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WILTSHIRE MINERALS LOCAL PLAN  
S77 STERTS FARM, HANNINGTON

**AGRICULTURAL LAND CLASSIFICATION  
REPORT OF SURVEY**

Resource Planning Team  
Taunton Statutory Unit

February 1993

**ADAS** 

WILTSHIRE MINERALS LOCAL PLAN  
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Report of Survey

1. SUMMARY

Two hundred and fourteen hectares of land at Sterts Farm, Hannington were graded using the Agricultural Land Classification (ALC) System in December 1992 and February 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000. The information is correct at this scale but any enlargement would be misleading. A total of 179 auger borings and 6 soil profile pits were examined.

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying map.

Distribution of ALC grades: Sterts Farm, Hannington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3a	137.0	64.0	68.9	
3b	61.7	28.8	<u>31.1</u>	
Urban	0.5	0.2	100%	
Non Agric	<u>14.8</u>	<u>6.9</u>		(198.7 ha)
TOTAL	214.0	100%		

There are no climatic or site limitations for the survey area. The main limitation across the site is wetness. This is of varying severity, downgrading the site to Subgrade 3a and 3b. In parts there is a droughtiness limitation which matches the 3a wetness limitation. There are small areas downgraded to Subgrade 3b on the basis of microrelief. There is a risk of flooding across the site but there is insufficient reliable data available to make an assessment of the effects on the grading all of the land. It is thought that part of the site would be downgraded to Subgrade 3b if the risk could be properly assessed. Without data for flood risk, 64% of the site has been classified as best and most versatile.

## 2. INTRODUCTION

Two hundred and fourteen hectares of land at Sterts Farm, Hannington were graded using the Agricultural Land Classification (ALC) System in December 1992 and February 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 179 auger borings and 6 soil profile pits were examined.

The published Provisional 1" to the mile ALC map of this area (MAFF 1973) shows the site to be mainly Grade 3 with a small area of Grades 2 and 4 in the west. The area was surveyed in 1979 at a scale of 1:25,000 as part of the Cotswold water park ALC survey and mapped the site as a mix of Grades 3, 3a, 3b and 3c. The recent survey supersedes these maps having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988).

The ALC provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120cm of the soil profile. A description of the grades used in the ALC System can be found in Appendix 2.

At the time of survey most of the site was under winter cereals and grass.

## 3. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to lower grades despite other favourable conditions.

Estimates of climatic variables were obtained for the site by interpolation from the 5km grid Meteorological Office Database (Meteorological Office 1989) and are shown in Table 1.

The parameters used for assessing overall climatic limitation are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The values shown in Table 1 reveal that there is no overall climatic limitation.

No locally limiting climatic factors such as exposure were noted in the survey area. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in Section 6.

Table 1 Climatic Interpolations: Sterts Farm, Hannington

Grid Reference	SU 196 968
Height (m)	70
Accumulated Temperature (day deg)	1445
Average Annual Rainfall (mm)	680
Overall Climatic Grade	1
Field Capacity (Days)	149
Moisture Deficit,	
Wheat (mm)	107
Potatoes (mm)	99

#### 4. RELIEF

Most of the site is fairly flat. There are some fields which have severe microrelief in the form of ridge and furrows which limit the versatility of the land. These fields have been downgraded to Subgrade 3b. The site is at approximately 70m AOD.

#### 5. GEOLOGY AND SOILS

The published one inch scale solid and drift geology map, sheet 252 (Geological Survey of England and Wales 1974) shows the majority of the site to be of Alluvial deposits. There is a band of First Terrace River deposits through the centre of the site running east west. There are two small areas of Kellaway Clays in the south and east.

The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaissance scale of 1:250,000. This map shows the soils at the site to be of four associations. Corresponding to the River Terrace deposits is the Badsey 2 Association, described as mainly well drained fine loamy soils over calcareous gravel. The majority of the site is of Thames Association and this is described as calcareous clays affected by groundwater. There are small areas of Denchworth and Evesham 2 in the south and east which are both poorly drained clays.

The soils found in the recent survey show evidence of restricted drainage and high water tables in some areas. Some parts of the site have stony subsoils and this slightly restricts the available water for crop growth.

## 6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Table 2 Distribution of ALC grades: Sterts Farm, Hannington

<b>Grade</b>	<b>Area (ha)</b>	<b>% of Survey Area</b>	<b>% of Agricultural Land</b>	
3a	137.0	64.0	68.9	
3b	61.7	28.8	<u>31.1</u>	
Urban	0.5	0.2	100%	
Non Agric	<u>14.8</u>	<u>6.9</u>		(198.7 ha)
<b>TOTAL</b>	<b>214.0</b>	<b>100%</b>		

### Subgrade 3a

The majority of the site has been classified as Subgrade 3a. These soils show evidence of high ground water levels for part of the year. Some of the profiles have gleying within 40cm, whilst others had high water tables at the time of survey. These soils are Wetness Class II on the basis of the definitions in Appendix 3. The absence of slowly permeable layers in these soils was confirmed by examination of the subsoil structures in soil profile pits. The topsoil texture of these soils is generally heavy clay loam. The profile are generally stony. The stone content of the soil and the textures of the horizons varies as confirmed by soil profile pits. Some of the profiles are also limited to Subgrade 3a by droughtiness. The light textures and the stone content mean that the water available for crop growth is reduced. If data was available on the extent of flooding, it is expected that part of this area would be downgraded.

### Subgrade 3b

Three areas have been downgraded on the basis of restrictions on versatility caused by microrelief. In these fields a ridge and furrow system is in place and this limits the type of machinery that can be used.

The small area of 3b in the south is similar to the soils described above but has clay topsoils. This means that the soils can be no better than Subgrade 3b.

Wetness Class IV. The structures associated with slowly permeable layers were confirmed in a soil profile pit. The topsoil textures in this area are clays and heavy clay loams.

Part of this area may be affected by flooding by insufficient data is available to make an accurate assessment.

#### Urban and Non Agricultural

Just over 15 hectares of land in the site is in non agricultural uses. This includes tracks, a derelict farmstead and an area of planted trees.

## APPENDIX 1

### REFERENCES

**GEOLOGICAL SURVEY OF ENGLAND AND WALES (1974)** Solid and drift edition. Sheet 252 Swindon, 1:63,360 scale

**MAFF (1973)** Agricultural Land Classification Map sheet 157 Provisional 1:63,360 scale

**MAFF (1988)** Agricultural Land Classification of England and Wales (Revised guidelines and criteria for grading the quality of agricultural land) Alnwick

**METEOROLOGICAL OFFICE (1989)** Published climatic data extracted from the agroclimatic dataset, compiled by the Meteorological Office

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

SITE NAME		PROFILE NUMBER		SLOPE AND ASPECT		LAND USE		Av Rainfall :- 679			PARENT MATERIAL		
Sterts Farm		Pit 1		0		Ley		ATO :- 1446			Alluvium		
JOB NO		DATE		GRID REFERENCE		DESCRIBED BY		FC Days :- 150			Climatic grade :- 1		
74/92		2.2.93		SU 197 967		PRW/GMS							
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	21	10YR32	C	-	None	Mod. medium Granual	Good	-	Friable	Abundant fine		None	
2	33	10YR52	C	-	cdom (gleyed)	MMSAB	Good	Mod.	Friable	Common fine		None	
3	75	25Y62	C	-	cdom (gleyed)	MCAB (some MMAB) Also, some SAB . but break into AB	<0.5 (border-line in places, but gen <0.5)	Mod.	Friable	Common very fine		Common	
4	105	25Y64	C	-	mdom (gleyed)	WMSAB		Good	Friable	Fine few		Common	
5	105+	25Y66	SCL(?)	20% (visual)				Mod.					

Profile Gleyed From:- 21 cm

Depth to Slowly Permeable Horizon:- 33 cm

Wetness Class :- IV

Wetness Grade :- 3B

Available Water Wheat :- 167mm

Potatoes :- 122mm

Moisture Deficit Wheat :- 107mm

Potatoes :- 99mm

Moisture Balance Wheat :- +60mm

Potatoes :- +23mm

Droughtiness Grade :- 1 (to 120 cm)

Final ALC Grade :- 3B

Main Limiting Factor(s) :- Wetness

Remarks :-

Water table rising to near surface.

SITE NAME Sterts Farm		PROFILE NUMBER Pit 2	SLOPE AND ASPECT 0		LAND USE Permanent Grass	Av Rainfall :- 679 ATO :- 1446 FC Days :- 150		PARENT MATERIAL First Terrace River Deposits				
JOB NO 74/92		DATE 2.2.93	GRID REFERENCE SU 188 963		DESCRIBED BY GMS/PRW		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	23	10YR33	C	0	-	Mod. medium granular	Many	-	Friable	Many		-	Abrupt, smooth
2	40	10YR54	HCL	21% HR sieved/disp.	-	MCAB	Many	Mod.	Friable	Many fine		Few	Abrupt, smooth
3	58	10YR54	HCL	45% HR sieved/disp.	-	MCSAB	Many	Mod.	Friable	Many fine		Few	Abrupt, smooth
4	90+	10YR76	CS	55% HR sieved/disp.	-	-	Many	Mod.	Very friable	Few fine to 70 cm		-	-

Profile Gleyed From:- None Depth to Slowly Permeable Horizon:- None Wetness Class :- I Wetness Grade :- 3A	Available Water Wheat :- 87mm Potatoes :- 83mm Moisture Deficit Wheat :- 107mm Potatoes :- 99mm Moisture Balance Wheat :- -20mm Potatoes :- -16mm Droughtiness Grade :- 3A (to 120 cm)	Final ALC Grade :- 3B Main Limiting Factor(s) :- Micro relief Remarks :- 3A on droughtiness and workability.
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SITE NAME		PROFILE NUMBER		SLOPE AND ASPECT		LAND USE		Av Rainfall :- 679			PARENT MATERIAL		
Sterts Farm		Pit 3		0		Ley		ATO :- 1446			Alluvium		
JOB NO		DATE		GRID REFERENCE		DESCRIBED BY		FC Days :- 150					
74/92		2.2.93		SU 187 958		PRW/GMS		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	10YR43	HCL	0	None	MMG	Good	-	Friable	Many med. + fine		None	Clear
2	53	10YR53	C	0	cdom (gleyed)	MCSAB	<0.5 (border-line)	Mod.	Friable	Many very fine		Few	
3	95	25Y64	MCL	0	mdogm (gleyed)	MMAB	Good	Mod.	Friable	Common very fine to 80cm + few fine		None	
4	120	10YR66	CSL	30% visual	Wet			Mod.					
Profile Gleyed From:- 28cm Depth to Slowly Permeable Horizon:- None Wetness Class :- II Wetness Grade :- 3A				Available Water Wheat :- 150mm Potatoes :- 118mm Moisture Deficit Wheat :- 107mm Potatoes :- 99mm Moisture Balance Wheat :- +43mm Potatoes :- +19mm Droughtiness Grade :- 1 (to 120 cm)				Final ALC Grade :- 3A Main Limiting Factor(s) :- Wetness Remarks :- Pit dug to 105 cm H2 not SPL.					

SITE NAME Sterts Farm		PROFILE NUMBER Pit 4	SLOPE AND ASPECT 0		LAND USE Ploughed	Av Rainfall :- 679 ATO :- 1446 FC Days :- 150 Climatic grade :- 1		PARENT MATERIAL Alluvium				
JOB NO 74/92		DATE 5.2.93	GRID REFERENCE SU 181 956		DESCRIBED BY GMS/PRW							

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	10YR33	HCL	0	-	MFSAB	Many	-	Friable	Common fine		-	Smooth, abrupt
2	64	10YR53 tending to 2.5Y52 with depth	C	0	cdom (gleyed)	MCSAB	Common	Mod.	Friable	Common fine		-	Smooth, abrupt
3	85	2.5Y66	CSL	46% HR (sieved/displ.)	-	-	Many	Mod.	-	Few fine		-	Smooth, abrupt
4	120	2.5Y56	CS with LMS lenses	32% HR (sieved/displ.)	cdom	-	Many	Mod.	-	-		-	-

Profile Gleyed From:- 20 cm Depth to Slowly Permeable Horizon:- None Wetness Class :- II Wetness Grade :- 3A	Available Water Wheat :- 116mm Potatoes :- 112mm Moisture Deficit Wheat :- 107mm Potatoes :- 99mm Moisture Balance Wheat :- +9mm Potatoes :- +13mm Droughtiness Grade :- 2 (to 120 cm)	Final ALC Grade :- 3A Main Limiting Factor(s) :- Wetness Remarks :- Water table at 75 cm.
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SITE NAME		PROFILE NUMBER		SLOPE AND ASPECT		LAND USE		Av Rainfall :- 679			PARENT MATERIAL		
Sterts Farm		Pit 5		0		Cereals		ATO :- 1446			(Just into) First Terrace River Deposits		
JOB NO		DATE		GRID REFERENCE		DESCRIBED BY		FC Days :- 150					
74/92		5.2.93		SU 180 950		GMS/PRW		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	10YR43	HCL	5% HR (visual)	-	MMSAB	Common	-	Friable	Common fine		-	Smooth, abrupt
2	50	10YR54	C	21% HR (sieved/disp1.)	c fom	MMSAB	Common	Good	Friable	Few fine		-	Smooth, abrupt
3	70	2.5Y56	CS	50% HR (sieved/disp1.)	-	-	Common	Mod.	Loose	Very few fine			Smooth, clear
4	85+	2.5Y56	CS	59% HR (sieved/disp1.)	-	-	Common	Mod.	Loose	Not observed			-
Profile Gleyed From:- Not				Available Water Wheat :- 96mm				Final ALC Grade :- 3A					
Depth to Slowly Permeable Horizon:- None				Potatoes :- 90mm									
Wetness Class :- II (water table at 50 cm)				Moisture Deficit Wheat :- 107mm				Main Limiting Factor(s) :- Wetness/droughtiness					
				Potatoes :- 99mm									
Wetness Grade :- 3A				Moisture Balance Wheat :- -11mm									
				Potatoes :- -9mm				Remarks :-					
				Droughtiness Grade :- 3A (to 120 cm)				Pit dug to 85 cm.					

SITE NAME Sterts Farm		PROFILE NUMBER 6	SLOPE AND ASPECT 0		LAND USE Cereals	Av Rainfall :- 679 ATO :- 1446 FC Days :- 150		PARENT MATERIAL First River Terrace Deposits				
JOB NO 74/92		DATE 16/2/92	GRID REFERENCE SU 179 955		DESCRIBED BY GMS/PRW		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	10YR42	HCL	-	-	MMSAB	Many	Mod.	Friable	Common Fine	No	No	Abrupt smooth
2	45	2.5Y52	C	-	Common ochreous (Gleyed)	MCSAB	<0.5% 0.5%	Mod.	Friable	Few fine	Slightly calcarious	No	
3	60	10YR56	HCL	20% HR (sieved/disl.)	Stained	-	Many	Mod.	Very Friable	Few fine	Calcarious	No	
4	80+	2.5Y64	LMS	32% HR (sieved/disl.)	Stained	-	Many	Mod.	Loose	X	Calcarious	No	

Profile Gleyed From:- 25 cm Depth to Slowly Permeable Horizon:- None Wetness Class :- II Wetness Grade :- 3a	Available Water Wheat :- 112mm Potatoes :- 102mm Moisture Deficit Wheat :- 107mm Potatoes :- 99mm Moisture Balance Wheat :- +5mm Potatoes :- +3mm Droughtiness Grade :- 3a (to 120 cm)	Final ALC Grade :- 3a Main Limiting Factor(s) :- Wetness/droughtiness Remarks :- Pit dug to 80 cm.
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