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Hampshire Minerals and
Waste Disposal Plan
Omission site 4 : Hamble Halt, Hound
Agricultural Land Classification
ALC Map and Report
June 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

HAMPSHIRE MINERALS AND WASTE DISPOSAL PLAN OMISSION SITE 4 : HAMBLE HALT, HOUND

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 Hampshire. The work forms part of MAFF's statutory input to the Hampshire Minerals and Waste Disposal Plan.
- 1.2 Omission site 4 comprises approximately 24 hectares of land bordered to the east by Hamble Lane and to the west by Hound Road, Hound, south Hampshire. An Agricultural Land Classification, (ALC), survey was carried out during June 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 27 borings and two 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.
- 1.3 At the time of the survey most of the land was in permanent pasture. Land use in the field north of Hamble Station was a mixture of potatoes, ley, grassland, beans and ploughed land. The farm buildings mapped consist of horse stables. The urban mapped adjacent to the farm buildings comprises excavated land which has been filled with rubble and rubbish. The urban mapped south of the track comprises a concrete shed.
- 1.4 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 1:5,000. 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	16.9	71.0	72.5
3a	5.3	22.3	22.8
3b	1.1	4.6	<u>4.7</u>
Urban	0.1	0.4	100% (23.3 ha)
Farm Buildings	<u>0.4</u>	<u>1.7</u>	
Total area of site	<u>23.8</u>	<u>100%</u>	

- 1.5 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.

- 1.6 The agricultural land surveyed has been classified as a mixture of Grade 2 (very good quality) and Subgrades 3a (good quality land) and 3b (moderate quality land). Soil droughtiness is the predominant limitation, occasionally in combination with minor soil wetness limitations. Moisture availability for crops is determined by the depth to underlying gravelly deposits and will affect crop growth and yields, with the deeper profiles generally producing higher and less variable crop yields than on the land of lower quality which coincides with shallower soils.

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 (degree days Jan-June), as a measure of the relative warmth of a locality.
- 2.3 No local climatic factors such as exposure or frost risk are believed to affect the site.

Table 2 : Climatic Interpolations

Grid Reference	SU468084	SU472086
Altitude (m)	20	23
Accumulated Temperature (degree days, Jan-June)	1534	1531
Average Annual Rainfall (mm)	788	791
Field Capacity (days)	161	162
Moisture Deficit, Wheat (mm)	114	114
Moisture Deficit, Potatoes (mm)	110	110
Overall Climatic Grade	1	1

3. Relief

- 3.1 The survey area occupies very gently undulating land falling from c.24m AOD in the north of the site to c.20m AOD along the southern boundary of the site. Neither gradient nor relief impose any limitation to agricultural use.

4. **Geology and Soil**

- 4.1 British Geological Survey (1987), Sheet 315, Southampton shows the entire site to be underlain by older river gravels, terraces 2 and 3.
- 4.2 The published Soil Survey map (SSEW, 1983, 1:250,000) shows soils of the Hamble 2 association. These soils are described as 'deep stoneless well drained silty soils and similar soils affected by groundwater, over gravel locally. Usually flat land' (SSEW, 1983).
- 4.3 Detailed field examination found well or moderately well drained soils overlying gravelly deposits at varying depths.

5. **Agricultural Land Classification**

- 5.1 Table 1 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 Very good quality land is limited by a minor soil droughtiness restriction, occasionally in combination with minor soil wetness limitations. Profiles typically comprise non-calcareous medium silty clay loam topsoils which are underlain by medium or heavy silty clay loams or clay loams. Topsoils range from being *stoneless to slightly stony, containing between c.0-4% flints > 2cm by volume and c.0 -15% total flints by volume*. Subsoils are of similar stoniness though often become very stony, containing c.35-50% total flints at c.60-100 cm depth. The interaction between soil textures and profile stone contents at this site imparts a minor reduction in profile available water. Such land may have slightly reduced yield potential as a result. Profiles within this mapping unit are generally well drained (Wetness Class I) with occasional gleying at c.45-60 cm depth. However, some profiles are moderately well drained (Wetness Class II) due to slowly permeable clay at c.75-80 cm depth acting to slightly impede drainage. This results in gleying at c.40-45 cm depth. This land may have slightly restricted flexibility of cropping, stocking and cultivations. Pits 1 and 2 typify this mapping unit.

Subgrade 3a

- 5.4 Good quality agricultural land is limited by soil droughtiness. Profiles typically comprise non-calcareous medium silty clay loam topsoils over medium or heavy silty clay loams or clay loam subsoils, though occasional stoneless coarse textured profiles also occur. Profiles are generally well drained (Wetness Class I). Topsoils are generally slightly stony, containing c.1-3% flints >2cm by volume and 8-15% total flints by volume. Upper subsoils are moderately stony, containing c.25-30%

total flints by volume and pass into very stony subsoils, containing c.40-50% total flints by volume at c.55 cm depth. The interaction between these soil textures and profile stone contents within these relatively shallow profiles at this site imparts a moderate reduction in profile available water. This land may have reduced yield potential as a result.

Subgrade 3b

- 5.5 Moderate quality land is restricted by a significant soil droughtiness limitation associated with shallow profiles over gravelly deposits. Medium silty clay loam topsoils are underlain by subsoils which become sandier and more stony with depth. Topsoils are slightly stony, containing c.4% flints > 2 cm by volume and 10% total flints by volume. These are directly underlain by moderately to very stony upper subsoils, containing c.30-40% total flints by volume which pass into very stony lower subsoils, containing c.55-65% total flints by volume at c.40 cm depth. The coarse textured subsoils within such profiles retain little water for extraction by crop roots, and this combined with the high profile stone contents, means that profile available water is significantly restricted in this mapping unit given the prevailing climatic regime. Consequently, this land is likely to have lowered and variable crop yields at this locality.

ADAS Ref: 1503/110/94
MAFF Ref: EL15/107

Resource Planning Team
Guildford Statutory Group
ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1987) Sheet No. 315, Southampton, 1:50,000 (Solid and 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), Climatological Data for Agricultural Land Classification.

Soil Survey of England and Wales (1983), Sheet No. 6, Soils of South East England and accompanying legend.

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, 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 (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.

¹The 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 Abbreviations - Explanatory Note

Soil Pit Descriptions

Database Printout - Boring Level Information

Database Printout - Horizon Level Information

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

- GRID REF** : national 100 km grid square and 8 figure grid reference.
- 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		
- GRDNT** : Gradient as estimated or measured by a hand-held optical clinometer.
- GLEYSPL** : Depth in centimetres (cm) to gleying and/or slowly permeable layers.
- AP (WHEAT/POTS)** : Crop-adjusted available water capacity.
- MB (WHEAT/POTS)** : Moisture Balance. (Crop adjusted AP - crop adjusted MD)
- DRT** : Best grade according to soil droughtiness.
- If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

MREL : Microrelief limitation	FLOOD : Flood risk	EROSN : Soil erosion risk
EXP : Exposure limitation	FROST : Frost prone	DIST : Disturbed land
CHEM : Chemical limitation		
- LIMIT** : The main limitation to land quality. The following abbreviations are used.

OC : Overall Climate	AE : Aspect	EX : Exposure
FR : Frost Risk	GR : Gradient	MR : Microrelief
FL : Flood Risk	TX : Topsoil Texture	DP : Soil Depth
CH : Chemical	WE : Wetness	WK : Workability
DR : Drought	ER : Erosion Risk	WD : Soil Wetness/Droughtiness
ST : Topsoil Stoniness		

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. **GLEYS** : 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 **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

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 appropriate 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 MINS OM SITE 4 Pit Number : 1P

Grid Reference: SU47000830 Average Annual Rainfall : 0 mm
 Accumulated Temperature : 0 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

SOIL PIT DESCRIPTION

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

Grid Reference: SU47300850 Average Annual Rainfall : 0 mm
 Accumulated Temperature : 0 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

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	SU47300870	PGR		045 080	2	2	157	43 121	11	1			WE	2	BORDER WC I/II
1P	SU47000830	PGR			1	1	132	18 118	8	2			DR	2	PIT DUG TO 75
2	SU47000860	PGR			1	1	94	-20 103	-7	3A			DR	2	IMP65 2 to 120
2P	SU47300850	PGR		060 100	1	1	156	42 119	9	2			DR	2	SL. GLEYED 28
3	SU47110860	PGR		055	1	1	128	14 124	14	2				1	IMP90 1 to 120
4	SU47200860	PGR			1	1	160	46 123	13	1				1	SL. GLEYED 55
5	SU47300860	PGR		042	1	1	113	-1 122	12	3A			DR	2	IMP75 2 to 120
6	SU46900850	PGR		055 075	2	2	134	20 111	1	2			WD	2	
7	SU47000850	PGR	S	01	1	1	60	-54 60	-50	4			DR	3B	IMP40 3Bto 120
8	SU47100850	PGR			1	1	71	-43 71	-39	3B			DR	3B	IMP48 3Bto 120
9	SU47200850	PGR		055 100	1	1	153	39 124	14	1				1	
10	SU47300850	PGR		040	2	2	160	46 124	14	1			WE	2	BORDER WC I/II
11	SU46800840	PGR		050 078	2	2	129	15 108	-2	2			WD	2	Q SPL 50
12	SU46900840	PGR			1	1	131	17 121	11	2			DR	2	IMP100 2to 120
13	SU47000840	PGR			1	1	138	24 120	10	2			DR	2	IMP100 2to 120
14	SU47100840	PLO			1	1	96	-18 102	-8	3A			DR	2	IMP60 2 to 120
15	SU47200840	PLO			1	1	112	-2 121	11	3A			DR	2	IMP75 2 to 120
16	SU47300840	PLO			1	1	105	-9 117	7	3A			DR	2	IMP70 2 to 120
17	SU46800830	PGR		045	1	1	105	-9 118	8	3A			DR	2	IMP70 2 to 120
18	SU46900830	PGR			1	1	161	47 125	15	1				1	
19	SU47000830	PGR			1	1	108	-6 120	10	3A			DR	2	IMP70 2 to 120
20	SU47100830	POT	S	01 035	2	2	64	-50 64	-46	3B			DR	3A	IMP42 3Ato 120
21	SU47200830	LEY			1	1	81	-33 83	-27	3B			DR	3A	IMP53 3Ato 120
22	SU47300830	PLO			1	1	77	-37 79	-31	3B			DR	3A	IMP55 3Ato 120
23	SU47000820	PLO			1	1	91	-23 95	-15	3B			DR	3A	IMP60 3Ato 120
24	SU47100820	PLO	NE	01	1	1	113	-1 119	9	3A			DR	2	IMP78 2 to 120
25	SU47200820	PLO	S	02	1	1	101	-13 85	-25	3A			DR	3A	SANDY PROFILE
26	SU47300820	HRT	S	01	1	1	104	-10 114	4	3A			DR	2	IMP70 2 to 120
27	SU46820832	PGR			1	1	63	-51 63	-47	4			DR	3B	IMP38 3Bto 120

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/	SUBS	STR	POR	IMP	SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH							
1	0-30	mzc1	10YR43 00						1	0	HR	3						
	30-45	hzc1	10YR54 00	10YR68 00	M			S	0	0		0					M	
	45-80	hc1	10YR64 00	75YR58 68	M			Y	0	0		0					M	
	80-120	hc1	10YR53 00	10YR56 00	M			Y	0	0	HR	5					M	Y
1P	0-28	mzc1	10YR43 00						1	0	HR	3						
	28-52	hc1	10YR44 00						0	0		0	MDCSAB	FR	M			
	52-70	hc1	10YR56 00						0	0	HR	5	MDCSAB	FR	M			
	70-120	hc1	10YR56 00						0	0	HR	50					M	
2	0-30	mzc1	10YR43 00						3	0	HR	10						
	30-38	mzc1	10YR43 00						0	0	HR	15					M	
	38-45	mzc1	10YR44 00						0	0	HR	4					M	
	45-58	mzc1	10YR44 00						0	0	HR	10					M	
	58-65	mzc1	10YR44 00						0	0	HR	35					M	Impen stones 65cm
2P	0-28	mzc1	10YR43 00						0	0	HR	2	MDCSAB	FR				
	28-60	hc1	10YR54 00	10YR58 00	M			S	0	0		0	MDCSAB	FR	M			
	60-100	hc1	10YR53 00	10YR58 00	M			Y	0	0		0	MDCSAB	FR	M			
	100-120	hc1	10YR52 00	10YR58 00	M			Y	0	0	HR	8	WK CAB	FR	M	Y	Y	
3	0-30	mzc1	10YR43 00						0	0	HR	2						
	30-55	mzc1	10YR44 00	10					0	0		0					M	
	55-80	mzc1	10YR53 00	10YR56 00	C			Y	0	0		0					M	
	80-88	hzc1	10YR53 00	10YR56 00	C			Y	0	0	HR	10					M	
	88-90	c	10YR53 00	10YR56 00	C			Y	0	0	HR	30					M	Impen stones 90cm
4	0-30	mzc1	10YR42 00						0	0		0						
	30-55	mzc1	10YR44 54						0	0	HR	1					M	
	55-70	hc1	10YR54 00	10YR56 00	M			S	0	0		0					M	
	70-100	hzc1	10YR54 53						0	0		0					M	
	100-120	hc1	10YR53 00	10YR56 00	F			00MN00 00	0	0	HR	3					M	
5	0-28	mzc1	10YR43 00						0	0	HR	2						
	28-42	mzc1	10YR53 00	00MN00 00	C				0	0		0					M	
	42-55	mzc1	10YR53 00	75YR46 00	C			00MN00 00	Y	0	0	0					M	
	55-71	hc1	10YR53 00	10YR68 00	M			00MN00 00	Y	0	0	0					M	
	71-75	hc1	10YR52 00	10YR68 00	M			Y	0	0	HR	35					M	Impen stones 75cm
6	0-30	mzc1	10YR43 00						0	0	HR	10						
	30-45	mzc1	10YR43 00						0	0	HR	15					M	
	45-55	mzc1	10YR53 00						0	0	HR	15					M	
	55-75	mzc1	10YR53 00	10YR56 00	C			Y	0	0	HR	10					M	
	75-120	c	25Y 52 62	75YR58 00	M			05YR58 00	Y	0	0	HR	3				P	Y
7	0-27	mzc1	10YR42 00						4	0	HR	10						
	27-40	mc1	10YR44 00						0	0	HR	35					M	Re 1P 1503/127/94 Impen stones 40cm

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
				COL	ABUN	CONT		>2	>6	LITH						
8	0-32	mzc1	10YR42 43					2	0	HR	10					Re 1P 1503/127/94 Impen stones 48cm
	32-48	mc1	10YR43 00					0	0	HR	40	M				
9	0-28	mzc1	10YR43 00	10YR46 00	F			0	0	HR	2					
	28-55	mzc1	10YR56 00					0	0		0	M				
	55-100	hzc1	10YR53 00	10YR56 00	M		Y	0	0		0	M				
	100-120	c	10YR53 00	10YR56 00	M		Y	0	0	HR	5	P		Y		
10	0-30	mzc1	10YR42 00					0	0	HR	1					
	30-40	mzc1	10YR54 00	10YR56 00	C		S	0	0		0	M				
	40-60	hzc1	10YR54 00	10YR56 00	C		Y	0	0		0	M				
	60-120	hzc1	10YR53 00	10YR56 00	M		Y	0	0		0	M				
11	0-30	mzc1	10YR42 00					0	0	HR	10					
	30-50	mzc1	10YR44 00					0	0	HR	15	M				
	50-78	c	25Y 53 63	10YR58 68	M		Y	0	0	HR	15	M				
	78-120	c	25Y 63 00	10YR58 00	M		Y	0	0	HR	2	P		Y		
12	0-30	mzc1	10YR44 00					0	0	HR	5					
	30-50	mzc1	10YR44 54					0	0		0	M				
	50-75	hzc1	10YR54 53	10YR56 00	F	00MNO0 00		0	0	HR	3	M				
	75-95	c	10YR54 53	10YR56 00	F			0	0	HR	5	M				
	95-100	c	10YR54 53	10YR56 00	F			0	0	HR	30	M			Impen stones 100cm	
13	0-27	mzc1	10YR43 00					1	0	HR	4					
	27-46	mzc1	10YR44 00					0	0		0	M				
	46-75	hc1	10YR56 00					0	0		0	M				
	75-90	hc1	10YR56 00					0	0		0	M				
	90-100	hc1	10YR56 00					0	0	HR	5	M			Impen stones 100cm	
14	0-30	mzc1	10YR43 00					0	0	HR	3					
	30-40	mzc1	10YR43 00					0	0	HR	5	M				
	40-55	mzc1	10YR44 00					0	0	HR	5	M				
	55-60	mc1	10YR44 00					0	0	HR	30	M			Impen stones 60cm	
15	0-27	mzc1	10YR43 00					0	0	HR	2					
	27-45	mzc1	10YR44 00					0	0	HR	2	M				
	45-65	hzc1	10YR56 00					0	0		0	M				
	65-75	hc1	10YR56 00					0	0	HR	15	M			Impen stones 75cm	
16	0-30	mzc1	10YR43 00					1	0	HR	4					
	30-55	mzc1	10YR44 00					0	0	HR	5	M				
	55-70	mzc1	10YR44 00					0	0	HR	15	M			Impen stones 70cm	
17	0-30	mzc1	10YR42 00					0	0	HR	5					
	30-45	mzc1	10YR44 00					0	0	HR	2	M				
	45-65	mzc1	10YR53 00	10YR56 00	C		Y	0	0	HR	5	M				
	65-70	hzc1	10YR53 00	10YR56 00	C		Y	0	0	HR	30	M			Impen stones 70cm	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----				STRUCT/ CONSIST	SUBS			CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH	TOT		STR	POR	IMP	
18	0-30	mzc1	10YR42 43						0	0	0						
	30-55	mzc1	10YR44 00						0	0	0			M			
	55-75	hzc1	10YR56 00						0	0	0			M			
	75-120	hc1	10YR56 00						0	0	0			M			
19	0-29	mzc1	10YR43 00						1	0	HR	3					
	29-53	mzc1	10YR44 00						0	0		0		M			
	53-70	hc1	10YR56 00						0	0	HR	5		M			Impen stones 70cm
20	0-35	mzc1	10YR42 43						3	0	HR	15					
	35-42	mc1	10YR52 00	10YR56 00 C				Y	0	0	HR	40		M			Impen stones 42cm
21	0-30	mzc1	10YR42 00						2	0	HR	8					
	30-53	mzc1	10YR44 00						0	0	HR	25		M			Impen stones 53cm
22	0-30	mzc1	10YR42 00						3	0	HR	15					
	30-55	mzc1	10YR44 54	10YR56 00 F					0	0	HR	30		M			Impen stones 55cm
23	0-27	mzc1	10YR43 00						1	0	HR	4					
	27-45	mzc1	10YR44 00						0	0	HR	3		M			
	45-55	hc1	10YR56 00						0	0	HR	30		M			
	55-60	hc1	10YR56 00						0	0	HR	50		M			Impen stones 60cm
24	0-27	mzc1	10YR43 00						1	0	HR	4					
	27-40	mzc1	10YR44 00						0	0		0		M			
	40-68	hc1	10YR56 00						0	0		0		M			
	68-78	hc1	10YR56 54						0	0	HR	30		M			Impen stones 78cm
25	0-28	mc1	10YR42 00						2	0	HR	7					
	28-38	ms1	10YR44 00						0	0	HR	2		M			
	38-78	lms	25Y 56 00						0	0		0		M			
	78-120	ms	25Y 66 00						0	0		0		M			
26	0-30	mc1	10YR42 00						2	0	HR	4					
	30-50	mc1	10YR56 00						0	0		0		M			
	50-65	sc1	25Y 56 00	10YR68 00 F					0	0		0		M			
	65-70	cs1	25Y 56 00						0	0	HR	10		M			Impen stones 70cm
27	0-33	mzc1	10YR42 00						0	0	HR	10					Re 1P 1503/127/94
	33-38	mzc1	10YR42 00	10YR56 00 F					0	0	HR	30		M			Impen stones 38cm