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Land at Wood Hill, Near Send, Surrey

Agricultural Land Classification

ALC Map and Report

May 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

LAND AT WOOD HILL, NEAR SEND, SURREY

1 Summary

1 1 ADAS was commissioned by MAFF s Land Use Planning Unit to provide information on land quality for 50 4 hectares of land at Wood Hill Nr Send Surrey for a proposed golf course

1 2 The site is situated 5km north east of Guildford Surrey to the north of the A3 (T) An Agricultural Land Classification (ALC) survey was carried out in April 1994 The survey was undertaken at a detailed level of approximately one boring per hectare A total of 51 soil auger borings and three soil inspection pits were described in accordance with MAFF s revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988) The 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 much of the land was under poorly maintained weed infested grassland with some set aside land Land mapped as urban includes residential property gardens and roads Non Agricultural land mainly represents woodland and scrub

1 4 The distribution of grades and subgrades is shown on the attached ALC map and the area measurements and extent 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

Table 1 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Land
2	2 7	5 8
3a	3 6	7 8
3b	38 9	84 2
4	1 0	2 2
Total Agricultural Area	46 2	100 (46 2 ha)
Urban	2 4	
Non Agricultural	1 6	
Open Water	0 2	
Total area of site	50 4	

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 majority of land on the site is graded Subgrade 3b moderate quality land with smaller areas of Grade 2 very good quality land and Subgrade 3a, good quality land Also two small areas of Grade 4 poor quality land have been mapped Grade 2 land has been mapped in a single strip in association with moderately well drained sandy clay loam or medium sandy loam soils which exhibit evidence of slight soil wetness and/or droughtiness Subgrade 3a land generally relates to slightly heavier land with imperfect drainage which is limited by wetness and workability imperfections The majority of the Subgrade 3b land comprises deep well drained sandy soils which are significantly limited by soil droughtiness 3b land to the north east of Old Timbers comprises the heavy poorly drained soils or soils suffering from a high, and difficult to control groundwater level To the north of Three Fords a small area of land is limited to 3b due to steep slopes between 8 10° The small areas of Grade 4 land are saturated for long periods with standing water noted on the surface at the time of survey This is due to high groundwater levels and wet flushes as caused by water seepage

2 CLIMATE

2 1 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5 km grid point dataset (Met Office 1989) for a representative location in the survey area

Table 2 Climatic Interpolation

Grid Reference	TQ 025 539
Altitude (m AOD)	49
Accumulated Temperature (°C days Jan-June)	1469
Average Annual Rainfall (mm)	695
Field Capacity Days	147
Moisture deficit wheat (mm)	112
Moisture deficit potatoes (mm)	106

2 2 Climatic factors are considered first when classifying land since climate can be overriding in the sense that adverse climatic conditions may restrict land quality irrespective of favourable site and soil conditions The details in Table 2 above show that there is no overall climatic limitation affecting this site In addition no local climatic factors such as exposure or frost risk are believed to affect the land quality

2 3 However climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations

3 RELIEF

3 1 Land falls from a maximum height of 49 m AOD on the flat topped hill west of Old Timbers to approximately 30 m AOD near Whitehouse Farm and to the south of Sendbarns Old Timbers Cottage lies on the watershed between two shallow valleys which run in a south westerly and north easterly direction Along the

western edge of the site the land falls relatively steeply to Potters Lane and the River Wey Some slopes to the north of Three Fords were measured at 8-10° using a hand held clinometer Such gradients limit this area of land to Subgrade 3b Elsewhere slope does not exceed 4° and is not therefore a limiting factor to agricultural land quality

4 GEOLOGY AND SOILS

4 1 The Geological Survey of England and Wales (1976) Sheet 285 Aldershot (Drift Edition) shows approximately half the site coinciding with the highest land to be mapped as Recent river gravels (higher terraces) All the remaining land is mapped as Eocene London Clay

4 2 The Soil Survey of England and Wales has mapped the soils on two occasions both broadly reflect the above geology Firstly in 1983 the reconnaissance scale (1 250 000) Soils of South East England shows two soil associations The western half of the site is mapped as Waterstock Association soils which are described as deep permeable mainly fine loamy soils variably affected by groundwater Some deep well drained fine and coarse loamy soils (SSEW 1983) On the eastern half Wickham 4 Association soils are shown and are described as being slowly permeable seasonally waterlogged fine loamy over clayey and fine silty over clayey soils associated with similar clayey soils (SSEW 1983)

Secondly in 1986 soils were mapped at a larger scale (1 25 000 Sheet TQ 05 Woking) and show a more complex pattern of soil series Sandy soils series are mapped over the western half of the site (Arrow Arrow/Loshes and Formby) whilst heavier textured clay loam soils (Wickham and Lawford) are mapped on the eastern half

4 3 Detailed field examination of the soils on the site broadly confirms the mapped geology and soils with light loamy and sandy soils dominating in the west and heavier clayey soils found in the east

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 observations points are shown on the attached sample point map

Grade 2

5 3 A narrow ribbon of very good quality agricultural land has been mapped in the north west of the site Profiles typically comprise non calcareous very slightly stony medium sandy loam or sandy clay loam topsoils (which may contain 1-3% total flints by volume) These overlie similarly textured upper subsoils which may become sandier (ie loamy medium sand) with depth and are typically very slightly

to slightly stony (contain 2-10% total flints) The lower subsoils typically from 50-75 cm depth comprise slowly permeable stoneless clay sandy clay or sandy clay loam Overall these soils have been assigned to Wetness Class II (occasionally III) Reserves of available water within these soil profiles may be insufficient for crop growth and may cause crops to suffer drought stress particularly during the summer months Of less significance in this mapping unit is a small area of land also affected by slight soil wetness where the slowly permeable layer occurs above 52 cms or where the topsoil comprises sandy clay loam This land is restricted to Grade 2 due to slight droughtiness and minor wetness limitations

Subgrade 3a

5 4 Four small areas of Subgrade 3a land have been mapped These occur to the north of Vicarage Lane on the slightly raised valley sides and in the extreme south of the site These areas have been assigned to this subgrade (good quality land) on the basis of a moderate wetness and workability limitation

Soils typically comprise very slightly stony medium clay loam or sandy clay loam topsoils over similar or slightly heavier upper subsoils Slowly permeable clay is encountered at 50 55 cms and thus these profiles have been assigned to Wetness Class III In the small area to the south soils are slightly lighter in texture with evidence of high groundwater levels (the land in part is lower than the adjacent A3 Trunk road) and thus have also been included within this subgrade

Subgrade 3b

5 5 Subgrade 3b has been mapped over the majority of the site and contains three different soil types

5 5 1 Land graded 3b on the western half of the site typically comprises the lightest textured soils Profiles typically comprise very slightly stony loamy medium sand over similar or lighter medium sand subsoils Occasionally at depth (80 100 cm) clay or sandy clay is encountered Although occasional profiles were gleyed and sometimes wet due to a high groundwater table these soils are generally well drained and thereby assigned to Wetness Class I Due to the sandy soil textures profiles have low reserves of available water and crops are likely to suffer drought stress particularly during the summer months The moderately severe droughtiness imperfections preclude the land from a higher grade Some land to the north of Three Fords which corresponds to the above soil types is also limited to Subgrade 3b due to gradient (see paragraph 3 1)

5 5 2 The second soil type occurs to the north of Vicarage Lane These profiles comprise stoneless medium clay loam heavy clay loam or medium/heavy silty clay loam topsoils over slowly permeable clay at 30 cm Soil drainage is severely impeded and thus assigned to Wetness Class IV Within this area some profiles have deeper clay loam textures extending to 70 75 cm over clay or sandy clay These have significant groundwater problems which are likely to be difficult to control and consequently soil wetness is likely to restrict the cropping potential of the land

5 5 3 The third soil type comprises lighter soils and is found to the south of Vicarage Lane Soils comprise deep fine loamy or coarse loamy top and upper subsoils over slowly permeable clay or sandy clay typically occurring from 55-80 cm They suffer from prolonged surface waterlogging especially on the footslopes which receive run off and lateral movement of water from upslope Wet flushes are common causing a pattern of drier and wetter areas This significantly affects the flexibility of cropping and timing of any cultivation Thus this area is restricted to Subgrade 3b

Grade 4

5 6 Grade 4 land occurs in two low lying areas in the north of the site At the time of the survey (late April 1994) these areas were severely waterlogged and it is not thought possible to improve the land by normal field drainage practices due to the high groundwater levels and the flat low lying nature of the land in the valley bottom Thus land is severely limited because of high groundwater water seepage and possible flood risk and therefore cannot be graded higher than 4

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Resource Planning Team
Huntingdon Statutory Group
ADAS Cambridge

SOURCES OF REFERENCE

Geological Survey of England and Wales 1976 Sheet 285 Aldershot 1 50 000

MAFF (1972) Agricultural Land Classification Map No 170 Provisional 1 63 360

MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for grading the quality of Agricultural Land Alnwick

Meteorological Office (1989) Data extracted from the published agroclimatic dataset

Soil Survey of England and Wales (1983) Soils of South East England Sheet 6 1 250 000

Soil Survey of England and Wales (1984) Soils and their use in South East England by M G Jarvie *et al* Harpenden

Soil Survey of England and Wales (1986) Woking Sheet TQ 05 1 25 000 and bulletin

Appendix 1

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur typical cropping range and the expected level of consistency of yield In practice the grades are defined by reference to physical characteristics and the grading guidance and cut offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions The most productive and flexible land falls in Grades 1 and 2 and Subgrade 3a and collectively comprises about one third of the agricultural land in England and Wales About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4 Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates The remainder is very poor quality land in Grade 5 which mostly occurs in the uplands

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 include 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 and horticultural crops can usually be grown but on some land in 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 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 Where 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 levels of yields It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yield of which are variable In most 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

Descriptions of other land categories used on ALC maps

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/airfields 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 (e g 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 land cover types e g buildings in large grounds and where map scale permits the cover types may be shown separately Otherwise the most extensive cover type will usually be shown

Appendix 2

FIELD ASSESSMENT OF SOIL WETNESS CLASS

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 not wet within 40 cm depth for more than 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 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 and 90 days in most years
IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years *or* if there is no slowly permeable layer within 80 cm depth it is wet within 40 cm depth for 91-210 days in most years
V	The soil profile is set 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

[1] The 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 3

SOIL BORING AND SOIL PIT DESCRIPTIONS

Contents

* Soil boring descriptions
* Soil pit descriptions
* Soil Abbreviations Explanatory Note

LAND AT WOOD HILL NEAR SEND SURREY

Auger Boring details

1 GR TQ 031 546 2° E/Weedy wet grassland
0-25 cm 10YR33 mCL neg stones
25-75 cm 10YR53 54 mSZL neg stones common distinct ochreous and grey mottles 10YR56 and 10YR62
75-100 cm 10YR53 SC neg stone common distinct ochreous (cdom) and grey (cdgm) mottles 10YR56 and 10YR62 few mang concs

1A GR TQ 031 544 3° E/Weed infested grass
0-20 cm 10YR33 SCL neg stones
20-50 cm 10YR54 and 53 SCL cdom 10YR5/8 neg stones
50-80 cm 10YR64 C cdom 10YR66 cdgm 10YR62 neg stone plastic

2 GR TQ 032 546 Flat valley bottom Weed infested grass Ground too wet to auger Water on surface of soil several cms deep Poached surface

3 GR TQ 033 546 1°W Grass paddock grazed by horses
0 25 cm 10YR42 and 52 mCL neg stones rusty root mottles 10YR58
25 60 cm 10YR54 and 52 SC neg stones cdom 10YR58
50-80 cm 10YR64 and 63 C (dense) neg stones cdom 10YR66 and cdgm 10YR62

4 GR TQ 032 545 2°E Tussocky soft grass
0-20 cm 10YR43 mCL neg stones
20-35 cm 10YR53 hCL neg stones few mang concs cdom 10YR58 and cdgm 10YR62
35 60 cm 10YR53 C neg stones few mang concs cdom 10YR56 and cdgm 10YR62

5 GR TQ 033 545 1°W Grass - horse grazing
0 25 cm 10YR42 and 52 mCL neg stones rusty root mottles 10YR58
25-50 cm 10YR54 and 53 SCL 10% flints cdom 10YR56 moist
50 80 cm 10YR54 and 52 C stoneless vcdom 10YR5/8

6 GR TQ 023 544 4°E Short grass
0-35 cm 10YR43 light SCL 3% flints
35 60 cm 10YR54 C(s) 2% flints few distinct ochreous mottles (fdom) 10YR66
60 90 cm 10YR54 C neg stone cdom 10YR66 cdgm 10YR62

7 GR TQ 032 544 3° E Weedy grassland
0 30 cm 10YR32 mCL neg stone
30 65 cm 10YR53 hCL neg stone cdom 10YR56 cdgm 10YR62 few mang concs very moist
65 75 cm 10YR53 SCL neg stone cdom 10YR56 cdgm 10YR62 saturated
75 100 cm 10YR53 SC 15% small flints vcdom 10YR58 vcdgm 10YR62

8 GR TQ 023 543 5°W Grass
0-30 cm 10YR43 MSL 1% flints
30-45 cm 10YR44 MSL 2% small flints
45-55 cm 10YR55 MSL 3% small flints
55 90 cm 10YR56 C neg stones cdom 10YR58 cdgm 10YR62

9 GR TQ 024 543 1°N Rank grassland
0 35 cm 10YR43 LMS 1% flints
35-45 cm 10YR55 & 64 LMS 4% small flints
45-70 cm 10YR55 & 64 MS 2% small flints
70 100 cm 10YR64 MS stoneless wet
100-120 cm 10YR64 SC 5% small flints saturated

10 GR TQ 031 543 3°E Weedy grassland
0 30 cm 10YR43 mCL 3% flints
30 45 cm 10YR54 mCL 3% flints
45-55 cm 10YR54 53 hCL neg stone cdom 10YR56 cdgm 10YR62
55-90 cm 10YR56 C stoneless plastic common mang concs

11 GR TQ 032 543 ½° N (valley bottom) Grassland
0 25 cm 10YR43 &51 hZCL neg stones rusty root mottles 10YR58
25 75 cm 10YR52 c stoneless vcdom 10YR58 wet (affected by groundwater)

12 GR TQ 024 542 ½°N (on top of ridge) Rough grassland
0-30 cm 10YR43 MSL 3% flints
30-50 cm 10YR54 & 64 MSL 2% flints
50 80 cm 10YR54 C stoneless cdom 10YR56 cdgm 10YR62

13 GR TQ 025 542 Flat grass
0-35 cm 10YR43 SCL stoneless
35-55 cm 10YR53 MSL 10% flints cdom 10YR56 wet
55-70 cm 10YR68 & 74 LMS stoneless wet
70-120 cm 10YR68 & 72 SCL stoneless few mang concs

14 GR TQ 031 542 3°E Short grass grazed by rabbits
0-35 cm 10YR43 mCL neg stone
35-70 cm 10YR53 C stoneless cdom 10YR56 cdgm 10YR62 common mang concs plastic

15 GR TQ 032 542 ½° SW Grass and weeds
0-25 cm 10YR43 mZCL 2% flints
25-70 cm 10YR53 & 52 C 2% flints cdom 10YR58 plastic

16 GR TQ 024 541 4°W Grassland
0 30 cm 10YR43 SCL 5% flints
30-50 cm 10YR53 and 63 C 5-10% flints cdom 10YR56 cdgm 10YR52
50 80 cm 10YR53 & 63 C stoneless vcdom 10YR58 vcdom 10YR51

17 GR TQ 025 541 Flat grassland
0-35 cm 10YR43 SCL neg stone
35-100 cm 10YR68 & 62 C neg stone 1% flints few mang concs cdom 10YR58 and cdgm 10YR52 plastic

18 GR TQ 026 541 Flat nettle infested grassland
0-35 cm 10YR33 SCL 3% flints
35-65 cm 10YR53 & 63 SCL 5% flints fdom 10YR56 common mang concs
65-75 cm 10Y6R68 & 62 SCL stoneless plastic
75-100 cm 10YR68 & 62 SC stoneless plastic

19 GR TQ 029 541 3°E Grassland (just to E c 20 m is wet flush - possible springline)
0-30 cm 10YR43 SCL 2% flints
30 50 cm 10YR44 SCL stoneless very moist
50-70 cm 10YR44 SCL 5% flints saturated (therefore colours masked)
70-100 cm 10YR52 & 58 SC stoneless (drier than horizon above)

20 GR TQ 030 541 2°E Grassland (wet patches in field nearby)
0-30 cm 10YR42 mCL 1% flints rusty root mottles 10YR58
30-55 cm 10YR53 & 63 SCL stoneless cdom 10YR56 very moist
55 65 cm 10YR53 & 52 SC stoneless cdom 10YR56 almost plastic
65-80 cm 10YR53 & 52 (z) C stoneless dense cdom 10YR56

21 GR TQ 031 541 2°SE Short weedy grassland (near pond)
0-25 cm 10YR42 hCL stoneless cdom 10YR58 cdgm 10YR41
25-65 cm 10YR53 & 52 SCL 5% flint cdom 10YR58 few mang concs very moist
65-80 cm 10YR53 & 52 SC 5% flints cdom 10YR58 moist

22 GR TQ 024 540 5°W Weedy set aside
0-35 cm 75YR32 LMS 1% small flints
35-45 cm 10YR54 & 56 MS stoneless
45 50 cm 10YR54 & 62 MSL stoneless
50 60 cm 10YR54 & 62 SCL stoneless
60-110 cm 10YR66 C stoneless cdom 10YR58 cdgm 10YR62

23 GR TQ 025 540 2°S Weedy set aside
0-35 cm 10YR33 LMS stoneless
35 50 cm 10YR64 & 66 MS stoneless (wet from 45 cm)
50-120 cm 10YR62 & 75YR43 MS stoneless wet → saturated

24 GR TQ 026 540 2°E Weedy set aside
0-40 cm 10YR33 LMS 1% flints
40-55 cm 10YR63 MS stoneless 75YR44 & 46
55-120 cm colours as above +10YR61 MS stonless wet mang concs noted from 95 cm

25 GR TQ 027 540 2°S Nettle infested rough grassland
0 35 cm 10YR32 LMS neg stone
35 50 cm 10YR44 & 64 LMS 1% flints
50 85 cm 10YR44 & 53 MS occ iron concretions very moist
85 120 cm 10YR63 & 64 MS stoneless wet

26 GR TQ 029 540 3°SE Grass paddock
0-30 cm 10YR43 MSL stoneless
30-45 cm 10YR44 MSL 1% flints and occ chalk fragments
45-70 cm 10YR54 LMS 3% iron concretions
70 80 cm 10YR54 SCL 5% flints very moist cdom 10YR56 and cdgm 10YR52
80 120 cm 10YR54 SC stoneless plastic wet (masks mottling)

27 GR TQ 030 540 3°E Grass paddock
0-30 cm 10YR33 MSL stoneless
30-55 cm 10YR54 LMS stoneless few mang concs
55-80 cm 10YR53 & 54 LMS stoneless wet from 70 cm +
80-95 cm 10YR53 & 54 MS large mang conc stains saturated
95-120 cm 10YR53 & 75YR58 C cdom 10YR58 plastic

28 GR TQ 031 540 3°E Short grass (wet area nearby)
0-35 cm 10YR33 MCL stoneless
35-55 cm 10YR56 MSL 3% flints wet
55-95 cm 10YR53 C stoneless cdom 10YR58 & cdgm 10YR72 60 cm+ mang concs common with depth
95-120 cm 10YR53 & 56 SCL stoneless cdom 10YR58 + cdgm 10YR72

29 GR TQ 024 539 8°W Nettle infested set aside
0-35 cm 10YR33 LMS neg stones
35-45 cm 75YR44 LMS neg stones
45-55 cm 75YR56 MS stoneless moist
55-80 cm 10YR56 MS stoneless very moist
80-95 cm 10YR66 & 56 LMS stoneless wet
95-120 cm 10YR66 & 56 MSL stoneless dry

30 GR TQ 025 539 3° S Very weedy set aside
0-35 cm 10YR33 LMS 2% flints
35-50 cm 10YR43 & 53 LMS stoneless moist
50-85 cm 10YR64 & 54 MS stoneless wet
85-120 cm 75YR44 & 62 LMS 5% flints few mang concs saturated

31 GR TQ 026 539 2°SE Grassland and nettles
0-30 cm 10YR33 LMS neg stone
30-50 cm 10YR72 & 73 MS stoneless
50-120 cm 10YR72 & 73 MS stoneless wet clayey lenses and mang conc stains 95 cm +

32 GR TQ 027 539 4°SE Tall grass
0-35 cm 10YR32 LMS 1% flints
35-40 cm 10YR64 & 63 LMS stoneless
40 120 cm 75YR62 & 52 MS stoneless wet from 90 cm + 5% iron concretions from 70 cm +

33 GR TQ 028 539 3°SE Weed infested grass
0 30 cm 10YR33 & 54 SCL neg stone
30-45 cm 10YR54 SC 5% flints few mang concs
45-80 cm 10YR53 C 5% flints cdom 10YR56 cdgm 10YR52 plastic

34 GR TQ 029 539 3°SE Tall grass and nettles
0-35 cm 10YR43 LMS 1% flints
35 50 cm 75YR44 LMS stoneless few mang concs
50-120 cm 75YR44 & 64 MS stoneless wet 75 cm +

35 GR TQ 030 539 3°W Grass and weeds
0-30 cm 10YR32 LMS 1% flints
30 60 cm 10YR63 & 75YR43 LMS 5 10% iron concretions
60 85 cm10YR62 & 63 MS stoneless wet → saturated
85 120 cm 10YR62 & 63 SC stoneless

36 GR TQ 024 538 6°W Weedy set aside
0-40 cm 10YR32 LMS neg stones
40-120 cm 10YR64 & 54 MS stoneless becomes wetter with depth

37 GR TQ 025 538 3°W Nettle infested set aside
0 35 cm 10YR43 LMS 4% flints
35 55 cm 10YR76 & 75YR56 MS 4% flints few large mang stains
55 65 cm 10YR72 & 64 hCL stoneless few mang concs
65-90 cm 10YR72 & 64 C stoneless cdom 10YR56

38 GR TQ 026 538 3°SE Grass and nettles
0 35 cm 10YR43 MSL neg stones
35 55 cm 75YR44 LMS neg stones
55-70 cm 10YR56 MS stoneless large mang stains 65 cm +
70-120 cm 10YR54 & 75YR44 MS stoneless wet → saturated common mang stains

39 GR TQ 027 538 4°SE Grass and nettles
0 35 cm 10YR32 LMS 2% small flints
35 75 cm 10YR54 & 64 MS stoneless occ mang stains
75 85 cm 10YR62 & 66 MSL stoneless few mang concs
85-110 cm 10YR62 & 66 C stoneless plastic cdom and cdgm as matrix

40 GR TQ 028 538 3°E Nettlebed
0-35 cm 10YR33 LMS neg stone
35 50 cm 10YR43 & 52 LMS stoneless wet
50-65 cm 10YR43 & 52 LMS stoneless few mang concs wet
65-120 cm 10YR71 MS saturated

41 GR TQ 029 538 2° S Grass and nettles
0 45 cm 10YR31 (sli org?) MSL 1% flints
45-70 cm 10YR55 & 52 SCL 10% flints cdom 10YR56
70-100 cm 10YR64 & 62 SC stoneless cdom 10YR56

42 GR TQ 025 537 9°W Nettle and weed infested set aside
0 40 cm 10YR43 LMS neg stone
40 70 cm 10YR56 MS stoneless moist
70-110 cm 10YR53 C stoneless cdom 75YR68 & cdgm 10YR62 plastic occ sandy lenses

43 GR TQ 026 537 4° SE Tall grass
0-35 cm 10YR32 & 33 LMS neg stone
35 85 cm 10YR44 & 66 MS neg stone common mang stains 55 cm +
85 110 cm 7 5YR68 C stoneless cdgm 10YR72 plastic occ sand lense

44 GR TQ 027 537 4° SE Grass and weeds
0 35 cm 10YR32 LMS neg stone
35 50 cm 10YR44 MS stoneless
50-85 cm 10YR73 & 63 MS stoneless moist
85-100 cm 10YR62 MS 5% flints cdom 10YR66 SCL lenses in MS
100-120 cm 10YR62 SC stoneless cdom 10YR66

45 GR TQ 028 537 3°E Tall grass
0 40 cm 10YR33 MSL neg stones
40-55 cm 10YR33 & 44 LMS 15% flints few mang stains
55-65 cm 10YR43 LMS 10% flints
65-85 cm 10YR56 MS 10% flints wet
85-110 cm 10YR53 SCL 4% flints cdom 75YR58 few mang concs

46 GR TQ 026 536 4°S Grass and weeds
0-25 cm 10YR54 C 2% flints
25-60 cm 10YR53 C stoneless cdom 10YR56 cdgm 10YR62 common mang concs
40 cm + plastic

47 GR TQ 027 536 4°SE Grass (short grazed by rabbits)
0 35 cm 10YR32 LMS neg stone
35-50 cm 75YR44 & 10YR54 MS stoneless
50-115 cm 75YR44 & 10YR54 MS stoneless iron staining wet 80 cm +

48 GR TQ 028 536 3°SE Grass
0-35 cm 10YR33 LMS 5% flints
35-75 cm 10YR54 & 33 LMS stoneless few mang concs
75-85 cm 10YR54 & 52 MS stoneless wet
85-100 cm 10YR66 MS stoneless cdom 10YR56
100-120 cm 10YR66 SCL 10% flints cdom 10YR56

49 GR TQ 026 535 4°S Grass and weeds
0-20 cm 10YR33 LMS 3% flints
20-45 cm 10YR54 & 41 LMS stoneless wet
45-90 cm 10YR56 C stoneless ffgm 10YR62 55 cm + cfom 10YR58 70 cm+
common mang concs 65 cm +
90-120 cm 10YR56 SCL stoneless cfom 10YR58

50 GR TQ 027 535 3°SE Tall grass
0-30 cm 10YR43 MSL 1% flints
30-55 cm 75YR 54 & 53 MSL stoneless mang concs 45 cm +
55-60 cm 10YR66 & 63 SC stoneless cdom 10YR68
60-90 cm 10YR66 & 63 C stoneless plastic cdom 10YR68

51 GR TQ 027 534 4°SE Tall grass (land below level of adjacent A3)
0 25 cm 10YR42 SCL neg stone rusty root mottles 10YR58 from 20 cm
25-70 cm 10YR62 & 58 SC stoneless moist
70-100 cm 10YR62 & 58 SCL stoneless wet plastic

PIT DESCRIPTIONS

Site Name Wood Hill Near Send Surrey Pit Number 1P (AB 1A)

GRID REFERENCES TQ 0310 5435

Average Annual Rainfall	690
Accumulated Temperature	1483
Field Capacity Level	146
Land Use	Grassland and nettles
Slope and Aspect	3° E

Horizon	Texture	Colour	Stones >2	Tot Stone	Mottles	Structure
0 20 cm	SCL	10YR33	1	1	--	--
20-50 cm	SCL	10YR54 53	0	0	C	MDCSAB
50 80 cm	C	10YR64	0	0	C	MDCAB

Wetness Grade	3a	Wetness Class	III
		Gleying	20 cm
		SPL	50 cm
Drought Grade	2	APW 126 m MBW	14 mm
		APP 103 m MBP	-3 mm

FINAL ALC GRADE 3a
MAIN LIMITATION WETNESS

Site Name Wood Hill Near Send Surrey Pit Number 2P (AB 23)

GRID REFERENCES TQ 0250 5400

Average Annual Rainfall	694
Accumulated Temperature	1470
Field Capacity Level	147
Land Use	Set aside weed infested
Slope and Aspect	1° W

Horizon	Texture	Colour	Stones >2	Tot Stone	Mottles	Structure
0-37 cm	LMS	10YR33	0	0	--	--
37-57 cm	MS	10YR54	0	0	--	WKCSAB
57-110cm	MS	10YR53	0	0	--	MDCSAB

Wetness Grade	1	Wetness Class	I
		Gleying	57 cm
		SPL	None

Drought Grade	3b	AWW	82	MBW	- 40
		AWP	66	MBP	- 30

FINAL ALC GRADE 3b

MAIN LIMITATION DROUGHT

Site Name Wood Hill Near Send Surrey Pit Number 2P (AB 12)

GRID REFERENCES TQ 0240 5420

Average Annual Rainfall	693
Accumulated Temperature	1470
Field Capacity Level	146
Land Use	Rough grass
Slope and Aspect	½° N

Horizon	Texture	Colour	Stones >2	Tot Stone	Mottles	Structure
0-32 cm	MSL	10YR43	2	2	--	--
32-50 cm	MSL	10YR66 54	--	4	--	MDCSAB
50-100cm	C	25Y62 63	--	1	C	STCPR

Wetness Grade	2	Wetness Class	III
		Gleying	50 cm
		SPL	50 cm

Drought Grade	2	APW	128 mm MBW 16 mm
		APP	105 m MBP -1 mm

FINAL ALC GRADE 2

MAIN LIMITATION WETNESS AND DROUGHT

PROFILES AND PITS

1 TEXTURE Soil texture classes are denoted by the following abbreviations

S	- sand
LS	- loamy sand
SL	sandy loam
SZL	- sandy silt loam
ZL	- silt loam
MZCL	- medium silty clay loam
MCL	- medium clay loam
SCL	- sandy clay loam
HZCL	- heavy silty clay loam
HCL	- heavy clay loam
SC	- sandy clay
ZC	- silty clay
C	- clay

For the sand loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction may be indicated by the use of prefixes

F fine (more than ⅔ of the sand less than 0 2 mm)
C coarse (more than ⅓ of sand greater than 0 6 mm)
M - medium (less than ⅔ fine sand and less than ⅓ coarse sand)

The sub divisions of clay loam and silty clay loam classes according to clay content are indicated as follows

M medium (less than 27% clay)
H heavy (27-35% clay)

Other possible texture classes include

OL - organic loam
P peat
SP - sandy peat
LP - loamy peat
PL - peaty loam
PS - peaty sand
MZ - marine light silts

2 MOTTLE COL Mottle colour

3 MOTTLE ABUN Mottle abundance

F few - less than 2% of matrix or surface described
C - common 2-20% of the matrix
M many - 20 40% of the matrix
VM very many - 40% + of the matrix

4 MOTTLE CONT Mottle continuity

F faint - indistinct mottles evident only on close examination
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 Stone lithology One of the following is used

HR - all hard rocks or 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 (>2 cm, >6 cm 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 well developed

- ped size
  - F - fine
  - M - medium
  - C - coarse
  - VC - very coarse

- ped shape
  - S - single grain
  - M - massive
  - GR - granular
  - SB/SAB - sub-angular blocky
  - AB - 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 in 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