Great North Road Solar and Biodiversity Park

Environmental Statement Report

Volume 4 – Technical Appendices

TA A10.5 – Desk Study and Preliminary Risk Assessment Study – Area 5

Document reference – EN010162/APP/6.4.10.5

Revision number 1

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

Contents

A10.5.1. INTRODUCTION

A10.5.1.1. PREAMBLE

1 RPS Consulting Services Ltd (RPS) was commissioned by Elements Green Trent Ltd to undertake a 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 DTS information and PRA for Study Area 5, as shown in Figure A10.5.1: Study Area 5 Boundaries. This constitutes Field Parcel ID's 8, 9, 10, 11, 15, 16, 17, 18, 19, 21, 134, 148, 243, 281, 282, 283, 284, 371 and 390, and are shown in Figure A10.5.2: Study Area 5 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.

6 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_C_1 and GSIP-2024-16448-21124_D_1 which are presented within 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.

A10.5.1.2. OBJECTIVES

7 The principal objectives of this assessment were as follows:

- Establish from published sources the geological sequence for Study Area 5 and potential for ground instability to occur through development proposals.
- To assess potential sources of contamination associated with historical and current land uses on Study Area 5 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.

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

A10.5.1.3. LEGISLATION AND GUIDANCE

9 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].

10 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).

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

[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).

A10.5.2. DESCRIPTION OF STUDY AREA 5 AND DESK STUDY

12 Study Area 5 comprises the eastern part of the Development and is constrained by Norwell Lane in the north, Bathley Lane to the south and the A1 to the east. Open fields bound Study Area 5 to the west. See Figure A10.5.1: Study Area 5 Boundaries for the extent of Study Area 5.

13 Study Area 5 currently comprises hedge and tree bounded undeveloped agricultural fields. Norwell Lane and Vicarage Lane are aligned east to west through the northern and southern parts of the Study Area, respectively. An existing railway line (The Great Northern Railway) crosses from north to south through the eastern part of the Study Area.

14 This section of the Development Site is noted to sit on relatively low-lying and flat ground with topography ranging from 25 m Above Ordnance Datum (AOD) in the north-west, to 10 m AOD in the east and centrally.

15 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.

16 Study Area 5 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 A10.5.1 below:

Table A10.5.1: Neighbouring Land Uses within 250 m

Direction	Description
North	Undeveloped agricultural land (Study Area 6), Sapphire Lakes.
East	The A1 and undeveloped agricultural land.
South-east	Village of North Muskham.
South	Bathley Lane and undeveloped agricultural land (Study Area 4).
West	Undeveloped agricultural land Villages of Bathley and Norwell.

A10.5.2.1. THE DEVELOPMENT

A10.5.2.1.1. The Great North Road Solar and Biodiversity Park (GNR) ("the Development")

17 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].

A10.5.2.1.2. Study Area 5

18 Study Area 5 is designated as Work Area 3 environmental mitigation / enhancement areas. These areas may contain the following principal development components/activities;

- Site preparation and/or clearance;

- Access tracks;
- Fencing/gates;
- Archaeological investigations;
- SuDS measures;
- Planting and vegetation management, and other mitigation/enhancement measures;
- Laying down of permissive paths and bridleways, cycle routes, signage and information boards;

19 As such construction works will be limited to the above and will be managed by a Landscape and Ecological Management Plan (LEMP), presented within Volume 4 TA A5.1 – LEMP [EN010162/APP/6.4.5.1].

A10.5.2.2. SITE HISTORY

A10.5.2.2.1. Historical Map Review

20 The following review is based on past editions of readily available Ordnance Survey (OS) maps. These include scales of 1:1,250, 1:2,500, 1:10,560 and 1:10,000 dated 1884 to 2024. Volume 4 Technical Appendix A10.11 – Desk Study and Preliminary Risk Assessment Groundsure Data [EN010162/APP/6.4.10.11]. Historical site uses are presented in Table A10.5.2, below:

Table A10.5.2: Historical Site Uses within Study Area 5

Study Area 5 Land Use and Features	Dates
Undeveloped agricultural land and farm buildings.	1884-2024

21 Pertinent historical site uses within 250 m of Study Area 5 are presented, in Table A10.5.3 below:

Table A10.5.3: Historical Neighbouring Land Uses within 250 m

Surrounding Land Use	Orientation	Distance from Study Area 5	Dates	
			From	To
Great Northern Railway Line	East/West	10 m	1884	2024

A10.5.2.2.2. Planning History

22 There are five planning records associated with the Study Area 5 area available on the Newark and Sherwood District Council planning website as of November 2024. These are summarised as follows:

- 23/01706/FUL – Cafe Amore Great North Road Cromwell NG23 6JE Demolition of existing vacant restaurant building (former Little Chef) and construction of Drive-Thru, Car Parking and Landscaping. Received 25/09/2023, Validated 12/07/2024.
- 14/SCR/00022 – Screening Opinion for Development of a Photovoltaic (PV) Solar Farm Capable of Generating Approximately 12 Megawatts of Electricity. Application Received 02/05/2014, Application Validated 02/05/2014, Environmental Impact Assessment Not Required 19/05/2014.

A10.5.2.3. ENVIRONMENTAL SETTING

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

A10.5.2.3.1. Geology

24 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 5 are indicated to be as follows:

Table A10.5.4: Descriptions of Geological Strata

Stratum	Description & approx. thickness (based upon BGS Lexicon of Rock Units)	Aquifer Classification
Superficial Deposits		
Alluvium	Present as a thin ribbon through the central parts of the Study Area associated with other tributaries. Generally comprises unconsolidated clay, silt, sand and gravel. Variable thickness.	Secondary A Aquifer
Holme Pierrepont Sand and Gravel Member	Covers much of Study Area 5. Generally comprises sand and gravel. Approx. Thickness typically 0 to 12 m.	Secondary A Aquifer
Bedrock		
Mercia Mudstone Group - Mudstone	Present beneath the whole of Study Area 5 and outcropping in the west, generally comprises red, green-grey mudstones with subordinate siltstones and widespread beds of gypsum/anhydrite. Rare thin sandstone beds	Secondary B Aquifer

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

Stratum	Description & approx. thickness (based upon BGS Lexicon of Rock Units)	Aquifer Classification
	possible. Approx. Thickness up to 182 m.	
Mercia Mudstone Group – Siltstone, Dolomitic	Present in semi-circular bands Study Area 5, generally comprises siltstones and thick-halite bearing units set within green-grey mudstones. Approx. Thickness up to 182 m.	Secondary Undifferentiated

25 There is no recorded evidence on the published geological mapping of Made Ground within Study Area 5. The majority of Study Area 5 has cover of superficial deposits associated with the course of the River Trent and tributaries.

26 BGS borehole records indicate a small number of historical exploratory hole logs (ref's SK76SE/29, SK76SE/17, SK76SE/19, SK76SE/32) across Study Area 5. The available records indicate superficial deposits of sands and gravels to up to 8.60 m depth (Alluvium and the Holme Pierrepont Sand and Gravel Member) in the north above Mercia Mudstone Group mudstone bedrock.

A10.5.2.3.2. Hydrogeology

27 Superficial deposits (Alluvium and the Holme Pierrepont Sand and Gravel Member) underlying Study Area 5 have been classed by the EA, as Secondary A Aquifers of high vulnerability. The underlying Mercia Mudstone Group bedrock is classed as a Secondary B Aquifer or Secondary Undifferentiated Aquifer. These are defined below:

- 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 have predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
- Secondary Undifferentiated Aquifer: Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

28 According to EA data, contained within the Groundsure EnviroInsight report, Study Area 5 is not located in a groundwater Source Protection Zone (SPZ).

29 Information provided by the EA indicates that there are four records for active licensed groundwater abstractions on or within 250 m of Study Area 5. These are detailed in Table A10.5.5 below:

Table A10.5.5: Licensed Groundwater Abstractions within 250 m

Licence Holder	Approx distance and direction from Study Area 5	Source	Use
03/28/69/0058 J S Dakin & Co	Onsite	Cromwell - Pond	Spray Irrigation - Direct
03/28/69/0111 Denniff	Onsite	North Muskham – Catchpit (2)	Spray Irrigation - Direct
03/28/69/0297 Gibson	121 m south	Lagoons in River Gravels (Point 1)	Spray Irrigation - Direct
03/28/69/0060 Johnson	179 m north-east	Cromwell - Catchpit	Spray Irrigation - Direct

A10.5.2.3.3. Surface Water

30 There are no watercourses classified as being within a River Basin Management Plan published by the EA under the European Water Framework Directive (2000) within Study Area 5. A list of readily identifiable nearby watercourses and water bodies within 250 m is summarised below:

Table A10.5.6: Nearby Watercourses and Water Bodies

Watercourse/Body	Quality Classification	Approx Distance and direction from Study Area 5
Unidentified	-	0 m - Delineating the southern boundary of fields 16, 18, 390.
Sapphire Fishing Lakes	-	Offsite south of Cromwell Crossing, within the 250 m study area.
Various ponds and lakes	-	0 m - Within field 16

31 Information provided by the EA, contained within the Groundsure Insights report, indicates that there is one active licensed surface water abstraction recorded either on or within 250 m of Study Area 5. The surface water abstraction listed is detailed below:

Table A10.5.7: Licensed Surface Water Abstractions within 250 m

Licence Holder	Use	Approx Distance and direction from Study Area 5
03/28/68/0011 J & J Burnett Ltd	Spray Irrigation – Direct	Onsite

A10.5.2.3.4. Ecologically Sensitive Sites

32 Natural England data indicates that there are no ecologically sensitive sites, that constitute environmental receptors 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 5.

A10.5.2.3.5. Radon

33 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 5 lies within a kilometre grid square with maximum radon potential of less than 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 Bq 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.

34 The higher resolution Radon Potential dataset, as included within the Groundsure Insight 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 that Study Area 5 has a maximum radon potential of less than 1 % of properties having a radon level at or above the Action Level in Great Britain.

A10.5.2.3.6. Mining Remediation Authority

35 The Interactive Map Viewer on the Mining Remediation Authority[7] website indicates that Study Area 5 is not located in a coal mining reporting area.

A10.5.2.3.7. Non-coal Mining

36 BGS sources indicate that Study Area 5 is not located in an area of recorded non-coal mining (vein minerals, chalk, oil shale, building stone, bedded ores,

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

evaporites and 'other' commodities including ball clay, jet, black marble, graphite and chert).

37 BGS holds a database of British Pits, abbreviated to 'BritPit', comprising currently active, closed surface and underground mineral workings. Records indicate four former BritPits to be present within 250 m of the Study Area and are detailed in the table below.

Table A10.5.8: British Pit Record Details

Name	Commodity	Status	Approx. Distance & Direction from Study Area 5
Cromwell Ballast Pit	Sand & Gravel	Ceased	47 m north-east
Cromwell Pits	Sand & Gravel	Ceased	62 m north-east
Cromwell Pits	Sand & Gravel	Ceased	124 m north-east
Norwell Hall Pits	Clay & Shale	Ceased	213 m north-west

A10.5.2.3.8. BGS Ground Stability Hazard Ratings

38 British Geological Survey Ground Stability Hazard ratings for the Study Area are summarised, in Table A10.5.9, below;

Table A10.5.9: BGS Ground Stability Ratings

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

39 A moderate ground stability hazard in relation to compressible ground has been identified for Study Area 5 associated with the alluvial deposits. This relates to compressibility and uneven settlement hazards, which are potentially present.

A10.5.2.4. AUTHORISED PROCESSES AND POLLUTION INCIDENTS

A10.5.2.4.1. Landfill and Waste Sites

40 Data provided by the EA, Local Authority and BGS indicates that there are no recorded licensed or known historical landfill or waste treatment / transfer sites located within 250 m of Study Area 5.

A10.5.2.4.2. Environmental Permits

41 EA and Local Authority data indicates that there is a single process regulated by an Environmental Permit (under the Environmental Permitting Regulations (2010)) within 250 m of Study Area 5.

42 The permit holder is given as Muskham Services, BP Service Station for 'Unloading of Petrol into Storage at Service Stations' and is located 138 m to the south-east.

A10.5.2.4.3. COMAH Sites

43 There are no records of any operations under the Control of Major Accident Hazards (COMAH) Regulations 1999, located within 250 m of Study Area 5.

A10.5.2.4.4. Pollution Incidents

44 Environment Agency data indicates that there are no recorded pollution incidents within 250 m of Study Area 5.

A10.5.2.5. UNEXPLODED ORDNANCE

45 CIRIA Report C681[8] (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.

46 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 5 is in a low risk UXO area. No further measures are considered necessary other than provision of tool box talks during site inductions for construction staff and 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].

[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).

A10.5.3. OUTLINE CONCEPTUAL SITE MODEL

A10.5.3.1. BACKGROUND

47 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).

48 Receptors include human beings, controlled waters 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.

49 As part of the assessment, the potential risks to receptors from potential sources, are 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.

A10.5.3.2. POTENTIAL POLLUTION LINKAGES

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

A10.5.3.2.1. Potential Contaminant Sources

Onsite Current

51 Study Area 5 currently comprises predominantly agricultural fields. Whilst there is potential for contaminants such as chemicals such as pesticides, herbicides and insecticides may have been used on-site and in its 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

52 No potentially significant historical contaminative sources have been identified within Study Area 5.

Offsite Current

53 No potentially significant current off-site contaminant sources have been identified that could impact on Study Area 5.

Offsite Historical

54 The Great Northern Railway runs north-south through the central part of the Study Area and is evident on maps dating from 1884 to the present day. Localised Made Ground is likely to be associated with the railway that could act as a potential source of heavy metals, hydrocarbons, non-metallic compounds and organic contaminants. Historically railways represent a potential source of airborne particulate contaminants such as coal, metals, asbestos that are redeposited in the surrounding area. The railway tracks also represent a source of other contaminants such as creosote or herbicides used in maintenance and upkeep. Contaminant linkage may be present but the circumstances under which harm would occur even in the long-term are improbable, given the proposed managed mitigation and enhancement development proposals for the area and no additional changes to existing or creation of new pathways by the development proposals for this area.

A10.5.3.2.2. Potential Pathways

55 Study Area 5 is indicated to be predominantly underlain by mudstone strata belonging to the Mercia Mudstone Group, which also outcrops across the western section of this Study Area. This stratum is considered to be relatively impermeable and is likely to retard the downward or lateral migration of contaminants of concern via shallow groundwater (where present).

56 Shallow groundwater within saturated granular superficial deposits represents a potential migration pathway for leachable or liquid contaminants. The unsaturated zone would also provide a viable pathway for ground gas migration. Anticipated shallow groundwater flow direction is towards the east and the River Trent. Possible off-site sources to the east are therefore likely to be downgradient of Study Area 5 and unlikely to represent a viable source for contaminant migration. Those to the west are located on low permeability bedrock strata where again migration potential is limited.

57 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.

A10.5.3.2.3. Potential Receptors

58 Superficial Alluvium and Holme Pierrepont Sand and Gravel Member, situated across much of the Study Area, are classed as Secondary A Aquifers. The underlying Mercia Mudstone Group bedrock is classed as a Secondary B Aquifer. Study Area 5 is not located within an SPZ however 11 current groundwater abstractions are present on or within 250 m of the Study Area. Given the lack of identified potentially contaminative sources associated with Study Area 5 it is considered that the risk posed to groundwater from the Development is low.

59 Surface water features include tributaries of the River Trent and several lakes/ponds have been identified either on or close to Study Area 5. These

are likely to be in hydraulic continuity with shallow groundwater within the superficial deposits. However, given the absence of identified potential on-site contaminative sources, it is considered that there is little or no risk posed to surface water features through mobilisation of contaminants by The Development. The proposed use of this Study Area for mitigation and enhancement under an agreed LEMP would also suggest no viable risk to Controlled Waters from the proposed activities.

60 During operation of the Development it is not envisaged that there would be any full-time occupancy, and it is considered that the risks posed to any maintenance workers involved in repair of gates, fences, signage etc are negligible given the historical site usage and adoption of best working practises. Future Site Users are therefore discounted as a viable receptor.

61 Due to the absence of on-site contaminative sources, the risks posed to off-site users is considered to be low.

62 The assessment does not consider the risk to construction workers. Risks would 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 lack of identified potential contaminative sources and the site setting there is not considered to be a significant risk to ecological receptors, crops/vegetation or archaeological receptors.

A10.5.3.3. OUTLINE CONCEPTUAL SITE MODEL

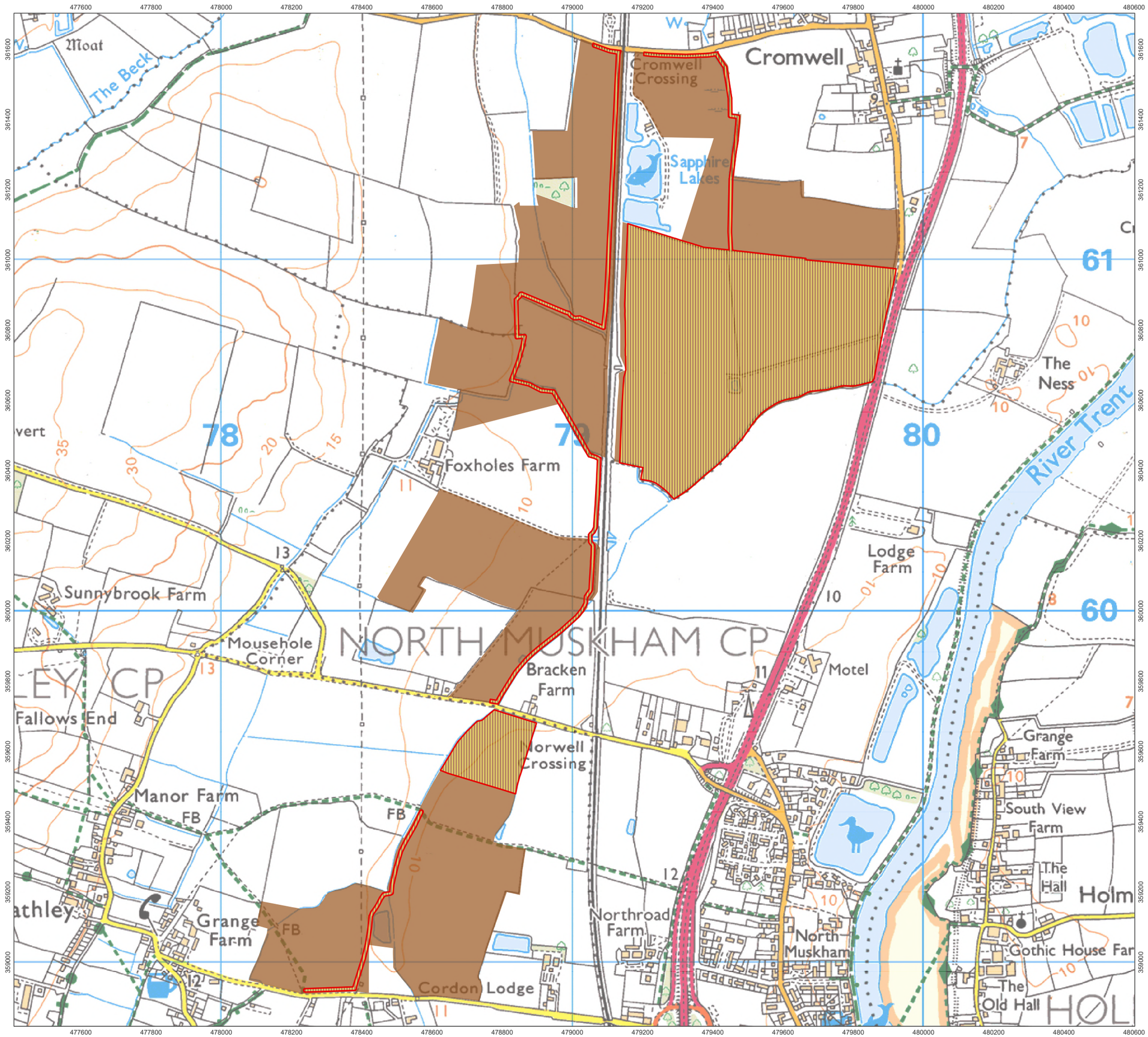
64 Given the lack of potentially significant historical or current contamination sources associated with Study Area 5 and the non-construction nature of the proposed development for this Study Area it is considered that there is negligible risk posed to human health, controlled waters or buildings, buried structures or services by the Development.

A10.5.4. CONCLUSIONS AND RECOMMENDATIONS

A10.5.4.1. PRELIMINARY GEO-ENVIRONMENTAL CONCLUSIONS

65 No significant potential contaminative sources or pathways have been identified for Study Area 5 that could impact on the potential receptors established in the PRA. Therefore, it is considered that no further works, in the form or intrusive ground investigations or assessments are required relating to ground conditions / contamination for this Study Area, based on its former and current use and mitigation/enhancement development proposals.

ANNEX A – FIGURES

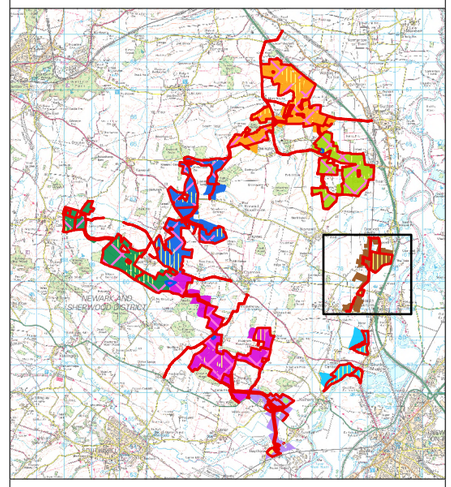


Order Limits

Study Area 5

Works Areas

Works Area 3 Mitigation



1:10,500 Scale @ A3

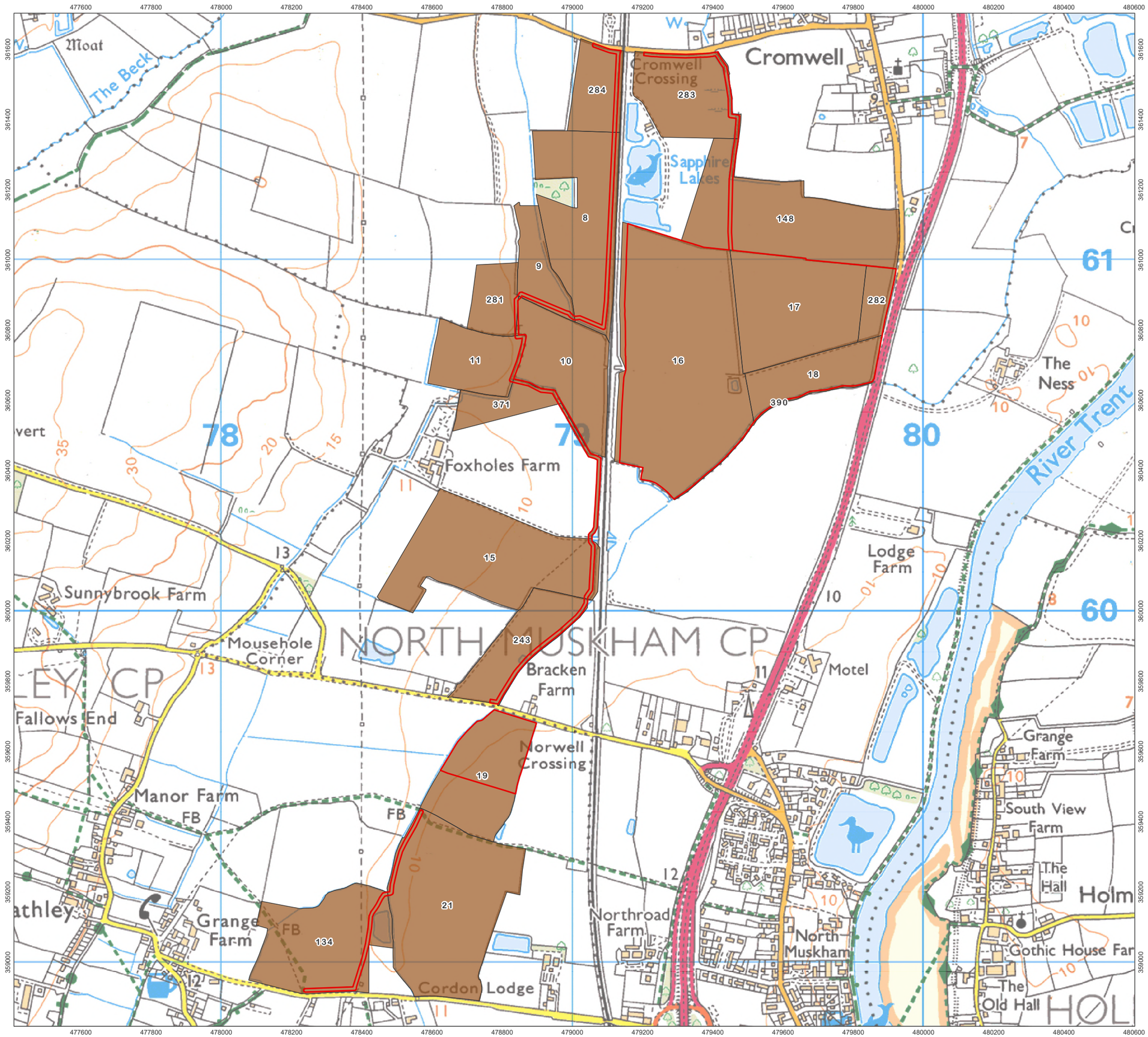
0 0.07 0.15 0.3 km

Ref: NP12850	Date: 11/06/2025

Study Area 5
Figure A10.5.1

Great North Solar and Biodiversity Park
Environmental Statement

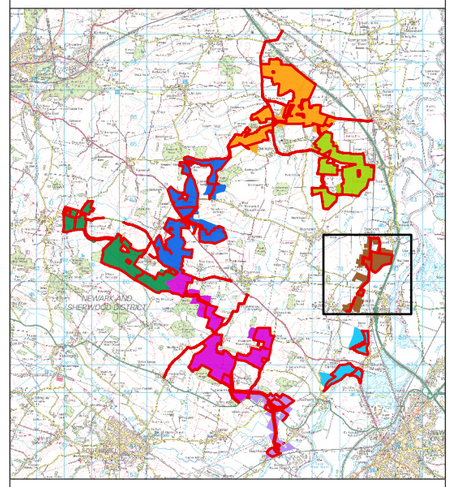
P:\eur-mpfs-02.eur.rpsgroup.com\Projects\12850 DCO Great North Road Solar\Tech\Drawings\12850-0023-02.aprx\12850-0023-02



Order Limits

Field Boundaries

Study Area 5



1:10,500 Scale @ A3

0 0.07 0.15 0.3 km

Ref: NP12850	Date: 11/06/2025

Study Area 5 Field Boundaries
Figure A10.5.2

Great North Solar and Biodiversity Park
Environmental Statement

P:\eur-mpfs-02.eur.rpsgroup.com\Projects\12850 DCO Great North Road Solar\Tech\Drawings\12850-0024-02.aprx\12850-0024-02

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 client and is confidential to them and their professional advisors. No reliance whatsoever is provided to any party other than the Applicant 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.