



November 2019

**Peel Investments (North) Ltd**

**Agricultural Land Quality**

**Land at East Boothstown, Manchester**

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# 1 Introduction

- 1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by Peel Investments (North) Ltd to assess the Agricultural Land Classification (ALC) of land at East Boothstown, Manchester, by means of a desk appraisal of soil and site characteristics.
- 1.2 Paragraph 170 of the National Planning Policy Framework (NPPF<sup>1</sup>) indicates that planning policies and decisions should contribute to and enhance the natural and local environment by recognising, amongst other matters, the benefits from natural capital and ecosystem services, including the economic and other benefits of the best and most versatile (BMV) agricultural land.
- 1.3 Paragraph 171 goes on to state that plans should allocate land with the least environmental or amenity value, where consistent with other policies in the NPPF, and, in footnote 53, explains that where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.
- 1.4 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)<sup>2</sup>, and summarised in Natural England's Technical Information Note 049<sup>3</sup>.
- 1.5 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.
- 1.6 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

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<sup>1</sup> **Ministry of Housing, Communities and Local Government (2019).** *National Planning Policy Framework.*

<sup>2</sup> **MAFF (1988).** *Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.* MAFF Publications.

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

land) and Subgrade 3b (moderate quality land). Land which is classified as Grades 1, 2 and 3a in the ALC system is defined in Annex 2 of the NPPF as BMV agricultural land.

## 2 Site and climatic conditions

### General features, land form and drainage

- 2.1 The site extends to 30.7ha, predominantly comprising agricultural grassland. Non-agricultural land includes Booth's Bank Farm buildings and Alder Wood and accounts for around 3.6ha. The site is bounded to the north by Leigh Road, to the north-west by residential properties, to the south-west and south by the Bridgewater Canal and to the east by RHS Garden Bridgewater.
- 2.2 Drainage of the land is via Shaw Brook which carries water southward to the Bridgewater Canal.
- 2.3 Topography in the north of the site is gently sloping, falling southward from around 50m above Ordnance Datum (AOD) at Leigh Road to 25m at Alder Wood. Approximately the southern two-thirds of the site is largely level at around 25m AOD.

### Agro-climatic conditions

- 2.4 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 25m AOD, and are given in Table 1. Climate at the site is wet and relatively warm. Moisture deficits are moderate to moderately small. The number of Field Capacity Days (FCD) is larger than is typical for lowland England (150) and is considered to be unfavourable for agricultural land working.

**Table 1:** Local agro-climatic conditions

Parameter	Value
Average Annual Rainfall	917mm
Accumulated Temperatures >0°C	1,417 day°
Field Capacity Days	218 days
Average Moisture Deficit, wheat	80mm
Average Moisture Deficit, potatoes	65mm

- 2.5 There is no overriding climatic limitation to agricultural land quality.

## Soil parent material and soil type

- 2.6 The bedrock geology mapped by the British Geological Survey<sup>4</sup> across most of the site is the Pennine Upper Coal Measures Formation, which mostly comprises interbedded grey mudstone, siltstone and sandstone, commonly with coal seams, although is dominated by sandstone in the north. In the south of the site this is overlain by a thin band of the Collyhurst Sandstone Formation, a typically soft red sandstone, and calcareous mudstone and siltstone of the Manchester Marls Formation.
- 2.7 Superficial deposits of glacial till overlie the bedrock across the site and can include poorly sorted material ranging in size from clay to boulders.
- 2.8 The Soil Survey of England and Wales soil association mapping<sup>5</sup> (1:250,000 scale) shows the Brickfield 3 association across a majority of the site, with Turbary Moor soils in the south.
- 2.9 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.
- 2.10 Turbary Moor soils comprise peat throughout. Where uncultivated the soils are very acidic with high groundwater levels. The soils can be improved for arable crops by draining using pumped ditches combined with field drains<sup>6</sup>.

## 3 Agricultural land quality and land use

### Existing data

- 3.1 Provisional ALC mapping shows the site as undifferentiated Grade 3. Grade 3 is defined as:

*“Grade 3 – good to moderate quality agricultural land*

*Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.”*

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

<sup>5</sup> **Soil Survey of England and Wales (1984)**. *Soils of Midland and Western England (1:250,000)*, Sheet 3.

<sup>6</sup> **Ragg et al (1984)**. *Soils and Their Use in Midland and Western England*, Harpenden, Bulletin 12.

3.2 Grade 3 is further subdivided into Subgrades 3a and 3b, defined as:

*“Subgrade 3a - good quality agricultural land*

*Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.*

*Subgrade 3b - moderate quality agricultural land*

*Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.”*

3.3 The provisional maps are not suitable for assessing the quality of individual sites, as explained in Natural England's TIN049:

*“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 ...”*

3.4 TIN049 goes on to say:

*“Since 1976, selected areas have been resurveyed in greater detail and to revised guidelines and criteria. Information based on detailed ALC field surveys in accordance with current guidelines (MAFF, 1988) is the most definitive source. Data from the former Ministry of Agriculture, Fisheries and Food (MAFF) archive of more detailed ALC survey information (from 1988) is also available on <http://magic.defra.gov.uk/>.”*

3.5 There is no detailed ALC data available for the site, however land to the immediate south of the Bridgewater Canal, within an area also mapped as having Turbary Moor soils, has been surveyed<sup>7</sup>.

3.6 The survey report focusses primarily on the investigation of wetness classes of peatland using measurements from dipwells. As part of the study, over 2,100ha of agricultural land was surveyed and was assigned WC I to III. Most of the agricultural land in the study area was

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<sup>7</sup> MAFF (1988). *Assessment of Land Quality on Chat Moss*. Ref 59/88

subsequently classified as Grade 1. However, in the north of the study area, which lies adjacent to the East Boothstown site, south of the Bridgewater Canal, the land is classified as Grades 1, 2 and 3a. There is little detail given in the MAFF report on the soil characteristics, other than very brief descriptions at each dipwell location. A majority comprise peat throughout, or occasionally overlies sandy silt loam at depth. Three of 32 dipwells were in locations at which there is reported to be a topsoil of clay loam to 30cm depth, over peat. These profiles are of WC III. Under the climatic conditions of the site, soils of WC III with medium clay loam topsoils are limited by wetness and workability to Subgrade 3a. Similar profiles of WC II would also be of Subgrade 3a.

- 3.7 Where the topsoil is peaty, profiles of WC I and II account for the land of Grade 1 quality, whilst profiles of WC III would be of Grade 2.
- 3.8 Aerial imagery of the site shows that the area mapped as Turbary Moor soils has patchy grass growth and established trees. This area could be considered non-agricultural. The imagery also shows disturbance through the site, possibly from the installation of a pipeline or cable. In the mapped peat area, there are deep ruts in the exposed topsoil, although the surrounding grass looks to be well established and dense, suggesting good quality land.
- 3.9 The main component soils of the Brickfield 3 association include slightly stony clay loam to 20cm depth. This overlies a mottled but permeable upper subsoil of clay loam to 50cm depth, which in turn overlies a grey, mottled clay loam lower subsoil, which has a weak, coarse structure and poor permeability. Where the slowly permeable layer begins within around 59cm of the soil surface, the profiles are of WC IV, and where deeper the profiles will be of WC III.
- 3.10 Under the climatic conditions of the site, profiles of WC IV with medium clay loam topsoil would be Subgrade 3b; and those of WC III would be improved by one grade to Subgrade 3a. Where the topsoil is of heavy clay loam, WC IV profiles would be Grade 4 and WC III profiles would be Subgrade 3b. The grades according to wetness are highlighted in Appendix 1.
- 3.11 Based on the distribution of the mapped soil types, the ALC of land at East Boothstown is predicted to be predominantly Subgrade 3b, with an area of Subgrade 3a in the south of the site, as shown in Figure RAC8581-1d.

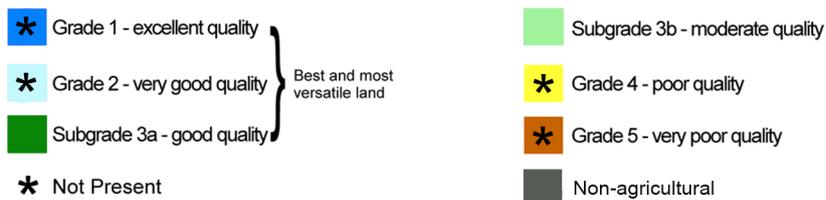
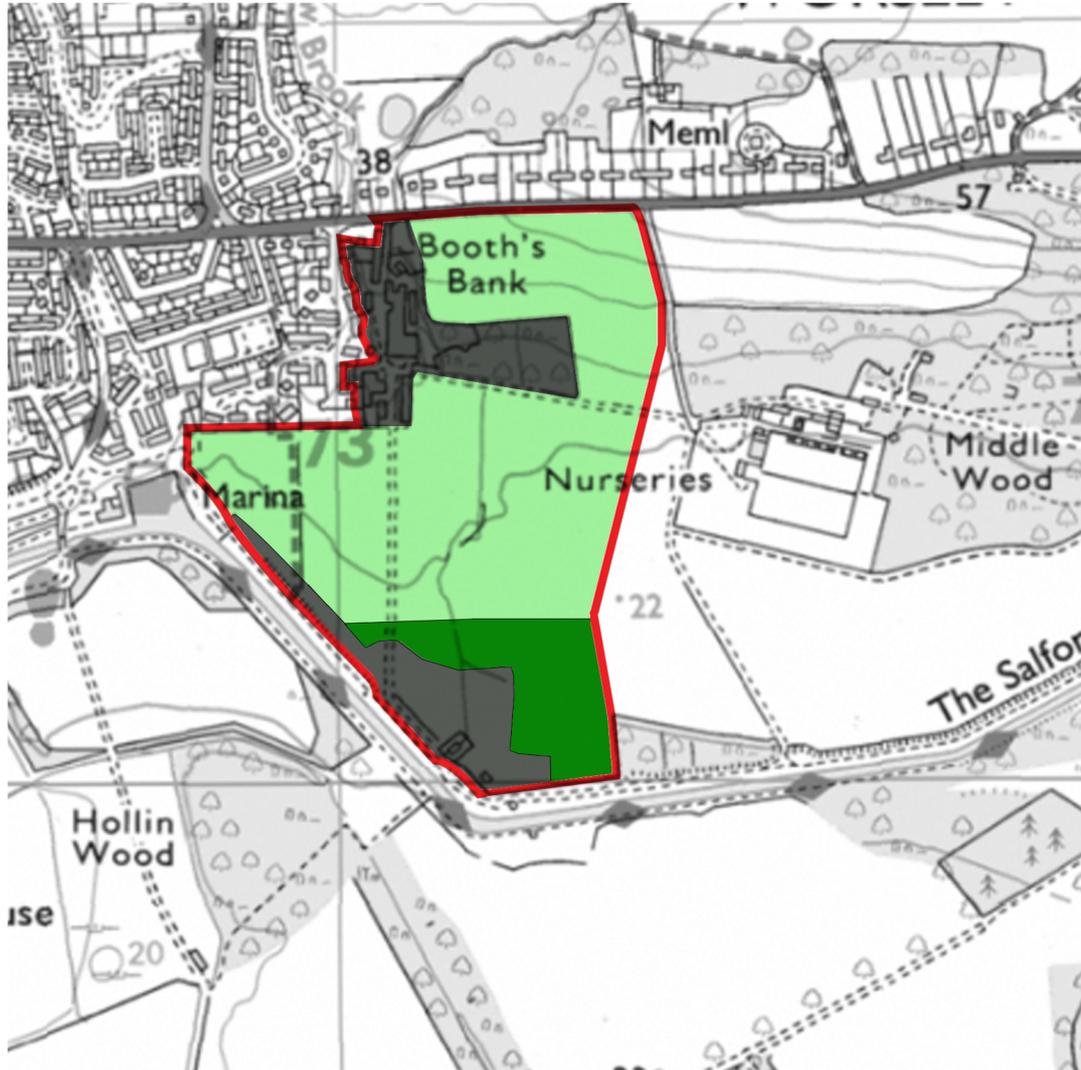
## **4 Summary**

- 4.1 The site at East Boothstown extends to 30.7ha of predominantly agricultural grassland.

- 4.2 The site is provisionally mapped as Grade 3. There is no detailed ALC survey data available for the site, however extensive survey work has been carried out to the immediate south of the Bridgewater Canal.
- 4.3 The main soils mapped are affected by wetness and workability and are most likely to be of Subgrade 3b. Subgrade 3a and Grade 4 could also be present. Based on the adjacent survey data, the peat soils mapped to the south of the site are likely to be of better quality, and are predicted to be Subgrade 3a or better.

**Appendix 1: Table 6 of the ALC guidelines – grade according to wetness**

Wetness Class	Texture <sup>1</sup> of the top 25 cm	Field Capacity Days				
		<126	126-150	151-175	176-225	>225
I	S <sup>2</sup> LS <sup>3</sup> SL SZL	1	1	1	1	2
	ZL MZCL MCL SCL	1	1	1	2	3a
	HZCL HCL	2	2	2	3a	3b
	SC ZC C	3a(2)	3a(2)	3a	3b	3b
II	S <sup>2</sup> LS <sup>3</sup> SL SZL	1	1	1	2	3a
	ZL MZCL MCL SCL	2	2	2	3a	3b
	HZCL HCL	3a(2)	3a(2)	3a	3a	3b
	SC ZC C	3a(2)	3b(3a)	3b	3b	3b
III	S <sup>2</sup> LS SL SZL	2	2	2	3a	3b
	ZL MZCL MCL SCL	3a(2)	3a(2)	3a	3a	3b
	HZCL HCL	3b(3a)	3b(3a)	3b	3b	4
	SC ZC C	3b(3a)	3b(3a)	3b	4	4
IV	S <sup>2</sup> LS SL SZL	3a	3a	3a	3b	3b
	ZL MZCL MCL SCL	3b	3b	3b	3b	3b
	HZCL HCL	3b	3b	3b	4	4
	SC ZC C	3b	3b	3b	4	5
V	S LS SL SZL	4	4	4	4	4
	ZL MZCL MCL SCL	4	4	4	4	4
	HZCL HCL	4	4	4	4	4
	SC ZC C	4	4	4	5	5
Soils in Wetness Class VI - Grade 5						



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Scale 1:10,000@A4 Nov/2019

Figure RAC8581-1d: Predicted Agricultural Land Classification

Site: GMA31, East Boothstown

Client: Peel Investments (North) Ltd

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