READING AGRICULTURAL CONSULTANTS

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Wates Developments Limited

Agricultural Land Quality

at

Land south of Wixams and west of A6

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Contents

1 Introduction

1.1 Reading Agricultural Consultants Ltd (RAC) is instructed by Wates Developments Limited to assess the Agricultural Land Classification (ALC) of land south of Wixams and west of the A6, by means of a desk appraisal of soil and site characteristics.

1.2 Paragraph 174 of the National Planning Policy Framework (NPPF[1]) 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 175 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 footnote 58 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)[2], and summarised in Natural England's Technical Information Note 049[3].

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. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into

[1] **Ministry of Housing, Communities and Local Government (2021).** *National Planning Policy Framework.*

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

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

Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing.

1.7 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.

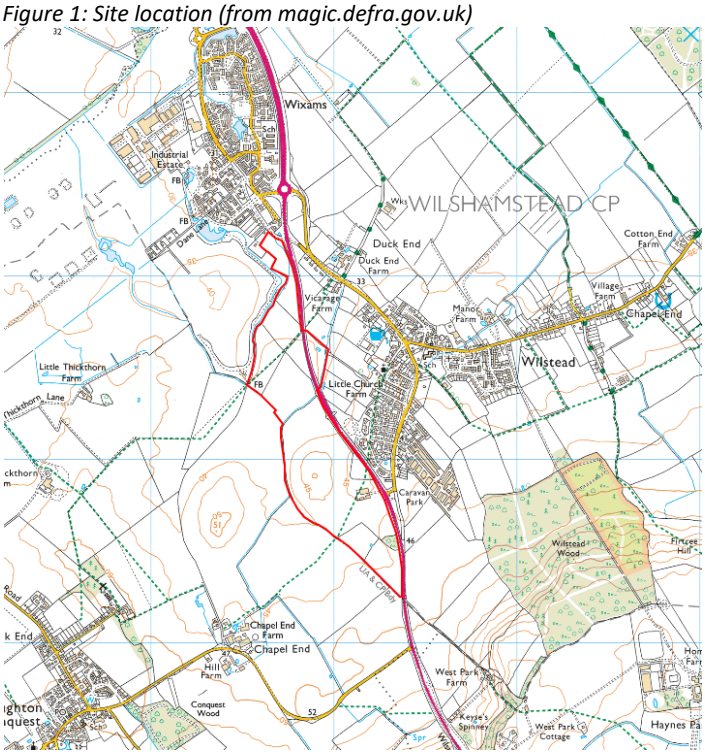
2 Site and climatic conditions

General features, land form and drainage

2.1 The site is located south of the settlement of Wixams, on the west side of the A6 at Wilstead, Bedfordshire, and extends to 53.5ha in total. Most of the land is in arable agricultural use, with areas of permanent grassland in the south and north-east, and a small pocket of woodland also in the south. Other non-agricultural land comprises a yard that looks likely to be temporary, located within a triangular field parcel in the north-east. The site is bounded to the west by other agricultural land.

2.2 There is a hill feature in the south of the site with an altitude of around 45m above Ordnance Datum (AOD). The land slopes gently down to the north to a low altitude of around 35m AOD where there are peripheral field ditches that carry water northward.

Figure 1: Site location (from magic.defra.gov.uk)



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 40m AOD, and are given in Table 1. The climate at the site is dry and moderately warm. Moisture deficits are large. The number of Field Capacity Days (FCD) is much smaller than is typical for lowland England (150) and is very favourable for agricultural land working.

Table 1: Local agro-climatic conditions

Parameter	Value
Grid Ref	TL 05881 43120
Average Annual Rainfall	571mm
Accumulated Temperatures >0°C	1,439 day°
Field Capacity Days	99 days
Average Moisture Deficit, wheat	118mm
Average Moisture Deficit, potatoes	113mm

Soil parent material and soil type

2.4 The bedrock geology mapped by the British Geological Survey[4] is the Oxford Clay Formation, distinguished by two different component members. In the north, the Peterborough Member includes mainly brownish-grey, organic-rich mudstone with shelly beds. In the south is undifferentiated Stewartby Member (pale to medium grey calcareous mudstone) and Weymouth Member (pale grey, slightly silty calcareous mudstone).

2.5 Superficial deposits of glacial head are mapped in three patches in the north of the site and include angular rock and clayey material from upslope sources.

2.6 The Soil Survey of England and Wales soil association mapping[5] (1:250,000 scale) shows the Evesham 3 association across the site. The soils are clayey or fine loamy over clayey, slowly permeable and usually calcareous. Profiles are typically imperfectly drained, of Wetness Class (WC) III[6].

[4] **British Geological Survey (2021).** *Geology of Britain viewer*, http://mapapps.bgs.ac.uk/geologyofbritain/home.html.

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

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

3 Agricultural land quality and land use

Existing data

3.1 Provisional ALC mapping shows the site as undifferentiated good to moderate quality Grade 3 agricultural land. 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 level of yield. Where more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2."*

3.2 Grade 3 was later subdivided into the 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."*
>
> and
>
> *"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 a substantial area to the immediate north and west of the site has been surveyed in detail. The survey was undertaken in 1998 and covered around 170ha of agricultural land subject to planning for a mixed use development (Elstow Garden Villages New Settlement, planning reference 99/01645/OUT[7]). The survey classified the land as mostly (73%) Subgrade 3b, with three small areas of Subgrade 3a (amounting to 18%), and the remainder Grade 4 (9%).

3.6 The classification of the Subgrade 3a and Subgrade 3b land was determined by the degree and extent of a soil wetness limitation, whereas the Grade 4 land had been previously disturbed and contained rubble and brick fragments.

3.7 As the ALC is concerned with the long-term inherent physical characteristics of land and soil, rather than short-term management or use, the findings of the 1998 ALC report remain valid.

3.8 Similar to the site, the land surveyed is also provisionally mapped as Grade 3 and has a comparable climate. The mapped soil is of a different named association (formerly Rowsham, of which the Rowsham series predominated, now known as Lawford series), however the characteristics are similar, with Lawford soils comprising clay throughout which is poorly drained although not usually calcareous. It is noted that the Denchworth series is closely associated with the Rowsham series, and these are typically poorly drained, non-calcareous clays.

3.9 The survey of adjacent land identified soil profiles mainly comprising heavy clay loam or clay topsoils over clay subsoils, however there is variation in the depth to mottled and slowly permeable layers, and in the degree of calcareousness, which all affect the grading. Calcareous clay soils are generally better structured than non-calcareous clays and are consequently better drained and easier to cultivate.

3.10 There are two soil types in profiles of Subgrade 3a. The first has dark brown, non-calcareous heavy clay loam or clay topsoil of around 28cm depth. The upper subsoil is non-calcareous, brown clay. From around 60cm depth the clay is greyish brown and non-calcareous with distinct mottling. The profiles are WC II. The second type has calcareous, heavy clay loam topsoil of

[7] 99/01645/OUT Elstow Garden Villages New Settlement Environmental Statement http://edrms.bedford.gov.uk/OpenDocument.aspx?id=okLKfu9GUQ1h82ImOF2ARQ%3d%3d&name=99%2001645%20OUT%20Elstow%20Garden%20Villages%20New%20Settlement%20Enviromental%20Statement.pdf

25cm depth which overlies greyish brown, calcareous clay which is mottled and gleyed. These profiles are of WC III.

3.11 The soil profiles in land of Subgrade 3b quality have non-calcareous, dark greyish brown clay topsoil of around 28cm depth. The topsoil is distinctly mottled. The subsoil is clay which becomes greyer and more calcareous with depth, but is slowly permeable within 55cm of the surface which places the profiles in WC IV.

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3.12 As the Grade 4 identified in a survey of land immediately north and west of the site was due to localised disturbance, it is assumed that Grade 4 will not be present at the site.

3.13 The mapped Evesham 3 soils on the site are characterised by profiles of calcareous clay which are imperfectly drained (WC III). The existing survey data confirms that soils of this type are present in the locality. Under the climatic conditions of the site, with only 99 FCD, such profiles would be limited by wetness to Subgrade 3a.

3.14 The profiles would be Subgrade 3b if the clay content of the topsoil was found to exceed 50%.

3.15 It is possible that additional areas of Subgrade 3b would be found at the site due to localised variations in soil conditions, in line with the existing adjacent survey data and particularly on the flatter, lower-lying land in the north, although it is considered that most of the site is likely to be classified as Subgrade 3a due to the better drained properties of the mapped calcareous clay soils.

4 Summary

4.1 The site at Wixams, Bedfordshire extends to 53.5 in total, of which most is agricultural land.

4.2 The site is provisionally mapped as good to moderate quality Grade 3 quality agricultural land.

4.3 A detailed survey undertaken in 1998 across land to the immediate north and west of the site classified most of the land as Subgrade 3b, with a smaller area of Subgrade 3a and some localised Grade 4.

4.4 The soil profiles identified on the adjacent land mainly include heavy clay loam and clay topsoil over clay subsoils, which are mostly non-calcareous and WC IV and classified as Subgrade 3b. Where they are calcareous and WC II or III, they are classified as Subgrade 3a. The main limitation to the ALC grading is soil wetness.

4.5 The site has a mapped soil type that differs marginally from that mapped across the adjacent surveyed area. As the mapped soils are calcareous clays that are generally better structured and drained than those mapped and found on adjacent land, such profiles are likely to be mostly limited by wetness to Subgrade 3a. Given the identification in the vicinity of non-calcareous clay soils, it is also likely that some Subgrade 3b land will be present at the site.