



john newton & partners

jnpgroup

Consulting Engineers

www.jnpgroup.co.uk

Phase 1 Geo-environmental Desk Study

Project: Sapphire Plaza, Reading

Client: National Bank of Kuwait

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Sheffield

telephone

0114 2443 500

email

sheffield@jnpgroup.co.uk

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Phase 1 Geo-environmental Desk Study



Prepared by.....

Emily Leach
Graduate Engineer



Approved by.....

Sarah Longstaff
Principal Hydrogeologist

FOR AND ON BEHALF OF JNP GROUP

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Figure 1 Site Location Plan

<i>Appendix A</i>	<i>Limitations</i>
<i>Appendix B</i>	<i>Site Location Map</i>
<i>Appendix C</i>	<i>Groundsure Report</i>
<i>Appendix D</i>	<i>Historical Map Extracts</i>

1 INTRODUCTION

1.1.1 jnp group was instructed by Jonathan Walton (Pegasus Group) on behalf of the client, the National Bank of Kuwait to undertake a Phase 1 Geo-environmental Desk Study at Sapphire Plaza, Reading, RG1 4RE (hereafter referred to as 'the site'). This report is subject to the limitations presented in Appendix A.

1.1.2 It is understood that the proposed works includes a change of use to provide residential accommodation within the existing building.

1.1.3 Any comments given are based on the understanding that the proposed redevelopment will be as detailed above.

1.2 Objectives

1.2.1 The purpose of the investigation was to address geo-environmental issues relating to a proposed residential end-use of the site without gardens. The scope of work comprised desk study research only. This report contains details of the site, development of an initial conceptual model, and a preliminary risk assessment with regard to contaminated land issues.

1.3 Methodology

1.3.1 This report has been compiled in accordance with the guidance given in the Environment Agency / Department of Environment, Food, and Rural Affairs (DEFRA) Contaminated Land Report 11 'Model Procedures for the Management of Land Contamination' (Environment Agency. 2004) and the Environment Agency's three reports entitled 'Guiding Principles for Land Contamination' (Environment Agency. 2010).

2 SITE DESCRIPTION

- 2.1.1 The site is situated in the centre of a one-way system to the east of Reading town centre. Within the one-way system, it is located between the Kennet and Avon Canal and Kennet Street, as shown in Appendix B. The centre of the site is located at National Grid Reference 472255, 173346. The site covers an area of approximately 0.2520 ha.
- 2.1.2 The site is situated in the centre of Reading and is bounded to the north by the Kennet and Avon Canal, to the east by residential apartments and a carpark with Kings Road beyond. To the south, the site is bounded by Kennet Street with a residential block beyond and to the west by Watlington Street. Predominantly, residential buildings surround the site.
- 2.1.3 The site is currently occupied by HM Revenue and Customs, and is a large octagon shaped building up to four stories high with a basement carpark which is accessed off Kennet Street. The main pedestrian access to the building is off Watlington Street. Occasional trees and bushes line the eastern boundary of the site.

3 GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

3.1 Geology

- 3.1.1 The geology of the site has been determined by reference to the 1:50,000 scale British Geological Survey (BGS) online Geoindex Tool (<http://mapapps2.bgs.ac.uk/geoindex/home.html>).
- 3.1.2 No artificial or Made Ground is indicated to be present underlying the site from BGS data. However, the Groundsure report indicates that there may be infilled ground in the north of the site associated with the canal.
- 3.1.3 The site is indicated to be underlain by Sand and Gravel of the Kempton Park Gravel Formation, which is described by the BGS as “*Sand and gravel, locally with lense of silt, clay or peats*”. Alluvium is present along the northern boundary of the site; the BGS describe this as “*clay, silt, sand and gravel*”.
- 3.1.4 The underlying geology is indicated to be the Seaford and Newhaven Chalk Formation, which is described by the BGS as ‘*Chalk with flints.*’ The overlying Lambeth Group outcrops c. 330m to the south.
- 3.1.5 There are no faults denoted within 500 m of the site.
- 3.1.6 The following table details the risk of geological hazard potential on or underlying the site as identified in the Groundsure Report (included in Appendix C).

Table 3.1: Geological Hazards

Hazard	Risk
Shrinking or swelling clay	Very low / negligible
Landslide ground	Very low
Ground dissolution	Very low
Compressible soils	Moderate associated with the Alluvium, negligible associated with the Kempton Park Gravel Formation
Collapsible soils	Very low/ negligible
Running sand	Very low / low

- 3.1.7 Based upon the above, there is a moderate risk of compressible soils associated with the Alluvium. This is confirmed to the northern edge of the site. Further testing will be required as part of ground investigation to quantify the risk. Otherwise, geological hazards are not considered to present a constraint to development.

3.2 BGS Borehole Records

- 3.2.1 jnp group have consulted online borehole records held by the BGS. Numerous borehole records are present within 250m of the site however one borehole record is noted 38m south-east of the site (SU77SW859). The borehole encountered 0.7m of tarmac over brick fill which was underlain by medium dense brown gravelly silt sand to 1.9m bgl. Underlying the superficial deposits is Grade 5, Grade 3 and Grade 2 chalk with flints proven up to a depth of 30m. The rest water level in the borehole is indicated as 4.8m bgl (measured in May 2000).

3.3 Background Soil Chemical Concentrations

- 3.3.1 The Groundsure Report (Appendix C) provides an indication to the background concentrations of a number of metallic contaminants commonly recorded in soils:

-  arsenic 15 – 25 mg/kg;
-  cadmium < 1.8 mg/kg;
-  chromium 60 - 90 mg/kg;
-  lead <100 mg/kg;
-  nickel 15 – 30 mg/kg

3.3.2 In addition, the UK Soil Observatory map viewer (<http://www.ukso.org/mapViewer.html>) provides an indication to the background concentrations of a number of metallic contaminants commonly recorded in soils:

-  arsenic 19.37 mg/kg;
-  cadmium 0.50 mg/kg;
-  chromium 68.78 mg/kg;
-  copper 36.42 mg/kg
-  lead 127.72 mg/kg;
-  nickel 26.59 mg/kg;
-  zinc 139.66mg/kg

3.3.3 Therefore, naturally elevated concentrations of metals are not anticipated at the site or in close proximity.

3.4 Ground Workings, Mining History and Natural Cavities

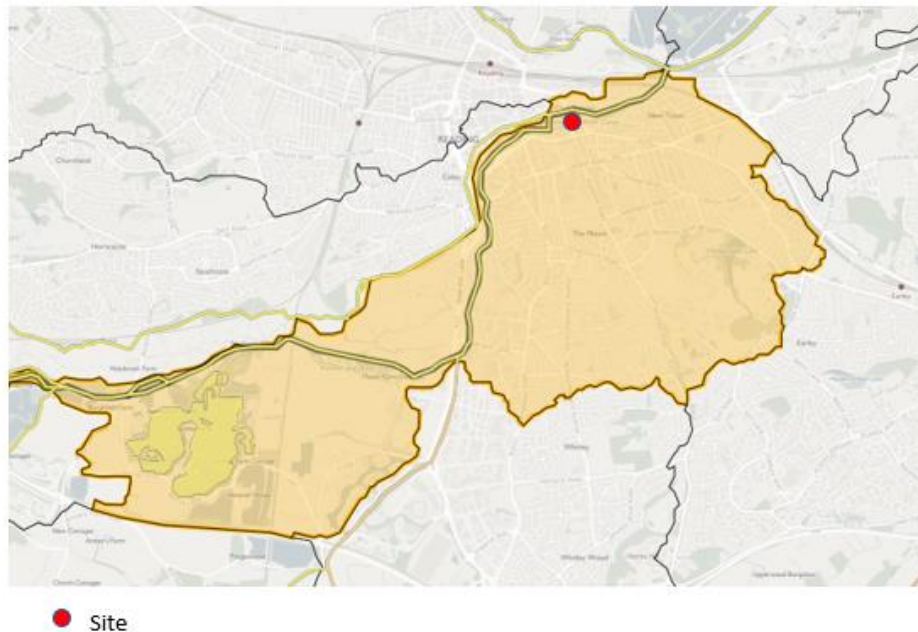
-  There are five records of historic surface ground workings within 100m of the site and these are all related to the construction of the adjacent canal.
-  No historic underground workings have occurred within 1 km of the site;
-  No current ground workings have occurred within 750m of the site;
-  No coal mining has occurred within 1 km of the site;
-  There are eight records of non-coal mining areas within 1 km of the site. These are in excess of 85m from the site and are associated with chalk mining;
-  There is one non-coal mining cavity located within 500m of the site; this is 85m south-east of the site in the Chalk and is a localised area where underground mining may have occurred;
-  There are no natural cavities located within 250m of the site;
-  No brine or gypsum extraction has occurred within 1 km of the site;
-  No tin or clay mining areas are recorded within 1 km of the site.

3.5 Hydrology

3.5.1 The nearest surface water features to the site are the Kennet and Avon Canal, which is situated 6m to the north of the site, and the River Kennet which is situated 130m to the north of the site. Both flow in an eastwardly direction. This section of the canal splits from the River Kennet c. 250m to the west of the site and then re-joins the Kennet c. 250m to the east of the site. This flows into the River Thames to the north east of the site. The site is situated within the Kennet and Holy Brook Catchment and the sites context is shown on the plan in Figure 1.

Figure 1: Kennet and Holy Brook Catchment defined by the Environmental Agency

Kennet and Holy Brook Catchment



- 3.5.2 The EA Catchment Explorer website (<https://environment.data.gov.uk/catchment-planning>) indicates that water quality in the above catchment was classified as moderate between 2013 and 2016.
- 3.5.3 The site lies in an area considered by the Environment Agency to be at a medium risk of fluvial flooding. However, the Flood Map for planning indicates that the site is located within a Flood Zone 1 within Flood Zone 2 just on the northern edge of the site and Flood Zone 3 confined to the canal to the north.
- 3.5.4 There are two active surface water abstraction licences within 1km of the site, the nearest of which is situated 662m west of the site and is associated with the Oracle Shopping Centre. The second is located 857m north of the site and is associated with The Reading Sustainability Centre. Both of these are from the River Thames upstream of the confluence with the Kennet.

3.6 Hydrogeology

- 3.6.1 The Aquifer Maps contained in the Groundsure Report indicates that the sand and gravels of the Kempton Park Gravel Formation underlying the site are classified as a Secondary-A Aquifer. The underlying Chalk is classified as a Principal Aquifer.
- 3.6.2 The Environment Agency define a Principal Aquifer as:
"These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer."
- 3.6.3 The Environment Agency define a Secondary-A Aquifer 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."

- 3.6.4 The overlying soils are classified as having a high leaching potential, although this is uncertain, as a worst-case vulnerability classification is assumed by the Environment Agency (EA) for urban areas.
- 3.6.5 The Groundsure Report lists two groundwater water abstractions within 1km of the site. The nearest groundwater abstraction is located 479m to the north-east of the site and has a historical status. The Royal Berkshire Hospital located 525m to the south has a current license for potable uses.
- 3.6.6 The site's proximity to groundwater Source Protection Zones (SPZs) was determined by reference to the Environment Agency's website. These zones show the risk of contamination from any activities that might cause pollution in the area, with the closer the activity, the greater the associated risk. The maps show three main zones (inner, outer and total catchment) to a groundwater source.
- 3.6.7 The site lies in a Zone III (Total Catchment) Source Protection Zone associated with the abstraction at the Royal Berkshire Hospital
- 3.6.8 The definition of a SPZ III is:
'The area around a source within which all groundwater recharge is presumed to be discharged at the source. In confined aquifers, the source catchment may be displaced some distance from the source. For heavily exploited aquifers, the final Source Catchment Protection Zone can be defined as the whole aquifer recharge area where the ratio of groundwater abstraction to aquifer recharge (average recharge multiplied by outcrop area) is > 0.75.'

4 SITE HISTORY

4.1.1 The history of the site and the surrounding area has been determined from historical map extracts. Copies of these extracts are included in Appendix D. The historical land uses on site and in close proximity to the site are summarised in the following table:

Table 4.1: Site History Summary

Date	On-site Historical Land Use	Off-site Historical Land Use
1879	The site is occupied by residential houses and gardens. The houses line the site boundaries with the gardens located in the centre of the site.	The Kennet and Avon Canal is immediately north of the site as well as a biscuit factory located 50-350m north of the site. Gas Works are located 100m north-west and a sewage pumping station is located 200m north-west of the site. The surrounding site is predominantly residential.
1898	No change	Royal Hospital is now denoted and located 450m south, sawmills are located 350m north-west and a prison is located 350m north-west of the site.
1914	No change	Biscuit factory located 400m South-west of the site. A university is shown immediately south of the site.
1931	No Change	Gas Works is no longer denoted.
1956	The houses located to the north of the site have been demolished and replaced with a printing works.	The houses immediately adjacent to the site have been demolished and are part of the printing works also located on site
1962	No change	The Sewage Pumping Station is no longer denoted, the sawmill located 350m north-west of the site has been removed from historical maps and the biscuit factory located 400m south-west of the site is now described as a works.
1973	No change	Works is no longer identified on the maps
1986- 1990	All residential houses, gardens and printing works have been demolished and replaced with an octagonal building named Sapphire House.	Immediately adjacent to the site, the printing works have been demolished and replaced with a residential building
1989	No change	A museum is now in the place of the old gas works and the biscuit factory to the north of the site has now changed use to residential flats and commercial properties with parts of the site being demolished. Kenavon Drive was also built through the site of the biscuit factory.
2001	No change	The site of the biscuit factory to the north of the site is now denoted as Forbury Retail Park

4.2 Site History Summary

- 4.2.1 The site and surroundings were shown to already be developed on the earliest available maps, 1879. The site usage appeared to have been mainly residential up till 1956 when the northern part of the site was developed into a Printing Works. By 1986 to 1990, the entire site was redeveloped as Sapphire House.
- 4.2.2 The surrounding area was heavily urbanised by 1879 and appears to have undergone continuous redevelopment up until the present day. Historically the surrounding area was a mix of residential and industrial properties with a biscuit factory, Gas Works, and a Sewage Pumping Station located within 250m of the north of the site.

5 INFORMATION HELD BY STATUTORY AUTHORITIES

- 5.1.1 This section details any relevant information held in the registers maintained by statutory bodies as identified in the Groundsure Report (Appendix C).

5.2 Waste Management Facilities

- 5.2.1 The Groundsure Report identifies two licensed waste management facilities located within 1 km of the site as follow:

 Alton House Waste Recycling Centre located 108m east of the site. This takes household, commercial and industrial waste of less than 25000 tonnes and has been issued since 2002.

 Deans Farm located 923m north-east of the site and has a status of closure.

- 5.2.2 There are two historical landfills recorded within 1km of the site. The closest is located 651m north-east of the site at the address Napier Road, Berkshire, Reading and the waste is classified as inert, industrial. The second is located 990m north-east of the site at Deans Farm and licence was surrendered in April 2010.

5.3 Historic IPC, IPPC Part A and B Activities and Enforcements

- 5.3.1 The Groundsure Report indicates that:

 There are no historic IPC authorisations within 500 m of the study site;

 There are no Part A (1) and IPPC authorised activities within 1 km of the site;

 There are two Part A (2) and Part B activities and enforcements within 500 m of the site. The closest is located 286m south of the site at the address of St Albans Operating Company and the other is for Kings Road Garage located 292m east of the site. Both are detailed as having no enforcements notified.

5.4 Pollution Incidents to Controlled Waters

- 5.4.1 Records held by the Environment Agency identified ten pollution incidents to controlled waters within 500m of the site. With the exception of one incident dating from 2005, recorded 418m to the west of the site, which was recorded as a Category 2 significant water impact, all the rest were recorded as minor or no impact.

5.5 Discharge Consents

- 5.5.1 The Groundsure Report identifies seventeen licensed discharge consents within 500m of the site. The closest are as follow:

 115m north of the site, Nabisco Brands Ltd had a permit between October 1985 to May 1991

 Blake Cottages had a permit between November 1985 to April 1991 at a location 206m north-west of the site

 227m north-west, Abbey Garden Development had a permit between August 1988 to February 1991.

5.6 Fuel Sites

- 5.6.1 The Groundsure Report identifies two active fuel station entries within 500 m of the site:

 BP have a fuel station located 298m south of the site which has a status of open;

 An obsolete fuel station is located 400m east of the site.

5.7 Historical and Contemporary Industrial Data

5.7.1 The Groundsure Report identifies nine potentially contaminative industrial sites within 250 m of the site. The nearest are summarised as follows:

-  Office and shop equipment is located on site and is categorised as industrial products.
-  Tanks categorised as industrial features are located 68m south-west of the site.
-  173m south of the site is Swift Upholstery which is categorised as consumer products.
-  An Electricity Sub Station is located 188m east of the site.
-  An electricity sub-station was located on the site in 1971.

5.8 Radon

5.8.1 The Groundsure Report states that the Health Protection Agency identified less than 1% of homes above the action level. The British Geological Survey Information Services Group indicates that no radon protection measures are necessary.

5.8.2 Reference to BRE211 'Radon: guidance on protective measures for new dwellings' indicates that the site does not lie within an area where geological information indicates that basic radon protection may be required. Therefore, no radon protection measures are considered necessary.

5.9 Environmentally Sensitive Areas

5.9.1 A Nitrate Vulnerable Zone (NVZ) is located 395m north of the site.

5.9.2 NVZs are designated areas where concentrations of nitrate in groundwater (due to agricultural practices) are above guideline values e.g. Drinking Water Standards. High concentrations of nitrate in groundwaters has given rise to environmental and health concerns and these have been reflected in the EC Nitrates Directive (91/676/EEC) which is aimed at reducing nitrate pollution in controlled waters from agriculture.

6 UK CONTAMINATED LAND LEGISLATIVE FRAMEWORK

6.1 Legislation on Contaminated Land

- 6.1.1 Given that the site is being assessed with the potential for future development, the most applicable appraisal relates to the requirements of the Planning Regime as described in the National Planning Policy Framework. In order to proceed with an assessment of contamination issues it is essential that there is compliance with UK guidance as detailed within reports published by the Environment Agency 'Model Procedures for the Management of Land Contamination' (Environment Agency, 2004), and 'Guiding Principles for Land Contamination' (Environment Agency, 2010).
- 6.1.2 Part IIA of the Environmental Protection Act, 1990, which was enacted by Section 57 of the Environment Act 1995, and the associated Contaminated Land (England) Regulations 2000 (SI 2000/227), was introduced on 1 April 2000. It created a new statutory regime for the identification and remediation of land where contamination poses an unacceptable risk to human health and the environment. The guidance was subject to a review by DEFRA in 2012, and a revision was published.
- 6.1.3 Part IIA provides a statutory definition of contaminated land:
"any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused, or that there is a significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused".
- 6.1.4 Controlled waters are considered to be all groundwaters, inland surface waters, and estuarine and coastal waters.
- 6.1.5 To determine whether land falls under the Part IIA definition of contaminated land, the site should be evaluated in the context of a risk based framework. The assessment of contaminated land is typically a two-phase process, which is initially based on a qualitative assessment of the likelihood of complete pollution linkages, with a quantitative element that seeks to determine the degree and the significance of the harm. Land is only defined as 'Contaminated Land' if a "significant pollutant linkage" is present.
- 6.1.6 A pollutant linkage must comprise the following:
Source - a contaminant at a concentration capable of causing adverse health or environmental effects.
Receptor - there must be a receptor (e.g. human, controlled waters, ecological, or property) present, which may be at risk of harm or impact from the source.
Pathway - there must be an exposure pathway through which the receptor comes into contact with the contamination source.
- 6.1.7 Each of these elements can exist independently, but they create risk only when they are linked together, so that a particular contaminant affects a particular receptor, through a particular pathway.
- 6.1.8 The responsible authority then needs to consider whether the identified pollution linkage:
 is resulting in significant harm being caused to the receptor in the pollutant linkage;
 presents a significant possibility of significant harm being caused to that receptor;
 is resulting in the pollution of controlled waters, which constitute the receptor; or is likely to result in such pollution.
- 6.1.9 If a pollutant linkage is demonstrated, then the Part IIA legislation provides powers for remedial action to be enforced by the Local Authority in whose area the contaminated land is situated.
- 6.1.10 In addition, **jnp group** has undertaken a preliminary risk assessment based on the **probability** of receptor exposure to the identified source and the **consequences** of such exposure.

6.1.11 **Risk management**, which can include site surfacing, formal management systems, legal requirements; is then considered to provide an overall residual risk. The categories of environmental risk used by jnp group are given in Table 6.1 that follows.

Table 6.1: Risk Matrix

Environmental Risks		
HIGH		Issues within this category likely to provide a significant cost or liability. Further detailed investigation may be required to clarify the risk.
MEDIUM		It is possible that issues within this category may provide a cost or liability. Further investigation may be required to clarify the risk.
LOW		It is unlikely that issues within this category will provide a significant cost or liability. Basic investigation may be required to clarify the risk.
NONE		No source – pathway – receptor linkage present.

7 CONCEPTUAL MODEL AND PRELIMINARY RISK ASSESSMENT

7.1 General

- 7.1.1 This section uses information from desk-based sources to provide a conceptual model and qualitative assessment of the potential risks posed to human health and environmental receptors from potential on-site and off-site sources of contamination. The assessment is presented as a 'source-pathway-receptor' model in accordance with Part IIA of the Environmental Protection Act 1990.
- 7.1.2 The conceptual model has been developed assuming that the site development comprises a change of use of the existing building from commercial to residential.

7.2 Potential Sources of Contamination

Potential On-site Sources of Contamination

-  The site is shown as developed on the earliest available map with a number of residential houses shown across the site. In 1956, part of the site was redeveloped for the first time and a printing works was built on the northern part of the site. By 1986 to 1990, the entire site was demolished and Sapphire House was built. Recently the site has been utilised as the HM Revenue and Customs Office.
-  The proposals are for a change of use, asbestos within the building fabric may be present;
-  External works (other than minor enabling works) are not proposed;
-  An electricity sub-station was noted on site in 1971;
-  Infilled ground may be present in the north of the site;
-  Heavy metals, Volatile Organic Compounds, Semi Volatile Organic Compounds, hydrocarbons, PCBs, asbestos and soil gas may be present as a result of previous phases of development.
-  In accordance with C733 guidance, any structure built, refurbished or modified during the Twentieth Century has the potential to contain asbestos containing materials (ACM). In addition, any demolition material either stockpiled or used as backfill on site also has the potential to contain asbestos containing materials (intact or broken up).

Potential Off-Site Sources of Contamination

-  Historical land use within 200m of the site included residential, commercial and industrial premises. The industrial processes include a Gas Works, a Sewage Pumping Station and Biscuit Factory. The closest of these industries is 60m to the north and is unlikely to have led to significant contamination of the site.

7.3 Receptors

- 7.3.1 The site development includes a residential high-rise building with a two-storey basement carpark beneath. Based on the current proposals, the primary receptors considered to be potentially at risk from any identified contamination are as follows:

Human Health

-  Construction workers during the redevelopment phase (mainly potential asbestos exposure during redevelopment of the building);
-  Residential end users.

Controlled Waters

-  The sand and gravel of the Kempton Park Gravel Formation beneath the site is classified as a Secondary-A Aquifer overlying a Principal Chalk aquifer. Jnpgroup consider groundwater to be a sensitive receptor;
-  The nearest controlled surface watercourse is the Kennet and Avon Canal which are situated 6m to the north of the site. jnpgroup consider this to be a sensitive receptor although the construction of the canal needs to be further understood and whether there is any drainage from the site into the canal..

Ecological

-  The site is not located within an environmentally designated sensitive area;
-  Given the site setting, sensitive species are considered unlikely to be present at the site (subject to any ecological survey undertaken).

Property

-  Concrete sulphate attack;
-  Build-up of gases with potential for explosion.

7.4 Pathways

7.4.1 Potential contaminant migration pathways considered relevant to the site are:

Human Health

-  Ingestion of contaminated soils and dust particles;
-  Direct physical contact with near surface soils and contaminated dust particles;
-  Inhalation of wind-blown contaminated dust;
-  Inhalation of vapours and gases, migrating vertically into the atmosphere;
-  Inhalation of vapours and gases, migrating into buildings and confined spaces;

Infrastructure

-  Water supply pipework.

Controlled Waters

-  Lateral migration of contaminated groundwater into the Kennet and Avon Canal.
-  Leaching of contaminants into shallow groundwater;
-  Vertical migration of contaminated shallow groundwater impacting deeper groundwater in the aquifer sequence;
-  Run-off of site-derived contamination into the Kennet and Avon Canal.

Ecological

-  Migration of contamination through groundwater and subsequent uptake by plant roots;
-  Direct contact between ecological receptors and contaminated surface water;
-  Direct contact between ecological receptors and contaminated soils;
-  Ingestion of contaminated soils/surface waters by ecological receptors;
-  Inhalation of vapours or wind-blown dust by ecological receptors.

7.5 Pollutant Linkages

7.5.1 A 'pollutant linkage' describes the relationship between a contaminant, a pathway and a receptor, a 'pollutant' being the contaminant in a pollutant linkage. A contaminant, pathway and receptor must all be present for a pollutant linkage to exist, which forms the basis for determination that a piece of land is Contaminated Land. Potential sources, pathways and receptors have been assessed. The following table summarises the significant pollutant linkages potentially active at the site.

Table 7.1: Potential Source-Pathway-Receptor Linkages for Human Health Risk Assessment

Source	Pathway	Receptor
Contaminated soils	Dermal contact	On site female child: 0 - 6 yrs old
		On site construction worker
	Dermal contact with household dust	On site female child: 0 - 6 yrs old
		On site construction worker
	Inhalation of fugitive soil dust	On site female child: 0 - 6 yrs old
	Inhalation of fugitive household dust	On site female child: 0 - 6 yrs old
	Inhalation of vapours in outdoor air	On site female child: 0 - 6 yrs old
		On site construction worker
Ground Gas	Inhalation of vapours in indoor air	On site female child: 0 - 6 yrs old
	Contact with contaminated soils	Water supply pipework
	Vertical and Lateral Migration	End Users
		Residential Housing
		Services and Infrastructure

Table 7.2: Source Pathway Receptor Linkages for Controlled Waters Risk Assessment

Source	Pathway	Receptor
Contaminated soils	Leaching Mechanisms	Groundwater stored in the Kempton Park Gravel Formation and Seaford and Newhaven Chalk Formation
	Runoff during construction works	Kennet and Avon Canal
Contaminated groundwater	Vertical migration	Groundwater stored in the Kempton Park Gravel Formation and Seaford and Newhaven Chalk Formation
Contaminated groundwater	Lateral and vertical migration (baseflow)	Kennet and Avon Canal

7.6 Preliminary Risk Assessment

7.6.1 From the information obtained from the desk study jnp group has undertaken a preliminary risk assessment.

Table 7.3: Preliminary Risk Assessment

Issue	Risk		Justification
LAND	LOW		Former land use suggests potential sources of contamination present on site. Potential for direct contact / inhalation of vapours or gases with residential receptors limited by hardstanding across the site.
GROUNDWATER	LOW		The site is located on productive strata (Secondary A and Principal Aquifer). Potential mobilisation of contamination limited by hardstanding across the site.
SURFACE WATER	MEDIUM		The nearest surface watercourse is adjacent to the northern boundary. External works limited but potential for surface water run-off to the Canal during construction.
ECOLOGY	NONE		Based on the assumption that there are no sensitive/ protected species on site (subject to any ecological survey undertaken).

7.6.2 The conceptual model has been refined and the plausible pollutant linkages evaluated against generic criteria in accordance with joint DEFRA / Environment Agency publication 'Model Procedures for the Management of Land Contamination' (Environment Agency. 2004).

8 CONCLUSIONS

8.1 Conclusions

- 8.1.1 The desk study has identified that the geological succession below the site is likely to comprise sand and gravel of the Kempton Park Gravel Formation with the Seaford and Newhaven Chalk Formation encountered beneath.
- 8.1.2 Based on information contained within the desk study, it is the opinion of jnp group that the potential site conditions provide a **LOW** to **MEDIUM** environmental risk.
- 8.1.3 As the proposed scheme is for a change of use, a Phase 2 ground investigation is not required.
- 8.1.4 There is a risk of surface water pollution from site run-off. Measures should be implemented to ensure that this does not occur during construction.

8.2 Recommendations

- 8.2.1 jnp group recommend that the scope of the intrusive works is agreed with the Regulatory Authorities as they may have particular requirements that need to be taken into account.

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Appendix A

Limitations



Introduction

This report is confidential and has been prepared solely for the benefit of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from **jnp group**; a charge may be levied against such approval. **jnp group** accepts no responsibility or liability for the consequences of this document being used for any purpose or project other than for which it was commissioned, and: this document to any third party with whom and agreement has not been executed.

Any comments given within this report are based on the understanding that the proposed works to be undertaken will be as described in the introduction and the information referred to and provided by others and will be assumed to be correct and will not have been checked by **jnp group** and **jnp group** will not accept any liability or responsibility for any inaccuracy in such information.

Any deviation from the recommendations or conclusions contained in this report should be referred to **jnp group** in writing for comment and **jnp group** reserve the right to reconsider their recommendations and conclusions contained within. **jnp group** will not accept any liability or responsibility for any changes or deviations from the recommendations noted in this report without prior consultation and our full approval.

The details contained within this report reflect the site conditions prevailing at the time of investigation. **jnp group** warrants the accuracy of this report up to and including that date. Additional information, improved practice or changes in legislation may necessitate this report having to be reviewed in whole or in part after that date. If necessary, this report should be referred back to **jnp group** for re-assessment and, if necessary, re-appraisal.

This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report. Whilst this report and the opinion made herein are correct to the best of **jnp groups'** belief, **jnp group** cannot guarantee the accuracy or completeness of any information provided by third parties.

The report represents the finding and opinions of experience geotechnical and geo-environmental engineers. **jnp group** does not provide legal advice and the advice of lawyers may also be required.

It should be noted that the following were not included as part of the agreed scope of works with the client: detailed ecological surveys and assessment; groundwater monitoring and sampling; geotechnical requirements etc.

jnp group has provided advice and made recommendations based on the findings of the work undertaken, however this is subject to the approval / acceptance by the relevant Regulatory Authorities.

Objectives

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, **jnp group** reserves the right to review such information and, if warranted, to modify the opinions accordingly. It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Appendix B

Site Location Map



Site Location Plan



john newton & partners
jnp group
Consulting Engineers



Appendix C

Groundsure Report



Address: H M REVENUE & CUSTOMS, SAPPHIRE PLAZA, WATLINGTON STREET, READING, RG1 4TA

Date: 20 Nov 2019

Reference: GS-6474781

Client: JNP Group

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2015

Grid Reference: 472255,173346

Site Size: 0.2520ha

Report Reference: GS-6474781

Client Reference: S10942

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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	0	5	38	87
1.2 Additional Information – Historical Tank Database	0	0	44	85
1.3 Additional Information – Historical Energy Features Database	1	0	38	87
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	24
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	2	3	7	3
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	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	2
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	13
2.1.8 Records of Licensed Discharge Consents	0	0	3	14
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	1
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	1	9
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	2	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	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	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	1	0	2	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	1	0	8	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	2
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	1	1	16
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	3	3
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	1	5
6.6 Source Protection Zones (within 500m of the study site)	1	0	0	1	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)	1	0	0	1	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	Yes	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	2	26	20	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment 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	Medium					
7.4 Flood Defences within 250m of the study site	None 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	0
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	1
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	0	0	0	1	0	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	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Very Low
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	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.

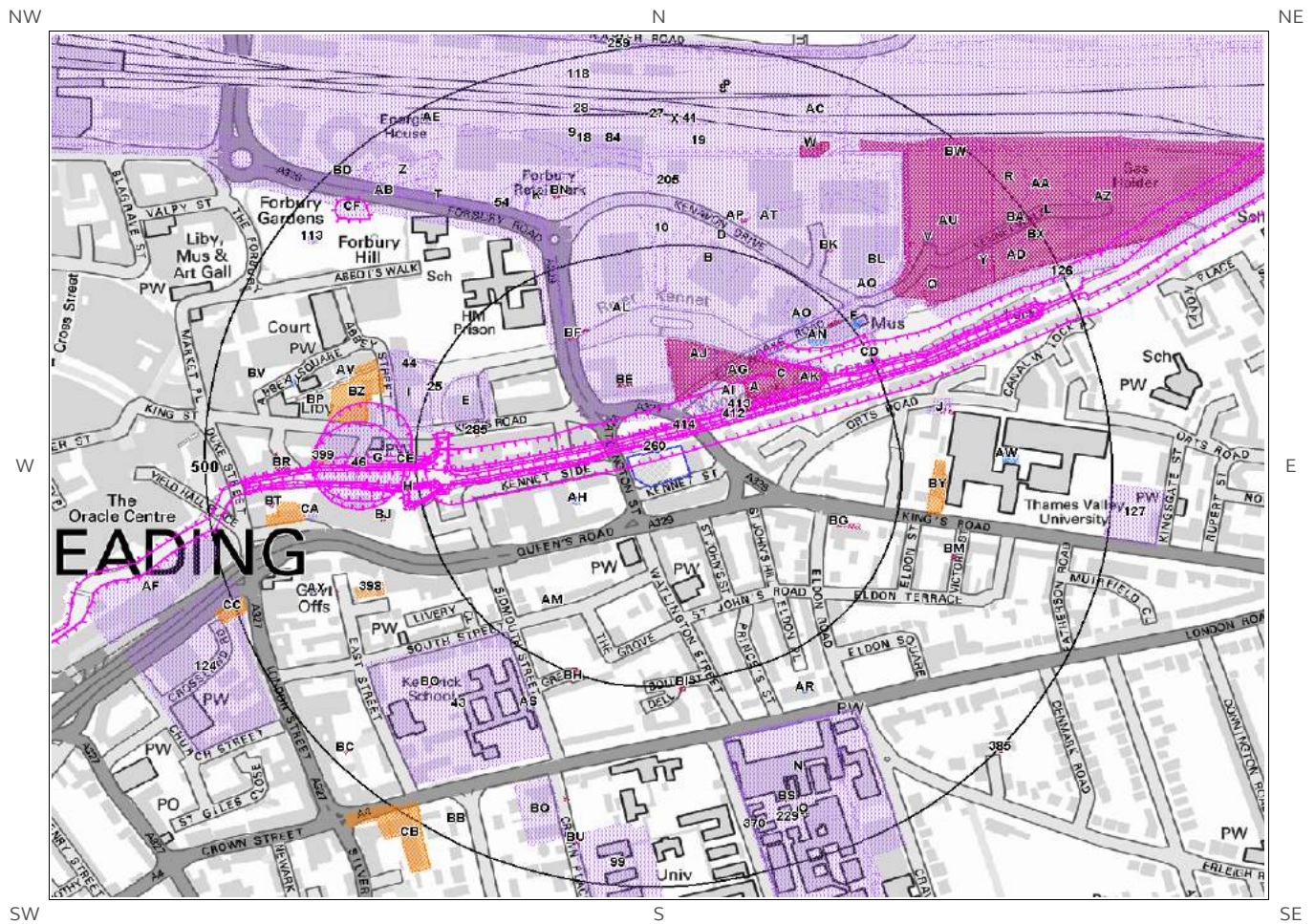
Note: Maps

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).

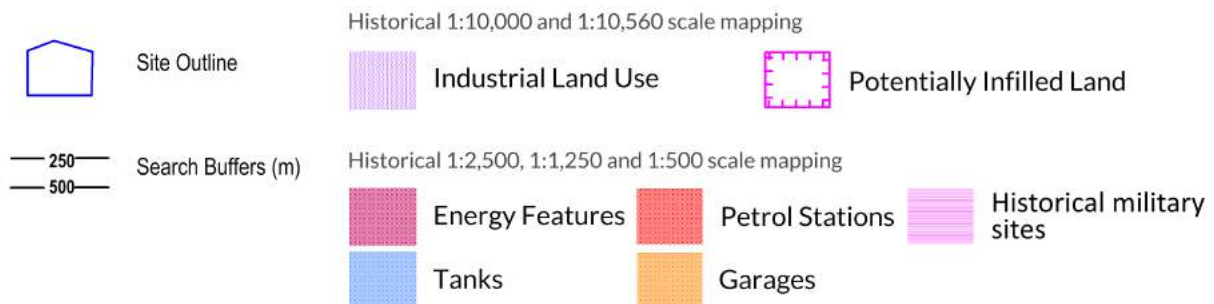
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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



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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: 130

ID	Distance [m]	Direction	Use	Date
1A	35	NE	Gas Works	1898
2AT	37	N	Unspecified Factory	1962
3AI	46	NE	Sawmills	1913
4A	49	NE	Unspecified Commercial/Industrial	1938
5A	49	NE	Unspecified Commercial/Industrial	1933
6B	58	N	Biscuit Factory	1898
7B	63	N	Unspecified Factory	1971
8B	63	N	Unspecified Factory	1977
9	68	N	Railway Sidings	1898
10	72	N	Biscuit Factory	1933
11C	105	NE	Gas Works	1913
12C	105	NE	Gasometer	1898
13A	105	NE	Unspecified Tank	1938
14A	105	NE	Gasometer	1913
15C	112	NE	Unspecified Tank	1938
16C	117	NE	Unspecified Tank	1933
17D	134	N	Biscuit Factory	1938
18	164	NE	Railway Sidings	1913
19	164	NE	Railway Sidings	1938
20D	164	NE	Biscuit Factory	1913
21D	164	NE	Biscuit Factory	1938
22E	167	W	Sawmills	1938
23E	167	W	Sawmills	1898
24E	167	W	Sawmills	1913
25	167	W	Sawmill	1938
26F	181	NE	Corporation Sewage Pumping Station	1933
27	190	N	Railway Sidings	1938
28	194	N	Railway Sidings	1933
29F	219	NE	Sewage Pumping Station	1898
30G	222	W	Unspecified Wharf	1938
31G	222	W	Unspecified Wharf	1938
32H	223	W	Unspecified Disused Wharf	1933

33H	224	W	Unspecified Wharf	1938
34H	224	W	Unspecified Wharf	1938
35F	226	NE	Sewage Pumping Station	1938
36F	226	NE	Sewage Pumping Station	1913
37H	226	W	Unspecified Wharf	1938
38I	231	W	Sawmills	1938
39I	231	W	Sawmills	1913
40I	231	W	Sawmills	1898
41	232	N	Railway Sidings	1962
42CE	234	W	Unspecified Wharf	1989
43	241	SW	Biscuit Factory	1913
44	252	W	Sawmills	1933
45G	255	W	Unspecified Wharf	1994
46	263	W	Unspecified Wharf	1938
47J	291	E	Smithy	1898
48J	300	E	Smithy	1913
49K	315	N	Goods Shed	1913
50K	315	N	Goods Sheds	1938
51L	317	NE	Gas Works	1913
52L	317	NE	Gas Works	1898
53L	320	NE	Unspecified Commercial/Industrial	1933
54	322	NW	Goods Sheds	1938
55O	326	S	Hospital	1994
56L	326	NE	Unspecified Commercial/Industrial	1938
57N	327	S	Hospital	1933
58M	327	S	Hospital	1962
59M	327	S	Hospital	1971
60U	327	N	Goods Sheds	1938
61M	327	S	Hospital	1938
62N	328	S	Hospital	1913
63N	328	S	Hospital	1938
64N	328	S	Hospital	1898
65Q	328	NE	Sewage Pumping Station	1938
66L	328	NE	Unspecified Commercial/Industrial	1938
67O	330	S	Hospital	1977
68O	330	S	Hospital	1989
69L	337	NE	Unspecified Commercial/Industrial	1971
70L	337	NE	Gas Works	1977
71P	340	N	Railway Sidings	1977
72P	340	N	Railway Sidings	1971
73Q	357	NE	Gas Holders	1977
74T	357	NW	Goods Sheds	1913
75R	362	NE	Unspecified Depot	1994

76R	362	NE	Unspecified Depot	1989
77S	362	N	Railway Sidings	1994
78S	362	N	Railway Sidings	1989
79CA	373	W	Smithy	1913
80T	377	NW	Railway Building	1962
81U	378	NW	Goods Sheds	1938
82V	381	NE	Unspecified Tank	1938
83BQ	382	S	Nursery	1898
84	384	N	Railway Building	1913
85V	386	NE	Unspecified Tank	1938
86V	389	NE	Unspecified Tank	1933
87W	397	N	Railway Building	1971
88W	397	N	Railway Building	1977
89W	397	N	Railway Building	1989
90X	400	N	Railway Buildings	1938
91X	401	N	Railway Buildings	1913
92AA	407	NE	Railway Sidings	1898
93U	411	NW	Railway Building	1898
94U	412	NW	Goods Sheds	1913
95Y	412	NE	Gas Holder	1977
96Y	412	NE	Unspecified Tank	1971
97AB	415	NW	Railway Buildings	1898
98Z	417	NW	Goods Sheds	1938
99	419	S	Nursery	1898
100Z	420	NW	Railway Building	1962
101W	421	NE	Railway Building	1898
102Z	424	NW	Goods Sheds	1933
103CF	426	NW	Unspecified Heap	1933
104	426	NE	Railway Sidings	1913
105AA	430	NE	Railway Sidings	1933
106Z	433	NW	Goods Sheds	1913
107AB	436	NW	Goods Sheds	1913
108AC	437	N	Railway Building	1898
109Z	437	NW	Railway Building	1898
110AC	446	N	Railway Building	1913
111AC	446	N	Railway Building	1938
112AD	456	NE	Unspecified Tank	1938
113	457	NW	Unspecified Tank	1971
114AD	458	NE	Unspecified Tanks	1913
115AD	458	NE	Unspecified Tanks	1977
116AD	458	NE	Unspecified Tank	1938
117AD	461	NE	Unspecified Tank	1933
118	471	N	Railway Building	1938
119AE	475	NW	Railway Building	1898
120BA	479	NE	Unspecified Tanks	1913
121AE	480	NW	Railway Building	1913

122AE	480	NW	Railway Building	1938
123BX	484	NE	Unspecified Tanks	1977
124	486	W	Unspecified Factory	1977
125L	494	NE	Unspecified Tanks	1977
126	495	NE	Boat House	1913
127	495	E	Nursery	1898
128AF	497	W	Unspecified Depot	1977
129AF	497	W	Unspecified Depot	1989
130AF	497	W	Unspecified Depot	1994

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:

129

ID	Distance (m)	Direction	Use	Date
131AG	55	N	Gas Works	1879
132AG	55	N	Gas Works	1879
133AG	57	N	Gas Works	1879
134AH	71	W	Unspecified Tank	1991
135AH	72	W	Tanks	1989
136C	90	NE	Gas Works	1900
137C	94	NE	Gas Works	1912
138AG	101	NE	Tank or Trough	1879
139AG	101	NE	Tank or Trough	1879
140A	104	NE	Gasometer	1879
141AI	105	NE	Unspecified Tank	1879
142A	105	NE	Gasometer	1931
143A	105	NE	Gasometer	1912
144A	105	NE	Gasometer	1900
145A	109	NE	Gasometer	1879
146A	109	NE	Gasometer	1879
147AJ	110	N	Unspecified Tank	1879
148AG	112	N	Unspecified Tank	1879
149AJ	113	N	Tanks	1879
150AG	114	N	Unspecified Tank	1879
151AG	114	N	Unspecified Tank	1879
152A	114	NE	Unspecified Tank	1879
153AJ	119	N	Unspecified Tank	1879
154AJ	121	N	Unspecified Tank	1879
155AJ	121	N	Unspecified Tank	1879
156AG	122	NE	Gasometer	1879

157AG	125	NE	Gasometer	1879
158AG	125	NE	Gasometer	1879
159AK	167	NE	Gasometer	1879
160AK	170	NE	Tar Tank	1879
161AK	170	NE	Tar Tank	1879
162AL	177	N	Unspecified Tank	1956
163AL	177	N	Unspecified Tank	1956
164AM	183	SW	Unspecified Tank	1879
165AM	183	SW	Unspecified Tank	1879
166AN	198	NE	Unspecified Tank	1956
167AN	198	NE	Unspecified Tank	1956
168AN	205	NE	Unspecified Tank	1989
169AN	205	NE	Unspecified Tank	1991
170AN	205	NE	Unspecified Tank	1971
171AO	210	NE	Tanks	1988
172AO	210	NE	Tanks	1990
173AO	210	NE	Tanks	1997
174AO	210	NE	Tanks	1997
175F	253	NE	Unspecified Tank	1988
176F	253	NE	Unspecified Tank	1973
177F	253	NE	Unspecified Tank	1956
178F	253	NE	Unspecified Tank	1997
179F	253	NE	Unspecified Tank	1997
180F	253	NE	Unspecified Tank	1956
181F	254	NE	Tanks	1912
182F	254	NE	Unspecified Tank	1931
183F	255	NE	Unspecified Tank	1931
184BH	256	S	Unspecified Tank	1991
185F	260	NE	Unspecified Tank	1879
186F	260	NE	Unspecified Tank	1879
187AP	286	N	Unspecified Tank	1956
188AP	293	N	Unspecified Tank	1956
189AP	293	N	Unspecified Tank	1956
190AQ	294	NE	Unspecified Tank	1989
191AQ	294	NE	Unspecified Tank	1983
192AQ	294	NE	Unspecified Tank	1983
193AQ	294	NE	Unspecified Tank	1989
194AQ	294	NE	Unspecified Tank	1989
195AQ	294	NE	Unspecified Tank	1992
196AQ	294	NE	Unspecified Tank	1992
197AR	299	SE	Unspecified Tank	1931
198AR	300	SE	Unspecified Tank	1912
199AS	307	SW	Unspecified Tank	1991
200AS	307	SW	Unspecified Tank	1989
201AT	310	N	Unspecified Tank	1956
202AT	310	N	Unspecified Tank	1956

203AU	315	NE	Gas Works	1912
204AU	315	NE	Gas Works	1900
205	324	N	Tanks	1973
206L	339	NE	Gas Works	1972
207AV	349	W	Unspecified Tank	1979
208AV	349	W	Unspecified Tank	1988
209AV	349	W	Unspecified Tank	1968
210AV	349	W	Unspecified Tank	1988
211AV	349	W	Unspecified Tank	1997
212AW	369	E	Tanks	1986
213AW	369	E	Tanks	1986
214AW	369	E	Tanks	1980
215AW	369	E	Tanks	1983
216AW	370	E	Tanks	1996
217AW	370	E	Tanks	1993
218V	384	NE	Unspecified Tank	1931
219AW	384	E	Tanks	1996
220AW	384	E	Tanks	1993
221AX	399	W	Unspecified Tank	1957
222AX	399	W	Unspecified Tank	1958
223AX	399	W	Unspecified Tank	1956
224AY	402	W	Unspecified Tank	1988
225AY	402	W	Unspecified Tank	1997
226Y	415	NE	Gasholder	1972
227AZ	423	NE	Gas Works	1899
228AZ	423	NE	Gas Works	1912
229	443	S	Tanks	1968
230AD	453	NE	Unspecified Tank	1932
231AD	453	NE	Unspecified Tank	1899
232AD	453	NE	Unspecified Tank	1912
233BA	460	NE	Unspecified Tank	1983
234BB	476	SW	Unspecified Tank	1879
235BB	476	SW	Unspecified Tank	1879
236BA	476	NE	Tanks	1912
237BA	476	NE	Tanks	1932
238AE	477	NW	Unspecified Tank	1879
239AE	477	NW	Unspecified Tank	1879
240BA	479	NE	Tanks	1899
241AE	479	NW	Unspecified Tank	1931
242AE	479	NW	Unspecified Tank	1912
243AE	479	NW	Unspecified Tank	1900
244AE	480	NW	Unspecified Tank	1879
245BC	481	SW	Unspecified Tank	1968
246BC	482	SW	Unspecified Tank	1969
247BC	482	SW	Unspecified Tank	1982
248BA	482	NE	Unspecified Tank	1983

249AE	482	NW	Unspecified Tank	1956
250AE	482	NW	Unspecified Tank	1962
251AE	482	NW	Unspecified Tank	1958
252AE	482	NW	Unspecified Tank	1957
253BD	487	NW	Tank or Trough	1879
254BA	488	NE	Tanks	1983
255BA	488	NE	Tanks	1983
256BA	488	NE	Tanks	1972
257BD	493	NW	Tank or Trough	1879
258BD	493	NW	Tank or Trough	1879
259	497	N	Tanks	1912

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:

126

ID	Distance (m)	Direction	Use	Date
260	0	On Site	Electricity Substation	1971
261AG	55	N	Gas Works	1879
262AG	55	N	Gas Works	1879
263AG	57	N	Gas Works	1879
264BE	86	N	Electricity Substations	1991
265BE	86	N	Electricity Substation	1956
266BE	87	N	Electricity Substation	1971
267BE	87	N	Electricity Substation	1989
268BE	89	N	Electricity Substation	1956
269C	90	NE	Gas Works	1900
270C	94	NE	Gas Works	1912
271C	104	NE	Gasometer	1879
272C	105	NE	Gasometer	1931
273C	105	NE	Gasometer	1912
274C	105	NE	Gasometer	1900
275C	109	NE	Gasometer	1879
276C	109	NE	Gasometer	1879
277AG	122	NE	Gasometer	1879
278AG	125	NE	Gasometer	1879
279AG	125	NE	Gasometer	1879
280BF	161	NW	Electricity Substation	1956
281BF	162	NW	Electricity Substation	1971
282BF	162	NW	Electricity Substation	1956
283BF	162	NW	Electricity Substation	1989

284AK	167	NE	Gasometer	1879
285	177	W	Electricity Substation	1971
286BG	183	E	Electricity Substation	1991
287BG	183	E	Electricity Substation	1971
288BG	188	E	Electricity Substation	1989
289AN	229	NE	Electricity Substation	1973
290AN	229	NE	Electricity Substation	1990
291AN	229	NE	Electricity Substation	1988
292AN	230	NE	Electricity Substation	1956
293AN	231	NE	Electricity Substation	1956
294F	233	NE	Electricity Substation	1997
295F	233	NE	Electricity Substation	1997
296BH	242	S	Electricity Substation	1991
297BH	242	S	Electricity Substation	1989
298BI	248	S	Electricity Substation	1991
299BI	252	S	Electricity Substation	1971
300AP	287	N	Electricity Substation	1997
301AP	288	N	Electricity Substation	1990
302AP	288	N	Electricity Substation	1988
303BJ	295	W	Electricity Substation	1988
304BJ	295	W	Electricity Substation	1968
305BJ	296	W	Electricity Substation	1979
306BK	296	NE	Electricity Substation	1956
307BK	296	NE	Electricity Substation	1973
308BK	299	NE	Electricity Substation	1956
309J	307	E	Electricity Substation	1986
310J	307	E	Electricity Substation	1980
311J	307	E	Electricity Substation	1983
312J	307	E	Electricity Substation	1986
313AU	315	NE	Gas Works	1900
314AU	315	NE	Gas Works	1912
315J	317	E	Electricity Substation	1996
316J	317	E	Electricity Substation	1993
317BL	321	NE	Electricity Substation	1989
318BL	321	NE	Electricity Substation	1989
319BL	321	NE	Electricity Substation	1992
320BL	321	NE	Electricity Substation	1992
321BL	321	NE	Electricity Substation	1989
322BL	321	NE	Electricity Substation	1983
323BL	321	NE	Electricity Substation	1983
324BM	324	E	Electricity Substation	1986
325BM	325	E	Electricity Substation	1993
326BM	325	E	Electricity Substation	1986
327BM	325	E	Electricity Substation	1956
328BM	325	E	Electricity Substation	1996
329BM	325	E	Electricity Substation	1956

330BN	335	N	Electricity Substation	1956
331BN	335	N	Electricity Substation	1973
332BN	335	N	Electricity Substation	1956
333AA	339	NE	Gas Works	1972
334BN	343	N	Electricity Substation	1990
335BN	343	N	Electricity Substation	1988
336BO	351	SW	Electricity Substation	1997
337BO	352	SW	Electricity Substation	1988
338V	368	NE	Electricity Substation	1992
339V	368	NE	Electricity Substation	1989
340V	368	NE	Electricity Substation	1989
341V	368	NE	Electricity Substation	1992
342V	368	NE	Electricity Substation	1989
343V	368	NE	Electricity Substation	1983
344V	368	NE	Electricity Substation	1983
345V	368	NE	Electricity Substation	1972
346BP	374	W	Electricity Substation	1979
347BP	375	W	Electricity Substation	1968
348AX	379	W	Electricity Substation	1997
349AY	380	W	Electricity Substation	1997
350BP	381	W	Electricity Substation	1988
351BP	382	W	Electricity Substation	1988
352W	388	N	Electricity Substation	1990
353W	388	N	Electricity Substation	1988
354W	389	N	Electricity Substation	1956
355W	389	N	Electricity Substation	1973
356W	389	N	Electricity Substation	1997
357W	389	N	Electricity Substation	1997
358BQ	398	S	Electricity Substation	1993
359BR	399	W	Electricity Substation	1997
360BR	401	W	Electricity Substation	1988
361W	403	N	Electricity Substation	1956
362BR	407	W	Electricity Substation	1988
363Y	415	NE	Gas holder	1972
364BS	419	S	Electricity Substation	1993
365BS	419	S	Electricity Substation	1968
366BT	422	W	Electricity Substation	1997
367BT	423	W	Electricity Substation	1988
368AZ	423	NE	Gas Works	1912
369AZ	423	NE	Gas Works	1899
370	442	S	Electricity Substation	1968
371BU	447	S	Electricity Substation	1993
372BU	448	S	Electricity Substation	1968
373BV	448	W	Electricity Substation	1988
374BV	449	W	Electricity Substation	1997
375BV	450	W	Electricity Substation	1988

376BC	481	SW	Electricity Substation	1979
377BW	482	NE	Electricity Substation	1992
378BW	482	NE	Electricity Substation	1989
379BW	482	NE	Electricity Substation	1989
380BW	482	NE	Electricity Substation	1989
381BW	482	NE	Electricity Substation	1992
382BX	484	NE	Electricity Substation	1983
383BX	484	NE	Electricity Substation	1983
384BX	484	NE	Electricity Substation	1972
385	499	SE	Electricity Substation	1993

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: 24

ID	Distance (m)	Direction	Use	Date
386BY	283	E	Garage	1966
387BY	283	E	Garage	1993
388BY	283	E	Garage	1996
389BY	283	E	Garage	1986
390BY	284	E	Garage	1986
391BY	284	E	Garage	1983
392BY	284	E	Garage	1980
393BZ	299	W	Garage	1968
394BZ	299	W	Garage	1956
395BZ	299	W	Garage	1957
396BZ	299	W	Garage	1958
397BZ	299	W	Garage	1962
398	325	SW	Garage	1988
399	354	W	Garage	1968
400CA	387	W	Garage	1957
401CA	387	W	Garage	1958

402CA	388	W	Garage	1956
403CA	388	W	Garage	1962
404CA	393	W	Garage	1968
405CB	479	SW	Garage	1959
406CB	480	SW	Garage	1957
407CB	481	SW	Garage	1957
408CC	485	W	Police Garage	1979
409CC	487	W	Police Garage	1968

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.

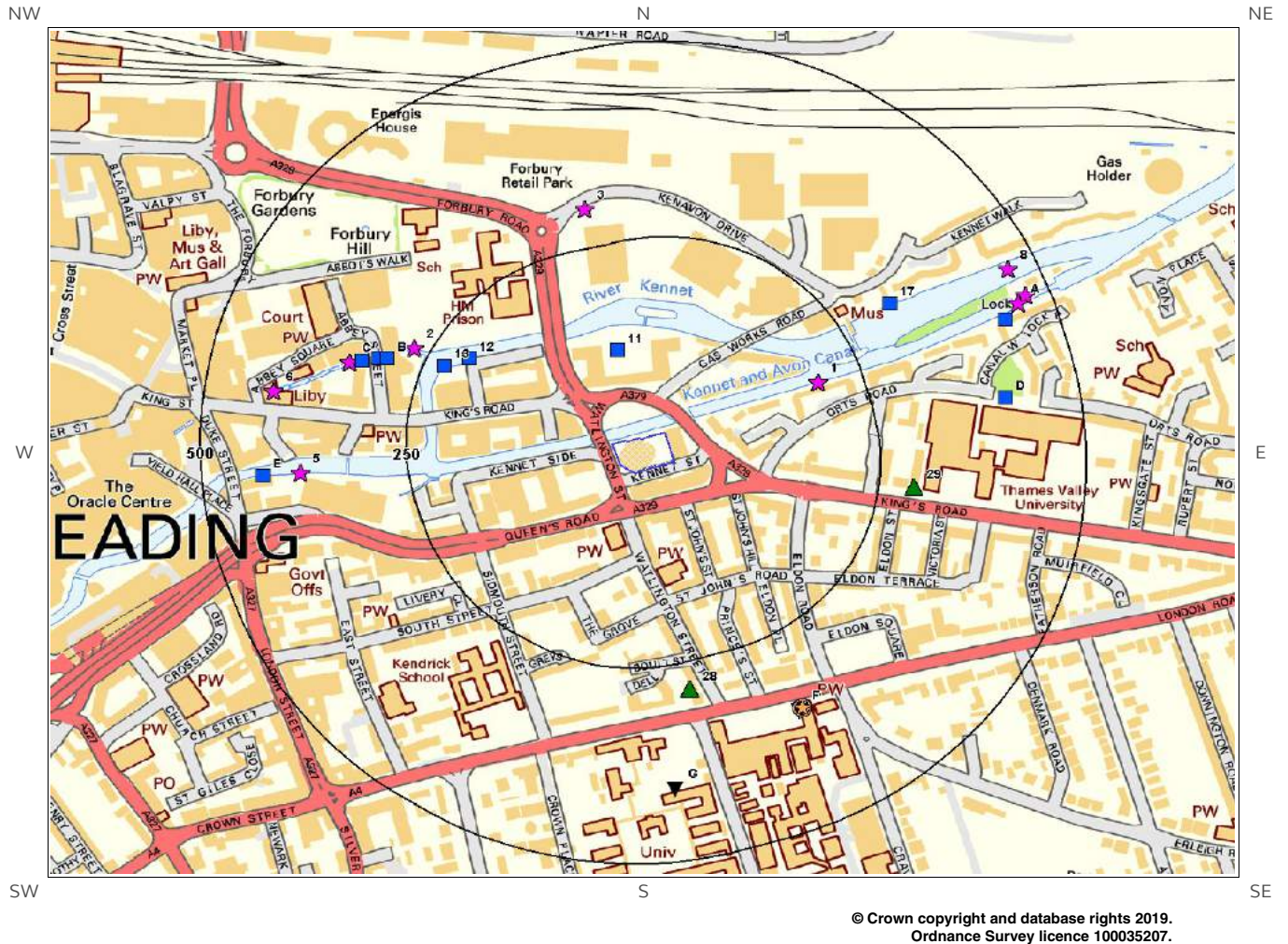
1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 15

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

ID	Distance(m)	Direction	Use	Date
410CD	0	On Site	Canal	1994
411CD	0	On Site	Canal	1989
412	9	N	Canal	1938
413	11	N	Canal	1938
414	15	N	Canal	1933
415G	222	W	Unspecified Wharf	1938
416G	222	W	Unspecified Wharf	1938
417H	223	W	Unspecified Disused Wharf	1933
418H	224	W	Unspecified Wharf	1938
419H	224	W	Unspecified Wharf	1938
420H	226	W	Unspecified Wharf	1938
421CE	234	W	Unspecified Wharf	1989
422G	255	W	Unspecified Wharf	1994
423G	263	W	Unspecified Wharf	1938
424CF	426	NW	Unspecified Heap	1933

2. Environmental Permits, Incidents and Registers Map



- | | | |
|-------------------------------|---|--|
| Site Outline | Recorded Pollution Incident | RAS 3 & 4 Authorisations |
| Dangerous Substances (List 1) | Dangerous Substances (List 2) | Part A(1) Authorised Processes and Historic IPC Authorisations |
| Water Industry Referrals | Licenced Discharge Consents | Part A(2) and Part B Authorised Processes |
| Red List Discharge Consents | 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:

0

Database searched and no data found.

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:

2

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
28	286	S	472318 173025	Address: St Albans Operating Company Limited, formerly Murco Petroleum Limited, Reading Service Station, 69 London Road, Reading, RG1 5BW Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
29	292	E	472589 173283	Address: Kings Road Garage, Kings Road, RG1 4EX Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

13

The following RAS Licence (3 or 4) records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
44F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept, royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	BY1654	Date of Approval: 12/10/2004 Effective from: 12/10/2004 Last date of update: 2015-01-01	Superseded By Variation
45F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept, Royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BY1638	Date of Approval: 12/10/2004 Effective from: 9/11/2004 Last date of update: 2015-01-01	Superseded By Variation
46F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept, Royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BM7898	Date of Approval: 16/5/2002 Effective from: 11/6/2002 Last date of update: 2015-01-01	Superseded By Variation

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
47F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept, Royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AN2528	Date of Approval:17/8 /1994 Effective from:14/9/1994 Last date of update:2015-01-01	Superseded By Variation
48F	351	SE	472450 173000	Royal Berkshire Hospital, London Road, Reading, RG1 5AN	Royal Berkshire NHS Foundation Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BZ9669	Date of Approval:6/9/2006 Effective from:- Last date of update:2018-11-01	Replaced
49F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept, Royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BW3605	Date of Approval:1/12 /2003 Effective from:1/1/2004 Last date of update:2015-01-01	Superseded By Variation
50F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept, Royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AB4362	Date of Approval:1/7/1992 Effective from:31/7/1992 Last date of update:2015-01-01	Superseded By Variation
51F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept, Royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AS4885	Date of Approval:24/8 /1995 Effective from:21/9/1995 Last date of update:2015-01-01	Superseded By Variation
52F	351	SE	472450 173000	Royal Berkshire Nhs Foundation Trust, Medical Physics Dept,royal Berkshire Hospital,london Road, Reading, Berkshire, RG1 5AN	Royal Berkshire Nhs Foundation Trust	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	BL5687	Date of Approval:24/10/2001 Effective from:25/10/2001 Last date of update:2015-01-01	Superseded By Variation
53F	351	SE	472450 173000	Royal Berkshire Hospital, London Road, Reading, RG1 5AN	Royal Berkshire NHS Foundation Trust	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	BZ9642	Date of Approval:6/9/2006 Effective from:- Last date of update:2018-11-01	Replaced

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
54F	351	SE	472450 173000	Royal Berkshire Hospital, London Road, Reading, RG1 5AN	Royal Berkshire NHS Foundation Trust	-	TB3030DS	Date of Approval:- Effective from:11-08-2014 Last date of update:2018-11-01	Issued
55G	406	S	472300 172900	Wyeth Research (uk) Ltd, The University Of Reading, London Road, Reading, Berkshire, RG1 5AQ	Wyeth Research (uk) Ltd	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AK1304	Date of Approval:1/12/1993 Effective from:29/12/1993 Last date of update:2015-01-01	Revoked/cancelled
56G	406	S	472300 172900	University Of Reading, London Road, Reading, Berkshire, RG6 2AF	University Of Reading	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AD6897	Date of Approval:31/3/1991 Effective from:31/3/1991 Last date of update:2015-01-01	Revoked/cancelled

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

17

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

ID	Distance (m)	Direction	NGR	Details
11	115	N	472230 173460	Address: NABISCO BRANDS LTD. KINGS ROAD READ, NABISCO BRANDS LTD. KINGS ROAD R, EADING Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0435 Permit Version: 1 Receiving Water: RIVER KENNET Status: REVOKED - UNSPECIFIED Issue date: 18/10/1985 Effective Date: 18-Oct-1985 Revocation Date: 08/05/1991
12	206	NW	472050 173450	Address: BLAKES COTTAGES, READING Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0514 Permit Version: 1 Receiving Water: RIVER KENNET Status: REVOKED - UNSPECIFIED Issue date: 19/11/1985 Effective Date: 19-Nov-1985 Revocation Date: 25/04/1991
13	227	NW	472020 173440	Address: ABBEY GARDEN DEVELOPMENT, PHASE III, ABBEY GARDEN DEVELOPMENT, PHASE, III, READING, BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.2738 Permit Version: 1 Receiving Water: RIVER KENNET Status: REVOKED - UNSPECIFIED Issue date: 15/08/1988 Effective Date: 15-Aug-1988 Revocation Date: 25/02/1991
14B	295	W	471950 173450	Address: THE ABBEY GARDENS DEVELOPMENT, PHAS, THE ABBEY GARDENS DEVELOPMENT, P, HASE II, READING BERKS Effluent Type: MISCELLANEOUS Receiving Water: HOLY BROOK Status: REVOKED - UNSPECIFIED Issue date: 20/01/1986 Effective Date: 20-Jan-1986 Revocation Date: 11/07/1997

ID	Distance (m)	Direction	NGR	Details
DISCHARGES - SURFACE WATER Permit Number: CTWC.0564 Permit Version: 1				
15B	295	W	471950 173450	Address: THE ABBEY GARDENS DEVELOPMENT, PHAS, THE ABBEY GARDENS DEVELOPMENT, P, HASE II, READING BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0563 Permit Version: 1 Receiving Water: HOLY BROOK Status: REVOKED - UNSPECIFIED Issue date: 20/01/1986 Effective Date: 20-Jan-1986 Revocation Date: 05/09/1997
16B	305	W	471940 173450	Address: ABBEY GARDENS, PHASE 1, READING, BE, ABBEY GARDENS, PHASE 1, READING, BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.0662 Permit Version: 1 Receiving Water: THE HOLY BROOK Status: REVOKED - UNSPECIFIED Issue date: 11/02/1986 Effective Date: 11-Feb-1986 Revocation Date: 19/03/1991
17	318	NE	472560 173520	Address: READING GASWORKS SITE, OFF KENAVON, READING GASWORKS SITE, OFF KENAV, ON DRIVE, READING, BERKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.1649 Permit Version: 1 Receiving Water: RIVER KENNET Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 09/06/1987 Effective Date: 09-Jun-1987 Revocation Date: 01/10/1996
18C	322	W	471920 173447	Address: DEWATERING WORKS SERV KINGS HOUSE, KINGS HOUSE, 33 KINGS ROAD, READING, BERKSHIRE, RG1 3BU Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRDB3097AL Permit Version: 1 Receiving Water: HOLY BROOK Status: SURRENDERED UNDER EPR 2010 Issue date: 07/10/2015 Effective Date: 07-Oct-2015 Revocation Date: 21/02/2017
19D	409	E	472700 173400	Address: Reading, Blakes Lock, Reading, Blakes Lock Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.1768 Permit Version: 1 Receiving Water: HOLLY BROOK Status: TEMPORARY CONSENTS (WATER ACT 1989, SECTION 113) Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 02/09/2010
20D	409	E	472700 173400	Address: Reading, Blakes Lock, Reading, Blakes Lock Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.1768 Permit Version: 2 Receiving Water: Holly Brook Status: TEMPORARY CONSENTS (WATER ACT 1989, SECTION 113) Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date:
21E	426	W	471800 173300	Address: FACTORY AT READING, BERKS Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTRC.0508 Permit Version: 1 Receiving Water: KENNET Status: REVOKED - UNSPECIFIED Issue date: 22/03/1962 Effective Date: 22-Mar-1962 Revocation Date: 03/04/1987
22E	426	W	471800 173300	Address: PREMISES, KINGS RD, READING, BERKS, PREMISES, KINGS RD, READING, BER, KS Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTCP.0299 Permit Version: 1 Receiving Water: R KENNET Status: REVOKED - UNSPECIFIED Issue date: 12/02/1964 Effective Date: 12-Feb-1964 Revocation Date: 04/02/1986
23E	426	W	471800 173300	Address: PREMISES, KINGS RD, READING, BERKS, PREMISES, KINGS RD, READING, BER, KS Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTCP.0298 Permit Version: 1 Receiving Water: R KENNET Status: REVOKED - UNSPECIFIED Issue date: 12/02/1964 Effective Date: 12-Feb-1964 Revocation Date: 04/02/1986

ID	Distance (m)	Direction	NGR	Details	
24E	426	W	471800 173300	Address: PREMISES, KINGS RD, READING, BERKS, PREMISES, KINGS RD, READING, BER, KS Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTCP.0297 Permit Version: 1	Receiving Water: R KENNET Status: REVOKED - UNSPECIFIED Issue date: 12/02/1964 Effective Date: 12-Feb-1964 Revocation Date: 04/02/1986
25E	426	W	471800 173300	Address: PREMISES, KINGS RD, READING, BERKS, PREMISES, KINGS RD, READING, BER, KS Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTCP.0296 Permit Version: 1	Receiving Water: R KENNET Status: REVOKED - UNSPECIFIED Issue date: 12/02/1964 Effective Date: 12-Feb-1964 Revocation Date: 04/02/1986
26E	426	W	471800 173300	Address: PREMISES, KINGS RD, READING, BERKS, PREMISES, KINGS RD, READING, BER, KS Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: CTCP.0295 Permit Version: 1	Receiving Water: R KENNET Status: REVOKED - UNSPECIFIED Issue date: 12/02/1964 Effective Date: 12-Feb-1964 Revocation Date: 04/02/1986
27A	437	E	472700 173500	Address: BLAKES LOCK HOUSE, BLAKES LOCK, NEA, BLAKES LOCK HOUSE, BLAKES LOCK, NEAR READING, BERKSHIRE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CSSM.0035 Permit Version: 1	Receiving Water: RIVER KENNET Status: NEW CONSENT, BY APPLICATION (WRA 91, SECTION 88) Issue date: 26/08/1997 Effective Date: 26-Aug-1997 Revocation Date: 25/05/2006

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:

1

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

ID	Distance (m)	Direction	Application Reference Number	NGR	Application Status	Application Date	Address	Details	Details of Enforcement Action
57F	350	SE	11/01974/H AZARD	472453 173003	Withdrawn	21/12/2011	Royal Berkshire Hospital, London Road, Reading, Berkshire, RG1 5AN	Storage of liquid oxygen and bottled gas.	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

2.2 Dangerous or Hazardous Sites

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

0

Database searched and no data found.

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:

10

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	195	E	472472.0 173419.0	Incident Date: 27-Jun-2003 Incident Identification: 169420.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
2	271	NW	471983.0 173463.0	Incident Date: 21-May-2003 Incident Identification: 159849.0 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	299	N	472190.0 173640.0	Incident Date: 01-Nov-2002 Incident Identification: 118072.0 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4C	336	W	471905.0 173445.0	Incident Date: 15-Jul-2002 Incident Identification: 91618.0 Pollutant: Specific Waste Materials Pollutant Description: Other Specific Waste Material Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5	381	W	471845.0 173303.0	Incident Date: 18-Jun-2003 Incident Identification: 166999.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
6	418	W	471812.0 173408.0	Incident Date: 28-Jun-2005 Incident Identification: 324802.0 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7A	458	E	472715.0 173520.0	Incident Date: 19-Mar-2002 Incident Identification: 65030.0 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
8	464	NE	472703.0 173564.0	Incident Date: 16-Mar-2002 Incident Identification: 64464.0 Pollutant: Oils and Fuel Pollutant Description: Mixed/Waste Oils Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
9A	470	E	472724.0 173530.0	Incident Date: 04-Oct-2001 Incident Identification: 34552.0 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
10A	470	E	472724.0	Incident Date: 04-Oct-2001 Water Impact: Category 3 (Minor)

ID	Distance (m)	Direction	NGR	Details
			173530.0	Incident Identification: 34552.0 Pollutant: Oils and Fuel Pollutant Description: Diesel Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

0

Database searched and no data found.

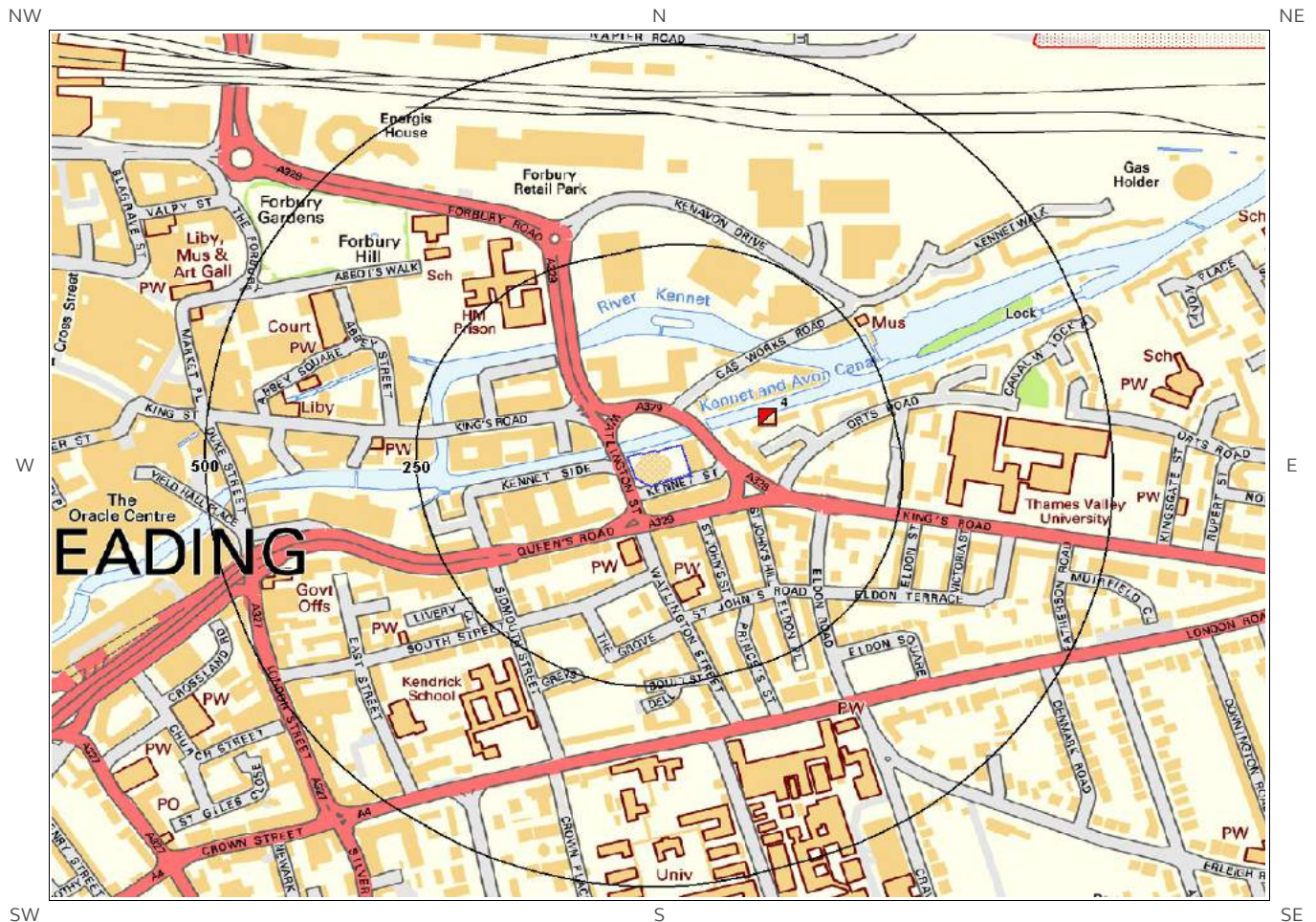
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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

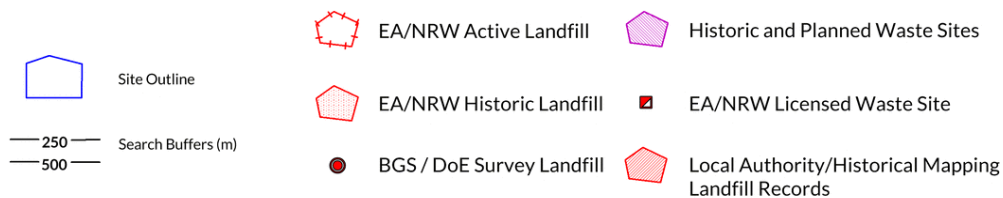
0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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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:

0

Database searched and no data found.

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

3

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
1	651	NE		Site Address: Napier Road, Reading, Berkshire Waste Licence: - Site Reference: TP0266, RDG3 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	990	NE		Site Address: Deans Farm, Redlands Pit, Reading, Caversham, Berkshire Waste Licence: Yes Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 01-Jun-1992 Licence Surrendered: 13-Apr-2010 Licence Holder Address: Howbery Park, Wallingford, Oxfordshire Operator: Deans Farm Licence Holder: Deans Farm First Recorded: - Last Recorded: -
Not shown	1433	SW		Site Address: Waterloo Meadows, Reading, Berkshire Waste Licence: - Site Reference: TP0154, RDG8 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -

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

0

Database searched and no data found.

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:

0

Database searched and no data found.

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

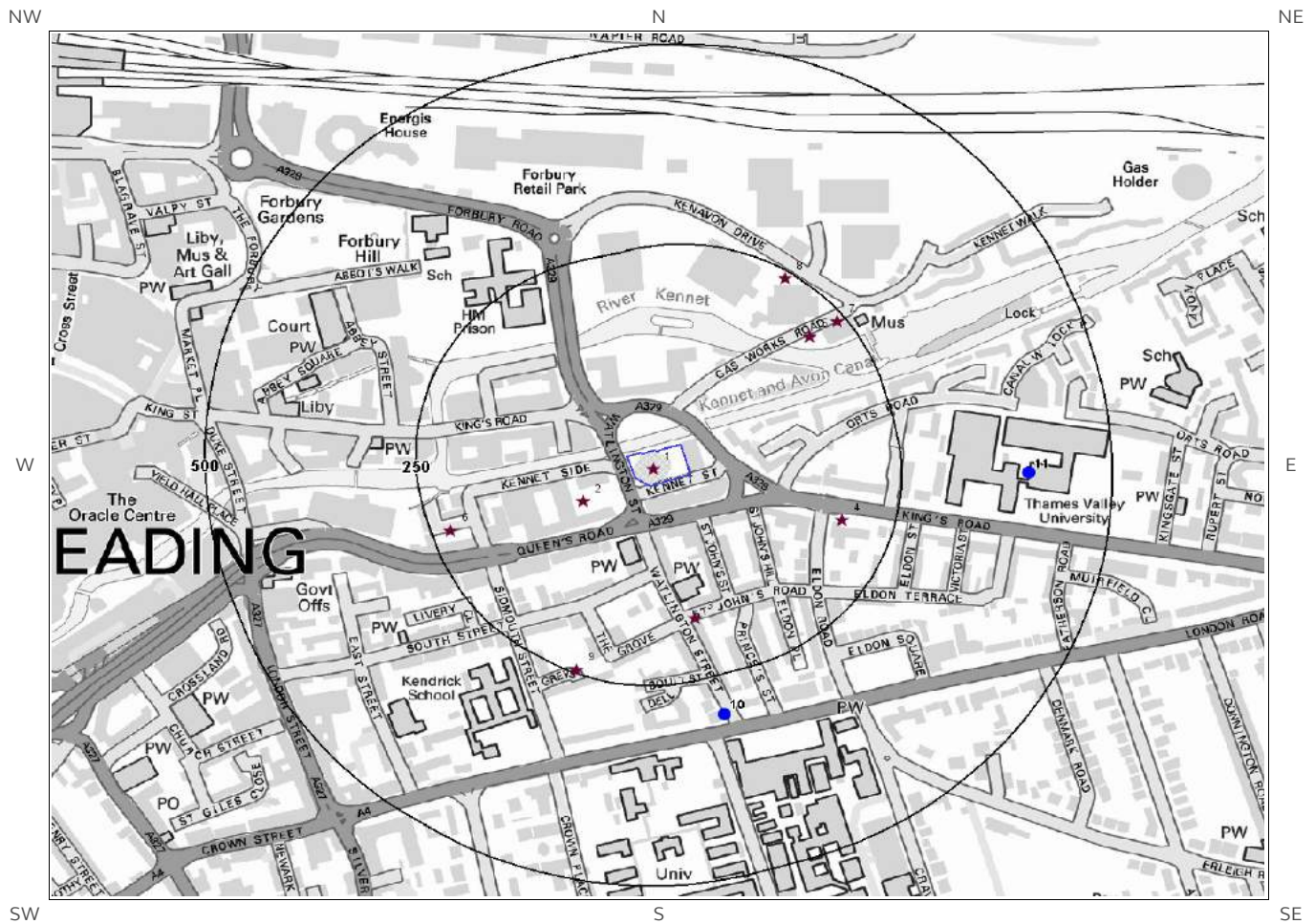
3

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
4	108	E	472390 173390	Site Address: Omega Park, Alton, Hampshire, GU34 2QE Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HOP003 EPR reference: - Operator: Hopkins Recycling Ltd Waste Management licence No: 83406 Annual Tonnage: 4910.0 Issue Date: 15/10/2002 Effective Date: - Modified: 17/12/2004 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Alton House Waste Recycling Centre Correspondence Address: Hopkins Recycling Limited, Unit 10, Bridge Farm, Curbridge, Botley, Southampton, Hampshire, SO30 2HB
Not shown	923	NE	472833 174100	Site Address: Environment Agency West Area _____, Deans Farm, Redlands Pit, Caversham, Reading, Berks, RG4 5JZ Type: Landfill taking other wastes Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EAW001 EPR reference: - Operator: Environment Agency Waste Management licence No: 86148 Annual Tonnage: 400.0 Issue Date: 01/06/1992 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: Deans Farm Correspondence Address: Environment Agency, Isis House, Howbery Park, Wallingford, Oxon, OX10 8BD

ID	Distance (m)	Direction	NGR	Details
Not shown	923	NE	472833 174100	Site Address: Environment Agency West Area_____, Deans Farm, Redlands Pit, Caversham, Reading, Berkshire, RG4 5JZ Type: Landfill taking other wastes Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: EAW001 EPR reference: EA/EPR/CP3494LR/S001 Operator: Environment Agency Waste Management licence No: 86148 Annual Tonnage: 0.0 Issue Date: 01/06/1992 Effective Date: - Modified: - Surrendered Date: Apr 13 2010 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Deans Farm Correspondence Address: -

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

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

9

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Universal Transaction Processing Ltd	472254 173325	Sapphire Plaza, Watlington Street, Reading, Berkshire, RG1 4RE	Office and Shop Equipment	Industrial Products
2	68	SW	Tank	472172 173285	Berkshire, RG1	Tanks (Generic)	Industrial Features
3	173	S	Swift Upholstery	472304 173138	63, Watlington Street, Reading, Berkshire, RG1 4RQ	Carpets, Flooring, Rugs and Soft Furnishings	Consumer Products
4	188	E	Electricity Sub Station	472478 173261	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
5	204	NE	Tank	472440 173491	Berkshire, RG1	Tanks (Generic)	Industrial Features
6	228	W	Electricity Sub Station	472015 173248	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
7	240	NE	Electricity Sub Station	472472 173509	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
8	241	NE	Electricity Sub Station	472411 173563	Berkshire, RG1	Electrical Features	Infrastructure and Facilities
9	245	S	Electricity Sub Station	472164 173074	Berkshire, RG1	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

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

2

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
10	298	S	472339 173018	BP	69, London Road, Watlington Street, Reading, Reading, RG1 5BW	No	Open
11	400	E	472699 173320	OBSOLETE	191, Kings Road, Reading, Reading, RG1 4JL	Not Applicable	Obsolete

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
KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

5.3 Bedrock and Solid Geology

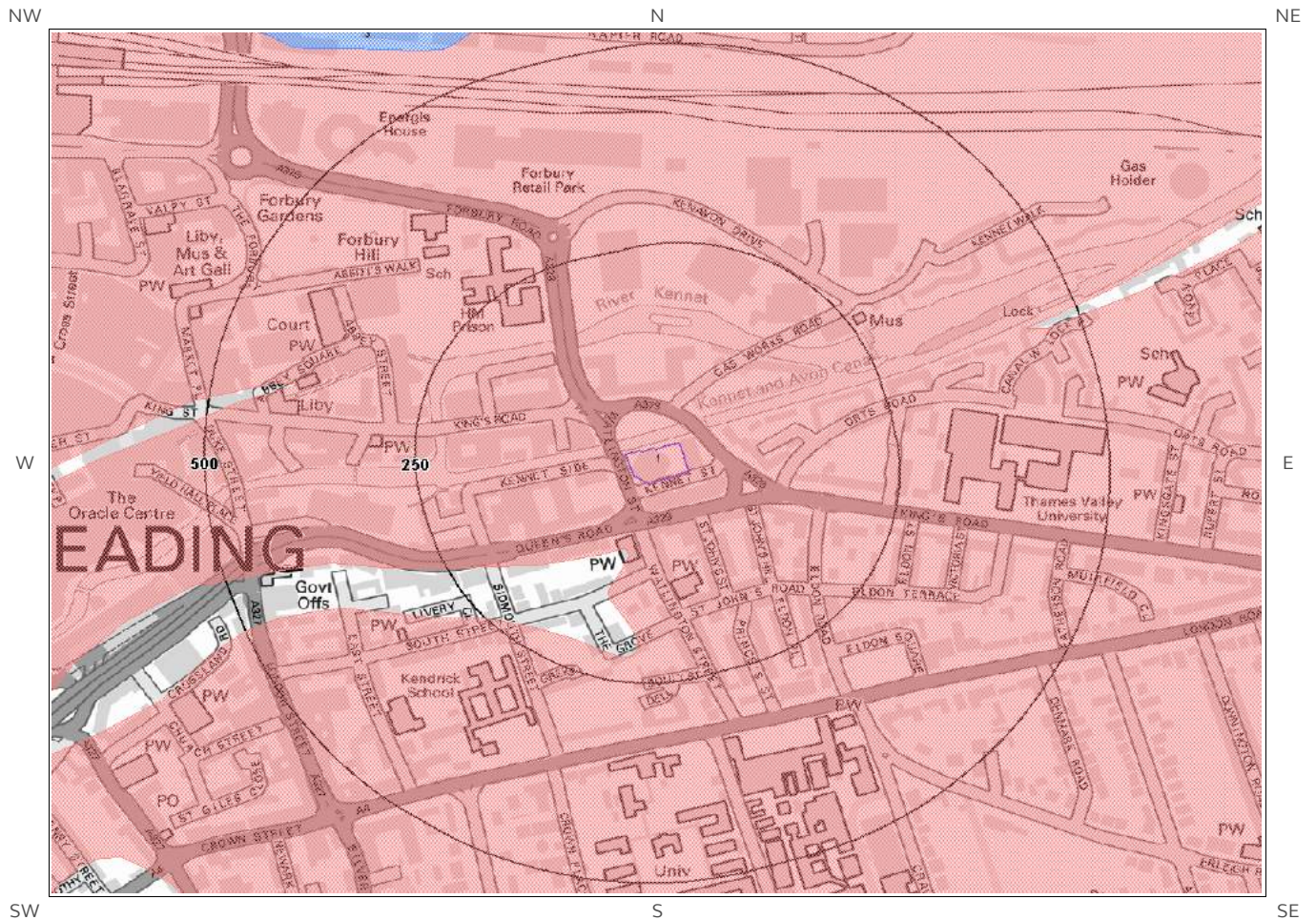
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
SNCK-CHLK	SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED)	CHALK

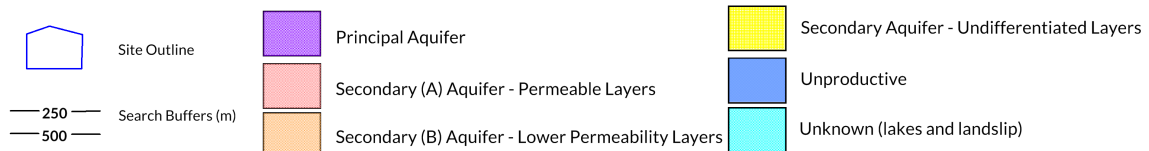
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

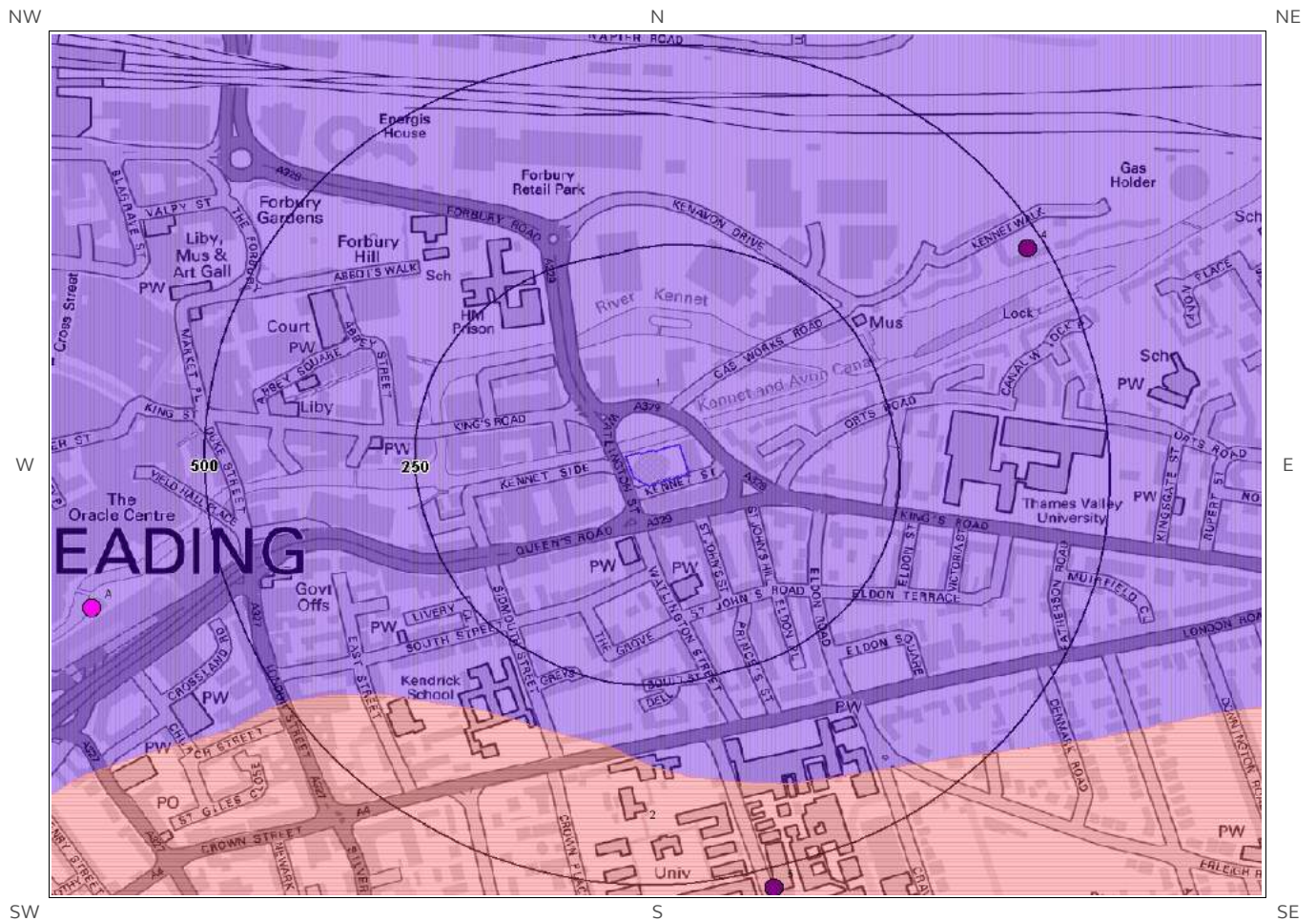
6a. Aquifer Within Superficial Geology



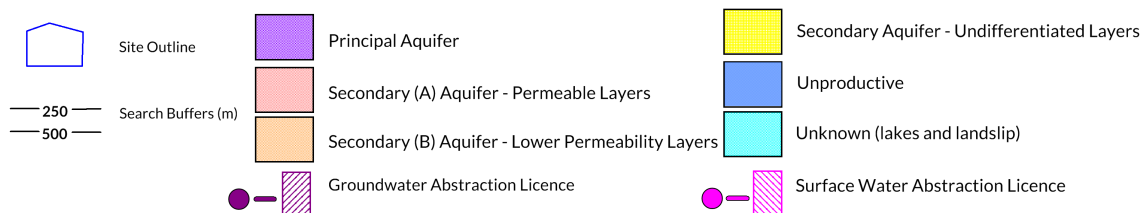
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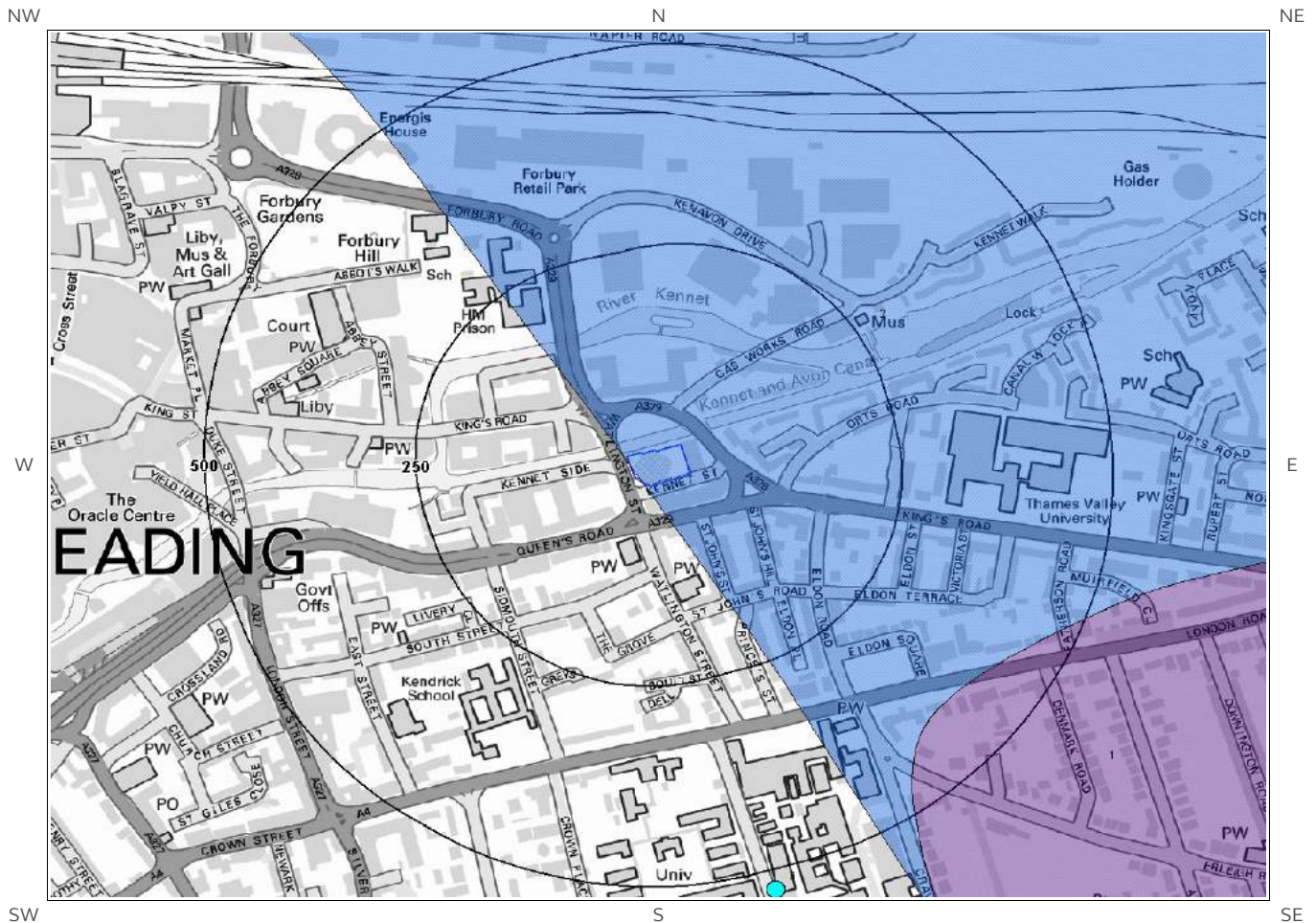
6b. Aquifer Within Bedrock Geology and Abstraction Licences



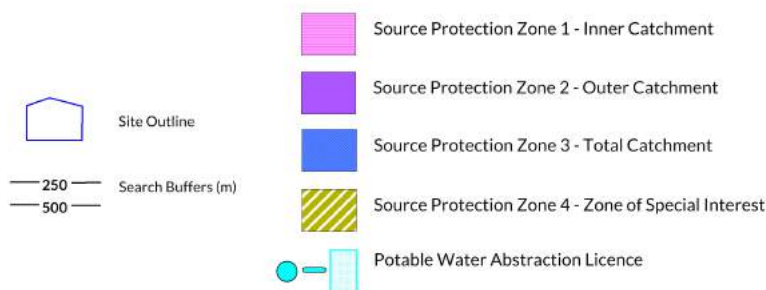
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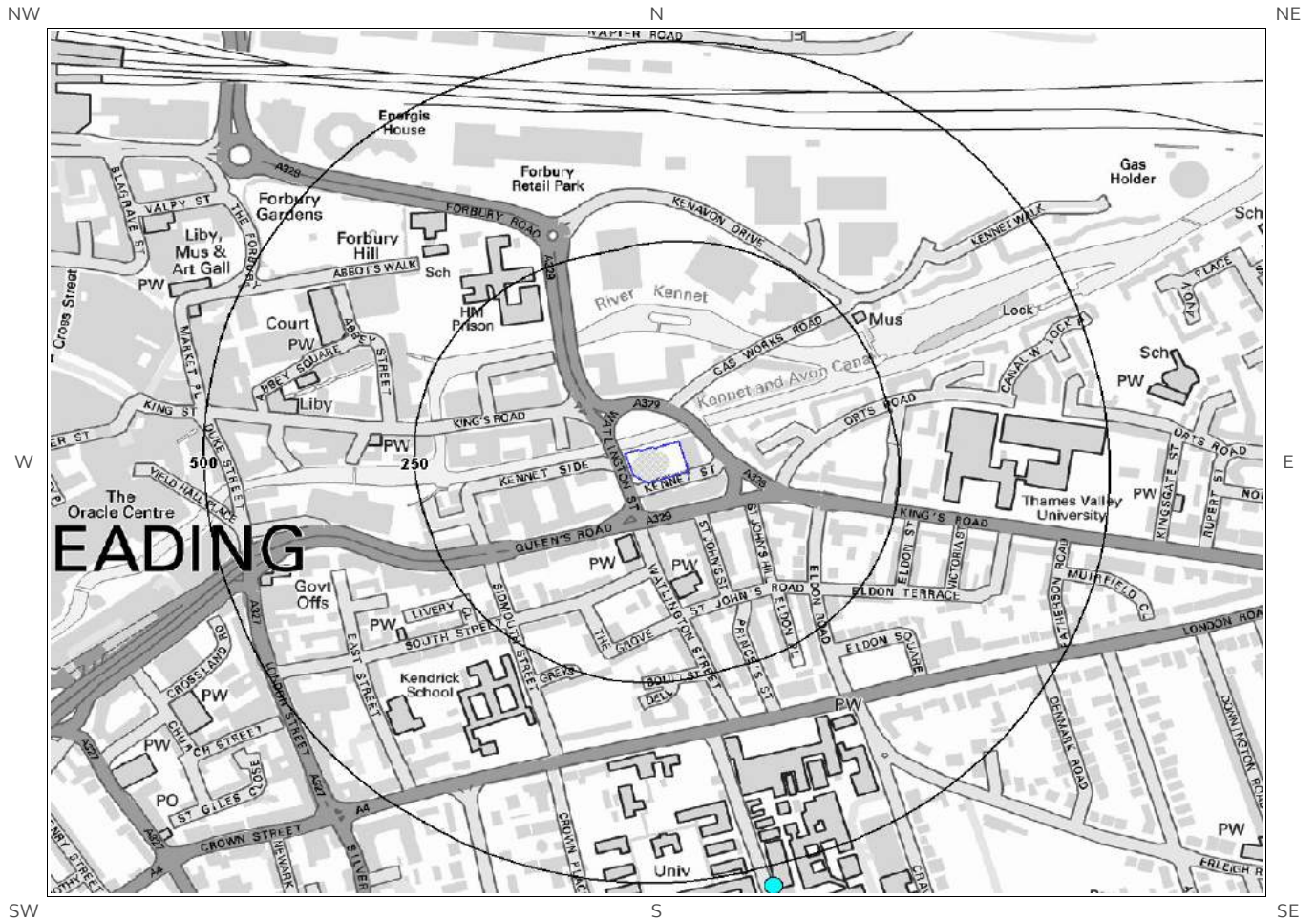
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



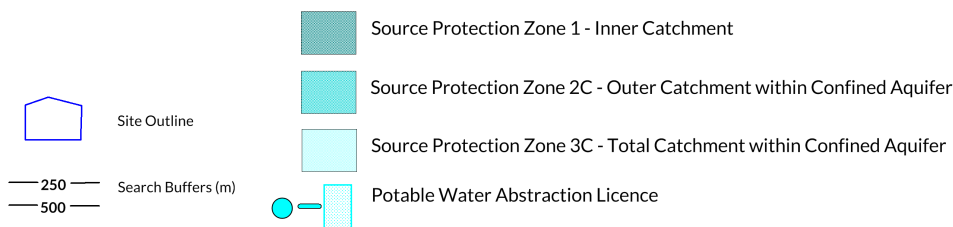
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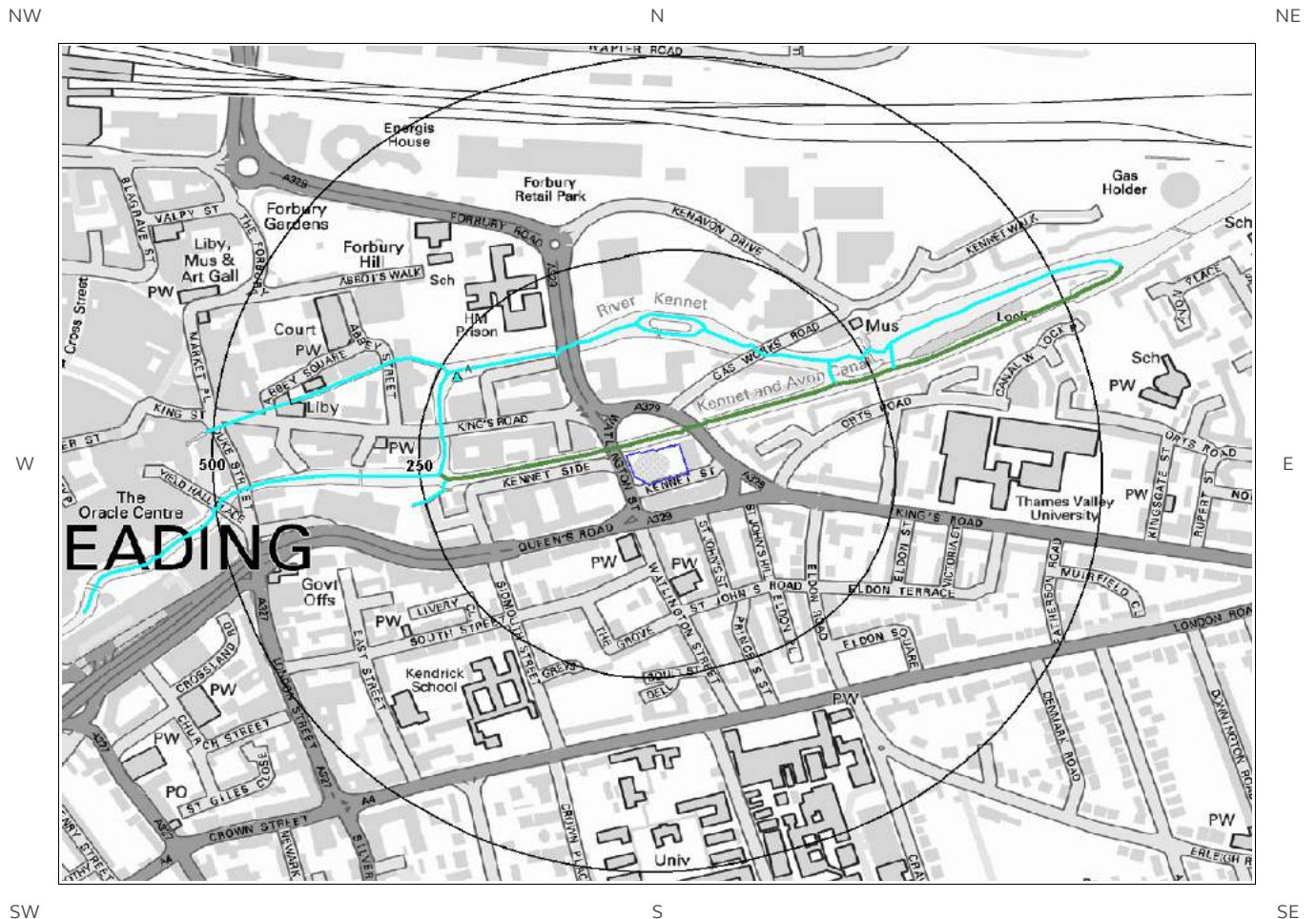
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Watercourse Network and River Quality



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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

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	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	327	S	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

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
4	479	NE	472700 173600	Status: Historical Licence No: 28/39/22/0600 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: FORMER GASWORKS, KENAVON DRIVE, READING (5 BOREHOLES) Data Type: Point Name: M J GLEESON GROUP PLC Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 31/07/2000 Version End Date:
5	525	S	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: ROYAL BERKSHIRE HOSPITAL Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL Annual Volume (m³): 127,750 Max Daily Volume (m³): 350 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 17/01/1992 Version End Date:
Not shown	1036	W	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CHEAPSIDE, READING, BERKSHIRE Data Type: Point Name: PRIMARK STORES LIMITED Annual Volume (m³): 14,933 Max Daily Volume (m³): 41 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:
Not shown	1108	N	471900 174400	Status: Active Licence No: 28/39/23/0020 Details: Laundry Use Direct Source: THAMES GROUNDWATER Point: 72 GEORGE STREET, CAVERSHAM, - BOREHOLE 'A' Data Type: Point Name: Berendsen UK Limited Annual Volume (m³): 68,190 Max Daily Volume (m³): 300 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 12/01/2016 Version End Date:
Not shown	1329	NE	473500 173900	Status: Historical Licence No: 28/39/23/0016 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: READING UNIVERSITY RESEARCH SITE, READING, - WELL 'A' Data Type: Point Name: UNIVERSITY OF READING Annual Volume (m³): 1,136 Max Daily Volume (m³): 23 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:
Not shown	1400	NE	473560 173940	Status: Active Licence No: 28/39/23/0191 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WATERSIDE CENTRE, THAMES VALLEY PARK ROAD Data Type: Point Name: WOKINGHAM WATERSIDE CENTRE LTD Annual Volume (m³): 2,600 Max Daily Volume (m³): 25 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1527	NW	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 11/07/1966 Version End Date:
Not shown	1527	NW	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 11/07/1966 Version End Date:
Not shown	1527	NW	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD Annual Volume (m³): 90,920 Max Daily Volume (m³): 727 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 30/06/2006 Version End Date:
Not shown	1527	NW	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD Annual Volume (m³): 90,920 Max Daily Volume (m³): 727 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 30/06/2006 Version End Date:
Not shown	1753	W	470600 174000	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING POINT B Data Type: Point Name: HILLIER GROUP OF COMPANIES Annual Volume (m³): 6,682 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:
Not shown	1763	SE	473000 171700	Status: Historical Licence No: 28/39/22/0077 Details: General use relating to Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: WHITEKNIGHTS PARK, READING Data Type: Point Name: UNIVERSITY OF READING Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 26/04/1993 Version End Date:
Not shown	1779	SE	473040 171700	Status: Historical Licence No: 28/39/22/0077 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: WHITEKNIGHTS PARK - READING - BOREHOLE Data Type: Point Name: UNIVERSITY OF READING Annual Volume (m³): 240,000 Max Daily Volume (m³): 1,032 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2011 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1834	E	474030 173930	Status: Historical Licence No: 28/39/23/0175 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: THAMES VALLEY PARK, READING - BOREHOLE 'A' Data Type: Point Name: THAMES VALLEY PARK MANCO LTD	Annual Volume (m³): 50,750 Max Daily Volume (m³): 750 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/10/1999 Version End Date:
Not shown	1834	E	474030 173930	Status: Historical Licence No: 28/39/23/0175 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: THAMES VALLEY PARK, READING - BOREHOLE 'A' Data Type: Point Name: THAMES VALLEY PARK MANCO LTD	Annual Volume (m³): 50,750 Max Daily Volume (m³): 750 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/10/1999 Version End Date:
Not shown	1891	E	474090 173930	Status: Historical Licence No: 28/39/23/0175 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: THAMES VALLEY PARK, READING, - BOREHOLE 'B' Data Type: Point Name: THAMES VALLEY PARK MANCO LTD	Annual Volume (m³): 50,750 Max Daily Volume (m³): 750 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/10/1999 Version End Date:
Not shown	1891	E	474090 173930	Status: Historical Licence No: 28/39/23/0175 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: THAMES VALLEY PARK, READING, - BOREHOLE 'B' Data Type: Point Name: THAMES VALLEY PARK MANCO LTD	Annual Volume (m³): 50,750 Max Daily Volume (m³): 750 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/10/1999 Version End Date:
Not shown	1976	NW	470400 174100	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING POINT A Data Type: Point Name: HILLIER GROUP OF COMPANIES	Annual Volume (m³): 6,682 Max Daily Volume (m³): 27 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 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	
22A	662	W	471590 173150	Status: Active Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: ST.GILES STREAM AT THE ORACLE CENTRE, READING Data Type: Point Name: ORACLE SHOPPING CENTRE LTD	Annual Volume (m³): 737,856 Max Daily Volume (m³): 2,016 Application No: - Original Start Date: 16/02/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/02/2000 Version End Date:
23A	662	W	471590	Status: Historical	Annual Volume (m³): -

ID	Distance (m)	Direction	NGR	Details
			173150	Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THE ORACLE CENTRE, READING Data Type: Point Name: ORACLE SHOPPING CENTRE LTD Max Daily Volume (m³): - Application No: - Original Start Date: 16/02/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/02/2000 Version End Date:
Not shown	857	N	472072 174185	Status: Active Licence No: TH/039/0023/022 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER THAMES AT CAVERSHAM WEIR Data Type: Point Name: The Reading Sustainability Centre CIC Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 19/02/2016 Expiry Date: 31/03/2028 Issue No: 2 Version Start Date: 19/02/2019 Version End Date:
Not shown	1359	NW	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Transfer between sources Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THAMES AT CHRISTCHURCH MEADOW Data Type: Point Name: READING BOROUGH COUNCIL Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 12/05/2003 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 12/05/2003 Version End Date:
Not shown	1359	NW	471440 174450	Status: Historical Licence No: 28/39/23/0199/TR Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER THAMES - CHRISTCHURCH MEADOWS Data Type: Point Name: READING BOROUGH COUNCIL Annual Volume (m³): 1,752,000 Max Daily Volume (m³): 4,800 Application No: - Original Start Date: 10/09/2008 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 10/09/2008 Version End Date:
Not shown	1359	NW	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Lake & Pond Throughflow Direct Source: THAMES SURFACE WATER - NON TIDAL Point: THAMES AT CHRISTCHURCH MEADOW Data Type: Point Name: READING BOROUGH COUNCIL Annual Volume (m³): 31,536 Max Daily Volume (m³): 86 Application No: - Original Start Date: 12/05/2003 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 01/04/2006 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
3	525	S	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: ROYAL BERKSHIRE HOSPITAL Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL Annual Volume (m³): 127,750 Max Daily Volume (m³): 350 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1036	W	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CHEAPSIDE, READING, BERKSHIRE Data Type: Point Name: PRIMARK STORES LIMITED	Annual Volume (m³): 14,933 Max Daily Volume (m³): 41 Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1400	NE	473560 173940	Status: Active Licence No: 28/39/23/0191 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WATERSIDE CENTRE, THAMES VALLEY PARK ROAD Data Type: Point Name: WOKINGHAM WATERSIDE CENTRE LTD	Annual Volume (m³): 2,600 Max Daily Volume (m³): 25 Original Application No: - Original Start Date: 21/12/2000 Expiry Date: - Issue No: 3 Version Start Date: Version End Date:
Not shown	1527	NW	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING, BERKSHIRE Data Type: Point Name: COX & WYMAN LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1527	NW	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: MEADOW ROAD, READING, BERKSHIRE Data Type: Point Name: MANROSE MANUFACTURING LTD	Annual Volume (m³): 90,920 Max Daily Volume (m³): 727 Original Application No: - Original Start Date: 23/01/1990 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	1779	SE	473040 171700	Status: Historical Licence No: 28/39/22/0077 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: WHITEKNIGHTS PARK - READING - BOREHOLE Data Type: Point Name: UNIVERSITY OF READING	Annual Volume (m³): 240,000 Max Daily Volume (m³): 1,032 Original Application No: - Original Start Date: 14/03/1966 Expiry Date: - Issue No: 103 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

Identified

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (6c):

ID	Distance (m)	Direction	Zone	Description
2	0	On Site	3	Total catchment
1	413	SE	2	Outer catchment

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	Major 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.
297	S	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

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:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

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

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	967	NE	473100 173880	River Name: Thames (w Area) Reach: Whitchurch Stw - Kennet End/Start of Stretch: End of Stretch NGR	A	A	A	A	A
Not shown	967	NE	473100 173880	River Name: Thames (w Area) Reach: Kennet - Loddon End/Start of Stretch: Start of Stretch NGR	B	B	B	A	A

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAH). 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):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
27A	227	NW	472020 173440	River Name: Kennet Reach: Holy Brook - Thames End/Start of Stretch: Start of Stretch NGR	B	A	A	A	A
28A	227	NW	472020 173440	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: End of Stretch NGR	B	A	A	A	A
Not shown	714	N	472135 174053	River Name: Thames Reach: Whitchurch Stw - Kennet End/Start of Stretch: Sample Point NGR	A	A	A	A	A
Not shown	805	NE	473015 173702	River Name: Kennet Reach: Holy Brook - Thames End/Start of Stretch: Sample Point NGR	B	A	A	A	A
Not shown	967	NE	473100 173880	River Name: Kennet Reach: Holy Brook - Thames End/Start of Stretch: End of Stretch NGR	B	A	A	A	A
Not shown	967	NE	473100 173880	River Name: Thames Reach: Kennet - Loddon End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A
Not shown	967	NE	473100 173880	River Name: Thames Reach: Whitchurch Stw - Kennet End/Start of Stretch: End of Stretch NGR	A	A	A	A	A
Not shown	1017	SW	471351 172807	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: Sample Point NGR	B	A	A	A	A

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	13 N	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 13.5
82	13 N	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 13.5
2	140 N	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.0
83	140 N	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.0
3	147 NE	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.1
84	147 NE	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.1
4	153 N	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.0
85	153 N	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.0
5	155 N	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 18.4
86	155 N	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 18.4
6	203 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.9
7	203 E	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames 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): 14.7
87	203 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.9
88	203 E	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
8	210 NE	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 20.6
89	210 NE	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 20.6
9	218 W	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.1
10	218 W	Gunter's Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.1
90	218 W	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.1
91	218 W	Gunter's Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.1
11	219 W	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.3
92	219 W	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 17.3
12	225 W	Gunter's Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2
93	225 W	Gunter's Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.2

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
13	226 W	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 13.9
94	226 W	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 13.9
14	239 NW	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
95	239 NW	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.8
15	277 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.6
16	277 E	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.4
96	277 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.6
97	277 E	Kennet and Avon Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 19.4
17	286 NE	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 24.4
98	286 NE	River Kennet	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 24.4
18	288 NW	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
99	288 NW	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
19	302	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NW			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
100	302 NW	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
20	306 NW	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
101	306 NW	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	317 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.8
102	317 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.8
22	411 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	411 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	429 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
Not shown	429 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
24	431 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames 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	431 W	Holy Brook	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

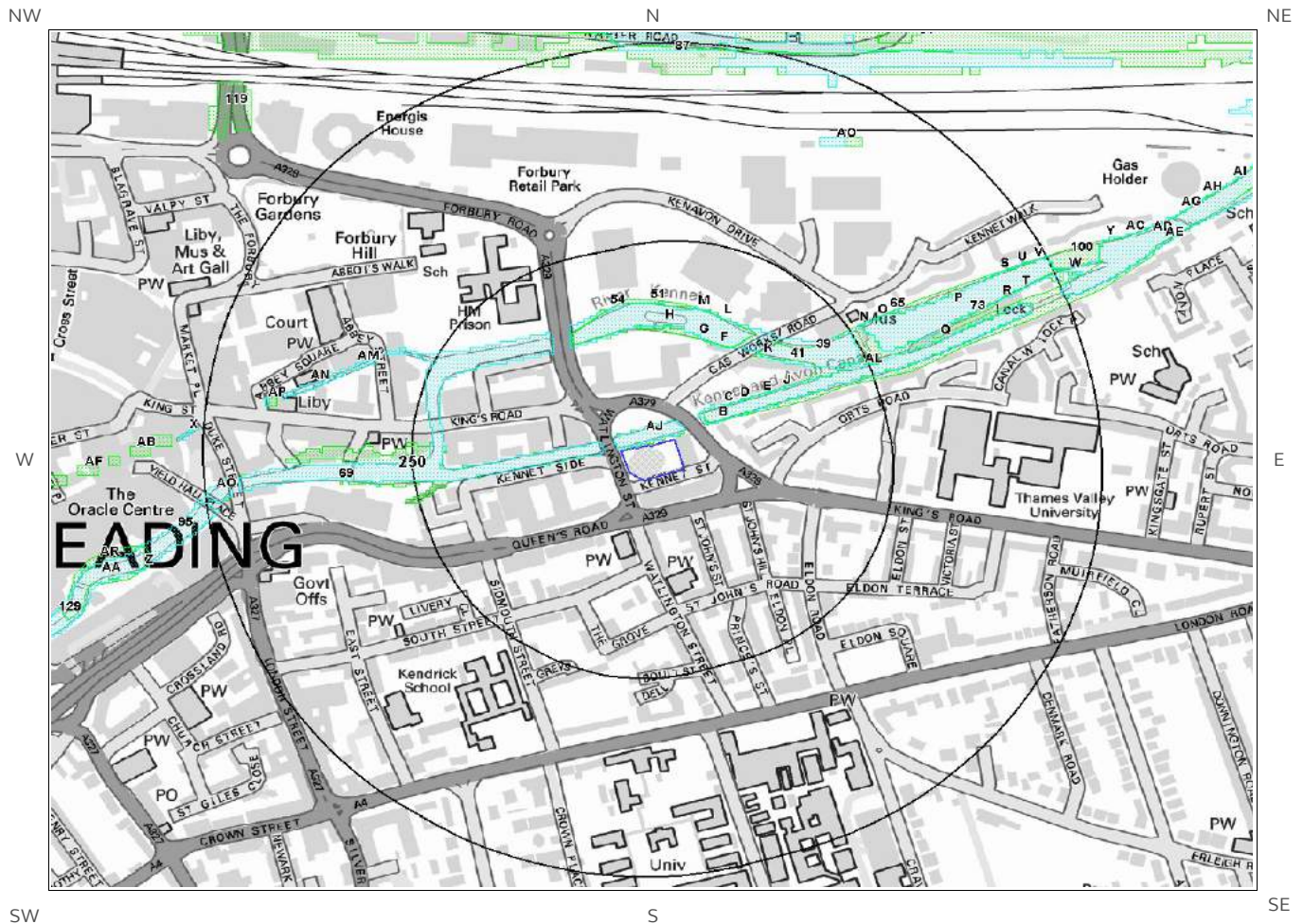
Surface water features within 250m of the study site

Identified

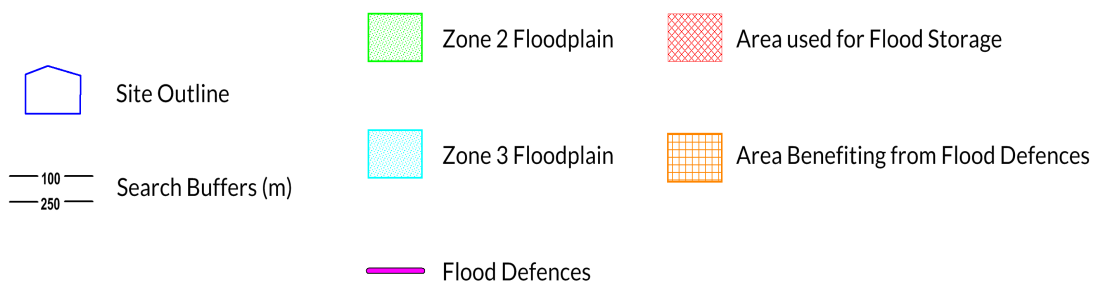
The following surface water records are not represented on mapping:

Distance (m)	Direction
6	N
21	W
40	NE
130	N
149	NW

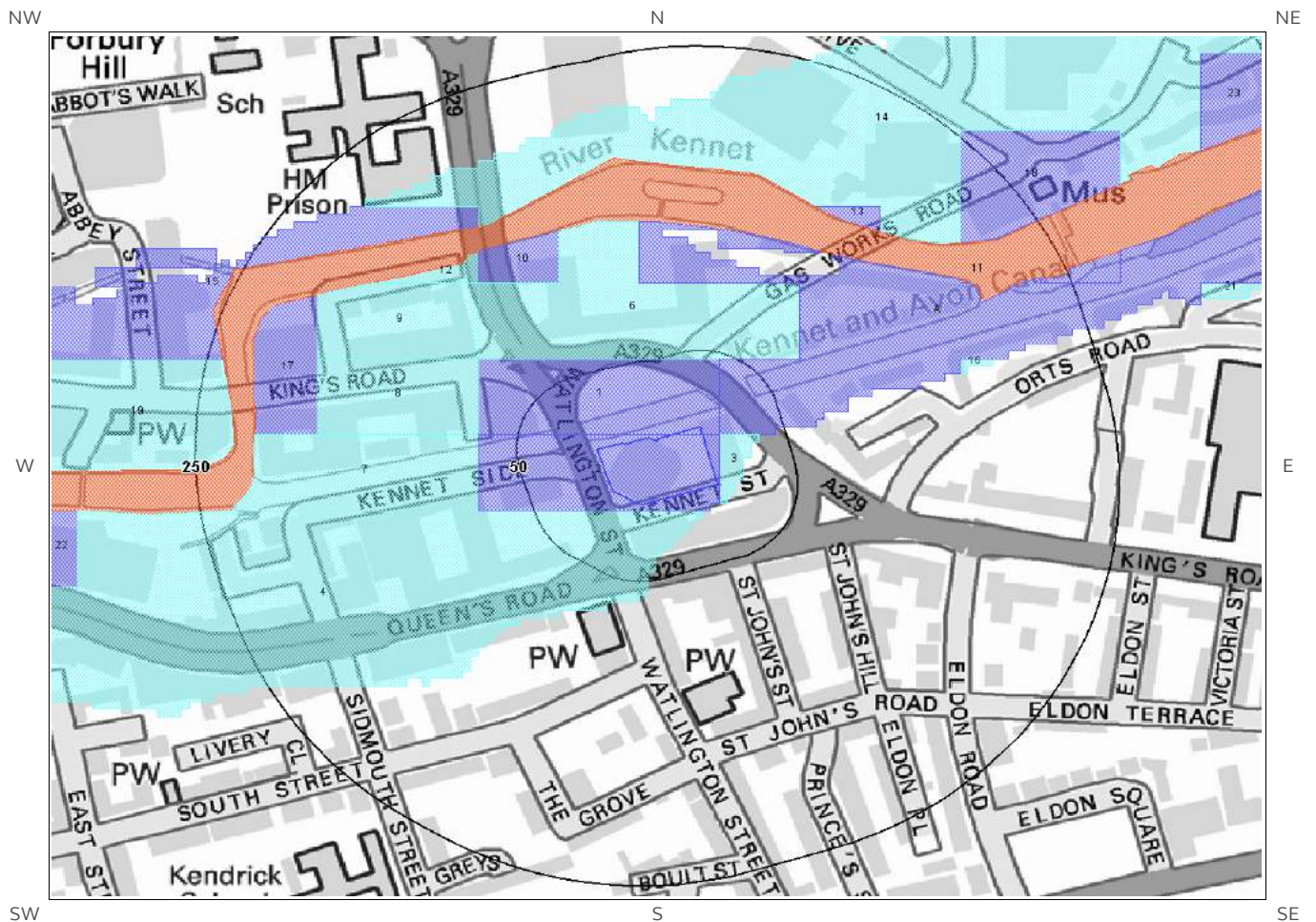
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



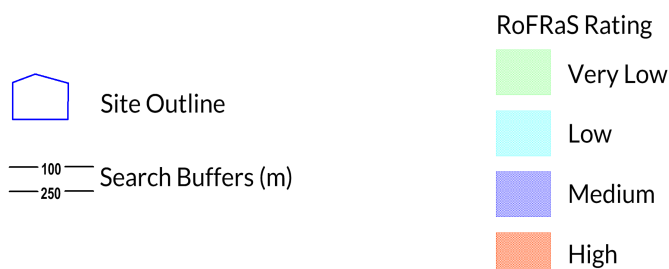
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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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
1AJ	0	On Site	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
2AK	21	W	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
3A	38	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
4A	43	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
5AL	43	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
6A	44	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
7B	56	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
8B	57	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
9B	63	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
10B	64	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
11C	68	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
12C	72	E	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
13C	75	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
14C	76	E	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
15C	80	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
16D	87	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
17D	89	E	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
18Q	92	E	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
19D	93	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)

20D	100	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
21D	105	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
22E	112	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
23E	122	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
24E	125	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
25F	126	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
26F	128	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
27F	130	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
28H	130	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
29G	130	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
30G	130	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
31H	131	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
32F	132	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
33E	134	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
34I	134	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
35J	137	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
36	141	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
37I	141	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
38K	146	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
39	146	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
40J	146	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
41	149	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
42K	150	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
43J	150	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
44J	159	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
45L	161	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
46L	162	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
47L	162	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)

48L	162	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
49L	162	NE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
50L	163	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
51	164	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
52M	166	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
53M	167	N	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
54	175	N	19-Nov-2019	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
1AJ	2	N	19-Nov-2019	Zone 3 - (Fluvial Models)
2AK	21	W	19-Nov-2019	Zone 3 - (Fluvial Models)
3A	38	NE	19-Nov-2019	Zone 3 - (Fluvial Models)
4A	126	NE	19-Nov-2019	Zone 3 - (Fluvial Models)

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

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	Medium
2	0.0	On Site	Medium

3	1.0	E	Low
4	3.0	S	Low
5A	10.0	E	Medium
6	45.0	N	Low

7.4 Flood Defences

Flood Defences within 250m of the study site None identified
Database searched and no data found.

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 Clearwater 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

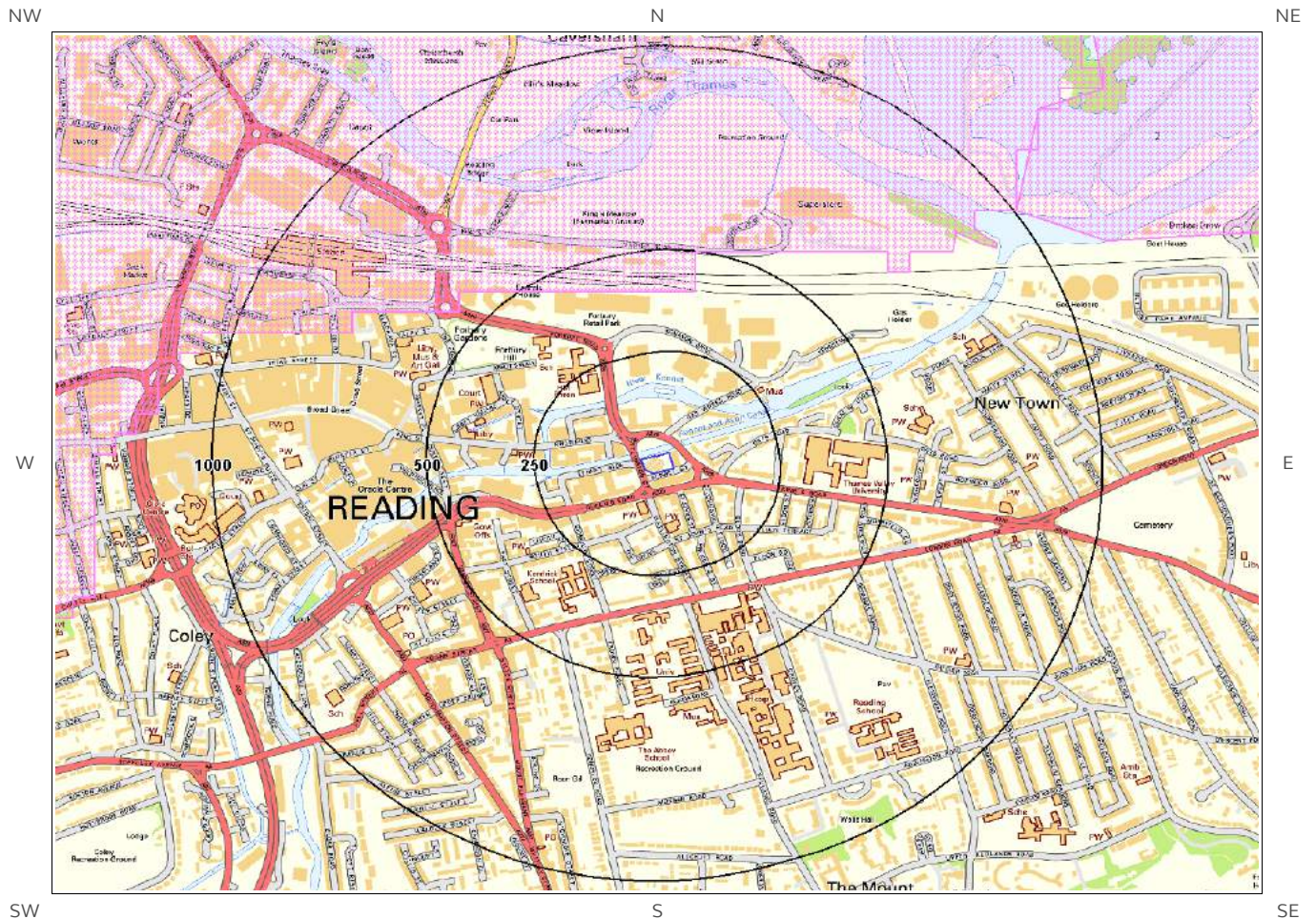
British Geological Survey confidence rating in this result

High

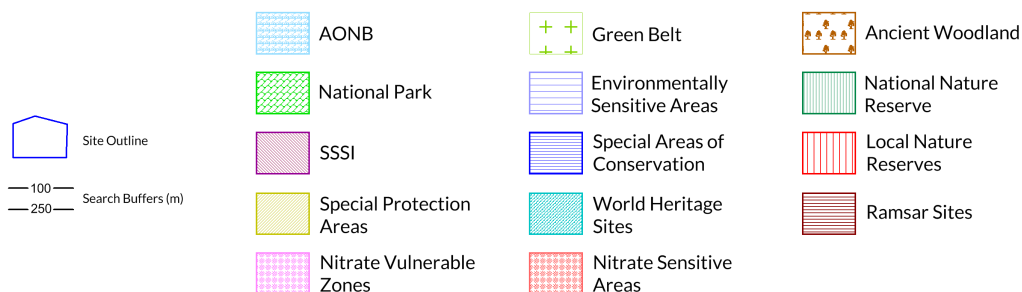
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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



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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:

0

Database searched and no data found.

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:

1

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1871	NE	Unknown	Ancient & Semi-Natural Woodland

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:

3

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
1	395	N	Existing	DEFRA
2	1006	NE	Existing	DEFRA
Not shown	1896	E	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 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

Maximum Soluble 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
Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

* 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
Mansfield
Notts NG18 4RG
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: Reading Borough Council
Phone: 0118 937 3787
Web: <http://beta.reading.gov.uk/>
Address: Civic Offices, Bridge Street, Reading, RG1 2LU

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



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Address: H M REVENUE & CUSTOMS, SAPPHIRE PLAZA, WATLINGTON STREET, READING, RG1 4TA

Date: 20 Nov 2019

Reference: GS-6474782

Client: JNP Group

NW N NE



SW S SE

Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 472255,173346
Site Size: 0.2520ha

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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 linear features	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 linear features 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 linear features

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 linear features within 500m of the study site boundary?

No

Section 3: Radon

3. Radon

3.1 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.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

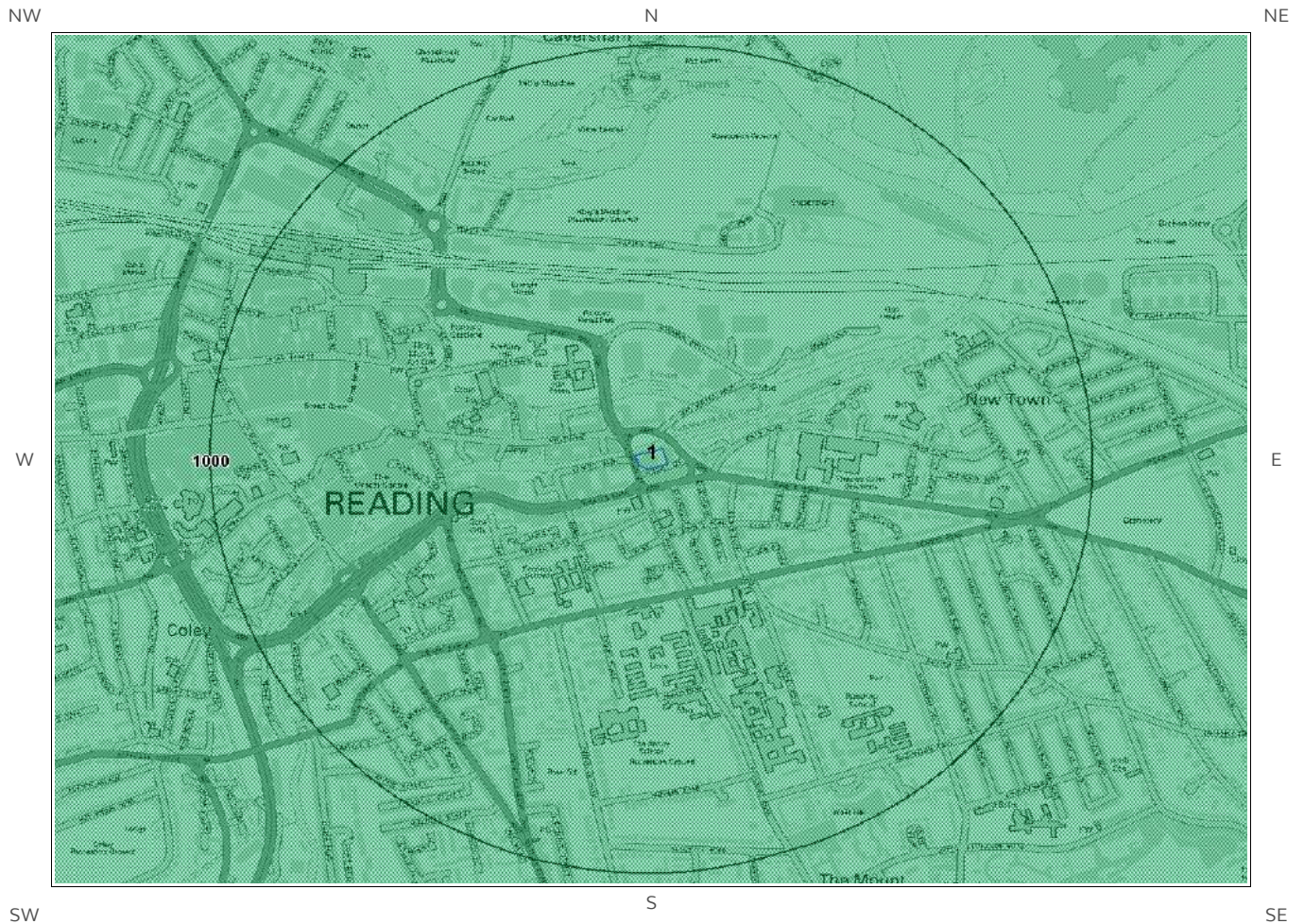
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	2	3	7	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	3

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	1	0	1	2	5
5.4 Non-Coal Mining*	0	0	1	6	1
5.5 Non-Coal Mining Cavities	0	0	1	0	9
5.5 Natural Cavities	0	0	0	0	7

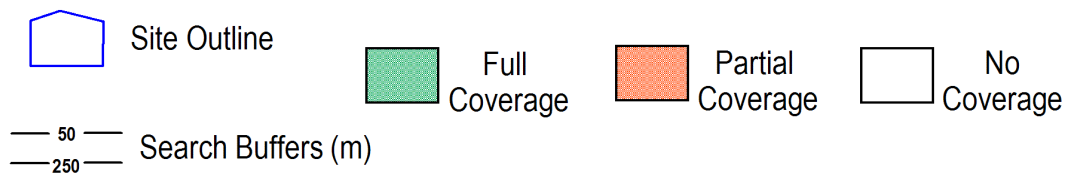
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Very Low				
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	0	1	17		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	2	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	0	0	27	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	1	

1:10,000 Scale Availability



1_10,000 Availability Legend

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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	Some deposits are mapped	Full	Full	No coverage
N2	1645.0	Some deposits are mapped	Full	Full	No coverage

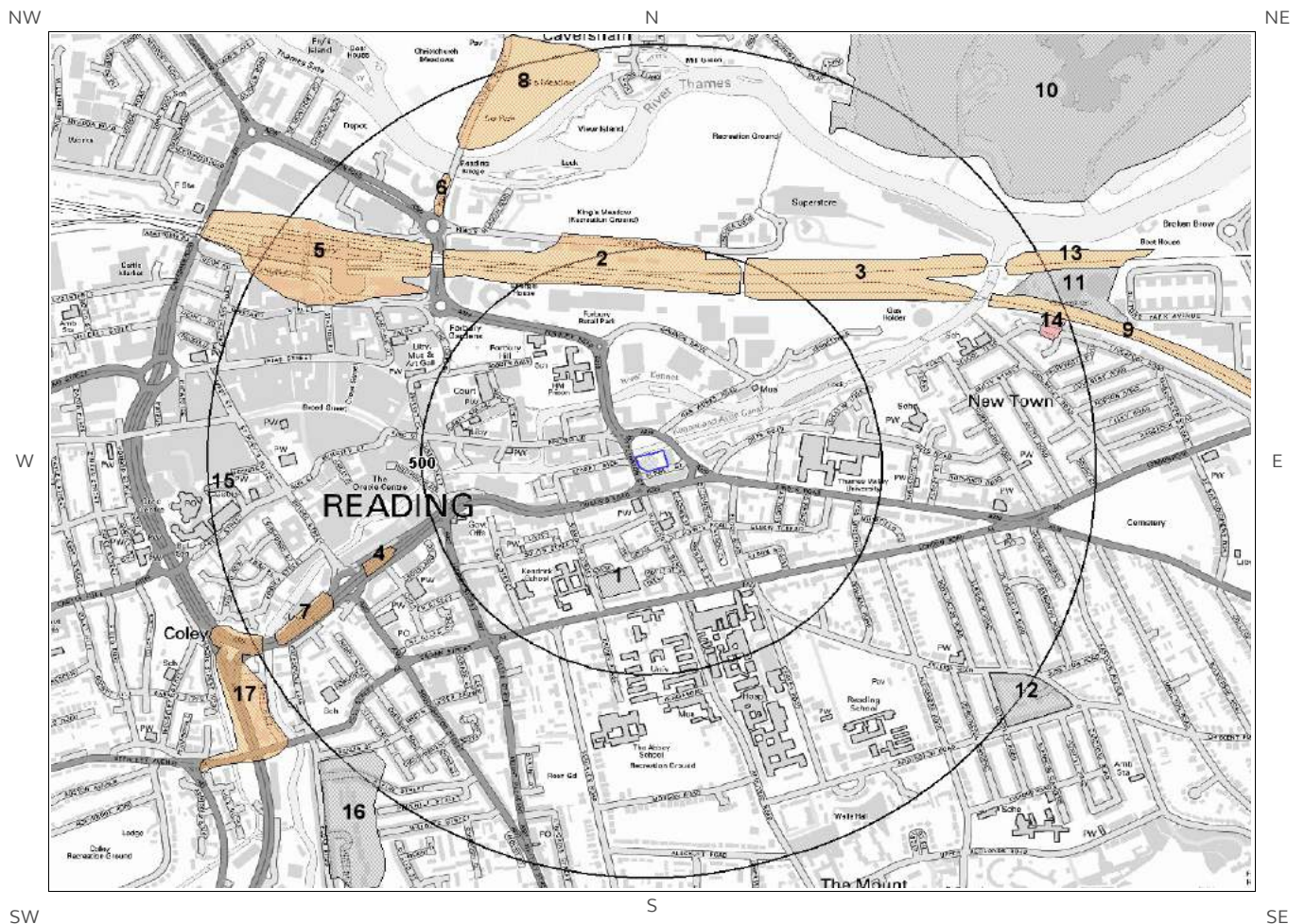
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not 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

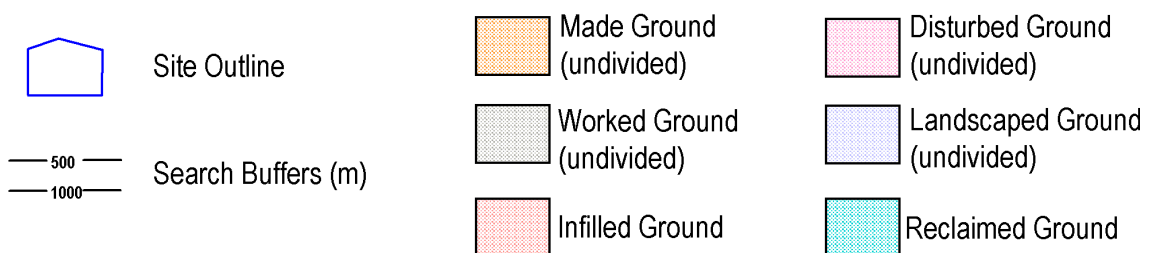
1 Geology (1:10,000 scale).

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



Artificial Ground Legend

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1. Geology 1:10,000 scale

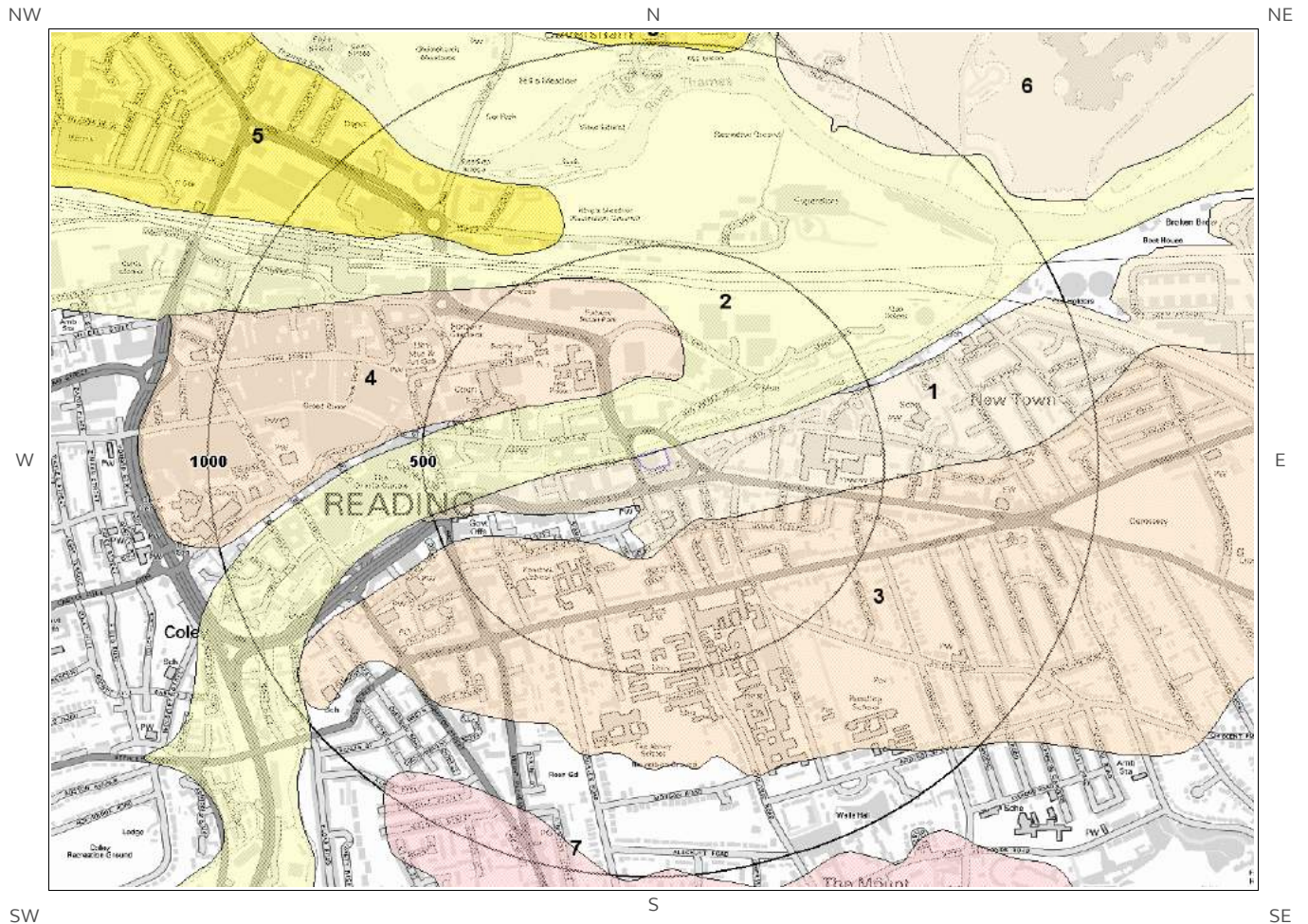
1.1 Artificial Ground

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? Yes

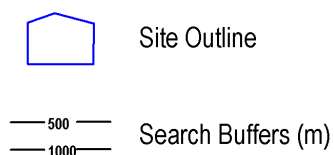
ID	Distance	Direction	LEX Code	Description	Rock Description
1	235.0	S	WGR-VOID	Worked Ground (Undivided)	Void
2	395.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	427.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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



Artificial Ground Legend

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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	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel
2	0.0	On Site	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
3	148.0	S	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel
4	168.0	NW	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel

1.2.2 Landslip

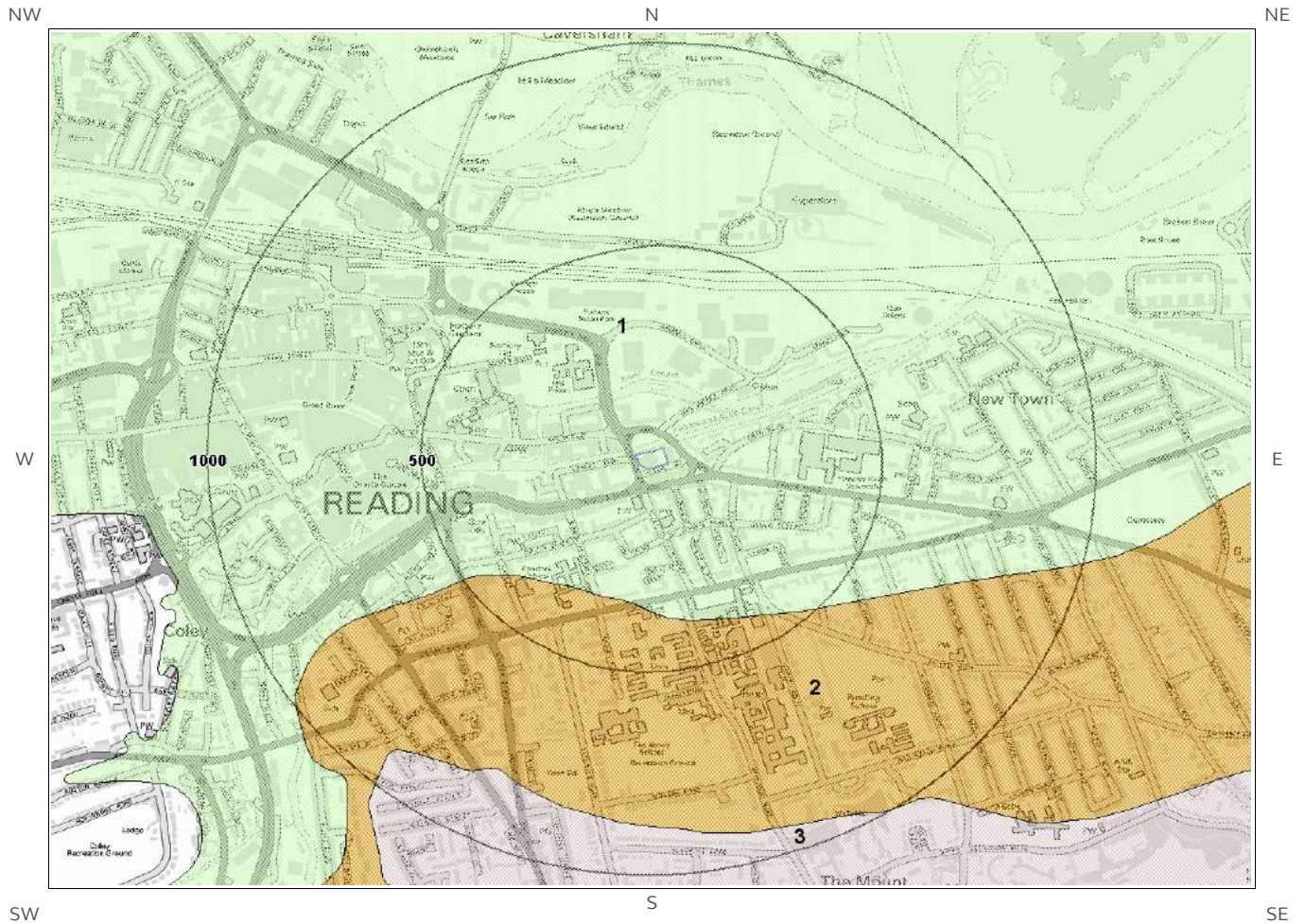
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

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

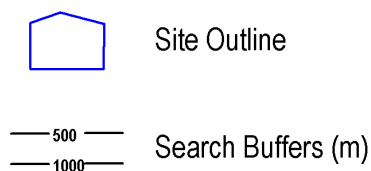
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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



Bedrock and linear features Legend

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1.3 Bedrock and linear features

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	LSNCK-CHLK	Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) - Chalk	Campanian Age - Turonian Age
2	326.0	S	LMBE-CLSISA	Lambeth Group - Clay, Silt And Sand	Paleocene Epoch

1.3.2 Linear features

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

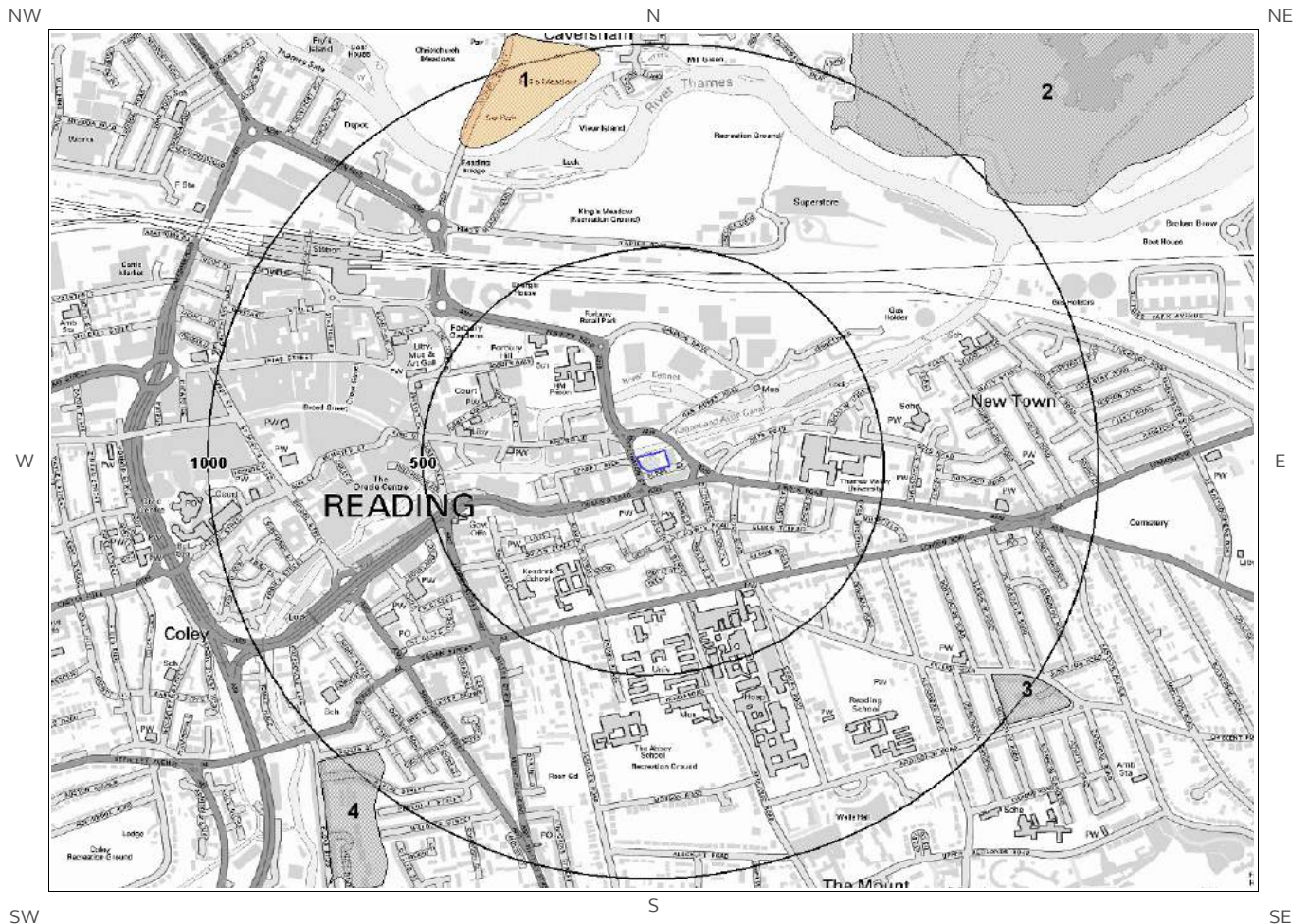
Database searched and no data found at this scale.

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.

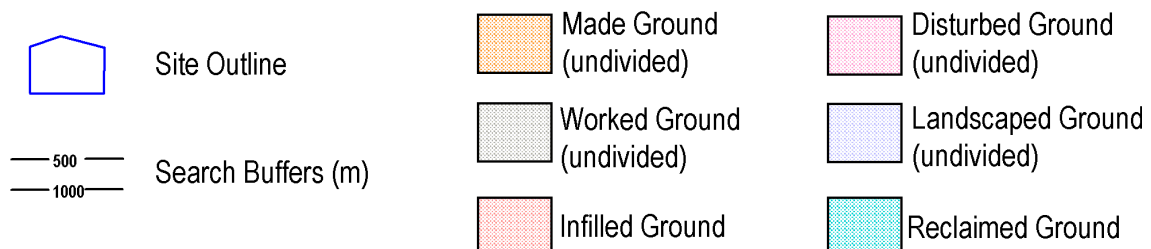
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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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: 268

2.1.1 Artificial/ Made Ground

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

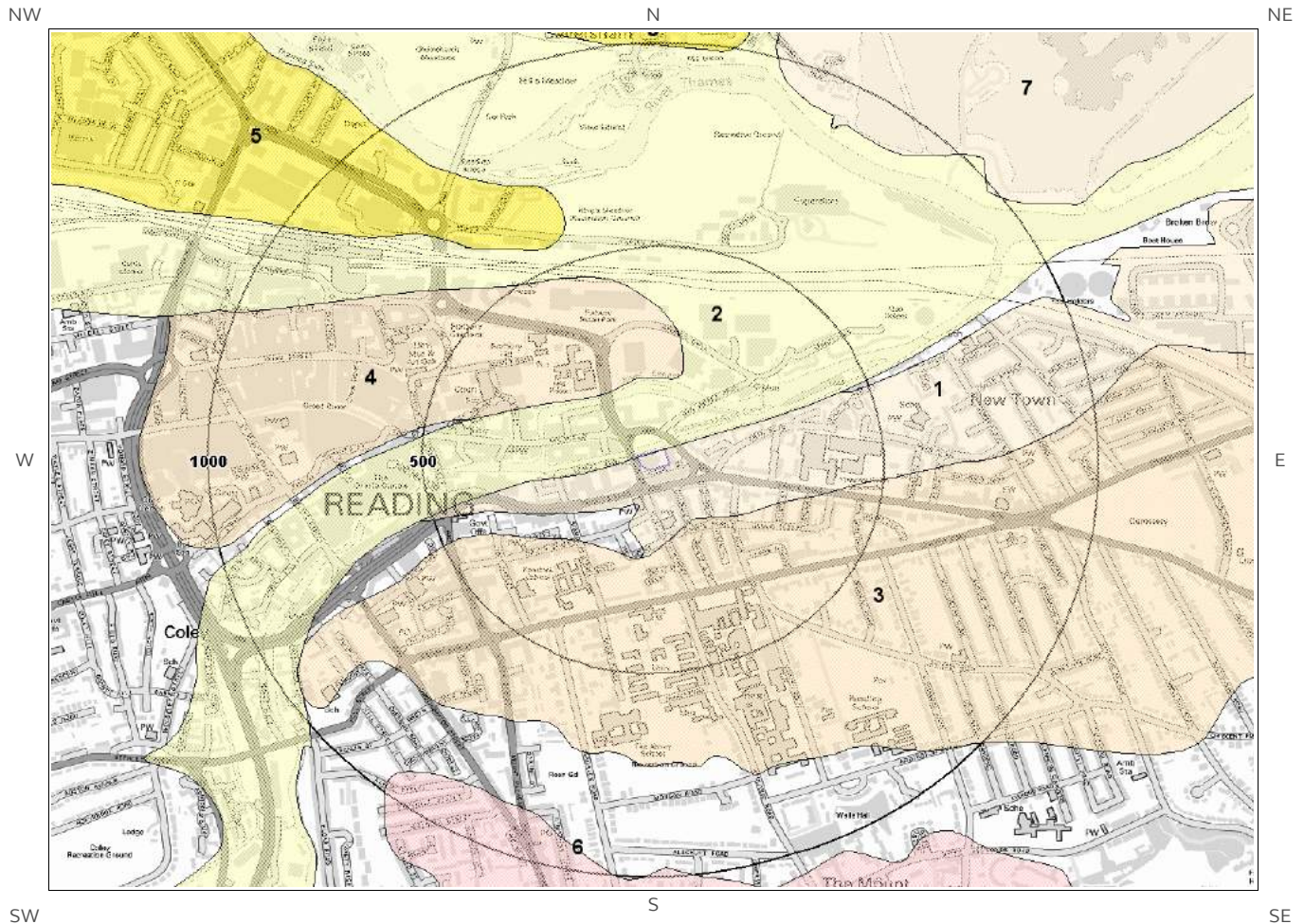
Database searched and no data found.

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.

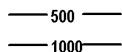
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline



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	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
2	0.0	On Site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	146.0	SE	TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL
4	167.0	NW	TPGR-XSV	TAPLOW GRAVEL MEMBER	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	Intergranular	High	Very Low
0.0	On Site	Intergranular	Very High	High

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.

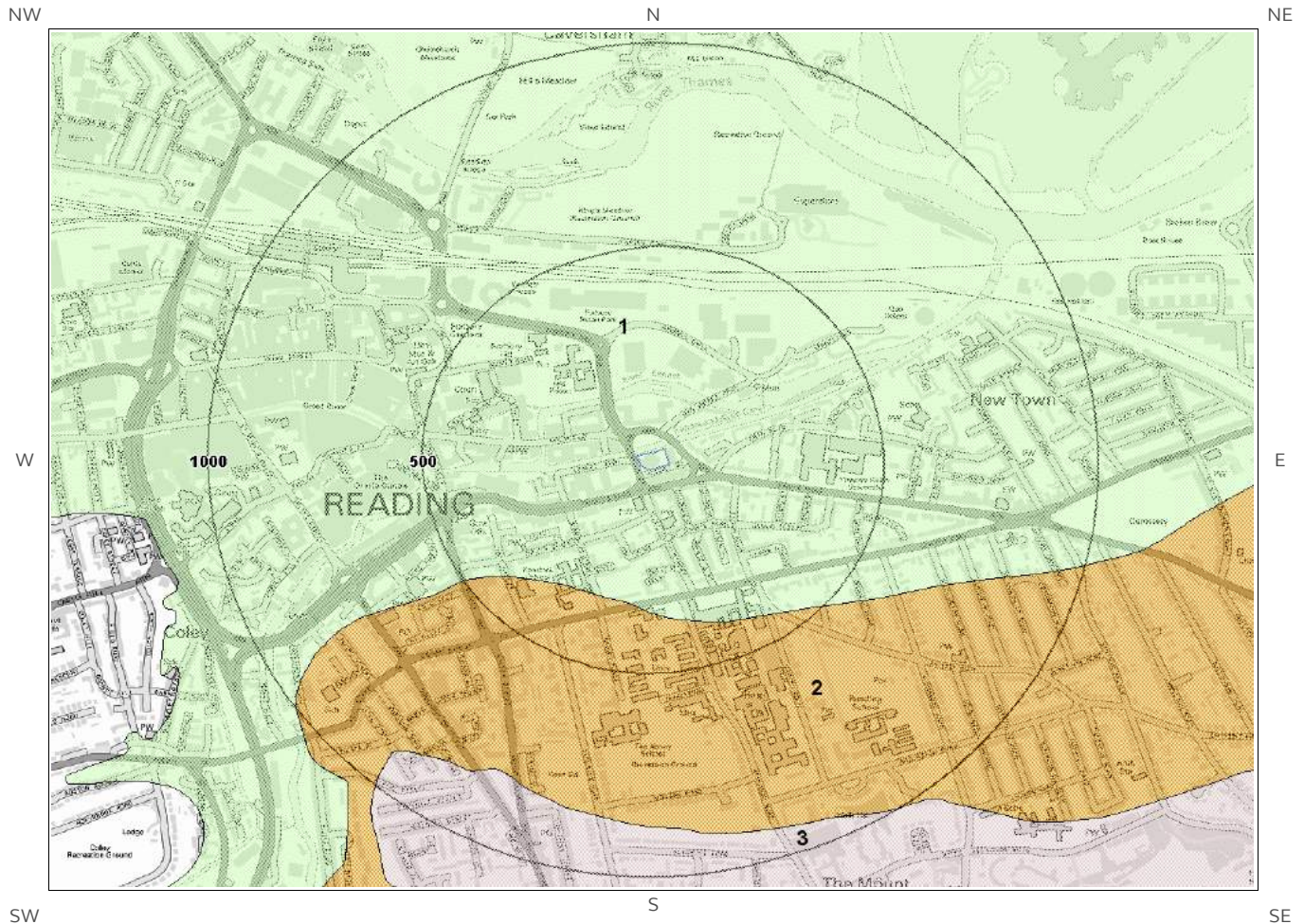
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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.

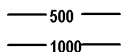
2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 268

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	SNCK-CHLK	SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	CONIACIAN
2	327.0	S	LMBE-XCZS	LAMBETH GROUP - CLAY, SILT AND SAND	THANETIAN

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	Very High	Very High

2.3.3 Linear features

Are there any records of linear features 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

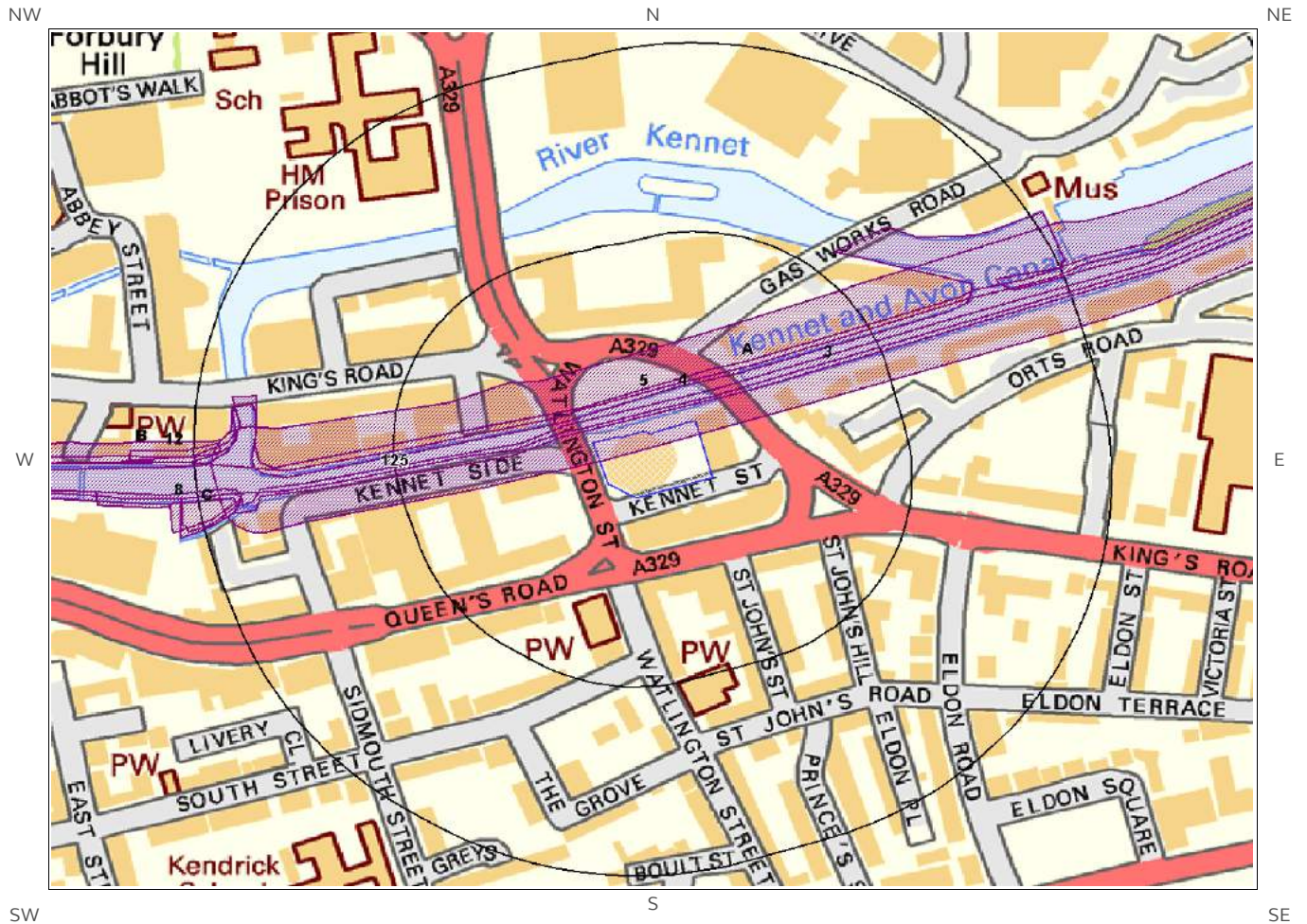
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

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

3.2 Radon Protection

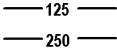
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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-  Site Outline
-  Historic Surface Ground Workings
-  Historic Underground Workings
-  Current Ground Workings
-  Search Buffers (m)
125
250

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
1A	0.0	On Site	472827 173587	Canal	1994
2A	0.0	On Site	472827 173587	Canal	1989
3	9.0	N	472417 173411	Canal	1938
4	11.0	N	471459 173043	Canal	1938
5	15.0	N	472412 173417	Canal	1933
6B	222.0	W	471997 173344	Unspecified Wharf	1938
7B	222.0	W	471997 173344	Unspecified Wharf	1938
8	223.0	W	471976 173295	Unspecified Disused Wharf	1933
9C	224.0	W	471985 173294	Unspecified Wharf	1938
10C	224.0	W	471985 173294	Unspecified Wharf	1938
11C	226.0	W	471984 173290	Unspecified Wharf	1938
12	234.0	W	471963 173334	Unspecified Wharf	1989

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

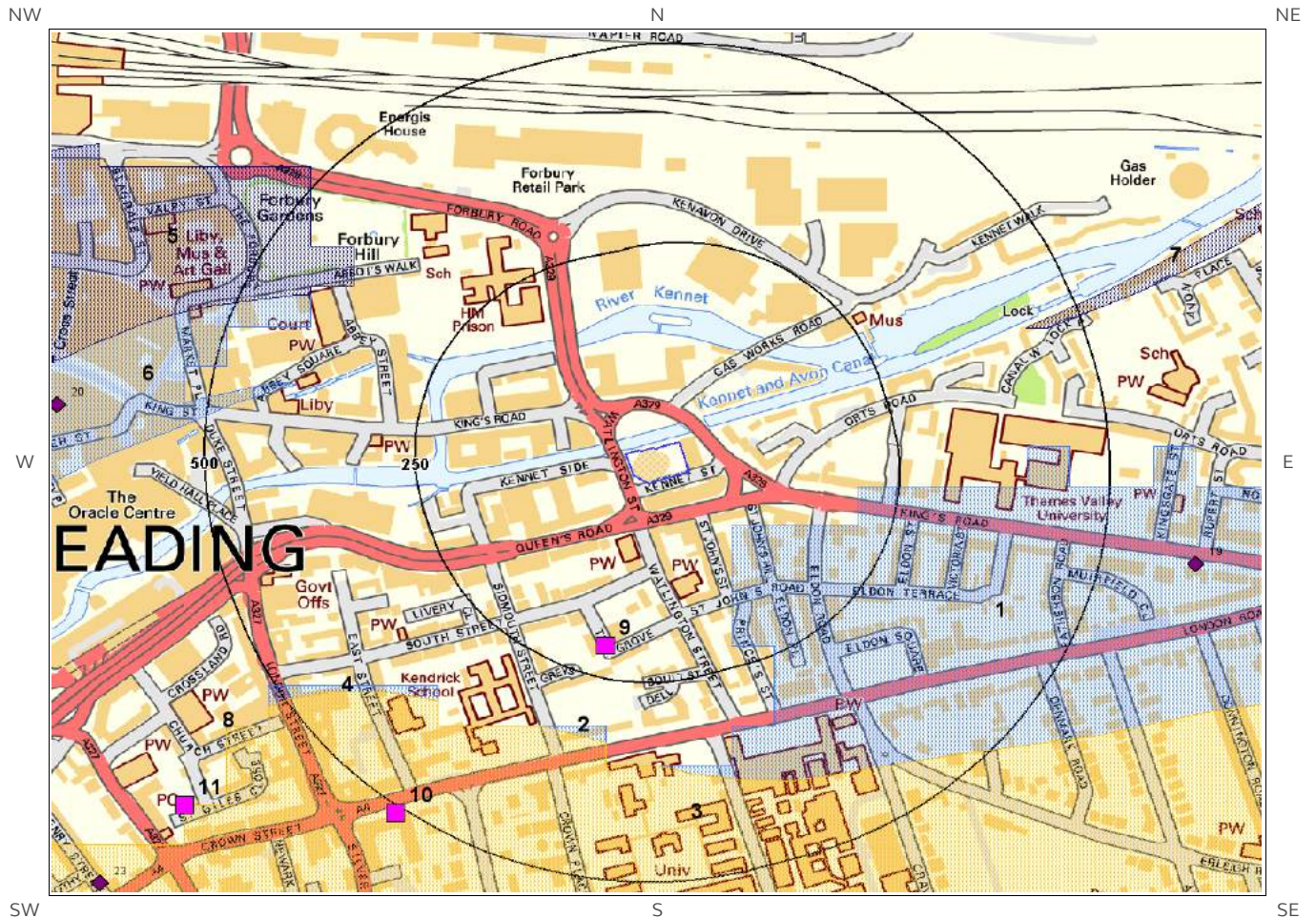
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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:

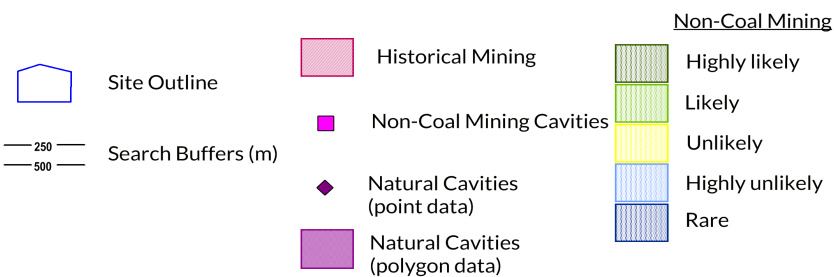
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	923.0	E	473159 173660	Gravel	Cholmelly Road Gravel Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	934.0	SW	471778 172498	Clay & Shale	Ivy Bridge Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	990.0	SE	473115 172757	Gravel	Reading School Gravel 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

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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? Yes

The following information provided by JPB is not represented on mapping: Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.

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? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	85.0	SE	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
2	308.0	S	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
3	327.0	S	Not available	Chalk	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
4	352.0	SW	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
5	386.0	NW	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
6	400.0	W	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
7	435.0	E	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
8	570.0	SW	Not available	Chalk	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

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? Yes

The following Non-Coal Mining Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Address	Superficial Deposits	Bedrock Deposits	Extracted Mineral
9	210.0	S	472200 173100	Reading, Berkshire	Taplow Gravel	Chalk Group	Chalk
10	509.0	SW	471950 172890	Jubilee Square, Reading, Berkshire	Taplow Gravel	Chalk Group	Chalk
11	675.0	SW	471700 172900	Reading, Berkshire	Taplow Gravel	Lambeth Group, Upper Chalk Formation	Chalk
Not shown	698.0	SW	471900 172700	The Old Orchard Kiln, Reading, Berkshire	-	Lambeth Group, Upper Chalk Formation	Chalk
Not shown	717.0	SW	471790 172750	Reading, Berkshire	-	Lambeth Group, Upper Chalk Formation	Chalk
Not shown	813.0	SW	471700 172700	Shearmans Brick Kiln, Reading, Berkshire	-	Lambeth Group, Upper Chalk Formation	Chalk
Not shown	851.0	SW	471700 172650	Shearmans Brick Kiln, Reading, Berkshire	-	Lambeth Group, Upper Chalk Formation	Chalk
Not shown	898.0	SW	471850 172500	The Upper Kiln, Reading, Berkshire	-	London Clay, Lambeth Group, Upper Chalk Formation	Chalk

ID	Distance (m)	Direction	NGR	Address	Superficial Deposits	Bedrock Deposits	Extracted Mineral
Not shown	973.0	SW	471700 172500	Ivy Lodge Brickfield/ Southampton Kiln, Reading, Berkshire	Boyn Hill Gravel	London Clay, Lambeth Group, Upper Chalk Formation	Chalk
Not shown	989.0	SW	471500 172650	Katesgrove Kilns (1), Reading, Berkshire	Worked Ground	Lambeth Group, Upper Chalk Formation	Chalk

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? Yes

The following Natural Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
19	612.0	E	472900 173200	Taplow Gravel	Chalk Group	Solution Pipe x 3
20	677.0	W	471550 173400	Taplow Gravel	Chalk Group	Solution Pipe x 5
Not shown	725.0	W	471500 173300	Taplow Gravel	Chalk Group	Solution Pipe x 1
Not shown	726.0	W	471500 173400	Taplow Gravel	Chalk Group	Solution Pipe x 3
23	815.0	SW	471600 172800	-	Chalk Group, Lambeth Group	Unknown
Not shown	836.0	W	471400 173200	Taplow Gravel	Chalk Group	Solution Pipe x 2
Not shown	862.0	E	473100 173000	Taplow Gravel	Chalk Group, Lambeth Group	Sinkhole x 1

5.7 Brine Extraction

This data provides information from 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 Cornwall and Devon Metalliferous Mining

This dataset provides information on metalliferous mining areas in Cornwall/Devon and is derived from records held by Mining Searches UK.

Are there any Cornwall and Devon Metalliferous Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

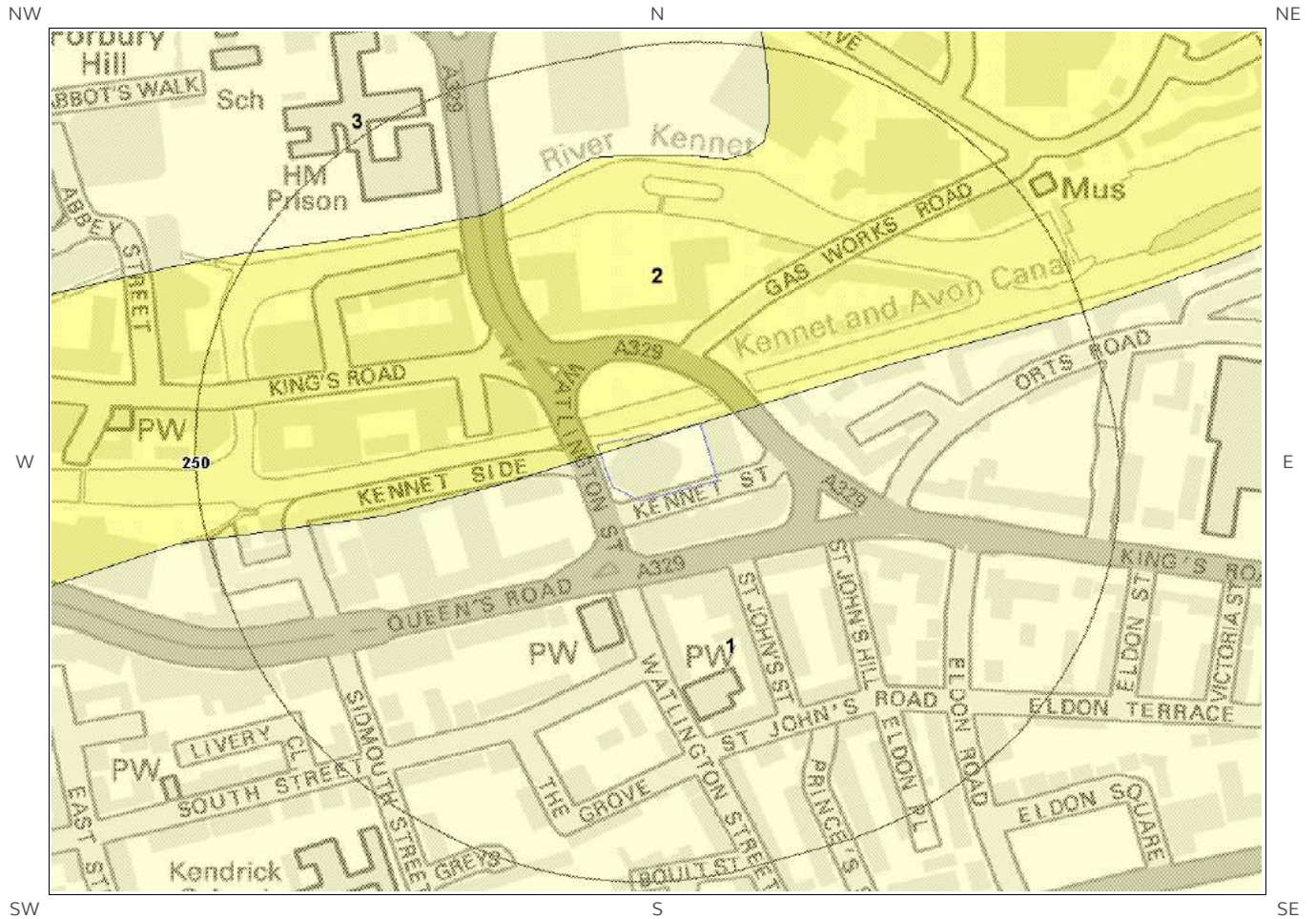
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

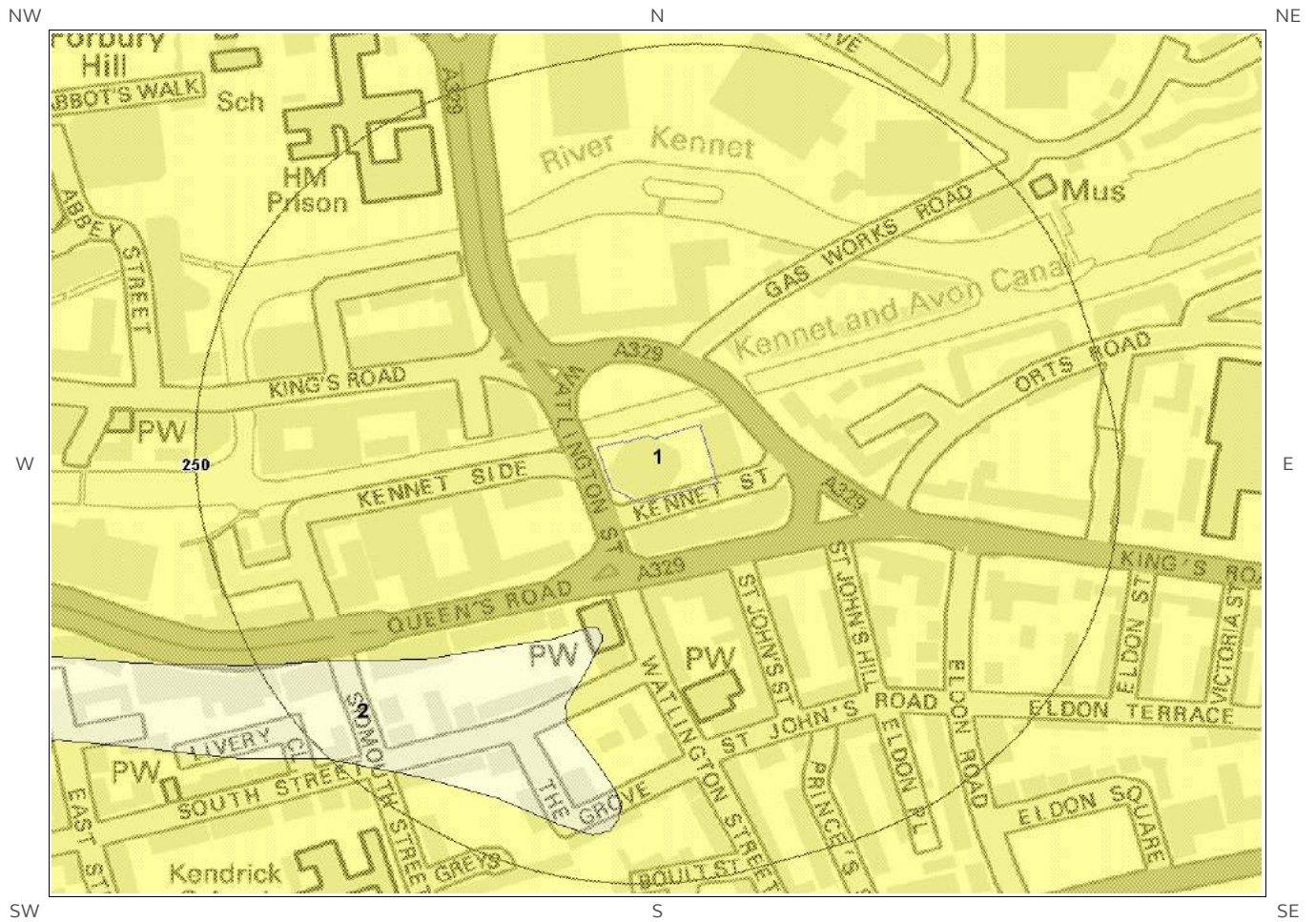


Shrink Swell Clay Legend

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6.2 Landslides map

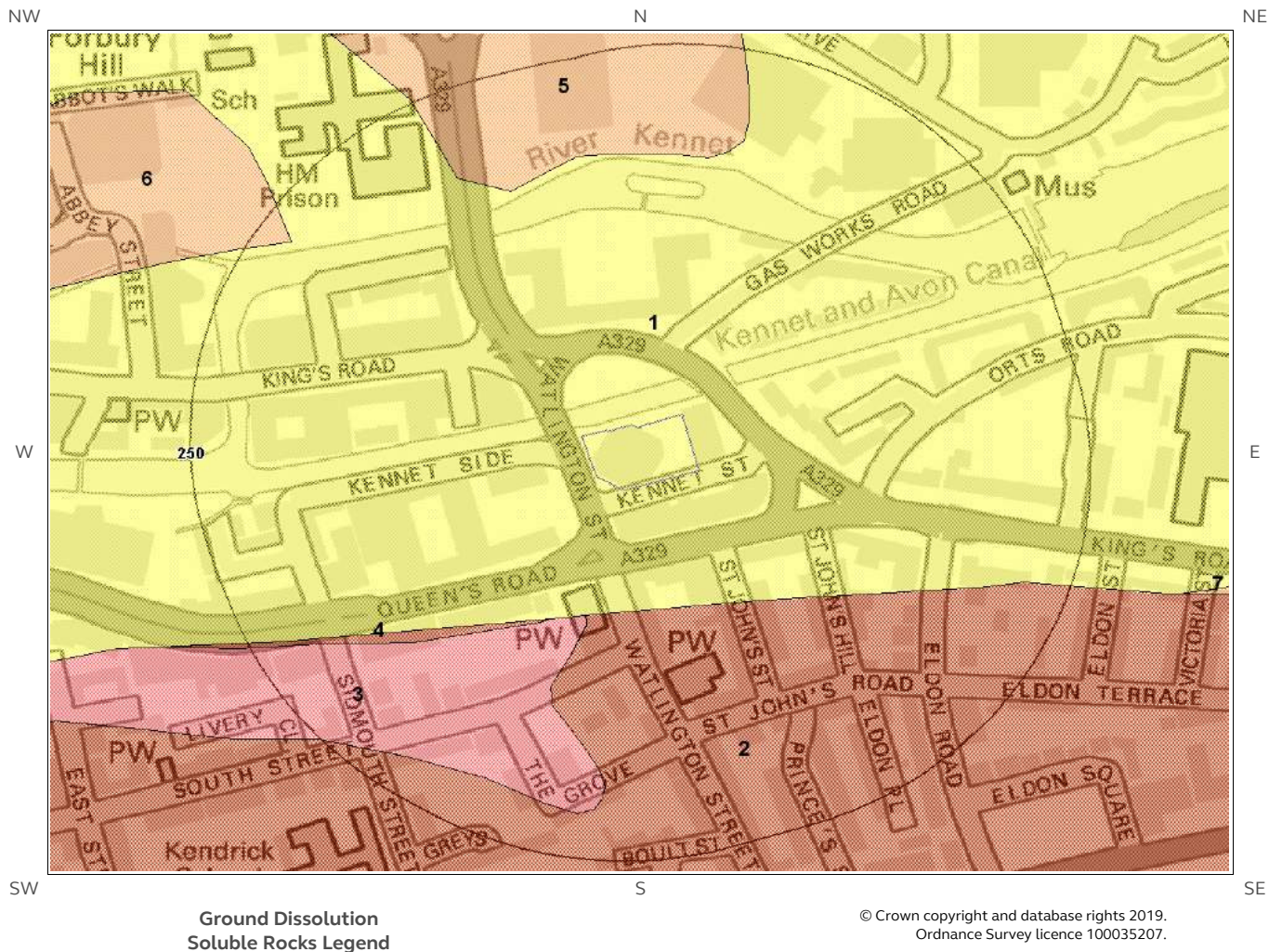


Landslides Legend

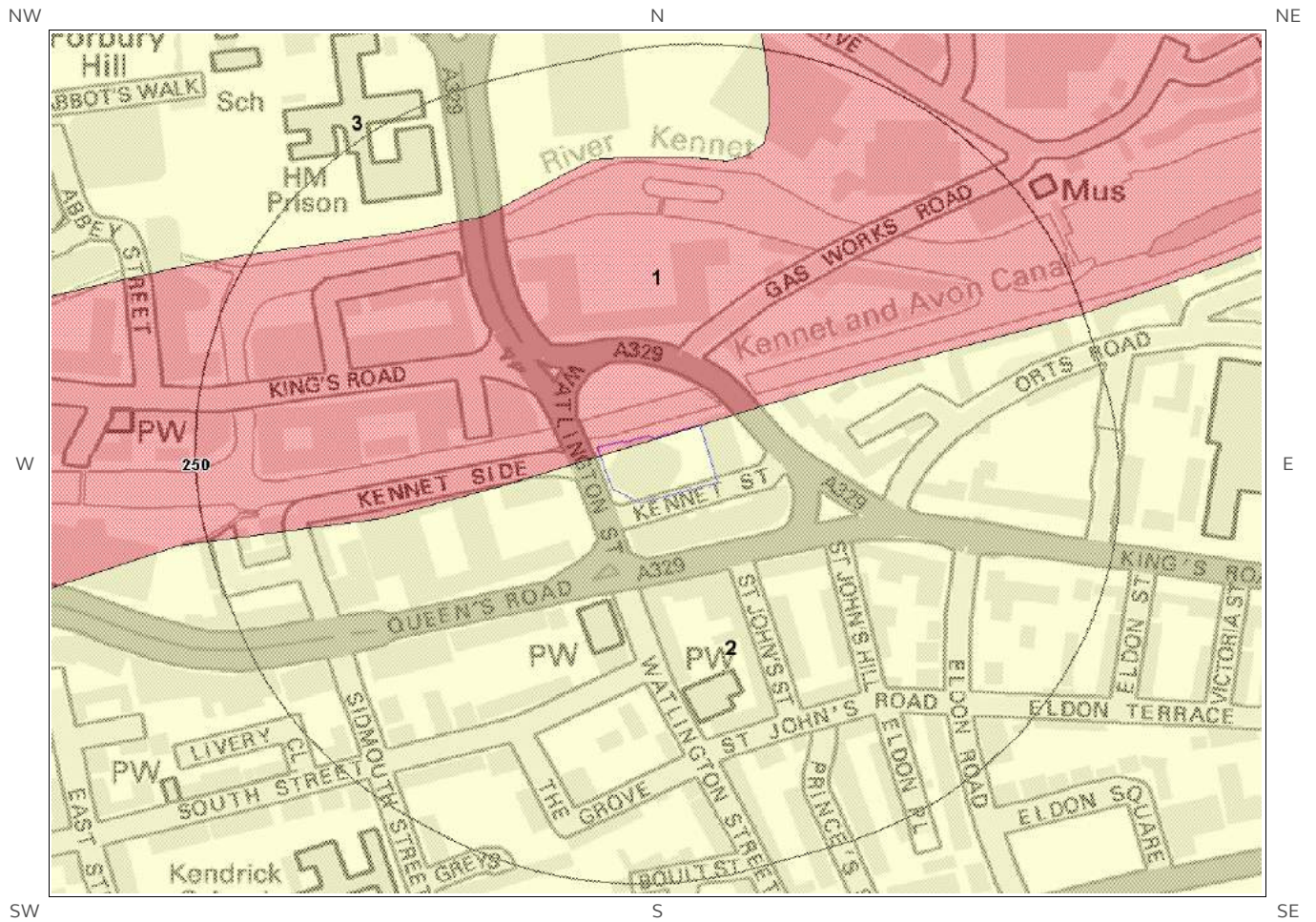
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6.3 Ground Dissolution of Soluble Rocks map



6.4 Compressible Deposits map

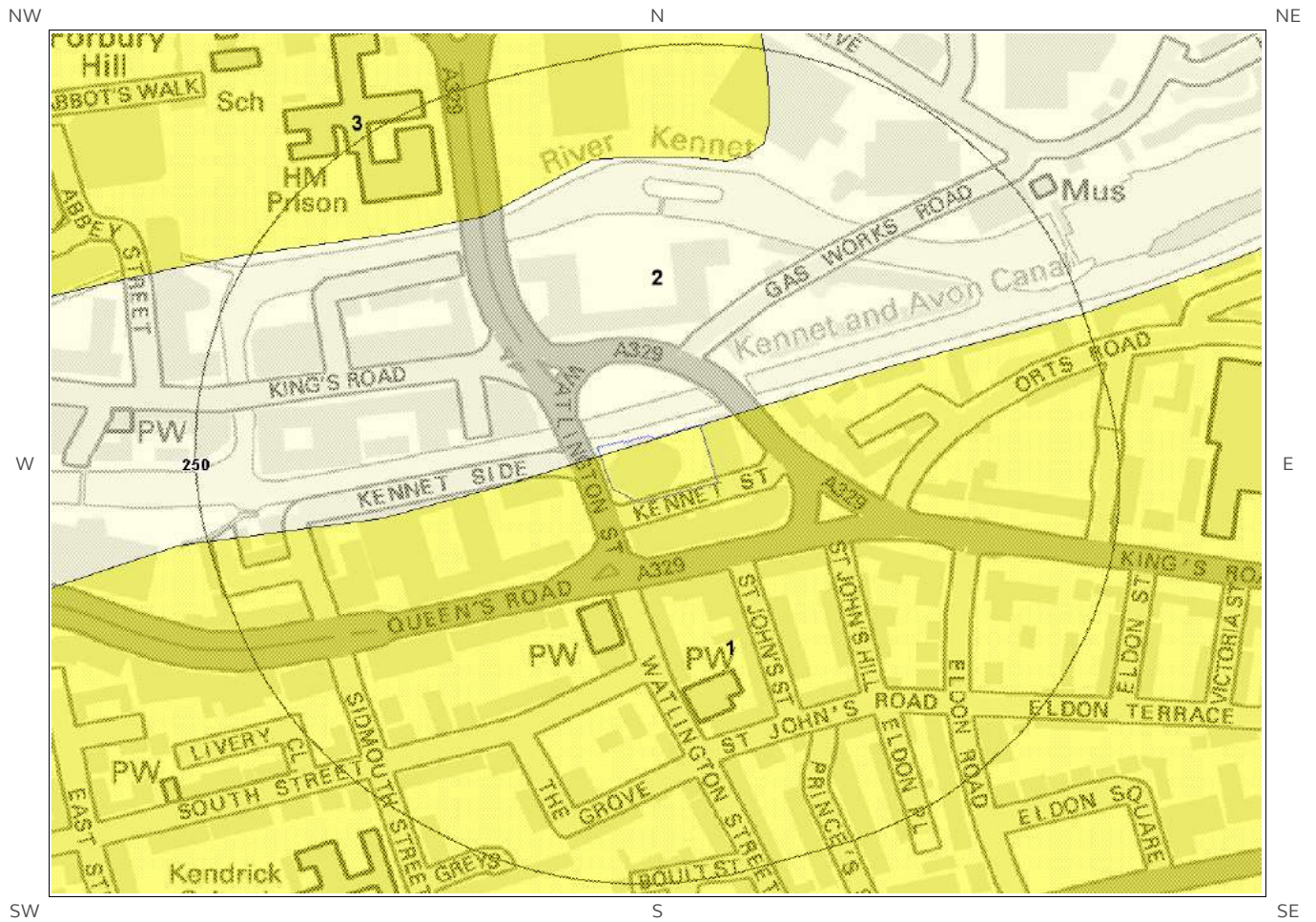


Compressible Deposits Legend

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6.5 Collapsible Deposits map

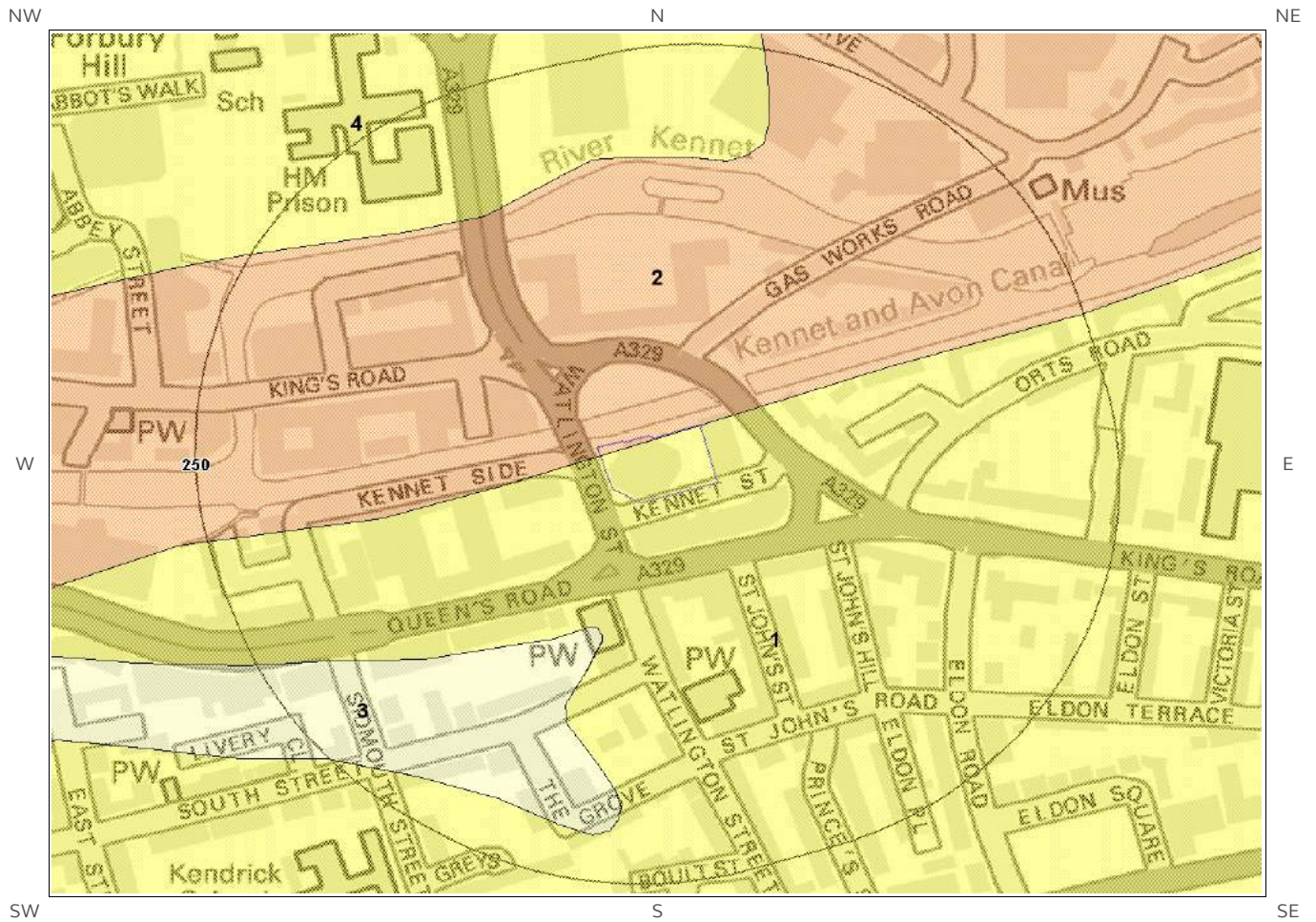


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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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	Negligible	Ground conditions predominantly non-plastic. 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 likely 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.

* 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	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

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	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:

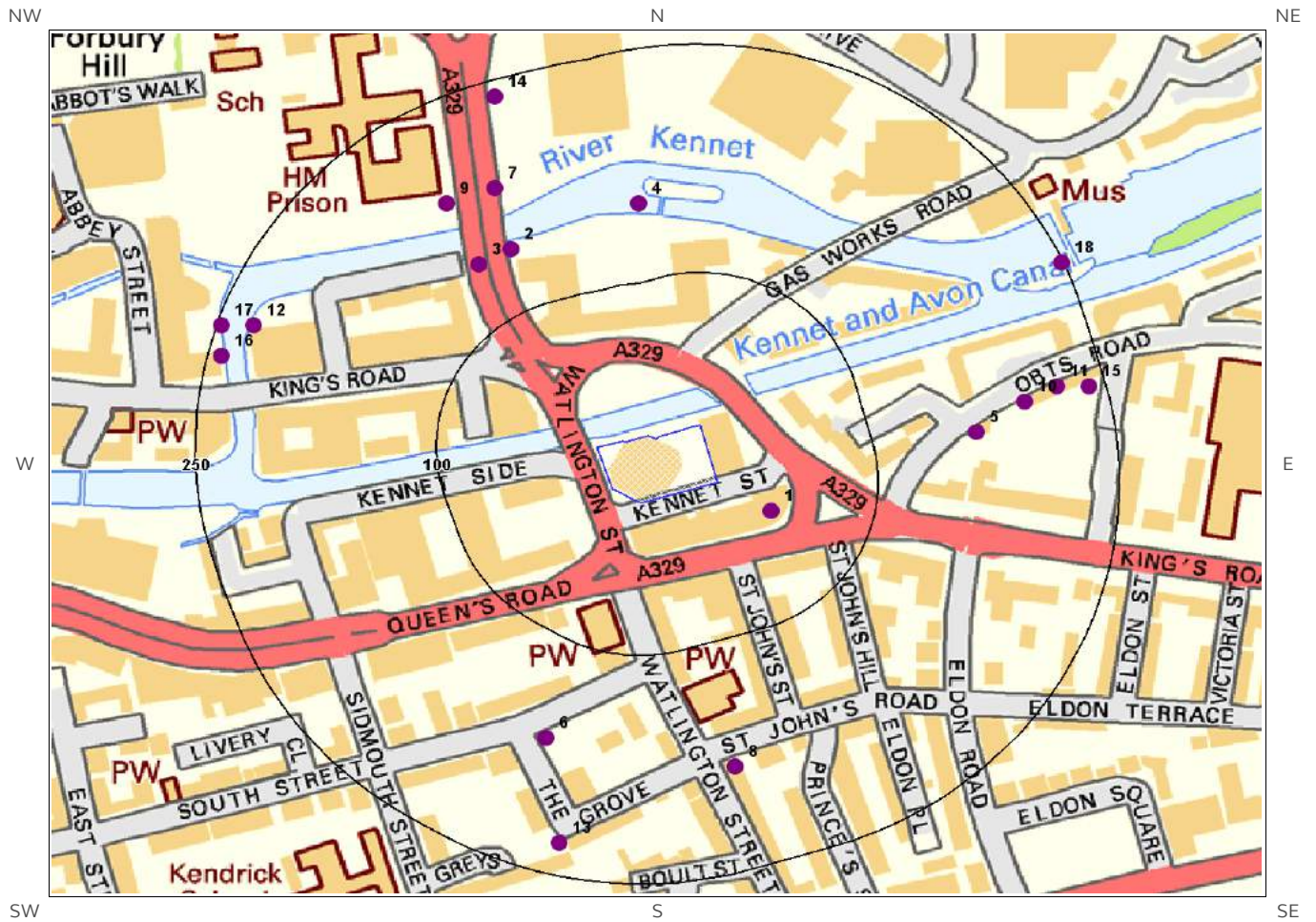
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

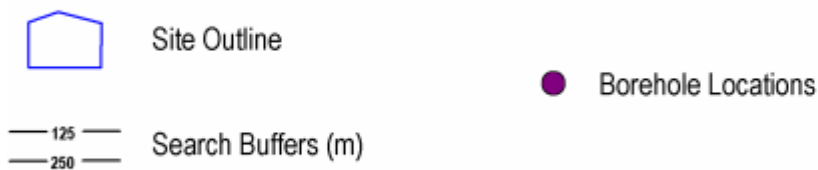
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased 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.

7 Borehole Records map



Borehole Records Legend

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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:

18

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	38.0	SE	472332 173298	SU77SW859	30	QUEENS ROAD KINGS ROAD READING 1
2	141.0	NW	472170 173470	SU77SW132	20	READING I D ROAD 8
3	141.0	NW	472150 173460	SU77SW134	20	READING I D ROAD 10
4	150.0	N	472250 173500	SU77SW36	91.44	HUNTLEY & PALMERS READING
5	164.0	E	472460 173350	SU77SW919	No details	ORTS ROAD READING 5
6	165.0	S	472192 173149	SU77SW1200	No details	Queen's Road Reading BH1
7	182.0	N	472160 173510	SU77SW131	20	READING I D ROAD 7
8	183.0	S	472310 173130	SU77SW630	7.62	63 WATLINGTON ST READING
9	186.0	NW	472130 173500	SU77SW133	20	READING I D ROAD 9
10	198.0	E	472490 173370	SU77SW918	No details	ORTS ROAD READING 4
11	220.0	E	472510 173380	SU77SW917	No details	ORTS ROAD READING 3
12	228.0	W	472010 173420	SU77SW921	No details	SHIRE HALL READING 1A
13	229.0	S	472200 173080	SU77SW714	10	LAND ADJOINING ALBION TERRACE - READING BH3
14	239.0	N	472160 173570	SU77SW130	5	READING I D ROAD 6
15	239.0	E	472530 173380	SU77SW916	No details	ORTS ROAD READING 2
16	242.0	W	471990 173400	SU77SW922	No details	SHIRE HALL READING 2
17	247.0	W	471990 173420	SU77SW935	No details	SHIRE HALL READING 15
18	249.0	NE	472513 173461	SU77SW1036	No details	BLAKES BUCK WEIR RIVER KENNET WS 6

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/15637582
#2: scans.bgs.ac.uk/sobi_scans/boreholes/428284
#3: scans.bgs.ac.uk/sobi_scans/boreholes/428286
#4: scans.bgs.ac.uk/sobi_scans/boreholes/428185
#7: scans.bgs.ac.uk/sobi_scans/boreholes/428283
#8: scans.bgs.ac.uk/sobi_scans/boreholes/428782
#9: scans.bgs.ac.uk/sobi_scans/boreholes/428285
#13: scans.bgs.ac.uk/sobi_scans/boreholes/12831011
#14: scans.bgs.ac.uk/sobi_scans/boreholes/428282

8 Estimated Background Soil Chemistry

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

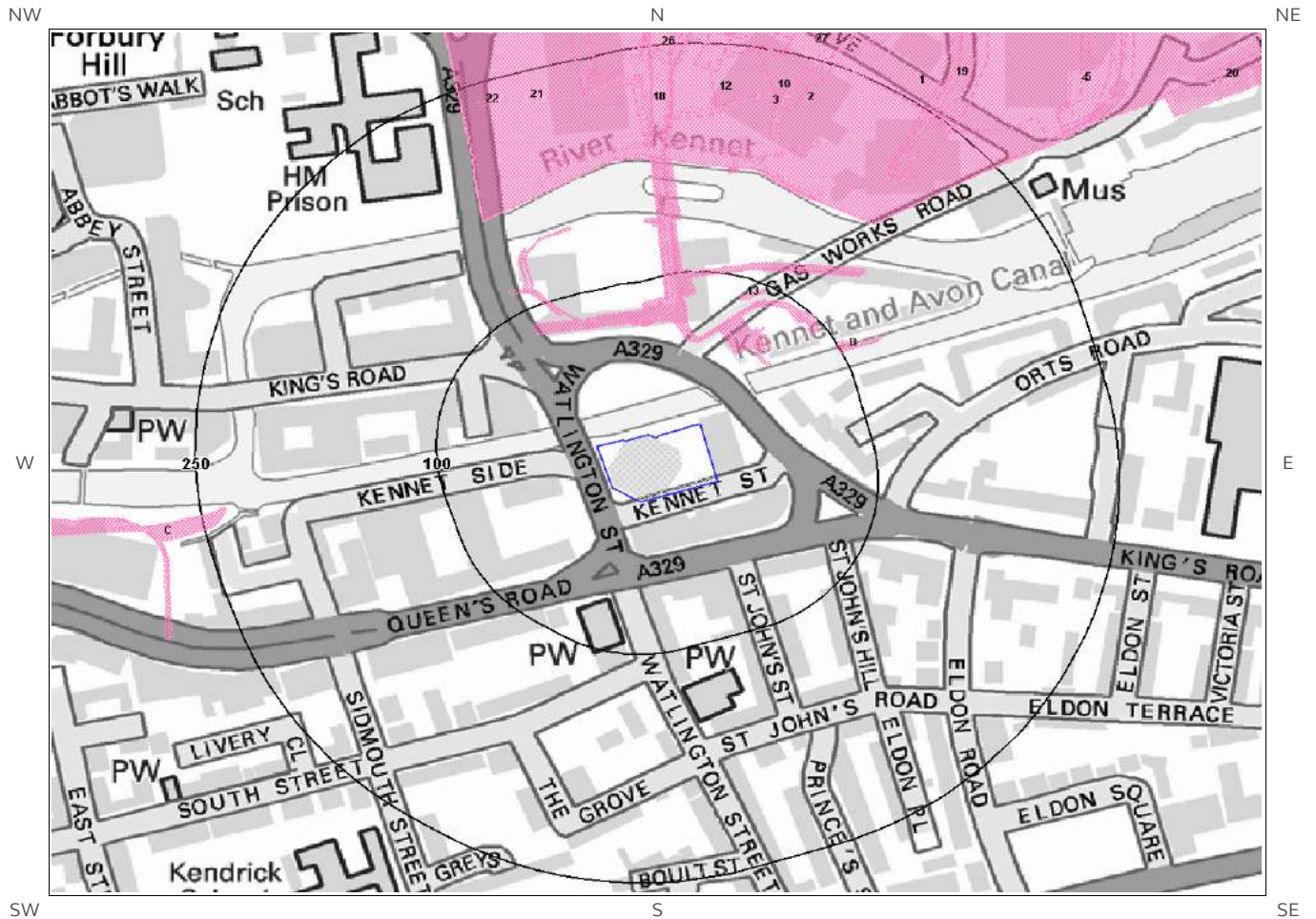
2

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	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

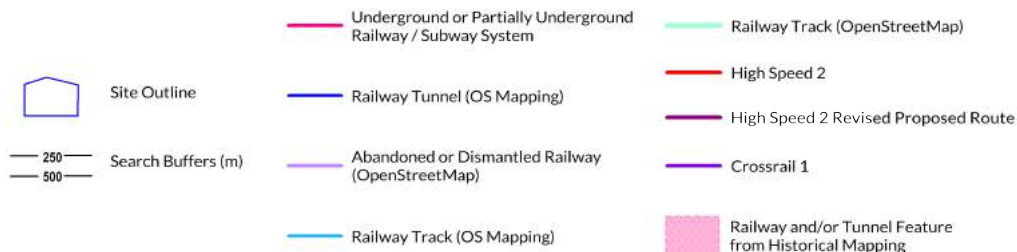
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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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? No

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

ID	Distance (m)	Direction	NGR	Details	Date
7	51	NE	472405 173569	Railway Sidings	1879
8A	55	N	472262 173539	Railway Sidings	1879
9A	55	N	472262 173539	Railway Sidings	1879
1	68	N	471639 173719	Railway Sidings	1898
10	71	N	472117 173727	Railway Sidings	1900
11	74	N	472120 173730	Railway Sidings	1931

ID	Distance (m)	Direction	NGR	Details	Date
12	74	N	472120 173730	Railway Sidings	1912
13	85	N	472433 173417	Railway Sidings	1879
14	89	N	472292 173425	Railway Sidings	1879
15B	98	NE	472499 173383	Railway Sidings	1879
16B	101	NE	472389 173408	Railway Sidings	1879
17B	101	NE	472389 173408	Railway Sidings	1879
18	134	N	n/a	Railway	1879
2	164	NE	471693 173770	Railway Sidings	1938
3	164	NE	471677 173761	Railway Sidings	1913
4	190	N	471714 173783	Railway Sidings	1938
5	194	N	471797 173791	Railway Sidings	1933
19	201	NE	472036 173695	Railway Sidings	1956
20	202	NE	472058 173657	Railway Sidings	1956
21	226	N	472299 173546	Railway Sidings	1879
6	232	N	471525 173860	Railway Sidings	1962
22	234	N	472271 173543	Railway Sidings	1879
23C	234	W	471957 173258	Railway Sidings	1879
24C	234	W	471957 173258	Railway Sidings	1879
25	235	W	472068 173234	Railway Sidings	1879
26	235	N	n/a	Railway	1899
27	235	N	n/a	Railway	1932

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? No

Have any active 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.

9.5 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? Yes

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



British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
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



The Coal
Authority

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



Public Health
England

Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettell Lane
Brierley Hill, West Midlands
DY5 3LH
Tel: +44 (0) 1384 262 000
Email: enquiries.gs@jpb.co.uk
Website: www.jpb.co.uk



Ordnance Survey

Adanac Drive, Southampton
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/>



Peter Brett Associates
Caversham Bridge House
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail: reading@pba.co.uk
Website: <http://www.peterbrett.com/home>



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