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HAMPSHIRE MINERALS PLAN
ADDITIONAL AREA AT BLEAK HILL
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JANUARY 1994

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AGRICULTURAL LAND CLASSIFICATION REPORT

1 0 Summary

1 1 ADAS was commissioned by MAFF s Land Use Planning Unit to provide information on land quality on a number of sites in Hampshire The work forms part of MAFF s statutory input to the preparation of the Hampshire Minerals Plan

1 2 Approximately 10 hectares of land relating to land at Bleak Hill near Harbridge Hampshire was surveyed in January 1994 The survey was undertaken at a detailed level of approximately one boring per hectare A total of 15 soil auger borings and 1 soil inspection pit 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 longterm limitations on its use for agriculture

1 3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS

1 4 At the time of the survey the landuse on the site was permanent grassland with an area that had been recently ploughed

1 5 The distribution of 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 5 000 It is accurate at this scale but any enlargement would be misleading This map supersedes any previous survey information for the site However land immediately to the south has been previously surveyed and it s findings provide additional information for this survey area

Table 1 _ Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Area
3a	0 3	2 8
3b	10 6	97 2
Total area of site	10 9	100% (10 9 ha)

1 6 Appendix 1 gives a general description of the grades subgrades and land use categories identified in the survey The main classes are described in terms of the type of limitation that can occur the typical cropping range and the expected level and consistency of yield

1 7 The majority of the site has been classified as subgrade 3b with soil droughtiness as the main limitation Soils consist of medium clay loams over gravel in the upper subsoil continuing to depth This significantly restricts the available water reserves in the profile for crop growth and also limits the depth of effective rooting A small area of land to the south west is classified as subgrade 3a This represents an area of similar soils but with gravel deeper in the profile such that available water reserves and rooting depths are greater and the land limited only by moderate droughtiness

2 0 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 annual average rainfall as a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality

2 3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met Office 1989) The details are given in the table below and these show that there is no overall climatic limitation affecting the site

2 4 No local climatic factors such as exposure or frost risk affect the site However it should be noted that climatic characteristics such as moisture deficits for wheat and potatoes can interact with soil properties to increase the risk of soil droughtiness though the comparatively high rainfall and field capacity days for the locality does partially offset this problem

Table 2 - Climatic Interpolation

Grid Reference	SU 130 114
Altitude (m)	50
Accumulated Temperature (days)	1507
Average Annual Rainfall (mm)	876
Field Capacity (days)	181
Moisture Deficit Wheat (mm)	105
Moisture Deficit Potatoes (mm)	98
Overall Climatic Grade	1

3 0 Relief

3 1 The site is almost flat and lies at an altitude of approximately 50 51 metres Nowhere on the site do relief or gradient affect agricultural land quality

4 0 Geology and Soil

4 1 The published geological sheet for the site Sheet 314 (BGS 1976) shows the underlying geology to be Recent and Pleistocene Plateau Gravel

4 2 The published soils information for the area Sheet 6 (SSEW 1983) shows the site to comprise soils of the Sonning 1 association "Well drained flinty coarse loamy and sandy soils mainly over gravel Some coarse loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging (SSEW 1983) A detailed inspection of soils on the site revealed the presence of shallow flinty fine loamy soils over gravel

5 0 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

Subgrade 3a

5 3 This small area of land represents a continuation of soils found in a previous survey immediately to the south of the site (ADAS Reference 1508/042/91) These soils comprise very slightly stony (1-4% flints > 2 cm) medium sandy silt loam topsoils over upper subsoils of similar texture or medium sandy loam or sandy clay loam which are very slightly to slightly stony with 3 10% total flints to a depth of 40 52 cm Below this depth stone content rises to 30 35% total flints before passing to gravel at 60-70 cm depth Profiles are well drained with a wetness class of I but land is limited to subgrade 3a by moderate soil droughtiness arising from a moderate depth of soil over gravel and shallow rooting into the gravelly substrate This results in reduced reserves of water available for plant growth which can lead to depressed yields the degree of which varies according to crop type the amount and duration of the shortfall in water reserves and the growth stage at which it occurs

Subgrade 3b

5 4 Moderate quality land covers the majority of the site The soil profiles comprise medium clay loam topsoils containing 9-12% total flints of which 0-3% > 2 cm in diameter Upper subsoils consist of a similar texture with 3 20% total flints which passes to medium clay loam with 70% total small flints (gravel) between 35 50 cm depth Soils are again well drained and are assigned to wetness class I Pit 1 dug in these soils found effective plant rooting to be approximately 30 cm into the gravelly subsoil With this reduced rooting depth combined with the profile stone content and the proximity of gravel closer to the surface than that of subgrade 3a land soils are significantly restricted in available water reserves for adequate plant growth Consequently land is limited to subgrade 3b due to significant soil droughtiness The shortfall in available water reserves makes these soils particularly prone to drought stress and will reduce the range of crops that can grown on this land which can tolerate such conditions Some better quality profiles deeper to gravel were encountered but not mapped separately due to their limited number and extent

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB GRADES

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 on the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops The level of yield is generally high but may be lower or more variable than Grade 1

Grade 3 Good To Moderate Quality Agricultural Land

Land with moderate limitations which affect the choice of crops timing and type of cultivation harvesting or the level of yield When more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2

Sub grade 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

Sub-grade 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 very 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 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 re claimed 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/airfields Also active mineral workings and refuse tips where restoration conditions to soft' after uses may apply

Woodland

Includes commercial and non commercial 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

REFERENCES

* ADAS (1991) Agricultural Land Classification - Bleak Hill 2 Somerley Hampshire (Reference 1508/042/91)

* BRITISH GEOLOGICAL SURVEY (1976) Sheet No 314 Ringwood 1 50 000 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 No 6 Soils Of South East England 1 250 000 scale and accompanying legend

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years

Wetness Class II

The soil profile is wet within 70cm depth for 31 90 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 90 days but not wet within 40cm depth for more than 30 days in most years

Wetness Class III

The soil profile is wet within 70cm depth for 91 180 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 70cm for more than 180 days but only wet within 40cm depth for 31-90 days in most years

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years **or** if there is no slowly permeable layer within 80cm depth it is wet within 40cm depth for 91-210 days in most years

Wetness Class V

The soil profile is wet within 40cm depth for 211 335 days in most years

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years

(The number of days is not necessarily a continuous period In most years is defined as more than 10 out of 20 years)

APPENDIX IV

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 PIT DESCRIPTION

Site Name HANTS MINS BLEAK HILL Pit Number 1P

Grid Reference SU12961121 Average Annual Rainfall 876 mm
Accumulated Temperature 1507 degree days
Field Capacity Level 181 days
Land Use Permanent Grass
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 28	MCL	10YR43 00	3	10		WKCSAB
28- 42	MCL	10YR44 00	0	10		WKCSAB
42- 72	MCL	10YR56 00	0	70		

Wetness Grade 2 Wetness Class I
Gleying cm
SPL No SPL

Drought Grade 3B APW 75 mm MBW -30 mm
APP 78 mm MBP -20 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT	COMMENTS
1	SU13001150	PGR					1	2	67	-38	70	-28	3B				DR 3B	IMP40 AS 1P
1P	SU12961121	PGR					1	2	75	-30	78	-20	3B				DR 3B	ROOT72
2	SU13001140	PGR					1	2	87	-18	88	-10	3A				DR 3A	IMP58 AS 1P
3	SU13101140	PLO					1	2	73	-32	76	-22	3B				DR 3B	IMP44 AS 1P
4	SU12901130	PLO					1	2	71	-34	74	-24	3B				DR 3B	IMP45 AS 1P
5	SU13001130	PLO					1	2	73	-32	76	-22	3B				DR 3B	IMP50 AS 1P
6	SU13101130	PLO					1	2	72	-33	76	-22	3B				DR 3B	IMP45 AS 1P
7	SU13201130	PGR					1	2	79	-26	82	-16	3B				DR 3B	IMP50 AS 1P
8	SU12801120	PGR					1	2	71	-34	75	-23	3B				DR 3B	IMP45 AS 1P
9	SU12901120	PGR					1	2	89	-16	91	-7	3A				DR 3A	IMP68 AS 1P
10	SU13001120	PGR					1	2	106	1	110	12	3A				DR 3A	IMP75 AS 1P
11	SU13101120	PGR					1	2	85	20	87	-11	3A				DR 3A	IMP70 AS 1P
12	SU13211122	PGR					1	2	60	-45	62	-36	3B				DR 3B	IMP35 AS 1P
13	SU13061124	PGR					1	2	69	-36	72	-26	3B				DR 3B	IMP42 AS 1P
14	SU12951126	PGR					1	2	83	-22	85	-13	3B				DR 3A	IMP48 AS 1P
15	SU12941123	PGR					1	2	65	-40	68	-30	3B				DR 3B	IMP45 AS 1P

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
1	0 30	mcl	10YR43 00						0	0	HR	12						
	30-36	mcl	10YR44 00						0	0	HR	8		M				
	36 66	mcl	10YR44 00						0	0	HR	70		P				
1P	0 28	mcl	10YR43 00						3	0	HR	10	WKCSAB VF					
	28 42	mcl	10YR44 00						0	0	HR	10	WKCSAB FR	M				
	42-72	mcl	10YR56 00						0	0	HR	70		P				
2	0-34	mcl	10YR43 00						0	0	HR	10						
	34-50	mcl	10YR44 00						0	0	HR	5		M				
	50-80	mcl	10YR44 00						0	0	HR	70		P				
3	0 30	mcl	10YR43 00						0	0	HR	10						
	30 40	mcl	10YR44 00						0	0	HR	10		M				
	40 70	mcl	10YR44 00						0	0	HR	70		P				
4	0-29	mcl	10YR43 00						0	0	HR	12						
	29-40	mcl	10YR44 00						0	0	HR	15		M				
	40-70	mcl	10YR44 00						0	0	HR	70		P				
5	0 27	mcl	10YR43 00						0	0	HR	11						
	27 40	mcl	10YR44 00						0	0	HR	5		M				
	40 70	mcl	10YR44 00						0	0	HR	70		P				
6	0 26	mcl	10YR43 00						0	0	HR	10						
	26-35	mcl	10YR44 00						0	0	HR	8		M				
	35-40	c	75YR56 00						0	0	HR	20		M				
	40-70	c	75YR56 00						0	0	HR	70		P				
7	0-28	mcl	10YR43 00						0	0	HR	9						
	28 45	hcl	10YR44 56						0	0	HR	10		M				
	45-75	hcl	10YR44 00						0	0	HR	70		P				
8	0-28	mcl	10YR43 00						0	0	HR	12						
	28 40	mcl	10YR56 00						0	0	HR	10		M				
	40-70	mcl	10YR56 00						0	0	HR	70		P				
9	0-30	mcl	10YR43 00						0	0	HR	12						
	30-55	mcl	10YR44 00						0	0	HR	10		M				
	55 85	mcl	10YR56 00						0	0	HR	70		P				
10	0-28	mcl	10YR43 00						0	0	HR	9						
	28 60	mcl	10YR44 00						0	0	HR	3		M				
	60-70	mcl	10YR56 00						0	0	HR	15		M				
	70-100	hcl	10YR56 00						0	0	HR	70		P				
11	0-33	mcl	10YR43 00						0	0	HR	10						
	33-48	mcl	10YR44 00						0	0	HR	3		M				
	48-78	mcl	10YR54 00						0	0	HR	70		P				

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	0-28	mcl	10YR43 00						0	0	HR	10						
	28-30	mcl	10YR44 00						0	0	HR	5		M				
	30-60	mcl	10YR44 00						0	0	HR	70		P				
13	0 28	mcl	10YR43 00						0	0	HR	12						
	28-38	mcl	10YR44 00						0	0	HR	10		M				
	38-68	mcl	10YR44 56						0	0	HR	70		P				
14	0-28	mcl	10YR43 00						0	0	HR	11						
	28-48	mcl	10YR44 00						0	0	HR	5		M				
	48-78	mcl	10YR44 00						0	0	HR	70		P				
15	0 28	mcl	10YR43 00						0	0	HR	12						
	28-35	mcl	10YR44 00						0	0	HR	8		M				
	35-65	mcl	10YR56 00						0	0	HR	70		P				