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WEST OXFORDSHIRE LOCAL PLAN  
SITE 260 : EYNHAM  
AGRICULTURAL LAND CLASSIFICATION  
ALC MAP & REPORT  
AUGUST 1993

**WEST OXFORDSHIRE LOCAL PLAN  
SITE 260 : EYNHAM  
AGRICULTURAL LAND CLASSIFICATION REPORT**

**1.0 Summary**

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on 8 sites in West Oxfordshire. The work forms part of MAFF's statutory input to the West Oxfordshire Local Plan.

1.2 Approximately 6 hectares of land relating to site 260 at Eynsham, Oxfordshire was surveyed during August 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 6 soil auger borings and 2 soil inspection pits were assessed in accordance with MAFF's 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 longterm limitations on its use for agriculture.

At the time of the survey land was in permanent grass, cereal stubble and recently ploughed. The south part of the site appeared to be part of a recreational ground.

1.3 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:5000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Agricultural Area</u>
2	5.1	100 (5.1 ha)
Non agricultural	0.9	
Urban	0.3	
Total area of site	6.3	

1.4 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey.

1.5 The site has been classified as Grade 2, the land being limited by a slight workability limitation associated with the heavy nature of the topsoil texture. A slight droughtiness imperfection also limits land to this grade due to the combination of soil textures and climatic regime.

**2.0 Climate**

2.1 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.

2.2 The main parameters used in the assessment of the overall climatic limitation are annual average rainfall, as a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site.

2.4 No local climatic factors such as exposure or frost risk affect the site. However climatic factors such as the relatively high moisture deficits interact with soil properties to influence soil wetness and droughtiness limitations.

**Table 2 : Climatic Interpolation**

Grid Reference :	SP 438 093
Altitude (m) :	63
Accumulated Temperature (days) :	1441
Average Annual Rainfall (mm) :	648
Field Capacity (days) :	141
Moisture Deficit, Wheat (mm) :	110
Moisture Deficit, Potatoes (mm) :	103
Overall Climatic Grade :	1

### **3.0 Relief**

3.1 The site is flat and lies at an altitude of approximately 63 metres. Nowhere on the site does relief or gradient affect agricultural land quality.

### **4.0 Geology and Soil**

4.1 The relevant geological sheet for the site, Sheet 236 (BGS, 1982) shows the underlying geology to be predominantly Quaternary Alluvium with an area of Jurassic Oxford Clay to the north west.

4.2 The published soils information for the area, Sheet 6 (SSEW, 1983) shows the majority of the site to comprise the Kelmscott association -"Calcareous fine loamy soils over gravel. Variably affected by groundwater, associated with non calcareous clayey soils over gravel" (SSEW, 1983). To the north west is mapped the Badsey 1 association -"Well drained calcareous and non calcareous fine loamy soils over limestone gravel. Some deep fine loamy and fine loamy soils over gravel..." (SSEW, 1983). A detailed inspection of soils on the site revealed the presence of calcareous and non calcareous fine loamy soils over clay. No gravel was encountered.

### **5.0 Agricultural Land Classification**

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached sample point map.

#### **Grade 2**

5.3 The entire site has been classified as grade 2, very good quality agricultural land. Soil profiles are calcareous or non calcareous and typically comprise topsoils of heavy clay loam containing 0-3% total stones by volume. Upper subsoils consist of heavy clay loam or clay containing 2-8% total stones over lower subsoils of clay containing 0-5% total stones. Profiles are well drained and are assigned to wetness class I. However due to a heavy topsoil texture interacting with climatic factors, land can be classified no higher than than grade 2 due to a

slight workability limitation. Clayey topsoils textures retain water for longer periods than lighter textures and decrease the time land is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock. Together with this limitation soils are also limited to grade 2 due to a slight droughtiness limitation. The combination of soil textures, structures, profile stone content and climatic factors (see paragraph 2.4) slightly reduces available water for crop growth such that a classification of grade 2 is appropriate. Occasional profiles of poorer quality were encountered but were not mapped separately due to their limited number and distribution.

5.4 Land classified as non agricultural comprises a playing field.

5.5 The areas marked as urban consists of a house and gardens.

ADAS REFERENCE : 3305/142/93  
MAFF REFERENCE : EL 33/225

Resource Planning Team  
Guildford Statutory Group  
ADAS Reading

## APPENDIX I

### 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 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 on 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. When more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2.

#### **Sub-grade 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.

#### **Sub-grade 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 (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.

## **Urban**

Built-up or 'hard' uses with relatively little potential for a return to agriculture : 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 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.

## **Woodland**

Includes commercial and non-commercial woodland.

## **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, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

## APPENDIX II

### REFERENCES

\* BRITISH GEOLOGICAL SURVEY (1982), Sheet No.236, Witney, 1:50,000 scale.

\* MAFF (1988), Agricultural Land Classification of England And Wales : Revised guidelines and criteria for grading the quality of agricultural land.

\* METEOROLOGICAL OFFICE (1989), Climatological Data for Agricultural Land Classification.

\* SOIL SURVEY OF ENGLAND AND WALES (1983), Sheet No.6, "Soils of South East England", 1:250,000 scale and accompanying legend.

## APPENDIX III

### DEFINITION OF SOIL WETNESS CLASSES

#### **Wetness Class I**

The soil profile is not wet within 70cm depth for more than 30 days in most years.

#### **Wetness Class II**

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

#### **Wetness Class III**

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

#### **Wetness Class IV**

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

#### **Wetness Class V**

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

#### **Wetness Class VI**

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

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)



## APPENDIX IV

### SOIL PIT AND SOIL BORING DESCRIPTIONS

- Contents :
- \* Soil Abbreviations : Explanatory Note
  - \* Soil Pit Descriptions
  - \* Database Printout : Boring Level Information
  - \* Database Printout : Horizon Level Information

## SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

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

### Boring Header Information

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

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

**ARA** : Arable    **WHT** : Wheat    **BAR** : Barley    **CER** : Cereals    **OAT** : Oats    **MZE** : Maize    **OSR** : Oilseed rape  
**BEN** : Field Beans    **BRA** : Brassicae    **POT** : Potatoes    **SBT** : Sugar Beet    **FCD** : Fodder Crops    **LIN** : Linseed  
**FRT** : Soft and Top Fruit    **HRT** : Horticultural Crops    **PGR** : Permanent Pasture    **LEY** : Ley Grass    **RGR** : Rough Grazing  
**SCR** : Scrub    **CFW** : Coniferous Woodland    **DCW** : Deciduous Woodland    **HTH** : Heathland    **BOG** : Bog or Marsh  
**FLW** : Fallow    **PLO** : Ploughed    **SAS** : Set aside    **OTH** : Other

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

4. **GLEYSPL** : Depth in cm to gleying or slowly permeable layers.

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

6. **MB (WHEAT/POTS)** : Moisture Balance.

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

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

**MREL** : Microrelief limitation    **FLOOD** : Flood risk    **EROSN** : Soil erosion risk    **EXP** : Exposure limitation    **FROST** : Frost  
**DIST** : Disturbed land    **CHEM** : Chemical limitation

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

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

### Soil Pits and Auger Borings

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

**S** : Sand    **LS** : Loamy Sand    **SL** : Sandy Loam    **SZL** : Sandy Silt Loam    **CL** : Clay Loam    **ZCL** : Silty Clay Loam  
**SCL** : Sandy Clay Loam    **C** : Clay    **SC** : Sandy Clay    **ZC** : Silty Clay    **OL** : Organic Loam    **P** : Peat    **SP** : Sandy Peat  
**LP** : Loamy Peat    **PL** : Peaty Loam    **PS** : Peaty Sand    **MZ** : 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 prefixes.

**F** : Fine (more than 66% of the sand less than 0.2mm)

**M** : Medium (less than 66% fine sand and less than 33% coarse sand)

**C** : 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

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

6. **STONE LITH** : One of the following is used.

HR : all hard rocks and stones MSST : soft, medium or coarse grained sandstone

SI : soft weathered igneous or metamorphic SLST : soft oolitic or dolimitic limestone

FSST : soft, fine grained sandstone ZR : soft, argillaceous, or silty rocks CH : chalk

GH : gravel with non-porous (hard) stones GS : gravel with porous (soft) stones

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

7. **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 VC : very coarse

- ped shape S : single grain M : massive GR : granular AB : angular blocky SAB : sub-angular blocky PR : prismatic  
PL : platy

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

L : loose VF : very friable FR : friable FM : firm VM : very firm EM : extremely firm EH : extremely hard

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

G : good M : moderate P : poor

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

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

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

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

14. 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

SOIL PIT DESCRIPTION

Site Name : WEST OXON LP SITE 260 Pit Number : 1P

Grid Reference: SP43790939 Average Annual Rainfall : 648 mm  
 Accumulated Temperature : 1441 degree days  
 Field Capacity Level : 141 days  
 Land Use : Bare Soil  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 22	HCL	10YR32 00	0	2		
22- 36	C	10YR43 00	0	2	F	MDCSAB
36- 56	C	10YR53 00	0	2	C	MDCSAB
56-120	MCL	10YR56 00	0	0		

Wetness Grade : 3A Wetness Class : II  
 Gleying : 036 cm  
 SPL : cm

Drought Grade : 1 APW : mm MBW : 0 mm  
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A  
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : WEST OXON LP SITE 260 Pit Number : 2P

Grid Reference: SP43700930 Average Annual Rainfall : 648 mm  
 Accumulated Temperature : 1441 degree days  
 Field Capacity Level : 141 days  
 Land Use : Bare Soil  
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	HCL	10YR42 00	0	3		
30- 50	HCL	10YR44 00	0	3		MDCSAB
50- 63	C	10YR44 00	0	3		MDCSAB
63-120	C	25Y 53 00	0	5		MDCSAB

Wetness Grade : 2 Wetness Class : I  
 Gleying : cm  
 SPL : cm

Drought Grade : 2 APW : 137mm MBW : 27 mm  
 APP : 114mm MBP : 11 mm

FINAL ALC GRADE : 2  
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	SP43650954	PGR			1	2	097	-13	106	3	3A				
1P	SP43790939	PL0	036		2	3A		0		0				DR 3A	IMP PROB2DR
2	SP43800950	STB			1	2	122	12	118	15	2			WE 3A	
2P	SP43700930	PL0			1	2	137	27	114	11	2			WE 2	
3	SP43700940	PL0			1	2	140	30	116	13	2			WE 2	
4	SP43800940	PL0	035		2	3A		0		0				WE 3A	AS 1P
5	SP43700930	PL0			1	2	139	29	116	13	2			WE 2	
6	SP43800930	PL0			1	2	112	2	114	11	3A			WE 2	IMP PROB2DR

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLEY	>2	>6		LITH	TOT	STR	POR	IMP	SPL
1	0-25	mzc1	10YR42 00					0	0	HR	2						
	25-65	mc1	10YR44 00					0	0	HR	8		M				
1P	0-22	hc1	10YR32 00					0	0	HR	2						
	22-36	c	10YR43 00	000C00	00	F		0	0	HR	2	MDCSAB	FM	M			
	36-56	c	10YR53 00	10YR56	00	C		Y	0	0	HR	2	MDCSAB	FM	M		
	56-120	mc1	10YR56 00					Y	0	0		0		M			Y
2	0-30	hc1	10YR42 00					0	0		0						
	30-70	hc1	75YR54 00	00MN00	00	F		0	0		0			M			
	70-90	c	75YR54 00					0	0		0			M			
2P	0-30	hc1	10YR42 00					0	0	HR	3						
	30-50	hc1	10YR44 00					0	0	HR	3	MDCSAB	FM	M			
	50-63	c	10YR44 00					0	0	HR	3	MDCSAB	FM	M			
	63-120	c	25Y 53 00					0	0	HR	5	MDCSAB	FM	M			
3	0-38	hc1	10YR42 00					0	0	HR	3						Y
	38-48	hc1	10YR44 00					0	0	HR	4			M			Y
	48-120	c	10YR44 00	000C00	00	C		0	0	HR	2			M			Y
4	0-27	hc1	10YR32 00					0	0	HR	2						
	27-35	hc1	10YR43 00					0	0	HR	2			M			
	35-45	c	10YR53 00	10YR68	00	C		Y	0	0	HR	2		M			
	45-90	c	10YR53 00	10YR68	76	M		Y	0	0	HR	2		M			
5	0-30	hc1	10YR52 00					0	0	HR	2						Y
	30-40	hc1	10YR44 00					0	0	HR	2			M			Y
	40-52	c	10YR44 00					0	0	HR	2			M			Y
	52-120	c	10YR44 00	000C00	00	F		0	0	HR	2			M			Y
6	0-26	hc1	10YR42 00					0	0	HR	2						Y
	26-38	c	10YR44 00					0	0	HR	2			M			Y
	38-80	hc1	10YR56 00					0	0	HR	5			M			Y