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TUNBRIDGE WELLS BOROUGH LOCAL PLAN  
LAND WEST OF NURSERY ROAD PADDOCK WOOD  
AGRICULTURAL LAND CLASSIFICATION  
ALC MAP & REPORT  
OCTOBER 1993

**TUNBRIDGE WELLS BOROUGH LOCAL PLAN  
LAND WEST OF NURSERY ROAD PADDOCK WOOD  
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 six sites around Tunbridge Wells. The work forms part of MAFF's statutory input to the preparation of the Tunbridge Wells Borough Local Plan.

1 2 Approximately 8 hectares of land west of Nursery Road in Paddock Wood, Kent, was surveyed during October 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 9 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. 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 Work was conducted by members of the Resource Planning Team in the Guildford Statutory Group.

1 4 At the time of the survey, the land use on the site was varied. In the most south-western field, there was permanent grass within a woodland clearing. In the field south of Eastland Cottages, the land use was cereal. Land use for the remaining area was a mixture of woodland, non-agricultural, and permanent grass.

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 information for this site.

Table 1 - Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3b	4.8	59.3	100.0 (4.8 ha)
Urban	0.4	4.9	
Woodland	2.1	25.9	
Non Agric	<u>0.8</u>	<u>0.8</u>	
Total	8.1	100	

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 All of the agricultural land surveyed has been assessed as Subgrade 3b, moderate quality, because of a significant wetness limitation. Profiles comprise medium clay loam topsoils overlying heavier textured subsoils. Profiles show clear evidence of seasonal waterlogging as drainage is impeded by the presence of a poorly structured subsoil at shallow depths. In addition, a small area of land south of the urban buildings can be classed as no better than Subgrade 3b because of severe micro-relief caused by soil disturbance.

## 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 (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

Table 2 . Climatic Interpolations

Grid Reference	SU 667 457
Altitude (m)	16
Accumulated Temperature (days)	1495
Average Annual Rainfall (mm)	686
Field Capacity (days)	142
Moisture Deficit Wheat (mm)	122
Moisture Deficit Potatoes (mm)	119
Overall Climatic Grade	1

## 3 0 Relief

3 1 The site is flat and lies at approximately 16m

## 4 0 Geology and Soil

4 1 BGS Sheet 287 Sevenoaks (1971) shows the entire site to be underlain by Brickearth geology (loess reworked by river action)

4 2 The soil type for the site as shown on the Soil Survey map of South East England (SSEW 1983 1 250 000) comprises the Parkgate Association These soils are described as deep stoneless soils with argillic gleys being dominant They are affected by seasonally high groundwater and have grey and ochreous mottled subsoil colours (SSEW 1983)

## **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 3b**

5 3 All of the agricultural land surveyed has been assessed as Subgrade 3b moderate quality because of a significant wetness limitation Excessive soil wetness adversely affects seed germination and survival plus inhibits the development of a good root system Restrictions on cultivations or grazing by livestock may also result Topsoils comprise medium clay loams which tend to heavy clay loams along the western boundary of the site These are underlain by heavy clay loam and clay subsoils As shown by Pit 1 profiles are gleyed and a slowly permeable horizon is present within 40cm Such a significant impedance to drainage means these soils are placed into Wetness Class IV The interaction between such soil conditions and local climatic regime means these soils are assessed as Subgrade 3b In addition a small area of land south of the urban buildings can be classed no better than Subgrade 3b because of significant micro relief caused by soil disturbance

### **Non Agricultural**

5 4 The Non Agricultural land shown on the map comprises overgrown derelict land

### **Woodland**

5 5 The Woodland shown on the map is occupied by young and mature deciduous trees

### **Urban**

5 6 The Urban land marked on the map is a building yard

## 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 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

- \* British Geological Survey (1971) Sheet No 287 Sevenoaks 1 50 000
- \* 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 Sets for Agricultural Land Classification
- \* Soil Survey of England and Wales (1983) Sheet 6 Soils of South East England 1 250 000 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 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** - 8 digit square 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 - Horticulture 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 **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 element column:

MREL - Mole limit to    FLOOD - Flood risk    EROSN - Soil erosion risk    EXP - Exposure limit to    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 - Mole limit  
FL - Flood Risk    TX - Topsoil Texture    DP - Soil Depth    CH - Chemical    WE - Wetness    WK - Workability  
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 silty, dylic, and silty loam classes the pediment 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 subdivided 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 content

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 dolomitic 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 subangular 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 T BRIDGE WELLS LP P WOOD P t N mbe 1P

Grid Reference TQ66704568  
 Average Annual Rainfall 686 mm  
 Accumulated Temperature 1495 degree days  
 Field Capacity Level 142 day  
 Land Use Cereals  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	MOTTLES	STRUCTURE
0 35	MCL	10YR42 00	0		0		
35 63	C	25Y 62 00	0		0	M	WKCSAB
63 77	HCL	05Y 72 00	0		0	M	MDCSAB
77 85	HCL	25Y 72 00	0		0	M	
85 120	C	75YR46 56	0		0	M	

Wet G d 3B  
 Wetness C1 IV  
 G1 y1 g 035 cm  
 SPL 035 cm

Drought Grade 2  
 APW 138mm MBW 16 mm  
 APP 111mm MBP 8 mm

FINAL ALC GRADE 3B  
 MAIN LIMITATION Wetness

SAMPLE NO	GRID REF	ASPECT USE	WETNESS		WHEAT		POTS		M REL		EROSN	FROST	CHEM	ALC	COMMENTS	
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
1	TQ66604570	CER	038	038	3	3B	96	26	108	11	3B			WE	3B	BORDER WC 3/4
1P	TQ66704568	CER	035	035	4	3B	138	16	111	8	2			WE	3B	PIT77 AUGER120
2	TQ66704570	CER	025		1	1	159	37	117	2	2			DR	2	MSL 85 CM
3	TQ66864560	PGR	020	050	3	3A	136	14	113	6	2			WE	3A	SPL 50 CM
4	TQ66604560	PGR	000	030	3	3B	87	35	93	26	3B			WE	3B	SPL 30 CM
5	TQ66724564	CER	035	035	3	3B	106	16	106	13	3A			WE	3B	SPL 35 CM
6	TQ66824567	PGR	020	020	4	3B	103	19	101	18	3A			WE	3B	SPL 20 CM
7	TQ66604575	CER	020	020	4	3B	110	12	101	18	3A			WE	3B	SPL 20 CM

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED		STONES			STRUCT/	SUBS				
				COL	ABUN	CONT	COL	GLE	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL
1	0 30	h 1	10YR43 00						0	0	0						
	30 38	hc1	10YR52 54						0	0	0		M				
	38 70	c	10YR52 00	10YR58 00	M		00MN00 00	Y	0	0	0		P	Y		Y	
1P	0 35	mc1	10YR42 00						0	0	0						
	35 63		25Y 62 00	10YR56 00	M		10YR53 00	Y	0	0	0	WKCSAB	FR	P	Y		Y
	63 77	h 1	05Y 72 00	10YR56 00	M		00MN00 00	Y	0	0	0	MDCSAB	FM	M			Y
	77 85	hc1	25Y 72 00	10YR56 00	M		00MN00 00	Y	0	0	0			M			Y
	85 120	c	75YR46 56	25Y 51 61	M		00MN00 00	Y	0	0	0			P			Y
2	0 25	mc1	25Y 43 00						0	0	0						
	25 48	hc1	25Y 53 00	10YR51 58	C			Y	0	0	0			M			
	48 60	hc1	25Y 53 00	10YR51 58	M			Y	0	0	0			M			
	60 70	hc1	10YR51 00	10YR56 54	M			Y	0	0	0			M			
	70 85	mc1	10YR43 00					Y	0	0	0			M			
	85 120	ms1	10YR62 00	10YR56 00	M			Y	0	0	0			M			
3	0 20	mc1	25Y 42 00						0	0	0						
	20 50	mzc1	25Y 72 00	10YR66 00	M		00MN00 00	Y	0	0	0			M			
	50 120	c	25Y 62 00	10YR66 00	M		00MN00 00	Y	0	0	0			P		Y	
4	0 30	hc1	10YR41 51	10YR58 00	C			Y	0	0	0						
	30 60	c	10YR51 00	10YR58 00	M		00MN00 00	Y	0	0	0			P	Y		Y
5	0 35	mc1	10YR43 00						0	0	0						
	35 68	hc1	10YR52 00	10YR58 00	C		00MN00 00	Y	0	0	0			P	Y		Y
	68 80	hc1	10YR53 00	10YR68 00	M		00MN00 00	Y	0	0	0			M			
6	0 20	mc1	25Y 42 00						0	0	0						
	20 60	c	25Y 72 00	10YR56 00	M		00MN00 00	Y	0	0	0			P			Y
	60 90	c	25Y 62 00	10YR56 00	M			Y	0	0	0			P			Y
7	0 20	mc1	10YR42 00						0	0	0						
	20 100	c	25Y 72 00	10YR56 00	M		00MN00 00	Y	0	0	0			P			Y