SUNNICA ENERGY FARM

Preliminary Environmental Information Report

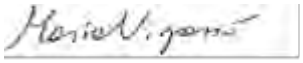
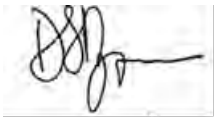
Appendix 16B: Preliminary Environmental Risk Assessment

National Grid Connection

Sunnica Ltd

AUGUST 2020

Quality information

Prepared by	Checked by	Verified by
		
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Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	18.12.19	For Issue	Katie Bruce		Principal Consultant
2	22.07.20	Revised Boundary	Katie Bruce		Principal Consultant

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1. Introduction

1.1 Terms of Reference

1.1.1 AECOM was commissioned by Sunnica Ltd to undertake a Preliminary Environmental Risk Assessment (PRA) (also referred to as a Phase 1 Land Contamination report) to support a Development Consent Order application for the Sunnica Energy Farm (hereafter referred to as the 'Scheme'). The Scheme comprises the installation of solar photovoltaic (PV) generating panels and on-site energy storage facilities across four proposed sites, within Cambridgeshire and Suffolk.

1.1.2 The Scheme includes infrastructure for connection to the national grid between the Sunnica East Site A and the Sunnica West Site A (hereafter referred to as 'Grid Connection Route A'); and between the Sunnica West Site A, Sunnica West Site B and an extension of the distribution and transmission grid to the Burwell National Grid Substation (hereafter referred to as 'Grid Connection Route B'). A Site layout plan is presented in Figure 1 in Appendix 16B-A.

1.1.3 The land required for the Scheme is hereafter referred to as the 'Scheme Boundary'. The study area is defined as the Site plus a buffer extending 250m from the Scheme Boundary in all directions.

1.1.4 The objectives of this report are to review readily available site information, develop a preliminary ground model, evaluate the geo-environmental characteristics of the land within the Scheme Boundary and make a preliminary qualitative assessment of land quality liabilities, potential ground-related risks and constraints to the Scheme.

1.2 The Scheme

1.2.1 Sunnica Energy Farm is a new solar farm proposal that would deliver electricity to the national electricity transmission network. Sunnica will use ground mounted solar photovoltaic (PV) panel arrays to generate electricity energy from the sun and combine these with a Battery Energy Storage System (BESS)

1.2.2 Electricity will be generated at Sunnica West Site A and B, near Chippenham and Snailwell in Cambridgeshire, at Sunnica East Site A, near Isleham in Cambridgeshire and Suffolk, and Sunnica East Site B, near Worlington and Freckenham in Suffolk. All locations will comprise ground mounted solar PV panel arrays, supporting electrical infrastructure and, potentially, BESS.

1.2.3 The BESSs will consist of a compound and battery array to allow for the importation, storage and exportation of energy to the National Grid. Details of the design of the BESS elements, including their power and energy ratings, and their dimensions and appearance, are currently in development.

1.2.4 Supporting electrical infrastructure will include on-site substations on Sunnica East Site A and B and Sunnica West Site A, and on-site cabling between the different electrical elements across the Scheme. The generating equipment of the Scheme will be fenced and be protected via security measures such as CCTV and lighting. Inside the fenced areas, in addition to the generating equipment will be, internal access tracks, landscaping and habitat management and drainage. It is not proposed for any area to be continuously lit.

1.2.5 The Scheme will be connected to the existing Burwell National Grid Substation, most likely using 132kV cables buried underground. The cables will run between Sunnica East Site A and Sunnica West Site A (Grid Connection Route A), and then on to the Burwell National Grid Substation (Grid Connection Route B). Details of the cable route, dimensions of the cables, the depth and method of burial, and numbers of joints required are currently in development.

1.2.6 During the construction phase, a number of temporary construction compound(s) will be required as well as temporary roadways to facilitate access to all parts of the Site. The construction compounds will be composed of several offices, welfare facilities, canteens, storage and waste skips, parking areas and enough space in order to allow for storage, downloading and a turning area.

1.3 Land Quality Assessment Methodology

1.3.1 The geo-environmental assessment presented in this report and associated recommendations provided have been prepared in accordance with the following key guidance:

- National Planning Policy Framework (NPPF) and associated Planning Practice Guidance;
- British Standard 10175:2011+A2:2017 ‘Investigation of Potentially Contaminated Sites – Code of Practice’ (Ref 16B-1);
- Contaminated Land Report (CLR) 11 ‘Model Procedures for the Management of Land Contamination’ (2004) CLR11[1] (Ref 16B-2) and updated guidance Land Contamination: Risk Management (LCRM, 2020);

[1] Due to be replaced by online guidance “Land Contamination: Risk Management” (LCRM) (https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks) during 2020

- DEFRA (Department for Environment, Food, and Rural Affairs): Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (April 2012) (Ref 16B-3); and
- Environment Agency (EA), February 2018. The Environment Agency's approach to groundwater protection. Version 1.2.

1.3.2 This report considers the implications of Part 2A of the Environmental Protection Act 1990 and the associated Contaminated Land (England) Regulations 2006 (and 2012 amendment) as material planning considerations through the Town and Country Planning Act 1990.

1.4 Report Tasks

1.4.1 The following tasks have been performed:

- A review of the geological, hydrological, hydrogeological and ecological setting at the Site;
- Preparation of a preliminary ground model for the Site;
- A review of publicly available geo-environmental information to develop an understanding of the environmental setting/sensitivity of the Site and its surroundings;
- Details from site walkovers, undertaken on 10th and 15th January 2019 and 25th September 2019 documenting:
  - the existing layout, current operations and condition of the Site and immediately surrounding land;
  - the inspection of any site storm-water, foul and off-site effluent discharges;
  - A visual inspection (non-intrusive) of the external building fabric of potential structures and inspection of an asbestos register (if available);
- A review of historical land uses for the Site and surrounds with a particular emphasis on identifying potential ground hazards and potential on-site and off-site contamination sources;
- A review of land designated for Mineral Safeguarding; and
- Preparation of a Conceptual Site Model (CSM) with a view to identifying any potentially significant source-pathway-receptor linkages followed by a qualitative risk assessment.

1.5 Sources of Information

1.5.1 The information and documents reviewed for the purpose of this report are given below:

- British Geological Survey (BGS) geological map sheet 188 (Cambridge) and 189 (Bury St Edmunds) 1:50,000 scale (Solid and Drift) (Ref 16B-4);
- Groundsure Reports (data sheet, sensitivity maps and historical mapping) (Appendix 16B-C, Ref 16B-5);

- AECOM, January 2019. Sunnica Energy Farm. Environmental Impact Assessment Scoping Report.
- DEFRA Magic Map online application: http://magic.defra.gov.uk/magicmap.aspx (last accessed July 2020) (Ref 16B-6);
- BGS GeoIndex Onshore website: http://mapapps2.bgs.ac.uk/geoindex/home.html (last accessed July 2020) (Ref 16B-7);
- The long-term flood risk information on Gov.uk: https://flood-warning-information.service.gov.uk/long-term-flood-risk/map (last accessed July 2020) (Ref 16B-8);
- BGS Radon Potential Dataset: https://www.ukradon.org/information/ukmaps (last accessed July 2020);
- Cambridgeshire and Peterborough Minerals and Waste Development Plan: https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/business/planning-and-development/Proposals_Map_C_MSA_Maps_017.pdf?inline=true (last accessed July 2020) (Ref 16B-9);
- Suffolk Minerals and Waste Development Scheme: https://www.suffolk.gov.uk/assets/planning-waste-and-environment/Minerals-and-Waste-Policy/SMWLP-Pre-submission-Consultation-Document/SMWLP-Development-Scheme-2018.pdf (last accessed July 2020) (Ref 16B-10); and
- Site visits undertaken by AECOM on 10th and 15th January 2019 and on 25th September 2019.

2. Environmental Setting

2.1 Site Location and Description

2.1.1 Appendix 16B-A (A1 – A3) contains Figure 1: Site Boundary and Scheme Options; Figure 2: Photo Locations; and collation of the Site Walkover Photographs.

2.1.2 Tables 16B-1 to 16B-10 summarise the findings of the AECOM site walkovers undertaken on 10th and 15th January 2019 and on 25th September 2019; and have been separated out for the different site areas for clarity and ease of reporting.

Sunnica East Site A

2.1.3 The Scheme at Sunnica East Site A will comprise ground mounted solar PV panel arrays, supporting electrical infrastructure and, potentially, BESS. An area in the central part of the Sunnica East Site A is excluded from the site boundary, and will not be developed with solar panels or associated infrastructure.

2.1.4 Potential sources of contamination identified during the site visits are shown in Plate 16B-1.

Plate 16B-1 Sunnica East Site A showing potential contamination sources from site visits

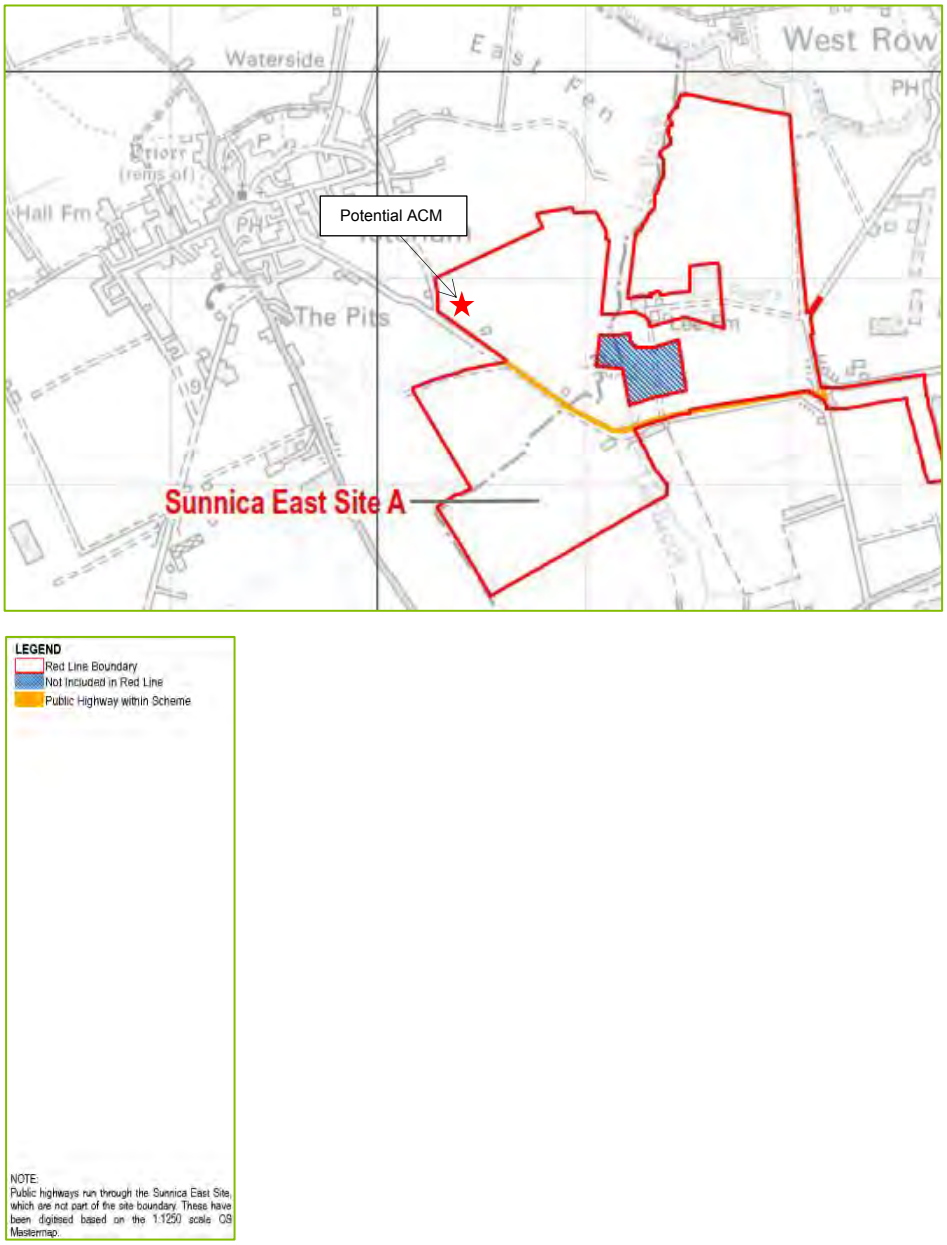


Table 16B-1 Site Walkover Information - Sunnica East Site A

Site Name:	**Sunnica East A Site**
Site Location:	The Sunnica East Site A is located to the south-east of Isleham, south-west of West Row and north of Freckenham. The eastern part of Sunnica East Site A is within the county of Suffolk, and in the West Suffolk Council administrative area; the western part is within the county of Cambridgeshire, and in the East Cambridgeshire District Council administrative area.
Size:	Approximately 222.4ha
On Site Description	The Sunnica East Site A comprises of fields, separated by a number of tracks, and is mainly occupied by agricultural land with trees, hedgerows, small wooded areas and copses. The Sunnica East Site A is crossed by a public highway (Beck Road) and Sheldrick's Road adjoins the Site to the north-west. Lee Brook, which runs in a northern direction toward the River Lark, cuts the central part of the Sunnica East Site A, north of Freckenham.

Hardstanding / Landscaping:	The Sunnica East Site A is mainly occupied by agricultural land (soft landscaping), except for Beck Road and tracks (generally concrete) intercepting the Site.
Topography / Drainage:	The Sunnica East Site A is generally flat or gently undulating.
Ecology and Water Quality	No visual evidence of contamination has been reported for Lee Brook during the January 2019 surveys. No evidence of vegetation stress was observed on-site. Japanese Knotweed or other invasive species were not observed in the areas visited during AECOM's walkover surveys. Although two of the three surveys have been carried out during the winter months when Japanese knotweed and Giant Hogweed do die back making identification more difficult.
Tanks, plant and electric substations:	None identified on-site.
Ancillary Infrastructure	None identified on-site.
Asbestos on Site:	Potential Asbestos Containing Material (ACM) was observed in a barn to the north of Beck Road, in the form of corrugated roofing, at the north-western part of the Sunnica East Site A (photos 58 and 58a, Appendix 16B-A).

2.1.5 Land uses within 250m of the Sunnica East Site A boundary were determined from site walkovers and mapping and are summarised in Table 16B-2 below.

Table 16B-2 Surrounding Land Use – Sunnica East Site A

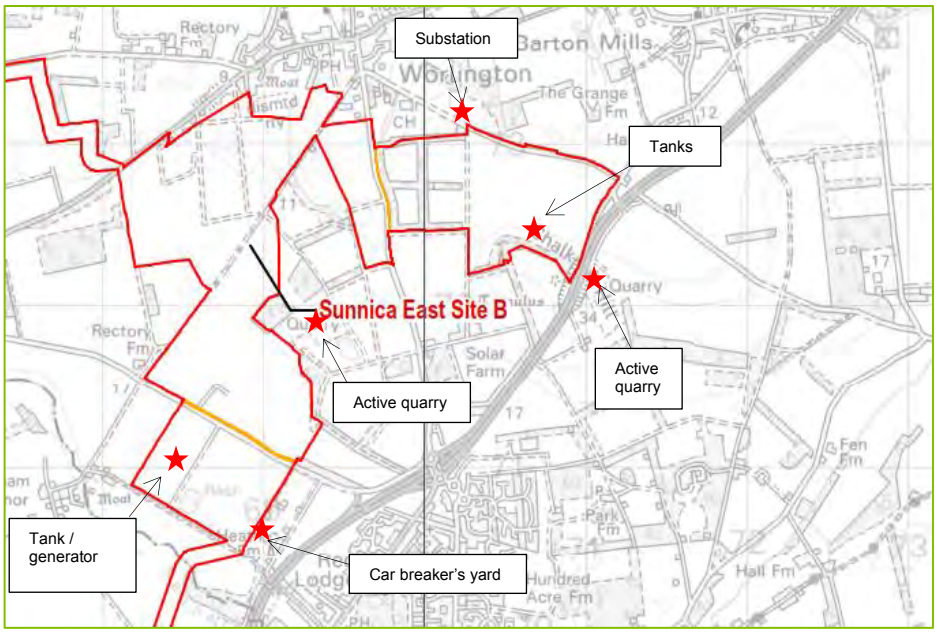
Direction	Description
North	The landscape features surrounding the Sunnica East Site A include the rural village of Isleham to the north-west and West Row to the north-east, surrounded by arable fields, woodlands and scattered farms. River Lark flows 150m north of the Sunnica East Site A, south of West Row.
East:	Agricultural land extends to the east of the Sunnica East Site A.
West	The rural village of Isleham is approximately 300m to the north-west of the Sunnica East Site A, surrounded by arable fields.
South	The village of Freckenham lies approximately 600m south of the Sunnica East Site A, surrounded by agricultural land.
Central area between the land parcels	Two reservoirs within Lee Farm are within an off-site area, in the central section of the Sunnica East Site A.

Sunnica East Site B

2.1.6 The Scheme at Sunnica East Site B will comprise ground mounted solar PV panel arrays, supporting electrical infrastructure and, potentially, BESS.

2.1.7 Potential sources of contamination identified during the site visits are shown in Plate 16B-2.

Plate 16B-2 Sunnica East Site B showing potential contamination sources from site visits



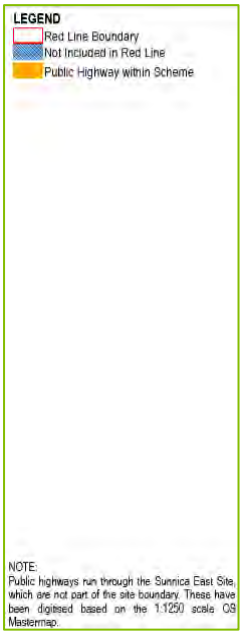


Table 16B-3 Site Walkover Information - Sunnica East Site B

Site Name:	Sunnica East B Site
Site Location:	The Sunnica East Site B is located between Worlington (to the north) and Red Lodge (to the south). The Sunnica East Site B lies within the county of Suffolk, and in the West Suffolk Council administrative area.
Size:	Approximately 322.7ha

On Site Description	The Sunnica East Site B comprises of fields, separated by local roads and is mainly occupied by agricultural land with trees, hedgerows, small wooded areas and copses (photos 1, 2 and 2a, Appendix 16B-A). The Sunnica East Site B is crossed by two public highways, Elms Road (across the south-western area) and New Market Road (eastern area). Freckenham Road (B1102) borders the Sunnica East Site B to the north-west, the A11 (Red Lodge Bypass) carriageway adjoins the Site to the east and local roads such as Golf Links Road and Newmarket Road adjoin the Site to the north-east (photo 1a, Appendix 16B-A). Several tracks are located across the Sunnica East Site B.
Hardstanding / Landscaping:	The Sunnica East Site B is mainly occupied by agricultural land (soft landscaping), (photos 17, 18, 18a, Appendix 16B-A), except for local roads and tracks (generally concrete) intercepting the Site (photo 4 and 8a, Appendix 16B-A).
Topography / Drainage:	The Sunnica East Site B is generally flat or gently undulating. A 'tumulus' (ancient burial mound) is labelled on the maps on-site adjacent to the eastern boundary. A linear grassed bund was identified adjacent to the boundary of the south eastern part of the Sunnica East Site B (photos 9, 9a, 9b, 9c, 9d and 9e, Appendix 16B-A). The bund looks to have been constructed along the northern edge of the biomass plant located adjacent south-east to the Sunnica East Site B (photo 5b, Appendix 16B-A). A grassed bund is also shown off-site, north of the Worlington Quarry (photo 25, Appendix 16B-A).
Ecology and Water Quality	A small reservoir is located in the south-western section of the Sunnica East Site B. Three ponds, one of these associated with the excavation within a quarry (Worlington Quarry), are located off-site, adjacent to the central part of the Sunnica East Site B (photos 19, 19a and 19b Appendix 16B-A). The River Kennet runs approximately 170m south-west of the Sunnica East Site: during the site walkover (10th January 2019), an unidentified cloudy sheen was observed in the surface water, south of the Sunnica East Site B (photos 12, 12a, 12b and 12c Appendix 16B-A). No evidence of vegetation stress was observed on-site. Beehives were identified off site to the south-east of Sunnica East Site B (photos 25b and 25c, Appendix 16B-A). Japanese Knotweed or other invasive species were not observed in the areas visited during AECOM's walkover surveys. Although two of the three surveys have been carried out during the winter months when Japanese knotweed and Giant Hogweed do die back making identification more difficult.
Tanks, plant and electric substations:	A gas substation (photos 3, 3a and 4, Appendix 16B-A) was observed in the north-eastern part of the Sunnica East Site B, south-east of Worlington. Two above ground storage tanks (ASTs) labelled 'Yara', associated with farms were observed in the eastern part of the Sunnica East Site B, along the southern boundary (photos 5, 5a and 61 Appendix 16B-A). The content is unconfirmed but they are thought to be for liquid fertilizer. A further AST labelled 'FERT' was observed in the southern part of the Sunnica East Site B, to the south of Elm Road (photo 60 Appendix 16B-A). The content is unconfirmed but they are thought to be for liquid fertilizer. A generator (photos 60a and 60b Appendix 16B-A) was observed (25th September 2019) adjacent to the above mentioned 'FERT' AST, with what appeared to be oil contamination on the surrounding ground.
Ancillary Infrastructure	During the site walkover, a number of groundwater abstraction points were observed adjacent to surface water, off-site, between Worlington and the Worlington Quarry, likely for agricultural purposes (photos 20, 20a, 21, 21a and 21b, Appendix 16B-A). Possible groundwater monitoring wells were identified off-site, north of the Worlington Quarry (photos 16 and 24, Appendix 16B-A). During the site walkover (10th January 2019), a fenced area was observed within the eastern extent of the Sunnica East Site B (photos 6, 6a and 6b, Appendix 16B-A). The purpose of this area was unknown.
Asbestos on Site:	None identified on-site.

2.1.8 Land uses within 250m of the Sunnica East Site B boundary were determined from site walkovers and mapping and are summarised in Table 16B-4 below.

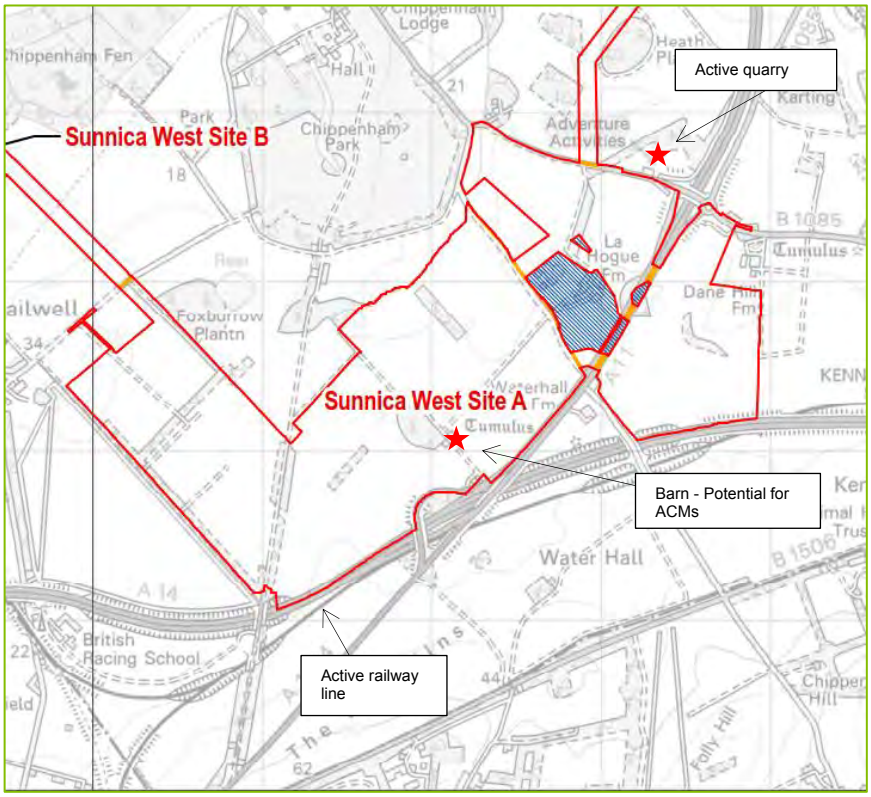
Table 16B-4 Surrounding Land Use – Sunnica East Site B

Direction	Description
North	The landscape features immediately surrounding the Sunnica East Site B include the villages of Worlington to the north and of Barton Mills to the north-east, surrounded by arable fields, woodlands and scattered farms. River Lark flows 450m to the north of the Sunnica East Site B, north of Worlington.
East:	To east and north-east, the Sunnica East Site B is adjoined by Golf Links Road, with a golf course, arable fields and an area identified as County Wildlife Site beyond (photo 1a, Appendix 16B-A). The A11 (Red Lodge Bypass) carriageway briefly adjoins the Sunnica East Site to the east, with the settlement of Red Lodge Heath beyond the road to the south-east. Industrial land uses adjoin the A11 (Red Lodge Bypass) to the south-east of the Sunnica East Site B, including a solar farm (photo 9, Appendix 16B-A), an Anaerobic Digestion (AD) plant (biomass plant) and an active quarry.
West	Agricultural land adjoins the Sunnica East Site B to the west, with the village of Freckenham located beyond (1.3km west).
South	To the south-west, the Sunnica East Site B is generally surrounded by arable fields, with commercial activities including a car breaker's yard (Vehicle Dismantles Ltd) (Photos 10a and 10b, Appendix 16B-A). An area formerly occupied by a garage (reported in the Groundsure Report) is adjacent to the car breaker's yard, at the end of Bridge End Road (photo 11, Appendix 16B-A). Worlington Quarry (photo 25 and 25a, Appendix 16B-A), located adjacent east of the central land parcel of the Sunnica East Site, is operated by Frimstone Ltd (previously known as M Dickerson) since 2004. The quarry covers approximately 70 hectares of land and is accessed from Elms Road, approximately 700m north of the A11 (Red Lodge Bypass). This site has been operational since planning permission was originally granted for the quarry in 2004, extracting sand and gravel and importing inert material for recycling and to utilise for the restoration of the site. The existing permitted duration of the quarry will take operation up to the 30th October 2025 (source: Scoping Report). The River Kennet runs approximately 170m south-west of the Sunnica East Site B (photo 12, 12a, 12b and 12c, Appendix 16B-A) and a number of reservoirs are located south of the Sunnica East Site (photo 13, 13a and 13b, Appendix 16B-A).

Sunnica West Site A

2.1.9 The Scheme at Sunnica West Site A will comprise ground mounted solar PV panel arrays, supporting electrical infrastructure and, potentially, BESS. The Sunnica West Site A boundaries and potential sources of contamination identified during the site visits are shown in Plate 16B-3 below.

Plate 16B-3 Sunnica West Site A showing potential contamination sources from site visits



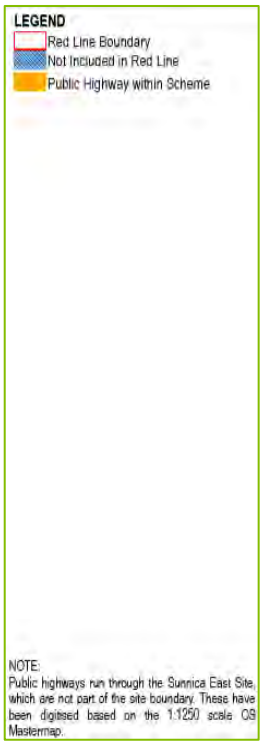


Table 16B-5 Site Walkover Information - Sunnica West Site A

Site Name:	Sunnica West Site A
Site Address:	The Sunnica West Site A is located approximately 2.7km north of Newmarket and 1km to the south of Chippenham. The Sunnica West Site A lies within the county of Cambridgeshire, and in the East Cambridgeshire District Council administrative area.
Size:	Approximately 459.8ha
On Site Description	Sunnica West Site A mainly comprises of agricultural fields and includes trees, managed hedgerows, tree shelterbelts (linear rows of trees), small woodlands and copses, a barn (photos 59 and 59a, Appendix 16B-A) and access track (photos 35 to 43 inclusive, Appendix 16B-A). A straight tree-lined avenue bisects the Sunnica West Site A and forms part of a former carriageway to Chippenham Hall, which is located to the north within Chippenham Park. The A11 (Red Lodge Bypass) and La Hogue Road run through the Sunnica West Site A. The A14 (New Market Bypass) carriageway borders the Sunnica West Site A to the south (photo 44, Appendix 16B-A); Norwich Road adjoins part of the south-eastern extent of the Site; and B1085 (Dane Hill Road) adjoins the Site to the north-east. A disused building named 'Waterworks' is currently located on-site along the south-eastern boundary, at the A14/A11 (Red Lodge Bypass) junction. This is the former Waterhall public water supply source owned by Anglian Water. Suffolk County Council have reported that, although the site is no longer used and is no longer licensed it may be appropriate to regard the site as a potential receptor as the abstraction wells are still in place and should be protected and the site is still owned by Anglian Water. The Lee Brook crosses the north-eastern edge of the Sunnica West Site A and runs along part of the northern-eastern boundary.
Hardstanding / Landscaping:	Sunnica West Site A is mainly covered by soft landscaping, except for the former carriageway (concrete) to Chippenham Hall.
Topography / Drainage:	The topography of the Sunnica West Site A is relatively flat. The surrounding area includes smooth rolling chalk hills.
Ecology and Water Quality	No visual evidence of contamination has been reported for Lee Brook during the site walkover.
Tanks, plant and electric substations:	None identified on-site.
Ancillary Infrastructure	None identified on-site.
Asbestos on Site:	Potential for ACM within corrugated roofing was observed in the barn in the central part of the Sunnica West Site A (photos 59 and 59a, Appendix 16B-A).

Table 16B-6 Surrounding Land Use – Sunnica West Site A

Direction	Description
North	The surrounding landscape to the north comprises arable fields with hedgerows and trees. Farms (Water Hall Farm and Moulton Manor Farm) are 250m north of the Sunnica West Site A, with Chippenham Park Garden beyond. The Groundsure report indicates an area of potentially infilled land along the Lee Brook, at the north-eastern edge of the Sunnica West Site A (off-site).
South	The A14 (Newmarket Bypass), A11 (Red Lodge Bypass) and the Cambridge Newmarket and Bury Branch railway line adjoin the Sunnica West Site A to the south, with agricultural land beyond and developed areas of Newmarket from 1.2km to the south. A school ('The Elite Swimming Academy') is located adjacent south of the Sunnica West Site A, beyond the A11 (Red Lodge Bypass).
East:	To the east, the Sunnica West Site A is bordered by a local road (B1085 Dane Hill Road), with an outdoor centre ('WildTracks Outdoor Activity Park') and a quarry (photo 26, Appendix 16B-A) beyond, to the west of A11 (Red Lodge Bypass). An area including an active landfill and two historical landfills is between 140m and 500m east of the Sunnica East Site A, beyond the B1085 (Dane Hill Road), to the east of the A11 (Red Lodge Bypass). Kennet train station is 1.2km to the south-east of the Sunnica West Site A.
West:	To the west, the Sunnica West Site A is bordered by a canal, with arable fields beyond. The village of Snailwell lies from approximately 250m west of the Sunnica West Site A.

Direction	Description
	A horse training ground (photo 33, Appendix 16B-A) is shown adjacent north-west of the Sunnica West Site A.
Area between the land parcels	The area between the Sunnica West Site A land parcels to the east includes a farm, small retail /commercial activities (i.e. a florist, a farm shop & cafe) and a number of ponds. The Groundsure report indicates potentially infilled land at this location.

Sunnica West Site B

2.1.10 The Scheme at Sunnica West Site B will comprise ground mounted solar PV panel arrays, supporting electrical infrastructure and, potentially, BESS. The Sunnica West Site B boundaries and potential sources of contamination identified during the site visits are shown in Plate 16B-4 below.

Plate 16B-4 Sunnica West Site B showing potential contamination sources from site visits

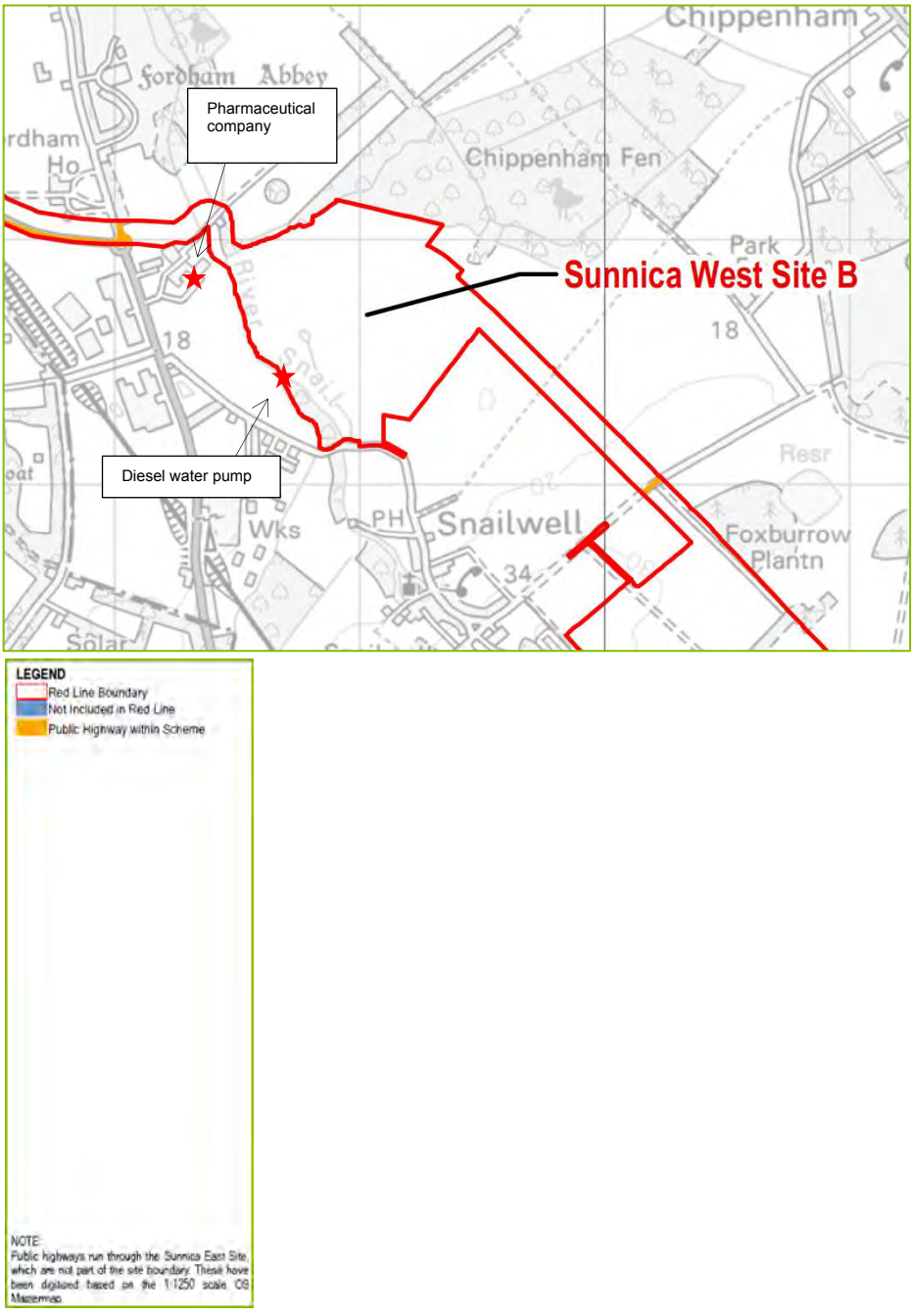


Table 16B-7 Site Walkover Information – Sunnica West Site B

Site Name:	Sunnica West Site B
Site Address:	Area north of Snailwell
Size:	Approximately 68.8ha
On Site Description	The Sunnica West Site B is occupied by agricultural fields with trees and hedgerows, and is adjoined by River Snail to the west and by an unnamed drain, linked to the River Snail to the north. Fenland (listed as a Special Area of Conservation (SAC)), Chippenham Fen and Snailwell Poor's Fen (listed as Site of Special Scientific Interest (SSSI)) are partially within the Sunnica West Site B. Chippenham Fen National Nature Reserve (NNR) and Snailwell Meadow (SSSI) adjoin the Sunnica West Site B to the north and south respectively.
Hardstanding / Landscaping:	The area consists of soft landscaping.
Topography / Drainage:	The area is generally relatively flat.
Tanks, plant and electric substations:	None identified on-site.
Ancillary Infrastructure	A diesel-powered water pump (not bunded) was observed on-site, in the proximity of the River Snail, during a site visit (25th September 2019) (photos 61, 61a and 61b, Appendix 16B-A). The pump was standing in water and fuel containers were discarded near the pump.
Asbestos on Site:	None observed on-site during the walkover.

Table 16B-8 Surrounding Land Use – Sunnica West Site B

Direction	Description
North	Chippenham Fen and Snailwell Poor's Fen (listed as SSSI), Fenland (listed as SAC) and Chippenham Fen (listed as NNR) adjoin (and partially overlap) the Sunnica West Site B, to the north.
East:	To the east, the Sunnica West Site B is adjoined by agricultural fields (photos 47 to 49, Appendix 16B-A). A manhole cover (indicating possible infrastructure below) was observed to the east of the Sunnica West Site B, during the site walkover (photo 50, Appendix 16B-A).
West	A pharmaceutical company (LGC) (photo 56, Appendix 16B-A) lies adjacent west of the Sunnica West Site B.
South	Fordham Road adjoins the Sunnica West Site B to the south, with agricultural fields beyond.

Grid Connection Route A

2.1.11 Grid Connection Route A includes a cable corridor between the Sunnica East Site B and Sunnica West Site A, as shown in Plate 16B-5. Potential sources of contamination identified during the site visits are summarised in Table 16B-9 below.

Plate 16B-5 Grid Connection Route A

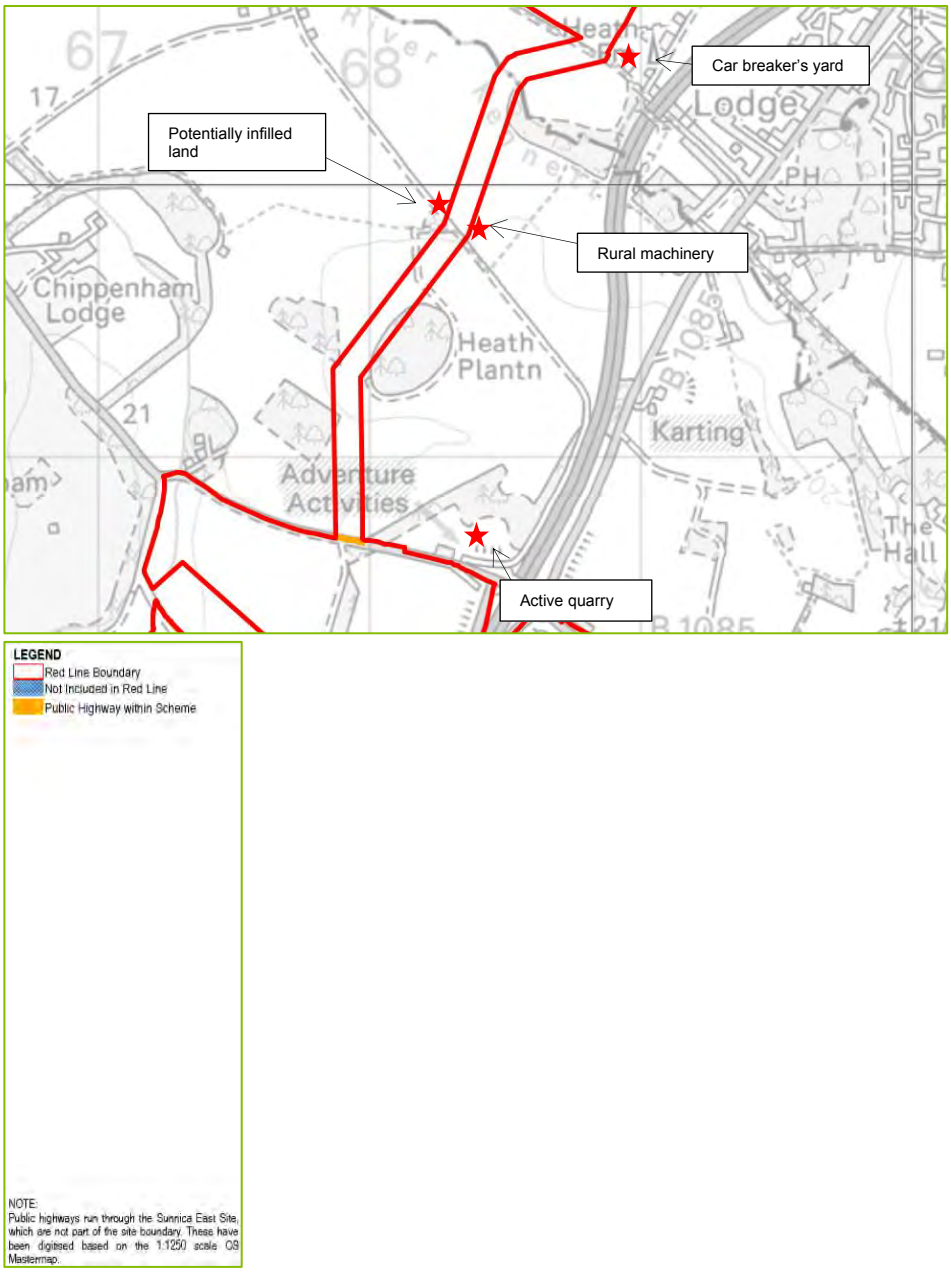


Table 16B-9 Site Walkover Information Grid Connection Route A

Route Name:	Grid Connection Route A
Location:	Cable corridor between Sunnica East Site and Sunnica West Site A.
Length:	Approximately 2.0km

On Site Description	
	Grid Connection Route A runs from southern part of the Sunnica East Site B, across the countryside, to the north-eastern boundary of the Sunnica West Site A. The cable route corridor for Grid Connection Route A adjoins a car breaker's yard (Vehicle Dismantles ltd) (photos 10, 10a and 10b, Appendix 16B-A) and an area formerly occupied by a garage (photo 11, Appendix 16B-A), at its eastern end. During the site walkover, rural machinery, including tractors and a tanker, likely to be used for slurry, was observed along Route A (photo 15, Appendix 16B-A). Potentially infilled land (historical) and evidence of burning wood was observed adjacent to the cable route corridor for Grid Connection Route A, along the track to Badlingham Manor (photo 14, Appendix 16B-A).
Hardstanding / Landscaping:	The cable route corridor for Grid Connection Route A crosses agricultural fields, except for B1085 local road (concrete), which adjoins the Sunnica West Site A to the east.
Topography / Drainage:	The area crossed by the cable route corridor for Grid Connection Route A is relatively flat or gently undulating. The cable route corridor for Grid Connection Route A intercepts the River Kennet, at its eastern part. A reservoir is located 100m south of the cable route corridor for Grid Connection Route A (photos 13, 13a and 13b Appendix 16B-A) (this reservoir is not marked on Figures 1 and 2 in Appendix 16B-A)
Tanks, plant and electric substations:	None identified on-site.
Ancillary Infrastructure	None identified on-site.
Asbestos on Site:	None observed on-site during the walkover.
Surrounding Land Uses – Current significant Features/Land Uses	
Active quarry	A quarry (photo 26, Appendix 16B-A) is located 100m east of the cable route corridor for Grid Connection Route A, and adjacent east of the Sunnica West Site A. A leisure area (Wild Outdoor Activity Park) (photo 27, Appendix 16B-A) is adjacent to the east of the quarry. Tanks of unknown contents were observed within the leisure area (photo 28, Appendix 16B-A)

Grid Connection Route B

2.1.12 Grid Connection Route B includes cable corridor between Sunnica West Site A and Burwell National Grid Substation Extension, as shown in Plate 16B-6. Potential sources of contamination identified during the site visits are summarised in Table 16B-10 below.

Plate 16B-6 Grid Connection Route B

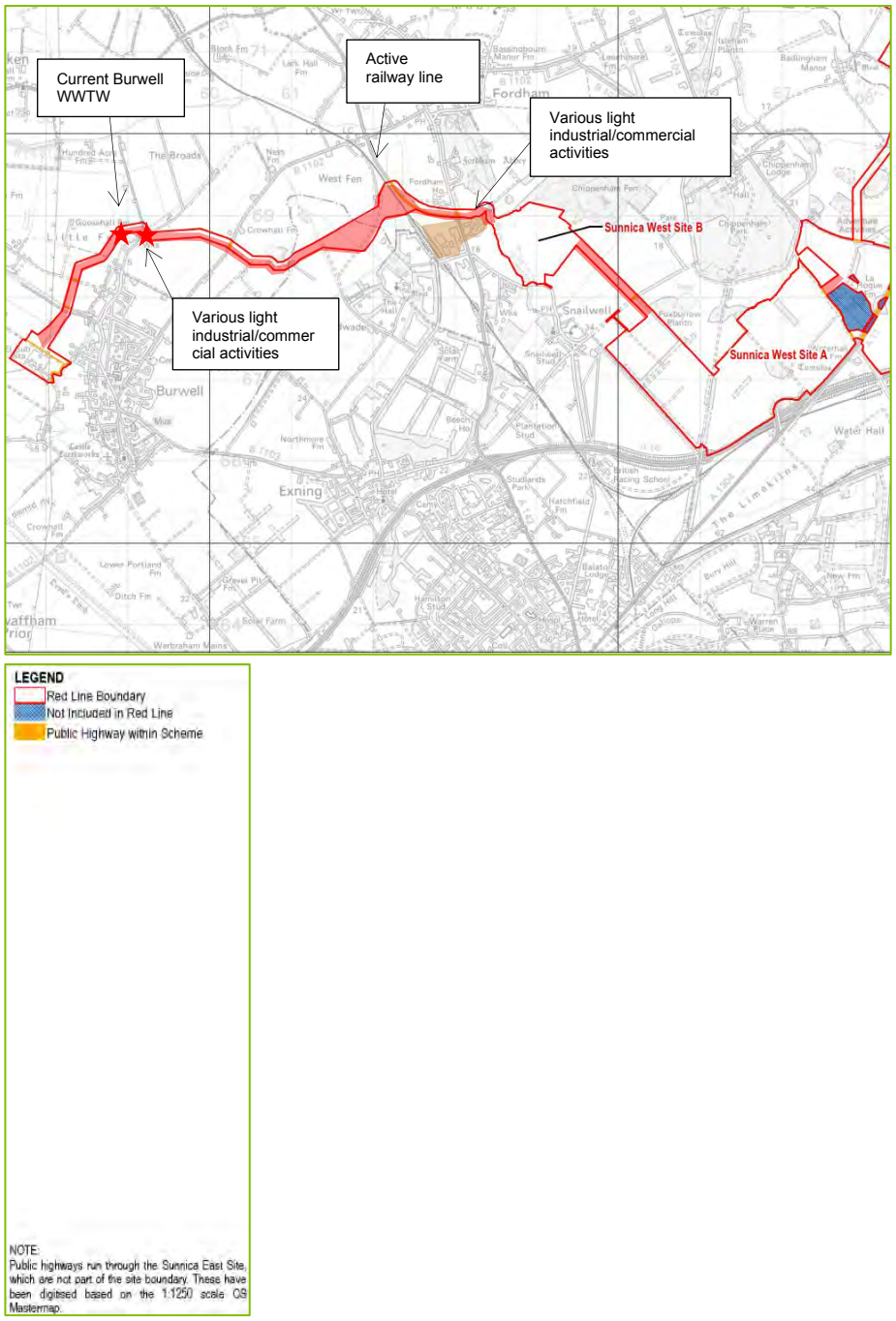


Table 16B-10 Site Walkover Information Grid Connection Route B

Route Name:	Grid Connection Route B
Location:	Cable corridor between Sunnica West Site A and Burwell National Grid Substation.
Length:	Approximately 8.0km

On Site Description	The cable route corridor for Grid Connection Route B runs within parcels of land in the eastern area of the Sunnica West Site A; and from the north-western edge of the Sunnica West Site A (photo 32a, Appendix 16B-A), across the countryside (photo 32, 47, 48 and 49, Appendix 16B-A), to the north of Snailwell, through Sunnica West Site B, where it then adjoins to the north a commercial/industrial area (including a pharmaceutical company (photo 56, Appendix 16B-A), a wholesaler and a trucking company). The cable route corridor for Grid Connection Route B proceeds in a western direction, crosses the Newmarket Road and railway line which connects Newmarket to Ely; then continues across the countryside toward a waste water treatment works (Burwell WWTW), and then in a south-western direction, to the Burwell substation (photos 54 and 55, Appendix 16B-A), to the west of Burwell.
Hardstanding / Landscaping:	The cable route corridor for Grid Connection Route B mainly crosses agricultural land (soft landscaping), except for the local roads (concrete). Local roads crossed by the cable route corridor for Grid Connection Route B are (from east to west): Chippenham Road, Fordham Road (A142), Nees Road (B1102) and Broads Road).
Topography / Drainage:	The area crossed by the cable route corridor for Grid Connection Route B is generally relatively flat or gently undulating. The cable route corridor for Grid Connection Route B intersects the River Snail to the north of Snailwell, the New River 2.5km east of Burwell, the Catch Water Drain to the north of Burwell around the Burwell WWTW and several unnamed land drains (tributaries of the New River). The cable route corridor for Grid Connection Route B adjoins a pond to the south 400m east of B1102 (Ness Road).
Tanks, plant and electric substations:	None identified on-site.
Ancillary Infrastructure	None identified on-site.
Asbestos on Site:	None observed on-site during the walkover.

Surrounding Land Uses – Current Significant Features/Land Uses	
Various light industrial/commercial activities, including Pharmaceutical Company (LGC) (photo 56, Appendix 16B-A), Wholesaler (CP Foods UK Ltd), trucking Company (Turners Soham Ltd) and Packaging company (DS Smith Packaging).	Located along the cable route corridor for Grid Connection Route B, to the north of Snailwell.
Current Burwell WWTW/former sewage works.	Located adjacent south of the cable route corridor for Grid Connection Route B, 430m north of Burwell.
Various light industrial/commercial activities and depots, including engine rebuilding service (Allitt Motor Services), engineer (Cambridge Robores Ltd), Towing Service (Manchetts Rescue & Recovery Ltd) to the east of Broads Road.	Located along the cable route corridor for Grid Connection Route B, 350m north of Burwell.

2.3 Geology

Published Geology

2.3.1 Based on a review of published geological maps (Geological Map 188 Cambridge and 189 Bury St Edmunds) and British Geological Survey GeoIndex Onshore website the majority of the Site is directly underlain (in sequence, from the most recent to the older formation) by Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated), Zig Zag Chalk Formation and West Melbury Marly Chalk Formation. All these formations are characterised by chalk. Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated) are shown across the majority of the Site in the eastern and central parts; Zig Zag Chalk Formation outcrops in the northern and central parts of the Site; and West Melbury Marly Chalk Formation is shown in the western part of the Site, to the south-west of Fordham.

2.3.2 Superficial deposits are shown as River Terrace Deposits and Head Deposits located mainly in the central, northern and eastern part of the Site; and some elongated outcrops of Alluvium over the chalk, associated with Lee Brook (northern part of the Site), River Kennet (eastern part of the Site) and the River Snail (central part of the Site). Superficial deposits also include small outcrops of peat (western and northern parts of the Site), Lowestoft Formation (eastern part of Site) and Brown Sand (eastern part of the Site).

2.3.3 Table 16B-11 provides a summary of the geology (made ground, superficial deposits and bedrock units) in the study area.

Table 16B-11 Geological Setting and Description (Source: BGS Geoindex Onshore)

Geological Strata	Distribution	Formation Description	Areas	Aquifer Designation
Made ground				
Made ground	Likely present at various locations.	Artificial ground comprising variable deposits of reworked natural and man-made material	Minor deposits of made ground may be encountered across all land within the Scheme Boundary, for example where ponds or pits have been backfilled. Made ground is identified (off-site) to the south-east of the Sunnica East Site B (from the site visit; photos 5b and 9-9e, Appendix 16B-A)	Not classified
Superficial				
Peat	Localised outcrops north of Burwell (along the New River) and north of Isleham (along the Lee Brook).	Peat	Present across the cable route corridor for Grid Connection Route B and at the north-western edge of Sunnica East Site A.	Unproductive Strata
Alluvium	Elongated outcrops along the River Snail, north of Snailwell; along the	Clay, silt, sand and gravel	Present along the cable route corridor for Grid Connection Route B; at the northern edge of the Sunnica West Site B; along	Secondary A

Geological Strata	Distribution	Formation Description	Areas	Aquifer Designation
	River Kennet, east of Red Lodge; along Lee Brook, south of Freckenham.		the cable route corridor for Grid Connection Route A; along the western boundary of the Sunnica East Site B; and in the central part of Sunnica East Site B.	
River Terrace Deposits	Extensive areas to the south and east of Chippenham and to the north of Red Lodge; and localised elongated outcrops along the River Snail, north of Snailwell.	Sand and gravel	Present across the cable route corridor for Grid Connection Route B; across the north and eastern part of Sunnica West Site A along the cable route corridor for Grid Connection Route A; and across the majority of the Sunnica East Site B.	Secondary A
Head Deposits	Localised outcrop to the west and south-west of Worlington.	Clay, silt, sand and gravel	Present across Sunnica East Site A and B; and across the eastern part of the Sunnica West Site A.	Secondary (Undifferentiated)
Lowestoft Formation	Small localised outcrop 800m south west of Kennet and west of Red Lodge.	Clay and silt	Present across the eastern part of the Sunnica West Site A; and along the cable route corridor for Grid Connection Route A.	Secondary B
Blown Sand	Small elongated outcrops, 800m north of Red Lodge.	Sand	Present across Sunnica East Site B.	Secondary A
Bedrock				
Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated)	Present across the eastern, central and southern parts of the Site.	Chalk	Present along the cable route corridor for Grid Connection Route B; across Sunnica West Site A and Sunnica West Site B; along the cable route corridor for Grid Connection Route A; and across the southern part of the Sunnica East Site B.	Principal
Zig Zag Chalk Formation	Present across the central part of the Site, 1 km south of Fordham; and across the northern part of the Site west of Worlington.	Chalk	Present across Sunnica East Site A and B; and along the cable route corridor for Grid Connection Route B.	Principal
West Melbury Marly Chalk Formation	Present across the western part of the Site, to the south-west of Fordham.	Chalk	Present along the cable route corridor for Grid Connection Route B.	Principal

2.3.4 A review of the BGS Geoindex identified a large number of borehole records located on-site and in the proximity of the Scheme Boundary as being available to view. The borehole records generally align with the expected geological conditions from the geological mapping. Table 16B-12 summarises the stratigraphy reported in a selection of the BGS boreholes, also included as Appendix 16B-B.

Table 16B-12 Identified Geological Stratigraphy beneath the Site (BGS borehole)

BGS Reference	Location	Hole depth (m bgl)	Strata Encountered (m bgl)
TL67SE84	On site (central area of the Sunnica East Site B)	44.2	From ground level to 5.0: pebbly sand. From 5.0 to 44.2: Chalk (with Totternhoe Stone at approx. 20mgl). Groundwater level: 5.25m bgl.

BGS Reference	Location	Hole depth (m bgl)	Strata Encountered (m bgl)
TL67SE1	On site (eastern area of the Sunnica East Site B)	79.2	From ground level to 55.32m: Lower Chalk (with Totternhoe Stone 21.84 – 23.27). From 55.32 to 57.00: Cambridge Greensand. From 57.00 to 69.42: Gault. From 69.42 to 78.32: Lower Gault. From 78.32 – 79.25: Carstone. Groundwater level: 'wet' from 12.24m bgl.
TL77SW27	On site (north-eastern area of the Sunnica East Site B)	4.0	From ground level to 0.4: sandy soil. From 0.4 to 2.5: very clayey pebbly sand. From 2.5 to 4.0: Chalk, soft to firm.
TL66NE69	On site (western area of the Sunnica West Site A)	7.0	From ground level to 0.4: brown silty sandy topsoil. From 0.4 to 1.2: medium dense brown slightly silty fine sand with little chalk and flint gravel and small cobbles. From 1.2 to 2.7: very dense pale yellow brown clayey fine and medium sand with little flint gravel and little chalk gravel. From 2.7 to 7.0: Compact, rubbly partly weathered chalk.
TL66NW93	On site (eastern area of the Sunnica West Site A)	3.5	From ground level to 0.3: brown soil. From 0.3 to 3.1: very clayey sandy gravel. From 3.1 to 3.5: white chalk.
TL66NW83	On-site (Grid Connection Route B, north of Snailwell)	4.0	From ground level to 0.4: brown soil. From 0.4 to 1.2: Alluvium described as grey silt. From 1.2 to 3.8: River Terrace Deposits described as sandy gravels. From 3.8 to 4.0: white chalk.
TL66NW95	On-site (Grid Connection Route B, at Breach Farm, 500m north-east of Burwell)	6.8	From ground level to 6.8: chalk. Groundwater level: 4m bgl.

Ground Stability and Mining Hazards

2.3.5 The Groundsure Report (extracts included as Appendix 16B-C) provides details of geological and ground stability hazards, which are summarised in Table 16B-13 below.

Table 16B-13 Groundsure listed geological and ground stability hazards

Hazard Category	Site Hazard
Coal Mining[2]	None identified
Non-coal mining	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions is localised and unlikely and is at a level where they need not be considered.
Brine Extraction[1]	None identified
Collapsible Deposits	Very low
Compressible Deposits	Negligible to high AECOM note: Generally, the Site presents a negligible risk for compressible deposits, except for high risk identified along the watercourses.
Ground Dissolution of Soluble Rock	Negligible to very low

[22] Within 75m of the Site

Hazard Category	Site Hazard
Landslide Risks	Negligible to low
Running sands	Negligible to low
Shrinking/swelling clay	Negligible to low

Radon

2.3.6 Sunnica East Site A and the northern part of the Sunnica East Site B lie within a radon affected area, as between 1 and 3% of properties are estimated to be at or above the action level of 200 becquerels per cubic metre of air (Bq/m^3) for residential properties (Ref 16B-11). For the remainder of the study area, less than 1% of homes are estimated to have radon levels at or above the radon action level.

2.3.7 The Groundsure Report (source data: BGS/Public Health England) states that radon protection measures are not required in any area of the Site during the construction of new dwellings and extensions.

2.4 Hydrogeology

2.4.1 A review of the 'Magic' maps indicates that the Site overlies a Principal Aquifer, associated with the chalk strata. These are layers of rock or drift deposits that have inter-granular and/or fracture permeability and can often provide a high level of water storage. They may support water supply and/or river base flow in a strategic scale. Due to their high permeability, Principal Aquifers are considered to be highly vulnerable to pollutants.

2.4.2 Superficial deposits of the Alluvium, River Terrace Deposits and Blown Sand are classified as Secondary A aquifers, defined by the Environment Agency as "*permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers*".

2.4.3 Small outcrops of the Lowestoft Formation, identified at the eastern boundary of the Sunnica West Site A and along the cable route corridor for Grid Connection Route A, are associated with a Secondary B aquifer, defined as '*predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering'*.

2.4.4 Head deposits, identified across Sunnica East Site A and B and across the eastern part of Sunnica West Site A, are classified as Secondary Undifferentiated Aquifer. The status of Secondary Undifferentiated Aquifer has been assigned in cases where "*the layer has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type*".

2.4.5 The Site is located within Source Protection Zones (SPZs) designated by the Environment Agency for the protection of potable water supply. Two outer SPZs (SPZ 2) are shown at the northern edge of Sunnica West Site A and at the eastern edge of Sunnica East Site B. Total catchment SPZs (SPZ 3) lie across the rest of Sunnica West Site A and Sunnica West Site B; and across the majority of Sunnica East Site B and the western edge of Sunnica East Site A.

2.4.6 According to the Groundsure Report, there are 24 active groundwater abstraction licences on-site and within 250m from the Site. Groundwater abstraction points were observed during the site visit (photos 20 and 21, Appendix 16B-A); it is possible that these relate to the abstraction licences for spray irrigation, at Upton Suffolk Farms. Available BGS borehole logs show a groundwater level of between 4.0m bgl and 5.25m bgl.

2.5 Hydrology

2.5.1 The River Kennet is located on the eastern part of the study area and is crossed by the cable route corridor for Grid Connection Route A, between Red Lodge and Chippenham.

2.5.2 The Lee Brook, which flows in a northerly direction for 3.5km to its confluence with the River Kennet, crosses the Sunnica East Site A.

2.5.3 River Snail (which flows in a northerly direction) and New River (which flows in a north-western direction) are located in the central part of the study area and are crossed by the cable route corridor for Grid Connection Route B to the north of Snailwell and 2.5km east of Burwell, respectively.

2.5.4 Catch Water Drain runs in a northern direction at the western edge of the study area and is intercepted by the cable route corridor for Grid Connection Route B to the north of Burwell.

2.5.5 There are numerous small ponds, reservoirs and drains within the study area, mainly associated with local farms and drainage of agricultural fields. According to the Groundsure Report, there are multiple surface water abstraction licences directly adjacent west of Sunnica East Site A, adjacent west of Sunnica West Site B and adjacent west of Sunnica West Site A.

2.5.6 The Site is not within an Environmental Agency Drinking Water Protected Area (Surface Water).

2.5.7 The Groundsure report indicates that the Biological Quality is recorded as Grade A and Chemical Quality Grade is recorded as between A and C, for the River Snail and River Lark in 2009. Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

2.5.8 The Environment Agency Catchment Data for 2015 shows the ecological status of the River Lark to be mainly moderate and the chemical status to be good during the 2016 assessments. The River Snail is not listed.

2.6 Flooding

2.6.1 The Sunnica East Site B is located within Flood Zone 1[3]. The Sunnica East Site A is located within Flood Zone 1, with areas of Flood Zone 2[4] and Flood Zone 3[5] associated with the Lee Brook (across the central area) and with the River Lark (along the northern boundary).

2.6.2 The majority of the Sunnica West Site A and Sunnica West Site B is located within Flood Zone 1. Areas of land within Flood Zone 2 and Flood Zone 3 are associated with the Lee Brook, which adjoins Sunnica West Site A to the north-east, and with an elongated area to the west of La Hogue Farm; and with River Snail, which adjoins the Sunnica West Site B to the west.

2.7 Sensitive Sites

2.7.1 The Magic maps indicate that the entire Site is located within a surface water nitrate vulnerable zone.

2.7.2 The following sensitive sites have been identified within 250m from the Site:

- Chippenham Fen and Snailwell Poor's Fen (listed as SSSI), Fenland (listed as SAC) and Chippenham Fen (listed as NNR), situated to the south-west of Fordham, 150m north of the cable route corridor for Grid Connection Route B. Chippenham Fen and Snailwell Poor's Fen SSSI and Fenland SAC are shown partially within Sunnica West Site B; and Chippenham Fen NNR adjoins the Sunnica West Site B to the north;
- Snailwell Meadow (SSSI), situated north of Snailwell, adjoin Sunnica West Site B to the south; and
- Blackland Rough (listed as SSSI), situated to the south of Fordham, 250m north of the cable route corridor for Grid Connection Route B.

[3] Flood Zone 1 - land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
[4] Flood Zone 2 - land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%).
[5] Flood Zone 3 - land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%).

3. Historical Review

3.1 Review of Ordnance Survey Maps

3.1.1 Historical mapping has been reviewed to evaluate potential on and off-site past activities in the study area that may have affected the Site's environmental and land quality. Historical Ordnance Survey (OS) map extracts were obtained from the Groundsure Report and copies of key maps are provided in Appendix 16B-C.

3.1.2 A tabular summary of the historical mapping review is presented in Table 16B-14 and shown in Figure 3, Appendix 16B-A.

Table 16B-14 Review of Historical Mapping Data

Reference	Name	Location	Description
	Sunnica East Site		
A	Dismantled railway (including former Cambridge and Mildenhall Branch)	Across the northern part of the Sunnica East Site B, the central part of Sunnica East A, and crossing the cable route corridor for Grid Connection Route B.	Cambridge and Mildenhall Branch railway are shown from 1901 (1901; scale 1:10,560). Dismantled railway (1983; scale 1:10.000)
B	Current quarry (Worlington Quarry)	Adjacent south of the Sunnica East Site B.	Historically, this area remained undeveloped at least until 1983 (most recent map).
C	Current quarry	Adjacent east of the Sunnica East Site B, beyond A11 (Red Lodge Bypass).	Historically, this area was occupied by a chalk pit until the late 1950's, when it was relabelled on the maps as a chalk quarry (currently in use).
D	Current construction site/former chalk pit/former disused quarry	540m south of the Sunnica East Site B, to the east of New Market Road.	Historically, this area was undeveloped until 1950, when it was used as chalk pit. Historical maps from 1975 show this area as a disused quarry. Works are indicated on-site on the 1988 historical map. This area is currently a construction site.
J	Former windmill / former pumping house	North-western edge of Sunnica East Site A.	Windmill (pumping) from 1881 to 1886. Pumping house from 1979 to 2010. The pumping house is no longer shown on-site in the most recent maps.
	Grid Connection Route A		
E	Current vehicle dismantler	Located adjacent south-west of the Sunnica East Site B, at the eastern end of the cable route corridor for Grid Connection Route A.	Heath Farm, surrounded by undeveloped land, is shown on-site since 1882. Marshland is indicated on-site to the east of Heath Farm on the 1957 (scale 1:10.560) historical map. From 1983, this area includes additional buildings likely to be housing. The Groundsure report indicates this area historically occupied by a garage in 1977.

Reference	Name	Location	Description
F	Quarry	Located adjacent east of Sunnica West Site A, to the east of cable route corridor for Grid Connection Route A.	No evidence of the quarry in the historical maps.
H	Infilled gravel pit	Located adjacent west of Grid Connection Route A, north of Heath Plantation.	Identified during the site visit.
	Sunnica West Site A		
G	Former clay pit/works	At La Hogue Farm, in the centre of Sunnica West Site A (but excluded from the site boundary). Adjacent south of Grid Connection Route B.	Historically this area was occupied by clay pits since 1884 until 1957, when works are shown on-site (historical map scale 1:10.560). Currently this area is shown as potentially infilled land.
I	Gravel pits plantation	Adjacent west of Sunnica West Site A.	This area is indicated as a gravel pit and gravel pit plantation from at least 1884. This area to the south-east of Snailwell is currently wooded.
K	Former sewage works	Adjacent north-east of Sunnica West Site A, 100m east of Chippenham Park.	Shown on the maps between 1950 and 1958. This area is currently named Stannel Wood and is occupied by a number of sheds.
	Grid Connection Route B		
L	Various light industrial and commercial activities, including pharmaceutical company (LGC), packaging company (DS Smith Packaging) and wholesaler (CP Foods UK Ltd) and trucking Company (Turners Soham Ltd)	Located north of Snailwell, from adjacent south of the cable route corridor for Grid Connection Route B.	This area has been undeveloped until late 1880's. Biggen Stud and Biggen Cottage is shown on-site in historical maps from 1924 to 1980. Industrial/commercial buildings are shown on-site from the 1994 historical map.
M	Historical non-coal mining cavity for the extraction of coprolite, currently occupied by a pond. Potentially infilled land.	Located adjacent north of the cable route corridor for Grid Connection Route B, 1.5km north-west of Burwell.	This area has been developed with cement works, including clay pit and tramway, between around 1880 and 1920. This area is shown to be occupied by a pond from at least 1959 to the present.
N	Area of disused pit or quarry (disused sand pit, former gravel pit and former chalk pit or quarry)	Located along and adjacent north of the cable route corridor for Grid Connection Route B, 600m north of Burwell.	Disused sand pit, former gravel pit and former chalk pit or quarry are shown on-site from 1980.
O	Current Burwell WWTW / former sewage works	Located adjacent south of the cable route corridor for Grid Connection Route B, 430m north of Burwell.	Historically, this area has been undeveloped and crossed by a water course until around late 1950s. Sewage works are shown on-site from 1980 to 1994. The site is currently occupied by WWTW.
P	Various light industrial and commercial activities and depots, including engine rebuilding service (Allitt Motor Services), engineer (Cambridge Robores Ltd.), Towing Service (Manchetts Rescue & Recovery Ltd.) to the east of Broads Road	Located adjacent south of the cable route corridor for Grid Connection Route B, 350m north of Burwell.	Historically, this area has been undeveloped and crossed by a water course until around late 1950s. Glass house, depots, refuse or slag heap are shown on-site in the 1980 historical map. Industrial/commercial buildings are shown on-site in the 1994 historical map.

Reference	Name	Location	Description
Q	Electricity sub station	Located at the south-western end of the cable route corridor for Grid Connection Route B, west of Burwell.	Historically, this area has been undeveloped land until at least late 1950s. Electricity substation is shown on site from the 1980 historical map.

3.2 Historical Development Summary

3.2.1 Historical maps indicate that the Site has been mainly undeveloped land since the earliest available historical maps (late 1800's), with contamination sources limited to potential applications of pesticides and fertilizers for agricultural purposes. Potential sources of contamination have been identified locally on-site and within the surroundings and include historical and current mining sites, former sewage works and current waste water treatment works, and various light industrial and commercial activities, located mainly along the cable route corridor for Grid Connection Route B.

3.2.2 Active railway lines are shown crossing the cable route corridor for Grid Connection Route B and adjoining the Sunnica West Site A to the south; historical railway tracks (currently dismantled) have been identified across the central part of the Sunnica East Site A, the northern part of the Sunnica East Site B and along the cable route corridor for Grid Connection Route B.

3.2.3 Farmland, including farm buildings and yards where fuel and agricultural materials were/are stored, are shown at various locations across the study area. A barn with a suspected asbestos cement roof and a water pump with associated fuel containers was observed during a site walkover, and are identified as R and S in Figure 3 Appendix 16B-A which primarily shows the historical activities that may have affected the Site's environmental and land quality as A – Q).

3.2.4 Potential contaminative sources may also be associated with infilled pits and ponds, scattered across the Site, which may have been filled with a variety of (potentially unlicensed) waste materials.

4. Regulatory Records

4.1.1 The following section presents a summary of the environmental conditions at and within a 250m radius (and further where considered relevant for context) of the Site, summarised from the Groundsure Report (Appendix 16B-C) and the DEFRA Magic Map Application.

4.1.2 Generally, sites with regulated processes, registered radioactive substances, licensed waste management facilities and landfills, hazardous substances, fuel station entries and selected contemporary trade directory entries within 250m of the Site could, depending upon the nature of their activities, represent potential sources of contamination.

4.2 Discharge Consents and Groundwater Abstractions

4.2.1 According to the Groundsure Report there are 54 registered discharge consents on-site and within 250m of the Site, 45 listed as revoked.

4.2.2 The active consents are mainly related to sewage discharge and final/treated effluent directly to water courses or to groundwater via infiltration or soakaway. According to the Groundsure Report there are 22 active groundwater abstraction licences located on-site and within 250m of the Site. These abstractions mainly relate to spray irrigation, vegetable washing and general farming and domestic uses.

4.3 Contraventions

4.3.1 The Groundsure Report lists six pollution incidents to controlled waters on-site and two within 250m of the Site; these are summarised below in Table 16B-15.

Table 16B-15 Summary of pollution incidents to controlled waters within 250m

Incident Severity	Pollutant	Date	Distance / Direction from Site (m)
Category 4 – No Impact	Pollutant not identified.	07/01/2002	On-site
Category 3 – Minor	Oils and fuel.	14/11/2003	On-site
Category 3 – Minor	Specific waste materials (containers).	23/12/2002	On-site
Category 4 – No Impact	Other pollutant.	01/10/2002	On-site
Category 3 – Minor	Oils and fuels.	31/01/2002	On-site
Category 3 – Minor	Inert materials and wastes (construction and demolition materials and tyres).	21/02/2003	On-site
Category 3 – Minor	Inert materials and wastes (soil and clay).	19/08/2003	130m east
Category 3 – Minor	Inert materials and wastes (construction and demolition materials and wastes).	05/11/2001	220m north

4.4 Landfills and Waste Management Facilities

4.4.1 The Groundsure Report shows one active landfill site, four historical landfill sites and eight licensed waste management facilities within 250m of the Site. These are summarised below in Table 16B-16.

Table 16B-16 Summary of Landfill Site and Licensed Waste management Facilities within 250m

Name	Location	Description
Active Landfill Sites		
Active Kennett Phase 2A Landfill Site	Located along Dane Hill Road, Kennett, 200m east of Sunnica West Site A.	The landfill is issued to Mick George Limited to receive inert waste. Operational dates are not provided
Historical Landfill Sites		
Former Kennett Landfill Site	Located 240m north of Dane Hill Road and of Sunnica West Site A.	The historical landfill was licensed to Suffolk County Council to receive commercial and household waste between 02nd January 1974 and 02nd June 1982.
Former Chalk Quarry, off Newmarket Road.	Located to the west of Newmarket Road, adjacent south-east of the Sunnica East Site B.	The historical landfill was licensed to Suffolk County Council to receive industrial, commercial and household waste between 31st January 1971 and 31st December 1992
Former Red Lodge Landfill Site	Located to the south-west of Elms Road, north-west of Red Lodge, adjacent south-west of the Sunnica East Site B.	The historical landfill was licensed to Middleton Aggregates Ltd between 12th September 1991 and 7th January 2013. The type of waste received is unknown.
BGS non-operational landfill site (Refuse Tip, Redland Purle, Bury Rd, Kentford)	Located adjacent south-east of Freckenham, 1km west of the Sunnica East Site B.	The historical landfill was reported to receive refuse. Licence details are unknown.
Waste Treatment Sites		
Registered Waste Transfer Site at Barton Mills Chalk Quarry	Located at the Barton Mills Chalk Quarry, to the west of Newmarket Road, adjacent south-east of the Sunnica East Site B.	The site is licensed to Sewells Reservoir Construction Limited to receive inert. Licence (n. SEW001) issued on the 12th September 2018.
Registered Waste Transfer Site at Worlington Quarry	Located adjacent south of Sunnica East Site B, west of Elm Road and north of Red Lodge.	The site is licensed to Frimstone Limited for the deposition of waste to land as a recovery operation. Licence (n. FRI062) issued on the 6th March 2012.
Registered Waste Transfer Site at Worlington Quarry	Located adjacent south of the Sunnica East Site B, west of Elm Road and north of Red Lodge.	The site is licensed to Frimstone Limited for treatment of waste to produce soil. Licence (n. MDI021) issued on the 12th October 2011.
Registered Waste Transfer Site at Worlington Quarry	Located adjacent south of the Sunnica East Site B, west of Elm Road and north of Red Lodge.	The site is licensed to Frimstone Limited for the management of inert or extractive waste at the mine. Licence (n. FRI058) issued on the 5th August 2011.
Vehicle Dismantlers Limited (Red Lodge) - Registered Waste Transfer Site	Located to the south-west of Elms Road, north of Red Lodge Bypass, adjacent south-west of the Sunnica East Site B.	The site is licensed to Vehicle Dismantlers Limited as a vehicle depollution facility. Licence (n. VEH002) issued on the 2th August 2018.
B McGivern - Registered	Located to the south-west of Elms Road, north of Red Lodge	The site is licensed to B McGivern as a metal recycling site (vehicle dismantler). Licence (n. BMC001) issued on

Name	Location	Description
Waste Transfer Site	Bypass, adjacent south-west of the Sunnica East Site B.	the 12th December 1994.
Plantation Farm, H E H Enterprises - Chippenham Transfer Station	Located to the east of B1085, 90m east of Sunnica West Site A.	The site is operated by H E H Enterprises Ltd as a household, commercial and industrial waste transfer station (size: < 25000 tonnes/year).
Plantation Farm	Located to the east of B1085, 90m east of Sunnica West Site A.	The site is operated by D Haird & Company Limited for treatment of waste to produce soil (size: < 75000 tonnes/year)

4.5 Contemporary Trade Directory Entries

4.5.1 There are three on-site potentially contaminative industrial site/features entries and 15 contaminative industrial site/features entries within 250m of the Site listed in the Groundsure Report. A summary of the entries is given in Table 16B-17 below, which also lists their proximity to the Site.

Table 16B-17 Summary of Trade Directory Entries

Name	Location	Classification	Category	Distance / Direction from site (m)
Pumping station	Cambridgeshire, CB8	Water pumping stations	Industrial features	Along the southern boundary of the Sunnica West Site A.
Pumping house	Suffolk, IP28	Water pumping station	Industrial features	North-western edge of Sunnica East Site A.
Vehicle Dismantlers Ltd	Bridge End Road, Red Lodge, Suffolk, IP28 8LQ	Scrap metal merchants	Recycling services	Adjacent south of the south-eastern boundary of the Sunnica East Site B.
Tanks	Worlington	Manufacturing and production	Industrial Features	130m north of the Sunnica East Site B.
Electricity substation	Worlington	Public infrastructure	Infrastructure and facilities	220m north of the Sunnica East Site B.
T S R Tuning	3, Freckenham Road, Worlington, Bury St. Edmunds, Suffolk, IP28 8SQ	Vehicle repair, testing and servicing	Repair and servicing	250m north of the Sunnica East Site B.
L G C Ltd	Newmarket Road, Fordham, Ely, Cambridgeshire, CB7 5WW	Dental and medical laboratories	Health practitioners and establishments	Adjacent south of the cable route corridor for Grid Connection Route B.
Turners of Soham Ltd	Newmarket, Cambridgeshire, CB8 7NR	Container and storage	Transport, storage and delivery	130m south of the cable route corridor for Grid Connection Route B.
C P Foods	Fordham Road, Newmarket, Cambridgeshire, CB8 7LG	Catering and no specific food products	Foodstuffs	60m north the cable route corridor for Grid Connection Route B.
Burgess WWTW	Cambridgeshire, CB25	Public infrastructure	Infrastructure and facilities	Adjacent west of the cable route corridor for Grid Connection Route B.
Ramfast Ltd	2 Broads Road Business Park, Burwell, Cambridge, Cambridgeshire, CB25 0BT	Manufacturing and production of pumps and compressors	Industrial products	Adjacent west of the cable route corridor for Grid Connection Route B.

Name	Location	Classification	Category	Distance / Direction from site (m)
Cambridge Rebores Ltd	1, Broads Road Business Park, Burwell, Cambridge, Cambridgeshire, CB25 0BT	Vehicle repair, testing and servicing	Repair and servicing	Adjacent west of the cable route corridor for Grid Connection Route B.
Allitt Motor Services	6, Broads Road Business Park, Burwell, Cambridge, Cambridgeshire, CB25 0BT	Vehicle repair, testing and servicing	Repair and servicing	Adjacent west of the cable route corridor for Grid Connection Route B.
Pro Lignum	5 Broads Road Business Park, Burwell, Cambridge, Cambridgeshire, CB25 0BT	Manufacturing and production – furniture	Consumer products	Adjacent west of the cable route corridor for Grid Connection Route B.
Electricity substation	Cambridgeshire, CB25	Public infrastructure	Infrastructure and facilities	80m west of the cable route corridor for Grid Connection Route B.
Electricity substation	Cambridgeshire, CB25	Public infrastructure	Infrastructure and facilities	South-western end of the cable route corridor for Grid Connection Route B.
Tank	Suffolk, IP28	Tanks (generic)	Industrial feature	70m west of Sunnica West Site A.
Depot	Cambridgeshire, CB8	Container and storage	Transport, storage and delivery	50m north of Sunnica West Site A.
Mast	Cambridgeshire, CB8	Telecommunication features	Infrastructure and facilities	150m east of Sunnica West Site A.

4.6 Fuel Station Entries

4.6.1 There are no fuel station entries within 500m of the Site listed in the Groundsure Report.

4.7 Sites Determined as Contaminated Land under Part IIA EPA 1990

4.7.1 There is one record of a site determined as Contaminated Land under section 78R of the Environmental Protection Act within 500m of the Site. This is related to a former and current landfill sites, located to the east of Dane Hill Road and south of A11 (Red Lodge Bypass), 70m east of Sunnica West Site A. The record is listed as revoked.

4.8 Radioactive or Hazardous Substances

4.8.1 As indicated in the Groundsure Report, there are eleven records of registered radioactive substances permits located on-site or within 250m of the Site, nine listed as revoked, cancelled or superseded.

4.8.2 The valid or issued ones are held by LGC Limited and by Dencora (fordham) Ltd, at Newmarket Road, in the central part of the study area, adjacent to the cable route corridor for Grid Connection Route B.

4.9 Industrial Sites holding Licences and/or Authorisations

4.9.1 As indicated in the Groundsure Report, there is one site recorded as holding an Integrated Pollution Control (IPC) permit, within 250m of the Site. This relates to European Metal Recycling Ltd, located in the village of Snailwell, 250m west of the Sunnica West Site A. The permit is listed as revoked/superseded.

4.9.2 According to the Groundsure Report there are seven Part A(1) and Integrated Pollution Prevention and Control (IPPC) authorised activities on-site or within 250m, two listed as effective. These are Bay Farm AD Site, operated by S&P Biogas Limited and Red Lodge Compost Facility, operated by Anti Waste Ltd, both involving the recovery and disposal of non-hazardous waste with biological treatment.

4.10 List 1 and List 2 Dangerous Substance Inventory Site Records

4.10.1 According to the Groundsure Report there is one record of List 1 Dangerous Substances Inventory Sites, within 250m of the Site. This relates to the active Burwell Waste Water Treatment Work, located in the western extent of the study area, along the cable route corridor for Grid Connection Route B. Burwell WWTW is also listed as a List 2 Dangerous Substances Inventory Site. The authorised L1 substance is cadmium and L2 substances are chromium, copper and zinc.

4.10.2 According to the Groundsure Report, there are a further nineteen sites listed as List 2 Dangerous Substances Inventory Sites, within 250m of the Site. Authorised L2 substances/parameters are copper, zinc, nickel and pH.

4.11 Unexploded Ordnance

4.11.1 Regional unexploded bomb (UXB) mapping published by Zetica (Ref 16B-12) shows the Site to lie within a zone with a low risk of UXB.

4.11.2 The Site was open land during World War II and it is currently mostly undeveloped, meaning it was possible for bomb strikes to go unobserved. Overall the presence of unexploded ordnance on-site is considered to be unlikely.

4.12 Gas Transmission Pipelines

4.12.1 According to the Groundsure Report, a ground transmission pipeline crosses the Sunnica East Site B in a west-east direction and transects the cable route corridor for Grid Connection Route B north-west of Snailwell.

5. Mineral Resources

5.1.1 The western part of the study area falls within the Cambridgeshire County Council area of control. The Cambridgeshire and Peterborough Minerals and Waste Core Strategy, which sets the framework for all minerals and waste developments until 2026, identifies areas of the county where significant mineral resources occur. The Mineral and Waste Core Strategy includes Proposals Map C: Mineral Safeguarding Areas, adopted by Cambridgeshire County Council and Peterborough City Council on 19 July 2011. This map indicates that there are Mineral Safeguarding Areas for sand and gravel within the Scheme Boundary, as shown in sheets 145, 146, 147 and 167 (Ref 16B-9), within the areas of the Site detailed below:

- Part of cable route corridor for Grid Connection Route B, along the River Snail, south of Fordham;
- The entire Sunnica West Site A and Sunnica West Site B; and
- The entire cable route corridor for Grid Connection Route A.

5.1.2 The eastern part of the study area falls within the Suffolk County Council area of control. Following the Planning and Compensation Act of 2004, the County Council produced the following minerals and waste Development Plan Documents (DPDs) that are still in force: a) Suffolk Minerals Core Strategy (adopted 2008); b) Suffolk Minerals Site Specific Allocations (adopted 2009) and; c) Suffolk Waste Core Strategy (adopted 2011) (Ref 16B-10) Suffolk County Council is currently producing a single Suffolk Minerals & Waste Local Plan to replace all three of the existing DPDs.

5.1.3 Suffolk Minerals Site Specific Allocations identifies two proposed sites for sand and gravel extraction in the study area, both adjacent to the Sunnica East Site B, as detailed below:

- Extension to Worlington Quarry, Red Lodge (19) (Ref 16B-13), a 3.0 ha area, located south of the Worlington Quarry (south of Sunnica East Site B); and
- Extension to Worlington Quarry, Red Lodge (20) (Ref 16B-14), 6.6 ha area, located north of the Worlington Quarry (to the south of Sunnica East Site B).

5.1.4 There are no Mineral Safeguarding Areas defined in the current adopted Suffolk County Council DPDs.

6. Conceptual Site Model and Environmental Risk Assessment

6.1 General

6.1.1 Current legislation relating to contaminated land in the UK is contained within Part 2A of the Environmental Protection Act 1990, which was inserted by Section 57 of the Environment Act 1995, and by Section 86 of the Water Act 2003, and elaborated within the Contaminated Land (England) Regulations 2006 [S.I 2006/1380] (amended 2012 [S.I. 2012/263]).

6.1.2 Land affected by contamination is also a material consideration under the Town and Country Planning Act 1990 and is aligned with the requirements under Part 2A of the EPA through the DCLG National Planning Policy Framework (NPPF) and associated online Planning Practice Guidance (PPG). Under the Planning regime, the Part 2A requirements are applied to the intended future use of the land so that following redevelopment, as a minimum, the Site should be in such a condition that it cannot meet the definition of Contaminated Land.

6.1.3 The “suitable for use” approach is adopted for the assessment of contaminated land where remedial measures are only undertaken when unacceptable risks to human health or the environment are considered to be present taking into account the use (or proposed use) of the land in question together with the environmental setting.

6.1.4 Current good industry practice recommends that the determination of health hazard and hazards to the environment due to contaminated land is based on the principle of staged risk assessment, as outlined in Part 2A of the Environmental Protection Act 1990, the Contaminated Land Statutory Guidance and Environment Agency guidance document CLR11 ‘Model Procedures for the Management of Land Contamination’ (and updated guidance Land Contamination: Risk Management (LCRM, 2020)).

6.1.5 The risk assessment process for environmental contaminants is based on a source-pathway-receptor analysis. These terms can be defined as follows:

- **Source**: substance that has the potential to cause adverse impacts to human health, property or the environment.
- **Pathway**: route whereby the source may come into contact with the receptor: examples include ingestion of contaminated soil and leaching of contaminants from soil into watercourses.
- **Receptor**: target that may be affected by contamination: examples include human occupants/users of Site, water resources (surface waters or groundwater), or structures.

6.1.6 For a risk to be present, there must be a viable pollutant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

6.1.7 The following sections detail the Conceptual Site Model (CSM), which has been developed for the Site with a view to assessing the potential risks.

6.2 Potential Sources of Contamination

6.2.1 This section uses the information obtained in the previous sections (former/current on-site and off-site activities, regulatory records, understanding of ground conditions and site walkover observations) to identify potential sources of contamination on the Site and in its surroundings that could pose an unacceptable risk to the Scheme. The risk assessment principles adopted in this assessment are presented in Appendix 16B-D.

6.2.2 Potential contamination sources have been identified as follows:

On Site

- Made ground potentially imported to the Site as part of its historic development;
- Former pumping houses and pumping stations (Sunnica East Site A);
- Gas substation (Sunnica East Site B);
- Electrical substation (end of the cable route corridor for Grid Connection Route B);
- Three ASTs - thought to be for fertiliser (Sunnica East Site B);
- Generator (Sunnica East Site B);
- Diesel water pump (Sunnica West Site B)
- Barns (Sunnica West Site A and Sunnica East Site A);
- Former (dismantled) railway lines (the cable route corridor for Grid Connection Route B, Sunnica East Site A and Sunnica East Site B); and
- Current railway lines (the cable route corridor for Grid Connection Route B).

Off-Site

- Worlington Quarry (adjacent south of Sunnica East Site B);
- Unspecified works (adjacent south of the Sunnica East Site B);
- Energy farm (adjacent south-east of the Sunnica East Site B);
- Vehicle dismantlers (adjacent south-west of the Sunnica East Site B);
- Quarry (adjacent south-east of the Sunnica East Site B);
- Farm (adjacent east of the Sunnica West Site A);

- Current railway line (adjacent south and west of the Sunnica West Site A);
- Potentially infilled land (adjacent north and east of the Sunnica West Site A);
- One site determined as Contaminated Land (listed as revoked) (including current and former landfills) (from 70m east of Sunnica West Site A);
- Waste transfer station (90m east of Sunnica West Site A);
- Current pharmaceutical company (the cable route corridor for Grid Connection Route B);
- Current wholesaler (the cable route corridor for Grid Connection Route B);
- Current trucking company (the cable route corridor for Grid Connection Route B);
- Former sewage works/current Burwell WWTW (adjacent south of the cable route corridor for Grid Connection Route B);
- Manufacturing and production – furniture (adjacent west of the cable route corridor for Grid Connection Route B);
- Vehicle repair, testing and servicing (adjacent west of the cable route corridor for Grid Connection Route B);
- Manufacturing and production of pumps and compressors (adjacent west of the cable route corridor for Grid Connection Route B);
- Packaging, transport, storage and delivery (adjacent south of the cable route corridor for Grid Connection Route B);
- Dental and medical laboratories (adjacent south of the cable route corridor for Grid Connection Route B); and
- Historical non-coal mining cavity/potentially infilled land (adjacent north of the cable route corridor for Grid Connection Route B).

6.3 Potential Geo-chemical Parameters

6.3.1 In view of the current and former site activities, it is considered that the following may be present in soil and groundwater on parts of the Site:

- Metals, semi-metals, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), semi-volatile-organic compounds (SVOCs) potentially associated with made ground, farmyards, railway lines and light industrial/commercial sites such as vehicle breakers yard, on-site and off-site;
- Contamination with pathogens (micro-organisms) and gases such as methane and hydrogen sulphide associated with the historical sewage works and current WWTW;
- Ground gas (methane, carbon dioxide, hydrogen sulphide) and leachate potentially associated with former landfill sites, former infilled ponds and infilled land, depending on its organic matter content;

- Asbestos containing materials (ACMs) and asbestos fibres potentially associated with the corrugated roofing on and within barn buildings on-site and made ground;
- Polychlorinated biphenyls (PCBs) associated with electrical substations;
- Miscellaneous inorganics (sulphate, nitrate, phosphate, ammoniacal nitrogen, acidic/alkaline pH) associated with any made ground and agricultural land from fertiliser application; and
- Pesticides, most likely from storage in farmyard areas, also potentially from diffuse application on agricultural fields.

6.3.2 The list above is based on information provided by the Environment Agency/NHBC/CIEH 'Guidance for the Safe Development of Housing on Land Affected by Contamination', together with the Department of the Environment Industry Profiles and in house experience from the investigation of similar sites. All of the above geo-chemical compounds will need to be considered as part of any further assessment.

6.4 Pathways

6.4.1 The principal pathways for contaminant migration are considered to be as follows:

- Dermal contact, ingestion or inhalation of potential contaminants in soils (including possible asbestos entrained in soil dusts), during construction works and future site operation;
- Leaching of contaminants, impact and migration via the underlying groundwater;
- Possible lateral migration of impacted groundwater to controlled waters receptors, i.e. groundwater abstractions, rivers, canals, drains and ponds (subject to current groundwater levels); and
- Surface water run-off and/or direct percolation from surface, or migration via site drains.

6.5 Receptors

6.5.1 The principal receptors are considered to be as follows:

Human Health Receptors

- Site workers during future operation of the Site;
- General public on the Site using the Public Right of Way (PRoW), (assuming this remains following development);
- Neighbours in residential/commercial properties adjacent to the Site and general public in the areas adjacent the Site.

Controlled Water Receptors

- Groundwater (Principal and Secondary Aquifers);

- Abstraction wells at the former Waterhall public water supply source (southern extent of Sunnica West Site A).
- Surface Water (rivers, canals, drains and ponds).

Ecological Receptors:

- Chippenham Fen and Snailwell Poor's Fen (SSSI), Snailwell Meadow (SSSI), Blackland Rough (SSSI), Fenland (SAC) and Chippenham Fen (NNR).

Property Receptors:

- Farm buildings;
- PV foundations and cables;
- Utilities;
- Livestock; and
- Crops.

Mining/mineral sites:

- Mineral Safeguarding Areas for sand and gravel; and
- Site Specific Allocations for sand and gravel extractions (Extension to Worlington Quarry, Red Lodge (19) and Worlington Quarry, Red Lodge (20)).

6.5.2 Demolition/construction/maintenance workers involved in any ground and construction works are excluded from the list of potential receptors for this assessment as the methodology and assumptions presented for human health described in Section 6.1 do not consider the short-term, and typically high frequency of exposure for this receptor group. Short-term risks to construction workers are discussed further in Section 6.7.

6.6 Assessment of Plausible Contaminant Linkages

6.6.1 A risk assessment of the identified plausible contaminated linkages has been undertaken for the Site in line with current legislation. The assessment takes into consideration the sources of possible contaminant risks and the presence of any plausible pathways or receptors as outlined in the Environmental Protection Act 1990 (Part 2A).

6.6.2 A summary of the assessed risk is provided in Table 16B-18. The risk matrix assessment is based on guidance within R&D Publication 66 (NHBC and Environment Agency, 2008) and is included in Appendix 16B-D.

6.6.3 For the purpose of this risk assessment, the proposed use of the Site is based on the information presented in Appendix 16B-A.

Table 16B-18 Risk Evaluation of Potential Pollutant Linkages without Mitigation Measures

Source	Pathway	Receptor	Risk Evaluation			Justification
			Severity	Likelihood	Risk	
Hazards to Human Health						
Metal, inorganic and organic chemical contamination within the made ground (possibly including ACM) and shallow soils	Inhalation of contaminated soil dusts (including ACM fibres)	Site neighbours (residential/commercial)	Mild	Low	Low	Land uses in proximity to the Site comprise mainly agricultural, with limited areas of residential and commercial usage. Commercial areas represent a low sensitivity; residential areas are classified as a medium sensitivity.
	Ingestion, dermal contact, dust / vapour inhalation	Site workers	Mild	Low	Low	Complete pathways may be present but current information suggests a large scale source is unlikely. Further investigation is considered to be required to fully evaluate the risk and reduce uncertainty.
		Public site visitors on PRoW	Minor	Unlikely	Very Low	Complete pathways may be present but current information suggests a gross source is unlikely. Further investigation is considered to be required to fully evaluate the risk and reduce uncertainty.
Hazards to Controlled Waters						
Metal, inorganic and organic chemical contamination within the made ground and groundwater	Leaching of contaminants (if present) from overlying soils	Groundwater (Principal and Secondary Aquifers) and associated abstraction wells	Medium	Low	Moderate/Low	Complete pathways may be present but current information suggests a gross source is unlikely. Licensed abstractions are located on-site (including abstraction wells at the former Waterhall public water supply source) and the site is in a SPZ. Further investigation is considered to be required to fully evaluate the risk and reduce uncertainty.
	Lateral groundwater migration and discharge to surface water	Surface water (rivers, canals, drains and ponds)	Medium	Low	Moderate/Low	Shallow groundwater is potentially in hydraulic continuity with rivers, drains and ponds located on-site. The potential therefore exists for contaminated groundwater to discharge into the surface water features. Further investigation is considered to be required to further evaluate the risk and reduce uncertainty (the requirement for site investigation is expected to be secured through a requirement of the Development Consent Order).

Source	Pathway	Receptor	Risk Evaluation			Justification
			Severity	Likelihood	Risk	
Hazard to Ecological Receptors						
Metal, inorganic and organic chemical contamination within the made ground and groundwater. Introduced contaminants from construction such as fuels and oils.	Lateral groundwater migration and discharge to surface water Sedimentation and dust deposition Physical damage to habitat Increased human disturbance during construction	Ecological receptors Chippenham Fen and Snailwell Poor's Fen (SSSI), Snailwell Meadow (SSSI), Blackland Rough (SSSI), Fenland (SAC) and Chippenham Fen (NNR).	Medium	Likely	Moderate	Sunnica West Site B will be partially located within or adjacent to ecological receptors. The potential therefore exists for wildlife habitat loss, watercourse pollution, sedimentation and dust deposition.
Hazard to Properties						
Phytotoxic metals in soil (cadmium, copper, mercury, nickel and zinc) Ground gas Sulphate and hydrocarbons	Plant uptake of bio-available contamination in soils	Crops in fields/ grazing animals	Mild	Unlikely	Very Low	Small grazing animals such as sheep may be occasionally present within the Scheme after construction. The potential exists for ingestion of contaminated soil/plants in animals. However, studies[6] conducted in southwest and central England conclude that '*only a small proportion of these metals are taken up into the leaf material of pasture plants and that plant uptake would not seem to constitute a major pathway to grazing animals'*.
	Ground gas	Any on-site buildings such as the switchgear and control building; farm buildings	Minor	Low	Very Low	Complete pathways may be present but current information suggests a gross source is unlikely. Further investigation is considered to be required to fully evaluate the risk and reduce uncertainty (the requirement for site investigation is expected to be secured through a requirement of the Development Consent Order).
	Direct contact of ground with in-ground structures Permeation of hydrocarbons through plastic utility pipes	Concrete foundations, water supply pipes and other utilities	Minor	Low	Very Low	The potential exists for contaminants to come into direct contact with new foundations and utilities on-site, potentially pitting them at risk. Further investigation is considered to be required to further evaluate the risk and reduce uncertainty (the

[6] Terrestrial Ecosystem; ThorntonP. Abrahams 'Soil ingestion — a major pathway of heavy metals into livestock grazing contaminated land' https://www.sciencedirect.com/science/article/pii/S0048969783800266

Source	Pathway	Receptor	Risk Evaluation			Justification
			Severity	Likelihood	Risk	
						requirement for site investigation is expected to be secured through a requirement of the Development Consent Order).
Impact on mining/mineral sites						
Mining/mineral sites	Loss of resource	Mineral Safeguarding Areas for sand and gravel; Minerals Site Specific Allocations	Medium	Low	Moderate/Low	There will be a temporary sterilisation of the resource. However, the resource will not be lost permanently. The impact on Minerals Site Specific Allocations is assessed as very low, as these are not located on-site.

6.7 Risks to Construction / Maintenance Workers

6.7.1 There is a potential for disturbance of contaminated materials present within made ground during construction. Thus, workers may potentially be impacted by contaminated soils and dusts as well as shallow groundwater during the construction phase.

6.7.2 The UK human health risk assessment process focuses on long-term chronic health risks. An assessment of this type is not applicable to the potential risk to temporary site workers during demolition, construction or maintenance works which is typically of higher frequency and shorter duration. Prior to work commencing, a health and safety risk assessment should be carried out in accordance with current health and safety regulations and based on ground investigation findings. This assessment should cover potential risks to both site staff and the local population. Based on the findings of this risk assessment, appropriate mitigation measures should be implemented during the course of any temporary works.

6.7.3 This could include, for example, the following measures:

- Use of appropriate Personal Protective Equipment (PPE) for construction workers - including gloves and, where appropriate, dust masks, use of ground gas monitoring equipment and hygiene facilities; and
- Use of appropriate site control measures to minimise the migration of contaminated dusts and soils from the Site to adjacent areas.

6.8 Design Mitigation Measures

6.8.1 No detailed design plans are available at the time of writing. However, the following design mitigation measures are anticipated:

- Plant: all plant (i.e. inverters, transformers and switchgear) will be installed on concrete bases with suitable bunding where appropriate;
- Surface water drainage: the detailed operational drainage design will be carried out pre-construction with the objective of ensuring that drainage of the land to the present level is maintained. It will follow either the design of a new drainage system taking into account the proposed new infrastructure (access tracks, cable trenches, structure foundations) to be constructed, or, if during the construction of any of the infrastructure, there is any interruption to existing schemes of land drainage, then new sections of drainage will be constructed. The construction of new drainage systems will be done following the indications of the hydrological report that will be carried out in future phases of the project. Infiltration drainage design will be in accordance with BRE 365 and infrastructure will be placed at least 10m away from watercourses;
- Operational Activities: during the operational phase, on-site activity will be minimal and would be restricted principally to vegetation management, equipment maintenance and servicing, replacement of any

components that fail, and monitoring to ensure the continued effective operation of the Scheme. It is anticipated that there could be 10 to 20 visits per year with four wheel drive vehicles or transit vans. There will be no permanent staffing or on-site office.

- A Construction Environmental Management Plan (CEMP) will be provided prior to construction, with the aim of (amongst other things) reducing nuisance impacts from dust generation, soil removal and waste generation.

7. Desk Study Conclusions

7.1 Preliminary Risk Assessment Findings

7.1.1 AECOM was commissioned by Sunnica Ltd to undertake a Preliminary Environmental Risk Assessment to assess the land condition within the Scheme Boundary to identify potential environmental land quality liabilities and constraints prior to the Proposed Scheme.

7.1.2 **Current Site Description:** The land within the Scheme Boundary is currently occupied mainly by agricultural land, separated by local roads. The Scheme Boundary is surrounded by agricultural land, with mixed residential and commercial areas within 250m. A number of active and former quarries and active former landfills and are located within 250m.

7.1.3 **Proposed Redevelopment:** The Proposed Scheme will include four areas of solar generating panels and associated infrastructure, to be connected onto the national grid. It will also include the installation of on-site storage of electricity utilising lithium-ion batteries. The proposed areas of solar generating panels will be connected to the Burwell National Grid Substation to accommodate the additional electricity generation arising from the Proposed Scheme.

7.1.4 **Site History:** Historical maps indicate that the land within the Scheme Boundary has been mainly undeveloped land since the earliest available historical maps with contaminated sources limited to potential applications of pesticides and fertilizers for agricultural purposes. Potential sources of contamination have been identified locally on-site and in the surroundings, including active and former landfills, historical and current mining sites, former sewage works and current waste water treatment works, various industrial and commercial activities, farmlands, active and historical (dismantled) railway lines, and a number of infilled pits and ponds, scattered across the land within the Scheme Boundary, which may have been filled with a variety of (unlicensed) waste materials.

7.1.5 **Ground Conditions and Sensitivity:** The land within the Scheme Boundary is directly underlain by solid geology of the Chalk Formation, classified as a Principal Aquifer, locally overlaid by superficial deposits of the Alluvium, River Terrace Deposits, Lowestoft Formation and Blown Sand, classified as Secondary Aquifers.

7.1.6 The land within the Scheme Boundary is located within Source Protection Zones (SPZ) designated by the Environment Agency for the protection of potable water supply.

7.1.7 A number of rivers, drains and isolated ponds are also located within the study area.

7.1.8 There are identified areas of nationally designated ecological significance within 250m of the Scheme Boundary.

7.1.9 Fenland SAC, Chippenham Fen SSSI and Snailwell Poor's Fen SSSI are shown partially within Sunnica West Site B. These nature conservation sites are fed by chalk springs, and water levels are controlled by a series of ditches and dykes. They also support a diverse range of aquatic flora and fauna which may be susceptible to local changes in ground and surface flows.

7.1.10 A ground transmission gas pipeline crosses the Sunnica East Site B in a west-east direction and transects the cable route corridor for Grid Connection Route B north-west of Snailwell. This provides more of a physical or logistical constraint than a contamination issue.

7.1.11 **Environmental Risk:** This assessment has indicated that the potential contaminant linkages associated with the current use or Proposed Scheme are generally classified as Very low to Moderate/Low in the absence of mitigation/control measures and site specific geo-environmental ground investigation data.

7.1.12 Advice should be sort from Natural England and the Environment Agency with regard to Chippenham Fen SSSI and Snailwell Poor's Fen SSSI prior to carrying out any intrusive works.

7.1.13 A shallow site investigation should be undertaken prior to construction to characterise the chemical condition of the soil and groundwater. It is expected that the requirement for a shallow site investigation would be secured through a requirement of the development consent.

7.1.14 Mineral Safeguarding Areas for sand and gravel have been identified on-site. This would suggest a temporary sterilisation of the resource. However, the resource will not be lost permanently.

7.1.15 The information collected as part of this PRA suggests that there are no significant constraints with regards to contamination of soil and groundwater that would be a significant constraint to the development of the land. The active quarry adjacent south-east of the Sunnica East Site B and the area adjacent to the east of Sunnica West Site A (including an active quarry) are considered to present the greatest potential risk to land quality.

7.2 Recommendations

7.2.1 Intrusive site investigation is recommended to provide adequate geo-environmental data to evaluate soil and groundwater quality and refine the conceptual site model. It will also enable the identification of suitable mitigation measures (should they be required) so that unacceptable pollutant linkages do not exist on completion of the Scheme. The geo-environmental investigation should be designed with due consideration of the requirements of BS 10175:2011: +A2 2017: Investigation of Potentially Contaminated Sites – Codes of Practice (BSI). The requirement for an intrusive investigation is expected to be secured through a requirement of the Development Consent Order.

7.2.2 In summary, key objectives to be addressed by the investigation include:

- Confirmation of the ground and groundwater conditions;
- Validation of the geo-environmental conceptual site model; and
- Chemical status of made ground (if present), natural soils and groundwater for the purpose of risk assessment to human health and controlled waters, and for preliminary waste classification.

7.2.3 It is recommended that the ground investigation be designed in accordance with the UK Specification for Ground Investigation (2nd Edition). In brief, the outline scope of works is anticipated to include:

- Window sample boreholes to investigate shallow ground conditions;
- Machine and/or hand excavated trial pits;
- Installation of groundwater monitoring wells;
- Programme of groundwater (and potentially ground gas) monitoring; and
- Geo-environmental laboratory testing.

7.2.4 In order to deliver project efficiency, it is recommended that the geo-environmental investigation expected to be carried out post-consent will be combined with intrusive geotechnical testing that is likely to be required to inform design of foundations for the Proposed Scheme.

8. References

Ref 16B-1 British Standards Institution (2011) BS 10175:2011 + A2:2017 Investigation of potentially contaminated sites – Code of practice. London, BSI.

Ref 16B-2 Environment Agency, Contaminated Land Report (CLR11) Model Procedures for the Management of Land Contamination, 2004.

Ref 16B-3 DEFRA: Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, (April 2012).

Ref 16B-4 British Geological Survey (1993) Geology of Cambridge, sheet 188 and Bury St Edmunds, sheet 189 (England and Wales), 1:50,000.

Ref 16B-5 Groundsure Report (references 60589004_geo and 60589004_enviro, ordered 16th January 2019; reference GS-6137698, GS-6137699, GS-6137657, GS-6137658 ordered 1st July 2019, and reference GS-6311923_geo and GS-6311923_enviro ordered 16th September 2019).

Ref 16B-6 Department for Environment, Food, and Rural Affairs' Magic Map online application: http://magic.defra.gov.uk/magicmap.aspx. Accessed 16th July 2020.

Ref 16B-7 British Geological Survey (BGS) GeoIndex Onshore online geological mapping.

Ref 16B-8 Gov.uk long term flood risk information: https://flood-warning-information.service.gov.uk/long-term-flood-risk/map. Accessed 16th July 2020.

Ref 16B-9 Cambridgeshire and Peterborough Minerals and Waste Development Plan: https://ccc-live.storage.googleapis.com/upload/www.cambridgeshire.gov.uk/business/planning-and-development/Proposals_Map_C_MSA_Maps_017.pdf?inline=true. Accessed 16th July 2020.

Ref 16B-10 Suffolk Minerals and Waste Development Scheme: https://www.suffolk.gov.uk/assets/planning-waste-and-environment/Minerals-and-Waste-Policy/SMWLP-Pre-submission-Consultation-Document/SMWLP-Development-Scheme-2018.pdf. Accessed 16th July 2020.

Ref 16B-11 Public Health England: https://www.ukradon.org/information/ukmaps. Accessed 17th July 2020.

Ref 16B-12 Zetica (n.d.) Regional Unexploded Bomb Risk, Zetica.

Ref 16B-13 Suffolk County Council: https://www.suffolk.gov.uk/assets/planning-waste-and-environment/Minerals-and-Waste-Policy/Minerals-Specific-Site-Allocation-Development-Plan-Site-19-Worlington-Quarry.pdf. Accessed 16th July 2020.

Ref 16B-14 Suffolk County Council: https://www.suffolk.gov.uk/assets/planning-waste-and-environment/Minerals-and-Waste-Policy/Minerals-Specific-Site-Allocation-Development-Plan-Site-20-Worlington-Quarry.pdf. Accessed 16th July 2020.

Appendix 16B-A Figures and Site Walkover Photographs

A.1 Figure 1 – Site Plan

A.2 Figure 2 – Site Walkover Photograph Plan

A.3 Site Walkover Photographs

A.4 Figure 3 – Historical Potentially Contaminative Land Uses/Sources

560000 565000 570000

275000

270000

265000

Sunnica East Site A

Sunnica East Site B

Sunnica West Site B

Sunnica West Site A

0 1,000 2,000 3,000 4,000m

N

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Red Line Boundary
- Not Included in Red Line
- Public Highway within Scheme

NOTE:
Public highways run through the Sunnica East Site, which are not part of the site boundary. These have been digitised based on the 1:1250 scale OS Mastermap.

Purpose of Issue
PEIR

Client
SUNNICA LTD

Project Title
sunnica energy farm

Drawing Title
FIGURE 1
RED LINE BOUNDARY

Drawn	Checked	Approved	Date
AD	KB	NC	20/07/2020

AECOM Internal Project No.	Scale @ A3
60589004	1:50,000

AECOM
Unit 1 Wellbrook Court,
Girton,
Cambridge, CB3 0NA
United Kingdom
Telephone (01223) 488000
www.aecom.com

Drawing Number	Rev
60589004_PEIR_GC_001	0

File Name:C:\Users\Anna.Diliello\AECOM Directory\Sunnica Energy Farm - GIS - General\Layout\PEIR\Chapter_14_OtherEnvironmentalTopics\200720_SunnicaEnergyFarm_Figure14-1_RedLineBoundary.mxd

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Red Line Boundary
- Not Included in Red Line
- Public Highway within Scheme
- Approximate Photo Location

Purpose of Issue
PEIR

Client
SUNNICA LTD

Project Title
sunnica energy farm

Drawing Title
FIGURE 2
APPROXIMATE
PHOTO LOCATIONS

Drawn	Checked	Approved	Date
AD	KB	NC	20/07/2020

AECOM Internal Project No.	Scale @ A3
60589004	1:40,000

AECOM
Midpoint
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.aecom.com

Drawing Number
60589004_PEIR_GC_002

Rev
00

500 0 500 1,000 1,500 2,000 m

File Name:C:\Users\Anna.Dilieto\AECOM Directory\Sunnica Energy Farm - GIS - General\Layout\PEIR\Chapter_14_OtherEnvironmentalTopics\200720_SunnicaEnergyFarm_Figure14-2_PhotoLocations.mxd

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 35.85 **Longitude:** 0: 30; 41.35 **Altitude:** 10.59m	**Project No.** 60589004

Photo No. 1	**Date:** 15/01/19

Direction Photo Taken:

South-west

Description:

View of Sunnica East site B from the Golf Link Road (northern boundary).

Photo No. 1a	**Date:** 15/01/19

Direction Photo Taken:

West

Description:

View of Sunnica East Site B from the Golf Link Road (northern boundary).

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 41.84 **Longitude:** 0: 30; 41.35 **Altitude:** 10.59m	**Project No.** 60589004

Photo No. **2**	**Date:** 15/01/19
Direction Photo Taken: South-west	
Description: Flat agricultural land within the Sunnica East Site B boundary.	

Photo No. **2a**	**Date:** 15/01/19
Direction Photo Taken: West	
Description: Flat agricultural land within the Sunnica East Site B boundary.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 41.24 **Longitude:** 0: 29; 51.3 **Altitude:** 12.05m	**Project No.** 60589004

Photo No. 3	**Date:** 15/01/19

Direction Photo Taken:

North-west

Description:

Gas sub-station (www.safegas.it)

Photo No. 3a	**Date:** 15/01/19

Direction Photo Taken:

East

Description:

Gas sub-station signage. (www.safegas.it)

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 40.59 **Longitude:** 0: 29; 50.15 **Altitude:** 12.29m	**Project No.** 60589004

Photo No. 4	**Date:** 15/01/19
Direction Photo Taken: South	
Description: Gas sub-station with the Sunnica East Site B boundary (tree line). (www.safegas.it)	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 27.41 **Longitude:** 0: 29; 49.4 **Altitude:** 14.29m	**Project No.** 60589004

Photo No. 5	**Date:** 15/01/19
Direction Photo Taken: South-west	
Description: 'Yara' AST on farmland within the Sunnica East Site B boundary. Thought to be for liquid fertilisers.	

Photo No. 5a	Date: 15/01/19
Direction Photo Taken: East	
Description: 'Yara' AST on farmland within the Sunnica East Site B boundary. Thought to be for liquid fertilisers.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 27.63 **Longitude:** 0: 29; 40.10 **Altitude:** 12.81m	**Project No.** 60589004

Photo No. 6	Date: 15/01/19
Direction Photo Taken: South-west	
Description: Fencing on Sunnica East Site B	

Photo No. 6a	Date: 15/01/19
Direction Photo Taken: South	
Description: Fencing on Sunnica East Site B.	

Photo No. 6b	Date: 15/01/19
Direction Photo Taken: South-east	
Description: Fencing on Sunnica East Site B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 27.63 **Longitude:** 0: 29; 35.2 **Altitude:** 14.29m	**Project No.** 60589004

Photo No. 7	**Date:** 15/01/19

Direction Photo Taken:

South

Description:

Track through the Sunnica East farm land running east to west.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 26.06 **Longitude:** 0: 29; 35.3 **Altitude:** 14.29m	**Project No.** 60589004

Photo No. 8	**Date:** 15/01/19

Direction Photo Taken:

South-west

Description:

Flat agricultural fields within the Sunnica East Site B boundary.

Photo No. 8a	Date: 15/01/19
Direction Photo Taken: South	
Description: Flat agricultural fields with concrete track running from north to south within the Sunnica East Site B boundary.	

Photo No. 8b	Date: 15/01/19
Direction Photo Taken: East	
Description: Agricultural fields within the Sunnica East Site B boundary.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 13.58 **Longitude:** 0; 29; 50.80 **Altitude:** 22.77m	**Project No.** 60589004

Photo No. 9	**Date:** 15/01/19
Direction Photo Taken: South-east	
Description: Elevated made ground (bunding) adjacent to the Solar Farm.	

Photo No. 9a	**Date:** 15/01/19
Direction Photo Taken: West	
Description: Elevated made ground (bunding) with view to the west.	

Photo No. 9b	Date: 15/01/19
Direction Photo Taken: South-west	
Description: Elevated made ground (bunding) with view to the south-west.	

Photo No. 9c	Date: 15/01/19
Direction Photo Taken: North	
Description: Elevated made ground (bunding) with view to the north.	

Photo No. 9d	Date: 15/01/19
Direction Photo Taken: South	
Description: Elevated made ground (bunding) with view of the farm site.	

Photo No. 9e	Date: 15/01/19
Direction Photo Taken: East	
Description: Elevated made ground (bunding), picture showing gradient.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd	**Site Location: Sunnica East** **Latitude:** 52; 19; 28.14 **Longitude:** 0; 28; 50.88 **Altitude:** 17.77m	**Project No.** 60589004

Photo No. **10**	**Date:** 15/01/19
Direction Photo Taken: South-east	
Description: Vehicle Dismantling site.	

Photo No. **10a**	**Date:** 15/01/19
Direction Photo Taken: South-west	
Description: Vehicle Dismantlers. Potential for hydrocarbon contaminated ground.	

Photo No. 10b	Date: 15/01/19
Direction Photo Taken: West	
Description: Vehicle Dismantlers. Potential for hydrocarbon contaminated ground.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 18; 19.10 **Longitude:** 0: 28; 40.72 **Altitude:** 11.76m	**Project No.** 60589004

Photo No. 11	Date: 15/01/19
Direction Photo Taken: South east	
Description: End of Bridge End Road (formerly a garage) leading onto PRoW.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 18; 19.10 **Longitude:** 0: 28; 40.72 **Altitude:** 11.76m	**Project No.** 60589004

Photo No. **12**	**Date:** 15/01/19
Direction Photo Taken: North-west	
Description: River Kennett (presence of unidentified cloudy sheen on the water surface).	

Photo No. **12a**	**Date:** 15/01/19
Direction Photo Taken: West	
Description: River Kennett (dry) route running under the A11.	

Photo No. 12b	Date: 15/01/19
Direction Photo Taken: North	
Description: Water overflow pipe discharging into the River Kennett.	

Photo No. 12c	Date: 15/01/19
Direction Photo Taken: South-east	
Description: River Kennett (dry).	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 18; 8.54 **Longitude:** 0: 28; 30.39 **Altitude:** 16.28m	**Project No.** 60589004

Photo No. **13**	**Date:** 15/01/19
Direction Photo Taken: South	
Description: Reservoir east of the cable route and south east of the Sunnica East Site B.	

Photo No. **13a**	**Date:** 15/01/19
Direction Photo Taken: South-east	
Description: Reservoir to the south east of the Sunnica East Site B.	

Photo No. 13b	Date: 15/01/19
Direction Photo Taken: South-east	
Description: Reservoir to the south east of the Sunnica East Site B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 18; 4.63 **Longitude:** 0: 28; 0.51 **Altitude:** 19.68m	**Project No.** 60589004

Photo No. 14	Date: 15/01/19
Direction Photo Taken: South	
Description: Potentially infilled land (historic), with evidence of wood burning adjacent to the cable route.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 18; 0.83 **Longitude:** 0: 28; 19.21 **Altitude:** 7.42m	**Project No.** 60589004

Photo No. 15	**Date:** 15/01/19

Direction Photo Taken:

South-west

Description:

Agricultural machinery including a tanker (likely to be for slurry).

Photo No. 15a	**Date:** 15/01/19

Direction Photo Taken:

South-west

Description:

Agricultural machinery (off site) near cable route.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 4.58 **Longitude:** 0: 29; 18.01 **Altitude:** 11.46m	**Project No.** 60589004

Photo No. 16	**Date:** 15/01/19
Direction Photo Taken: West	
Description: Flat agricultural land. Water monitoring well present.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 19.14 **Longitude:** 0: 29; 15.71 **Altitude:** 13.28m	**Project No.** 60589004

Photo No. 17	**Date:** 15/01/19
Direction Photo Taken: South-West	
Description: Flat Agricultural land centre of the Sunnica East Site B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 30.81 **Longitude:** 0: 29; 11.34 **Altitude:** 10.23m	**Project No.** 60589004

Photo No. 18	**Date:** 15/01/19
Direction Photo Taken: North-east	
Description: Flat agricultural land, with some surface water puddles in the central part of Sunnica East Site B.	

Photo No. 18a	**Date:** 15/01/19
Direction Photo Taken: East	
Description: Flat agricultural land in the central part of Sunnica East Site B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 32.21 **Longitude:** 0: 29; 1.92 **Altitude:** 9.72m	**Project No.** 60589004

Photo No. **19**	**Date:** 15/01/19
Direction Photo Taken: South	
Description: Large pond in the central / north-eastern part of the site. (possibly groundwater fed)	

Photo No. **19a**	**Date:** 15/01/19
Direction Photo Taken: South	
Description: Large pond in the central / north-eastern part of the site.	

Photo No. 19b	Date: 15/01/19

Direction Photo Taken:

South

Description:

Large pond in the central / north-eastern part of the Site.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	Site Location: Sunnica East **Latitude:** 52; 19; 31.99 **Longitude:** 0: 29; 0.85 **Altitude:** 9.35m	**Project No.** 60589004

Photo No. 20	Date: 15/01/19

Direction Photo Taken:

East

Description:

Possible groundwater abstraction point adjacent to large pond (potentially for irrigation).

Photo No. 20a	Date: 15/01/19
Direction Photo Taken: East	
Description: Possible groundwater abstraction point adjacent to large pond.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 31.16 **Longitude:** 0: 29; 58.82 **Altitude:** 9.42m	**Project No.** 60589004

Photo No. 21	Date: 15/01/19
Direction Photo Taken: East	
Description: Possible groundwater abstraction point adjacent to large pond (Sign labeled '3').	

Photo No. 21a	Date: 15/01/2019
Direction Photo Taken: South-east	
Description: Possible groundwater abstraction point adjacent to large pond (Sign labeled '3').	

Photo No. 21b	Date: 15/01/2019
Direction Photo Taken: South-east	
Description: Possible groundwater abstraction point adjacent to large pond.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 30.87 **Longitude:** 0: 28; 58.75 **Altitude:** 9.42m	**Project No.** 60589004

Photo No. 22	**Date:** 15/01/19
Direction Photo Taken: South-West	
Description: Agricultural fields within Sunnica East Site B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 94; 16.87 **Longitude:** 0: 27; 25.36 **Altitude:** 9.40m	**Project No.** 60589004

Photo No. 23	**Date:** 15/01/19
Direction Photo Taken: West	
Description: Soil appears to be predominantly sand.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 15.14 **Longitude:** 0: 29; 2.43 **Altitude:** 11.21m	**Project No.** 60589004

Photo No. **24**	**Date:** 15/01/19
Direction Photo Taken: West	
Description: Groundwater monitoring well	

Photo No. **24a**	**Date:** 15/01/19
Direction Photo Taken: West	
Description: Groundwater monitoring well towards the south-east corner of the Sunnica East Site B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 19; 13.21 **Longitude:** 0: 29; 4.94 **Altitude:** 31.07m	**Project No.** 60589004

Photo No. **25**	**Date:** 15/01/19
Direction Photo Taken: South-west	
Description: Quarry works	

Photo No. **25a**	**Date:** 15/01/19
Direction Photo Taken: South-west	
Description: Quarry works	

Photo No. 25b	Date: 15/01/19
Direction Photo Taken: North-west	
Description: Beehives	

Photo No. 25c	Date: 10/01/19
Direction Photo Taken: North-west	
Description: Beehives next to bunding in south-east corner of Sunnica East Site B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 25.25 **Longitude:** 0; 27; 59.52 **Altitude:** 22.62m	**Project No.** 60589004

Photo No. 26	**Date:** 10/01/19
Direction Photo Taken: West	
Description: Entrance to Quarry Access is off the A11	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 26.49 **Longitude:** 0; 28; 1.17 **Altitude:** 22.12m	**Project No.** 60589004

Photo No. 27	**Date:** 10/01/19
Direction Photo Taken: North-west	
Description: WildTracks Outdoor Activity Park Bike/Motocross track	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 26.74 **Longitude:** 0; 28; 1.47 **Altitude:** 22.18m	**Project No.** 60589004

Photo No. 28	**Date:** 10/01/19

Direction Photo Taken:

South-west

Description:

WildTracks Outdoor Activity Park
Above Ground Storage Tanks of unknown content present on site

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 23.63 **Longitude:** 0; 27; 58.04 **Altitude:** 22.25m	**Project No.** 60589004

Photo No. 29	**Date:** 10/01/19

Direction Photo Taken:

South

Description:

Agricultural land adjacent to Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 23.62 **Longitude:** 0;27; 58.36 **Altitude:** 23.20m	**Project No.** 60589004

Photo No. 31	**Date:** 10/01/19
Direction Photo Taken: South-east	
Description: Agricultural land Looking over the Sunnica West Site A.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 7.69 **Longitude:** 0; 25; 13.46 **Altitude:** 24.66	**Project No.** 60589004

Photo No. 32	**Date:** 10/01/19
Direction Photo Taken: North-west	
Description: Agricultural land Looking at Grid Connection Route B, the cable route that will connect to the Sunnica West site from the North-west.	

Photo No. 32a	Date: 10/01/19
Direction Photo Taken: South-west	
Description: Photograph facing down Chippenham Road where Grid Connection Route B, the cable route will cross the road to connect to the Sunnica West site.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 51.13 **Longitude:** 0; 24; 48.19 **Altitude:** 36.79m	**Project No.** 60589004

Photo No. 33	Date: 10/01/19
Direction Photo Taken: South	
Description: Horse training ground adjacent to the west of the Sunnica West Site A.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 38.45 **Longitude:** 0; 27; 55.17 **Altitude:** 37.36m	**Project No.** 60589004

Photo No. **34**	**Date:** 10/01/19

Direction Photo Taken:

North-east

Description:

Agricultural/grazing land situated to the east of the Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 48.44 **Longitude:** 0; 24; 53.07 **Altitude:** 39.59m	**Project No.**

Photo No. **35**	**Date:** 10/01/19

Direction Photo Taken:

North-east

Description:

Agricultural/grazing land situated within the boundary of the Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 46.24 **Longitude:** 0; 24; 58.51 **Altitude:** 37.77m	**Project No.** 60589004

Photo No. **36**	**Date:** 10/01/19

Direction Photo Taken:

East

Description:

Agricultural/grazing land situated within the boundary of the Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 41.54 **Longitude:** 0; 25; 5.20 **Altitude:** 32.43m	**Project No.** 60589004

Photo No. **37**	**Date:** 10/01/19

Direction Photo Taken:
East

Description:

Agricultural/grazing land situated within the boundary of the Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 32.48 **Longitude:** 0;25; 15.11 **Altitude:** 23.66m	**Project No.** 60589004

Photo No. 38	**Date:** 10/01/19

Direction Photo Taken:

South-east

Description:

Track running adjacent to the Sunnica West Site A (to the left) and Horse training ground (to the right).

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 31.53 **Longitude:** 0;25; 17.13 **Altitude:** 23.60m	**Project No.** 60589004

Photo No. 39	**Date:** 10/01/19

Direction Photo Taken:

East

Description:

Agricultural/grazing land situated within the boundary of the Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 4.94 **Longitude:** 0; 26; 3.86 **Altitude:** 25.66m	**Project No.** 60589004

Photo No. 40	**Date:** 10/01/19

Direction Photo Taken:

North-west

Description:

Track running adjacent to the Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 6.70 **Longitude:** 0; 25; 53.44 **Altitude:** 20.56m	**Project No.** 60589004

Photo No. 41	**Date:** 10/01/19

Direction Photo Taken:

South-west

Description:

Track running adjacent to the Sunnica West Site A (to the left) and Horse training ground (to the right). Bridge over the A11 can be seen in the background.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 4.60 **Longitude:** 0; 25; 55.10 **Altitude:** 27.96m	**Project No.** 60589004

Photo No. 42	**Date:** 10/01/19
Direction Photo Taken: North-east	
Description: Parcel of land at the end of the track adjacent to the southern corner of the Sunnica West Site A.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 5.30 **Longitude:** 0; 25; 57.20 **Altitude:** 27.93m	**Project No.** 60589004

Photo No. 43	**Date:** 10/01/19
Direction Photo Taken: North	
Description: Photograph facing the Sunnica West Site A.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 2.36 **Longitude:** 0; 25; 51.96 **Altitude:** 22.55m	**Project No.** 60589004

Photo No. 44	**Date:** 10/01/19

Direction Photo Taken:

North-east

Description:

View from bridge over the A11 that runs adjacent to the Sunnica West Site A.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 6.63 **Longitude:** 0; 24; 31.31 **Altitude:**16.66	**Project No.** 60589004

Photo No. 45	**Date:** 10/01/19

Direction Photo Taken:

East

Description:

Agricultural field
Tree line in the background indicates where the Grid Connection Route B will potentially be situated.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 12.63 **Longitude:** 0; 24; 39.57 **Altitude:** 17.60m	**Project No.** 60589004

Photo No. **46**	**Date:** 10/01/19

Direction Photo Taken:

North-east

Description:

Photograph facing where the Grid Connection Route B will connect to the site.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 21.23 **Longitude:** 0; 24; 51.33 **Altitude:** 15.61m	**Project No.** 60589004

Photo No. **47**	**Date:** 10/01/19

Direction Photo Taken:

South east

Description:

Agricultural field, looking towards tree shelterbelt where Grid Connection Route B will potentially be situated.

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 23.67 **Longitude:** 0; 24; 54.52 **Altitude:** 15.19m	**Project No.** 60589004

Photo No. 48	**Date:** 10/01/19
Direction Photo Taken: North-east	
Description: Agricultural field where the Grid Connection Route B will potentially pass alongside tree shelterbelt.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 24.64 **Longitude:** 0; 24; 56.59 **Altitude:** 15.38m	**Project No.** 60589004

Photo No. 49	**Date:** 10/01/19
Direction Photo Taken: South-east	
Description: Agricultural field with tree shelterbelt situated where the Grid Connection Route B will potentially pass.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 15.57 **Longitude:** 0; 24; 43.08 **Altitude:** 17.66m	**Project No.** 60589004

Photo No. 50	**Date:** 10/01/19
Direction Photo Taken: South-east	
Description: View of agricultural land with manhole cover present. Possibility of infrastructure below.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 41.36 **Longitude:** 0; 18; 56.56 **Altitude:** 2.90m	**Project No.** 60589004

Photo No. 51	**Date:** 10/01/19
Direction Photo Taken: North	
Description: View of Burwell electrical substation	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 41.87 **Longitude:** 0; 18; 56.56 **Altitude:** 2.09m	**Project No.** 60589004

Photo No. 52	**Date:** 10/01/19
Direction Photo Taken: South	
Description: View stream running adjacent to Burwell.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 48.35 **Longitude:** 0; 19; 4.60 **Altitude:** 2.89m	**Project No.** 60589004

Photo No. 53	**Date:** 10/01/19
Direction Photo Taken: North-east	
Description: View of unknown road running adjacent (north-eastern side of the substation).	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 52.54 **Longitude:** 0; 18; 52.69 **Altitude:** 1.58m	**Project No.** 60589004

Photo No. 54	**Date:** 10/01/19
Direction Photo Taken: North	
Description: View looking down potential Grid Connection Route B to Burwell Substation.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 16; 56.58 **Longitude:** 0; 18; 45.16 **Altitude:** 0.89m	**Project No.** 60589004

Photo No. 55	**Date:** 10/01/19
Direction Photo Taken: South	
Description: View of Burwell electrical substation.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 34.73 **Longitude:** 0; 23; 29.19 **Altitude:** 15.00m	**Project No.** 60589004

Photo No. **56**	**Date:** 10/01/19
Direction Photo Taken: North-west	
Description: View of LGC Pharmaceutical company.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 17; 23.60 **Longitude:** 0; 23; 5.61 **Altitude:** 25.95m	**Project No.** 60589004

Photo No. **57**	**Date:** 10/01/19
Direction Photo Taken: West	
Description: View of agricultural fields to the south of the Grid Connection Route B.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 52; 33; 69.67 **Longitude:** 0: 42; 80.64 **Altitude:** 10.39m	**Project No.** 60589004

Photo No. 58	**Date:** 25/09/19
Direction Photo Taken: North-east	
Description: Barn at the north-western part of Sunnica East Site A. Potential for ACMS.	

Photo No. 58a	**Date:** 25/09/19
Direction Photo Taken: North-east	
Description: Barn at the north-western part of Sunnica East Site A. Potential for ACMS.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West** **Latitude:** 52; 27; 66.06 **Longitude:** 0: 44; 78.22 **Altitude:** 36.59m	**Project No.** 60589004

Photo No. **59**	**Date:** 25/09/19
Direction Photo Taken: North	
Description: Barn at the central part of Sunnica West Site A. Potential for ACMS.	

Photo No. **59a**	**Date:** 25/09/19
Direction Photo Taken: North	
Description: Barn at the central part of Sunnica West Site A. Potential for ACMS.	

AECOM

PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica East** **Latitude:** 53; 31; 03.60 **Longitude:** 0: 47; 05.65 **Altitude:** 12.10m	**Project No.** 60589004

Photo No. **60**	**Date:** 25/09/19
Direction Photo Taken: North-east	
Description: AST labelled 'FERT'	

Photo No. **60a**	**Date:** 25/09/19
Direction Photo Taken: North-east	
Description: A generator located adjacent to the above mentioned AST. Potential oil contamination on the surrounding ground.	

Photo No. 60b	Date: 25/09/19
Direction Photo Taken: North-east	
Description: A generator located adjacent to the above mentioned AST. Potential oil contamination on the surrounding ground.	

AECOM

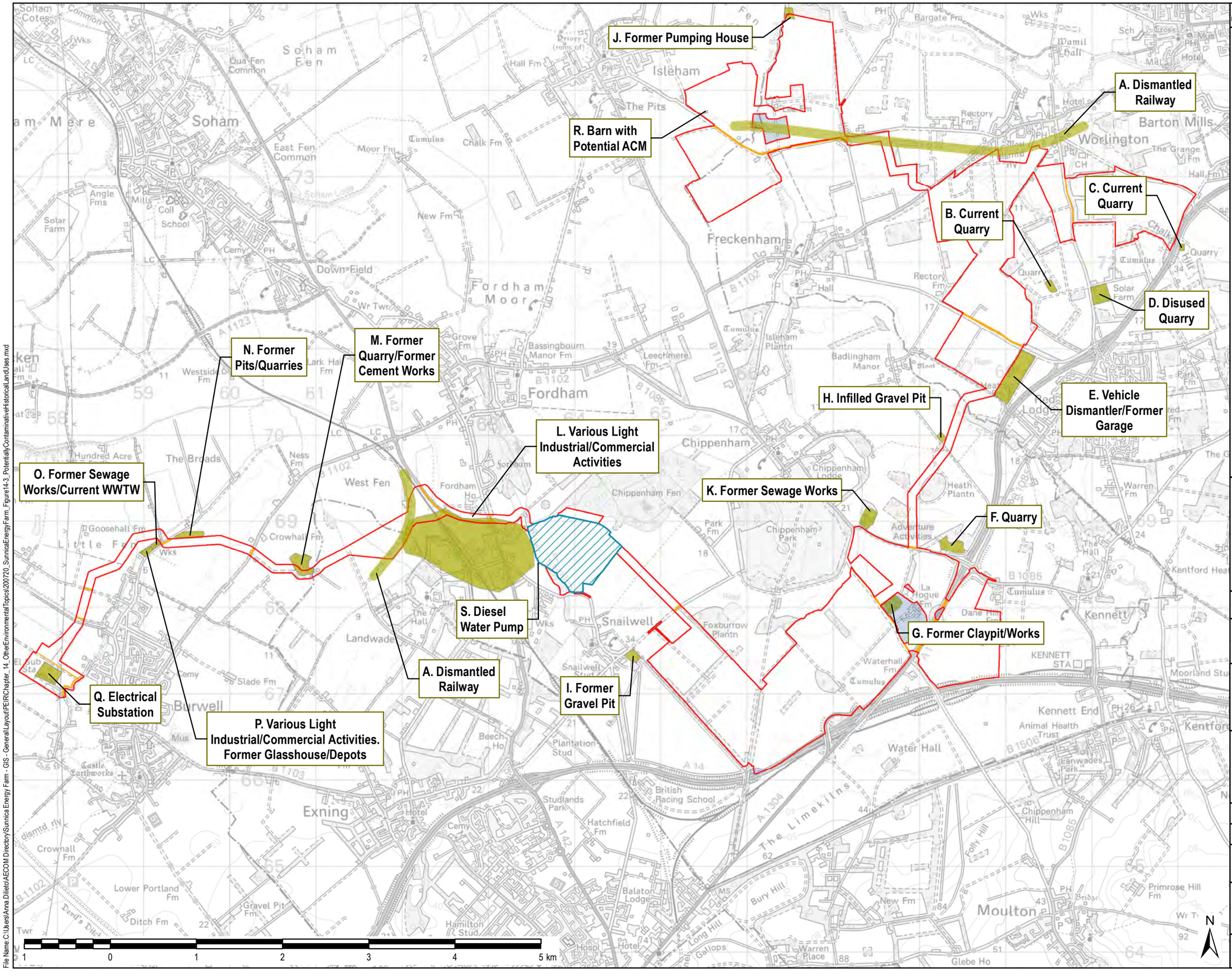
PHOTOGRAPHIC LOG

Client Name: Sunnica Ltd.	**Site Location: Sunnica West B** **Latitude:** 52; 28; 52.50 **Longitude:** 0: 40; 64.10 **Altitude:** 18.0m	**Project No.** 60589004

Photo No. 61	Date: 25/09/19
Direction Photo Taken: West	
Description: A diesel powered water pump, sitting in water next to/in the River Snail.	

Photo No. 61a	Date: 25/09/19
Direction Photo Taken: West	
Description: Diesel powered water pump, located partially in water.	

Photo No. 61b	Date: 25/09/19
Direction Photo Taken: West	
Description: Discarded fuel containers on the bank of the River Snail, in the proximity of the diesel powered water pump.	



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Red Line Boundary
- Not Included in Red Line
- Public Highway within Scheme
- Area Potentially Used During Construction
- Potentially Contaminative Land Uses (on-site/off-site)

Purpose of Issue: PEIR

Client: SUNNICA LTD

Project Title: sunnica energy farm

Drawing Title: FIGURE 4 POTENTIALLY CONTAMINATIVE LAND USES

Drawn	Checked	Approved	Date
AD	KB	NC	20/07/2020

AECOM Internal Project No.: 60589004

Scale @ A3: 1:40,000

AECOM
Midpoint
Alençon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.aecom.com

Drawing Number: 60589004_PEIR_GC_003

Rev: 00

File Name: C:\Users\Anna.Dilieto\AECOM Directory\Sunnica Energy Farm - GIS - General\Layout\PEIR\Chapter_14_OtherEnvironmentalTopics\200720_SunnicaEnergyFarm_Figure14-3_PotentiallyContaminativeHistoricalLandUses.mxd

Sub-Appendix B BGS Borehole Logs

Borehole Log

1:188 TL 66 NE 6571.6693

Report No.5808

WORKS	NEWMARKET BY-PASS EASTERN ROAD CONSTRUCTION UNIT		BOREHOLE OR PIT No. 180
SITE		CUT/FILL (m)	SHEET 1 OF 1
CONTRACTOR	SOIL MECHANICS LTD.		CHAINAGE
TYPES & DIAMETER OF BORING (mm)	S and A 200 mm to base		OFF-SET FROM CENTRE LINE (m)

BORING DATE & DEPTH (m)	BORING DEPTH OF CASING (m)	BORING DEPTH TO WATER (m)	SAMPLES DEPTH & TYPE	SAMPLES RESULT	DETAIL OF STRATA (20mm to 1m) LEGEND	DEPTH (m)	O.D.LEVEL (m)	DESCRIPTION OF STRATA		
			0.05 U	53		0.0	28.0	Brown silty sandy TOPSOIL with a little flint gravel		
			0.5 B 0.6 N	30		0.4	27.6			
			1.25 J					Medium dense brown slightly silty fine SAND with a little chalk and flint gravel and small cobbles		
			1.5 U	150		1.2	26.8			
3.9.71	NIL	(1330hrs) NIL	2.0 B					Very dense pale yellow brown clayey fine and medium SAND with a little flint gravel and a little chalk gravel becoming more frequent towards depth		
4.9.71		NIL (0900hrs)	2.1 N	57		2.7	25.3			
			2.8 J 3.0 U	65						
			3.5 B 3.6 N	24						
			4.25 J							
			4.5 U	60				Compact rubbly partly weathered CHALK, joints often infilled with remoulded chalk and fragments	IV	MIDDLE CHALK
			5.0 B 5.1 N	21						
			5.75 J 6.0 U							
			6.5 B 6.6 N	24						
4.9.71	NIL	NIL				7.0	21.0	END OF BOREHOLE		

NO STANDING WATER OBSERVED DURING BORING OPERATIONS

REMARKS:-

TL 66 NE 93 6742 6731 **Sounds Plantation, Chippenham** **Bloc**

Surface level (+25.8 m) +85 ft
Water not encountered
March 1979

Overburden
Mineral
Bedrock

LOG

Geological classification	Lithology	Thickness m	D
	Soil, brown	0.3	
Third Terrace	'Very clayey' sandy gravel Gravel: fine to coarse, subangular flint with some chalk and sandstone Sand: medium with fine and some coarse, quartz with some flint and chalk, pale brown	2.8	
Middle Chalk	Chalk, white	0.4+	

GRADING

Mean for deposit percentages			Depth below surface (m)	percentages							
				Fines	Sand			Gravel			
Fines	Sand	Gravel		-$\frac{1}{16}$	+$\frac{1}{16}$ -$\frac{1}{4}$	+$\frac{1}{4}$ -1	+1 -4	+4 -16	+16 -64	+64 mm	
23	57	20	0.3-3.1	23	16	36	5	13	7	0	

COMPOSITION

Depth below surface (m)	percentages by weight in gravel fraction						
	Flint		Chalk	Ironstone	Quartz/ Quartzite	Sandstone	Others
	Black/Brown	White					
0.3-3.1	13	74	8	0	trace	5	0

TL 66 NW 83 6387 6831 **Snailwell Fen, Snailwell**

Surface level (+12.3 m) +40 ft
Water struck at (+11.1 m) +36 ft
February 1979

Overburden
Mineral
Bedrock

LOG

Geological classification	Lithology	Thickness m
	Soil, brown	0.4
Alluvium	Silt, grey	0.8
First Terrace	Sandy gravel Gravel: fine to coarse with sporadic cobbles, subangular to subrounded, predominantly flint, with some well-rounded fine chalk pebbles and some quartz and quartzite Sand: medium with coarse and some fine, mainly quartz with some flint and chalk, brown	2.6
Lower Chalk	Chalk, white	0.2+

GRADING

Mean for deposit percentages			Depth below surface (m)	percentages						
				Fines	Sand			Gravel		
Fines	Sand	Gravel		$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	+1 -4	+4 -16	+16 -64	+64 m
5	54	41	1.2-2.2	6	6	13	10	21	42	2
			2.2-3.8	4	9	42	19	18	8	0
			Mean	5	8	31	15	19	21	1

COMPOSITION

Depth below surface (m)	percentages by weight in gravel fraction						
	Flint		Chalk	Ironstone	Quartz/ Quartzite	Sandstone	Others
	Black/Brown	White					
1.2-2.2	61	34	4	trace	1	0	trace
2.2-3.8	61	29	4	trace	4	0	2
Mean	61	32	4	trace	2	0	1

188/326 **Breach Farm, Burwell.** (Disused)

TL66/22

Surface +26. Shaft × 3. *Date unknown.*
R.W.L. +12¾. *Aug. 1960.*

LCk	...	...	22½	22½

RECORD OF WELL (SHAFT OR BORE)

TL66/22

For Survey use only

N.....

Licence No.....

EXACT SITE OF WELL

At Breach Farm TL 6043 6835

Town or Village Burwell

County Cambs. Six-inch quarter sheet 35 SE/E

For ..... State whether owner, tenant, builder, contractor, consultant, etc.:—

Address (if different from above).....

Level of ground surface above sea-level (O.D.) 26 ft. If well-top is not at ground level, state how far .. {above: / below;

SHAFT 22½ ft.; diameter 3 ft.; Full details of headings (dimensions and direction

BORE ..... ft.; diameter of bore: at top ..... ins.; at bottom ..... ins.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.).....

Water struck at depths of ..... ft. below well-to

TEST CONDITIONS

Rest level of water 13 '14 ft. ~~above~~ below well-top. Suction at ..... ft. Yield on ..... hours' / days' te

pumping at ..... galls. per ..... with depression to ..... ft. below well-top.

Recovery to rest-level in ..... mins. / hours Capacity of pump ..... g.p.h. Date of measurements Augu

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type ..... Motive power .....

Capacity ..... gallons per hour. Suction at ..... ft.

Amount pumped ..... galls. per day. Estimated consumption ..... galls. per wee

Well made by ..... Date of well Not known

Information from Visit

ADDITIONAL NOTES

ANALYSIS (please attach copy if available)

Chalk well, recently deepened and farm on mains supply. Water level in well similar to that in nearby disused chalk pit of cement works

Visited and sited AMB 8-60

Cambs. 35 SE/E.

DATA Bank

2,000 8/54 JC&S Gp689

Institute of Geological Sciences

RECORD OF SHAFT OR BOREHOLE

6-in or 1:10 000 Map Regis

TL 67 SE/1

Name and Number of Shaft or Borehole:

Ely-Ouse Bh 5

National Grid Refere

TL 6998 7249

For whom made Essex River Authority

Town or Village 2.25 km SW of Mildenhall *County* Suffolk

Exact site (reference to a fixed point on 1-in or 1:50 000 Map)

1-in or 1:50 000 New Series Map No.

189

Purpose for which made Water Transfer Tunnel

Ground level at shaft / bore *relative to O.D.* 14.2 *m. If not ground level give O.D. of beginning of* shaft / bore ____ *m.*

Made by Messrs Binnie & Partners *Date of sinking* ____

Information from ____ *Examined by* C.R. Bris

A.A. Morter & E.P. Smith

Specimen Numbers and Additional Notes

Geological Classification	Description of Strata	Thickness *metres*	
Lower Chalk	Core missing	5.18	
	Firm white, smooth chalk	0.13	
	Core missing	0.66	
	Firm white smooth chalk much disturbed	0.51	
	Engineering sample	0.05	
	Soft white chalk	0.30	
	Engineering sample	0.16	
	Soft white smooth chalk much disturbed by drilling and weathering	0.78	7
	Engineering sample	0.43	8
	Firm white chalk; below 8.61m becomes very disturbed (? more marly)	0.94	
	Engineering sample	0.05	
	Firm white smooth chalk, much disturbed down to 10.41m. Bottom 0.25m very hard.	1.48	

Institute of Geological Sciences

Name and Number of Shaft or Borehole:

Ely-Ouse Bh 5

6-in or 1:10 000 Map Registration No.

TL 67 SE/1

National Grid Reference
TL 6998 7249

Geological Classification	Description of Strata	Thickness *metres*	De *me*
	Brought Forward		
Lower Chalk	Engineering sample	0.38	
	Firm white smooth Chalk, below 11.23m very broken up and wet	1.19	
	Engineering sample	0.05	
	Firm white, slightly silty chalk with many very small shell fragments	0.46	
	Firm smooth unfossiliferous Chalk	1.50	
	Buff chalky silt	0.33	
	Off white silty unfossiliferous bioturbated Chalk	0.51	
	Engineering sample	0.05	
	Firm white smooth Chalk; echinoid fragments at 15.19m	0.63	
	Off white very rubbly, smooth unfossiliferous Chalk	0.99	
	Engineering sample	0.05	
	Off white, smooth, unfossiliferous, rubbly Chalk	0.49	
	Off white slightly silty and marly bioturbated, unfossiliferous very rubbly Chalk	0.58	
	Engineering sample	0.23	
	Off white slightly silty and marly bioturbated, unfossiliferous very rubbly Chalk.	0.31	
	Engineering sample	0.05	
	Firm white smooth Chalk	0.33	
	Pale grey silty and marly bioturbated unfossiliferous Chalk; below 19.10m becomes very churned up and puggy	1.01	
	Engineering sample	0.05	
	Pale grey silty and marly bioturbated unfossiliferous, puggy churned-up Chalk	0.92	
	Engineering sample	0.15	
	Pale grey silty and marly unfossiliferous puggy churned-up Chalk	0.41	
	Hard white gritty Chalk. Rhynchonellid at 21.64m	0.50	

IGS 1805 8000 12/76

Institute of Geological Sciences

Name and Number of Shaft or Borehole:

Ely-Ouse Bh 5

6-in or 1:10 000 Map Registration No.

TL 67SE/1

National Grid Reference

TL 6998 7249

Geological Classification	Description of Strata	Thickness *metres*	De *me*
	Brought Forward		
Tottenhoe Stone	Buff calcareous bioturbated silt. Rhynchonellid at 22.15m + small (8mm diam) brown phosphatic pebble. One small (8mm diam.) green-coated pebble at 22.25m	0.72	
	Engineering sample	0.05	
	Greyish buff marly bioturbated silt. Terebratulids at 22.66m and 23.06m	0.66	
	Off-white smooth chalk becoming churned-up and puggy down to	0.66	
	Engineering sample	0.05	
	Pale grey smooth, churned-up and puggy Chalk	1.47	
	Engineering sample	0.05	
	Pale grey slightly marly, churned-up and puggy Chalk	0.87	
	Off white, firm, but broken up fossiliferous Chalk	0.91	
	Engineering sample	0.05	
	Off white firm, sparsely fossiliferous Chalk	1.17	
	Engineering sample	0.25	
	Off white firm, sparsely fossiliferous Chalk, very rubbly 29.41-29.87m	1.43	
	Engineering sample	0.05	
	Firm, white smooth Chalk; terebratulid at 30m. Rubbly in lower 0.5m	0.71	
	Core missing - "possible cavity"	0.99	
	Greyish buff silty and marly Chalk, very rubbly. Many Inoceramus fragments	1.14	
	Engineering sample	0.05	
	Greyish buff silty and marly very rubbly Chalk. Ammonite at 33.53m, fragmentary Inoceramus. Very puggy (?more marly) in lowest 0.3m	0.47	
	Engineering sample	0.06	
	Buff very silty calcareous marl; large Inoceramus fragments. Oyster at 35.26m	0.86	

IGS 1805 3000 12/76

Institute of Geological Sciences

Name and Number of Shaft or Borehole:

Ely-Ouse Bh. 5

6-in or 1:10 000 Map Registration No.

TL 67 SE/1

National Grid Reference
TL 6998 7249

Geological Classification	Description of Strata	Thickness *metres*	De *me*
	Brought forward		
Lower Chalk	Firm off white gritty chalk with small brachiopods and oysters	0.33	
	Puggy churned-up off white chalk	0.28	
	Engineering sample	0.38	
	Firm off white gritty chalk	0.48	
	Off white slightly marly and silty chalk. Many Inoceramus fragments. Ammonite at 37.49m	0.66	
	Engineering sample	0.05	
	Off white silty and marly bioturbated chalk. Many Inoceramus fragments Large uncoiled ammonite at 38.02m. Other ammonites at 38.15m, 38.30m and 38.53m. (Schloenbachia), rynchonellid at 38.33m	0.87	
	Engineering sample	0.28	
	Off white slightly marly and silty chalk	0.17	
	Engineering sample	0.06	
	Off white slightly marly and silty chalk Ammonite (Schloenbachia) at 39.12m	0.10	
	Buff very silty marl. Inoceramus fragments. Rhynchonellid at 39.52m.	0.53	
	Off white to pale grey silty bioturbated marly chalk	0.48	
	Buff to pale grey marly, very silty, bioturbated chalk. Few fossils	0.22	
	Engineering sample	0.26	
	Hard off white shell fragmental bioturbated chalk. Ammonite at 42.55m	0.37	
	Light grey bioturbated silty marl	0.20	
	Engineering sample	0.05	
	Light grey silty marl. Ammonite? at 43.33m. Rhynchonellids at 43.48m, Inoceramus at 43.59m	0.31	

IGS 1805 3000 12/76

DATA ACQUISITION SHEET

LTB/D/510

NRA region: Anglian (Brampton) 189 TL67/51

File Number: TL 67/99,119,120,210,213 TL67 SE/8

Pump Well Identification:

NRA id No: TL 67/213

BGS (WL) No: TL 67/51

NGR: TL 689 727

Elevation:

Measuring Point: 11.08 m AOD.

Site Name: STP Morlock, Worlington.

Locality:

Well details:

depth of pumping well: 44.20m

diameter: 0.229m (18")

casing details: Slotted to 29.57mbgl.

☐ observation boreholes

number of obs bhs: Not analysed.

obs bh details:

Aquifer Details:

confined / unconfined If confined, confining layer:

Aquifer Geology	from	to	Aquifer Geology	from	to
pebbly sand	0	5m			
Chalk					

Tottenhoe Stone at approx 20m bgl.

Pumping Test Details:

date of test: 8/10 - 22/10/85

length of test: 14 days

RWL: 5.25m

PWL: 11.84m

pumping rate: 1370m³/d

TL 77 SW 27 **7006 7323** **Golf Course, Worlington**

Surface level 10.0 m (33 ft)
Water struck at 7.0 m
September 1980

Overburd
Mineral
Waste
Bedrock

LOG

Geological classification	Lithology	Thickness m
Soil	Sandy soil	0.4
River Terrace Deposits (Second Terrace)	'Very clayey' pebbly sand, low fines content in upper 0.6 m Gravel: fine and coarse, mainly subrounded chalk with subangular pale flint Sand: fine with medium, subrounded quartz with some subangular pale flint, traces of medium and coarse chalk; yellowish brown fines	2.1
	Very sandy clay, moderate brown, comprises 50% sand with scattered pebbles	0.5
Middle Chalk	Chalk, soft to firm	1.0+

GRADING

Mean for deposit percentages			Depth below surface (m)	Percentages						
				Fines	Sand			Gravel		
Fines	Sand	Gravel		-$\frac{1}{16}$	+$\frac{1}{16}$ -$\frac{1}{4}$	+$\frac{1}{4}$ -1	+1 -4	-4 -16	-16 -64	+64 m
27	65	8	0.4-1.0	27	40	36	3	7	7	0
			1.0-1.5	34	38	25	2	3	3	0
			1.5-2.5	36	38	20	2	2	2	0
			Mean	**27**	**37**	**26**	**2**	**4**	**4**	**0**

Sub-Appendix C Groundsure Report Extracts

(Note Groundsure sections ordered at different stages hence the different areas need combining to view the whole site

Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	290	40	113	158
1.2 Additional Information – Historical Tank Database	12	2	3	15
1.3 Additional Information – Historical Energy Features Database	18	0	2	34
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	3	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	2	0	7	8
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	311	37	54	127

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	4	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	5	0	2	0
2.1.3 Records of Red List Discharge Consents	0	0	0	1
2.1.4 Records of List 1 Dangerous Substances Inventory sites	1	0	0	3
2.1.5 Records of List 2 Dangerous Substances Inventory sites	6	0	15	1
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	6	0	1	3
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	11	0	0	0
2.1.8 Records of Licensed Discharge Consents	47	8	14	14
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	3
2.2 Records of COMAH and NIHHS sites	0	0	0	1
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	9	0	4	3
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	1	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	2	0	0	0	6	2
3.1.3 BGS/DoE Landfill Site Survey	2	0	0	0	0	1
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	3	2
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	2	5	0	3	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	9	0	2	6	16	10

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	49	7	32	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	2	0	0	0
4.4 National Grid Gas Transmission Pipelines	1	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	Identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	87	8	7	9	35	55
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	55	7	23	30	55	120
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	1	0	0	0	1	16
6.6 Source Protection Zones (within 500m of the study site)	5	0	2	3	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	22	1	#250GWV#	#500GWV#	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	Yes	Yes	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	722	82	464	630	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	High
7.4 Flood Defences within 250m of the study site	Identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	Identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	4	0	5	6	15	16
8.2 Records of National Nature Reserves (NNR)	1	0	0	0	0	3
8.3 Records of Special Areas of Conservation (SAC)	1	0	0	0	0	3
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	1	3
8.5 Records of Ramsar sites	1	0	0	0	0	3
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	1	1
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	3	0	0	0	1	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	8	0	0	0	5	1
8.14 Records of Green Belt land	0	0	0	0	0	0

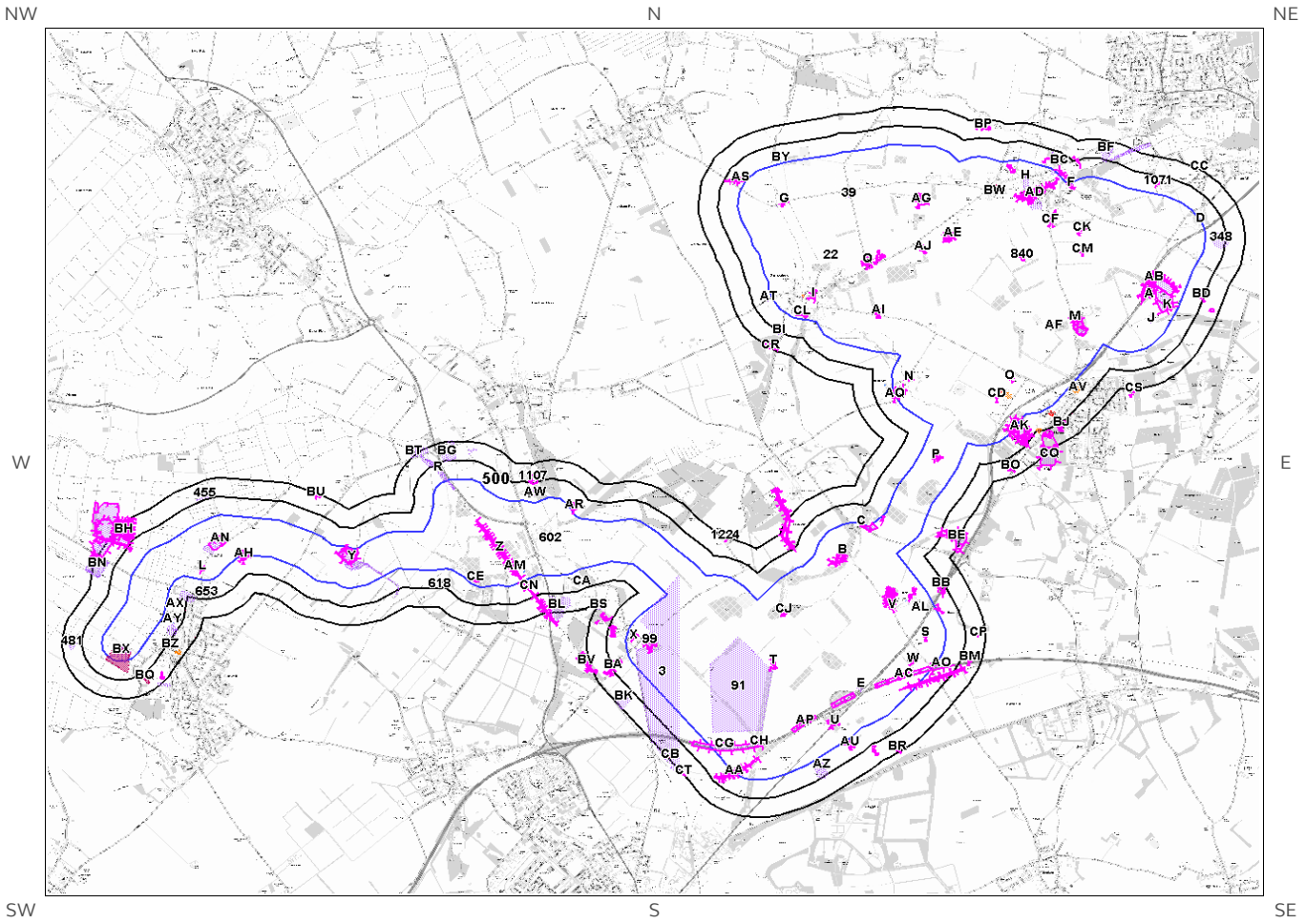
Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	High
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Very Low
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	High
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	Identified
10.3 Brine affected areas within 75m of the study site	None identified

1. Historical Land Use



Historical 1:10,000 and 1:10,560 scale mapping

Site Outline

Industrial Land Use

Potentially Infilled Land

250
500
Search Buffers (m)

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

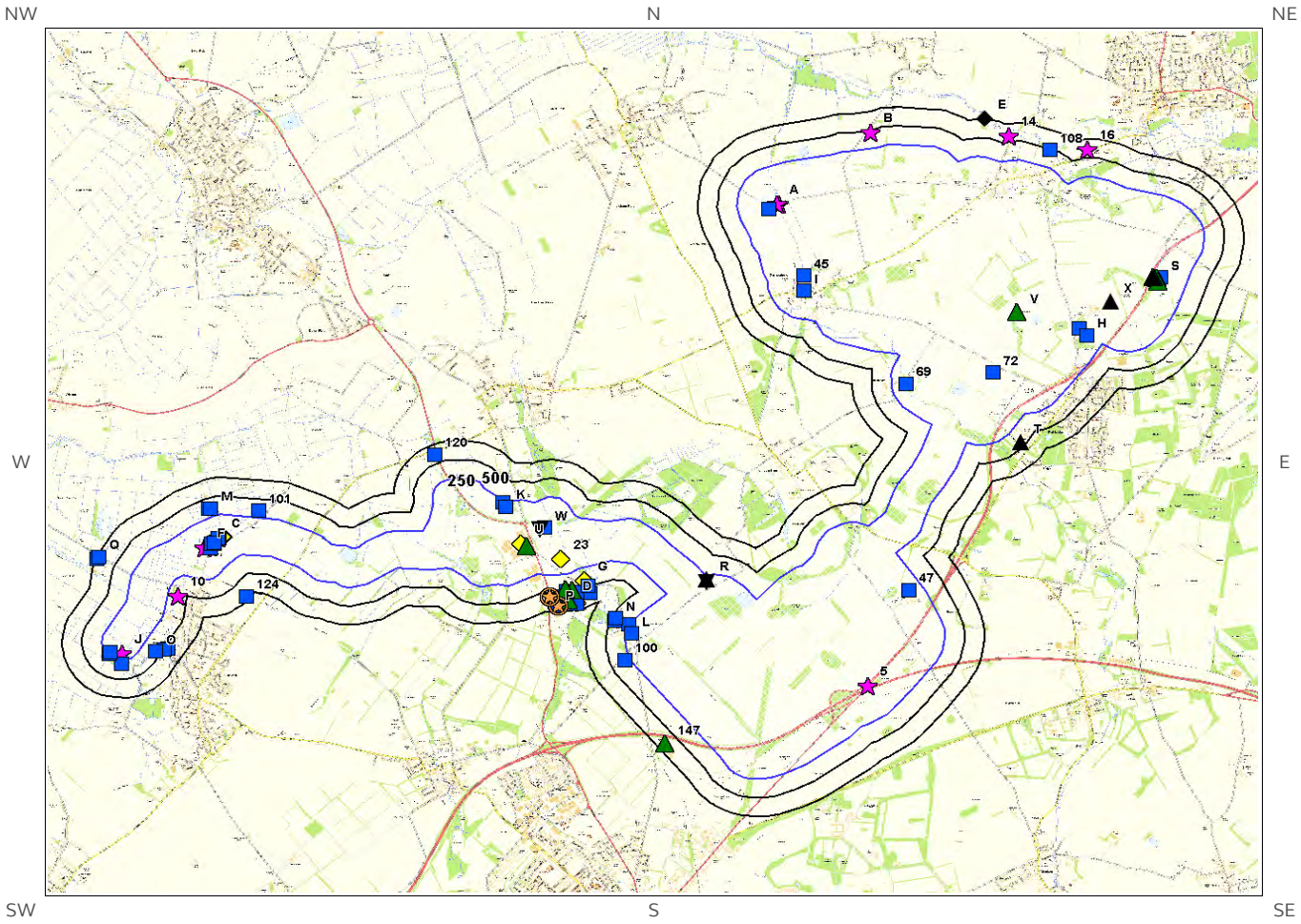
Petrol Stations

Historical military sites

Tanks

Garages

2. Environmental Permits, Incidents and Registers Map



Site Outline

250
500
Search Buffers (m)

Recorded Pollution Incident

Dangerous Substances (List 1)

Dangerous Substances (List 2)

Water Industry Referrals

Licenced Discharge Consents

Red List Discharge Consents

RAS 3 & 4 Authorisations

Part A(1) Authorised Processes and Historic IPC Authorisations

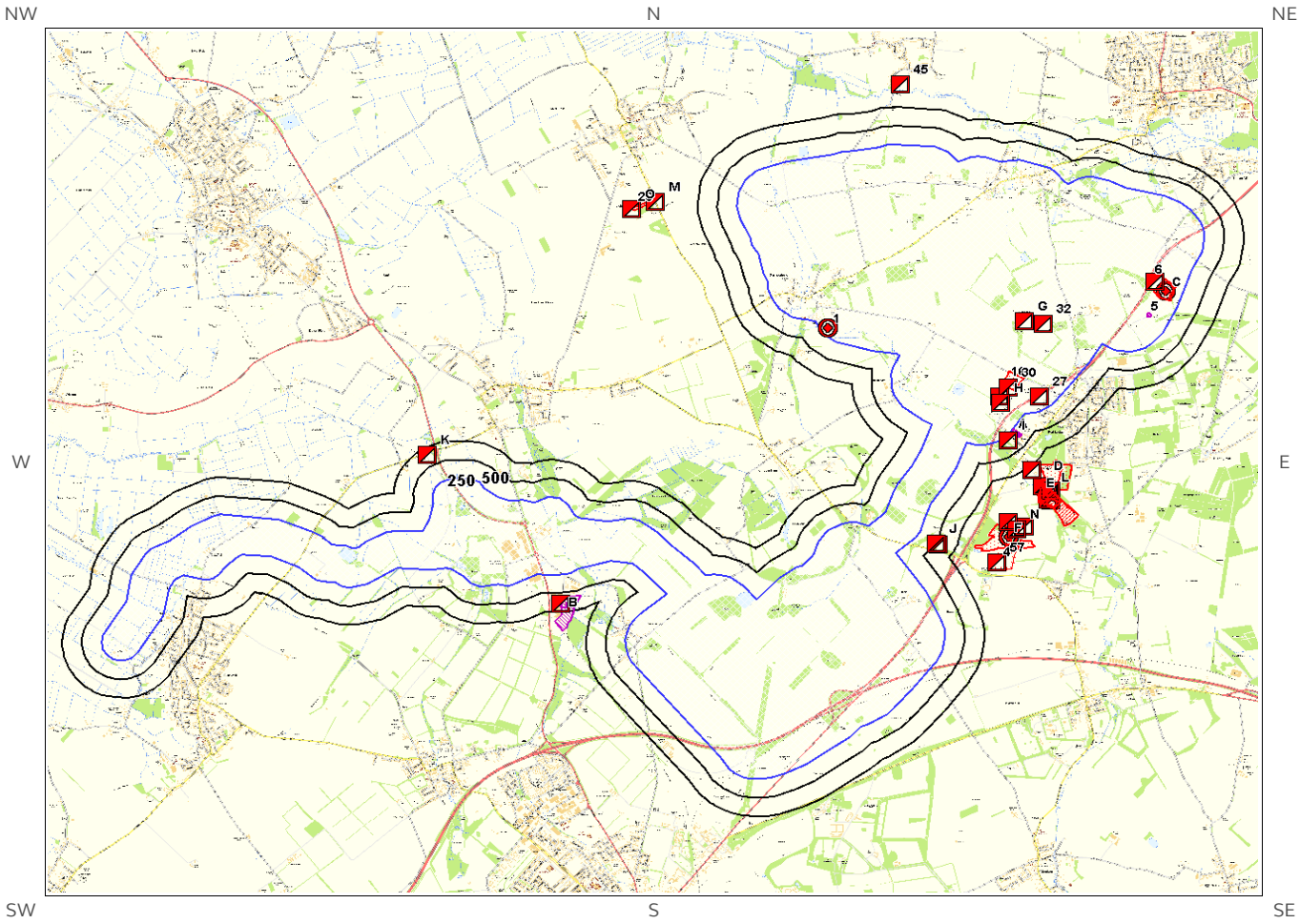
Part A(2) and Part B Authorised Processes

COMAH / NIHHS Sites

Sites Determined as Contaminated Land

Hazardous Substance Consents and Enforcements

3. Landfill and Other Waste Sites Map



Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

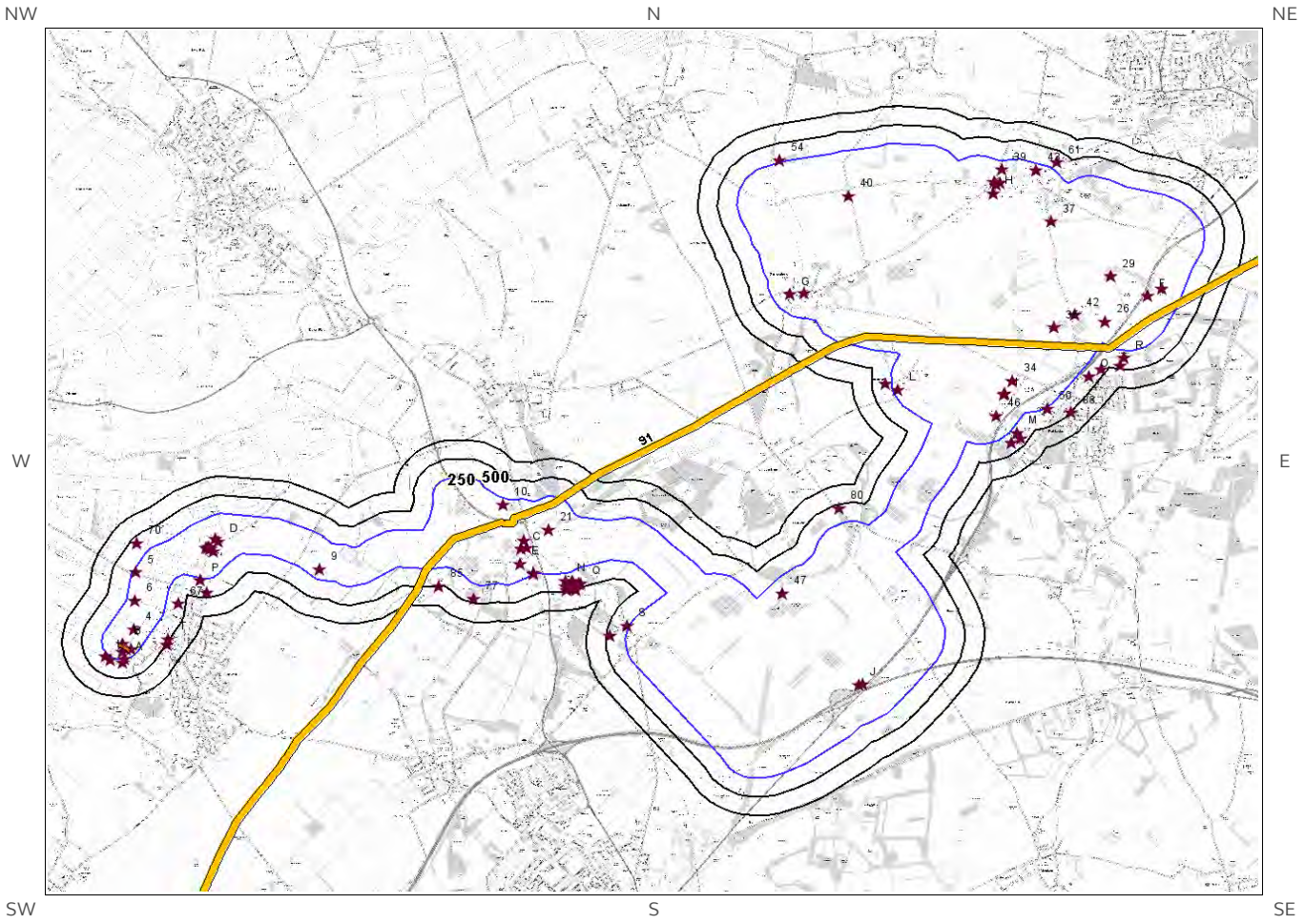
BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

4. Current Land Use Map



Site Outline

Search Buffers (m)

250

500

Current Industrial Sites

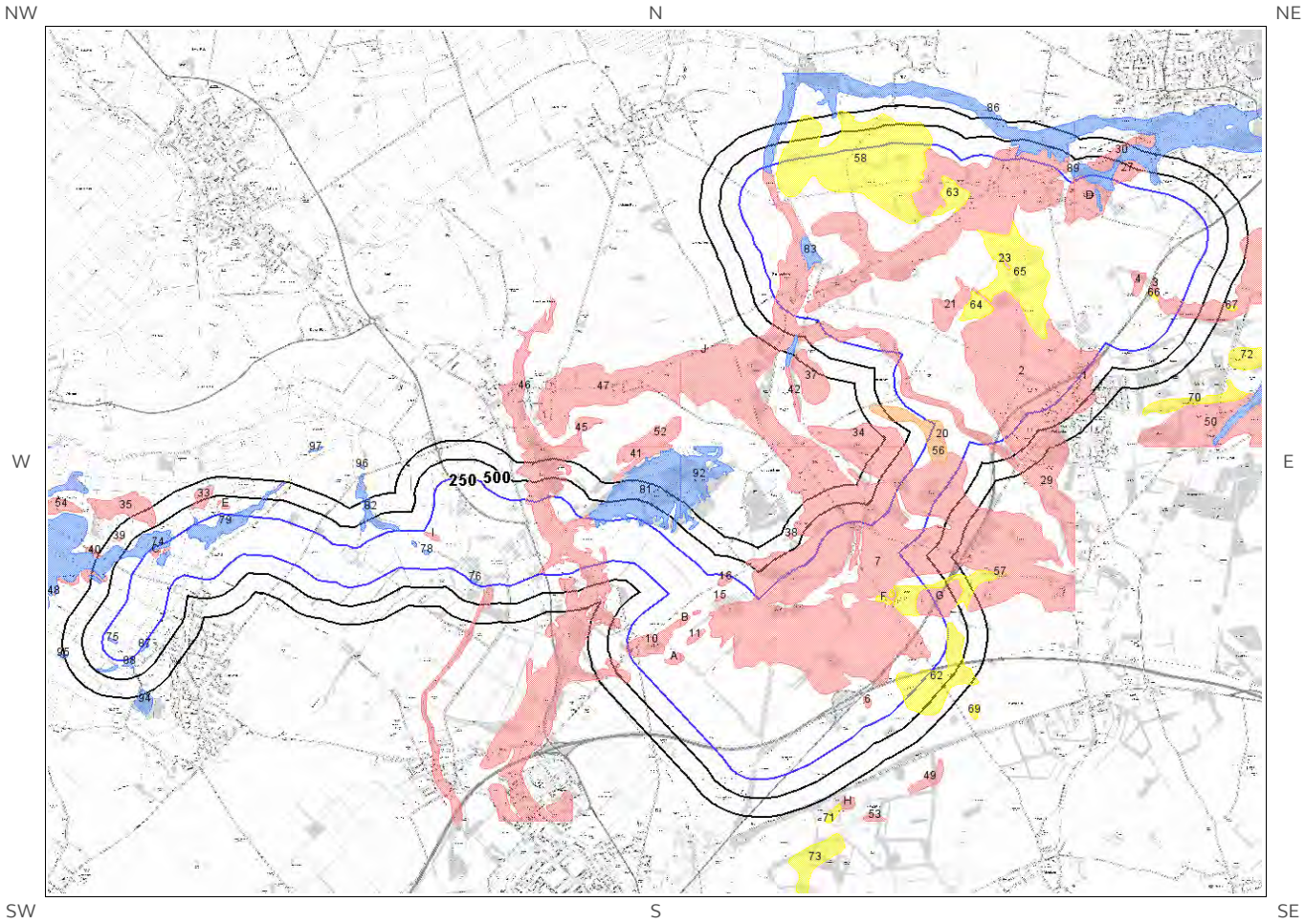
Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

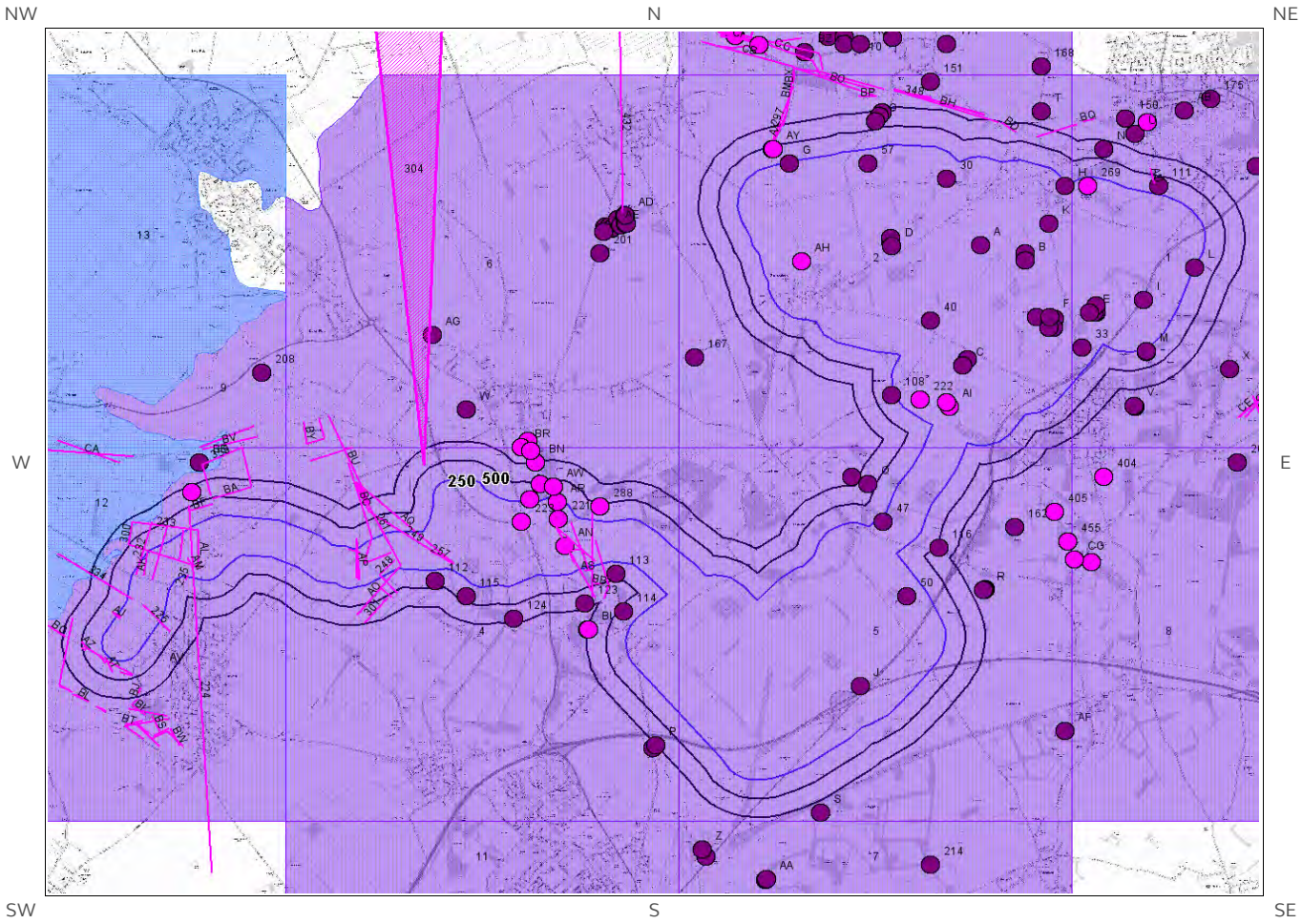
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

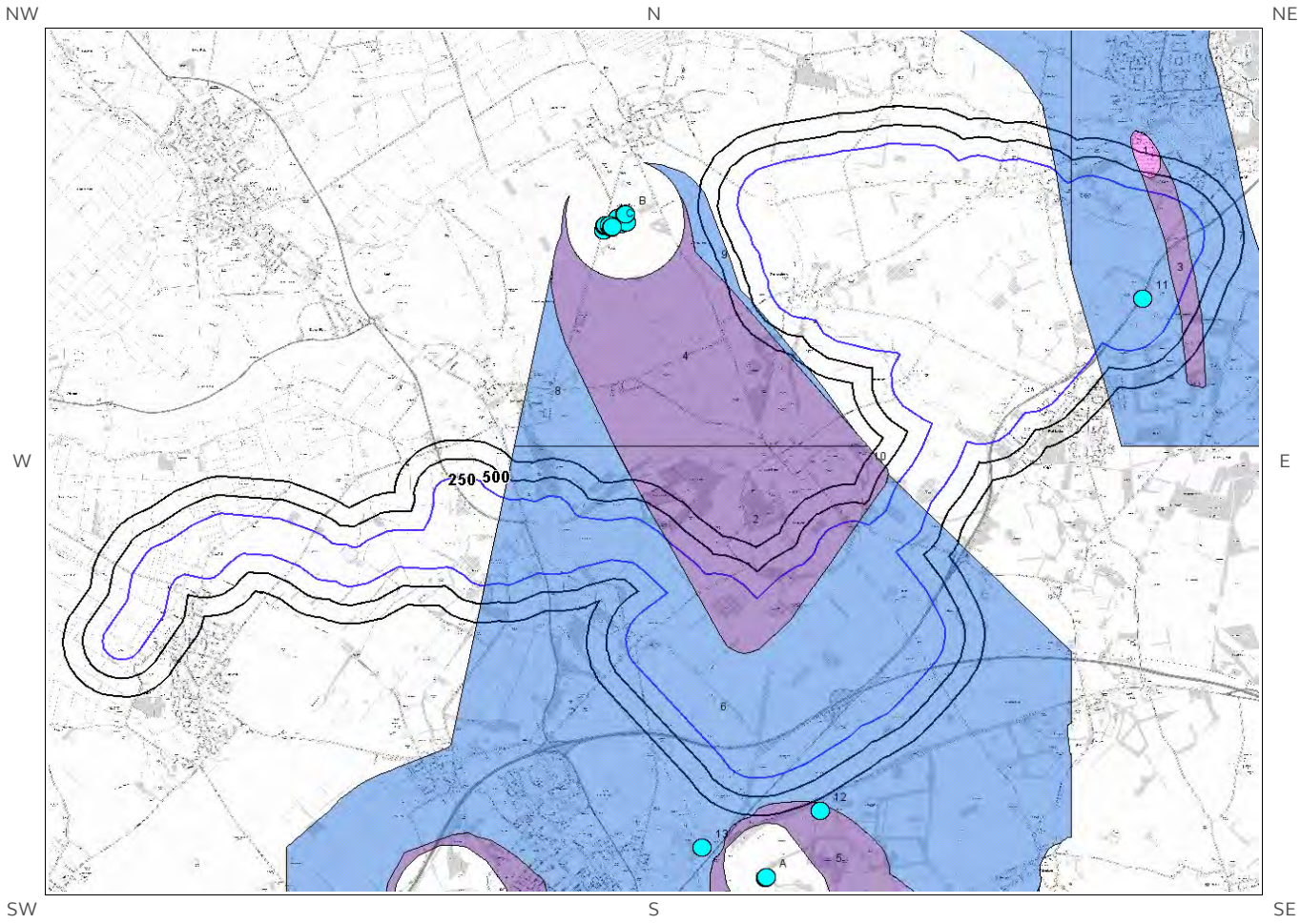
Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licences



Site Outline
250
500
Search Buffers (m)
Principal Aquifer
Secondary (A) Aquifer - Permeable Layers
Secondary (B) Aquifer - Lower Permeability Layers
Groundwater Abstraction Licence
Secondary Aquifer - Undifferentiated Layers
Unproductive
Unknown (lakes and landslip)
Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

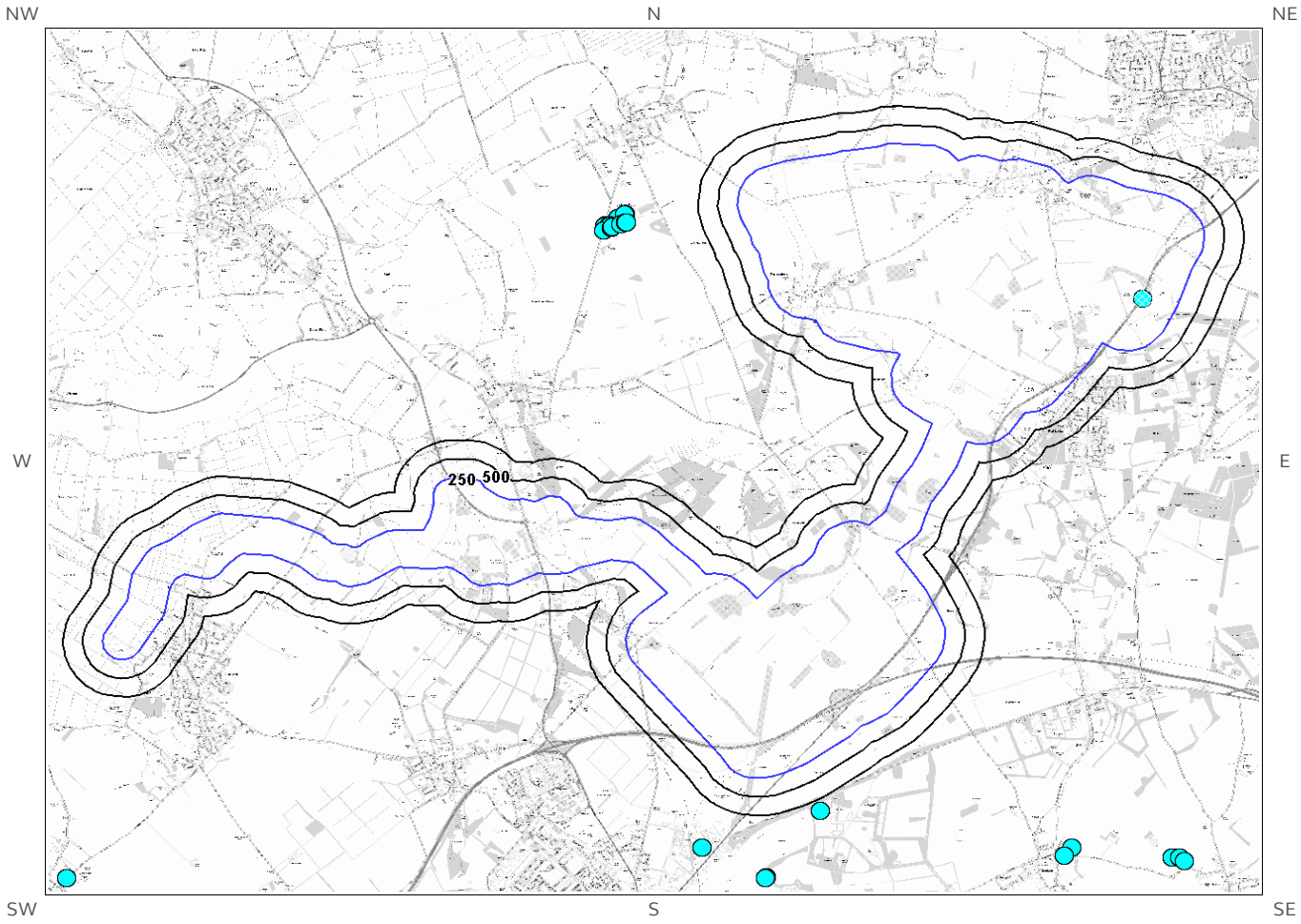
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Site Outline

250
500
Search Buffers (m)

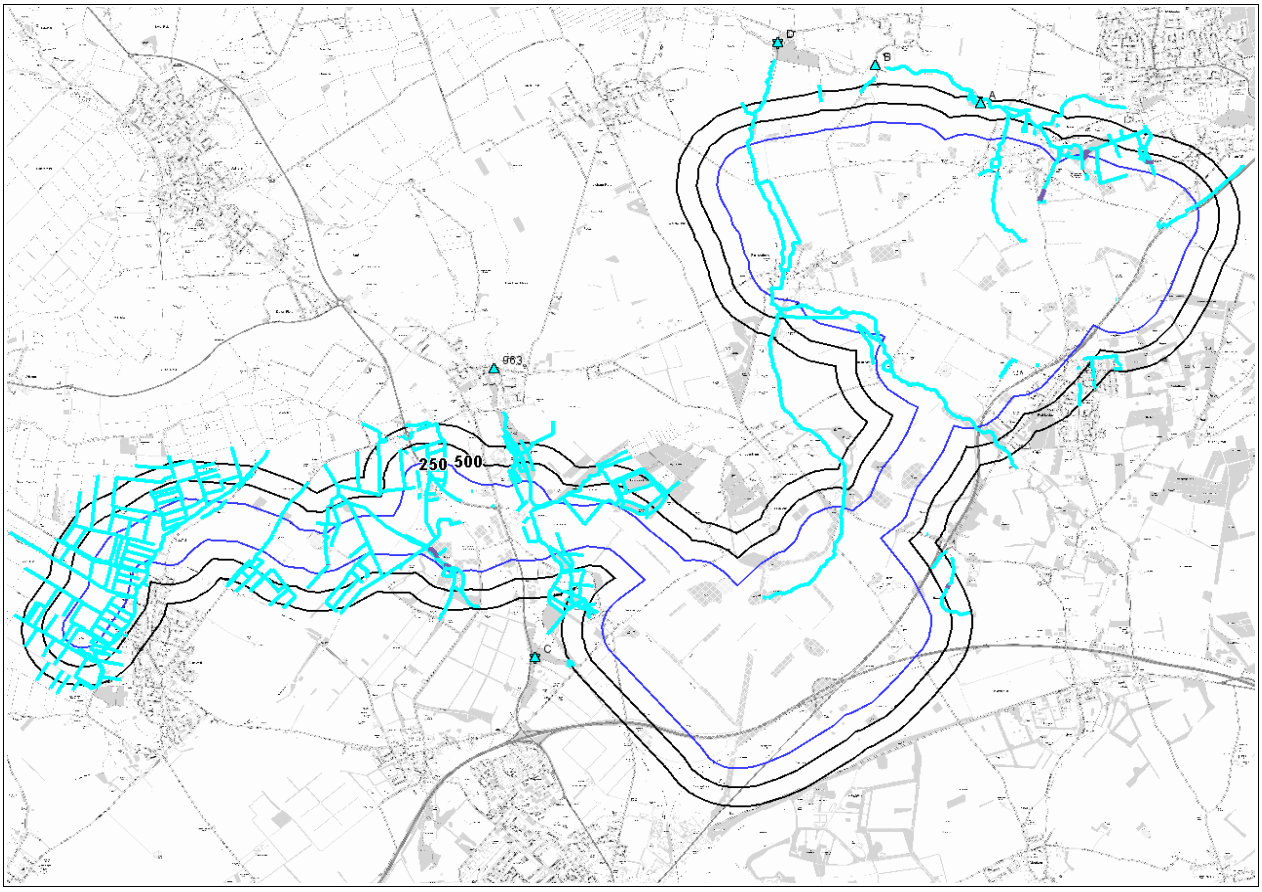
Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



Site Outline

250 500 Search Buffers (m)

Tidal River

Inland River

Underground or Elevated Tidal River

Underground or Elevated Inland River

Foreshore

General Quality Assessment: Chemistry

Canal

Underground or Elevated Canal

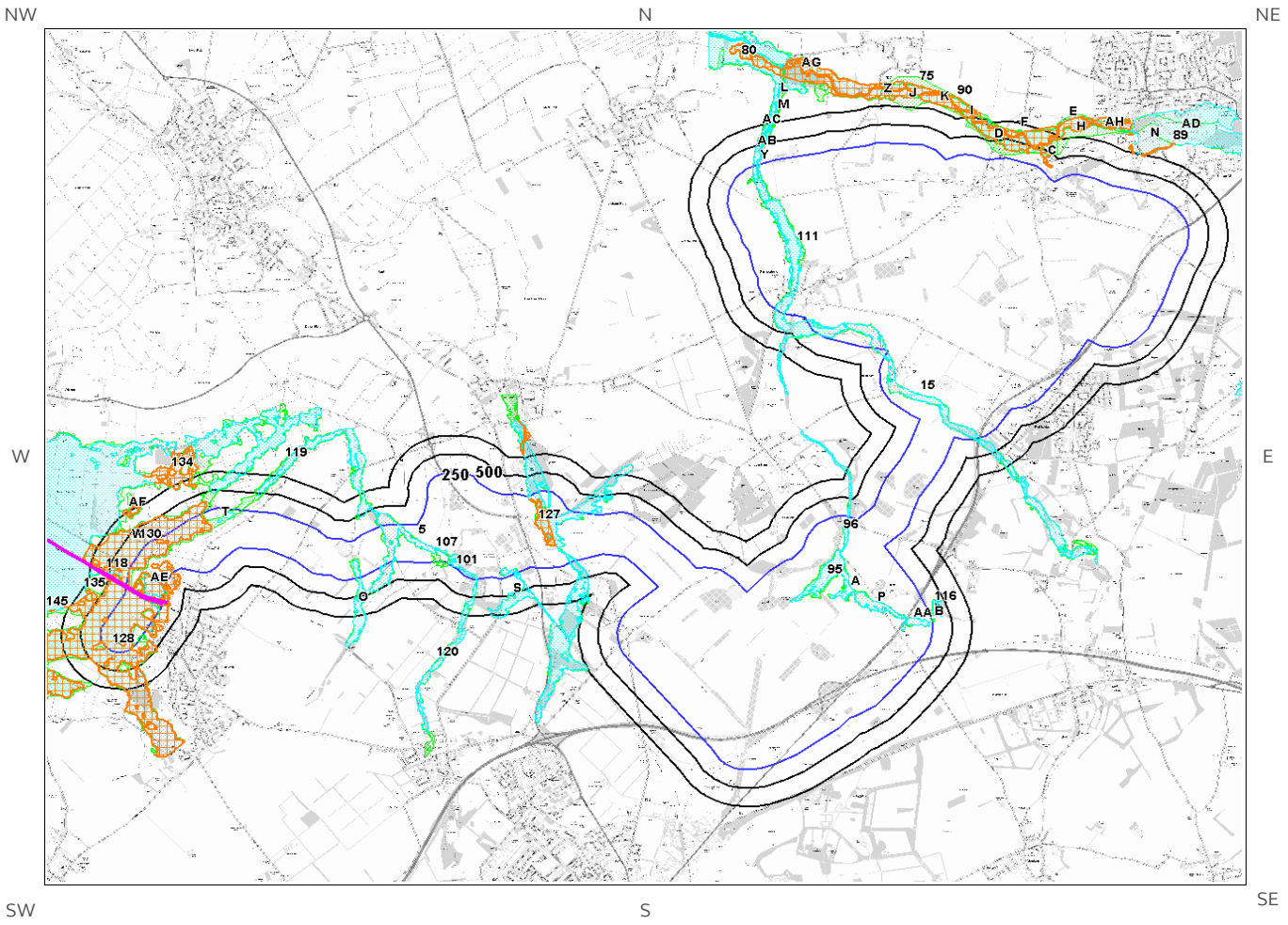
Lock or Flight of Locks

Lake, Reservoir, or Marsh

Drain or Transfer

General Quality Assessment: Biology

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

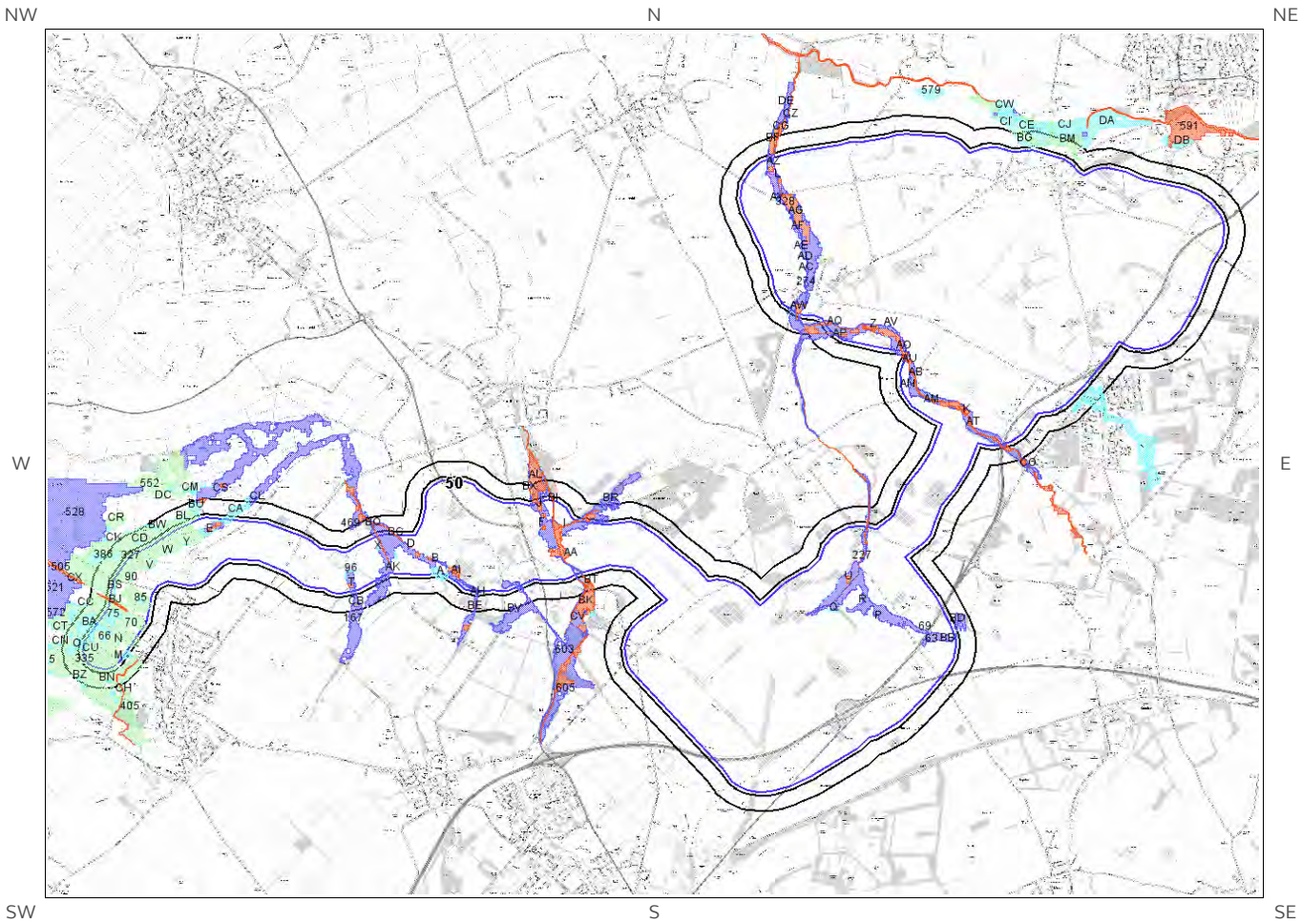
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



Site Outline

100 250 Search Buffers (m)

RoFRaS Rating

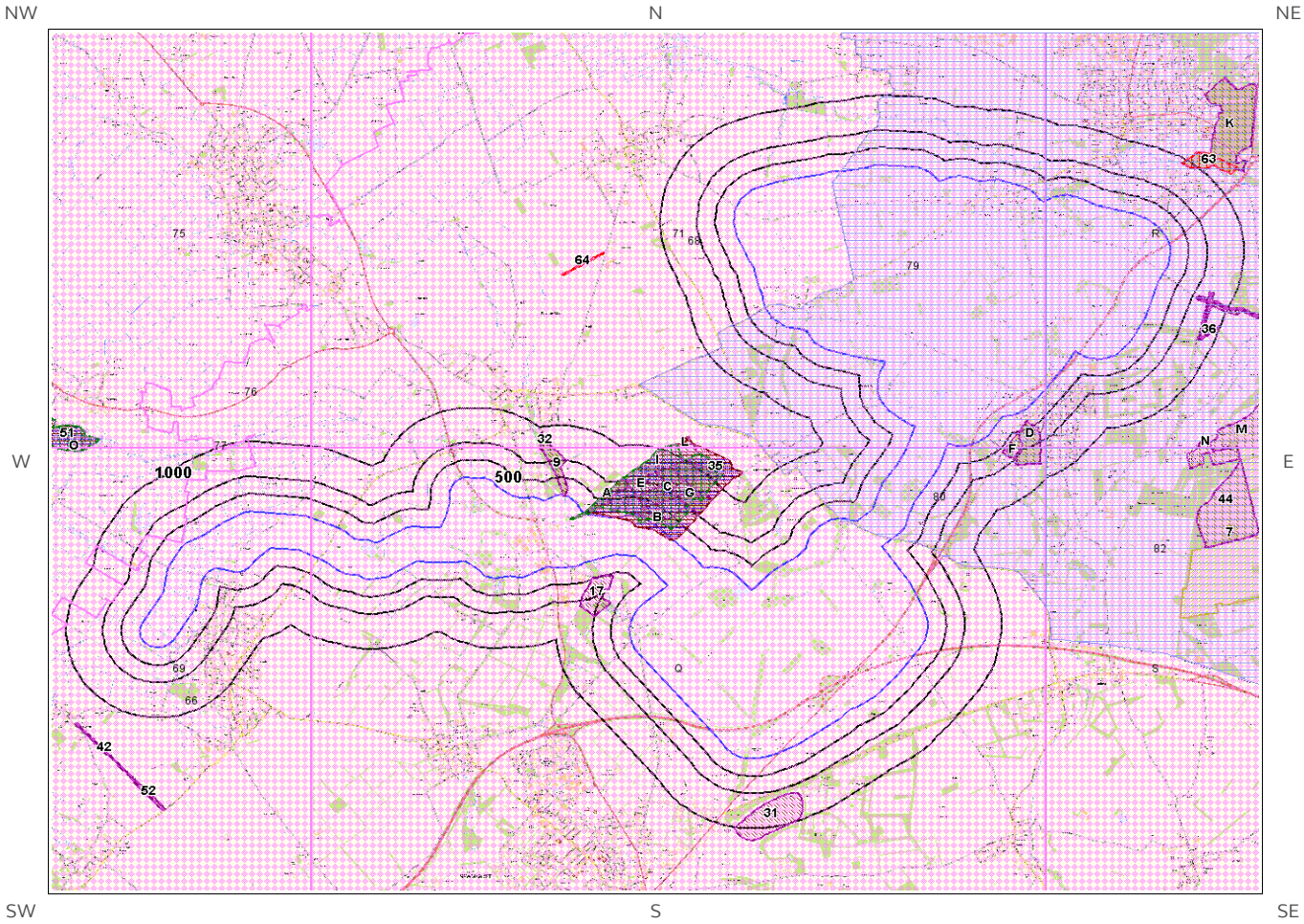
Very Low

Low

Medium

High

8. Designated Environmentally Sensitive Sites Map



Site Outline

100 / 250 Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

Geo Insight

Address:	**Suffolk, Newmarket, CB8 7NU**
Date:	**Jan 7, 2018**
Reference:	**60589004_Geo**
Client:	**Aecom Infrastructure and Environment UK Ltd**

NW N NE

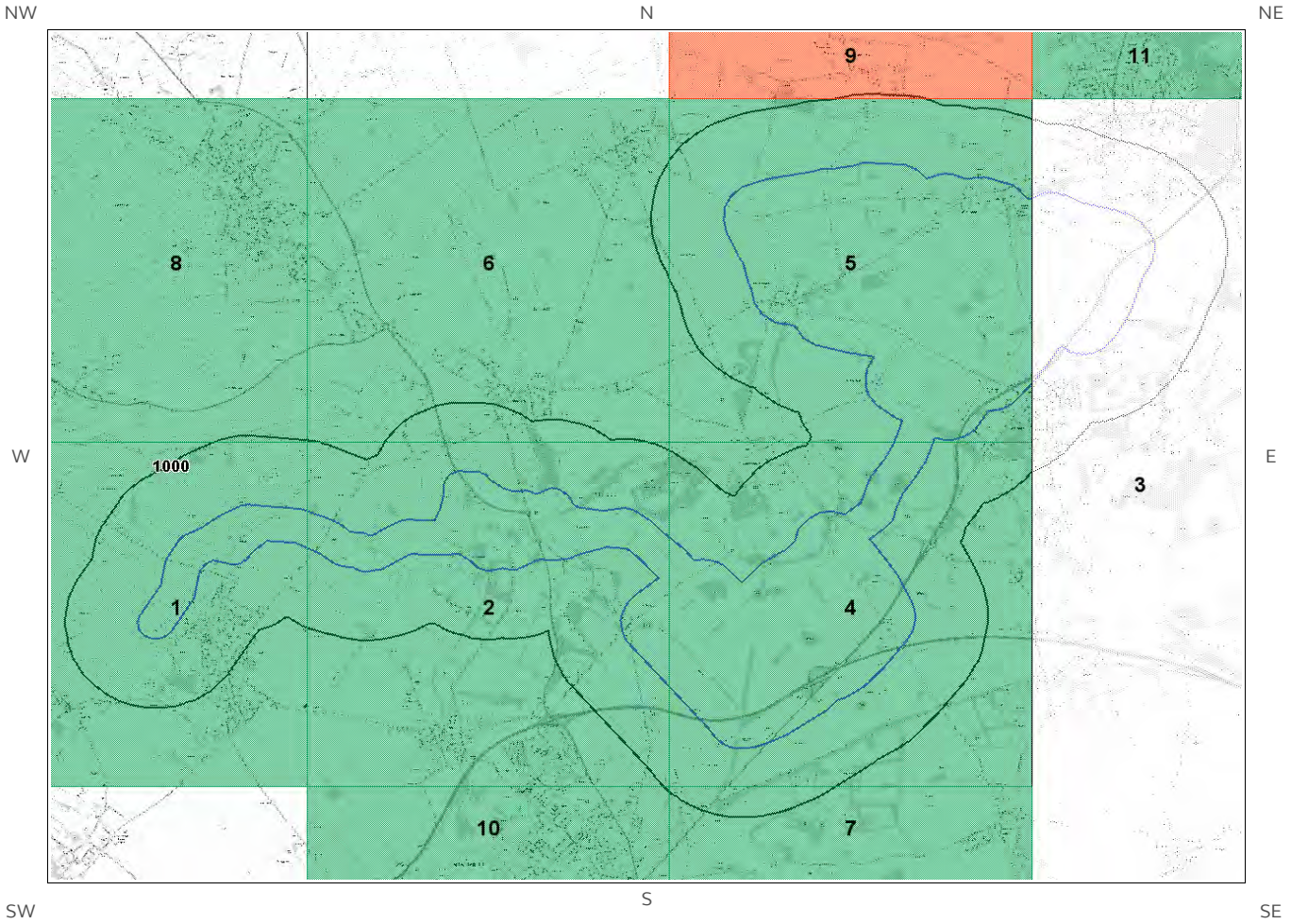
W E

SW S SE

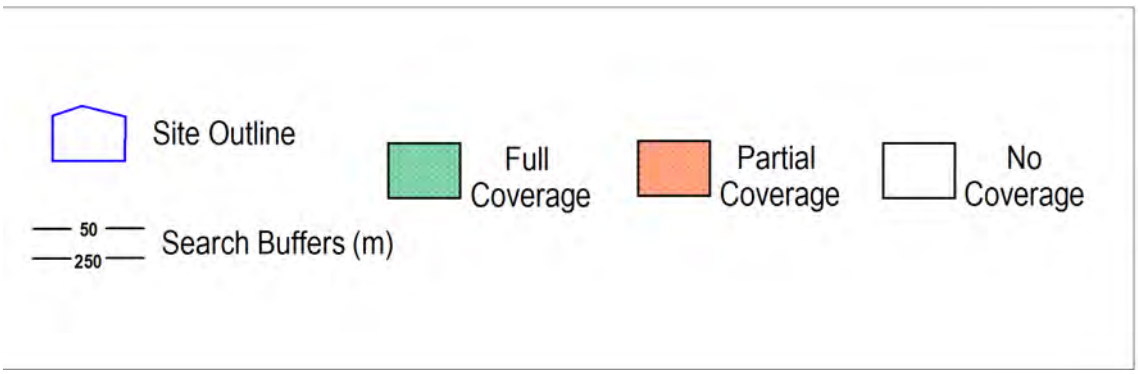
Aerial Photograph Capture date:	10-May-2017
Grid Reference:	568283,269806
Site Size:	3039.41ha

Contents Page

1:10,000 Scale Availability

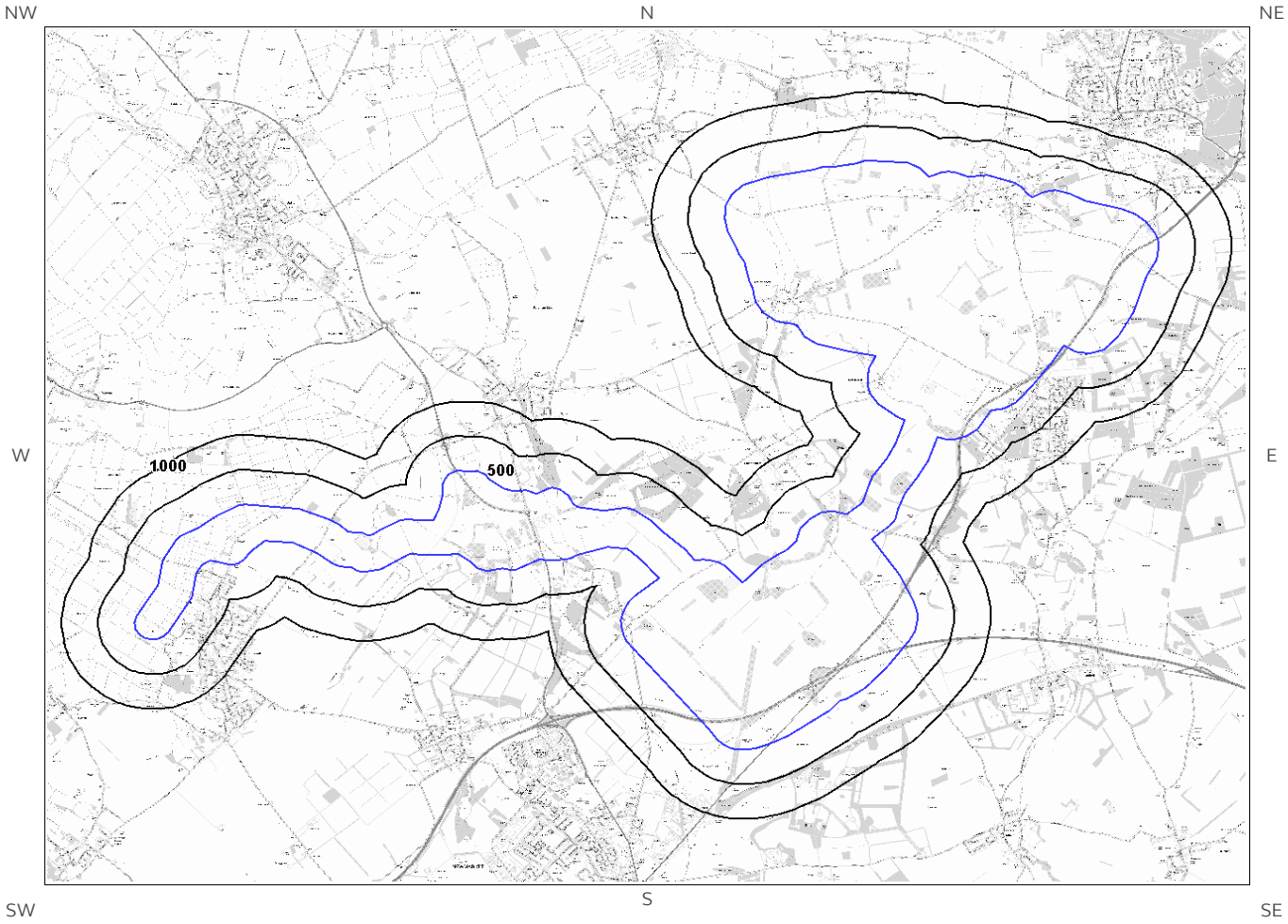


1_10,000 Availability Legend



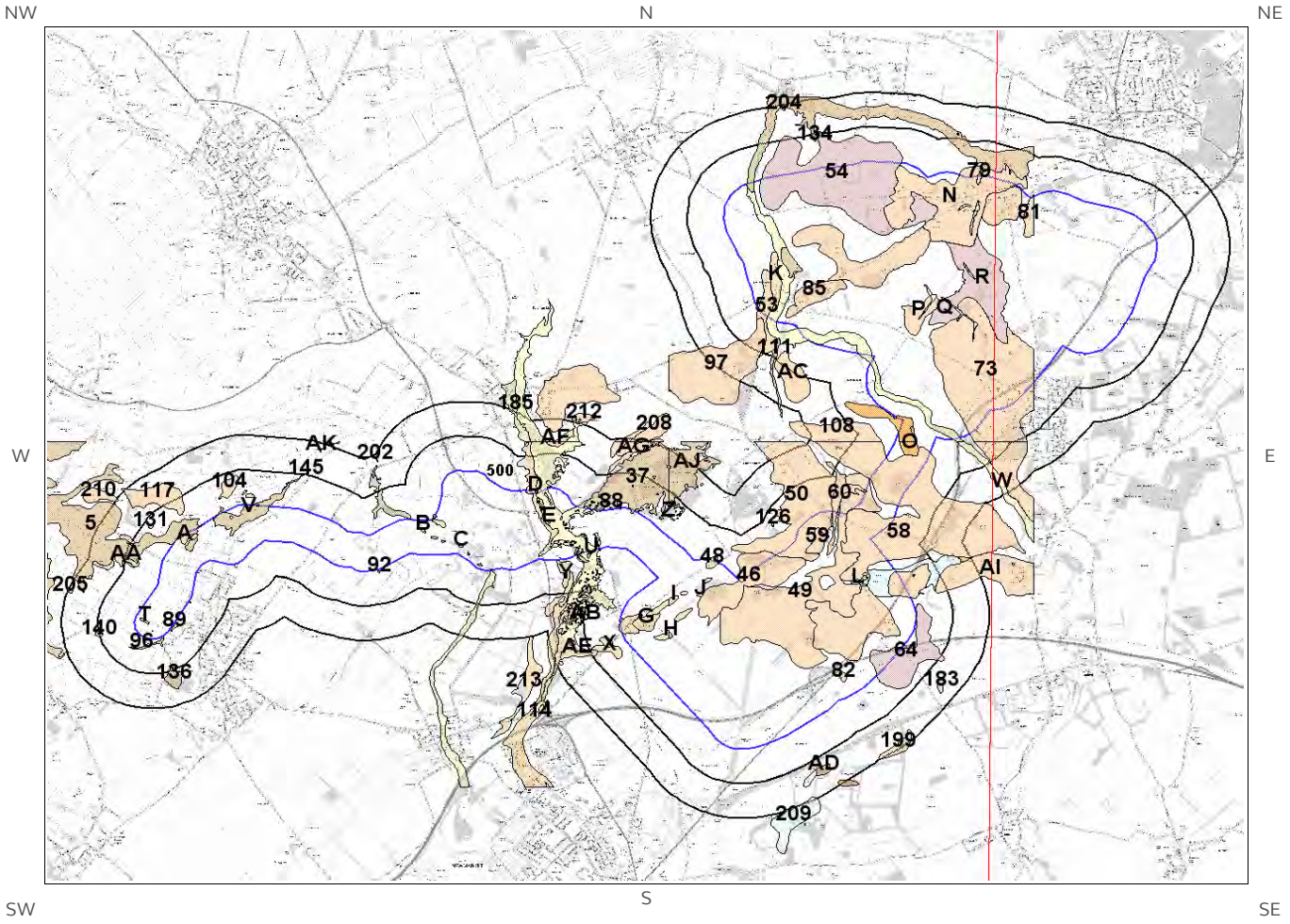
1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

1.2 Superficial Deposits and Landslips map (1:10,000 scale)

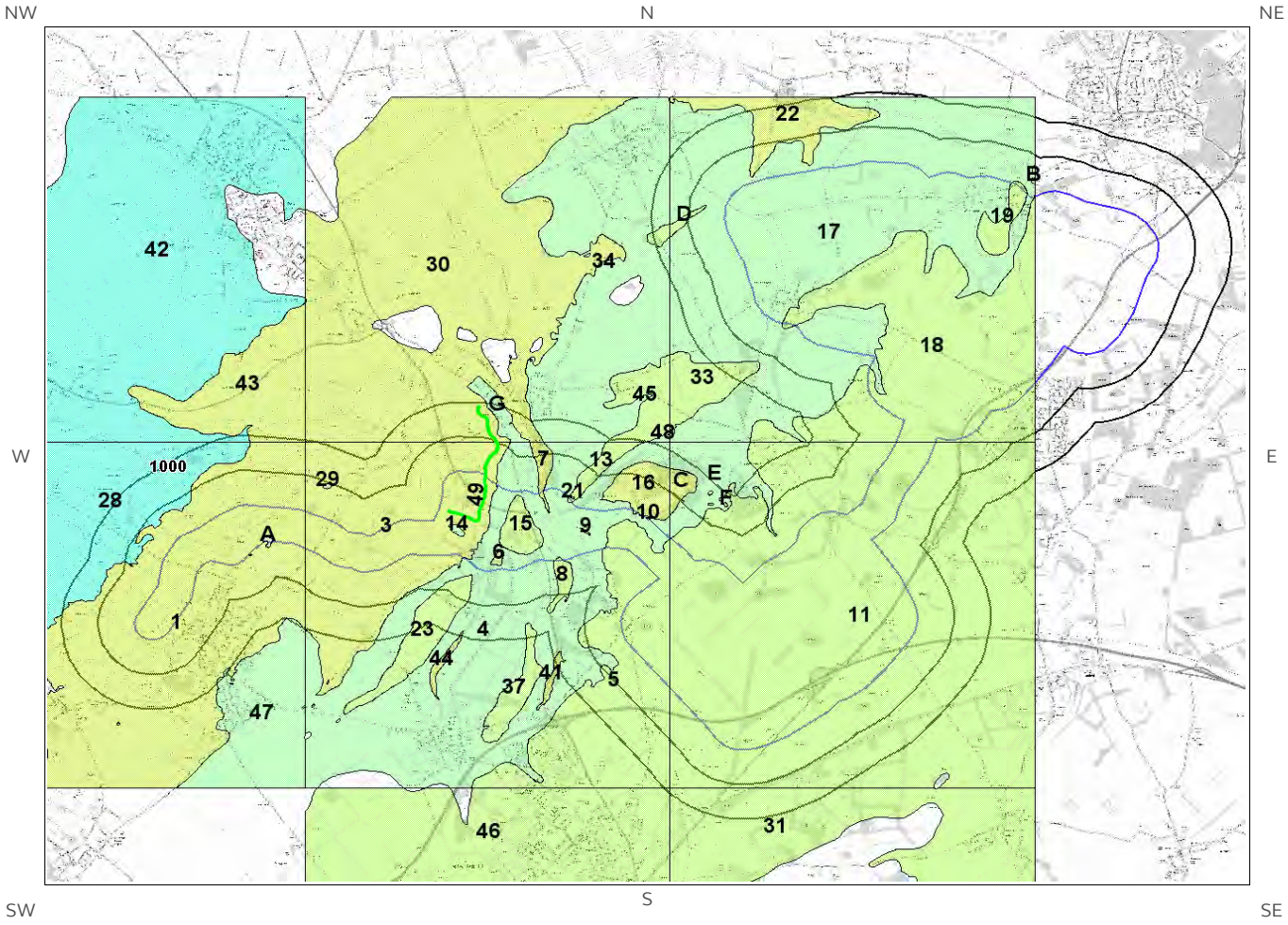


Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features map (1:10,000 scale)



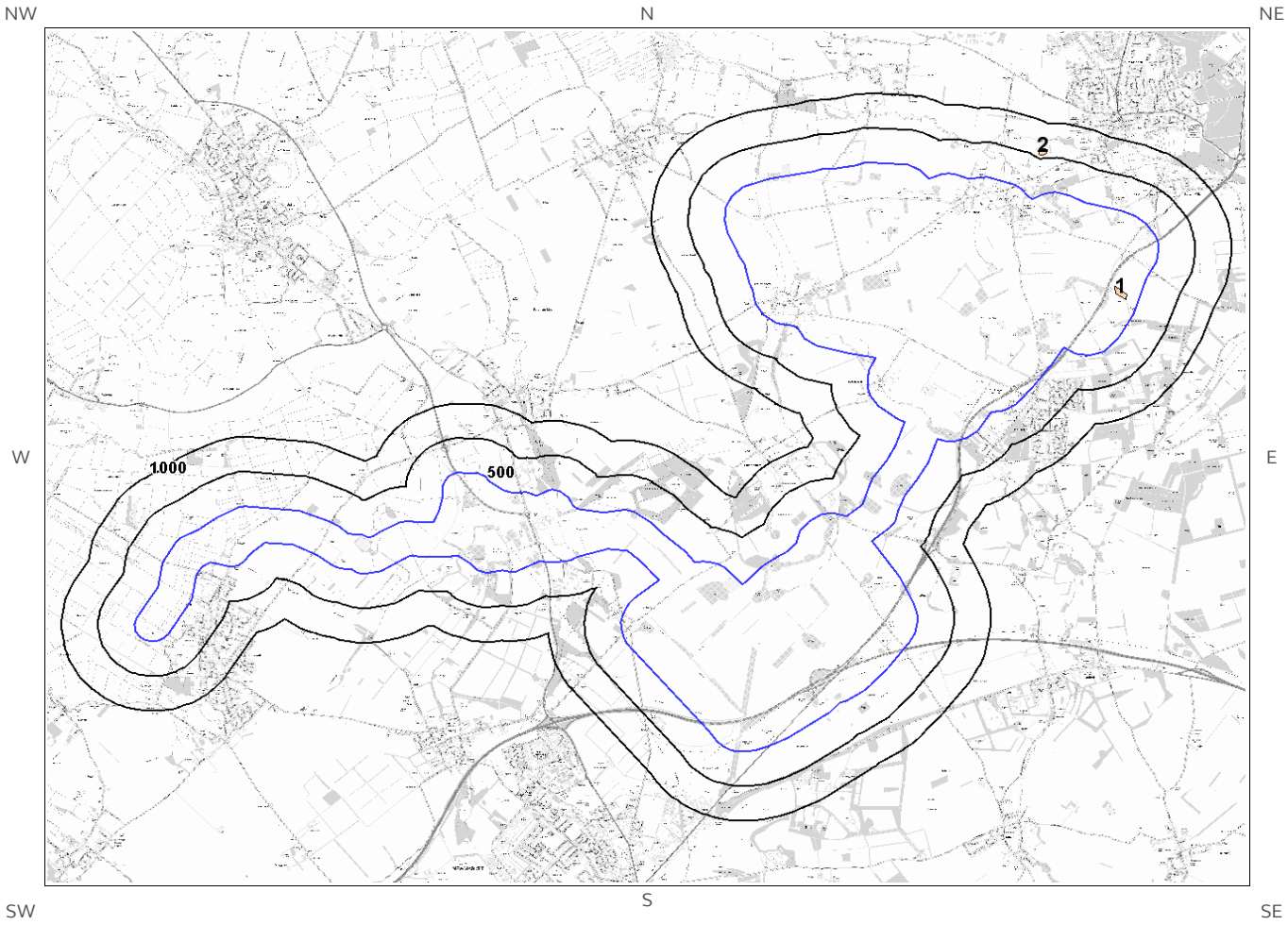
Bedrock and linear features Legend

Site Outline

500
1000
Search Buffers (m)

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

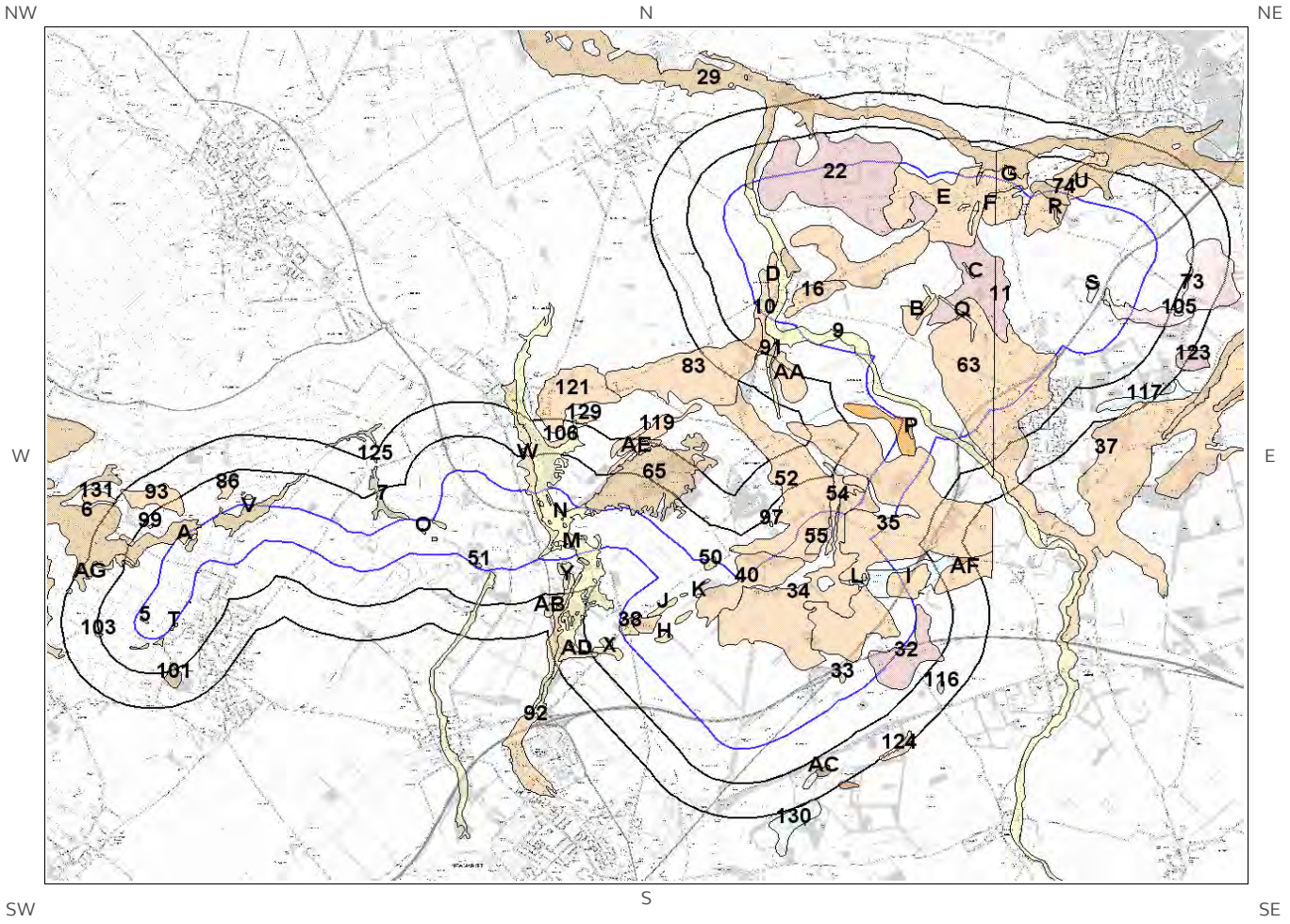
Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

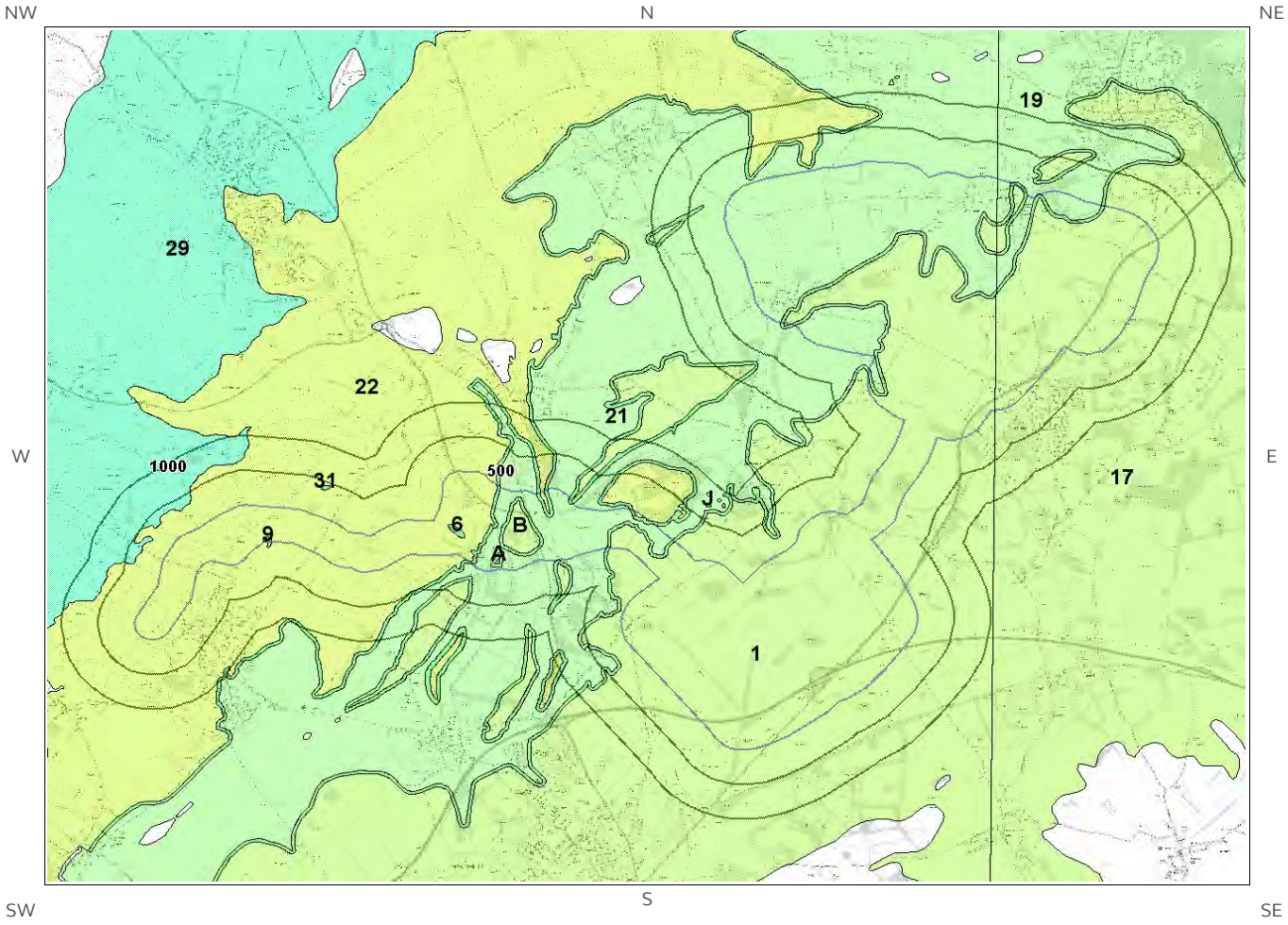
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock and linear features map (1:50,000 scale)



Site Outline

500
1000
Search Buffers (m)

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.

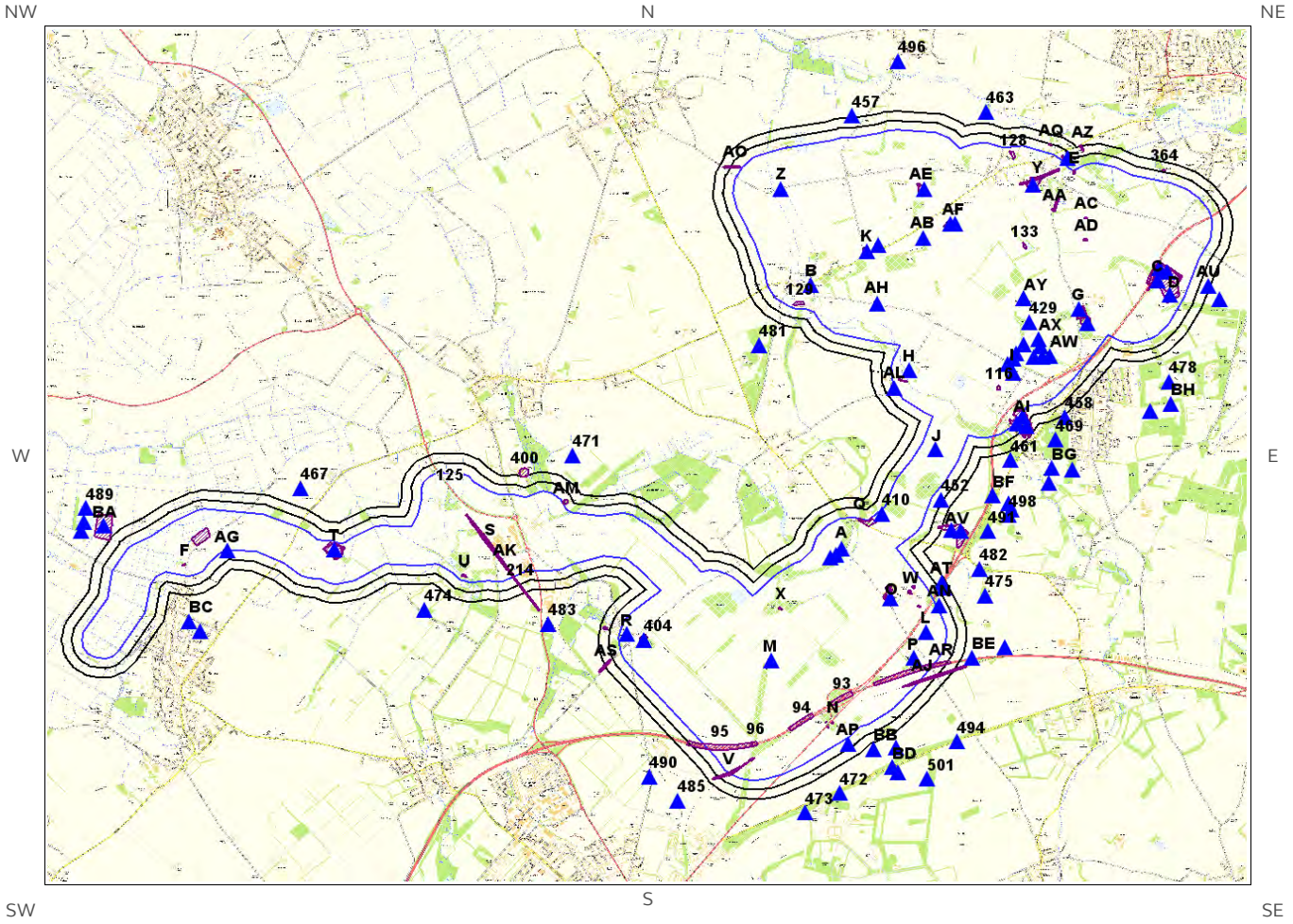
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

---

4 Ground Workings map



Ground Workings Legend

Site Outline

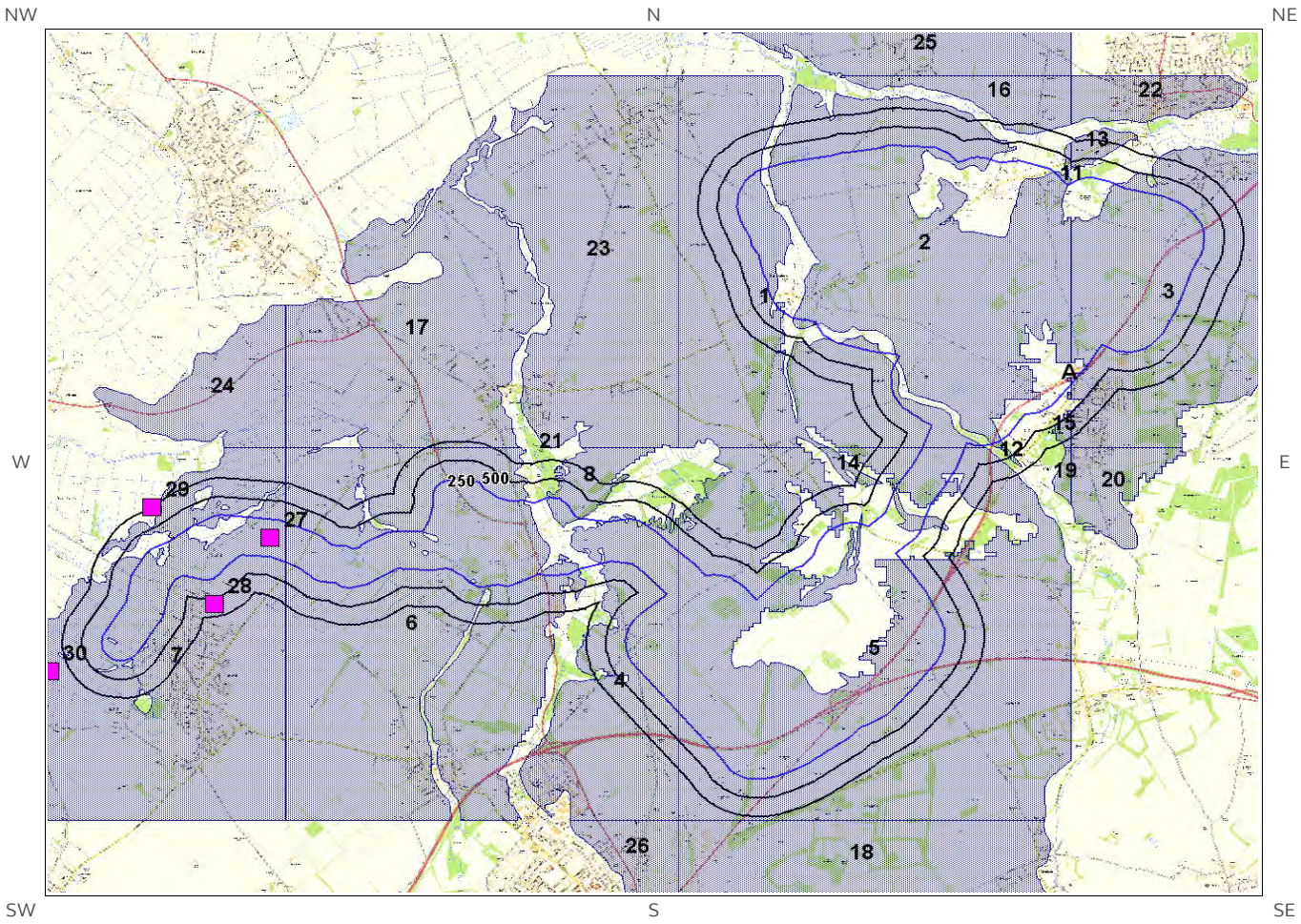
125
250
Search Buffers (m)

Historic Surface Ground Workings

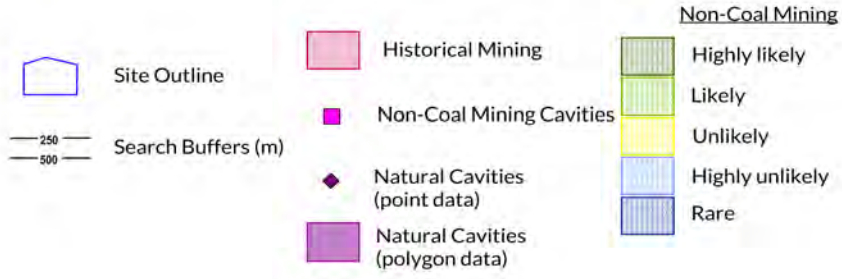
Historic Underground Workings

Current Ground Workings

5 Mining, Extraction & Natural Cavities map

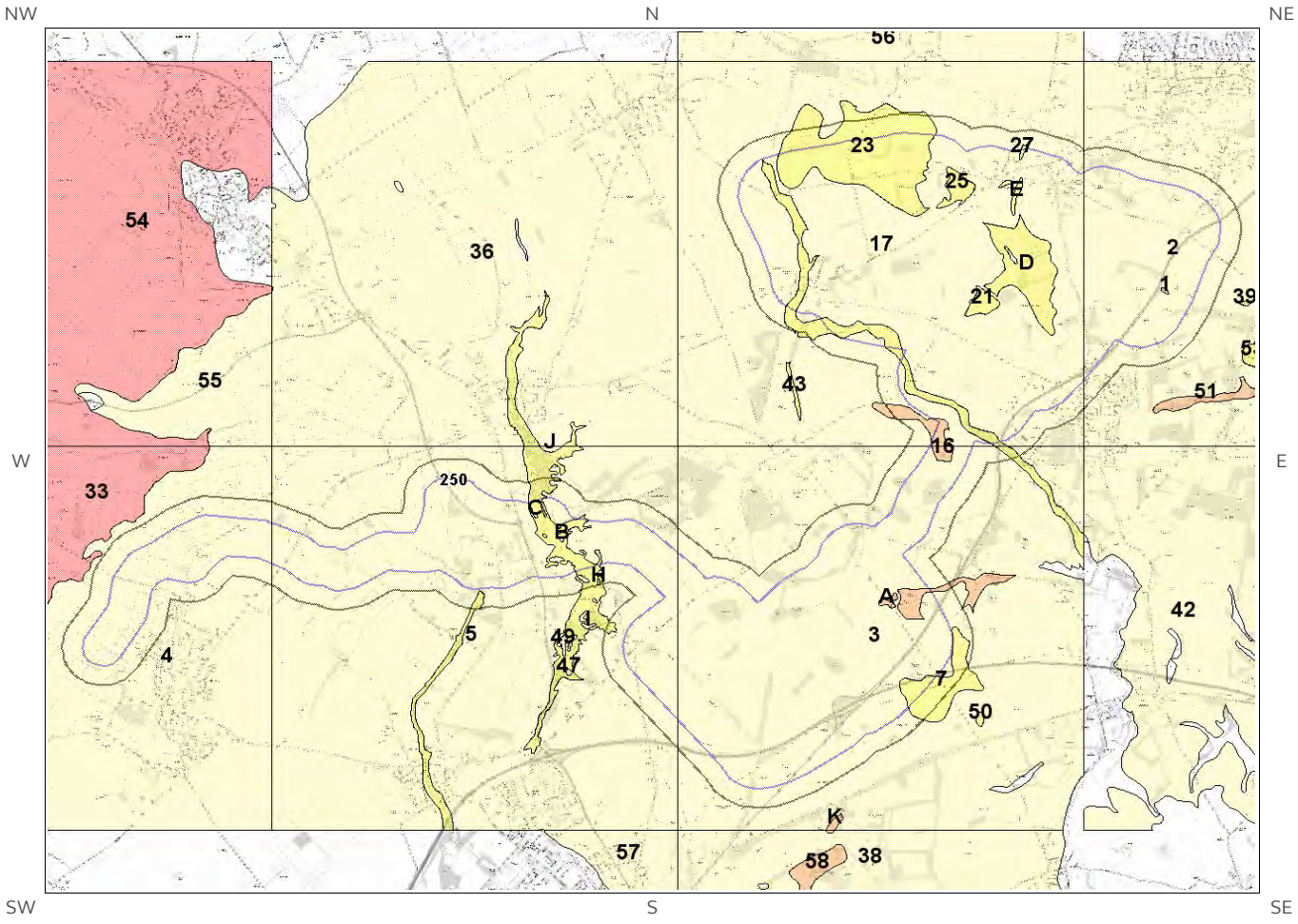


Mining, Extraction and Natural Cavities Legend



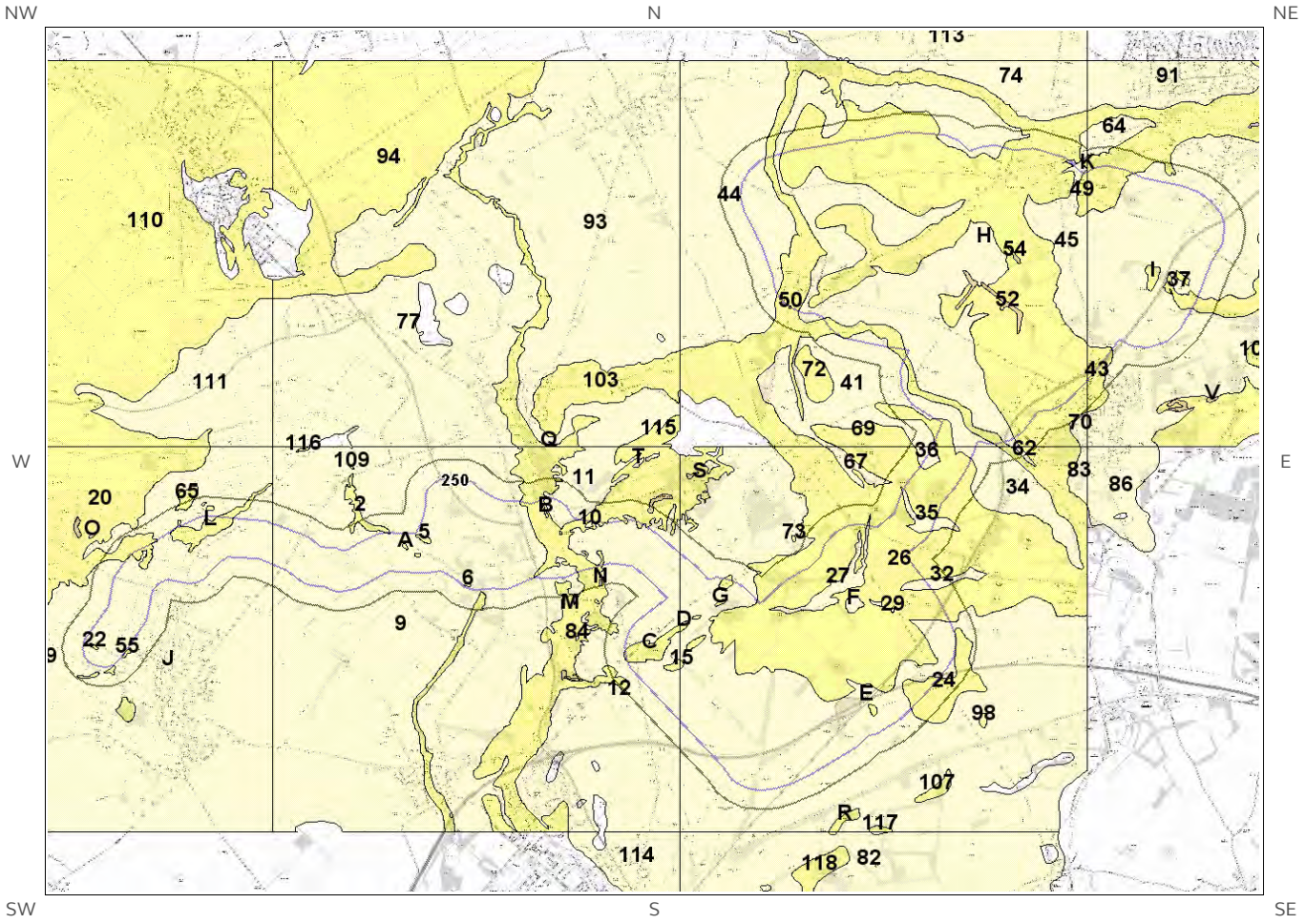
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

6.2 Landslides map



Landslides Legend

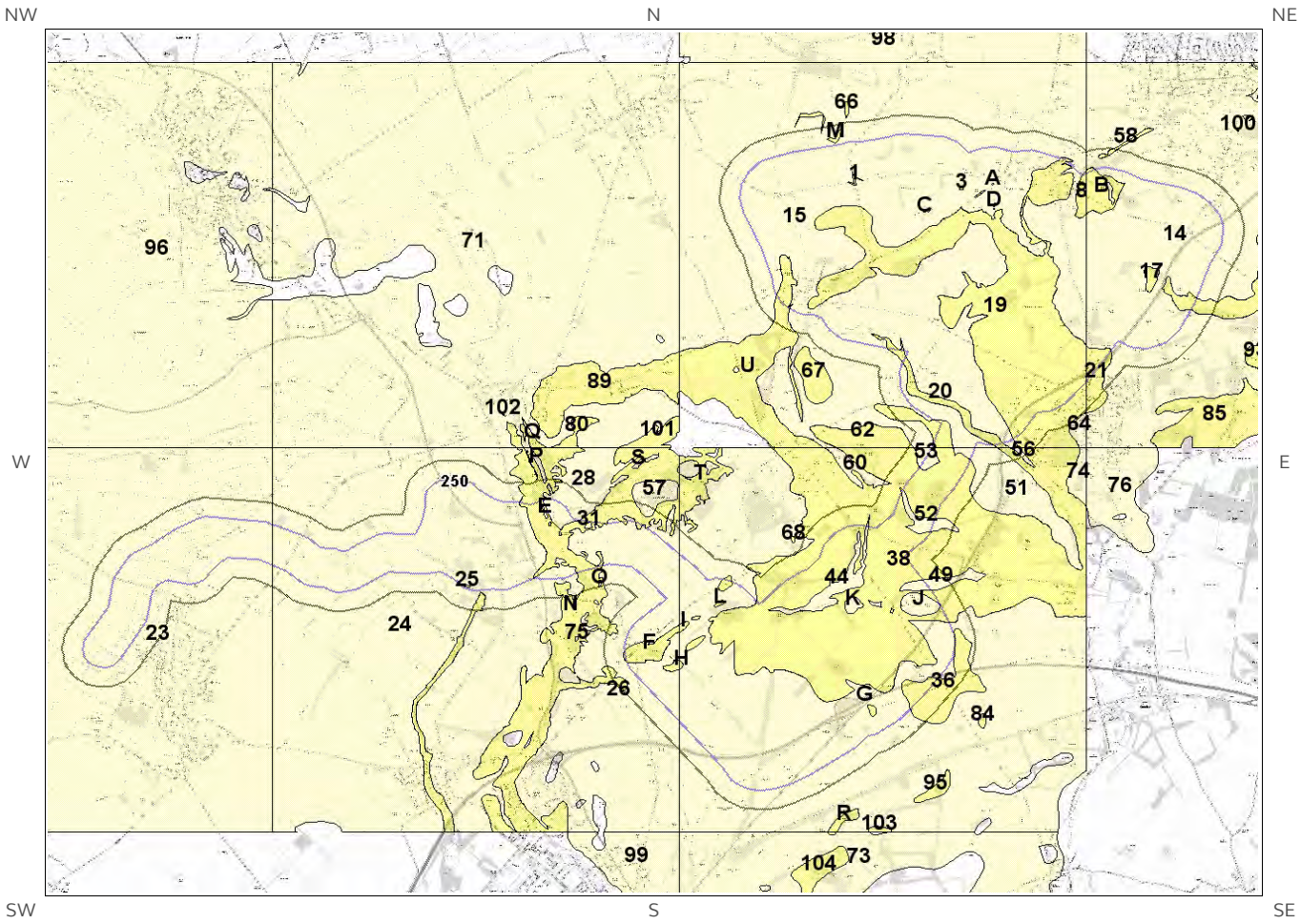
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map



Ground Dissolution Soluble Rocks Legend

Site Outline

Search Buffers (m)

125

250

No Data / Null

Negligible

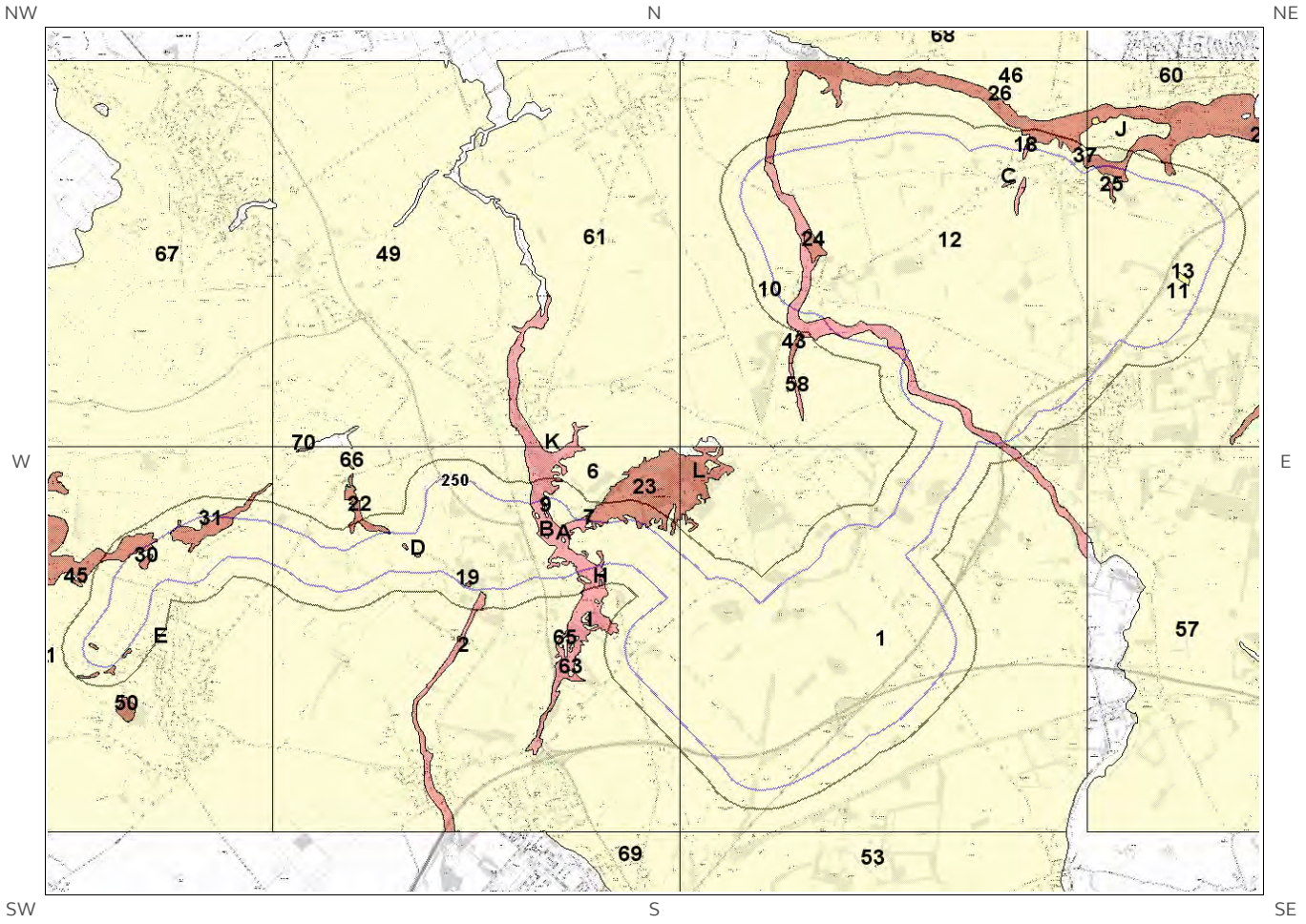
Very Low

Low

Moderate

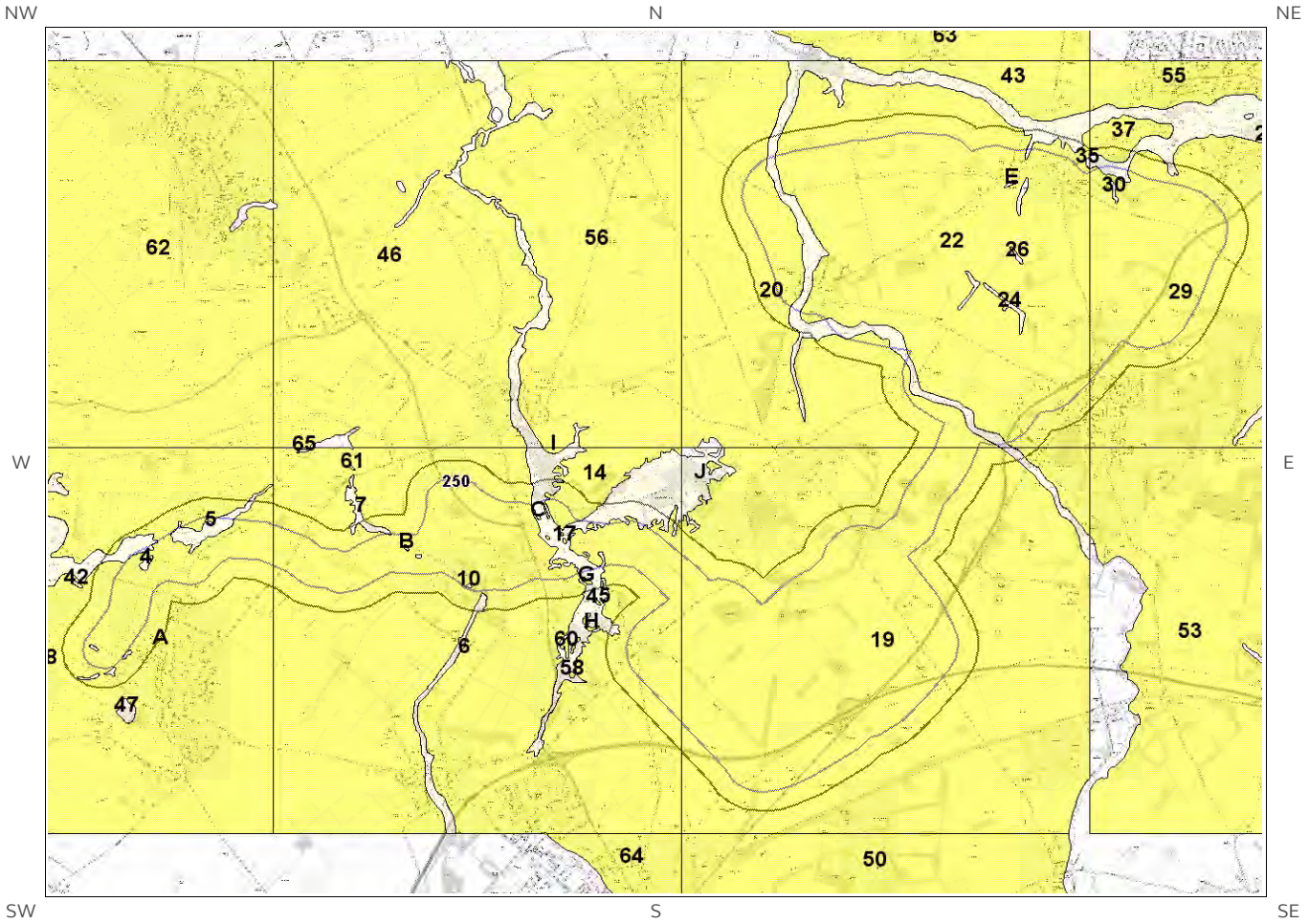
High

6.4 Compressible Deposits map



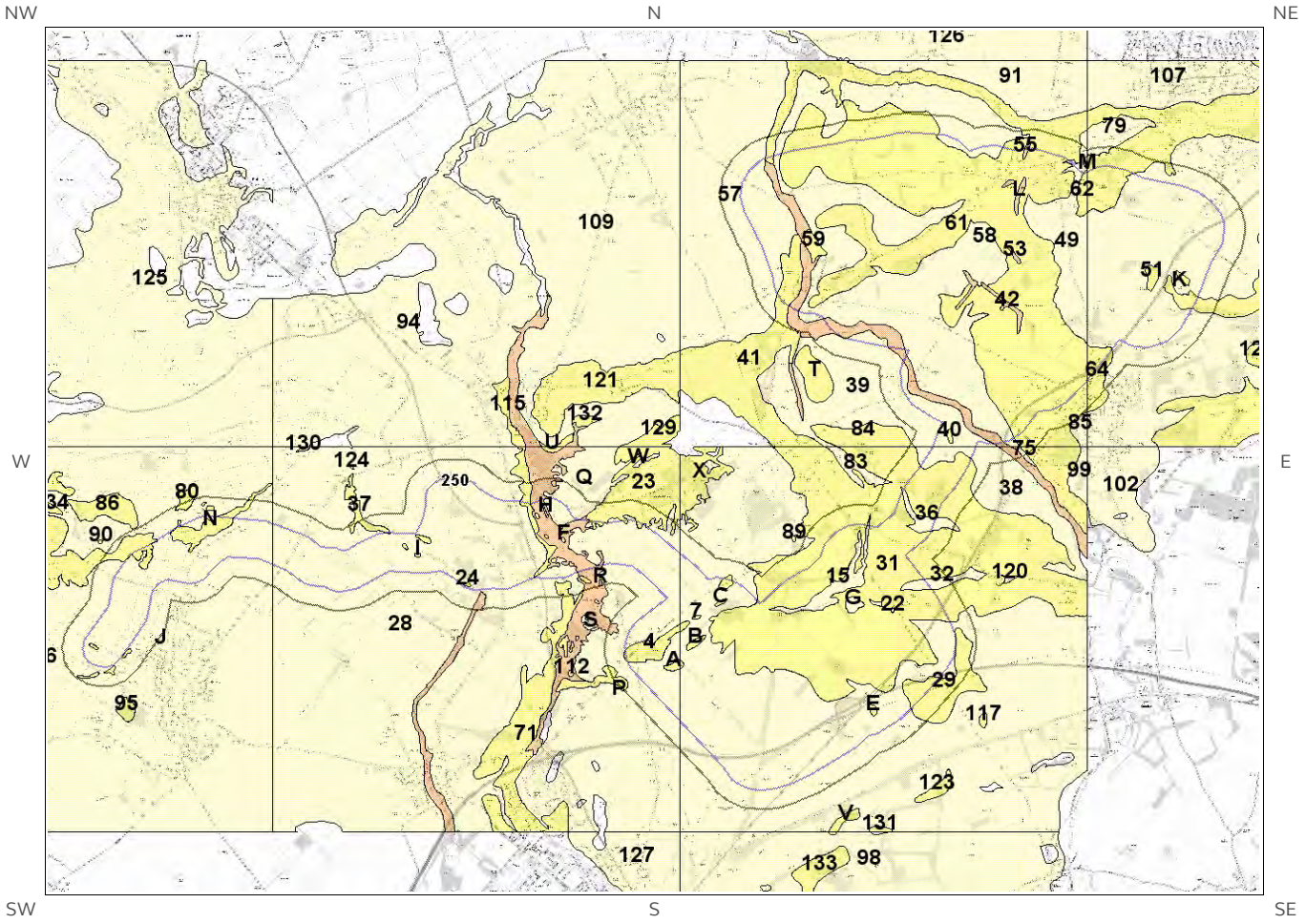
Compressible Deposits Legend

6.5 Collapsible Deposits map



Collapsible Deposits Legend

6.6 Running Sand map



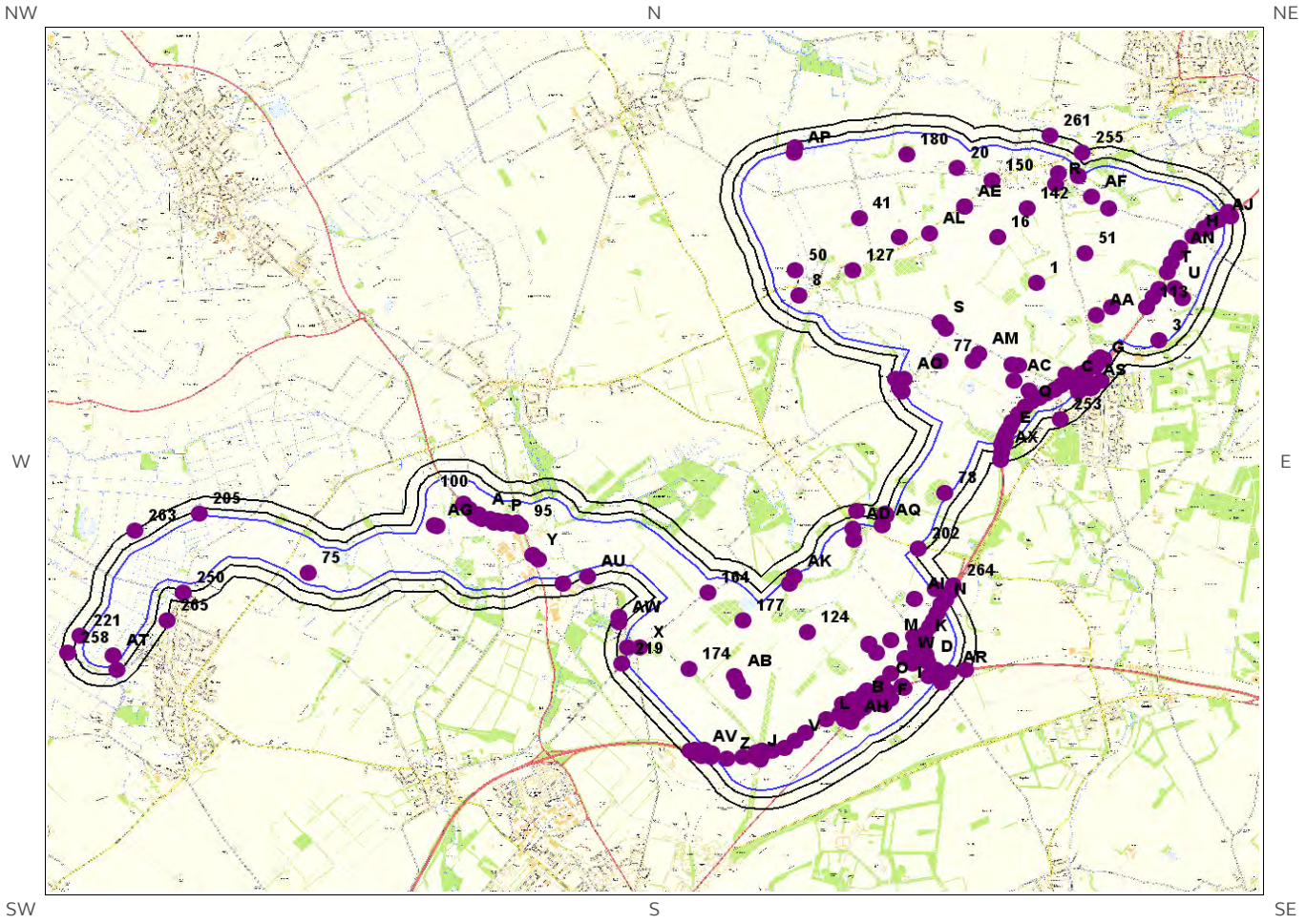
Running Sand Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low
Low
Moderate
High

7 Borehole Records map



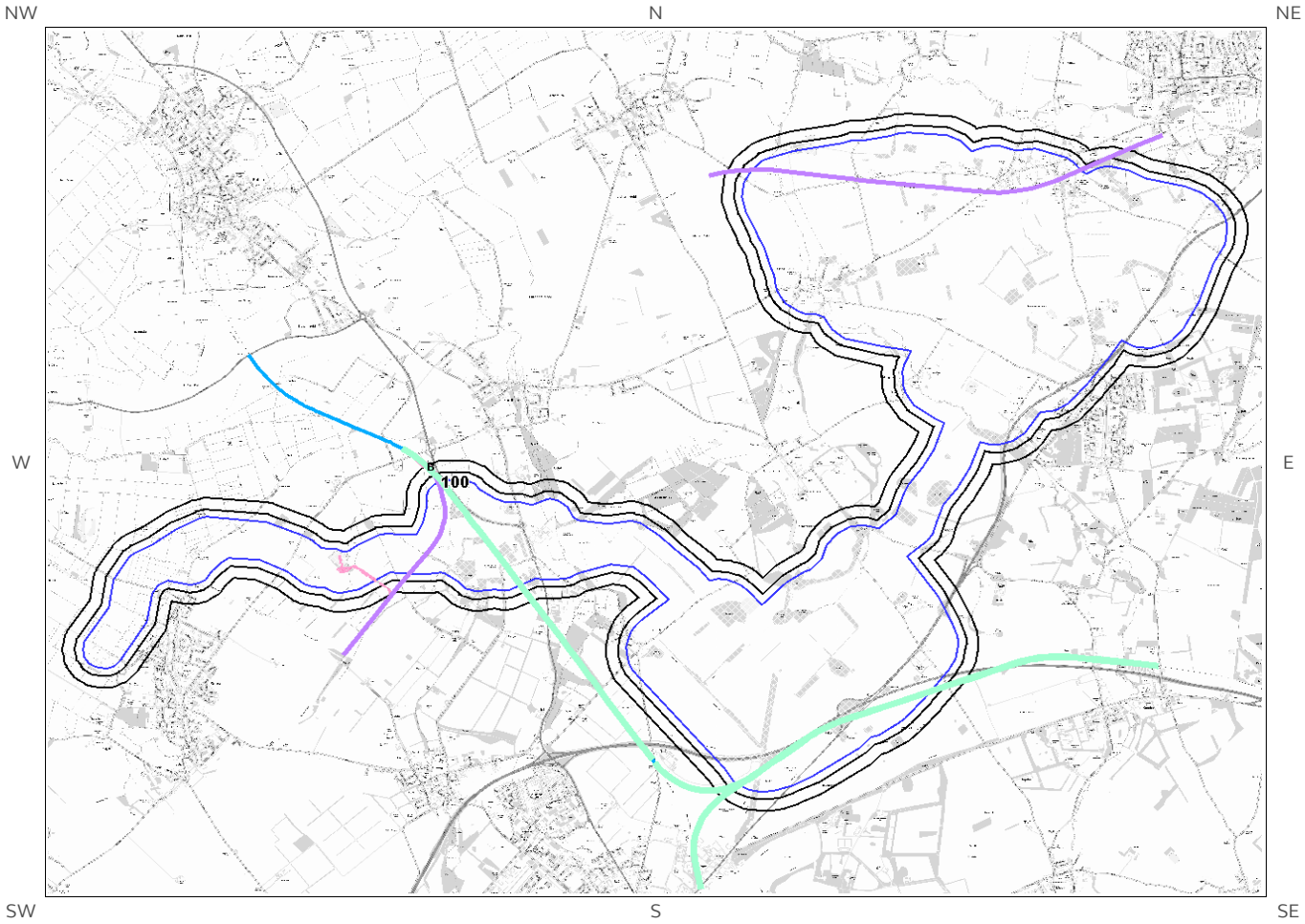
Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

9 Railways and Tunnels map



Railways and Tunnels Legend

- Site Outline
- 250 / 500 Search Buffers (m)
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

Sub-Appendix D Environmental Risk Assessment Principles

Environmental Risk Assessment Principles

Using criteria based on those presented in Section 6.3 of the CIRIA Report "Contaminated Land Risk Assessment: A Guide to Good Practice" (CIRIA Report C552) the magnitude of the risk associated with potential contamination at the site has been assessed. To do this an estimate is made of:

- The potential severity of the risk; and
- The likelihood of risk occurring.

The severity of the risk is classified according to the criteria in Table 1.1 below.

Table 1.1: Severity of Risk

Severity	*Examples*
High	Acute risks to human health likely to result in "significant harm" (e.g. very high concentrations of contaminants/ground gases) Catastrophic damage to buildings/property (e.g. by explosion, sites with high gassing potential, extensive VOC contamination) Major pollution of controlled waters (e.g. surface watercourses or principal aquifers/source protection zones) Short term risk to a particular ecosystem
Medium	Chronic (long-term) risk to human health likely to result in "significant harm" (e.g. elevated concentration of contaminants/ground gases) Pollution of sensitive controlled waters (e.g. surface watercourses or principal/secondary A aquifers) Significant effects on sensitive ecosystems or species
Mild	Pollution of non-sensitive waters (e.g. smaller surface watercourses or Secondary B aquifers or unproductive strata) Significant damage to crops, buildings, structures or services (e.g. by explosion, sites with medium gassing potential, elevated concentrations of contaminants)
Minor	Non-permanent human health effects (requirement for protective equipment during site works to mitigate health effects) Damage to non-sensitive ecosystems or species Minor (easily repairable) damage to buildings, structures or services (e.g. by explosion, sites with low gassing potential)

The probability of the risk occurring is classified according to the criteria in Table 1.2.

Table 1.2: Probability of Risk

Probability	*Examples*
High likelihood	Pollutant linkage may be present that appears very likely in the short-term and risk is almost certain to occur in the long term, or there is evidence of harm to the receptor.

Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
Low likelihood	Pollutant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	Pollutant linkage may be present but the circumstances under which harm would occur even in the long-term are improbable.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table 1.3.

Table 1.3: Comparison of Probability and Severity

		Severity			
		High	Medium	Mild	Minor
Probability	High likelihood	**Very High Risk**	**High Risk**	**Moderate Risk**	**Moderate/Low Risk**
	Likely	**High Risk**	**Moderate Risk**	**Moderate/Low Risk**	**Low Risk**
	Low likelihood	**Moderate Risk**	**Moderate/Low Risk**	**Low Risk**	**Very Low Risk**
	Unlikely	**Moderate/Low Risk**	**Low Risk**	**Very Low Risk**	**Very Low Risk**

The requirements for further works or mitigation are dependent on the significance of the risk. Generally, 'Moderate' to 'Very High' risks are considered to be significant and in need of further assessment/mitigation, and 'Very Low' to 'Low' risks are generally considered insignificant and not requiring further assessment/mitigation. Professional judgement is often required in the determination of whether an effect is considered to be significant by taking account of whether effects are considered to be positive or negative, permanent or temporary, direct or indirect, the duration and frequency of the effect and whether any secondary effects are caused.