Land Around Hart's Lane, Monkerton,Exeter

REPORT OF SURVEY

Agricultural Land Classification

Resource Planning Group
South West Region
Bristol
May 1989

101/89a

LAND AROUND HART'S LANE, MONKERTON, EXETER
AGRICULTURAL LAND CLASSIFICATION

REPORT OF SURVEY

1. Introduction

In April and May 1989 the Resource Planning Group (RPG) carried out an Agricultural Land Classification (ALC) of a 3.18 hectare site adjacent to Hart's lane, Monkerton, Devon, in order to help Exeter Divisional staff to determine their response to an ad hoc planning application.

As part of this consultation the RPG was asked to survey an area larger than the application site in order to establish the ALC grades on adjacent land. The area surveyed is shown on the ALC map and constitutes a block of land bounded by Hollow Lane, Pinn Lane and the main Pinhoe Road, and lies on the north-eastern fringe of Exeter.

This area had in fact been surveyed in September 1986 under the original ALC system. However, as a result of the introduction in January 1989 of revised guidelines and criteria for grading the quality of agricultural land and because of the likely contentious nature of the area, the RPG were asked to re-survey the area and to confirm the classification under the revised system.

The results of the survey are outlined below in Table 1 and illustrated in the accompanying ALC map. The fieldwork was conducted at an approximate auger sample density of just over one boring per hectare.

Table 1: Distribution of Grades and Sub-Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
1	36.74	67.5	86.5
2	1.06	1.9	2.5
3A	4.06	7.5	9.6
3B	0.61	1.1	1.4
Non Agric	3.70	6.8	100% (42.47 ha)
Farm Bldgs	0.98	1.8	
Urban	7.31	13.4	
	54.46 ha	100%	

2. Climate

Estimates of important climatic variables for three representative points have been obtained by interpolation from a 5 km grid database, and are shown in Table 2 below. The main parameters used in the assessment of overall climate are accumulated temperature (as a measure of the relative warmth of a locality) and average annual rainfall (as a measure of overall wetness). Together, throughout the site, these parameters suggest that overall climate is not a limiting factor.

Table 2: Climate Interpolations

	Location 1*	2*	3*
Altitude (M)	50	25	40
Accumulated Temnperature (°days)	1541	1569	1552
Average Annual Rainfall (mm)	819	786	811
Moisture Deficit, Wheat (mm)	108	112	109
Moisture Deficit, Potates (mm)	101	107	103
Field Capacity Days	171	167	170

* Location 1 on the gentle north-facing slopes in the south-west of the site on the highest land; Location 2 on the lowlying floodplain land in the north-east; Location 3 in the application area itself.

3. Agricultural Land Classification

Grade 1: the majority of the site has been placed in this grade and is illustrated in detail by Pits 1-3. The soils have no significant ALC limitation. Typically they are deep medium sandy loams that continue to depth or grade into sandy clay loam textures. As a result, there is no droughtiness limitation and the profiles are placed in Wetness Class I. Occasionally, some of the profiles exhibit sandy clay horizons at depth which do act as slowly permeable layers. Even here, this limitation has very little effect and, given the Field Capacity Day values and the light topsoil textures, may be mapped as Grade 1.

Grade 2: a limited area of this grade has been identified in the south-eastern corner and forms a map unit with adjacent grade 2 land to the east and south which was mapped in December 1988. Here, loamy medium sand subsoils limit the profiles to grade 2 on droughtiness.

Sub-grade 3A: the majority of the floodplain area in the north has been downgraded to 3A as a result of soil wetness. These heavier soils exhibit medium clay loam topsoils which show increasing clay content with depth. Clay textures occur at shallow depths and act as slowly permeable layers with distinct evidence of gleying below 40 cm.

The soils fall into Wetness Class III and, given the FCD level and medium clay loam topsoils, are placed in 3A.

Sub-grade 3B: two limited areas of this grade had been identified. Both have gradient as the most limiting factor.

Soil Profile Descriptions: Explanatory Note

Soil texture classes are denoted by the following abbreviations:

Sand **S**; Loamy Sand **LS** Sandy Loam **SL**; Sand Silt Loam **SZL**; Silt Loam **ZL**;

Medium Silty Clay Loam **MZCL**; Medium Clay Loam **MCL**; Sandy Clay Loam **SCL**;

Heavy Silty Clay Loam **HZCL**; Heavy Clay Loam **HCL**; Sandy Clay **SC**;

Silty Clay **ZC**; Clay **C**

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:

Peat **P**; Sandy Peat **SP**; Loamy Peat **LP**; Peaty Loam **PL**;
Peaty Sand **PS**; Marine Light Silts **MZ**

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**".

Other notation:

st	stones (6 cm)
sst	small stones (2 cm - 6 cm)
vsst	very small stones (2 mm - 2 cm)
Mn	manganese
cdom/cfom	common distinct/feint ochreous mottles
mpom	many prominent ochreous mottles (**VMPOM** = very many ..)

Few = 1-5%; **common** = 6-15%; **many** = 16-35%; **very many** = +35%

AGRICULTURAL LAND CLASSIFICATION

Harts Lane, Monkton, Devon
8FCS 2961

SOIL PROFILE DESCRIPTION

Date of Survey 20.4.89

NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOTI
1	MSL	5YR54	0-25	approx 2% stone <2 cm	
	C	5YR54/64	25-45	<2% Mn	
			I		
2	MSL	5YR43	0-30	approx 2% st <2 cm	
	MCL	5YR54	30-52	<2% Mn	
	C	5YR54/56	52-60	<2% Mn	
	C	2.5YR54	60-110+	possible SPL from 60 cm with mottling	
				WC II (assuming pale ped faces)	
3	MSL	5YR43	0-30		3° slope
	MSL	5YR44	30-50		
	MSL	5YR44	50-80	approx 2% st <2 cm, Weathering	
				colours and some redder sandy lenses	
	LMS	5YR44	80-110+		
4	MSL	5YR43	0-30		
	MSL	5YR44	30-58		
	MSL	5YR44	58-75	quite sandy; <2% Mn	
	C	2.5YR54	75-110+	and 5YR64/66; >2% Mn with evident	
				pale ped faces; SPL from 75; WC2	
5	MSL	5YR43	0-29		
	MSL	5YR44	29-47		
	LMS	5YR54	47-110+	towards MSL; >2% Mn from 70cm	
6	MSL	5YR43	0-32		5°slope
	MSL	5YR44	32-55		
	MSL	5YR54	55-90	>2% Mn; almost pale colours	
	LMS	5YR44	90-110+		
7	MSZL	5YR43	0-26		Slight hollow; base
	MSL	5YR44	26-60		of 5° slopes
	MSL	5YR54	60-110+		

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOTI
8	MSL	5YR43/53	0-28		5° slope
	MSL	5YR54	28-60		
	MSL	5YR54	60-85	some redder Sandy lenses; >2% Mn	
	SC	5YR64	85-110+	>2% Mn; varied weathering and	
				mottling colours; possible SPL	
				WC I	
9	MSL	5YR43	0-26		
	MSL	5YR44	26-55		
	MSL	5YR54	55-65		
	SC	2.5YR56	65-110+	2.5YR54 below 80 cm; >2% Mn from	
				90 cm; possible SPL from 90 cm; WC	I
10	MSL	5YR43	0-28		
	MSL	5YR44	28-50		
	MSL	5YR54	50-60		
	LMS	5YR64	60-70		
	SC	5YR54	70-110+	<2% Mn; no evidence of pale ped faces	
				until below 90 cm; WC I	
11	MSL	5YR43	0-26		
	MSL	5YR44	26-55		
	MSL	5YR54	55-65	no evidence of Mn	
	SC	2.5YR56	65-110+	possible SPL from approx 70 cm,	
				becoming quite sandy from 90 cm;	
				WC I/II	
12	MSL	5YR43	0-32		
	MSL	5YR44	32-45	<2% Mn; approx 2% vsst	
	SC	2.5YR54	45-110+	>2% Mn from 70 cm but no evidence	
				of pale peds; very light and sandy	
				clay, difficult to assess any SPL	
13	MSL	5YR43	0-35		
	MSL	5YR44	35-100	<2% Mn from 60 cm	
	LMS	2.5YR44	100-110+		

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOT
14	MSL	5YR43	0-35		
	MSL	5YR44	35-100		
	LMS	5YR53	100-110+		
15	MSL	5YR43	0-25		
	MSL	5YR44	25-110+	very uniform subsoil	
16	MSL	5YR43	0-28		
	MSL	5YR44	28-50		
	SCL	2.5YR44	50-65		
			I	(65, 46 cm)	
17	MSZL	5YR54	0-25		
	MSL	5YR54	25-60		
	LMS	2.5YR44	60-110+		
18	MSZL	5YR43	0-25		
	MSL	5YR43	25-40		
	SCL	5YR54	40-110+	almost clay, but no wetness problem	
				evident	
19	MSL	5YR44	0-35		
	MSL	5YR44	35-80	slightly lighter subsoil	
	MSL	5YR54	80-110+		
20	MSL	5YR43	0-32		
	MSL	5YR54	32-100		
	SCL	5YR54	100-110+		
21	MSL	5YR43	0-35		
	MSL	5YR44	35-50		
	LMS	5YR54	50-90		
	LMS	5YR64	90-110+		
22	MSL	5YR43	0-36		6° slope
	MSL	5YR54	36-60		
	MSZL	5YR54	60-110+		

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOT
23	MSZL	5YR43	0-35		
	MSL	5YR44	35-110+	almost MSZL to depth	
24	MSZL	5YR44	0-33		
	MSL	5YR44	30-65		
	SCL	2.5YR44	65-90		
	MSL	2.5YR44	90-110+		
25	MSL	5YR44	0-100	little soil variation	
	LMS	2.5YR44	100-110+		
26	MSZL	5YR43	0-50		
	MSZL	5YR54	50-95		
	MSL	5YR54/64	95-110+		
27	MSL	5YR43	0-25	Surface Mn, <2%	6° slope
	MSL	5YR44	25-40	towards SCL	
	SCL	5YR44	40-60	Mn from 52 cm, <2%	
	SCL	2.5YR54/44	60-110+	>2% Mn; with coarse sand fraction	
				from 90cm	
				No evidence of pale ped faces in	
				auger samples; No SPL	
28	MSZL	7.5YR42	0-26	Surface Mn, >2%	
	MSL	5YR44	26-65	<2% Mn	
	MSL	2.5YR44/54	65-110+		
				No evidence of wetness or SPL	
29	MSZL	5YR43	0-22		
	MSL	5YR44	22-50		
	MSZL	5YR54	50-80	<2% Mn from 70 cm	
	SCL	2.5YR54	80-101	approx 5% stone <2 cm	
			I	No evidence of wetness or SPL	
30	MSZL	5YR43	0-32		
	MSL	5YR44	32-70		
	MSL	5YR44/54	70-110+	towards MSZL at base	
				No evidence of wetness or SPL	

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOT
31	MSL	5YR44	0-30		Bottom of 8° sl
	SCL	2.5YR54	30-60		
	MSL	2.5YR56	60-90	or towards 10R56; very sandy	
	SCL	2.5YR44	90-110+		
32	MSZL	5YR43	0-15	>2% Mn	
	MSZL	5YR54	15-110+	>2% Mn; <2% Mn from 80 cm	
				No evidence of gleying or SPL	
33	MSL	5YR33	0-22		
	SCL	5YR44	22-30		
	MSL	5YR44	30-50		
	MSL	5YR54	50-70		
	SCL	2.5YR44/46	70-110+		
				No evidence of wetness or SPL	
34	SCL	5YR33	0-26	>2% surface Mn	
	SCL	5YR44	26-60		
	MCL	5YR54	60-110+		
				No evidence of wetness or SPL	
35	MSL	5YR43	0-28		5° slope
	MSL	5YR44	28-45		
	SCL	5YR44	45-110+		
				No evidence of wetness or SPL	
36	MSZL	7.5YR42	0-5		
	SCL	5YR54	5-40		
	HCL	5YR54	40-65	>2% Mn; approx 2% stone <2 cm	
	C	5YR56	65-70	>2% Mn; approx 10% stone <2 cm;	
				no evident pale ped faces in	
				auger sample	
	C	5YR56	70-100+	>2% Mn; 2% mottling evident;	
				pale ped faces apparent in auger	
				sample wetness class II	
				C	

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOT
37	MSL	5YR44	0-32		
	SCL	5YR54	32-60	<2% Mn from 50 cm	
	SCL/FSL	5YR54	60-90	>2% Mn, with some paler colours	
				5YR64	
	MSL	5YR54	90-110+		
				No SPL, possible gleying, WC I	
38	MSZL	5YR44	0-20		
	MSZL	5YR54	20-40	<2% Mn	
	MCL	5YR54/64	40-80	almost pale, >2% Mn; some mottle	
			I	colours	
				No SPL; some gleying; WC I	
38A	Clay from 55 cm with possible SPL				
39	MSZL	5YR44	0-15		
	MCL	5YR54	15-38		
	C	5YR54	38-100+	>2% Mn from approx 45 cm with some	
				mottling and possible pale ped	
				faces; possible SPL from 55/60 cm	
				WC III	
40	MCL	5YR44	0-40		
	HCL	5YR54	40-62	<2% Mn	
	C	5YR54	62-90+	>2% Mn; pale ped faces 5YR64;	
				possible mottling above 70cm,	
				distinct below 70 cm	
				WC II (III)	
41	MCL	7.5YR54	0-30	surface mottling	
	HCL	7.5YR64/66	30-40	pale; >2% Mn	
	C		40-75	possible SPL from 40 cm, definite	
			I	from 55cm; into Marly 7.5YR64 from	
				55 cm with mottles and weath. colours	
				WC III	
				(others Imp at 70, 90 cm)	

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOTE
42	MSL	5YR54	0-25		
	MSL	5YR44	25-100+	No evidence of wetness	
43	MSZL	5YR54	0-22		
	MSL	5YR44	22-110+	No evidence of wetness	
44	MSL	5YR44	0-30		
	MSL	5YR54	30-70		
			I		
45	MSZL	5YR44	0-20	surface mottling	
	MSL	5YR44	20-40	>2% Mn	
	HCL	5YR54/56	40-60	>2% Mn; some mottle colours	
	C	5YR54	60-85	>2% Mn; mottling	
	C	5YR64	85-110+	>2% Mn; mottling	
				SPL from approx 60 cm; WC II	
46	MCL	5YR54	0-40		
	C	5YR64	40-80+	>2% Mn; mottling	
				SPL at 50 cm; WC III	
47	MSZL	5YR44	0-30		
	SC	10R44	30-45	soft purple Marl; <10% sst	
			I		
47A	MSL	5YR44	0-60		5° slope
	MSL	5YR54	60-110+	WC I	
48	MSL	5YR44	0-55		3° slope
	MSL	5YR54	55-75		
	MSL	5YR64	75-110+		
49	MSZL	5YR44	0-50		
	MSL	5YR44	50-90		
	MSL	5YR54	90-110+	WC I	
50	MSL	5YR44	0-80	little soil variation	
	MSZL	5YR54	80-110+		

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOTI
51	MSL	5YR44	0-50		6° slope
	SCL	5YR44	50-80		
	SCL	5YR54	80-110+	WC I	
52	MSL	5YR43	0-27	<2% Mn	
	SCL	2.5YR54/44	27-45	approx 2% stones <2 cm	
	MSL	2.5YR54	45-60	or towards 10R56	
	SC	2.5YR54	60-72	> 2% Mn; not thick enough for SPL	
	MSL	2.5YR54	72-90		
			I		
53	MCL	5YR44	0-20	towards MSZL	
	HCL	5YR46	20-42	<2% Mn; not gleyed below 40 cm	
	C	5YR56	42-90+	>2% Mn and mottling; possibly	
				pale peds	
				SPL from 42 cm; WC III	
54	MSZL	5YR34	0-26		
	MSL	5YR54	26-40	>2% Mn	
	SCL	5YR54/64	40-60	>2% Mn	
	SCL	5YR54/64	60-90	>2% Mn, no apparent pale peds	
	MSL	2.5YR44	90-110+	>2% Mn, WC I	
55	MSL	5YR34	0-25		
	MSL	5YR44	25-55		
	MSL	2.5YR44	55-70		
	SC	2.5YR44	70-83		
			I		
56	MSZL	5YR43	0-26		
	MSZL	5YR44/54	26-50	>2% Mn, >2% mottles	
	SL	5YR64/54	50-60	5% sst	
	SCL	2.5YR44	60-70		
	SC	2.5YR46	70-80+	and varied marl weathering colours;	
				SPL; WC II	
57	MSL	5YR43	0-30		
	MSL	2.5YR34	30-60		
	MSZL	2.5YR34	60-110+	no evidence of wetness	

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NO	TEXTURE	COLOUR	DEPTH (CM)	SOIL PROFILE NOTES	TOPOGRAPHY NOTES
58	MSZL	5YR43	0-30		
	MSL	5YR44	30-110+	WC I	
59	MSL	5YR44	0-30	>2% Mn; surface mottling	
	MSL	5YR44	30-50	>2% Mn Mottles and Mn	
	SCL	5YR46	50-70	ditto	
	SC	5YR46	70-110+	ditto	
				possible ppf below 70cm; SPL at	
				70 cm; WC II	
60	MSL	5YR44	0-28		
	MSL	5YR46	28-100+	WC I	
61	MSL	5YR44	0-50		
	MSL	5YR46	50-56		
	LMS	5YR56	56-110+	WC I	
62	MSZL	5YR34	0-30		
	CSZL	5YR34	30-40		
	SCL/SC	2.5R 36	40-110+	WC I	

Hart's Lane, Monkerton, Devon

Soil Pit Descriptions

Pit No 1

Topsoil : 0-28 cm
Medium Sandy Loam
5YR43 (Reddish Brown)

Subsoil 1 : 28-77 cm
Medium Sandy Loam
Medium to Coarse Sub-angular Blocky (tending to Angular)
Weakly developed; Friable/Very Friable
"Good" Structural Conditions
> 2% Porosity (> 0.5 mm)
No evidence of wetness

Subsoil 2 : 77-+120 cm
Sandy Clay
2.5 YR44 (tending to 2.5YR54)
Coarse Angular Blocky
< 0.5% Porosity (> 0.5 mm)
Structure and Porosity indicate Slowly Permeable from 77 cm
Ped faces 2.5YR54 (ie not Pale)
No evidence of Manganese
Red Soil not gleyed within 70 cm

Wetness Class II
FCD Value and Topsoil Texture equate to ALC Grade I

Pit No 2

Topsoil : 0-32 cm
Medium Sandy Silt Loam
5YR43
< 2% Manganese

Subsoil 1 : 32-68 cm
Medium Sandy Loam
5YR44
No Manganese
Medium Sub-angular Blocky
Weakly Developed; Very Friable
"Good" Structural Conditions

Subsoil 2 : 68-120+ cm
Loamy Medium Sand
2.5YR34 (Dark Reddish Brown)
Medium Sub-angular Blocky
Weakly Developed; Friable
"Good" Structural Conditions

AP Wheat	= 152 mm	MD Wheat	= 108 mm	MB Wheat	= +44 mm
AP Potatoes	= 117 mm	MD Potatoes	= 101 mm	MB Potatoes	= +16 mm

Grade according to Droughtiness = I

Pit No 3

See Baker Development Report

Pit No 4

Topsoil : 0-19 cm
Medium Clay Loam
5YR44 (Reddish Brown)

Subsoil 1 : 19-30 cm
Heavy Clay Loam
5YR43/44
< 2% Manganese

Subsoil 2 : 30-80+ cm
Clay
5YR46
Ped faces 5YR 64/54
> 2% Manganese
Coarse Prismatic Structure from 40 cm, Moderately Developed
< 0.5% Biopores (> 0.5 mm)
Evidence of > 2% Mottling from 40 cm

Gleyed, 40-70 cm; SPL, + 40 cm
Wetness Class III
FCD Value and topsoil Texture equate to ALC grade 3A