1. APPENDIX B – EXISTING BASELINE ASSESSMENTS

This appendix of the EIA Scoping Report contains the existing baseline assessments for Lord Rayleighs Farm (now referred to as HG3) and Drapers Farm (now referred to as HG1). The assessment included in this appendix are detailed in the table below:

Number	Name
1.1	Agricultural Land Classification - Lord Rayleighs Farm
1.2	Agricultural Land Classification – Drapers Farm
1.3	Arboriculture Survey Report – Drapers Chase Solar Farm (September 2022)
1.4	Arboriculture Survey Report – Poplars Solar Farm (October 2022)
1.5	Geophysical Survey Report of Poplars Solar Farm (January 2023)
1.6	Geophysical Survey Report of Drapers Chase Solar Farm (January 2023)
1.7	Site Location Plan – Drapers Chase Solar Farm (October 2022)
1.8	Site Location Plan – Poplars Solar Farm (October 2022)
1.9	Baseline Ecology Report – Drapers Chase Solar Farm (October 2022)
1.10	Baseline Ecology Report – Poplars Solar Farm (October 2022)
1.11	Request for Screening Opinion – Drapers Chase Solar Farm (October 2022)
1.12	Request for Screening Opinion – Poplars Solar Farm (October 2022)
1.13	Flood Risk Assessment – Drapers Chase Solar Farm (October 2022)
1.14	Flood Risk Assessment – Poplars Solar Farm (October 2022)
1.15	Pre-Application Advice Request Supporting Statement – Drapers Chase Solar Farm (July 2022)
1.16	Pre-Application Advice Request Supporting Statement – Poplars Solar Farm (July 2022)
1.17	PINS Response to Request for Pre-Application Advice (January 2023)

AGRICULTURAL LAND CLASSIFICATION
LORD RAYLEIGHS SOLAR FARM

CLIENT: BLUESTONE ENERGY LTD
PROJECT: LORD RAYLEIGHS SOLAR FARM
DATE: 8TH SEPTEMBER 2022 – ISSUE 2
ISSUED BY: JAMES FULTON MRICS FAAV

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1. EXECUTIVE SUMMARY

1.1 This report assesses the Agricultural Land Classification (ALC) grading of 111.9Ha, of agricultural land approximately 3.5km southwest of Rayne in Essex.

1.2 The main limiting factor is found to be soil wetness, a combination of the soils found on site and the climatic regime.

1.3 The land is graded as follows:

Grade 3a:	111.9Ha

2. INTRODUCTION

2.1 Amet Property Ltd have been instructed by Bluestone Energy LTD to produce an Agricultural Land Classification (ALC) report on a 111.9-hectare site to the southwest of Rayne in Essex in support of a planning application for a solar farm with associated infrastructure

2.2 The report's author is James Fulton BSc (Hons) MRICS FAAV who has worked as a chartered surveyor, agricultural valuer, and agricultural consultant since 2004, has a degree in agriculture which included modules on soils and over 10 years' experience in advising farmers on soil structure and cultivation methods and in producing agricultural land classification reports.

2.3 The report is based on a site visit conducted on the 25th of June 2022. During the site visit conditions were dry and sunny. During the inspection three trial pits were dug to a depth of 120cm. In addition to the trial pits an augur was used to take approximately one sample per hectare on the proposed development site to a depth of 120cm with smaller trial pits at some of these locations to confirm soil structure and colour where it was not clear from the augur samples. A plan of augur points can be found at *appendix 1.* The trial pit locations were selected as they were representative of the soils found on site. Where subsoils were inspected with a spade, descriptions of structure have been recorded based on the soil survey field handbook[1]; where an augur has been used the structure is described as good, moderate or poor based on figure 9,10 and 11 in the MAFF[2] guidance. Colours are described using Munsell Colours[3].

2.4 During the sampling conditions were generally good with the subsoil state described as moist allowing samples to be removed and examined easily. The topsoils were generally dry and so a lot of water had to be added to hand texture samples.

2.5 The site is described in literature as likely to be calcareous and so hydrochloric acid was used to test in field for a reaction that would indicate calcareous soils.

2.6 The site extends 111.9Ha of arable land spread cross 8 fields in an arable rotation.

2.7 Further information has been obtained from the MAGIC website, the Soil Survey of England and Wales, the British Geological Survey, the Meteorological Office and 1:250,000 series Agricultural Land Classification maps.

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[1] Hodgson, JM (1997) Soil Survey Field Handbook

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

[3] Munsell Color (2009) Munsell Soil Color Charts

2.8 The collected information has been judged against the Ministry of Agriculture Fisheries and Food Agricultural Land Classification of England and Wales revised guidelines and criteria for grading the quality of agricultural land.

2.9 The principal factors influencing agricultural production are climate, site and soil and the interaction between them MAFF (1988) & Natural England (2012)[4].

3. PUBLISHED INFORMATION

3.1 The British Geological Survey 1:50,000 scale map shows the bedrock geology to be London Clay Formation – Clay, silt and sand. The superficial deposits are recorded as Lowestoft Formation – Diamicton.

3.2 The national soils map shows the site to be Hanslope Association – Slowly permeable calcareous soils.

3.3 The 1:250,000 series Agricultural Land Classification maps show the land to be Grade 2. These plans are of strictly limited value, using an out-of-date methodology at a very small scale (low detail) level of survey. Further information on the limits of their use can be found in TIN049.

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

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

4. CLIMATE

4.1 Climate has a major, and in places overriding, influence on land quality affecting both the range of potential agricultural uses and the cost and level of production.

4.2 There is published agro-climatic data for England and Wales provided by the Meteorological Office, such data for the subject site is listed in the table below.

Agro-Climatic Data – Full details can be found at *appendix 2*

Grid Reference	569514 221555
Altitude (ALT)	74.81
Average Annual Rainfall (AAR)	595.40
Accumulated Temperature - Jan to June (ATO)	1394.57
Duration of Field Capacity (FCD)	110.90
Moisture Deficit Wheat	116.23
Moisture Deficit Potatoes	101.31

4.3 The main parameters used in assessing the climatic limitation are average annual rainfall (AAR), as a measure of overall wetness; and accumulated temperature (ATO), as a measure of the relative warmth of a locality.

4.4 The AAR and ATO provide no climatic limitation to grade.

4.5 The site is shown to be in flood zone 1 – areas with a less than 1 in 1000 annual chance of flooding. There was no evidence of flooding seen during the site visit and it is considered that will not result in a limitation to land grade.

5. STONINESS

5.1 Most of the site was slightly stony. Where there were stones in the topsoil, the total stones did not exceed 5% and with very few exceptions were too small to be retained by a 2cm grid. Stoniness is not considered a limiting factor to land grade.

6. GRADIENT

6.1 The steepest areas of the site are only a gentle slope with gradient never representing the most limiting factor to land grade.

7. SOILS

7.1 The soils found on site largely follow the expectations set by the national soils map. Full information on the sample points along trial pit descriptions and photographs can be found at *appendix 3*.

7.2 The topsoil was consistently a greyish brown (10YR 5/2) calcareous clay with up to 5% very small stones. The topsoil depth ranged from 25-30cm

7.3 The subsoil ranged from brown (10YR 5/3) to light olive brown (2.5Y 5/3) and was consistently poorly structured with weak course angular blocky, weak medium angular blocky and massive structures being evidenced where pits were dug with firm or very firm consistence. Occasionally there was a moderately structured (Medium angular blocky) subsoil from 25-50cm.

7.4 Pale or grey colours and ochreous mottles evidence gleying while the structure and firmness evidence a slowly permeable layer from as shallow as 25cm.

INTERACTIVE FACTORS

8. WETNESS

8.1 An assessment of the wetness class of each sample point was made based on the flow chart at Figure 6 in the MAFF guidance. The wetness class and topsoil texture were then assessed against Table 6 of the MAFF guidance to determine the ALC grade according to wetness. The wetness assessment can be found at *appendix 4*.

8.2 The slowly permeable gleyed horizon from 20cm along with the FCD of110.46 result in a wetness class of III based on Figure 7 in the MAFF guidance.

8.3 Table 6 with less than 126 FCD, wetness class III and calcareous clay topsoil results in a grade 3a limitation.

8.4 Wetness was found to be the limiting factor across the whole survey area.

9. DROUGHTINESS

9.1 Droughtiness limits are defined in terms of moisture balance for wheat and potatoes using the formula:

MB (Wheat) = AP (Wheat) - MD (Wheat)

and

MB (Potatoes) = AP (Potatoes) - MD (Potatoes)

Where:
MB = Moisture Balance
AP = Crop Adjusted available water capacity
MD = Moisture deficit

9.2 Moisture deficit for wheat and potatoes can be found in the agro-climatic data and are as follows:

MD (Wheat) = 116.23
MD (Potatoes) = 101.31

9.3 Crop adjusted available water is calculated by reference to the total available water and easily available water which is calculated by reference to soil texture and structural condition and the stone content. The moisture balance was calculated for the trial pit locations and confirms that droughtiness limitation is grade 3a or occasionally grade 2 where there was a better structured first subsoil.

10. AGRICULTURAL LAND CLASSIFICATION

10.1 The Agricultural Land Classification provides a framework for classifying land according to which its physical or chemical characteristics impose long-term limitations on agricultural use. The limitations can operate in one or more of four principle ways: they may affect the range of crops that can be grown, the level of yield, the consistency of yield and the cost of obtaining it.

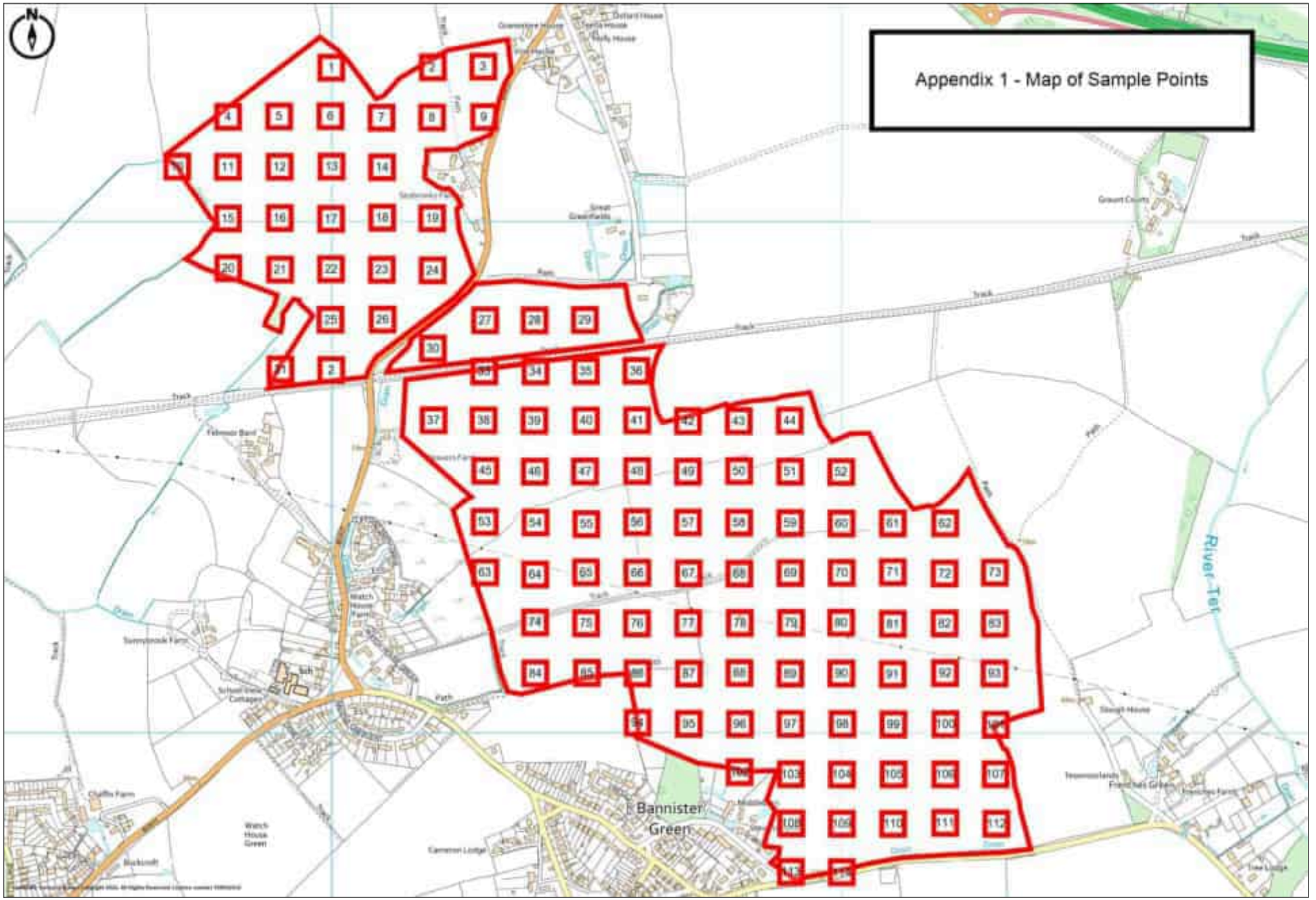
10.2 The principle physical factors influencing agricultural production are climate, site and soil and the interactions between them which together form the basis for classifying land into one of 5 grades; grade 1 being of excellent quality and grade 5 being land of very poor quality. Grade 3 land, which constitutes approximately half of all agricultural land in the United Kingdom is divided into 2 subgrades – 3a and 3b. A full definition of all of the grades can be found at *appendix 5.*

10.3 This assessment sets out that the site is limited by both wetness and droughtiness.

10.4 The breakdown of land by classification is:

Grade 3a: 111.9Ha

10.5 A plan of the land grading can be found at *appendix 6*.



Promap
LANDMARK INFORMATION

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Appendix 2 – Climatic Data

Site Details: Lord Rayleighs Farm

Grid reference (centre of site): 569514 221555

Altitude: Mean 74.18m AOD

Climatic data from surrounding locations:

Grid Reference	ALT	AAR	LR_AAR	ASR	ATO	ATS	MDW	MDP	FCD
5650 2200	54	594	0.6	300	1419	2423	118	113	111
5650 2250	73	595	0.3	300	1396	2398	116	110	111
5700 2200	67	590	0.4	295	1404	2409	118	113	110
5700 2250	84	601	0.2	305	1382	2384	113	107	112

Altitude Adjusted

Grid Reference	AAR	ATO	FCD	MDW	MDP	Proximity Adjustment
5650 2200	606.49	1395.28	112.81	114.99	101.72	7.81%
5650 2250	595.54	1393.94	111.08	115.78	99.76	4.54%
5700 2200	593.12	1395.10	110.45	116.98	102.54	69.04%
5700 2250	599.16	1392.48	111.73	114.07	96.96	18.61%

Appendix 3a - Augur Survey Results

		Topsoil					Subsoil 1						Subsoil 2					
Sample No	Altitude	Depth	Texture	Colour	Stoniness	Mottles	Depth	Texture	Colour	Stoniness	Mottles	Structure	Depth	Texture	Colour	Stoniness	Mottles	Structure
1	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
2	78	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
3	79	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
4	76	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
5	75	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
6	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
7	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
8	76	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
9	77	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
10	76	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
11	75	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
12	74	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
13	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
14	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
15	74	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
16	73	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
17	73	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
18	74	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
19	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor	50-120					
20	72	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
21	73	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
22	70	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
23	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor	50-120					
24	73	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	WCAB	50-120	Calc C	2.5Y 5/3		MO	WMAB
25	72	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
26	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor	50-120					
27	77	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
28	78	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
29	79	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
30	76	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
31	71	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
32	75	0-25	Calc C	10YR 4/2	5%		25-50	Calc C	10YR 5/3		MO	Poor	50-120	Calc C	2.5Y 5/3		MO	Poor
33	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
34	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
35	79	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
36	78	0-30	Calc C	10YR 4/2	<5%		30-50	Calc C	10YR 5/3		MO	MAB	50-120	Calc C	2.5Y 5/3		MO	M Prism
37	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
38	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
39	78	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
40	78	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
41	77	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
42	76	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
43	74	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
44	74	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
45	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
46	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
47	78	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
48	76	0-25	Calc C	10YR 4/2	<5%		25-50	Calc C	10YR 5/3		MO	Moderate	50-120	Calc C	2.5Y 5/3		MO	Poor
49	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
50	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						

		Topsoil					Subsoil 1						Subsoil 2					
Sample No	Altitude	Depth	Texture	Colour	Stoniness	Mottles	Depth	Texture	Colour	Stoniness	Mottles	Structure	Depth	Texture	Colour	Stoniness	Mottles	Structure
51	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
52	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
53	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
54	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
55	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
56	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
57	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
58	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
59	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
60	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
61	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
62	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
63	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
64	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
65	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
66	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
67	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	2.5Y 5/3		MO	Poor						
68	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
69	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Massive						
70	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
71	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
72	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
73	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
74	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
75	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
76	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
77	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
78	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
79	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
80	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
81	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
82	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
83	71	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
84	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
85	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
86	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
87	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
88	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
89	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
90	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
91	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
92	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
93	72	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
94	77	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
95	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
96	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
97	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
98	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
99	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
100	71	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
101	71	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						

		Topsoil					Subsoil 1						Subsoil 2					
Sample No	Altitude	Depth	Texture	Colour	Stoniness	Mottles	Depth	Texture	Colour	Stoniness	Mottles	Structure	Depth	Texture	Colour	Stoniness	Mottles	Structure
102	76	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
103	75	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
104	74	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
105	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
106	72	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
107	71	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
108	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
109	72	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
110	71	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
111	69	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
112	68	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
113	73	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
114	72	0-25	Calc C	10YR 4/2	<5%		25-120	Calc C	10YR 5/3		MO	Poor						
	74.81																	

Appendix 3b – Trial Pit Descriptions

Sample Point No. 24		
Horizon 1	0-25cm Dark greyish brown (10YR 4/2) calcareous clay with very few very small stones.	
Horizon 2	25-50cm Brown (10YR 5/3) calcareous clay with a weak course angular blocky structure, very firm consistence and many ochreous mottles	
Horizon 3	50-120cm Light Olive Brown (2.5Y 5/3) calcareous clay with a weak medium angular blocky structure, firm consistence and many ochreous mottles with significant lumps of calcium carbonate throughout the horizon	
Pictures		
Horizon 1	Horizon 2	Horizon 3
Slowly permeable layer	Starts at 25cm	
Gleying	Starts at 25cm	
Wetness Class	III	
Wetness limitation	3a	
MB Wheat	4.13	
MB potatoes	-3.27	
Droughtiness Limitation	3a	

Sample Point No. 36		
Horizon 1	0-30cm Dark greyish brown (10YR 4/2) calcareous clay with very few very small stones.	
Horizon 2	30-50cm Brown (10YR 5/3) calcareous clay with a medium angular blocky structure, friable consistence and many ochreous mottles	
Horizon 3	50-120cm Light Olive Brown (2.5Y 5/3) calcareous clay with a medium prismatic structure, firm consistence and many ochreous mottles	
Pictures		
Horizon 1	Horizon 2	Horizon 3
Slowly permeable layer	Starts at 50cm	
Gleying	Starts at 30cm	
Wetness Class	III	
Wetness limitation	3a	
MB Wheat	11.89	
MB potatoes	10.31	
Droughtiness Limitation	2	

Sample Point No. 69	
Horizon 1	0-25cm Dark greyish brown (10YR 4/2) calcareous clay with very few very small stones.
Horizon 2	25-120cm Brown (10YR 5/3) calcareous clay with a massive structure, extremely firm consistence and many ochreous mottles
Pictures	

Horizon 1	Horizon 2

Slowly permeable layer	Starts at 25cm
Gleying	Starts at 25cm
Wetness Class	III
Wetness limitation	3a
MB Wheat	4.13
MB potatoes	-3.27
Droughtiness Limitation	3a

ANALYTICAL REPORT

Report Number	**30575-22**	**W250**	**AMET PROPERTY**
Date Received	**23-AUG-2022**		**HENWICK BARN**
Date Reported	**05-SEP-2022**		**BULWICK**
Project	**SOIL LATE REQUEST**		**CORBY**
Reference	**AMET PROPERTY**		**NORTHANTS**
Order Number			**NN17 3DU**

Laboratory Reference			**SOIL575027**	**SOIL575028**							
Sample Reference			**RAYLEIGH 24**	**RAYLEIGH 69**							
Determinand	**Unit**		**SOIL**	**SOIL**							
Coarse Sand 2.00-0.63mm	% w/w		3	2							
Medium Sand 0.63-0.212mm	% w/w		16	10							
Fine Sand 0.212-0.063mm	% w/w		11	9							
Silt 0.063-0.002mm	% w/w		35	40							
Clay <0.002mm	% w/w		35	39							
Organic Matter LOI	% w/w		4.2	4.6							
Neutralising Value as CaCO3 eq.	% w/w		4.1	2.3							
Neutralising Value as CaO eq.	% w/w		2.3	1.3							
Textural Class **			C/HCL	C							

Notes

Analysis Notes
The sample submitted was of adequate size to complete all analysis requested.
The results as reported relate only to the item(s) submitted for testing.
The results are presented on a dry matter basis unless otherwise stipulated.

Document Control
This test report shall not be reproduced, except in full, without the written approval of the laboratory.

** Please see the attached document for the definition of textural classes.

Reported by
[redacted]
Natural Resource Management, a trading division of Cawood Scientific Ltd.
Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS
[redacted]

www.cawood.co.uk

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand, loamy sand, sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

- vf Very Fine (more than 2/3's of sand less than 0.106 mm)
- f Fine (more than 2/3's of sand less than 0.212 mm)
- c Coarse (more than 1/3 of sand greater than 0.6 mm)
- m Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam classes* according to clay content are indicated as follows:

- M medium (less than 27% clay)
- H heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

Appendix 4 - Wetness and Droughtiness Assessment

	Wetness Assesment			Grade	Droughtiness Assessment		Grade
Sample No	Depth to SPL	Gley	Wetness Class	According to Wetness	MB Wheat	MB Potato	According to Droughtiness
1	35	<40	III	3a	4.13	-3.27	3a
2	50	<40	III	3a	11.4	9.83	2
3	50	<40	III	3a	11.4	9.83	2
4	35	<40	III	3a	4.13	-3.27	3a
5	35	<40	III	3a	4.13	-3.27	3a
6	35	<40	III	3a	4.13	-3.27	3a
7	35	<40	III	3a	4.13	-3.27	3a
8	50	<40	III	3a	11.4	9.83	2
9	50	<40	III	3a	11.4	9.83	2
10	35	<40	III	3a	4.13	-3.27	3a
11	35	<40	III	3a	4.13	-3.27	3a
12	35	<40	III	3a	4.13	-3.27	3a
13	35	<40	III	3a	4.13	-3.27	3a
14	35	<40	III	3a	4.13	-3.27	3a
15	50	<40	III	3a	11.4	9.83	2
16	50	<40	III	3a	11.4	9.83	2
17	50	<40	III	3a	11.4	9.83	2
18	50	<40	III	3a	11.4	9.83	2
19	35	<40	III	3a	4.13	-3.27	3a
20	50	<40	III	3a	11.4	9.83	2
21	50	<40	III	3a	11.4	9.83	2
22	50	<40	III	3a	11.4	9.83	2
23	35	<40	III	3a	4.13	-3.27	3a
24	35	<40	III	3a	4.13	-3.27	3a
25	35	<40	III	3a	4.13	-3.27	3a
26	35	<40	III	3a	4.13	-3.27	3a
27	35	<40	III	3a	4.13	-3.27	3a
28	35	<40	III	3a	4.13	-3.27	3a
29	35	<40	III	3a	4.13	-3.27	3a
30	35	<40	III	3a	4.13	-3.27	3a
31	35	<40	III	3a	4.13	-3.27	3a
32	35	<40	III	3a	4.13	-3.27	3a
33	35	<40	III	3a	4.13	-3.27	3a
34	35	<40	III	3a	4.13	-3.27	3a
35	50	<40	III	3a	11.4	9.83	2
36	50	<40	III	3a	11.89	10.31	2
37	35	<40	III	3a	4.13	-3.27	3a
38	35	<40	III	3a	4.13	-3.27	3a
39	35	<40	III	3a	4.13	-3.27	3a
40	50	<40	III	3a	11.4	9.83	2
41	50	<40	III	3a	11.4	9.83	2
42	50	<40	III	3a	11.4	9.83	2
43	50	<40	III	3a	11.4	9.83	2

	Wetness Assesment			Grade	Droughtiness Assessment		Grade
Sample No	Depth to SPL	Gley	Wetness Class	According to Wetness	MB Wheat	MB Potato	According to Droughtiness
44	50	<40	III	3a	11.4	9.83	2
45	35	<40	III	3a	4.13	-3.27	3a
46	35	<40	III	3a	4.13	-3.27	3a
47	35	<40	III	3a	4.13	-3.27	3a
48	50	<40	III	3a	11.4	9.83	2
49	35	<40	III	3a	4.13	-3.27	3a
50	35	<40	III	3a	4.13	-3.27	3a
51	35	<40	III	3a	4.13	-3.27	3a
52	35	<40	III	3a	4.13	-3.27	3a
53	35	<40	III	3a	4.13	-3.27	3a
54	35	<40	III	3a	4.13	-3.27	3a
55	35	<40	III	3a	4.13	-3.27	3a
56	35	<40	III	3a	4.13	-3.27	3a
57	35	<40	III	3a	4.13	-3.27	3a
58	35	<40	III	3a	4.13	-3.27	3a
59	35	<40	III	3a	4.13	-3.27	3a
60	35	<40	III	3a	4.13	-3.27	3a
61	35	<40	III	3a	4.13	-3.27	3a
62	35	<40	III	3a	4.13	-3.27	3a
63	35	<40	III	3a	4.13	-3.27	3a
64	35	<40	III	3a	4.13	-3.27	3a
65	35	<40	III	3a	4.13	-3.27	3a
66	35	<40	III	3a	4.13	-3.27	3a
67	35	<40	III	3a	4.13	-3.27	3a
68	35	<40	III	3a	4.13	-3.27	3a
69	35	<40	III	3a	4.13	-3.27	3a
70	35	<40	III	3a	4.13	-3.27	3a
71	35	<40	III	3a	4.13	-3.27	3a
72	35	<40	III	3a	4.13	-3.27	3a
73	35	<40	III	3a	4.13	-3.27	3a
74	35	<40	III	3a	4.13	-3.27	3a
75	35	<40	III	3a	4.13	-3.27	3a
76	35	<40	III	3a	4.13	-3.27	3a
77	35	<40	III	3a	4.13	-3.27	3a
78	35	<40	III	3a	4.13	-3.27	3a
79	35	<40	III	3a	4.13	-3.27	3a
80	35	<40	III	3a	4.13	-3.27	3a
81	35	<40	III	3a	4.13	-3.27	3a
82	35	<40	III	3a	4.13	-3.27	3a
83	35	<40	III	3a	4.13	-3.27	3a
84	35	<40	III	3a	4.13	-3.27	3a
85	35	<40	III	3a	4.13	-3.27	3a
86	35	<40	III	3a	4.13	-3.27	3a
87	35	<40	III	3a	4.13	-3.27	3a

	Wetness Assesment			Grade	Droughtiness Assessment		Grade
Sample No	Depth to SPL	Gley	Wetness Class	According to Wetness	MB Wheat	MB Potato	According to Droughtiness
88	35	<40	III	3a	4.13	-3.27	3a
89	35	<40	III	3a	4.13	-3.27	3a
90	35	<40	III	3a	4.13	-3.27	3a
91	35	<40	III	3a	4.13	-3.27	3a
92	35	<40	III	3a	4.13	-3.27	3a
93	35	<40	III	3a	4.13	-3.27	3a
94	35	<40	III	3a	4.13	-3.27	3a
95	35	<40	III	3a	4.13	-3.27	3a
96	35	<40	III	3a	4.13	-3.27	3a
97	35	<40	III	3a	4.13	-3.27	3a
98	35	<40	III	3a	4.13	-3.27	3a
99	35	<40	III	3a	4.13	-3.27	3a
100	35	<40	III	3a	4.13	-3.27	3a
101	35	<40	III	3a	4.13	-3.27	3a
102	35	<40	III	3a	4.13	-3.27	3a
103	35	<40	III	3a	4.13	-3.27	3a
104	35	<40	III	3a	4.13	-3.27	3a
105	35	<40	III	3a	4.13	-3.27	3a
106	35	<40	III	3a	4.13	-3.27	3a
107	35	<40	III	3a	4.13	-3.27	3a
108	35	<40	III	3a	4.13	-3.27	3a
109	35	<40	III	3a	4.13	-3.27	3a
110	35	<40	III	3a	4.13	-3.27	3a
111	35	<40	III	3a	4.13	-3.27	3a
112	35	<40	III	3a	4.13	-3.27	3a
113	35	<40	III	3a	4.13	-3.27	3a
114	35	<40	III	3a	4.13	-3.27	3a

APPENDIX 5 - DESCRIPTION OF ALC GRADES

Grade 1 - excellent quality agricultural land Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 - very good quality agricultural land Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

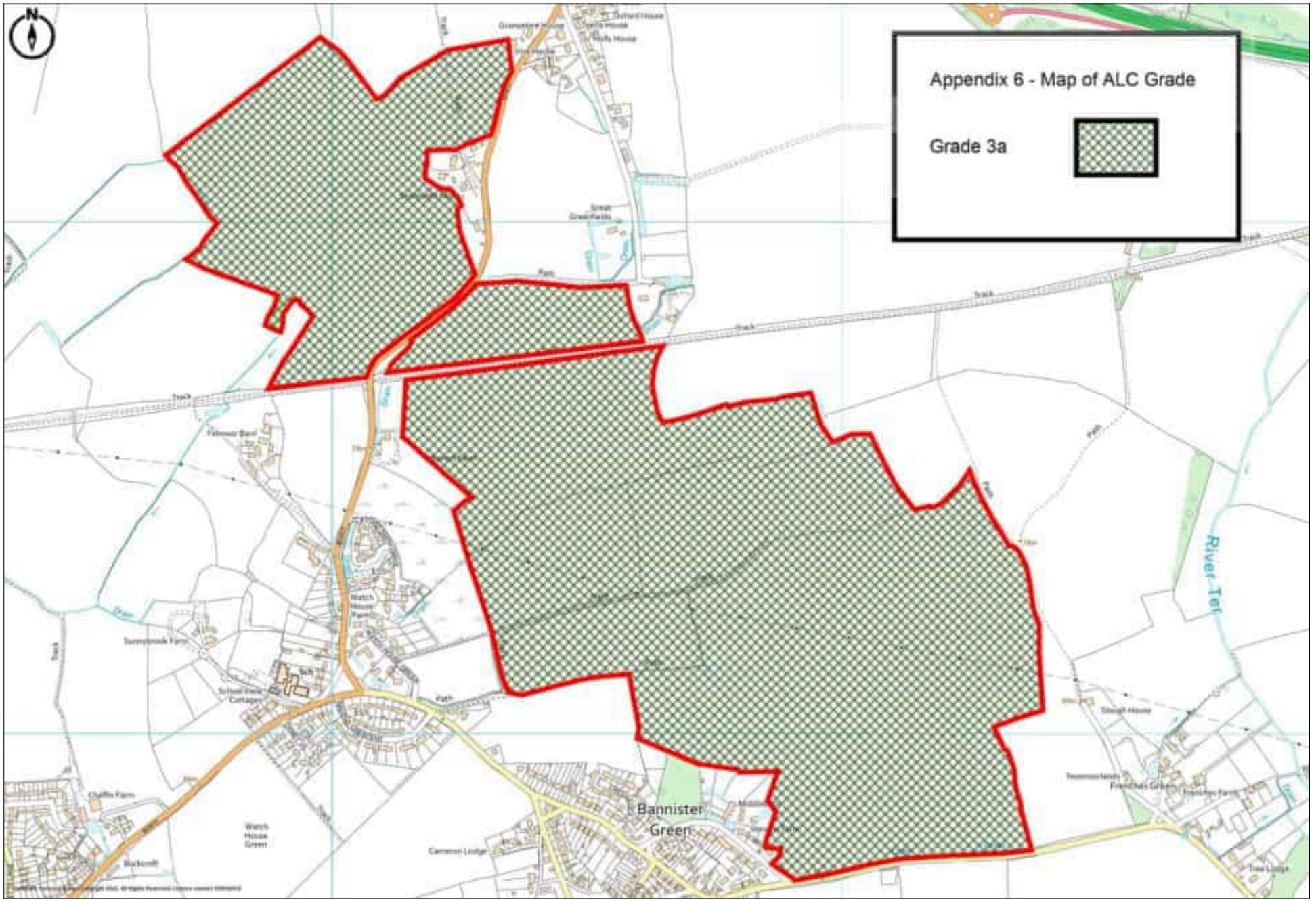
Grade 3 - good to moderate quality agricultural land Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

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.

Grade 4 - poor quality agricultural land Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 - very poor-quality agricultural land Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.



Promap
LANDMARK INFORMATION

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AGRICULTURAL LAND CLASSIFICATION
DRAPERS SOLAR FARM

CLIENT: BLUESTONE ENERGY LTD
PROJECT: DRAPERS SOLAR FARM
DATE: 8TH SEPTEMBER 2022 – ISSUE 2
ISSUED BY: JAMES FULTON MRICS FAAV

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1. EXECUTIVE SUMMARY

1.1 This report assesses the Agricultural Land Classification (ALC) grading of 72.9Ha, of agricultural land approximately 1km southwest of Rayne in Essex.

1.2 The limiting factor is found to be soil wetness, a combination of the soils found on site and the climatic regime.

1.3 The land is graded as follows:

Grade 3a:	72.9Ha

2. INTRODUCTION

2.1 Amet Property Ltd have been instructed by Bluestone Energy LTD to produce an Agricultural Land Classification (ALC) report on a 72.9-hectare site to the southwest of Rayne in Essex in support of a planning application for a solar farm with associated infrastructure

2.2 The report's author is James Fulton BSc (Hons) MRICS FAAV who has worked as a chartered surveyor, agricultural valuer, and agricultural consultant since 2004, has a degree in agriculture which included modules on soils and over 10 years' experience in advising farmers on soil structure and cultivation methods and in producing agricultural land classification reports.

2.3 The report is based on a site visit conducted on the 25th of June 2022. During the site visit conditions were dry and sunny. During the inspection a trial pit was dug to a depth of 120cm. In addition to the trial pits an augur was used to take approximately one sample per hectare on the proposed development site to a depth of 120cm with smaller trial pits at some of these locations to confirm soil structure and colour where it was not clear from the augur samples. A plan of augur points can be found at *appendix 1.* The trial pit locations were selected as they were representative of the soils found on site. Where subsoils were inspected with a spade, descriptions of structure have been recorded based on the soil survey field handbook[1]; where an augur has been used the structure is described as good, moderate or poor based on figure 9,10 and 11 in the MAFF[2] guidance. Colours are described using Munsell Colours[3].

2.4 During the sampling conditions were generally good with the subsoil state described as moist allowing samples to be removed and examined easily. The topsoils were generally dry and so a lot of water had to be added to hand texture samples.

2.5 The site is described in literature as likely to be calcareous and so hydrochloric acid was used to test in field for a reaction that would indicate calcareous soils.

2.6 The site extends 72.9Ha of arable land spread cross 9 fields or part fields in an arable rotation.

2.7 Further information has been obtained from the MAGIC website, the Soil Survey of England and Wales, the British Geological Survey, the Meteorological Office and 1:250,000 series Agricultural Land Classification maps.

---

[1] Hodgson, JM (1997) Soil Survey Field Handbook

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

[3] Munsell Color (2009) Munsell Soil Color Charts

2.8 The collected information has been judged against the Ministry of Agriculture Fisheries and Food Agricultural Land Classification of England and Wales revised guidelines and criteria for grading the quality of agricultural land.

2.9 The principal factors influencing agricultural production are climate, site and soil and the interaction between them MAFF (1988) & Natural England (2012)[4].

3. PUBLISHED INFORMATION

3.1 The British Geological Survey 1:50,000 scale map shows the bedrock geology to be London Clay Formation – Clay, Silt and sand. The superficial deposits are recorded as Lowestoft Formation – Diamicton.

3.2 The national soils map shows the site to be Hanslope Association – Slowly permeable calcareous soils.

3.3 The 1:250,000 series Agricultural Land Classification maps show the land to be Grade 2. These plans are of strictly limited value, using an out-of-date methodology at a very small scale (low detail) level of survey. Further information on the limits of their use can be found in TIN049.

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

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

4. CLIMATE

4.1 Climate has a major, and in places overriding, influence on land quality affecting both the range of potential agricultural uses and the cost and level of production.

4.2 There is published agro-climatic data for England and Wales provided by the Meteorological Office, such data for the subject site is listed in the table below.

4.3 The climatic data for each of the sites was determined separately as the distance between locations and difference in altitude could provide different results.

Agro-Climatic Data – Full details can be found at *appendix 2*

Grid Reference	571406 221701
Altitude (ALT)	73.78
Average Annual Rainfall (AAR)	594.77
Accumulated Temperature - Jan to June (ATO)	1394.93
Duration of Field Capacity (FCD)	110.46
Moisture Deficit Wheat	116.00
Moisture Deficit Potatoes	100.92

4.4 The main parameters used in assessing the climatic limitation are average annual rainfall (AAR), as a measure of overall wetness; and accumulated temperature (ATO), as a measure of the relative warmth of a locality.

4.5 The AAR and ATO provide no climatic limitation to grade.

4.6 The site is shown to be in flood zone 1 – areas with a less than 1 in 1000 annual chance of flooding. There was no evidence of flooding seen during the site visit and it is considered that will not result in a limitation to land grade.

5. STONINESS

5.1 Most of the site was slightly stony. Where there were stones in the topsoil, they very rarely exceeded 5% and with very few exceptions were too small to be retained by a 2cm grid. Stoniness is not considered a limiting factor to land grade.

6. GRADIENT

6.1 The steepest areas of the site are only a gentle slope with gradient never representing the most limiting factor to land grade.

7. SOILS

7.1 The soils found on site largely follow the expectations set by the national soils map. Full information on the sample points along trial pit descriptions and photographs can be found at *appendix 3*.

7.2 The topsoil was consistently a greyish brown (10YR 5/2) calcareous clay with up to 5% very small stones. The topsoil was very shallow in places extending to only 20cm with evidence of the subsoil having been brought to the surface by cultivations

7.3 The subsoil ranged from grey (10YR 5/1) to brown (10YR 5/3) and was consistently very poorly structured with course angular blocky structures being evidenced where pits were dug with firm or very firm consistence.

7.4 Pale or grey colours and ochreous mottles evidence gleying while the structure and firmness evidence a slowly permeable layer from as shallow as 20cm

INTERACTIVE FACTORS

8. WETNESS

8.1 An assessment of the wetness class of each sample point was made based on the flow chart at Figure 6 in the MAFF guidance. The wetness class and topsoil texture were then assessed against Table 6 of the MAFF guidance to determine the ALC grade according to wetness. The wetness assessment can be found at *appendix 4*.

8.2 The slowly permeable gleyed horizon from 20cm along with the FCD of110.46 result in a wetness class of III based on Figure 7 in the MAFF guidance.

8.3 Table 6 with less than 126 FCD, wetness class III and calcareous clay topsoil results in a grade 3a limitation.

8.4 Wetness was found to be the limiting factor across the whole survey area.

9. DROUGHTINESS

9.1 Droughtiness limits are defined in terms of moisture balance for wheat and potatoes using the formula:

MB (Wheat) = AP (Wheat) - MD (Wheat)

and

MB (Potatoes) = AP (Potatoes) - MD (Potatoes)

Where:
MB = Moisture Balance
AP = Crop Adjusted available water capacity
MD = Moisture deficit

9.2 Moisture deficit for wheat and potatoes can be found in the agro-climatic data and are as follows:

MD (Wheat) = 116.00
MD (Potatoes) = 100.92

9.3 Crop adjusted available water is calculated by reference to the total available water and easily available water which is calculated by reference to soil texture and structural condition and the stone content. The moisture balance was calculated for the trial pit location and confirms that droughtiness limitation is grade 3a.

10. AGRICULTURAL LAND CLASSIFICATION

10.1 The Agricultural Land Classification provides a framework for classifying land according to which its physical or chemical characteristics impose long-term limitations on agricultural use. The limitations can operate in one or more of four principle ways: they may affect the range of crops that can be grown, the level of yield, the consistency of yield and the cost of obtaining it.

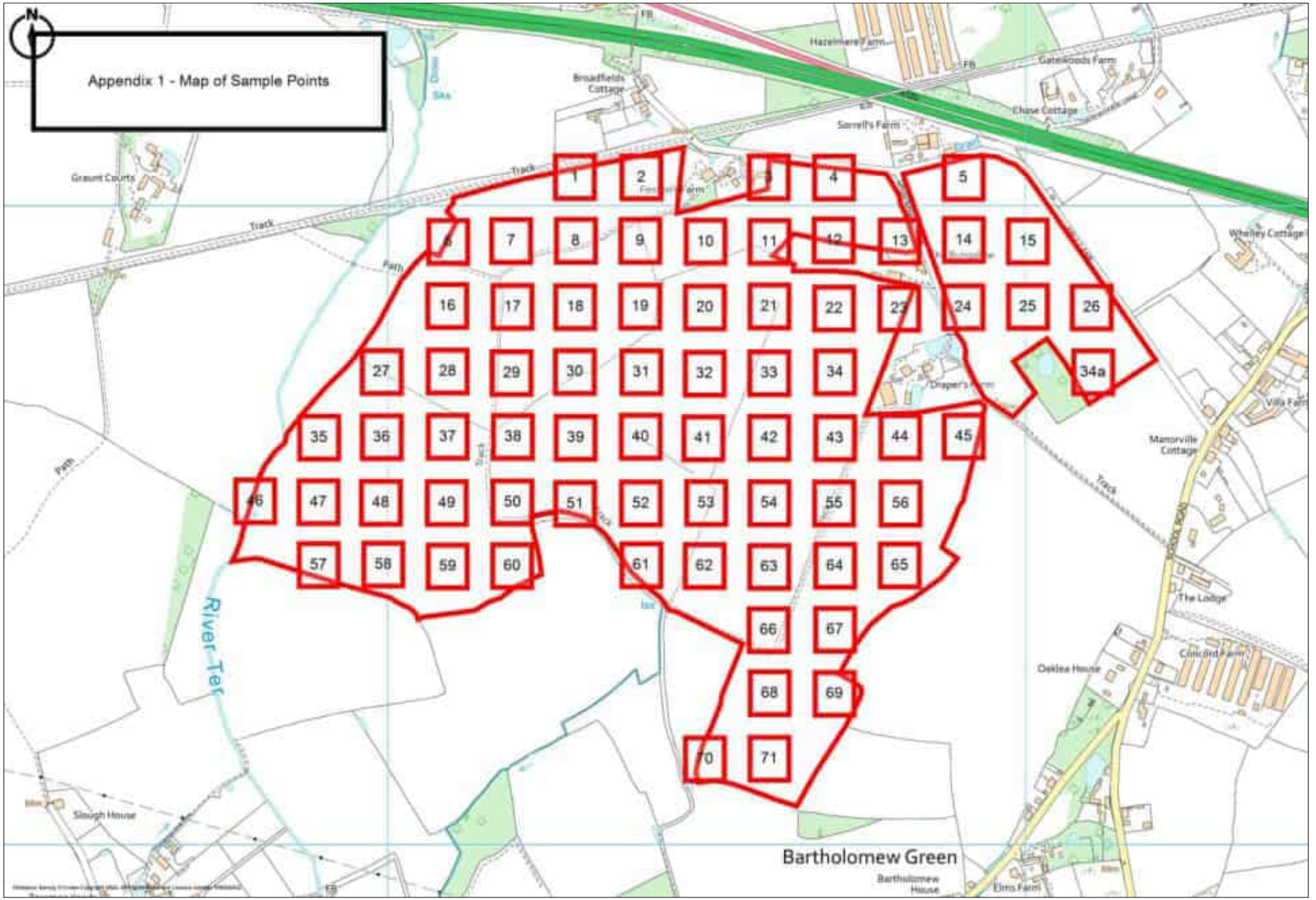
10.2 The principle physical factors influencing agricultural production are climate, site and soil and the interactions between them which together form the basis for classifying land into one of 5 grades; grade 1 being of excellent quality and grade 5 being land of very poor quality. Grade 3 land, which constitutes approximately half of all agricultural land in the United Kingdom is divided into 2 subgrades – 3a and 3b. A full definition of all of the grades can be found at *appendix 5.*

10.3 This assessment sets out that the site is equally limited by both wetness and droughtiness.

10.4 The breakdown of land by classification is:

Grade 3a: 72.9Ha

10.5 A plan of the land grading can be found at *appendix 6*.



Promap
LANDMARK INFORMATION

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Appendix 2 – Climatic Data

Site Details: Drapers Farm

Grid reference (centre of site): 571406 221701

Altitude: Mean 73.78m AOD

Climatic data from surrounding locations:

Grid Reference	ALT	AAR	LR_AAR	ASR	ATO	ATS	MDW	MDP	FCD
5700 2200	67	590	0.4	295	1404	2409	118	113	110
5700 2250	84	601	0.2	305	1382	2384	113	107	112
5750 2200	67	590	0.4	300	1402	2709	117	111	108
5750 2250	59	595	0.3	305	1409	2416	116	111	111

Altitude Adjusted

Grid Reference	AAR	ATO	FCD	MDW	MDP	Proximity Adjustment
5700 2200	592.71	1396.27	110.39	117.11	102.72	50.41%
5700 2250	598.96	1393.65	111.70	114.19	97.12	21.98%
5750 2200	592.71	1394.27	108.39	116.11	100.72	17.36%
5750 2250	599.43	1392.15	111.64	114.17	100.55	10.24%

Appendix 3 - Soil Sampling Information

		Topsoil					Subsoil 1					
Sample No	Altitude	Depth	Texture	Colour	Stoniness	Mottles	Depth	Texture	Colour	Stoniness	Mottles	Structure
1	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
2	75	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
3	78	0-30	Calc C	10YR 5/2	5%		30-120	Calc C	10YR 5/1		MO	POOR
4	78	0-30	Calc C	10YR 5/2	5%		30-120	Calc C	10YR 5/1		MO	POOR
5	77	0-20	Calc C	10YR 5/2	5%		20-120	Calc C	10YR 5/1		MO	POOR
6	68	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
7	72	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
8	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
9	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
10	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
11	78	0-30	Calc C	10YR 5/2	5%		30-120	Calc C	10YR 5/1		MO	POOR
12	78	0-30	Calc C	10YR 5/2	5%		30-120	Calc C	10YR 5/1		MO	POOR
13	78	0-30	Calc C	10YR 5/2	5%		30-120	Calc C	10YR 5/1		MO	POOR
14	77	0-20	Calc C	10YR 5/2	5%		20-120	Calc C	10YR 5/1		MO	CAB
15	77	0-20	Calc C	10YR 5/2	5%		20-120	Calc C	10YR 5/1		MO	POOR
16	69	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
17	72	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
18	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
19	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
20	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
21	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
22	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
23	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
24	76	0-20	Calc C	10YR 5/2	5%		20-120	Calc C	10YR 5/1		MO	POOR
25	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
26	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
27	67	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
28	71	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
29	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
30	75	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
31	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR

		Topsoil					Subsoil 1					
Sample No	Altitude	Depth	Texture	Colour	Stoniness	Mottles	Depth	Texture	Colour	Stoniness	Mottles	Structure
32	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
33	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
34	77	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
34a	75	0-30	Calc C	10YR 5/2	5%		30-120	Calc C	10YR 5/1		MO	POOR
35	67	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	CAB
36	71	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
37	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
38	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
39	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
40	75	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
41	75	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
42	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
43	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
44	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
45	76	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
46	66	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
47	69	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
48	71	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
49	47	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
50	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
51	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
52	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
53	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
54	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
55	75	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
56	75	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
57	70	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/1		MO	POOR
58	72	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
59	72	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
60	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
61	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/2		MO	CAB
62	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/2		MO	POOR

		Topsoil					Subsoil 1					
Sample No	Altitude	Depth	Texture	Colour	Stoniness	Mottles	Depth	Texture	Colour	Stoniness	Mottles	Structure
63	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
64	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
65	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
66	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
67	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
68	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
69	74	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
70	73	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
71	72	0-30	Calc C	10YR 5/2	<5%		30-120	Calc C	10YR 5/3		MO	POOR
	73.78											

Appendix 3b – Trial Pit Descriptions

Sample Point No. 8	
Horizon 1	0-20cm Greyish brown (10YR 5/2) calcareous clay with unslaked surface
Horizon 2	20-120cm Grey (10YR 5/1) calcareous clay with a course angular blocky structure, an extremely firm consistence, and many ochreous mottles
Pictures	

Horizon 1

Horizon 2

Slowly permeable layer	Starts at 20cm
Gleying	Starts at 20cm
Wetness Class	III
Wetness limitation	3a
MB Wheat	0.10
MB potatoes	-6.67
Droughtiness Limitation	3a

ANALYTICAL REPORT

Report Number	**30575-22**	**W250**	**AMET PROPERTY**
Date Received	**23-AUG-2022**		**HENWICK BARN**
Date Reported	**05-SEP-2022**		**BULWICK**
Project	**SOIL LATE REQUEST**		**CORBY**
Reference	**AMET PROPERTY**		**NORTHANTS**
Order Number			**NN17 3DU**

Laboratory Reference		**SOIL575026**
Sample Reference		**DRAPERS 14**
Determinand	**Unit**	**SOIL**
Coarse Sand 2.00-0.63mm	% w/w	5
Medium Sand 0.63-0.212mm	% w/w	10
Fine Sand 0.212-0.063mm	% w/w	10
Silt 0.063-0.002mm	% w/w	34
Clay <0.002mm	% w/w	41
Organic Matter LOI	% w/w	5.1
Neutralising Value as CaCO3 eq.	% w/w	3.4
Neutralising Value as CaO eq.	% w/w	1.9
Textural Class **		C

Notes

Analysis Notes

The sample submitted was of adequate size to complete all analysis requested.
The results as reported relate only to the item(s) submitted for testing.
The results are presented on a dry matter basis unless otherwise stipulated.

Document Control

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** Please see the attached document for the definition of textural classes.

Reported by

[redacted]

Natural Resource Management, a trading division of Cawood Scientific Ltd.
Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS
[redacted]

www.cawood.co.uk

ADAS (UK) Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand, loamy sand, sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

- vf Very Fine (more than 2/3's of sand less than 0.106 mm)
- f Fine (more than 2/3's of sand less than 0.212 mm)
- c Coarse (more than 1/3 of sand greater than 0.6 mm)
- m Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam classes* according to clay content are indicated as follows:

- M medium (less than 27% clay)
- H heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

Appendix 4 - Wetness and Droughtiness Assessment

	Wetness Assesment			Grade	Droughtiness Assessment		Grade
Sample No	Depth to SPL	Gley	Wetness Class	According to Wetness	MB Wheat	MB Potato	According to Droughtiness
1	35	<40	III	3a	0.1	-6.67	3a
2	35	<40	III	3a	3.9	-2.87	3a
3	35	<40	III	3a	3.9	-2.87	3a
4	35	<40	III	3a	3.9	-2.87	3a
5	35	<40	III	3a	0.1	-6.67	3a
6	35	<40	III	3a	3.9	-2.87	3a
7	35	<40	III	3a	3.9	-2.87	3a
8	35	<40	III	3a	3.9	-2.87	3a
9	35	<40	III	3a	3.9	-2.87	3a
10	35	<40	III	3a	3.9	-2.87	3a
11	35	<40	III	3a	3.9	-2.87	3a
12	35	<40	III	3a	3.9	-2.87	3a
13	35	<40	III	3a	3.9	-2.87	3a
14	35	<40	III	3a	0.1	-6.67	3a
15	35	<40	III	3a	0.1	-6.67	3a
16	35	<40	III	3a	3.9	-2.87	3a
17	35	<40	III	3a	3.9	-2.87	3a
18	35	<40	III	3a	3.9	-2.87	3a
19	35	<40	III	3a	3.9	-2.87	3a
20	35	<40	III	3a	3.9	-2.87	3a
21	35	<40	III	3a	3.9	-2.87	3a
22	35	<40	III	3a	3.9	-2.87	3a
23	35	<40	III	3a	3.9	-2.87	3a
24	35	<40	III	3a	0.1	-6.67	3a
25	35	<40	III	3a	3.9	-2.87	3a
26	35	<40	III	3a	3.9	-2.87	3a
27	35	<40	III	3a	3.9	-2.87	3a
28	35	<40	III	3a	3.9	-2.87	3a
29	35	<40	III	3a	3.9	-2.87	3a
30	35	<40	III	3a	3.9	-2.87	3a
31	35	<40	III	3a	3.9	-2.87	3a
32	35	<40	III	3a	3.9	-2.87	3a
33	35	<40	III	3a	3.9	-2.87	3a
34	35	<40	III	3a	3.9	-2.87	3a
34a	35	<40	III	3a	3.9	-2.87	3a
35	35	<40	III	3a	3.9	-2.87	3a
36	35	<40	III	3a	3.9	-2.87	3a
37	35	<40	III	3a	3.9	-2.87	3a
38	35	<40	III	3a	3.9	-2.87	3a
39	35	<40	III	3a	3.9	-2.87	3a
40	35	<40	III	3a	3.9	-2.87	3a
41	35	<40	III	3a	3.9	-2.87	3a
42	35	<40	III	3a	3.9	-2.87	3a

	Wetness Assesment			Grade	Droughtiness Assessment		Grade
Sample No	Depth to SPL	Gley	Wetness Class	According to Wetness	MB Wheat	MB Potato	According to Droughtiness
43	35	<40	III	3a	3.9	-2.87	3a
44	35	<40	III	3a	3.9	-2.87	3a
45	35	<40	III	3a	3.9	-2.87	3a
46	35	<40	III	3a	3.9	-2.87	3a
47	35	<40	III	3a	3.9	-2.87	3a
48	35	<40	III	3a	3.9	-2.87	3a
49	35	<40	III	3a	3.9	-2.87	3a
50	35	<40	III	3a	3.9	-2.87	3a
51	35	<40	III	3a	3.9	-2.87	3a
52	35	<40	III	3a	3.9	-2.87	3a
53	35	<40	III	3a	3.9	-2.87	3a
54	35	<40	III	3a	3.9	-2.87	3a
55	35	<40	III	3a	3.9	-2.87	3a
56	35	<40	III	3a	3.9	-2.87	3a
57	35	<40	III	3a	3.9	-2.87	3a
58	35	<40	III	3a	3.9	-2.87	3a
59	35	<40	III	3a	3.9	-2.87	3a
60	35	<40	III	3a	3.9	-2.87	3a
61	35	<40	III	3a	3.9	-2.87	3a
62	35	<40	III	3a	3.9	-2.87	3a
63	35	<40	III	3a	3.9	-2.87	3a
64	35	<40	III	3a	3.9	-2.87	3a
65	35	<40	III	3a	3.9	-2.87	3a
66	35	<40	III	3a	3.9	-2.87	3a
67	35	<40	III	3a	3.9	-2.87	3a
68	35	<40	III	3a	3.9	-2.87	3a
69	35	<40	III	3a	3.9	-2.87	3a
70	35	<40	III	3a	3.9	-2.87	3a
71	35	<40	III	3a	3.9	-2.87	3a

APPENDIX 5 - DESCRIPTION OF ALC GRADES

Grade 1 - excellent quality agricultural land Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 - very good quality agricultural land Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

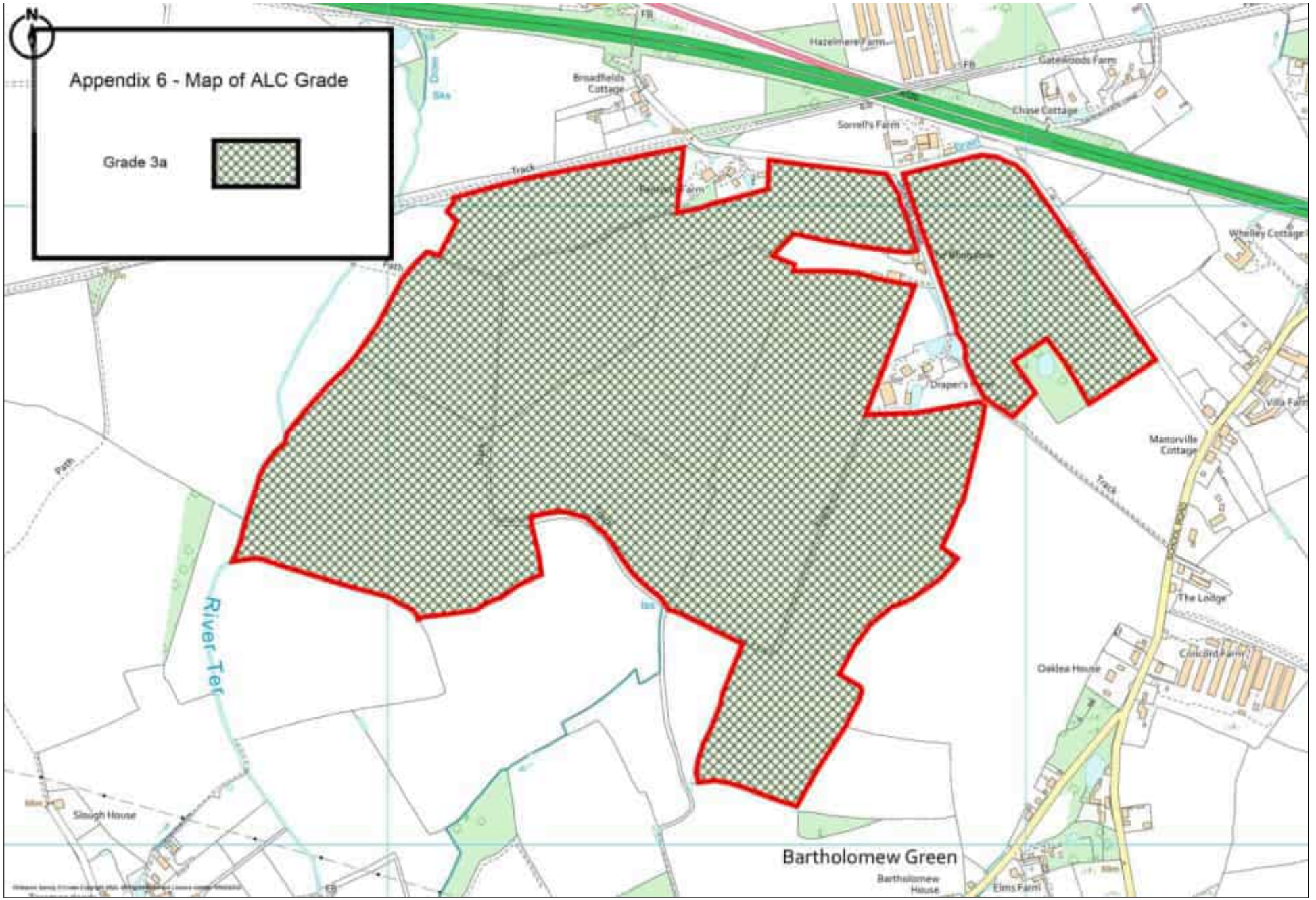
Grade 3 - good to moderate quality agricultural land Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

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.

Grade 4 - poor quality agricultural land Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 - very poor-quality agricultural land Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.



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LANDMARK INFORMATION

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ARBORICULTURAL SURVEY REPORT

Drapers Chase Solar Farm

September 2022

Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Drapers Chase Solar Farm	
Project reference:	4677	
Site Address:	Fentons Road, Rayne, Braintree, Essex	
Nearest Postcode:	CM77 6SL	
Central Grid reference:	TL 71500 21744	
Local Planning Authorities:	Braintree District Council (BDC); Uttlesford District Council (UDC)	
Relevant planning policies:	**BDC**: Local Plan 2013 - 2033 (section 1), Essex Design Guide Guidance 2005. **UDC**: Uttlesford Local Plan (adopted January 2005).	
Statutory Controls:	**Tree Preservation Order**	**Conservation Area**
	None shown for BDC & UDC	None shown for BDC & UDC
Soil Type: (Source: BGS online soils map © NERC 2022)	**Superficial/Drift**	**Bedrock**
	Lowestoft Formation - Diamicton	London Clay Formation - Clay, silt and sand
Topographical Survey:	Drawing No: 23628-500-01, dated: July 2022	
Notes:	Oak pollard recorded as veteran tree (T96).	
Report author:	David Holmes *FdSc, MArborA*	
Checked by:	Richard Hyett *MSc, BSc (Hons), MICFor, MArborA*	
Date of issue:	23rd September 2022	

Arboricultural Association Professional Member
PR1027

Institute of Chartered Foresters registered

REPORT CONTENTS:

SECTION 1: SUMMARY, SITE DETAILS & SURVEY FINDINGS

SECTION 2: TREE SURVEY & CONSTRAINTS PLAN

SECTION 3: TREE SURVEY SCHEDULE & SITE IMAGES

SECTION 4: METHODOLOGY

SECTION 5: DESIGN GUIDANCE AND GENERIC ADVICE

THIS REPORT HAS BEEN PREPARED TO PROVIDE ADVICE AND GUIDANCE ON THE POTENTIAL FOR DEVELOPMENT OF LAND IN RELATION TO TREES. IT IS THEREFORE INTENDED FOR 'INTERNAL USE' ONLY BY THE NAMED CLIENT AND DESIGN TEAM. IT MAY NOT THEREFORE BE SUITABLE FOR SUBMISSION TO A PLANNING AUTHORITY WITH A PLANNING APPLICATION.

1. INSTRUCTION

1.1. I am David Holmes, an arboriculturist with 14 years of experience and a professional member of the Arboricultural Association.

1.2. Barton Hyett Associates Ltd have been instructed by Pegasus Group on behalf of Bluefield Renewable Developments Ltd, to survey trees located at Drapers Chase Solar Farm, Braintree ('the site') in accordance with the recommendations of British Standard 5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.

1.3. The scope of the instruction was to inspect trees relevant to a planning application for a solar farm at the site and provide written advice on how they inform feasibility and design options. This report is intended for use by the applicant and design team only, and is not for submission to the Local Planning Authority (LPA).

2. SITE DESCRIPTION

2.1. The site lies 2.5 miles south-west of the town of Braintree and is made up of agricultural land with field boundaries being defined by a mixture of hedgerows and ditches.

2.2. The survey area measures approximately 75 hectares and is made up of 9 fields used for arable crop production. The site slopes gently down to the south with the approximate height above mean sea level varying between 78m - 72m.

2.3. To the west of the site, the *River Ter* runs north to south. The A120 dual carriageway runs from east to west just north of the site. The Flitch Way footpath, which uses the route of the disused Bishop's Stortford to Braintree branch line forms a boundary with the north of the site.

2.4. The surrounding area is agricultural land with farms and outlying dwellings, the village of Felsted is located 2.5 miles to the east of the site. Currently, access to the site is possible from Drapers Chase.

3. TREE SURVEY FINDINGS

3.1. A total of 109 trees, 28 group features, 1 woodland and 92 hedgerows were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (**Section 2**) and within the Tree Survey Schedule (**Section 3**).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	**109**	25	54	30	-
Groups	**28**	2	22	4	-
Woodlands	**1**	1	-	-	-
Hedgerows	**92**	-	81	11	-
Total	**230**	**28**	**157**	**45**	**-**

Table 1: Summary of arboricultural features of each BS5837 quality category

4. KEY ARBORICULTURAL FEATURES

4.1. A high quality oak pollard, T96 was recorded as a veteran tree. The girth measures 3.7m which classifies the oak as a 'notable tree' according to Figure 1.3 in Lonsdale (2013)[1]. Girth alone should not be relied upon as an indicator of age in this instance as the effect of pollarding slows the secondary growth of trees, i.e the thickening of stems and limbs. When T96 is assessed for veteran status it meets some of the criteria for characteristic features found on veteran trees (in para. 2.1.1 in Read, 2000 [2]) which lists features such as; major trunk cavities, dry crevices (fissure to south of stem), bark loss, an old look or a high aesthetic interest.

4.2. I have consulted DEFRA's 'Magic Map' website to check for the presence of ancient woodland (ASNW). Whilst there are no ASNW listed on the site, the feature recorded as W1 is listed as deciduous woodland on the '*2021 Priority Habitat Inventory*' and as broadleaved woodland on the '*2014 National Forestry Inventory*'.

4.3. Where elm has been recorded around the site, it was found to be a mix of English elm (*Ulmus procera*) and field elm (*Ulmus minor*).

5. CONSTRAINTS AND OPPORTUNITIES

5.1. Due to the agricultural usage of the site, most of the recorded arboricultural resource is located along the field boundaries. As a change in land usage is proposed, retaining the majority of trees will be possible.

5.2. There are existing access points around the site which lead from field margin to margin. These are reasonably wide at 4 - 5m and do not feature gates since there is no livestock grazing the land. Utilising the field margins and access points for internal tracks will reduce the requirement for tree removal to install access routes.

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[1] *Lonsdale, D. (ed.) 2013. Ancient and other veteran trees: further guidance on management. London: The Tree Council*

[2] *Read, H. 2000. Veteran Trees: A guide to good management. London: English Nature.*

5.3. Detrimental impacts from development might include, but are not limited to, damage to roots and understorey, damage to or compaction of soil around the tree roots, and changes to the water table or drainage within the tree's soil.

5.4. There is a good opportunity to improve the long-term tree cover through appropriate new tree or woodland planting. Suitable planting alongside existing features, new boundary or infrastructure features (e.g. attenuation ponds), and establishing new wildlife corridors to link existing ponds or woodland would help with improving biodiversity and connectivity.

5.5. There is an opportunity to enhance the existing hedgerows with supplementary planting to fill in gaps brought about by moribund elm stems or undesirable species colonising the plots, such as bramble or elder.

5.6. Please see **Section 5** for further advice and guidance on designing new developments near trees.

6. RECOMMENDATIONS AND CONCLUSION

6.1. The information contained within this report should be used in the preparation of design proposals for the site, in order to minimise negative arboricultural impacts.

6.2. The Root Protection Areas (RPAs) and veteran tree buffer zones of recorded arboricultural features should be considered sacrosanct and proposed development(e.g. infrastructure for the short to long-term construction) should be planned to avoid these areas wherever possible.

6.3. The developable area of the site is focused within the interior of existing agricultural fields and is therefore relatively free from arboricultural constraints. On this basis, the development of the site to provide a solar farm is feasible from an arboricultural perspective. There is ample opportunity across the site to establish new trees and restore hedgerows. Sufficient field margins and access points exist which can be exploited for internal access routes.

6.4. The site contains some high quality arboricultural features, it will be important for these trees to be carefully considered in the preparation of design proposals for future development of the land, in order to minimise negative arboricultural impacts.

6.5. Once the design proposal has been agreed, an Arboricultural Impacts Assessment report should be prepared for submission to the LPA in order for the planning application to be validated and to provide the LPA with sufficient information in order to determine the application.

[redacted]

David Holmes, *FdSc, MArborA*
Arboriculturist

570750 571000 571250 571500 571750 572000 572250

222000 221750 221500 221250 221000

T88 -A1 T80 -C3 T81 -B1 T78 -A1 T79 -B1 T83 -B1 T84 -B1 T82 -B1 T86 -A1 T87 -A1 T85 -A1 T77 -B1 T75 -B1 T74 -B1 T73 -B1 T76 -B1 T57 -B1 T56 -B3 T58 -B1 T59 -B1 T72 -B3 T71 -B1 T70 -B1 T69 -C1 T68 -C3 T67 -B1 T66 -B1 T65 -B1 T64 -B1 T63 -B1 T62 -B1 T61 -B1 T54 -B1 T52 -A1 T51 -A1 T53 -A1 T60 -B1 T50 -A1 T55 -A1 T49 -C1 T47 -A1 T46 -A1 T39 -B1 T40 -A1 T41 -C3 T48 -C1 T45 -C1 T44 -A1 T43 -B1 T42 -B1 T89 -A1 T93 -A1 T92 -B1 T94 -B1 T98 -B1 T91 -B1 T90 -A1 T38 -C1 T31 -C3 T32 -C3 T30 -B1 T29 -B1 T28 -B1 T27 -B1 T26 -B1 T97 -C1 T95 -B1 T96 -A3 T99 -B1 T100 -B1 T101 -A1 T102 -C1 T103 -C1 T104 -C1 T105 -C1 T106 -B1 T107 -B1 T108 -A1 T109 T1 -C1 T5 -C1 T2 -C1 T8 -C1 T4 -B1 T6 -C1 T7 -C1 T3 -A1 T9 -B1 T10 -A1 T11 -C1 T12 -A1 T13 -C1 T14 -B1 T16 -B1 T15 -A1 T17 -B1 T18 -B1 T19 -C1 T21 -C3 T37 -C1 T36 -C3 T35 -C1 T34 -B1 T33 -A1 T22 -C3 T20 -B1 T23 -C3 T24 -B1 T25 -B1

G1 -B2 G2 -B2 G4 -A2 W1 -A2 G10 -A2 G11 -B2 G12 -B2 G13 -B2 G14 -B2 G15 -C2 G16 -C2 G17 -B2 G19 -B2 G20 -C2 G21 -B2 G22 -B2

H67 -B2 H53 -B2 H65 -B2 H66 -B2 H64 -B2 H63 -B2 H62 -B2 H61 -B2 H60 -B2 H59 -B2 H58 -B2 H57 -B2 H56 -B2 H55 -B2 H54 -B2 H52 -B2 H51 -B2 H50 -B2 H49 -B2 H48 -B2 H47 -B2 H46 -B2 H45 -B2 H44 -B2 H43 -B2 H42 -B2 H41 -B2 H40 -B2 H39 -B2 H38 -B2 H37 -B2 H36 -B2 H35 -B2 H34 -B2 H33 -B2 H32 -B2 H31 -B2 H30 -B2 H29 -B2 H28 -B2 H27 -B2 H26 -B2 H25 -B2 H24 -B2 H23 -B2 H22 -B2 H21 -B2 H20 -B2 H19 -B2 H18 -B2 H17 -B2 H16 -B2 H15 -B2 H14 -B2 H13 -B2 H12 -B2 H11 -B2 H10 -B2 H9 -B2 H8 -B2 H7 -B2 H6 -B2 H5 -B2 H4 -B2 H3 -B2 H2 -B2 H1 -B2

OOS1 OOS2 OOS3 OOS4 OOS5 OOS6 OOS7 OOS8 OOS9 OOS10 OOS11 OOS12

KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
- Category U Tree - Very low quality (Mostly unsuitable for retention)
- Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Shrub mass/offsite tree/out of scope (OOS)
- ★ Tree/Group/Hedgerow not on topographical survey. Location given is an estimate

Ancient Tree / Woodland or Veteran Trees

- Ancient tree/woodland or Veteran tree: Important trees that require special consideration
- Ancient tree/woodland or Veteran tree buffer: As per published standing advice from Natural England and the Forestry Commission

Label	Description
OOS1	Outgrown hedge outside of red-line boundary; maple, oak, elm & thorn; approx dia. 250mm; average height of 8m
OOS2	Small elm & brambles
OOS3	Brambles
OOS4	Off-site 2x dead-standing thorn stems
OOS5	Off-site garden trees, mixed broadleaves & conifers; separated from site by significant ditch; maximum overhang of crown into site of 2m; tallest boundary trees measure 10m in height
OOS6	Off-site stand of trees, mixed broadleaves & conifers; no overhang into site; tallest trees measure 15m in height
OOS7	Brambles / dead elm stems
OOS8	Small hazel & rose-hips
OOS9	Small hawthorn & rose-hips
OOS10	Dead elm stems swathed in ivy
OOS11	Derelict plot containing dead elm stems (@2m height) becoming colonised by young new plants & 2x oak formally planted
OOS12	Dead hawthorn stems swathed in ivy

INDEX MAP

Note: The original of this drawing was produced in colour – a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice

N GRID NORTH

0 40 80 160 Meters

PROJECT TITLE

Drapers Farm (4677)

DRAWING TITLE

Tree Survey Plan

SCALE				DRAWING NUMBER	
Scale: 1:2,250 @ A1				**BHA_4677_01**	
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE	
TB	IH	-	-	**21/09/2022**	

COORDINATE SYSTEM / DATUM: **British National Grid / Newlyn Datum (AOD)**

CLIENT: **Pegasus Planning Group**

CREDITS

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Barton Hyett Associates
Arboricultural Consultants

Tel: 01386 576161
Address: Office 5E, Deer Park Business Centre,
Eckington, Pershore, Worcestershire, WR10 3DN

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4677

DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

INDIVIDUAL TREES

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T1	Oak (English)	On	7.0	1	Yes	250	4.0-4.0-4.0-3.5	1.0	1.5	S	Y	None	Typical for age & species	Good	Fair	20+	C1	3.0	28	-
T2	Oak (English)	On	7.0	1	None	300	5.0-5.0-5.0-5.0	1.0	1.5	NE	Y	None	Typical for age & species	Good	Fair	20+	C1	3.6	41	-
T3	Oak (English)	On	18.0	1	Yes	900	9.0-10.0-10.0-9.0	4.0	3.5	E	M	None	Ivy to main stem has been severed; crown has slightly sparse appearance with foliage occurring in dense clusters	Good	Fair	40+	A1	10.8	366	-
T4	Maple (Field)	On	12.0	2	None	350	6.0-6.0-6.0-6.0	0.0	0.0	None	SM	None	Twin-stemmed tree	Good	Fair	20+	B1	4.2	55	-
T5	Service Tree (Wild)	On	10.0	1	Yes	550	3.0-6.0-6.0-6.0	0.5	2.5	NW	M	None	Historic storm damage with loss of main leader; visible woodpecker activity to upper stem; hung-up damaged limb @6m to north-west of crown	Good	Fair	20+	C1	6.6	137	-
T6	Hazel (Common)	On	4.5	20	None	360	2.5-2.5-1.0-2.5	0.0	0.0	None	SM	None	Typical for age & species; flailed to clear ditch	Good	Fair	10+	C1	4.3	59	-
T7	Ash (Common)	On	9.0	1	Yes	600	4.0-5.0-4.0-3.0	2.5	3.0	S	M	None	Heavily decayed main stem with recent loss of main leader; small crown made-up of re-gen. Recommend stem be reduced to habitat monolith @6m	Fair	Fair	10+	C1	7.2	163	-
T8	Hazel (Common)	On	4.5	20	None	360	2.5-2.5-1.0-2.5	0.0	0.0	None	SM	None	Typical for age & species; flailed to clear ditch	Good	Fair	10+	C1	4.3	59	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4677

DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T9	Oak (English)	On	16.0	1	Yes	1000	10.0-9.0-9.0-11.0	4.5	2.0	N	M	None	Recent storm damage to north-west of crown @5m; crown has slightly sparse appearance with foliage occurring in dense clusters; minor bark damage from ground-level to 4m at south of main stem with dark staining	Fair	Fair	40+	B1	12.0	452	-
T10	Oak (English)	On	17.0	1	Yes	700	6.0-7.0-7.0-7.0	3.0	3.5	NW	M	None	Recent minor bark damage to south of root-collar; good vigour	Good	Fair	40+	A1	8.4	222	-
T11	Ash (Common)	On	14.0	1	Yes	450	5.0-6.0-6.0-3.0	3.5	0.0	W	EM	None	Minor twiggy dieback throughout crown; chicken o the woods fungal fruiting body @4m to east of main stem; suppressed by adjacent oak; visible woodpecker activity to south of main stem @3 - 5m	Fair	Fair	10+	C1	5.4	92	-
T12	Oak (English)	On	18.0	1	None	930	11.0-10.0-10.0-8.5	3.0	4.0	NE	M	None	Historic storm damage @7m to north-west of crown; drainage ditch to north-east of stem	Good	Fair	40+	A1	11.2	391	-
T13	Oak (English)	On	11.0	1	Yes	550	7.0-7.0-6.0-7.0	3.0	4.0	N	EM	None	Significant loss of vigour with moderate deadwood throughout crown; visible woodpecker activity; loose bark around root-collar. Recommend stem be reduced to habitat monolith @6m	Poor	Fair	10+	C1	6.6	137	-
T14	Oak (English)	On	15.0	1	Yes	600	6.0-6.5-7.0-7.0	3.5	0.0	None	EM	None	Main stem splits @2m with both stems forming a cohesive crown; minor deadwood throughout crown	Good	Fair	20+	B1	7.2	163	-

BS5837:2012 TREE SURVEY SCHEDULE

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T15	Oak (English)	On	19.0	1	Yes	1000	11.0-7.5-10.0-9.0	3.0	3.0	SW	M	None	Minor twiggy dieback throughout crown; historic storm damage to upper stem @7m; drainage ditch to south-west of stem	Good	Fair	40+	A1	12.0	452	-
T16	Oak (English)	On	18.0	1	Yes	1000	9.0-8.5-10.0-8.0	3.0	3.0	S	M	None	Significant bark loss to north of stem from ground to 6m with significant occlusion; historic storm damage to south of stem @3.5m; partially undermined root-plate to south-east; moderate deadwood throughout crown; good vigour	Good	Fair	20+	B1	12.0	452	-
T17	Oak (English)	On	10.0	1	Yes	250	6.0-6.0-6.0-5.0	0.0	0.5	W	SM	None	Cut back to clear ditch	Good	Fair	20+	B1	3.0	28	-
T18	Oak (English)	On	10.0	1	Yes	200	5.0-5.0-5.0-4.0	0.5	1.0	S	SM	None	Cut back to clear ditch	Good	Fair	20+	B1	2.4	18	-
T19	Ash (Common)	On	12.0	1	Yes	600	7.0-8.0-8.0-6.0	2.5	2.5	S	M	None	Heavily swathed in ivy; minor twiggy dieback throughout crown; tree has appearance of a pollard	Fair	Fair	10+	C1	7.2	163	-
T20	Oak (English)	On	16.0	3	Yes	640	8.0-8.0-8.0-8.0	0.5	0.0	None	M	None	Triple-stemmed tree to corner of field boundary	Good	Fair	20+	B1	7.7	185	-
T21	Ash (Common)	On	12.0	1	Yes	650	4.0-4.0-9.0-7.0	3.0	0.0	NE	M	None	Extensive dieback throughout crown with loss of vigour; moderate deadwood throughout crown; visible woodpecker; limited crown formed by creating-gen. Recommend tree be reduced to a habitat monolith @6m	Fair	Fair	10+	C3	7.8	191	-

T1

BS5837:2012 TREE SURVEY SCHEDULE

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SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T22	Ash (Common)	On	13.0	1	Yes	700	5.0-6.0-7.0-6.0	1.5	2.5	S	M	None	Catastrophic failure of upper stem with debris in-situ on ground; extensive fungal fruiting bodies to west of stem from 1m - 4m; visible woodpecker activity; upper crown formed by re-gen. Recommend tree be reduced to a habitat stem @6m	Fair	Fair	10+	C3	8.4	222	-
T23	Ash (Common)	On	14.0	1	Yes	700	7.0-7.0-4.0-2.0	2.5	0.0	SW	M	None	Heavily swathed in ivy; significant dieback to main leader; limited crown formed by re-gen. Recommend tree be reduced to habitat monolith @6m	Fair	Fair	10+	C3	8.4	222	-
T24	Maple (Field)	On	14.0	3	Yes	550	7.0-7.0-7.0-6.0	0.0	0.0	None	EM	None	Typical for age & species	Good	Fair	20+	B1	6.6	137	-
T25	Ash (Common)	On	17.0	1	Yes	700	10.0-8.0-9.0-9.0	0.0	0.0	None	EM	None	Main stem & scaffold limbs heavily swathed in ivy; reduced vigour evident throughout crown	Fair	Fair	20+	B1	8.4	222	-
T26	Oak (English)	On	16.0	1	None	640	9.0-10.0-9.0-8.0	3.0	2.5	N	M	None	Typical for age & species	Good	Fair	20+	B1	7.7	185	-
T27	Ash (Common)	On	17.0	2	Yes	990	9.0-9.0-8.5-7.0	4.0	5.0	N	M	None	Twin-stemmed tree; reduction in vigour; heavily swathed in ivy	Fair	Fair	20+	B1	11.9	443	-
T28	Elm (English)	On	15.0	2	None	560	7.0-6.0-7.0-7.0	1.0	1.0	E	EM	None	Field elm. Wide spreading form; good vigour	Good	Fair	20+	B1	6.7	142	-
T29	Ash (Common)	On	15.0	3	None	640	8.0-7.0-8.0-7.0	0.0	0.0	None	EM	None	Typical for age & species	Fair	Fair	20+	B1	7.7	185	-
T30	Oak (English)	On	16.0	1	None	700	8.0-8.0-8.5-9.0	3.0	2.5	N	M	None	Typical for age & species	Fair	Fair	20+	B1	8.4	222	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4677

DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T31	Ash (Common)	On	16.0	1	None	700	8.0-8.0-8.0-8.0	3.0	0.0	N	M	None	Extensive basal cavity visible to north of stem; dieback in upper crown with main leader heavily decayed; main stem swathed in ivy; crown mostly formed by re-gen; sheltered location at field corner	Fair	Fair	20+	C3	8.4	222	-
T32	Ash (Common)	On	12.0	1	Yes	700	8.0-7.0-7.0-7.0	3.0	0.0	N	M	None	Recent storm damage to south of stem @5m; dieback in upper crown with main leader heavily decayed; visible woodpecker activity; shaggy bracket to west of stem @3m; crown mostly formed by re-gen. Recommend tree be reduced to a habitat monolith @6m	Fair	Fair	20+	C3	8.4	222	-
T33	Oak (English)	On	16.0	1	None	800	9.0-10.0-9.0-9.0	3.5	7.0	N	M	None	Recent storm damage to north of crown @7m; good vigour	Good	Fair	40+	A1	9.6	290	-
T34	Ash (Common)	On	18.0	1	Yes	800	9.0-10.0-10.0-10.0	3.0	3.5	N	M	None	Visible woodpecker activity; shaggy bracket located within union adjacent to bark fissure; wide spreading form leaving a non-cohesive crown	Fair	Fair	20+	B1	9.6	290	-
T35	Ash (Common)	On	18.0	1	Yes	750	9.0-10.0-9.0-9.0	3.0	0.0	NW	M	None	Minor twiggy dieback throughout crown; notable loss of vigour; visible woodpecker activity to decayed limbs in upper crown	Fair	Fair	20+	C1	9.0	254	-

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T36	Ash (Common)	On	18.0	1	Yes	800	7.0-10.0-8.0-9.0	3.0	0.0	None	M	None	Extensive dieback throughout crown; notable loss of vigour with moderate deadwood; visible woodpecker activity to historic storm damage site to north of scaffold limb @10m. Recommend tree be reduced to a habitat monolith @6m	Fair	Fair	10+	C3	9.6	290	-
T37	Ash (Common)	On	17.0	1	Yes	750	8.0-9.0-5.0-7.0	3.5	5.0	N	M	None	Minor twiggy dieback throughout crown; notable loss of vigour; asymmetric crown shape due to lateral suppression	Fair	Fair	20+	C1	9.0	254	-
T38	Oak (English)	On	8.0	1	Yes	160	3.0-4.0-5.0-4.0	2.5	1.0	S	Y	None	Main stem splits @1.5m into 3x scaffold limbs	Good	Fair	10+	C1	2.0	12	-
T39	Ash (Common)	On	16.0	1	Yes	700	8.0-9.0-8.5-7.0	4.5	0.0	N	M	None	Established to east of significant ditch; root-plate to west is exposed; main stem appears to be re-gen from bole; stem splits @3m into several scaffold limbs giving appearance of old pollard; ditch; ivy & vegetation prevent full inspection	Fair	Fair	20+	B1	8.4	222	-
T40	Oak (English)	On	18.0	1	Yes	1000	10.0-12.0-11.0-10.0	3.5	3.5	S	M	None	Established to east of ditch; main stem & scaffold limbs heavily swathed in ivy; good vigour throughout crown	Good	Good	40+	A1	12.0	452	-

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T41	Ash (Common)	On	16.0	1	Yes	750	9.0-7.0-8.0-8.0	3.5	3.5	N	M	None	Extensive dieback throughout crown; foliage occurs in small clusters leaving a sparse crown density. Recommend tree be reduced to a habitat monolith @6m	Fair	Fair	10+	C3	9.0	254	-
T42	Ash (Common)	On	15.0	1	Yes	900	7.0-9.0-8.0-9.0	4.0	0.0	None	M	None	Notable tree; has appearance of old pollard; some evidence of hollowing around main union with woodpecker activity noted; shaggy bracket noted to north side of union	Fair	Fair	20+	B1	10.8	366	-
T43	Ash (Common)	On	17.0	1	None	490	8.0-7.0-7.0-8.0	4.0	8.0	N	M	None	Minor twiggy dieback with slightly sparse crown	Fair	Fair	20+	B1	5.9	109	-
T44	Oak (English)	On	15.0	1	None	850	8.0-5.0-11.0-9.0	3.0	4.5	S	M	None	Good vigour; drainage pipe & gulley within north-west section of root-plate approx. 1.5m from stem	Good	Fair	40+	A1	10.2	327	-
T45	Maple (Field)	On	15.0	1	None	280	4.0-4.0-2.0-3.0	4.5	0.0	None	EM	None	Damage to lower stem; swathed in ivy	Fair	Fair	10+	C1	3.3	35	-
T46	Oak (English)	On	17.0	1	Yes	850	10.0-9.0-9.0-9.0	3.0	3.0	W	M	None	Established to south of ditch; small field maples growing around stem; good vigour throughout crown	Good	Good	40+	A1	10.2	327	-
T47	Oak (English)	On	18.0	1	Yes	1000	9.0-8.0-9.0-9.0	3.5	5.0	N	M	None	Established to north of ditch; main stem splits @1.5m into 2 stems which form a cohesive crown; dia. estimated @1m	Good	Fair	40+	A1	12.0	452	-

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T48	Maple (Field)	On	14.0	1	None	260	5.0-4.0-2.0-3.0	4.0	0.0	None	EM	None	Damage to lower stem; deformed stem which gives impression of leaning tree (northwards)	Fair	Fair	10+	C1	3.1	31	-
T49	Maple (Field)	On	15.0	1	None	260	6.0-4.0-2.0-3.0	4.5	0.0	None	EM	None	Stem swathed in ivy	Fair	Fair	10+	C1	3.1	31	-
T50	Oak (English)	On	17.0	1	Yes	1000	10.0-9.0-9.0-10.0	4.5	0.0	None	M	None	Old pollard established to north of ditch; lower stem swathed in ivy	Fair	Good	40+	A1	12.0	452	-
T51	Oak (English)	On	16.0	1	Yes	800	9.0-10.0-9.0-10.0	3.0	2.5	NW	M	None	Established to west of ditch; main stem & scaffold limbs heavily swathed in ivy; small field maple & hawthorn growing around stem; minor deadwood throughout crown	Fair	Good	40+	A1	9.6	290	-
T52	Oak (English)	On	16.0	1	Yes	800	8.0-9.0-9.0-8.5	3.0	3.0	S	M	None	Established to north of ditch; main stem & scaffold limbs heavily swathed in ivy; small field maple growing around stem; good vigour throughout crown	Good	Good	40+	A1	9.6	290	-
T53	Apple (Crab)	On	16.0	1	Yes	600	6.0-8.0-7.0-6.0	4.5	2.5	N	M	None	Heavily swathed in ivy; estimated stem dia. indicates significant age; minor deadwood within upper crown	Fair	Good	40+	A1	7.2	163	-
T54	Maple (Field)	On	10.0	6	Yes	610	5.0-4.0-5.0-4.0	0.0	0.0	None	EM	None	Typical for age & species; side failed to a height of 4m for clearance	Good	Fair	20+	B1	7.3	168	-
T55	Oak (English)	On	17.0	1	Yes	1000	10.0-10.0-10.0-10.0	4.0	0.0	None	M	None	Old pollard established to north of ditch; lower stem swathed in ivy	Fair	Good	40+	A1	12.0	452	-
T56	Oak (English)	On	9.0	1	Yes	780	5.0-7.0-7.0-6.0	4.5	2.0	E	M	None	Hedgerow oak; reduced vitality; good deadwood habitat; located within the ditch	Fair	Fair	20+	B3	9.4	275	-

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T57	Oak (English)	On	8.0	1	Yes	680	6.0-7.0-6.0-6.0	4.0	3.0	W	M	None	Hedgerow oak of good form and condition; located within the ditch	Good	Good	40+	B1	8.2	209	-
T58	Maple (Field)	On	6.0	1	Yes	300	4.0-5.0-5.0-5.0	0.5	0.5	None	EM	None	Field maple located within the hedgerow and establishing above hedge height	Good	Fair	40+	B1	3.6	41	-
T59	Oak (English)	On	14.0	1	Yes	700	6.0-7.0-7.0-6.0	4.0	3.0	S	M	None	Hedgerow oak of good form and condition; ivy throughout crown	Good	Good	40+	B1	8.4	222	-
T60	Oak (English)	On	15.0	1	Yes	850	7.0-7.0-8.0-8.0	4.5	3.0	E	M	None	Established to north of ditch; main stem & scaffold limbs heavily swathed in ivy (severed in past)	Fair	Good	20+	B1	10.2	327	-
T61	Oak (English)	On	15.0	1	Yes	700	6.0-7.0-8.0-7.0	4.0	3.0	W	EM	None	Established to north of ditch; main stem heavily swathed in ivy; small hazel growing around stem; sides failed to a height of 4m for clearance	Fair	Good	20+	B1	8.4	222	-
T62	Oak (English)	On	13.0	1	Yes	600	6.0-6.0-6.0-6.0	4.0	3.5	S	EM	None	Established to north of ditch; historic storm damage has resulted in loss of upper part of leader	Fair	Fair	20+	B1	7.2	163	-
T63	Oak (English)	On	15.0	1	Yes	600	7.0-7.0-7.0-8.0	4.5	3.0	N	EM	None	Established to south of ditch; typical for age & species	Good	Fair	20+	B1	7.2	163	-
T64	Maple (Field)	On	13.0	3	Yes	570	5.0-6.0-7.0-5.0	0.0	0.0	None	EM	None	Typical for age & species; side failed to a height of 4m for clearance	Good	Fair	20+	B1	6.8	147	-
T65	Maple (Field)	On	11.0	2	Yes	470	6.0-5.0-6.0-5.0	0.0	0.0	None	EM	None	Typical for age & species; side failed to a height of 4m for clearance	Good	Fair	20+	B1	5.6	100	-

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T66	Oak (English)	On	15.0	1	Yes	700	7.0-6.0-7.0-8.0	4.0	4.5	N	EM	None	Established to south of ditch; main stem swathed in ivy	Fair	Good	20+	B1	8.4	222	-
T67	Elm (English)	On	6.0	3	Yes	350	3.0-4.5-4.0-4.0	1.0	0.5	E	SM	None	Elm showing good resilience to DED. Located south of the ditch	Good	Fair	20+	B1	4.1	52	-
T68	Ash (Common)	On	12.0	3	Yes	340	4.0-5.0-4.0-3.0	4.0	2.0	S	M	None	Lapsed hedgerow coppice tree. Slightly reduced vitality but hollowing coppice stump is good future deadwood habitat	Fair	Fair	20+	C3	4.1	52	-
T69	Ash (Common)	On	12.0	3	Yes	370	5.0-5.0-5.0-5.0	4.0	3.0	S	SM	None	Establishing ash; multi stemmed from ground level; field heavily ploughed to the north	Good	Good	20+	C1	4.4	62	-
T70	Oak (English)	On	14.0	1	Yes	580	7.0-7.5-6.0-7.0	4.0	4.0	None	EM	None	Hedgerow oak; ivy throughout crown. Located south of the ditch	Good	Fair	40+	B1	7.0	152	-
T71	Maple (Field)	On	12.0	6	Yes	550	6.0-5.0-5.0-6.0	3.0	2.0	None	EM	None	Maple tree located within the hedgerow and growing above hedge height	Good	Fair	40+	B1	6.6	137	-
T72	Willow (Grey)	On	18.0	1	Yes	1100	7.0-10.5-9.0-9.0	4.0	4.0	None	M	None	Mature willow; ivy obscuring main stem. Tree of same age and species to the north has recently failed. This tree would benefit from pollarding. Large over-extended limb to the east is vulnerable to storm damage	Good	Fair	40+	B3	13.2	547	-
T73	Willow (Grey)	On	18.0	3	Yes	820	9.5-9.0-7.0-7.0	4.0	3.5	S	M	None	Multi stemmed from ground level; located west of the ditch	Good	Fair	40+	B1	9.8	304	-

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T74	Oak (English)	On	12.0	1	Yes	600	6.0-7.5-7.0-7.0	3.0	3.5	S	M	None	Hedgerow oak; located south of the ditch; ivy throughout crown	Good	Good	40+	B1	7.2	163	-
T75	Oak (English)	On	12.0	1	Yes	750	6.0-7.5-7.0-7.0	3.0	3.5	S	M	None	Hedgerow oak; located south of the ditch; ivy throughout crown	Good	Good	40+	B1	9.0	254	-
T76	Oak (English)	On	12.0	1	Yes	500	7.0-7.0-7.0-7.0	3.5	1.0	SE	EM	None	Re-gen from old bole; good reaction growth around lower stem	Good	Fair	40+	B1	6.0	113	-
T77	Willow	On	16.0	1	Yes	600	6.0-8.5-7.0-7.0	3.0	3.5	S	EM	None	Typical for age & species	Good	Fair	20+	B1	7.2	163	-
T78	Oak (English)	On	18.0	1	Yes	1100	10.0-11.0-10.0-9.0	3.5	3.0	N	M	None	Established to south of ditch; moderate deadwood in upper crown with visible woodpecker activity	Good	Fair	40+	A1	13.2	547	-
T79	Maple (Field)	On	12.0	1	Yes	300	2.5-5.0-5.0-2.0	4.5	2.5	SW	EM	None	Suppressed by adjacent oak	Good	Fair	20+	B1	3.6	41	-
T80	Ash (Common)	On	14.0	1	Yes	700	3.0-8.0-5.0-4.0	0.5	0.5	S	M	None	Heavily decayed bole with crown formed by re-gen; sheltered location	Fair	Fair	10+	C3	8.4	222	-
T81	Ash	On	12.0	3	Yes	410	6.0-6.0-5.0-5.0	4.0	0.0	None	EM	None	Typical for age & species	Good	Fair	20+	B1	4.9	76	-
T82	Ash (Common)	On	15.0	6	Yes	730	6.0-6.0-6.0-6.0	4.0	0.0	None	EM	None	Typical for age & species; minor twiggy dieback to north of crown	Fair	Fair	20+	B1	8.8	241	-
T83	Ash (Common)	On	16.0	1	Yes	700	8.5-7.0-10.0-9.0	4.0	5.0	N	M	None	Moderate deadwood throughout north & eastern parts of upper crown; old pruning wounds to scaffold limbs with accosted decay / slow occlusion; adjacent to field entrance with visible root damage to north of root-plate	Fair	Fair	20+	B1	8.4	222	-
T84	Willow	On	8.0	4	Yes	650	4.0-6.0-5.0-6.0	0.0	0.0	None	EM	None	Typical for age & species	Good	Fair	20+	B1	7.8	191	-

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T85	Oak (English)	On	17.0	1	Yes	800	10.0-9.5-11.0-11.0	5.0	4.0	None	M	None	Established to east of ditch; hedgerow oak of excellent form and condition	Good	Good	40+	A1	9.6	290	-
T86	Oak (English)	On	15.0	1	None	630	8.0-5.0-8.5-8.0	3.5	4.0	N	M	None	Established to east of ditch; laterally suppressed by adjacent oak	Good	Fair	40+	A1	7.6	180	-
T87	Oak (English)	On	16.0	1	None	740	8.0-9.0-9.0-7.0	3.0	3.5	NW	M	None	Established to west of ditch; minor bark damage to west of stem @0.25m	Good	Fair	40+	A1	8.9	248	-
T88	Oak (English)	On	15.0	1	Yes	850	8.0-8.0-8.0-8.0	3.0	2.0	W	M	None	Non-progressive lean to east; bark loss around main union & scaffold limbs above with exposed heartwood	Good	Fair	40+	A1	10.2	327	-
T89	Oak (English)	On	17.0	1	Yes	750	8.0-7.0-8.0-8.5	3.0	2.5	E	M	None	Established to north of ditch; good stem taper; good vigour throughout crowns	Good	Good	40+	A1	9.0	254	-
T90	Oak (English)	On	15.0	1	None	700	8.0-8.0-9.0-8.0	3.5	2.5	W	M	None	Established to west of ditch; historic storm damage to east of crown @8m; main stem splits @2.5m; water-shoots to scaffold limbs	Good	Fair	40+	A1	8.4	222	-
T91	Oak (English)	On	17.0	1	Yes	800	9.0-9.0-10.0-8.0	4.0	4.0	N	M	None	Established to east of ditch; open basal cavity to west containing withered fungal fruiting bodies; moderate deadwood with thinning crown	Fair	Fair	20+	B1	9.6	290	-
T92	Oak (English)	Off	16.0	1	Yes	700	8.0-9.0-9.0-9.0	3.0	3.0	S	EM	None	Low spreading form	Good	Fair	20+	B1	8.4	222	-

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Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T93	Oak (English)	On	16.0	1	Yes	800	9.0-8.0-7.0-8.0	3.0	2.5	W	M	None	Established to south of ditch; good stem taper; wide spreading form; good vigour throughout crown; tourniquet (ratchet strap) in-situ to base of scaffold limb to north of crown @4m	Good	Fair	40+	A1	9.6	290	-
T94	Oak (English)	On	16.0	1	Yes	750	8.0-9.0-9.0-8.0	3.0	3.0	E	M	None	Typical for age & species; crown overhanging & in contact with adjacent off-site outbuildings	Good	Good	40+	B1	9.0	254	-
T95	Oak (English)	On	15.0	2	Yes	570	7.0-7.0-7.0-7.0	3.0	0.0	None	EM	None	Established to east of braid broad ditch; typical for age & species	Good	Fair	20+	B1	6.8	147	-
T96	Oak (English)	On	14.0	1	None	1170	9.0-9.0-8.0-9.0	3.0	0.0	None	M	Veteran	Old pollard established to west of broad ditch; extensive cavitation below main union; crack to south of main stem from G/L to main union; fruiting bodies to south; non-progressive lean to east; crown made-up of early-mature re-gen; dia. recorded @1m	Good	Fair	40+	A3	14.0	619	17.55
T97	Maple (Field)	On	7.5	5	None	220	5.0-5.0-4.5-5.0	0.0	0.0	None	SM	None	Multi-stemmed hedge tree; growing against telecom pole	Good	Fair	10+	C1	2.6	22	-
T98	Oak (English)	Off	16.0	1	Yes	700	8.0-9.0-8.0-8.0	2.5	5.0	N	EM	None	Typical for age & species	Good	Fair	20+	B1	8.4	222	-
T99	Oak (English)	On	15.0	1	Yes	600	6.5-7.5-8.0-8.0	3.5	3.0	E	M	None	Minor deadwood throughout crown; dense water-shoots along scaffold limbs; crown lift above road	Good	Fair	20+	B1	7.2	163	-
T100	Oak (English)	On	10.0	1	None	310	6.0-7.0-6.5-6.0	3.5	2.0	W	EM	None	Crown lift to clear road	Good	Fair	20+	B1	3.7	43	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4677

DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)
T101	Oak (English)	On	16.0	1	Yes	1000	10.0-10.0-10.0-10.0	4.5	3.5	S	M	None	Main stem swathed in ivy; drainage ditch to south-west of stem with exposed section of root-plate; crown lift to clear road	Good	Fair	40+	A1	12.0	452	-
T102	Cherry (Wild)	On	6.0	2	None	160	2.0-2.0-1.5-2.0	2.5	2.5	W	Y	None	Typical for age & species	Good	Fair	10+	C1	2.0	12	-
T103	Cherry (Wild)	On	6.0	1	None	160	1.5-2.0-2.0-2.0	1.0	1.0	N	Y	None	Typical for age & species	Good	Fair	10+	C1	2.0	12	-
T104	Oak (English)	On	8.0	1	None	310	6.0-5.0-5.0-6.0	3.5	2.5	S	SM	None	Main stem splits @1.5m forming an included union; minor damage to lateral limbs; unbalanced crown	Fair	Fair	20+	C1	3.7	43	-
T105	Oak (English)	On	7.0	1	None	120	1.0-1.5-1.5-1.5	1.0	1.0	E	Y	None	Typical for age & species	Good	Fair	10+	C1	1.5	7	-
T106	Oak (English)	On	10.0	1	None	400	6.5-6.0-6.0-7.0	4.5	2.5	S	EM	None	Main stem splits @2m; crown lift to clear road	Good	Fair	20+	B1	4.8	72	-
T107	Oak (English)	On	10.0	1	None	340	7.0-7.0-6.0-6.0	4.5	2.5	W	EM	None	Crown lift to clear road	Good	Fair	20+	B1	4.1	52	-
T108	Oak (English)	On	17.0	1	None	940	10.0-10.0-10.0-9.0	4.5	3.0	W	M	None	Minor twiggy dieback throughout crown; drainage ditch to south-west of stem with exposed section of root-plate; crown lift to clear road	Good	Fair	40+	A1	11.3	400	-
T109	Oak (English)	On	10.0	1	None	410	7.0-7.0-7.0-7.0	4.5	2.5	S	EM	None	Main stem splits @2m into several scaffold limbs; crown lift to clear road	Good	Fair	20+	B1	4.9	76	-

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DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G1	Ash; English oak; crack willow; field maple; elm; hawthorn; blackthorn	On	3 - 17	30	Yes	900.0	7.5	0.5	M	None	Group established around dry marl-pit; predominantly oak; ash & willow with other species occurring as understory	Good	Fair	40+	B2	10.8
G2	White willow; elm	On	10 - 20	6	Yes	850.0	6.0	0.5	M	None	Sample area where plot abuts survey area; group established to rear of farm yard; 2x dead elm stems within plot	Good	Fair	20+	B2	10.2
G3	White willow	On	14	2	None	180.0	5.0	0.0	EM	None	Multi-stemmed trees to east of ditch embankment	Good	Fair	20+	B2	2.2
G4	English oak	On	20	2	Yes	1000.0	9.0	3.0	M	None	2x mature oak forming cohesive crown; good vigour; good stem taper; burr to north-west of root-collar on northern most stem	Good	Good	40+	A2	12.0
G5	English oak; ash; field maple; elm	On	16	5	Yes	850.0	8.0	3.0	M	None	2x mature oak; 1x early-mature ash; 1x elm & 1x maple forming cohesive crown	Good	Fair	40+	B2	10.2
G6	Field maple; crack willow	Off	12 - 14	2	Yes	400.0	6.0	0.0	EM	None	Off-site multi-stemmed trees	Good	Fair	20+	B2	4.8
G7	Field maple	On	12	7	Yes	350.0	5.0	0.0	EM	None	Multi-stemmed trees within hedge	Good	Fair	20+	B2	4.2
G8	Lime	On	16	2	Yes	500.0	7.0	3.0	EM	None	2x multi-stemmed lime forming cohesive crown; good vigour; minor ivy cover to stems	Good	Fair	40+	B2	6.0
G9	Field maple; ash; crack willow; hawthorn	On	14	10	Yes	400.0	5.0	0.0	EM	None	Multi-stemmed trees forming part of boundary hedge	Good	Fair	20+	B2	4.8
G10	English oak	On	17	2	Yes	800.0	8.0	3.0	M	None	2x mature trees forming a reasonably cohesive crown; 1x stem to east of plot has non-progressive lean to south; 1x stem to west heavily swathed in ivy	Good	Fair	40+	B2	9.6
G11	Goat willow; hawthorn	On	10	6	Yes	350.0	5.0	0.25	M	None	Multi-stemmed willow; typical for age & species; small thorn stems to west of plot	Good	Fair	20+	B2	4.2
G12	Oak; elm; field maple; hawthorn; hazel; blackthorn; spindle; dogwood	Off	16	150	Yes	700.0	8.0	1.0	M	None	Outgrown hedge with establishing oak & maple - other species occur as understory; ditch to north of group	Good	Fair	40+	B2	8.4
G13	White willow; goat willow; field maple; oak	On	5 - 15	6	Yes	300.0	5.0	0.0	SM	None	Trees established around dry marl-pit; bramble understory	Fair	Fair	20+	B2	3.6
G14	Oak; elm; field maple; hawthorn; hazel; blackthorn; spindle; dogwood	Off	16	150	Yes	700.0	8.0	1.0	M	None	Outgrown hedge with establishing oak & maple - other species occur as understory; ditch to north of group	Good	Fair	40+	B2	8.4

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DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

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SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G15	Field maple ; common ash; English elm	On	8-10	5	Yes	300.0	5.0	3.0	EM	None	Field maple; elm and ash stems; all in a state of decline	Poor	Poor	<10	C2	3.6
G16	Field maple	On	8-10	3	Yes	300.0	5.0	3.0	EM	None	Field maple stems; all in a state of decline	Poor	Poor	<10	C2	3.6
G17	English oak	Off	17-18	4	Yes	700.0	9.0	4.0	M	None	Trees located on the western bank of the ditch; likely offsite. Early-mature to Mature oak forming a cohesive canopy	Good	Good	40+	B2	8.4
G18	Common alder; English oak; hawthorn	Off	8-18	50	Yes	600.0	7.0	1.0	EM	None	Trees located on the western bank of the ditch; likely offsite. Predominantly alder with 2x Early-mature to Mature oak. Alder foliage and occasional thorn form a degree of screening for the neighbouring land	Good	Fair	40+	B2	7.2
G19	Common ash; grey willow; alder; blackthorn; elder	On	5-18	150	Yes	700.0	7.0	1.0	EM	None	Linear tree feature forming the western field boundary. Mature ash (many with storm damage); Early mature grey willow and alder. Understorey of thorn and elder provide some screening for neighbouring land	Good	Fair	40+	B2	8.4
G20	Grey willow; goat willow; common ash	Off	8-15	50	Yes	300.0	5.0	1.0	SM	None	Willow and ash copse located within the neighbouring field and bounding the site	Good	Fair	40+	C2	3.6
G21	Oak; ash; field maple; hawthorn; blackthorn	On	5 - 16	10	None	450.0	7.0	0.0	EM	None	Remnants of hedge to field boundary with established oak; ash & maple	Good	Fair	40+	B2	5.4
G22	Oak	Off	12	2	None	460.0	7.0	3.0	EM	None	Off-site on disused railway embankment; 2x trees with cohesive crown	Good	Fair	40+	B2	5.5
G23	White willow	On	14	2	None	350.0	5.0	0.0	EM	None	Multi-stemmed trees established within ditch; stems to north topped to clear overhead power lines	Good	Fair	20+	B2	4.2
G24	Field elm	On	14	8	None	400.0	4.5	1.0	EM	None	Multi-stemmed trees establishing within hedge-line; twiggy dieback to upper crown of southern-most stem	Good	Fair	20+	B2	4.8
G25	Goat willow; ash; elm; hawthorn; dogwood	Off	2 - 10	10	None	90.0	1.5	0.0	Y	None	Off-site group of young boundary trees	Fair	Fair	10+	C2	1.1
G26	English oak	On	17	3	None	620.0	8.0	3.0	M	None	3x mature oak forming cohesive crown in site boundary; good vigour; good stem taper; partially exposed root-collar to central tree with good reaction growth to buttresses	Good	Good	40+	A2	7.4
G27	English oak	On	8	4	None	330.0	5.0	3.0	EM	None	Stand of 4x oak; same age within hedgerow	Good	Fair	20+	B2	3.9
G28	English oak	On	9	5	None	360.0	5.0	3.0	EM	None	Stand of 5x oak; same age within hedgerow	Good	Fair	20+	B2	4.3

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WOODLANDS

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
W1	Scot's pine; ash; sweet chestnut; field maple; sycamore; English oak; beech; crack willow; wild cherry; Douglas fir; cypress; hawthorn; Swedish whitebeam; elder; laurel; box	On	2 - 15	100	None	870.0	8.0	1.5	EM	None	Plantation with wide variation of species; predominantly early-mature with limited young understory; flooded marl-pit located to north-east; significant ditch around perimeter of plot	Good	Fair	40+	A2	10.4

HEDGEROWS

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Field maple; hazel; blackthorn	On	10.0	6	150	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	1.8
H2	Hawthorn; blackthorn	On	3.5	4	90	0.0	EM	Outgrown section of hedge	Good	Fair	40+	B2	1.1
H3	Elm; elder	On	12.0	4.5	370	0.0	EM	Multi-stemmed trees within root-plate of oak; cut back to clear ditch	Good	Fair	20+	B2	4.4
H4	Hawthorn; blackthorn; hazel	On	3.5	2.5	90	0.0	EM	Outgrown hedge; predominantly thorn	Good	Fair	20+	B2	1.1
H5	Field maple; elm	On	12.0	4.5	250	0.0	EM	1x multi-stemmed maple & 1x elm; failed to clear ditch	Good	Fair	20+	B2	3.0
H6	Field maple	On	6.0	4.5	100	0.0	EM	Multi-stemmed trees within hedge	Good	Fair	20+	B2	1.3
H7	Hawthorn; field maple; elm	On	2.0	1	80	0.0	EM	Maintained by flail; sporadic small gaps	Good	Fair	20+	B2	1.0
H8	Hawthorn; field maple; oak	On	2.0	1	80	0.0	EM	Maintained by flail; hedge continues south-east along boundary - surveyed section stops at red-line boundary of survey site	Good	Fair	40+	B2	1.0
H9	Elm; oak; dogwood; elder	On	2.0	1.5	90	0.0	EM	Maintained by flail; sporadic gaps & partially choked by brambles; 2x oak stands to north of feature @4m height	Good	Fair	20+	C2	1.1
H10	Hawthorn; field maple	On	2.0	1	80	0.0	EM	Maintained by flail	Good	Fair	40+	B2	1.0
H11	Field maple; hazel; elm; bullace	On	10.0	6	200	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	2.4

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SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H12	Blackthorn; field maple; hazel; dogwood	On	2.0	1	80	0.0	EM	Maintained by flail	Good	Fair	40+	B2	1.0
H13	Field maple; ash; hazel; crab apple; elm	On	10.0	6	200	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	2.4
H14	Hawthorn; blackthorn; field maple; ash; hazel; lime; spindle	On	2.0	1	80	0.0	EM	Maintained by flail; small gap (approx. 1m) to north of feature	Good	Fair	40+	B2	1.0
H15	Hawthorn; blackthorn; field maple; ash; hazel; spindle	On	2.0	1	80	0.0	EM	Maintained by flail	Good	Fair	40+	B2	1.0
H16	Field maple; hazel	On	2.0	1	80	0.0	EM	Maintained by flail	Good	Fair	40+	B2	1.0
H17	Hawthorn; blackthorn; hazel; field maple; lime; crab apple; dogwood; elder	On	10.0	6	190	0.0	EM	Sides maintained by flail to a height of 4m for access; occasional dead blackthorn stem	Good	Fair	40+	B2	2.3
H18	Hawthorn; blackthorn	On	3.0	1.5	90	0.0	EM	Maintained by flail	Good	Fair	20+	B2	1.1
H19	Hawthorn; blackthorn; ash; crab apple; field maple; hazel	On	10.0	6	250	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	3.0
H20	Hawthorn; blackthorn; hazel; crab apple; goat willow; field maple; elm	On	10.0	6	250	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	3.0
H21	Hawthorn; dogwood	On	3.0	1.5	80	0.0	EM	Maintained by flail; predominantly thorn	Good	Fair	40+	B2	1.0
H22	Hawthorn; blackthorn; elm; field maple; goat willow; dogwood; hazel	On	10.0	6	250	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	3.0
H23	Hawthorn; blackthorn; field maple; oak; dogwood; hazel	On	10.0	6	200	0.0	EM	Sides maintained by flail to a height of 4m for access; sporadic small gaps	Good	Fair	40+	B2	2.4
H24	Field maple	On	2.0	1	80	0.0	EM	Maintained by flail	Good	Fair	40+	B2	1.0
H25	Field maple; hazel; ash; lime; hawthorn; blackthorn	On	10.0	6	200	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	2.4
H26	Elm; spindle	On	4.5	3	80	0.0	EM	Maintained by flail; remnant section of hedge	Good	Fair	20+	C2	1.0
H27	Field maple; hazel; blackthorn; dogrose; dogwood	On	3.0	2	80	0.0	EM	Maintained by flail; predominantly maple	Good	Good	40+	B2	1.0
H28	Field maple; hazel; oak; dogwood; dogrose	On	3.0	2	80	0.0	EM	Maintained by flail; predominantly maple	Good	Good	40+	B2	1.0

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Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H29	Hawthorn; blackthorn; field maple; hazel; dogwood; dogrose	On	3.0	2	80	0.0	EM	Maintained by flail	Good	Good	40+	B2	1.0
H30	Field maple; hazel; elm; spindle	On	10.0	5.5	190	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line	Good	Good	40+	B2	2.3
H31	Field maple; hazel; hawthorn; blackthorn; elm; spindle; dogrose	On	10.0	5.5	300	0.0	M	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line; sporadic small gaps being colonised by dogrose	Good	Good	40+	B2	3.6
H32	Blackthorn; field maple ; hazel; English elm	On	3.0	3	80	0.1	SM	Some field maple establishing above hedge height (up to 6m-8m). Some dead elm stems. Gaps along the length of the hedgerow. Hedgerow generally of poor quality	Fair	Fair	10+	C2	1.0
H33	Hazel	On	3.0	3	80	0.1	SM	Short section of hazel coppice/remnant hedgerow	Fair	Fair	20+	C2	1.0
H34	Hazel; field maple; hawthorn	On	3.0	2	80	0.1	SM	Short section of remnant hedgerow	Good	Fair	20+	C2	1.0
H35	Field maple; blackthorn; crab apple; hawthorn; dogrose; dogwood; spindle	On	12.0	6	300	0.0	M	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line	Good	Good	40+	B2	3.6
H36	Field maple; blackthorn; elm; crab apple; hawthorn; dogrose; dogwood; spindle	On	12.0	6	180	0.0	M	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line; sporadic gaps occur due to dead elm stems	Good	Good	40+	C2	2.2
H37	Hazel; willow; alder	On	4.0	4	100	0.1	SM	Mixed broadleaf trees establishing on the banks of the ditch and forming an informal hedgerow/ understorey to the mature oak	Good	Fair	20+	C2	1.3
H38	Hawthorn; blackthorn; field maple; dogwood	On	3.5	2	80	0.0	SM	Maintained by flail	Good	Good	40+	B2	1.0
H39	Hawthorn; blackthorn; field maple; crab apple; elm; hazel; goat willow; dogwood; spindle	On	12.0	5.5	190	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple & willow along hedge-line	Good	Good	40+	B2	2.3
H40	Hawthorn; spindle; oak	On	4.0	3	80	0.0	EM	Maintained by flail; isolated / remnant section of hedge	Good	Fair	20+	B2	1.0
H41	Hawthorn; blackthorn; field maple; crab apple; elm; hazel; goat willow; dogwood; spindle	On	12.0	5	160	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line; small sporadic gaps to west of feature	Good	Good	40+	B2	2.0
H42	Field maple	On	6.0	4.5	150	0.0	EM	Multi-stemmed trees within hedge	Good	Fair	20+	B2	1.8
H43	Hawthorn	On	3.5	2	80	0.0	SM	Maintained by flail	Good	Good	40+	B2	1.0

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Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H44	Hawthorn; blackthorn; hazel; wild service; field maple; elm; spindle; dogwood	On	12.0	5.5	200	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line with 1x multi-stemmed wild service at the approximate centre of the feature	Good	Good	40+	B2	2.4
H45	Hawthorn; blackthorn; field maple; elm	On	8.0	4.5	160	0.0	EM	Sides maintained by flail; establishing maple along hedge-line	Good	Good	40+	B2	2.0
H46	Hawthorn; blackthorn; elder	On	2.5	1.5	80	0.0	SM	Sides maintained by flail	Good	Good	20+	B2	1.0
H47	Hawthorn; blackthorn; crab apple	On	3.0	1.5	90	0.0	SM	Sides maintained by flail	Good	Good	20+	B2	1.1
H48	Hawthorn; blackthorn; field maple; hazel; dogwood	On	7.5	4	130	0.0	EM	Sides maintained by flail; establishing maple along hedge-line	Good	Good	40+	B2	1.6
H49	Blackthorn	On	1.5	1	60	0.0	SM	Maintained by flail	Good	Good	40+	B2	0.8
H50	Hawthorn; blackthorn; field maple; elder; dogwood	Off	8.0	5	150	0.0	EM	Off-site on disused railway embankment; sides maintained by flail to a height of 4m for clearance	Good	Fair	40+	B2	1.8
H51	Hawthorn; blackthorn; hazel; oak; field maple; elm; dogwood	On	12.0	5.5	170	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line	Good	Good	40+	B2	2.0
H52	Blackthorn; field maple ; hazel; English elm	On	3.0	3	80	0.1	SM	Predominantly blackthorn with some field maple and ash coppice establishing above hedge height (up to 6m-8m) Gaps along the length of the hedgerow	Fair	Fair	20+	C2	1.0
H53	Hawthorn; blackthorn; field maple; oak; ash; elder; dogwood	Off	14.0	7	350	0.3	EM	Off-site on disused railway embankment; outgrown hedge with developing oak; ash & maple; field sides flailed to a height of 4m for clearance	Good	Fair	40+	B2	4.2
H54	Blackthorn; field maple ; hazel; English elm	On	3.0	2	80	0.1	SM	Predominantly blackthorn with some field maple and ash coppice establishing above hedge height (up to 6m-8m) Gaps along the length of the hedgerow	Fair	Fair	20+	C2	1.0
H55	Blackthorn	On	3.0	1.5	80	0.0	SM	Maintained by flail	Good	Good	40+	B2	1.0
H56	Field maple; elm; crab apple; blackthorn; elm; ash; hazel; goat willow	On	11.0	5.5	140	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple & ash along hedge-line	Good	Good	40+	B2	1.7
H57	Blackthorn; field maple	On	3.0	2	80	0.1	SM	Predominantly blackthorn with some field maple establishing above hedge height (up to 6m). Gaps along the length of the hedgerow	Fair	Fair	20+	C2	1.0
H58	Blackthorn; field maple	On	3.0	2	80	0.1	SM	Predominantly blackthorn with some field maple establishing above hedge height (up to 6m). Gaps along the length of the hedgerow	Fair	Fair	20+	C2	1.0

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4677

DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H59	Hawthorn; blackthorn; crab apple; elder	Off	8.0	5	140	0.0	EM	Off-site on disused railway embankment; sides maintained by flail to a height of 4m for clearance	Good	Fair	40+	B2	1.7
H60	Hawthorn; blackthorn; field maple	On	3.0	1.5	90	0.0	SM	Maintained by flail; small sporadic gaps	Good	Good	20+	B2	1.1
H61	Hawthorn; blackthorn; field maple; elm	On	8.0	5	120	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple along hedge-line	Good	Good	40+	B2	1.5
H62	Field maple; elm; oak; blackthorn	On	3.0	1.5	80	0.0	SM	Maintained by flail	Good	Good	40+	B2	1.0
H63	Hawthorn; oak; field maple; elm	On	8.0	5	130	0.0	EM	Sides maintained by flail to a height of 4m for clearance	Good	Good	40+	B2	1.6
H64	Hawthorn; blackthorn; field maple	On	3.0	1.5	90	0.0	SM	Maintained by flail; small sporadic gaps	Good	Good	20+	B2	1.1
H65	Hawthorn; blackthorn; field maple	On	5.0	2	90	0.0	SM	Maintained by flail	Good	Good	20+	B2	1.1
H66	Elm	On	3.0	1.5	90	0.0	SM	Maintained by flail; remnant / isolated section of hedge	Good	Good	20+	B2	1.1
H67	Hawthorn; blackthorn; field maple; oak; ash; elder	Off	12.0	7	330	0.3	EM	Off-site on disused railway embankment; outgrown hedge with developing oak; ash & maple; field sides flailed to a height of 4m for clearance	Good	Fair	40+	B2	3.9
H68	Hawthorn; blackthorn; crab apple	On	2.5	1.5	80	0.0	SM	Maintained by flail	Good	Good	40+	B2	1.0
H69	Hawthorn; blackthorn; damson; field maple	On	8.0	5	160	0.0	EM	Sides maintained by flail to a height of 4m for clearance	Good	Fair	40+	B2	2.0
H70	Blackthorn; damson; elm	On	3.5	2.5	80	0.0	SM	Sides maintained by flail to a height of 4m for access; recently topped to clear overhead power lines	Good	Good	40+	B2	1.0
H71	Hawthorn; blackthorn; hazel; field maple; crab apple	On	10.0	5	140	0.0	EM	Sides maintained by flail to a height of 4m for clearance; establishing maple & elm along hedge-line; 1x dead-standing multi-stemmed elm to west of feature	Good	Good	40+	B2	1.7
H72	Hawthorn; blackthorn; elm; dogwood	On	3.0	2	80	0.0	EM	Maintained by flail; predominantly maple	Good	Good	40+	B2	1.0
H73	Field maple; hazel; hawthorn	On	3.0	2	90	0.0	EM	Maintained by flail; predominantly maple	Good	Good	40+	B2	1.1
H74	Field maple; elm; blackthorn; hawthorn	On	10.0	6	250	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	3.0

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4677

DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H75	Hawthorn; blackthorn; oak; field maple; dogwood	On	8.0	6	160	0.0	SM	Sporadic thicket; understory becoming colonised by brambles; semi-mature oak established to field-edge	Good	Fair	40+	B2	2.0
H76	Field maple; blackthorn; dogwood	On	3.0	2	90	0.0	EM	Maintained by flail; predominantly maple	Good	Good	40+	B2	1.1
H77	Hawthorn; blackthorn; crab apple	On	6.0	4	250	0.0	EM	Sporadic hedge; sides maintained by flail for access; does not appear to have been laid during lifetime	Good	Fair	20+	B2	3.0
H78	Field maple; elm; apple; ash	On	10.0	6	280	0.0	EM	Sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	3.3
H79	Hawthorn; damson	On	6.0	4	180	0.0	EM	Sporadic hedge; sides maintained by flail for access; does not appear to have been laid during lifetime	Good	Fair	20+	B2	2.2
H80	Blackthorn; hawthorn; apple	On	3.5	2.5	250	0.0	EM	Sides maintained by flail to a height of 4m for access; recently topped to clear overhead power lines	Good	Good	40+	B2	3.0
H81	Hawthorn; blackthorn; field maple; elm; ash; dogwood	On	2.5	1.5	80	0.0	SM	Maintained by flail	Good	Good	40+	B2	1.0
H82	Hawthorn	On	6.0	4	180	0.0	EM	Sporadic hedge; sides maintained by flail for access; does not appear to have been laid during lifetime	Good	Fair	20+	B2	2.2
H83	Hawthorn; blackthorn; field maple; hybrid black poplar; crab apple; hazel; elm; dogwood; elder	Off	11.0	6	300	0.0	EM	Off-site sporadic hedge; plot becoming colonised by brambles; sides maintained by flail for access	Good	Fair	20+	B2	3.6
H84	Hawthorn; damson	On	5.0	3	100	0.0	EM	Sides maintained by flail for access; hedge in contact with adjacent outbuildings	Good	Fair	20+	B2	1.3
H85	Field maple	On	14.0	6	300	0.0	EM	2x multi-stemmed trees within hedge	Good	Fair	20+	B2	3.6
H86	Hawthorn	On	6.0	4	150	0.0	EM	Sporadic remnant section of hedge; sides maintained by flail to a height of 4m for access	Good	Fair	40+	B2	1.8
H87	Hawthorn; blackthorn; elm; elder	On	4.0	3	90	0.0	EM	Sides maintained by flail for access; hedge established to west of broad ditch which at the time of survey contained standing-water to the upper section; occasional dead elm stems	Good	Good	20+	B2	1.1
H88	Field maple; elm; dogwood	Off	2.5	2	80	0.0	SM	Maintained off-site hedge	Good	Good	40+	B2	1.0
H89	Field maple; goat willow; elm	On	3.5	2.5	90	0.0	SM	Sides maintained by flail for access	Good	Good	20+	B2	1.1
H90	Hawthorn; bullace; elm	On	2.0	1	80	0.0	EM	Maintained by flail; predominantly thorn	Good	Fair	40+	B2	1.0
H91	Hawthorn; blackthorn; bullace; goat willow; oak; elm; spindle; elder	On	2.0	1	80	0.0	EM	Maintained by flail; predominantly thorn	Good	Fair	40+	B2	1.0

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4677

DRAPERS CHASE SOLAR FARM

SURVEYOR: DH AND IH

CLIENT: BLUEFIELD RENEWABLE DEVELOPMENTS LTD

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H92	Hawthorn; field maple; bullace; oak; dogwood; spindle	On	1.5	1	70	0.0	EM	Maintained by flail; predominantly thorn; hedge continues south-east along boundary - surveyed section stops at red-line boundary of survey site	Good	Fair	40+	**B2**	0.8

SELECT IMAGES FROM THE TREE SURVEY

DRAPERS CHASE SOLAR FARM

PROJECT NO: 4677

SURVEYOR: DAVID HOLMES / IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12 - 14 / 09 / 2022

IMAGE 1: A view looking west towards W1, a high-quality plantation with wide species variation.

IMAGE 2: A view looking east along the Flitch Way at H67, an off-set outgrown hedge on the railway embankment.

IMAGE 3: A view looking south along the hedge H44 which forms a prominent field boundary.

IMAGE 4: A view looking south at T96, a high quality veteran ask pollard recorded to the west of a broad ditch.

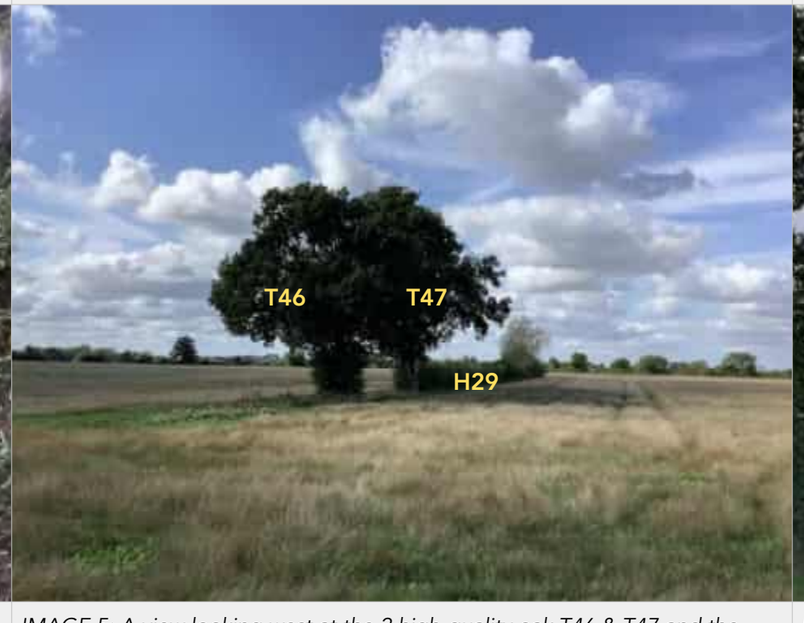

IMAGE 5: A view looking west at the 2 high-quality oak T46 & T47 and the hedge H29.

IMAGE 6: A view looking west at the high quality crab apple T53 located within the hedge H31.

- The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.
- The full tree survey findings are recorded in the following tree survey schedule.
- Within the tree survey schedule, each surveyed TREE (T), GROUP (G), HEDGEROW (H), WOODLAND (W) or SHRUB MASS on or adjacent to the site is given a reference number which refers to its position on the tree survey and constraints plan.
- TREE SPECIES are listed by common name.

The **DIMENSIONS** taken are:

- STEM-No. Indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- STEM DIAMETER (measured in millimetres), obtained from the girth measured at approx. 1.5m. For trees with 2 to 5 sub-stems a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees, the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- HEIGHT (measured in metres), recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD, taken at the four cardinal points to derive an accurate representation of the tree crown, recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m.
- CROWN CLEARANCES are expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall crown e.g. the average height of the crown above ground level. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- ESTIMATES. Where any measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

LIFE STAGE is defined as follows:

Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.

SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature).

EM Early-mature: Not yet having reached 75% of expected mature size. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.

M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.

LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.

A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):

Essentially a snapshot of the general health of the tree based upon its general appearance, it's apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but decay giving rise to structural weakness would be recorded under 'Structural Condition' – see next parameter):

Good: No significant health issues.
Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).
Poor: Significant stress or disease noted; larger areas of dieback than above.
Dead: (or Moribund).

STRUCTURAL CONDITION:

Defects affecting the structural stability of the tree including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. Classified as:

Good: No obvious structural defects: basically sound.
Fair: Minor, potential or incipient defects.
Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.
Dead: (or Moribund).

ESTIMATED REMAINING CONTRIBUTION:

An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance):

- Less than 10 years
- 10+ years
- 20+ years
- 40+ years

SPECIAL IMPORTANCE:

Trees that are particularly notable as high value trees such as ancient trees/woodland or veteran trees. Such trees may be regarded as the principal arboricultural features of a site and pose a significant constraint to potential development.

An *ancient* tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old but not necessarily so; they may be regarded as 'survivors' that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

QUALITY CATEGORY:

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value, These are:

(1) arboricultural qualities
(2) landscape qualities, and
(3) cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only.

Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees' general suitability for retention.

CATEGORY A: HIGH QUALITY:

Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life expectancy of at least 40 years.

A1: Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.).
A2: Trees, groups or woodlands of particular visual importance as landscape features.
A3: Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

CATEGORY B: MODERATE QUALITY:

Trees or groups of some importance with a likely useful life expectancy in excess of 20 years. Their retention would be desirable; selective removal of certain individuals may be acceptable but only after full consideration of all alternative courses of action.

B1: Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)
B2: Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees' overall, collective value).
B3: Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

CATEGORY C: LOW QUALITY:

Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. Also small trees with stems below 15cm diameter.

Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

C1: Unremarkable trees of very limited merit or of significantly impaired condition.
C2: Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.
C3: Trees with extremely limited conservation or other cultural benefit.

CATEGORY U:

Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

E.g. dead or moribund trees; those at risk of collapse or in terminal decline; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens.

(Category U trees may have conservation values that it might be desirable to preserve. This category may also include trees that should be removed irrespective of any development proposals.)

ROOT PROTECTION AREA (RPA):

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter, measured at 1.5m above ground level. The shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's stem diameter.

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

THE IMPORTANCE OF TREES

Wider benefits:

There is a growing body of evidence that trees bring a wide range of benefits to the places people live.

Some *Economic* benefits of trees include:

- Trees can increase property values
- As trees grow larger, the lift they give to property values grows proportionately
- They can improve the environmental performance of buildings by reducing heating and cooling costs, thereby cutting bills
- Mature landscapes with trees can be worth more as development sites
- Trees create a positive perception of a place for potential property buyers
- Urban trees improve the health of local populations, reducing healthcare costs

Some *Social* benefits of trees include:

- Trees help create a sense of place and local identity
- They benefit communities by increasing pride in the local area
- They can create focal points and landmarks
- They have a positive impact on people's physical and mental health
- They can have a positive impact on crime reduction

Some *Environmental* benefits of trees include:

- Urban trees reduce the 'urban heat island effect' of localised temperature extremes
- They provide shade, making streets and buildings cooler in summer
- They help remove dust and particulates from the air
- They help to reduce traffic noise by absorbing and deflecting sound
- They help to reduce wind speeds
- By providing food and shelter for wildlife, they help increase biodiversity
- They can reduce the effects of flash flooding by slowing the rate at which rainfall reaches the ground
- They can help remediate contaminated soil

On new development sites:

Trees bring many benefits to new development. Where retained successfully they can form important and sustainable elements of green infrastructure, contribute to urban cooling and reduce energy demands in buildings. Their importance is acknowledged in relation to adaptation to the effects of climate change. Other benefits brought by trees include:

- Increasing property values
- Visual amenity
- Softening, complementing and adding maturity to built form
- Displaying seasonal change
- Increasing wildlife opportunities in built-up areas
- Contributing to screening and shade
- Reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that, when determining planning applications, local planning authorities should apply the following principle:

c) 'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.'

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and

'Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'

Note: Further information from the National Planning Policy Guidance Suite and Standing Advice is provided in the design guidance section.

Other paragraphs of the NPPF 2021 of relevance to this report are:

Paragraph 131: *'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

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

STATUTORY CONTROLS

Statutory tree protection

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Where information is available on any Statutory designations such as this they are identified within the summary table in Section 1 and on the Tree Survey and Constraints Plan at Section 2.

Notwithstanding specific exceptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of protected trees or woodlands without the prior written consent of the LPA.

Penalties for contravention of a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates' Court, or an unlimited fine is the matter is determined by the Crown Court.

Similarly, and again notwithstanding specific exceptions, it is an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75mm diameter at 1.5 height without having first provided the LPA with 6 weeks written notification of intent to carry out the works.

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined.

Statutory Wildlife Protection

Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside of the scope for this report.

Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for protected species such as bats in addition to birds and small mammals. It is advised that in some instances specialist ecological advice may be required. This may result in tree works being carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the site manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by the appointed Ecologist or the relevant Statutory Nature Conservation Organisation (SNCO): Natural England, Scottish Natural Heritage or Natural Resources Wales.

It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. This time period only provides an indication of likely nesting times and as such diligence is required when undertaking tree works at all times.

Irrespective of the time of year and other than any actions approved under General Licence, it is an offence to intentionally kill, injure or take any wild bird or to intentionally take, damage or destroy the nest or eggs of any wild bird. Ideally, tree operations should be avoided during the likely bird nesting period. However, any tree works should always only be carried out following a preliminary visual check of the vegetation.

For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in England and Wales. A different legislative framework applies in Scotland and Northern Ireland.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with any relevant statutory controls, outlined above.

DESIGN GUIDANCE

Approach

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

A hierarchical approach is adopted in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods subject to site-specific soil conditions.

Service runs that cannot be routed outside the RPA(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable or desirable. Off-site provision may be considered in some circumstances but this will require negotiation with the local planning authority.

Considerations:

For proposed residential developments, consideration must be given to numerous factors future tree growth and orientation.

Tree constraints

Root Protection Areas:

With reference to BS5837:2012, a root protection area (RPA) is defined as "a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure should be treated as a priority". "**The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained**".

BS5837:2012 states (4.6.2) that, "where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced." The BS goes on to state that, "modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution," and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- topography and drainage;
- soil type and structure;
- the likely tolerance of the tree to root damage/disturbance.

Additional buffer zones beyond the RPA:
The following text is taken from the Standing Advice produced by the Forestry Commission and Natural England as included in the National Planing Policy Guidance:

'A buffer zone's purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development'.

Ancient woodland buffer:
'For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic'.

Ancient and veteran tree buffer:
'A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter'.

Above ground:
Above ground constraints posed by trees describe the capacity for trees to have an overbearing or dominating effect on new developments; usually post occupancy. Typical above ground constraints include a number or combination of inconveniences including shading, branch spread, movement of trees during strong winds and so on. If not adequately considered, above ground constraints can lead to repeated requests to fell or heavily prune retained and protected trees.

Shade:
Adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light.
Conversely, appropriate designed development can use existing or new trees to create necessary and welcome shade and screening.
As part of the adopted approach the above considerations and constraints are assessed cumulatively in order to provide clear and site-specific advice on the areas of a site most suitable for the location of development.

Dependent on the site and nature of the proposed development, the Tree Survey and Constraints Plans may show the following:

Recommended Developable area - an advisory area defined in order to minimise arboricultural impacts using standard approaches to construction. Restricting proposed development to this area will limit the risk of harm to retained trees and of the Local Planning Authority objecting to the proposed development. It may be possible to propose development outside of this area but specific 'low impact' construction techniques may be needed recommended.

Recommended Buffer to development - similar to the Recommend Developable Area but defined as a line marking a suitable buffer to retained trees. More commonly used on large sites or sites where the presence of trees is localised.

Tree Opportunities

Depending on the scale of developments existing trees can often provide opportunities to enhance the existing arboricultural resource of a site by bringing it into good management or by putting in place remedial measures e.g. soil amelioration.

Appropriately designed new tree planting is extremely important in maintaining healthy and sustainable tree populations. For the reasons highlighted, new trees can bring many benefits to new developments. It is critical to the establishment of new tree planting that the locations, species and specification of new trees is appropriate. Subsequently the sourcing of high-quality stock, suitable planting and the provision of post planting maintenance are essential to allow new trees to establish and to allow them to mature.

ARBORICULTURAL SURVEY REPORT

Poplars Solar Farm

October 2022

Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Poplars Solar Farm	
Project reference:	4678	
Site Address:	Stevens Lane, Bannister Green, Felsted, Essex	
Nearest Postcode:	CM6 3EF	
Central Grid reference:	TL 69914 21025	
Local Planning Authority:	Uttlesford District Council	
Relevant planning policies:	Uttlesford Local Plan (January 2005): GEN2 - Design; ENV3 - Open spaces and trees; ENV7 - The protection of the natural environment - designated sites; ENV8 - Other landscape elements of importance for nature conservation.	
Statutory Controls:	**Tree Preservation Order**	**Conservation Area**
	Yes - T144 (TPO Ref: T36)	No
Soil Type: (Source: BGS online soils map © NERC 2022)	**Superficial/Drift**	**Bedrock**
	Lowestoft Formation - Diamicton	London Clay Formation - Clay, silt and sand
Topographical Survey:	23629-500-01 Lord Rayleighs Farm	
Notes:	Three veteran trees were surveyed at the site: T149, T158 & T159	
Report author:	Ian Howell *BA (Hons), Cert Arb L4 (ABC), TechArborA*	
Checked by:	Richard Hyett *MSc, BSc (Hons), MICFor, MArborA*	
Date of issue:	04/10/2022	

Arboricultural Association Technician Member

TE6738

Institute of Chartered Foresters registered

REPORT CONTENTS:

SECTION 1: SUMMARY, SITE DETAILS & SURVEY FINDINGS

SECTION 2: TREE SURVEY & CONSTRAINTS PLAN

SECTION 3: TREE SURVEY SCHEDULE & SITE IMAGES

SECTION 4: METHODOLOGY

SECTION 5: DESIGN GUIDANCE AND GENERIC ADVICE

THIS REPORT HAS BEEN PREPARED TO PROVIDE ADVICE AND GUIDANCE ON THE POTENTIAL FOR DEVELOPMENT OF LAND IN RELATION TO TREES. IT IS THEREFORE INTENDED FOR 'INTERNAL USE' ONLY BY THE NAMED CLIENT AND DESIGN TEAM. IT MAY NOT THEREFORE BE SUITABLE FOR SUBMISSION TO A PLANNING AUTHORITY WITH A PLANNING APPLICATION.

1. INSTRUCTION

1.1. Barton Hyett Associates Ltd have been instructed by Pegasus Group on behalf of Bluefield Renewable Developments Ltd, to survey trees located at Poplars Solar Farm, Stevens Lane, Bannister Green, Felsted, Essex ('the site') in accordance with the recommendations of British Standard 5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.

1.2. The scope of the instruction was to inspect trees relevant to a planning application at the site and provide written advice on how they inform feasibility and design options. This report is intended for use by the applicant and design team only, and is not for submission to the Local Planning Authority (LPA).

2. SITE DESCRIPTION

2.1. The site lies approximately 3 miles west of the town of Braintree and is made up of irregularly shaped agricultural fields with boundaries being defined by a mixture of hedgerows, hedgerow trees and ditches.

2.2. The Flitch Way footpath, which uses the route of the disused Bishop's Stortford to Braintree branch line, passes through the site from east to west and there are a significant number of less formal footpaths that cross the site in all directions.

2.3. The surrounding area is agricultural land with farms and outlying dwellings and the village of Felsted is located close to the south-east of the site. Access to the site is possible from B4174 and Rayne Road.

3. TREE SURVEY FINDINGS

3.1. A total of 274 trees, groups of trees and hedgerows were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (**Section 2**) and within the Tree Survey Schedule (**Section 3**).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	**171**	24	113	33	1
Groups	**50**	-	40	10	-
Hedgerows	**53**	-	24	29	-
Total	**274**	**24**	**177**	**72**	**1**

Table 1: Summary of arboricultural features of each BS5837 quality category

4. KEY ARBORICULTURAL FEATURES

4.1. As can be seen from the summary table, the majority of the arboricultural resource at the site is considered to be of moderate or high-quality and therefore desirable and highly desirable for retention.

4.2. There are 24 high-quality (BS5837:2012 Category A) trees at the site, 20 of which are mature English oak, 2 are mature common ash, one is hornbeam and one is a wild service tree.

4.3. Some high-quality trees have been assigned the BS5837:2012 sub-category 3 due to their heritage and conservation value. Typically these trees are of notable maturity and have significant habitat potential due to the presence of niche habitat features e.g. large diameter branch tear-outs/stubs and associated hollowing with significant amounts of deadwood habitat present within the main stem or tree crown. A number of moderate (BS5837:2012 Category B) and sometimes low category (BS5837:2012 Category C) trees across the site have also been assigned BS5837:2012 sub-category 3 where this is considered relevant.

4.4. There is also a prominent linear tree feature (G9, G13 and G14) that runs the length of The Flitch Way footpath, which uses the route of the disused Bishop's Stortford to Braintree branch line and passes through the site from east to west. These tree groups (G9, G13 and G14) are dominated by semi-mature to early-mature English oak that are prominent within the landscape and have a significant amount of future growth potential.

4.5. English oak trees T149, T158 and T159 are considered to be 'veteran trees' due to their numerous niche habitat features including hollows in structural limbs and hollowing of the main stem, large diameter branch tear outs, retrenched canopies and notably large stem diameters.

4.6. The National Planning Policy Framework 2021 (NPPF) paragraph 180 states that: 'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused unless there are wholly exceptional reasons, and a suitable compensation strategy exists'.

4.7. Detrimental impacts on the ancient oak trees from development might include direct damage to roots, damage to (or compaction of) soil, changes to the water table or drainage within the surrounding soil and increased pollution (such as noise, light or dust). A key method of mitigation recommended by the Standing Advice is the use of the 15 x diameter at breast height (DBH) ancient/veteran tree buffer zone. The associated buffer zones have been plotted on the Tree Survey and Constraints Plan (**Section 2).**

5. CONSTRAINTS AND OPPORTUNITIES

5.1. There is the potential for shading to be cast across parts of the site by tree and tree group canopies. Due to the maturity of the vast majority of the arboricultural resource on the site, almost all of the trees will require consideration during the design of the solar array layout due to their size and orientation relative to the site. The objective should be to ensure that the panels will operate as effectively as required and to eliminate any post-development pressure to fell or prune retained trees.

5.2. The Root Protection Areas (RPAs), inclusive of any additional buffers, of all high and moderate-quality trees and tree groups, should be respected and avoided by any development, including solar arrays, tracks, cable routes and inverter/sub-stations. The RPAs and buffers are plotted on the Tree Survey and Constraints Plan (**Section 2**). An electronic CAD version of this drawing will be provided to the layout designers so it can be

imported into the design drawing and the arboricultural constraints adequately considered and impacts avoided.

5.3. Given the nature of the site and the location of the arboricultural resource, there is still ample opportunity for solar development to be located within the interior of the large and open fields without impacting the site's arboricultural resource.

5.4. Please see **Section 5** for further advice and guidance on designing new developments near to trees.

6. RECOMMENDATIONS AND CONCLUSION

6.1. The information contained within this report should be used in the preparation of design proposals for the site, in order to minimise negative arboricultural impacts.

6.2. Internal tracks for maintenance and construction, as well as the installation of underground cables linking the arrays with the transformers and sub-stations, should avoid the RPAs (and veteran tree buffer zones) of high and moderate-quality trees. Wherever feasible, the proposed design should utilise existing gateways and gaps in the hedgerows.

6.3. Some of the RPAs associated with significant trees at the site have been heavily ploughed in the past. This will likely have been causing regular damage to roots located within the top 20cm-30cm of soil. There is therefore an opportunity to greatly improve the rooting areas associated with these trees through the amelioration of the soil and establishment of grass/wildflower pasture within their RPAs. This could assist in potentially providing a long-term benefit to the health of these trees and enhancement to the site overall.

6.4. It will be important to consider the potential shading cast by tree canopies. There is also some overhang of lateral branches across the site boundary and onto the site from off-site trees.

6.5. Once the design proposal has been finalised for submission, an Arboricultural Impact Assessment report must be prepared for submission to the LPA in order for the planning application to be validated and to provide the LPA with sufficient information in order to determine the application.

[redacted]

Ian Howell
Arboriculturist

KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
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Ancient Tree / Woodland or Veteran Trees

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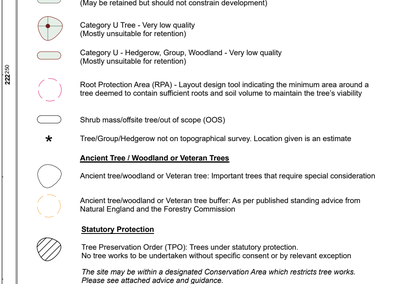
Statutory Protection

Tree Preservation Order (TPO): Trees under statutory protection.
No tree works to be undertaken without specific consent or by relevant exception

The site may be within a designated Conservation Area which restricts tree works. Please see attached advice and guidance.

Species	On / Off Site	Height (m)	No. of Stems	Est. Diameter?	Stem 1 / Actual /	Stem 2 (mm)	Stem 3 (mm)
Oak (English)	On	8	1	Yes	400		
Ash (Common)	On	7	2	Yes	200	225	
Ash (Common)	On	10	2	Yes	200	225	
Ash (Common)	On	12	2	Yes	250	225	
Ash (Common)	On	11	1	Yes	225		
Maple (Field)	On	8	1	Yes	200		
Ash (Common)	On	8	6	Yes	125		
Maple (Field)	On	7	1	Yes	200		
Maple (Field)	On	4	1	Yes	150		
Willow (Goat)	On	4	1	Yes	225		
Ash (Common)	On	8	4	Yes	125	150	170
Ash (Common)	On	6.5	3	Yes	160	200	170
Ash (Common)	On	8	1	Yes	475		
Ash (Common)	On	7	1	Yes	140		
Oak (English)	On	6	1	Yes	100		
Ash (Common)	On	9	1	Yes	280		
Ash (Common)	On	5	1	Yes	225		
Oak (English)	On	17	1	Yes	750		
Willow (Goat)	On	5	6	Yes	80		
Maple (Field)	On	7	1	Yes	250		
Ash (Common)	On	7	1	Yes	150		

INDEX MAP



Note: The original of this drawing was produced in colour – a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice

N
GRID NORTH

0 25 50 100 Meters

PROJECT TITLE

Poplars Farm (4678)

DRAWING TITLE

Tree Survey Plan

SCALE			DRAWING NUMBER	
Scale: 1:1,500 @ A1			**BHA_4678_01**	
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
TB	**IH**	**-**	**1 of 3**	**22/09/2022**

COORDINATE SYSTEM / DATUM: **British National Grid / Newlyn Datum (AOD)**

CLIENT: **Pegasus Planning Group**

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Barton Hyett Associates
Arboricultural Consultants

Tel: 01386 576161
Address: Office 5E, Deer Park Business Centre,
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Tel: 01386 576161
Address: Office SE, Deer Park Business Centre,
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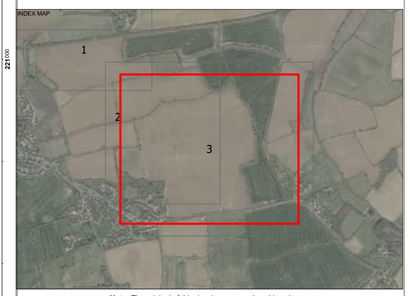

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DATE: 22/09/2022			

COORDINATE SYSTEM / DATUM
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Address: Office 5E, Deer Park Business Centre,
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BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

INDIVIDUAL TREES

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T1	Maple (Field)	On	8	1	Yes	250	4.0-4.0-4.0-4.0	3.0	3	S	SM	None	Establishing hedgerow tree; smaller adjacent tree is in decline	Good	Good	40+	B1	3	28	-	-
T2	Oak (English)	On	15	1	Yes	320	6.0-6.0-6.0-6.0	3.0	3	S	SM	None	Establishing oak tree located within an offsite hedgerow	Good	Good	40+	B1	3.8	46	-	-
T3	Oak (English)	On	16	1	Yes	600	7.0-8.0-8.0-7.0	4.0	4	E	EM	None	Establishing oak of good form and condition; ditch to the W	Good	Good	40+	B1	7.2	163	-	-
T4	Oak (English)	On	8	1	Yes	400	5.0-5.0-4.0-4.0	3.0	3	None	SM	None	Establishing oak; reduced vitality; ditch to the E	Fair	Fair	10+	C1	4.8	72	-	-
T5	Oak (English)	On	19	1	Yes	1000	9.0-9.5-9.0-10.0	4.0	4	N	M	None	Establishing oak of good form and condition; ditch to the E	Good	Good	40+	A1	12	452	-	-
T6	Oak (English)	On	16	1	Yes	780	7.0-8.0-7.0-8.0	3.0	3	None	EM	None	Establishing oak of good form and condition; ditch to the E	Good	Good	40+	B1	9.4	275	-	-
T7	Ash (Common)	On	7	2	Yes	300	5.0-4.0-4.0-4.0	3.0	2	None	SM	None	Establishing hedgerow tree	Fair	Fair	20+	C1	3.6	41	-	-
T8	Ash (Common)	On	15	1	Yes	380	7.0-6.5-6.0-6.5	4.0	3	N	EM	None	Establishing hedgerow tree	Good	Good	40+	B1	4.5	65	-	-
T9	Oak (English)	On	8	2	Yes	510	5.0-5.5-4.5-5.0	3.0	2	S	EM	None	Establishing hedgerow tree	Good	Good	40+	B1	6.1	118	-	-
T10	Oak (English)	On	9	1	Yes	450	5.0-5.5-6.0-5.0	3.0	2	S	EM	None	Establishing hedgerow tree	Good	Good	40+	B1	5.4	92	-	-
T11	Ash (Common)	On	10	2	Yes	300	5.0-4.0-4.0-4.0	3.0	2	None	SM	None	Establishing hedgerow tree	Good	Fair	20+	C1	3.6	41	-	-
T12	Ash (Common)	On	12	2	Yes	340	5.0-5.0-6.0-4.0	3.0	2	None	EM	None	Establishing hedgerow tree; decay at base	Good	Fair	20+	C1	4.1	52	-	-
T13	Ash (Common)	On	11	1	Yes	220	4.0-4.0-3.0-3.0	3.0	2	N	SM	None	Establishing hedgerow tree; limited maturity	Good	Good	20+	C1	2.6	22	-	-
T14	Oak (English)	On	8	1	Yes	700	5.0-6.0-6.0-6.0	3.0	2	W	M	None	Mature hedgerow tree of stunted form	Good	Good	40+	B1	8.4	222	-	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T15	Oak (English)	On	14	1	Yes	1100	8.0-8.0-8.0-6.0	4.0	3	None	M	None	Mature oak of lapsed pollard form	Good	Good	40+	A3	13.2	547	-	-
T16	Ash (Common)	On	18	1	Yes	1050	8.5-8.5-8.5-8.5	3.0	3	None	M	None	Mature ash of lapsed pollard form; ditch the the E	Good	Fair	40+	A3	12.6	499	-	-
T17	Oak (English)	On	12	1	Yes	550	6.0-6.0-6.0-6.0	2.0	2	N	SM	None	Establishing hedgerow oak	Good	Good	40+	B1	6.6	137	-	-
T18	Maple (Field)	On	14	3	Yes	510	6.5-6.0-5.0-6.0	1.0	2	None	M	None	Mature multi stemmed tree establishing above the hedgerow	Good	Good	40+	B1	6.1	118	-	-
T19	Oak (English)	On	19	1	Yes	1050	10.0-10.0-10.0-10.5	4.0	3.5	None	M	None	Mature oak of lapsed pollard form	Good	Good	40+	A1	12.6	499	-	-
T20	Oak (English)	On	16	1	Yes	850	8.0-6.0-5.0-6.5	5.0	2	NW	M	None	Mature oak of lapsed pollard form; suppressed by neighbouring trees	Good	Good	40+	B1	10.2	327	-	-
T21	Oak (English)	On	10	1	Yes	750	7.5-5.0-5.5-5.5	3.0	3	None	M	None	Hedgerow oak of lapsed pollard form; ditch to the N; dense ivy throughout crown	Good	Good	40+	B1	9	254	-	-
T22	Ash (Common)	On	6.5	3	Yes	310	5.0-5.0-4.5-4.5	3.0	3	None	SM	None	Hedgerow ash of multi stemmed form	Good	Fair	40+	C1	3.7	43	-	-
T23	Ash (Common)	On	8	4	Yes	280	5.0-5.0-4.5-4.0	3.0	0.5	None	SM	None	Hedgerow ash of multi stemmed form	Good	Fair	40+	C1	3.3	35	-	-
T24	Maple (Field)	On	10	3	Yes	420	6.0-6.0-5.0-6.0	1.0	2	None	EM	None	Hedgerow tree; ditch to the N	Good	Fair	40+	B1	5	80	-	-
T25	Ash (Common)	On	8	6	Yes	310	5.0-5.0-4.5-5.0	3.0	3	None	SM	None	Hedgerow ash of multi stemmed form	Good	Fair	40+	C1	3.7	43	-	-
T26	Ash (Common)	On	8	1	Yes	300	5.0-6.0-4.5-5.0	3.0	3	W	EM	None	Hedgerow ash of stunted form	Good	Fair	40+	B1	3.6	41	-	-
T27	Oak (English)	On	17	1	Yes	680	7.0-7.5-6.5-6.0	3.0	3	S	M	None	Hedgerow oak of good form and condition; ditch to the S	Good	Good	40+	B1	8.2	209	-	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T28	Oak (English)	On	12	1	Yes	750	7.5-7.5-6.0-7.5	3.0	3	None	M	None	Hedgerow oak of lapsed pollard form; ditch to the S	Good	Good	40+	B1	9	254	-	-
T29	Oak (English)	On	10	1	Yes	880	7.5-7.0-6.0-6.0	3.0	3	None	M	None	Hedgerow oak of lapsed pollard form; ditch to the S	Good	Good	40+	A1	10.6	350	-	-
T30	Oak (English)	On	12	1	Yes	750	7.5-7.5-6.0-7.5	3.0	2	None	M	None	Hedgerow oak of lapsed pollard form; ditch to the S	Good	Good	40+	B1	9	254	-	-
T31	Oak (English)	On	13	1	Yes	780	6.5-7.0-6.0-5.5	2.0	2	E	M	None	Hedgerow oak of good form and condition	Good	Good	40+	B1	9.4	275	-	-
T32	Oak (English)	On	14	1	Yes	500	7.0-6.0-6.0-6.0	3.0	3	None	EM	None	Establishing hedgerow oak; pond to the E	Good	Good	40+	B2	6	113	-	-
T33	Ash (Common)	On	6	1	Yes	700	3.0-3.0-3.0-3.0	2.0	2	None	M	None	Hollowed ash stem	Good	Fair	20+	B3	8.4	222	-	-
T34	Oak (English)	On	16	1	Yes	600	7.0-6.0-6.0-6.0	4.0	3	None	EM	None	Hedgerow oak of lapsed pollard form	Good	Good	40+	B2	7.2	163	-	-
T35	Oak (English)	On	15	1	Yes	800	8.0-7.0-7.5-7.5	3.0	3	None	M	None	Mature hedgerow oak of good form and condition; ditch to S	Good	Good	40+	B2	9.6	290	-	-
T36	Oak (English)	On	12	1	Yes	450	6.0-6.0-6.0-6.0	3.0	3	N	EM	None	Establishing hedgerow oak of good form and condition	Good	Good	40+	B2	5.4	92	-	-
T37	Oak (English)	On	12	1	Yes	500	7.0-6.0-6.0-6.0	3.0	3	None	EM	None	Establishing hedgerow oak of good form and condition	Good	Good	40+	B2	6	113	-	-
T38	Oak (English)	On	8	1	Yes	850	4.0-4.0-4.0-4.0	3.0	3	None	M	None	Storm damaged oak with a hollowed stem	Good	Fair	40+	B3	10.2	327	-	-
T39	Oak (English)	On	13	1	Yes	550	7.0-6.0-6.0-6.0	3.0	3	None	EM	None	Establishing hedgerow oak of good form and condition	Good	Good	40+	B2	6.6	137	-	-
T40	Oak (English)	On	8	1	Yes	780	4.0-4.0-4.0-4.0	3.0	3	None	M	None	Lapsed hedgerow pollard	Good	Good	40+	B3	9.4	275	-	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T41	Oak (English)	On	14	1	Yes	550	8.0-7.0-7.0-6.0	2.0	2	S	EM	None	Establishing hedgerow oak of good form and condition; ditch to W	Good	Good	40+	B1	6.6	137	-	-
T42	Maple (Field)	On	7	1	Yes	200	3.0-3.0-3.0-3.0	2.0	1	None	SM	None	Hedgerow tree growing above hedge height; reduced vitality	Fair	Fair	10+	C1	2.4	18	-	-
T43	Willow (Goat)	On	4	1	Yes	220	3.0-3.5-3.0-1.5	2.0	0.5	None	SM	None	Located within a gap in the hedgerow	Good	Fair	20+	C1	2.6	22	-	-
T44	Maple (Field)	On	4	1	Yes	150	2.0-2.0-2.0-2.0	2.0	0.5	None	SM	None	Located within a gap in the hedgerow; slightly reduced vitality	Fair	Fair	10+	C1	1.8	10	-	-
T45	Oak (English)	On	17	1	Yes	850	7.5-7.5-6.0-7.5	3.0	3	W	M	None	Hedgerow oak of good form and condition; ditch to the W	Good	Good	40+	B1	10.2	327	-	-
T46	Oak (English)	On	8	1	Yes	600	5.0-5.0-6.0-5.0	3.0	3	None	M	None	Hedgerow oak of good form and condition; stunted and possibly a lapsed pollard; ditch to the W	Good	Good	40+	B1	7.2	163	-	-
T47	Oak (English)	On	6	1	Yes	500	6.0-5.0-3.0-4.0	2.0	2	None	SM	None	Oak with a field maple adjacent. Crown has been pruned clear of overhead wires; ditch to the E	Good	Fair	40+	B1	6	113	-	-
T48	Maple (Field)	On	6	1	Yes	250	4.0-4.0-3.0-4.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	3	28	-	-
T49	Ash (Common)	On	7	1	Yes	200	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.4	18	-	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T50	Maple (Field)	On	7	1	Yes	250	4.0-4.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	3	28	-	-
T51	Ash (Common)	On	18	1	Yes	880	7.0-7.0-6.0-7.0	4.0	3	None	M	None	Mature ash pollard located within the hedgerow and growing above hedge height. Existing compacted earth track and ditch to the S	Good	Fair	40+	B3	10.6	350	-	-
T52	Maple (Field)	On	7	1	Yes	250	4.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	3	28	-	-
T53	Ash (Common)	On	8	1	Yes	200	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.4	18	-	-
T54	Oak (English)	On	7	1	Yes	250	4.0-4.0-4.0-4.0	3.0	2	None	SM	None	Oakestablishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	3	28	-	-
T55	Maple (Field)	On	5	1	Yes	160	3.0-3.0-3.0-3.0	3.0	2	None	Y	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	C1	2	12	-	-
T56	Ash (Common)	On	6	1	Yes	200	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.4	18	-	-

BS5837:2012 TREE SURVEY SCHEDULE

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POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T57	Oak (English)	On	4.5	1	Yes	180	3.0-3.0-3.0-3.0	2.0	2	None	Y	None	Oak establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.2	15	-	-
T58	Maple (Field)	On	7	1	Yes	250	4.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	3	28	-	-
T59	Maple (Field)	On	7	1	Yes	220	3.0-4.0-4.0-4.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	2.6	22	-	-
T60	Ash (Common)	On	6	1	Yes	190	3.0-3.0-3.0-3.0	3.0	4	None	Y	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	2.3	16	-	-
T61	Maple (Field)	On	7	1	Yes	250	4.0-4.0-4.0-4.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	3	28	-	-
T62	Oak (English)	On	7	1	Yes	190	4.0-4.0-4.0-3.0	3.0	2	None	SM	None	Oakestablishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	2.3	16	-	-
T63	Ash (Common)	On	6	1	Yes	180	3.0-3.0-3.0-3.0	3.0	4	None	Y	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	2.2	15	-	-

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T64	Ash (Common)	On	12	1	Yes	580	5.0-5.0-5.0-5.0	4.0	3	None	EM	None	Ash within the hedgerow and growing above hedge height. Existing compacted earth track and ditch to the N	Good	Fair	40+	B3	7	152	-	-
T65	Maple (Field)	On	7	3	Yes	390	4.0-4.0-4.0-4.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	4.7	69	-	-
T66	Ash (Common)	On	8	1	Yes	220	4.0-4.0-4.0-4.0	4.0	4	None	SM	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	2.6	22	-	-
T67	Maple (Field)	On	7	1	Yes	250	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	3	28	-	-
T68	Ash (Common)	On	10	1	Yes	700	5.0-5.0-5.0-5.0	3.0	3	None	M	None	Mature ash pollard located within the hedgerow and growing above hedge height. Existing compacted earth track and ditch to the N	Good	Fair	40+	B3	8.4	222	-	-
T69	Maple (Field)	On	8	1	Yes	250	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	3	28	-	-
T70	Ash (Common)	On	7	1	Yes	150	3.0-2.0-2.0-2.0	3.0	2	None	Y	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S; reduced vitality	Fair	Fair	<10	C1	1.8	10	-	-

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Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T71	Maple (Field)	On	6	1	Yes	220	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.6	22	-	-
T72	Oak (English)	On	6	1	Yes	220	4.0-4.0-4.0-4.0	3.0	3	None	SM	None	Oak establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.6	22	-	-
T73	Ash (Common)	On	7	1	Yes	150	3.0-2.0-2.0-2.0	3.0	2	None	Y	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S; reduced vitality	Fair	Fair	<10	C1	1.8	10	-	-
T74	Maple (Field)	On	6	1	Yes	250	3.0-4.0-3.0-4.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	3	28	-	-
T75	Oak (English)	On	6	1	Yes	650	4.0-4.5-5.0-6.0	3.0	3	None	M	None	Oak within the hedgerow growing above hedge height. Existing compacted earth track to the N. Decay/hollowing in main stem	Good	Fair	40+	B3	7.8	191	-	-
T76	Oak (English)	On	6	1	Yes	220	4.0-4.0-4.0-4.0	3.0	3	None	SM	None	Oak establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.6	22	-	-

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PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T77	Ash (Common)	On	7	1	Yes	220	3.0-3.0-3.0-3.0	3.0	3	None	SM	None	Field Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.6	22	-	-
T78	Maple (Field)	On	6	1	Yes	250	3.0-3.0-3.0-4.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Fair	40+	B1	3	28	-	-
T79	Maple (Field)	On	6	1	Yes	220	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.6	22	-	-
T80	Ash (Common)	On	10	3	Yes	420	5.0-5.0-6.0-5.0	3.0	3	S	EM	None	Field Ash establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Fair	40+	B1	5	80	-	-
T81	Ash (Common)	On	7	1	Yes	220	3.0-3.0-3.0-3.0	3.0	3	None	SM	None	Field Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.6	22	-	-
T82	Ash (Common)	On	7	1	Yes	250	4.0-4.0-4.0-4.0	3.0	3	None	SM	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	3	28	-	-
T83	Maple (Field)	On	6	1	Yes	220	4.0-4.0-4.0-4.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Good	40+	B1	2.6	22	-	-

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T84	Ash (Common)	On	6	1	Yes	220	3.0-3.0-3.0-3.0	3.0	3	None	SM	None	Field Ash establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Fair	40+	B1	2.6	22	-	-
T85	Service Tree (Wild)	On	6	1	Yes	220	3.0-4.0-4.0-3.5	3.5	2	E	EM	None	Wild service tree (rare species) establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	B1	2.6	22	-	-
T86	Ash (Common)	On	6	1	Yes	200	3.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field Ash establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Fair	40+	B1	2.4	18	-	-
T87	Maple (Field)	On	6	1	Yes	220	4.0-3.0-3.0-3.0	3.0	2	None	SM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track and ditch to the S	Good	Fair	40+	B1	2.6	22	-	-
T88	Maple (Field)	On	8	1	Yes	250	4.0-3.0-3.0-3.0	3.0	2	None	EM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Fair	40+	B1	3	28	-	-
T89	Maple (Field)	On	8	1	Yes	250	5.0-6.0-4.0-4.0	4.0	1	N	EM	None	Field maple establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Fair	40+	B1	3	28	-	-
T90	Oak (English)	On	16	1	None	640	7.0-7.0-7.0-6.0	4.0	3	W	EM	None	Establishing oak of good form and condition; existing compacted earth track to the N	Good	Good	40+	B1	7.7	185	-	-

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T91	Oak (English)	On	19	1	Yes	1150	10.0-10.0-10.0-10.5	4.5	3	None	M	None	Mature hedgerow pollard; now lapsed; some hollowing of the main stem at the historic pollard point. Field heavily ploughed to the S; ditch to the N; existing compacted earth track to the N & E	Good	Good	40+	A3	13.8	598	-	-
T92	Oak (English)	On	12	1	Yes	1050	7.0-7.5-7.5-7.5	3.0	2.5	None	M	None	Mature hedgerow pollard; now lapsed; some hollowing of the main stem. Field heavily ploughed to the S; ditch to the N	Good	Good	40+	A3	12.6	499	-	-
T93	Maple (Field)	On	7	1	Yes	250	4.0-4.0-3.0-4.0	2.5	2	None	SM	None	Establishing maple; reduced vitality	Fair	Fair	40+	C1	3	28	-	-
T94	Oak (English)	On	15	1	Yes	900	7.0-6.0-4.0-5.0	5.0	4	None	M	None	Hedgerow pollard; slightly reduced vitality and some decay at the historic pollard point	Fair	Fair	40+	B3	10.8	366	-	-
T95	Willow (Goat)	On	5	6	Yes	200	3.0-4.0-3.0-3.0	0.5	0.5	S	SM	None	Located within the ditch	Good	Fair	40+	C1	2.4	18	-	-
T96	Maple (Field)	On	7	1	Yes	280	4.0-4.0-3.0-4.0	0.5	0.5	None	EM	None	Establishing maple; dense foliage in lower crown	Good	Fair	40	B1	3.3	35	-	-
T97	Maple (Field)	On	6	1	Yes	280	4.0-4.0-3.0-4.0	0.5	0.5	None	EM	None	Establishing maple; dense foliage in lower crown	Good	Fair	40+	B1	3.3	35	-	-
T98	Ash (Common)	On	6	1	Yes	220	4.0-4.0-3.0-3.0	1.5	1.5	N	SM	None	Establishing tree	Good	Good	40+	B1	2.6	22	-	-
T99	Maple (Field)	On	8	6	Yes	240	5.0-3.0-4.0-3.0	2.0	0.5	None	EM	None	Hedgerow tree growing above hedge height	Good	Fair	40+	B1	2.9	26	-	-
T100	Maple (Field)	On	8	1	Yes	200	3.0-3.0-4.0-3.0	2.0	0.5	None	EM	None	Hedgerow tree growing above hedge height; reduced vitality	Fair	Fair	10+	C1	2.4	18	-	-
T101	Oak (English)	Off	16	1	Yes	650	7.0-6.0-6.5-5.5	1.0	1	N	EM	None	Establishing oak; ditch to the W	Good	Good	40+	B1	7.8	191	-	-

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T102	Oak (English)	On	17	1	Yes	750	5.0-6.0-5.0-6.0	5.0	4	E	M	None	Tree is 90% dead. Should be retained as standing tree for habit; ditch to the W	Poor	Poor	<10	C3	9	254	-	-
T103	Willow (Goat)	On	5	1	Yes	350	4.0-4.0-4.0-4.0	2.0	0.5	S	SM	None	Located within the ditch	Good	Fair	40+	B1	4.2	55	-	-
T104	Oak (English)	Off	7	1	Yes	500	5.0-5.0-4.0-5.0	3.0	1	None	EM	None	Establishing oak of stunted form; ditch to the W	Good	Good	40+	B1	6	113	-	-
T105	Oak (English)	On	20	1	Yes	1100	8.0-10.0-10.0-9.0	4.0	4	None	M	None	Prominent oak with some storm damage/large diameter branch tear outs. Field heavily ploughed 3m to the W	Good	Fair	40+	A3	13.2	547	-	-
T106	Oak (English)	Off	8	1	Yes	580	6.0-7.0-5.0-5.0	3.0	1	None	EM	None	Establishing oak; existing footpath and bridge to the SE	Good	Good	40+	B1	7	152	-	-
T107	Oak (English)	Off	17	1	Yes	700	8.0-7.0-8.0-7.5	4.0	3	S	EM	None	Establishing oak; located off-site with a ditch to the W	Good	Good	40+	B1	8.4	222	-	-
T108	Ash (Common)	On	5	1	Yes	220	3.0-2.0-3.0-2.0	1.0	0.5	S	EM	None	Stunted ash; possibly regrowth from a stump	Fair	Fair	<10	C1	2.6	22	-	-
T109	Oak (English)	Off	13	1	Yes	600	7.0-6.0-5.0-6.0	4.0	3	N	EM	None	Establishing hedgerow oak; located off-site with a ditch to the W	Good	Good	40+	B1	7.2	163	-	-
T110	Oak (English)	Off	20	1	Yes	1000	9.0-10.0-9.0-9.5	4.0	3	W	M	None	Mature oak of excellent form and condition; located off-site with a ditch to the W	Good	Good	40+	A1	12	452	-	-
T111	Oak (English)	Off	20	1	Yes	1000	9.0-10.0-9.0-9.5	4.0	3	None	M	None	Mature oak of excellent form and condition; located off-site with a ditch to the W	Good	Good	40+	A1	12	452	-	-
T112	Oak (English)	On	8	1	Yes	1000	5.0-5.0-5.0-5.0	4.0	3	None	M	None	Mature hedgerow pollard of excellent form and condition	Good	Good	40+	A3	12	452	-	-

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T113	Ash (Common)	On	9	3	Yes	640	6.0-6.0-6.0-6.0	4.0	3	S	M	None	Mature and now lapsed hedgerow coppice; ditch to the N	Good	Fair	40+	B1	7.7	185	-	-
T114	Ash (Common)	On	8	4	Yes	400	4.5-5.0-5.0-4.0	3.0	3	None	SM	None	Establishing multi stemmed hedgerow tree; ditch to the N	Good	Fair	40	B1	4.8	72	-	-
T115	Aspen	On	8	2	Yes	250	3.5-4.0-4.0-4.0	3.0	3	S	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	3	28	-	-
T116	Oak (English)	On	9	1	Yes	250	4.0-4.0-4.0-4.0	4.0	4	S	SM	None	Located on the roadside verge; ditch to the N	Good	Good	40+	B1	3	28	-	-
T117	Ash (Common)	On	8	1	Yes	280	4.0-4.0-4.0-4.0	3.0	3.5	NE	SM	None	Located on the roadside verge; ditch to the N	Good	Good	40+	B1	3.3	35	-	-
T118	Willow (Goat)	On	6	4	Yes	450	4.0-6.0-3.5-6.0	0.5	0.5	None	EM	None	Multi stemmed from ground level; ditch to the N	Good	Fair	40+	B1	5.4	92	-	-
T119	Ash (Common)	On	9	1	Yes	280	4.0-4.0-4.0-4.0	3.0	2	None	SM	None	Establishing hedgerow tree. Slightly reduced vitality	Fair	Good	40+	C1	3.3	35	-	-
T120	Ash (Common)	On	8	1	Yes	220	2.0-2.0-2.0-2.0	3.0	3.5	SW	SM	None	Establishing hedgerow tree. Dieback throughout crown	Poor	Poor	<10	U	2.6	22	-	-
T121	Oak (English)	On	6	1	Yes	100	1.5-1.5-1.5-1.5	3.0	3.5	None	Y	None	Establishing young hedgerow tree	Good	Good	40+	C1	1.3	5	-	-
T122	Ash (Common)	On	7	1	Yes	140	2.0-2.0-2.0-2.0	3.0	3.5	None	Y	None	Establishing young hedgerow tree	Good	Good	40+	C1	1.7	9	-	-
T123	Ash (Common)	On	9	1	Yes	280	3.5-3.5-3.5-3.5	3.0	3.5	SW	SM	None	Establishing hedgerow tree. Existing access to the W	Good	Good	40+	B1	3.3	35	-	-
T124	Oak (English)	On	9	1	Yes	280	4.0-4.0-4.0-4.0	3.0	4	None	SM	None	Establishing hedgerow tree. Existing access to the E	Good	Good	40+	B1	3.3	35	-	-
T125	Ash (Common)	On	10	1	Yes	200	4.0-4.0-4.0-4.0	4.0	5	None	SM	None	Establishing hedgerow tree; reduced vitality	Fair	Fair	40+	C1	2.4	18	-	-
T126	Elm (English)	On	12	1	Yes	250	5.0-4.0-5.0-5.0	2.0	2	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	3	28	-	-

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T127	Ash (Common)	On	8	1	Yes	150	3.0-3.0-3.0-3.0	4.0	4	None	SM	None	Establishing hedgerow tree; reduced vitality	Fair	Fair	40+	C1	1.8	10	-	-
T128	Oak (English)	On	8	1	Yes	200	4.5-4.0-4.5-4.0	4.0	4	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	2.4	18	-	-
T129	Ash (Common)	On	8	1	Yes	200	4.0-4.0-4.0-4.0	4.0	4	None	SM	None	Establishing hedgerow tree; reduced vitality	Fair	Fair	40+	C1	2.4	18	-	-
T130	Oak (English)	On	6	1	Yes	180	3.0-3.0-3.0-3.0	4.0	4	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	2.2	15	-	-
T131	Ash (Common)	On	10	1	Yes	200	4.0-4.0-4.0-4.0	4.0	4	None	SM	None	Establishing hedgerow tree; reduced vitality	Fair	Fair	40+	C1	2.4	18	-	-
T132	Ash (Common)	On	5	1	Yes	150	3.0-3.0-2.0-3.0	4.0	4	None	Y	None	Establishing hedgerow tree; limited maturity	Good	Good	40+	C1	1.8	10	-	-
T133	Ash (Common)	On	6	1	Yes	190	3.0-3.0-2.0-3.0	4.0	4	None	SM	None	Establishing hedgerow tree; reduced vitality	Fair	Fair	10+	C1	2.3	16	-	-
T134	Oak (English)	On	8	1	Yes	180	3.0-4.0-4.0-3.0	4.0	4	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	2.2	15	-	-
T135	Sycamore	On	6	1	Yes	190	3.0-3.0-2.0-3.0	4.0	4	None	SM	None	Establishing hedgerow tree; reduced vitality	Poor	Fair	10+	C1	2.3	16	-	-
T136	Ash (Common)	On	7	1	Yes	190	3.0-3.0-3.0-3.0	4.0	4	None	SM	None	Establishing hedgerow tree; reduced vitality	Fair	Fair	10+	C1	2.3	16	-	-
T137	Oak (English)	On	8	1	Yes	250	4.0-4.0-4.0-4.0	4.0	4	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	3	28	-	-
T138	Sycamore	On	8	1	Yes	250	4.0-4.0-4.0-4.0	4.0	4	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	3	28	-	-
T139	Ash (Common)	On	8	1	Yes	250	4.0-4.0-4.0-4.0	3.0	3.5	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	3	28	-	-
T140	Ash (Common)	On	8	1	Yes	220	3.5-3.5-3.5-3.5	3.0	3.5	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	2.6	22	-	-
T141	Ash (Common)	On	10	1	Yes	220	3.5-3.5-3.5-3.5	3.0	3.5	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	2.6	22	-	-
T142	Ash (Common)	On	9	1	Yes	130	2.0-3.0-2.0-2.0	3.0	3.5	S	SM	None	Young tree	Good	Good	40+	C1	1.6	8	-	-

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T143	Oak (English)	On	9	1	Yes	280	4.5-4.0-5.0-4.5	3.0	3.5	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	3.3	35	-	-
T144	Oak (English)	On	17	1	Yes	1000	7.0-7.0-7.5-7.0	4.0	3	None	M	None	Mature oak of lapsed pollard form located within the hedgerow; ivy throughout crown	Good	Good	40+	A1	12	452	-	Yes
T145	Oak (English)	Off	15	1	Yes	400	7.0-6.0-6.0-6.5	3.0	2	W	EM	None	Establishing oak located within the neighbouring garden	Good	Good	40+	B1	4.8	72	-	-
T146	Maple (Field)	On	15	2	Yes	500	6.0-6.0-7.0-6.0	3.0	2	None	M	None	Mature hedgerow tree	Good	Good	40+	B1	6	113	-	-
T147	Oak (English)	On	18	1	Yes	800	9.0-8.5-9.0-8.5	3.0	3	None	M	None	Mature oak of good form and condition located within the neighbouring property. Ditch to the N	Good	Good	40+	B1	9.6	290	-	-
T148	Oak (English)	On	14	1	None	750	6.0-6.0-6.5-6.5	2.0	2	None	EM	None	Open grown oak; mechanical wound at base; good adaptive growth and good vitality	Good	Good	40+	B1	9	254	-	-
T149	Oak (English)	On	8	1	None	1400	6.0-6.0-5.0-6.0	1.0	0.5	None	M	Veteran	Open grown oak; large stem diameter; likely of lapsed pollard form. Retrenched crown; hollowing of main stem at the historic pollard point; fungal associations (beefsteak fungus)	Good	Good	40+	A3	15	707	21	-
T150	Oak (English)	On	18	1	Yes	980	8.0-8.5-9.0-7.0	3.0	3	None	M	None	Mature oak of lapsed pollard form located within the neighbouring property. Ditch to the N	Good	Good	40+	A2	11.8	434	-	-
T151	Hornbeam	On	18	1	Yes	780	7.0-5.0-7.0-6.0	3.0	3	None	M	None	Mature hornbeam of lapsed pollard form located within the neighbouring property. Ditch to the N	Good	Good	40+	A2	9.4	275	-	-

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Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T152	Oak (English)	On	16	1	Yes	780	7.0-7.0-7.0-7.0	3.0	3	None	M	None	Mature oak of lapsed pollard form located within the neighbouring property. Ditch to the N	Good	Good	40+	B2	9.4	275	-	-
T153	Oak (English)	On	20	1	Yes	1400	8.0-10.0-10.0-9.0	5.0	0.5	None	M	None	Mature oak of lapsed low-pollard form located within the hedgerow. Historically Pollarded at 0.5m	Good	Good	40+	A3	15	707	-	-
T154	Oak (English)	On	17	1	Yes	1200	10.0-9.0-8.5-9.5	4.0	3.5	None	M	None	Mature oak of lapsed pollard form located within the hedgerow	Good	Good	40+	A3	14.4	651	-	-
T155	Oak (English)	On	10	1	Yes	1100	6.0-6.0-7.0-6.0	4.0	3.5	None	M	None	Mature oak of lapsed pollard form located within the hedgerow	Good	Good	40+	A3	13.2	547	-	-
T156	Oak (English)	On	16	1	Yes	680	8.0-8.0-7.0-8.0	3.0	3.5	S	M	None	Mature oak of good form and condition; pond to the S	Good	Good	40+	B2	8.2	209	-	-
T157	Ash (Common)	On	10	1	Yes	650	6.0-5.0-5.0-5.0	4.0	3	None	M	None	Mature ash pollard; dense ivy throughout crown; reduced vitality but has good niche habitat potential	Fair	Fair	20+	B3	7.8	191	-	-
T158	Oak (English)	On	10	1	Yes	1100	6.0-6.0-7.0-5.5	4.0	3.5	None	M	Veteran	Mature oak of lapsed pollard form located adjacent to a pond. Large stem diameter; decay and hollowing at the historic pollard point. Significant niche habitat potential	Good	Fair	40+	A3	13.2	547	16.5	-
T159	Oak (English)	On	10	1	Yes	1050	7.0-8.0-7.5-5.0	4.0	3.5	None	M	Veteran	Mature oak of lapsed pollard form located adjacent to a pond. Large stem diameter; decay and hollowing at the historic pollard point	Good	Fair	40+	A3	12.6	499	15.75	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T160	Oak (English)	On	17	1	None	590	6.0-7.0-7.0-6.5	2.0	2	None	EM	None	Open grown oak; mechanical wound at base; good adaptive growth and good vitality	Good	Good	40+	B1	7.1	157	-	-
T161	Oak (English)	On	19	1	Yes	950	9.0-8.0-8.5-9.0	3.0	3.5	None	M	None	Mature hedgerow oak of excellent form and condition; ditch to the E	Good	Good	40+	A1	11.4	408	-	-
T162	Maple (Field)	On	8	2	Yes	320	3.5-3.0-3.0-3.5	2.0	2	None	SM	None	Establishing hedgerow tree	Good	Good	40+	B1	3.8	46	-	-
T163	Oak (English)	On	15	1	Yes	950	7.0-6.0-7.0-6.0	3.0	3.5	None	M	None	Mature hedgerow oak dense ivy throughout crown; ditch to the E	Good	Good	40+	B1	11.4	408	-	-
T164	Oak (English)	On	19	1	Yes	1150	8.0-9.0-8.5-9.0	4.5	3	None	M	None	Mature hedgerow pollard; now lapsed; some hollowing of the main stem at the historic pollard point. Ivy throughout lower crown; existing compacted earth track to the N	Good	Good	40+	A3	13.8	598	-	-
T165	Ash (Common)	On	5	1	Yes	180	3.0-3.0-3.0-3.0	3.0	4	None	Y	None	Ash establishing within the hedgerow above hedge height. Existing compacted earth track to the N	Good	Good	40+	C1	2.2	15	-	-
T166	Service Tree (Wild)	On	9	1	None	350	4.0-4.5-4.0-4.0	3.0	3	W	M	None	Wild service tree establishing within the hedgerow and above hedge height. Ditch and existing compacted earth track to the N. Rare tree of excellent form and condition	Good	Good	40+	A1	4.2	55	-	-
T167	Ash (Common)	On	8	1	Yes	480	5.0-4.0-3.0-3.5	4.0	3	N	EM	None	Hollowed ash stem within the hedgerow	Fair	Fair	10+	C3	5.8	104	-	-
T168	Oak (English)	On	11	1	Yes	780	6.0-5.0-5.0-6.0	5.0	4	None	M	None	Hedgerow pollard of lapsed form; reduced vitality but has niche habitat potential	Fair	Fair	20+	B3	9.4	275	-	-

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran/ Ancient Tree or ANSW buffer radius (m)	TPO?
T169	Ash (Common)	On	17	2	Yes	880	6.0-7.0-6.0-7.0	4.0	2	None	M	None	Hedgerow ash of low pollard form	Good	Fair	40+	B1	10.6	350	-	-
T170	Ash (Common)	On	17	1	Yes	880	8.0-9.0-8.5-8.0	4.0	0.5	N	M	None	Mature ash of very good form and condition; pond to the S	Good	Good	40+	A2	10.6	350	-	-
T171	Oak (English)	On	16	1	Yes	680	7.0-7.0-7.0-8.0	3.0	3.5	S	M	None	Mature oak of good form and condition; pond to the E; existing field access to the W	Good	Good	40+	B2	8.2	209	-	-

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POPLARS SOLAR FARM

PROJECT NO: 4678

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G1	Leyland Cypress	Off	12-14	5	Yes	250.0	4.0	1.0	SM	None	Off site evergreen screening trees with significant future growth potential	Good	Fair	40+	C2	3.0
G2	Field maple; elder common ash; hawthorn	On	5-15	20	Yes	300.0	5.0	1.0	EM	None	Boundary treeline. Outgrown hedgerow with EM maple and ash establishing along its length.	Good	Good	40+	B2	3.6
G3	Field maple; hawthorn; blackthorn	On	5-12	15	None	250.0	5.0	0.5	SM	None	Establishing group of outgrown hedgerow trees at the site boundary; some dead stems	Fair	Fair	20+	C2	3.0
G4	Field maple	On	5-6	3	None	250.0	5.0	0.5	SM	None	Outgrown hedgerow trees at the site boundary	Good	Fair	40+	C2	3.0
G5	Field maple; English oak; common ash; hawthorn	On	5-15	5	Yes	300.0	5.0	1.0	EM	None	Boundary treeline. Outgrown hedgerow with EM maple; oak and ash establishing along its length.	Good	Good	40+	B2	3.6
G6	Field maple; English oak	On	12-15	2	Yes	300.0	5.0	1.0	EM	None	Boundary trees. EM maple and English oak. Ditch to the SE	Good	Good	40+	B2	3.6
G7	English oak; common ash	On	12-15	4	Yes	900.0	8.0	2.0	M	None	Hedgerow oak (x3) and ash (x1). Oak look to be of lapsed pollard form	Good	Good	40+	B3	10.8
G8	Hazel; goat willow; common ash	Off	5-18	50	Yes	500.0	5.0	1.0	EM	None	Copse of trees at the site boundary; predominantly low level hazel and goat willow bounding the site; ditch to the E	Good	Fair	40+	B2	6.0
G9	English oak; hawthorn; blackthorn	On	5-17	250	Yes	550.0	6.0	4.0	SM	None	Linear tree feature running through the site from E to W. Footpath at centre; likely a disused railway line. Exclusively SM to EM oak of uniform age and condition with occasional understorey of thorn	Good	Good	40+	B2	6.6
G10	Common ash; English oak; field maple; hawthorn	On	5-17	15	Yes	300.0	5.0	1.0	SM	None	Establishing trees at the roadside boundary	Good	Fair	40+	B2	3.6
G11	Hawthorn; blackthorn; field maple; common ash	On	5-12	100	Yes	350.0	5.0	1.0	SM	None	Linear tree feature; predominantly scrub with ash and field maple establishing within. Footpath is just north of the site boundary (hedgerow)	Good	Fair	40+	B2	4.2
G12	Hybrid black poplar; English oak	Off	18-25	10	Yes	800.0	10.0	3.0	M	None	Off site tree group separated from the site by a ditch at the field edge. Existing compacted earth track at field boundary	Good	Fair	40+	B2	9.6

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POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G13	English oak; hawthorn; blackthorn	On	5-17	250	Yes	550.0	6.0	4.0	SM	None	Linear tree feature running through the site from E to W. Footpath at centre; likely a disused railway line. Exclusively SM to EM oak of uniform age and condition with occasional understorey of thorn	Good	Good	40+	B2	6.6
G14	English oak; hawthorn; blackthorn	On	5-17	250	Yes	550.0	6.0	4.0	SM	None	Linear tree feature running through the site from E to W. Footpath at centre; likely a disused railway line. Exclusively SM to EM oak of uniform age and condition with occasional understorey of thorn	Good	Good	40+	B2	6.6
G15	Aspen; sycamore; wild cherry; corpus; hazel; field maple	On	5-16	25	Yes	400.0	5.0	0.5	SM	None	Establishing screening trees located within the neighbouring property. Sycamore and aspen trees within have significant future growth potential	Good	Good	40+	B2	4.8
G16	Hawthorn; Cronus; oak	On	3-5	10	Yes	200.0	3.0	0.5	SM	None	Establishing screening trees located within the neighbouring property.	Good	Good	40+	C2	2.4
G17	Field maple	On	6-12	3	Yes	500.0	5.0	1.0	EM	None	SM to EM field maple establishing within the hedgerow and growing above the height of the hedge	Good	Fair	40+	B2	6.0
G18	Field maple	On	6-10	3	Yes	500.0	5.0	1.0	EM	None	SM to EM field maple establishing within the hedgerow and growing above the height of the hedge; ditch to the E	Good	Fair	40+	B2	6.0
G19	Field maple ; English elm	On	10-12	4	Yes	500.0	5.0	1.0	EM	None	SM to EM elm (x3) field maple (x1) establishing within the hedgerow and growing above the height of the hedge. Elm are likely to succumb to DED; ditch to the E	Good	Fair	10+	C2	6.0
G20	Field maple	On	8-12	3	Yes	500.0	5.0	1.0	EM	None	SM to EM field maple establishing within the hedgerow and growing above the height of the hedge; ditch to the E	Good	Fair	40+	B2	6.0
G21	Field maple ; Common ash ; English oak	On	10-12	4	Yes	500.0	5.0	1.0	EM	None	SM to EM ash and field maple establishing within the hedgerow and growing above the height of the hedge. Dead oak and ash in decline; ditch to the E	Good	Fair	10+	C2	6.0
G22	Blackthorn; hawthorn; ; field maple; hazel; English oak; corpus	Off	3-6	2500	Yes	150.0	3.0	0.2	SM	None	Area of very dense offsite scrub and establishing broadleaf trees recently cut back from the site boundary	Good	Fair	40+	C2	1.8
G23	Common ash; hornbeam; field maple	On	5-13	6	Yes	500.0	5.0	0.2	EM	None	Outgrown hedgerow trees now growing above hedge height; ditch to the N	Good	Fair	40+	B2	6.0

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POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G24	English oak; common ash; field maple; hornbeam; hawthorn	On	5-17	25	Yes	600.0	7.0	1.0	EM	None	Copse of trees located around a pond	Good	Fair	40+	B2	7.2
G25	Hornbeam; English oak; field maple; common ash	On	8-10	50	Yes	300.0	5.0	2.0	EM	None	Outgrown hedgerow trees now establishing above the height of the hedgerow.	Good	Fair	40+	B2	3.6
G26	Hornbeam; English oak; field maple; wild crab apple	On	8-10	100	Yes	300.0	5.0	0.5	EM	None	Outgrown hedgerow trees now establishing above the height of the hedgerow.	Good	Fair	40+	B2	3.6
G27	English oak; common ash	On	12-15	4	Yes	550.0	6.0	2.0	SM	None	SM to EM hedgerow oak (x3) and ash (x1); ditch to the W	Good	Good	40+	B2	6.6
G28	English oak; hornbeam; field maple	On	5-13	15	Yes	500.0	5.0	0.5	EM	None	Outgrown hedgerow; now more of a linear tree feature; ditch to the W	Good	Fair	40+	B2	6.0
G29	Field maple; English oak	On	6-8	2	Yes	500.0	4.0	3.0	EM	None	Hedgerow trees; both with reduced vitality	Fair	Fair	20+	C2	6.0
G30	English oak; goat willow; hornbeam	On	8-13	3	Yes	450.0	5.0	0.5	EM	None	Mixed broadleaf species forming a cohesive canopy; low foliage is dense and has likely been flailed	Good	Fair	40+	B2	5.4
G31	English oak; field maple	On	8-10	4	Yes	450.0	5.0	1.0	SM	None	Oak (x2); maple (x1) establishing within the hedgerow and growing above the height of the hedge	Good	Fair	40+	B2	5.4
G32	Common ash	On	12-17	4	Yes	500.0	6.0	2.0	EM	None	Hedgerow ash forming a cohesive canopy and establishing above hedge height	Good	Fair	40+	B2	6.0
G33	Common ash; English elm; field maple	On	8-18	7	Yes	600.0	5.0	1.0	M	None	Mixed broadleaf species establishing within the hedgerow and growing above the height of the hedge; Elm are now up to 17-18m and showing good resilience to DED; ditch to the W	Good	Fair	40+	B2	7.2
G34	Common ash; aspen	On	8-14	3	Yes	600.0	5.0	1.0	M	None	Ash (x2); aspen (x1) establishing within the hedgerow and growing above the height of the hedge; ditch to the W	Good	Fair	40+	B2	7.2
G35	Field maple	On	8-12	3	Yes	500.0	5.0	1.0	EM	None	SM to EM field maple establishing within the hedgerow and growing above the height of the hedge; ditch to the W	Good	Fair	40+	B2	6.0
G36	Field maple; sycamore	On	8-10	3	Yes	300.0	5.0	2.0	EM	None	Trees growing within the outgrown hedgerow above hedge height	Good	Good	40+	B2	3.6
G37	English oak; field maple	On	10-12	2	Yes	500.0	8.0	2.0	EM	None	Trees growing within the outgrown hedgerow above hedge height	Good	Good	40+	B2	6.0

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Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
G38	Hawthorn; maple; hazel; spruce	Off	5-15	20	Yes	250.0	5.0	1.0	SM	None	Establishing copse of predominantly broadleaf trees located within the neighbouring property	Good	Good	40+	B2	3.0
G39	Hawthorn; maple; hazel	Off	5-15	25	Yes	200.0	5.0	1.0	SM	None	Establishing copse of broadleaf trees located within the neighbouring property	Good	Good	40+	B2	2.4
G40	English elm; hawthorn	Off	3-5	20	Yes	200.0	4.0	0.5	SM	None	Establishing hawthorn scrub and elm that are of an age whereby they are likely to succumb to DED	Fair	Fair	<10	C2	2.4
G41	Field maple; hawthorn	On	8-15	8	Yes	500.0	5.0	2.0	EM	None	SM to EM field maple establishing above hedgerow height	Good	Fair	40+	B2	6.0
G42	Common ash; macrocarpa; field maple; hawthorn	Off	6-18	10	Yes	550.0	5.0	1.0	EM	None	Offsite tree group located within neighbouring property	Good	Fair	40+	B2	6.6
G43	English oak; hawthorn; blackthorn; hazel; field maple	On	5-15	500	Yes	500.0	5.0	1.0	SM	None	Establishing copse of off-site broadleaf trees	Good	Good	40+	B2	6.0
G44	English oak; field maple; hawthorn	On	5-18	20	Yes	600.0	8.0	2.0	EM	None	Liner tree feature. Trees are growing within the outgrown hedgerow above hedge height. More significant and mature oak are plotted as individuals	Good	Good	40+	B2	7.2
G45	English oak; field maple; hawthorn	On	5-18	10	Yes	650.0	5.0	2.0	EM	None	Group of trees with a pond at the centre	Good	Good	40+	B2	7.8
G46	English oak; field maple; hawthorn	On	5-18	10	Yes	500.0	5.0	2.0	EM	None	Group of trees with a pond at the centre; 2x mature oak plotted as individuals	Good	Fair	40+	B2	6.0
G47	Field maple	On	8-12	3	Yes	500.0	5.0	1.0	EM	None	SM to EM field maple establishing within the hedgerow and growing above the height of the hedge; ditch to the E	Good	Fair	40+	B2	6.0
G48	Common ash; English elm	On	8-15	4	Yes	400.0	5.0	1.0	EM	None	Ash and elm located within the hedgerow; reduced vitality	Fair	Fair	<10	C2	4.8
G49	Field maple	On	8-12	3	Yes	500.0	5.0	1.0	EM	None	SM to EM field maple establishing within the hedgerow and growing above the height of the hedge; ditch to the E	Good	Fair	40+	B2	6.0
G50	Common ash; hawthorn; English oak; field maple	On	5-18	10	Yes	500.0	5.0	2.0	EM	None	Group of trees with a pond at the centre. Mature ash plotted as an individual tree	Good	Fair	40+	B2	6.0

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SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

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HEDGEROWS

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Hawthorn; elder	Off	5.0	5	150	0.5	SM	Outgrown hedgerow trees	Good	Fair	40+	C2	1.8
H2	Leyland Cypress	Off	14.0	5	200	1.0	SM	Evergreen screening trees	Good	Fair	40+	C2	2.4
H3	Blackthorn; field maple; elm	On	4.0	3.5	80	0.1	SM	Short section of hedgerow; becoming outgrown; dead elm stems to south	Fair	Fair	10+	C2	1.0
H4	Hawthorn; blackthorn; field maple	On	4.0	3	100	0.1	SM	Establishing hedgerow; gaps of up to 5m; becoming outgrown	Good	Fair	20+	C2	1.3
H5	Field maple; hazel	On	2.0	2.5	80	0.1	SM	Dense hedgerow. Ditch to the SE	Good	Fair	40+	B2	1.0
H6	Hawthorn; field maple	On	2.0	2	150	0.1	M	Dense and maintained hedgerow	Good	Good	40+	B2	1.8
H7	Hazel; field maple ; hawthorn	On	3.5	3.5	80	0.1	EM	Dense hedgerow; predominantly hazel coppice	Good	Good	40+	B2	1.0
H8	Hawthorn; elder; blackthorn; field maple	On	5.0	5	150	0.1	SM	Outgrown hedgerow trees/scrub located on the banks of the roadside verge	Good	Fair	20+	C2	1.8
H9	Hawthorn; blackthorn; rose	On	2.5	2.5	80	0.1	SM	Dense hedgerow	Good	Fair	40+	C2	1.0
H10	Hawthorn; blackthorn; rose	On	2.5	2.5	80	0.1	SM	Dense hedgerow	Good	Fair	40+	C2	1.0
H11	Hawthorn; blackthorn; field maple	On	5.0	3	100	0.1	SM	Dense and outgrown hedgerow; footpath to the N	Good	Fair	40+	B2	1.3
H12	Field maple; goat willow; hawthorn	On	5.0	4	150	0.1	SM	Outgrown boundary hedgerow; good screening from neighbouring property	Good	Fair	40+	B2	1.8
H13	Hawthorn; blackthorn; elder	On	2.0	1	75	0.2	SM	Where thorn understorey trees bond the field to the S they have been side flailed and form an informal hedgerow. Some gaps along its length	Fair	Fair	20+	C2	1.0
H14	Hawthorn; blackthorn; elder	On	2.0	1	75	0.2	SM	Where thorn understorey trees bond the field to the S they have been side flailed and form an informal hedgerow. Some gaps along its length	Fair	Fair	20+	C2	1.0
H15	Hawthorn; blackthorn; elder	On	2.0	1	75	0.2	SM	Where thorn understorey trees bond the field to the S they have been side flailed and form an informal hedgerow. Some gaps along its length	Fair	Fair	20+	C2	1.0
H16	Hawthorn; blackthorn; elder	On	2.0	1	75	0.2	SM	Where thorn understorey trees bond the field to the S they have been side flailed and form an informal hedgerow. Some gaps along its length	Fair	Fair	20+	C2	1.0
H17	Field maple; English elm; hawthorn; hazel; blackthorn	Off	4.0	4	80	0.2	SM	Outgrown and unmaintaned hedgerow providing a degree of screening for the site; ditch to the E. Likely an offsite resource	Good	Fair	20+	C2	1.0

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CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H18	Hazel; field maple; blackthorn; elm	On	2.5	2	80	0.1	EM	Establishing hedgerow becoming outgrown; ditch to the N; some gaps of up to 5m along its length	Good	Fair	20+	C2	1.0
H19	Hazel; field maple; blackthorn; elm	On	2.5	2	80	0.1	EM	Establishing hedgerow becoming outgrown; ditch to the N; some gaps of up to 5m along its length	Good	Fair	20+	C2	1.0
H20	Hazel; field maple; blackthorn; elm	On	2.0	2	80	0.1	EM	Establishing hedgerow becoming outgrown; ditch to the N	Fair	Fair	20+	C2	1.0
H21	Hazel; field maple; blackthorn; elm	On	2.0	2	80	0.1	EM	Establishing hedgerow becoming outgrown; ditch to the S	Fair	Fair	20+	C2	1.0
H22	Hawthorn; hornbeam; field maple	On	2.0	2	80	0.1	EM	Unmaintaned hedgerow/understorey trees	Good	Fair	20+	C2	1.0
H23	Hornbeam; hawthorn; field maple	On	2.0	2	80	0.1	SM	Dense hedgerow/understorey trees	Good	Fair	40+	B2	1.0
H24	Hazel; field maple; blackthorn	On	2.0	2	80	0.1	EM	Dense hedgerow; ditch to the W	Good	Good	20+	B2	1.0
H25	Hazel; field maple; blackthorn	On	2.0	2	80	0.1	EM	Dense hedgerow; ditch to the W	Good	Good	20+	B2	1.0
H26	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track and ditch to the S	Good	Good	40+	B2	1.0
H27	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track and ditch to the S	Good	Good	40+	B2	1.0
H28	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track to the N	Good	Good	40+	B2	1.0
H29	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track to the N	Good	Good	40+	B2	1.0
H30	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track and ditch to the S; some gaps along its length of up to 3-4m	Good	Good	40+	B2	1.0
H31	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track and ditch to the S	Good	Good	40+	B2	1.0
H32	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track to the N	Good	Good	40+	B2	1.0
H33	Hawthorn; field maple; English elm	On	2.0	2.5	80	0.1	M	Dense and mature hedgerow. Approx 20m of the hedge at the W end is elm which is likely to succumb to DED	Good	Good	40+	B2	1.0
H34	Blackthorn; hawthorn; elm	On	1.5	1.5	80	0.1	SM	Scrappy hedgerow with dead elm stems and gaps along its length	Fair	Fair	10+	C2	1.0

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H35	Goat willow; English elm; field maple; hawthorn; blackthorn	On	3.5	3	100	0.1	EM	Hedgerow with dead elm stems and bramble with some some gaps along its length; some goat willow and elm are beginning to establish above hedge height (approx 5-6m)	Fair	Fair	20+	C2	1.3
H36	Blackthorn; field maple	On	1.5	2	80	0.1	SM	Remnant section of hedgerow	Good	Fair	20+	C2	1.0
H37	Hawthorn; blackthorn; field maple; dog rose	On	2.5	2.5	80	0.1	EM	For the most part a dense hedgerow; slightly more sparse in the southern section	Good	Fair	40+	B2	1.0
H38	Blackthorn ; hawthorn; hazel; bramble	On	2.0	2	80	0.1	SM	Remnant section of hedgerow/scrub	Good	Fair	20+	C2	1.0
H39	Blackthorn ; hawthorn; hazel; bramble	On	2.0	2	80	0.1	SM	Remnant section of hedgerow/scrub	Good	Fair	20+	C2	1.0
H40	Blackthorn	On	2.5	2	80	0.1	SM	Remnant section of hedgerow/scrub	Good	Fair	20+	C2	1.0
H41	Hawthorn; field maple	On	2.0	2	80	0.1	EM	Reasonably dense hedgerow; provides a degree of screening from the road	Good	Fair	40+	C2	1.0
H42	Hawthorn; field maple ; blackthorn	On	2.0	2	80	0.1	EM	Reasonably dense hedgerow; provides a degree of screening from the road	Good	Fair	40+	C2	1.0
H43	Hawthorn; field maple ; blackthorn	On	2.0	2	80	0.1	EM	Reasonably dense hedgerow; provides a degree of screening from the road	Good	Fair	40+	C2	1.0
H44	Leyland Cypress	Off	3.0	2.5	150	0.1	SM	Well maintained evergreen screening hedgerow	Good	Fair	40+	C2	1.8
H45	Hawthorn; field maple; English oak	On	4.0	3	150	0.2	SM	Outgrown hedgerow/understorey trees; forming an informal hedgerow; good screening for the site from neighbouring land	Good	Fair	40+	B2	1.8
H46	Hawthorn; field maple; English oak	On	5.0	5	200	0.2	SM	Outgrown hedgerow/woodland edge trees forming an informal hedgerow; good screening for the site from neighbouring land	Good	Fair	40+	B2	2.4
H47	Hawthorn; blackthorn; hazel; field maple	On	3.0	3	100	0.2	EM	Outgrown hedgerow/understorey trees	Good	Fair	40+	C2	1.3
H48	Hawthorn; blackthorn; field maple; hazel	On	2.5	2.5	100	0.2	M	Dense and mature hedgerow	Good	Good	40+	B2	1.3
H49	Hawthorn; blackthorn; field maple; hazel	On	2.5	2.5	100	0.2	M	Dense and mature hedgerow	Good	Good	40+	B2	1.3
H50	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track to the N	Good	Good	40+	B2	1.0
H51	Field maple; hazel; cornus; hawthorn	On	2.5	2	80	0.1	M	Dense and mature hedgerow; existing compacted earth track to the N	Good	Good	40+	B2	1.0

BS5837:2012 TREE SURVEY SCHEDULE

PROJECT NO: 4678

POPLARS SOLAR FARM

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

Ref	Species	On/off site	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. low crown height (m)	Life Stage	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H52	Field maple; English elm; hawthorn; hazel; blackthorn	Off	4.0	4	80	0.2	SM	Outgrown and unmaintaned hedgerow providing a degree of screening for the site; ditch to the E. Likely an offsite resource. Dead elm stems	Good	Fair	20+	C2	1.0
H53	Hawthorn; blackthorn; common ash	On	2.5	2	100	0.2	M	Dense and mature hedgerow; provides good screening for the site from the residential area to the S	Good	Fair	40+	B2	1.3

SELECT IMAGES FROM THE TREE SURVEY

POPLARS SOLAR FARM

PROJECT NO: 4678

SURVEYOR: DAVE HOLMES/IAN HOWELL

CLIENT: BLUESTONE

SURVEY DATE: 12-14/09/2022

IMAGE 1: Photograph taken looking west to east along the Flitch Way Footpath. Maturing oak parallel to the footway

IMAGE 2: Typical boundary at the site. Dense and flailed vegetation below outgrown hedgerow trees.

IMAGE 3: T158 & 159. Two veteran English oak trees located on the bank of an agricultural pond.

IMAGE 4: T149, veteran English oak tree located within the field interior.

IMAGE 5: T91, High quality and prominent English oak of lapsed pollard form.

IMAGE 6: Looking west to east along the existing farm track, also a footpath.

- The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.
- The full tree survey findings are recorded in the following tree survey schedule.
- Within the tree survey schedule, each surveyed TREE (T), GROUP (G), HEDGEROW (H), WOODLAND (W) or SHRUB MASS on or adjacent to the site is given a reference number which refers to its position on the tree survey and constraints plan.
- TREE SPECIES are listed by common name.

The **DIMENSIONS** taken are:

- STEM-No. Indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- STEM DIAMETER (measured in millimetres), obtained from the girth measured at approx. 1.5m. For trees with 2 to 5 sub-stems a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees, the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- HEIGHT (measured in metres), recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD, taken at the four cardinal points to derive an accurate representation of the tree crown, recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m.
- CROWN CLEARANCES are expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall crown e.g. the average height of the crown above ground level. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- ESTIMATES. Where any measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

LIFE STAGE is defined as follows:

Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.

SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature).

EM Early-mature: Not yet having reached 75% of expected mature size. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.

M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.

LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.

A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):

Essentially a snapshot of the general health of the tree based upon its general appearance, it's apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but decay giving rise to structural weakness would be recorded under 'Structural Condition' – see next parameter):

Good: No significant health issues.
Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).
Poor: Significant stress or disease noted; larger areas of dieback than above.
Dead: (or Moribund).

STRUCTURAL CONDITION:

Defects affecting the structural stability of the tree including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc. Classified as:

Good: No obvious structural defects: basically sound.
Fair: Minor, potential or incipient defects.
Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.
Dead: (or Moribund).

ESTIMATED REMAINING CONTRIBUTION:

An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance):

- Less than 10 years
- 10+ years
- 20+ years
- 40+ years

SPECIAL IMPORTANCE:

Trees that are particularly notable as high value trees such as ancient trees/woodland or veteran trees. Such trees may be regarded as the principal arboricultural features of a site and pose a significant constraint to potential development.

An *ancient* tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old but not necessarily so; they may be regarded as 'survivors' that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

QUALITY CATEGORY:

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value, These are:

(1) arboricultural qualities
(2) landscape qualities, and
(3) cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only.

Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees' general suitability for retention.

CATEGORY A: HIGH QUALITY:

Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life expectancy of at least 40 years.

A1: Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.).
A2: Trees, groups or woodlands of particular visual importance as landscape features.
A3: Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

CATEGORY B: MODERATE QUALITY:

Trees or groups of some importance with a likely useful life expectancy in excess of 20 years. Their retention would be desirable; selective removal of certain individuals may be acceptable but only after full consideration of all alternative courses of action.

B1: Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)
B2: Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees' overall, collective value).
B3: Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

CATEGORY C: LOW QUALITY:

Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. Also small trees with stems below 15cm diameter.

Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

C1: Unremarkable trees of very limited merit or of significantly impaired condition.
C2: Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.
C3: Trees with extremely limited conservation or other cultural benefit.

CATEGORY U:

Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

E.g. dead or moribund trees; those at risk of collapse or in terminal decline; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens.

(Category U trees may have conservation values that it might be desirable to preserve. This category may also include trees that should be removed irrespective of any development proposals.)

ROOT PROTECTION AREA (RPA):

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter, measured at 1.5m above ground level. The shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's stem diameter.

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

THE IMPORTANCE OF TREES

Wider benefits:

There is a growing body of evidence that trees bring a wide range of benefits to the places people live.

Some *Economic* benefits of trees include:

- Trees can increase property values
- As trees grow larger, the lift they give to property values grows proportionately
- They can improve the environmental performance of buildings by reducing heating and cooling costs, thereby cutting bills
- Mature landscapes with trees can be worth more as development sites
- Trees create a positive perception of a place for potential property buyers
- Urban trees improve the health of local populations, reducing healthcare costs

Some *Social* benefits of trees include:

- Trees help create a sense of place and local identity
- They benefit communities by increasing pride in the local area
- They can create focal points and landmarks
- They have a positive impact on people's physical and mental health
- They can have a positive impact on crime reduction

Some *Environmental* benefits of trees include:

- Urban trees reduce the 'urban heat island effect' of localised temperature extremes
- They provide shade, making streets and buildings cooler in summer
- They help remove dust and particulates from the air
- They help to reduce traffic noise by absorbing and deflecting sound
- They help to reduce wind speeds
- By providing food and shelter for wildlife, they help increase biodiversity
- They can reduce the effects of flash flooding by slowing the rate at which rainfall reaches the ground
- They can help remediate contaminated soil

On new development sites:

Trees bring many benefits to new development. Where retained successfully they can form important and sustainable elements of green infrastructure, contribute to urban cooling and reduce energy demands in buildings. Their importance is acknowledged in relation to adaptation to the effects of climate change. Other benefits brought by trees include:

- Increasing property values
- Visual amenity
- Softening, complementing and adding maturity to built form
- Displaying seasonal change
- Increasing wildlife opportunities in built-up areas
- Contributing to screening and shade
- Reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that, when determining planning applications, local planning authorities should apply the following principle:

c) 'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.'

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and

'Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'

Note: Further information from the National Planning Policy Guidance Suite and Standing Advice is provided in the design guidance section.

Other paragraphs of the NPPF 2021 of relevance to this report are:

Paragraph 131: *'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

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

STATUTORY CONTROLS

Statutory tree protection

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Where information is available on any Statutory designations such as this they are identified within the summary table in Section 1 and on the Tree Survey and Constraints Plan at Section 2.

Notwithstanding specific exceptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of protected trees or woodlands without the prior written consent of the LPA.

Penalties for contravention of a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates' Court, or an unlimited fine is the matter is determined by the Crown Court.

Similarly, and again notwithstanding specific exceptions, it is an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75mm diameter at 1.5 height without having first provided the LPA with 6 weeks written notification of intent to carry out the works.

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined.

Statutory Wildlife Protection

Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside of the scope for this report.

Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for protected species such as bats in addition to birds and small mammals. It is advised that in some instances specialist ecological advice may be required. This may result in tree works being carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the site manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by the appointed Ecologist or the relevant Statutory Nature Conservation Organisation (SNCO): Natural England, Scottish Natural Heritage or Natural Resources Wales.

It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. This time period only provides an indication of likely nesting times and as such diligence is required when undertaking tree works at all times.

Irrespective of the time of year and other than any actions approved under General Licence, it is an offence to intentionally kill, injure or take any wild bird or to intentionally take, damage or destroy the nest or eggs of any wild bird. Ideally, tree operations should be avoided during the likely bird nesting period. However, any tree works should always only be carried out following a preliminary visual check of the vegetation.

For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in England and Wales. A different legislative framework applies in Scotland and Northern Ireland.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with any relevant statutory controls, outlined above.

DESIGN GUIDANCE

Approach

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

A hierarchical approach is adopted in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods subject to site-specific soil conditions.

Service runs that cannot be routed outside the RPA(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable or desirable. Off-site provision may be considered in some circumstances but this will require negotiation with the local planning authority.

Considerations:

For proposed residential developments, consideration must be given to numerous factors future tree growth and orientation.

Tree constraints

Root Protection Areas:

With reference to BS5837:2012, a root protection area (RPA) is defined as "a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure should be treated as a priority". "**The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained**".

BS5837:2012 states (4.6.2) that, "where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced." The BS goes on to state that, "modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution," and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- topography and drainage;
- soil type and structure;
- the likely tolerance of the tree to root damage/disturbance.

Additional buffer zones beyond the RPA:
The following text is taken from the Standing Advice produced by the Forestry Commission and Natural England as included in the National Planing Policy Guidance:

'A buffer zone's purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development'.

Ancient woodland buffer:
'For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you're likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic'.

Ancient and veteran tree buffer:
'A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter'.

Above ground:
Above ground constraints posed by trees describe the capacity for trees to have an overbearing or dominating effect on new developments; usually post occupancy. Typical above ground constraints include a number or combination of inconveniences including shading, branch spread, movement of trees during strong winds and so on. If not adequately considered, above ground constraints can lead to repeated requests to fell or heavily prune retained and protected trees.

Shade:
Adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light.
Conversely, appropriate designed development can use existing or new trees to create necessary and welcome shade and screening.
As part of the adopted approach the above considerations and constraints are assessed cumulatively in order to provide clear and site-specific advice on the areas of a site most suitable for the location of development.

Dependent on the site and nature of the proposed development, the Tree Survey and Constraints Plans may show the following:

Recommended Developable area - an advisory area defined in order to minimise arboricultural impacts using standard approaches to construction. Restricting proposed development to this area will limit the risk of harm to retained trees and of the Local Planning Authority objecting to the proposed development. It may be possible to propose development outside of this area but specific 'low impact' construction techniques may be needed recommended.

Recommended Buffer to development - similar to the Recommend Developable Area but defined as a line marking a suitable buffer to retained trees. More commonly used on large sites or sites where the presence of trees is localised.

Tree Opportunities

Depending on the scale of developments existing trees can often provide opportunities to enhance the existing arboricultural resource of a site by bringing it into good management or by putting in place remedial measures e.g. soil amelioration.

Appropriately designed new tree planting is extremely important in maintaining healthy and sustainable tree populations. For the reasons highlighted, new trees can bring many benefits to new developments. It is critical to the establishment of new tree planting that the locations, species and specification of new trees is appropriate. Subsequently the sourcing of high-quality stock, suitable planting and the provision of post planting maintenance are essential to allow new trees to establish and to allow them to mature.

Geophysical Survey Report

Of

Poplars Solar Farm (formerly known as the Lord Rayleighs site)

For

Pegasus Planning Group Ltd

On Behalf Of

Bluestone Energy

Magnitude Surveys Ref: MSTL1415A

OASIS Number: magnitud1-512942

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3 Captain Street

Bradford

BD1 4HA

01274 926020

info@magnitudesurveys.co.uk

Report By:

Eleanor Dacre MESci

Madhumathy Chandrasekaran BA MA

Aidan Hernaman MESci

Report Approved By:

Finnegan Pope-Carter BSc (Hons) MSc FGS

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Abstract

Magnitude Surveys were commissioned to assess the subsurface archaeological potential of c. 110.6ha of land at Poplars Solar Farm (formerly known as the Lord Rayleighs site). A fluxgate gradiometer survey was successfully completed across the survey area and identified anomalies of an archaeological, agricultural, natural and undetermined origin. Probable and possible archaeological activity has been identified in the form of a partial enclosure containing a ring ditch; possible extraction activity located to the immediate west of the enclosure; a second, isolated ring ditch; and further linear anomalies forming past field systems. Former mapped and unmapped field boundaries have been detected across the survey area, and linear anomalies likely relating to modern ploughing and drains have also been identified. Natural variations likely resulting from changes in the superficial deposits have been detected. Anomalies classified as 'undetermined' have been detected and, although these are likely to be a result of natural processes or agricultural activities, an archaeological origin cannot be ruled out completely.

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1. Introduction

1.1. Magnitude Surveys Ltd (MS) was commissioned by Pegasus Planning Group Ltd on behalf of Bluestone Energy to undertake a geophysical survey over a c. 110.6ha area of land at Poplars Solar Farm (formerly known as the Lord Rayleighs site), Felsted, Essex, TL 69264 22137.

1.2. The geophysical survey comprised quad-towed GNSS-positioned fluxgate gradiometer survey. Magnetic survey is the standard primary geophysical method for archaeological applications in the UK due to its ability to detect a range of different features. The technique is particularly suited for detecting fired or magnetically enhanced features, such as ditches, pits, kilns, sunken featured buildings (SFBs) and industrial activity (David *et al*., 2008).

1.3. The survey was conducted in line with the current best practice guidelines produced by Historic England (David *et al*., 2008), the Chartered Institute for Archaeologists (CIfA, 2020) and the European Archaeological Council (Schmidt *et al.,* 2015).

1.4. It was conducted in line with a WSI produced by MS (Howarth and Carli, 2022).

1.5. The survey commenced on 17/10/2022 and ended on 02/12/2022.

2. Quality Assurance

2.1. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society for Archaeological Prospection).

2.2. The directors of MS are involved in cutting edge research and the development of guidance/policy. Specifically, Dr Chrys Harris has a PhD in archaeological geophysics from the University of Bradford, is a Member of CIfA and is the Vice-Chair of the International Society for Archaeological Prospection (ISAP); Finnegan Pope-Carter has an MSc in archaeological geophysics and is a Fellow of the London Geological Society, as well as a member of GeoSIG (CIfA Geophysics Special Interest Group); Dr Paul Johnson has a PhD in archaeology from the University of Southampton, is a Fellow of the Society of Antiquaries of London and a Member of CIfA, has been a member of the ISAP Management Committee since 2015, and is currently the nominated representative for the EAA Archaeological Prospection Community to the board of the European Archaeological Association.

2.3. All MS managers, field and office staff have degree qualifications relevant to archaeology or geophysics and/or field experience.

2.4. Data collection was repeated over the same traverses to demonstrate the consistency and reliability of the geophysical survey. These are presented below, taken from Area 6:

2.5. Traverse 37:

2.6. Traverse 52:

3. Objectives

3.1. The objective of this geophysical survey was to assess the subsurface archaeological potential of the survey area.

4. Geographic Background

4.1. The survey area was located c. 2km north-east of the town of Felsted. The gradiometer survey was undertaken across seven arable fields and two fields under pasture. The survey area was bordered by Rayne Road to the south and arable fields to the east, north and west. To the southwest and northeast are residential buildings.

4.2. Survey considerations:

Survey Area	Ground Conditions	Further Notes
1	The survey area consisted of an undulated arable field.	The survey area was bordered by hedgerows to the south, west and north-east and ditches to the south-west and south, with an open boundary in the north. Metal fences and residential properties bordered the south-eastern boundary of the survey area.
2	The survey area consisted of a flat arable field.	The survey area was bordered on all sides by hedgerows and ditches. A metal fence was present along the western boundary.
3	The survey area consisted of a flat arable field with rough terrain.	The survey area was bordered on all sides by hedgerows. Pylons and overhead cables ran north-west to south-east across the survey area.
4	The survey area consisted of an arable field with a gentle dip orientated west to east.	The survey area was bordered on all sides by hedgerows and ditches. A small area in the south was heavily ploughed.
5	The survey area consisted of a flat arable field with rough terrain.	The survey area was bordered on all sides by hedgerows and ditches.
6	The survey area consisted of a flat arable field.	The survey area was bordered on all sides by hedgerows and ditches.
7	The survey area consisted of a flat arable field.	The survey area was bordered by hedges on all sides. Pylons and associated overhead cables ran from northwest to southeast across the centre of the survey area.
8	The survey area consisted of a flat pasture field.	The survey area was bordered by hedges and a ditch to the east and west, and by a trackway and trees to the south. The field continued to the northeast.

9	The survey area consisted of a pasture field sloping down to the southwest.	The survey area was bordered by hedges and a ditch to the north and south, and by a road and ditch to the east. The field continued to the west. Pylons and associated overhead cables ran from north to south in the centre of the survey area. A public footpath ran from north to south also across the centre of the survey area.

4.3. The underlying geology comprises clay, silt and sand of the London Formation. Superficial deposits consist of Diamicton of the Lowestoft Formation and a combination of sand and gravel of the Kesgrave Catchment Subgroup and Head which are present in the north-west of Area 1 (British Geological Survey, 2023).

4.4. The soils consist of lime-rich loamy and clayey soils with impeded drainage (Soilscapes, 2023).

5. Archaeological Background

5.1. The following is a summary of a draft Desk Based Assessment produced and provided by Pegasus Planning Group Ltd (Ward, 2023).

5.2. Great Grands Courts Wood, a woodland of medieval date, was recorded as extending into the eastern extent of the site and was depicted on mapping from the 17th century. No features of archaeological origin were identified within the survey area itself; however, archaeological activity has been recorded in the wider landscape.

5.3. The cropmark of an early Bronze age to late Iron age curvilinear enclosure has been identified in the form of a settlement located c. 480m south of the survey area. Bronze Age features were identified c. 640m north-west of the survey area from an aerial survey, along with field walking and evaluation trenching. The evaluation trenching identified a pit containing pottery along with cremated human remains and metalworking. Concentrations of burnt flints and flint flakes were identified c. 810-955m east of the site along the proposed route of the A120. Worked flints of Mesolithic, early Neolithic and Bronze Age date were recorded following the stripping of an area c. 920m east of the survey area on the route of the A120. Further findspots of prehistoric date have been identified in the wider study area, mainly recorded as residual finds.

5.4. The route of the Stane Street Roman Road lies c. 585m north of the survey area. A possible malt house which operated during the 2nd and early 3rd centuries was identified c.735m north of the survey area. This comprises a timber-framed building and a possible tank structure. potential farmstead was identified, which included four large postholes, a pit, at least three ovens and two large quarry pits. Furthermore, ditches containing Roman pottery were identified during evaluations c. 130m west of the survey area and c. 650m north of the survey area. During an evaluation c. 135m west of the survey area, eight ditches / gullies and a metalled surface of Roman date were identified. During an antiquary excavation in 1826, three or four urns containing calcinated bones were identified on the borders of Bocking and Braintree and were described as Roman; these are located c. 730m south of the survey area although an exact location is unknown.

5.5. C. 130m west of the survey area, Saxon activity has been identified in the form of a cluster of gullies, pits and ditches indicative of agricultural use. During a trial trench evaluation at Watch

House Green c. 295m west of the survey area, a small fragment of a possible medieval ditch was identified. A moat originated during the 16th century was recorded at Stevens Farm, c. 80m west of the survey area, part of which is surviving and with the remainder shown as an earthwork. Two further moats were also identified immediately east of the survey area. A number of moats were also identified in the wider area. A large number of buildings were constructed within the wider study area which originated during the medieval period. A number of findspots have also been identified in the wider surroundings of the survey area. These include, two silver coins found c. 55m north of the survey area and one single silver coin c. 155m north of it.

5.6. Maps from the 18th century onwards illustrate the survey area as arable land parcels, with some areas of grassland and woodland, and was under the ownership and occupancy of a number of various individuals. During the latter half of the 20th century, a number of the internal field boundaries within the site were removed.

5.7. A large number of cropmarks have been identified in the wider study area on aerial photographs as well as within the survey area itself, in its northern and southern extents, and are considered likely to relate to field boundaries.

6. Methodology

6.1. Data Collection

6.1.1. Magnetometer surveys are generally the most cost effective and suitable geophysical technique for the detection of archaeology in England. Therefore, a magnetometer survey should be the preferred geophysical technique unless its use is precluded by any specific survey objectives or the site environment. For this site, no factors precluded the recommendation of a standard magnetometer survey. Geophysical survey therefore comprised the magnetic method as described in the following section.

6.1.2. Geophysical prospection comprised the magnetic method as described in the following table.

6.1.3. Table of survey strategies:

Method	Instrument	Traverse Interval	Sample Interval
Magnetic	Bartington Instruments Grad-13 Digital Three-Axis Gradiometer	1m	200Hz reprojected to 0.125m

6.1.4. The magnetic data were collected using MS' bespoke quad-towed GNSS-positioned system.

6.1.4.1. MS' quad-towed system was comprised of Bartington Instruments Grad 13 Digital Three-Axis Gradiometers. Positional referencing was through a multi-channel, multi-constellation GNSS Smart Antenna RTK GPS outputting in NMEA mode to ensure high positional accuracy of collected measurements. The RTK GPS is accurate to 0.008m + 1ppm in the horizontal and 0.015m + 1ppm in the vertical.

6.1.4.2. Magnetic and GPS data were stored on an SD card within MS' bespoke datalogger. The datalogger was continuously synced, via an in-field Wi-Fi unit, to servers within MS' offices. This allowed for data collection, processing, and visualisation to be monitored in real-time as fieldwork was ongoing.

6.1.4.3. A navigation system was integrated with the RTK GPS, which was used to guide the surveyor. Data were collected by traversing the survey area along the longest possible lines, ensuring efficient collection and processing.

6.2. Data Processing

6.2.1. Magnetic data were processed in bespoke in-house software produced by MS. Processing steps conform to the EAC and Historic England guidelines for 'minimally enhanced data' (see Section 3.8 in Schmidt *et al.*, 2015: 33 and Section IV.2 in David *et al.,* 2008: 11).

Sensor Calibration – The sensors were calibrated using a bespoke in-house algorithm, which conforms to Olsen *et al.* (2003).

Zero Median Traverse – The median of each sensor traverse is calculated within a specified range and subtracted from the collected data. This removes striping effects caused by small variations in sensor electronics.

Projection to a Regular Grid – Data collected using RTK GPS positioning requires a uniform grid projection to visualise data. Data are rotated to best fit an orthogonal grid projection and are resampled onto the grid using an inverse distance-weighting algorithm.

Interpolation to Square Pixels – Data are interpolated using a bicubic algorithm to increase the pixel density between sensor traverses. This produces images with square pixels for ease of visualisation.

6.3.Data Visualisation and Interpretation

6.3.1. This report presents the gradient of the sensors' total field data as greyscale images, as well as the total field data lower sensors (Figures 3, 5 & 7). The gradient of the sensors minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images of the gradient and total field at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figures 11, 14, 17, 20, 23, 26, 29, 32 & 35). XY trace plots visualise the magnitude and form of the geophysical response, aiding anomaly interpretation.

6.3.2. Geophysical results have been interpreted using greyscale images and XY traces in a layered environment, overlaid against open street maps, satellite imagery, historical maps, LiDAR data, and soil and geology maps. Google Earth (2023) was also consulted, to compare the results with recent land use.

6.3.3. Geodetic position of results – All vector and raster data have been projected into OSGB36 (ESPG27700) and can be provided upon request in ESRI Shapefile (.SHP) and Geotiff (.TIF) respectively. Figures are provided with raster and vector data projected against OS Open Data.

7. Results

7.1.Qualification

7.1.1. Geophysical results are not a map of the ground and are instead a direct measurement of subsurface properties. Detecting and mapping features requires that said features have properties that can be measured by the chosen technique(s) and that these properties have sufficient contrast with the background to be identifiable. The interpretation of any identified anomalies is inherently subjective. While the scrutiny of the results is undertaken by qualified, experienced individuals and rigorously checked for quality and consistency, it is often not possible to classify all anomaly sources. Where possible, an anomaly source will be identified along with the certainty of the interpretation. The only way to improve the interpretation of results is through a process of comparing excavated results with the geophysical reports. MS actively seek feedback on their reports, as well as reports from further work, in order to constantly improve our knowledge and service.

7.1.2. In order to inform the reliability of the geophysical survey data, a portion of the greyscale from Area 3 has been chosen and displayed below, as it shows evidence of an anomaly corresponding with a known feature. Within this portion of the data, linear anomalies are visible and correspond with former field boundaries recorded on the HER as linear cropmarks and on OS historical mapping.

7.2.Discussion

7.2.1. The geophysical results are presented in combination with satellite imagery and historical maps (Figures 4, 6 & 8).

7.2.2. The fluxgate gradiometer survey has responded well to the environment of the survey area, although discrete ferrous anomalies scattered throughout the survey area may have obscured weaker, more ephemeral features, if present. The geophysical survey has primarily detected anomalies of archaeological, agricultural, natural and undetermined origins.

7.2.3. Evidence of probable and possible archaeological activity has been recorded across the survey area. In the southeast of Area 1, the survey has identified three sides of a probable partial enclosure (Figures 3 & 4). Within the enclosure, a ring ditch has been identified, measuring roughly 17m in diameter and showing internal discrete anomalies, possibly indicative of pits. Further linear and curvilinear anomalies are present within this enclosure, including a pair of linear anomalies running at 90 degrees to each other and describing a possible enclosed space at the northwest corner of the enclosure. Further linear anomalies have been detected in Area 1, running outside of the mentioned enclosure and possibly associated with it (Figures 3 & 4). While some of these appear to be a possible continuation of the anomalies of probable archaeological origin and are similar in shape and signal, they also intersect and may be part of the surrounding mapped field systems. As such, a classification as “Archaeology Possible” has been assigned to them.

7.2.4. Surrounding these anomalies of probable and possible archaeological origin, a group of anomalies partly amorphous in shape and partly exhibiting more defined edges has been identified (Figures 3 & 4). These have been categorised as “Archaeology Possible” and may be suggestive of extraction activities. No mapped extraction activity has been identified on available historical mapping corresponding to these anomalies; however, clay pits are mapped in the wider area and the local geology of clay, silt, sand and gravels indicates that extraction would not be unexpected.

7.2.5. Further anomalies of archaeological origin have been identified in the east of Area 5 in the form of another possible ring ditch, similar in dimensions to the one identified further north and showing possible internal pits as well (Figures 5 & 6).

7.2.6. Multiple linear and curvilinear anomalies, classified as possibly archaeological in origin, have been identified in Areas 2 and 4 (Figures 3-6). The anomalies in Area 2 appear to form a system of unmapped enclosures, orientated north-south, while the ones in Area 4 exhibit a variety of orientations and, while more difficult to interpret, these may as well pertain to one or more past field systems.

7.2.7. Extensive evidence of historical agricultural activity has been identified throughout the survey area in the form of mapped and unmapped field boundaries, which are visible on historical OS Mapping and as cropmarks on satellite imagery (Figures 3-8). Linear trends likely relating to modern ploughing regimes and drainage features have also been identified across the majority of the survey area (Figure 3-8).

7.2.8. Several linear, curvilinear, and sub-circular anomalies have been classified as 'Undetermined' (Figures 3-8). These lack any distinctive pattern, diagnostic morphology, or corroborative evidence which would allow for a more confident interpretation. It is possible that these anomalies are a result of natural processes or of agricultural or anthropogenic activities, although an archaeological origin cannot be ruled out entirely.

7.3.Interpretation

7.3.1. General Statements

7.3.1.1. Geophysical anomalies will be discussed broadly as classification types across the survey area. Only anomalies that are distinctive or unusual will be discussed individually.

7.3.1.2. **Data Artefact** – Data artefacts usually occur in conjunction with anomalies with strong magnetic signals due to the way in which the sensors respond to very strong point sources. They are usually visible as minor 'streaking' following the line of data collection. While these artefacts can be reduced in post-processing through data filtering, this would risk removing 'real' anomalies. These artefacts are therefore indicated as necessary in order to preserve the data as 'minimally processed'.

7.3.1.3. **Ferrous (Spike)** – Discrete dipolar anomalies are likely to be the result of isolated pieces of modern ferrous debris on or near the ground surface.

7.3.1.4. **Ferrous/Debris (Spread)** – A ferrous/debris spread refers to a concentration of multiple discrete, dipolar anomalies usually resulting from highly magnetic material such as rubble containing ceramic building materials and ferrous rubbish.

7.3.1.5. **Magnetic Disturbance** – The strong anomalies produced by extant metallic structures, typically including fencing, pylons, vehicles, and service pipes, have been classified as 'Magnetic Disturbance'. These magnetic 'haloes' will obscure weaker anomalies relating to nearby features, should they be present, often over a greater footprint than the structure causing them.

7.3.1.6. **Undetermined** – Anomalies are classified as Undetermined when the origin of the geophysical anomaly is ambiguous and there is no supporting contextual evidence to justify a more certain classification. These anomalies are likely to be the result of geological, pedological or agricultural processes, although an archaeological origin cannot be entirely ruled out. Undetermined anomalies are generally distinct from those caused by ferrous sources.

7.3.2. Magnetic Results - Specific Anomalies

7.3.2.1. **Archaeology Probable (Ring Ditches)** – In the southeast of Area 1 and east of Area 5, discontinuous annular anomalies [**1a** and **5a**] have been identified (Figures 15-17 & 24-26). These are similar in dimensions, measuring between c. 17m and 18 m in diameter respectively, and are consistent with probable ring

ditches. Discrete anomalies, exhibiting a strongly positive magnetic signal have been identified within both [**1a** and **5a**] and may relate to internal pits. It is possible that [**1a** and **5a**] may relate to prehistoric roundhouses; however, based on the geophysical data alone, it is difficult to infer a more precise chronology and a different, funerary function cannot be excluded entirely.

7.3.2.2. **Archaeology Probable (Enclosure)** – In Area 1, strong linear and curvilinear anomalies [**1c**] have been identified (Figures 12-17). These appear to describe three sides of a partially recorded enclosure which likely continues eastwards, outside of the survey area. This includes internal features such as the ring ditch [**1a**] and further linear anomalies describing a possible enclosed space at its north-western corner.

7.3.2.3. **Archaeology Possible (Strong and Weak)** – Continuing westwards from the southernmost side of the partial enclosure [**1c**], a linear anomaly [**1b**] showing a strongly positive magnetic signal has been identified and is seen turning northwards, creating a 90 degrees angle (Figure 9-17). This exhibits a magnetic signal which is comparable to that of enclosure [**1c**]; however, [**1b**] has no direct physical connection with [**1c**] and it also appears to intersect and possibly pertain to the mapped field system identified in that same area. For this reason, [**1c**] has been interpreted as possibly archaeological in origin and may either be associated with enclosure [**1c**] or to the later field system identified in Area 1.

7.3.2.4. **Archaeology Possible (Strong and Weak – Possible Extraction)** – In Area 1 and immediately west of enclosure [**1c**], a group of amorphous anomalies along with others showing more defined edges and exhibiting both strong and weak positive magnetic signals have been identified [**1d**] (Figures 12-17). These relate to areas of magnetically enhanced material and may correspond to unmapped extraction of clay, sand, silt or gravel which are locally available.

7.3.2.5. **Archaeology Possible (Weak)** – Running on a roughly north-south and east-west axis, a series of intersecting linear anomalies [**2a**] have been identified (Figures 18-20). These exhibit a faintly positive magnetic signal and are seen describing possible field divisions which are not recorded on any available mapping. To their south, across Area 4, further linear anomalies running on different orientations may relate to further unmapped field systems.

7.3.2.6. **Agricultural (Strong and Weak) –** Across the majority of the survey area, strong and weak positive linear anomalies have been identified (Figures 9-35). Most of these correspond with former field boundaries visible on historical maps, while others, such as the ones visible in the south of Area 3, are unmapped.

7.3.2.7. **Agricultural (Trend) –** Weak linear anomalies running across and along several fields have been identified throughout the survey area (Figures 9-35). These likely relate to modern ploughing regimes and tractor tracks.

7.3.2.8. **Natural (Weak) –** In Areas 1, 2, 3 and 4, broad anomalies of varying strength have been identified (Figures 16, 19 & 31). These are most prominent in the

Total Field data (Figures 3, 5 & 7) and are interpreted as relating to bands of magnetically enhanced sand and gravel deposits.

7.3.2.9. **Drainage Feature –** Within Areas 1, 3, 4, 5, 6, 7, 8, and 9, several linear dipolar anomalies have been identified (Figures 10, 13, 16 & 22). The shape and dipolarity are suggestive of ceramic drains.

7.3.2.10. **Undetermined (Weak) –** Across the survey areas, several linear and curvilinear anomalies have been identified (Figures 4, 6 & 8). These vary in size and orientation, and do not correspond to any features visible on historical maps or satellite images. Due to the lack of diagnostic data and weak signal, these have been classified as 'undetermined'. Whilst these likely have agricultural, modern, or natural origins, an archaeological origin cannot be ruled out.

8. Conclusions

8.1. A fluxgate gradiometer survey was successfully completed across the survey area. The geophysical survey has detected a range of different types of anomalies of archaeological, agricultural, natural, modern and undetermined origin. Modern disturbance was limited to survey boundaries and surrounding a large service.

8.2. Anomalies of probable and possible archaeological origin have been identified in the north and centre of the survey area, and include two ring ditches, a partial enclosure, possible extraction activity and possible past field systems.

8.3. Evidence of continued agricultural use of the land has been detected across the entirety of the survey area in the form of former mapped and unmapped field boundaries, in addition to linear trends likely relating to modern ploughing and drains.

8.4. Anomalies of natural origin likely relating to broad bands of superficial deposits have been identified in the centre of the survey area.

8.5. Anomalies of an undetermined origin have been identified across the survey area. These are most likely of agricultural, natural, or modern origin; however, an archaeological origin cannot be ruled out.

9. Archiving

9.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report.

9.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to any dictated time embargoes.

10. Copyright

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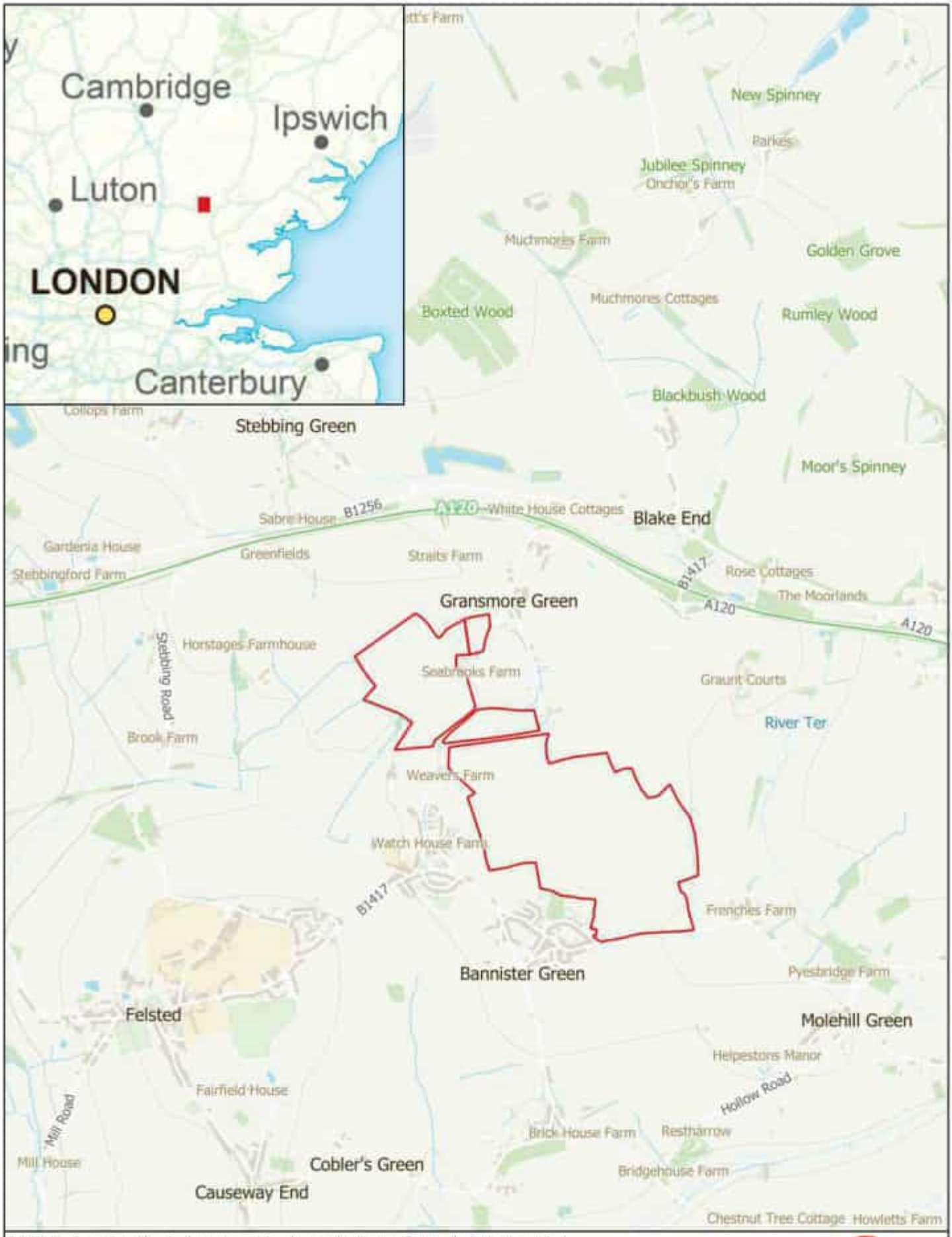
12. Project Metadata

MS Job Code	MSTL1415A
Project Name	Poplars Solar Farm (formerly known as the Lord Rayleighs site), Felsted, Essex
Client	Pegasus Planning Group Ltd
Grid Reference	TL 69264 22137
Survey Techniques	Magnetometry
Survey Size (ha)	110.6ha
Survey Dates	2022-10-17 to 2022-11-04
Project Lead	Isabella Carli BA MA PCIfA
Project Officer	Isabella Carli BA MA PCIfA
HER Event No	N/A
OASIS No	TBC
S42 Licence No	TBC
Report Version	Final 1.1

13. Document History

Version	Comments	Author	Checked By	Date
0.1	Initial draft for Project Lead to Review	MC ED	LAG	22 December 2022
0.2	Corrections after Geophysical Services Manager review	AH	IC	23 December 2022
0.3	Corrections from Project Lead	IC, JA	IC	4 January 2023
0.3	Director's check	N/A	FPC	6 January 2023
0.4	Comments from Client; addition of Archaeological Background and Paragraph 7.1.2	IC, ZR	IC	17 January 2023
Final 1.0	Addition of: duplicate traverses, HER Event number, OASIS number	IC	IC	7 February 2023
Final 1.1	Reference to HER Event Number removed as Essex HER does not issue event numbers for deposition	IC	IC	13 February 2023



MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)

Figure 1 - Site Location

1:25,000 @ A4

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Site Boundary

N

0 0.5 1 km

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MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 2 - Location of Survey Areas
1:10,000 @ A3
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Survey Extent

N

0 250 500 750 m

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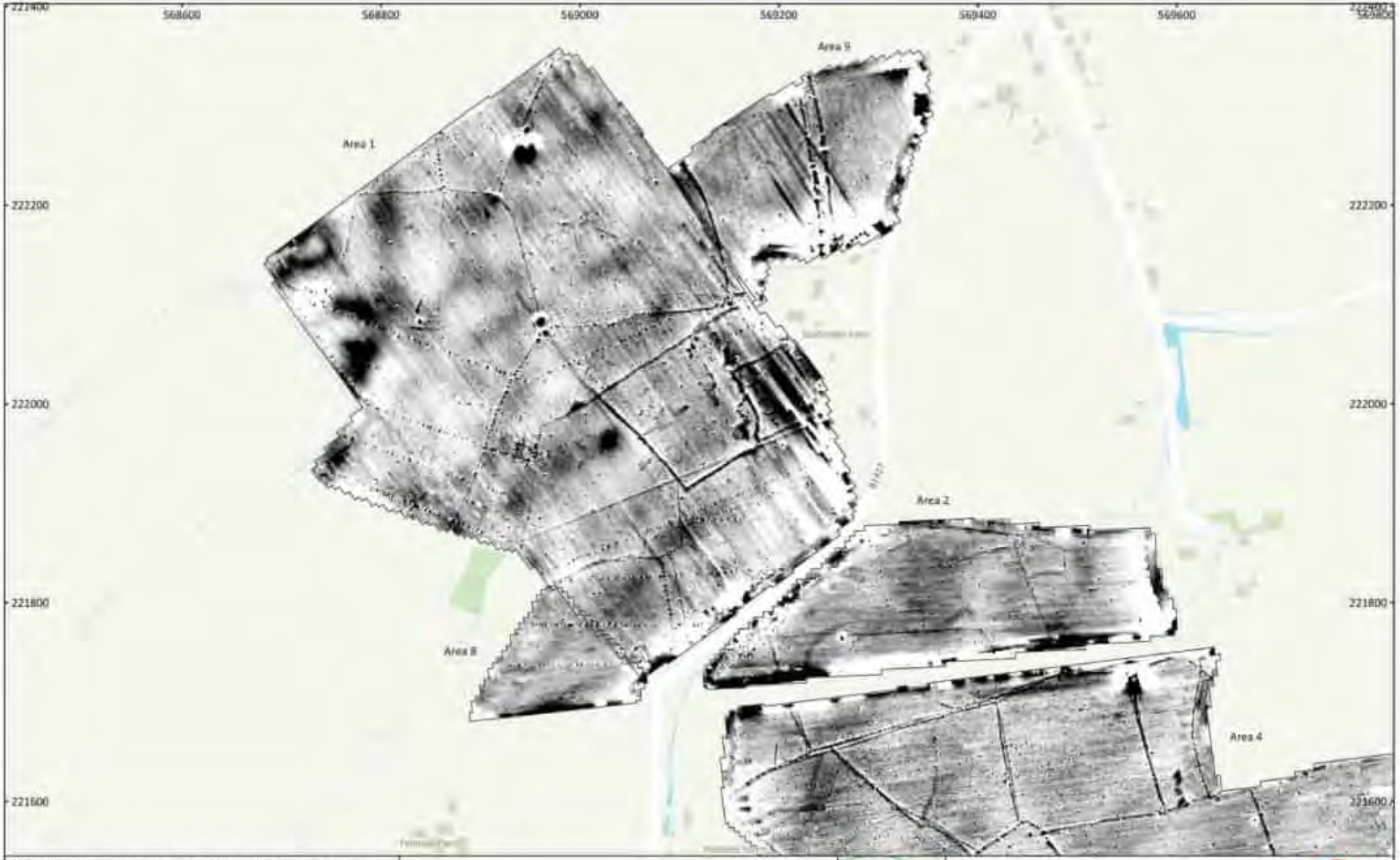

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 3 - Magnetic Total Field (Lower Sensor) (North)
1:3,500 @ A3
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48.997 nT 49.005

Gransmore Green
Bannister Green

N

0 100 200 300 m

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MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 4 - Magnetic Interpretation Over Historical Map and Satellite Imagery (North) 1:3,500 @ A3
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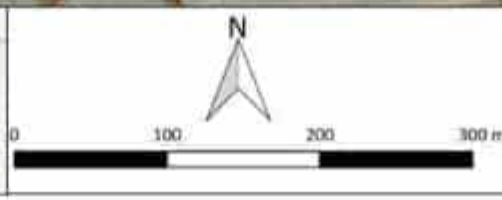
Contains satellite imagery © Bing Satellite 2023

- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Agricultural (Strong)
- Agricultural (Weak)
- Natural (Strong)
- Natural (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Ferrous/Debris (Spread)
- Magnetic Disturbance
- Agricultural (Trend)
- Drainage Feature
- Ferrous (Spike)



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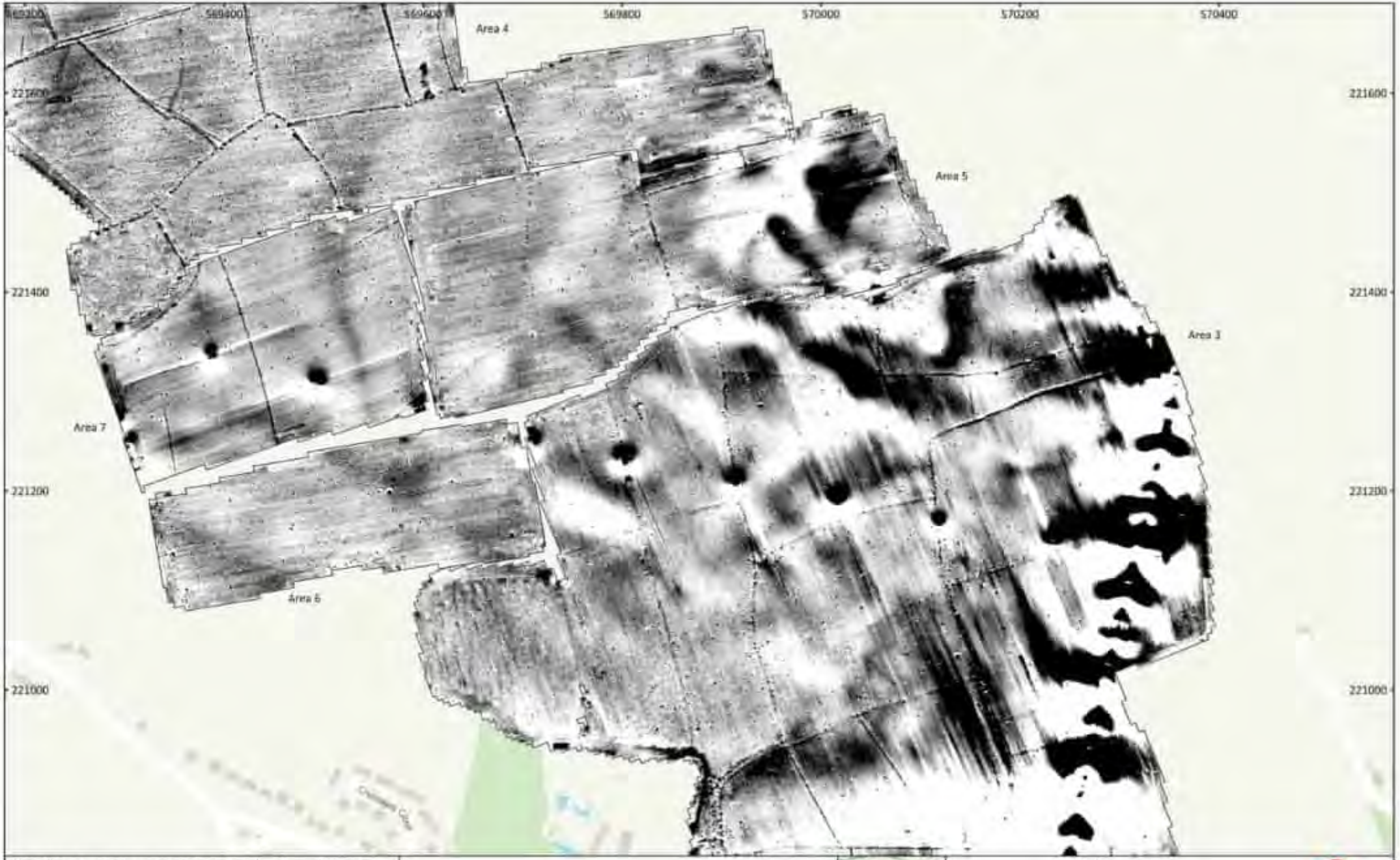

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Figure 5 - Magnetic Total Field (Lower Sensor) (Centre)
1:3,500 @ A3
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48,997 nT 49,005

Gransmore Green
Bannister Green

N

0 100 200 300 m

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Figure 6 - Magnetic Interpretation Over Historical Map and Satellite Imagery (Centre)
1:3,500 @ A3
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Figure 7 - Magnetic Total Field (Lower Sensor) (South)
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48,997 nT 49,005

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Figure 8 - Magnetic Interpretation Over Historical Map and Satellite Imagery (South)
1:3,500 @ A3
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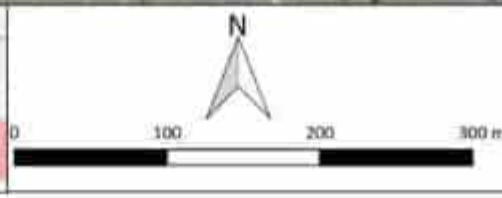
- Agricultural (Strong)
- Agricultural (Weak)
- Agricultural (Spread)
- Natural (Weak)
- Undetermined (Weak)
- Ferrous/Debris (Spread)
- Magnetic Disturbance
- Agricultural (Trend)
- Data Artefact (Trend)
- Drainage Feature
- Service
- Ferrous (Spike)



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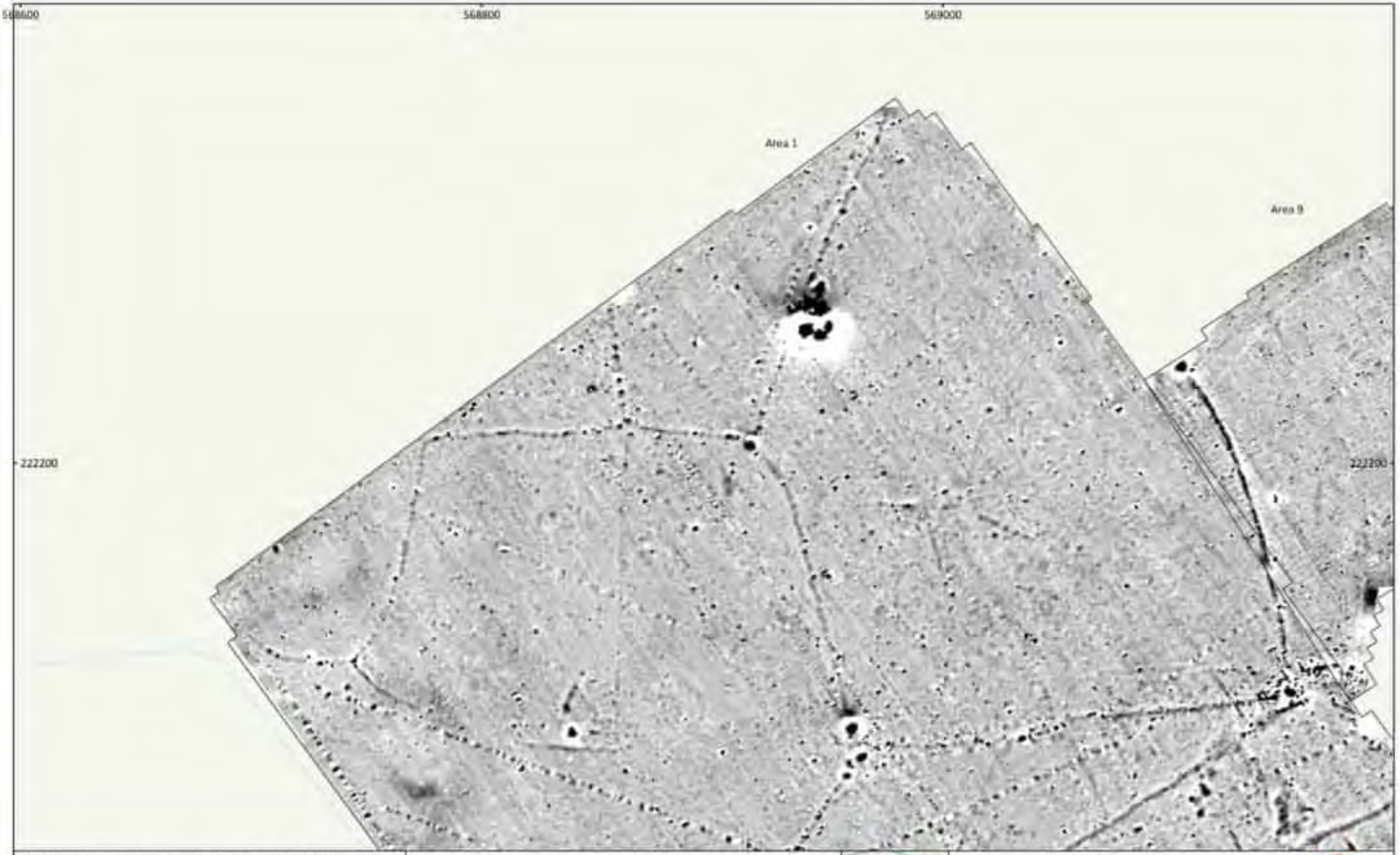

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 9 - Magnetic Gradient (Areas 1 (West) & 9)
1:1,500 @ A3
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-1 nT 1

Gransmore Green
Bannister Green

N

0 30 60 90 m

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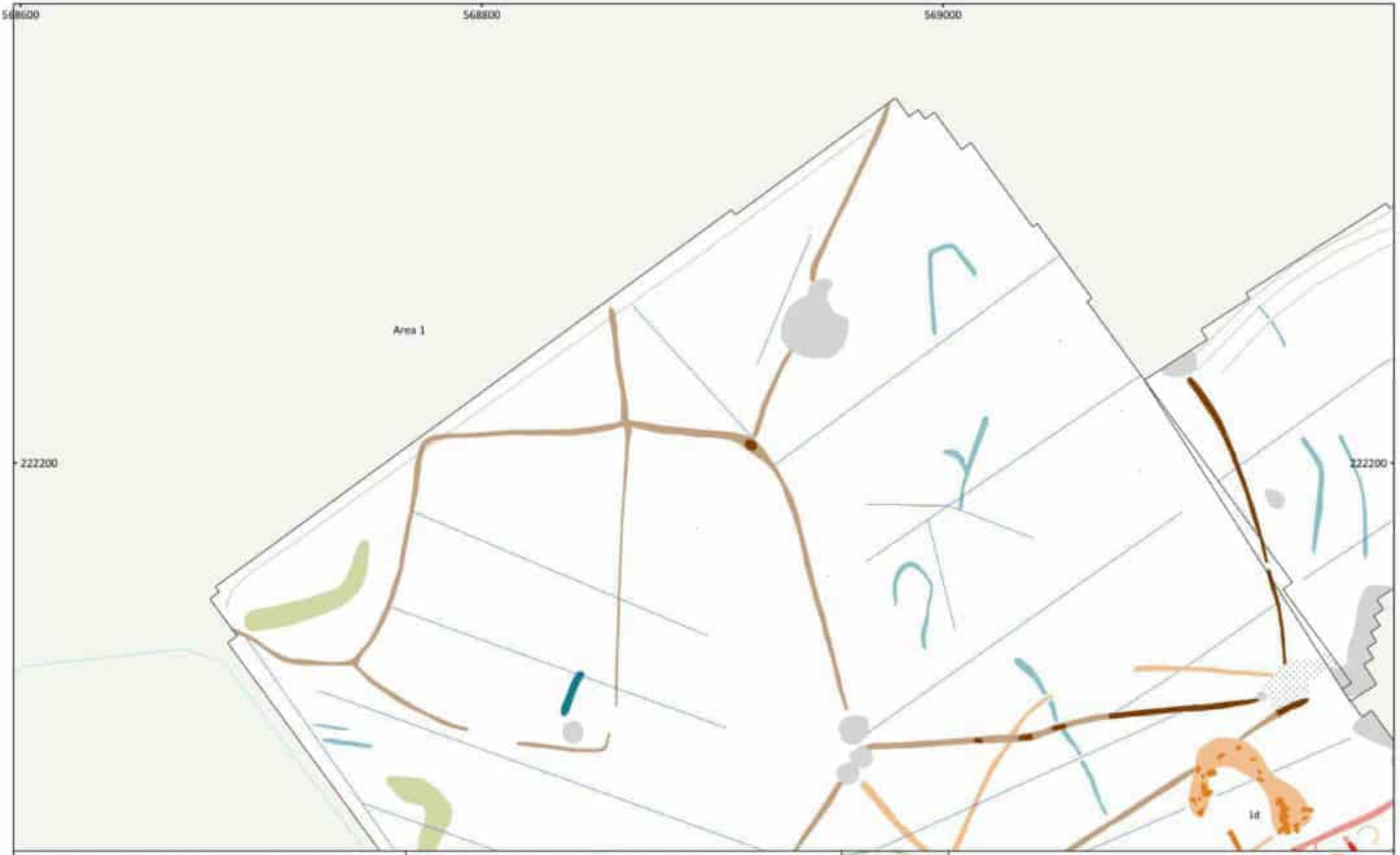

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Figure 10 - Magnetic Interpretation (Areas 1 (West) & 9)
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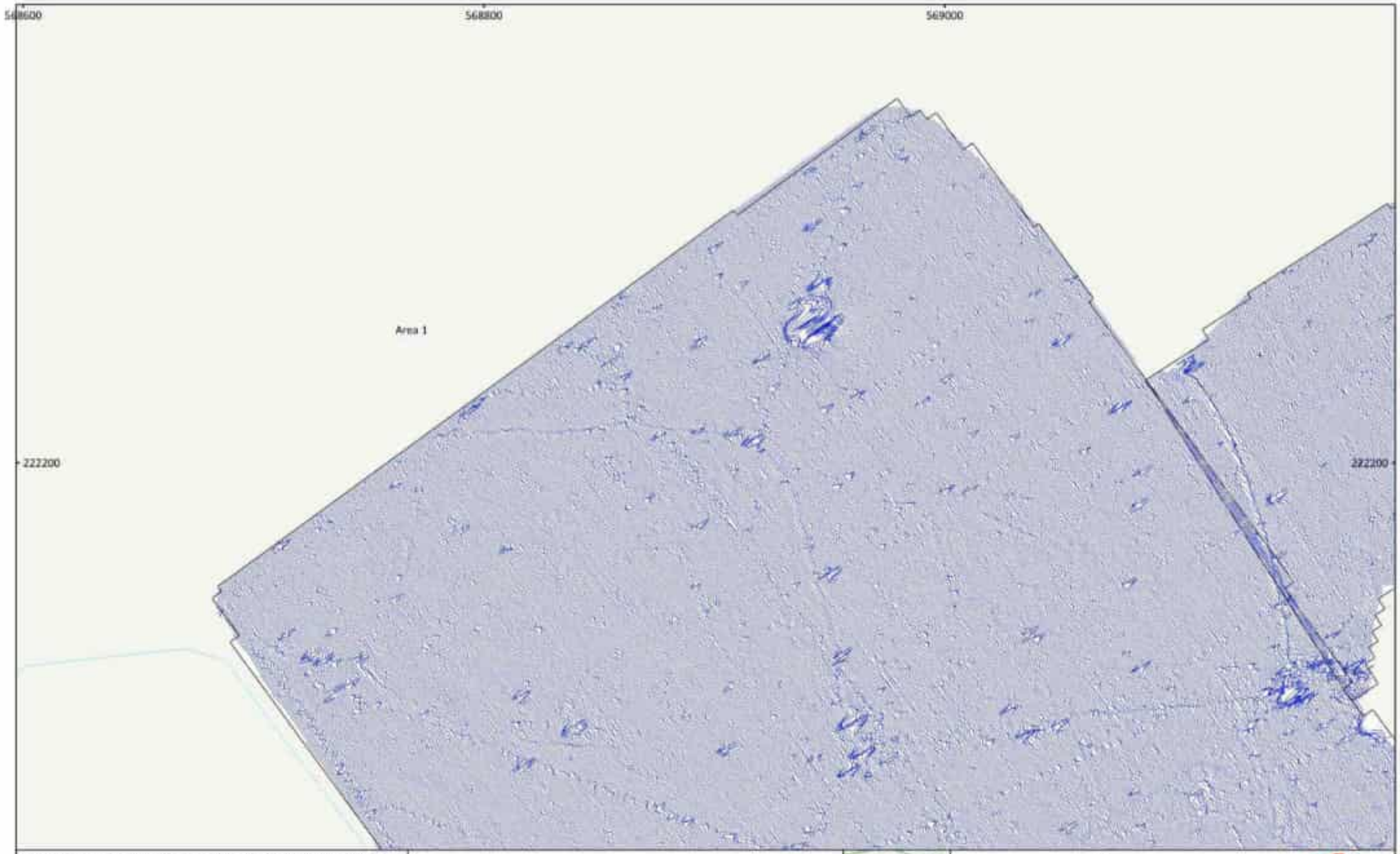

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Figure 11 - XY Trace Plot (Areas 1 (West) & 9)
30nT/m at 1:1,500 @ A3
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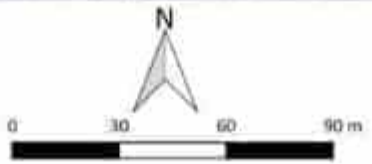

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MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 12 - Magnetic Gradient (Areas 1 (East) & 9)
1:1,500 @ A3
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-1 nT 1

Gransmore Green
Bannister Green

N

0 30 60 90 m

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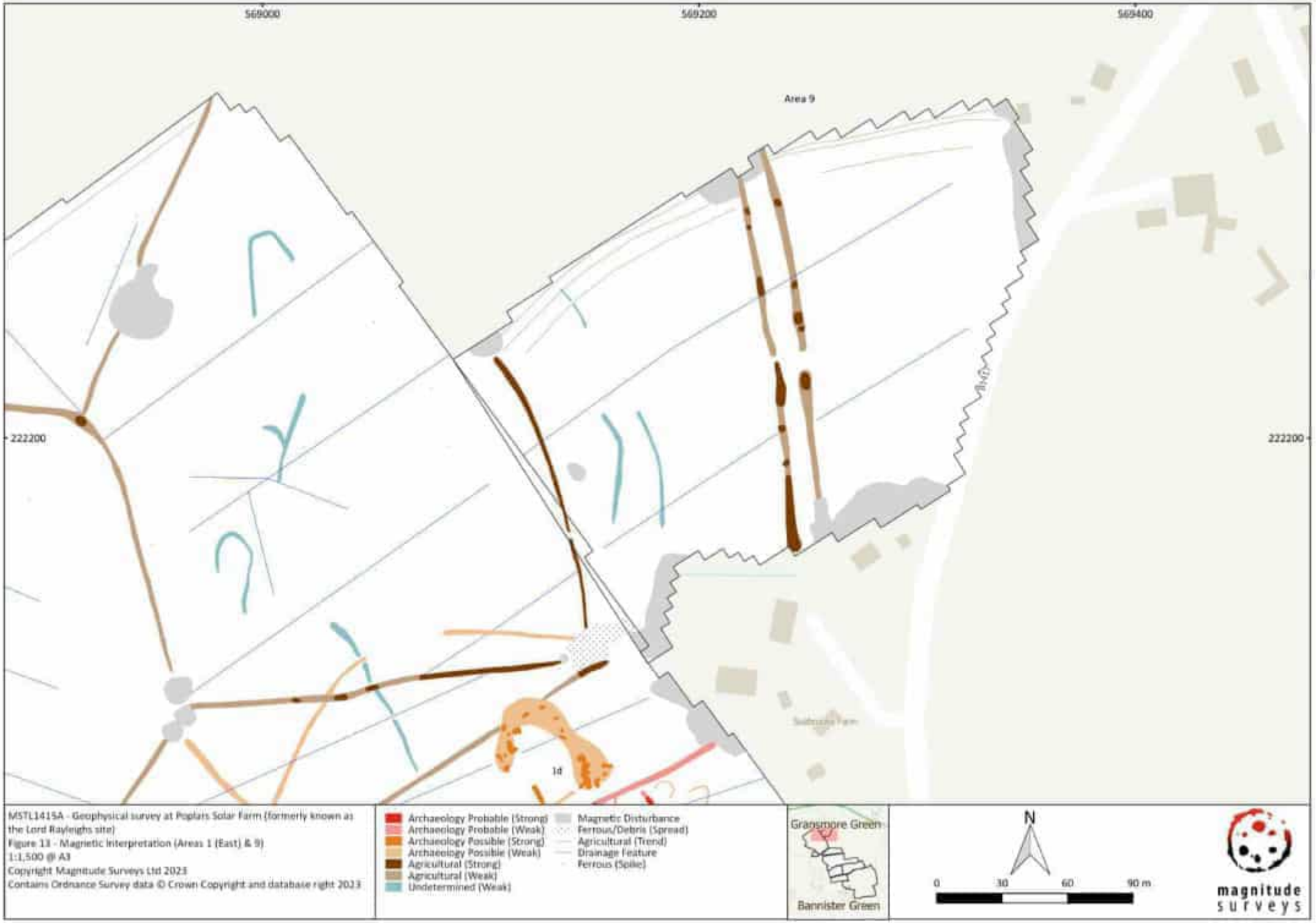

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 13 - Magnetic Interpretation (Areas 1 (East) & 9)
1:1,500 @ A3
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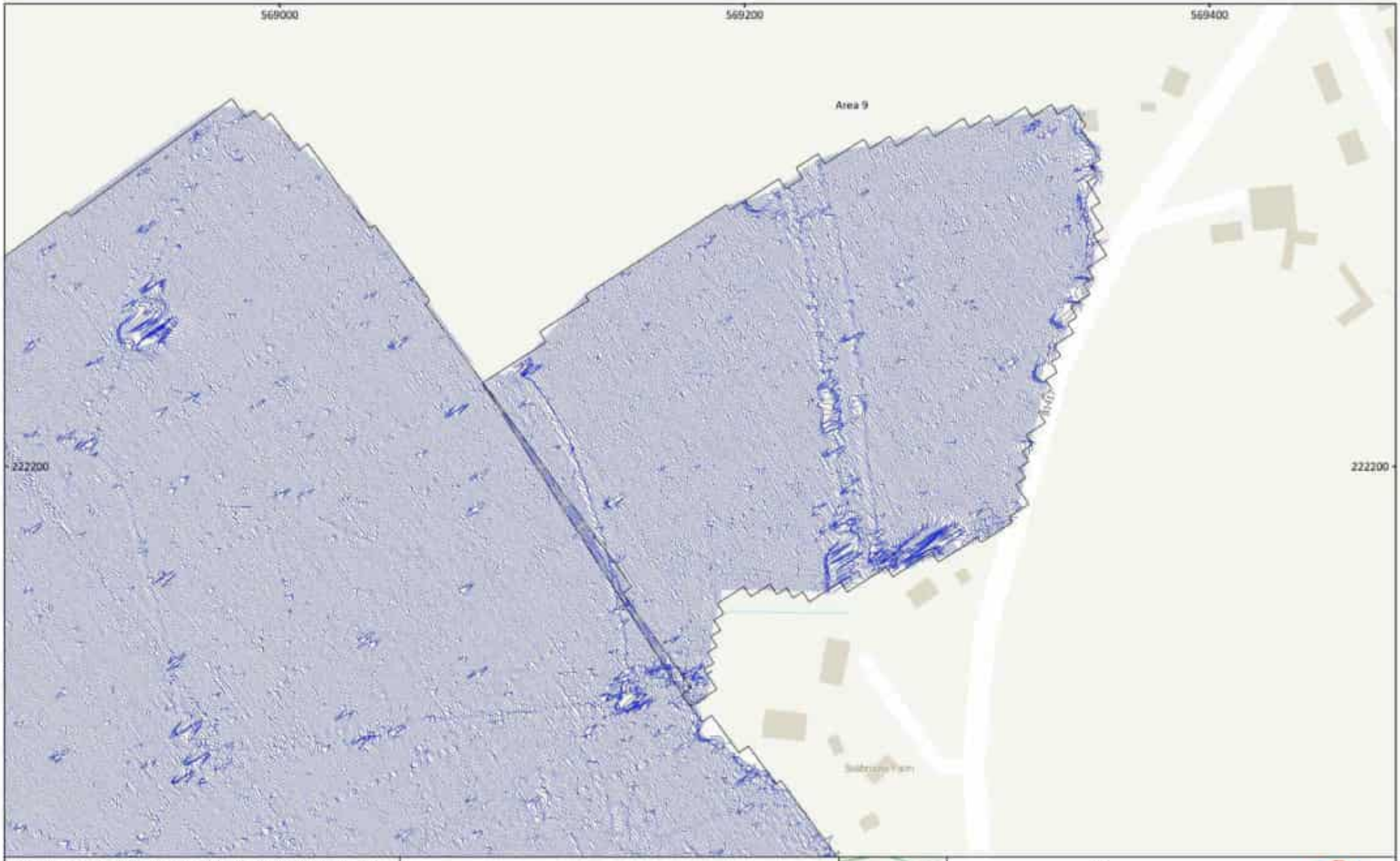

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 14 - XY Trace Plot (Areas 1 (East) & 9)
30nT/cm at 1:1,500 @ A3
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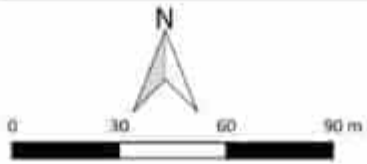

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MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 15 - Magnetic Gradient (Areas 1, 2 & 8)
1:1,500 @ A3
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Figure 16 - Magnetic Interpretation (Areas 1, 2 & 8)
1:1,500 @ A3
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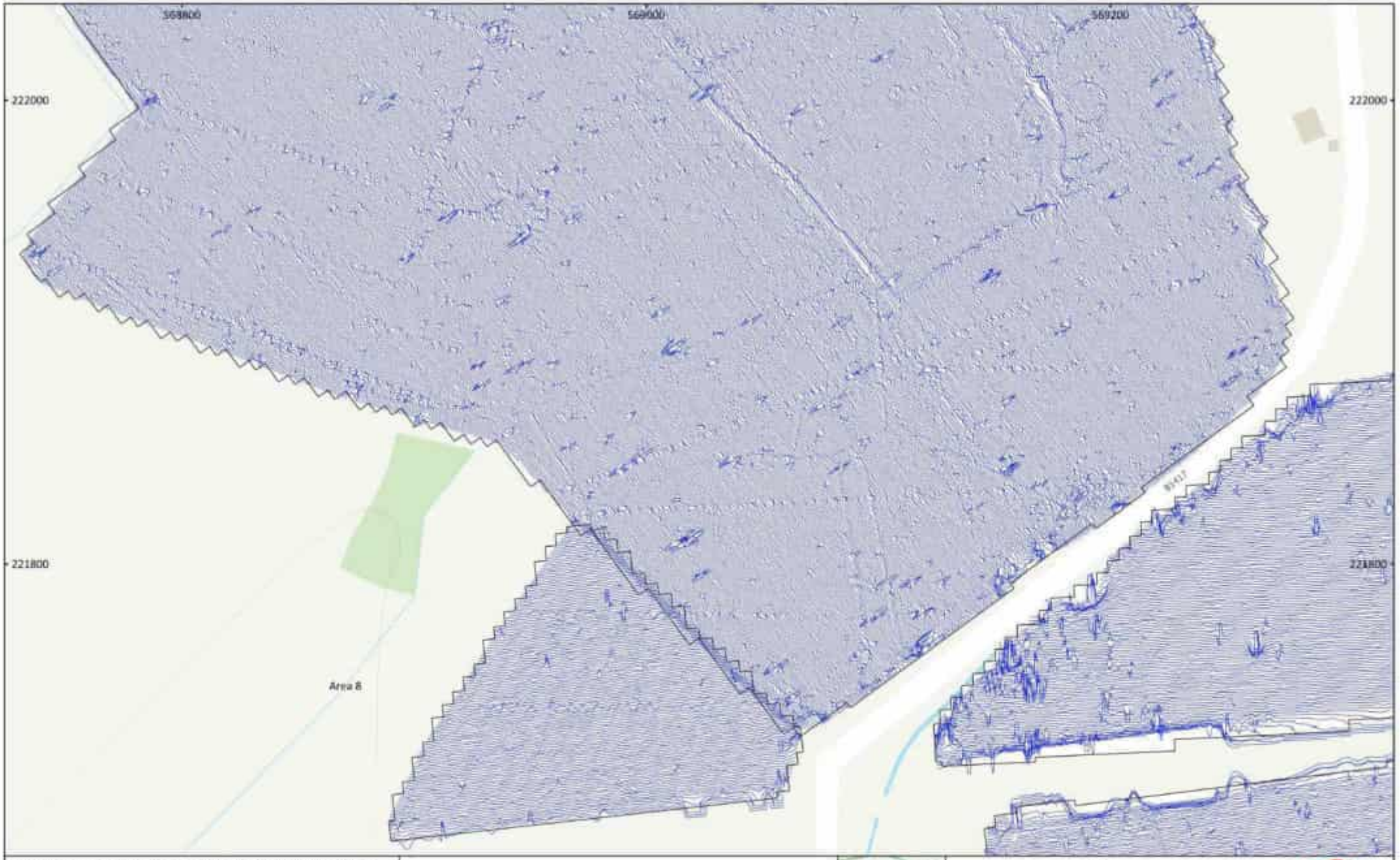
- Archaeology Probable (Strong)
- Archaeology Probable (Weak)
- Archaeology Possible (Strong)
- Archaeology Possible (Weak)
- Agricultural (Strong)
- Agricultural (Weak)
- Natural (Weak)
- Undetermined (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Drainage Feature
- Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys



MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 17 - XY Trace Plot (Areas 1, 2 & 8)
30nT/cm at 1:1,500 @ A3
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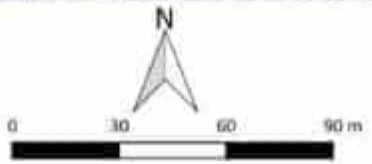

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M5TL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 18 - Magnetic Gradient (Areas 1, 2 & 4)
1:1,500 @ A3
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MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 19 - Magnetic Interpretation (Areas 1, 2 & 4)
1:1,500 @ A3
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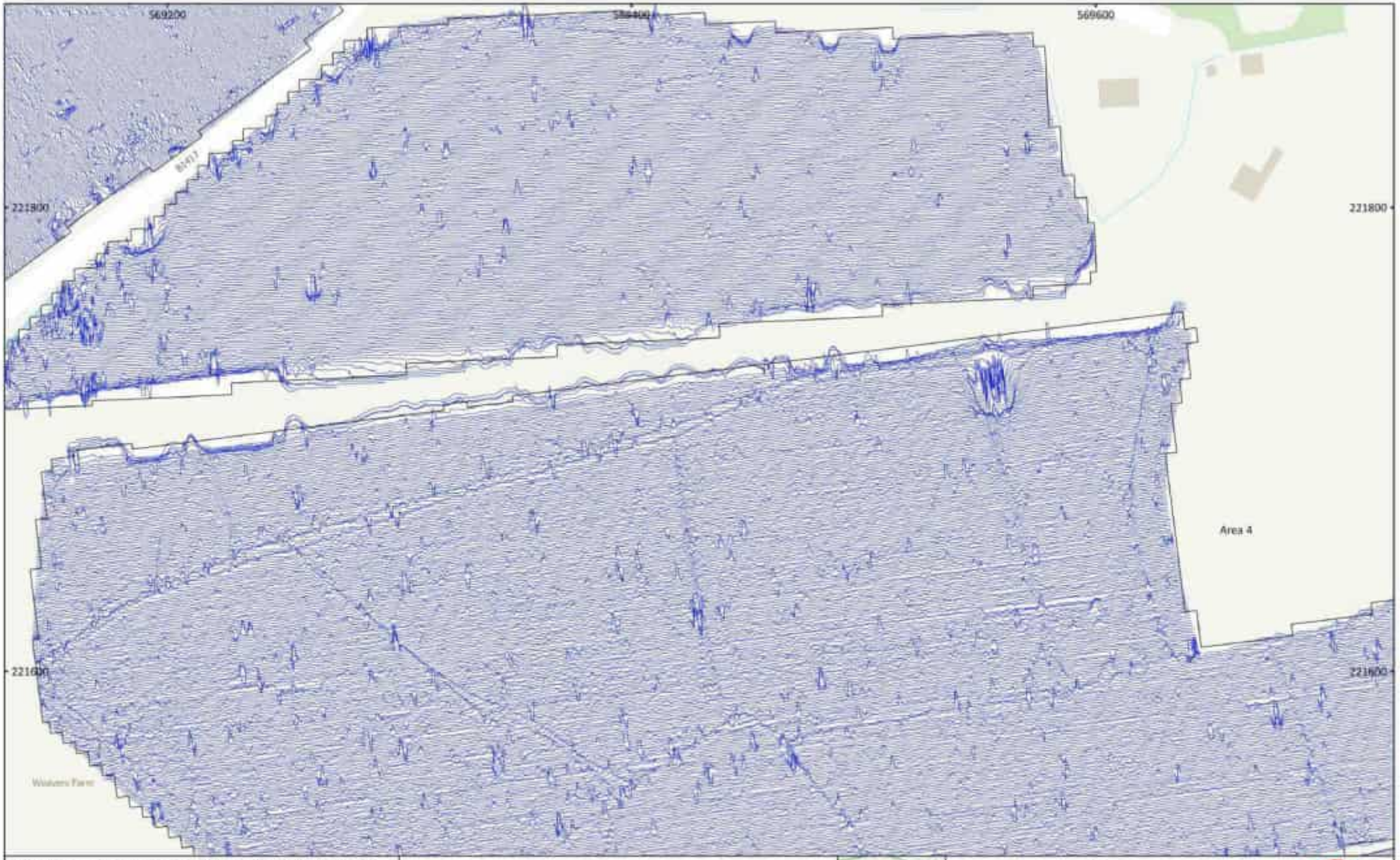
- Archaeology Possible (Weak)
- Agricultural (Strong)
- Agricultural (Weak)
- Natural (Strong)
- Natural (Weak)
- Undetermined (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Agricultural (Trend)
- Drainage Feature
- Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys



MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 20 - XY Trace Plot (Areas 1, 2 & 4)
30nT/cm at 1:1,500 @ A3
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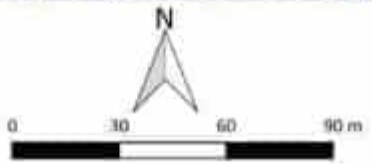

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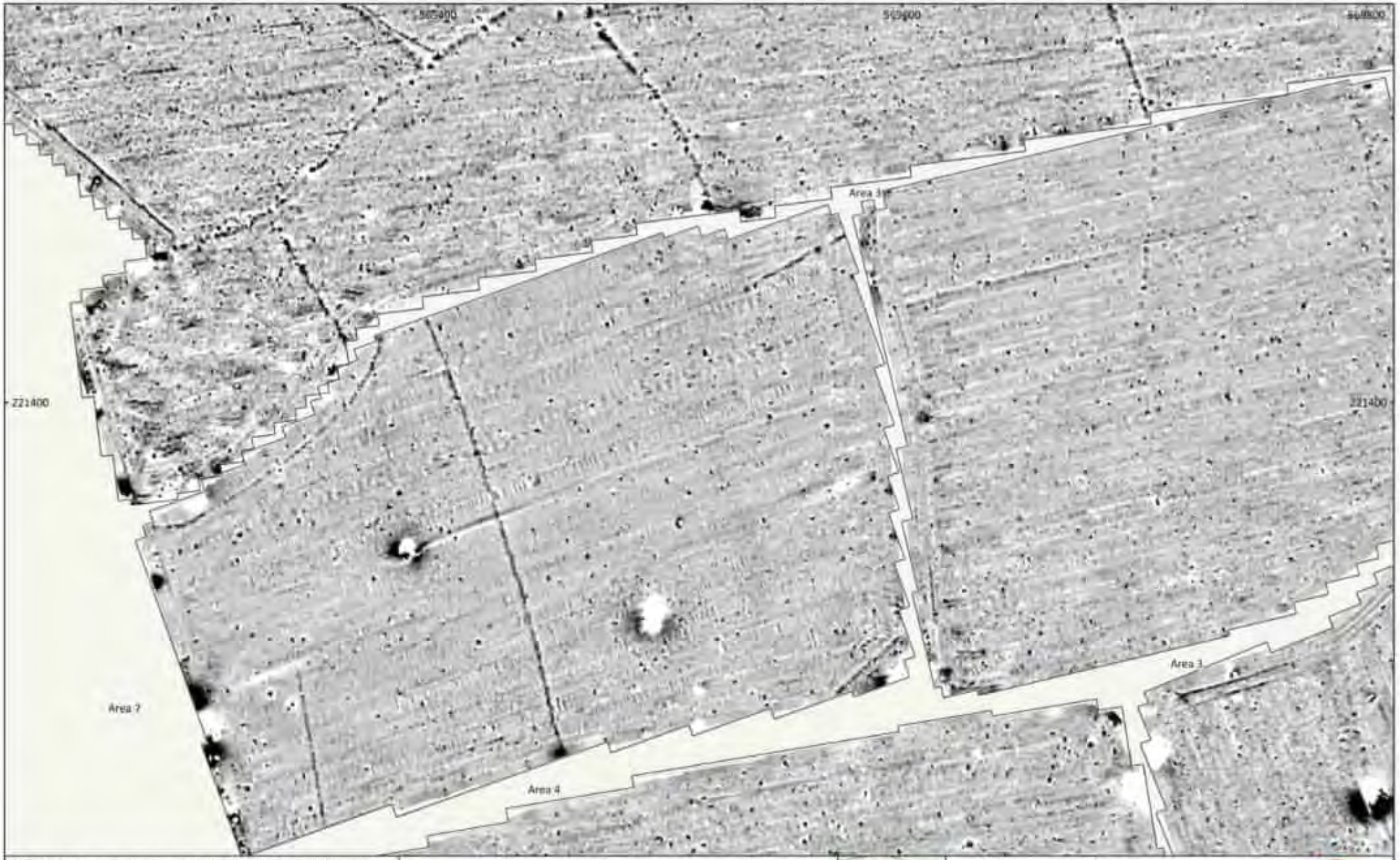

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 21 - Magnetic Gradient (Areas 3, 4, 5, 6 & 7)
1:1,500 @ A3
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-1 nT 1

Great more Green
Bannister Green

N

0 30 60 90 m

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M5TL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 22 - Magnetic Interpretation (Areas 3, 4, 5, 6 & 7)
1:1,500 @ A3
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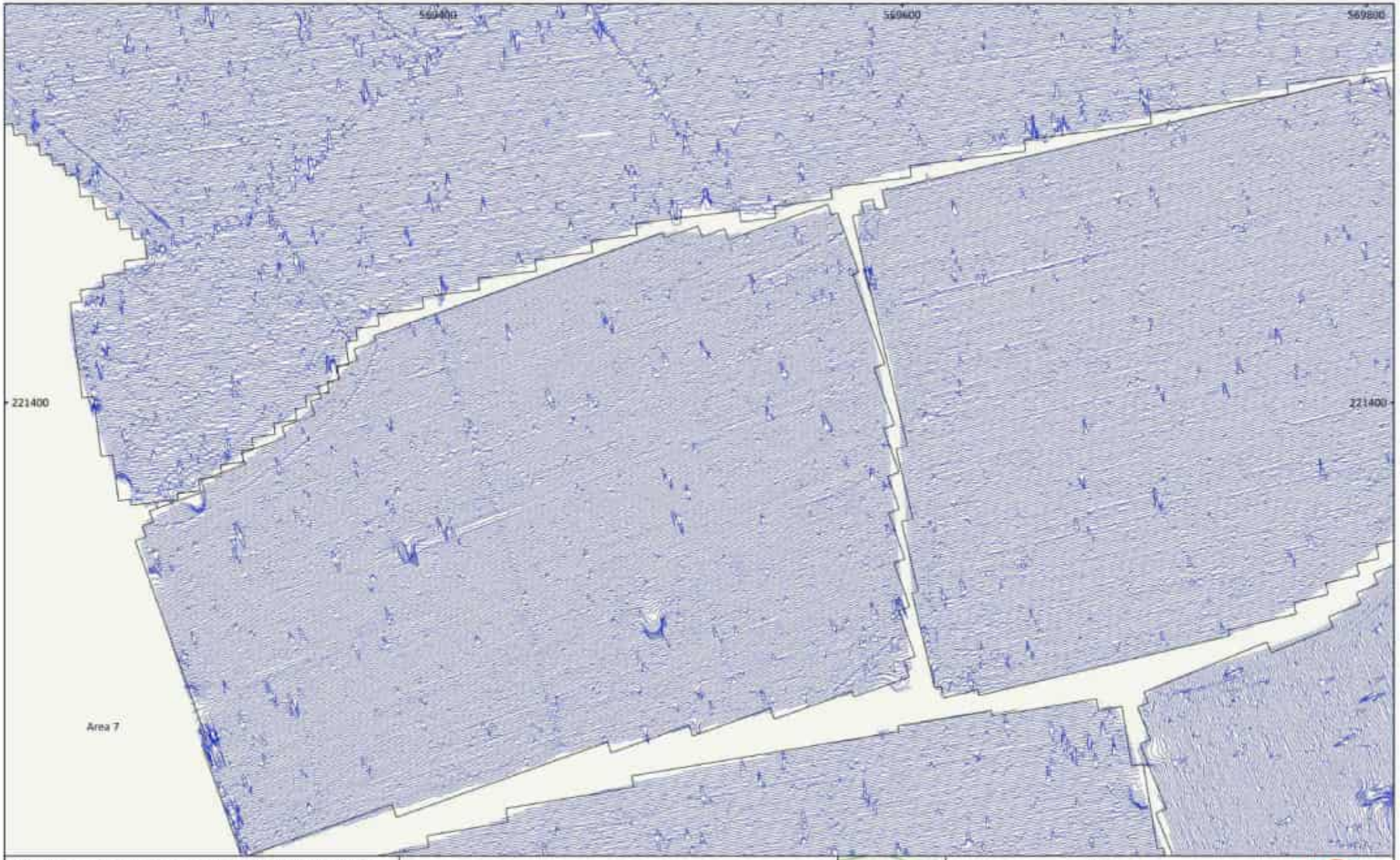
- Archaeology Possible (Weak)
- Agricultural (Strong)
- Agricultural (Weak)
- Undetermined (Strong)
- Undetermined (Weak)
- Magnetic Disturbance
- Agricultural (Trend)
- Drainage Feature
- Ferrous (Spike)

N

0 30 60 90 m

magnitude surveys



MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 23 - XY Trace Plot (Areas 3, 4, 5, 6 & 7)
30nT/m at 1:1,500 @ A3
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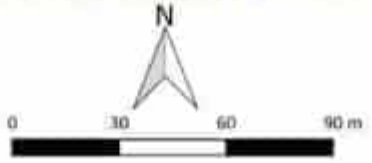

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MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 24 - Magnetic Gradient (Areas 3, 4 & 5)
1:1,500 @ A3
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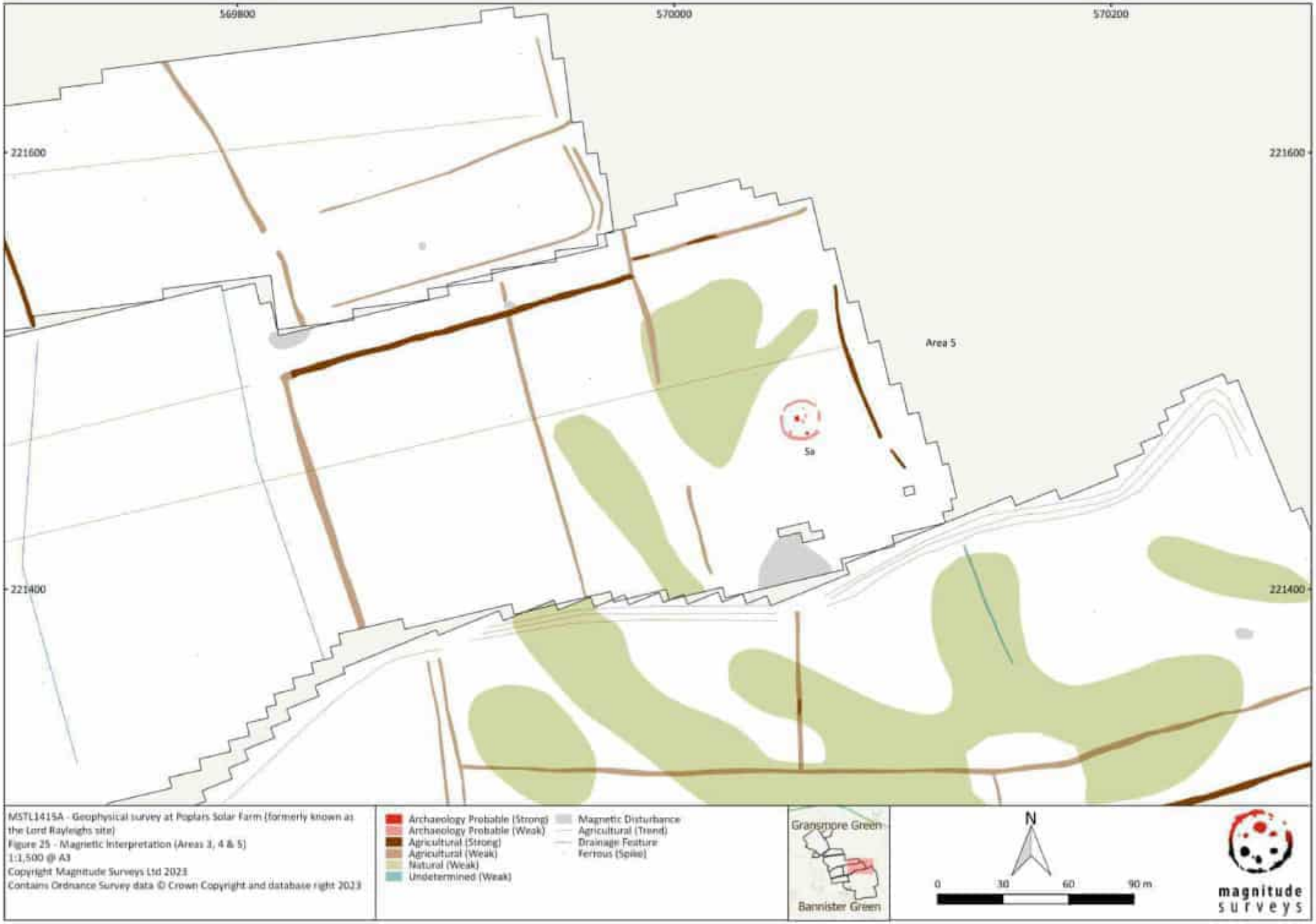
-1 nT 1

Grangmore Green
Bannister Green

N

0 30 60 90 m

magnitude surveys



MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 25 - Magnetic Interpretation (Areas 3, 4 & 5)
1:1,500 @ A3
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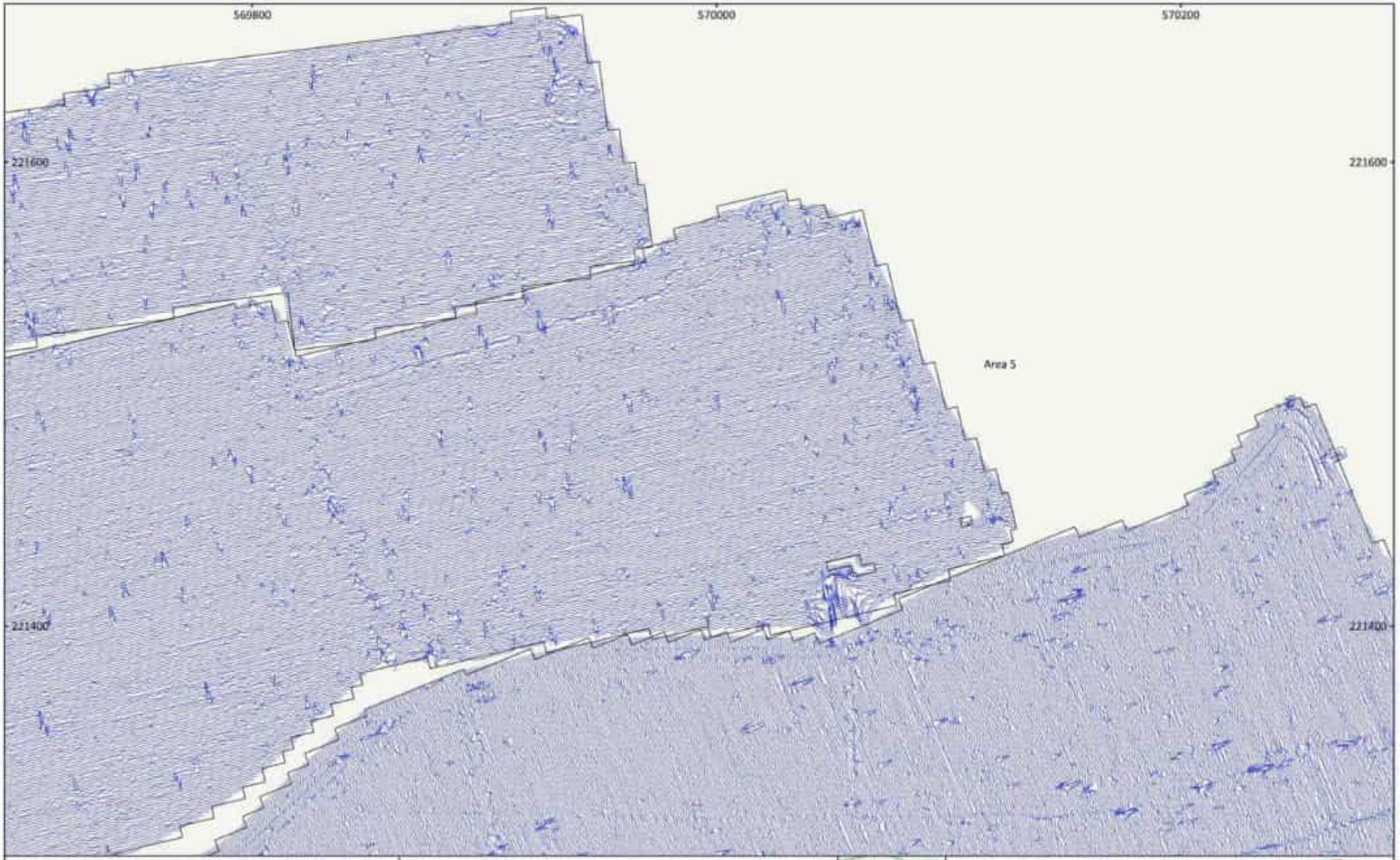

M5TL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 26 - XY Trace Plot (Areas 3, 4 & 5)
30nT/m at 1:1,500 @ A3
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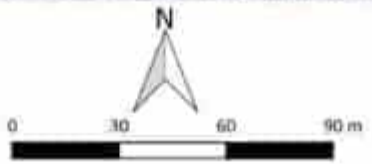

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MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 27 - Magnetic Gradient (Areas 3 & 6)
1:1,500 @ A3
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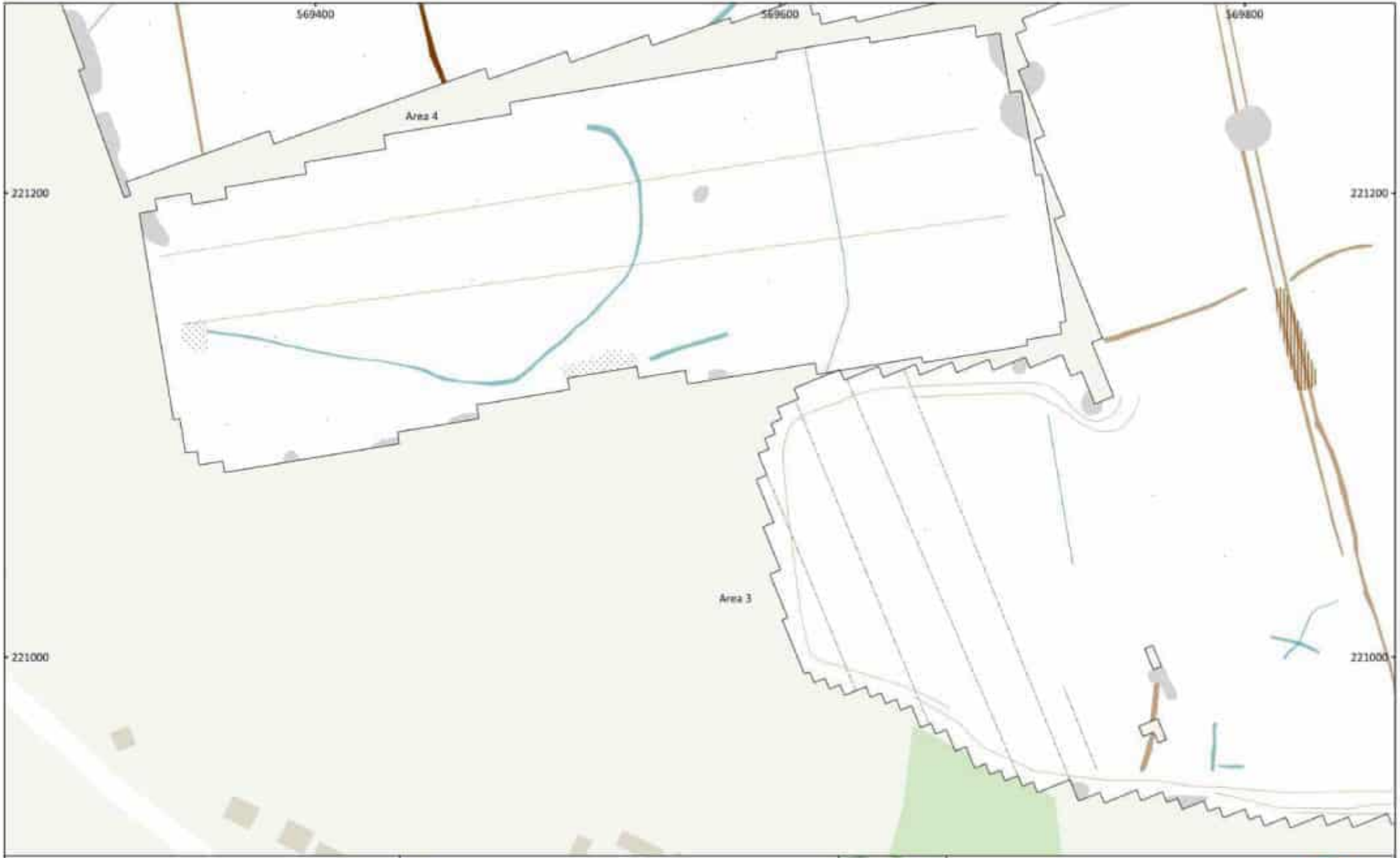
-1 nT 2

Grangmore Green
Bannister Green

N

0 30 60 90 m

magnitude surveys



M5TL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 28 - Magnetic Interpretation (Areas 3 & 6)
1:1,500 @ A3
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Agricultural (Spread)
Agricultural (Strong)
Agricultural (Weak)
Undetermined (Weak)
Magnetic Disturbance
Ferrous/Debris (Spread)
Agricultural (Trend)
Data Artefact
Drainage Feature
Ferrous (Spike)

Gransmore Green
Bannister Green

N

0 30 60 90 m

magnitude surveys

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 29 - XY Trace Plot (Areas 3 & 6)
30nT/m at 1:1,500 @ A3
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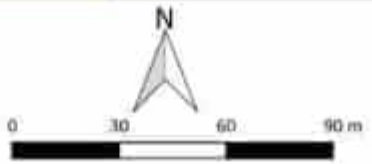

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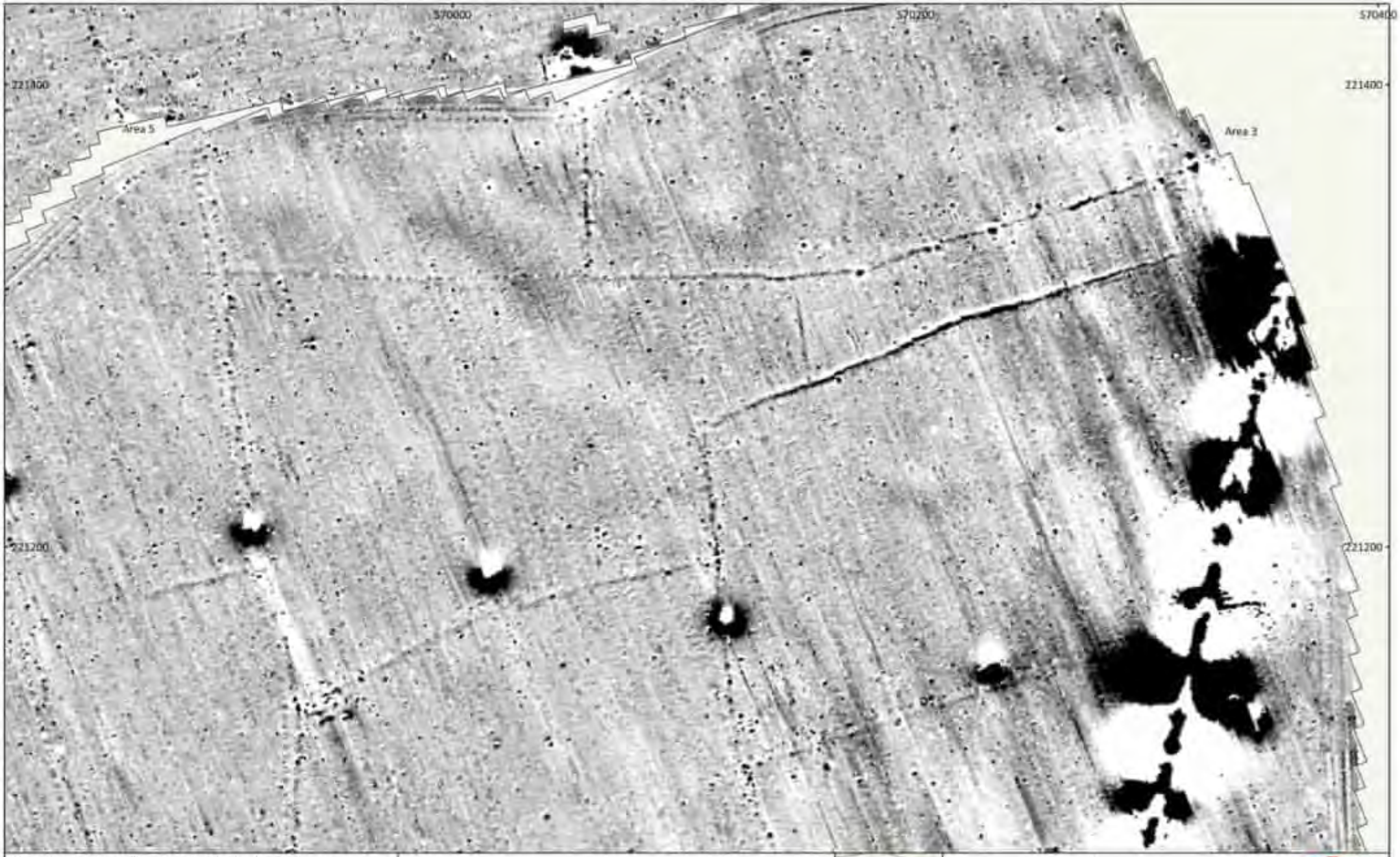

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 30 - Magnetic Gradient (Areas 3 & 5)
1:1,500 @ A3
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-1 nT 2

Gransmore Green
Bannister Green

N

0 30 60 90 m

magnitude surveys

M5TL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 31 - Magnetic Interpretation (Areas 3 & 5)
1:1,500 @ A3
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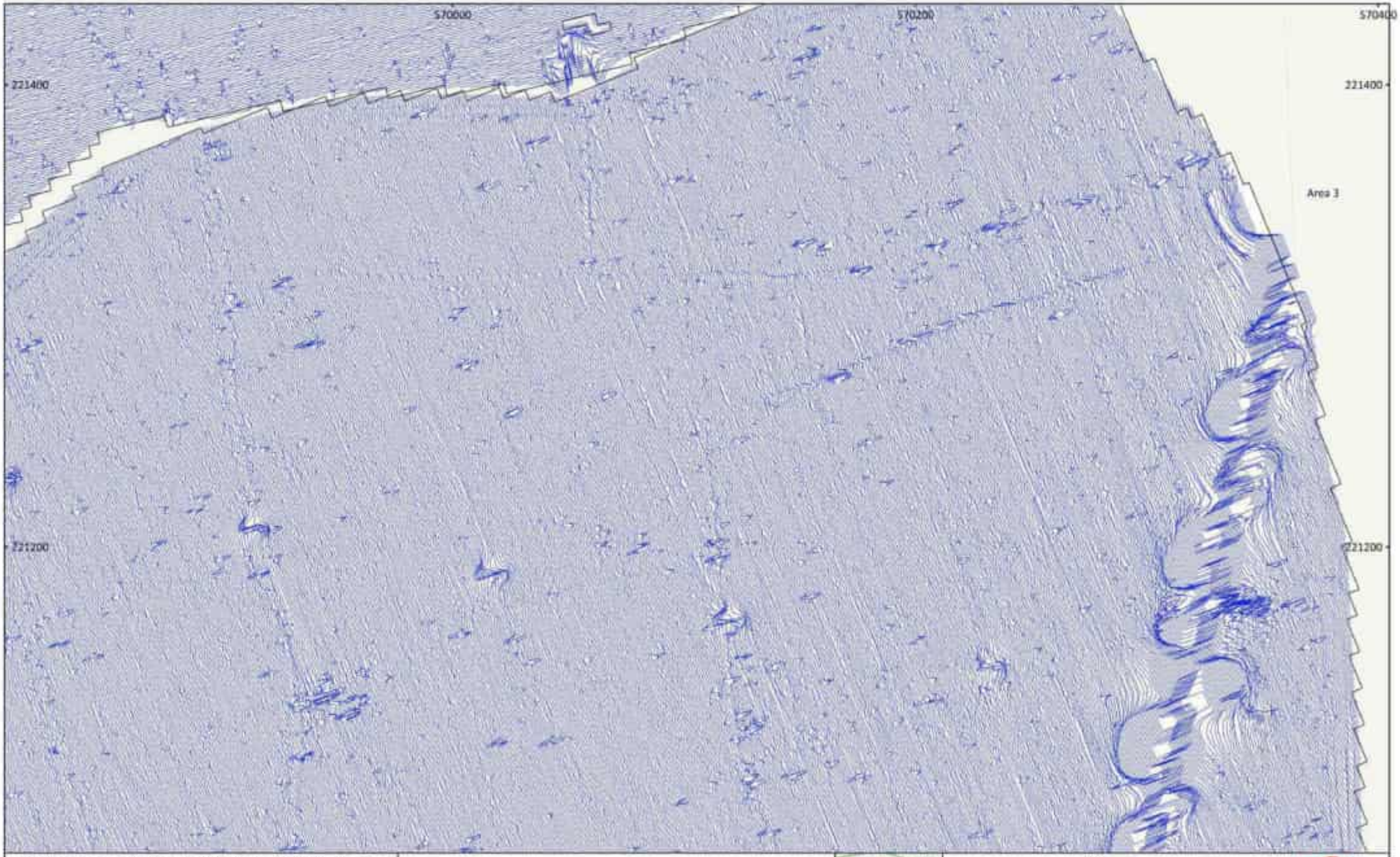
Agricultural (Spread)
Agricultural (Strong)
Agricultural (Weak)
Natural (Weak)
Undetermined (Weak)
Magnetic Disturbance
Ferrous/Debris (Spread)
Agricultural (Trend)
Service
Drainage Feature
Ferrous (Spike)

Gransmore Green
Bannister Green

N

0 30 60 90 m

magnitude surveys



MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 32 - XY Trace Plot (Areas 3 & 5)
30nT/m at 1:1,500 @ A3
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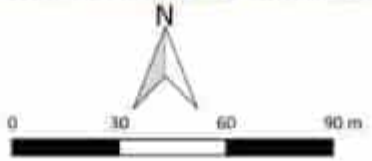

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M5TL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 33 - Magnetic Gradient (Area 3)
1:1,500 @ A3
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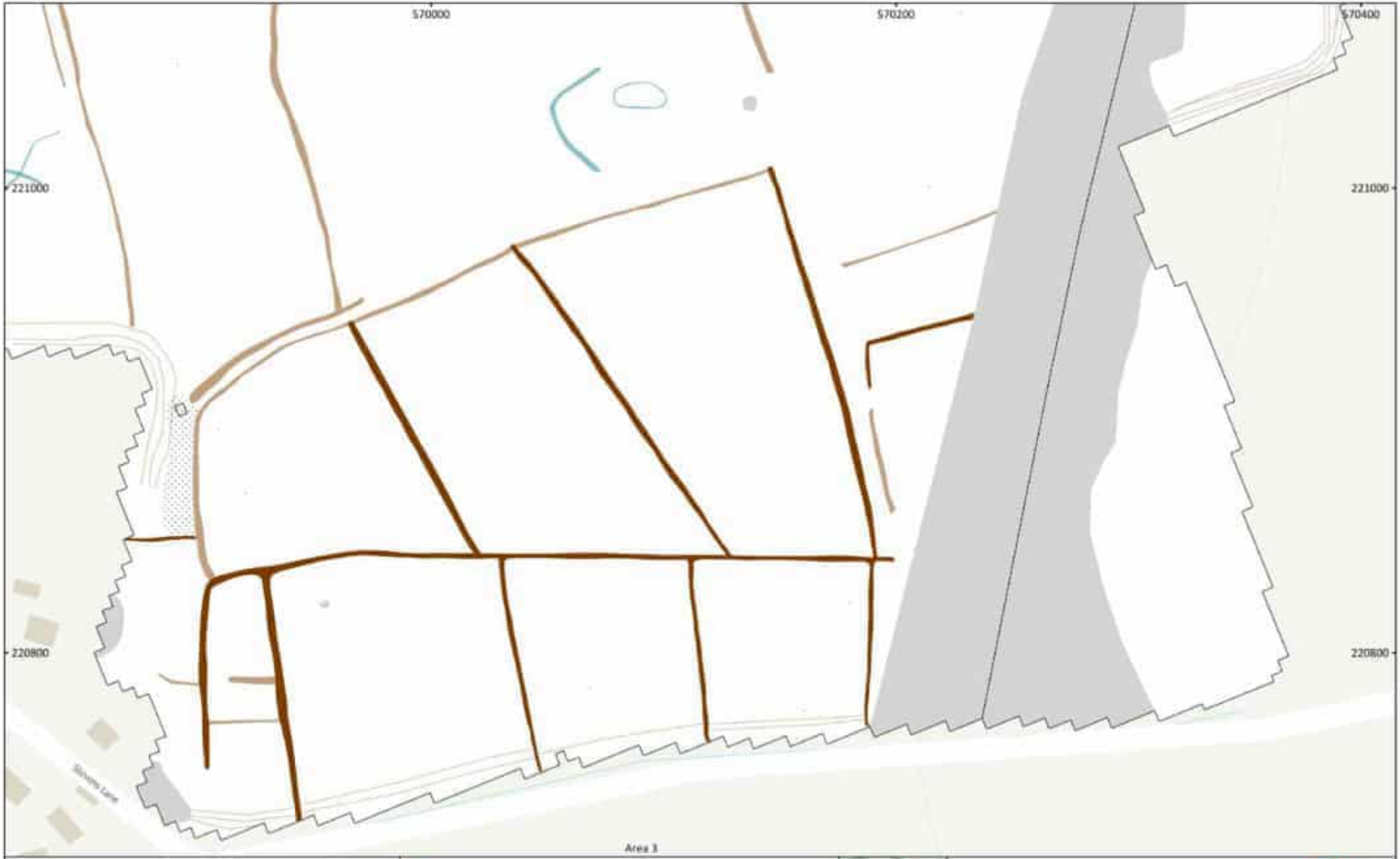

MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 34 - Magnetic Interpretation (Area 3)
1:1,500 @ A3
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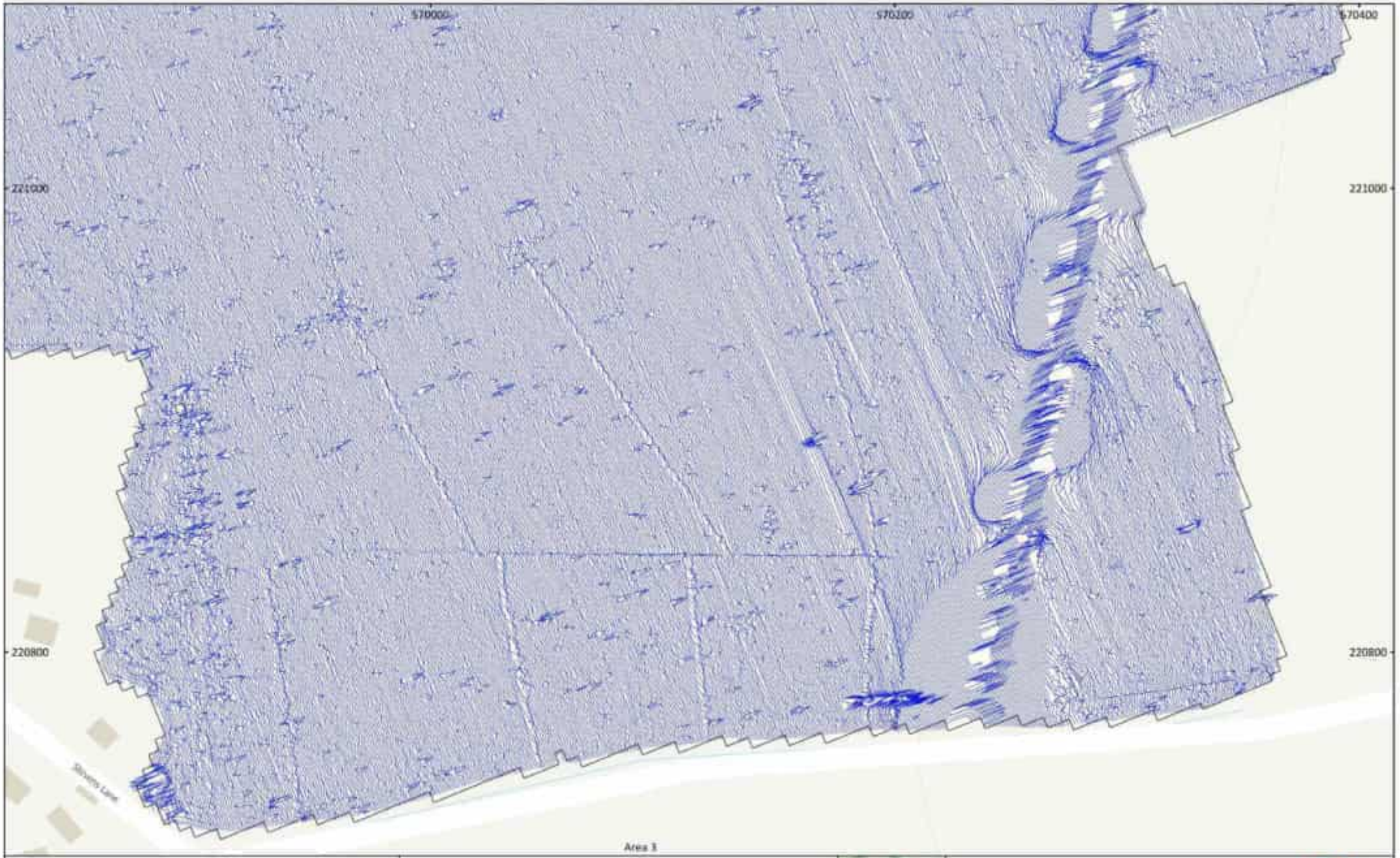
Agricultural (Strong)
Agricultural (Weak)
Undetermined (Weak)
Magnetic Disturbance
Ferrous/Debris (Spread)
Agricultural (Trend)
Service
Ferrous (Spike)

Gransmore Green
Bannister Green

N

0 30 60 90 m

magnitude surveys



MSTL1415A - Geophysical survey at Poplars Solar Farm (formerly known as the Lord Rayleighs site)
Figure 35 - XY Trace Plot (Area 3)
30nT/m at 1:1,500 @ A3
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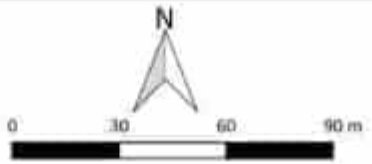

magnitude surveys

Geophysical Survey Report

Of

Land at Drapers Chase Solar Farm, Felsted, Essex

For

Pegasus Planning Group Ltd

On Behalf Of

Bluestone Energy

Magnitude Surveys Ref: MSTL1415B

OASIS Number: magnitud1-512944

January 2023

3 Captain Street

Bradford

BD1 4HA

01274 926020

info@magnitudesurveys.co.uk

Report By:

Aidan Hernaman MESci

Madhumathy Chandrasekaran BA MA

Report Approved By:

Finnegan Pope-Carter BSc (Hons) MSc FGS

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06 January 2023

Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c.71.8ha area of land at Drapers Chase Solar Farm, Felsted, Essex. A fluxgate gradiometer survey was successfully completed across the survey area. No anomalies suggestive of significant archaeological features were identified. Agricultural activity has been identified as a series of former mapped and unmapped field boundaries and drainage features. Bands of magnetically enhanced material likely relating to superficial deposits of clay, silt, sand and gravel have also been identified. Anomalies undetermined in origin have also been detected and, while these may relate to agricultural and/or modern activities, their origin remains uncertain.

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1. Introduction

1.1. Magnitude Surveys Ltd (MS) was commissioned by Pegasus Planning Group Ltd on behalf of Bluestone Energy to undertake a geophysical survey over a c. 71.8ha area of land at Drapers Chase Solar Farm, Felsted, Essex (TL 69264 22137).

1.2. The geophysical survey comprised quad-towed GNSS-positioned fluxgate gradiometer survey. Magnetic survey is the standard primary geophysical method for archaeological applications in the UK due to its ability to detect a range of different features. The technique is particularly suited for detecting fired or magnetically enhanced features, such as ditches, pits, kilns, sunken featured buildings (SFBs) and industrial activity (David *et al*., 2008).

1.3. The survey was conducted in line with the current best practice guidelines produced by Historic England (David *et al*., 2008), the Chartered Institute for Archaeologists (CIfA, 2020) and the European Archaeological Council (Schmidt *et al.,* 2015).

1.4. It was conducted in line with a WSI produced by MS (Howarth and Carli, 2022).

1.5. The survey commenced on 17/10/22 and ended on 04/11/2022.

2. Quality Assurance

2.1. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society for Archaeological Prospection).

2.2. The directors of MS are involved in cutting edge research and the development of guidance/policy. Specifically, Dr Chrys Harris has a PhD in archaeological geophysics from the University of Bradford, is a Member of CIfA and is the Vice-Chair of the International Society for Archaeological Prospection (ISAP); Finnegan Pope-Carter has an MSc in archaeological geophysics and is a Fellow of the London Geological Society, as well as a member of GeoSIG (CIfA Geophysics Special Interest Group); Dr Paul Johnson has a PhD in archaeology from the University of Southampton, is a Fellow of the Society of Antiquaries of London and a Member of CIfA, has been a member of the ISAP Management Committee since 2015, and is currently the nominated representative for the EAA Archaeological Prospection Community to the board of the European Archaeological Association.

2.3. All MS managers, field and office staff have degree qualifications relevant to archaeology or geophysics and/or field experience.

2.4. Data collection was repeated over the same traverses to demonstrate the consistency and reliability of the geophysical survey. These are presented below, taken from Area 1:

2.5. Traverse 83:

2.6. Traverse 130:

3. Objectives

3.1. The objective of this geophysical survey was to assess the subsurface archaeological potential of the survey area.

4. Geographic Background

4.1. The survey area was located c. 1.6km southwest of Rayne (Figure 1). The gradiometer survey was undertaken across 10 fields under arable cultivation. The survey area is located south of the A120 and c. 4.5km west of Braintree. To its south are arable fields while to its west is the River Ter (Figure 2).

4.2. Survey considerations:

Survey Area	Ground Conditions	Further Notes
1	The survey area consisted of a flat stubble field.	The area was bordered to the north, west and east by a road and to the south by trees and no physical boundary.
2	The survey area consisted of a flat stubble field.	The area was surrounded by hedges and ditches with a portion of the northeast being bordered by farm infrastructure. Running roughly north-south in the northeast of the field were pylons and overhead cables.
3	The survey area consisted of a flat stubble field.	The area was bordered on all sides by hedgerows and trees, and to the northwest, north, and northeast by ditches as well.
4	The survey area consisted of a stubble field sloping down to the southeast.	The area was bordered on all sides by ditches and hedgerows. In the centre-west there was a mound of tree trunks.
5	The survey area consisted of a stubble field sloping gently down to the north.	The area was surrounded by ditches and hedgerows on all sides.
6	The survey area consisted of a stubble field sloping gently down to the east.	The area was bordered on all sides by ditches and trees. Running east-west in the south of the area were pylons and overhead cables.

7	The survey area consisted of a flat stubble field.	The area was surrounded by ditches and hedgerows on all sides.
8	The survey area consisted of a flat stubble field with dense vegetation.	The area was bordered on all sides but the northeast by trees and ditches. To the northeast there was no physical boundary.
9	The survey area consisted of a flat stubble field with dense vegetation.	The survey area was bordered on all sides by trees and ditches.
10	The survey area consisted of a flat stubble field with dense vegetation.	The survey area was bordered on all sides by trees and ditches.

4.1. The underlying geology comprises clay, silt and sand of the London Clay Formation and is present across the whole survey area. The superficial deposits are comprised of diamicton of the Lowestoft Formation that cover most of the survey area, while a section in the east of Area 1 comprises sand and gravel of the Lowestoft Formation. In the west of Areas 4 and 5 is a band of clay, silt, sand and gravel (British Geological Survey, 2023).

4.2. The survey area comprises lime-rich loamy and clayey soils with impeded drainage (Soilscapes, 2023).

5. Archaeological Background

5.1. The following is a summary of a draft Desk Based Assessment produced and provided by Pegasus Planning Group Ltd (Ward, 2023).

5.2. The findspot of a Bronze Age hoard has been recorded by the HER within the eastern extent of the survey area, although no precise location for this is known. A decorated copper-alloy handle of probable Roman date was identified within the centre of the survey area and further findspots of Roman date were also identified within the east of the survey area, including pottery and coins. The findspots of an early medieval lead brooch and a silver medieval coin were identified within the east of the survey area, though a precise location for these is unknown.

5.3. Approximately 310m north of the survey area, Bronze Age pits and ditches have been recorded after a geophysical survey and excavation. A scatter of Late Bronze Age to early Iron Age pottery was identified *c.* 260m north of the survey area,. in advance of the construction of the A120. During fieldwalking along the route of the proposed A120 trunk road, c. 620-70-830m north-west of the site, a number of finds of prehistoric date were recorded, comprising concentrations of burnt flint and flint flakes. Further prehistoric findspots were identified c.900m west of the survey area on the slope of the River Rayne, *c.* 400m north-west of the route of the A120 and c. 515m north-west of the survey area.

5.4. A Romano-British settlement has been recorded c.260m north of the survey area, including evidence of buildings, pits and ditches. Trial trenching c. 310m north of the site uncovered late Iron Age to Romano-British activity in the form of possible enclosures, pits, field systems and burials. A potential Romano-British farmstead was also recorded c. 400m northwest of the survey area. 3rd and 4th century activity was identified c. 840m east of the survey area, comprising Roman pottery, gullies and ditches. C. 145m north of the survey area, along the

proposed route of the A120*,* a concentration of Roman pottery was identified and a subsequent evaluation found field boundaries and a circular enclosure ditch. Further scatters of Roman pottery were also found along the route of the proposed A120 c. 185m north, c. 260m and c. 545m north of the survey area. The route of the Stane Street Roman Road is also known to run c.315m north of the survey area.

5.5. Evidence of medieval activity has been recorded c. 645m east of the survey area in the form of a moat including drainage ditches and ponds. The findspot of a medieval copper alloy jetton was recorded *c.* 920m north of the survey area. A number of buildings are recorded within the wider study area and most likely originated during the medieval period.

5.6. A map regression shows that some of the field boundaries within the survey area have been removed between the 18th and 19th centuries and some of the fields were amalgamated to form larger land parcels. The railway line between Bishops Stortford and Braintree was constructed in 1864 and lies immediately north of the survey area and is now in use as a bridleway. No major changes are recorded in the 20th century.

5.7. Cropmarks of linear features, most likely field boundaries, were recorded as extending into the northern extent of the survey area on aerial photographs.

5.8. A geophysical survey undertaken *c.* 315m north of the site identified a number of features of uncertain date, including a possible ring ditch and traces of field systems or enclosures.

6. Methodology

6.1. Data Collection

6.1.1. Magnetometer surveys are generally the most cost effective and suitable geophysical technique for the detection of archaeology in England. Therefore, a magnetometer survey should be the preferred geophysical technique unless its use is precluded by any specific survey objectives or the site environment. For this site, no factors precluded the recommendation of a standard magnetometer survey. Geophysical survey therefore comprised the magnetic method as described in the following section.

6.1.2. Geophysical prospection comprised the magnetic method as described in the following table.

6.1.3. Table of survey strategies:

Method	Instrument	Traverse Interval	Sample Interval
Magnetic	Bartington Instruments Grad-13 Digital Three-Axis Gradiometer	1m	200Hz reprojected to 0.125m

6.1.4. The magnetic data were collected using MS' bespoke quad-towed GNSS-positioned system.

6.1.4.1. MS' quad-towed system was comprised of Bartington Instruments Grad 13 Digital Three-Axis Gradiometers. Positional referencing was through a multi-channel, multi-constellation GNSS Smart Antenna RTK GPS outputting in NMEA mode to ensure high positional accuracy of collected measurements. The RTK GPS is accurate to 0.008m + 1ppm in the horizontal and 0.015m + 1ppm in the vertical.

6.1.4.2. Magnetic and GPS data were stored on an SD card within MS' bespoke datalogger. The datalogger was continuously synced, via an in-field Wi-Fi unit, to servers within MS' offices. This allowed for data collection, processing and visualisation to be monitored in real-time as fieldwork was ongoing.

6.1.4.3. A navigation system was integrated with the RTK GPS, which was used to guide the surveyor. Data were collected by traversing the survey area along the longest possible lines, ensuring efficient collection and processing.

6.2.Data Processing

6.2.1. Magnetic data were processed in bespoke in-house software produced by MS. Processing steps conform to the EAC and Historic England guidelines for 'minimally enhanced data' (see Section 3.8 in Schmidt *et al.*, 2015: 33 and Section IV.2 in David *et al.,* 2008: 11).

Sensor Calibration – The sensors were calibrated using a bespoke in-house algorithm, which conforms to Olsen *et al.* (2003).

Zero Median Traverse – The median of each sensor traverse is calculated within a specified range and subtracted from the collected data. This removes striping effects caused by small variations in sensor electronics.

Projection to a Regular Grid – Data collected using RTK GPS positioning requires a uniform grid projection to visualise data. Data are rotated to best fit an orthogonal grid projection and are resampled onto the grid using an inverse distance-weighting algorithm.

Interpolation to Square Pixels – Data are interpolated using a bicubic algorithm to increase the pixel density between sensor traverses. This produces images with square pixels for ease of visualisation.

6.3.Data Visualisation and Interpretation

6.3.1. This report presents the gradient of the sensors' total field data as greyscale images, as well as the total field data from the or lower sensors (Figures 3, 5 & 7). The gradient of the sensors minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images of the gradient and total field at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figures 11, 14, 17, 20, 23 & 26). XY trace plots visualise the magnitude and form of the geophysical response, aiding anomaly interpretation.

6.3.2. Geophysical results have been interpreted using greyscale images and XY traces in a layered environment, overlaid against open street maps, satellite imagery, historical maps, LiDAR data, and soil and geology maps. Google Earth (2023) was also consulted, to compare the results with recent land use.

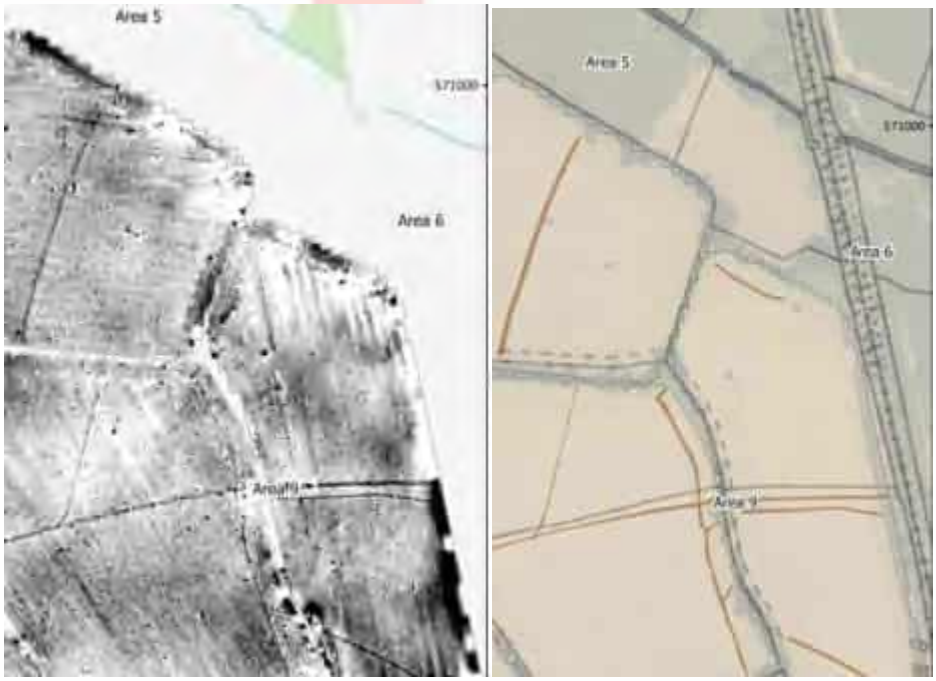
6.3.3. Geodetic position of results – All vector and raster data have been projected into OSGB36 (ESPG27700) and can be provided upon request in ESRI Shapefile (.SHP) and Geotiff (.TIF) respectively. Figures are provided with raster and vector data projected against OS Open Data.

7. Results

7.1.Qualification

7.1.1. Geophysical results are not a map of the ground and are instead a direct measurement of subsurface properties. Detecting and mapping features requires that said features have properties that can be measured by the chosen technique(s) and that these properties have sufficient contrast with the background to be identifiable. The interpretation of any identified anomalies is inherently subjective. While the scrutiny of the results is undertaken by qualified, experienced individuals and rigorously checked for quality and consistency, it is often not possible to classify all anomaly sources. Where possible, an anomaly source will be identified along with the certainty of the interpretation. The only way to improve the interpretation of results is through a process of comparing excavated results with the geophysical reports. MS actively seek feedback on their reports, as well as reports from further work, in order to constantly improve our knowledge and service.

7.1.2. In order to inform the reliability of the geophysical survey data, a portion of the greyscale from Area 6 has been chosen and displayed below, as it shows evidence of an anomaly corresponding with a known feature. Within this portion of the data, a linear anomaly is visible and corresponds with a former field boundary recorded on the HER as a linear cropmark and on OS historical mapping.



7.2.Discussion

7.2.1. The geophysical results are presented in combination with satellite imagery and historical maps (Figures 4, 6 and 8).

7.2.2. The fluxgate gradiometer survey has responded well to the environment of the survey area, although occasional concentrations of ferrous anomalies may have obscured weaker, more ephemeral features, if present (Figures 3-8). The geophysical survey has primarily detected anomalies of agricultural and natural origins.

7.2.3. No anomalies suggestive of significant archaeological features were identified.

7.2.4. Anomalies relating to agricultural activity have been detected across the survey area (Figures 3-8). A number of these anomalies align with former field boundaries recorded on historical maps. Those that are not recorded appear to be subdivisions of the mapped historical boundaries and are coherent with the wider field systems.

7.2.5. Linear anomalies relating to drainage features have been identified in the centre and south of the survey area (Figures 3-8).

7.2.6. Broad, amorphous anomalies suggestive of clay, silt, sand and gravel deposits have been detected in the northwest, centre and south of the survey area (Figures 3-8).

7.3.Interpretation

7.3.1. General Statements

7.3.1.1. Geophysical anomalies will be discussed broadly as classification types across the survey area. Only anomalies that are distinctive or unusual will be discussed individually.

7.3.1.2. **Data Artefact** – Data artefacts usually occur in conjunction with anomalies with strong magnetic signals due to the way in which the sensors respond to very strong point sources. They are usually visible as minor 'streaking' following the line of data collection. While these artefacts can be reduced in post-processing through data filtering, this would risk removing 'real' anomalies. These artefacts are therefore indicated as necessary in order to preserve the data as 'minimally processed'.

7.3.1.3. **Ferrous (Spike)** – Discrete dipolar anomalies are likely to be the result of isolated pieces of modern ferrous debris on or near the ground surface.

7.3.1.4. **Ferrous/Debris (Spread)** – A ferrous/debris spread refers to a concentration of multiple discrete, dipolar anomalies usually resulting from highly magnetic material such as rubble containing ceramic building materials and ferrous rubbish.

7.3.1.5. **Magnetic Disturbance** – The strong anomalies produced by extant metallic structures, typically including fencing, pylons, vehicles, and service pipes, have been classified as 'Magnetic Disturbance'. These magnetic 'haloes' will obscure

weaker anomalies relating to nearby features, should they be present, often over a greater footprint than the structure causing them.

7.3.1.6. **Undetermined** – Anomalies are classified as Undetermined when the origin of the geophysical anomaly is ambiguous and there is no supporting contextual evidence to justify a more certain classification. These anomalies are likely to be the result of geological, pedological or agricultural processes, although an archaeological origin cannot be entirely ruled out. Undetermined anomalies are generally distinct from those caused by ferrous sources.

7.3.2. Magnetic Results - Specific Anomalies

7.3.2.1. Agricultural (Strong and Weak) – Across the survey area, multiple positive, both weak and strong, linear anomalies have been detected [**1a, 1b, 2a, 2b, 4a, 6a, 9a, and 10a**] (Figures 9-26). A number of these anomalies align with field boundaries recorded on historical mapping. Those that are not recorded display similar orientations, sizes and signals to the mapped ones and have therefore been interpreted as former unmapped field boundaries.

7.3.2.2. Drainage Features (Trend) – Across Areas 3, 7 and 8, several weakly positive linear anomalies have been identified (Figures 9-11; 18-26). These all run in a northwest to southeast orientation and are likely relating to drainage features.

7.3.2.3. Natural (Weak & Spread) – Broad, amorphous anomalies identified across Areas 2, 3 & 4 (Figures 16-26) have been interpreted as natural in origin. These likely correspond with magnetically enhanced deposits of clay, silt and sand.

7.3.2.4. Undetermined (Strong and Weak) – Linear anomaly [**4b**] (Figures 15-17), which exhibits a very faint positive magnetic signal, is located in the vicinity of a mapped field boundary ([**4a**]) and appears to run towards it and possibly adjoin it; an agricultural origin is therefore possible but uncertain. Anomaly [**10b**] (Figures 9-11) exhibits a strongly dipolar signal with a double-peak signal which may be indicative of burning activity; it is however possible that this relates to a feature with ferrous content instead.

8. Conclusions

8.1. A fluxgate gradiometer survey has successfully been undertaken across the survey area. The geophysical survey has detected anomalies of agricultural, natural and undetermined origins. The underlying geology has contributed to the enhancement of the magnetic data with areas of magnetically enhanced clay, silt and sand detected in the northeast, southwest and south of the survey area. Some areas exhibit concentrations of ferrous debris, particularly in the northeast, and magnetic disturbance from pylons and overhead power cables has also been detected. It is possible within these areas that anomalies with weaker magnetic signals may have been obscured, if any were present.

8.2. No anomalies suggestive of significant archaeological features were identified.

8.3. Historical and modern agricultural activity has been identified across the survey area in the form of former mapped and unmapped field boundaries and drainage features.

8.4. Anomalies of undetermined origin have been detected. These may relate to agricultural activities and modern, ferrous features; however, their origin remains uncertain.

9. Archiving

9.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report.

9.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to any dictated time embargoes.

10. Copyright

10.1. Copyright and intellectual property pertaining to all reports, figures and datasets produced by Magnitude Services Ltd is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

11. References

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12. Project Metadata

MS Job Code	MSTL1415B
Project Name	Drapers Chase Solar Farm, Felsted, Essex
Client	Pegasus Planning Group Ltd
Grid Reference	TL 69264 22137
Survey Techniques	Magnetometry
Survey Size (ha)	71.8
Survey Dates	2022 -10-17 to 2022-11-04
Project Lead	Isabella Carli BA MA PCIfA
Project Officer	Isabella Carli BA MA PCIfA
HER Event No	N/A
OASIS No	TBC
S42 Licence No	N/A
Report Version	Final 1.1

13. Document History

Version	Comments	Author	Checked By	Date
0.1	Initial draft for Project Lead to Review	AH	IC, JD	13 December 2022
0.2	Comments from Project Lead	IC, IT	IC	4 January 2023
0.2	Director's check	N/A	FPC	6 January 2023
0.3	Archaeological Background and Paragraph 7.1.2	IC, ED	IC, LG	17 January 2023
Final 1.0	Addition of: duplicate traverses, HER Event number, OASIS number	IC	IC	7 February 2023
Final 1.1	Reference to HER Event Number removed as Essex HER does not issue event numbers for deposition	IC	IC	13 February 2023

MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 1 - Site Location
1:25,000 @ A4
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Site Boundary

MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 2 - Location of Survey Areas
1:10,000 @ A3
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Survey Extent

N

0 250 500 750 m

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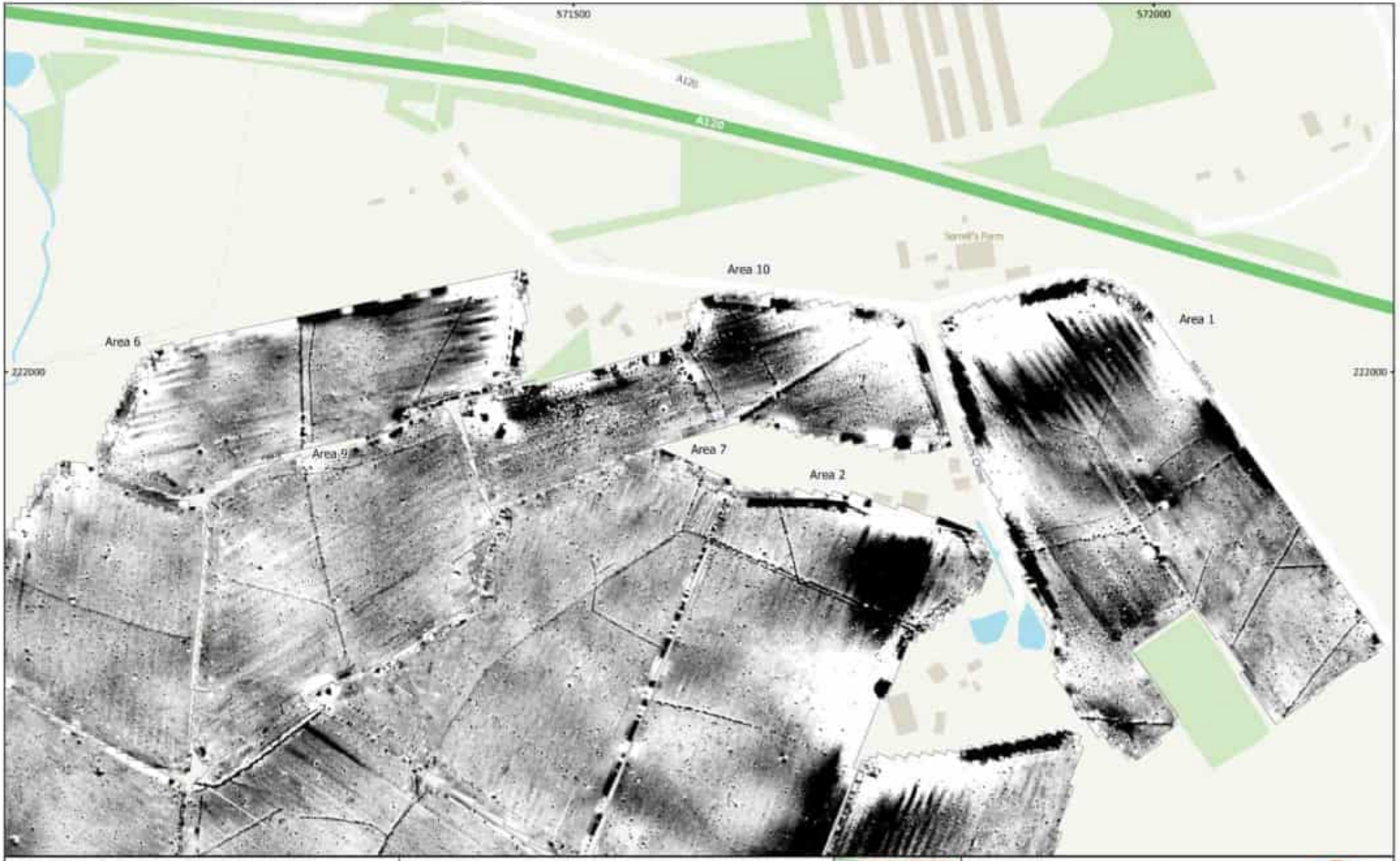

M5TL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 3 - Magnetic Total Field (Lower Sensor) (Overview) (North)
1:3,000 @ A3
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-48,997 nT 48,005

0 50 100 150 m

magnitude surveys

MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 4 - Magnetic Interpretation Over Historical Maps (Overview) (North)
1:3,000 @ A3
Copyright Magnitude Surveys Ltd 2022
Contains historical mapping © CLS Data 2022: Ordnance Survey, 6" 2nd edition c. 1882-1913

- Agricultural (Strong)
- Agricultural (Weak)
- Agricultural (Spread)
- Natural (Spread)
- Undetermined (Strong)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Drainage Feature
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

M5TL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 5 - Magnetic Total Field (Lower Sensor) (Overview) (West)
1:3,000 @ A3
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Contains Ordnance Survey data © Crown Copyright and database right 2022

48,997 nT 49,005

N

0 50 100 150 m

magnitude surveys

MSTL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 6 - Magnetic Interpretation Over Historical Maps (Overview) (West)
1:3,000 @ A3
Copyright Magnitude Surveys Ltd 2022
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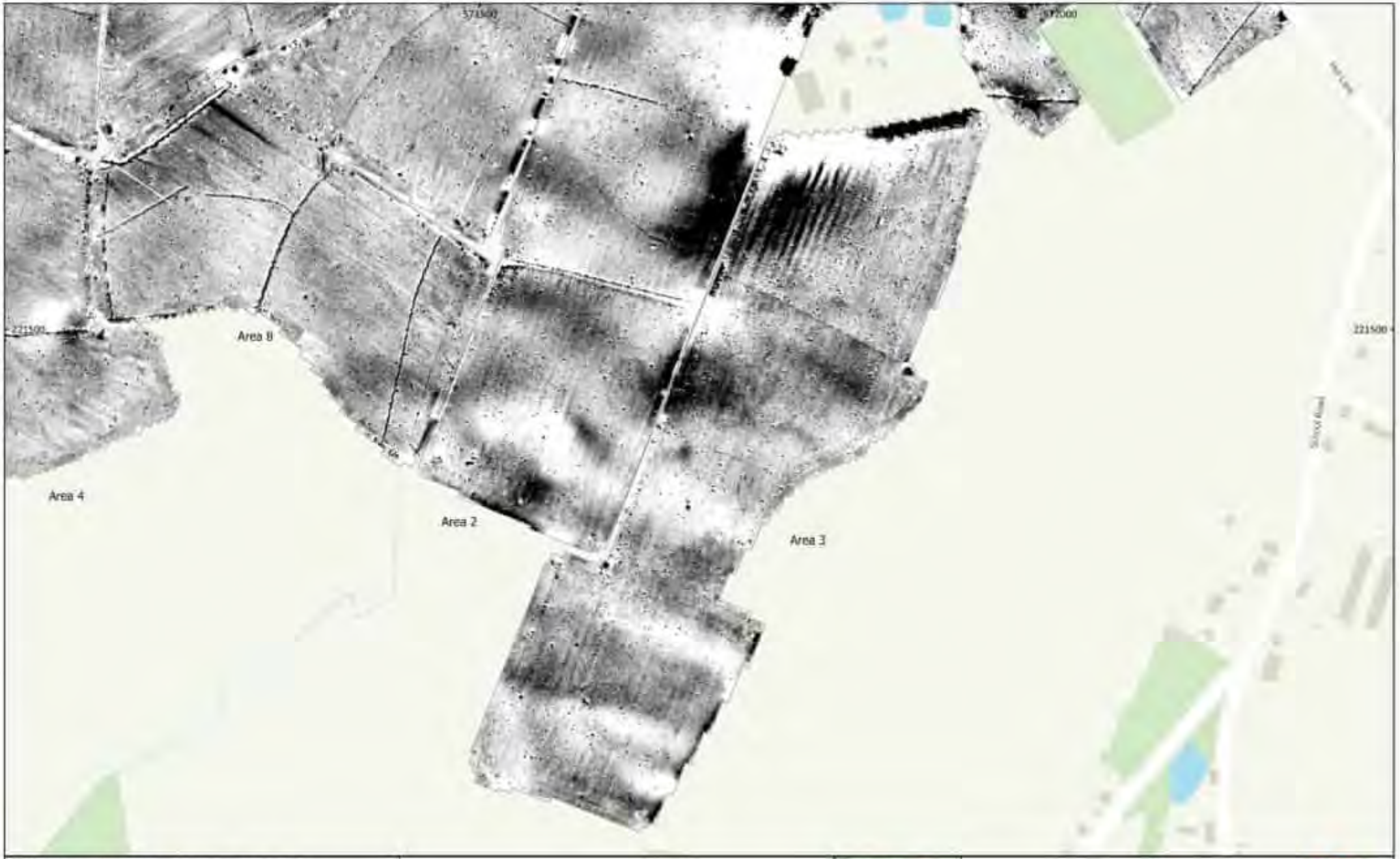
- Agricultural (Strong)
- Agricultural (Weak)
- Agricultural (Spread)
- Natural (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Undetermined (Weak)
- Drainage Feature
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys



MSTL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 7 - Magnetic Total Field (Lower Sensor) (Overview) (South)
1:3,000 @ A3
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-48,997 nT 48,005

0 50 100 150 m

N

magnitude surveys

M5TL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 8 - Magnetic Interpretation Over Historical Maps (Overview) (South)
1:3,000 @ A3
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- Agricultural (Strong)
- Agricultural (Weak)
- Agricultural (Spread)
- Natural (Spread)
- Natural (Weak)
- Magnetic Disturbance
- Ferrous/Debris (Spread)
- Undetermined (Weak)
- Drainage Feature
- Ferrous (Spike)

N

0 50 100 150 m

magnitude surveys

MSTL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 9 - Magnetic Gradient (Areas 2, 5, 6, 7, 9 & 10)
1:1,500 @ A3
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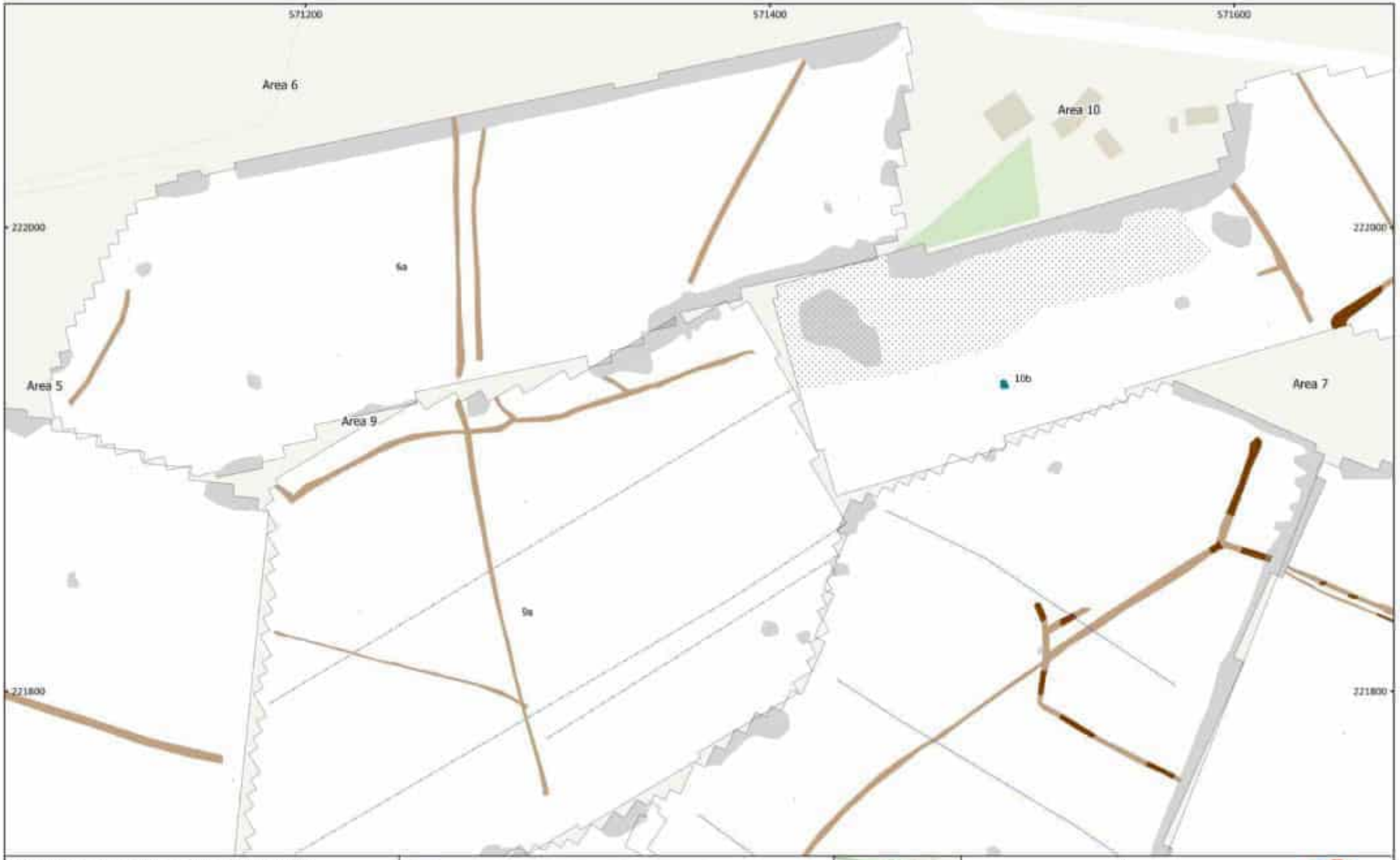

MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 10 - Magnetic Interpretation (Areas 2, 5, 6, 7, 9 & 10)
1:1,500 @ A3
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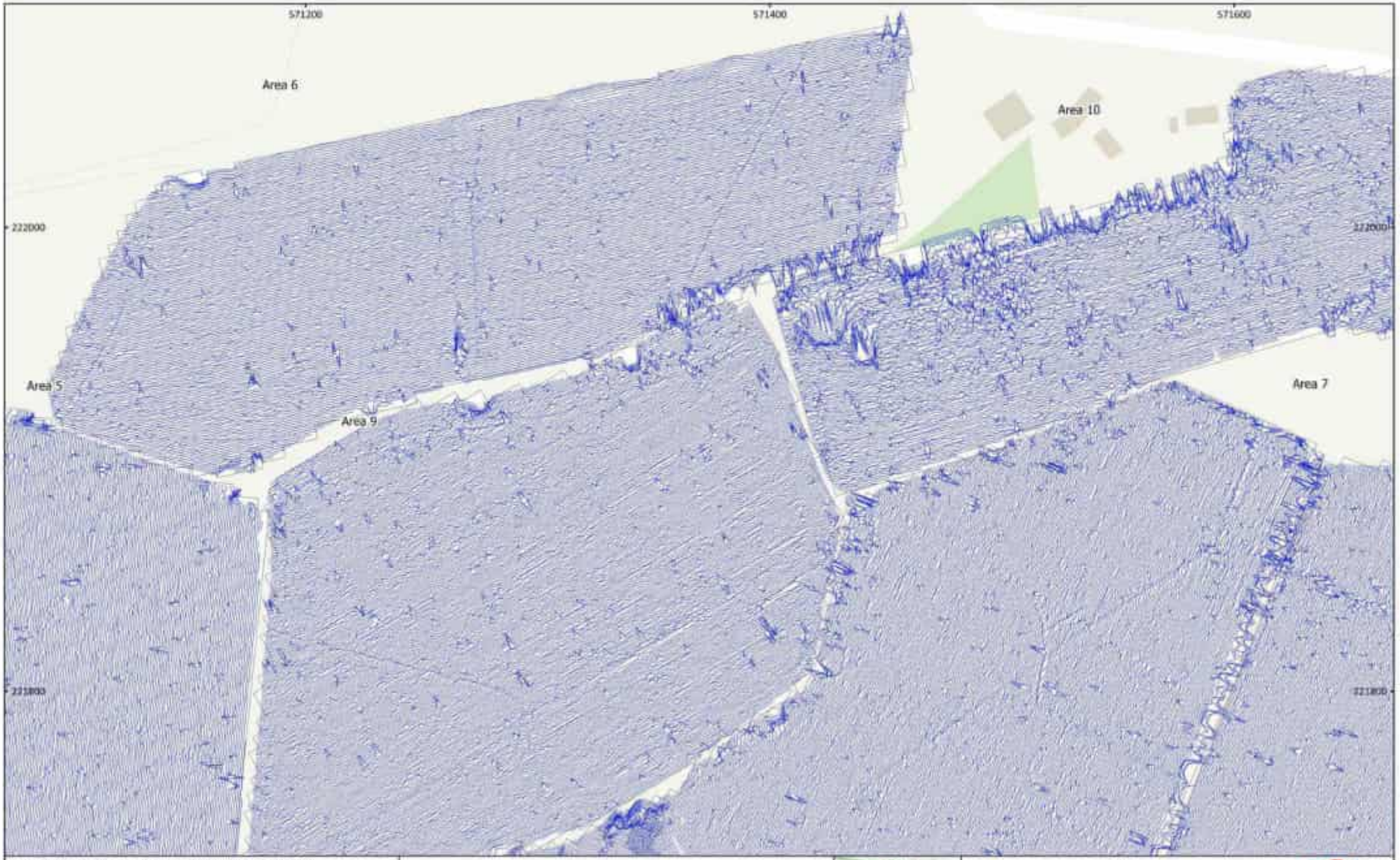
Agricultural (Strong)
Agricultural (Weak)
Undetermined (Strong)
Magnetic Disturbance
Ferrous/Debris (Spread)
Drainage Feature
Data Artefact
Ferrous (Spike)

N

0 40 80 120 m

magnitude surveys



MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 11 - XY Trace Plot (Areas 2, 5, 6, 7, 9 & 10)
30nT/cm at 1:1,500 @ A3
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N

0 40 80 120 m

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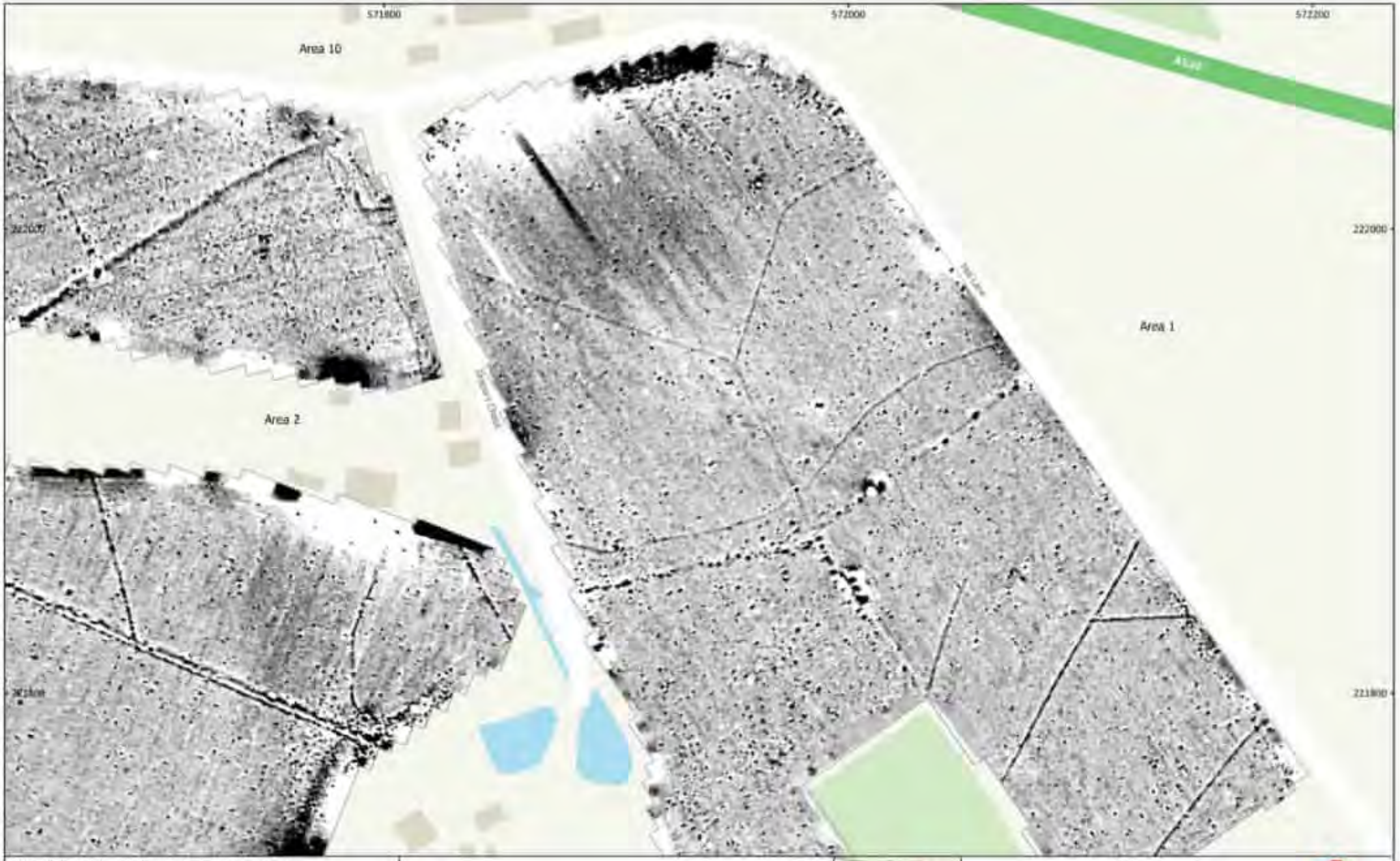

MSTL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 12 - Magnetic Gradient (Areas 1, 2, 7 & 10)
1:1,500 @ A3
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MSTL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 13 - Magnetic Interpretation (Areas 1, 2, 7 & 10)
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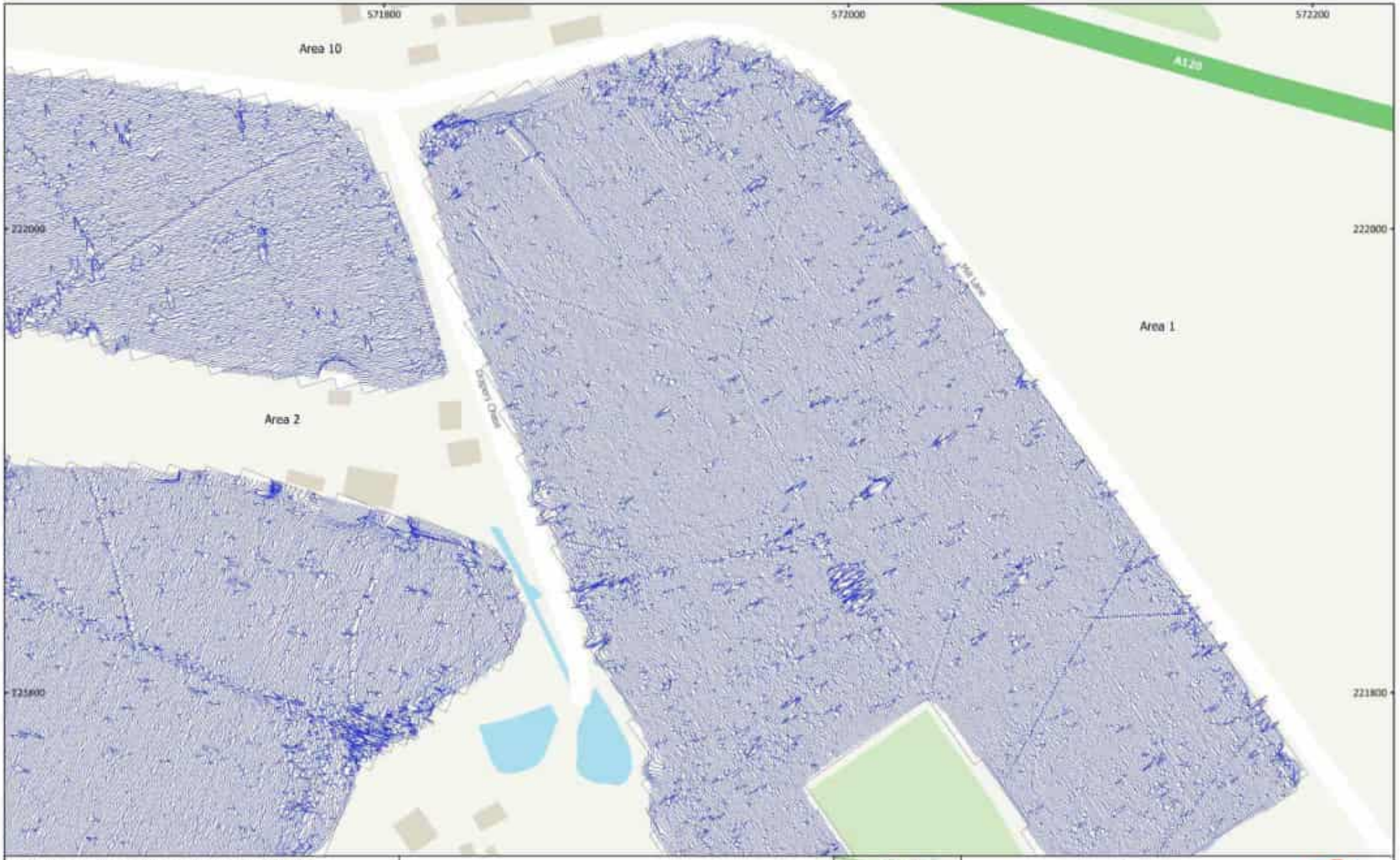
Agricultural (Strong)
Agricultural (Weak)
Magnetic Disturbance
Ferrous/Debris (Spread)
Ferrous (Spike)

N

0 40 80 120 m

magnitude surveys



MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 14 - XY Trace Plot (Areas 1, 2, 7 & 10)
30nT/cm at 1:1,500 @ A3
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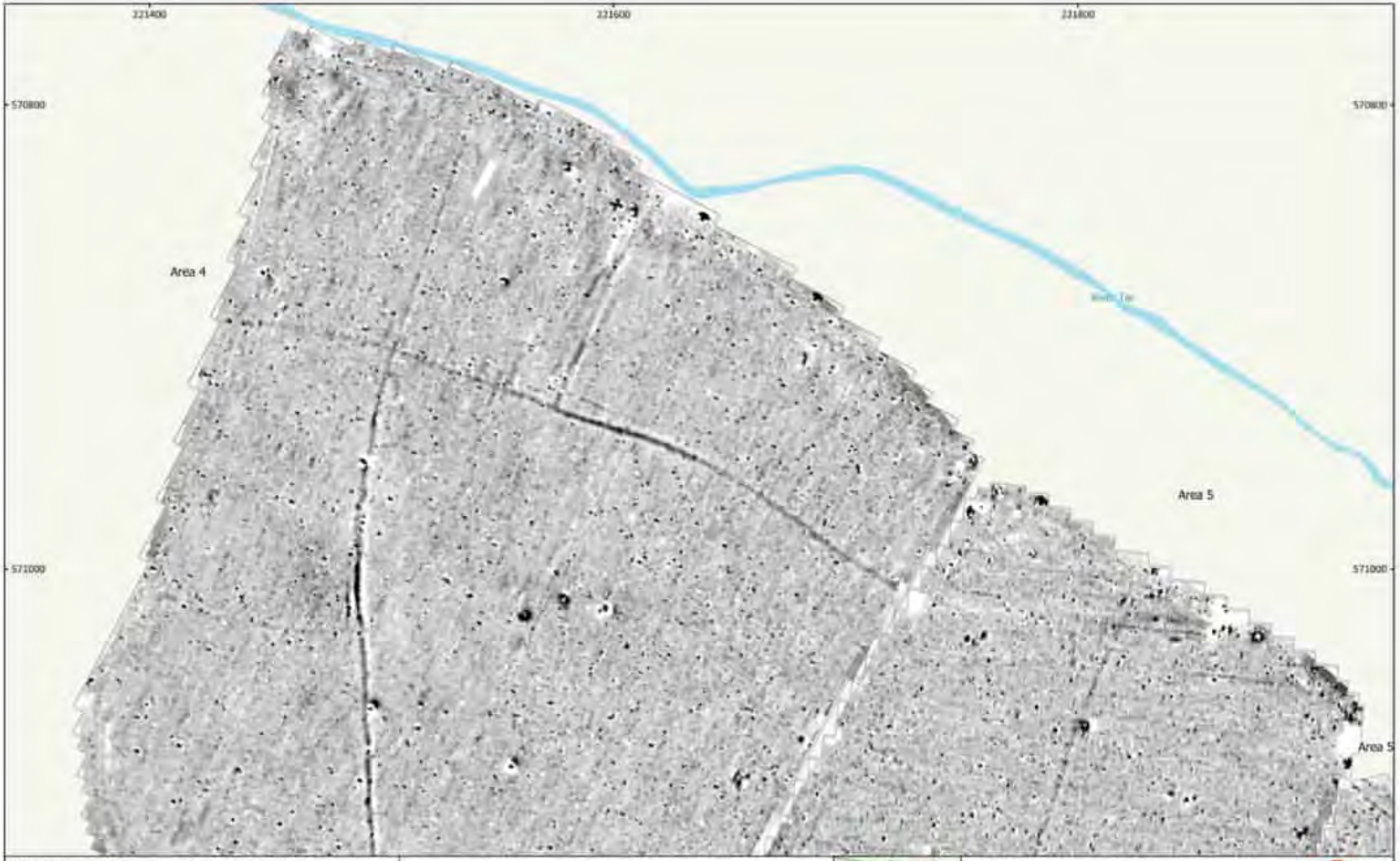

MSTL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 15 - Magnetic Gradient (Areas 4, 5 & 6)
1:1,500 @ A3
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-1 nT 1

0 40 80 120 m

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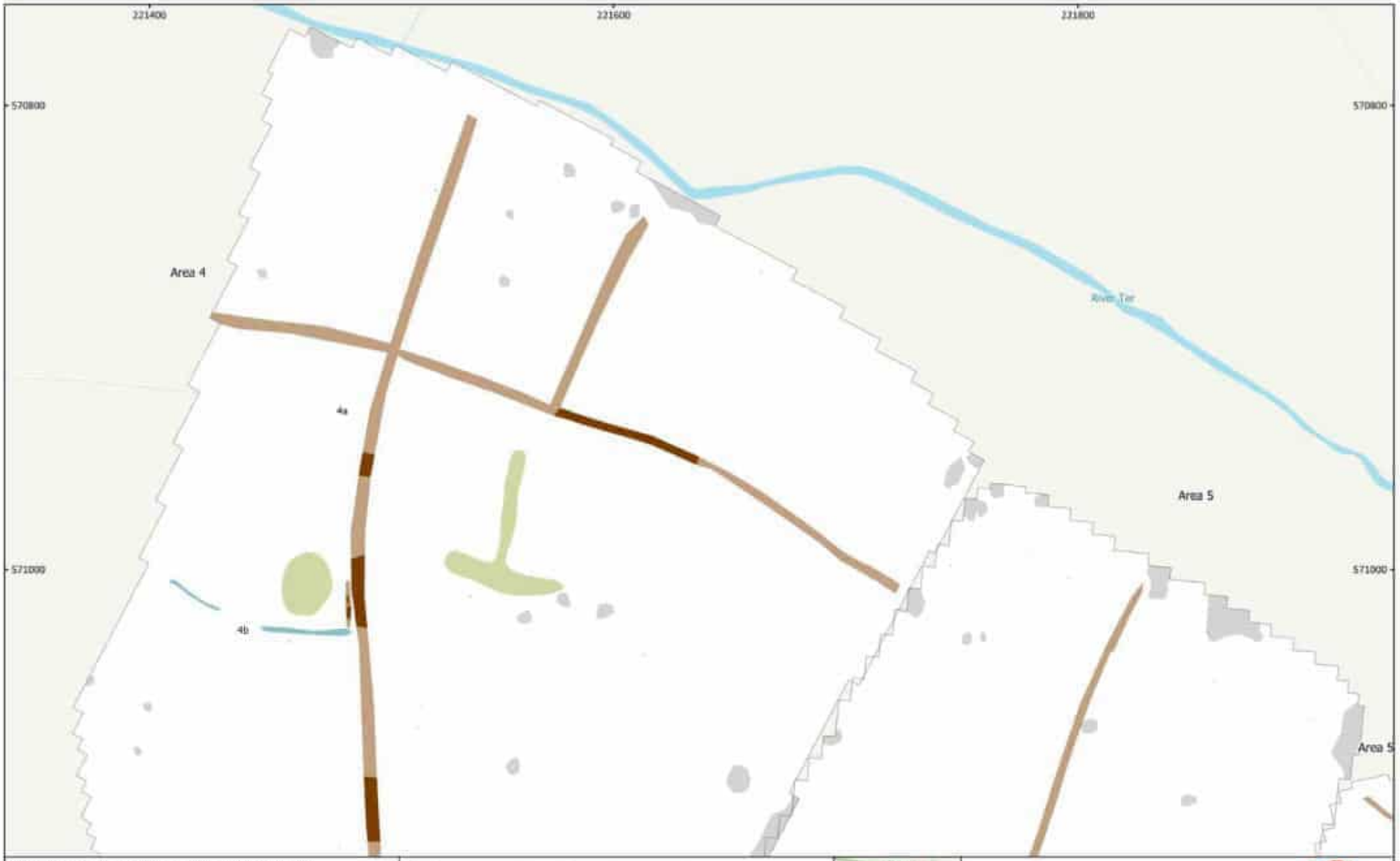

MSTL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 16 - Magnetic Interpretation (Areas 4, 5 & 6)
1:1,500 @ A3
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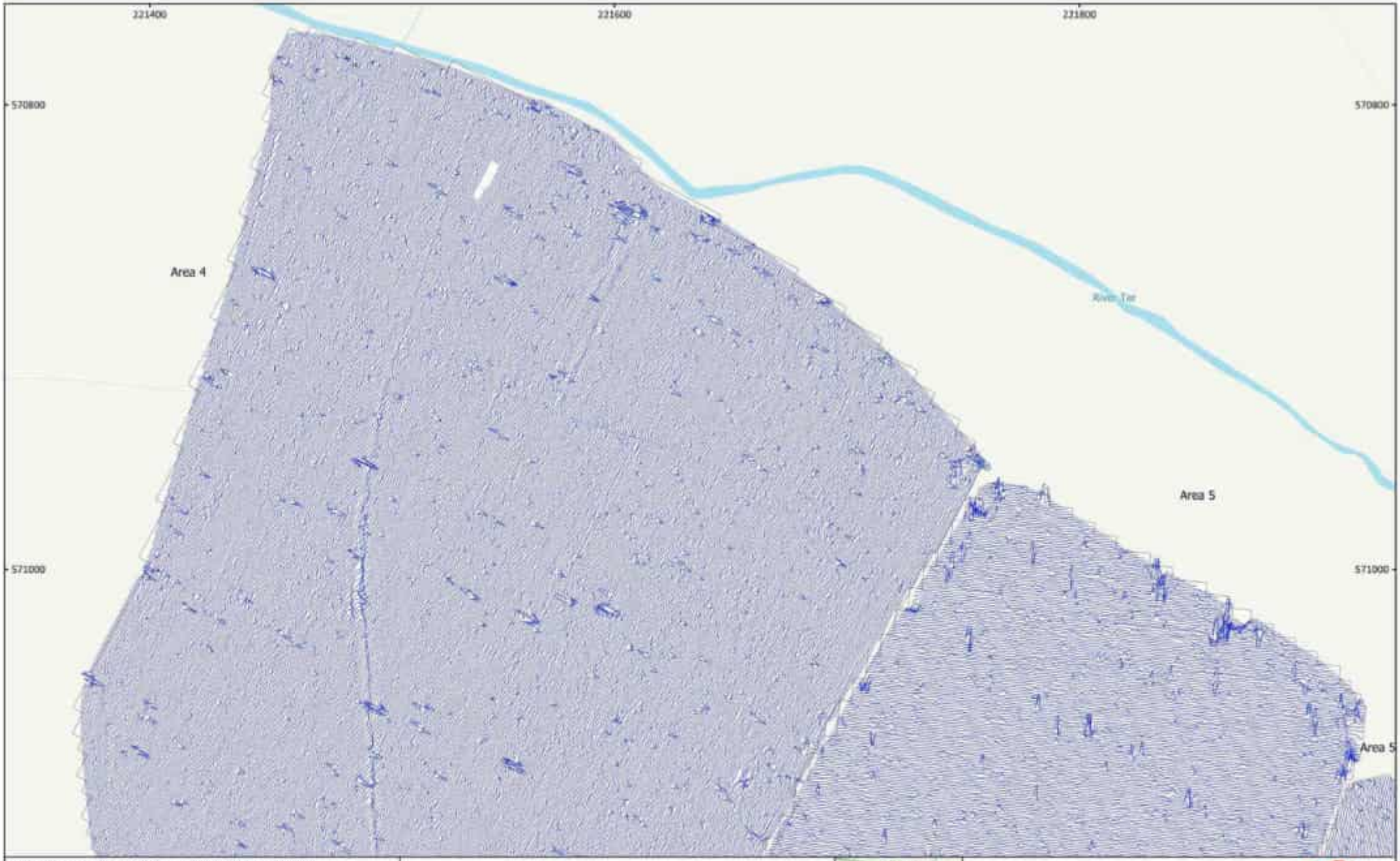
Agricultural (Strong)
Agricultural (Weak)
Natural (Weak)
Undetermined (Weak)
Magnetic Disturbance
Ferrous (Spike)

N

0 40 80 120 m

magnitude surveys



MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 17 - XY Trace Plot (Areas 4, 5 & 6)
30nT/cm at 1:1,500 @ A3
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N

0 40 80 120 m

magnitude surveys

M5TL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 18 - Magnetic Gradient (Areas 2, 3, 4, 5, 7, 8 & 9)
1:1,500 @ A3
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-1 nT 1

N

0 40 80 120 m

magnitude surveys

M5TL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 19 - Magnetic Interpretation (Areas 2, 3, 4, 5, 7, 8 & 9)
1:1,500 @ A3
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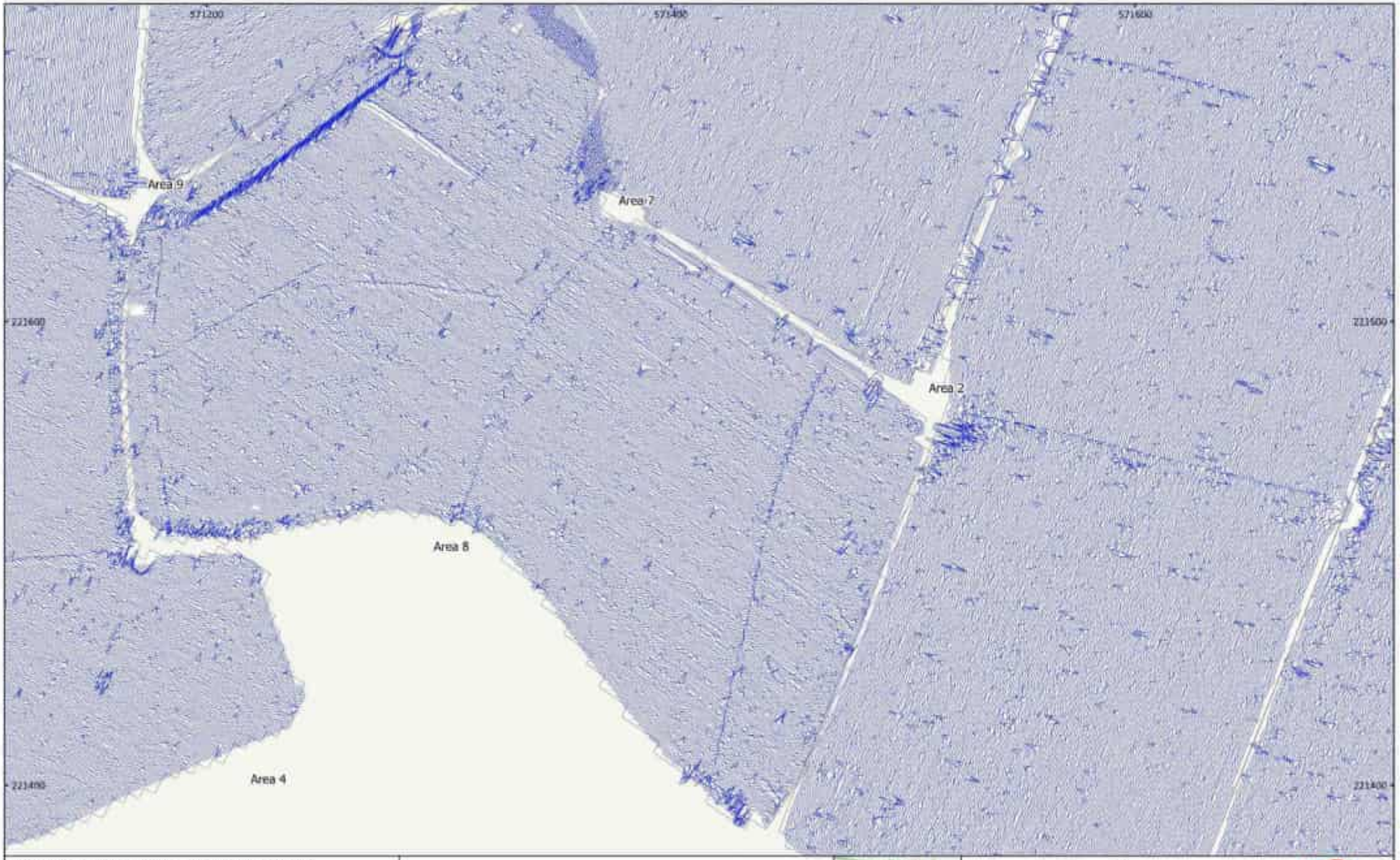
Agricultural (Strong)
Agricultural (Weak)
Agricultural (Spread)
Natural (Weak)
Undetermined (Weak)
Magnetic Disturbance
Ferrous/Debris (Spread)
Drainage Feature
Ferrous (Spike)

N

0 40 80 120 m

magnitude surveys



MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 20 - XY Trace Plot (Areas 2, 3, 4, 5, 7, 8 & 9)
30nT/cm at 1:1,500 @ A3
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N

0 40 80 120 m

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M57L14198 - Geophysical Survey at Drapers Chase Solar Farm
Figure 21 - Magnetic Gradient (Areas 1, 2 & 3)
1:1,500 @ A3
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-1 nT 1

0 40 80 120 m

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M5TL14158 - Geophysical Survey at Drapers Chase Solar Farm
Figure 22 - Magnetic Interpretation (Areas 1, 2 & 3)
1:1,500 @ A3
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Agricultural (Strong)
Agricultural (Weak)
Natural (Spread)
Magnetic Disturbance
Ferrous/Debris (Spread)
Drainage Feature
Ferrous (Spike)

N

0 40 80 120 m

magnitude surveys

MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 23 - XY Trace Plot (Areas 1, 2 & 3)
30nT/cm at 1:1,500 @ A3
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N

0 40 80 120 m

magnitude surveys

M5TL1419B - Geophysical Survey at Drapers Chase Solar Farm
Figure 24 - Magnetic Gradient (Areas 2 & 3)
1:1,500 @ A3
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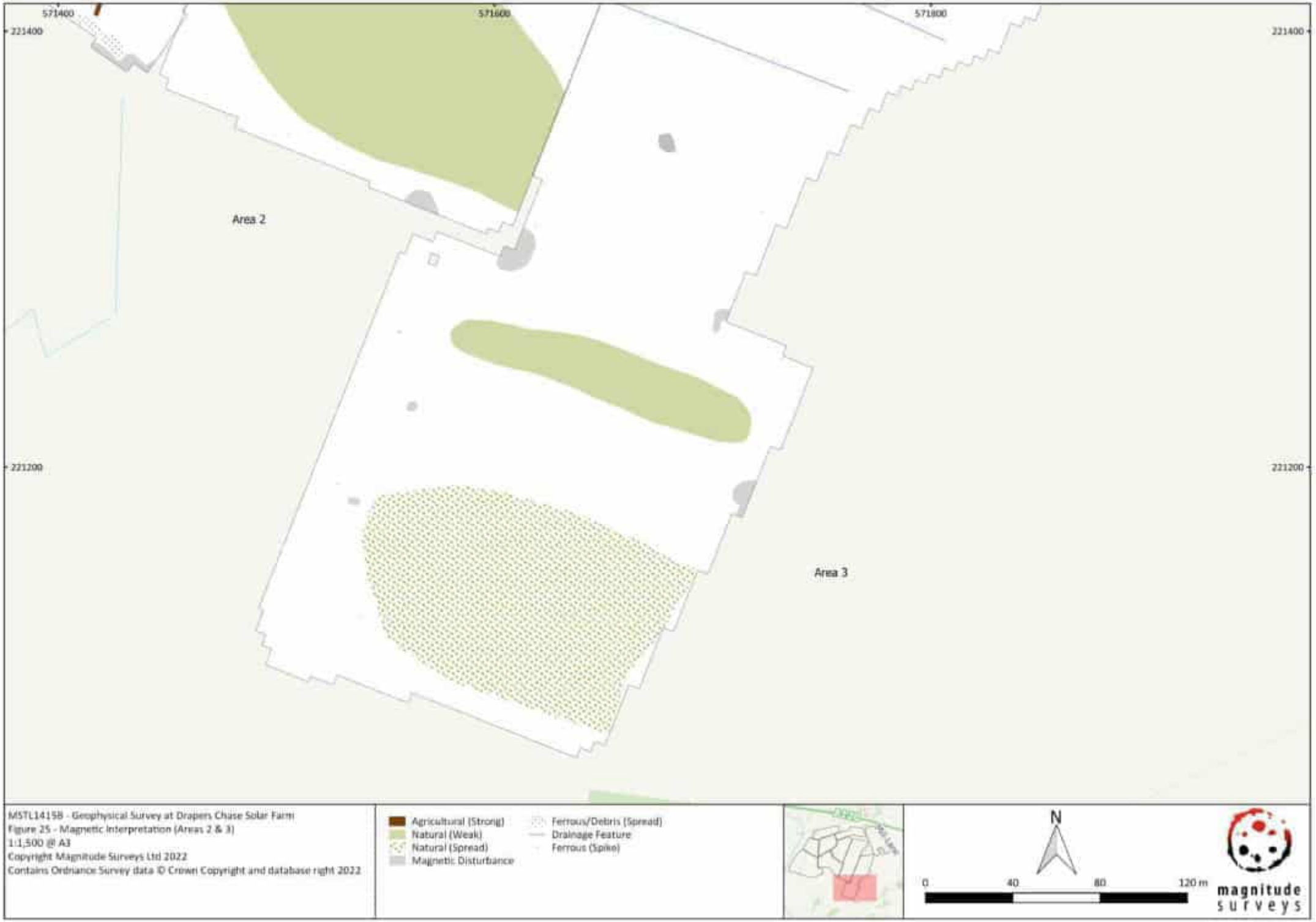

M5TL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 25 - Magnetic Interpretation (Areas 2 & 3)
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MSTL1415B - Geophysical Survey at Drapers Chase Solar Farm
Figure 26 - XY Trace Plot (Areas 2 & 3)
30nT/cm at 1:1,500 @ A3
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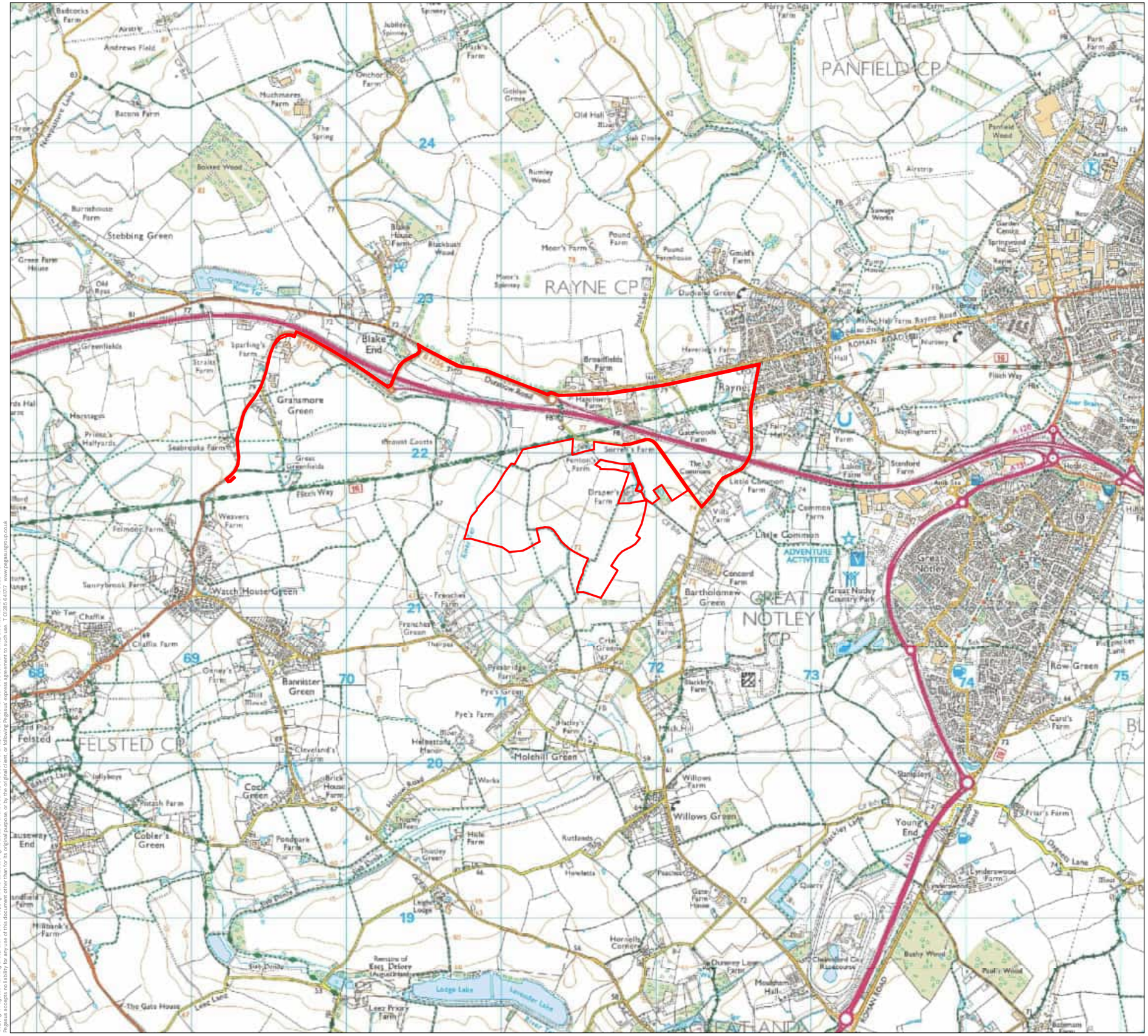
PANFIELD CP
RAYNE CP
GREAT NOTLEY CP
FELSTED CP
Stebbing Green
Blake End
Gransmore Green
Watch House Green
Bannister Green
Cock Green
Cobler's Green
Causeway End
Molehill Green
Willows Green
Rayne
Great Notley
Great Notley Country Park
Bartholomew Green
Little Common
Row Green
Young's End
Felsted
Lodge Lake
Lancaster Lake
Roman Road
Dunmow Road
Braintree Road
Panfield Lane
Flitch Way
A120
A131
Old Hall
Pound Farm
Broadfields Farm
Drapers Farm
Willows Farm
Concord Farm
Clockhouse Farm
Bushy Wood
Rumley Wood
Boxted Wood
Blackbush Wood
Pauls Wood
Panfield Wood
Lyderswood Farm
Stansley
Friars Farm
Gould's Farm
Moor's Farm
Pye's Farm
Hill Hall
Mount Hill
Hobbs Hall
Mill Wood
Hoppit Hill
Hoppit Hill Farm
Rayne Hall Farm
Rayne Lodge
Rayne Nursery
Rayne Hall
Rayne Primary School
Rayne Lodge Farm
Rayne Hall Farm Rayne Road
Rayne Hall Rayne Road
Rayne Hall Rayne Road Nursery
Rayne Hall Rayne Road Primary School
Rayne Lodge Farm Rayne Road
Rayne Lodge Rayne Road
Rayne Lodge Rayne Road Nursery
Rayne Lodge Rayne Road Primary School
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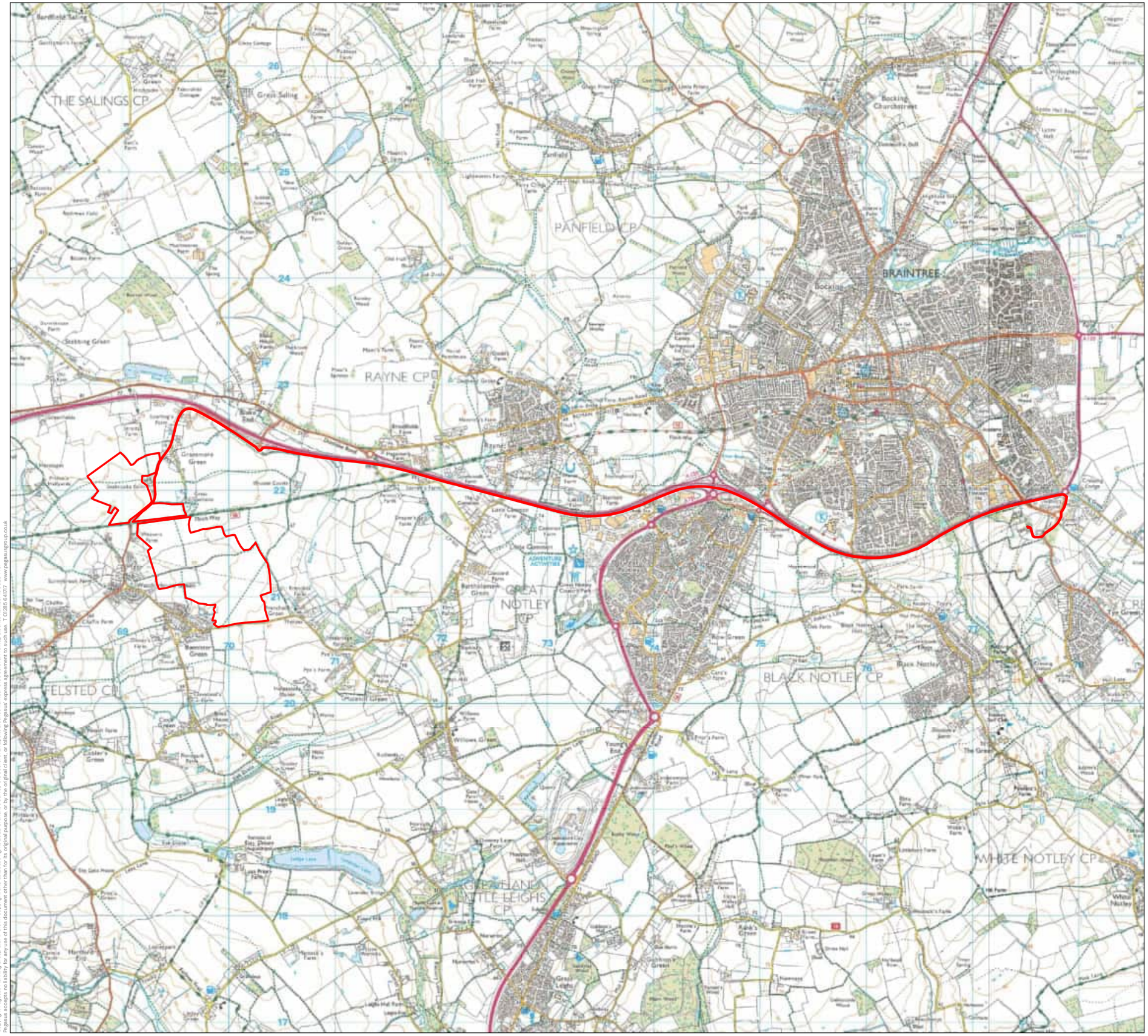
Rayne Road Primary School



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KEY

Site Boundary

NOTES:
REVISIONS: First Issue (14/06/2022) SC
Rev A (17/10/2022) SC

SITE LOCATION PLAN

POPLARS SOLAR FARM

CLIENT
Bluestone

DATE	DRAWN	APPROVED	SCALE
17/10/2022	SC	IH	1:35,000@A3

SHEET	REVISION	DRAWING NUMBER
-	**A**	P22-1322_01

N

0 1.5 km

PEGASUS GROUP

Drapers Chase Solar Farm

on behalf of Bluestone Energy Limited

Baseline Ecology Report

avianecology

Document Control				
Project Name:	Drapers Chase Solar Farm			
Project Number:	Pegas-075-1701			
Report Title	Baseline Ecology Report			
Issue	**Date**	**Notes**	**Prepared**	**Reviewed**
V1	11/10/2022	Draft for client review	K Love *BSc (Hons.)*	D Foy *BA (Hons.)*

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APPENDICES

Appendix 1: Photographs
Appendix 2: Confidential Badger Survey Report
Appendix 3: Great Crest Newt eDNA Laboratory Results

1 INTRODUCTION

1.1 Background

1.1.1 Avian Ecology Limited (AEL) was commissioned by Bluestone Energy Limited via Pegasus Group in 2022 to undertake a suite of Baseline Ecology Surveys on land west of Braintree, Essex (the 'Site'). This report has been prepared in order to the provide baseline information to inform an Environmental Statement (ES) Biodiversity chapter in support of the planning application for the proposed installation and operation of a Solar Farm and associated infrastructure.

1.1.2 This Report details the results of a comprehensive range of ecological surveys and Desk Study undertaken during 2022 by AEL.

1.1.3 The baseline information provided in this report is required in order to produce a Biodiversity ES Chapter which will provide a succinct and robust evaluation of the anticipated effects of the proposed development.

1.1.4 The information provided in this Baseline Ecology Report comprises:

- A desktop study;
- Extended habitat survey;
- Breeding bird survey; and
- Great crested newt *Triturus cristatus* eDNA survey.

1.1.5 The Report refers to relevant survey methodology and guidance as appropriate.

1.2 Site Overview

1.2.1 The Site as illustrated by the red-line application boundary, shown on **Figure 1,** comprises areas of agricultural land of approximately 70.29ha, located at the approximate central grid reference of TL 7144 2175.

1.2.2 The Site comprises nine arable fields marked by a series of hedgerows, ditches and trees. The River Ter (flowing in a north to south direction) forms a section of the western Site boundary. The Site encircles Drapers Farm, which is accessed through the Site along Drapers Chase. In the wider context, the Site is further surrounded by extensive areas of farmland and areas of woodland.

1.3 Scope of Assessment

1.3.1 The objectives of the Baseline presented within this Report are to:

- Identify the proximity of any designated sites for nature conservation interest;
- Provide baseline information on the current habitats and ecological features both within the Site and immediate surrounding area; and,
- Identify the presence or potential presence of any protected species or habitats.

1.3.2 The Assessment has comprised a desk study review of existing ecological information for the Site and surrounding area, together with an extended habitat survey, great crested newt presence/absence survey and breeding bird survey.

1.3.3 The Assessment refers to relevant legislation, planning policy and guidance as appropriate.

1.4 Legislative Framework, Planning Policy and Guidance

1.4.1 During the preparation of this report, reference has been made to the following key pieces of legislation, planning policy and guidance listed in **Table 1.1** below.

Table 1.1: Key legislation, planning policy and guidance.

International
• Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (hereafter referred to as the 'the Ramsar Convention)[1]; • Convention on the Conservation of European Wildlife and Natural Habitats 1979 (hereafter referred to as the 'the Bern Convention'[2]; and, • UNESCO convention on the protection of the World Cultural and Natural Heritage (1972)[3].
National
• The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[4]; • The 'Conservation of Habitats and Species Regulations 2017 (as amended); • The Wildlife and Countryside Act 1981 (as amended); • The Environment Act 2021[5]; • Infrastructure Act 2015; • Countryside and Rights of Way Act 2000; • The Invasive Alien Species (Enforcement and Permitting) Order 2019[6]; • Natural England European Protected Species Policies[7] • Protection of Badgers Act 1992; • Hedgerow Regulations 1997; • Natural Environment and Rural Communities (NERC) Act (2006); • The National Planning Policy Framework 2 (NPPF2, 2021)[8]; • The United Kingdom Biodiversity Action Plan (UK BAP); • *Wildlife licensing: comment on new policies for European protected species licence* (Natural England. 2016)[9] • European protected species policies for mitigation licences (Natural England. 2022)[10] • Ancient woodland, ancient trees and veteran trees: advice for making planning decisions (Natural England. 2022)[11] • BS 42020:2013 Biodiversity – Code of Practice for Planning and Development; • BS 8683:2021 Process for designing and implementing Biodiversity Net Gain; and,

[1] https://www.ramsar.org/
[2] https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/104
[3] https://whc.unesco.org/en/convention/
[4] https://www.legislation.gov.uk/uksi/2019/579/contents/made
[5] https://services.parliament.uk/Bills/2019-21/environment.html
[6] https://www.legislation.gov.uk/uksi/2019/527/introduction/made
[7] https://www.gov.uk/guidance/european-protected-species-policies-for-mitigation-licences
[8] https://www.gov.uk/government/publications/national-planning-policy-framework--2
[9] https://www.gov.uk/government/consultations/wildlife-licensing-comment-on-new-policies-for-european-protected-species-licences
[10] https://www.gov.uk/guidance/european-protected-species-policies-for-mitigation-licences
[11] https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions

• Biodiversity Net Gain. Good practice principles for development[12].
Local
• Essex Biodiversity Action Plan[13] • Integrating Biodiversity into Development[14] • Uttlesford District Council: Planning and Wildlife[15] • Uttlesford District Council: UDC Constraints Map External[16] • Uttlesford Local Plan 2005 – Policies ENV7 and ENV8[17]

1.4.2 The Conservation of Habitats and Species Regulations 2017 (as amended) remains in place following the United Kingdom's (UK's) withdrawal from the European Union (EU) with only relatively minor changes that came into force on 31st December 2020, with the 2017 regulations being transposed into national (England and Wales) legislation via the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019. They are hereafter referred to as the 'Habitats Regulations'.

1.4.3 The 'UK Post-2010 Biodiversity Framework' succeeds the UK Biodiversity Action Plan (UK BAP) and 'Conserving Biodiversity – the UK Approach'. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work and are therefore considered within this report in the context of the objectives of the Biodiversity Framework. BAPs identify habitats and species of nature conservation priority on a UK (UK BAP) and Local (LBAP) scale. UK BAPs formed the basis for statutory lists of priority species and habitats in England under Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006, and so are also relevant in the context of this legislation.

[12] https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development-a-practical-guide/
[13] https://www.braintree.gov.uk/downloads/file/2436/e47-the-essex-biodiversity-action-plan-1999
[14] http://www.essexwtrecords.org.uk/sites/default/files/planning_files/Integrating%20Biodiversity%20into%20Development.pdf
[15] https://www.uttlesford.gov.uk/article/4897/Planning-and-wildlife
[16] https://udc.maps.arcgis.com/apps/webappviewer/index.html?id=8de6663b65c84fb699a718eac0fa926d
[17] https://www.uttlesford.gov.uk/media/4723/Uttlesford-Local-Plan-Adopted-January-2005/pdf/Local_Plan_2005.pdf?m=637471937917270000

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken to identify existing information on the presence of designated sites for nature conservation, protected, priority and otherwise notable species and habitats within proximity to the Site as follows:

- Non-statutory designated sites for nature conservation within 2km of the Site;
- National statutory designated sites for nature conservation, within 5km of the Site;
- International statutory designated sites for nature conservation, within 10km of the Site; and,
- Existing records of protected, priority and otherwise notable fauna and flora species within 2km of the Site[18].

2.1.2 The following key sources were consulted:

- Natural England and Joint Nature Conservation Committee (JNCC) websites[19];
- The Multi Agency Geographic Information for the Countryside (MAGIC) website[20];
- The Woodland Trust Ancient Tree Inventory[21];
- The Natural England Open Data Geoportal[22];
- National Biodiversity Network (NBN) Atlas[23]; and,
- The Essex Field Club (EFC)[24].

2.1.3 Reference was also made to Ordnance Survey maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any features of nature conservation interest in the wider area, including potential ponds.

2.1.4 The results of the desktop study are provided in **Figure 2: Statutory Designated Sites Plan** and **Figure 3: Non-statutory Designated Sites Plan**.

2.2 Extended Habitat Survey

2.2.1 An extended habitat survey of the Site was undertaken on 22nd August 2022 by K Love *BSc*, who is a competent and qualified ecologist.

2.2.2 The practical survey methodology followed the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat survey methodology (JNCC, 2010). However, specific habitats were also recorded and mapped in accordance with the recently and widely adopted methodology described within the *UK Habitat Classification Manual Version 1.1* (UK Habitat Classification Working Group. 2020[25]). All habitats were mapped and described using a series of 'target notes' (TNs) to the

[18] Existing records of protected, priority and otherwise notable species within 2km of the Site have been limited to the preceding 10-year period, unless more historic records are considered pertinent to the Site and Proposed Development.
[19] http://jncc.defra.gov.uk/
[20] https://magic.defra.gov.uk/MagicMap.aspx
[21] https://ati.woodlandtrust.org.uk/
[22] https://naturalengland-defra.opendata.arcgis.com/
[23].https://nbnatlas.org/ NBN Atlas records have been utilised in accordance with the NBN Atlas Data Licences conditions (https://docs.nbnatlas.org/data-licenses/) with 'Open Government' and 'Creative Commons No Rights Reserved' licensed data referred to within the report.
[24] https://www.essexfieldclub.org.uk/portal.php
[25] https://ukhab.org/ukhab-documentation/

highest level of UK habitat classification as possible, with each individual habitat feature being assigned to a primary habitat and then described with secondary codes if applicable. The survey was extended to include the additional recording of specific features indicating the presence, or likely presence, of protected species, invasive species and other species of conservation significance. The extent of the Site and habitats as surveyed is shown on **Figure 4** with accompanying photographs in **Appendix 1**.

2.3 Breeding Bird Surveys

2.3.1 A breeding bird survey was undertaken between June and July 2022, employing an adapted version of the British Trust for Ornithology (BTO) Common Bird Census (CBC) technique (Gilbert *et al*., 1998[26]) and comprising a series of three staggered survey visits undertaken at least seven days apart.

2.3.2 All survey visits were carried out during the morning and finished by 09:30hrs in conditions suitable for survey (avoiding heavy rain and strong winds). A summary of survey effort is presented in **Table 2.1**. Breeding bird survey visits were undertaken by C. Kilshaw *BSc* and R. Kilshaw *BSc*; two suitably competent and experienced ornithologists.

2.3.3 The survey area comprised the Site and also included a 100m buffer observed from the Site boundary designed to record the potential presence of species listed under Schedule 1 of the Wildlife & Countryside Act 1981[27] (as amended) (**Figure 5**).

2.3.4 During each survey visit all bird registrations were recorded on suitably scaled field maps using standard BTO species codes and behaviour notations (such as singing, carrying food, active nest). The approximate locations of bird territories within the Site were determined using standard territory mapping techniques to identify and isolate areas within which birds consistently displayed breeding behaviours (following Gilbert *et al.* 1998).

2.3.5 Observations of non-breeding birds just visiting the Site (e.g. gulls feeding in fields) and birds flying over the Site were also made.

2.3.6 For the purposes of this report, although the estimated number of breeding territories for all species is provided (**Table 3.5**) only the breeding territories of Notable Species are mapped and presented on **Figures 5,** given these are the most relevant species to the design and assessment of development proposals. Notable Species relevant to the Proposed Development include Birds of Conservation Concern (BoCC Amber and Red List Species (Stanbury *et al.,* 2021[28]), NERC Act (2006)[29], Annex 1[30] raptors and owls, Schedule 1 species and Essex Biodiversity Action Plan[31] species.

Table 2.1: Breeding Bird Survey Effort.

Survey visit	Date	Start time	End time	Sunrise (24hrs)
1	08/06/2022	07:30	09:30	04:39
2	23/06/2022	07:00	09:00	04:38
3	07/07/2022	07:00	09:30	04:47

[26] Gilbert, G., Gibbons, D.W & Evans, J. (1998) *Bird monitoring methods. A manual of techniques for key UK species*. RSPB, Sandy
[27] Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
[28] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747. Available online at https://britishbirds.co.uk/content/status-our-bird-populations.
[29] Natural Environment and Rural Communities (NERC) Act (2006)
[30] Annex 1 – species listed on Annex 1 of the EC Directive 2009/147/EC of the European Parliament on the conservation of wild birds.
[31] https://www.braintree.gov.uk/downloads/file/2436/e47-the-essex-biodiversity-action-plan-1999

2.4 Great Crested Newt Surveys

2.4.1 Potential ponds which could be used by great crested newt for breeding, if present and suitable, were identified within a 250m radius of the Site using OS and aerial mapping. Due to the low impact of solar energy developments on great crested newt habitats, and reflecting guidance published by Natural England[32], ponds beyond 250m from the Site were not considered.

Great Crested Newt HSI Assessment

2.4.2 Eight accessible/viewable ponds (P4, P5, P6, P12, P14, P15, P18 and P20) were assessed for their suitability to support great crested newt using the HSI (Habitat Suitability Index) Assessment methodology as developed by Oldham *et al*. 2000[33] and as detailed within ARG UK guidance (ARG UK, 2010[34]), see (**Figure 6**).

2.4.3 The HSI assessment involves the measurement of ten different indices which, when combined, have been found to provide a good indication of the general suitability of ponds for great crested newts. Each of the indices is scored (between 0.01-1) using a series of graphs and figures within the guidance notes (ARG UK, 2010). These scores are then used to calculate an overall Habitat Suitability Score for each pond.

2.4.4 Final scores relate to pond suitability for great crested newt and range from 'poor' to 'excellent'.

Great Crested Newt eDNA Survey

2.4.5 Twenty ponds were identified on and within 250m of the Site from OS and aerial mapping (**Figure 6**). Of these, eight ponds were subject to eDNA surveys in 2022; two ponds within the Site (P6 and P20) and six ponds within the 250m buffer (P4, P5, P12, P14, P15 and P18). Five further ponds (P2, P8, P9, P13 and P16) were accessed but dry at the time survey. These ponds were therefore excluded from the survey.

2.4.6 The eight ponds included in the survey (P4, P5, P6, P12, P14, P15, P18 and P20) were sampled on 22nd June 2022 by a suitably experienced surveyor, K. Love *BSc*., and secondary surveyor R. McLaughlin *MSc.*

2.4.7 The protocol for sampling followed that outlined within the technical advice note for field and laboratory sampling of great crested newts (Biggs *et al*., 2014), which requires the collection of 20 x 30ml subsamples from each pond, spaced as evenly as possible around the pond margin. Each sample was then placed within a Whirl-Pak bag and shaken for 10 seconds, before a 15ml sample was pipetted from the bag and placed in a specimen tube for laboratory analysis. Following collection, samples were refrigerated prior to laboratory dispatch.

2.4.8 Laboratory analysis was undertaken by SureScreen Scientifics[35]. The laboratory follows the analysis methodology outlined within the Defra Project WC1067 (Biggs *et al*., 2014).

2.4.9 Laboratory analysis results are provided within **Appendix 3**.

[32] https://www.gov.uk/guidance/great-crested-newts-advice-for-making-planning-decisions
[33] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.
[34] ARG UK (2010) ARG UK Advice Note 5: Great crested newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom.
[35] scientifics@surescreen.com

2.5 Limitations

Extended Habitat Survey

2.5.1 An extended habitat survey does not constitute a detailed botanical survey or faunal species list or provide a full protected species survey but, enables competent ecologists to ascertain an understanding of the ecology of the Site in order to:

- Broadly identify the nature conservation value of the Site and assess the significance of any potential impacts on habitat/species recorded; and/or,
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation value of a site (if any).

2.5.2 The extended habitat survey visit was undertaken in August 2022 and therefore within the optimal period for botanical surveys (approximately April to September).

Breeding Bird Surveys

2.5.3 The results of the surveys are only a snap-shot of the habitat use and activity of the bird assemblage within the Site. However, the surveys have provided indicative evidence of the breeding bird assemblage within the Site.

2.5.4 It is appreciated that factors, including cropping regime/agricultural land use and disturbance will influence habitat use within the Site by birds on an annual basis. It is an assumption that the cropping regime/land use during the survey period is typical. No significant disturbance events were recorded during the surveys (with the exception of usual events such as agricultural work and traffic along roads) and as such are not considered significant in terms of having an influence on the target species, when regarding the survey period in its entirety and as such are not considered further in this assessment.

Great Crested Newt Presence/Absence Survey (eDNA)

2.5.5 Twenty ponds were identified within either the Site or within 250m of the Site boundary. Thirteen ponds were accessible, with access not granted to a further seven ponds (P1, P3, P7, P10, P11, P17 and P19). Five ponds (P2, P8, P9, P13 and P16) were dry at the time of survey and therefore excluded from eDNA surveys.

3 BASELINE

3.1 Designated Sites for Nature Conservation

Statutory Designated Sites

3.1.1 No international statutory designated sites occur within 10km of the Site boundary.

3.1.2 Four national statutory designated sites occur within 5km of the Site, with the closest being Flitch Way Local Nature Reserve (LNR), which is located adjacent to the northern Site boundary.

3.1.3 The Site does not lie within a Site of Special Scientific Interest (SSSI) Impact Risk Zone (IRZ) whereby the LPA is required to consult with Natural England in regard to potential impact pathways associated with the development.

3.1.4 A summary of statutory designated sites for nature conservation located within 5km of the Site is provided below in **Table 3.1**. The locations of statutory designated sites in relation to the Site are shown in **Figure 2**.

Table 3.1: Statutory Designated Sites.
LNR: Local Nature Reserve

Site Name	Approximate Distance/Direction	Description
Flitch Way LNR	Adjacent to the northern Site boundary	A wildlife corridor that connects the four Essex Wildlife Trust Living Landscape Areas of Hatfield Forest, Pincey Valley, Upper Chelmer and Pods Brook Valley. It links the nature reserves and open spaces of Hatfield Forest, Honeysuckle Wood and David Cock Community Woodland (Great Dunmow), Oak Meadow (Rayne), Great Notley Country Park, Hoppits Mead and John Ray Park (Braintree). The site supports a variety of notable species including bats, badger *Meles meles*, amphibians, reptiles, birds, plants and invertebrates.
Cuckoo Wood LNR	1.65km east	An important area of woodland containing a number of locally rare species. Very good habitat for fungi, due to the amount of dead wood found within the woodland. It has a huge range of habitats including amenity grassland, meadow areas, lakes, ponds, an extensive ditch network and hedgerows.
Hoppit Mead LNR	2.98km north-east	The wet woodland by Hoppit Bridge that has a strong association with the 17th Century naturalist and theologian, John Ray. Hoppit Mead LNR lies within a chain of Public Open Spaces that is being developed as the "John Ray Park". The Park embraces localities studied by eminent local naturalist John Ray during the 17th Century and combines places of significant wildlife value, with diverse opportunities for informal recreation and social history study.
Bocking Blackwater LNR	4.54km north-east	A large area of open space, from Bradford Street, that continues along the river up to the A131. It contains wildflower meadows, amenity grassland, scrub areas and wetland habitats. Two woodland areas and the open space have a good range of plant species, including Veteran trees.

Non-statutory Designated Sites

3.1.5 A review of the data provided by EFC confirms that a non-statutory designated site for nature conservation; Flitch Way Local Wildlife Site (LoWS), is directly adjacent to the northern Site boundary. Flitch Way LoWS predominately occupies a similar area as Flitch Way LNR within 2km of the Site.

3.1.6 The search identified a total of five LoWS's within 2km of the Site. Details of these non-statutory designations are provided in **Table 3.2**. The locations of non-statutory designated sites in relation to the Site are shown in **Figure 3**.

Table 3.2: Non-statutory Designated Sites.
LoWS: Local Wildlife Site.

Site Name	Approximate Distance and Direction from Site	Description
Flitch Way LoWS	Adjacent to the northern Site boundary	A wildlife corridor that connects the four Essex Wildlife Trust Living Landscape Areas of Hatfield Forest, Pincey Valley, Upper Chelmer and Pods Brook Valley. It links the nature reserves and open spaces of Hatfield Forest, Honeysuckle Wood and David Cock Community Woodland (Great Dunmow), Oak Meadow (Rayne), Great Notley Country Park, Hoppits Mead and John Ray Park (Braintree). The site supports a variety of notable species including bats, badger, amphibians, reptiles, birds, plants and invertebrates.
Blackbush Wood LoWS	1.49km north-west	Blackbush Wood has a canopy of pedunculate oak *Quercus robur,* ash *Fraxinus excelsior* and hornbeam *Carpinus betulus* over hazel *Corylus avellana*, elder *Sambucus nigra* and hawthorn *Crataegus monogyna.* Contains typical ground flora.
Rumley Wood LoWS	1.59km north	Over half of the ancient Rumley Wood has been grubbed out, leaving a copse of peduculate oak, ash, hawthorn and hornbeam. A few Scots pine *Pinus sylvestris* standards are also present. The rather poor ground flora is dominated by nettle *Urtica dioica* and bramble *Rubus fruticosus* agg, though with some yellow archangel *Lamiastrum galeobdolum*, pendulous sedge *Carex pendula* and meadowsweet *Filipendula ulmaria.*
White Court Wood LoWS	1.65km east	This small, possibly ancient wood has an extroidinary rich flora. The canopy largely comprises standards of pedunculate oak with some ash and field maple *Acer campestre* over neglected hazel coppice. Wild service tree *Sorbus torminalis* is also present in the canopy whilst spurge laurel *Daphne laureola* is of note amongst the shrub layer. The very diverse ground cover includes twayblade *Neottia ovata*, cowslip *Primula veris*, goldilocks buttercup *Ranunculus auricomus*, sanicle *Sanicula europaea*, early dog-violet *Viola reichenbachiana* and greater butterfly orchid *Platanthera chlorantha*, which has possibly declined in distribution in recent decades.
Golden Grove LoWS	2km north	This ancient wood is dominated by hornbeam coppice with only scattered standards of pedunculate oak and ash. The scrub layer comprises scattered elder, hawthorn and holly *Ilex aquifolium*. The sparse ground cover contains bluebell *Hyacinthoides non-scripta* and dog's mercury *Mercurialis perennis* amongst bramble in abundance.

3.2 Priority Habitats – Existing Records

3.2.1 A review of MAGIC, aerial imagery, EFC data return and the extended habitat survey identified five habitats of Principal Importance (also known as priority habitats) under Section 41 of the NERC Act/UK Biodiversity Action Plan within 2km of the Site. This includes ponds, hedgerows, rivers and streams, deciduous woodland and traditional orchard habitats. Five priority habitats under the Essex Biodiversity Action Plan (LBAP) are present within 2km of the Site, including hedgerows, cereal field margins, traditional orchards, ancient woodland and urban area habitats. Three priority habitats are located within the Site itself (ponds, hedgerows and cereal field margins). Two priority habitats are located adjacent to the Site boundary (deciduous woodland and rivers/streams).

3.2.2 Review of the Woodland Trust Ancient Tree Inventory identified no notable trees within the Site, or within 500m of the Site. Ancient and semi-natural woodland within 2km of the Site is limited to a single woodland parcel called Rumley Wood (1.45ha) located approximately 1.59km north. Examination of the Natural England Open Data Geoportal identified no ancient or irreplaceable peaty soil habitat within the Site or within 500m of the Site boundary.

3.2.3 Information on the eight priority habitats identified within 2km of the Site is presented in **Table 3.3** below. Where numerous records of a particular habitat were recorded, only the closest record to the Site has been provided, in order to provide context for the Site and surrounding area.

Table 3.3: Priority habitats.

Priority habitat name	Designation	Approximate Distance from Site
Ponds	NERC S.41, UKBAP	Within the Site
Hedgerows	NERC S.41, UKBAP, LBAP	Within the Site
Cereal field margins	LBAP	Within the Site
Deciduous woodland	NERC S.41, UKBAP	Directly adjacent to the Site boundary
Rivers and streams	NERC S.41, UKBAP	Directly adjacent to the Site boundary
Traditional orchard	NERC S.41, UKBAP, LBAP	1.16km north-east
Ancient woodland	AWI, LBAP	1.59km north
Urban areas	LBAP	2.4km east (Braintree)

Key

NERC S.41: Natural Environment and Rural Communities (NERC) Act (2006)

UKBAP: UK Biodiversity Action Plan Priority Habitat

LBAP: Priority Habitats listed on the Essex Local Biodiversity Action Plan

AWI: Ancient Woodland Inventory

3.3 Extended Habitat Survey

3.3.1 This section should be read in conjunction with the Habitat Plan presented as **Figure 4**, Target Notes (TNs) presented in **Table 3.4** and photographs presented in **Appendix 1.**

3.3.2 The Site occupies an area of land totalling c.70.29ha, set within a rural landscape. Habitats within the Site predominantly comprise arable fields, with boundary hedgerows, tree lines, woodland and dry

ditches. The River Ter also lies directly adjacent to a section of the western Site boundary. Two ponds are located within the Site, with a further 18 ponds located within 250m of the Site boundary.

3.3.3 Habitats recorded within the Site are considered to be typical of dominant habitats within the wider landscape.

***Arable** (UKHab code: c1.17.73, c1.73, c1b5, c1c, c1d)*

3.3.4 Arable land was the dominant habitat within the Site. Six of the nine fields were dominated by borage *Borago officinalis* (**Photograph 1**), with two remaining fields comprising perennial rye-grass *Lolium perenne* and one with wheat *Triticum aestivum*.

***Modified Grassland** (UKHab code: g4, g4.10, g4.16, g4.64)*

3.3.5 Arable fields frequently include field margins comprising modified grassland that often-contained tall herb species. Field margins vary between 1m to 6m wide and are dominated by either false oat-grass *Arrhenatherum elatius*, cock's-foot *Dactylis glomerata* or perennial rye-grass. Field margins also incorporate various assemblages of other flora species with following recorded on-Site; crested dog's-tail *Cynosurus cristatus*, nettle, creeping thistle *Cirsium arvense*, docks *Rumex* sp., willowherb *Epilobium* sp., bramble, bird's foot trefoil *Lotus corniculatus*, ribwort plantain *Plantago lanceolata*, spear thistle *Cirsium vulgare*, ragwort *Jacobaea vulgaris*, sorrel *Rumex acetosa* and sow thistle *Sonchus* sp..

3.3.6 Field margins widen in three areas to cover three field corners within the Site (see Cereal Field Margins in **Table 3.3**; **Photograph 2**). Modified grassland field corners comprise similar species compositions as field margins previously described. One field corner, however, includes a section of mown creeping thistle. Only these three cereal field margin corners represent Priority LBAP habitat within the Site.

***Hedgerows** (UKHab code: h2a, h2a.11)*

3.3.7 Hedgerows are predominantly intensively managed and vary between being intact and defunct. Sections are either species-rich (**Photograph 3**) or species-poor, with some also containing trees. Blackthorn *Prunus spinosa* is the dominant species in most hedgerows, with hawthorn and bramble also dominant in sections. Other species present consist of a mix of elder, elm *Ulmus* sp., field maple, oak, dogwood *Cornus sanguinea*, hazel, ash, apple *Malas* sp., traveller's-joy *Clematis vitalba*, ivy *Hedera helix*, bramble and dog-rose *Rosa canina*. Trees present within hedgerow include either immature oak or sections of mature oak and ash.

***Lines of Trees** (UKHab code: w1g6)*

3.3.8 Tree lines are located throughout the Site (**Photograph 4**) and include both mature and immature trees. Some sections are dominated by either blackthorn, hawthorn, field maple, alder *Alnus glutinosa* or willow *Salix* sp.. The species assemblage present on-Site also includes oak, lime *Tilia* sp., hazel, elder, ash, elm, damson *Prunus domestica subsp. insititia*, crab apple *Malus sylvestris*, goat willow *Salix caprea*, wayfaring tree *Viburnum lantana*, sycamore *Acer pseudoplatanus* and wild service tree, with dogwood, spindle *Euonymus europaeus*, traveller's-joy, guelder-rose *Viburnum opulus*, dog-rose, bramble and ivy incorporated.

***Standing Water** (UKHab code: r1.117.191, r1a.19.119, r1a.19.120.)*

3.3.9 Two ponds (P6 and P20) are located within the Site (**Figure 6**).

3.3.10 Pond P6 is a shallow pond that at the time of the extended habitat survey was almost completely dry. The pond was however included in the GCN eDNA and HSI surveys (see Section 2.5) and recorded with a greater quantity standing water earlier in June 2022. The narrow pond is located at the road junction

between Drapers Chase and Fentons Road in the corner of an arable field. The pond is difficult to access due to the presence of dense surrounding vegetation comprising willow, blackthorn, bramble, ash and hawthorn. Water quality is considered relatively poor.

3.3.11 Pond P20 is located at the end of a hedgerow section amongst a section of dense scrub comprising bramble, willow and dog-rose. The pond was completely dry at the time of the extended habitat survey, but was recorded as a shallow body of water during the great crested newt surveys (see Section 2.5; **Photograph 5**).

3.3.12 A network of dry ditches are located throughout the Site along hedgerow bases, ranging between 1m-2m in width. At the time of survey, the Site was considered to be particularly dry whilst during a period of local draught. It is therefore possible for on-Site ditches to contain standing water during other times of the year. However, ditches did not provide any evidence of seasonal water level fluctuations, with no aquatic or marginal species recorded. Such ditches are therefore considered likely to remain dry throughout the majority of the year.

***Watercourse** (UKHab code: r2a)*

3.3.13 The River Ter borders an area of the western Site boundary. The watercourse was approximately 1m wide and 5cm deep at the time of survey. The water has a slow, southernly flow and is located along a line of trees which creates a high degree of shading. The bank is steep and dominated by bramble and willowherb.

***Woodland** (UKHab code: w1f7.19)*

3.3.14 A mixed deciduous woodland is located adjacent to the eastern Site boundary (**Photograph 6**). The woodland includes mature whitebeam *Sorbus aria*, ash, cypress *Cupressus* sp., sycamore, oak, willow, beech *Fagus sylvatica*, field maple, sweet chestnut *Castanea sativa* and hawthorn, with non-native species laurel *Laurus nobilis* and *Cotoneaster* sp. planted along sections of the woodland edge **(Photograph 6)**. Areas of the woodland canopy are open, with the ground flora in open areas dominated by creeping thistle and nettle. In shaded areas false oat-grass dominates the ground flora. A large pond (Pond P12) is located within the woodland parcel outside of the Site (**Photograph 7**). The pond is highly shaded, contains shallow banksides dominated by nettle.

Table 3.4: Target Notes

Target Note	Description
TN1	Mature ash tree with an open trunk. Moderate / high bat roost potential (**Photograph 8**).
TN2	Beehive
TN3	Dying mature ash tree with dense ivy and holes present. Low bat roost potential.
TN4	Mature ash tree containing holes. Low bat roost potential.
TN5	Beehive
TN6	Mature ash tree with woodpecker holes. Moderate bat roost potential.
TN7	Mature ash tree with cracks and holes. Moderate bat roost potential.
TN8	*Cotoneaste*r sp. along neighbouring woodland. An invasive, non-native plant species.

3.4 Protected and Notable Species

Birds

Legislation

3.4.1 All wild birds, their nests and eggs are, with few exceptions, protected under the Wildlife and Countryside Act 1981 (as amended). Over eighty species or groups of species are listed under Schedule 1 of the Act, which confers special protection with increased penalties for offences committed.

3.4.2 Additionally, a further forty-nine bird species are listed under Section 41 of the NERC Act 2006, and are therefore, a material consideration within the planning process.

Desk Study

3.4.3 The EFC data search returned numerous records of notable bird species within 2km of the Site, including a variety of priority species commonly associated with the farmland and woodland habitats surrounding the Site.

3.4.4 The EFC data search returned 480 records for 99 bird species within the search area, including a total of 65 notable bird species within 2km of the Site. This includes 14 species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Schedule 1 species returned during the data search include green sandpiper *Tringa ochropus*, red kite *Milvus milvus*, barn owl *Tyto alba,* kingfisher *Alcedo atthis*, merlin *Falco columbarius*, hobby *Falco Subbuteo*, Cetti's warbler *Cettia cetti*, firecrest *Regulus ignicapilla*, redwing *Turdus iliacus*, fieldfare *Turdus pilaris*, black redstart *Phoenicurus ochruros*, brambling *Fringilla montifringilla*, crossbill *Loxia curvirostra* and serin *Serinus serinus.*

3.4.5 The data return also included six species listed on Annex 1 of the Directive 2009/147/EC (Birds Directive). These species include golden plover *Pluvialis apricaria*, common tern *Sterna hirundo*, little egret *Egretta garzetta*, red kite, kingfisher and merlin.

3.4.6 Twenty-one Natural Environment & Rural Communities (NERC) Act Section 41 Species are included in the EFC data return. Species include cuckoo *Cuculus canorus*, turtle dove *Streptopelia tutur*, lapwing *Vanellus vanellus*, herring gull *Larus argentatus*, lesser spotted woodpecker *Dryobates minor*, marsh tit *Poecile palustris*, skylark *Alauda arvensis*, grasshopper warbler *Locustella naevia*, starling *Sturnus vulgaris*, song thrush *Turdus philomelos*, spotted flycatcher *Muscicapa striata*, house sparrow *Passer domesticus,* dunnock *Prunella modularis*, yellow wagtail *Motacilla flava*, tree pipit *Anthus trivialis*, hawfinch *Coccothraustes coccothraustes*, bullfinch *Pyrrhula pyrrhula*, linnet *Linaria cannabina*, lesser redpoll *Acanthis cabaret*, yellowhammer *Emberiza citronella* and reed bunting *Emberiza schoeniclus*.

3.4.7 Two species returned in the data search are further listed as priority species under the Essex Biodiversity Action Plan. These include skylark and song thrush.

3.4.8 The data search returned 25 species listed as Red Listed BoCC and 28 species listed as Amber Listed BoCC.

3.4.9 A review of MAGIC shows that the Site is not allocated as an Important Bird Are and that the closest Important Bird Area is >22km from the Site.

Breeding Bird Survey

3.4.10 The breeding bird assemblage recorded within the survey area is considered representative of the locale and the agricultural and field boundary habitats present. A total of nine Notable Species were recorded breeding within the survey area (**Table 3.5**).

3.4.11 Notable Species recorded within the Site included two Red List species (skylark and yellowhammer) and seven Amber List species (woodpigeon, moorhen, willow warbler, whitethroat, wren, song thrush and dunnock).

3.4.12 Four Notable Species are listed as rare and most threatened species under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) (skylark, song thrush, dunnock and yellowhammer). Skylark and song thrush are the only species present which are listed under the Essex Local Biodiversity Action Plan (LBAP).

3.4.13 Cetti's warbler is the only species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) that was recorded breeding within the Site.

3.4.14 The number of breeding territories for three priority species were considered to be low (≤4 territories), although a moderate number of nesting territories was recorded for four Notable Species recorded. These consisted of skylark (6 territories), wren (10 territories), dunnock (5 territories) and yellowhammer (8 territories).

3.4.15 The Notable Species breeding assemblage was typically associated with vegetation along field boundaries, which principally comprised of field-margins, hedgerows, tree-lines and woodland habitats within and adjacent to the Site, with the exception of skylark which utilised open agricultural fields for nesting purposes. Skylark were recorded in moderate breeding numbers, with six skylark territories located throughout and immediately adjacent to the Site.

3.4.16 All breeding species (or potential breeding species) recorded along with an estimated number of the breeding territories within the Site are detailed within **Table 3.5**. Those species in **bold** are considered Notable Species. The indicative locations of the territories of Notable Species are provided in **Figure 5.**

Table 3.5: Breeding bird survey results.

Name	Scientific Name	Estimated Number of Territories (per visit)			Estimated Territories (total)	Conservation Status
		June	June	July		
Pheasant	*Phasianus colchicus*	1	1	0	1	-
Red-legged Partridge	*Alectoris rufa*	1	0	1	1	-
Woodpigeon	***Columba palumbus***	3	3	2	3	Amber
Collared Dove	*Streptopelia decaocto*	0	1	1	1	Green
Moorhen	***Gallinula chloropus***	1	0	0	0-1	Amber
Green Woodpecker	*Picus viridis*	1	1	1	1	Green
Blue Tit	*Cyanistes caeruleus*	8	3	7	8	Green
Great Tit	*Parus major*	2	2	0	2	Green
Skylark	***Alauda arvensis***	5	6	4	6	Red; NERC S41; LBAP
Cetti's Warbler	***Cettia cetti***	1	0	0	1	Green; S1
Willow Warbler	***Phylloscopus trochilus***	1	0	0	0-1	Amber
Chiffchaff	*Phylloscopus collybita*	1	4	4	4	Green

Blackcap	*Sylvia atricapilla*	1	1	0	1	Green
Whitethroat	***Curruca communis***	3	1	1	3	Amber
Wren	***Troglodytes troglodytes***	10	10	6	10	Amber
Song Thrush	***Turdus philomelos***	0	1	0	0-1	Amber; NERC S41; LBAP
Blackbird	*Turdus merula*	3	4	1	4	Green
Robin	*Erithacus rubecula*	10	4	3	10	Green
Dunnock	***Prunella modularis***	5	3	4	5	Amber; NERC S41
Chaffinch	*Fringilla coelebs*	1	0	0	0-1	Green
Yellowhammer	***Emberiza citrinella***	6	7	8	8	Red; NERC S41

Key

S1 – Schedule 1 of the Wildlife & Countryside Act 1981 (as amended)

BoCC – Birds of Conservation Concern. Red, Amber and Green categories are given (Stanbury et al., 2021)

NERC S41 – Priority Species listed on the Natural Environment and Rural Communities (NERC) Act (2006)

LBAP – Priority Species listed under the Essex Local Biodiversity Action Plan.

3.4.17 During survey visits, observations of buzzard *Buteo buteo*, kestrel *Falco tinnunculus*, swallow *Hirundo rustica*, long-tailed tit *Aegithalos caudatus*, pied wagtail *Motacilla alba yarellii*, linnet *Linaria cannabina* and goldfinch *Carduelis carduelis* were also made, but for which breeding evidence was not recorded within the survey area.

Bats

Legislation

3.4.18 All species of British bat are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Bats are further protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The Act and Regulations make it an offence to:

- kill, injure, or take any wild bat;
- damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection; and,
- intentionally or recklessly disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection.

3.4.19 Seven bat species in the UK are also listed as species of Principal Importance for the purpose of conserving biodiversity under Section 41 of the NERC Act 2006. Pipistrelles *Pipistrellus* sp. are further listed as Priority Species under the Essex Biodiversity Action Plan.

Desk Study

3.4.20 The data received from EFC returned 22 bat records over the previous 10 years. Bat species returned include barbastelle *Barbastella barbastellus* (2 records), brown long-eared *Plecotus auritus* (6 records), common pipistrelle *Pipistrellus pipistrellus* (8 records), soprano pipistrelle *Pipistrellus pygmaeus* (4 records), an unknown long-eared bat species *Plecotus* sp. (1 record) and an unknown bat species *Chiroptera* sp. (1 record). No bat records were returned within the Site itself, with the only reported roost located approximately 1.6km north-east.

3.4.21 A review of MAGIC identified two Natural England licences granted for bat roosts within 2km of the Site:

- EPSM2010-2038; destruction of a brown long-eared bat and common pipistrelle breeding and resting site between 2010 to 2011. Located c. 1km south-west of the Site.
- 2015-14099-EPS-MIT; damage of a barbastelle, brown long-eared bat, common pipistrelle, Natterer's bat *Myotis nattereri* and soprano pipistrelle breeding and resting site between 2015 to 2025. Located c. 1.3km north-east of the Site.

Roosting Bats

3.4.22 During the extended habitat survey, a number of trees located within the hedgerows or tree lines were considered to have potential bat roost features; including a mature ash tree with moderate / high bat roost potential (**TN1**), mature ash trees with moderate bat roost potential (**TN6** and **TN7**) and mature ash trees with low bat roost potential (**TN3** and **TN4**).

Foraging and Commuting Bats

3.4.23 Habitats within the Site are considered to most closely fit the description for land of 'moderate' interest for commuting and foraging bats in accordance with Bat Conservation Trust (BCT) guidance[36], with continuous habitat connected to the wider landscape that could be used. Flitch Way LNR / LoWS (immediately north of the Site) offers good opportunities for commuting and foraging bat species, with the River Ter and associated riparian habitat providing further opportunities along the western Site boundary.

3.4.24 Linear features within and around the Site such as hedgerows, woodland edges, tree lines and watercourses are considered to offer the most favourable habitats for foraging / commuting bats.

Badger

Legislation

3.4.25 Badgers and their setts are protected under the Protection of Badgers Act 1992. Under the Act it is an offence to: wilfully kill, injure, take, possess or cruelly ill-treat a badger; to attempt to do so: or, intentionally or recklessly interfere with a sett.

3.4.26 Sett interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. It is not illegal, and therefore a licence is not required, to carry out disturbing activities in the vicinity of a sett if no badger is disturbed and the sett is not damaged or destroyed. Where an activity is likely to result in an offence under the Protection of Badgers Act 1992 a licence from Natural England is required.

Desk Study

3.4.27 The data received from EFC returned 5 records of badger within 2km of the Site over the last ten years; with a two records in close proximity to the Site.

Further Information

3.4.28 During the extended habitat survey evidence of badger was identified within the Site. Full survey results are detailed in **Appendix 2**: Confidential Badger Survey Report.

3.4.29 Overall, the Site provides good quality habitat for sett making and foraging/commuting badgers.

[36] Bat Conservation Trust (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition).

Otter

Legislation

3.4.30 Otters are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); they receive further protection under the Habitats Regulations. The Act and Regulations make it an offence to:

- deliberately capture, injure or kill an otter;
- damage or destroy a breeding site or resting place, and;
- deliberately disturb an otter, particularly in a way which is likely to:

  a) to impair their ability to survive, breed or reproduce, rear or nurture young; and,

  b) to affect significantly the local distribution or abundance of the species.

3.4.31 Otter is listed as a priority species under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, as well as the UK BAP and Essex LBAP. Otter is therefore a material consideration within the planning process.

Desk Study

3.4.32 The data received from EFC returned one record of otter within 2km of the Site, located approximately 1.2km north-east near the Oak Meadow Nature Reserve in Rayne village.

3.4.33 A review of MAGIC did not identify any Natural England licences for otter within 2km of the Site.

Habitat Suitability

3.4.34 No signs of otter were recorded during the extended habitat survey; however, the River Ter along the western boundary offers some suitability for commuting otters.

3.4.35 In addition, the network of ditches and ponds located within the Site offer reduced/seasonal opportunities for foraging/commuting otters.

Water Vole

Legislation

3.4.36 The water vole and its habitats receive full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Water vole is also listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act and Essex LBAP. The species is therefore a material consideration within the planning process.

Desk Study

3.4.37 The data received from EFC returned no records of water vole within 2km of the Site.

Habitat Suitability

3.4.38 No evidence of water vole was found during the extended habitat survey. As ditches were all recorded to be dry, no suitable habitat was considered present within the Site at the time of survey. However, 2022 experienced a particularly dry summer and although all ditches were assessed to be dry throughout all surveys within the Site, it is possible for aquatic conditions in such habitats to change seasonally and fluctuate in suitability between years.

Hazel Dormouse

Legislation

3.4.39 Hazel dormice are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The Act and Regulations make it an offence to:

- deliberately capture, injure or kill hazel dormice;
- damage or destroy a hazel dormouse resting place or breeding site;
- deliberately or recklessly disturb a hazel dormouse while it's in a structure or place of shelter or protection; and/or,
- block access to structures or places of shelter or protection.

3.4.40 Additionally, the hazel dormouse is listed as priority species under Section 41 of the NERC Act 2006 and Essex LBAP. The species is therefore a material consideration within the planning process.

Desk Study

3.4.41 The EFC data search returned no records of hazel dormouse *Muscardinus avellanarius* within 2km of the Site.

3.4.42 A review of MAGIC did not identify any Natural England licences for dormouse within 2km of the Site.

Habitat Suitability

3.4.43 The Site was assessed for its potential to support hazel dormouse based on guidance outlined in the *Dormouse Conservation Handbook*[37]. The Site has field boundary features (hedgerows and tree lines) that offer some potential for foraging/nesting/hibernating hazel dormouse with direct connectivity to wider areas of woodland located in the surrounding area. Species-rich tree lines and hedgerows in particular are likely to act as suitable hazel dormice habitat. However, the majority of the Site (open agricultural fields) provides negligible suitable habitat for the species with a lack of any known records for the species in the wider 2km buffer environment.

Amphibians

Legislation

3.4.44 Great crested newts and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The Act and Regulations make it an offence to;

- kill, injure, or disturb a great crested newt;
- damage or destroy a breeding or resting place; or,
- obstruct access to any place that is used for shelter or protection.

[37] Bright PW, Morris PA and Mitchell-Jones A. (2006). *Dormouse Conservation Handbook 2nd Edition*. English Nature, Peterborough.

3.4.45 Great crested newt and common toad are also listed as priority species in England under Section 41 of the NERC Act 2006, with great crested newt further listed under the Essex LBAP. These species are therefore a material consideration within the planning process.

Desk Study

3.4.46 The data received from EFC returned 10 records of amphibian within 2km of the Site during the last ten years, with no records returned within the Site. Records returned include two great crested newt records, three common toad *Bufo bufo* records, two smooth newt *Lissotriton vulgaris* records and three common frog *Rana temporaria* records. Both great crested newt records were returned approximately 1.7km from the Site boundary, however, several historical records were identified in close proximity to the Site during 2005, including Pond P7 (**Figure 6**) which was not included in the great crested newt surveys (see Section 2.5).

3.4.47 A review of MAGIC identified three Natural England licences granted for great crested newt within 2km of the Site:

- 2016-25899-EPS-MIT-3; damage and destruction of great crested newt breeding and resting site between 2017 to 2025. Located c. 460m south-east of the Site.
- 2015-13447-EPS-MIT; damage and destruction of great crested newt resting site between 2015 to 2019. Located c. 1.2km south-west of the Site.
- 2015-7487-EPS-MIT; damage and destruction of great crested newt resting site between 2015 to 2025. Located c. 1.7km west of the Site.

3.4.48 Review of MAGIC further identified eight great crested newt class licence returns within 2km of the Site. Licence returns all included positive results for great crested newt presence, dating between 2014 to 2017. The closest record was identified approximately 460m north-east in a woodland pond located adjacent to Flitch Way LNR / LoWS.

Great Crested Newt HSI Assessment Results

3.4.49 Two ponds within the Site (P6 and P20) and a further six ponds surrounding the Site (P4, P5, P12, P14, P15 and P18) were assessed for their suitability to support great crested newts following the HSI assessment methodology. The assessment calculated a habitat suitability score for each pond based on a series of indices generated from variables including pond size and the presence/absence of wildfowl. Final scores relate to suitability and range from 'poor' to 'excellent' suitability.

3.4.50 Ponds P12, P14, P15 and P18 were assessed as having 'good' suitability to support great crested newts. Pond P4 and P6 were assessed to have 'average' suitability and pond P5 resulted in 'below average' suitability. The least suitable pond surveyed was pond P20 which was assessed to have 'poor' great crested newt suitability.

3.4.51 The results of the HSI Assessment are displayed in **Table 3.6** below. The location of all ponds on Site and within 250m of the Site boundaries are provided in **Figure 6**.

Table 3.6: HSI survey results.

Suitability Indices	P4	P5	P6	P12	P14	P15	P18	P20
SI 1 – Location	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SI 2 – Pond area	0.10	0.05	0.05	1.00	0.95	0.60	0.40	0.05

SI 3 – Pond drying	0.50	0.50	0.50	0.90	1.00	1.00	0.67	0.50
SI 4 – Water quality	0.67	0.67	0.33	0.67	0.67	0.33	0.67	0.33
SI 5 –Shade	1.00	1.00	1.00	0.70	0.30	1.00	1.00	0.30
SI 6 – Fowl	1.00	1.00	1.00	1.00	1.00	1.00	0.67	1.00
SI 7 – Fish	0.67	1.00	1.00	0.67	0.67	0.67	0.67	1.00
SI 8 – Ponds	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
SI 9 – Terrestrial habitat	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SI 10 – Macrophytes	0.40	0.30	0.90	0.30	0.30	0.30	0.40	0.30
HSI Score:	**0.62**	**0.58**	**0.61**	**0.77**	**0.71**	**0.72**	**0.70**	**0.48**
Suitability	**Average**	**Below average**	**Average**	**Good**	**Good**	**Good**	**Good**	**Poor**

Great Crested Newt e-DNA Survey Results

3.4.52 The e-DNA laboratory sample results were received from Surescreen Scientifics on the 4th July 2022. The results concluded that **P5**, **P6, P12, P14, P15** and **P20** were found to be **positive** for great crested newt e-DNA, thereby indicating that great crested newt breeding populations are present within these ponds (and therefore the Site); as summarised in **Table 3.7**. The laboratory reports are provided in full in **Appendix 3**.

Table 3.7: eDNA survey results.

Pond	Sample Ref.	Inhibition Check	Degradation Check	Sample Integrity Score	Result
P4	5870	Pass	Pass	Pass	**Negative**
P5	5869	Pass	Pass	Pass	**Positive**
P6	5868	Pass	Pass	Pass	**Positive**
P12	5855	Pass	Pass	Pass	**Positive**
P14	5857	Pass	Pass	Pass	**Positive**
P15	5856	Pass	Pass	Pass	**Positive**
P18	5853	Pass	Pass	Pass	**Negative**
P20	5854	Pass	Pass	Pass	**Positive**

3.4.53 The dominant arable farmland habitats on Site provide sub-optimal amphibian terrestrial habitat, however, field boundary features such as hedgerows, tree lines, field margins, ditches and woodland provide suitable limited terrestrial habitat for amphibians.

Reptiles

Legislation

3.4.54 Under section 9 (5) of the Wildlife and Countryside Act 1981 (as amended), the more widespread reptile species; slow worm *Anguis fragilis*, grass snake *Natrix helvetica*, common lizard *Zootoca vivipara* and adder *Vipera berus* are protected against sale, barter, exchange, transporting for sale and advertising to sell or buy.

3.4.55 Common lizard, grass snake, adder and slow worm are also listed as priority species in England under Section 41 of the NERC Act 2006; they are therefore a material consideration within the planning process.

Desk Study

3.4.56 The data received from EFC returned three reptile records within 2km of the Site during the previous ten years. Records include one grass snake *Natrix helvetica*, one slow worm *Anguis fragilis* and one common lizard *Zootoca vivipara* in the wider environment.

Habitat Suitability

3.4.57 The arable fields are considered to be of sub-optimum value to reptiles. The boundary hedgerows, tree lines, ditches, field margins, waterbodies and woodlands are considered to offer more suitable habitat for reptiles if present, providing foraging, refuge and commuting opportunities.

White-clawed Crayfish

Legislation

3.4.58 The white-clawed crayfish *Austropotamobius pallipes* is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of Sections 9 (1 & 5) which makes it an offence to intentionally take or sell white-clawed crayfish. White-clawed crayfish is also listed as priority species in England under Section 41 of the NERC Act 2006 and listed within the Essex Biodiversity Action Plan; the species is therefore a material consideration within the planning process.

Desk Study

3.4.59 The data received from EFC returned no records of white-clawed crayfish.

Habitat Suitability

3.4.60 Habitats sections of the River Ter located adjacent to the Site are considered potentially suitable to support this species.

Other Notable Species

Mammals

3.4.61 Brown hare *Lepus europaeus* was observed within on-Site arable fields during the extended habitat survey.

3.4.62 The data received from EFC returned one record of brown hare within 2km of the Site during the last ten years.

3.4.63 The habitats on Site, most notably the hedgerows/tree-lines/field margins/ditch/woodland boundaries could provide opportunities for other notable mammal species such a hedgehog *Erinaceus europaeus*.

3.4.64 Brown hare and hedgehog are listed in England under Section 41 of the NERC Act 2006. Brown hare is further listed under the Essex Biodiversity Action Plan.

Invertebrates

3.4.65 The data received from EFC returned 19 records of notable invertebrate species within 2km of the Site during the last ten years, most notably including ten records of small heath *Coenonympha pamphilus*, two records of white-letter hairstreak *Satyrium w-album* and one record of cinnabar *Tyria jacobaeae*.

3.4.66 The arable fields subject to regular agricultural management are considered unlikely to support a notable invertebrate assemblage, while boundary hedgerows, ditches, ponds, field margins and trees are considered more likely to support a more diverse range of species associated with such habitats.

3.5 Invasive Non-native Species

Legislation

3.5.1 These species are listed under Schedule 9 of The Wildlife & Countryside Act 1981 (as amended), it is an offence to plant or otherwise cause them to grow in the wild. This includes allowing the species to grow/spread, spreading the species or transferring polluted ground material from one area to another.

3.5.2 Any Schedule 9 species or soil/waste containing this species is classed as controlled waste under the Environmental Protection Act (Duty of Care) Regulations 1991, which requires a permit issued by the Environment Agency to transfer polluted material off-site to a registered waste facility. If waste soils containing invasive species are to be transferred from Site it is likely that the disposal of these soils will need to be permitted by the Environment Agency, in order to achieve legislative compliance.

3.5.3 Section 14(4A) of the Wildlife and Countryside Act (1981), as inserted by section 23 of the Infrastructure Act 2015, enables species control agreements and orders to be made by environmental authorities to ensure that landowners take action on Schedule 9 invasive non-native species, or permit others to enter the land and carry out those operations, to prevent their establishment and spread. The Species Control Provisions: Code of Practice for England sets out how the provisions should be applied by environmental authorities in England.

3.5.4 Species such as signal crayfish *Pacifastacus leniusculus*, muntjac deer *Muntiacus reevesi* and grey squirrel *Sciurus carolinensis* are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) Section 14(1) of the WCA makes it illegal to release or allow to escape into the wild any animal listed in Schedule 9 of the Act.

Desk Study

3.5.5 The EFC returned no plant species listed within Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within the search area.

3.5.6 The EFC returned nine records of plant considered invasive in Essex within 2km of the Site during the last ten years, with none recorded within the Site itself. Essex invasive plant species returned in the wider area include Spanish bluebell *Hyacinthoides hispanica*, goat's-rue *Galega officinalis*, least duckweed *Lemna minuta*, butterfly-bush *Buddleja davidii*, false-acacia *Robinia pseudoacacia* and lesser bulrush *Typha angustifolia.*

3.5.7 Records of invasive animal species listed within Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) received from the EFC during the last ten years consist of a single muntjac deer in 2012.

Survey Results

3.5.8 Chinese muntjac was recorded within the Site during the extended habitat survey, as well as *Cotoneaster* sp. (see **TN8** in **Table 3.4**) along sections of neighbouring woodland (**Photograph 6**).

FIGURES

Figure 1: Site Location Plan
Figure 2: Statutory Designated Sites Plan
Figure 3: Non-statutory Designated Sites Plan
Figure 4: Habitat Plan
Figure 5: Breeding Bird Survey Results
Figure 6: Pond Location Plan

FIGURE 1: SITE LOCATION PLAN

FIGURE 2: STATUTORY DESIGNATED SITES PLAN

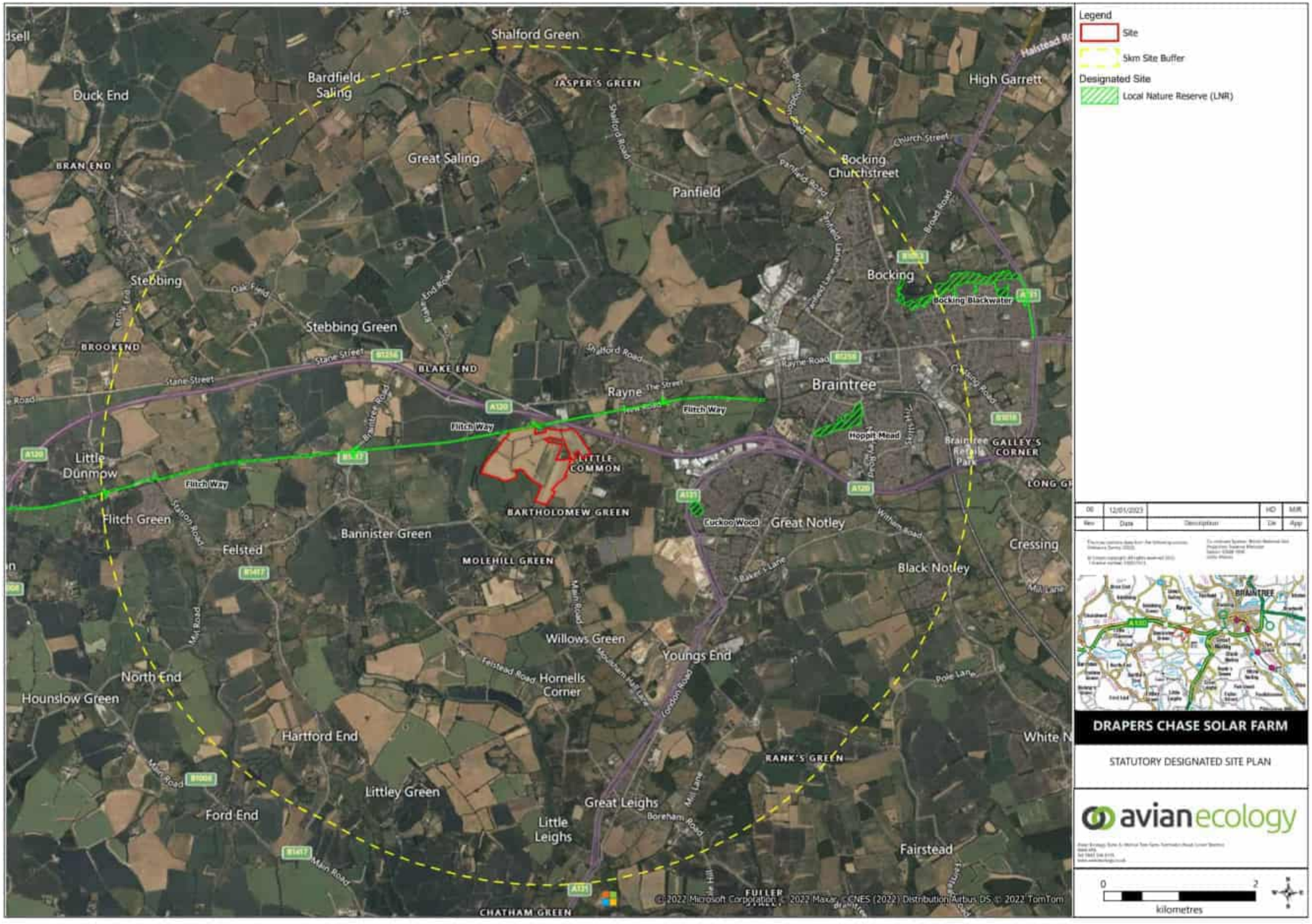


FIGURE 3: NON-STATUTORY DESIGNATED SITES PLAN

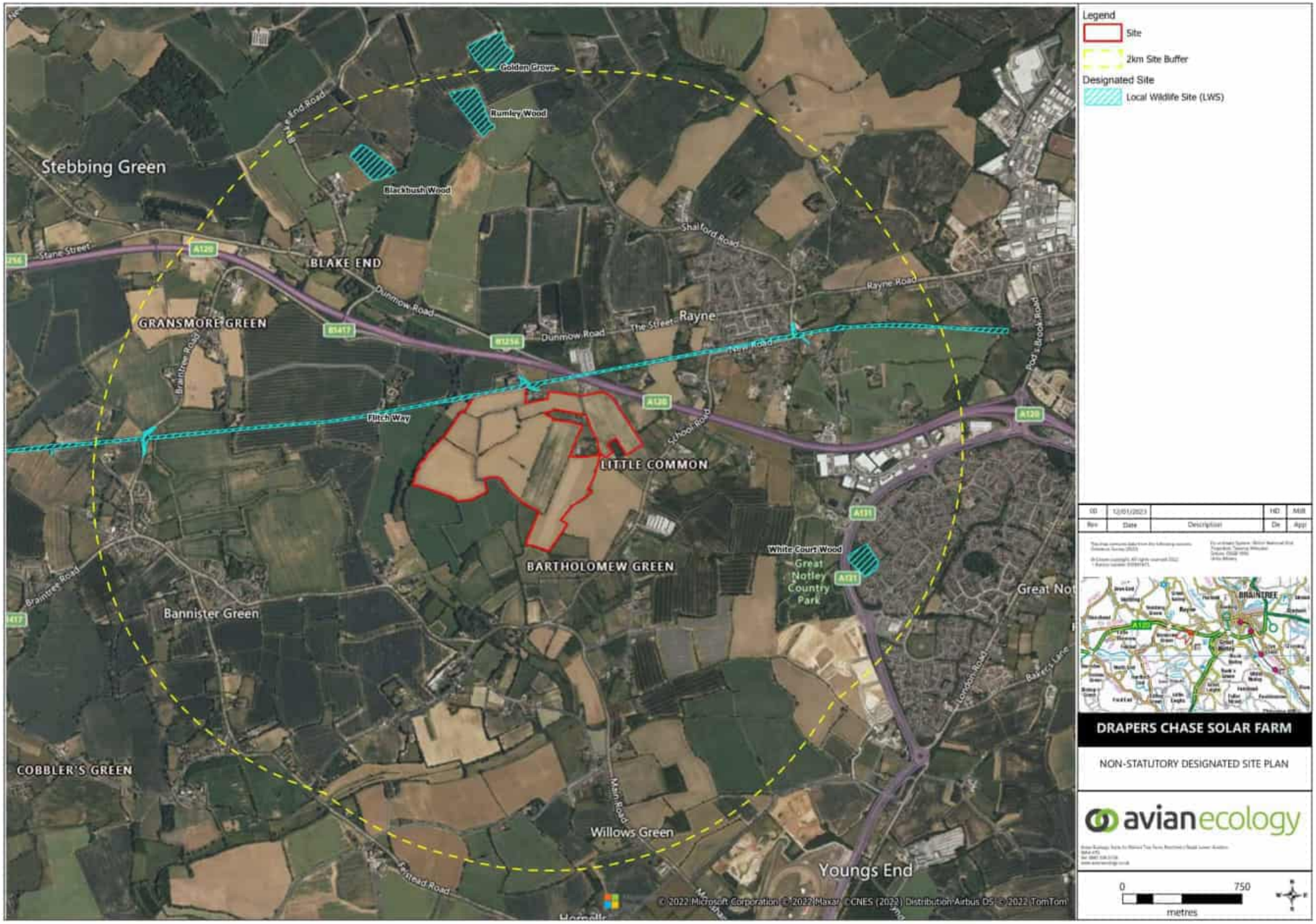


FIGURE 4: HABITAT PLAN

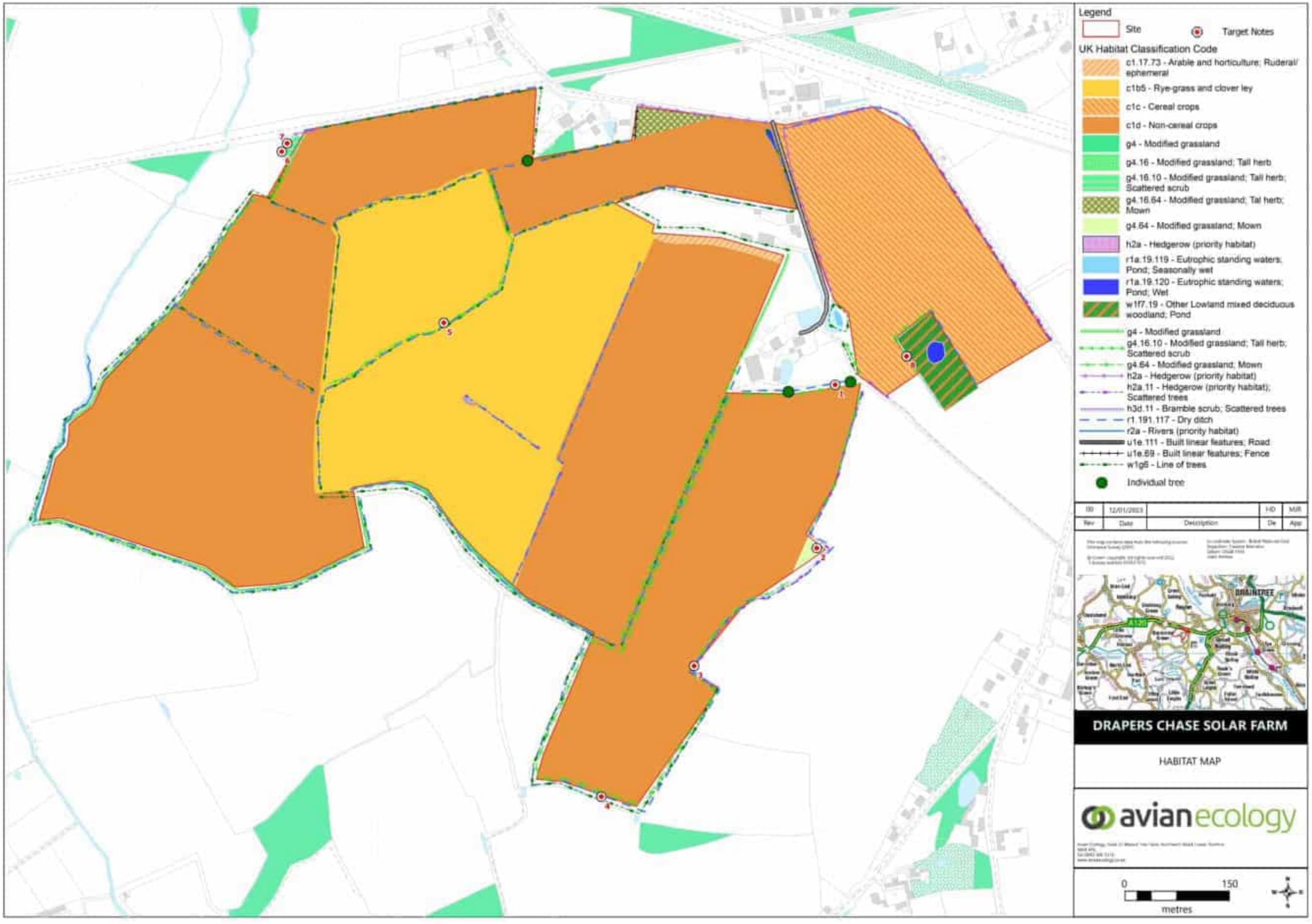


FIGURE 5: BREEDING BIRD SURVEY RESULTS

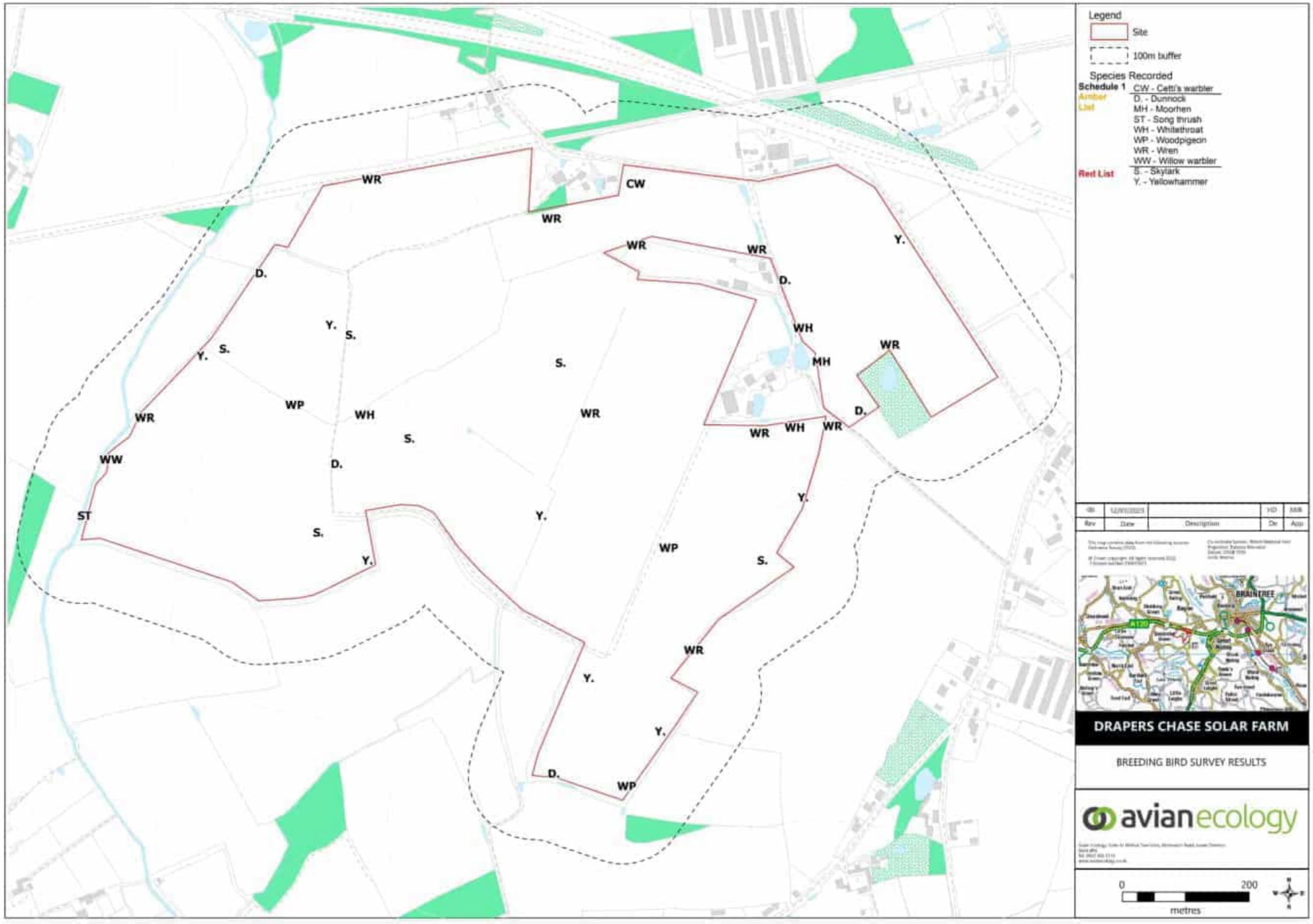
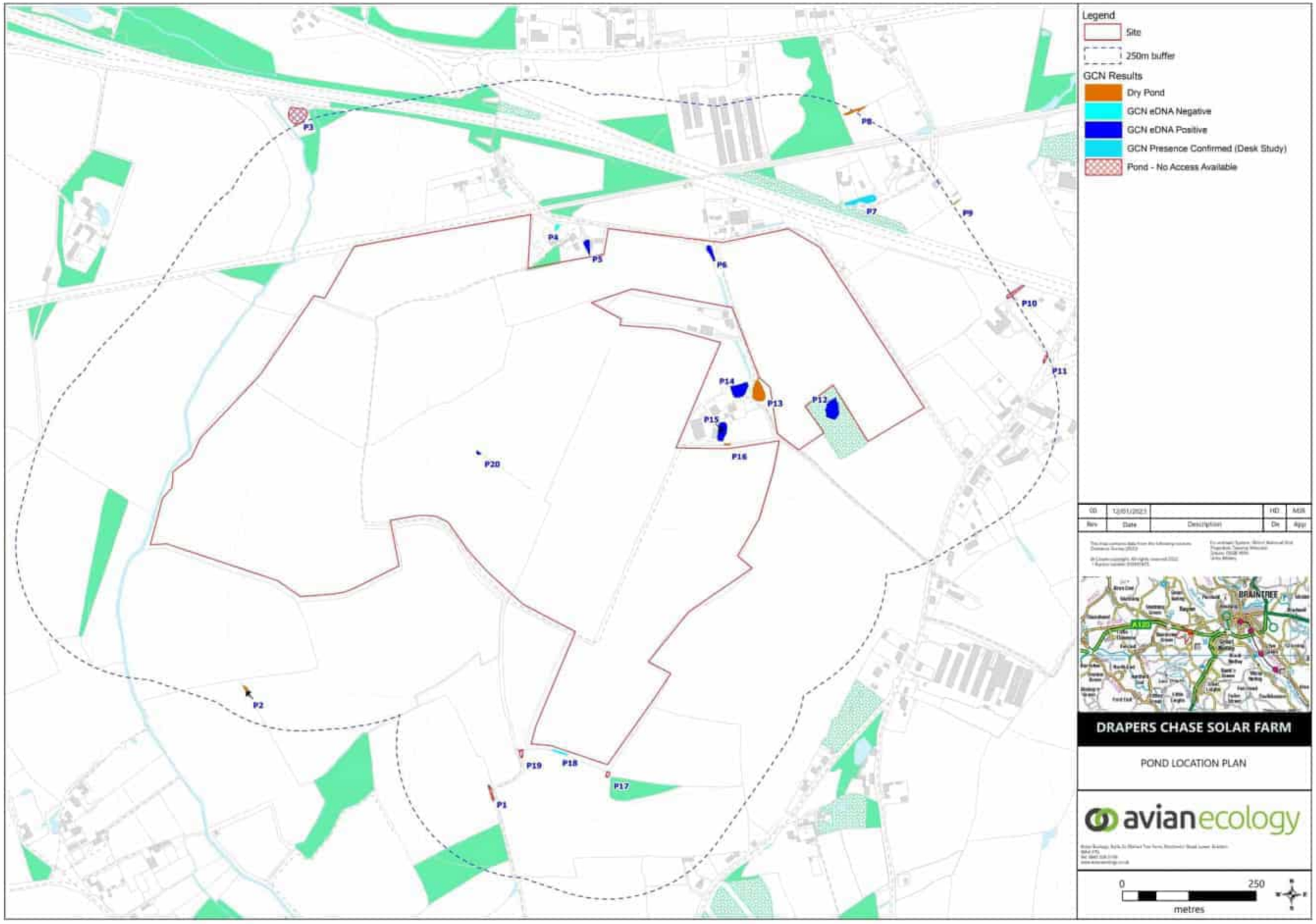


FIGURE 6: POND PLAN



APPENDICES

APPENDIX 1: PHOTOGRAPHS

APPENDIX 2: CONFIDENTIAL BADGER SURVEY REPORT

APPENDIX 3: GREAT CREST NEWT EDNA LABORATORY RESULTS

APPENDIX 1: PHOTOGRAPHS

Photo 1: Arable field containing borage dominating the majority of on-Site habitat.

Photo 2: Modified grassland field corner containing tall herb.

Photo 3: Species-rich hedgerow containing mature trees.

Photo 4: Line of trees located throughout the Site's field boundaries.

Photo 5: Pond P20 – a shallow pond within the Site pictured with water at the time of GCN eDNA and HSI surveys, dry during the extended habitat survey.

Photo 6: Mixed deciduous woodland parcel bordering the Site. Pictured along the edge is *Cotoneaster* sp. (**TN8**).

Photo 7: Pond P12 - a large pond located within a neighbouring parcel of woodland. Recorded with the presence of great crested newts.	**Photo 8:** TN1 – an ash tree with moderate / high bat roost potential within the Site.

APPENDIX 2: CONFIDENTIAL BADGER SURVEY REPORT

(provided as a separate document)

APPENDIX 3: GREAT CRESTED NEWT EDNA LABORATORY REPORT

SureScreen Scientifics

Folio No: E14422
Report No: 1
Purchase Order: AE-22-122
Client: AVIAN ECOLOGY LTD
Contact: Dan Foy

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 24/06/2022
Date Reported: 04/07/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
5853	P18 Drapers Farm	TL 71539 21106	Pass	Pass	Pass	Negative	0
5854	P20 Drapers Farm	TL 71381 21640	Pass	Pass	Pass	Positive	12
5855	P12 Drapers Farm	TL 72022 21739	Pass	Pass	Pass	Positive	2
5856	P15 Drapers Farm	TL 71852 21694	Pass	Pass	Pass	Positive	8
5857	P14 Drapers Farm	TL 71886 21793	Pass	Pass	Pass	Positive	9
5868	P6 Drapers Farm	TL 71807 22040	Pass	Pass	Pass	Positive	5
5869	P5 Drapers Farm	TL 71567 22052	Pass	Pass	Pass	Positive	2

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel. +44 (0)1332 292093 Email: scientifics@surescreen.com
Company Registration No. 08950940

SureScreen Scientifics

5870	P4 Drapers Farm	TL 71507 22080	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth **Approved by:** Chelsea Warner

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling

location at the time the sample was taken or within the recent past at the sampling location.

Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.

Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

Poplars Solar Farm

on behalf of Bluestone Energy Limited

Baseline Ecology Report

avianecology

Document Control				
Project Name:	Poplars Solar Farm			
Project Number:	Pegas-075-1700			
Report Title	Baseline Ecology Report			
Issue	**Date**	**Notes**	**Prepared**	**Reviewed**
V1	11/10/2022	Draft for client review	K Love *BSc (Hons.)*	D Foy *BA (Hons.)*

This report has been prepared in accordance with the terms and conditions of appointment for Ecological Appraisal [on request]. Avian Ecology Ltd. (6839201) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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Appendix 1: Photographs

Appendix 2: Confidential Badger Survey Report

Appendix 3: Great Crest Newt eDNA Laboratory Results

1 INTRODUCTION

1.1 Background

1.1.1 Avian Ecology Limited (AEL) was commissioned by Bluestone Energy Limited via Pegasus Group in 2022 to undertake a suite of Baseline Ecology Surveys on land west of Braintree, Essex (the 'Site'). This report has been prepared in order to the provide baseline information to inform an Environmental Statement (ES) Biodiversity chapter in support of the planning application for the proposed installation and operation of a Solar Farm and associated infrastructure.

1.1.2 This Report details the results of a comprehensive range of ecological surveys and Desk Study undertaken during 2022 by AEL.

1.1.3 The baseline information provided in this report is required in order to produce a Biodiversity ES Chapter which will provide a succinct and robust evaluation of the anticipated effects of the proposed development.

1.1.4 The information provided in this Baseline Ecology Report comprises:

- A desktop study;
- Extended habitat survey;
- Breeding bird survey; and
- Great crested newt *Triturus cristatus* eDNA survey.

1.1.5 The Report refers to relevant survey methodology and guidance as appropriate.

1.2 Site Overview

1.2.1 The Site as illustrated by the red-line application boundary, shown on **Figure 1,** comprises three land parcels composed of agricultural land of approximately c.108.69 ha. Two smaller northern land parcels are spatially separated from each other by the B1417. The largest southern Site land parcel is spatially detached from the northern Site land parcels by the Flitch Way Local Nature Reserve (LNR) / Local Wildlife Ste (LoWS). The Site is located at the approximate central grid reference of TL 7427 1970.

1.2.2 The Site comprises arable fields marked by a series of hedgerows, field margins, ditches, fences and trees. The Site is located directly north-east of Bannister Green village near Felsted. In the wider context, the Site is further surrounded by extensive areas of farmland, scattered woodland and small settlements.

1.3 Scope of Report

1.3.1 The objectives of the Baseline presented within this Report are to:

- Identify the proximity of any designated sites for nature conservation interest;
- Provide baseline information on the current habitats and ecological features both within the Site and immediate surrounding area; and,
- Identify the presence or potential presence of any protected species or habitats.

1.3.2 The Assessment has comprised a desk study review of existing ecological information for the Site and surrounding area, together with an extended habitat survey, great crested newt presence/absence survey and breeding bird survey.

1.3.3 The report refers to relevant legislation, planning policy and guidance as appropriate.

1.4 Legislative Framework, Planning Policy and Guidance

1.4.1 During the preparation of this report, reference has been made to the following key pieces of legislation, planning policy and guidance listed in **Table 1.1** below.

Table 1.1: Key legislation, planning policy and guidance.

International
• Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (hereafter referred to as the 'the Ramsar Convention)[1]; • Convention on the Conservation of European Wildlife and Natural Habitats 1979 (hereafter referred to as the 'the Bern Convention'[2]; and, • UNESCO convention on the protection of the World Cultural and Natural Heritage (1972)[3].
National
• The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[4]; • The 'Conservation of Habitats and Species Regulations 2017 (as amended); • The Wildlife and Countryside Act 1981 (as amended); • The Environment Act 2021[5]; • Infrastructure Act 2015; • Countryside and Rights of Way Act 2000; • The Invasive Alien Species (Enforcement and Permitting) Order 2019[6]; • Natural England European Protected Species Policies[7] • Protection of Badgers Act 1992; • Hedgerow Regulations 1997; • Natural Environment and Rural Communities (NERC) Act (2006); • The National Planning Policy Framework 2 (NPPF2, 2021)[8]; • The United Kingdom Biodiversity Action Plan (UK BAP); • Wildlife licensing: comment on new policies for European protected species licence (Natural England. 2016)[9] • European protected species policies for mitigation licences (Natural England. 2022)[10] • Ancient woodland, ancient trees and veteran trees: advice for making planning decisions (Natural England. 2022)[11] • BS 42020:2013 Biodiversity – Code of Practice for Planning and Development;

[1] https://www.ramsar.org/
[2] https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/104
[3] https://whc.unesco.org/en/convention/
[4] https://www.legislation.gov.uk/uksi/2019/579/contents/made
[5] https://services.parliament.uk/Bills/2019-21/environment.html
[6] https://www.legislation.gov.uk/uksi/2019/527/introduction/made
[7] https://www.gov.uk/guidance/european-protected-species-policies-for-mitigation-licences
[8] https://www.gov.uk/government/publications/national-planning-policy-framework--2
[9] https://www.gov.uk/government/consultations/wildlife-licensing-comment-on-new-policies-for-european-protected-species-licences
[10] https://www.gov.uk/guidance/european-protected-species-policies-for-mitigation-licences
[11] https://www.gov.uk/guidance/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions

• BS 8683:2021 Process for designing and implementing Biodiversity Net Gain; and, • Biodiversity Net Gain. Good practice principles for development[12].
Local
• Essex Biodiversity Action Plan[13] • Integrating Biodiversity into Development[14] • Uttlesford District Council: Planning and Wildlife[15] • Uttlesford District Council: UDC Constraints Map External[16] • Uttlesford Local Plan 2005 – Policies ENV7 and ENV8[17]

1.4.2 The Conservation of Habitats and Species Regulations 2017 (as amended) remains in place following the United Kingdom's (UK's) withdrawal from the European Union (EU) with only relatively minor changes that came into force on 31st December 2020, with the 2017 regulations being transposed into national (England and Wales) legislation via the Conservation of Habitats and Species Amendment (EU Exit) Regulations 2019. They are hereafter referred to as the 'Habitats Regulations'.

1.4.3 The 'UK Post-2010 Biodiversity Framework' succeeds the UK Biodiversity Action Plan (UK BAP) and 'Conserving Biodiversity – the UK Approach'. The lists of priority species and habitats agreed under UK BAP still form the basis of much biodiversity work and are therefore considered within this report in the context of the objectives of the Biodiversity Framework. BAPs identify habitats and species of nature conservation priority on a UK (UK BAP) and Local (LBAP) scale. UK BAPs formed the basis for statutory lists of priority species and habitats in England under Section 41 (England) of the NERC Act 2006, and so are also relevant in the context of this legislation.

[12] https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development-a-practical-guide/
[13] https://www.braintree.gov.uk/downloads/file/2436/e47-the-essex-biodiversity-action-plan-1999
[14] http://www.essexwtrecords.org.uk/sites/default/files/planning_files/Integrating%20Biodiversity%20into%20Development.pdf
[15] https://www.uttlesford.gov.uk/article/4897/Planning-and-wildlife
[16] https://udc.maps.arcgis.com/apps/webappviewer/index.html?id=8de6663b65c84fb699a718eac0fa926d
[17] https://www.uttlesford.gov.uk/media/4723/Uttlesford-Local-Plan-Adopted-January-2005/pdf/Local_Plan_2005.pdf?m=637471937917270000

2 METHODOLOGY

2.1 Desk Study

2.1.1 A desk study was undertaken to identify existing information on the presence of designated sites for nature conservation, protected, priority and otherwise notable species and habitats within proximity to the Site as follows:

- Non-statutory designated sites for nature conservation within 2km of the Site;
- National statutory designated sites for nature conservation, within 5km of the Site;
- International statutory designated sites for nature conservation, within 10km of the Site; and,
- Existing records of protected, priority and otherwise notable fauna and flora species within 2km of the Site[18].

2.1.2 The following key sources were consulted:

- Natural England and Joint Nature Conservation Committee (JNCC) websites[19];
- The Multi Agency Geographic Information for the Countryside (MAGIC) website[20];
- The Woodland Trust Ancient Tree Inventory[21];
- The Natural England Open Data Geoportal[22];
- National Biodiversity Network (NBN) Atlas[23]; and,
- The Essex Field Club (EFC)[24].

2.1.3 Reference was also made to Ordnance Survey maps of the wider area and online aerial images (www.google.co.uk/maps) in order to determine any features of nature conservation interest in the wider area, including potential ponds.

2.1.4 The results of the desktop study are provided in **Figure 2: Statutory Designated Sites Plan** and **Figure 3: Non-statutory Designated Sites Plan.**

2.2 Extended Habitat Survey

2.2.1 An extended habitat survey of the Site was undertaken on 23rd August 2022 by K Love *BSc*, who is a competent and qualified ecologist.

2.2.2 The practical survey methodology followed the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat survey methodology (JNCC, 2010). However, specific habitats were also recorded and mapped in accordance with the recently and widely adopted methodology described within the *UK Habitat Classification Manual Version 1.1* (UK Habitat Classification Working

[18] Existing records of protected, priority and otherwise notable species within 2km of the Site have been limited to the preceding 10-year period, unless more historic records are considered pertinent to the Site and Proposed Development.
[19] http://jncc.defra.gov.uk/
[20] https://magic.defra.gov.uk/MagicMap.aspx
[21] https://ati.woodlandtrust.org.uk/
[22] https://naturalengland-defra.opendata.arcgis.com/
[23] https://nbnatlas.org/) NBN Atlas records have been utilised in accordance with the NBN Atlas Data Licences conditions (https://docs.nbnatlas.org/data-licenses/) with 'Open Government' and 'Creative Commons No Rights Reserved' licensed data referred to within the report.
[24] https://www.essexfieldclub.org.uk/portal.php

Group. 2020[25]). All habitats were mapped and described using a series of 'target notes' (TNs) to the highest level of UK habitat classification as possible, with each individual habitat feature being assigned to a primary habitat and then described with secondary codes if applicable. The survey was extended to include the additional recording of specific features indicating the presence, or likely presence, of protected species, invasive species and other species of conservation significance. The extent of the Site and habitats as surveyed is shown on **Figure 4** with accompanying photographs in **Appendix 1**.

2.3 Breeding Bird Surveys

2.3.1 A breeding bird survey was undertaken between June and July 2022, employing an adapted version of the British Trust for Ornithology (BTO) Common Bird Census (CBC) technique (Gilbert *et al*., 1998[26]) and comprising a series of three staggered survey visits undertaken at least seven days apart.

2.3.2 All survey visits were carried out during the morning and finished by 09:30hrs in conditions suitable for survey (avoiding heavy rain and strong winds). A summary of survey effort is presented in **Table 2.1**. Breeding bird survey visits were undertaken by C. Kilshaw *BSc* and R. Kilshaw *BSc*; two suitably competent and experienced ornithologists.

2.3.3 The survey area comprised the Site and also included a 100m buffer observed from the Site boundary designed to record the potential presence of species listed under Schedule 1 of the Wildlife & Countryside Act 1981[27] (as amended) (**Figures 5**).

2.3.4 During each survey visit all bird registrations were recorded on suitably scaled field maps using standard BTO species codes and behaviour notations (such as singing, carrying food, active nest). The approximate locations of bird territories within the Site were determined using standard territory mapping techniques to identify and isolate areas within which birds consistently displayed breeding behaviours (following Gilbert *et al.* 1998).

2.3.5 Observations of non-breeding birds just visiting the Site (e.g. gulls feeding in fields) and birds flying over the Site were also made.

2.3.6 For the purposes of this report, although the estimated number of breeding territories for all species is provided (**Table 3.5**) only the breeding territories of Notable Species are mapped and presented on **Figures 5**, given these are the most relevant species to the design and assessment of development proposals. Notable Species relevant to the Proposed Development include Birds of Conservation Concern (BoCC Amber and Red List Species (Stanbury *et al.,* 2021[28]), NERC Act (2006)[29], Annex 1[30] raptors and owls, Schedule 1 species and Essex Biodiversity Action Plan[31] species.

Table 2.1: Breeding Bird Survey Effort.

Survey visit	Date	Start time	End time	Sunrise (24hrs)
1	10/06/2022	07:30	09:30	04:39

[25] https://ukhab.org/ukhab-documentation/
[26] Gilbert, G., Gibbons, D.W & Evans, J. (1998) *Bird monitoring methods. A manual of techniques for key UK species*. RSPB, Sandy
[27] Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
[28] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747. Available online at https://britishbirds.co.uk/content/status-our-bird-populations .
[29] Natural Environment and Rural Communities (NERC) Act (2006)
[30] Annex 1 – species listed on Annex 1 of the EC Directive 2009/147/EC of the European Parliament on the conservation of wild birds.
[31] https://www.braintree.gov.uk/downloads/file/2436/e47-the-essex-biodiversity-action-plan-1999

Survey visit	Date	Start time	End time	Sunrise (24hrs)
2	27/06/2022	07:00	09:30	04:40
3	08/07/2022	07:00	09:30	04:48

2.4 Great Crested Newt Surveys

2.4.1 Potential ponds which could be used by great crested newt for breeding, if present and suitable, were identified within a 250m radius of the Site using OS and aerial mapping. Due to the low impact of solar energy developments on great crested newt habitats, and reflecting guidance published by Natural England [32], ponds beyond 250m from the Site were not considered.

Great Crested Newt HSI Assessment

2.4.2 Five accessible/viewable ponds (P5, P6, P18, P19 and P20) were assessed for their suitability to support great crested newt using the HSI (Habitat Suitability Index) Assessment methodology as developed by Oldham *et al*. 2000[33] and as detailed within ARG UK guidance (ARG UK, 2010[34]), see (**Figure 6**).

2.4.3 The HSI assessment involves the measurement of ten different indices which, when combined, have been found to provide a good indication of the general suitability of ponds for great crested newts. Each of the indices is scored (between 0.01-1) using a series of graphs and figures within the guidance notes (ARG UK, 2010). These scores are then used to calculate an overall Habitat Suitability Score for each pond.

2.4.4 Final scores relate to pond suitability for great crested newt and range from 'poor' to 'excellent'.

Great Crested Newt eDNA Survey

2.4.5 Twenty-seven ponds were identified on and within 250m of the Site from OS and aerial mapping (**Figure 6**). Of these, five ponds were subject to eDNA surveys in 2022; three ponds within the Site (P18, P19 and P20) and two ponds directly adjacent to the Site boundary (P5 and P6). Two further ponds (P7 and P17) were accessed but dry at the time survey. These two ponds were therefore excluded from the survey.

2.4.6 The five ponds included in the survey (P5, P6, P18, P19 and P20) were sampled on 23rd June 2022 by a suitably experienced surveyor, K. Love *BSc*, and secondary surveyor R. McLaughlin *MSc.*

2.4.7 The protocol for sampling followed that outlined within the technical advice note for field and laboratory sampling of great crested newts (Biggs *et al*., 2014), which requires the collection of 20 x 30ml subsamples from each pond, spaced as evenly as possible around the pond margin. Each sample was then placed within a Whirl-Pak bag and shaken for 10 seconds, before a 15ml sample was pipetted from the bag and placed in a specimen tube for laboratory analysis. Following collection, samples were refrigerated prior to laboratory dispatch.

2.4.8 Laboratory analysis was undertaken by SureScreen Scientifics[35]. The laboratory follows the analysis methodology outlined within the Defra Project WC1067 (Biggs *et al*., 2014).

[32] https://www.gov.uk/guidance/great-crested-newts-advice-for-making-planning-decisions

[33] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus). Herpetological Journal 10 (4), 143-155.

[34] ARG UK (2010) ARG UK Advice Note 5: Great crested newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom.

[35] scientifics@surescreen.com

2.4.9 Laboratory analysis results are provided within **Appendix 3**.

2.5 Limitations

Extended Habitat Survey

2.5.1 An extended habitat survey does not constitute a detailed botanical survey or faunal species list or provide a full protected species survey but, enables competent ecologists to ascertain an understanding of the ecology of the site in order to:

- Broadly identify the nature conservation value of the Site and assess the significance of any potential impacts on habitat/species recorded; and/or,
- Confirm the need and extent of any additional specific ecological surveys that are required to identify the true nature conservation value of a site (if any).

2.5.2 The extended habitat survey visit was undertaken in August 2022 and therefore within the optimal period for botanical surveys (approximately April to September).

Breeding Bird Surveys

2.5.3 The results of the surveys are only a snap-shot of the habitat use and activity of the bird assemblage within the Site. However, the surveys have provided indicative evidence of the breeding bird assemblage within the Site.

2.5.4 It is appreciated that factors, including cropping regime/agricultural land use and disturbance will influence habitat use within the Site by birds on an annual basis. It is an assumption that the cropping regime/land use during the survey period is typical. No significant disturbance events were recorded during the surveys (with the exception of usual events such as agricultural work and traffic along roads and as such are not considered significant in terms of having an influence on the target species, when regarding the survey period in its entirety and as such are not considered further in this assessment.

Great Crested Newt Presence/Absence Survey (eDNA)

2.5.5 Twenty-seven ponds were identified within either the Site or within 250m of the Site boundary. Seven ponds were accessible, with access not granted to a further twenty ponds (P1, P2, P3, P4, P8, P9, P10, P11, P12, P13, P14, P15, P16, P21, P22, P23, P24, P25, P26 and P27). Two ponds (P7 and P17) were dry at the time of survey and therefore excluded from eDNA surveys.

3 BASELINE

3.1 Designated Sites for Nature Conservation

Statutory Designated Sites

3.1.1 No international statutory designated sites occur within 10km of the Site boundary.

3.1.2 Three national statutory designated sites occur within 5km of the Site, with the closest being Flitch Way Local Nature Reserve (LNR), which is located adjacent to the Site boundary. Flitch Way LNR partitions the two northern Site land parcels from the largest southern Site land parcel.

3.1.3 The Site does not lie within a Site of Special Scientific Interest (SSSI) Impact Risk Zone (IRZ) whereby the LPA is required to consult with Natural England in regard to potential impact pathways associated with the development.

3.1.4 A summary of statutory designated sites for nature conservation located within 5km of the Site is provided below in **Table 3.1**. The locations of statutory designated sites in relation to the Site are shown in **Figure 2**.

Table 3.1: Statutory Designated Sites.

Site Name	Approximate Distance/Direction	Description
Flitch Way LNR	Adjacent to the Site boundary. Partitions the northern and southern Site land parcels.	A wildlife corridor that connects the four Essex Wildlife Trust Living Landscape Areas of Hatfield Forest, Pincey Valley, Upper Chelmer and Pods Brook Valley. It links the nature reserves and open spaces of Hatfield Forest, Honeysuckle Wood and David Cock Community Woodland (Great Dunmow), Oak Meadow (Rayne), Great Notley Country Park, Hoppits Mead and John Ray Park (Braintree). The site supports a variety of notable species including bats, badger *Meles meles*, amphibians, reptiles, birds, plants and invertebrates.
Cuckoo Wood LNR	3.12km east	An important area of woodland containing a number of locally rare species. Very good habitat for fungi, due to the amount of dead wood found within the woodland. It has a huge range of habitats including amenity grassland, meadow areas, lakes, ponds, an extensive ditch network and hedgerows.
Hoppit Mead LNR	4.82km east	The wet woodland by Hoppit Bridge that has a strong association with the 17th Century naturalist and theologian, John Ray. Hoppit Mead LNR lies within a chain of Public Open Spaces that is being developed as the "John Ray Park". The Park embraces localities studied by eminent local naturalist John Ray during the 17th Century and combines places of significant wildlife value, with diverse opportunities for informal recreation and social history study.

Non-statutory Designated Sites

3.1.5 A review of the data provided by EFC confirms that a non-statutory designated site for nature conservation; Flitch Way Local Wildlife Site (LoWS) is directly adjacent to the Site boundary. Flitch Way

LoWS partitions the two northern Site land parcels from the southern Site land parcel. Flitch Way LoWS predominately occupies a similar area as Flitch Way LNR within 2km of the Site.

3.1.6 The search identified a total of four LoWSs within 2km of the Site. Details of these non-statutory designations are provided in **Table 3.2**. The locations of non-statutory designated sites in relation to the Site are shown in **Figure 3**.

Table 3.2: Non-statutory Designated Sites.

Site Name	Approximate Distance and Direction from Site	Description
Flitch Way LoWS	Adjacent to the Site boundary	A wildlife corridor that connects the four Essex Wildlife Trust Living Landscape Areas of Hatfield Forest, Pincey Valley, Upper Chelmer and Pods Brook Valley. It links the nature reserves and open spaces of Hatfield Forest, Honeysuckle Wood and David Cock Community Woodland (Great Dunmow), Oak Meadow (Rayne), Great Notley Country Park, Hoppits Mead and John Ray Park (Braintree). The site supports a variety of notable species including bats, badger, amphibians, reptiles, birds, plants and invertebrates.
Stebbing Green LoWS	835m north	Flower-rich village green and sections of roadside species-rich grassland.
Boxted Wood LoWS	1.19km north	Large ancient woodland with recent plantings of pedunculate oak *Quercus robur*, poplars *Populus* sp., beech *Fagus sylvatica* and conifers. A semi-natural canopy of small-leaved lime *Tilia cordata*, ash *Fraxinus excelsior*, oak, and understory of hornbeam *Carpinus betulus*, field maple *Acer campestre* and hazel *Corylus avellana*. Ground flora comprising wood anemone *Anemone nemorosa,* hairy St. John's-wort *Hypericum hirsutum*, yellow archangel *Lamium galeobdolon* and dog's mercury *Mercurialis perennis*.
Blackbush Wood LoWS	1.51km north-east	Blackbush Wood has a canopy of pedunculate oak, ash and hornbeam over hazel, elder *Sambucus nigra* and hawthorn *Crataegus monogyna.* Contains typical ground flora.

3.2 Priority Habitats – Existing Records

3.2.1 A review of MAGIC, aerial imagery, EFC data return and the extended habitat survey identified six habitats of Principal Importance (also known as priority habitats) under Section 41 of the NERC Act (2006)/UK Biodiversity Action Plan within 2km of the Site. This includes ponds, hedgerows, rivers and streams, deciduous woodland, wood-pasture and parkland and traditional orchard habitats. Four priority habitats under the Essex Biodiversity Action Plan (LBAP) are present within 2km of the Site, including hedgerows, cereal field margins, traditional orchards and ancient woodland habitats. Three priority habitats are located within the Site itself (ponds, hedgerows and cereal field margins). One priority habitat is located adjacent to the Site boundary (deciduous woodland).

3.2.2 Review of the Woodland Trust Ancient Tree Inventory identified no notable trees within the Site, or within 500m of the Site. Ancient and semi-natural woodland within 2km of the Site is limited to a single 13.75ha woodland parcel called Boxted Wood located approximately 1.19km to the north. Examination of the Natural England Open Data Geoportal identified no ancient or irreplaceable peaty soil habitat within the Site or within 500m of the Site boundary.

3.2.3 Information on the eight priority habitats identified within 2km of the Site is presented in **Table 3.3** below. Where numerous records of a particular habitat were recorded, only the closest record to the Site has been provided, in order to provide context for the Site and surrounding area.

Table 3.3: Priority habitats.

Priority habitat name	Designation	Approximate Distance from Site
Ponds	NERC S.41, UKBAP	Within the Site
Hedgerows	NERC S.41, UKBAP, LBAP	Within the Site
Cereal field margins	LBAP	Within the Site
Deciduous woodland	NERC S.41, UKBAP	Directly adjacent to the Site boundary
Rivers and streams	NERC S.41, UKBAP	360m east
Wood-pasture and parkland	NERC S.41, UKBAP	930m west
Traditional orchard	NERC S.41, UKBAP, LBAP	1.03km south
Ancient woodland	AWI, LBAP	1.19km north

Key

NERC S.41: Priority Habitats listed within Section 41 of the NERC Act (2006)

UKBAP: UK Biodiversity Action Plan Priority Habitat

LBAP: Priority Habitats listed on the Essex Local Biodiversity Action Plan

AWI: Ancient Woodland Inventory

3.3 Extended Habitat Survey

3.3.1 This section should be read in conjunction with the Habitat Plan presented as **Figure 4**, Target Notes (TNs) presented in **Table 3.4** and photographs presented in **Appendix 1.**

3.3.2 The Site occupies an area of land totalling c.108.69 ha, set within a rural landscape. Habitats within the Site predominantly comprise arable fields, with boundary hedgerows, tree lines, woodland and dry ditches. Four ponds are located within the Site, with a further twenty-three ponds located within 250m of the Site boundary. The Site is located directly north-east of Bannister Green village near Felsted.

3.3.3 Habitats recorded within the Site are considered to be typical of dominant habitats within the wider landscape.

***Arable** (UKHab codes: c1a8, c1a8.64, c1c)*

3.3.4 Arable land was the dominant habitat within the Site. Six of the seven fields were dominated by tilled barley *Hordeum vulgare* (**Photograph 1**). Arable fields often incorporated large sections classed as game bird mix strips and corners (**Photograph 2**), with the seventh arable field completely composed of such habitat. Blocks of land reserved for farmland birds include a range of *Brassicaceae* sp. and *Apiaceae* sp. cover crops, as well as sow thistle *Sonchus* sp., creeping thistle *Cirsium arvense*, nettle, bristly oxtongue, oat, ragwort and docks *Rumex* sp.. Several areas of game bird mix strips and corners had been recently mown.

***Modified Grassland** (UKHab codes: g4, g4.64, g4.115)*

3.3.5 Arable fields frequently include field margins comprising modified grassland (**Photograph 3**). Field margins vary between 1m to 10m wide and are often dominated by either false oat-grass

Arrhenatherum elatius, cock's-foot *Dactylis glomerata* or perennial rye-grass *Lolium perenne*, with some sections also incorporating frequent amounts of sweet vernal *Anthoxanthum odoratum* or Timothy *Phleum pratense*. Field margins also incorporate various assemblages of other flora species with following recorded on-Site; nettle, rough meadow grass, creeping thistle, docks, willowherb *Epilobium* sp., ribwort plantain *Plantago lanceolata*, spear thistle *Cirsium vulgare* and sow thistle.

***Hedgerows** (UKHab codes: h2a, h2a.11, h2a.11.69)*

3.3.6 Hedgerows are predominantly intact and managed, however several sections within the Site are defunct or unmanaged. Managed hedgerows range between 2m to 2.5m tall and 2m to 3m wide, whilst unmanaged hedgerows range between 3m to 5m tall with comparable widths. Hedgerows are often species-rich (**Photograph 4**) although some sections lack a diverse range of species and are species-poor. Blackthorn *Prunus spinosa* and hawthorn are frequently the dominant species, with field maple also dominant in short sections. Other species present consist of a mix of elder, elm *Ulmus* sp., oak, lime, goat willow, hazel, dogwood, spindle, wild service tree, sycamore, ash, common hop *Humulus lupulus*, traveller's-joy *Clematis vitalba*, ivy *Hedera helix*, bramble and dog-rose *Rosa canina*. Mature, semi-mature and immature trees comprising oak, ash, field maple, elm, willow, poplar and sycamore are present throughout several hedgerow sections.

***Lines of Trees** (UKHab codes: w1g6, w1g6.10, w1g6.19, w1g6.19.117, w1g6.69)*

3.3.7 Tree lines are located throughout the Site (**Photograph 5**) and include both mature, semi-mature and immature trees. In some areas the Site boundary lies adjacent to neighbouring gardens and therefore includes a diverse range of ornamental trees including a short section of *Cotoneaster* sp. (**TN10**). The species assemblage present on-Site includes oak, lime *Tilia* sp., hazel, elder, ash, elm, apple, goat willow *Salix caprea*, wayfaring tree *Viburnum lantana*, sycamore, yew, field maple, hawthorn, blackthorn, Norway maple, cherry, cypress, willow, holly, aspen, horse chestnut, hybrid black poplar *Populus x canadensis* and wild service tree *Sorbus torminalis*, with dogwood, spindle *Euonymus europaeus*, traveller's-joy, dog-rose, bramble and ivy incorporated. Several tree lines surround the perimeter of on-Site ponds (dry and wet).

***Standing Water** (UKHab codes: r1.10.16.117.191, r1a.19.119, r1a.19.120)*

3.3.8 Review of aerial mapping identified four potential ponds (P7, P18, P19 and P20) located within the Site prior to the extended habitat survey (**Figure 6**).

3.3.9 During the Site visit, Pond P7 was identified to be a wider section of dry ditch dominated by willowherb and bramble.

3.3.10 Pond P18 is a wet pond completely shaded by a surrounding trees such as ash, oak, elm and hawthorn (**Photograph 6**). Banksides of the pond are steep on one side, which limits accessibility by 50%. The pond is 70% covered in duckweed and contains deep water. Bankside vegetation is limited.

3.3.11 Pond P19 is a shallow pond located directly west of Pond 18. The pond is completely shaded by mature elm, oak and field maple trees, with ground level scrub limiting 25% of access to the pond perimeter. At the time of the extended habitat survey, the pond was completely dry, however, it was included in the GCN eDNA and HSI surveys (see Section 2.5) as it contained a shallow depth of standing water earlier in June 2022. The pond is therefore subject to seasonal drying.

3.3.12 Pond P20 is located west of P19. The banksides of the pond are very steep sided which limits 70% of the perimeter access. The pond is completely shaded by mature surrounding ash, oak and field maple trees. The pond contains a shallow depth of water, which at the time of survey was covered in algae. Bankside vegetation along the pond perimeter is highly limited.

3.3.13 Pond P5 is located directly adjacent to the Site boundary (**Photograph 7**). The pond is highly shaded by surrounding trees and contains deep water. Trees include hawthorn, field maple, ash and hazel. Banksides are relatively steep in sections of the pond and contain limited vegetation.

3.3.14 The off-Site pond P6 is a widened section of ditch located adjacent to the Site. The pond is dominated by willowherbs and nettle and contains very steep banksides. Dense bramble and hawthorn scrub limit access to the south-western pond perimeter.

3.3.15 A network of dry ditches are located throughout the Site along hedgerow bases, ranging between 1m-2m in width. At the time of survey, the Site was considered to be particularly dry whilst during a period of local draught. It is therefore possible for on-Site ditches to contain standing water during other times of the year. However, ditches did not provide any evidence of regular seasonal water level fluctuations, with no aquatic or marginal species recorded. Such ditches are therefore considered likely to remain dry throughout the majority of the year.

***Woodland** (UKHab code: w1f7)*

3.3.16 Two small deciduous off-Site woodland parcels are located directly adjacent to the Site with one dominated by semi-mature oak and hawthorn (**Photograph 8**), and the other by mature oak. The mature oak woodland contains a vast quantity of open canopy which is dominated by willow, hazel and elder scrub and immature trees. Access was not permitted into either woodland.

Table 3.4: Target Notes

Target Note	Description
TN1	Mature oak tree with holes in trunk. Moderate to high bat roost potential (**Photograph 9**).
TN2	Mature ash tree with holes. Moderate bat roost potential.
TN3	Mature oak tree with holes. Moderate bat roost potential.
TN4	Mature oak tree with woodpecker holes. Moderate bat roost potential.
TN5	Old mature oak tree with several holes and cracks. Moderate bat roost potential.
TN6	Dead tree with woodpecker holes. Moderate bat roost potential.
TN7	Mature oak tree with a large hole in the trunk. Moderate bat roost potential.
TN8	Dead tree with some cracks and ivy present. Low to moderate bat roost potential.
TN9	*Cotoneaster* sp. along a neighbouring fence. An invasive, non-native plant species (**Photograph 10**).
TN10	*Cotoneaster* sp. along a neighbouring fence and tree line. An invasive, non-native plant species.

3.4 Protected and Notable Species

Birds

Legislation

3.4.1 All wild birds, their nests and eggs are, with few exceptions, protected under the Wildlife and Countryside Act 1981 (as amended). Over eighty species or groups of species are listed under Schedule 1 of the Act, which confers special protection with increased penalties for offences committed.

3.4.2 Additionally, a further forty-nine bird species are listed under Section 41 of the NERC Act (2006), and are therefore, a material consideration within the planning process.

Desk Study

3.4.3 The EFC data search returned numerous records of notable bird species within 2km of the Site, including a variety of priority species commonly associated with the farmland and woodland habitats surrounding the Site.

3.4.4 The EFC data search returned 301 records for eighty-two bird species within the search area, including a total of fourty-four notable bird species within 2km of the Site. This includes ten species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Schedule 1 species returned during the data search include green sandpiper *Tringa ochropus*, red kite *Milvus milvus*, barn owl *Tyto alba,* kingfisher *Alcedo atthis*, hobby *Falco Subbuteo*, peregrine *Falco peregrinus*, Cetti's warbler *Cettia cetti*, redwing *Turdus iliacus*, fieldfare *Turdus pilaris* and brambling *Fringilla montifringilla*.

3.4.5 The data return also included five species listed on Annex 1 of the Directive 2009/147/EC (Birds Directive). These species include golden plover *Pluvialis apricaria*, common tern *Sterna hirundo*, red kite, kingfisher and peregrine.

3.4.6 Thirteen NERC Act (2006) Section 41 Species are included in the EFC data return. Species include turtle dove *Streptopelia tutur*, herring gull *Larus argentatus*, skylark *Alauda arvensis*, starling *Sturnus vulgaris*, song thrush *Turdus philomelos*, spotted flycatcher *Muscicapa striata*, house sparrow *Passer domesticus,* dunnock *Prunella modularis*, yellow wagtail *Motacilla flava*, bullfinch *Pyrrhula pyrrhula*, linnet *Linaria cannabina*, yellowhammer *Emberiza citronella* and reed bunting *Emberiza schoeniclus*.

3.4.7 Two species returned in the data search are further listed as priority species under the Essex Biodiversity Action Plan. These include skylark and song thrush.

3.4.8 The data search returned sixteen species listed as Red Listed BoCC and twenty-eight species listed as Amber Listed BoCC.

3.4.9 A review of MAGIC shows that the Site is not allocated as an Important Bird Area and that the closest Important Bird Area is >23km from the Site.

Breeding Bird Survey

3.4.10 The breeding bird assemblage recorded within the survey area is considered representative of the locale and the agricultural and field boundary habitats present. A total of seven Notable Species were recorded breeding within the survey area (**Table 3.5**).

3.4.11 Notable Species recorded within the Site included three Red List species (skylark, linnet and yellowhammer) and four Amber List species (woodpigeon, whitethroat, wren and dunnock).

3.4.12 Four Notable Species are listed as rare and most threatened species under Section 41 (S41) of the NERC Act (2006) (skylark, dunnock, linnet and yellowhammer). Skylark is the only species present which is listed under the Essex Local Biodiversity Action Plan (LBAP). No species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were recorded breeding within the Site.

3.4.13 The number of breeding territories for three priority species were considered to be low (less than four territories), although a moderate number of nesting territories were recorded for four Notable Species. These consisted of skylark (fourteen territories), wren (fifteen territories), dunnock (nine territories) and yellowhammer (thirteen territories).

3.4.14 The Notable Species breeding assemblage was typically associated with vegetation along field boundaries, which principally comprised of field-margins, hedgerows, tree lines and woodland habitats within and adjacent to the Site, with the exception of skylark which utilised open agricultural fields for nesting purposes. Skylark were recorded in moderate breeding numbers, with fourteen skylark territories located throughout and immediately adjacent to the Site.

3.4.15 All breeding species (or potential breeding species) recorded along with an estimated number of the breeding territories within the Site are detailed within **Table 3.5.** Those species in bold are considered Notable Species. The indicative locations of the territories of Notable Species are provided in **Figure 5.**

Table 3.5: Breeding bird survey results.

Name	Scientific Name	Estimated Number of Territories (per visit)			Estimated Territories (total)	Conservation Status
		June	June	July		
Pheasant	*Phasianus colchicus*	1	1	0	1	
Red-legged Partridge	*Alectoris rufa*	2	2	1	2	
Woodpigeon	***Columba palumbus***	3	3	2	3	Amber
Buzzard	*Buteo buteo*	0	1	0	0-1	Green
Great Spotted Woodpecker	*Dendrocopos major*	1	0	0	0-1	Green
Green Woodpecker	*Picus viridis*	0	0	1	0-1	Green
Blue Tit	*Cyanistes caeruleus*	6	6	11	11	Green
Great Tit	*Parus major*	7	2	1	7	Green
Skylark	***Alauda arvensis***	12	13	14	14	Red; NERC S41; LBAP
Chiffchaff	*Phylloscopus collybita*	2	1	4	4	Green
Lesser Whitethroat	*Curruca curruca*	0	0	1	0-1	Green
Whitethroat	***Curruca communis***	2	3	4	4	Amber
Wren	***Troglodytes troglodytes***	15	12	12	15	Amber
Blackbird	*Turdus merula*	3	3	5	5	Green
Robin	*Erithacus rubecula*	5	5	3	5	Green
Dunnock	***Prunella modularis***	6	9	5	9	Amber; NERC S41
Chaffinch	*Fringilla coelebs*	1	0	0	0-1	Green
Linnet	***Linaria cannabina***	0	2	2	2	Red; NERC S41
Goldfinch	*Carduelis carduelis*	0	0	3	3	Green
Yellowhammer	***Emberiza citrinella***	13	10	12	13	Red; NERC S41

Key

BoCC – Birds of Conservation Concern. Red, Amber and Green categories are given (Stanbury et al., 2021)

NERC S41 – Priority Species listed within Section 41 of the NERC Act (2006)

LBAP – Priority Species listed under the Essex Local Biodiversity Action Plan.

3.4.16 During survey visits, observations of swift *Apus apus*, collared dove *Streptopelia decaocto*, red kite *Milvus milvus* (listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)), magpie *Pica pica* and bullfinch *Pyrrhula pyrrhula* were also made, but for which breeding evidence was not recorded within the survey area.

Bats

Legislation

3.4.17 All species of British bat are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Bats are further protected under the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The Act and Regulations make it an offence to:

- kill, injure, or take any wild bat;
- damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection; and,
- intentionally or recklessly disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection.

3.4.18 Seven bat species in the UK are also listed as species of Principal Importance for the purpose of conserving biodiversity under Section 41 of the NERC Act (2006). Pipistrelles *Pipistrellus* sp. are further listed as Priority Species under the Essex Biodiversity Action Plan.

Desk Study

3.4.19 The data received from EFC returned six bat records over the previous ten years. Bat species returned include brown long-eared *Plecotus auritus* (one record), common pipistrelle *Pipistrellus pipistrellus* (four records), Leisler's bat *Nyctalus leisleri* (one record). No bat records were returned within the Site itself, and none of the six records detailed the potential presence of a roost. The closest record involved a common pipistrelle located 600m west of the Site. Seventeen historical records between 1986 and 2011 were also returned, with none present within the Site. Historical records also include soprano pipistrelle *Pipistrellus pygmaeus* presence in the wider area.

3.4.20 A review of MAGIC identified one Natural England licences granted for bat roosts within the Site and one within 2km of the Site:

- EPSM2010-2038; destruction of a brown long-eared bat and common pipistrelle breeding and resting site between 2010 to 2011. Located within the Site.
- 2017-28598-EPS-MIT; destruction of a brown long-eared bat and common pipistrelle resting place between 2017 to 2023. Located c. 1.6km south-west of the Site.

Roosting Bats

3.4.21 During the extended habitat survey, a number of trees located within the hedgerows or tree lines were considered to have potential bat roost features; including a mature oak tree with moderate/high bat roost potential (**TN1; Photograph 1**), mature ash and oak trees with moderate bat roost potential (**TN2, TN3, TN4, TN5, TN6** and **TN7**) and a dead tree with low/moderate bat roost potential (**TN8**).

Foraging and Commuting Bats

3.4.22 Habitats within the Site are considered to most closely fit the description for land of 'moderate' interest for commuting and foraging bats in accordance with Bat Conservation Trust (BCT) guidance[36], with continuous habitat connected to the wider landscape that could be used. Flitch Way LNR / LoWS offers good opportunities for commuting and foraging bat species and is likely to provide an important linear habitat for bats within the Site and wider landscape.

3.4.23 Linear features within and around the Site such as hedgerows, woodland edges, tree lines, ditches are considered to offer the most favourable habitats for foraging / commuting bats.

Badger

Legislation

3.4.24 Badgers and their setts are protected under the Protection of Badgers Act 1992. Under the Act it is an offence to: wilfully kill, injure, take, possess or cruelly ill-treat a badger; to attempt to do so: or, intentionally or recklessly interfere with a sett.

3.4.25 Sett interference includes damaging or destroying a sett, obstructing access to a sett, and disturbing a badger whilst it is occupying a sett. It is not illegal, and therefore a licence is not required, to carry out disturbing activities in the vicinity of a sett if no badger is disturbed and the sett is not damaged or destroyed. Where an activity is likely to result in an offence under the Protection of Badgers Act 1992 a licence from Natural England is required.

Desk Study

3.4.26 The data received from EFC returned four records of badger *Meles meles* within 2km of the Site over the last ten years; with no records within the Site itself. Fifteen historical records were returned between 1998 and 2010, with one record located within the Site in 1999.

3.4.27 During the extended habitat survey evidence of badger was identified within the Site. Full survey results are detailed in **Appendix 2**: *Confidential Badger Survey Report.*

3.4.28 Overall, the Site provides good quality habitat for sett making and foraging/commuting badgers.

Otter

Legislation

3.4.29 Otters *Lutra lutra* are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); they receive further protection under the Habitats Regulations. The Act and Regulations make it an offence to:

- deliberately capture, injure or kill an otter;
- damage or destroy a breeding site or resting place, and;
- deliberately disturb an otter, particularly in a way which is likely to:

  a) to impair their ability to survive, breed or reproduce, rear or nurture young; and,

  b) to affect significantly the local distribution or abundance of the species.

[36] Bat Conservation Trust (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition).

3.4.30 Otter is listed as a priority species under Section 41 of the NERC Act (2006), as well as the UK BAP and Essex LBAP. Otter is therefore a material consideration within the planning process.

Desk Study

3.4.31 The data received from EFC returned no records of otter within 2km of the Site.

3.4.32 A review of MAGIC did not identify any Natural England licences for otter within 2km of the Site.

Habitat Suitability

3.4.33 No signs of otter were recorded during the extended habitat survey, with habitats within the Site considered sub-optimal. Although the species could opportunistically utilise the network of ditches and ponds located within the Site for commuting or foraging purposes, the only watercourse considered potentially suitable for otter on a more permanent basis is located 350m east (River Ter).

Water Vole

Legislation

3.4.34 The water vole *Arvicola amphibius* and its habitats receive full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Water vole is also listed under Section 41 of the NERC Act (2006) and Essex LBAP. The species is therefore a material consideration within the planning process.

Desk Study

3.4.35 The data received from EFC returned no records of water vole within 2km of the Site during the last ten years. Two historical records from 1998 were however returned in the wider search area. The closest record included a water vole in the River Ter approximately 1.3km south, with the second record located approximately 2km west in Stebbing Brook.

Habitat Suitability

3.4.36 No evidence of water vole was found during the extended habitat survey. As ditches were all recorded to be dry, no suitable habitat was considered present within the Site at the time of survey. However, 2022 experienced a particularly dry summer and although all ditches were assessed to be dry throughout all surveys within the Site, it is possible for aquatic conditions in such habitats to change seasonally and to fluctuate in suitability between years.

Hazel Dormouse

Legislation

3.4.37 Hazel dormice *Muscardinus avellanarius* are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The Act and Regulations make it an offence to:

- deliberately capture, injure or kill hazel dormice;
- damage or destroy a hazel dormouse resting place or breeding site;
- deliberately or recklessly disturb a hazel dormouse while it's in a structure or place of shelter or protection; and/or,
- block access to structures or places of shelter or protection.

3.4.38 Additionally, the hazel dormouse is listed as priority species under Section 41 of the NERC Act (2006) and Essex LBAP. The species is therefore a material consideration within the planning process.

Desk Study

3.4.39 The EFC data search returned no records of hazel dormouse within 2km of the Site.

3.4.40 A review of MAGIC did not identify any Natural England licences for dormouse within 2km of the Site.

Habitat Suitability

3.4.41 The Site was assessed for its potential to support hazel dormouse based on guidance outlined in the *Dormouse Conservation Handbook*[37]*.* The Site has field boundary features (hedgerows and tree lines) that offer some potential for foraging/nesting/hibernating hazel dormouse with direct connectivity to wider areas of woodland located in the surrounding area. Species-rich tree lines and hedgerows in particular could potentially provide suitable hazel dormice habitat. However, the majority of the Site (open agricultural fields) provides negligible suitable habitat for the species with a lack of any known records for the species in the wider 2km environment.

Amphibians

Legislation

3.4.42 Great crested newts and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. The Act and Regulations make it an offence to;

- kill, injure, or disturb a great crested newt;
- damage or destroy a breeding or resting place; or,
- obstruct access to any place that is used for shelter or protection.

3.4.43 Great crested newt and common toad *Bufo bufo* are also listed as priority species in England under Section 41 of the NERC Act (2006), with great crested newt further listed under the Essex LBAP. These species are therefore a material consideration within the planning process.

Desk Study

3.4.44 The data received from EFC returned five records of amphibians within 2km of the Site during the last ten years, with no records returned within the Site. Records returned include four great crested newt records and one common frog *Rana temporaria* record. The closest great crested newt record was returned in 2018 approximately 230m west of the Site boundary in Pond P21 (**Figure 6**). Six historical records of great crested newt were identified in the surrounding area between 1987 and 2006, with none located within 900m of the Site boundaries.

3.4.45 A review of MAGIC identified three Natural England licences granted for great crested newt within 2km of the Site:

[37] Bright PW, Morris PA and Mitchell-Jones A. (2006). *Dormouse Conservation Handbook 2nd Edition*. English Nature, Peterborough.

- 2015-13447-EPS-MIT; damage and destruction of great crested newt resting site between 2015 to 2019. Located c. 55m south-west of the Site (potentially Pond P12 in **Figure 6**)

- 2015-7487-EPS-MIT; damage and destruction of great crested newt resting site between 2015 to 2025. Located c. 155m west of the Site (potentially Pond P22 in **Figure 6**).

- 2016-25899-EPS-MIT-3; damage and destruction of great crested newt breeding and resting site between 2017 to 2025. Located c. 1.6km east of the Site.

3.4.46 Review of MAGIC further identified two great crested newt class licence returns within 2km of the Site. Licence returns all included positive results for great crested newt presence, with one return located at Pond P12 in 2017 (c.55m south-west) and another at Pond P22 in 2015 (c. 155m west) (see **Figure 6**).

Great Crested Newt HSI Assessment Results

3.4.47 Three ponds within the Site (P18, P19 and P20) and a further two ponds adjacent to the Site boundary (P5 and P6) were assessed for their suitability to support great crested newts following the HSI assessment methodology. The assessment calculated a habitat suitability score for each pond based on a series of indices generated from variables including pond size and the presence/absence of wildfowl. Final scores relate to suitability and range from 'poor' to 'excellent' suitability.

3.4.48 Ponds P5, P6, P18 and P19 were assessed as having 'average' suitability to support great crested newts. Pond P20 was assessed to have 'below average' suitability.

3.4.49 The results of the HSI Assessment are displayed in **Table 3.6** below. The location of all ponds on Site and within 250m of the Site boundaries are provided in **Figure 6**.

Table 3.6: HSI survey results.

Suitability Indices	P5	P6	P18	P19	P20
SI1 – Location	1.00	1.00	1.00	1.00	1.00
SI2 – Pond area	1.00	0.10	0.35	0.50	0.20
SI3 – Pond drying	0.90	0.50	0.90	0.90	1.00
SI4 – Water quality	0.67	0.67	0.67	0.67	0.33
SI5 –Shade	0.20	1.00	0.30	0.30	0.30
SI6 – Fowl	1.00	1.00	1.00	1.00	1.00
SI7 – Fish	0.67	1.00	0.67	0.67	0.67
SI8 – Ponds	0.95	0.95	1.00	1.00	1.00
SI9 – Terrestrial habitat	1.00	1.00	1.00	1.00	1.00
SI10 – Macrophytes	0.30	0.80	0.30	0.30	0.30
HSI Score:	**0.69**	**0.69**	**0.65**	**0.67**	**0.58**
Suitability	**Average**	**Average**	**Average**	**Average**	**Below average**

Great Crested Newt e-DNA Survey Results

3.4.50 The e-DNA laboratory sample results were received from Surescreen Scientifics on the 4th July 2022. The results concluded that **P5** was **positive** for great crested newt e-DNA, thereby indicating that great crested newt breeding populations are present directly adjacent to the Site (and therefore highly likely

to be present within the Site itself); as summarised in **Table 3.7**. The laboratory reports are provided in full in **Appendix 3**.

Table 3.7: eDNA survey results.

Pond	Sample Ref.	Inhibition Check	Degradation Check	Sample Integrity Score	Result
P5	5873	Pass	Pass	Pass	**Positive**
P6	5874	Pass	Pass	Pass	**Negative**
P18	5867	Pass	Pass	Pass	**Negative**
P19	5871	Pass	Pass	Pass	**Negative**
P20	5872	Pass	Pass	Pass	**Negative**

3.4.51 The dominant arable farmland habitats on Site provide sub-optimal amphibian terrestrial habitat, however, field boundary features such as hedgerows, tree lines, field margins, ditches and woodland provide suitable limited terrestrial habitat for amphibians.

Reptiles

Legislation

3.4.52 Under Section 9 (5) of the Wildlife and Countryside Act 1981 (as amended), the more widespread reptile species; slow worm *Anguis fragilis*, grass snake *Natrix helvetica*, common lizard *Zootoca vivipara* and adder *Vipera berus* are protected against sale, barter, exchange, transporting for sale and advertising to sell or buy.

3.4.53 Common lizard, grass snake, adder and slow worm are also listed as priority species in England under Section 41 of the NERC Act (2006); they are therefore a material consideration within the planning process.

Desk Study

3.4.54 The data received from EFC returned one reptile record within 2km of the Site during the previous ten years. The record from 2019 included one common lizard approximately 50m west of the Site in an area of scrub habitat.

3.4.55 One historical record common lizard record was returned approximately 280m west of the Site boundary along the Flitch Way LNR/LoWS.

Habitat Suitability

3.4.56 The arable fields are considered to be of sub-optimum value to reptiles. The boundary hedgerows, tree lines, ditches, field margins, waterbodies and woodlands are considered to offer more suitable habitat for reptiles that are confirmed in the wider area. Such habitats may provide foraging, refuge, hibernation and commuting opportunities.

Other Notable Species

Mammals

3.4.57 Brown hare *Lepus europaeus* was observed within on-Site arable fields during the extended habitat survey.

3.4.58 The data received from EFC returned one record of brown hare within 2km of the Site during the last ten years, as well as one hedgehog *Erinaceus europaeus*. No records were received within the Site itself.

3.4.59 The habitats on-Site, most notably the hedgerows/tree lines/field margins/ditch/woodland boundaries could provide opportunities for notable mammal species such a hedgehog.

3.4.60 Brown hare and hedgehog are listed in England under Section 41 of the NERC Act (2006). Brown hare is further listed under the Essex Biodiversity Action Plan

Invertebrates

3.4.61 The data received from EFC returned 38 records of notable invertebrate species within 2km of the Site during the last ten years, most notably including ten small heath *Coenonympha pamphilus* records, one shoulder-striped wainscot *Leucania comma* record, one beaded chestnut *Agrochola lychnidis* record, three shaded broad-bar *Scotopteryx chenopodiata* records, one white ermine *Spilosoma lubricipeda* record, one deep-brown dart *Aporophyla lutulenta* record, ten cinnabar *Tyria jacobaeae* records, one ghost moth *Hepialus humuli* record, one green-brindled crescent *Allophyes oxyacanthae record*, one large nutmeg *Apamea anceps* record, one large-headed resin bee *Heriades truncorum* record and one latticed heath *Chiasmia clathrate* record. No records were returned within the Site boundary, with the majority of records being associated with Stebbing Green LoWS.

3.4.62 The arable fields subject to regular agricultural management are considered unlikely to support a notable invertebrate assemblage, while boundary hedgerows, ditches, ponds, field margins and trees are considered more likely to support a more diverse range of species associated with such habitats.

3.5 Invasive Non-native Species

Legislation

3.5.1 These species are listed under Schedule 9 of The Wildlife & Countryside Act 1981 (as amended), it is an offence to plant or otherwise cause them to grow in the wild. This includes allowing the species to grow/spread, spreading the species or transferring polluted ground material from one area to another.

3.5.2 Any Schedule 9 plant species or soil/waste containing this species is classed as controlled waste under the Environmental Protection Act (Duty of Care) Regulations 1991, which requires a permit issued by the Environment Agency to transfer polluted material off-site to a registered waste facility. If waste soils containing invasive species are to be transferred from Site it is likely that the disposal of these soils will need to be permitted by the Environment Agency, in order to achieve legislative compliance.

3.5.3 Section 14(4A) of the Wildlife and Countryside Act (1981), as inserted by Section 23 of the Infrastructure Act 2015, enables species control agreements and orders to be made by environmental authorities to ensure that landowners take action on Schedule 9 invasive non-native species, or permit others to enter the land and carry out those operations, to prevent their establishment and spread. The Species Control Provisions: Code of Practice for England sets out how the provisions should be applied by environmental authorities in England.

3.5.4 Species such as signal crayfish *Pacifastacus leniusculus*, muntjac deer *Muntiacus reevesi* and grey squirrel *Sciurus carolinensis* are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) Section 14(1), which makes it illegal to release or allow to escape into the wild any animal listed in Schedule 9 of the Act.

Desk Study

3.5.5 The EFC returned one invasive plant species listed within Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within the search area. This included two records of Himalayan balsam *Impatiens glandulifera* situated west of the Site along the Stebbing Brook. The closest record is approximately 1.7km west.

3.5.6 EFC returned nine records of plant considered invasive in Essex within 2km of the Site during the last ten years, with none recorded within the Site itself. Essex invasive plant species returned in the wider area include butterfly-bush *Buddleja davidii*, false-acacia *Robinia pseudoacacia*, evergreen oak *Quercus ilex* and Himalayan balsam *Impatiens glandulifera*.

3.5.7 Records of invasive animal species listed within Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) received from the EFC during the last ten years consist of a two muntjac deer in 2012, located outside of the Site boundary.

Survey Results

3.5.8 Muntjac was recorded within the Site during the extended habitat survey. *Cotoneaster* sp. was recorded adjacent to the Site in the northern land parcel along a section of neighbouring garden fence (**TN9**) and fence/line of trees (T**N10**) (see **Table 3.4**).

FIGURES

Figure 1: Site Location Plan

Figure 2: Statutory Designated Sites Plan

Figure 3: Non-statutory Designated Sites Plan

Figure 4: Habitat Plan

Figure 5: Breeding Bird Survey Results

Figure 6: Pond Location Plan

FIGURE 1: SITE LOCATION PLAN

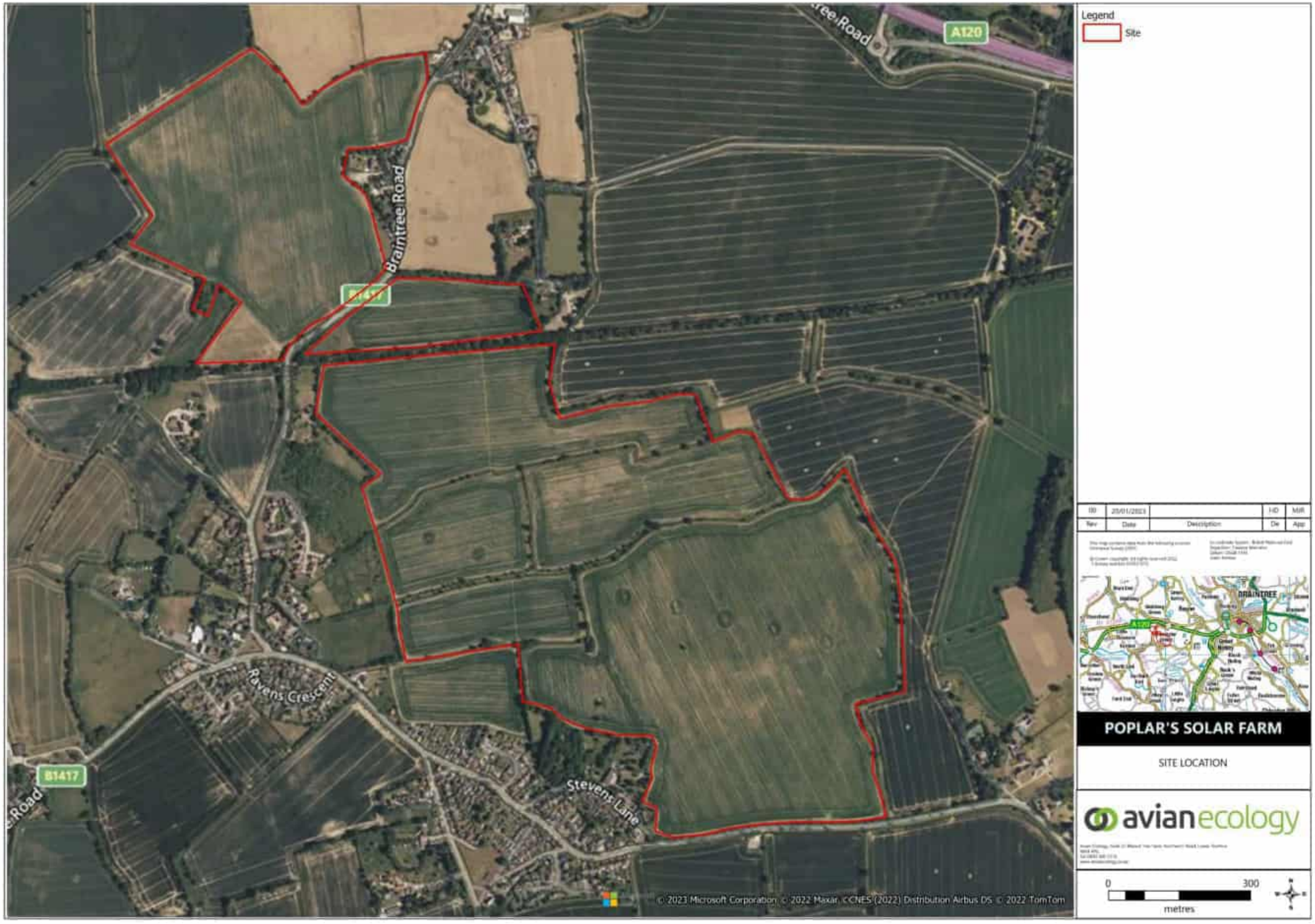


FIGURE 2: STATUTORY DESIGNATED SITES PLAN

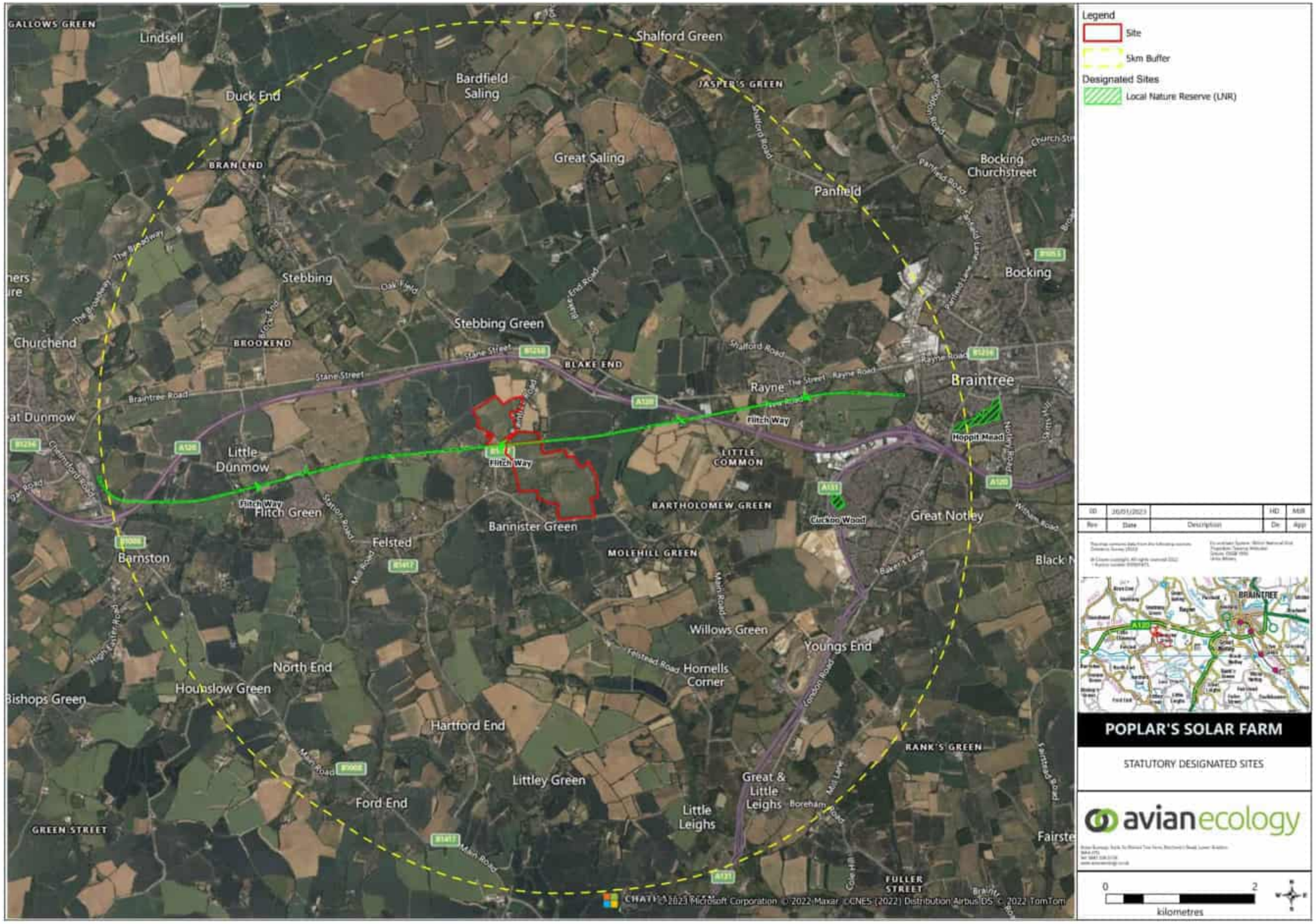


FIGURE 3: NON-STATUTORY DESIGNATED SITES PLAN

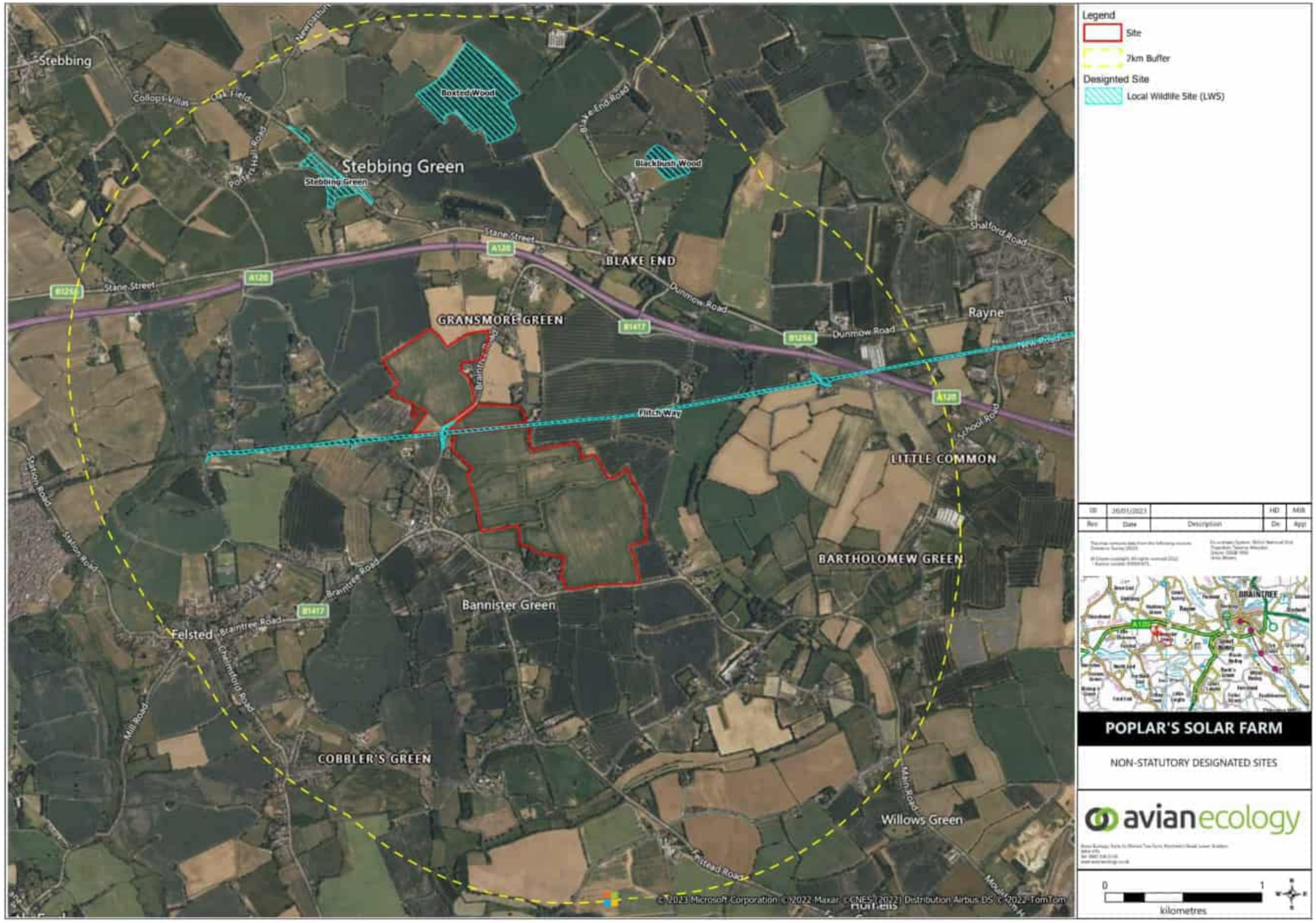


FIGURE 4: HABITAT PLAN

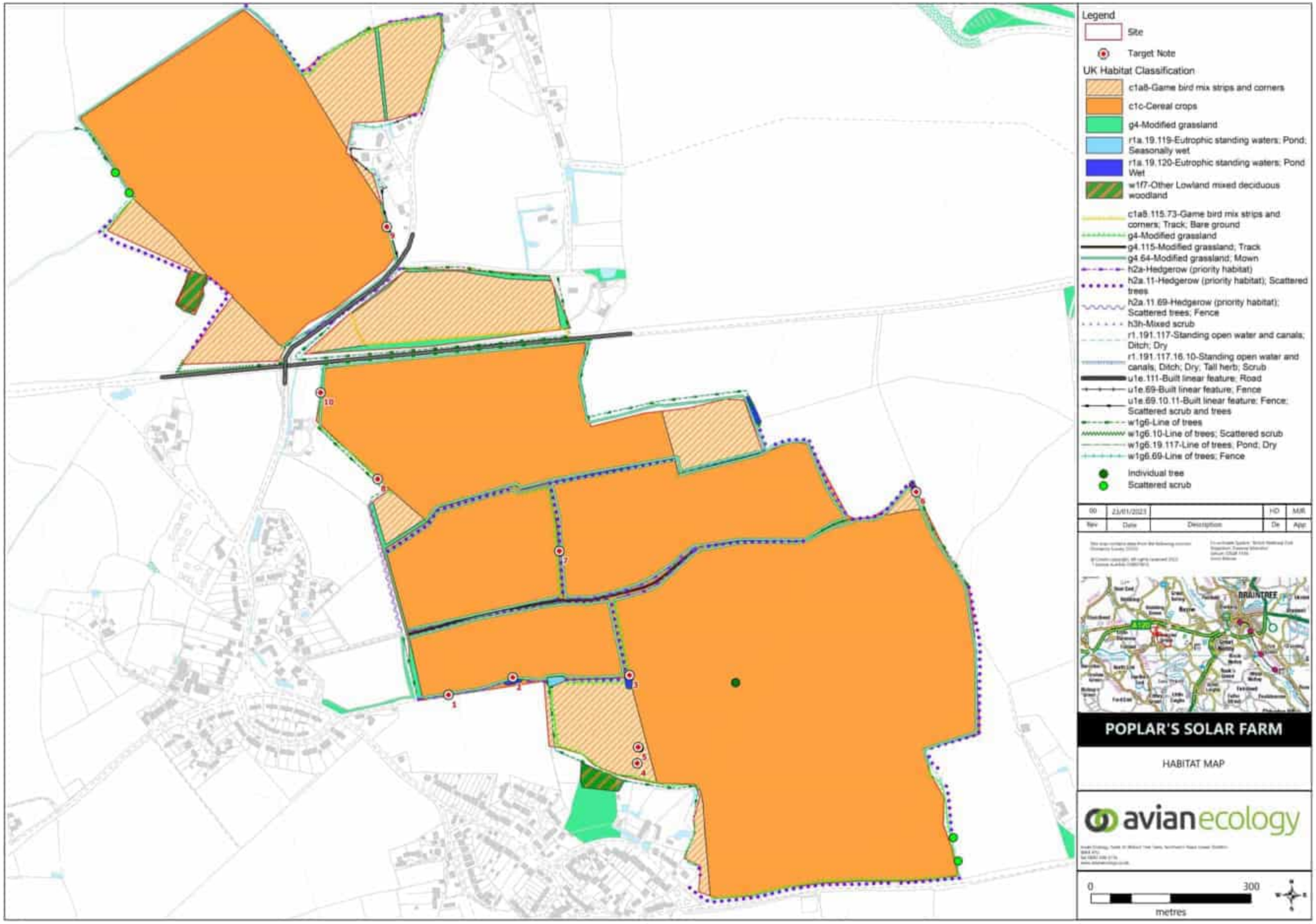


FIGURE 5: BREEDING BIRD SURVEY RESULTS

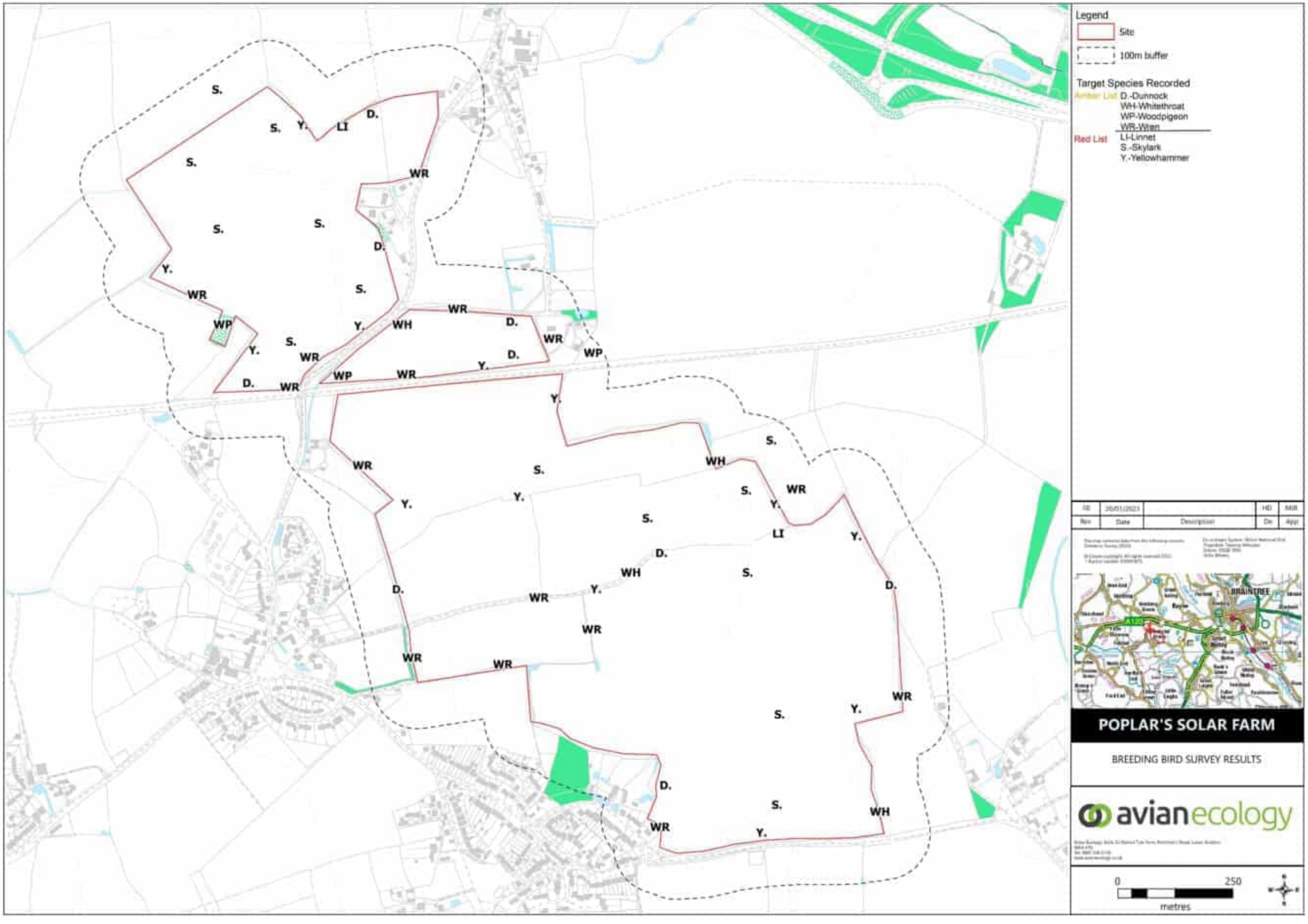
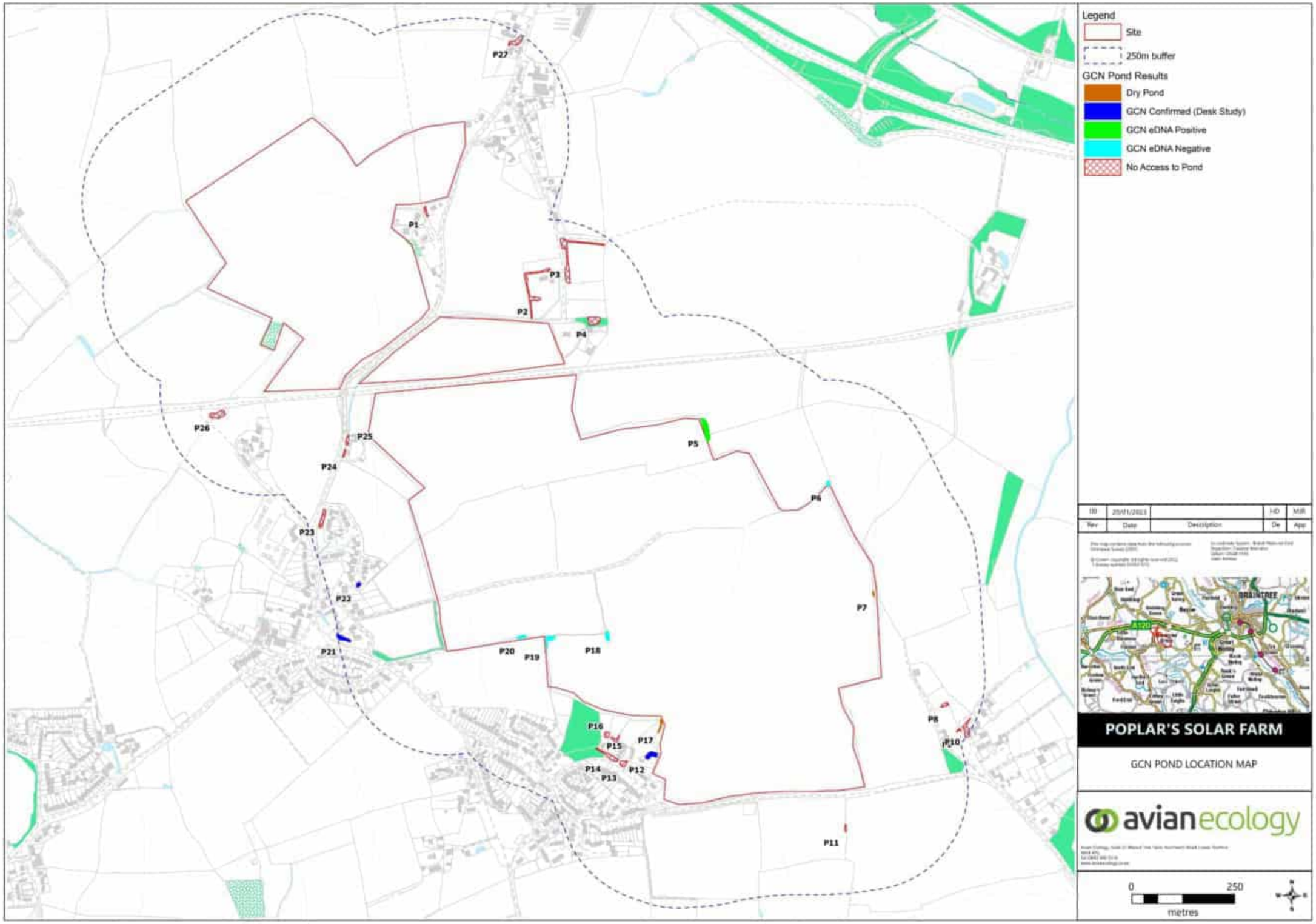


FIGURE 6: POND PLAN



APPENDICES

APPENDIX 1: PHOTOGRAPHS

APPENDIX 2: CONFIDENTIAL BADGER SURVEY REPORT

APPENDIX 3: GREAT CREST NEWT EDNA LABORATORY RESULTS

APPENDIX 1: PHOTOGRAPHS

Photo 1: Arable field dominated by tilled barley.

Photo 2: Game bird strip and margin habitat.

Photo 3: Modified grassland field margin.

Photo 4: Species-rich hedgerow containing trees.

Photo 5: Line of mature trees.

Photo 6: Pond P18 located within the Site. This pond remained wet throughout on-Site surveys and returned negative results for great crested newt eDNA.

Photo 7: Pond P5 located adjacent to the Site. This pond remained wet throughout on-Site surveys and returned positive results for great crested newt eDNA.	**Photo 8:** Small parcel of neighbouring woodland comprised of semi-mature oak and hawthorn.
Photo 9: TN1 - Mature oak with multiple holes in the trunk. Moderate/high bat roost potential.	**Photo 10:** Neighbouring garden fence bordering the Site, which contains presence of *Cotoneaster* sp..

APPENDIX 2: CONFIDENTIAL BADGER SURVEY REPORT

(provided as a separate document)

APPENDIX 3: GREAT CRESTED NEWT EDNA LABORATORY REPORT

SureScreen Scientifics

Folio No: E14421
Report No: 1
Purchase Order: AE-22-125
Client: AVIAN ECOLOGY LTD
Contact: Dan Foy

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 24/06/2022
Date Reported: 04/07/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
5867	P18 Lord Rayleighs Farm	TL 69729 21110	Pass	Pass	Pass	Negative	0
5871	P19 Lord Rayleighs Farm	TL 69614 21113	Pass	Pass	Pass	Negative	0
5872	P20 Lord Rayleighs Farm	TL 69527 21124	Pass	Pass	Pass	Negative	0
5873	P5 Lord Rayleighs Farm	TL 69953 21614	Pass	Pass	Pass	Positive	3
5874	P6 Lord Rayleighs Farm	TL 70267 21513	Pass	Pass	Pass	Negative	0

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08850940

SureScreen Scientifics

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth **Approved by:** Chelsea Warner

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared

positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.

Forensic Scientists and Consultant Engineers
SureScreen Scientifics Ltd, Morley Retreat, Church Lane, Morley, Derbyshire, DE7 6DE
UK Tel: +44 (0)1332 292003 Email: scientifics@surescreen.com
Company Registration No. 08950940

Request for Screening Opinion.

Drapers Chase Solar Farm.

On behalf of Bluestone Energy Ltd.

Date: 14/10/2022 | Pegasus Ref: P22-1321

Author: James Sutton

Document Management.

Version	Date	Author	Checked/ Approved by:	Reason for revision
1	14/10/2022	James Sutton	Alexis Tysler	Client comments
2	24/10/2022	Alexis Tysler		

Contents.

Screening Letter

Appendices contents.

Appendix A – Site Location Plan (SLP)

Appendix B – Environmental Designation Plan (EDP)

P22-1321
24th October 2022

The Planning Inspectorate
FAO. Environmental Services Team
Central Operations
Temple Quay House
2 The Square
Bristol, BS1 6PN

Dear Sir/Madam,

RE: REQUEST FOR SCREENING OPINION UNDER REGULATION 6 OF THE TOWN AND CONTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017

PROPOSED INSTALLATION AND OPERATION OF A SOLAR FARM FACILITY, TOGETHER WITH ALL ASSOCIATED WORKS, EQUIPMENT AND NECESSARY INFRASTRUCTURE – ON LAND AT DRAPER'S FARM, RAYNE, BRAINTREE, ESSEX

We write on behalf of our client, Bluestone Energy Ltd (the 'Applicant') to formally request a Screening Opinion to determine whether there is a requirement for an Environmental Impact Assessment (EIA) to accompany a planning application for development at the above location.

In accordance with the EIA Regulations, we have provided the following information:

(a) A plan sufficient to identify the land (**Appendix A**);

(b) A description of the development, including in particular-

i. A description of the physical characteristics of the development and, where relevant, of demolition works; (**Appendix B**);

ii. A description of the location of the development, with particular regard to the environmental sensitivity of the geographic areas likely to be affected (**Appendix B**);

(c) A description of the aspects of the environment likely to be significantly affected by the development (**Appendix B**);

(d) To the extent the information is available, a description of any likely significant effects of the Proposed Development on the environment resulting from-

i. The expected residues and emissions and the production of waste, where relevant; and

ii. The use of natural resources, in particular soil, land water and biodiversity; (**Appendix B**) and

(e) Such other information or representations as the person making the request may wish to provide or make, including any features of the Proposed Development or any measures to avoid or prevent what might otherwise have been significant adverse effects on the environment (**Appendix B**).

We look forward to receiving the Screening Opinion within three weeks of receipt of this request as specified in the Regulations and confirmation that the Screening Opinion will be placed on the Public Register.

Yours faithfully,

James Sutton

Principal Environmental Planner

[redacted]

Enc.

1x Site Location Plan

1x Environmental Designation Plan

APPENDIX A

PLAN SUFFICIENT TO IDENTIFY THE LAND

APPENDIX B

A description of the development, including in particular-

i. **A description of the physical characteristics of the development and, where relevant, of demolition works;**

ii. **A description of the location of the development, with particular regard to the environmental sensitivity of the geographic areas likely to be affected;**

A description of the aspects of the environment likely to be significantly affected by the development;

To the extent the information is available, a description of any likely significant effects of the Proposed Development on the environment resulting from-

iii. **The expected residues and emissions and the production of waste, where relevant; and**

iv. **The use of natural resources, in particular soil, land water and biodiversity; and**

Such other information or representations as the person making the request may wish to provide or make, including any features of the Proposed Development or any measures to avoid or prevent what might otherwise have been significant adverse effects on the environment.

Application Site

The Application Site ("Site") (Appendix A) extends to some 70 hectares (ha) of agricultural land to the southwest of Braintree and Rayne, and west of Great Notley as shown on the Site Location Plan (SLP). It is located within the open countryside and is characterised by a series of agricultural fields in arable use, with Draper's Farm positioned in the eastern area of the proposed solar farm but excluded from the red line boundary. The Site is a cross boundary application as the northeastern areas lie within Braintree District Council and the majority of the Site within the administrative boundary of Uttlesford District Council.

The land parcels are typically bounded by well managed hedgerows as well as small pockets of woodland and trees. To the east the Site is bounded by Mill Lane, a local road, and beyond this is further agricultural land and the A120. To the north is Fenton Road, another minor road and beyond this is a recycling scrap yard, which comprises a series of outbuildings, sheds and stockpiles of recycled and processed materials. Flitch Way – a Local Nature Reserve and National Trail – also forms part of the northern boundary and this is discussed in further detail under the 'Biodiversity' section in Appendix B. The River Ter adjoins part of the western boundary, as well as further parcels of agricultural land beyond this. The southern boundary is irregular in shape as it follows existing field boundaries and again more agricultural land is found further south.

The Site can be considered predominantly rural with the immediate surrounding area mostly comprising agricultural fields, small pockets of woodland and isolated farmsteads and dwellings. However, there are some urbanised features present such as the A120 and the villages of Great Notley and Rayne, which are found to the east and northeast respectively.

Mature hedgerows, small areas of woodland and scattered trees form the margins of the Site. Access is proposed from the existing agricultural access into the Site from Drapers Chase. This access junction will be upgraded and reconfigured to enable the access and necessary visibility splays for the construction and operation of the solar farm. The amended design of theses access points are subject to further discussions with the local highway authority.

The Application Site is not located within any statutory or non-statutory designations, but as mentioned previously, Flitch Way Local Nature Reserve (LNR) and National Trail forms part of the northern boundary. Flitch Way runs from Great Dunmow in the west to Braintree in the east. The

next nearest designation is Cuckoo Wood, another LNR located 1.7km to the southeast of the Site. The overall site context is shown on the attached Environmental Designation Plan (EDP).

Given the predominantly rural nature of the Site and its wider setting, there are numerous Public Rights of Way (PRoWs) within and adjacent to the Application Site. To summarise, within the Site boundary, there are three footpaths – numbered 21, 24, 25 – which are routed in a north-south alignment, whilst Footpath 39 runs east-west parallel to the Flitch Way LNR in the northern section of the Site. Furthermore, Flitch Way LNR is also a recognised bridleway and National Trail – Bridleway 45 – linking Great Dunmow to Braintree and vice versa.

Nature and purpose of the Proposed Development

The Proposed Development is the 'proposed installation and operation of a solar farm facility, together with all associated works, equipment and necessary infrastructure.'

Through the utilisation of natural sunlight, the facility will generate renewable energy for distribution onto the National Grid network. This will support the local and national renewable energy targets and ultimately reduce the reliance on finite fossil fuel-based sources as a form of energy.

The nature of ground mounted solar PV is both temporary and reversible, allowing the Site to be restored to its former agricultural use. The Proposed Development is likely to consist of the following elements:

- Photovoltaic (PV) panels based on a simple metal framework ('table') to form an 'array' which is pile driven into the ground, avoiding the need for substantial foundations. These bifacial arrays will be laid in east/west rows and have a fixed operation. The rear edge of the panel would have a maximum height of 3.08m above original ground level and will be spaced between 5-8m,
- A number of inverters / transformers at various locations around the arrays,
- Underground cable connection to an existing substation in Braintree,
- Boundary fencing (e.g. deer fencing) around the edge of the solar farm,

- A CCTV system, either pole or fence-mounted, located at strategic points around the site perimeter for security and maintenance reasons,
- Associated internal access tracks connecting inverter / transformer units,
- Relevant communications and monitoring equipment,
- Temporary access and construction compound; and
- Reconfiguration of existing Site access off Drapers Chase for construction, operation and decommissioning purposes.

Access into the Site is proposed via Drapers Chase. This access and its associated visibility splays will need to be designed and agreed in accordance with the requirements of the local highways authority. Other key junctions along the proposed route will also be reviewed and assessed for their suitability and safety.

An underground cable connection is also required in order to link Drapers Chase Solar Farm with the Point of Connection (POC). The total length of cable required is approximately 5.7 kilometers in length and will be routed via the B1417; the B1256 (Dunmow Road); The Street; Station Road; School Road; and Mill Lane. The cable route, linking Drapers Chase Solar Farm and the POC, is shown on the attached SLP.

The Proposed Development will also provide biodiversity enhancements through new planting and landscaping where possible, especially if there are any significant gaps within the existing hedgerows and marginal vegetation of the Site. New planting will support a diverse range of critical invertebrate species and encourage new species to colonise the margins of the Site. There are potential further opportunities for habitat creation though the implementation of wildlife corridors and the installation of bat and bird nesting boxes, hibernacula, woodpiles, and beehives within the margins of the Site.

The Proposed Development would be a temporary application with the lifetime of the Solar Farm being in the region of 40 years. After this time, the solar farm and its supporting infrastructure will be dismantled and removed from the Site.

Possible Effects on the Environment	
Section 1 – Applicable Thresholds	
Does the Proposed Development fall within Schedule 1 (Y/N)?	No
If yes, what is the applicable description.	N/A
If yes, the project automatically requires EIA	
If no, does the Proposed Development fall within Schedule 2 (Y/N)?	Yes
If yes, what is the applicable description?	3 (a) Industrial installations for the production of electricity, steam, and hot water
Is the Project located in or adjacent to a 'Sensitive Area'?	No
If yes proceed to Section 2.	
If no, what is the corresponding applicable threshold in Schedule 2?	The area of the development exceeds 0.5 hectares
Does the Project exceed the applicable threshold (Y/N)?	Yes

If yes, proceed to Section 2	
Section 2 – Assessment of Possible Effects	
Topic	**Analysis**
Population	During the construction phase of development, it is considered unlikely that the proposals will result in a significant change in population as the proposals do not involve significant or intensive labour requirements. Therefore, local and wider economic migrants are unlikely to relocate to the area on a permanent basis. However, both the construction and decommissioning phase will have a temporary effect on employment opportunities through the creation of various construction jobs. In addition to this, local shops, services and goods will also be used during these two key periods. A minor beneficial effect is therefore anticipated. Once operational, the Proposed Development does not provide any permanent residential accommodation and therefore will not have a significant effect on population. The only vehicle movements will be associated with maintenance required, which is anticipated to be of a low level. Therefore, this will have negligible impacts on the surrounding population.
Human Health	During the construction phase there will be some potential for minor pollution or nuisance consistent with ongoing construction works, which include the following; lighting of external works, security lighting, dust and noise emissions generated from plant, vehicles and other construction processes, surface water run-off from stockpiles, plant noise etc. However, construction activities would be appropriately controlled to an acceptable level through

	the adoption of a Construction Environmental Management Plan (CEMP) as well as best practice techniques and appropriate safety measures. A Construction Traffic Management Plan (CTMP) and Construction Traffic Method Statement (CTMS) would be provided as part of the planning application to ensure that there were no significant effects on highway capacity and safety. The existing soil profile has no historic issues to indicate there might be any form of contamination and the Site is at low risk of groundwater vulnerability. Once operational there will be no unusual risk to human health. The development relies on well-established, safe modern technology and responsible operators who will utilise the Construction Quality Assurance Plans as necessary. Appropriate Health and Safety signage will be displayed on Site, to warn of the potential risk from working near electrical equipment and to prevent illegal access and trespass. Consequently, there are no unusual risks to human health and significant impacts are not anticipated.
Biodiversity	The Application Site is not subject to any statutory or non-statutory nature conservation designations. Nevertheless, part of the Site shares a border with the Flitch Way LNR, which is also a National Trail and is an important greenway and wildlife corridor and forms part of the National Cycle Network as 'Route 16'. It is recognised and safeguarded as it has managed to survive the effects of intensive agriculture and urbanisation within the surrounding area and therefore supports wildlife hotspots along its designated route. However, the shared border with the LNR is for only 0.3km in length and therefore significant effects are not anticipated. Furthermore, there will be an adequate buffer provided to Flitch Way LNR from the solar farm to reduce any impacts further. Within the wider area, there two additional designations; Cuckoo Wood LNR, located 1.7km to the southeast and Hoppit Mead LNR circa 3.2km to the

	northeast of the Site. However, given the distance and the nature of the proposals, significant impacts are unlikely. In terms of biodiversity at the Site itself, the fields are well screened by hedgerows which include a mixture of large and small trees along their boundaries. There is also an area of woodland adjacent to the eastern sector of the Site. Additional planting is proposed where deemed necessary and this will enhance biodiversity wherever possible. Suitable stand-off margins are proposed to reduce any impacts to the boundaries (especially any existing mature trees) as these form important natural mitigation to potential visual impacts. A robust stand-off margin will need to be given to the Flitch Way LNR along the northern boundary. The Site, which comprises agricultural land, is considered to be of low ecological value as it is subject to frequent grazing management techniques. The field boundaries, marginal trees and woodland areas – along the eastern edge – offer greater ecological value and these features will be retained and safeguarded through the Proposed Development. Whilst there may be an effect on biodiversity, the majority of the Site contains land utilised for agricultural purposes that is subject to regular change and therefore of low ecological value. It is unlikely sensitive ecological species or habitats will have colonised the Site. Through the implementation of appropriate mitigation measures during construction, the potential effects from the development can be managed and are unlikely to be significant. The retention of the existing trees, woodland and other marginal vegetation will soften the development and also provide an opportunity to enhance biodiversity and strengthen ecological networks. Biodiversity can be enhanced through additional on-site planting and potential installation of bat and nesting bird boxes, bee hotels, hibernacula woodpiles etc. These enhancement measures will be informed by a Phase 1 Habitat Survey and species assessment as well as any necessary Phase 2 protected species surveys.

Land	The construction of the Proposed Development will involve the temporary use of circa 70 ha of greenfield / agricultural land during the operational life of the development (up to 40 years). Therefore, it is unlikely the development will lead to a significant loss of natural resources and as such significant impacts are not anticipated on the land. The proposals enable the Site to be developed in conjunction with the retention of pockets of natural woodland, trees, hedgerows and other marginal habitats. In addition, the nature of the Proposed Development enables some agricultural activities such as livestock grazing to continue during the operational life of the solar farm. The Proposed Development includes the option for the land to be returned to agricultural use once the supply of renewable electricity in this location is no longer required. The proposed installation of the solar panels enables this transition to be achievable at a low cost and impact and completion within a relatively short time frame. Whilst in operation as a solar farm, the land can naturally recover from previous intensive agricultural practices. Through this strategy, it is considered the overall health of the land will generally improve over the lifetime of the solar farm. This is significant as it is recognised that the Site is within the Nitrates Vulnerability Zone as a result of the extensive agricultural practices dominating the Site and wider areas. The nature of the Proposed Development will reduce the need for any fertilizers or other polluting chemicals and allow the Site to naturally regenerate, providing a benefit to the local environment.
Soil	The Proposed Development will lead to the temporary loss of an area of greenfield / agricultural land for a period of up to 40 years until being safely decommissioned. The NPPF (2021) (Para 174) requires consideration of development which affects the best and most versatile (BMV) agricultural land, i.e. ALC Grade 1,

	Grade 2 and Subgrade 3a (Natural England Technical Information Note 0149). Existing mapping suggests that the land is predominantly considered to be Grade 2 quality, as well as an area of Grade 3. However, an Agricultural Land Classification (ALC) was completed in July 2022, which confirms that the Site is categorised as predominantly Grade 3a, which is considered to be 'BMV' agricultural land. Once renewable electricity generation has ceased, the land will be returned to agricultural use as the development is fully reversible. With the land having a period of time to rest following intensive agricultural activity, it is generally accepted that the health of the soil profile within the Application Site will improve over the lifetime of the solar farm. Due to the nature of solar farms, it is unlikely that the construction of the Proposed Development would lead to the loss of soils as appropriate construction techniques will be implemented to reduce intrusive ground preparation works. Therefore, significant effects are not considered likely. Although it is deemed unlikely for any contamination to be present on Site, this risk will be controlled during construction through the obligation of appropriate planning conditions to ensure any contamination risks are addressed. Furthermore, most of the soil will not be physically impacted or disturbed from the development and therefore its degradation is considered unlikely. No significant effects are therefore anticipated.
Water	The River Ter is located 100m to the west of the Site and flows in southerly direction parallel to the western boundary. As a result of this, Flood Zone 3 borders the western boundary of the Site but the Site itself is located entirely within Flood Zone 1 and is therefore at low risk of flooding with a 1 in 1000 annual probability of river or sea flooding. National planning policy requires all planning applications above certain thresholds to include a Flood Risk Assessment (FRA), including mitigation in the form of a drainage strategy. An FRA and surface water drainage strategy

	will be provided as part of a suitable planning application and review the likelihood of fluvial flooding risks from the River Ter. In any case, the updated NPPF (2021) has set out within Annex 3: Flood risk vulnerability classification that solar farms are classed as 'Essential infrastructure' which means that a sequential test is not needed as part of a planning application as the 'essential' status allows development in such flood risk areas. As such the Proposed Development is unlikely to have a significant effect when considered against the current EIA Regulations.
Air	The Site does not lie within an Air Quality Management Area (AQMA) nor are there any in the wider area. Whilst there may be some dust generated during construction, this can be reduced through the implementation of a Dust Monitoring and Management Plan (DMMP) that can be appropriately secured by planning condition. Therefore, it is considered unlikely that the proposals will have a significant effect on air quality during construction. The construction period is expected to last for circa 6-9 months and it is estimated that the maximum number of daily deliveries by the largest delivery vehicles associated with the construction phase (15.4mTherefore, significant effects during the construction phase are not anticipated. Once operational, the only vehicle movements to / from the Site would be from occasional maintenance vehicles, which would visit the Site approximately once a month. Such a low level of traffic to the Site would not give rise to significant effects on air quality. No significant effects are therefore anticipated.
Climate	It is acknowledged that construction of the Proposed Development will result in the release of carbon as well as other emissions associated with the use of HGV vehicles and other plant / machinery. Although, considering the temporary nature of the development, short-term construction period and

	the low level of physical construction work required, it is considered that these emissions are unlikely to be complex or significant. Once operational the facility will generate energy from a renewable source (sunlight). Therefore, the development will only contribute positively to the local climate by reducing reliance on finite energy production facilities and helping to support carbon sequestration.
Material Assets	Construction will require the use of natural resources as is standard within the construction phase of development i.e. power supply / water / primary aggregates / concrete etc. This is not considered to be an unusual or complex operation and accordingly no significant effects are anticipated. Due to the nature of the development, no natural resources will be required for the operation of the facility once constructed. Therefore, no long-term impacts are anticipated.
Risk of Major Accidents and Disasters	The Site is not known to be susceptible to land instability or extreme and / or adverse climatic conditions. Considering the nature and location of the Proposed Development, it is not considered to be vulnerable to, or give rise to significant impacts in relation to the Risk of Accidents and Major Disasters.
Cultural Heritage	The Site is not located within any statutory and / or non-statutory designated heritage sites. However, the closest heritage assets to the Site are all Grade II Listed Buildings associated with Draper's Farm and Fenton's Farm. Draper's Farm is accessed via Drapers Chase off Fentons Road in the eastern sector of the Site and the listed heritage assets are Draper's Farm House, a farm outbuilding and a building known as Rooks. Whilst Fenton's Farm is accessed via Fentons Road and its listed assets relate to again the farmhouse – Fenton's Farmhouse – as well as two ancillary barns. The nearest Scheduled Monuments are both associated with Leez Augustinian Priory, fishponds and Tudor Mansion. Both assets are circa 2.1km

	to the southwest of the Application Site. In addition, the Tudor Mansion itself as well as some of its surrounding features are listed as Grade I. There are numerous Grade II Listed Buildings within the wider setting of the Site, particularly within the village of Rayne to the north, in addition, its Church of All Saints is a Grade I Listed Building and Rayne Hall is a Grade II* Listed Property. The villages of Bannister Green and Felsted as well as the Hamlet of Molehill Green all to the south and southwest of the Site, contain further clusters of predominantly Grade II Listed Buildings. The Site is not within or adjacent to a Conservation Area. Please see the Environmental Designations Plan (EDP) for more information. A Heritage Statement will be submitted as part of the planning application to fully consider potential impacts on the historic character of the surrounding villages and their associated heritage assets. A desk based archaeological assessment may also be required to inform further archaeological fieldwork such as a geophysical survey to ensure any potential archaeological features both above and below ground are recorded and mitigated accordingly.
Landscape	The Site does not fall within any statutory landscape designations and is not within the Green Belt. The Application Site falls into National Character Area 86: South Suffolk and North Essex Clayland. This classifies the landscape as generally wooded arable countryside, with a complex network of old-species rich hedgerows, ancient woods, parklands, meadows with streams and rivers that all flow eastwards. There is still evidence of traditional irregular field patterns. The low-lying and gentle gradient aspects of the landscape area provides predominantly arable agricultural land, which naturally provides a high capacity to accommodate the Proposed Development. At a more local level, the Site lies within Character Area B16: Felsted Farmland Plateau within Uttlesford District Council (note the Site is shared with Braintree District Council as well). This landscape is characterised by gently

	undulating farmland, small woods and copses with the farmland generally comprising arable with field boundaries delineated by hedgerows. A Landscape and Visual Impact Assessment (LVIA) will support any future planning application and it will principally review the key sensitivities of this landscape; which include a strong rural character and the open panoramic views to surrounding areas. The Site comprises a series of agricultural fields, which are currently used for arable production with the field margins generally defined by dense hedgerows and scattered trees. Generally, to the east, south and west lie further agricultural land as well as pockets of woodland and isolated farmsteads and dwellings. To the north is the A120, scrap recycling yard as well as a border with Flitch Way LNR. The Site and its immediate surrounding landscape are generally remote from urban development and residential properties, but the northern boundary lies adjacent to the scrap recycling yard, as well as Fenton's Farm. Draper's Farm also borders the Site in the eastern section. Additional screening may need to be considered for these existing residential dwellings. It is acknowledged that there is an extensive network of Public Right of Ways (PROWs) through the Site as well as the surrounding landscape. None of these PROWs will be diverted or closed as part of the construction and operation phases of the development. Any potential for interaction between users and construction traffic will be managed through the use of adequate safety measures e.g. through the use of banksmen which will be controlled by planning condition. Footpaths are not considered noise sensitive and therefore soil bunds are not considered as appropriate mitigation. However, they may be impacted visually by the Site during the construction phase as well as in the longer term once the solar farm is in operation. Therefore, further screening planting can be provided in strategic locations to minimise impacts on rights of way users.

	In summary, it is evident that the potential landscape and visual impacts need further assessment, as an increase in further solar arrays may impact upon the character and appearance of the local area. This will include advice on the siting and height of the proposed design and layout to reduce impacts on sensitive receptors. These include the residential properties at Fenton's Farm and Drapers Farm, PROW users, as well as wider views from the surrounding land. The Proposed Development will incorporate appropriate design and landscape measures wherever possible, with all reinforcement or new planting utilising native species that are in keeping with local landscape character and consider the nature of views available. The retention of the established hedgerow and hedgerow trees adds structure to the Site and provides a locally moderate to high level of enclosure and visual screening. Assuming suitable PRoW corridor solutions can be agreed with the Essex County Council (ECC) and other recommended mitigation and management measures are implemented, then the Site is considered to be suitable in landscape and visual terms for solar development. As outlined above, an LVIA will accompany any impending planning application.
Cumulative and Interactive Effects	A cumulative impact assessment will be undertaken to identify any major existing or approved applications within the vicinity of the Site, which may give rise to significant cumulative effects. Some of the identifiable sites have been outlined below; • Erection of a Solar Photovoltaic Farm (49.9MW) with supporting infrastructure and battery storage, inverters and transformers, fencing and landscaping works located approximately 700m to the east of the Site. It should be emphasised that this solar farm application was not considered to constitute EIA development (Ref: UTT/22/0007/FUL) and approved at Planning Committee but the decision notice is unavailable to view online. • Application for 150 dwellings with public open space, and access from School Road (Ref: 19/01326/OUT) was dismissed at appeal in 2020

	with the appeal lodged for failing to determine the application. This site is located 0.7km to the northeast of the Application Site. • The Applicant has submitted a separate EIA Screening Opinion relating to a solar farm of a similar size and scale on land 0.5km to the west at Poplars Farm, concurrently with this EIA Screening Request. However, it should be noted that the solar farms are functionally and financially separate from each other and the potential for combined and sequential cumulative effects of these schemes will be fully assessed within the LVIA to be submitted for each application. • Preliminary landscape investigations indicate that there will be some potential for cumulative in-combination and sequential views between the eastern parcels of the proposed Poplars Solar Farm site and western parcels of the proposed Drapers Chase Solar Farm site that would be difficult to entirely mitigate. However, the lack of proximity to any statutory designated landscape, combined with the low-lying nature of the Site, good levels of existing screening, additional screening proposed and small extent of this potential for effect relative to the areas of the proposals as a whole indicates that the potential for cumulative landscape and visual effects is unlikely to be significant. • Screening Request for a Solar Photovoltaic Farm (49.99MW) with supporting infrastructure at Great Notley (22/01061/SCR) located 5km to the east of the Site.
Conclusion	
It is considered that the proposals fall within the category of Schedule 2 (3 a) as described in the EIA Regulations 2017. Development proposals described under Schedule 2 require an EIA if they are considered *likely to have significant effects on the environment* by virtue of factors such as nature, size, or location. Given that the Proposed Development exceeds the screening threshold in Schedule	

2 (3 a) of 0.5 hectares, it is appropriate to screen the proposals with the Local Planning Authority to determine if there are significant effects likely to arise from the proposals.

The screening process should consider the development proposals against the criteria and thresholds which are included within the EIA Regulations and accompanying PPG in determining the requirement for an Environmental Statement (ES) to accompany an application for planning permission.

Schedule 3 of the EIA Regulations provides selection criteria for Screening Schedule 2 development, which includes three broad categories for consideration: the characteristics of the development; the environmental sensitivity of the location; and the characteristics of the potential impacts.

The PPG, under the Environmental Impact Assessment section (Paragraph 057), provides further indicative criteria and thresholds, as well as key issues to consider, in the determination of likely significance of effects. For 3 (a) Energy Industry, the criteria and advice given are:

- "Indicative Criteria and Threshold – 'Thermal output more than 50MW. Small stations using novel forms of generation should be considered carefully."
- "Key Issues to Consider – 'Level of emissions to air, arrangements for the transport of fuel and any visual impact."

The operational development is less than 50MW and is unlikely to give rise to significant impacts relating to air and transport impacts especially from fuel deliveries due to the renewable nature of the scheme. It is also noted that a similar scheme of nature and size on adjacent land, was not deemed to warrant EIA development (Ref: UTT/22/0007/FUL). However, due to the size of the Application Site, it is evident there is potential for visual impacts when viewing the project from surrounding areas.

It is also recognised that the Applicant has submitted a separate EIA Screening Opinion relating to a solar farm of a similar size and scale on land 0.5km to the west at Lord Rayleigh's Farm. However, the Applicant has confirmed that these two potential solar farms are functionally and financially separate from one another. Furthermore, separate construction, operation and maintenance programmes would apply to each scheme and in terms of supply or 'off-take' each site would be dedicated to different customers via separate purchasing agreements. The potential for combined and sequential cumulative effects of these schemes will be fully assessed within the LVIA to be submitted for each application. The lack of proximity to any statutory designated landscape,

combined with the low-lying nature of the Site, good levels of existing screening and mitigation proposed indicates that the potential for cumulative landscape and visual effects is unlikely to be significant.

Given the nature of the development proposals, it is considered that whilst there may be some impacts on the local environment as a consequence of the Proposed Development, none of these are considered to constitute 'significant impacts', as set out in central government guidance. Consequently, it is considered that the proposals do not constitute EIA development and would not require an Environmental Statement to be submitted with a planning application for a Solar Farm in this location.

Nevertheless, any subsequent planning application will be accompanied by the necessary technical assessments to enable the Local Planning Authority to consider and determine the planning application on its own merits.

We look forward to receiving the Council's response to this Screening Request within the designated 3-week timeframe on receipt of this request, as stated in the EIA Regulations (Part II-6(6)).

Town & Country Planning
(Environmental Impact Assessment) Regulations 2017

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Request for Screening Opinion.

Poplars Solar Farm.

On behalf of Bluestone Energy Ltd.

Date: 14/10/2022 | Pegasus Ref: P22-1322

Author: James Sutton

Document Management.

Version	Date	Author	Checked/ Approved by:	Reason for revision
1	14/10/2022	James Sutton	Alexis Tysler	
2	24/10/2022	Alexis Tysler		Client comments

Contents.

Screening Letter

Appendices contents.

Appendix A – Site Location Plan (SLP)

Appendix B – Environmental Designation Plan (EDP)

P22-1322
24th October 2022

The Planning Inspectorate
FAO. Environmental Services Team
Central Operations
Temple Quay House
2 The Square
Bristol, BS1 6PN

Dear Sir/Madam,

RE: REQUEST FOR SCREENING OPINION UNDER REGULATION 6 OF THE TOWN AND CONTRY PLANNING (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017

PROPOSED INSTALLATION AND OPERATION OF A SOLAR FARM FACILITY, TOGETHER WITH ALL ASSOCIATED WORKS, EQUIPMENT AND NECESSARY INFRASTRUCTURE – ON LAND AT LORD RAYLEIGHS FARM, FELSTED, ESSEX

We write on behalf of our client, Bluestone Energy Ltd (the 'Applicant') to formally request a Screening Opinion to determine whether there is a requirement for an Environmental Impact Assessment (EIA) to accompany a planning application for development at the above location.

In accordance with the EIA Regulations, we have provided the following information:

(a) A plan sufficient to identify the land (**Appendix A**);

(b) A description of the development, including in particular-

i. A description of the physical characteristics of the development and, where relevant, of demolition works; (**Appendix B**);

ii. A description of the location of the development, with particular regard to the environmental sensitivity of the geographic areas likely to be affected (**Appendix B**);

(c) A description of the aspects of the environment likely to be significantly affected by the development (**Appendix B**);

(d) To the extent the information is available, a description of any likely significant effects of the Proposed Development on the environment resulting from-

i. The expected residues and emissions and the production of waste, where relevant; and

ii. The use of natural resources, in particular soil, land water and biodiversity; (**Appendix B**) and

(e) Such other information or representations as the person making the request may wish to provide or make, including any features of the Proposed Development or any measures to avoid or prevent what might otherwise have been significant adverse effects on the environment (**Appendix B**).

We look forward to receiving the Screening Opinion within three weeks of receipt of this request as specified in the Regulations and confirmation that the Screening Opinion will be placed on the Public Register.

Yours faithfully,

James Sutton

Principal Environmental Planner

[redacted]

Enc.

1x Site Location Plan

1x Environmental Designation Plan

APPENDIX A

PLAN SUFFICIENT TO IDENTIFY THE LAND

APPENDIX B

A description of the development, including in particular-

i. **A description of the physical characteristics of the development and, where relevant, of demolition works;**

ii. **A description of the location of the development, with particular regard to the environmental sensitivity of the geographic areas likely to be affected;**

A description of the aspects of the environment likely to be significantly affected by the development;

To the extent the information is available, a description of any likely significant effects of the Proposed Development on the environment resulting from-

iii. **The expected residues and emissions and the production of waste, where relevant; and**

iv. **The use of natural resources, in particular soil, land water and biodiversity; and**

Such other information or representations as the person making the request may wish to provide or make, including any features of the Proposed Development or any measures to avoid or prevent what might otherwise have been significant adverse effects on the environment.

Application Site
The Application Site ("Site") (Appendix A) extends to some 108 hectares (ha) of agricultural land to the southwest of Braintree and Rayne, and west of Great Notley as shown on the Site Location Plan (SLP). It is located within the open countryside and is characterised by a series of agricultural fields in arable use. The Site lies within the administrative boundary of Uttlesford District Council. The land parcels are bounded by well managed hedgerows which also include a range of small and larger trees. Within the fields there are also isolated trees sporadically positioned as well as overhead electricity pylons which run in a southeast-northwest direction through the central areas of the Site. The Site can be split into two uneven areas of land by the 'Flitch Way' a Local Nature Reserve and National Trail, this is discussed in further detail below, under the 'Biodiversity' section in Appendix B. To the east and south, the Site is bounded by essentially further parcels of agricultural land of various shapes and sizes. The villages of Felsted and Bannister Green are situated immediately adjacent to the western and southwestern boundaries respectively. The B1417 forms part of the northwestern boundary and arable land is found to the north until the landform reaches the A120. The Site can be considered predominantly rural with the immediate surrounding area mostly comprising agricultural fields, small pockets of woodland and isolated farmsteads and dwellings. However, there are some urbanised features present, such as the A120 and the villages of Great Notley and Rayne, which are found to the east and northeast respectively. Mature hedgerows, intertwined with a range of trees as well as other scattered trees form the margins of the Site. There are two access points proposed into the Site, which form the existing field entrances from Rayne Road (along the southern boundary) and the B1417 (along northwestern boundary). These existing junctions will be upgraded and reconfigured to enable the access and necessary visibility splays for the construction and operation of the solar farm. The amended design of theses access points are subject to further discussions with the local highway authority. The Application Site is not located within any statutory or non-statutory designations, but as mentioned previously, Flitch Way Local Nature Reserve (LNR) intersects the Site in an east-west direction, dividing the Site into two principal areas. The Flitch Way runs from Great Dunmow in the west to Braintree in the east. The next nearest designation is Cuckoo Wood, another LNR located

3.2km directly to the east of the Site. The overall site context is shown on the attached Environmental Designation Plan (EDP).

Given the predominantly rural nature of the Site and its wider setting, there are numerous Public Rights of Way (PRoWs) within and adjacent to the Application Site. Within the Site boundary, there are six footpaths – numbered chronologically as 8, 17, 19, 44, 45, 115 – which are located within the northern and southern half of the Site. Furthermore, Flitch Way LNR is also a recognised National Trail and links Great Dunmow to Braintree and vice versa.

Nature and purpose of the Proposed Development

The Proposed Development is the 'proposed installation and operation of a solar farm facility, together with all associated works, equipment and necessary infrastructure.'

Through the utilisation of natural sunlight, the facility will generate renewable energy for distribution onto the National Grid network. This will support the local and national renewable energy targets and ultimately reduce the reliance on finite fossil fuel-based sources as a form of energy.

The nature of ground mounted solar PV is both temporary and reversible, allowing the Site to be restored to its former agricultural use. The Proposed Development is likely to consist of the following elements:

- Photovoltaic (PV) panels based on a simple metal framework ('table') to form an 'array' which is pile driven into the ground, avoiding the need for substantial foundations. These bifacial arrays will be laid on fixed tables with an east/west orientation. The rear edge of the panel would have a maximum height of 3.08m above original ground level and will be spaced between 5-8m.
- A number of inverters / transformers at various locations around the arrays,
- Underground cable connection to an existing substation in Braintree and internal cables linking the components of the solar farm together,
- Boundary fencing (e.g. deer fencing) around the edge of the solar farm,

- A CCTV system, either pole or fence-mounted, located at strategic points around the site perimeter for security and maintenance reasons,
- Associated internal access tracks connecting inverter / transformer units,
- Relevant communications and monitoring equipment,
- Temporary access and construction compound; and
- Reconfiguration of two existing agricultural Site access junctions from Rayne Road and B1417 for construction, operation and decommissioning purposes.

Access into the Site is proposed via two existing field entrances from Rayne Road (along the southern boundary) and the B1417 (along northwestern boundary). These existing junctions will be upgraded, reconfigured and designed in accordance with the requirements of the local highways authority.

An underground cable connection is also required in order to link Poplars Solar Farm with the Point of Connection (POC). The total length of cable required is approximately 10.3 kilometers in length and will be routed via the B1417; the A120; the B1018; and Braintree Road. The cable route, linking Poplars Solar Farm and the POC, is shown on the attached SLP and forms part of the Application Site.

The Proposed Development will also provide biodiversity enhancements through new planting and landscaping where possible, especially if there are any significant gaps within the existing hedgerows and marginal vegetation of the Site. New planting will support a diverse range of critical invertebrate species and encourage new species to colonise the margins of the Site. There are potential further opportunities for habitat creation though the implementation of wildlife corridors and the installation of bat and bird nesting boxes, hibernacula, woodpiles, and beehives within the margins of the Site.

The Proposed Development would be a temporary application with the lifetime of the Solar Farm being in the region of 40 years. After this time, the solar farm and its supporting infrastructure will be dismantled and removed from the Site.

Possible Effects on the Environment	
Section 1 – Applicable Thresholds	
Does the Proposed Development fall within Schedule 1 (Y/N)?	No
If yes, what is the applicable description.	N/A
If yes, the project automatically requires EIA	
If no, does the Proposed Development fall within Schedule 2 (Y/N)?	Yes
If yes, what is the applicable description?	3 (a) Industrial installations for the production of electricity, steam, and hot water
Is the Project located in or adjacent to a 'Sensitive Area'?	No
If yes proceed to Section 2.	
If no, what is the corresponding applicable threshold in Schedule 2?	The area of the development exceeds 0.5 hectares
Does the Project exceed the applicable threshold (Y/N)?	Yes

If yes, proceed to Section 2	
Section 2 – Assessment of Possible Effects	
Topic	**Analysis**
Population	During the construction phase of development, it is considered unlikely that the proposals will result in a significant change in population as the proposals do not involve significant or intensive labour requirements. Therefore, local and wider economic migrants are unlikely to relocate to the area on a permanent basis. However, both the construction and decommissioning phase will have a temporary effect on employment opportunities through the creation of various construction jobs. In addition to this, local shops, services and goods will also be used during these two key periods. A minor beneficial effect is therefore anticipated. Once operational, the Proposed Development does not provide any permanent residential accommodation and therefore will not have a significant effect on population. The only vehicle movements will be associated with maintenance required, which is anticipated to be of a low level. Therefore, this will have negligible impacts on the surrounding population.
Human Health	During the construction phase there will be some potential for minor pollution or nuisance consistent with ongoing construction works, which include the following; lighting of external works, security lighting, dust and noise emissions generated from plant, vehicles and other construction processes, surface water run-off from stockpiles, plant noise etc. However, construction activities would be appropriately controlled to an acceptable level through

	the adoption of a Construction Environmental Management Plan (CEMP) as well as best practice techniques and appropriate safety measures. A Construction Traffic Management Plan (CTMP) and Construction Traffic Method Statement (CTMS) would be provided as part of the planning application to ensure that there were no significant effects on highway capacity and safety. The existing soil profile has no historic issues to indicate there might be any form of contamination and the Site is at low risk of groundwater vulnerability. Once operational there will be no unusual risk to human health. The development relies on well-established, safe modern technology and responsible operators who will utilise the Construction Quality Assurance Plans as necessary. Appropriate Health and Safety signage will be displayed on Site, to warn of the potential risk from working near electrical equipment and to prevent illegal access and trespass. Consequently, there are no unusual risks to human health and significant impacts are not anticipated.
Biodiversity	The Application Site is not subject to any statutory or non-statutory nature conservation designations. Nevertheless, parts of the Site share a border with the Flitch Way LNR, which is also a National Trail. It is recognised and safeguarded as it has managed to survive the effects of intensive agriculture and urbanisation within the surrounding area and therefore supports wildlife hotspots along its designated route. Within the wider area, there is one additional designation; Cuckoo Wood LNR circa 3.2km directly to the east of the Site. The Site also lies on the edge of the Site of Special Scientific Interest (SSSI) Impact Risk Zone for Garnetts Wood / Barnston Lays SSSI but given the distance to these – particularly to the latter – and the nature of the proposals, significant impacts are unlikely.

	In terms of biodiversity at the Site itself, the fields are well screened by hedgerows which include a mixture of large and small trees along their boundaries. Additional planting is proposed where deemed necessary and this will enhance biodiversity wherever possible. Suitable stand-off margins are proposed to reduce any impacts to the boundaries (especially any existing mature trees) as these form important natural mitigation to potential visual impacts. An Arboricultural Impact Assessment (AIA) and a Phase 1 Habitat Survey and species assessment will provide further information on the requirement for stand-off margins and any recommendations made in respect of the LNR to ensure appropriate mitigation. The Site, which comprises agricultural land, is considered to be of low ecological value as it is subject to frequent management techniques, particularly given its quality. The field boundaries and marginal trees offer greater ecological value and these features will be retained and safeguarded through the Proposed Development. Whilst there may be an effect on biodiversity, the majority of the Site contains land utilised for agricultural purposes that is subject to regular change and therefore of low ecological value. It is unlikely sensitive ecological species or habitats will have colonised the Site. Through the implementation of appropriate mitigation measures during construction, the potential effects from the development can be managed and are unlikely to be significant. The retention of the existing trees, woodland and other marginal vegetation will soften the development and also provide an opportunity to enhance biodiversity and strengthen ecological networks. Biodiversity can be enhanced through additional on-site planting and potential installation of bat and nesting bird boxes, bee hotels, hibernacula woodpiles etc. These enhancement measures will be informed by a Phase 1 survey as well as any necessary Phase 2 protected species surveys and Biodiversity Management Plan.

Land	The construction of the Proposed Development will involve the temporary use of circa 108 ha of greenfield / agricultural land during the operational life of the development (up to 40 years). Therefore, it is unlikely the development will lead to a significant loss of natural resources and as such significant impacts are not anticipated on the land. The proposals enable the Site to be developed in conjunction with the retention of existing trees, hedgerows and other marginal habitats. In addition, the nature of the Proposed Development enables some agricultural activities such as livestock grazing to continue during the operational life of the solar farm. The Proposed Development includes the option for the land to be returned to agricultural use once the supply of renewable electricity in this location is no longer required. This is especially important when measured against the quality of the land. The proposed installation of the solar panels enables this transition to be achievable at a low cost and within a relatively short time frame. Whilst in operation as a solar farm, the land can naturally recover from previous intensive agricultural practices. Through this strategy, it is considered the overall health of the land will generally improve over the lifetime of the solar farm. This is significant as it is recognised that the Site is within the Nitrates Vulnerability Zone as a result of the extensive agricultural practices dominating the Site and wider areas. The nature of the Proposed Development will reduce the need for any fertilizers or other polluting chemicals and allow the Site to naturally regenerate, providing a benefit to the local environment.
Soil	The Proposed Development will lead to the temporary loss of an area of greenfield / agricultural land for a period of up to 40 years until being safely decommissioned.

	The NPPF (2021) (Para 174) requires consideration of development which affects the best and most versatile (BMV) agricultural land, i.e. ALC Grade 1, Grade 2 and Subgrade 3a (Natural England Technical Information Note 0149). Existing mapping suggests that the land is predominantly Grade 2 quality, as well as a section of Grade 3 land through the southwestern area of Site. However, an Agricultural Land Classification (ALC) was completed in July 2022, which confirms that the Site is categorised as predominantly Grade 3a, which is considered to be 'BMV' agricultural land. Once renewable electricity generation has ceased, the land will be returned to agricultural use as the development is fully reversible. With the land having a period of time to rest following intensive agricultural activity, it is generally accepted that the health of the soil profile within the Application Site will improve over the lifetime of the solar farm. Due to the nature of solar farms, it is unlikely that the construction of the Proposed Development would lead to the loss of soils as appropriate construction techniques will be implemented to reduce intrusive ground preparation works. Therefore, significant effects are not considered likely. Although it is deemed unlikely for any contamination to be present on Site, this risk will be controlled during construction through the obligation of appropriate planning conditions to ensure any contamination risks are addressed. Furthermore, most of the soil will not be physically impacted or disturbed from the development and therefore its degradation is considered unlikely. No significant effects are therefore anticipated.
Water	The River Ter at its closest point is located approximately 0.4km to the east of the Site and flows in a southwesterly direction away from the Application Site. However, the Site itself is located entirely within Flood Zone 1 and is therefore at low risk of flooding with a 1 in 1000 annual probability of river or sea flooding. National planning policy requires all planning applications above certain thresholds to include a Flood Risk Assessment (FRA), including mitigation in

	the form of a drainage strategy. An FRA and surface water drainage strategy will be provided as part of a suitable planning application and review the likelihood of fluvial flooding risks from the River Ter. In any case, the updated NPPF (2021) has set out within Annex 3: Flood risk vulnerability classification that solar farms are classed as 'Essential infrastructure' which means that a sequential test is not needed as part of a planning application as the 'essential' status allows development in such flood risk areas. As such the Proposed Development is unlikely to have a significant effect when considered against the current EIA Regulations.
Air	The Site does not lie within an Air Quality Management Area (AQMA) nor are there any in the wider area. Whilst there may be some dust generated during construction, this can be reduced through the implementation of a Dust Monitoring and Management Plan (DMMP) that can be appropriately secured by planning condition. Therefore, it is considered unlikely that the proposals will have a significant effect on air quality during construction. The construction period is expected to last for circa 6-9 months and it is estimated that the maximum number of daily deliveries by the largest delivery vehicles associated with the construction phase (15.4m HGV) will be 14 which is a low level when considered against most other development projects. Therefore, significant effects during the construction phase are not anticipated. Once operational, the only vehicle movements to / from the Site would be from occasional maintenance vehicles, which would visit the Site approximately once a month. Such a low level of traffic to the Site would not give rise to significant effects on air quality. No significant effects are therefore anticipated.
Climate	It is acknowledged that construction of the Proposed Development will result in the release of carbon as well as other emissions associated with the use of

	HGV vehicles and other plant / machinery. Although, considering the temporary nature of the development, short-term construction period and the low level of physical construction work required, it is considered that these emissions are unlikely to be complex or significant. Once operational the facility will generate energy from a renewable source (sunlight). Therefore, the development will only contribute positively to the local climate by reducing reliance on finite energy production facilities and helping to support carbon sequestration.
Material Assets	Construction will require the use of natural resources as is standard within the construction phase of development i.e. power supply / water / primary aggregates / concrete etc. This is not considered to be an unusual or complex operation and accordingly no significant effects are anticipated. Due to the nature of the development, no natural resources will be required for the operation of the facility once constructed. Therefore, no long-term impacts are anticipated.
Risk of Major Accidents and Disasters	The Site is not known to be susceptible to land instability or extreme and / or adverse climatic conditions. Considering the nature and location of the Proposed Development, it is not considered to be vulnerable to, or give rise to significant impacts in relation to the Risk of Accidents and Major Disasters.
Cultural Heritage	The Site is not located within any statutory and / or non-statutory designated heritage sites. However, the closest heritage assets to the Site are all Grade II Listed Buildings; Great Greenfields and Poplars adjacent to the northern half of the Site, and parallel to the southern boundary there is a cluster within Bannister Green, including Stevens Farm Barn which is the closest at 90m. The nearest Scheduled Monuments are both associated with Leez Augustinian Priory, fishponds and Tudor Mansion. Both assets are circa 1.5km to the south of the Application Site. In addition, the Tudor Mansion itself as well as some of its surrounding features are listed as Grade I.

	There are numerous Grade II Listed Buildings within the wider setting of the Site, particularly within the village of Rayne to the northeast, in addition, its Church of All Saints is a Grade I Listed Building and Rayne Hall is a Grade II* Listed Property. The hamlet of Molehill Green to the southwest of the Site contains further groups of predominantly Grade II Listed Buildings. The Site is not within or adjacent to a Conservation Area. Please see the Environmental Designations Plan (EDP) for more information. A Heritage Statement will be submitted as part of the planning application to fully consider potential impacts on the historic character of the surrounding villages and their associated heritage assets. A desk based archaeological assessment may also be required to inform further archaeological fieldwork such as a geophysical survey to ensure any potential archaeological features both above and below ground are recorded and mitigated accordingly.
Landscape	The Site does not fall within any statutory landscape designations and is not within the Green Belt. The Application Site falls into National Character Area 86: South Suffolk and North Essex Clayland. This classifies the landscape as generally wooded arable countryside, with a complex network of old-species rich hedgerows, ancient woods, parklands, meadows with streams and rivers that all flow eastwards. There is still evidence of traditional irregular field patterns. The low-lying aspect of the landscape area provides predominantly arable agricultural land, which naturally provides a high capacity to accommodate this type of development. At a more local level, the Site lies within Character Area B16: Felsted Farmland Plateau within Uttlesford District Council. This landscape is characterised by gently undulating farmland, small woods and copses with the farmland generally comprising arable with field boundaries delineated by hedgerows. A Landscape and Visual Impact Assessment (LVIA) will support any future planning application and it will principally review the key sensitivities of this

	landscape; which include a strong rural character and the open panoramic views to surrounding areas. The Site comprises a series of agricultural fields, which are currently used for arable production with the field margins generally defined by dense hedgerows and scattered trees. Generally, the Site is surrounded on all sides by further agricultural land as well as pockets of woodland, small villages, hamlets, isolated farmsteads and dwellings. To the north is the A120, the rest of the surrounding highway network is formed by minor 'B class' roads. The Site and its immediate surrounding landscape are generally remote from urban development and residential properties, but part of Felsted village and Bannister Green village lie on the western and southwestern boundaries of the Site. Consequently, additional screening may need to be considered for these existing residential areas. It is acknowledged that there is an extensive network of Public Right of Ways (PRoWs) through the Site as well as the surrounding landscape. None of these PRoWs will be diverted or closed as part of the construction and operation phases of the development. Any potential for interaction between users and construction traffic will be managed through the use of adequate safety measures e.g. through the use of banksman which will be controlled by planning condition. Footpaths are not considered noise sensitive and therefore soil bunds are not considered as appropriate mitigation. However, they may be impacted visually by the Site during the construction phase as well as in the longer term once the solar farm is in operation. Therefore, further screening planting can be provided in strategic locations to minimise impacts on rights of way users. In summary, the potential for landscape and visual impacts will be subject to further detailed assessment, as an increase in further solar arrays may impact upon the character and appearance of the local area. This will include advice on the siting and height of the proposed design and layout to reduce impacts on sensitive receptors to include adjoining residential properties within the

	villages of Felsted and Bannisters Green, as well as wider views from the surrounding land. The Proposed Development will incorporate appropriate design and landscape measures wherever possible, with all reinforcement or new planting utilising native species that are in keeping with local landscape character and consider the nature of views available. The retention of the established hedgerow and hedgerow trees adds structure to the Site and provides a locally moderate to high level of enclosure and visual screening. Assuming suitable PRoW corridor solutions can be agreed with the Essex County Council (ECC) and other recommended mitigation and management measures are implemented, then the Site is considered to be suitable in landscape and visual terms for solar development. As outlined above, an LVIA will accompany any impending planning application.
Cumulative and Interactive Effects	A cumulative impact assessment will be undertaken to identify any major existing or approved applications within the vicinity of the Site, which may give rise to significant cumulative effects. Some of the identifiable sites have been outlined below; • Erection of a Solar Photovoltaic Farm (49.9MW) with supporting infrastructure and battery storage, inverters and transformers, fencing and landscaping works located approximately 2km to the east of the Site. It should be emphasised that this solar farm application was not considered to constitute EIA development (Ref: UTT/22/0007/FUL) and approved at Committee but the decision notice is still pending (unavailable to view online). • Outline application for construction of 41 new dwellings with associated landscaping and infrastructure off Clifford Smith Drive, located approximately 100m from the western boundary of the Site (Ref: UTT/19/2118/OP) which was approved in April 2020. • The Applicant has submitted a separate EIA Screening Opinion relating to a solar farm of a similar size and scale on land 0.5km to the

	east at Drapers Farm, concurrently with this EIA Screening Request. However, it should be noted that the solar farms are functionally and financially separate from each other and the potential for combined and sequential cumulative effects of these schemes will be fully assessed within the LVIA to be submitted for each application. • Preliminary landscape investigations indicate that there will be some potential for cumulative in-combination and sequential views between the eastern parcels of the proposed Poplars Solar Farm site and western parcels of the proposed Drapers Solar Farm site that would be difficult to entirely mitigate. However, the lack of proximity to any statutory designated landscape, combined with the low-lying nature of the Site, good levels of existing screening, additional screening proposed and small extent of this potential for effect relative to the areas of the proposals as a whole indicates that the potential for cumulative landscape and visual effects is unlikely to be significant. • Full application for the construction of 24 dwellings and school related community car park on land at Sunnybrook Farm (Ref: UTT/20/1882/FUL. This application is awaiting determination and is located 0.5km to the southwest of the Site. • Full application for 38 new dwellings and new doctors surgery, as well as supporting infrastructure and landscaping on land west of Station Road in Felsted (Ref UTT/22/1078/DFO). This application is awaiting determination and lies circa 2.1km to the southwest of the Site.
Conclusion	
It is considered that the proposals fall within the category of Schedule 2 (3 a) as described in the EIA Regulations 2017. Development proposals described under Schedule 2 require an EIA if they are considered *likely to have significant effects on the environment* by virtue of factors such as nature,	

size, or location. Given that the Proposed Development exceeds the screening threshold in Schedule 2 (3 a) of 0.5 hectares, it is appropriate to screen the proposals with the Local Planning Authority to determine if there are significant effects likely to arise from the proposals.

The screening process should consider the development proposals against the criteria and thresholds which are included within the EIA Regulations and accompanying PPG in determining the requirement for an Environmental Statement (ES) to accompany an application for planning permission.

Schedule 3 of the EIA Regulations provides selection criteria for Screening Schedule 2 development, which includes three broad categories for consideration: the characteristics of the development; the environmental sensitivity of the location; and the characteristics of the potential impacts.

The PPG, under the Environmental Impact Assessment section (Paragraph 057), provides further indicative criteria and thresholds, as well as key issues to consider, in the determination of likely significance of effects. For 3 (a) Energy Industry, the criteria and advice given are:

- "Indicative Criteria and Threshold – 'Thermal output more than 50MW. Small stations using novel forms of generation should be considered carefully."
- "Key Issues to Consider – 'Level of emissions to air, arrangements for the transport of fuel and any visual impact."

The operational development is less than 50MW and is unlikely to give rise to significant impacts relating to air and transport impacts. It is also noted that a similar scheme of nature and size was not deemed to warrant EIA development in the local area (Ref: UTT/22/0007/FUL). However, due to the size of the Application Site, it is evident there is potential for visual impacts when viewing the project from surrounding areas.

It is also recognised that the Applicant has submitted a separate EIA Screening Opinion relating to a solar farm of a similar size and scale on land 0.5km to the east at Drapers Farm. However, the Applicant has confirmed that these two potential solar farms are functionally and financially separate from one another. Furthermore, separate construction, operation and maintenance programmes would apply to each scheme and in terms of supply or 'off-take' each site would be dedicated to different customers via separate purchasing agreements. The potential for combined and sequential cumulative effects of these schemes will be fully assessed within the LVIA to be submitted for each application. The lack of proximity to any statutory designated landscape,

combined with the low-lying nature of the Site, good levels of existing screening indicates that the potential for cumulative landscape and visual effects is unlikely to be significant.

Given the nature of the development proposals, it is considered that whilst there may be some impacts on the local environment as a consequence of the Proposed Development, none of these are considered to constitute 'significant impacts', as set out in central government guidance. Consequently, it is considered that the proposals do not constitute EIA development and would not require an Environmental Statement to be submitted with a planning application for a Solar Farm in this location.

Nevertheless, any subsequent planning application will be accompanied by the necessary technical assessments to enable the Local Planning Authority to consider and determine the planning application on its own merits.

We look forward to receiving the response to this Screening Request within the designated 3-week timeframe on receipt of this request, as stated in the EIA Regulations (Part II-6(6)).

Town & Country Planning
(Environmental Impact Assessment) Regulations 2017

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FLOOD RISK ASSESSMENT & SURFACE WATER DRAINAGE STRATEGY

PROPOSED SOLAR FARM DEVELOPMENT, DRAPER'S FARM, BRAINTREE, UTTLESFORD

On behalf of Bluestone Energy Ltd
Date: 28 October 2022 | Pegasus Ref: P22-1321 – Author: Maja Raicevic

Document Management.

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1. INTRODUCTION

Background

1.1 Pegasus Planning Group Ltd has been appointed by Bluestone Energy Ltd (herein referred to as "the Applicant") to undertake a Flood Risk Assessment (FRA) for a proposed Solar Farm development at Draper's Farm, Braintree, Uttlesford.

1.2 The proposed development is based on a single fixed panel area with all panels sharing the same vertical tilt and azimuth angle.

1.3 This assessment considers the risks of all types of flooding to the site including tidal, fluvial, surface, historic, groundwater, sewer and artificial sources.

National and Local Policies

1.4 The National Planning Policy Framework (NPPF) states that a site-specific Flood Risk Assessment (FRA) will be required for proposals:

a) that are greater than 1 hectare in area within Flood Zone 1;

b) for all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3;

c) in an area within Flood Zone 1 which has critical drainage problems; and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.

d) in an area within Flood Zone 1 identified in a Strategic Flood Risk Assessment as being at increased flood risk in the future.

e) in an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

1.5 The site area is approximately 73 hectares in size and within Flood Zone 1, therefore, a full FRA is required.

1.6 As of April 2015, the legislation for dealing with FRAs changed, with additional emphasis put on the use of Sustainable Drainage Systems (SuDS) within drainage schemes for new developments.

1.7 In February 2016, the Environment Agency (EA) introduced new guidance relating to climate change allowance, which has increased the percentage rate of change applied to the 1 in 100 year event scenario.

1.8 As such, any new application will require a surface water drainage scheme submitted to accompany all planning applications and will be required to demonstrate the use of SuDS within the design and should be in line with the requirements as set out within the National Planning Policy Framework Technical Guidance (NPPFTG).

1.9 The site falls under two Districts, Uttlesford and Braintree.

1.10 The key objectives of the Uttlesford District Council Level 1 Strategic Flood Risk Assessment (May 2016, JBA Consulting) are:

- Critically review and update the 2008 SFRA, taking into account the latest flood risk information and any updates to legislation and policy;
- Provide an individual flood risk analysis of the Areas of Search identified within the district as part of the Local Plan preparation.
- Provide mapping showing the Flood Zones for planning and flood risk from other sources in accordance with the provision of national flood risk guidance.

1.11 The key objectives of the Braintree District Council Level 1 Strategic Flood Risk Assessment (November 2016, AECOM) are:

- Ensure a clear understanding of the risks of flooding, nationally and locally, so that investment in risk management can be prioritised more effectively;
- Set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about the management of the remaining risks;

- Encourage innovative management of risks taking account of the needs of the communities and the environment;
- Ensure the emergency responses to flood incidents are effective and that communities are able to respond properly to flood warnings; and,
- Ensure informed decisions are made on land use planning.

2. EXISTING SITE AND HYDROLOGY

Site Location & Existing Conditions

2.1 The site area is approximately 73 Ha in size and comprises entirely of greenfield area.

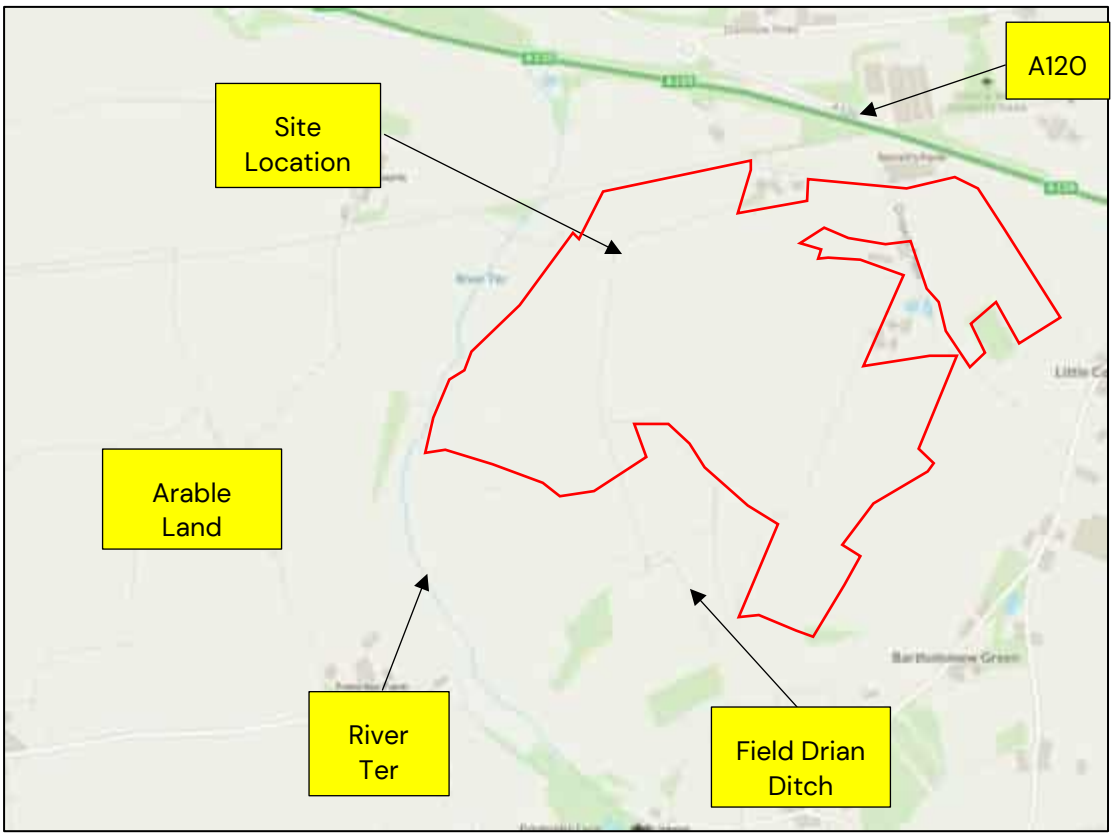
2.2 The site is entirely arable land mainly bordered by hedgerows. The north side of the site is bounded by A120 road, arable land to the east and south side and the River Ter to the west side of the site.

2.3 Approximate site co-ordinates are E: 571313; N: 221761, with nearest post code CM77 6SL.

2.4 The Environment Agency flood map shows the site as lying within Flood Zone 1 (< 1 in 1000 years probability of flooding). The land to the immediate west side of the development beyond the site boundary is indicated to be in Flood Zone 3 (> 1 in 100 years probability of flooding) likely due to the River Ter.

2.5 A copy of the EA flood map can be found at Section 5 of this report.

Figure 2.1 – Site Location



2.6 Levels taken from a topographical survey undertaken by Brunel Surveys Ltd (dated July 2022. REF: 23628-500-01) indicate the site to have south westerly fall with a high point of 77.77m AOD in the northeast portion of the site to a low point of 65.34m AOD in the far west side of the site. A copy of this topographical survey can be found in **Appendix A**.

Existing Drainage and Hydrology

2.7 The closest watercourse to the site is the River Ter, bounding the west side of the site. There is a field drain ditch located south of the site.

2.8 The site is currently a greenfield area; therefore it is unlikely that there is an existing drainage network running in the sites surrounding.

2.9 The site consists of multiple existing field ditches running along the boundary each field (noted on the topographical survey sheets) within the proposed development, these provide drainage for any overland flows that have not be absorbed into the ground via infiltration.

2.10 Geological data held by the British Geological Survey (BGS) indicates that the bedrock geology underlying the site is London Clay Formation – clay, silt, sand. Superficial deposits overlying the site comprise of Lowestoft Formation – Diamicton.

2.11 The Soilscape soils data shows the site to be 'Lime-rich loamy and clayey soils with slightly impeded drainage'.

3. PROPOSED DEVELOPMENT

3.1 The proposed development is for the installation and operation of a solar farm facility with an output of up to 49.9MWp together with all associated works, equipment and necessary infrastructure.

3.2 The access road will be off the existing School Road, located on the east side of the site.

3.3 A copy of the proposed site layout can be found in **Appendix B**.

4. DEVELOPMENT VULNERABILITY AND FLOOD ZONE CLASSIFICATION

National Planning Policy Framework (NPPF)

4.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.

4.2 NPPF requires that, as part of the planning process:

• A 'site specific' Flood Risk Assessment will be undertaken for any site that has a flood risk potential.

• Flood risk potential is minimised by applying a 'sequential approach' to locating 'vulnerable' land uses.

• Sustainable drainage systems are used for surface water disposal where practical.

• Flood risk is managed through the use of flood resilient and resistant techniques.

• Residual risk is identified and safely managed.

4.3 Table 1 of NPPF, categorises flood zones into:

• Zone 1- Low probability (< 1 in 1000 years)

• Zone 2- Medium probability (1 in 1000 - 1 in 100 years)

• Zone 3a- High probability (> 1 in 100 years)

• Zone 3b- The functional floodplain (>1 in 20 years)

4.4 The NPPF sets out a matrix indicating the types of development that are acceptable in different Flood Zones (see Table 4.1). The proposed development is a Solar Farm. The development is located in Flood Zone 1 and therefore, development in this area is considered appropriate.

4.5 NPPF also categorises types of development into Flood Risk Vulnerability groups. A Solar Farm development is classified within the NPPF as being 'Essential Infrastructure', which consists of essential utility infrastructure.

Table 4.1 – NPPF Guidance

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required	✓	✓	✓
Zone 3a	Exception Test Required	✗	Exception Test Required	Exception Test Required	✓
Zone 3b	Exception Test Required	✗	✗	✗	✓

5. SITE SPECIFIC FLOODING ISSUES AND EXISTING FLOOD RECORDS

5.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.

National Planning Policy Framework (NPPF)

5.2 In accordance with the National Planning Policy Framework, this Flood Risk Assessment considers all sources of flooding including:

a) Tidal Flooding – from sea;

b) Fluvial Flooding – from rivers and streams;

c) Pluvial Flooding – overland surface water flow and exceedance;

d) Historic flooding – known historic flooding issues;

e) Groundwater flooding – from elevated groundwater levels or springs;

f) Flooding from sewers – exceedance flows from existing sewer systems; and

g) Artificial sources – reservoirs, canals etc.

Tidal Flooding

5.3 The Environment Agency website provides basic flood mapping data as a general guide to whether a site is at risk of flooding from various sources including rivers and seas for Flood Zoning classification.

5.4 This mapping (Figure 5.1) indicates that the site is located within Flood Zone 1 an area with a low probability of flooding occurring (< 1 in 1000 years). However, it should be noted that the land to the immediate west site boundary is shown to be in Flood Zone 3, an area with a high probability of flooding occurring (> 1 in 100 years), although has no impact on the preposed development.

5.5 Given the site's inland location and its high elevations (>65m AOD), the risk from tidal source of flooding is considered to be **Very Low.**

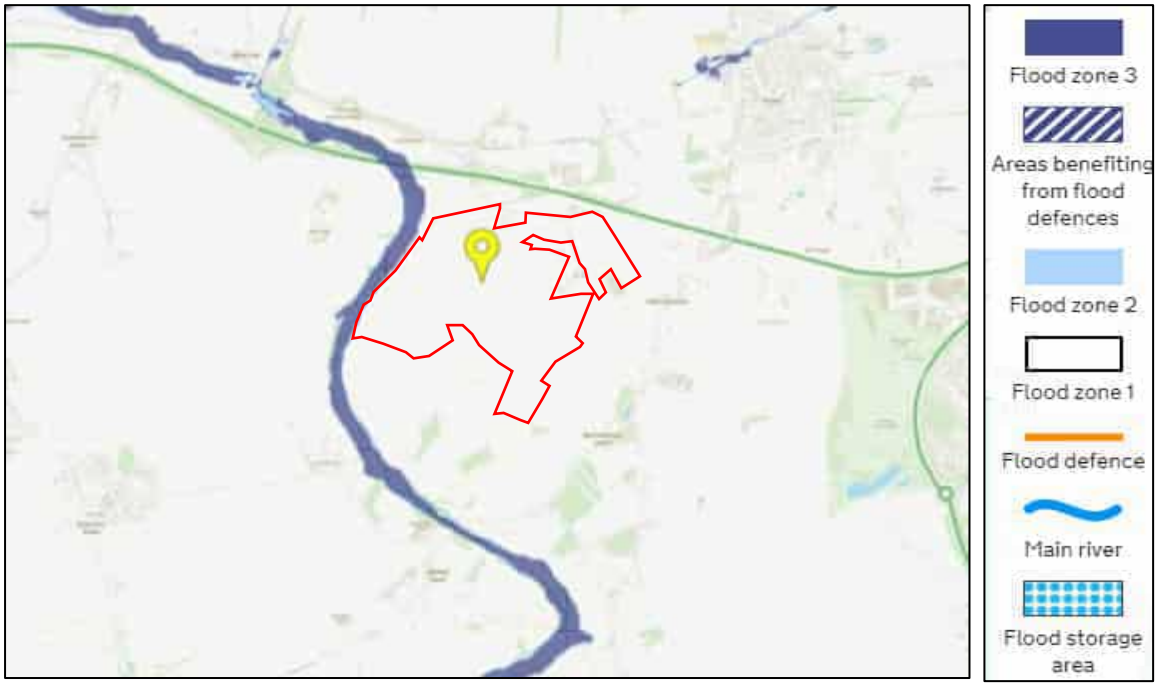
Fluvial Flooding

5.6 The closest watercourse to the site is the River Ter, bounding the west side of the site. There is a field drain ditch located south of the site.

5.7 This mapping (Figure 5.1) indicates that the site is located within Flood Zone 1 an area with a low probability of flooding occurring (< 1 in 1000 years). The EA Defra Spatial Map does not make any reference to historical flooding occurring at the site.

5.8 Given the above Fluvial Flood risk to the site is **Very Low.**

Figure 5.1 – Environment Agency Tidal / Fluvial Flooding Map

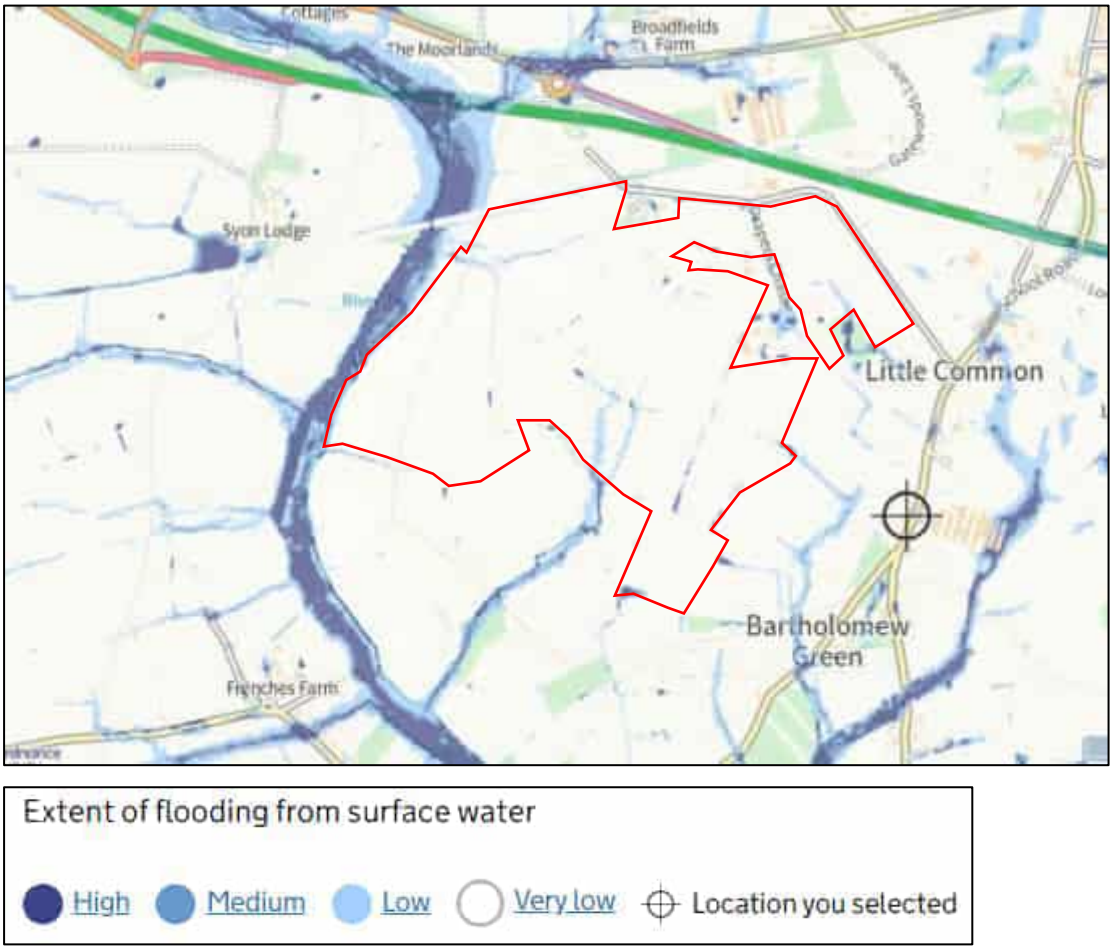


Pluvial Flooding

5.9 The Surface Water (Pluvial) Flood Map (Figure 5.2) indicates the majority of the site to be at very low risk from surface water flooding. However, there are few areas across the site shown to be at some risk of surface water flooding. There are few isolated ponds within the site that are shown to be at low risk from surface water flooding. The flooding is most likely due to the locally lower lying topography in that area with flood depths below 300mm.

5.10 The River Ter that bounds the west side of the site is shown to be in medium risk from surface water flooding with flood depths over between 300-900mm and flow velocities over 0.25 m/s. However, the flooding is not shown to spread across into the site boundary.

Figure 5.2 – Environment Agency Surface Flooding Map



5.11 Therefore, the development is considered to be at **Low** risk of flooding from surface water flows.

Historic Flooding

5.12 The Uttlesford District Council Level 1 SFRA notes historical flooding that occurred within the district:

- November 1875, August 1917, September 1960 - Saffron Walden

- Summer 1987, June 2007 - Ashdon
- October 2001 - Clavering, Manuden, Stansted Mountfitchet, Great Chesterford, Littlebury, Newport, Saffron Walden, Little Walden, Great Dunmow, Ashdon
- January 2003 - Widespread across district.
- February 2014 - Saffron Walden, Newport, Wendens Ambo, Debden, Stansted, Arkesden, Ashdon, Quendon, Henham, Stansted Mountfitchet
- November 2014 - Clavering, Berden, Manuden, Wimbish

5.13 The Uttlesford District Council Strategic Flood Risk Assessment makes no reference of flooding occurring at the site or adjacent land. The Braintree District Council SFRA makes no reference of flooding occurring at the site.

5.14 It is therefore considered that historic flooding at this site is **Low.**

Groundwater Flooding

5.15 Geological data held by the British Geological Survey (BGS) indicates that the bedrock geology underlying the site is London Clay Formation – clay, silt, sand. Superficial deposits overlying the site comprise of Lowestoft Formation – Diamicton.

5.16 The Soilscape soils data shows the site to be 'Lime-rich loamy and clayey soils with slightly impeded drainage'.

5.17 The Uttlesford District Council SFRA makes no reference of groundwater flooding occurring at the site. The Braintree District SFRA makes no reference of groundwater flooding occurring at the site.

5.18 It is therefore considered that flooding from this source is **Low.**

Flooding from Sewers

5.19 The Uttlesford District Council SFRA does not note any postcodes starting with 'CM77' to have been affected by sewer flooding.

5.20 The Braintree District Council SFRA does not note any postcodes starting with 'CM77' to have been affected by sewer flooding.

5.21 Due to the topography of the surrounding area any flood water from private drainage of the sites surrounding would follow the local topography, draining further southwest of the site.

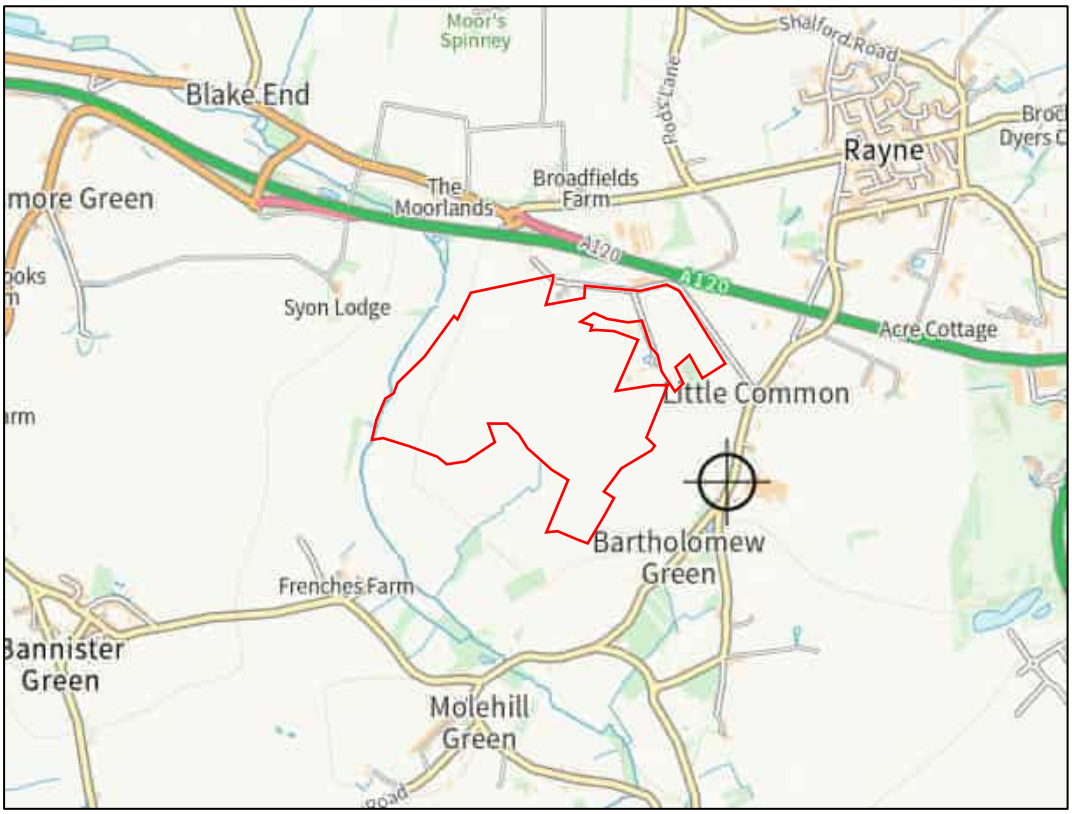
5.22 The risk of sewer flooding to the site is therefore considered to be **Low.**

Flooding from Artificial Sources

5.23 From the EA map there are no reservoirs or canals in the vicinity of the site.

5.24 Therefore, the development is considered to be at **Very Low** risk of flooding from reservoirs, canals and artificial sources.

Figure 5.3 – Environment Agency Reservoir Flooding Map



Post Development Residual Flood Risk Summary

5.25 The risk of flooding is summarised in Table 5.1:

Table 5.1 – Flood Risk to the Site from All Sources

Flood Source	Flood Risk	Mitigation/Comments
Tidal	Very Low	• The site is located entirely in Flood Zone 1.
Fluvial	Very Low	• The site is located entirely in Flood Zone 1.
Pluvial	Low	• The EA flood map shows the site to be at low risk from surface water flooding.
Historic	Low	• The EA Defra Spatial Map makes no reference of historic flooding occurring at the site. • No mitigation measures are required.
Groundwater	Low	• The site is underlain by Bedrock geology of London Clay Formation. • The soilscape notes the ground to be' Lime-rich loamy and clayey soils with slightly impeded drainage'
Sewers	Low	• There are no records of sewer flooding occurring at the site.
Artificial	Very Low	• There is no flood risk shown from reservoirs to the site.

Access & Egress

5.26 The site is unmanned and will only be visited for maintenance purposes, therefore in the event of an extreme event occurrence, access and egress to/from the site can be easily achieved to higher parts of the site as necessary.

6. PROPOSED DRAINAGE STRATEGY

6.1 The topographical survey provided in Appendix A shows significant falls across the various parcels of land within the site boundary towards existing field ditches. The depths of these ditches average at approximately 1m so would therefore be considered significant to the flow of surface water.

6.2 The ditches connect with one another and direct flows towards the River Ter. Any proposed solar panels would allow water to fall to the ground and migrate towards these existing field ditches and eventually towards the River Ter. Some surface water will migrate into the ground via infiltration.

6.3 The proposed development would not increase impermeable area on site. The proposed access tracks will be a combination of mown grass paths, grass reinforcement and gravel. All three are permeable in nature and do not alter the existing drainage characteristics of the site.

6.4 Pollutants arising from surface water runoff on the solar panels will be negligible, once onto the existing grassed field it will be treated in a similar way to swales and basin prior to final discharge into the River Ter.

6.5 Consideration should be made in to the control of surface water and pollutants during the construction stage of the development.

7. SUMMARY

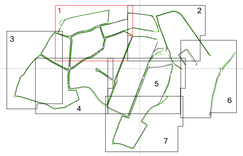
7.1 The site area is approximately 73 Ha in size and comprises entirely of greenfield area.

7.2 The proposed development is for the installation and operation of a solar farm facility with an output of up to 49.9MWp together with all associated works, equipment and necessary infrastructure.

7.3 The site lies entirely in Flood Zone 1, the NPPF classes Solar Farms as essential utility infrastructure and poses no increase in the risk of flooding from all sources.

7.4 The proposal is considered to accord with the requirements of the National Planning Policy Framework (NPPF) with residual risk to the site fully mitigated, and as such considered low risk.

Appendix A – Topographical Survey



N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE
0m 12.5m 25m 50m

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
PGM1	571752.049	221064.880	76.085	PGM
PGM2	571584.318	221871.242	72.985	PGM
PGM3	571584.318	221871.242	72.985	PGM
PGM4	571446.461	221390.285	72.295	PGM
PGM5	571446.461	221390.285	72.295	PGM
PGM6	571531.014	221064.910	77.197	PGM
PGM7	571428.890	221870.602	76.355	PGM
PGM8	571457.897	221985.508	76.890	PGM
PGM9	571783.116	222043.806	76.991	PGM
PGM10	571783.116	222043.806	76.991	PGM
PGM11	571153.989	221868.246	70.011	PGM
PGM12	571157.071	221645.082	73.855	PGM
PGM13	571046.855	221365.697	71.854	PGM
PGM14	571633.156	221698.689	75.670	PGM
PGM15	571633.156	221698.689	75.670	PGM
A1	572313.875	221501.397	72.653	Null
A2	572228.371	221467.546	73.101	Null
A3	572412.071	221614.032	75.023	Null
A4	572262.393	221514.349	72.977	Null
A5	572355.048	221710.368	74.318	Null
A6	572352.495	221710.353	73.850	Null

Cropped field
Cropped field
Cropped field
Cropped field
Cropped field
Cropped field
Cropped field

LEGEND

AV	Air Valve	CY	Cutley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Borehole	IC	Inspection Cover	TP	Telegraph Pole
BT	Bore Hole	KL	Kerb Level	TL	Traffic Light
BT	Telecom Cover	KS	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	TS	Mumbhard TS
CL	Channel Level	MH	Manhole	TC	Cable TV
EY	Electricity Cover	MKxTyp	Mark/Type) Marker Post	TV	Cable TV Cover
EOT	End of Trees	OH	Overhead Cable	TWL	Top of Wall Level
EP	Electricity Pole	PB	Post Box	UTL	Urvidis to Lift
FL	Fence Level	PC	Post Cover	UTS	Urvidis to Survey
FFL	Finished Floor Level	RNP	Road Name Plate	UTT	Urvidis to Trace
FH	Fire Hydrant	SC	Stop Cock (Water)	VP	Vent Pipe
GL	Ground Level	SG	Sign Gantry	WL	Water Level
GP	Gate Post	SP	Sign Post	WL	Water Level
GPR	Ground Penetrating Radar	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

SURVEY STATION	GATE	BANK	FOLIAGE	CLIFF

50m MAJOR CONTOUR
MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd
UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
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EMAIL : admin@brunelsurveys.com
WEB : www.brunelsurveys.com
TEL : 01793 784700
Land, Building and Utility Surveyors

CLIENT

Pegasus

JOB TITLE

Topographical Survey

Drapers Farm
Drapers Chase
Rayne
Braintree
CM77 6SN

Sheet 1 of 7

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

23628-500-01

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
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PGM2	571752.049	221064.890	76.085	PGM
PGM3	571994.318	221301.242	72.980	PGM
PGM4	571446.461	221390.285	72.295	PGM
PGM5	571446.461	221390.285	72.295	PGM
PGM6	571531.014	221564.410	77.197	PGM
PGM7	571428.899	221870.602	76.355	PGM
PGM8	571457.697	221985.508	76.890	PGM
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PGM10	571783.116	222043.806	76.991	PGM
PGM11	571153.989	221868.246	70.011	PGM
PGM12	571157.071	221645.082	73.855	PGM
PGM13	571046.850	221365.697	71.854	PGM
PGM14	571633.156	221698.689	75.670	PGM
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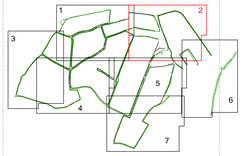

N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE
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Cropped field
Cropped field
Cropped field
Area not required
Cropped field
Trees and bushes (Pond inside)
Trees and bushes (Pond inside)
Trees and bushes (Pond inside)
Cropped field

LEGEND

AV	Air Valve	CY	Gulley	SVF	Soil Vent Pipe
BH	Bore Hole	CH	Hedge	TBM	Temporary Bench Mark
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BS	Bus Stop	IL	Invert Level	TP	Telegraph Pole
CB	Communication Chamber	LP	Lamp Post	TR	Traffic Rail
CL	Cover Level	LC	Lamp Column	ETI	Illuminated TS
DP	Down Pipe	MH	Manhole	TY	Toss Toy
EOT	End of Trench Cover	OP	Observation Post	TC	Top of Bank Corner
EOT	End of Trees	OH	Overhead Cable	THL	Top of Hill Level
EP	Electricity Pole	PB	Post Box	UTL	Unable to Lift
FH	Fire Hydrant	PB	Post Box	UTS	Unable to Survey
FFL	Finished Floor Level	RWP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SC	Stop Cock (Water)	VP	Vent Pipe
GP	Gate Post	SP	Sign Post	WT	Water Tank Top
GP	Gate Post	SP	Sign Post	WL	Water Level
GPR	Ground Penetrating Radar	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

SURVEY STATION | GATE | BANK | FOLIAGE | CLIFF

50m MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd
UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
WATCHFIELD, SWINDON, WILTSHIRE, SN6 8TY
EMAIL : admin@brunelsurveys.com
WEB : www.brunelsurveys.com
TEL : 01793 784700
Land, Building and Utility Surveyors

CLIENT

Pegasus

JOB TITLE

Topographical Survey

Drapers Farm
Drapers Chase
Rayne
Braintree
CM77 6SN

Sheet 2 of 7

REVISIONS

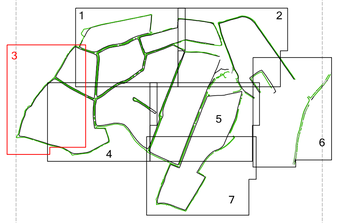
SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.
23628-500-01

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
PGM1	571752.049	221664.860	76.085	PGM
PGM2	571701.104	221655.581	72.350	PGM
PGM3	571594.518	221301.242	72.980	PGM
PGM4	571446.461	221390.285	72.295	PGM
PGM5	571367.009	221654.434	75.092	PGM
PGM6	571631.414	221894.810	77.197	PGM
PGM7	571428.690	221870.602	76.355	PGM
PGM8	571457.697	221985.508	76.890	PGM
PGM9	571783.116	222043.806	76.991	PGM
PGM10	571382.962	221968.485	75.061	PGM
PGM11	571165.989	221888.266	70.011	PGM
PGM12	571157.071	221645.082	73.855	PGM
PGM13	571046.850	221365.697	71.854	PGM
PGM14	571933.156	221698.689	75.670	PGM
PGM15	571815.468	222041.980	76.977	PGM
A1	572213.875	221337.397	72.653	Nail
A2	572228.371	221467.546	73.101	Nail
A3	572412.177	221814.032	75.022	Nail
A4	572262.393	221574.349	72.977	Nail
A5	572293.848	221654.990	74.266	Nail
A6	572350.495	221710.353	73.850	Nail

N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1



SCALE

0m 12.5m 25m 50m

Cropped field

Cropped field

Cropped field

Cropped field

LEGEND

AV	Air Valve	GY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	Ht	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BS	Bus Stop	IL	Invert Level	TP	Telegraph Pole
BT	Cable TV Cover	Kk	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	ITS	Illuminated TS
DP	Down Pipe	MH	Manhole	TT	Tree Top
EY	Electricity Cover	MKv	Type) Marker Post	TV	Cable-TV Cover
EOT	End of Trace	OH	Overhead Cable	TWL	Top of Wall level
EP	Electricity Pole	PB	Post Box	UTL	Unable to Lift
ER	Earth Rod	RE	Rodding Eye	UTS	Unable to Survey
FFL	Finished Floor Level	RNP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SC	Stop Cock (Water)	VP	Vent Pipe
FP	Fence Post	SL	Silt Level	VT	Vegetation Top
GP	Gate Post	SP	Sign Post	WL	Water Level
GPR	Ground Penetrating Radar	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

STN1 SURVEY STATION · GATE · BANK · FOLIAGE · CLIFF

50m MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd
UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
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Pegasus

JOB TITLE

Topographical Survey

Drapers Farm
Drapers Chase
Rayne
Braintree
CM77 6SN

Sheet 3 of 7

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

23628-500-01

Cropped field

Cropped field

Cropped field

Cropped field

Cropped field

Cropped field

Trees and bushes (Pond inside)

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE
0m 12.5m 25m 50m

SURVEY STATIONS

Name	Easting	Northing	Height	Remark
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PGM2	571751.104	221209.583	72.350	PGM
PGM3	571691.534	221170.787	72.295	PGM
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PGM13	571046.850	221365.697	71.854	PGM
PGM14	571833.156	221098.689	75.670	PGM
PGM15	571815.408	222041.580	76.977	PGM
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A2	572228.373	221461.546	73.101	Nail
A3	572412.177	221814.032	75.022	Nail
A4	572262.993	221674.349	72.877	Nail
A5	572293.646	221654.980	74.266	Nail
A6	572350.606	221710.553	73.850	Nail

LEGEND

AV Air Valve	CV Cutley	SVP Soil Vent Pipe	
BL Bollard	HI Height	TAL Threshold Level	
BH Bore Hole	IC Inspection Cover	TL Traffic Light	
BT Bus Stop	KC Kerb Corner	TP Telegraph Pole	
BT Telecom Cover	KI Kerb Inlet	TS Traffic Sign	
CL Cover Level	LC Lamp Column	BTB Illuminated TS	
DP Down Pipe	MH Manhole	CP Cattle Grid	
EY Electricity Cover	MKx/yyc Marker Post	TV Cattle TV Cover	
EOT End of Truck	OH Overhead Cable	TWL Top of Wall Level	
FH Fire Hydrant	PC Pedestal	UC Unknown Cover	
ER Earth Rod	PE Pedding Eye	UTS Unsafe to Survey	
FFL Finished Floor Level	RMP Road Name Plate	UTT Unsafe to Trace	
FP Footpath Post	SA Survey Station(s)	VC Valve Cover	
FP Fence Post	SL SW Level	VT Vegetation Top	
GP Gate Post	SP Sign Post	WL Water Level	
GT Grid/Surface Gully	SV Stop Valve	WO Wash Out	
GV Gas Valve			

KEY

STN1 SURVEY STATION | GATE | BANK | HEDGE | CLIFF

50m MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

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Topographical Survey

Drapers Farm
Drapers Chase
Rayne
Braintree
CM77 6SN

Sheet 4 of 7

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.
23628-500-01

Cropped field

Trees and bushes
(Pond inside)

Cropped field

Cropped field

Area not safe to survey

Bee Hives

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE

0m 12.5m 25m 50m

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
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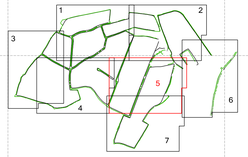

LEGEND

AV	Air Valve	CY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BT	Boundary	IL	Invert Level	TS	Traffic Light Stalk
BT	Telecom Cover	KI	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	BTB	Blumbleated TS
CP	Control Post	MH	Manhole	TV	Cable TV Box
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ER	Earth Rod Hole	PC	Pump Chamber	UP	Utility Pole
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FFL	Finished Floor Level	RNP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SA	Sign Attached	VC	Vent Cover
FP	Fence Post	SL	Sill Level	VT	Vegetation Top
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GR	Gas Governing Rate	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

STN1 SURVEY STATION | GATE | BANK | FOLIAGE | CLIFF

50m MAJOR CONTOUR

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Drapers Chase
Rayne
Braintree
CM77 6SN

Sheet 5 of 7

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

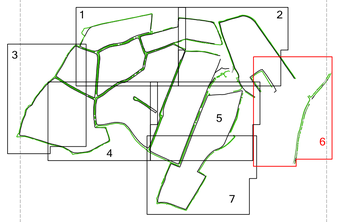
23628-500-01

Cropped field

Trees and bushes
(Pond inside)

School Road

Mill Lane



N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE

0m 12.5m 25m 50m

SURVEY STATIONS

Name	Easting	Northing	Height	Remark
PGM1	571752.049	221664.860	76.085	PGM
PGM2	571701.104	221265.581	72.350	PGM
PGM3	571594.518	221301.242	72.980	PGM
PGM4	571446.461	221390.285	72.295	PGM
PGM5	571367.009	221654.434	75.092	PGM
PGM6	571631.414	221894.810	77.197	PGM
PGM7	571428.690	221870.602	76.355	PGM
PGM8	571457.697	221985.508	76.890	PGM
PGM9	571783.116	222043.806	76.991	PGM
PGM10	571382.962	221968.485	75.061	PGM
PGM11	571165.989	221888.266	70.011	PGM
PGM12	571157.071	221645.082	73.855	PGM
PGM13	571046.850	221365.697	71.854	PGM
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A2	572228.371	221467.546	73.101	Nail
A3	572412.177	221814.032	75.022	Nail
A4	572662.393	221574.349	72.977	Nail
A5	572293.848	221654.990	74.266	Nail
A6	572350.495	221710.353	73.850	Nail

LEGEND

AV	Air Valve	GY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BS	Box Stop	IL	Invert Level	TP	Telegraph Pole
BT	Telecom Cover	KI	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	ITS	Illuminated TS
DP	Down Pipe	MH	Manhole	TT	Tree Top
EY	Electricity Cover	MK	(Type) Marker Post	TV	Cable TV Cover
EOT	End of Trace	OH	Overhead Cable	TWL	Top of Wall level
EP	Electricity Pole	PB	Post Box	UTL	Unable to Lift
ER	Earth Rod	RE	Rodding Eye	UTS	Unable to Survey
FFL	Finished Floor Level	RNP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SC	Stop Cock (Water)	VP	Vent Pipe
FP	Fence Post	SL	Silt Level	VT	Vegetation Top
GP	Gate Post	SP	Sign Post	WL	Water Level
GPR	Ground Penetrating Radar	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

STN1 SURVEY STATION · GATE · BANK · FOLIAGE · CLIFF

50m — MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd

UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
WATCHFIELD, SWINDON, WILTSHIRE, SN6 8TY

EMAIL : admin@brunelsurveys.com
WEB : www.brunelsurveys.com
TEL : 01793 784700

Land, Building and Utility Surveyors

CLIENT

Pegasus

JOB TITLE

Topographical Survey

Drapers Farm
Drapers Chase
Rayne
Braintree
CM77 6SN

Sheet 6 of 7

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

23628-500-01

Cropped field

Area not safe to survey

Bee Hives

Cropped field

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
PGM1	571752.049	221064.890	76.085	PGM
PGM2	571644.960	221221.242	72.980	PGM
PGM3	571594.318	221301.242	72.980	PGM
PGM4	571446.461	221390.285	72.295	PGM
PGM5	571351.414	221564.410	77.197	PGM
PGM6	571531.414	221564.410	77.197	PGM
PGM7	571428.899	221870.602	76.355	PGM
PGM8	571457.697	221985.508	76.890	PGM
PGM9	571783.116	222043.806	76.991	PGM
PGM10	571655.989	221886.266	70.011	PGM
PGM11	571155.989	221886.266	70.011	PGM
PGM12	571157.071	221645.082	73.855	PGM
PGM13	571046.850	221365.697	71.854	PGM
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PGM15	571633.156	221698.689	75.670	PGM
A1	572215.875	221021.397	72.653	Null
A2	572228.371	221467.546	73.101	Null
A3	572412.071	221614.032	75.022	Null
A4	572292.393	221514.349	72.373	Null
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N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE

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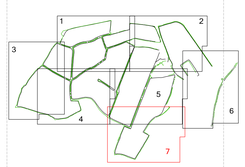

LEGEND

AV	Air Valve	CY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BT	Boundary	IL	Invert Level	TS	Traffic Light Stn
BT	Telecom Cover	KS	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	BTS	Illuminated TS
CP	Control Point	MH	Manhole	TV	Cable TV Box
CY	Elec/Mis Cover	MK	Mis.Cpoint, Marker Post	TV	Cable TV Cover
ECT	End of Trunk	OH	Overhead Cable	TWL	Top of Wall Ironwk
EP	Electric Pole	PC	Post Office	UTL	Unidis to Line
ER	Earth Rod	RE	Reading Eye	UTS	Unidis to Survey
FFL	Fitt&Hed Floor Level	RNP	Road Name Plate	UTT	Unidis to Trace
FH	Fire Hydrant	SC	Sewer Cover(Foul)	VC	Valve Cover
FP	Fence Post	SL	Silt Level	VT	Vegetation Top
GP	Gate Post	SP	Slip Post	WL	Water Level
GPT	Ground Pumping Rate	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

STN1 — SURVEY STATION; GATE; BANK; FOLIAGE; CLIFF

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MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd
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CLIENT

Pegasus

JOB TITLE

Topographical Survey

Drapers Farm
Drapers Chase
Rayne
Braintree
CM77 6SN

Sheet 7 of 7

REVISIONS

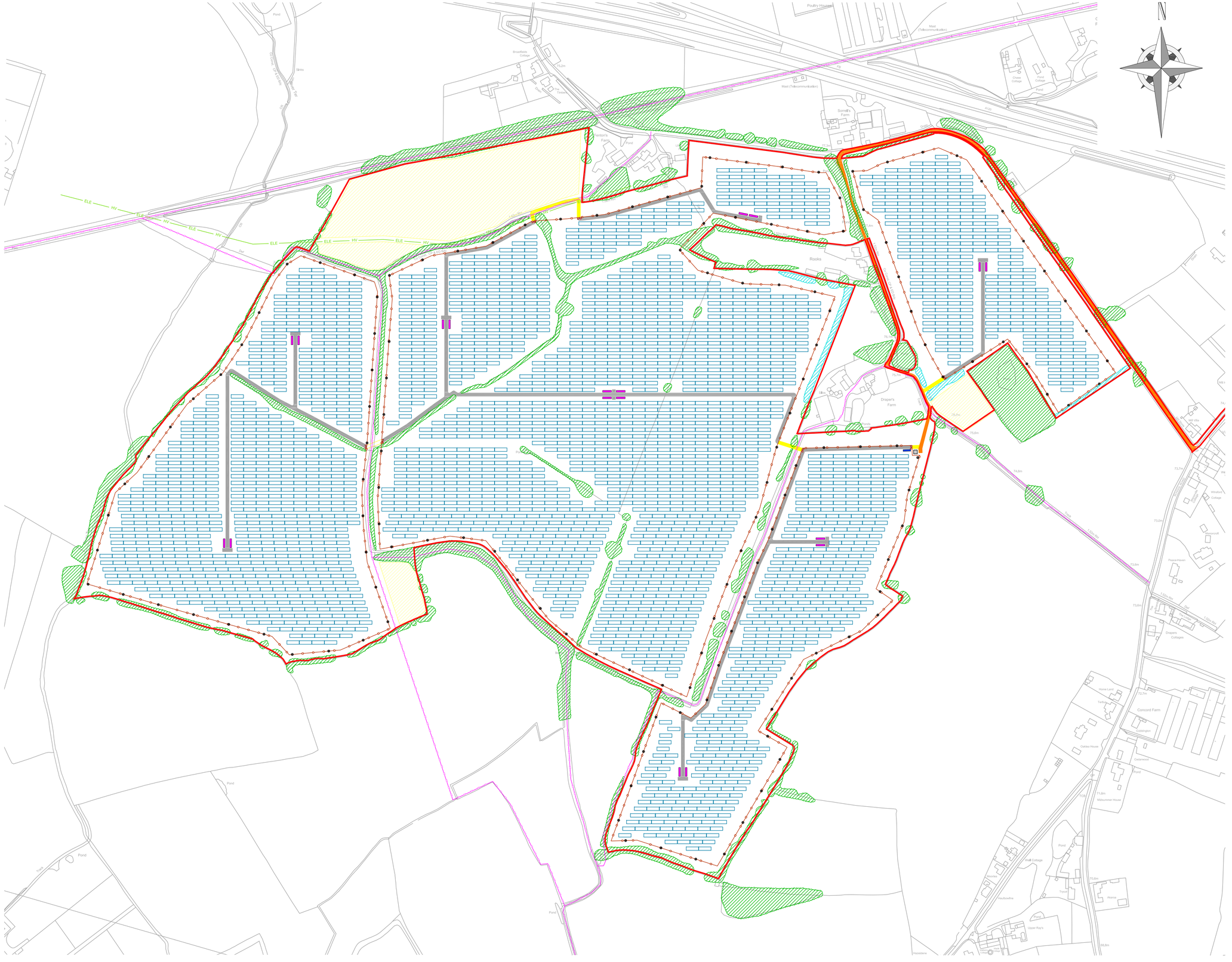
SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

23628-500-01

Appendix B – Site Plan

A1



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Scaled dimensions must not be taken from this drawing. All dimensions are to be confirmed on site prior to commencement of work

Revisions:

Revision	Date	Revision Notes	Drawn	Inspected
01	18.07.22	First Issue	JM	MS
02	01.08.22	Amended	JM	MS
03	03.08.22	Amended	JM	MS

LEGEND:

- PROPOSED SITE
- DNO ACCESS
- CONSTRUCTION AND MAINTENANCE ACCESS
- SITE ACCESS
- FOOTPATH
- BRIDLEWAY
- PERIMETER FENCELINE
- EXISTING O/H HV CABLE ROUTE
- EXISTING VEGETATION
- PROPOSED VEGETATION
- BIO DIVERSITY AREA

SITE INFRASTRUCTURE:

- 33kV DNO SUBSTATION
- PV SOLAR MODULES
- SECURITY GATE
- CCTV CAMERA
- INVERTER
- CUSTOMER SWITCHGEAR

1 Draper's Farm Site Layout Plan

Scale: 1:2500@A1

0 50 100 150 200 250m

SCALE 1:2500

Project:

Draper's Farm Solar

Land At Draper's Farm, Dunmow, CM6 3JZ

Consultant:

Bluestone Energy Ltd

Bluestone Energy Limited
44-50 High Street, Rayleigh, Essex, SS6 7EA

Tel: +44 (0) 207 417 1705
Mob: +44 (0) 7737651384

Drawn by:

CADmando 2D, 3D CAD & BIM SERVICES

CADmando Design & Draughting Solutions Ltd
The Long Barn, The Courtyard, Severn Drive, Tewkesbury Business Park, GL20 8GD

Tel: +44 (0) 1684 850019
Mob: +44 (0) 7814436910

Status:

PLANNING

Drawing Title:

Draper's Farm Site Layout Plan

Drawn:	Checked:	First Issued:
JM	MS	18.07.2022

Project Code: **BSE002-** Drawing Number: **PL-01**

Sheet Size:	Scale:	Revision:
A1	**1:2500**	**03**

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FLOOD RISK ASSESSMENT & SURFACE WATER DRAINAGE STRATEGY

PROPOSED SOLAR FARM DEVELOPMENT, RAYLEIGH'S FARM, FELSTED, UTTLESFORD

On behalf of Bluestone Energy Ltd
Date: 28th October 2022 | Pegasus Ref: P22-1322 – Author: Maja Raicevic

Document Management.

Version	Date	Author	Checked/ Approved by:	Reason for revision
Revision A	28/10/2022	Maja Raicevic	Luke Johnson	First Issue

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TABLE 6.1:	ASSESSMENT OF SUDS SUITABILITY

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APPENDIX B	SITE PLAN
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APPENDIX E	PROPOSED DRAINAGE STRATEGY LAYOUT

1. INTRODUCTION

Background

1.1 Pegasus Planning Group Ltd has been appointed by Bluestone Energy Ltd (herein referred to as "the Applicant") to undertake a Flood Risk Assessment (FRA) for a proposed Solar Farm development at Rayleigh's Farm, Felsted, Uttlesford.

1.2 This assessment considers the risks of all types of flooding to the site including tidal, fluvial, surface, historic, groundwater, sewer and artificial sources.

National and Local Policies

1.3 The National Planning Policy Framework (NPPF) states that a site-specific Flood Risk Assessment (FRA) will be required for proposals:

a) that are greater than 1 hectare in area within Flood Zone 1;

b) for all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3;

c) in an area within Flood Zone 1 which has critical drainage problems; and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.

d) in an area within Flood Zone 1 identified in a Strategic Flood Risk Assessment as being at increased flood risk in the future.

e) in an area in Flood Zone 1 that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

1.4 The site area is approximately 111.9 hectares in size and within Flood Zone 1, therefore, a full FRA is required.

1.5 As of April 2015, the legislation for dealing with FRAs changed, with additional emphasis put on the use of Sustainable Drainage Systems (SuDS) within drainage schemes for new developments.

1.6 In February 2016, the Environment Agency (EA) introduced new guidance relating to climate change allowance, which has increased the percentage rate of change applied to the 1 in 100 year event scenario.

1.7 As such, any new application will require a surface water drainage scheme submitted to accompany all planning applications and will be required to demonstrate the use of SuDS within the design and should be in line with the requirements as set out within the National Planning Policy Framework Technical Guidance (NPPFTG).

1.8 The key objectives of the Uttlesford District Council Level 1 Strategic Flood Risk Assessment (May 2016, JBA Consulting) are:

- Critically review and update the 2008 SFRA, taking into account the latest flood risk information and any updates to legislation and policy;
- Provide an individual flood risk analysis of the Areas of Search identified within the district as part of the Local Plan preparation.
- Provide mapping showing the Flood Zones for planning and flood risk from other sources in accordance with the provision of national flood risk guidance.

2. EXISTING SITE AND HYDROLOGY

Site Location & Existing Conditions

2.1 The site area is approximately 111.9 Ha in size and comprises entirely of greenfield area.

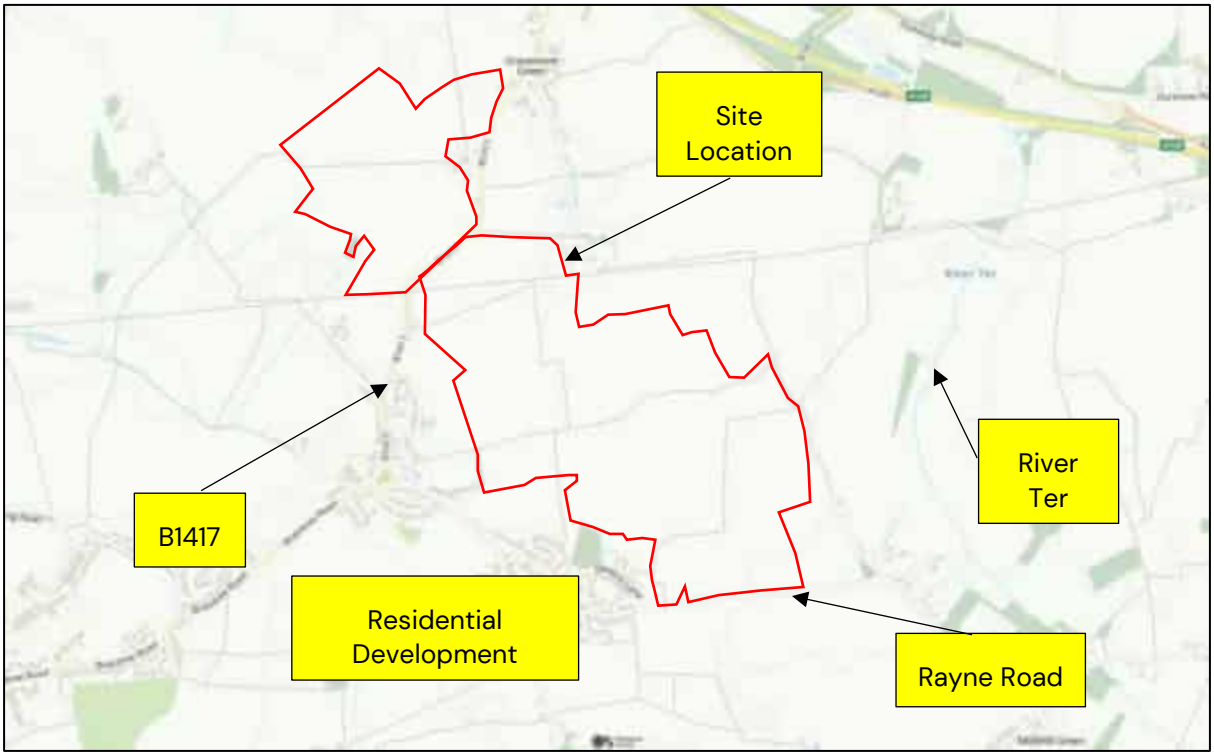
2.2 The site is entirely arable land mainly bordered by hedgerows. The site is predominantly bounded by undeveloped land to all sides. Further to the north side is the A120 road, there is a field drain ditch and undeveloped land to the west side, residential developments, and Rayne Road to the south side and further to the east side is the River Tar.

2.3 Approximate site co-ordinates are E: 569556; N: 220875, with nearest post code CM6 3NW.

2.4 The Environment Agency flood map shows the site as lying within Flood Zone 1 (< 1 in 1000 years probability of flooding).

2.5 A copy of the EA flood map can be found at Section 5 of this report.

Figure 2.1 – Site Location



2.6 Levels taken from a topographical survey undertaken by Brunel Surveys Ltd (dated July 2022. REF: 23629-500-01) indicate the site to have south westerly fall with a high point of 79.24m AOD in the northeast corner of the site to a low point of 67.32m AOD in the far south side of the site. A copy of this topographical survey can be found in **Appendix A**.

Existing Drainage and Hydrology

2.7 The closest main watercourse to the site is the River Ter, located around 300 m east of the site. There is a field drain ditch running across the northern portion of the site.

2.8 The site is currently a greenfield area, therefore it is unlikely that there is an existing drainage network running in the sites surrounding.

2.9 The site consists of multiple existing field ditches running along the boundary each field (noted on the topographical survey sheets) within the proposed development, these provide drainage for any overland flows that have not be absorbed into the ground via infiltration.

2.10 Geological data held by the British Geological Survey (BGS) indicates that the bedrock geology underlying the site is London Clay Formation – clay, silt, sand. Superficial deposits overlying the site comprise of Lowestoft Formation – Diamicton.

2.11 The Soilscape soils data shows the site to be 'Lime-rich loamy and clayey soils with slightly impeded drainage'.

3. PROPOSED DEVELOPMENT

3.1 The proposed development is for the installation and operation of a solar farm facility with an output of up to 49.9MWp together with all associated works, equipment, and necessary infrastructure.

3.2 The access road will be off the existing Rayne Road bounding the south side of the site.

3.3 A copy of the proposed site layout can be found in **Appendix B**.

4. DEVELOPMENT VULNERABILITY AND FLOOD ZONE CLASSIFICATION

National Planning Policy Framework (NPPF)

4.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.

4.2 NPPF requires that, as part of the planning process:

• A 'site specific' Flood Risk Assessment will be undertaken for any site that has a flood risk potential.

• Flood risk potential is minimised by applying a 'sequential approach' to locating 'vulnerable' land uses.

• Sustainable drainage systems are used for surface water disposal where practical.

• Flood risk is managed through the use of flood resilient and resistant techniques.

• Residual risk is identified and safely managed.

4.3 Table 1 of NPPF, categorises flood zones into:

• Zone 1- Low probability (< 1 in 1000 years)

• Zone 2- Medium probability (1 in 1000 - 1 in 100 years)

• Zone 3a- High probability (> 1 in 100 years)

• Zone 3b- The functional floodplain (>1 in 20 years)

4.4 The NPPF sets out a matrix indicating the types of development that are acceptable in different Flood Zones (see Table 4.1). The proposed development is a Solar Farm. The development is located in Flood Zone 1 and therefore, development in this area is considered appropriate.

4.5 NPPF also categorises types of development into Flood Risk Vulnerability groups. A Solar Farm development is classified within the NPPF as being 'Essential Infrastructure', which consists of essential utility infrastructure.

Table 4.1 – NPPF Guidance

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required	✓	✓	✓
Zone 3a	Exception Test Required	✗	Exception Test Required	Exception Test Required	✓
Zone 3b	Exception Test Required	✗	✗	✗	✓

5. SITE SPECIFIC FLOODING ISSUES AND EXISTING FLOOD RECORDS

5.1 Local Planning Authorities, (LPA) have a statutory obligation to consult the Environment Agency, (EA) on all applications in flood risk zones. The EA will consider the effects of flood risk in accordance with the NPPF.

National Planning Policy Framework (NPPF)

5.2 In accordance with the National Planning Policy Framework, this Flood Risk Assessment considers all sources of flooding including:

a) Tidal Flooding – from sea;

b) Fluvial Flooding – from rivers and streams;

c) Pluvial Flooding – overland surface water flow and exceedance;

d) Historic flooding – known historic flooding issues;

e) Groundwater flooding – from elevated groundwater levels or springs;

f) Flooding from sewers – exceedance flows from existing sewer systems; and

g) Artificial sources – reservoirs, canals etc.

Tidal Flooding

5.3 The Environment Agency website provides basic flood mapping data as a general guide to whether a site is at risk of flooding from various sources including rivers and seas for Flood Zoning classification.

5.4 This mapping (Figure 5.1) indicates that the site is located within Flood Zone 1 an area with a low probability of flooding occurring (< 1 in 1000 years).

5.5 Given the site's inland location and its high elevations (>67m AOD), the risk from tidal source of flooding is considered to be **Very Low.**

Fluvial Flooding

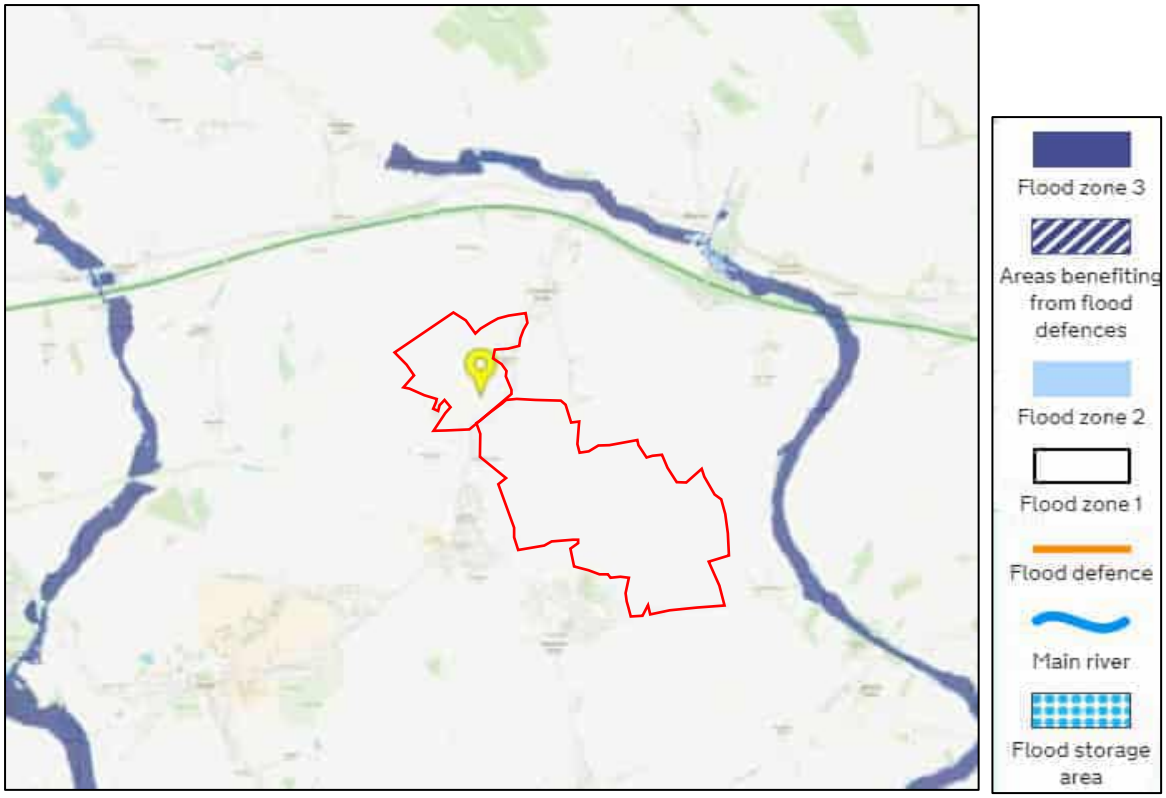
5.6 The closest main watercourse to the site is the River Ter, located around 300 m east of the site. There is a field drain ditch running across the northern portion of the site.

5.7 This mapping (Figure 5.1) indicates that the site is located within Flood Zone 1 an area with a low probability of flooding occurring (< 1 in 1000 years).

5.8 The EA Defra Spatial Map does not make any reference to historical flooding occurring at the site.

5.9 Given the above Fluvial Flood risk to the site is **Very Low.**

Figure 5.1 – Environment Agency Tidal / Fluvial Flooding Map



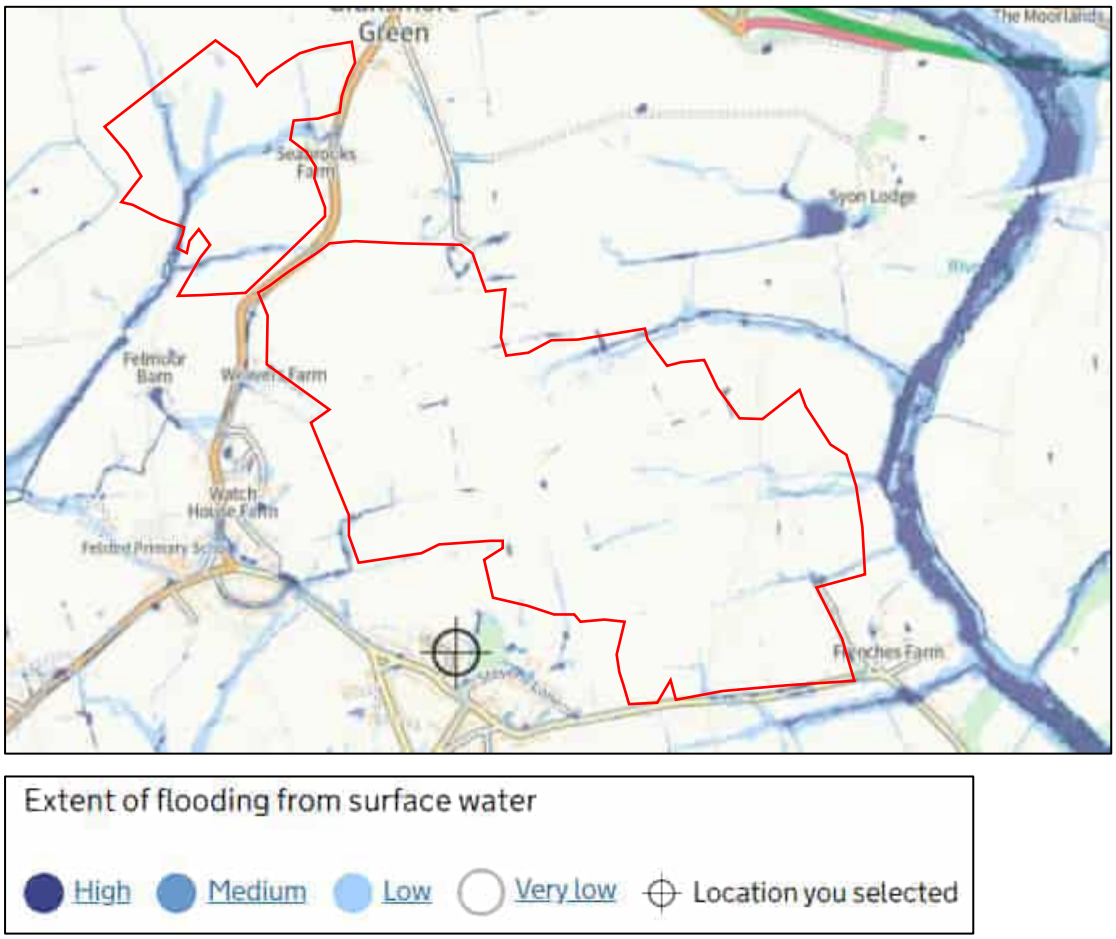
Pluvial Flooding

5.10 The Surface Water (Pluvial) Flood Map (Figure 5.2) indicates the majority of the site to be at very low risk from surface water flooding. However, there are few areas across the site shown to be at risk of surface water flooding.

5.11 The north side of the site is indicated to be at high risk of surface water flooding with flood depths ranging from 300mm to 900mm and flow velocities over 0.25 m/s. The flooding is linked to the field drain ditch running in a south westerly direction.

5.12 There are a few isolated ponds and sheet flows across the site indicated to be at low to high risk from surface water flooding. The flooding is caused due to the locally lower lying topography in that area.

Figure 5.2 – Environment Agency Surface Flooding Map



5.13 Therefore, the development is considered to be at **Low** risk of flooding from surface water flows.

Historic Flooding

5.14 The Uttlesford District Council Level 1 SFRA notes historical flooding that occurred within the district:

- November 1875, August 1917, September 1960 - Saffron Walden
- Summer 1987, June 2007 - Ashdon
- October 2001 - Clavering, Manuden, Stansted Mountfitchet, Great Chesterford, Littlebury, Newport, Saffron Walden, Little Walden, Great Dunmow, Ashdon
- January 2003 - Widespread across district.
- February 2014 - Saffron Walden, Newport, Wendens Ambo, Debden, Stansted, Arkesden, Ashdon, Quendon, Henham, Stansted Mountfitchet
- November 2014 - Clavering, Berden, Manuden, Wimbish

5.15 The Uttlesford District Council Strategic Flood Risk Assessment makes no reference historical flooding occurring at the site or adjacent land.

5.16 It is therefore considered that historic flooding at this site is **Low.**

Groundwater Flooding

5.17 Geological data held by the British Geological Survey (BGS) indicates that the bedrock geology underlying the site is London Clay Formation – clay, silt, sand. Superficial deposits overlying the site comprise of Lowestoft Formation – Diamicton.

5.18 The Soilscape soils data shows the site to be 'Lime-rich loamy and clayey soils with slightly impeded drainage'.

5.19 The Uttlesford District Council SFRA makes no reference of groundwater flooding occurring at the site.

5.20 It is therefore considered that flooding from this source is **Low.**

Flooding from Sewers

5.21 The Uttlesford District Council SFRA notes 2 properties with postcodes starting with 'CM6' to have been affected by external sewer flooding.

5.22 Due to the topography of the surrounding area any flood water from private drainage of the sites surrounding would follow the local topography, draining further southwest of the site.

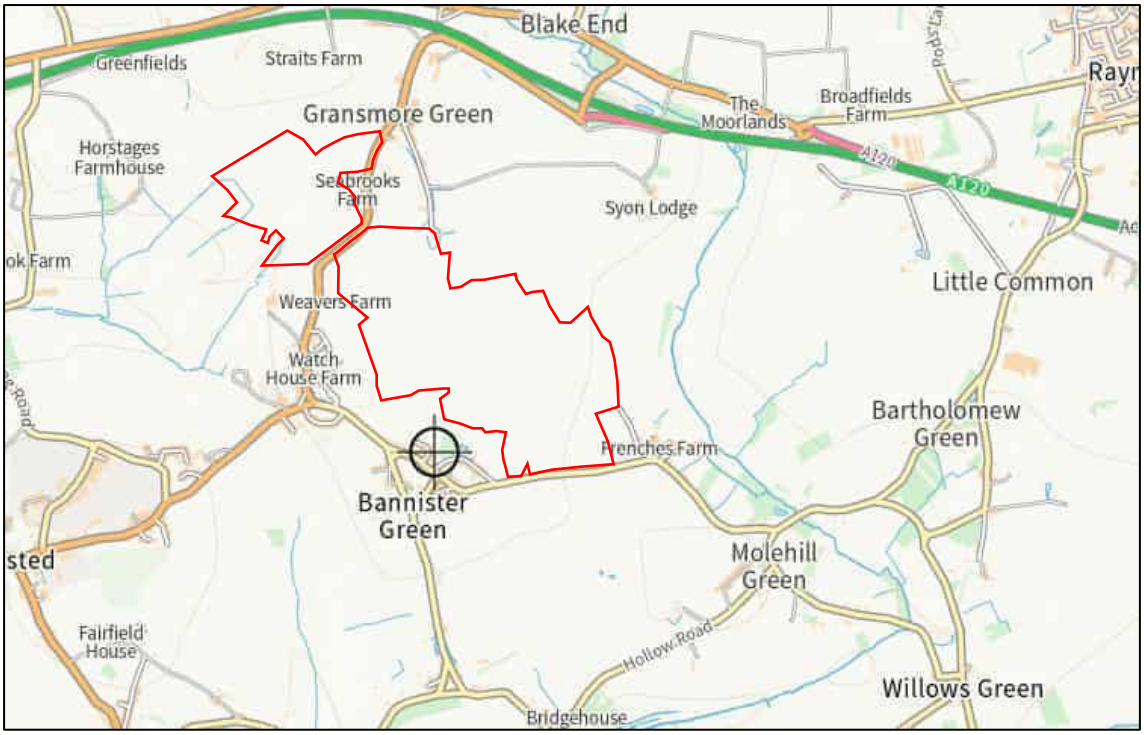
5.23 The risk of sewer flooding to the site is therefore considered to be **Low.**

Flooding from Artificial Sources

5.24 From the EA map there are no reservoirs or canals in the vicinity of the site.

5.25 Therefore, the development is considered to be at **Very Low** risk of flooding from reservoirs, canals and artificial sources.

Figure 5.3 – Environment Agency Reservoir Flooding Map



Post Development Residual Flood Risk Summary

5.26 The risk of flooding is summarised in Table 5.1:

Table 5.1 – Flood Risk to the Site from All Sources

Flood Source	Flood Risk	Mitigation/Comments
Tidal	Very Low	• The site is located entirely in Flood Zone 1.
Fluvial	Very Low	• The site is located entirely in Flood Zone 1.
Pluvial	Low	• The EA flood map shows the site to be at low risk from surface water flooding.
Historic	Low	• The EA Defra Spatial Map makes no reference of historic flooding occurring at the site. • No mitigation measures are required.
Groundwater	Low	• The site is underlain by Bedrock geology of London Clay Formation. • The soilscape notes the ground to be' Lime-rich loamy and clayey soils with slightly impeded drainage'
Sewers	Low	• There are no records of sewer flooding occurring at the site.
Artificial	Very Low	• There is no flood risk shown from reservoirs to the site.

Access & Egress

5.27 The site is unmanned and will only be visited for maintenance purposes, therefore in the event of an extreme event occurrence, access and egress to/from the site can be easily achieved to higher parts of the site as necessary.

6. PROPOSED DRAINAGE STRATEGY

6.1 The topographical survey provided in Appendix A shows significant falls across the various parcels of land within the site boundary towards existing field ditches. The depths of these ditches average at approximately 1m so would therefore be considered significant to the flow of surface water.

6.2 The ditches connect with one another and are assumed to direct flows towards the River Ter beyond the site boundary. Any proposed solar panels would allow water to fall to the ground and migrate towards these existing field ditches and eventually towards the River Ter. Some surface water will migrate into the ground via infiltration.

6.3 The proposed development would not increase impermeable area on site. The proposed access tracks will be a combination of mown grass paths, grass reinforcement and gravel. All three are permeable in nature and do not alter the existing drainage characteristics of the site.

6.4 Pollutants arising from surface water runoff on the solar panels will be negligible, once onto the existing grassed field it will be treated in a similar way to swales and basin prior to final discharge into the River Ter.

6.5 Consideration should be made into the control of surface water and pollutants during the construction stage of the development.

7. SUMMARY

7.1 The site area is 111.9 Ha in size and is entirely a greenfield area.

7.2 The proposed development is for the installation and operation of a solar farm facility with an output of up to 49.9MWp together with all associated works, equipment, and necessary infrastructure.

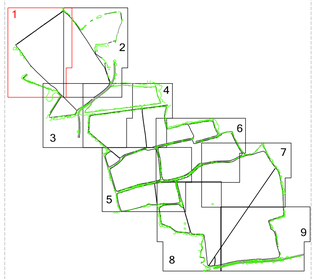
7.3 The site lies entirely in Flood Zone 1, the NPPF classes solar farm as essential utility infrastructure and poses no increase in the risk of flooding from all sources.

7.4 The proposal is considered to accord with the requirements of the National Planning Policy Framework (NPPF) with residual risk to the site fully mitigated, and as such considered low risk.

Appendix A – Topographical Survey

N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1



SCALE

0m 12.5m 25m 50m

Cropped field

Cropped field

Cropped field

Cropped field

Cropped field

Set Aside

Cropped field

Tree Canopy

Tree Canopy

Tree Canopy

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

field

Set Aside

Set Aside

Cropped field

Cropped field

Set Aside

Cropped field

B1417

B1417

SCALE
0m 12.5m 25m 50m

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
PGM1	570233.832	220769.123	68.723	PGM
PGM2	569873.241	220923.557	75.101	PGM
PGM3	569703.991	221264.475	77.478	PGM
PGM4	569958.087	221384.444	76.548	PGM
PGM5	569816.135	221514.605	76.248	PGM
PGM6	569816.135	221514.605	76.248	PGM
PGM7	569638.975	221603.527	77.355	PGM
PGM8	569479.029	221756.247	78.570	PGM
PGM9	569190.788	221787.120	75.521	PGM
PGM10	569184.797	221784.435	75.483	PGM
PGM11	569316.410	221784.435	75.483	PGM
PGM12	569316.410	221194.365	74.762	PGM
PGM13	569650.333	221351.045	77.011	PGM
PGM14	569664.019	221268.210	77.381	PGM
PGM15	569705.852	221122.002	76.892	PGM
PGM16	569868.664	221817.445	71.085	PGM
PGM17	569868.664	221817.445	71.085	PGM
PGM18	569168.442	221572.638	74.414	PGM
PGM19	569086.397	222233.568	76.184	PGM
LR1	570535.099	220830.761	65.758	Null
LR2	570508.291	220796.225	66.375	Null
LR3	570343.706	220758.647	68.356	Null
LR4	570343.706	220758.647	68.356	Null
LR5	570091.185	220749.433	71.208	Null
LR6	569928.757	220707.130	73.028	Null
LR7	569850.530	220704.447	73.496	Null
LR8	569281.750	221863.658	70.603	Null
LR9	569281.750	221863.658	70.603	Null
LR9A	569173.810	221768.284	75.027	Null
LR10	569073.163	221711.269	76.620	Null
LR11	569082.538	221578.824	74.642	Null

LEGEND

AV	Air Valve	GY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BS	Bus Stop	IL	Invert Level	TP	Telegraph Pole
CC	Chamber Cover	KB	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	ITS	Illuminated TS
DP	Down Pipe	MH	Manhole	TT	Tree Top
EY	Electricity Cover	MkrType	Marker Post	TV	Cable TV Cover
EOT	End of Trace	OH	Overhead Cable	TWL	Top of Wall level
EP	Electricity Pole	PB	Post Box	UTL	Unable to Lift
ER	Earth Rod	RE	Rodding Eye	UTS	Unable to Survey
FFL	Finished Floor Level	RNP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SC	Stop Cock (Water)	VP	Vent Pipe
FP	Fence Post	SL	Silt Level	VT	Vegetation Top
GP	Gate Post	SP	Sign Post	WL	Water Level
GPR	Ground Penetrating Radar	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

STN1 SURVEY STATION · GATE · BANK · FOLIAGE · CLIFF

50m MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd
UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
WATCHFIELD, SWINDON, WILTSHIRE, SN6 8TY
EMAIL : admin@brunelsurveys.com
WEB : www.brunelsurveys.com
TEL : 01793 784700
Land, Building and Utility Surveyors

CLIENT

Pegasus

JOB TITLE

Topographical Survey

Lord Rayleighs Farm
Felsted
near CM6 3EF

Sheet 2 of 9

REVISIONS

SCALE: A0 Sheet @ 1 to 500

DATE: July 2022 | SURVEYED BY: PJW JH JW SC TH

DRAWN BY: PJW | CHECKED BY: PJA

DRAWING No.: 23629-500-01

Cropped field

Set Aside

Set Aside

Set Aside

Cropped field

Cropped field

B1417

B1417

B1417

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE
0m 12.5m 25m 50m

SURVEY STATIONS

Name	Easting	Northing	Height	Remark
PQ80	559215.637	221763.121	69.103	PQM
PQ81	559215.637	221763.121	69.103	PQM
PQ83	559703.261	221354.470	77.478	PQM
PQ84	559703.261	221354.470	77.478	PQM
PQ85	559356.748	221166.472	76.851	PQM
PQ86	559618.105	221016.005	75.298	PQM
PQ87	559618.105	221016.005	75.298	PQM
PQ88	559735.629	221150.111	76.572	PQM
PQ89	559735.629	221150.111	76.572	PQM
PQM10	559145.177	221684.415	75.251	PQM
PQM11	559145.177	221684.415	75.251	PQM
PQM12	559316.010	221166.304	74.355	PQM
PQM13	559600.203	221361.849	71.011	PQM
PQM14	559600.203	221361.849	71.011	PQM
PQM15	559709.057	221153.004	74.856	PQM
PQM16	559709.057	221153.004	74.856	PQM
PQM17	559895.410	221745.895	75.873	PQM
PQM18	559895.410	221745.895	75.873	PQM
PQM19	559195.067	222333.008	74.414	PQM
PQM20	559195.067	222333.008	74.194	PQM
LP1	559626.701	221763.121	69.103	Tie
LP2	559626.701	221763.121	69.103	Tie
LP3	559626.701	221763.121	69.103	Tie
LP4	559626.701	221763.121	69.103	Tie
LP5	559626.701	221763.121	69.103	Tie
LP6	559626.701	221763.121	69.103	Tie
LP7	559626.701	221763.121	69.103	Tie
LP8	559626.701	221763.121	69.103	Tie
LP9	559626.701	221763.121	69.103	Tie
LP10	559626.701	221763.121	69.103	Tie
LP11	559626.701	221763.121	69.103	Tie
LP12	559626.701	221763.121	69.103	Tie
LP13	559626.701	221763.121	69.103	Tie
LP14	559626.701	221763.121	69.103	Tie
LP15	559626.701	221763.121	69.103	Tie
LP16	559626.701	221763.121	69.103	Tie
LP17	559626.701	221763.121	69.103	Tie
LP18	559626.701	221763.121	69.103	Tie
LP19	559626.701	221763.121	69.103	Tie
LP20	559626.701	221763.121	69.103	Tie
LP21	559626.701	221763.121	69.103	Tie
LP22	559626.701	221763.121	69.103	Tie
LP23	559626.701	221763.121	69.103	Tie
LP24	559626.701	221763.121	69.103	Tie
LP25	559626.701	221763.121	69.103	Tie
LP26	559626.701	221763.121	69.103	Tie
LP27	559626.701	221763.121	69.103	Tie
LP28	559626.701	221763.121	69.103	Tie
LP29	559626.701	221763.121	69.103	Tie
LP30	559626.701	221763.121	69.103	Tie
LP31	559626.701	221763.121	69.103	Tie
LP32	559626.701	221763.121	69.103	Tie
LP33	559626.701	221763.121	69.103	Tie
LP34	559626.701	221763.121	69.103	Tie
LP35	559626.701	221763.121	69.103	Tie
LP36	559626.701	221763.121	69.103	Tie
LP37	559626.701	221763.121	69.103	Tie
LP38	559626.701	221763.121	69.103	Tie
LP39	559626.701	221763.121	69.103	Tie
LP40	559626.701	221763.121	69.103	Tie
LP41	559626.701	221763.121	69.103	Tie
LP42	559626.701	221763.121	69.103	Tie
LP43	559626.701	221763.121	69.103	Tie
LP44	559626.701	221763.121	69.103	Tie
LP45	559626.701	221763.121	69.103	Tie
LP46	559626.701	221763.121	69.103	Tie
LP47	559626.701	221763.121	69.103	Tie
LP48	559626.701	221763.121	69.103	Tie
LP49	559626.701	221763.121	69.103	Tie
LP50	559626.701	221763.121	69.103	Tie

LEGEND

AV	Air Valve	GY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BT	BT Cover	IL	Invert Level	TP	Telegraph Pole
ST	Telecom Cover	KS	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	BTS	Illuminated TS
CH	Change Point	MH	Manhole	TR	Trial Hole
CY	Electricity Cover	MkPo	Mark Post / Marker Post	TV	Cable TV Cover
EOT	End of Truck	OH	Overhead Cable	TWL	Top of Wall Level
EP	Electricity Pole	PC	Post & Coil	UC	Unable to Close
ER	Earth Rod	RE	Reading Eye	UTS	Unable to Survey
FFL	Finished Floor Level	RNP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SA	Spot Above (Water)	VC	Vent Cover
FP	Fence Post	SL	Sill Level	VT	Vegetation Pot
GP	Gate Post	SP	Slipp Post	WL	Water Level
GPR	Ground Penetrating Radar	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

STN1 SURVEY STATION | GATE | BANK | FOLIAGE | CLIFF

50m MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd
UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
WATCHFIELD, SWINDON, WILTSHIRE, SN6 8TY
EMAIL : admin@brunelsurveys.com
WEB : www.brunelsurveys.com
TEL : 01793 784700
Land, Building and Utility Surveyors

CLIENT

Pegasus

JOB TITLE

Topographical Survey

Lord Rayleighs Farm
Felsted
near CM6 3EF

Sheet 3 of 9

REVISIONS

SCALE: A0 Sheet @ 1 to 500

DATE: July 2022

SURVEYED BY: PJW JH JW SC TH

DRAWN BY: PJW

CHECKED BY: PJA

DRAWING No.: 23629-500-01

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE
0m 12.5m 25m 50m

Set Aside
Set Aside
Set Aside
Cropped field
Cropped field
Cropped field
Cropped field
Cropped field
Cropped field

B1417
B1417

SURVEY STATIONS

Name	Eastings	Northings	Height	Remarks
PQ60	559370.637	220763.121	78.723	PQM
PQ61	559370.637	220763.121	78.723	PQM
PQ62	559702.281	221264.470	77.478	PQM
PQ63	559702.281	221264.470	77.478	PQM
PQ65	559556.146	221196.472	76.851	PQM
PQ66	559618.135	221115.205	75.298	PQM
PQ67	559618.135	221115.205	75.298	PQM
PQ68	559729.539	221152.127	76.572	PQM
PQ69	559729.539	221152.127	76.572	PQM
PQM10	559149.177	221069.415	75.291	PQM
PQM11	559149.177	221069.415	75.291	PQM
PQM12	559153.412	221156.305	74.355	PQM
PQM13	559600.203	221367.845	73.911	PQM
PQM14	559600.203	221367.845	73.911	PQM
PQM15	559704.612	221122.202	75.858	PQM
PQM16	559704.612	221122.202	75.858	PQM
PQM17	559895.418	221145.895	75.213	PQM
PQM18	559895.418	221145.895	75.213	PQM
PQM19	560356.261	222232.006	74.156	PQM
LR1	570630.359	229835.701	69.758	Trig
LR2	570630.359	229835.701	69.758	Trig
LR3	570261.133	229762.689	61.010	Trig
LR4	570243.795	229756.643	65.254	Trig
LR5	570243.795	229756.643	65.254	Trig
LR7	569552.797	229763.438	71.858	Trig
LR8	569346.704	229815.022	71.669	Trig
LR9	569346.704	229815.022	71.669	Trig
LR44	569173.810	221766.294	76.631	Trig
LR10	569573.192	221771.269	76.625	Trig
LR11	569452.014	221832.634	76.643	Trig

LEGEND

AV	Air Valve	GY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BT	Boundary Post	IL	Invert Level	TP	Telegraph Pole
BT	Telecom Cover	KS	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	BTS	Illuminated TS
CP	Control Post	MH	Manhole	TV	Cable TV Box
CY	Electricity Cover	MK/Cyclic	Marker Post	TV	Cable TV Cover
EOT	End of Trans	OH	Overhead Cable	THL	Top of Wall level
ER	Earth Rod Bore	PC	Post Code	UM	Unable to Map
ER	Earth Rod	RE	Reading Eye	US	Unable to Survey
FFL	Finished Floor Level	RMP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SA	Sewage Ventilator	VC	Vent Cover
FP	Fence Post	SL	Sill Level	VT	Vegetation Top
GP	Gate Post	SP	Sign Post	WL	Water Level
GP	Guard Rail/Railing Rail	SV	Stop Valve	WO	Water Out
GH	Gas Valve			WO	Wash Out

KEY

STN1 SURVEY STATION | GATE | BANK | FOLIAGE | CLIFF

50m MAJOR CONTOUR
MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd
UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
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WEB : www.brunelsurveys.com
TEL : 01793 784700
Land, Building and Utility Surveyors

CLIENT
Pegasus

JOB TITLE
Topographical Survey
Lord Rayleighs Farm
Felsted
near CM6 3EF
Sheet 4 of 9

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.
23629-500-01

Cropped field

Cropped field

Cropped field

Set Aside

Cropped field

Cropped field

Cropped field

Cropped field

Set Aside

Cropped field

Cropped field

N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE

0m 12.5m 25m 50m

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
PQ60	550370.631	221503.123	76.151	PQM
PQ61	550370.631	221503.123	76.151	PQM
PQ62	550702.287	221354.470	77.478	PQM
PQ63	550702.287	221354.470	77.478	PQM
PQ65	570556.148	221356.672	74.851	PQM
PQ66	550838.575	221515.001	75.268	PQM
PQ67	550838.575	221515.001	75.268	PQM
PQ68	550180.784	221761.245	76.521	PQM
PQ69	550180.784	221761.245	76.521	PQM
PQM10	580140.177	221664.415	76.251	PQM
PQM11	550174.410	221154.305	74.353	PQM
PQM12	550174.410	221154.305	74.353	PQM
PQM13	549930.222	221187.845	77.211	PQM
PQM14	549930.222	221187.845	77.211	PQM
PQM15	549754.621	221122.043	75.899	PQM
PQM16	549754.621	221122.043	75.899	PQM
PQM17	558990.410	220145.805	75.613	PQM
PQM18	558990.410	220145.805	75.613	PQM
PQM19	550580.267	222332.008	76.184	PQM
LR1	570630.069	22905.161	69.794	Trig
LR2	570630.069	22905.161	69.794	Trig
LR3	570261.114	220762.885	67.018	Trig
LR4	570261.114	220762.885	67.018	Trig
LR5	570261.163	220745.433	71.238	Trig
LR6	570261.163	220745.433	71.238	Trig
LR7	569953.542	220104.447	73.858	Trig
LR8	569936.764	219763.222	73.883	Trig
LR9	569936.764	219763.222	73.883	Trig
LR44	550173.410	221764.244	76.521	Trig
LR77	550174.410	221154.305	74.353	Trig
LR77	569953.536	219763.404	74.643	Trig

LEGEND

AV	Air Valve	CY	Gulley	SVP	Soil Vent Pipe
BH	Bore Hole	G	Inspection Cover	TC	Traffic Control
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BS	Bus Stop	IL	Invert Level	TP	Telegraph Pole
CC	Chamber Cover	LB	Letter Box	TR	Traffic Route
CL	Cover Level	LC	Lamp Column	TS	Blue/Amber TS
DP	Down Pipe	MH	Manhole	TT	Toss Toy
EC	Electric Box Cover	MK	Marker Post	UC	Unknown Cover
EOT	End of Kerb	MK	Overhead Cable	OHL	Top of Hall/Brow
EP	Electricity Pole	PB	Post Box	UTL	Unable to Lift
ER	Earth Rod	PC	Rodding Eye	UTS	Unable to Survey
FL	Flood Light Level	RM	Road Marker Post	VP	Vent Pipe
FH	Fire Hydrant	SC	Stop Cock (Water)	WP	Wind Pipe
FP	Fence Post	SL	Silt Level	VT	Vegetation Top
GP	Gate Post	SP	Sign Post	WL	Water Level
GPO	Grass Overriding Rear	SV	Stop Valve	WO	Waste Out
GV	Gas Valve			WO	Wash Out

KEY

STN1 — SURVEY STATION; GATE; BANK; FOLIAGE; CLIFF

50m — MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

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CLIENT

Pegasus

JOB TITLE

Topographical Survey

Lord Rayleighs Farm
Felsted
near CM6 3EF

Sheet 7 of 9

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

23629-500-01

Cropped field

Set Aside

Cropped field

Cropped field

Rayne Road

SURVEY STATIONS				
Name	Easting	Northing	Height	Remark
PGM1	570233,832	220769,123	68,723	PGM
PGM2	570073,521	220222,514	76,101	PGM
PGM3	569973,241	221264,470	77,578	PGM
PGM4	569858,087	221354,444	76,548	PGM
PGM5	570056,148	221398,972	74,891	PGM
PGM6	569819,135	221515,605	75,248	PGM
PGM7	569638,975	221607,527	77,355	PGM
PGM8	569477,966	221697,121	77,521	PGM
PGM9	569190,398	221787,120	75,521	PGM
PGM10	569146,177	221686,415	75,351	PGM
PGM11	569260,740	221348,301	75,482	PGM
PGM12	569316,410	221194,365	74,305	PGM
PGM13	569437,619	221139,010	74,161	PGM
PGM14	569564,019	221258,210	77,381	PGM
PGM15	569700,852	221322,202	76,899	PGM
PGM16	568968,664	221817,446	71,065	PGM
PGM17	568680,410	222145,805	75,873	PGM
PGM18	569198,447	222107,636	74,414	PGM
PGM19	569086,397	222233,067	75,194	PGM
LR1	570035,269	220760,761	68,154	Null
LR2	570008,291	220796,225	68,379	Null
LR3	570361,116	220762,899	67,316	Null
LR4	570243,706	220759,647	68,254	Null
LR5	570091,163	220749,433	71,208	Null
LR6	569955,530	220754,447	73,498	Null
LR7	569850,530	220754,447	73,498	Null
LR8	569308,158	221953,222	77,885	Null
LR9	569281,170	221880,658	76,603	Null
LR9A	569173,810	221796,284	75,027	Null
LR10	569073,169	221711,859	76,625	Null
LR11	569060,538	221578,624	74,642	Null

LEGEND

AV	Air Valve	GY	Gulley	SVP	Soil Vent Pipe
BL	Bollard	HI	Height	THL	Threshold Level
BH	Bore Hole	IC	Inspection Cover	TL	Traffic Light
BS	Bus Stop	IL	Invert Level	TP	Telegraph Pole
BT	Telecom Cover	KI	Kerb Inlet	TS	Traffic Sign
CL	Cover Level	LC	Lamp Column	ETS	Illuminated TS
DP	Down Pipe	MH	Manhole	TT	Tree Top
EY	Electricity Cover	MK	(Type) Marker Post	TV	Cable TV Cover
EOT	End of Trace	OH	Overhead Cable	TWL	Top of Wall level
EP	Electricity Pole	PB	Post Box	UTL	Unable to Lift
ER	Earth Rod	RE	Rodding Eye	UTS	Unable to Survey
FFL	Finished Floor Level	RNP	Road Name Plate	UTT	Unable to Trace
FH	Fire Hydrant	SC	Stop Cock (Water)	VP	Vent Pipe
FP	Fence Post	SL	Silt Level	VT	Vegetation Top
GP	Gate Post	SP	Sign Post	WL	Water Level
GPR	Ground Penetrating Radar	SV	Stop Valve	WM	Water Meter
GV	Gas Valve			WO	Wash Out

KEY

STN1 SURVEY STATION · GATE · BANK · FOLIAGE · CLIFF

50m MAJOR CONTOUR

MINOR CONTOUR (0.25m Interval)

Brunel Surveys Ltd

UNIT 59, SHRIVENHAM HUNDRED BUSINESS PARK
WATCHFIELD, SWINDON, WILTSHIRE, SN6 8TY

EMAIL : admin@brunelsurveys.com
WEB : www.brunelsurveys.com
TEL : 01793 784700

Land, Building and Utility Surveyors

CLIENT

Pegasus

JOB TITLE

Topographical Survey

Lord Rayleighs Farm
Felsted
near CM6 3EF

Sheet 8 of 9

REVISIONS

SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

23629-500-01

N

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

SCALE

0m 12.5m 25m 50m

Cropped field

Cropped field

Cropped field

Cropped field

Rayne Road

Rayne Road

Grid and Levels to National Grid
Projection OSTN15 and OSGM15
OS Scale factor = 1

N

1 2 3 4 5 6 7 8 9

SCALE

0m 12.5m 25m 50m

SURVEY STATIONS

Name	Easting	Northing	Height	Remark
PGM1	556370.631	221923.127	76.101	PGM
PGM2	556403.241	221923.127	76.101	PGM
PGM3	556703.067	221954.470	77.478	PGM
PGM4	556703.067	221954.470	77.478	PGM
PGM5	556884.145	221996.672	76.891	PGM
PGM6	556884.145	221996.672	76.891	PGM
PGM7	556838.075	221915.001	75.258	PGM
PGM8	556838.075	221915.001	75.258	PGM
PGM9	556180.758	221781.125	75.521	PGM
PGM10	556180.758	221781.125	75.521	PGM
PGM11	556144.177	221664.415	76.251	PGM
PGM12	556144.177	221664.415	76.251	PGM
PGM13	556174.410	221154.305	74.355	PGM
PGM14	556500.222	221187.845	71.211	PGM
PGM15	556500.222	221187.845	71.211	PGM
PGM16	556754.652	221123.242	74.890	PGM
PGM17	556754.652	221123.242	74.890	PGM
PGM18	556866.410	221145.895	75.813	PGM
PGM19	556866.410	221145.895	75.813	PGM
PGM20	556586.567	222332.268	74.348	PGM
LR1	557630.569	22963.161	69.794	Top
LR2	557630.569	22963.161	69.794	Top
LR3	557651.114	223742.889	67.515	Top
LR4	557651.114	223742.889	67.515	Top
LR5	557691.165	223745.433	71.238	Top
LR6	557691.165	223745.433	71.238	Top
LR7	556953.532	224154.447	73.458	Top
LR8	556936.758	223953.222	73.883	Top
LR9	556936.758	223953.222	73.883	Top
LR10	557173.413	221764.264	75.521	Top
LR11	557173.413	221764.264	75.521	Top
LR12	556952.336	221516.404	74.643	Top

LEGEND

AV	Air Valve	GY	Gulley
BH	Bore Hole	HH	Hand Hole
BN	Brick Hole	IC	Inspection Cover
BS	Bus Stop	IL	Invert Level
CC	Chamber Cover	LP	Lamp Post
CL	Cover Level	LC	Lamp Column
DP	Down Pipe	MH	Manhole
EC	Electric Box Cover	MK	Marker/Mile Post
EOT	End of Kerb	MK-C	Centre/Island Curb
EP	Electricity Pole	PB	Post Box
ER	Earth Rod	PC	Ridding Eye
FL	Finished Floor Level	RP	Reflector Post/Pipe
FH	Fire Hydrant	SC	Stop Cock (Water)
FP	Fence Post	SL	Silt Level
GP	Gate Post	SP	Sign Post
GPO	Guard Post/Bollard	TP	Shop Valves
GV	Gas Valve		

SVP	Soil Vent Pipe		
TC	Traffic Control		
TL	Traffic Light		
TP	Telegraph Pole		
TR	Trial Hole		
BT	Blue/Bell/BT		
TT	Toss Toy		
TW	Tank/Well Cover		
TWL	Top of Wall/Level		
UTL	Unable to Lift		
UTS	Unable to Survey		
VP	Vent Pipe/Post		
WP	Wind Pump		
VT	Vegetation Top		
WL	Water Level		
WO	Waste Water		
WO	Wash Out		

KEY

STN1 STATION · GATE · BANK · FOUNDS · CLIFF · 50m MAJOR CONTOUR · MINOR CONTOUR (0.25m Interval)

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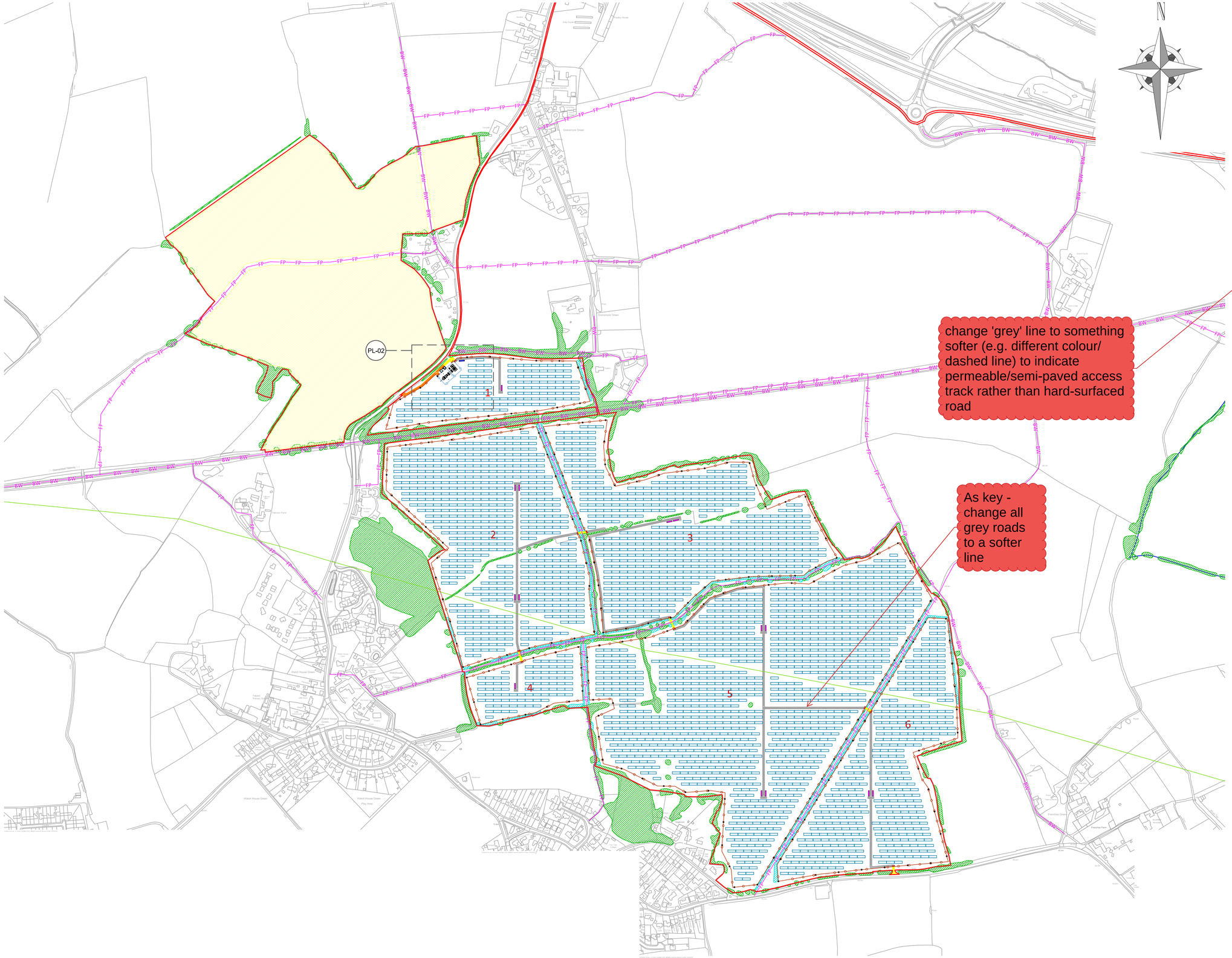
SCALE	A0 Sheet @ 1 to 500
DATE	July 2022
SURVEYED BY	PJW JH JW SC TH
DRAWN BY	PJW
CHECKED BY	PJA

DRAWING No.

23629-500-01

Appendix B – Site Plan

A1



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Scaled dimensions must not be taken from this drawing. All dimensions are to be confirmed on site prior to commencement of work

Revisions:

Revision	Date	Revision Notes	Drawn	Inspected
01	18.07.22	First Issue	JM	MS
02	01.08.22	Revised	JM	MS
03	03.08.22	Panel Spec Revised	JM	MS

LEGEND:

- PROPOSED SITE
- DNO ACCESS
- CONSTRUCTION AND MAINTENANCE ACCESS
- SITE ACCESS
- FOOTPATH
- BRIDLEWAY
- PERIMETER FENCELINE
- 2.4m PALISADE FENCE
- EXISTING O/H HV CABLE ROUTE
- EXISTING VEGETATION
- PROPOSED VEGETATION
- BIODIVERSITY AREA

SITE INFRASTRUCTURE:

- 132kV DNO SUBSTATION
- PV SOLAR MODULES
- 33kV DNO SUBSTATION
- SECURITY GATE
- CCTV CAMERA
- INVERTER
- CUSTOMER SWITCHGEAR

Project:

Rayleigh's Farm Solar

Land At Lord Rayleigh's Farm, Dunmow, CM6 3JZ

Consultant:

Bluestone Energy Ltd

Bluestone Energy Limited
44-50 High Street, Rayleigh, Essex, SS6 7EA

Tel: +44 (0) 207 417 1705
Mob: +44 (0) 7737651384

Drawn by:

CADmando 2D, 3D CAD & BIM SERVICES

CADmando Design & Draughting Solutions Ltd
The Long Barn, The Courtyard, Severn Drive, Tewkesbury Business Park, GL20 8GD

Tel: +44 (0) 1684 850019
Mob: +44 (0) 7814436910

Status:

PLANNING

Drawing Title:

Rayleigh's Farm Site Layout Plan

Drawn:	Checked:	First Issued:
JM	MS	18.07.2022

Project Code: **BSE001-** Drawing Number: **PL-01**

Sheet Size:	Scale:	Revision:
A1	**1:4000**	**03**

0 40 80 120 160 200 240 280 320 360 400m

SCALE 1:4000

1 Rayleigh's Farm Site Layout Plan

Scale: 1:4000@A1

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Pre-Application Advice Request Supporting Statement.

Land at Lord Rayleigh's Farm, Dunmow, Essex, CM6 3JZ.

On behalf of Bluestone Energy Ltd.

Date: July 2022 | Pegasus Ref: P22-1322

Document Management.

Version	Date	Author	Checked/ Approved by:	Reason for revision
V1	25.07.22	EF MRTPI	PB	

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1. Introduction.

1.1. This report has been prepared on behalf of Bluestone Energy Ltd ("the Applicant"), to support a request for Pre-Application Advice in respect of a proposed solar array development together with associated equipment and infrastructure ("the Proposed Development") on Land at Lord Rayleigh's Farm, Dunmow, Essex, CM6 3JZ ("the Application Site").

1.2. This report is submitted as part of a request for Pre-Application Advice from Officers in order to gain a greater understanding of the potential for the development of a solar array development at this Site.

1.3. Bluestone Energy Ltd. were established in 2018 and are a niche renewable energy developer, based in the UK with global reach. Bluestone Energy develop projects from origination to ready to build across a core technology offering of solar PV, battery energy storage, on shore wind and electrical vehicle charging infrastructure. Bluestone Energy's team holds over 60 years of combined energy industry experience and is made up of land, grid and renewable energy technology specialists dedicated to supporting net zero ambitions.

1.4. This pre-application request is made prior to progressing community consultation, further studies and assessments in the preparation of a full set of documents necessary to support a planning application, with advice received during pre-application discussions informing these matters.

1.5. This report is supported by a '**Site Location Plan'** and '**Environmental Designations Plan'** which details the Proposed Development area, as well as the nearby context within which the proposed Solar Array Application Site sits.

1.6. This report sets out pertinent details regarding the Site location (Section 2) and landscape context (Section 3), summarises the development proposals (Section 4), outlines the broad planning policy context considerations (Section 5) and sets out some specific questions the Applicant would like to be addressed as part of the Pre-Application discussions (Section 6).

2. The Site.

2.1. The Application Site extends to approximately 114 hectares of agricultural land to the south-west of Braintree and Rayne, and east of Great Notley. It is located within the open countryside and is characterised by a series of agricultural fields in arable use.

2.2. The Application Site lies within the administrative boundary of Uttlesford District Council.

2.3. The land parcels within the Application Site are bounded by well managed hedgerows which also include a range of small and larger trees. Within the fields there are also isolated trees sporadically positioned as well as overhead electricity pylons which run in a south-east to north-west direction through the central areas of the Application Site. The Application Site is intersected by the 'Flitch Way' a Local Nature Reserve and National Trail. To the east and south, the Application Site is bounded by further parcels of agricultural land. The villages of Felsted and Bannister Green are situated immediately adjacent to the western and south-western boundaries respectively. The B1417 forms part of the north-western boundary and arable land is found to the north until the landform reaches the A120.

2.4. The Application Site is not located within any statutory or non-statutory designations, and is not located within the designated Green Belt. However, as mentioned above, Flitch Way Local Nature Reserve (LNR) intersects the Application Site in an east-west direction, dividing the Site into two principal areas. The Flitch Way runs from Great Dunmow in the west to Braintree in the east. The next nearest designation is Cuckoo Wood, another LNR located 3.2km directly to the east of the Application Site. The Application Site also lies on the edge of the Site of Special Scientific Interest (SSSI) Impact Risk Zone for Garnetts Wood / Barnston Lays SSSI (approximately 6.4km south-west of the Application Site). However, the Proposed Development does not fall under the criteria whereby the Local Authority would be required to consult with Natural England regarding potential risk to the SSSI.

2.5. A number of Public Rights of Way (PRoW) are located within or in close proximity to the Application Site. Within the Application Site boundary, there are six footpaths numbered chronologically as 8, 17, 19, 44, 45, 115, which are located within the northern and southern half of the Site. Furthermore, Flitch Way LNR is also a recognised National Trail and links Great Dunmow to Braintree.

2.6. The River Ter at its closest point is located approximately 0.4km to the east of the Application Site and flows in a south-westerly direction away from the Application Site. However, the Application Site itself is located entirely within Flood Zone 1 and is therefore at low risk of flooding with a 1 in 1000 annual probability of river or sea flooding.

2.7. In addition, the Application Site is not located within any statutory and / or non-statutory designated heritage sites, and the Application Site is not located within or adjacent to a Conservation Area. However, the closest heritage assets to the Application Site are all Grade II Listed Buildings; Great Greenfields (List UID: 1147331) and Poplars (List UID: 1112851) in the northern half of the Application Site and parallel to the southern boundary there is a cluster within Bannister Green, including Stevens Farm Barn (List UID: 1322279) which is the closest at 90m.

2.8. The nearest Scheduled Monuments are both associated with Leez Augustinian Priory, fishponds and Tudor Mansion. Both assets are circa 1.5km to the south of the Application

Site. In addition, the Tudor Mansion itself as well as some of its surrounding features are listed as Grade I.

2.9. There are numerous Grade II Listed Buildings within the wider setting of the Application Site, particularly within the village of Rayne to the north-east, in addition, its Church of All Saints is a Grade I Listed Building and Rayne Hall is a Grade II* Listed Property. The hamlet of Molehill Green to the south-west of the Application Site contains further groups of predominantly Grade II Listed Buildings.

2.10. The Application Site is greenfield land in arable use. The land is predominantly shown as Grade 2 quality (very good quality agricultural land), as well as an area of Grade 3 (green) 'Good to Moderate' agricultural land, according to the Natural England Agricultural Land Classification Map (1:250 000 scale). However, a more detailed Agricultural Land Classification (ALC) report has been prepared by Amet Property (July 2022). The report concludes that the Application Site is graded as entirely Grade 3a.

2.11. As set out above, the accompanying Environmental Designations Plan indicates the proximity of the Application Site to environmental designations (Appendix 2).

3. Landscape Context.

3.1. A site visit was carried out by a Chartered Landscape Architect on 4th July 2022; the weather varied from bright to light cloud, and the visibility remained good throughout. Land within the Application Site was observed from public rights of way and internal field margins.

3.2. Fields within the Application Site have been labelled and form 7 areas (Areas A-G) as shown at Appendix 3.

3.3. Land within the Application Site known as Lord Rayleigh's Farm lies about 1km to the north-east of Felsted, on the north-eastern edge of the settlements of Watch House Green and Bannister Green, and north-west of Frenches Green. Approximately two-thirds of the Application Site (parcels A-E) lies to the south of Flitch Way, with the remainder (parcels F and G) to the north of that route.

3.4. Landscape surroundings to the Site are rural but well settled. Residential properties fall within the settlements noted above. The Watch House (Grade II Listed) lies in the centre of Watch House Green, about 230m to the west of parcel B. Weavers Farm (Grade II Listed) lies at the northern edge of Watch House Green, adjacent to the western boundary of parcel E. Three Grade II properties lie within Bannister Green to the west of parcel A, comprising Cressages (160m), Yewtree Cottage (130m) and Stevens Farm Barn (65m). A cluster of Grade II Listed buildings occur at Frenches Green, with Tessmorlands being the nearest at c.210m to the east of parcel A, and the farmhouse and various buildings at Frenches Farm (c.300m).

3.5. To the north of Flitch Way, the curtilage of both Great Greenfields (Grade II Listed) and Poplars (Grade II Listed) lie adjacent to the northern and eastern boundaries of parcel F, respectively. Other Grade II buildings in the vicinity of the Application Site include Straits Farmhouse and Pump (c.330m) north of, and Princes Halfyards (c.450m) and Horstages (c.520m) to the west of, parcel G.

3.6. The Application Site is on gently undulating land that, to the south of Flitch Way, falls from c.75m AOD to c.67m AOD generally eastward toward the River Ter. Land to the north of Flitch Way falls from c.75m AOD along the northern edge of the site down to c.70m AOD to south/south-west edge.

3.7. The Application Site is subdivided into small, medium and large sized fields of irregular shape and varied orientation, separated by ditches and intact or intermittent hedgerows with mature trees; historically hedgerows have been removed to create the larger fields. Individual fields have a medium to low sense of enclosure created by a combination of flattish terrain, bounding vegetation, and field size. Smaller fields (parcels B, C and F) have a higher sense of enclosure. Traffic noise from the A120 (c.515m north of parcel G) is audible.

3.8. The Application Site is bisected by a disused railway line that now forms Route 16/Flitch Way, which is part of the National Cycle Network that runs between Braintree and Bishops Stortford. As it passes the Application Site, NCN16 is generally at-grade but is well screened by a continuous belt of trees and shrub understorey, with only occasional glimpses north and south toward the Site where the hedgerow has been trimmed, or where gaps and adjoining PROW occur.

3.9. Part of the northern boundary of parcel G is marked by a ditch; all remaining boundaries follow the established field pattern and are defined by hedgerows with trees.

3.10. The River Ter, which at the time of survey was a narrow stream, lies c. 320m to the east of parcel A at its closest point.

3.11. Several public rights of way traverse or follow the boundaries of the Application Site. The PROW network comprises footpaths that at the time of survey appeared well used.

3.12. Land within the Site is in arable use.

3.13. From within the Application Site, views out are limited by intervening vegetation combined with topography although there is intervisibility with nearby settlements and/or isolated properties.

3.14. Established hedgerows and hedgerow trees add structure to the Site and provide a locally moderate to high level of enclosure and visual screening.

3.15. Assuming suitable PROW corridor solutions can be agreed with Essex County Council, including consideration of any cumulative impacts, and other recommended mitigation and management is implemented, then the Site is considered to be suitable in landscape and visual terms for solar development.

4. Development Proposals and Application Approach.

4.1. The Proposed Development comprises the installation of a ground mounted solar array together with associated equipment and infrastructure on the Application Site as described in Section 2 of this report.

4.2. The likely Description of Development for the planning application will be:

"***Installation and operation of a Solar Farm facility together with all associated works, equipment and necessary infrastructure.***"

4.3. It is anticipated that the delivered capacity of the Proposed Development would be approximately 49.9MW.

4.4. The Proposed Development will likely include the following facilities as well as associated works, equipment and necessary infrastructure:

- Fixed Solar PV Panels arranged on a simple metal framework facing south to form tables ("arrays"). The metal framework is pile driven into the ground, avoiding the need for substantive foundations. It is anticipated that the height of the arrays would be approximately 3m;
- A number of Power Conversion Units at various locations around the arrays;
- A Customer Substation;
- Distribution Network Operator (DNO) Substation (to connect into the local electricity network);
- Boundary fencing (e.g. deer fencing) around the edge of the Application Site;
- A CCTV system, either pole or fence-mounted, located at strategic points around the Application Site;
- Associated access tracks connecting the Power Conversion Units;
- Storage container(s) for spare parts etc.;
- Relevant communications and monitoring equipment;
- Creation or improvement of Site accesses for construction, operation and decommissioning purposes;
- Proposed mitigation measures and biodiversity enhancement areas, which will achieve in excess of 10% biodiversity net gain; and
- The proposed grid connection and associated underground cabling.

4.5. Detailed development proposals will allow for significant buffers to the existing and established Application Site boundary vegetation, as well as accommodating site-specific constraints.

Flood Risk

4.6. The Application Site is located entirely within Flood Zone 1 and is therefore at low risk of flooding with a 1 in 1000 annual probability of river or sea flooding. A Flood Risk Assessment and Drainage Strategy would accompany a future planning application.

Procedural Requirements

4.7. In light of the Department for Levelling Up, Housing and Communities (DLUHC) exercising their powers set out by Section 62A of the Town and Country Planning Act 1990, it is understood that Uttlesford District Council, who would otherwise be the Local Planning Authority in regard to this planning application, have been placed in 'special measures'. The Applicant therefore has applied directly to the Planning Inspectorate for advice and assistance at this pre-planning application stage.

Cumulative Considerations

4.8. It should be noted that this pre-application advice request scheme is being submitted at the same time as another, separate proposed Solar Farm scheme is also being progressed in the vicinity of this Application Site. This separate project is known as 'Draper's Farm'. It is anticipated that this Draper's Farm development would also be up to 49.9 MW (see location plan at Appendix 4).

4.9. The two Sites are owned by different freehold title owners.

4.10. The land lease/ownership of each Site and grid connection offer are linked to an independent SPV.

4.11. Separate development, construction, operation and maintenance programmes would apply to each Site.

4.12. Whilst the two Sites would share a common point of connection at UKPN Braintree GSP and 132kv point of supply at Lord Rayleigh's Farm, the two Sites would be separately metered and separately operated via two independent 33kv substations.

4.13. In terms of offtake, each Site would be dedicated to different off takers via a separate Corporate Power Purchase Agreement, or merchant output and mix within the client portfolio.

Planning Act (2008) Considerations

4.14. Extracts from the Planning Act 2008 relating to the consenting requirements and procedure are provided below.

4.15. Part 3 Nationally significant infrastructure projects details at Section 14 and 15:

"14 Nationally significant infrastructure projects: general

(1) In this Act "nationally significant infrastructure project" means a project which consists of any of the following—

(a) the construction or extension of a generating station;

……

15 Generating Stations

(1) The construction or extension of a generating station is within section 14(1)(a) only if the generating station is or (when constructed or extended) is expected to be within subsection (2)

(2) A generating station is within this subsection if—

(a) it is in England F2…,

[F3(aa) it does not generate electricity from wind,]

(b) it is not an offshore generating station, and

(c) its capacity is more than 50 megawatts."

4.16. Furthermore, Part 4 Requirement for development consent Sections 31 and 35 confirms:

"31 When development consent is required

Consent under this Act ("development consent") is required for development to the extent that the development is or forms part of a nationally significant infrastructure project.

……

35 Directions in relation to projects of national significance

(1) The Secretary of State may give a direction for development to be treated as development for which development consent is required.

This is subject to the following provisions of this section and section 35ZA.

(2) The Secretary of State may give a direction under subsection (1) only if—

(a) the development is or forms part of—

(i) a project (or proposed project) in the field of energy, transport, water, waste water or waste, or

(ii) a business or commercial project (or proposed project) of a prescribed description,

(b) the development will (when completed) be wholly in one or more of the areas specified in subsection (3), and

(c) the Secretary of State thinks the project (or proposed project) is of national significance, either by itself or when considered with—

(i) in a case within paragraph (a) (i), one or more other projects (or proposed projects) in the same field;

(ii) in a case within paragraph (a) (ii), one or more other business or commercial projects (or proposed projects) of a description prescribed under paragraph (a)(ii)……."

4.17. Both Land at Lord Rayleigh's Farm and Draper's Farm projects are functionally and financially separate entities on the basis of the parameters explained above and therefore it is considered that they should be taken as comprising separate energy generation stations under the terms of the Planning Act 2008.

Environmental Impact Assessment Considerations

4.18. With regard to potential cumulative impacts from an environmental perspective, both Land at Lord Rayleigh's Farm and Draper's Farm schemes will be subject to separate EIA screening opinions to determine if they are deemed to be EIA development.

4.19. If either and/or both are determined through the screening process to be EIA development with an Environmental Statement (ES) required, then each planning application will be subject to separate ES assessments, but which nonetheless will include a statement of intent (if EIA development) that the cumulative effects of the schemes in combination will be fully assessed.

The Proposed Approach

4.20. Subject to Pre-Application Advice received and the outcome of community consultation, the Applicant will prepare a full planning application.

4.21. It is considered that the proposals do not constitute EIA development, however as noted above, prior to submission of a full planning application, the Applicant will request a Screening Opinion to determine whether there is a requirement for an Environmental Impact Assessment (EIA) to accompany the planning application.

4.22. A full future planning application is proposed to be supported by the following:

- Statutory application requirements including: a completed Application Form, Site Location Plan, Planning Statement, Design and Access Statement and the relevant planning application fee;
- Detailed drawings of associated buildings, equipment and plant proposed as well as the proposed Site Layout, including indicative planting plans;
- Statement of Community Involvement;
- Reports addressing the following topics (to be in the form of an Environmental Statement if the Proposed Development is deemed EIA through the Screening process):

a) Landscape and Visual (including trees & hedges);

b) Biodiversity;

c) Transport and Traffic;

d) Flood Risk and Drainage;

e) Cultural Heritage;

f) Glint and Glare;

g) Noise;

h) Agricultural Land.

5. Planning Policy Review.

5.1. Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires that all planning applications are determined in accordance with the Development Plan unless material considerations indicate otherwise.

5.2. This Section identifies the key planning policy and guidance relevant to the Proposed Development. The Planning Statement prepared to support the subsequent planning application will include a full assessment of the relevant policies and guidance. An overview of the provisions that are intended to be assessed are provided here.

5.3. In regard to the Uttlesford District Council Development Plan, Councillors decided to withdraw the Draft Uttlesford Local Plan 2019 and start a new Plan at an Extraordinary Council Meeting (ECM) on Thursday 30th April 2020. The decision was in response to the government appointed Inspector's Letter, dated 10th January 2020 and the independent Peer Review report from the East of England Local Government Association, dated 23rd March 2020. Uttlesford District Council remain committed to preparing a new Local Plan that provides for sustainable growth and benefits for the district. The Council are now preparing a programme of works and timetable for developing this new Local Plan.

5.4. The current adopted local planning policy for Uttlesford is set out in the Uttlesford Local Plan 2005. The Application Site also lies within the Felsted Neighbourhood Plan area, made on 25th February 2020.

5.5. Other material considerations in terms of policy and guidance include the following:

- National Planning Policy Framework (July 2021);
- National Planning Practice Guidance (first published March 2014);
- EN-1: Overarching National Policy Statement for Energy (July 2011);
- EN-3: National Policy Statement for Renewable Energy Infrastructure (July 2011);
- Paris Agreement of the United Framework Convention on Climate Change (December 2015);
- Climate Change Act 2008 (2050 Target Amendment) Order 2019;
- Energy White Paper (December 2020);
- The Carbon Budget Order (June 2021);
- Draft Overarching National Policy Statement for Energy (EN-1) and Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) (September 2021);
- Net Zero Strategy: Build Back Greener (October 2021);
- United Nations Climate Change Conference (COP26) (November 2021); and
- British Energy Security Strategy, UK Government (April 2022).

Climate Change

5.6. Uttlesford District Council declared a climate and ecological emergency in 2019 and as part of this commitment, they have approved a new Climate Crisis Strategy 2021-30.

Development Plan

Uttlesford Local Plan (2005)

5.7. The Uttlesford Local Plan was adopted in January 2005 and represents the latest planning policy adopted by Uttlesford District Council.

5.8. **Policy ENV15 Renewable Energy** states:

"***Small scale renewable energy development schemes to meet local needs will be permitted if they do not adversely affect the character of sensitive landscapes, nature conservation interests or residential and recreational amenity.***"

5.9. The following policies are considered relevant to the Proposed Development:

- **Policy S7 – The Countryside;**
- **Policy GEN1 – Access;**
- **Policy GEN2 – Design;**
- **Policy GEN3 – Flood Protection;**
- **Policy GEN4 – Good Neighbourliness;**
- **Policy GEN7 – Nature Conservation;**
- **Policy E4 – Farm Diversification: Alternative Use of Farmland;**
- **Policy ENV2 – Development Affecting Listed Buildings;**
- **Policy ENV4 – Ancient Monuments and Sites of Archaeological Importance;**
- **Policy ENV5 – Protection of Agricultural Land;**
- **Policy ENV7 – The Protection of the Natural Environment – Designated Sites;**
- **Policy ENV8 – Other Landscape Elements of Importance for Nature Conservation; and**
- **Policy ENV11 – Noise Generators.**

Felsted Neighbourhood Plan (2020)

5.10. The Felsted Neighbourhood Plan was formally made by the Council on 25th February 2020 and establishes a vision for the evolution and long-term sustainability of Felsted Parish and village.

5.11. The following policies are considered relevant to the Proposed Development:

- **FEL/ICH 1 – High Quality Design;**
- **FEL/ICH3 – Light Pollution;**
- **FEL/CW1 – Landscape and Countryside Character;**
- **FEL/CW3 – Footpaths, Bridleways and Cycleways;**
- **FEL/CW4 – Green Infrastructure; and**
- **FEL/INF1 – Flood Risk.**

Uttlesford District Council Emerging Policy

5.12. The Local Development Scheme (LDS) sets out the important dates regarding decisions and document publication targets for the preparation of the Local Plan. The first Issues and Options stage was conducted in 2020/21 as a series of consultations were held with the community and other stakeholders. The LDS details the Council plan for the Regulation 18 Preferred Options Local Plan to go to public consultation from November to December, with the Regulation 19 Submission Draft Local Plan targeted for consultation in November and December 2023. Final preparatory work on the submission plan is anticipated in January and February 2024, subsequently the final draft of the plan will be submitted to the Planning Inspectorate for examination in May 2024 and the Council anticipates adoption of the plan in March 2025.

National Planning Policy and Guidance

5.13. The Planning Statement will also consider the proposals against national planning policy and guidance, as material considerations, to the consideration of the planning application.

National Planning Policy Framework (NPPF) (July 2021)

5.14. The updated National Planning Policy Framework (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to achieve sustainable development.

5.15. Paragraph 2 states that the NPPF is a material consideration in planning decisions and also emphasises that planning "***decisions must also reflect relevant international obligations and statutory requirements***" which includes those relating to greenhouse gas emissions reduction targets, inter alia.

5.16. Chapter 14 'Meeting the challenge of climate change, flooding and coastal change' emphasises at paragraph 152 that the planning system should ***"support the transition to a low carbon future in a changing climate"*** and should help to "***to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the use of existing resources…; and support the delivery of renewable and low carbon energy and associated infrastructure***".

5.17. Paragraph 158 confirms a positive presumption in favour of (non-wind) renewable energy development as follows:

"***When determining planning applications for renewable and low carbon development, local planning authorities should:***

a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b) approve the application if its impacts are (or can be made) acceptable…."

National Planning Practice Guidance (NPPG) (First Published March 2014)

5.18. The Government's National Planning Practice Guidance (NPPG) is web-based guidance which is intended to be read alongside the NPPF and is a material consideration in the consideration of planning applications.

5.19. The chapter on 'Renewable and Low Carbon Energy' provides guidance to help Councils in developing policies for renewable and low carbon energy and identifies relevant planning considerations to complement the content of the NPPF.

5.20. Paragraph 003 (Reference ID: 5-003-20140306) addresses the question of how local authorities develop a position strategy to promote the delivery of renewable and low carbon energy and emphasises as part of this "***that all communities have a responsibility to help increase the use and supply of green energy.***"

5.21. Paragraph 013 (ID: 5-013-20150327) is entitled "***What are the particular planning considerations that relate to large scale ground-mounted solar photovoltaic farms?***" and sets out the following particular factors for consideration:

- ***"encouraging the effective use of land by focussing large scale solar farms on previously developed and non-agricultural land, provided that it is not of high environmental value;***
- ***where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays.***
- ***that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use;***
- ***the proposal's visual impact, the effect on landscape of glint and glare (see guidance on landscape assessment) and on neighbouring uses and aircraft safety;***
- ***the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun;***
- ***the need for, and impact of, security measures such as lights and fencing;***
- ***great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting. As the significance of a heritage asset derives not only from its physical presence, but also from its setting, careful consideration should be given to the impact of large-scale solar farms on such assets. Depending on their***

scale, design and prominence, a large-scale solar farm within the setting of a heritage asset may cause substantial harm to the significance of the asset;

- ***the potential to mitigate landscape and visual impacts through, for example, screening with native hedges;***
- ***the energy generating potential, which can vary for a number of reasons including, latitude and aspect.***

The approach to assessing cumulative landscape and visual impact of large scale solar farms is likely to be the same as assessing the impact of wind turbines. However, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land topography the area of a zone of visual influence could be zero."

International and National Climate Change Context

5.22. Both national legislation and international agreements set targets for the reduction of carbon emissions and the increase in renewable energy generation. The NPPF states at paragraph 2 that planning decisions must reflect relevant international obligations, and the UK's legally binding commitments to energy targets is also an important material consideration.

5.23. The over-arching context is set by the **Paris Agreement** of the United Framework Convention on Climate Change in 2015 which introduced Nationally Determined Contributions (NDCs), national climate plans that include commitments to increasing renewable energy provision.

5.24. In 2019 the Government amended the **Climate Change Act 2008** by introducing a target for at least a 100% reduction of greenhouse gas emissions (compared to 1990 levels) in the UK by 2050.

5.25. The UK Government's **Carbon Budget Order** (June 2021) places a restriction on the total amount of greenhouse gases that the UK can emit over a 5-year period and are implemented to drive the requirements contained within the Climate Change Act 2008 to reach Net Zero emissions in less than 30 years.

5.26. The budget requires a reduction of UK greenhouse gas emissions of 78% by 2035 relative to 1990, a 63% reduction from 2019, which comprises the world's most ambitious greenhouse gas emissions reductions target.

5.27. The Prime Minister announced on 19th April 2021 that:

"***The Carbon Budget will ensure Britain remains on track to end its contribution to climate change while remaining consistent with the Paris Agreement temperature goal to limit global warming to well below 2°C and pursue efforts towards 1.5°C.***[1]"

5.28. The rapid role out of renewable electricity generation will form a key part of achieving this carbon budget.

5.29. These national and international objectives and commitments were endorsed by the COP26 summit hosted within the UK in November 2021. In order to accelerate action

[1] https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slashemissions-by-78-by-2035, Published 20th April 2021.

towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change almost 200 countries agreed to the Glasgow Climate Pact, to limit the rise in global temperature to 1.5 degree Celsius from pre-industrial levels.

Energy White Paper (December 2020)

5.30. The Energy White Paper was published by the Department for Business, Energy and Industrial Strategy (BEIS) to address the transformation of the UK's energy system towards the 2050 target for net-zero emissions. The foreword states that:

"The UK has set a world–leading net zero target, the first major economy to do so, but simply setting the target is not enough – we need to achieve it. Failing to act will result in natural catastrophes and changing weather patterns, as well as significant economic damage, supply chain disruption and displacement of populations."

5.31. The foreword concludes that:

"The way we produce and use energy is therefore at the heart of this. Our success will rest on a decisive shift away from fossil fuels to using clean energy for heat and industrial processes, as much as for electricity generation."

5.32. The White Paper recognises the progress made to increase deployment of renewables and sees the expansion of renewable technologies as a key contributor to achieving an affordable clean electricity system by 2050. It states (page 45):

"Onshore wind and solar will be key building blocks of the future generation mix, along with offshore wind. We will need sustained growth in the capacity of these sectors in the next decade to ensure that we are on a pathway that allows us to meet net zero emissions in all demand scenarios."

Overarching National Policy Statement (NPS) for Energy (EN-1) and Renewable Energy Infrastructure (EN-3)

5.33. The National Policy Statements (NPS) set out how the energy sector can help deliver the Government's climate change objectives by clearly setting out the need for new low carbon energy infrastructure to contribute to climate change mitigation and achieve decarbonisation targets.

5.34. The content of the NPS documents is a relevant material consideration for the purposes of the determination of this application, due to the essential role of the proposed infrastructure in contributing towards the delivery of renewable electricity generation and supporting the transition to a decarbonised electricity system.

5.35. Overarching NPS for Energy EN-1 was published in 2011 to set out national policy for energy infrastructure in the UK.

5.36. NPS EN-3 sets out the national policy for renewable energy projects, including the need for a "***significant increase in generation from large-scale renewable energy infrastructure***".

5.37. The Energy White Paper: Powering our Net Zero Future (2020) states that the existing designated NPS documents published in 2011 would be reviewed to ensure that they reflect the policies set out within the Energy White Paper and other elements of the current energy

context. Subsequently, draft replacement NPS documents have been published for consultation, including updated draft NPS EN-1 and EN-3.

5.38. The draft NPS documents continue to confirm that the NPS may be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended) and describe that whether, and to what extent, NPS will comprise a material consideration will be "***judged on a case by case basis and will depend upon the extent to which the matters are already covered by applicable planning policy.***"

5.39. The draft revised NPS EN-1 explains that the Government's objective is to ensure the UK's supply of energy always remains secure, reliable, affordable and consistent with meeting the target to cut greenhouse gas emissions to net zero by 2050.

5.40. Draft NPS EN-1 emphasises that the country "***will need to dramatically increase the volume of energy supplied from low carbon sources and reduce the amount provided by fossil fuels***" (para. 2.3.4), with an "***urgent need for new generating capacity***" (para. 3.3.20). The draft NPS concludes that "***a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar***" (para. 3.3.21).

5.41. A draft revision of NPS EN-3 emphasises the Government's commitment to sustained growth in solar capacity to ensure that the UK is 'on a pathway' that allows it to meet net zero emissions. The document affirms at paragraph 2.47.1 that:

"***Solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation worldwide. Solar farms can be built quickly and, coupled with consistent reductions in the cost of materials and improvements in the efficiency of panels, large-scale solar is now viable in some cases to deploy subsidy-free and at little to no extra cost to the consumer… As such solar is a key part of the government's strategy for low-cost decarbonisation of the energy sector.***"

5.42. Reference is made to the importance of the grid connection for Applicants of solar development and reinforces that the capacity of the grid network to accept the likely output from a proposed solar farm is critical to the technical feasibility of a development. Paragraph 2.48.12 describes:

"***Locating solar farms at places with grid connection capacity enables the applicant to maximises existing grid infrastructure, minimise disruption to local community infrastructure or biodiversity and reduce overall costs….***"

5.43. Draft NPS EN-3 includes specific guidance regarding agricultural land classification and land type in relation to solar development and references at paragraph 2.48.13 that whilst ground mounted Solar PV projects should utilise preferable agricultural land preferably of lower classification where possible that "***land type should not be a predominating factor in determining the suitability of the site location***".

Net Zero Strategy: Build Back Greener (October 2021)

5.44. In 2020 the Prime Minister set out the Government's 'Ten Point Plan for a Green Industrial Revolution.' In October 2021, the Net Zero Strategy: Build Back Greener policy paper was

published which builds upon that 10 Point Plan in regard to the UK's carbon budgets, 2030 Nationally Determined Contribution and 2050 net zero target.

5.45. The Net Zero Strategy will be submitted to the United Nations Framework Convention on Climate Change (UNFCCC) as the UK's second Long-Term Low Greenhouse Gas Emission Development Strategy under the Paris Agreement. The Strategy addresses the objective of a decarbonised power system by 2035 (Section 3i), with a list of delivery commitments including to:

"***Take action so that by 2035, all our electricity will come from low carbon sources, subject to security of supply, bringing forward the government's commitment to a fully decarbonised power system by 15 years…***"

5.46. The Strategy confirms at Section 3i paragraph 11 that:

"***…the Energy White Paper's fundamental approach remains unchanged. A low-cost, net zero consistent electricity system is most likely to be composed predominantly of wind and solar generation, whether in 2035 or 2050.***"

5.47. The Strategy reiterates that the UK needs to continue to drive rapid deployment of renewables so that it can reach substantially greater capacity beyond 2030 (Chapter 3i, paragraph 35). Section 3i paragraph 36, which states that the Sixth Carbon Budget also requires:

"***…a sustained increase to the deployment of land-based renewables such as locally supported onshore wind and solar in the 2020s and beyond.***"

5.48. Given the size of the challenge, the government states "***we will need to consider how low carbon energy infrastructure can be deployed at an unprecedented scale and pace sympathetically alongside the interests of our communities and consistent with our obligations to a sustainable environment, both land-based and marine***" (Chapter 3i, paragraph 32, page 102).

5.49. Paragraph 12 describes that to achieve the Carbon Budget 6 trajectory "***we will need to build all of these technologies at, or close to, their maximum technical limit, to meet the twin challenge of accelerating decarbonisation and servicing increased demand***."

<u>UK Government British Energy Security Strategy (April 2022)</u>

5.50. The UK Government published a British Energy Security Strategy in 2022 to describe how it proposes to enable the provision of secure, clean, and affordable British energy for the long term.

5.51. Accelerating the transition from fossil fuels via the deployment of renewable energy is a key component of achieving the strategy. Page 19 describes that a "***five fold increase in deployment of solar development by 2035 is required***" and states that "***we will consult on amending planning rules to strengthen policy in favour of development on non-protected land***", described on page 30 as anticipated to be achieved by the end of 2022.

6. Conclusions and Questions.

6.1. It is requested that advice be given to inform the development proposals and preparation of a planning application. The following questions are included to guide the advice being sought at this pre-application stage:

1. Confirmation that the submission of this Proposed Development under the Town and Country Planning Act (1990) is the appropriate route and procedure for the determination of this Proposed Development?

2. Given the comments made with regard to the separate scheme being promoted nearby at Draper's Farm as explained at Section 4 of this report, confirmation that these two schemes can be separately progressed as separate planning applications under the Town and Country Planning Act (1990) (notwithstanding that these sites may require cumulative assessment as part of a subsequent determination under EIA Screening/Scoping Opinions)?

3. Confirmation of the appropriate pre-application fee for a meeting and provision of written advice?

4. Whether the Proposed Development may be regarded as acceptable 'in principle'?

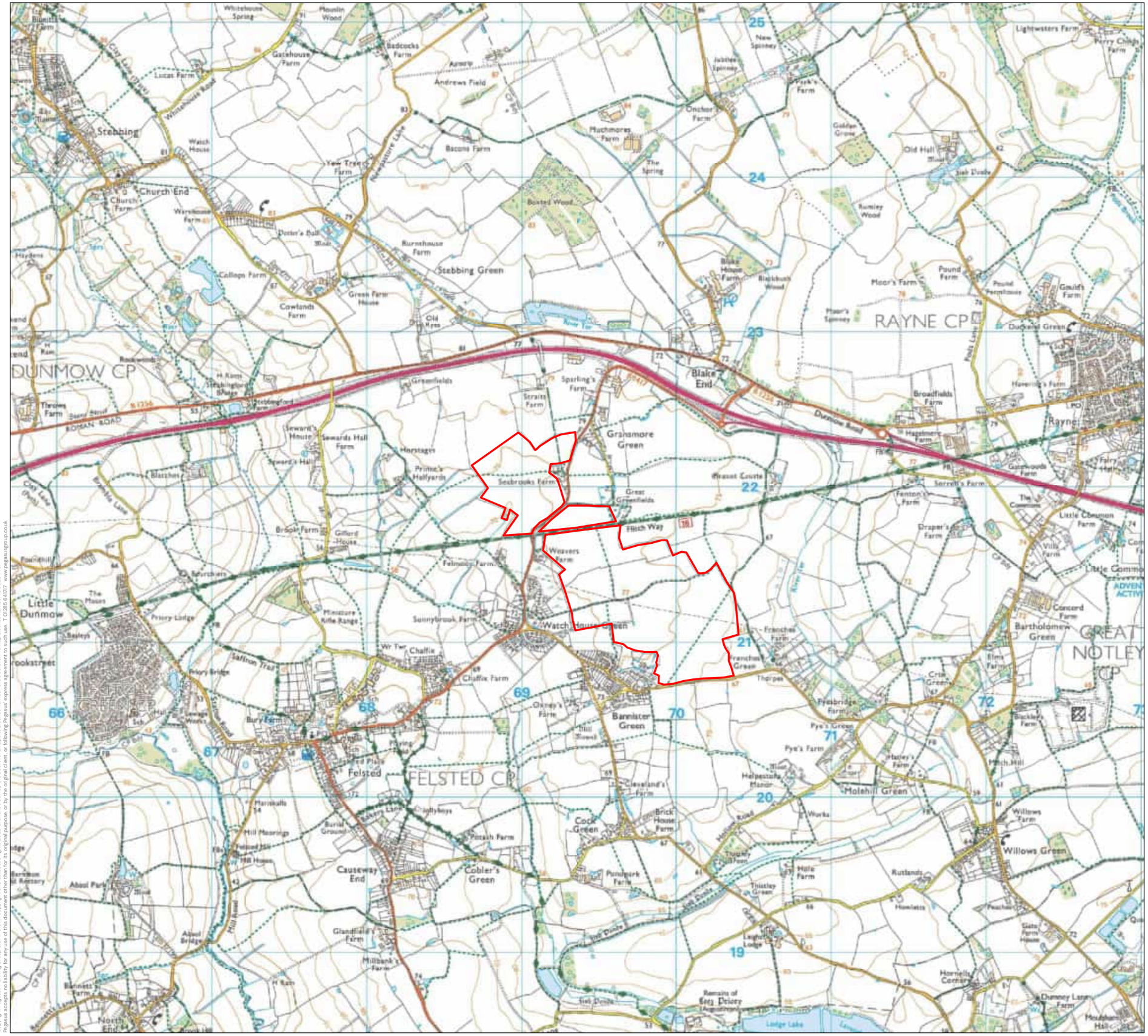
5. Are there any comments from specialist consultees (Landscape and Visual, Ecology, Highways, Flood Risk and Drainage, Heritage, Glint and Glare, Noise and Agricultural Land) which may inform the further refinement of the Proposed Development and assessment?

6. Confirmation regarding the extent of any information which is recommended to be submitted with the planning application to justify the site location in accordance with NPPG advice?

7. Are there any further planning policies, documents or guidance to those identified at Section 5 of this report which should be considered in the planning application submission?

8. What are the validation requirements for a planning application for the Proposed Development?

Appendix 1 – Site Location Plan.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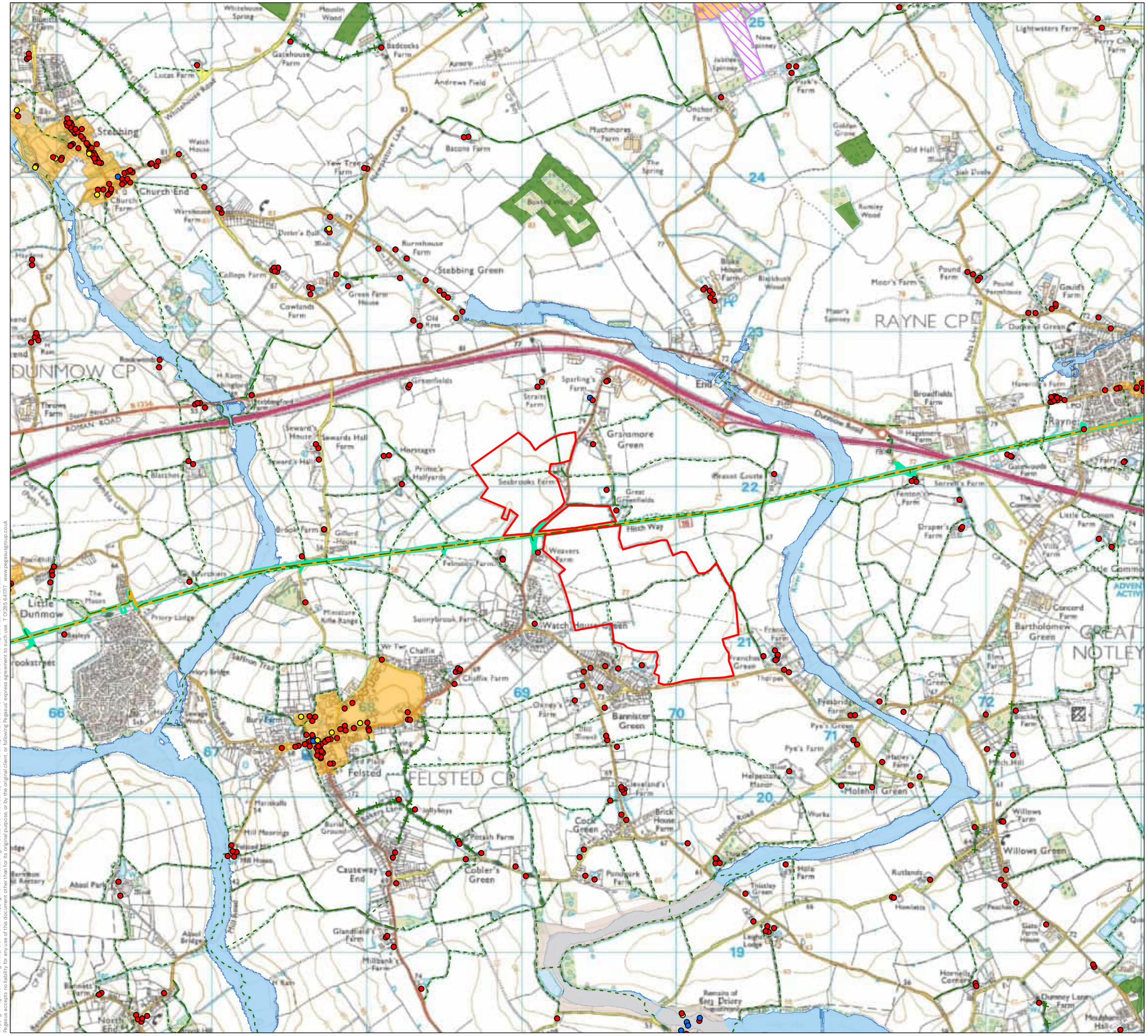
Church End
Stebbing Green
DUNMOW CP
RAYNE CP
FELSTED CP
GREAT NOTLEY CP
Blake End
Grasmore Green
Watch House Green
Bannister Green
Molehill Green
Willows Green
Cock Green
Causeway End
Cobler's Green
Little Dunmow
Felsted
Rayne
Dunmow Road
Flitch Way
Roman Road
Braintree Lane
Newpasture Lane
Whitehouse Road
Saffron Trail
Andrews Field
Boxted Wood
Rumley Wood
Blackbush Wood
Lodge Lake
Remains of Priory (Augustinian)
Gatehouse Farm
Badcocks Farm
Bacons Farm
Machmores Farm
Onchan Farm
Old Hall
Lightwaters Farm
Perry Chicks Farm
Park's Farm
Moor's Farm
Pound Farm
Gould's Farm
Broadfields Farm
Haywards Farm
Duckend Green
Yew Tree Farm
Kurnshouse Farm
Green Farm House
Cowlands Farm
Callops Farm
Dester's Ball
Sparling's Farm
Strats Farm
Seabrooks Farm
Great Greenfields
Greenfields
Sewards House
Sewards Hall Farm
Horstages
Prime's Halfyards
Blatchet
Brook Farm
Gilford House
Weavers Farm
Felmores Farm
Sunnybrook Farm
Chalfix
Chalfix Farm
Bury Farm
Okney's Farm
Franchise Farm
Franchise Green
Thorpes
Frasbridge Farm
Pye's Farm
Pye's Green
Helpestalls Manor
Hatley's Farm
Hitch Hill
Crix Green
Bartholomew Green
Concord Farm
Little Common Farm
Fenton's Farm
Draper's Farm
Sorrells Farm
Hagsmore Farm
Gatewoods Farm
Brick House Farm
Potash Farm
Pondpark Farm
Thistley Green
Hole Farm
Rutlands
Homelands
Peachers
Willows Farm
Dunney Lane Farm
Mountnessing Hall
Abbot Park
Abbot Bridge
Glandfield's Farm
Millbank's Farm
Bannister's Farm
North End
Priory Lodge
Priory Bridge
Sewage Works
Mill Meadings
Marshalls
Burial Ground
Felsted Place
Felsted Mill
Mill House
Abbot's Hall
Rookwoods
Throwes Farm
Blake House Farm
Pound Farmhouse
Old Rees
Old Dunmow
Hall Dyke
Pincey Brook
Ash Dyke
Old Ditch
Wash
Works
Hall
Sch
Rec
Mill
Ho
Pond
Spr
Wr Twr
Meadow
Allotments
Rifle Range
Basleys
The Moors
Rookstreet
Barnston & Rectory
Throwes Farm
Bannister's Farm
Blatchet
Brook Farm
Gilford House
Felmores Farm
Sunnybrook Farm

Appendix 2 – Environmental Designations Plan.



KEY

- Site Boundary
- National Cycle Route
- CRoW Access Land
- Country Parks

Listed Building - Grade

- I
- II*
- II

- Registered Parks and Gardens
- Scheduled Monuments
- Conservation Area
- Local Nature Reserves
- Ancient Woodland
- EA Flood Zone 3
- EA Flood Zone 2
- Public Footpaths
- Public Bridleways
- Restricted Byway
- Public Byway open to all traffic

NOTES:
REVISIONS: First Issue (14/06/2022) SC

ENVIRONMENTAL DESIGNATIONS PLAN

LORD RAYLEIGH'S FARM

CLIENT
Bluestone

DATE	DRAWN	APPROVED	SCALE
16/06/2022	SC	IH	1:24,000@A3

SHEET	REVISION	DRAWING NUMBER
-	-	P22-1322_02

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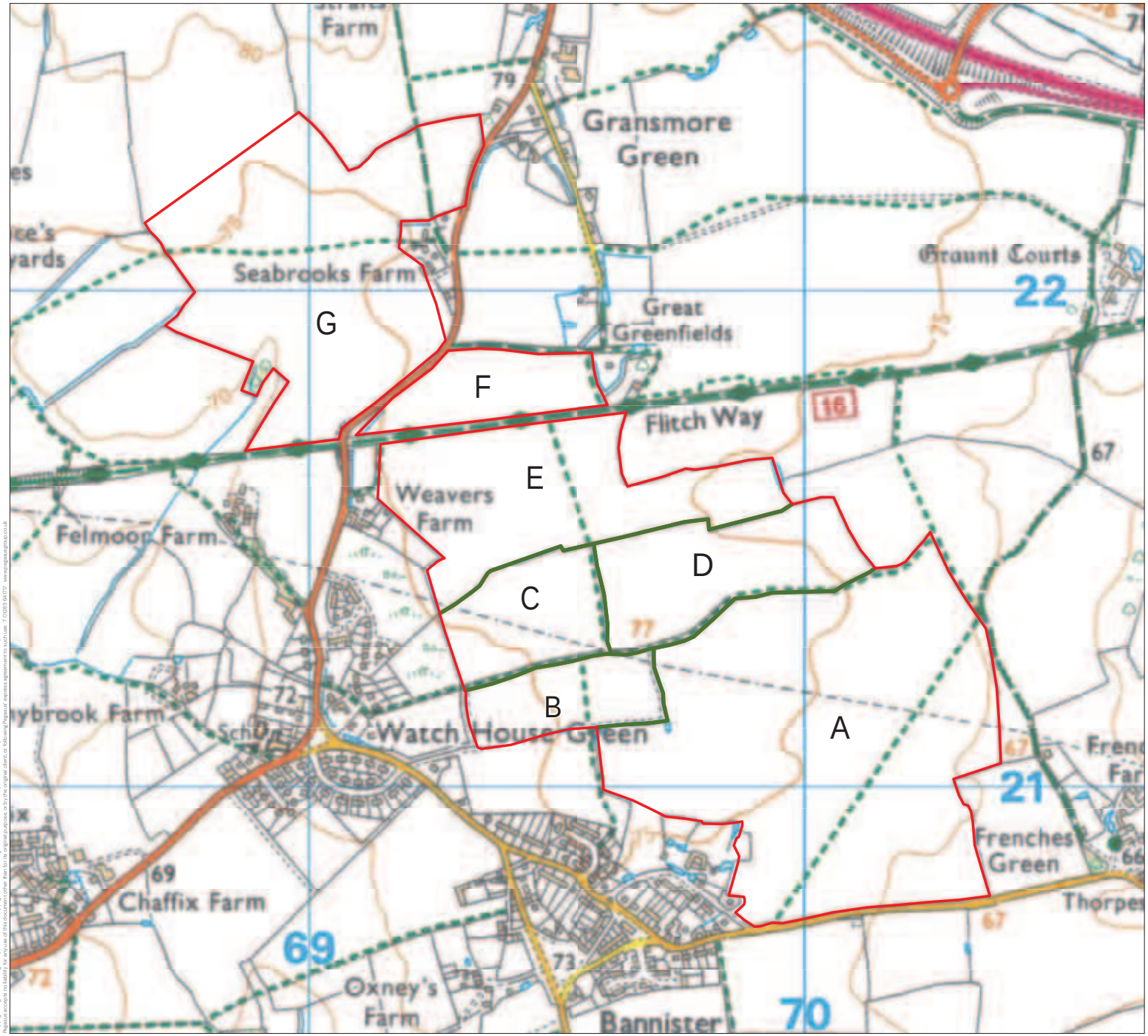
Appendix 3 – Parcel Plan and Mitigation Plan.



KEY

Site Boundary

Parcel Divisions

NOTES:
REVISIONS: First Issue (22/07/2022) SC

PARCEL PLAN

LORD RAYLEIGH'S FARM

CLIENT
Bluestone

DATE	DRAWN	APPROVED	SCALE
25/07/2022	SC	SC	1:7,500@A3

SHEET	REVISION	DRAWING NUMBER
-	-	P22-1322_06

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KEY

- Site Boundary
- Buffer Zone – No Development
- Proposed Hedgerows

NOTES:
REVISIONS: First Issue (25/07/2022) SC

MITIGATION PLAN

LORD RAYLEIGH'S FARM

CLIENT
Bluestone

DATE	DRAWN	APPROVED	SCALE
25/07/2022	SC	SC	1:7,500@A3

SHEET	REVISION	DRAWING NUMBER
-	-	P22-1322_05

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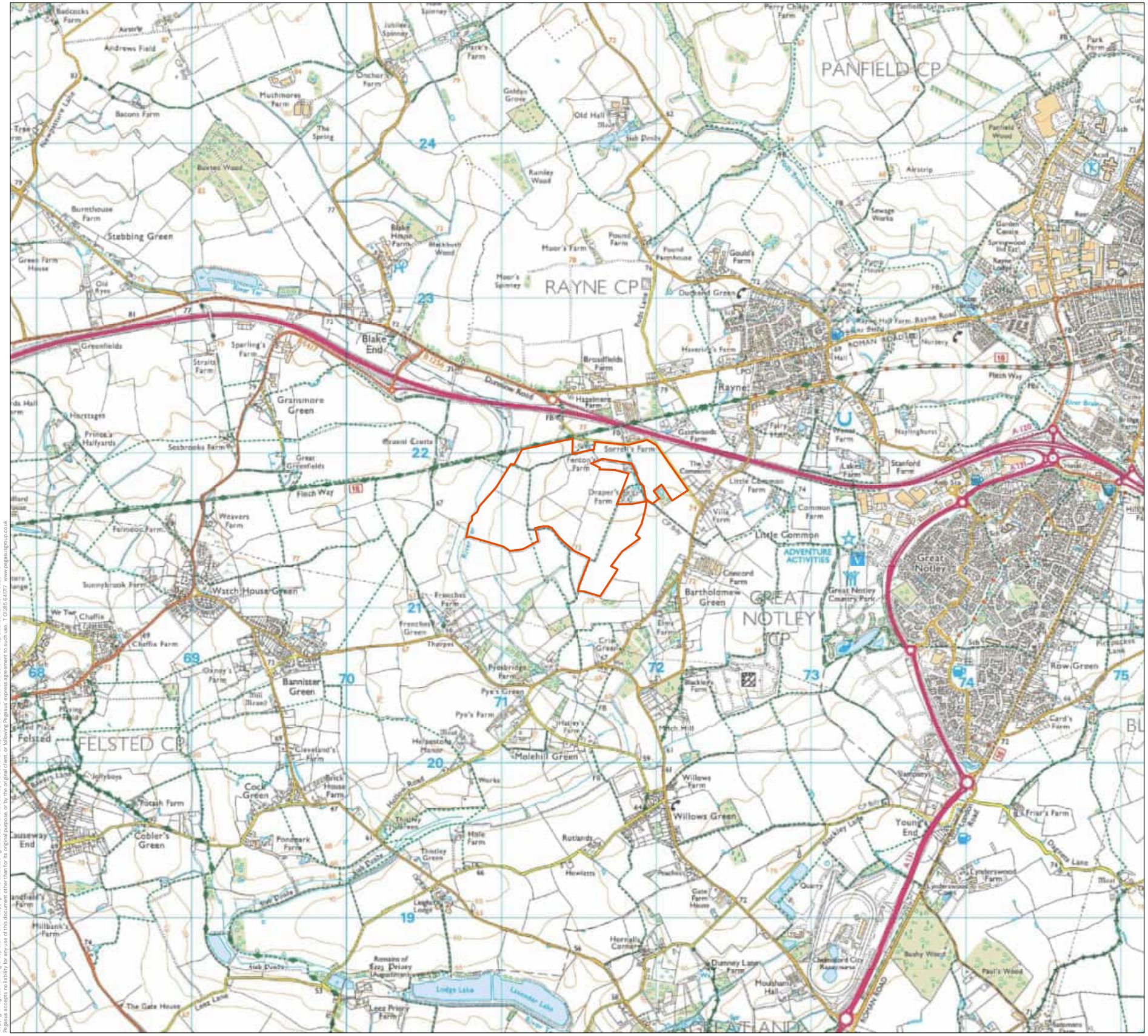
Appendix 4 – Draper's Farm Site Location Plan.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FELSTED CP
GREAT NOTLEY CP
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Great Notley
Braintree
Blake End
Gransmore Green
Stubbing Green
Watch House Green
Bannister Green
Cock Green
Cobler's Green
Causeway End
Felsted
Molehill Green
Willows Green
Little Common
Young's End
Row Green
Bartholomew Green
Great Notley Country Park
ADVENTURE ACTIVITIES
ROMAN ROAD
Duncan Road
Dunmow Road
Flitch Way
Lodge Lake
Lower Lake
Lees Priory
Remains of Lees Priory (Augustinian)
Stubbing Green
Old Hall Moat
Stub Ponds
Pond
Airstrip
Sewage Works
Nursery
Quarry
Bushy Wood
Paul's Wood
Ramsley Wood
Buntess Wood
Blackbush Wood
Pound Farmhouse
Pound Farm
Moor's Farm
Moor's Spinney
Golden Grove
Park's Farm
Perry Childs Farm
Panfield Farm
Panfield Wood
Andrews Field
Bacons Farm
Burnthouse Farm
Green Farm House
Old Ayes
Greenfields
Sparling's Farm
Straits Farm
Hazelmere Farm
Broadfields Farm
Haverils Farm
Gosselmonds Farm
Sorrells Farm
Fenton's Farm
Draper's Farm
Little Common Farm
Common Farm
Villa Farm
Stanford Farm
Lakes Farm
Naylinghurst
Fairy Hall
Hillcrest
Hillcrest Farm
Lyndenwood Farm
Lyndenwood
Friar's Farm
Oaklands Lane
Gate Farm House
Rotlands
Howletts
Thistley Green
Hole Farm
Willows Farm
Hatley's Farm
Pye's Green
Pyebridge Farm
Frenches Green
Frenches Farm
Thorpes
Okney's Farm
Chaffix Farm
Wr Twr
Sunnybrook Farm
Felsted Place
Jollyboys
Potash Farm
Brick House Farm
Cleveland's Farm
Helpestons Manor
Pond Farm
Pondsark Farm
Hillbank's Farm
Sandfield's Farm
Weavers Farm
Feltneos Farm
Sosbrooks Farm
Prince's Halfyards
Hinstages
Great Greenfields
Muchmores Farm
Dorchor Farm
Jubilee Spinney
The Spring
Blake House Farm
Mill (Ruined)
Gould's Farm
Carl's Farm
Blackley Farm
Crix Green
Dines Farm
Lodge Farm
Lodge
Lees Lane
The Gate House
Duncow Lane
Duncow Green
Parish Church
Sch
Fb
PO
Hall
Works
Pond
Tank
Sta
Cemetery
Garden Centre
Springwood Ind Est
Kayne Lodge
Kayne Hall
Kayne Hill Farm, Rayne Road
Gas Depot
Sawmills
Lodge
Cottage
Farm
Mast
Tower
Tpt
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Rec
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Town & Country Planning Act 1990 (as amended)
Planning and Compulsory Purchase Act 2004

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Pegasus House, Querns Business Centre,
Whitworth Road, Cirencester, GL7 1RT
T 01285 641717
E Cirencester@pegasusgroup.co.uk
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Pre-Application Advice Request Supporting Statement.

Draper's Farm, Rayne, Essex, CM77 6SN.

On behalf of Bluestone Energy Ltd.

Date: July 2022 | Pegasus Ref: P22-1321

Document Management.

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1. Introduction.

1.1. This report has been prepared on behalf of Bluestone Energy Ltd ("the Applicant"), to support a request for Pre-Application Advice in respect of a proposed solar array development together with associated equipment and infrastructure ("the Proposed Development") on Draper's Farm, Rayne, Essex, CM77 6SN ("the Application Site").

1.2. This report is submitted as part of a request for Pre-Application Advice from Officers in order to gain a greater understanding of the potential for the development of a solar array at this Site.

1.3. Bluestone Energy Ltd. were established in 2018 and are a niche renewable energy developer, based in the UK with global reach. Bluestone Energy develop projects from origination to ready to build across a core technology offering of solar PV, battery energy storage, on shore wind and electrical vehicle charging infrastructure. Bluestone Energy's team holds over 60 years of combined energy industry experience and is made up of land, grid and renewable energy technology specialists dedicated to supporting net zero ambitions.

1.4. This pre-application request is made prior to progressing community consultation, further studies and assessments in the preparation of a full set of documents necessary to support a planning application, with advice received during pre-application discussions informing these matters.

1.5. This report is supported by a '**Site Location Plan'** and '**Environmental Designations Plan'** which details the Proposed Development area, as well as the nearby context within which the proposed Solar Array Site sits.

1.6. This report sets out pertinent details regarding the site location (Section 2) and landscape context (Section 3), summarises the development proposals (Section 4), outlines the broad planning policy context considerations (Section 5) and sets out some specific questions the Applicant would like to be addressed as part of the Pre-Application discussions (Section 6).

2. The Site.

2.1. The Application Site extends to approximately 69 hectares of agricultural land to the south-west of Braintree and Rayne, and east of Great Notley. It is located within the open countryside and is characterised by a series of agricultural fields in arable use, with Drapers Farm positioned in the eastern area of the proposed solar farm but excluded from the red line application boundary.

2.2. The Application Site is a cross Local Authority boundary application, as the north-eastern areas lie within Braintree District Council whilst the majority of the Application Site sits within the administrative boundary of Uttlesford District Council.

2.3. The land parcels within the Application Site are typically bounded by well managed hedgerows as well as small pockets of woodland and trees. To the east, the Application Site is bounded by Mill Lane, a local road, and beyond this is further agricultural land and the A120. To the north is Fenton Road, another minor road and beyond this is a recycling scrap yard, which comprises a series of outbuildings, sheds and stockpiles of recycled and processed materials. Flitch Way, a Local Nature Reserve and National Trail, also forms part of the northern boundary. The River Ter adjoins part of the western boundary, as well as further parcels of agricultural land beyond this. The southern boundary is irregular in shape as it follows existing field boundaries and again more agricultural land is found further south.

2.4. The Application Site is not located within any statutory or non-statutory landscape or nature designations and is not within the designated Green Belt. However, as mentioned above, Flitch Way Local Nature Reserve (LNR) and National Trail forms part of the northern boundary. Flitch Way runs from Great Dunmow in the west to Braintree in the east. Within the wider area, there two additional designations; Cuckoo Wood LNR, located 1.7km to the south-east and Hoppit Mead LNR circa 3.2km to the north-east of the Site.

2.5. A number of Public Rights of Way (PRoW) are located within or in close proximity to the Application Site. Within the Application Site boundary, there are three footpaths, numbered 21, 24, 25, which are routed in a north-south alignment, whilst Footpath 39 runs east-west parallel to the Flitch Way LNR in the northern section of the Application Site. Furthermore, Flitch Way LNR is also a recognised bridleway and National Trail (Bridleway 45) linking Great Dunmow to Braintree.

2.6. In addition, the Application Site is not located within any statutory and / or non-statutory designated heritage sites and the Application Site is not located within or adjacent to a Conservation Area. However, the closest heritage assets to the Site are all Grade II Listed Buildings associated with Drapers Farm and Fentons Farm. Drapers Farm is accessed via Drapers Chase off Fentons Road in the eastern sector of the Application Site, and the listed heritage assets are Drapers Farm House (List UID: 1322272), a farm outbuilding (List UID: 1147278) and a building known as Rooks (List UID: 1147272). Fentons Farm is accessed via Fentons Road, and its listed assets relate also to the associated farmhouse (Fentons Farmhouse) as well as two ancillary barns (List UID: 1338148, 1338149 and 1122756).

2.7. The nearest Scheduled Monuments are both associated with Leez Augustinian Priory, fishponds and Tudor Mansion. Both assets are circa 2.1km to the south-west of the Application Site. In addition, the Tudor Mansion itself as well as some of its surrounding features are listed as Grade I.

2.8. There are numerous Grade II Listed Buildings within the wider setting of the Application Site, particularly within the village of Rayne to the north, in addition, its Church of All Saints is a Grade I Listed Building and Rayne Hall is a Grade II* Listed Property. The villages of Bannister Green and Felsted as well as the Hamlet of Molehill Green all to the south and south-west of the Site, contain further clusters of predominantly Grade II Listed Buildings.

2.9. The River Ter is located approximately 100m to the west of the Application Site's northern boundary and flows in a southerly direction, adjoining part of the western boundary. As a result of this, Flood Zone 3 borders the western boundary of the Application Site but the Application Site itself is located entirely within Flood Zone 1 and is therefore at low risk of flooding with a 1 in 1,000 annual probability of river or sea flooding.

2.10. The Application Site is greenfield land in arable use. The land is predominantly shown as Grade 2 quality (very good quality agricultural land), as well as an area of Grade 3 (green) 'Good to Moderate' agricultural land, according to the Natural England Agricultural Land Classification Map (1:250 000 scale). However, a more detailed Agricultural Land Classification (ALC) report has been prepared by Amet Property (July 2022). The report concludes that the Application Site is graded as entirely Grade 3a.

2.11. As set out above, the accompanying Environmental Designations Plan indicates the proximity of the Site to environmental designations (Appendix 2).

3. Landscape Context.

3.1. A site visit was carried out by a Chartered Landscape Architect on 4th July 2022; the weather varied from bright to light cloud, and the visibility remained good throughout. Land within the Site was observed from public rights of way and internal field margins. Two fields, immediately to the south and west of Draper's Farm (Parcels I and J), were not walked due to the presence of bee hives.

3.2. Fields within the Site have been labelled (Areas A-J) as shown at Appendix 3.

3.3. Draper's Farm (house and one outbuilding Grade II Listed) lies about 1.7km to the west of Great Notley, 1.1km to the southwest of Duckend Green/Rayne, and 450m to the northwest of Bartholomew Green. Landscape surroundings to the Site are rural but well settled. Residential properties, Rooks (Grade II Listed) and The Bungalow lie off Draper's Chase (the lane that provides access to Draper's Farm) about 130m to the north of Draper's Farm, Sorrell's Farm lies about 320m to the north opposite the Fenton's Road/Draper's Chase junction, and Fenton's Farm (house and two barns all Grade II Listed) lies about 370m to the northwest.

3.4. The Application Site is on a low lying spur at c.75m AOD, with a very shallow fall to the south (c.72m AOD) and southwest (c.65m at the southwest corner). Slightly higher land lies to the north and northwest (c.77m to 78m AOD). The Site is subdivided into small to medium sized fields of irregular shape and varied orientation, separated by ditches and intact or intermittent hedgerows with mature trees. Individual fields have a medium sense of enclosure created by a combination of flattish terrain, bounding vegetation, and field size. Smaller fields that occur along the northern edge of the site to the east, south, and west of Fenton's Farm have a high sense of enclosure. Traffic noise from the A120 (ranging from 30m to 260m from the northern boundary) is intrusive and constant.

3.5. The northern edge of the Site is defined by a disused railway line that now forms Route 16/Flitch Way, which is part of the National Cycle Network that runs between Braintree and Bishops Stortford. As it passes the Site, NCN16 alternates between a shallow cutting and low embankment and is well screened by a continuous belt of trees and shrub understorey, with only occasional glimpses south toward the Site where gaps occur. An oblique overbridge carries NCN16 over the A120 providing elevated views to the north of the Site and Sorrel's Farm.

3.6. The eastern and southern boundaries follow the established field pattern and are defined by hedgerows with trees.

3.7. The River Ter, which at the time of survey was a narrow stream, lies parallel to, and forms a short edge to the western site boundary. The remainder of the western boundary follows existing field boundaries.

3.8. Several public rights of way traverse or follow the boundaries of the site, and Draper's Chase, whilst not a PROW, is a permissive route.

3.9. Land within the Site is in arable use.

3.10. From within the Site, views out are limited by intervening vegetation combined with topography.

3.11. The PROW network comprises footpaths that at the time of survey appeared well used.

3.12. Established hedgerows and hedgerow trees add structure to the Site and provide a moderate to high level of enclosure and visual screening.

3.13. Assuming suitable PROW corridor solutions can be agreed with Essex County Council, including consideration of any cumulative impacts, and other recommended mitigation and management is implemented, then the Site is considered to be suitable in landscape and visual terms for solar development.

4. Development Proposals and Application Approach.

4.1. The Proposed Development comprises the installation of a ground mounted solar array together with associated equipment and infrastructure on the Application Site as described in Section 2 of this report.

4.2. The likely Description of Development for the planning application will be:

"***Installation and operation of a Solar Farm facility together with all associated works, equipment and necessary infrastructure.***"

4.3. It is anticipated that the delivered capacity of the Proposed Development would be approximately 49.9MW.

4.4. The Proposed Development will likely include the following facilities as well as associated works, equipment and necessary infrastructure:

- Fixed Solar PV Panels arranged on a simple metal framework facing south to form tables ("arrays"). The metal framework is pile driven into the ground, avoiding the need for substantive foundations. It is anticipated that the height of the arrays would be approximately 3m;
- A number of Power Conversion Units at various locations around the arrays;
- A Customer Substation;
- Distribution Network Operator (DNO) Substation (to connect into the local electricity network);
- Boundary fencing (e.g. deer fencing) around the edge of the Application Site;
- A CCTV system, either pole or fence-mounted, located at strategic points around the Application Site;
- Associated access tracks connecting the Power Conversion Units;
- Storage container(s) for spare parts etc.;
- Relevant communications and monitoring equipment;
- Creation or improvement of Site accesses for construction, operation and decommissioning purposes;
- Proposed mitigation measures and biodiversity enhancement areas, which will achieve in excess of 10% biodiversity net gain; and
- The proposed grid connection and associated underground cabling.

4.5. Detailed development proposals will allow for significant buffers to the existing and established Application Site boundary vegetation, as well as accommodating site-specific constraints.

Flood Risk

4.6. The Application Site lies within Flood Zone 1 and is therefore at low risk of flooding. The River Ter is located approximately 100m to the west of the Application Site's northern boundary and flows in a southerly direction, adjoining part of the western boundary. As a result of this, Flood Zone 3 borders the western boundary of the Site. A Flood Risk Assessment and Drainage Strategy would accompany a future planning application.

Procedural Requirements

4.7. In light of the Department for Levelling Up, Housing and Communities (DLUHC) exercising their powers set out by Section 62A of the Town and Country Planning Act 1990, it is understood that Uttlesford District Council, who would otherwise be the lead authority in regard to this cross boundary planning application, have been placed in 'special measures'. The Applicant therefore has applied directly to the Planning Inspectorate for advice and assistance at this pre-planning application stage.

Cumulative Considerations

4.8. It should be noted that this pre-application advice request scheme is being submitted at the same time as another, separate proposed Solar Farm scheme is also being progressed in the vicinity of this Application Site. This separate project is known as 'Land at Lord Rayleigh's Farm'. It is anticipated that this Lord Rayleigh's Farm development would also be up to 49.9 MW (see location plan at Appendix 4).

4.9. The two Sites are owned by different freehold title owners.

4.10. The land lease/ownership of each Site and grid connection offer are linked to an independent SPV.

4.11. Separate development, construction, operation and maintenance programmes would apply to each Site.

4.12. Whilst the two Sites would share a common point of connection at UKPN Braintree GSP and 132kv point of supply at Lord Rayleigh's Farm, the two Sites would be separately metered and separately operated via two independent 33kv substations.

4.13. In terms of offtake, each Site would be dedicated to different off takers via a separate Corporate Power Purchase Agreement, or merchant output and mix within the client portfolio.

Planning Act (2008) Considerations

4.14. Extracts from the Planning Act 2008 relating to the consenting requirements and procedure are provided below.

4.15. Part 3 Nationally significant infrastructure projects details at Section 14 and 15:

"14 Nationally significant infrastructure projects: general

(1) In this Act "nationally significant infrastructure project" means a project which consists of any of the following—

(a) the construction or extension of a generating station;

.....

15 Generating Stations

(1) The construction or extension of a generating station is within section 14(1)(a) only if the generating station is or (when constructed or extended) is expected to be within subsection (2)

(2) A generating station is within this subsection if—

(a) it is in England F2...,

[F3(aa) it does not generate electricity from wind,]

(b) it is not an offshore generating station, and

(c) its capacity is more than 50 megawatts."

4.16. Furthermore, Part 4 Requirement for development consent Sections 31 and 35 confirms:

"31 When development consent is required

Consent under this Act ("development consent") is required for development to the extent that the development is or forms part of a nationally significant infrastructure project.

.....

35 Directions in relation to projects of national significance

(1) The Secretary of State may give a direction for development to be treated as development for which development consent is required.

This is subject to the following provisions of this section and section 35ZA.

(2) The Secretary of State may give a direction under subsection (1) only if—

(a) the development is or forms part of—

(i) a project (or proposed project) in the field of energy, transport, water, waste water or waste, or

(ii) a business or commercial project (or proposed project) of a prescribed description,

(b) the development will (when completed) be wholly in one or more of the areas specified in subsection (3), and

(c) the Secretary of State thinks the project (or proposed project) is of national significance, either by itself or when considered with—

(i) in a case within paragraph (a) (i), one or more other projects (or proposed projects) in the same field;

(ii) in a case within paragraph (a) (ii), one or more other business or commercial projects (or proposed projects) of a description prescribed under paragraph (a)(ii)……."

4.17. Both Draper's Farm and Lord Rayleigh's Farm projects are functionally and financially separate entities on the basis of the parameters explained above and therefore it is considered that they should be taken as comprising separate energy generation stations under the terms of the Planning Act 2008.

Environmental Impact Assessment Considerations

4.18. With regard to potential cumulative impacts from an environmental perspective, both Draper's Farm and Lord Rayleigh's Farm schemes will be subject to separate EIA screening opinions to determine if they are deemed to be EIA development.

4.19. If either and/or both are determined through the screening process to be EIA development with an Environmental Statement (ES) required, then each planning application will be subject to separate ES assessments, but which nonetheless will include a statement of intent (if EIA development) that the cumulative effects of the schemes in combination will be fully assessed.

The Proposed Approach

4.20. Subject to Pre-Application Advice received and the outcome of community consultation, the Applicant will prepare a full planning application.

4.21. It is considered that the proposals do not constitute EIA development, however as noted above, prior to submission of a full planning application, the Applicant will request a Screening Opinion to determine whether there is a requirement for an Environmental Impact Assessment (EIA) to accompany the planning application.

4.22. A full future planning application is proposed to be supported by the following:

- Statutory application requirements including: a completed Application Form, Site Location Plan, Planning Statement, Design and Access Statement and the relevant planning application fee;
- Detailed drawings of associated buildings, equipment and plant proposed as well as the proposed Site Layout, including indicative planting plans;
- Statement of Community Involvement;

- Reports addressing the following topics (to be in the form of an Environmental Statement if the Proposed Development is deemed EIA through the Screening process):

    a) Landscape and Visual (including trees & hedges);

    b) Biodiversity;

    c) Transport and Traffic;

    d) Flood Risk and Drainage;

    e) Cultural Heritage;

    f) Glint and Glare;

    g) Noise;

    h) Agricultural Land.

5. Planning Policy Review.

5.1. Section 38(6) of the Planning and Compulsory Purchase Act 2004 requires that all planning applications are determined in accordance with the Development Plan unless material considerations indicate otherwise.

5.2. This Section identifies the key planning policy and guidance relevant to the Proposed Development. The Planning Statement prepared to support the subsequent planning application will include a full assessment of the relevant policies and guidance. An overview of the provisions that are intended to be assessed are provided here.

5.3. As this Application Site would constitute a cross boundary planning application, local planning policy relevant to both Braintree District Council and Uttlesford District Council have been detailed below.

5.4. The current adopted Braintree District Council Development Plan comprises the following documents:

- Local Development Scheme (LDS)(May 2021);
- Local Plan Review (2005);
- Core Strategy (2011);
- Local Plan 2013-2033 Section 1 (2021);
- Statement of Community Involvement (SCI)(February 2021);
- Supplementary Planning Documents;
- Neighbourhood Plans;
- Masterplans;
- Local Development Order (July 2021); and
- Conservation Area Reviews and management plans.

5.5. In regard to the Uttlesford District Council Development Plan, Councillors decided to withdraw the Draft Uttlesford Local Plan 2019 and start a new Plan at an Extraordinary Council Meeting (ECM) on Thursday 30th April 2020. The decision was in response to the government appointed Inspector's Letter, dated 10th January 2020 and the independent Peer Review report from the East of England Local Government Association, dated 23rd March 2020. Uttlesford District Council remain committed to preparing a new Local Plan that provides for sustainable growth and benefits for the district. The Council are now preparing a programme of works and timetable for developing this new Local Plan.

5.6. The current adopted local planning policy for Uttlesford is set out in the Uttlesford Local Plan 2005. Part of the Site also lies within the Felsted Neighbourhood Plan area, made on 25th February 2020.

5.7. Other material considerations in terms of policy and guidance include the following:

- National Planning Policy Framework (July 2021);
- National Planning Practice Guidance (first published March 2014);
- EN-1: Overarching National Policy Statement for Energy (July 2011);
- EN-3: National Policy Statement for Renewable Energy Infrastructure (July 2011);
- Paris Agreement of the United Framework Convention on Climate Change (December 2015);
- Climate Change Act 2008 (2050 Target Amendment) Order 2019;
- Energy White Paper (December 2020);
- The Carbon Budget Order (June 2021);
- Draft Overarching National Policy Statement for Energy (EN-1) and Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) (September 2021);
- Net Zero Strategy: Build Back Greener (October 2021);
- United Nations Climate Change Conference (COP26) (November 2021); and
- British Energy Security Strategy, UK Government (April 2022).

5.8. The Application Site is located within the Civil Parish of Felsted and Rayne, and within Felsted and Stebbing Ward as well as Rayne Ward.

Climate Change

5.9. Braintree District Council declared a Climate Change Emergency in July 2019 and announced a target to be carbon neutral as a Council as far as practical by 2030, as well as supporting communities to reduce the impacts of climate change across the Braintree District.

5.10. Uttlesford District Council declared a climate and ecological emergency in 2019 and as part of this commitment, they have approved a new Climate Crisis Strategy 2021-30.

Development Plan

Braintree District Council Local Plan Review (2005)

5.11. The Braintree District Local Plan Review was adopted by the Council on 25th July 2005. In accordance with the Secretary of State's Direction, all of the Local Plan, except for 11 policies which expired on 24th July 2008, are saved until it is replaced in whole (or in part) as new Development Plan documents are adopted. A number of policies in the Local Plan Review have expired, or have been superseded, since its adoption in 2005 for reference.

5.12. Relevant to the Proposed Development is **Policy RLP 76 Renewable Energy** which states:

"Proposals for renewable energy schemes and the integration of renewable energy generation into new developments, will be encouraged and permitted where no demonstrable harm is caused to landscape, nature conservation, or historic features within or immediately adjacent to the site. Developers are also encouraged to enter into a dialogue with the District Council to identify sites for renewable energy development."

5.13. The following policies are also considered relevant to the Proposed Development:

- **Policy RLP 62 - Development Likely to Give Rise to Pollution, or the Risk of Pollution;**
- **Policy RLP 65 - External Lighting;**
- **Policy RLP 69 - Sustainable Drainage;**
- **Policy RLP 73 - Waste Minimisation;**
- **Policy RLP 80 - Landscape Features and Habitats;**
- **Policy RLP 81 - Trees, Woodland Grasslands and Hedgerows;**
- **Policy RLP 84 - Protected Species;**
- **Policy RLP 90 - Layout and Design of Development;**
- **Policy RLP 105 - Archaeological Evaluation; and**
- **Policy RLP 161 - Utilities Development.**

Braintree District Council Core Strategy (2011)

5.14. The Braintree District Council Core Strategy sets out the vision, objectives and strategy for development of the District up to 2026 and was adopted on 19th September 2011. It contains a number of core policies that replace some of the Local Plan Review policies.

5.15. The Core Strategy has in part been replaced by Section 1 of the Local Plan 2013-2033 (including Policy CS9 – Built and Historic Environment, which referred to renewable energy proposals). The remainder of Core Strategy, along with the Local Plan Review will be replaced by Section 2 of the Local Plan 2013-2033 (Emerging Local Plan) upon adoption.

5.16. One of the twelve key objectives set out to reflect and underpin the vision and aims for Braintree District refers to 'Sustainability' and states:

"To ensure that all development is sustainable and minimises the use of scarce natural resources and addresses the causes and potential impacts of climate change, encourages renewable energy, and promotes the development of previously developed land and urban regeneration to limit the extent of greenfield land required and concentrates new growth at the most sustainable locations. To ensure that development avoids flood risk areas and reduces future flood risk where possible. To prevent a deterioration in water quality and where possible to take measures to improve it."

5.17. The following policies are considered relevant to the Proposed Development:

- **Policy CS 5 - The Countryside; and**
- **CS 8 - Natural Environment and Biodiversity.**

Braintree District Council Local Plan 2013-2033 Section 1 (2021)

5.18. The Braintree District Council 2013-2033 Section 1 was formally adopted on 22nd February 2021 and has the effect of replacing, in part, a number of the strategic policies contained within the Braintree District Core Strategy, adopted in 2011. The Local Plan 2013-2033 is a two part document which sets out the Strategic Plan for North Essex and strategy for development of the District up to 2033. Section 1 is shared with Colchester and Tendring Councils and covers all three Authorities.

5.19. The following policies are considered relevant to the Proposed Development:

- **Policy SP1 – Presumption in Favour of Sustainable Development; and**
- **Policy SP7 – Place Shaping Principles.**

Uttlesford Local Plan (2005)

5.20. The Uttlesford Local Plan was adopted in January 2005 and represents the latest planning policy adopted by Uttlesford District Council.

5.21. **Policy ENV15 Renewable Energy** states:

"***Small scale renewable energy development schemes to meet local needs will be permitted if they do not adversely affect the character of sensitive landscapes, nature conservation interests or residential and recreational amenity.***"

5.22. The following policies are considered relevant to the Proposed Development:

- **Policy S7 – The Countryside;**
- **Policy GEN1 – Access;**
- **Policy GEN2 – Design;**
- **Policy GEN3 – Flood Protection;**
- **Policy GEN4 – Good Neighbourliness;**
- **Policy GEN7 – Nature Conservation;**
- **Policy E4 – Farm Diversification: Alternative Use of Farmland;**
- **Policy ENV2 – Development Affecting Listed Buildings;**
- **Policy ENV4 – Ancient Monuments and Sites of Archaeological Importance;**
- **Policy ENV5 – Protection of Agricultural Land;**

- **Policy ENV7 – The Protection of the Natural Environment – Designated Sites;**
- **Policy ENV8 – Other Landscape Elements of Importance for Nature Conservation; and**
- **Policy ENV11 – Noise Generators.**

Felsted Neighbourhood Plan (2020)

5.23. The Felsted Neighbourhood Plan was formally made by the Council on 25th February 2020 and establishes a vision for the evolution and long-term sustainability of Felsted Parish and village.

5.24. The following policies are considered relevant to the Proposed Development:

- **FEL/ICH 1 – High Quality Design;**
- **FEL/ICH3 – Light Pollution;**
- **FEL/CW1 – Landscape and Countryside Character;**
- **FEL/CW3 – Footpaths, Bridleways and Cycleways;**
- **FEL/CW4 – Green Infrastructure; and**
- **FEL/INF1 – Flood Risk.**

Emerging Policy

Braintree District Council Emerging Policy

5.25. The Braintree District Council 2013-2033 Section 2 Local Plan sets out the policies, maps and sites for development, housing, employment as well as regeneration within the district. The Section 2 Local Plan is currently subject to an examination by Inspectors appointed by the Secretary of State for Communities and Local Government. At the time of writing the Section 2 Inspectors report was considered by the Local Plan Sub-Committee on 5th July and will now be considered by the Council on 25th July.

5.26. The following emerging policies are considered relevant to the Proposed Development:

- Policy LPP 1 - Development Boundaries;
- Policy LPP 50 - Built and Historic Environment;
- Policy LPP 55 - Layout and Design of development;
- Policy LPP 60 - Heritage Assets and their settings;
- Policy LPP 63 - Archaeological Evaluation, Excavation and Recording;
- Policy LPP 67 - Natural Environment and Green Infrastructure;
- Policy LPP 68 - Protected Species, Priority Spaces and Priority Habitat;

- Policy LPP 69 - Tree Protection;
- Policy LPP 70 - Protection, Enhancement, Management and Monitoring of Biodiversity;
- Policy LPP 71 - Landscape Character and Features;
- Policy LPP 74 - Climate Change;
- Policy LPP 76 - Renewable Energy Schemes;
- Policy LPP 78 - Flooding Risk and Surface Water Drainage;
- Policy LPP 79 - Surface Water Management Plan;
- Policy LPP 80 - Sustainable Urban Drainage Systems; and
- Policy LPP 81 - External Lighting.

Uttlesford District Council Emerging Policy

5.27. The Local Development Scheme (LDS) sets out the important dates regarding decisions and document publication targets for the preparation of the Local Plan. The first Issues and Options stage was conducted in 2020/21 as a series of consultations were held with the community and other stakeholders. The LDS details the Council plan for the Regulation 18 Preferred Options Local Plan to go to public consultation from November to December, with the Regulation 19 Submission Draft Local Plan targeted for consultation in November and December 2023. Final preparatory work on the submission plan is anticipated in January and February 2024, subsequently the final draft of the plan will be submitted to the Planning Inspectorate for examination in May 2024 and the Council anticipates adoption of the plan in March 2025.

National Planning Policy and Guidance

5.28. The Planning Statement will also consider the proposals against national planning policy and guidance, as material considerations, to the consideration of the planning application.

National Planning Policy Framework (NPPF) (July 2021)

5.29. The updated National Planning Policy Framework (NPPF) was published in July 2021 and sets out the Government's planning policies for England and how these are expected to achieve sustainable development.

5.30. Paragraph 2 states that the NPPF is a material consideration in planning decisions and also emphasises that planning "***decisions must also reflect relevant international obligations and statutory requirements***" which includes those relating to greenhouse gas emissions reduction targets, inter alia.

5.31. Chapter 14 'Meeting the challenge of climate change, flooding and coastal change' emphasises at paragraph 152 that the planning system should ***"support the transition to a low carbon future in a changing climate"*** and should help to "***to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise***

vulnerability and improve resilience; encourage the use of existing resources…; and support the delivery of renewable and low carbon energy and associated infrastructure*".*

5.32. Paragraph 158 confirms a positive presumption in favour of (non-wind) renewable energy development as follows:

"***When determining planning applications for renewable and low carbon development, local planning authorities should:***

a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b) approve the application if its impacts are (or can be made) acceptable…."

National Planning Practice Guidance (NPPG) (First Published March 2014)

5.33. The Government's National Planning Practice Guidance (NPPG) is web-based guidance which is intended to be read alongside the NPPF and is a material consideration in the consideration of planning applications.

5.34. The chapter on 'Renewable and Low Carbon Energy' provides guidance to help Councils in developing policies for renewable and low carbon energy and identifies relevant planning considerations to complement the content of the NPPF.

5.35. Paragraph 003 (Reference ID: 5-003-20140306) addresses the question of how local authorities develop a position strategy to promote the delivery of renewable and low carbon energy and emphasises as part of this "***that all communities have a responsibility to help increase the use and supply of green energy.***"

5.36. Paragraph 013 (ID: 5-013-20150327) is entitled "***What are the particular planning considerations that relate to large scale ground-mounted solar photovoltaic farms****?"* and sets out the following particular factors for consideration:

- ***"encouraging the effective use of land by focussing large scale solar farms on previously developed and non-agricultural land, provided that it is not of high environmental value;***
- ***where a proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/or encourages biodiversity improvements around arrays.***
- ***that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations are removed when no longer in use and the land is restored to its previous use;***
- ***the proposal's visual impact, the effect on landscape of glint and glare (see guidance on landscape assessment) and on neighbouring uses and aircraft safety;***
- ***the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun;***
- ***the need for, and impact of, security measures such as lights and fencing;***

- ***great care should be taken to ensure heritage assets are conserved in a manner appropriate to their significance, including the impact of proposals on views important to their setting. As the significance of a heritage asset derives not only from its physical presence, but also from its setting, careful consideration should be given to the impact of large-scale solar farms on such assets. Depending on their scale, design and prominence, a large-scale solar farm within the setting of a heritage asset may cause substantial harm to the significance of the asset;***
- ***the potential to mitigate landscape and visual impacts through, for example, screening with native hedges;***
- ***the energy generating potential, which can vary for a number of reasons including, latitude and aspect.***

The approach to assessing cumulative landscape and visual impact of large scale solar farms is likely to be the same as assessing the impact of wind turbines. However, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land topography the area of a zone of visual influence could be zero."

International and National Climate Change Context

5.37. Both national legislation and international agreements set targets for the reduction of carbon emissions and the increase in renewable energy generation. The NPPF states at paragraph 2 that planning decisions must reflect relevant international obligations, and the UK's legally binding commitments to energy targets is also an important material consideration.

5.38. The over-arching context is set by the **Paris Agreement** of the United Framework Convention on Climate Change in 2015 which introduced Nationally Determined Contributions (NDCs), national climate plans that include commitments to increasing renewable energy provision.

5.39. In 2019 the Government amended the **Climate Change Act 2008** by introducing a target for at least a 100% reduction of greenhouse gas emissions (compared to 1990 levels) in the UK by 2050.

5.40. The UK Government's **Carbon Budget Order** (June 2021) places a restriction on the total amount of greenhouse gases that the UK can emit over a 5-year period and are implemented to drive the requirements contained within the Climate Change Act 2008 to reach Net Zero emissions in less than 30 years.

5.41. The budget requires a reduction of UK greenhouse gas emissions of 78% by 2035 relative to 1990, a 63% reduction from 2019, which comprises the world's most ambitious greenhouse gas emissions reductions target.

5.42. The Prime Minister announced on 19th April 2021 that:

"**The Carbon Budget will ensure Britain remains on track to end its contribution to climate change while remaining consistent with the Paris Agreement temperature goal to limit global warming to well below 2°C and pursue efforts towards 1.5°C.**[1]**"**

[1] https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slashemissions-by-78-by-2035, Published 20th April 2021

5.43. The rapid role out of renewable electricity generation will form a key part of achieving this carbon budget.

5.44. These national and international objectives and commitments were endorsed by the COP26 summit hosted within the UK in November 2021. In order to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change almost 200 countries agreed to the Glasgow Climate Pact, to limit the rise in global temperature to 1.5 degree Celsius from pre-industrial levels.

Energy White Paper (December 2020)

5.45. The Energy White Paper was published by the Department for Business, Energy and Industrial Strategy (BEIS) to address the transformation of the UK's energy system towards the 2050 target for net-zero emissions. The foreword states that:

"The UK has set a world–leading net zero target, the first major economy to do so, but simply setting the target is not enough – we need to achieve it. Failing to act will result in natural catastrophes and changing weather patterns, as well as significant economic damage, supply chain disruption and displacement of populations."

5.46. The foreword concludes that:

"The way we produce and use energy is therefore at the heart of this. Our success will rest on a decisive shift away from fossil fuels to using clean energy for heat and industrial processes, as much as for electricity generation."

5.47. The White Paper recognises the progress made to increase deployment of renewables and sees the expansion of renewable technologies as a key contributor to achieving an affordable clean electricity system by 2050. It states (page 45):

"Onshore wind and solar will be key building blocks of the future generation mix, along with offshore wind. We will need sustained growth in the capacity of these sectors in the next decade to ensure that we are on a pathway that allows us to meet net zero emissions in all demand scenarios."

Overarching National Policy Statement (NPS) for Energy (EN-1) and Renewable Energy Infrastructure (EN-3)

5.48. The National Policy Statements (NPS) set out how the energy sector can help deliver the Government's climate change objectives by clearly setting out the need for new low carbon energy infrastructure to contribute to climate change mitigation and achieve decarbonisation targets.

5.49. The content of the NPS documents is a relevant material consideration for the purposes of the determination of this application, due to the essential role of the proposed infrastructure in contributing towards the delivery of renewable electricity generation and supporting the transition to a decarbonised electricity system.

5.50. Overarching NPS for Energy EN-1 was published in 2011 to set out national policy for energy infrastructure in the UK.

5.51. NPS EN-3 sets out the national policy for renewable energy projects, including the need for a "***significant increase in generation from large-scale renewable energy infrastructure***".

5.52. The Energy White Paper: Powering our Net Zero Future (2020) states that the existing designated NPS documents published in 2011 would be reviewed to ensure that they reflect the policies set out within the Energy White Paper and other elements of the current energy context. Subsequently, draft replacement NPS documents have been published for consultation, including updated draft NPS EN-1 and EN-3.

5.53. The draft NPS documents continue to confirm that the NPS may be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended) and describe that whether, and to what extent, NPS will comprise a material consideration will be "***judged on a case by case basis and will depend upon the extent to which the matters are already covered by applicable planning policy.***"

5.54. The draft revised NPS EN-1 explains that the Government's objective is to ensure the UK's supply of energy always remains secure, reliable, affordable and consistent with meeting the target to cut greenhouse gas emissions to net zero by 2050.

5.55. Draft NPS EN-1 emphasises that the country "***will need to dramatically increase the volume of energy supplied from low carbon sources and reduce the amount provided by fossil fuels***" (para. 2.3.4), with an "***urgent need for new generating capacity***" (para. 3.3.20). The draft NPS concludes that "***a secure, reliable, affordable, net zero consistent system in 2050 is likely to be composed predominantly of wind and solar***" (para. 3.3.21).

5.56. A draft revision of NPS EN-3 emphasises the Government's commitment to sustained growth in solar capacity to ensure that the UK is 'on a pathway' that allows it to meet net zero emissions. The document affirms at paragraph 2.47.1 that:

"***Solar farms are one of the most established renewable electricity technologies in the UK and the cheapest form of electricity generation worldwide. Solar farms can be built quickly and, coupled with consistent reductions in the cost of materials and improvements in the efficiency of panels, large-scale solar is now viable in some cases to deploy subsidy-free and at little to no extra cost to the consumer… As such solar is a key part of the government's strategy for low-cost decarbonisation of the energy sector.***"

5.57. Reference is made to the importance of the grid connection for Applicants of solar development and reinforces that the capacity of the grid network to accept the likely output from a proposed solar farm is critical to the technical feasibility of a development. Paragraph 2.48.12 describes:

"***Locating solar farms at places with grid connection capacity enables the applicant to maximises existing grid infrastructure, minimise disruption to local community infrastructure or biodiversity and reduce overall costs….***"

5.58. Draft NPS EN-3 includes specific guidance regarding agricultural land classification and land type in relation to solar development and references at paragraph 2.48.13 that whilst ground mounted Solar PV projects should utilise preferable agricultural land preferably of lower classification where possible that "***land type should not be a predominating factor in determining the suitability of the site location***".

Net Zero Strategy: Build Back Greener (October 2021)

5.59. In 2020 the Prime Minister set out the Government's 'Ten Point Plan for a Green Industrial Revolution.' In October 2021, the Net Zero Strategy: Build Back Greener policy paper was published which builds upon that 10 Point Plan in regard to the UK's carbon budgets, 2030 Nationally Determined Contribution and 2050 net zero target.

5.60. The Net Zero Strategy will be submitted to the United Nations Framework Convention on Climate Change (UNFCCC) as the UK's second Long-Term Low Greenhouse Gas Emission Development Strategy under the Paris Agreement. The Strategy addresses the objective of a decarbonised power system by 2035 (Section 3i), with a list of delivery commitments including to:

"***Take action so that by 2035, all our electricity will come from low carbon sources, subject to security of supply, bringing forward the government's commitment to a fully decarbonised power system by 15 years…***"

5.61. The Strategy confirms at Section 3i paragraph 11 that:

"***…the Energy White Paper's fundamental approach remains unchanged. A low-cost, net zero consistent electricity system is most likely to be composed predominantly of wind and solar generation, whether in 2035 or 2050.***"

5.62. The Strategy reiterates that the UK needs to continue to drive rapid deployment of renewables so that it can reach substantially greater capacity beyond 2030 (Chapter 3i, paragraph 35). Section 3i paragraph 36, which states that the Sixth Carbon Budget also requires:

"…a sustained increase to the deployment of land-based renewables such as locally supported onshore wind and solar in the 2020s and beyond."

5.63. Given the size of the challenge, the government states "***we will need to consider how low carbon energy infrastructure can be deployed at an unprecedented scale and pace sympathetically alongside the interests of our communities and consistent with our obligations to a sustainable environment, both land-based and marine***" (Chapter 3i, paragraph 32, page 102).

5.64. Paragraph 12 describes that to achieve the Carbon Budget 6 trajectory "***we will need to build all of these technologies at, or close to, their maximum technical limit, to meet the twin challenge of accelerating decarbonisation and servicing increased demand***."

UK Government British Energy Security Strategy (April 2022)

5.65. The UK Government published a British Energy Security Strategy in 2022 to describe how it proposes to enable the provision of secure, clean, and affordable British energy for the long term.

5.66. Accelerating the transition from fossil fuels via the deployment of renewable energy is a key component of achieving the strategy. Page 19 describes that a "***five fold increase in deployment of solar development by 2035 is required***" and states that *"**we will consult on amending planning rules to strengthen policy in favour of development on non-protected land***", described on page 30 as anticipated to be achieved by the end of 2022.

6. Conclusions and Questions.

6.1. It is requested that advice be given to inform the development proposals and preparation of a planning application. The following questions are included to guide the advice being sought at this pre-application stage:

1. Confirmation that the submission of this Proposed Development under the Town and Country Planning Act (1990) is the appropriate route and procedure for the determination of this Proposed Development?

2. Given the comments made with regard to the separate scheme being promoted nearby at Lord Rayleigh's Farm as explained at Section 4 of this report, confirmation that these two schemes can be separately progressed as separate planning applications under the Town and Country Planning Act (1990) (notwithstanding that these sites may require cumulative assessment as part of a subsequent determination under EIA Screening/Scoping Opinions)?

3. Confirmation of the appropriate pre-application fee for a meeting and provision of written advice?

4. Whether the Proposed Development may be regarded as acceptable 'in principle'?

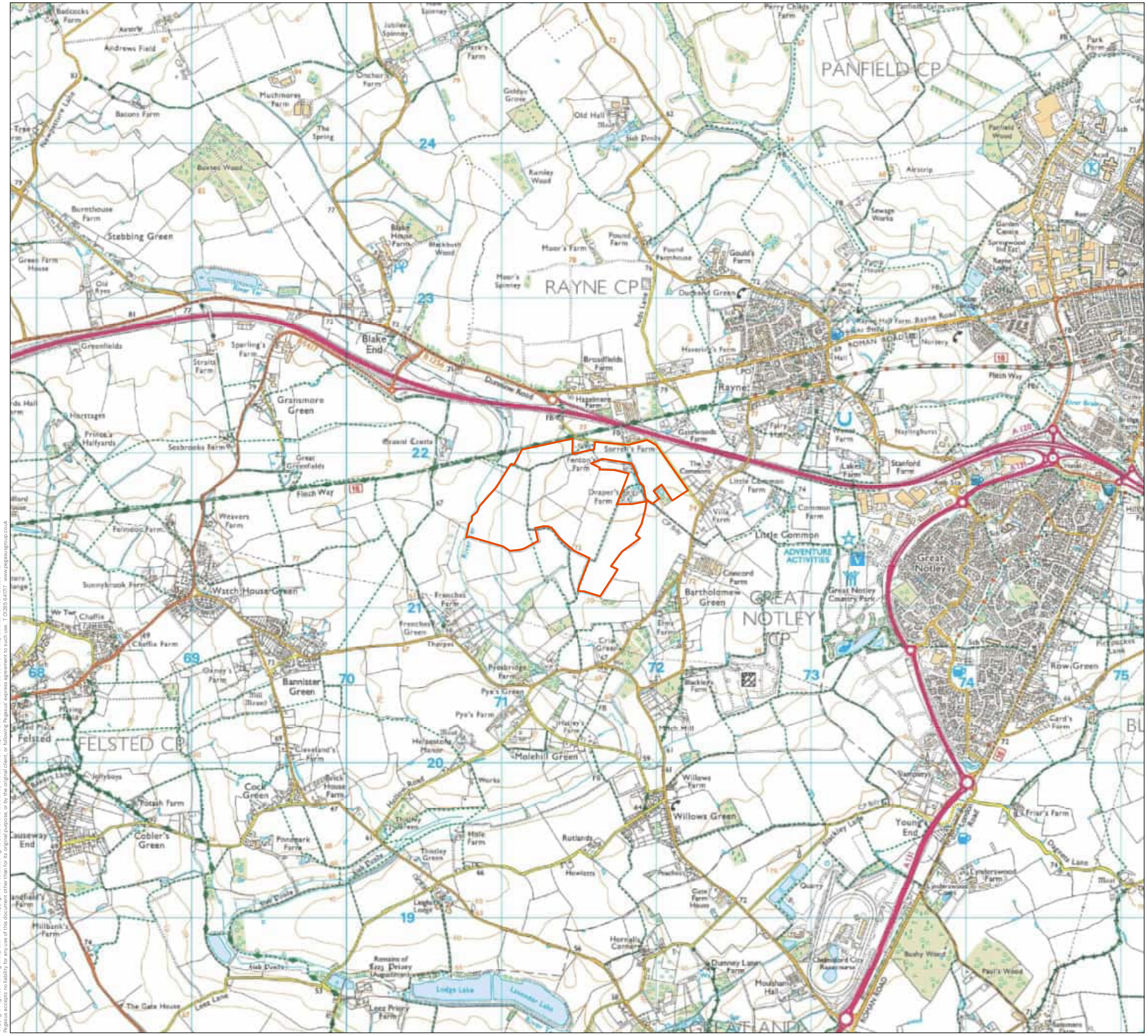
5. Are there any comments from specialist consultees (Landscape and Visual, Ecology, Highways, Flood Risk and Drainage, Heritage, Glint and Glare, Noise and Agricultural Land) which may inform the further refinement of the Proposed Development and assessment?

6. Confirmation regarding the extent of any information which is recommended to be submitted with the planning application to justify the site location in accordance with NPPG advice?

7. Are there any further planning policies, documents or guidance to those identified at Section 5 of this report which should be considered in the planning application submission?

8. What are the validation requirements for a planning application for the Proposed Development?

Appendix 1 – Site Location Plan.


PANFIELD CP
RAYNE CP
FELSTED CP
GREAT NOTLEY CP
Rayne
Great Notley
Braintree
Blake End
Gransmore Green
Stubbing Green
Watch House Green
Bannister Green
Cock Green
Cobler's Green
Causeway End
Felsted
Molehill Green
Willows Green
Little Common
Young's End
Row Green
Bartholomew Green
Great Notley Country Park
ADVENTURE ACTIVITIES
ROMAN ROAD
Duncan Road
Dunmow Road
Flitch Way
Lodge Lake
Lower Lake
Lees Priory
Remains of Lees Priory (Augustinian)
Stubbing Green
Old Hall Moat
Stub Ponds
Pond
Airstrip
Sewage Works
Nursery
Quarry
Bushy Wood
Paul's Wood
Ramsley Wood
Buntess Wood
Blackbush Wood
Pound Farmhouse
Pound Farm
Moor's Farm
Moor's Spinney
Golden Grove
Park's Farm
Perry Childs Farm
Panfield Farm
Panfield Wood
Andrews Field
Bacons Farm
Burnthouse Farm
Green Farm House
Old Ayes
Greenfields
Sparling's Farm
Straits Farm
Hazelmere Farm
Broadfields Farm
Haverils Farm
Gosselmonds Farm
Sorrells Farm
Fenton's Farm
Draper's Farm
Little Common Farm
Common Farm
Villa Farm
Stanford Farm
Lakes Farm
Naylinghurst
Fairy Hall
Hillcrest
Hillcrest Farm
Lyndenwood Farm
Lyndenwood
Friar's Farm
Oaklands Lane
Gate Farm House
Rotlands
Howletts
Thistley Green
Hole Farm
Willows Farm
Hatley's Farm
Pye's Green
Pyebridge Farm
Frenches Green
Frenches Farm
Thorpes
Okney's Farm
Chaffix Farm
Wr Twr
Sunnybrook Farm
Felsted Place
Jollyboys
Potash Farm
Brick House Farm
Cleveland's Farm
Helpestons Manor
Pond Farm
Pondsark Farm
Hillbank's Farm
Sandfield's Farm
Weavers Farm
Feltneos Farm
Sosbrooks Farm
Prince's Halfyards
Hinstages
Great Greenfields
Muchmores Farm
Dorchor Farm
Jubilee Spinney
The Spring
Blake House Farm
Mill (Ruined)
Gould's Farm
Carl's Farm
Blackley Farm
Crix Green
Dines Farm
Lodge Farm
Lodge
Lees Lane
The Gate House
Duncow Lane
Duncow Green
Parish Church
Sch
Fb
PO
Hall
Works
Pond
Tank
Sta
Cemetery
Garden Centre
Springwood Ind Est
Kayne Lodge
Kayne Hall
Kayne Hill Farm, Rayne Road
Gas Depot
Sawmills
Lodge
Cottage
Farm
Mast
Tower
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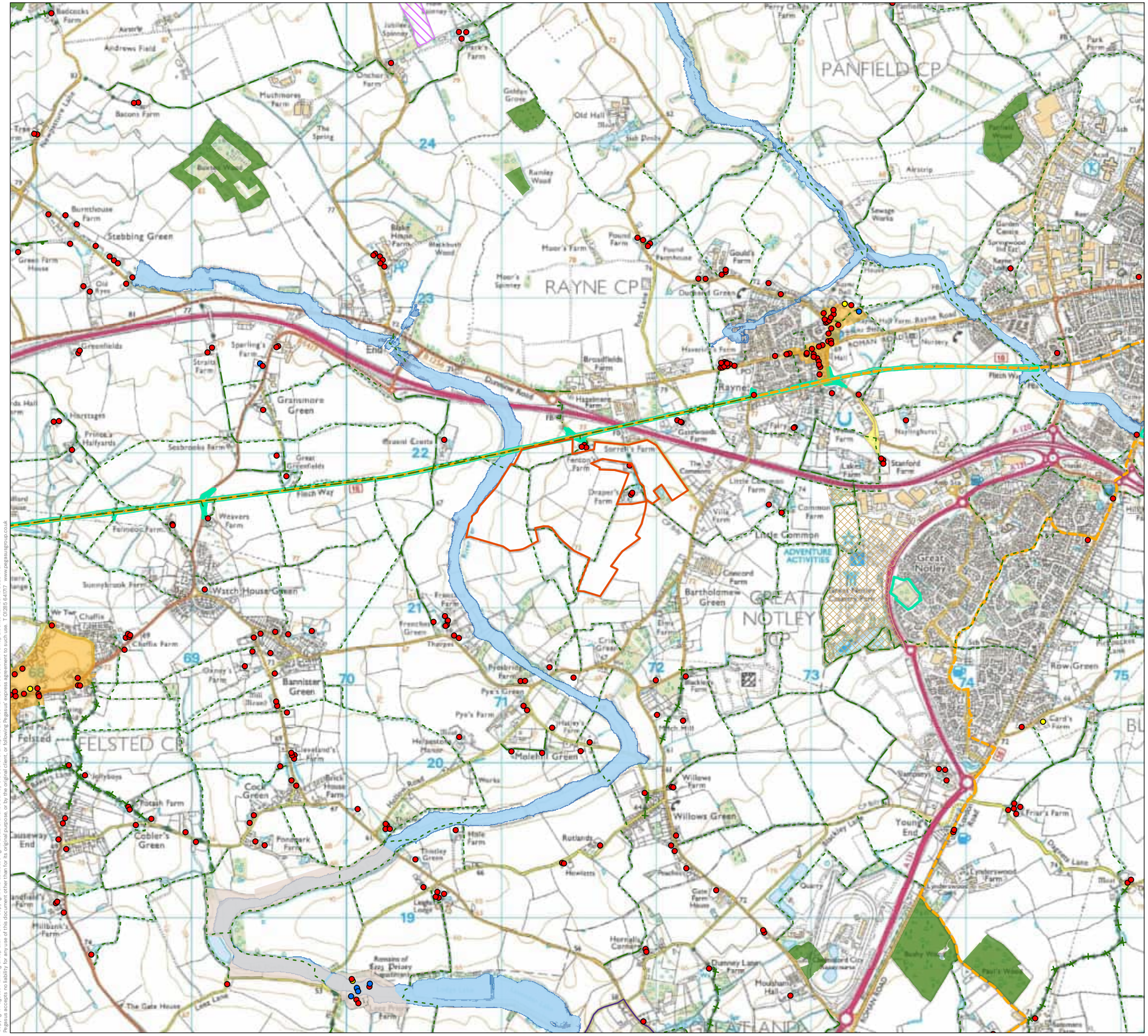
Appendix 2 – Environmental Designations Plan.



KEY

- Site Boundary
- National Cycle Route
- Regional Cycle Route
- CRoW Access Land
- Country Parks

Listed Building - Grade

- I
- II*
- II

- Registered Parks and Gardens
- Scheduled Monuments
- Conservation Area
- Local Nature Reserves
- Ancient Woodland
- EA Flood Zone 3
- EA Flood Zone 2
- Public Footpaths
- Public Bridleways
- Restricted Byway
- Public Byway open to all traffic

NOTES:
REVISIONS: First Issue (14/06/2022) SC

ENVIRONMENTAL DESIGNATIONS PLAN
DRAPER'S FARM

CLIENT
Bluestone

DATE	DRAWN	APPROVED	SCALE
16/06/2022	SC	IH	1:24,000@A3

SHEET	REVISION	DRAWING NUMBER
-	-	P22-1321_02

N

0 — 1 km

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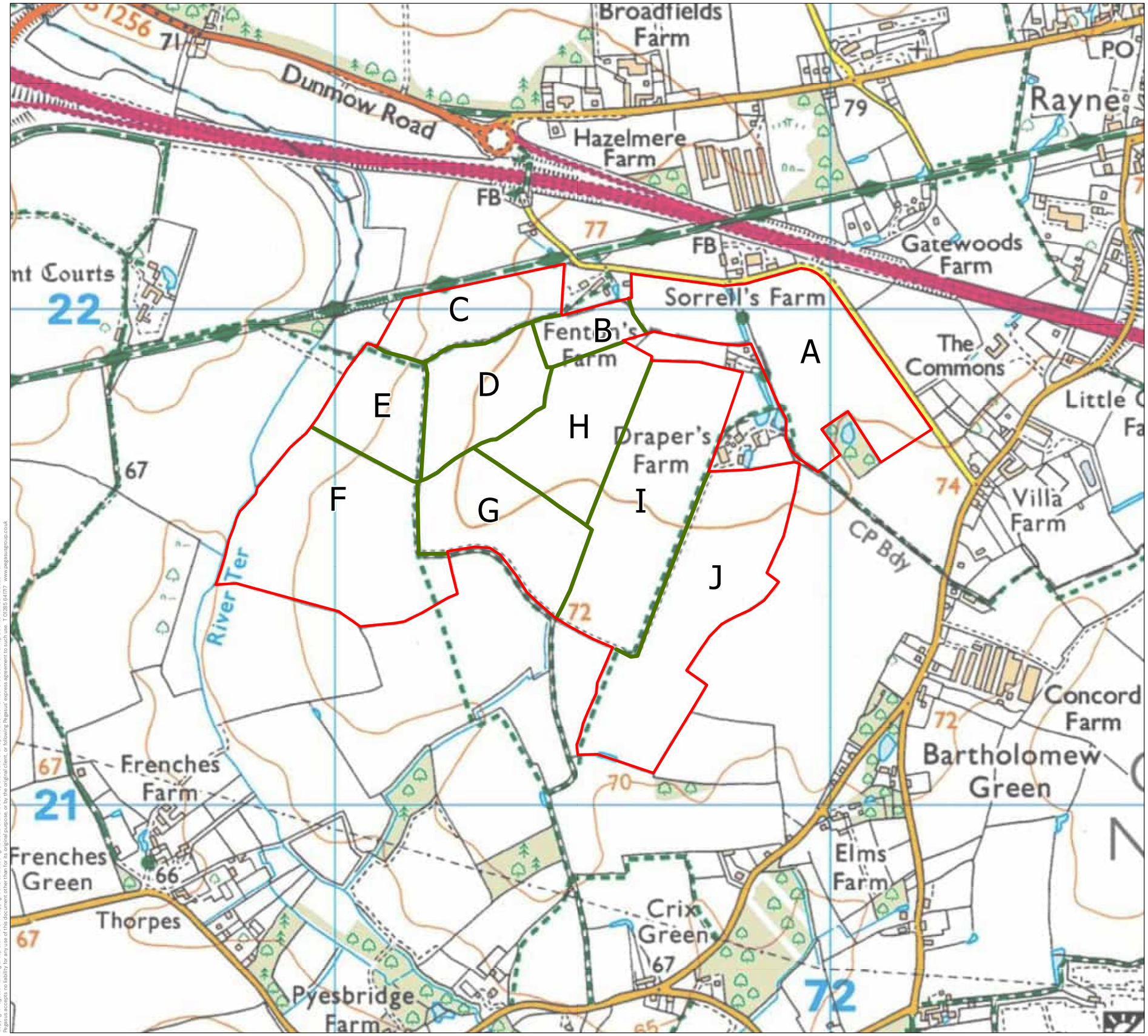
Appendix 3 – Parcel Plan and Mitigation Plan.



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KEY

- Site Boundary
- Parcel Divisions

NOTES:
REVISIONS: First Issue 25/07/2022 SC

PARCEL PLAN

DRAPER'S FARM

CLIENT
Bluestone

DATE	DRAWN	APPROVED	SCALE
25/07/2022	SC	AS	1:7,500@A3

SHEET	REVISION	DRAWING NUMBER
-	-	P22-1321_05

N

0 0.3 km

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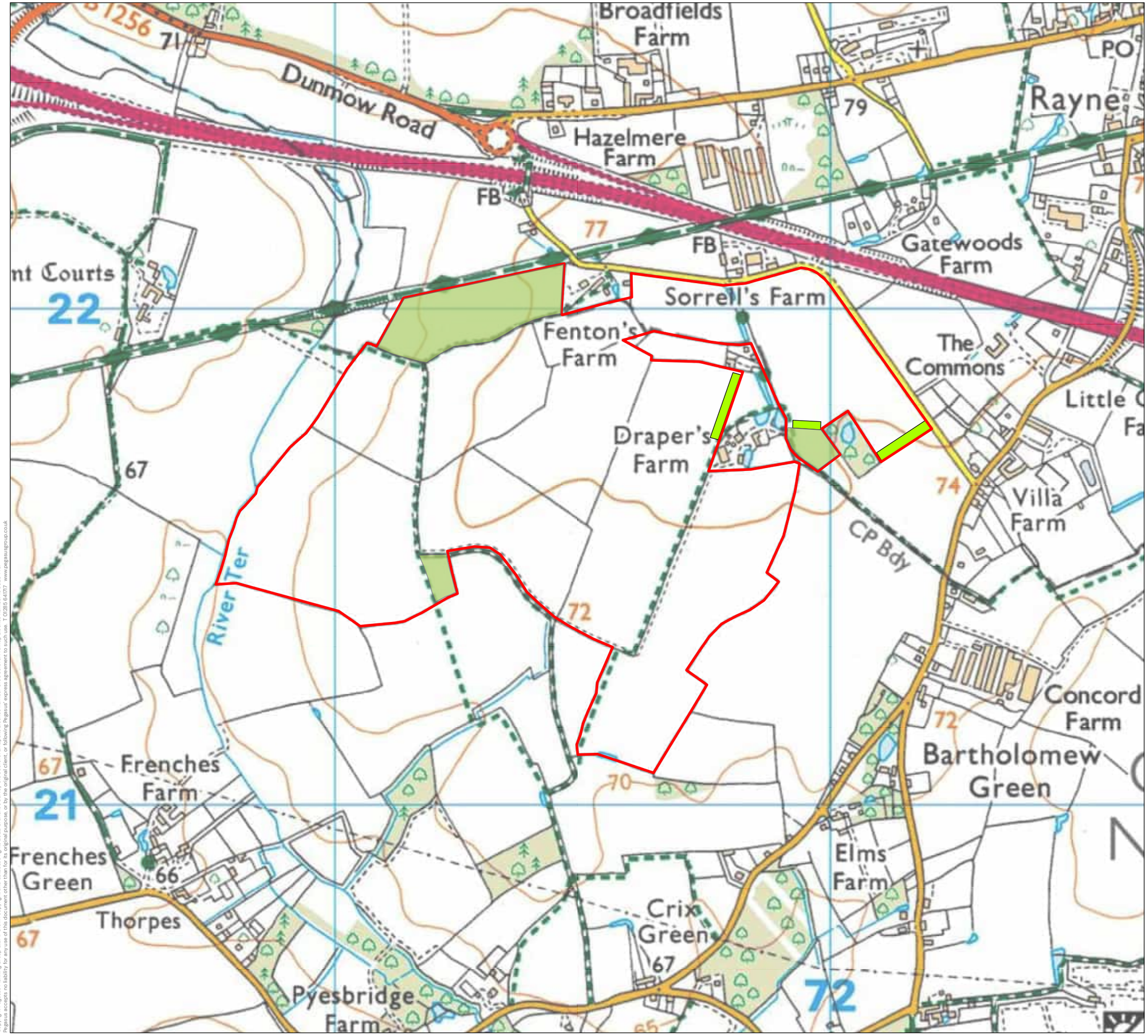

KEY

- Site Boundary
- Buffer Zone - No Development
- Proposed Hedgerows

NOTES:
REVISIONS: First Issue 25/07/2022 SC

MITIGATION PLAN

DRAPER'S FARM

CLIENT
Bluestone

DATE	DRAWN	APPROVED	SCALE
25/07/2022	SC	AS	1:7,500@A3

SHEET	REVISION	DRAWING NUMBER
-	-	P22-1321_04

N

0 0.3 km

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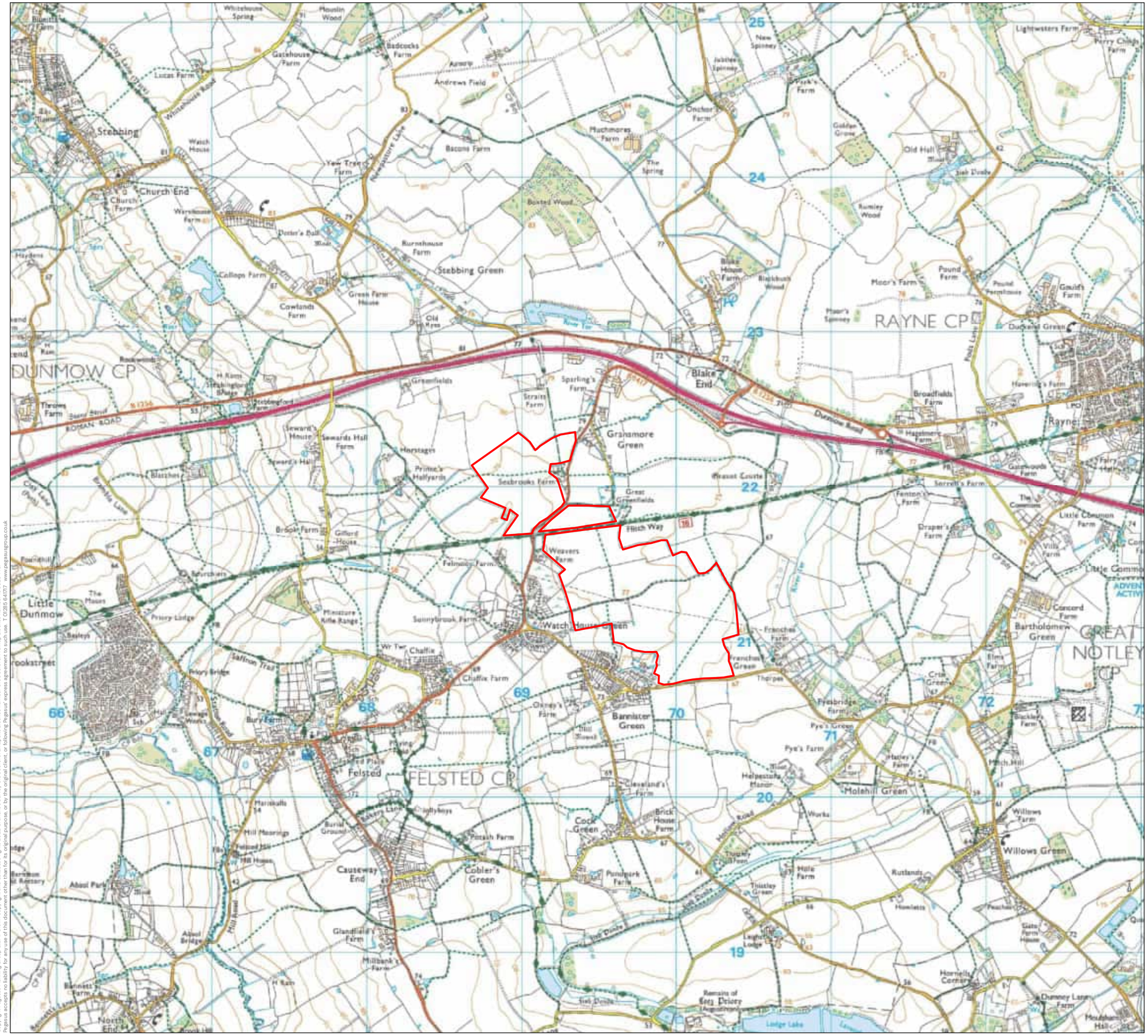
Appendix 4 – Land at Lord Rayleigh's Farm Site Location Plan.


Stebbing
Church End
Stebbing Green
DUNMOW CP
RAYNE CP
FELSTED CP
GREAT NOTLEY CP
Blake End
Grasmore Green
Watch House Green
Bannister Green
Molehill Green
Willows Green
Cock Green
Causeway End
Cobler's Green
Little Dunmow
Felsted
Rayne
Dunmow Road
Flitch Way
Roman Road
Braintree Lane
Newpasture Lane
Whitehouse Road
Saffron Trail
Andrews Field
Boxted Wood
Rumley Wood
Blackbush Wood
Lodge Lake
Remains of Priory (Augustinian)
Gatehouse Farm
Badcocks Farm
Bacons Farm
Machmores Farm
Onchan Farm
Old Hall
Lightwaters Farm
Perry Chicks Farm
Park's Farm
Moor's Farm
Pound Farm
Gould's Farm
Broadfields Farm
Haywards Farm
Duckend Green
Yew Tree Farm
Kurnshouse Farm
Green Farm House
Cowlands Farm
Callops Farm
Dester's Ball
Sparling's Farm
Strats Farm
Seabrooks Farm
Great Greenfields
Greenfields
Sewards House
Sewards Hall Farm
Horstages
Prime's Halfyards
Blatchet
Brook Farm
Gilford House
Weavers Farm
Felmores Farm
Sunnybrook Farm
Chalfix
Chalfix Farm
Bury Farm
Okney's Farm
Franchise Farm
Franchise Green
Thorpes
Frasbridge Farm
Pye's Farm
Pye's Green
Helpestalls Manor
Hatley's Farm
Hitch Hill
Crix Green
Bartholomew Green
Concord Farm
Little Common Farm
Fenton's Farm
Draper's Farm
Sorrells Farm
Hagsmore Farm
Gatewoods Farm
Brick House Farm
Potash Farm
Pondpark Farm
Thistley Green
Hole Farm
Rutlands
Homelands
Peachers
Willows Farm
Dunney Lane Farm
Mountnessing Hall
Abbot Park
Abbot Bridge
Glandfield's Farm
Millbank's Farm
Bannister's Farm
North End
Priory Lodge
Priory Bridge
Sewage Works
Mill Meadings
Marshalls
Burial Ground
Felsted Place
Felsted Mill
Mill House
Abbot's Hall
Rookwoods
Throwes Farm
Blake House Farm
Pound Farmhouse
Old Rees
Old Dunmow
Hall Dyke
Pincey Brook
Ash Dyke
Old Ditch
Wash
Works
Hall
Sch
Rec
Mill
Ho
Pond
Spr
Wr Twr
Meadow
Allotments
Rifle Range
Basleys
The Moors
Rookstreet
Barnston & Rectory
Throwes Farm
Bannister's Farm
Blatchet
Brook Farm
Gilford House
Felmores Farm
Sunnybrook Farm

Town & Country Planning Act 1990 (as amended)
Planning and Compulsory Purchase Act 2004

Cirencester
Pegasus House, Querns Business Centre,
Whitworth Road, Cirencester, GL7 1RT
T 01285 641717
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REQUEST FOR PRE-APPLICATION ADVICE

PROPOSED APPLICATIONS BY BLUESTONE ENERGY LIMITED UNDER S62A OF THE TOWN AND COUNTRY PLANNING ACT 1990.

S62A/2022/0008 (pre-app) - Draper's Farm (Drapers Chase Solar Farm), Rayne, Essex, CM77 6SN

S62A/2022/0009 (pre-app) - Land at Lord Rayleigh's Farm (Poplars Solar Farm), Dunmow, Essex, CM6 3JZ.

BACKGROUND

1. The request relates to proposed solar farms at (1) Draper's Farm, Rayne, Essex (Site A), and (2) Lord Rayleigh's Farm, Dunmow, Essex (Site B).
2. Most of Site A, Draper's Farm and all of Site B, Lord Rayleigh's Farm lie within the administrative area of Uttlesford District Council (UDC). A small part of Site A lies within the administrative area of Braintree District Council.
3. UDC is subject to a direction under S62A of The Town and Country Planning Act 1990, which allows a developer to apply for planning permission directly to the Planning Inspectorate (PINS).
4. Each development is described as, the installation and operation of a solar farm facility together with all associated works, equipment, and necessary infrastructure with a deliverable capacity of some 49.9MW.
5. A single 132kv DNO Substation would be constructed at Site B – Lord Rayleigh's Farm and that Site A - Drapers Farm would connect to this via a 5.7km cable. The 132kv DNO Substation on Site B - Lord Rayleigh's Farm would connect to the UK Power Networks Braintree Grid Supply Point on the south-eastern edge of Braintree.
6. The pre-application advice request for each proposal list 8 identical questions. The first 2 questions effectively require PINS to issue a determination whether the proposals should be determined either as (a) planning applications under The Town and Country Planning Act 1990 or (b) as a Nationally Significant Infrastructure Project (NSIP) under The Town and Country Planning Act 2008.

PINS RESPONSE

7. PINS is unable to provide a definitive answer to questions 1 and 2 for the following reasons.
8. First, the Planning Inspectorate (PINS) does not have the power to give a legally binding interpretation on such matters. Only the Courts can provide a definitive interpretation of legislation. Accordingly, it is for the developer to decide what to apply for and under which legislation having taken their own legal advice.
9. Second, a recently submitted application to the High Court raises similar issues to the substance of questions 1 and 2. An application[1] was made to

[1] CO/4780/2022

the High Court of Justice in London on the 20 December 2022 by Durham County Council and Hartlepool Borough (the claimants) for a judicial review of an Inspector's decision concerning a series of linked appeals. The appeals relate to a proposed solar farm, associated infrastructure and substation connections, and the construction of a substation and infrastructure in relation to an approved solar farm.

10. The Inspector decided that the appeals were valid and that she had jurisdiction to determine the appeals under the provisions of the TCPA. She did not consider it within her power to make a determinative ruling on whether any of the proposed developments could constitute an NSIP for which development consent was required as an extension to another solar farm.

11. The Claimants judicial review proceedings seek declarations that:

    1 the subject matter of the appeal applications comprises a NSIP under the Planning Act 2008,

    2 the Secretary of States does not have jurisdiction to determine the appeals under the Town and Country Planning Act 1990,

    3 the Claimants are not estopped from asserting that the Secretary of State does not have jurisdiction from determining the appeals.

12. The Claimants assert that the key question is whether any of the appeals can be considered an extension of the consented solar farm and that the developer should not be permitted to "salami slice" the schemes.

13. The parallel with the Draper's Farm and Lord Rayleigh's Farm schemes is the claimants' submission that an application for a sub-50Mw solar farm on Site X followed by a sub-50Mw solar farm on Site Y that share a common substation and other infrastructure should be regarded as a single generating station and therefore a NSIP and subject to the regime provided for by the 2008 Planning Act.

14. Given the similarities between the cases, PINS considers that it would be inappropriate to provide advice on the substance of questions 1 and 2 in advance of the Court determining the judicial review application.

15. Given the above, could you please indicate whether you wish to proceed with the request for advice in relation to questions 4 to 8 (question 3 relates to the pre-application fee which you have already agreed). If you do wish to proceed, the response would be on a without prejudice basis on the assumption that the applications could proceed under The Town and Country Planning Act 1990.

George Baird

Inspector

9 January 2023