November 2019

Peel Investments (North) Ltd

Agricultural Land Classification and Soil Resources

at

Hazelhurst, Salford

Beechwood Court,
Long Toll, Woodcote,
RG8 0RR

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1 Introduction

1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by Peel Investments (North) Ltd to investigate the Agricultural Land Classification (ALC) and soil resources of land at Hazelhurst, Salford, by means of a detailed survey of soil and site characteristics. The site was surveyed in detail in March 2012.

1.2 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 (1988)[1], and summarised in Natural England's Technical Information Note 049[2].

1.3 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.

1.4 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 ALC system is defined as best and most versatile agricultural land.

1.5 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 site as undifferentiated Grade 3. However, TIN049 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*

[1] **MAFF (1988).** *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land*. MAFF Publications.

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

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 …"

1.6 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. As the ALC is concerned with the long-term, inherent characteristics of the soil and land, the survey results from 2012 remain valid.

2 Site and climatic conditions

General features, land form and drainage

2.1 The site extends to 17.5ha predominantly of arable agricultural land. Non-agricultural land comprises an area of trees in the north-west, a small area surrounding an electricity pylon on the northern boundary, and a small copse around a pond in the centre of the site. The site is bounded to the east and south by the settlement of Hazelhurst, to the north by the A580, and to the west by woodland, beyond which is the M60.

2.2 The site is gently undulating and at an altitude of around 55m above Ordnance Datum (AOD).

Agro-climatic conditions

2.3 Agro-climatic data for the site have been interpolated from the Meteorological Office's standard 5km grid point data set at a representative altitude of 55m AOD, and are given in Table 1. The climate is wet and moderately cool. Moisture deficits are moderately small. The Field Capacity Day (FCD) regime (which estimates the duration of the period from the autumn or early winter to spring when the soil moisture deficit is zero) is longer than is typical for lowland England, which is considered to be unfavourable for agricultural work.

Table 1: Local agro-climatic conditions

Parameter	Value
Average Annual Rainfall	943mm
Accumulated Temperatures >0°C	1,382 day°
Field Capacity Days	223 days
Average Moisture Deficit, wheat	75mm
Average Moisture Deficit, potatoes	58mm

2.4 There is an overriding climatic limitation to Grade 2.

Soil parent material and soil type

2.5 The underlying geology mapped by the British Geological Survey[3] comprises the Pennine Middle Coal Measures Formation in the north of the site and the Pennine Upper Coal Measures in the south. Both formations include interbedded grey mudstone, siltstone and pale grey sandstone, with variable inclusions of coal seams and marine fossils. Within the Coal Measures are east/west bands dominated by sandstone of Newton Heath Sandstone and Worsley Delf Rock, to the north and south respectively.

2.6 Superficial deposits of glacial till overlie the bedrock across the site and may include poorly sorted material ranging in size from clay to boulders.

2.7 The Soil Survey of England and Wales soil association mapping[4] (1:250,000 scale) shows the Brickfield 3 association to be present across the site. The Brickfield 3 association is characterised by predominantly loamy and clayey surface-water gley soils that are waterlogged for much of the year (Wetness Class (WC) IV). These soils are mostly in permanent grassland or in a grass ley and cereal rotation as they are wet. Cultivation can be difficult and topsoil structure is quickly damaged when wet[5].

3 Agricultural land quality

Soil survey methods

3.1 In total, 22 soil profiles were examined across the site using an Edelman (Dutch) auger at an observation density of one per hectare in accordance with the established recommendations for ALC surveys[2]. One observation pit was also excavated to examine subsoil structures. The locations of observations are indicated on Figure RAC8581-1a. At each observation point the following characteristics were assessed for each soil horizon up to a maximum of 120cm or any impenetrable layer:

- soil texture;
- significant stoniness;

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

[4] **Soil Survey of England and Wales (1984).** *Soils of Midland and Western England* (1:250,000), Sheet 3

[5] **Ragg et al (1984).** *Soils and Their Use in Midland and Western England*. Soil Survey of England and Wales Bulletin 12, Harpenden.

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

3.2 Three topsoil samples were submitted for laboratory determination of particle size distribution, pH, organic matter content and nutrient contents (P, K, Mg). Results are presented in Appendix 1.

3.3 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 15cm thick, in relation to the number of FCD at the location.

3.4 Soil droughtiness was investigated by the calculation of moisture balance equations (given in Appendix 2). 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.

Agricultural land classification and site limitations

3.5 Assessment of land quality has been carried out according to the MAFF revised ALC guidelines (1988)[1]. Soil profiles have been described according to Hodgson (1997)[6] which is the recognised source for describing soil profiles and characteristics according to the revised ALC guidelines.

3.6 The main factor affecting the classification of the land is limited workability due to the combination of poor soil drainage, the long FCD regime and the clayey topsoil textures.

3.7 Topsoil textures are clay loam, sandy clay loam and silty clay loam, which are very dark brown or very dark grey (10YR2/2 or 3/1 in the Munsell soil colour charts[7]). Topsoil is well developed with a medium sub-angular blocky structure, and the topsoil depth ranges from 25 to 40cm.

3.8 Subsoil textures are mostly clay in the northern half of the site and sandy clay in the southern half of the site, with instances of sandy loam, loamy sand and sandy clay loam. The subsoil

[6] **Hodgson, J. M. (Ed.) (1997).** *Soil survey field handbook.* Soil Survey Technical Monograph No. 5, Silsoe.

[7] **Munsell Color (2009).** *Munsell Soil Color Book*. Grand Rapids, MI, USA

colour is variable, from brown to greyish brown (10YR5/2, 4/2) mostly in the south, grey (N5) in the east and dusky red (2.5YR2.5/1, 3/2) in the centre and west. Subsoils are prominently mottled and are gleyed.

3.9 Across much of the site, the soils are wet, usually WCIV, poorly drained, with poorly permeable clay subsoil. Where the topsoil textures are medium clay loam or similar, this land is limited to no better than Subgrade 3b due to restricted workability. Where topsoil textures are heavier, there is a limitation to Grade 4.

3.10 Where subsoil is more moderately well developed with a medium sub-angular blocky structure, the soils are gleyed but permeable, of WC II or III depending on the depth to gleying. Profiles are limited by wetness and workability to Subgrade 3a.

3.11 The areas of each ALC grade present at the site are given in Table 2 and shown in Figure RAC8581-2a.

Table 2: Agricultural land classification

Grade	Description	Area (ha)	% of agri land
3a	Good quality	4.5	28
3b	Moderate quality	9.9	63
4	Poor quality	1.5	9
Total Agricultural		15.9	100
Non-Agricultural		1.5	-

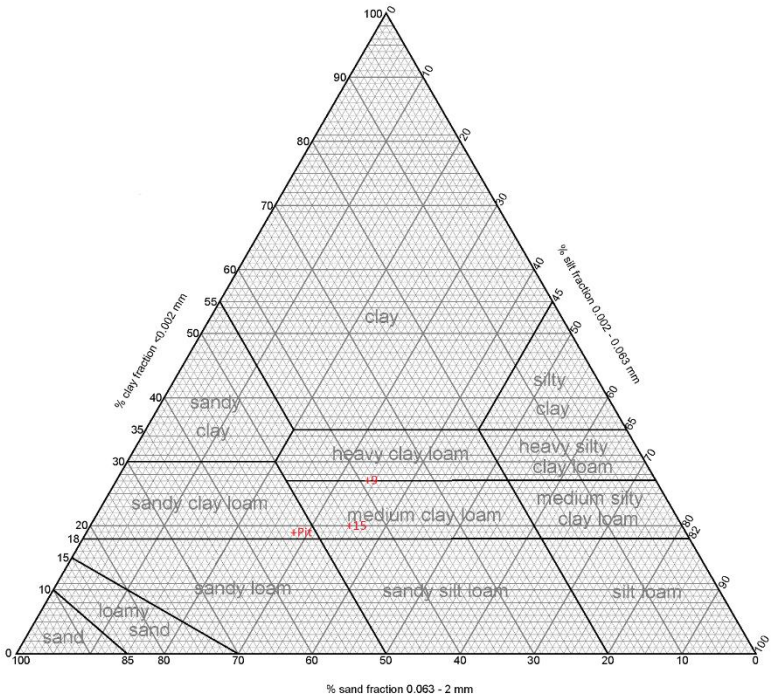
Appendix 1: Laboratory Data

Determinand	Pit	Site 9	Site 15	Units
Sand 2.00-0.063 mm	53	39	45	% w/w
Silt 0.063-0.002 mm	28	34	35	% w/w
Clay <0.002 mm	19	27	20	% w/w
Organic Matter	5.6	6.6	7.5	% w/w
Texture	Sandy Clay Loam	Medium/Heavy Clay Loam	Medium Clay Loam	

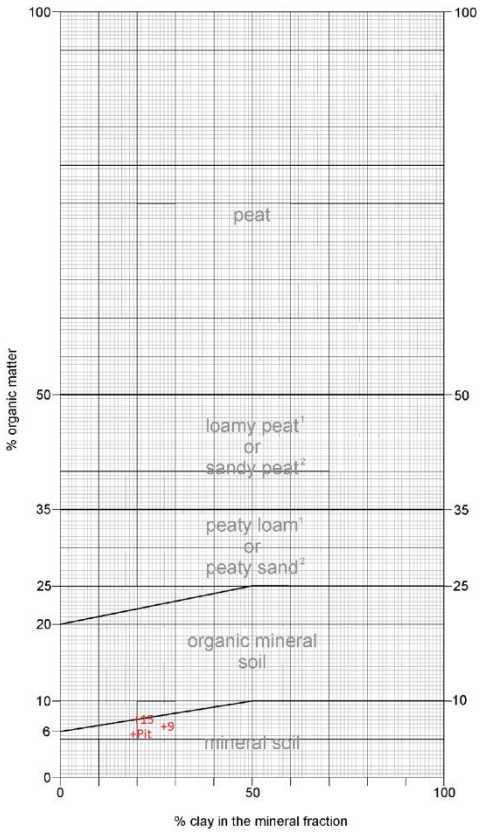
Determinand	Pit	Site 9	Site 15	Units
Soil pH	6.4	7.1	7.4	
Phosphorus (P)	7	15	13	Mg/l (av)
Potassium (K)	57	105	81	Mg/l (av)
Magnesium (Mg)	50	60	41	Mg/l (av)

Determinand	Pit	Site 9	Site 15	Units
Phosphorus (P)	0	1	1	ADAS Index
Potassium (K)	0	1	1	ADAS Index
Magnesium (Mg)	1	2	1	ADAS Index

Soil Texture by Particle Size Analysis



Organic Matter Class



[1] Less than 50% sand in the mineral fraction

[2] 50% sand or more in the mineral fraction

Appendix 2: Soil Profile Summaries and Droughtiness Calculations

Droughtiness calculations are made according to the methodology given in Appendix 4 of the ALC guidelines, MAFF 1988.
Workability is assessed according to Tables 6 and 7 of the ALC guidelines

MDw= 75 MDp= 58

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
1	0	30	MCL	10YR 2/2		0	1	18	54.0	1	18	54.0	n	n	IV	3b
	30	45	C	10YR 5/3	mcp och	0	1	21	31.5	1	21	31.5	y	y		
	45	50	C	10YR 5/3	mcp och	0	0.5	15	7.5	1	15	7.5	y	y		
	50	70	C	10YR 5/3	mcp och	0	0.5	15	30.0	0	15	30.0	y	y		
	70	120	C	10YR 5/3	mcp och	0	0.5	15	75.0				y	y		
								Total (mm) =	198.0			Total (mm) =	123.0			
								MBw=	123.0			MBp=	65.0			
								Grade =	1			Grade =	1			

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
2	0	39	MCL	10YR 2/2		0	1	18	70.2	1	18	70.2	n	n	II	3a
	39	50	FSL	10YR 6/2	mcp och	0	1	17	18.7	1	17	18.7	y	n		
	50	60	FSL	10YR 6/2	mcp och	0	1	13	13.0	1	13	13.0	y	n		
	60	70	SC	10YR 5/3	mcp och	0	0.5	14	14.0	1	14	14.0	y	n		
	70	80	SC	10YR 5/3	mcp och	0	0.5	14	14.0	0	0	0.0	y	n		
	80	120	SC	10YR 5/3	mcp och	0	0.5									
								Total (mm) =	129.9			Total (mm) =	115.9			
								MBw=	54.9			MBp=	57.9			
								Grade =	1			Grade =	1			

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
3	0	35	MCL	10YR 2/2		0	1	18	63.0	1	18	63.0	n	n	IV	3b
	35	50	FSL	10YR 6/2	mcp och	0	1	17	25.5	1	17	25.5	y	n		
	50	70	FSL	10YR 6/2	mcp och	0	1	13	26.0	1	13	26.0	y	n		
	70	120	SC	10YR 5/3	mcp och	0	0.5	14	70.0	1	0	0.0	y	n		
								Total (mm) =	184.5			Total (mm) =	114.5			
								MBw=	109.5			MBp=	56.5			
								Grade =	1			Grade =	1			

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
4	0	35	MCL	10YR 2/2		0	1	18	63.0	1	18	63.0	n	n	I	2
	35	50				35	1	16	16.1	1	16	16.1	y	n		
	50	70				35	1	0	0.7	1	0	0.7	y	n		
	70	120				35	0.5	0	0.9	0	0	0.0	y	n		
								Total (mm) =	80.7			Total (mm) =	79.8			
								MBw=	5.7			MBp=	21.8			
								Grade =	2			Grade =	1			

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
5	0	30	MCL	10YR 3/1		2	1	18	53.0	1	18	53.0	n	n	III	3a
	30	50	SC	10YR 3/3		2	1	19	37.3	1	19	37.3	y	n		
	50	60	SC	10YR 3/3		2	1	14	13.7	1	14	13.7	y	n		

	70	120				0	0.5		0.0	1		0.0	y	n		
								Total (mm) =	104.0		Total (mm) =	104.0				
								MBw=	29.0		MBp=	46.0				
								Grade =	2		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
6	0	30	SCL	10YR 3/1		2	1	17	50.0	1	18	53.0	n	n	III	3a
	30	50	SC	10YR 3/3		0	1	19	38.0	1	19	38.0	y	n		
	50	60	SC	10YR 3/3		0	1	14	14.0	1	14	14.0	y	n		
	70	120				0	0.5		0.0	1		0.0				
								Total (mm) =	102.0		Total (mm) =	105.0				
								MBw=	27.0		MBp=	47.0				
								Grade =	2		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
7	0	28	HCL	10YR 2/2		1	1	18	49.9	1	18	49.9	n	n	IV	4
	28	50	C	10YR 4/2	mcp och	0	1	21	46.2	1	21	46.2	y	y		
	50	60	C	10YR 4/2	mcp och	0	1	15	15.0	1	15	15.0	y	y		
	70	120	C	10YR 4/2	mcp och	0	0.5	15	75.0	1		0.0	y	y		
								Total (mm) =	186.1		Total (mm) =	111.1				
								MBw=	111.1		MBp=	53.1				
								Grade =	1		Grade =	1				

							Wheat Calculation			Potato Calculation						

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
8	0	25	HCL	10YR 2/2		1	1	18	44.6	1	18	44.6	n	n	IV	4
	25	50	SC	10YR 4/2	mcp och	0	1	19	47.5	1	19	47.5	y	y		
	50	70	SC	10YR 4/2	mcp och	0	1	14	28.0	1	14	28.0	y	y		
	70	120	SC	10YR 4/2	mcp och	0	0.5	14	70.0	1		0.0	y	y		
								Total (mm) =	190.1		Total (mm) =	120.1				
								MBw=	115.1		MBp=	62.1				
								Grade =	1		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
9	0	28	MCL	10YR 2/2		2	1	18	49.4	1	18	49.4	n	n	IV	3b
	28	50	C	10YR 4/2	mcp och	0	1	21	46.2	1	21	46.2	y	y		
	50	70	C	10YR 4/2	mcp och	0	1	15	30.0	1	15	30.0	y	y		
	70	120	C	10YR 4/2	mcp och	0	0.5	15	75.0	1		0.0	y	y		
								Total (mm) =	200.6		Total (mm) =	125.6				
								MBw=	125.6		MBp=	67.6				
								Grade =	1		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
10	0	30	MCL	10YR 3/1		2	1	18	53.0	1	18	53.0	n	n	II	3a
	30	50	SC	10YR 3/3		0	1	19	38.0	1	19	38.0	n	n		
	50	60				0	1	14	14.0	1	14	14.0	n	n		

	70	120				0	0.5		0.0	1		0.0	n	n		
								Total (mm) =	105.0		Total (mm) =	105.0				
								MBw=	30.0		MBp=	47.0				
								Grade =	2		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
11	0	25	SCL	10YR 2/2		2	1	17	41.7	1	17	41.7	n	n	III	3a
	25	50	SC	10YR 4/3	mcp och	0	1	15	37.5	1	15	37.5	y	n		
	50	70	SC	10YR 4/3	mcp och	0	1	10	20.0	1	15	30.0	y	n		
	70	120	LS	10YR 4/3	ccp och	0	0.5	6	30.0	1		0.0	y	n		
								Total (mm) =	129.2		Total (mm) =	109.2				
								MBw=	54.2		MBp=	51.2				
								Grade =	1		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
12	0	25	SCL	10YR 2/2		2	1	17	41.7	1	17	41.7	n	n	II	3a
	25	50	SC	10YR 3/3		0	1	19	47.5	1	19	47.5	n	n		
	50	70	SC	10YR 3/3		0	1	14	28.0	1	14	28.0	N	n		
	70	120	LS	10YR 3/3	ccp och	0	0.5	14	70.0	1		0.0	y	n		
								Total (mm) =	187.2		Total (mm) =	117.2				
								MBw=	112.2		MBp=	59.2				
								Grade =	1		Grade =	1				

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
13	0	30	MCL	10YR 2/2		0	1	18	54.0	1	18	54.0	n	n	IV	3b
	30	45	C	10YR 5/3	mcp och	0	1	21	31.5	1	21	31.5	y	y		
	45	50	C	10YR 5/3	mcp och	0	0.5	15	7.5	1	15	7.5	y	y		
	50	70	C	10YR 5/3	mcp och	0	0.5	15	30.0	0	15	30.0	y	y		
	70	120	C	10YR 5/3	mcp och	0	0.5	15	75.0				y	y		
								Total (mm) =	144.0			Total (mm) =	69.0			
								MBw=	69.0			MBp=	11.0			
								Grade =	1			Grade =	1			

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
14	0	30	HCL	N3		0	1	18	54.0	1	18	54.0	n	n	IV	4
	30	50	C	N5	mcp och	0	1	21	42.0	1	21	42.0	y	y		
	50	70	C	N5	mcp och	0	0.5	15	30.0	1	15	30.0	y	y		
	70	120	C	N5	mcp och	0	0.5	15	75.0	0	15	75.0	y	y		
								Total (mm) =	147.0			Total (mm) =	147.0			
								MBw=	72.0			MBp=	89.0			
								Grade =	1			Grade =	1			

Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	Wheat Calculation: TAv or EAv (stones) %	Wheat Calculation: TAv or EAv (soil) %	Wheat Calculation: AP (wheat) mm	Potato Calculation: TAv (stones) %	Potato Calculation: TAv (soil) %	Potato Calculation: AP (potatoes) mm	Gley	SPL	WC	ALC Grade
15	0	30	MCL	10YR 2/2		0	1	18	54.0	1	18	54.0	n	n	IV	3b

	30	45	C	N5	mcp och	0	1	21	31.5	1	21	31.5	y	y		
	45	50	C	N5	mcp och	0	0.5	15	7.5	1	15	7.5	y	y		
	50	70	C	N5	mcp och	0	0.5	15	30.0	0	15	30.0	y	y		
	70	120	C	N5	mcp och	0	0.5	15	75.0				y	y		
								Total (mm) =	144.0		Total (mm) =	69.0				
								MBw=	69.0		MBp=	11.0				
								Grade =	1		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
16	0	34	ZL	10YR 2/2		0	1	23	78.2	1	23	78.2	n	n	IV	3b
	34	44	C	10YR 2/2	och	0	1	13	13.0	1	13	13.0	y	y		
	44	50	C	10YR 3/1	och	0	0.5	13	7.8	1	13	7.8	y	y		
	50	70	C	10YR 3/1	och	0	0.5	7	14.0	1	13	26.0	y	y		
	70	120	C	10YR 3/1	och	0	0.5	7	35.0				y	y		
								Total (mm) =	148.0		Total (mm) =	125.0				
								MBw=	73.0		0	67.0				
								Grade =	1		Grade =	1				

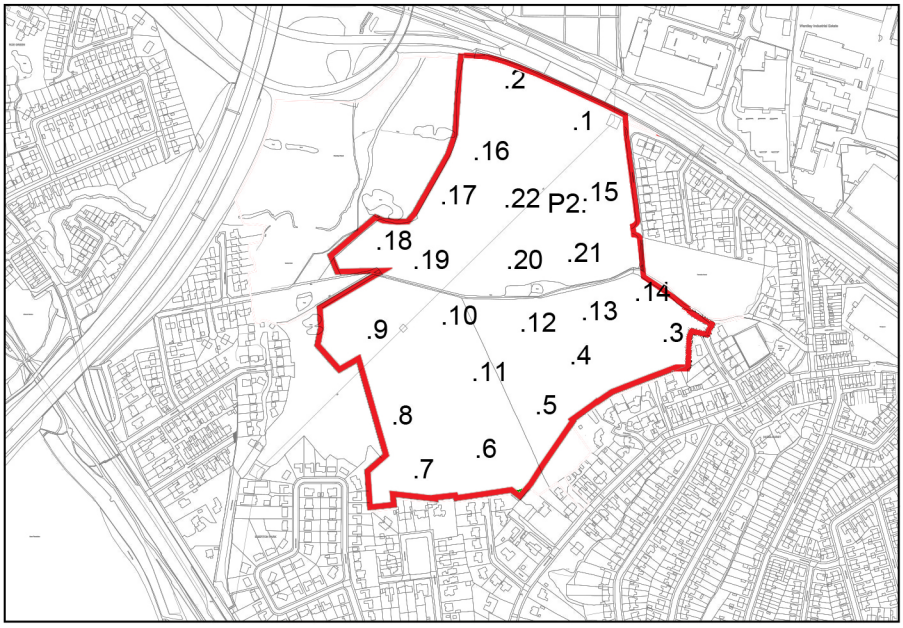
							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
17	0	35	MCL	2.5Y 2.5/1		0	1	18	63.0	1	18	27.0	n	n	III	3a
	35	50	SC	10YR 3/1	och	0	1	15	22.5	1	19	38.0	y	n		
	50	70				0	0.5	0	0.0	1	0	0.0				
	70	120				0	0.5	0	0.0							
								Total (mm) =	85.5		Total (mm) =	65.0				

								MBw=	10.5		MBp=	7.0				
								Grade =	2		Grade =	2				
							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
18	0	40	ZCL	2.5YR 3/2		0	1	19	76.0	1	19	19.0	n	n	IV	3b
	40	50	HC	2.5YR 2.5/1	och	0	1	13	13.0	1	13	26.0	y	y		
	50	70	HC	2.5YR 2.5/1	och	0	0.5	7	14.0	1	13	65.0	y	y		
	70	120	HC	2.5YR 2.5/1	och	0	0.5	7	35.0				y	y		
								Total (mm) =	138.0		Total (mm) =	110.0				
								MBw=	63.0		MBp=	52.0				
								Grade =	1		Grade =	1				
							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
19	0	38	MCL	10YR 2/2		0	1	18	68.4	1	18	21.6	n	n	IV	3b
	38	50	C	2.5YR 2.5/1	och	0	1	13	15.6	1	13	26.0	y	y		
	50	70	C	2.5YR 2.5/1	och	0	0.5	7	14.0	1	13	65.0	y	y		
	70	120	C	2.5YR 2.5/2	och	0	0.5	7	35.0			0.0	y	y		
								Total (mm) =	133.0		Total (mm) =	112.6				
								MBw=	58.0		MBp=	54.6				
								Grade =	1		Grade =	1				
							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
20	0	36	ZCL	10YR 3/1		0	1	19	68.4	1	19	26.6	n	n	IV	3b

	36	50	MC	2.5YR 3/2		0	1	13	18.2	1	13	26.0	y	y	
	50	70	MC	2.5YR 3/2		0	0.5	7	14.0	1	13	65.0	y	y	
	70	120	MC	2.5YR 3/2		0	0.5	7	35.0				y	y	
								Total (mm) =	135.6		Total (mm) =	117.6			
								MBw=	60.6		MBp=	59.6			
								Grade =	1		Grade =	1			

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
21	0	36	ZCL	10YR 3/1		0	1	19	26.6	1	19	26.6	n	n	IV	3b
	36	50	MC	2.5YR 3/2		0	1	13	26.0	1	13	26.0	y	y		
	50	70	MC	2.5YR 3/2		0	0.5	7	35.0	1	13	65.0	y	y		
	70	120	MC	2.5YR 3/2		0	0.5	7	0.0				y	y		
								Total (mm) =	87.6		Total (mm) =	117.6				
								MBw=	12.6		MBp=	59.6				
								Grade =	2		Grade =	1				

							Wheat Calculation			Potato Calculation						
Site No.		Depth (cm)	Texture	Colour	Mottle	stones %	TAv or EAv (stones) %	TAv or EAv (soil) %	AP (wheat) mm	TAv (stones) %	TAv (soil) %	AP (potatoes) mm	Gley	SPL	WC	ALC Grade
22	0	32	MCL	10YR 2/2		0	1	18	57.6	1	18	57.6	n	n	IV	3b
	32	50	SCL	10YR 2/2		0	1	15	27.0	1	15	27.0	y	n		
	50	63	SCL	10YR 3/2	och	0	0.5	10	13.0	1	15	19.5	y	y		
	63	70	C	10YR 3/2	och	0	0.5	7	4.9		13	9.1	y	y		
	70	120	C	10YR 3/2	och	0	0.5	7	35.0							
								Total (mm) =	137.5		Total (mm) =	113.2				
								MBw=	62.5		MBp=	55.2				
								Grade =	1		Grade =	1				



Survey Area

+1 Auger Observation

.P1 Pit Observation

N

Scale 1:10,000@A4 Nov/2019

Figure	RAC8581-1a: Observations
Site:	Hazelhurst, Salford
Client:	Peel Investments (North) Ltd

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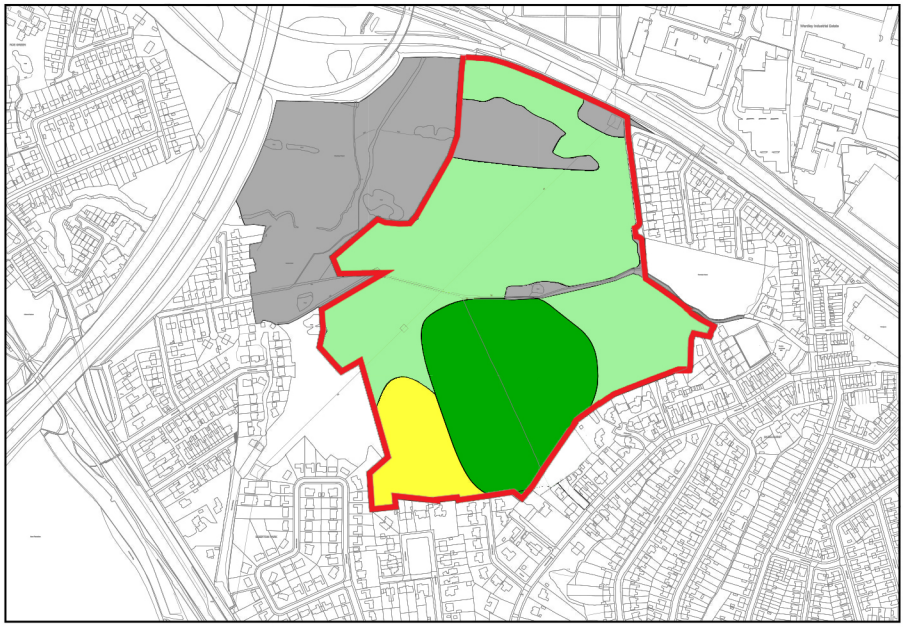

* Grade 1 - excellent quality
* Grade 2 - very good quality
* Subgrade 3a - good quality

Best and most versatile land

* Not Present
* Subgrade 3b - moderate quality
* Grade 4 - poor quality
* Grade 5 - very poor quality
* Non-agricultural

N

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Figure	RAC8581-2a: Agricultural Land Classification
Site:	Hazelhurst, Salford
Client:	Peel Investments (North) Ltd

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