West Burton C (Gas Fired Generating Station)

Appendix 11A: Phase I Geo-Environmental Site Assessment

EDF Energy (Thermal Generation) Limited

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1. Introduction

1.1 General Introduction

1.1.1 AECOM Infrastructure & Environment UK Ltd (hereafter referred to as AECOM) was commissioned by EDF Energy (Thermal Generation) Limited (hereafter referred to as 'the Applicant') to undertake a Phase 1 Geotechnical and Geo-environmental Site Assessment (ESA) for a proposed gas fired power station ('West Burton C') on the West Burton Power Station site near Gainsborough, Nottinghamshire, hereafter referred to as the 'Site'.

1.1.2 The location of the site can be seen in **Figure 1.1** and **Figure 3.1 (ES Volume II)**.

1.2 Objective & Aims

1.2.1 The objective of the works was to determine the likely ground conditions beneath the Site and the potential for ground contamination arising from historical or current on-site or off-site activities.

1.3 Scope of Works

1.3.1 The scope of services for this study included:

- a site walkover of external areas by AECOM (completed on 31st May 2017);
- commissioning and review of Groundsure reports (including a regulatory database search and historical Ordnance Survey (OS) maps) in 2017 and 2019 (Annex B – Part 1, Annex B - Part 2));
- review of publically available web-based sources, including the Environment Agency (EA) website, British Geological Survey (BGS) (Ref 11A-1) and Ordnance Survey Explorer maps (Ref 11A-2);
- review of relevant previous site investigation reports (described and referenced herein);
- assessment of anticipated ground conditions and identification of potential development constraints; and
- development of a preliminary Conceptual Site Model (CSM), identifying potential contaminants of concern, sources, pathways and receptors.

1.4 Summary of Key Changes since Publication of the Preliminary Environmental Information (PEI) Report

1.4.1 The PEI Report (Ref 11A-3) was published for statutory consultation in September 2017, allowing consultees the opportunity to provide informed comment on the Proposed Development, the assessment process and preliminary findings through a consultation process prior to the finalisation of this ES.

1.4.2 The key changes relevant to this appendix since the PEI Report was published are summarised in **Table 1** below.

Table 1: Summary of key changes since publication of the PEI Report

Summary of change since PEI Report	Reason for change	Summary of change to appendix text in the ES
The proposed Application Order Limits has been amended to remove outfalls to River Trent which are no longer proposed.	Updates to design and site layout.	The Groundsure report (**Annex B-2**) presented in this appendix reflects the earlier indicative Site Boundary (including outfalls to River Trent) – distances quoted herein to features of interest are therefore indicative only. An updated Groundsure report (**Annex B-1**) is therefore also appended and updates to the text of this chapter have been made in the light of this.

2. Site Description

2.1 Site Location

2.1.1 The Site is located approximately 3.5km to the south-west of the town of Gainsborough, immediately to the north of the existing West Burton B (WBB) Power Station. Access to the Site by road is via the Gainsborough Road, which links to the A620 and A631.

2.1.2 The Site is centred on National Grid reference 480388, 386337(see **Figure 1**).

2.2 Site Layout

2.2.1 The Site comprises four main areas, some of which include current installations and operating infrastructure of the West Burton A (WBA) coal fired power station and the WBB Power Station (a combined cycle gas turbine (CCGT) power station which is located to the south of the Proposed Power Plant Site):

- the northern part of the Site and location of the Site and construction laydown area, comprises of scrub land and the former construction laydown areas of WBB;
- the railway sidings immediately north-west of WBB Power Station;
- two proposed drainage connection corridor options that run east from the Site towards the flood defences of the River Trent, terminating at the existing drainage system of the West Burton Power Station;
- an area for a potential additional oily water separator to the south-east corner of the WBB site; and
- operating areas of the WBB Power Station, including the main operating facilities in the north-east of the WBB Power Station and the 400kV switchyard in the south that forms the existing connection to the National Grid.

2.3 Surrounding Land Use

2.3.1 Land use immediately surrounding the Site is summarised below:

- north: scrubland bounds the Site to the north. Railway sidings lie to the west, separating the Site from the WBA Power Station coal stockpile area. Further to the north are the current and former pulverised fuel ash (PFA) disposal areas (Bole Ings PFA disposal site), a railway line and agricultural land;
- east: immediately adjacent to the Site to the east is the River Trent, with agricultural land beyond;

- south: WBB Power Station, beyond which is the WBA/WBB Power Station site access road (River Road). South of River Road is agricultural land; and
- west: railway sidings, outlying operations and coal stockpile of the WBA Power Station. Beyond these are the connecting railway and agricultural land.

2.4 Site Walkover

2.4.1 A Site walkover was completed by AECOM on the 31st May 2017. The walkover focused on the northern section of the West Burton Power Station site, with particular focus on the Site area (north of West Burton B Power Station) and the western banks of the River Trent. Areas located towards the eastern site boundary were not accessed during this site walkover. The aim of the site walkover was to gain an insight into the ground conditions and presence of surface water features within the particular areas of interest. Plates of the key features identified during the walkover are presented in **Annex A**.

2.4.2 Key observations included:

- **Bole Ings:** This area was located to the north-west, just outside of the West Burton Power Station site boundary, and was accessed by road via the coal stockyard from the south. The area was relatively flat, with PFA currently being stored (Plate 1). To the west was the ash disposal site, details of which are featured below. Borehole GM6(S) was present at this location (Plate 1).
- **Bole Round:** This area was located at the northern edge of the West Burton Power Station site, north of Wheatley Beck, and was used during construction of WBB Power Station both for relocation of PFA and as a temporary storage area, prior to commercial operation of WBB Power Station in 2013. The area was flat and approximately 10m higher in elevation than the access road and land to the south (Plate 2). At the time of the site visit (May 2017) mature vegetation was present around the outside of the elevated mound.
- **Land between Bole Ings and Wheatley Beck:** This area was located between Wheatley Beck to the north and the PFA handling area to the south. The area comprised a series of raised embankments running NE-SW through dense vegetation (Plate 3).
- **Wheatley Beck**: Bordering the area to the north at the base of a valley (Plate 4). The water was not visible at this location due to lower elevation and surrounding vegetation. The area was not easily accessible by vehicle or on foot as vegetation was, in places, up to a metre tall. Two large ponds were present and were surrounded by reeds and other vegetation (Plates 5 & 6). The type of vegetation varied, including flowering plants and reeds surrounding the ponds. Borehole GM23 was encountered within this location, the precise location of which can be seen on the plan attached in **Annex E**.

- **Land between Wheatley Beck and the Site:** This piece of land comprised two distinct areas:
  - the northern area (outside of the Site boundary) comprised a series of embankments and hollows, which were heavily vegetated. An elevated track, was accessed, which was sandwiched between Wheatley Beck to the north-east (Plate 7) and a second trough to the south (Plate 8). Standing water was identified in the base of the trough, though the origin of the water was not identified.
  - the southern area (within the Site boundary and location of the construction laydown area) comprised an elevated mound (Plate 9), which was less densely vegetated than the land to the north (Plate 10) and rose approximately 5-6m above the level of the surrounding land. It was unclear what the mound was formed from, although pieces of angular rock were identified at the surface of the top of the mound (Plate 11). Looking across the landscape towards the north-east, a coal stockpile could be seen (Plate 12). Small wooded areas were also present on the mound (Plate 13). At the base of the mound, adjacent to the roadway, deposits of PFA were present (Plate 14).
- **Hargreaves ash handling compound:** immediately south-east of the elevated mound (and also in the construction laydown area) was a rectangular compound which could be accessed via a gravel roadway to the south-east (Plate 15). The surface of the compound and the access road appeared to be formed from gravel, including clinker (Plate 16).
- **Meadow south of ash handling compound:** immediately south-east of the roadway adjacent to the Hargreaves compound (Plate 17) was an access track leading to the meadow and grassy mound which comprise the Site (Plates 18 and 19). This area had been redeveloped from its previous land use (construction laydown area for WBB Power Station) into a landscaped meadow, with band drains and newly planted trees. This meadow was present at a higher elevation than the ash disposal compound and can be seen in Plate 20. This is the area of the Site.
- **River Trent:** The River Trent was located east of the Site (Plate 21). It is separated from the Site by a number of fishing ponds (Plate 22). On the western bank of the Trent, a discharge pipe was identified, though it was unclear what this pipe discharged and whether it was still in use (Plate 23).
- **Abstraction and Discharge Points:** Adjacent to the West Burton Power Station site discharge and abstraction point, the main station interceptor was present (Plate 24). The discharge from the interceptor (Plate 25) passed through a channel underneath the road and discharged to the River Trent (Plate 26). Various buildings were also located on the banks of the River Trent, including the abstraction pumphouse (Plate 27). The surface water abstraction point (Plate 28) was located approximately 150m downstream of the abstraction point, though at the time of the Site visit, the incoming tide meant the current was reversed. As a consequence, the water in the vicinity of the abstraction point was noted to be very silty with a high suspended solid content (Plate 29).

2.5 Additional Information from Site Walkover and Applicant Personnel

- The banks of the River Trent are exceptionally silty, meaning that the Applicant is required to periodically dig out silt from the River Trent, prior to water abstraction.
- It was suggested that great crested newts have reportedly been identified within various watercourses visited during the Site walkover.

3. Site Environmental Setting

3.1 Introduction

3.1.1 The physical setting and environmental characteristics of the Site are based on information obtained from the following sources:

- Groundsure reports GS-3864430 and GS-3864429 dated 9th May 2017 (**Annex B** – Part 2) and Groundsure report GS- 5785102 dated 29th January 2019 (**Annex B** – Part 1).;
- The BGS website (www.bgs.ac.uk) (Ref 11A-2); and
- The Environment Agency (EA) website (http://maps.environment-agency.gov.uk/) (Ref 11A-4).

3.2 Geology

3.2.1 The Groundsure reports (**Annex B** – Part 1 and Part 2), existing site investigation records and publically available BGS borehole records have been reviewed to identify the likely geological sequence at the Site.

Made Ground

3.2.2 Given that the Site lies within an area formerly used for the disposal of PFA, a considerable thickness of made ground is also anticipated below parts of the Site. While the majority of the made ground is anticipated to comprise PFA, other materials may have been co-deposited with the PFA, including furnace bottom ash (FBA).

3.2.3 In their Geotechnical Desk Study Report (Ref 11A-5), WSP/Parsons Brinkerhoff report that as much as 0.5 million cubic metres of PFA may have been placed at the Site, primarily through end-tipping methods.

3.2.4 Recent borehole data (CMT, 2017) (Ref 11A-6) has provided depth measurements for the PFA on-site and this is summarised in **Table 2** below:

Table 2: Depth of PFA at on-site boreholes

Borehole ID	Lithology	Depth (m, below ground level (bgl))
CPA	PFA	0 – 9.8
CPB	PFA	0 – 7.45
CPD	PFA	0 – 9.8
CPH	PFA	0 – 9.2

Superficial Geology

3.2.5 From a review of BGS information and the geology sections of the Groundsure reports (**Annex B**), the following superficial deposits may be present beneath the Site:

- alluvium; and
- glacial till.

3.2.6 The relative extent of outcrops of the uppermost superficial deposits in relation to the Site are discussed in more detail below.

3.2.7 Based on a review of BGS geological mapping and the Groundsure Geo Insight report, alluvial deposits are shown to dominate the superficial geology of the Site (Plate 13 in **Annex A**), with exception of glacial till (diamicton till) which is present in the south-western corner of the Site, beneath the existing National Grid connection and the WBA Power Station.

3.2.8 The on-site BGS boreholes presented in **Table 3**Error! Reference source not found. show the depths of superficial deposits present:

Table 3: Superficial deposit depths

Borehole ID	Lithology	Depth (m, bgl)
SK88 NW42	Alluvium	0.3 – 4.11
SK88 NW77	Alluvium	0.3 – 5.5
SK88 NW43	Alluvium	0.45 – 2.13

Bedrock Geology

3.2.9 BGS bedrock geological mapping and the Groundsure report (**Annex B**) indicate that the Site (including the railway sidings and utility/drainage connection corridors) is underlain by the Mercia Mudstone Group. The following boreholes located close to the Site encountered the Mercia Mudstone Group:

- SK88NW42, located within the WBB facility, encountered mudstones and siltstones of the Mercia Mudstone Group at 4.11m below ground level (bgl) and terminated at a depth of 17.37m bgl; and
- SK88NW41, located within the footprint of the Proposed Development encountered very stiff to hard weathered ‘Keuper Marl’ (Mercia Mudstone Group) at 5.03m bgl and terminated at 12.34m.

Engineering Geology

3.2.10 Derived from the Groundsure Geo Insight report, **Table 4** below presents the assessed risk associated with identified natural ground stability hazards. It should be noted that this assessment only covers natural soils and does not include an assessment of any potential stability issues associated with made ground, and in particular the PFA deposits.

Table 4: Summary of natural ground stability hazards

Hazard	Assessed Risk
Shrink-swell clays	Very low
Landslides	Very low
Ground dissolution of soluble rocks	Negligible
Collapsible deposits	Negligible beneath the Site. Very low in the south-western extent of the Site (beneath WBB Power Station site).
Running sands	Low beneath the Site. Very low in the south-western extent of the Site (beneath WBB Power Station site).

Coal Mining

3.2.11 The Groundsure report (**Annex B**) and online Coal Authority mapping tools do not show the Site to be within an identified coal mining reporting area.

3.2.12 The Groundsure report revealed no recorded instances of coal mining, mineral extraction, clay extraction or natural cavities beneath the Site.

3.3 Hydrogeology

3.3.1 The Environment Agency classifications for the identified superficial deposits and bedrock underlying the Site are summarised in **Table 5** below.

Table 5: Environment Agency aquifer classification of superficial and bedrock geology

Type	Formation	Environment Agency Aquifer Classification
Superficial Deposits	Alluvium (clay, silt, sand and gravel)	Secondary A
	Glacial Till (clay)	Secondary (undifferentiated)
Bedrock	Mercia Mudstone Group	Secondary B

Key:

Secondary A aquifer – 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. These are generally aquifers formerly classified as minor aquifers.'*

Secondary B aquifer – defined by the Environment Agency 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. These are generally the water-bearing parts of the former non-aquifers.'*

Secondary Undifferentiated aquifer – defined by the Environment Agency as *'an aquifer where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.'*

3.3.2 Soils at the Site are classified as being of a high leaching potential, meaning that they readily transmit liquid discharges and pollutants, with the exception of soils in an area to the north of the Site and those derived from glacial till in the south-east, which have no designation.

3.3.3 The 2019 Groundsure report (Ref. 11A-1b) **Annex B**) revealed a single groundwater abstraction license 2km north-east of the Site. Records show the license is for an active Anglian Water potable water supply borehole.

3.3.4 A review of a groundwater monitoring programme undertaken by the Applicant in 2017 (Ref 11A-7) indicates that groundwater levels vary from 12m Above Ordnance Datum (AOD) to a more typical 2–7m AOD across the wider West Burton Power Station site. Most of the Site lies at an elevation of between 10-14m AOD, and is therefore approximately 4–8m above typical groundwater levels.

3.3.5 It is considered that there may be pockets of perched water within the PFA deposits, due to the expected heterogeneity in the particle size of the deposits (resulting from end tipping of the material) and dependent on water damping and compaction of the fill.

3.4 Hydrology

Watercourses

3.4.1 The Groundsure report (**Annex B**) shows the following pass within 250m of the Site;

- the River Trent, an Environment Agency main river, is present east of the Site running south to north; the river is tidally influenced in this region;
- Wheatley Beck, an ordinary watercourse under the jurisdiction of Trent Valley Internal Drainage Board (IDB), passes 150m north of the Site, flowing west to east and discharging into the River Trent;
- Catchwater Drain, an ordinary watercourse also in the jurisdiction of Trent Valley IDB, runs south-west to north-east, discharging into the River Trent approximately 60m south-east of the southern drainage connection corridor; and
- several secondary watercourses which run north-east, south-west and pass 80-160m from the Site, feeding Catchwater Drain and Wheatley Beck.

3.4.2 In addition to the above, a number of other watercourses and culverts run within 500m of the Site, all ultimately discharging to tributaries of the River Trent. Surface water drainage from the periphery of the nearby coal stockyard discharges to Wheatley Beck, via oil interceptors. Surface water from the existing West Burton Power Station site flows south-east and discharges to the River Trent. A number of small surface water bodies lie between the development site and the River Trent. For further details on watercourses in the vicinity of the Site, refer to **Appendix 12A**: Flood Risk Assessment (Volume ESII).

Water Quality

3.4.3 Water quality was assessed using information presented on the Environment Agency Catchment Data Explorer (Ref 11A-4).

3.4.4 At the point of discharge into the River Trent, the water quality in Wheatley Beck (Wheatley beck Catchment Trib of Trent) was classified as having moderate ecological and good chemical quality from data collected in 2016.

3.4.5 **Table 6** presents a summary of Environment Agency water quality data relating to the River Trent (from Carlton-on-Trent to Laughton Drain). The River Trent is also a designated water course under the Nitrates Directive (Ref 11A-8).

Table 6: Summary of Environment Agency water quality information for the River Trent

Criteria	2013	2014	2015	2016

Criteria			2013	2014	2015	2016
Overall Water Body			Moderate	Moderate	Moderate	Moderate
Ecological (overall)			Moderate	Moderate	Moderate	Moderate
	Biological quality elements		Poor	Poor	Bad	Bad
		Invertebrates	Poor	Poor	Bad	Bad
		Macrophytes and Phytobenthos Combined	Good	Good	Good	Good
	Hydromorphological Supporting Elements		Supports good	Supports good	Supports good	Supports good
	Physico-chemical quality elements		Moderate	Moderate	Moderate	Moderate
	Acid neutralising capacity		-	-	-	High
		Ammonia (Phys-Chem)	High	High	High	High
		Dissolved oxygen	High	High	High	High
		pH	High	High	High	High
		Phosphate	Poor	Poor	Poor	Poor
		Temperature	High	High	High	High
	Specific pollutants		High	High	High	High
	Supporting elements (Surface Water)		Moderate	Moderate	Moderate	Moderate
Chemical (overall)			Fail	Good	Good	Good
Priority hazardous substances			Fail	Good	Good	Good
		Tributyltin compounds	Fail	Good	Good	Good
Priority Substances			Good	Fail	Good	Good
		Nickel and its compounds	Good	Fail	Good	Good

	Scale					
Key	Ecological status	Bad	Poor	Moderate	Good	High
	Chemical status	Fail	Good			

Water Abstractions

3.4.6 The current surface water abstraction license (License Serial No: 03/28/69/0070) pertaining to the Applicant (WBA and WBB Power Stations) is presented in **Annex C**. The license authorises the Applicant to abstract water from the River Trent at specific points (SK 80541, 85818 and SK 80548 85976) for cooling and industrial processes.

3.4.7 Within the 2019 Groundsure Report (**Annex B**) four other surface water abstraction licenses were listed as being present within 2km of the Site; three relating to the River Trent (30m - 1.2km to the east) and one relating to the Hall Farm reservoir (1.3km to the north-west).

Flood Risk

3.4.8 Small areas at the eastern and northern edges of the Proposed Development area lie within a Zone 2 floodplain (annual 0.1-1% chance of flooding), with another designated Zone 2 floodplain adjoining the Site to the north-east. Both of the proposed drainage connection corridor options lie within a designated Zone 3 floodplain (>1% annual chance of flooding). Whilst flood defences are indicated to be present between the Site and the River Trent, none of the Site is shown to be within an area benefitting from existing defences.

3.4.9 The Environment Agency overall Risk of Flooding from Rivers and the Sea (RoFRaS) designates the majority of the Site to not be at risk of flooding, with small areas to the east and northern borders of site listed as being at 'low' and 'medium' risk. Small areas are listed as being at high risk. These areas are exclusively associated with Wheatley Beck at the central north-east border of Site.

3.5 Radon

3.5.1 The Groundsure report (**Annex B**) indicates that the Site is not in located a Radon Affected Area, as less than 1% of properties are above the Action Level. Therefore no radon protective measures are necessary in construction of new properties or extensions.

3.6 Sensitive Land Use

3.6.1 With the exception of the central part of the Proposed Power Plant Site, the remainder of the Site and surrounding area including the River Trent are within a designated Nitrate Vulnerable Zones.

3.6.2 The Lea Marsh Site of Special Scientific Interest (SSSI) site is located approximately 1km to the north-east of the Site. No other environmentally sensitive sites, including National or Local Nature Reserves, Special Areas

of Conservation, Special Protection Areas or Ramsar Sites were identified within 2km of the Site.

3.7 Overall Site Sensitivity

3.7.1 The environmental sensitivity of the Site is considered to be as follows with regards to:

- Groundwater – **Moderate/High sensitivity** – A Secondary A Superficial Aquifer and a Secondary B Bedrock Aquifer are shown to be underlying the Proposed Power Plant Site;
- Surface water – **Moderate**– There are no new discharge points proposed, however the River Trent will still receive water originating from the Proposed Development via existing drainage network; and
- Land use – **Low sensitivity** – With the exception of WBA Power Station and WBB Power Station, the Site is primarily surrounded by agricultural land and no significant sensitive land uses have been identified proximal to the Site.

3.7.2 Based on the possible presence of a Secondary A aquifer within the superficial deposits underlying the Site, which could be in hydraulic connectivity with the River Trent, the overall sensitivity of the Site is considered to be moderate.

4. Site History

4.1 Introduction

4.1.1 AECOM has reviewed historical Ordnance Survey (OS) maps dating from 1885 to present obtained as part of the Groundsure report (**Annex B**) in order to assess potential historical uses of the Site and the surrounding land. The summary provided below identifies key historical land uses and features which are considered to have the potential to have impacted the soil and groundwater beneath the Site. The historical maps are included within the Groundsure Historic Maps provided in **Annex B** (Part 2).

4.2 History of the Site and Surrounding Land Use

4.2.1 A summary of potentially contaminative land uses identified from historical maps is presented in **Table 7**, below:

Table 7: Summary of the review of historical maps

Date	On-Site Land Use	Off-Site Land Use
1885-1886	• Agricultural land (fields); • two former river channel features (oxbow lakes, approx. 50-80m channel width) are denoted. One passes through the north of the Site beneath the centre of the Proposed Power Plant Site and the proposed northern drainage connection corridor. The second passes beneath the eastern extent of the proposed southern drainage connection corridor; • building of unknown purpose and small watercourse shown in the vicinity of the proposed southern drainage connection corridor. • the River Trent follows its present course, adjoining the Site to the east.	• Agricultural land (fields), field drains and minor watercourses.
1899-1900	Building of unknown use marked as 'Cheese House'.	• Pumping House shown 150m to the north-west of the Site boundary.
1904	• No significant change.	• No significant change.
1916 - 1921	• Two footpaths cross the north of the Site.	• No significant change.
1947-1948	• No significant change.	• No significant change.
1951	• Pumping House no longer inferred.	• No significant change.

Date	On-Site Land Use	Off-Site Land Use
1969-1974	• Rail infrastructure is present in the north-west of the Site, adjacent to the coal stockyard of WBA Power Station. Site drainage is denoted around the stockyard. • field drains shown across the Site. • pumping Station shown in proposed southern drainage connection corridor. • inferred landfill in the north of the Site, assumed to be a PFA disposal area.	• WBA Power Station and supporting infrastructure shown immediately west and south-west of Site. • area approx. 150m to the north-west of the Site inferred as 'Emergency dust disposal area' (assumed to be purposed for PFA disposal). • Wheatley Beck and the Catchwater Drain are named on mapping. • sewage works shown immediately north-east of the Site. • ground workings shown north-west of the Site.
1977-1980	• The former river channels are no longer denoted.	• Surface water ponds shown immediately east of the Site, between the northern and southern drainage connection corridors. • former site of medieval village and church shown 100m south of the Site. • *'Emergency dust disposal area'* still inferred north-east of the Site.
1989-1994	• No significant change.	• No significant change.
2002	• Works compound shown in the north of the Site. • Track shown through south of the Site.	• No significant change.
2010	• North of Site inferred as 'Emergency Dust Disposal Area'.	• Expansion of WBA Power Station supporting operations west of the Site (possible flu-gas desulphurisation plant) • excavations of unknown

Date	On-Site Land Use	Off-Site Land Use
		purpose north-east of the Site are shown to be flooded.
2014	• Construction of WBB Power Station. Supporting infrastructure is shown to extend around the Site and along the northern drainage connection corridor.	• No significant change.

4.3 Summary of Site History

4.3.1 The West Burton Power Station site is located immediately north of the remains of the medieval village of West Burton. Prior to its development as a power station in the late 1950s and early 1960s, the West Burton Power Station site was primarily occupied by agricultural land. Continued operation of the WBA Power Station facility has produced large volumes of PFA, which has been removed to disposal sites throughout the north-east of the expanded West Burton Power Station site. Work began on the site of the WBB CCGT plant in 2008, with construction completed and generation commencing in 2013 (Ref 11A-9).

4.3.2 In addition to the above, the review of historical ordnance survey mapping revealed the following key features:

- two former 50-80m wide river channel features beneath the Site and drainage connection corridors; and
- areas within and surrounding the north of the Site formerly purposed as ‘emergency dust disposal’ areas. These are assumed to be the historical sites related to the WBA Power Station PFA disposal.

5. Regulatory Database Search

5.1 Introduction

5.1.1 AECOM commissioned Groundsure to conduct a database search of available regulatory agency records to evaluate whether activities on or near the Site have the potential to create significant adverse effects. Groundsure reviews databases compiled by national and local governmental agencies. The Groundsure report (**Annex B**) essentially relates to operational activities for which licenses or authorisations are required and have been obtained pursuant to environmental laws. It is therefore possible that there are unauthorised activities being carried out in the vicinity of the Site that are not declared and therefore not detailed. It is also noted that the databases referenced by Groundsure are continually updated and consequently recent developments/registrations in the Site area may have occurred since the Groundsure report was produced.

5.1.2 It should be noted that this information is reported as AECOM received it from Groundsure, which in turn reports information as it is provided in various government databases. It is not possible for either AECOM or Groundsure to verify the accuracy or completeness of information contained in these databases. However, the use of this information is a generally accepted practice in the conduct of Phase 1 ESAs.

5.1.3 Sites identified within the study radius (500m) are evaluated to assess if they are likely to have had an adverse impact on the subject property or could be adversely affected by the subject property. The criteria used to evaluate sites within the study radius include distance from the subject property, the expected depth and direction of groundwater and surface water flow, likely surface water flow direction and the presence/absence of documented contaminant releases at the identified sites.

5.1.4 The approximate distances to features described in this section have been estimated from the closest boundary of the Site and may also be subject to an error.

5.2 Database Review

Table 8: Summary of database review

Category			Search Radius (m)	Summary of relevant records;	
				On site	Off site
Environmental Permits, Incidents and Registers	Industrial Sites Holding Licences and/or Authorisations	Historic IPC Authorisations	500	None recorded.	None recorded.
		Part A(1) and IPPC Authorised Activities	500	None recorded.	28 recorded all pertaining to the Applicant.
		Red List Discharge Consents (potentially harmful discharges to controlled waters)	500	None recorded.	None recorded.
		List 1 Dangerous Substances Inventory Sites	500	None recorded.	None recorded.
		List 2 Dangerous Substance Inventory Sites	500	None recorded.	None recorded.
		Part A(2) and Part B Activities and Enforcements	500	None recorded.	None recorded.
		Category 3 or 4 Radioactive Substances Authorisations	500	None recorded.	None recorded.
		Licensed Discharge Consents	500	None recorded.	12 recorded, (all directions) from Site to tributaries of, or directly to, the River Trent. 4 pertain to the wider WB Power Station site, 5 pertain to the proximal water treatment works, 2 pertain to other processes and 1 pertains to Sturton-le-Steeple Quarry.
		Water Industry Referrals (potentially	500	None recorded.	None recorded.

Category			Search Radius (m)	Summary of relevant records;	
				On site	Off site
		harmful discharges to the public sewer)			
		Planning Hazardous Substance Consents and Enforcements	500	None recorded.	None recorded.
	Records if Control of Major Accident Hazards (COMAH) and Notification of Installations Handling Hazardous Substances (NIHHS) sites		n/a	The wider West Burton Power Station site is a designated COMAH site (Lower Tier Operator). This included the full extent of the Proposed Development Site, with the exception of the northern extent of the Site.	
	Pollution Incidents	Environment Agency Recorded Pollution Incidents List 2	500	None recorded.	None recorded.
		Environment Agency Recorded Pollution Incidents List 1	500	None recorded.	None recorded.
	Sites Determined as Contaminated Land under Part 2A EPA 1990		n/a	None recorded.	None recorded.
Landfill and Other Waste Sites	Landfill Sites	Environment Agency/Natural Resources Wales landfill data	500	None recorded.	1 active landfill shown adjacent north of the Site. It is understood that this is Bole Ings Ash Disposal site, operated by the Applicant.
		Environment Agency/Natural Resources Wales historic landfill sites	500	1 recorded, covering the full extent of the Site (with exception to the rail sidings and far extent of each drainage connection corridor) and extending to the north. Landfill for inert industrial liquid sludge. Believed to be the former site of WBA PFA disposal.	

Category			Search Radius (m)	Summary of relevant records;	
				On site	Off site
		BGS/DoE non-operational landfill sites	500	None recorded.	1 recorded >500m from the Site, 'no risk to aquifer'.
		Landfills from Local Authority and Historical Mapping Records	500	None recorded.	None recorded.
	Other Waste Sites	Waste treatment, transfer or disposal sites	500	None recorded.	4 records. 3 of which pertain to 'Emergency Dust Disposal Areas' (1969-89) Site and 1 pertaining to an Historic Planning Application Reference: 16/01441/CDM “for the construction of use of ash processing plant.”
		Environment Agency/Natural Resources Wales licensed waste sites	1500	None recorded.	6 records. 4 listings (3 effective), 933-1421m south-west of the Site, pertaining to the West Burton Power Station site and 2 listings pertaining to the Gainsborough Landfill site 1.4km east.
Current Industrial Data	Potentially Contaminative Industrial Sites		250	None recorded.	11 records, 4-248m from site, including pumping stations, tanks, waste storage and industrial machinery.

6. Review of Existing Information

6.1 Introduction

6.1.1 AECOM has reviewed the following historical reports and information as part of this Phase 1 ESA:

- Application Site Report, West Burton Power Station, Jacobs (March 2006) (Ref 11A-10);
- West Burton CCGT Power Station, Flood Risk Assessment, Parsons Brinckerhoff (October 2008) (Ref 11A-11);
- West Burton CCGT Power Station, Pre-Construction Ground Contamination Risk Assessment, (Jacobs, 2008) (Ref 11A-12);
- West Burton 'B' Power Station, Proposed Landscaping Works Utilising Spoil from the Construction Site, Jacobs (May 2012) (Ref 11A-13);
- West Burton Power Station, Annual Groundwater Report 2013, EDF Energy (2013) (Ref 11A-7);
- Letter report, Window Sampling and SPT Investigation Results, Kiwa CMT Testing (May 2014) (Ref 11A-14);
- WBB North Area GI (Kiwa CMT Testing, 2017) (Ref 11A-6); and
- Assorted borehole logs (2014-2017), provided to AECOM by the Applicant (Ref 11A-15).

6.2 Application Site Report (Jacobs, 2006)

6.2.1 This Application Site Report was completed to supplement an application to the Environment Agency for an operating permit for the WBA Power Station facility. The report provides a pollution assessment, comprising a detailed summary of the associated operating infrastructure of WBA Power Station and the pollution prevention measures in place. The report also provides a CSM for the wider West Burton Power Station site.

6.2.2 It is noted that, at the time of writing, the Site, adjacent to WBB Power Station is not in use, but has formerly been purposed for the disposal of PFA. It is also noted that ash was historically infilled in the Emergency Ash Disposal areas.

6.2.3 The summary of the site CSM states:

6.2.4 'the environmental condition of the sub-surface within the installation may have been impaired by historical use of the site. Areas of the site have been infilled with ash in a controlled manner..'

6.3 West Burton CCGT Power Station, Flood Risk Assessment, Parsons Brinckerhoff (2008)

6.3.1 This flood risk assessment was completed to support the construction of the WBB Power Station facility, which was on-going at the time of the study, and considered risks of fluvial and tidal flooding.

6.3.2 The report recorded that the majority of the WBB Power Station main compound lies within an area at minimum or no risk of flooding, whilst in areas of the Site close to the River Trent there is a 0.5-1.3% of flooding in any given year.

6.3.3 The report concluded that the mechanism for tidal flooding of the Site was unaffected by the proposed development of WBB Power Station. In the event that tidal levels in the River Trent reach a 1 in 200 year high, it was noted that there is a risk that existing flood defences may be overtopped. However, taking into account the elevation of the WBB Power Station facility, it is unlikely the main compound would be affected. The report noted that the area of the intake and pump house is at risk of flooding, however the structure is considered to be 'water-compatible'.

6.4 West Burton CCGT Power Station, Pre-Construction Ground Contamination Risk Assessment, (Jacobs, 2008)

6.4.1 The 2008 Jacobs report presents a pre-construction ground contamination risk assessment for the WBB Power Station.

6.4.2 A site investigation in the final quarter of 2007 sunk 4no. rotary boreholes, 6no. cable percussion boreholes and 10no. trial pits within the area of the proposed WBB Power Station development. Exploratory holes revealed a significant thickness of PFA, overlying natural alluvial superficial deposits over bedrock. Thicknesses of PFA identified beneath the WBB Power Station site were as follows;

- south of WBB Power Station site, 2-3.6m bgl;
- north-east of WBB Power Station site, 6.0m bgl;
- far north of WBB Power Station site, 10.5m bgl; and
- east of WBB Power Station site, none.

6.4.3 The report stated that at the time of writing, the availability of WBB Power Station site-specific groundwater levels data was not sufficient to confirm the WBB Power Station site hydrogeological regime.

6.4.4 Based on water strikes recorded during drilling, it was suggested that groundwater is likely to be in continuity with the natural ground within the south-east of the Site and in continuity with the lower part of the PFA in the north-western area of the Site. However, it was also suggested that the

water level recorded in boreholes in the northern end of the WBB Power Station site may simply reflect ash pore water/perched water which has accumulated at the base of the ash fill above the natural clay.

6.5 West Burton 'B' Power Station, Proposed Landscaping Works Utilising Spoil from the Construction Site (Jacobs, 2012)

6.5.1 This environmental report pertains to a package of proposed landscaping works in the vicinity of the WBB Power Station facility (then still under construction). As described in the report, intention was to reduce the level of stockpiles of previously deposited PFA, utilising the spoil in permanent landscaping works around the near-complete WBB Power Station CCGT plant.

6.5.2 One of the areas proposed to be affected by the landscaping works was 'Area 2', an area of land that had been raised in level by the historical deposition of PFA. Area 2 lay immediately north of the WBB Power Station development and had been resurfaced with crushed stone to form the construction laydown area, prior to the plant's completion in 2013. Area 2 now lies directly below the assumed location of the Proposed Development.

6.5.3 It was proposed that, following construction, stone would be removed from the surface of Area 2, replaced with topsoil and seeded with a variety of vegetation.

6.6 Annual Groundwater Monitoring Report (EDF, 2013; 2017)

6.6.1 The environmental permits for the wider West Burton Power Station site require that the Applicant submit annual groundwater monitoring reports to the Environment Agency. Groundwater reports for 2010, 2011 and 2012 were reviewed by AECOM. The 2013 annual report also includes a summary of data from previous years monitoring, which began in 2007. The 2017 annual monitoring report has also been reviewed.

6.6.2 During 2013, groundwater level and quality monitoring on the West Burton Power Station site was undertaken on a quarterly basis. The report presents the 2013 groundwater level data alongside historical trends.

6.6.3 Available monitoring data suggests that, within the Site, estimated groundwater levels may vary from:

- 2.5m bgl close to the banks of the River Trent, to;
- 4.1-4.3m bgl in the north of the Proposed Power Plant Site, to;
- 4.8-5.1m in the south of the Proposed Power Plant Site (stated figures are approximate).

6.6.4 On the basis of levels recorded in 2013 across the wider West Burton Power Station site, the report states that the inferred hydraulic gradient is broadly from the south-west towards the east and north-east.

6.6.5 Groundwater sampling results for the 2013 monitoring are presented alongside historical trends. The report summarises that no hazardous or non-hazardous pollutants were found to be significantly impacting the groundwater beneath the Site.

6.6.6 The 2017 annual monitoring report is broadly consistent with the 2013 findings (refer to paragraph 3.3.4).

6.7 Window Sampling and SPT Investigation Results (Kiwa CMT Testing, 2014)

6.7.1 On 29th and 30th April 2014, Kiwa CMT Testing installed 8No. window sample holes to depths of 1.0-8.0m bgl. Whilst it is inferred that the boreholes were drilled within the northern area of the WBB Power Station site, the exact location of each of the boreholes can be seen in **Annex E**.

6.7.2 With the exception of one window sample location, exploratory holes passed through a shallow depth of concrete and made ground (approx. 0.5-0.6m), before encountering PFA deposits of varying compaction levels until hole completion (max 8.0m bgl). Stratigraphic unit boundaries were inferred from changes in CPT values, and no samples were collected to confirm the change in stratigraphy. PFS thicknesses of 3.9-7.5m were therefore inferred.

6.8 *WBB North Area GI* (Kiwa CMT Testing, 2017)

6.8.1 Further borehole logs, which comprise a part of the 'WBB North Area GI', are available for exploratory holes advanced in early 2017. Although the exact positon of these holes is similarly unclear, borehole logs indicate ground conditions consistent with those thought to underlie WBB Power Station and the Proposed Power Plant Site. Logs show a small amount of crushed stone (0.05-0.1m bgl), overlying 7.4-9.7m thickness PFA. With the exception of one hole, which terminated in the PFA, the logs show PFA deposits to be underlain by grey and brown clay or sand. Mudstone was encountered in one hole from 13.4m bgl, until termination at 16.4m bgl.

7. Assessment of Anticipated Ground Conditions

7.1 Introduction

7.1.1 Based on a review of the available information relating to the underlying ground conditions at the Site and previous investigation data, AECOM has undertaken an assessment of the anticipated ground conditions at the Site to identify potential development constraints that should be further assessed during the Proposed Development design.

7.2 Summary of Potential Development Constraints

7.2.1 Identified potential constraints associated with ground conditions at the Site include:

- the infilled river channels (ox bow lakes – former route of the River Trent) that pass beneath the Site and the southern drainage connection corridor. Besides presenting engineering implications with an increased risk of compressible ground, coarse grained sediments within the channels may represent a preferential pathway for groundwater flow, and may remain hydraulically linked to the River Trent. Therefore, there is a greater potential risk of migration of contaminants, following a spill or release to the Secondary A Aquifer and adjacent primary watercourse;
- historic PFA disposal. A significant thickness of PFA is expected to be present beneath the Proposed Power Plant Site. In addition, Emergency ash disposal areas identified in the north of the Site are expected to have historically been used to dispose of PFA; PFA will likely require significant improvement or piling to address the heterogeneous nature of the deposits. Other studies (WSP, 2017) (Ref 11A-5) have also noted that PFA may have been dumped with coarser FBA, posing a risk associated with void formation and differential subsidence;
- evidence for the presence of hydrogen sulphide has been encountered during excavation works towards the south of the Site, possibly occurring as a result of microbial action (WSP, 2017) (Ref 11A-5);
- uncertainty with respect to groundwater levels. Further data is needed to accurately predict the active groundwater regime beneath the Site, whether groundwater levels show any delayed tidal response and whether groundwater across the Site represents a single body or a number of discrete perched water tables; and
- uncertainty over ground conditions – little information is available with respect to ground condition within the drainage connection corridors and the rail offloading area. The groundwater regime beneath the drainage connection corridors is considered to have the potential to vary significantly from the wider Site. In addition, significant contamination arising from current and historical use would be expected within the rail sidings.

7.3 Summary of Anticipated Ground Conditions

7.3.1 A review of available reports and information has yielded the following information pertinent to the Proposed Development:

- the area beneath the existing WBB Power Station facility and the Site were historically used for the disposal of PFA;
- emergency Ash Disposal areas in the vicinity of the Site were historically used for the disposal of PFA;
- a significant depth of made ground, comprising topsoil, crushed stone surfacing and PFA could be expected beneath the Proposed Power Plant Site; and
- the tidal River Trent poses a flood risk to parts of the Proposed Development, principally the northern and southern drainage connection corridors situated to the eastern limits of the Site.

7.3.2 **Table 9** below provides a generalised and approximate summary of available ground condition data for the wider Site.

Table 9: Approximate depths to geology beneath the wider WBB Power Station site/ Proposed Development site

Geological Unit	Top of Strata (Metres Below Ground Level)	Description
Made ground (other)	0-0.6	Topsoil, crushed stone, concrete and rubble
Made ground (PFA)	0-10.5	Pulverised fuel ash deposits
Superficial deposits (clay)	9.2-10	Grey and brown clay
Superficial deposits (alluvium)	9.8-10.7	Alluvial sand
Mercia Mudstone Bedrock	13.4	Initially weathered Mudstone (marl)

8. Preliminary Conceptual Site Model

8.1 Introduction

8.1.1 AECOM has developed a preliminary conceptual site model (CSM) based on a qualitative "Source → Pathway → Receptor" (SPR) risk assessment, For the purpose of the assessment, an on-going commercial/industrial site use has been assumed. The following sections consider the identified potential sources, pathways and receptors. **Table 10** identifies the potential sources of contamination on-site and off-site.

8.2 Potential Sources

Table 10: Potential sources of contamination

Location	Potential Sources
On-site	• Contamination associated with the historical (uncontrolled) deposition of PFA; • permitted activities relating to the Site's existing operation as a power station, including storage of fuels, switchyard etc; • contamination resulting from the Site's use as a construction laydown area, during the construction of WBB Power Station; • emergency diesel black-start generator and associated diesel storage (above ground storage tank of 50m^3); • railway sidings adjacent to the coal yard; • the Site's drainage system, including oil-water interceptors, drains, sumps and gullies; and • historical agricultural land use (e.g. use of pesticides, heavy equipment).
Off-site	• Contamination associated with the historical (uncontrolled) deposition of PFA; • permitted activities relating to the Site's existing operation as a power station, including contaminants associated with the main power plant from the boiler house, turbine house, switchyard etc; • the coal stockyard and associated activities (including the peripheral private railway line); • the nearby water treatment works; • the Site's effluent system, including oil-water interceptors,

Location	Potential Sources
	drains, sumps and gullies; and • historical agricultural land use (e.g. use of pesticides, heavy equipment).

8.2.1 Potential compounds of concern associated with the identified potential sources of contamination may include, but are not limited to:

- Volatile Organic Compounds (VOCs), including BTEX;
- Semi Volatile Organic Compounds (SVOCs) including poly-aromatic hydrocarbons (PAHs),
- hydrocarbons e.g. diesel or distillate fuel;
- Polychlorinated Biphenyls (PCBs);
- heavy metals;
- asbestos;
- inorganic ions, including alkalinity and sulphate; and
- ground gases (carbon dioxide, methane, hydrogen sulphide etc.).

8.3 Potential Pathways

8.3.1 Based upon the available information **Table 11** below identifies the potential pathways:

Table 11: Potential pathways

Pathway Type	Pathway
Human Health	• Dermal contact with substances in shallow soil and/or shallow groundwater; • inhalation of substances in dust; • inhalation of substances from the partitioning of vapours from soil and/or shallow groundwater; and • accidental ingestion of substances in soil/dust and/or shallow groundwater during potential groundworks.
Controlled Waters	• Vertical migration through unsurfaced areas, vegetated areas and hard-standing (where there are joins/cracks) and drains/pipework into the Made Ground/shallow soil; • lateral and vertical migration within the Made Ground and superficial deposits, e.g. leaching from soils in the unsaturated zone into shallow groundwater; • preferential lateral and vertical migration along routes

Pathway Type	Pathway
	of underground services, pipelines and associated trenches; • lateral and vertical migration within shallow groundwater in the Made Ground/superficial deposits, including to deeper groundwater; • lateral and vertical migration within deeper groundwater in the bedrock; and • lateral migration within groundwater to surface water courses.
Infrastructure	• Direct contact of substances within shallow groundwater with concrete foundations, plastic water pipes etc; and • migration of ground gases and accumulation in confined spaces (e.g. basements, service ducts).
Ecology	• Plant uptake and subsequent ingestion by fauna.

8.4 Potential Receptors

8.4.1 Based upon the available information, **Table 12** below identifies potential receptors:

Table 12: Potential Receptors

Receptor Type	Receptor
Human Health	• Current site employees; • off-site employees on neighbouring sites (WBA and WBB Power Station); and • future construction (and on eventual decommissioning, demolition) workers.
Controlled Waters	• Shallow groundwater within the superficial deposits (Secondary A Aquifer); • deeper groundwater within the bedrock (Secondary B Aquifer); and • surface water, including the fish ponds, Catchwater Drain, Wheatley Beck and the River Trent, assumed to be in hydraulic continuity with the shallow groundwater.
Infrastructure	• Below-ground structures, e.g. concrete foundations, plastic water pipes; and

Receptor Type	Receptor
	• confined spaces within buildings (e.g. basements, store cupboards, service ducts).
Ecology	• Flora and fauna in woodlands, fishing ponds etc. surrounding the Site.

8.5 Risk Assessment Principles

8.5.1 A summary of the risk assessment principles used to evaluate potential pollutant linkages is presented as **Annex F**.

8.6 Summary of Potential Pollutant Linkages

8.6.1 A summary of the potential pollutant linkages is summarised in **Table 13**, below. **Annex F** provides definitions for risk levels.

Table 13: Summary of risk assessment principles

Source	Pathway	Receptor	Potential severity	Likelihood of occurrence	Level of risk	Discussion
PFA lagoons, coal stockpiles, railway and associated activities.=	Direct dermal contact/ingestion /inhalation	Current and future site users Current and future users of neighbouring sites	Medium	Low	**Moderate/ Low**	Former PFA disposal areas are located directly north-west of the Proposed Power Plant Site; therefore it is possible that future site workers may be impacted via inhalation of dusts/vapours. Assuming that the Site is landscaped and covered with hardstanding, it is unlikely future site users will come into direct dermal contact or ingest coal/PFA materials. The coal stockyard will be operational during the time scale of the proposed construction works. The spread of coal dust is suppressed by spraying water onto the coal stockyard, this should continue throughout the timescale of the proposed development to mitigate impacts towards current/future site workers and nearby residents.
	Inhalation of vapours and dusts		Medium	Low	**Moderate/ Low**	
	Direct dermal contact/ingestion /inhalation	Construction and excavation workers	Medium	Likely	**Moderate**	Construction and excavation workers are likely to come into direct contact with PFA/coal stockpile material due to their close proximity and likely disturbance during the works. However, the severity of this is anticipated to be low, as suitable mitigation and health and safety measures (e.g. use of suitable PPE) should be in place.
	Inhalation of vapours and dusts		Medium	Unlikely	**Low**	

Source	Pathway	Receptor	Potential severity	Likelihood of occurrence	Level of risk	Discussion
						Infilled materials could also pose a risk to construction workers and neighbouring site users if appropriate mitigation measures are not adopted.
	Run off directly from lagoons/stockpile and vertical migration through unsurfaced areas	Controlled waters, including groundwater and surface waters (River Trent, River, Wheatley Beck, drainage channels and fishing ponds)	Medium	Likely	**Moderate**	It is anticipated that leaching of contaminants may occur when rainwater and overland flows come into contact with the PFA deposits beneath the Site. These contaminated waters are likely to migrate vertically into shallow ground layers if exposed during excavation. Such flows may migrate laterally into surface water courses such as the River Trent via preferential pathways. Potential contaminant migration into deeper groundwater is also a possibility and, if occurs, could be relatively high risk due to groundwater vulnerability and aquifer classification (Secondary B) of the underlying bedrock.
	Leaching from made ground and superficial deposits and vertical migration into shallow groundwater		Medium	Likely	**Moderate**	
	Lateral migration of impacted shallow groundwater to surface waters, including along preferential pathways		Medium	Likely	**Moderate**	
	Vertical migration of impacted shallow groundwater to deeper groundwater		Medium	Low	**Moderate/ Low**	
	Plant uptake and subsequent ingestion	Flora and Fauna	Minor	Likely	**Low**	The Site is highly vegetated with varying species of flora and fauna, including reeds,

Source	Pathway	Receptor	Potential severity	Likelihood of occurrence	Level of risk	Discussion
	by fauna					ferns and orchids. It is anticipated that if suitable pollution mitigation measures are in place with regards to ground/surface waters, risk to flora and fauna is likely to be low. Particular care should be taken in areas where great crested newts are present, due to their protected status.
	Direct impact to infrastructure	Buried infrastructure e.g. pipes	Mild	Low	**Low**	Contaminated groundwater may have adverse impacts on underground infrastructure, however risk associated with this is relatively low. Both the PFA disposal area and coal stockyard are located within close proximity to both WBA and WBB Power Stations; therefore contaminated groundwater and overland flows may impact upon infrastructure if exposed during excavation works.
Current power plant operations and related spills/leaks	Direct dermal contact /ingestion /inhalation	Current and future site users Current and future users of neighbouring sites	Mild	Unlikely	**Very Low**	According to the Groundsure report **(Annex B)**, there has not been any recorded pollution incidents on-site relating to current power plant operations. It is therefore anticipated to be unlikely that contamination relating to spills/leaks will impact upon site workers. Appropriate PPE should be worn alongside the implementation of necessary safety procedures whilst in the vicinity of the
	Inhalation of vapours		Medium	Unlikely	**Low**	

Source	Pathway	Receptor	Potential severity	Likelihood of occurrence	Level of risk	Discussion
						current power station to minimise risk to human health.
	Leaching from shallow soil and vertical migration into shallow groundwater	Controlled waters, including groundwater and surface waters (River Trent, Wheatley Beck and drainage channels)	Medium	Low	**Moderate/ Low**	Risk associated with leaks/spills associated with current power plant operations is anticipated to be low, as there has not been any pollution incidents recorded on-site. Appropriate pollution mitigation and safety measures should be adopted to reduce the risk associated with future power plant operations.
	Lateral migration of impacted shallow groundwater to surface waters, including along preferential pathways		Medium	Low	**Moderate/ Low**	
	Vertical migration of impacted shallow groundwater to deeper groundwater		Medium	Low	**Moderate/ Low**	
	Plant uptake and subsequent ingestion by fauna	Flora and Fauna	Minor	Low	**Very Low**	As mentioned previously, there have not been any pollution incidents recorded in association with the current power plant. However the plant is still operational, therefore any spills which do occur during the proposed works would have the potential to impact upon flora and fauna via contaminated waters.

Source	Pathway	Receptor	Potential severity	Likelihood of occurrence	Level of risk	Discussion
Off-site current land uses e.g. sewage works, coal stockyard, railway	Direct dermal contact /ingestion /inhalation	Current and future site users Current and future users of neighbouring sites	Medium	Unlikely	**Low**	According to the Groundsure report (**Annex B**), there has been no pollution incidents associated with the sewage works located to the north-east of Site. Taking into account the distance between the sewage works and the Proposed Development, the risk to human health is not expected to be significant. There are procedures which help to mitigate against the impacts of dust dispersal from the coal stockyard; therefore, it is unlikely that this will cause significant harm to human health. Any contamination originating from the railway is unlikely to impact upon workers due to distance from site. Distance between the Site and the railway line means that any adverse impacts upon human health associated with this source is unlikely.
	Inhalation of vapours and dusts		Medium	Unlikely	**Low**	
	Leaching from made ground and superficial deposits and vertical migration into shallow groundwater	Controlled waters, including groundwater and surface waters (River Trent, River, Wheatley Beck and drainage channels)	Medium	Low	**Low**	Again, there have not been any pollution incidents recorded in association with the sewage works, and environmental permits are present relating to the discharge of sewage waters. Therefore, assuming that pollution safety and mitigation strategies are in place, it is unlikely that contaminants will migrate from this source into ground/surface waters.
	Lateral migration of impacted shallow groundwater to surface waters, including along		Medium	Low	**Low**	

Source	Pathway	Receptor	Potential severity	Likelihood of occurrence	Level of risk	Discussion
	preferential pathways					
	Vertical migration of impacted shallow groundwater to deeper groundwater		Medium	Low	**Low**	
	Plant uptake and subsequent ingestion by fauna.	Flora and Fauna	Minor	Unlikely	**Very Low**	The sewage works are surrounded by agricultural land and has its own environmental permit. The sewage works is located off-site and will subsequently not be a part of the proposed development; therefore it is unlikely that ground/surface water courses will be affected by pollutants.
emergency diesel generator	Direct dermal contact/ingestion/inhalation of vapours	Current and future site users Current and future users of neighbouring sites	High	Low	**Moderate**	In the event of a spill/leak from the emergency diesel generator or associated diesel tanks, site users may be exposed to fuels and associated vapours. If inhaled diesel can cause irritation to the eyes, dizziness, and nausea and, under long-term exposure, may lead to more serious health problems such as lung and kidney damage. Accidental ingestion of diesel in large doses is unlikely due to the foul smell/taste, however if ingestion occurs serious health issues can occur. The

Source	Pathway	Receptor	Potential severity	Likelihood of occurrence	Level of risk	Discussion
						likelihood of occurrence is low as fuels would be stored within a safe container and an appropriate sized bund would be in place. Appropriate PPE should be worn when working in the vicinity of the generator and diesel tank, including goggles, coveralls and gloves. Site workers would have been face fitted and trained in the correct use of respirators.
	Leaching from made ground and superficial deposits and vertical migration into shallow groundwater	Controlled waters, including groundwater and surface waters (River Trent, River, Wheatley Beck and drainage channels)	Medium	Low	**Moderate/ low**	A bund would be used to protect the surrounding area, including groundwater, from contamination relating to diesel spills/leaks. Risk to groundwater is expected to be low, assuming that the protective bund is in good condition.
	Lateral migration of impacted shallow groundwater to surface waters, including along preferential pathways		Medium	Low	**Moderate/ low**	
	Vertical migration of impacted shallow groundwater to deeper groundwater		Medium	Low	**Moderate/ low**	

9. Summary and Recommendations

9.1 Summary

9.1.1 This Phase 1 ESA comprised a review of available geotechnical and geo-environmental information for the Site in order to assess the likely ground conditions and any potential for ground contamination arising from historical or current on-site or off-site activities.

9.1.2 Key findings of the assessment are listed below:

- the Site is located within close proximity to the River Trent, with a series of drainage channels included within the Site;
- historical maps indicate that prior to the development of the current power stations at West Burton, the Site was agricultural land;
- following development of WBA Power Station, the Site was used as an area for deposition of PFA and recent investigations indicate a minimum depth of up to 7.9m of PFA may be present across the Site;
- there is a single groundwater abstraction license 2km north east of the Site relating to an active Anglian Water potable water supply borehole;
- four surface water abstraction licenses within 2000m of the Site; three relating to the River Trent (to the east) and one relating to the Hall Farm reservoir (to the north-west);
- the regulatory database check did not identify any previous pollution incidents on-site or within 500m of site;
- the bedrock beneath the Site is Mercia Mudstone with superficial deposits of Alluvium covering the majority of the Site with the exception of a band of Glacial Till running north-west – south-east at the southern end of the Site;
- the superficial alluvium is classified as a secondary (A) aquifer (permeable layers) and the Diamicton is classified as a secondary aquifer (undifferentiated layers);
- a number of coal pits and sandstone and limestone quarries were present within 750m of the Site until the early 1900s, and all appear to have been infilled by 1991. A limited number of other potential sources of contamination were identified from historical maps including railway lines and a sewage works;
- one landfill was recorded in the Groundsure report (**Annex B**), and is located on-site (West Burton Power Station) relating to Inert, Industrial and Liquid waste. This is believed to relate to former PFA disposal areas;
- the diesel generator and associated above ground diesel storage tank, which would be present on-site presents minimal risks to workers and the environment, providing a bund is used to form a protective barrier between the contamination source and receptors;

- a preliminary assessment of potential ground conditions which may be present at the Site identified the potential development constraints to include infilled ground, sloping ground, potential for shallow groundwater and aggressive ground conditions (associated with PFA);
- a preliminary conceptual site model has been prepared which identified the potential for complete source-pathway-receptor pollutant linkages to be present at the Site as very low to moderate and localised.; and
- likely foundation solution will involve piling, and these will require a piling risk assessment.

9.2 Recommendations

9.2.1 Based upon the information reviewed as part of this Phase 1 Geo-environmental site assessment, it was recommended that intrusive ground investigations would be required to further assess any potential pollutant linkages and potential geotechnical constraints on the Proposed Development. In particular, uncertainty about the depth and nature of groundwater deposits beneath the Site and whether these are in hydraulic continuity with the River Trent required further investigation.

9.2.2 The recommendations for the ground investigations (and scope undertaken) included the following:

- trial pitting, window sampling, cable percussion boreholes with follow on rotary core drilling,
- in-situ testing and collection of soil samples chemical and geotechnical laboratory analysis, including asbestos screening;
- installation of monitoring wells to record ground gas and groundwater conditions;
- completion of groundwater and gas monitoring events to characterise gas and groundwater conditions at the site and obtain samples for laboratory analysis; and
- surface water sampling to assess the impact of possible groundwater/runoff to surface water receptors including the fishing ponds.

9.2.3 The results of the initial ground investigation completed in December 2017 are provided in **Appendix 11B** (ES Volume II).

9.2.4 The ground investigation works and interpretive reporting may also be used to support discharge of DCO Requirements, and provide data for assessment of baseline conditions for future permitting.

10. References

Ref 11A-1 British Geological Survey (BGS) website (www.bgs.ac.uk) including the 'GeoIndex' tool, accessed May 2017; Ref 3-1: Groundsure® Reports; EnviroInsight (ref. GS-3864429), GeoInsight (ref. GS-3864430) and MapInsight (ref. GS-3864431), dated 9th May 2017.

Ref 11A-2 Ordnance Survey Explorer™ topographic map sheets 271 (Map of Newark-On-Trent (Retford, Southwell & Saxilby)) 1:25,000 scale.

Ref 11A-3 AECOM (2017) *Preliminary Environmental Information (PEI) Report*, September 2017.

Ref 11A-4 The Environment Agency (EA) website (http://maps.environment-agency.gov.uk/) accessed 10th May 2017.

Ref 11A-5 WSP/Parsons Brinkerhoff (2017) *West Burton Plant C – Geotechnical Desk Study, WSP.*

Ref11A-6 CMT (2017) *West Burton B North Area GI (Kiwa CMT Testing, May 2017).*

Ref11A-7 EDF Energy (2013) West Burton Power Station, Annual Groundwater Report 2013.

Ref 11A-8 European Commission (1991) *Concerning the protection of waters against pollution caused by nitrates from agricultural sources* (91/676/EEC).

Ref 11A-9 EDF Energy. 2017. West Burton B CCGT power station. [Online] Available at: https://www.edfenergy.com/energy/power-stations/west-burton-b-ccgt. [Accessed 12 December 2017].

Ref 11A-10 Jacobs (2006) *Application Site Report, West Burton Power Station.*

Ref 11A-11 Parsons Brinckerhoff (2008) *West Burton CCGT Power Station, Flood Risk Assessment.*

Ref 11A-12 Jacobs (2008) *West Burton CCGT Power Station, Pre-Construction Ground Contamination Risk Assessment.*

Ref 11A-13 Jacobs (2012) West Burton 'B' Power Station, Proposed Landscaping Works Utilising Spoil from the Construction Site.

Ref 11A-14 CMT (2014) Letter report, Window Sampling and SPT Investigation Results, Kiwa CMT Testing.

Ref 11A-15 Assorted borehole logs (2014-2017), provided to AECOM by EDF.

Annex A - Plates

Photograph 1	PFA storage area and borehole GM6(S)

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Photograph 3	Vegetated area between Bole Ings and Wheatley Beck

Photograph 4	Wheatley Beck

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Photograph 8	Trough (View from the South)

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Photograph 13	Small wooded area on elevated mound

Photograph 14	PFA deposits at edge of access track

Photograph 15	Access route to the ash disposal site

Photograph 16	Gravel at edge of Hargreaves yard (clinker)

Photograph 17	Access track to meadow and grassy mound

Photograph 18	Area of Proposed Development of West Burton 'C' from top of mound in north-east of Site

Photograph 19	Area north-east of Proposed Development

Photograph 20	Location of Proposed Development (West Burton C) with West Burton B Power Station in background

Photograph 21	View of River Trent from western bank

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Photograph 23	Discharge pipe (Source unknown)

Photograph 24	Main power station interceptor

Photograph 25	Interceptor discharge

Photograph 26	River Trent discharge point

Photograph 27	Main power station abstraction pumphouse

Photograph 28	Surface water abstraction point

Photograph 29	**River Trent in vicinity of the abstraction point (high suspended solid content)**

Annex B - Groundsure Reports

Enviro Insight

Address:	**West Burton C Power Station,**
Date:	**29 Jan 2019**
Reference:	**GS-5785102**
Client:	**Aecom Infrastructure and Environment UK Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	23-Aug-2015
Grid Reference:	480236,386319
Site Size:	35.71ha

Report Reference: GS-5785102
Client Reference: West_Burton_C-_60572265

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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	2	9	13	2
1.2 Additional Information – Historical Tank Database	0	4	4	3
1.3 Additional Information – Historical Energy Features Database	5	0	0	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	2	6	4	14

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	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	21	7
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	2	8	2
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	0
2.2 Records of COMAH and NIHHS sites	1	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	0
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	1	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	1	0	0	0	0	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	1	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	1	3	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	2	4

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	2	9	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None 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)	0	0	0	0	0	1
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	1	0	0	0	3
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	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)	2	0	#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	Yes	No	No	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	12	34	78	68	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	None 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)	0	0	0	0	0	2
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	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	2	0	2	0	2	2
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	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very 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	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Moderate
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 not in a Radon Affected Area, as less than 1% 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	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

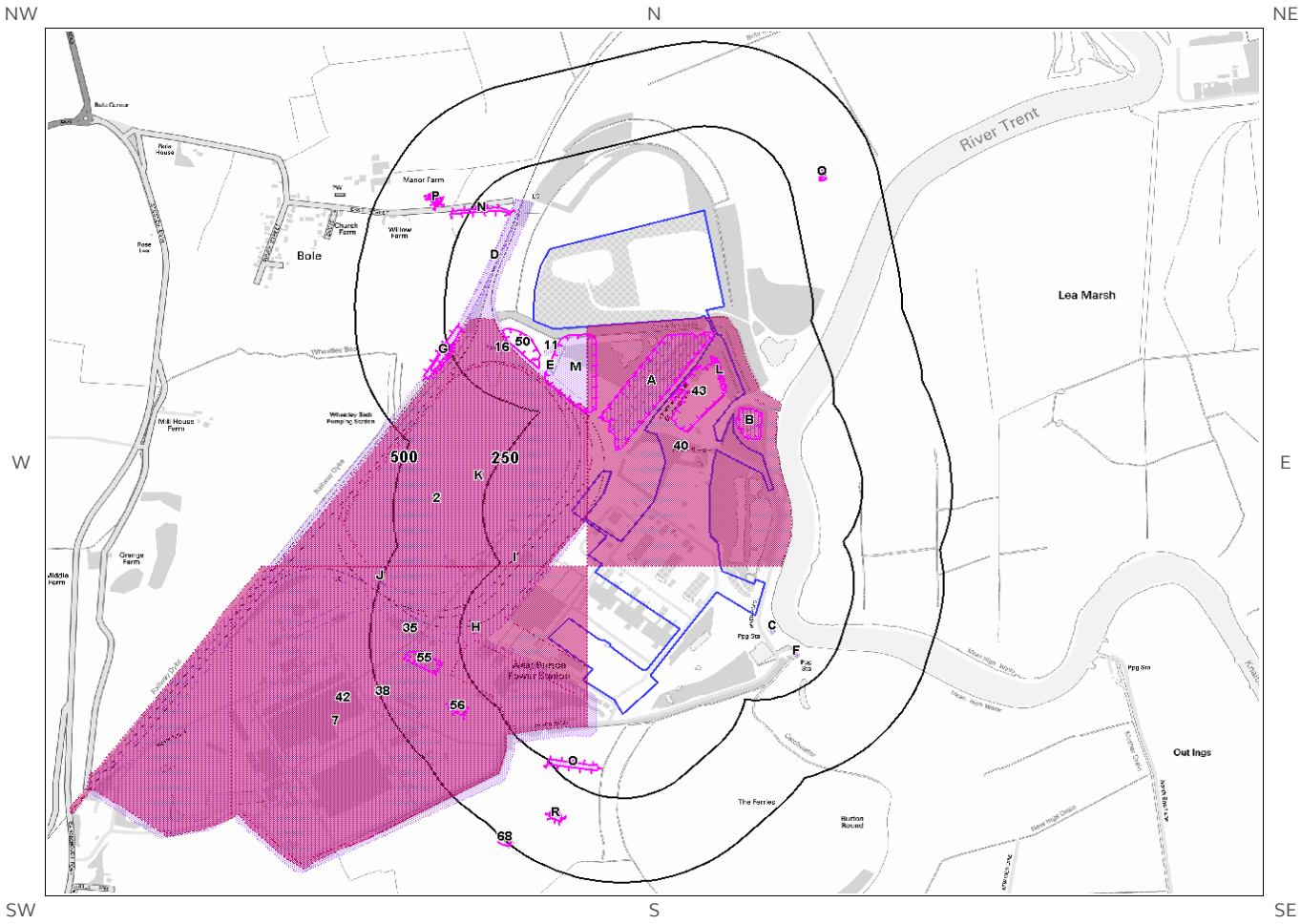
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



Site Outline

250
500
Search Buffers (m)

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

Industrial Land Use

Potentially Infilled Land

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

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 26

ID	Distance [m]	Direction	Use	Date
1L	0	On Site	Unspecified Ground Workings	1900
2	0	On Site	Railway Sidings	1979
3A	3	SW	Unspecified Pits	1980
4A	3	SW	Unspecified Pits	1971
5B	6	E	Sewage Works	1971
6B	6	E	Sewage Works	1980
7	20	SW	Power Station	1979
8M	23	S	Emergency Dust Disposal Area	1979
9C	47	SE	Pumping Station	1971
10C	47	SE	Pumping Station	1980
11	49	S	Pumping House	1947
12D	114	NW	Railway Sidings	1921
13E	115	S	Pumping House	1900
14D	115	NW	Railway Sidings	1947
15D	117	W	Railway Sidings	1900
16	119	SW	Pump House	1979
17E	121	S	Pumping House	1921
18N	151	NW	Unspecified Ground Workings	1900
19F	152	SE	Pumping Station	1980
20F	152	SE	Pumping Station	1971
21O	167	SW	Unspecified Pit	1916
22H	195	W	Unspecified Tank	1979
23G	202	W	Cuttings	1885
24G	236	W	Cuttings	1951
25R	345	SW	Unspecified Pit	1904
26J	485	W	Unspecified Tanks	1979

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 11

ID	Distance (m)	Direction	Use	Date
27B	23	NE	Tanks	1969
28B	25	E	Unspecified Tank	1969
29B	29	E	Unspecified Tank	1969
30B	40	NE	Tanks	1969
31H	193	W	Unspecified Tank	1989
32I	204	W	Unspecified Tank	1989
33I	205	W	Unspecified Tank	1974
34H	208	W	Unspecified Tank	1974
35	384	W	Unspecified Tank	1989
36J	483	W	Tanks	1989
37J	498	W	Unspecified Tanks	1974

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 5

ID	Distance (m)	Direction	Use	Date
38	0	On Site	Power Station	1989
39K	0	On Site	Power Station	1989
40	0	On Site	Power Station	1969
41K	0	On Site	Power Station	1974
42	0	On Site	Power Station	1974

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

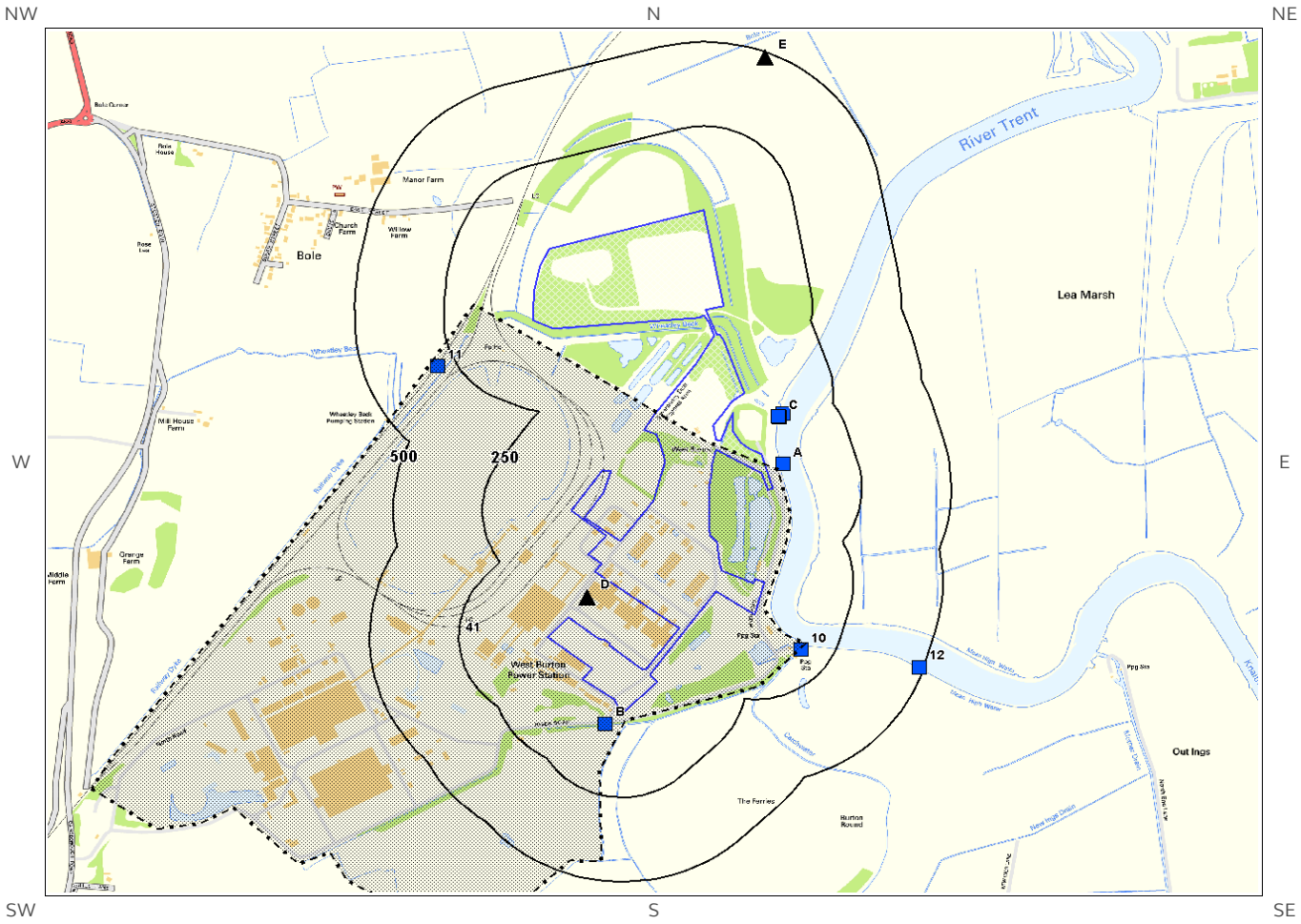
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 26

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
43	0	On Site	Pond	1971
44L	0	On Site	Unspecified Ground Workings	1900
45A	3	SW	Unspecified Pits	1980
46A	3	SW	Unspecified Pits	1971
47B	6	E	Sewage Works	1971
48B	6	E	Sewage Works	1980
49M	23	S	Emergency Dust Disposal Area	1979
50	46	SW	Pond	1979
51N	151	NW	Unspecified Ground Workings	1900
52O	167	SW	Unspecified Pit	1916
53G	202	W	Cuttings	1885
54G	236	W	Cuttings	1951
55	307	W	Pond	1979
56	317	SW	Pond	1979
57P	333	NW	Pond	1951
58P	335	NW	Pond	1979
59Q	336	E	Pond	1921
60Q	336	E	Pond	1900
61Q	336	E	Pond	1885
62P	337	NW	Pond	1885

63P	337	NW	Pond	1900
64P	337	NW	Pond	1947
65P	338	NW	Pond	1921
66R	344	SW	Pond	1900
67R	345	SW	Unspecified Pit	1904
68	484	SW	Pond	1979

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

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

28

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
42D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: ZP3338DH Original Permit Number: CP3035MK EPR Reference: - Issue Date: 17/03/2017 Effective Date: 17/03/2017 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
43D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: XP3932ZX Original Permit Number: CP3035MK EPR Reference: - Issue Date: 11/03/2013 Effective Date: 11/03/2013 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
44D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: ZP3338DH Original Permit Number: CP3035MK EPR Reference: - Issue Date: 17/03/2017 Effective Date: 17/03/2017 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
45D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: OTHER WASTE DISPOSAL;	Permit Number: XP3932ZX Original Permit Number: CP3035MK EPR Reference: - Issue Date: 11/03/2013 Effective Date: 11/03/2013 Last date noted as effective: 2018-12-

ID	Distance (m)	Direction	NGR	Details	
				NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	03 Status: SUPERCEDED
46D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: XP3932ZX Original Permit Number: CP3035MK EPR Reference: - Issue Date: 11/03/2013 Effective Date: 11/03/2013 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
47D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: ZP3338DH Original Permit Number: CP3035MK EPR Reference: - Issue Date: 17/03/2017 Effective Date: 17/03/2017 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
48D	74	NE	480000 385900	Operator: EDF ENERGY (THERMAL GENERATION) LIMITED Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: EP3734JR Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/01/2018 Effective Date: 15/01/2018 Last date noted as effective: 2018-12-03 Status: EFFECTIVE
49D	74	NE	480000 385900	Operator: EDF ENERGY (THERMAL GENERATION) LIMITED Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: EP3734JR Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/01/2018 Effective Date: 15/01/2018 Last date noted as effective: 2018-12-03 Status: EFFECTIVE
50D	74	NE	480000 385900	Operator: EDF ENERGY (THERMAL GENERATION) LIMITED Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: EP3734JR Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/01/2018 Effective Date: 15/01/2018 Last date noted as effective: 2018-12-03 Status: EFFECTIVE
51D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: CP3035MK Original Permit Number: CP3035MK EPR Reference: EA/EPR/CP3035MK/V002 Issue Date: 21/06/2007 Effective Date: 21/06/2007 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
52D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: CP3035MK Original Permit Number: CP3035MK EPR Reference: EA/EPR/CP3035MK/V002 Issue Date: 21/06/2007 Effective Date: 21/06/2007 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
53D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION	Permit Number: CP3035MK Original Permit Number: CP3035MK EPR Reference: EA/EPR/CP3035MK/V002

ID	Distance (m)	Direction	NGR	Details	
				EPR/CP3035MK Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Issue Date: 21/06/2007 Effective Date: 21/06/2007 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
54D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: HP3332XP Original Permit Number: CP3035MK EPR Reference: - Issue Date: 02/04/2009 Effective Date: 02/04/2009 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
55D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: HP3332XP Original Permit Number: CP3035MK EPR Reference: - Issue Date: 02/04/2009 Effective Date: 02/04/2009 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
56D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: HP3332XP Original Permit Number: CP3035MK EPR Reference: - Issue Date: 02/04/2009 Effective Date: 02/04/2009 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
57D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: JP3133DM Original Permit Number: CP3035MK EPR Reference: - Issue Date: 30/06/2016 Effective Date: 30/06/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
58D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: JP3133DM Original Permit Number: CP3035MK EPR Reference: - Issue Date: 30/06/2016 Effective Date: 30/06/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
59D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: JP3133DM Original Permit Number: CP3035MK EPR Reference: - Issue Date: 30/06/2016 Effective Date: 30/06/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
60D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: MP3534AN Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/12/2015 Effective Date: 01/01/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
61D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON	Permit Number: MP3534AN Original Permit Number: CP3035MK EPR Reference: -

ID	Distance (m)	Direction	NGR	Details	
				CCGT POWER STATION EPR/CP3035MK Process: COMBUSTION; ANY FUEL =>50MW	Issue Date: 15/12/2015 Effective Date: 01/01/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
62D	74	NE	480000 385900	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: WEST BURTON CCGT POWER STATION EPR/CP3035MK Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: MP3534AN Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/12/2015 Effective Date: 01/01/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
63E	481	N	480500 387500	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: BOLE INGS ASH DISPOSAL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: YP3134SC Original Permit Number: YP3134SC EPR Reference: - Issue Date: 02/04/2007 Effective Date: 02/04/2007 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
64E	481	N	480500 387500	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: BOLE INGS ASH DISPOSAL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: YP3030KA Original Permit Number: YP3134SC EPR Reference: - Issue Date: 16/04/2010 Effective Date: 17/04/2010 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
65E	481	N	480500 387500	Operator: EDF ENERGY (THERMAL GENERATION) LIMITED Installation Name: BOLE INGS ASH DISPOSAL SITE Process: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING TREATMENT OF SLAGS AND ASHES	Permit Number: VP3134JP Original Permit Number: YP3134SC EPR Reference: - Issue Date: 15/01/2018 Effective Date: 15/01/2018 Last date noted as effective: 2018-12-03 Status: EFFECTIVE
66E	481	N	480500 387500	Operator: EDF ENERGY (THERMAL GENERATION) LIMITED Installation Name: BOLE INGS ASH DISPOSAL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: VP3134JP Original Permit Number: YP3134SC EPR Reference: - Issue Date: 15/01/2018 Effective Date: 15/01/2018 Last date noted as effective: 2018-12-03 Status: EFFECTIVE
67E	481	N	480500 387500	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: BOLE INGS ASH DISPOSAL SITE Process: RECOVERY OR A MIX OF RECOVERY AND DISPOSAL OF > 50 T/D NON-HAZARDOUS WASTE (> 100 T/D IF ONLY AD) INVOLVING TREATMENT OF SLAGS AND ASHES	Permit Number: FP3537WF Original Permit Number: YP3134SC EPR Reference: - Issue Date: 22/01/2016 Effective Date: 22/01/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED
68E	481	N	480500 387500	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: BOLE INGS ASH DISPOSAL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: FP3537WF Original Permit Number: YP3134SC EPR Reference: - Issue Date: 22/01/2016 Effective Date: 22/01/2016 Last date noted as effective: 2018-12-03 Status: SUPERCEDED

ID	Distance (m)	Direction	NGR	Details	
69E	481	N	480500 387500	Operator: EDF ENERGY (WEST BURTON POWER) LTD Installation Name: BOLE INGS ASH DISPOSAL SITE Process: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Permit Number: HP3734TK Original Permit Number: YP3134SC EPR Reference: - Issue Date: 20/05/2010 Effective Date: 20/05/2010 Last date noted as effective: 2018-12-03 Status: SUPERCEDED

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1A	48	E	480550 386300	Address: WEST BURTON POWER STATION, BOLE, NOTTINGHAMSHIRE Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: T/69/10276/T Permit Version: 1	Receiving Water: WHEATLEY BECK/R TRENT (TIDAL) Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/03/1986 Effective Date: 21-Mar-1986 Revocation Date: 22/12/1994
2A	48	E	480550 386301	Address: WEST BURTON POWER STATION, BOLE, NOTTINGHAMSHIRE Effluent Type: TRADE DISCHARGES - SITE DRAINAGE (CONTAM SURFACE WATER, NOT WASTE SIT Permit Number: T/69/10276/T Permit Version: 1	Receiving Water: WHEATLEY BECK/R TRENT (TIDAL) Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/03/1986 Effective Date: 21-Mar-1986 Revocation Date: 22/12/1994
3B	59	SW	480050 385531	Address: WEST BURTON PS, WEST BURTON, WEST BURTON Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: TSC4073 Permit Version: 1	Receiving Water: LOCAL DITCH Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: 12/08/2011
4B	59	SW	480050 385530	Address: WEST BURTON PUMPING STATION, STURTON-LE-STEEPLE, NOTTINGHAMSHIRE Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: T/69/12415/O Permit Version: 1	Receiving Water: TRIB OF CATCHWATER DRAIN Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 05/02/1988 Effective Date: 05-Feb-1988 Revocation Date: -
5C	117	SE	480536 386441	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 4	Receiving Water: RIVER TRENT Status: VARIED UNDER EPR 2010 Issue date: 01/04/2016 Effective Date: 01-Apr-2016 Revocation Date: -
6C	120	NE	480540 386440	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 2	Receiving Water: RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 24/09/2009 Effective Date: 01-Jan-2010 Revocation Date: 29/03/2010
7C	120	NE	480540 386440	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 1	Receiving Water: RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 07/02/2002 Effective Date: 07-Feb-2002 Revocation Date: 31/12/2009

ID	Distance (m)	Direction	NGR	Details	
8C	120	NE	480540 386440	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 3	Receiving Water: RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 30/03/2010 Effective Date: 30-Mar-2010 Revocation Date: 31/03/2016
9C	124	SE	480550 386450	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/08058/R Permit Version: 1	Receiving Water: RIVER TRENT Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 02/09/1980 Effective Date: 02-Sep-1980 Revocation Date: 06/02/2002
10	166	SE	480600 385750	Address: WEST BURTON POWER STATION, BOLE, NOTTINGHAMSHIRE Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: T/69/10276/T Permit Version: 1	Receiving Water: WHEATLEY BECK/R TRENT (TIDAL) Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/03/1986 Effective Date: 21-Mar-1986 Revocation Date: 22/12/1994
11	301	SW	479580 386590	Address: WEST BURTON POWER STATION, BOLE, NOTTINGHAMSHIRE Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: T/69/10276/T Permit Version: 1	Receiving Water: WHEATLEY BECK/R TRENT (TIDAL) Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/03/1986 Effective Date: 21-Mar-1986 Revocation Date: 22/12/1994
12	488	E	480933 385699	Address: STURTON LE STEEPLE QUARRY, OFF COWPASTURE LANE, STURTON LE STEEPLE, DN22 0HB Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD006845 Permit Version: 1	Receiving Water: THE RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 12/06/2009 Effective Date: 01-Apr-2015 Revocation Date: -

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 1

The following COMAH & NIHHS Authorisation records provided by the Health and Safety Executive are represented as polygons or buffered points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Company	Address	Operational Status	Tier
41	0	On Site	EDF Energy (West Burton Power) Limited	EDF Energy (Thermal Generation) Limited, West Burton Power Station, Retford, Nottinghamshire, DN22 9BL	Current COMAH Site	COMAH Upper Tier Operator

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

0

Database searched and no data found.

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

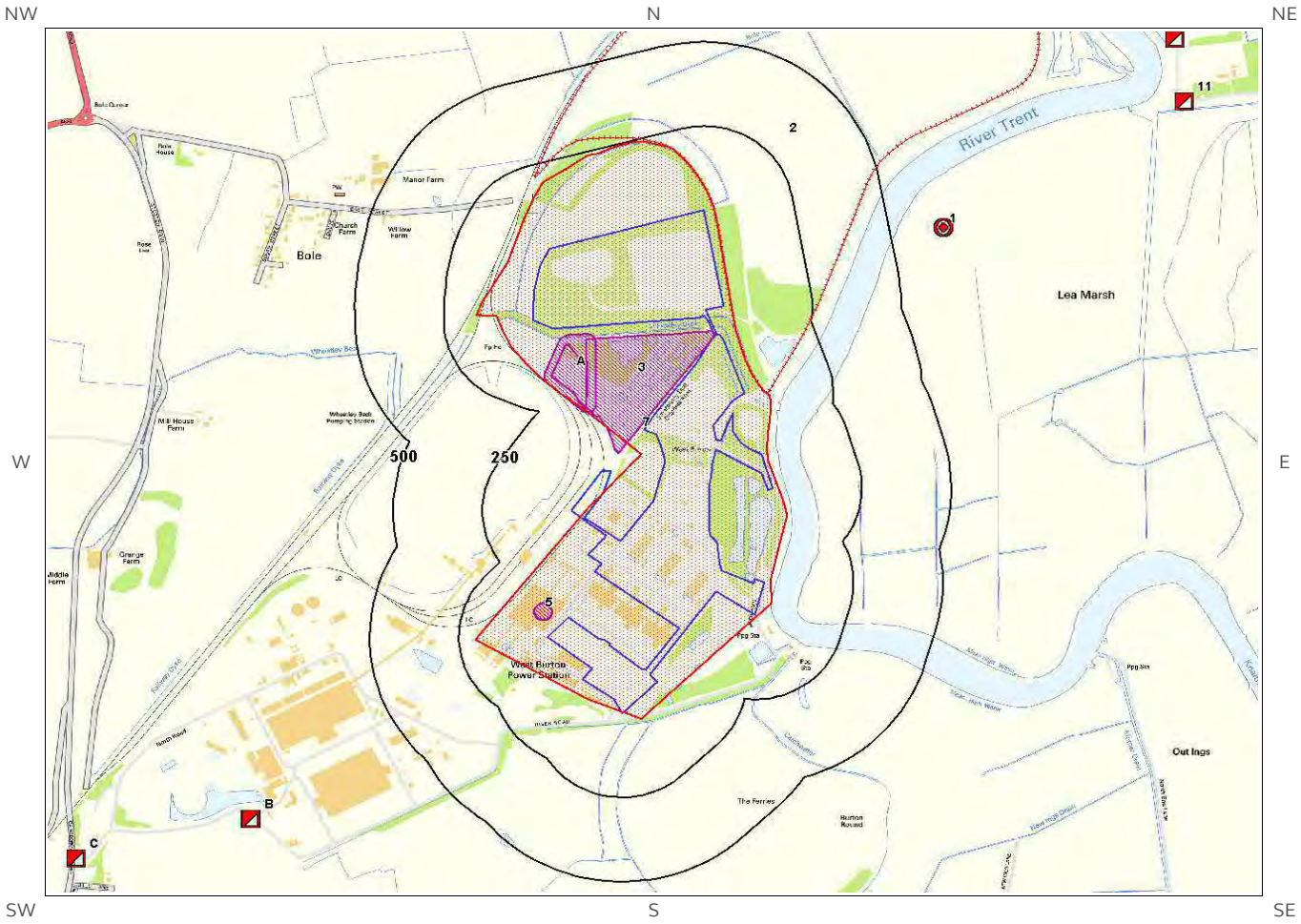
Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

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

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

1

The following Environment Agency/Natural Resources Wales landfill records are represented as polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	22	E	480500 387500	Address: West Burton Power Station, Retford, West Burton, Nottinghamshire, DN22 9BL Landfill Reference: 0.0 Environmental Permitting Regulations (Waste) Reference: - Landfill Type: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Operator: EDF Energy (Thermal Generation) Limited Status: Effective IPPC Reference: EPR Reference:

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

2

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
7	0	On Site		Site Address: West Burton Power Station Tip, West Burton Power Station, Retford Waste Licence: Yes Site Reference: 1/92/317/88NW, 1/77/46/88NW Waste Type: Inert, Industrial, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 17-Jan-1978 Licence Surrendered: 22-Apr-1994 Licence Holder Address: 53 Wake Green Road, Moseley, Birmingham Operator: - Licence Holder: Central Electricity Generating Board First Recorded: 31-Dec-1946 Last Recorded: 22-Apr-1994
Not shown	1353	NE		Site Address: Lea Road Tip, Gainsborough, Lincolnshire Waste Licence: - Site Reference: - Waste Type: Inert, Industrial, Commercial, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Gainsborough Urban District Council Licence Holder: - First Recorded: 31-Dec-1954 Last Recorded: -

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

1

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
1	650	E	481000.0 387000.0	Address: Lea Road Tip, Gainsborough, Lincs BGS Number: 1199.0	Risk: No risk to aquifer Waste Type: N/A

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

4

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
3	0	On Site	480179 386513	Type of Site: Emergency Dust Disposal Area Site Address: N/A	Planning Application Reference: N/A Date: 1969	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	23	S	479953 386569	Type of Site: Emergency Dust Disposal Area (B) Site Address: N/A	Planning Application Reference: N/A Date: 1979	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5	36	NW	479878 385863	Type of Site: Ash Processing Plant Site Address: West Burton Power Station, Retford, Nottinghamshire, DN22 9BL	Planning Application Reference: 16/01441/CDM Date: 07/11/2016	Further Details: Scheme comprises county council application for the construction of use of ash processing plant.The associated works include sewer systems, landscaping, infrastructure, enabling and access roads. Data Source: Historic Planning Application Data Type: Point
6A	50	S	479950	Type of Site:	Planning Application Reference:	Further Details: N/A

ID	Distance (m)	Direction	NGR	Details		
			386559	Emergency Dust Disposal Area Site Address: N/A	N/A Date: 1989	Data Source: Historic Mapping Data Type: Polygon

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

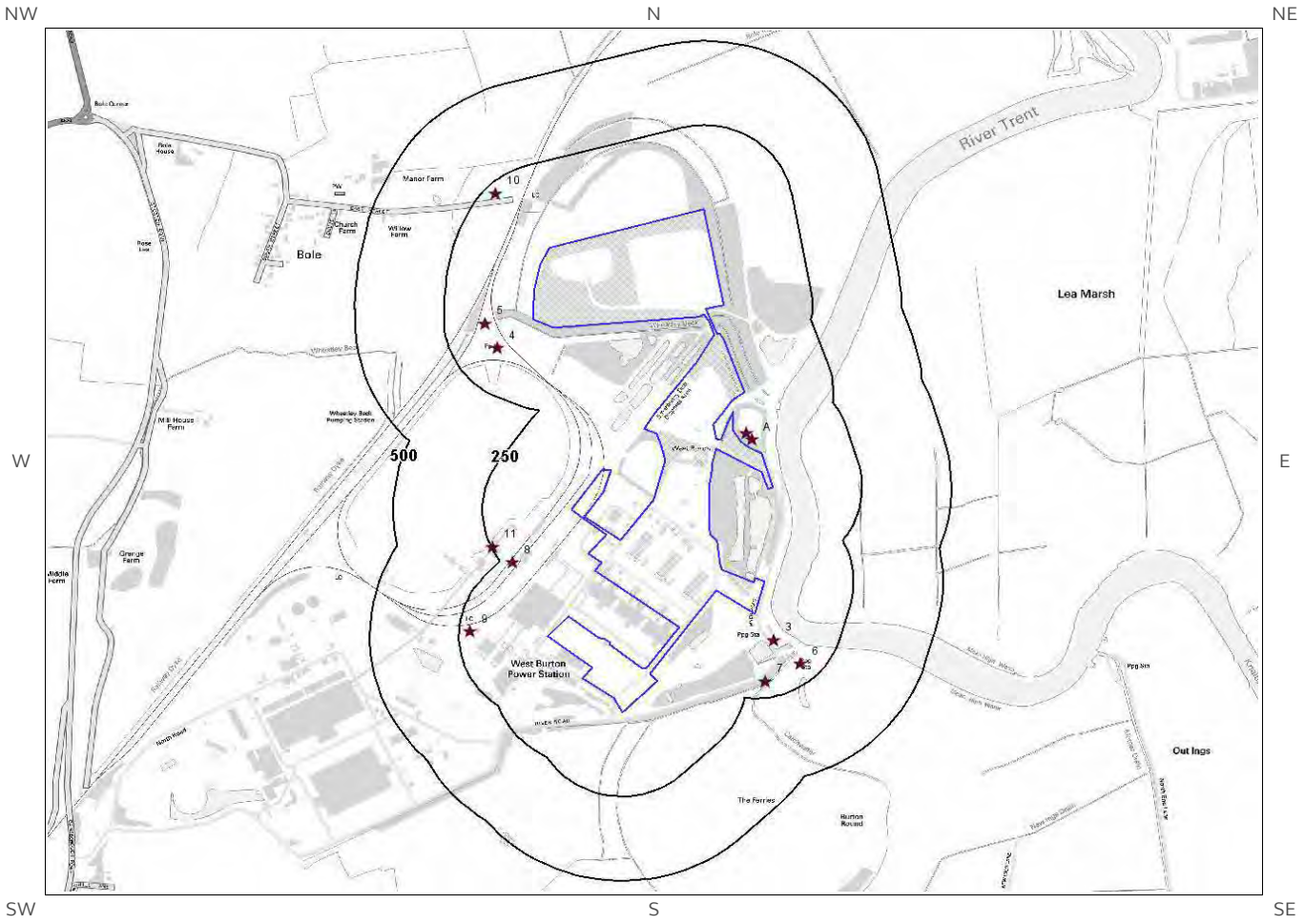
6

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
9B	993	SW	479056 385251	Site Address: West Burton Power Station, Near Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EDF001 EPR reference: - Operator: E D F Energy (west Burton Power) Limited Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: 03/06/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Bole Ings Site, West Burton Power Station Correspondence Address: Mr Kenneth Marsh, West Burton Power Station, Retford, Nottinghamshire, DN22 9BL
10B	994	SW	479055 385250	Site Address: West Burton Power Station, Near Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TXU005 EPR reference: - Operator: T X U Europe Merchant Generation Ltd Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Bole Ings Site, West Burton Power Station Correspondence Address: West Burton Power Station, Near Retford, Nottinghamshire, DN22 9BL
11	1387	E	481677 387376	Site Address: Lea Road, Gainsborough, Lincolnshire, DN21 1AF Type: Household, Commercial & Industrial Waste Landfill Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LIN001 EPR reference: EA/EPR/NP3797FC/A001 Operator: Lincwaste Ltd Waste Management licence No: 43069 Annual Tonnage: 62500.0	Issue Date: 16/09/1993 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC Site Name: Gainsborough Landfill Site Linc Waste Ltd Correspondence Address: -
12	1416	E	481649 387562	Site Address: Lea Road, Gainsborough, Lincolnshire, DN21 1AF Type: Household, Commercial & Industrial Waste Landfill Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: LIN001 EPR reference: - Operator: Lincwaste Ltd Waste Management licence No: 43069 Annual Tonnage: 0.0	Issue Date: 16/09/1993 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Gainsborough Landfill Site Linc Waste Ltd Correspondence Address: Tritton House, Matilda Road, Lincoln, Lincolnshire, LN6

ID	Distance (m)	Direction	NGR	Details	
					7BN
13C	1479	SW	478565 385133	Site Address: West Burton Power Station, Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EDF001 EPR reference: EA/EPR/AP3897FB/T002 Operator: E D F Energy (West Burton Power) Limited Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: 03/06/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC Site Name: Bole Ings Site West Burton Power Station Correspondence Address: -
14C	1479	SW	478565 385133	Site Address: West Burton Power Station, Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EDF001 EPR reference: - Operator: E D F Energy West Burton Power Ltd Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: 03/06/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Bole Ings Site West Burton Power Station Correspondence Address: West Burton Power Station, Retford, Nottinghamshire, DN22 9BL

4. Current Land Use Map



Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 11

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1A	23	NE	Mast	480462 386371	Nottinghamshire, DN22	Telecommunications Features	Infrastructure and Facilities
2A	25	NE	Sewage Works	480446 386390	Nottinghamshire, DN22	Waste Storage, Processing and Disposal	Infrastructure and Facilities
3	92	SE	Pumping Station	480524 385778	Nottinghamshire, DN22	Water Pumping Stations	Industrial Features
4	131	SW	Pumping House	479747 386643	Nottinghamshire, DN21	Water Pumping Stations	Industrial Features
5	138	W	Pylon	479712 386716	Nottinghamshire, DN21	Electrical Features	Infrastructure and Facilities
6	194	SE	Burton Round Pumping Station	480598 385707	Nottinghamshire, DN22	Water Pumping Stations	Industrial Features
7	199	S	Water Tower	480499 385656	Nottinghamshire, DN22	Water Pumping Stations	Industrial Features
8	214	W	Tank	479791 386008	Nottinghamshire, DN22	Tanks (Generic)	Industrial Features
9	221	W	Tank	479670 385803	Nottinghamshire, DN22	Tanks (Generic)	Industrial Features
10	222	NW	Pylon	479743 387101	Nottinghamshire, DN22	Electrical Features	Infrastructure and Facilities
11	248	SW	Conveyor	479733 386054	Nottinghamshire, DN22	Conveyors	Industrial Features

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

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5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILMP-DMTN	TILL, MID PLEISTOCENE	DIAMICTON
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

5.3 Bedrock and Solid Geology

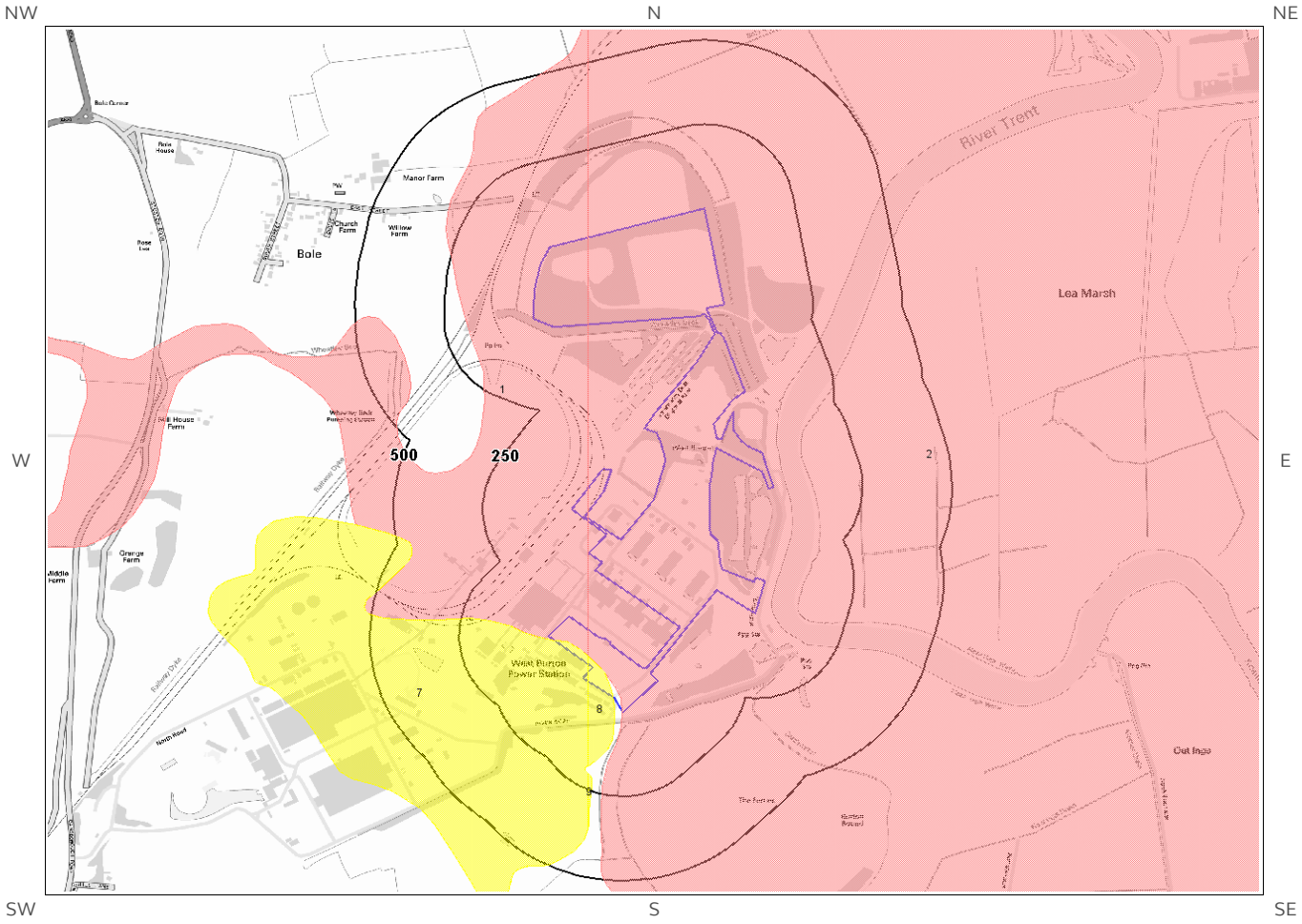
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
MMG-MDST	MERCIA MUDSTONE GROUP	MUDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

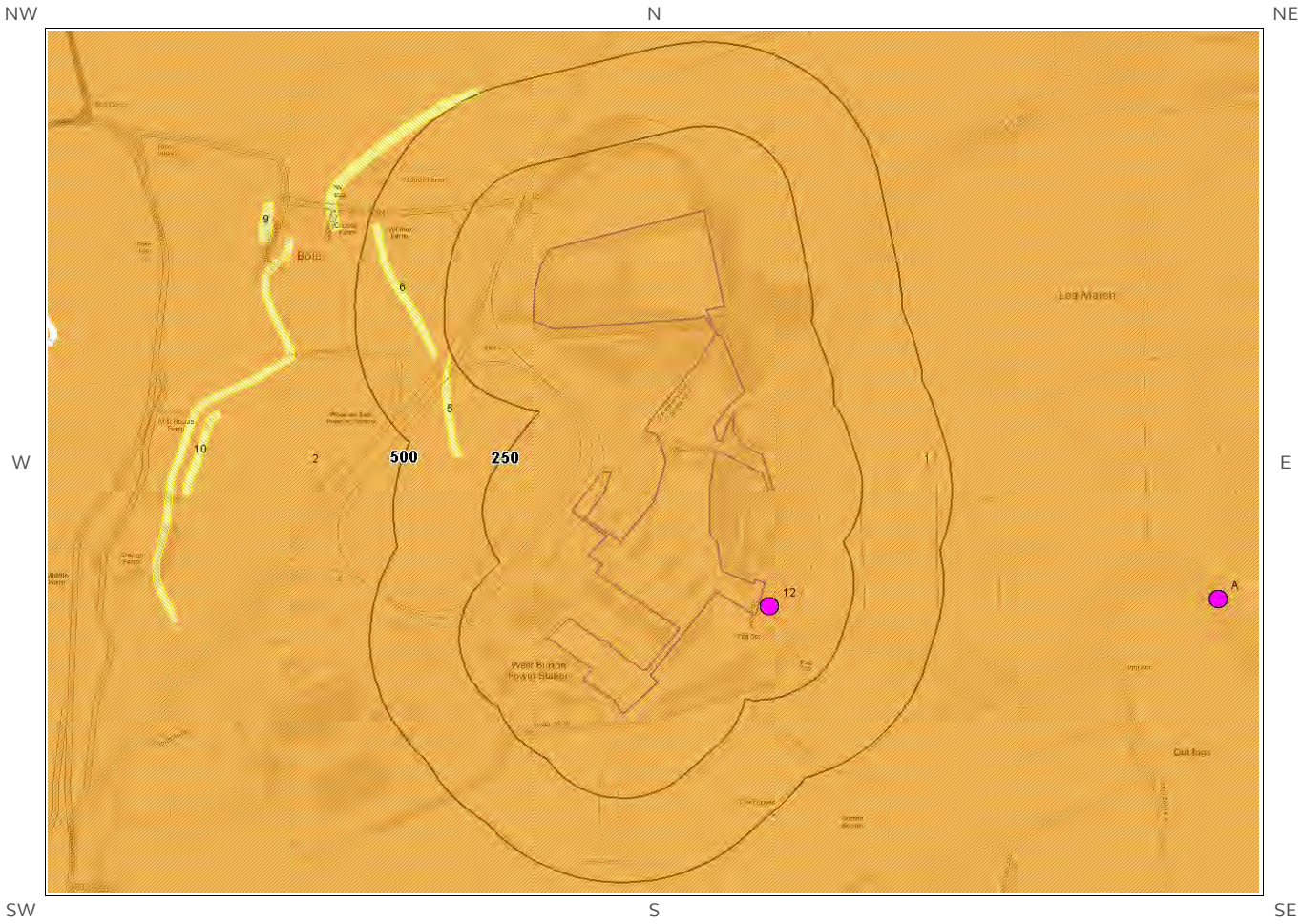
Secondary (B) Aquifer - Lower Permeability Layers

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

Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE

Site Outline

250 Search Buffers (m)
500

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

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	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. These are generally aquifers formerly classified as minor aquifers
2	0	On Site	Secondary A	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. These are generally aquifers formerly classified as minor aquifers
7	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
8	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
9	207	SW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
2	0	On Site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
5	254	W	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

ID	Distance (m)	Direction	Designation	Description
6	286	W	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
7	496	NW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1996	NE	481853 388340	Status: Active Licence No: 03/28/69/0034 Details: Potable Water Supply - Direct Direct Source: Groundwater Midlands Region Point: GAINSBOROUGH - BOREHOLE 'D' Data Type: Point Name: ANGLIAN WATER SERVICES LTD	Annual Volume (m^3): 2.48894e+006 Max Daily Volume (m^3): 8183 Original Application No: - Original Start Date: 22/11/1965 Expiry Date: - Issue No: 108 Version Start Date: 23/01/2018 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
12	30	E	480510 385880	Status: Historical Licence No: MD/028/0069/003 Details: Hydraulic Testing Direct Source: Surface Water Midlands Region Point: RIVER TRENT AT LAND ADJ RIVER ROAD Data Type: Point Name: PPS Pipeline Systems GmbH	Annual Volume (m^3): - Max Daily Volume (m^3): 2672 Application No: - Original Start Date: 25/06/2009 Expiry Date: 21/07/2009 Issue No: 1 Version Start Date: 25/06/2009 Version End Date:
13A	1272	E	481770 385900	Status: Historical Licence No: 03/28/69/0243/1 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LEA, GAINSBOROUGH - RIVER TRENT Data Type: Point Name: MOULDS	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 10/01/2003 Expiry Date: 31/03/2017 Issue No: 100 Version Start Date: 10/01/2003 Version End Date:
14A	1272	E	481770 385900	Status: Historical Licence No: 03/28/69/0243 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: LEA, GAINSBOROUGH - RIVER TRENT	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 31/01/1996 Expiry Date: -

ID	Distance (m)	Direction	NGR	Details	
				Data Type: Point Name: MOULDS	Issue No: 100 Version Start Date: 31/01/1996 Version End Date:
Not shown	1316	NW	478900 387800	Status: Active Licence No: 03/28/69/0082 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: HALL FARM - RESERVOIR ON SAUNDBY BECK Data Type: Point Name: BARTON & CO	Annual Volume (m^3): 3636.8 Max Daily Volume (m^3): 454.6 Application No: - Original Start Date: 11/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/03/2005 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — Identified

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1996	NE	481853 388340	Status: Active Licence No: 03/28/69/0034 Details: Potable Water Supply - Direct Direct Source: Groundwater Midlands Region Point: GAINSBOROUGH - BOREHOLE 'D' Data Type: Point Name: ANGLIAN WATER SERVICES LTD	Annual Volume (m^3): 2.48894e+006 Max Daily Volume (m^3): 8183 Original Application No: - Original Start Date: 22/11/1965 Expiry Date: - Issue No: 108 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
0	On Site	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

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. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
97	159	E	480600 386500	River Name: Wheatley Beck Reach: Track Bridge To Conf With Trent End/Start of Stretch: End of Stretch NGR	B	A	A	A	B
98	166	SE	480600 385750	River Name: Catchwater Drain Reach: Trib From North Leverton To R Trent End/Start of Stretch: End of Stretch NGR	B	B	B	B	B
99	1056	W	478810 386540	River Name: Wheatley Beck Reach: Track Bridge To Conf With Trent End/Start of Stretch: Sample Point NGR	B	A	A	A	B
Not shown	1121	SW	479620 384550	River Name: Catchwater Drain Reach: Trib From North Leverton To R Trent End/Start of Stretch: Sample Point NGR	B	B	B	B	B

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
3	0 On Site	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
4	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
5	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
6	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
19	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
20	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
21	0 On Site	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
22	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
23	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
24	0 On Site	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
7	2 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
25	2 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	15	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	E			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
26	15 E	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	20 SW	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
27	20 SW	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
10	23 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
28	23 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
11	28 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
12	28 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	28 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
30	28 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
13	30 E	Wheatley Beck	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
31	30 E	Wheatley Beck	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
14	31 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
32	31 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
15	32 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
16	32 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
33	32 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
34	32 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
17	33 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
35	33 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.2
18	34 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
19	34 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
36	34 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
37	34 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
20	45 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
38	45 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	49 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
39	49 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
22	50 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
23	50 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
40	50 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
41	50 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
24	51 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
42	51 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.6
25	54 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2
43	54 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.2
26	55 E	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
44	55	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	E			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	60 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
45	60 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
28	75 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
29	75 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
46	75 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
47	75 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
30	79 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	79 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
31	99 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
32	99 E	Not Specified	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
49	99 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
50	99 E	Not Specified	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
33	102 W	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	102 W	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	108 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
52	108 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
35	117 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
36	117 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
53	117 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
54	117 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	118 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
55	118 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
38	123 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
56	123 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
39	127 SE	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
57	127 SE	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
40	137 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
58	137 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.9
41	138 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
42	138 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
43	138 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
59	138 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
60	138 SE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
61	138 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
44	141 E	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
62	141 E	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
45	156	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SE			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
63	156 SE	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
46	157 SE	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.6
64	157 SE	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.6
47	158 SE	Catchwater Drain	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	158 SE	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
65	158 SE	Catchwater Drain	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
66	158 SE	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
49	160 SE	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
67	160 SE	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.6
50	163 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
68	163 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	165 E	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
69	165 E	River Trent	Tidal river or stream.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
52	176 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
70	176 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
53	191 W	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
71	191 W	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
54	192 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	192 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
72	192 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
73	192 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
56	205 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
74	205 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
57	211 S	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
75	211 S	Catchwater Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.5
58	217 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
76	217 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
59	238 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
60	238 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	238 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.3
78	238 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
61	241 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
62	241 SW	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
79	241 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
80	241 SW	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.7
63	252 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
81	252	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	SW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
64	254 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
82	254 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
65	271 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
66	271 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
83	271 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
84	271 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
67	275 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
85	275 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
68	283 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.0
86	283 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 5.0
69	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
70	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
71	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
87	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
88	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
89	304 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
72	317 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
90	317 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
73	323 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
91	323 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
74	355 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
92	355 SW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
75	380 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.9
93	380 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.9

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
76	391 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
94	391 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
77	395 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.3
95	395 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 6.3
78	400 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.9
96	400 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.9
79	401 W	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
97	401 W	Wheatley Beck	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
80	403 N	Bole Ings Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
Not shown	403 N	Bole Ings Drain	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
81	426 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
99	426 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
82	430	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	S			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
83	430 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
Not shown	430 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
Not shown	430 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.4
84	438 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
Not shown	438 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
85	439 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	439 NW	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
86	443 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	443 S	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
87	454 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
Not shown	454 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.3
88	457 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.8
106	457	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	E			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.8
89	461 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
90	461 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
107	461 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
108	461 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
91	463 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
109	463 W	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.3
92	470 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
93	470 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
Not shown	470 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.7
Not shown	470 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
94	481 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.0
112	481 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 3.0
95	482 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.0
96	482 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
113	482 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.0
114	482 E	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Trent Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9

6.11 Surface Water Features

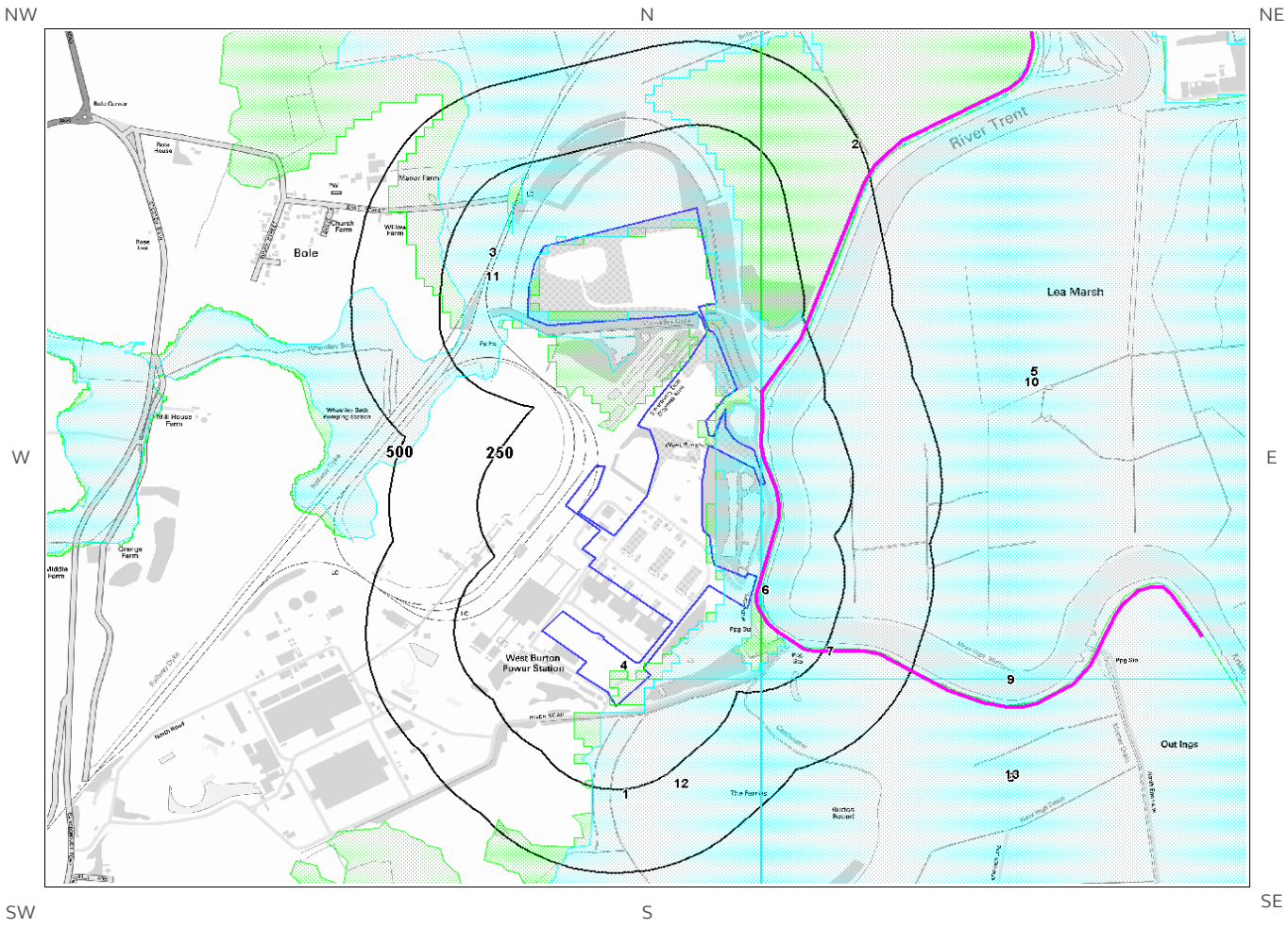
Surface water features within 250m of the study site	Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
29	E
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	On Site
0	S
7	NE
10	W
16	NW
19	SW
21	NW
21	SW
22	E
23	E
25	SW
28	S
31	SE
32	SE
36	S
39	SE
45	S
48	W
49	S
51	NW
51	NW
51	S
54	E
54	NW
57	NW
60	W
61	S
76	S
80	NW
87	E
92	NW
104	SW
106	W
108	N
117	W
128	N
155	SE
163	W
191	W

Distance (m)	Direction
192	SW
205	W
220	N
223	N
228	SE
237	E

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

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
2	0	On Site	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
3	0	On Site	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
4	0	On Site	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
5	21	E	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
6	21	E	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
7	37	E	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)
8	212	S	12-Oct-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	0	On Site	12-Oct-2018	Zone 3 - (Fluvial Models)
2	0	On Site	12-Oct-2018	Zone 3 - (Fluvial Models)
3	15	SE	12-Oct-2018	Zone 3 - (Fluvial Models)
4	212	S	12-Oct-2018	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite High

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a High (1 in 30 or greater) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	High
2	0.0	On Site	Medium
3	0.0	On Site	Medium
4	0.0	On Site	Low
5	0.0	On Site	Low
6	0.0	On Site	Low
7	0.0	On Site	Low
8	0.0	On Site	Low
9	0.0	On Site	Low
10	0.0	On Site	Low
11	0.0	On Site	Low
12	0.0	On Site	Medium
13	7.0	NW	Medium
14	14.0	SW	High
15	16.0	E	High
16	18.0	SE	Low
17	19.0	SW	High
18	25.0	E	Low
19A	31.0	SW	Medium
20A	31.0	SW	Low
21	36.0	S	Low
22	40.0	S	Medium

7.4 Flood Defences

Flood Defences within 250m of the study site — Identified

The following flood defence records are represented as lines on the Flood Map:

ID	Distance (m)	Direction	Update
14	13	E	10-Dec-2018

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site — None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site — Identified

Clearwater Flooding or Superficial Deposits Flooding — Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

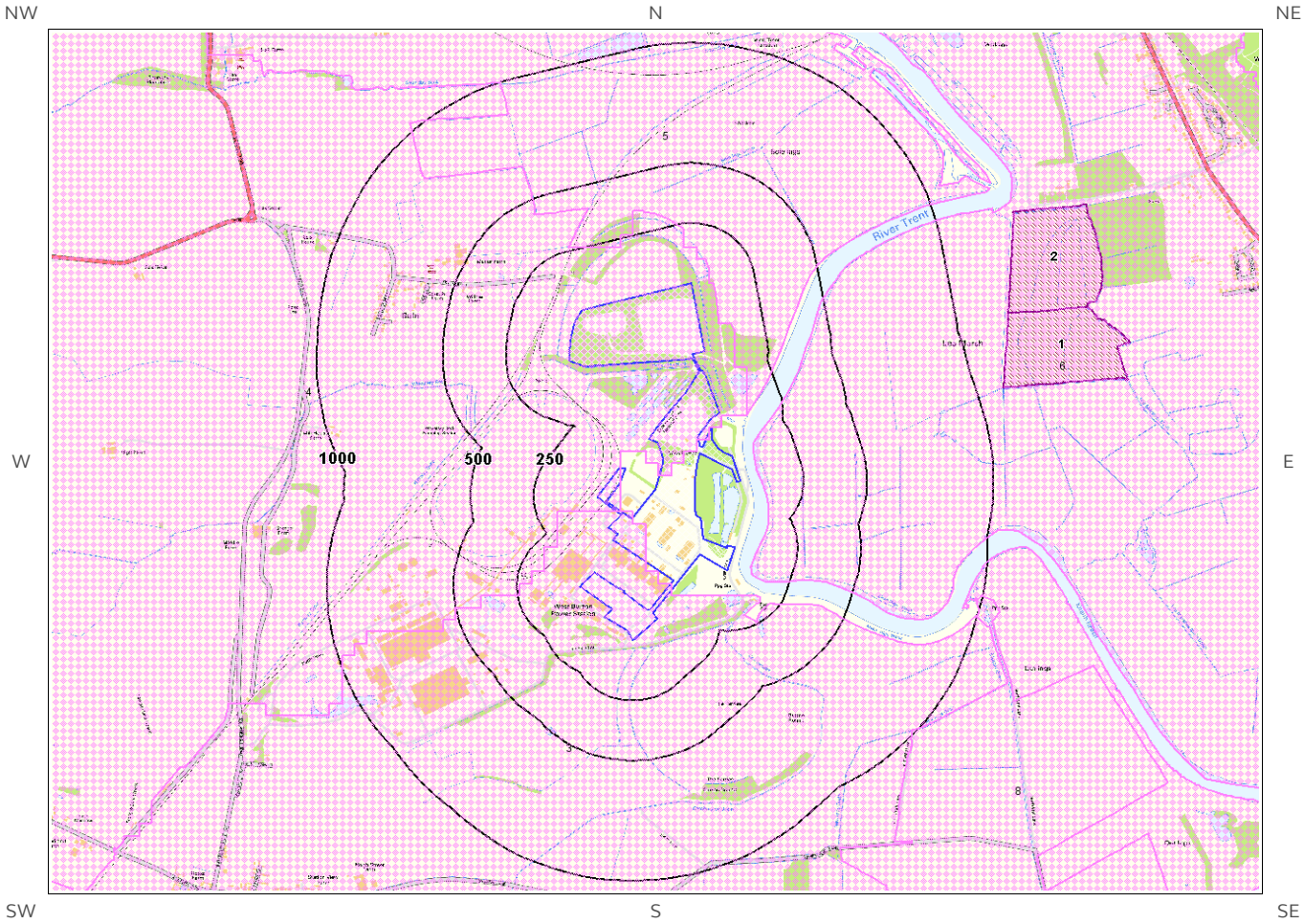
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result — High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



Site Outline

130 — 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

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site | Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

2

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
1	1109	E	Lea Marsh	Natural England
2	1208	E	Lea Marsh	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

8

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
3	0	On Site	Existing	DEFRA
4	0	On Site	Existing	DEFRA
5	70	E	Existing	DEFRA
6	75	E	Existing	DEFRA
7	935	E	Existing	DEFRA
8	974	E	Existing	DEFRA
Not shown	1572	SE	Existing	DEFRA
Not shown	1984	S	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell*[*] hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site — Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 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 site is not in a Radon Affected Area, as less than 1% 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.

9.2.2 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.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified
Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

The Coal Authority
200 Lichfield Lane
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Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Bassetlaw District Council
Phone: 01909 533 533
Web: http://www.bassetlaw.gov.uk/
Address: Queen s Buildings, Potter Street, Worksop, Nottinghamshir,

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:

https://www.groundsure.com/terms-and-conditions-may25-2018

Aecom Infrastructure and Environment UK Ltd

AECOM LTD,2, CITY WALK,
LEEDS, LS11 9AR

Groundsure Reference:	GS-3864429
Your Reference:	60527350
Report Date	9 May 2017
Report Delivery Method:	Email - pdf

Groundsure Enviro Insight

Address: WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

[redacted]

Managing Director
Groundsure Limited

Enc.
Groundsure Enviroinsight

Groundsure Enviro Insight

Address:	**WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL**
Date:	**9 May 2017**
Reference:	**GS-3864429**
Client:	**Aecom Infrastructure and Environment UK Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	23-Aug-2015
Grid Reference:	480251,385852
Site Size:	23.97ha

Report Reference: GS-3864429
Client Reference: 60527350

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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	3	5	6	6
1.2 Additional Information – Historical Tank Database	0	0	8	4
1.3 Additional Information – Historical Energy Features Database	5	0	0	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Potentially Infilled Land	1	4	3	6

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	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	18	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	2	8	1
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	0
2.2 Records of COMAH and NIHHS sites	1	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	1
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	1	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	1	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	1	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	1	2	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	2	2

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	2	8	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
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 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	1	0	0	0	0	3
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	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)	2	0	0	0	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 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	Yes	No	No	Yes
6.10 Detailed River Network entries within 500m of the site	0	1	20	17	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 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?	Yes
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Yes
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Medium
7.4 Are there any Flood Defences within 250m of the study site?	Yes
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface
7.8 What is the 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)	0	0	0	0	0	2
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	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	4	1	0	0	2	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the 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 property is not in a Radon Affected Area, as less than 1% 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 Are there any coal mining areas within 75m of the study site?	No
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use

Site Outline

250
500
Search Buffers (m)

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

Industrial Land Use

Potentially Infilled Land

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

Energy Features

Petrol Stations

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 20

ID	Distance [m]	Direction	Use	Date
1	0	On Site	Railway Sidings	1979
2A	0	On Site	Pumping Station	1971
3A	0	On Site	Pumping Station	1980
4B	8	NW	Unspecified Pits	1980
5B	8	NW	Unspecified Pits	1971
6	16	SW	Power Station	1979
7C	41	NE	Sewage Works	1980
8C	41	NE	Sewage Works	1971
9D	60	SE	Pumping Station	1980
10D	60	SE	Pumping Station	1971
11J	68	NE	Unspecified Ground Workings	1900
12K	139	NW	Emergency Dust Disposal Area	1979
13F	164	W	Unspecified Tank	1979
14L	180	S	Unspecified Pit	1916
15E	300	NW	Pumping House	1921
16E	305	NW	Pumping House	1900
17	322	NW	Pumping House	1947
18M	355	SW	Unspecified Pit	1904
19	447	NW	Pump House	1979
20H	462	NW	Unspecified Tanks	1979

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 12

ID	Distance (m)	Direction	Use	Date
21C	58	NE	Tanks	1969
22C	66	NE	Tanks	1969

23C	78	E	Unspecified Tank	1969
24	80	NE	Unspecified Tank	1969
25F	162	NW	Unspecified Tank	1989
26F	174	W	Unspecified Tank	1974
27G	201	SW	Unspecified Tank	1989
28G	201	SW	Unspecified Tank	1974
29	347	W	Unspecified Tank	1989
30H	461	NW	Tanks	1989
31H	476	NW	Unspecified Tanks	1974
32H	479	NW	Tanks	1989

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 5

ID	Distance (m)	Direction	Use	Date
33	0	On Site	Power Station	1989
34I	0	On Site	Power Station	1989
35	0	On Site	Power Station	1969
36I	0	On Site	Power Station	1974
37	0	On Site	Power Station	1974

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

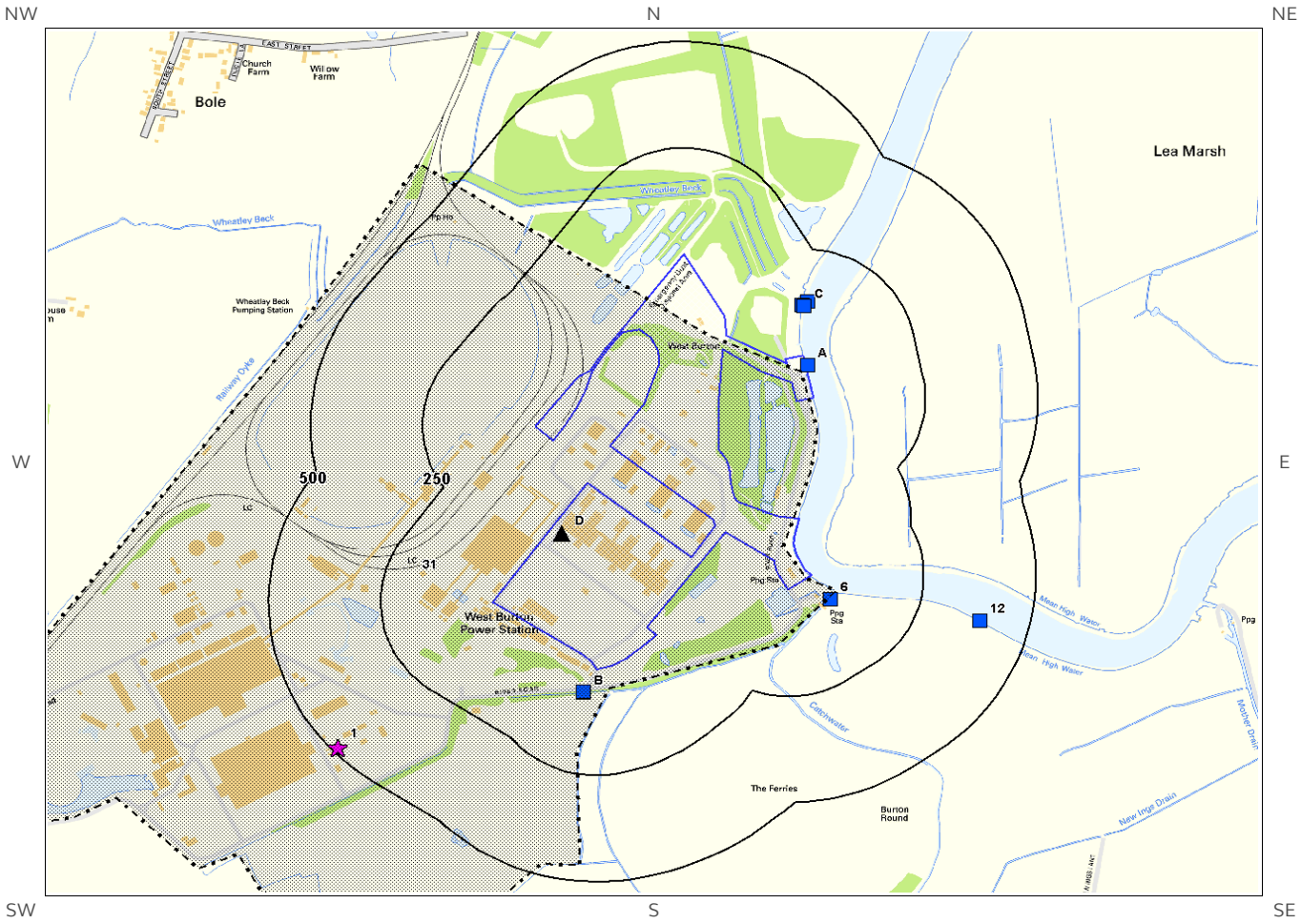
1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 14

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
38	0	On Site	Pond	1971
39B	8	NW	Unspecified Pits	1971
40B	8	NW	Unspecified Pits	1980
41C	41	NE	Sewage Works	1980
42C	41	NE	Sewage Works	1971
43J	68	NE	Unspecified Ground Workings	1900
44K	139	NW	Emergency Dust Disposal Area	1979
45L	180	S	Unspecified Pit	1916
46	255	SW	Pond	1979
47	257	W	Pond	1979
48	338	NW	Pond	1979
49M	353	SW	Pond	1900
50M	355	SW	Unspecified Pit	1904
51	487	SW	Pond	1979

2. Environmental Permits, Incidents and Registers Map



- Site Outline
- Search Buffers (m) 250 / 500
- 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

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

18

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
32D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: JP3133DM Original Permit Number: CP3035MK EPR Reference: - Issue Date: 30/6/2016 Effective Date: 30/6/2016 Last date noted as effective: 2017-01-30 Status: Effective
33D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: CP3035MK Original Permit Number: CP3035MK EPR Reference: EA/EPR/CP3035MK/V002 Issue Date: 21/6/2007 Effective Date: 21/6/2007 Last date noted as effective: 2017-01-30 Status: Superceded
34D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: ZP3338DH Original Permit Number: CP3035MK EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 2017-01-30 Status: Determination

ID	Distance (m)	Direction	NGR	Details	
35D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: CP3035MK Original Permit Number: CP3035MK EPR Reference: EA/EPR/CP3035MK/V002 Issue Date: 21/6/2007 Effective Date: 21/6/2007 Last date noted as effective: 2017-01-30 Status: Superceded
36D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: JP3133DM Original Permit Number: CP3035MK EPR Reference: - Issue Date: 30/6/2016 Effective Date: 30/6/2016 Last date noted as effective: 2017-01-30 Status: Effective
37D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: ZP3338DH Original Permit Number: CP3035MK EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 2017-01-30 Status: Determination
38D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: XP3932ZX Original Permit Number: CP3035MK EPR Reference: - Issue Date: 11/3/2013 Effective Date: 11/3/2013 Last date noted as effective: 2017-01-30 Status: Superceded
39D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: XP3932ZX Original Permit Number: CP3035MK EPR Reference: - Issue Date: 11/3/2013 Effective Date: 11/3/2013 Last date noted as effective: 2017-01-30 Status: Superceded
40D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: JP3133DM Original Permit Number: CP3035MK EPR Reference: - Issue Date: 30/6/2016 Effective Date: 30/6/2016 Last date noted as effective: 2017-01-30 Status: Effective
41D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: MP3534AN Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/12/2015 Effective Date: 1/1/2016 Last date noted as effective: 2017-01-30 Status: Superceded
42D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: MP3534AN Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/12/2015 Effective Date: 1/1/2016 Last date noted as effective: 2017-01-30 Status: Superceded

ID	Distance (m)	Direction	NGR	Details	
43D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: MP3534AN Original Permit Number: CP3035MK EPR Reference: - Issue Date: 15/12/2015 Effective Date: 1/1/2016 Last date noted as effective: 2017-01-30 Status: Superceded
44D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: CP3035MK Original Permit Number: CP3035MK EPR Reference: EA/EPR/CP3035MK/V002 Issue Date: 21/6/2007 Effective Date: 21/6/2007 Last date noted as effective: 2017-01-30 Status: Superceded
45D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: HP3332XP Original Permit Number: CP3035MK EPR Reference: - Issue Date: 2/4/2009 Effective Date: 2/4/2009 Last date noted as effective: 2017-01-30 Status: Superceded
46D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: OTHER WASTE DISPOSAL; NON-HAZARDOUS WASTE >50T/D BY BIOLOGICAL TREATMENT	Permit Number: HP3332XP Original Permit Number: CP3035MK EPR Reference: - Issue Date: 2/4/2009 Effective Date: 2/4/2009 Last date noted as effective: 2017-01-30 Status: Superceded
47D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: XP3932ZX Original Permit Number: CP3035MK EPR Reference: - Issue Date: 11/3/2013 Effective Date: 11/3/2013 Last date noted as effective: 2017-01-30 Status: Superceded
48D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: HP3332XP Original Permit Number: CP3035MK EPR Reference: - Issue Date: 2/4/2009 Effective Date: 2/4/2009 Last date noted as effective: 2017-01-30 Status: Superceded
49D	0	On Site	480000 385900	Operator: Edf Energy (west Burton Power) Ltd Installation Name: West Burton Ccgt Power Station Epr/cp3035mk Process: COMBUSTION; ANY FUEL =>50MW	Permit Number: ZP3338DH Original Permit Number: CP3035MK EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 2017-01-30 Status: Determination

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

11

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
2A	4	E	480550 386300	Address: WEST BURTON POWER STATION, BOLE, NOTTINGHAMSHIRE Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: T/69/10276/T Permit Version: 1	Receiving Water: WHEATLEY BECK/R TRENT (TIDAL) Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/03/1986 Effective Date: 21-Mar-1986 Revocation Date: 22/12/1994

ID	Distance (m)	Direction	NGR	Details	
3A	5	E	480550 386301	Address: WEST BURTON POWER STATION, BOLE, NOTTINGHAMSHIRE Effluent Type: TRADE DISCHARGES - SITE DRAINAGE (CONTAM SURFACE WATER, NOT WASTE SIT Permit Number: T/69/10276/T Permit Version: 1	Receiving Water: WHEATLEY BECK/R TRENT (TIDAL) Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/03/1986 Effective Date: 21-Mar-1986 Revocation Date: 22/12/1994
4B	62	SW	480050 385531	Address: WEST BURTON PS, WEST BURTON, WEST BURTON Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: TSC4073 Permit Version: 1	Receiving Water: LOCAL DITCH Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: 12/08/2011
5B	63	SW	480050 385530	Address: WEST BURTON PUMPING STATION, STURTON-LE-STEEPLE, NOTTINGHAMSHIRE Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: T/69/12415/O Permit Version: 1	Receiving Water: TRIB OF CATCHWATER DRAIN Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 05/02/1988 Effective Date: 05-Feb-1988 Revocation Date: -
6	70	SE	480600 385750	Address: WEST BURTON POWER STATION, BOLE, NOTTINGHAMSHIRE Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: T/69/10276/T Permit Version: 1	Receiving Water: WHEATLEY BECK/R TRENT (TIDAL) Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/03/1986 Effective Date: 21-Mar-1986 Revocation Date: 22/12/1994
7C	116	N	480540 386440	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 2	Receiving Water: RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 24/09/2009 Effective Date: 01-Jan-2010 Revocation Date: 29/03/2010
8C	116	N	480540 386440	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 3	Receiving Water: RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 30/03/2010 Effective Date: 30-Mar-2010 Revocation Date: 31/03/2016
9C	116	N	480540 386440	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 1	Receiving Water: RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 07/02/2002 Effective Date: 07-Feb-2002 Revocation Date: 31/12/2009
10C	117	N	480536 386441	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/45540/R Permit Version: 4	Receiving Water: RIVER TRENT Status: VARIED UNDER EPR 2010 Issue date: 01/04/2016 Effective Date: 01-Apr-2016 Revocation Date: -

ID	Distance (m)	Direction	NGR	Details	
11C	127	N	480550 386450	Address: WEST BURTON WWTW, RIVER ROAD, R/O WEST BURTON POWER STATION, WEST BURTON, NOTTINGHAMSHIRE, DN22 9HT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: T/69/08058/R Permit Version: 1	Receiving Water: RIVER TRENT Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 02/09/1980 Effective Date: 02-Sep-1980 Revocation Date: 06/02/2002
12	389	E	480933 385699	Address: STURTON LE STEEPLE QUARRY, OFF COWPASTURE LANE, ., ., STURTON LE STEEPLE, DN22 0HB Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD006845 Permit Version: 1	Receiving Water: THE RIVER TRENT Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 12/06/2009 Effective Date: 01-Apr-2015 Revocation Date: -

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 1

The following COMAH & NIHHS Authorisation records provided by the Health and Safety Executive are represented as polygons or buffered points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	Company	Address	Operational Status	Tier
31	0	On Site	EDF Energy (West Burton Power) Limited	EDF Energy (West Burton Power) Limited, West Burton Power Station, Retford, Nottinghamshire, DN22 9BL	Current COMAH Site	COMAH Lower Tier Operator

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	489	SW	479500 385400	Incident Date: 07-Mar-2002 Incident Identification: 62468 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

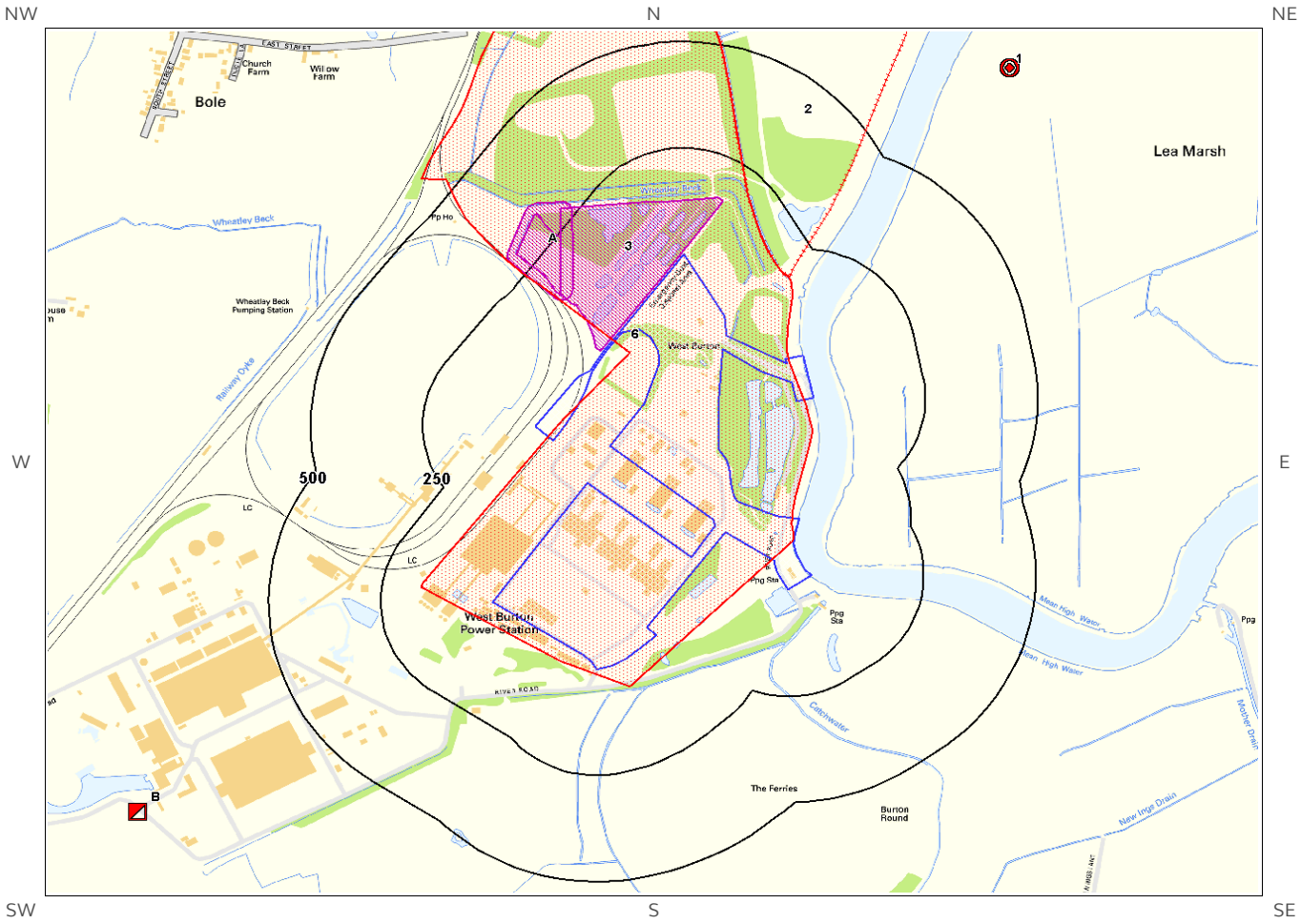
Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site? 0

Database searched and no data found.

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

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

1

The following Environment Agency/Natural Resources Wales landfill records are represented as polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2	163	NE	480500 387500	Address: West Burton Power Station, Retford, West Burton, Nottinghamshire, DN22 9BL Landfill Reference: -9999.0 Environmental Permitting Regulations (Waste) Reference: - Landfill Type: WASTE LANDFILLING; >10 T/D WITH CAPACITY >25,000T EXCLUDING INERT WASTE	Operator: EDF Energy (West Burton Power) Ltd Status: Effective IPPC Reference: EPR Reference:

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

1

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
6	0	On Site	480100 386300	Site Address: West Burton Power Station Tip, West Burton Power Station, Retford Waste Licence: Yes Site Reference: 1/92/317/88NW, 1/77/46/88NW Waste Type: Inert, Industrial, Liquid, sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 17-Jan-1978 Licence Surrendered: 22-Apr-1994 Licence Holder Address: 53 Wake Green Road, Moseley, Birmingham Operator: - Licence Holder: Central Electricity Generating Board First Recorded: 31-Dec-1946 Last Recorded: 22-Apr-1994

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

1

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
1	818	NE	481000.0 387000.0	Address: Lea Road Tip, Gainsborough, Lincs BGS Number: 1199.0	Risk: No risk to aquifer Waste Type: N/A

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

3

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
3	5	NW	480179 386513	Type of Site: Emergency Dust Disposal Area Site Address: N/A	Planning Application Reference: N/A Date: 1969	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	139	NW	479953 386569	Type of Site: Emergency Dust Disposal Area (B) Site Address: N/A	Planning Application Reference: N/A Date: 1979	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5A	156	NW	479950 386559	Type of Site: Emergency Dust Disposal Area Site Address: N/A	Planning Application Reference: N/A Date: 1989	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

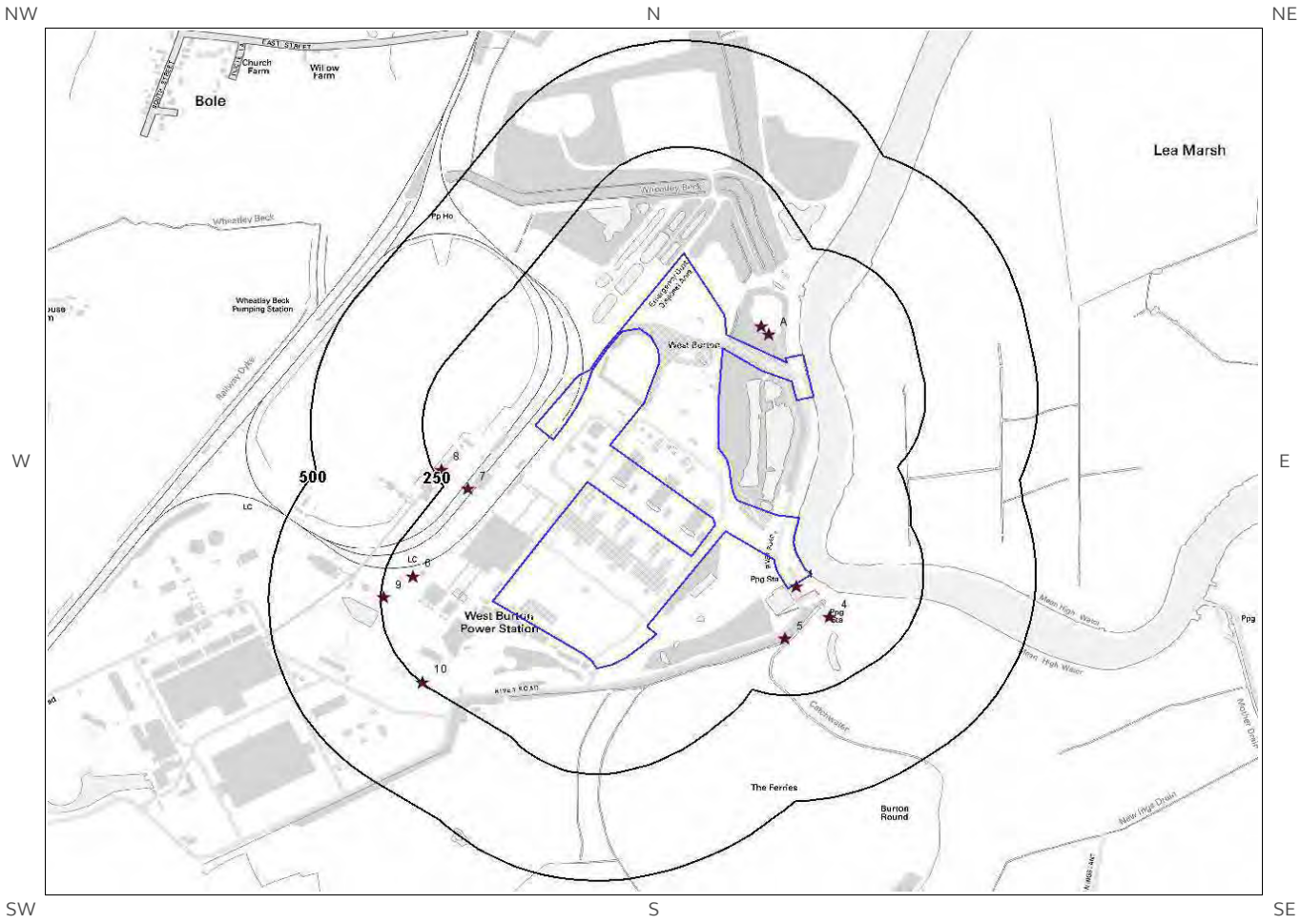
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

4

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
7B	933	SW	479056 385251	Site Address: West Burton Power Station, Near Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EDF001 EPR reference: - Operator: E D F Energy (west Burton Power) Limited Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: 03/06/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Bole Ings Site, West Burton Power Station Correspondence Address: Mr Kenneth Marsh, West Burton Power Station, Retford, Nottinghamshire, DN22 9BL
8B	934	SW	479055 385250	Site Address: West Burton Power Station, Near Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TXU005 EPR reference: - Operator: T X U Europe Merchant Generation Ltd Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: "Bole Ings Site, West Burton Power Station" Correspondence Address: West Burton Power Station, Near Retford, Nottinghamshire, DN22 9BL
Not shown	1421	SW	478565 385133	Site Address: West Burton Power Station, Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EDF001 EPR reference: EA/EPR/AP3897FB/T002 Operator: E D F Energy (West Burton Power) Limited Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: 03/06/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC Site Name: Bole Ings Site West Burton Power Station Correspondence Address: -
Not shown	1421	SW	478565 385133	Site Address: West Burton Power Station, Retford, Nottinghamshire, DN22 9BL Type: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EDF001 EPR reference: - Operator: E D F Energy West Burton Power Ltd Waste Management licence No: 43109 Annual Tonnage: 3000.0	Issue Date: 01/04/1996 Effective Date: 03/06/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: IPPC Site Name: Bole Ings Site West Burton Power Station Correspondence Address: West Burton Power Station, Retford, Nottinghamshire, DN22 9BL

4. Current Land Use Map



Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 10

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	4	SE	Pumping Station	480524 385778	Pumping Station, DN22	Water Pumping Stations	Industrial Features
2A	42	NE	Mast	480462 386371	Mast, DN22	Telecommunications Features	Infrastructure and Facilities
3A	52	NE	Sewage Works	480446 386390	Sewage Works, DN22	Waste Storage, Processing and Disposal	Infrastructure and Facilities
4	104	SE	Burton Round Pumping Station	480598 385707	Burton Round Pumping Station, DN22	Water Pumping Stations	Industrial Features
5	116	S	Water Tower	480499 385656	Water Tower, DN22	Water Pumping Stations	Industrial Features
6	188	W	Tank	479670 385803	Tank, DN22	Tanks (Generic)	Industrial Features
7	205	NW	Tank	479791 386008	Tank, DN22	Tanks (Generic)	Industrial Features
8	233	SW	Conveyor	479733 386054	Conveyor, DN22	Conveyors	Industrial Features
9	245	W	Travelling Crane	479603 385753	Travelling Crane, DN22	Travelling Cranes and Gantries	Industrial Features
10	246	SW	Cooling Tower	479691 385554	Cooling Tower, DN22	Chimneys	Industrial Features

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

---

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILMP-DMTN	TILL, MID PLEISTOCENE	DIAMICTON
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

5.3 Bedrock and Solid Geology

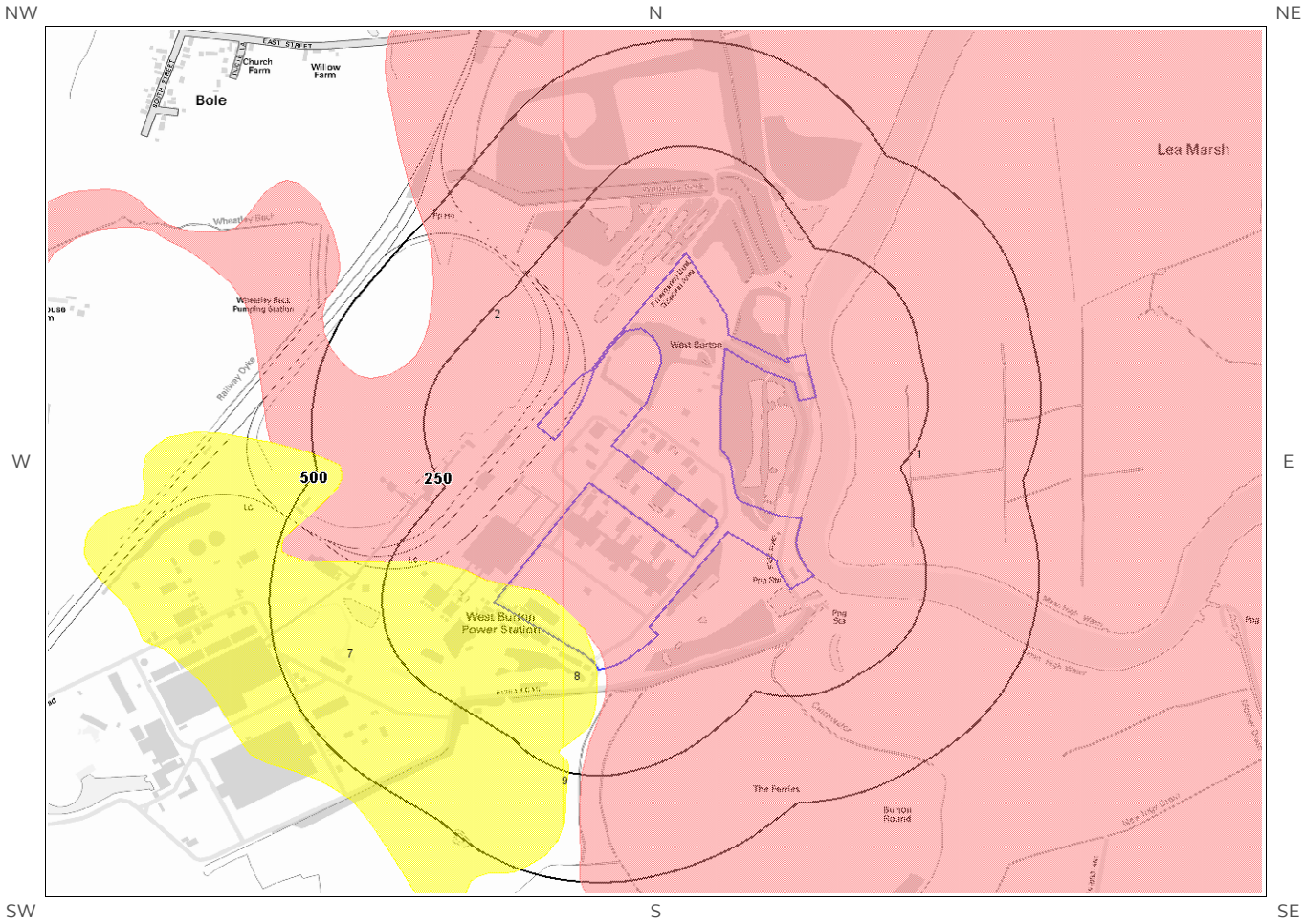
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
MMG-MDST	MERCIA MUDSTONE GROUP	MUDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

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

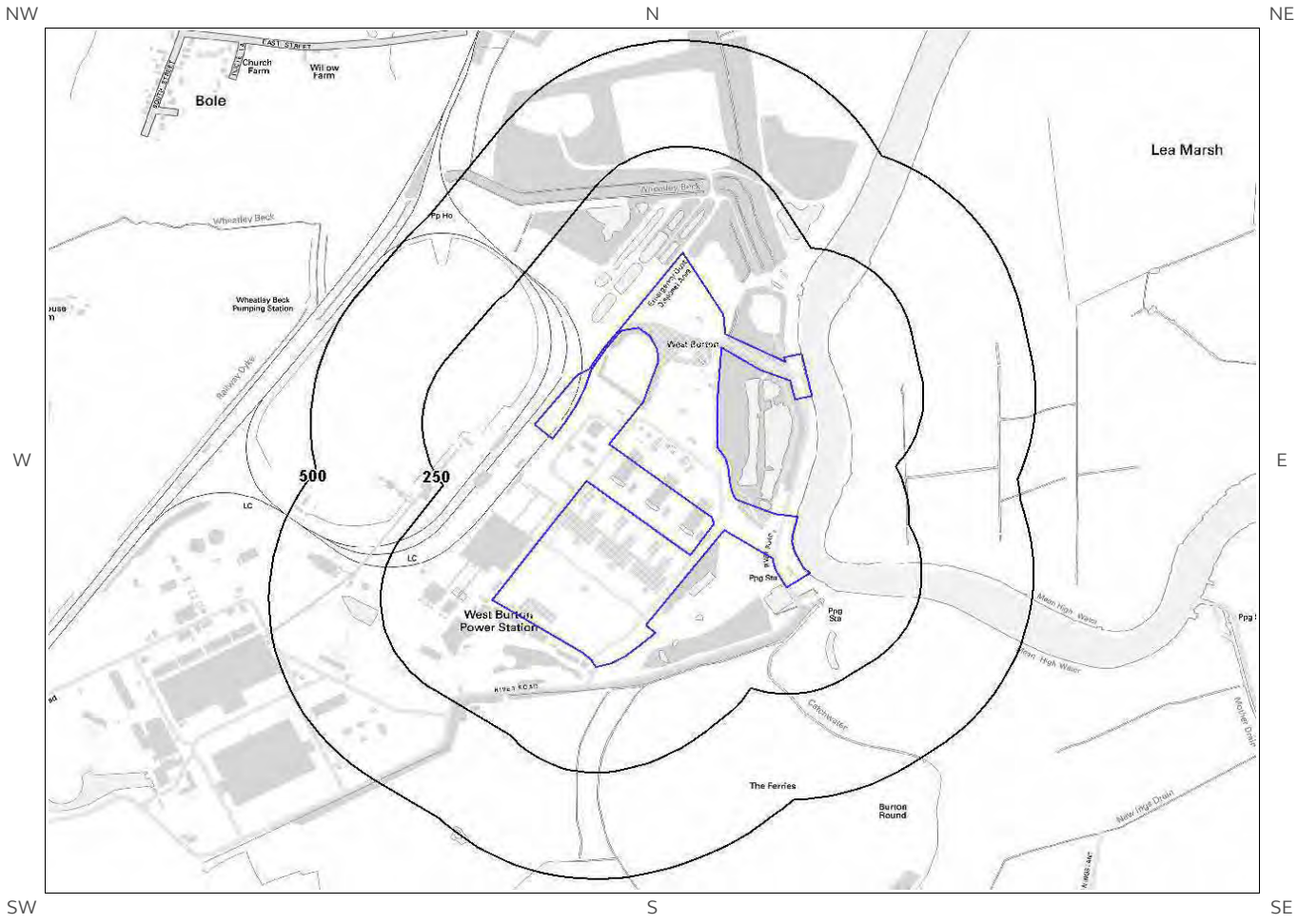
Unproductive

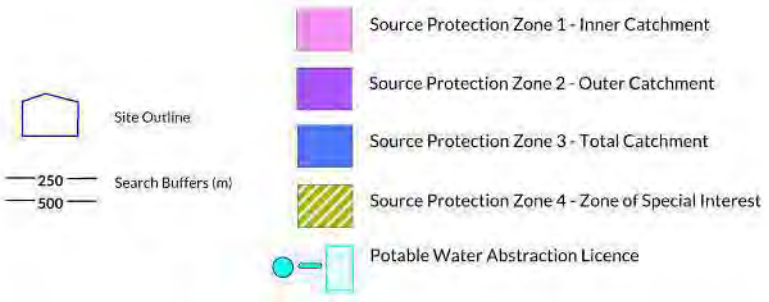
Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses

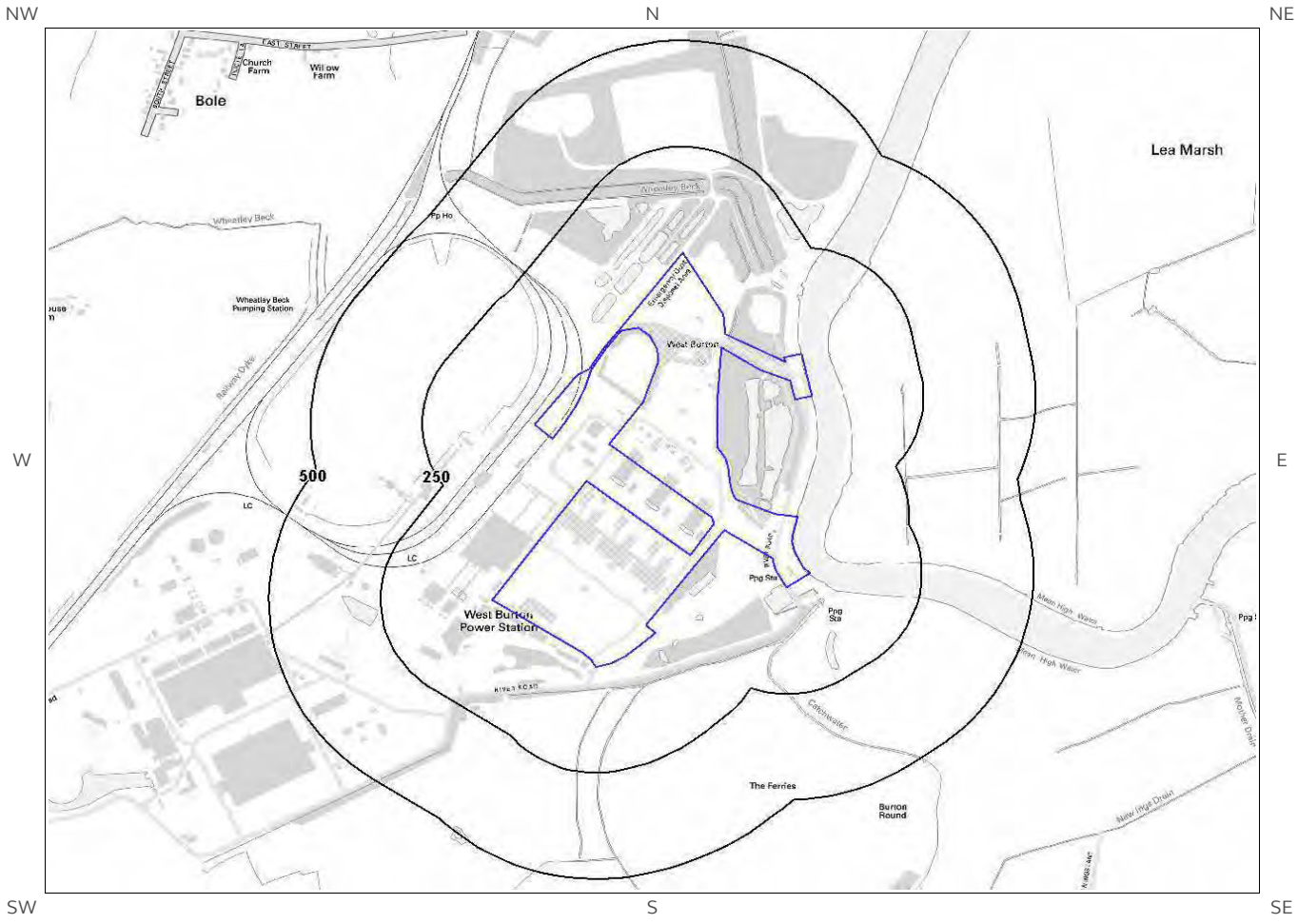
Site Outline
250
500
Search Buffers (m)
Principal Aquifer
Secondary (A) Aquifer - Permeable Layers
Secondary (B) Aquifer - Lower Permeability Layers
Groundwater Abstraction Licence
Secondary Aquifer - Undifferentiated Layers
Unproductive
Unknown (lakes and landslip)
Surface Water Abstraction Licence

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





6d. Hydrogeology – Source Protection Zones within confined aquifer



Site Outline

250
500
Search Buffers (m)

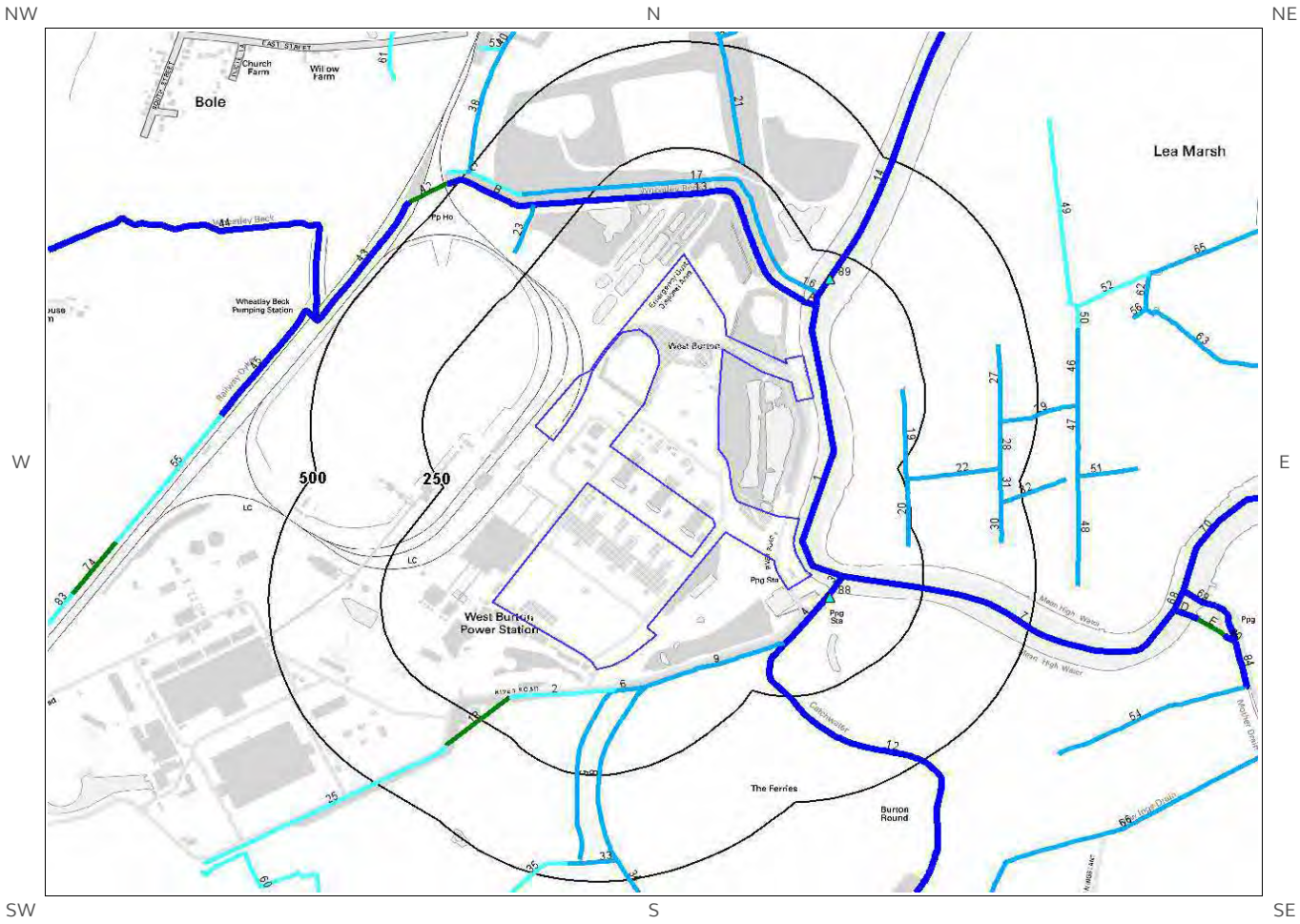
Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

6e. Hydrology – Detailed River Network and River Quality



6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	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. These are generally aquifers formerly classified as minor aquifers
2	0	On Site	Secondary A	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. These are generally aquifers formerly classified as minor aquifers
7	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
8	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
9	219	S	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
2	0	On Site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
5	338	NW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
8	0	On Site	480510 385880	Status: Historical Licence No: MD/028/0069/003 Details: Hydraulic Testing Direct Source: Surface Water Midlands Region Point: River Trent At Land Adj River Road Data Type: Point Name: PPS Pipeline Systems GmbH	Annual Volume (m^3): 0 Max Daily Volume (m^3): 2672 Application No: NPS/WR/001049 Original Start Date: 25/6/2009 Expiry Date: 21/7/2009 Issue No: 1 Version Start Date: 25/6/2009 Version End Date:
Not shown	1215	E	481770 385900	Status: Historical Licence No: 03/28/69/0243 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: Lea, Gainsborough - River Trent Data Type: Point Name: MOULDS	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: - Original Start Date: 31/1/1996 Expiry Date: 38807 Issue No: 100 Version Start Date: 31/1/1996 Version End Date:
Not shown	1215	E	481770 385900	Status: Historical Licence No: 03/28/69/0243/1 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: Lea, Gainsborough - River Trent Data Type: Point Name: MOULDS	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: A/28/69/132 Original Start Date: 10/1/2003 Expiry Date: 31/3/2017 Issue No: 100 Version Start Date: 10/1/2003 Version End Date:
Not shown	1849	NW	478900 387800	Status: Active Licence No: 03/28/69/0082 Details: Spray Irrigation - Direct Direct Source: Surface Water Midlands Region Point: Hall Farm - Reservoir On Saundby Beck Data Type: Point Name: BARTON & CO	Annual Volume (m^3): 3636.8 Max Daily Volume (m^3): 454.6 Application No: - Original Start Date: 11/3/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/3/2005 Version End Date:

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site? Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
0	On Site	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? Yes

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

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. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
88	70	SE	480600 385750	River Name: Catchwater Drain Reach: Trib From North Leverton To R Trent End/Start of Stretch: End of Stretch NGR	B	B	B	B	B
89	186	N	480600 386500	River Name: Wheatley Beck Reach: Track Bridge To Conf With Trent End/Start of Stretch: End of Stretch NGR	B	A	A	A	B
Not shown	1133	SW	479620 384550	River Name: Catchwater Drain Reach: Trib From North Leverton To R Trent End/Start of Stretch: Sample Point NGR	B	B	B	B	B
Not shown	1195	W	478810 386540	River Name: Wheatley Beck Reach: Track Bridge To Conf With Trent End/Start of Stretch: Sample Point NGR	B	A	A	A	B

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1	17	NE	River Name: River Trent Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
2	52	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
3	58	SE	River Name: Catchwater Drain Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
4	58	SE	River Name: Catchwater Drain Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
5	59	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
6	59	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
7	70	E	River Name: River Trent Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
8	79	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
9	79	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
10A	121	N	River Name: Wheatley Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
11A	121	N	River Name: River Trent Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
12	127	S	River Name: Catchwater Drain Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
13	132	NE	River Name: Wheatley Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
14	150	N	River Name: River Trent Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
15A	150	N	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
16	158	N	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
17	162	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
18	171	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
19	198	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
20	226	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
21	249	NE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
22	257	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
23	300	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
24B	335	NW	River Name: Wheatley Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
25	343	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
26B	371	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
27	417	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
28	420	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
29	420	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
30	430	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
31	449	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
32	451	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
33	452	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
34	452	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
35	461	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
36C	492	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
37C	497	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
38	497	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

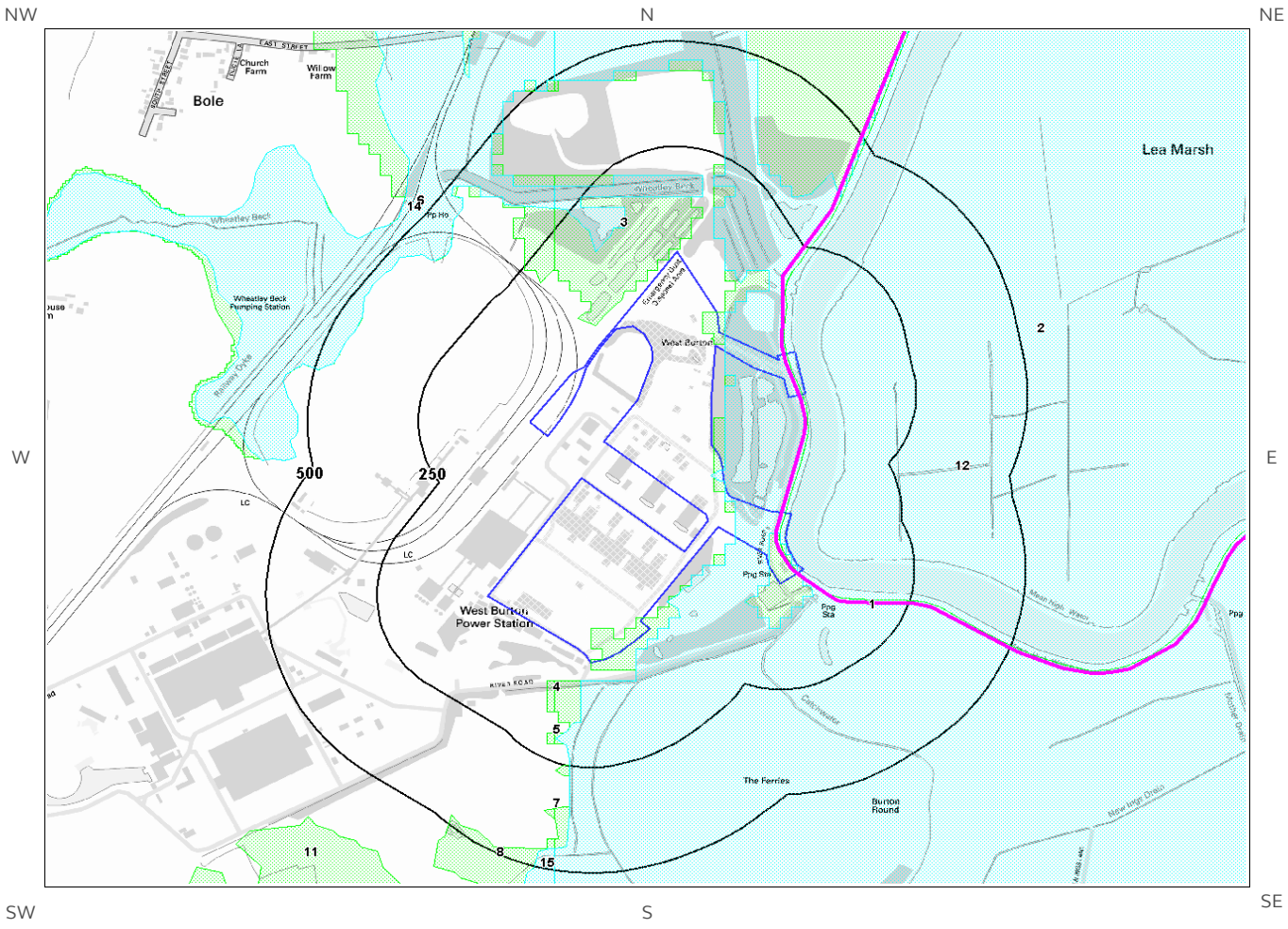
6.11 Surface Water Features

Are there any surface water features within 250m of the study site? Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
0	On Site
5	SW
15	E
16	S
17	NW
21	SE
33	N
36	SE
43	SE
47	NW
47	NW
48	NW
51	S
57	S
59	NW
59	W
62	S
66	SE
70	NW
74	NE
75	W
88	NW
89	NW
98	SW
128	NW
131	NE
139	N
140	SE
141	NW
147	W
161	NE
169	N
190	W
198	E
222	NE
225	E
248	NE

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

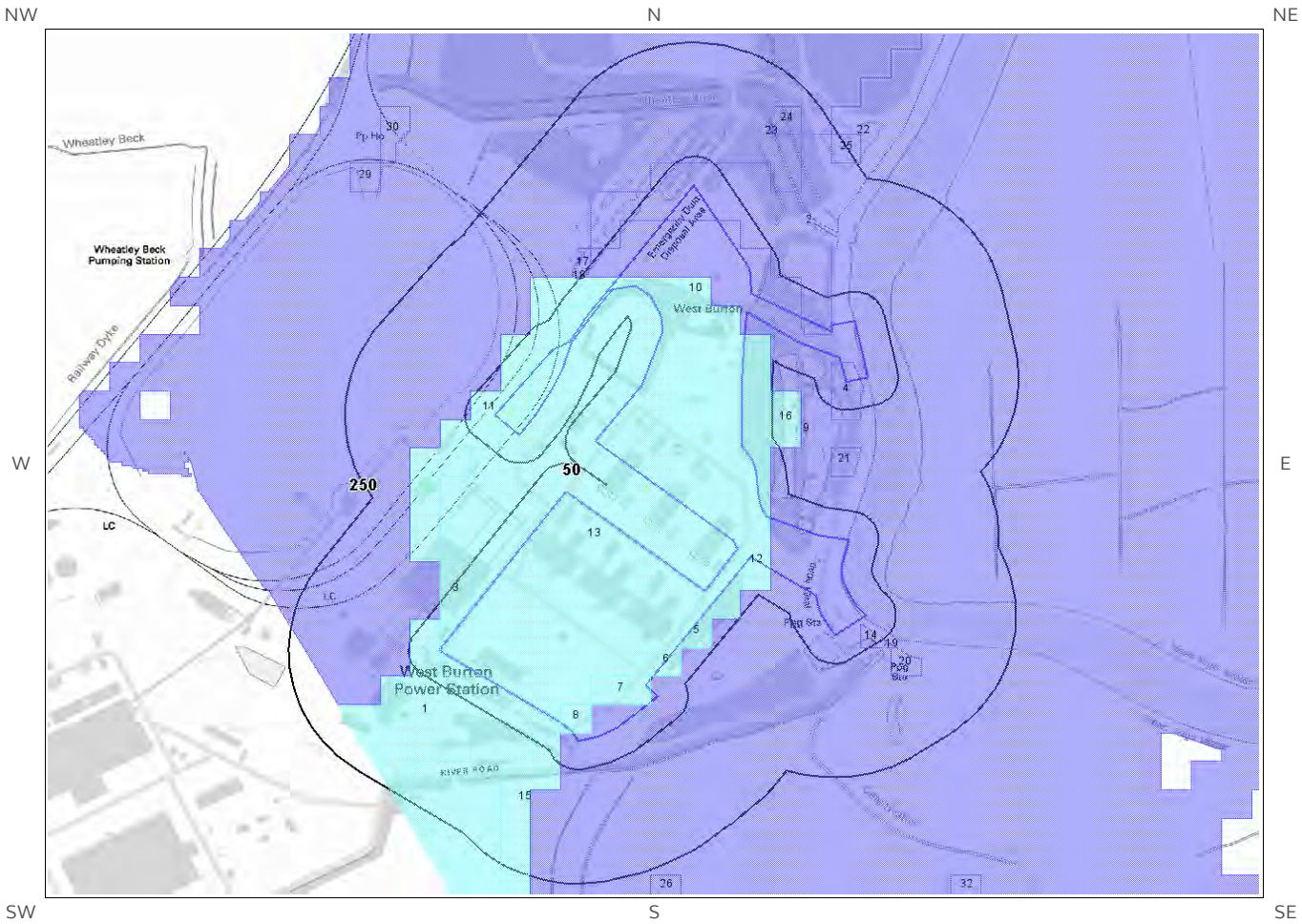
Zone 3 Floodplain

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

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? Yes

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)
2	0	On Site	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)
3	2	NW	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)
4	91	SW	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)
5	186	SW	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)
6	190	NW	01-Feb-2017	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? Yes

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	0	On Site	01-Feb-2017	Zone 3 - (Fluvial Models)
2	127	NW	01-Feb-2017	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Medium

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Medium (greater than 1 in 100 but less than 1 in 30) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRas flood Risk
1	0.0	On Site	Low
2	0.0	On Site	Medium
3	0.0	On Site	Low
4	0.0	On Site	Medium
5	0.0	On Site	Low
6	0.0	On Site	Low
7	0.0	On Site	Low
8	0.0	On Site	Low
9	0.0	On Site	Medium
10	0.0	On Site	Low
11	0.0	On Site	Low
12	0.0	On Site	Low
13	0.0	On Site	Low
14	6.0	SE	Medium
15	14.0	SW	Low
16	37.0	NE	Low
17	45.0	NW	Medium
18	46.0	NW	Medium

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? Yes

The following flood defence records are represented as lines on the Flood Map:

ID	Distance (m)	Direction	Update
18	0	On Site	31-Jan-2017

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

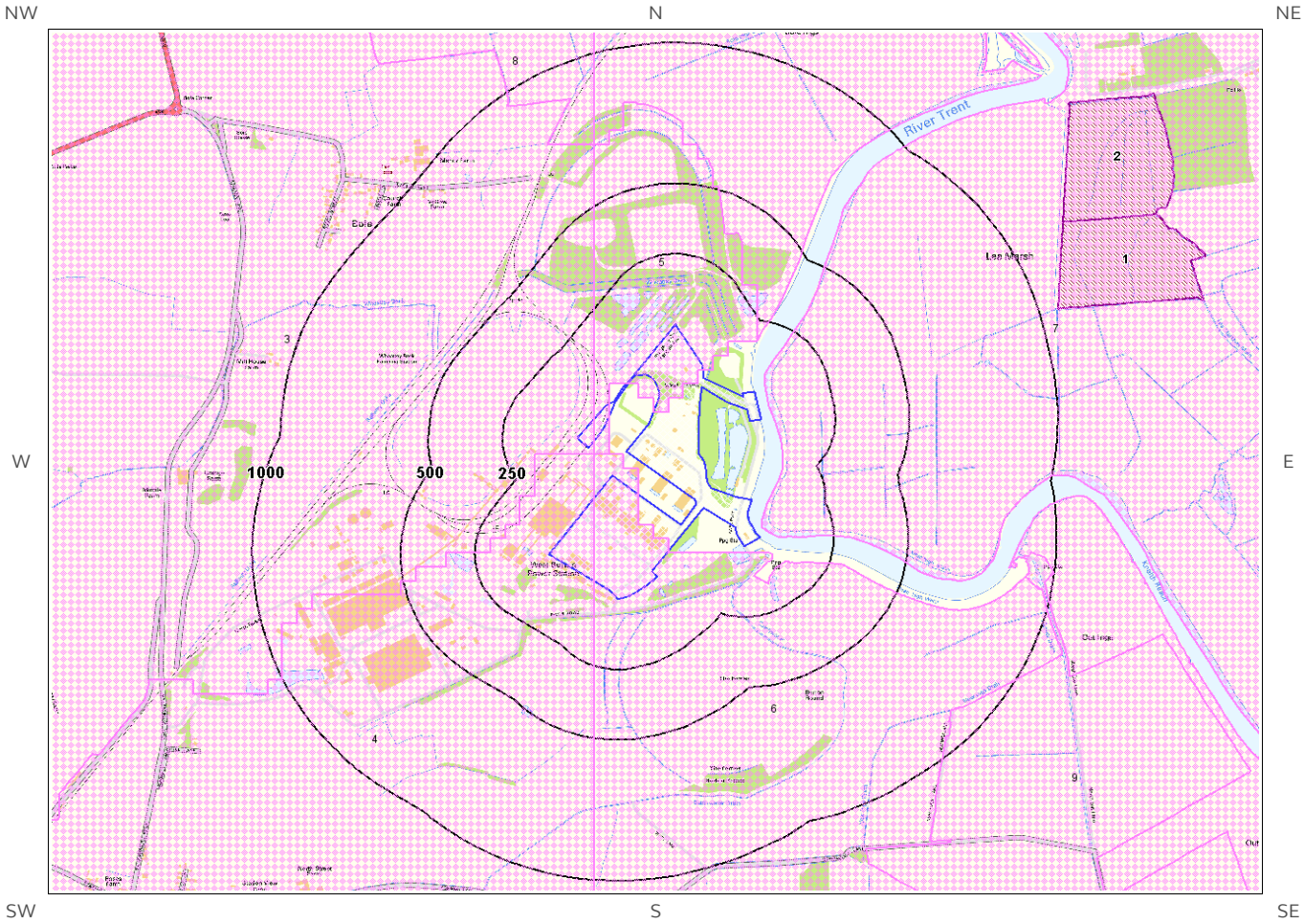
7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result? High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



Site Outline

130 250 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

8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

2

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
1	1064	E	Lea Marsh	Natural England
2	1202	NE	Lea Marsh	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

7

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
3	0	On Site	Existing	DEFRA
4	0	On Site	Existing	DEFRA
5	0	On Site	Existing	DEFRA
6	0	On Site	Existing	DEFRA
7	29	NE	Existing	DEFRA
8	695	NW	Existing	DEFRA
9	889	SE	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell*[*] hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand*[*] hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

9.2 Radon

9.2.1 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 not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

* This indicates an automatically generated 50m buffer and site.

9.2.2 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.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site?	No

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary?	No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site?	No

Guidance: No Guidance Required.

Contact Details

Groundsure Helpline
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info@groundsure.com

British Geological Survey Enquiries
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Email:
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enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
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Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

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Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Bassetlaw District Council
Phone: 01909 533 533
Web: http://www.bassetlaw.gov.uk/
Address: Queen s Buildings, Potter Street, Worksop, Nottinghamshir,

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-sept-2016

Aecom Infrastructure and Environment UK Ltd

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LEEDS, LS11 9AR

Groundsure Reference:	GS-3864430
Your Reference:	60527350
Report Date	9 May 2017
Report Delivery Method:	Email - pdf

Groundsure Geo Insight

Address: WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

[redacted]

Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Groundsure Geo Insight

Address:	**WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL**
Date:	**9 May 2017**
Reference:	**GS-3864430**
Client:	**Aecom Infrastructure and Environment UK Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	23-Aug-2015
Grid Reference:	480251,385852
Site Size:	23.97ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the 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: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of faults within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and Faults	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of faults within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is 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 not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	1	4	2	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	4

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

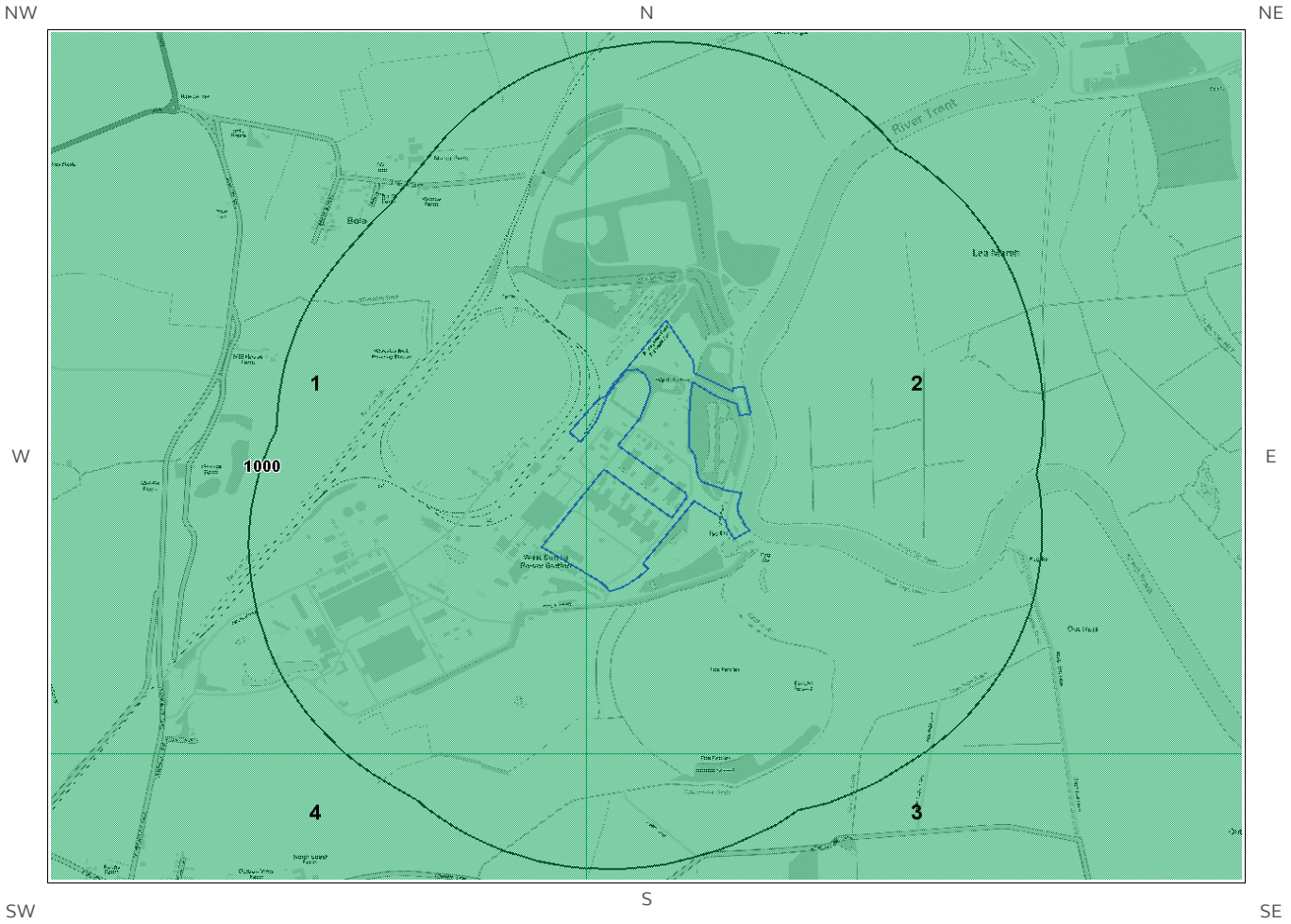
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Very Low
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Moderate
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	3	2	4

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	13	0	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	2	2	3	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	8	12	8	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability



1_10,000 Availability Legend

Site Outline

Full Coverage

Partial Coverage

No Coverage

50
250
Search Buffers (m)

Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	Full	Full	No coverage
2	0.0	No deposits are mapped	Full	Full	No coverage
3	585.0	No deposits are mapped	Full	Full	No coverage
4	590.0	No deposits are mapped	Full	Full	No coverage

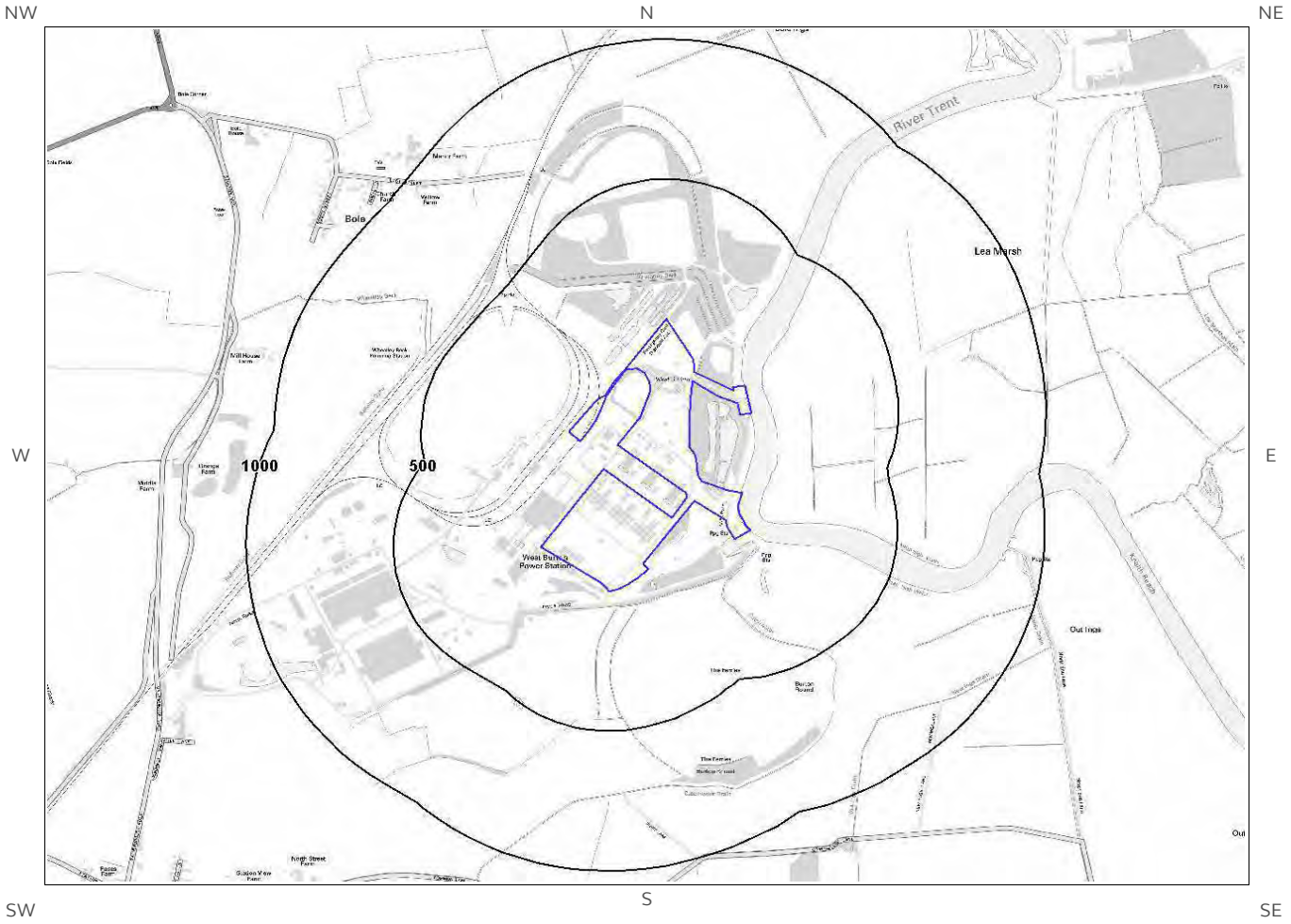
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

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



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

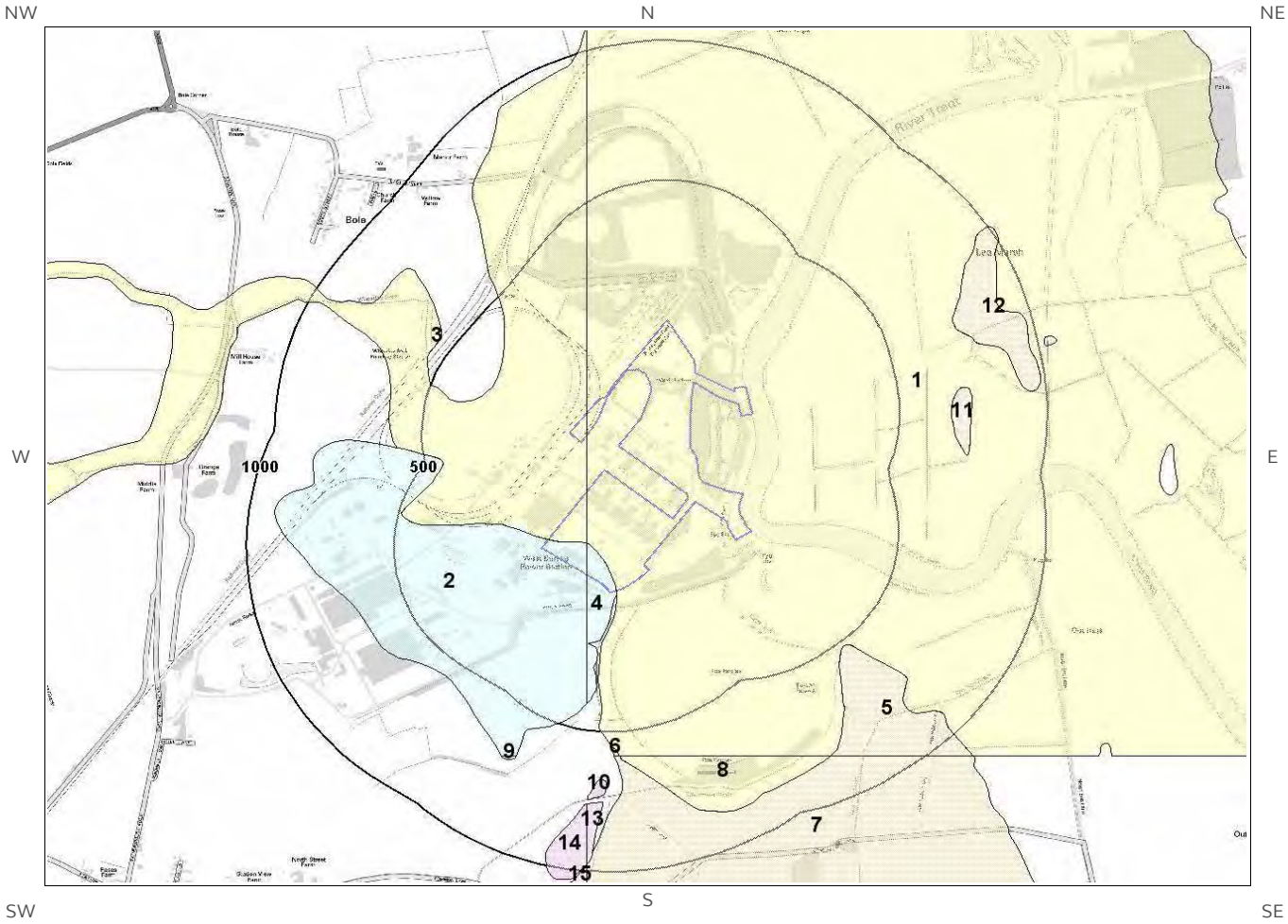
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

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



Artificial Ground Legend

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
2	0.0	On Site	TILMP-DMTN	Till, Mid Pleistocene - Diamicton	Diamicton
3	0.0	On Site	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
4	0.0	On Site	TILMP-DMTN	Till, Mid Pleistocene - Diamicton	Diamicton

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

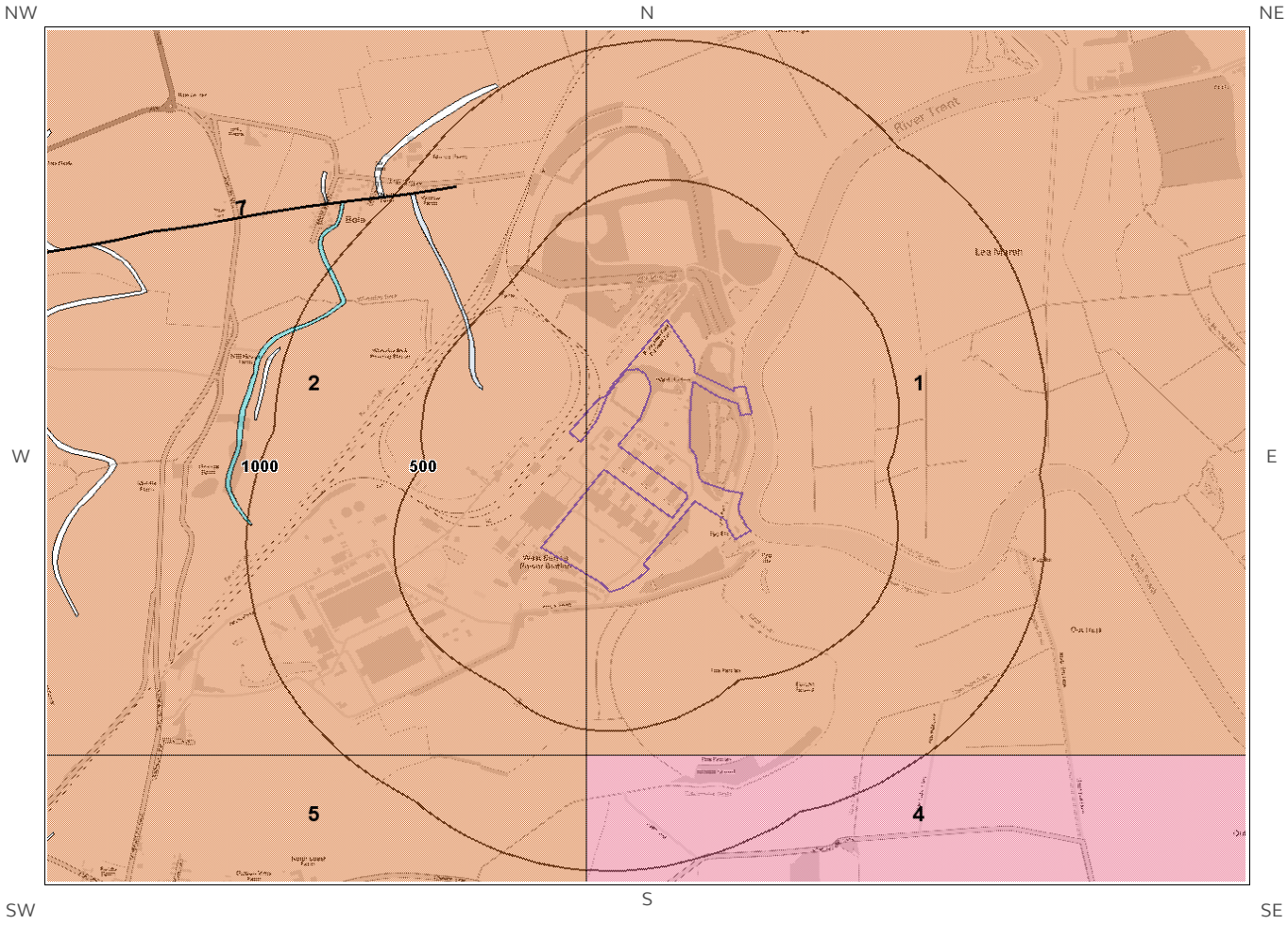
No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and Faults Map (1:10,000 scale)



Bedrock and Faults Legend

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and Faults

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	MMG-MDST	Mercia Mudstone Group - Mudstone	Rhaetian Age - Early Triassic Epoch
2	0.0	On Site	MMG-MDST	Mercia Mudstone Group - Mudstone	Rhaetian Age - Early Triassic Epoch
3	332.0	NW	MMG-DSLST	Mercia Mudstone Group - Dolomitic Siltstone	Rhaetian Age - Early Triassic Epoch

1.3.2 Faults

Are there any records of Faults within 500m of the study site boundary at 1:10,000 scale? No

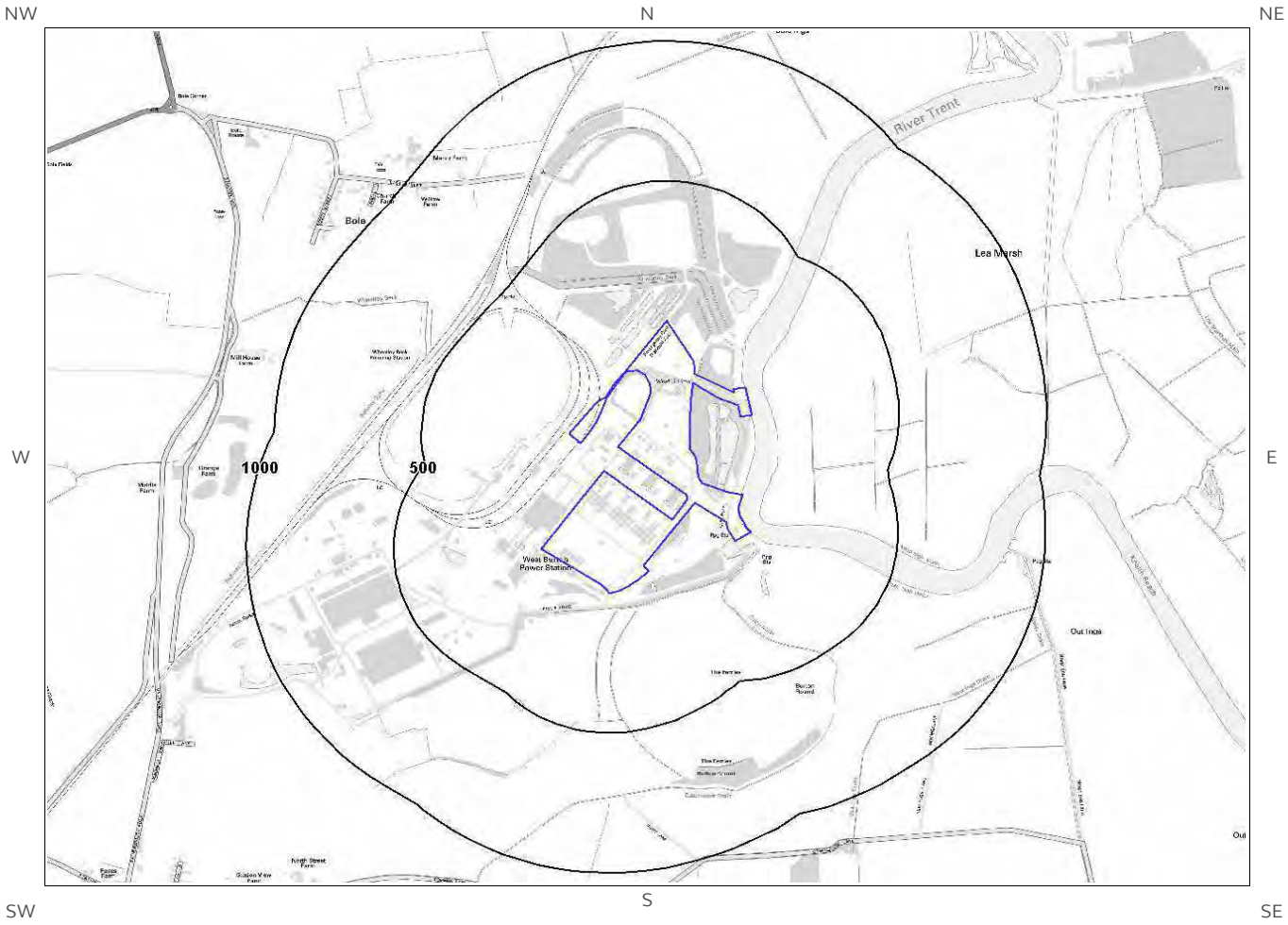
Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground Map



Ground Workings Legend

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 101

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? No

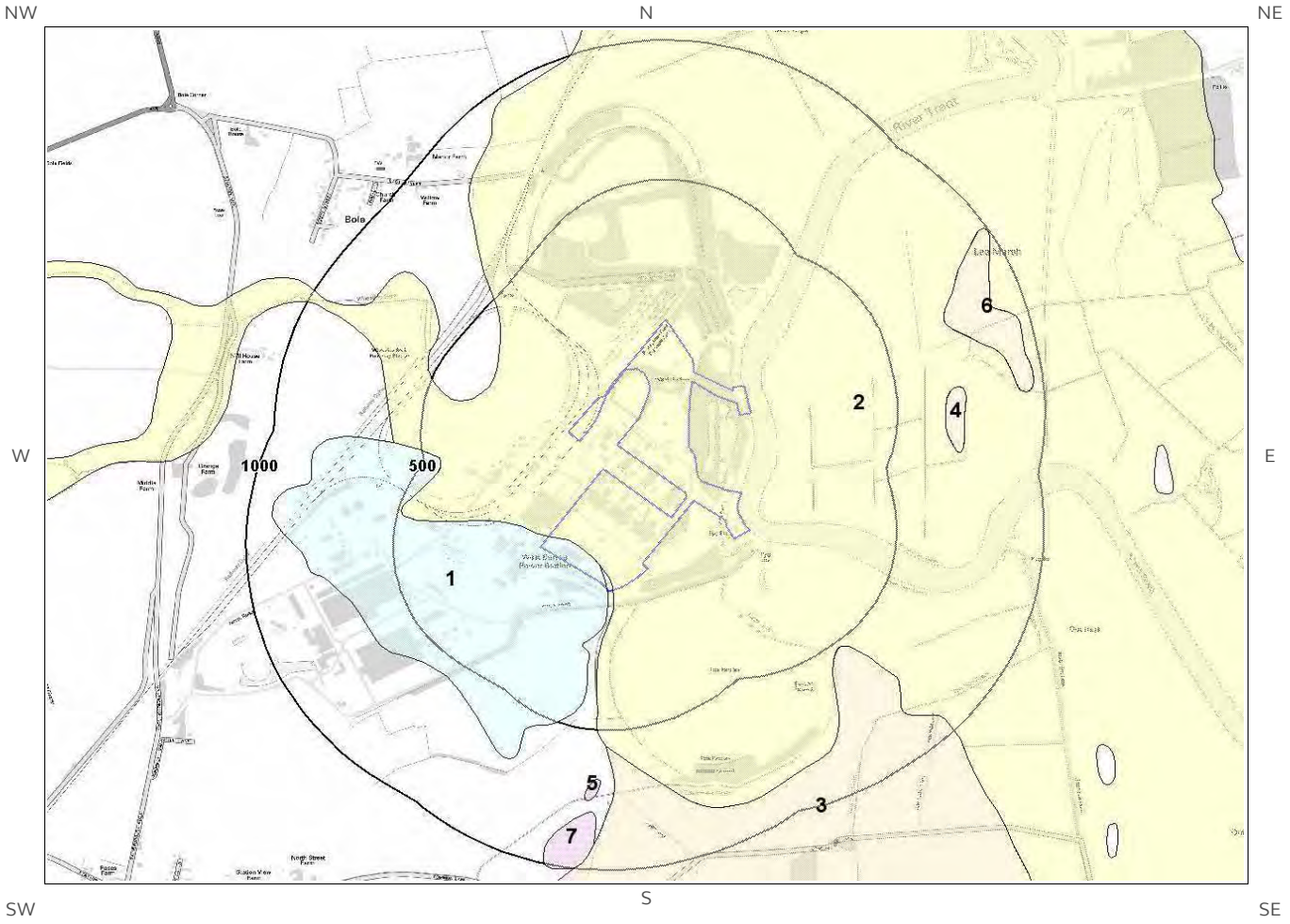
Database searched and no data found.

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

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



Ground Workings Legend

Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILMP-DMTN	TILL, MID PLEISTOCENE	DIAMICTON
2	0.0	On Site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low
0.0	On Site	Intergranular	High	Very Low
0.0	On Site	Intergranular	High	Very Low
0.0	On Site	Mixed	High	Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

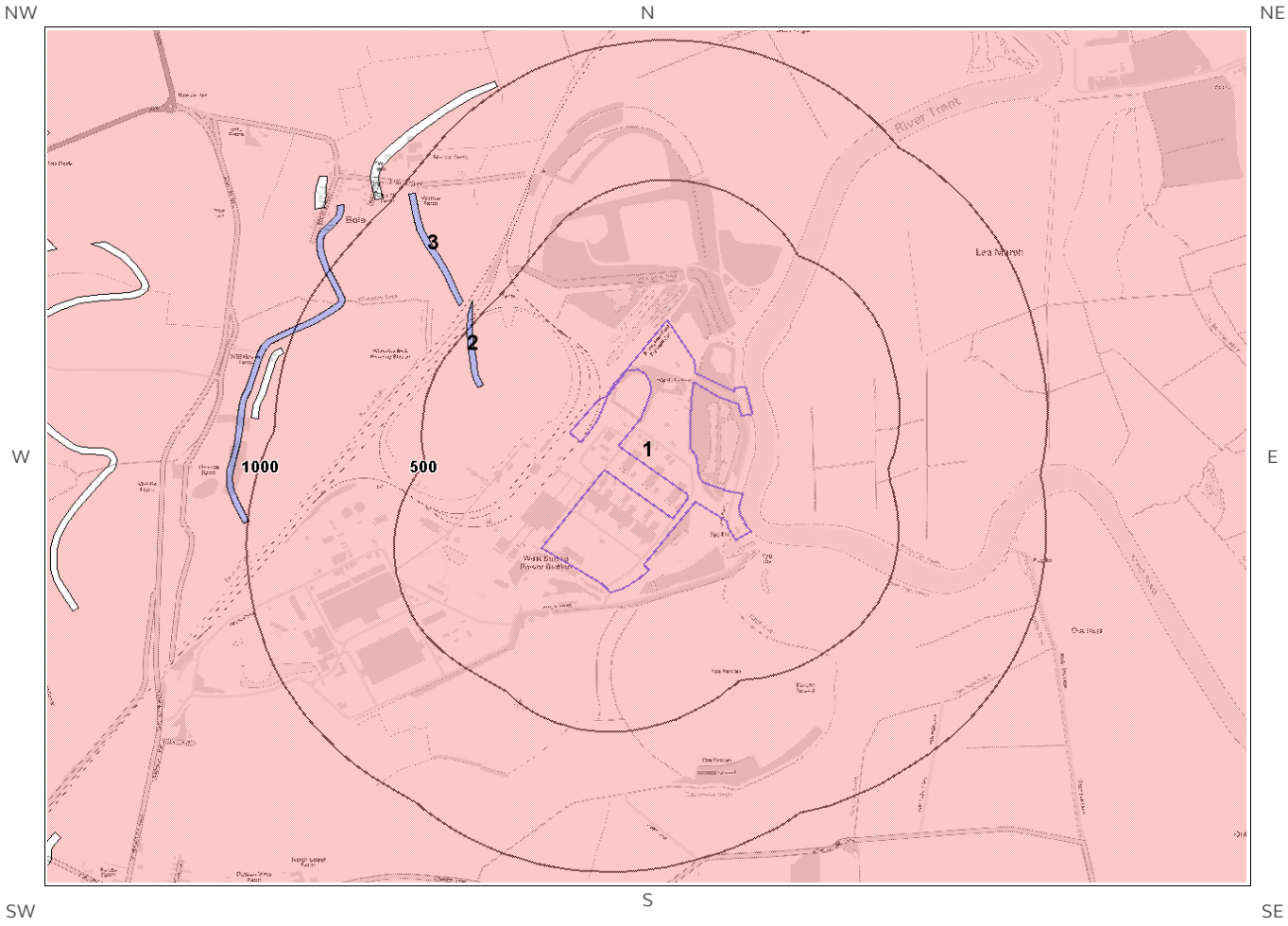
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and Faults Map (1:50,000 scale)



Ground Workings Legend

Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 101

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	MMG-MDST	MERCIA MUDSTONE GROUP - MUDSTONE	-
2	338.0	NW	MMG-DSLST	MERCIA MUDSTONE GROUP - SILTSTONE, DOLOMITIC	-

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Low	Low
0.0	On Site	Fracture	Low	Low

2.3.3 Faults

Are there any records of Faults within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

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 not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

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

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	0.0	On Site	480312 386506	Pond	1971
2A	8.0	NW	480194 386517	Unspecified Pits	1971
3A	8.0	NW	480194 386517	Unspecified Pits	1980
4B	41.0	NE	480453 386421	Sewage Works	1971
5B	41.0	NE	480453 386421	Sewage Works	1980
6	68.0	NE	480367 386569	Unspecified Ground Workings	1900
7	180.0	S	479960 385412	Unspecified Pit	1916

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

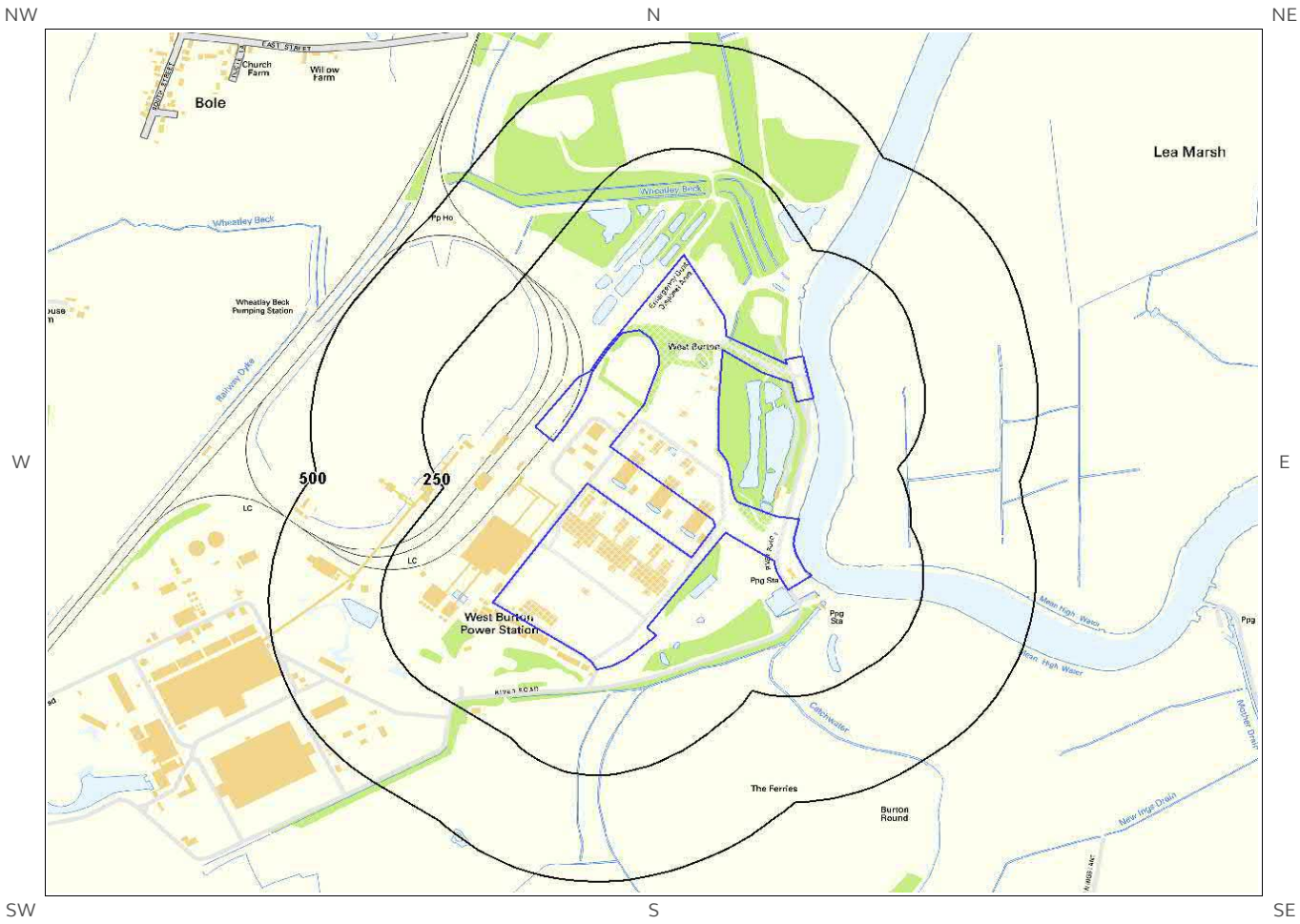
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

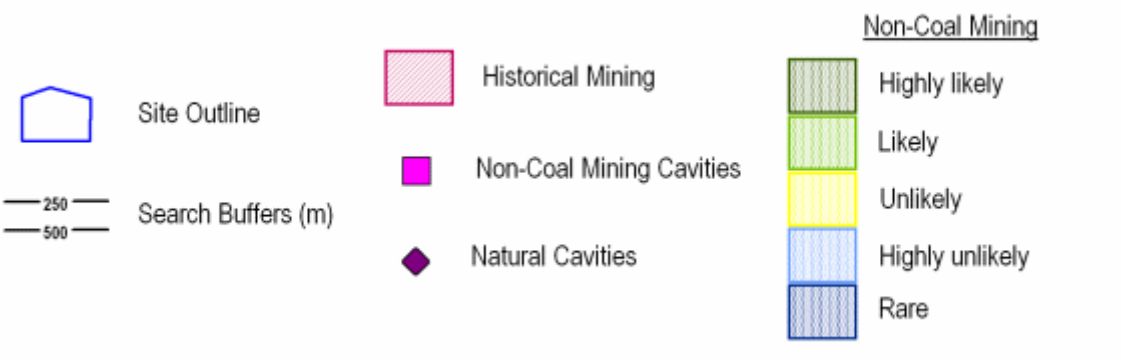
The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
8C	509.0	SW	479380 385545	Desulphogypsum	West Burton Power Station Desulphurisation Plant	Power station which produces Desulphogypsum and, or, Pulverised Fuel Ash or Furnace Bottom Ash	Active
9C	509.0	SW	479380 385545	Furnace Bottom Ash	West Burton Power Station Ash Plant	Recycled material, construction and demolition materials recovered for use as secondary aggregates	Active
10C	509.0	SW	479380 385545	Pulverised-Fuel Ash	West Burton Power Station Ash Plant	Recycled material, construction and demolition materials recovered for use as secondary aggregates	Active
Not shown	925.0	S	479986 384665	Sand	Blackburn Lane Sand Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities Map



Mining, Extraction and Natural Cavities Legend



5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

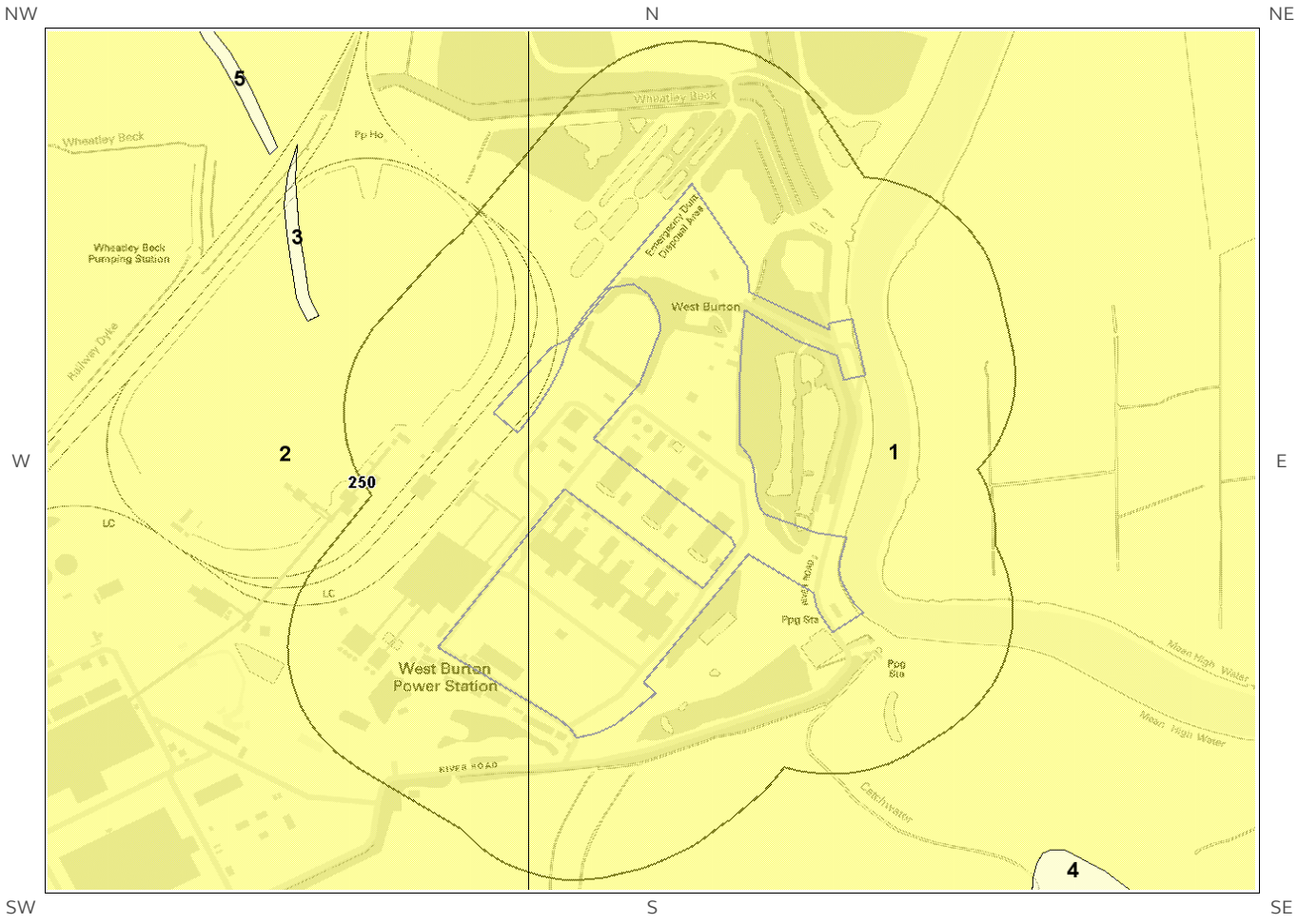
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

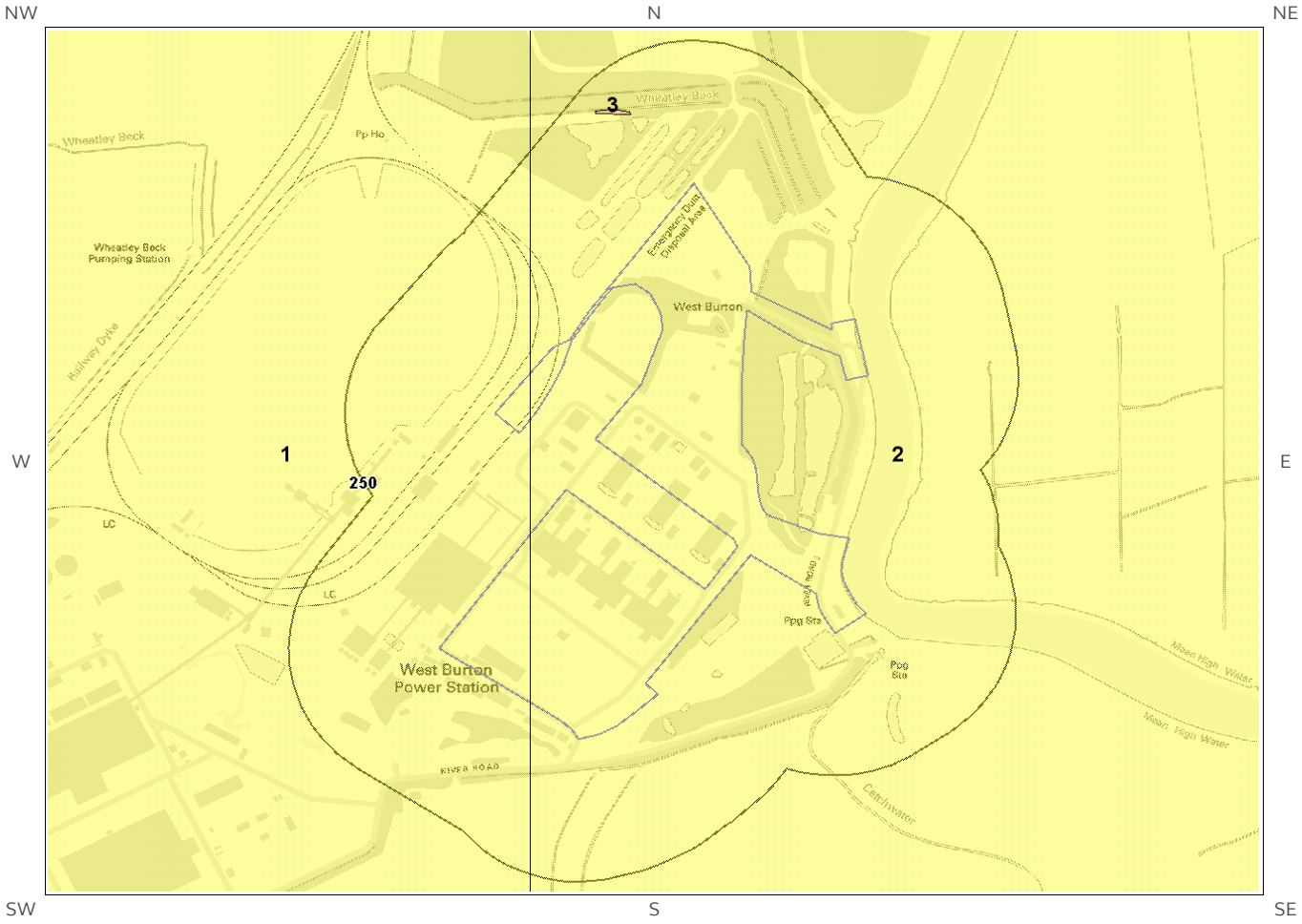
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay Map



Shrink Swell Clay Legend

6.2 Landslides Map

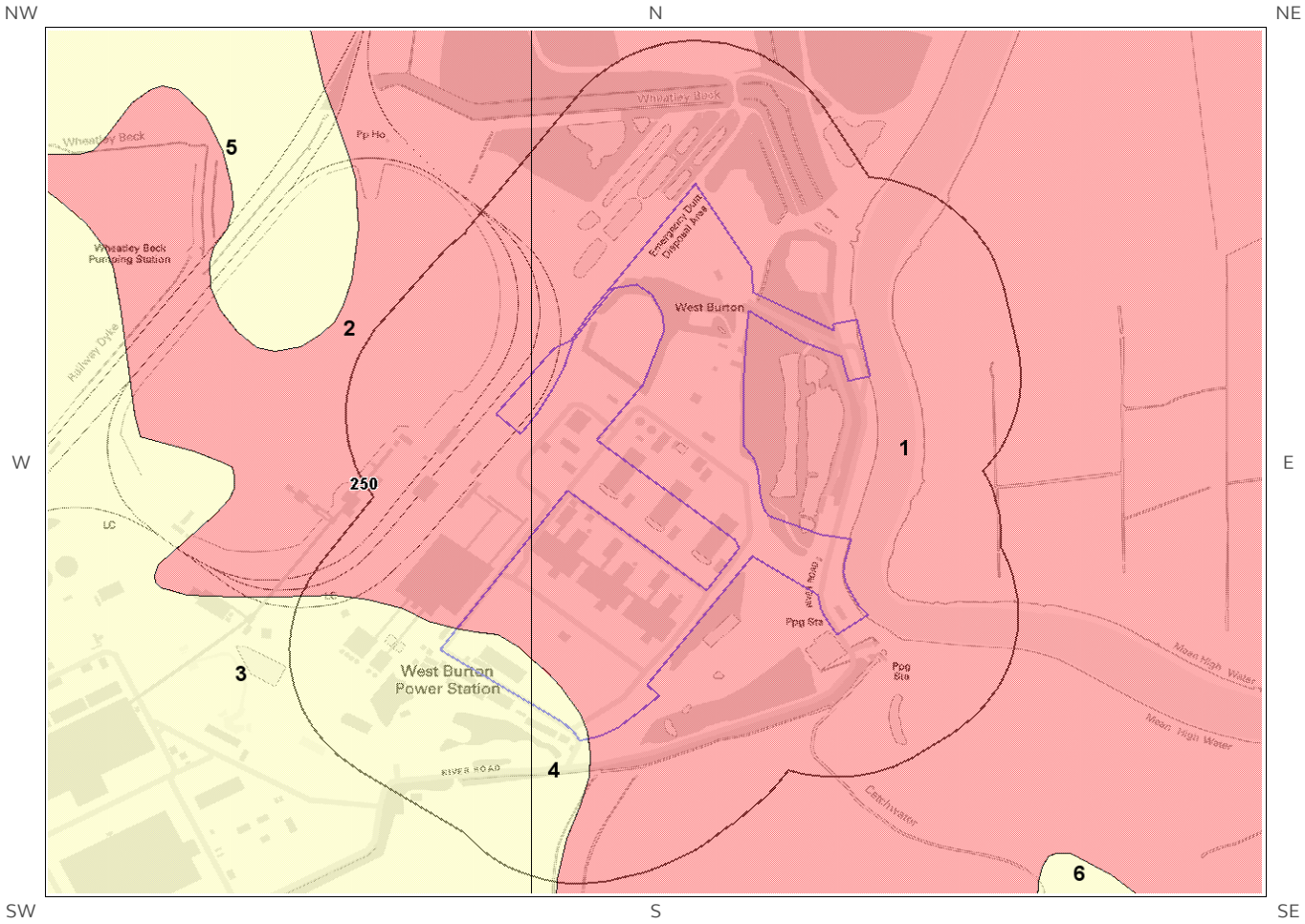


Landslides Legend

6.3 Ground Dissolution of Soluble Rocks Map

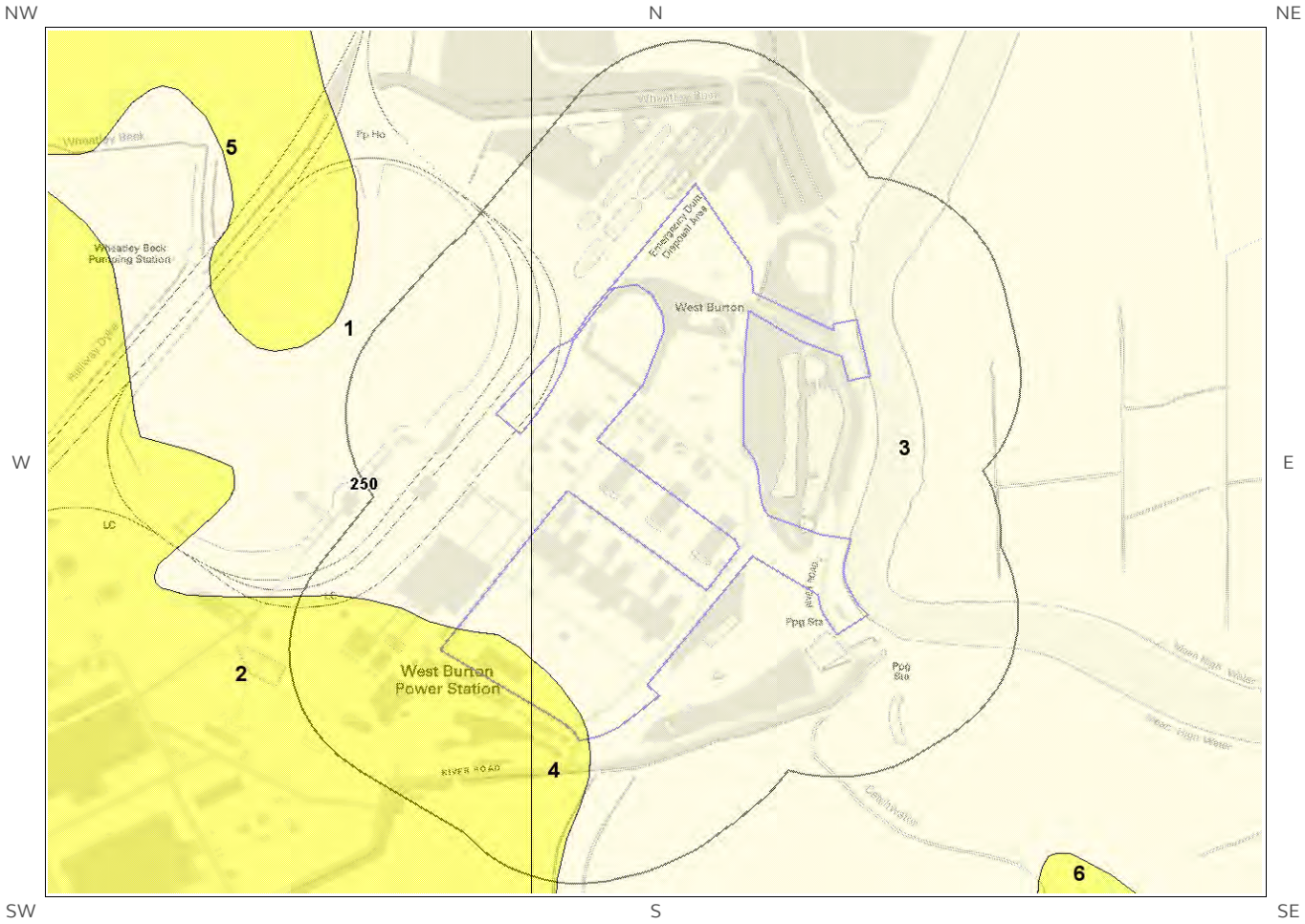
Ground Dissolution Soluble Rocks Legend

6.4 Compressible Deposits Map



Compressible Deposits Legend

6.5 Collapsible Deposits Map



Collapsible Deposits Legend

6.6 Running Sand Map

Running Sand Legend

6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Moderate

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
2	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

* This includes an automatically generated 50m buffer zone around the site

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.
2	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Moderate	Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.
2	0.0	On Site	Moderate	Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.
3	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
4	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

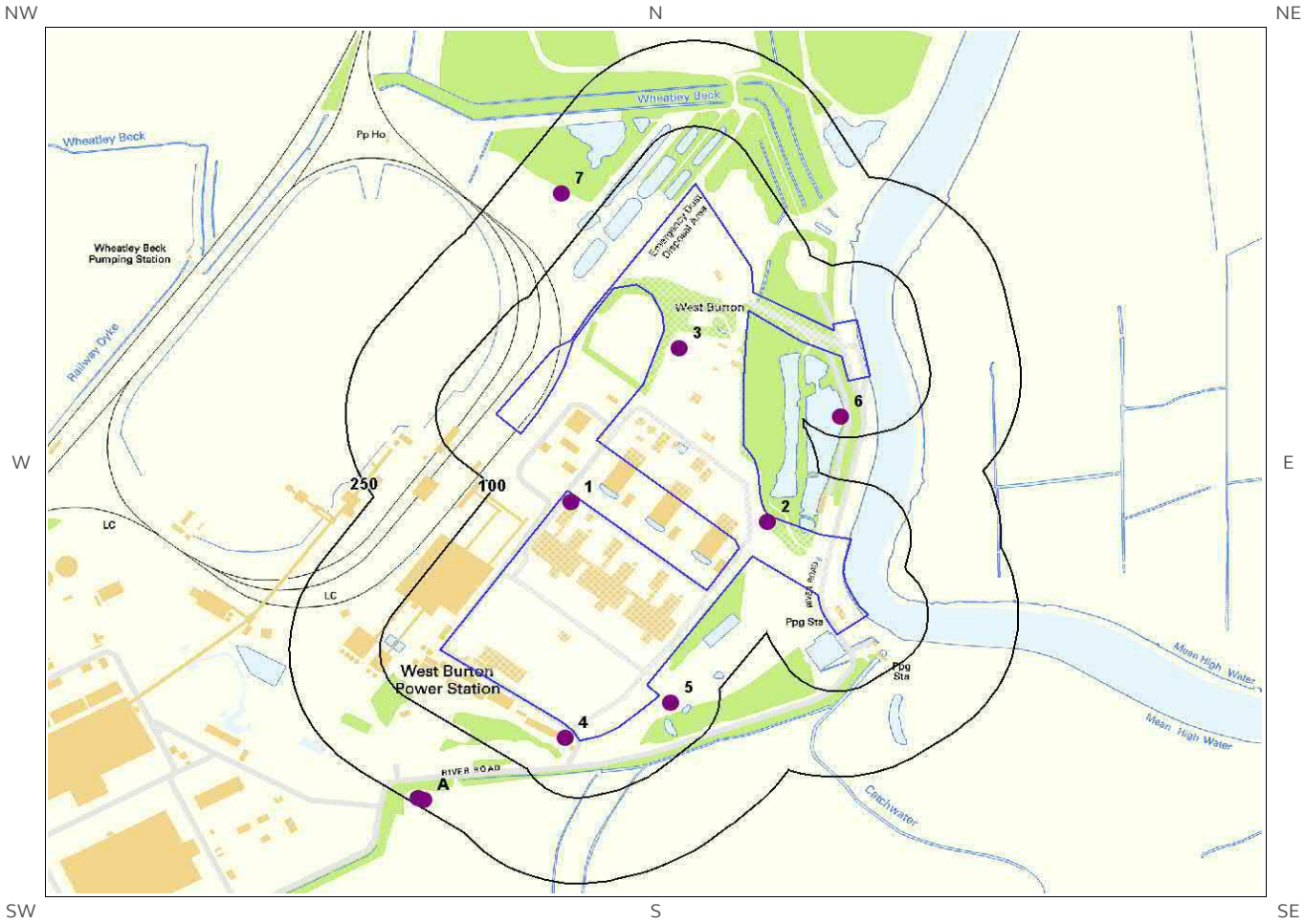
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
3	0.0	On Site	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
4	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.
3	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
4	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
5	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.

7 Borehole Records Map



Borehole Records Legend

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 9

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	480065 386002	SK88NW42	17.37	WEST BURTON POWER STATION SITE INVESTIGATION
2	0.0	On Site	480391 385968	SK88NW44	15.24	WEST BURTON POWER STATION SITE INVESTIGATION
3	0.0	On Site	480244 386272	SK88NW41	12.34	WEST BURTON POWER STATION SITE INVESTIGATION
4	18.0	SW	480055 385590	SK88NW45	12.8	WEST BURTON POWER STATION SITE INVESTIGATION
5	23.0	SE	480230 385650	SK88NW77	7.0	WEST BURTON
6	66.0	S	480512 386152	SK88NW43	27.74	WEST BURTON POWER STATION SITE INVESTIGATION
7	165.0	NW	480050 386543	SK88NW40	12.04	WEST BURTON POWER STATION SITE INVESTIGATION
8A	239.0	SW	479820 385480	SK78NE54	12.8	LOW FARM WEST BURTON
9A	241.0	SW	479811 385483	SK78NE2/A	-1.0	LOW FARM WEST BURTON

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/243990
#2: scans.bgs.ac.uk/sobi_scans/boreholes/243992
#3: scans.bgs.ac.uk/sobi_scans/boreholes/243989
#4: scans.bgs.ac.uk/sobi_scans/boreholes/243993
#5: scans.bgs.ac.uk/sobi_scans/boreholes/244025
#6: scans.bgs.ac.uk/sobi_scans/boreholes/243991
#7: scans.bgs.ac.uk/sobi_scans/boreholes/243988
#8A: scans.bgs.ac.uk/sobi_scans/boreholes/239840

8 Estimated Background Soil Chemistry

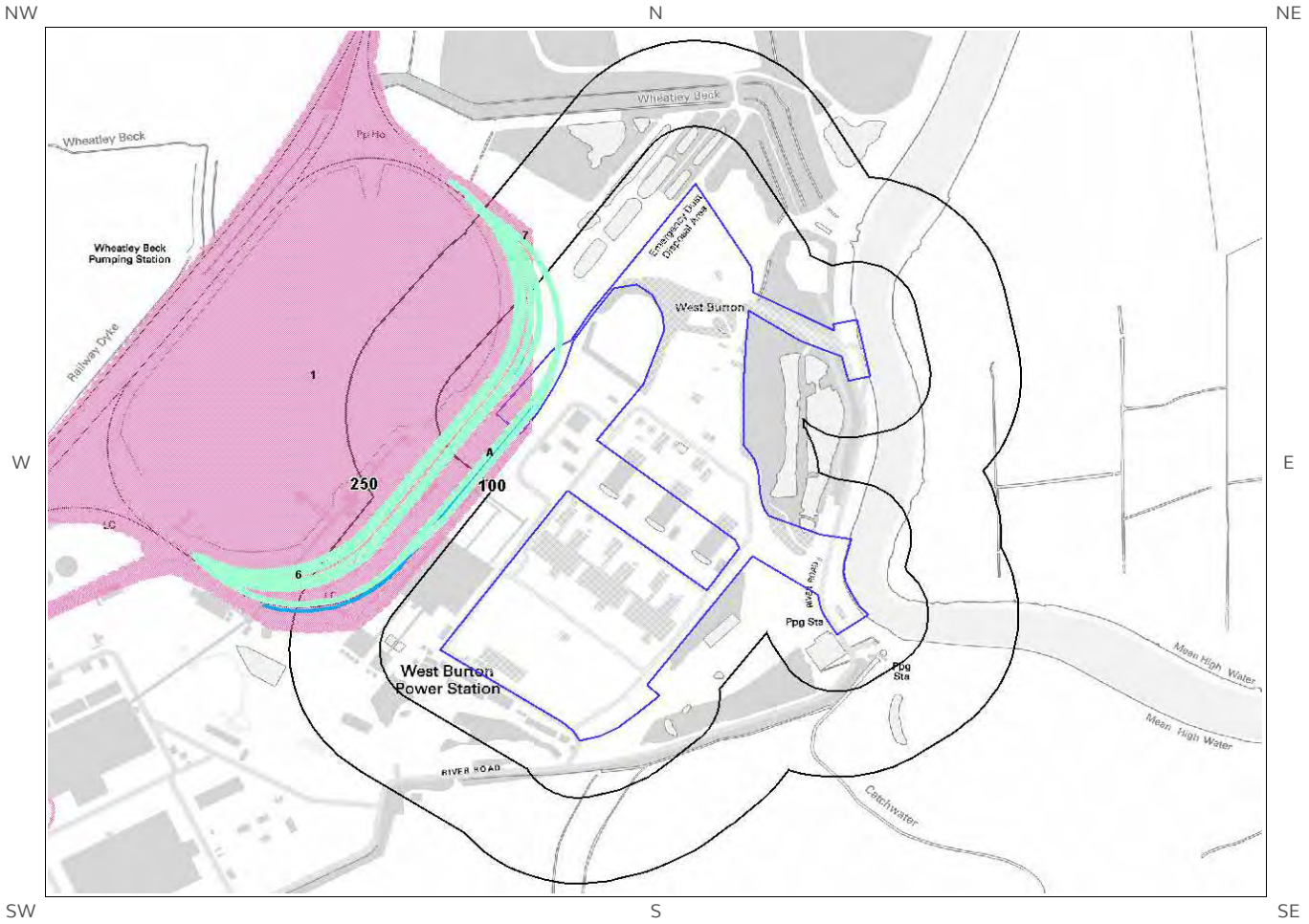
Records of background estimated soil chemistry within 250m of the study site boundary: 13

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg	<100 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels Map



Railways and Tunnels Legend

- Site Outline
- Search Buffers (m): 250, 500
- 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

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? Yes

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1	0	On Site	479298 386209	Railway Sidings	1979
2A	0	On Site	479937 386090	Railway Sidings	1989
3	8	NW	479982 386290	Railway Sidings	1989
4A	37	SW	479930 386071	Railway Sidings	1974
5	132	NW	479438 385900	Railway Sidings	1989
6	135	NW	479000 385708	Railway Sidings	1974

ID	Distance (m)	Direction	NGR	Details	Date
7	148	NW	479989 386464	Railway Sidings	1974

Any records that have been identified are represented on the Railways and Tunnels Map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? Yes

Have any active railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Name	Type
0	On Site	Not given	Rail
0	On Site	Not given	Rail
0	On Site	Not given	Rail
0	On Site	Not given	Multi Track
0	On Site	Not given	Multi Track
0	On Site	Not given	Rail
0	On Site	Not given	Rail
0	On Site	Not given	Rail
16	NW	Not given	Rail
16	NW	Not given	Rail
18	NW	Not given	Multi Track
18	NW	Not given	Multi Track
22	NW	Not given	Rail
22	NW	Not given	Rail
38	NW	Not given	Rail
38	NW	Not given	Rail
42	NW	Not given	Multi Track
42	NW	Not given	Multi Track
45	NW	Not given	Rail
45	NW	Not given	Rail
150	NW	Not given	Rail
150	NW	Not given	Rail
221	NW	Not given	Rail

Distance (m)	Direction	Name	Type
221	NW	Not given	Rail
245	NW	Not given	Rail
245	NW	Not given	Rail
245	NW	Not given	Rail
245	NW	Not given	Rail

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

Groundsure Helpline

Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:**enquiries@bgs.ac.uk**
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

British Gypsum

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East Leake
Loughborough
Leicestershire
LE12 6HX

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email: **enquiries@phe.gov.uk**
Main switchboard: 020 7654 8000

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Website: **www.jpb.co.uk**

Ordnance Survey

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SO16 0AS

Tel: 08456 050505
Website: http://www.ordnancesurvey.co.uk/

Getmapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website:**http://www1.getmapping.com/**

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Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail:**reading@pba.co.uk**
Website:**http://www.peterbrett.com/home**

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-sept-2016/

Annex C – West Burton Surface Water Abstraction License

Licence Serial No:	03/28/69/0070

Please quote the serial number in all correspondence about this licence

FULL LICENCE TO ABSTRACT WATER

The Environment Agency ("the Agency") grants this licence to:-

EDF Energy (West Burton) Limited ("the licence holder")

40 Grosvenor Place
London
SW1X 7EN

Company registration number 4267569

This licence authorises the licence holder to abstract water from the source of supply described in the Schedule of Conditions to this licence and subject to the provisions of that Schedule. The licence commences from the effective date shown below and shall remain in force until the date of expiry shown below.

Signed [redacted]

Rachel Grant
Permitting Team leader

Environment Agency
Permitting Support Centre
P.O. Box 4209
Sheffield
S9 9BS

Date of issue ..... 14 July 2010

Date effective ..... 14 July 2010

Date of expiry ..... 31 March 2034

Date of original issue ..... 23 February 1966
(if this document is a reissue or revision of the licence originally granted for this abstraction)

The licence should be kept safe and its existence disclosed on any sale of the property to which it relates. Please read the 'important notes' on the cover to this licence.

Note: References to "the map" are to the map which forms part of this licence.
References to "the Agency" are to the Environment Agency or any successor body.

Licence Serial No:	03/28/69/0070

SCHEDULE OF CONDITIONS

1. SOURCE OF SUPPLY

1.1 Inland water known as the River Trent at West Burton, Nottinghamshire.

2. POINT(S) OF ABSTRACTION

2.1 At National Grid References SK 80541 85818 (West Burton A) and SK 80548 85976 (West Burton CCGT) marked “A” and “B” on the map.

3. MEANS OF ABSTRACTION

3.1 Intake works and pumps.

4. PURPOSES OF ABSTRACTION

4.1 Evaporative cooling and other high loss processes.

4.2 Non-evaporative cooling and other low loss processes.

4.3 Industrial (boiler feed and process water).

5. PERIOD OF ABSTRACTION

5.1 All year.

6. MAXIMUM QUANTITY OF WATER TO BE ABSTRACTED

6.1
21,820 cubic metres per hour
445,508 cubic metres per day
136,372,603 cubic metres per year

6.2 The aggregate quantity of water authorised to be abstracted under this licence and under licence serial number 03/28/69/0069 shall not exceed:

21,820 cubic metres per hour
445,508 cubic metres per day
136,372,603 cubic metres per year

6.3 The aggregate quantity of water authorised to be abstracted under this licence and licence number 03/28/69/0069 (Cottam) for evaporative cooling and other high loss processes shall not exceed 46,728,000 cubic metres per year.

6.4 The aggregate quantity of water authorised to be abstracted under this licence and licence number 03/28/69/0069 (Cottam) for non-evaporative cooling and other low loss processes shall not exceed 87,262,603 cubic metres per year.

6.5 The aggregate quantity of water authorised to be abstracted under this licence and licence number 03/28/69/0069 (Cottam) for boiler feed and process water shall not exceed 2,382,000 cubic metres per year.

West Burton CCGT Plant only

6.6 Abstraction for purpose of non-evaporative cooling and other low loss processes at National Grid Reference SK 80548 85976 (point 'B' on the map) shall not exceed:

876 cubic metres per hour
21,007 cubic metres per day
5,600,000 cubic metres per year

6.7 Abstraction for purpose of evaporative cooling and other high loss processes at National Grid Reference SK 80548 85976 (point 'B' on the map) shall not exceed:

1,700 cubic metres per hour
40,800 cubic metres per day
10,600,000 cubic metres per year

6.8 Abstraction for purpose of boiler feed and process water at National Grid Reference SK 80548 85976 (point 'B' on the map) shall not exceed:

108 cubic metres per hour
2,592 cubic metres per day
395,000 cubic metres per year

6.9 Total abstraction at National Grid Reference SK 80548 85976 (point 'B' on the map) shall not exceed:

2,684 cubic metres per hour
64,399 cubic metres per day
16,595,000 cubic metres per year

Note: An hour means any period of 60 consecutive minutes, a day means any period of 24 consecutive hours and a year means the 12 month period beginning on 1 April and ending on 31 March.

7. MEANS OF MEASUREMENT OF WATER ABSTRACTED

7.1 For abstraction from the River Trent the Licence Holder shall use meters to measure quantities of water abstracted. The Licence Holder shall provide and install the meters before any abstraction takes place. The Licence Holder shall position and install the meters in accordance with any written directions given by the Agency. The Licence Holder shall maintain the meters in such a condition, and if necessary replace them, so as to measure quantities of water abstracted accurately and efficiently. The Licence Holder shall calibrate them regularly, in accordance with the recommendations of the manufacturer or at any time required by the Agency, and shall replace them as necessary. The Licence Holder shall retain evidence of current certification for inspection by the Agency.

7.2 The Agency may have regard to its Abstraction Metering Good Practice Manual (or equivalent guidance) in directing any of the following: where the meters should be located or how they should be installed; whether the meters measure accurately, and/or efficiently and/or are properly maintained; whether it is necessary to require repair or replacement of the meters.

7.3 The quantities of water abstracted for the purposes of evaporative cooling and other high loss processes, boiler feed and process water and non evaporative cooling and other low loss processes shall be calculated using the methodology outlined in the 'EDF Energy proposed monitoring methodology version 1' dated 27th April 2010.

8. RECORDS

8.1 The Licence Holder shall take and record readings of the meters specified in condition 7.1 at the same time each day during the whole of the period during which abstraction is authorised or as otherwise approved in writing by the Agency.

8.2 Quantities of water calculated by the means specified in condition 7.3 above shall be recorded by the Licence Holder at the same time each day during the whole of the period during which abstraction is authorised or as otherwise approved in writing by the Agency.

8.3 A copy of the record or summary data from it shall be sent to the Agency within 28 days after 31 March in each year or within 28 days of being so directed in writing by the Agency.

8.4 Each record shall be kept and be made available during all reasonable hours for inspection by the Agency for at least 7 years.

9 FURTHER CONDITIONS

9.1 No abstraction shall take place when:

The total abstraction since the first day of April in any year for the purpose of evaporative cooling and other high loss processes and boiler feed and process water under this licence and licence number 3/28/69/0069 has exceeded 41,823,654 cubic metres and;

The flow in the River Trent as gauged by the Agency at its flow gauging station at North Muskham is equal to or less than 2,650 Megalitres per day as may be notified by the Agency.

9.2 The Agency's said gauging of the flow shall be conclusive.

9.3 A temporary water treatment plant may be installed adjacent to the new point of abstraction at SK 80548 85976 to abstract water for the commissioning of the new CCGT plant or water from the cooling towers of Station 'A' may be recycled for use in such commissioning works. The quantities of water used shall not exceed those stated in clauses 6.6 to 6.9.

ADDITIONAL INFORMATION

Note: the following information is provided for information only. It does not form part of the licence.

REASONS FOR CONDITIONS

Condition 9.1 has been imposed to ensure that there shall be no derogation of protected rights and so that other uses and users of water shall not be adversely affected by the increased consumptive use of water.

Condition 9.3 has been imposed to ensure the temporary water treatment plant to be used for the CCGT Plant commissioning works is operated under the terms and conditions of the licence.

IMPORTANT NOTES

Note: the following information is provided for information only. It does not form part of the licence.

The licence holder shall use water abstracted under the terms of this licence in an efficient manner. The Agency will have regard to its Guidance on Water Efficiency (or equivalent guidance) in determining whether water is being used efficiently and any measures required to meet this condition. This is in accordance with the Agency's responsibilities under the Water Resources Act 1991 to secure the proper use of water (Section 19(1)(b)).

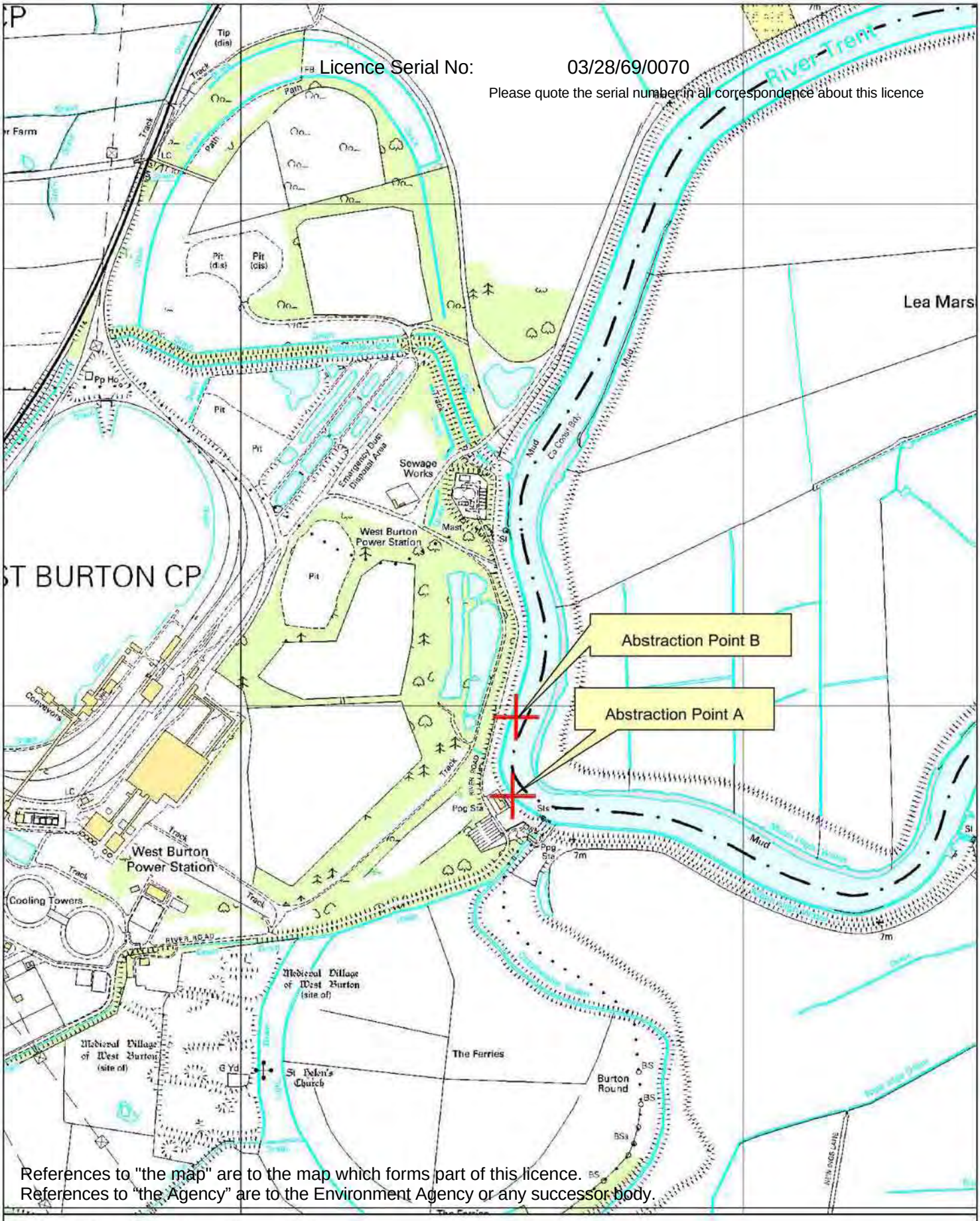
LICENCE HISTORY

Licence serial number	Issue date	Expiry date	Summary of changes
3/28/69/70/S/R	23 February 1966		Original licence issued to the Central Electricity Generating Board
3/28/69/70/S/R	18 January 1989		Licence varied to increase annual quantity.
3/28/69/70/S/R	1 August 1991		Licence transferred to National Power Plc.
3/28/69/70/S/R	20 November 1997		Licence transferred to Eastern Merchant Generation Ltd.
3/28/69/70/S/R	28 April 2000		Licence transferred to TXU Europe Merchant Generation Ltd.
3/28/69/70/S/R	10 January 2002		Licence transferred to West Burton Power Ltd

3/28/69/70/S/R	4 August 2003		Licence transferred to EDF Energy (West Burton Power) Ltd.
03/28/69/0070	14 July 2010	31 March 2034	Licence number amended to how it appears on NALD. Formal variation to licence including aggregation with 03/28/69/0069 (Cottam). New abstraction point and purposes added for new CCGT plant.

Licence Serial No: 03/28/69/0070

Please quote the serial number in all correspondence about this licence



Note: References to "the map" are to the map which forms part of this licence.
References to "the Agency" are to the Environment Agency or any successor body.

MAP ACCOMPANYING LICENCE NUMBER 03/28/69/0070

Environment Act 1995
Water Resources Act 1991 as amended by the Water Act 2003
Water Resources (Abstraction and Impounding) Regulations 2006

Scale 1:10,000

N

creating a better place

Environment Agency

Steve Hoad
EDF Energy
West Burton Power Station
Nr Retford
Nottinghamshire
DN22 9BL

Our references: NPS/WR/002129 & NPS/WR/002134

Date: 15 July 2010

Decision on your applications

Application numbers: NPS/WR/002129 & NPS/WR/002134
Licence numbers: 03/28/69/0069 & 03/28/69/0070

Dear Mr Hoad

We are pleased to tell you that your applications for a variation of an existing licences have been successful.

Please read your licences carefully as they are legal documents. You will have to keep to the conditions shown on them and do any monitoring in line with the licence conditions. Your licences will remain in force until 31 March 2034. If, as a result of your application, part of your licence has a time limit, your licence will tell you which parts of the licence the limit applies to and when the limit runs out.

As you are aware from viewing the drafts of the varied licences they contain a mixture of standard and bespoke conditions to account for the historic construction of the power stations. Your email to Caroline Fletcher on 15th June 2010 requested clarification of a couple of the standard licence conditions with reference to the bespoke measurement and metering conditions. As you are aware Caroline has responded by email to the queries but noted that written confirmation would accompany the licence documents. Please see below for details.

With reference to conditions 8.1 and 8.2 - the conditions are written in a way that allows for alternative scenarios to be agreed in writing by the Environment Agency. The Environment Agency are satisfied that the methods detailed in the 'EDF Energy proposed monitoring methodology version 1' dated 27th April 2010' will enable you to provide accurate records of the quantities of water abstracted for each use. Automated systems to record the water abstracted rather than manual meter readings are widely used among licence holders and compliant with our requirements. Although the actual figures will not be obtained in real time each day, the Environment Agency has accepted that the use of estimates for the calculated elements of the abstractions will provide figures as close to reality as can be achieved (given the practical constraints at the sites) for situations where real time daily figures are required (for example checking compliance with the Hands off Flow condition).

The reason that the licence condition 6 note sets out a day as "any period of 24 hours" is to prevent the licence holder submitting readings at a variety of hours each

day which would make checking daily compliance from the meter returns very complicated and would present a potentially inaccurate record. We only require one reading to be taken each day. It is entirely up to the licence holder what time of day is chosen to take daily compliance records and this is not information that we ask for with your return submissions. The reason it is phrased "any period of 24 hours" is to avoid individual licence holders being tied down to a generic time within the 24 hour period to make readings.

Please be aware that as Condition 7.3 of both licences directly references the document 'EDF Energy proposed monitoring methodology version 1' dated 27th April 2010, any changes to this document will need to be approved by the Environment Agency and the licences formally varied to reference any future amended versions.

We make water charges based on the yearly authorised amount shown on your licence and not on what you actually abstract. The charges will become due from the date we issue the licence and on 1 April each year after that. If you have applied to vary your licence, you may have to pay more abstraction charges. We will send you an account for water charges shortly, unless the authorised abstraction period has now passed – in this case, we will not send you an account for water charges until 1 April. To work out your charges, please refer to our Scheme of Abstraction Charges, which is available on our website at www.environment-agency.gov.uk.

If your licence contains a condition referring to river flows at one of our river-flow gauging stations, we will contact you shortly to tell you how to get access to river-flow information.

We regularly make routine visits to make sure that the terms of licences are up to date and that any work to abstract or impound water keeps to the licence conditions. If winter storage reservoirs are involved, we will normally need to inspect these when they are complete and before any water is abstracted.

We will usually inspect existing reservoirs when we make our first visit. One of our representatives will contact you, before they visit, to discuss the terms of the licence. They may visit you again later without giving you notice.

It is your responsibility to make sure that the water you abstract is suitable for the purpose it will be used for. You must continue to monitor the water to make sure you are using it efficiently. It is also your responsibility to make sure that you have any other permission (for example, planning permission) you need in connection with your proposed work.

If you are not satisfied with the conditions set on your application, you can appeal to the Secretary of State for Environment, Food and Rural Affairs in England or the Welsh Ministers for Wales at the following addresses.

In England:

Secretary of State
The Planning Inspectorate
Temple Quay House
2 The Square
Bristol
BS1 6PN

In Wales:

Welsh Ministers
Environmental Protection Division
Crown Buildings
Cathays Park
Cardiff
CF10 3NQ

You can get a standard notice of appeal from the addresses above. You must return the notice of appeal **within 28 days** of the date of this notice, and send a copy to us. The notice must give the reasons for the appeal and you must also send:

- the application it relates to;
- any information or reports you sent us with the application;
- this decision notice; and
- any other relevant correspondence.

You can withdraw an appeal at any time before a decision has been made. In exceptional circumstances, the Secretary of State and Welsh Ministers for Wales have the power to allow a longer period for serving a notice of appeal.

If you have any questions about your application, please contact Joseph Tidbury on 0114 289 8340.

Yours sincerely

[redacted]

Catherine Leach
Team Leader
Permitting Support Centre

Direct dial: 0114 289 8340
Direct fax: 0114 262 6697
Direct e-mail: PSC-WaterResources@environment-agency.gov.uk

EDF Energy Proposed Monitoring Methodology

Introduction

Abstraction licences 3/28/69/69/S (Cottam) and 3/28/69/70/S/R (West Burton) are currently undergoing a formal variation which will include aggregation with each other and the addition of West Burton CCGT. At this time, the licence numbers will also be changed to 03/28/69/0069 (Cottam) and 03/28/69/0070 (West Burton).

Historical background

The coal-fired stations (Cottam and West Burton A) were designed and built in the 1960s. During this time, measuring water use was not a routine consideration, nor available for large flows, and so the stations were not deliberately designed to allow the installation and maintenance of water meters at relevant locations.

The gas-fired station (WB CCGT) is currently under construction. Given the importance of measuring water use today, it has been designed to allow the installation and maintenance of water meters at relevant locations. (For the same reasons, the Cottam Development Centre (CDC) at Cottam, which became operational in 1999, is also equipped with flow meters.)

Coal-fired stations have more complex water needs than gas-fired stations.

Investigations into measuring water flows on Cottam and West Burton A

In some cases, it has been found that the design does allow water meters to be installed and maintained. Consequently, flow meters have been introduced, e.g. West Burton A main abstraction.

However, in other cases, it has been found that this is not possible, e.g. Cottam purge line (return from cooling towers). The most recent investigation on this issue was carried out during 2008 and a report on the outcome submitted to the Environment Agency in 2009. A copy of this report is included in Appendix A.

Proposed monitoring methodology

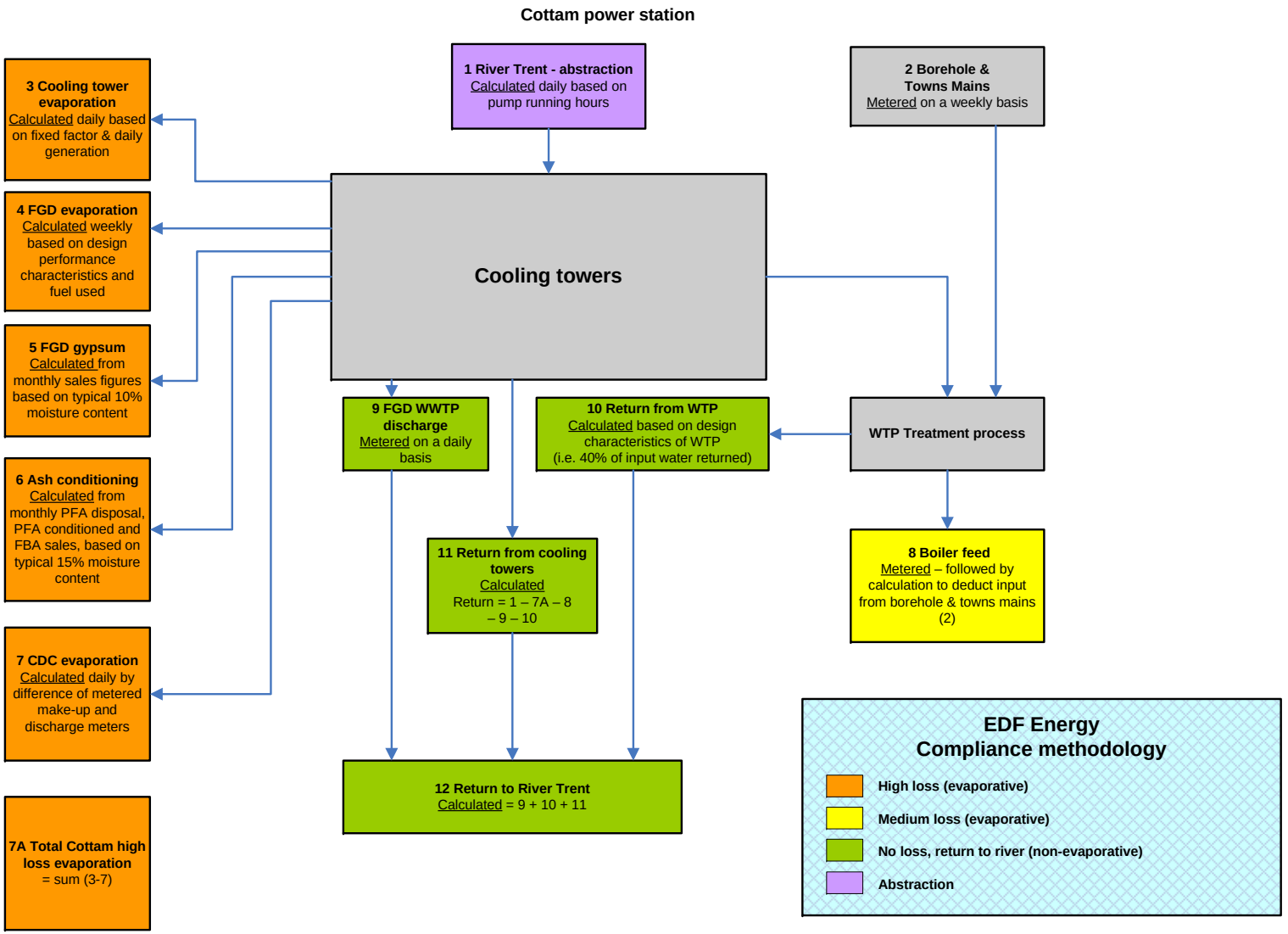
Given the circumstances described above, the proposed monitoring methodology is therefore based on a combination of metered and calculated data.

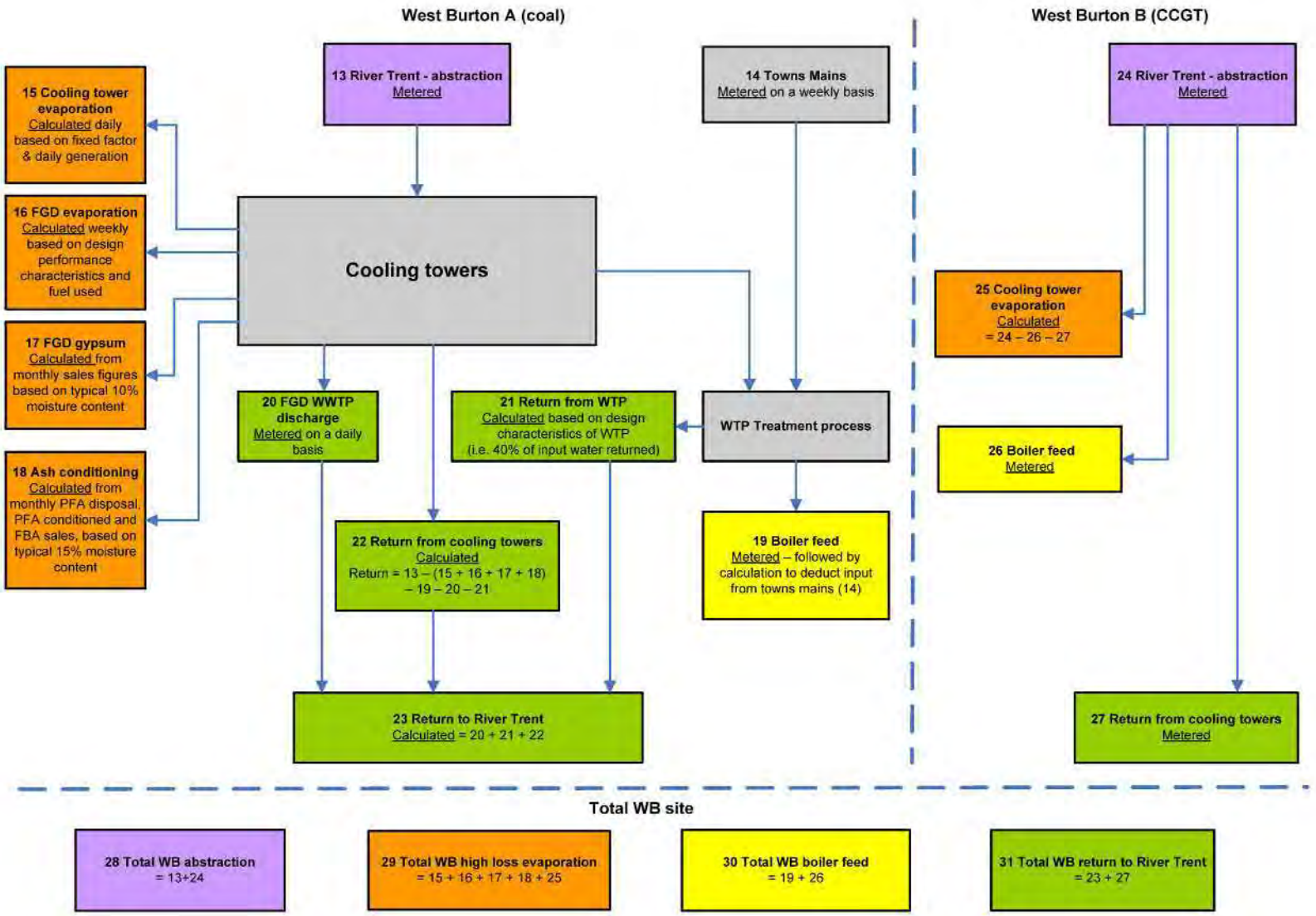
The proposed methodology is shown on the diagrams below which identify:

- The types of flows on the sites which need to be considered in order to demonstrate licence compliance
- Based on colour, what type of use the relevant parameter represents (abstraction, high-loss evaporative etc)
- How each relevant parameter is determined (metered, calculated etc)
- The frequency each relevant parameter is determined (daily, weekly etc)
- How the relevant parameters are then combined to demonstrate licence compliance, either at the site or combined sites level

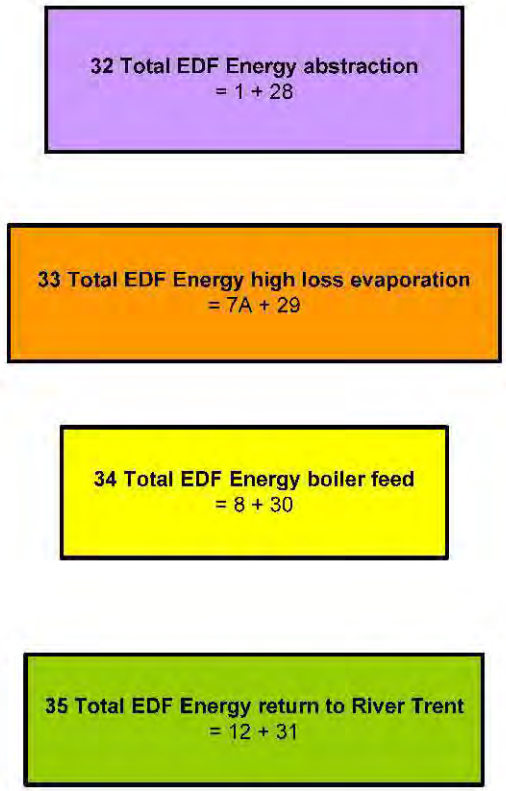
Glossary of terms

WTP = Water Treatment Plant
FGD = Flue Gas Desulphurisation
FGD WWTP = Flue Gas Desulphurisation Wastewater Treatment Plant
PFA = Pulverised Fuel Ash
FBA = Furnace Bottom Ash
CDC = Cottam Development Centre


Cottam power station
1 River Trent - abstraction
Calculated daily based on pump running hours
2 Borehole & Towns Mains
Metered on a weekly basis
3 Cooling tower evaporation
Calculated daily based on fixed factor & daily generation
4 FGD evaporation
Calculated weekly based on design performance characteristics and fuel used
5 FGD gypsum
Calculated from monthly sales figures based on typical 10% moisture content
6 Ash conditioning
Calculated from monthly PFA disposal, PFA conditioned and FBA sales, based on typical 15% moisture content
7 CDC evaporation
Calculated daily by difference of metered make-up and discharge meters
7A Total Cottam high loss evaporation
= sum (3-7)
Cooling towers
9 FGD WWTP discharge
Metered on a daily basis
10 Return from WTP
Calculated based on design characteristics of WTP (i.e. 40% of input water returned)
WTP Treatment process
11 Return from cooling towers
Calculated
Return = 1 – 7A – 8 – 9 – 10
8 Boiler feed
Metered – followed by calculation to deduct input from borehole & towns mains (2)
12 Return to River Trent
Calculated = 9 + 10 + 11
EDF Energy
Compliance methodology
High loss (evaporative)
Medium loss (evaporative)
No loss, return to river (non-evaporative)
Abstraction


West Burton A (coal)
West Burton B (CCGT)
13 River Trent - abstraction
Metered
14 Towns Mains
Metered on a weekly basis
24 River Trent - abstraction
Metered
15 Cooling tower evaporation
Calculated daily based on fixed factor & daily generation
16 FGD evaporation
Calculated weekly based on design performance characteristics and fuel used
17 FGD gypsum
Calculated from monthly sales figures based on typical 10% moisture content
18 Ash conditioning
Calculated from monthly PFA disposal, PFA conditioned and FBA sales, based on typical 15% moisture content
Cooling towers
20 FGD WWTP discharge
Metered on a daily basis
21 Return from WTP
Calculated based on design characteristics of WTP (i.e. 40% of input water returned)
WTP Treatment process
22 Return from cooling towers
Calculated
Return = 13 – (15 + 16 + 17 + 18) – 19 – 20 – 21
19 Boiler feed
Metered – followed by calculation to deduct input from towns mains (14)
25 Cooling tower evaporation
Calculated
= 24 – 26 – 27
26 Boiler feed
Metered
23 Return to River Trent
Calculated = 20 + 21 + 22
27 Return from cooling towers
Metered
Total WB site
28 Total WB abstraction
= 13+24
29 Total WB high loss evaporation
= 15 + 16 + 17 + 18 + 25
30 Total WB boiler feed
= 19 + 26
31 Total WB return to River Trent
= 23 + 27

Total EDF Energy sites



Demonstrating daily compliance

As some of the data is not metered, it is not possible to demonstrate daily compliance in real time. This is because some of the calculated data requires information such as fuel use, ash and gypsum sales, which only become available weekly (fuel use) and monthly (ash and gypsum).

Such flows, however, represent relatively low uses. Larger flows, such as cooling tower evaporation, which accounts for >90% of water use, will be determined on a daily basis.

Nevertheless, where real-time data is not available daily or weekly, it is possible to calculate estimates based on daily electricity production levels. This is because, for these items, their water consumption is aligned very closely to electricity production.

From these estimates, we will also add 10% so that they represent the “worst-case” scenario.

These estimates could then be used to demonstrate daily compliance and also identify when the hands-off condition is activated, until the weekly or monthly data becomes available.

When the weekly or monthly data becomes available, this would be weighted into daily equivalents and then input into the compliance spreadsheet. The data would need to be weighted, rather than be a straight arithmetic average, so that daily compliance can be demonstrated accurately, e.g. if Cottam did not generate for 1 week in a month, then there would be no water use during that week.

Background to the calculation methods

Appendix B contains further information on some of the calculation methods outlined on the diagrams above.

Appendix A

Cottam Power Station
EPR Permit SP3535LT

Report on MCERTS for flow monitoring – June 2009

1 Introduction

On 28 March 2008, a report was submitted to satisfy Improvement Condition 11 on the subject of the measures in use, or to be used, to achieve compliance with the Environment Agency's Monitoring Certification Scheme (MCERTS).

This report contained a section on emissions to water, with a further sub-section for flow monitoring. The sub-section on flow monitoring is reproduced below:

> ***3.2 Flow Monitoring***
>
> *[For] the measurement of flow... specific requirements are set out in the Environment Agency's MCERTS scheme "Minimum requirements for the self monitoring of effluent flow". This requires that all sites with an obligation to measure effluent flow volume in their PPC permits must have been visited by an MCERTS Inspector by 31st December 2008 and demonstrated that the total daily volume discharged is being measured with a target uncertainty better than ± 8% and with a 95% confidence level. It is also required that each site must have a fully implemented, documented and maintained Quality Management System which is audited separately to the flow installations.*
>
> *The Endress & Hauser flow meter on the FGD Waste Water Treatment discharge is not MCERTS certificated but the intention is to have the measurement system inspected and to replace it only if it does not meet the MCERTS requirements.*
>
> *Our Integrity Process Control & Electrical Team is currently reviewing the options for implementing direct measurement of the cooling tower purge flow to replace the existing calculation methodology. If a suitable monitoring location can be identified then we expect to procure and install a flow monitor that has been certificated under the MCERTS scheme and arrange for an MCERTS Inspection. If this is not possible then we will carry out a detailed review of the calculation methodology and hold discussions with the MCERTS Inspector.*

This report explains how Cottam met the minimum requirements for the self-monitoring of effluent flow, as well as providing an update on the progress made to directly measure the cooling tower purge flow.

2 Meeting the minimum requirements

Cottam have an obligation to measure effluent flow volume in their PPC permits for two locations:

- W1(b) – Cooling tower purge flow – 200,000 m^3 per day – Calculation methodology
- W1(d) – FGD WWTP flow – 3,000 m^3 per day – Metered

For the flow inspection part of the minimum requirements, we contracted with Critical Flow, one of the approved MCERTS inspectors, and they came to site in August 2008 and

February 2009. Due to resourcing issues, their second visit to site was unable to take place in 2008. However, due to many operators experiencing this problem also, the Environment Agency revised the minimum requirements so that operators would be deemed compliant as long as they had contracted with a service provider for the final inspection, which we had.

For the QMS part of the minimum requirements, we contracted with SIRA and the audit took place in early December. Subject to minor non-conformances being addressed, the Cottam system was deemed acceptable. The minor non-conformances were subsequently closed out within an agreed timescale and proof of this submitted to the auditor.

In the event that both flow discharge points could be inspected satisfactorily, a "Site Conformity Certificate" could be issued by SIRA, who operate the MCERTS scheme for water on behalf of the Environment Agency. However, as we were unable to find a practicable way to directly measure the Cottam purge, this was not possible.

A copy of the certificate confirming that the FGD flow meter meets the +/- 8% daily limit requirement can be found in Appendix A.

3 Update on the progress made to directly measure the cooling tower purge

In document 24 of the PPC permit application, the calculation methodology, which has been in use at Cottam for a number of years, was described. Cooling tower evaporation is determined based on generation and a fixed evaporation factor, and this is then deducted from river water abstracted, which is determined through make-up pump running hours and flow characteristics. As the report submitted 28 March 2008 explained, we were reviewing the options for implementing direct measurement of the cooling tower purge flow to replace this existing calculation methodology.

Cottam was designed and built in the 1960s. During this time, the need to measure water use did not have the importance it has today. Consequently, systems were not deliberately designed to provide a practicable way of measuring water use. In this context, practicable means:

- Being able to locate the instrument in a position which will produce accurate data, for example with sufficient straight-line length (based on technical guidance) both upstream and downstream
- Being able to install and maintain the instrument in a safe and timely manner, for example not requiring rare events, such as full station shutdowns, to achieve this
- Not jeopardising unduly the ability of the station to generate electricity and meet its commitments to the Grid

At the back of the CW pumphouse, the purge flows over a penstock weir and falls approximately 4m into a small exposed chamber. Within this chamber, there is a large amount of turbulence. After the chamber, the purge then flows by gravity in an underground concrete pipeline. At no point does the pipeline ever run full. Shortly after the CW pumphouse, the pipeline runs parallel to the single make-up pipeline feeding the station. During this section, both lines are encased in an additional layer of concrete. Internal access to the purge pipeline is limited. However, at locations on either side of the Seymour Drain there are manhole access points.

To help find a suitable location, instrument suppliers and also Critical Flow were asked to attend site during quarter 2 and quarter 3, 2008 to assess the potential for monitoring flow.

Following extensive investigations, we were unable to find a practicable way to directly measure the cooling tower purge. These investigations are detailed below.

Penstock weir area

As this is the only area where the flow is exposed, initial investigations were concentrated here. When the flow emerges from behind the CW pumphouse, there is a short distance before it flows over the penstock weir.

It was thought that it might be possible to install a flow velocity meter and a height instrument here to calculate the volume of discharge. However, inspection revealed that the flow within this area is not uniform, due to the placement of various infrastructure items within the flow and also because there is not sufficient upstream and downstream straight-line length. It would therefore not be possible to obtain reliable data, and certainly not within the +/- 8% daily limit requirement.

Above. Exposed collection chamber and start of the underground concrete pipeline at the penstock weir area

As described previously, the purge flows over the penstock weir into a small exposed chamber. Within this chamber, there is a large amount of turbulence and it does not represent a suitable location point to measure flow. After the chamber the purge then flows by gravity in an underground concrete pipeline.

One possibility would be to enter the concrete pipeline at this point and install suitable instrumentation at a location which gives sufficient upstream and downstream straight-line length. However, due to the presence of water, and fast moving flows, this would require a full station shutdown. Furthermore, a full station shutdown, which is an extremely rare event, would also be required for all maintenance work, as well as calibration and verification exercises to quality assure the data. It would therefore not be possible to install instrumentation at this location.

Manhole access points either side of the Seymour Drain

These two locations were investigated for the potential to fit instrumentation, ie. flow velocity meter and height indicator so as to be able to calculate purge volume. However, both installation and maintenance, as well as calibration and verification exercises to quality assure the data, would require full station shutdowns to deliver an acceptable residual safety risk from the fact that the purge line is under vacuum.

It would therefore not be practicable to consider fitting instrumentation through either of these access points.

Civil engineering solution

Since the pipeline is concrete, a “strap-on” magnetic flow meter is unlikely to produce reliable data. In addition, at no point within it does the pipeline run full. Hence, there would be the need to break into the pipeline to install both flow velocity and height indicator instrumentation so that the purge volume could be ascertained.

Whilst this could be achieved during a full station shutdown, it would not be a satisfactory solution to enable maintenance, calibration and verification exercises to be performed. Consequently, we considered the possibility of removing a section of the concrete pipeline and installing a steel “U-bend” section. This would create a section where the pipeline ran full and where a strap-on meter would be possible.

However, based on a report from a civil engineering consultant, it is not practicable to consider this option. Since the concrete of the pipeline is approximately 40-years old, attempts to break into it could result in significant fracturing of this critical infrastructure, and as such this approach is regarded as unduly jeopardising the ability of the station to generate electricity and meets its commitments to the Grid. In addition, there are few locations where it would be possible to attempt to break into the pipeline because, for a significant distance, it runs parallel to the make-up line; during this section, both lines are encased in a common additional layer of concrete.

In any event, it is also unlikely a full station shutdown would last long enough to allow such ambitious civil works to be completed.

Intended way forward

In light of our conclusion that it is not practicable to directly measure the Cottam purge flow, it is our intention to review and refine the existing calculation methodology .

Appendix – Cottam W1(d) verification certificate

Critical Flow Systems Ltd

Magnetic Flow Meter - VERIFICATION CERTIFICATE - Closed Pipe

alterations made to the set-up parameters will invalidate this certificate

This is to certify that the Magnetic Flow Metering Installation located in:

Cottam Power Station

at

FGD Waste Water W1 (d) (of EDF Energy)

has been approved by Critical Flow Systems Ltd to conform to the following conditions:

1 That the location for flow measurement is in accordance with the manufacturers recommendations

2 That the installation is in accordance with the manufactures recommendations

3 That the form and the hydraulics of the measurement system were such that the flow through the measurement section was uniform and substantially free from turbulence

4 That the pipe and the installation have been surveyed by CFS and the following measurements were recorded:

Pipe Diameter	=	200.0	± 1 mm
Flow meter diameter	=	200.0	± 1 mm

5 That the Flow Meter (Danfoss Mag 5000) was programmed with an intended maximum flow rate (4-20mA) of 300 CuM/Hr

6 That the construction tolerances and installation tolerances were such that they could not substantially affect the principle of operation of the flow system

7 Estimated Uncertainties (error) for the installation are detailed below.

8 There are no additional caveats, see uncertainties for comments

Uncertainty

Daily Uncertainty	**5.0%**
Verification	**3.5%**
Critical Uncertainty Volume	**n/a**

02/02/2009

Dated

[redacted]

on behalf of Critical Flow Systems Ltd

Appendix B

Cooling tower evaporation – The amount of water evaporated in the cooling towers is primarily a function of the generating load of the station and the type of cooling tower. It cannot be directly measured.

West Burton and Cottam use long established fixed factors in relation to their cooling tower type which record how much water is evaporated per MWh of electricity generated. This is then used to calculate daily evaporation as follows:

m^3/MWh (fixed factor) x MWh produced daily = water evaporated daily

Cottam abstraction – This is based on abstraction pump running hours and their known pump capacity. At West Burton, it was possible to install and maintain flow meters.

FGD evaporation – This is calculated based on fuel use, where the design of the facility means 300kg of water is evaporated in the FGD absorbers per 1000kg of fuel used.

FGD gypsum – Gypsum is produced to an agreed specification. Moisture is typically 10%.

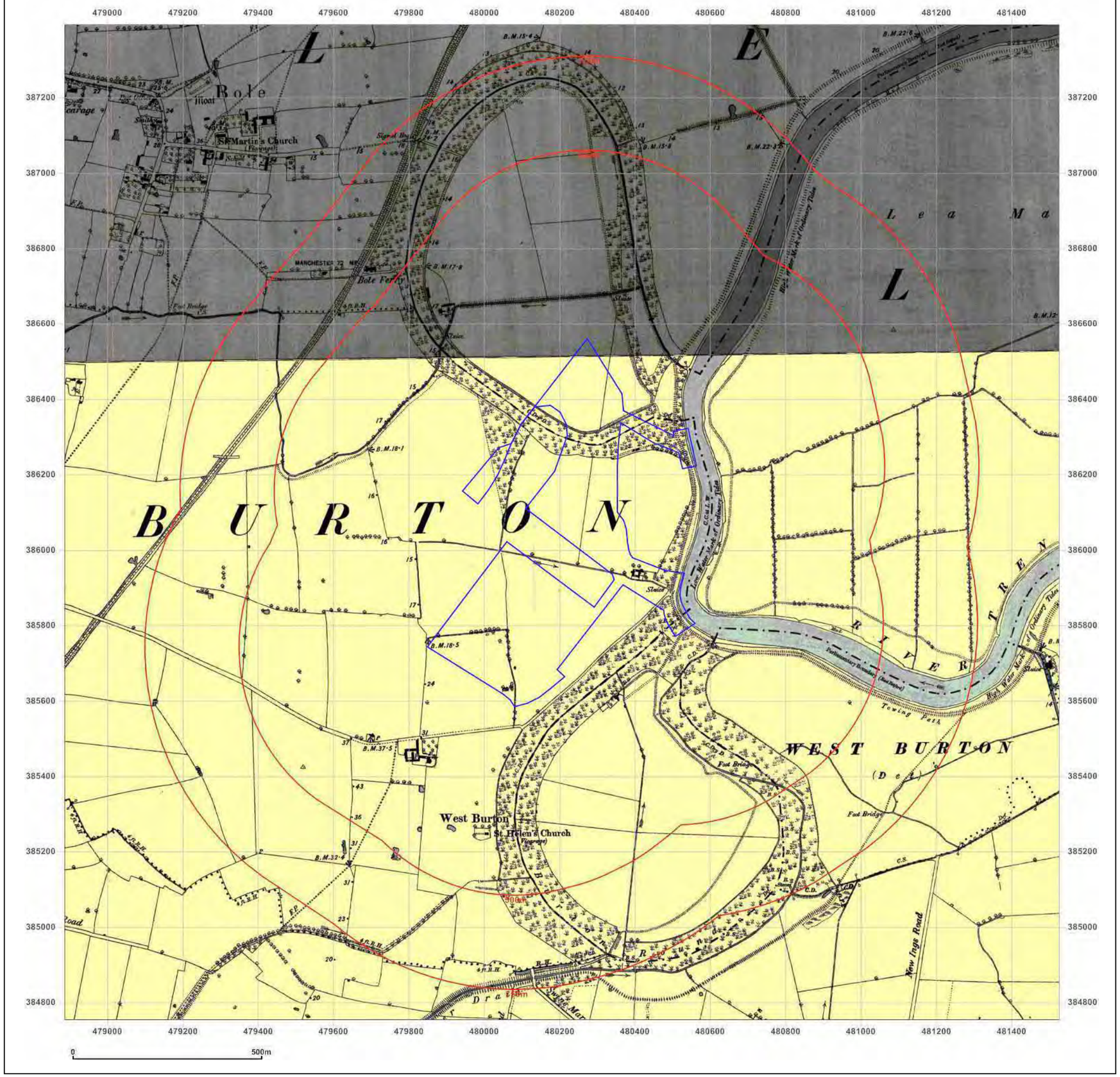
Ash conditioning – Ash is a by-product of power generation and is sometimes conditioned with moisture. When conditioned, this is typically at 15%. All pulverised fuel ash (PFA) disposed of is conditioned, as are all furnace bottom ash sales (FBA) and some PFA sales. All FBA is sold.

CDC river water use – The CDC only use river water for cooling purposes, i.e. high loss evaporative. Boiler feed (medium-loss evaporative) is fed from towns mains.

Water Treatment Plant (WTP) – The WTP returns water back to the river. This amount is determined on the known design characteristics of the the WTPs.

In addition, if necessary, Cottam and West Burton are able to use sources other than river water for boiler feed production. As the licence is for boiler feed from river water, when other sources are used it is proposed that an appropriate deduction will be made.

Annex D – Groundsure Historical Maps



Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: County Series

Map date: **1885**

Scale: 1:10,560

Printed at: 1:10,560

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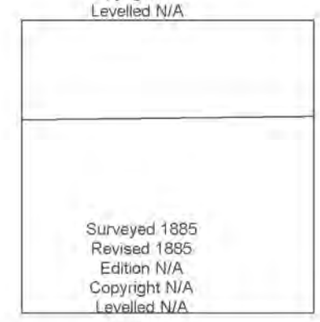
Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A



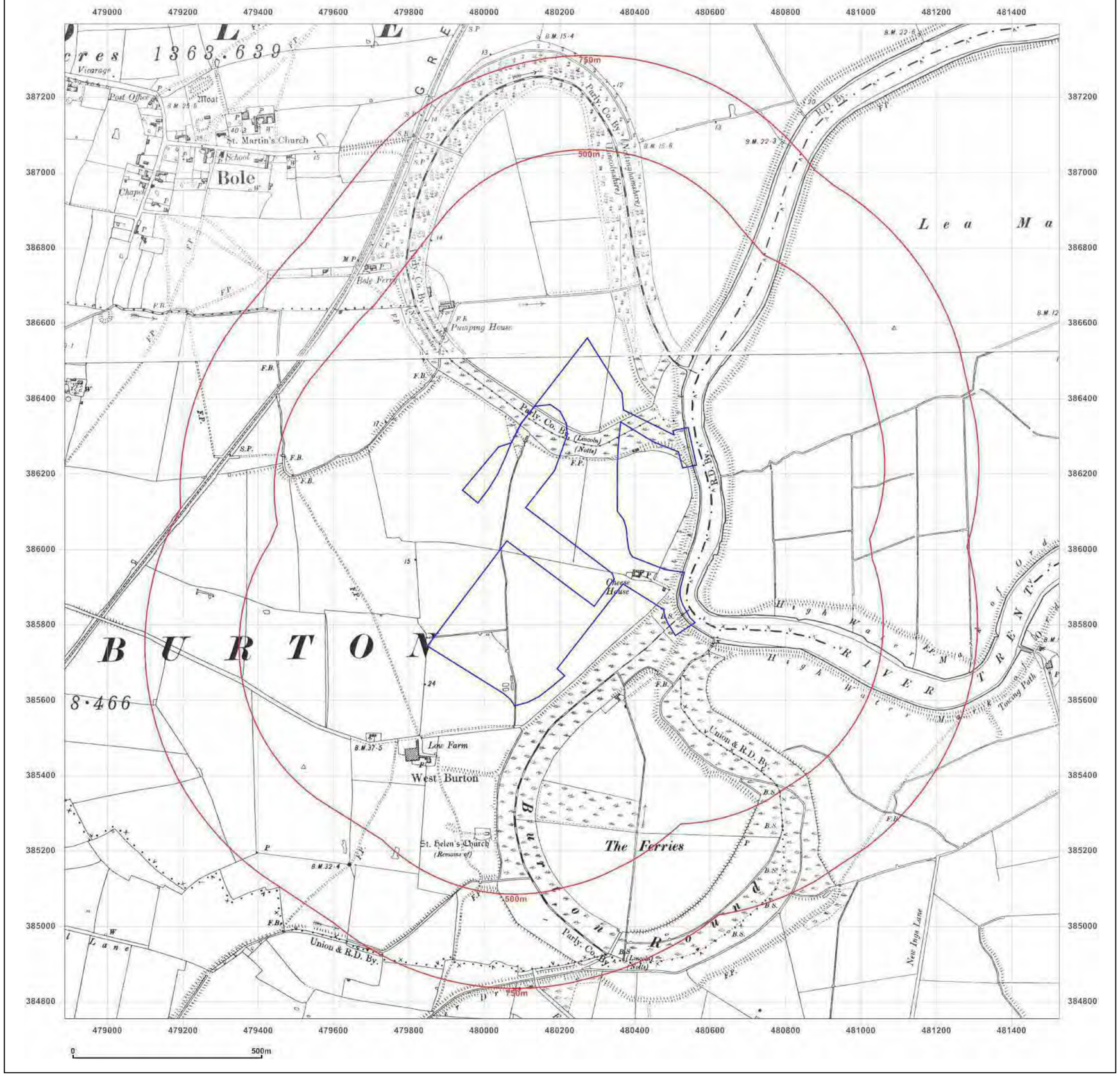
Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 09 May 2017

To view map legend click here *Legend*



Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1885
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1900
Edition N/A
Copyright N/A
Levelled N/A

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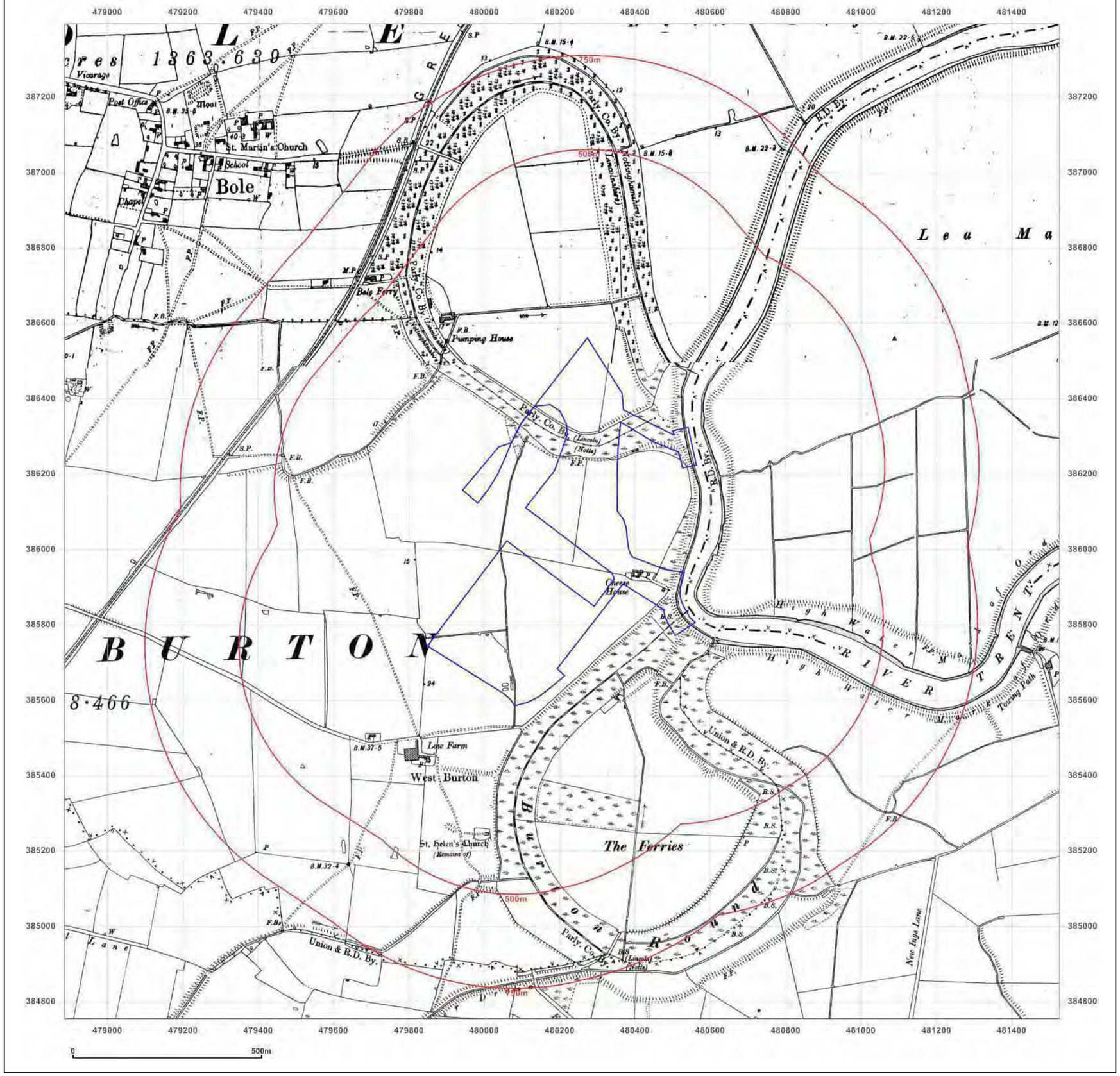
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 09 May 2017

To view map legend click here *Legend*



Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: County Series

Map date: **1904**

Scale: 1:10,560

Printed at: 1:10,560

N
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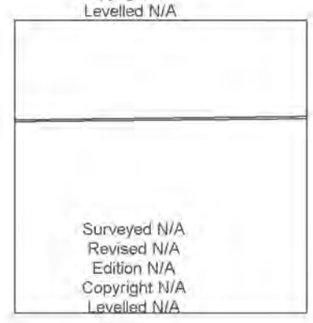
Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



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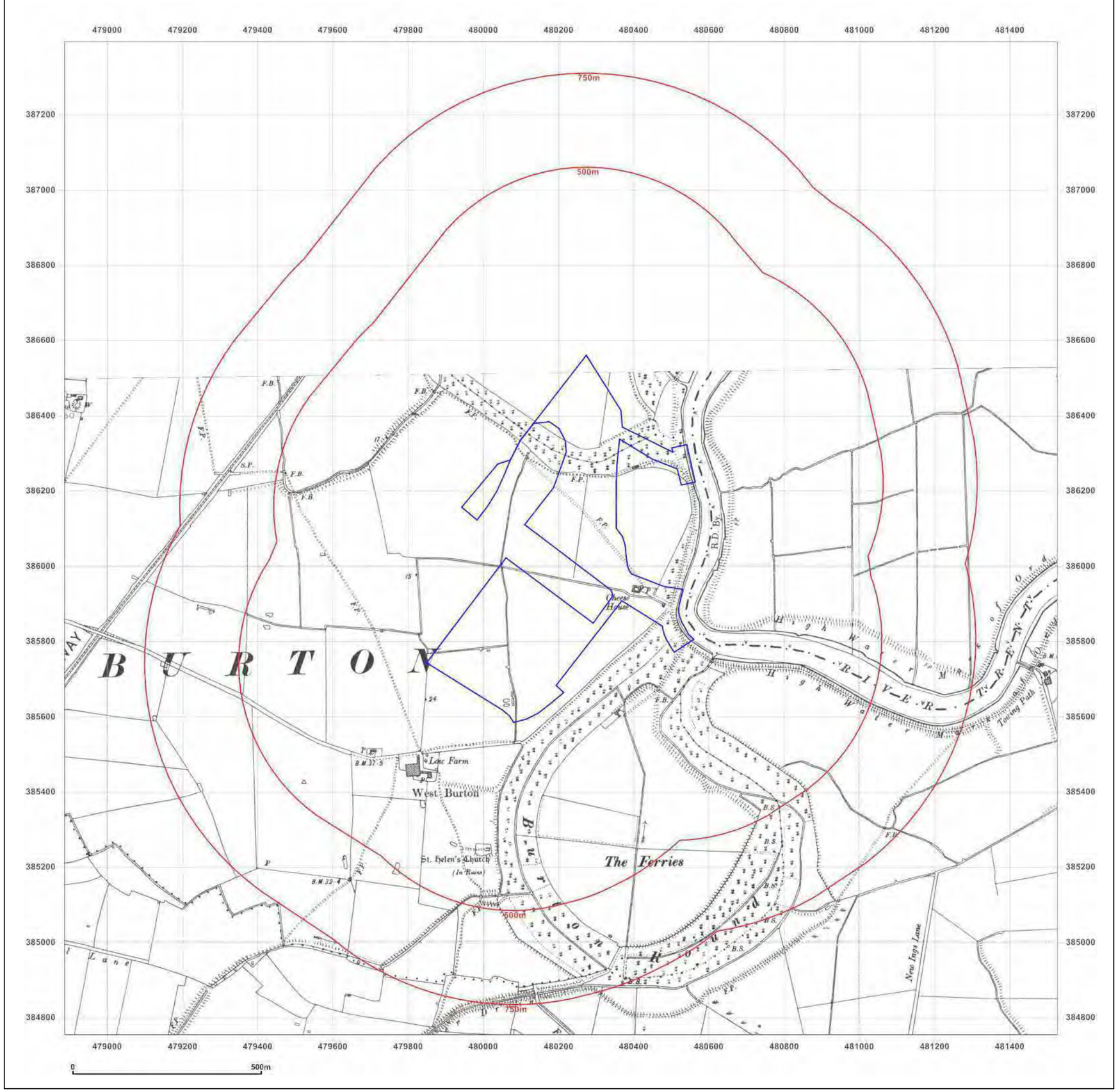

Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: County Series

Map date: **1916**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1884
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A

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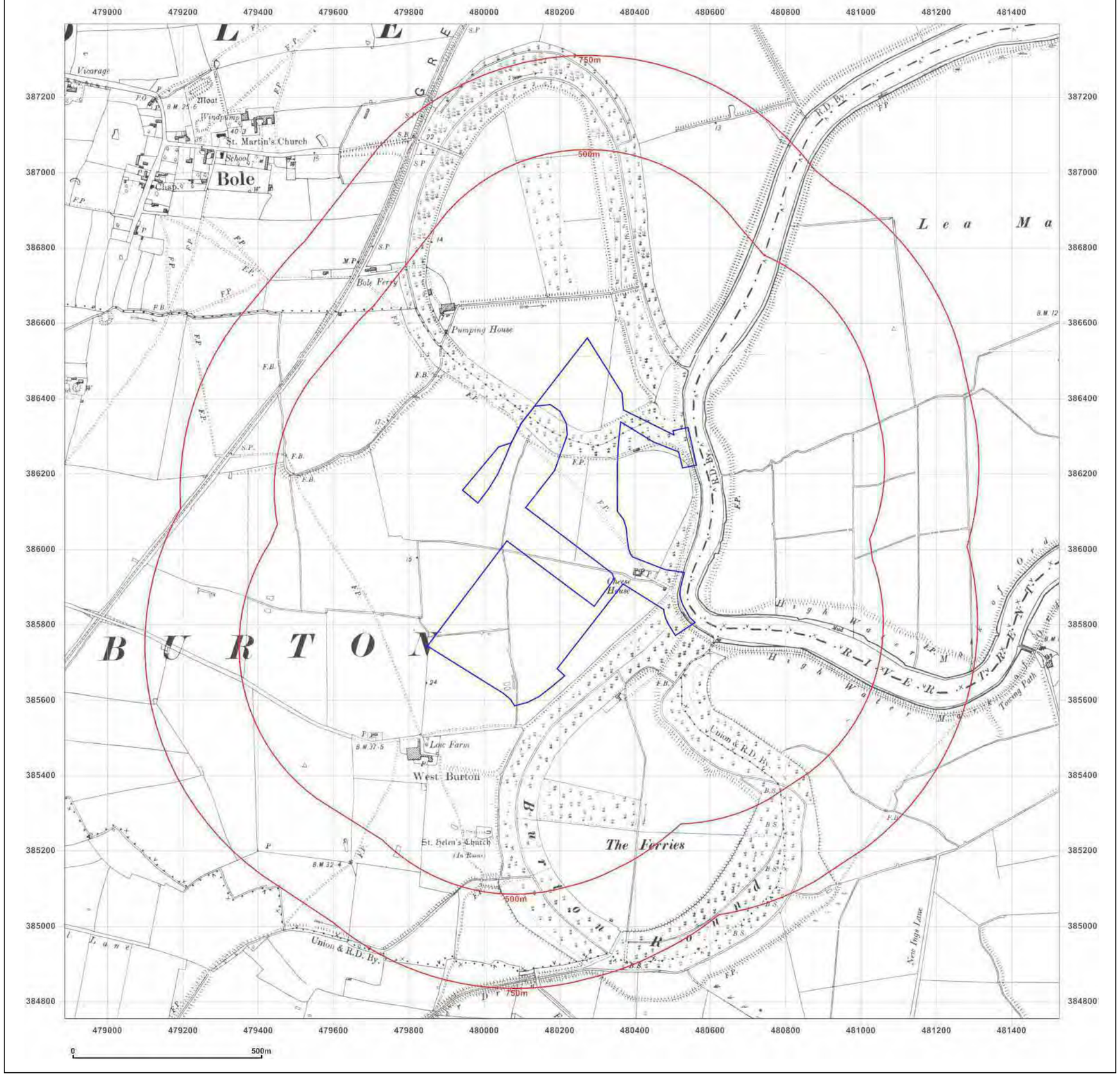

Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: County Series

Map date: **1916-1921**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1884
Revised 1921
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A

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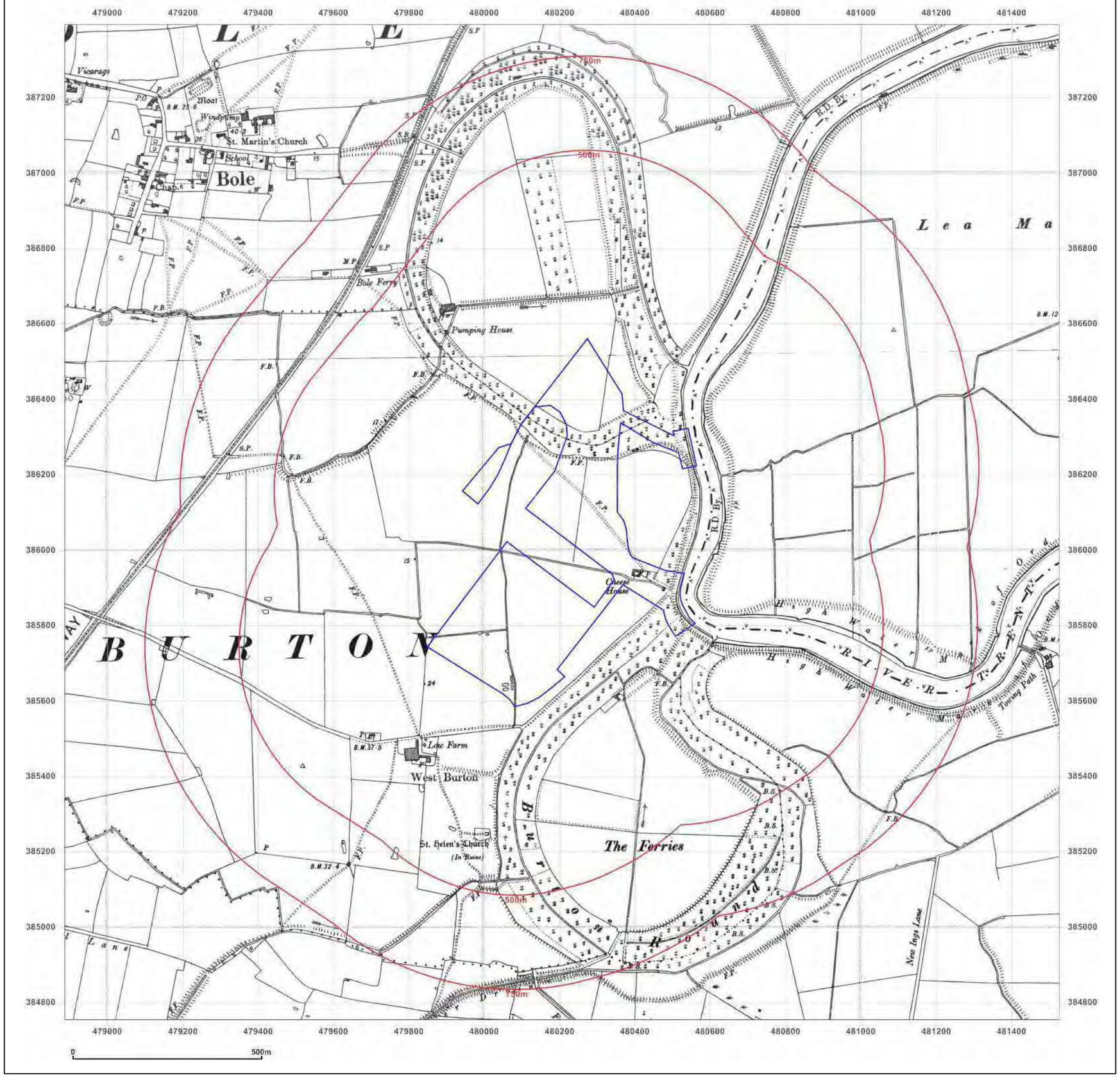

Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: County Series

Map date: **1947-1948**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1884
Revised 1947
Edition 1947
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 09 May 2017

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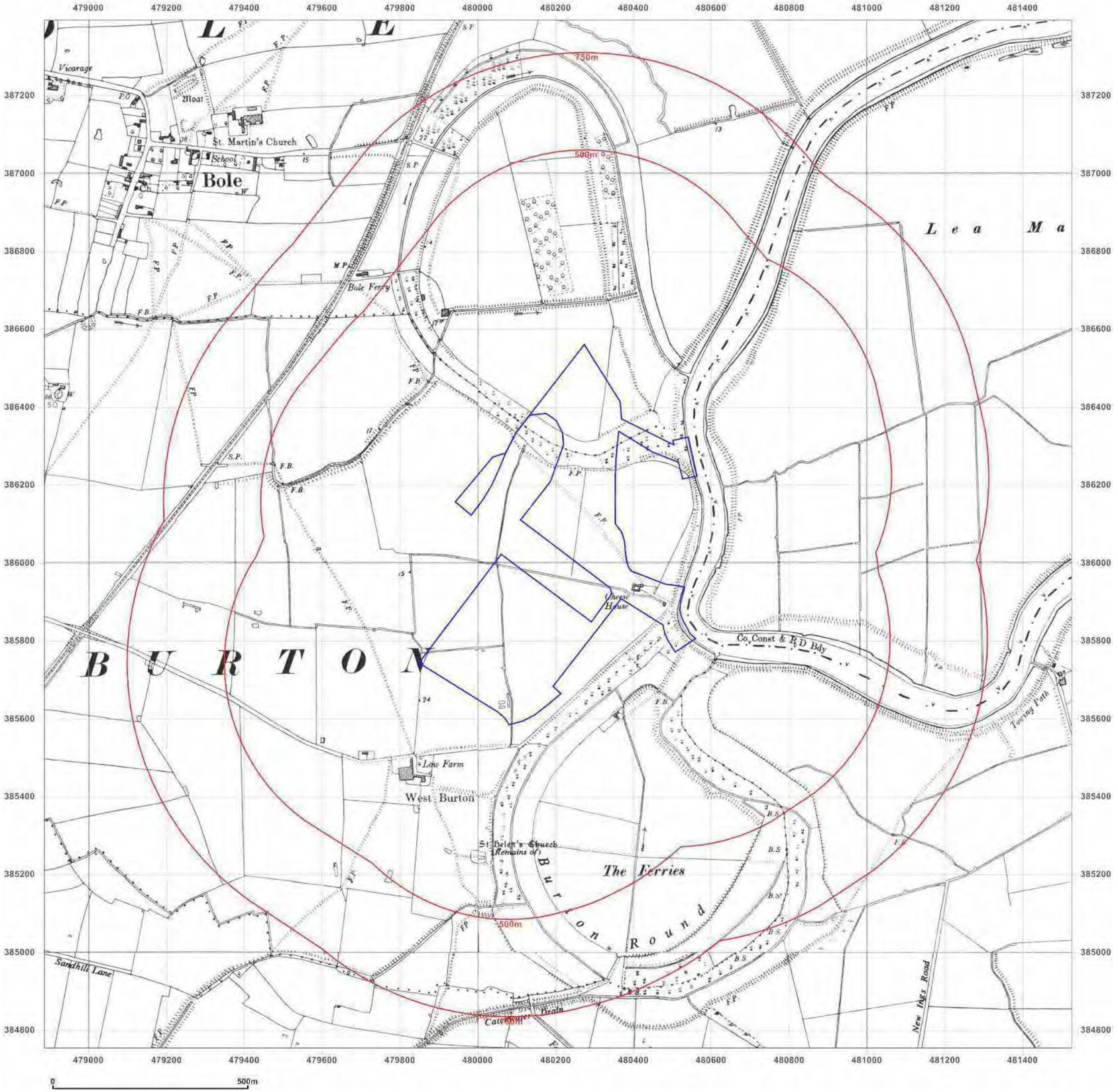

Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: Provisional
Map date: **1951**
Scale: 1:10,560
Printed at: 1:10,560

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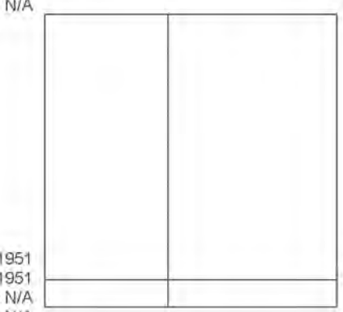
Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1951
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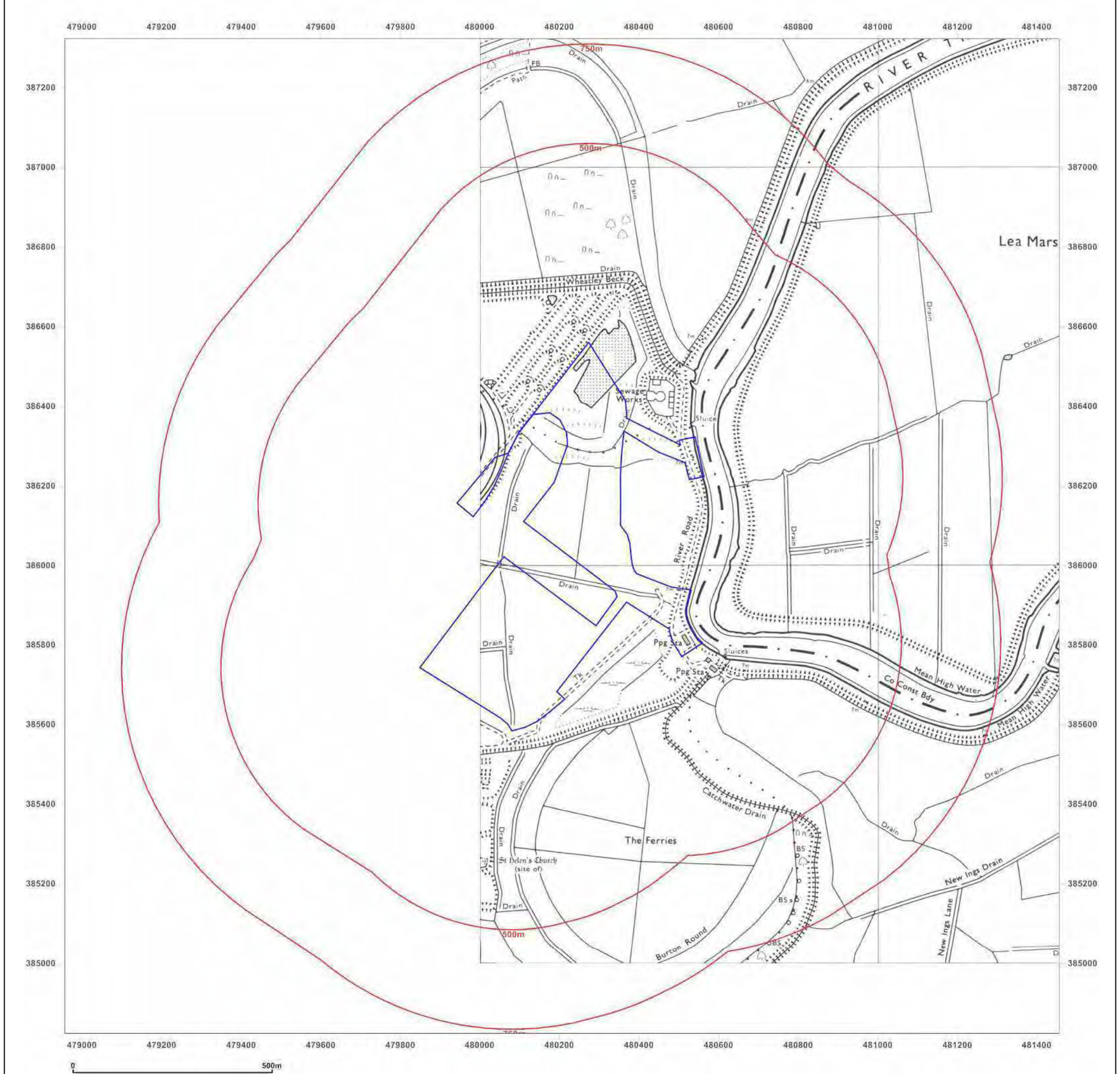

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: National Grid

Map date: **1971**

Scale: 1:10,000

Printed at: 1:10,000

N
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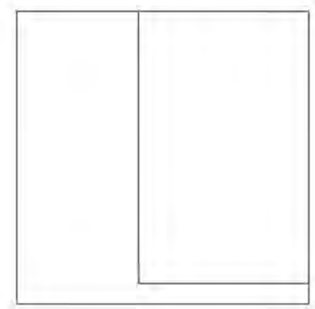
Surveyed 1971
Revised 1971
Edition N/A
Copyright N/A
Levelled N/A



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Production date: 09 May 2017

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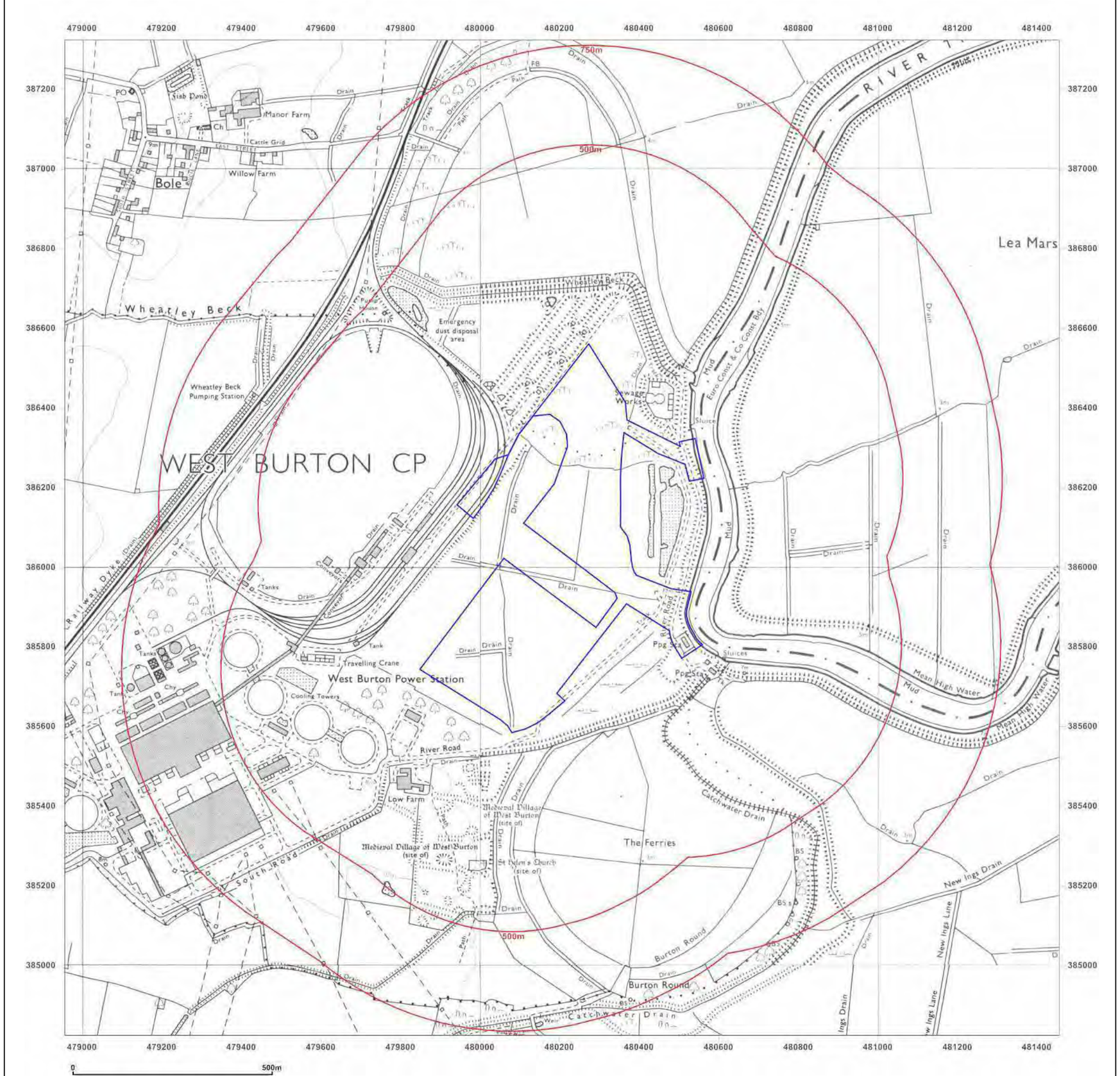

Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: National Grid
Map date: **1977-1980**
Scale: 1:10,000
Printed at: 1:10,000

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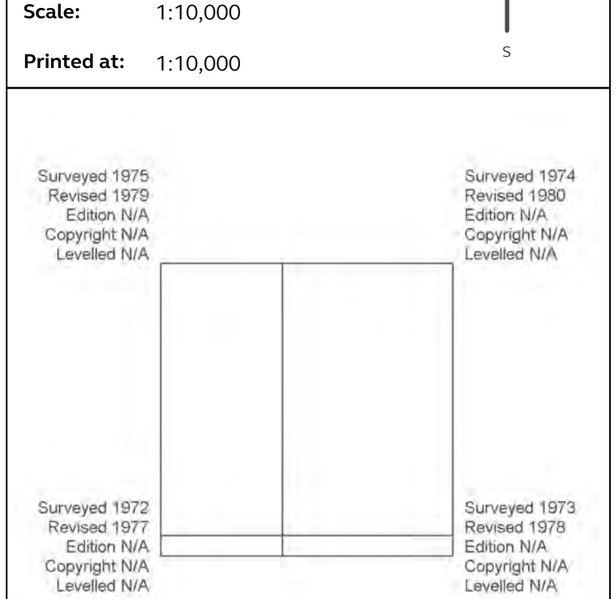

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Production date: 09 May 2017

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Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

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Production date: 09 May 2017

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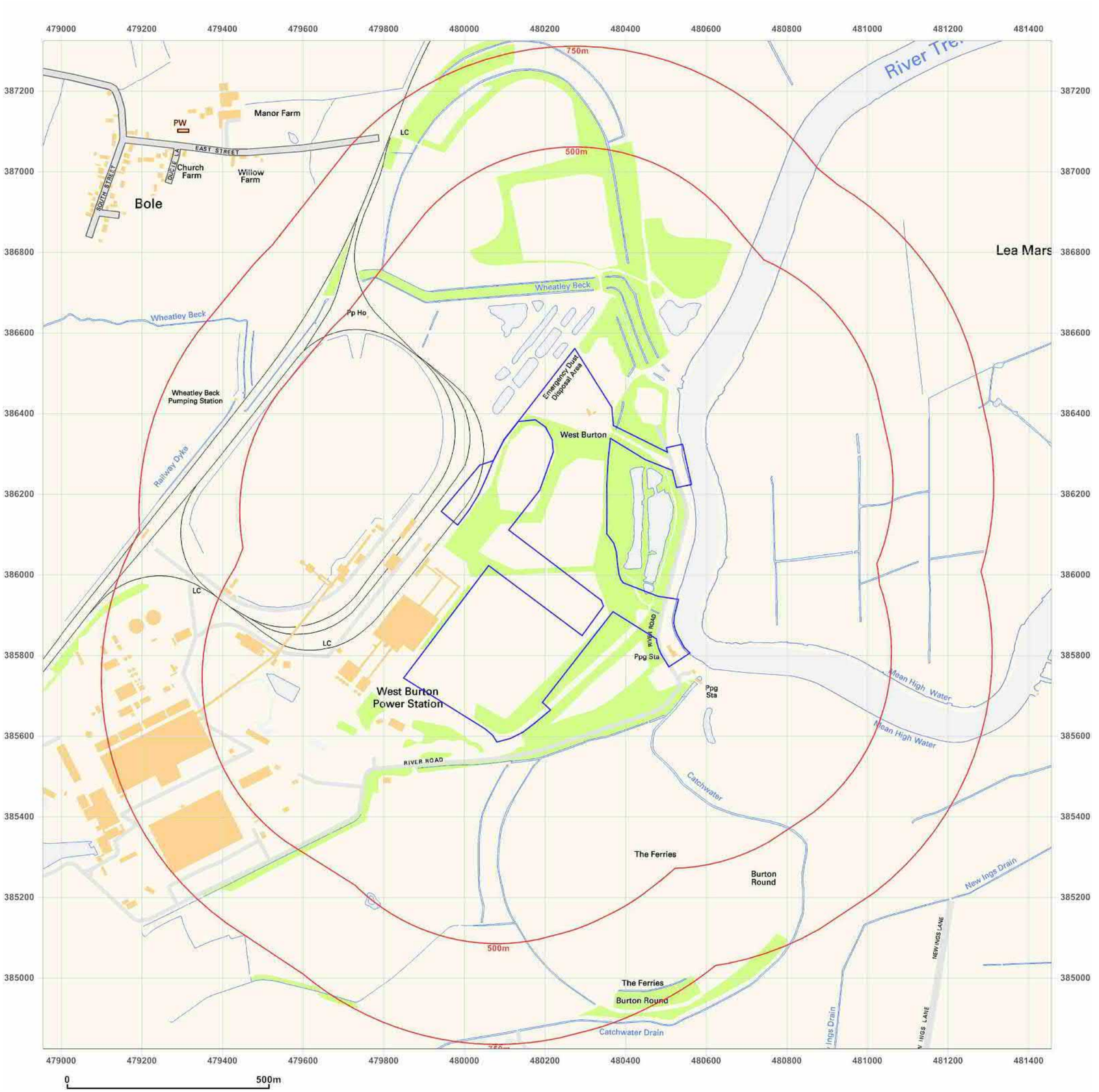

Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

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Production date: 09 May 2017

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Groundsure INSIGHTS

Site Details:

WEST BURTON POWER STATION, UNNAMED ROAD, RETFORD, DN22 9BL

Client Ref: 60527350
Report Ref: GS-3864431
Grid Ref: 480205, 386073

Map Name: National Grid
Map date: **2014**
Scale: 1:10,000
Printed at: 1:10,000

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Production date: 09 May 2017

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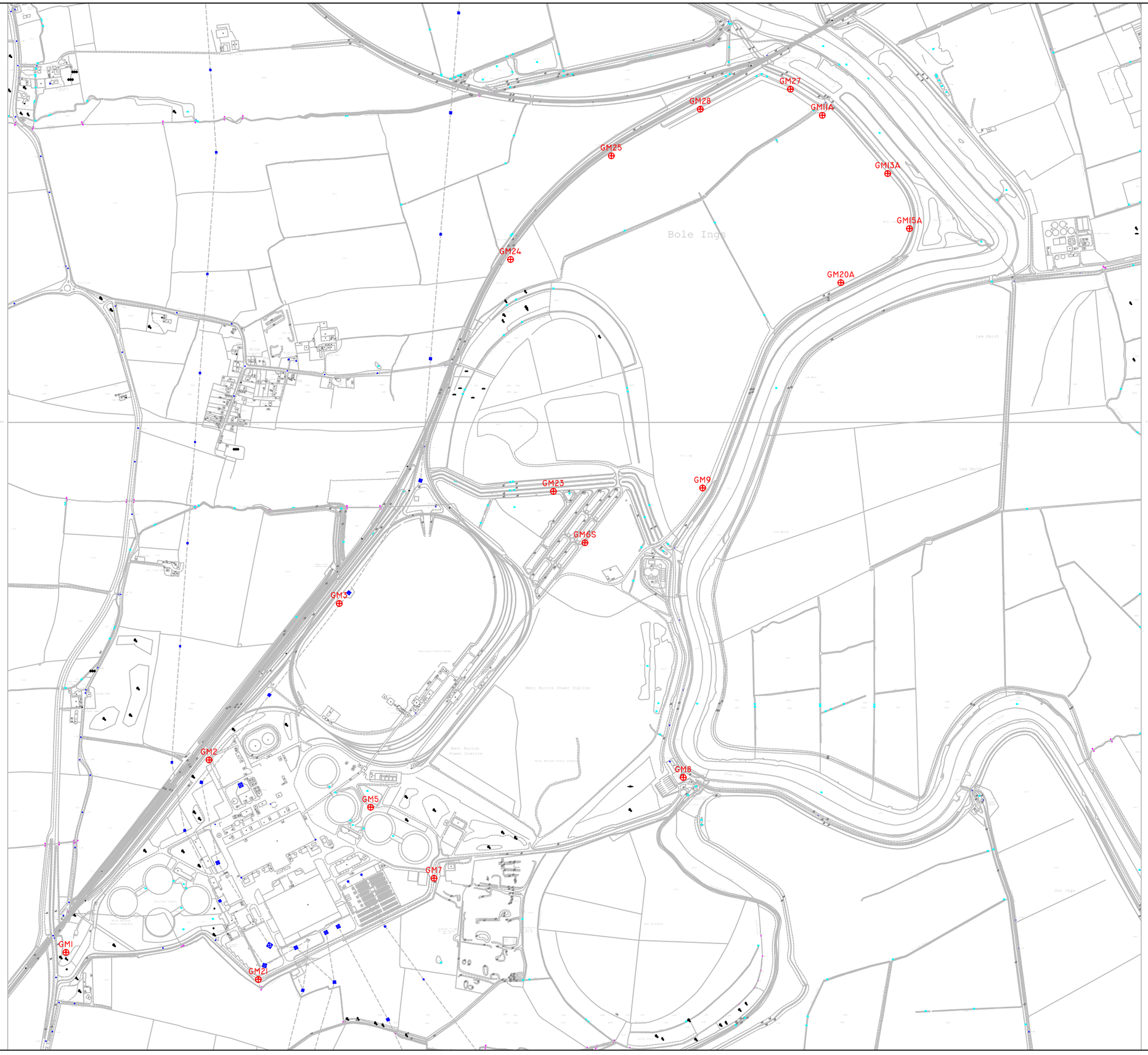
Annex E - Borehole Location Map



GENERAL NOTES

Hole ID	Easting (m)	Northing (m)	Level (mAOD)
GM1	478585.017	385217.418	12.503
GM2	479039.285	385828.290	9.042
GM3 per Jacobs	479453.000	386325.000	7.046
GM5	479552.601	385677.975	8.731
GM6S	480233.404	386517.822	8.044
GM7	479753.875	385452.882	8.241
GM8	480545.505	385772.442	6.906
GM9	480607.109	386691.400	4.314
GM11A	480986.978	387874.597	3.749
GM13A	481194.860	387689.859	7.650
GM15A	481263.997	387514.901	7.786
GM20A	481046.027	387343.315	7.569
GM21	479195.974	385131.555	8.364
GM23	480132.935	386680.773	7.045
GM24	479997.005	387416.945	3.898
GM25	480317.220	387746.018	3.560
GM27	480885.722	387957.468	3.111
GM28	480599.560	387893.999	3.280

REV	DESCRIPTION	DATE

This survey has been referenced to the Ordnance Survey (O.S) National Grid (OSGB36) via the Active GPS Network (ETRS89) using OSTN02 and OSGM02 transformations, all dimensions in metres

HAWK CONTRACTS
Charlestone House, Cruckmoor Lane, Preas Green, SY13 2BS
Tel. (0870) 393 0000. Fax. (0870) 393 0011

CLIENT & PROJECT NAME
EDF Energy (West Burton PS) LTD.
West Burton Groundwater and Surface Water Monitoring

DRAWING TITLE
West Burton Power Station
Borehole Locations

SCALE	BY	DATE		
1:12000	P.K.	13.12.2012		
SHEET SIZE	DRAWING NUMBER			REVISION
A3	PK1212-1012			

Annex F – Risk Assessment Principles

Current good practice recommends that the determination of hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Environment Agency guidance on Model Procedures for the Management of Land Contamination (CLR 11).

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.

Assessments of risks associated with each of these pollutant linkages are discussed in the following sections.

Using criteria broadly based on those presented in EA, Chartered Institute of Environmental Health (CIEH) and National House Building Council (NHBC) R&D Publication 66 'Guidance for the Safe Development of Housing on Land Affected by Contamination' (2008), the magnitude of the risk associated with potential contamination at the site has been assessed. To do this an estimate is made of:

- The magnitude of the potential consequence (i.e. severity); and
- The magnitude of probability (i.e. likelihood).

The severity of the risk is classified according to the criteria in **Table C1**, below:

1. Table C1: Summary of Potential Pollutant Linkages: magnitude of consequences

· SEVERITY	· DEFINITION AND EXAMPLES
Severe	- 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 aquifers) - Significant effects on sensitive ecosystems or species
Mild	- Pollution of non-sensitive waters (e.g. smaller surface watercourses or non-aquifers) - 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 C2**, below:

2. Table C2: Likelihood of Risk Occurrence: magnitude of probability

· LIKELIHOOD	· EXPLANATION
High	- Contaminant 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	- Contaminant linkage may be present, and it is probable that the risk will occur over the long term
Low	- Contaminant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	- Contaminant 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 C3**, below:

3. Table C3: Risk Based on Comparison of Likelihood and Severity

		SEVERITY			
LIKELIHOOD		**SEVERE**	**MEDIUM**	**MILD**	**MINOR**
	HIGH	Very High	High	Moderate	Moderate/Low
	LIKELY	High	Moderate	Moderate/Low	Low
	LOW	Moderate	Moderate/Low	Low	Very Low
	UNLIKELY	Moderate/Low	Low	Very Low	Very Low