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Saltash

Agricultural Land Classification

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Resource Planning Team
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FRCA Western Region

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SALTASH

AGRICULTURAL LAND CLASSIFICATION SURVEY

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INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of 346 ha of land at Saltash, Cornwall. Field survey was based on 119 auger borings and 5 soil profile pits, and was completed in July 1997. During the survey 10 samples were analysed for particle size distribution (PSD).

2. The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in the preparation of Caradon Local Plan.

3. Information on climate, geology and soils, and from previous ALC surveys was considered and is presented in the relevant section. Apart from the published regional ALC map (MAFF, 1977), which shows the site at a reconnaissance scale as mainly Grade 2 with some Grade 3 at the north west end, only the southern part of the site had been previously surveyed in detail. This was in 1987 at a scale of 1:14 200 (ADAS, 1987) and was to the classification guidelines which have now been superseded. The current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF, 1988) and supersedes any previous ALC survey. Grade descriptions are summarised in Appendix I.

4. A recent ALC survey at Carkeel Golf Course (ADAS, 1995), although not adjacent to the current survey sites but on the north side of Saltash, has soils developed on similar parent material. This found mainly Subgrade 3b, as did other recent surveys at Hatt (ADAS, 1994 and 1997) and at Broadmoor Farm, Saltash (ADAS, 1993).

5. At the time of survey land cover was mainly grass for grazing with some cereals, maize for forage and a small area of potatoes at Wadgeworthy Farm. Other land which was not surveyed included mainly residential land, roads and the railway with some wasteland around the coastline.

SUMMARY

6. The distribution of ALC grades is shown on the accompanying 1:15 000 scale ALC map. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas. Areas are summarised in the Table 1.

Table 1: Distribution of ALC grades: Saltash

Grade	Area (ha)	% Surveyed Area 237.2 ha)
3b	19037	81
4	31.8	13
5	14.7	6
Other land	108.9	
Total site area	346.1	

7. This shows none of the land to be best and most versatile. The best of the agricultural land and by far the largest proportion was found to be Subgrade 3b limited mainly by workability and also by gradient. The smaller areas shown as Grades 4 and 5 are found on the steeper valley sides and are limited almost entirely by gradient.

CLIMATE

8. Estimates of climatic variables for this site were derived from the published agricultural climate dataset "Climatological Data for Agricultural Land Classification" (Meteorological Office, 1989) using standard interpolation procedures. Data for key points around the site are given in Table 2 below.

9. Since the ALC grade of land is determined by the most limiting factor present, overall climate is considered first because it can have an overriding influence by restricting land to a lower grade despite more favourable site and soil conditions. Parameters used for assessing overall climate are accumulated temperature, a measure of relative warmth and average annual rainfall, a measure of overall wetness. The results shown in Table 2 indicate that there is an overall climatic limitation which limits the land to Grade 2 above approximately 55 m altitude.

10. Climatic variables also affect ALC grade through interactions with soil conditions. The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes, which are compared with the moisture available in each profile in assessing soil droughtiness limitations. These are described in later sections. A critical boundary of 225 FC Days was found approximately at 50 m altitude, although this varies slightly across the site.

Table 2: Climatic Interpolations: Saltash

Grid Reference		SX 399 587	SX 427 580	SX 426 581
Altitude (m)		100	50	54
Accumulated Temperature (day °C)		1512	1569	1565
Average Annual Rainfall (mm)		1243	1147	1155
Overall Climatic Grade		2	1	1
Field Capacity Days		239	224	226
Moisture deficit (mm):	Wheat	74	86	85
	Potatoes	60	75	74

RELIEF

11. Altitude ranges from sea level at Forder Lake to 100 m at Winstone Beacon. Although much of the higher ground was found to have gentle and moderate slopes which are not limiting, considerable areas within that shown as Subgrade 3b was also found to be more strongly sloping with gradients of 8-11°. Steeper valley sides throughout the survey area were frequently found with slopes of 12-18° (Grade 4) or over 18° (Grade 5).

GEOLOGY AND SOILS

12. The underlying geology of the site is shown on the published geology map (IGS, 1977) as mainly Upper Devonian slates with banded intrusions of volcanic rocks and more local intrusions of diabase. This was largely borne out by the current survey, although there was little obvious distinction between the various rock types within the depths of the sol profiles examined.

13. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW, 1983) as mainly Denbigh 1 Association on the Slates and Trusham Association mainly where the intrusions influenced the parent material.

14. Denbigh 1 Association is described as well drained fine loamy and fine silty soils over rock with some similar soils showing slowly permeable subsoils and slight seasonal waterlogging. Trusham Association is described as well drained fine loamy soils over deeply weathered rock with some shallow soils and steep slopes in places.

16. This distribution was largely borne out by the current survey. Although as described for the geology, the distinction between the two associations was not as obvious as may be indicated in the published information.

AGRICULTURAL LAND CLASSIFICATION

17. The distribution of ALC grades found by the current survey is shown on the accompanying 1:15 000 scale map and areas are summarised in Table 1. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas.

Subgrade 3b

18. The area shown as Subgrade 3b was found to be mainly heavy clay loam topsoil at Wetness Class I. This implies a moderate limitation due to workability, Subgrade 3b where the Field Capacity Days exceed 225 which was the case for most of the site. Wetness was generally not a limitation although scattered observations such as at Pit 4 were found to be Wetness Class II with gleying evident in the subsoil above 70 cm.

19. In the small area where Field Capacity Days do not exceed 225, similar profiles with heavy clay loam topsoils at Wetness Class I would be graded 3a. However this occurs to any extent only in the south east of the site, around the railway on the Wearde promontory, where other limitations such as gradient and soil depth restrict many of the observations to Subgrade 3b so that the broad classification of the ground was also limited to Subgrade 3b.

20. A considerable proportion of the area shown as Subgrade 3b was also found to be limited by gradient, with slopes of between 8 and 11°.

21. Scattered observations were assessed by hand texturing to be medium clay loam, but these were supported by only one PSD analysis and even this was borderline (within 1% clay content) of heavy clay loam. This was at Pit 5. Therefore, no Subgrade 3a mapping unit could be identified as these observations were scattered and nowhere widespread. The current survey therefore shows fundamental divergence from the published provisional ALC information which shows large areas as Grade 2. This is due to the objective application of topsoil texture and climatic data within the current published guidelines for ALC classification.

Grades 4 and 5

22. The survey found steeper valley sides to be Grade 4 with slopes of 12-18° and also Grade 5, with slopes of over 18°.

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15 August 1997

REFERENCES

ADAS RESOURCE PLANNING TEAM, (1987) Agricultural Land Classification Survey of Saltash Local Plan. Scale 1: 14 200, Reference 38/87, ADAS Bristol.

ADAS RESOURCE PLANNING TEAM, (1993) Agricultural Land Classification Survey of Broadmoor Farm, Saltash Scale 1: 10 000, Reference 69/93., ADAS Bristol.

ADAS RESOURCE PLANNING TEAM, (1994) Agricultural Land Classification Survey of Hatt Scale 1: 10 000, Reference 108/94, ADAS Bristol.

ADAS RESOURCE PLANNING TEAM, (1995) Agricultural Land Classification Survey of Carkeel Golf Course Scale 1: 10 000, Reference 2/95, ADAS Bristol.

ADAS RESOURCE PLANNING TEAM, (1997) Agricultural Land Classification Survey of Hatt Scale 1: 20 000, Reference 28/97, ADAS Bristol.

INSTITUTE OF GEOLOGICAL SCIENCES Sheet 348, Plymouth, 1: 50 000 series, Drift edition. IGS, London.

HODGSON, J M (Ed) (1974) Soil Survey Field Handbook, Technical Monograph No 5. Soil Survey of England and Wales, Harpenden.

HODGSON, J M (In preparation) Soil Survey Field Handbook, Revised edition.

MAFF (1977) 1:250 000 series Agricultural Land Classification, South West Region. MAFF Publications, Alnwick.

MAFF (1988) Agricultural Land Classification of England and Wales. Revised Guidelines and Criteria for grading the quality of agricultural land. MAFF Publications, Alnwick.

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land Classification. Meteorological Office, Bracknell.

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

SOIL SURVEY OF ENGLAND AND WALES (1984) Soils and Their Use in South West England, Bulletin No 14. SSEW, Harpenden.

APPENDIX I

DESCRIPTION OF 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 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 most 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.

Source: MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for Grading the Quality of Agricultural Land, MAFF Publications, Alnwick.

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile.

Wetness Class I

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

Wetness Class II

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

Wetness Class III

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

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

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

Notes: The number of days specified is not necessarily a continuous period.

'In most years' is defined as more than 10 out of 20 years.

Source: Hodgson, J M (In preparation) Soil Survey Field Handbook, Revised Edition.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Saltash	Pit 1 (ASP 8)	2° S	Fallow	Av Rainfall: 1231 mm ATO: 1524 day °C	Devonian Slate: some volcanic
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 238 Climatic Grade: 2 Exposure Grade: -	PSD SAMPLES TAKEN
27/97	29/4/97	SX 3956 5977	HLJ/PB		TS 0-25cm HCL (S35: Z33: C32%)

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	26	HCL	10YR43	1% > 2cm (S) 18% < 2cm (S+D) 19% HR, ZR	0	0	-	-	-	-	CF, VF	-	Clear smooth
2	58	HCL	7.5YR43	3% > 2cm (S) 22% <2 cm (S+D) 25% ZR	0	0	MFSAB	Fr	G	G	FVF	-	Grad smooth
3	95+	C	10YR54	9% > 2cm (S) 18% < 2cm (S+D) 27% ZR	0	0	MFSAB	Fr	G	G	FVF	-	-

Profile Gleyed From: -

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 3b

Available Water	Wheat:	167 mm
	Potatoes:	116 mm
Moisture Deficit	Wheat:	83 mm
	Potatoes:	71 mm
Moisture Balance	Wheat:	+84 mm
	Potatoes:	+45 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wk

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Saltash	Pit 2 (ASP 5)	3° N	Ley	Av Rainfall: 1231 mm ATO: 1524 day °C	Devonian Slates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 238 Climatic Grade: 2	PSD SAMPLES TAKEN
27/97	29/4/97	SX 3959 5990	GMS/ PB	Exposure Grade: -	TS 0-25cm HCL (S31: Z37: C32%)

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	28	HCL	7.5YR43	1% > 2cm (S) 16% < 2cm (S+D) 17% HR, ZR	0	0	-	-	-	-	MF, VF	-	Clear smooth
2	60	ZC	10YR53	5% > 2cm (S) 26% < 2cm (S+D) 31% ZR, HR	0	0	WCSAB	Fm	M	P	CVF	-	Clear wavy
3	90+	C	10YR54	30% > 2cm (S) 22% < 2cm (S+D) 52% HR, ZR	FDFO * 10YR58	F*	WCSAB	Fm	M	P	FVF	-	-

Profile Gleyed From: -

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 3b

Available Water Wheat: 102 mm

Potatoes: 92 mm

Moisture Deficit Wheat: 83 mm

Potatoes: 71 mm

Moisture Balance Wheat: +19 mm

Potatoes: +21 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wk

Remarks: *H3 Few mottles and manganese associated with weathering of stones.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Saltash	Pit 3 (ASP 66)	6 ° SE	Pots	Av Rainfall: 1243 mm ATO: 1512 day °C	Devonian Slates
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 238 Climatic Grade: 2	PSD SAMPLES TAKEN
27/97	30/4/97	SX 4042 5895	GMS/PB	Exposure Grade: -	TS 0-25 cm HCL/MCL (S40: Z32: C28%)

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	25	HCL	7.5YR43	1% > 2cm (S) 20% < 2cm (S+D) 21% ZR	0	0	-	-	-	-	CF, VF*	-	Clear smooth
2	60	HZCL	7.5YR54	12% > 2cm (S) 18% < 2cm (S+D) 30% ZR, HR	0	0	WCSAB	Fr	M	P	FVF*	-	Clear wavy
3	84+	C	10YR54	60% > 2cm (S) 13% < 2cm (S+D) 73% HR, ZR	0	0	Too stony	-	(M)	-	None seen*	-	

Profile Gleyed From: -

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 3b

Available Water Wheat: 94 mm

Potatoes: 95 mm

Moisture Deficit Wheat: 83 mm

Potatoes: 71 mm

Moisture Balance Wheat: +11 mm

Potatoes: +24 mm

Droughtiness Grade: 2 (Calculated to 100 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wk

Remarks: Pit dug in track within potatoes therefore few roots as no vegetation.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Saltash	Pit 4 (ASP 61)	3° E	Fallow	Av Rainfall: 1243 mm ATO: 1512 day °C	Igneous intrusion
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 238 Climatic Grade: 2 Exposure Grade: -	PSD SAMPLES TAKEN
27/97	30/4/97	SX 3967 5893	PB/GMS		TS 0-25cm HCL (S31: Z37: C32%)

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	28	HCL	7.5YR43	<1% > 2cm (S) 8% < 2cm (S+D) 9% HR	0	0	-	-	-	-	MF, VF	-	Grad smooth
2	52	HCL	7.5YR43	10% HR (VIS)	0	0	MFSAB	Fr	G	G	MF, VF	-	Clear wavy
3	92+	C	10YR64	10% HR, ZR (VIS)	CDFO 10YR58	C	MCSAB	Fm	M	P (low)	CVF	-	-

Profile Gleyed From: 52 cm

Depth to Slowly Permeable Horizon: -

Wetness Class: II

Wetness Grade: 3b

Available Water Wheat: 143 mm

Potatoes: 119 mm

Moisture Deficit Wheat: 83 mm

Potatoes: 71 mm

Moisture Balance Wheat: +60 mm

Potatoes: +48 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): We

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Saltash	Pit 5 (ASP 135)	7° S	PGR	Av Rainfall: 1165 mm ATO: 1558 day °C	Devonian slate
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 227 Climatic Grade: 2 Exposure Grade: 1	PSD SAMPLES TAKEN
27/97	18/7/97	SX 4177 5809	PB		TS 0-25cm MCL/HCL (S45: Z29: C26%)

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	20	MCL*	10YR43	25%HR (S+D)	0	0	-	-	-	G	MF, VF	-	Clear smooth
2	34	HCL	7.5YR43	2% > 2cm (S) 23% < 2cm (S+D) 25% HR	0	0	MMGr	Fr	G	G	MF, VF	-	Clear smooth
3	80+	HZCL	2.5Y63	20% > 2cm (S) 52% < 2cm (S+D) 71% ZR	FFFO	0	Too stony	-	(M)	G	None seen	-	-

Profile Gleyed From: -

Depth to Slowly Permeable Horizon: -

Wetness Class: I

Wetness Grade: 3a

Available Water Wheat: 86 mm

Potatoes: 88 mm

Moisture Deficit Wheat: 83 mm

Potatoes: 71 mm

Moisture Balance Wheat: +3 mm

Potatoes: +17 mm

Droughtiness Grade: 3a (Calculated to 80 cm)

Final ALC Grade: 3a, borderline 3b

Main Limiting Factor(s): Wk

Remarks: TS borderline MCL/HCL

APPENDIX III

ABBREVIATIONS AND TERMS USED IN SURVEY DATA

Soil pit and auger boring information collected during ALC survey is held on a computer database and is reproduced in this report. Terms used and abbreviations are set out below. These conform to definitions contained in the Soil Survey Field Handbook (Hodgson, 1974).

1. **Terms used on computer database, in order of occurrence.**

GRID REF: National 100 km grid square and 8 figure grid reference.

LAND USE: At the time of survey

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

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

GLEY, SPL: Depth in centimetres to gleying or slowly permeable layer.

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

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

DRT: Best grade according to soil droughtiness.

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

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

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:**	Erosion Risk	**WD:**	Soil Wetness/Droughtiness
ST:	Topsoil Stoniness				

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
ZL:	Silt 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 the following 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)

MOTTLE COL: Mottle colour using Munsell notation.

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%+

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.

PED. COL: Ped face colour using Munsell notation.

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

STONE LITH: Stone Lithology - One of the following is used.

HR:	All hard rocks and stones	**SLST:**	Soft oolitic or dolimitic limestone

CH:	Chalk	**FSST:**	Soft, fine grained sandstone
ZR:	Soft, argillaceous, or silty rocks	**GH:**	Gravel with non-porous (hard) stones
MSST:	Soft, medium grained sandstone	**GS:**	Gravel with porous (soft) stones
SI:	Soft weathered igneous or metamorphic rock		

Stone contents are given in % by volume for sizes >2cm, >6cm and total stone >2mm.

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		

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

SUBS STR: Subsoil structural condition recorded for the purpose of calculating profile droughtiness: **G:** Good **M:** Moderate **P:** Poor

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

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

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

CALC: If the soil horizon is calcareous with naturally occurring calcium carbonate exceeding 1% a 'Y' will appear this column.

2. Additional terms and abbreviations used mainly in soil pit descriptions.

STONE ASSESSMENT:

VIS:	Visual	**S:**	Sieve	**D:**	Displacement

MOTTLE SIZE:

EF:	Extremely fine <1mm	**M:**	Medium 5-15mm
VF:	Very fine 1-2mm>	**C:**	Coarse >15mm
F:	Fine 2-5mm		

MOTTLE COLOUR: May be described by Munsell notation or as ochreous (OM) or grey (GM).

ROOT CHANNELS: In topsoil the presence of 'rusty root channels' should also be noted.

MANGANESE CONCRETIONS: Assessed by volume

N:	None		**M:**	Many	20-40%
F:	Few	<2%	**VM:**	Very Many	>40%
C:	Common	2-20%			

STRUCTURE: Ped Development *

WA:	Weakly adherent	**M:**	Moderately developed
W:	Weakly developed	**S:**	Strongly developed

POROSITY:

P:	Poor	- less than 0.5% biopores at least 0.5mm in diameter
G:	Good	- more than 0.5% biopores at least 0.5mm in diameter

ROOT ABUNDANCE:

The number of roots per 100cm^2:		Very Fine and Fine	Medium and Coarse
F:	Few	1-10	1 or 2
C:	Common	10.25	2 - 5
M:	Many	25-200	>5
A:	Abundant	>200	

ROOT SIZE

VF:	Very fine	<1mm	**M:**	Medium	2 - 5mm
F:	Fine	1-2mm	**C:**	Coarse	>5mm

HORIZON BOUNDARY DISTINCTNESS:

Sharp:	<0.5cm	**Gradual:**	6 - 13cm
Abrupt:	0.5 - 2.5cm	**Diffuse:**	>13cm
Clear:	2.5 - 6cm		

HORIZON BOUNDARY FORM: Smooth, wavy, irregular or broken.*
* See Soil Survey Field Handbook (Hodgson, 1974) for details.

27-97 Saltash

	HA	ACRES	% AGRICULTURAL LAND	% TOTAL LAND
Grade 1	0.0	0.0	0.0	0.0
Grade 2	0.0	0.0	0.0	0.0
Subgrade 3a	0.0	0.0	0.0	0.0
Subgrade 3b	190.7	471.2	80.4	55.1
Grade 4	31.8	78.6	13.4	9.2
Grade 5	14.7	36.3	6.2	4.2
land Not surveyed	0.0	0.0	0.0	0.0
Total Agri. Land =	237.2	586.1	100.0	68.5
Other land	108.9	269.1	-	31.5
Total Site Area =	346.1	855.2	-	100.0