A1 LAND WEST OF LITTLE SILVERS HOTEL TENTERDEN, KENT AGRICULTURAL LAND CLASSIFICATION ALC MAP & REPORT AUGUST, 1993

LAND WEST OF LITTLE SILVERS HOTEL, TENTERDEN, KENT AGRICULTURAL LAND CLASSIFICATION REPORT

1.0 Summary

- 1.1 In August, 1993, a detailed Agricultural Land Classification (ALC) was made on approximately 32 hectares of land to the west of Little Silvers Hotel at St Michaels, north of Tenterden in Kent.
- 1.2 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF's Land Use Planning Unit to provide information on the quality of agricultural land affected by a proposed golf course development.
- 1.3 The classification has been made using MAFF's revised guidelines and criteria for grading the quality of agricultural land. 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.
- 1.4 The fieldwork was carried out with an observation density of approximately one per hectare. A total of 23 borings and 1 soil pit was examined.
- 1.5 All of the agricultural land is classified as Sub-grade 3B. The key limitation is soil wetness related to soils with clear evidence of shallow waterlogging for long periods caused by shallow poorly structured clay horizons below the topsoil.
- 1.6 The ALC information is shown on the attached map at a scale of 1:5,000: it is accurate at this level but any enlargement would be misleading. This map supercedes any previous ALC information for this site.
- 1.7 At the time of survey the land use on the site was permanent grassland. Non-agricultural land accounts for 1.3 ha, Farm Buildings 0.4 ha and Woodland 4.6 ha.
- 1.8 A general description of the grades and sub-grades is provided as an appendix. 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.

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 the 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. 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.

<u>Table 2 : Climatic Interpolations</u>

Grid Reference:	TQ881361	TQ877358
Altitude (m):	60	50
Accumulated Temperature (days):	1444	1456
Average Annual Rainfall (mm):	740	732
Field Capacity (days):	150	149
Moisture Deficit, Wheat (mm):	116	117
Moisture Deficit, Potatoes (mm):	111	113
Overall Climatic Grade :	1	1

3.0 Relief

3.1 The majority of the land is gently sloping with a southerly aspect but gradient becomes a limiting factor on the steeper slopes in the extreme west of the survey area.

4.0 Geology and Soil

4.1 The relevant geological sheet for the site shows the underlying geology to be mostly Weald Clay with some Tonbridge Wells Sands in the western edge. The survey revealed the majority of the soil profiles to be Clay of Heavy Clay Loam topsoils overlying Clay subsoils.

5.0 Agricultural Land Classification

- 5.1 The ALC information is shown on the attached ALC map and the location of the soil observation points is shown on the attached sample point map.
- 5.2 The whole of the agricultural area has been placed in Sub-grade 3B. The attached soil pit description is typical of the soils that ocur and describes the main soil wetness limitation. Clay topsoils overlie upper and lower subsoils of similar texture. The soils show clear evidence of shallow gleying caused by the clay subsoil being slowly permeable. The pit describes the upper subsoil as massive in structure overlying coarse prismatic structures below. Throughout the site the slowly permeable layers are generally present within 40 cm and the soils have been placed in Wetness Class IV. This, in combination with the heavy nature of the topsoils and the prevailing Field Capacity range (149-150 days), limits the land to no better than Sub-grade 3B.
- 5.3 This degree of wetness restricts the range of crops that can tolerate such conditions and also reduces the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.
- 5.4 The areas marked as Non-agricultural include areas of ponds and scrub.

ADAS REFERENCE : 2001/116/93 MAFF REFERENCE : EL 20/77 Resource Planning Team Guildford Statutory Group

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 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/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 sclae 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

- * MAFF (1988), Agricultural Land Classification of England And Wates: revised guidelines and criteria for grading the quality of agricultural land.
- * Meteorological Office (1989), Climatological Data for Agricultural Land Classification.
- * British Geological Survey (1978), Sheet No.304, Tenterden, 1:50,000

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 PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a database. This has commonly used notations and abbreviations as set out below.

Boring Header Information

- 1. GRID REF: national grid square and 8 figure grid reference.
- 2. USE: Land use at the time of survey. The following abbreviations are used.

ARA: Arable WHT: Wheat BAR: Barley CER: Cereals OAT: Oats MZE: Maize OSR: Oilseed rape
BEN: Field Beans BRA: Brassicae POT: Potatoes SBT: Sugar Beet FCD: Fodder Crops LIN: Linseed

FRT : Soft and Top Fruit HRT : Horticultural Crops PGR : Permanent Pasture LEY : Ley Grass RGR : Rough Grazing SCR : Scrub CFW : Coniferous Woodland DCW : Deciduous Woodland HTH : Heathland BOG : Bog or Marsh

FLW : Fallow PLO : Ploughed SAS : Set aside OTH : Other

- 3. GRDNT: Gradient as measured by a hand-held optical clinometer.
- 4. GLEY/SPL: Depth in cm to gleying or slowly permeable layers.
- 5. AP (WHEAT/POTS): Crop-adjusted available water capacity.
- 6. MB (WHEAT/POTS): Moisture Balance.
- 7. DRT: Best grade according to soil droughtiness.
- 8. If any of the following factors are considered significant, an entry of 'Y' will be entered in the relevant column.

MREL: Microrelief limitation FLOOD: Flood risk EROSN: Soil erosion risk EXP: Exposure limitation FROST: Frost DIST: Disturbed land CHEM: Chemical limitation

9. LIMIT: The main limitation to land quality. The following abbreviations are used.

OC: Overall Climate AE: Aspect EX: Exposure FR: Frost Risk GR: Gredient MR: Microrelief FL: Flood Risk TX: Topsoil Texture DP: Soil Depth CH: Chemical WE: Wetness WK: Workebility DR: Drought ER: Soil Erosion Risk WD: Combined 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 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 MSST: soft, medium or coarse grained sandstone
SI: soft weathered igneous or metamorphic SLST: soft oolitic or dolimitic limestone
FSST: soft, fine grained sandstone ZR: soft, argillaceous, or silty rocks CH: chalk
GH: gravel with non-porous (hard) stones GS: gravel with porous (soft) stones

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

program: ALC012

LIST OF BORINGS HEADERS 12/08/93 GOLF COURSE - TENTERDEN

page 1

AA	1PLE			A	SPECT				WETN	NESS	-WH	EAT-	-P0	TS-	M.	REL	EROSN	FROST	СН	EM	ALC	
NO.	GI	RID	REF	USE		GRDNT	GLEY	Y SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EX	CP DI	ST	LIMIT		COMMENTS
	P TQ8			PGR			000		4	3B	098	-19	106	-7	3A					WE	38	MASSIVE
	TQ8			PGR			000	030	4	3B	119		112	-1	=					WE	3B	SPL H2
_	TQ8			PGR			025		2	3A	123		118	5	2					WE	ЗА	
8		382		PGR			025		4	3B	092			-9	3B					WE	38	
- 9	TQ8	37 9	360	PGR			000	030	4	38	108	-9	106	-7	3A					WE	3B	
1 10	TOS	220	360	PGR	CLI	04	000	025		3B	106		104	-9	24					WE	30	
11			360		SW	04 04	000		4 4	3B	108	-11	104	-9 -7	3A 3A					WE	38 38	
_	TQ8			PGR	SW	02	000		4	3B	096	-21		-12	3B					WE	38	SPL
	TQ				SE	OZ.	000	-	4	38	081	-36		-29	38					WE	38	SPL
7	TO	379		PGR		02	000		4	3B	085		091							WE	3B	SPL.
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19	TQ8	381	359	PGR	SE	01	000	045	3	3B	000	0	000	0						WE	ЗА	Q SPL
20	TQ	382	359	PGR	SW	04	000	035	4	3B	110	-7	116	3	3A					WE	3B	H2-Q SPL
21	TQ8	883	359	PGR	SW	03	000	030	4	38	101	-16	106	-7	3A					WE	3B	SPL
24	TQ8	378	358	PGR	S	02	000	040	4	3B	087	-30	093	-20	3B					WE	3B	
1 24																						
25	TQ	379	358	PGR	S	02	000	035	4	3B	082	-35	085	-28	3B					WE	3B	SPL
26			358	PGR	S	02	000	040	4	3B	086	-31	092	-21	3B					WE	3B	SPL
27		381		PGR	SE	02	000	040	4	3B	085	-32	091	-22	3B					WE	38	SPL
28	-			PGR	SM	03	000	040	4	38	107	-10	112	-1	3A					WE	3B	BORD WC3
_ 29	TQS	383	358	PGR	SW	03	000	040	4	3B	099	-18	115	2	3A					₩E	3B	H3-Q SPL
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30				PGR		01	000	022	4	3B	090			-11						WE	3B	SPL
31			357	PGR			000			2	146		116	3	2					WE	5	NOSPL
32	-		357	PGR			000		4		089	-28		-18	38					WE	3B	
33	IŲŁ	382	159	PGR	2M	04	000	U45	3	3B	880	-29	U94	-19	3B					WE	38	SPL

----STONES---- STRUCT/ SUBS ---- PED SAMPLE DEPTH TEXTURE COLOUR COL ABUN CONT COL. GLEY >2 >6 LITH TOT CONSIST STR POR IMP SPL CALC 0-23 c 25Y 63 00 10YR68 00 C 0 0 Υ ۵ 23-43 С 25Y 53 00 10YR56 62 M 0 0 0 MASS Υ VM M 43-75 25Y 64 00 10YR58 00 M 05Y 61 00 Y 0 0 0-30 hc1 25Y 64 00 10YR58 00 C ٧ 0 0 ٥ 25Y 63 00 10YR58 71 M 30-55 ¢ 00MN00 00 Y 0 0 0. Р 55-90 hzc1 10YR71 00 10YR58 82 M 0 0 0 М 0-25 25Y 64 00 hc1 0 0 Λ 25-60 25Y 63 00 10YR58 71 M c 0 0 0 60-90 25Y 72 83 10YR58 00 M 0-25 25Y 64 00 10YR58 00 F mc l 0 n 25-70 25Y 74 00 10YR58 71 M 0-30 hc1 25Y 64 00 10YR58 00 C 0 Ω 30-70 25Y 63 00 10YR58 71 C С 0 0 O 70-90 05Y 63 00 25Y 66 71 M 00MN00 00 Y 0-25 hc1 25Y 64 00 10YR58 00 C 0 0 Υ 25-90 25Y 63 00 10YR58 71 M С Υ 0 0 0 0-30 mc1 25Y 64 00 10YR58 00 C 0 0 30-90 С 25Y 63 00 05YR58 71 M 0-25 10YR42 00 10YR58 00 M C 00MN00 00 Y 0 0 0 25-55 c 10YR52 00 10YR58 51 M 00MN00 00 Y 0 0 55-80 10YR51 00 10YR58 00 M 0-20 c 25Y 63 00 000C00 00 C 0 0 ٥ 20-35 25Y 52 00 000C00 00 M 0 С 35-55 25Y 52 00 000C00 00 M С 0-25 25Y 63 00 000C00 00 C Ô 0 25-35 25Y 62 00 000C00 00 M С 35-60 25Y 52 00 000C00 00 M c 0 0 0-25 25Y 64 00 10YR58 00 C 0 С 25-50 25Y 64 00 10YR58 71 C С γ 0 0 0 50-80 25Y 62 00 10YR58 81 M 0 С 0-30 hzc1 25Y 53 00 10YR56 00 M 0 0 0 30-45 hzc? 25Y 53 00 10YR56 00 M 00MN00 00 Y 0 0 25Y 53 00 10YR58 51 M 45-80 00MN00 00 Y С 0 0 0 0-35 10YR53 00 10YR56 00 C 0 0 С 35-70 С 25Y 53 00 10YR56 00 M 00MN00 00 Y 0 0 0 70-85 c 25Y 53 00 10YR56 51 M 0 0 0 Υ

page 2

COMPLETE LIST OF PROFILES 12/08/93 GOLF COURSE - TENTERDEN

----MOTTLES---- PED ----STONES---- STRUCT/ SUBS COL ABUN CONT COL. GLEY >2 >6 LITH TOT CONSIST STR POR IMP SPL CALC SAMPLE DEPTH TEXTURE COLOUR 10YR53 00 10YR56 51 C 0 0 0 0 - 30hc1 Υ 25Y 53 00 10YR68 51 M COMNOC CO Y 0 0 a 30-55 С 55-80 10YR51 00 10YR58 68 M 0 0 0 25Y 63 00 000C00 00 C 0 0 0-25 Υ Ω 25-40 25Y 63 00 000C00 00 M 0 0 0 40-60 25Y 63 00 000C00 00 M 0 0 0 С 0-25 с 25Y 53 00 000C00 00 M 0 0 0 25Y 63 00 000C00 00 M 0 0 25-35 c 0 35-55 с 25Y 63 00 000C00 00 M 0 0 26 0-20 с 10YR42 00 000C00 00 C 0 0 0 20-40 C 25Y 63 00 000C00 00 M 0 0 0 40-60 25Y 63 00 000C00 00 M С 0-20 10YR63 00 000C00 00 C O O HR 2 С 20-40 25Y 63 00 000C00 00 M 0 0 0 C 25Y 63 00 000C00 00 M 40-60 0 0 0 c 10YR53 00 10YR56 00 C 0-30 hzcl 0 0 HR 30-40 hzcl 25Y 53 00 10YR56 00 M 00MN00 00 Y 0 0 0 40-65 C 25Y 52 00 10YR68 00 M 0 0 0 25Y 51 00 10YR58 00 M Υ 0 0 0 Р 65-80 V 00 00MN00 0-30 hal 10YR52 00 10YR58 00 M 0 0 0 10YR53 52 10YR58 00 M Υ 0 0 0 30-40 С 40-70 10YR71 00 10YR58 00 M Υ 0 0 0 c 0-22 10YR53 00 75YR46 00 C 0 0 0 10YR53 00 10YR58 52 M 00MN00 00 Y 0 0 22-70 С 25Y 64 00 000C00 00 C 0 0 0-25 0 25Y 64 00 000C00 00 M 0 0 25-38 С 38-70 sc 25Y 63 00 000C00 00 M 0 0 0 М 10YR64 00 000C00 00 M 0 0 0 70-120 c 0-25 hc1 25Y 63 00 000C00 00 C 0 0 0 25-40 С 25Y 63 00 000C00 00 M 0 0 0 25Y 52 00 000C00 00 M 0 0 0 40-60 C 0-25 с 25Y 53 00 000C00 00 C 0 0 0 25-45 с 0 0 0 25Y 64 00 000C00 00 M 25Y 63 00 000C00 00 M 0 0 0 45-60 с

SOIL PIT DESCRIPTION

Site Name : GOLF COURSE - TENTERDEN Pit Number : 1P

Grid Reference: TQ884 358 Average Annual Rainfall: 740 mm

Accumulated Temperature: 1444 degree days

Field Capacity Level : 150 days

Land Use : Permanent Grass Slope and Aspect : degrees

HORIZON TEXTURE COLOUR STONES >2 TOT. STONE MOTTLES STRUCTURE 0- 23 С 25Y 63 00 0 0 C 25Y 53 00 0 23- 43 С 0 М MASS 25Y 64 00 43- 75 С 0 0 MCP

Wetness Grade : 3B Wetness Class : IV Gleying :000 cm

SPL :023 cm

Drought Grade: 3A APW: 098mm MBW: -19 mm

APP : 106mm MBP : -7 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness