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ENERGY AND CLIMATE CHANGE
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WASTE RESOURCE MANAGEMENT

BEACON FEN ENERGY PARK LTD

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GROUND CONDITIONS DESK STUDY

JANUARY 2024

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GROUND CONDITIONS DESK STUDY

JANUARY 2024

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1 INTRODUCTION

Background and Planning Status

1.1 This report has been prepared by Wardell Armstrong LLP (WA) on behalf of Beacon Fen Energy Park Ltd (the Applicant) and follows WA's Scoping Report (reference ST19595/0001, dated April 2023). This report has been prepared in accordance with WA Standard Terms and Conditions and Limitations, as described in Appendix 1.

1.2 This report supports the Preliminary Environmental Information Report (PEIR) for the proposed Beacon Fen Energy Park development. This is a proposed ground-mounted solar photovoltaic (PV) electricity generation and battery energy storage system (BESS), together with associated grid connection infrastructure, which is referred to as a whole as the 'Proposed Development'.

1.3 The 2023 Scoping Report determined the following recommended approach for assessing potential risks / effects relating to ground conditions:

"*Based on the initial review of publicly available data and in consideration of the nature of the Proposed Development, there is considered to be a low risk to sensitive receptors during both the construction and operational phases of the Proposed Development. It would, therefore, be disproportionate and unnecessary to prepare a specific ground conditions chapter for inclusion within the Environmental Statement (ES). It is recognised, however, that there is a planning requirement to ensure that potential contamination and ground conditions risks have been fully considered and addressed (e.g. as required by the government's Land Contamination Risk Management Guidance and the relevant National Policy Statements for Energy). It is, therefore, intended to produce a standalone Phase 1 Ground Conditions Desk Study for inclusion within the ES. This will ensure that a proportionate level of information and assessment is provided*".

1.4 The Planning Inspectorate's (PINS) Scoping Opinion (*Scoping Opinion: Proposed Beacon Fen Energy Park*, 26 May 2023) stated that they agree with the approach of carrying out a desk study and that this should form justification for either confirming the suitability of scoping Ground Conditions out of the ES or should it identify the possibility of significant effects for the assessment of these to be scoped into the ES. The Scoping Opinion also included correspondence from the Environment Agency stating their agreement to scoping Ground Conditions out of the ES provided that a separate Phase 1 Ground Conditions Desk Study is submitted. Correspondence from North Kesteven Council (NKDC) contained within the Scoping Opinion notes the

presence of a groundwater Source Protection Zones (SPZ) at the Site, although it is noted that due to a reduction in the size of the Site since Scoping this is no longer the case.

Site Location

1.5 The Site is located near Sleaford, Lincolnshire. The Site comprises a land parcel named Beacon Fen Energy Park (BFEP) (centred at approximate national grid reference (NGR: TF 14687 48004) together with a cable route corridor covering a large area to the south. These areas are referred to individually as the Solar Array Area and Cable Route Corridor or collectively as the Site. The Site location is shown on WA Drawing ST19595-120 and on Figure 1-1 below. The centre of the Site area is located at NGR: TF 17719 42741.

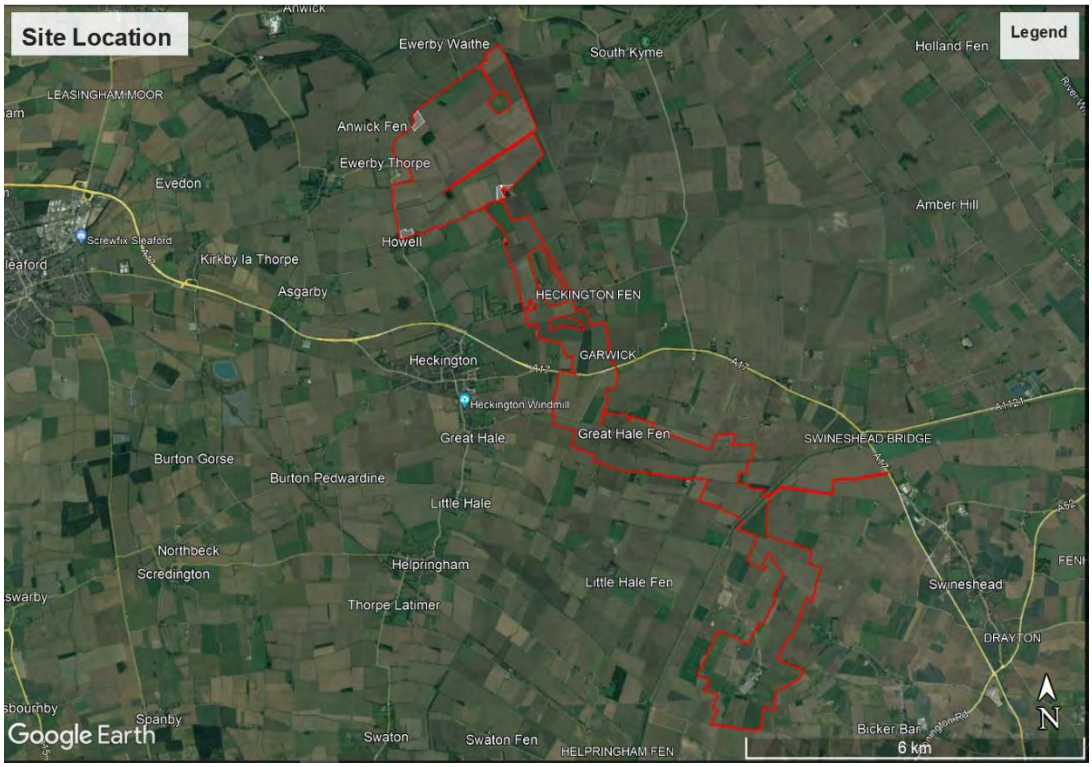


Figure 1-1. Site Location Plan, Google Earth.

1.6 The Solar Array Area is located to the north of Heckington and adjacent to Ewerby Thorpe, is circa (c.) 517 hectares (ha) in area and generally comprises arable fields with hedgerows and drainage ditches and sparse tree cover. The Cable Route Corridor is elongated in shape and covers an area southeast of the Solar Array Area, extending from the south of the Solar Array Area to the Bicker Fen Substation.

1.7 The Solar Array Area is located within the NKDC, with the Cable Route Corridor entering land within Boston Borough Council (BBC) and South Holland District Council (SHDC).

Proposed Development

1.8 The Proposed Development is an above ground solar panel array and BESS infrastructure at the Solar Array Area, which will be connected to wider electricity infrastructure by a new cable route to be installed to the south of the Solar Array Area within the Cable Route Corridor. At this stage, the location of the new cables within the Cable Route Corridor is currently being investigated and has not yet been finalised.

1.9 The solar panel farm infrastructure and engineering works within the Solar Array Area will include the following:

- Solar PV modules;
- PV solar mounting structures;
- Inverters;
- Transformers;
- High-voltage (HV) switchgear and control equipment;
- BESS;
- Electrical compounds;
- Temporary construction compounds;
- Onsite cabling kiosks;
- Storage facilities;
- Fencing, lighting and security;
- Drainage and utility connections; and,
- Access tracks, hardstanding and new or modified accesses.

1.10 The proposed development within the Cable Route Corridor will comprise the installation of new underground electricity cables to connect the Solar Array Area to Bicker Fen Substation and, in the south of the Cable Route Corridor, upgrading and extending the existing Bicker Fen Substation. At the time of writing, it has not yet been established whether this will include one larger substation compound or three smaller substation compounds. For either choice, the substation will include a control building anticipated to be around 20m x 20m in plan and around 6m high.

1.11 It is understood that the Proposed Development will have an operational life of approximately 40 years.

Scope and Objectives

1.12 In line with the planning background described previously, the overall purposes of this report are to:

i. Provide a geo-environmental Phase 1 desk study in accordance with relevant planning policy and guidance.
ii. Allow for conclusions to be made regarding the suitability of scoping the Ground Conditions topic out of the PEIR and, subsequently, the ES.

1.13 The general scope of work carried out in order to achieve these objectives comprises:

- A review of past and current uses of the Site and surrounding areas.
- A review of the geo-environmental setting of the Site, including geology, mining, hydrogeology and hydrology.
- The identification of potential contamination sources, pathways and receptors as part of a preliminary Conceptual Site Model (CSM).
- A preliminary geo-environmental risk assessment of any potentially viable source-pathway-receptor linkages identified.

1.14 This report has been prepared in general accordance with the principles of the Environment Agency's 'Land Contamination: Risk Management' (LCRM) guidance.

Data Sources

1.15 The history, environmental and geological setting of the Site and surrounding areas has been investigated by consultation with a range of publicly available information and purchased digital datasets, including:

- Historical mapping provided by Landmark Information Group in digital format, at 1:2,500 scale and 1:10,000 scale, dating from 1888 to 1994.
- Historical mapping available online from the National Library of Scotland.
- Google Earth satellite imagery from 2000 to present.
- British Geological Survey (BGS) Geohazards data ('GeoSure' data sets for soluble rocks, shrink swell clay, running sand, landslides, compressible ground, and collapsible ground).
- BGS bedrock and superficial geology mapping and aquifer data (1:50,000 scale).
- EA datasets available under Open Government Licence, comprising: groundwater and surface water abstractions, pollution incidents and discharge consents.

- UK Government open data sources (available under Open Government Licence), comprising: SPZ, authorised waste sites, historical landfill sites and nitrate vulnerable zones.
- Local planning documentation and maps regarding the locations of Local Geological Sites, including the Central Lincolnshire Local Plan StatMap Aurora Online Mapping.
- Radon risk designation data, available digitally from UK Radon.
- A data search reply from NKDC, confirming the absence of any sites formally determined as Contaminated Land under Part IIA of the Environmental Protection Act 1990, within their geographical boundaries.
- MAGIC Interactive Map (online: https://magic.defra.gov.uk/magicmap.aspx).

Limitations

1.16 This report has been prepared in support of the PEIR. Should the redline boundary or any pertinent aspect of the design of the Proposed Development change prior to submission of the ES, this report will need to be updated accordingly.

1.17 At the time of writing, historical mapping data has not been obtained for the Cable Route Corridor. Owing to the nature of the area (i.e. agricultural land), the nature of the Proposed Development within the Cable Route Corridor (i.e. cable installation after which the fields will revert to agriculture) and its size (c. 900 ha), it is considered that the review of historical mapping is best deferred until this report is updated for submission with the ES, when a more refined (smaller) area is likely to be applicable. This approach prevents unnecessary and disproportionate assessment / information at the PEIR stage, whilst still ensuring a comprehensive assessment in support of the ES. Similarly, walkover surveys to inform this report have been restricted to the Solar Array Area, with the approach being that targeted walkovers will be undertaken at the Cable Route Corridor once the 900 ha area has been refined, and this report updated accordingly prior to submission as part of the ES.

1.18 Further to initial drafting of this report, the Proposed Development has been updated to include an access road, which connects the Solar Panel Array area to the A17 south of Ewerby and east of Kirkby la Thorpe. This area was added to the overall Site following purchase of the historical maps and therefore has not been considered within this assessment. This report will be updated to review the environmental and geological setting for the access route following the purchase of relevant data. It should be noted that many of the drawings referenced within this report are linked to

other disciplines within the wider project and have therefore been updated to include an access road, even though this area has not been assessed within this report.

1.19 This report focusses primarily on geo-environmental issues. For information, some limited and basic general commentary is provided on geotechnical engineering constraints in Section 7. This is not intended to be comprehensive nor to constitute any formal geotechnical desk study nor to form any part of the formal geotechnical design process. Geotechnical desk studies and design reports should be undertaken as deemed necessary by the engineering designers of the Proposed Development.

1.20 This report does not provide any appraisal of the likely foundations solution for any structures at the Site. For the purpose of geo-environmental assessment, it is assumed that either shallow or deep foundations (e.g. piles) may be required.

1.21 This report does not consider Flood Risk or Water Resources matters that are covered within the Water Resources chapter of the PEIR.

2 SITE HISTORY AND CURRENT LAND USE

Site History

Solar Array Area

2.1 Based upon a review of historical mapping and satellite imagery dated between 1888 and present for the Solar Array Area and surrounding 250m, the Solar Array Area and surrounding areas have not undergone significant changes throughout this (135-year) timeframe. The historical maps for the solar array area have been presented on WA Drawings ST19595-180 – 186. The earliest mapping edition shows the Solar Array Area to predominantly comprise undeveloped land or agricultural fields and to be split into many field parcels bordered by hedgerows, drains or trees.

2.2 From the earliest mapping edition onwards, the Hodge Dike runs through the Solar Array Area from northeast to southwest, with a draining pump in the east. The Catchwater Drain runs through the centre of the Solar Array Area from the north-west and connects to the Hodge Dike in the centre of the Solar Array Area. The Twelve Drain is present, running northeast to southwest, in the north of the Solar Array Area. A small, unmarked structure is present in the far west of the Solar Array Area, from which an access track leads through the Solar Array Area from west to east. An area of woodland labelled Fox Covert is present in the north-west of the Solar Array Area. The Heckington Tunnel and Waithe Pumping Engines are present in the north-east corner of the Solar Array Area, adjacent to the Car Dike.

2.3 Several farms are present immediately surrounding the Solar Array Area, including one that is surrounded by (but outside) the Solar Array Area boundary in the north-east of the Site. Asgarby Fen Farm is located immediately south of the Solar Array Area, with Cottager's Plot adjacent to the farm. The Car Dike (Roman Canal) is present along the eastern Site boundary, extending north and south of the Solar Array Area. The village of Ewerby Thorpe is present immediately west of the Site, with the Town of Ewerby located further to the west.

2.4 The Village of Howell is present immediately southwest of the Solar Array Area, which includes a farm, a hall, a church and a rectory with a moat. Minor roads are present along the north, south and west boundaries of the Solar Array Area, with limited residential properties along their traces. Land beyond the roads and the Car Dike are shown to comprise agricultural land in all directions surrounding the Solar Array Area. The River Slea is located c. 850m north of the Site, with a toll gate and bridge north-east of the Site where it meets the Car Dike.

2.5 No significant changes to the Solar Array Area or surrounding areas (250m buffer) have been identified on any of the mapping through to present day, aside from minor changes to field boundaries and moderations to farm structures. On 1:2,500 scale mapping, the Catchwater Drain is shown to be within a cutting.

Cable Route Corridor

2.6 As noted in Section 1 of this report, full historical mapping is yet to be obtained for the Cable Route Corridor. This information will be obtained and reviewed prior to final issue of this report in support of the ES. For the purpose of PEIR, an initial review of freely available historical maps, held by the National Library of Scotland, together with Google Earth historical imagery, has been carried out.

2.7 On the earliest available mapping (1888), the land is generally recorded to comprise agricultural land with small areas of woodland. The field parcels are generally bound by hedgerows, access tracks or drainage channels. Many farms are present across the Cable Route Corridor, but not with built development of any significant size. The Great Northern Railway line is present crossing through the centre of the Cable Route Corridor in an east to west orientation, extending beyond the Cable Route Corridor boundary in both directions. The Heckington Eau surface water body crosses through the north of the Cable Route Corridor, extending south-west towards Heckington and north-east to connect with the Head Dyke. To the south of the railway line, the South Forty Foot Drain is present, orientated south to north-east through the Cable Route Corridor, before diverting east and running parallel to the railway line. Roads associated with the local road network are present. The Car Dyke is present c. 700m east of the Cable Route Corridor in the far north and runs parallel to the Site. Further south, this feature crosses through the centre of the Cable Route Corridor, east of Heckington, and subsequently continues beyond the Cable Route Corridor to the south. The Hammond Brook is located immediately south-east of the Cable Route Corridor.

2.8 Google Earth Imagery shows the A17 as having been constructed by c. 2000, which is an expansion of the existing access road to the Town of Heckington, and crosses the Cable Route Corridor on an east to west orientation. This follows the route of a previous local road, although the extent of the road is likely to be more significant in width crossing the Cable Route Corridor than the previous local route.

2.9 The Bicker Fen Substation appears to be present from c. 2005, onwards, in the far south of the Cable Route Corridor. There are also various pylons and overhead lines connecting into this substation within the Cable Route Corridor. From c. 2019, onwards, wind turbines are present surrounding across the south of the Cable Route Corridor (to the south of where the minor road, Bicker Drove, crosses the Cable Route Corridor), associated with Donnington Wind Farm.

2.10 With the exception of the substation and wind farm developments in the south of the Cable Route Corridor and the construction of the A17 through the centre of the Cable Route Corridor, no areas of significant built development, changes in land use or likely sources of significant ground contamination potential were identified by the review of historical mapping.

Current Land Use

2.11 A site walkover was completed by a WA Engineer on 6th July 2023. The walkover route was planned to provide good spatial coverage across the Solar Array Area. No part of the Cable Route Corridor was covered within this walkover. It is understood that the Solar Array Area falls under ownership of three landowners and permission was obtained from each to allow access on the date of the walkover.

2.12 The Solar Array Area was found to generally comprise agricultural land split into approximately 40 No. field parcels. These were generally segregated by drainage ditches or dirt, gravel or grass covered tracks. The Solar Array Area was observed to be relatively flat lying across its entirety, with little variation in elevation aside from the drainage ditches.

2.13 The perimeter of the Solar Array Area is lined with dense hedgerows and trees, with roads along the northern, western and southern site boundaries. The edges of the field parcels and drainage ditches were generally overgrown with weeds and vegetation, but the majority of the open field areas appeared to be maintained in good condition. Where clay was exposed at surface along the access tracks, desiccation cracks were present, considered to be a result of extended hot weather prior to the walkover survey.

2.14 The Solar Array Area is bisected through the centre by a culvert trending north-west to south-east, which links into the Car Dyke immediately east of Site, which (in turn) runs along the eastern boundary of the Site. Parallel and north of this feature, a large gravel track runs through the centre of the Solar Array Area, which is wide enough for vehicle and machinery access to the Site. This is blocked by a padlocked gate on the

western Site boundary. Adjacent to this track, within the centre/east of the Site, is an area currently used by the landowners as miscellaneous storage. Items present within this part of the Solar Array Area include a large fertiliser tank, disused farm machinery, waste stockpiles and discarded rotting hay bales. The tank was labelled as containing 'Yara N37 Fertiliser'. A review of the Safety Data Sheet for this product (available online) indicates that it is an ammonium nitrate fertiliser. The large fertiliser tank appeared to be in good condition, with no evidence of leaks or spills, and was sited on a concrete base. The waste stockpiles were observed to include many manmade constituents, including bricks, plastics, glass, tarpaulin, cement and ceramics. Rusty metal was also observed in this area. Photographs from the walkover are included in Appendix 2.

2.15 Several tracks lead south into the Solar Array Area from the northern Site boundary, secured from public access by padlocked gates. Small wooded areas were recorded in the northern half of the Solar Array Area, adjacent to access tracks. No evidence of contamination was observed within these areas.

2.16 Gravel/dirt tracks also lead into the Solar Array Area from the south, some of which are blocked by padlocked gates and others open for access. Halfway along the southern boundary of the Solar Array Area, an access point was observed wide and level enough to be suitable for vehicular access. Adjacent to this, an area of cement hardstanding was observed with waste stockpiles including brick and cement. No further evidence of possible contamination was observed within this area.

3 GEOLOGICAL AND HYDROGEOLOGICAL SETTING

Geology

3.1 The assessment of the geology at the Site is based upon published geological mapping from the British Geological Survey (BGS). Geological mapping for the Site (both the Solar Array Area and the Cable Route Corridor) is reproduced on WA Drawings ST19595-161 – Superficial Geology, ST19595-162 – Bedrock Geology and ST19595-163 – Artificial Geology.

3.2 A summary of the published geology of the Solar Array Area is provided in Table 3-1, below. A summary of the geological information relating to the Cable Route Corridor is provided below in Table 3-2.

Table 3-1: Summary of Published Geology for the Solar Array Area

Made Ground	One area of Made Ground is recorded within the Solar Array Area boundary, located adjacent to an access track leading to the south of the Site and is recorded as an artificial deposit of undivided made ground. This appears to correlate with a rectangular (assumed manmade) water filled feature in this location and immediately adjacent land that is generally heavily vegetated. This feature was formed after 1994. No other made ground is recorded within the Solar Array Area, but might be present at limited thickness along roads/access tracks and surrounding existing properties. Made ground deposits of significant thickness and extents are not expected within the Solar Array Area.
Superficial Deposits	The north and east of the Solar Array Area are recorded to be underlain by Tidal Flat Deposits, generally recorded as clay and silts. The centre, west and south of the Solar Array Area are recorded to be underlain by Mid-Pleistocene Till deposits (Diamicton). An area within the centre of the Solar Array Area is recorded to be underlain by Alluvium (Clay, Silt, Sand and Gravel) and a small area in the south of recorded as underlain by Glaciofluvial Ice Contact Sand and Gravel deposits.
Solid Strata	The majority of the Solar Array Area is recorded by the BGS 1:50,000 scale mapping to be underlain by solid strata of the Oxford Clay Formation, which is generally described as a silicate mudstone with sporadic beds of limestone nodules. The land in the far east of the Solar Array Area is recorded to be underlain by interbedded mudstone and siltstone of the West Walton Formation.
Geological Structure	A fault is recorded as running along the southern boundary of the Solar Array Area, trending northeast to southwest, extending into the Cable Route Corridor to the south, but does not enter the boundary of the Solar Array Area. The Site is not located within an area of major geological folding with the beds generally dipping at very shallow angles to the east.
Ground Stability Hazards	Collapsible Deposits: Class A (Tidal Flat Deposits) or Class B (Till and Glaciofluvial Deposits) – not considered or unlikely, respectively, to be present across the Solar Array Area. Compressible Ground: Class A (Till) – not thought to be present where these deposits underlie the Solar Array Area, and Class D (Tidal Flat Deposits and Alluvium) – hazards are probably present where these deposits underlie the Solar Array Area. Running Sand: Class B (Till) – unlikely to be present where these deposits underlie the Solar Array Area. Class C (Alluvium) – possibly present where these deposits underlie the solar panel area. Class D (Tidal Flat Deposits) – probably present where these deposits underlie the Solar Array Area i.e. in the northern half and east of this area. Shrink Swell Clays: Class D – predominantly high plasticity ground conditions, with localised pockets of Class C (predominantly medium plasticity) along the southern boundary of the Solar Array Area and Class A – not believed to be present where Glaciofluvial Deposits are recorded. Soluble Rocks: Class A – not thought to be present or not prone to dissolution. Landslides: Class B – unlikely to occur. The spatial distribution of the various classifications listed above is shown on Drawings ST19595-133 to ST19595-137 inclusive, with the exception of soluble rocks (not necessary to show on a drawing due to the uniformity of the classification).

Table 3-2: Summary of Published Geology for the Cable Route Corridor	
Made Ground	BGS 1:50,000 geological mapping does not record the presence of made ground within the Cable Route Corridor. However, the Cable Route Corridor crosses several roads, railway lines and access tracks where made ground is expected at variable thicknesses. It is considered unlikely that made ground would be present across the majority of the Cable Route Corridor in significant thicknesses as the land is predominantly agricultural land.
Superficial Deposits	The southern half of the Cable Route Corridor is recorded to be underlain entirely by clay and silt of Tidal Flat Deposits, which extend significantly beyond the Cable Route Corridor to the north, east and south. The northern half of the Cable Route Corridor is underlain by variable superficial deposits, the most extensive of which is recorded to be Mid-Pleistocene Till deposits. Localised areas in the north and centre are underlain by Sleaford Sand and Gravel, Glaciofluvial Sheet Deposits or Till deposits.
Solid Strata	Approximately half of the Cable Route Corridor (north-west and east) is recorded to be underlain by interbedded mudstone and siltstone of the West Walton Formation. The centre and south of the Cable Route Corridor is underlain by mudstone of the Oxford Clay Formation.
Geological Structure	A fault is recorded to cross the north of the Cable Route Corridor, extending east and west of the cable route corridor. A second fault is present within the far north of the Cable Route Corridor, which extends to the east and west of the site.
Ground Stability Hazards	Collapsible Deposits: Class A (Tidal Flat Deposits) or Class B (Till, Sand and Gravel and Glaciofluvial deposits) – not considered or unlikely, respectively, to be present across the Cable Route Corridor. Compressible Ground: Class D – hazards are probably present in the southern half of the Cable Route Corridor and localised areas in the northern half with the remainder of the area, associated with the Till and Glaciofluvial Deposits, recorded as Class A – not believed to be present. Running Sand: Class D – running sand conditions are recorded by the BGS as 'probably present' in the southern half of the Cable Route Corridor and localised areas in the northern half with the remainder of the area, associated with the Till and Glaciofluvial Deposits, recorded as Class B – unlikely to be present. Shrink Swell Clays: Class D – predominantly high plasticity ground conditions within a localised area in the north of the Cable Route Corridor. The majority of the Cable Route Corridor has medium plasticity (Class C) ground conditions. Two areas within the north of the cable route are within Class A, with shrink swell clays not believed to be present. Soluble Rocks: Class A – not thought to be present or not prone to dissolution. Landslides: Class B – unlikely to occur. The spatial distribution of the various classifications listed above is shown on Drawings ST19595-133 to ST19595-137 inclusive, with the exception of soluble rocks (due to the uniformity of the classification).

Hydrogeology

3.3 Hydrogeological information has been obtained from a review of:

- BGS Aquifer Designation data provided by Landmark Information Group.
- The MAGIC Interactive map.

Solar Array Area

3.4 The Till superficial deposits in the centre, west and south of the Solar Array Area are designated as a Secondary Undifferentiated Aquifer, which is a designation that is applied where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the soil type. These usually only have a minor value and this designation is likely to be due to the largely variable characteristics of these deposits.

3.5 The Alluvium and Glaciofluvial Deposits in the centre and south of the Solar Array Area are designated as a Secondary A Aquifer, which are described by the Environment Agency as permeable layers capable of supporting water supplies at a local (rather than strategic scale) and, in some cases, forming an important source of base flow to rivers. The Tidal Flat Deposits present in the north and east of the Solar Array Area are designated as Unproductive Strata. The spatial arrangement of the aquifers described above is shown on Drawing ST19595-150.

Cable Route Corridor

3.6 The southern half of the Cable Route Corridor is underlain by Tidal Flat Deposits, designated as Unproductive Strata. The majority of the northern half of the Cable Route Corridor is underlain by the Till deposits designated as a Secondary Undifferentiated Aquifer. The localised areas of Glaciofluvial Deposits or Sleaford Sand and Gravel in the northern half of the Cable Route Corridor are designated as Secondary A Aquifers.

3.7 The solid strata of the Oxford Clay Formation and West Walton Formation is designated as Unproductive Strata beneath both the Solar Array Area and Cable Route Corridor.

Source Protection Zones

3.8 The Solar Array Area, Cable Route Corridor and surrounding land are not located within a SPZ catchment. The closest SPZ to the Solar Array Area is located c. 2.15km north-west, with the SPZ 1 inner catchment located c. 2.60km north-west of the Site.

Groundwater Flooding

3.9 As a separate Flood Risk Assessment (FRA) Report and a Water Resources Chapter are being produced for this project, the risk of groundwater flooding is beyond the scope of this assessment and has not been included within this report.

Discharge Consents

3.10 No discharge consents are recorded within the Solar Array Area or the Cable Route Corridor. The discharge consents within 2km of the Site boundary are shown on WA Drawing ST19595-132, with the closest located just outside the Solar Pannel Array boundary at Austhorpe Farm. The discharge consents within proximity of the cable route corridor relate to sewage works or farms.

Water Abstractions

3.11 There are three recorded surface water abstractions located within the Solar Array Area and four recorded surface water abstractions located within the Cable Route Corridor. All of these permits relate to use for irrigation.

3.12 There are several surface water abstractions for irrigation located within a 2km buffer of either the Solar Array Area or the Cable Route Corridor, as shown on WA Drawing ST19595-132. These abstractions appear to be from the extensive surface drainage network that is present within the Site and in the surrounding area. One of the abstractions, located immediately adjacent to the south of the Cable Route Corridor (at White House Farm), is also licensed for the transfer of water between sources.

3.13 There are no groundwater abstractions located within 250m of either the Solar Array Area or the Cable Route Corridor. The closest groundwater abstraction is recorded to be c. 2.9km north-west of the Site at May Park Chicken Factory. The closest recorded potable water abstraction to the Site is a groundwater abstraction located c. 5.5km west of the Cable Route Corridor.

3.14 The locations of recorded surface water and groundwater abstractions at and within 2km of the Site are shown on Drawing ST19595-132.

Nitrate Vulnerable Zones

3.15 The Solar Array Area and Cable Route Corridor are located entirely within the 'Black Sluice Internal Drainage Board (IDB) draining to the South Forty Foot Drain' Nitrate Vulnerable Zone (NVZ), which extends far beyond the Site to the east, west and south. The land immediately north of the Solar Array Area is located within the 'Lower Witham' NVZ.

Hydrology

3.16 Many surface water features are present within the Solar Array Area and Cable Route Corridor, predominantly small features along field boundaries. Larger surface drains that are present include the South Forty Foot Drain, which crosses the Cable Route Corridor, the Heckington Eau, which crosses the north of the Cable Route Corridor and the Car Dyke, which forms part of the eastern boundary of the Solar Array Area.

3.17 Several small reservoirs, ponds and other surface water features are present within the Site.

4 MINING AND QUARRYING

4.1 Research of the mining and quarrying setting of the Site has been carried out based on an examination of the published geological and topographical information and the Coal Authority's Online Interactive Map Viewer. The Site does not fall within a known coalfield area and, as such, underground workings of coal and coal mining features are not expected.

4.2 A review of the available historical maps for the Solar Array Area and Cable Route Corridor did not identify any recorded areas of surface quarrying or pits within the Site or surrounding areas. No features associated with likely underground workings were evident on the historical maps, such as mine shafts or mining spoil heaps.

4.3 Therefore, the possibility that the ground conditions at the Site are affected by historical mining or quarrying is considered to be low.

5 ENVIRONMENTAL SETTING AND CONSULTATIONS

Contaminated Land Register Entries and Notices

5.1 There are no known recorded contaminated land register entries or notices (i.e. sites formally designated as 'contaminated land' under Part 2A of the Environmental Protection Act) located within the Site or within 1km of the Site boundary. This has been confirmed in correspondence by an Environmental Health Officer of NKDC, dated 03 July 2023, and by a review of relevant online information from both BBC and SHDC. This indicates that there are no such sites at all within the administrative boundaries of these three councils).

Waste Management

5.2 There are no recorded historical landfills present within the Solar Array Area or the Cable Route Corridor. The closest recorded historical landfill to the Site is located c. 1.2km south-east of the Solar Array Area and c. 240m east of the Cable Route Corridor. This landfill is recorded to have accepted waste from 1964 and the license was surrendered in 1994. Accepted waste types included inert, industrial, household and special waste.

5.3 There are no active or permitted landfills recorded within the Solar Array Area or Cable Route Corridor. The closest permitted landfill is located c. 8.7km west of the Cable Route Corridor and is recorded to have been licensed from 1993 for Morris Construction Limited. This accepts non-biodegradable wastes.

Radon

5.4 Radon can be a hazard within built developments or within enclosed or confined spaces. The UK Health Protection Agency and BGS provide mapping of the number of homes in a given area above the 'Action Level' for radon (i.e. 200Bq/m^3), which is available online[1]. Although this data relates directly to measurements taken from homes or dwellings, it is also relevant to employers assessing risks for enclosed underground and ground floor workplaces.

5.5 The Solar Array Area and the Cable Route Corridor are located entirely within an area of the lowest radon potential, with less than 1% of homes recorded at or above the Action Level that would require protection measures. Land situated around 150m to the north-west of the Solar Array Area boundary is recorded to have between 1% and 3% of homes above the Action Level.

[1] https://www.ukradon.org/information/ukmaps.

Pollution Incidents

5.6 There are no recorded historical pollution incidents within the Solar Array Area, but a total of four are recorded within the Cable Route Corridor (all located within the south of this area). Details of these four incidents are provided in Table 5-1, below.

Table 5-1: Summary Information on Historical Pollution Incidents within the Site Boundary

Notification Date	X, Y co-ordinate	Incident Status	Air - Incident Category	Land - Incident Category	Water - Incident Category	Cause of incident	Pollutant
10/03/2004	519815, 339199	Closed	Category 4 (No Impact)	Category 1 (Major)	Category 4 (No Impact)	Fly-Tipping	Solvents
27/06/2002	519999, 339090	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 2 (Significant)	Unauthorised Discharge or Disposal	Other Sewage Material
11/04/2014	519019, 339023	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 4 (No Impact)	Accidental Spillage	Lubricating Oils
03/01/2002	520348, 339435	Closed	Category 4 (No Impact)	Category 4 (No Impact)	Category 3 (Minor)	Other Inadequate Control or Containment	Other Agricultural Material or Waste

5.7 A further five pollution incidents are recorded within 1km of the boundary of the Site. None of these have a severity of greater than Category 3 (minor) in relation to either land or water. The closest of these incidents is located c. 80m south of the centre of the Cable Route Corridor and relates to an accidental spillage of gas and fuel oils from an above ground store/tank in 2004 (Category 3 incident in relation to water). The location of all recorded pollution incidents is shown on Drawing ST19595-132.

Asbestos

5.8 During the walkover survey that was undertaken in the Solar Array Area, no evidence of previous or current built development was identified. The walkover survey identified one area of surface made ground within the centre of the Solar Array Area, near to an above ground fertiliser storage tank where a stockpile of waste materials (including brick, cement and ceramics, etc.) was identified. No obvious evidence of asbestos was noted within this stockpile, but it should be noted that this statement is a general observation and does not represent a formal assessment by a qualified asbestos surveyor. Owing to the nature of the stockpile, the presence of asbestos could not be discounted without further information on its source and / or testing of the material.

5.9 In addition, limited made ground materials may be present along access tracks and roads. There is no reason to believe that, if present, any such made ground would contain traces or fragments of asbestos, but, likewise, this cannot be definitively discounted at this stage. At present, the likelihood is considered to be low.

5.10 As discussed within Section 2 of this report, a walkover survey has not been undertaken across the cable route corridor as part of this assessment. The Cable Route Corridor generally comprises agricultural land and fields, with very little built development (both currently and historically). Several farms and residential properties are present, but these are isolated and there are no pockets of concentrated development of this type. The only change of use and built development across the Site (historically) is the expansion of the major road (into the A17) in the north of the Cable Route Corridor, plus the construction of the Bicker Fen Substation (plus connecting power lines) and the Donnington Wind Farm in the far south of the Cable Route Corridor. These developments are not considered to present a significant risk of introducing asbestos to the soils at the Site; particularly given the recency of the substation and wind farm developments (post-2000). The risk of asbestos in the ground within the Cable Route Corridor, therefore, is considered to be low.

5.11 Notwithstanding the above, it is understood that archaeological trenching works carried out on 3 November encountered several fragments of fibrous material at approximate co-ordinates 513874, 347513 (in the west of the Solar Array Area). These appear to be a small and isolated occurrence and it is not known whether they contain asbestos or not, the trial pit was terminated and backfilled in accordance with the archaeological safety procedures. A revisit to obtain samples for asbestos testing is planned but has not yet been undertaken. Therefore, at present, it is considered that this finding does not change the general likelihood described above, but that this should be reviewed when this desk study report is updated for submission with the ES should analytical results then be available.

Designated Sites

5.12 There are no recorded Sites Of Special Scientific Interest (SSSI), Special Areas Of Conservation (SAC), Special Protection Areas or Ramsar sites located within the Site or within 1km of either the Solar Array Area or the Cable Route Corridor.

5.13 There are no recorded Local Geological Sites at or within 1km of the Site.

6 CONCEPTUAL SITE MODEL

6.1 The UK legislative approach to the assessment of contaminated land is defined by the requirements of Part 2A of the Environmental Protection Act (EPA) 1990. This defines contaminated land as land that is in such a condition that:

- Significant harm is being caused or there is a significant possibility of such harm being caused; or,
- Significant pollution of Controlled Waters is being caused or there is a significant possibility of such pollution being caused.

6.2 Contaminated land assessment is incorporated into the UK planning regime through the National Planning Policy Framework (NPPF) (2023) and associated guidance, including the UK Government's Land Contamination Risk Management (last updated 2023) and Planning Practice Guidance (PPG).

6.3 The planning regime is designed to provide an effective statutory framework for the assessment and remediation of contaminated land and is based on a number of principles, including the 'suitable for use' approach and the assessment of contamination by a risk-based approach.

6.4 The assessment of contamination risk is based on the 'contaminant-pathway-receptor' concept, referred to as a contaminant linkage. These terms are defined as follows:

- **Contaminant** – a contaminant or pollutant that is in, on or under the land and that has the potential to cause harm or pollution.
- **Pathway** – a route or means by which a receptor could be, or is, exposed to or affected by a contaminant.
- **Receptor** – in general terms, something that could be adversely affected by a contaminant, such as people, an ecological system, property, or a waterbody.

6.5 An important purpose of the desk study is to identify whether any potential contaminant linkages exist, together with a qualitative appraisal of their potential significance. All three components (i.e. contaminant source, pathway and receptor) must be present for there to be a viable contaminant linkage. This information is collated into a Preliminary Conceptual Site Model (PCSM), which summarises all of the potential contaminant linkages identified.

6.6 The potential contaminants, pathways and receptors identified at the Site are discussed below, followed by a PCSM.

Contaminants

6.7 The primary possible contaminants at the Site are considered to be:

- Potential herbicides and pesticides within the shallow soils from previous and current agricultural land use.
- Localised potential for contamination within the area of made ground and stockpiling adjacent to an above ground fertiliser storage tank within the Solar Array Area.
- Potential for contamination associated with the major railway line that runs through the Cable Route Corridor.
- Potential for unrecorded contamination associated with historical agricultural practices. Examples of contaminative practices can include burning (can generate ash residues enriched in contaminants), unrecorded infilling of low points / ponds, and the spreading of sewage sludge, although there is no specific record of any of these practices at the Site.
- Potential for accidental leaks and spills along road networks running across the Site and from farm vehicles and machinery.
- Potential for residual land contamination with solvents resulting from the Category 1 pollution incident listed in Table 5-1. However, it is noted that this incident took place a substantial time ago (2004) and is recorded by the Environment Agency to be 'closed', suggesting that remedial measures may have been undertaken to the satisfaction of the regulatory authorities at the time.
- Potential for water pollution from the Category 2 or Category 3 incidents recorded listed in Table 5-1, which relate to sewage and agricultural waste respectively. Both of these incidents were over 20 years ago and are recorded to be 'closed', so the likelihood of any significant residual contamination is low.
- Potential for contamination associated with the substation and wind farm developments in the south of the Cable Route Corridor. However, due to nature and recency of these developments, the potential for them to have introduced significant soil or water contamination sources is considered to be low.
- Potential for contamination in the recorded artificial deposit of undivided made ground at the Solar Array Area. This appears to correlate with a rectangular (assumed manmade) water filled feature in this location and immediately adjacent land that is generally heavily vegetated. This feature was formed after 1994.

- Potential for an off-site source of ground gas, at the historical landfill approximately 240m east of the Site.

Receptors

Human Health

6.8 The potential human health receptors that may be affected are considered to be construction staff during the construction phase and maintenance staff during the operational phase (worst case assumed to be a female adult).

Controlled Waters

6.9 The Site is underlain by various superficial Secondary aquifers. The solid strata beneath the Site are designated to be Unproductive Strata and, as such, are not considered to be a sensitive groundwater receptor. The Site is crossed by many small watercourses that run along field boundaries, and several larger drainage channels, that represent surface water receptors.

Structures

6.10 The only permanent occupiable structure included within the Proposed Development is the control building within the extension and upgrade to the substation in the southeast of the cable route corridor. This structure is a possible receptor for ground gas accumulation. There is also potential for temporary occupied structures to be required for staff during the construction phase. The foundation types for the permanent infrastructure at the Solar Array Area and substation are not currently known. Any buried concrete, including deep foundations / piles, associated with these may be at risk from naturally occurring chemically aggressive ground conditions, noting that the Oxford Clay is a known sulphate and sulphide bearing rock.

Water Supply Pipes

6.11 Should new potable water supply pipes be installed at the Site, these may (theoretically) be at risk from contaminant permeation should they be sited in ground that contains contaminants that can permeate certain water pipe materials. Examples of such contaminants are petroleum hydrocarbons and organic solvents.

Pathways

6.12 In order for the potential contaminant sources discussed above to pose a contamination risk, a viable pathway to a receptor must exist. There are several potential pathways at the Site, which are discussed below.

Human Health

6.13 Solar farm construction and maintenance staff may be exposed to contamination at the Site through accidental ingestion of contaminated soils or groundwater, dermal contact with the skin and inhalation of dust or gas/vapours. Workers and visitors on adjacent sites are also considered to be a receptor within this assessment.

Contaminant Leaching

6.14 There is potential for contaminants to be present within the shallow soils at the Site, possibly within areas of isolated made ground deposits, adjacent to roads and the railway line, and surrounding the stockpile/storage area in the centre of the Solar Array Area. These contaminants may pose a risk to the shallow superficial aquifers at the Site through leaching. There is a high density of surface water features at the Site and within the surrounding area. These have the potential to be negatively affected by contaminant leaching and direct runoff of contaminants.

Ground Gas Migration

6.15 The potential ground gas sources at the Site appear to be limited to the potential for localised areas of made ground and potential natural organic matter within Alluvium. The primary pathway, therefore, would be likely to be direct vertical migration to any structures (e.g. temporary construction accommodation) located directly on such deposits.

6.16 The likelihood / significance of lateral migration risk from these potential gas sources is expected to be low given their limited nature and considering the ground conditions (e.g. substantial areas of Till and Tidal Flat Deposits, which are commonly relatively clayey and have limited gas transmissivity). Similarly, the potential for the Site to be influenced by gas migration from off-site sources is considered low. Whilst there is a historical landfill around 240m east of the Cable Route Corridor and 1.2km south east of the Solar Array Area that may be a ground gas source, the intervening ground conditions are recorded to consist of Tidal Flat Deposits overlying mudstone and siltstone. These ground conditions typically have low gas transmissivity and, considering that the only permanent occupiable structures within the Cable Route Corridor are at the Bicker Fen Substation extension (which is over 7km from the landfill), it is considered that there is not a possible contaminant-pathway-receptor linkage in relation to gas migration from this landfill.

Preliminary Conceptual Site Model

6.17 The PCSM presented in Table 6-1, below, details an initial assessment of all potential contaminant linkages for the Site. The risk classifications in Table 6-1 are based on a qualitative appraisal of the information provided in this report, considering such factors as the sensitivity of the receptor, the potential severity of the consequences and the probability of contamination being present (e.g. based on the nature of the source).

6.18 It should be noted that risks to new below ground concrete are not included in Table 6-1 as this is primarily a routine engineering design issue and is discussed further in Section 7 of this report.

Table 6-1 - Tabulated Conceptual Site Model			
Potential Contaminant Sources	**Potential Pathways**	**Potential Receptors**	**Risk Classification**
ONSITE SOURCES			
1) Potential herbicides and pesticides within the shallow soils from previous and current agricultural land use. 2) Potential for localised Made Ground around roads/railways and stockpiles noted during the site walkover survey, in the area of undivided Made Ground recorded by the BGS, and from the construction and operation of the substation and wind farm. 3) Potential for unrecorded contamination associated with historical agricultural practices and from leaks / spills from agricultural machinery. 4) Potential for solvent contamination in the location of the historical Category 1 pollution incident. 5) Potential for contamination associated with recorded Category 2 and 3 pollution incidents. The potential contaminants associated with each source type are: 1) Pesticides and herbicides. 2) Unknown, but common contaminants include metals, petroleum / diesel hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH) and asbestos. 3) Unknown, but typical contaminants are as per point 2. 4) Organic solvents (unknown type). 5) Sewage and unknown agricultural waste.	Direct ingestion of soil and soil derived dust. Dermal contact of soil and soil derived dust. Inhalation of dust and vapours (outdoors and indoors, although indoor risk relates only to temporary construction accommodation). Direct contact and / or ingestion of surface water or groundwater contamination.	Human Health: • Construction workers. • Future site workers or visitors. • Neighbouring site workers or visitors	**LOW -** The probability of contamination associated with agricultural land use (source types 1 and 3) is considered to be unlikely. In relation to source type 3, it is noted that no evidence of fuel storage, leaks or spillages were observed during the site walkover. The probability of contamination associated with source type 2 is also unlikely, because the sources are not typically associated with notable contamination risks and because the area of undivided made ground appears largely to relate to a recent water feature. The probability of contamination associated with source type 4 is unlikely, because the incident took place in 2004 and is recorded by the Environment Agency to be 'closed' (suggesting that satisfactory action was taken to address it). The proposed land use is low sensitivity (lower than the current agricultural land use) and the receptors would also benefit from suitable occupational health & safety controls (risk assessments, PPE, measures for dealing with unexpected contamination etc.) and environmental controls (dust management etc.) as is mandatory for construction projects. Therefore, potential consequences are considered to be medium which yields an overall Low risk classification.
Source types 1-5, as listed above.	Anthropogenic (man-made) pathways e.g. new foundations. Vertical and lateral migration in permeable strata. Surface water runoff.	Controlled Waters: • Secondary A or Undifferentiated Aquifer (superficial deposits). • Surface water including, but not limited to, Car Dyke, South Forty Foot Drain, Heckington Eau.	**VERY LOW – LOW –** As above the probability of contamination sources is considered to be unlikely. The groundwater sensitivity is relatively low given the nature and distribution of the aquifers. The recorded pollution incidents had minor or non-significant impacts on waters, although it is not recorded what receiving body this impact rating is based on. The surface water receptors are of higher sensitivity, but related consequences are considered to be mild or medium. Therefore the overall risk is considered to be Very Low to Low. Provided that good environmental practice is followed during construction (e.g. leachate / run-off control, foundation works risk assessments for any piling activities etc.), construction activities

Table 6-1 - Tabulated Conceptual Site Model			
Potential Contaminant Sources	**Potential Pathways**	**Potential Receptors**	**Risk Classification**
			would not be expected to present a significant contaminant mobilisation risk.
Source types 1 to 4, as above.	Permeation of contaminants into water supply pipes.	Human Health: • Consumption of drinking water from pipes affected by contaminant permeation.	**LOW -** The probability of a source of contaminants that present a pipe permeation risk is generally considered to be unlikely at the Site. Localised areas of greater risk may occur e.g. in the location of the previous solvent spill. However, this is located in the Cable Route Corridor so is not expected to be in the location of new drinking water pipes. A worst-case consequence of medium therefore yields an overall Low risk classification. It is a mandatory design requirement for all new drinking water pipes to be designed with regard to the ground conditions, including consideration and assessment of ground contamination risks. Where this identifies potential risks, these can be avoided through standard design measures (e.g. use of barrier pipe).
Source types 2 and 3 above. Potential for localised, limited made ground deposits that may have a gas generation potential. Additionally: 5) Potential for ground gas generation by natural superficial deposits with a high organic matter content (e.g. Alluvium, Tidal Flat Deposits).	Vertical ground gas migration into structures and / or lateral migration, resulting in explosion or asphyxiation.	Buildings and Human Health: • Explosions and / or asphyxiation in buildings or other enclosed spaces.	**LOW -** Potential gas sources are limited in extent and at present are largely hypothetical / precautionary (i.e. rather than known / likely sources of substantial gas generation). The only permanent occupiable structure within the development is the control building within the substation upgrade. However, as discussed above, the potential for ground gas generation is low with no identified source. The temporary construction buildings are also typically of a form that minimises the risk of ground gas ingress e.g. temporary modular buildings.
OFFSITE SOURCES			
Potential contamination associated with adjacent agricultural activities and leaks/spills within adjacent roads, and possible made ground around roads and railways.	Direct ingestion soil derived dust blown onto Site. Dermal contact of soil derived dust blown on to Site. Inhalation of fugitive dust and vapours (outdoors). Inhalation of asphyxiating gases and volatile vapours (outdoors).	Human Health: • Construction workers. • Future site workers or visitors.	**VERY LOW** Whilst the potential cannot be discounted, it is considered within this assessment to be unlikely and no significant likely sources have been identified. The consequences are considered to be mild and the receptors at the Site would also benefit from suitable occupational health & safety controls (risk assessments, PPE, measures for dealing with unexpected contamination etc.).

Table 6-1 - Tabulated Conceptual Site Model			
Potential Contaminant Sources	**Potential Pathways**	**Potential Receptors**	**Risk Classification**
	• Anthropogenic (man-made) pathways • Vertical and lateral migration in permeable strata • Surface water runoff	**Controlled Waters** • Secondary A or Undifferentiated Aquifer (superficial deposits) • Surface water including, but not limited to, Car Dyke, South Forty Foot Drain, Heckington Eau.	**LOW -** The Site is connected to a network of surface drains that may be affected by agricultural run-off / contaminants, which in turn could then enter the Site. However, this can be considered a ubiquitous 'background' risk for an agricultural area and, in the absence of any specific recorded point contamination sources on adjacent land or potable surface water abstractions at the Site, the risk to surface water is classified as low. Similarly, risks to the relatively low sensitivity shallow groundwater from off-site sources are classified as low.

7 PRELIMINARY GEOTECHNICAL CONSTRAINTS

7.1 A preliminary assessment of the potential geotechnical constraints is presented, below, on the basis of the available information. This section of the report should be read with regard to the limitations described in Section 1.

Ground Conditions

7.2 The ground conditions at the Site are summarised within Tables 3-1 and 3-2, but are generally similar across the Solar Array Area and the Cable Route Corridor. There are recorded variable superficial deposits across the entire Site which are both cohesive and granular nature. The solid strata are recorded to comprise the Oxford Clay Formation or mudstones of the West Walton Formation.

Topography

7.3 The Site as a whole appears to be relatively flat lying and comprises open agricultural fields with drainage ditches, roadways and hedgerows/treelines bordering field parcels.

Foundations

7.4 The nature of the Proposed Development at the Site is such that foundations are only likely to be required in the Solar Array Area, associated with the solar panel arrays and ancillary infrastructure, and for the control building within the substation extension and upgrade in the southeast of the Cable Route Corridor, although the design for this structure has not yet been confirmed. In-line with the scope and limitations in Section 1, this report does not provide any appraisal of the likely suitable foundations for the structures at the Solar Array Area. The geo-environmental assessments provided in Section 6 are intended to be flexible to cover any foundations technique.

Geohazards

7.5 The BGS Geohazards data sets indicate an elevated risk of compressible ground and shrink swell clays within the Solar Array Area. The potential for compressible deposits, shrink-swell clays, and the variable superficial deposits may present various geotechnical constraints, which should be considered by the geotechnical designer. Although not expected to be widespread, should made ground deposits be encountered, these are also likely to present a geotechnical constraint requiring consideration.

Earthworks

7.6 Although the Site is relatively flat, it is understood that some form of earthworks may be required as part of the construction activities associated with the Proposed Development. Any earthworks will need to account for such issues as the likely variable composition of the shallow soils, (very) high water table, the potential for high moisture content in earthworks material, and the potential for elevated sulphate / sulphide concentrations.

Services

7.7 Due regard to the presence of existing services should be made during the design and construction of the project. In particular, the south of the Site (i.e. within the Cable Route Corridor) may contain various services due to the presence of a substation and wind farm. It is understood that planning the design around existing services falls within the scope of the engineering designers for the Proposed Development.

7.8 It is understood that the cable route will lead the services south-east from the Solar Array Area and connect to the expanded substation. It is understood that the cable route will have to cross such features as roadways, watercourses and the railway line along its path. Where services pass under roads and railways, etc., vertical drilling stand-offs (if trenchless techniques are used) or compaction (if trenching is used) should be designed to be suitably protective of both the existing and proposed infrastructure (e.g. in respect of ground settlement).

Buried Structures

7.9 As discussed within Section 2 of this report, based on the review of the historical mapping at the Site and the lack of any historical built development, the risk of encountering significant buried structures is considered to be low.

Excavations

7.10 Excavations will be required within the construction phase of the Proposed Development to allow for construction of foundations, to carry out earthworks and to create the cable route corridor. The shallow soils at the Site are likely to be variable in nature and, therefore, have the potential to comprise a mixture of cohesive and granular soils. It is considered possible that unsupported excavations may be prone to stability issues.

Controlled Waters

7.11 The hydrological setting of the Site is such that a significant number of surface water features are present both on and surrounding the Site. As the land is relatively flat-lying and close in elevation to these features, it is expected that groundwater is likely to be present at shallow depths beneath the Site. Any excavations, therefore, may be susceptible to flooding if left open for any length of time. Dewatering measures should be incorporated into the construction phase should they be required.

Concrete Attack

7.12 Parts of the Site are recorded to be underlain by solid strata of the Oxford Clay Formation, which is a noted sulphate and sulphide bearing rock type. Additionally, there is the potential for elevated sulphate and sulphide concentrations in any made ground that may be present in the superficial deposits and in the other solid strata that are mapped to be present. Standard design procedures should be followed, including appropriate testing and risk assessment relative to the foundations and earthworks design to ensure that suitable chemical resistant concrete (and, if necessary, other associated protection measures) are incorporated into the design.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 This desk study report has summarised the available information and potential risks for the proposed development at the Site. The Site is considered to present an overall low risk from past land use, surrounding land use, ground instability and contamination.

8.2 Information obtained as part of the desk-based review indicates that the Site has been generally free from built development throughout its history. The Site has generally been used for agricultural purposes from the earliest available mapping, with the main previous land use being recent substation and wind farm developments in the south. Roads / tracks cross the Site in several places and a railway line crosses through the centre of the Cable Route Corridor. The land surrounding the Site in all directions generally comprises similar land uses of agricultural and limited residential areas.

8.3 The information sources reviewed indicate the likely sources of potential contamination to be agricultural activities, the possibility of isolated areas of made ground and the potential for solvent contamination in the location of a former Category 1 pollution incident in the Cable Route Corridor.

8.4 The PCSM indicates a low risk to receptors, considering the nature of the identified potential sources, the sensitivity of the receptors and the probability of a viable source-pathway-receptor linkage being present.

8.5 Significant contamination is not expected at the Site. Therefore, it is currently anticipated that any contamination risks at the Site would be adequately addressed by the adoption of best working practices in-line with standard construction environmental management and occupational health procedures to ensure that construction does not cause an unacceptable contamination risk and that any unexpected contamination encountered during construction is correctly addressed.

8.6 It is anticipated that a geotechnical ground investigation will be carried out for design purposes. It is recommended that this investigation incorporates contamination testing of the soils, informed by the findings of the desk study, to provide verification of the preliminary qualitative risk assessments in this desk study.

8.7 Overall, it is concluded that, in terms of potential contamination risks, the Site is likely to be suitable for its proposed use (i.e. development and use for a solar farm and associated cable route). No potential significant risks / effects have been identified that would require assessment through the preparation of an ES chapter. Provided

that the following standard development procedures are carried out as part of the development, it is considered that the identified low risks will be adequately addressed:

- Environmental management (dust, leachate, surface water quality etc.) in accordance with a Construction Environmental Management Plan (CEMP).
- Occupational health & safety management in accordance with relevant legislation.
- Contamination testing to be carried out as a matter of completeness during geotechnical design investigations, informed by the findings of this desk study.

8.8 This report should be updated prior to submissions of the ES to reflect any refinement of the design or boundaries of the Proposed Development and additional data that will be collected / reviewed as identified in Section 1 of this report.

8.9 There are potential geotechnical constraints at the Site, including those associated with the likelihood of variable shallow soils, high groundwater levels and sulphate / sulphides. These issues are common constraints and can be addressed through routine geotechnical design good practice.

APPENDICES

Appendix 1

Wardell Armstrong Standard Terms and Conditions and Limitations

STANDARD TERMS AND CONDITIONS AND LIMITATIONS TO REPORTS

This Report is provided for the stated purpose and for the sole use of the client in accordance with the Terms and Conditions of Appointment under which the services were performed. The Report is confidential to the client and no other warranty, expressed or implied, is made as to the professional advice included in the Report or any other services provided by Wardell Armstrong LLP. This Report may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of Wardell Armstrong LLP.

The conclusions and recommendations contained in this Report are based upon information provided by others including details supplied by the client and/or professional advisors on the assumption that all relevant information from whom it has been requested and/or supplied is accurate. Information so provided and/or supplied has not been verified independently by Wardell Armstrong LLP, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by Wardell Armstrong LLP in providing the services are outlined in this Report. The work described in this Report is based on the conditions and information as stated at the date the Report was completed. The scope of this Report and the services are accordingly limited by these circumstances. The findings outlined in the Report together with any opinions expressed and recommendations made are considered to be valid and appropriate at the time of preparation and for the specific purpose or purposes intended. Whilst a walk over site visit may have been carried out as part of the work this has been limited to observations only and no other physical investigations, sampling and testing work has been carried out as part of this work.

Wardell Armstrong LLP disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report which may come or be brought to Wardell Armstrong LLP's attention after the date of the Report. Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

Where any site observations have been carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results from any site observations made may vary and further confirmatory work should be made after the issuance of this Report. Wardell Armstrong LLP does not guarantee or warrant any estimates or projections contained in this Report.

Appendix 2
Walkover Photographs

Appendix 2: Site Walkover Photographs 6 July 2023

Figure 1. View of footpath showing overgrown drainage ditch and wooded area.

Figure 2. Desiccation cracks within footpaths.

Figure 3. View across field parcel showing the nature of current crops.

Figure 4. View along access track through the centre of the Solar Array Area running east to west.

Figure 5. View across field parcel showing nature of vegetation/crops present.

Figure 6. View across a recently ploughed field, showing the flat and homogenous landscape.

Figure 9. Flint gravel and fossils identified within the topsoil along a footpath.

Figure 8. View looking across field parcels showing footpath and height of trees in wooded areas.

Figure 9. View across the centre of the Site, showing the nature of crops and wooded areas.

Figure 10. Showing a gated access point into the north of the Site suitable for vehicles.

Figure 11. View across the Site looking southeast showing overgrown vegetation and open land.

Figure 12. View looking east along the access track in the centre of the Solar Array Area, showing the storage tank.

Figure 13. Chemical labels on the above ground storage tank in the centre of the Solar Array Area.

Figure 14. Gravel stockpile in the south of the Solar Array Area.

Figure 15. Waste and rubble stockpile in the centre of the Solar Array Area.

Figure 16. Scrap metal stored in the centre of the Solar Array Area.

Figure 17. View from the access track looking across the Site.

Figure 18. Area of hardstanding in the south of the Solar Array Area.

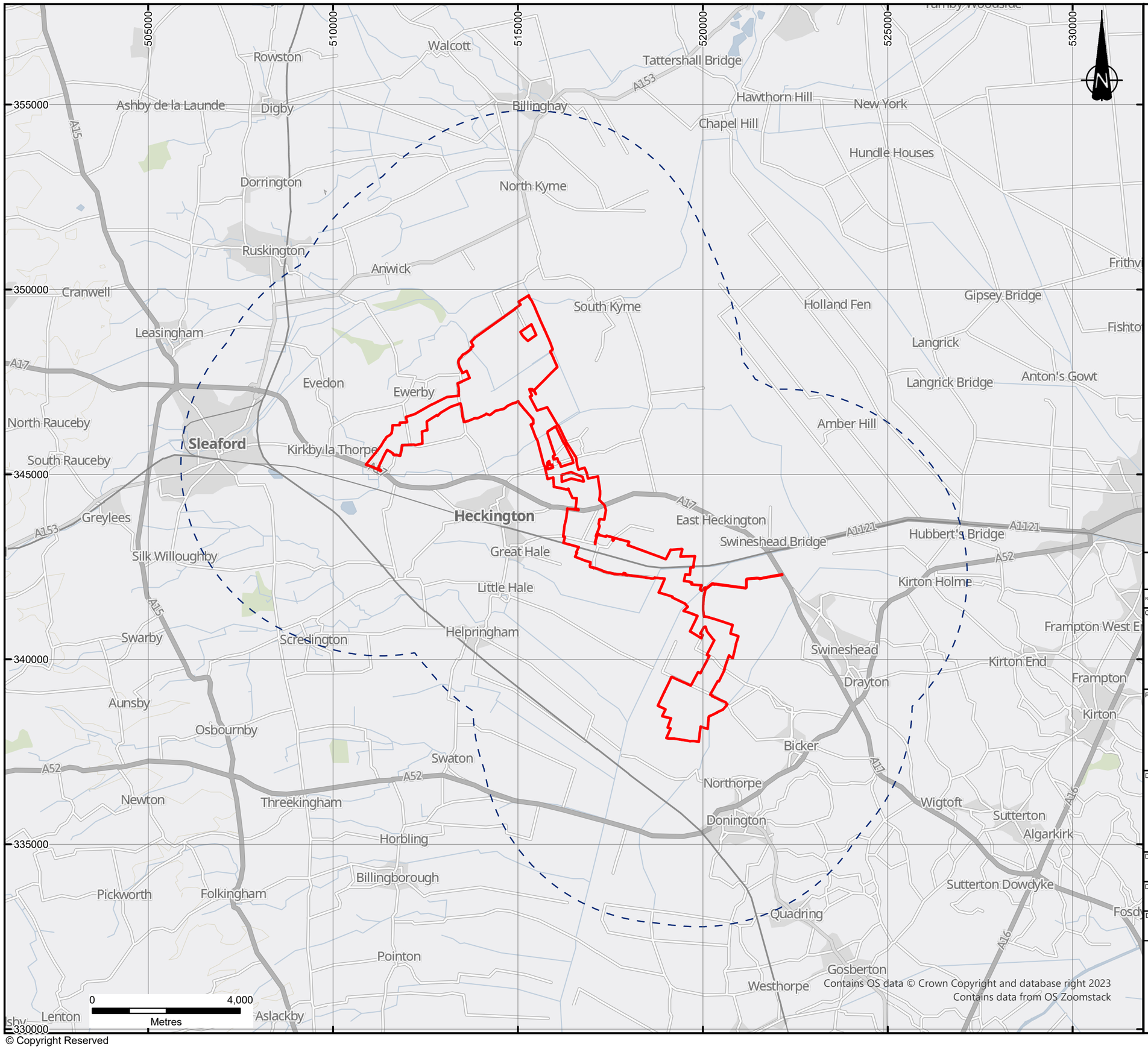
Figure 19. Stockpile in the south of the Solar Array Area on the hardstanding in Figure 18.

Figure 20. View across a grass covered access track showing tall crops and vegetation.

Figure 21. View across converging access tracks within the north of the Solar Array Area, looking south.

Figure 22. View looking out over field parcel in the centre of the Solar Array Area showing height of vegetation.

DRAWINGS



KEY

- Red Line Boundary (the Site)
- 5km Buffer

Notes:

Boundaries are indicative.

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

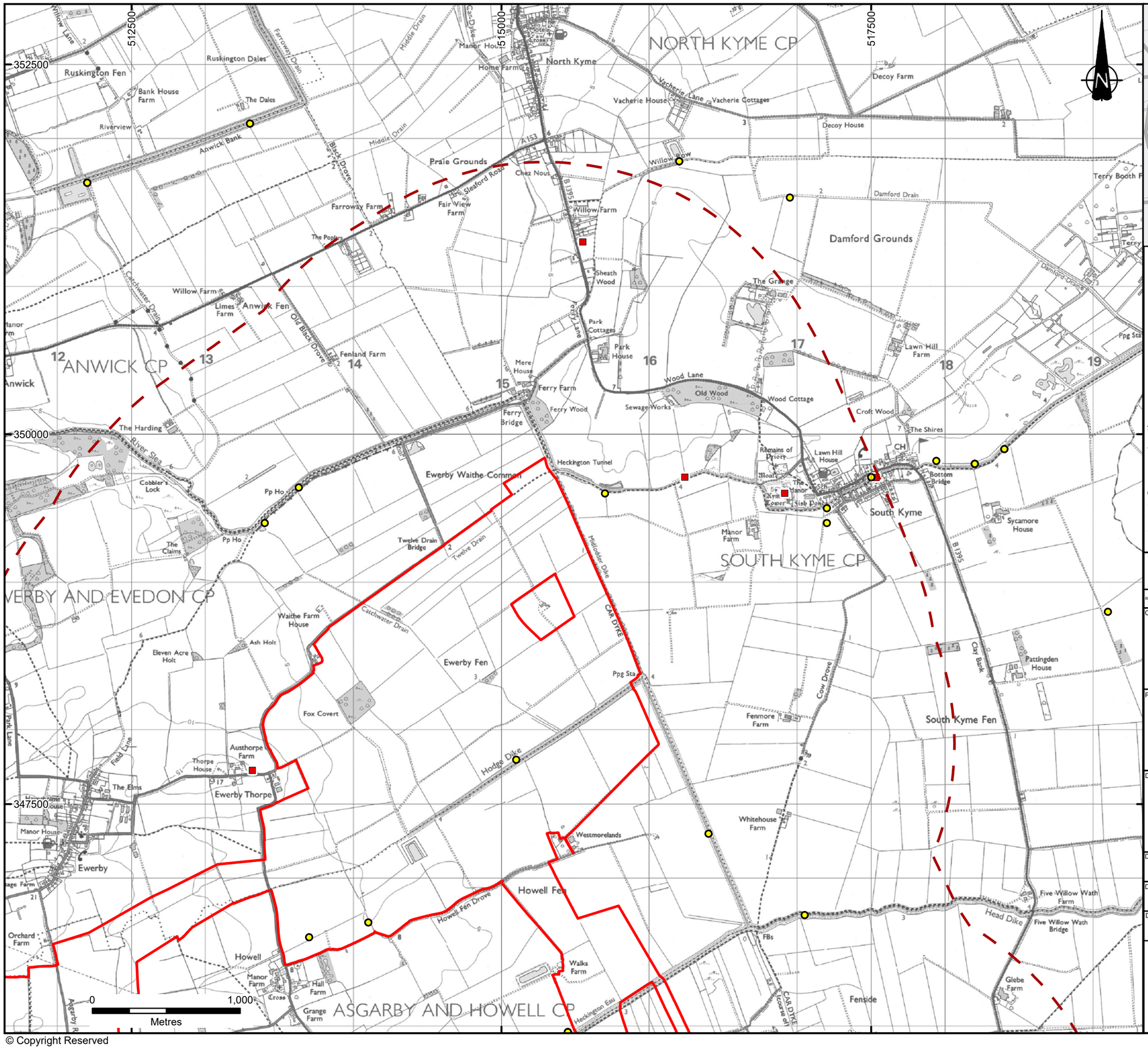
SITE LOCATION WITH 5KM BUFFER

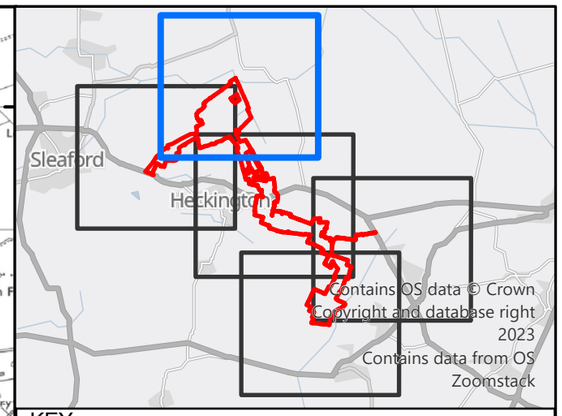
DRG No.	REV
ST19595-120	B

DRG SIZE	SCALE	DATE
A3	1:100,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
GU	SG	MW

wardell armstrong





KEY

- Red Line Boundary (the Site)
- 2km Site Buffer
- Surfacewater Extractions
- Discharge Consents

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

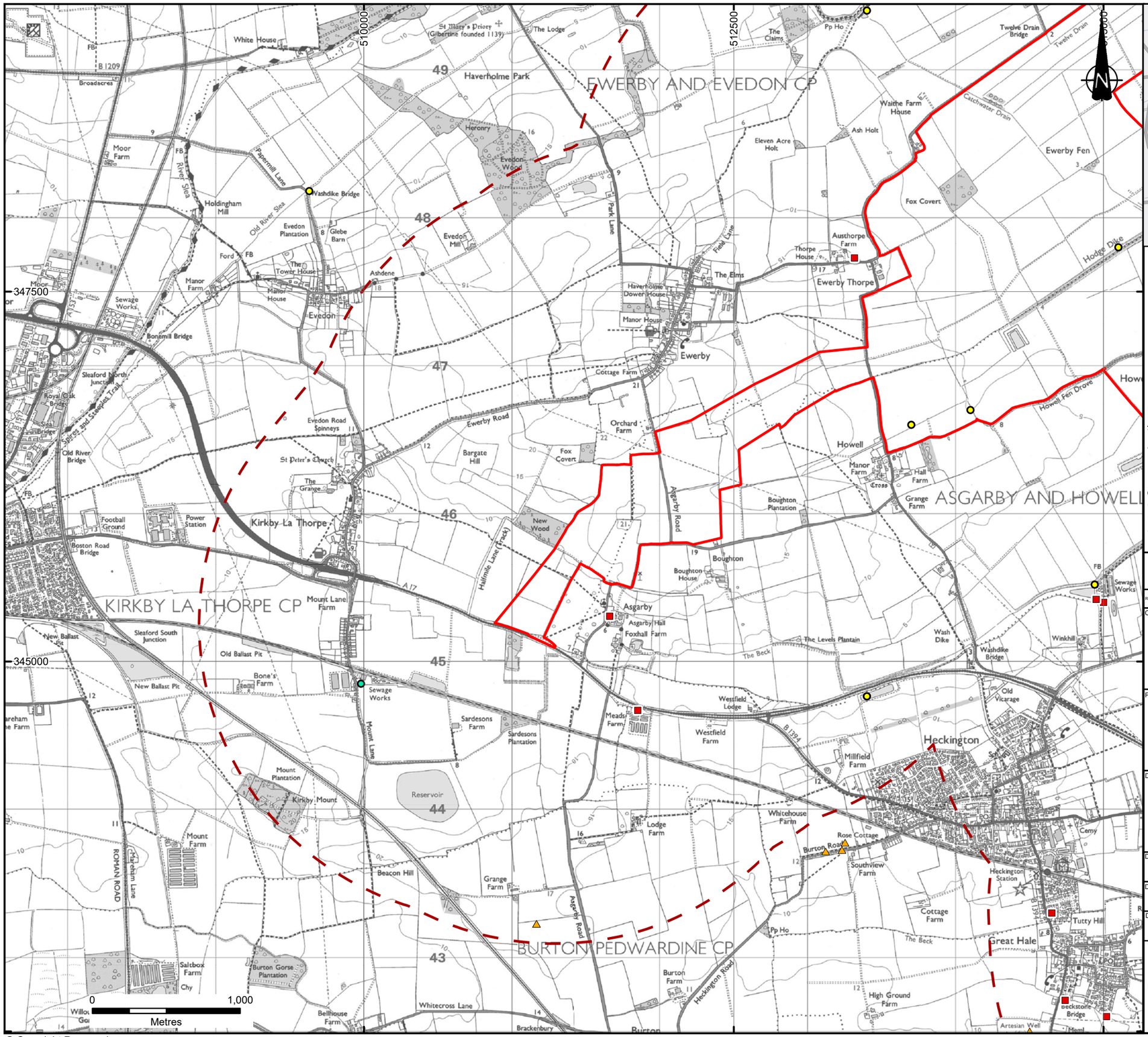
RECORDED POLLUTION INCIDENTS, WATER ABSTRACTIONS AND DISCHARGES PAGE 1 OF 5

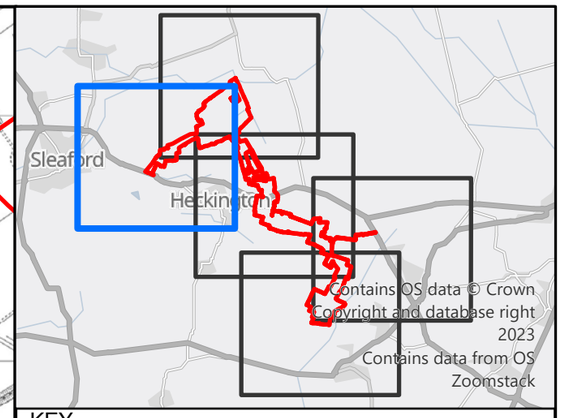
DRG No.	REV	SUIT. CODE
ST19595-132	B	--

DRG SIZE	SCALE	DATE
A3	1:25,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong





KEY

- Red Line Boundary (the Site)
- 2km Site Buffer
- Groundwater Abstractions
- Surfacewater Extractions
- Discharge Consents
- Recorded Historical Pollution Incidents

Notes:
The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

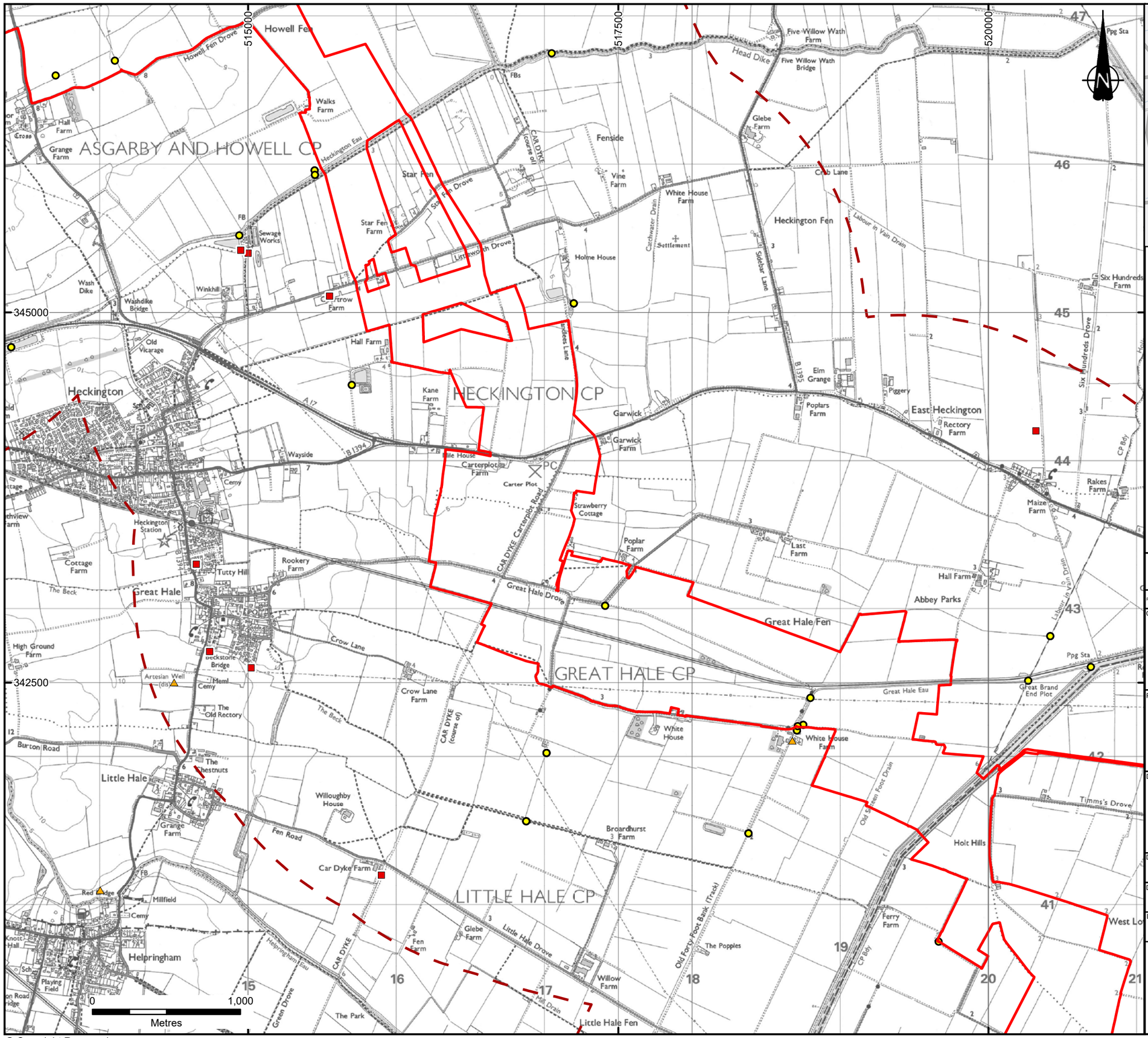
RECORDED POLLUTION INCIDENTS, WATER ABSTRACTIONS AND DISCHARGES PAGE 2 OF 5

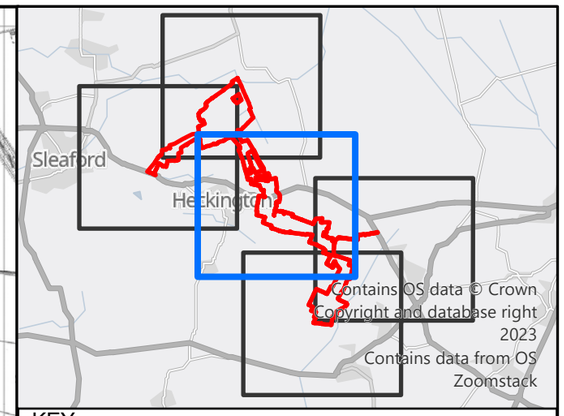
DRG No.	REV	SUIT. CODE
ST19595-132	B	--

DRG SIZE	SCALE	DATE
A3	1:25,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong





KEY

- Red Line Boundary (the Site)
- 2km Site Buffer
- Surfacewater Extractions
- Discharge Consents
- Recorded Historical Pollution Incidents

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

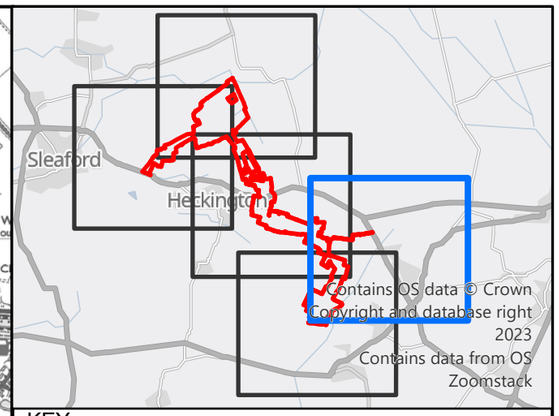
RECORDED POLLUTION INCIDENTS, WATER ABSTRACTIONS AND DISCHARGES PAGE 3 OF 5

DRG No.	REV	SUIT. CODE
ST19595-132	B	--

DRG SIZE	SCALE	DATE
A3	1:25,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



KEY

- Red Line Boundary (the Site)
- 2km Site Buffer
- Surfacewater Extractions
- Discharge Consents
- Recorded Historical Pollution Incidents

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

RECORDED POLLUTION INCIDENTS, WATER ABSTRACTIONS AND DISCHARGES PAGE 4 OF 5

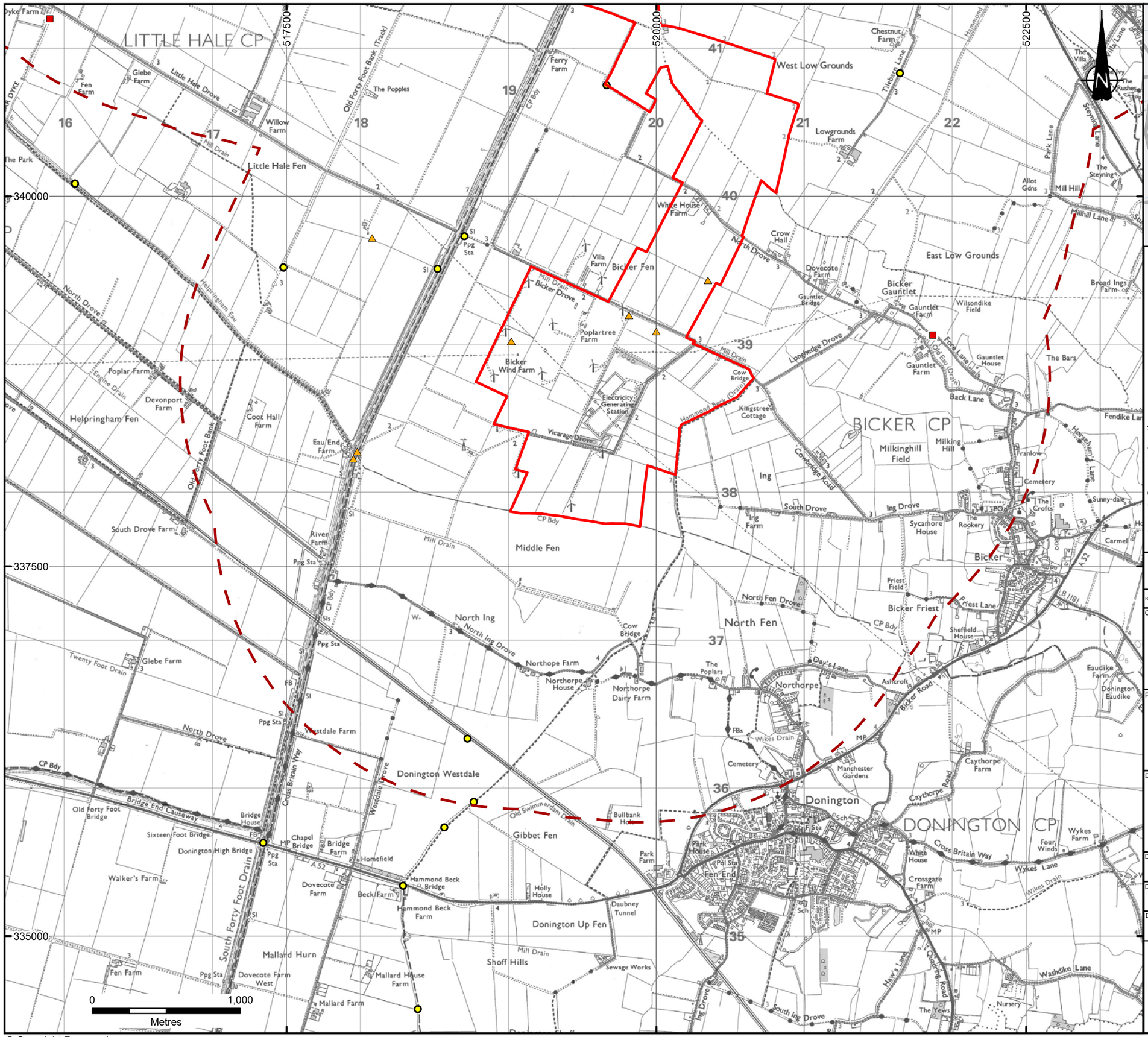
DRG No.	REV	SUIT. CODE
ST19595-132	B	--

DRG SIZE	SCALE	DATE
A3	1:25,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong

0 1,000 Metres



KEY

- Red Line Boundary (the Site)
- 2km Site Buffer
- Surfacewater Extractions
- Discharge Consents
- Recorded Historical Pollution Incidents

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

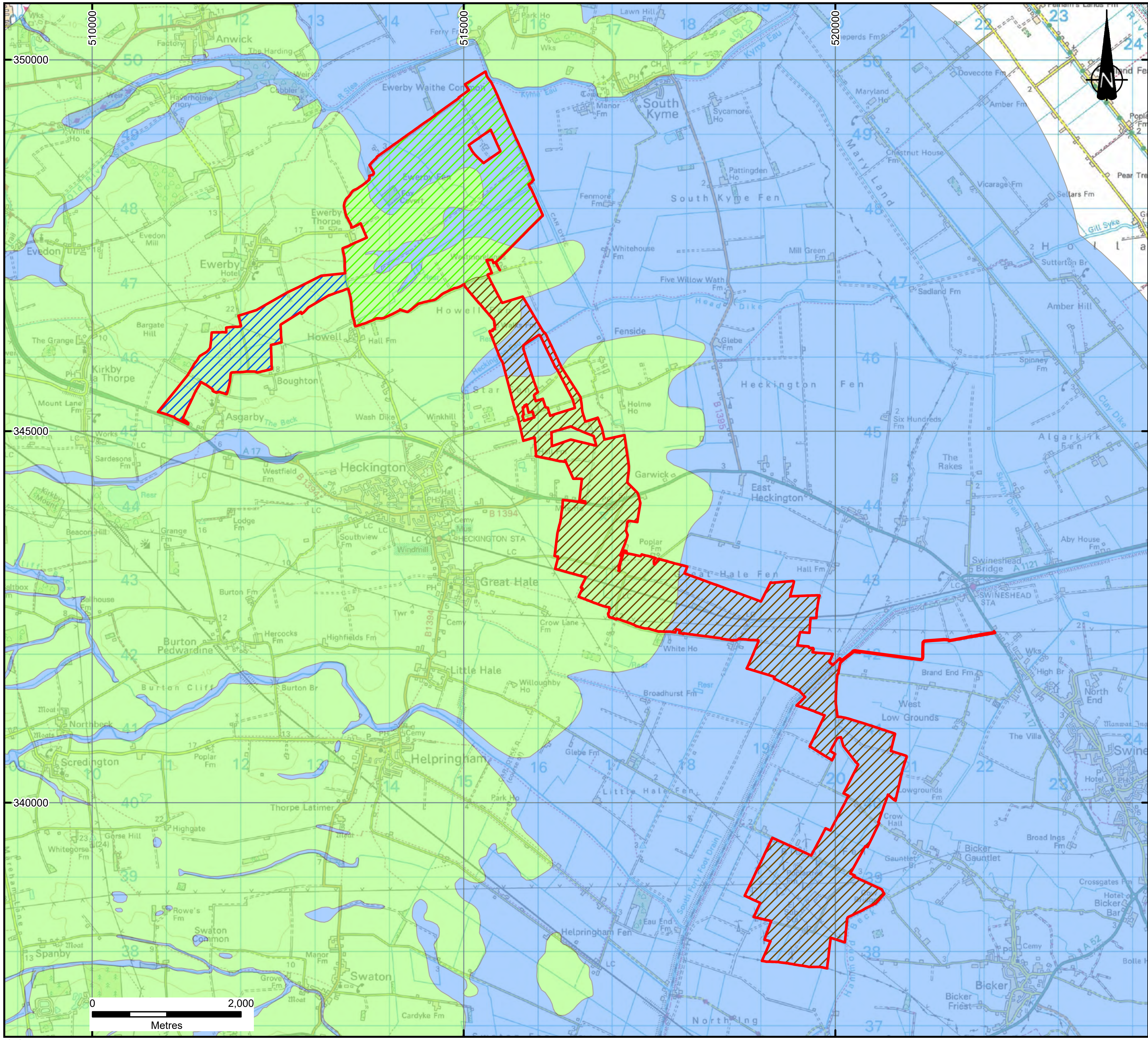
RECORDED POLLUTION INCIDENTS, WATER ABSTRACTIONS AND DISCHARGES PAGE 5 OF 5

DRG No.	REV	SUIT. CODE
ST19595-132	B	--

DRG SIZE	SCALE	DATE
A3	1:25,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



KEY

- Red Line Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

GeoSure Hazard Class

- A - Not believed to be present
- B - Unlikely to be present

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

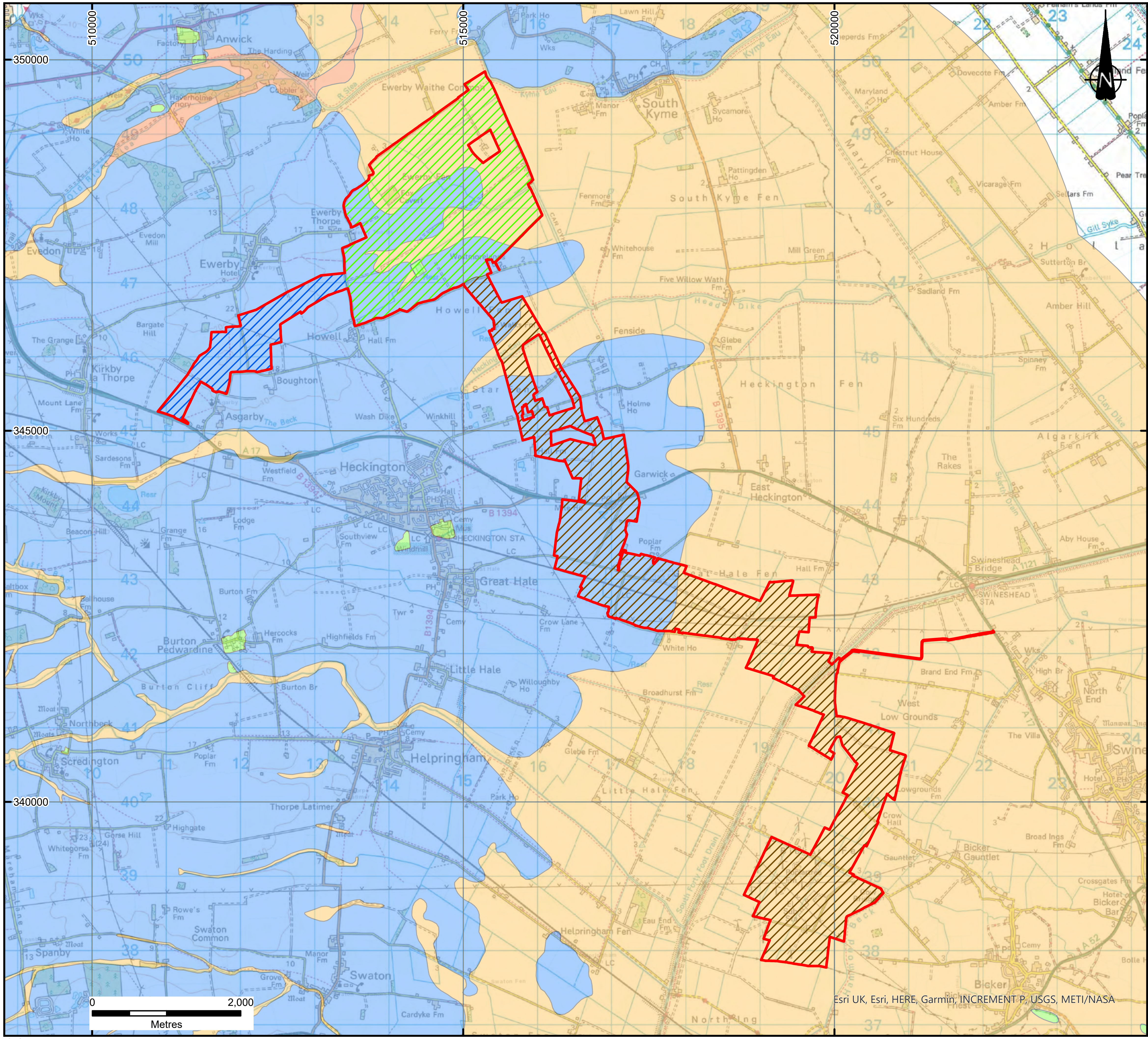
BGS GEOSURE HAZARDS: COLLAPSIBLE DEPOSITS

DRG No.	REV	SUIT. CODE
ST19595-133	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



KEY

- Red Line Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

GeoSure Hazard Class

- A - Not believed to be present
- B - Unlikely to be present
- D - Probably present
- E - Present, significant constraint

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES AND LEGEND	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT: BEACON FEN ENERGY PARK LTD

PROJECT: BEACON FEN ENERGY PARK

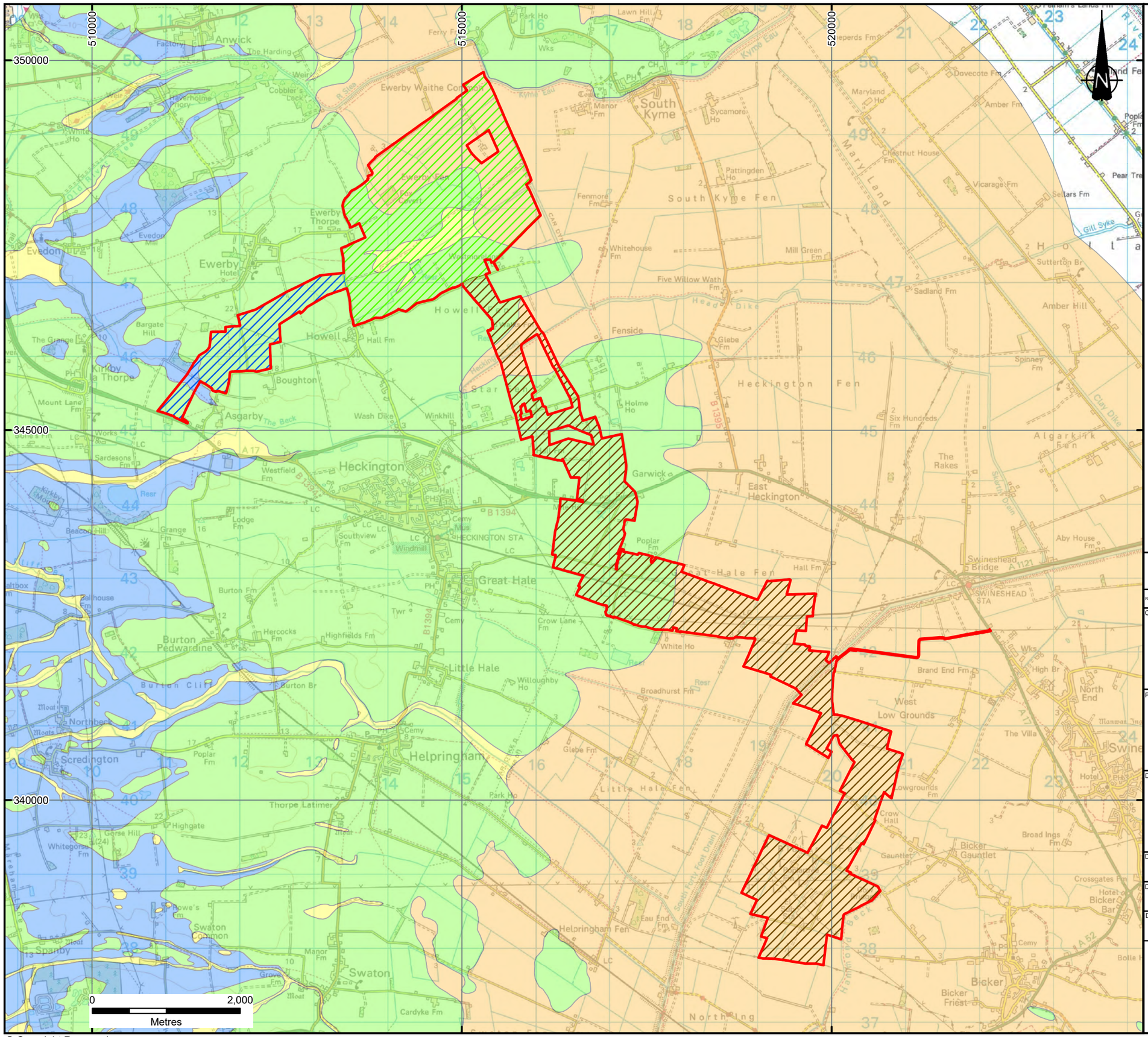
DRAWING TITLE: BGS GEOSURE HAZARDS: COMPRESSIBLE DEPOSITS

DRG No.	REV	SUIT. CODE
ST19595-134	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



KEY

- Red Line Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

GeoSure Hazard Class

- A - Not believed to be present
- B - Unlikely to be present
- C - Possibly present
- D - Probably present

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	AMENDED NOTES AND LEGEND	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

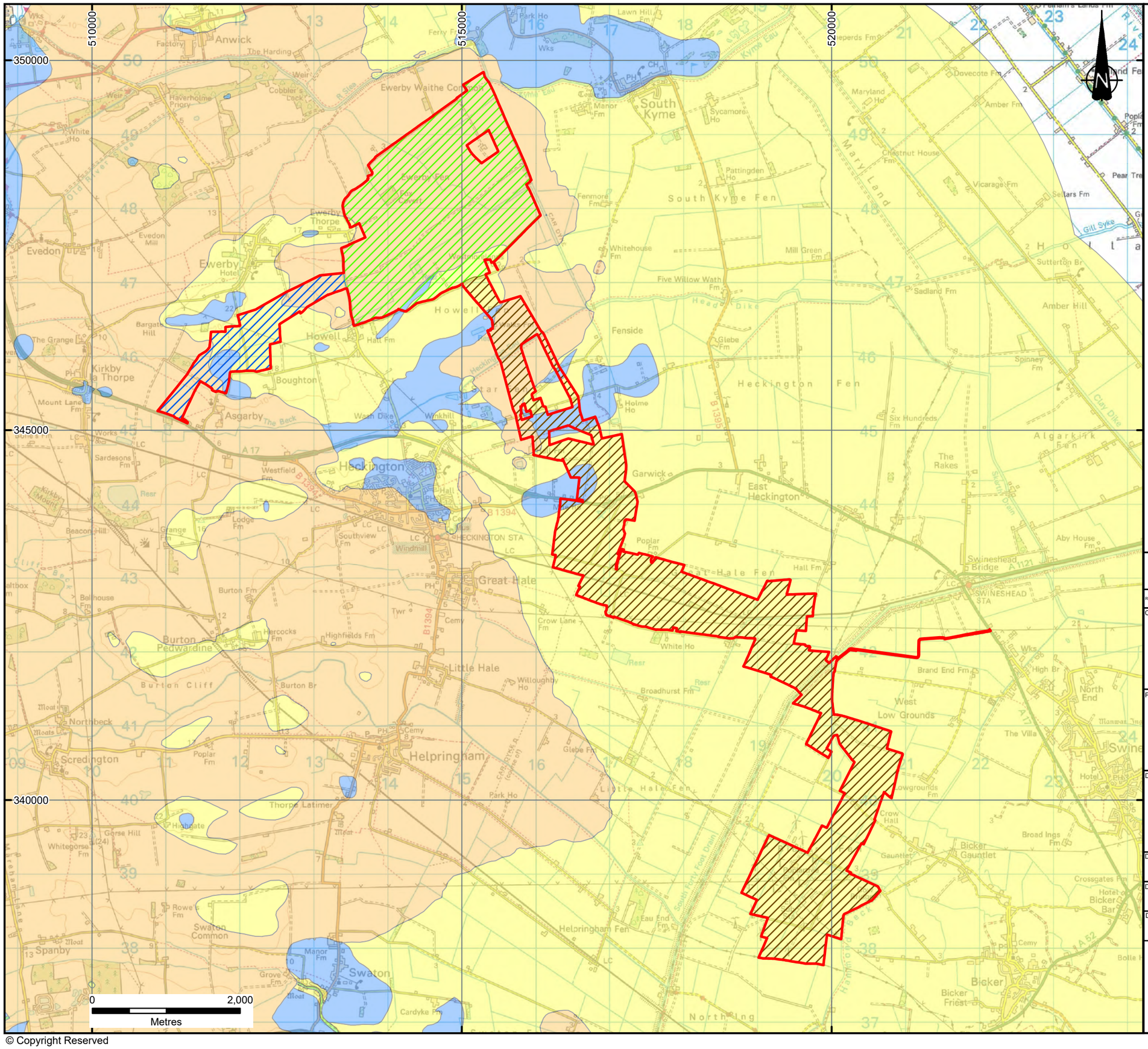
BGS GEOSURE HAZARDS:
RUNNING SANDS

DRG No.	REV	SUIT. CODE
ST19595-135	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



KEY

- Red Line Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

GeoSure Hazard Class

- A - Not believed to be present
- B - Unlikely to be present
- C - Possibly present
- D - Probably present

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES AND LEGEND	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

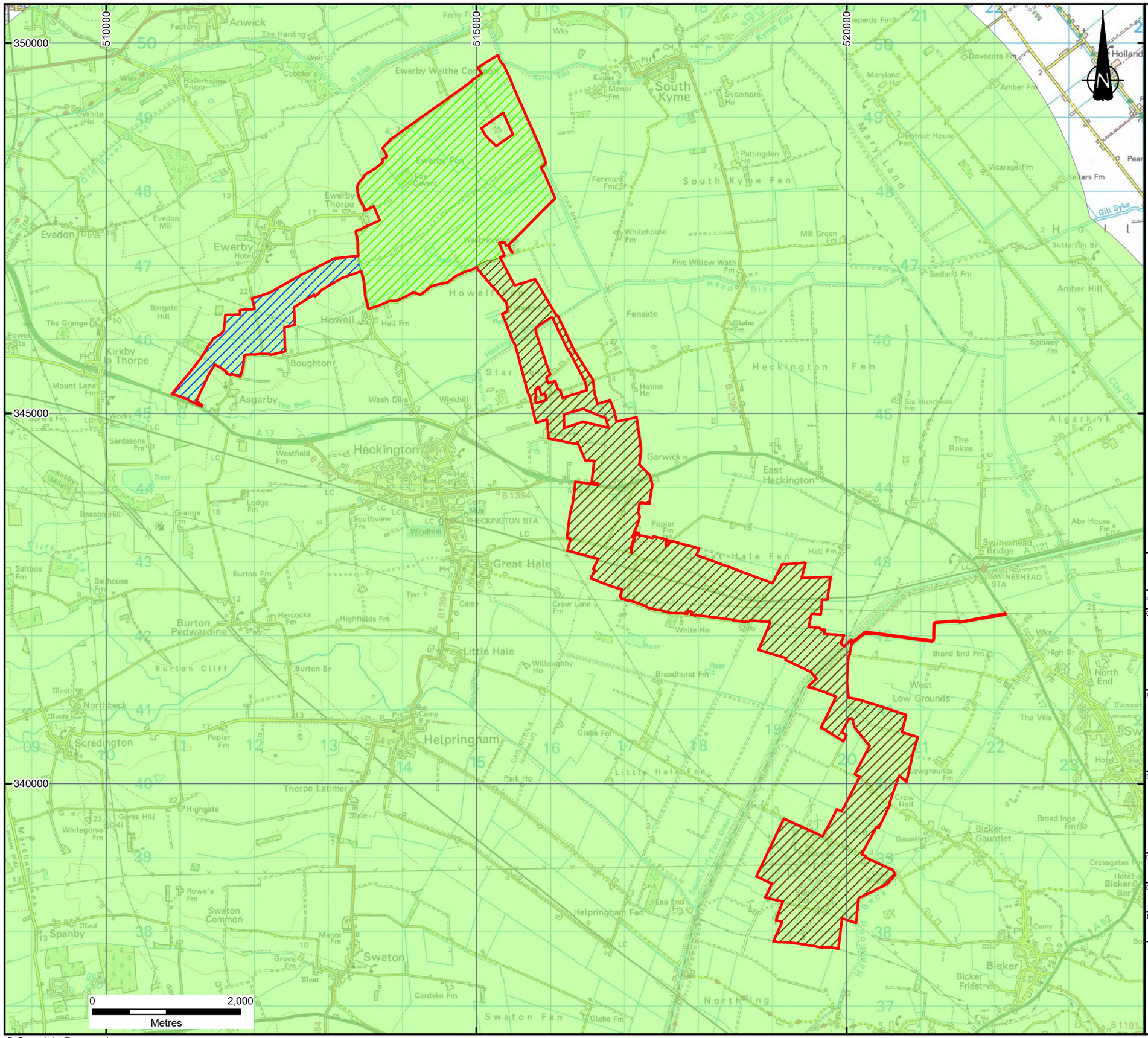
BGS GEOSURE HAZARDS:
SHRINK SWELL CLAYS

DRG No.	REV	SUIT. CODE
ST19595-136	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



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KEY

- Red Line Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

GeoSure Hazard Class

- B - Unlikely to be present

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	AMENDED NOTES AND LEGEND	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

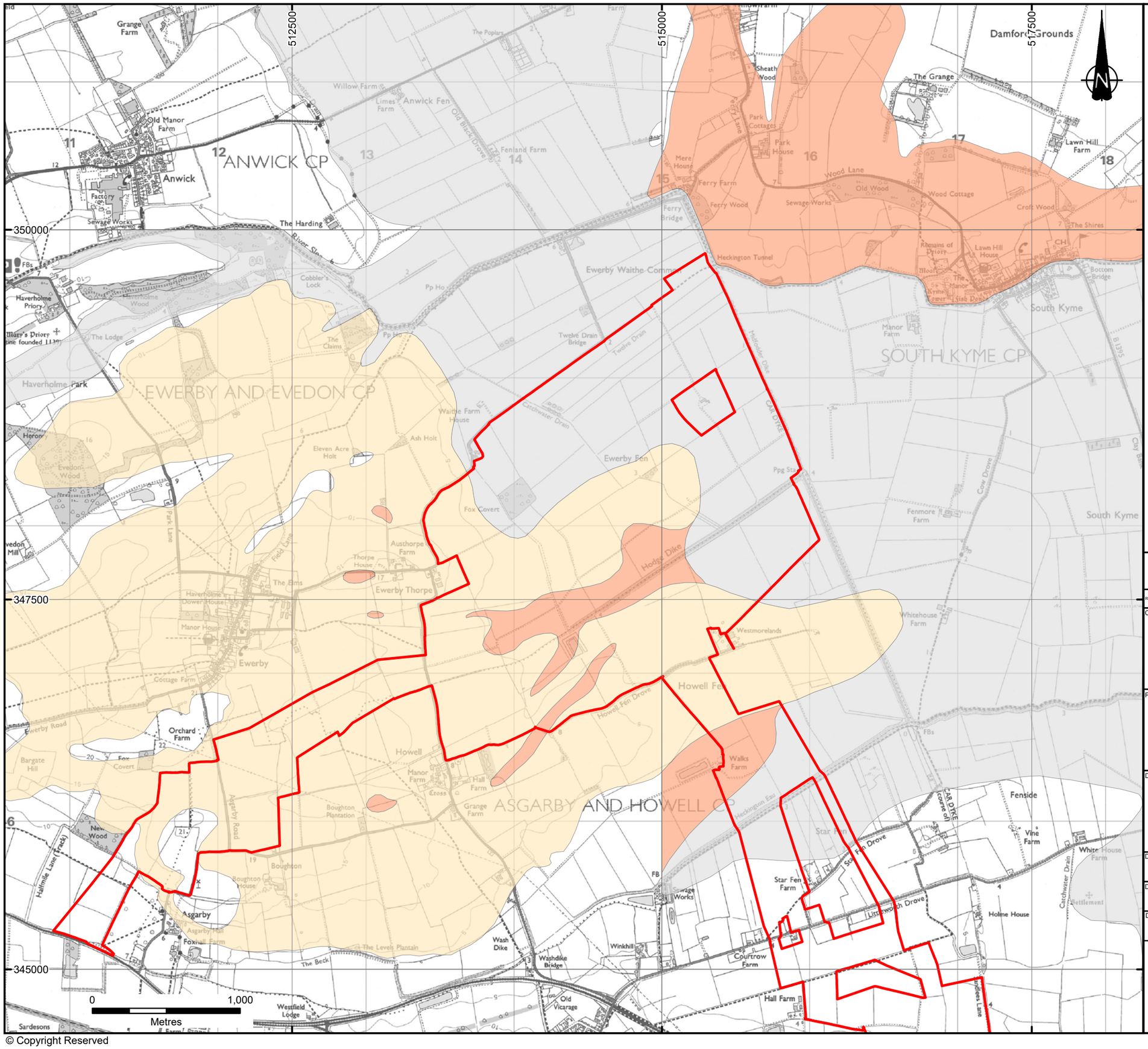
BGS GEOSURE HAZARDS: LANDSLIDES

DRG No.	REV	SUIT. CODE
ST19595-137	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



KEY

- Red Line Boundary (the Site)

Superficial Aquifer

- Secondary A
- Secondary (undifferentiated)
- Unproductive

Notes:

Boundaries are indicative.

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

Contains British Geological Survey materials © NERC 2023.

Bedrock Aquifer designations are not applied because the full coverage area shown on the drawings is classified as Unproductive Strata.

Superficial Aquifer data was only purchased for the Solar Array area and therefore does not cover the Access Route and Cable Route Corridor.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

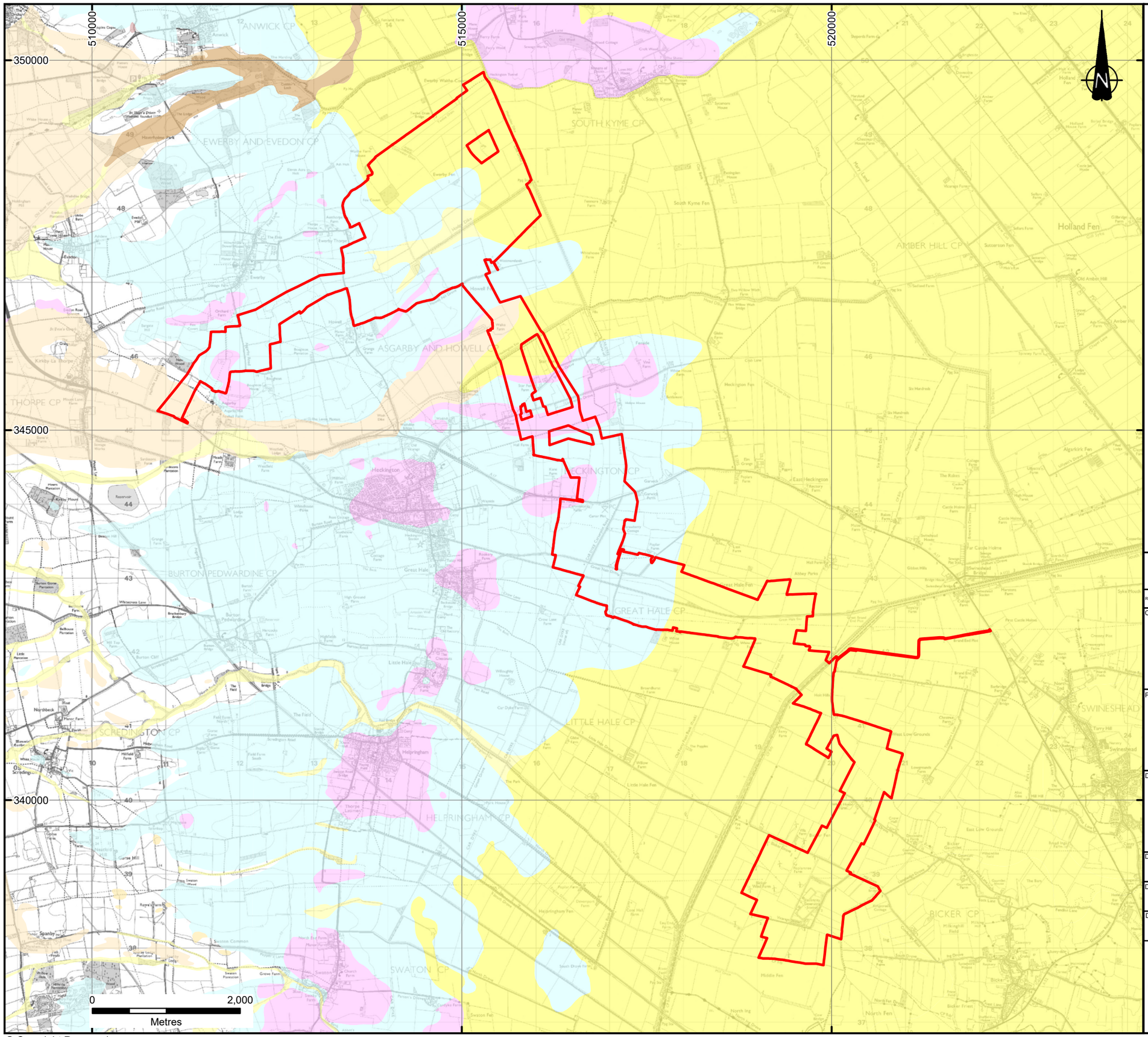
AQUIFERS PLAN

DRG No.	REV	SUIT. CODE
ST19595-150	B	--

DRG SIZE	SCALE	DATE
A3	1:25,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
CP	SG	MW

wardell armstrong



KEY

- RED LINE BOUNDARY (THE SITE)
- ALLUVIUM - CLAY, SILT, SAND AND GRAVEL
- TIDAL FLAT DEPOSITS - CLAY AND SILT
- GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL
- GLACIOFLUVIAL ICE CONTACT DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL
- GLACIOFLUVIAL SHEET DEPOSITS, MID PLEISTOCENE - SAND AND GRAVEL
- TILL, MID PLEISTOCENE - DIAMICTON
- BLOWN SAND - SAND
- HEAD - CLAY, SILT, SAND AND GRAVEL
- PEAT - PEAT
- SLEAFORD SAND AND GRAVEL - SAND AND GRAVEL
- SAND AND GRAVEL OF UNCERTAIN AGE AND ORIGIN - SAND AND GRAVEL
- TIDAL FLAT DEPOSITS, 1 - CLAY AND SILT

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

The colour symbology for different geological units / formations is provided by the British Geological Survey (BGS) using their standardised symbology. Some of the units / formations have very similar colours that may not be distinguishable in print or pdf form. For further distinction, refer to the BGS online GeoIndex https://mapapps2.bgs.ac.uk/geoindex/home.html.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMNEDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

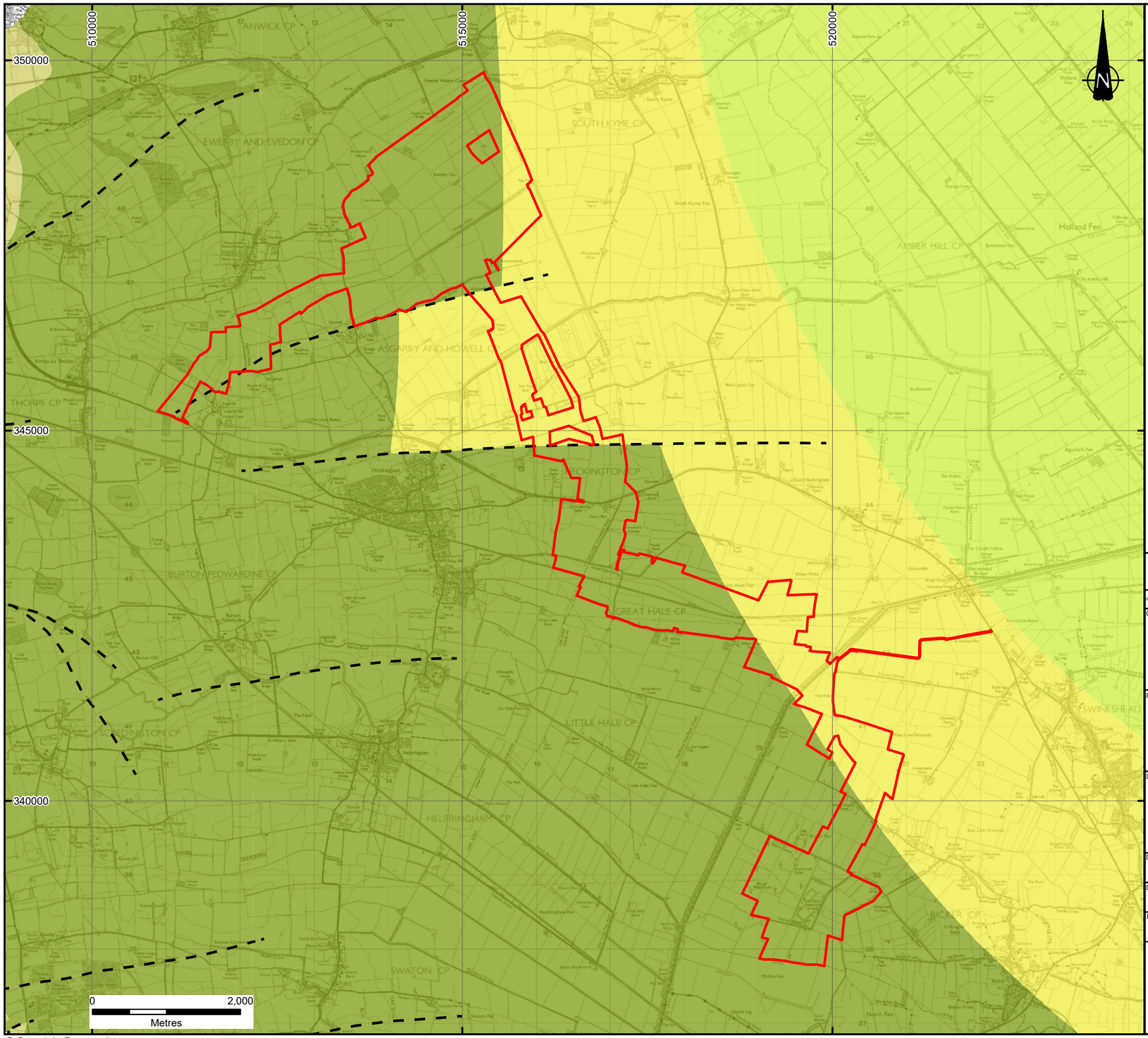
SUPERFICIAL GEOLOGY

DRG No.	REV	SUIT. CODE
ST19595-161	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

wardell armstrong



KEY

- Red Line Boundary (the Site)
- AMPTHILL CLAY FORMATION - MUDSTONE
- WEST WALTON FORMATION - MUDSTONE AND SILTSTONE
- KELLAWAYS SAND MEMBER - SANDSTONE AND SILTSTONE, INTERBEDDED
- OXFORD CLAY FORMATION - MUDSTONE
- PETERBOROUGH MEMBER - MUDSTONE
- FAULT

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

The colour symbology for different geological units / formations is provided by the British Geological Survey (BGS) using their standardised symbology. Some of the units / formations have very similar colours that may not be distinguishable in print or pdf form. For further distinction, refer to the BGS online GeoIndex https://mapapps2.bgs.ac.uk/geoindex/home.html.

REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

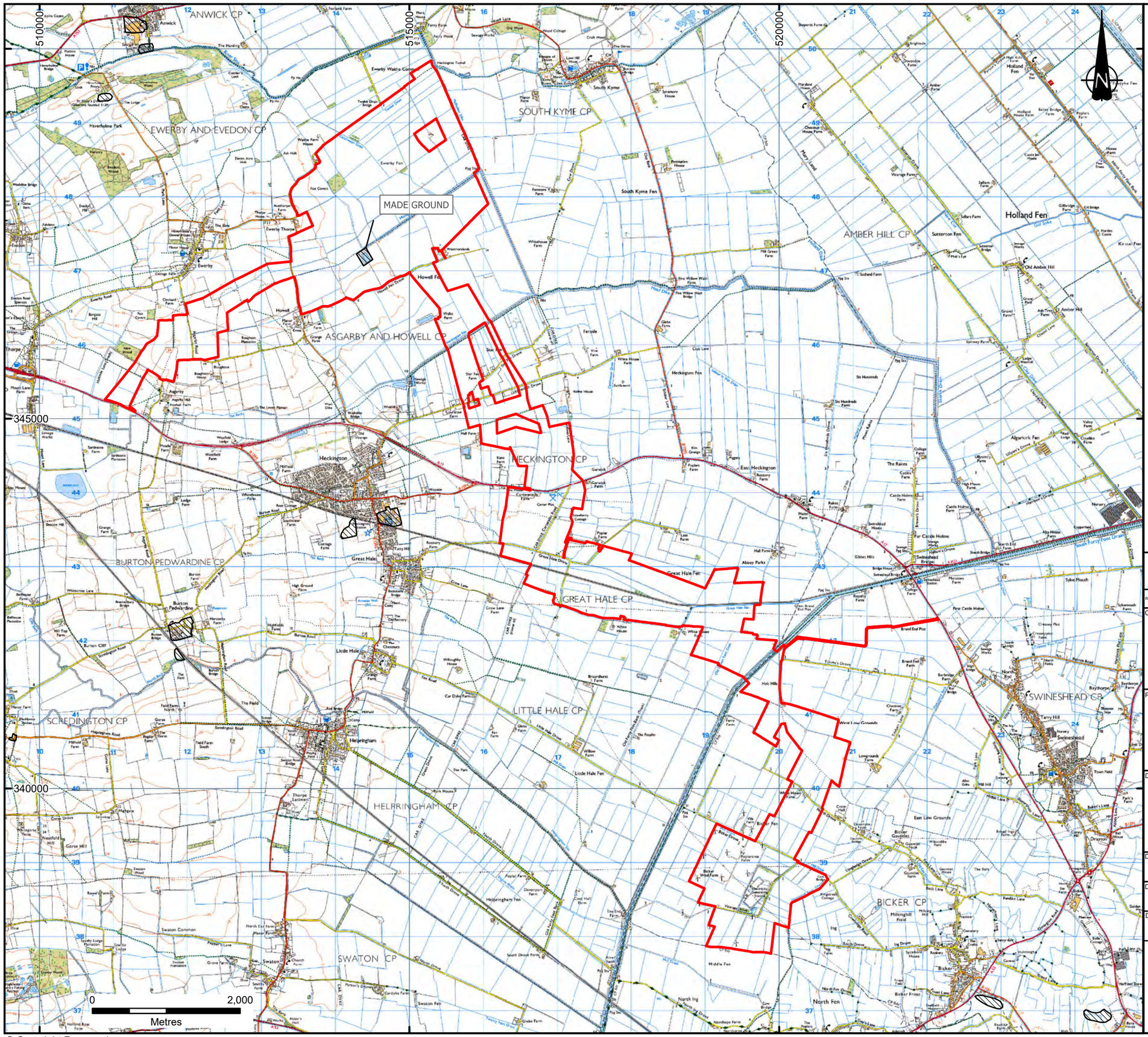
BEDROCK GEOLOGY

DRG No.	REV	SUIT. CODE
ST19595-162	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

wardell armstrong



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KEY

RED LINE BOUNDARY (THE SITE)

MADE GROUND (UNDIVIDED)

Notes:

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
B	AMENDED NOTES	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

ARTIFICIAL GEOLOGY

DRG No.	REV	SUIT. CODE
ST19595-163	B	--

DRG SIZE	SCALE	DATE
A3	1:50,000	04/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

wardell armstrong

514000

516000

348000

Ewerby Waterless Common

Black Drove

Twelve Drains Bridge

Ewerby Thorpe

Collingers Plat

Fin Rew

0 200

Metres

KEY

- Redline Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

Notes:

Boundaries are indicative. Cable Route Corridor and Access Route Corridor shown for visual purposes only, and have not been considered in this Report.

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
B	AMENDED NOTES AND LEGEND	04/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

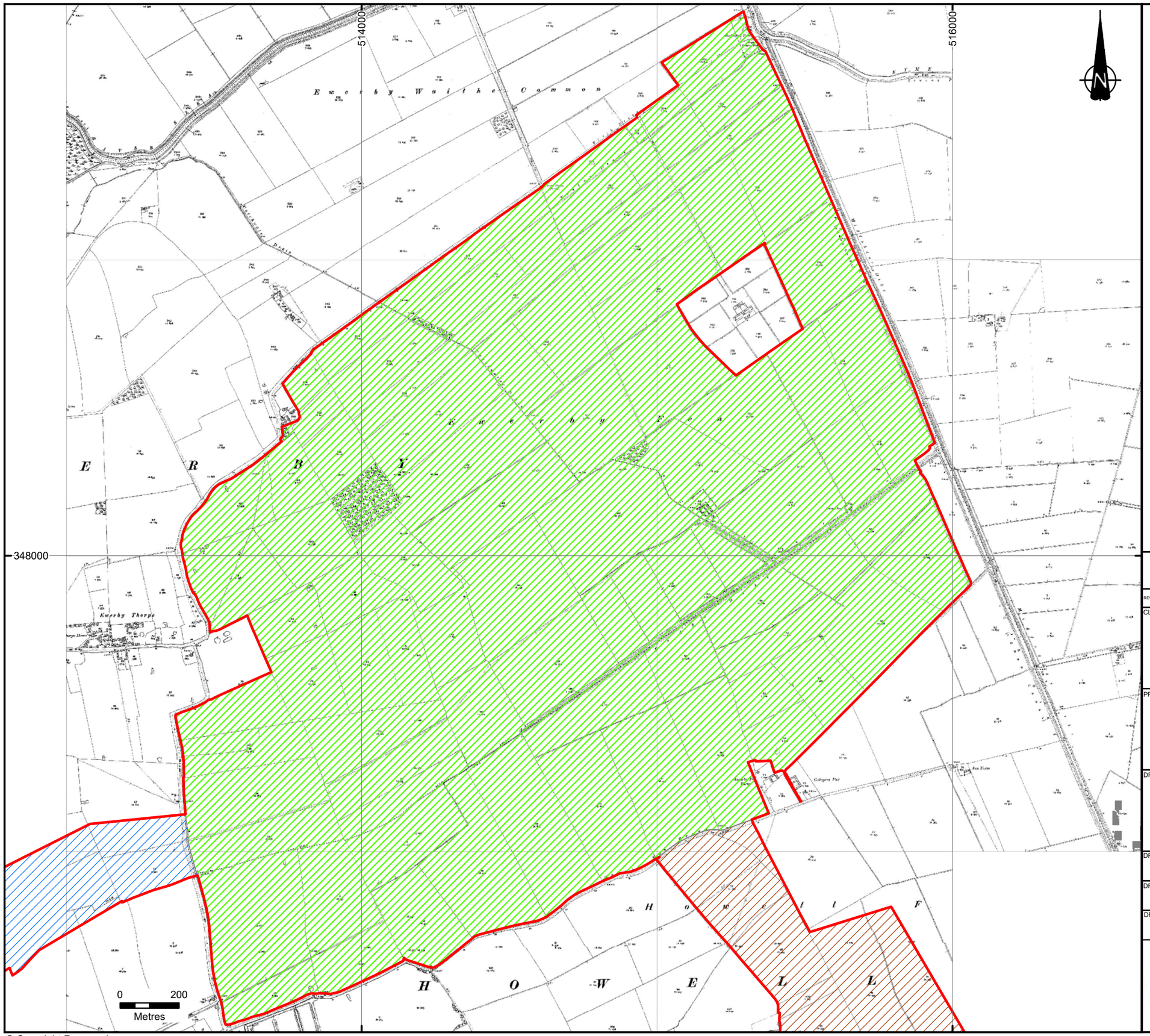
COUNTY SERIES PLAN - 1889

DRG No.	REV	SUIT. CODE
ST19595-180	B	--

DRG SIZE	SCALE	DATE
A3	1:12,500	05/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

wardell armstrong



KEY

- Redline Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

Notes:

Boundaries are indicative. Cable Route Corridor and Access Route Corridor shown for visual purposes only, and have not been considered in this Report.

The Redline Boundary (the Site) contains information provided by Ardent Management for the Solar Array Area on 07/07/2023, the Cable Route Corridor on 28/07/2023, and the Access Route Corridor on 26/10/2023.

REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
B	AMENDED NOTES AND LEGEND	05/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

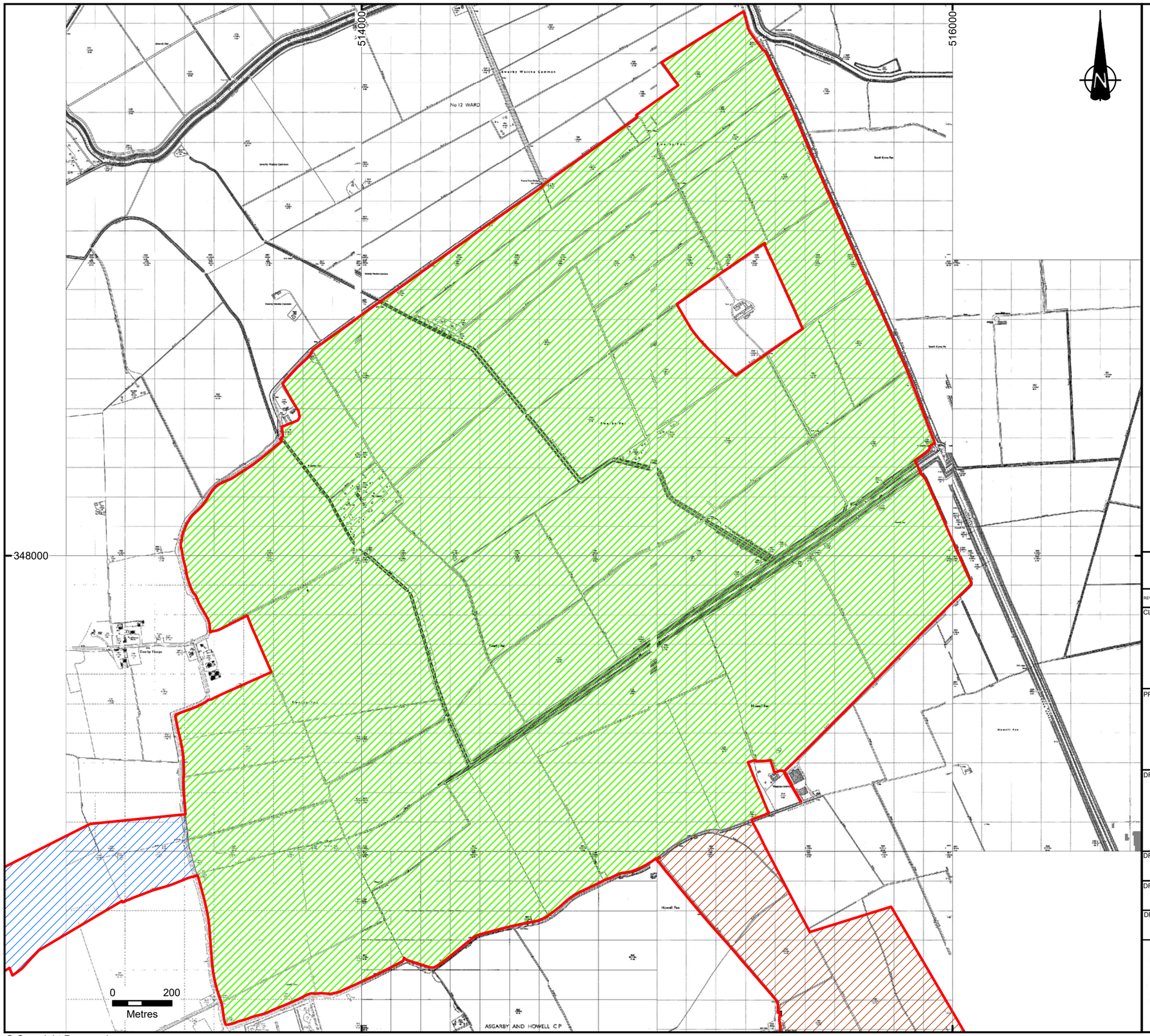
COUNTY SERIES PLAN - 1905

DRG No.	REV	SUIT. CODE
ST19595-181	B	--

DRG SIZE	SCALE	DATE
A3	1:12,500	05/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

wardell armstrong



KEY

- Redline Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

Notes:

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REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	AMENDED NOTES AND LEGEND	05/12/23	RCB	SG	MW
A	FIRST ISSUE				

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

NATIONAL GRID PLAN - 1976

DRG No.	REV	SUIT. CODE
ST19595-182	B	--

DRG SIZE	SCALE	DATE
A3	1:12,500	05/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

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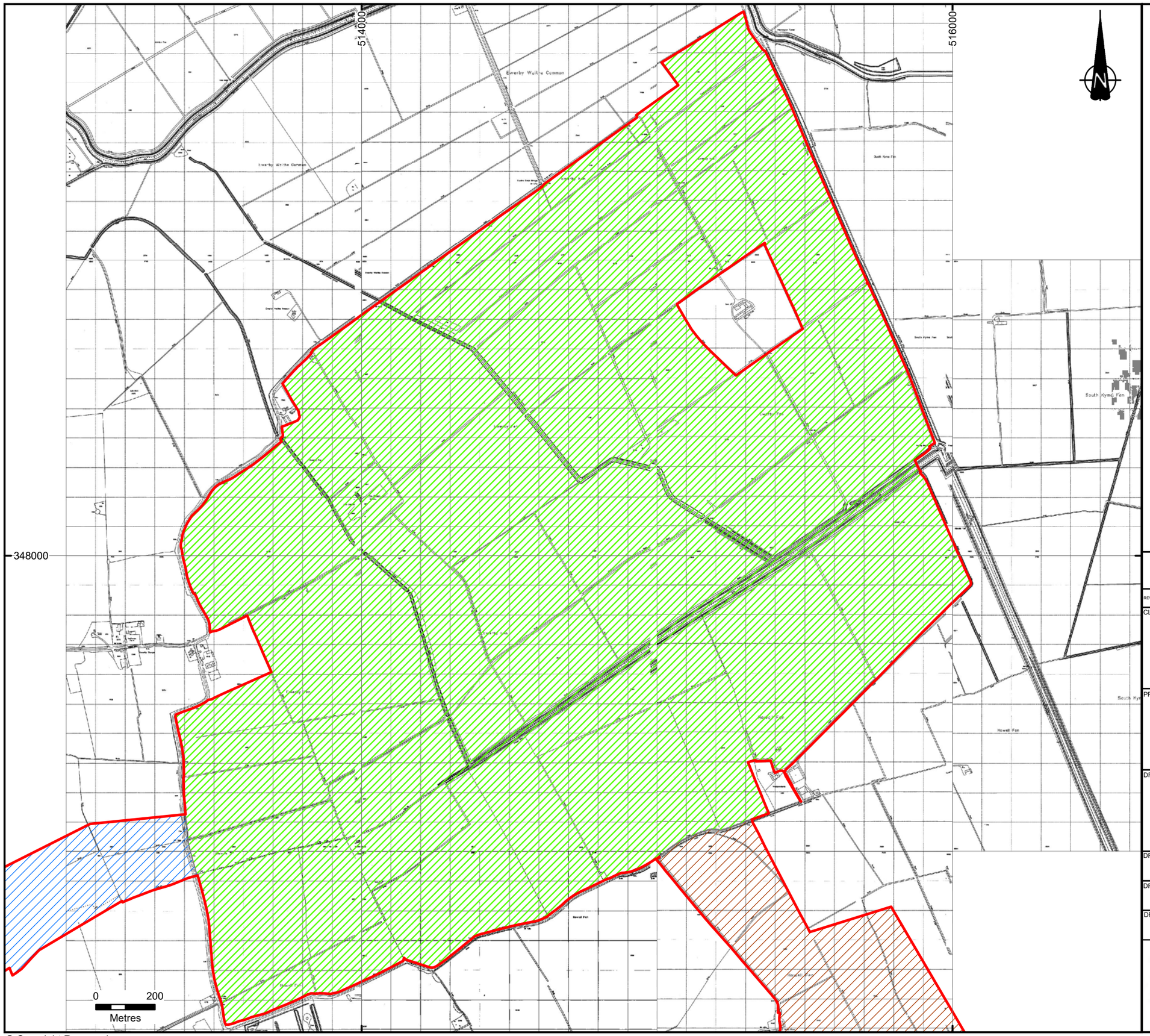

KEY

- Redline Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

Notes:

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REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
B	AMENDED NOTES AND LEGEND	05/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

NATIONAL GRID PLAN - 1994

DRG No.	REV	SUIT. CODE
ST19595-183	B	--

DRG SIZE	SCALE	DATE
A3	1:12,500	05/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

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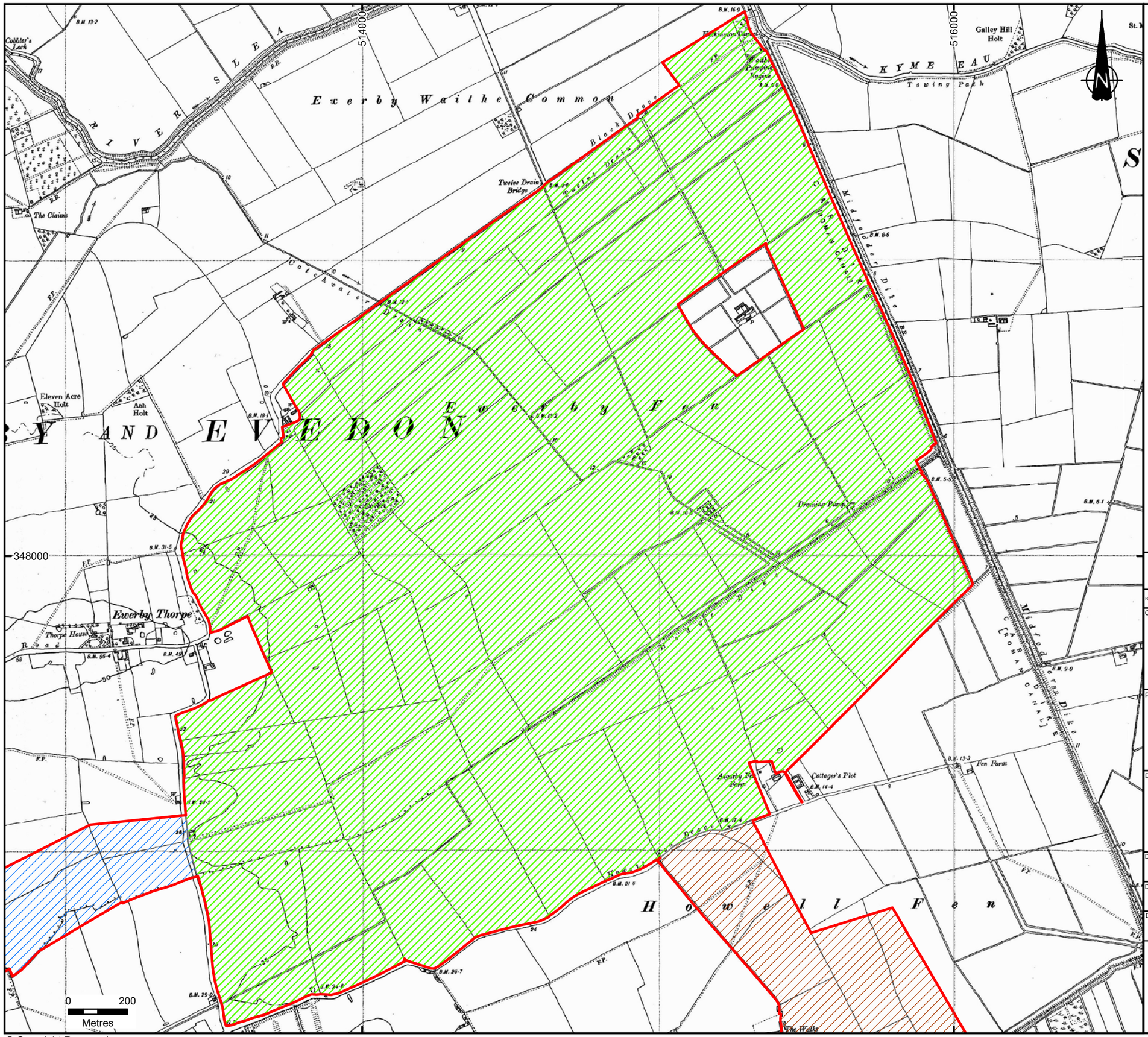

KEY

- Redline Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

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REVISION	DETAILS	DATE	DRAWN	CHKD	APP'D
B	AMENDED NOTES AND LEGEND	05/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

COUNTY SERIES PLAN - 1888

DRG No.	REV	SUIT. CODE
ST19595-184	B	--

DRG SIZE	SCALE	DATE
A3	1:12,500	05/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

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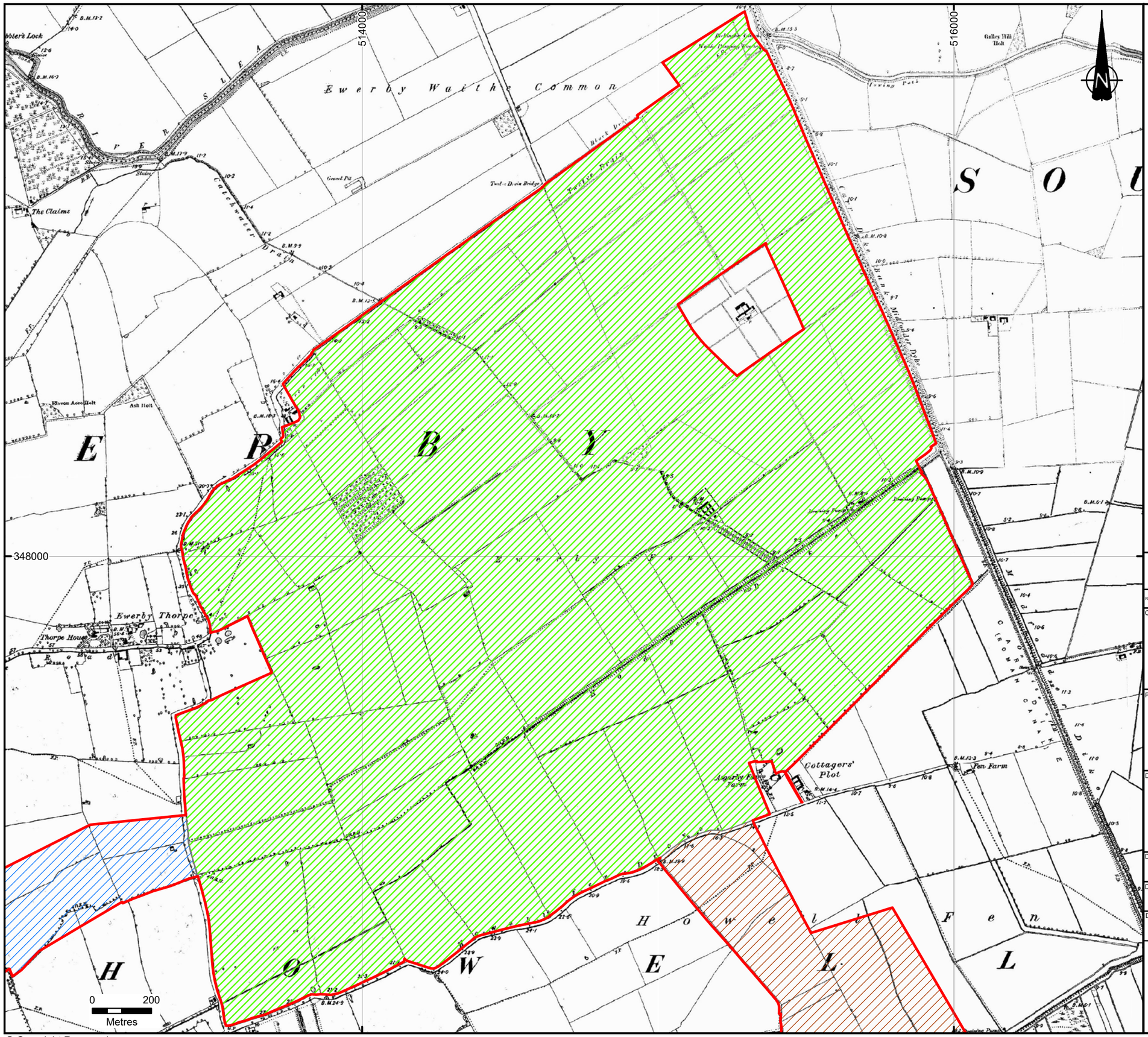

KEY

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- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

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REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES AND LEGEND	05/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

COUNTY SERIES PLAN - 1906

DRG No.	REV	SUIT. CODE
ST19595-185	B	--

DRG SIZE	SCALE	DATE
A3	1:12,500	05/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

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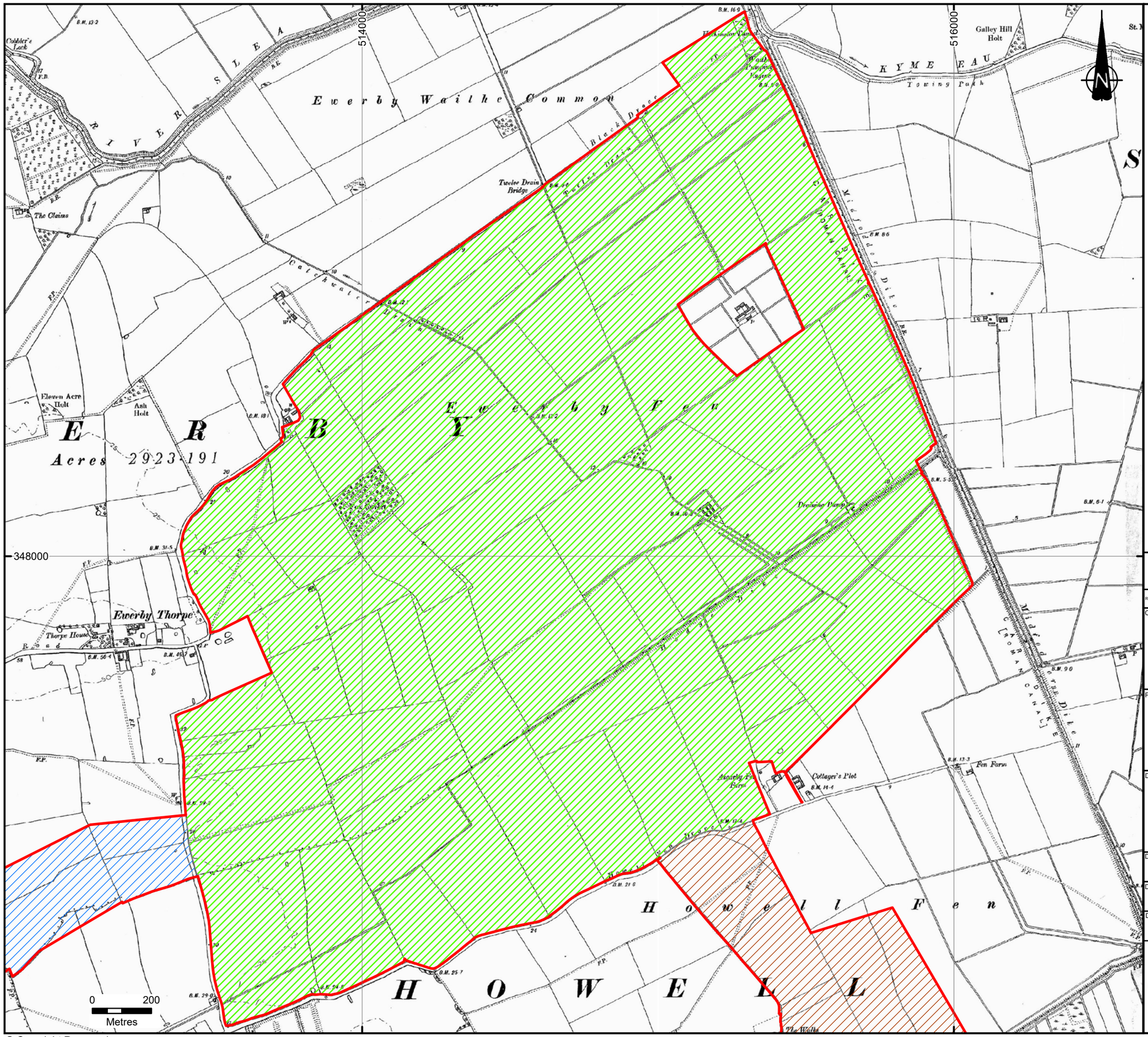

KEY

- Redline Boundary (the Site)
- Solar Array Area
- Cable Route Corridor
- Access Route Corridor

Notes:

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REVISION	DETAILS	DATE	DRAWN	CHK'D	APP'D
B	AMENDED NOTES AND LEGEND	05/01/24	CP	SG	MW
A	FIRST ISSUE	05/12/23	RCB	SG	MW

CLIENT

BEACON FEN ENERGY PARK LTD

PROJECT

BEACON FEN ENERGY PARK

DRAWING TITLE

COUNTY SERIES PLAN - 1947

DRG No.	REV	SUIT. CODE
ST19595-186	B	--

DRG SIZE	SCALE	DATE
A3	1:12,500	05/01/2024

DRAWN BY	CHECKED BY	APPROVED BY
RCB	SG	MW

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