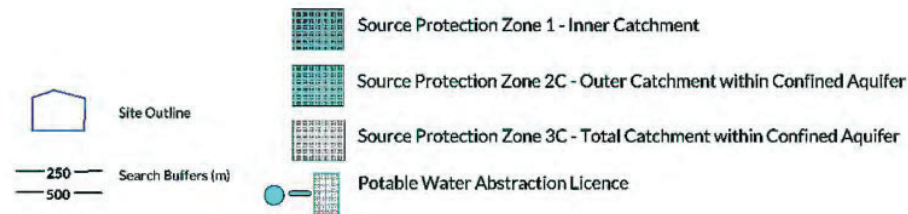
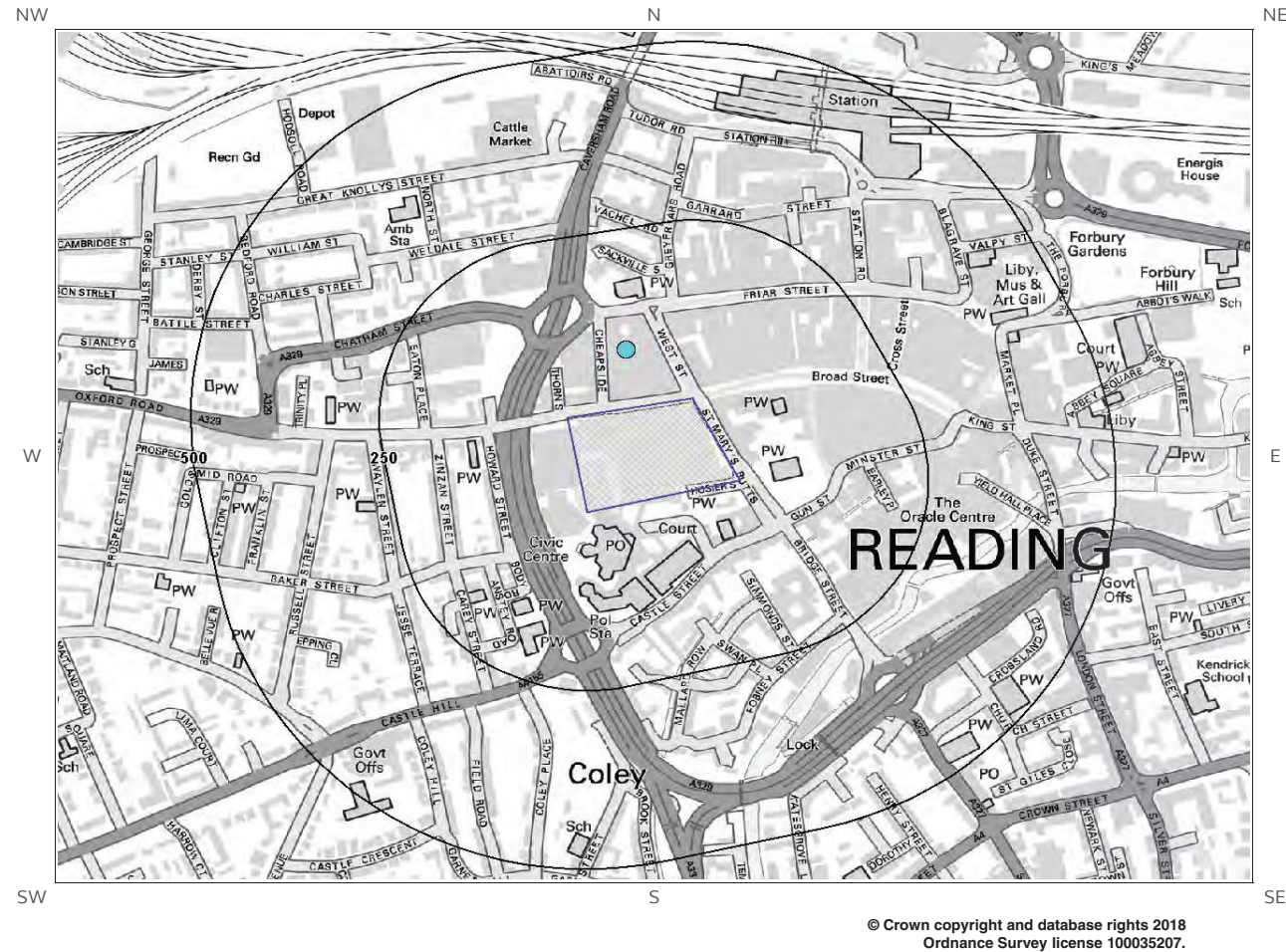
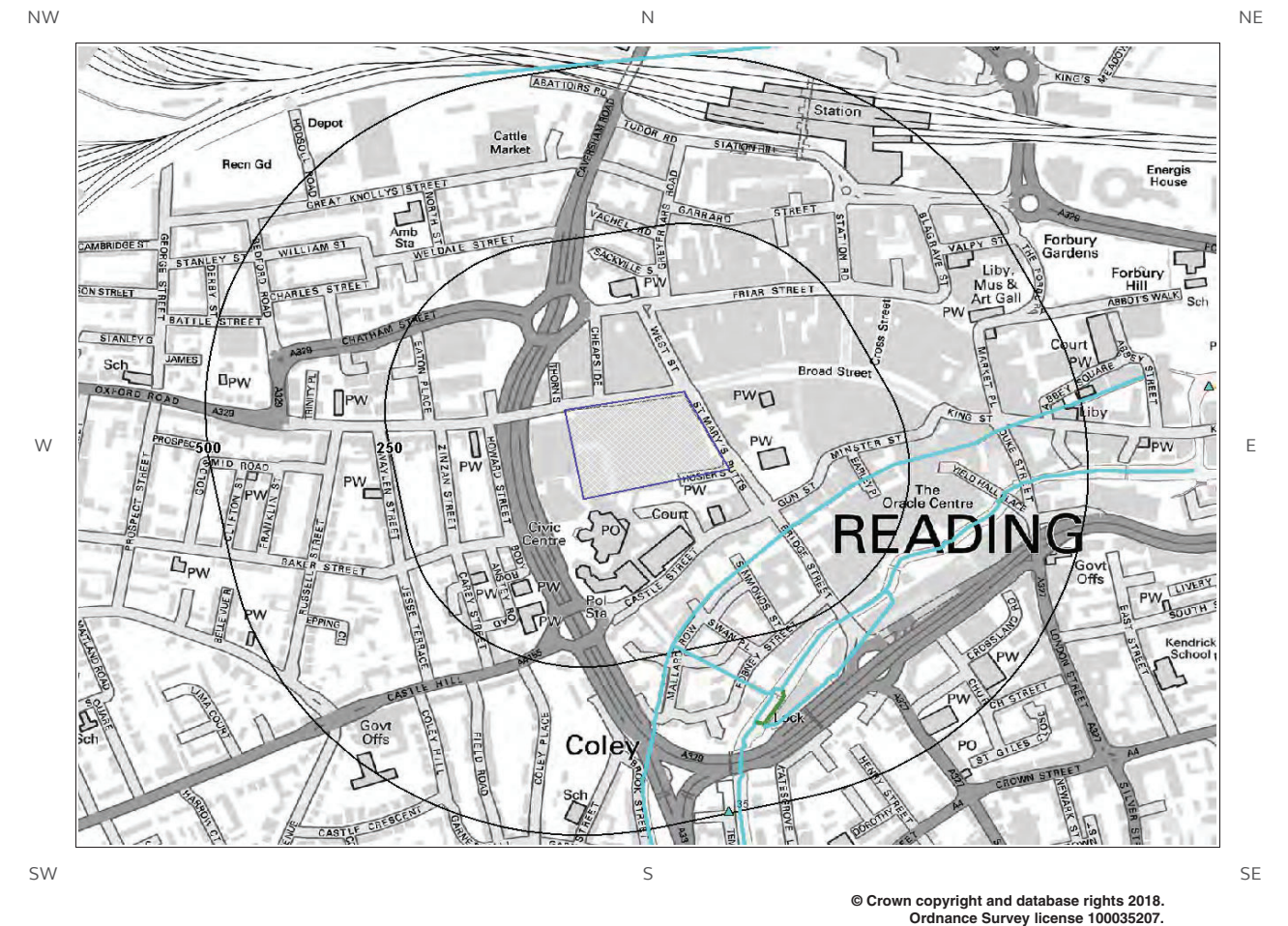


6d. Hydrogeology – Source Protection Zones within confined aquifer



6e. Hydrology – Watercourse Network and River Quality



6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	375	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
5	484	N	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.2 Aquifer within Bedrock Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
4	116	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
5	440	SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site Identified

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

ID	Distance (m)	Direction	NGR	Details
7	81	N	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Cheapside, Reading, Berkshire Data Type: Point Name: PRIMARK STORES LIMITED Annual Volume (m³): 14933 Max Daily Volume (m³): 40.91 Original Application No: - Original Start Date: 11/7/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2008 Version End Date:
Not shown	729	N	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: Meadow Road, Reading, Berkshire Data Type: Point Name: MANROSE MANUFACTURING LTD Annual Volume (m³): 90920 Max Daily Volume (m³): 727.4 Original Application No: - Original Start Date: 23/1/1990 Expiry Date: - Issue No: 101 Version Start Date: 30/6/2006 Version End Date:
Not shown	729	N	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Meadow Road, Reading, Berkshire Data Type: Point Name: MANROSE MANUFACTURING LTD Annual Volume (m³): 90920 Max Daily Volume (m³): 727.4 Original Application No: - Original Start Date: 23/1/1990 Expiry Date: - Issue No: 101 Version Start Date: 30/6/2006 Version End Date:
Not shown	729	N	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Non-Evaporative Cooling Direct Source: Thames Groundwater Point: Cardiff Road, Reading, Berkshire Data Type: Point Name: COX & WYMAN LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WR.A/1988 Original Start Date: 11/7/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/7/1966 Version End Date:
Not shown	729	N	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Cardiff Road, Reading, Berkshire Data Type: Point Name: COX & WYMAN LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WR.A/1988 Original Start Date: 11/7/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/7/1966 Version End Date:
Not shown	792	NW	470600 174000	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: Thames Groundwater Point: Cardiff Road, Reading Point B Data Type: Point Name: HILLIER GROUP OF COMPANIES Annual Volume (m³): 6682 Max Daily Volume (m³): 27.28 Original Application No: WR.A/4547 Original Start Date: 22/1/1975 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1002	NW	470400 174100	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: Thames Groundwater Point: Cardiff Road, Reading Point A Data Type: Point Name: HILLIER GROUP OF COMPANIES	Annual Volume (m³): 6682 Max Daily Volume (m³): 27.28 Original Application No: WR.A/4547 Original Start Date: 22/1/1975 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:
Not shown	1144	NE	471900 174400	Status: Active Licence No: 28/39/23/0020 Details: Laundry Use Direct Source: Thames Groundwater Point: 72 George Street, Caversham, - Borehole 'a' Data Type: Point Name: Berendsen UK Limited	Annual Volume (m³): 68190 Max Daily Volume (m³): 300.04 Original Application No: NPS/WR/021020 Original Start Date: 9/5/1966 Expiry Date: - Issue No: 102 Version Start Date: 12/1/2016 Version End Date:
Not shown	1169	SE	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Royal Berkshire Hospital Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL	Annual Volume (m³): 127750 Max Daily Volume (m³): 350 Original Application No: WRA/5950 Original Start Date: 17/1/1992 Expiry Date: - Issue No: 100 Version Start Date: 17/1/1992 Version End Date:
Not shown	1359	NW	470100 174300	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: Thames Groundwater Point: Little John's Farm, Reading (e) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9819 Max Daily Volume (m³): 26.82 Original Application No: WR.A/3088 Original Start Date: 9/1/1967 Expiry Date: - Issue No: 100 Version Start Date: 9/1/1967 Version End Date:
Not shown	1377	E	472700 173600	Status: Historical Licence No: 28/39/22/0600 Details: Pollution Remediation Direct Source: Thames Groundwater Point: Former Gasworks, Kenavon Drive, Reading (5 Boreholes) Data Type: Point Name: M J GLEESON GROUP PLC	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WRW/A/1061 Original Start Date: 31/7/2000 Expiry Date: 31/08/2001 Issue No: 1 Version Start Date: 31/7/2000 Version End Date:
Not shown	1412	W	469800 173900	Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Battle Hospital, Oxford Road, Reading Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY	Annual Volume (m³): 136875 Max Daily Volume (m³): 400 Original Application No: WRA/5942 Original Start Date: 17/1/1992 Expiry Date: - Issue No: 100 Version Start Date: 7/1/1999 Version End Date:
Not shown	1573	NW	470100 174600	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: Thames Groundwater Point: Little John's Farm, Reading (d) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9819 Max Daily Volume (m³): 26.82 Original Application No: WR.A/3088 Original Start Date: 9/1/1967 Expiry Date: - Issue No: 100 Version Start Date: 9/1/1967 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1736	NW	469700 174400	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: Thames Groundwater Point: Little John's Farm, Reading (c) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9819 Max Daily Volume (m³): 26.82 Original Application No: WR.A/3088 Original Start Date: 9/1/1967 Expiry Date: - Issue No: 100 Version Start Date: 9/1/1967 Version End Date:
Not shown	1736	NW	469700 174400	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: Thames Groundwater Point: Little John's Farm, Reading (b) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9819 Max Daily Volume (m³): 26.82 Original Application No: WR.A/3088 Original Start Date: 9/1/1967 Expiry Date: - Issue No: 100 Version Start Date: 9/1/1967 Version End Date:
Not shown	1807	NW	469500 174200	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: Thames Groundwater Point: Little John's Farm, Reading (a) Data Type: Point Name: DRAYTON	Annual Volume (m³): 9819 Max Daily Volume (m³): 26.82 Original Application No: WR.A/3088 Original Start Date: 9/1/1967 Expiry Date: - Issue No: 100 Version Start Date: 9/1/1967 Version End Date:

6.4 Surface Water Abstraction Licences

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

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

ID	Distance (m)	Direction	NGR	Details	
23A	291	SE	471590 173150	Status: Historical Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: Thames Surface Water - Non Tidal Point: The Oracle Centre, Reading Data Type: Point Name: ORACLE SHOPPING CENTRE LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 16/2/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/2/2000 Version End Date:
24A	291	SE	471590 173150	Status: Active Licence No: 28/39/22/0594 Details: Lake & Pond Throughflow Direct Source: Thames Surface Water - Non Tidal Point: St.giles Stream At The Oracle Centre, Reading Data Type: Point Name: ORACLE SHOPPING CENTRE LTD	Annual Volume (m³): 737856 Max Daily Volume (m³): 2016 Application No: - Original Start Date: 16/2/2000 Expiry Date: - Issue No: 1 Version Start Date: 16/2/2000 Version End Date:
Not shown	1029	N	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Transfer between sources Direct Source: Thames Surface Water - Non Tidal Point: Thames At Christchurch Meadow Data Type: Point Name: READING BOROUGH COUNCIL	Annual Volume (m³): - Max Daily Volume (m³): - Application No: WRW/A/1115 Original Start Date: 12/5/2003 Expiry Date: 31/3/2016 Issue No: 1 Version Start Date: 12/5/2003 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1029	N	471440 174450	Status: Historical Licence No: 28/39/23/0199/TR Details: Transfer Between Sources (Post Water Act 2003) Direct Source: Thames Surface Water - Non Tidal Point: River Thames - Christchurch Meadows Data Type: Point Name: READING BOROUGH COUNCIL	Annual Volume (m³): 1752000 Max Daily Volume (m³): 4800 Application No: WRW/A/1218 Original Start Date: 10/9/2008 Expiry Date: 31/3/2016 Issue No: 1 Version Start Date: 10/9/2008 Version End Date:
Not shown	1029	N	471440 174450	Status: Historical Licence No: 28/39/23/0196 Details: Lake & Pond Throughflow Direct Source: Thames Surface Water - Non Tidal Point: Thames At Christchurch Meadow Data Type: Point Name: READING BOROUGH COUNCIL	Annual Volume (m³): 31536 Max Daily Volume (m³): 86.4 Application No: WRW/A/1115 Original Start Date: 12/5/2003 Expiry Date: 31/3/2016 Issue No: 1 Version Start Date: 1/4/2006 Version End Date:
Not shown	1086	NE	472072 174185	Status: Active Licence No: TH/039/0023/022 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: Thames Surface Water - Non Tidal Point: River Thames At Caversham Weir Data Type: Point Name: The Reading Sustainability Centre CIC	Annual Volume (m³): 0 Max Daily Volume (m³): 0 Application No: NPS/WR/020629 Original Start Date: 19/2/2016 Expiry Date: 31/3/2028 Issue No: 1 Version Start Date: 19/2/2016 Version End Date:

6.5 Potable Water Abstraction Licences

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

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

ID	Distance (m)	Direction	NGR	Details	
1	81	N	471200 173500	Status: Active Licence No: 28/39/23/0042 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Cheapside, Reading, Berkshire Data Type: Point Name: PRIMARK STORES LIMITED	Annual Volume (m³): 14933 Max Daily Volume (m³): 40.91 Original Application No: - Original Start Date: 11/7/1966 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:
Not shown	729	N	470900 174100	Status: Historical Licence No: 28/39/23/0041 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Cardiff Road, Reading, Berkshire Data Type: Point Name: COX & WYMAN LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WR.A/1988 Original Start Date: 11/7/1966 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	729	N	470900 174100	Status: Active Licence No: 28/39/23/0167 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Meadow Road, Reading, Berkshire Data Type: Point Name: MANROSE MANUFACTURING LTD	Annual Volume (m³): 90920 Max Daily Volume (m³): 727.4 Original Application No: - Original Start Date: 23/1/1990 Expiry Date: - Issue No: 101 Version Start Date: Version End Date:

Report Reference: GS-5187835
Client Reference: 2206

ID	Distance (m)	Direction	NGR	Details	
Not shown	1169	SE	472400 172800	Status: Active Licence No: 28/39/22/0521 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Royal Berkshire Hospital Data Type: Point Name: ROYAL BERKSHIRE HOSPITAL	Annual Volume (m³): 127750 Max Daily Volume (m³): 350 Original Application No: WRA/5950 Original Start Date: 17/1/1992 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1412	W	469800 173900	Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Thames Groundwater Point: Battle Hospital, Oxford Road, Reading Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY	Annual Volume (m³): 136875 Max Daily Volume (m³): 400 Original Application No: WRA/5942 Original Start Date: 17/1/1992 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

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

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

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

Database searched and no data found.

Report Reference: GS-5187835
Client Reference: 2206

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
153	S	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
391	SE	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

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

Identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHl). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

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

Chemical Quality Grade									
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
35	499	S	471351 172807	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: Sample Point NGR	B	A	A	A	A
36A	679	E	472020 173440	River Name: Kennet Reach: Holy Brook - Thames End/Start of Stretch: Start of Stretch NGR	B	A	A	A	A
37A	679	E	472020 173440	River Name: Kennet Reach: Foudry Brook - Holy Brook End/Start of Stretch: End of Stretch NGR	B	A	A	A	A
Not shown	1049	NE	472135 174053	River Name: Thames Reach: Whitchurch Stw - Kennet End/Start of Stretch: Sample Point NGR	A	A	A	A	A

6.10 Ordnance Survey MasterMap Water Network

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

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

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

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	122 SE	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
2	122 SE	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.0
47	122 SE	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
25	343 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
Not shown	343 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 2.6
26	353 S	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	353 S	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
27	367 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	367 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
28	375 S	River Kennet Alternative Name: -	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 12.2
29	375 S	River Kennet Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 17.3
Not shown	375 S	River Kennet Alternative Name: -	Canal. A manmade watercourse for inland navigation.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 12.2
Not shown	375 S	River Kennet Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 17.3
30	422 S	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 8.4
Not shown	422 S	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 8.4
31	453 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 1.4
Not shown	453 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 1.4
32	455 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	455 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
33	476 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.8
Not shown	476 E	Holy Brook Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Unclassified. Average Width in Watercourse Section (m): 3.8
34	499 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided
Not shown	499 N	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Unclassified. Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

Surface water features within 250m of the study site Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
196	S
227	S
244	S
248	S

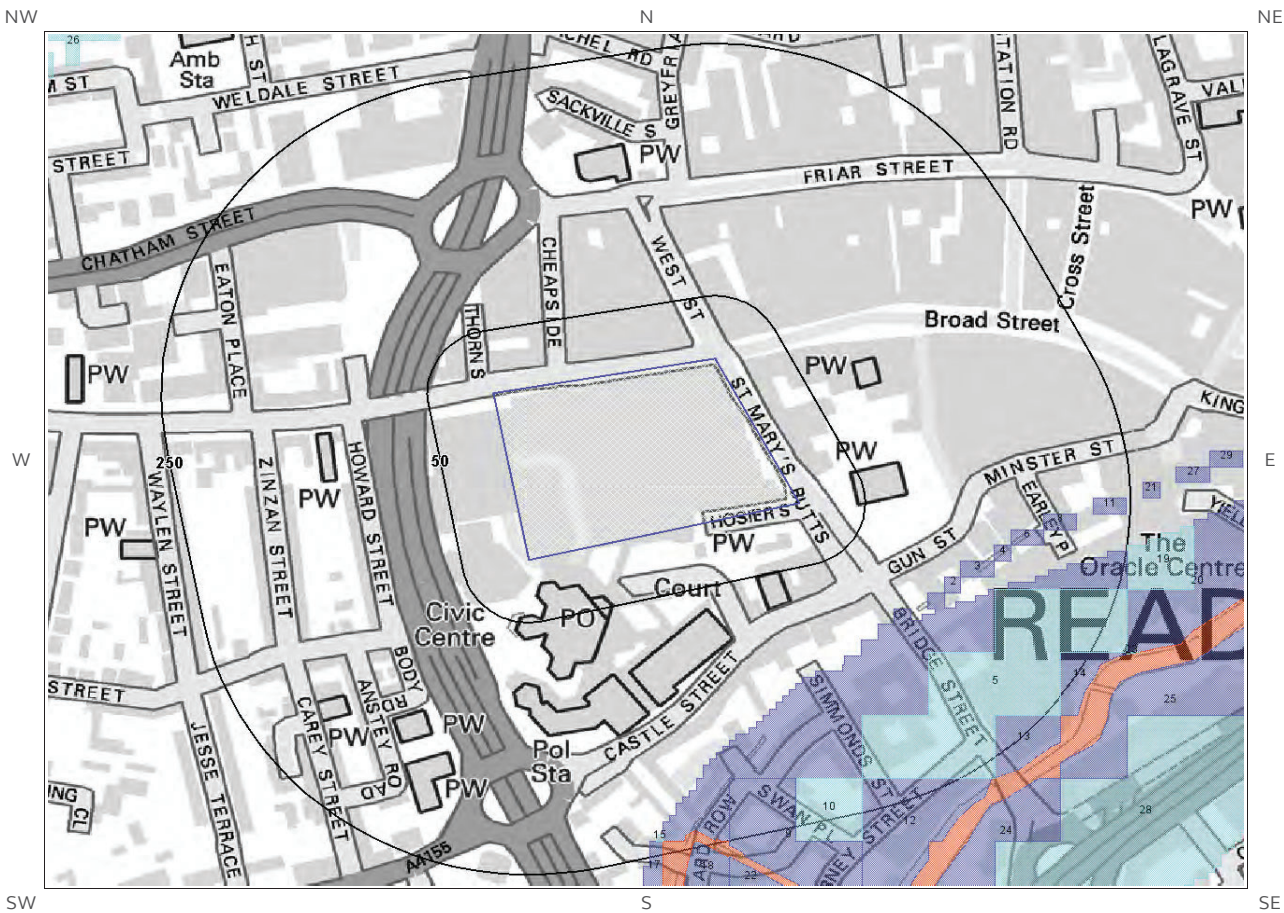
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



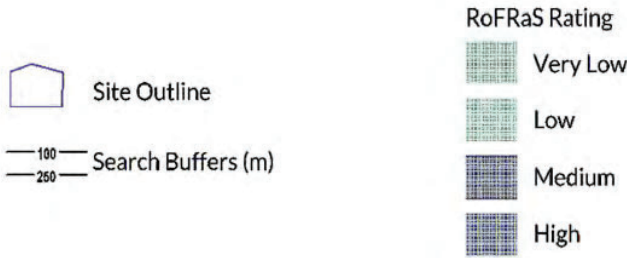
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

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

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

ID	Distance (m)	Direction	Update	Type
1	110	SE	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
2E	124	SE	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
3H	130	E	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
4I	150	E	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
5	161	E	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
6L	184	E	29-May-2018	Zone 2 - (Fluvial /Tidal Models)
7N	222	E	29-May-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

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

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

ID	Distance (m)	Direction	Update	Type
1	110	SE	30-May-2018	Zone 3 - (Fluvial Models)
2E	113	SE	30-May-2018	Zone 3 - (Fluvial Models)
3H	118	SE	30-May-2018	Zone 3 - (Fluvial Models)
4I	120	SE	30-May-2018	Zone 3 - (Fluvial Models)
5	124	SE	30-May-2018	Zone 3 - (Fluvial Models)

6L	126	S	30-May-2018	Zone 3 - (Fluvial Models)
7N	130	E	30-May-2018	Zone 3 - (Fluvial Models)
	135	S	30-May-2018	Zone 3 - (Fluvial Models)
	145	S	30-May-2018	Zone 3 - (Fluvial Models)
	150	E	30-May-2018	Zone 3 - (Fluvial Models)
	154	S	30-May-2018	Zone 3 - (Fluvial Models)
	161	E	30-May-2018	Zone 3 - (Fluvial Models)
	164	S	30-May-2018	Zone 3 - (Fluvial Models)
	173	S	30-May-2018	Zone 3 - (Fluvial Models)
	180	S	30-May-2018	Zone 3 - (Fluvial Models)
	184	E	30-May-2018	Zone 3 - (Fluvial Models)
	202	S	30-May-2018	Zone 3 - (Fluvial Models)
	211	S	30-May-2018	Zone 3 - (Fluvial Models)
	222	E	30-May-2018	Zone 3 - (Fluvial Models)
	233	S	30-May-2018	Zone 3 - (Fluvial Models)
	241	SE	30-May-2018	Zone 3 - (Fluvial Models)

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

Highest risk of flooding onsite Very 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 Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

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

7.5 Areas benefiting from Flood Defences

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

7.6 Areas benefiting from Flood Storage

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

7.7 Groundwater Flooding Susceptibility Areas

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

Clearwater Flooding or Superficial Deposits Flooding Clearwater Flooding

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

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

Potential at Surface

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

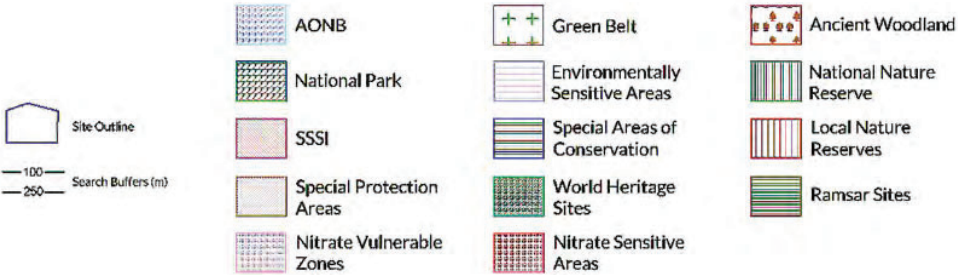
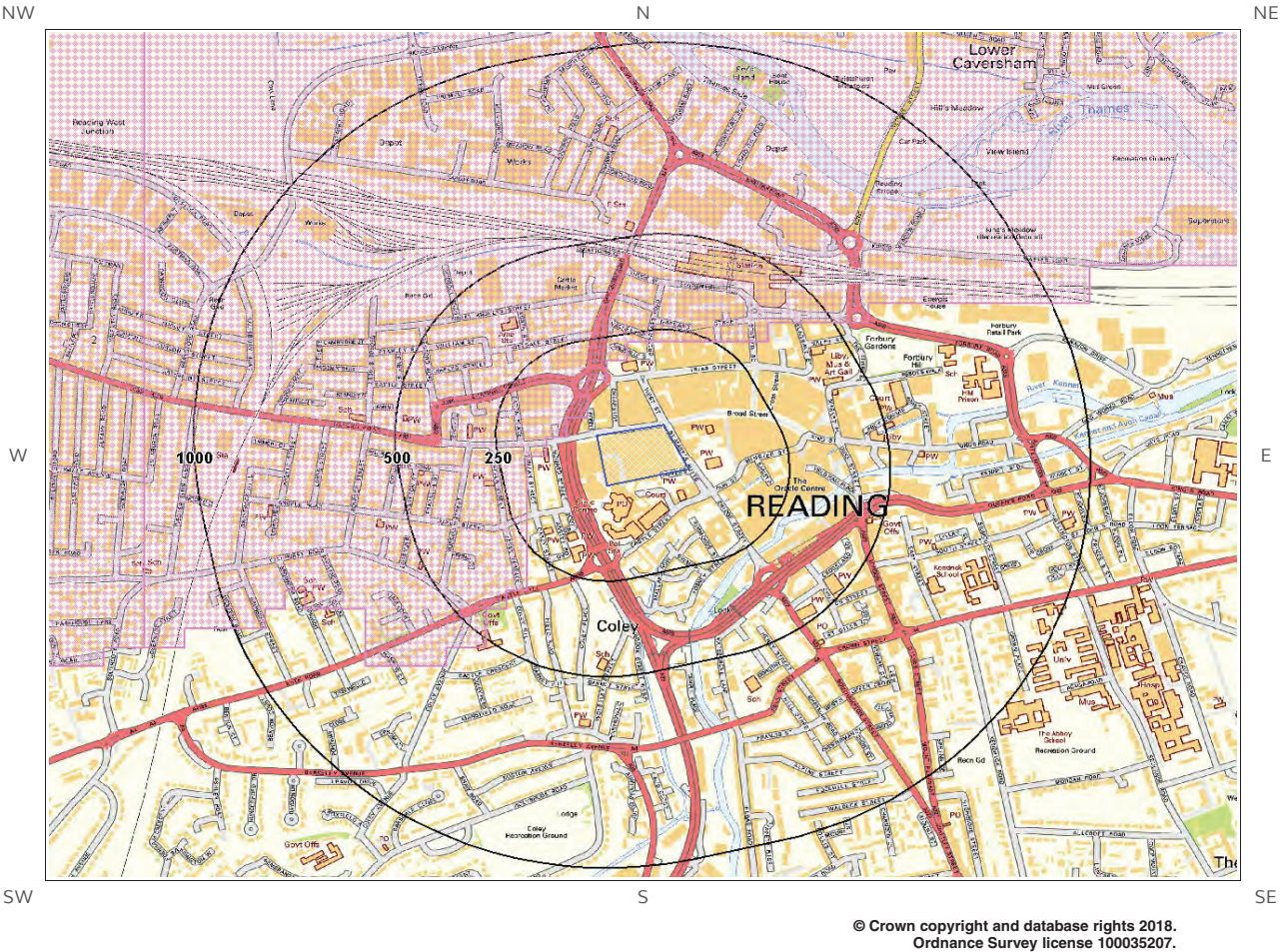
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result High

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

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

8. Designated Environmentally Sensitive Sites Map



8. Designated Environmentally Sensitive Sites

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

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

Database searched and no data found.

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

Database searched and no data found.

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

Database searched and no data found.

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

Database searched and no data found.

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

Database searched and no data found.

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

Database searched and no data found. 0

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

Database searched and no data found. 0

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

Database searched and no data found. 0

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

Database searched and no data found. 0

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

Database searched and no data found. 0

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

Database searched and no data found. 0

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

Database searched and no data found. 0

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

3

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

ID	Distance (m)	Direction	NVZ Name	Data Source
1	50	NW	Existing	DEFRA
2	1123	W	Existing	DEFRA
Not shown	1858	E	Existing	DEFRA

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

Database searched and no data found. 0

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

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

9.1.1 Shrink Swell

Maximum Shrink-Swell** hazard rating identified on the study site Negligible

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

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

9.1.2 Landslides

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

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

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

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site High

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

Hazard
Very significant soluble rocks are present, with a high possibility of localised subsidence occurring naturally or in adverse conditions such as high surface or subsurface water flow. Obtain specialist advice to advise on need for stabilisation work and/or land management plan to maintain stability. Do not dispose of drainage into the ground. For new build a specialist land stability assessment is necessary. Investigation, remediation and/or mitigation works may be necessary to stabilise the area. Construction work may cause subsidence. Surface drainage must not affect the karst system or groundwater. Increased construction costs are likely. For existing property increase in insurance risk due to potential soluble rocks hazards. Potential of groundwater pollution.

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

9.1.4 Compressible Ground

Maximum Compressible Ground* 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
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

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

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

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

9.1.6 Running Sand

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

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

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

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

9.2 Radon

9.2.1 Radon Affected Areas

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

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

9.2.2 Radon Protection

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

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site
None identified
Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary
Identified

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

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

Past underground mine workings may occur. The rock types present in these areas are such that small mineral veins may be present on which it is possible that small scale mining has been undertaken and/or it is possible that limited underground extraction of other materials may have occurred. All such occurrences are likely to be of minor localised extent and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

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

Contact Details

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



BJB Consulting Limited

Head Office, Unit 7, Calder Close, Calder Park,
WAKEFIELD, WF4 3BA

Groundsure Reference: GS-5187836

Your Reference: 2206

Report Date 2 Jul 2018

Report Delivery Method: Email - pdf

Geo Insight

Address: 54 BROAD STREET MALL, BROAD STREET, READING, RG1 7QE

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: 54 BROAD STREET MALL, BROAD STREET, READING, RG1 7QE
Date: 2 Jul 2018
Reference: GS-5187836
Client: BJB Consulting Limited

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Aerial Photograph Capture date: 20-Apr-2015
Grid Reference: 471248,173368
Site Size: 2.44ha

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Overview of Findings

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

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

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

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslide within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No
Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslide 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	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	0	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	20	24

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	1	0	1	2	5
5.4 Non-Coal Mining*	1	0	5	29	13
5.5 Non-Coal Mining Cavities	0	0	0	11	22
5.5 Natural Cavities	0	1	5	18	18

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Client Reference: 2206

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

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

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	14	16	96

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	1	0	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	0	Not Searched
9.5 Railway Projects	0	0	0	1

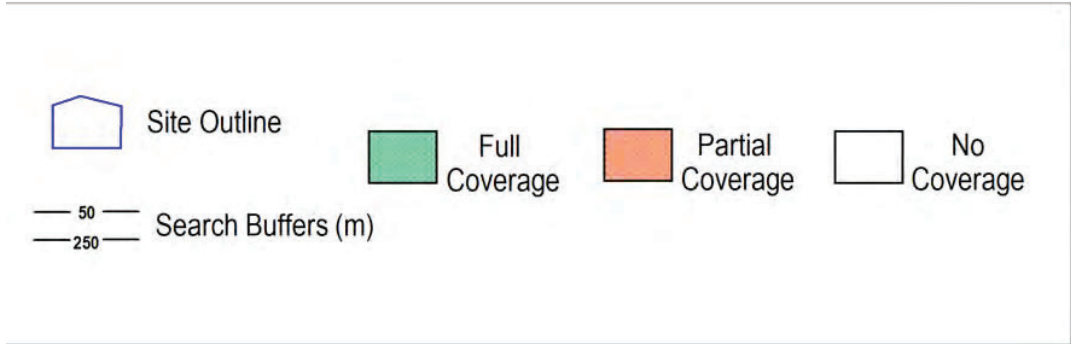
Report Reference: GS-5187836
Client Reference: 2206

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale
Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
2	1123.0	Some deposits are mapped	Full	Full	No coverage
N3	1567.0	Some deposits are mapped	Full	Full	No coverage
N4	1950.0	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)

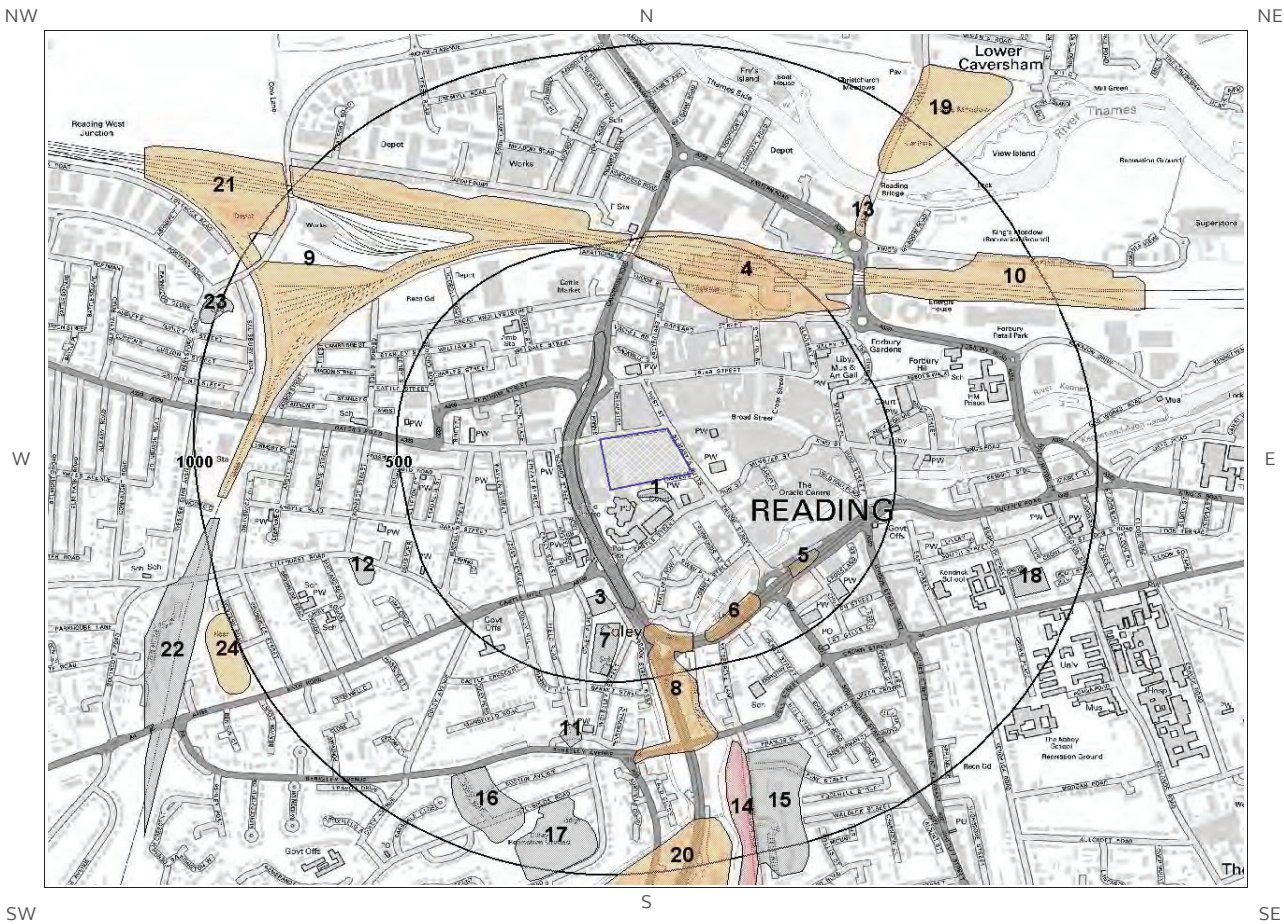
1. Geology 1:10,000 scale

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	17.0	S	WGR-VOID	Worked Ground (Undivided)	Void
2	59.0	W	WGR-VOID	Worked Ground (Undivided)	Void
3	269.0	S	WGR-VOID	Worked Ground (Undivided)	Void
4	323.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	337.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	340.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	347.0	S	WGR-VOID	Worked Ground (Undivided)	Void
8	360.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	470.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit



Artificial Ground Legend

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