

**ENVIRONMENT**

HB (South Caldecotte) Ltd  
South Caldecotte  
Milton Keynes  
Phase 1 Geo-Environmental Assessment

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## EXECUTIVE SUMMARY

EXECUTIVE SUMMARY	
Site Location	The site is located at Land off A5, South Caldecotte, Milton Keynes, MK17 9RB at National Grid Reference 489216, 234195. The site comprises a broad triangle of agricultural land, with an area of approximately 59 hectares.
Proposed Development	The proposed development is anticipated to comprise a minimum of 2.1 million square feet of B2/B8 and ancillary employment floorspace, with associated road infrastructure and soft landscaping.
Site Setting and History	The site is relatively level, sloping gently to the southeast from a high point in the northern corner. Based on the historical mapping available, the site has always comprised agricultural land, currently mainly arable with the remainder set aside for pasture. With the exception of one small area of farm buildings, no other evidence of construction was observed on site. Drainage ditches, were present along the northern and western boundaries with observable surface water, as well within the site itself.
Geological Setting	No superficial deposits are present in a large area of the north-eastern corner of the site, and a small area in the south-west. The remainder of the site comprises one of three types of superficial deposit; River Terrace Deposits, Alluvium and Head Deposits. The bedrock geology is anticipated to comprise the Oxford Clay Formation with the West Walton Formation present in the south-eastern corner.
Regulatory Setting	A number of planning applications associated with Cross Roads Farm have been submitted and accepted regarding extensions and the change of use of sheds. Several planning applications were also associated with Caldecotte Lake Business Park, noted to have previously been utilised as a sewage works with an associated small-scale tip. Several other pertinent features have been identified within relatively close proximity of the site, including pollution incidents, a historical petrol filling station and a number of electricity sub-stations and tanks. However, with the exception of potential gas migration, the majority of these are not considered to pose any likely significant risk to the development.
Geotechnical Setting	The underlying geology across the site is indicated to be comprised of variable superficial deposits. Mature trees may impact on cohesive soils susceptible to volume change and there is the potential for aggressive soil conditions to be present. Soakaways may be viable for drainage dependant on the geology present.
Environmental Appraisal	There was no observable evidence of contamination from the walkover. The historical mapping has identified the potential for localised Made Ground or isolated pockets of possible contamination, mainly associated with the farm buildings, and the potential for the use of pesticides on a site wide basis. The potential for migration of gases from off site has also been identified.
Recommendations	A ground investigation should be undertaken on a site wide basis in order to obtain representative samples for geotechnical and geo-environmental laboratory testing, to observe ground conditions and characterise the variable geology present, including the presence of any Made Ground and undertake in-situ testing. Monitoring wells should be installed to provide coverage across the site for gas and groundwater monitoring.
This summary should be read in conjunction with BWB's full report (ref. SCD-BWB-XX-YE-RP-0001_Ph1) and reflects an assessment of the Site based on information received by BWB at the time of production.	

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## 1. INTRODUCTION

### Instruction

- 1.1 BWB Consulting Ltd (BWB) was instructed by HB (South Caldecotte) Ltd (the Client) to carry out a Phase 1 Geo-Environmental Assessment. Details of the project brief are included in BWB proposal reference 170803/R1/0001/NTS2682/RC/KES dated August 2017/April 2018 .
- 1.2 The proposed development is anticipated to comprise a minimum of 2.1 million square feet of B2/B8 and ancillary employment floorspace, with associated road infrastructure and soft landscaping.

### Objectives

- 1.3 This report has been completed to present pertinent information into the environmental risks and liabilities associated with the site. It has been completed to fulfil the requirements of a preliminary risk assessment in accordance with BS10175: 2011+A2:2017 'Investigation of Potentially Contaminated Sites Code of Practice' and CLR11 'Model Procedures for the Management of Contaminated Land'. The objectives of the report are:
- To assess historical activities at the site with respect to their potential impact on the site environment;
  - To characterise the environmental setting of the site, identify migration pathways and vulnerable receptors for contamination originating at the site, focusing on potential soil and groundwater liabilities;
  - To assess historical and current surrounding land use in relation to known or potential off-site contamination issues that may impact the subject property;
  - To review existing site investigation and remediation information available for the site;
  - To develop a preliminary Conceptual Site Model (CSM); and
  - To assess potential environmental liabilities associated with the site.

### Scope of Works

- 1.4 The Scope of work included:
- Site walkover to inspect the current condition of the site at ground surface (photographs presented as Appendix 2);
  - Review of the following information:
    - Groundsure Reports comprising an Enviro-Insight and Geo-Insight numbered HMD-214-4874329 and HMD-214-4874330 respectively (see Appendix 3);
    - Historical Ordnance Survey Mapping (Appendix 4);
    - British Geological Survey (BGS) exploratory hole records ([www.bgs.ac.uk](http://www.bgs.ac.uk));
    - BGS (1992) 1:50 000 Scale Leighton Buzzard Sheet 220 Solid and Drift;

- Zetica – regional unexploded bomb risk maps ([www.zetica.com](http://www.zetica.com)); and
- MAGIC Website ([www.magic.gov.uk](http://www.magic.gov.uk)).
- Provide a summary of key risks that require further investigation in order to control the identified risks; and
- Produce a Geo-Environmental Assessment (this report) providing qualitative contamination risk assessment and ground-related constraints to the proposed development.



## 2. THE SITE

### Site Location

- 2.1 The site is located at Land off A5, South Caldecotte, Milton Keynes, MK17 9RB at National Grid Reference 489216, 234195. The location of the site is shown in Figure 2.1.

Figure 2.1: Site Location Plan



Reproduced from the Ordnance Survey Open Map – 1: 25,000 with the permission of the controller of Her Majesty's Stationery Office Crown Copyright Reserved

### Site Description

- 2.2 An aerial photograph of the site is presented as Figure 2.2. Photographs from the site inspection are presented in Appendix 2.
- 2.3 The site comprises a broad triangle, with an area of approximately 59 hectares. The site is relatively level, sloping gently to the southeast from a high point in the northern corner.

Figure 2.2: Aerial Photograph



### Site Walkover

- 2.4 A site walkover was completed on 17 April 2018 by a representative of BWB. Photographs from the walkover are presented in Appendix 2.
- 2.5 The site comprises agricultural land, approximately 70% arable with the remainder set aside for pasture. There was no access to fields set aside for pasture in the west of the site at the time of the walkover, although the land was observable from other areas of the site and perimeter.
- 2.6 With the exception of one small area of buildings, set around a courtyard with one further external barn to the north, no other evidence of construction was observed on site. No access was available to the farm buildings. Other than that associated with the farm buildings, there was no other evidence of hardstanding.
- 2.7 The northern half of the site was occupied by two fields, both cropped with wheat, with a small area of land set aside in the most northern corner of the site close to the railway line. A drainage ditch separated this land from the cropped field to the south. A public footpath access point was located opposite Station Road at the northern extent of the site.
- 2.8 The land was observed to slope gently to the southwest. The drainage ditch ran broadly parallel with the palisade fencing separating the site from the railway land to the north and ran both inside and outside of the fencing. Moving west, the ditch ran predominantly outside of the boundary and was culverted to allow access over to the railway bridge and public land beyond.
- 2.9 Overhead electricity cables ran broadly parallel to the northern boundary, set some 40m into the site, with a branch running south through the centre of the site. Gas pipeline marker posts were noted in several places along the northern boundary.

- 2.10 Exposed soil within the cropped fields indicated principally cohesive material, with abundant fine to coarse angular to subangular flint and chert gravel. Sporadic pottery and tile fragments could be observed throughout the site, particularly concentrated towards the centre.
- 2.11 A small copse of mature trees was located broadly centrally within the north of the site, slightly elevated from the surrounding fields. An abundance of spent shotgun cartridges was concentrated around this part of the site.
- 2.12 The majority of the site was dry and firm underfoot, although localised waterlogging was observed in places, particularly at access points in field boundaries.
- 2.13 West of the site, the A5 ran on an embankment, some three metres or so higher than the site. A drainage channel again ran along the western boundary and was joined by one separating the pasture fields to the south from the cropped fields in the north.
- 2.14 Cattle and sheep were observed within separate fields in the south of the site. Ridge and furrow were observed in a number of the fields, typical of Middle Age open field system. Pastureland ran the majority of the length of the A5 to the island in the southern corner. Drainage ditches could be observed along many of the field boundaries.
- 2.15 A number of mature trees surrounded the farm buildings, within another copse concentrated just to the north. Beyond that, the field adjacent to the V10 Brickhill Street looked to be ploughed and set aside without crop, with the largest cropped field north of this, separated by a field boundary.
- 2.16 Moving north, a small area of land, slightly elevated and surrounded by a ditch and wooden fence in poor condition was understood to belong to Anglian Water. The majority was overgrown, with evidence of electrical cabinets in the north of the area.
- 2.17 Drainage ditches, were present along the northern and western boundaries, either within or just outside of the boundary fencing or hedges. Ditches with observable surface water were present within the site itself, notably running from the centre of the site in a south-easterly direction to the boundary, which also demarked the change in use from arable to pasture in the east.
- 2.18 There was no visual or olfactory evidence of sources of significant sources of on-site contamination in the form of spillages or surface staining. No tanks were observed, although there was no access to the farm buildings adjacent to V10 Brickhill Street.
- 2.19 No invasive species were observed during the site walkover.

#### Potential Constraints to Ground Investigation

- 2.20 All landowners and access requirements will need to be confirmed prior to undertaking any intrusive works.
- 2.21 Ground conditions were generally good in terms of vehicle access, although localised soft or wet areas must be anticipated.

- 2.22 Overhead cables can be observed in the north of the site, and a gas pipeline is anticipated to run along the northern boundary. A full utilities search is understood to have been instructed.

#### Site Surroundings

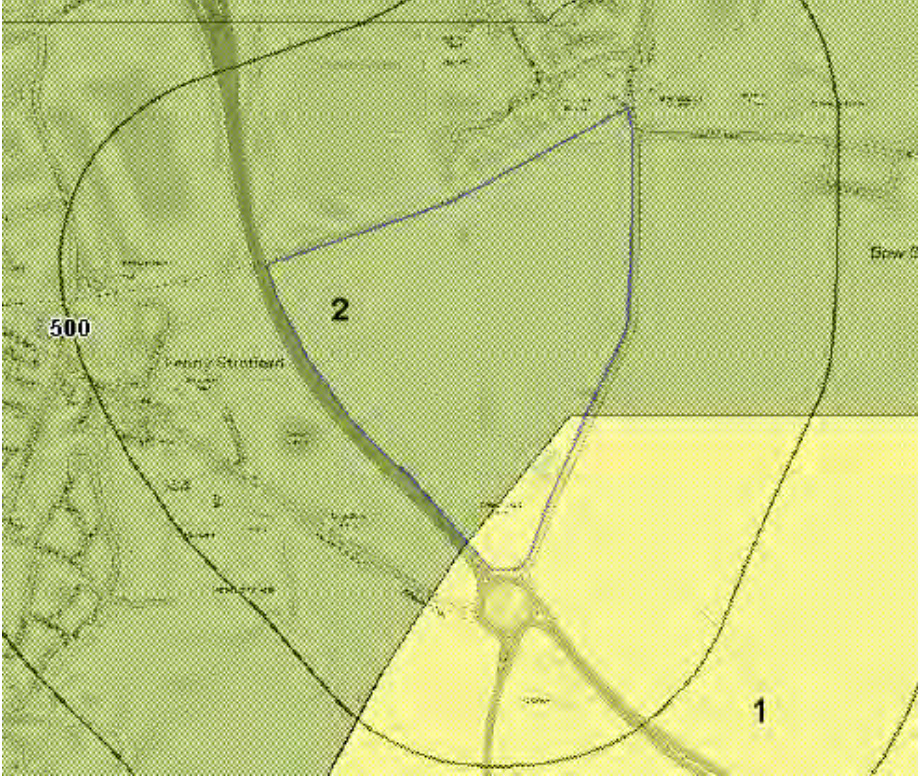
- 2.23 The site is bound to the north by a railway line with Caldecotte Lake and a commercial estate beyond. The A5 bounds the west of the site, with agricultural land and a garden centre beyond. V10 Brickhill Street is present to the east, with agricultural land beyond, with the connecting roundabout to the south. Milton Keynes is present in the wider northern and western areas with agricultural land to the wider southern and eastern areas.

### 3. PUBLISHED GROUND CONDITIONS

3.1 The anticipated ground conditions for the site and controlled waters vulnerability is discussed within Table 3.1 below.

Table 3.1: Published Ground Conditions

<p>Geology</p>	<p>It is anticipated that the majority of the site will comprise varying depths of topsoil, will Made Ground expected to be present along the rail corridor to the north as indicated within the Groundsure Report.</p> <p><u>Superficial Deposits</u></p> <p>No superficial deposits are present in a large area of the north-eastern corner of the site, and a small area in the south-west. The remainder of the site comprises one of three types of superficial deposit, as seen in Figure 3.1Error! Reference source not found..</p> <p>The western area of the site comprises River Terrace Deposits (RTD) (No.4 and 5) described as sand and gravel locally with lenses of silt, clay or peat. A thin band of Alluvium (No.3.), associated with a historical surface water feature, is present through the centre of the site and is described as normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. The third superficial deposit on site comprises Head Deposits (No.2 and 6) present in the eastern area of the site and is described as poorly sorted and poorly stratified deposits of gravel, sand and clay locally with lenses of silt, clay or peat and organic material.</p> <p>Figure 3.1: Superficial Geology</p> <p><u>Bedrock Geology</u></p> <p>The bedrock geology is anticipated to comprise the Oxford Clay Formation (OCF) across the majority of the site, with the West Walton Formation (WWF) present in the south-eastern corner of the site, as presented in Figure 3.2. The former is described as a grey, generally smooth to slightly silty, with sporadic</p>
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	<p>beds of argillaceous limestone nodules. The latter is described as calcareous mudstone, silty mudstone and siltstone, with subordinate fine-grained sandstones and argillaceous limestone or siltstone nodules.</p> <p>Figure 3.2: Bedrock Geology</p> 
<p>Hydrogeology</p>	<p><u>Superficial Deposits</u></p> <p>The Environment Agency (EA) classifies the RTD and Alluvium as a Secondary A Aquifer, which are defined 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.</p> <p>The Head Deposits however, are classified as a Secondary Undifferentiated Aquifer, which is assigned where it is not possible to attribute either category A or B to a rock type. These layers have previously been designated as both minor and non-aquifers in different locations to the variable characteristics of the rock type.</p> <p>The superficial deposits are classified as having an intermediate leaching potential (category I1), which is defined as soils which can possibly transmit a wide range of pollutants.</p> <p><u>Bedrock Geology</u></p> <p>The EA classifies the bedrock geology as unproductive stratum, which are defined as rock layers with low permeability that have negligible significance for water supply or river base flow.</p> <p>No groundwater or potable abstraction licenses are present within 1km of the site.</p> <p>The site is not located within a Source Protection Zone (SPZ).</p>
<p>Surface Waters</p>	<p>An inland river is shown in the Groundsure report running through the centre of the site, flowing from east to west, which feeds into the River Ouzel approximately 90m west of the site at its closest point.</p> <p>A very small section in the north-western corner of the site is assigned a low flood rating (greater than 1 in 1000 but less than 1 in 100 chance of flooding in any given year) in relation to flooding from rivers and the sea (RoFRaS), with a Zone 2</p>

	<p>floodplain and medium flood rating located approximately 20m north and west of the site.</p> <p>The site is located within an area of superficial deposit flooding at the surface (groundwater flooding associated with shallow unconsolidated sedimentary aquifers overlying unproductive aquifers).</p> <p>River Quality data indicates the River Ouzel to have a Biological Quality Grade B (2005-2009) (935m south-west) and a Chemical Quality Grade from a B (2005-2006) to a grade A (2007-2009) (385m south-west).</p> <p>A historical surface water abstraction licence (associated with the abstraction of up to an annual volume of 600m<sup>3</sup> for 'make up or top up water') was located approximately 210m north of the site.</p> <p>Three historical licensed discharge consents were reported on-site to tributaries of the River Ouse/Ouzel, for agricultural effluent and sewage discharges.</p>
Ground Gas & Radon	<p>The site is not within a radon affected area, therefore no radon protection measures are required.</p> <p>Made Ground, Alluvium, RTD and Head Deposits are all anticipated to be present. These deposits could act as a potential source of low levels of methane and carbon dioxide given their potential organic content.</p>
Mining and Mineral Extraction	<p>No mining has occurred on site. Historical surface workings are noted approximately 15m to the north-east and 210m to the west associated with a sewage works and brick works, respectively.</p>

## 4. Site History

4.1 Historical Ordnance Survey (OS) mapping for the site area has been reviewed. These maps and plans date from the 1881 OS County Series to the current 2004 National Grid Plans. The historical plans reviewed have been reproduced in Appendix 4. The key points of the historical development of the site and surrounding area are summarised below in Tables 4.1 and 4.2.

Table 4.1: Key Points of Development History

Dates	On Site	Significance
1881 - 2014	<p>The site appears to be used for agricultural purposes demarcated into a number of fields by tree-lined hedgerows. CROSS ROADS FARM and a footpath are present in the south of the site, and further footpaths are present across the north of the site.</p> <p>The site remains unchanged until the 2002 plans where Cross Roads Farm has been extended with a number of new developments.</p> <p>Maps Reviewed: 1881 (1:10,560), 1898 (1:10,560), 1900 (1:10,560), 1924 (1:10,560), 1938 (1:10,560), 1950 (1:10,560), 1970 (1:10,560), 1977 (1:10,000), 1987 (1:10,000), 2002 (1:10,000), 2010 (1:10,000) and 2014 (1:10,000).</p>	<p>Limited contamination sources are expected from the site history.</p> <p>MADE GROUND may be present from the development of Cross Roads Farm.</p> <p>Localised contaminants may include PETROLEUM HYDROCARBONS, HEAVY METALS (namely lead), PESTICIDES, ASBESTOS CONTAINING MATERIALS (ACMs), and GROUND GAS.</p>

Table 4.2: Key Points of Surrounding Area Development History

Dates	Off Site	Significance
1881 - 1900	<p>The L&amp;NWR BEDFORD BRANCH RAILWAY LINE runs along the norther boundary of the site.</p> <p>The <i>River Ouzel</i> is present approximately 30m west of the north-western tip of the site, flowing in a northern direction. <i>Grand Union Canal</i> is present approximately 400m west of the site at its closest point.</p> <p>A BRICK WORKS and GAS WORKS are present approximately 300m west of the site.</p> <p>Maps Reviewed: 1881 (1:10,560), 1898 (1:10,560) and 1900 (1:10,560).</p>	<p>The RAILWAY INFRASTRUCTURE, BRICK WORKS, TANKS, SEWAGE WORKS and GAS WORKS and are considered to represent a potential source of PETROLEUM HYDROCARBON, HEAVY METALS, ACIDS and ALKALIS, OILS and SOLVENTS, VOLATILE and SEMI VOLATILE ORGANIC COMPOUNDS (VOCs and SVOCs) and asbestos containing materials (ACMs).</p>
1924 - 1950	<p>The brick works no longer seem to be present on the 1924 plans, however, a TANK is present close to its location, approximately 200m west of the site.</p> <p>A SEWAGE DISPOSAL WORKS with associated filter beds is present approximately 400m north-west of the site.</p> <p>The gas works are now labelled as Fenny Stratford Gas Works (Gas, Light and Coke Co).</p> <p>Allotments are present adjacent to the north and east of the site.</p> <p>Maps Reviewed: 1924 (1:10,560), 1938 (1:10,560), 1950 (1: 0,560).</p>	<p>Given the distance from site and the underlying geology these land uses are not considered to represent a significant risk to the site.</p>



<p>1970 - 1987</p>	<p>Fenny Stratford has seen RESIDENTIAL EXPANSION approximately 500m west of the site at its closest point between 1970 and 1977.</p> <p>An additional SEWAGE WORKS has been developed approximately 80m north of the site, with the sewage works present north-west seeing further development and the addition of TANKS from the 1977 plans. Unspecified WORKS and another TANK is present approximately 400m west of the site.</p> <p>The A5 has been developed directly to the west of the site from the 1987 plans. Additionally, Caldecotte Lake has been developed north of the site, and is positioned approximately 150m away at its closest point.</p> <p>Maps Reviewed: 1970 (1:10,560), 1977 (1:10,000) and 1987 (1:10,000).</p>	
<p>2002 - 2014</p>	<p>Both sewage works have been replaced with an industrial estate to the north-west and offices to the north.</p> <p>Large RESIDENTIAL AND COMMERCIAL expansion has occurred to the west and north-east of the site.</p> <p>Maps Reviewed: 2002 (1:10,000), 2010 (1:10,000) and 2014 (1:10,000).</p>	

#### Aerial Photographs

- 4.2 Aerial photography viewed via the Groundsure Report (Appendix 3) dated 3<sup>rd</sup> July 2015 indicates the site to be its current layout comprising agricultural fields demarcated with tree lined hedgerows and a farm present in the south-eastern area of the site.
- 4.3 Aerial photography viewed through Google Earth dated 1945, 2000, 2003, 2004, 2005, 2006, 2007, 2010 and 2017 also show the site in its current layout.

#### Operational / Company Records

- 4.4 No operational or company records have been reviewed as part of this assessment.

#### Previous Investigation Reports

- 4.5 BWB are not aware of any previous investigations at this site.

## 5. REGULATORY SETTING

### Planning History

- 5.1 The Milton Keynes Council Planning Portal was reviewed on 23<sup>rd</sup> April 2018 for pertinent planning applications and permissions on and in close proximity to the site.
- 5.2 A number of planning applications since 2000 associated with Cross Roads Farm have been submitted and accepted regarding extensions and the change of use of sheds.
- 5.3 Several planning applications associated with Caldecotte Lake Business Park including the development of a four-storey office block are located approximately 50m north of the site at the closest point. A Phase 1 report indicates the site to have been a low risk to human health and controlled waters.
- 5.4 The site was noted to have previously been utilised as a sewage works (1950s-1970s) with an associated small-scale tip (pre-1974). A ground investigation prior to the development of the site indicated the site did not require remediation. However, at the time the local authority identified the site for assessment under the Part IIA of the Environmental Protection Act (EPA) 1990 but assigned a low priority. No reference to this has been identified within the Groundsure report, therefore, it is considered that this classification has since been removed following the site development.
- 5.5 No pertinent planning applications associated with the site or in close proximity to the site are deemed to be significant.

### Permits Consents and Authorisations

- 5.6 A full listing of permits, consents and authorisations including discharge consents, pollution incidences and other environmental information included in the Groundsure Report, is presented in Appendix 3.
- 5.7 The following pertinent features have been identified which have the potential to have a detrimental impact on site.
  - Three current Part B permit exists approximately 260m south-east, 340m south-west and 450m west of the site associated with the unloading and storage of petrol at the Shell garage, located at MK17 9AA, and waste oil burning at Schubert's Motors and Chalky White MK2 2BL respectively; the latter two have new applied legislation.
  - Two historical Part B Permits previously existed approximately 375m west and 500m south-west of the site associated with the coating and enamel process at Bpc Magazines and dry cleaning at Wharfside Dry Cleaners and Laundry.
  - Two recorded pollution incidents occurred on 14<sup>th</sup> January and September 24<sup>th</sup> 2002, associated with diesel and contaminated water respectively. Both had no impact on land and air (Category 4) and a minor impact on water (Category 3).
  - One record of the storage of hazardous substances at the Tesco National Distribution Centre exists approximately 435m north-west of the site.

- A historical petrol filling station was noted to be present approximately 240m south of the site.
- A number of electricity sub-stations, and tanks are positioned within 250m of the site west and north-west of the site (post 1970) with the latter of varying ages.

5.8 A number of licensed discharge consents have been identified within 500m of the site. These are summarised in Table 5.1 below:

Distance	Direction	Licensee	Effluent Type	Receiving Water	Dates
0	On site	Cross Roads Farm	Agricultural	Tributary Ouse River	Historical
			Sewage discharge	Tributary Ouzel River	
130	SW	Belvedere Nurseries	Sewage discharge	Tributary Ouzel River	Historical
165	NW	SWS Industrial Site	Miscellaneous Discharge	Tributary Ouzel River	Surrendered under EPR 2010 – 2017
255	W	Watling Street	Miscellaneous Discharge	River Ouzel	Historical
260	NW	SWS Industrial Site	Miscellaneous Discharge	River Ouzel	Surrendered under EPR 2010 – 2017
325	SW	Watling Street	Trade Discharge	River Ouzel	Historical
350	SW	Fenny Stratford	Miscellaneous Discharge	River Ouzel	Historical
400	W	Bletchley Watling Street	Sewage Discharge	Grand Canal Union	Historical
445	SW	Manor Fields PS EO	Sewage Discharge	River Ouzel	Historical
495	NW	Caldecotte Area	Miscellaneous Discharge	Caldecotte Lake	Historical

5.9 Due to the distance from site, the geology of the area and the dates the above are not considered to pose a significant risk to the site.

### Landfilling and Waste Management

5.10 A full listing of EA, BGS and Local Authority recorded landfills are provided in the Groundsure Report presented in Appendix 3.

5.11 The following facilities have been identified which have the potential to have a detrimental impact on site.

- Two records of historical landfill sites are positioned approximately 10m north-west and 440m south-west of the site, located at Fenny Stratford and the Formal Canal Dredging Tip respectively. No further information regarding license dates and waste type are provided.

## 6. GEOTECHNICAL APPRAISAL

6.1 The Groundsure report, site history, current site-setting and geology setting have all been considered in order to provide an indication of the potential ground related constraints and opportunities in the context of the proposed development as set out in Table 6.1 below.

Table 6.1: Ground Related Constraints & Opportunities

Potential Constraint / Opportunity	Explanation	Potential Mitigation Options
Made Ground	Varying depths of Made Ground are likely to be present around the farm area.	Made Ground in its current condition is unlikely to be suitable as a founding stratum without treatment. Foundations will need to be advanced beyond the Made Ground into competent natural strata, or the Made Ground removed and replaced with suitable engineered fill.
Topsoil	Varying thicknesses of topsoil are anticipated to be present across the majority of the site. Significant volumes may therefore be generated as part of a site strip.	Depending on the quality of the topsoil, it may be possible to sell this material as a commodity or reuse it on another area of the site.
Preliminary Foundation Solution	Given the proposed development comprises a number of different buildings, foundations solutions will therefore be undertaken on a building by building basis; due to the varying ground conditions across the site.	In-situ tests and geotechnical laboratory testing should be undertaken across the site to clarify the properties of the soils.
Trees and Shrink/Swell Clays	Mature trees are present within the site boundary, positioned along field boundaries. Given the geology of the site, tree root systems could potentially create a shrink/swell issue for foundations in close proximity.	Depending on the volume change potential of the shallow soils, foundations in close proximity to new or existing trees may need to be locally deepened beyond the zone of influence of tree roots. Planting or removal of trees or shrubs near to buildings are likely to alter the physical characteristics of the soils locally.
Pyritic Geology	The underlying bedrock geology of the OCF is known to be pyritic.	Geotechnical testing of the bedrock geology will seek to inform concrete design classifications.
Coal Mining and Mineral Extraction	The site is not located within a high-development risk area.	No further action is required.
Earthworks	The site slopes from south to north-western corner of the site from approximately 76mAOD to 65mAOD. Earthworks may therefore be required prior to the development.	Geotechnical testing should seek to clarify the properties of soils on site, and to determine their potential for re-use.

<p>Drainage and Soakaways</p>	<p>Based on the anticipated ground conditions, a soakaway drainage solution may be possible within the Alluvium, RTD and Head Deposits present on site. However, this is not consistent across the entire site. The underlying bedrock geology is unlikely to be suitable and therefore an alternative solution may be required.</p>	<p>If soakaway drainage is an option to be explored then soakaway testing should be undertaken, within the superficial deposits present on site, in general accordance with BRE365 guidance.</p>
<p>Roads and Pavements</p>	<p>California Bearing Ratio (CBR) values should be sought for road and pavement design.</p>	<p>In-situ CBR testing using a Dynamic Cone Penetrometer (DCP) prior to excavations should be undertaken to infer CBR values. Furthermore, geotechnical testing should be undertaken to provide consistency of results.</p>
<p>Ground Dissolution Hazards</p>	<p>The Groundsure report indicates the following ground stability hazards relating to the site:  No Hazard: Ground dissolution of soluble rocks.  Very low risk: Collapsible deposits, Landslide deposits.  Low risk: Running sands.  Moderate risk: Shrink-swell clays, compressible deposits.</p>	<p>There is possible risk associated with compressible deposits and shrink-swell clays on site. Ground conditions should be assessed during a ground investigation to confirm this.</p>
<p>UXO</p>	<p>UXO risk maps indicate the site to be located in a low risk area.</p>	<p>No further action is necessary.</p>

## 7. PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

### Introduction

- 7.1 The risk posed by any contaminants in soil or groundwater will depend on the nature of the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.
- 7.2 The following sections discuss all the identified potential on and off-site sources, pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors such as human health and/or controlled waters from the data gained from the desk study. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.
- 7.3 Three impact potentials exist for any given site; these are:
- The site impacting upon itself;
  - The site impacting on its surroundings; and
  - The surroundings impacting on the site.
- 7.4 All three impacts need to be considered in a risk assessment.
- 7.5 A Source, Pathway, Receptor analysis has been undertaken for the site based on the information provided in the preceding sections. This is presented as Table 7.1 and further information about the risk classification scheme is included within Appendix 5.
- 7.6 Sources (S); These are potential or known sources of contamination that may relate to a former land use or present site feature or process (e.g. fuel storage tanks).
- 7.7 Pathways (P); A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development.
- 7.8 Receptors (R); Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).

Table 7.1: Preliminary Conceptual Site Model

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
<p>S1: On site: Made Ground.</p> <p>Associated contaminants: petroleum hydrocarbons, heavy metals and ACMs.</p> <p>Localised Made Ground, Peat is a potential source of ground gas generation.</p>	<p>P1: Direct contact, incidental ingestion and inhalation of vapours and particulates.</p>	<p>R1: Construction/ services personnel</p>	Md	UI	L	<p>The exposure of construction workers/services personnel can be mitigated by the adoption of suitable working methods, utilising appropriate PPE and maintaining good hygiene. If significant asbestos is recorded, the requirements of CAR 2012 should be complied with.</p> <p>It is anticipated that hard standing will be present across some of the site. This will limit the potential for direct contact with, and minimise dust generation from potentially contaminated soils at the site post construction. In landscaped areas the provision of a clean capping layer would restrict direct access to potentially contaminated soils.</p> <p>It is recommended that an intrusive ground investigation be completed in order to assess the extent of any potential contamination at the site.</p>
		<p>R2: Future site users</p>	Md	Lw	M/L	
	<p>P2: Inhalation of vapours and ground gases in indoor and outdoor air.</p>	<p>R1: Construction/ services personnel</p>	Md	UI	L	<p>In the event that elevated concentrations of hazardous ground gases or volatile contaminants are identified during ground investigation works and/or where entry into confined spaces/excavations is required by construction workers it is recommended that a combination of the following may be required to mitigate the potential risk of exposure to hazardous gases/vapours by construction workers:</p> <ul style="list-style-type: none"> <li>• appropriate PPE and/or Respiratory Protective Equipment (RPE);</li> <li>• monitoring equipment (such as explosive level meters); and</li> <li>• safe entry procedures.</li> </ul> <p>Potential sources of ground gases and vapours such as Made Ground and contaminated soils could potentially be mitigated through removal or treatment prior to construction. The installation of protection measures may be required during construction to mitigate the potential risk to future site users from ground gases/vapours.</p>
		<p>R2: Future site users</p>	Md	UI	L	
	<p>P3: Vertical migration (leaching and</p>	<p>R3: Underlying Secondary A</p>	Mi	UI	L	<p>No groundwater testing data or information of standing water levels is currently available for the site. The proposed development will result in much of the site being covered by areas of hardstanding, which will</p>

Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
	permeation) of contaminants through the soil profile.	Aquifer (Alluvium, RTD)				likely reduce rainwater infiltration rates and therefore reduce leaching potential.  It is recommended that an intrusive ground investigation should be completed in order to assess the potential risk to controlled waters.
	P4: Lateral migration of contaminated groundwater.	R4: River Ouzel Tributary	Mi	UI	L	The recommendations of EA document PPG6: Construction and Demolition Sites: Prevent Pollution should be considered during construction.
	P5: Direct contact.	R5: Water utility pipes	Mi	Lw	L	Organic compounds in the shallow soils could taint the water supply. A ground investigation and subsequent laboratory analysis should be undertaken to inform the design of new services.
		R6: Buried structures/ foundations.	Mi	Lw	L	Sulphates and low pH in the ground could accelerate the degradation of buried concrete structures (e.g. foundations). Ground investigation should include an assessment of the concrete design class.
	P6: Migration and accumulation of ground gases in enclosed spaces leading to asphyxiation (carbon dioxide) or explosion (methane).	R2: Future site users	Sv	UI	M/L	Ground gas monitoring should be completed as part of an intrusive ground investigation in order to characterise the ground gas regime at the site. The gas assessment should be undertaken in accordance with CIRIA guidance.  Depending on the level of the gassing regime, gas protection measures may be required within all new properties at the site.



Source	Pathway	Receptor	Con	Prob	Risk	Mitigation/Investigation
S2: Off site – Historical surface workings to the north-east and west present a potential source of ground gas.	P6: Migration and accumulation of ground gases in enclosed spaces leading to asphyxiation (carbon dioxide) or explosion (methane).	R2: Future site users	Sv	UI	M/L	<p>Ground gas monitoring should be completed as part of an intrusive ground investigation in order to characterise the ground gas regime at the site, including monitoring wells along the north-east and west site boundaries. The gas assessment should be undertaken in accordance with CIRIA guidance.</p> <p>Depending on the level of the gassing regime, gas protection measures may be required within all new developments at the site.</p>
<p style="text-align: center;"> <span style="background-color: #800000; color: white; padding: 2px;">VH = Very High</span>,  <span style="background-color: #FF0000; color: white; padding: 2px;">H = High</span>,  <span style="background-color: #FF8C00; color: white; padding: 2px;">M = Moderate</span>,  <span style="background-color: #FFFF00; color: black; padding: 2px;">M/L = Moderate/Low</span>,  <span style="background-color: #008000; color: white; padding: 2px;">L = Low</span>,  <span style="background-color: #90EE90; color: black; padding: 2px;">VL = Very Low</span> </p> <p style="text-align: center;">KEY: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor Hi = High, Li = Likely, Lw = Low Likelihood, UI = Unlikely</p>						

## 8. ENVIRONMENTAL LIABILITY ASSESSMENT/DEVELOPMENT CONSTRAINTS

### Statutory Liability

- 8.1 The contaminated land regime has implications for those who cause or knowingly permit land to be contaminated, or who own or occupy land that is contaminated. Contaminated land is defined in Section 78A (2) of Part IIA of the Environmental Protection Act 1990 as:
- 8.2 “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:
- i. *Significant harm is being caused or there is a significant possibility of such harm being caused; or*
  - ii. *Significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused.*”
- 8.3 Harm is defined in Section 78(4) of the Environmental Protection Act 1990 as:
- 8.4 “Harm to the health of living organisms or other interference with ecological systems of which they form part and, in the case of man, includes harm to his property.”
- 8.5 Once an area of land has been identified as contaminated land, appropriate persons will be identified as being responsible for the cost of cleaning up the land by the enforcing authority. The appropriate person will be liable for all or part of the remediation of the land. Two classes of appropriate person have been identified:
- Class A appropriate persons are those who cause or knowingly permit the pollutants to be in, on or under the land.
  - Class B appropriate persons are the owners(s) or occupier(s) of the land.
- 8.6 Where no Class A appropriate persons can be identified, then Class B appropriate persons may become liable.
- 8.7 Based on the information available regarding the site, the potential for Statutory Authority action based on “*pollution of controlled water*” or “*significant harm*” as defined by Part IIA of the Environmental Protection Act 1990 is considered to be LOW based on the limited contaminative sources that have been identified.

### Third Party Liability

- 8.8 Comment on the severity of off-site migration onto the site and whether liability exist.
- 8.9 Based on the information contained in this report, it is the opinion of BWB that the potential for legal action by surrounding landowners, based on the potential for contamination to migrate off-site, is considered to be LOW when considering the lack of contamination identified.

## Public Relations

- 8.10 The likelihood of public relations being tarnished due to contamination issues at the site are considered to be LOW.

## Development Implications

- 8.11 Ground gas protection measures may need to be installed at the site, associated with the superficial deposits present. This may not be applicable to the entire site area; however, a ground investigation will aid in determining this.

## 9. CONCLUSION AND RECOMMENDATIONS

### Conclusions

#### Environmental

- 9.1 The site is indicated to have been agricultural land since the earliest published mapping. The majority of the site comprises fields for crops or pasture, with only a small area given over to farm buildings. A number of streams and ditches surround and cross the site.
- 9.2 There was no observable evidence of contamination from the walkover. The historical mapping has identified the potential for localised Made Ground or isolated pockets of possible contamination, mainly associated with the farm buildings, and the potential for the use of pesticides on a site wide basis. The potential for migration of gases from off site has also been identified.

#### Geotechnical

- 9.3 The underlying geology across the site is indicated to be comprised of variable superficial deposits, including Alluvium, River Terrace Deposits and Head, overlying the Oxford Clay Formation and the West Walton Formation in the far south.
- 9.4 Mature trees are located in a number of areas across the site which may impact on cohesive soils susceptible to volume change or compressibility. There is also the potential for aggressive soil conditions which may impact on concrete class for foundations design.
- 9.5 Soakaways may be viable for drainage in certain areas of the site, mainly dependant on the superficial deposits (where present). The underlying bedrock is unlikely to be a suitable medium in which to construct soakaways.

### Recommendations

#### Environmental

- 9.6 A ground investigation should be undertaken on a site wide basis in order to obtain shallow soil samples for geo-environmental laboratory testing and observe shallow ground conditions, in particular the presence of any Made Ground which may be present.
- 9.7 Monitoring wells should be installed to provide coverage across the site for gas and groundwater monitoring. Groundwater and surface water samples may be required for testing, dependant on the results of the soil testing and observations made.
- 9.8 All areas of the site should be investigated, including those not accessible at the time of the walkover survey, with potential sources of contamination targeted should any become apparent with access to the whole site.

---

### Geotechnical

- 9.9 The ground investigation should provide sufficient information to characterise ground conditions across the site to inform the ground model from which to provide foundations recommendations.
- 9.10 Exploratory holes should be positioned in order to delineate the superficial deposits which vary significantly across the site in terms of type and likely depths.
- 9.11 Taking into consideration the proposed development and the range of ground conditions anticipated, a range of techniques should be employed, including boreholes and trial pits. In-situ testing should be undertaken as appropriate to the investigation technique, with samples obtained for geotechnical laboratory testing as required.
- 9.12 The depth of exploratory hole should be appropriate to the technique employed; it is anticipated that boreholes will be required to penetrate the superficial deposits (where present) and determine the geotechnical properties of the underlying bedrock in several locations relevant to each proposed building.

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*APPENDICES*

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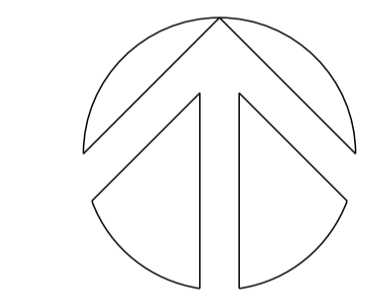


APPENDIX 1: Site Masterplan

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Revisions:  
 P1: 07/06/19 kbl Masterplan updated, drawing number P005 updated to PAS 1192 standard.  
 P2: 24/06/19 kbl Client / team comments.  
 P3: 27/06/19 kbl Client comments.  
 P4: 02/07/19 kbl Redline updated.  
 P5: 04/07/19 kbl Redline updated.



Site	GIA (ft²)	NDA (ac)	Plot Density (%)
Unit 1	473,200	27.13	51.2
Unit 2	615,400	21.2	52.1
Unit 3	369,708	15.87	53.5
Unit 4	254,200	10.68	54.7
Unit 5	61,400	3.47	40.7
Unit 6 (office)	10,400	1.22	19.7
Unit 7	53,700	4.33	28.5
Unit 8	49,800	2.87	39.9
Unit 9	164,800	8.39	45.2
Unit 10	278,500	12.24	52.3
<b>Total</b>	<b>2,331,108</b>	<b>107.40</b>	<b>49.9</b>

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South Caldecotte

Drawing Name:  
 Indicative Masterplan 23

Drawing Status: PLANNING  
 Suitability: S2  
 Rev: P5  
 SGP Project: 16-048  
 Drawn: KBL  
 Team: JY  
 Date: 13/11/2018  
 Scale: 1:2500 @ A1  
 Drawing Number:

16-048-01-SGP-XX-00-DR-A-1006-P5

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## APPENDIX 2: Site Photographs

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Project Number: NTS2682  
Project Name: South Caldecotte  
Site Photographs

**BWB**



Photo 1 — Looking south from the northern footpath entrance off V10 Brickhill Street, opposite Station Street, towards the Anglian Water land



Photo 2 — Looking northwest to the area of overgrown land north of the ditch draining from east to west along the northern site boundary

Project Number: NTS2682  
Project Name: South Caldecotte  
Site Photographs

**BWB**



Photo 3 — Soils at the surface predominantly cohesive with angular to subrounded flint and chert gravel



Photo 4 — Looking southwest from the centre of the northern boundary

Project Number: NTS2682  
Project Name: South Caldecotte  
Site Photographs

**BWB**



Photo 5 — Patches of surface water-logging, usually at boundaries or entrances to fields, in this case broadly in the centre of the site



Photo 6 — Looking southeast from the centre of the northern boundary, past the copse of trees situated broadly in the centre of the northern half of the site

Project Number: NTS2682  
Project Name: South Caldecotte  
Site Photographs

**BWB**



Photo 7 — View of the field in the most western corner, with the A5 beyond



Photo 8 — Looking west along the ditch separating the cropped land from pasture to the south and east

Project Number: NTS2682  
Project Name: South Caldecotte  
Site Photographs

**BWB**



Photo 9 — Looking southwest into the un-cropped field north of the wooded area adjacent to V10 Brickhill Street



Photo 10 — looking west at the farm buildings off V10 Brickhill Street



Project Number: NTS2682  
Project Name: South Caldecotte  
Site Photographs

**BWB**



Photo 11 — Looking north towards pasture, parallel and adjacent to the A5



Photo 12 — Looking north into the Anglian Water land adjacent to V10 Brickhill Street

APPENDIX 3: Groundsure Report

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BWB Consulting Limited

5th Floor, Waterfront House, Station Street,  
Nottingham, NG2 3DQ

Groundsure  
Reference:

HMD-214-4874329

Your Reference:

NTS2682\_POR017497

Report Date

11 Apr 2018

Report Delivery  
Method:

Email - pdf

## Enviro Insight

Address: Land to the east of the A5, MK17 9JH

Dear Sir/ Madam,

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

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

Yours faithfully,

Managing Director  
Groundsure Limited

Enc.  
Groundsure Enviroinsight

**Address:** Land to the east of the A5, MK17 9JH  
**Date:** 11 Apr 2018  
**Reference:** HMD-214-4874329  
**Client:** BWB Consulting Limited



**Aerial Photograph Capture date:** 03-Jul-2015  
**Grid Reference:** 489216,234195  
**Site Size:** 57.86ha

**Report Reference:** HMD-214-4874329  
**Client Reference:** NTS2682\_POR017497

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Standard Terms and Conditions	72

# 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.

<b>Section 1: Historical Industrial Sites</b>	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	1	2	11	108
1.2 Additional Information – Historical Tank Database	0	0	8	66
1.3 Additional Information – Historical Energy Features Database	0	7	2	57
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	2	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	11
1.6 Potentially Infilled Land	0	1	5	28
<b>Section 2: Environmental Permits, Incidents and Registers</b>	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	5
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	3	0	2	12
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	0	2
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
<b>3.1 Landfill Sites</b>						
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	1	0	1	0	4
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
<b>3.2 Landfill and Other Waste Sites Findings</b>						
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	0	0	1	4

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	4	6	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	1	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	Identified
5.2 Are there any 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 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Identified					
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	4
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	1	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	1	2	4	Not searched	Not searched

## Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	Yes	Yes	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	14	14	50	26	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

## Section 7: Flooding

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

## 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	2	11
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	1
8.13 Records of Nitrate Vulnerable Zones	1	0	0	1	1	1
8.14 Records of Green Belt land	0	0	0	0	0	0

## Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?

Moderate

9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?

Moderate

9.1.2 What is the maximum Landslides hazard rating identified on the study site?

Very Low

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

Negligible

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

Moderate

9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?

Very Low

9.1.6 What is the maximum Running Sand hazard rating identified on the study site?

Low

9.2 Radon

9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The 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 Are there any coal mining areas within 75m of the study site?

None identified

10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?

None identified

10.3 Are there any 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 licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

## 7. Flooding

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

## 8. Designated Environmentally Sensitive Sites

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

## 9. Natural Hazards

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

## 10. Mining

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

## 11. Contacts

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

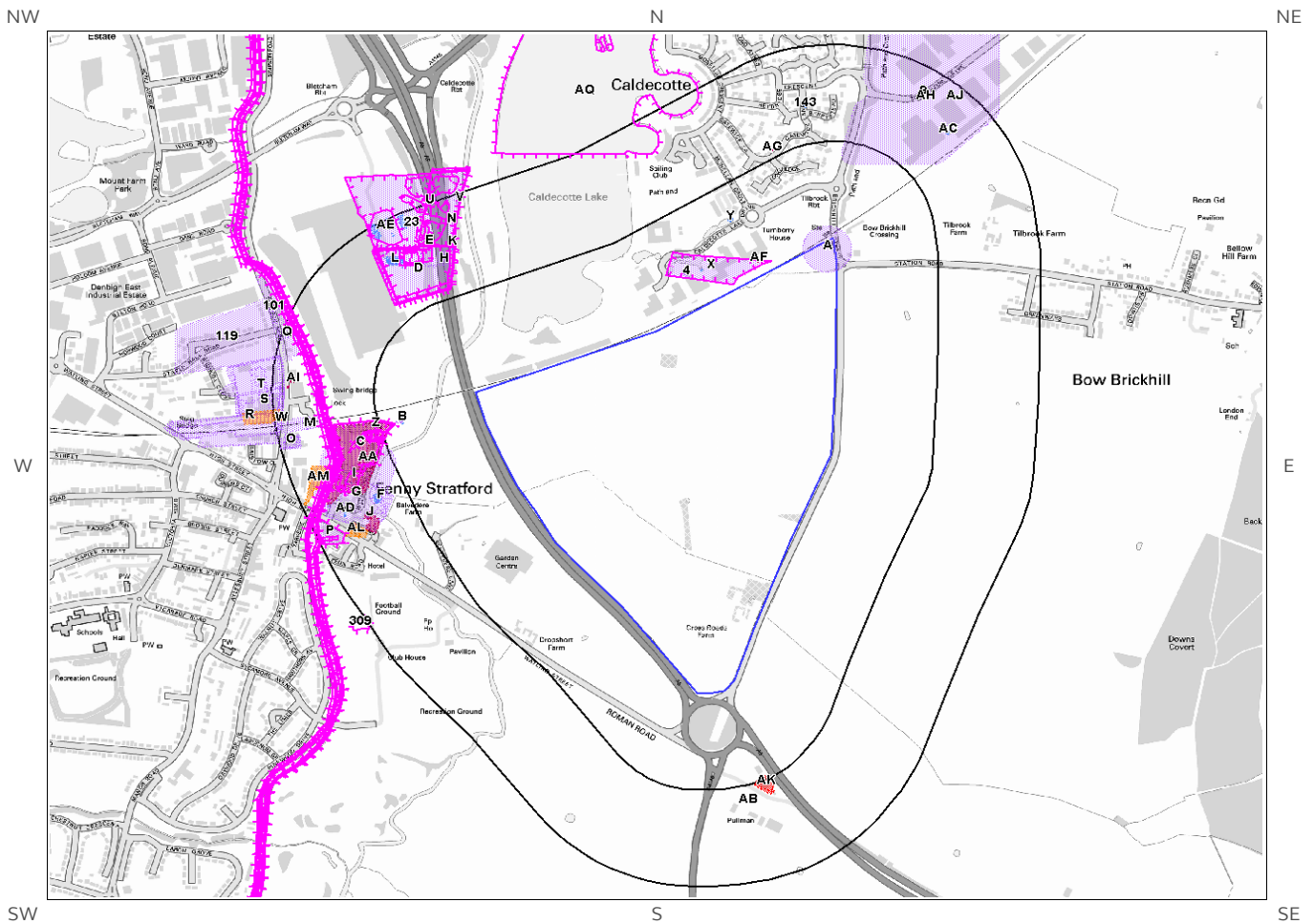
### Note: Maps

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

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

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

# 1. Historical Land Use



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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: 122

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Railway Station	1975
2A	7	NE	Railway Building	1967
3X	14	NW	Sewage Works	1975
4	90	NW	Unspecified Tank	1975
5B	190	W	Unspecified Tank	1938
6B	192	W	Unspecified Tank	1924
7B	194	W	Unspecified Tank	1950
8B	196	W	Unspecified Tank	1967
9	196	N	Industrial Estate	1991
10B	203	W	Unspecified Tank	1950
11C	213	W	Bricks Works	1898
12C	221	W	Brick Works	1900
13I	241	W	Gas Works	1950
14Z	246	W	Unspecified Tank	1975
15D	272	N	Unspecified Works	1967
16E	274	N	Sewage Disposal Works	1950
17D	275	N	Sewage Disposal Works	1924
18D	276	N	Sewage Disposal Works	1950
19E	277	N	Sewage Disposal Works	1938
20E	277	N	Sewage Disposal Works	1938
21F	284	SW	Gas Works	1898
22F	284	SW	Gas Works	1924
23	289	N	Sewage Works	1975
24G	291	SW	Unspecified Works	1975
25G	291	SW	Unspecified Works	1967
26G	292	SW	Gas Works	1900
27G	298	SW	Gas Works	1950
28C	307	W	Refuse Heap	1950
29F	311	SW	Gasometer	1898
30F	311	SW	Gasometer	1924
31F	311	SW	Unspecified Tank	1938
32F	314	SW	Unspecified Tank	1950
33F	317	SW	Unspecified Tank	1967
34F	317	SW	Unspecified Tank	1975

35F	324	SW	Gasometer	1950
36F	324	SW	Gasometer	1900
37H	329	N	Unspecified Tanks	1950
38H	332	N	Unspecified Tanks	1938
39I	336	SW	Unspecified Tank	1938
40G	337	SW	Unspecified Tank	1975
41G	338	SW	Unspecified Tank	1924
42E	338	N	Unspecified Tanks	1950
43D	339	N	Unspecified Tanks	1950
44G	339	SW	Gasometer	1950
45E	340	N	Unspecified Tanks	1967
46G	343	SW	Unspecified Tank	1967
47G	348	SW	Gasometer	1950
48J	350	SW	Unspecified Tank	1898
49J	350	SW	Unspecified Tank	1924
50J	352	SW	Unspecified Tank	1938
51J	354	SW	Unspecified Tank	1950
52E	355	N	Filter Beds	1938
53E	355	N	Filter Beds	1938
54J	357	SW	Unspecified Tank	1950
55J	357	SW	Unspecified Tank	1900
56J	357	SW	Unspecified Tank	1967
57D	359	N	Filter Beds	1924
58D	359	NW	Filter Beds	1950
59H	363	N	Unspecified Tanks	1950
60K	364	N	Unspecified Tanks	1950
61K	365	N	Unspecified Tanks	1924
62H	369	N	Unspecified Tanks	1938
63L	379	NW	Unspecified Tanks	1975
64L	380	NW	Unspecified Tank	1924
65L	380	NW	Unspecified Tank	1950
66L	383	NW	Unspecified Tank	1938
67R	386	W	Railway Sidings	1967
68K	389	N	Unspecified Tanks	1950
69K	393	N	Unspecified Tanks	1938
70U	403	N	Sludge Beds	1975
71M	411	W	Railway Building	1967
72M	412	W	Railway Building	1975
73L	414	NW	Unspecified Tank	1950
74M	428	W	Railway Building	1967
75N	431	N	Unspecified Tanks	1950
76AE	431	NW	Filter Beds	1975
77Q	432	W	Unspecified Depot	1967
78N	432	N	Unspecified Tanks	1924
79N	432	N	Unspecified Tanks	1950
80P	435	SW	Unspecified Wharf	1898

81N	436	N	Unspecified Tanks	1938
82O	445	W	Police Station	1950
83O	447	W	Police Station	1924
84O	447	W	Police Station	1898
85O	449	W	Police Station	1975
86O	449	W	Police Station	1938
87O	450	W	Police Station	1950
88P	452	SW	Unspecified Wharf	1900
89O	454	W	Police Station	1967
90O	456	W	Police Station	1900
91Q	464	W	Timber Yard	1950
92S	470	W	Sawmills	1898
93R	470	W	Railway Sidings	1898
94S	470	W	Railway Sidings	1924
95T	470	W	Timber Yard	1950
96R	470	W	Railway Sidings	1950
97T	471	W	Timber Yard	1924
98T	471	W	Timber Yard	1938
99R	472	W	Railway Sidings	1938
100T	472	W	Unspecified Depot	1967
101	475	W	Timber Yard	1950
102T	477	W	Unspecified Works	1975
103U	477	N	Unspecified Tanks	1950
104V	478	N	Unspecified Tanks	1924
105V	478	N	Unspecified Tanks	1950
106W	479	W	Railway Building	1924
107W	479	W	Railway Building	1898
108T	481	W	Timber Yard	1950
109S	481	W	Sawmills	1900
110R	481	W	Railway Sidings	1900
111R	481	W	Railway Sidings	1950
112W	482	W	Railway Buildings	1950
113W	483	W	Railway Building	1924
114W	483	W	Railway Building	1898
115W	483	W	Railway Building	1967
116V	484	N	Unspecified Tanks	1938
117W	484	W	Railway Building	1975
118O	487	W	Railway Building	1967
119	488	W	Timber Yard	1938
120W	491	W	Railway Buildings	1950
121W	495	W	Railway Building	1950
122W	495	W	Railway Building	1900



## 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:

74

ID	Distance (m)	Direction	Use	Date
123X	81	NW	Unspecified Tank	1991
124Y	159	NW	Unspecified Tank	1994
125Y	159	NW	Unspecified Tank	1994
126Y	159	NW	Unspecified Tank	1996
127Y	159	NW	Unspecified Tank	1995
128Y	159	NW	Unspecified Tank	1991
129B	193	W	Unspecified Tank	1925
130AA	248	W	Gasholder Station	1970
131Z	251	W	Gasholder	1970
132AA	284	W	Gasholder Station	1981
133AB	291	S	Unspecified Tank	1981
134AB	291	S	Unspecified Tank	1992
135F	316	SW	Unspecified Tank	1981
136F	317	SW	Unspecified Tank	1900
137F	317	SW	Unspecified Tank	1925
138F	318	SW	Unspecified Tank	1970
139I	337	SW	Gasholder	1970
140I	339	SW	Gasholder	1981
141J	342	SW	Gas Works	1900
142I	343	SW	Gasometer	1925
143	344	N	Unspecified Tank	1991
144J	346	SW	Gas Works	1881
145J	352	SW	Gasometer	1881
146D	352	N	Tanks	1925
147I	355	W	Tanks	1925
148J	357	SW	Gasometer	1900
149J	357	SW	Unspecified Tank	1925
150D	358	NW	Tanks	1925
151G	362	SW	Tanks	1925
152I	363	W	Tanks	1925
153K	367	N	Tanks	1925
154L	369	NW	Tanks	1925
155L	377	NW	Unspecified Tank	1970
156L	378	NW	Unspecified Tank	1925
157L	382	NW	Unspecified Tank	1970
158H	382	N	Tanks	1925
159L	383	NW	Unspecified Tank	1981

160L	387	NW	Unspecified Tank	1970
161AC	387	NE	Unspecified Tank	1999
162AC	387	NE	Unspecified Tank	1999
163L	388	NW	Unspecified Tank	1981
164E	389	N	Tanks	1925
165K	391	N	Tanks	1925
166L	391	NW	Unspecified Tank	1925
167E	393	N	Tanks	1925
168L	393	NW	Unspecified Tank	1981
169I	397	SW	Tanks	1900
170L	400	NW	Tanks	1925
171AD	405	SW	Tanks	1993
172AD	405	SW	Tanks	1993
173AD	406	SW	Tanks	1990
174AD	406	SW	Tanks	1984
175L	410	NW	Unspecified Tank	1999
176L	410	NW	Unspecified Tank	1999
177AD	413	SW	Unspecified Tank	1984
178AD	413	SW	Unspecified Tank	1990
179AD	413	SW	Unspecified Tank	1993
180AD	413	SW	Unspecified Tank	1993
181L	426	NW	Unspecified Tank	1970
182L	429	NW	Unspecified Tank	1970
183L	431	NW	Unspecified Tank	1981
184L	434	NW	Unspecified Tank	1981
185N	435	N	Unspecified Tank	1925
186AE	453	NW	Unspecified Tank	1970
187AE	459	N	Tanks	1970
188AE	459	NW	Unspecified Tank	1981
189AE	465	NW	Unspecified Tank	1970
190AE	465	NW	Settling Tank	1970
191AE	470	NW	Settling Tank	1981
192AE	480	N	Tanks	1981
193V	481	N	Unspecified Tank	1925
194AE	483	NW	Settling Tank	1970
195AE	487	NW	Settling Tank	1981
196AE	500	NW	Unspecified Tank	1970

### 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:

66

ID	Distance (m)	Direction	Use	Date
197AF	34	NW	Electricity Substation	1996
198AF	34	NW	Electricity Substation	1996
199AF	34	NW	Electricity Substation	1994
200AF	34	NW	Electricity Substation	1995
201AF	34	NW	Electricity Substation	1995
202AF	34	NW	Electricity Substation	1994
203AF	36	NW	Electricity Substation	1991
204C	219	W	Gas, Light and Coke Company Gas Works	1925
205AA	248	W	Gasholder Station	1970
206Z	251	W	Gasholder	1970
207AG	269	NW	Electricity Substation	1995
208AG	269	NW	Electricity Substation	1996
209AG	269	NW	Electricity Substation	1993
210AG	269	NW	Electricity Substation	1996
211AG	269	NW	Electricity Substation	1993
212AG	269	NW	Electricity Substation	1995
213AG	269	NW	Electricity Substation	1999
214AG	269	NW	Electricity Substation	1999
215AG	269	NW	Electricity Substation	1995
216AG	269	NW	Electricity Substation	1995
217AG	269	NW	Electricity Substation	1995
218AG	269	NW	Electricity Substation	1995
219AA	284	W	Gasholder Station	1981
220I	337	SW	Gasholder	1970
221I	339	SW	Gasholder	1981
222J	342	SW	Gas Works	1900
223I	343	SW	Gasometer	1925
224J	346	SW	Gas Works	1881
225J	352	SW	Gasometer	1881
226C	353	W	Electricity Substation	1993
227C	353	W	Electricity Substation	1993
228C	354	W	Electricity Substation	1984
229C	354	W	Electricity Substation	1990
230AD	357	SW	Gasometer	1900
231L	406	NW	Electricity Substation	1999
232L	406	NW	Electricity Substation	1999
233AH	423	NE	Electricity Substation	1991
234AH	423	NE	Electricity Substation	1991
235AH	424	NE	Electricity Substation	1999
236AH	424	NE	Electricity Substation	1995
237AH	424	NE	Electricity Substation	1996
238AH	424	NE	Electricity Substation	1996
239AH	424	NE	Electricity Substation	1993

240AH	424	NE	Electricity Substation	1993
241AH	424	NE	Electricity Substation	1995
242AH	424	NE	Electricity Substation	1994
243AH	424	NE	Electricity Substation	1999
244AH	424	NE	Electricity Substation	1994
245AI	444	W	Electricity Substation	1981
246AI	458	W	Electricity Substation	1970
247AI	458	W	Electricity Substation	1993
248AI	458	W	Electricity Substation	1993
249AI	460	W	Electricity Substation	1984
250AI	460	W	Electricity Substation	1990
251AJ	467	NE	Electricity Substation	1991
252AJ	467	NE	Electricity Substation	1991
253AJ	467	NE	Electricity Substation	1999
254AJ	467	NE	Electricity Substation	1994
255AJ	467	NE	Electricity Substation	1993
256AJ	467	NE	Electricity Substation	1996
257AJ	467	NE	Electricity Substation	1996
258AJ	467	NE	Electricity Substation	1995
259AJ	467	NE	Electricity Substation	1995
260AJ	467	NE	Electricity Substation	1993
261AJ	467	NE	Electricity Substation	1999
262AJ	467	NE	Electricity Substation	1994

### 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: 2

ID	Distance (m)	Direction	Use	Date
263AK	237	S	Filling Station	1992
264AK	242	S	Filling Station	1993

### 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: 11

ID	Distance (m)	Direction	Use	Date
----	--------------	-----------	-----	------

265AL	379	SW	Garage	1981
266AL	391	SW	Garage	1970
267AL	391	SW	Garage	1993
268AL	391	SW	Garage	1993
269AL	391	SW	Garage	1990
270AL	391	SW	Garage	1984
271AM	392	W	Garage	1993
272AM	392	W	Garage	1993
273AM	393	W	Garage	1990
274AM	393	W	Garage	1984
275W	482	W	Garage	1981

## 1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 34

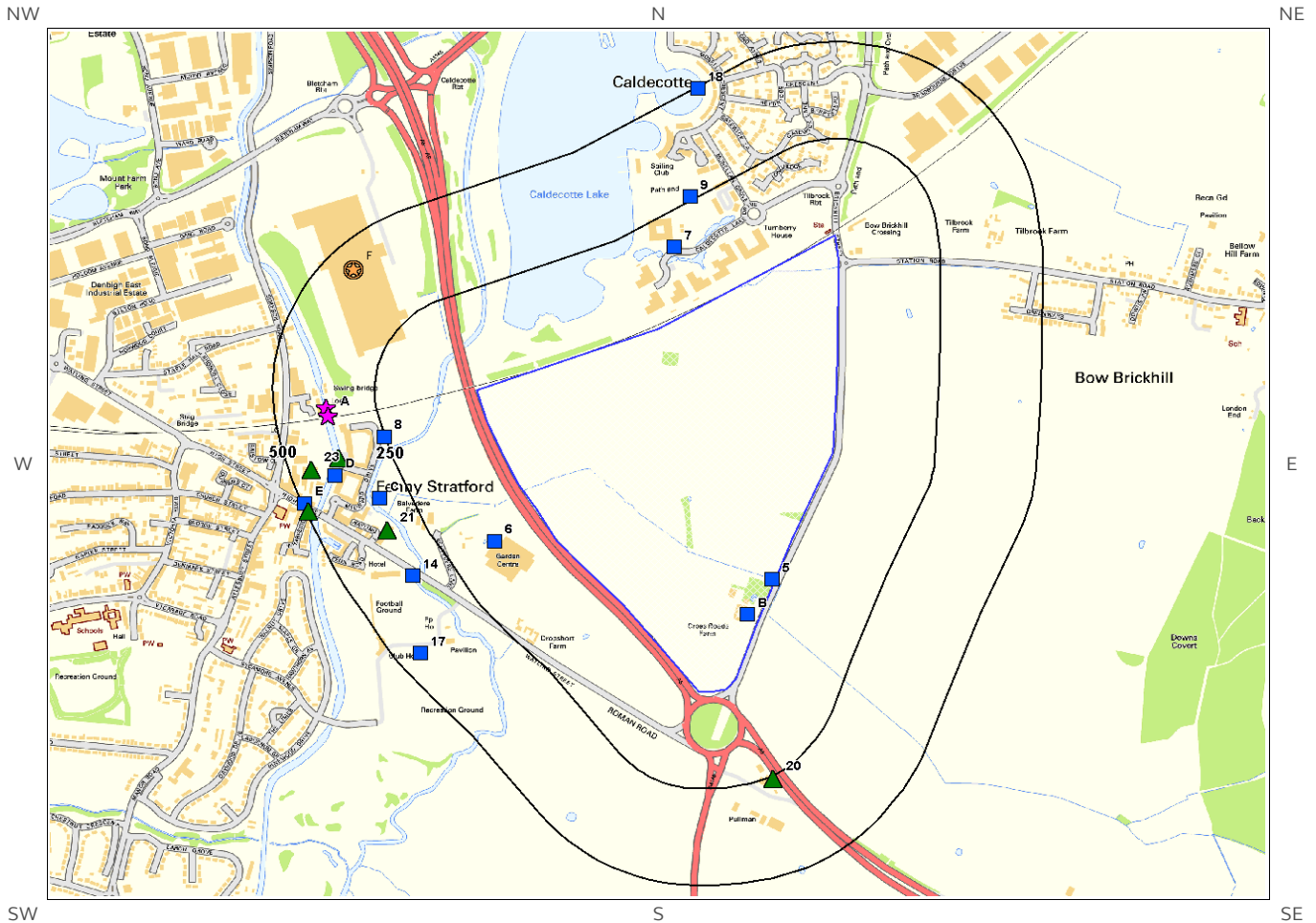
The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
276X	14	NW	Sewage Works	1975
277C	213	W	Bricks Works	1898
278AA	221	W	Brick Works	1900
279Z	247	W	Pond	1924
280Z	247	W	Pond	1938
281Z	250	W	Pond	1967
282Z	251	W	Pond	1950
283Z	260	W	Pond	1950
284E	274	N	Sewage Disposal Works	1950
285D	275	N	Sewage Disposal Works	1924
286L	276	N	Sewage Disposal Works	1950
287E	277	N	Sewage Disposal Works	1938
288E	277	N	Sewage Disposal Works	1938
289AE	289	N	Sewage Works	1975
290C	307	W	Refuse Heap	1950
291E	355	N	Filter Beds	1938
292E	355	N	Filter Beds	1938
293L	359	N	Filter Beds	1924
294L	359	NW	Filter Beds	1950
295AN	362	W	Canal	1924
296AN	362	W	Canal	1898
297AN	364	W	Canal	1938
298AO	366	W	Canal	1967
299AO	366	W	Canal	1975
300AN	367	W	Canal	1950
301AP	374	W	Canal	1900
302AP	374	W	Canal	1950

303U	403	N	Sludge Beds	1975
304AQ	407	NW	Lake	1987
305AQ	407	NW	Lake	1991
306AE	431	NW	Filter Beds	1975
307P	435	SW	Unspecified Wharf	1898
308P	452	SW	Unspecified Wharf	1900
309	497	SW	Pond	1898

---

# 2. Environmental Permits, Incidents and Registers Map



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- |                                                                                                  |                                                                                                                   |                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|  Site Outline |  Recorded Pollution Incident   |  RAS 3 & 4 Authorisations                                       |
|  250          |  Dangerous Substances (List 1) |  Part A(1) Authorised Processes and Historic IPC Authorisations |
|  500          |  Dangerous Substances (List 2) |  Part A(2) and Part B Authorised Processes                      |
|                                                                                                  |  Water Industry Referrals      |  COMAH / NIHHS Sites                                            |
|                                                                                                  |  Licenced Discharge Consents   |  Sites Determined as Contaminated Land                          |
|                                                                                                  |  Red List Discharge Consents   |  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:

5

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
20	262	SE	489464 233370	Address: Shell, Milton Keynes Service Station, A5, Little Brickhill, Milton Keynes, MK17 9AA 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
21	342	SW	488519 234015	Address: Schubert's Motors (formerly Wymbush Motors), 16A Watling Street, Fenny, Stratford, MK8 8DD Process: Waste Oil Burner <0.4 MW Status: New Legislation Applies Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
22D	376	W	488401 234199	Address: Bpc Magazines, Watling St, MK2 2BP Process: Coating & Enamelling Process Status: Historical Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
23	450	W	488332 234170	Address: Chalky White, 16A Watling Street, Fenny Stratford, Milton Keynes, MK2 2BL Process: Waste Oil Burner <0.4 MW Status: New Legislation Applies Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
24E	497	SW	488324 234063	Address: Wharfside Dry Cleaners & Laundry, 1 Wharfside, Bletchley, Milton Keynes, MK2 2AZ Process: Dry Cleaning 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:

0

Database searched and no data found.

## 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	
3B	0	On Site	489400 233800	Address: CROSS ROADS FARM, BOW BRICKHILL Effluent Type: AGRICULTURE - UNSPECIFIED Permit Number: PR1NFG0574 Permit Version: 1	Receiving Water: Trib River Ouse Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 21/05/1963 Effective Date: 21-May-1963 Revocation Date: 20/02/1991
4B	0	On Site	489400 233800	Address: CROSS ROADS FARM, BOW BRICKHILL Effluent Type: AGRICULTURE - UNSPECIFIED Permit Number: PR1NFG1212 Permit Version: 1	Receiving Water: Trib River Ouse Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 29/05/1963 Effective Date: 29-May-1963 Revocation Date: 20/02/1991
5	0	On Site	489460 233890	Address: CROSSROADS FARM, BOW BRICKHILL RD, BOW BRICKHILL, MILTON KEYNES, MK17 9JL Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: PRCNF14042 Permit Version: 1	Receiving Water: tributary River Ouzel Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 10/06/1998 Effective Date: 10-Jun-1998 Revocation Date: -
6	132	SW	488780 233990	Address: BELVEDERE NURSERIES, WATLING STREET, FENNY STRATFORD, MILTON KEYNES, MK17 9JH Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: PRCNF05184 Permit Version: 1	Receiving Water: Trib River Ouzel Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 21/05/1993 Effective Date: 21-May-1993 Revocation Date: -
7	166	NW	489220 234750	Address: SWS IND SITE/CALDECOTE, BLETCHLEY Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: AW1NF921 Permit Version: 1	Receiving Water: trib River Ouzel Status: SURRENDERED UNDER EPR 2010 Issue date: 18/02/1971 Effective Date: 18-Feb-1971 Revocation Date: 04/12/2017
8	253	W	488510 234260	Address: WATLING STREET, BLETCHLEY, MILTON KEYNES BUCKS Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: PR1NF2429 Permit Version: 1	Receiving Water: River Ouzel Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 17/10/1986 Effective Date: 17-Oct-1986 Revocation Date: 30/01/2001
9	260	NW	489260 234880	Address: SWS IND SITE/CALDECOTE, BLETCHLEY Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: AW1NF922 Permit Version: 1	Receiving Water: River Ouzel Status: SURRENDERED UNDER EPR 2010 Issue date: 18/02/1971 Effective Date: 18-Feb-1971 Revocation Date: 04/12/2017
10C	323	SW	488500 234100	Address: WATLING STREET NO.10, BLETCHLEY, MILTON KEYNES, BUCKS, MK2 2AW Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: PR1NF1493 Permit Version: 1	Receiving Water: River Ouzel Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 30/01/1985 Effective Date: 30-Jan-1985 Revocation Date: 19/02/1992

ID	Distance (m)	Direction	NGR	Details	
11C	323	SW	488500 234100	Address: WATLING STREET NO.10, BLETCHLEY, MILTON KEYNES, BUCKS, MK2 2AW Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: PR1NF2222 Permit Version: 1	Receiving Water: River Ouzel Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 25/02/1986 Effective Date: 25-Feb-1986 Revocation Date: 13/06/1993
12C	323	SW	488500 234100	Address: WATLING STREET NO.10, BLETCHLEY, MILTON KEYNES, BUCKS, MK2 2AW Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: PR1NF2222 Permit Version: 2	Receiving Water: R Ouzel Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 14/06/1993 Effective Date: 14-Jun-1993 Revocation Date: 05/07/1995
13C	323	SW	488500 234100	Address: WATLING STREET NO.10, BLETCHLEY, MILTON KEYNES, BUCKS, MK2 2AW Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: PR1NF2222 Permit Version: 3	Receiving Water: R Ouzel Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 06/07/1995 Effective Date: 06-Jul-1995 Revocation Date: 23/04/1996
14	348	SW	488580 233900	Address: FENNY STRATFORD, BLETCHLEY, MILTON KEYNES, MK2 Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: PRCNF02251 Permit Version: 1	Receiving Water: River Ouzel Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 06/02/1990 Effective Date: 06-Feb-1990 Revocation Date: 13/02/1992
15D	399	W	488390 234160	Address: BLETCHLEY-WATLING STREET SSO, WATLING STREET, BLETCHLEY, MILTON KEYNES, BUCKINGHAMSHIRE, MK2 2BL Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: AWCNF2701 Permit Version: 1	Receiving Water: Grand Union Canal Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 02/01/1990 Effective Date: 02-Jan-1990 Revocation Date: 02/09/2010
16D	399	W	488390 234160	Address: BLETCHLEY-WATLING STREET SSO, WATLING STREET, BLETCHLEY, MILTON KEYNES, BUCKINGHAMSHIRE, MK2 2BL Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: AWCNF2701 Permit Version: 2	Receiving Water: Grand Union Canal Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: 12/04/2017
17	443	SW	488600 233700	Address: MANOR FIELDS PS EO, BLETCHLEY, MILTON KEYNES, MK2 2HX Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: AW1NF917 Permit Version: 1	Receiving Water: River Ouzel Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 11/12/1970 Effective Date: 11-Dec-1970 Revocation Date: -
18	495	NW	489280 235160	Address: CALDECOTTE AREA, MILTON KEYNES Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: PRCNF02160 Permit Version: 1	Receiving Water: Caldecotte Lake Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 26/01/1990 Effective Date: 26-Jan-1990 Revocation Date: 08/08/2003

ID	Distance (m)	Direction	NGR	Details	
19E	495	SW	488316 234087	Address: BLETCHLEY-WATLING STREET SSO, WATLING STREET, BLETCHLEY, MILTON KEYNES, BUCKINGHAMSHIRE, MK2 2BL Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: AWCNF2701 Permit Version: 3	Receiving Water: Grand Union Canal Status: VARIED UNDER EPR 2010 Issue date: 13/04/2017 Effective Date: 13-Apr-2017 Revocation Date: -

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

0

Database searched and no data found.

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

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
26F	434	NW	99/01498/H AZ_D	488434 234690	Approved	03/11/1999	Tesco National Distribution Centre, Bletcham Way, Fenny Lock, Milton Keynes, MK1 1BA	Storage Of hazardous substances	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:

2

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

ID	Distance (m)	Direction	NGR	Details	
1A	372	W	488372 234313	Incident Date: 14-Jan-2002 Incident Identification: 52391 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2A	374	W	488367 234334	Incident Date: 24-Sep-2002 Incident Identification: 110333 Pollutant: Contaminated Water Pollutant Description: Suspended Solids	Water Impact: Category 3 (Minor) 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.

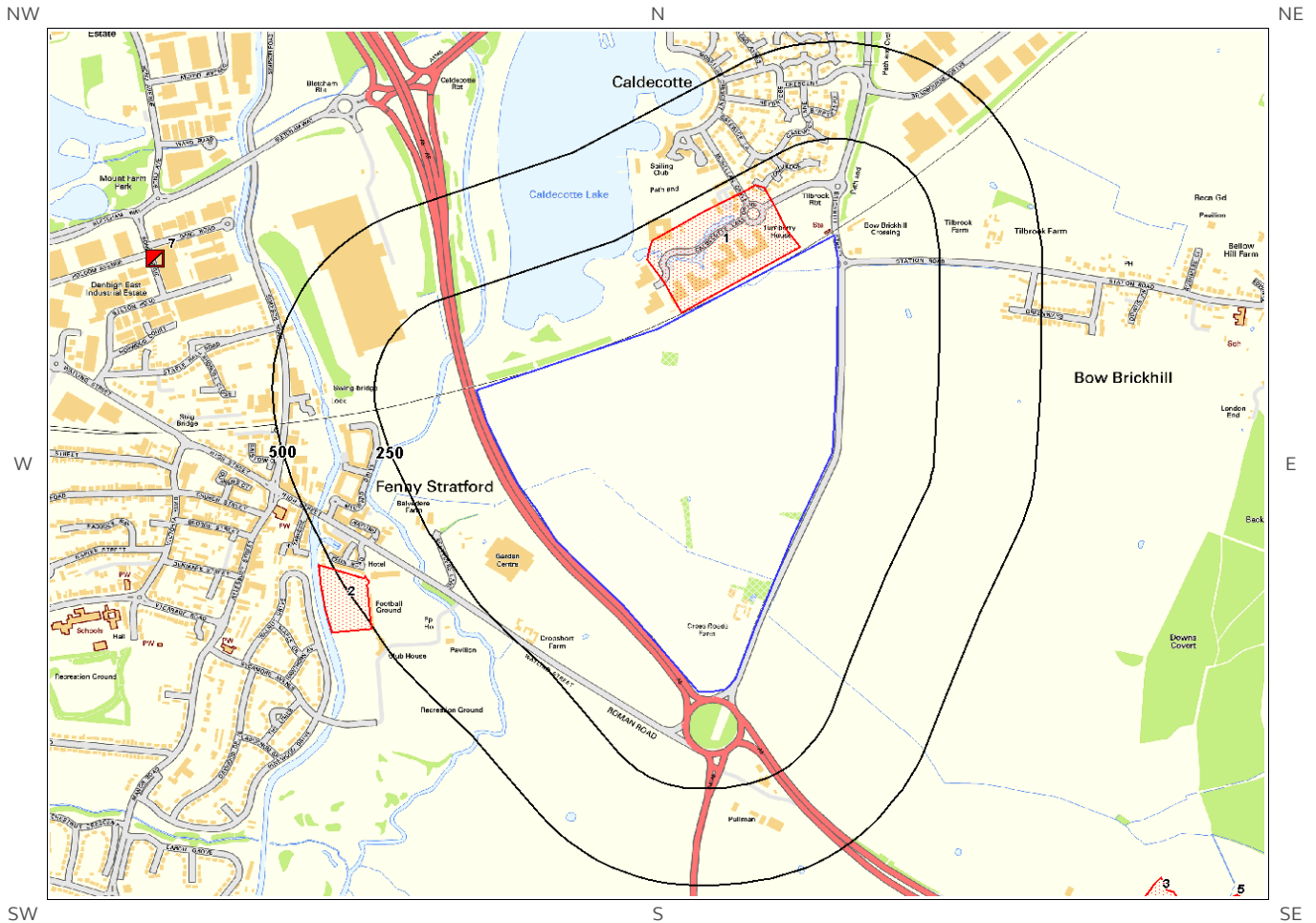
## 2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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










0

Database searched and no data found.

# 3. Landfill and Other Waste Sites Map



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- |                                                                                     |                          |                                                                                       |                                                     |                                                                                     |                                  |
|-------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------|
|  | Site Outline             |    | EA/NRW Active Landfill                              |  | Historic and Planned Waste Sites |
|  | EA/NRW Historic Landfill |  | EA/NRW Licensed Waste Site                          |  | BGS / DoE Survey Landfill        |
|  | 250 Search Buffers (m)   |    | Local Authority/Historical Mapping Landfill Records |                                                                                     |                                  |
|  | 500 Search Buffers (m)   |                                                                                       |                                                     |                                                                                     |                                  |

# 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:

6

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	8	NW	489300 234700	Site Address: Pre-76 Fenny Stratford, Fenny Stratford, Caldecotte Waste Licence: - Site Reference: MK3(PRE 1976) Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
2	442	SW	488400 233800	Site Address: Former Canal Dredging Tip Fenny Stratfor, Off Watling Street, Fenny Stratford Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
3	1141	SE	490400 233000	Site Address: Land adjacent to Little Brickhill Bypass No.1, Little Brickhill, Buckinghamshire Waste Licence: Yes Site Reference: WDA/347 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 03-Apr-1992 Licence Surrendered: 22-Apr-1994 Licence Holder Address: Lammas Road, Weldon Industrial Estate, Corby, Northamptonshire Operator: Weldon Plant Licence Holder: Weldon Plant Limited First Recorded: 07-Apr-1992 Last Recorded: 01-Apr-1994
Not shown	1156	W	487400 234100	Site Address: Tavistock Road, Bletchley Waste Licence: - Site Reference: MK1(PRE 1976) Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -

ID	Distance (m)	Direction	NGR	Details	
5	1288	SE	490600 232900	Site Address: Land adjacent to A5 Little Brickhill Bypass No.1, Little Brickhill, Buckinghamshire Waste Licence: Yes Site Reference: WDA/348, WDA/1 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 03-Apr-1992 Licence Surrendered: 22-Apr-1994 Licence Holder Address: Lammas Road, Weldon Industrial Estate, Corby, Northamptonshire Operator: Weldon Plant Licence Holder: Weldon Plant Limited First Recorded: 07-Apr-1992 Last Recorded: 01-Apr-1994
Not shown	1443	SW	487400 233400	Site Address: Westfield Road, Bletchley Waste Licence: - Site Reference: MK2(PRE 1976) Waste Type: - 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:

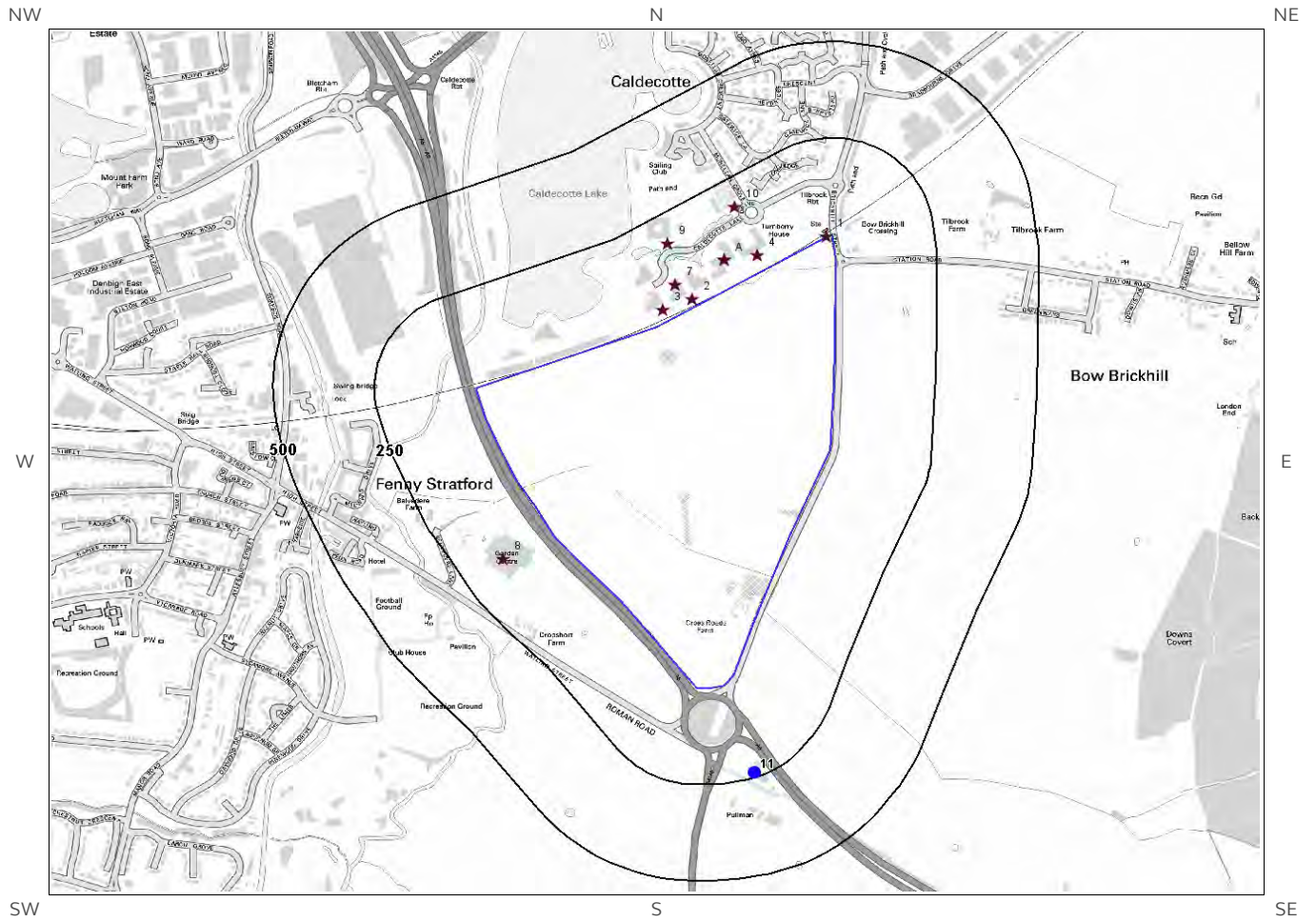
5

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
7	858	NW	487950 234720	<p>Site Address: Bilton Road, Bletchley, Buckinghamshire, MK1 1HT Type: - Size: &lt; 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ANO001 EPR reference: EA/EPR/TP3090NJ/S002 Operator: Ano-Coil Ltd Waste Management licence No: 70088 Annual Tonnage: 400.0</p> <p>Issue Date: 30/09/1991 Effective Date: - Modified: 02/05/1995 Surrendered Date: 29/08/2000 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Ano-coil Ltd Correspondence Address: -</p>
Not shown	1343	W	487401 234253	<p>Site Address: A Goodman &amp; Son, Tavistock Street, Bletchley, Milton Keynes, Buckinghamshire, MK2 2PP Type: Metal Recycling Site (mixed MRS's) Size: &gt;= 25000 tonnes &lt; 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GAI001 EPR reference: EA/EPR/KP3290NW/V004 Operator: Gainreward Ltd Waste Management licence No: 70083 Annual Tonnage: 24999.0</p> <p>Issue Date: 27/08/1992 Effective Date: - Modified: 03/12/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: A Goodman &amp; Son Correspondence Address: -</p>
Not shown	1350	W	487400 234200	<p>Site Address: A Goodman &amp; Son, Tavistock Street, Bletchley, Milton Keynes, Buckinghamshire, MK2 2PP Type: ELV Facility Size: &lt; 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: AGO001 EPR reference: EA/EPR/MP3796NW/V002 Operator: Gainreward Ltd Waste Management licence No: 75132 Annual Tonnage: 2500.0</p> <p>Issue Date: 25/11/2004 Effective Date: - Modified: 03/12/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: A Goodman &amp; Son Correspondence Address: -</p>
Not shown	1350	W	487400 234200	<p>Site Address: A Goodman &amp; Son, North Street, Bletchley, Buckinghamshire, MK2 2PZ Type: Metal Recycling Site (mixed MRS's) Size: &lt; 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: GAI001 EPR reference: EA/EPR/KP3290NW/A001 Operator: Gainreward Ltd Waste Management licence No: 70083 Annual Tonnage: 25000.0</p> <p>Issue Date: 27/08/1992 Effective Date: - Modified: 10/07/1996 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Gainreward - A Goodman &amp; Son Correspondence Address: -</p>
Not shown	1350	W	487400 234200	<p>Site Address: Tavistock Street, Bletchley, Milton Keynes, Buckinghamshire, MK2 2PP Type: ELV Facility Size: &lt; 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: AGO001 EPR reference: - Operator: Gainreward Limited Waste Management licence No: 75132 Annual Tonnage: 0.0</p> <p>Issue Date: 25/11/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: A Goodman &amp; Son Correspondence Address: Tavistock Street, Bletchley, Milton Keynes, Buckinghamshire, MK2 2PP</p>



# 4. Current Land Use Map



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-  Site Outline
-  Current Industrial Sites
-  Electricity Transmission Cables
-  Petrol & Fuel Sites
-  Gas Transmission Pipelines
-  Search Buffers (m)

# 4. Current Land Uses

## 4.1 Current Industrial Data

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

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	4	NW	Bow Brickhill Rail Station	489600 234777	MK7	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
2	23	NW	Electricity Sub Station	489270 234614	MK7	Electrical Features	Infrastructure and Facilities
3	33	NW	Electricity Sub Station	489197 234585	MK7	Electrical Features	Infrastructure and Facilities
4	44	NW	Electricity Sub Station	489430 234727	MK7	Electrical Features	Infrastructure and Facilities
5A	72	NW	ROHM Semiconductor	489349 234714	Sunningdale House, Caldecotte Lake Drive, Caldecotte, Milton Keynes, MK7 8LF	Electrical Components	Industrial Products
6A	73	NW	BWC Aluminium	489349 234715	Unit 33-34 Sunningdale House, Caldecotte Lake Drive, Caldecotte, Milton Keynes, MK7 8LF	Metals Manufacturers, Fabricators and Stockholders	Industrial Products
7	75	NW	Leaseplan Go	489228 234650	St. Andrews House 71-81, Caldecotte Lake Drive, Caldecotte, Milton Keynes, MK7 8LQ	Vehicle Hire and Rental	Hire Services
8	138	SW	GBC Milton Keynes	488804 233938	Belvedere Belvedere Lane, Watling Street, Bow Brickhill, Milton Keynes, MK17 9JH	Garden Goods	Consumer Products
9	178	NW	Electricity Sub Station	489210 234758	MK7	Electrical Features	Infrastructure and Facilities
10	181	NW	Document Logistix	489373 234853	Tokairo House 8, Copperhouse Court, Caldecotte, Milton Keynes, MK7 8NL	Printing Related Machinery	Industrial Products

## 4.2 Petrol and Fuel Sites

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

1

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
11	237	S	489423 233381	Shell	Shell Milton Keynes South, Watling Street, Watling Street, A4146, Little Brickhill, Milton Keynes, Milton Keynes, MK17 9NE	No	Open

## 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

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

Lex Code	Description	Rock Type
MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

## 5.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL

## 5.3 Bedrock and Solid Geology

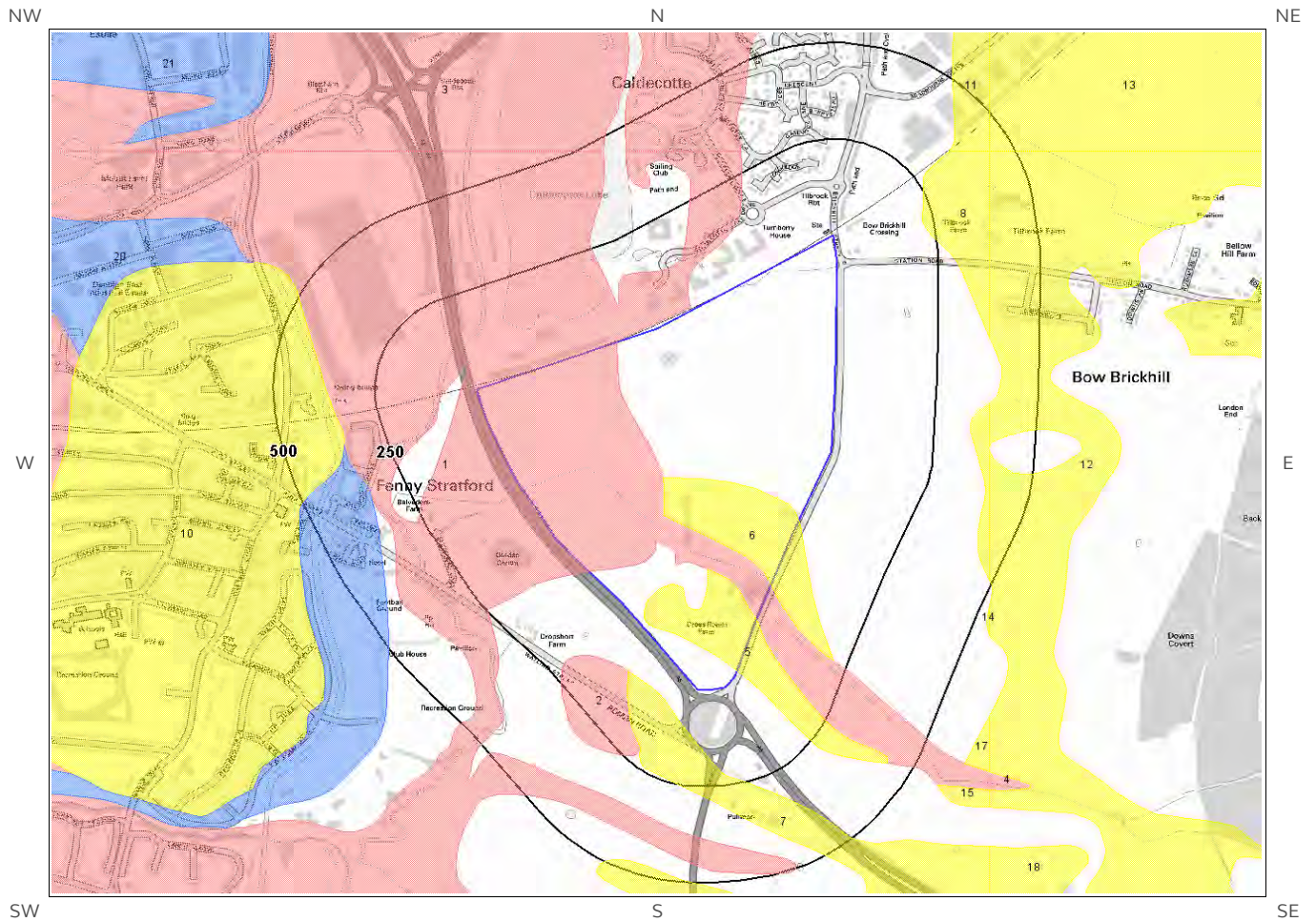
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
WWB-MDST	WEST WALTON FORMATION	MUDSTONE
OXC-MDST	OXFORD CLAY FORMATION	MUDSTONE

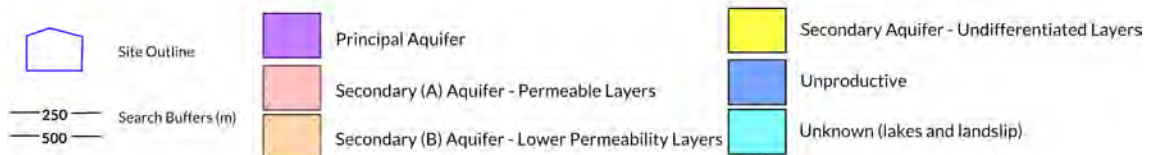
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

# 6 Hydrogeology and Hydrology

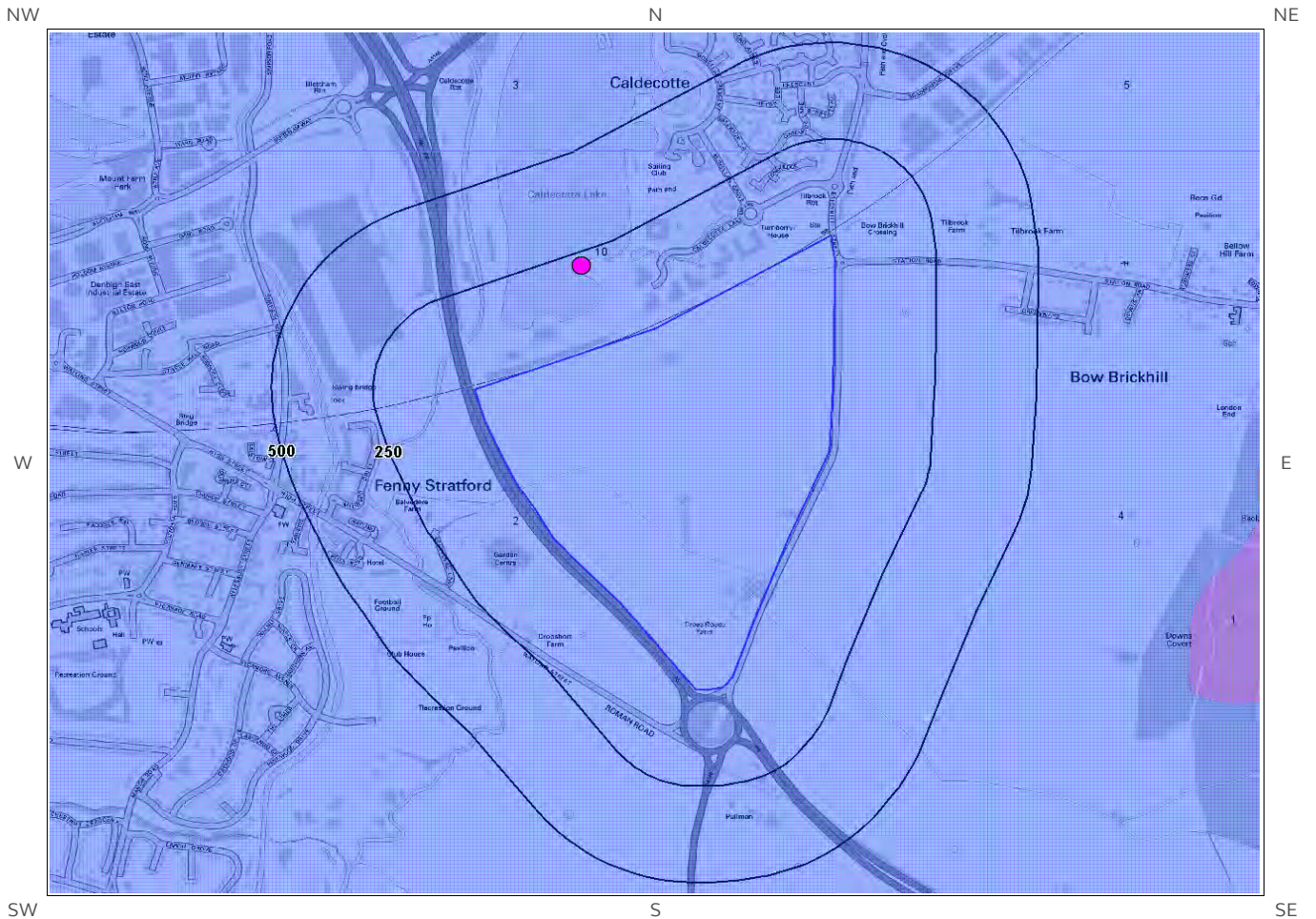
## 6a. Aquifer Within Superficial Geology



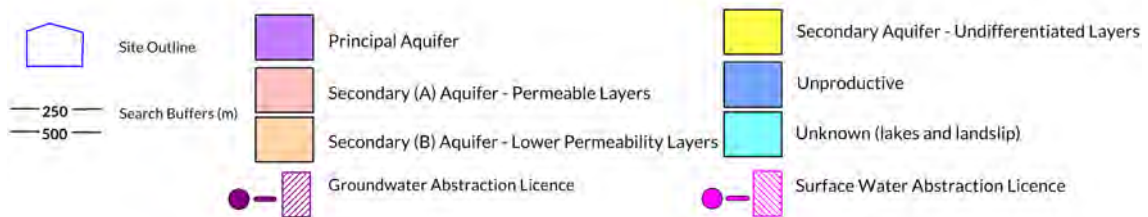
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# 6b. Aquifer Within Bedrock Geology and Abstraction Licenses

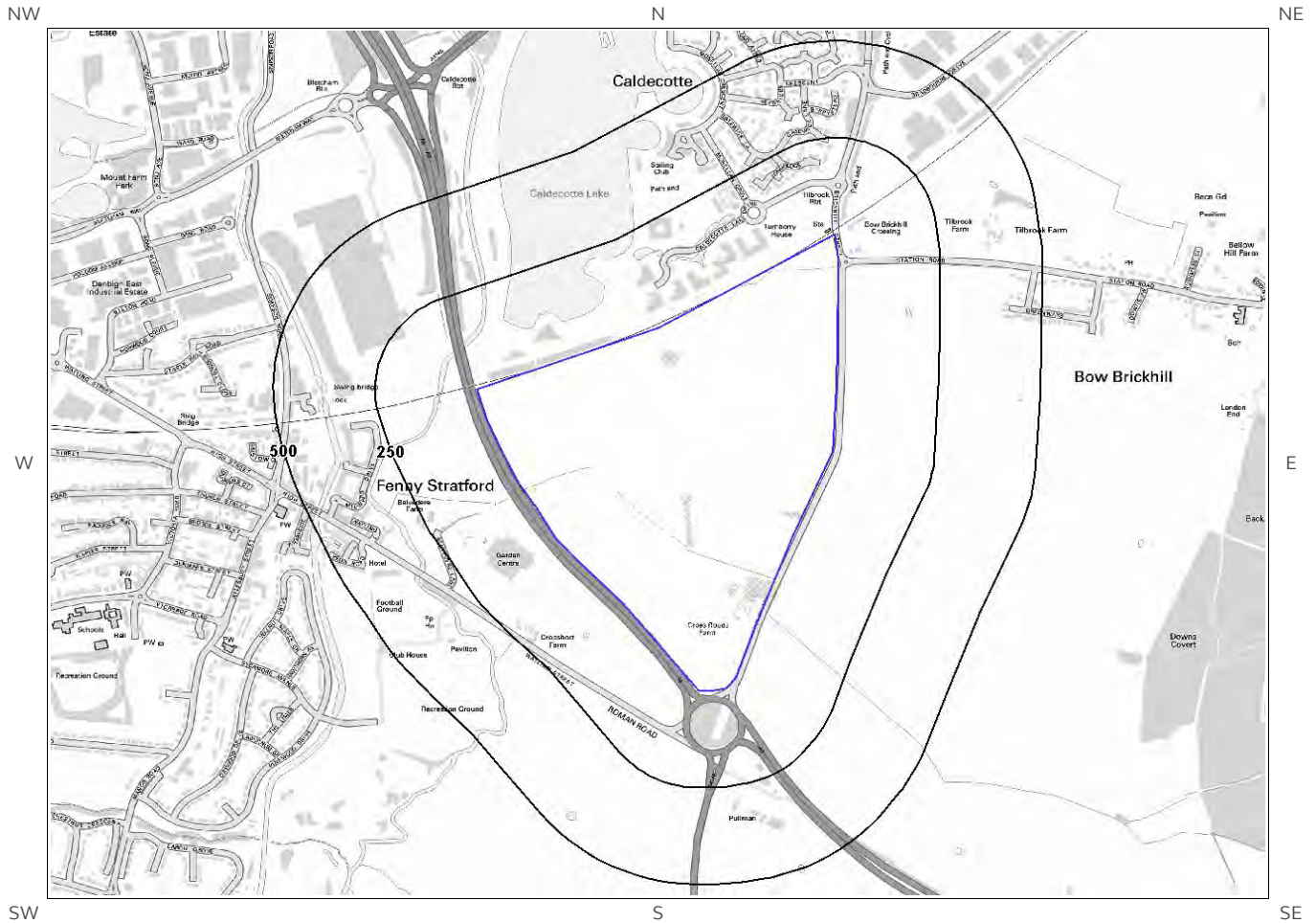


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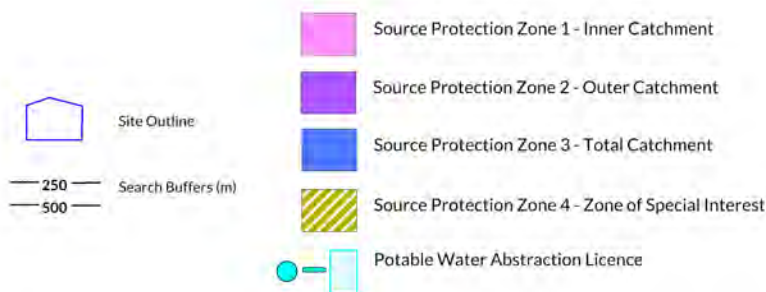




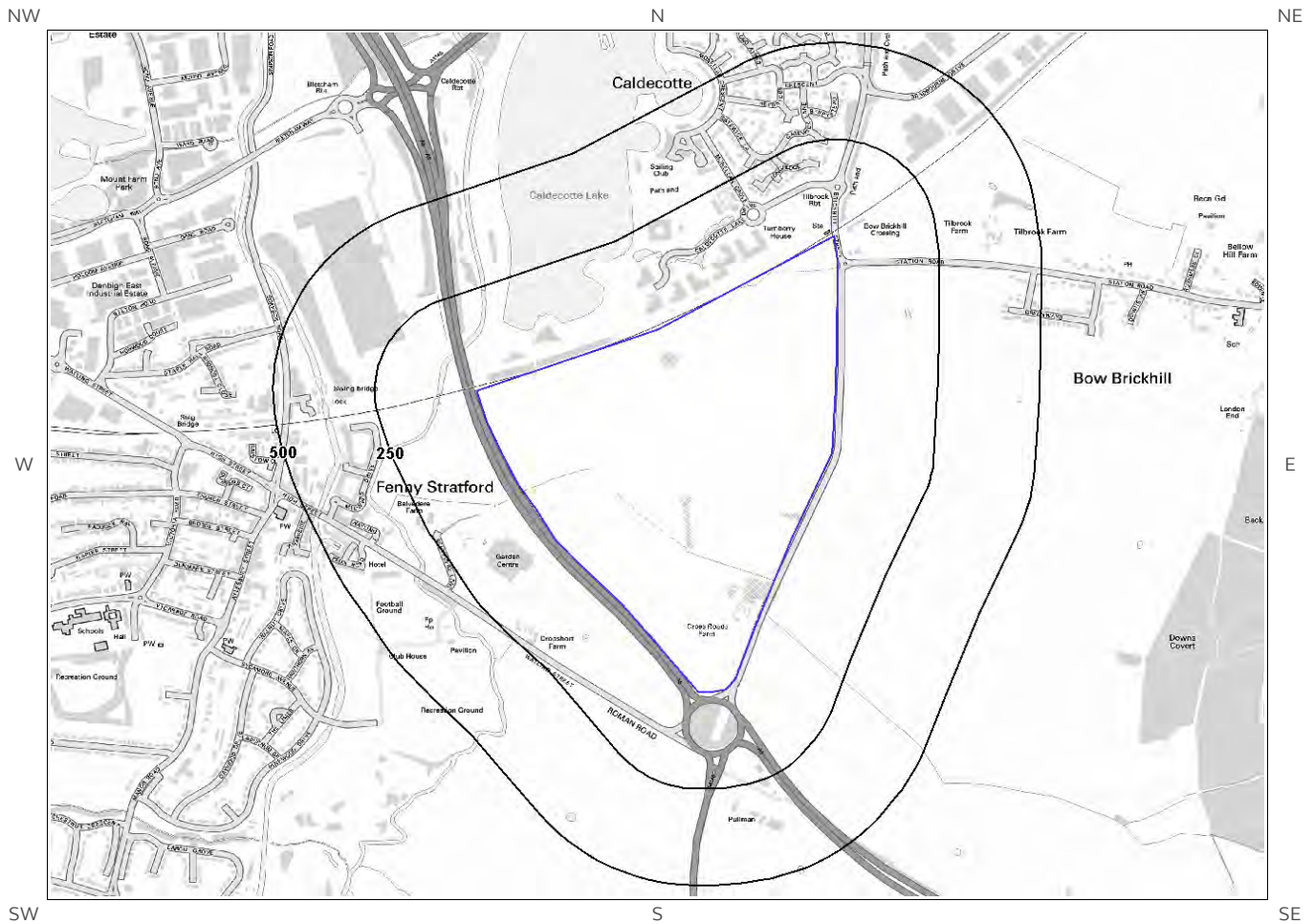
# 6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



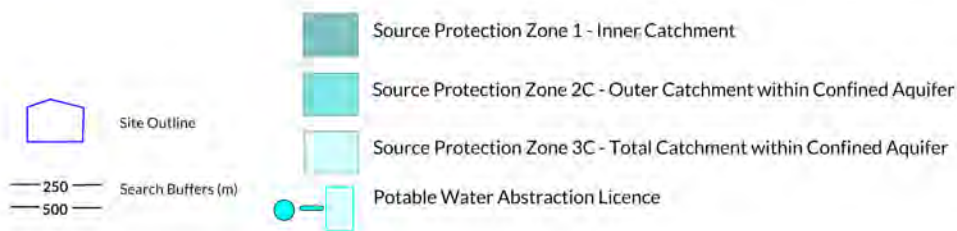
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# 6d. Hydrogeology – Source Protection Zones within confined aquifer

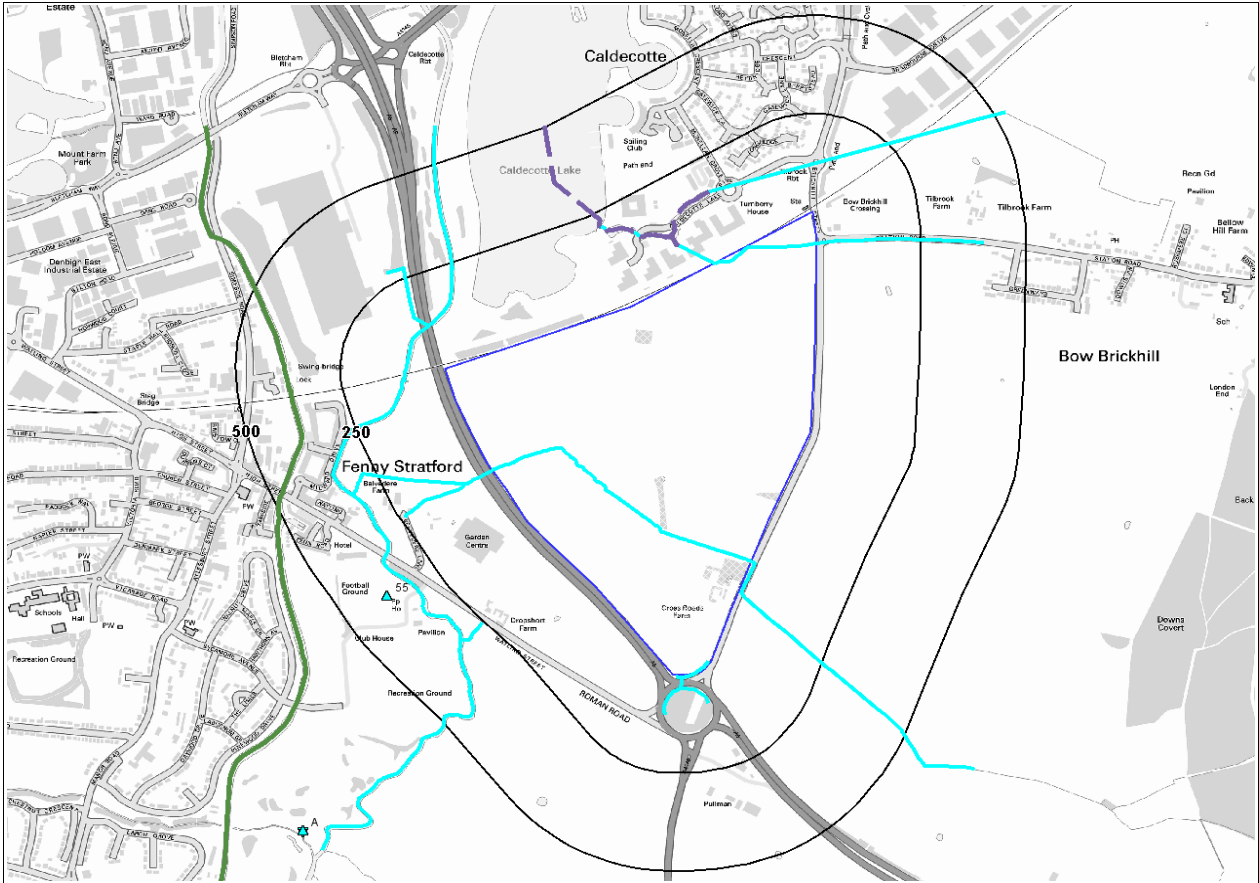


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# 6e. Hydrology – Watercourse Network and River Quality

NW N NE



W E

SW S SE

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# 6. Hydrogeology and Hydrology

## 6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
7	79	SW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	101	SW	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
8	223	E	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
3	302	NW	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
19	338	SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
9	339	E	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
10	347	W	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
11	360	NE	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
12	375	E	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
13	443	NE	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

## 6.2 Aquifer within Bedrock Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
2	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
3	219	N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	375	E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	443	NE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

## 6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? Identified

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1236	W	487512 234541	Status: Historical Licence No: 6/33/08/*G/0066 Details: Pollution Remediation Direct Source: Ground Water Source Of Supply Point: 3 Boreholes (9-11) At Bletchley Data Type: Point Name: NETWORK RAIL INFRASTRUCTURE LTD Annual Volume (m <sup>3</sup> ): 58400 Max Daily Volume (m <sup>3</sup> ): 160 Original Application No: 3619 Original Start Date: 6/11/2006 Expiry Date: 31/3/2016 Issue No: 2 Version Start Date: 11/9/2007 Version End Date:
Not shown	1292	W	487456 234541	Status: Historical Licence No: 6/33/08/*G/0066 Details: Pollution Remediation Direct Source: Ground Water Source Of Supply Point: 4 Boreholes (5-8) At Bletchley Data Type: Point Name: NETWORK RAIL INFRASTRUCTURE LTD Annual Volume (m <sup>3</sup> ): 58400 Max Daily Volume (m <sup>3</sup> ): 160 Original Application No: 3619 Original Start Date: 6/11/2006 Expiry Date: 31/3/2016 Issue No: 2 Version Start Date: 11/9/2007 Version End Date:
Not shown	1294	W	487451 234513	Status: Historical Licence No: 6/33/08/*G/0066 Details: Pollution Remediation Direct Source: Ground Water Source Of Supply Point: 4 Boreholes (1-4) At Bletchley Data Type: Point Name: NETWORK RAIL INFRASTRUCTURE LTD Annual Volume (m <sup>3</sup> ): 58400 Max Daily Volume (m <sup>3</sup> ): 160 Original Application No: 3619 Original Start Date: 6/11/2006 Expiry Date: 31/3/2016 Issue No: 2 Version Start Date: 11/9/2007 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1294	W	487451 234513	Status: Historical Licence No: 6/33/08/*G/0066 Details: Pollution Remediation Direct Source: Ground Water Source Of Supply Point: 4 Boreholes (1-4) Atbletchley Data Type: Point Name: NETWORK RAIL INFRASTRUCTURE LTD	Annual Volume (m <sup>3</sup> ): 58400 Max Daily Volume (m <sup>3</sup> ): 160 Original Application No: CN 3619 Original Start Date: 6/11/2006 Expiry Date: 31/3/2016 Issue No: 1 Version Start Date: 6/11/2006 Version End Date:

## 6.4 Surface Water Abstraction Licences

Are there any 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	
10	213	N	489000 234700	Status: Historical Licence No: 6/33/08/*S/0056 Details: Make-Up Or Top Up Water Direct Source: Surface Water Source Of Supply Point: Caldecotte Lake, bow Brickhill Data Type: Point Name: LASALLE UK VENTURES PROPERTY 7 SARL	Annual Volume (m <sup>3</sup> ): 600 Max Daily Volume (m <sup>3</sup> ): 360 Application No: CS 2709 Original Start Date: 1/6/1990 Expiry Date: - Issue No: 101 Version Start Date: 20/8/2008 Version End Date:

## 6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? None identified

Database searched and no data found.

## 6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? None identified

Database searched and no data found.

## 6.7 Source Protection Zones within Confined Aquifer

Are there any 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

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

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
17	W	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
66	SW	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
220	W	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
264	E	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
375	E	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
387	E	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
473	SW	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.

## 6.9 River Quality

Is there any 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
53A	935	SW	488400 233200	River Name: Ouzel Reach: Stapleford Mill ..... Eaton Leys Farm End/Start of Stretch: End of Stretch NGR	B	B	B	B	B
54A	935	SW	488400 233200	River Name: Ouzel Reach: Eaton Leys Farm ..... A421 Road Bridge End/Start of Stretch: Start of Stretch NGR	B	B	B	B	B

### 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
55	385	SW	488600 233800	River Name: Ouzel Reach: Eaton Leys Farm .. A421 Road Bridge End/Start of Stretch: Sample Point NGR	B	B	A	A	A
56A	935	SW	488400 233200	River Name: Ouzel Reach: Stapleford Mill .. Eaton Leys Farm End/Start of Stretch: End of Stretch NGR	B	B	B	B	B
57A	935	SW	488400 233200	River Name: Ouzel Reach: Eaton Leys Farm .. A421 Road Bridge End/Start of Stretch: Start of Stretch NGR	B	B	A	A	A



## 6.10 Ordnance Survey MasterMap Water Network

Are there any Ordnance Survey MasterMap Water Network entries within 500m of the study site?

#DRN\_Count#

#NDF\_DRN\_tag#

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

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

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
2	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
3	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
4	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
5	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
6	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
7	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
10	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
11	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
12	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
13	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
14	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
15	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
16	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
8	4 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
17	4 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
9	7 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
18	7 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
10	8 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
19	8 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
11	33 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
20	33 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
12	34 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
13	34 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
21	34 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
22	34 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
14	47 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
23	47 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
15	60 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
24	60 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
16	76 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
17	76 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
25	76 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
26	76 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
18	79 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
27	79 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
19	81 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 5.0
28	81 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 5.0
20	85 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
29	85 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
21	91 W	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.3
30	91 W	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.3
22	97 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 2.8
31	97 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 2.8
23	104 W	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.4

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
32	104 W	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.4
24	110 NW	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
33	110 NW	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
25	112 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.7
26	112 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.8
34	112 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.7
35	112 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.8
27	116 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
28	116 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
29	116 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
36	116 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
37	116 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
38	116 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
30	117 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
31	117 N	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.2
32	117 N	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.2
39	117 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
40	117 N	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.2
41	117 N	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 11.2
33	135 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 6.5
34	135 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 0.8
42	135 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 6.5
43	135 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 0.8
35	147 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
44	147 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
36	163 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.1
45	163 NW	-	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 12.1
37	202 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
46	202 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
38	215 NW	Caldecotte Lake	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 145.7
39	215 NW	Caldecotte Lake	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 145.7
47	215 NW	Caldecotte Lake	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 145.7
48	215 NW	Caldecotte Lake	Lake, loch or reservoir.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 145.7
40	256 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
49	256 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
41	306 SW	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.5

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
50	306 SW	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.5
42	322 SW	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.3
51	322 SW	River Ouzel	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: 9.3
43	372 W	Grand Union 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: 14.3
44	372 W	Grand Union 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: 14.3
52	372 W	Grand Union 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: 14.3
53	372 W	Grand Union 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: 14.3
45	375 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
46	375 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
54	375 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
55	375 E	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
47	405 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided



ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
48	405 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
49	405 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
56	405 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
57	405 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
58	405 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
50	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
51	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
52	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
59	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
60	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided
61	450 NE	-	Inland river not influenced by normal tidal action.	Catchment Area: Cam Ely Ouse and South Level Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section: Not Provided

## 6.11 Surface Water Features

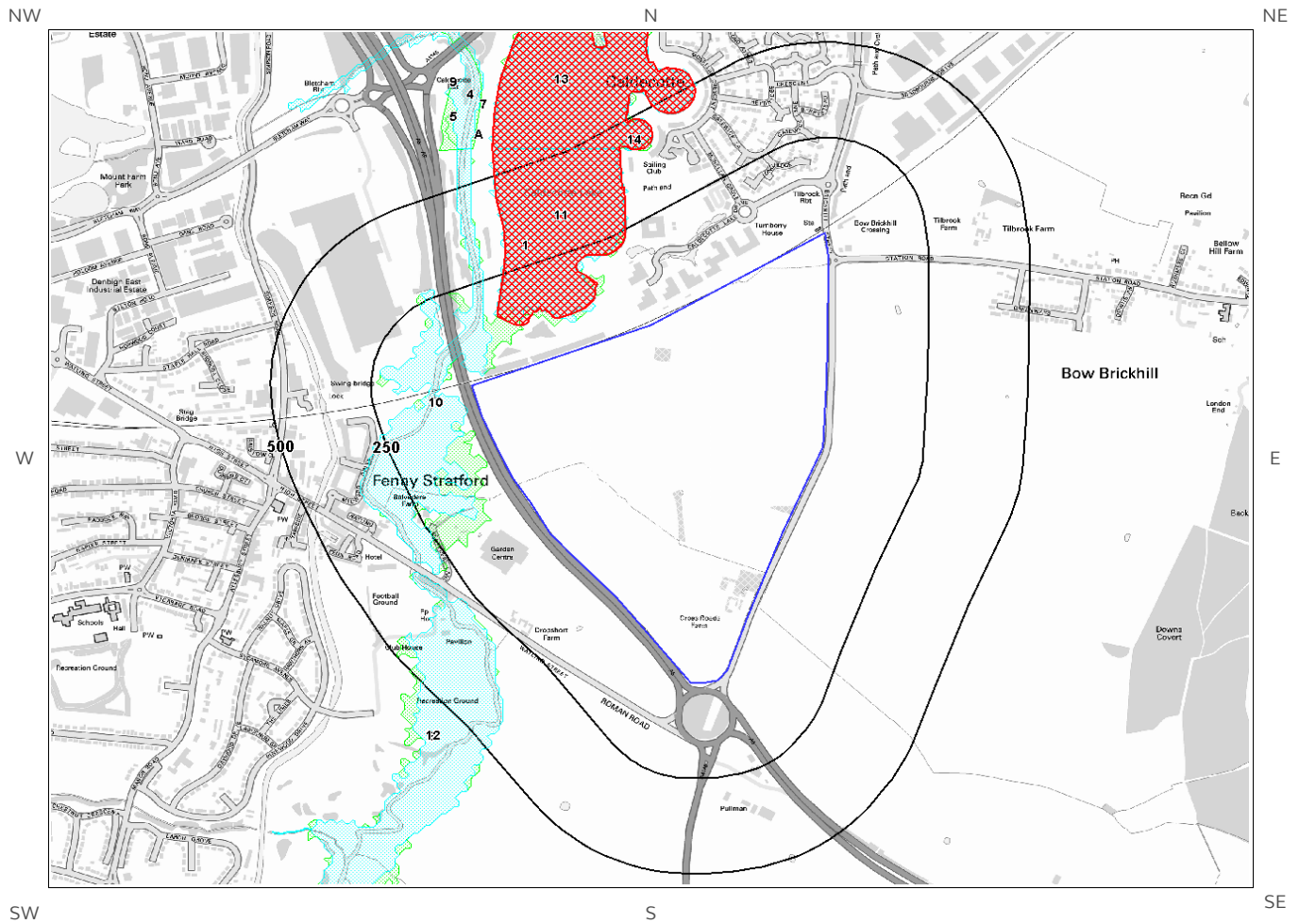
Are there any surface water features within 250m of the study site?

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
0	On Site
7	E
8	E
18	E
41	SW
46	E
57	SW
81	NW
85	SW
85	W
93	W
94	N
114	N
124	SW
140	NW
151	NW
162	NW
186	SW
200	N

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



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# 7 Flooding

## 7.1 River and Coastal Zone 2 Flooding

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

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

ID	Distance (m)	Direction	Update	Type
1	17	N	19-Mar-2018	Zone 2 - (Fluvial /Tidal Models)

## 7.2 River and Coastal Zone 3 Flooding

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

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

ID	Distance (m)	Direction	Update	Type
1	17	N	19-Mar-2018	Zone 3 - (Fluvial Models)
	71	N	19-Mar-2018	Zone 3 - (Fluvial Models)

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

What is the highest risk of flooding onsite? Low

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 Low (greater than 1 in 1000 but less than 1 in 100) 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
----	--------------	-----------	-------------------

1A	0.0	On Site	Low
2A	0.0	On Site	Low
3	7.0	N	Low
4	18.0	N	Low
5	22.0	N	Low
6	30.0	N	Low
7	30.0	W	Medium
8	33.0	SW	High
9	37.0	SW	Low
10B	39.0	SW	Low
11	40.0	W	Very Low
12	41.0	W	Very Low
13B	42.0	SW	Low
14B	42.0	SW	Low
15	43.0	NW	Low
16B	44.0	SW	Low

---

## 7.4 Flood Defences

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

---

## 7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? None identified

---

## 7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? Identified

---

## 7.7 Groundwater Flooding Susceptibility Areas

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

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

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

---

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

Potential at Surface

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

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## 7.8 Groundwater Flooding Confidence Areas

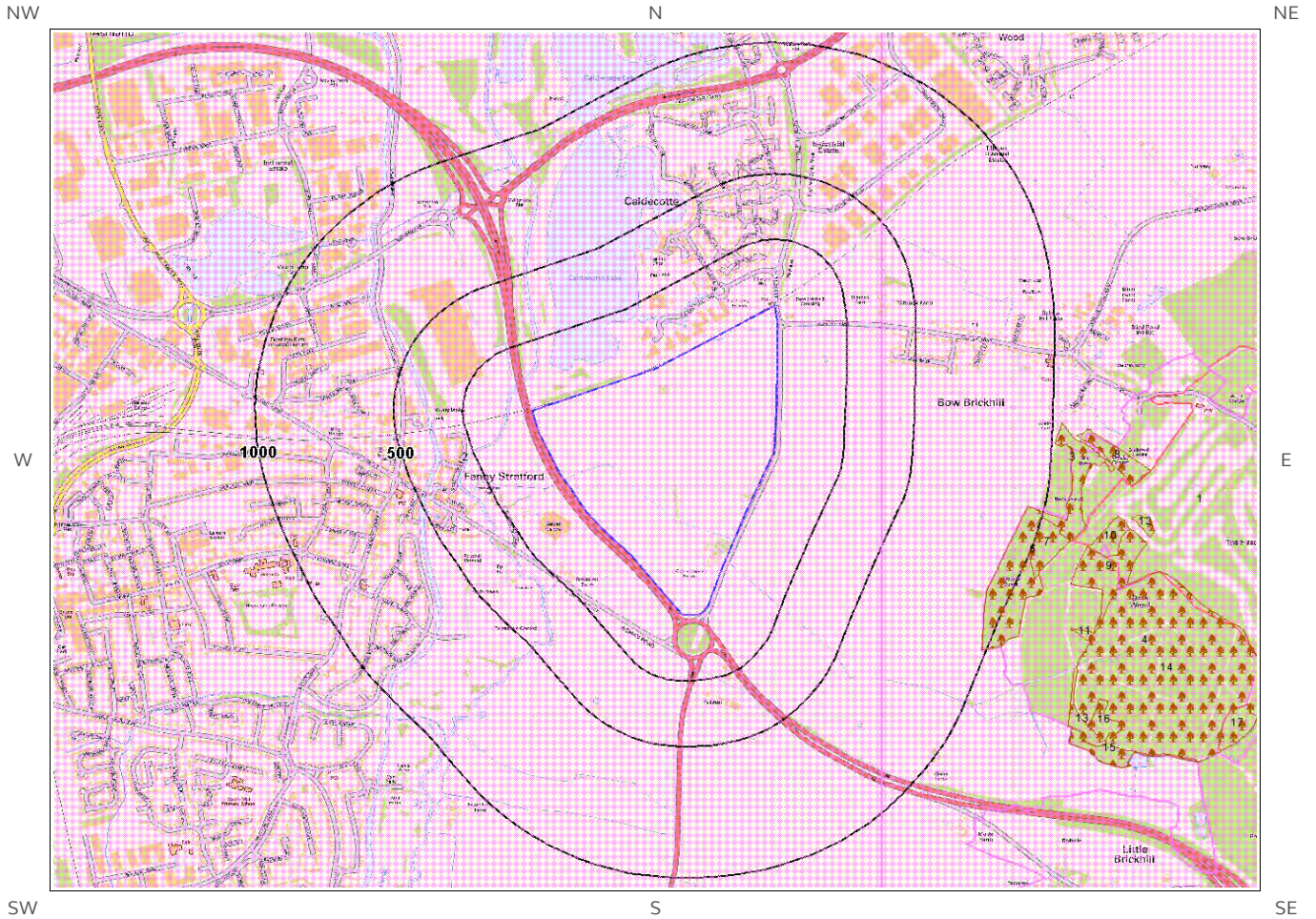
What is the British Geological Survey confidence rating in this result?

Moderate

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

Presence of 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:

13

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
6	916	SE	UNKNOWN	Ancient and Semi-Natural Woodland
7	988	E	UNKNOWN	Ancient Replanted Woodland
8	1089	E	UNKNOWN	Ancient Replanted Woodland
9	1178	E	UNKNOWN	Ancient Replanted Woodland
10	1187	E	UNKNOWN	Ancient and Semi-Natural Woodland
11	1252	SE	UNKNOWN	Ancient Replanted Woodland
12	1314	E	UNKNOWN	Ancient and Semi-Natural Woodland
13	1321	E	UNKNOWN	Ancient Replanted Woodland
14	1323	E	UNKNOWN	Ancient Replanted Woodland
15	1392	E	UNKNOWN	Ancient and Semi-Natural Woodland
16	1443	E	UNKNOWN	Ancient and Semi-Natural Woodland
17	1898	E	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1957	N	UNKNOWN	Ancient and 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:

1

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

ID	Distance (m)	Direction	NSA Name	Data Source
1	1131	E	Birchmoor	Natural England

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

4

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
2	0	On Site	Existing	DEFRA
3	375	E	Existing	DEFRA
4	916	SE	Existing	DEFRA
Not shown	1776	S	Existing	DEFRA

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

0

Database searched and no data found.

# 9. Natural Hazards Findings

## 9.1 Detailed BGS GeoSure Data

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

### 9.1.1 Shrink Swell

What is the maximum Shrink-Swell\* 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
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

### 9.1.2 Landslides

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

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

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

### 9.1.3 Soluble Rocks

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

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

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

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

### 9.1.4 Compressible Ground

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

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

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

### 9.1.5 Collapsible Rocks

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

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

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

### 9.1.6 Running Sand

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

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

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

\* 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.

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### 9.2.2 Radon Protection

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

# 10. Mining

## 10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? None identified

Database searched and no data found.

---

## 10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? None identified

Database searched and no data found.

---

## 10.3 Brine Affected Areas

Are there any 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](http://www.bgs.ac.uk)

BGS Geological Hazards Reports and general geological enquiries:  
[enquiries@bgs.ac.uk](mailto: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](http://www.environment-agency.gov.uk)

Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

**Public Health England**

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133-155 Waterloo Road, London, SE1 8UG  
[www.gov.uk/phe](http://www.gov.uk/phe)

Email: [enquiries@phe.gov.uk](mailto:enquiries@phe.gov.uk)  
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Mansfield  
Notts NG18 4RG  
Tel: 0345 7626 848  
DX 716176 Mansfield 5  
[www.coal.gov.uk](http://www.coal.gov.uk)

**Ordnance Survey**

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SO16 0AS  
Tel: 08456 050505

**Local Authority**

Authority: Milton Keynes  
Phone: 01908 691 691

Web: <http://www.milton-keynes.gov.uk/>

Address: Civic Offices, 1 Saxon Gate East, Milton Keynes, MK9 3HQ

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Tel: 01252 845444



**Public Health England**



**The Coal Authority**





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<https://www.groundsure.com/terms-and-conditions-sept-2016>



# Groundsure

LOCATION INTELLIGENCE

BWB Consulting Limited

5th Floor, Waterfront House, Station Street,  
Nottingham, NG2 3DQ

Groundsure  
Reference:

HMD-214-4874330

Your Reference:

NTS2682\_POR017497

Report Date

11 Apr 2018

Report Delivery  
Method:

Email - pdf

## Geo Insight

Address: Land to the east of the A5, MK17 9JH

Dear Sir/ Madam,

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

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

Yours faithfully,

Managing Director  
Groundsure Limited

Enc.  
Groundsure Geo Insight

**Address:** Land to the east of the A5, MK17 9JH  
**Date:** 11 Apr 2018  
**Reference:** HMD-214-4874330  
**Client:** BWB Consulting Limited

NW N NE



SW S SE

Aerial Photograph Capture date: 03-Jul-2015  
Grid Reference: 489216,234195  
Site Size: 57.86ha

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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?	Yes
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?	Yes

## 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?	Yes
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	Yes
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	0	1	3	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	2	0

## Section 5: Mining, Extraction & Natural Cavities

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



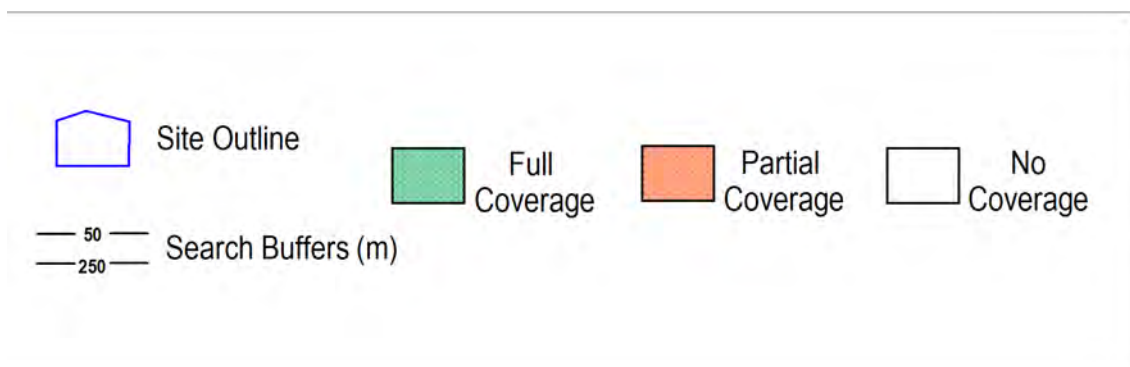
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
<b>Section 6: Natural Ground Subsidence</b>					
	On-site				
6.1 Shrink-Swell Clay	Moderate				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Moderate				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Low				
<b>Section 7: Borehole Records</b>					
	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	4	20	62		
<b>Section 8: Estimated Background Soil Chemistry</b>					
	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	24	7	0		
<b>Section 9: Railways and Tunnels</b>					
	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	1	0	3	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	12	4	Not Searched	
9.5 Railway Projects	0	0	0	0	

# 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	Some deposits are mapped
2	219.0	Some deposits are mapped	Full	Full	No coverage
3	375.0	Some deposits are mapped	Full	Full	Some deposits are mapped
4	443.0	Some deposits are mapped	Full	Full	No coverage

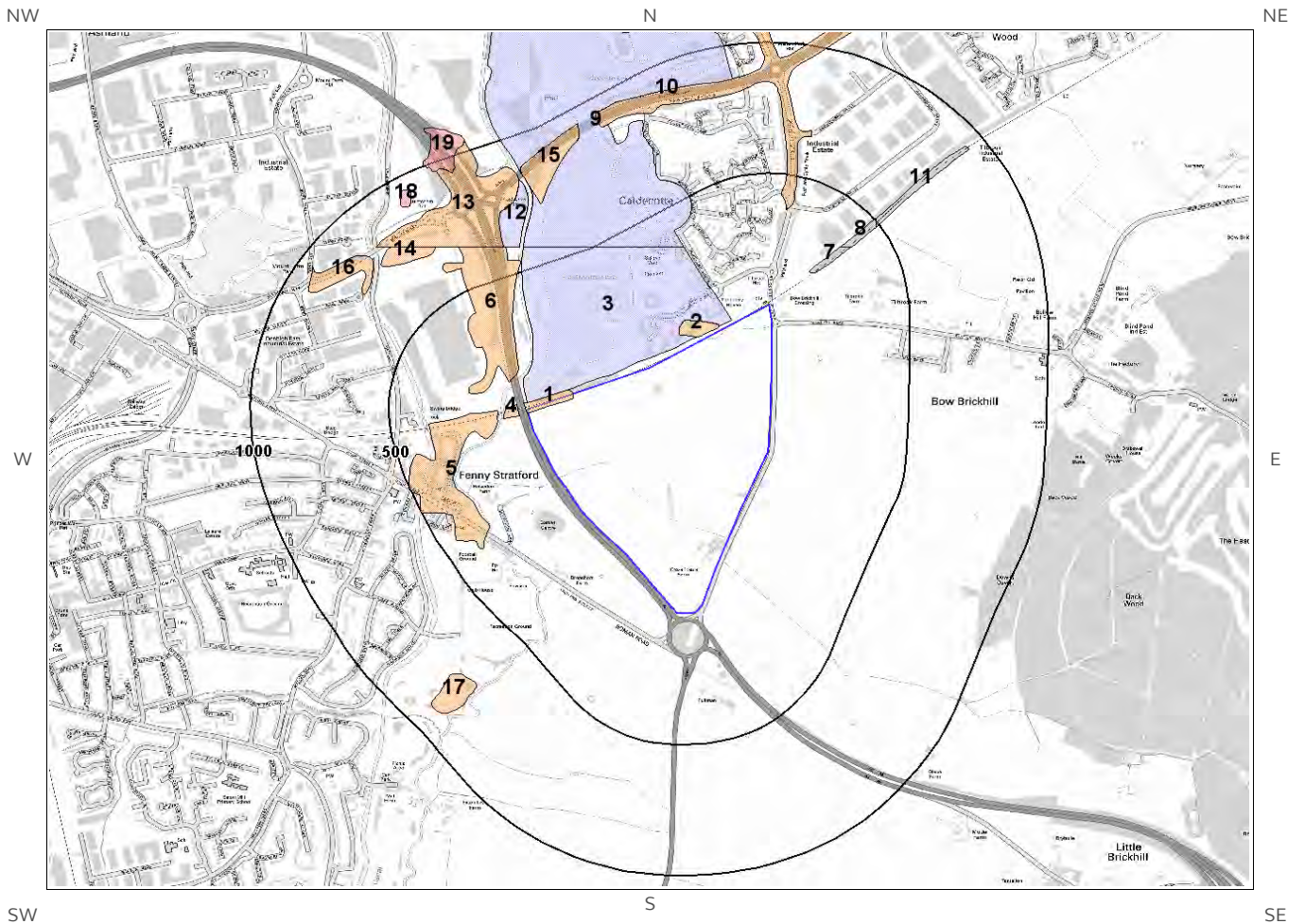
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not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

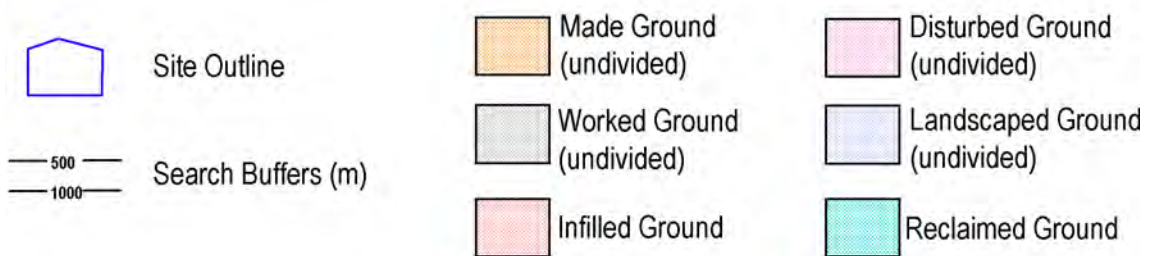
# 1 Geology (1:10,000 scale).

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



**Artificial Ground Legend**

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# 1. Geology 1:10,000 scale

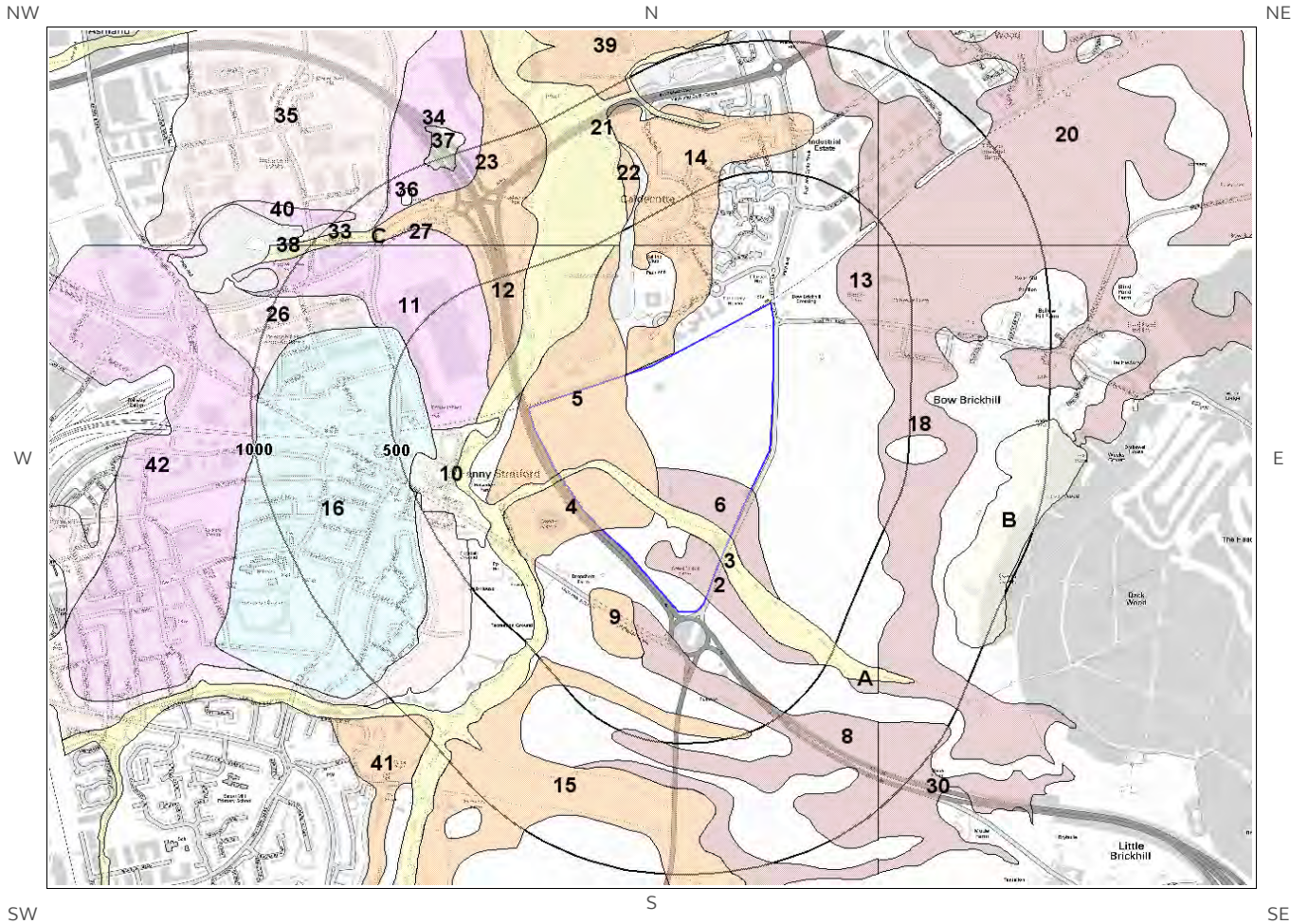
## 1.1 Artificial Ground

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

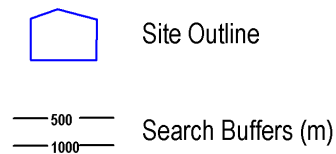
ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	13.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	16.0	NW	LSGR- UNKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
4	33.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	105.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	123.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	191.0	NE	WGR-VOID	Worked Ground (Undivided)	Void
8	338.0	NE	WGR-VOID	Worked Ground (Undivided)	Void
9	343.0	NW	LSGR- UNKNOWN	Landscaped Ground (Undivided)	Unknown/unclassified Entry
10	367.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	485.0	NE	WGR-VOID	Worked Ground (Undivided)	Void

# 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
2	0.0	On Site	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
3	0.0	On Site	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
4	0.0	On Site	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
5	0.0	On Site	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
6	0.0	On Site	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
7	3.0	N	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
8	78.0	SW	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
9	102.0	SW	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
10	113.0	W	SUPNM-UNKNOWN	Superficial Theme Not Mapped [for Digital Map Use Only] - Unknown/unclassified Entry	Unknown/unclassified Entry
11	156.0	NW	SGAO-XSV	Sand And Gravel Of Uncertain Age And Origin - Sand And Gravel	Sand And Gravel
12	156.0	NW	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
13	242.0	E	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
14	295.0	NW	STGO-XSV	Stoke Goldington Member - Sand And Gravel	Sand And Gravel
15	357.0	SW	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
16	360.0	W	TILMP-DMTN	Till, Mid Pleistocene - Diamicton	Diamicton
17	370.0	NE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
18	375.0	E	HEAD-XSC	Head - Sand And Clay	Sand And Clay
19	405.0	SW	GLLMP-XCZ	Glaciolacustrine Deposits, Mid Pleistocene - Clay And Silt	Clay And Silt
20	443.0	NE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
21	459.0	NW	ALV-XCZ	Alluvium - Clay And Silt	Clay And Silt

## 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.

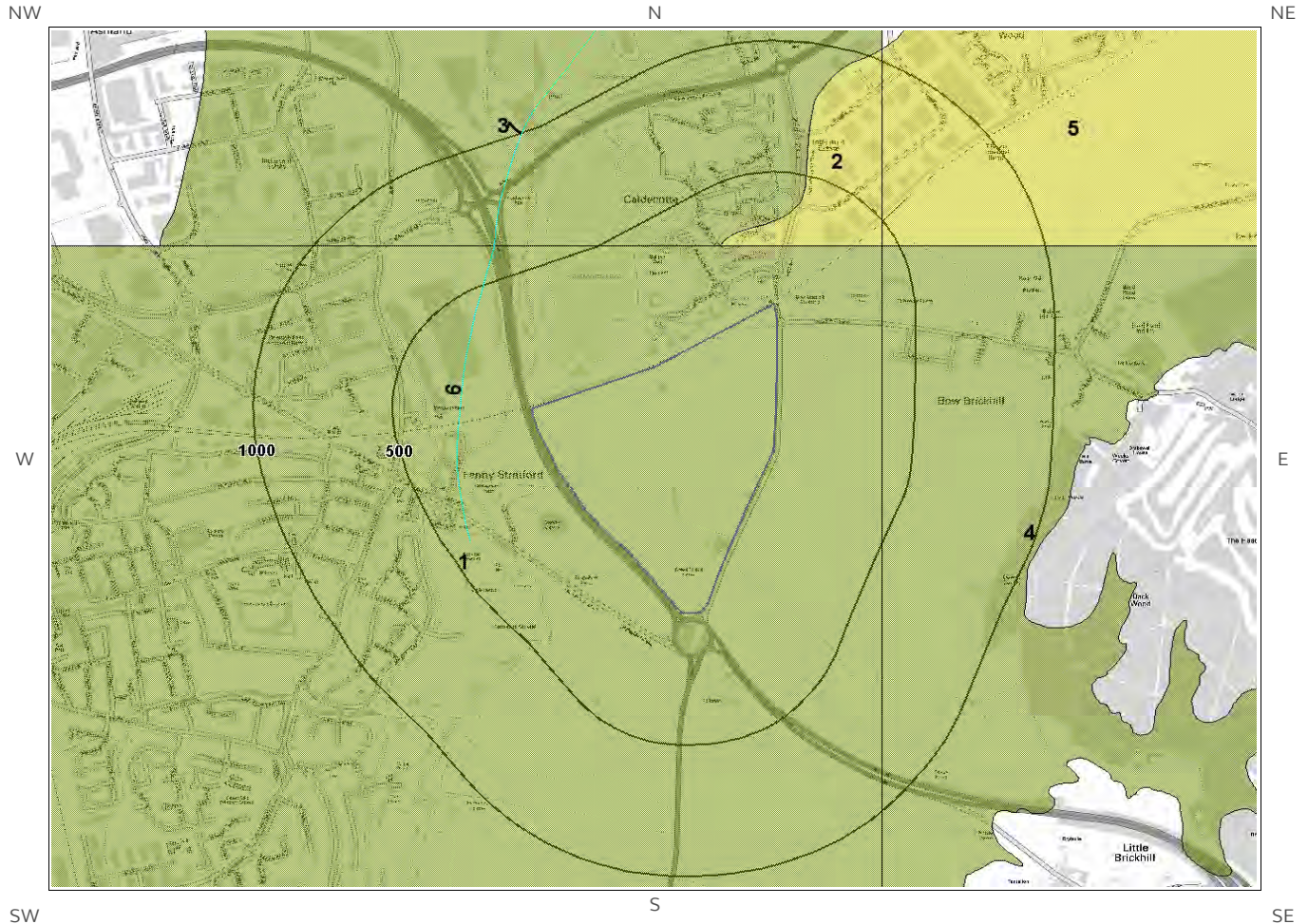
The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

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.

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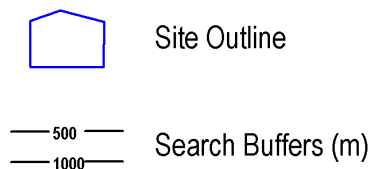


# 1.3 Bedrock and linear features map (1:10,000 scale)



**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	OXC-MDST	Oxford Clay Formation - Mudstone	Oxfordian Age - Callovian Age
2	219.0	N	STWE-MDST	Stewartby Member And Weymouth Member (undifferentiated) - Mudstone	Oxfordian Age - Callovian Age
3	288.0	NW	PET-MDST	Peterborough Member - Mudstone	Callovian Age
4	375.0	E	OXC-MDST	Oxford Clay Formation - Mudstone	Oxfordian Age - Callovian Age
5	443.0	NE	STWE-MDST	Stewartby Member And Weymouth Member (undifferentiated) - Mudstone	Oxfordian Age - Callovian Age

## 1.3.2 Linear features

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

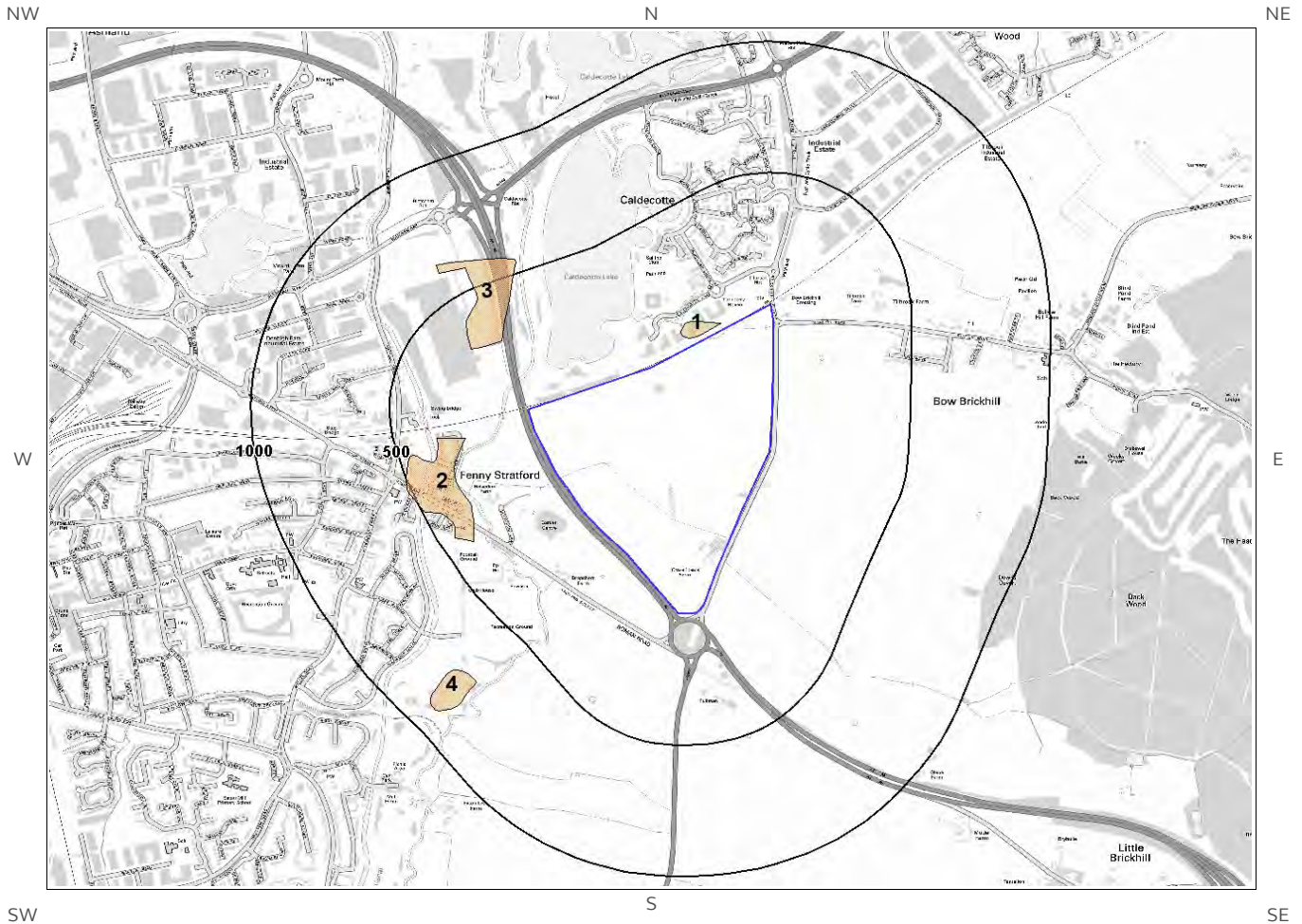
ID	Distance (m)	Direction	Category Description	Feature Description
6	256.0	W	LANDFORM	Buried channel or valley margin

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.

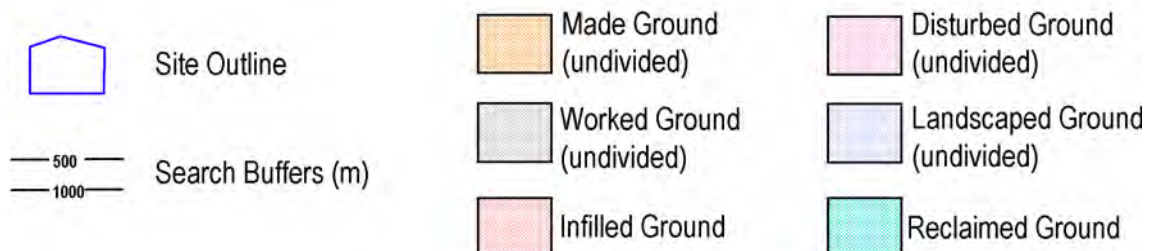
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

# 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: 220

#### 2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

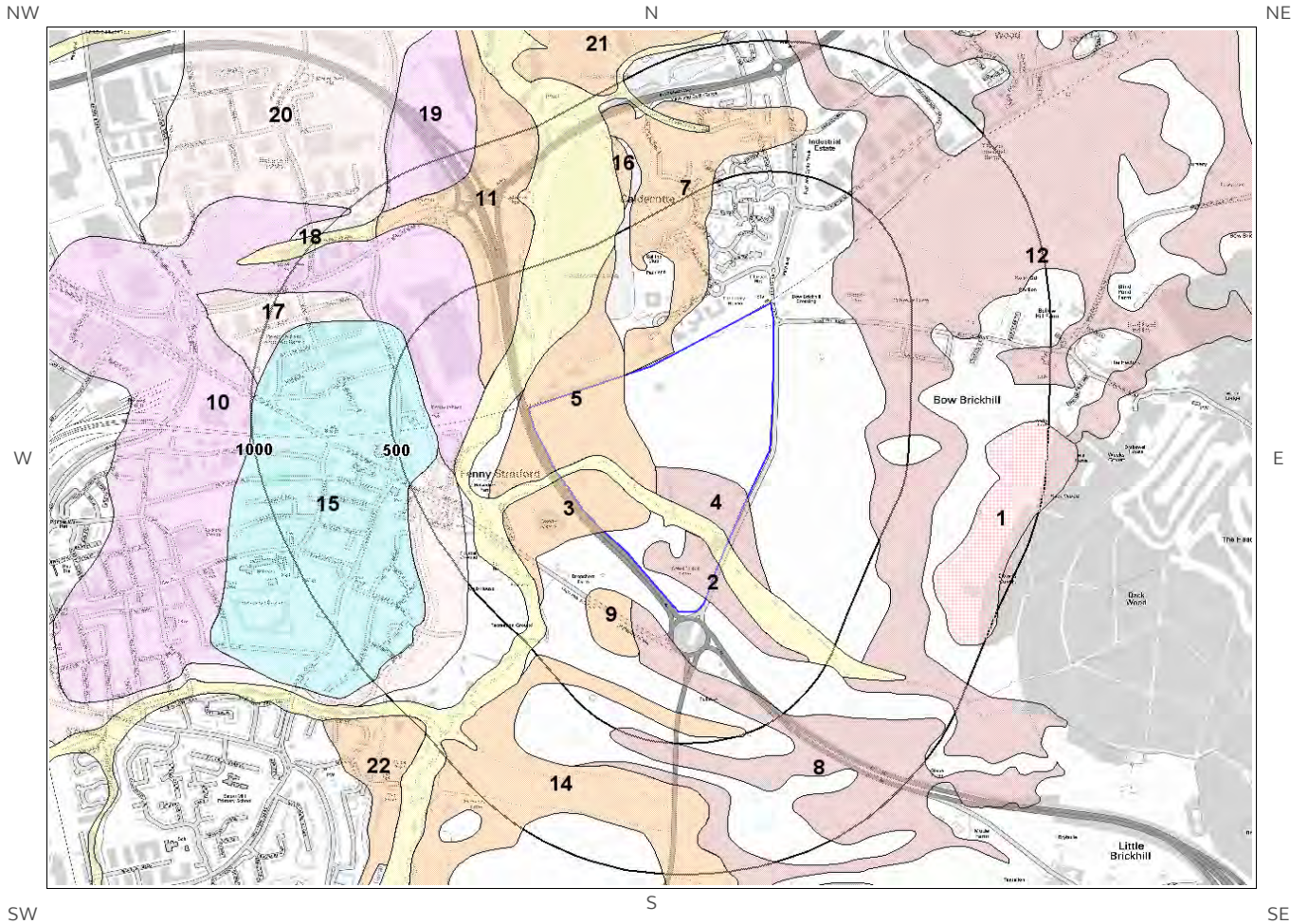
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	22.0	NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	248.0	W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	277.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

#### 2.1.2 Permeability of Artificial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
22.0	NW	Mixed	Very High	Low

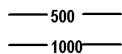
# 2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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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
2	0.0	On Site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
3	0.0	On Site	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
4	0.0	On Site	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
5	0.0	On Site	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
6	0.0	On Site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
7	2.0	N	RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL
8	79.0	SW	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
9	101.0	SW	RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL
10	172.0	W	SUPD-XSV	SUPERFICIAL DEPOSITS	SAND AND GRAVEL
11	172.0	NW	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
12	223.0	E	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
13	338.0	SW	GLLMP-XCZ	GLACIOLACUSTRINE DEPOSITS, MID PLEISTOCENE	CLAY AND SILT
14	346.0	SW	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
15	347.0	W	ODT-DMTN	OADBY MEMBER	DIAMICTON

### 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
0.0	On Site	Intergranular	Very High	High
0.0	On Site	Mixed	High	Very Low
0.0	On Site	Mixed	High	Very Low
2.0	N	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.

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### 2.2.4 Landslip Permeability

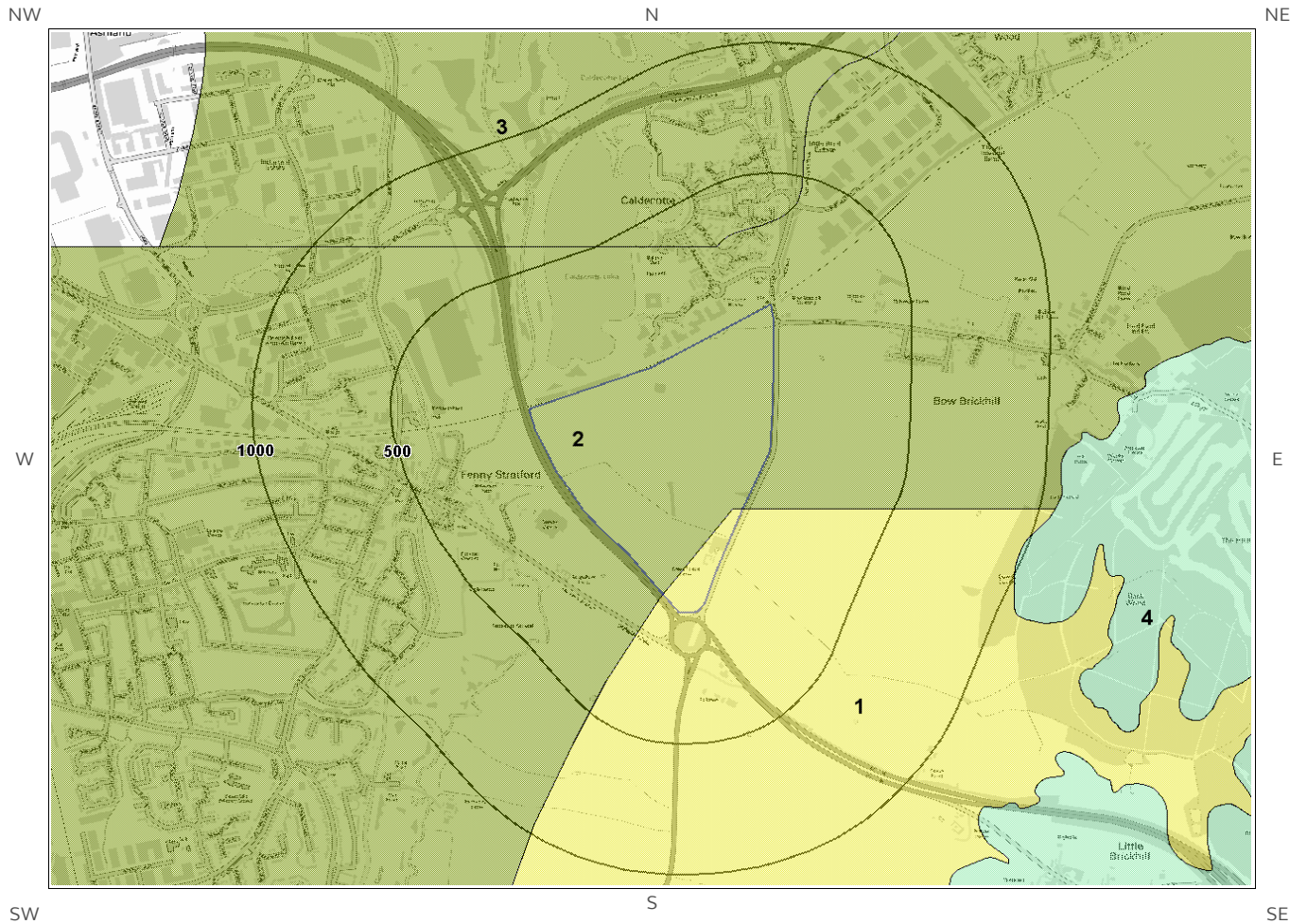
Are there any records relating to permeability of landslips within the study site boundary?

No

Database searched and no data found.

---

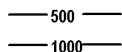
# 2.3 Bedrock and linear features map (1:50,000 scale)



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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: 220

### 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	WWB-MDST	WEST WALTON FORMATION - MUDSTONE	OXFORDIAN
2	0.0	On Site	OXC-MDST	OXFORD CLAY FORMATION - MUDSTONE	CALLOVIAN
3	288.0	NW	PET-MDST	PETERBOROUGH MEMBER - MUDSTONE	CALLOVIAN

### 2.3.2 Permeability of Bedrock Ground

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

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

### 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.

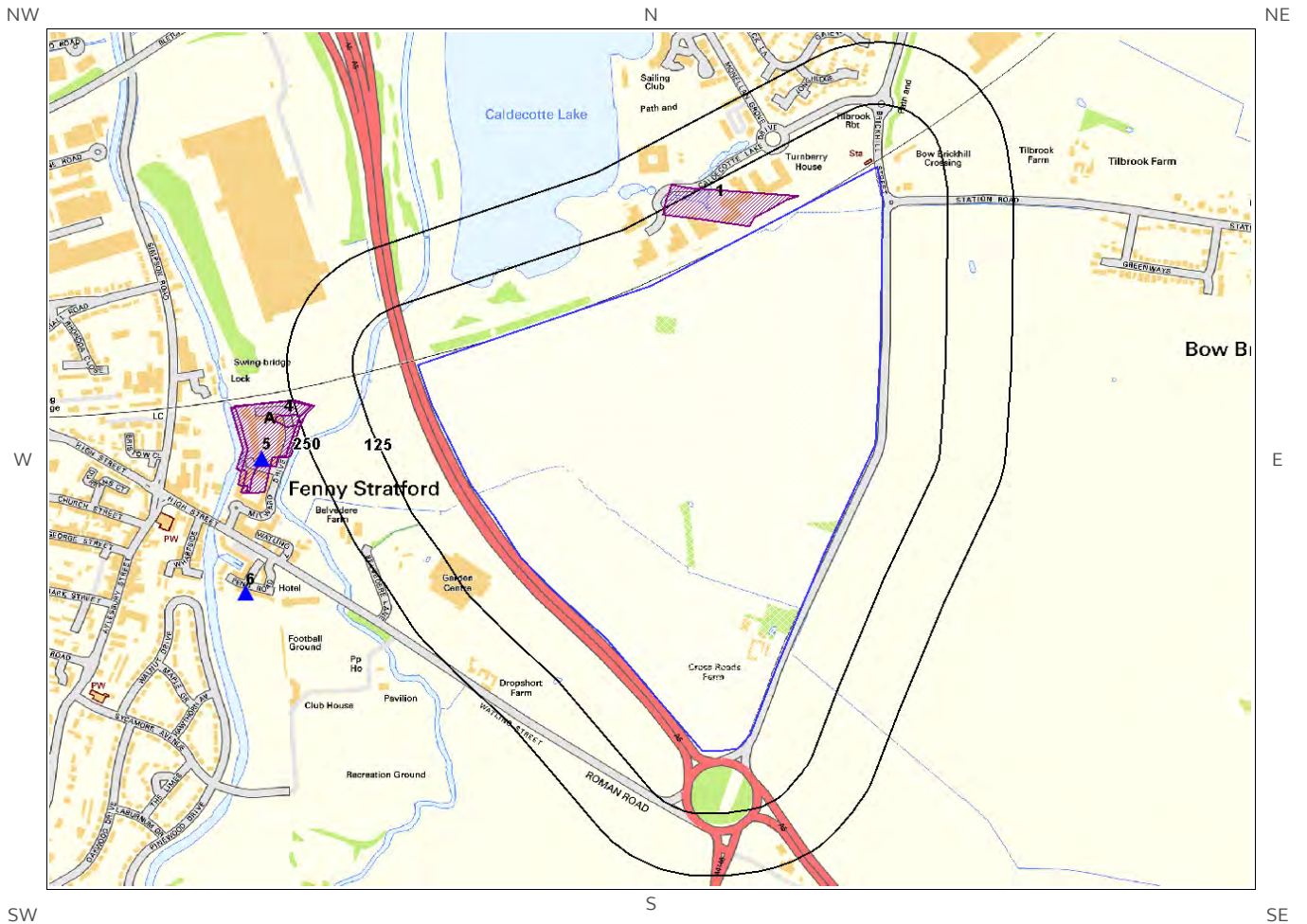
---

## 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.





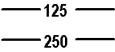
---

# 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)

# 4 Ground Workings

## 4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1	14.0	NW	489335 234702	Sewage Works	1975
2A	213.0	W	488464 234215	Bricks Works	1898
3A	221.0	W	488456 234214	Brick Works	1900
4	247.0	W	488489 234267	Pond	1924

## 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.

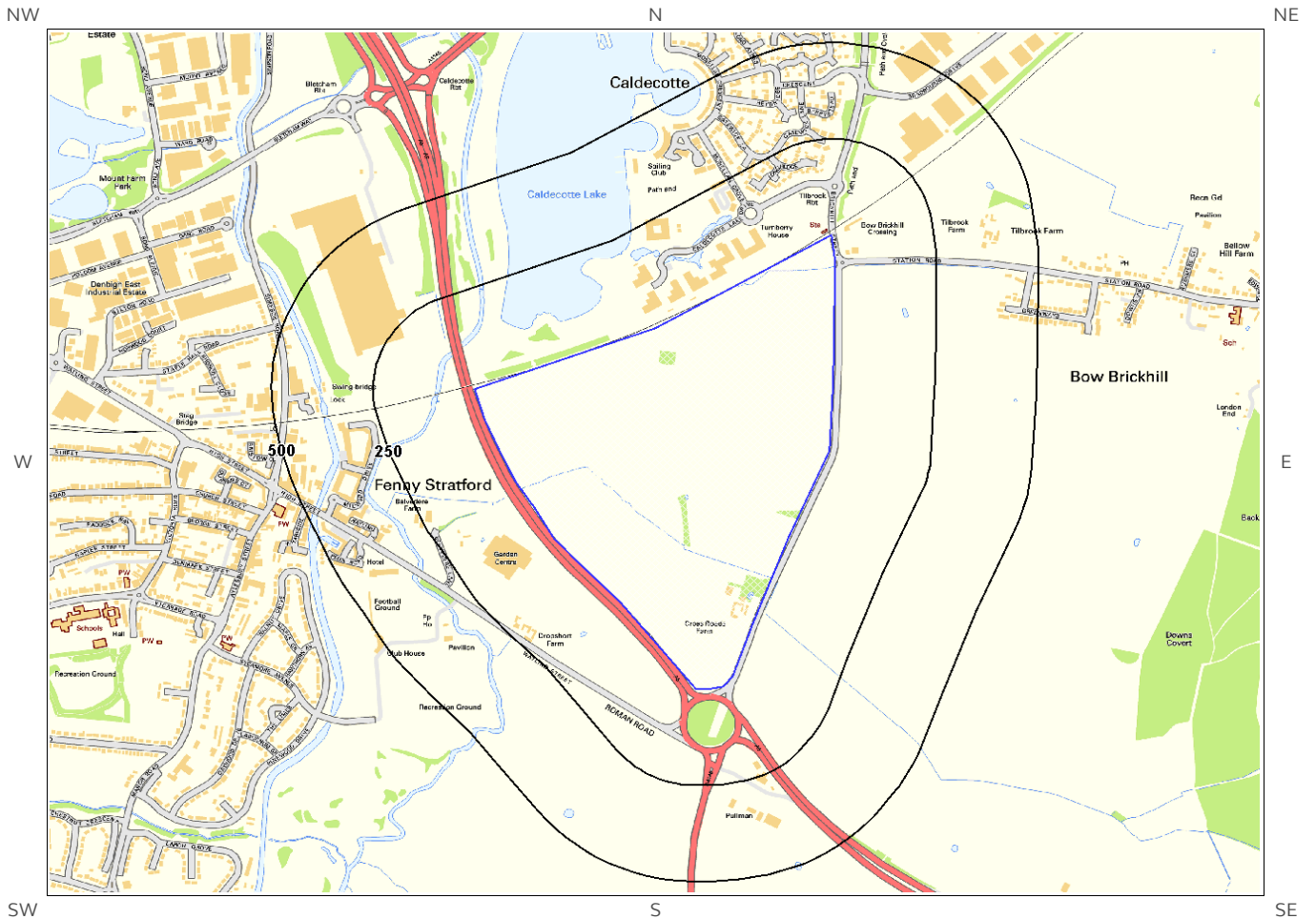
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

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
5	343.0	W	488438 234190	Clay & Shale	Canal Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

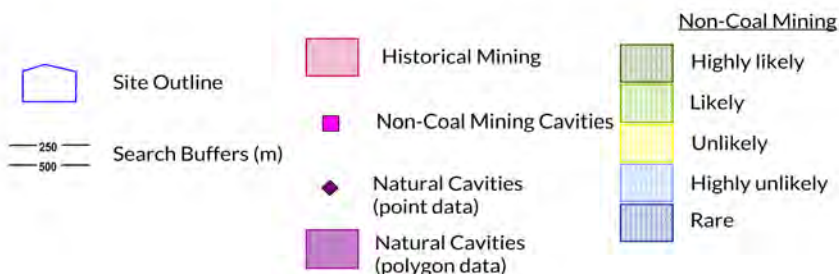
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
6	483.0	SW	488408 233919	Clay & Shale	Fenny Stratford Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

# 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? No

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

---

## 5.4 Non-Coal Mining

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

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

Database searched and no data found.

---

## 5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

---

## 5.6 Natural Cavities

This dataset provides information based on 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? No

Database searched and no data found.

---

## 5.7 Brine Extraction

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

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

Database searched and no data found.

---

## 5.8 Gypsum Extraction

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

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

Database searched and no data found.

---

## 5.9 Tin Mining

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

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

Database searched and no data found.

---



## 5.10 Clay Mining

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

Are there any Clay Mining areas within 1000m of the study site boundary?

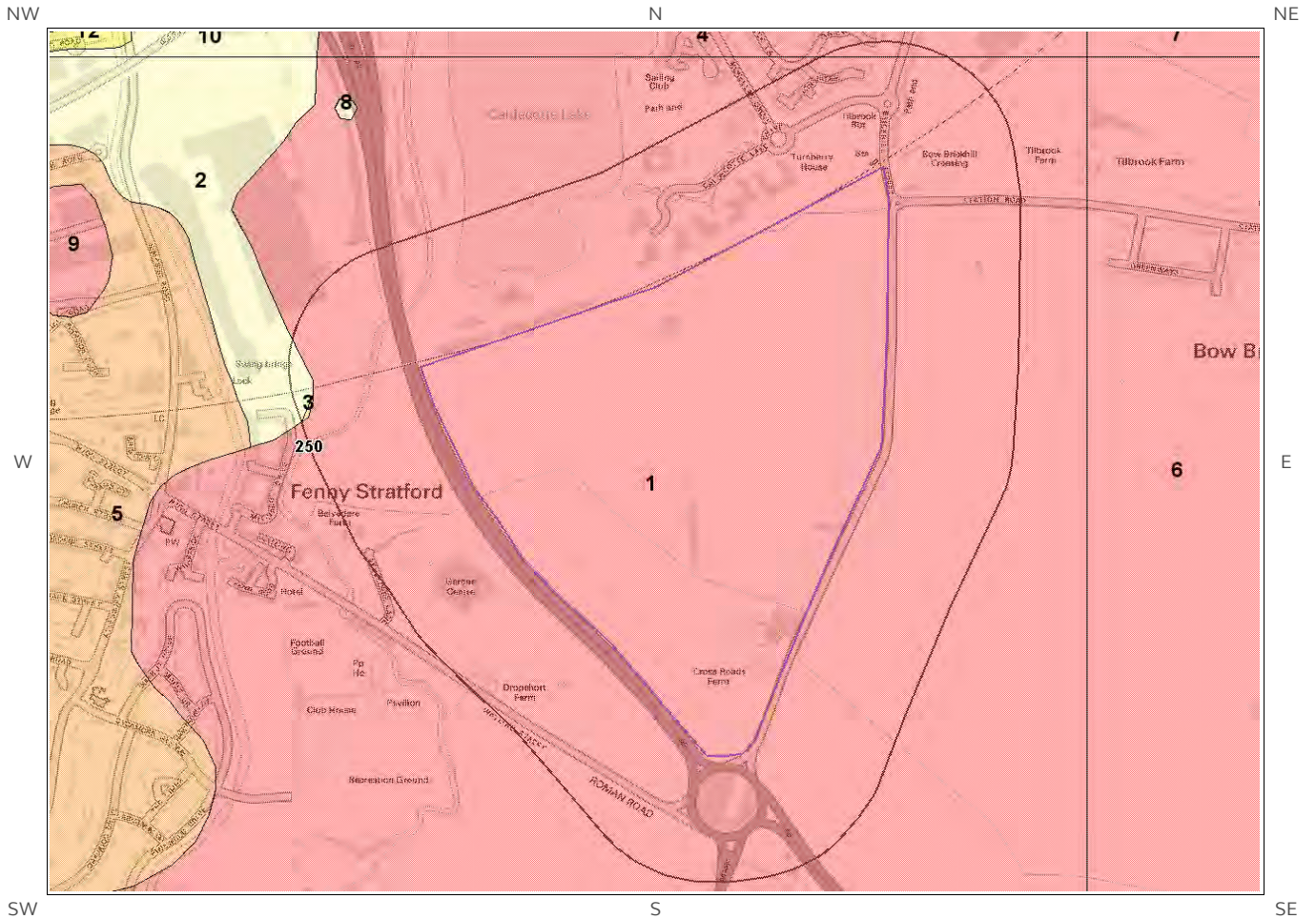
No

Database searched and no data found.

---

# 6 Natural Ground Subsidence

## 6.1 Shrink-Swell Clay map

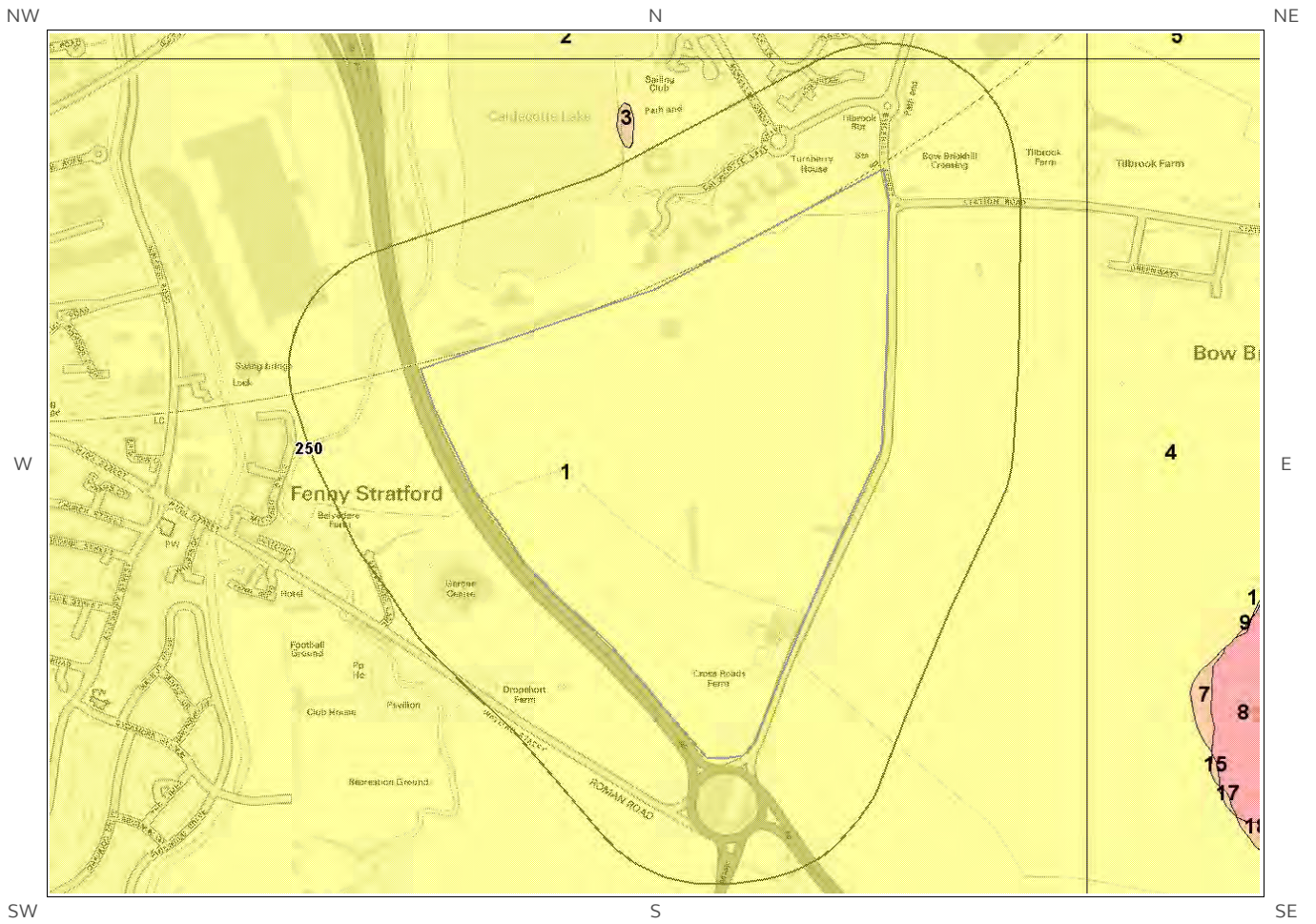


Shrink Swell Clay Legend

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# 6.2 Landslides map

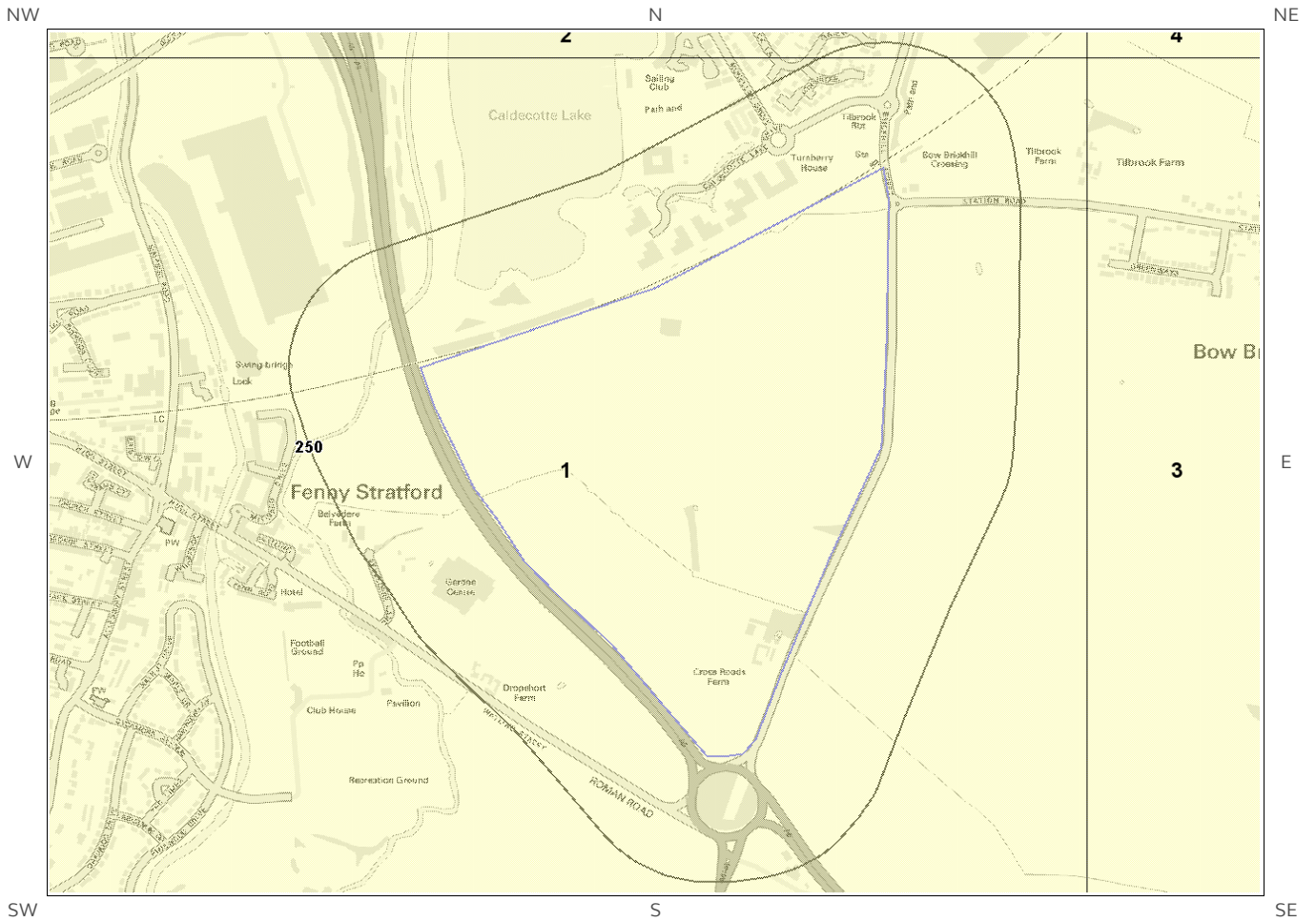


Landslides Legend

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# 6.3 Ground Dissolution of Soluble Rocks map

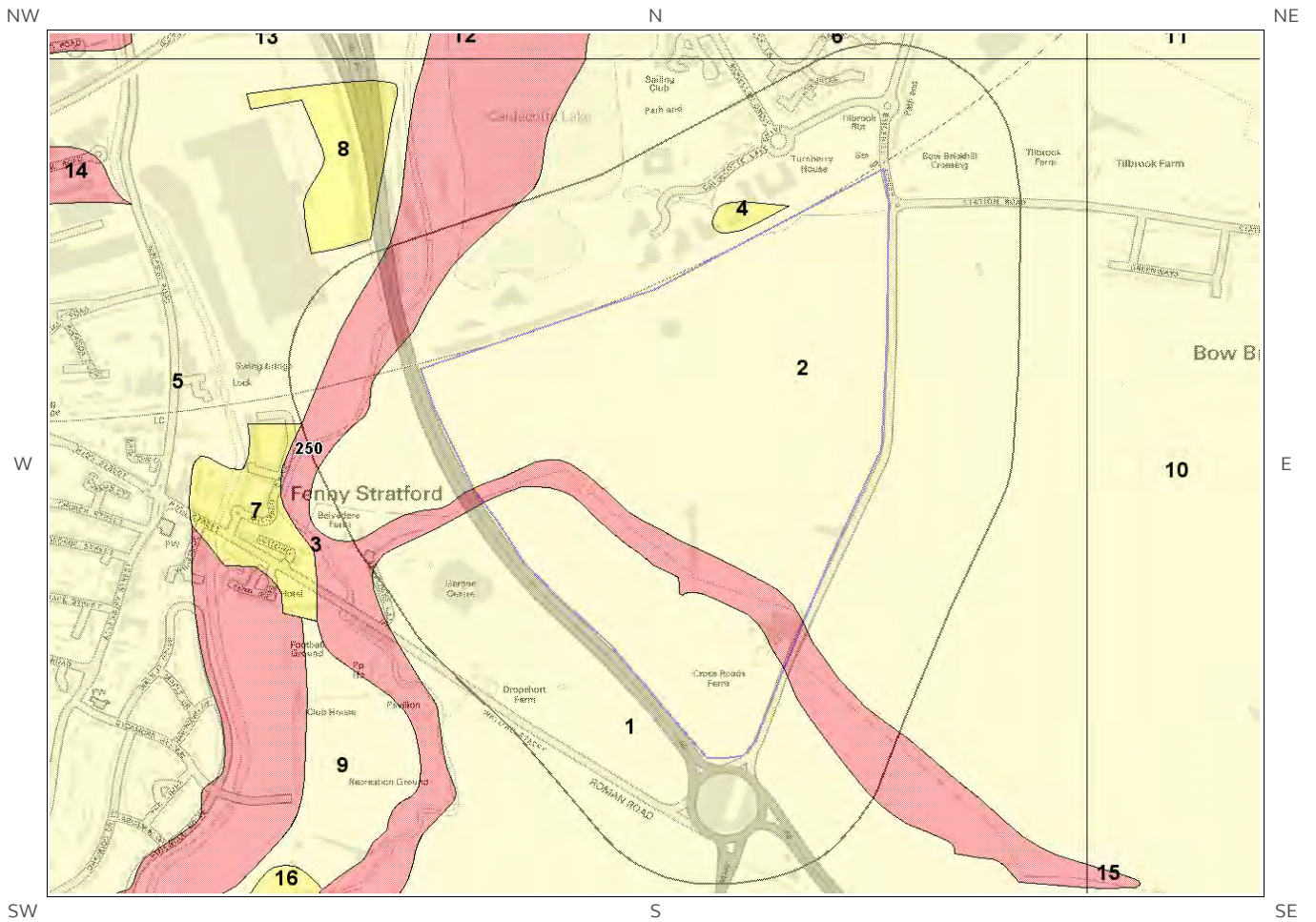


**Ground Dissolution Soluble Rocks Legend**

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# 6.4 Compressible Deposits map

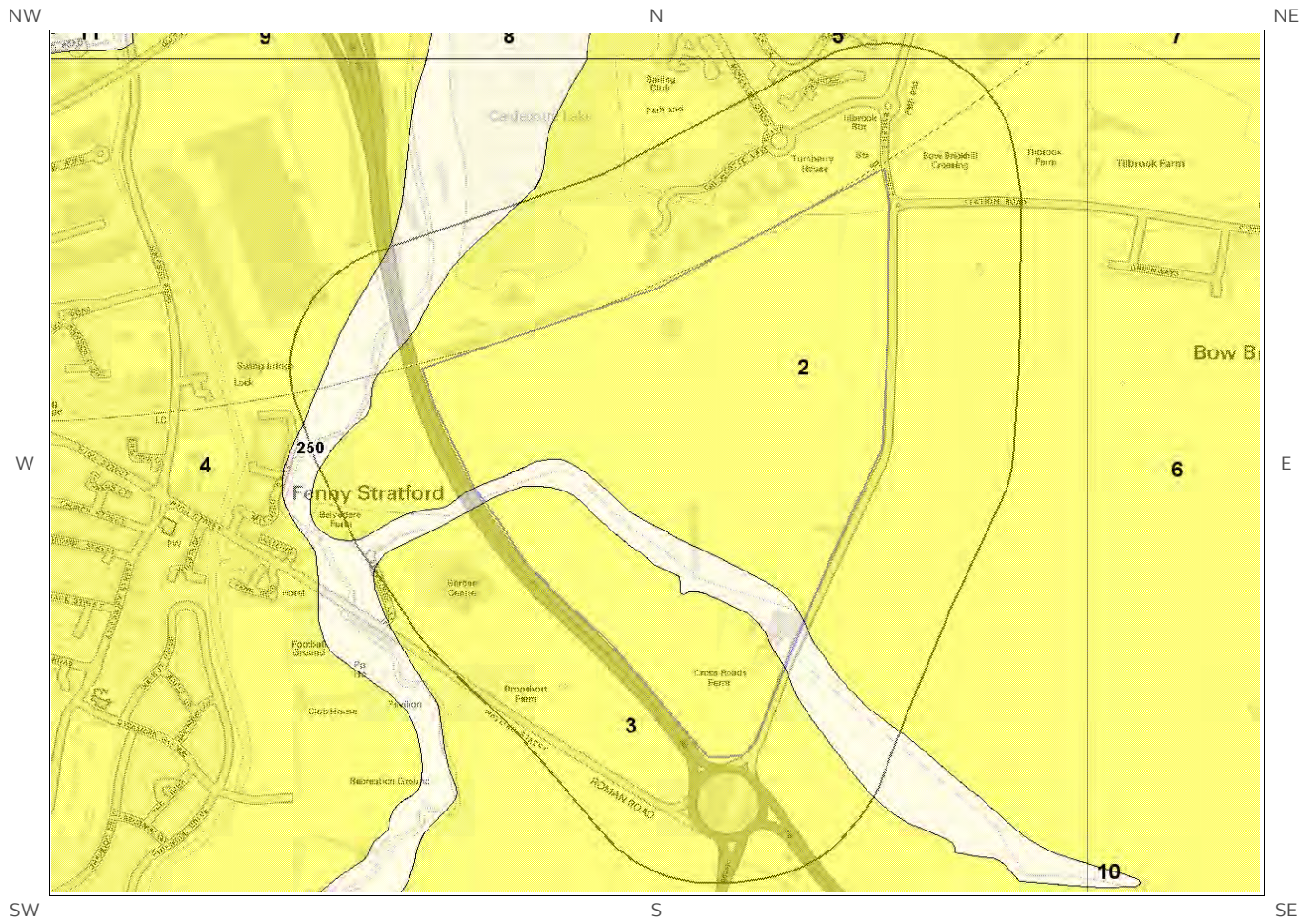


**Compressible Deposits Legend**

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# 6.5 Collapsible Deposits map



**Collapsible Deposits Legend**

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