8FC6 6334

5/15

Burnham-on-Sea and Highbridge
Agricultural Land Classification

Prepared for MAFF by
N A Done
ADAS Statutory Unit
Bristol

ADAS
FOOD, FARMING, LAND & LEISURE

Ministry of Agriculture, Fisheries and Food
Land Use Planning Unit

MAFF

BURNHAM-ON-SEA AND HIGHBRIDGE

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

A semi-detailed survey was carried out by ADAS on behalf of MAFF as part of its statutory role in the preparation of the Sedgemoor District Local Plan. The fieldwork at Burnham-on-Sea and Highbridge was completed in May 1995 at a scale of 1:10,000. Data on climate, soils, geology and from previous Agricultural Land Classification (ALC) Surveys was used and is presented in the report. The distribution of grades is shown on the accompanying ALC map and summarised below. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Burnham-on-Sea and Highbridge

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (1003.0 ha)
1	27.3	1.5	2.7
2	46.0	2.6	4.6
3a	21.0	1.2	2.1
3b	908.6	51.0	90.6
Urban	653.5	36.7	
Non Agricultural	91.5	5.1	
Agricultural Buildings	14.1	0.8	
Open Water	19.9	1.1	
TOTAL	1782.0	100.0	

Nearly all the agricultural land surveyed is of moderate quality and is limited by the heavy clay, poorly drained soils. However, nearly 10% of the land surveyed is of best and most versatile quality. These are areas of well drained light sandy soils which occur around West Huntspill and in localised patches north of Burnham.

BURNHAM-ON-SEA AND HIGHBRIDGE

AGRICULTURAL LAND CLASSIFICATION

CONTENTS

1. INTRODUCTION

A semi-detailed Agricultural Land Classification (ALC) Survey was carried out in May 1995 at Burnham-on-Sea and Highbridge on behalf of MAFF as part of its statutory role in the preparation of the Sedgemoor District Local Plan. The fieldwork covering 1003 ha of agricultural land was conducted by ADAS at a scale of 1:10,000 with approximately one boring per hectare of agricultural land. A total of 268 auger borings were examined and 14 soil profiles used to assess subsoil conditions. The boring density was reduced where the soils were found to be consistently similar over large areas.

The published provisional one inch to the mile ALC map of this area (MAFF 1971) shows nearly all the land to be Grade 3 with Grade 2 around Huntspill and Grade 4 at Berrow.

Most of the area was also surveyed in 1980 at 1:25,000 scale. This map shows the area to be Subgrades 3a, 3b and 3c with Grade 2 land at Huntspill. Land west of Alstone was surveyed at 1:2500 scale in 1980. This map shows the area to be Grades 3b and 3c. Soils data from these surveys was referred to in deciding when the boring density could be relaxed.

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). These guidelines provide 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 120 cm of the soil profile. A description of the grades used in the ALC system can be found in Appendix 2.

2. 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 a lower grade despite other favourable conditions.

Estimates of climatic variables were interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall climate are accumulated temperature, a measure of the relative warmth of a locality, and average annual rainfall, a measure of overall wetness. The results shown in Table 1 indicate there is no overall climatic limitation.

Table 1: Climatic Interpolations: Burnham-on-Sea and Highbridge

Grid Reference		ST 330 475	ST 305 525
Altitude (m)		5	5
Accumulated Temperature (day °)		1561	1559
Average Annual Rainfall (mm)		753	753
Overall Climatic Grade		1	1
Field Capacity Days		163	165
Moisture deficit (mm):	Wheat	109	108
	Potatoes	103	102

Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat and potatoes are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections.

3. RELIEF AND LANDCOVER

The whole area is flat and lies at approximately 6 m AOD. Most of the agricultural land is used for grass leys, with occasional fields of maize and cereal crops.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale Solid and Drift Sheet (IGS, 1980, Sheet 279). This map shows nearly all the site to be Marine and Estuarine alluvium with an area of Burtle Beds (shelly sands and gravel) between Alstone and Huntspill. There are small areas of Blown sand at Berrow which extend east of the urban areas.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000 and also in 1962 at a scale of one inch to the mile (Soil Survey 1962). The more recent survey maps the area of marine alluvium as Newchurch 2 Association soils, which are described as stoneless clay soils where groundwater is controlled by ditches and pumps. The area of Burtle Beds is mapped as Whimple 1 Association. These soils are described as reddish fine loamy over slowly permeable subsoils and associated with similar well drained soils. The blown sand area is mapped as having Sandwich Association soils which are described as mainly deep well drained calcareous and non-calcareous sandy soils.

The recent survey found 3 soil types similar to the mapped associations. Much of the agricultural land comprised deep stone-free silty clay and clay soils. These soils were found to be consistent across the marine alluvium and have silty clay (and occasionally clay and heavy clay loam) topsoils over silty clay and clay subsoils which extend to below 120 cm. The second soil type comprises well drained clay loam profiles derived from the Burtle Beds. These soils are very variable, sometimes having sandy silty loam and medium sandy loam tops over heavy clay loam and clay subsoils, but generally comprise medium clay loam topsoils.

The third soil type occurs in 3 small areas near Berrow on wind blown sand. These soils have sandy loam topsoils over sandy loam and occasionally loamy sand upper subsoils. The lower subsoils comprise clayey textures similar to the marine alluvium. These soils are stone-free.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades is shown in Table 2 and on the accompanying ALC map. This information could be misleading if shown at a larger scale.

Table 2: Distribution of ALC grades: Burnham-on-Sea and Highbridge

Grade	Area (ha)	% of Survey Area	% of Agricultural Land (1003.0 ha)
1	27.3	1.5	2.7
2	46.0	2.6	4.6
3a	21.0	1.2	2.1
3b	908.6	51.0	90.6
Urban	653.5	36.7	
Non Agricultural	91.5	5.1	
Agricultural Buildings	14.1	0.8	
Open Water	19.9	1.1	
TOTAL	1782.0	100.0	

Grade 1

An area of Grade 1 land has been mapped around Huntspill. These soils are well drained clay loams and sandy silt loams and experience no or very minor limitations. Some of these profiles have clay lower subsoils which were found to be porous and have permeable structures. There was some evidence of a slight drainage impediment indicated by gleying at depth, however, this was not sufficient to downgrade the soils from Wetness Class I.

Grade 2

A small area of Grade 2 land has been mapped at Huntspill. These soils are similar to the Grade 1, however, slightly heavier topsoils of medium clay loam and gleying occur higher up the profile, restricting these soils to Wetness Class II and Grade 2. A soil inspection pit dug in this grade found slightly stony (approximately 20%) subsoils which imposed a slight drought limitation. Three areas of Grade 2 land have been mapped between Burnham-on-Sea and Berrow. These soils are derived from the wind blown sand which overlays silty clay lower subsoils. This lower horizon is gleyed and slowly permeable and is assessed as Wetness Class II. The light sandy loam textures to a depth of approximately 60 cm pose a risk of drought stress for certain shallow-rooting crops such as potatoes. These soils are therefore limited to Grade 2 with a drought limitation.

Subgrade 3a

Three small areas of 3a land have been mapped around Huntspill at the interface between heavy marine clays and soils derived from the Burtle Beds. These soils have a moderate wetness limitation imposed by a slowly permeable layer occurring between 50 and 60 cm down the profile. The combination of Wetness Class III soils and a medium sandy silty loam or medium clay loam topsoil under the prevailing climatic conditions restricts this land to moderately good quality.

Subgrade 3b

Over three-quarters of the agricultural land in this survey is mapped as Subgrade 3b. These silty clay soils experience a moderately severe wetness limitation imposed by slowly permeable layers occurring at a shallow depth. The profiles are thus assessed as Wetness Classes III and IV. Soil inspection pits revealed some pores in these subsoils, but an insufficient amount to alleviate the effect of the slowly permeable layer as indicated by heavy mottling and gleying colours. The topsoils across all the land within this grade were found to be silty clays and clays with occasional heavy silty clay loam textures. Such heavy topsoil textures and poor drainage severely restrict the period of time in any year in which this land can be accessed for agricultural activities.

Urban

Lines of communication, residential areas of Burnham-on-Sea, Highbridge and Huntspill are shown as urban. An area of industrial development at Highbridge is shown as urban, although construction is yet to start on some parts of this land. Areas of formal and informal recreational use with a green cover have been mapped as non-agricultural. A number of ponds and lakes and Burnham-on-Sea associated with the leisure industry have been mapped as water bodies.

Agricultural Buildings

Farmsteads and land associated with agricultural buildings have been mapped as a separate category where possible.

Resource Planning Team
Taunton Statutory Unit
2 June 1995

APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1980) Solid and Drift Edition, Sheet 279, Weston-super-Mare.

MAFF (1971) Agricultural Land Classification Map, Sheet 165, 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) Climatological Data for Agricultural Land Classification.

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

SOIL SURVEY OF ENGLAND AND WALES (1962) Sheet 279: Soils of Weston-super-Mare, 1:63,360.

ADAS (1980) Unpublished Agricultural Land Classification Survey of Burnham-on-Sea and Brean, 1:25,000.

ADAS (1980) Unpublished Agricultural Land Classification Survey of West Huntspill, 1:2500.

APPENDIX 2

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.

Descriptions of other land categories used on ALC maps

Urban

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

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 landcover types, eg buildings in large grounds, and where may be shown separately. Otherwise, the most extensive cover type will usually be shown.

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

APPENDIX 3

DEFINITION OF SOIL WETNESS CLASSES

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
Burnham	Pit 1 (ASP 119)	0°	PGR	Av Rainfall: 753 mm ATO: 1561 day °C FC Days: 163 Climatic Grade: 1 Exposure Grade: 1	Sand over Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
5/95	19/5/95	ST306509	NAD/PB		NAD/239

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	MSL	10YR42	0	0	0	-	-	-	G	MF,VF	-	Clear Smooth
2	60	MSL	10YR43	0	FFFOM (75YR56)	0	WCSAB	Fr	M	P	CF, VF	-	Clear Smooth
3	95+	ZC	10YR52 (10YR52)	0	MDMOM (75YR56)	F	WCSAB	Fm	P	P	FVF	-	

Profile Gleyed From: 60 cm

Depth to Slowly Permeable Horizon: 60 cm

Wetness Class: II

Wetness Grade: 1

Available Water Wheat: 133 mm

Potatoes: 102 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: +24 mm

Potatoes: +10 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Drought

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Burnham	Pit 2 (ASP 256)	0°	PGR	Av Rainfall: 753 mm ATO: 1561 day °C FC Days: 163 Climatic Grade: 1 Exposure Grade: 1	Marine Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
5/95	17/5/95	ST325497	NAD/PB		NAD/235

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	13	ZC	10YR42	0	Rusty roof channels	0	-	-	-	G	Many F		Clear Smooth
2	35	ZC	10YR52	None	cdmom 10YR54	Few	MDMP	Firm	P	G	Common VF	-	Clear Smooth
3	120	ZC	10YR62 (10YR61)	None	Mdmom 10YR54, 56	Common	MDCP breaking to CAB	Friable	M	P (approx 0.3-0.4% pores)	Few VF		

Profile Gleyed From: 13 cm

Depth to Slowly Permeable Horizon: 35 cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 127 mm

Potatoes: 101 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: 18 mm

Potatoes: -2 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Burnham	Pit 3	0°	Ley	Av Rainfall: 753 mm ATO: 1561 day °C FC Days: 163 Climatic Grade: 1 Exposure Grade: 1	Marine Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
5/95	17/5/95	ST328499	NAD/PB		NAD/234

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	15	ZC	10YR42	0	RRC	0	-	-	-	G	MF	-	Clear Smooth
2	27	ZC	10YR52	0	CDMBM* (10YR54)	0	MCSAB	Fr	M	G	MF	-	Clear Smooth
3	80+	ZC	10YR61	0	MDCOM (10YR56)	F	WCPr	Fm	P	P in ped*	F,F		

Profile Gleyed From: 27 cm

Depth to Slowly Permeable Horizon: 27 cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 120 mm

Potatoes: 95 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: 11 mm

Potatoes: -8 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

H2: Brown mottles, not ochreous, therefore not gleyed.
H3: Large biopores and fissures contribute to overall high conductivity pit. Fills quickly with water.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Burnham	Pit 4	0°	PP	Av Rainfall: 753 mm ATO: 1561 day °C FC Days: 163 Climatic Grade: 1 Exposure Grade: 1	Marine Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
5/95	17/5/95	St300518	NAD/PB		NAD/232

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	30	FSL	10YR43	0	CRRC	0	-	-	-	G	MF	0	Gradual Smooth
2	58	MSL	10YR54	0	0	0	MMPr	Fr	M	G	MF	0	Clear Smooth
3	105+	ZC	10YR62	0	MDCOM (75YR56)	C	MCSAB	Fr	M	P*	FVF	0	

Profile Gleyed From: 58 cm

Depth to Slowly Permeable Horizon: 58 cm

Wetness Class: II

Wetness Grade: 1

Available Water Wheat: 142 mm

Potatoes: 102 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: +33 mm

Potatoes: -1 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Drought

Remarks:

* H3 pores borderline good.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Burnham	Pit 5 (ASP 55)	0°	Ley	Av Rainfall: 753 mm ATO: 1561 day °C FC Days: 163 Climatic Grade: 1 Exposure Grade: 1	Marine Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
5/95	17/5/95	ST309520	NAD/PB		NAD/231

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	ZC/C	10YR42	0	CRRC	0	-	-	-	G	MF	-	Clear Smooth
2	50	ZC	10YR52	0	CFMOM	F	MCSAB	Fm	M	P	CF	-	Gradual Smooth
3	80+	ZC	10YR61	0	MDMOM (75YR56)	F	WCSAB	Fm	P	P	FF	-	

Profile Gleyed From: 50 cm

Depth to Slowly Permeable Horizon: 50 cm

Wetness Class: III

Wetness Grade: 3b

Available Water Wheat: 128 mm

Potatoes: 103 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: 19 mm

Potatoes: 0 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

H3 borderline poor pores.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Burnham	Pit 6	0°	P Pasture	Av Rainfall: 753 mm ATO: 1561 day °C FC Days: 163 *Climatic Grade:* 1 Exposure Grade: 1	Marine Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
5/95	19/5/95	ST316496 ASP 250	PB/NAD		NAD/238

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	19	ZC	10YR42	None	Common rusty root channels	None	-	-	-	-	Many F+VF	-	Clear Smooth
2	34	ZC	10YR52	None	cffom 75YR46	Few nodules	MDCSAB	Firm	M	P well fissured	Common F+VF		Clear Smooth
3	55	ZC	10YR52	None	mdmom 10YR58	Common	MDMP	Friable	M	P	Common F		Gradual Smooth
4	85+	ZC	10YR52	None	mdom 10YR58	Few	WDCP	Firm	P	P	Few V fine		

Profile Gleyed From: 19

Depth to Slowly Permeable Horizon: 34

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 135 mm

Potatoes: 109 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: 26 mm

Potatoes: 6 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

Water at 75 cm. Pit to 85 cm.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Burnham	Pit 7 (ASP 304)	0°	PGR	Av Rainfall: 753 mm ATO: 1561 day °C FC Days: 163 Climatic Grade: 1 Exposure Grade: 1	Marine Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
5/95	19/5/95	ST319494	NAD/PB		NAD/237

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	18	ZC	10YR42	0	FRRC	0	-	-	-	G	MF,VF	-	Clear Smooth
2	43	ZC	10YR53 (10YR52)	0	0	C	MCSAB	Fm	M	P (Good fissures)	MF,VF	-	Clear Smooth
3	75+	ZC	10YR52	0	MDMOM	C	WCSAB	Fm	P	P	CF	-	

Profile Gleyed From: 43 cm

Depth to Slowly Permeable Horizon: 43 cm

Wetness Class: III

Wetness Grade: 3b

Available Water Wheat: 126 mm

Potatoes: 101 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: 17 mm

Potatoes: -2 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Burnham	Pit 8	0°	Ley	Av Rainfall: 753 mm ATO: 1561 day °C	Marine Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 163 Climatic Grade: 1 Exposure Grade: 1	SOIL SAMPLE REFERENCES
5/95	19/5/95	ST322495	PB/NAD		NAD/236

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	18	ZC	10YR42	None	None	Few	-	-	-	-	Many F+VF	-	Gradual Smooth
2	42	ZC	10YR53 (10YR52)	None	fffom	Few	MDCSAB	Firm	M	P well fissured	Common F+VF	-	Clear Smooth
3	54	ZC	10YR52	None	cdfom 10YR56	Few	MDCSAB	Firm	P	P (some large biopores)	Common VF		Clear Smooth
4	80+	ZC	10YR51	None	Mdmom 10YR56	Few	WDCSAB	Firm	P	P	Few V fine	-	

Profile Gleyed From: 42

Depth to Slowly Permeable Horizon: 54

Wetness Class: III

Wetness Grade: 3b

Available Water Wheat: 125 mm

Potatoes: 100 mm

Moisture Deficit Wheat: 109 mm

Potatoes: 103 mm

Moisture Balance Wheat: 16 mm

Potatoes: -3 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

SOIL PLASTICITY RECORDING SHEET

ANNEX 2

SITE DATA

Grid Ref	ASP 286		Site Name	Burnham-on-Sea			LPA	Sedgemoor	
AAR	753	ATO 1561		FCD	163	MD (wheat)	109	MD (potatoes)	103

SOIL PIT DATA

	PIT TWO: SOIL SERIES Newchurch 2			PIT FOUR SOIL SERIES Newchurch 2			PIT FIVE SOIL SERIES Newchurch 2		
DEPTH	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS
10 cm	HZCL	N		MSZL	N	No ball	HZCL	N	No ball
20 cm	ZC	N		"	N	"	"	N	"
30 cm	ZC	N		MSL	N	"	ZC	N	"
40 cm	ZC	N	Ball	"	Y	Worm, just	"	N	"
50 cm	ZC	Y		"	Y	Good worm	"	N	"
60 cm	ZC	Y		ZC	Y	"	"	N	"

SOIL PLASTICITY RECORDING SHEET **ANNEX 2**

SITE DATA

Grid Ref	ASP 286		Site Name	Burnham-on-Sea			LPA	Sedgemoor	
AAR	753	ATO	1561	FCD	163	MD (wheat)	109	MD (potatoes)	103

SOIL PIT DATA

	PIT TWO: SOIL SERIES Newchurch 2			PIT FOUR SOIL SERIES Newchurch 2			PIT FIVE SOIL SERIES Newchurch 2		
DEPTH	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS
10 cm	HZCL	N		MSZL	N	No ball	HZCL	N	No ball
20 cm	ZC	N		"	N	"	"	N	"
30 cm	ZC	N		MSL	N	"	ZC	N	"
40 cm	ZC	N	Ball	"	Y	Worm, just	"	N	"
50 cm	ZC	Y		"	Y	Good worm	"	N	"
60 cm	ZC	Y		ZC	Y	"	"	N	"