M54 to M6 Link Road

TR010054

Volume 6

6.3 Environmental Statement Appendices

Appendix 9.2 Agricultural Land Classification and Soil Resources

Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

May 2020

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

M54 to M6 Link Road

Development Consent Order 202[ ]

6.3 Environmental Statement Appendices

Appendix 9.2 Agricultural Land Classification and Soil Resources

Regulation Number	Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010054
Application Document Reference	6.3
Author	M54 to M6 Link Road Project Team and Highways England

Version	Date	Status of Version
P02	May 2020	DCO Application

Table of contents

Chapter **Pages**

1 Introduction 1
1.1 Agricultural Land Classification system 1
2 Site and climatic conditions 2
2.1 General features, land form and drainage 2
2.2 Agro-climatic conditions 2
2.3 Soil parent material and soil type 3
3 Agricultural land quality ..... 5~~4~~
3.1 Soil survey methods ..... 5~~4~~
3.2 Agricultural land classification and limitations ..... 6~~5~~
4 References ..... 8~~7~~

List of Tables

Table 1: Local agro-climatic conditions 2
Table 2: Local agro-climatic conditions within the Scheme boundary ..... 7~~6~~

List of Annexes

Annex A: Figures
Annex B: Laboratory Data
Annex C: Soil Profile Summaries and Droughtiness Calculations
Annex D: ADAS ALC Reports and Maps

1 Introduction

1.1 Agricultural Land Classification system

1.1.1 Guidance for assessing the quality of agricultural land in England and Wales is set out in the Ministry of Agriculture, Fisheries and Food (MAFF) revised guidelines and criteria for grading the quality of agricultural land (Ref 1) , and summarised in Natural England's Guidance for assessing development proposal on agricultural land (Ref 2) and Technical Information Note 049 (Ref 3).

1.1.2 Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. The principal physical factors influencing grading are climate, site and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

1.1.3 Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use, and Grade 5 is very poor quality land, with severe limitations due to adverse soil, relief, climate or a combination of these. Grade 3 land is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Land which is classified as Grades 1, 2 and 3a in the Agricultural Land Classification (ALC) system is defined as best and most versatile agricultural land.

1.1.4 As explained in Natural England's TIN049, the whole of England and Wales was mapped from reconnaissance field surveys in the late 1960s and early 1970s, to provide general strategic guidance on agricultural land quality for planners. This Provisional Series of maps was published on an Ordnance Survey base at a scale of One Inch to One Mile (1:63,360). The Provisional ALC map shows the Scheme boundary as undifferentiated Grade 3, bordering on Grade 2 to the south-west. However, TIN049 (Ref 3) explains that:

"These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance. They show only five grades: their preparation preceded the subdivision of Grade 3 and the refinement of criteria, which occurred after 1976. They have not been updated and are out of print. A 1:250 000 scale map series based on the same information is available. These are more appropriate for the strategic use originally intended …"

1.1.5 TIN049 goes on to explain that a definitive ALC grading should be obtained by undertaking a detailed survey according to the published guidelines, at an observation density of one boring per hectare. This survey follows the detailed methodology set out in the MAFF guidelines (Ref 1).

2 Site and climatic conditions

2.1 General features, land form and drainage

2.1.1 The Scheme boundary extends to approximately 200 ha, of which approximately 80.5 ha is agricultural land. Agricultural land at the site is mostly in arable use, with grassland primarily to the west of M6, Junction 11, and east of Featherstone. Non-agricultural land within the site area comprises the existing infrastructure: carriageways, spurs off the junctions, A460 Cannock Road, Hilton Lane and Dark Lane, as well as fishing ponds and woodland.

2.1.2 Much of the surrounding land use is agricultural, particularly to the east and north. The Scheme boundary is otherwise bounded in places by the settlements of Coven Heath in the south, Featherstone and Hilton in the west and Shareshill to the north, with two industrial estates in the south on the east and west of A460 Cannock Road.

2.1.3 Topography is very gently sloping throughout the Scheme boundary. The highest altitudes are at around 172 m above Ordnance Datum (AOD) east of Featherstone, and 145 m AOD south of M6, Junction 11. Altitudes across much of the Scheme boundary are between around 125 m and 135 m AOD, with the lowest ground in the south-west at 110 m AOD.

2.1.4 The land generally slopes down from west to east which directs water to the Staffordshire and Worcestershire Canal to the west of the Scheme boundary. West of the M6, Junction 11, there are two narrow valleys cut into the landscape containing small watercourses and ponds, which also drain water westwards.

2.2 Agro-climatic conditions

2.2.1 Agro-climatic data for the Scheme boundary have been interpolated from the Meteorological Office's standard 5 km grid point data set at three representative points, and are given in Table 1. The climate is cool and moderately moist. The number of Field Capacity Days is larger than is typical for lowland England (150), and is considered to be slightly unfavourable for providing opportunities for agricultural field work.

Table 1: Local agro-climatic conditions

Parameter	Value		
Representative location	North	South	West
Grid ref	SJ 955067	SJ 945050	SJ 933046
Altitude	132 m	147 m	125 m
Average annual rainfall	718 mm	718 mm	712 mm
Accumulated temperatures >0°C	1,331 day	1,335 day	1,341 day
Field capacity days	169 days	169 days	167 days

Parameter	Value		
Average moisture deficit, wheat	90 mm	88 mm	91 mm
Average moisture deficit, potatoes	76 mm	74 mm	77 mm

2.2.2 There is however no overall climatic limitation to agricultural land quality, as shown in Diagram 1.

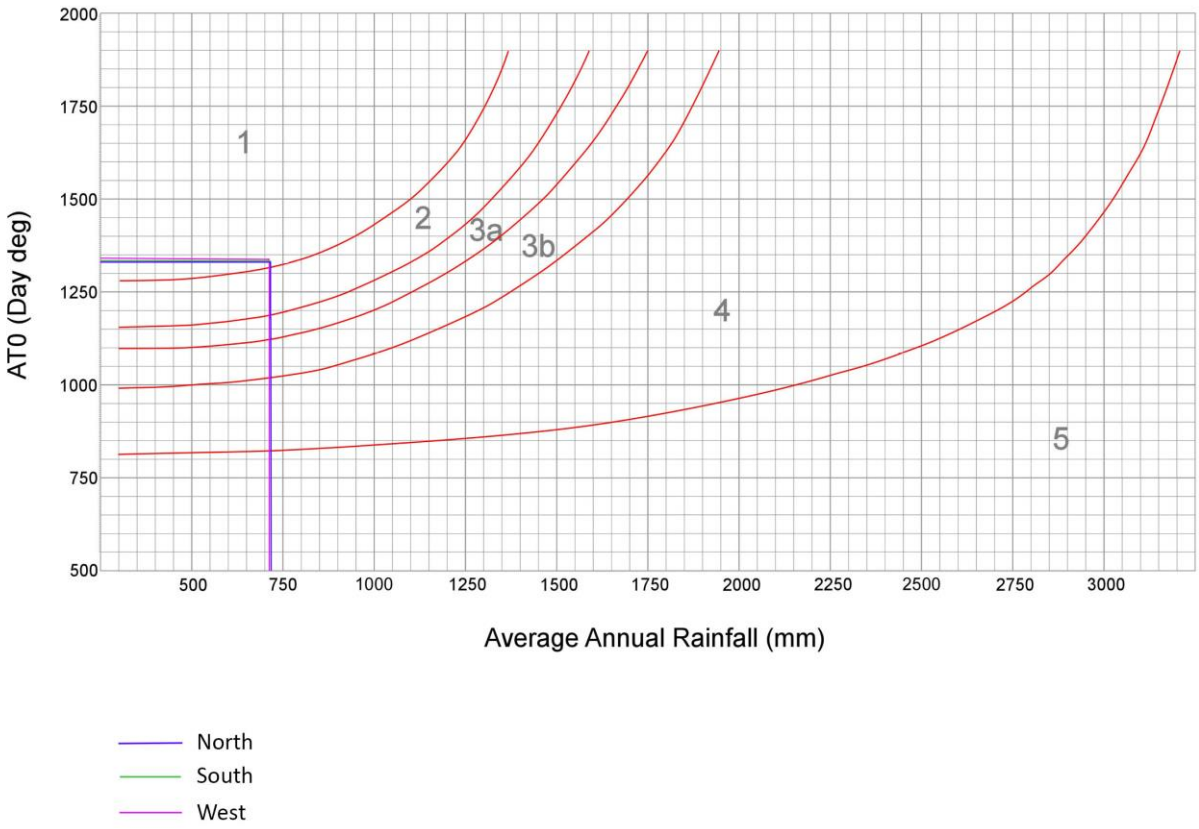


Diagram 1: Climatic limitations to agricultural land quality

2.3 Soil parent material and soil type

2.3.1 The underlying bedrock mapped by the British Geological Survey (Ref 4) includes five distinct units which in reverse age order are:

- ~~the~~ Alveley Member of the Salop Formation, present in the north and including red mudstone and fine- to medium-grained sandstone with limestone;
- ~~. In the east is~~ undifferentiated Clent and Enville Formation in the east, comprising red pebbly mudstone and sandstone;
- ~~. In the south-west is the~~ Wildmoor Sandstone Member of the Wilmslow Sandstone Formation in the south-west, characterised by fine- to medium-grained reddish sandstone;

- ~~. Across a majority of the Scheme boundary is the~~ Chester Formation across the majority of the Scheme boundary, which includes reddish brown pebbly conglomerate and sandstone. Sandstone and pebbly sandstone are more common in the upper part; and

~~2.3.1~~- Helsby Sandstone Formation~~. I~~ in the south-west of the Scheme boundary and comprising~~is~~ pebbly sandstone ~~of the Helsby Sandstone Formation~~.

2.3.2 Superficial deposits of Devensian till overlie the bedrock across much of the Scheme boundary and may include unsorted material ranging in size from clay to boulders. Within the mapped till deposits in the north-east and south-west are two pockets of glaciofluvial sand and gravel. Alluvium is mapped in the north in conjunction with the small watercourse in the north and normally comprising silty clay.

2.3.3 The Soil Survey of England and Wales soil association mapping (Ref 5) (1:250,000 scale) shows the Clifton association to be present within the Scheme boundary~~across the site~~. Clifton association soils are characterised by clay loam or sandy clay loam throughout, which become more reddish with depth. Upper horizons are seasonally waterlogged, and profiles are commonly of Wetness Class (WC) IV, but with underdrainage are improved to WC III (Ref 6).

~~2.3.3~~2.3.4 A small area of Wick 1 association flanks the Scheme boundary to the south of M6 Junction 11 and an area of Goldstone association abuts the Scheme boundary in the south-east. Wick 1 soils are deep, well drained, coarse loamy and sandy soils, locally over gravel. Goldstone soils are well drained, very acid, very stony, sandy soils.

3 Agricultural land quality

3.1 Soil survey methods

3.1.1 Soil survey data across the Scheme boundary has been obtained from a total of six separate surveys, of which four were undertaken by ADAS between 1993 and 1996 (Ref 7, 8, 9 and 10) and two by Reading Agricultural Consultants in 2019. Each of the surveys has been undertaken in accordance with the established recommendations for ALC surveys and has included observation of soil profiles at a minimum density of one per hectare. Of the four ADAS surveys undertaken, two areas have since been built on, however the soils data remains of use for context. As the ALC is concerned with long-term limitations on agricultural use, the earlier survey results are still considered to be applicable. The original ADAS reports and maps are attached at Annex D.

3.1.2 In total, 58 soil profiles were examined across the present Scheme boundary using an Edelman (Dutch) auger at an observation density of approximately one per hectare. Two observation pits (one ADAS and one Reading Agricultural Consultants) were also excavated to examine subsoil structures. The locations of observations and pits are indicated on Figure RAC8421-1, Annex A. At each observation point the following characteristics were assessed for each soil horizon up to a maximum of 120 cm or any impenetrable layer:

- soil texture;
- significant stoniness;
- colour (including localised mottling);
- consistency;
- structural condition;
- free carbonate; and
- depth.

3.1.3 Two topsoil samples taken during the 2019 survey at observations RAC7 and RAC Pit were submitted for laboratory determination of particle size distribution, pH, organic matter content and nutrient contents (P, K, Mg). Results are presented in Annex B.

3.1.4 Soil Wetness Class (WC) was inferred from the matrix colour, presence or absence of, and depth to, greyish and ochreous gley mottling, and slowly permeable subsoil layers at least 15 cm thick, in relation to the number of Field Capacity Days at the location.

3.1.5 Soil droughtiness was investigated by the calculation of moisture balance equations (given in Annex C). Crop-adjusted Available Profile Water (AP) is estimated from texture, stoniness and depth, and then compared to a calculated moisture deficit (MD) for the standard crops, wheat and potatoes. The MD is a function of potential evapotranspiration and rainfall. Grading of the land can be affected if the AP is insufficient to balance the MD and droughtiness occurs.

3.2 Agricultural land classification and limitations

3.2.1 Assessment of land quality has been carried out according to the MAFF revised ALC guidelines. Soil profiles have been described according to Hodgson which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.

3.2.2 Agricultural land quality at this site is predominantly affected by droughtiness, with wetness and depth also representing localised limitations. The land is mostly classified as Grade 2, with smaller areas of Subgrade 3a and Subgrade 3b.

Grade 2

3.2.3 Grade 2 land is found throughout the central part of the site. Topsoil is of medium sandy loam or occasionally sandy clay loam of 38 cm average depth. The topsoil is mostly dark brown (including 7.5YR3/2, 3/3 and 10YR3/3 in the Munsell soil colour charts) and is slightly stony, at 2% to 7% by volume. Upper subsoil has similar texture and stone content, although in places is of loamy sand. Most of the upper subsoil is brown (including 7.5YR4/3, 5/4, 10YR5/3) however there is a reddish brown (5YR3/3 to 5/3) variant identified in two locations; north of Hilton Lane and east of Featherstone. An excavated soil pit confirms the description of the mapped soil type in which the sandy clay loam~~The~~ upper subsoil has a weak medium subangular blocky structure which~~and~~ is permeable.

3.2.4 The main soils have lower subsoil horizons of loamy sand or sand which are similarly brown to reddish brown and slightly stony. Due to the coarser textures, the soils are slightly droughty which limits them to Grade 2.

3.2.5 A second soil type of Grade 2 quality is identified in which the lower subsoil is of reddish brown clay or heavy clay loam. This soil type is found in isolated spots and not in one definitive area. ~~The structure is weakly developed and forms coarse prismatic peds, resulting in slow p~~Permeability is slow from depths of around 65 cm to 75 cm. Profiles are of WC II and limited by wetness to Grade 2.

Subgrade 3a

3.2.6 Land of Subgrade 3a quality is found in restricted areas in the south, centre and north of the Scheme boundary. The soil profiles most commonly include dark brown (7.5YR3/2 or 3/4) sandy clay loam topsoil of around 30 cm depth. The topsoil is slightly stony at 2% to 5% by volume.

3.2.7 Upper subsoil horizons are similar although may include clay and are also occasionally dark greyish brown (10YR4/2). Stone content is up to around 10% and the upper subsoil is mottled. Lower subsoils are of slowly permeable clay which is reddish brown (5YR4/3, 4/4 or 5/3) with common to many ochreous mottles. The clay has a weakly developed, coarse angular blocky structure ~~prismatic or massive structure and is slowly permeable~~. These profiles are imperfectly drained, of WC III, and are limited by wetness and workability to Subgrade 3a.

3.2.8 There are occasional instances of a second soil type of Subgrade 3a which is coarser textured throughout, including sandy loam topsoil and upper subsoil, over loamy sand or medium sand lower subsoil. The stone content of the lower subsoil was such that observation with the auger was often restricted. The freely draining

coarse textures and increasing stone content reduces the capacity for water storage in the profile, such that there is a droughtiness limitation to Subgrade 3a.

Subgrade 3b

3.2.9 Land of Subgrade 3b quality is limited by gradient in the centre of the Scheme boundary where slopes are measured at 8° to 9°. Gradient is a limiting factor to agricultural land quality in the ALC guidelines because of both ease of working with machinery and risk of erosion. Any land steeper than 7 degrees cannot be classified as best and most versatile). West of the M6, Junction 11, a restricted area of land is classified as Subgrade 3b due to the ground being impenetrable from depths of between 20 and 30 cm. The area is likely to have been disturbed: it is understood that car boot sales are held in this location, and debris such as glass and batteries were found at the surface of the soil. North of the M6 junction is another area classified as Subgrade 3b. The soils are described as similar to those of Subgrade 3a with clay subsoil. Gleyed and slowly permeable layers occur at shallower depth. The soils are of WC IV, resulting in a wetness and workability limitation to Subgrade 3b. Topsoil stone content is also noted as being limiting in the vicinity of Wolverhampton Road, commonly with 15% to 20% total stone by volume. This area has since been built upon; however the soil type may continue to be applicable nearby between the M6 and M6 Toll.

3.2.10 The areas of each ALC grade within the Scheme boundary are given in Table 2 and the distribution is shown in Figure RAC8421-2, Annex A.

Table 2: Local agro-climatic conditions within the Scheme boundary

Grade	Description	Area (ha)	% of agricultural land
2	Very good quality	52.8	66
3a	Good quality	19.3	24
3b	Moderate quality	8.4	10
Total Agricultural		80.5	100
Non-Agricultural		118.8	-

4 References

Ref 1 Ministry of Agriculture, Fisheries and Food (1988). Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land. MAFF Publications.

Ref 2 Natural England (2018) Guide to assessing development proposal on agricultural land. Available online at: https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land

Ref 3 Natural England (2012). Technical Information Note 049 - Agricultural Land Classification: protecting the best and most versatile agricultural land, Second Edition.

Ref 4 British Geological Survey (2019). *Geology of Britain viewer*, http://mapapps.bgs.ac.uk/geologyofbritain/home.html

Ref 5 Soil Survey of England and Wales (1984). *Soils of South East England* (1:250,000), Sheet 6.

Ref 6 Jarvis et al (1984). *Soils and Their Use in South East England*. Soil Survey of England and Wales Bulletin 15, Harpenden.

Ref 7 ADAS (1993). *Agricultural Land Classification, Hilton Local Plan*. Job No: 44/93

Ref 8 ADAS (1994). *Agricultural Land Classification, Laney Green (Site 66/67), Staffordshire Aggregates Local Plan*. Job No:080/94

Ref 9 ADAS (1996). *Hilton Cross – Major Investment Site Proposal, Agricultural Land Classification*. Job No: 025/96

Ref 10 ADAS (1996). *Shareshill South – Major Investment Site Proposal, Agricultural Land Classification Survey*. ADAS Reference: 024/96, 25/RPT/0781

Ref 11 Hodgson, J. M. (Ed.) (1997). Soil survey field handbook. Soil Survey Technical Monograph No. 5, Silsoe.

Annex A: Figures

N

3
2
4
7
8
1
5
6
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
ADASPIT
23
24
25
26
27
28
29
30
31
32
15
14
16
13
RACPIT
12
17

100 0 100 200 300 400 m

KEY

Scheme boundary

Boreholes

ADAS

RAC

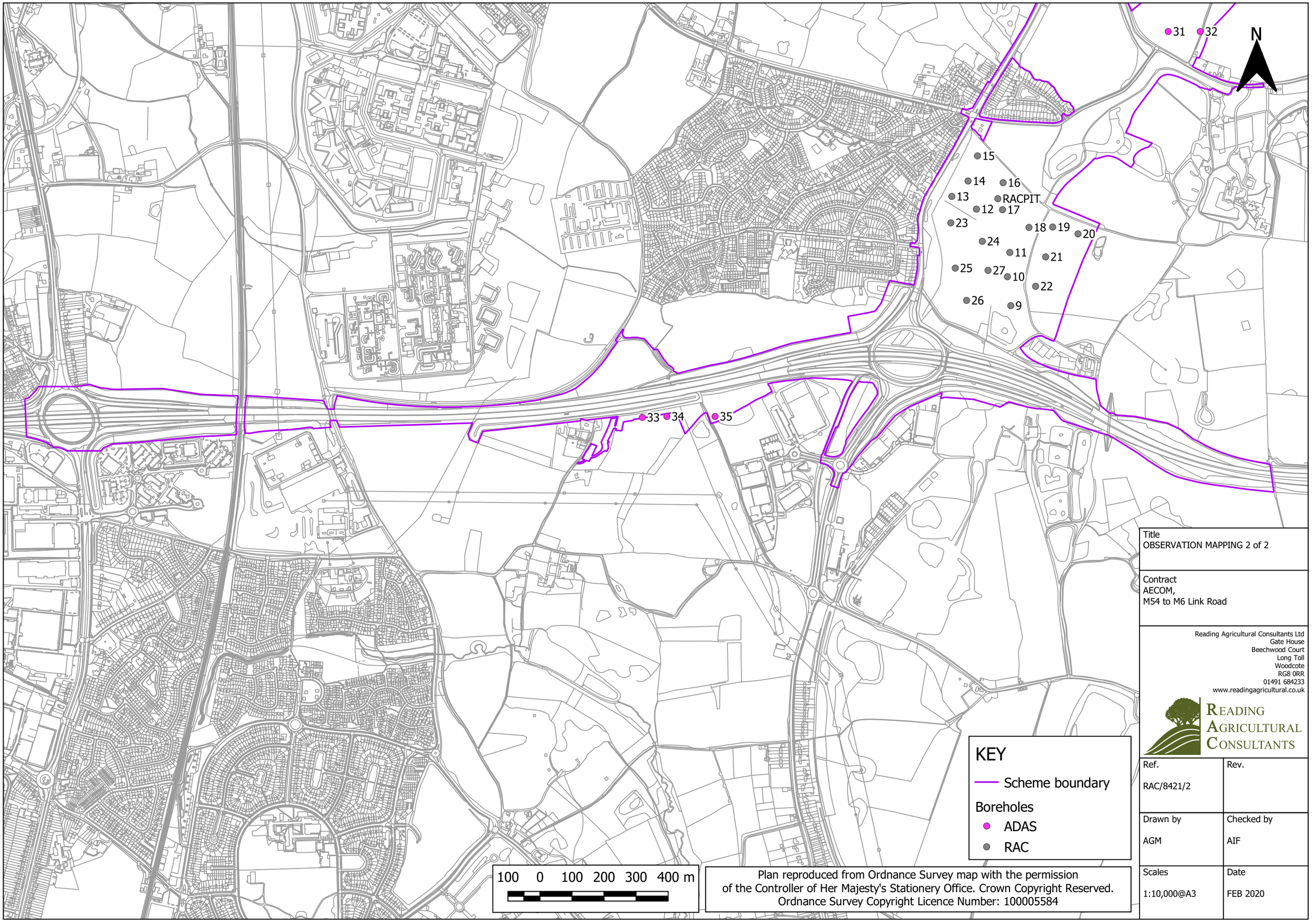
Title
OBSERVATION MAPPING 1 of 2

Contract
AECOM,
M54 to M6 Link Road

Reading Agricultural Consultants Ltd
Gate House
Beechwood Court
Long Toll
Woodcote
RG8 0RR
01491 684233
www.readingagricultural.co.uk

READING AGRICULTURAL CONSULTANTS

Ref.	Rev.
RAC/8421/1	
Drawn by	Checked by
AGM	AIF
Scales	Date
1:10,000@A3	FEB 2020



Plan reproduced from Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office. Crown Copyright Reserved. Ordnance Survey Copyright Licence Number: 100005584

Title
OBSERVATION MAPPING 2 of 2

Contract
AECOM,
M54 to M6 Link Road

Reading Agricultural Consultants Ltd
Gate House
Beechwood Court
Long Toll
Woodcote
RG8 0RR
01491 684233
www.readingagricultural.co.uk

READING AGRICULTURAL CONSULTANTS

Ref.	Rev.
RAC/8421/2	
Drawn by	Checked by
AGM	AIF
Scales	Date
1:10,000@A3	FEB 2020

Annex B: Laboratory Data

Annex B: Laboratory Data

Determinand	Borehole 7	RAC Pit	Units
Sand 2.00-0.063 mm	71	65	% w/w
Silt 0.063-0.002 mm	17	21	% w/w
Clay <0.002 mm	12	14	% w/w
Organic Matter	3.3	3.0	% w/w
Texture	Sandy Loam	Sandy Loam	

Determinand	Borehole 7	RAC Pit	Units
Soil pH	6.7	7.1	
Phosphorus (P)	34.6	32.2	Mg/l (av)
Potassium (K)	234	175	Mg/l (av)
Magnesium (Mg)	92.7	106	Mg/l (av)

Determinand	Borehole 7	RAC Pit	Units
Phosphorus (P)	3	3	ADAS Index
Potassium (K)	2+	2-	ADAS Index
Magnesium (Mg)	2	3	ADAS Index

Annex C: Soil Profile Summaries and Droughtiness Calculations

Wetness / workability limitations are determined according to the methodology given in Appendix 3 of the ALC guidelines, MAFF 1988

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.

Grades are shown for drought, wetness and any other soil or site factors which are relevant. The overall Grade is set by the most limiting factor and shown on the right.

Stone types		
%	TAV	Eav
hard	1	0.5
chalk	10	7

Climate Data	
MDwheat	88
MDpotato	74
FCD	169

Wetness Class Guidelines	*II*	*III*	*IV*	*V*
SPL within 80cm, gleying within 40cm	>74cm	46-74cm	<46cm	
SPL within 80cm, gleying at 40-70cm	>60cm	<60cm		
No SPL but gleying within 40cm	coarse subsoil	*I*	other cases	*II*

hard flint & pebble

Maximum depth of auger penetration is underlined

Site No.		Depth cm		Texture	CaCO3	Colour	Mottle colour	abund-ance	stone % hard	stone % chalk	Struct-ure	APwheat mm	AP potato mm	Gley	SPL	WC	Wetness grade WE	Final Grade	Limiting Factor(s)
1	T	0	30	SCL		10YR3/2			2			50	50	n	n	*I*	1	**1**	
		30	45	SCL		10YR4/3			2			22	22	n	n				
		45	80	SCL		10YR4/3			5			36	36	n	n				
		80	120	C		10YR4/3			5		poor	27	0	n	n				
											Total	**135**	**108**		Horses-grass				
											MD	47	34						
									Droughtiness grade (DR)			1	1						
2	T	0	30	SCL		10YR3/3			2			50	50	n	n	*III*	3a	**3a**	WE
		30	45	SCL		10YR4/2			2			22	22	n	n				
		45	55	SCL		7.5YR4/2			2			12	15	n	n				
		55	100	C		5YR4/3	Och	com	5		poor	30	19	y	y				
		100	120	C		5YR4/3	Grey	com	5		poor	13	0	y	y				
											Total	**128**	**105**		Wet at 55cm; gravel layer present 55cm+				
											MD	40	31		Car boot sale site: grass				
									Droughtiness grade(DR)			1	1						

3	T	0	30	SCL	10YR3/3			51	51	n	n	///	3a	**3b**	DP	
		30	50	SCL	10YR3/3			30	30	n	n					
		50	120	C	10YR3/3		poor	49	26	n	n					
							Total	**130**	**107**		Several attempts to auger 20cm -impenetrable;					
							MD	42	33		v slight slope to rough scrub area.					
						Droughtiness grade(DR)		1	1							
4	T	0	30	mSL	10YR3/2			51	51	n	n	///	3a	**3b**	DP	
		30	50	SCL	10YR3/3			30	30	n	n					
		50	120	C	10YR3/3		poor	49	26	n	n					
							Total	**130**	**107**		Several attempts to auger 20cm -impenetrable;					
							MD	42	33		Car boot sale evidence- glass/batteries on surface					
						Droughtiness grade(DR)		1	1							
5	T	0	30	mSL	10YR3/3	2		50	50	n	n	/	1	**2**	DR	
		30	43	mSL	10YR3/2	2		19	19	n	n					
		50	60	mS	7.5YR4/3	10		5	6	n	n					
		60	120	mS	7.5YR4/3	10		27	6	n	n					
							Total	**101**	**82**		Gravel 50cm+					
							MD	13	8		Difficult to auger 60cm+ gravel					
						Droughtiness grade(DR)		2	2							
6	T	0	30	mSL	7.5YR4/3	2		50	50	n	n	/	1	**2**	DR	
		30	43	LmS	7.5YR3/3	2		11	11	n	n					
		43	60	mS	2.5YR3/6	5		9	11	n	n					
		60	120	mS	2.5YR3/6	10		27	6	n	n					
							Total	**98**	**79**							
							MD	10	5		Difficult to auger 60cm+ gravel					
						Droughtiness grade(DR)		2	2							

7	T	0	30	mSL	7.5YR3/3			2		50	50	n	n	/	1	**2**	DR	
		30	45	mSL	7.5YR4/3			2		22	22	n	n					
		45	60	mS	7.5YR4/2			10		8	10	n	n					
		60	120	mS	2.5YR3/6			10		27	6	n	n					
									Total	**107**	**88**		Stone @40cm difficult to auger 45cm					
									MD	19	14							
								Droughtiness grade(DR)		2	1							
8	T	0	35	mSL	10YR3/2			2		58	58	n	n	/	1	**2**	DR	
		35	45	mSL	10YR4/2			2		15	15	n	n					
		45	60	mS	7.5YR4/2			10		8	10	n	n					
		60	120	mS	2.5YR3/6			10		27	6	n	n					
									Total	**108**	**89**		Stone @45cm difficult to auger 45cm					
									MD	20	15							
								Droughtiness grade(DR)		2	1							
9	T	0	33	mSL	7.5YR3/3			2		55	55	n	n	/	1	**1**		
		33	40	mSL	7.5YR3/2	Och	few	2		10	10	n	n					
		40	50	mSL	7.5YR3/2			5		14	14	n	n					
		50	120	mSL	7.5YR3/2			10		70	27	n	n					
									Total	**149**	**107**		gras s near fishing pond					
									MD	61	33							
								Droughtiness grade (DR)		1	1							

10	T	0	43	mSL	7.5YR3/2	2		72	72	n	n	/	1	**2**	DR	
		43	75	LmS	5YR3/3	2		21	24	n	n					
		75	90	mS	5YR3/4	5		7	0	n	n					
		90	110	mS	5YR4/3	5		10	0	n	n					
		110	120	mS	5YR4/3	5		5	0	n	n					
											grass					
							Total	**114**	**96**							
							MD	26	22							
						Droughtiness grade(DR)		2	1							
11	T	0	35	mSL	7.5YR3/2	2		72	72	n	n	/	1	**2**	DR	
		35	50	LmS	5YR3/3	2		21	24	n	n					
		50	120	mS	5YR3/4	5		7	0	n	n					
											gras s					
							Total	**114**	**96**							
							MD	26	22		difficult to auger 35cm- stone?					
						Droughtiness grade(DR)		2	1							
12	T	0	45	mSL	7.5YR3/3	2		75	75	n	n	/	1	**2**	DR	
		45	50	SCL	5YR3/3	2		7	7	n	n					
		50	120	mS	5YR3/3	10		32	13	n	n					
											post harvest- maize;					
							Total	**114**	**95**							
							MD	26	21		difficult to auger 50cm- pebble layer					
						Droughtiness grade(DR)		2	1							

13	T	0	33	SCL	7.5YR3/2			2		55	55	n	n	*II*	2	**2**	WE	
		33	40	SCL	7.5YR4/2	Och	few	2		10	10	n	n					
		40	65	SCL	7.5YR5/2	Och	com	2		29	37	y	n					
		65	110	C	5YR4/3	Grey	com	2	poor	31	6	y	y					
		110	120	C	5YR4/3			2	poor	7	0	y	y					
									Total	**133**	**109**		post harvest- maize; borderline 2/3a					
									MD	45	35		standing water in wheelings (after heavy rain)					
								Droughtiness grade(DR)		1	1							
14	T	0	30	SCL	7.5YR3/4			2		50	50	n	n	*III*	3a	**3a**	WE	
		30	45	SCL	7.5YR3/3			2		22	22	n	n					
		45	100	C	5YR4/3	Mn, Grey	com	2	poor	41	32	y	y					
		100	120	C	5YR4/3			2	poor	14	0	y	y					
									Total	**127**	**104**		post harvest- maize					
									MD	39	30		standing water in wheelings (after heavy rain)					
								Droughtiness grade(DR)		1	1							
15	T	0	30	SCL	7.5YR3/2			2		50	50	n	n	*III*	3a	**3a**	WE	
		30	48	SCL	7.5YR3/2			2		26	26	n	n					
		48	50	SCL	10YR3/2	Och	few	5		3	3	n	n					
		50	120	C	5YR4/3			10	poor	44	24	y	y					
									Total	**124**	**103**		Difficult to auger 50cm stone- small rounded pebbles present					
									MD	36	29							
								Droughtiness grade(DR)		1	1							

16	T	0	40	SCL	7.5YR4/3			2		67	67	n	n	*II*	2	**2**	WE	
		40	65	SCL	5YR4/3			2		29	37	n	n					
		65	75	SCL	5YR4/4			5		10	7	n	n					
		75	110	C	5YR4/4	Mn,Och	com	2	poor	24	0	y	y					
		110	120	C	5YR4/4			2	poor	7	0	y	y					
									Total	**137**	**111**		Ob 16 on 3a/2 border.					
									MD	49	37		Clays appear shallower within profiles to the west					
								Droughtiness grade(DR)		1	1							
17	T	0	40	mSL	7.5YR3/3			2		67	67	n	n	*I*	1	**1**		
		40	80	SCL	5YR4/3			2		44	44	n	n					
		80	100	C	5YR4/3			2	poor	14	0	y	y					
		100	120	C	5YR4/3			2	poor	14	0	y	y					
									Total	**138**	**111**		red soil					
									MD	50	37							
								Droughtiness grade(DR)		1	1							
RACPIT	T	0	35	SCL	7.5YR3/3			2		67	67	n	n	*III*	3a	**3a**	WE	
		35	40	SCL	5YR4/3			2		44	44	n	n					
		40	65	SCL	5YR4/3	och	com	2		14	0	y	n					
		65	80	C	5YR4/4	och	com	2	poor	14	0	y	y					
		80	120	C	5YR4/4			2	poor	14	0	y	y					
									Total	**138**	**111**		Red soil					
									MD	50	37		Water present at 80cm					
								Droughtiness grade(DR)		1	1							

18	T	0	35	mSL	7.5YR3/3	2		58	58	n	n	/	1	**2**	DR	
		35	50	LmS	5YR4/3	5		13	13	n	n					
		50	120	mS	5YR4/3	10		32	13	n	n					
							Total	**103**	**84**		pebble layer at 35cm difficult to auger 50cm					
							MD	15	10		post maize harvest					
						Droughtiness grade(DR)		2	1							
19	T	0	38	mSL	7.5YR3/3	2		63	63	n	n	/	1	**2**	DR	
		38	50	mSL	5YR4/4	5		17	17	n	n					
		50	120	mS	5YR4/4	10		32	13	n	n					
							Total	**112**	**93**		grass- cattle present slope in field 7 degrees					
							MD	24	19		augered to 50cm- stone present					
						Droughtiness grade(DR)		2	1							
20	T	0	38	mSL	5YR3/3	2		63	63	n	n	/	1	**2**	DR	
		38	40	cSL	5YR4/3	5		2	2	n	n					
		40	50	cSL	5YR4/3	10		15	15	n	n					
		50	120	mS	5YR4/3	10		32	13	n	n					
							Total	**111**	**92**		grass- cattle present					
							MD	23	18		augered to 50cm- stone present at 40cm - gritty					
						Droughtiness grade(DR)		2	1							
21	T	0	33	mSL	7.5YR2.5/3	2		55	55	n	n	/	1	**1**	DR	
		33	45	mSL	7.5YR3/3	2		18	18	n	n					
		40	55	SCL	5YR4/4	5		19	21	n	n					
		55	120	mS	5YR4/4	10		30	10	n	n					
							Total	**121**	**104**		grass- cattle present					
							MD	33	30		stone present at 55cm					
						Droughtiness grade(DR)		1	1							

22	T	0	30	mSL	7.5YR3/3	2		50	50	n	n	/	1	**2**	DR	
		30	40	mSL	5YR3/3	2		15	15	n	n					
		40	50	mSL	5YR3/3	5		14	14	n	n					
		50	120	mS	5YR3/3	10		32	13	n	n					
							Total	**111**	**92**		stone layers rounded qtz pebbles @40cm Difficult to auger 50cm stone- small rounded pebbles present					
							MD	23	18							
						Droughtiness grade(DR)		2	1							
23	T	0	36	mSL	7.5YR3/2	8		57	57	n	n	/	1	**2**	DR	
		36	70	LmS	7/5YR5/4	10		22	28	n	n					
		70	120	mS	5YR5/6	15		22	0	n	n					
							Total	**101**	**84**							
							MD	13	10							
						Droughtiness grade(DR)		2	1							
24	T	0	40	mSL	7.5YR3/2	13		60	60	n	n	/	1	**2**	DR	
		40	54	LmS	7.5YR3/2	7		11	12	n	n					
		54	70	LmS	7.5YR5/4	20		8	12	n	n					
		70	120	mS	5YR5/6	20		21	0	n	n					
							Total	**99**	**83**							
							MD	11	9							
						Droughtiness grade(DR)		2	2							

25	T	0	37	mSL	7.5YR3/2			10		57	57	n	n	*I*	1	**2**	DR	
		37	80	LmS	7.5YR5/3	few	Fe	10		27	27	n	n					
		80	120	LmS	5YR4/3	com	Femn	10		22	0	n	n					
									Total	**106**	**84**							
									MD	18	10							
								Droughtiness grade(DR)		2	1							
26	T	0	30	SCL	5YR4/2			7		48	48	n	n	*IV*	3b	**3b**	WE GR	
		30	50	C	5YR4/2	com	Femn	5	poor	25	25	y	y					
		50	120	C	5YR4/3	com	Femn	5	poor	46	25	y	y					
									Total	**119**	**97**							
									MD	31	23							
								Droughtiness grade(DR)		1	1							
27	T	0	40	mSL	7.5YR3/2			5		65	65	n	n	*I*	1	**2**	DR	
		40	62	LmS	7.5YR3/2	com	Femn	10		15	18	n	n					
		62	120	mS	5YR4/3	many	Femn	10		26	5	y	n					
									Total	**106**	**88**							
									MD	18	14							
								Droughtiness grade(DR)		2	1							

Restored land BGS geoindex

Profiles in area varied from clay to sand SS
3b slope
8de

SS-Lots of small stone (varys with profile up to 20%)

Restored BGS geoindex

SS varies locally from sands to sandy loams.

Annex D: ADAS ALC Reports and Maps

AGRICULTURAL LAND CLASSIFICATION
HILTON LOCAL PLAN

Resource Planning Team
Statutory Group
ADAS Wolverhampton

Job No: 44/93
MAFF Ref: EL37/10023

AGRICULTURAL LAND CLASSIFICATION REPORT FOR HILTON LOCAL PLAN

1. Summary

1.1 The Agricultural Land Classification (ALC) survey for this site shows that the following proportions of ALC grades are present:

Sub grade 3a	10.2 ha (70.8% of the site)
Other land	
Non agricultural	3.20 ha (22.2% of the site)
Woodland and)	1.00 ha (7.0% of the site)
Open Water)	

1.2 The main limitations to the agricultural use of land in Subgrade 3a is topsoil stone content, and soil wetness.

2. Introduction

2.1 The site was surveyed by the Resource Planning Team in July 1993. An Agricultural Land Classification (ALC) survey was undertaken according to the guidelines laid down in the 'Agricultural Land Classification of England and Wales - Revised Guidelines and Criteria for Grading the Quality of Agricultural Land' (MAFF 1988).

2.2 The 14.4 ha site lies southwest of Junction 1 of the M54 motorway and is bounded to the north by the M54 motorway to the east by the A460 road, to the south by a minor road and to the west by a disused track. Of the 14.4 ha, 10.2 ha are in agricultural use.

2.3 The survey was requested by MAFF in connection with compilation of a local plan.

2.4 At LUPU's request, this was a detailed grid survey at scale of 1:10000 with a minimum auger boring density of one per hectare. The attached map is only accurate at the base map scale and any enlargement would be misleading.

2.5 At the time of survey the site was under cereals.

3. Climate

3.1 The following interpolated data are relevant for the site

Average Annual Rainfall	715 mm
Accumulated Temperature above 0°C January to June	1329 Day °C

3.2 There is no overall climatic limitation on the site.

3.3 Other relevant information includes:

Field Capacity Days	168 days
Moisture Deficit (wheat)	89 mm
Moisture Deficit (potatoes)	76 mm

4. Site

4.1 The assessment of site factors is primarily concerned with the way in which topography influences the use of agricultural machinery. These include gradient, micro relief and flooding.

4.2 Gradient, micro relief and flooding do not impose any limitations on the agricultural use of the land.

5. Geology and Soils

5.1 The solid geology of the area is comprised of pebbly red sandstone and conglomerates of the Triassic Bunter Pebble Beds. This is overlain by deposits of Boulder clay and unbedded gravels and sands.

5.2 The underlying geology influences the soils, which are typically sandy clay loam topsoils over sandy clay or sand at depth. The soils are generally moderately stony.

6. Agricultural Land Classification

6.1 Sub-grade 3a - occupies 10.2 ha (70.8%) of the survey area and is found to the north of the site.

6.1.1 Over the northern half of the site, the soil generally has sandy clay loam textures overlying sandy clay and is stony. The soils have slowly permeable layers (SPL) below 45cm and fall into Wetness Class III.

6.1.2 The main limitation to the agricultural use of this land is soil wetness.

6.1.3 Over the southern half of the site, the soils typically have sandy clay loam or sandy loam textures overlying sand, with clay below 90cm. The soils are moderately stony.

6.1.4 The limitation to the agricultural use of this land is topsoil stone content.

6.2 Other land includes non-agricultural land used by a sports centre, occupying 3.2 ha (22.2 %) of the survey area; to the north and east of the site and open water immediately south of the non-agricultural land on the eastern boundary, which together occupy 1.0 ha (7.0%) of the site.

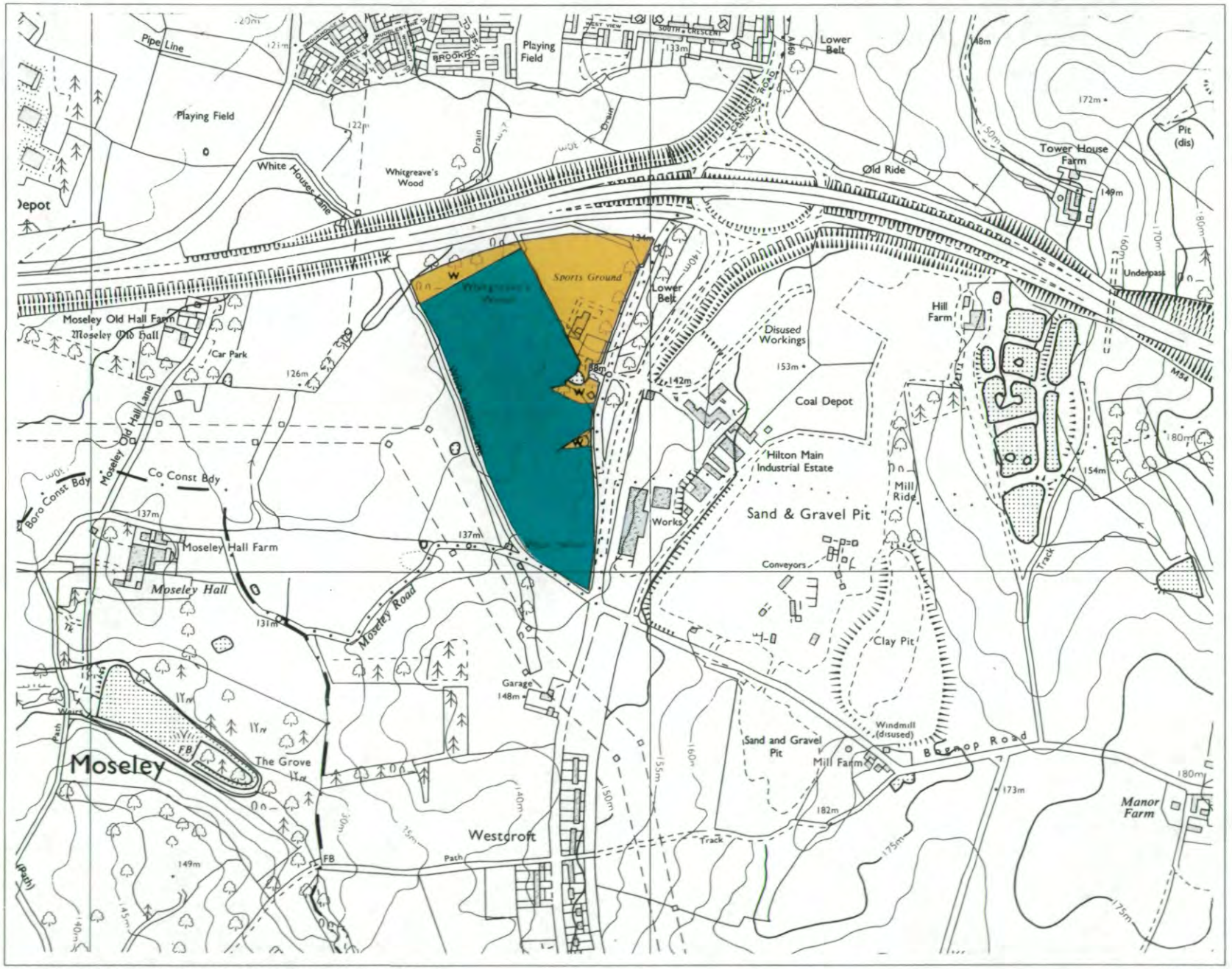
6.3 Summary of Agricultural Land Classification Grades

Grade/sub grade	Area in hectares	% of survey area	% of agricultural land
3a	10.2	70.8	100.0
Other land			
Non agricultural	3.2	22.2	
Woodland	)1.0	) 7.0	
Open water	)	)	
Total survey area	14.4	100.00	
Total *agricultural land*	10.2		100.00

Resource Planning Team
Statutory Group
ADAS Wolverhampton
July 1993

AGRICULTURAL LAND CLASSIFICATION

HILTON LOCAL PLAN



Agricultural Land

GRADE		LAND QUALITY
1	*	EXCELLENT
2	*	
3a		
3b	*	MODERATE
4	*	
5	*	VERY POOR

Non-Agricultural Land

Land predominantly in urban use	*
Land primarily in non - agricultural use	
Woodland	W
Agricultural buildings	*
Open water	
Land not surveyed	*

Statistics

Site Area 14.4 ha

Agricultural Land Area 10.2 ha

Percentage of Each Grade

Scale 1:10000

0 200 400

Metres

O.S. Base Map Nos SJ 90 SW

Surveyed by ADAS Resource Planning Team

File No 25RPT0557 Job No 044/93

MAFF Ministry of Agriculture Fisheries and Food

This map is accurate only at base map scale. Any enlargement would be misleading.

Map produced by The Cartographic Unit, Wolverhampton Statutory Unit.

AGRICULTURAL LAND CLASSIFICATION

LANEY GREEN (SITE 66/67)

STAFFORDSHIRE AGGREGATES LOCAL PLAN

M J W Wood
Resource Planning Team
ADAS Statutory Group
WOLVERHAMPTON

ADAS Ref: 25/RPT/0043
Job No: 080/94
MAFF Ref: EL 37/00034A

AGRICULTURAL LAND CLASSIFICATION REPORT FOR LANEY GREEN (SITE 66/67), STAFFORDSHIRE AGGREGATES LOCAL PLAN

1. SUMMARY

1.1 The Agricultural Land Classification (ALC) Survey for this site shows that the following proportions of ALC grades are present:

Grade/Subgrade	ha	% of site
3b	28.7	100

1.2 The main limitations to the agricultural use of the land on this site are topsoil stone content and soil wetness.

2. INTRODUCTION

2.1 The site was surveyed by the Resource Planning Team in November 1994. An Agricultural Land Classification survey was undertaken according to the guidelines laid down in the "Agricultural Land Classification of England and Wales - Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" (MAFF 1988).

2.2 The 28.7 ha site is situated to the northeast of Junction 11 of the M6 motorway. The land immediately surrounding the site is predominantly in agricultural use.

2.3 The survey was requested by MAFF in connection with the Staffordshire Aggregates Local Plan.

2.4 At the request MAFF's Land Use Planning Unit this was a detailed grid survey at 1: 10 000 scale with a minimum auger boring density of 1 per hectare. The attached map is only accurate at the base map scale and any enlargement would be misleading.

2.5 At the time of the survey the site was under cereals and grass.

3. CLIMATE

3.1 The following interpolated data are relevant for the site (SJ 960 076):

Average Annual Rainfall (mm)	721
Accumulated Temperature above $0^{o}C$ January to June (day ^{o}C)	1338

3.2 There is no overall climatic limitation on the site.

3.3 Other relevant data for classifying land include:

Field Capacity Days (days)	169
Moisture Deficit Wheat (mm)	91
Moisture Deficit Potatoes (mm)	77

4. SITE

4.1 Three site factors of gradient, micro-relief and flooding are considered when classifying land.

4.2 These factors do not impose any limitations on the agricultural use of this land.

5. GEOLOGY AND SOILS

5.1 The geology of the area is comprised of the Etrurian Marl Group (British Geological Survey, Sheet 153 Wolverhampton 1 Inch). This is overlain with deposits of Quaternary alluvium and boulder clay.

5.2 The underlying geology influences the soils which have a sandy clay loam over clay texture.

6. AGRICULTURAL LAND CLASSIFICATION

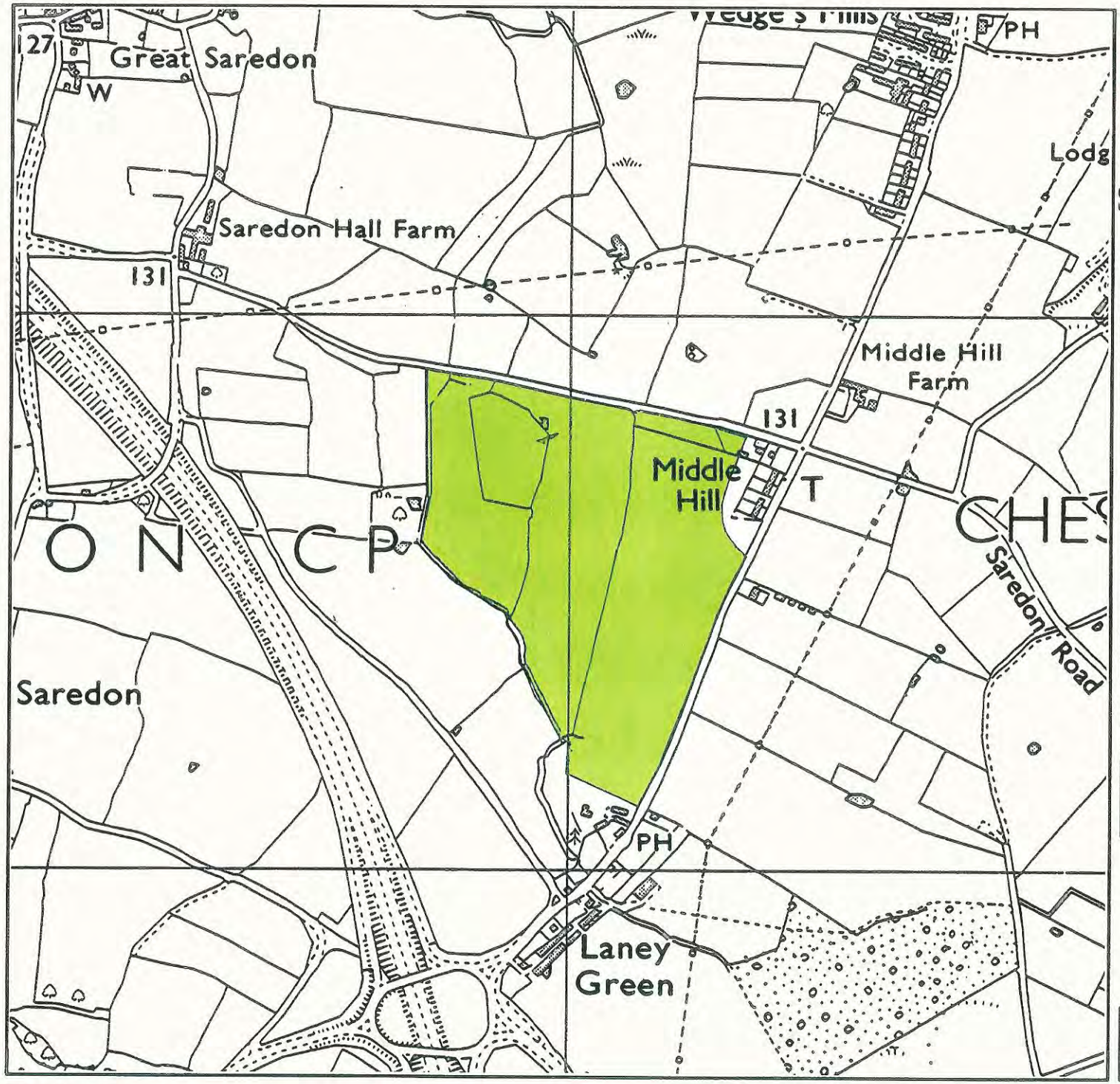
6.1 Subgrade 3b occupies 28.7 ha (100 %) of the survey area.

6.1.1 These soils typically have a sandy clay loam texture overlying sandy clay loam or loamy sand and clay to depth . Occasionally there may be lenses of sandy loam, clay loam, sand or gravel within the subsoil. The profiles are moderately stony (especially in the east of the site). Observations of gleying and the depth to the slowly permeable layer places these soils in to Wetness Class IV.

6.1.2 The main limitations to the agricultural use of this land are topsoil stone content greater than 2cm in size and soil wetness.

6.2 SUMMARY OF AGRICULTURAL LAND CLASSIFICATION GRADES

Grade/Subgrade	Area (Ha)	% of survey area
3b	28.7	100
Totals	28.7	100



MAFF Ministry of Agriculture Fisheries and Food

Agricultural Land Classification

Laney Green 66/67, Staffs Aggregates Local Plan

Agricultural Land

Grade		Quality	Area (ha)
1	*	Excellent	nil
2	*	Very Good	nil
3a	*	Good	nil
3b		Moderate	28.7
4	*	Poor	nil
5	*	Very Poor	nil

Other Land Categories

		Area (ha)
*	Urban	nil
*	Non-Agricultural	nil
W	Woodland	nil
*	Agricultural Buildings	nil
*	Open Water	nil
*	Not Surveyed	nil

Total agricultural land area 28.7
Total survey area 28.7

* Grade/category not present within survey area

Scale 1:10,000

0 100 200 300 400 500 600 Metres

Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land. MAFF (Publications), London SE99 7TP

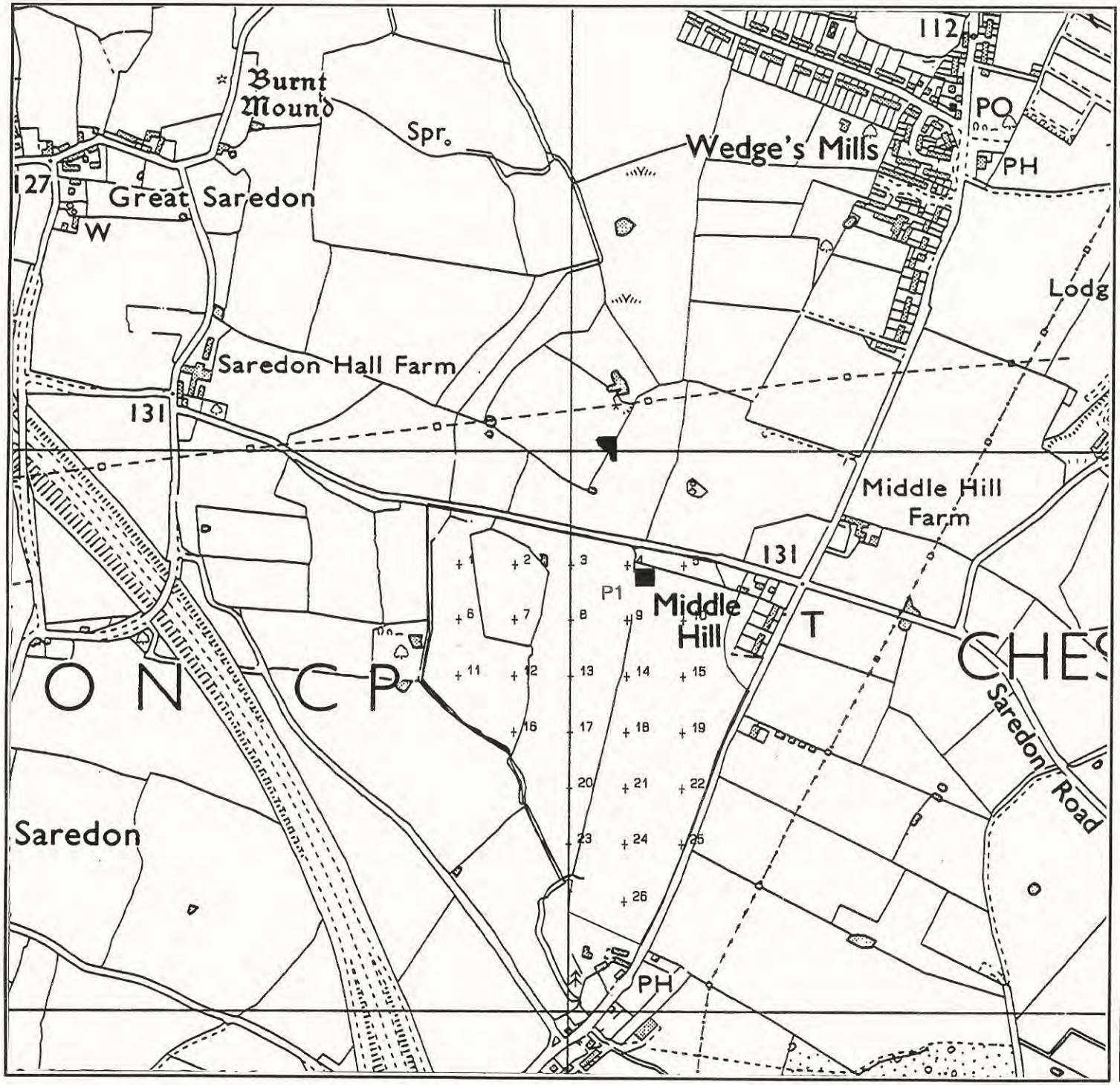
The information is accurate at the base map scale but any enlargement would be misleading.

Surveyed and drawn by the Resource Planning Team, ADAS Statutory Unit Wolverhampton

Based on the 1989 Ordnance Survey 1: 10,000 map with the permission of the Controller of Her Majesty's Stationery Office.

Source Map(s): SJ90NE

Reference no. 080 94



MAFF Ministry of Agriculture Fisheries and Food

Agricultural Land Classification

Laney Green 66/67, Staffs Aggregates Local Plan

AUGER BORINGS

Soil Pits ■

Scale 1:10,000

0 100 200 300 400 500 600 Metres

Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land. MAFF(Publications), London SE99 7TP.

The information is accurate at the base map scale but any enlargement would be misleading.

Surveyed and drawn by the Resource Planning Team, ADAS Statutory Unit Wolverhampton

Based on the 1989 Ordnance Survey 1: 10,000 map with the permission of the Controller of Her Majesty's Stationery Office.

Source Map(s): SJ90NE

Reference no. 080 94

HILTON CROSS - MAJOR INVESTMENT SITE PROPOSAL
Agricultural Land Classification
June 1996

Resource Planning Team
ADAS Statutory Group
WOLVERHAMPTON

ADAS Ref: 25/RPT/781
Job No: 025/96
MAFF Ref: EL 37/11268
LUPU Com: WO1979

AGRICULTURAL LAND CLASSIFICATION REPORT FOR HILTON CROSS - MAJOR INVESTMENT SITE PROPOSAL

1 SUMMARY

1.1 The Agricultural Land Classification (ALC) Survey for this site shows that the following proportions of ALC grades are present:

Grade/Other Land	Area (hectares)	% of surveyed area
2	3.4	15
3a	17.2	77
3b	1.3	6
Other land	0.5	2
Total Survey Area	22.4	100

1.2 The main limitation to the agricultural use of land in Grade 2 is soil droughtiness.

1.3 The main limitation to the agricultural use of land in Subgrade 3a is soil wetness.

1.4 The main limitation to the agricultural use of land in Subgrade 3b is soil wetness

2 INTRODUCTION

2.1 The site was surveyed by the Resource Planning Team in June 1996. An Agricultural Land Classification survey was undertaken according to the guidelines laid down in the "Agricultural Land Classification of England and Wales - Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" (MAFF 1988).

2.2 The 22.4 ha site is situated to the south west of Junction 1 on the M54 Motorway, close to Moseley Old Hall. The land immediately to the south and west of the site is predominantly in agricultural use. The land to the east is currently being developed for a business park.

2.3 The survey was requested by MAFF in connection with proposals to identify sites for major investment in the West Midlands.

2.4 At MAFF Land Use Planning Unit's request this was a detailed grid survey at 1:10000 with a minimum auger boring density of 1 per hectare. The attached map is only accurate at the base map scale and any enlargement would be misleading.

2.5 At the time of the survey the site was under grass, oilseed rape and woodland.

3 CLIMATE

3.1 The following interpolated data are relevant for the site (SJ 934 043) :

Average Annual Rainfall (mm)	713
Accumulated Temperature above 0°C January to June (day °C)	1340

3.2 There is no overall climatic limitation on the site.

3.3 Other relevant data for classifying land include:

Field Capacity Days (days)	167
Moisture Deficit Wheat (mm)	90
Moisture Deficit Potatoes (mm)	77

4 SITE

4.1 Three site factors of gradient, micro relief and flooding are considered when classifying land.

4.2 These factors do not impose any limitations on the agricultural use of the land.

5 GEOLOGY AND SOILS

5.1 The drift geology of the area is comprised of Quaternary boulder clay and river terrace deposits - British Geological Survey Sheet 153 Wolverhampton 1:63 360.

5.2 The underlying geology influences the soils which either have a sandy loam texture in the west or clay loam and sandy clay loam texture in the east.

6 AGRICULTURAL LAND CLASSIFICATION

6.1 Grade 2 - occupies 3.4 ha (15%) of the survey area and is found in the west of the site, adjacent to Moseley Old Hall Lane.

6.1.1 These soils typically have a sandy loam texture overlying loamy sand and sand to depth, with few to common stones within the profile. The moisture balance places these soils into Grade 2.

6.1.2 The main limitation to the agricultural use of this land is soil droughtiness.

6.2 Subgrade 3a - occupies 17.2 ha (77%) of the survey area and is found mainly in the centre and east of the site.

6.2.1 The soil has a sandy clay loam or clay loam texture over clay to depth, with few to common stones within the profile. Observations of gleying and the depth to the slowly permeable layer place these soils in Wetness Class III. There are isolated pockets of lighter loamy sand and sand in the subsoil.

6.2.2 The main limitation to the agricultural use of this land is soil wetness.

6.3 Subgrade 3b - occupies 1.3 ha (6%) of the survey area and is found in the centre of the site.

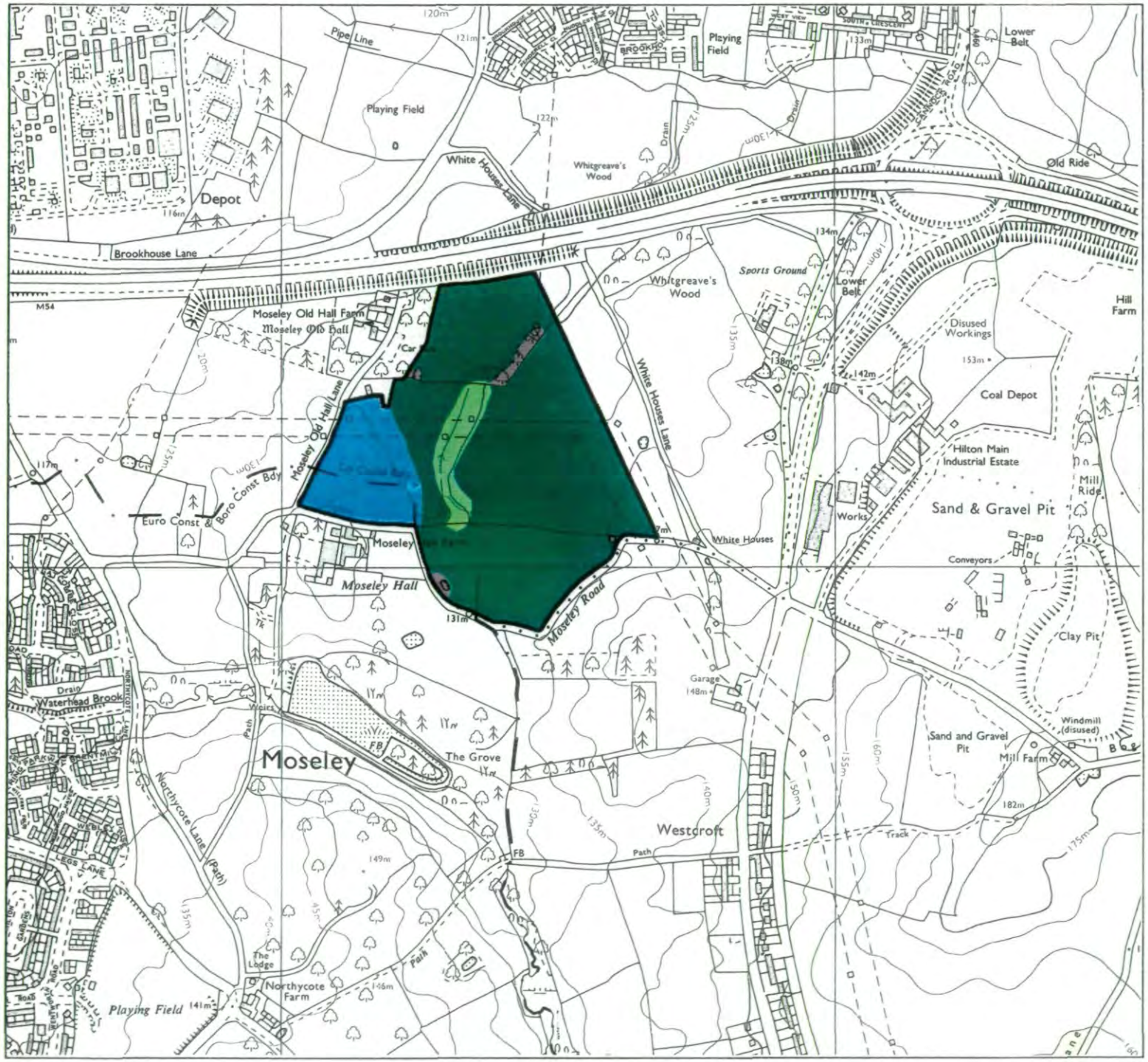
6.3.1 The soil typically has a clay loam texture over heavy clay loam and clay to depth. Observations of gleying and the depth to the slowly permeable layer place these soils in Wetness Class IV.

6.3.2 The main limitation to the agricultural use of this land is soil wetness.

6.4 Other land includes woodland and isolated ponds/scrub which occupy 0.5 ha (2%) of the survey area.

6.5 SUMMARY OF AGRICULTURAL LAND CLASSIFICATION GRADES

Grade/Other Land	Area (hectares)	% of surveyed area
2	3.4	15
3a	17.2	77
3b	1.3	6
Other land	0.5	2
Total Survey Area	**22.4**	**100**



MAFF Ministry of Agriculture Fisheries and Food

Agricultural Land Classification

Hilton Cross

Major investment site proposal

Legend

	Quality	Area (ha)
Grade 1	Excellent	nil
Grade 2	Very Good	3.4
Grade 3a	Good	17.2
Grade 3b	Moderate	1.3
Grade 4	Poor	nil
Grade 5	Very Poor	nil
	Agricultural land not surveyed	nil
	Other land	0.5
	Boundary of survey area	
	Total agricultural land area	21.9
	Total survey area	22.4

* Not present within survey area

Scale - 1:10,000

0 100 200 300 400 500 600 Metres

Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land. Maff (publications), London SE99 7TP.

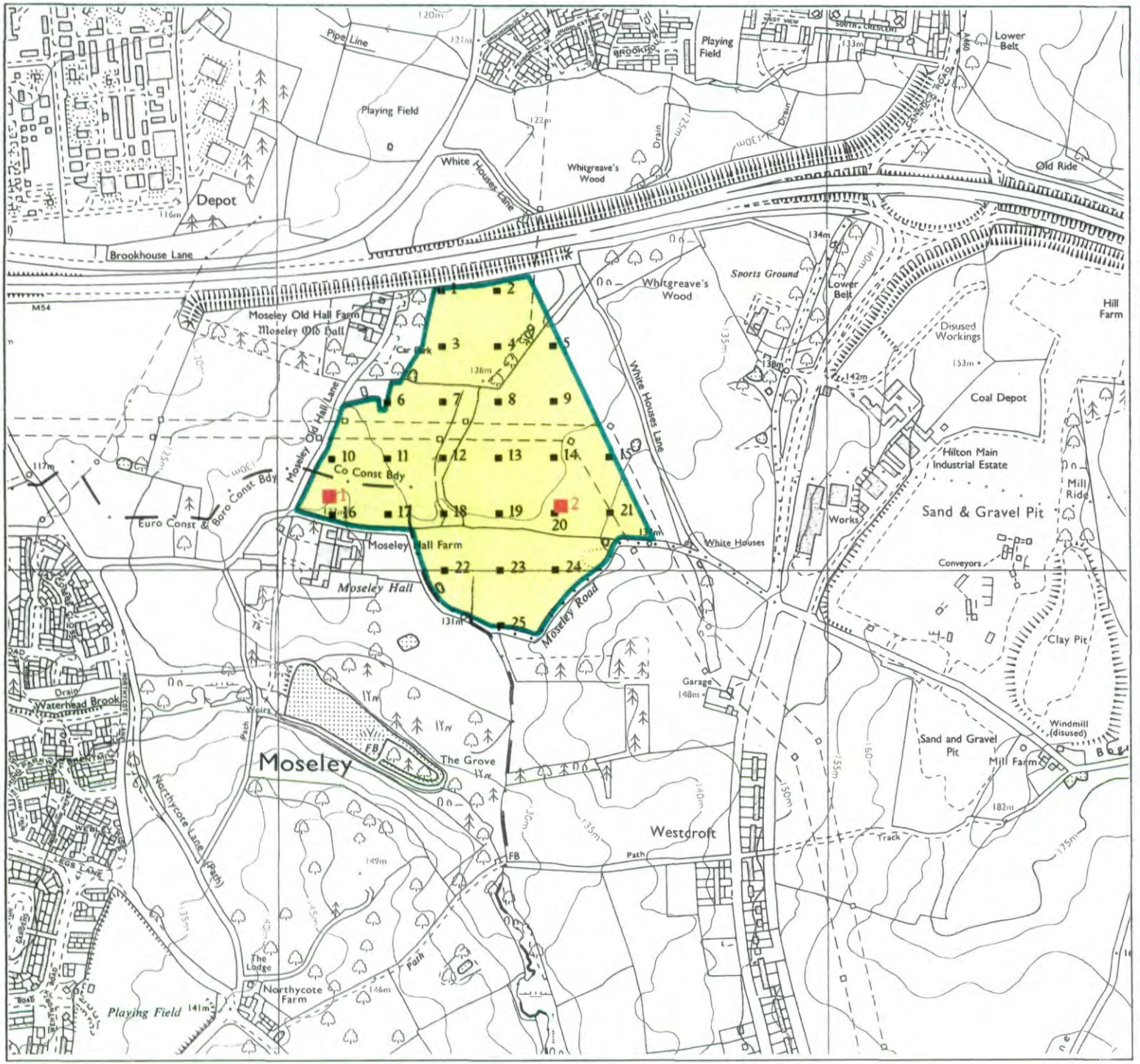
The information is accurate at base map scale but any enlargement would be misleading.

Surveyed and drawn by the Resource Planning Team, ADAS Statutory Unit, Wolverhampton.

Based on the 1989 Ordnance Survey 1:10,000 map with the permission of the Controller of Her Majesty's Stationery Office. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. MAFF Licence No: GD272361

Source map(s): SJ90SW

Reference no: 025/96



MAFF Ministry of Agriculture Fisheries and Food

Agricultural Land Classification

Hilton Cross

Major investment site proposal

Sample Point Map

Legend

- ■1 Location of soil pit
- ▪1 Location of auger sample point
- Boundary of survey area

Scale - 1:10,000

0 100 200 300 400 500 600 Metres

Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land. Maff (publications), London SE99 7TP.

The information is accurate at base map scale but any enlargement would be misleading.

Surveyed and drawn by the Resource Planning Team, ADAS Statutory Unit, Wolverhampton.

Based on the 1989 Ordnance Survey 1:10,000 map with the permission of the Controller of Her Majesty's Stationery Office. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. MAFF Licence No: GD272361

Source map(s): SJ90SW

Reference no: 025/96

SHARESHILL SOUTH
MAJOR INVESTMENT SITE PROPOSAL

Agricultural Land Classification Survey
ALC Map and Report
December 1996

Resource Planning Team
ADAS Statutory Group
ADAS Wolverhampton

ADAS Reference: 024/96, 25/RPT/0781
MAFF Reference: EL 37/11272
LUPU Commission: WO1981

AGRICULTURAL LAND CLASSIFICATION REPORT
SHARESHILL SOUTH
MAJOR INVESTMENT SITE PROPOSAL

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey on 100.2 hectares of land. The land is located to the east of Shareshill and is bounded by the M6 motorway to the east, the A460 trunk road to the west and Hilton Lane to the south. The survey was undertaken by the Resource Planning Team at Wolverhampton (Northern ADAS Statutory Centre) during November and December 1996.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit in Crewe. The survey was in connection with the major investment sites (MIS) study in the West Midlands. The results of this survey supersede any previous ALC information for this land.

3. The land has been graded in accordance with the publication "Agricultural Land Classification of England and Wales - Revised Guidelines and criteria for Grading the Quality of Agricultural Land" (MAFF 1988) .

4. At the time of survey the agricultural land on this site was under grass, cereals, oilseed rape and fodder crops, part had been recently ploughed and a small area was under set aside.

SUMMARY

5. The findings of the survey are shown on the attached ALC map. At the request of the Land Use Planning Unit this was a detailed grid survey at a scale of 1:10 000 with a minimum auger boring density of 1 per hectare. The ALC map is only accurate at the base map scale and any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% site area	% surveyed area
2	52.2	52	56
3a	31.6	31	34
3b	7.6	8	8
4	1.5	2	2
Other Land	7.3	7	-
Total surveyed area	92.9	-	100
Total site area	100.2	100	-

7. The agricultural land on this site has been classified as Grade 2 (very good quality), Subgrade 3a (good quality), Subgrade 3b (moderate quality) and Grade 4 (poor quality), the key limitations being soil wetness, soil droughtiness, topsoil content and gradient.

8. The area of very good quality land is mapped in the west and centre of the site with a small area along the eastern boundary. The soils have either a sandy loam topsoil overlying sandy loam or loamy sand and sand to depth or sandy loam and sandy clay loam topsoils overlying a sandy clay loam subsoil to depth occasionally reaching sand or clay at depth.

9. The area of good quality land is located in the south, north and east of the site. In the north the soils commonly comprise of a sandy loam topsoil overlying sandy loam, loamy sand and sand to depth and are slightly to moderately stony. In the south and east, the soils have a sandy clay loam topsoil overlying sandy clay loam and clays occasionally at depth.

10. The area of moderate quality land is mapped in the centre and east of the site. The soils in this area have either a sandy loam topsoil overlying a loamy sand and sand subsoil and are slightly to moderately stony or a sandy loam topsoil overlying variable sandy clay loam and sandy loam subsoils. The areas have been mapped as Subgrade 3b as the gradient is between 7° and 11°.

11. The area of poor quality land is mapped in the east of the site, bordering the stream. The soils have a clay loam topsoil overlying clay subsoil.

FACTORS INFLUENCING ALC GRADE

Climate

12. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

13. The key climatic variables used for grading this site are given in Table 2 below and were obtained from the published 5km grid datasets using standard interpolation procedures (Met. Office, 1989).

14. 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.

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SJ 954 060
Altitude	m, AOD	136
Accumulated Temperature	day°C	1327
Average Annual Rainfall	mm	716
Field Capacity Days	days	168
Moisture Deficit, Wheat	mm	89
Moisture Deficit, Potatoes	mm	76

7. The agricultural land on this site has been classified as Grade 2 (very good quality), Subgrade 3a (good quality), Subgrade 3b (moderate quality) and Grade 4 (poor quality), the key limitations being soil wetness, soil droughtiness, topsoil content and gradient.

8. The area of very good quality land is mapped in the west and centre of the site with a small area along the eastern boundary. The soils have either a sandy loam topsoil overlying sandy loam or loamy sand and sand to depth or sandy loam and sandy clay loam topsoils overlying a sandy clay loam subsoil to depth occasionally reaching sand or clay at depth.

9. The area of good quality land is located in the south, north and east of the site. In the north the soils commonly comprise of a sandy loam topsoil overlying sandy loam, loamy sand and sand to depth and are slightly to moderately stony. In the south and east, the soils have a sandy clay loam topsoil overlying sandy clay loam and clays occasionally at depth.

10. The area of moderate quality land is mapped in the centre and east of the site. The soils in this area have either a sandy loam topsoil overlying a loamy sand and sand subsoil and are slightly to moderately stony or a sandy loam topsoil overlying variable sandy clay loam and sandy loam subsoils. The areas have been mapped as Subgrade 3b as the gradient is between 7° and 11°.

11. The area of poor quality land is mapped in the east of the site, bordering the stream. The soils have a clay loam topsoil overlying clay subsoil.

FACTORS INFLUENCING ALC GRADE

Climate

12. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

13. The key climatic variables used for grading this site are given in Table 2 below and were obtained from the published 5km grid datasets using standard interpolation procedures (Met. Office, 1989).

14. 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.

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	SJ 954 060
Altitude	m, AOD	136
Accumulated Temperature	day°C	1327
Average Annual Rainfall	mm	716
Field Capacity Days	days	168
Moisture Deficit, Wheat	mm	89
Moisture Deficit, Potatoes	mm	76

15. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.

16. The combination of rainfall and temperature at this site means that there is no overall climatic limitation. Local climatic factors, such as exposure and frost risk, are not believed to significantly affect the site. The site is climatically Grade 1.

Site

17. The site lies at an altitude ranging from 125m to 152m AOD. The land falls away from the highest point in the centre of the site and is crossed by two tributaries of the River Penk which contribute to its undulating nature.

18. Three site factors of gradient, microrelief and flooding are considered when classifying the land.

19. Gradient imposes a limitation on the agricultural use of four areas of land in the centre and north east of the site. Gradients of 9-11° limit these areas to Subgrade 3b.

20. Microrelief and flooding do not impose any limitations on the agricultural use of this land.

Geology and soils

21. The solid geology of the area is comprised of Carboniferous Keele Beds and Bunter Pebble Beds. These are overlain with deposits of unbedded glacial sands and gravels glacial till and recent alluvium - British Geological Survey Sheet, (1948, 1958).

22. The soils that have developed on this geology are either of a sandy loam texture over loamy sand and sand to depth or a sandy clay loam texture overlying sandy clay loam and occasionally clay to depth, the soils are variably stony.

Agricultural Land Classification

23. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

Grade 2

24. Land of very good quality occupies 52.2 hectares (52%) of the site area and extends across the majority of the western side of the site in a single unit, smaller areas have been identified in the centre and east of the site.

25. In the west of the site the soil has a sandy loam texture over either loamy sand and sand to depth or sandy loam and sand to depth the profiles are slightly stony. The moisture balance places these soils in Grade 2 and topsoil stone content also limits some of these soils to Grade 2.

26. The main limitations to the agricultural use of this land are soil droughtiness and topsoil stone content.

27. In the centre and east of the site, the soils have a sandy clay loam or sandy loam topsoil texture overlying a sandy clay loam subsoil. The depth to gleying and the slowly permeable layer places these soils into Wetness Classes II and III. The topsoils are variably stony.

28. The main limitations to the agricultural use of this land are soil wetness and topsoil stone content.

Subgrade 3a

29. Land of good quality occupies 31.6 hectares (31%) of the site area and is found across the north, centre, south and east of the site in isolated blocks.

30. In the north and centre of the site the soil has either a sandy loam or sandy clay loam topsoil texture, overlying a loamy sand and sand subsoil to depth, the soils are slightly to moderately stony and the moisture balance places these soils in Subgrade 3a.

31. The main limitation to the agricultural use of this land is soil droughtiness.

32. In the south and west of the site around Hollybush Lane, the soils have a sandy clay loam texture overlying either sandy clay loam to depth or sandy clay loam and clay to depth. The depth to gleying and the slowly permeable layer places these soils into Wetness Class IV. Occasionally topsoil stone content limits the soils to Subgrade 3a.

33. In the extreme south of the site, along Hilton Lane, isolated borings of Subgrade 3b land were found, but these were too small to map at this scale.

34. The main limitations to the agricultural use of this land are soil wetness and occasionally topsoil stone content.

Subgrade 3b

35. Land of moderate quality occupies 7.6 hectares (8%) of the site area and is found in the centre and east of the site.

36. The soils have a sandy loam or sandy clay loam topsoil texture, which overlies either loamy sand and sand to depth or sandy clay loam to depth. Gradients of 9-11° limit these areas to Subgrade 3b.

37. The main limitation to the agricultural use of this land is gradient.

Grade 4

38. Land of poor quality occupies 1.5 hectares (2%) of the site area and is found in the east of the site bordering the stream.

39. The soil has a clay loam topsoil texture overlying clay to depth. The depth and duration of waterlogging in the soil profile places these soils into Wetness Class V.

40. The main limitation to the agricultural use of this land is soil wetness.

Other Land

41. Other land occupies 7.3 hectares (7%) of the site area and comprises, farm buildings, woodland, ponds and water courses, residential buildings and metalled trackways.

Resource Planning Team
Wolverhampton Statutory Group
ADAS Wolverhampton

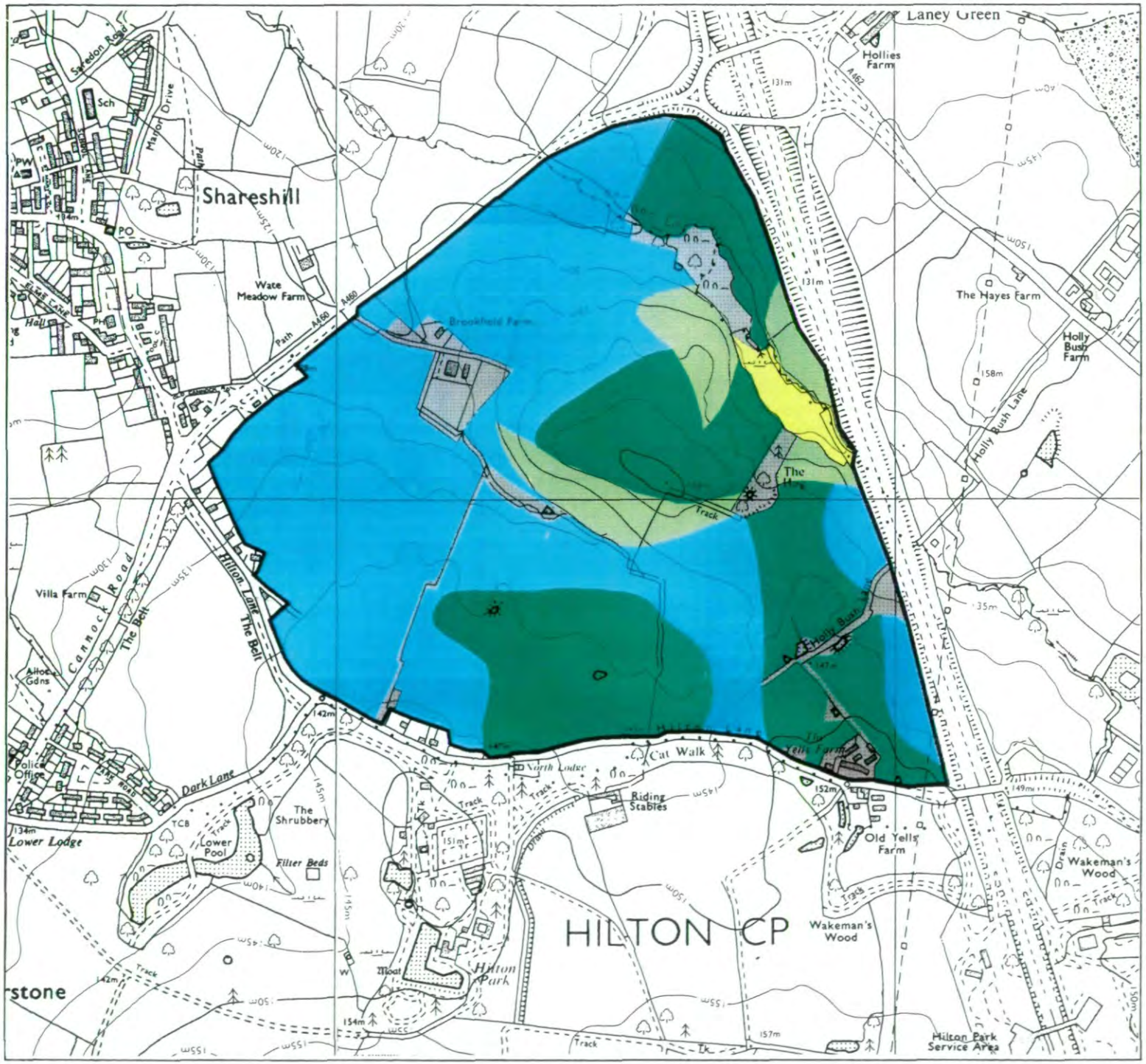
SOURCES OF REFERENCE

British Geological Survey (1948) *Sheet 153, Wolverhampton Drift Edition. 1:63 360 Scale.* BGS: London.

British Geological Survey (1958) *Sheet 153, Wolverhampton Solid Edition. 1:63 360 Scale.* BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.*
MAFF: London.

Meteorological Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.



MAFF Ministry of Agriculture Fisheries and Food

Agricultural Land Classification

Shareshill South
Major Investment Site Proposal

Legend

	Quality	Area (ha)
Grade 1	Excellent	nil
Grade 2	Very Good	52.2
Grade 3a	Good	31.6
Grade 3b	Moderate	7.6
Grade 4	Poor	1.5
Grade 5	Very Poor	nil
	Agricultural land not surveyed	nil
	Other land	7.3
	Boundary of survey area	
	Total agricultural land area	92.9
	Total survey area	100.2

* Not present within survey area

Scale - 1:10,000

0 100 200 300 400 500 600 Metres

Further details contained in MAFF (1988) Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land. Maff (publications), London SE99 7TP.
The information is accurate at base map scale but any enlargement would be misleading.

Surveyed and drawn by the Resource Planning Team, ADAS Statutory Unit, Wolverhampton.
Based on the 1995 Ordnance Survey 1:10,000 map with the permission of the Controller of Her Majesty's Stationery Office. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. MAFF Licence No: GD272361
Source map(s): SJ90NE/NW
Reference no: 024/96