Great North Road Solar and Biodiversity Park

Environmental Statement Report

Volume 4 – Technical Appendices

TA A10.6 – Desk Study and Preliminary Risk Assessment – Study Area 6

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

Contents

A10.6.1. INTRODUCTION

A10.6.1.1. 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 Desk Top Study (DTS) information and Preliminary Risk Assessment (PRA) for Study Area 6, as shown Figure A10.6.1: Study Area 6 Boundaries. This constitutes Field Parcel ID's 161, 162, 164, 165, 166, 167, 168, 169, 170, 172, 173, 174, 175, 176, 177, 178, 179, 180, 182, 183, 184, 187, 188, 189, 190, 196, 197, 200, 201, 202, 203, 205, 226, 247, 260, 268, 269, 314, 317, 372, 392, 461, 462, 485, 488, 490, 491, 492, 555 and 557, and are shown on Figure A10.6.2: Study Area 6 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 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.

A10.6.1.2. OBJECTIVES

7 The principal objectives of this assessment were as follows:

- Establish from published sources the geological sequence for Study Area 6 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 6 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 requirements 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.

A10.6.1.3. 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).

A10.6.2. DESCRIPTION OF STUDY AREA 6 AND DESK STUDY

12 Study Area 6 comprises the north-eastern part of the Order Limits and is constrained by The Grange / Stud Farm House and Study Area 7 to the north-west and a railway and fields to the east. Fields constrain the study area to the south and west. The extents of Study Area 6 are presented in Figure 10.6.1: Study Area 6 Boundaries of this report.

13 Study Area 6 currently comprises agricultural fields and sporadic small areas of mature woodland. Ossington Road crosses the northern part of the study area in an east-west direction and a minor road, leading to Norwell, trends southwards along the eastern margins. Hill Farm and Willoughby Farm are situated centrally within the study area. Agricultural land bounds this study area on all sides. North to south trending lines of electricity transmission lines on pylons cross the eastern half of Study Area 6.

14 The study area generally slopes from approximately 45 m Above Ordnance Datum (AOD) in the north-west to approximately 15 m AOD in the east.

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 6 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 A10.6.1 below:

Table A10.6.1: Neighbouring Land Uses within 250 m

Direction	Description
North	Isolated farm buildings (incl Stud Farm) and associated infrastructure, minor watercourses, undeveloped agricultural land and sporadic mature woodland.
East	Commercial and light industrial warehouses and associated infrastructure, isolated farm/residential buildings, railway line, A1, undeveloped agricultural land and a moat.
South	Undeveloped agricultural land and farms.
West	Undeveloped agricultural land.
Centrally (Off-site but included within Study Area 6)	Farm buildings associated with Hill Farm and Willoughby (formerly Carlton Hill) Farms, woodland, wind turbines and associated substations and infrastructure.

A10.6.2.1. THE DEVELOPMENT

A10.6.2.1.1. The Great North Road Solar and Biodiversity Park (GNR) ("the Development")

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

A10.6.2.1.2. Study Area 6

18 The proposed Work No 4 intermediate substation, identified as Carlton Crossing, is located within the east of Study Area 6 periphery (field No. 167) and a second substation identified as Ossington Road in the north (field No. 165).

19 The majority of this study area comprises fields allocated for Work No 1 solar PV development with Work No 2 areas for cables primarily in the north-west and south-west together with designated Work No. 3 mitigation / enhancement areas in the north.

A10.6.2.2. SITE HISTORY

A10.6.2.2.1. Historical Map Review

20 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 1885 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 A10.6.2, below:

Table A10.6.2: Historical Site Uses within Study Area 6

Study Area 6 Land Use and Features	Dates
Undeveloped agricultural land	1884 - 2024
Wind Turbine in west	2024 - current

21 Pertinent historical site uses within 250 m of Study Area 6 are presented, in Table A10.6.3, below.

Table A10.6.3: Historical Neighbouring Land Uses within 250 m

Surrounding Land Use	Orientation	Distance from Study Area 6	Dates	
			From	To
Undeveloped agricultural land	North, east, south, west	0 – 250 m	1884	2024
Railway line	East	10 m	1884	2024
Stud Farm	North-east	50 m	1899	2024
Commercial & Industrial warehouses, hardstanding and associated infrastructure, expansion southwards in 2006	East	50 m	2001	2024
The Grange Farm	North-west	90 m	1884	2024

A10.6.2.2.2. Planning History

22 There are readily available planning records associated with Study Area 6 available on the Newark and Sherwood District Council planning website as of November 2024, those relevant to ground conditions and construction are summarised as follows:

- 21/02693/FUL (21/01408/DEM) – Proposed demolition of 14 modern farm buildings and erection of 5 detached dwellings – Refused 07/09/2022.
    - Comments in relation to contaminated land include the concern for agricultural sources of contamination to have been / be present within the site including fuel storage, machinery repair, storage of sileage and feed, tanks/lagoons, disposal of animal waste and disposal of asbestos. No other comments were made in relation to contaminated land.
- 15/SCO/00004 – Scoping request for a single wind turbine with a hub height of up to 50m and a rotor of up to 54 m in diameter, a substation and transformer cubicle, electrical infrastructure and associated access track, crane hardstanding and temporary construction compound – Decision EIA Required *(wind turbine constructed)*
- 14/SCR/00044 - Screening request *(for the above application)* – Decision EIA Required *(no wind turbine within development)*
- 12/00949/FUL – Installation of 1 wind turbine, with a maximum height to tip of 77m, a section of new access track, a hardstanding, a small substation and associated infrastructure *(wind turbine constructed)*
- 14-00742/DISCON – Request for confirmation of discharge conditions 7,8,10,14,17,19,20 and 21 attached to planning permission *(above)* – DOC – All conditions discharged 21/05/2014

A10.6.2.3. 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].

A10.6.2.3.1. 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 the Development is 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 A10.1.4: Descriptions of Geological Strata

Stratum	**Description & approx. thickness (based upon BGS Lexicon of Rock Units)**	**Aquifer Classification**
Superficial Deposits		
Alluvium Deposits	Present along the eastern fringe, generally comprises unconsolidated clay, silt, sand and gravel deposited through fluvial action. Approx. Thickness - Variable	Secondary A Aquifer
Holme Pierrepont Sand and Gravel Member	Present across the eastern fringe, generally comprises sand and gravel deposits that are poorly sorted and contain rounded gravel. Approx. Thickness – 0 -12 m	Secondary A Aquifer
Bedrock		
Mercia Mudstone Group – Mudstone	Present across the majority of Study Area 6 section of the Development, generally comprises red, green-grey mudstones with subordinate siltstones and widespread beds of gypsum/anhydrite. Rare thin sandstone beds possible. Approx. Thickness – 182 m	Secondary B Aquifer
Mercia Mudstone Group – Siltstone, Dolomitic	Present in semi-circular bands across the Development, generally comprises siltstones and thick-halite bearing units set within green-grey mudstones. Approx. Thickness – 182 m	Secondary B Aquifer

25 The majority of Study Area 6 is shown to be devoid of superficial deposits. The Alluvium and Holme Pierrepont Sand and Gravel Member are relatively localised along the east and south-east periphery of the study area.

26 BGS borehole records indicate accessible borehole records for Study Area 6. A single record is located within the north and three along the south-eastern boundary. A summary of these records is presented below.

27 Historical borehole record SK76SE/25 is located within the northern part of Study Area 6, approximately 300 m north of Ossington Road. The borehole is indicated to have been drilled to confirm the presence of coal measures within the bedrock geology and was terminated at 844.20 m below ground level (BGL). A summary of the geological strata encountered is presented in Table A10.6.5 below.

Table A10.6.5: Descriptions of Borehole SK76SE/25

Stratum	General Description	Depth (m BGL)
Superficial Deposits		
None recorded	-	0.00 – 3.05
Bedrock		
Mercia Mudstone Group	Red-brown siltstone with rare gypsum beds becoming red-brown and grey green with some gypsum, becoming dark brown to red-brown mudstone with rare siltstone beds, sandy beds and rare gypsum.	3.05 – 182.00
Sherwood Sandstone Group	Red brown to orange-brown rounded fine and medium Sandstone with rare thin marl beds.	182.00 – 358.90
Roxby Formation	Mudstone, sandstone and siltstone, varying in composition and depth.	358.00 – 385.00
Brotherton Formation	Off-white impure dolomitic limestone, becoming off-white limestone.	385.00 – 391.00
Edlington Formation	Mudstone, sandstone, siltstone and unconfirmed limestone.	391.00 – 439.00
Cadeby Formation	Off-white limestone with occasional marl beds, becoming dolomitic limestone, siltstone, siltstone with thin limestone beds.	439.00 – 499.70
Permian Basal Breccia	Breccia	499.70 – 501.00
Pennine Middle Coal Measures Formation	Sandstone, siltstone, silty mudstone.	501.00 – 513.60
Rowhurst Rider Marine Band	Mudstone, silty mudstone.	513.60 – 528.01
High Main Coal	Coal, dirty, bright with pyritic lenses.	528.01 – 528.59
Seatearth	Light grey pyritic silty mudstone with common roots, becoming silty poorly laminated with abundant roots.	528.59 – 528.85

28 The remaining depths of this borehole are indicated to comprise mudstone, sandstone, siltstone, coal measures and seatearth strata to the full borehole

depth at 844.20 m BGL. Study Area 6 is not indicated to be within a coal mining reporting area, or development high risk zone.

29 Borehole SK76SE/3 is present in the east of Study Area 6, approximately 150 m west from the railway present along the eastern boundary. The borehole is indicated to have been drilled to confirm the presence of coal measures within the bedrock geology, terminating at 884.00 m BGL.

30 Superficial deposits inferred as Alluvium and comprising gravel were recorded to 17.00 m BGL. The mapped location of this borehole would indicate that these deposits are more likely to be representative of the Holme Pierrepont Sand and Gravel Member. Underlying these deposits was red and green shale with gypsum strata belonging to the Mercia Mudstone Group, which was recorded to 180 m depth. Sandstone, shale and limestone strata were recorded underlying the Mercia Mudstone Group to 492 m depth. Interbedded mudstone, sandstone and coal strata belonging to the Pennine Middle Coal Measures Formation was recorded to the maximum borehole depth.

A10.6.2.3.2. Hydrogeology

31 Superficial deposits (Alluvium and the Holme Pierrepont Sand and Gravel Member) underlying the eastern periphery of Study Area 6 have been classed, by the EA, as a Secondary A Aquifer of high vulnerability. The underlying Mercia Mudstone Group bedrock is classed as a Secondary B Aquifer, also of high vulnerability. 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 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.

32 According to EA data, contained within the Groundsure GeoInsight Report, Study Area 6 is not located in a groundwater Source Protection Zone (SPZ).

33 Information provided by the EA indicates that there are no active licensed groundwater abstractions within 250 m of Study Area 6.

A10.6.2.3.3. Surface Water

34 There are two minor watercourses flowing eastwards across Study Area 6 that form tributaries to a watercourse named The Beck. The Beck is classified as being within a River Basin Management Plan published by the EA under the European Water Framework Directive (2000) and is located some 500 m south of Study Area 6. A list of readily identifiable nearby watercourses and water bodies within 250 m is presented in Table A10.6.6, below:

Table A10.6.6: Nearby Watercourses and Water Bodies within 250 m

Watercourse/Body	Quality Classification	Approx Distance and direction from Study Area 6
Three small un-named watercourses	N/A	Onsite 1) flowing to the north-east on northern boundary of fields 174-177. 2) Flowing eastwards across south of Study Area before feeding into The Beck south of Carlton-on-Trent. 3) Flowing eastwards (fields 189 and 269).

35 Based on satellite imagery and published topographic information, multiple watercourses not classified under the WFD are present around Study Area 6, primarily relating to drainage across agricultural land.

36 Information contained within the Groundsure GeoInsight Report indicates that there are no records of active licensed surface water abstractions within 250 m of Study Area 6.

A10.6.2.3.4. Ecologically Sensitive Sites

37 The Groundsure EnviroInsight Report indicates that there is a single ecologically sensitive site adjoining Study Area 6 identified as Carlton Wood (Ancient & Semi-Natural Woodland).

A10.6.2.3.5. Radon

38 According to the online Indicative Atlas of Radon in England and Wales published by the UK Health Security Agency (UKHSA)[5] and BGS, the Study Area lies within kilometre grid squares 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.

39 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 that Study Area 6 has a maximum radon potential of less than 1 % of properties having a radon level at or above the Action Level in Great Britain.

[5] UK Health Security Agency (2022). UK maps of radon. Available at: https://www.ukradon.org/information/ukmaps (accessed 21.05.2025).

A10.6.2.3.6. Mining Remediation Authority

40 The Interactive Map Viewer on the Mining Remediation Authority[6] website and Groundsure GeoInsight Report indicates that Study Area 6 is not located within a coal mining reporting area or within a Development High Risk Area.

A10.6.2.3.7. Non-coal Mining

41 BGS sources indicate that Study Area 6 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).

42 BGS holds a database of British Pits, abbreviated to 'BritPit', comprising currently active, closed surface and underground mineral workings. Records indicate two former 'BritPits' to be present within Study Area 6, and one to be present within 250 m of the Study Area 6 boundary. These are detailed in the table below.

Table A10.6.7: 'BritPit' Record Details

Name	Commodity	Status	Approx. Distance & Direction from Study Area 6
Willoughby Farm Pit	Clay & shale	Ceased	Onsite (centre)
Carlton Pit	Sand & gravel	Ceased	Onsite (east)
Northfield Pit	Sandstone	Ceased	108 m south

A10.6.2.3.8. BGS Ground Stability Hazard Ratings

43 BGS Ground Stability Hazard ratings for Study Area 6 are summarised as follows:

Table A10.6.8: BGS Ground Stability Hazard Ratings

Ground Stability Hazard	BGS Risk Rating	Comments
Collapsible Ground	Negligible / Very Low	-
Compressible Ground	Negligible / Moderate	Moderate risk rating in relation to Alluvium deposits in the east.
Ground Dissolution	Negligible	-
Landslide	Very Low	-
Running Sand	Negligible / Very Low / Low	Low risk rating in relation to Alluvium deposits

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

Ground Stability Hazard	BGS Risk Rating	Comments
Shrinking or Swelling Clays	Negligible / Very low	-

44 A moderate ground stability hazard in relation to compressible ground has been identified for Study Area 6 associated with the alluvial deposits on the eastern periphery. This relates to compressibility and uneven settlement hazards, which are potentially present. Land use should consider specifically the compressibility and variability of the material at this location.

A10.6.2.4. AUTHORISED PROCESSES AND POLLUTION INCIDENTS

A10.6.2.4.1. Landfill and Waste Sites

45 Information provided by EA and Local Authority sources indicates that there are no known recorded licensed or known historical landfill sites, waste treatment or transfer sites recorded within 250 m of Study Area 6.

A10.6.2.4.2. Environmental Permits

46 EA and Local Authority data indicates that there are no known processes regulated by an Environmental Permit (under the Environmental Permitting Regulations (2010)) within 250 m of Study Area 6.

A10.6.2.4.3. COMAH Sites

47 There are no records of any operations under the Control of Major Accident Hazards (COMAH) Regulations 1999, located within 250 m of Study Area 6.

A10.6.2.4.4. Pollution Incidents

48 Environment Agency data indicates that there are no records of ‘major’ or ‘significant’ pollution incidents within 250 m of Study Area 6.

A10.6.2.5. UNEXPLODED ORDNANCE

49 CIRIA Report C681[7] (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.

50 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 6 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].

[7] 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).

A10.6.3. OUTLINE CONCEPTUAL SITE MODEL

A10.6.3.1. BACKGROUND

51 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).

52 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.

53 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.

A10.6.3.2. POTENTIAL POLLUTION LINKAGES

54 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.

A10.6.3.2.1. Potential Contaminant Sources

Onsite Current

55 Study Area 6 comprises agricultural land associated with local farms such as Willoughby and Hill Farm. Most of Study Area 6 comprises agricultural land. Whilst there is potential for contaminants such as pesticides, herbicides and insecticides to have been used onsite 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

56 No potentially historical contaminated site uses have been identified for Study Area 6.

Offsite Current

57 Situated centrally within Study Area 6 (outside of the order limits) are buildings of Willoughby and Hill Farm and two wind turbines with associated buildings, infrastructure and substations. There is potential for these land uses to have localised associated Made Ground or use potentially contaminative substances, including hydrocarbons, agrochemicals and asbestos containing materials. Leaks and point source spills are likely to be small scale and limited in extent by the low permeability bedrock strata present across these locations indicating limited migration potential. Therefore, it is considered that there is little or no risk posed to groundwater, surface water or future site users associated with Study Area 6 from these sources through implementation of The Development.

58 Current off-site potential sources of contaminants of concern also include the light industrial and commercial premises to the east of Study Area 6. An existing railway line also runs north to south adjacent to the eastern development boundary. The railway line may be a source of historical airborne contamination from particulates such as coal, asbestos or metals. Light industrial premises are likely to use and store various materials that may pose a potential contaminative source, however there is no evidence of past pollution incidents or permitted activities associated with these premises.

Offsite Historical

59 No potential historical potentially contaminative off-site land uses have been identified within 250 m of Study Area 6.

A10.6.3.2.2. Potential Pathways

60 Study Area 6 is indicated to be predominantly underlain by mudstone strata belonging to the Mercia Mudstone Group. This stratum is considered to be mainly of very low permeability and is likely to limit the downward or lateral migration of contaminants of concern over distance via shallow groundwater (where/if present).

61 Shallow groundwater may be present within the superficial deposits with an assumed easterly flow direction towards the River Trent and it is likely that the shallow superficial aquifers are in hydraulic continuity with surface watercourses on and within 250 m of the Study Area. This would indicate a low risk of migration onto Study Area 6 from the potential sources identified to the east of the railway.

A10.6.3.2.3. Potential Receptors

62 Superficial deposits of Alluvium and Holme Pierrepont Sand and Gravel Member, situated within the east, are classed as Secondary A Aquifers. The underlying Mercia Mudstone Group bedrock is classed as a Secondary B Aquifer. Study Area 6 is not located within an SPZ and no groundwater abstractions are present within 250 m radius. Given the lack of identified potentially contaminative sources associated with Study Area 6 it is considered that the risk posed to groundwater in this study area by The Development is low.

63 Flowing eastwards, three minor surface water courses cross the site and form tributaries to The Beck Catchment and the River Trent. The absence of identified onsite contaminative sources and limited lateral migration potential of the bedrock geology would indicate no significant risk to this water body.

64 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 identified low risk from onsite contaminative sources and adoption of best working practises.

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

66 This 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. Given the lack of onsite contaminative sources the risks are considered to be low.

67 Based on the lack of potential contaminative sources and setting, there is not considered to be a significant risk to ecological receptors, crops/vegetation or archaeological receptors.

A10.6.3.3. OUTLINE CONCEPTUAL SITE MODEL

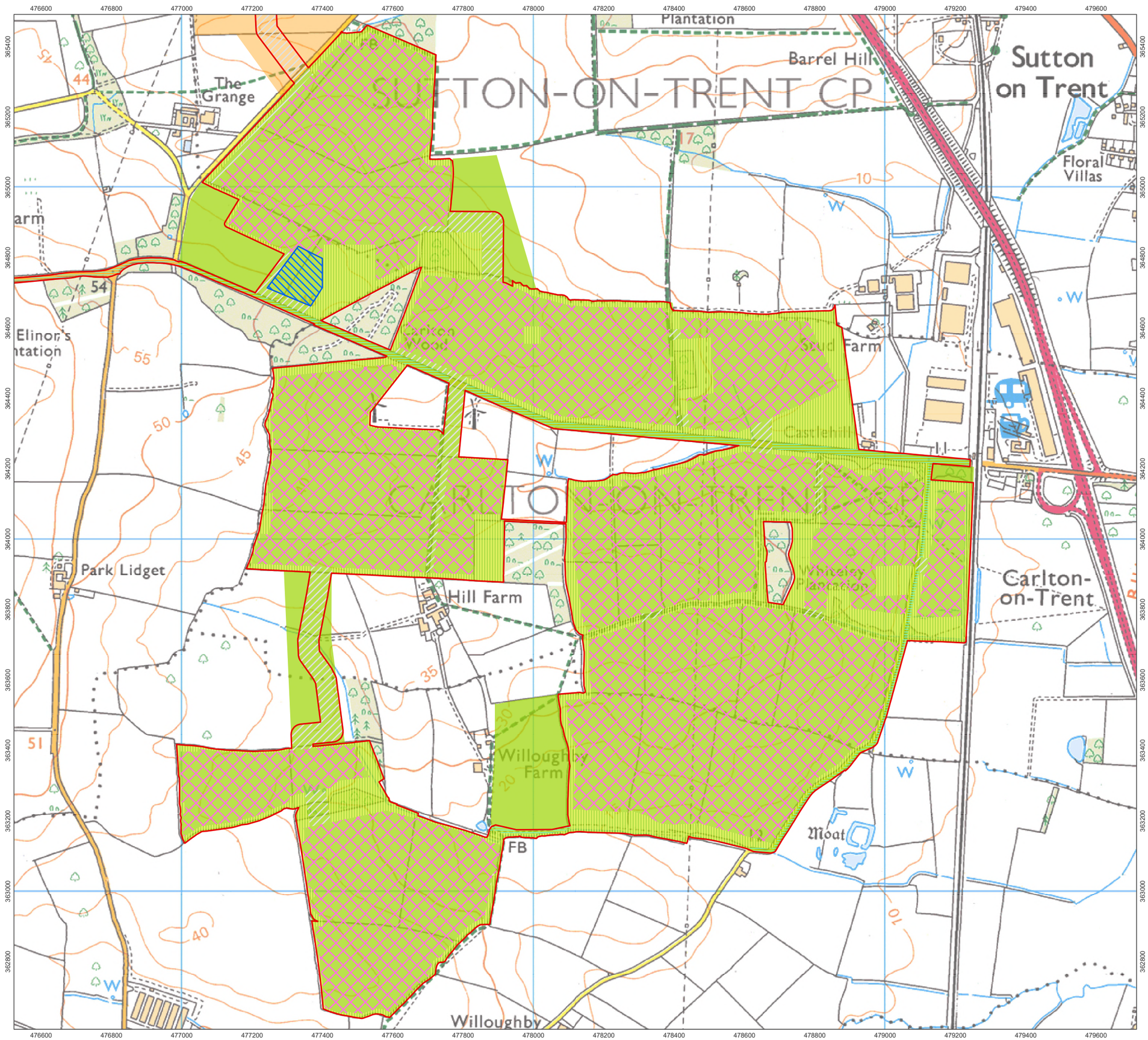
68 Given the lack of potentially significant historical or current contamination sources associated with Study Area 6, it is considered that there is negligible risk posed to human health, controlled waters or buildings, buried structures or services.

A10.6.4. CONCLUSIONS AND RECOMMENDATIONS

A10.6.4.1. PRELIMINARY GEO-ENVIRONMENTAL CONCLUSIONS

69 No significant potential contaminative sources or pathways have been identified for Study Area 6 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 current and former use.

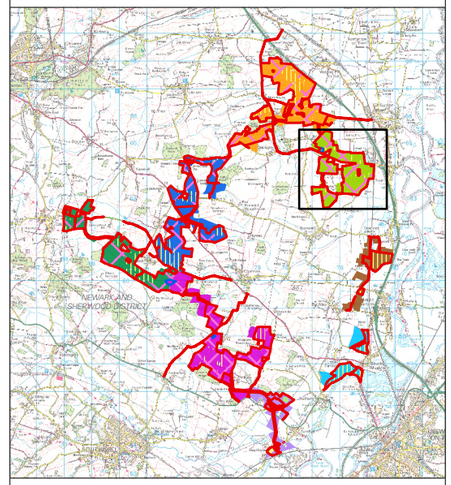
ANNEX A – FIGURES



Order Limits
Study Area 6
Study Area 7

Works Areas

Works Area 1 Solar PV
Works Area 2 Cable
Works Area 3 Mitigation
Works Area 4 Substations
Works Area 8 Access



1:10,500 Scale @ A3

0 0.07 0.15 0.3 km

Ref: NP12850 | Date: 11/06/2025

Study Area 6
Figure A10.6.1

Great North Solar and Biodiversity Park Environmental Statement

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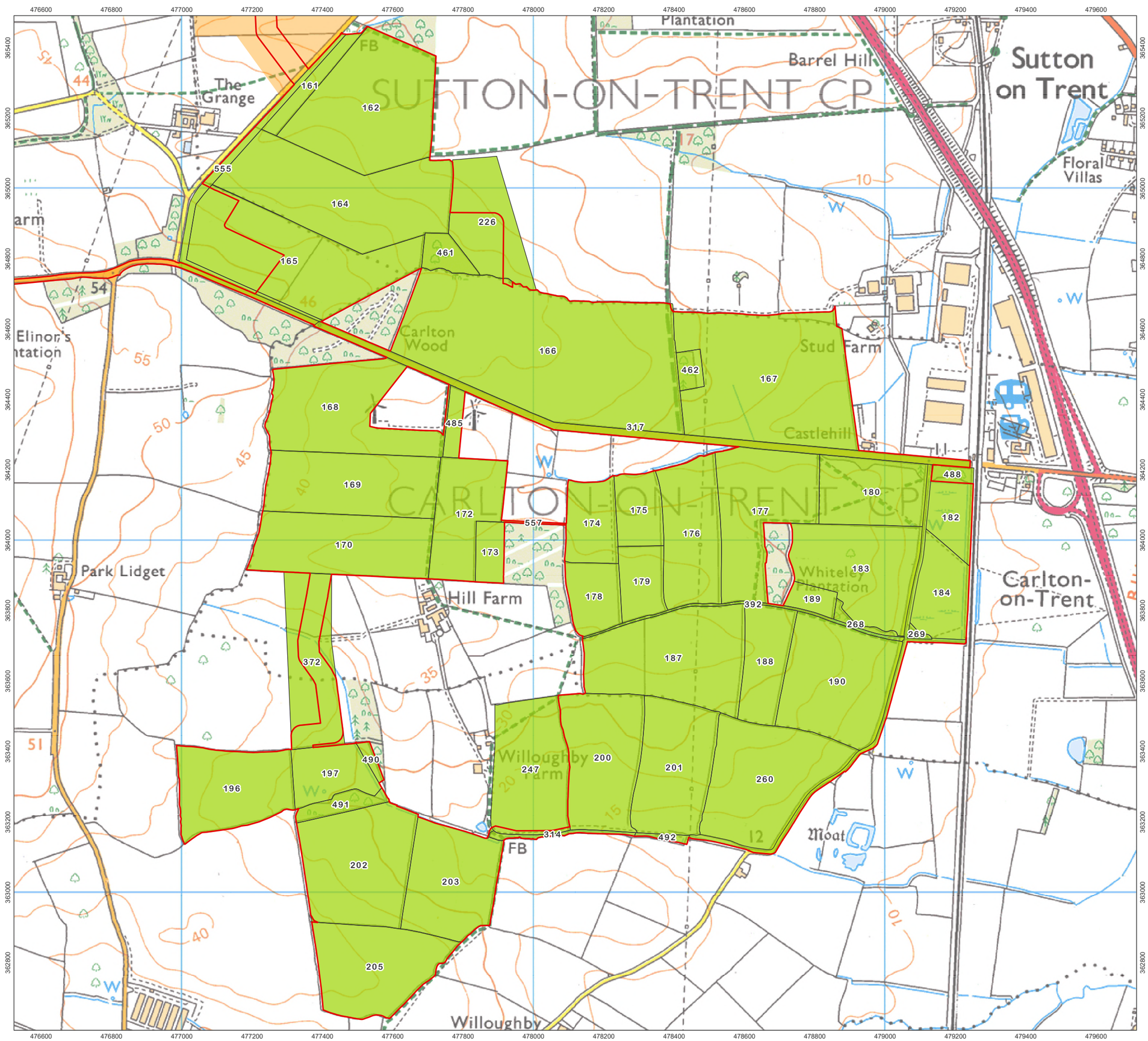
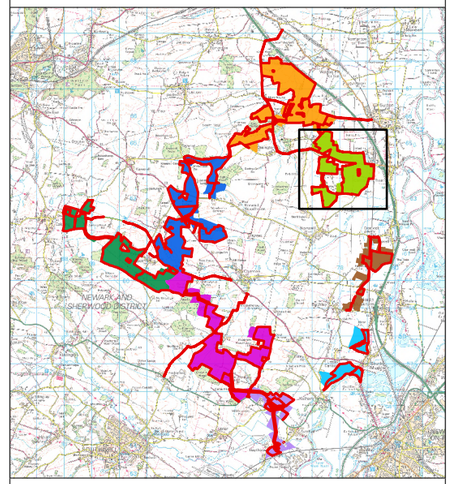


Order Limits

Field Boundaries

Study Area 6

Study Area 7



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Ref: NP12850 | Date: 11/06/2025

Study Area 6 Field Boundaries
Figure A10.6.2

Great North Solar and Biodiversity Park
Environmental Statement

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ANNEX B - PRA METHODOLOGY

Introduction

70 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.

71 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

72 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.

73 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

74 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

75 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.

76 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.

77 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.

78 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.

79 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

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

82 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.

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

84 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.

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

86 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".

87 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.

88 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.