

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'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 Enviroinsight User Guide.

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

ID	Distance (m)	Direction	Designation	Description
1	144	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

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'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 Enviroinsight User Guide.

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary 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

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

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	1101	S	423080 420470	Status: Active Licence No: 2/27/13/200 Details: General Washing/Process Washing Direct Source: Groundwaters Point: Borehole - Coal Measures - Ravensthorpe - Dewsbury Data Type: Point Name: Lawton Yarns Ltd Annual Volume (m³): 28800 Max Daily Volume (m³): 960 Original Application No: NPS/WR/016408 Original Start Date: 23/6/1999 Expiry Date: - Issue No: 102 Version Start Date: 6/8/2014 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1101	S	423080 420470	Status: Historical Licence No: 2/27/13/200 Details: General Washing/Process Washing Direct Source: Groundwaters Point: Borehole Data Type: Point Name: WILLIAM S GRAHAM LIMITED	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 6921 Original Start Date: 23/6/1999 Expiry Date: - Issue No: 100 Version Start Date: 23/6/1999 Version End Date:
Not shown	1175	N	422430 422700	Status: Historical Licence No: 2/27/13/189 Details: Evaporative Cooling Direct Source: Groundwaters Point: Borehole-coal Measures-dewsbury Data Type: Point Name: RHOM & HAAS (UK) LTD	Annual Volume (m³): 270000 Max Daily Volume (m³): 725 Original Application No: 6806 Original Start Date: 30/4/1997 Expiry Date: 31/12/2006 Issue No: 101 Version Start Date: 2/5/2000 Version End Date:
Not shown	1175	N	422430 422700	Status: Historical Licence No: 2/27/13/189 Details: Evaporative Cooling Direct Source: Groundwaters Point: Borehole Data Type: Point Name: MORTON INTERNATIONAL	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 6806 Original Start Date: 30/4/1997 Expiry Date: 31/12/2006 Issue No: 100 Version Start Date: 30/4/1997 Version End Date:
Not shown	1397	S	422620 420140	Status: Historical Licence No: NE/027/0013/005 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole At Ravensthorpe Mills, Dewsbury Data Type: Point Name: ULSTER YARNS LTD	Annual Volume (m³): 50000 Max Daily Volume (m³): 250 Original Application No: NPS/WR/004796 Original Start Date: 1/1/2011 Expiry Date: 31/3/2027 Issue No: 1 Version Start Date: 1/1/2011 Version End Date:
Not shown	1397	S	422620 420140	Status: Historical Licence No: 2/27/13/218 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Dewsbury - Coal Measures Data Type: Point Name: ULSTER YARNS LTD	Annual Volume (m³): 100000 Max Daily Volume (m³): 500 Original Application No: 8155 Original Start Date: 1/1/2006 Expiry Date: 31/12/2010 Issue No: 2 Version Start Date: 23/3/2007 Version End Date:
Not shown	1397	S	422620 420140	Status: Historical Licence No: 2/27/13/202 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Dewsbury - Coal Measures Data Type: Point Name: RIVERSTONE SPINNING LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 06947 Original Start Date: 24/4/2000 Expiry Date: 31/12/2005 Issue No: 2 Version Start Date: 23/4/2002 Version End Date:
Not shown	1397	S	422620 420140	Status: Historical Licence No: NE/027/0013/005 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Coal Measures - Ravensthorpe Mills, Dewsbury Data Type: Point Name: ULSTER YARNS LTD	Annual Volume (m³): 50000 Max Daily Volume (m³): 250 Original Application No: NPS/WR/004796 Original Start Date: 1/1/2011 Expiry Date: 31/3/2027 Issue No: 1 Version Start Date: 1/1/2011 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1431	S	422390 420150	Status: Historical Licence No: 2/27/13/215 Details: Process Water Direct Source: Groundwaters Point: Borehole - Coal Measures - Ravensthorpe - Dewsbury Data Type: Point Name: DEWSBURY DYEING CO LTD	Annual Volume (m³): 65000 Max Daily Volume (m³): 270 Original Application No: 8077 Original Start Date: 24/12/2003 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 24/12/2003 Version End Date:
Not shown	1431	S	422390 420150	Status: Historical Licence No: 2/27/13/215 Details: Process water Direct Source: Groundwaters Point: Borehole-coal Measures-ravensthorpe,dewsbury Data Type: Point Name: DEWSBURY DYEING CO LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 08077 Original Start Date: 24/12/2003 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 24/12/2003 Version End Date:
Not shown	1686	N	422750 423260	Status: Historical Licence No: 2/27/13/193 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Coal Measures - Staincliffe Dewsbury Data Type: Point Name: THOMAS CARR LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 6862 Original Start Date: 4/3/1998 Expiry Date: 31/12/2008 Issue No: 100 Version Start Date: 4/3/1998 Version End Date:
Not shown	1686	N	422750 423260	Status: Historical Licence No: 2/27/13/193 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole Data Type: Point Name: THOMAS CARR LIMITED C/O BERNARD KAYE	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 6862 Original Start Date: 4/3/1998 Expiry Date: 31/12/2008 Issue No: 100 Version Start Date: 4/3/1998 Version End Date:
Not shown	1694	SE	424090 420460	Status: Active Licence No: 2/27/13/226/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Coal Measures - Dewsbury Data Type: Point Name: CALDER DYEING LTD	Annual Volume (m³): 75000 Max Daily Volume (m³): 330 Original Application No: NPS/WR/016837 Original Start Date: 1/4/2015 Expiry Date: 31/3/2027 Issue No: 1 Version Start Date: 1/4/2015 Version End Date:
Not shown	1694	SE	424090 420460	Status: Historical Licence No: 2/27/13/226 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Coal Measures - Dewsbury Data Type: Point Name: CALDER DYEING LTD	Annual Volume (m³): 75000 Max Daily Volume (m³): 330 Original Application No: 8279 Original Start Date: 19/10/2007 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 19/10/2007 Version End Date:
Not shown	1826	W	420920 421600	Status: Historical Licence No: 2/27/13/231 Details: General Farming & Domestic Direct Source: Groundwaters Point: Borehole - Coal Measures - Mirfield Data Type: Point Name: JOHN L BARBER & SON	Annual Volume (m³): 25000 Max Daily Volume (m³): 103 Original Application No: 8315 Original Start Date: 8/9/2008 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 8/9/2008 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1830	N	422650 423400	Status: Historical Licence No: 2/27/13/193 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Coal Measures - Staincliffe Dewsbury Data Type: Point Name: THOMAS CARR LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 6862 Original Start Date: 4/3/1998 Expiry Date: 31/12/2008 Issue No: 100 Version Start Date: 4/3/1998 Version End Date:
Not shown	1830	N	422650 423400	Status: Historical Licence No: 2/27/13/193 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole Data Type: Point Name: THOMAS CARR LIMITED C/O BERNARD KAYE Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 6862 Original Start Date: 4/3/1998 Expiry Date: 31/12/2008 Issue No: 100 Version Start Date: 4/3/1998 Version End Date:
Not shown	1843	NE	424300 422600	Status: Historical Licence No: 2/27/13/046 Details: Process water Direct Source: Groundwaters Point: Borehole - Coal Measures - Dewsbury Data Type: Point Name: JOSHUA ELLIS & COMPANY LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 03279 Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/10/1997 Version End Date:
Not shown	1843	NE	424300 422600	Status: Historical Licence No: 2/27/13/046 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole Data Type: Point Name: JOSHUA ELLIS & COMPANY LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 3279 Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/10/1997 Version End Date:
Not shown	1843	NE	424300 422600	Status: Historical Licence No: 2/27/13/046 Details: General use relating to Secondary Category (High Loss) Direct Source: Groundwaters Point: Borehole Data Type: Point Name: JOSHUA ELLIS & COMPANY LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 3279 Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/10/1997 Version End Date:
Not shown	1843	NE	424300 422600	Status: Historical Licence No: 2/27/13/046 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Groundwaters Point: Borehole - Coal Measures - Dewsbury Data Type: Point Name: JOSHUA ELLIS & COMPANY LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 03279 Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/10/1997 Version End Date:
Not shown	1843	NE	424300 422600	Status: Historical Licence No: 2/27/13/046 Details: General use relating to Secondary Category (High Loss) Direct Source: Groundwaters Point: Borehole - Coal Measures - Dewsbury Data Type: Point Name: JOSHUA ELLIS & COMPANY LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 03279 Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/10/1997 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1843	NE	424300 422600	Status: Historical Licence No: 2/27/13/046 Details: Process water Direct Source: Groundwaters Point: Borehole Data Type: Point Name: JOSHUA ELLIS & COMPANY LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 3279 Original Start Date: 20/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 22/10/1997 Version End Date:
Not shown	1923	SW	421600 420000	Status: Historical Licence No: 2/27/13/063 Details: General Farming & Domestic Direct Source: Groundwaters Point: Well Data Type: Point Name: BROOK Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 3103 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 12/1/1972 Version End Date:
Not shown	1923	SW	421600 420000	Status: Historical Licence No: 2/27/13/063 Details: General Farming & Domestic Direct Source: Groundwaters Point: Well - Coal Measures - Mirfield Data Type: Point Name: BROOK Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 03103 Original Start Date: 27/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 12/1/1972 Version End Date:

6.4 Surface Water Abstraction Licences

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

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1098	S	423140 420493	Status: Active Licence No: 2/27/13/211/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Calder-ravensing Mills-ravensthorpe Data Type: Point Name: Lawton Yarns Ltd Annual Volume (m³): 350000 Max Daily Volume (m³): 960 Application No: NPS/WR/017905 Original Start Date: 1/4/2015 Expiry Date: 31/3/2027 Issue No: 1 Version Start Date: 1/4/2015 Version End Date:
Not shown	1101	S	423140 420490	Status: Historical Licence No: 2/27/13/211 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Calder-ravensing Mills-ravensthorpe Data Type: Point Name: Lawton Yarns Ltd Annual Volume (m³): 350000 Max Daily Volume (m³): 960 Application No: NPS/WR/016410 Original Start Date: 21/11/2002 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: 6/8/2014 Version End Date:
Not shown	1389	S	422830 420140	Status: Historical Licence No: 2/27/13/179 Details: Non-Evaporative Cooling Direct Source: Surface Water Point: River Calder Data Type: Point Name: BRITISH WATERWAYS Annual Volume (m³): 25842000 Max Daily Volume (m³): 70800 Application No: 6708 Original Start Date: 22/4/1996 Expiry Date: - Issue No: 100 Version Start Date: 28/8/1996 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1389	S	422830 420140	Status: Active Licence No: 2/27/13/179 Details: Non-Evaporative Cooling Direct Source: Surface Water Point: River Calder - Thornhill Power Station - Dewsbury Data Type: Point Name: Canal and River Trust Annual Volume (m³): 25842000 Max Daily Volume (m³): 70800 Application No: 6708 Original Start Date: 22/4/1996 Expiry Date: - Issue No: 101 Version Start Date: 21/1/2008 Version End Date:
Not shown	1506	S	422400 419870	Status: Historical Licence No: 2/27/13/229 Details: General Use Relating To Secondary Category (High Loss) Direct Source: Surface Water Point: River Calder - Ravensthorpe Data Type: Line Name: FORTICRETE LTD Annual Volume (m³): 22000 Max Daily Volume (m³): 80 Application No: 8286 Original Start Date: 8/1/2008 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 1/4/2008 Version End Date:
Not shown	1506	S	422400 419870	Status: Historical Licence No: 2/27/13/229 Details: Dust Suppression Direct Source: Surface Water Point: River Calder - Ravensthorpe Data Type: Line Name: FORTICRETE LTD Annual Volume (m³): 22000 Max Daily Volume (m³): 80 Application No: 8286 Original Start Date: 8/1/2008 Expiry Date: 31/3/2015 Issue No: 1 Version Start Date: 1/4/2008 Version End Date:
Not shown	1704	SE	423890 420240	Status: Historical Licence No: 2/27/13/230 Details: Dust Suppression Direct Source: Surface Water Point: River Calder - Dewsbury Data Type: Point Name: LAFARGE AGGREGATES LTD Annual Volume (m³): 680000 Max Daily Volume (m³): 2520 Application No: NPS/WR/014615 Original Start Date: 7/7/2008 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: 26/9/2013 Version End Date:
Not shown	1704	SE	423890 420240	Status: Historical Licence No: 2/27/13/230 Details: Mineral Washing Direct Source: Surface Water Point: River Calder - Dewsbury Data Type: Point Name: LAFARGE AGGREGATES LTD Annual Volume (m³): 680000 Max Daily Volume (m³): 2520 Application No: NPS/WR/014615 Original Start Date: 7/7/2008 Expiry Date: 31/3/2015 Issue No: 2 Version Start Date: 26/9/2013 Version End Date:
Not shown	1741	E	424510 421360	Status: Historical Licence No: 2/27/13/129 Details: Boiler Feed Direct Source: Surface Water Point: River Calder Data Type: Point Name: ARONSTEAD LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Application No: 5085 Original Start Date: 24/2/1971 Expiry Date: - Issue No: 100 Version Start Date: 16/3/1978 Version End Date:
Not shown	1799	E	424560 421290	Status: Active Licence No: 2/27/13/163 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Calder - Dewsbury Data Type: Point Name: HENRY DAY & SONS LTD Annual Volume (m³): 15000 Max Daily Volume (m³): 90.92 Application No: 6210 Original Start Date: 1/6/1989 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:
Not shown	1799	E	424560 421290	Status: Historical Licence No: 2/27/13/163 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Calder Data Type: Point Name: HENRY DAY & SONS LTD Annual Volume (m³): 15000 Max Daily Volume (m³): 90.92 Application No: 6210 Original Start Date: 1/6/1989 Expiry Date: - Issue No: 100 Version Start Date: 1/6/1989 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1951	E	424700 421200	Status: Historical Licence No: 2/27/13/191 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Calder Data Type: Point Name: CALDER MASONARY Annual Volume (m³): - Max Daily Volume (m³): - Application No: 6812 Original Start Date: 23/5/1997 Expiry Date: - Issue No: 100 Version Start Date: 23/5/1997 Version End Date:
Not shown	1951	E	424700 421200	Status: Active Licence No: 2/27/13/191 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface Water Point: River Calder - Dewsbury X 2 Abstraction Points Data Type: Point Name: CALDER MASONARY Annual Volume (m³): 9720 Max Daily Volume (m³): 36 Application No: 6812 Original Start Date: 23/5/1997 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2008 Version End Date:

6.5 Potable Water Abstraction Licences

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

No

Database searched and no data found.

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	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.
254	NW	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

6.9 River Quality

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

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (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
Not shown	1053	NW	422100 422400	River Name: Spen Beck/dean Beck Reach: Cleckheaton U/s Spenborough End/Start of Stretch: End of Stretch NGR	C	C	C	C	B
Not shown	1235	S	423114 420341	River Name: River Calder Reach: Spen Beck Batley Beck End/Start of Stretch: Start of Stretch NGR	C	C	C	C	C
Not shown	1235	S	423114 420341	River Name: River Calder Reach: Thornhill Flood Lockspen Beck End/Start of Stretch: End of Stretch NGR	C	C	C	C	C
Not shown	1279	S	422951 420261	River Name: River Calder Reach: Greenwood Lock Thornhill Flood Lock End/Start of Stretch: End of Stretch NGR	C	C	C	C	C
Not shown	1279	S	422951 420261	River Name: River Calder Reach: Thornhill Flood Lockspen Beck End/Start of Stretch: Start of Stretch NGR	C	C	C	C	C
Not shown	1279	S	422951 420261	River Name: Calder & Hebble Navigatio Reach: River Calder At Thorriver Calder At Horb End/Start of Stretch: End of Stretch NGR	C	C	C	C	C

6.10 Detailed River Network

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

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

ID	Distance (m)	Direction	Details	
1	425	W	River Name: Spen River Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
2	445	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
3	450	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
4	463	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
5	477	SW	River Name: Spen River Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined

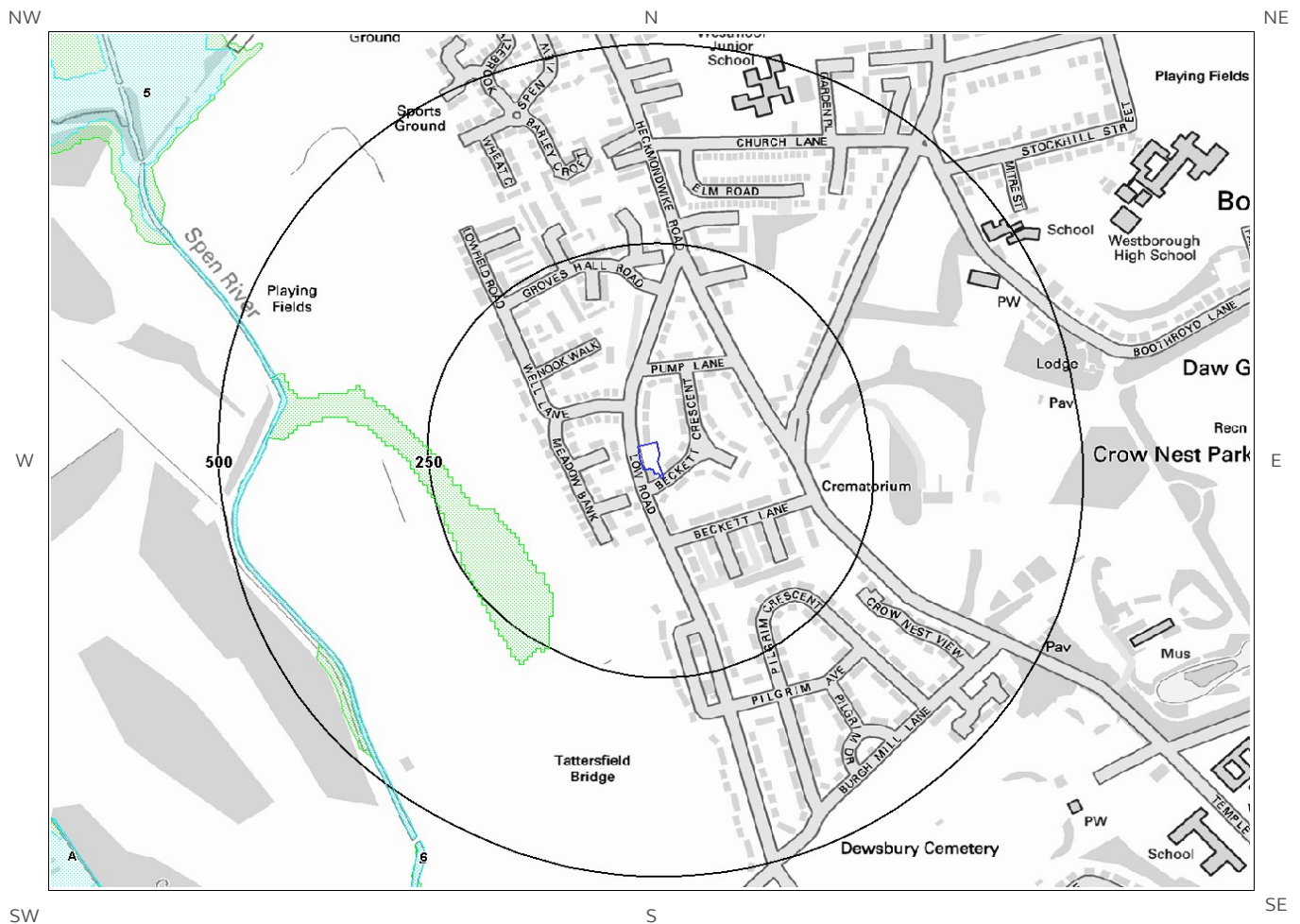
6.11 Surface Water Features

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

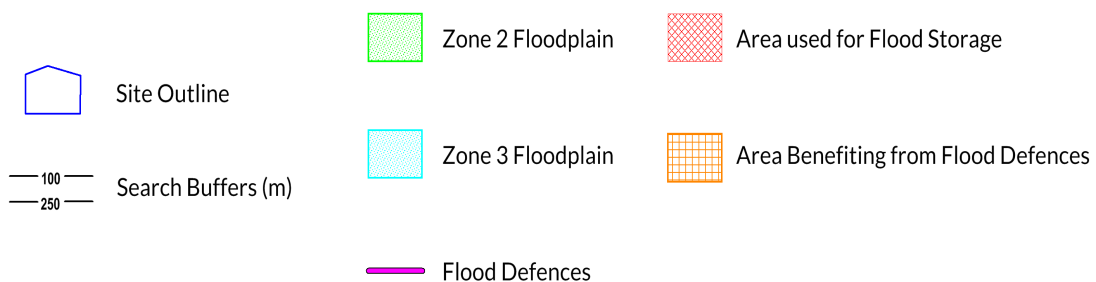
The following surface water records are not represented on mapping:

Distance (m)	Direction
234	S

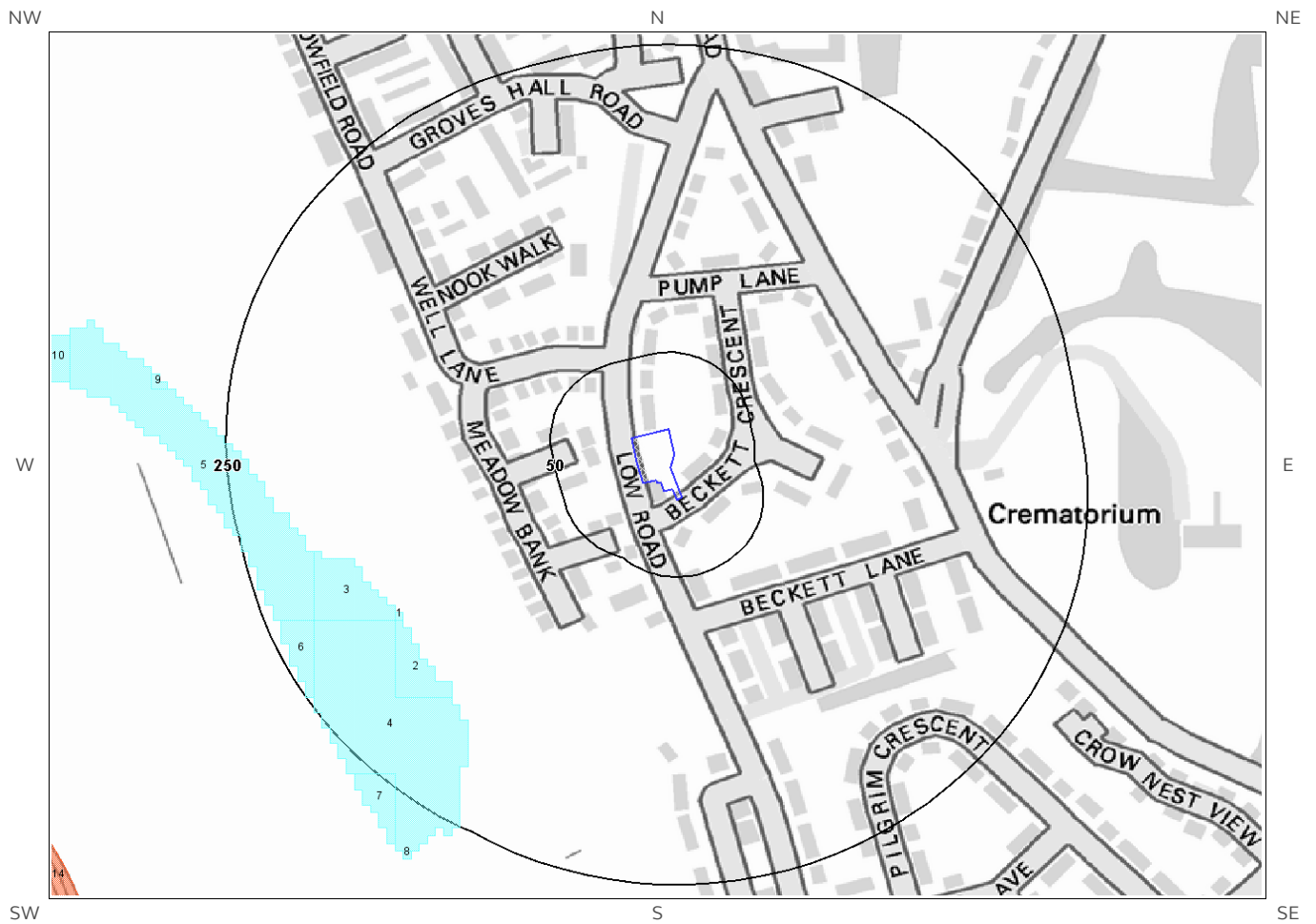
7a. Environment Agency Flood Map for Planning (from rivers and the sea)



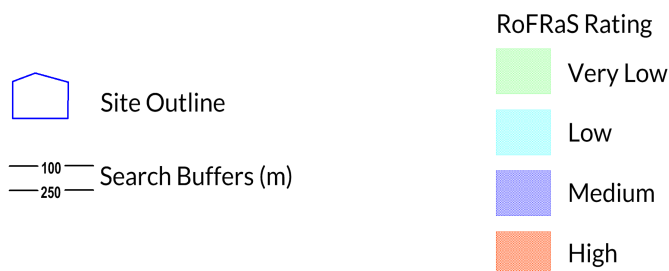
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7b. Environment Agency Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency Zone 2 floodplain? Yes

Environment Agency 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	170	SW	08-Feb-2016	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency Zone 3 floodplain? No

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.

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

What is the highest risk of flooding onsite? Very Low

The Environment Agency 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

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

7.6 Areas benefiting from Flood Storage

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

7.7 Groundwater Flooding Susceptibility Areas

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

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? 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 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

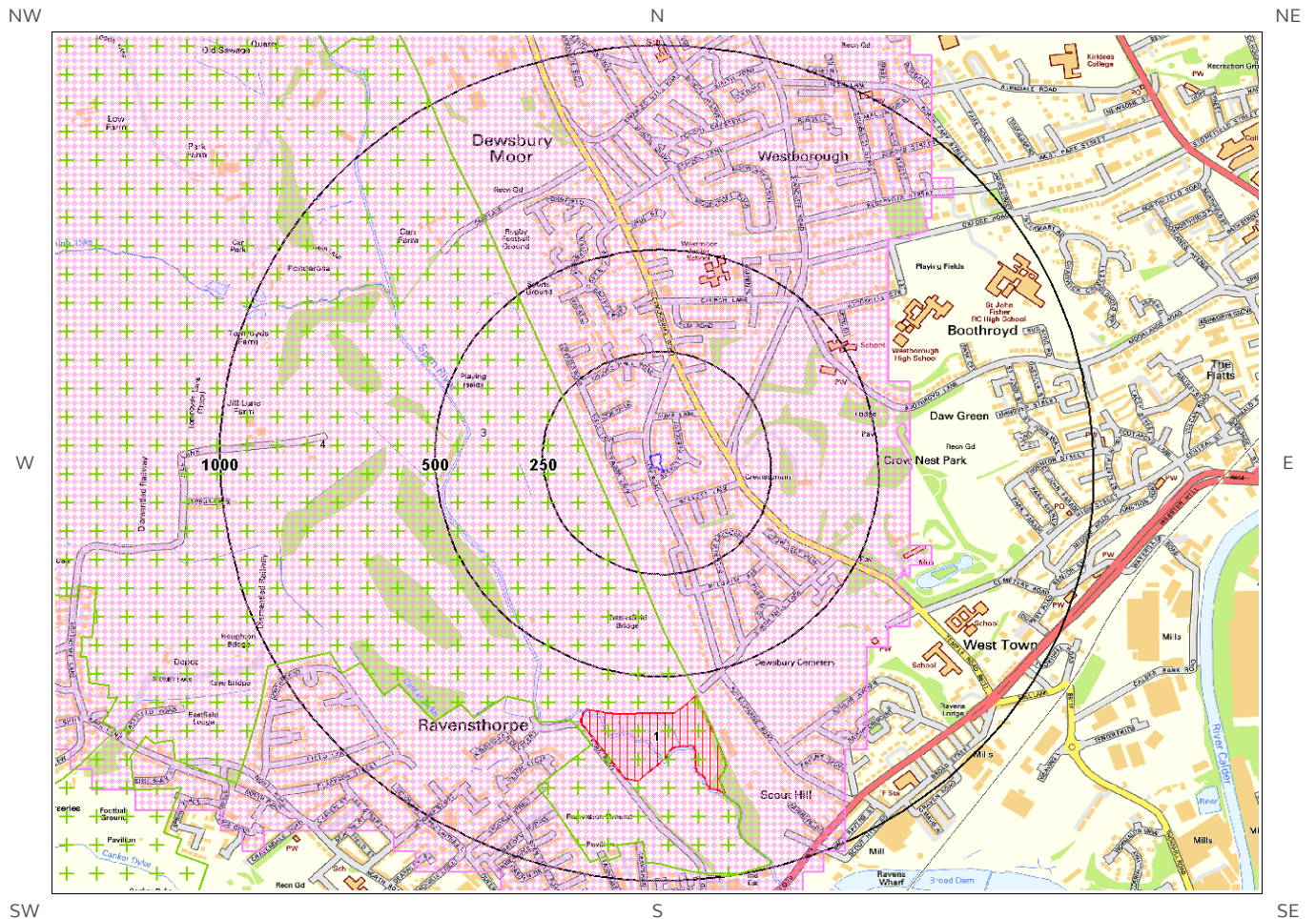
7.8 Groundwater Flooding Confidence Areas

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

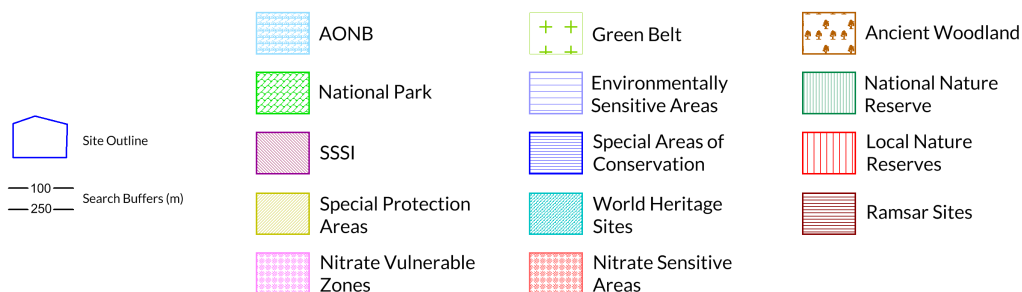
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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? Yes

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:

0

Database searched and no data found.

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

2

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1	552	S	Lower Spen Wildlife Area	Natural England
Not shown	1950	SE	Sparrow Wood	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NVZ Name	Data Source
3	0	On Site	Existing	DEFRA

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

3

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ID	Distance	Direction	Green Belt Name	Local Authority Name
4	128	W	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
Not shown	1663	S	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)
Not shown	1987	SW	Liverpool, Manchester and West Yorks Greenbelt	Kirklees District (B)

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 GeoInsight**, available from our **website**. The following information has been found:

9.1.1 Shrink Swell

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

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

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

9.1.2 Landslides

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

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

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

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.