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Hampshire Structure Plan Review
Land to the West of Hamble
Agricultural Land Classification
Reconnaissance Survey
ALC Map and Report
January 1995

AGRICULTURAL LAND CLASSIFICATION REPORT.

HAMPSHIRE STRUCTURE PLAN REVIEW
LAND TO THE WEST OF HAMBLE
RECONNAISSANCE SURVEY

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of 'areas of search' in connection with MAFF's input to the Hampshire Structure Plan Review.

1.2 Land to the west of Hamble comprises approximately 382 hectares of land bounded by Hamble, Butlocks Heath and Bursledon to the south and east, Southampton to the north, and the Netley landfill site to the west. An Agricultural Land Classification (ALC) survey was carried out during December 1994 and January 1995. The survey was completed at a reconnaissance level of detail, on a 'free' survey basis. It was undertaken primarily to update the 1:63,360 scale provisional ALC maps for the area of search. Consequently the results are designed for strategic planning purposes only. For site specific proposals, further, more detailed, surveys may be required. A total of 69 borings and one soil inspection pit were assessed according to 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 long-term limitations on its use for agriculture. Information, including data from nine soil pits, was also drawn from four existent surveys (ADAS Refs: 1503/24/82, 1503/110/94, 1503/127/94, 1503/128/94) which cover a significant amount of the survey area.

1.3 The work was carried out by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the agricultural land was under permanent grass, horticulture (predominantly vegetables and strawberries), stubble, together with some areas of set aside and recently cultivated areas. Much of the area of permanent grass was being grazed by horses or cattle. Urban areas include, grouped and/or individual dwellings, a school and light industrial areas. Recreational land, woodland, an area in use as a Sunday market and existing gravel workings are shown as Non-agricultural.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in Table 1 overleaf. The map has been drawn at a scale of 1:50,000. It is accurate at this scale, but any enlargement would be misleading.

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.

Table 1: Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
1	73	19.1	24.9
2	87	22.8	29.7
3a	79	20.7	27.0
3b	54	14.1	18.4
Urban	44	11.5	100% (293ha)
Non-Agricultural	45	11.8	
Total area of Site	382ha	100%	

1.7 The agricultural land in this 'area of search' ranges from excellent quality (Grade 1), to moderate quality (Subgrade 3b), including substantial proportions of very good quality (Grade 2) and good quality (Subgrade 3a). Principal limitations include soil droughtiness, soil wetness and to a lesser extent topsoil stoniness and slope.

1.8 Towards the centre and south east of the area there are some areas that showed no significant limitation in terms of agricultural land quality. The deep brickearth derived soils are well drained (Wetness Class I and II) and are likely to contain sufficient profile available water for plant growth in most years. These are the areas shown as excellent quality Grade 1 land.

1.9 However, over the remaining area, soil droughtiness forms the main limitation to land quality. This occurs where hard stones and gravelly horizons in the soil profile restrict available water giving rise to slight to severe risks of drought stress dependant upon precise soil characteristics. These factors affect plant growth and yield. Where topsoil stoniness is the principal limitation it is often in combination with a stony profile and similarly results in a moderate or severe limitation to land quality. Topsoil stones limit the versatility of the land by increasing the production costs associated with cultivation and affecting plant establishment, growth and yield. Soil wetness occurs principally towards the north of the area, associated with locations where slowly permeable horizons occur at varying depths causing slight to severe drainage imperfections. This restricts the opportunities for cultivation and/or stocking without the risk of structural damage to the soil. Soil wetness can also affect plant establishment, growth and yield. Slope, which only affects a very small area, limiting it to Subgrade 3b, is significant in terms of the safe and efficient use of agricultural 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 area. Due to its coastal location, the area is comparatively mild as indicated by the high values for Accumulated Temperature (January to June).

2.4 No local climatic factors such as exposure or frost risk are believed to affect the area. However, climatic and soil factors interact to influence soil wetness and droughtiness limitations. Soil droughtiness may be at least partially offset by the availability of irrigation water, as around Pickwell Farm (OS map ref.: SU468101, see ADAS Ref: 1503/128/94)

Table 2: Climatic Interpolations

Grid Reference	SU482078	**SU475091**	SU476109
Altitude, (m, AOD)	15	**30**	50
Accumulated Temperature (day °C. Jan.-June)	1540	**1523**	1499
Average Annual Rainfall (mm)	792	**796**	808
Field Capacity Days	162	**163**	165
Moisture deficit, wheat (mm)	116	**113**	109
Moisture deficit, potatoes (mm)	112	**109**	103
Overall Climatic Grade	1	**1**	1

2.5 Due to the comparatively small differences in the local climate (see Table 2 above), the specific climatic variables chosen for the purposes of the survey, and used throughout, were from the individual point interpolation that gave the closest approximation to the values showing the greatest coverage in this area taken from isopleth maps of each variable. These isopleth maps were constructed using a total of 18 separate interpolations from different locations and altitudes within the site. Table 2 gives representative data from the survey area; the actual values used for the climate and soil interactions (wetness and droughtiness assessment) are those for SU475091 at 30m. AOD, shown in bold type above.

3. Relief

3.1 The 'area of search' lies between approximately 15 and 50m AOD. The land overall is relatively flat, rising gently from the south and east towards the north. In a small area close to Hound Farm, Hound (map ref. SU470088) slope is limiting in terms of agricultural land quality, being in the range 7-11°, measured with an optical reading clinometer.

4. Geology and Soils

4.1 The published geological information (BGS, 1973), shows the majority of the 'area of search' to be underlain by plateau gravel, particularly towards the south. The remaining area is shown as being underlain by Eocene Bracklesham Beds, mostly in the north of the site, and in valley features towards the south.

4.2 The most detailed published soils information (Kay, 1939), shows the majority of the area, towards the east, to be underlain by soils from the Warsash, Hamble, Hook, Southampton, Swanwick and Sarisbury series. Towards the west, outside the 1939 survey area, the most detailed published soils information is from the SSEW publications of 1983 and 1984. This area is mapped as the Hamble 2 Association and is most likely to comprise soils from the Hamble and Hook series' with smaller inclusions of other soil types. This association is briefly described as, "deep stoneless well drained silty soils and similar soils affected by groundwater; over gravel locally. Usually flat land." (SSEW 1983). The soils encountered in the area were of a broadly similar type to those described in the published sources (Kay, 1939 and SSEW, 1983), except that wet and/or stony soils were more common than the published data would suggest.

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 1

5.3 Excellent quality agricultural land capable of supporting a wide range of arable and horticultural crops has been identified in two mapping units comprising approximately 19% of the 'area of search'. They generally equate with the areas of deeper brickearth drift. Soil in this area showed no significant limitation in terms of agricultural land quality. They are well or moderately well drained (Wetness Class I or II, see Appendix II) and contain sufficient reserves of available water for plant growth. Soil profiles commonly comprised a very slightly stony or slightly stony (up to 5% total flints) fine sandy silt loam, silt loam or medium silty clay loam or medium clay loam topsoil. These pass to similarly textured upper subsoil horizons and commonly overlie stoneless to very slightly stony clay subsoils that may be gleyed or slightly gleyed. The soils are not generally slowly permeable although some variants towards the north may have slowly permeable characteristics. Occasionally these were impenetrable to the soil auger around 100cm due to flints. Given the local climatic regime, the depth at which the gleyed and slowly permeable horizons occur in the observations affected is such that Wetness Class I or II is appropriate. In these profiles topsoil workability is not a significant limiting factor such that Grade 1 is applied. The pit observation, 4p (ADAS Ref: 1503/128/94) is typical of this soil type. All these soils are flexible in use and suited to a wide variety of agricultural and horticultural production from which high and consistent yields should be obtained.

5.4 Additionally a number of profiles, located on the previously surveyed land at Pickwell Farm (OS grid ref.: SU468101, see ADAS Ref: 1503/128/94), which would have otherwise be Grade 2 due to minor soil droughtiness limitations, are mapped as Grade 1 as a result of the enhanced potential afforded by irrigation water, which offsets the inherent droughtiness limitation. Profiles are similar to

those described above, but profile water is slightly restricted as a result of a combination of factors such as, shallower soils over impenetrable stony horizons, higher stone contents throughout the profile or profiles with higher clay contents throughout.

Grade 2

5.5 Land of very good quality extends over approximately 23% of the 'area of search'. Principal limitations, which are minor, include soil wetness and soil droughtiness with some profiles equally limited by these factors. Soils limited by either wetness or droughtiness occur in a complex pattern throughout the Grade 2 mapping units. These were considered to represent areas where the brickearth drift and associated soils were a little thinner over underlying gravels or clays. These mapping units also include occasional areas of Grade 1 which are too small to delineate separately.

5.6 Observations limited by soil wetness commonly comprised a very slightly to slightly stony (up to 10% total flints) fine sandy silt loam, medium silty clay loam or medium clay loam topsoil. These pass to similar upper subsoil horizons, which are occasionally gleyed. These commonly overlie gleyed stoneless to moderately stony (up to 20% total flints) heavy silty clay loam, clay loam over clay lower subsoil horizons. The lower clay horizon forms a slowly permeable layer causing a drainage imperfection in the soil sufficient to equate with Wetness Class II or III (see Appendix II) dependant on the depth of occurrence. The light or medium topsoil texture of the soils leads them to be placed in Grade 2. A soil wetness limitation such as this causes there to be a very slight restriction on the number of days when mechanised operations and/or stocking may occur without causing structural damage to the soil. The soil pit 2p at ADAS Ref: 1503/128/94 is similar in type to this soil, except that at the pit the slowly permeable clay horizon occurs at a shallower depth, leading to Subgrade 3a being applied in that case.

5.7 The observations of Grade 2 limited by soil droughtiness commonly comprise a slightly stony (up to 15% total flints) fine sandy silt loam or medium silty clay loam topsoil. These pass to similarly stony medium sandy silt loam, medium silty clay loam or medium clay loam upper subsoil horizons. These overlie moderately stony (up to 20% total flints) medium sandy loam, medium sandy silt loam, medium silty clay loam or medium clay loam horizons, passing to a moderately stony (up to 30% total flints) medium sandy loam, medium sandy silt loam or clay loam lower subsoil. Gleying due to the effects of fluctuating groundwater was observed in some profiles. Occasional observations were impenetrable to the soil auger around 75cm, due to flints in the profile. Well drained (Wetness Class I) soils of this nature in the prevailing local climate have very slightly restricted profile available water. This is due to the flint content reducing the water holding capacity of the soil, resulting in the land being slightly less productive than that associated with Grade 1 as crop yields are likely to be lower and less consistent. The soil pits 1p and 2p at ADAS Ref: 1503/110/94 are representative of this soil type.

5.8 A number of profiles particularly to the south of Pickwell Farm (SU468101) on the previously surveyed site at Old Netley, Hound (ADAS Ref: 1503/128/94) are

included in Grade 2 on the basis of their enhanced potential resulting from their being irrigated. This allows a soil droughtiness limitation to be partially offset. Profiles of similar texture to those described above (para. 5.6), become impenetrable to the soil auger between 55 and 65cm and are generally more stony, containing 2-35% total flints by volume. These moderately stony horizons occur immediately above the impenetrable layer. Such profiles have restricted reserves of soil moisture as a result of their stoniness and Subgrade 3a would normally be assigned. However with the availability of irrigation water, soil droughtiness limitations are partially offset and this area is shown as Grade 2.

Subgrade 3a

5.8 Land of good quality occurs over approximately 22% of the 'area of search'. Principal limitations to land quality include soil droughtiness, soil wetness and topsoil stoniness, the most common being soil droughtiness.

5.9 Soil profiles limited by soil droughtiness and topsoil stoniness are essentially similar in character over the 'area of search', occurring towards the centre of the investigated area. They commonly comprise a slightly to moderately stony (up to 25% total flints, including up to 14% > 2cm) fine sandy silt loam, medium sandy loam, medium clay loam or medium silty clay loam topsoil. These pass to moderately to very stony (up to 50% total flints) loamy medium sand, medium sandy loam, fine sandy silt loam, medium silty clay loam, medium clay loam or medium silty clay loam upper subsoils. This was occasionally impenetrable to the soil auger between 40 and 55cm. Where the upper subsoil was penetrated, it passed to a very stony (up to 50% total flints) fine sandy silt loam, clay loam, clay or sandy clay lower subsoil horizon which became impenetrable to the soil auger between 55 and 100cm. Commonly the deeper observations were those limited by topsoil stoniness having between 10 and 14% flints in the topsoil >2cm. The pit observation 1p is typical of this soil type. The effect of the stones in the profile is to reduce the profile available water such that there is a moderate risk of drought stress. Where topsoil stoniness is significant in the final grading, it is partly due to increased production costs, as the volume and size of the stones increases wear on tyres and machinery and partly on the basis that large stones (>2cm) in the topsoil affect crop establishment and growth.

5.10 Profiles limited by soil wetness tend to occur towards the north and west of the 'area of search'. They commonly comprise a slightly stony (up to 10% total flints) medium silty clay loam or medium clay loam, occasionally fine sandy silt loam topsoil, overlying a gleyed and slightly stony (up to 15% total flints) silty clay loam or medium clay loam upper subsoil. From between 50 and 65cm this overlies a gleyed and slowly permeable stoneless to very stony (up to 45 % total flints) heavy silty clay loam or clay lower subsoil, which is occasionally impenetrable to the soil auger at depth. The pit observations 2p, ADAS Ref: 1503/128/94 and 2p, ADAS Ref: 1503/127/94 are typical of this soil type. The depth to gleyed and slowly permeable horizons within the prevailing local climate leads to Wetness Class III (see Appendix II) being applied. The relevant topsoil workability class leads to Subgrade 3a being appropriate. Soil wetness at this level leads to a moderate restriction on the versatility of land in terms of opportunities for mechanical

operations and/or stocking without the risk of causing structural damage to the soil.

5.11 Some land on the previously surveyed site, reference 1503/128/94, is mapped as Subgrade 3a due to its enhanced potential arising from the availability of irrigation. Medium textured profiles which are generally slightly stony in the topsoil and become more stony with depth, passing to very gravelly lower horizons and are typically impenetrable to the soil auger at relatively shallow depths (35-55cm). The land is affected by soil droughtiness due to the shallow, stony nature of the soils and would normally be assigned to Subgrade 3b under normal circumstances. However, the soil droughtiness limitation is partially offset by the availability of irrigation water and Subgrade 3a is therefore appropriate.

Subgrade 3b

5.12 Land of moderate quality occurs over approximately 13% of the 'area of search'. Principal limitations to land quality include soil droughtiness, soil wetness, topsoil stoniness and slope, soil droughtiness being the most common.

5.13 Profiles limited to this subgrade by soil droughtiness tend to occur sporadically throughout the 'area of search'. For example to the north west of the area around grid refs. SU471111 and SU464107; towards the south east of the area around grid ref., SU480079 and on the previous detailed surveys around grid ref. SU470088, SU465095 and SU470095. They commonly comprised a moderately stony (to around 30% total flints, including up to 12% > 2cm) sandy silt loam, medium silty clay loam occasionally medium clay loam topsoil, which on occasion was impenetrable to the soil auger. Where deeper sampling was possible, the topsoil passed to a moderately to very stony (20 - 60% total flints) fine or medium sandy silt loam or medium clay loam, occasionally medium silty clay loam upper subsoil horizon. This became impenetrable to the soil auger between 30 and 55cm. In the pit observations 1p, ADAS Ref: 1503/127/94, and 1p and 5p at, 1503/128/94, the upper subsoil passes to further very stony (60%+ v/v flints) medium sandy loam and loamy medium sand horizons which were considered to be gravel (>70% v/v total flints) from approximately 90cm. Within the local climate, profiles of this nature fall into this subgrade on the basis of soil droughtiness as the stones significantly restrict profile available water. This means that there is a risk of drought stress occurring in most years leading to an inconsistent or depressed crop yield.

5.14 On occasion, the stones in the topsoil are sufficient in quantity and size to restrict land quality to Subgrade 3b alone. This occurred in discrete pockets throughout the area. For example, to the north west around SU464105 and SU469110 and on a previous survey around SU470950. In these areas the quantity of stones in the topsoil was approximately 30% in total, including up to 20% of flints greater than 2cm in diameter. The volume and size of stones in the topsoil are significant as the increased wear on tyres and cultivation equipment leads to higher production costs. Large stones (>2cm) in the topsoil also affect successful crop establishment and growth.

5.15 Profiles affected by soil wetness fall into two groups and are primarily located to the north and west of the site, with isolated pockets elsewhere e.g., around the pit observation 3p at SU471990 on the previous detailed survey, ref: 1503/128/94. The first commonly comprises a moderately stony (up to 30% total flints), medium silty clay loam or medium clay loam topsoil which is often gleyed. This either passes to moderately stony (up to 15% total flints) gleyed heavy clay loam over very stony (40-50% total flints) slowly permeable clay, or directly to the clay subsoil. Soils of this type are characterised by the pit observation 3p on the previously surveyed site, ADAS Ref: 1503/128/94, where, although less stony, the profile is of a similar form. The local climatic regime leads soils of this nature to be placed in Wetness Class IV (see Appendix II) and subsequently Subgrade 3b when the medium topsoil workability is taken into account. A limitation of this nature causes a significant reduction in the number of days when mechanical operations and/or stocking may occur without the risk of causing structural damage to the soil.

5.16 The second area assigned to Subgrade 3b under a soil wetness limitation is towards the extreme north of the site around grid ref. SU475103. The soils in this area are essentially similar to those described in para. 5.10 and would normally be assigned to Subgrade 3a on this basis. However, given the high groundwater levels and extreme saturation at the time of the survey, Wetness Classes IV and V (see Appendix II) were considered more appropriate. The presence of hydrophilic vegetation such as Juncus sp. across some of this land indicate long periods of waterlogging, possibly caused by seepage of groundwater at the junction of two geological deposits. Such land is unlikely to benefit significantly from artificial drainage. As such it presents severe difficulties for cropping and cultivations and is best suited to seasonal grazing. If the scale of final mapping had been larger, some of this area would be shown as Grade 4.

5.17 A small area of land around SU470088 at Hound Farm, Hound, (see ADAS Ref: 1503/127/94) is limited to Subgrade 3b on slope. Gradients of 8° measured using an optical reading clinometer, mean that there is a restriction on the safe and efficient use of farm machinery such that Subgrade 3b is appropriate.

SOURCES OF REFERENCE

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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 (eg. 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, religous buildings, cemetries. 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 (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, eg. 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

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years.[2]
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 only wet within 40 cm depth for 30 days in most years.
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.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for 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.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

[1]The number of days specified is not necessarily a continuous period.

[2]'In most years' is defined as more than 10 out of 20 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 computer database. This uses notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF** : national 100 km 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 estimated or measured by a hand-held optical clinometer.

4. **GLEY/SPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.

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

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

7. **DRT** : Best grade according to soil droughtiness.

8. 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		

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
CH : Chemical	**WE** : Wetness	**WK** : Workability
DR : Drought	**ER** : Erosion Risk	**WD** : Soil Wetness/Droughtiness
ST : Topsoil Stoniness		

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
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)

2. **MOTTLE COL** : Mottle colour using Munsell notation.

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 using Munsell notation.

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

7. **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/metamorphic rock		

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **STRUCT** : the degree of development, size and shape of soil peds are described using the following notation:

degree of development	**WK** : weakly developed **ST** : strongly developed	**MD** : moderately developed
ped size	**F** : fine **C** : coarse	**M** : medium **VC** : very coarse
ped shape	**S** : single grain **GR** : granular **SAB** : sub-angular blocky **PL** : platy	**M** : massive **AB** : angular blocky **PR** : prismatic

9. **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

10. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness : **G** : good **M** : moderate **P** : poor

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

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

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

14. **CALC** : If the soil horizon is calcareous, a 'Y' will appear in this column.

15. 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 : HANTS STRUCTURE HAMBLE Pit Number : 1P

Grid Reference: SU47400965 Average Annual Rainfall : 796 mm
Accumulated Temperature : 1523 degree days
Field Capacity Level : 163 days
Land Use :
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 40	FSZL	10YR41 42	8	18	HR					
40- 60	MZCL	10YR54 00	0	40	HR				M	
60-100	SC	25Y 61 00	0	50	HR	M			M	

Wetness Grade : 1 Wetness Class : I
Gleying : 60 cm
SPL : cm

Drought Grade : 3A APW : 111mm MBW : -2 mm
APP : 102mm MBP : -7 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : HANTS MINS OM SITE 4 Pit Number : 1P

Grid Reference: SU47000830 Average Annual Rainfall : 791 mm
Accumulated Temperature : 1531 degree days
Field Capacity Level : 162 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MZCL	10YR43 00	1	3	HR					
28- 52	HCL	10YR44 00	0	0			MDCSAB	FR	M	
52- 70	HCL	10YR56 00	0	5	HR		MDCSAB	FR	M	
70-120	HCL	10YR56 00	0	50	HR				M	

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : No SPL

Drought Grade : 2 APW : 132mm MBW : 18 mm
APP : 118mm MBP : 8 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

ADAS Ref: 1503/110/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS OM SITE 4 Pit Number : 2P

Grid Reference: SU47300850 Average Annual Rainfall : 791 mm
Accumulated Temperature : 1531 degree days
Field Capacity Level : 162 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	MZCL	10YR43 00	0	2	HR		MDCSAB	FR		
28- 60	HCL	10YR54 00	0	0		M	MDCSAB	FR	M	
60-100	HCL	10YR53 00	0	0		M	MDCSAB	FR	M	
100-120	HCL	10YR52 00	0	8	HR	M	WKCAB	FR	M	

Wetness Grade : 1 Wetness Class : I
Gleying :060 cm
SPL :100 cm

Drought Grade : 2 APW : 156mm MBW : 42 mm
APP : 119mm MBP : 9 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

ADAS Ref: 1503/110/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS OM SITE 10 Pit Number : 1P

Grid Reference: SU47100900 Average Annual Rainfall : 791 mm
Accumulated Temperature : 1529 degree days
Field Capacity Level : 162 days
Land Use : Ploughed
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 33	MZCL	10YR42 00	4	31	HR		WKCSAB	FR		
33- 48	MCL	10YR56 46	15	48	HR			FR	M	
48- 63	MSL	10YR53 00	15	56	HR	M		FR	M	
63- 71	MSL	25Y 64 00	7	55	HR	M		FR	M	
71- 90	MSL	10YR52 00	8	52	HR	M		FR	M	
90-120	LMS	10YR52 00	0	55	HR	M		FR	M	

Wetness Grade : 1 Wetness Class : 1
Gleying : 48 cm
SPL : No SPL

Drought Grade : 3B APW : 80mm MBW : -34 mm
APP : 73mm MBP : -36 mm

FINAL ALC GRADE : 3B[1]
MAIN LIMITATION : Droughtiness

ADAS Ref: 1503/127/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS OM SITE 10 Pit Number : 2P

Grid Reference: SU47400900 Average Annual Rainfall : 791 mm
Accumulated Temperature : 1529 degree days
Field Capacity Level : 162 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 29	MZCL	10YR42 00	0	2	HR	F	MDCSAB	FR		
29- 48	MCL	25Y 44 54	0	0		C	MDCAB	FR	M	
48- 78	MZCL	10YR53 00	0	0		M	WKCSAB	FR	M	
78- 90	MCL	10YR52 00	0	5	HR	M	WKCSAB	FR	M	
90-120	C	25Y 61 00	0	8	HR	M	WKCSAB	FM	P	

Wetness Grade : 3A Wetness Class : III
Gleying :S29 cm
SPL : 29 cm

Drought Grade : APW : mm MBW : 0 mm
APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness
ADAS Ref: 1503/127/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS, OM SITE 5 Pit Number : 1P

Grid Reference: SU46960977 Average Annual Rainfall : 782 mm
Accumulated Temperature : 1524 degree days
Field Capacity Level : 160 days
Land Use : Horticultural Crops
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 30	MCL	10YR42 00	1	25	HR					
30- 45	MCL	10YR42 00	0	30	HR				M	
45- 60	MCL	10YR44 00	0	63	HR				P	
60- 90	LMS	75YR56 00	0	61	HR				P	
90-120	GH	75YR56 00	0	0					P	

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

Drought Grade : 3B APW : 68 mm MBW : -44 mm
APP : 67 mm MBP : -40 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

ADAS Ref: 1503/128/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS, OM SITE 5 Pit Number : 2P

Grid Reference: SU46900990 Average Annual Rainfall : 782 mm
Accumulated Temperature : 1524 degree days
Field Capacity Level : 160 days
Land Use : Horticultural Crops
Slope and Aspect : 01 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 33	MCL	10YR42 00	1	10	HR		MDCSAB	FR		
33- 54	HCL	25Y 53 00	0	1	HR	M	MDCSAB	FR	M	
54- 66	C	25Y 52 00	0	45	HR	M			M	
66-105	C	25Y 61 71	0	12	HR	M	MDCAB	FR	M	
105-120	C	25Y 61 71	0	45	HR	M			M	

Wetness Grade : 3A Wetness Class : III
Gleying :033 cm
SPL :066 cm

Drought Grade : 2 APW : 125mm MBW : 13 mm
APP : 104mm MBP : -3 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness
ADAS Ref: 1503/128/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS, OM SITE 5 Pit Number : 3P

Grid Reference: SU47100990 Average Annual Rainfall : 782 mm
Accumulated Temperature : 1524 degree days
Field Capacity Level : 160 days
Land Use : Horticultural Crops
Slope and Aspect : 02 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 33	MCL	10YR42 00	12	30	HR					
33- 75	C	10YR52 00	0	2	HR	M	WKCSAB	FR	M	
75-120	C	10YR61 00	0	0		M	MDVCPL	FR	P	

Wetness Grade : 3B Wetness Class : IV
Gleying :033 cm
SPL :033 cm

Drought Grade : 2 APW : 120mm MBW : 8 mm
APP : 101mm MBP : -6 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

ADAS Ref: 1503/128/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS, OM SITE 5 Pit Number : 4P

Grid Reference: SU47071023 Average Annual Rainfall : 782 mm
Accumulated Temperature : 1524 degree days
Field Capacity Level : 160 days
Land Use : Ploughed
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 37	ZL	10YR42 00	0	1	HR					
37- 50	ZL	10YR43 00	0	0			MDCSAB	FR	M	
50- 70	HZCL	10YR44 00	0	0		F	MDCSAB	FR	M	
70-100	HZCL	10YR54 00	0	0		C	MDCSAB	FR	M	
100-120	HCL	10YR54 64	0	0		M	MDCSAB	FR	M	

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

Drought Grade : 1 APW : 183mm MBW : 71 mm
APP : 147mm MBP : 40 mm

FINAL ALC GRADE : 1
MAIN LIMITATION :
ADAS Ref: 1503/128/94

SOIL PIT DESCRIPTION

Site Name : HANTS MINS, OM SITE 5 Pit Number : 5P

Grid Reference: SU46490954 Average Annual Rainfall : 782 mm
Accumulated Temperature : 1524 degree days
Field Capacity Level : 160 days
Land Use : Permanent Grass
Slope and Aspect : 02 degrees SW

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 30	FSZL	10YR43 00	3	20	HR					
30- 58	FSZL	75YR44 00	0	60	HR				P	
58- 95	LMS	75YR44 00	0	62	HR				P	
95-120	GH	75YR44 00	0	0					P	

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

Drought Grade : 3B APW : 73 mm MBW : -39 mm
APP : 72 mm MBP : -35 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

ADAS Ref: 1503/128/94

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
1	SU47151080	LEY		1	30		2	1	109	-4	121	12	3A				DR	2	IMP FLINTS 70
1P	SU47400965	FRT			60		1	1	111	-2	102	-7	3A				DR	3A	ISTS100 TRENCH
2	SU47001093	LEY	SW	1	30	60	3	2	117	4	114	5	3A				TS	3B	3A/3B IMP90
3	SU47051100	LEY	SW	1	65		1	1	184	71	150	41	1					1	BORDER 2 WE
4	SU47431078	LEY	NE	2	75		1	1	149	36	144	35	1					1	
5	SU47201068	LEY	SE	1					097	-16	099	-10	3A				DR	3A	IMP FLINTS 55
6	SU47181058	LEY	SE	1	28		1	1	133	20	120	11	2				TS	3A	BORDER 2
7	SU47351051	LEY	S	1	68	68	2	2	118	5	118	9	3A				WD	2	IMP FLINTS 90
8	SU47331030	LEY	SE	3	80	100	1	1	188	75	143	34	1					1	
9	SU47450977	LEY	W	1	45	90	1	1	121	8	123	14	2				DR	2	IRRIGATED I85
10	SU47500938	FAL			50		1	1	092	-21	100	-9	3B				DR	3A	IMP FLINTS 70
11	SU47250935	LEY	W	1			1	1		0		0					TS	3B	IMP FLINTS 30
12	SU47550765	RGR	W	1			1	1	144	31	128	19	1					1	IMP FLINTS 100
13	SU47680765	RGR			45		1	1	173	60	138	29	1					1	
14	SU47800765	RGR			65		1	1	165	52	129	20	1					1	FINE SAND
15	SU47980766	RGR	E	1			1	1	140	27	124	15	2					1	IMP FLINTS 100
16	SU48100767	RGR	E	3			1	1	078	-35	078	-31	3B				DR	3B	IMP FLINTS 50
17	SU46901099	PLO	W	1	0	25	4	3B	055	-58	055	-54	4				TS	3B	IMP 50 WE=3B
18	SU46851093	PLO	W	1	25	35	4	3B	085	-28	094	-15	3B				WD	3B	IMP FLINTS 75
19	SU46901081	PLO	W	3	50		1	1	149	36	117	8	2				DR	2	BORDER 1/2
20	SU46951070	PLO	SW	1			1	1	089	-24	096	-13	3B				DR	3A	IMP FLINTS 65
21	SU46801063	PLO	W	1	75	100	1	1	153	40	123	14	1					1	
22	SU46851040	PLO			60	80	1	1	147	34	123	14	1					1	
23	SU47651044	MZE	W	1	70		1	1	146	33	116	7	2				DR	2	
24	SU47651068	MZE	W	1	35	55	3	2	109	-4	088	-21	3A				DR	3A	TS=3A ALSO
25	SU47681055	MZE	W	1			1	1	110	-3	119	10	3A				DR	2	IMP FLINTS 75
26	SU47581048	MZE	W	1			1	1	088	-25	091	-18	3B				DR	3A	IMP FLINTS 60
27	SU47501045	MZE	W	1	50	50	3	2	114	1	115	6	3A				WD	2	IMP FLINTS 85
28	SU47471095	RGR	S	2	30	70	4	3B		0		0					WE	3B	WCIV-BOGGY
29	SU47600930	FRT	W	1	60	60	2	2	118	5	095	-14	3A				DR	3A	
30	SU47730929	RGR	E	6			1	1	047	-66	047	-62	4				DR	3A	IMP FLINTS 50
31	SU47800933	RGR	E	1	35		1	1	145	32	113	4	2				DR	2	
32	SU47870940	PGR	E	2	29	35	4	3A	108	-5	112	3	3A				WD	3A	IMP FLINTS 80
33	SU47700940	PGR	E	5	55	55	3	3A	113	0	105	-4	3A				WE	3A	IMP FLINTS 100
34	SU47650940	PGR	E	2			1	1	088	-25	088	-21	3B				DR	3A	IMP FLINTS 50
35	SU47620900	SAS					1	1	078	-35	078	-31	3B				DR	3A	IMP FLINTS 50
36	SU47600915	SAS					1	1	069	-44	069	-40	3B				DR	3A	IMP FLINTS 45
37	SU47600922	SAS			75	75	2	1	128	15	104	-5	2				TS	3A	V.WET 55-75
38	SU47680892	FRT			50	65	2	2	138	25	119	10	2				WD	2	WET 50-65
39	SU47570889	FRT					1	1	064	-49	061	-48	3B				DR	3B	IMP FLINTS 40
40	SU47700890	FRT	S	1	55	55	3	3A		0		0					WE	3A	V.WET 30-55
41	SU47500882	PLO			45	65	2	1	141	28	135	26	2				DR	2	

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
42	SU47680881	PGR			65		1	1	158	45	122	13	1					1	
43	SU47700872	PGR			55	55	3	2		0		0					WE	2	
44	SU47500872	PGR			50	100	1	1	165	52	129	20	1					1	
45	SU47501115	PGR	S	2	25		4	3B	080	-33	083	-26	3B				WE	3B	WCIV-BOGGY 15
46	SU47421102	RGR	S	1	30	50	4	3B		0		0					WE	3B	WCIV-BOGGY
47	SU47331107	RGR			30	45	4	3B		0		0					WE	3B	WCIV-BOGGY
48	SU47560957	PLO					1	1	065	-48	065	-44	3B				DR	3A	IMP FLINTS 45
49	SU47350962	FRT			42	75	2	2	112	-1	111	2	3A				DR	3A	IMP FLINTS 90
50	SU47400965	FRT			60		2	2	107	-6	101	-8	3A				DR	3A	IMP FLINTS 100
51	SU47520952	PLO			35	70	3	2	103	-10	101	-8	3A				DR	3A	IMP FLINTS 90
52	SU47300953	PGR			35	70	3	2	097	-16	103	-6	3A				DR	3A	IMP FLINTS 75
53	SU47510790	RGR			90		1	1	176	63	140	31	1					1	
54	SU47680809	RGR			70		1	1	161	48	125	16	1					1	
55	SU47820812	RGR					1	1	100	-13	109	0	3A				DR	3A	IMP FLINTS 65
56	SU47930799	RGR	SE	2			1	1	080	-33	081	-28	3B				DR	3B	IMP FLINTS 55
57	SU48050786	RGR	NW	2	65		1	1	114	1	118	9	3A				DR	3A	IMP FLINTS 80
58	SU48230786	PGR	E	2	55	55	3	2		0		0					WE	2	
59	SU46381055	HOR	W	1			1	1		0		0					TS	3B	IMP FLINTS 25
60	SU46401066	PGR	W	2	50		1	1	148	35	130	21	1					1	SL GLEY 25
61	SU46391077	PGR	E	1			1	1	045	-68	045	-64	4				DR	3B	IMP FLINTS 25
62	SU46531090	PGR	E	1	35	50	3	3A		0		0					WE	3A	
63	SU46481068	HOR	W	1			1	1	069	-44	069	-40	3B				DR	3B	IMP FLINTS 37
64	SU47071108	PGR	S	2			1	1	057	-56	057	-52	4				DR	3B	IMP FLINTS 35
65	SU47101046	PGR	S		60		1	1	165	52	129	20	1					1	
66	SU47151030	PGR			45	60	2	1	138	25	130	21	2					1	IMP FLINTS 100
67	SU46801106	PGR	N	1	28		2	2		0		0					WE	2	
68	SU46811107	PGR	N		0	25	4	3B		0		0					WE	3B	IMP FLINTS 55
69	SU46951114	PGR	S	2			1	1	063	-50	063	-46	3B				DR	3B	IMP FLINTS 35

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-30	fszl	10YR42 00						2	0	HR	4							
	30-45	fszl	10YR53 43	10YR56 00	C			Y	0	0	HR	4		M					
	45-65	mzcl	10YR53 00	10YR58 00	C			Y	0	0	HR	4		M					
	65-70	hcl	10YR46 00		M			Y	0	0	HR	40		M					IMP FLINTS 70
1P	0-40	fszl	10YR41 42						8	0	HR	18							
	40-60	mzcl	10YR54 00						0	0	HR	40		M					
	60-100	sc	25Y 61 00	10YR58 00	M			Y	0	0	HR	50		M					IMP FLINTS 100
2	0-30	fszl	10YR42 00						15	1	HR	20							
	30-60	fszl	10YR53 54		C			Y	0	0	HR	25		M					WET 30-60
	60-90	c	10YR58 64	75YR58 00	M			Y	0	0	HR	5		P			Y		IMP FLINTS 90
3	0-30	fszl	10YR42 43						1	0	HR	1							
	30-65	zl	10YR54 00						0	0	HR	1		M					
	65-70	hzcl	10YR54 00	10YR54 00	C		10YR53 00	S	0	0	HR	1		M					
	70-120	hzcl	10YR54 00	10YR56 00	C		10YR53 00	Y	0	0	HR	1		M					
4	0-30	fszl	10YR42 43						3	0	HR	3							
	30-75	fszl	10YR44 00						0	0	HR	5		M					V.WET 50+ QSLGLEYED
	75-90	hzcl	10YR54 53	10YR56 00	C		10YR53 00	Y	0	0	HR	2		P					
5	0-30	fszl	10YR42 00						10	0	HR	15							
	30-55	fszl	10YR44 00						0	0	HR	20		M					IMP FLINTS 55
6	0-28	fszl	10YR32 00						10	1	HR	15							
	28-40	fszl	10YR53 62	75YR44 00	C			Y	0	0	HR	25		M					IMP FLINTS 90
	40-90	fszl	10YR62 53		C			Y	0	0	HR	25		M					V.WET-GROUNDWATER?
7	0-30	mzcl	10YR42 43						3	0	HR	5							
	30-68	mzcl	10YR54 00						0	0	HR	5		M					
	68-90	c	10YR53 54	75YR46 00	C			Y	0	0	HR	10		P			Y		IMP FLINTS 90
8	0-30	fszl	10YR43 00						3	0	HR	5							
	30-80	fszl	10YR44 00						0	0	HR	5		M					
	80-100	fszl	10YR53 00	10YR56 00	C			Y	0	0	HR	5		M					
	100-120	c	10YR62 00	10YR58 00	M			Y	0	0	HR	5		P			Y		
9	0-35	mszl	10YR42 43						2	0	HR	3							
	35-45	mszl	10YR54 56						0	0	HR	3		M					
	45-80	hzcl	10YR53 66	10YR58 00	C			Y	0	0	HR	2		M					
	80-85	c	10YR63 00	75YR56 00	C			Y	0	0	HR	50		M			Y		IMP FLINTS 85
10	0-35	fszl	10YR42 00						5	0	HR	17							
	35-50	mzcl	10YR54 00						0	0	HR	35		M					
	50-70	hzcl	10YR53 54		C			Y	0	0	HR	50		M					IMP FLINTS 70
11	0-30	fszl	10YR42 00						17	1	HR	23							IMP FLINTS 30

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
12	0-20	fszl	10YR42 00						0	0	HR	1							
	20-70	mzcl	10YR54 44						0	0	HR	1		M					
	70-100	hzcl	10YR54 00						0	0	HR	1		M					IMP FLINTS 100
13	0-20	fszl	10YR42 00						0	0	HR	1							
	20-45	fszl	10YR54 00						0	0	HR	1		M					
	45-70	mzcl	10YR54 53						0	0	HR	1		M					
	70-120	hzcl	10YR54 53			F			0	0	HR	1		M					
14	0-23	fszl	10YR42 00						0	0	HR	1							
	23-65	mzcl	10YR54 44						0	0	HR	1		M					
	65-120	mzcl	10YR53 00	75YR58 00	C			Y	0	0	HR	1		M					
15	0-25	mzcl	10YR33 00						0	0		0							
	25-50	mzcl	10YR43 00						0	0		0		M					
	50-100	hzcl	10YR54 00						0	0		0		M					IMP FLINTS 100
16	0-25	mszl	10YR32 00						7	0	HR	10							
	25-50	mszl	10YR42 00						0	0	HR	20		M					IMP FLINTS 50
17	0-25	mzcl	10YR42 00	10YR46 00	C			Y	20	0	HR	30							EST. STONES V.WET
	25-50	c	25Y 63 00	10YR68 00	M			Y	0	0	HR	40		P		Y			IMP FLINTS 50
18	0-25	mcl	10YR42 00						10	0	HR	15							
	25-35	hcl	25Y 52 00	10YR58 00	M			Y	0	0	HR	15		M					
	35-70	c	25Y 61 00	10YR68 00	M			Y	0	0	HR	10		P		Y			
	70-75	c	25Y 61 00	10YR68 00	M			Y	0	0	HR	50		P		Y			IMP FLINTS 75
19	0-28	mzcl	10YR42 00						0	0	HR	5							
	28-50	mcl	10YR44 54						0	0	HR	5		M					
	50-65	mzcl	10YR54 53	10YR56 00	C			Y	0	0		0		M					
	65-120	hzcl	10YR53 00	10YR56 00	C			Y	0	0	HR	10		M					
20	0-25	mzcl	10YR42 00						3	0	HR	10							
	25-55	mcl	10YR44 54						0	0	HR	15		M					
	55-65	mcl	10YR53 54						0	0	HR	30		M					IMP FLINTS 65
21	0-30	mzcl	10YR42 43						0	0	HR	3							BRICKEARTH
	30-60	mzcl	10YR54 00	10YR56 00	F				0	0		0		M					
	60-75	hzcl	10YR54 53	10YR56 00	F		00MN00 00		0	0		0		M					
	75-100	hzcl	10YR52 00	10YR58 00	C			Y	0	0		0		M					
	100-120	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	5		P		Y			
22	0-30	mzcl	10YR42 00						0	0	HR	3							BRICKEARTH TO 80
	30-60	hzcl	10YR54 56						0	0		0		M					
	60-80	hzcl	10YR52 53	10YR56 00	C			Y	0	0		0		M					
	80-120	c	10YR52 00	10YR58 00	M			Y	0	0		0		P		Y			

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
23	0-25	fszl	10YR41 00						5	0	HR	15						
	25-40	mcl	10YR41 42						0	0	HR	15		M				
	40-70	mzcl	10YR54 00	10YR56 00	F				0	0	HR	5		M				
	70-100	mszl	10YR43 00	10YR58 00	M			Y	0	0	HR	20		M				
	100-120	hcl	10YR53 00	75YR58 00	M			Y	0	0	HR	20		M				
24	0-35	msl	10YR31 00						12	0	HR	25						
	35-55	msl	25Y 53 00	10YR68 00	M			Y	0	0	HR	20		M				V.WET 30-55
	55-90	c	25Y 62 00	75YR58 00	M			Y	0	0	HR	10		P		Y		DRY SPL CLAY
	90-120	c	25Y 72 00	05YR58 00	M			Y	0	0	HR	15		P		Y		SURFACE WATER PROB
25	0-35	mzcl	10YR42 00						2	0	HR	6						
	35-65	mzcl	10YR54 00						0	0	HR	2		M				
	65-75	mzcl	10YR53 54						0	0	HR	25		M				IMP FLINTS 75
26	0-35	fszl	10YR31 00						12	0	HR	22						
	35-55	fszl	10YR53 00						0	0	HR	40		M				
	55-60	fszl	10YR53 00						0	0	HR	60		M				IMP FLINTS 60 QGH
27	0-30	fszl	10YR53 00						0	0	HR	3						
	30-40	fsl	10YR54 00						0	0		0		M				
	40-50	lms	10YR54 00						0	0		0		M				
	50-85	c	10YR52 54	10YR58 00	C			Y	0	0		0		P		Y		IMP FLINTS 85 QSPL
28	0-30	fszl	10YR32 31						0	0	HR	5						WET FLUSHES IN AREA
	30-50	mzcl	10YR52 00	10YR56 00	C			Y	0	0	HR	5		M				
	50-70	mzcl	25Y 52 00	10YR58 00	M			Y	0	0	HR	10		M				
	70-120	hcl	25Y 62 00	10YR58 00	M			Y	0	0	HR	15		P		Y		
29	0-35	mcl	10YR42 00						8	0	HR	20						SURFACE-V.STONY
	35-60	msl	10YR54 00						0	0	HR	15		M				
	60-120	c	25Y 63 00	05YR58 00	M		75YR58 00	Y	0	0	HR	10		P		Y		
30	0-30	msl	10YR41 00						10	0	HR	25						
	30-50	lms	10YR56 00						0	0	HR	50		M				IMP FLINTS 50
31	0-35	mszl	10YR42 00						2	0	HR	6						
	35-65	mszl	10YR52 51	10YR68 00	C		00MN00 00	Y	0	0	HR	15		M				
	65-90	msl	10YR52 00	10YR68 00	C		00MN00 00	Y	0	0	HR	20		M				
	90-120	msl	25Y 53 00	10YR68 00	M			Y	0	0	HR	30		M				
32	0-29	fszl	10YR42 00						1	0	HR	6						
	29-35	mcl	10YR52 00	10YR56 00	M			Y	0	0	HR	10		M				
	35-75	c	25Y 53 00	10YR68 00	M		00MN00 00	Y	0	0	HR	5		P		Y		
	75-80	hcl	10YR63 00	10YR68 00	C		00MN00 00	Y	0	0	HR	30		M				IMP FLINTS 80
33	0-33	mcl	10YR42 00						3	0	HR	10						
	33-55	mcl	10YR54 00						0	0	HR	5		M				
	55-95	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	10		P		Y		
	95-100	c	25Y 52 51	10YR58 00	M			Y	0	0	HR	25		P		Y		IMP FLINTS 100

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	
34	0-35	fszl	10YR42 00						5	0	HR	12							
	35-48	mcl	10YR54 00						0	0	HR	15		M					
	48-50	mcl	10YR54 00						0	0	HR	30		M					IMP FLINTS 50
35	0-35	fszl	10YR42 00						14	0	HR	25							SURFACE-V.STONY
	35-50	fszl	10YR56 00						0	0	HR	40		M					IMP FLINTS 50
36	0-30	fszl	10YR41 00						12	0	HR	25							SURFACE-V.STONY
	30-45	mcl	10YR44 54						0	0	HR	25		M					IMP FLINTS 45
37	0-30	fszl	10YR42 00						10	0	HR	22							SURFACE-V.STONY
	30-55	mcl	10YR54 00						0	0	HR	20		M					
	55-75	mcl	10YR54 00	10YR56 00	F				0	0	HR	20		M					
	75-120	c	25Y 62 00	75YR58 00	M			Y	0	0	HR	5		P			Y		
38	0-30	mzcl	10YR42 00						0	0	HR	3							
	30-50	mzcl	10YR43 00						0	0	HR	2		M					
	50-65	mzcl	10YR52 00	10YR58 00	C			Y	0	0	HR	5		M					WET
	65-120	c	25Y 53 00	10YR58 00	M			Y	0	0	HR	10		P			Y		DRY
39	0-35	mszl	10YR42 00						12	0	HR	25							SURFACE-V.STONY
	35-40	msl	10YR46 00						0	0	HR	40		M					IMP FLINTS 40
40	0-30	mzcl	10YR43 00						3	0	HR	8							V.WET
	30-55	mzcl	10YR44 00	10YR46 00	F				0	0	HR	15		M					SATURATED
	55-80	c	10YR53 00	10YR58 00	M			Y	0	0	HR	10		P			Y		DRY
41	0-28	fszl	10YR43 00						0	0	HR	5							
	28-45	fszl	10YR44 00	10YR56 00	F				0	0		0		M					
	45-65	hzcl	10YR53 52	10YR56 00	C			Y	0	0		0		M					
	65-100	c	25Y 53 00	10YR58 00	M			Y	0	0	HR	5		P			Y		
42	0-30	mzcl	10YR43 00						0	0	HR	5							
	30-65	mzcl	10YR54 52	10YR56 00	F				0	0		0		M					
	65-120	hzcl	10YR53 52	10YR58 00	C			Y	0	0		0		M					
43	0-30	fszl	10YR42 43						0	0	HR	3							
	30-55	mzcl	10YR44 52	10YR56 00	F				0	0		0		M					
	55-90	c	10YR52 53	10YR56 00	C			Y	0	0		0		P			Y		
	90-120	c	10YR52 53	10YR56 00	C			Y	0	0	HR	10		P			Y		
44	0-25	fszl	10YR42 43						0	0	HR	5							
	25-50	mzcl	10YR42 43	10YR56 00	F				0	0		0		M					
	50-60	mzcl	10YR52 53	10YR56 00	C			Y	0	0		0		M					
	60-100	hzcl	10YR52 00	10YR56 00	C			Y	0	0		0		M					
	100-120	hcl	10YR52 00	10YR56 00	C			Y	0	0		0		M					
45	0-25	fszl	10YR31 00						0	0	HR	15							
	25-40	mzcl	10YR63 00	10YR66 00	C			Y	0	0	HR	25		M					
	40-55	mzcl	10YR63 00	10YR66 00	C			Y	0	0	HR	40		M					IMP FLINTS 55

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
46	0-30	fsz1	10YR31 00						0	0	HR	10							
	30-50	mzc1	25Y 63 00	10YR58 00	M			Y	0	0	HR	20		M					
	50-80	c	25Y 71 00	10YR68 00	M		05YR58 00	Y	0	0	HR	10		P			Y		IMP FLINTS 80
47	0-30	fs1	10YR42 00	10YR56 00	F				0	0	HR	5							
	30-45	fsz1	10YR52 00	10YR66 00	C			Y	0	0		0		M					
	45-65	hc1	25Y 63 00	10YR58 00	M			Y	0	0	HR	5		M					
	65-90	c	25Y 63 00	05YR58 00	M			Y	0	0	HR	15		P			Y		IMP FLINTS 90
48	0-33	mc1	10YR42 00						5	0	HR	12							
	33-45	mc1	10YR43 00	10YR56 00	F				0	0	HR	40		M					IMP FLINTS 45
49	0-42	fsz1	10YR41 42						9	0	HR	18							
	42-75	mzc1	10YR53 63	10YR68 00	C			Y	0	0	HR	30		M					
	75-85	c	25Y 61 00	10YR58 00	M			Y	0	0	HR	25		P			Y		
	85-90	c	25Y 61 00	10YR58 00	M			Y	0	0	HR	40		P			Y		IMP FLINTS 90
50	0-40	fsz1	10YR42 00						9	0	HR	18							
	40-60	mzc1	10YR44 00						0	0	HR	40		M					
	60-100	sc	25Y 61 00	10YR58 00	M			Y	0	0	HR	50		P					IMP FLINTS 100
51	0-35	fsz1	10YR42 00						10	0	HR	20							
	35-60	mc1	25Y 53 00	10YR58 00	M			Y	0	0	HR	30		M					
	60-70	hc1	25Y 53 00	10YR58 00	M			Y	0	0	HR	40		M					
	70-90	c	25Y 62 00	75YR58 00	M		05YR58 00	Y	0	0	HR	30		P			Y		IMP FLINTS 90
52	0-35	fsz1	10YR42 00	10YR56 00	F				7	0	HR	20							
	35-70	hc1	25Y 53 00	10YR56 58	M			Y	0	0	HR	30		M					
	70-75	c	25Y 61 00	75YR58 00	M		05YR58 00	Y	0	0	HR	25		P			Y		IMP FLINTS 75
53	0-35	z1	10YR43 00						0	0		0							
	35-70	mzc1	10YR54 00	10YR56 00	F				0	0		0		M					
	70-90	mzc1	10YR54 52	10YR56 00	F				0	0		0		M					
	90-120	hzc1	10YR54 52	10YR56 00	C			Y	0	0		0		M					
54	0-35	mzc1	10YR44 00						0	0	HR	1							
	35-55	mzc1	10YR44 54						0	0	HR	1		M					
	55-70	mzc1	10YR54 52						0	0		0		M					
	70-90	mzc1	10YR53 52	10YR56 00	C			Y	0	0		0		M					
	90-120	hzc1	25Y 53 00	10YR58 00	C		00MN00 00	Y	0	0		0		M					
55	0-35	mzc1	10YR43 00						1	0	HR	5							
	35-60	mzc1	10YR44 54						0	0	HR	5		M					
	60-65	mzc1	10YR54 56						0	0	HR	40		M					IMP FLINTS 65
56	0-30	fsz1	10YR41 00						6	0	HR	12							
	30-50	msz1	10YR42 00						0	0	HR	45		M					
	50-55	ms1	10YR43 00						0	0	HR	60		M					IMP FLINTS 55

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
57	0-30	mzcl	10YR41 42						2	0	HR	10							
	30-50	mzcl	10YR43 00						0	0	HR	5		M					
	50-65	mzcl	10YR53 54	10YR56 00	F				0	0		0		M					
	65-75	mszl	10YR53 00	10YR58 00	C			Y	0	0		0		M					
	75-80	mzcl	10YR53 00	10YR58 00	C			Y	0	0	HR	30		M					IMP FLINTS 80
58	0-30	fszl	10YR42 00						4	0	HR	10							
	30-55	fszl	10YR42 43						0	0	HR	15		M					
	55-75	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	10		M		Y			
	75-120	c	25Y 61 00	10YR58 00	M		05YR58 00	Y	0	0	HR	10		P		Y			
59	0-25	mszl	10YR32 00						16	0	HR	25							IMP FLINTS 25
60	0-25	fszl	10YR42 00						1	0	HR	6							
	25-50	mzcl	10YR54 00	10YR56 00	C			S	0	0		0		M					
	50-75	fsl	10YR52 00	10YR58 00	M			Y	0	0		0		M					
	75-120	lms	10YR52 00	10YR58 00	M			Y	0	0		0		M					
61	0-25	fszl	10YR31 00						10	0	HR	20							IMP FLINTS 25
62	0-35	mzcl	10YR41 00						0	0	HR	5							
	35-50	hzcl	10YR52 00	10YR56 00	C			Y	0	0		0		M					
	50-80	c	25Y 53 00	10YR58 00	M			Y	0	0	HR	2		P		Y			
63	0-35	fszl	10YR31 00						8	0	HR	15							
	35-37	fszl	10YR34 00						0	0	HR	40		M					IMP FLINTS 37
64	0-30	fszl	10YR31 00						12	0	HR	25							
	30-35	fszl	10YR44 00						0	0	HR	35		M					IMP FLINTS 35
65	0-22	fszl	10YR43 00						0	0	HR	2							
	22-45	mzcl	10YR44 54	10YR56 00	F				0	0		0		M					
	45-60	mzcl	10YR54 00	10YR56 00	C			S	0	0		0		M					
	60-120	hzcl	10YR53 52	10YR56 00	C			Y	0	0		0		M					
66	0-30	fszl	10YR43 00						0	0		0							
	30-45	mszl	10YR54 00	10YR56 00	F				0	0		0		M					
	45-60	mszl	10YR54 00	10YR56 00	C			S	0	0		0		M					
	60-95	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	2		P		Y			
	95-100	c	25Y 52 00	10YR58 00	M			Y	0	0	HR	20		P		Y			IMP FLINTS 100
67	0-28	mzcl	10YR42 00						0	0	HR	1							
	28-65	mzcl	10YR53 52	10YR68 00	M			Y	0	0		0		M					
	65-120	hzcl	25Y 53 52	10YR68 00	M			Y	0	0		0		M					
68	0-25	mzcl	25Y 41 00	10YR58 00	M			Y	0	0		0							
	25-50	c	25Y 61 00	10YR58 00	M			Y	0	0		0		P		Y			
	50-55	c	05Y 61 00	10YR58 00	M			Y	0	0	HR	40		P		Y			IMP FLINTS 55

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
69	0-30	fsz1	10YR41 42						7	0	HR	15							
	30-35	fsz1	10YR41 42						0	0	HR	40		M					IMP FLINTS 35