Great North Road Solar and Biodiversity Park

Environmental Statement Report

Volume 4 – Technical Appendices

TA A10.2 – Desk Study and Preliminary Risk Assessment - Study Area 2

Document reference – EN010162/APP/ 6.4.10.2

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June 2025

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, APFP Regulation 5(2)(a)

Contents

A10.2.1. INTRODUCTION

A10.2.1.1. PREAMBLE

1 RPS Consulting Services Ltd (RPS) was commissioned by Elements Green Trent Ltd to undertake a Phase 1 Desk Study and Preliminary Risk Assessment (DTS and PRA) of The Great North Road Solar and Biodiversity Park (GNR; "the Development"), within the Order Limits. The report has been commissioned prior to the submission of the application for DCO consent for the Development.

2 The Development would be located to the north-west of Newark, in the Newark and Sherwood district, Nottinghamshire, East Midlands. The Development would be within an area bound by the Order Limits. The Order Limits are to the west of the A1, north of the A617, east of Eakring, and south of Egmanton, to the north and north-west of Staythorpe. The Development essentially consists of discrete land parcels proposed to be occupied by solar PV panels, BESS and associated infrastructure, and connected by cable route areas. The eastern side of the Development runs from the north of Norwell to Egmanton in the north (with additional parcels of land for mitigation/enhancement around North Muskham). The western side of the Development runs north-west from Staythorpe Power Station and then splits at Maplebeck, with spurs running to Eakring in the north-west and Kneesall to the north-north-east, then connecting with the eastern side of the Development.

3 A plan showing the location and Order Limits for the Development is provided as Figure 10.1: Site Desk Study Zoning Plan in Volume 2 Chapter 10 – Ground Conditions and Land Contamination [EN010162/APP/6.2.10]. In order to provide sufficient detail for the PRA, the Development has been subdivided by RPS into eight study areas (referenced as Study Areas 1 – 8). It should be noted that the split of the Study Areas are based on the previous Order Limits for PEIR and therefore the DTS and PRA presents an assessment of an area that is inclusive of the current Order Limits. It should be noted that where cable routes extend beyond the Study Area, along existing public highway, these cable routes have not been subject to specific desk based review or considered within the conceptual site model on the basis that these public highways would have been constructed to adoptable standards and therefore are not considered to represent potentially contaminated areas.

4 This report presents the Desk Top Study (DTS) information and Preliminary Risk Assessment (PRA) for Study Area 2 as shown in Figure A10.2.1: Study Area 2 Boundaries. This includes Field Parcel ID's 30, 31, 32, 33, 34, 36, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 60, 125, 126, 213, 214, 215, 216, 217, 244, 246, 251, 252 and 265, 294, 298, 434, 499, 504, 515, 516, 517, 599 and 600, and are shown on Figure A10.2.2: Study Area 2 Field Boundaries.

5 The wider area within and surrounding the Order Limits are generally composed of agricultural land, interspersed by occasional woodlands. Surrounding villages and hamlets are connected by rural roads and public rights of way. Smaller fields and tree cover are more common close to the

villages and along water courses, with larger and more open fields set further away. The total area of the Development Site is approximately 1,765 hectares (ha), the majority of which is currently used for arable crops or is otherwise down to pasture. The Desk Study assessment is based upon a review of published information available from local, regional, and national agencies. The desk study information is derived from Insight Reports provided by Groundsure, Ref. GSIP-2024-16448-21124_F_1, GSIP-2024-16448-21124_E_1 and GSIP-2024-16448-21124_A_1 which are presented in Volume 4 Technical Appendix A10.11 – Desk Study and Preliminary Risk Assessment Groundsure Data [EN010162/APP/ 6.4.10.11]. Please note the terms and conditions attached to the supply of data from Groundsure. It should be noted that the Study Area boundaries presented within the Groundsure Insights Reports are based on the previous Preliminary Environmental Information Report site boundary which was provided at the time of purchasing the Groundsure data. Only information relating to the Study Areas and a data search buffer of 250 m, where relevant, has been included within this assessment.

A10.2.1.2. OBJECTIVES

6 The principal objectives of this assessment were as follows:

- Establish from published sources the geological sequence for Study Area 2 and potential for ground instability to occur through development proposals.
- To assess potential sources of contamination associated with historical and current land uses both on Study Area 2 and within a data search area of 250 m radius.
- To review the environmental setting to assess the sensitivity of the surrounding area to contamination/pollution.
- To produce an outline Conceptual Site Model (CSM) detailing how any contamination may impact the identified receptors via pollutant linkages; and
- To conclude on the likely requirement for any further assessment and ground investigation required in support of the DCO application.

7 The PRA methodology utilised in the preparation of this assessment is presented in detail in Annex B.

A10.2.1.3. LEGISLATION AND GUIDANCE

8 The assessment has been undertaken in general accordance with British Standard BS EN ISO 21365:2020[1] and is considered suitable to meet the initial requirements of planning as outlined within the National Planning Policy Framework (NPPF)[2]. The assessment also reflects the

[1] British Standards Institution (2020). BS EN ISO 21365:2020 soil quality. Conceptual site models for potentially contaminated sites. Available at: https://standardsdevelopment.bsigroup.com/projects/2017-02617 (accessed 21.05.2025).
[2] Ministry of Housing, Communities and Local Government, National Planning Policy Framework (Dec 2024/ Amended Feb 2025) Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf (accessed 21.05.25).

recommendations of Environment Agency guidance, Land Contamination: Risk Management, (LCRM 2023)[3].

9 This report has been produced in general accordance with:

- Contaminated Land (England) Regulations 2006 (as amended);
- DEFRA Environmental Protection Act 1990: Part 2A – Contaminated Land Statutory Guidance (2012);
- Environment Agency (2023) Land Contamination: Risk Management (LCRM 2023);
- National Planning Policy Framework (2024);
- CIRIA Document C665: Assessing Risks Posed by Hazardous Ground Gases to Buildings;
- British Standard requirements for the 'Investigation of potentially contaminated sites – Code of practice' (ref. BS10175:2011+A1:2017);
- British Standard requirements for the 'Code of practice for ground investigations' (ref. BS5930:2015+A1:2020); and,
- British Standard requirements for the 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings' (ref BS8485:2015+A1:2019).

10 Details of the limitations of this type of assessment are described in Annex C.

A10.2.2. DESCRIPTION OF STUDY AREA 2 AND DESK STUDY

11 Study Area 2 is comprises the south-west of Caunton, immediately south and north-west and north-east of Knapthorpe, west and north of Averham Park, east of Winkburn and north-east of Hockerton. See Figure A10.2.2: Study Area 2 Boundaries for the extent of Study Area 2.

12 Study Area 2 covers an approximate area of 463 hectares and currently comprises undeveloped agricultural land. Study Area 2 passes through Luke, Readyfield, Mather and Lady Woods. Caunton Road passes through the central area of the Study Area, running north-east to south-west.

13 Study Area 2 has a variable elevation profile, between 50 m Above Ordnance Datum (AOD) and 70 m AOD with a topographical low of 34 m AOD at Field Number 168, associated with a broad valley that Caunton Road passes through.

14 Given the absence of potentially significant contaminative land uses / sources, as identified from environmental data searches, within the Study Area, a targeted site inspection has not been required of this Study Area.

15 Study Area 2 is located in an area of predominantly agricultural land use. Based on the images reviewed the surrounding land uses, within 250 m, are summarised in Table A10.2.1 below:

[3] Environment Agency (2023). Land Contamination: Risk Management (LCRM). Available at: https://www.gov.uk/government/publications/land-contamination-risk-management;lcrm (accessed on 25.01.2025).

Table A10.2.1: Neighbouring Land Uses

Direction	Description
North:	Beesthorpe Hall Farm, plantations.
North-east:	Caunton village.
North-west:	Village of Maplebeck.
East:	Study Area 3, Park Leys farms and Bedmax Industrial Unit, Muskham Woodhouse Farm.
South:	Cheveral and Spring Woods, Averham Park farm and stables.
West:	Study Area 1, Park Spring Wood, Lady Wood, Mather Wood, Coppice Wood.
Surrounding:	Agricultural land.

A10.2.2.1. THE DEVELOPMENT

A10.2.2.1.1. The Great North Road Solar and Biodiversity Park (GNR) ("the Development")

16 Full details and a detailed description of The Development are outlined in Environmental Statement (ES) Volume 2 Chapter 5 - Development Description [EN010162/APP/6.2.5].

A10.2.2.1.2. Study Area 2

17 The majority of this Study Area comprises fields allocated as Work Area 1 solar PV arrays, designated Work Area 3 mitigation areas and Work Area 2 cable routes. In the west of Study Area 2 is the proposed Maplebeck Road Substation location.

A10.2.2.2. SITE HISTORY

A10.2.2.2.1. Historical Map Review

18 The following review is based on past editions of readily available historical Ordnance Survey (OS) maps. These include scales of 1:1,250, 1:2,500, 1:10,560 and 1:10,000 dated 1883 to 2024. Extracts from the historical maps are included within Volume 4 TA A10.11 – Desk Study and Preliminary Risk Assessment Groundsure Data [EN010162/APP/6.4.10.11]. Historical land uses are presented in Table A10.2.2, below:

Table A10.2.2: Historical Site Uses within Study Area 2

Study Area 2 Land Use and Features	Dates
Agricultural land/fields (majority of Study Area 2).	1883 – 2024
Grass Drying Plant (central but excluded from the Development Area).	1994 – 2024
Former embankment (on proposed cable route).	1883 – 1970

Study Area 2 Land Use and Features	Dates
Electricity pylons aligned north-south through the east of the Study Area.	1970 – 2024

19 Pertinent historical site uses within 250 m of Study Area 2 are presented in Table A10.2.3 below.

Table A10.2.3: Historical Neighbouring Land Uses within 250 m

Surrounding Land Use	Orientation	Distance	Dates	
			From	To
Garage/fuel filling station on A616	North-west	53 m	1971	2024
Farm Water Pumps	North	40 m	1970	2003
Knapthorpe Lodge Poultry Houses	East	150 m	2001	2024
Brick Yard / Works and associated brick pits (disused by 1951)	South-south-east	10 m	1883	1970
Covered Reservoir	East	5 m	1971	2001

A10.2.2.2.2. Planning History

20 There are no available planning records for Study Area 2 on the Newark and Sherwood District Council planning website as of November 2024.

A10.2.2.3. ENVIRONMENTAL SETTING

21 The Groundsure Insight Reports used in preparation of the environmental setting assessment are presented in Volume 4 TA A10.11 – Desk Study and Preliminary Risk Assessment Groundsure Data [EN010162/APP/6.4.10.11].

A10.2.2.3.1. Geology

22 Based on British Geological Survey (BGS)4 mapping (1:50,000-scale) and the Environment Agency (EA) Groundwater Vulnerability mapping (1:100,000-scale), the stratigraphic sequence and aquifer classifications beneath Study Area 2 are indicated to be as follows:

[4] British Geological Survey (2025). Geoindex Onshore. Available at: https://www.bgs.ac.uk/map-voewers/geoindex-onshore/ (accessed on 21.05.2025).

Table A10.2.4: Descriptions of Geological Strata

Stratum	**Description & approx. thickness (based upon BGS Lexicon of Rock Units and borehole data)**	**Aquifer Classification**
Superficial Deposits		
Alluvium.	Present as a linear band beneath the south-west of Study Area 2 and also underlies a small area of the north-east of Field Number C184. Generally comprises unconsolidated clay, silt, sand and gravel. Thickness not proven.	Secondary A Aquifer.
Bedrock		
Mercia Mudstone Group – Mudstone.	Dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thickness up to 152 m based on borehole evidence.	Secondary B Aquifer.
Mercia Mudstone Group - Siltstone, Dolomitic.	Dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thickness up to 152 m based on borehole evidence.	Secondary Undifferentiated Aquifer.

23 Alluvial Deposits underlie small areas of the south-west cable route and north-east corner of Field Number C184 of Study Area 2 and are associated with the River Trent floodplain. The majority of Study Area 2 is directly underlain by outcropping/shallow bedrock of the Mercia Mudstone Group (MMG).

24 BGS borehole logs SK75NW/10, SK75NW/11 and SK75NE/185, all located on Study Area 2 proved shallow MMG bedrock from ground level to depths of in excess of 40 metres below ground level (m BGL).

A10.2.2.3.2. Hydrogeology

25 Study Area 2 is located above a Secondary B Aquifer relating to the MMG bedrock, and a Secondary Undifferentiated Aquifer related to the siltstone and dolomitic MMG bedrock. The Alluvium is classified a Secondary A Aquifer. These are defined as:

- Secondary A Aquifers represent formations that are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers.
- Secondary B Aquifers represent formations that are generally formed of lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons, and weathering.
- Secondary Undifferentiated Aquifers represent formations that have varying characteristics in different locations.

26 According to EA data, contained within the Groundsure Insight reports, Study Area 2 is not located in a groundwater Source Protection Zone (SPZ).

27 Information provided by the EA indicates that there is one active licensed groundwater abstraction within 250 m of Study Area 2. This is detailed in Table A10.2.5 below:

Table A10.2.5: Groundwater Abstractions

Licence Holder	Approx Distance and direction from Study Area 2	Source	Use
Germany Farms Limited	200 m north	Groundwater Midlands Region	General Farming and Domestic

A10.2.2.3.3. Surface Water

28 There is one watercourse within 250 m of Study Area 2 which is classified within a River Basin Management Plan published by the EA under the European Water Framework Directive (2000).

Table A10.2.6: Nearby Watercourses and Water Bodies

Watercourse/Body	Quality Classification (2019)	Approx Distance and direction from Study Area 2
Pingley/Rundell Dyke Catchment Upper (tributary of Trent)	Moderate	Onsite
The Wink	N/A	Adjacent to southern boundary

29 Information provided by the EA indicates that there are no records of active licensed surface water abstractions within 250 m of Study Area 2.

A10.2.2.3.4. Ecologically Sensitive Sites

30 Natural England data indicates that there is one ecologically sensitive site (SSSI), which constitutes an environmental receptor as defined within Table 1 of the DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012)[5], located within a 250 m radius of Study Area 2. Ecologically sensitive sites protected under the NPPF are also listed in the table below.

Table A10.2.7: Ecologically Sensitive Sites

Environmental Designation	Name	Approx Distance and direction from Study Area 2
Ancient Woodland	Dukes Wood	5 m north
Ancient Woodland	Coppice Wood	5 m west
Ancient Woodland	Lady Wood	5 m south
Ancient Woodland	Park Spring Wood	25 m west
Ancient Woodland	Muskham Wood	5 m north
Ancient Woodland	Cheveral Wood	5 m south
SSSI	Mather Wood	50 m south

A10.2.2.3.5. Radon

31 According to the online Indicative Atlas of Radon in England and Wales published by the UK Health Security Agency (UKHSA)[6] and BGS, Study Area 2 lies within a kilometre grid square with maximum radon potential of between 0 % and 1 %. The Indicative Atlas is based upon Radon Potential Data and classifies areas based upon the likelihood of a property having a radon action level at or above the Action Level of 200 m^3 based upon a dataset of over 500,000 records provided by the UKHSA and geology provided by the BGS. The Radon Potential is calculated from statistics (geometric mean and geometric standard deviation) of indoor radon measurements collected over each geological unit.

32 The higher resolution Radon Potential dataset, as included within the Groundsure GeoInsight report, provides a more accurate assessment of the level of risk and the requirements for inclusion of preventative measures during construction based upon BGS Geology (1:50,000 scale) geological map data. This indicates less than 1 % of properties having a radon level at or above the Action Level in Great Britain.

[5] DEFRA (2012). Contaminated Land Statutory Guidance. Available at: www.gov.uk/government/publications/contaminated-land-statutory -guidance (accessed on 21.05.2025).
[6] UK Health Security Agency (2022). UK maps of radon. Available at: https://www.ukradon.org/information/ukmaps (accessed 21.05.2025).

A10.2.2.3.6. Mining Remediation Authority

33 The Interactive Map Viewer on the Mining Remediation Authority7 website indicates that Study Area 2 is not located in a coal mining reporting area.

A10.2.2.3.7. Non-coal Mining

34 BGS sources indicate that Study Area 2 is not located in an area of recorded non-coal mining (vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities including ball clay, jet, black marble, graphite, and chert).

35 BGS holds a database of British Pits, abbreviated to 'BritPit', comprising currently active, closed surface and underground mineral workings. Records indicate that four former BritPits are present within Study Area 2 or within the 250 m study area. Record details are presented in the table below.

Table A10.2.8: British Pit Record Details

Name	Commodity	Status	Approx. Distance & Direction in relation to Study Area 2
Woodhouse Farm Pits	Sandstone/clay and shale	Ceased	In east of Study Area
Hockerton Clay Pit	Clay and shale	Ceased	6 to 49 m south-west
Hockerton Stone Pits	Sandstone	Ceased	49 to 172 m south-west
Gables Farm Pit	Sandstone	Ceased	South-west

A10.2.2.3.8. BGS Ground Stability Hazard Ratings

36 British Geological Survey Ground Stability Hazard ratings for the Study Area are summarised as follows:

Table A10.2.9: BGS Ground Stability Hazards

Ground Stability Hazard	BGS Risk Rating
Collapsible Ground	Negligible – Very Low
Compressible Ground	Negligible – Moderate (Alluvium)
Ground Dissolution	Negligible
Landslide	Very Low
Running Sand	Negligible
Shrinking or Swelling Clays	Negligible – Very Low

[7] Mining Remediation Authority (2025). Map Viewer. Available at: https://datamine-cauk.hub.arcgis.com (accessed 21.05.25).

A10.2.2.4. AUTHORISED PROCESSES AND POLLUTION INCIDENTS

A10.2.2.4.1. Landfill and Waste Sites

37 Data provided by the EA, Local Authority and BGS indicates that there are no recorded licensed or known historical landfill sites located within 250 m of Study Area 2.

38 Information provided by the EA/Local Authority shows that there are no waste treatment / transfer sites recorded within 250 m of the Study Area.

A10.2.2.4.2. Environmental Permits

39 EA and Local Authority data indicates that there are no processes regulated by an Environmental Permit (under the Environmental Permitting Regulations (2010)) within 250 m of the Study Area.

A10.2.2.4.3. Waste Exemptions

40 EA and Local Authority data indicates the following waste exemptions within 250 m of the Study Area outlined in the table below;

Table A10.2.10: Waste Exemptions

Site	Permitted Activity	Approx Distance and direction from Study Area 2
Land At SK7413057340	Storing waste exemption (sludge)	Onsite
Bedmax, Hockerton Road, Caunton, Newark, NG23 6BA	Disposing of waste exemption (Burning of waste)	Onsite
Manor Farm, Ollerton Road, Kelham, Newark, NG23 5QS	Storing waste exemption (sludge)	Onsite
Land At SK7382056730	Storing waste exemption (sludge)	Onsite
Knapthorpe Grange Newark, Nottinghamshire NG23 6AZ	Disposing of waste exemption (Burning of waste)	Onsite
Knapthorpe Grange Newark Nottinghamshire NG23 6AZ	Disposing of waste exemption (deposits from dredging)	Onsite

A10.2.2.4.4. COMAH Sites

41 There are no records of any operations under the Control of Major Accident Hazards (COMAH) Regulations 1999, located within 250 m.

A10.2.2.4.5. Pollution Incidents

42 Environment Agency data indicates that there are two records of 'major' or 'significant' pollution incidents within 250 m of the Study Area. These are outlined in the following table:

Table A10.2.11: Pollution incidents

Location/Address	Approx Distance and direction from Study Area 2	Receiving Medium and date	Severity of Incident and Type
North of Broadgate Lane	92 m south-east	Water - 18/02/2004	Category 2 (significant) contaminated water release
Park Leys	118 m south-east	Land - 21/09/2016	Category 2 (significant) specific waste materials

A10.2.2.5. UNEXPLODED ORDNANCE

43 CIRIA Report C6818 (Stone et al., (2009)) outlines recommendations for dealing with the potential risk associated with the legacy of Unexploded Ordnance Risk, largely relating to WWII bombing and military sites.

44 A detailed desk based UXO Risk Assessment was undertaken by Tetra Tech RPS Energy for The Development dated 28th August 2024. The findings of the assessment identifies that Study Area 1 is in a low risk UXO area. No further measures are considered necessary other than the provision of tool box talks during site inductions for construction staff and the inclusion of UXO in Risk Assessments and emergency plans at pre-construction stage. The Tetra Tech RPS Energy UXO Risk Assessment report is presented in Volume 4 TA A10.10 – Detailed Desk Study (Stage 2) for Potential UXO Contamination [EN010162/APP/6.4.10.1].

A10.2.3. OUTLINE CONCEPTUAL SITE MODEL

A10.2.3.1. BACKGROUND

45 An outline conceptual site model (CSM) consists of an appraisal of the source-pathway-receptor 'contaminant linkages' which is central to the approach used to determine the existence of 'contaminated land' according to the definition set out under Part 2A of the Environmental Protection Act, 1990. For a risk to exist (under Part 2A), all three of the following components must be present to facilitate a potential 'pollutant linkage'.

- **Source** referring to the source of contamination (Hazard).
- **Pathway** for the contaminant to move/migrate to receptor(s).
- **Receptor** (Target) that could be affected by the contaminant(s).

[8] CIRIA (2009). Unexploded Ordnance C681: A Guide for the Construction Industry. Available at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductcode=C681 (accessed on 21.05.2025).

46 Receptors include human beings, controlled waters, environmentally sensitive land uses and buildings / structures. The National Planning Policy Framework, used to address contaminated land through the planning process, follows the same principles as those set out under Part 2A.

47 As part of the assessment, the potential risks to receptors from a potential sources is given one of the following classifications:

- **Low risk** - it is considered unlikely that issues within the category will give rise to significant harm to identified receptors.
- **Moderate risk** - it is possible, but not certain that issues within the category will give rise to significant harm to receptors.
- **High risk** - there is a high potential that issues within the category will give rise to significant harm to identified receptors.

A10.2.3.2. POTENTIAL POLLUTION LINKAGES

48 Each stage of the potential pollutant linkage sequence has been assessed individually on the basis of information obtained from the desk study exercise and are discussed in the following section.

A10.2.3.2.1. Potential Contaminant Sources

Onsite Current

49 Study Area 2 currently comprises predominantly agricultural fields. Whilst there is potential for contaminants such as pesticides, herbicides and insecticides to have been used on-site and in its close proximity, these chemicals typically have a low residency time in soils and they degrade rapidly in compliance with the requirements for crops and grazing prior to products being used for human consumption. Therefore, agricultural uses are not considered a potential significant source of contamination.

Onsite Historical

50 Onsite historical sources include a former embankment in the east of the Study Area. This had been cleared by 1971 and may have represented a source of localised Made Ground of unknown composition.

Offsite Current

51 Current off-site potential sources of contaminants of concern include a garage/fuel filling station adjacent to the A616 at the northern limits of the Study Area. There are no pollution incidents or regulatory enforcements listed for this location and it is situated on the outcropping MMG bedrock strata therefore the migration potential for leaks or spills is considered to be minimal. This has therefore been discounted as a potential source for the PRA.

Offsite Historical

52 EA data indicates there to have been two significant pollution incidents within 250 m radius. Given the age of these (2004 and 2016) and location in relation to the Study Area the potential for impact on The Development is considered to be minimal and these are not considered to be viable sources for assessment.

53 A former brick works / brickyard is identified 10 m south-east of Study Area 2, in the vicinity of Mickleborough Hill. Localised Made Ground may be possible where brick pits have been infilled. Any Made Ground could be classed as a potential source of contamination or ground gas generation dependent upon the infill materials.

A10.2.3.2.2. Potential Pathways

54 The extreme north-west of Study Area 2 has fluvial superficial cover deposits of Alluvium within which there is potential for mobilisation of gaseous or liquid/leachable contaminants of concern via granular horizons or via shallow groundwater. These may impact on controlled waters or human heath receptors via dermal contact, ingestion and vapour inhalation pathways.

55 The superficial deposits are indicated to be underlain by mudstone strata belonging to the Mercia Mudstone Group, which also outcrops across the remainder of this Study Area. This is considered to be relatively impermeable and is likely to retard the downward or lateral migration of contaminants of concern over distance via shallow groundwater (where present) or as gases or vapours.

56 For future site users (maintenance workers), pathways for direct contact/ingestion with residual soils or inhalation of airborne dust may exist in areas of soft landscaping.

57 It should be noted that pathways may be modified or exacerbated by disturbance.

A10.2.3.2.3. Potential Receptors

58 The Mercia Mudstone Group present at outcrop across most of the Study Area are considered a Secondary B Aquifer however Study Area 2 is not within any SPZ's and there are no licensed potable abstractions on the study area or within 250 m. Groundwater is not considered a sensitive receptor based upon the setting of Study Area 2 and is discounted from further assessment in this PRA.

59 Several surface water features have been identified on and within 250 m of Study Area 2, however, the absence of identified on-site contamination sources and limited lateral migration potential of the bedrock geology would indicate no significant risk to these water bodies.

60 During operation of the Development it is not envisaged that there would be any full-time occupancy, however it is expected that there would be periodic requirements for maintenance work/checks. The risks posed to maintenance workers are considered to be negligible given the historical site usage, low risk of contact with residual soils, the likely absence of shallow groundwater and adoption of best working practices.

61 Off-site users are unlikely to be adversely impacted by any site derived contaminants for the majority of the Study Area. The identified possible onsite contamination source (former embankment) is not in close proximity to the main Study Area 2 residential conurbations and migration potential for any associated leachable/gaseous contaminants is likely to be limited by the nature of the shallow geology.

62 The assessment does not consider the risk to construction workers. These risks will be managed through appropriate Health & Safety legislation via the H&S At Work Act (1974) and in accordance with Construction Design and Management (CDM, 2015) regulations.

63 Based on the identified potential sources and the site setting there is not considered to be a significant risk to ecological receptors, crops/vegetation, or archaeological receptors from contamination.

A10.2.3.3. OUTLINE CONCEPTUAL SITE MODEL

64 An outline CSM has been developed on the basis of the desk study. The CSM is used to identify potential sources, pathways, and receptors (i.e. potential pollutant linkages) post development and is summarised in the table below.

Table A10.2.12: Outline Conceptual Site Model

Potential Source	Contaminants Of Concern	Via	Potential Pathways	Linkage Potentially Active?	Receptors	Qualitative Risk Assessment	Notes
Former Embankment in east	ACMs, hydrocarbons, heavy metals	Soil	Inhalation of volatiles, dust or fibres	Yes	Future site users	Low	Low risk of residual soil exposure to maintenance workers in soft landscaping.
Former Brick Works and pits (offsite)	Ground gases (CO2 and methane), hydrocarbons	Groundwater, Soil	lateral migration through permeable strata/shallow groundwater inhalation of volatiles, toxic gases, explosive risks	No	Future site users and structures	-	It is not anticipated that there will be buildings as part of The Development or long-term occupancy of staff. Low permeability strata suggests minimal risk of migration from source.

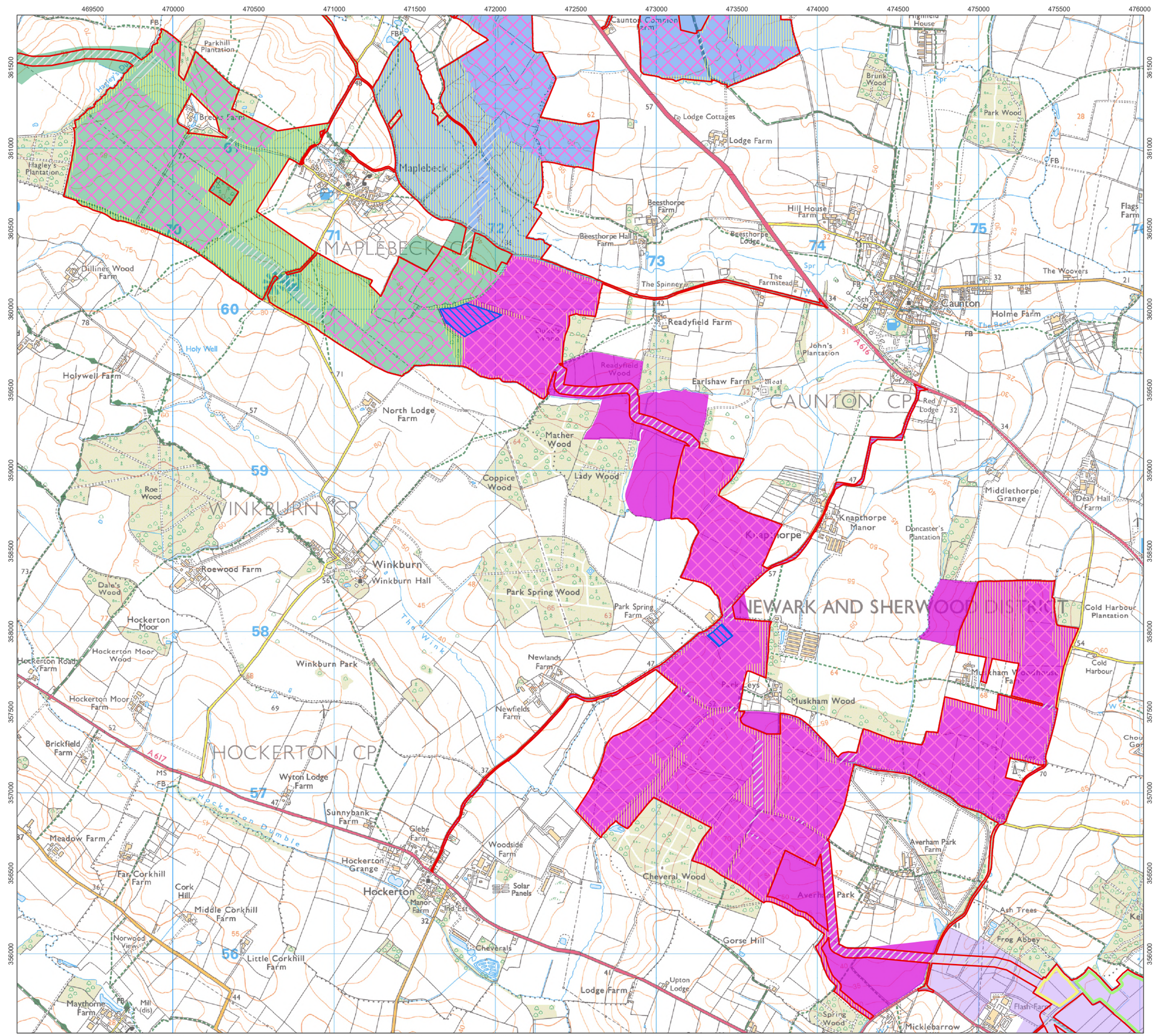
N.B. If a Moderate or High Qualitative Risk Rating is identified further assessment is recommended

A10.2.4. CONCLUSIONS AND RECOMMENDATIONS

A10.2.4.1. PRELIMINARY GEO-ENVIRONMENTAL CONCLUSIONS

65 The outline CSM produced upon completion of the desk study assessment has identified few potential pollutant linkages that may be active following construction of The Development in Study Area 2. Those that have been identified are considered to represent a low risk and no further assessment is considered necessary.

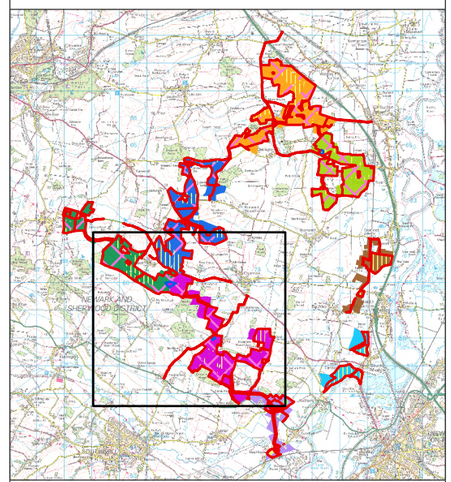
ANNEX A – FIGURES



Order Limits
Study Area 2
Study Area 1
Study Area 3
Study Area 8

Works Areas

Works Area 1 Solar PV
Works Area 2 Cable
Works Area 3 Mitigation
Works Area 4 Substations
Works Area 5a BESS
Works Area 5b 400kV Substation
Works Area 8 Access



1:23,000 Scale @ A3

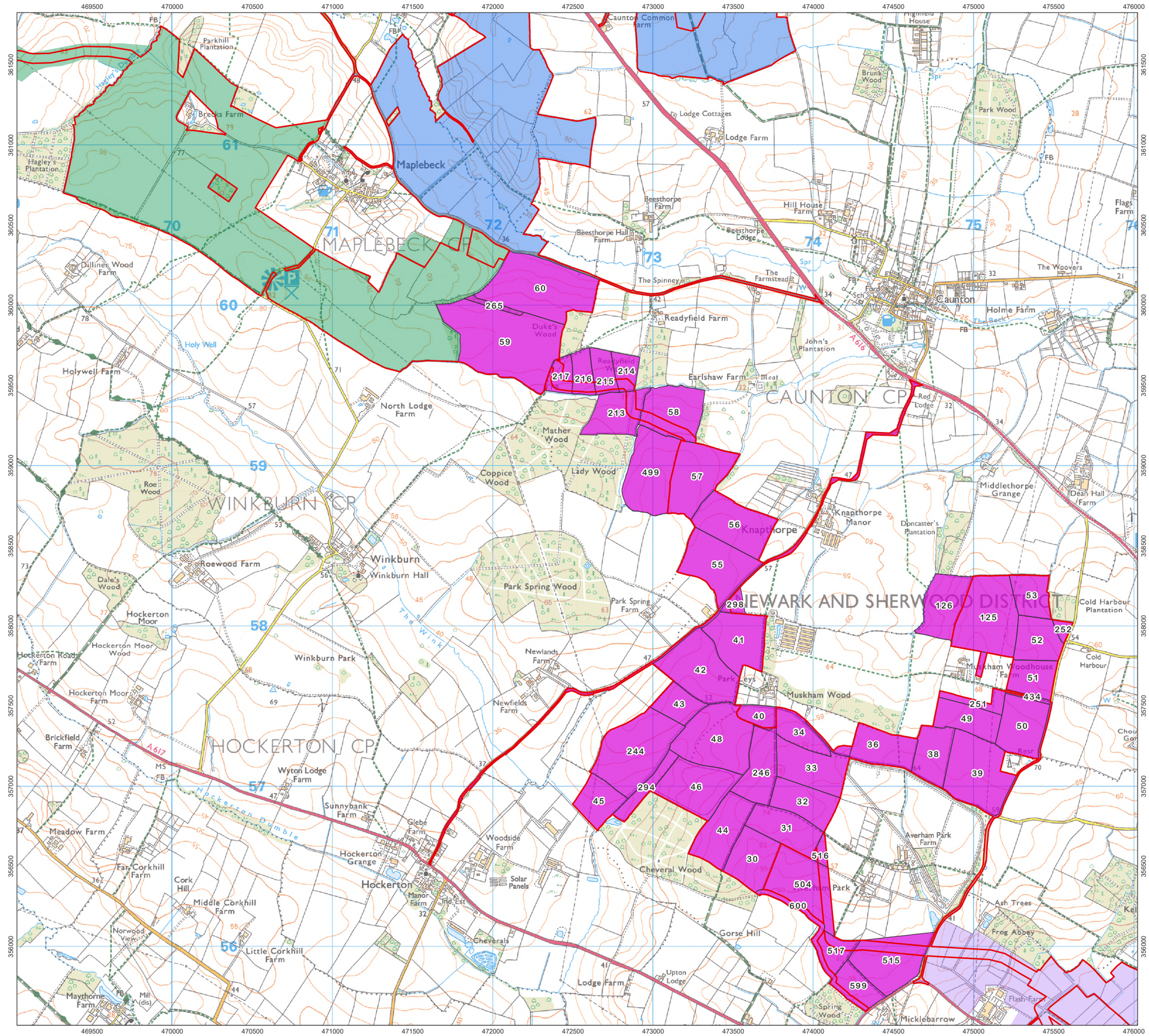
0 0.2 0.4 0.8 km

Ref: NP12850	Date: 11/06/2025

Study Area 2
Figure A10.2.1

Great North Solar and Biodiversity Park
Environmental Statement

P:\eur-mpfs-02.eur.rpsgroup.com\Projects\12850 DCO Great North Road Solar\Tech\Drawings\12850-0023-02.aprx\12850-0023-02



Order Limits
Field Boundaries
Study Area 2
Study Area 1
Study Area 3
Study Area 8

1:23,000 Scale @ A3

0 0.2 0.4 0.8 km

Ref: NP12850	Date: 11/06/2025

Study Area 2 Field Boundaries
Figure A10.2.2

Great North Solar and Biodiversity Park
Environmental Statement

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ANNEX B - PRA METHODOLOGY

INTRODUCTION

66 This report provides available factual data for the site obtained only from the sources described below and related to the site on the basis of the location provided by the Applicant. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.

67 This report is written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information and changes in legislation may necessitate a re-interpretation of the report in whole or in part after its original submission. The report is provided for sole use by the Applicant and is confidential to them and their professional advisors. No reliance whatsoever is provided to any party other than the client unless otherwise agreed.

Information Sources

Current and Historical Land Use

68 This section establishes the former and current uses of the Study Area and within a 250 m data search radius, which could have caused contamination. Details of the Development including current land use and location provided by the Applicant.

69 Information about the history of the Study Area and a 250 m radius, has been obtained through an inspection of historical maps at 1:10,000, 1:10,560, 1:2,500 and 1:1,250 scales and historical aerial photographs (where available). The accuracy of maps cannot be guaranteed, and it should be recognised that different conditions on-site may have existed between, and subsequent to, the map survey dates.

Regulatory Records

70 Regulatory records including landfills, pollution incidents (‘major’ and ‘significant’ only), industry authorisations and licensed water abstractions are derived from information purchased from Groundsure Ltd (unless otherwise specified).

Environmental Setting

71 The geological sequence underlying the Study Area and the approximate depths of strata are provided by maps published by the British Geological Survey (BGS) 1:50,000 scale and available borehole records held by the BGS.

72 The hydrogeological classification is obtained from Groundwater Vulnerability mapping by the BGS/EA/National Resources Wales (NRW). The vulnerability of groundwater is determined from this mapping and geological information.

73 The location of surface watercourses has been obtained from an inspection of current OS maps. Flood risk details and information on groundwater Source Protection Zones were obtained from readily available EA/NRW information published on-line and supplied by Groundsure Ltd.

74 Details of sensitive ecosystems/habitats and coal mining areas were supplied by Natural England and the Coal Authority respectively via Groundsure Ltd and inspection of the MAGIC website.

75 Radon is a radioactive gas produced naturally by certain types of geology. This report uses the Indicative Atlas of Radon in England and Wales (2007) produced by the Health Protection Agency (HPA) and the British Geological Survey (BGS) to determine whether the Study Area is located in an area at risk from radon gas. Where potential issues are identified, a site-specific radon report is obtained from the HPA and BGS to provide a more accurate estimate of the probability of the site being affected by radon gas ingress.

ANNEX C – ASSUMPTIONS AND LIMITATIONS

76 A "desk study" means that no site visits have been carried out as part of an assessment, unless otherwise specified.

77 This report provides available factual data for the Study Area obtained only from the sources described in the text and related to the Study Area and a 250 m radius, where relevant, on the basis of the location information provided by the Applicant.

78 The desk study information is not necessarily exhaustive and further information relevant to the Study Area may be available from other sources.

79 The accuracy of maps cannot be guaranteed, and it should be recognised that different conditions within the Study Area may have existed between and subsequent to the various map surveys.

80 No sampling or analysis has been undertaken in relation to this desk study.

81 Any borehole data from British Geological Survey sources is included on the basis that: "The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation".

82 Where any data supplied by the Applicant or from other sources, including that from previous site investigations, have been used it has been assumed that the information is correct. No responsibility can be accepted by RPS for inaccuracies in the data supplied by any other party.

83 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the report in whole or in part after its original submission.