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Worthing Borough Local Plan
Site 3: Land Between Sompting and Broadwater
Agricultural Land Classification, ALC Map and Report
March 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

WORTHING BOROUGH LOCAL PLAN
SITE 3: LAND BETWEEN SOMPTING AND BROADWATER

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in the Worthing Borough of West Sussex. The work forms part of MAFF's statutory input to the preparation of the Worthing Borough Local Plan.

1.2 The site comprises 48.9 hectares of land north east of Broadwater and west of Sompting, to the north of Worthing, West Sussex. An Agricultural Land Classification (ALC) survey was carried out during February 1995. The survey was undertaken at a detailed level of approximately one boring per hectare of agricultural land surveyed. A total of 48 borings, 4 topsoil stone measurements and four soil inspection pits were described 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 a long term limitation on its use for agriculture.

1.4 At the time of the survey the majority of the land was under winter wheat and oil-seed rape. The areas immediately to the south of the Sompting by pass, east of Charmandean Lane and in the extreme south east of the site were under permanent grazing. Areas shown as Urban include dwellings, light industry, a school, roads, a track and part of a disused quarry, the remainder of which was being used for agricultural storage and stables. Areas shown as Non-agricultural include part of a golf course to the north west, and an area of scrub towards the south west of the site.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1: Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
2	6.0	12.3	13.8
3a	22.6	46.2	51.8
3b	15.0	30.7	34.4
Non-Agricultural	1.7	3.5	100.0 (43.6ha)
Urban	2.7	5.5	
Agricultural Buildings	0.9	1.8	
Total area of site	48.9ha	100.0	

1.6 Appendix I gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

1.7 The agricultural land at this site has been classified as very good quality (Grade 2) to moderate quality (Subgrade 3b) including a substantial proportion of good quality (Subgrade 3a). Principal limitations include soil droughtiness, topsoil stoniness and slope. Soil droughtiness affects the majority of the site and is caused either by solid chalk occurring at shallow to moderate depths in the profile and restricting plant rooting depth or by flints in the profile restricting soil water availability to plants. Stones in the topsoil affect land quality in certain areas of the site where the flints are of sufficient quantity and size to significantly affect cultivation costs and restrict land quality to Subgrade 3a. Towards the west of the site, slopes between 7° and 11° limit the land to Subgrade 3b, as cultivation is compromised in terms of the safe and efficient use of farm machinery.

2. 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 an overall climatic limitation are average annual 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 are believed to affect the site. However, climatic and soil factors interact to influence soil wetness and droughtiness limitations.

Table 2: Climatic Interpolation

Grid Reference	TQ156051	TQ152057	TQ155059
Altitude, (m, AOD)	10	30	50
Accumulated Temperature (°days, Jan.-June)	1531	1508	1485
Average Annual Rainfall (mm)	795	804	814
Field Capacity Days	167	168	170
Moisture deficit, wheat (mm)	118	115	112
Moisture deficit, potatoes (mm)	115	112	108
Overall Climatic Grade	1	1	1

3. Relief

3.1 The site lies between approximately 10m and 60m AOD. Overall the site falls from the north-east and north-west towards the south from the South Downs onto the coastal plain. Towards the centre of the site, a dry valley occurs bisecting the northern part of the site. To the west of this, slopes of a sufficient gradient to affect land quality were measured. Towards the south of the site, the land becomes flat.

4. Geology and Soils

4.1 The published geological information (BGS, 1984), shows the majority of the site to be underlain by Head drift deposits. Most of the remainder is shown as Cretaceous Upper and Middle Chalk without differentiation, with a small area of Alluvium to the extreme south east of the site.

4.2 The published soils information (SSGB, 1967), shows the site to be underlain by soils of the Binsted, Charity, Coombe and Icknield Series. These are described as; 'relatively shallow and flinty clays' (Binsted Series), 'shallow flinty clays' (Charity Series), 'well drained highly calcareous silty and loamy soils with a moderate flint content' (Coombe Series),and, 'very shallow, calcareous silty loams over chalk' (Icknield Series). Soils of these broad types were found on the site.

5. Agricultural Land Classification

5.1 Paragraph 1.5 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 Land of very good quality extends over an area of the east of the site in a single unit. To the north are chalky soils on the higher land and to the south, south of the Sompting by-pass, the soils become stonier, particularly on the surface. The principal limitation to land quality is soil droughtiness. Profiles are well drained, Wetness Class I, and typically comprise a non-calcareous slightly stony (up to 10% total flints, with up to 5% >2cm) medium silty clay loam topsoil over a similarly stony non-calcareous medium or heavy silty clay loam upper subsoil. This passes to a stoneless to moderately stony (up to 30% total flints) non-calcareous medium or heavy silty clay loam, occasionally clay lower subsoil, commonly becoming impenetrable to the soil auger between 70 and 100cm depth. The land is slightly drought prone as the stones in the profile cause available water to be slightly restricted. The pit observation 4P (see Appendix III) is representative of this land quality unit at this site. The pit was not able to be described below approximately 90cm, due to the stony nature of the lower subsoils. Taking the drought calculation down to 90cm produces a Subgrade 3a classification, but nearby

observations suggest that the subsoil resource extends beyond 90cm and that there is sufficient available water to qualify the area for Grade 2.

Subgrade 3a

5.4 Good quality land has been mapped where soil properties and climatic factors give rise to soil droughtiness and topsoil stoniness limitations. Soil droughtiness occurs in two different well drained (Wetness Class I) soil types. Towards the north-east and west of the site calcareous slightly stony and chalky (up to 10% total flints and 20% chalk fragments) medium silty clay loam topsoils overlie upper subsoils passing to a moderately or very chalky (up to 50% chalk fragments) medium silty clay loam horizon. Solid Chalk occurs between 45 and 70cm. Chalk has the effect of restricting plant rooting depth and as such it reduces profile available water, leading to an increased risk of drought stress to plants affecting plant growth and yield. Under the prevailing climatic conditions this leads to Subgrade 3a. The pit observation 2P (see Appendix III) is typical of this soil type.

5.5 Where Subgrade 3a is shown towards the centre and south of the site, profiles were often found to be limited by both soil droughtiness and/or topsoil stoniness. Profiles were typically found to be well drained (Wetness Class I), and to comprise a slightly to moderately stony (up to 14% total flints, 12%>2cm) non-calcareous medium silty clay loam topsoil, passing to slightly or moderately stony (up to 30% total flints) medium or heavy silty clay loam, occasionally clay upper subsoil. Commonly, these became impenetrable to the soil auger between 50 and 100cm, where flint contents increased as at the pit observation 1P (see Appendix III) which is typical of this soil unit. The flints in the profile lead to reduced water availability in the soil such that within the local climatic parameters Subgrade 3a is appropriate on the basis of an increased risk of drought stress occurring in plants affecting growth and yield. Where the profiles described above were deeper over impenetrable layers, soil droughtiness was often superseded by topsoil stoniness as the principal limitation. This most commonly occurred towards the centre of the site at the base of the dry valley feature where topsoil stones were measured at 15% total flints, 8%>2cm of which 6% were greater than 6cm in diameter. Topsoil stones larger than 2cm diameter have the effect of increasing production costs by causing extra wear and tear to implements and tyres. They also act as an impediment to cultivation, harvesting and crop growth. The volumes which were encountered at this site were sufficient to place them in Subgrade 3a.

Subgrade 3b

5.5 Moderate quality agricultural land has been mapped where soil droughtiness and gradient are the predominant limiting factors. Soil droughtiness occurs under two different soil types. The most common, located towards the north of the site, is shown where the soils are well drained (Wetness Class I), shallow and often chalky and/or stony over solid Chalk. Typically, they comprise a slightly to moderately stony (up to 10% total flints, 8%>2cm) calcareous medium silty clay loam topsoil, occasionally passing to a shallow moderately stony or very chalky (up to 20% total flints or up to 50% chalk fragments) calcareous medium silty clay loam upper subsoil, overlying pure chalk between 25 and 40cm depth. Chalk at shallow depths

has the effect of restricting plant rooting depth. The pit observation, 3P (see Appendix III), where roots were observed to be penetrating approximately 30cm into the Chalk is typical of this soil type. By reducing root penetration, Chalk also has the effect of reducing profile available water and under the prevailing climatic conditions Subgrade 3b is appropriate, due to an increased risk of drought stress affecting plant growth and yield consistency.

5.6 In the south east of the site, an area of Subgrade 3a has been mapped where the land is at a slightly lower level than the adjacent Subgrade 3a land. This area ties in with adjacent Subgrade 3b land identified in an earlier ADAS survey(Ref: 4201/124/92). This is a complicated unit with variable limitations affecting the overall grade; soil droughtiness, soil wetness, microrelief and disturbance are all active to some degree on this land. These limitations have not been assessed in an additive fashion, but the degree of variability that exists over short distances suggests that this land has quite limited flexibility and cannot therefore be graded higher than Subgrade 3b. A more detailed investigation might downgrade this area further.

5.7 The soils proved impenetrable to the soil auger at shallow depths, between 30 and 40cm, and are likely to sit over very stony subsoils or gravel deposits. A high degree of subsoil stoniness, together with a limited depth of soil suggests that this land would experience a significant droughtiness limitation. The borings tended to be located on minor ridges which, in addition to creating a microrelief problem, probably indicate that gravel deposits may occur at shallow depths. The nature of the microrelief problem suggests that there may even have been localised disturbance, especially where the survey area is adjacent to the urban sections of Sompting.

5.8 In addition to these restrictions, at the time of survey (February) all of the within - field hollows were under standing water with very little obvious drainage capability. A significant wetness limitation as a result of elevated groundwater levels is therefore an additional consideration.

5.9 Towards the west of the site, on the east facing slope of the dry valley feature, slopes were a significant factor in land classification. Gradients in this area were measured, at approximately 9°. Slopes of this gradient are sufficient to compromise the safe and efficient operation of farm machinery, particularly for cultivation and harvesting, to the extent that Subgrade 3b is appropriate.

SOURCES OF REFERENCE

British Geological Survey (1984) Sheet 318/333 Worthing / Brighton, 1:50,000. Solid & Drift Edition.

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

Meteorological Office (1989), Climatic datasets for Agricultural Land Classification.

Soil Survey of Great Britain (1967), Bulletin No.3, Soils of the West Sussex Coastal Plain.

APPENDIX I

DESCRIPTION OF THE 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 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 of this 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 land.

Grade 3 : Good to Moderate Quality Land
Land with moderate limitations which affect the choice of crops, the 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.

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 the level of yields. It is mainly suited to grass with occasional arable crops (e.g. 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 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 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 parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland
Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm woodland.

Agricultural Buildings
Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (e.g. 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, e.g. 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

DEFINITION OF SOIL WETNESS CLASS

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 180 days, but only wet within 40 cm depth for 31-90 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 present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.

Wetness Class IV

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

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

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	**FLW** : Fallow
PGR : Permanent Pasture	**LEY** : Ley Grass	**RGR** : Rough Grazing
SCR : Scrub	**CFW** : Coniferous Woodland	**DCW** : Deciduous Wood
HTH : Heathland	**BOG** : Bog or Marsh	**FLW** : Fallow
PLO : Ploughed	**SAS** : Set aside	**OTH** : Other
HRT : Horticultural Crops		

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

4. **GLEY/SPL** : 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 **ST** : Topsoil Stones
CH : Chemical	**WE** : Wetness	**WK** : Workability
DR : Drought	**ER** : Erosion Risk	**WD** : Soil Wetness/Droughtiness

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	**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	**GH** : gravel with non-porous (hard) stones

SI : soft weathered igneous/metamorphic rock
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 : WORTHING LP SITE 3 Pit Number : 1P

Grid Reference: TQ15600510 Average Annual Rainfall : 804 mm
Accumulated Temperature : 1508 degree days
Field Capacity Level : 168 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	MZCL	10YR32 00	12	14	HR					
29- 55	MZCL	10YR42 00	0	20	HR		MCSAB	FR	M	
55- 70	HZCL	75YR44 00	0	15	HR		MCSAB	FM	M	
70-100	HZCL	75YR44 00	0	30	HR				M	

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3A APW : 115mm MBW : 0 mm
APP : 106mm MBP : -6 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Topsoil Stoniness

SOIL PIT DESCRIPTION

Site Name : WORTHING LP SITE 3 Pit Number : 2P

Grid Reference: TQ15500572

Average Annual Rainfall : 804 mm
Accumulated Temperature : 1508 degree days
Field Capacity Level : 168 days
Land Use : Cereals
Slope and Aspect : 03 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MZCL	10YR42 00	0	4	HR					Y
25- 37	MZCL	10YR54 00	0	5	CH				M	Y
37- 47	MZCL	10YR64 00	0	30	CH				M	Y
47- 72	CH	00ZZ00 00	0	2	HR				P	Y

Wetness Grade : 1

Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3A

APW : 99 mm MBW : -16 mm
APP : 103mm MBP : -9 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WORTHING LP SITE 3 Pit Number : 3P

Grid Reference: TQ15120563 Average Annual Rainfall : 804 mm
Accumulated Temperature : 1508 degree days
Field Capacity Level : 168 days
Land Use : Cereals
Slope and Aspect : 04 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MZCL	10YR52 00	6	12	HR					Y
25- 40	MZCL	10YR52 53	0	30	CH				M	Y
40- 70	CH	10YR81 00	0	2	HR				M	Y

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3B APW : 88 mm MBW : -27 mm
APP : 94 mm MBP : -18 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : WORTHING LP SITE 3 Pit Number : 4P

Grid Reference: TQ15400542

Average Annual Rainfall : 804 mm
Accumulated Temperature : 1508 degree days
Field Capacity Level : 168 days
Land Use : Oilseed Rape
Slope and Aspect : 01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	MZCL	10YR42 00	4	6	HR					
25- 78	MZCL	10YR44 00	0	10	HR		MDCSAB	FR	M	
78- 88	MZCL	10YR44 00	0	30	HR				M	

Wetness Grade : 1

Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3A

APW : 116mm MBW : 1 mm
APP : 114mm MBP : 2 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

LIST OF BORINGS HEADERS 02/17/95 WORTHING LP SITE 3

AMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT	COMMENTS
1P	TQ15600510	CER					1	1	115	0	106	-6	3A				TS 3A	IMP FLINTS 100
1S	TQ15550495	CER					1	1		0		0					TS 2	TS ONLY
2P	TQ15500572	CER	S	03			1	1	99	-16	103	-9	3A				DR 3A	PIT90 ROOTS 72
2S	TQ15650494	CER					1	1		0		0					TS 3A	TS ONLY
3P	TQ15120563	CER	E	04			1	1	88	-27	94	-18	3B				DR 3B	CH 40 ROOTS 70
3S	TQ15180563	CER					1	1		0		0						
4	TQ14900590	CER	E	05			1	1	72	-43	74	-38	3B				TS 3A	TS ONLY
4P	TQ15400542	OSR	S	01			1	1	116	1	114	2	3A				DR 3B	CH 26 ROOTS 56
4S	TQ15250565	CER					1	1		0		0					DR 2	PIT 90
6	TQ15100590	CER					1	1	108	-7	112	0	3A				TS 3A	TS ONLY
7	TQ15200590	CER					1	1	78	-37	81	-31	3B				DR 3A	IMP FLINTS 80
8	TQ15300590	CER					1	1	95	-20	101	-11	3A				DR 3B	CH 29 ROOTS 59
9	TQ15400590	CER					1	2	100	-15	112	0	3A				DR 3A	CH 45 ROOTS 70
10	TQ15500590	CER	SW	06			1	1	102	-13	104	-8	3A				DR 3A	IMP FLINTS 70
11	TQ14900580	CER	E	04			1	1	71	-44	72	-40	3B				DR 3A	CH 50 ROOTS 75
13	TQ15500580	CER					1	1	100	-15	114	2	3A				DR 3B	CH 30 ROOTS 60
14	TQ15200580	CER					1	1	78	-37	81	-31	3B				DR 3A	IMP FLINTS 70
15	TQ15300580	CER					1	1	86	-29	88	-24	3B				DR 3B	CH 30 ROOTS 60
16	TQ15400580	CER					1	1	81	-34	84	-28	3B				DR 3A	IMP FLINTS 55
17	TQ15500580	CER	W	04			1	1	120	5	113	1	2				DR 3B	CH 30 ROOTS 60
18	TQ14900570	CER	S	05			1	1	85	-30	90	-22	3B				DR 2	CH 70 ROOTS 95
19	TQ15000570	CER	E	06			1	1	78	-37	81	-31	3B				DR 3B	CH 35 ROOTS 65
20	TQ15100570	CER					1	1	116	1	115	3	3A				DR 3B	CH 30 ROOTS 60
21	TQ15200570	CER					1	1	127	12	112	0	2				TS 3A	IMP FLINTS 85
22	TQ15310570	CER					1	1	117	2	116	4	3A				TS 3A	IMP FLINTS 100
23	TQ15400570	CER					1	1	79	-36	82	-30	3B				DR 2	IMP FLINTS 85
24	TQ15500570	CER					1	1	95	-20	100	-12	3A				DR 3B	CH 30 ROOTS 60
25	TQ14800560	PGR					1	1	93	-22	99	-13	3B				DR 3A	CH 45 ROOTS 70
26	TQ14900560	PGR					1	1	106	-9	104	-8	3A				DR 3A	CH 45 ROOTS 70
27	TQ15000560	PGR					1	1	86	-29	91	-21	3B				DR 3A	CH 45 ROOTS 70
28	TQ15100560	PGR					1	1	93	-22	96	-16	3B				DR 3B	CH 35 ROOTS 65
29	TQ15200560	CER					1	1	125	10	111	-1	2				DR 3A	IMP FLINTS 55
30	TQ15300560	CER					1	1	118	3	113	1	3A				TS 3A	
31	TQ15400560	OSR					1	1	76	-39	79	-33	3B				TS 3A	IMP FLINTS 90
32	TQ15500560	CER					1	1	146	31	113	1	2				DR 3B	CH 29 ROOTS 59
33	TQ1480050	PGR					1	1	94	-21	102	-10	3B				DR 2	
34	TQ14900550	PGR					1	1	84	-31	84	-28	3B				DR 3A	IMPCH&FLNTS 65
35	TQ14980550	PGR					1	1	143	28	117	5	2				DR 3A	IMP FLINTS 50
36	TQ15400550	OSR			45		1	1	115	0	113	1	3A				DR 2	
37	TQ15500550	CER					1	1	112	-3	116	4	3A				DR 2	IMP FLINTS 90
39	TQ14800540	PGR			70		1	1	144	29	119	7	2				DR 3A	IMP FLINTS 80
40	TQ14910540	PGR					1	1	70	-45	70	-42	3B				DR 2	
																	DR 3B	IMP40 POSS DIS

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
41	TQ15400540	OSR					1	1	120	5	114	2	2						
42	TQ15500540	CER					1	1	128	13	117	5	2				DR	2	IMP 90 SEE 4P
44	TQ15400530	OSR					1	1	96	-19	108	-4	3A				DR	2	IMP 100 SEE 4P
45	TQ15500530	OSR					1	1	103	-12	117	5	3A				DR	2	IMP 70 SEE 4P
46	TQ15600530	CER					1	1	135	20	111	-1	2				DR	2	IMP 70 SEE 4P
																	DR	2	SEE 4P
47	TQ15400522	OSR					1	1	63	-52	63	-49	4						
48	TQ15500520	PGR					1	1	64	-51	64	-48	4				DR	3A	IMP 40 SEE 1P
49	TQ15600520	PGR					1	1	105	-10	118	6	3A				DR	3A	IMP 40 SEE 1P
50	TQ15500510	PGR					1	1	87	-28	92	-20	3B				DR	3A	IMP FLINTS 70
51	TQ15600510	LEY					1	1	96	-19	105	-7	3A				DR	3A	IMP 60 SEE 1P
																	DR	3A	IMP 65 SEE 1P
52	TQ15700510	LEY					1	1	81	-34	83	-29	3B						
53	TQ15500500	CER					1	1	66	-49	66	-46	3B				DR	3A	IMP 55 SEE 1P
54	TQ15600500	CER					1	1	80	-35	80	-32	3B				DR	3A	IMP 40 SEE 1P
55	TQ15700500	CER					1	1	79	-36	79	-33	3B				DR	3A	IMP 50 SEE 1P
56	TQ15730497	PGR		15			2	2	36	-79	36	-76	4				DR	3B	IMP 50 SEE 1P
																	DR	3B	IMP FLINTS 20
57	TQ15600491	CER					1	1	64	-51	64	-48	4						
58	TQ15700490	PGR					1	1	36	-79	36	-76	4				DR	3A	IMP 40 SEE 1P
60	TQ15230562	CER					1	1	108	-7	112	0	3A				DR	4	IMP FLINTS 20
61	TQ15340551	CER					1		78	-37	81	-31	3B				DR	3A	IMP 80 AND TS
																	DR	3B	CH 30 ROOTS 60

COMPLETE LIST OF PROFILES 06/03/95 WORTHING LP SITE 3

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1P	0-29	mzcl	10YR32 00						12	0	HR	14							
	29-55	mzcl	10YR42 00						0	0	HR	20	MCSAB	FR	M				
	55-70	hzcl	75YR44 00				00MN00	00	0	0	HR	15	MCSAB	FM	M				
	70-100	hzcl	75YR44 00						0	0	HR	30			M				PIT IMP FLINTS 100
1S	0-25	mzcl	10YR42 00						8	0	HR	12							TOPSOIL STONE ONLY
2P	0-25	mzcl	10YR42 00						0	0	HR	4					Y		
	25-37	mzcl	10YR54 00						0	0	CH	5			M		Y		
	37-47	mzcl	10YR64 00						0	0	CH	30			M		Y		PIT TO 90
	47-72	ch	00ZZ00 00						0	0	HR	2			P		Y		ROOTS VISIBLE TO 72
2S	0-25	mzcl	10YR42 00						13	0	HR	16							TOPSOIL STONE ONLY
3P	0-25	mzcl	10YR52 00						6	0	HR	12					Y		
	25-40	mzcl	10YR52 53						0	0	CH	30			M		Y		
	40-70	ch	10YR81 00						0	0	HR	2			M		Y		FEW ROOTS IN CHALK
3S	0-25	mzcl	10YR42 00						6	6	HR	15					Y		TOPSOIL STONE ONLY
4	0-26	mzcl	10YR52 00						8	0	HR	12					Y		
	26-56	ch	05Y 82 00						0	0		0			M		Y		ROOTS 56 3P
4P	0-25	mzcl	10YR42 00						4	0	HR	6							
	25-78	mzcl	10YR44 00						0	0	HR	10	MDCSAB	FR	M				
	78-88	mzcl	10YR44 00						0	0	HR	30			M				PIT IMP FLINTS 90
4S	0-25	mzcl	10YR42 00						8	6	HR	15					Y		TOPSOIL STONE ONLY
6	0-24	mzcl	10YR42 43						10	0	HR	14							
	24-40	mzcl	10YR44 00						0	0	HR	5			M				
	40-80	mzcl	10YR54 00						0	0	HR	10			M				IMP FLINTS 80
7	0-29	mzcl	10YR53 52						0	0	HR	8					Y		
	29-59	ch	05Y 82 00						0	0		0			M		Y		ROOTS 59 3P
8	0-24	mzcl	10YR53 00						0	0	HR	4					Y		
	24-35	mzcl	10YR54 00						0	0	CH	3			M		Y		
	35-45	mzcl	10YR64 00						0	0	CH	50			M		Y		
	45-70	ch	05Y 82 00						0	0		0			M		Y		ROOTS 70 2P
9	0-26	hzcl	10YR52 00						4	0	HR	6							
	26-40	hzcl	10YR54 00						0	0	HR	10			M				
	40-70	hzcl	10YR54 00						0	0	HR	15			M				IMP FLINTS 70
10	0-27	mzcl	10YR52 00						4	0	HR	8					Y		
	27-43	hzcl	10YR63 64						0	0	CH	5			M		Y		
	43-50	mzcl	10YR63 00						0	0	CH	30			M				
	50-75	ch	05Y 82 00						0	0		0			M		Y		ROOTS 75 2P

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
11	0-25	mzcl	10YR42 52						8	0	CH	20				Y			
	25-55	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 60 3P
13	0-30	mzcl	10YR41 42						6	0	HR	15				Y			
	30-70	hzcl	75YR44 54						0	0	HR	5		M		Y			IMP FLINTS 70
14	0-30	mzcl	10YR43 00						6	0	HR	10				Y			
	30-60	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 60 3P
15	0-28	mzcl	10YR43 00						4	0	HR	10				Y			
	28-45	mzcl	10YR64 81						0	0	CH	25		M		Y			IMP FLINTS 55
	45-55	mzcl	10YR74 81						0	0	CH	40		M		Y			+10% FLINTS
16	0-30	mzcl	10YR43 00						0	0	CH	10				Y			
	30-60	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 60 3P
17	0-28	mzcl	10YR43 00						2	0	HR	5				Y			
	28-45	mcl	10YR54 00						0	0	CH	5		M		Y			
	45-55	mzcl	10YR54 00						0	0	CH	20		M		Y			
	55-70	mzcl	10YR64 71						0	0	CH	50		M		Y			
	70-95	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 95 2P
18	0-35	mzcl	10YR52 00						0	0	CH	20				Y			
	35-65	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 65 3P
19	0-30	mzcl	10YR52 00						2	0	HR	10				Y			
	30-60	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 60 3P
20	0-30	mzcl	10YR42 00						3	0	HR	10							SEE 3S/4S
	30-55	hzcl	10YR44 00						0	0	HR	5		M		Y			
	55-80	hzcl	75YR44 00						0	0	HR	10		M		Y			
	80-85	mzcl	10YR54 00						0	0	HR	10		M		Y			IMP FLINTS 85
21	0-30	mzcl	10YR41 42						8	0	HR	15				Y			SEE 3S/4S
	30-50	hzcl	10YR44 00						0	0	HR	10		M		Y			
	50-100	hzcl	75YR44 00						0	0	HR	5		M		Y			IMP FLINTS 100
22	0-30	mzcl	10YR42 00						5	0	HR	10				Y			
	30-55	mzcl	10YR44 00						0	0	HR	5		M		Y			
	55-85	hzcl	10YR44 00 00MN00 00 F						0	0	HR	5		M		Y			IMP FLINTS 85
23	0-30	mzcl	10YR52 00						0	0	CH	15				Y			
	30-60	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 60 3P
24	0-30	mzcl	10YR42 00						3	0	HR	10				Y			
	30-45	hzcl	10YR44 00						0	0	HR	5		M		Y			
	45-70	ch	10YR81 00						0	0	HR	2		P		Y			ROOTS 70 2P

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
25	0-25	mzcl	10YR52 00						0	0	HR	10					Y		
	25-45	mzcl	10YR64 00						0	0	CH	20		M			Y		
	45-70	ch	10YR81 00						0	0	HR	2		P			Y		ROOTS 70 2P
26	0-35	mzcl	10YR42 52						0	0	HR	5					Y		
	35-45	mzcl	10YR64 00						0	0	CH	10		M			Y		
	45-75	ch	10YR81 00						0	0	HR	2		P			Y		ROOTS 70 2P
27	0-27	mzcl	10YR52 00						0	0	CH	5					Y		
	27-35	mzcl	10YR63 00						0	0	CH	50		M			Y		
	35-65	ch	05Y 82 00						0	0		0		P			Y		ROOTS 70 2P
28	0-24	mzcl	10YR43 00						0	0	CH	3					Y		
	24-40	mzcl	10YR53 00						0	0	CH	5		M			Y		
	40-55	mzcl	10YR54 00						0	0	CH	10		M			Y		IMP FLINTS 55
29	0-26	mzcl	10YR43 00						11	0	HR	14							SEE 3S/4S
	26-45	mzcl	10YR54 00						0	0	HR	10		M					
	45-100	mzcl	10YR56 00						0	0	HR	10		M					
30	0-27	mzcl	10YR43 00						10	0	HR	12							SEE 3S/4S
	27-40	mzcl	10YR54 00						0	0	HR	5		M					
	40-75	mzcl	10YR56 00						0	0	HR	10		M					
	75-90	hzcl	10YR56 00						0	0	HR	10		M					IMP FLINTS 90
31	0-29	mzcl	10YR43 00						8	0	HR	12							
	29-59	ch	05Y 82 00						0	0		0		M			Y		ROOTS 59 SEE 3P
32	0-24	mzcl	10YR43 00						8	0	HR	12							
	24-45	mzcl	10YR54 00						0	0	HR	5		M					
	45-85	hzcl	10YR56 00						0	0	HR	10		M					
	85-120	mzcl	10YR64 00						0	0	CH	30		M			Y		
33	0-30	mcl	10YR42 00						0	0	HR	5					Y		
	30-55	hcl	10YR44 00						0	0	HR	10		M			Y		
	55-65	mcl	10YR44 00						0	0	CH	30		M			Y		IMP FLINTS/CH 65
34	0-28	mzcl	10YR42 00						0	0	HR	5					Y		
	28-50	c	10YR44 00						0	0	HR	5		M			Y		IMP FLINTS 50
35	0-30	mzcl	10YR42 00						0	0	HR	5					Y		
	30-60	hcl	10YR44 00						0	0	CH	5		M			Y		
	60-120	c	10YR54 00	10YR56 00	F				0	0	CH	5		M			Y		
36	0-30	mzcl	10YR43 00						0	0	HR	3							
	30-45	hzcl	10YR56 00						0	0		0		M					
	45-90	c	75YR56 00	10YR68 00	C	00MN00 00	S		0	0		0		P					IMP FLINTS 90

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
37	0-29	mzcl	10YR43 00						5	0	HR	8							
	29-60	mzcl	10YR44 00						0	0	HR	5		M					
	60-80	hzcl	10YR54 00						0	0	HR	15		M					IMP FLINTS 90
39	0-24	mzcl	10YR43 00						0	0	HR	3							
	24-55	hzcl	10YR54 00						0	0	HR	5		M					
	55-70	hzcl	10YR56 00						0	0	HR	5		M					
	70-120	c	10YR56 00	10YR58 00	C		00MN00 00	S	0	0	HR	5		M					
40	0-25	mzcl	10YR43 00						0	0	HR	3							
	25-40	hzcl	10YR53 00						0	0	HR	5		M					IMP40 POSS DISTURBD
41	0-30	mzcl	10YR42 00						2	0	HR	5							
	30-50	mzcl	10YR44 00						0	0	HR	15		M					
	50-90	hzcl	75YR44 00						0	0	HR	10		M					IMP FLINTS 90
42	0-28	mzcl	10YR41 00						3	0	HR	8							
	28-45	mzcl	10YR43 44						0	0	HR	5		M					
	45-80	hzcl	10YR44 00						0	0	HR	5		M					
	80-100	c	75YR44 00						0	0	HR	10		M					IMP FLINTS 100
44	0-30	mzcl	10YR42 00						2	0	HR	10							
	30-50	mzcl	10YR43 00						0	0	HR	15		M					
	50-60	hzcl	10YR44 54						0	0	HR	15		M					
	60-70	c	10YR43 00	75YR56 00	C			S	0	0	HR	20		M					IMP FLINTS 70
45	0-25	mzcl	10YR43 00						5	0	HR	8							
	25-35	mzcl	10YR44 00						0	0	HR	5		M					
	35-70	hzcl	10YR56 00	10YR58 00	F				0	0	HR	5		M					IMP FLINTS 70
46	0-28	mzcl	10YR43 42						5	0	HR	8							
	28-55	mzcl	10YR54 00						0	0	HR	15		M					
	55-120	c	10YR56 00	00MN00 00	F				0	0	HR	5		M					
47	0-30	mzcl	10YR43 00						10	0	HR	15							
	30-40	mzcl	10YR44 00						0	0	HR	20		M					IMP FLINTS 40
48	0-30	mzcl	10YR43 00						0	0	HR	10							
	30-40	hzcl	10YR43 44						0	0	HR	30		M					IMP FLINTS 40
49	0-30	mzcl	10YR43 00						0	0	HR	5							
	30-65	mzcl	10YR44 00						0	0	HR	5		M					
	65-70	mzcl	10YR44 00						0	0	HR	20		M					IMP FLINTS 70
50	0-25	mzcl	10YR41 42						0	0	HR	10							
	25-50	mzcl	10YR44 00						0	0	HR	15		M					
	50-60	mzcl	10YR44 00						0	0	HR	30		M					IMP FLINTS 60

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
51	0-30	mzcl	10YR41 42						3	0	HR	8							
	30-60	mzcl	10YR43 44						0	0	HR	10		M					
	60-65	mzcl	10YR53 00						0	0	HR	30		M					IMP FLINTS 65
52	0-28	mzcl	10YR41 42						5	0	HR	12							
	28-50	mzcl	10YR43 53						0	0	HR	20		M					
	50-55	mzcl	10YR44 00						0	0	HR	40		M					IMP FLINTS 55
53	0-30	mzcl	10YR43 42						8	0	HR	12							
	30-40	mzcl	10YR54 00						0	0	HR	10		M					IMP FLINTS 40
54	0-30	mzcl	10YR42 00						8	0	HR	12							
	30-50	mzcl	10YR44 00						0	0	HR	15		M					IMP FLINTS 50
55	0-29	mzcl	10YR42 00						10	0	HR	12							
	29-45	mzcl	10YR44 00						0	0	HR	15		M					
	45-50	mzcl	10YR44 00						0	0	HR	25		M					IMP FLINTS 50
56	0-15	mzcl	10YR42 00						0	0	HR	5							
	15-20	mzcl	10YR52 00	10YR56 00	C			Y	0	0		0		M					IMP FLINTS 20
57	0-27	mzcl	10YR43 00						10	0	HR	12							
	27-40	mzcl	10YR44 00						0	0	HR	15		M					IMP FLINTS 40
58	0-20	mzcl	10YR42 00						0	0	HR	5							IMP FLINTS 20
60	0-30	mzcl	10YR42 52						6	0	HR	12					Y		SEE 3S/4S
	30-80	hzcl	75YR44 00						0	0	HR	10		M			Y		IMP FLINTS 80
61	0-30	mzcl	10YR43 00						5	0	HR	10				Y			
	30-60	ch	10YR81 00						0	0	HR	2		P			Y		ROOTS 60 SEE 3P