Agricultural Land Classification:

Meerdyke Solar Farm, Norfolk

Prepared for:
Downing Renewable Developments

Prepared by:
R W Askew BSC(Hons) MSc F. I. Soil Sci CSci
Askew Land & Soil Limited

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Our interpretation of the site characteristics is based on available data made during our desktop study and soil survey. This desktop study and soil survey has assessed the characteristics of the site in relation to the assessment of its Agricultural Land Classification. It should not be relied on for alternative end-uses or for other schemes. This report has been prepared solely for the benefit of Downing Renewable Developments.

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2	Second issue incorporating Ramboll edits	06/10/2022	RWA

CONTENTS

APPENDICES

1 INTRODUCTION

1.1 Background

1.1.1 This report was commissioned by Downing Renewable Developments LLP to determine the quality of agricultural land at Meerdyke Solar Farm, Norfolk, PE14 7DL ('the Site'). The assessment was made in accordance with the Agricultural Land Classification (ALC) system for England and Wales (see 'Methodology' below). The 87.53 hectare (ha) Site is located to the east of Wisbech, as shown on **Figure 1**. The approximate centre of the Site is located at British National Grid (BNG) reference TF 50368 10343

1.2 Competency

1.2.1 The work has been carried out by a Chartered Scientist (CSci), who is a Fellow (F.I. Soil Sci) of the British Society of Soil Science (BSSS). The soil surveyor meets the requirements of the BSSS Professional Competency Standard (PCS) scheme for ALC (see PCS Document 2 '*Agricultural Land Classification of England and Wales*'[1]. The BSSS PCS scheme is endorsed, amongst others, by the Department for Environment, Food and Rural Affairs (Defra), Natural England, the Science Council, and the Institute of Environmental Assessment and Management (IEMA).

1.3 Methodology

1.3.1 This assessment is based upon the findings of a study of published information on climate, geology and soil in combination with a soil investigation carried out in accordance with the Ministry of Agriculture, Fisheries and Food (MAFF)[2] '*Agricultural Land Classification of England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land*', October, 1988 (henceforth referred to as the 'the ALC Guidelines').

1.3.2 The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The ALC system divides agricultural land into five grades (Grade 1 '*Excellent*' to Grade 5 '*Very Poor*'), with Grade 3 subdivided into Subgrade 3a '*Good*' and Subgrade 3b '*Moderate*'. Agricultural land classified as Grade 1, 2 and Subgrade 3a falls in the '*best and most versatile*' category in Paragraph 174 and 175 of the National Planning Policy Framework (NPPF) revised on 20th July 2021. Further details of the ALC system and national planning policy implications are set out in Natural England's '*Guide to assessing development proposals on agricultural land'*[3] online.

[1] British Society of Soil Science. Professional Competency Scheme Document 2 'Agricultural Land Classification of England and Wales'. Available online @ https://www.soils.org.uk/sites/default/files/events/flyers/ipss-competency-doc2.pdf Last accessed October 2022

[2] The Ministry of Agriculture, Fisheries and Food (MAFF) was incorporated within the Department for Environment, Food and Rural Affairs (Defra) in June 2001

[3] Natural England (2022) 'Guide to assessing development proposals 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 Last accessed October 2022

1.3.3 A detailed soil survey and ALC of the Site was carried out in May 2022. The ALC survey involved examination of the soil's physical properties at 88 auger-bore locations on an approximate 100 m grid pattern, at a sampling density of approximately 1 auger bore per ha. The soil profile was examined at each sample location to a maximum depth of approximately 1.2 m by hand with the use of a 5cm diameter Dutch (Edleman) soil auger. One soil pit, i.e., Pit 1, was excavated by hand with a spade in order to examine certain soil physical properties, such as stone content and the structural condition of the subsoil, more closely. The locations of the auger bores and the soil pit is shown on **Figure 1**. The soil profile data per auger-bore recorded on Site is given in the Soil Profile Logs as **Appendix 1**, and a detailed description of the soil profile in Pit 1 is given in **Appendix 2**.

1.3.4 The auger-bore locations were located using a hand-held Garmin E-Trec Geographic Information System (GIS) to enable the sample locations to be relocated for verification, if necessary. Where auger locations on a 100 m grid pattern fall on headland, tramlines, or within 3 m of a hedgerow or tree, they were relocated on agricultural land close by, i.e., to avoid compacted ground or land affected by tree roots, etc. The soil profile at each sample location was described using the '*Soil Survey Field Handbook: Describing and Sampling Soil Profiles*' (Ed. J.M. Hodgson, Cranfield University, 1997). Each soil profile was ascribed an ALC grade following the MAFF ALC Guidelines.

1.3.5 Two samples of topsoil were collected at auger-bore locations 11 and 88 as shown on **Figure 1**. The samples were sent to an accredited laboratory for particle size analysis, i.e., the proportions of sand, silt and clay. This is to determine the definitive texture class of the topsoil, especially with regard to distinguishing between medium clay loams (i.e., <27% clay) and heavy clay loams (27% to 35% clay). The results of the laboratory topsoil particle size analysis are given in a Test Report as **Appendix 3**.

1.4 Structure of the Remainder of this Report

1.4.1 The remainder of this report is structured as follows:

- Section 2 – Planning Policy Framework
- Section 3 – Agricultural Land Classification;
  - Climate;
  - Site (Gradient, Micro-relief, Risk of Flooding);
  - Soil (Geology, Soil Properties);
  - Interactive Limitations (Soil Droughtiness, Soil Wetness);
  - ALC Grading at the Site.
- Section 4 – ALC at the Site in a Wider Geographical Context;
- Section 5 – Summary and Conclusions

2 PLANNING POLICY FRAMEWORK

2.1 Background

2.1.1 This section of the report sets out the national and local planning framework in which to assess the opportunities and constraints to development at the Site in agricultural land quality terms.

2.2 NPPF July 2021

2.2.1 National planning policy guidance on development involving agricultural land is set out in NPPF, which was revised on the 20th July 2021. The NPPF aims to provide a simplified planning framework which sets out the Government's economic, environmental and social planning policies for England. The NPPF includes policy guidance on '*Conserving and Enhancing the Natural Environment*' (Section 15). Paragraph 174 (a and b) (page 50) are of relevance to this assessment of agricultural land quality and soil and states that:

'174…Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;…'

2.2.2 Paragraph 175 of the NPPF (2021) goes on to describe that *'175. Plan should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework[58] …'*

2.2.3 Footnote number 58 states 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.'*

2.3 Soil Health

2.3.1 Aims and objectives for safeguarding and, where possible, improving soil health are set out in the Government's 'Safeguarding our soils: A strategy for England'[4]. The Soil Strategy for England, which builds on Defra's '*Soil Action Plan for England (2004-2006)*, sets out an ambitious vision to protect and improve soil to meet an increased global demand for food and to help combat the adverse effects of climate change.

[4] Department for Environment, Food and Rural Affairs (2009). Safeguarding our soils: A strategy for England'. Available online @ https://www.gov.uk/government/publications/safeguarding-our-soils-a-strategy-for-england Last accessed October 2022

2.3.2 The Soil strategy for England states that '…soil is a fundamental and essentially non-renewable natural resource, providing the essential link between the components that make up our environment. Soils vary hugely from region to region and even from field to field. They all perform a number of valuable functions or ecosystem services for society including:

- nutrient cycling;
- *water regulation;*
- *carbon storage;*
- *support for biodiversity and wildlife;*
- *providing a platform for food and fibre production and infrastructure'*

2.3.3 The vision of the Soil Strategy for England has been developed in the Government's 25 Year Plan for the Environment[5]. Soil is recognised as an important national resource, and the Plan states that:

'We will ensure that resources from nature, such as food, fish and timber, are used more sustainably and efficiently. We will do this (in part) by:

….improving our approach to soil management: by 2030 we want all of England's soils to be managed sustainably, and we will use natural capital thinking to develop appropriate soil metrics and management approaches…'

2.3.4 The maintenance, and improvement, of soil health is therefore a material consideration when deciding if a development is appropriate on agricultural land. Soil health can be defined as a soil's ability to function and sustain plants, animals and humans as part of the ecosystem.

2.3.5 Of relevance to the proposed development at the Site, the installation of a solar photovoltaic (PV) array is a reversible, i.e. the agricultural land can be returned to its former agricultural productivity once the generation of renewable electricity has ceased, and the solar panels and associated infrastructure is removed. In many respects, the management of the land under solar photovoltaic (PV) panels as grassland can benefit soil health, as described in detail in **Appendix 4**.

2.3.6 A healthy soil has a well-developed soil structure, where soil particles are aggregated into soil peds (structural units) separated by pores or voids. This allows the free movement of water (precipitation) through the soil and facilitates gaseous exchange between the plant roots and the air. These soils are well aerated (oxygenated), which encourages healthy plant (crop) growth and an abundance of soil fauna and aerobic microbes. These soils often have high amounts of soil organic matter (SOM), associated with an accumulation of plant and animal matter, and thus are a good store of soil organic carbon (SOC).

[5] Department for Environment, Food and Rural Affairs (2009). A Green Future: Our 25 Year Plan to Improve the Environment. Available online @ https://www.gov.uk/government/publications/25-year-environment-plan Last accessed October 2022

2.3.7 The greatest benefits in terms of increase in SOM, and hence SOC, can be realised through land use change from intensive arable to grasslands. Likewise, SOM and SOC are increased when cultivation of the land for crops (tillage) is stopped and the land is uncultivated (zero tillage). Global evidence suggests that zero tillage results in more total soil carbon storage when applied for 12 years or more. Therefore, there is evidence that conversion of land from arable to grassland which is uncultivated over the long-term (>12 years), such as that under solar PV arrays, increases SOC and SOM.

2.3.8 Soils are habitats for millions of species, ranging from bacteria, fungi, protozoa, and microscopic invertebrates to mites, springtails, ants, worms and plants. Soil biota are strongly influenced by land management. Modern farming has led to the loss of soil biodiversity. Changes in land management practice and land use can have large effects on soil biodiversity over relatively short-time scales. Reducing the intensity of management, introducing no-tillage management, and converting arable land to pasture, such as grassland under solar PV arrays, has substantial beneficial effects.

2.3.9 In a well-structured soil, water and air can move freely through cracks and pores. However, a poor soil structure prevents water and air movement, and increases the risk of runoff. Soil structure is improved when the land is uncultivated over time (no tillage), and when SOM content is increased through the accumulation of plant material, such as roots, in the soil. The aerobic (oxygenated) decomposition of SOM helps to bind soil particles together into aggregates (peds). Therefore, the conversion of land which is tilled for arable to long-term grassland (no tillage), such as that under solar PV arrays, improves soil structure over time.

2.4 Best Practice Guidance

2.4.1 The Department for Environment, Food and Rural Affairs (Defra) has published '*Safeguarding our Soils – A Strategy for England*' (24th September 2009). The Soil Strategy was published in tandem with a '*Code of Practice for the Sustainable Use of Soils on Construction Sites*'[6]. The Soil Strategy for England, which builds on Defra's '*Soil Action Plan for England (2004-2006)*, sets out an ambitious vision to protect and improve soil to meet an increased global demand for food and to help combat the adverse effects of climate change.

[6] Department for Environment, Food and Rural Affairs (September, 2009) '*Code of Practice for the Sustainable Use of Soils on Construction Sites'*. Available online @ https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites. Last accessed October 2022

3 AGRICULTURAL LAND CLASSIFICATION

3.1 Background

3.1.1 This section of the report sets out the findings of the ALC. It is based on a desktop study of relevant published information on climate, topography, geology, and soil in conjunction with a soil survey.

3.1.2 As described in the ALC Guidelines, the main physical factors influencing agricultural land quality are:

- climate;
- site;
- soil; and
- interactive limitations.

3.1.3 These factors are considered in turn below.

3.2 Climate

3.2.1 Interpolated climate data relevant to the determination of the ALC grade of land at the Site is given in Table 3.1 below.

Table 3.1: ALC Climate Data for Meerdyke, Norfolk

Climate Parameter	Grid Ref: TF499106 (North Area)	Grid Ref: TF509097 (South Area)
Average Altitude (m)	0	-1
Average Annual Rainfall (mm)	541	540
Accumulated Temperature above 0˚C (January – June)	1445	1446
Moisture Deficit (mm) Wheat	126	126
Moisture Deficit (mm) Potatoes	123	123
Field Capacity Days (FCD)	96	96
Grade According to Climate	1	1

3.2.2 With reference to Figure 1 '*Grade according to climate*' on page 6 of the ALC Guidelines, there is a no climatic limitation to the quality of agricultural land at the Site. This means that agricultural land at the Site could be graded as ALC Grade 1 in overall climatic terms, in the absence of any other limiting factor, i.e., site, soil and/or interactive limitations.

3.2.3 Agricultural land at the Site is predicted to be at a range of field capacity (i.e., the amount of soil moisture or water content held in the soil after excess water has drained away) from 96 Field Capacity Days (FCD) per year, mainly over the late autumn, winter and early spring.

3.2.4 The combination of topsoil texture, drainage status (Wetness Class) of the profile, and number of FCD affects the degree to which agricultural land is limited by soil wetness. The climate at the Site falls in the <125 category (regarding Table 6 of the ALC Guidelines), as described in more detail under 'interactive limitations' below.

3.3 Site

3.3.1 The approximately 87.53 ha Site is located in Norfolk to the east of Wisbech on the Cambridgeshire/Norfolk border. The approximate centre of the Site is located at BNG reference TF 50368 10343. The location and boundaries of the Site are shown on **Figure 1**.

3.3.2 With regard to the ALC Guidelines, agricultural land quality can be limited by one or more of three main site factors as follows:

- gradient;
- micro-relief (i.e., complex change in slope angle over short distances); and
- risk of flooding.

I. Gradient and Micro-Relief

3.3.3 The land at the Site is broadly level, with the highest elevation at 2 metres (m) Above Ordnance Datum (AOD) in the south of the Site. Most of the Site is at mean sea level, i.e., 0mAOD. The quality of agricultural land at the Site is not limited by gradient as the gradient of the slope does not exceed 7° (as per Table 1 of the ALC Guidelines, 1988). Likewise, the quality of agricultural land at the Site is not limited by micro-relief, i.e., complex changes in slope angle and direction over short distances.

II. Risk of Flooding

3.3.4 From the Government Flood Map for Planning website[7], the Site is entirely located in Flood Zone 3 and an Area Benefitting from Defences. According to a Flood Risk Assessment prepared by Ramboll (September 2022) the site benefits from the presence of defences such that the site would not be affected by a 1 in 1000 (0.1%) annual probability tidal flood. Therefore, the agricultural land is not limited by flooding (re Table 2 '*Grade according to flood risk in summer*' and/or Table 3 '*Grade according to flood risk in winter*' of the ALC Guidelines.

[7] Government Flood Map for Planning. Available online @ https://flood-map-for-planning.service.gov.uk/confirm-location?easting=454700&northing=272400&nationalGridReference=SP547724 Last accessed October 2022

3.4 Soil

I. Geology/Soil Parent Material

3.4.1 British Geological Survey (BGS) information available online[8] has been utilised to identify the Bedrock underlying the Site and any Superficial (Drift) Deposits over the Bedrock. This information helps to determine the parent material from which the soil has formed.

3.4.2 The BGS information (1:50,000) indicates that Site is underlain by the Ampthill Clay Formation (mudstone). The bedrock is covered by a superficial covering of Tidal Flat Deposits (clay and silt).

II. Published Information on Soil

3.4.3 The Soil Survey of England and Wales (SSEW) soil map of Eastern of England (Sheet 3) at a scale of 1:250,000 and accompanying Bulletin No. 13 'Soils and their Use in Eastern England (C.A.H. Hodge et al. Harpenden, 1984) reports that agricultural land at the Site is covered by soils in the Wallasea 2 Association.

3.4.4 As described by the SSEW, the Wallasea 2 Association is extensive on reclaimed marine alluvium in the marshlands of Lincolnshire, Cambridgeshire and Norfolk, and is also present in Romney Marsh, the Essex marshes and in Holderness. The land is generally level but there are occasional ridges on the sites of former creeks. This Association comprises are clayey with a greyish brown topsoil over greyish or grey and ochreous mottled subsurface horizons. These soils are permeable but respond to underdrainage; drained soils are occasionally waterlogged (Wetness Class II) but undrained soils are waterlogged for long periods in winter (Wetness Class III or IV).

III. Soil Survey

3.4.5 A log of the 88 soil profiles recorded on Site (see Figure 1) is given as **Appendix 1**. A description of one soil pit (soil Pit 1) is given as **Appendix 2**. Most of the soils on Site are similar to those described by the SSEW as belonging to the Wallasea 2 Association as described above.

Topsoil Particle Size Analysis

3.4.6 To substantiate texture determined during the ALC survey by hand-texturing, two samples of topsoil were collected over the Site (i.e., auger bore location 11 and 88, **Figure 1**). The topsoil samples were sent to an accredited laboratory for analysis of particle size distribution (PSD), based on the British Standard Institution particle size grades. The certificate of analysis is provided as **Appendix 3**. The findings of the PSD analysis are shown in Table 3.2 below:

[8] British Geological Survey 'Geology of Britain Viewer'. Available online @ http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html Last accessed October 2022

Table 3.2: Topsoil Texture (re Table 10, ALC Guidelines)				
Topsoil Sample Location (See Fig. 1)	**% sand 0.063-2.0 mm**	**% silt 0.002-0.063 mm**	**% clay <0.002 mm**	**ALC Soil Texture Class**
11	5	55	40	Silty Clay
88	2	59	39	Silty Clay

3.5 Interactive Limitations

3.5.1 From the published information above, together with the findings of the detailed soil survey, it has been determined that the quality of agricultural land at the Site is limited mainly by soil wetness.

I. Soil Wetness

3.5.2 From the ALC Guidelines, a soil wetness limitation exists where '*the soil water regime adversely affects plant growth or imposes restrictions on cultivations or grazing by livestock*'. Agricultural land quality at the Site is limited by soil wetness to Subgrade 3a and Subgrade 3b according to the combination of (i) number of Field Capacity Days (FCD), (in this case 96 FCD), (ii) topsoil texture, and (iii) soil wetness class, as set out in Table 3.4 below (based on Table 6 '*Grade According to Soil Wetness – Mineral Soils*' in the ALC Guidelines):

Table 3.4: ALC Grade According to Soil Wetness		
Wetness Class	**Texture of the Top 25 cm**	**<126 Field Capacity Days**
II	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	1
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam*	2
	Heavy Clay Loam**	3a(2)
	Sandy Clay/Silty Clay/Clay	3a(2)
III	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	2
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam*	3a(2)
	Heavy Clay Loam**	3b(3a)
	Sandy Clay/Silty Clay/Clay	3b(3a)
IV	Sand, Loamy Sand, Sandy Loam, Sandy Silt Loam	3a
	Sandy Clay Loam/Medium Silty Clay Loam /Medium Clay Loam*	3b
	Heavy Clay Loam**	3b
	Sandy Clay/Silty Clay/Clay	3b
Key * <27% clay; and ** >27% clay		

II. Soil Droughtiness

3.5.3 From the ALC Guidelines, a soil droughtiness limitation exists '*in areas with relatively low rainfall or high evapotranspiration, or where the soil holds only small reserves of moisture available to plant roots*.' The ALC grade according to soil droughtiness is shown in Table 3.3 below (based on Table 8 '*Grade According to Droughtiness*' in the ALC Guidelines). To be eligible for Grades 1 to 3b the moisture balances (MBs) must be equal to, or exceed, the stated minimum values for both wheat and potatoes. If the MB for either crop is less (i.e., more negative) than that shown for Subgrade 3b, the soil is Grade 4 on droughtiness):

Table 3.3: ALC Grade According to Droughtiness (re Table 8 of the MAFF ALC Guidelines)

Grade/Subgrade	Moisture Balance (MB) Limits (mm)	
	Wheat	Potatoes
1	+30	+10
2	+5	-10
3a	-20	-30
3b	-50	-55
4	<-50	<-55

3.5.4 It has been calculated that auger locations 59, 60, 61, 62, 71, 74, 76, 77, 78 and 80 have a MB value of between 14 mm and 64 mm for wheat, and -8 mm and 5 mm for potatoes, which limits them to Grade 2.

3.6 ALC Grading at the Site

3.6.1 A detailed ALC survey has determined that agricultural land at the Site is limited by soil wetness and droughtiness to Grade 2, Subgrade 3a and Subgrade 3b. The area of land in each ALC grade has been measured from **Figure 2** and the area (ha) and proportion (% of Site) is given in Table 3.4. A slightly larger area of 88.5 ha was surveyed during the ALC survey while the final site area was determined to be 87.53 ha hence the discrepancy between the total area surveyed below and site area referenced in Section 1.1.1.

Table 3.4: Agricultural Land Classification – Meerdyke, Norfolk

ALC Grade	Area (Ha)	Area (%)
Grade 1 (Excellent)	0	0
Grade 2 (Very Good)	12.0	13.60
Subgrade 3a (Good)	36.5	41.20
Subgrade 3b (Moderate)	40.0	45.20
Grade 4 (Poor)	0	0
Grade 5 (Very Poor)	0	0
Other Land / Non-agricultural	0	0
Total	**88.5**	**100**

4. ALC AT THE SITE IN A WIDER GEOGRAPHICAL CONTEXT

4.1 Introduction

4.1.1 The aim of this section is to examine agricultural land quality at the Site in a national, regional, county and local context.

4.2 Pre-1988 ALC Information

4.2.1 During the 1960's and 1970's MAFF produced a series of maps to show the provisional ALC grade of agricultural land over the whole of England and Wales at a scale of 1:250,000. These provisional ALC maps are suitable for strategic land use planning only, i.e. they are appropriate for land areas greater than 80 ha. The provisional MAFF ALC map of South West England (1:250,000, 1984) indicates that the quality of agricultural land at the Site is mainly Grade 3 (not differentiated between Subgrade 3a and Subgrade 3b). The proportion of agricultural land in each of the ALC grades (derived from MAFF provisional or pre-1988 ALC information) in England, Eastern Government Office, Norfolk County, and King's Lynn and West Norfolk District Council is shown for comparison in Table 4.1 below.

Table 4.1: Provisional ALC – National, Regional and Local Context (Proportion of ALC Grades as % of Total Land Area)[9]

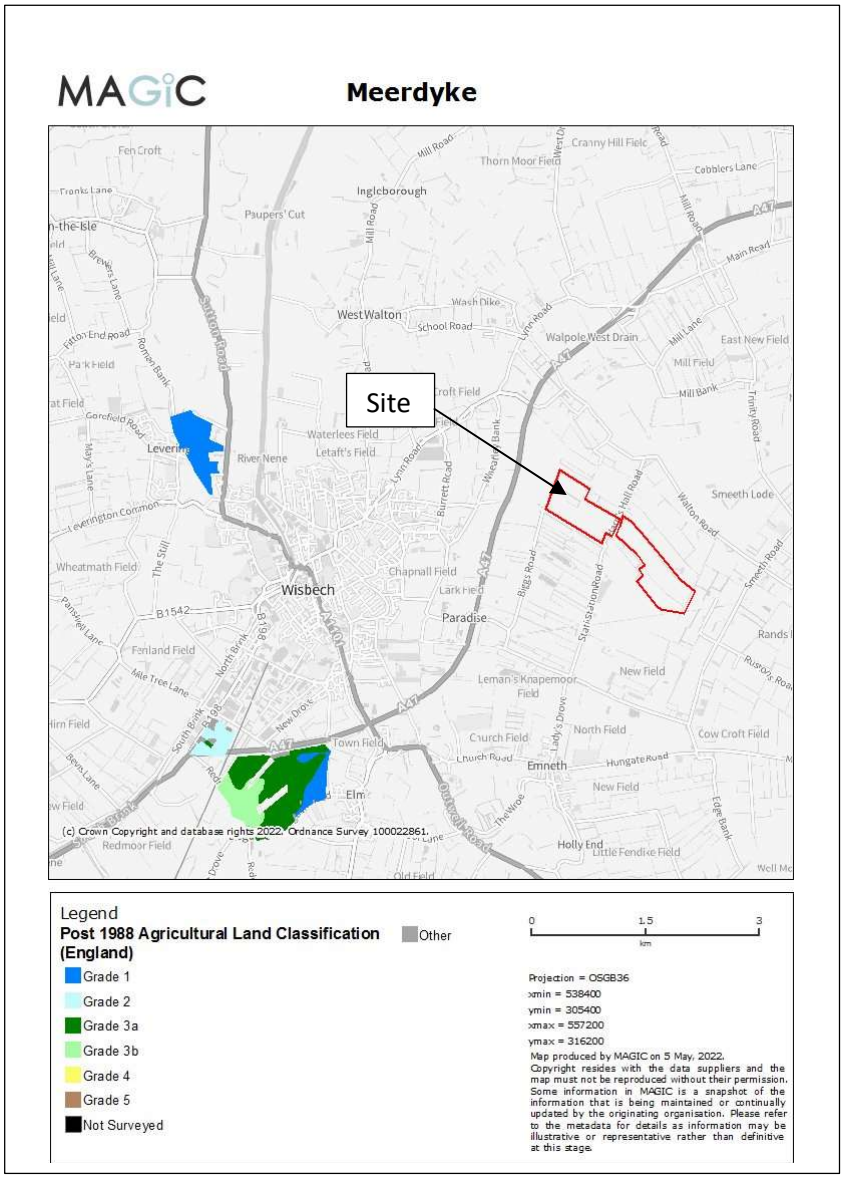
ALC Grade	England	Eastern Government Office	Norfolk County	King's Lynn and West Norfolk District
1 (excellent)	2.7	6.7	8.4	20.3
2 (very good)	14.2	29.2	16.4	22.2
3 (good to moderate)	48.2	46.4	55.4	42.1
4 (poor)	14.1	6.1	8.5	7.6
5 (very poor)	8.4	0.1	0.0	0.0
Non-Agricultural	5.0	6.4	9.1	6.5
Urban	7.3	5.1	2.2	1.3

4.2.2 Of note, the provisional (Pre 1988) ALC information shows that King's Lynn and West Norfolk has a high proportion of agricultural land in Grade 2, i.e., 22.2% compared with 14.2% in England as a whole.

[9] Ministry of Agriculture, Fisheries and Food, Land and Water Service, Technical Notes, Resource Planning (February 1983) 'Agricultural Land Classification of England and Wales – The Distribution of the Grades' (TN/RP/01 TFS 846)

4.3 Post-1988 ALC Information

4.3.1 The former MAFF has not carried a Post-1988 ALC survey of agricultural land covering the Site. An extract from the Post-1988 Agricultural Land Classification map online[10] surrounding the Site is given below.



4.3.2 As shown on the Post-1988 ALC survey above, MAFF determined that there is Grade 1, Grade 2, Subgrade 3a and Subgrade 3b to the west of the Site.

[10] Multi Agency Geographic Information for the Countryside. Post 1988 Agricultural Land Classification. Available online @ www.MAGIC.gov.uk Last accessed October 2022

5 SUMMARY AND CONCLUSIONS

5.1.1 This report was commissioned by Downing Renewable Developments LLP to determine the quality of agricultural land at Meerdyke Solar Farm, Norfolk, PE14 7DL ('the Site'). The assessment was made in accordance with the ALC system for England and Wales. The 87.53 ha Site is located to the east of Wisbech. The approximate centre of the Site is located at BNG reference TF 50368 10343 .

5.1.2 BGS information (1:50,000) indicates that Site is underlain by the Ampthill Clay Formation (mudstone). The bedrock is covered by Tidal Flat Deposits (clay and silt).

5.1.3 The National Soil Map (1:250,000) shows the Site is covered by soils in the Wallasea 2 Association. This Association comprises are clayey with a greyish brown topsoil over greyish or grey and ochreous mottled subsurface horizons. These soils are permeable but respond to underdrainage; drained soils are occasionally waterlogged (Wetness Class II) but undrained soils are waterlogged for long periods in winter (Wetness Class III or IV).

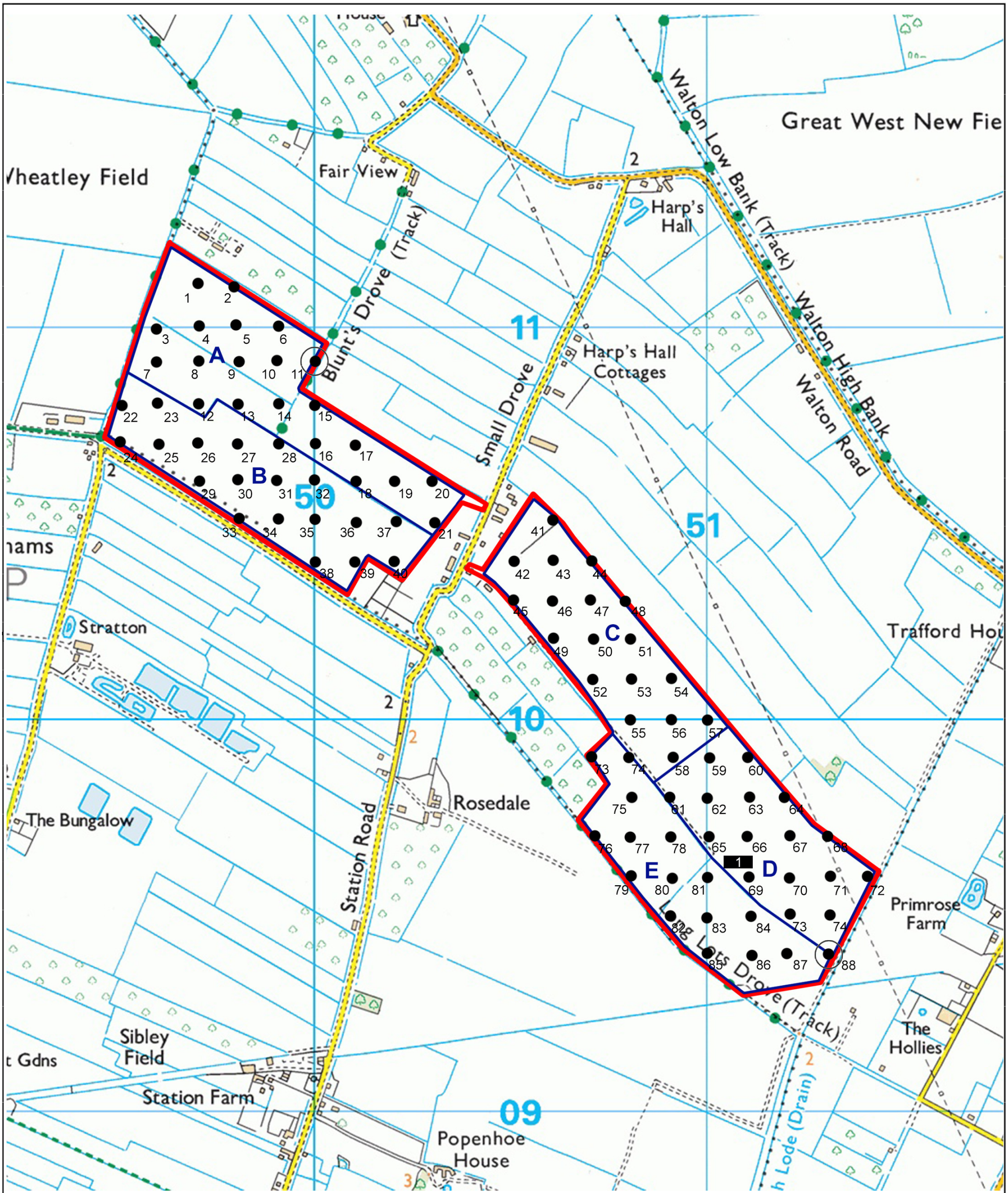
5.1.4 The quality of agricultural land at the Site is limited by soil wetness to mainly Subgrade 3b (i.e., 40.0 ha, or 45.20% of the Site), with some land limited by soil droughtiness to Grade 2 (i.e., 12.0 ha or 13.60% of the Site), or Subgrade 3a (i.e., 36.50 ha or 41.20% of the Site).

5.1.5 MAFF provisional (Pre 1988) ALC information shows that King's Lynn and West Norfolk District has a high proportion of agricultural land in Grade 2, i.e., 22.2% compared with 14.2% in England as a whole. The Site has 13.6% of Grade 2 agricultural land and a total of 86.4% agricultural land comprising of Grades 3A and 3B. MAFF Post-1988 ALC surveys have determined there is Grade 1, Grade 2, Subgrade 3a, and Subgrade 3b to the west of the Site.

5.1.6 Therefore, the use of agricultural land at this Site for a solar farm would not significantly harm national agricultural interests in terms of paragraphs 174 and 175 of the NPFF (2022).

5.1.7 In many respects, the management of the land under solar PV panels can improve soil health, such as increasing SOM, and hence SOC, increasing soil biodiversity, and improving soil structure. This is consistent with aims and objectives for improving soil health in the Government's 25 Year Plan for the Environment.

Figures



Site Parcel

Site boundary

Auger location

Topsoil Sample

Soil Pit

N

Client

Downing Renewable Developments

Figure 1

Sample Locations

Project Name

Meerdyke Solar Farm

Project No C882

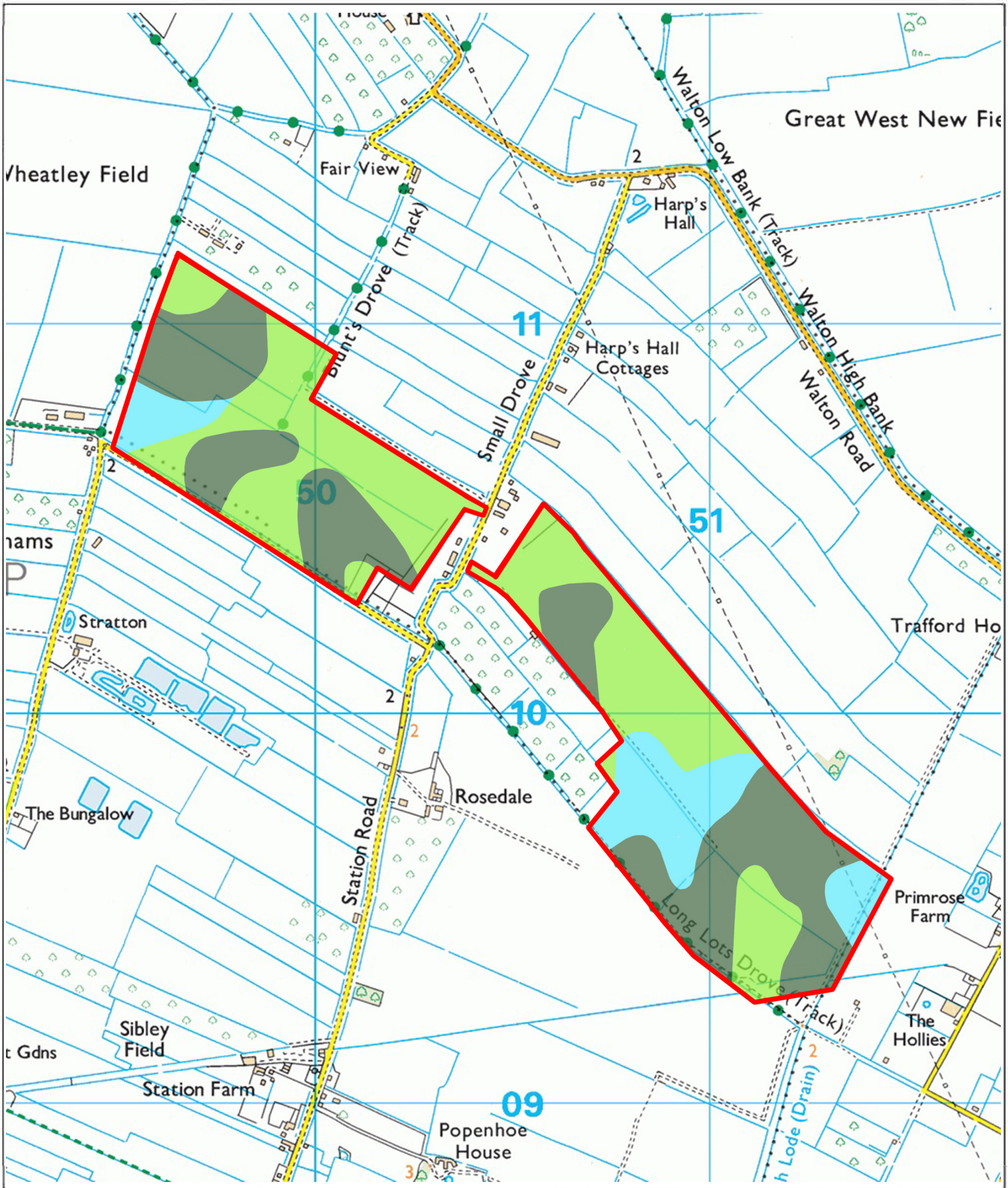
Dwg. No 01

Scale NTS

Date 06/10/2022

Drawn By ELA

R W Askew BSc(Hons) MISoilSci MSc CSCi
The Old Stables, Upexe, Exeter, EX5 5ND
Tel: 07753 227 224
Email: rw.askew@btinternet.com



ALC Grade

- Grade 1
- Grade 2
- Subgrade 3a
- Subgrade 3b
- Grade 4
- Grade 5
- Non-agricultural

Site boundary

Client

Downing Renewable Developments

Project No C882
Dwg. No 02
Scale NTS
Date 06/10/2022
Drawn By ELA

Figure 2:

Agricultural Land Classification

Project Name

Meerdyke Solar Farm

R W Askew BSc(Hons) MISoilSci MSc CSCi
The Old Stables, Upexe, Exeter, EX5 5ND
Tel: 07753 227 224
Email: rw.askew@btinternet.com