LAND AT WILMINGTON,
NEAR DARTFORD, KENT.

AGRICULTURAL LAND CLASSIFICATION
DETAILED SURVEY
JANUARY 1993

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1. INTRODUCTION

1.1 In January 1993, a detailed Agricultural Land Classification, (ALC) survey was carried out on 72.5 hectares of land at Wilmington, near Dartford in Kent. ADAS was commissioned by MAFF to determine the quality of land affected by proposals to develop the land as a 9-hole golf course.

1.2 The land was previously surveyed by the Resource Planning Team, ADAS Statutory Group in March 1992 at a reconnaissance scale of one boring per 4 ha. The later survey in January 1993 represents a more detailed level of one boring per hectare. A total of 64 borings (17 during the 1992 survey and 47 in 1993) were described 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 and chemical characteristics impose long term limitations on its agricultural use.

1.3 At the time of the survey, most of the area surveyed was in arable use, (winter cereals and oilseed rape) whilst small areas towards the west of the site were in permanent pasture some with scattered derelict orchard.

1.4 The distribution of grades is shown on the attached ALC map and the area and extent is given below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement may be misleading. This map supersedes the previous ALC information for this site.

Table 1: Distribution of Grades and Sub-grades

	Area (ha)	% total agricultural land
Grade 2	34.4	53.4
3a	24.7	38.4
3b	5.3	8.2
Total agricultural area	64.4	100
Non-agricultural	0.1	
Woodland	7.7	
Urban	0.3	
Total area of site	72.5 ha	

1.5 A description of the grades and land use categories identified in this survey is given in Appendix 1.

1.6 Grades 2, 3a and 3b have been mapped across the site, with small areas of woodland, non-agricultural and urban land in the vicinity of Rowhill Grange and Rowhill Wood towards the western boundary of the site.

The principal limitation to agricultural land quality on the site is that of soil droughtiness. The severity of the limitation varies according to the relative depths of soil over chalk, the textural characteristics of the soil and profile stoniness. The climatic regime at this locality is relatively warm and dry such that very shallow soils over chalk have been assigned to sub-grade 3b, whilst deep, stoneless profiles are generally graded 2.
Less significantly, soil wetness and/or workability, or topsoil stone contents act as a limitation across localised parts of the site.

2. CLIMATE

2.1 Climatic criteria are considered first when classifying land since climate can be over-riding in the sense that severe limiations will restrict land to low grades irrespective of favourable site or soil conditions.

2.2 Estimates of climatic variables relevant to the assessment of land quality were obtained by interpolation from a 5km grid point dataset, (Met Office, 1989) for representative locations in the survey area.

Table 2: Climatic Interpolation

Grid Reference	TQ 529 718	TR 523 709
Altitude (m,AOD)	40	65
Accumulated Temperature (°days,Jan-June)	1459	1431
Average Annual Rainfall (mm)	589	605
Field Capacity Days	114	118
Moisture deficit, wheat (mm)	120	116
Moisture deficit, potatoes (mm)	116	111

2.3 The main parameters used in the assessment of an overall climatic limitation are, average annual rainfall, a measure of overall wetness, and accumulated temperature, as a measure of the relative warmth of a locality. In this instance, climate does not represent an overall limitation to agricultural land quality. In addition, no local climatic factors such as exposure or frost risk are significant.

2.4 However, climatic factors, specifically field capacity days and soil moisture deficits, do interact with soil factors to influence soil wetness and droughtiness limitations. At this locality, the climate is very dry in both a regional and national context. The low number of days when soils are at field capacity and the correspondingly high moisture deficits will increase the risk of soil droughtiness, although problems associated with soil wetness and workability are less likely to occur.

3. RELIEF

3.1 The site lies at an altitude of 40-65m AOD, the highest land occurring towards the south west around Rowhill Grange and falling gently north-eastwards. Nowhere on the site do altitude or gradient affect agricultural land quality.

4. GEOLOGY AND SOILS

4.1 British Geological Survey, (1977) Sheet 271, Dartford shows the site to be underlain mainly be Cretaceous Upper Chalk deposits, although small areas of Thanet Beds are shown in the south-western and north-eastern parts of the site. A very small area of Boyn Hill Gravel overlies the outcrop of Thanet Beds towards the north-east part of the site.

4.2 Soil Survey of England and Wales, (1983) Sheet 6, Soils of South-East England, (1:250,000) shows the entire site to comprise soils of the Frilsham association. The accompanying legend describes these as 'well drained mainly fine loamy soils over chalk, some calcareous. Shallow calcareous fine loamy and fine silty in places ', (SSEW, 1983).

4.3 Detailed field examination of the soils on the site indicates that the majority comprise varying depths of loamy and clayey drift over chalk. Most soils are well drained, although occasional profiles are affected by slight drainage imperfections.

5. AGRICULTURAL LAND CLASSIFICATION

5.1 The ALC grading of the site is largely determined by the interaction between soil and climatic factors. Grades 2, 3a and 3b have been mapped on the basis of soil droughtiness and/or soil wetness and workability limitations. Most of the land is primarily affected by varying degrees of soil droughtiness.

5.2 Table 1 provides details of the area and extent of each grade. The distribution of ALC grades is shown on the attached ALC map.

5.3 The location of the soil observation points is shown on the attached auger boring map.

5.4 Grade 2

Very good quality agricultural land has been mapped across much of the northern and central parts of the site, accounting for 53% of the total agricultural land surveyed.
It occurs broadly in two situations.

- Although soils have developed over chalk deposits, a number of profiles do not pass to chalk. They tend to be deep and well drained. Profiles typically comprise medium or heavy clay loam topsoils which may be non-calcareous but are more usually calcareous and contain up to 6% total flints by volume. Subsoils are similarly textured, although they tend to pass to heavier clay horizons with depth, and may contain between 10 and 30% flints by volume in the lower subsoil

or may pass to chalky drift low in the profile. In addition, occasional profiles contained sandier horizons of sandy clay loam or sandy loam in the subsoil.
The combination of soil factors and the dry climatic regime gives rise to a slight risk of soil droughtiness. Where topsoils of heavy clay loam were encountered, land is also limited by a slight workability restriction.

- Land is also graded as 2 where profiles similar to those described above were observed, but where soils rest over chalky horizons (ie, 50% + chalk) or chalk deep in the profile. Soils are well drained and typically pass to chalky horizons or chalk below about 65-85 cm depth. This land is limited by slight droughtiness resulting from a reduced water capacity available for plant growth.

5.5 Grade 3a

Land assigned to this grade has been mapped as two distinct units whose characteristics and limitations to agricultural use are different.

- The 3a mapping unit towards the north of the site comprises soils which are limited principally by wetness. Profiles comprise medium or sandy clay loam topsoils which may be calcareous or non-calcareous and which contain up to 20% total flints by volume, (< 15% > 2 cm). These overlie heavier textures in the subsoil, such as heavy clay loam or clay. Gleying is evident from below the topsoil and the clayey subsoil is slowly permeable. Wetness class III is appropriate to these profiles which equates to grade 3a in this climatic regime. Occasional profiles were found to be better drained, but limited by soil droughtiness as a result of subsoil stoniness of up to 25% flints by volume. Such stone contents have the effect of reducing the reserves of water available for plant growth to the extent that in this dry climatic area, grade 3a is appropriate.

- The larger area of grade 3a across the central and southern part of the site comprises soils which have developed over chalk and is thereby limited by soil droughtiness. Calcareous medium, or more usually, heavy clay loam topsoils containing between 1 and 4% total flints and up to 2% total chalk by volume occur across this area. These overlie similar textures, heavy silty clay loam or clay in the subsoil which becomes progressively more chalky with depth, passing to pure chalk, (usually impenetrable to soil auger) between 50 and 75 cm depth. Due to relatively restricted rooting into the chalk, profile available water capacity is reduced such that crops may experience slight drought stress to the extent that grade 3a is appropriate.

5.6 Grade 3b

The areas mapped as grade 3b represent land which is very shallow over chalk. Profiles comprise medium or heavy clay loam topsoils which are calcareous and contain 2-5% total flints and up to 10% chalk by volume. These directly overlie chalky horizons, (ie, 50% + chalk), or pure chalk from 25-30 cm depth. Relatively shallow rooting into the chalk causes a significant droughtiness limitation in this dry climatic regime.

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Resource Planning Team
Guildford Statutory Team
ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1977), Sheet 271, Dartford, 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) Climatic datasets for Agricultural Land Classification.

- Soil Survey of England and Wales (1983) Sheet 6, Soils of South-East England, 1:250,000 and accompanying legend.

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	
2	0-32	mcl	10YR32 00						6	0	HR	8						Y	
	32-50	hcl	10YR54 00						0	0	HR	20		M				Y	
	50-60	c	10YR53 00	75YR58 00	C			Y	0	0	HR	20		M				Y	Imp 60+, stones
4	0-28	mcl	10YR32 00						0	0	HR	4							
	28-120	hcl	10YR44 00						0	0	HR	5		M					
5	0-32	hcl	10YR42 00						2	0	HR	3						Y	
	32-45	hcl	10YR64 00						0	0	CH	80		M				Y	Imp 45+, chalk
	45-70	ch							0	0		0		P				Y	Rooting to 70
6	0-30	mcl	10YR32 00						2	0	HR	3						Y	
	30-42	c	10YR53 00						0	0	CH	5		M				Y	
	42-60	c	10YR53 00	75YR68 00	M		10YR71 00	Y	0	0	CH	2		P		Y		Y	
	60-90	c	25 Y62 00	05YR58 00	M			Y	0	0		0		P		Y			Imp 90+, stones
7	0-30	hcl	10YR32 00						0	0		0							
	30-70	hcl	10YR54 00						0	0		0		M					
	70-120	scl	10YR54 00						0	0		0		M					Few chalk frags.
8	0-28	hcl	10YR32 00						0	0	HR	2							
	28-55	hcl	10YR44 00						0	0	CH	5		M				Y	
	55-120	hcl	10YR54 00						0	0		0		M					
9	0-28	mcl	10YR32 42						0	0	HR	2							
	28-75	c	25Y 42 00	10YR46 00	C			Y	0	0		0		M		Y			
	75-95	c	10YR56 00					Y	0	0	HR	25		P		Y			Imp 95+, stones
10	0-26	mcl	10YR32 00						0	0	HR	2							
	26-60	mcl	10YR43 00						0	0	HR	5		M					
	60-120	c	75YR56 00						0	0		0		M					
12	0-32	mcl	10YR32 00						0	0	HR	2						Y	
	32-50	c	10YR44 00						0	0		0		M					
	50-70	hcl	10YR54 00						0	0		0		M					Imp 70+, stones
14	0-25	mcl	10YR32 00						0	0	HR	2							
	25-35	hcl	10YR53 00						0	0	CH	5		M				Y	
	35-55	hzcl	25 Y82 00						0	0	CH	90		P				Y	
	55-83	hcl	10YR56 82						0	0	CH	40		P				Y	Imp 83+, chalk
	83-120	ch							0	0		0		P				Y	Rooting to 120
16	0-28	mcl	10YR32 00						0	0	HR	2							
	28-60	c	10YR56 00						0	0		0		M					
	60-80	c	10YR56 00						0	0	HR	10		M					Imp 80+, stones
17	0-32	mcl	10YR32 00						3	0	HR	3						Y	
	32-50	mcl	10YR74 00						0	0	CH	80		P				Y	Imp 50+, chalk
	50-70	ch							0	0		0		P				Y	Rooting to 70

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	CALC	
18	0-30	mcl	10YR42 00						0	0	HR	1					Y		
	30-60	hcl	10YR44 00						0	0		0		M			Y		
	60-75	c	10YR54 00						0	0	HR	2		M			Y		
	75-80	c	10YR54 00						0	0	CH	10		M			Y		
	80-120	hcl	10YR74 00						0	0	CH	20		M			Y		Chalky drift
19	0-33	hcl	10YR32 00						0	0	HR	1					Y		
	33-60	hcl	10YR74 00						0	0	CH	5		M			Y		+2% flints
	60-68	hcl	10YR74 00						0	0	CH	20		M			Y		Imp 68+, chalk
	68-110	ch							0	0		0		P			Y		Rooting to 110
20	0-30	mcl	10YR32 00						0	0	HR	2					Y		
	30-55	hcl	10YR43 00						0	0	HR	2		M			Y		
	55-80	hcl	10YR74 00						0	0	CH	20		M			Y		+2% flints
	80-120	ch							0	0		0		P			Y		Rooting to 120
21	0-30	hcl	10YR32 00						0	0	HR	2					Y		
	30-45	hcl	10YR43 00						0	0		0		M			Y		
	45-70	hcl	10YR54 00						0	0		0		M			Y		
	70-120	c	75YR56 00						0	0		0		M			Y		
22	0-33	mcl	10YR42 00						0	0	HR	1							
	33-50	hcl	10YR44 54						0	0		0		M			Y		
	50-67	c	75YR56 00						0	0		0		M			Y		
	67-120	hcl	10YR74 00						0	0	CH	20		M			Y		Chalky drift
24	0-30	mcl	10YR42 00						0	0	HR	2					Y		
	30-45	ch	10YR82 00						0	0		0		P			Y		Imp 45+, chalk
	45-70	ch							0	0		0		P			Y		Rooting to 70
26	0-32	mcl	10YR42 00						0	0		0					Y		
	32-60	hcl	10YR54 00						0	0	HR	2		M			Y		Few chalk frags.
	60-65	hcl	10YR64 00						0	0	CH	10		M			Y		
	65-80	hcl	10YR74 00						0	0	CH	80		P			Y		Imp 80+, chalk
	80-110	ch							0	0		0		P			Y		Rooting to 110
28	0-30	hcl	10YR42 00						0	0	HR	2					Y		
	30-65	hcl	10YR54 00						0	0		0		M			Y		
	65-90	c	75YR56 00						0	0	HR	2		M			Y		Imp 90+, stones
30	0-30	hcl	10YR42 00						0	0	HR	2					Y		
	30-75	c	10YR53 00						0	0		0		M			Y		Few chalk frags
	75-90	c	10YR53 00	75YR68 00	C		25Y 63 00	Y	0	0	HR	2		P	Y		Y		Imp 90+, stones
31	0-30	hcl	10YR42 00						0	0	HR	4							
	30-45	c	75YR46 00						0	0		0		M			Y		
	45-65	c	10YR64 00						0	0	CH	20		M			Y		
	65-89	hzcl	10YR56 00						0	0	CH	70		P			Y		Imp 89+, chalk
	89-120	ch							0	0		0		P			Y		Rooting to 120

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	
32	0-30	hcl	10YR42 00						0	0	HR	2						Y	
	30-42	c	10YR64 00						0	0	CH	10		M				Y	
	42-49	hzcl	10YR74 00						0	0	CH	80		P				Y	Imp 49+, chalk
	49-80	ch							0	0		0		P				Y	Rooting to 80
33	0-30	hcl	10YR32 42						0	0	HR	2						Y	
	30-45	c	10YR64 00						0	0	CH	20		M				Y	
	45-52	hzcl	10YR74 81						0	0	CH	80		P				Y	Imp 52+, chalk
	52-85	ch							0	0		0		P				Y	Rooting to 85
34	0-20	mcl	10YR42 00						0	0	HR	2							
	20-30	hcl	10YR42 00						0	0	HR	2		M					
	30-45	c	10YR46 56						0	0		0		M					
	45-70	c	10YR64 74						0	0	CH	40		M				Y	
	70-85	hzcl	10YR74 81						0	0	CH	60		P				Y	Imp 85+, chalk
	85-120	ch							0	0		0		P				Y	Rooting to 120
35	0-28	hcl	10YR42 00						0	0	HR	2						Y	
	28-37	hcl	10YR44 54						0	0	CH	10		M				Y	
	37-65	hcl	10YR54 64						0	0	CH	40		P				Y	Imp 65+, chalk
	65-100	ch							0	0		0		P				Y	Rooting to 100
36	0-28	hcl	10YR42 00						0	0	HR	2						Y	
	28-35	c	10YR44 54						0	0	CH	20		M				Y	
	35-75	hzcl	10YR73 81						0	0	CH	90		P				Y	Imp 75+, chalk
	75-80	ch							0	0		0		P				Y	Rooting to 80
37	0-28	hcl	10YR42 00						0	0	HR	2						Y	
	28-35	c	10YR54 00						0	0	CH	10		M				Y	
	35-60	c	10YR64 00						0	0	CH	30		M				Y	
	60-90	c	05 Y42 00	10YR46 00	M			Y	0	0	CH	50		P		Y		Y	Imp 90+, chalk
	90-120	ch						Y	0	0		0		P		Y		Y	Rooting to 120
39	0-30	hcl	10YR42 00						0	0	HR	1						Y	
	30-65	c	10YR53 00	10YR56 00	F				0	0	CH	30		M				Y	Imp 65+, chalk
	65-100	ch							0	0		0		P				Y	Rooting to 100
41	0-30	hcl	10YR42 00						0	0	HR	2						Y	
	30-38	c	10YR54 00						0	0	CH	20		M				Y	
	38-70	c	25Y 64 00	000C00	00 F				0	0	CH	40		M				Y	
	70-80	c	05Y 52 53	75YR44	00 C			Y	0	0		0		P					
	80-120	hzcl	10YR72 00					Y	0	0	CH	80		M				Y	Chalky drift
43	0-30	mcl	10YR42 32						0	0	HR	2						Y	
	30-45	c	10YR54 44						0	0	CH	10		M				Y	
	45-85	hzcl	10YR74 00						0	0	CH	35		M				Y	Imp 85+, chalk
45	0-30	hcl	10YR42 32						0	0	HR	3						Y	
	30-52	c	10YR44 00						0	0	HR	5		M					
	52-65	c	10YR54 00	75YR56	00 C		00MN00	00	0	0	HR	1		M					Imp 65+, chalk
	65-100	ch							0	0	HR	3		P				Y	Rooting to 100

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	
48	0-34	hcl	10YR42 00						0	0	HR	3							
	34-70	c	10YR54 00						0	0	HR	1		M					
	70-90	c	10YR54 56	000M00	00	F			0	0	HR	1		M					
	90-120	c	05Y 63 00	10YR56 00	C			Y	0	0	HR	1		P					
49	0-35	hcl	10YR42 00						0	0	HR	2							
	35-50	c	10YR54 00						0	0	HR	1		M					
	50-78	c	10YR54 00						0	0	CH	20		M				Y	
	78-95	hzcl	05Y 64 00						0	0	CH	60		P				Y	Imp 95+, chalk
	95-120	ch							0	0	HR	2		P				Y	Rooting to 120
50	0-29	mcl	10YR42 32						0	0	HR	2						Y	
	29-50	c	10YR54 00						0	0	CH	15		M				Y	
	50-75	c	10YR64 66						0	0	CH	40		M				Y	Imp 75+, chalk
	75-120	ch							0	0	HR	2		P				Y	Rooting to 120
51	0-29	hcl	10YR42 32						0	0	HR	2						Y	
	29-39	c	10YR54 00						0	0	CH	60		P				Y	
	39-90	hzcl	10YR73 00						0	0	CH	60		P				Y	Imp 90+, chalk
	90-120	ch							0	0		0		P				Y	Rooting to 120
52	0-28	hcl	10YR42 32						0	0	HR	2						Y	
	28-50	c	10YR46 00						0	0	HR	2		M				Y	
	50-80	hzcl	10YR64 00						0	0	CH	20		M				Y	Imp 80+, chalk
	80-120	ch							0	0	HR	2		P				Y	Rooting to 120
53	0-28	hcl	10YR42 32						0	0	HR	4						Y	
	28-50	hzcl	10YR72 73						0	0	CH	70		P				Y	Imp 50+, chalk
	50-90	ch							0	0	HR	3		P				Y	Rooting to 90
55	0-34	mcl	10YR42 00						0	0	HR	1							
	34-55	hcl	10YR54 56						0	0		0		M				Y	
	55-80	c	05Y 53 00	10YR56 00	M			Y	0	0		0		P		Y		Y	
57	0-29	hcl	10YR42 00						0	0	HR	1						Y	
	29-55	hcl	10YR66 76						0	0	CH	10		M				Y	
	55-80	hzcl	10YR73 00						0	0	CH	55		P				Y	Imp 80+, chalk
	80-120	ch							0	0	HR	2		P				Y	Rooting to 120
59	0-28	hcl	10YR42 32						0	0	HR	2						Y	
	28-35	c	10YR73 00						0	0	CH	25		M				Y	
	35-50	hzcl	10YR73 00						0	0	CH	60		P				Y	Imp 50+, chalk
	50-90	ch							0	0	HR	2		P				Y	Rooting to 90
61	0-30	hcl	10YR42 32						0	0	HR	3						Y	
	30-35	c	10YR54 00						0	0	CH	20		M				Y	
	35-70	hzcl	10YR73 00						0	0	CH	30		M				Y	Imp 70+, chalk
	70-110	ch							0	0	HR	2		P				Y	Rooting to 110

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	IMP	SPL	CALC	
65	0-28	hcl	10YR42 00						0	0	HR	2						Y	Imp 28+, chalk
	28-68	ch							0	0	HR	5		P				Y	Rooting to 68
66	0-26	hcl	10YR42 00						0	0	HR	2						Y	
	26-58	hzcl	05Y 73 00						0	0	CH	55		P				Y	Imp 58+, chalk
	58-98	ch							0	0	HR	2		P				Y	Rooting to 98
67	0-37	hcl	10YR42 00						0	0	HR	2						Y	
	37-50	hzcl	10YR73 00						0	0	CH	60		P				Y	Imp 50+, chalk
	50-90	ch							0	0	HR	3		P				Y	Rooting to 90
68	0-28	hcl	10YR32 42						0	0	HR	5						Y	
	28-43	hzcl	10YR73 00						0	0	CH	60		P				Y	Imp 43+, chalk
	43-83	ch							0	0	HR	3		P				Y	Rooting to 83
69	0-30	hcl	10YR42 00						0	0	HR	2						Y	
	30-57	hcl	10YR54 00						0	0	HR	1		M					
	57-65	c	10YR54 00	75YR56 00	C				0	0	HR	5		M				Y	Imp 65+, stones

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
2	TQ52707190	CER			050		1	1	83	-37	90	-26	3B				DR	3A	
4	TQ53107190	BAR	NE	01			1	1	149	29	113	-3	2				DR	2	
5	TQ52607180	CER	N	01			1	2	90	-30	96	-20	3B				DR	3B	
6	TQ52707180	CER	S	01	042	042	2	2	110	-10	108	-8	3A				DR	3A	
7	TQ52807180	CER					1	2	156	36	118	2	2				WD	2	
8	TQ52907180	BAR	N	01			1	2	154	34	116	0	2				WD	2	
9	TQ53007180	BAR	NE	01	028	028	3	3A	115	-5	117	1	3A				WE	3A	
10	TQ53107180	BAR	N	01			1	1	140	20	114	-2	2				DR	2	
12	TQ52707170	CER	NE	01			1	1	105	-15	117	1	3A				DR	2	
14	TQ52907170	BAR	N	01			1	1	124	4	97	-19	3A				DR	2	
16	TQ53107170	BAR	NE	01			1	1	107	-13	115	-1	3A				DR	2	
17	TQ52507160	CER	E	02			1	1	89	-31	95	-21	3A				DR	3A	
18	TQ52607160	CER	NE	01			1	1	149	29	117	1	2				DR	2	
19	TQ52707160	CER	N	02			1	2	132	12	115	-1	2				WD	2	
20	TQ52807160	CER	NE	02			1	1	141	21	114	-2	2				DR	2	
21	TQ52907160	OSR	N	01			1	2	145	25	117	1	2				WD	2	
22	TQ53007160	OSR	N	02			1	1	149	29	118	2	2				DR	2	
24	TQ52507150	CER	E	01			1	1	87	-33	93	-23	3B				DR	3B	
26	TQ52707150	OSR	NW	02			1	1	132	12	114	-2	2				DR	2	
28	TQ52907150	OSR	NE	01			1	2	120	0	117	1	3A				WD	2	
30	TQ53107150	OSR	NW	01	075	075	2	2	115	-5	117	1	3A				DR	3A	
31	TQ52507140	OSR	NE	02			1	2	133	13	111	-5	2				WD	2	
32	TQ52607140	OSR	NE	02			1	2	101	-19	100	-16	3A				DR	3A	
33	TQ52707140	OSR	N	02			1	2	105	-15	100	-16	3A				DR	3A	
34	TQ52807140	OSR	N	01			1	1	131	11	109	-7	2				DR	2	
35	TQ52907140	OSR	N	01			1	2	113	-7	100	-16	3A				DR	3A	
36	TQ53007140	OSR	N	01			1	2	96	-24	96	-20	3B				DR	3A	
37	TQ53107140	OSR	N	01	060	060	2	2	131	11	107	-9	2				WD	2	
39	TQ52507130	ORC					1	2	118	-2	108	-8	3A				DR	3A	
41	TQ52707130	RGR			070		1	2	134	14	108	-8	2				WD	2	
43	TQ52907130	CER					1	1	115	-5	112	-4	2				DR	2	
45	TQ53107130	CER					1	2	119	-1	111	-5	3A				DR	3A	
48	TQ52607120	PGR			090		1	2	137	17	117	1	2				WD	2	
49	TQ55207120	PGR					1	2	136	16	115	-1	2				WD	2	
50	TQ52807120	CER					1	1	133	13	110	-6	2				DR	2	
51	TQ52907120	CER					1	2	122	2	96	-20	3A				DR	3A	
52	TQ53007120	CER					1	2	140	20	115	-1	2				WD	2	
53	TQ53107120	CER	S	02			1	2	99	-21	91	-25	3B				DR	3A	
55	TQ52507110	PGR			055	055	2	2	109	-11	114	-2	3A				WE	2	
57	TQ52707110	PGR					1	2	133	13	108	-8	2				WD	2	
59	TQ52907110	CER					1	2	103	-17	95	-21	3A				DR	3A	
61	TQ53107110	CER	S	02			1	2	128	8	112	-4	2				WD	2	

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
65	TQ52507100	PGR	S	02			1	2	82	-38	88	-28	3B				DR	3B	
66	TQ52607100	PGR	S	02			1	2	105	-15	93	-23	3A				DR	3A	
67	TQ52707100	PGR	S	02			1	2	107	-13	99	-17	3A				DR	3A	
68	TQ53107100	CER	S	02			1	2	93	-27	90	-26	3B				DR	3B	
69	TQ52307090	PGR					1	2	98	-22	108	-8	3B				WE	2	