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Hampshire Minerals Plan
Omission Site 13 Salisbury Road,
Bickton
ALC Map and Report
December, 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

HAMPSHIRE MINERALS PLAN OMMISSION SITE 13 LAND AT SALISBURY ROAD, BICKTON

1 Summary

- 1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of omission sites relating to the Hampshire Minerals and Waste Disposal Plan. This work forms part of MAFF's statutory input to the above plan.
- 1.2 Approximately 6 hectares of land relating to omission site 13 land adjoining Salisbury Road Bickton was surveyed in November 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 8 borings and 1 soil inspection pits were assessed 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 long term limitations on its use for agriculture.
- 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 survey the agricultural land use was a grass ley.
- 1.5 The distribution of the grades and subgrades is shown on the attached ALC map and the areas 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. This map supersedes any previous survey information for this site.

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site
3a	3.7	66.1
3b	1.9	33.9
Total	5.6ha	100%

- 1.6 A general description of the grades, subgrades and land use categories is provided in Appendix I. 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 land quality on the site has been classified as subgrade 3a (good quality land) and subgrade 3b (moderate quality land) The key limitation is one of soil droughtiness caused by comparatively shallow depths of soil over gravelly lower horizons Where soils are deeper over gravel and the profiles are less stony (ie to the north of the site) land is graded 3a elsewhere due to an increased risk of drought they are appropriately graded 3b

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 The combination of rainfall and temperature at this site mean that there is no overall limitation to agricultural land quality

Table 2 Climatic Interpolation

Grid Reference	SU154119
Altitude (m AOD)	28
Accumulated Temperature (°days Jan June)	1531
Average Annual Rainfall (mm)	867
Field Capacity Days	180
Moisture deficit wheat (mm)	108
Moisture deficit potatoes (mm)	101
Overall Climatic Grade	1

3 Relief

3 1 The site lies at an altitude of around 28m AOD There is a slight valley feature running roughly north to south through the centre of the site Nowhere on the site do relief or microtopography affect agricultural land quality

4 Geology and Soils

4 1 The published geology map for the site area (BGS Sheet 314 Ringwood 1976) shows the site to be underlain by valley gravels Mineral Assessment Report No 50 (IGS 1980) indicates that these comprise 4th level terrace deposits overlying Bagshot Beds

4.2 The published soils information for the area (SSEW 1983 Sheet 6 1 250 000) shows the site to comprise the Hucklesbrook Association described as well drained coarse loamy and some sandy soils commonly over gravel. Some similar permeable soils affected by groundwater. Usually on flat land (SSEW 1983). Detailed field examination found soils broadly consistent with those described above.

5 Agricultural Land Classification

5.1 Table 1 provides 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 is shown on the attached sample point map.

Subgrade 3a

5.3 Land of this quality is mapped to the north of the site. Soils are well drained (wetness class 1) and typically comprise slightly stony (<10%v/v total flints) medium sandy silt loam or medium clay loam topsoils overlying similar subsoils. These in turn pass to increasing flinty layers from about 50-70cm before the gravel is reached. Moisture balance calculations indicate that there is a shortfall of moisture for crop growth. The magnitude of this shortfall is such that subgrade 3a is appropriate on the basis of the risk of drought.

Subgrade 3b

5.4 Moderate quality subgrade 3b land is mapped to the south of the site. Soils are broadly similar in type to those described above but are significantly more stony in the upper horizons and pass to gravel at shallower depths (50cm+). This causes a significant reduction in the available water capacity of the soil which in combination with the local climate regime gives these soils a high risk of drought. Moisture balance calculations indicate that such land is appropriately graded 3b. Pit 1 is typical of this land.

ADAS Reference 1508/272/94
MAFF Reference EL 15/107

Resource Planning Team
Guildford Statutory Group
ADAS Reading

REFERENCES

British Geological Survey (1976) Sheet Number 314 Ringwood 1 50 000

Institute of Geological Sciences (1980) Mineral Assessment Report 50 SU11
Fordingbridge (with accompanying map at 1 25 000 scale)

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 Number 6 Soils of South East England
1 250 000

Soil Survey of England and Wales (1984) Soils and their Use in South East England
Bulletin Number 15

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

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 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

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

Sample Point Map

Soil Abbreviations - explanatory note

Database Printout - soil pit information

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 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
POI 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 **GLEYSPL** 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 HANTS MINS OM SITE 13 Pit Number 1P

Grid Reference SU15401170 Average Annual Rainfall 867 mm
 Accumulated Temperature 1531 degree days
 Field Capacity Level 180 days
 Land Use Ley
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 29	MSZL	10YR42 00	10		22	HR					
29 35	MSZL	10YR42 00	0		34	HR				M	
35 50	MCL	10YR42 00	0		50	HR				M	
50 120	GH	10YR43 00	0		0					M	

Wetness Grade 1 Wetness Class I
 Gleying cm
 SPL cm

Drought Grade 3B APW 70 mm MBW -38 mm
 APP 67 mm MBP -34 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Droughtiness

SAMPL NO	GRID REF	USE	ASPECT	GRDNT	SPL	WETNESS		-WHEAT		POTS-		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
						CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD					
1	SU15201190	LEY	E	01		1	1	108	0	113	12	3A					DR 3A	Imp 70
1P	SU15401170	LEY				1	1	65	-43	62	39	3B					DR 3B	Pit at 88
2	SU15301190	LEY	E	01		1	1	94	14	94	-7	3A					DR 3A	Imp 60
3	SU15401190	LEY	W	01		1	1	112	4	112	11	3A					DR 3A	Imp 80
4	SU15221180	LEY				1	1	109	1	116	15	3A					DR 3A	Imp 70
5	SU15301180	LEY				1	1	110	2	116	15	3A					DR 3A	Imp 70
6	SU15401180	LEY				1	1	84	24	83	18	3B					DR 3B	Imp 55
7	SU15301170	LEY				1	1	85	-23	82	19	3B					DR 3B	Imp 50
8	SU15401170	LEY				1	1	70	-38	67	-34	3B					DR 3B	Imp 50

SAMPLE	DEPTH	TEXTURE	COLOUR	- MOTTLES - - PED			-STONES---			STRUCT/ CONSIST	SUBS							
				COL	ABUN	CONT	COL	GLEY	2		6	LITH	TOT	STR	POR	IMP	SPL	CALC
1	0 25	mzc1	10YR42 43							2	0	HR	3					
	25 50	msz1	10YR43 00							0	0	HR	3				M	
	50 60	mc1	10YR43 00							0	0	HR	3				M	
	60-70	mc1	10YR43 00							0	0	HR	40				M	
	70 120	gh	10YR43 00							0	0		0				P	
1P	0 29	ms1	10YR42 00							10	0	HR	22					hand textd msz1
	29 35	ms1	10YR42 00							0	0	HR	34				M	hand textd msz1
	35 50	mc1	10YR42 00							0	0	HR	50				M	
	50 120	gh	10YR43 00							0	0		0				M	
2	0 25	msz1	10YR42 43							5	0	HR	8					
	25 40	msz1	10YR43 00							0	0	HR	8				M	
	40 50	mc1	10YR43 00							0	0	HR	10				M	
	50 60	mc1	10YR43 00							0	0	HR	40				M	
	60 120	gh	10YR43 00							0	0		0				M	
3	0 25	msz1	10YR42 00							5	0	HR	8					
	25 40	msz1	10YR43 00							0	0	HR	8				M	
	40-75	mc1	10YR43 00							0	0	HR	8				M	
	75 80	mc1	10YR53 43							0	0	HR	40				M	
	80 120	gh	10YR53 00							0	0		0				M	
4	0-30	msz1	10YR43 00							0	0	HR	7					
	30 55	mc1	10YR54 00							0	0	HR	5				M	
	55 70	msz1	10YR52 00							0	0	HR	5				M	
	70 120	gh	10YR52 00							0	0		0				M	
5	0 30	msz1	10YR43 00							0	0	HR	8					
	30 55	msz1	10YR44 00							0	0	HR	5				M	
	55-70	mc1	10YR44 00							0	0	HR	5				M	
	70-120	gh	75YR44 00							0	0		0				M	
6	0 25	msz1	10YR42 00							7	1	HR	17					
	25 55	mc1	10YR43 00							0	0	HR	17				M	
	55 120	gh	10YR43 00							0	0		0				M	
7	0 30	msz1	10YR43 00							10	0	HR	15					
	30 50	mc1	75YR44 00							0	0	HR	10				M	
	50-120	gh	75YR44 00							0	0		0				M	
8	0-29	msz1	10YR42 00							10	0	HR	22					
	29-35	msz1	10YR42 00							0	0	HR	34				M	
	35 50	mc1	10YR42 00							0	0	HR	50				M	
	50-120	gh	10YR43 00							0	0		0				M	