

Eccleston Homes

**Desk Study
&
Ground Investigation Report**

for

Mondi Site, Ramsbottom

August 2019

REPORT NO: 19ECH016/DSGI

- *Desk Studies and Site Walkovers*
- *Intrusive Contaminated Land Investigations*
- *Geotechnical Appraisals and Ground Investigations*
- *Landfill Gas Assessments and Remedial Design*
- *Remediation Design and Implementation*
- *Remediation Project Management and Supervision*
- *Site Abnormal Assessments (Foundations and Contaminated Land)*

GEOTECHNICAL - CONTAMINATED LAND- FLOOD RISK

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Prepared by:



K Rodway

Checked by:



B Lewis

Authorised by:



M Fawcett

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2	Nov 19	Completion of gas monitoring	KR
3	Jun 23	Updated with additional investigation	LH
4	Jul 24	Updated with PFAS testing & EA landfill closure info	JS

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1 EXECUTIVE SUMMARY

Note – The following summary is not exhaustive and is to be used for guidance purposes only. The full report should be consulted for full details.

1. Site Location

The site is located to the south of Bridge Street and north of Ramsbottom Cricket Club in Ramsbottom. The site has an approximate postcode of BL0 9AL, with coordinates on the British National Grid of 379433,416756. The proposed site is approximately 4.61 hectares in total.

2. Site Description

On Site

The site is currently an unused parcel of land with several derelict structures in the west. The structures comprise two very dilapidated buildings and a large chimney.

The site is predominantly flat and almost entirely covered in hardstanding formed by concrete slabs, with several large and small stockpiles located throughout the site area. Large areas of the centre of the site area heavily vegetated. A full waste container was also noted in the south adjacent to the Cricket Club. A culverted stream / race was noted in the western site area.

A leaking IBC was noted adjacent to the entrance off the lane leading to the sports clubs. The leaking substance was found to be brown and 'rubbery' in nature but was no longer migrating.

There are two 'mounded' areas of soft standing in southern spur with trees on their eastern boundary.

Surrounding Area

The River Irwell is located on the eastern boundary. The remaining area is mixed commercial and residential.

3. Proposed Development

The proposed construction of residential dwellings with associated infrastructure, gardens and public open space.

4. Site History

On Site

The earliest available map of site is the 1850-1851 1:10,560 map with shows the site to be largely undeveloped land with reservoirs in the west and southwest.

The site is first developed in 1891 and a paper mill is shown to occupy the majority of the site, reservoirs are still present in the southern spur area.

By 2014 the majority of the former mill has been destroyed and the reservoirs have now been removed.

Surrounding Area

Initially, much of the land was industrial which was slowly replaced with commercial and residential properties.

5. Published Geology

The BGS map shows the geology beneath the site as the following:

- **Artificial Ground** – Covers entirety of site
- **Superficial** – Alluvium – Clay, Sand and Silt
- **Bedrock** – Millstone Grit Group – Mudstone and Siltstone
 - Hazel Greave Grit – Sandstone

Radon

The Groundsure data states that the site is within a low probability radon area (<1% of properties above the action level), therefore no radon protection measures are required in the construction of new dwellings.

6. Hydrogeology and Hydrology

- The superficial deposits of the Alluvium are designated as Secondary A Aquifer (Moderate Permeability).
- The bedrock deposits of the Sandstone are designated as Secondary A aquifer (Moderate Permeability).
- The site does not lie within Groundwater Source Protection as defined by the Environment Agency.
- There are no potable water abstractions within 500m of site.
- Two groundwater abstractions located onsite, on the western boundary.
- There are two (7 no.) recorded surface water features on site and seven (9 no.) within 250m.
- The site is shown to be at risk from groundwater flooding upon the BGS dataset.
- Flooding – Zones 2 and 3 noted as onsite. Risk is noted as Very Low to High (RoFRaS).

7. Summary of Environmental Data

Possible Contamination Sources and risk levels are shown below;

- **Current Land Use On Site** – Possible – Localised
- **Historical Land Use On Site** – Yes
- **Surroundings Industrial Processes (Historic and Current)** – Possible

In this qualitative risk assessment, a **Low / Moderate - Moderate** risk for ground gas and contamination exists across the site. Some remedial action may be necessary at the site, however, the likes of which cannot be confirmed until the geotechnical and contamination ground investigation has been completed.

8. Scope of Investigation

The fieldwork was carried out between the 25th June – 2nd July 2019 and included the following:

- Eighteen (18 no.) machine excavated trial holes to between 0.60mbgl (TP16) and 3.50mbgl (TP10).
- Eleven (11no.) window sample boreholes to depths between 0.35mbgl (WS18) and 5.00mbgl.
 - A further three (no.) locations were attempted but the concrete slabs were too robust to be cored.
- Four (4no.) rotary boreholes drilled to depths between 30mbgl (RO1) and 38mbgl (RO4).
- Six (6no.) ground gas monitoring visits over a period of at least three months with varying barometric pressures.
- Chemical analysis of forty-seven (47no.) samples.
- Analysis of forty-seven (47no.) samples for asbestos screening, with fifteen (15no.) samples for quantification.
- Analysis of three (3no.) water samples taken from WS1, WS8 and WS16.
- Analysis of four (4no.) surface water samples from the River Irwell and the onsite culverted stream.
- Collection and analysis of three (3no.) soil samples for geotechnical analysis.

A further site investigation was carried out on 12th and 13th May 2022 and consisted of the following:

- 9 No. trial pits (TP101 – TP109) to 4.0 m bgl
- 1 No. trial trench (TT101) to 1.4 m bgl
- Chemical analysis of 2 No. samples (TP102 @ 1 m bgl and TP105 @ 1.5 m bgl)
- Asbestos analysis of 2 No. samples (TP102 @ 1 m bgl and TP105 @ 1.5 m bgl)
- Collection and analysis of two soil samples for Atterberg testing (TT101 @ 0.8 m bgl and TP102 @ 2.0 m bgl)
- Collection of 3 No. bulk samples for Particle Size Distribution (PSD) testing

The purpose of this investigation was to determine the materials that were below the concrete slabs and how thick the concrete slabs are.

Following communications with the Environment Agency in February 2024, it was highlighted that “Per- and Polyfluoroalkyl Substances (PFAS) are recognised as being connected with the former industrial activities on site and pose a significant risk to controlled waters and therefore should be added to the site investigation testing regime.”

Betts Geo have therefore undertaken additional water sampling & testing on site to address these concerns. The site work consisted of the following:

- Three (3 No) sampling visits in March and April 2024
- Eight (8 No) samples collected on each visit (twenty four in total) – twelve (12 No) samples taken from the four existing wells on site – WS1, WS7, WS8 & WS16 and twelve (12 No) samples taken from the onsite/adjacent watercourse – three (3 No) upstream, six (6 No) midstream and three (3 No) downstream.

9. Ground Conditions Encountered

Ground conditions typically consisted of a CONCRETE slab with reinforcement and a damp-proof course over either a very sandy GRAVEL or LIMESTONE or SANDSTONE, overlying a further CONCRETE slab and subbase. Some locations exhibited areas of possible reworked SAND and / or SILT.

The main site area was almost entirely covered by concrete slabs, and a number of locations showed secondary slabs at depth. Natural strata consisted of both granular and cohesive strata, as well as shale bedrock at depth.

Olfactory and Visual Contamination

Significant visual and olfactory contamination was identified in a number of locations, as well as significant depths of Made Ground.

Obstructions

Concrete slabs were noted at surface and also at depth, some of these slabs were recorded in excess of 600mm thick. A number of the slabs could not be cored and could not be broken out using a 13tonne machine, it is thought that these may be machine bases from the former paper mill.

The large hard slabs were noted around TP11, TP18, WS4, WS5 and WS19. It is likely that more of these slabs will be present at the site.

Groundwater Fieldwork

Groundwater was observed between 0.60 and 3.00mbgl during the site works.

10. Specialist Ground Gas Measures

The site can be classed as Amber 1 / CS2. The site will require low level gas protection measures to be installed. This would usually consist of a 150mm passively vented subfloor void and a taped and sealed gas resistant membrane.

A number of volatile odours and VOCs/SVOCs were noted within the Made Ground during the site investigation however were not substantiated in testing. As a result, a hydrocarbon vapour resistant membrane may be required across the site to mitigate nuisance risk

11. Contamination Assessment and Remedial Actions

A number of exceedances have been observed across the site within Made Ground strata, these are associated with various PAHs, TPH C16-C21, Lead, Arsenic and asbestos. PAHs include the SVOC, Naphthalene. Further to these, a number of VOCs / SVOCs have also been observed above detection limits.

A minimum thickness of 600mm of debris-free soil is required within garden areas and landscaped areas as a capping system to mitigate residual risk to site end users from the asbestos and remaining determinants. It is also anticipated that the secondary slabs will be containing further contamination not observed during the investigation due to plant access limitations within the exclusion zone. The capping is to be made up of imported topsoil and subsoil.

Several areas of hydrocarbon / volatile odours were noted across the site during investigation; however, these were not substantiated in testing. As a result, a hydrocarbon vapour resistant membrane may be required across the site to mitigate nuisance risk – this is to be reviewed following the site strip.

Groundwater and Aquifer Risk

Potential risks to groundwater and aquifers are not anticipated given the ground investigation findings and soil analysis results.

Based on the results of the PFAS testing in groundwater, the risk of this potential contaminant of concern on site is deemed low. It is however important to note that this assessment has been based on worldwide guidance on PFAS substances as currently there are no SSV's within the UK.

12. Off-Site Disposal of Surplus Soil

If there is the need to remove soil / made ground off-site it is recommended that the results of the contamination testing (and possibly further testing) will be assessed by a suitably qualified person. The chemical laboratory data has

been screened using the online Hazwaste™ software and the laboratory test results indicate that, generally, the materials onsite would be classified as Non-hazardous.

However, several samples across the site have been shown to be hazardous.

13. Foundations

Due to depths of Made Ground and saturated SILTS being identified at depth, the variable nature of the Made Ground, and the potential for secondary slabs and deep obstructions, a piled solution is advised. Given the generally granular nature of Made Ground and the both cohesive and granular nature of natural soils on site, a driven piled solution should be taken to the appropriate strata. Suitable strata applicable to piling is thought to be at least 20mbgl.

14. Concrete Design

Given the levels of 2:1 water soluble sulphate identified in the vicinity of TP1, TP3 and TP5, a design class of DS-2, an ACEC class of AC-2 and a designated concrete class of DC2 is recommended in this area.

The remainder of the site can be recommended for a design class of DS-1, an ACEC class of AC-1 and a designated concrete class of DC-1.

15. Heave / Shrinkage Potential

Significant shallow cohesive strata were not observed at the site, testing may be undertaken once site levels are confirmed and an assessment of the depth to cohesive strata can be made.

16. Ground Floor Construction

Suspended floor construction e.g. either in situ RC slabs or block and beam flooring is recommended as per NHBC guidance.

17. Control of Groundwater

Limited shallow groundwater was encountered on site however perched groundwater was encountered in several locations. It is likely that provision of pumping / shuttering will be necessary during excavation of foundation trenches during wet weather and to deeper excavations for sewers etc. It is good practice to have such equipment on standby in case of seasonal / abnormal weather conditions.

The proposed flood risk alleviation design has increased site levels to factor in increased river levels in flood events and as such also by the same means lifted the site out of the zone of influence of potential groundwater flooding. The likelihood of solid geology bearing any influence upon groundwater levels to result in flooding is deemed very unlikely given the evidence of the known groundwater levels being in direct correlation / connectivity with the adjacent river and its surrounding superficial geological deposits (circa 20m drift).

Should sewers/excavations deeper than the boreholes/trial pits undertaken be required, further SI will be needed.

18. Highway

According to the criteria of Highways Agency HD 25/95 Volume 7 Section 2 Part 2 HD 25/94, a CBR value of circa 3% on the Made Ground is anticipated, however confirming in-situ CBR's should be undertaken once final formation levels are available. Placement of geotextiles within the areas of roads / parking could also be designed to minimise the subgrade thickness.

2 SITE DESCRIPTION

2.1 Introduction

This investigation was carried out on the instruction of Eccleston Homes. The purpose of the work was to carry out a Desk Study and Ground Investigation to provide geotechnical and contamination risk information for the proposed construction of residential dwellings with associated infrastructure, gardens and public open space. The area to the east of the River Irwell is no longer be considered and will not be discussed in this report.

The layout is plan can be seen below;



Planning Layout, Holcombe Mill, Bridge Street, Ramsbottom, Drawing No. 102, Rev N, Dated: 13.10.23

2.2 Site Location

The site is located to the south of Bridge Street and north of Ramsbottom Cricket Club in Ramsbottom. The site has an approximate postcode of BL0 9AL, with coordinates on the British National Grid of 379433,416756. The proposed site is approximately 4.61 hectares in total. See Site Location Plan in

Appendix A.

2.3 Site Description

2.3.1 On Site

The site is currently an unused parcel of land with several derelict structures in the west. The structures comprise two very dilapidated buildings and a large chimney.

The site is predominantly flat and almost entirely covered in hardstanding formed by concrete slabs, with several large and small stockpiles located throughout the site area. Large areas of the centre of the site area heavily vegetated. A full waste container was also noted in the south adjacent to the Cricket Club. A culverted stream / race was noted in the western site area.

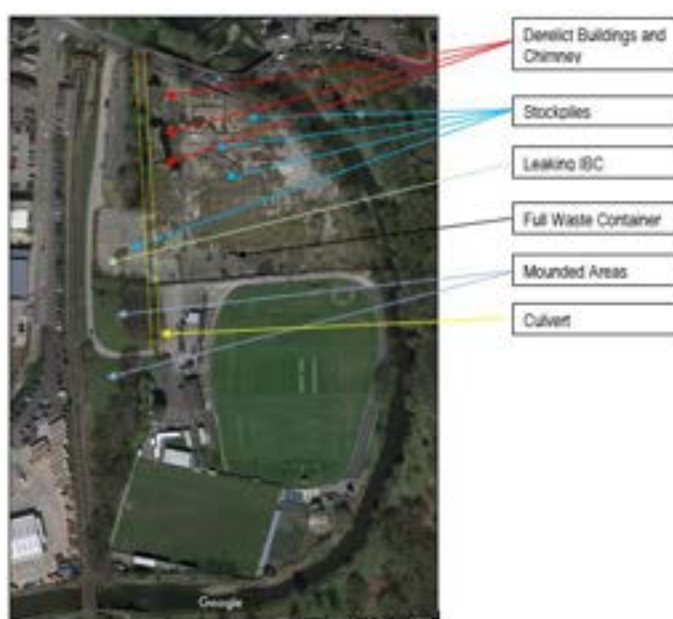
A leaking IBC was noted adjacent to the entrance off the lane leading to the sports clubs. The leaking substance was found to be brown and 'rubbery' in nature but was no longer migrating.

There are two 'mounded' areas of soft standing in southern spur with trees on their eastern boundary.

2.3.2 Surrounding Area

Surrounding land uses for the site are as follows:

- **North** – Bridge Street, the River Irwell and industrial / commercial buildings beyond.
- **East** – The River Irwell with a wooded area and residential beyond.
- **South** – Sports clubs with the River Irwell beyond.
- **West** – Railway line with Ramsbottom town beyond, mixed residential and commercial properties.



3 SITE HISTORY

3.1 Site History from Ordnance Survey Maps

A search of available historic maps was undertaken to establish the land use history of the site. Extracts of the maps discussed below and can be found in full in Appendix F of this report. All maps are Ordnance Survey unless otherwise stated. All distances quoted on OS maps are taken from the site boundary, which is marked on the map.

3.2 Summary of Site History

3.2.1 On Site

The earliest map, from 1850-1851, shows the site to be split between undeveloped land and the River Irwell in the east and reservoirs in the west. A small strip of land adjacent to the railway line is shown as a treelined road. An extract of the map is shown below;

1850-1851 1:10,560 map



By 1891, the site has been developed and now contains a paper mill, with a number of associated features present. Such as filter beds, reservoirs, chimneys and wells. The railway line to the west of the southern spur appears to cross the reservoir via either a bridge or culvert. An extract of the map is given below;

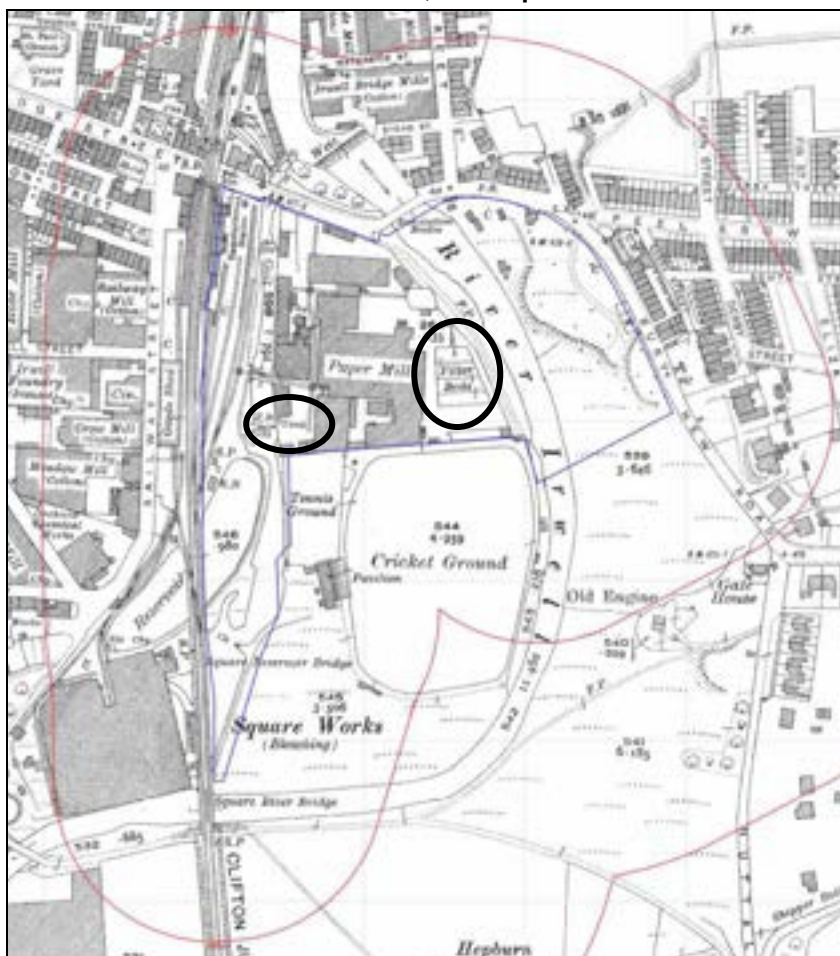
1891 1:2,500 map



Paper mills are historically known for using PFAS to provide water and oil repellent properties however PFAS is only used in certain types of paper mills. It is not 100% clear what paper this mill used to produce however a Google search suggests Holcombe Mill produced 105,000 tonnes of recycled containerboard a year for the UK market. The large majority of paper mills in the UK do not add PFAS to newly manufactures products, however, PFAS from recycled paper could be emitted from process effluent or residual paper sludge from the pulping process (EA Guidance – An Investigation on PFAS Emissions from UK Paper Mills – available at: https://thecpi.org.uk/library/PDF/Public/Publications/Reports/WRC%20Final%20Report%20UC16743.3_PFA%20Emissions%20from%20UK%20Paper%20Mills_20.06.23.pdf). Due to the presumed use of the mill, PFAS testing is recommended in the area.

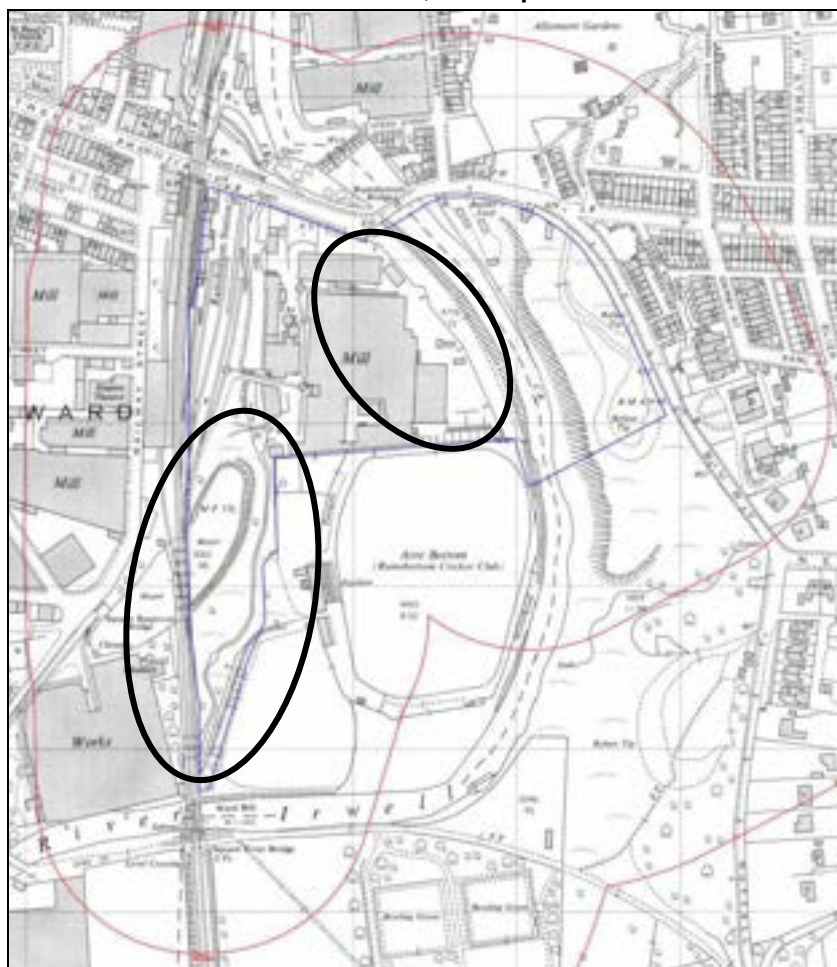
Mapping from 1929 shows a tank in the western area of the site and filter beds in the east of the site. There were also some minor configuration changes to the paper mill. An extract of the map is given below;

1929 1:2,500 map



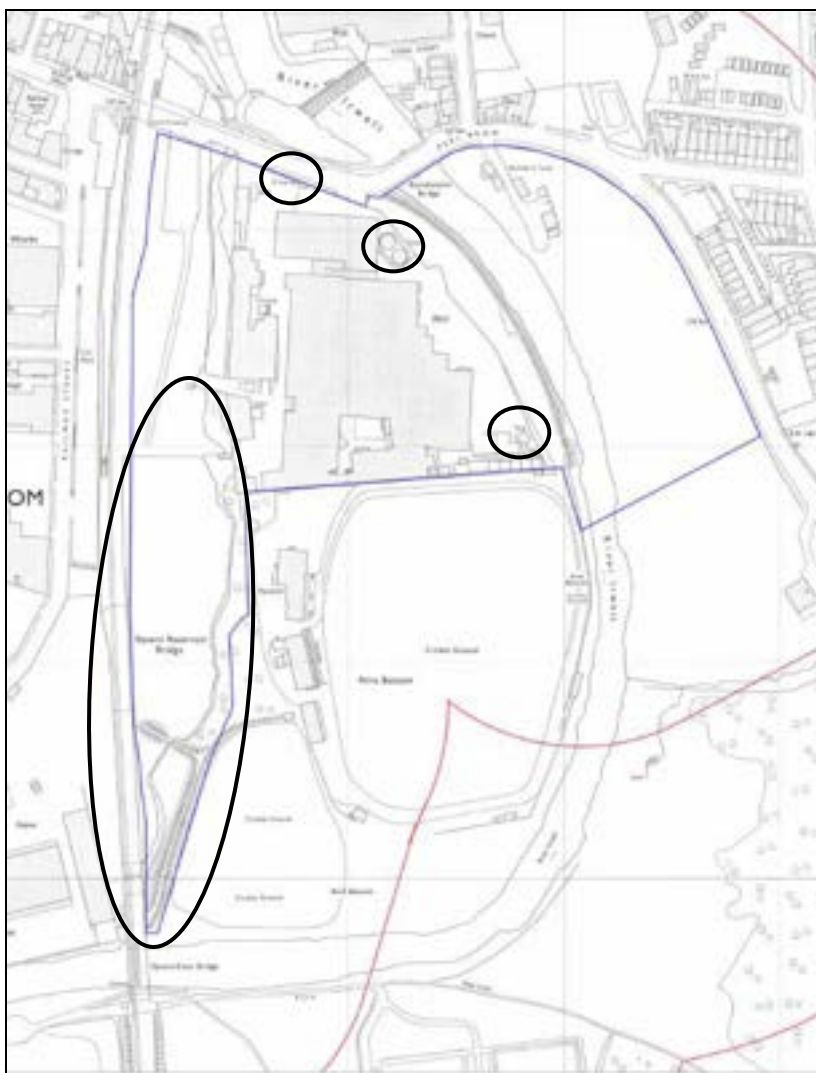
By 1962 the mill has been significantly extended, and a reservoir in the southern spur has been backfilled and a small stream has been created.

1962 1:2,500 map



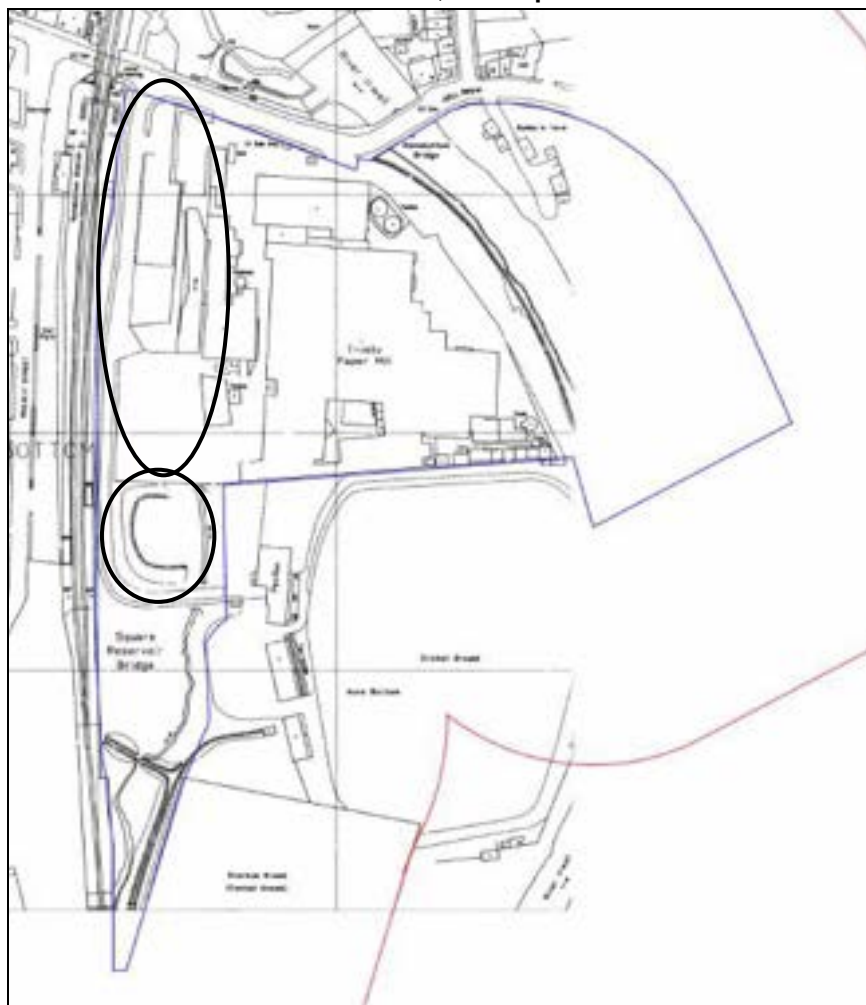
By 1978 the reservoirs in the west of the site have been backfilled. There are two new tank areas shown, the northern area shows two large tank, with one smaller tank in the southeast, and an electricity substation has been constructed on the northern boundary. An extract of the map is given below;

1978 1:1,250 map



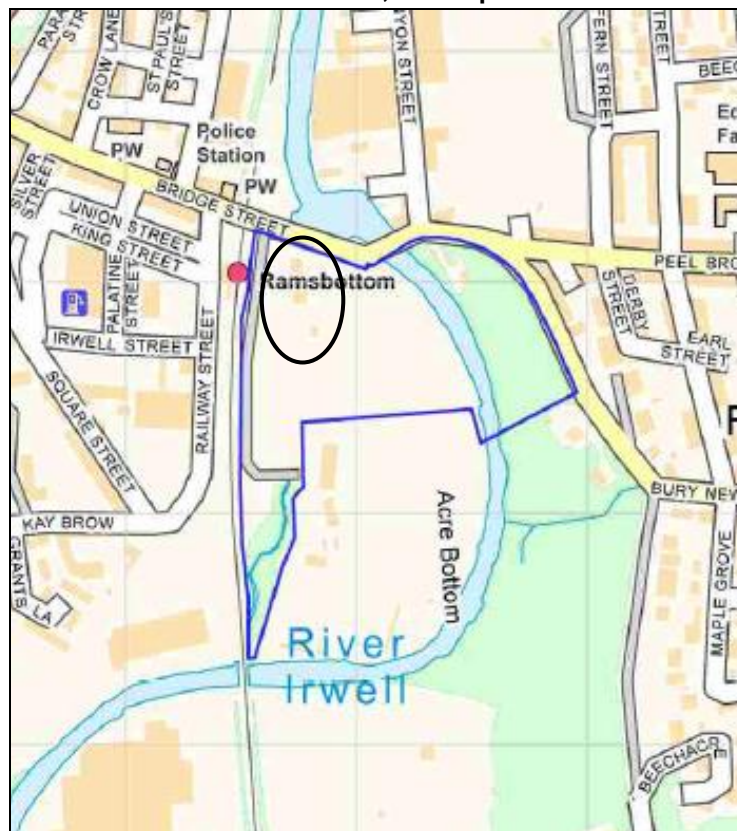
Mapping from 1994 shows a large area of hardstanding in the west has been constructed. The mill has also been extended slightly to the west. The first of the mounds in the southern spur has also been constructed.

1994 1:1,250 map



Historical mapping is inconsistent and often blank between 1994 and 2002. Between 2010 and 2014 the majority of the structures on site are demolished. However, some remain in the northwest of the site, it is assumed these are the structures remaining onsite currently. An extract of the map is shown below;

2014 1:10,000 map



3.2.2 Surrounding Area

The following table summarises the significant changes in historical use within 500m of the site boundary:

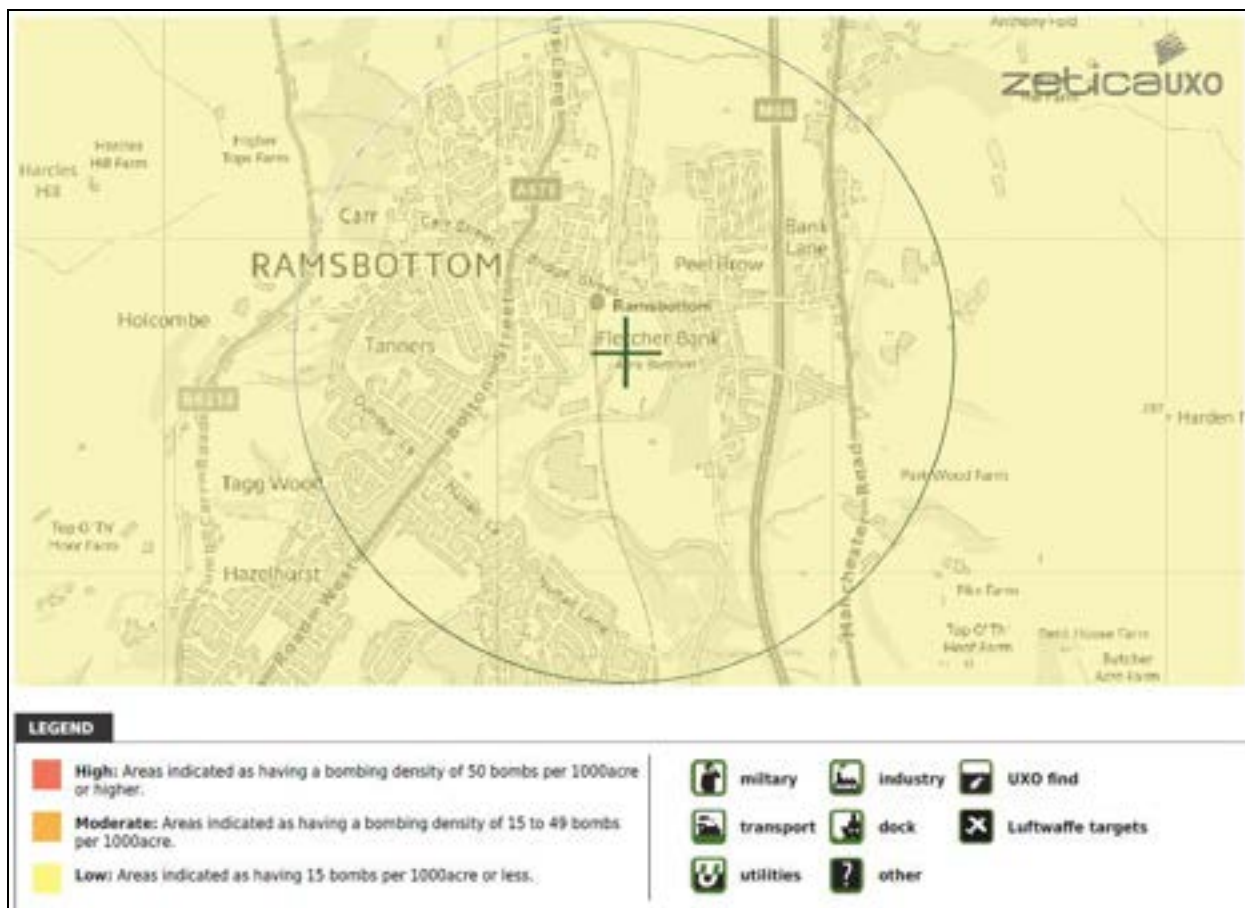
Date First Shown	Land Uses
1850-1851	River Irwell adjacent to the northern and eastern boundaries. Flows north to south. An 'old engine lodge' is shown 200m east. Sandstone quarry located 500m east. Large print works shown on western boundary of southern spur, later labelled as Square Works (bleaching). Series of small and one large reservoirs from 100m to the west. Ramsbottom train station is adjacent to western boundary. Ramsbottom town is shown approximately 200m northwest. Cotton mill with reservoir shown 400m northwest. Large cotton mill with large reservoir labelled as 'Ramsbottom Cotton Mill' detailed 400m north. Large areas are shown to be undeveloped.

1891	50-300m north collection of new mills and other industrial building constructed to the north. Large railway sidings shown 350m north. Large number of mills, works and foundry constructed 50m west of the site. Ramsbottom significantly expanded north, southwest and west. Residential homes constructed along Peel Brow to the east. Large areas to the northeast and southwest remain undeveloped.
1908-1910	Further, small-scale residential development east of the site. Tennis courts and cricket ground shown adjacent to southern boundary. Mill adjacent to southern spur now labelled as 'Square Bleaching Works'.
1927-1929	Soap works constructed 350m north of the site. Holme Mill constructed 75m southwest. Further small-scale residential development 100m southeast. Refuse destructor now constructed 400m north.
1938	Small-scale mapping largely blank. Iron foundry 60m west demolished.
1948	Nuttall Park now detailed south of the site, on the opposite bank of the Irwell.
1955	Large area of possible residential homes built 200m northeast.
1962	Small builders yard detailed 50m northeast. River Irwell banks appear to have been modified slightly. Refuse tip now labelled 200m southeast.
1967-1968	Continued expansion of Ramsbottom town.
1978	Number of mills and works to the west have been demolished, a depot has also been constructed to the west of the southern spur. Electrical substations are also shown. Another cricket ground has been created south of the previous one, with new 'clubhouses' also constructed.
1980	M66 constructed 325m east. Railway sidings to the north have no been reduced to a single line.
1992	Garage constructed 25m east.
1994	Configuration changes to existing mills / works. Southern most cricket club now shown as football club.
2002-2014	A number of works and mills remain to the north and southwest of the site. Two supermarkets were later constructed o the west of the site.

4 UNEXPLODED ORDNANCE (UXO)

A preliminary UXO has been made using online sources of information. The brief search has highlighted that no significant risks are present at the site. Further to this, the site had been developed prior to WWII and remained in use after, increasing the likelihood of any UXO items being recorded and removed.

On the basis of the site history and the online sources, the site is deemed to be at low risk from UXO.



5 GEOLOGY

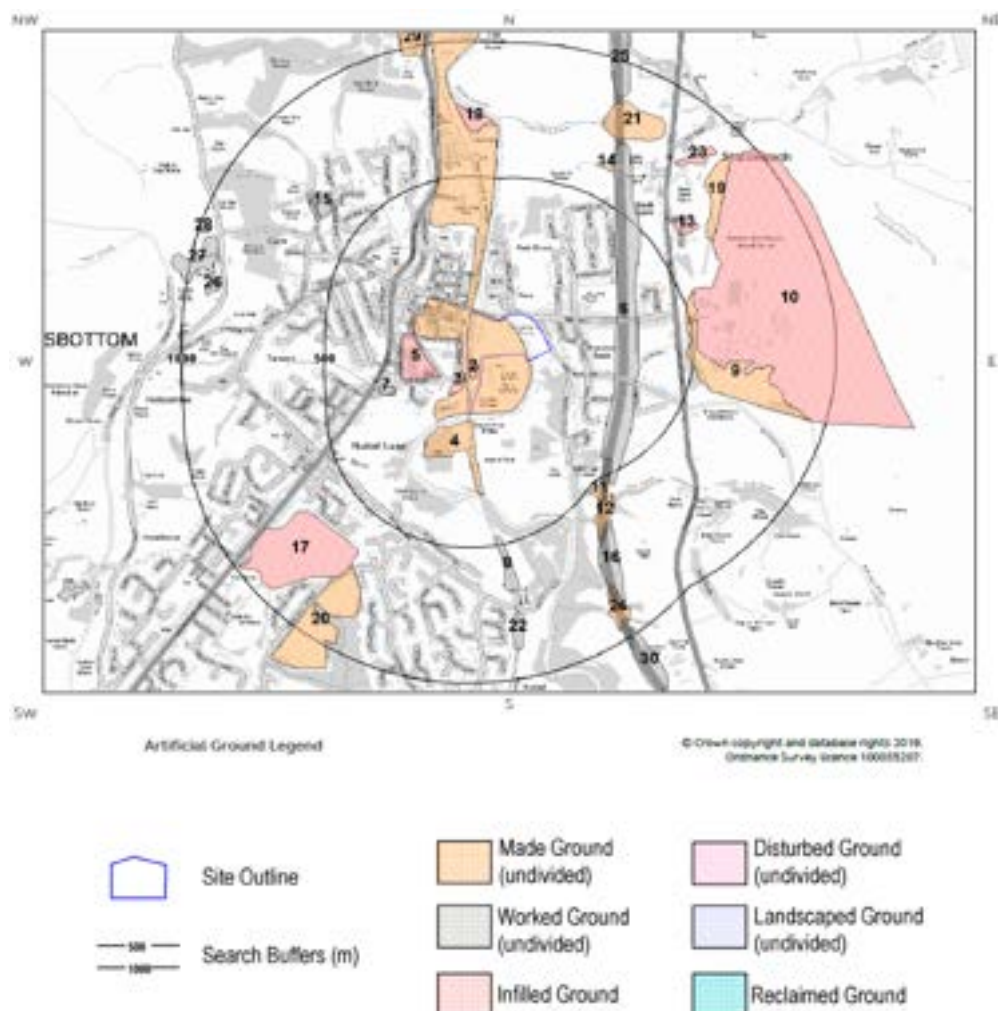
The following section details the published and available geological data available for the site and the surrounding area. All data is taken from the Groundsure report located in Appendix H unless otherwise stated. This report should be referred to for full details.

5.1 Published Geology

The documented geology of the site is summarised on the British Geological Survey map principally, with further site-specific details detailed below.

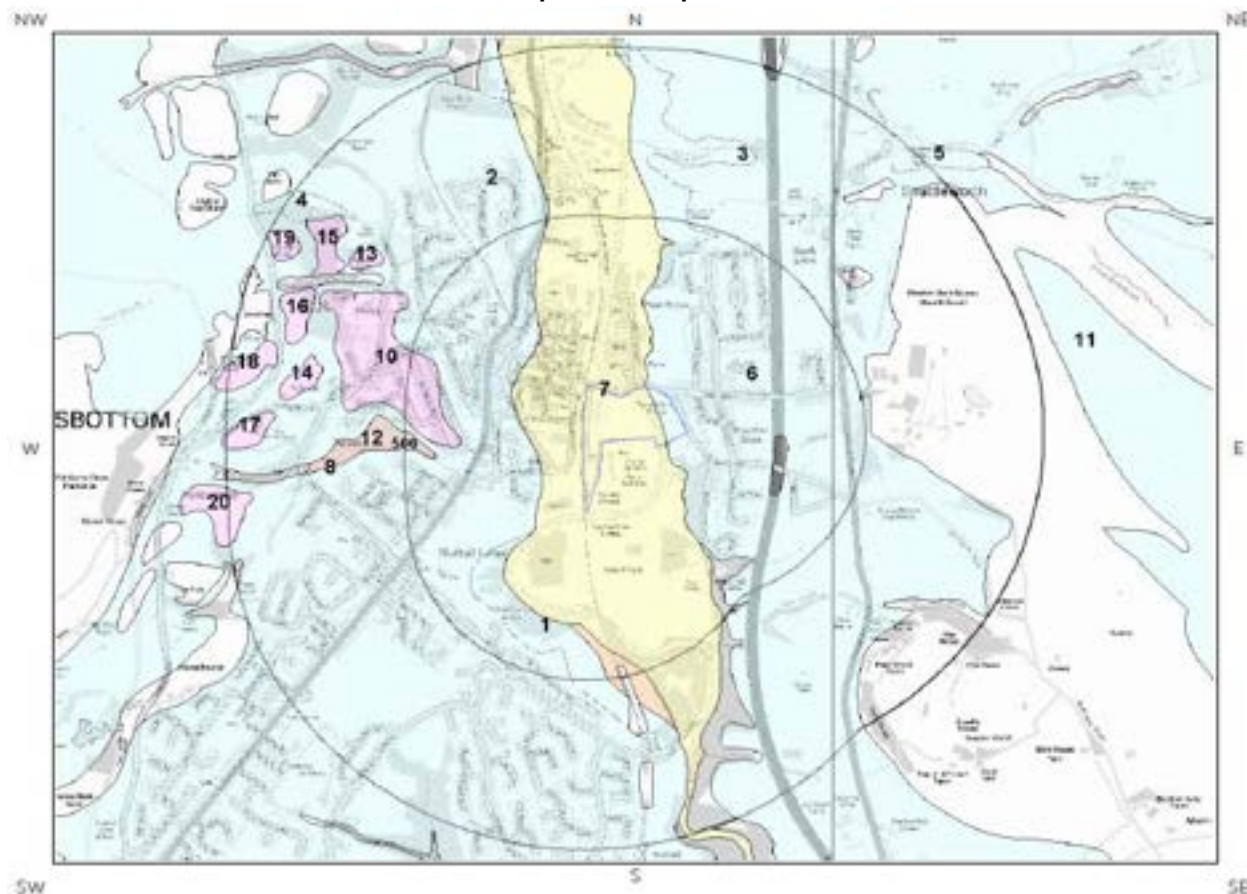
Geology	Artificial Ground and Land Slip	Drift	Solid
1:10,000	Made Ground & Infilled Land	Alluvium – Clay, Sand & Silt	Millstone Grit Group – Mudstone & Siltstone Hazel Greave Grit – Sandstone

Artificial Ground



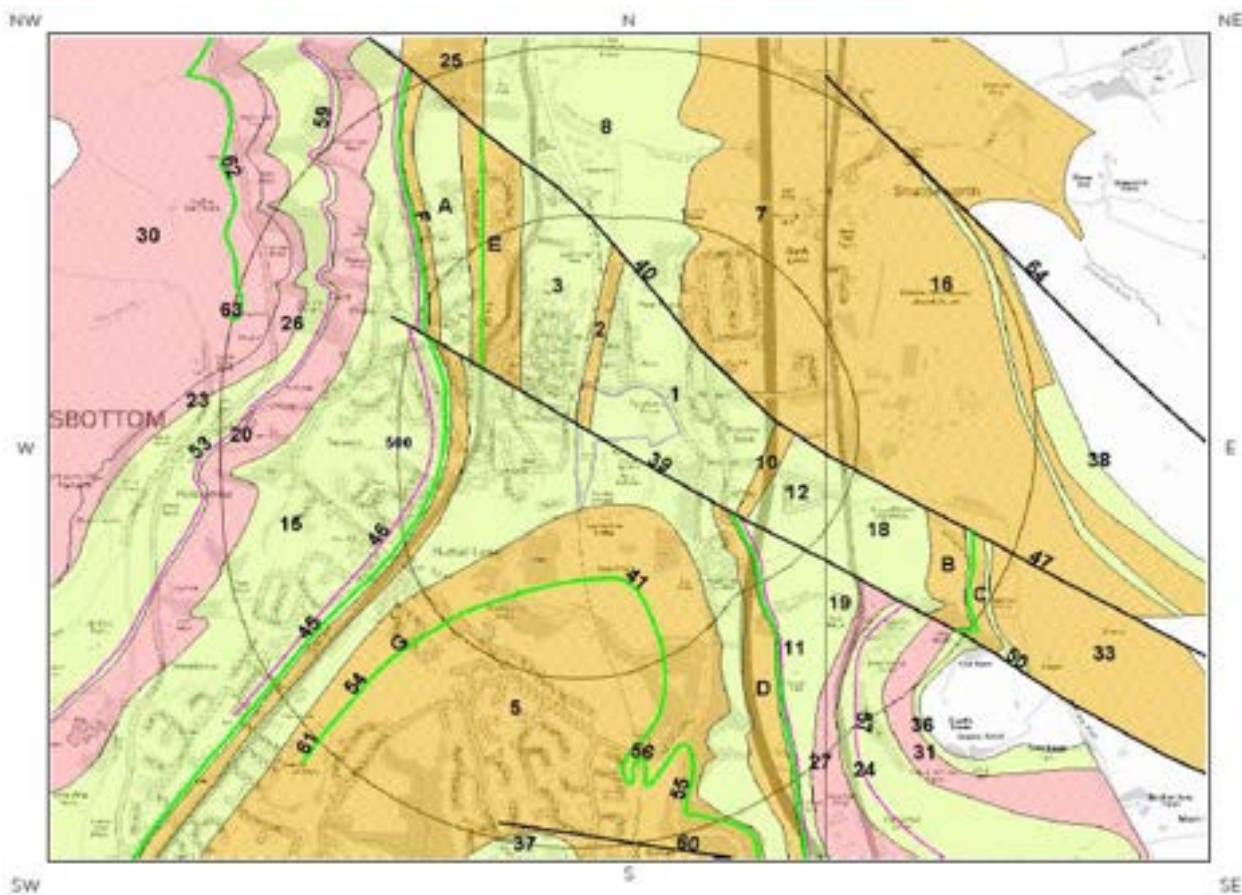
ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	0.0	On Site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	11.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	33.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	95.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
6	226.0	E	WGR-VOID	Worked Ground (Undivided)	Void
7	257.0	W	WGR-VOID	Worked Ground (Undivided)	Void
8	467.0	S	WGR-VOID	Worked Ground (Undivided)	Void
9	478.0	E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	495.0	E	WMGR-ARTDP	Infilled Ground	Artificial Deposit

Superficial Deposits



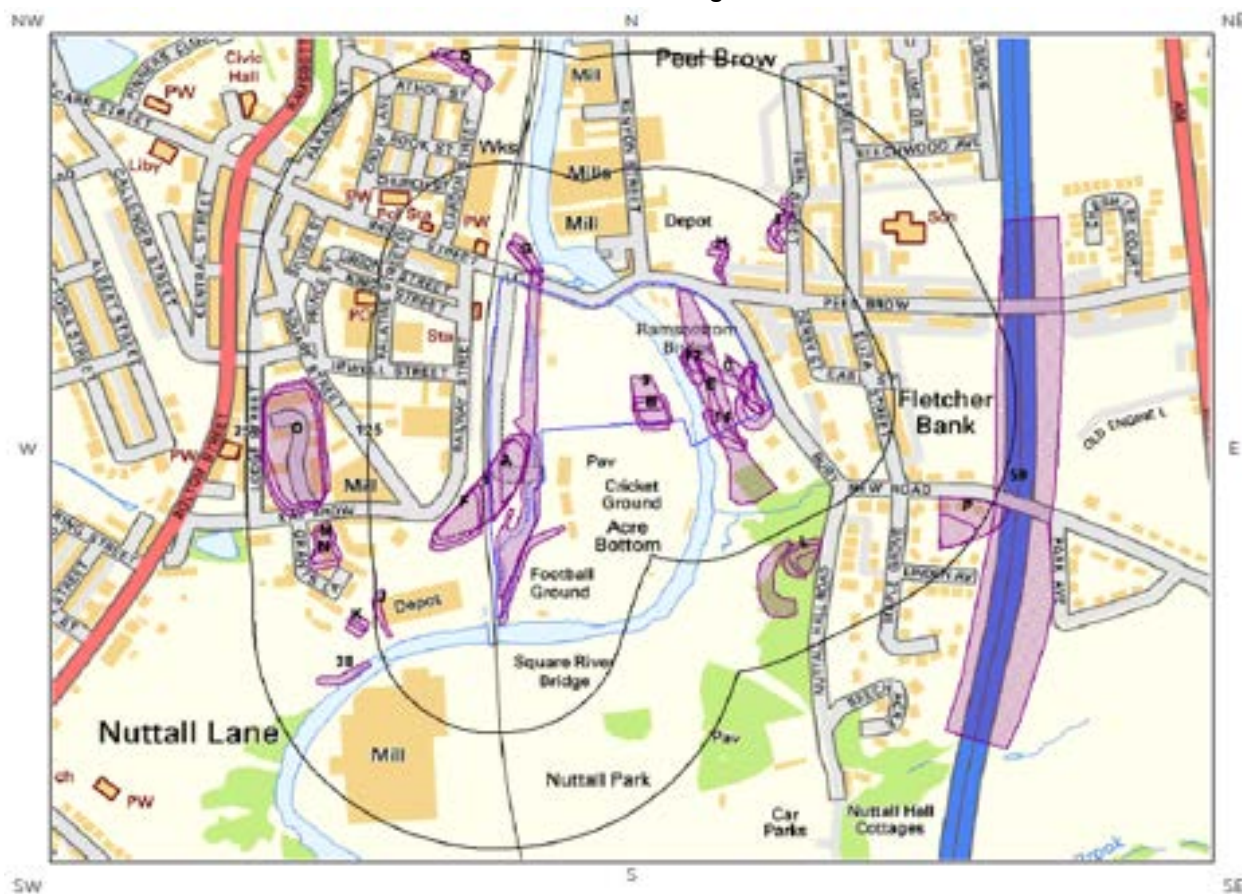
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
6	0.0	On Site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
7	0.0	On Site	ALV-XCZ5V	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
8	116.0	W	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
9	334.0	S	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
10	342.0	W	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
11	409.0	E	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
12	413.0	W	HEAD-DMTN	Head - Diamicton	Diamicton

Solid Deposits



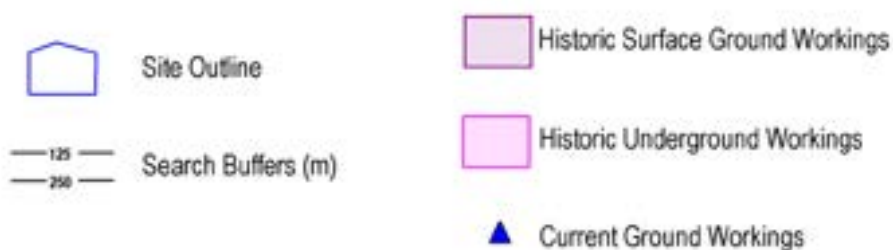
ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
2	0.0	On Site	HZG-SDST	Hazel Grieve Grit - Sandstone	Marsdenian Sub-age
3	0.0	On Site	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
4	0.0	On Site	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
5	0.0	S	BBS-SDST	Brooksbottoms Grit - Sandstone	Marsdenian Sub-age

Ground Workings



Ground Workings Legend

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The features recorded onsite are split between ponds, reservoirs, refuse heaps, filter beds and 'unspecified workings', as listed below;

ID	Distance (m)	Direction	NGR	Use	Date
1	0.0	On Site	379290 416615	Reservoir	1955
2	0.0	On Site	379339 416694	Ponds	1955
3A	0.0	On Site	379318 416624	Reservoir	1948
4A	0.0	On Site	379318 416624	Reservoirs	1891
5A	0.0	On Site	379318 416624	Pond	1908
6A	0.0	On Site	379318 416624	Reservoir	1927
7A	0.0	On Site	379326 416638	Pond	1968
8	0.0	On Site	379327 416522	Unspecified Ground Workings	1908
9	0.0	On Site	379463 416719	Filter Beds	1927
10B	0.0	On Site	379466 416696	Filter Beds	1948
11B	0.0	On Site	379468 416701	Filter Beds	1955
12	0.0	On Site	379507 416745	Refuse Heap	1948
13C	0.0	On Site	379559 416729	Refuse Heap	1927
14	0.0	On Site	379542 416679	Refuse Heap	1948
15D	0.0	On Site	379561 416721	Refuse Heap	1968
16C	0.0	On Site	379568 416722	Refuse Heap	1948
17D	0.0	On Site	379572 416729	Refuse Heap	1955
18E	0.0	On Site	379531 416715	Refuse Heap	1955
19E	0.0	On Site	379544 416715	Unspecified Ground Workings	1968

5.1.1 Linear Features

There is one linear feature located on site and a further 10no. features within 500m. The features within 250m are listed below;

ID	Distance (m)	Direction	Category Description	Feature Description
39	0.0	On Site	FAULT	Normal fault, inferred
40	176.0	NE	FAULT	Normal fault, inferred
41	207.0	S	ROCK	Coal seam, inferred

The feature identified on site is shown as a fault (inferred). Coal mining features are shown to 207m south of the site.

5.1.2 Historical Borehole Records

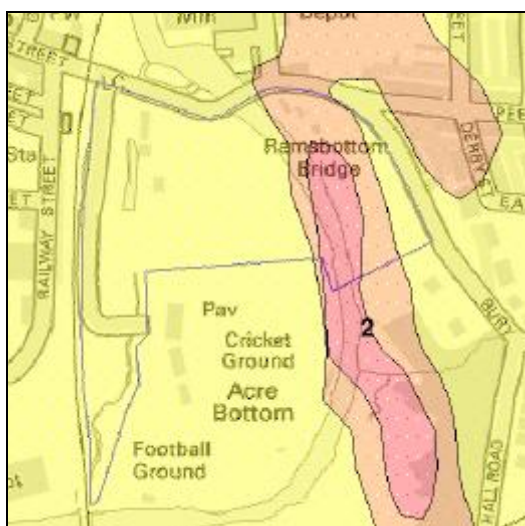
There are 3no. historic boreholes located onsite, that appear for have been used for wells, their succession can be summarised as below;

- Gravel
- Clay
- Conglomerate
- Clay and Gravel
- Rock from circa 19.00mbgl.

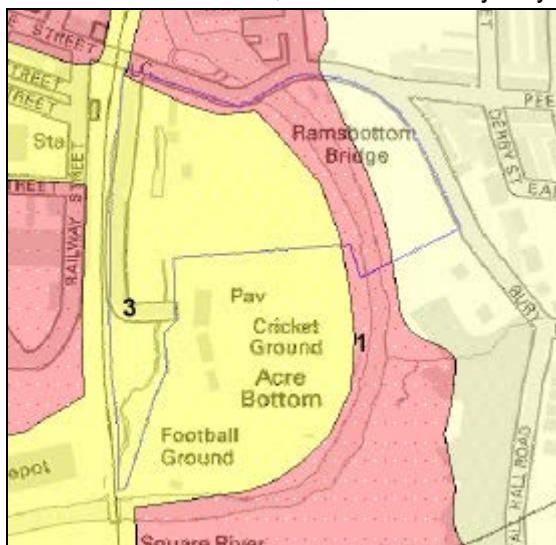
5.2 Ground Stability Issues

Potential risks due to ground stability according to the GroundSure report are listed below, along with maps where moderate risks may be present;

- Shrink-Swell Clay – Low Risk
- Landslide – Low to Moderate Risk, eastern boundary only (shown below)



- Ground Dissolution – Negligible
- Compressible Ground – Low to Moderate Risk, eastern boundary only (shown below)



- Collapsible Deposits – Negligible
- Running Sand – Low Risk

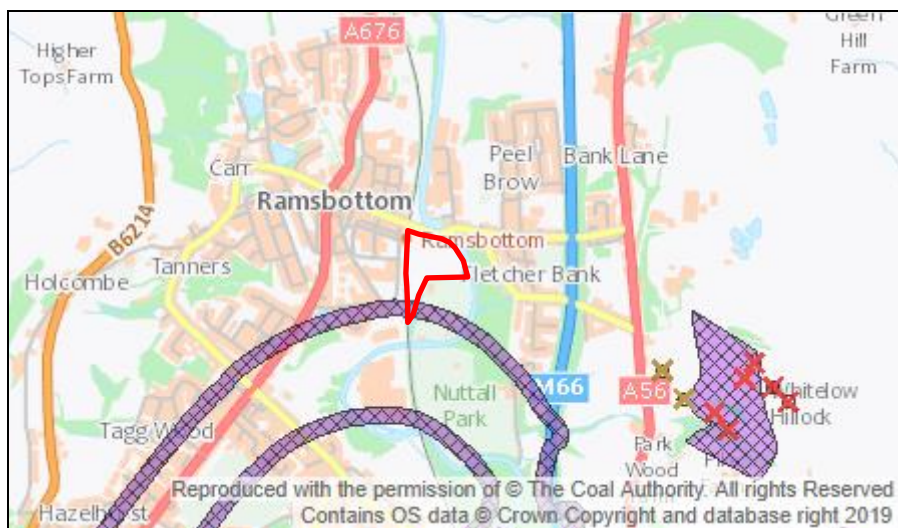
5.3 Geological Features

The table below summarises the presence/absence of recorded mining, extraction and natural cavities records within 500m of site. If entries are present within 250m, further details are provided in the relevant section below.

Data Type	On Site	0 – 250m	250 – 500m
Geological			
Historical Mining	-	-	-
Coal Mining	Yes	Yes	Yes
Non-Coal Mining	Yes	-	Yes
Non-Coal Mining Cavities	-	-	-
Natural Cavities	-	-	-
Brine Extraction	-	-	-

5.3.1 Coal Mining

The site is located within a coal mining area, and coal mining features exist to the south of the site, and as such, a Coal Authority Mining Report has been obtained. Online mapping has shown a possible coal seam to the south, which has further necessitated the Coal Authority report, and a Coal Mining Investigation. A plan showing mine features in the area is shown below;



The salient points of the Coal Authority Report are summarised below;

Section 1 – Mining activity and geology

Past Underground Mining

No past mining recorded.

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

None available.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
LOWER HOLCOMBE BROOK	Coal	Yes	Within	N/A	100

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence. The property is in an area where a notice to withdraw support was given in 1955. The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Withdrawal of support notices

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

5.3.2 Non-Coal Mining

One entry is recorded within 250m, and is noted as onsite as detailed below;

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be <u>considered</u>

Vein minerals unlikely to have impact onsite.

5.3.3 Radon

The Groundsure data states that the site is within a low probability radon area (<1% of properties above the action level), therefore no radon protection measures are required in the construction of new dwellings.

5.4 Hydrogeological and Hydrological Features

The table below summarises the presence/absence of any hydrological licences and incidents within 500m of the proposed site. If entries are present within 250m, further details are provided in the relevant subsection below;

Data Type	On Site	0 – 250m	250 – 500m
Hydrogeology & Hydrology			
Licensed Discharge Consents	-	5	1
Red List Discharge Consents	-	-	-
Ground Water Abstraction Licences	2	-	-
Surface Water Abstraction Licences	-	6	8
Potable Water Abstraction Licences	-	-	-
Source Protection Zones	-	-	-
Ground Water Vulnerability & Soil Leaching Potential	1	1	1
Surface Water Features	2	7	Not Searched

5.4.1 Licensed Discharge Consents

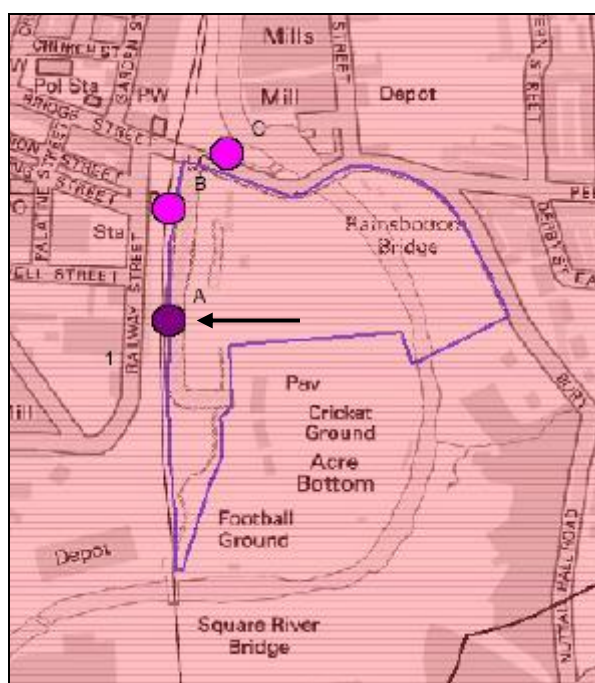
There are five (5no.) entries located within 250m of the site, as detailed below;

ID	Distance (m)	Direction	NGR	Details
9	13	N	379348 416847	Address: CARR STREET CSO 099BP, 82 CARR STREET, RAMSBOTTOM, BURY, LANCASHIRE, BL0 9EG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0001 Permit Version: 4 Receiving Water: RIVER IRWELL Status: VARIED UNDER EPR 2010 Issue date: 11/04/2018 Effective Date: 11-Apr-2018 Revocation Date: -
10B	38	E	379350 416470	Address: CARR STREET CSO 099BP, 82 CARR STREET, RAMSBOTTOM, BURY, LANCASHIRE, BL0 9EG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0001 Permit Version: 2 Receiving Water: RIVER IRWELL Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: 04/02/2016
11B	38	E	379350 416470	Address: CARR STREET CSO 099BP, 82 CARR STREET, RAMSBOTTOM, BURY, LANCASHIRE, BL0 9EG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0001 Permit Version: 1 Receiving Water: RIVER IRWELL Status: VARIED UNDER EPR 2010 Issue date: - Effective Date: 01-Jan-1995 Revocation Date: 02/09/2010
12C	232	N	379419 417068	Address: BRITANNIA WORKS, KENYON ST, RAMSBOTTOM, BURY, LANCASHIRE Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 0165/76 Permit Version: 2 Receiving Water: RIVER IRWELL Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 01-Jan-1995 Revocation Date: 15/08/2017
13C	232	N	379419 417068	Address: BRITANNIA WORKS, KENYON ST, RAMSBOTTOM, BURY, LANCASHIRE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0165/76 Permit Version: 1 Receiving Water: RIVER IRWELL Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01-Apr-1991 Revocation Date: 31/12/1994

5.4.2 Groundwater Abstraction Licenses

There are two (2no.) entries for groundwater abstraction licences, both are listed onsite, the extract is given below with approximate locations;

ID	Distance (m)	Direction	NGR	Details
3A	0	On Site	379300 416700	Status: Historical Licence No: 2569001030 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PEEL BRIDGE MILLS, RAMSBOTTOM" Data Type: Point Name: DANISCO PAPER LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 21/08/1999 Version End Date:
4A	0	On Site	379300 416700	Status: Historical Licence No: 2569001030 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PEEL BRIDGE MILLS, RAMSBOTTOM Data Type: Point Name: MONDI HOLCOMBE LIMITED Annual Volume (m³): 359149 Max Daily Volume (m³): 1637 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: 31/03/2015 Issue No: 105 Version Start Date: 11/08/2008 Version End Date:



5.4.3 Surface Water Abstraction Licences

There are six (6no.) entries for surface water abstraction licences, the extract is given below;

ID	Distance (m)	Direction	NGR	Details
25B	7	W	379300 416800	Status: Historical Licence No: 2569001029 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: R.IRWELL AT RAMSBOTTOM Data Type: Point Name: MONDI PAPER LIMITED Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 11/09/2001 Version End Date: -
26B	7	W	379300 416800	Status: Historical Licence No: 2569001224 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: R.IRWELL AT RAMSBOTTOM Data Type: Point Name: MONDI HOLCOMBE LIMITED Annual Volume (m³): 90920 Max Daily Volume (m³): 1091.04 Application No: - Original Start Date: 12/04/1988 Expiry Date: - Issue No: 103 Version Start Date: 11/08/2008 Version End Date: -
27B	7	W	379300 416800	Status: Historical Licence No: 2569001029 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: GOIT FED BY SURFACE DRAINAGE AND RIVER IRWELL AT RAMSBOTTOM Data Type: Point Name: MONDI HOLCOMBE LIMITED Annual Volume (m³): 322766 Max Daily Volume (m³): 1637 Application No: - Original Start Date: 14/02/1966 Expiry Date: 31/03/2015 Issue No: 105 Version Start Date: 11/08/2008 Version End Date: -
28C	16	N	379350 416850	Status: Historical Licence No: 2569001246 Details: Supply to a Leat for Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BRIDGE STREET, RAMSBOTTOM Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 19/01/1994 Expiry Date: - Issue No: 100 Version Start Date: 11/08/2000 Version End Date: -
29C	16	N	379350 416850	Status: Historical Licence No: 2569001246 Details: Supply to a Leat for Throughflow Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT BRIDGE STREET, RAMSBOTTOM" Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 19/01/1994 Expiry Date: - Issue No: 100 Version Start Date: 11/08/2000 Version End Date: -
30C	16	N	379350 416850	Status: Active Licence No: 2569001246 Details: Supply To A Leat For Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BRIDGE STREET RAMSBOTTOM Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL Annual Volume (m³): 6.31152e+007 Max Daily Volume (m³): 172920 Application No: - Original Start Date: 19/01/1994 Expiry Date: - Issue No: 100 Version Start Date: 11/08/2000 Version End Date: -

5.4.4 Groundwater Vulnerability & Soil Leaching Potential

There are three (3no.) entries located within 250m of the site, one of which is located onsite, as detailed below;

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.
15	E	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.
409	E	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.

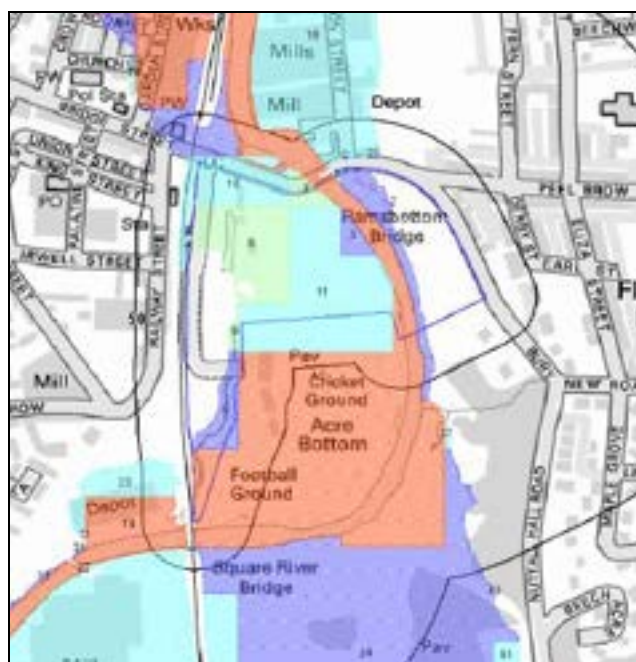
5.4.5 Surface Water Features

There are nine (9 no.) entries for surface water features within 250m, two of which are located onsite. Extract below;

Distance (m)	Direction
0	On Site
0	On Site
10	SW
10	W
11	NW
72	S
86	SE
86	SE
119	SW

5.4.6 Hydrogeology and Hydrology

- The superficial deposits of the Alluvium are designated as Secondary A Aquifer (Moderate Permeability).
- The bedrock deposits of the Sandstone are designated as Secondary A aquifer (Moderate Permeability).
- The site does not lie within Groundwater Source Protection as defined by the Environment Agency.
- There are no potable water abstractions within 500m of site.
- Two groundwater abstractions located onsite, on the western boundary.
- There are two (7 no.) recorded surface water features on site and seven (9 no.) within 250m.
- BGS data shows the site to be at significant to moderate risk of groundwater flooding.
- Flooding – Zones 2 and 3 noted as onsite. Risk is noted as Very Low to High (RoFRaS). Map of risks given below;

RoFRas

Map showing the site and surrounding area, including floodplains, flood defences, and search buffers. The map includes labels for streets like Carr, Nuttall Lane, and various flood zones. A legend at the bottom explains the symbols and colors used.

Legend:

- Site Outline (Blue outline)
- Search Buffers (m) (Black dashed lines for 100m and 250m)
- Zone 2 Floodplain (Light Green)
- Zone 3 Floodplain (Light Blue)
- Flood Defences (Thick purple line)
- Area used for Flood Storage (Pink)
- Area Benefiting from Flood Defences (Orange)

6 ENVIRONMENTAL DATA

The following section details environmental data available for the site and the surrounding area. Full details can be found in the EnviroCheck Report by Landmark located in Appendix H.

The table below summarises the presence/absence of any waste, hazardous substance sites of industrial land uses within 500m of the proposed site. If entries are present within 250m, further details are provided in the relevant section below.

Data Type	On Site	0 – 250m	250 – 500m
Environmental Permits, Incidents & Registers			
Historic Integrated Pollution Control Authorisations	-	2	-
Integrated Pollution Prevention and Control Authorised Activities	2	1	-
Part A (2) & Part B Activities and Enforcements	-	3	-
Category 3 or 4 Radioactive Substances Authorisations	-	-	-
Water Industry Referrals	-	-	-
Hazardous Substance Consents & Enforcements	-	-	-
EA / NRW Recorded Pollution Incidents	-	4	-
Landfill & Other Waste Sites			
EA / NRW Registered Landfill Sites	-	-	-
EA / NRW Historic Landfill Sites	-	1	2
BGS / DoE Landfill Site Survey	-	-	-
Landfills in Local Authority & Historical Mapping Records	2	2	2
Operational & Non-operational Waste Treatment, Transfer & Disposal Sites	-	5	7
EA / NRW Licenced Waste Sites	-	6	-
Hazardous Sites			
COMAH and NIHHS Sites	-	-	-
Historical Industrial Sites			
Potentially Contaminative Uses	32	89	75
Historical Tank Database	15	23	2
Historical Energy Features Database	3	15	20
Historical Petrol & Fuel Site Database	-	-	-
Historical Garage & Motor Vehicle Repair Database	-	7	-
Historical Military Sites	-	-	-
Potentially Infilled Land	19	40	55
Current Land Use			
Current Industrial Sites Data	1	39	Not Searched
Petrol & Fuel Sites	-	1	1
National Grid Underground Electricity Cables	-	-	-
National Grid Gas Transmission Pipelines	-	-	-
Designated Environmentally Sensitive Sites			
Sites of Special Scientific Interest (SSSI)	-	-	-
National Nature Reserves (NNR)	-	-	-
Special Areas of Conservation (SAC)	-	-	-
Special Protection Areas (SPA)	-	-	-
Areas of Outstanding Natural Beauty (AONB)	-	-	-
National Parks	-	-	-
Green Belt Land	-	-	-

6.1 Environmental Permits, Incidents & Registers

6.1.1 Historic Integrated Pollution Control Authorisations

There are two records for Historic IPC Authorisations within 250m of the site, an extract is given below;

ID	Distance (m)	Direction	NGR	Details
32D	7	W	379300 416800	Operator: Mondi Packaging Holcombe Ltd Address: Holcombe Mill, Bridge Street, Ramsbottom, Bury, Lancashire, BL0 0BS Process: Paper And Pulp Manufacturing Processes Permit Number: AU7451 Original Permit Number: IPCAPP Date Approved: 27-1-1997 Effective Date: 29-1-1997 Status: Superseded By Variation
33D	7	W	379300 416800	Operator: Mondi Packaging Holcombe Ltd Address: Holcombe Mill, Bridge Street, Ramsbottom, Bury, Lancashire, BL0 0BS Process: Paper And Pulp Manufacturing Processes Permit Number: BD4546 Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked - Now Ippc

6.1.2 Integrated Pollution Prevention and Control Authorised Activities

There are three records for IPPC Authorised Activities within 250m of the site, two of which are onsite. An extract is given below;

ID	Distance (m)	Direction	NGR	Details
26E	0	On Site	379400 416760	Operator: MONDI HOLCOMBE LTD Installation Name: DANISCO PAPER MILL EAEPRBJ6542IQS002 Process: PAPER, PULP AND BOARD; PRODUCING PAPER/BOARD >20T/D Permit Number: BJ6542IQ Original Permit Number: BJ6542IQ EPR Reference: - Issue Date: 09/01/2002 Effective Date: 09/01/2002 Last date noted as effective: 2019-01-31 Status: SUPERCEDED
27E	0	On Site	379400 416760	Operator: MONDI HOLCOMBE LTD Installation Name: DANISCO PAPER LIMITED Process: PAPER, PULP AND BOARD; PRODUCING PAPER/BOARD >20T/D Permit Number: KP3530KN Original Permit Number: BJ6542IQ EPR Reference: - Issue Date: - Effective Date: 25/06/2010 Last date noted as effective: 2019-01-31 Status: SURRENDER EFFECTIVE
28D	7	W	379300 416800	Operator: MONDI PAPER LTD Installation Name: - Process: PAPER, PULP & BOARD; PRODUCING PAPER/BOARD >20T/D Permit Number: BJ6542 Original Permit Number: BJ6542 EPR Reference: - Issue Date: 09/01/2002 Effective Date: 09/01/2002 Last date noted as effective: 2004-10-01 Status: SUPERSEDED BY PAS

A closure report for the IPPC Authorised Activities on site was obtained from the Environment Agency. This report detailed that the licensed was surrounded on the 20th April 1990 and also provided a site location plan of the landfill area. This can be seen below along with an overlay of the site area:



6.1.3 Part A (2) & Part B Activities and Enforcements

There are three (3 No.) entry for Part A (2) & Part B Activities and Enforcements within 250m. The extract is shown extract below;

ID	Distance (m)	Direction	NGR	Details
23	49	W	379261 416836	Address: Station Garage, Railway Street, BLO 9AL Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
24	157	W	379163 416894	Address: First Impression, 44 Bridge Street, Ramsbottom, Bury, BLO 9AQ Process: Dry Cleaning Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
25	476	N	379221 417313	Address: Ramsbottom Service Station, Stubbins Road, Ramsbottom, BLO 0PU 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

6.1.4 EA / NRW Recorded Pollution Incidents

There are four (4no.) records for EA / NRW Recorded Pollution Incidents within 250m of the site, an extract

of the records is given below;

ID	Distance (m)	Direction	NGR	Details	
1	69	S	379512.0 416592.0	Incident Date: 17-Apr-2002 Incident Identification: 72361.0 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	94	NW	379405.0 416919.0	Incident Date: 22-Jun-2014 Incident Identification: 1247909.0 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)
3	132	E	379446.0 416462.0	Incident Date: 15-Apr-2002 Incident Identification: 71682.0 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4	197	SW	379133.0 416302.0	Incident Date: 13-Jun-2001 Incident Identification: 9000.0 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

6.2 Landfill & Other Waste Sites

6.2.1 EA / NRW Historic Landfill Sites

There is one (1no.) entry for an historic landfill site within 250m, an extract is given below;

ID	Distance (m)	Direction	NGR	Details	
15	0	On Site		Site Address: Mill Lodge, Railway Street/Kenyon Street, Ramsbottom, Bury, Greater Manchester Waste Licence: Yes Site Reference: CD13, RD/LIC/009/76 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 13-Dec-1977 Licence Surrendered: 08-May-1990 Licence Holder Address: Inwell Street, Ramsbottom Operator: - Licence Holder: Inwell Street Metal Company Limited First Recorded: 31-Dec-1977 Last Recorded: 31-Jul-1979

A closure report for the Historic Landfill on site was obtained from the Environment Agency. This report detailed that the licensed was surrounded on the 20th April 1990 and also provided a site location plan of the landfill area. This can be seen in Section 6.1.2 above.

6.2.2 Landfills in Local Authority & Historical Mapping Records

There are four (4no.) entries for Landfills in Local Authority & Historical Mapping Records within 250m of site, two of which are located onsite, an extract of the record is below;

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
47	0	On Site	379550 416786	Refuse Tip	1962 mapping	Polygon
48	0	On Site	379557 416719	Refuse Tip	1962 mapping	Polygon
49	136	SE	379581 416524	Refuse Tip	1962 mapping	Polygon
50	221	N	379565 417057	Refuse Tip	1962 mapping	Polygon

A closure report for the Historic Landfill on site was obtained from the Environment Agency. This report detailed that the licensed was surrounded on the 20th April 1990 and also provided a site location plan of the landfill area. This can be seen in Section 6.1.2 above.

6.2.3 Operational & Non-operational Waste Treatment, Transfer & Disposal Sites

There are five (5no.) entries for Operational & Non-operational Waste Treatment, Transfer & Disposal Site records within 250m of site. The records within 100m are given below;

ID	Distance (m)	Direction	NGR	Details		
3A	79	N	379463 416958	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1992	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	79	N	379463 416958	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1994	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

6.2.4 Records of Environment Agency / Natural Resources Wales Licensed Waste Sites

There are six (6no.) Records of Environment Agency/Natural Resources Wales licensed waste sites within 250m of the site boundary, an extract of the records within 100m is given below;

ID	Distance (m)	Direction	NGR	Details
27F	91	N	379441 416928	Site Address: Waterside Mill & Peel Bridge Mill, Kenyon Street, Ramsbottom, Lancs, BL0 0AB Type: 75kte HCl Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: AWR003 EPR reference: CP3897E5/A001 Operator: A W R Rent A Skip Ltd Waste Management licence No: 100969 Annual Tonnage: 0.0 Issue Date: 04/06/2009 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: A W R Rent A Skip Correspondence Address: -
28F	91	N	379441 416928	Site Address: Waterside Mill, Kenyon Street, Ramsbottom, Lancashire, BL0 0AB Type: 75kte HCl Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHE032 EPR reference: EA/EPR/QP3092EN/T001 Operator: Wheeldon Brothers Waste Ltd Waste Management licence No: 100969 Annual Tonnage: 74999.0 Issue Date: 04/06/2009 Effective Date: 22/11/2010 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Waterside Mill & Peel Bridge Mill Correspondence Address: -
29F	90	N	379455 416937	Site Address: Land/premises At, Kenyon Street, Ramsbottom, Bury, Lancashire, BL0 0AB Type: Special Waste Transfer Station Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ISM001 EPR reference: EA/EPR/MP3496CP/V002 Operator: Irwell Street Metal Co Ltd Waste Management licence No: 53695 Annual Tonnage: 6250.0 Issue Date: 05/01/1994 Effective Date: - Modified: 21/11/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Irwell Street Metal Co Ltd Correspondence Address: -

6.3 Historical Industrial Sites

6.3.1 Potentially Contaminative Uses

There are One-hundred and twenty-one (121no.) records of Potentially Contaminative Uses within 250m of the site, 32 of which are located onsite, an extract of the records onsite is given below;

ID	Distance [m]	Direction	Use	Date
1D	0	On Site	Refuse Heap	1927
2BK	0	On Site	Refuse Heap	1948
3A	0	On Site	Refuse Heap	1968
4A	0	On Site	Refuse Heap	1948
5A	0	On Site	Refuse Heap	1955
6B	0	On Site	Paper Mill	1908
7B	0	On Site	Paper Mill	1948
8	0	On Site	Railway Sidings	1955
9BL	0	On Site	Unspecified Ground Workings	1908
10B	0	On Site	Paper Mill	1927
11B	0	On Site	Unspecified Mill	1891
12B	0	On Site	Paper Mill	1955
13B	0	On Site	Unspecified Mill	1968
14B	0	On Site	Unspecified Mill	1900
15C	0	On Site	Filter Beds	1927
16C	0	On Site	Filter Beds	1948
17C	0	On Site	Filter Beds	1955
18BJ	0	On Site	Unspecified Ground Workings	1968
19BI	0	On Site	Refuse Heap	1948
20D	0	On Site	Refuse Heap	1955
21AB	0	On Site	Railway Sidings	1968
22E	0	On Site	Railway Sidings	1948
23E	0	On Site	Railway Sidings	1927
24E	0	On Site	Railway Sidings	1891
25E	0	On Site	Railway Sidings	1908
26F	0	On Site	Railway Station	1927
27F	0	On Site	Railway Station	1908
28F	0	On Site	Railway Station	1891
29F	0	On Site	Railway Station	1948
30F	0	On Site	Railway Station	1955
31F	0	On Site	Railway Station	1968
32G	0	On Site	Bleaching Works	1955

6.3.2 Historical Tank Database

There are twenty-three (23no.) records of tank records within 250m of the site, fifteen of which are located onsite, an extract of the records onsite is given below;

ID	Distance (m)	Direction	Use	Date
197C	0	On Site	Unspecified Tank	1978
198C	0	On Site	Unspecified Tank	1992
199E	0	On Site	Unspecified Tank	1891
200E	0	On Site	Tanks	1992
201AS	0	On Site	Unspecified Tank	1938
202AS	0	On Site	Unspecified Tank	1910
203AS	0	On Site	Unspecified Tank	1929
204E	0	On Site	Tanks	1992
205E	0	On Site	Tanks	1978
206AT	0	On Site	Tanks	1992
207AT	0	On Site	Tanks	1978
208E	0	On Site	Tanks	1994
209E	0	On Site	Tanks	1994
210AT	0	On Site	Tanks	1994
211C	0	On Site	Unspecified Tank	1994

6.3.3 Historical Energy Features

There are fifteen (15no.) records in the historical energy database within 250m of the site, three of which are located onsite, an extract of the records onsite is given below;

ID	Distance (m)	Direction	Use	Date
222AW	0	On Site	Electricity Substation	1992
223AW	0	On Site	Electricity Substation	1978
224AW	0	On Site	Electricity Substation	1994

6.3.4 Historical Garage & Motor Vehicle Repair Database

There are seven (7no.) records in the historical garage & vehicle repair database within 250m of the site, an extract of the records onsite is given below;

ID	Distance (m)	Direction	Use	Date
260BG	41	W	Garage	1962
261BG	42	W	Garage	1992
262BG	42	W	Garage	1994
263BG	43	W	Garage	1978
264M	92	N	Depot and Destructor Works	1978
265BH	218	W	Garage	1992
266BH	218	W	Garage	1978

6.3.5 Potentially Infilled Lane

There are fifty-nine (59no.) records for potentially infilled land within 250m of the site, nineteen of which are located onsite, an extract of the records onsite is given below;

ID	Distance(m)	Direction	Use	Date
267BI	0	On Site	Refuse Heap	1948
268A	0	On Site	Refuse Heap	1927
269BJ	0	On Site	Refuse Heap	1955
270A	0	On Site	Unspecified Ground Workings	1968
271A	0	On Site	Refuse Heap	1955
272A	0	On Site	Refuse Heap	1948
273A	0	On Site	Refuse Heap	1968
274BK	0	On Site	Refuse Heap	1948
275BL	0	On Site	Unspecified Ground Workings	1908
276BM	0	On Site	Reservoir	1955
277BN	0	On Site	Reservoirs	1891
278BN	0	On Site	Reservoir	1948
279BN	0	On Site	Pond	1908
280BN	0	On Site	Reservoir	1927
281BN	0	On Site	Pond	1968
282C	0	On Site	Filter Beds	1955
283C	0	On Site	Filter Beds	1927
284AS	0	On Site	Ponds	1955
285C	0	On Site	Filter Beds	1948

6.4 Current Land Use

6.4.1 Current Industrial Sites

There forty (40no.) records for current industrial sites within 250m of the site, one of which is located onsite, an extract of the records within 100m are given below;

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Chimney	379361 416764	Greater Manchester, BL0	Chimneys	Industrial Features
2	21	W	East Lancashire Railway (Ramsbottom Station)	379206 416809	Greater Manchester, BL0	Railways (Heritage, Steam and Miniature)	Tourism
3	46	W	TNT Express	379253 416647	Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	Distribution and Haulage	Transport, Storage and Delivery
4A	47	W	Ramsbottom Metalwork	379253 416735	Empire Works, Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	Metalworkers Including Blacksmiths	Construction Services
5C	48	W	Station Garage	379262 416037	Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	Vehicle Repair, Testing and Servicing	Repair and Servicing
6A	50	W	Works	379250 416726	Greater Manchester, BL0	Unspecified Works Or Factories	Industrial Features
7A	56	W	Electricity Sub Station	379244 416737	Greater Manchester, BL0	Electrical Features	Infrastructure and Facilities
8B	56	NW	Booth King Partnership Ltd	379274 416887	Tollgate House 9c, Bridge Street, Ramsbottom, Bury, Greater Manchester, BL0 9AB	Civil Engineers	Engineering Services
9	57	NE	Electricity Sub Station	379560 416065	Greater Manchester, BL0	Electrical Features	Infrastructure and Facilities
10B	64	NW	Tank	379283 416902	Greater Manchester, BL0	Tanks (Generic)	Industrial Features
11	66	N	Depot	379465 416905	Greater Manchester, BL0	Container and Storage	Transport, Storage and Delivery
12C	67	W	Works	379241 416823	Greater Manchester, BL0	Unspecified Works Or Factories	Industrial Features
13	79	NW	Formulated Polymer Products Ltd	379267 416911	8, Garden Street, Ramsbottom, Bury, Greater Manchester, BL0 9BQ	Adhesives and Sealants	Industrial Products
14	81	W	Depot	379225 416492	Greater Manchester, BL0	Container and Storage	Transport, Storage and Delivery
15	89	N	15 M Waste & Recycling	379468 416928	Kenyon Street, Ramsbottom, Bury, Greater Manchester, BL0 0AB	Waste Storage, Processing and Disposal	Infrastructure and Facilities
16	95	W	Ramsbottom Paint & Bodyshop	379205 416504	Kay Brow Yard, Kay Brow, Ramsbottom, Bury, Greater Manchester, BL0 9AY	Vehicle Repair, Testing and Servicing	Repair and Servicing

6.4.2 Petrol & Fuel Sites

There two (2no.) records for petrol & fuel sites within 250m of the site, an extract of the record is given below;

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
41B	49	W	379260 416837	UNBRANDED	Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	No	Closed
42	498	N	379193 417329	ESSO	Stubbins Lane, Ramsbottom, Bury, Greater Manchester, BL0 0PU	No	Open

7 SUMMARY OF ENVIRONMENTAL SENSITIVITY

The following section is a review of the environmental sensitivity of the site as discussed in Sections 2 - 6. Significant potential risks are discussed in the following subsections and will then be evaluated as part of the Site Conceptual Model in Section 8.

Sources are defined as where pollution comes from, pathways are a route in which the pollution travels and receptors are anything affected by a pollutant. Further details on Source-Pathway-Receptor methodology can be found in Appendix D.

The table below focuses on significant site-specific sources, pathways and receptors. More 'generic' pathways and receptors (such as site end uses) will be covered as part of the initial Site Conceptual Model in Section 8.

7.1 Sources

Source	Distance/ Direction	Details	Significant Risk
Current Site Use – derelict	On Site	No significant sitewide contamination anticipated onsite from current land use, due it being derelict, although leaking IBCs were noted during brief walkover. No contaminative processes anticipated ongoing onsite.	Possible - Localised
Historic Site Use – Paper Mill & associated infrastructure	On Site	The site has been occupied by a paper mill for much of its known history and has gone through several phases of extension prior to it being demolished. Potential contamination includes PFAS, VOCs/SVOCs, heavy metals, PAH, TPH and asbestos. Potential biogenic ground gas source associated with demolition products and made ground on site. Possible redundant services in situ. Ground investigation and ground gas monitoring.	Yes
Surrounding Industrial Processes (Historical and Current)	Adjacent to Site	The site was set in a largely industrial setting with various works located to the north and west, these later became shops etc. Groundwater assumed to flow west to east across the site towards the Irwell. Possible contaminants from these historic uses include heavy metals, PAH, VOCs/SVOCs, TPHs and asbestos. Anticipated cohesive and granular strata across the site. Ground investigation and ground gas monitoring to confirm.	Possible

7.2 Pathways and Receptors

Pathways and Receptors	Distance/ Direction	Details	Significant Risk
Aquifers	Below Site	Potential for both cohesive and granular strata under the site. The site does not lie within a groundwater source protection zone and no potable water abstractions within 500m of site. Site history suggests contamination may be present.	Possible

8 INITIAL CONCEPTUAL SITE MODEL

For details on how the conceptual model is evaluated please refer to Appendix D.

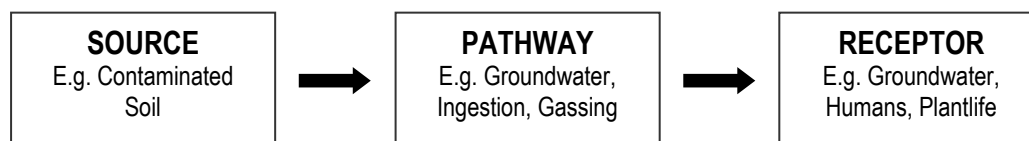
This section of the report aims to identify land which could potentially be affected by contamination, such that it could affect the value or re-use of the land, or such that mitigation would be required for certain proposed end uses of the land.

Potential contamination sources and environmentally sensitive receptors have been discussed in Section 7. Potentially significant risks are evaluated as part of the subsequent sub-sections.

8.1 Source-Pathway-Receptor Linkages

The risk assessment uses a 'Source-Pathway-Receptor' methodology for assessing whether a source of contamination could potentially lead to harmful consequences. This means that there needs to be a pollutant linkage from source to receptor for harm to be caused, this linkage consisting of a source of pollution; a pathway for the pollutant to move along; a receptor that is affected by the pollutant.

The current potential risks to site arising from various Source-Pathway-Receptor linkages are assessed below. A risk may be considered significant if all three of the stages are present and therefore providing a pollution linkage. The various sources, pathways and receptors are considered separately. The assessment is based on the future use, which is understood to be residential with home-grown produce.



Type of Contamination	Potential Sources	Potential Pathway	Potential Receptors	Pollution Linkage	Comment	Estimated Level of Risk
Ground Gas	Historical Land Use- On Site	Inhalation of Vapours	Construction/ Maintenance Workers	Potentially Active	Possible ground gas from deep made ground and areas of former industry. Ground investigation and ground gas monitoring to confirm. PPE to protect.	Low - Moderate
	Neighbouring Land Use Within 250m Of Site	Vapours Penetrating Unprotected Buildings	Future Site Users	Potentially Active	Possible ground gas from deep made ground and areas of former industry. Ground investigation and ground gas monitoring to confirm.	Moderate
Surface and Near Surface Contaminants Within Soils	Historical Land- Use On Site Neighbouring Land Use Within 250m Of Site	Ingestion, Inhalation, Dermal Contact	Current Site Users	Potentially Active	Potential for deep basements, foundations, pits and deep Made Ground. Potential determinants from historic site use and neighbouring land use comprise heavy metals, PFAS, VOCs/SVOCs, PAH's, TPH's and asbestos. Site is currently derelict. Ground investigation to confirm and target.	Low - Moderate
			Construction Workers	Potentially Active	Potential for deep basements, foundations, pits and deep Made Ground. Potential determinants from historic site use and neighbouring land use comprise heavy metals, PFAS, VOCs/SVOCs, PAH's, TPH's and asbestos. Ground investigation to confirm and target.	Moderate
			Future Site Users	Potentially Active	Potential for deep basements, foundations, pits and deep Made Ground. Potential determinants from historic site use and neighbouring land use comprise heavy metals, PFAS, VOCs/SVOCs, PAH's, TPH's and asbestos. Ground investigation to confirm and target.	Moderate
			Adjacent Land Users	Potentially Active	Surrounding area is residential and commercial. Historically industrial.	Low - Moderate
	Direct Contact	Structures	Plants	Potentially Active	Potential sulphates onsite could be a risk to structural foundations. Ground investigation to confirm.	Low – Moderate
				Potentially Active	Possible TPH, PAH, heavy metals and sulphates within the made ground demolition material and former industry on site/in immediate area.	Low – Moderate
Mobile Contaminants, Leachables e.g. from Pollution Sources Adjacent to Site/On Site	Historical Land- Use On Site	Leaching into Groundwater	Groundwater	Potentially Active	Potential for some migration due to anticipated cohesive and granular deposits.	Low
	Neighbouring Land Use Within 250m Of Site	Off-site Migration in Groundwater	Abstractions	Potentially Active	No current potable groundwater abstractions. Not in a Groundwater Source Protection Zone. Historic boreholes noted onsite.	Moderate
			Controlled Waters	Potentially Active	Surface water located on site, and adjacent to the eastern boundary. No water quality data for Irwell within GroundSure report.	Moderate
Organic and Inorganic Contaminants Within Soils / Groundwater	Historical Land- Use On Site Neighbouring Land Use Within 250m Of Site	Potable Water Supply Pipes	Utilities Workers	Potentially Active	Potential for lighter end hydrocarbon contamination including PAHs and TPHs. Ground investigation to confirm, then liaise with local water authority supplier.	Low – Moderate

8.2 Contamination Summary

In this qualitative risk assessment, a **Low / Moderate - Moderate** risk for ground gas and contamination exists across the site. Some remedial action may be necessary at the site, however, the likes of which cannot be confirmed until the geotechnical and contamination ground investigation has been completed.

8.3 Geotechnical Constraints

- Existing and redundant services across site.
- Potential tree heave as cohesive stratum anticipated (anticipated).
- Shallow groundwater.
- Depth of Made Ground / former foundations within the vicinity of former buildings and possible basements.
- Large buried structures.
- Culvert crosses site.
- Erosion of the riverbanks.
- Potential for deep saturated SILT deposits.
- Potential for coal workings in the south of the site.
- Former extraction wells onsite.

9 FIELDWORK

9.1 Fieldwork Objectives

The objectives of the intrusive ground investigation will be to:

- Clarify the 'Initial Contamination Conceptual Model'.
- Clarify the Initial Risk Assessment.
- Benchmark the contamination status of the site.
- Provide data for the design of any remedial works that may be required.
- Provide a geotechnical appraisal for the site.

9.2 Fieldwork Scope

The fieldwork was carried out between the 25th June – 2nd July 2019 and included the following:

- Eighteen (18 no.) machine excavated trial holes to between 0.60mbgl (TP16) and 3.50mbgl (TP10).
- Eleven (11no.) window sample boreholes to depths between 0.35mbgl (WS18) and 5.00mbgl.
 - A further three (3no.) locations were attempted but the concrete slabs were too robust to be cored.
- Four (4no.) rotary boreholes drilled to depths between 30mbgl (RO1) and 38mbgl (RO4).
- Six (6no.) ground gas monitoring visits over a period of at least three months with varying barometric pressures.
- Chemical analysis of forty-seven (47no.) samples.
- Analysis of forty-seven (47no.) samples for asbestos screening, with fifteen (15no.) samples for quantification.
- Analysis of three (3no.) water samples taken from WS1, WS8 and WS16.
- Analysis of four (4no.) surface water samples from the River Irwell and the onsite culverted stream.
- Collection and analysis of three (3no.) soil samples for geotechnical analysis.

The exploratory hole positions were selected and set out by Betts Geo Environmental Ltd (BGE) as shown on the Exploratory Hole Location Plan in Appendix B.

Surface water sampling locations were specified by Ecclestone Homes.

Services are present onsite, and are known to cross areas of planned investigation, however, the majority of services are located within the roads and footpaths. Prior to any intrusive works, each location was checked for services using a cable avoidance tool (CAT) and review of statutory service plans.

Rotary boreholes were targeted to the south of the site where coal mining was thought to be present.

Access was made via a gate on the small lane leading to the sports clubs. No access was allowed within the 60m exclusion zone for heavy plant (JCB & 13T excavator).

A further site investigation was carried out on 12th and 13th May 2022 and consisted of the following:

9 No. trial pits (TP101 – TP109) to 4.0 m bgl

1 No. trial trench (TT101) to 1.4 m bgl

Chemical analysis of 2 No. samples (TP102 @ 1 m bgl and TP105 @ 1.5 m bgl)

Asbestos analysis of 2 No. samples (TP102 @ 1 m bgl and TP105 @ 1.5 m bgl)

Collection and analysis of two soil samples for Atterberg testing (TT101 @ 0.8 m bgl and TP102 @ 2.0 m bgl)

Collection of 3 No. bulk samples for Particle Size Distribution (PSD) testing

The purpose of this investigation was to determine the materials that were below the concrete slabs and how thick the concrete slabs are.

Following communications with the Environment Agency in February 2024, it was highlighted that *“Per- and Polyfluoroalkyl Substances (PFAS) are recognised as being connected with the former industrial activities on site and pose a significant risk to controlled waters and therefore should be added to the site investigation testing regime.”*

Betts Geo have therefore undertaken additional water sampling & testing on site to address these concerns. The site work consisted of the following:

- Three (3 No) sampling visits in March and April 2024
- Eight (8 No) samples collected on each visit (twenty four in total) – twelve (12 No) samples taken from the four existing wells on site – WS1, WS7, WS8 & WS16 and twelve (12 No) samples taken from the onsite/adjacent watercourse – three (3 No) upstream, six (6 No) midstream and three (3 No) downstream.

An extract showing the sample locations in yellow can be seen overleaf;



10 GROUND CONDITIONS

10.1 General

The exploratory holes were logged by an Engineer in general accordance with the recommendations of BS5930:1999+A2:2010. Detailed descriptions, together with relevant comments, are given in the Exploratory Hole Logs included in Appendix C.

Ground conditions typically consisted of a CONCRETE slab with reinforcement and a damp-proof course over either a very sandy GRAVEL or LIMESTONE or SANDSTONE, overlying a further CONCRETE slab and subbase. Some locations exhibited areas of possible reworked SAND and / or SILT.

The main site area was almost entirely covered by concrete slabs, and a number of locations showed secondary slabs at depth.

Natural strata consisted of both granular and cohesive strata, as well as shale bedrock at depth.

Excavation in TP16 showed significant amounts of water and potential contamination. Materials excavated were similar to those expected from the buildings strip and demolition (SAND to BOULDER graded materials).

The full logs should be consulted in conjunction with this summary.

10.2 Ground Conditions Summary

Strata	Description	Thickness (m)	
		Top	Base
TOPSOIL	Maintained grass over brown clayey gravelly occasionally cobbly fine to coarse SAND. Gravel and cobbles are fine to coarse angular to subangular of rootlets, brick, concrete, metal, timber, paper and textiles.	0.00	0.20
CONCRETE	Reinforced concrete slab with DPC. Often noted as 200mm thick at varying depths across the site. In-situ slabs occasionally noted as +600mm thick.	0.00	1.65
MADE GROUND - Granular	Made ground granular materials consisted largely of either a subbase such as limestone or sandstone gravel or a demolition type waste. Demolition wastes comprised mixed brick, concrete and sandstone, as well as metals, textile, plastic, papers, ash and glass. Granular made ground was prevalent across the site from shallow depth.	0.00	2.85
MADE GROUND - Cohesive	Cohesive made ground as identified as either reworked CLAY or SILT and was occasionally noted as having hydrocarbon or organic odours.	0.90	4.50
NATURAL - Cohesive	Cohesive strata were recorded as either CLAY and SILT and were often sandy. CLAY was noted as often having a significant granular content which became coarse with depth.	0.60	23.00
NATURAL -	Natural granular deposits were noted to be SAND, GRAVEL	1.35	9.50

Granular	and SANDS & GRAVELS. Coarse grained granular materials were usually recorded at a greater depth when compared to SAND.		
Bedrock	Dark grey shale with occasional sandstone bands	23.00	38.00

10.3 Visual and Olfactory Contamination

Significant visual and olfactory contamination was identified in a number of locations, as well as significant depths of Made Ground mentioned above. Notes on observed contamination are as detailed in the table below;

Exploratory Hole	Depth (mbgl)	Strata	Remark
TP1	1.00	MADE GROUND	Hydrocarbon odour
TP2	1.00		
TP5	2.25	Possible MADE GROUND	Slight organic odour
TP8	1.20	MADE GROUND	Black water with sheen and strong hydrocarbon odour.
TP16	0.60		Strong hydrocarbon and 'waste' type odour
WS1	2.75		Slight hydrocarbon odour
WS16	1.95		Hydrocarbon odour
	2.20		Slight organic odour
TP101	0.30	MADE GROUND	Hydrocarbon odour
TP102	0.25	MADE GROUND	
TP105	1.20	MADE GROUND	Hydrocarbon staining and odour on base of concrete

The area in the south west corner identified very different composition of Made Ground in the form of organics / textile / paper waste / plastics within a predominantly granular matrix with boulders of concrete. Processing of this material under a mobile plant licence is anticipated with control of groundwater and groundwater treatment potentially required. This area is shown below:



10.4 Obstructions

A number of the slabs could not be cored and could not be broken out using a 13tonne machine, it is thought that these may be machine bases from the former paper mill.

The large hard slabs were noted around TP11, TP18, WS4, WS5 and WS19. It is likely that more of these slabs will be present at the site.

The slabs were broken through during the investigation in May 2022.

10.5 Groundwater – Fieldwork

Exploratory Hole	Depth (mbgl)	Strata	Remark
TP2	1.70	MADE GROUND:	Seepage
TP4	2.65	GRAVEL	Water Strike
TP5	2.25	MADE GROUND	
TP8	2.10		
TP10	1.75	MG / SILT	
	3.50		Water Strike
TP11	1.35 – 3.00	SAND	Slightly Damp
TP13	1.80	SILT	Damp
TP16	0.60	MADE GROUND	Standing Water – with sheen and hydrocarbon odour
TP18	1.30	SILT	Slightly Damp
WS1	2.75	MADE GROUND	Wet from 2.75mbgl
WS7	3.70 – 3.85	SAND	Water Strike
WS8	4.00	SAND	Water Strike
WS9	2.60	MADE GROUND	Water Strike
WS15	0.90	MADE GROUND	Standing Water
WS16	3.00	SILT	Water Strike
TP103	1.15	MADE GROUND	Water entering pit from broken pipe, movement across top of silt.
TP104	0.9	MADE GROUND	700mm culvert noted, standing water, no flow noted
TP106	2.2	SILT	Clay pipe at 2.20mbgl - medium inflow reducing.
TP107	2.05	SILT	Clay pipe noted at 2.05mbgl, medium inflow reducing.
TP108	1.85 and 2.05	MADE GROUND & SILT	Water seepage at 1.85mbgl, likely linked to broken pipe.
TP109	2.3	SILT	Clay pipe noted at 2.30mbgl with low-medium inflow, reducing.
TT101	1.20	MADE GROUND	Unrecorded water supply pipe struck at around 1.20mbgl. Fast inflow, not slowing. Dark brown to light brown to clear flow.

10.6 Groundwater – Post-Fieldwork Monitoring

The table below indicates groundwater encountered during the monitoring post fieldwork (6/6 visits have been undertaken);

Exploratory Hole	Depth to Water (mbgl)	Depth to Base of Well (mbgl)
WS1	2.73 - 3.13	4.05 - 4.15
WS7	2.9 - 3.38	4.10 - 4.15
WS8	1.75 - 1.93	3.30 - 3.50
WS16	0.8 - 1.15	2.80 - 2.85

11 COAL MINING INVESTIGATION

The site lies at the base of the Rossendale Coalfield, part of the Carboniferous Pennine Lower Coal Measures of Namurian age. The Geological Survey shows a possible outcrop of the thin Holcombe Brook Coal across the southern part of the site dipping north and overlain by the thick drift deposits of an infilled glacial meltwater channel.

There are no relevant collieries and shaft sections in Ramsbottom and evidence of the presence of the Holcombe Brook Mine is derived from hillside exposures on the valley sides east and west of the site. Evidence for shales possibly lying above the seam was encountered in water wells bored for the former paper works which occupied the site.

The Holcombe Brook Coal is a variable and impersistent coal seam of poor quality and interbedded with black shales. The seam was occasionally mined on the hills above Rossendale where it was occasionally worked at outcrop, and has a thickness thought to be up to 300mm. There are no shaft sections showing the seam and no deeper coal seams of workable thickness in this part of Lancashire. The Coal Authority have no records of any mineshafts on or within 20m of the site. Coal mining in Rossendale is first recorded in 1612 at Gambleside on the eastern slope of the valley 3km north of the site where the Upper and Lower Mountain Mines outcrop. Four (4no.) rotary holes were sunk to depths between 30mbgl (RO1) and 38mbgl (RO4) and was undertaken with a Coal Authority Permit.

Rockhead is weathered and comprised of dark grey shales and sandstones at depths greater than 20m. Drilling did not show any workings or seams of coal. It is therefore deemed that the site is at Low Risk from Coal Mining.

12 LABORATORY TESTING

12.1 General

An assessment of potential determinants associated with the current/former site uses has been undertaken. Determinants originating from the current/former site uses may include metals, polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPHs) and asbestos. A general suite of testing should detect most potential contaminants.

Test	No. of Tests	Description
pH Values	52	Determination of pH (using Cyberscan pH meter).
Sulphate - Soluble 2:1 Extract	52	Dionex.
Arsenic, Cadmium, Chromium VI, Chromium III, Total Chromium, Lead, Mercury, Selenium, Copper, Nickel, Complex and Free Cyanide and Zinc.	52	Soil samples were analysed in accordance with UKAS/MCERTS standards Inductively coupled plasma atomic emission spectroscopy (ICP-OES)
Speciated Polycyclic Aromatic Hydrocarbons (PAH),	49	Determination of Polycyclic Aromatic Hydrocarbons by GC-MS. End/end extraction using DCM on as received sample. In house method modified USEPA 8270. Include coronene if required.
TPH CWG	49	TPH CWG (Aliphatics C5-6,>6-8,>8-10,>10-12,>12-16,>16-21,>2-35) (aromatics >C5-7,>7-8,>8-10,>10-12,>12-16,>16-21,>21-35) C5-8 fractions by Headspace GC-MS (003S). C8-35 fractions on as received sample extracted with hexane/acetone, aliphatic/aromatic splits run by GC-FID (005S), banded as listed above.
GRO/BTEX/MTBE by GC-FID (C5-10; C10-C12)	49	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12).
Organic Matter	49	Determination of Organic Matter by combustion.
Asbestos Screen	49	Visual Screening for Fibres.
Atterberg	5	BS1377 Part 2. 1990, 4.3,5.3,5.4
Moisture Content	5	BS1377 Part 2. 1990, 3.2
Particle Size Distribution (PSD)	2	Wet Sieving Method

13 CONTAMINATION ASSESSMENT

13.1 General

Contaminants of concern recorded at concentrations above relevant screening values are summarised below. For ease of description, the identification of contaminant sources and possible re-use of material, Topsoil, Made Ground, Natural Strata and Groundwater will be dealt with in separate sub-headings in this section of the report where required.

Our assessment is based on the following assumptions:

- The proposed site end use is of a high-risk rating (residential housing with gardens). For analysis purposes, 'residential with home grown produce' is deemed most appropriate end use.
- The superficial Alluvial deposits are classed as a Secondary A Aquifer (Moderate Permeability).
- The bedrock deposits of the Mudstone & Sandstone are classed as a Secondary A Aquifer (Moderate Permeability).
- It is deemed that some statistical analysis is appropriate. Where sample data numbers are low and/or targeted, each determinant result is reviewed further as an individual result as opposed to an average across the site.
- Site history has indicated a **Low - Moderate** risk of contamination and ground gas.
- Statistical analysis of the chemical test results has been undertaken in general accordance with Environment Agency 2009 SGV Guidance and AtRisk 2017 using the combined assessment criterion given by CLEA (Note: all SSVs for EA derivation are for a SOM of 6%, in line with Environment Agency Report SC050021/SR4 – this figure is deemed representative as an average value for a sandy loam soil). AtRisk 2017 are used to the nearest SOM percentage deemed appropriate.
- Potential free product was identified in TP16.
- Following the withdrawal of CLR 7-10 Guidance documents by the Environment Agency, statistical analysis has been undertaken in accordance with the CIEH/CL:AIRE 'Guidance on Comparing Soil Contamination Data with a Critical Concentration' (May 2008). As such, the use of the mean value test alone is not considered.

A full risk assessment is detailed within Section 13 of this report.

13.2 Soils Contamination Summary

13.2.1 Made Ground

Made Ground was encountered across site and comprised various heterogenous materials such as brick, concrete, metal and plastic etc and a sandy topsoil. Details of the exceedances are provided in the table below:

Location	Depth (mbgl)	Determinant	Soil Organic Matter Content (SOM) (%)	Observed Concentration (mg/kg)	Threshold Concentration (mg/kg)
TP1	0.10	Lead Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene	7	290 16 15 17 2.4	200 8.54 2.05 9.86 1
	1.00	Lead Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Naphthalene Chrysotile & Amosite	5.3	280 12 10 13 1.4 1.3 <0.001 %	200 4.52 1.5 7.72 0.838 0.829 <0.001 %
TP2	0.50	Lead Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Naphthalene Chrysotile & Amosite	5.2	260 9.6 9.3 13 1.5 1 <0.001 %	200 4.52 1.5 7.72 0.838 0.829 <0.001 %
TP3	0.15	Lead Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Naphthalene Chrysotile & Amosite	5.9	250 25 23 28 3 9.7 <0.001 %	200 4.52 1.51 7.72 0.838 0.829 <0.001 %
	1.50	Lead TPH C16-C21 Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Indeno(123-cd pyrene) Naphthalene Chrysotile & Amosite	4.4	220 400 25 23 28 3 9.7 3.5 <0.001 %	200 319 4.52 1.5 7.72 0.838 7.31 0.829 <0.001 %
TP4	0.50	Chrysotile	0.8	<0.001 %	<0.001 %
TP5	1.70	Arsenic Chrysotile	6.2	46 <0.001 %	37 <0.001 %
TP6	0.50	Lead	7.8	970	200

TP9	0.20	Lead Chrysotile	4.4	430 0.001 %	200 <0.001 %
TP10	0.50	Chrysotile	2.7	<0.001 %	<0.001 %
TP11	0.50	Chrysotile	1.1	<0.001 %	<0.001 %
TP12	0.45	Chrysotile	2.6	0.095	<0.001 %
TP14	0.50	Chrysotile & Amosite	2.9	<0.001 %	<0.001 %
TP15	1.00	Chrysotile	3.7	<0.001 %	<0.001 %
TP16	0.60	Chrysotile	4.5	0.002 %	<0.001 %
TP17	0.60	Amosite	4.9	<0.001 %	<0.001 %
TP18	1.00	Lead	4.1	240	200
WS1	0.55	Arsenic Lead Chrysotile	6.3	67 670 0.002	37 200 <0.001 %
WS7	0.95	Arsenic Lead Benzo(a)pyrene Naphthalene	2.4	43 1100 2.8 0.94	37 200 1.51 0.829
WS8	0.50	Benzo(a)anthracene Benzo(a)pyrene Naphthalene	4.6	6.5 4.9 0.89	4.52 1.51 0.826
WS11	0.50	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene	8.2	8.1 7.2 8.3	8.54 2.05 9.86
WS12	0.35	Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Dibenzo(ah)anthracene Naphthalene	2.9	8.5 7.2 7.8 0.88 13	4.52 1.5 7.72 0.838 0.829
WS16	0.75	Arsenic Lead	2.2	140 470	37 200
	2.00	Arsenic Lead	5	160 1100	37 200

13.2.2 Possible Made Ground / Natural

Possible MADE GROUND / natural strata was recorded in a number of locations and was commonly observed as a soft greyish brown / grey and black SILT.

Location	Depth (mbgl)	Determinant	Soil Organic Matter Content (%)	Observed Concentration (mg/kg)	Threshold Concentration (mg/kg)
TP5	2.25	Arsenic Benzo(a)pyrene	5.1	53 1.8	37 1.51
WS1	2.75	Lead	7.1	200	200

13.2.3 Naphthalene and VOCs / SVOCs

Naphthalene was recorded above the most stringent 1% SOM thresholds in a number of locations and may pose a risk to end users through volatilisation and ingress into the new structures. The list below highlights areas potentially at risk;

Location	Depth (mbgl)	Observed Concentration (mg/kg)	1% SOM Threshold Concentration (mg/kg)
TP1	0.10	1.1	0.829
	1.00	1.3	
TP2	0.50	1	
TP3	0.15	3.5	
	1.50	8.6	
TP5	1.00	0.84	
WS1	2.75	5.3	
WS7	0.95	0.94	
WS8	0.50	0.89	
WS11	0.50	7.7	
WS12	0.35	13	

Further to the above, positive detections of VOCs / SVOCs have also been observed in the locations detailed below;

Location	Depth (mbgl)	Determinant	Observed Concentration (mg/kg)	1% SOM AtRisk Threshold Concentration (mg/kg)
VOCs				
WS1	2.75	Ethylbenzene	0.001	-
		p & m-Xylene	0.015	-
		o-Xylene	0.011	-
		1,3,5-Trimethylbenzene	0.001	-
		1,2,4-Trimethylbenzene	0.037	-
SVOCs				
TP1	1.00	2-Methylnaphthalene	1.20	-
		Dibenzofuran	1.60	-
		Carbazole	1.50	-
		Anthraquinone	0.80	-
TP3	1.50	2-Methylnaphthalene	6.30	-
		Dibenzofuran	6.50	-
		Carbazole	6.00	-
		Anthraquinone	1.50	-
TP5	1.70	2-Methylnaphthalene	0.80	-
		Dibenzofuran	1.10	-
		Carbazole	0.80	-
		Anthraquinone	0.80	-
WS1	2.75	2-Methylnaphthalene	3.30	-
		Dibenzofuran	1.60	-
		Carbazole	1.00	-
		Anthraquinone	0.50	-
WS7	0.95	4-Chloroaniline	0.40	-
		2-Methylnaphthalene	0.70	-
		Dibenzofuran	0.80	-
		Carbazole	0.80	-
		Anthraquinone	0.60	-

- No current guidance using AtRisk Thresholds

13.2.4 Natural Strata

Location	Depth (mbgl)	Determinant	Soil Organic Matter Content (%)	Observed Concentration (mg/kg)	Threshold Concentration (mg/kg)
WS10	1.00	Benzo(a)anthracene	4.2	20	4.52
		Benzo(a)pyrene		14	1.5
		Benzo(b)fluoranthene		12	7.72
		Dibenzo(ah)anthracene		1.5	0.838

13.2.5 Asbestos

Asbestos, of varying types, was detected in a number of locations as detailed in section 13.2.1, with quantification only showing four locations with concentrations above detection limits (0.001%), as shown below;

Location	Depth (mbgl)	Asbestos Type	Observed Concentration (%)
TP9	0.20	Chrysotile	0.001
TP12	0.45		0.095
TP16	0.60		0.002
WS1	0.55		0.002

13.3 Controlled Waters Contamination

Water samples were collected from boreholes onsite, the culvert and the River Irwell, as stated below;

- Samples of groundwater were collected from WS1, WS8 and WS16.
- Samples from the River Irwell were labelled as US1 (Upstream) and DS1 (Downstream).
- Samples from the Culvert were labelled as MS1, MS2 and MS3 (Midstream).

Analysis of the water results has shown that the majority of determinants were below detection. However, there were several exceedances, as detailed in the table below;

Location	Determinant	Observed Concentration (µg/l)	Threshold Freshwater Surface (FS) & General Quality of Groundwater (GQGW) (µg/l)
WS1	Cyanide Arsenic	14	5 (FS: short-term value)
		9.35	7.5 (GQGW)
MS1b	Zinc	14	5 (FS: short-term value)
DS1	Zinc	12 (visit 1) 11 (visit 2)	10.9 (FS: long-term value)
US1 MS1 MS1b MS2 MS3	Copper	6.2 – 12 5.6 – 6.8 10 3.4 – 6.1 1	1* (FS: long-term value)

Location	Determinant	Observed Concentration (µg/l)	Threshold Freshwater Surface (FS) & General Quality of Groundwater (GQGW) (µg/l)
DS1	Copper	6 - 11	1* (FS: long-term value)

* Dependant on bioavailability

Following concerns raised by the EA, additional water sampling was undertaken in early 2024 with the targeted samples being tested for 49 specific PFAS compounds in total.

The published guidance values for PFAS are largely restricted to PFOS, with limited UK guidance values (EQS for total PFOS and DWI tiered action criteria).

Ecological soil screening values (SSV's) for PFOS and PFOA have been published by the EA at 0.014 mg/kg and 0.022 mg/kg respectively based on secondary poisoning to birds and mammals, but mainly used for assessing material/ sludge to land in an agricultural settings. However, currently there are no SSV's within the UK to assess the risk of PFAS to human health.

The DWI have published guidance for individual PFAS compounds in drinking water, outlining a 0.1 µg/l threshold for 47 compounds likely to be equivalent to a future DWS. Important to note that this is a threshold for any PFAS, the 47 is just the list of compounds that the water companies are expected to analyse for.

The EU surface water EQS was set to 0.00065 µg/l for PFOS in inland surface water and applied in 2008.

CL:AIRE have recently published (June 2024) interim Category 4 Screening Levels (C4SLs) for four perfluoroalkyl substances – PFOA, PFNA, PFHxS and PFOS. These levels are shown in the table below however these limits are for soils and not waters therefore cannot be applied to this report.

Table 4.1: Interim C4SLs for PFOA, PFOS, PFHxS and PFNA.

Land-use	Interim C4SLs (mg.kg ⁻¹) (see notes below)			
	PFOA	PFOS	PFHxS	PFNA
Residential with consumption of homegrown produce	0.0076	0.013	0.0081	0.0073
Residential without consumption of homegrown produce	0.041	0.041	0.041	0.041
Allotments	0.0014	0.0027	0.0015	0.0013
Commercial	0.60	0.60	0.60	0.60
Public Open Space (residential)	0.079	0.079	0.079	0.079
Public Open Space (park)	0.17	0.17	0.17	0.17

N.B. These C4SLs are to be used with a Hazard Index approach (see Section 4.2). These C4SLs are based on chronic risk only. For further discussion of acute risks and other factors that should be considered when using these C4SL see Section 4.2 below.

Betts Geo sent the water samples to a UKAS accredited laboratory and tested each water sample for PFAS (PFOS PFOA) totals which tests 49 specific PFAS compounds in total.

All of the results for each individual compound came back below the DWI guidance of 0.1ug/l on visit 1 & 2. All the results for visit 3 came back below the DWI guidance of 0.1ug/l apart from one occurrence of 6:2 FTSA; 6:2FTS (w) which had a value of 0.143ug/l.

The highest PFAS compound values encountered during each visit are given below:

- Visit 1 – PFOS (w) value of 0.0741ug/l (74.1ng/l) (WS7)
- Visit 2 – PFOS (w) value of 0.0821ug/l (82.1ng/l) (WS7)
- Visit 3 – PFOS (w) value of 0.0892ug/l (89.2ng/l) (WS7)

The chemical results can be seen in the appendix. Please note the results from the lab are in ng/l and the guidance value is in ug/l therefore caution must be applied when interpreting these results.

Interpretation of the PFAS results can be seen in Section 14.2 below.

14 ENVIRONMENTAL RISK ASSESSMENT

14.1 General

This section assesses likely risks to the identified receptors, arising from potential contamination sources. It provides a final qualitative assessment of the risks involved, indicating whether (where appropriate) any immediate action is required to mitigate certain risks.

In assessing the risk qualitatively, it is appropriate to use the methods outlined in the CIRIA document C552, "Contaminated Land Risk Assessment a Guide to Good Practice". It uses a classification of risk based on the magnitude of the potential consequence or severity of risk occurring, compared with the magnitude of the probability or likelihood of the risk occurring. These are indicated on the attached tables in Appendix J.

The superficial deposits are classed as Secondary Undifferentiated Aquifer (Low Permeability) and the Bedrock deposits are classed as a Secondary A Aquifer (Moderate Permeability). With respect to human health, the proposed end use (residential with home grown produce) is of high sensitivity. Therefore, the site's environmental setting is considered to be of a **Moderate to High** environmental sensitivity. Transient risks to construction workers can be addressed by the adoption of appropriate health and safety measures (see Section 15.2), therefore, the primary residual risks that require assessment are Site End Users. The following sections are split into soils and groundwater for clarity.

14.2 Assessment of Contamination Analytical Results

Soils

A number of exceedances have been observed across the site within Made Ground strata, these are associated with various PAHs, TPH C16-C21, Lead, Arsenic and asbestos. PAHs include the SVOC, Naphthalene. Further to these, a number of VOCs / SVOCs have also been observed above detection limits.

The Made Ground exceedances have been recorded at varying depths between 0.10mbgl and 2.00mbgl. With deeper exceedances at 2.25mbgl (TP5) and 2.75mbgl (WS1), within potential Made Ground strata.

Based on the locations of TP5 and WS1, in relation to the formerly existing reservoirs, it is now considered likely that these are Made Ground samples from backfill / basal reservoir materials. As shown in the sketch below;



Occurrences of Dibenzo(ah)anthracene and Naphthalene are hotspots and statistically significant, and will therefore require further works, such as delineation, to mitigate the risk they pose to human health.

Double Ratio Plot analysis identified the source of the elevated benzo(a)pyrene in TP7 and TP8 to be coal derived. As the source is coal derived, the values may be compared against the DEFRA C4SL 2017 value of 4.95mg/kg due to a reduced bioavailability. Given that the results are below this threshold, minimal risk is anticipated from this source and it is deemed below residential thresholds in TP7 and TP8. The remaining benzo(a)pyrene exceedances are shown to likely sourced from Coal Tar / Creosote and cannot be discounted on this basis.

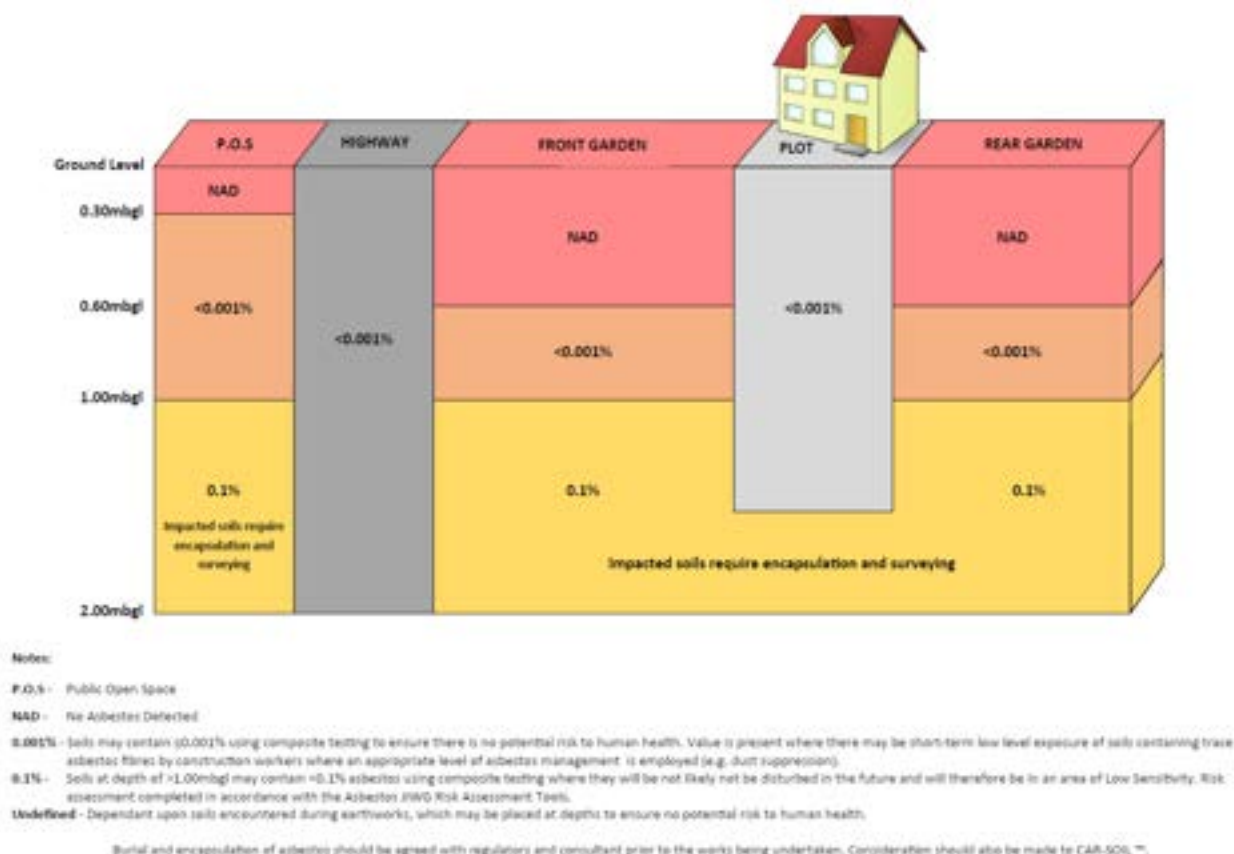
Statistical analysis of the Arsenic exceedances has shown that they are statistically significant and should be treated as hotspots, where they exceed the threshold value of 37mg/kg. Similarly, the occurrences of Lead are also considered significant and will require further works or mitigation in locations where they exceed 200mg/kg.

Asbestos (Amosite and Chrysotile) was identified in a number of locations with quantification testing recording concentrations within soils ranging from 0.001% (TP9) to 0.095% (TP12).

The presence of asbestos within the Made Ground is likely due to poorly managed historical demolition which the fill is largely comprised of and the practice of incineration of waste materials without prior screening. ICRCL Guidance Note 64/85 "Asbestos on Contaminated Sites" (1990) is still the most current guidance for asbestos in soil and suggests asbestos fibres should be <0.001% w/w within soil. Dutch and Australian Guidance also suggest the use of a threshold of 0.001% as a threshold for asbestos in soil. The Dutch Guidelines consider the risk from Chrysotile to be ten times less than Amphibole asbestos but the HSE, WHO, the Australian DoH and the USEPA have chosen not to distinguish between different asbestos fibre types.

The concentration (0.095%) of Chrysotile asbestos within the ash fill in TP12 at 0.45m potentially poses a significant risk to end users and construction workers, if the material is exposed and soil and asbestos fibres allowed to become airborne. Groundworks should follow CAR-SOIL™ Guidance. Given that the material used to back fill comprises a high percentage of demolition waste, the presence of further asbestos is likely. Detections of asbestos are also likely to occur the demolition waste stockpiles that exist onsite.

Below is a sketch showing levels of asbestos concentrations and locations where they are commonly accepted / unacceptable. This should be confirmed with the Local Authority prior to implementation, and should therefore only be used as a guide;



In general, widespread contamination was observed across the site, in conjunction with several hotspots.

Further investigation into the stockpiles is advised. Movement of these materials should also be carried out using correct dampening down methods.

A minimum thickness of 600mm of debris-free soil and no dig layer is required within garden areas and landscaped areas as a capping system to mitigate residual risk to site end users from the asbestos and remaining determinants. It is also anticipated that the secondary slabs will be containing further contamination not observed during the investigation due to plant access limitations within the exclusion zone. The capping is to be made up of imported subsoil and topsoil.

Several areas of hydrocarbon odours were noted across the site during investigation; however, these were not substantiated in testing. As a result, a hydrocarbon vapour resistant membrane may be required across the site to mitigate nuisance risk – this is to be reviewed following the site strip.

Groundwater and Aquifer Risk

Various exceedances have been noted within surface and groundwater samples. As summarised below;

Location	Determinant	Observed Concentration (µg/l)	Threshold Freshwater Surface (FS) & General Quality of Groundwater (GQGW) (µg/l)
WS1	Cyanide Arsenic	14 9.35	5 (FS: short-term value) 7.5 (GQGW)
MS1b	Zinc	14	5 (FS: short-term value)
DS1	Zinc	12 (visit 1) 11 (visit 2)	10.9 (FS: long-term value)
US1 MS1 MS1b MS2 MS3	Copper	6.2 – 12 5.6 – 6.8 10 3.4 – 6.1 1	1* (FS: long-term value)
DS1	Copper	6 - 11	1* (FS: long-term value)

* Dependant on bioavailability

Exceedances for Copper have been noted in all holes. There is little to no variation between upstream and downstream samples, so the source is likely located upstream of the site. No elevated levels of copper were identified on site within the soils suggesting the source is not on site.

The water sampled in WS1 are thought to be perched waters within the made ground strata it is therefore not considered representative of true groundwater at the site. Based on site history, the types of contamination and levels observed are considered typical of a site such as this. Downstream and midstream sampling has not showed correlating results, so the onsite perched waters are not considered to be in significant continuity with the River Irwell.

The downstream and midstream samples show a minor Zinc exceedance against the long-term mean threshold. On the basis, that this is a short sampling period with a minor exceedance, continued monitoring is likely to show mean concentrations below the threshold. No elevated levels of zinc were identified on site within the soils suggesting the source is not on site.

No significant risks to sensitive water abstractions/controlled waters are anticipated due to the following: no groundwater abstractions within 500m of site, no significant link between onsite and River Irwell chemical concentrations.

The risk to groundwaters / aquifers is therefore deemed as Low.

INTERPRETATION OF PFAS RESULTS

Levels of PFOS (w) were found to be elevated in WS7 when compared against the EU Surface EQS that was set to 0.00065ug/l. It is however important to note that WS7 contained groundwater not surface water, and therefore this guidance value may not be the most appropriate guidance value to use. WS7 is also located adjacent to the MS1b surface water sample location, proving that there is no active migration pathway present from the site to the surface water.

The vast majority of the 49 PFAS tested compounds (including PFOS (w)) are below the DWI guidance of

0.1ug/l (deemed more appropriate guidance value given the site setting).

One elevated occurrence of 6:2 FTSA; 6:2FTS (w) did however, come back above the DWI guidance value of 0.1ug/l - value of 0.143ug/l in DS1 on visit 3. DS1 is located approximately 250m from the former industrial area of site, therefore it is unlikely that this elevation is coming from site else it would have been picked up in MS1/MS1b sample location.

6:2 fluorotelomer sulfonate (6:2 FTS) has been used as a replacement for legacy per- and polyfluoroalkyl substances (PFAS). A scientific study (available at: [https://pubmed.ncbi.nlm.nih.gov/36629485/#:~:text=6%3A2%20fluorotelomer%20sulfonate%20\(6,with%20these%20sensitive%20life%20stages.\)](https://pubmed.ncbi.nlm.nih.gov/36629485/#:~:text=6%3A2%20fluorotelomer%20sulfonate%20(6,with%20these%20sensitive%20life%20stages.))) has characterized 6:2 FTS as potentially being less toxic than other PFAS however, no guidance specific to this determinant is currently available.

Based on the level of 6:2 FTSA; 6:2FTS (w) being only slightly above the DWI guidance value of 0.1ug/l and the fact 6:2 FTSA; 6:2FTS (w) has been identified as potentially been less toxic than other PFAS determinants, the risk of this potential contaminant of concern on site is deemed low. It is however important to note that this assessment has been based on worldwide guidance on PFAS substances as currently there are no SSV's within the UK.

It is important to note that based on the PFAS sampling to date, PFAS is not anticipated to be a significant risk in the historic landfill area given the PFAS concentrations found in the adjacent MS3 sampling location falling below all available guidance. PFAS may be contained in the area surrounding WS7 (as levels were slightly elevated against surface water guidance but **not against DWI guidance** – note this sample was taken from groundwater not surface water therefore the surface water guidance levels isn't deemed appropriate). From the results of the testing, it is evident that this determinant is not leaching into the underlying aquifer or nearest surface water course.

15 GROUND GAS ASSESSMENT

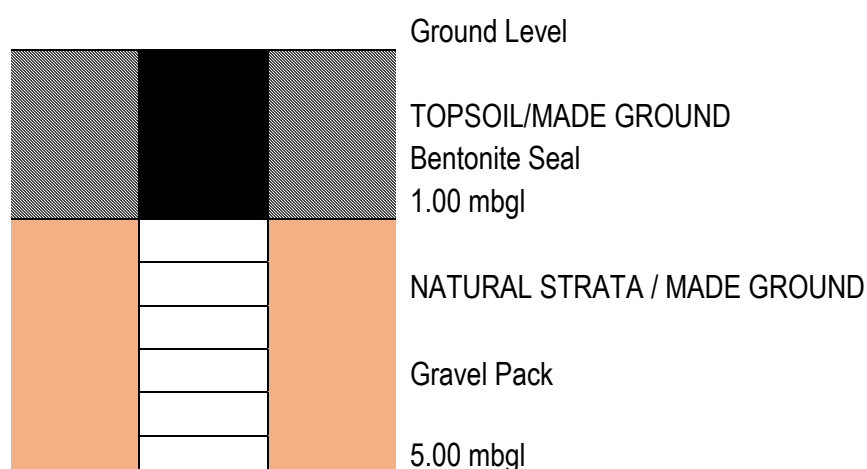
15.1 Ground Gas Requirements – Radon

The EnviroCheck data states that the site is within a low probability radon area (1-3% of properties above the action level).

15.2 Ground Gas Assessment

15.2.1 Ground Gas Boreholes Installations

The four (4 No.) boreholes were all installed up to 5.00 mbgl with 1.00 m of plain pipe and between 4.0 m of slotted pipe. A typical installation is shown below;



15.2.2 Summary of Results

Six out of six (6/6) ground gas visits have been undertaken, and gas monitoring is now completed, and the results are summarised below (see Appendix E for full details).

Location	Peak Gas Flow (l/h)	Atmospheric Pressure Range (mb)		Peak CH ₄ (%)	Peak CO ₂ (%)	Minimum O ₂ (%)	Gas Screening Value (GSV) (l/h)	
		Min	Max				CH ₄	CO ₂
WS1	<0.1	985	1006	0.10	4.30	16.70	0.0001	0.0043
WS7	0.1	985	1006	0.10	3.60	14.10	0.0001	0.0036
WS8	0.1	985	1006	0.10	9.70	14.10	0.0001	0.0097
WS16	0.1	985	1006	0.10	0.60	18.80	0.0001	0.0006

15.2.3 Guidance

Three recent publications are used for ground gas risk assessment:

- 'Guidance on Evaluation of Development Proposals on Sites Where Methane and Carbon Dioxide are Present', Report Edition No.04 March 2007 NHBC – designed for use with low rise residential properties.
- CIRIA C665 'Assessing risks posed by hazardous ground gases for buildings' 2007 - for high rise residential / flats.
- BS8485:2015 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.

Further details / accompanying notes for the following gas risk assessment are enclosed in Appendix G. The proposed development at the site is private residential two-storey houses, therefore assessments using the NHBC Guidance are deemed most appropriate.

15.2.4 Gas Recommendations

Elevated CO₂ has been observed in one location, WS8, which showed a maximum concentration of 9.70%. Whilst this is close to the suggested Amber 1 / Amber 2 threshold, it does not exceed it. Further to this, when taking gas flow into account, the calculated gas screening value (GSV) is significantly lower than the Amber 1 / 2 - threshold, showing there is little driving force to mobilise the ground gas.

From a review of the strata identified, the majority of made ground was granular in nature with no significant organic matter noted to suggest significant ground gas production or migration. Small pockets of organic material may be present within the alluvial material or other made ground on site. When alluvium or peat was deposited it contained organic material. Initially this would have degraded to produce methane gas. However, only the labile (easily degradable material) would have been used up. Old recalcitrant peat such as deep peat layers in alluvium generates very little new methane. As was generated it would have been emitted from the surface of the alluvium before being encased beneath made ground. Therefore, the ongoing risk from ground gas from this source is low.

On the basis of the above, the site can be classed as Amber 1 / CS2. The site will require low level gas protection measures to be installed.

A number of volatile odours and VOCs/SVOCs were noted within the Made Ground during the site investigation however were not substantiated in testing. A hydrocarbon vapour resistant membrane may be required across the site to mitigate nuisance risk – this is to be reviewed following the site strip and localised remediation.

16 REVISED CONCEPTUAL SITE MODEL

16.1 General

The Initial Conceptual Site Model has been amended in light of data obtained during the ground investigation, most notably the arsenic and lead contaminated soil in relation to the screening criteria for the proposed end use.

16.2 Final Conceptual Site Model

This section reassesses likely risks to the identified receptors, arising from potential contamination sources. It provides a final qualitative assessment of the risks involved, indicating whether (where appropriate) any immediate action is required to mitigate certain risks. It also discusses (where appropriate) what longer term measures or remedial works may be required in the future if the site were to be developed. It is considered that the site has not been assessed by the Local Authority as a contaminated site under the terms of the Environmental Protection Act 1990 Part IIa.

Target (Receptor)	Potential Source-Pathway Linkage	Remedial Action Required (where appropriate)	Est. Degree of Risk to Target Following Remedial Action Where Necessary
Site End Users	Inhalation of soil gases, odours or dust.	Site classed as Amber 1 / CS2. Low level gas protection measures required.	Low
Site End Users	Ingestion of, and skin contact with, contaminated soil.	Full 600mm clean and inert capping required across the site. No dig layer may be required due to presence of asbestos.	Low
Site End Users	Ingestion of contaminants in vegetables etc. or in soils adhering to vegetables, etc	Full 600mm clean and inert capping required across the site. No dig layer may be required due to presence of asbestos.	Low
Construction/ Maintenance Workers	Inhalation of soil gases, odours or dust.	PPE	Low (assumed basic PPE is used)
Construction/ Maintenance Workers	Ingestion of, and skin contact with, contaminated soil.	PPE	Low (assumed basic PPE is used)
Plants	Adverse effects on growth caused by presence of phytotoxic contaminants in soil.	Full 600mm capping required across the site. No dig layer may be required due to presence of asbestos.	Low
Buildings and Structures	Flow of ground gas into buildings. Asphyxiation, toxicity, explosion and fire hazards.	Site classed as Amber 1 / CS2. Low level gas protection measures required.	Low
Foundations	Sulphate attack of foundations	Foundations to be designed as per section 18.4.	Low
Water Supplies	Hydrocarbons penetrating plastic water supply pipes.	United Utilities pipeline risk assessment required. Protect-A-line to be allowed for in costings.	Low
Groundwater	Migration of soluble contaminants into groundwater on or off site.	No sensitive receptors within influencing distance.	Low
Surface Water	Migration of soluble contaminants and/or direct run-off of contaminants.	Limited impact on surface water from site, possible sources of contamination located upstream.	Low

17 OUTLINE STRATEGY FOR RISK REDUCTION / REMEDIATION STRATEGY

17.1 General

The following section details any recommendations to reduce risk on site and recommends remedial actions (as per the previous sections of this report). For clarity, the section is split into sub-sections as per the conceptual site model (Section 14).

It is important to note that a Bespoke Environmental Permit is likely to be required before any further excavations into the historic landfill area. Early pre-app consultation/liaison with the EA is advised.

17.2 Construction / Maintenance Workers

A number of exceedances have been observed across the site within Made Ground strata, these are associated with various PAHs, TPH C16-C21, Lead, Arsenic and asbestos. PAHs include the SVOC, Naphthalene. Further to these, a number of VOCs / SVOCs have also been observed above detection limits.

There are currently no assessment criteria for risks to construction workers, the following recommendations should be adhered to during site works:

- Site workers should wear gloves, boots and overalls and wash their hands before eating, drinking and smoking. Excessive dust generation should be avoided.
- It is recommended that during all excavations adequate ventilation should be maintained. If man entry into excavations is required, gas monitoring should be carried out as a precaution.
- If areas of suspected contamination are found then a suitably qualified person should undertake appropriate sampling, testing and further risk assessment.
- Asbestos was encountered on site, vigilance should be adhered, and any suspected asbestos should be notified, and a suitably qualified person appointed to inspect.

17.3 Site-End Users

A minimum thickness of 600mm of debris-free soil is required within garden areas and landscaped areas as a capping system to mitigate residual risk to site end users from the asbestos and remaining determinants. It is also anticipated that the secondary slabs will be containing further contamination not observed during the investigation due to plant access limitations within the exclusion zone. The capping is to be made up of imported topsoil and subsoil.

Several areas of hydrocarbon / volatile odours were noted across the site during investigation; however, these were not substantiated in testing. As a result, a hydrocarbon vapour resistant membrane may be required across the site to mitigate nuisance risk – this is to be reviewed following the site strip.

17.4 Ground Gas Protection Measures

As per Section 15.2.4, the site can be classed as Amber 1 / CS2. The site will require low level gas

protection measures to be installed. This would usually consist of a 150mm passively vented subfloor void and a taped and sealed gas resistant membrane.

A number of volatile odours and VOCs/SVOCs and possible TPH hotspot in TP16 were noted within the Made Ground during the site investigation however were not substantiated in testing. As a result, a hydrocarbon vapour resistant membrane may be required across the site to mitigate nuisance risk – this is to be reviewed following the site strip / Remediation.

17.5 Off-Site Disposal of Soils

Other than removal of hardstanding, no significant changes in site levels are understood to be proposed. However, any waste is likely to require excavation and offsite disposal and result in significant development costs.

The handling, re-use or disposal of waste is regulated by the Environment Agency. Any material excavated on-site may be classified as waste and it is the responsibility of the holder of a material to form their own view on whether or not it is waste. One of the ways this can be achieved is set out in the Development Industry Code of Practice (CoP; Ref. 13). This builds on the Environment Agency guidance document Definition of waste: developing greenfield and brownfield sites (2006). The Agency will take into account the use of the CoP in deciding whether to regulate materials as waste. If materials are dealt with in accordance with the CoP, the Agency considers that those materials are unlikely to be waste at the point when they are to be used for the purpose of land development.

All material proposed for off-site disposal (e.g. during future construction works) should be given a proper description and waste classification assessment as required by the Environmental Protection Duty of Care Regulations (Ref. 14), and in accordance with WM3 and the Environment Agency Technical Guidance on the assessment and classification of Hazardous Waste.

The chemical laboratory data has been screened using the online Hazwaste™ software and the laboratory test results indicate that, generally, the materials onsite would be classified as Non-hazardous.

However, several samples across the site have been shown to be hazardous, these are listed in the table below, these results should be read in conjunction with the Hazwaste™ report in in Appendix K.

Location	Depth (mbgl)	Comments
TP3	1.50	HP7 - Carcinogenic - TPH (C6 to C40) HP11 – Mutagenic - TPH (C6 to C40)
TP9	0.20	HP14 – Ecotoxic - Zinc sulphate
WS7	0.95	HP7 - Carcinogenic - Lead
WS6	0.55	HP8 - Corrosive - pH
WS16	2.00	HP7 - Carcinogenic - Lead

No allowance can be made for classification of materials between exploratory hole locations.

The recorded asbestos concentrations fall below the Hazardous Waste threshold (>0.1%) and no visible

asbestos materials were observed.

It is recommended that the results of the contamination testing (including the history of the site) be presented to the proposed landfills to obtain their acceptance of the information to date. However, further testing maybe required to fully assess the waste classification of the soils requiring offsite disposal. A copy of the Hazwaste™ summary report is presented in Appendix K. The results of these tests should be confirmed by the proposed waste receiver.

Segregation of the Topsoil, Made Ground and Natural Strata should be possible given the chemical analysis and very different visual identification.

It's recommended that a full waste management plan be compiled for the site.

17.6 Piped Drinking Water Supplies

The use of Protect-A-line is anticipated; however, a pipeline assessment should be undertaken to confirm.

18 GEOTECHNICAL ASSESSMENT

18.1 Introduction

It is understood that the proposed development will consist of construction of residential properties with associated rear gardens, associated infrastructure, public open space and new highway. Associated foundation loadings are anticipated to be low.

18.2 Site Preparation and Excavation

It is important to note that a Bespoke Environmental Permit is likely to be required before any further excavations into the historic landfill area. Early pre-app consultation/liaison with the EA is advised.

Excavations undertaken during site works were unstable within the made ground, all excavations should be planned, and due consideration should be given to providing temporary support or suitable battering. Excavations should be regularly inspected by a competent person to ensure continued safety. Further advice on the safety of excavations is given in *Health and Safety in Construction*. Shallow (<1.20mbgl) excavations for service trenches should be straight forward however, could be complicated by variable Made Ground on site.

18.3 Control of Groundwater

Limited shallow groundwater was encountered on site however perched groundwater was encountered in several locations. It is likely that provision of pumping / shuttering will be necessary during excavation of foundation trenches during wet weather and to deeper excavations for sewers etc. It is good practice to have such equipment on standby in case of seasonal / abnormal weather conditions.

Should sewers/excavations deeper than the boreholes/trial pits undertaken be required, further SI will be needed.

It is noted that the site may be at risk from groundwater flooding based upon the BGS datasets. The BGS datasets are deemed somewhat generic and based upon a variety of geological settings including valleys in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravel.

Groundwater flooding is generally caused by excessive rainfall and high water tables.

The Weetwood FRA confirms that the site has a moderate to significant risk of groundwater flooding (based on BGS dataset). The report asserts that this modelled estimate is overstated due to the extent of the existing hard cover currently on the site and a measurement of existing groundwater levels.

On this site the current site hardstanding coverage is generally impermeable and the BGS data base is based upon geological strata present (river terrace/valley deposits). River levels correlate with existing physical ground water monitoring data – i.e. shown to be in continuity as would be expected in the given geological and geomorphological setting.

River levels will indeed influence groundwater levels and during periods of heavy rain or flooding, rivers can overflow and saturate the surrounding land, leading to a rise in the water table and increased groundwater levels. Understanding the dynamics between river levels and groundwater is crucial for developing comprehensive flood management strategies.

The proposed flood risk alleviation design has increased site levels to factor in increased river levels in flood events and as such also by the same means lifted the site out of the zone of influence of potential groundwater flooding. The likelihood of solid geology bearing any influence upon groundwater levels to result in flooding is deemed very unlikely given the evidence of the known groundwater levels being in direct correlation / connectivity with the adjacent river and its surrounding superficial geological deposits (circa 20m drift).

18.4 Foundations

Due to depths of Made Ground and saturated SILTS being identified at depth, the variable nature of the Made Ground, and the potential for secondary slabs and deep obstructions, a piled solution is advised.

Given the generally granular nature of Made Ground and both cohesive and granular nature of natural soils on site, a driven piled solution should be taken to the appropriate strata.

Suitable strata applicable to piling is thought to be at least 20mbegl.

As an alternative by placing suitable granular fill during the remedial work (excavation and crushing of obstructions / concrete) a vibro ground improvement may be applicable with double reinforced strip foundation upon the improved ground.

A specialist piling / ground improvement foundation contractor should be consulted with regards to the design of the foundations, suitability of piled solution and provision for proof digging plots to remove obstructions.

The southern spur area, which is underlain by a landfill, has been shown to be heavily contaminated. Possible natural strata are located at 5.00-5.50mbgl, with bedrock noted at 21.00-23.00mbgl. Due to the levels of contamination and possible free product observed in these areas a piled solution may pose a significant risk to groundwater, and another solution may be required. Remedial work is required in this locality to both remove / stabilise contamination and make the fill geotechnically suitable (removal of large granular and biodegradable / plastics) Upon remediation a piled solution may be viable subject to further risk assessment.

Due to proximity of railway and possibly interconnected bodies of fill / water care must be taken when considering remedial work / foundations in this locality.

The anticipated impacted area is shown below;



18.5 Ground Floor Construction

Suspended floor construction e.g. either in-situ RC slabs or block and beam flooring is recommended as per NHBC guidance.

18.6 Soakaway

Soakaway tests were not undertaken due to anticipated contamination and depth of Made Ground.

18.7 Heave / Shrinkage Potential

Significant shallow cohesive strata were not observed at the site, testing may be undertaken once site levels are confirmed and an assessment of the depth to cohesive strata can be made.

18.8 Highway

According to the criteria of Highways Agency HD 25/95 Volume 7 Section 2 Part 2 HD 25/94, a CBR value of circa 3-5% on the Made Ground is anticipated, however confirming in-situ CBR's should be undertaken once layouts and levels are known.

Placement of geotextiles within the areas of roads / parking could also be designed to minimise the subgrade thickness.

18.9 Protection of Buried Concrete

It is considered for concrete design purposes that a brownfield site and mobile groundwater conditions are applicable.

Given the levels of 2:1 water soluble sulphate identified in the vicinity of TP1, TP3 and TP5, a design class of DS-2, an ACEC class of AC-2 and a designated concrete class of DC2 is recommended in this area.

The remainder of the site can be recommended for a design class of DS-1, an ACEC class of AC-1 and a designated concrete class of DC-1.

19 Further Works

19.1 Further Works Summary

The following works are required to adequately characterise the site and provide a basis to mitigate risk to human health and the environment;

- Sampling of stockpiles left onsite from demolition works.

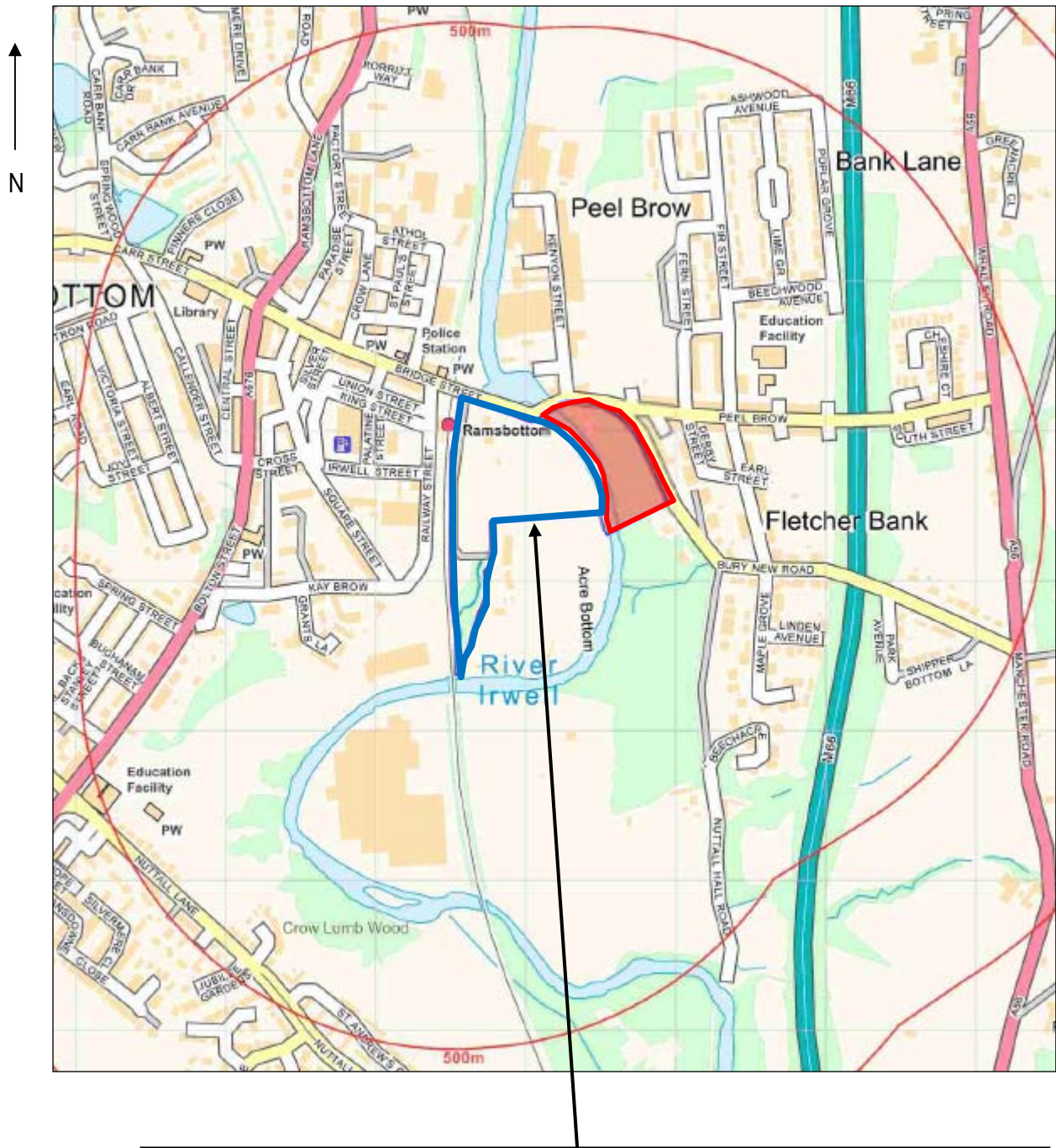
20 REFERENCES

- 20.1** BS 5930:2015 *Code of Practice for Site Investigation*.
- 20.2** BS1377: 2016 *Methods of Test for Soils for Civil Engineering Purposes*.
- 20.3** Assessment of risks to human health from land contamination: an overview of the development of guideline values and related research. EA, 2002.
- 20.4** *Contaminated Land Risk Assessment; A Guide to Good Practice; CIRIA C552: 2001*.
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- 20.6** *Hazardous Waste: Interpretation of the Definition and Classification of Hazardous Waste, Environment Agency, WM2 Version 1.0, June 2003*.
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- 20.9** NHBC Standards, Chapter 4.2, *2017 Building Near Trees*.
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- 20.13** *Piling In Layered Ground: Risks to Groundwater and Archaeology Science Report SC020074/SR Environment Agency October 2006*.
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- 20.25** *Atkins AtRisksoil.co.uk SSV's derived using CLEA for 1 or 6% SOM. Residential with home grown produce.2017*

APPENDIX A

(i) Site Location Plan

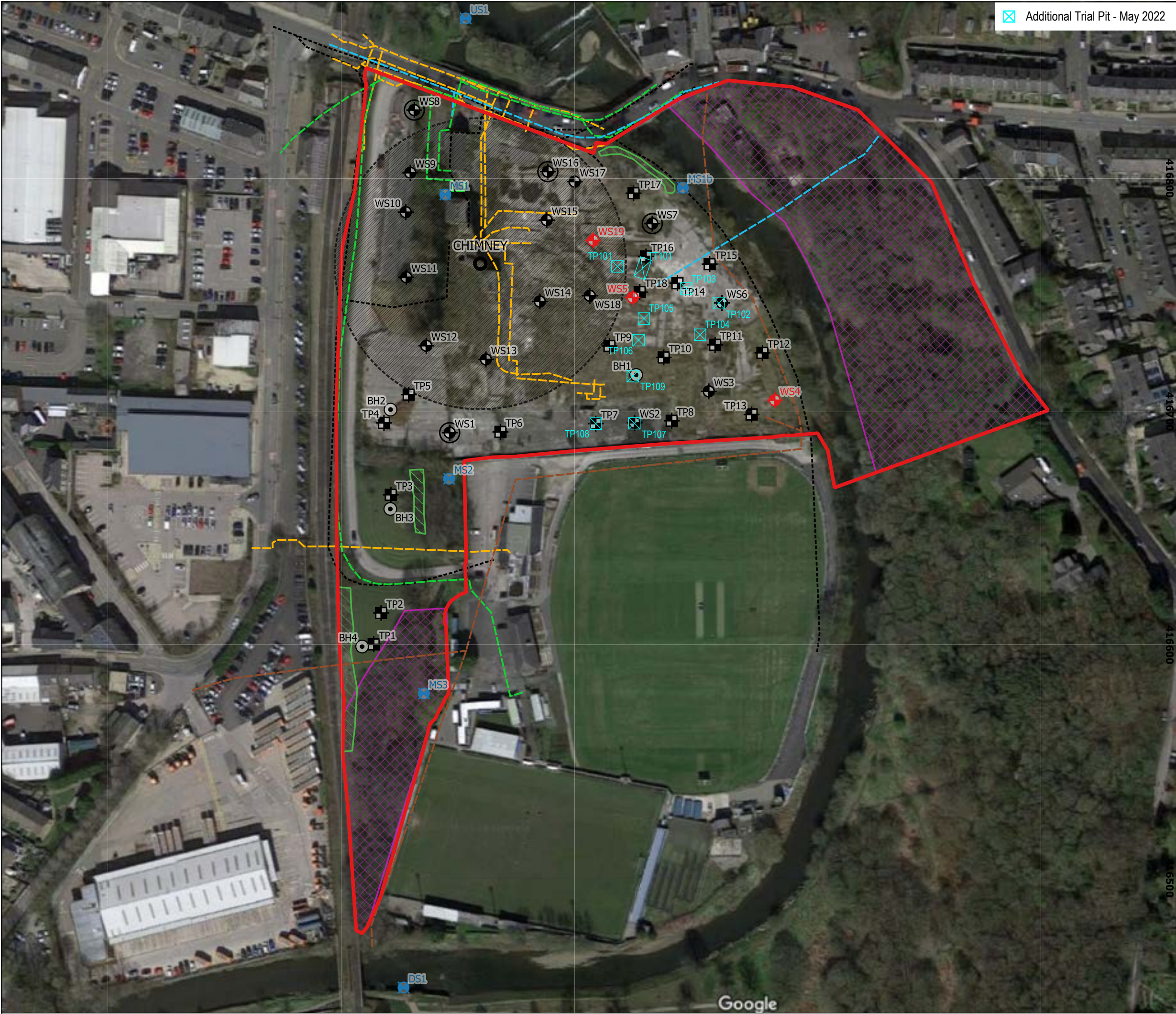


Site Location Plan

The site is located to the south of Bridge Street and north of Ramsbottom Cricket Club in Ramsbottom. The site has an approximate postcode of BL0 9AL, with coordinates on the British National Grid of 379433,416756. The proposed site is approximately 4.61 hectares in total.

APPENDIX B

(i) Exploratory Hole Location Plan



Additional Trial Pit - May 2022

NOTES
THIS SKETCH SHOWS LOCATIONS OF EXPLORATORY HOLES UNDERTAKEN BY BETTS GEO IN JUNE 2019 AND INDICATIVE LOCATIONS OF SERVICES DIGITISED FROM SERVICE PLANS AND 60m EXCLUSION ZONE AROUND THE EXISTING CHIMNEY ONSITE OVERLAIN AN AERIAL IMAGE TAKEN FROM GOOGLE MAPS (IMAGERY ©2019 Google, MAP DATA ©2019 Google, www.google.co.uk/maps).

- DO NOT SCALE**
- SITE BOUNDARY
 - POSSIBLE INVASIVE SPECIES
 - NO ACCESS
 - CHIMNEY
 - 60m EXCLUSION ZONE
 - US1 WATER SAMPLE [6]
- EXPLORATORY HOLES**
- TP1 TRIAL PIT [18]
 - BH1 ROTARY BOREHOLE [4]
 - WS2 WINDOW SAMPLE [12]
 - WS4 WINDOW SAMPLE - ABANDONED [3]
 - WS1 WINDOW SAMPLE WITH GAS INSTALL [4]
- SERVICES**
- SEWAGE
 - WATER
 - GAS
 - ELECTRICITY
 - TELECOMMUNICATIONS

B	18/5/22	KR	New Locations Added	MJF
A	12/07/19	RD	WATER SAMPLING LOCS ADDED	KR

REV	DATE	BY	DESCRIPTION	CHK
-----	------	----	-------------	-----

DRAWING STATUS: **DRAFT**



BETTS GEO
CONSULTING ENGINEERS

Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 enquiries@betts-associates.co.uk



eccleston homes

PROJECT: **HOLCOMBE MILL
BRIDGE STREET
RAMSBOTTOM**

TITLE: **EXPLORATORY HOLE
LOCATION PLAN**

DATE: 12/07/19	SCALE @ SIZE: 1:1550 @ A3	DRAWN: RD	CHECKED: KR
-------------------	------------------------------	--------------	----------------

PROJECT No: 19ECH016	DRAWING No: 1	REV: -
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APPENDIX C

(i) Historical Maps

Site Details:

HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM, BLO OBS

Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: County Series

Map date: 1891

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1891
Revised 1891
Edition N/A
Copyright N/A
Levelled N/A

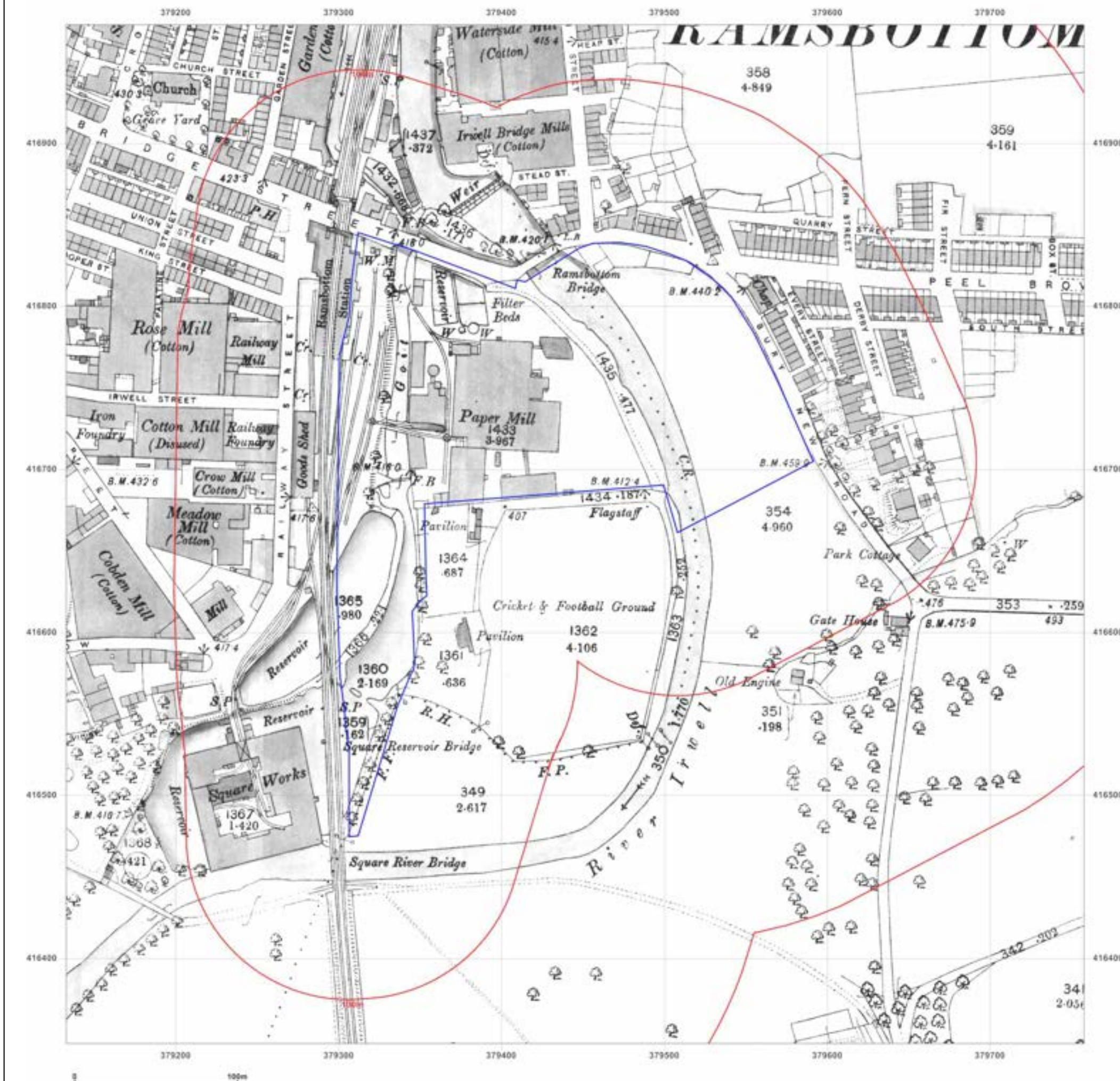


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Production date: 09 May 2019

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Site Details:

HOLCOMBE MILL, BRIDGE
STREET, RAMSBOTTOM, BLO
OBS

Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: County Series Town Plan

Map date: 1892

Scale: 1:500

Printed at: 1:1,000



Surveyed 1892
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Edition N/A
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Site Details:

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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: County Series

Map date: 1910

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1910
Revised 1910
Edition N/A
Copyright N/A
Levelled N/A

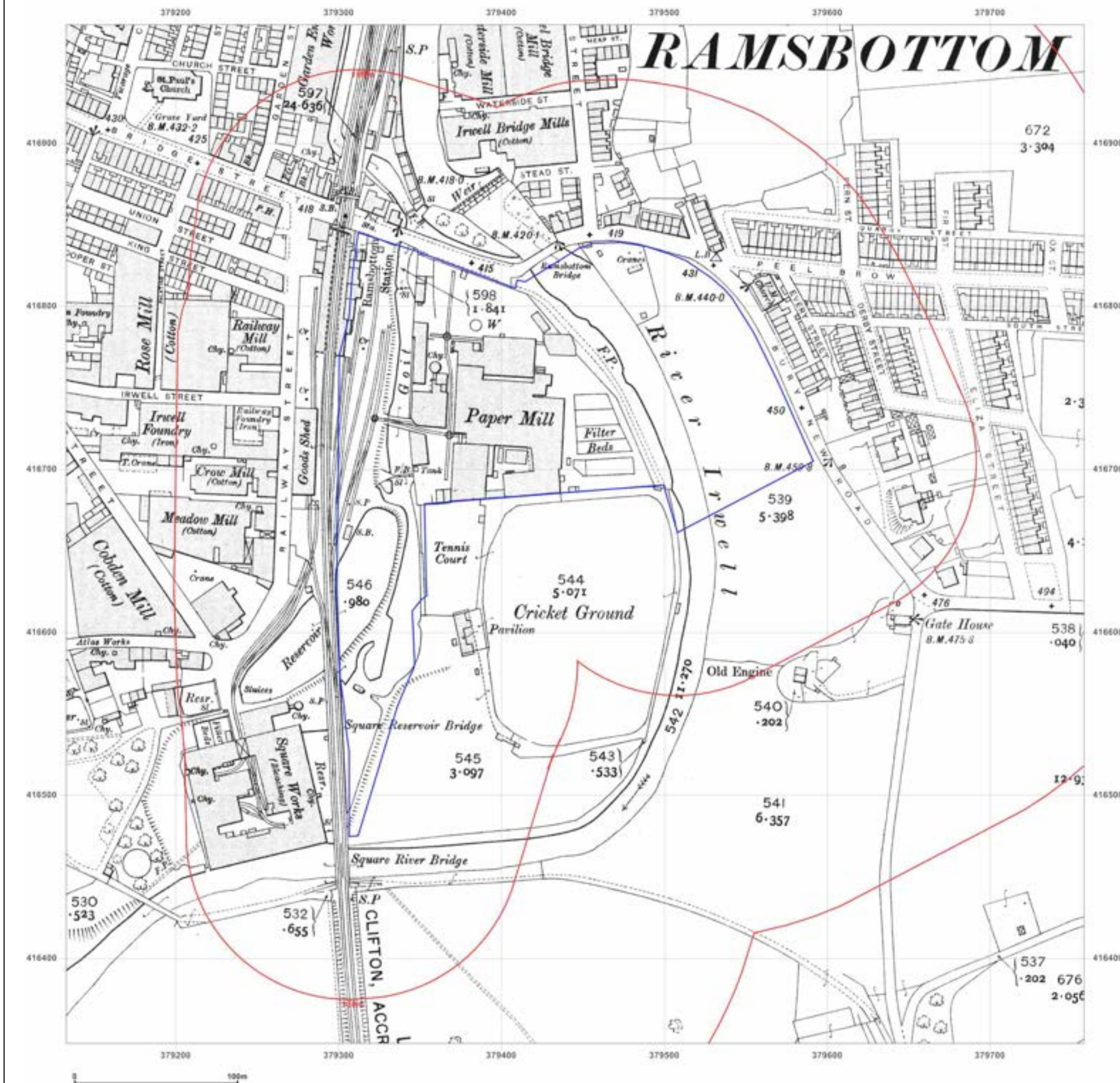


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Site Details:

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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: County Series

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Printed at: 1:2,500



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Revised 1929
Edition N/A
Copyright N/A
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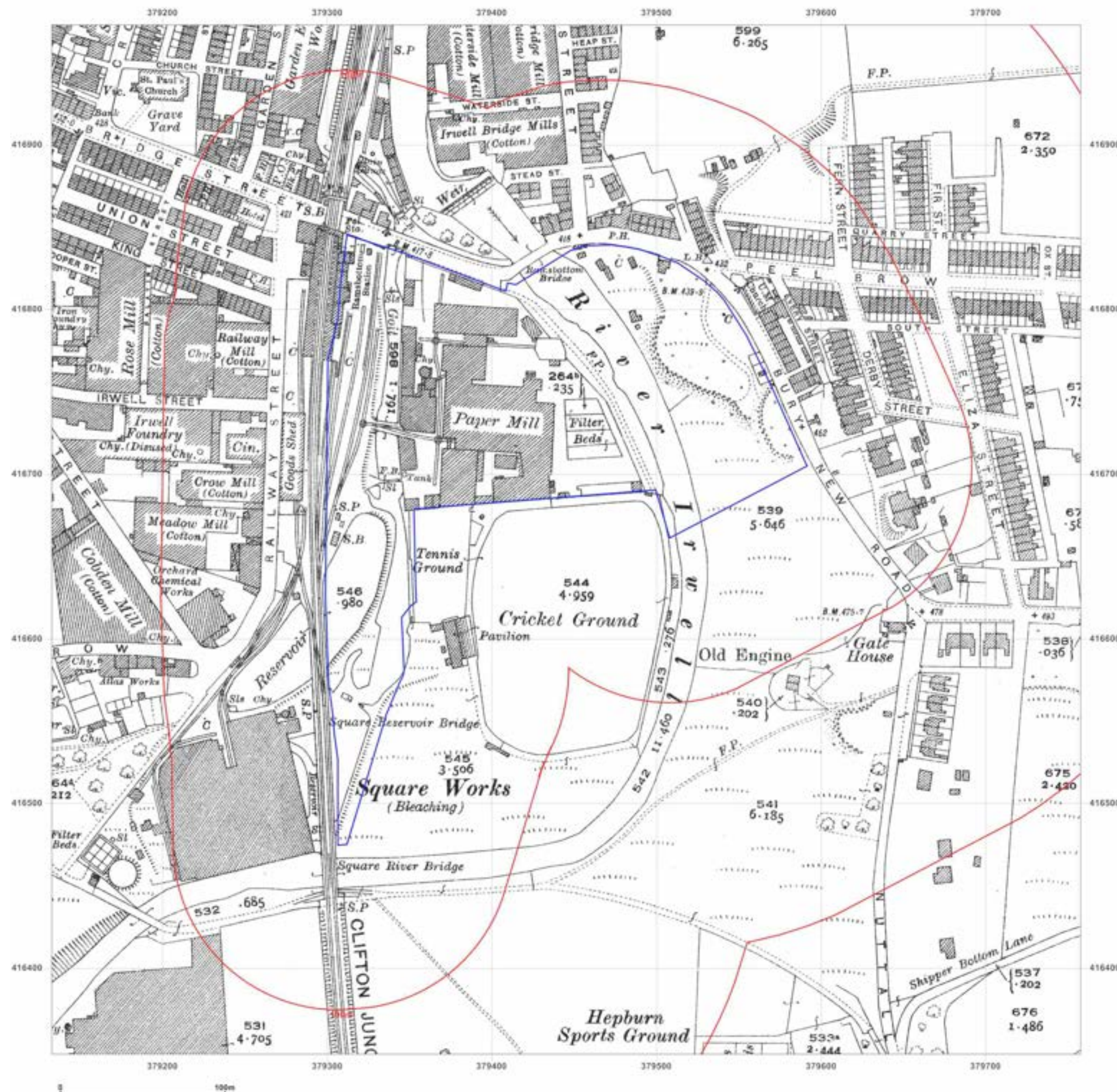


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Site Details:

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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: County Series

Map date: 1938

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Printed at: 1:2,500



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Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

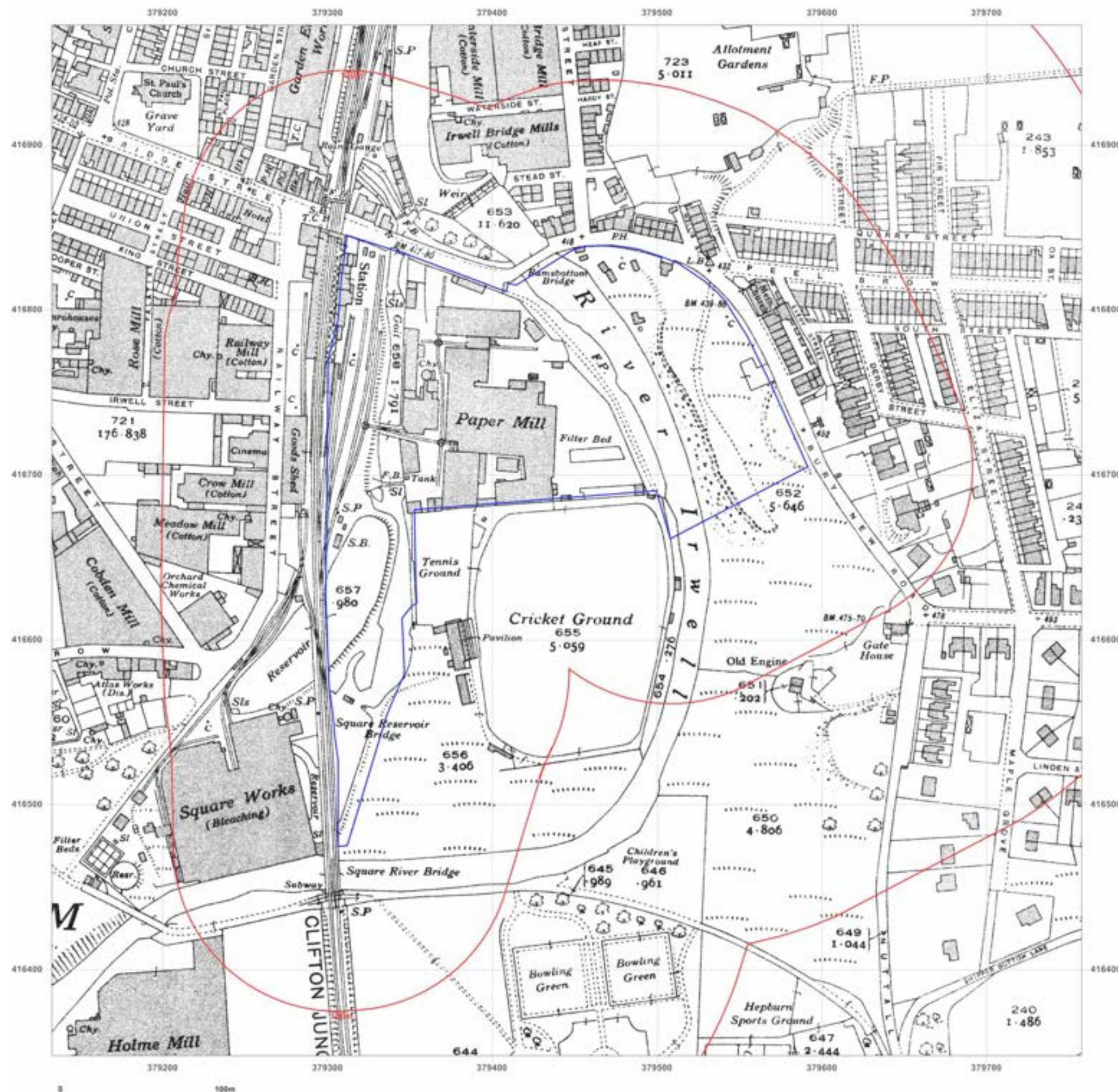


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Site Details:

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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1962
Revised 1962
Edition N/A
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Levelled 1957

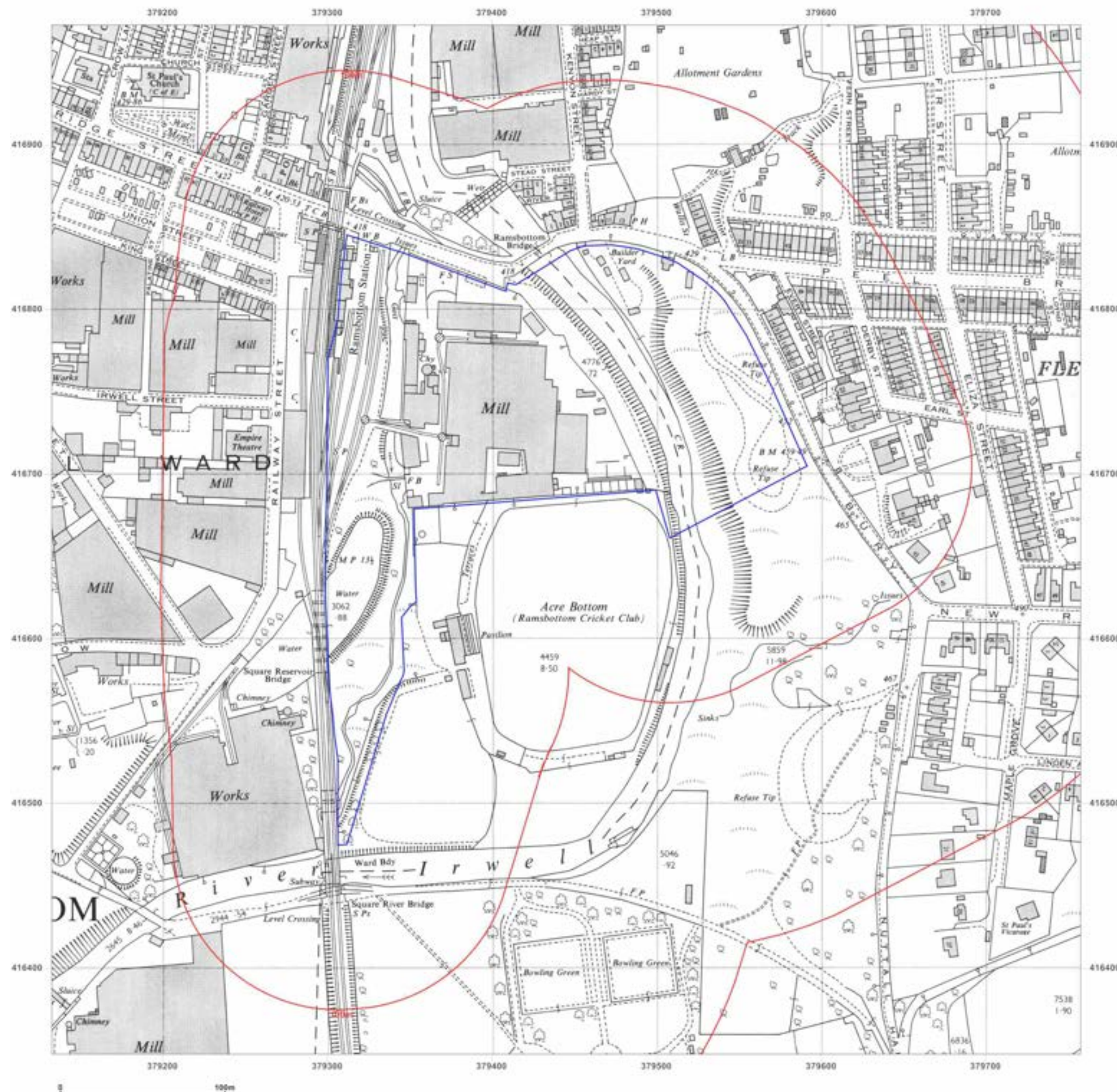


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Site Details:

HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM, BLO
OBS

Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 1964

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Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

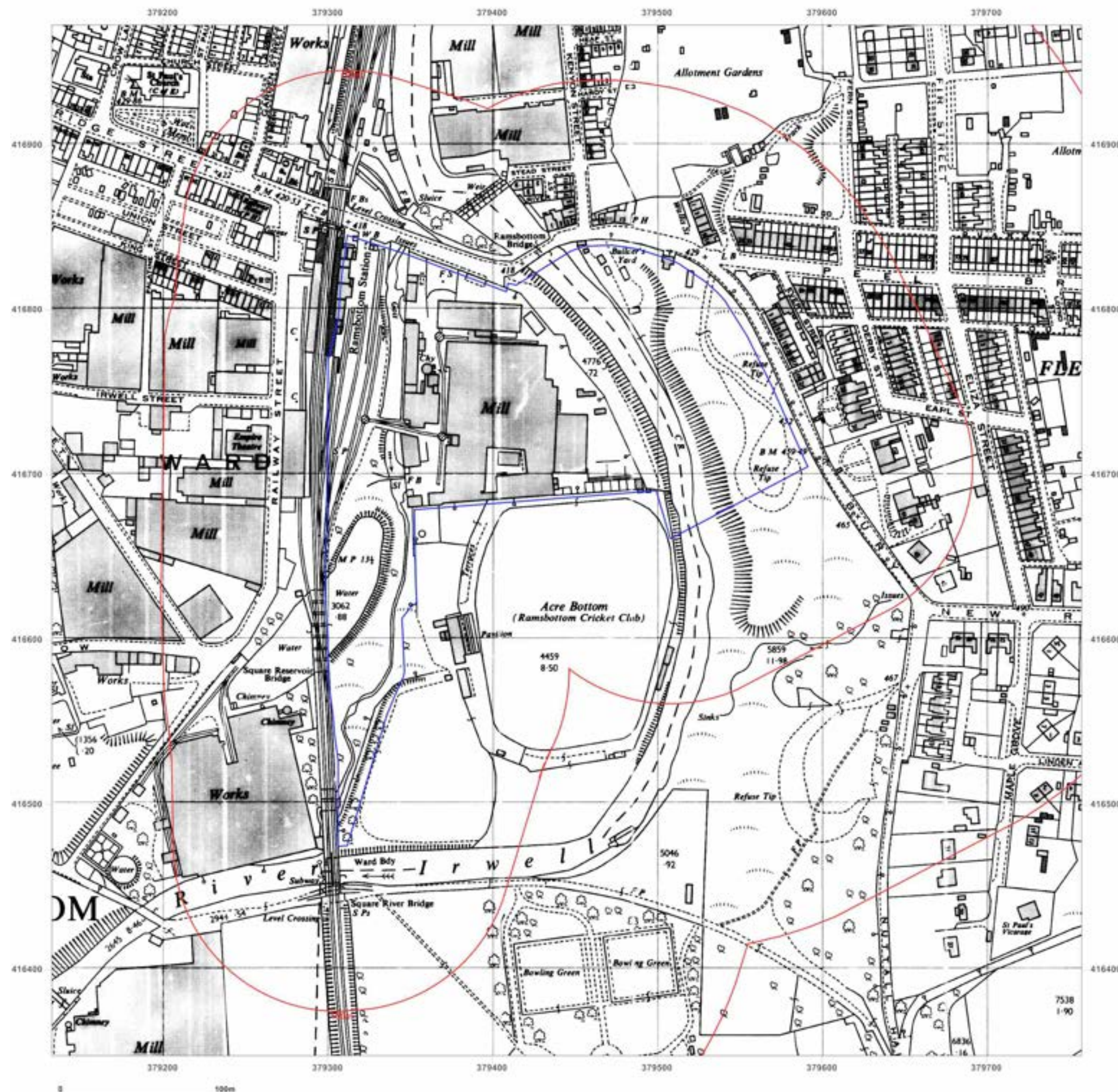


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Site Details:

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OBS

Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 1978

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Revised 1978
Edition N/A
Copyright 1978
Levelled 1962

Surveyed 1977
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Levelled 1957

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Revised 1978
Edition N/A
Copyright 1978
Levelled 1962

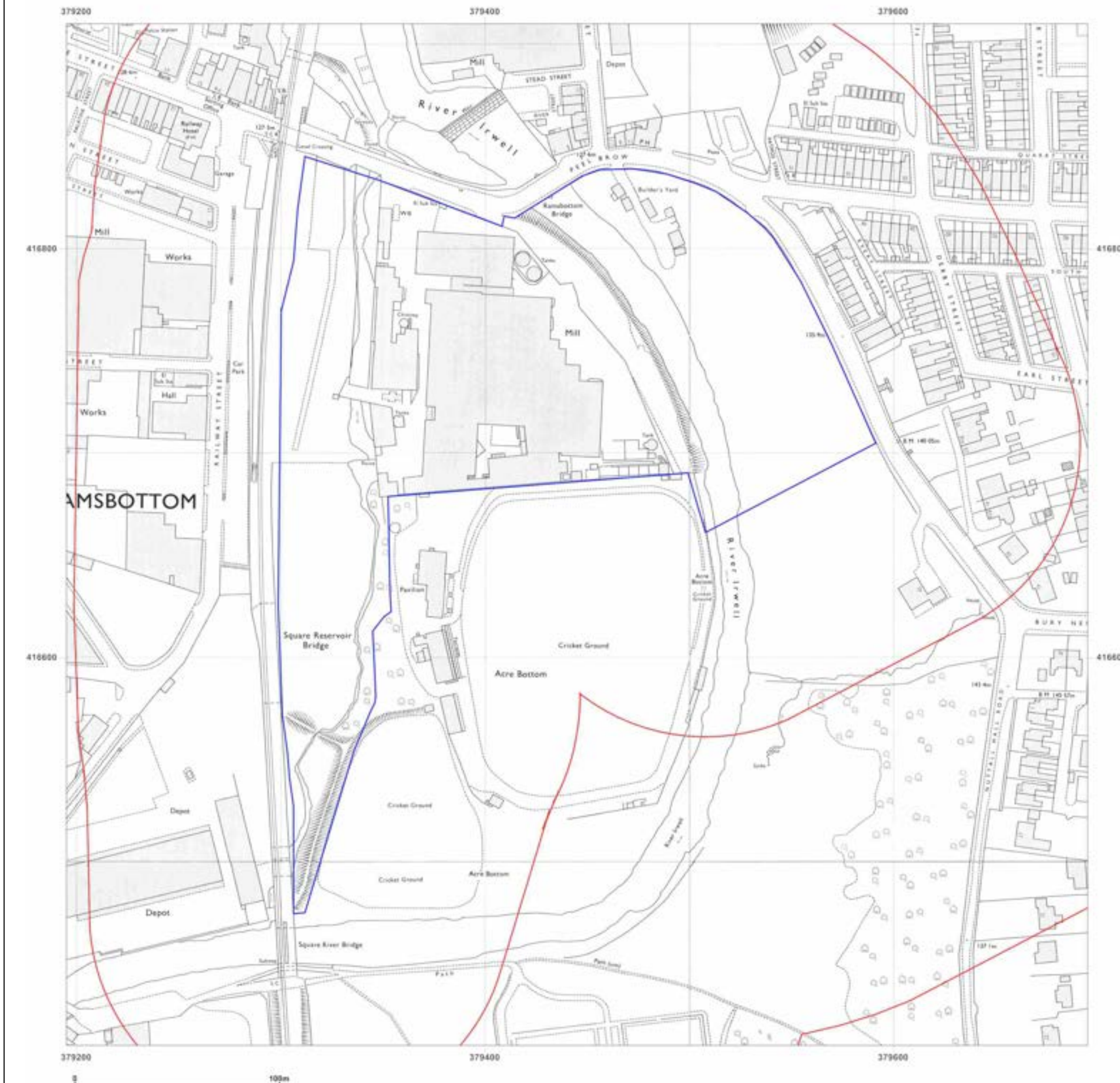


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Site Details:

HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM, BLO OBS

Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 1978

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
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Site Details:

HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM, BLO
OBS

Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 1989-1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1992
Revised N/A
Edition N/A
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Levelled N/A

Surveyed 1960
Revised 1978
Edition N/A
Copyright 1989
Levelled 1960

Surveyed 1992
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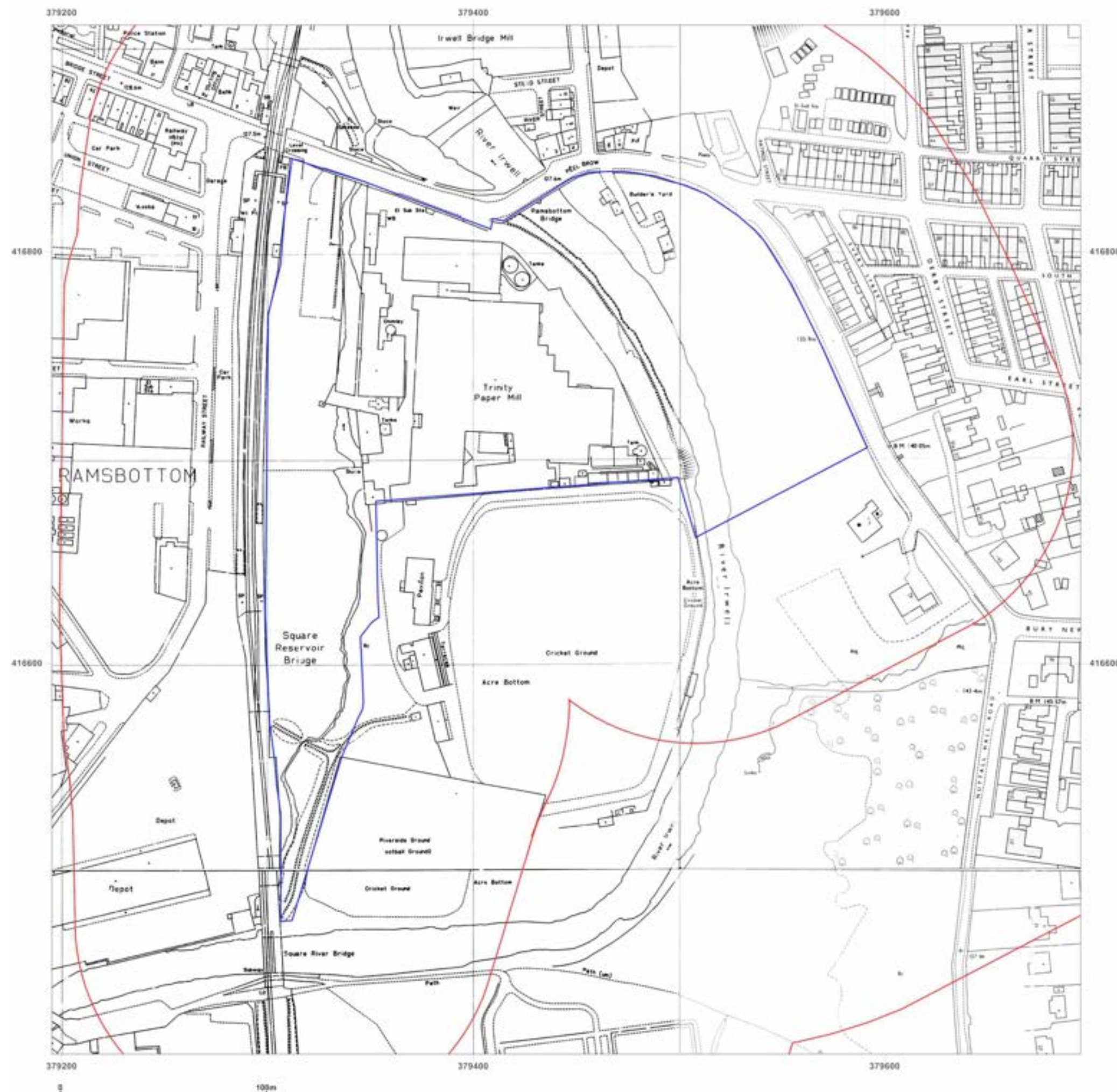


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Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

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Grid Ref: 379445, 416660

Map Name: County Series

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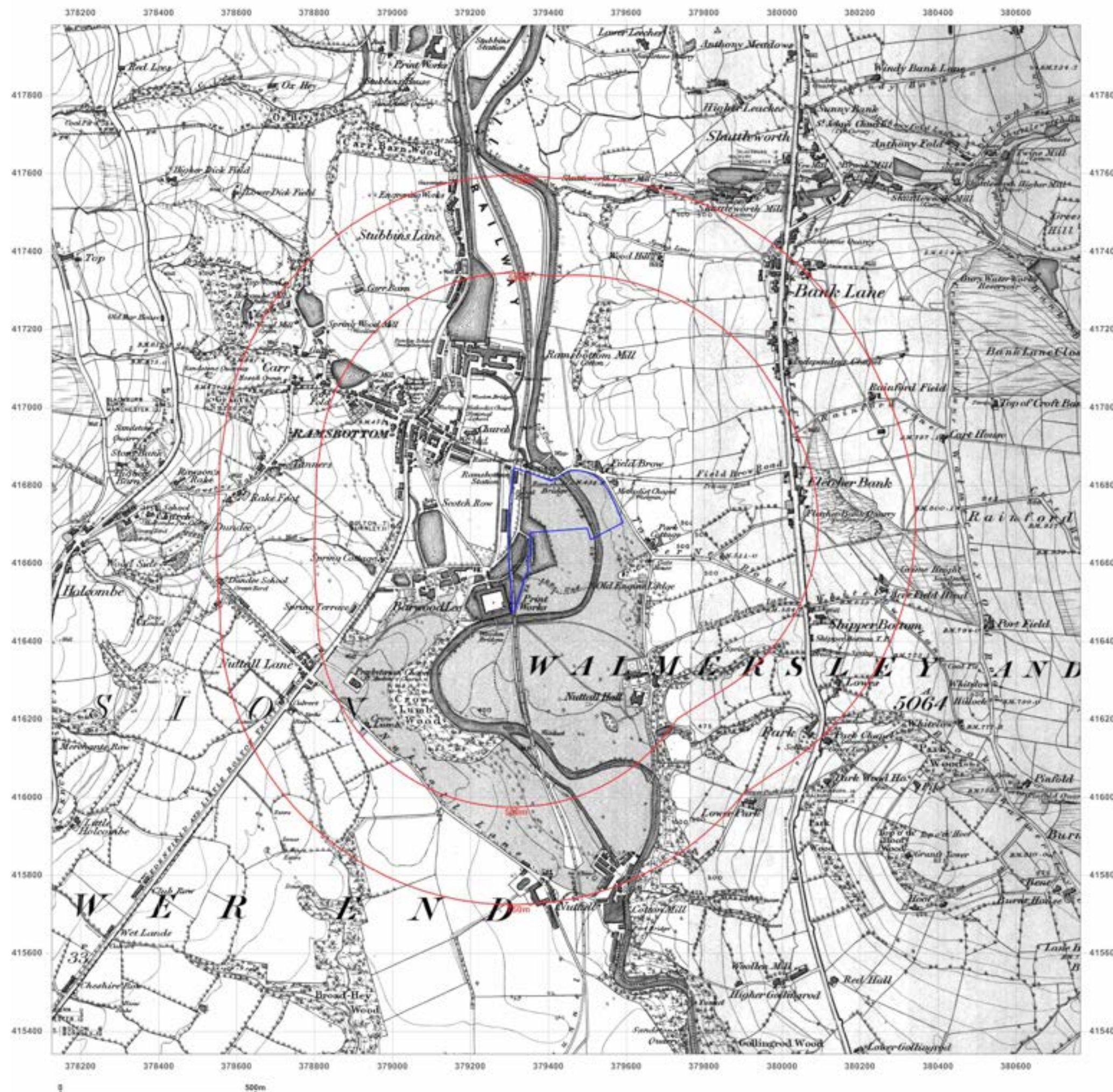


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Grid Ref: 379445, 416660

Map Name: County Series

Map date: 1891

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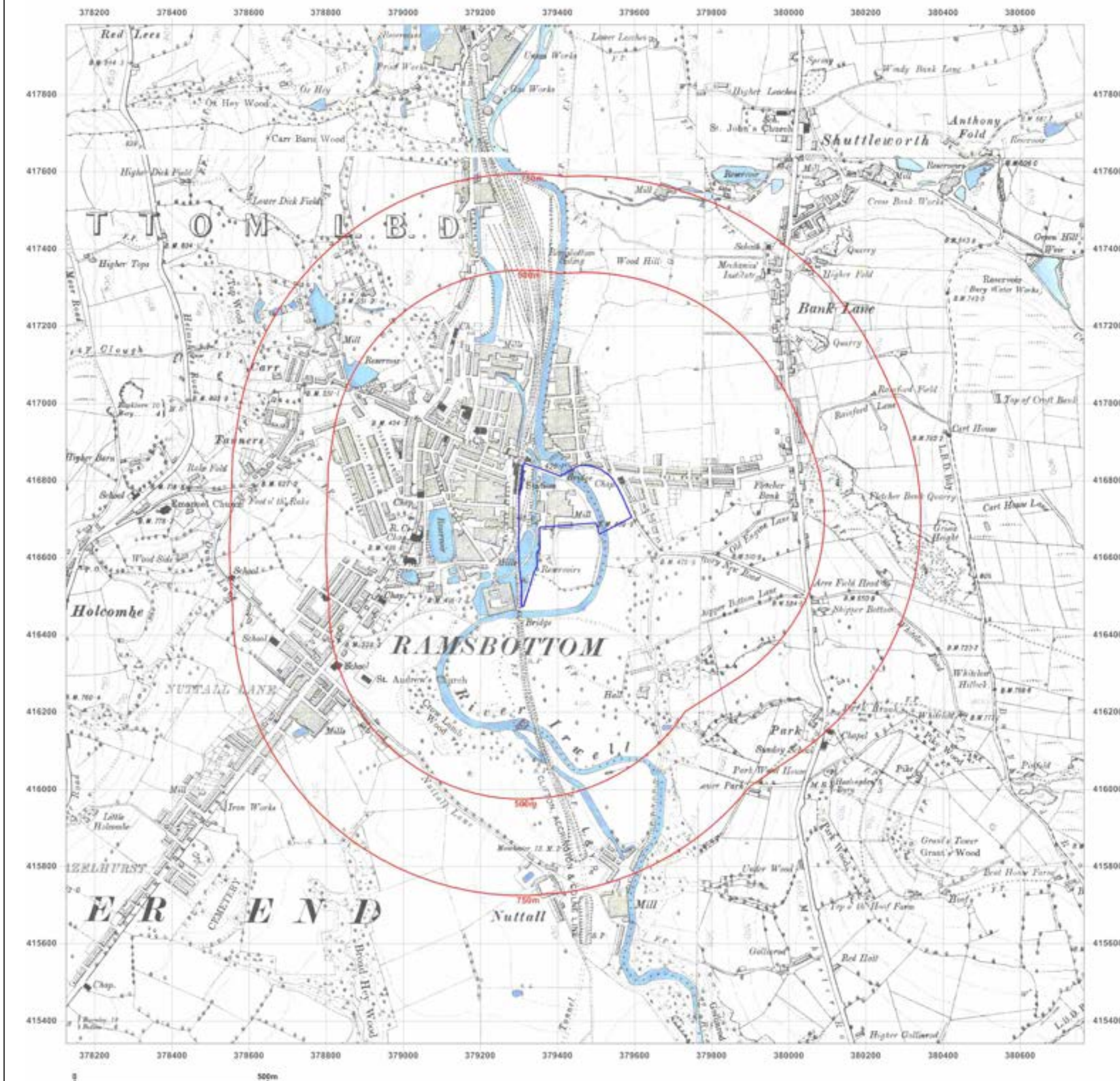


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Map Name: County Series

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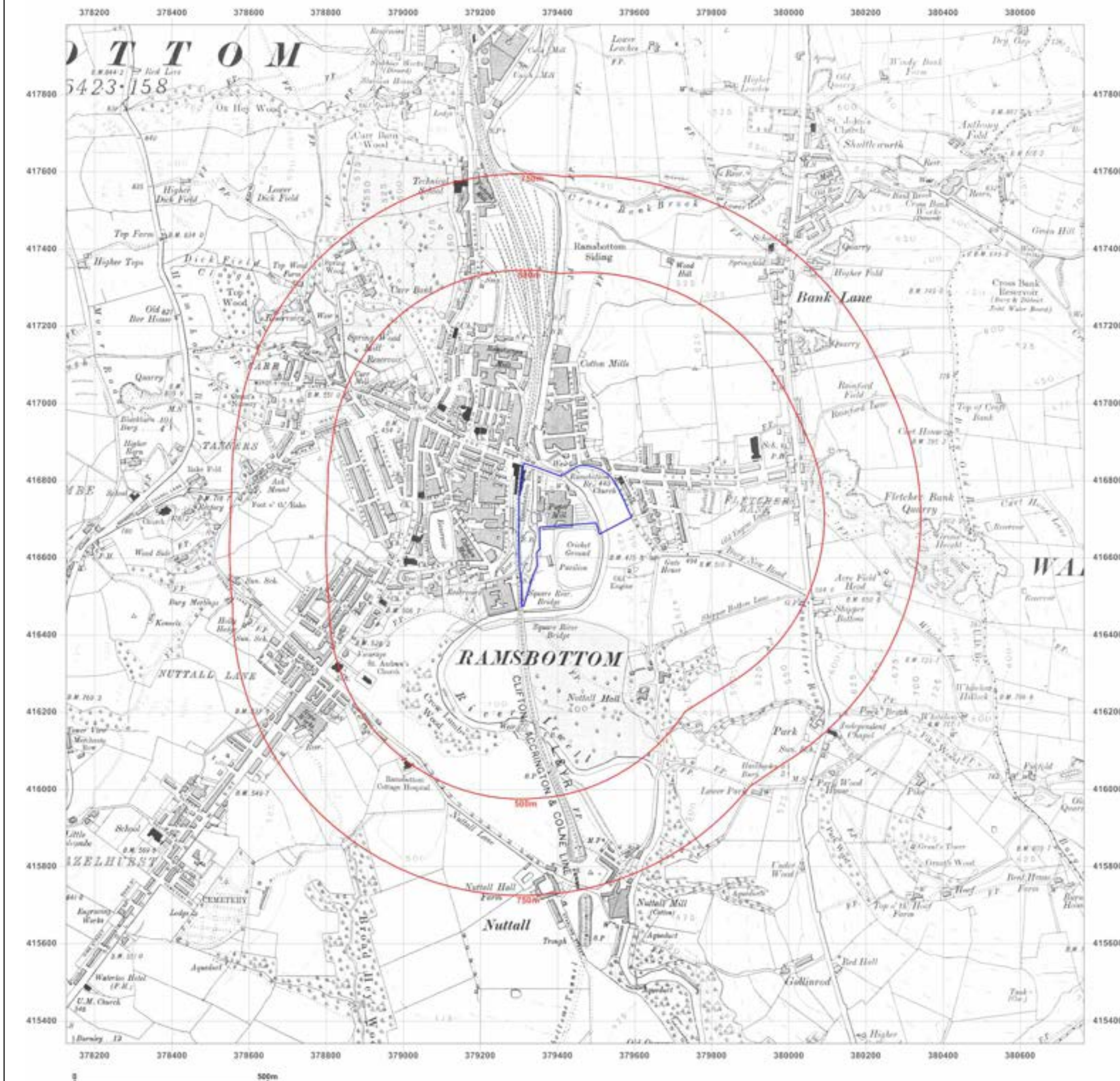


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Map Name: County Series

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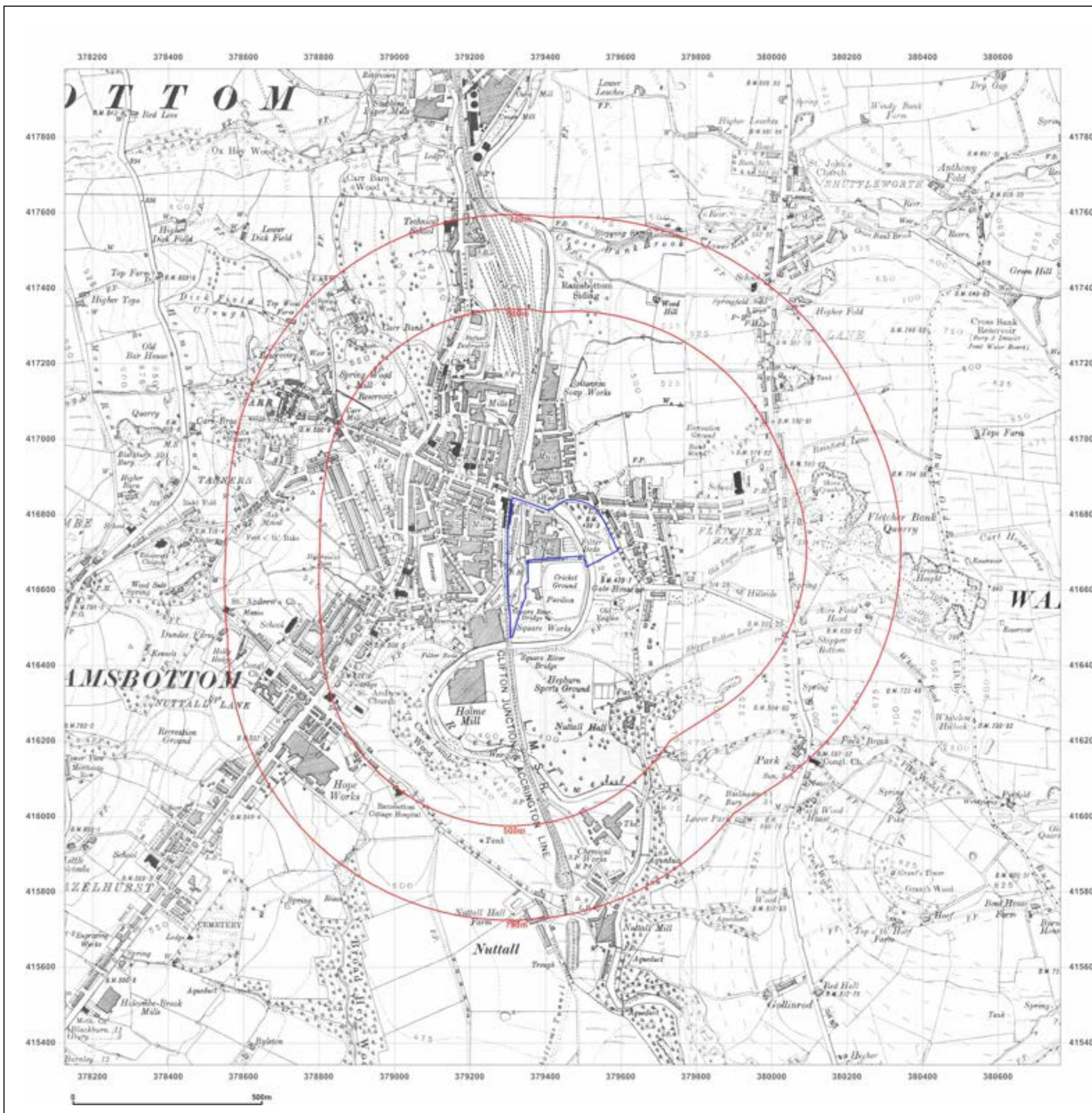


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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: County Series

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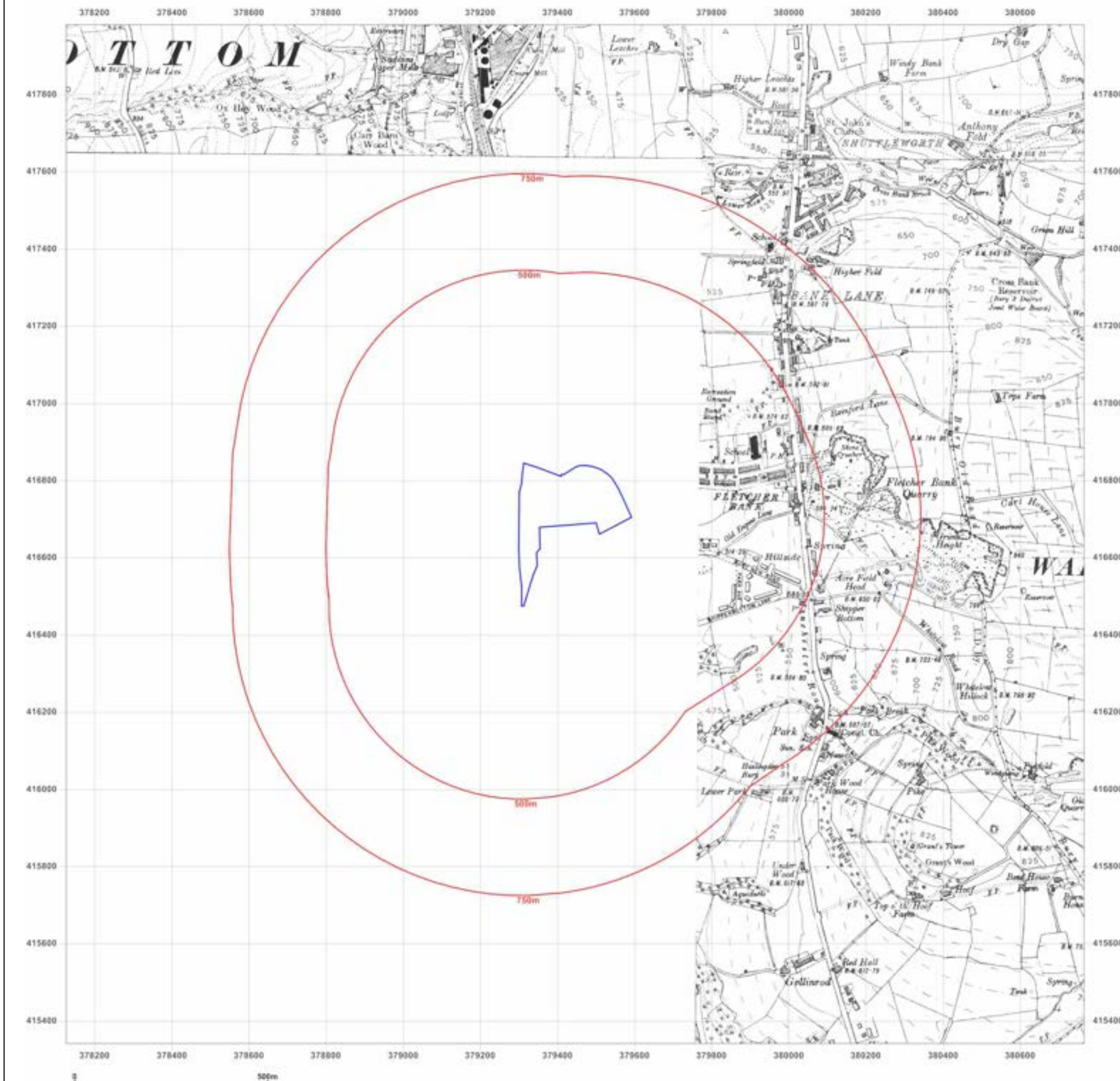


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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: Provisional

Map date: 1949

Scale: 1:10,560

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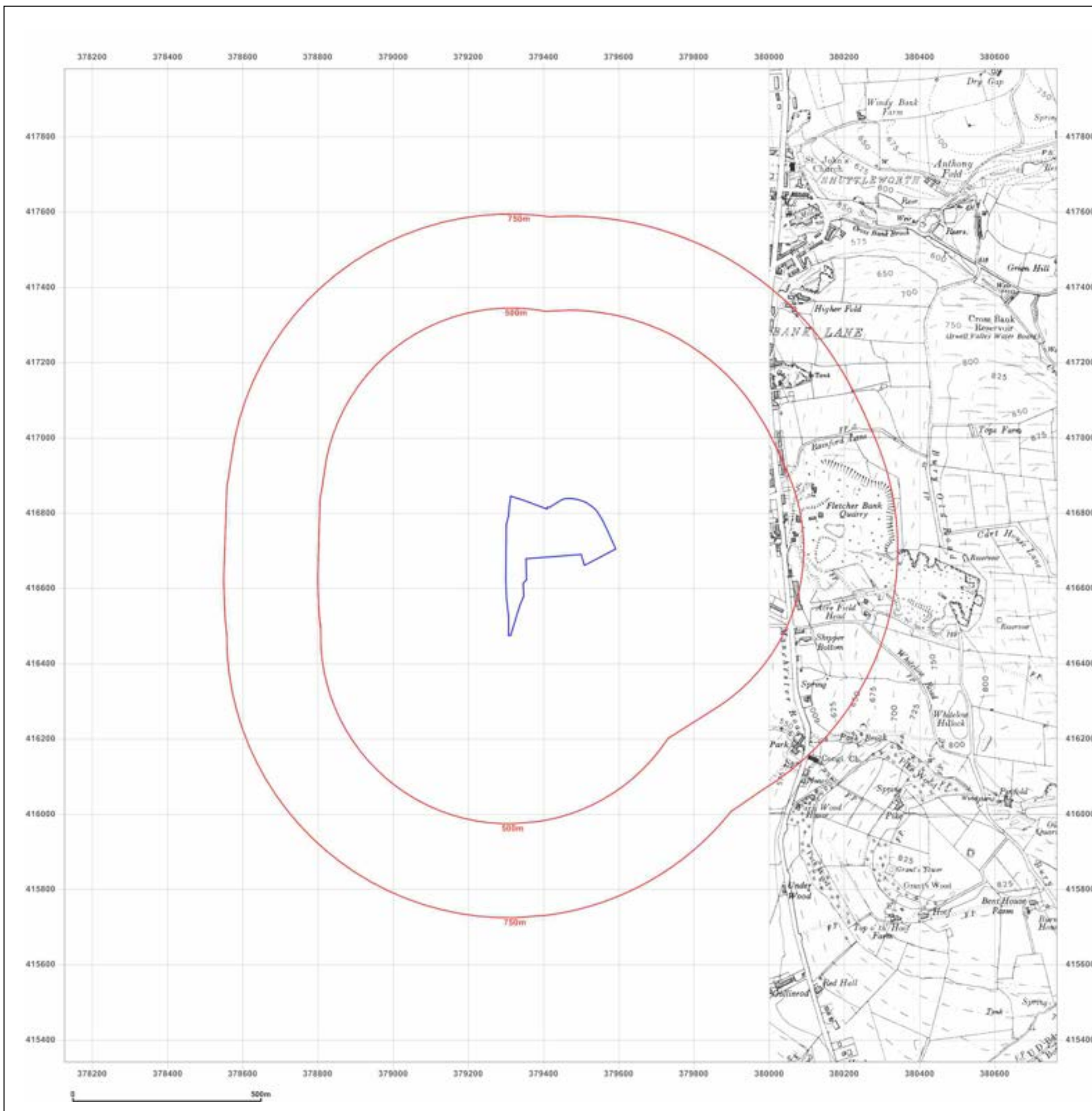


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Grid Ref: 379445, 416660

Map Name: Provisional

Map date: 1967-1968

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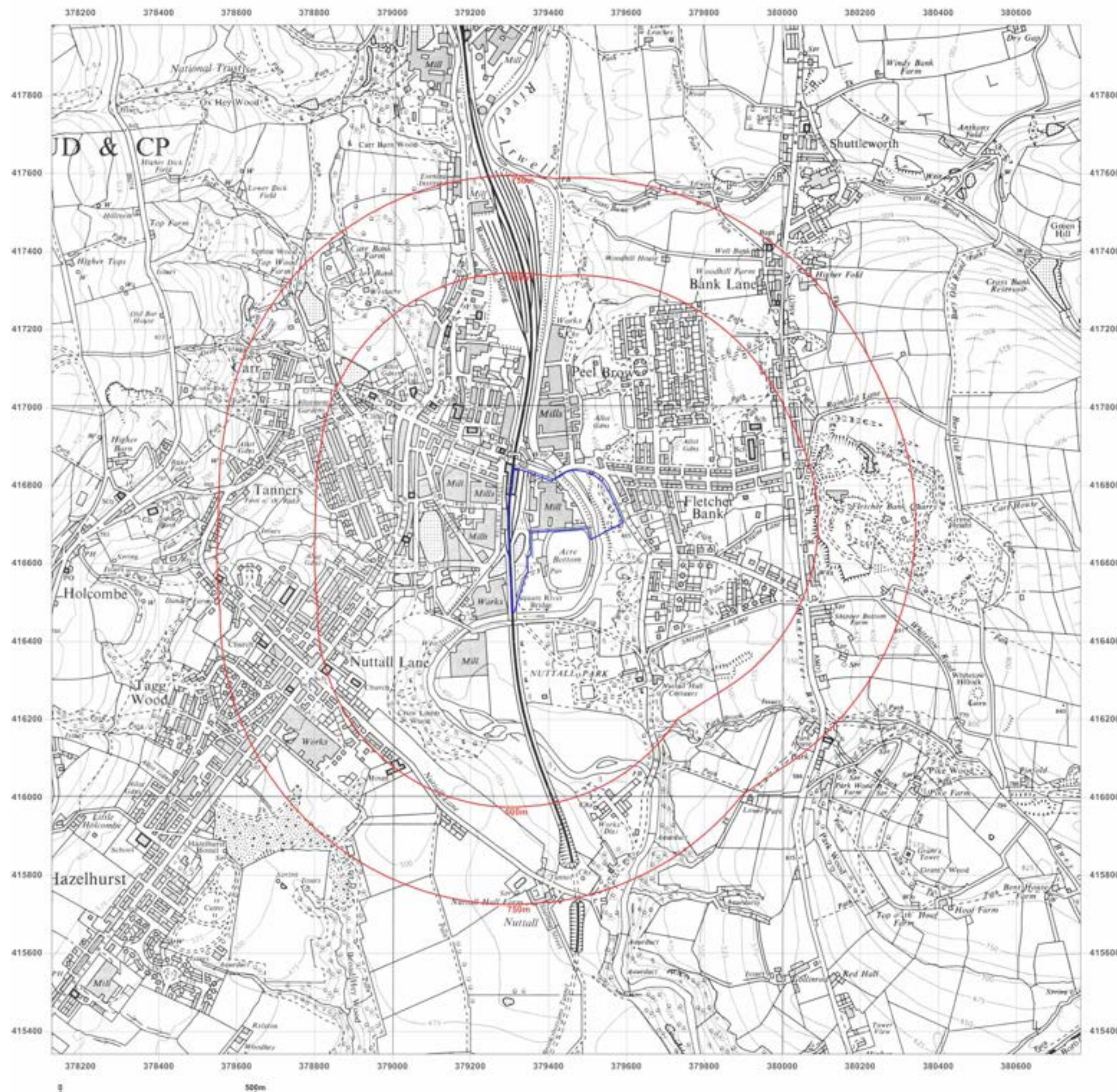


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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 1987

Scale: 1:10,000

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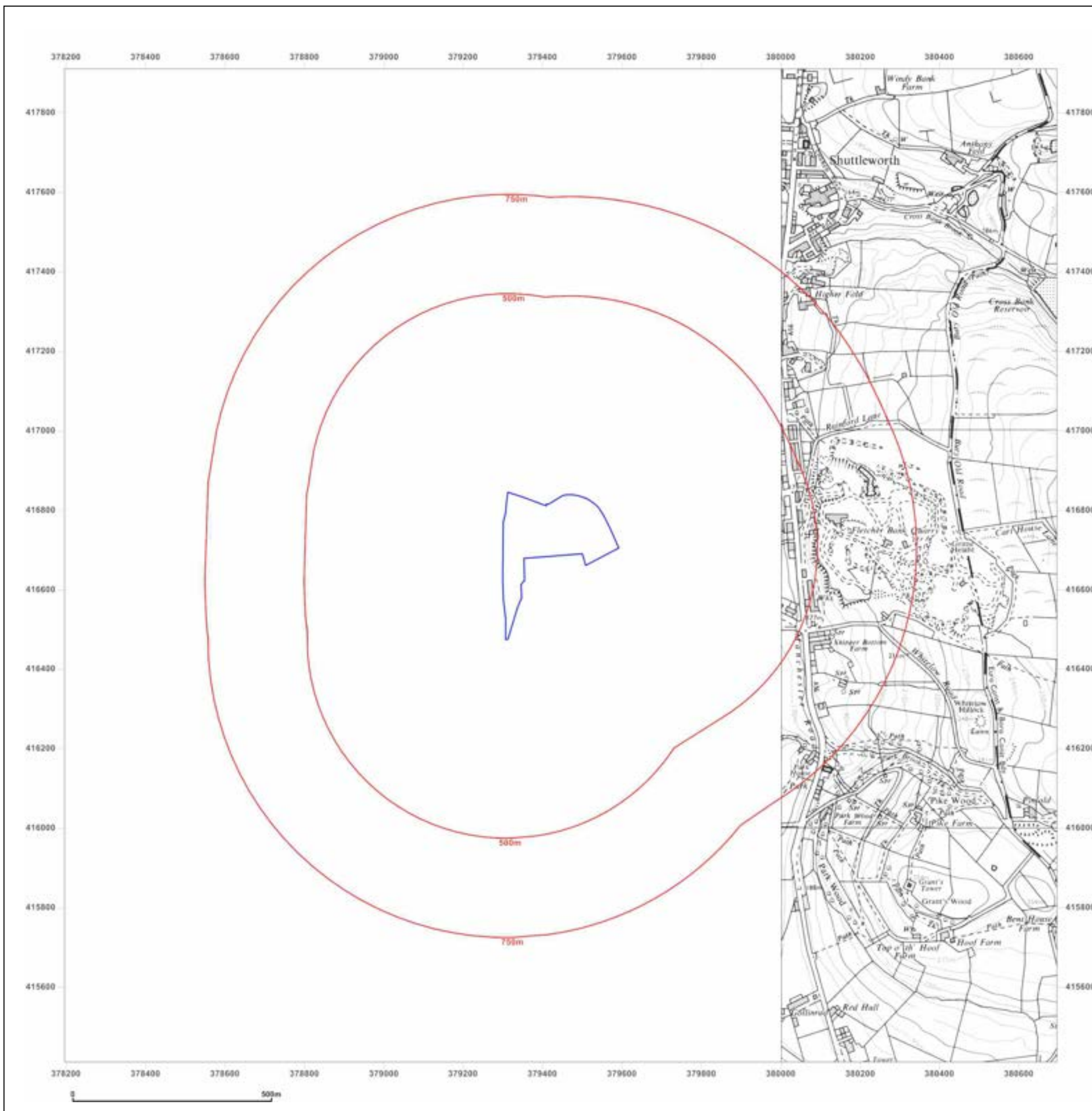


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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

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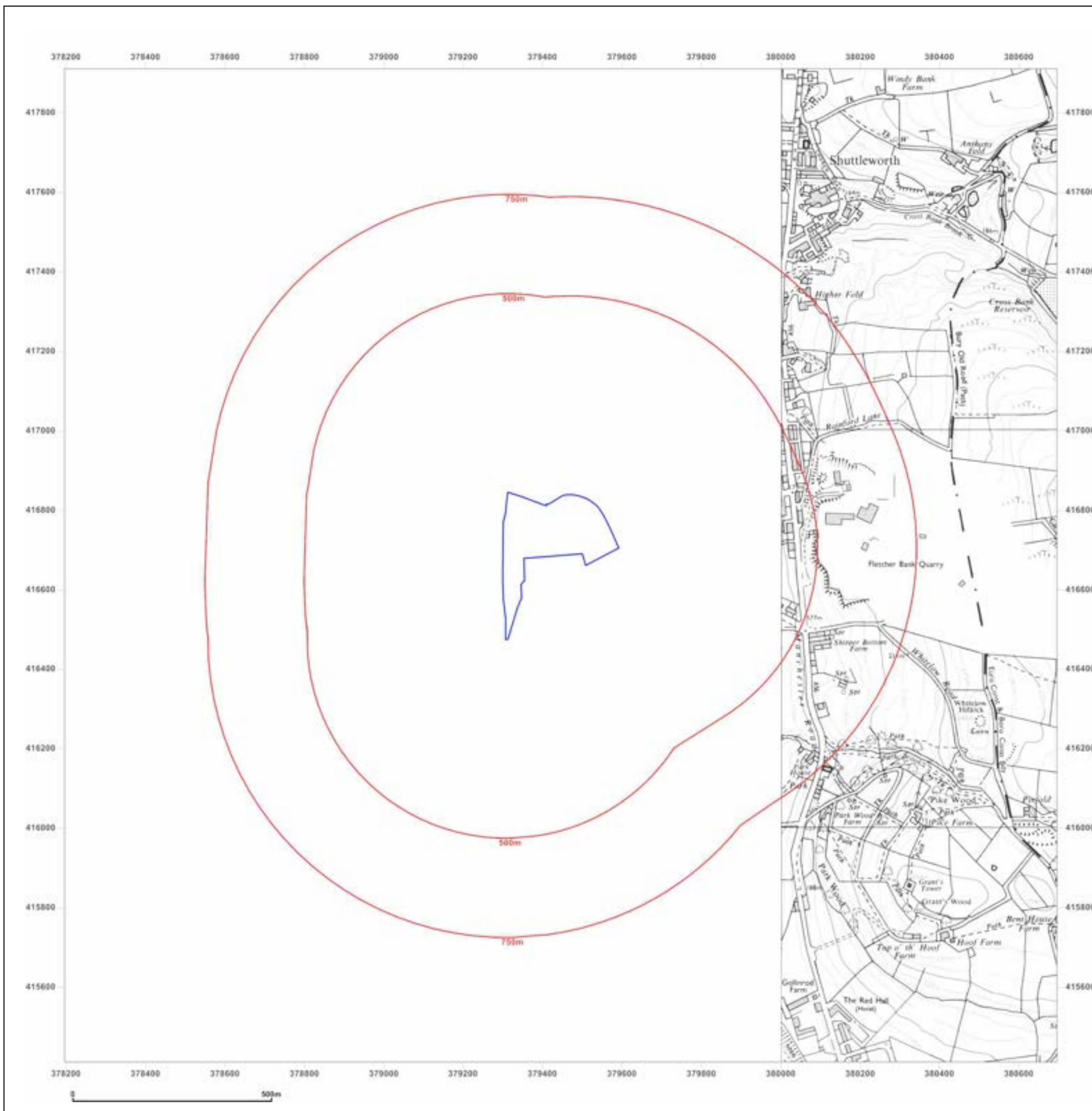


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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000

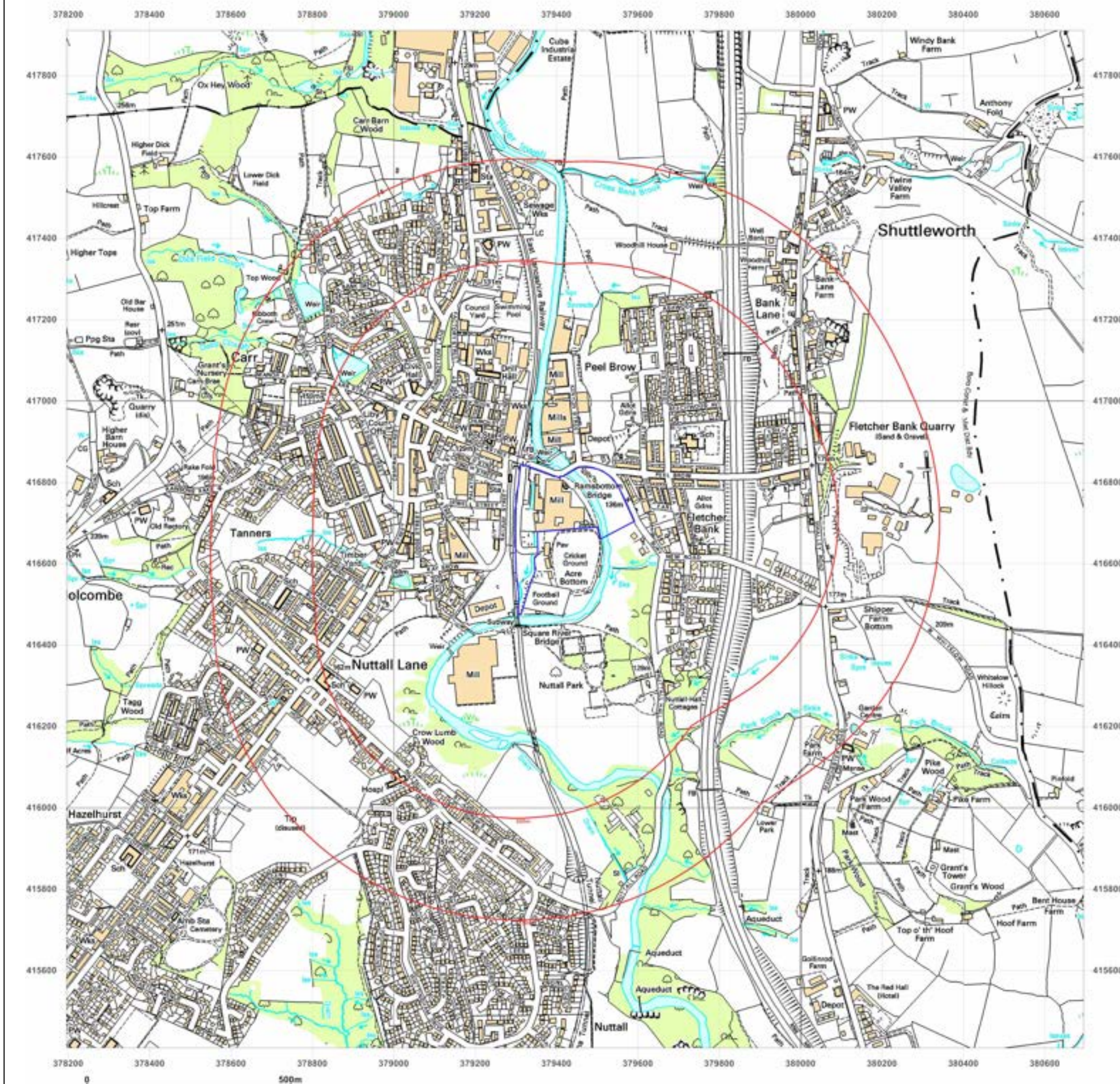


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Client Ref: BG3315
Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

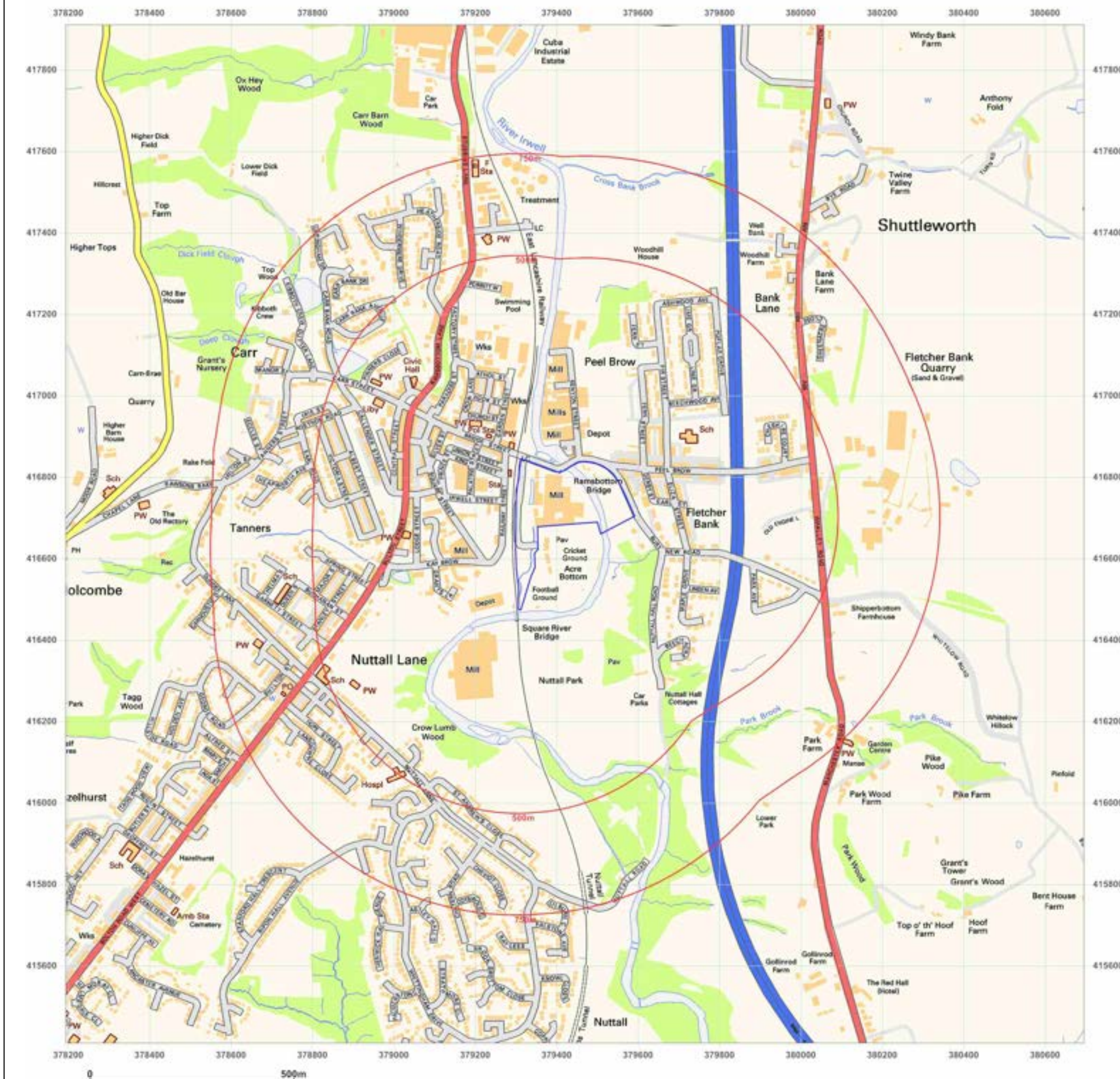


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Report Ref: GS-6015652
Grid Ref: 379445, 416660

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

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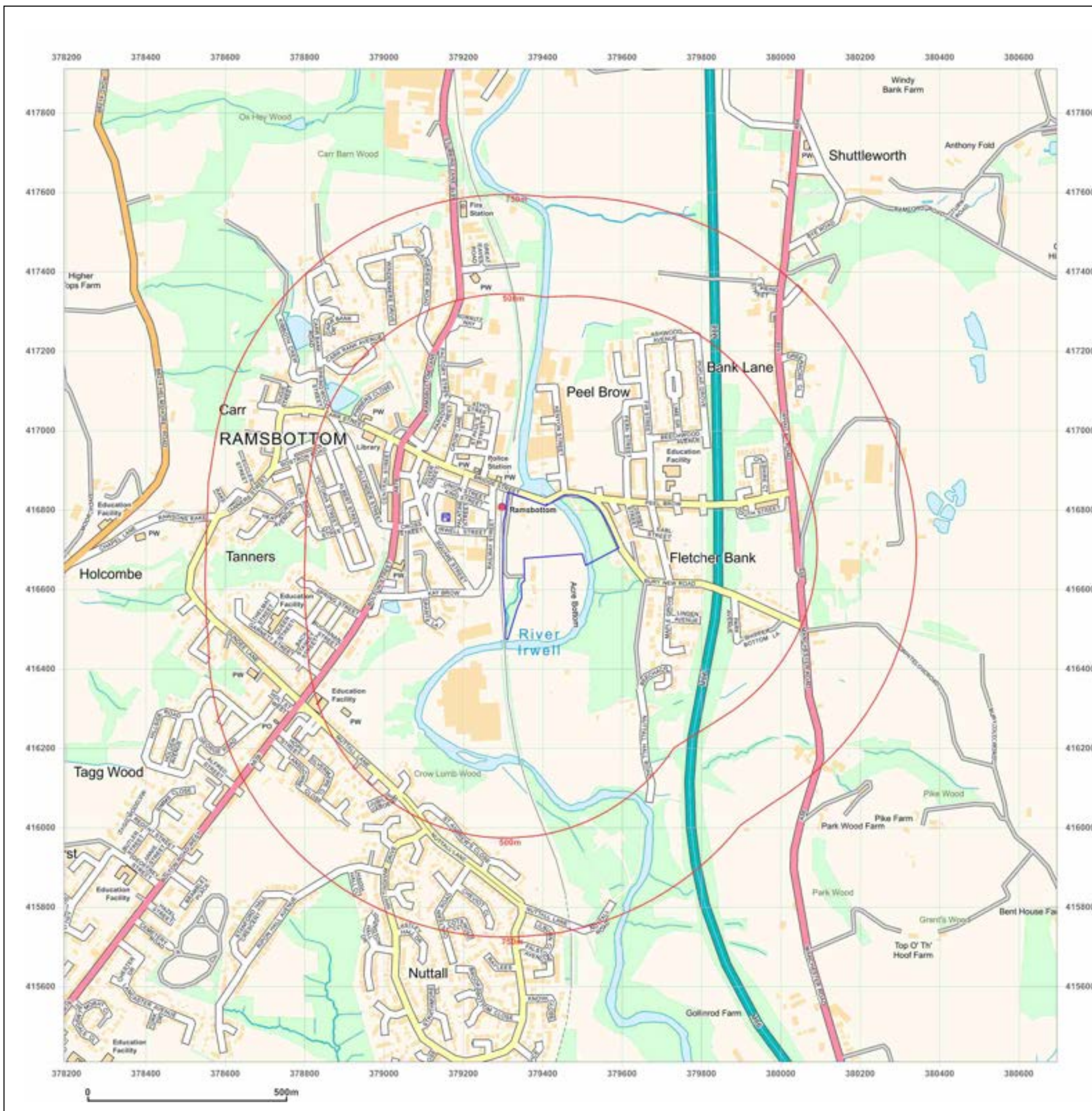


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APPENDIX D

- (i) GroundSure Report
- (ii) Coal Authority Report



Betts Geo Ltd

BETTS GEO ENVIRONMENTAL, 4 OLD MARSH
FARM BARN, MARSH FARM ROAD,
SEALAND, CH5 2LY

Groundsure
Reference:

GS-6015650

Your Reference:

BG3315

Report Date

9 May 2019

Report Delivery
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Address: HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM, BL0 0BS

Date: 9 May 2019

Reference: GS-6015650

Client: Betts Geo Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 26-Mar-2012

Grid Reference: 379433,416756

Site Size: 4.6144ha

Report Reference: GS-6015650

Client Reference: BG3315

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Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	32	25	64	75
1.2 Additional Information – Historical Tank Database	15	0	8	2
1.3 Additional Information – Historical Energy Features Database	3	2	13	20
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	4	3	0
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	19	10	30	55
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	2	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	2	1	0	3
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	1	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	1	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	1	1	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	3	2	1
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	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	4	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
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	2	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	1	0	0	2	5	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	2	0	2	2	29	7
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	5	7	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	6	4	10	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	1	5	34	Not searched
4.2 Records of Petrol and Fuel Sites	0	1	0	1
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	Identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	2	0	0	0	2	18
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	6	0	8	3	21
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	3
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	0	1	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	16	20	20	58	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 Environment Agency Zone 2 floodplains within 250m of the study site	Identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	High					
7.4 Flood Defences within 250m of the study site	Identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	Identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High					

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	2
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	3	6
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	1
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	1	0	2	2	1

Section 9: Natural Hazards	
9.1 Maximum risk of natural ground subsidence	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Moderate
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Moderate
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining	
10.1 Coal mining areas within 75m of the study site	Identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	Identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

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

1. Historical Industrial Sites

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

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

Note: Maps

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

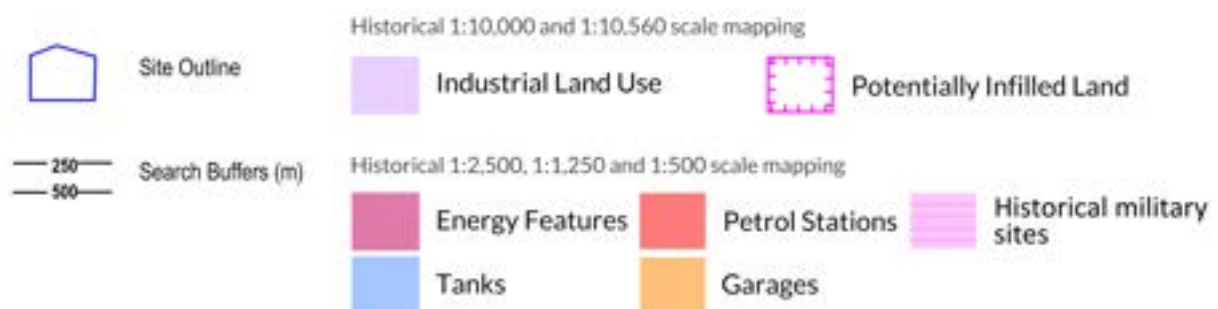
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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

1. Historical Land Use



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1. Historical Industrial Sites

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

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

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 196

ID	Distance [m]	Direction	Use	Date
1D	0	On Site	Refuse Heap	1927
2BK	0	On Site	Refuse Heap	1948
3A	0	On Site	Refuse Heap	1968
4A	0	On Site	Refuse Heap	1948
5A	0	On Site	Refuse Heap	1955
6B	0	On Site	Paper Mill	1908
7B	0	On Site	Paper Mill	1948
8	0	On Site	Railway Sidings	1955
9BL	0	On Site	Unspecified Ground Workings	1908
10B	0	On Site	Paper Mill	1927
11B	0	On Site	Unspecified Mill	1891
12B	0	On Site	Paper Mill	1955
13B	0	On Site	Unspecified Mill	1968
14B	0	On Site	Unspecified Mill	1980
15C	0	On Site	Filter Beds	1927
16C	0	On Site	Filter Beds	1948
17C	0	On Site	Filter Beds	1955
18BJ	0	On Site	Unspecified Ground Workings	1968
19BI	0	On Site	Refuse Heap	1948
20D	0	On Site	Refuse Heap	1955
21AB	0	On Site	Railway Sidings	1968
22E	0	On Site	Railway Sidings	1948
23E	0	On Site	Railway Sidings	1927
24E	0	On Site	Railway Sidings	1891
25E	0	On Site	Railway Sidings	1908
26F	0	On Site	Railway Station	1927
27F	0	On Site	Railway Station	1908
28F	0	On Site	Railway Station	1891
29F	0	On Site	Railway Station	1948
30F	0	On Site	Railway Station	1955
31F	0	On Site	Railway Station	1968
32G	0	On Site	Bleaching Works	1955
33BM	6	W	Railway Sidings	1908

34G	8	W	Unspecified Depot	1980
35G	8	W	Unspecified Works	1968
36H	9	W	Railway Sidings	1948
37H	9	W	Railway Sidings	1927
38G	11	W	Bleaching Works	1948
39G	11	W	Unspecified Works	1927
40H	13	W	Railway Building	1955
41H	14	W	Railway Building	1908
42I	23	NE	Unspecified Ground Workings	1955
43I	28	NE	Unspecified Ground Workings	1948
44I	28	NE	Unspecified Ground Workings	1927
45J	32	W	Unspecified Works	1980
46J	34	W	Unspecified Mills	1955
47J	34	W	Unspecified Mills	1968
48K	36	W	Unspecified Mills	1955
49K	36	W	Unspecified Commercial/Industrial	1980
50K	36	W	Unspecified Mills	1968
51	36	S	Unspecified Mill	1980
52K	36	W	Unspecified Mills	1891
53J	38	W	Unspecified Mills	1927
54J	38	W	Unspecified Mills	1948
55M	44	N	Cotton Mills	1908
56L	44	N	Unspecified Mills	1948
57L	44	N	Unspecified Mills	1927
58L	51	N	Unspecified Commercial/Industrial	1980
59L	51	N	Unspecified Mills	1955
60M	54	N	Unspecified Mills	1968
61N	55	W	Railway Sidings	1948
62N	55	W	Railway Sidings	1927
63	75	W	Unspecified Mills	1948
64M	85	N	Unspecified Mills	1927
65M	85	N	Unspecified Mills	1948
66P	85	SW	Unspecified Mill	1968
67O	85	NE	Unspecified Ground Workings	1927
68O	85	NE	Unspecified Ground Workings	1948
69P	89	SW	Cotton Mill	1955
70Q	93	W	Unspecified Mill	1955
71Q	93	W	Unspecified Commercial/Industrial	1980
72Q	93	W	Unspecified Commercial/Industrial	1968
73O	93	NE	Unspecified Ground	1955

Workings				
74	93	W	Unspecified Works	1980
75M	94	N	Unspecified Commercial/Industrial	1980
76M	94	N	Unspecified Mills	1955
77R	95	W	Unspecified Mill	1908
78R	95	W	Unspecified Mill	1948
79R	95	W	Unspecified Mill	1927
80P	97	SW	Cotton Mill	1948
81P	97	SW	Unspecified Mill	1927
82S	98	W	Railway Sidings	1927
83S	98	W	Railway Sidings	1948
84T	108	SE	Old Engine	1955
85U	109	W	Unspecified Works	1980
86S	109	W	Unspecified Ground Workings	1908
87T	110	SE	Old Engine	1948
88T	110	SE	Old Engine	1908
89T	110	SE	Old Engine	1927
90U	117	W	Unspecified Mill	1955
91U	117	W	Unspecified Mill	1968
92	118	NW	Police Station	1980
93U	120	W	Unspecified Mill	1927
94U	120	W	Unspecified Mill	1948
95S	121	W	Unspecified Tank	1968
96S	122	W	Unspecified Tank	1955
97V	126	W	Unspecified Tank	1908
98V	126	W	Unspecified Tank	1927
99V	126	W	Unspecified Tank	1948
100V	130	W	Filter Beds	1955
101V	133	W	Filter Beds	1948
102V	133	W	Filter Beds	1927
103BR	137	SE	Refuse Heap	1968
104BS	139	W	Unspecified Ground Workings	1908
105W	141	SE	Refuse Heap	1955
106W	147	SE	Refuse Heap	1948
107W	147	SE	Refuse Heap	1927
108X	186	N	Unspecified Mill	1955
109X	186	N	Unspecified Commercial/Industrial	1980
110X	186	N	Unspecified Mill	1927
111X	186	N	Unspecified Mill	1948
112Y	186	N	Unspecified Mills	1891
113Y	186	N	Unspecified Disused Mills	1948
114Y	197	N	Unspecified Disused Mills	1955
115	197	W	Unspecified Works	1980

116Y	197	N	Unspecified Commercial/Industrial	1968
117Z	198	SE	Refuse Heap	1928
118Z	209	SE	Refuse Heap	1938
119Y	213	N	Unspecified Mills	1908
120Y	224	N	Unspecified Mills	1927
121BV	230	E	Cuttings	1980
122AA	264	N	Soap Works	1948
123AA	264	N	Soap Works	1927
124	265	NW	Unspecified Works	1980
125AF	267	N	Railway Sidings	1908
126AA	276	N	Unspecified Works	1968
127AA	276	N	Unspecified Works	1980
128AA	276	N	Soap Works	1955
129AB	312	N	Railway Sidings	1927
130AB	312	N	Railway Sidings	1948
131AB	312	N	Railway Sidings	1908
132AB	312	N	Railway Sidings	1891
133	326	N	Railway Building	1955
134BZ	338	NE	Cuttings	1980
135AC	342	N	Unspecified Tank	1955
136AC	342	N	Chimney	1968
137AC	342	N	Chimney	1980
138AD	345	S	Chemical Works	1955
139AD	345	S	Unspecified Disused Works	1968
140AE	346	S	Unspecified Pit	1948
141AE	346	S	Unspecified Pit	1927
142AD	346	S	Unspecified Disused Works	1980
143AF	347	N	Railway Sidings	1927
144AF	347	N	Railway Sidings	1948
145AF	347	N	Railway Sidings	1891
146AE	349	S	Unspecified Ground Workings	1908
147AD	350	S	Chemical Works	1948
148AD	350	S	Chemical Works	1927
149AG	375	N	Refuse Destructor	1927
150AG	375	N	Refuse Destructor	1948
151AJ	375	N	Unspecified Ground Workings	1955
152AG	386	N	Refuse Destructor	1955
153AG	387	N	Fire Station	1968
154CA	398	NW	Unspecified Ground Workings	1891
155CB	401	W	Unspecified Ground Workings	1955
156AH	407	NW	Unspecified Mill	1908

157AH	412	NW	Unspecified Disused Mill	1948
158AH	412	NW	Unspecified Mill	1927
159AI	434	S	Unspecified Pit	1908
160AI	437	S	Cuttings	1948
161AI	437	S	Cuttings	1927
162AK	439	SE	Unspecified Pit	1968
163AJ	440	N	Unspecified Ground Workings	1948
164AJ	440	N	Unspecified Ground Workings	1927
165AK	447	SE	Unspecified Pit	1928
166AK	447	SE	Unspecified Pit	1938
167AL	449	E	Unspecified Quarry	1891
168AL	449	E	Unspecified Quarry	1938
169AK	454	SE	Unspecified Pit	1955
170AO	460	E	Sandstone Quarry	1851
171AM	462	S	Cuttings	1955
172AM	462	S	Cuttings	1927
173AM	462	S	Cuttings	1948
174AM	462	S	Cuttings	1908
175AM	462	S	Cuttings	1891
176AL	464	E	Unspecified Quarry	1908
177AL	464	E	Unspecified Quarry	1928
178AN	464	E	Unspecified Quarry	1949
179	464	N	Smithy	1908
180CD	470	W	Refuse Heap	1891
181AP	471	SW	Hospital	1980
182AN	475	E	Unspecified Quarry	1967
183AN	475	E	Unspecified Quarry	1987
184AO	476	E	Railway Sidings	1938
185AP	478	SW	Hospital	1968
186AP	478	SW	Hospital	1955
187AP	482	SW	Hospital	1908
188AQ	482	E	Unspecified Works	1967
189AQ	482	E	Unspecified Works	1987
190AP	485	SW	Hospital	1948
191AP	485	SW	Hospital	1927
192	491	E	Railway Sidings	1928
193	494	E	Railway Sidings	1928
194AR	500	N	Railway Building	1948
195AR	500	N	Railway Building	1908
196AR	500	N	Railway Building	1927

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:

25

ID	Distance (m)	Direction	Use	Date
197C	0	On Site	Unspecified Tank	1978
198C	0	On Site	Unspecified Tank	1992
199E	0	On Site	Unspecified Tank	1891
200E	0	On Site	Tanks	1992
201AS	0	On Site	Unspecified Tank	1938
202AS	0	On Site	Unspecified Tank	1910
203AS	0	On Site	Unspecified Tank	1929
204E	0	On Site	Tanks	1992
205E	0	On Site	Tanks	1978
206AT	0	On Site	Tanks	1992
207AT	0	On Site	Tanks	1978
208E	0	On Site	Tanks	1994
209E	0	On Site	Tanks	1994
210AT	0	On Site	Tanks	1994
211C	0	On Site	Unspecified Tank	1994
212AU	53	N	Unspecified Tank	1962
213AU	63	NW	Unspecified Tank	1978
214AV	63	NW	Unspecified Tank	1992
215AV	63	NW	Unspecified Tank	1994
216BO	73	W	Unspecified Tank	1891
217K	97	W	Tanks	1992
218V	123	W	Unspecified Tank	1910
219V	124	W	Unspecified Tank	1929
220Y	284	N	Unspecified Tank	1891
221AG	387	N	Unspecified Tank	1962

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:

38

ID	Distance (m)	Direction	Use	Date
222AW	0	On Site	Electricity Substation	1992

223AW	0	On Site	Electricity Substation	1978
224AW	0	On Site	Electricity Substation	1994
225I	49	NE	Electricity Substation	1978
226I	49	NE	Electricity Substation	1989
227I	51	NE	Electricity Substation	1992
228AX	52	W	Electricity Substation	1978
229AX	53	W	Electricity Substation	1992
230AX	53	W	Electricity Substation	1994
231AY	84	N	Electricity Substation	1992
232AY	86	N	Electricity Substation	1994
233AY	87	N	Electricity Substation	1978
234AZ	148	E	Electricity Substation	1989
235AZ	149	E	Electricity Substation	1992
236AZ	149	E	Electricity Substation	1978
237BA	244	NW	Electricity Substation	1994
238BA	244	NW	Electricity Substation	1996
239BA	244	NW	Electricity Substation	1992
240BA	254	NW	Electricity Substation	1981
241BA	254	NW	Electricity Substation	1978
242BB	277	N	Electricity Substation	1978
243BB	277	N	Electricity Substation	1994
244BB	277	N	Electricity Substation	1992
245BB	277	N	Electricity Substation	1996
246BB	277	N	Electricity Substation	1981
247BC	314	W	Electricity Substation	1978
248BC	314	W	Electricity Substation	1992
249BC	315	W	Electricity Substation	1989
250BD	317	NE	Electricity Substation	1992
251BD	318	NE	Electricity Substation	1978
252BD	318	NE	Electricity Substation	1981
253	455	E	Electricity Substation	1993
254BE	468	E	Electricity Substation	1979
255BE	468	E	Electricity Substation	1987
256BE	469	E	Electricity Substation	1987
257BE	469	E	Electricity Substation	1993
258BF	493	N	Electricity Substation	1978
259BF	493	N	Electricity Substation	1981

1.4 Additional Information – Historical Petrol and Fuel Site Database

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

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

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

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

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 7

ID	Distance (m)	Direction	Use	Date
260BG	41	W	Garage	1962
261BG	42	W	Garage	1992
262BG	42	W	Garage	1994
263BG	43	W	Garage	1978
264M	92	N	Depot and Destructor Works	1978
265BH	218	W	Garage	1992
266BH	218	W	Garage	1978

1.6 Historical military sites

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

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

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 114

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

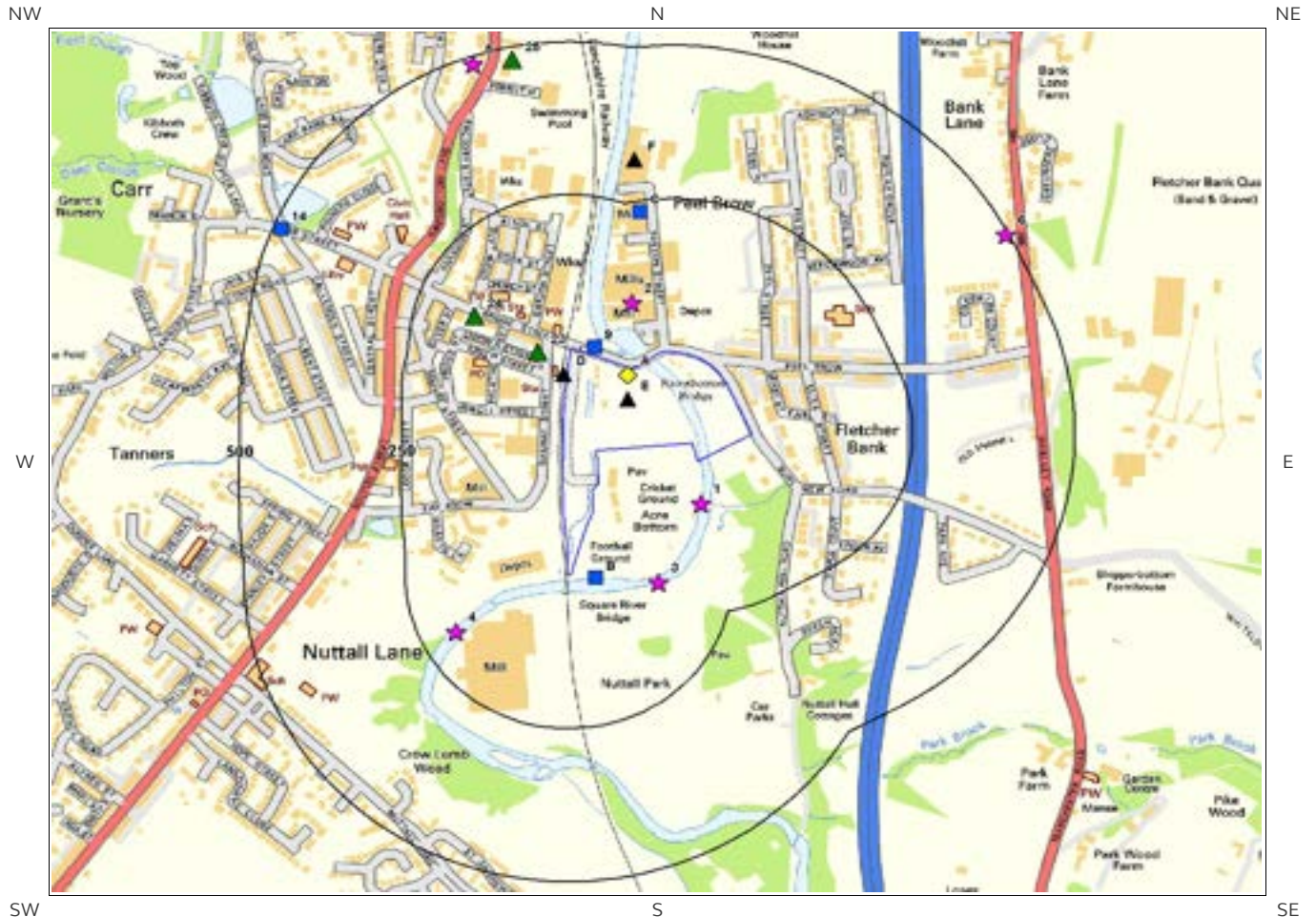
ID	Distance(m)	Direction	Use	Date
267BI	0	On Site	Refuse Heap	1948
268A	0	On Site	Refuse Heap	1927
269BJ	0	On Site	Refuse Heap	1955
270A	0	On Site	Unspecified Ground Workings	1968
271A	0	On Site	Refuse Heap	1955
272A	0	On Site	Refuse Heap	1948
273A	0	On Site	Refuse Heap	1968

274BK	0	On Site	Refuse Heap	1948
275BL	0	On Site	Unspecified Ground Workings	1908
276BM	0	On Site	Reservoir	1955
277BN	0	On Site	Reservoirs	1891
278BN	0	On Site	Reservoir	1948
279BN	0	On Site	Pond	1908
280BN	0	On Site	Reservoir	1927
281BN	0	On Site	Pond	1968
282C	0	On Site	Filter Beds	1955
283C	0	On Site	Filter Beds	1927
284AS	0	On Site	Ponds	1955
285C	0	On Site	Filter Beds	1948
286BQ	3	N	Pond	1891
287BO	8	W	Pond	1968
288BP	11	W	Reservoir	1927
289BP	11	W	Reservoir	1908
290BP	11	W	Reservoir	1948
291BQ	14	N	Pond	1948
292BQ	14	N	Pond	1927
293I	23	NE	Unspecified Ground Workings	1955
294I	28	NE	Unspecified Ground Workings	1927
295I	28	NE	Unspecified Ground Workings	1948
296O	85	NE	Unspecified Ground Workings	1948
297O	85	NE	Unspecified Ground Workings	1927
298O	93	NE	Unspecified Ground Workings	1955
299S	109	W	Unspecified Ground Workings	1908
300V	130	W	Filter Beds	1955
301V	133	W	Filter Beds	1948
302V	133	W	Filter Beds	1927
303BR	137	SE	Refuse Heap	1968
304BS	139	W	Unspecified Ground Workings	1908
305W	141	SE	Refuse Heap	1955
306W	147	SE	Refuse Heap	1927
307W	147	SE	Refuse Heap	1948
308BT	156	W	Reservoirs	1955
309BT	156	W	Ponds	1968
310BT	159	W	Reservoirs	1948
311BT	159	W	Reservoirs	1927
312BT	159	W	Reservoirs	1908
313BT	164	W	Reservoirs	1948

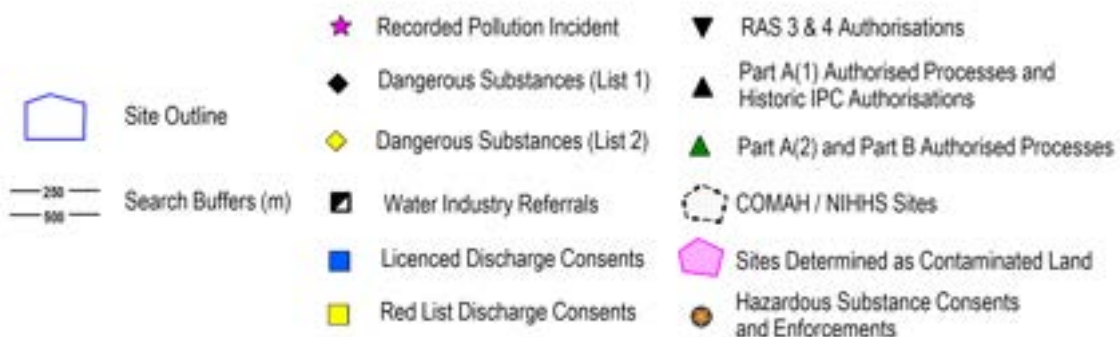
314BT	164	W	Reservoirs	1908
315Q	164	W	Pond	1968
316Q	169	W	Reservoir	1955
317Q	171	W	Reservoir	1908
318Q	171	W	Reservoir	1891
319Q	171	W	Reservoir	1948
320Q	171	W	Reservoir	1927
321Z	198	SE	Refuse Heap	1928
322BU	202	N	Pond	1955
323Z	209	SE	Refuse Heap	1938
324BU	224	N	Pond	1968
325BV	230	E	Cuttings	1980
326BW	256	W	Reservoir	1927
327BW	256	W	Reservoir	1948
328BW	256	W	Reservoir	1908
329BW	256	W	Pond	1891
330BW	257	W	Pond	1980
331BW	257	W	Pond	1968
332BW	262	W	Reservoir	1955
333BX	296	N	Pond	1948
334BX	296	N	Pond	1927
335BX	306	N	Pond	1955
336BY	322	N	Pond	1891
337AE	324	S	Pond	1908
338BY	330	N	Pond	1955
339BZ	338	NE	Cuttings	1980
340AE	346	S	Unspecified Pit	1927
341AE	346	S	Unspecified Pit	1948
342AE	349	S	Unspecified Ground Workings	1908
343AG	363	N	Pool	1980
344AG	375	N	Refuse Destructor	1927
345AG	375	N	Refuse Destructor	1948
346AJ	375	N	Unspecified Ground Workings	1955
347BY	386	N	Refuse Destructor	1955
348CA	398	NW	Unspecified Ground Workings	1891
349CB	401	W	Unspecified Ground Workings	1955
350AI	434	S	Unspecified Pit	1908
351AI	437	S	Cuttings	1948
352AI	437	S	Cuttings	1927
353	437	S	Reservoir	1955
354AK	439	SE	Unspecified Pit	1968
355AJ	440	N	Unspecified Ground Workings	1927

356AJ	440	N	Unspecified Ground Workings	1948
357CC	441	NW	Reservoir	1908
358CC	441	NW	Reservoir	1927
359CC	441	NW	Reservoir	1948
360CC	443	NW	Reservoir	1891
361CC	443	NW	Pond	1968
362CC	443	NW	Pond	1980
363CC	444	NW	Reservoir	1955
364AK	447	SE	Unspecified Pit	1928
365AK	447	SE	Unspecified Pit	1938
366AL	449	E	Unspecified Quarry	1891
367AL	449	E	Unspecified Quarry	1938
368AK	454	SE	Unspecified Pit	1955
369AO	460	E	Sandstone Quarry	1851
370AM	462	S	Cuttings	1955
371AM	462	S	Cuttings	1948
372AM	462	S	Cuttings	1891
373AM	462	S	Cuttings	1908
374AM	462	S	Cuttings	1927
375AL	464	E	Unspecified Quarry	1908
376AL	464	E	Unspecified Quarry	1928
377AN	464	E	Unspecified Quarry	1949
378CD	470	W	Refuse Heap	1891
379AN	475	E	Unspecified Quarry	1987
380AN	475	E	Unspecified Quarry	1967

2. Environmental Permits, Incidents and Registers Map



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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:

2

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

ID	Distance (m)	Direction	NGR	Details
32D	7	W	379300 416800	Operator: Mondi Packaging Holcombe Ltd Address: Holcombe Mill, Bridge Street, Ramsbottom, Bury, Lancashire, BL0 0BS Process: Paper And Pulp Manufacturing Processes Permit Number: AU7451 Original Permit Number: IPCAPP Date Approved: 27-1-1997 Effective Date: 29-1-1997 Status: Superseded By Variation
33D	7	W	379300 416800	Operator: Mondi Packaging Holcombe Ltd Address: Holcombe Mill, Bridge Street, Ramsbottom, Bury, Lancashire, BL0 0BS Process: Paper And Pulp Manufacturing Processes Permit Number: BD4546 Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked - Now Ippc

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

6

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

ID	Distance (m)	Direction	NGR	Details
26E	0	On Site	379400 416760	Operator: MONDI HOLCOMBE LTD Installation Name: DANISCO PAPER MILL EAEPRBJ6542IQS002 Process: PAPER, PULP AND BOARD; PRODUCING PAPER/BOARD >20T/D Permit Number: BJ6542IQ Original Permit Number: BJ6542IQ EPR Reference: - Issue Date: 09/01/2002 Effective Date: 09/01/2002 Last date noted as effective: 2019-01-31 Status: SUPERCEDED
27E	0	On Site	379400 416760	Operator: MONDI HOLCOMBE LTD Installation Name: DANISCO PAPER LIMITED Process: PAPER, PULP AND BOARD; PRODUCING PAPER/BOARD >20T/D Permit Number: KP3530KN Original Permit Number: BJ6542IQ EPR Reference: - Issue Date: - Effective Date: 25/06/2010

ID	Distance (m)	Direction	NGR	Details	
				Last date noted as effective: 2019-01-31 Status: SURRENDER EFFECTIVE	
28D	7	W	379300 416800	Operator: MONDI PAPER LTD Installation Name: - Process: PAPER, PULP & BOARD; PRODUCING PAPER/BOARD >20T/D	Permit Number: BJ6542 Original Permit Number: BJ6542 EPR Reference: - Issue Date: 09/01/2002 Effective Date: 09/01/2002 Last date noted as effective: 2004-10-01 Status: SUPERSEDED BY PAS
29F	315	N	379410 417150	Operator: KAYS LTD Installation Name: RAMSBOTTOM SOAP WORKS Process: ORGANIC CHEMICALS; SURFACE-ACTIVE AGENTS	Permit Number: XP3131YF Original Permit Number: WP3339LW EPR Reference: - Issue Date: - Effective Date: 22/08/2017 Last date noted as effective: 2019-01-31 Status: SURRENDER EFFECTIVE
30F	315	N	379410 417150	Operator: KAYS LTD Installation Name: RAMSBOTTOM SOAP WORKS Process: ORGANIC CHEMICALS; SURFACE-ACTIVE AGENTS	Permit Number: WP3339LW Original Permit Number: WP3339LW EPR Reference: - Issue Date: 14/06/2007 Effective Date: 14/06/2007 Last date noted as effective: 2019-01-31 Status: SUPERCEDED
31F	315	N	379410 417150	Operator: KAYS LTD Installation Name: RAMSBOTTOM SOAP WORKS Process: ORGANIC CHEMICALS; SURFACE-ACTIVE AGENTS	Permit Number: VP3435XJ Original Permit Number: WP3339LW EPR Reference: - Issue Date: 14/02/2008 Effective Date: 14/02/2008 Last date noted as effective: 2019-01-31 Status: SUPERCEDED

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

0

Database searched and no data found.

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

1

The following List 1 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
7A	0	On Site	379400 416800	Name: Danisco Paper, Holcombe Mill Status: Active Receiving Water: Stw Partcons	Authorised Substances: Mercury (other), Hexachlorocyclohexane, Pentachlorophenol, Hexachlorobutadiene

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

1

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
8A	0	On Site	379400 416800	Name: Danisco Paper, Holcombe Mill Status: Not Active Receiving Water: - Authorised Substances: Atrazine & Simazine

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

3

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
23	49	W	379261 416836	Address: Station Garage, Railway Street, BL0 9AL Process: Petrol Vapour Recovery Status: Historical Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
24	157	W	379163 416894	Address: First Impression, 44 Bridge Street, Ramsbottom, Bury, BL0 9AQ Process: Dry Cleaning Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
25	476	N	379221 417313	Address: Ramsbottom Service Station, Stubbins Road, Ramsbottom, BL0 0PU 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

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:

6

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

ID	Distance (m)	Direction	NGR	Details
9	13	N	379348 416847	Address: CARR STREET CSO 099BP, 82 CARR STREET, RAMSBOTTOM, BURY, LANCASHIRE, BL0 9EG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0001 Permit Version: 4 Receiving Water: RIVER IRWELL Status: VARIED UNDER EPR 2010 Issue date: 11/04/2018 Effective Date: 11-Apr-2018 Revocation Date: -
10B	38	E	379350 416470	Address: CARR STREET CSO 099BP, 82 CARR STREET, RAMSBOTTOM, BURY, LANCASHIRE, BL0 9EG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0001 Permit Version: 2 Receiving Water: RIVER IRWELL Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03-Sep-2010 Revocation Date: 04/02/2016
11B	38	E	379350 416470	Address: CARR STREET CSO 099BP, 82 CARR STREET, RAMSBOTTOM, BURY, LANCASHIRE, BL0 9EG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0001 Permit Version: 1 Receiving Water: RIVER IRWELL Status: VARIED UNDER EPR 2010 Issue date: - Effective Date: 01-Jan-1995 Revocation Date: 02/09/2010
12C	232	N	379419 417068	Address: BRITANNIA WORKS, KENYON ST, RAMSBOTTOM, BURY, LANCASHIRE Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 0165/76 Permit Version: 2 Receiving Water: RIVER IRWELL Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 01-Jan-1995 Revocation Date: 15/08/2017
13C	232	N	379419 417068	Address: BRITANNIA WORKS, KENYON ST, RAMSBOTTOM, BURY, LANCASHIRE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0165/76 Permit Version: 1 Receiving Water: RIVER IRWELL Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01-Apr-1991 Revocation Date: 31/12/1994
14	488	NW	378864 417040	Address: CARR STREET CSO 099BP, 82 CARR STREET, RAMSBOTTOM, BURY, LANCASHIRE, BL0 9EG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0001 Permit Version: 3 Receiving Water: RIVER IRWELL Status: VARIED UNDER EPR 2010 Issue date: 05/02/2016 Effective Date: 05-Feb-2016 Revocation Date: 10/04/2018

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

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

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:

6

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

ID	Distance (m)	Direction	NGR	Details
1	69	S	379512.0 416592.0	Incident Date: 17-Apr-2002 Incident Identification: 72361.0 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	94	NW	379405.0 416919.0	Incident Date: 22-Jun-2014 Incident Identification: 1247989.0 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)
3	132	E	379446.0 416462.0	Incident Date: 15-Apr-2002 Incident Identification: 71682.0 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4	197	SW	379133.0 416382.0	Incident Date: 13-Jun-2001 Incident Identification: 9000.0 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5	487	N	379159.0	Incident Date: 25-Mar-2005 Water Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details
6	495	NE	417308.0	Incident Identification: 301340.0 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Chemical Odour Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
			379984.0 417030.0	Incident Date: 25-Sep-2002 Incident Identification: 110419.0 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

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

0

Database searched and no data found.

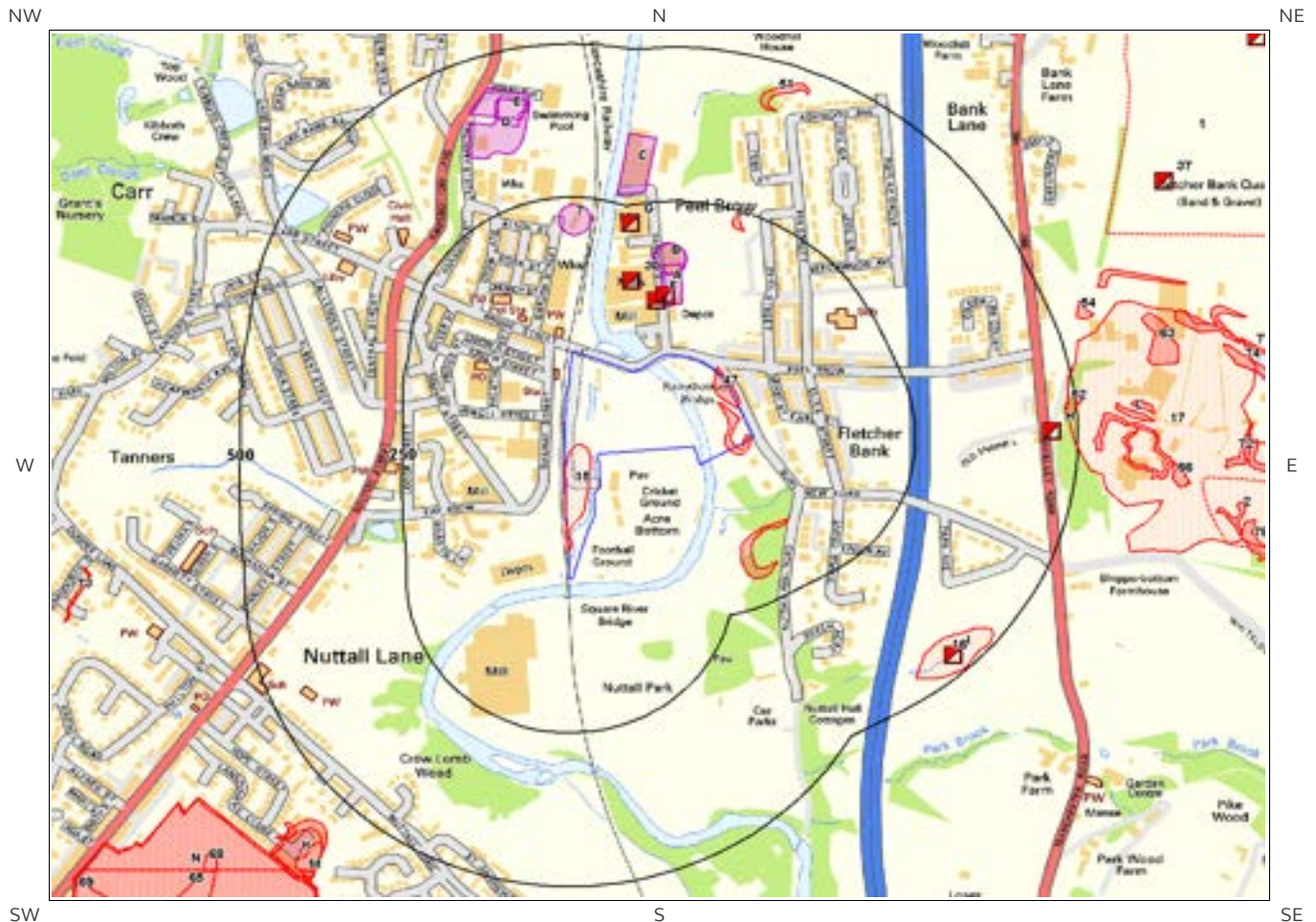
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

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

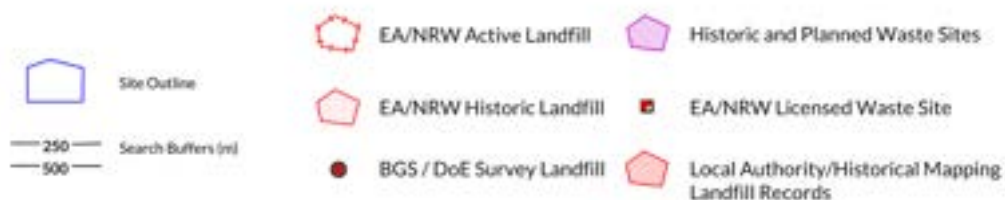
0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

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

2

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

ID	Distance (m)	Direction	NGR	Details
1	632	NE	380170 416650	Address: Fletcher Bank Quarry, Fletcher Bank, Ramsbottom, Lancashire, BL0 0DD Landfill Reference: 0.0 Environmental Permitting Regulations (Waste) Reference: - Landfill Type: WASTE LANDFILLING; ANY OTHER LANDFILL TO WHICH THE 2002 LANDFILL REGULATIONS APPLY Operator: Churchill Enviro Ltd Status: Transfer Effective IPPC Reference: EPR Reference:
2	694	E	380521 416530	Address: Land/premises At, Fletcher Bank, Ramsbottom, Bury, Lancashire, BL0 0DD Landfill Reference: 53693.0 Environmental Permitting Regulations (Waste) Reference: MML001 Landfill Type: A07: Industrial Waste Landfill (Factory curtilage) Operator: Marshalls Mono Ltd Status: Closure IPPC Reference: EPR Reference:

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

12

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
15	0	On Site		Site Address: Mill Lodge, Railway Street/Kenyon Street, Ramsbottom, Bury, Greater Manchester Waste Licence: Yes Site Reference: C013, RD/LIC/009/76 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 13-Dec-1977 Licence Surrendered: 08-May-1990 Licence Holder Address: Irwell Street, Ramsbottom Operator: - Licence Holder: Irwell Street Metal Company Limited First Recorded: 31-Dec-1977 Last Recorded: 31-Jul-1979
16	437	SE		Site Address: Park Farm, Off Manchester Road, Ramsbottom, Greater Manchester Licence Issue: 15-Jun-1979 Licence Surrendered: 01-Jul-2004

ID	Distance (m)	Direction	NGR	Details
				Waste Licence: Yes Site Reference: C003, RD/LIC/130/77 Waste Type: Inert, Household, Special Environmental Permitting Regulations (Waste) Reference: NR1/L/JCL001 Licence Holder Address: - Operator: J C Lees Esquire Licence Holder: J C Lees Esquire First Recorded: 30-Apr-1978 Last Recorded: -
17	485	E		Site Address: Fletcher Bank Quarry, Off Whitelow Road, Fletcher Bank, Ramsbottom, Bury, Greater Manchester Waste Licence: Yes Site Reference: RD/LIC/285/83, C097 Waste Type: Industrial, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 31-Oct-1983 Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Marshalls Mono Limited First Recorded: 31-Dec-1948 Last Recorded: -
18K	565	SW		Site Address: Carrington Novare, Off Hope Street, Ramsbottom, Greater Manchester Waste Licence: Yes Site Reference: C083 Waste Type: Inert, Industrial, Commercial, Household, Special, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 01-Jan-1974 Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Bury Metropolitan Borough Council First Recorded: 31-Dec-1960 Last Recorded: 31-Dec-1984
19N	638	SW		Site Address: Land off Bolton Road West, Off Bolton Road West, Ramsbottom, Greater Manchester Waste Licence: - Site Reference: C059 Waste Type: Industrial, Household Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1975
Not shown	732	SW		Site Address: Carrington Novare, Off Hope Street, Ramsbottom, Greater Manchester Waste Licence: - Site Reference: C069 Waste Type: Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	864	NE		Site Address: Top Mill, Off Bye Road, Shuttleworth, Bury, Greater Manchester Waste Licence: Yes Site Reference: RD/LIC/675/90,L19A,C094 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 10-Jul-1991 Licence Surrendered: Licence Holder Address: Craig House, 5 Bank Street, Bury Operator: - Licence Holder: Bury Metropolitan Borough Council First Recorded: 31-Dec-1991 Last Recorded: -
Not shown	880	NE		Site Address: Land off Whalley Road, Off Whalley Road, Shuttleworth, Ramsbottom, Greater Manchester Waste Licence: - Site Reference: C073 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1001	W		Site Address: Higher Barn Farm, Off Helmshore Road, Ramsbottom, Greater Manchester Waste Licence: - Site Reference: C120 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1983 Last Recorded: -
Not	1161	NE		Site Address: Land off Bamford Road, Off Licence Issue:

ID	Distance (m)	Direction	NGR	Details
shown				Bamford Road, Shuttleworth, Ramsbottom, Greater Manchester Waste Licence: - Site Reference: C063 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1983 Last Recorded: -
Not shown	1333	N		Site Address: Rose Bank Mill, Off Bolton Road North, Stubbins, Edenfield, Lancashire Waste Licence: - Site Reference: R016, K1/14/016 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Peel Holdings First Recorded: - Last Recorded: -
Not shown	1362	NE		Site Address: Top of the Lea, Off Bury Old Road, Shuttleworth, Ramsbottom, Greater Manchester Waste Licence: - Site Reference: C072 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:

42

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

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
47	0	On Site	379550 416786	Refuse Tip	1962 mapping	Polygon
48	0	On Site	379557 416719	Refuse Tip	1962 mapping	Polygon
49	136	SE	379581 416524	Refuse Tip	1962 mapping	Polygon
50	221	N	379565 417057	Refuse Tip	1962 mapping	Polygon
51	420	N	379611 417258	Refuse Tip	1962 mapping	Polygon
52	482	E	380085 416758	Refuse Tip	1962 mapping	Polygon
53	526	E	380125 416692	Refuse Tip	1962 mapping	Polygon

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
54	536	E	380103 416912	Refuse Tip	1962 mapping	Polygon
55K	551	SW	378890 416033	Unknown	Bury Metropolitan Borough Council	Polygon
56L	560	E	380179 416746	Refuse Tip	1962 mapping	Polygon
57K	576	SW	378907 416023	Refuse Tip	1962 mapping	Polygon
58L	583	E	380191 416754	Refuse Tip	1962 mapping	Polygon
59	585	NE	380190 416964	Refuse Tip	1962 mapping	Polygon
60	585	SW	378879 416065	Refuse Tip	1962 mapping	Polygon
61M	615	SW	378903 415994	Refuse Tip	1970 mapping	Polygon
62M	615	SW	378903 415994	Refuse Tip	1962 mapping	Polygon
63	620	E	380218 416866	Refuse Tip	1962 mapping	Polygon
64N	635	SW	378709 415970	Bolton Road West	Bury Metropolitan Borough Council	Polygon
65	640	SW	378720 415909	Refuse Tip	1970 mapping	Polygon
66	647	E	380251 416645	Refuse Tip	1962 mapping	Polygon
67	678	E	380274 416889	Refuse Tip	1962 mapping	Polygon
68	708	SW	378754 416014	Refuse Tip	1962 mapping	Polygon
69	722	SW	378696 415909	Refuse Tip	1962 mapping	Polygon
70	724	E	380328 416574	Refuse Tip	1962 mapping	Polygon
Not shown	729	SW	378887 415787	Carrington Novare Sludge Lagoon or Broad Hey Woods	Bury Metropolitan Borough Council	Polygon
72	729	E	380348 416692	Refuse Tip	1962 mapping	Polygon
73	736	W	378548 416448	Refuse Tip	1962 mapping	Polygon
74	740	E	380353 416829	Refuse Tip	1962 mapping	Polygon
Not shown	741	SW	378866 415793	Refuse Tip	1962 mapping	Polygon
76	764	E	380359 416669	Refuse Tip	1962 mapping	Polygon
77	768	E	380410 416804	Refuse Tip	1962 mapping	Polygon
78	769	E	380360 416536	Refuse Tip	1962 mapping	Polygon
Not shown	840	E	380453 416704	Refuse Tip	1962 mapping	Polygon
Not	924	E	380518	Refuse Tip	1962 mapping	Polygon

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
shown			416519			
Not shown	994	N	379283 417866	Refuse Tip	1962 mapping	Polygon
Not shown	1318	NE	380569 417658	Refuse Tip	1962 mapping	Polygon
Not shown	1391	N	379970 418166	Refuse Tip	1962 mapping	Polygon
Not shown	1391	SW	378626 415243	Refuse Tip	1962 mapping	Polygon
Not shown	1406	NE	380642 417712	Refuse Tip	1962 mapping	Polygon
Not shown	1408	N	378936 418219	Refuse Tip	1962 mapping	Polygon
Not shown	1408	N	378936 418219	Refuse Tip	1982 mapping	Polygon
Not shown	1436	N	380014 418183	Refuse Tip	1962 mapping	Polygon

3.2 Other Waste Sites

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

12

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		
3A	79	N	379463 416958	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1992	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	79	N	379463 416958	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1994	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5B	131	N	379462 416995	Type of Site: Waste Transfer Building Site Address: Kenyon Street, Ramsbottom, BURY, Greater Manchester, BL0 0A	Planning Application Reference: 36598 Date: 19/03/2001	Further Details: Scheme comprises a waste transfer station building with open ended front elevation and mezzanine floor, two roller shutter doors. This will also involve demolition. Construction - pitched roof; facing brick, metal cladding walls; metal cladding roof; rflight windows; roller shutter doors; portal frame. An application (ref: 36598) for Detailed Planning permission was granted, subject to conditions, by Bury M.B.C. on 28th September 2000. Contract awarded to Leach Construction Ltd.

ID	Distance (m)	Direction	NGR	Details		
				Data Source: Historic Planning Application Data Type: Point		
6B	132	N	379461 416996	Type of Site: Waste Transfer Station Site Address: Waterside Mill&Peel Bridge Mill, Kenyon Street, Ramsbottom, BURY, Greater Manchester, BL0 OAB Planning Application Reference: 50696 Date: 01/10/2009	Further Details: Scheme comprises change of use from haulage firm to waste transfer station. An application (ref: 50696) for detailed planning permission was submitted to Bury M.B.C. Data Source: Historic Planning Application Data Type: Point	
7	189	N	379315 417059	Type of Site: Waste Recycling Centre Site Address: M A Excavations Ltd, Garden Street, Ramsbottom, BURY, Greater Manchester, BL0 9BG Planning Application Reference: 52446 Date: -	Further Details: Scheme comprises change of use of site to waste recycling centre. An application (ref: 52446) for detailed planning permission was refused by Bury M.B.C. A detailed planning application has been refused. Data Source: Historic Planning Application Data Type: Point	
8C	264	N	379411 417149	Type of Site: Scrap Works Site Address: N/A Planning Application Reference: N/A Date: 1938	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon	
9C	264	N	379411 417149	Type of Site: Scrap Works Site Address: N/A Planning Application Reference: N/A Date: 1929	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon	
10D	335	N	379198 417207	Type of Site: Refuse Destructor Site Address: N/A Planning Application Reference: N/A Date: 1929	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon	
11D	335	N	379198 417207	Type of Site: Refuse Destructor Site Address: N/A Planning Application Reference: N/A Date: 1938	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon	
12E	375	N	379218 417233	Type of Site: Refuse Destructor Site Address: N/A Planning Application Reference: N/A Date: 1927	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon	
13E	375	N	379218 417233	Type of Site: Refuse Destructor Site Address: N/A Planning Application Reference: N/A Date: 1848	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon	
14E	386	N	379199 417248	Type of Site: Refuse Destructor Site Address: N/A Planning Application Reference: N/A Date: 1949	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon	

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

20

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

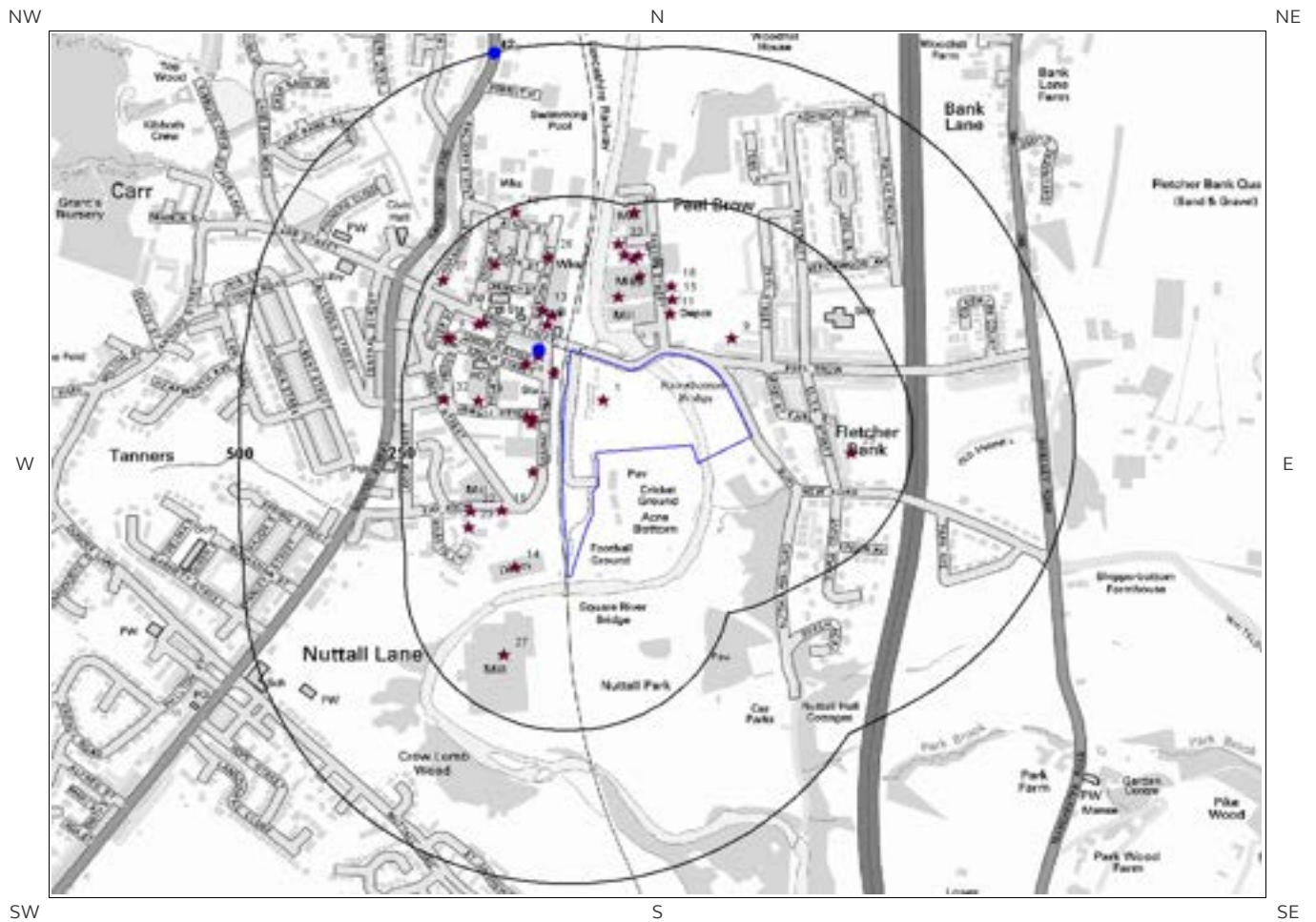
ID	Distance (m)	Direction	NGR	Details
27F	91	N	379441 416928	Site Address: Waterside Mill & Peel Bridge Mill, Kenyon Street, Ramsbottom, Lancs, BL0 0AB Type: 75kte HCl Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: AWR003 EPR reference: CP3897ES/A001 Operator: A W R Rent A Skip Ltd Waste Management licence No: 100969 Annual Tonnage: 0.0 Issue Date: 04/08/2009 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: A W R Rent A Skip Correspondence Address: -
28F	91	N	379441 416928	Site Address: Waterside Mill, Kenyon Street, Ramsbottom, Lancashire, BL0 0AB Type: 75kte HCl Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WHE032 EPR reference: EA/EPR/QP3092EN/T001 Operator: Wheeldon Brothers Waste Ltd Waste Management licence No: 100969 Annual Tonnage: 74999.0 Issue Date: 04/08/2009 Effective Date: 22/11/2010 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Waterside Mill & Peel Bridge Mill Correspondence Address: -
29F	98	N	379455 416937	Site Address: Land/premises At, Kenyon Street, Ramsbottom, Bury, Lancashire, BL0 0AB Type: Special Waste Transfer Station Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ISM001 EPR reference: EA/EPR/MP3496CP/V002 Operator: Irwell Street Metal Co Ltd Waste Management licence No: 53695 Annual Tonnage: 6250.0 Issue Date: 05/01/1994 Effective Date: - Modified: 21/11/2002 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Irwell Street Metal Co Ltd Correspondence Address: -
30	132	N	379403 416960	Site Address: Waterside Mill, Kenyon Street, Ramsbottom, Lancs, BL0 0AB Type: 75kte HCl Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ROG033 EPR reference: EP3694EA/T001 Operator: Rogers David Waste Management licence No: 100969 Annual Tonnage: 0.0 Issue Date: 04/08/2009 Effective Date: 13/10/2009 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Waterside Mill Correspondence Address: -
31G	222	N	379401 417054	Site Address: Field Mill, Unit 4, Harrison Street, Ramsbottom, Bury, Lancashire, BL0 0AH Type: ELV Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR001 EPR reference: EA/EPR/EP3994CJ/V002 Operator: 9 Apart Limited Waste Management licence No: 50393 Annual Tonnage: 2500.0 Issue Date: 18/07/2005 Effective Date: - Modified: 14/08/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: 9 Apart Limited Correspondence Address: -
32G	222	N	379401 417054	Site Address: Field Mill, Unit 4, Harrison Street, Ramsbottom, Bury, Lancashire, Issue Date: 18/07/2005 Effective Date: -

ID	Distance (m)	Direction	NGR	Details
				BLO 0AH Type: ELV Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: POR001 EPR reference: EA/EPR/EP3994CJ/A001 Operator: Porsch- Apart Ltd Waste Management licence No: 50393 Annual Tonnage: 2500.0 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Porsch- Apart Ltd Correspondence Address: -
33H	459	E	380050 416715	Site Address: Fletcher Bank, Manchester Road, Shuttleworth, Ramsbottom, BLO 0DD Type: Management of inert or extractive waste at mine Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAR237 EPR reference: EA/EPR/YP3490VR/A001 Operator: Marshalls Mono Limited Waste Management licence No: 102818 Annual Tonnage: 0.0 Issue Date: 21/06/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Fletcher Bank Quarry Correspondence Address: -
34H	459	E	380050 416715	Site Address: Fletcher Bank, Manchester Road, Shuttleworth, Ramsbottom, Lancashire, BLO 0DD Type: Management of inert or extractive waste at mine Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAR237 EPR reference: EA/EPR/YP3490VR/A001 Operator: Marshalls Mono Ltd Waste Management licence No: 102818 Annual Tonnage: 0.0 Issue Date: 21/06/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Fletcher Bank Quarry Correspondence Address: -
35I	468	SE	379898 416352	Site Address: Manchester Road, Ramsbottom, Bury, BLO Type: Landfill taking Non-Biodegradable Wastes Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: JCL001 EPR reference: - Operator: Lees Mr J C Waste Management licence No: 53922 Annual Tonnage: 0.0 Issue Date: 15/06/1979 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Park Farm Landfill Site Correspondence Address: Park Farm, Manchester Road, Ramsbottom, Bury, BLO
36I	468	SE	379898 416352	Site Address: Manchester Road, Ramsbottom, Bury, Lancashire, BLO Type: Other Landfill Site taking Special Waste Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JCL001 EPR reference: EA/EPR/BP3491CL/S002 Operator: Lees Mr J C Waste Management licence No: 53922 Annual Tonnage: 150000.0 Issue Date: 15/06/1979 Effective Date: - Modified: - Surrendered Date: Jul 1 2004 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Park Farm Landfill Site Correspondence Address: -
37	750	NE	380224 417123	Site Address: Fletcher Bank Quarry, Manchester Road, Ramsbottom, Bury, Lancashire, BLO 0DH Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHE136 EPR reference: EA/EPR/GB3930RY/A001 Operator: Churchill Enviro Ltd Waste Management licence No: 104214 Issue Date: 15/05/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Fletcher Bank Quarry Correspondence Address: -

ID	Distance (m)	Direction	NGR	Details	
Annual Tonnage: 74999.0					
Not shown	927	NE	380437 417085	Site Address: Fletcher Bank, Ramsbottom, Bury, Lancashire, BL0 0HD Type: Use of waste in construction <100,000 tps Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHU071 EPR reference: EA/EPR/RP3098VD/A001 Operator: Churchill Enviro Ltd Waste Management licence No: 102210 Annual Tonnage: 99999.0	Issue Date: 02/02/2011 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued Site Name: Fletcher Bank Quarry Correspondence Address: -
Not shown	927	NE	380437 417085	Site Address: Fletcher Bank Quarry, Ramsbottom, Bury, Lancashire, BL0 0HD Type: Deposit of waste to land as a recovery operation Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHU071 EPR reference: EA/EPR/RP3098VD/S003 Operator: Churchill Enviro Ltd Waste Management licence No: 102210 Annual Tonnage: 0.0	Issue Date: 02/02/2011 Effective Date: - Modified: 02/06/2017 Surrendered Date: Feb 20 2018 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Fletcher Bank Correspondence Address: -
Not shown	946	E	380521 416530	Site Address: Land/premises At, Fletcher Bank, Ramsbottom, Bury, Lancashire, BL0 0DD Type: Industrial Waste Landfill (Factory curtilage) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MML001 EPR reference: EA/EPR/MP3596CS/V006 Operator: Marshalls Mono Ltd Waste Management licence No: 53693 Annual Tonnage: 0.0	Issue Date: 05/01/1995 Effective Date: - Modified: 02/12/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Closure Site Name: Fletcher Bank Quarry Landfill Correspondence Address: -
Not shown	946	E	380521 416530	Site Address: Fletcher Bank, Ramsbottom, Bury, Lancashire, BL0 0DD Type: Industrial Waste Landfill (Factory curtilage) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FBQ001 EPR reference: - Operator: Marshalls Mono Limited Waste Management licence No: 50506 Annual Tonnage: 0.0	Issue Date: 08/03/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Fletcher Bank Quarry Landfill Site Correspondence Address: Fletcher Bank Quarry Landfill Site, Fletcher Bank, Ramsbottom, Bury, Lancashire, BL0 0DD
Not shown	946	E	380521 416530	Site Address: Fletcher Bank, Ramsbottom, Bury, Lancashire, BL0 0DD Type: Industrial Waste Landfill (Factory curtilage) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FBQ001 EPR reference: EA/EPR/PP3692CQ/A001 Operator: Marshalls Mono Ltd Waste Management licence No: 50506 Annual Tonnage: 150000.0	Issue Date: 08/03/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC Site Name: Fletcher Bank Quarry Landfill Site Correspondence Address: -
Not shown	992	SW	378445 415982	Site Address: Tagg Wood Works, Regent Street, Ramsbottom, Bury, Lancashire, BL0 9PL Type: Mobile Plant Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ENC003	Issue Date: 08/04/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Distance (m)	Direction	NGR	Details	
Not shown	992	SW	378445 415982	EPR reference: - Operator: Encia Group Ltd Waste Management licence No: 54433 Annual Tonnage: 0.0	Site Name: Tagwood Works Mobile Plant Correspondence Address: Stone Cross Place, Stone Cross Lane North, Lowton, Warrington, WA3 2SH
				Site Address: Tagg Wood Works, Regent Street, Ramsbottom, Bury, Lancashire, BL0 9PL Type: Mobile Plant Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ENC003 EPR reference: EA/EPR/QP3397CM/S002 Operator: Encia Group Ltd Waste Management licence No: 54433 Annual Tonnage: 74999.0	Issue Date: 08/04/2005 Effective Date: - Modified: - Surrendered Date: Nov 29 2006 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Tagwood Works Mobile Plant Correspondence Address: -
				Site Address: Fletcher Bank Quarry, Ramsbottom, Bury, BL0 0HD Type: Use of waste in construction <100,000 tps Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHU102 EPR reference: EA/EPR/BB3501MS/A001 Operator: Churchill Enviro Limited Waste Management licence No: 401512 Annual Tonnage: 99999.0	Issue Date: 17/07/2014 Effective Date: - Modified: - Surrendered Date: 0 Expiry Date: 0 Cancelled Date: 0 Status: Issued Site Name: Fletcher Bank Recovery Site Correspondence Address: -
46J	993	NE	380367 417357	Site Address: Fletcher Bank Quarry, Ramsbottom, Bury, Lancashire, BL0 0HD Type: Deposit of waste to land as a recovery operation Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CHU102 EPR reference: EA/EPR/BB3501MS/S003 Operator: Churchill Enviro Ltd Waste Management licence No: 401512 Annual Tonnage: 0.0	Issue Date: 17/07/2014 Effective Date: - Modified: 02/06/2017 Surrendered Date: Mar 29 2018 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: Fletcher Bank Recovery Site Correspondence Address: -

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

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

40

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Chimney	379361 416764	Greater Manchester, BL0	Chimneys	Industrial Features
2	21	W	East Lancashire Railway (Ramsbottom Station)	379286 416809	Greater Manchester, BL0	Railways (Heritage, Steam and Miniature)	Tourism
3	46	W	TNT Express	379253 416647	Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	Distribution and Haulage	Transport, Storage and Delivery
4A	47	W	Ramsbottom Metalwork	379253 416735	Empire Works, Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	Metalworkers Including Blacksmiths	Construction Services
5C	48	W	Station Garage	379262 416837	Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	Vehicle Repair, Testing and Servicing	Repair and Servicing
6A	50	W	Works	379250 416726	Greater Manchester, BL0	Unspecified Works Or Factories	Industrial Features
7A	56	W	Electricity Sub Station	379244 416737	Greater Manchester, BL0	Electrical Features	Infrastructure and Facilities
8B	56	NW	Booth King Partnership Ltd	379274 416887	Tollgate House 9c, Bridge Street, Ramsbottom, Bury, Greater Manchester, BL0 9AB	Civil Engineers	Engineering Services
9	57	NE	Electricity Sub Station	379560 416865	Greater Manchester, BL0	Electrical Features	Infrastructure and Facilities
10B	64	NW	Tank	379283 416902	Greater Manchester, BL0	Tanks (Generic)	Industrial Features
11	66	N	Depot	379465 416905	Greater Manchester, BL0	Container and Storage	Transport, Storage and Delivery
12C	67	W	Works	379241 416823	Greater Manchester, BL0	Unspecified Works Or Factories	Industrial Features
13	79	NW	Formulated Polymer Products Ltd	379267 416911	8, Garden Street, Ramsbottom, Bury, Greater Manchester, BL0 9BQ	Adhesives and Sealants	Industrial Products
14	81	W	Depot	379225 416492	Greater Manchester, BL0	Container and Storage	Transport, Storage and Delivery
15	89	N	I S M Waste &	379468	Kenyon Street,	Waste Storage, Processing	Infrastructure and

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
			Recycling	416928	Ramsbottom, Bury, Greater Manchester, BL0 0AB	and Disposal	Facilities
16	95	W	Ramsbottom Paint & Bodyshop	379205 416584	Kay Brow Yard, Kay Brow, Ramsbottom, Bury, Greater Manchester, BL0 9AY	Vehicle Repair, Testing and Servicing	Repair and Servicing
17	106	N	Depot	379385 416933	Greater Manchester, BL0	Container and Storage	Transport, Storage and Delivery
18	112	N	Depot	379467 416951	Greater Manchester, BL0	Container and Storage	Transport, Storage and Delivery
19	131	W	Electricity Sub Station	379169 416763	Greater Manchester, BL0	Electrical Features	Infrastructure and Facilities
20	133	N	Cadden Car & Commercial	379418 416966	Peel Bridge Mill, Kenyon Street, Ramsbottom, Bury, Greater Manchester, BL0 0AB	New Vehicles	Motoring
21D	142	W	Ramsbottom Flooring Ltd	379177 416889	38, Bridge Street, Ramsbottom, Bury, Greater Manchester, BL0 9AQ	Construction Completion Services	Construction Services
22	143	W	Rammy Tyres & Exhausts	379157 416583	Unit 1 Kay Brow Complex, Kay Brow, Ramsbottom, Greater Manchester, BL0 9AY	Vehicle Parts and Accessories	Motoring
23	148	W	M C Motor Repairs Ltd	379153 416557	Kay Brow Yard, Kay Brow, Ramsbottom, Bury, Greater Manchester, BL0 9AY	Vehicle Repair, Testing and Servicing	Repair and Servicing
24D	149	W	Woodholme Supplies	379168 416888	40-42, Bridge Street, Ramsbottom, Bury, Greater Manchester, BL0 9AQ	General Construction Supplies	Industrial Products
25	156	E	Electricity Sub Station	379745 416679	Greater Manchester, BL0	Electrical Features	Infrastructure and Facilities
26	156	N	Joshua Greaves & Sons Ltd	379276 416997	Garden Street, Ramsbottom, Bury, Greater Manchester, BL0 9BG	Special Purpose Machinery and Equipment	Industrial Products
27	159	SW	Cormar Carpets	379208 416348	Holme Mill, Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AU	Carpets, Flooring, Rugs and Soft Furnishings	Consumer Products
28E	163	N	Works	379408 416994	Greater Manchester, BL0	Unspecified Works Or Factories	Industrial Features
29E	167	N	Works	379415 417001	Greater Manchester, BL0	Unspecified Works Or Factories	Industrial Features
30E	174	N	C & G Wholesale Foods Ltd	379395 417001	3 Waterside Park, Harrison Street, Ramsbottom, Bury, Greater Manchester, BL0 0AD	Fish, Meat and Poultry Products	Foodstuffs
31	183	NW	G Hodgson Electrical	379195 416986	16, Crow Lane, Ramsbottom, Bury, Greater Manchester, BL0 9BR	Tools Including Machine Shops	Industrial Products
32	184	W	Works	379116 416766	Greater Manchester, BL0	Unspecified Works Or Factories	Industrial Features
33	188	N	Works	379385	Greater Manchester, BL0	Unspecified Works Or	Industrial Features

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
				417019		Factories	
34F	189	W	Stitch	379123 416866	2 Princes Court, Silver Street, Ramsbottom, Bury, Greater Manchester, BL0 9BJ	Textiles, Fabrics, Silk and Machinery	Industrial Products
35F	190	W	Orbital Design	379123 416863	3 Princes Court, Silver Street, Ramsbottom, Bury, Greater Manchester, BL0 9BJ	Published Goods	Industrial Products
36F	190	W	printing.com	379123 416864	Princes Court, Totally Wicked, 3a, Silver Street, Ramsbottom, Bury, Greater Manchester, BL0 9BJ	Published Goods	Industrial Products
37	229	NW	Canopy Products Ltd	379114 416961	The Warehouse 2-4, Paradise Street, Ramsbottom, Bury, Greater Manchester, BL0 9BS	General Construction Supplies	Industrial Products
38G	236	N	9 Apart	379410 417070	Unit 3-4 Field Mill, Harrison Street, Ramsbottom, Bury, Greater Manchester, BL0 0AH	Vehicle Parts and Accessories	Motoring
39G	236	N	Kays Ramsbottom Ltd	379410 417070	Britannia Works, Kenyon Street, Ramsbottom, Bury, Greater Manchester, BL0 0AE	Cosmetics, Toiletries and Perfumes	Consumer Products
40	241	N	Cadet County Training Centre	379225 417070	Crow Lane, Ramsbottom, Greater Manchester, BL0 9BR	Armed Services	Central and Local Government

4.2 Petrol and Fuel Sites

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

2

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

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
41B	49	W	379260 416837	UNBRANDED	Railway Street, Ramsbottom, Bury, Greater Manchester, BL0 9AL	No	Closed
42	498	N	379193 417329	ESSO	Stubbins Lane, Ramsbottom, Bury, Greater Manchester, BL0 0PU	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
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

5.3 Bedrock and Solid Geology

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

Lex Code	Description	Rock Type
MARSD-MDSI	MARSDEN FORMATION	MUDSTONE AND SILTSTONE
MARSD-MDSI	MARSDEN FORMATION	MUDSTONE AND SILTSTONE
GSYG-SDST	GUISELEY GRIT	SANDSTONE
MARSD-MDSI	MARSDEN FORMATION	MUDSTONE AND SILTSTONE
BBS-SDST	BROOKSBOTTOMS GRIT	SANDSTONE

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

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



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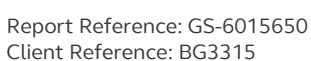
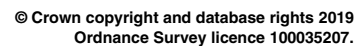


6b. Aquifer Within Bedrock Geology and Abstraction Licences

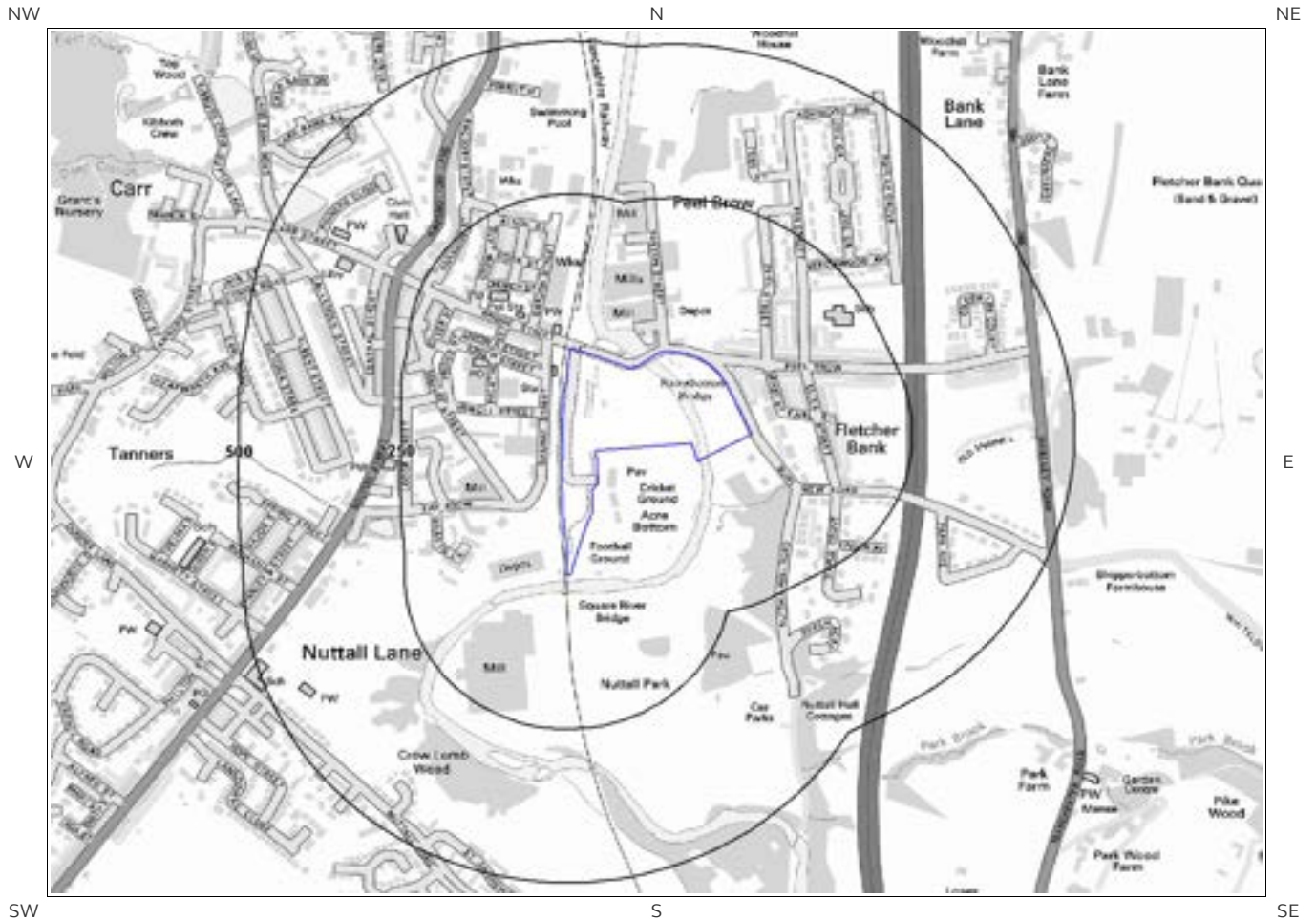


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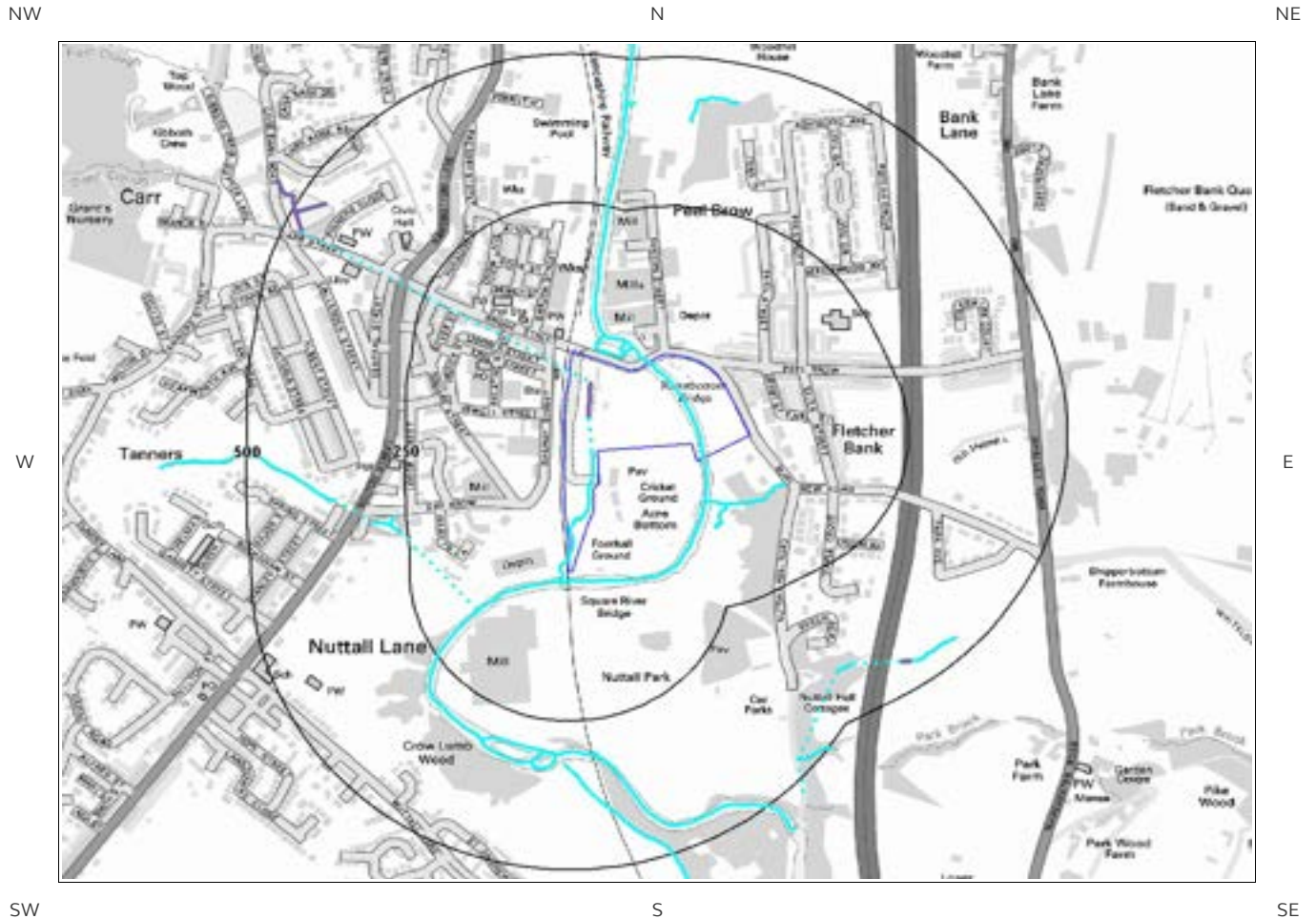
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
12	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
13	119	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
2	342	W	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
14	409	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
11	413	W	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers

6.2 Aquifer within Bedrock Deposits

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

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

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

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary 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	409	E	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
3A	0	On Site	379300 416700	Status: Historical Licence No: 2569001030 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PEEL BRIDGE MILLS, RAMSBOTTOM" Data Type: Point Name: DANISCO PAPER LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 21/08/1999 Version End Date:
4A	0	On Site	379300 416700	Status: Historical Licence No: 2569001030 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PEEL BRIDGE MILLS, RAMSBOTTOM Data Type: Point Name: MONDI HOLCOMBE LIMITED Annual Volume (m³): 359149 Max Daily Volume (m³): 1637 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: 31/03/2015 Issue No: 105 Version Start Date: 11/08/2008 Version End Date:
Not shown	775	S	379300 415700	Status: Historical Licence No: 2569001101 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "SPRING FED CATCHPIT AT NUTTAL HALL FARM, RAMSBOTTOM" Data Type: Point Name: WHITTAKER Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not shown	775	S	379300 415700	Status: Historical Licence No: 2569001101 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: SPRING FED CATCHPIT AT NUTTAL HALL FARM, RAMSBOTTOM Data Type: Point Name: WHITTAKER Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/01/1966 Version End Date:
Not shown	1089	N	379012 417892	Status: Active Licence No: 2569001129 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE A' AT STUBBINS PAPER MILL, RAMSBOTTOM. Data Type: Point Name: Essity UK Limited Annual Volume (m³): 772760 Max Daily Volume (m³): 4914 Original Application No: - Original Start Date: 16/02/1966 Expiry Date: - Issue No: 105 Version Start Date: 19/03/2018 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1100	N	379000 417900	Status: Historical Licence No: 2569001129 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT STUBBINS PAPER MILL, RAMSBOTTOM Data Type: Point Name: SCA Hygiene Products Tissue Limited	Annual Volume (m³): 545520 Max Daily Volume (m³): 2727.6 Original Application No: - Original Start Date: 16/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 13/08/2012 Version End Date:
Not shown	1100	N	379000 417900	Status: Historical Licence No: 2569001129 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT STUBBINS PAPER MILL, RAMSBOTTOM" Data Type: Point Name: GEORGIA-PACIFIC GB LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 16/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 02/04/2001 Version End Date:
Not shown	1158	N	379400 418000	Status: Historical Licence No: 2569001086 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, ROSEBANK PRINTWORKS, RAMSBOTTOM," Data Type: Point Name: EDWARD TURNBULL & CO LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/01/1981 Version End Date:
Not shown	1158	N	379400 418000	Status: Historical Licence No: 2569001086 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, ROSEBANK PRINTWORKS, RAMSBOTTOM, Data Type: Point Name: EDWARD TURNBULL & CO LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 22/01/2004 Version End Date:
Not shown	1158	N	379400 418000	Status: Historical Licence No: 2569001086 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES ROSEBANK PRINTWORKS RAMSBOTTOM Data Type: Point Name: EDWARD TURNBULL & CO LTD	Annual Volume (m³): 13638 Max Daily Volume (m³): 1091.04 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 22/01/2004 Version End Date:
Not shown	1579	W	377800 417300	Status: Historical Licence No: 2569001125 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: "WELL AT RAMSBOTTOM, KNOWN AS SOLDIERS WELL" Data Type: Point Name: PLATT	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 27/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/05/1971 Version End Date:
Not shown	1579	W	377800 417300	Status: Historical Licence No: 2569001125 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: WELL AT RAMSBOTTOM, KNOWN AS SOLDIERS WELL Data Type: Point Name: PLATT	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 27/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 11/05/1971 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1638	SE	380800 415600	Status: Historical Licence No: 2569001190 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: SPRING FED COLLECTING CHAMBER AT WALMERSLEY Data Type: Point Name: MOSLEY AND THWAITES Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 08/05/1972 Expiry Date: - Issue No: 100 Version Start Date: 08/05/1972 Version End Date:
Not shown	1650	SW	377800 415800	Status: Active Licence No: 2569001228 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT HOLCOMBE, NEAR BURY, LANCS Data Type: Point Name: DARUL ULOOM Annual Volume (m³): 22730 Max Daily Volume (m³): 90.92 Original Application No: - Original Start Date: 20/06/1990 Expiry Date: - Issue No: 100 Version Start Date: 20/06/1990 Version End Date:
Not shown	1650	SW	377800 415800	Status: Historical Licence No: 2569001228 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT HOLCOMBE, NEAR BURY, LANCS" Data Type: Point Name: DARUL ULOOM Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 20/06/1990 Expiry Date: - Issue No: 100 Version Start Date: 20/06/1990 Version End Date:
Not shown	1650	SW	377800 415800	Status: Historical Licence No: 2569001228 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT HOLCOMBE, NEAR BURY, LANCS Data Type: Point Name: DARUL ULOOM Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 20/06/1990 Expiry Date: - Issue No: 100 Version Start Date: 20/06/1990 Version End Date:
Not shown	1661	NE	381100 417400	Status: Historical Licence No: 2569001100 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: SPRING FED CATCHPIT AT GREEN HILL FARM, SHUTTLEWORTH, RAMS Data Type: Point Name: OVENDEN Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 19/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 19/01/1966 Version End Date:
Not shown	1661	NE	381100 417400	Status: Historical Licence No: 2569001100 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "SPRING FED CATCHPIT AT GREEN HILL FARM, SHUTTLEWORTH, RAMS" Data Type: Point Name: OVENDEN Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 19/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 19/01/1966 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1835	W	377600 415800	Status: Historical Licence No: 2569001204 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT HOLCOMBE, BURY" Data Type: Point Name: DAVENPORT	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 30/07/1979 Expiry Date: - Issue No: 100 Version Start Date: 30/07/1979 Version End Date:
Not shown	1835	W	377600 415800	Status: Historical Licence No: 2569001204 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT HOLCOMBE, BURY Data Type: Point Name: DAVENPORT	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 30/07/1979 Expiry Date: - Issue No: 100 Version Start Date: 30/07/1979 Version End Date:
Not shown	1950	NE	381000 418100	Status: Historical Licence No: 2569001099 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "SPRING FED CATCHPIT AT TOP O'TH' LEE AND DRY GAP FARMS, S" Data Type: Point Name: OVENDEN	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 19/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 19/01/1966 Version End Date:
Not shown	1950	NE	381000 418100	Status: Historical Licence No: 2569001099 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: SPRING FED CATCHPIT AT TOP O'TH' LEE AND DRY GAP FARMS, S Data Type: Point Name: OVENDEN	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 19/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 19/01/1966 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	
25B	7	W	379300 416800	Status: Historical Licence No: 2569001029 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: R.IRWELL AT RAMSBOTTOM Data Type: Point Name: MONDI PAPER LIMITED	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 11/09/2001 Version End Date:
26B	7	W	379300 416800	Status: Historical Licence No: 2569001224 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region	Annual Volume (m³): 90920 Max Daily Volume (m³): 1091.04 Application No: - Original Start Date: 12/04/1988 Expiry Date: -

ID	Distance (m)	Direction	NGR	Details	
				Point: R.IRWELL AT RAMSBOTTOM Data Type: Point Name: MONDI HOLCOMBE LIMITED	Issue No: 103 Version Start Date: 11/08/2008 Version End Date:
27B	7	W	379300 416800	Status: Historical Licence No: 2569001029 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: GOIT FED BY SURFACE DRAINAGE AND RIVER IRWELL AT RAMSBOTTOM Data Type: Point Name: MONDI HOLCOMBE LIMITED	Annual Volume (m³): 322766 Max Daily Volume (m³): 1637 Application No: - Original Start Date: 14/02/1966 Expiry Date: 31/03/2015 Issue No: 105 Version Start Date: 11/08/2008 Version End Date:
28C	16	N	379350 416850	Status: Historical Licence No: 2569001246 Details: Supply to a Leat for Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BRIDGE STREET , RAMSBOTTOM Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 19/01/1994 Expiry Date: - Issue No: 100 Version Start Date: 11/08/2000 Version End Date:
29C	16	N	379350 416850	Status: Historical Licence No: 2569001246 Details: Supply to a Leat for Throughflow Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT BRIDGE STREET , RAMSBOTTOM" Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 19/01/1994 Expiry Date: - Issue No: 100 Version Start Date: 11/08/2000 Version End Date:
30C	16	N	379350 416850	Status: Active Licence No: 2569001246 Details: Supply To A Leat For Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BRIDGE STREET RAMSBOTTOM Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL	Annual Volume (m³): 6.31152e+007 Max Daily Volume (m³): 172920 Application No: - Original Start Date: 19/01/1994 Expiry Date: - Issue No: 100 Version Start Date: 11/08/2000 Version End Date:
31D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BRITANNIA WORKS KENYON STREET RAMSBOTTOM Data Type: Point Name: KAYS RAMSBOTTOM LTD	Annual Volume (m³): 159111 Max Daily Volume (m³): 636.44 Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/09/1995 Version End Date:
32D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT PREMISES, BRITANNIA WORKS, KENYON STREET, RA Data Type: Point Name: KAYS RAMSBOTTOM LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/09/1995 Version End Date:
33D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100

ID	Distance (m)	Direction	NGR	Details	
				Point: R IRWELL AT, BRITANNIA WORKS, KENYON STREET, RAMSBOTTOM Data Type: Point Name: KAYS RAMSBOTTOM LTD	Version Start Date: 27/09/1995 Version End Date:
34D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BRITANNIA WORKS KENYON STREET RAMSBOTTOM Data Type: Point Name: KAYS RAMSBOTTOM LTD	Annual Volume (m³): 159111 Max Daily Volume (m³): 636.44 Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/09/1995 Version End Date:
35D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT, BRITANNIA WORKS, KENYON STREET, RAMSBOTTOM Data Type: Point Name: KAYS RAMSBOTTOM LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/09/1995 Version End Date:
36D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: Boiler Feed Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT PREMISES, BRITANNIA WORKS, KENYON STREET, RA" Data Type: Point Name: KAYS RAMSBOTTOM LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/09/1995 Version End Date:
37D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT PREMISES, BRITANNIA WORKS, KENYON STREET, RA Data Type: Point Name: KAYS RAMSBOTTOM LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/09/1995 Version End Date:
38D	267	N	379400 417100	Status: Historical Licence No: 2569001047 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT PREMISES, BRITANNIA WORKS, KENYON STREET, RA" Data Type: Point Name: KAYS RAMSBOTTOM LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 02/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 27/09/1995 Version End Date:
Not shown	925	N	379246 417768	Status: Active Licence No: 2569001201 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT 'A' AT STUBBINS, RAMSBOTTOM, BURY. Data Type: Point Name: Essity UK Limited	Annual Volume (m³): 3.1e+006 Max Daily Volume (m³): 9090 Application No: - Original Start Date: 07/11/1977 Expiry Date: - Issue No: 105 Version Start Date: 19/03/2018 Version End Date:
Not shown	961	N	379200 417800	Status: Historical Licence No: 2569001201 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region	Annual Volume (m³): 4.15968e+006 Max Daily Volume (m³): 11365 Application No: - Original Start Date: 07/11/1977 Expiry Date: -

ID	Distance (m)	Direction	NGR	Details	
				Point: R IRWELL AT RAMSBOTTOM, BURY Data Type: Point Name: SCA Hygiene Products Tissue Limited	Issue No: 102 Version Start Date: 13/08/2012 Version End Date:
Not shown	961	N	379200 417800	Status: Historical Licence No: 2569001201 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT RAMSBOTTOM, BURY" Data Type: Point Name: GEORGIA-PACIFIC GB LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 07/11/1977 Expiry Date: - Issue No: 101 Version Start Date: 02/04/2001 Version End Date:
Not shown	1065	NW	378785 417771	Status: Historical Licence No: 2569001128 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS 'A' AT STUBBINS, RAMSBOTTOM, BURY Data Type: Point Name: SCA Hygiene Products Tissue Limited	Annual Volume (m³): 1.45e+006 Max Daily Volume (m³): 4543 Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 103 Version Start Date: 08/11/2013 Version End Date:
Not shown	1083	NW	378800 417800	Status: Historical Licence No: 2569001128 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS (2) FED BY SURFACE DRAINAGE AT STUBBINS PAP Data Type: Point Name: GEORGIA-PACIFIC GB LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 02/04/2001 Version End Date:
Not shown	1083	NW	378800 417800	Status: Historical Licence No: 2569001128 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS X 2 FED BY SURFACE DRAINAGE AT STUBBINS Data Type: Point Name: SCA Hygiene Products Tissue Limited	Annual Volume (m³): 1.70475e+006 Max Daily Volume (m³): 5682.5 Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 13/08/2012 Version End Date:
Not shown	1105	NE	380400 417500	Status: Historical Licence No: 2569001199 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: CROSS BANK BRK AT RAMSBOTTOM, BURY Data Type: Point Name: MARSHALLS MONO LTD	Annual Volume (m³): 34096 Max Daily Volume (m³): 136 Application No: - Original Start Date: 22/09/1975 Expiry Date: - Issue No: 101 Version Start Date: 28/08/2014 Version End Date:
Not shown	1105	NE	380400 417500	Status: Historical Licence No: 2569001199 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "CROSS BANK BRK AT RAMSBOTTOM, BURY" Data Type: Point Name: MARSHALLS MONO LTD	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 22/09/1975 Expiry Date: - Issue No: 100 Version Start Date: 18/02/1987 Version End Date:
Not shown	1105	N	378930 417882	Status: Active Licence No: 2569001128 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR 'B' AT SUBBINS, RAMSBOTTOM, BURY. Data Type: Point Name: Essity UK Limited	Annual Volume (m³): 1.45e+006 Max Daily Volume (m³): 4543 Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 106 Version Start Date: 19/03/2018 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1160	N	378938 417943	Status: Active Licence No: 2569001128 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR 'C' AT SUBBINS, RAMSBOTTOM, BURY. Data Type: Point Name: Essity UK Limited Annual Volume (m³): 1.45e+006 Max Daily Volume (m³): 4543 Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 106 Version Start Date: 19/03/2018 Version End Date:
Not shown	1196	N	379000 418000	Status: Historical Licence No: 2569001128 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS (2) FED BY SURFACE DRAINAGE AT STUBBIN Data Type: Point Name: GEORGIA-PACIFIC GB LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 02/04/2001 Version End Date:
Not shown	1196	N	379000 418000	Status: Historical Licence No: 2569001128 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS X 2 FED BY SURFACE DRAINAGE AT STUBBINS Data Type: Point Name: SCA Hygiene Products Tissue Limited Annual Volume (m³): 1.70475e+006 Max Daily Volume (m³): 5682.5 Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 13/08/2012 Version End Date:
Not shown	1196	N	379000 418000	Status: Historical Licence No: 2569001128 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS (2) FED BY SURFACE DRAINAGE AT STUBBIN85 Data Type: Point Name: FORT JAMES UK LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/01/1998 Version End Date:
Not shown	1196	N	379000 418000	Status: Historical Licence No: 2569001128 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS (2) FED BY SURFACE DRAINAGE AT STUBBIN\$85 Data Type: Point Name: GEORGIA-PACIFIC GB LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 02/04/2001 Version End Date:
Not shown	1361	N	379500 418200	Status: Historical Licence No: 2569001180 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR AT ROSEBANK PRINTWORKS, RAMSBOTTOM, NEAR BURY Data Type: Point Name: EDWARD TURNBULL & CO LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 01/06/1969 Expiry Date: - Issue No: 101 Version Start Date: 22/01/2004 Version End Date:
Not shown	1361	N	379500 418200	Status: Historical Licence No: 2569001180 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "RESERVOIR AT ROSEBANK PRINTWORKS, RAMSBOTTOM, NEAR BURY" Data Type: Point Name: EDWARD TURNBULL & CO LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 01/06/1969 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1993 Version End Date:
Not shown	1361	N	379500 418200	Status: Historical Licence No: 2569001180 Details: Process water Annual Volume (m³): 547793 Max Daily Volume (m³): 1963.872 Application No: -

ID	Distance (m)	Direction	NGR	Details
				Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR AT ROSEBANK PRINTWORKS RAMSBOTTOM NEAR BURY Data Type: Point Name: EDWARD TURNBULL & CO LTD Original Start Date: 01/06/1969 Expiry Date: - Issue No: 101 Version Start Date: 22/01/2004 Version End Date:
Not shown	1692	N	379800 418500	Status: Historical Licence No: 2569001179 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "RESERVOIR AT PREMISES, EDENWOOD MILL, RAMSBOTTOM" Data Type: Point Name: TURNBULL & STOCKDALE LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 24/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 22/01/1999 Version End Date:
Not shown	1692	N	379800 418500	Status: Historical Licence No: 2569001179 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR AT PREMISES, EDENWOOD MILL, RAMSBOTTOM Data Type: Point Name: TURNBULL & STOCKDALE LTD Annual Volume (m³): 218208 Max Daily Volume (m³): 1091.06 Application No: - Original Start Date: 24/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 22/01/1999 Version End Date:
Not shown	1732	N	378800 418500	Status: Historical Licence No: 2569001110 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY UNNAMED TRIBUTARY RIVER IRWELL STUBBINS Data Type: Point Name: VOITH FABRICS STUBBINS LTD Annual Volume (m³): 272765.7 Max Daily Volume (m³): 1136.5 Application No: - Original Start Date: 01/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 27/09/1999 Version End Date:
Not shown	1732	N	378800 418500	Status: Historical Licence No: 2569001110 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY UNNAMED TRIB OF R IRWELL AT STUBBINS VAL Data Type: Point Name: VOITH FABRICS STUBBINS LTD Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 01/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 27/09/1999 Version End Date:
Not shown	1761	S	378950 414750	Status: Historical Licence No: 2569001038 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL IN RAMSBOTTOM Data Type: Point Name: GREENLEAF ENTERPRISES LTD Annual Volume (m³): 23639.7 Max Daily Volume (m³): 90.92 Application No: - Original Start Date: 25/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/03/2003 Version End Date:
Not shown	1830	N	378730 418580	Status: Historical Licence No: 2569001110 Details: Lake & Pond Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: UN-NAMED TRIBUTARY RIVER IRWELL AT LH PREMISES STUBBINS VALE Data Type: Point Name: VOITH PAPER FABRICS STUBBINS LTD Annual Volume (m³): 272766 Max Daily Volume (m³): 1136.5 Application No: - Original Start Date: 01/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/02/2006 Version End Date:
Not shown	1987	NE	381200 417900	Status: Historical Licence No: 2569001012 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY NEW GATE BRK AND FIELD DRAINAGE, ADJACENT Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 08/01/1991

ID	Distance (m)	Direction	NGR	Details
				Data Type: Point Name: TOMASZEWSKI
				Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

Identified

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1650	SW	377800 415800	Status: Historical Licence No: 2569001228 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT HOLCOMBE, NEAR BURY, LANCS" Data Type: Point Name: DARUL ULOOM Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 20/06/1990 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1650	SW	377800 415800	Status: Historical Licence No: 2569001228 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT HOLCOMBE, NEAR BURY, LANCS Data Type: Point Name: DARUL ULOOM Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 20/06/1990 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1650	SW	377800 415800	Status: Active Licence No: 2569001228 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT HOLCOMBE, NEAR BURY, LANCS Data Type: Point Name: DARUL ULOOM Annual Volume (m³): 22730 Max Daily Volume (m³): 90.92 Original Application No: - Original Start Date: 20/06/1990 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.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	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.
15	E	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.
409	E	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

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

6.9.1 Biological Quality:

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

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

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1258	N	379400 418100	River Name: Dearden Bk Reach: Qsl At Scout Moor Resvr. To Irwell End/Start of Stretch: End of Stretch NGR	B	C	C	C	C

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	1218	N	379401 418060	River Name: Dearden Bk. Reach: Qsl At Scout Moor Resvr. To Irwell End/Start of Stretch: Sample Point NGR	B	B	B	A	A
Not shown	1253	N	379361 418097	River Name: Irwell Reach: Rossendale Stw To Chest Wheel Bridge End/Start of Stretch: Sample Point NGR	B	A	A	B	B
Not shown	1258	N	379400 418100	River Name: Dearden Bk. Reach: Qsl At Scout Moor Resvr. To Irwell End/Start of Stretch: End of Stretch NGR	B	B	B	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	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
2	0 On Site	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.4
3	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
4	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
5	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
6	0 On Site	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.0
7	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
8	0 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
34	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.4
35	0 On Site	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.4
36	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 1.6
38	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
39	0 On Site	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.0
40	0 On Site	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
41	0 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
9	10 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
42	10 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
10	11 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.2
43	11 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.2
11	12 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.3
44	12 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.3
12	15 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.6
45	15 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.6

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
13	21 SW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.5
46	21 SW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.5
14	24 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.6
15	24 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
47	24 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.6
48	24 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.5
16	35 NW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
49	35 NW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
17	40 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.8
50	40 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.8
18	41 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
51	41 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
19	69	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	S			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
52	69 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.5
20	72 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
53	72 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
21	86 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
22	86 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
54	86 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	86 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	111 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.8
56	111 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.8
24	112 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.3
25	112 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.8
57	112 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 0.3
58	112 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 0.8
26	113 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
59	113 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
27	157 SW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.0
28	157 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
60	157 SW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.0
61	157 SW	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
29	263 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.7
62	263 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.7
30	269 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.4
63	269 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.4
31	277 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.7

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
64	277 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 16.7
32	300 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
Not shown	300 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
33	302 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
Not shown	302 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
34	304 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
67	304 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
35	305 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
36	305 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
37	305 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.2
Not shown	305 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
Not shown	305 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
Not shown	305	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	S			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.2
38	308 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
Not shown	308 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
39	311 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
Not shown	311 S	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
40	314 SW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
Not shown	314 SW	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 15.1
41	322 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	322 S	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
42	363 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
75	363 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.8
43	392 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	392 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): Not Provided
44	414 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
45	414 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
77	414 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
78	414 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
46	417 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
79	417 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
47	424 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	424 N	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
48	425 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
Not shown	425 N	River Irwell	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 14.7
49	449 SE	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.2
82	449 SE	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 4.2

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
50	456 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
83	456 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
51	459 NW	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 54.8
84	459 NW	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 54.8
52	472 NW	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 23.8
85	472 NW	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 23.8
53	475 SE	Park Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
54	475 SE	Park Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	475 SE	Park Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	475 SE	Park Brook	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
55	478 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	478 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
56	480	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	W			Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
Not shown	480 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 1.6
57	494 NW	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.0
90	494 NW	-	Lake, loch or reservoir.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 7.0

6.11 Surface Water Features

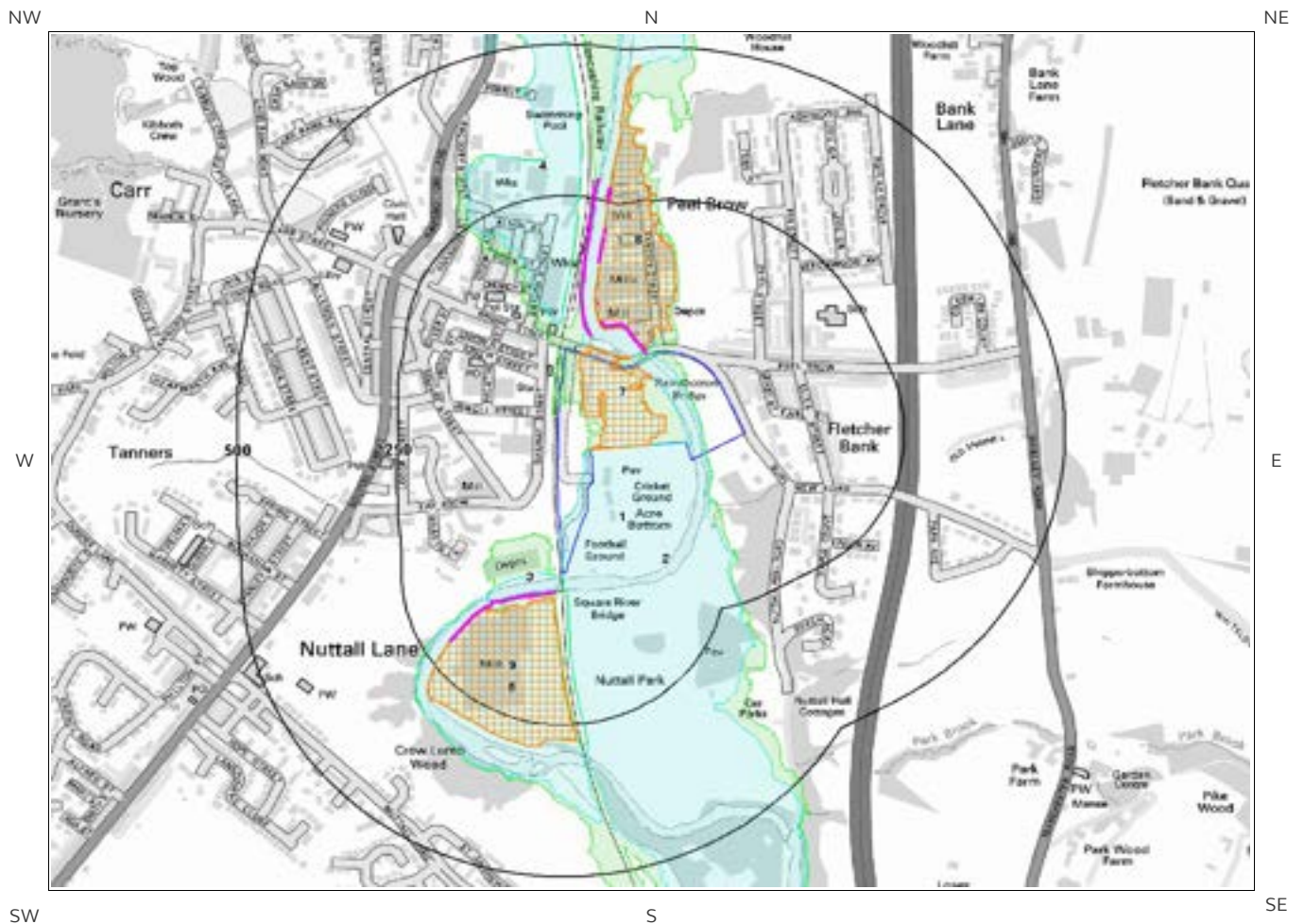
Surface water features within 250m of the study site

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
0	On Site
10	SW
10	W
11	NW
72	S
86	SE
86	SE
119	SW

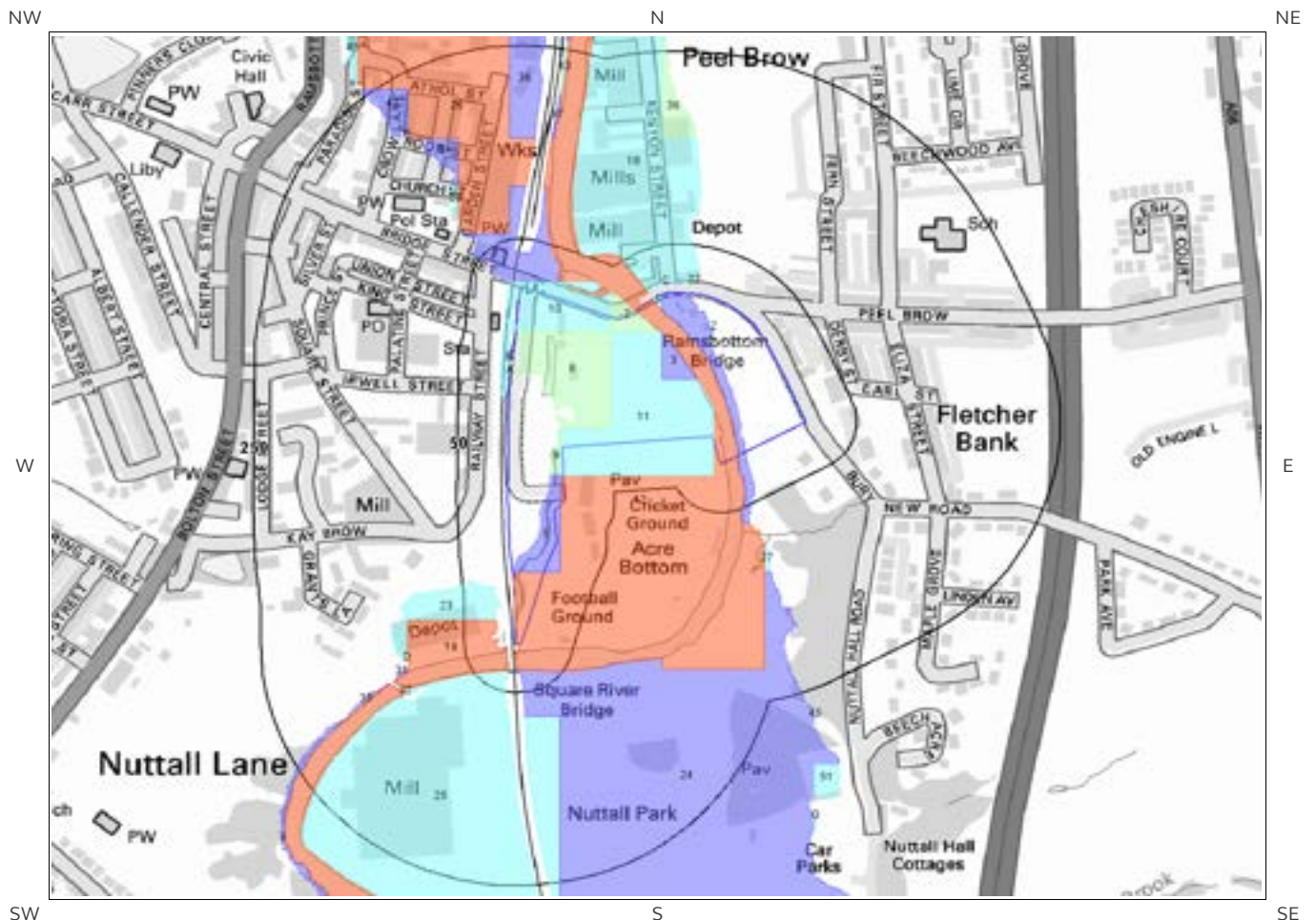
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



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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	0	On Site	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

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

Identified

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

ID	Distance (m)	Direction	Update	Type
1	0	On Site	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)
	10	W	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)
	40	N	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)
	44	S	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)

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

Highest risk of flooding onsite

High

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

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

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

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	Low
2	0.0	On Site	Low
3	0.0	On Site	Medium
4	0.0	On Site	Medium
5	0.0	On Site	Medium
6A	0.0	On Site	Very Low
7	0.0	On Site	Very Low
8	0.0	On Site	Very Low
9	0.0	On Site	Very Low
10	0.0	On Site	Low
11	0.0	On Site	Low
12	0.0	On Site	High
13A	0.0	On Site	Very Low
14B	0.0	W	Very Low
15	0.0	W	Very Low
16B	1.0	W	Very Low
17	5.0	N	Medium
18	8.0	NW	Low
19	9.0	W	High
20C	9.0	N	Medium
21C	10.0	N	Medium
22	11.0	N	Medium
23	14.0	W	Low
24	26.0	S	Medium
25	28.0	S	Low

7.4 Flood Defences

Flood Defences within 250m of the study site

Identified

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

ID	Distance (m)	Direction	Update
10	5	NW	21-Feb-2019
11	30	N	21-Feb-2019
12	33	S	21-Feb-2019
13	55	SW	21-Feb-2019
14	56	SW	21-Feb-2019
15	56	SW	21-Feb-2019
16	56	SW	21-Feb-2019
17	84	N	21-Feb-2019
18	148	N	21-Feb-2019
19	197	N	21-Feb-2019
20	245	N	21-Feb-2019

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site

Identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

7.7 Groundwater Flooding Susceptibility Areas

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

Identified

Clearwater Flooding or Superficial Deposits Flooding

Clearwater Flooding

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

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

Potential at Surface

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

7.8 Groundwater Flooding Confidence Areas

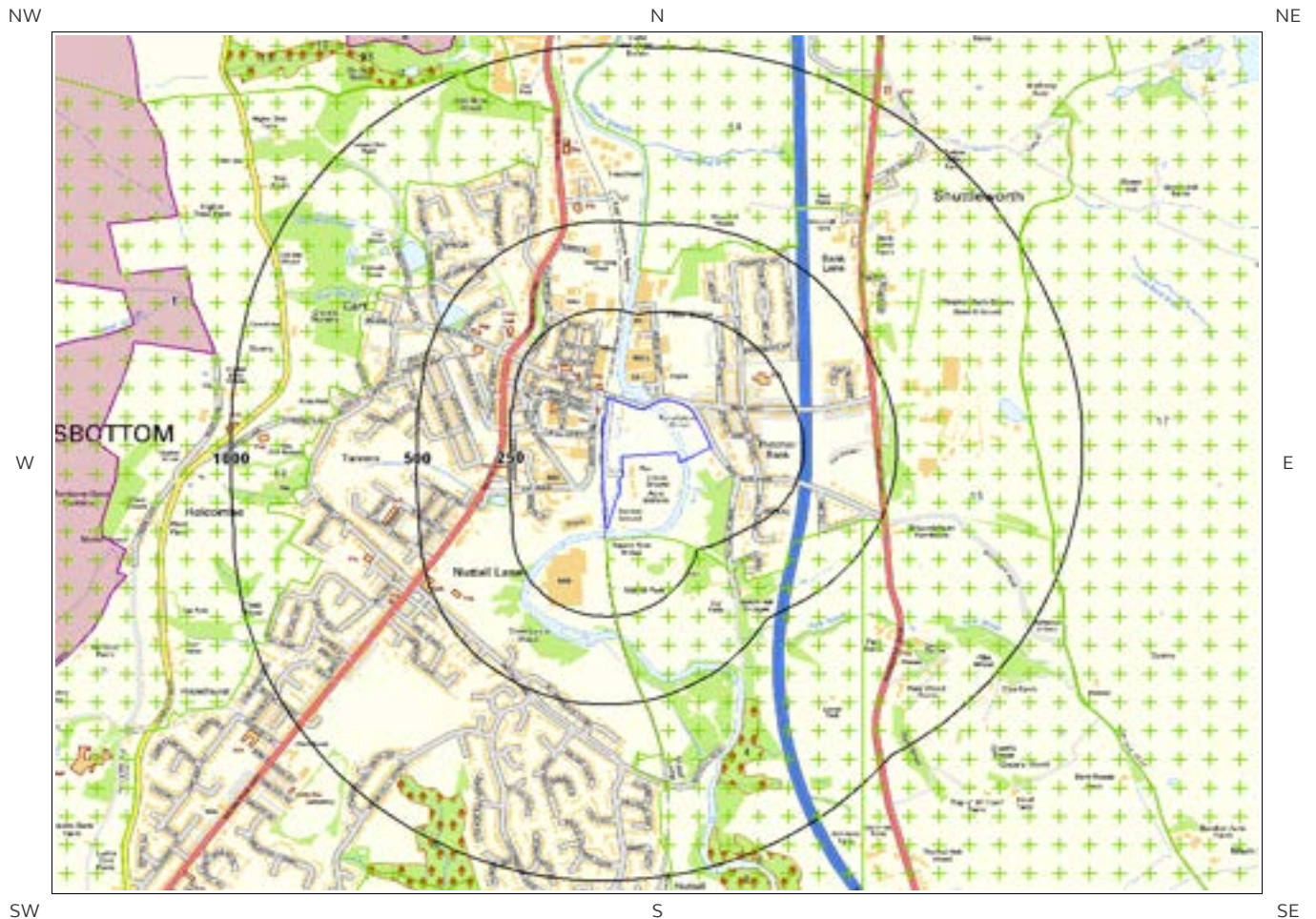
British Geological Survey confidence rating in this result

High

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

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

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

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

2

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

ID	Distance (m)	Direction	SSSI Name	Data Source
1	1064	W	West Pennine Moors	Natural England
2	1079	NW	Lower Red Lees Pasture	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

9

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
4	611	SE	NUTTALL WOOD	Ancient and Semi-Natural Woodland
5	844	SW	BROAD HEY WOOD	Ancient and Semi-Natural Woodland
6	896	S	GOLLINROD WOOD	Ancient and Semi-Natural Woodland
7	1012	NW	UNKNOWN	Ancient Replanted Woodland
8	1022	S	GOLLINROD WOOD	Ancient and Semi-Natural Woodland
9	1134	NW	UNKNOWN	Ancient and Semi-Natural Woodland
10	1184	NW	UNKNOWN	Ancient and Semi-Natural Woodland
11	1224	NW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1693	SW	DAWES BANK WOOD	Ancient and Semi-Natural Woodland

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

1

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
Not shown	1768	SW	Redisher 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:

0

Database searched and no data found.

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

6

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
----	----------	-----------	-----------------	----------------------

13	35	S	Liverpool, Manchester and West Yorks Greenbelt	Bury District (B)
14	358	N	Liverpool, Manchester and West Yorks Greenbelt	Bury District (B)
15	455	E	Liverpool, Manchester and West Yorks Greenbelt	Bury District (B)
16	824	N	Liverpool, Manchester and West Yorks Greenbelt	Rossendale District (B)
17	860	E	Liverpool, Manchester and West Yorks Greenbelt	Rossendale District (B)
Not shown	1871	N	Liverpool, Manchester and West Yorks Greenbelt	Rossendale 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 Geo Insight, available from our [website](#). The following information has been found:

9.1.1 Shrink Swell

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

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

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

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Moderate

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

Hazard
Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

9.1.3 Soluble Rocks

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

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

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

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

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site

Moderate

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

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

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site

Very Low

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

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

9.1.6 Running Sand

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

Low

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

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

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

9.2 Radon

9.2.1 Radon Affected Areas

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

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

9.2.2 Radon Protection

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

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

Identified

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

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	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

Past underground mine workings are uncommon, localised and of limited area. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size 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

None identified

Guidance: No Guidance Required.

Contact Details

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

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:

Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

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

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

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

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

Local Authority
Authority: Bury Metropolitan Borough Council
Phone: 01612 535 000
Web: <http://www.bury.gov.uk/>
Address: Town Hall, Knowsley Street, Bury, Lancashire, BL9 OSW

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



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Betts Geo Ltd

BETTS GEO ENVIRONMENTAL, 4 OLD MARSH
FARM BARN, MARSH FARM ROAD,
SEALAND, CH5 2LY

Groundsure
Reference:

GS-6015651

Your Reference: BG3315

Report Date 9 May 2019

Report Delivery Method: Email - pdf

Geo Insight

Address: HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM, BL0 0BS

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: HOLCOMBE MILL, BRIDGE STREET, RAMSBOTTOM, BL0 0BS
Date: 9 May 2019
Reference: GS-6015651
Client: Betts Geo Ltd



Aerial Photograph Capture date: 26-Mar-2012
Grid Reference: 379433,416756
Site Size: 4.6144ha

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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 landslide within 500m of the study site boundary at 1:10,000 scale?	Yes
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 landslide within 500m of the study site boundary?	Yes
	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?

Yes

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	19	10	30	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	14
4.3 Current Ground Workings	0	0	0	0	11

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	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	0	0	1	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

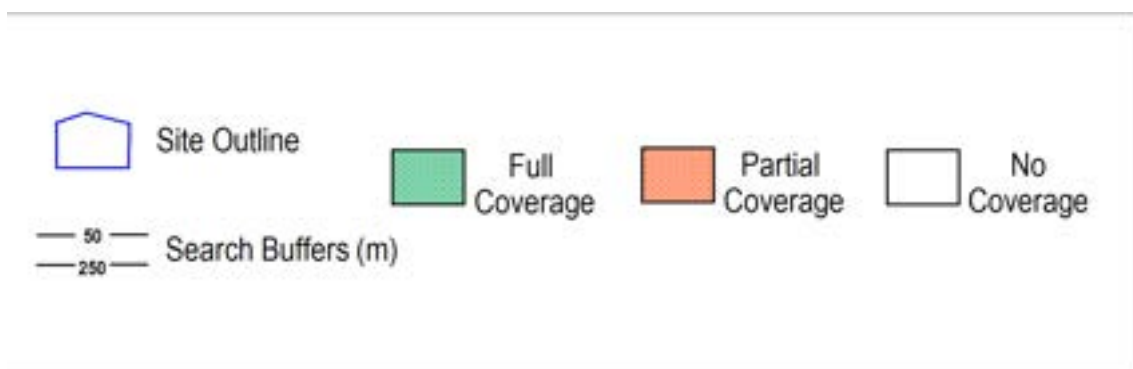
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Moderate				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Moderate				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	8	5	25		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	4	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	12	7	14	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	10	12	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	409.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1475.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N4	1628.0	Some deposits are mapped	Full	Full	Some deposits are mapped

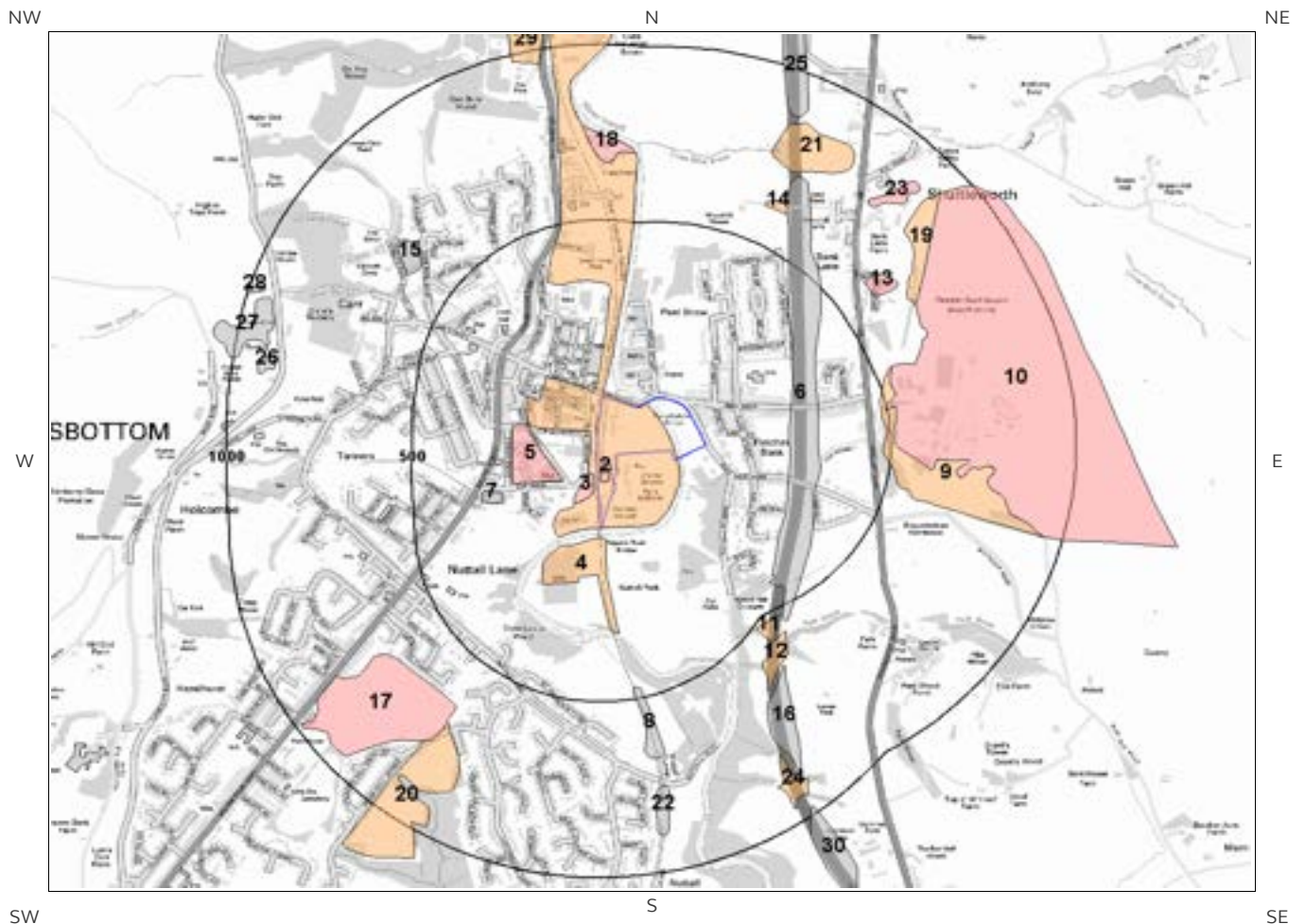
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not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

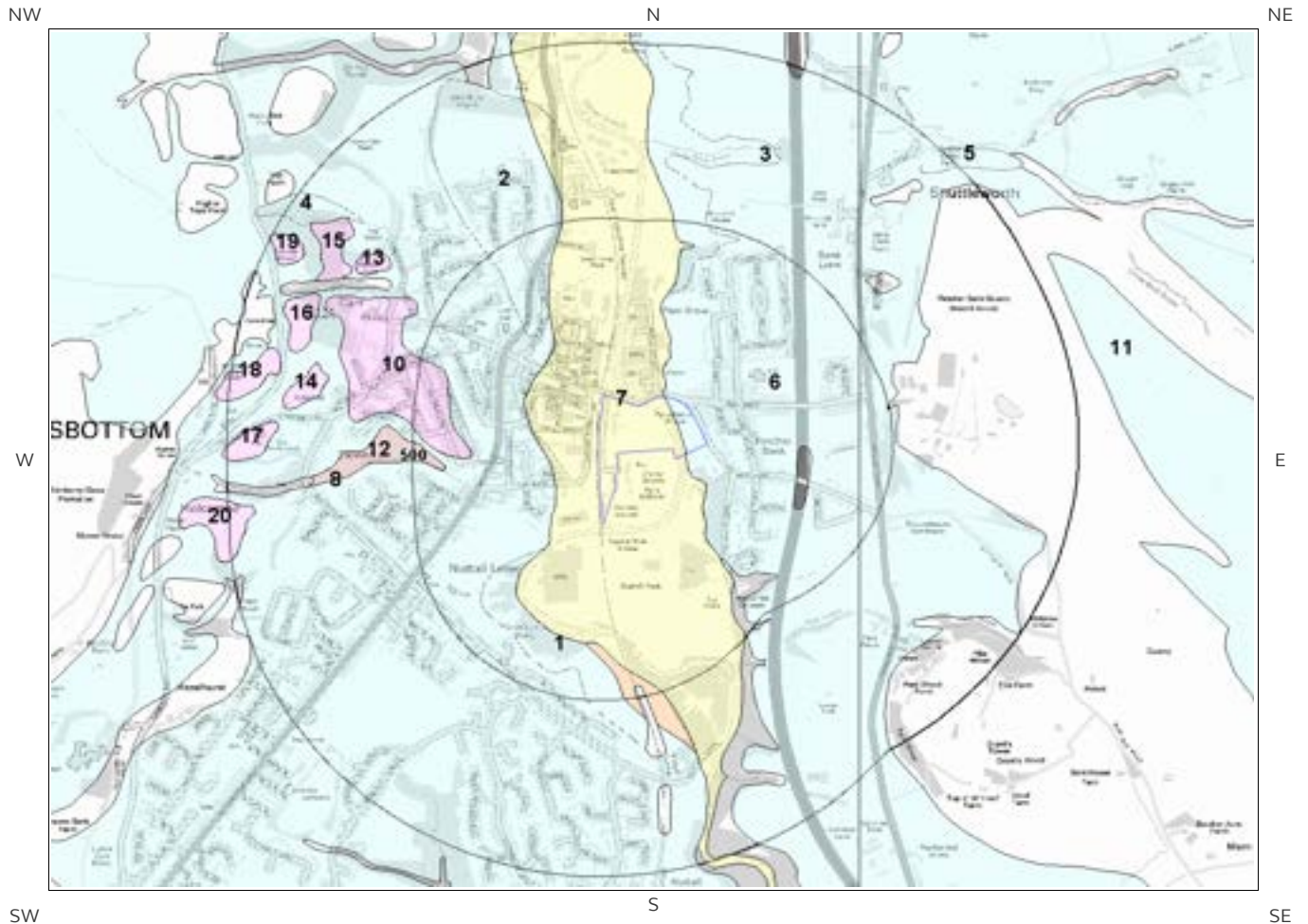
1.1 Artificial Ground

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	0.0	On Site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	11.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	33.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	95.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
6	226.0	E	WGR-VOID	Worked Ground (Undivided)	Void
7	257.0	W	WGR-VOID	Worked Ground (Undivided)	Void
8	467.0	S	WGR-VOID	Worked Ground (Undivided)	Void
9	478.0	E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	495.0	E	WMGR-ARTDP	Infilled Ground	Artificial Deposit

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



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

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

1.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
6	0.0	On Site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
7	0.0	On Site	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
8	118.0	W	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
9	334.0	S	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
10	342.0	W	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
11	409.0	E	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
12	413.0	W	HEAD-DMTN	Head - Diamicton	Diamicton

1.2.2 Landslip

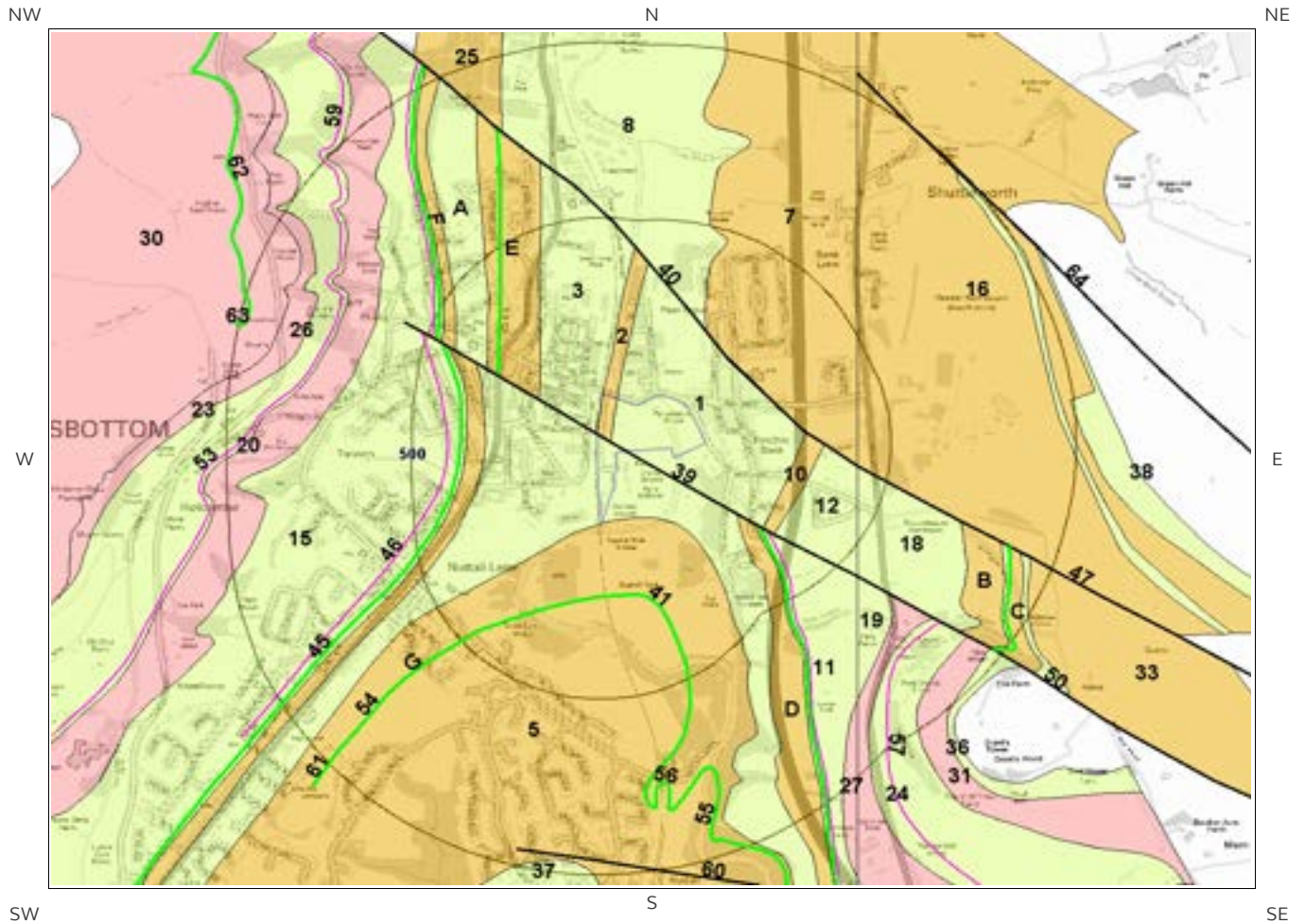
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	164.0	SW	SLIP-UNKNOWN	Landslide Deposits	Unknown/unclassified Entry
2	247.0	NW	SLIP-UNKNOWN	Landslide Deposits	Unknown/unclassified Entry
3	298.0	N	SLIP-UNKNOWN	Landslide Deposits	Unknown/unclassified Entry

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

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

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



Bedrock and linear features Legend

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1.3 Bedrock and linear features

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

1.3.1 Bedrock/ Solid Geology

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

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
2	0.0	On Site	HZG-SDST	Hazel Greave Grit - Sandstone	Marsdenian Sub-age
3	0.0	On Site	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
4	0.0	On Site	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
5	0.0	S	BBS-SDST	Brooksbottoms Grit - Sandstone	Marsdenian Sub-age
6E	165.0	W	BBS-SDST	Brooksbottoms Grit - Sandstone	Marsdenian Sub-age
7	176.0	NE	FLB-SDST	Fletcher Bank Grit - Sandstone	Marsdenian Sub-age
8	209.0	NE	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
9D	219.0	SE	HLBG-SDST	Holcombe Brook Grit - Sandstone	Marsdenian Sub-age
10	242.0	SE	HZG-SDST	Hazel Greave Grit - Sandstone	Marsdenian Sub-age
11	260.0	SE	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
12	291.0	SE	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
13	301.0	W	HLBG-SDST	Holcombe Brook Grit - Sandstone	Marsdenian Sub-age
14A	318.0	W	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
15	352.0	W	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian Age
16	409.0	E	FLB-SDST	Fletcher Bank Grit - Sandstone	Marsdenian Sub-age
17A	413.0	W	HLBG-SDST	Holcombe Brook Grit - Sandstone	Marsdenian Sub-age
18	414.0	E	MG-MDSI	Millstone Grit Group [see Also Migr] - Mudstone And Siltstone	Namurian 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
39	0.0	On Site	FAULT	Normal fault, inferred
40	176.0	NE	FAULT	Normal fault, inferred
41	207.0	S	ROCK	Coal seam, inferred

ID	Distance (m)	Direction	Category Description	Feature Description
42D	279.0	SE	ROCK	Coal seam, inferred
43E	285.0	W	ROCK	Coal seam, inferred
44D	300.0	SE	FOSSIL_HORIZON	Fossil horizon, marine band
45	367.0	W	ROCK	Coal seam, inferred
46	402.0	W	FOSSIL_HORIZON	Fossil horizon, marine band
47	414.0	E	FAULT	Normal fault, inferred
48F	470.0	W	ROCK	Coal seam, inferred
49F	484.0	W	FOSSIL_HORIZON	Fossil horizon, marine band

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.

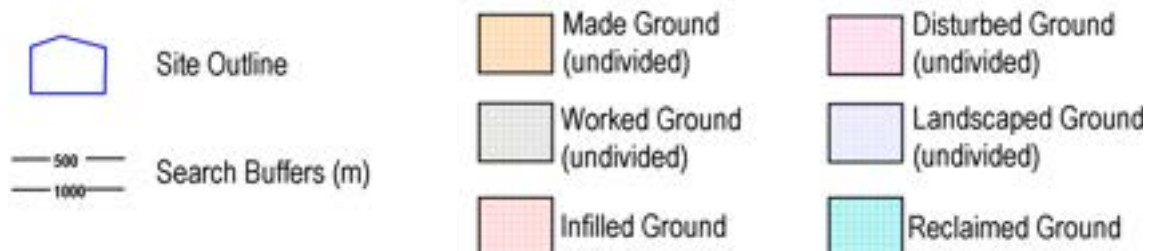
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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: 076

2.1.1 Artificial/ Made Ground

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

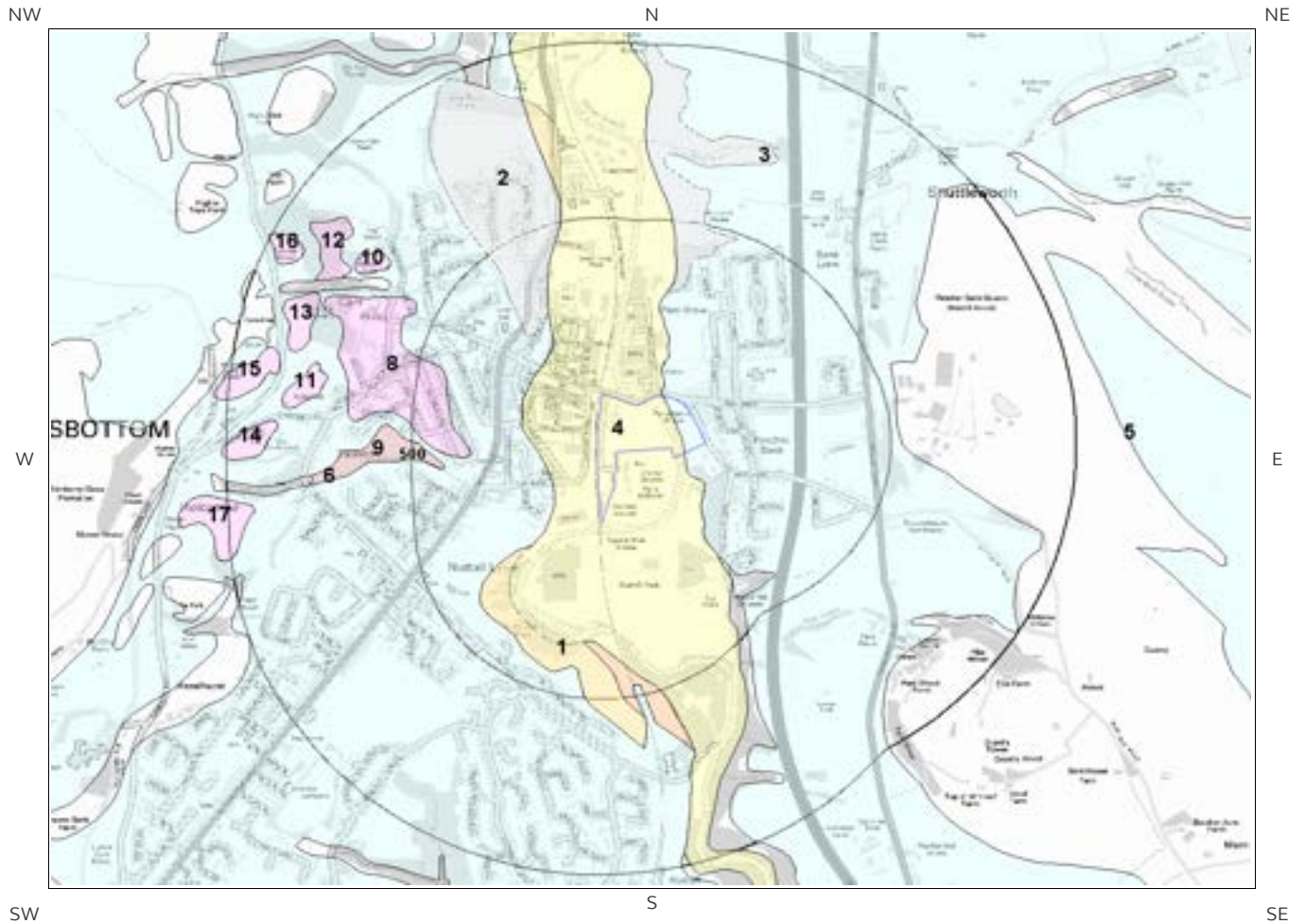
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	490.0	E	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

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
0.0	On Site	Mixed	Very High	Low

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



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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
4	0.0	On Site	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
5	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
6	119.0	W	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
7	335.0	S	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
8	342.0	W	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
9	413.0	W	HEAD-DMTN	HEAD	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	Mixed	High	Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	191.0	W	SLIP-UNKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY
2	247.0	NW	SLIP-UNKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY
3	298.0	N	SLIP-UNKNOWN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

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

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

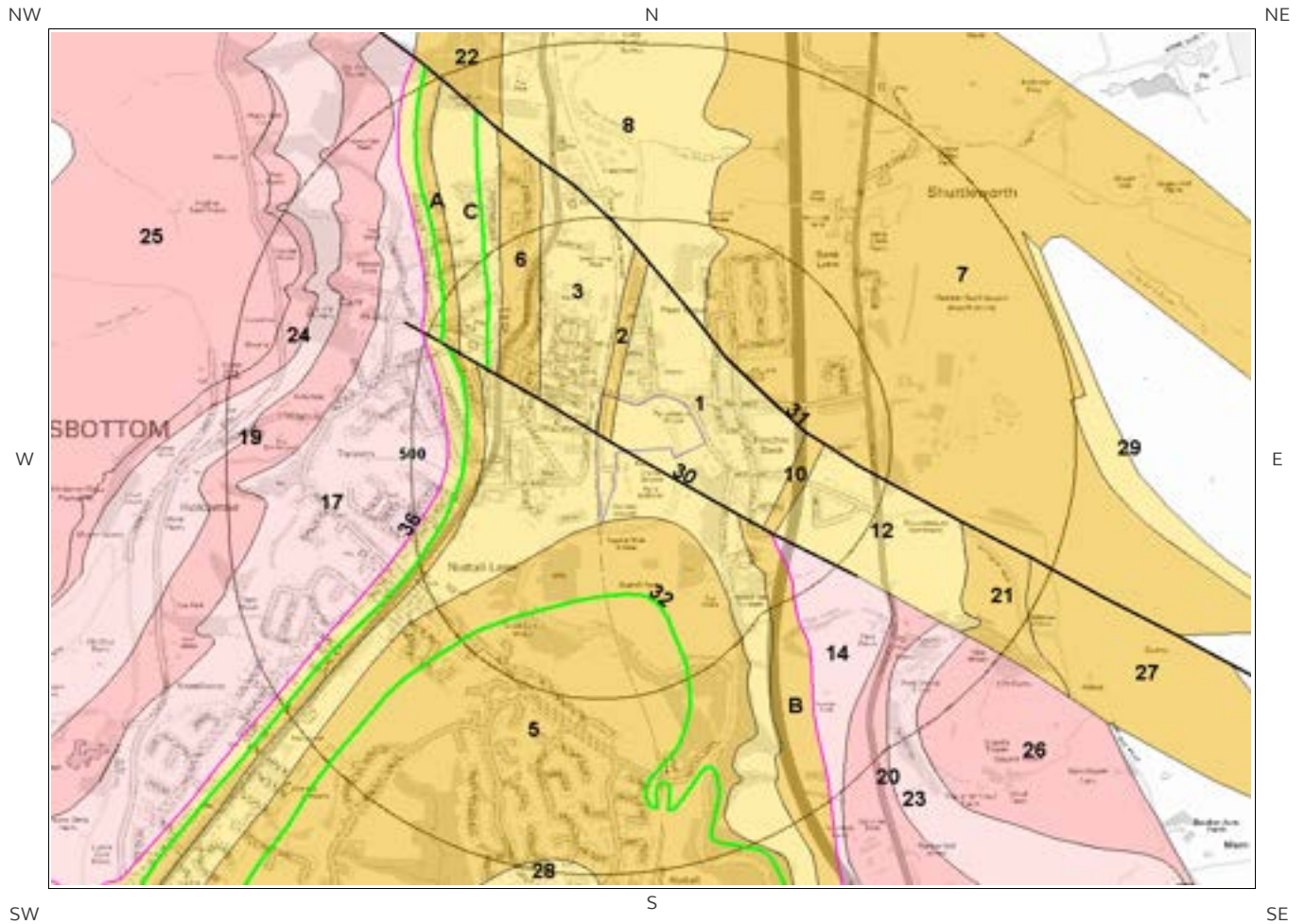
2.2.4 Landslip Permeability

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

No

Database searched and no data found.

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



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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: 076

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	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
2	0.0	On Site	GSYG-SDST	GUISELEY GRIT - SANDSTONE	NAMURIAN
3	0.0	On Site	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
4	0.0	On Site	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
5	0.0	S	BBS-SDST	BROOKSBOTTOMS GRIT - SANDSTONE	NAMURIAN
6	165.0	W	BBS-SDST	BROOKSBOTTOMS GRIT - SANDSTONE	NAMURIAN
7	175.0	NE	FLB-SDST	FLETCHER BANK GRIT - SANDSTONE	NAMURIAN
8	209.0	NE	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
9B	220.0	SE	HLBG-SDST	HOLCOMBE BROOK GRIT - SANDSTONE	NAMURIAN
10	243.0	E	GSYG-SDST	GUISELEY GRIT - SANDSTONE	NAMURIAN
11C	286.0	W	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
12	291.0	SE	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
13	301.0	W	HLBG-SDST	HOLCOMBE BROOK GRIT - SANDSTONE	NAMURIAN
14	307.0	SE	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
15D	352.0	W	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
16A	402.0	W	HLBG-SDST	HOLCOMBE BROOK GRIT - SANDSTONE	NAMURIAN
17	403.0	W	ROSSE-MDSI	ROSSENDALE FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN
18A	459.0	W	MARSD-MDSI	MARSDEN FORMATION - MUDSTONE AND SILTSTONE	NAMURIAN

2.3.2 Permeability of Bedrock Ground

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

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

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	High	Moderate
0.0	S	Fracture	High	Moderate

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? Yes

ID	Distance	Direction	Category Description	Feature Description
30	0.0	On Site	FAULT	Fault, inferred
31	175.0	NE	FAULT	Fault, inferred, displacement unknown
32	207.0	S	ROCK	Coal seam, inferred
33B	307.0	SE	FOSSIL_HORIZON	Marine band
34C	319.0	W	ROCK	Coal seam, inferred
35D	352.0	W	ROCK	Coal seam, inferred
36	403.0	W	FOSSIL_HORIZON	Marine band
37A	459.0	W	ROCK	Coal seam, inferred

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

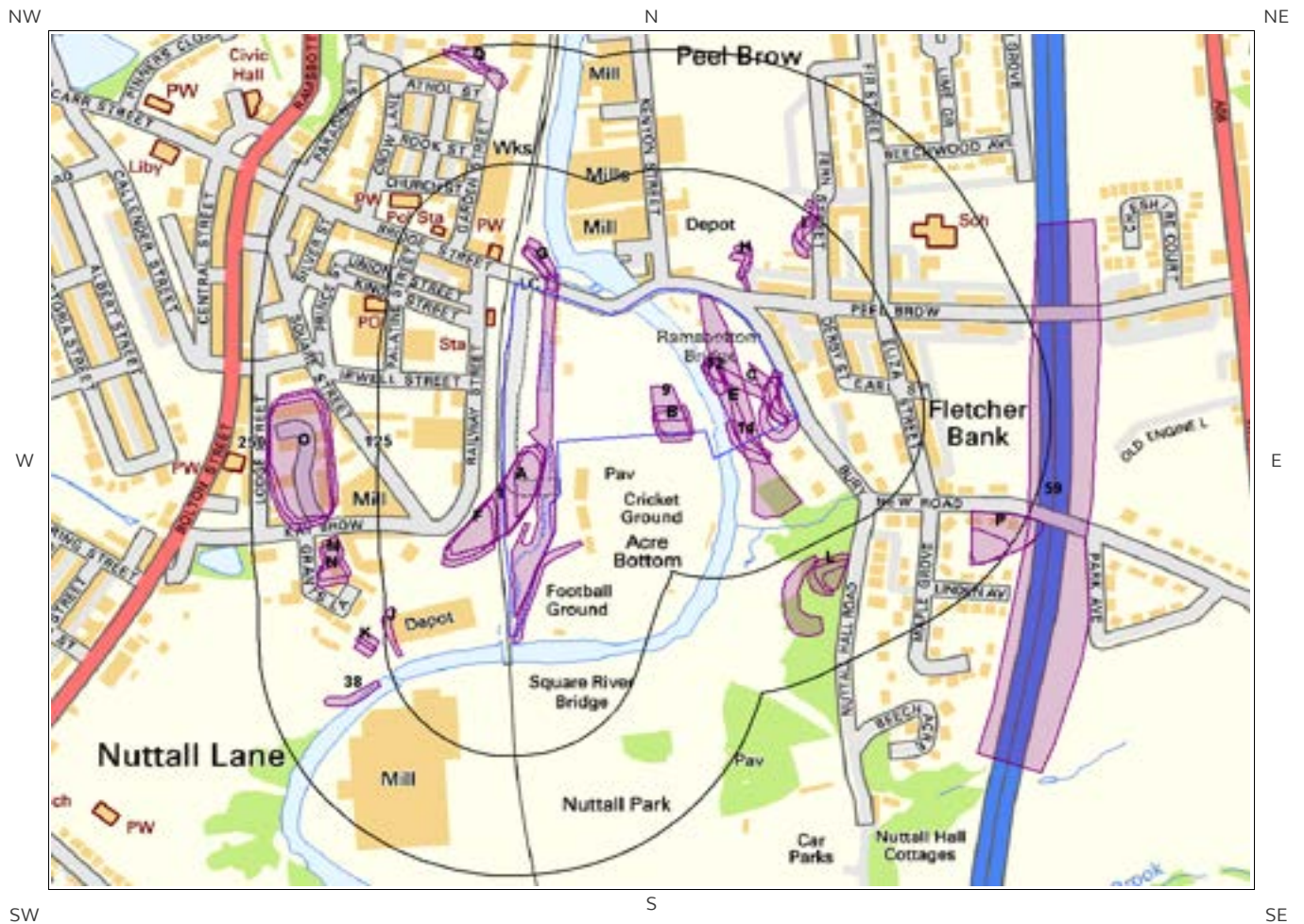
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

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

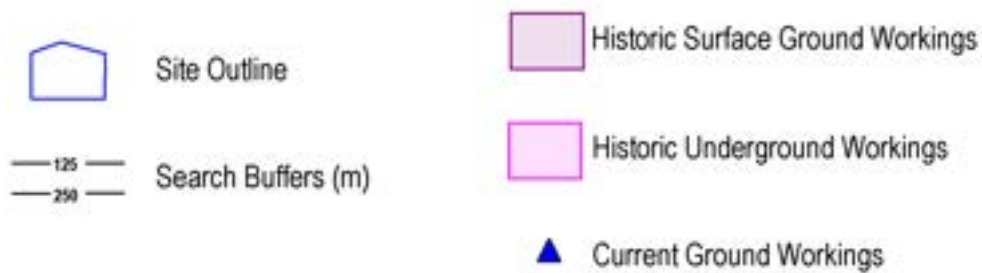
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1	0.0	On Site	379290 416615	Reservoir	1955
2	0.0	On Site	379339 416694	Ponds	1955
3A	0.0	On Site	379318 416624	Reservoir	1948
4A	0.0	On Site	379318 416624	Reservoirs	1891
5A	0.0	On Site	379318 416624	Pond	1908
6A	0.0	On Site	379318 416624	Reservoir	1927
7A	0.0	On Site	379326 416638	Pond	1968
8	0.0	On Site	379327 416522	Unspecified Ground Workings	1908
9	0.0	On Site	379463 416719	Filter Beds	1927
10B	0.0	On Site	379466 416696	Filter Beds	1948
11B	0.0	On Site	379468 416701	Filter Beds	1955
12	0.0	On Site	379507 416745	Refuse Heap	1948
13C	0.0	On Site	379559 416729	Refuse Heap	1927
14	0.0	On Site	379542 416679	Refuse Heap	1948
15D	0.0	On Site	379561 416721	Refuse Heap	1968
16C	0.0	On Site	379568 416722	Refuse Heap	1948
17D	0.0	On Site	379572 416729	Refuse Heap	1955
18E	0.0	On Site	379531 416715	Refuse Heap	1955
19E	0.0	On Site	379544 416715	Unspecified Ground Workings	1968
20G	3.0	N	379336 416861	Pond	1891
21F	8.0	W	379269 416591	Pond	1968

ID	Distance (m)	Direction	NGR	Use	Date
22F	11.0	W	379264 416581	Reservoir	1927
23F	11.0	W	379264 416581	Reservoir	1948
24F	11.0	W	379264 416581	Reservoir	1908
25G	14.0	N	379331 416868	Pond	1927
26G	14.0	N	379331 416868	Pond	1948
27H	23.0	NE	379537 416861	Unspecified Ground Workings	1955
28H	28.0	NE	379540 416863	Unspecified Ground Workings	1948
29H	28.0	NE	379540 416863	Unspecified Ground Workings	1927
30I	85.0	NE	379591 416894	Unspecified Ground Workings	1927
31I	85.0	NE	379591 416894	Unspecified Ground Workings	1948
32I	93.0	NE	379600 416906	Unspecified Ground Workings	1955
33J	109.0	W	379189 416480	Unspecified Ground Workings	1908
34J	130.0	W	379165 416470	Filter Beds	1955
35K	133.0	W	379162 416463	Filter Beds	1927
36K	133.0	W	379162 416463	Filter Beds	1948
37	137.0	SE	379584 416518	Refuse Heap	1968
38	139.0	W	379159 416416	Unspecified Ground Workings	1908
39L	141.0	SE	379625 416542	Refuse Heap	1955
40L	147.0	SE	379609 416538	Refuse Heap	1927
41L	147.0	SE	379609 416538	Refuse Heap	1948
42M	156.0	W	379132 416557	Ponds	1968
43M	156.0	W	379132 416557	Reservoirs	1955
44N	159.0	W	379130 416539	Reservoirs	1908
45N	159.0	W	379130 416539	Reservoirs	1948
46M	159.0	W	379130 416539	Reservoirs	1927
47M	164.0	W	379127 416562	Reservoirs	1948
48M	164.0	W	379127 416562	Reservoirs	1908
49O	164.0	W	379101 416667	Pond	1968
50O	169.0	W	379098 416662	Reservoir	1955

ID	Distance (m)	Direction	NGR	Use	Date
51O	171.0	W	379096 416655	Reservoir	1908
52O	171.0	W	379096 416655	Reservoir	1927
53O	171.0	W	379096 416655	Reservoir	1948
54O	171.0	W	379096 416655	Reservoir	1891
55P	198.0	SE	379798 416578	Refuse Heap	1928
56Q	202.0	N	379271 417068	Pond	1955
57P	209.0	SE	379782 416569	Refuse Heap	1938
58Q	224.0	N	379266 417081	Pond	1968
59	230.0	E	379830 416622	Cuttings	1980

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? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	678.0	S	379466 415772	Tunnel	1949
Not shown	678.0	S	379466 415772	Tunnel	1980
Not shown	678.0	S	379466 415772	Tunnel	1968
Not shown	681.0	S	379465 415768	Tunnel	1908
Not shown	681.0	S	379465 415768	Tunnel	1927
Not shown	681.0	S	379465 415768	Tunnel	1891
Not shown	681.0	S	379465 415768	Tunnel	1848
Not shown	888.0	S	379433 415419	Tunnel	1968
Not shown	888.0	S	379433 415419	Tunnel	1949
Not shown	891.0	S	379439 415419	Tunnel	1980
Not shown	894.0	S	379433 415414	Tunnel	1908

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	894.0	S	379433 415414	Tunnel	1891
Not shown	894.0	S	379433 415414	Tunnel	1848
Not shown	894.0	S	379433 415414	Tunnel	1927

4.3 Current Ground Workings

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

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

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

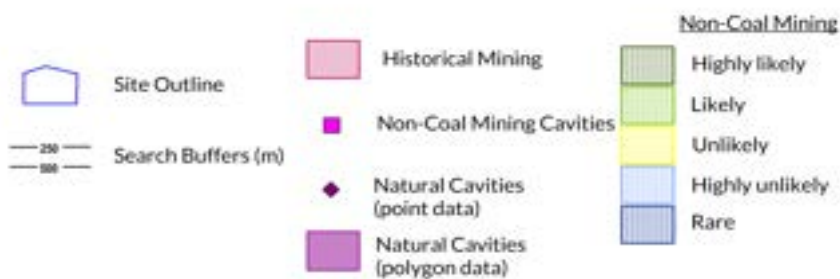
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	578.0	E	380169 416697	Sandstone	Fletcher Bank Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	630.0	NE	380055 417170	Sandstone	Fletcher Bank Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	715.0	E	380300 416800	Sandstone	Fletcher Bank Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Inactive
Not shown	715.0	E	380300 416800	Sandstone	Fletcher Bank Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Inactive
Not shown	806.0	W	378540 417079	Sandstone	Carr	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	837.0	NE	380110 417420	Sandstone	Bank Lane Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	853.0	W	378507 417128	Sandstone	Carr	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	881.0	W	378431 416915	Sandstone	Stony Bank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	882.0	E	380460 416555	Sandstone	Grime Height Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	964.0	E	380515 416980	Sandstone	Fletcher Bank Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Inactive
Not shown	967.0	NE	380350 417335	Sandstone	Fletcher Bank Quarry	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? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

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? Yes

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

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
2	409.0	E	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

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 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

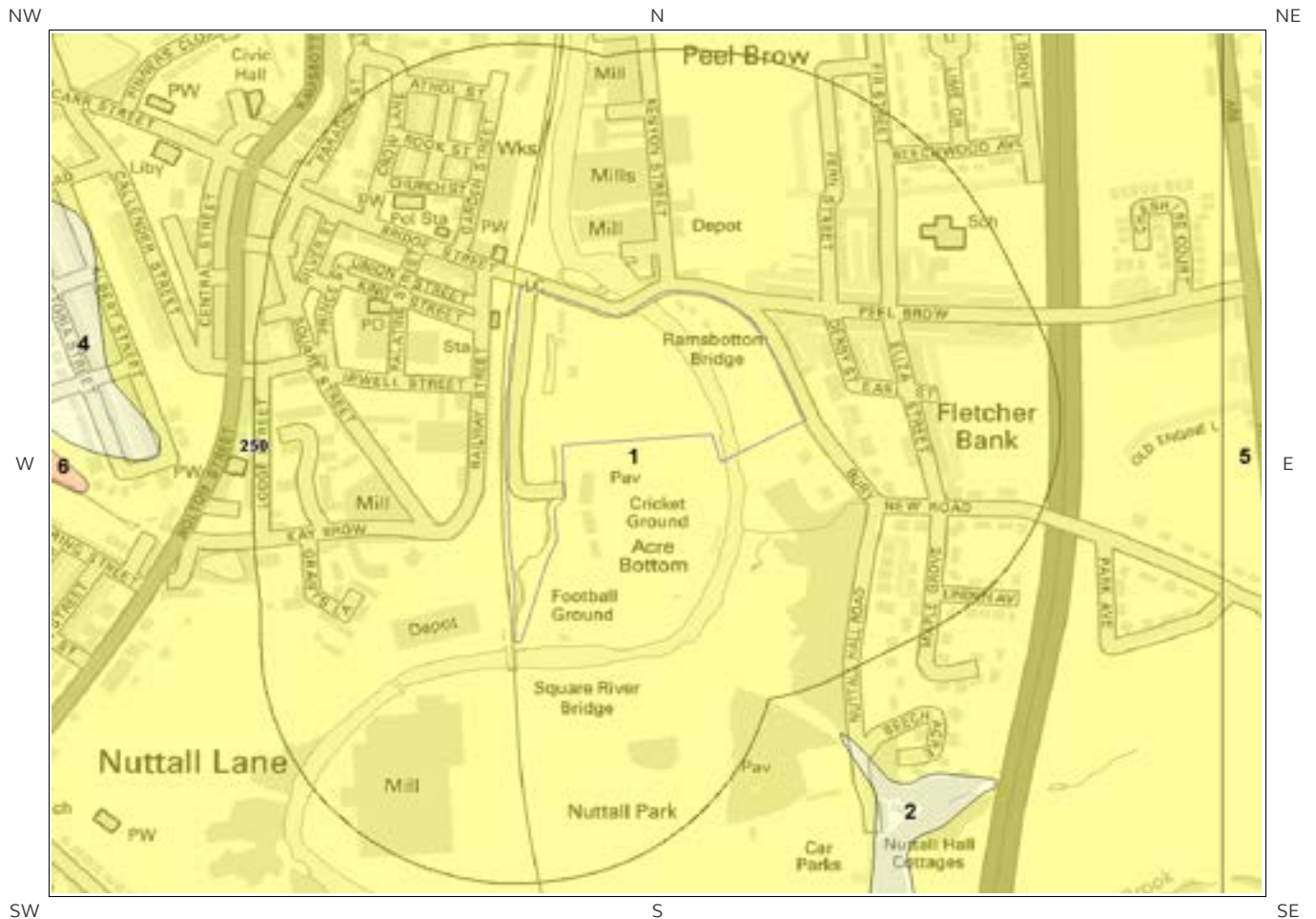
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

Database searched and no data found.

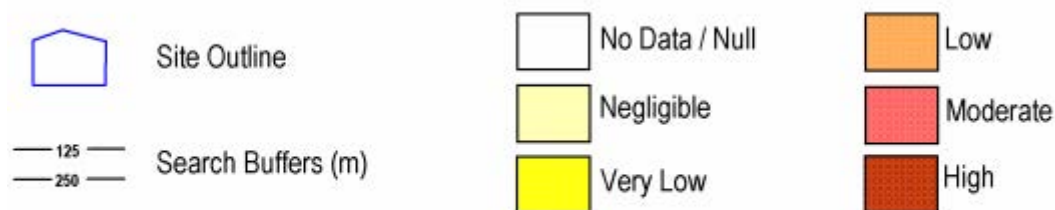
6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

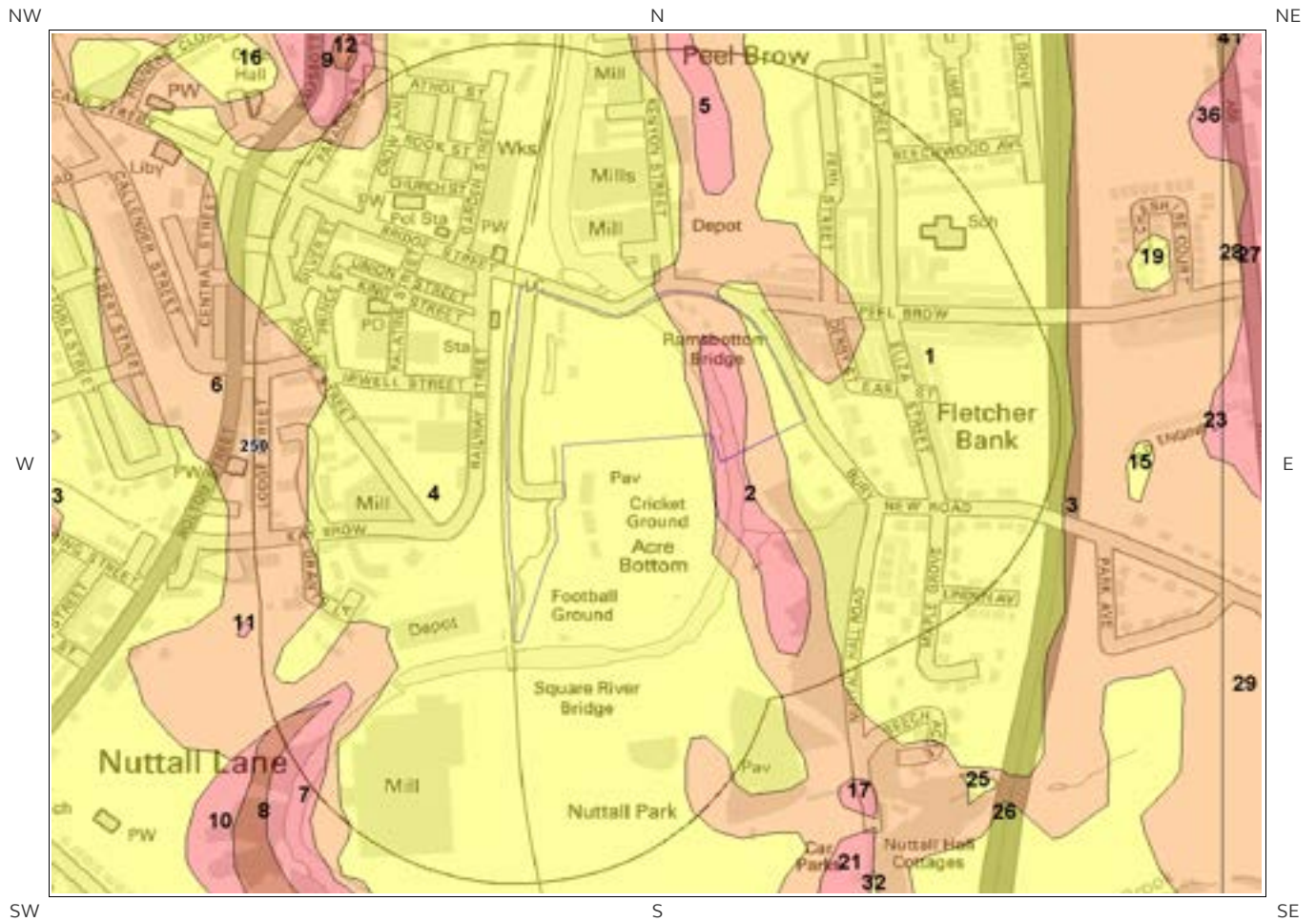


Shrink Swell Clay Legend

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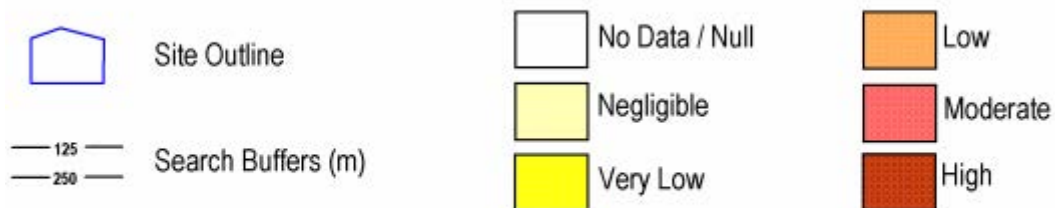


6.2 Landslides map

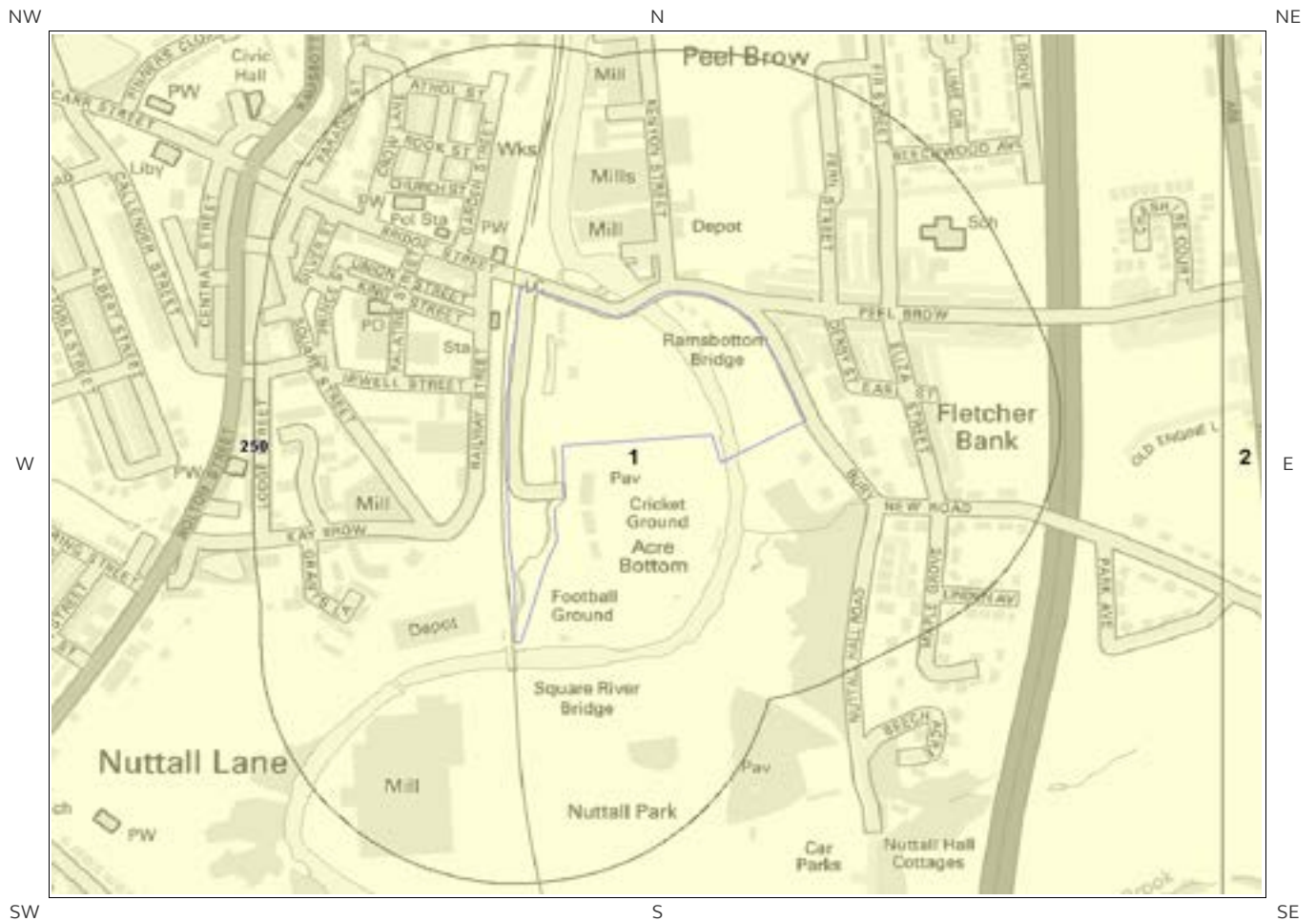


Landslides Legend

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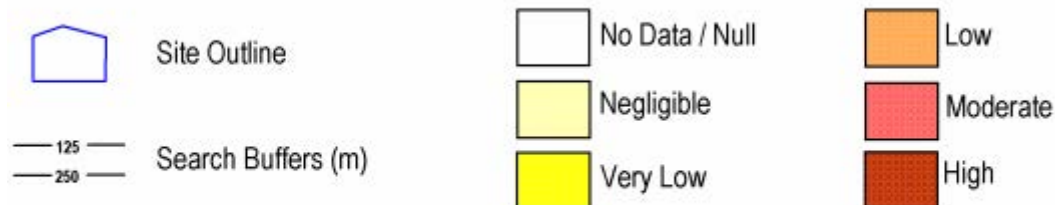


6.3 Ground Dissolution of Soluble Rocks map

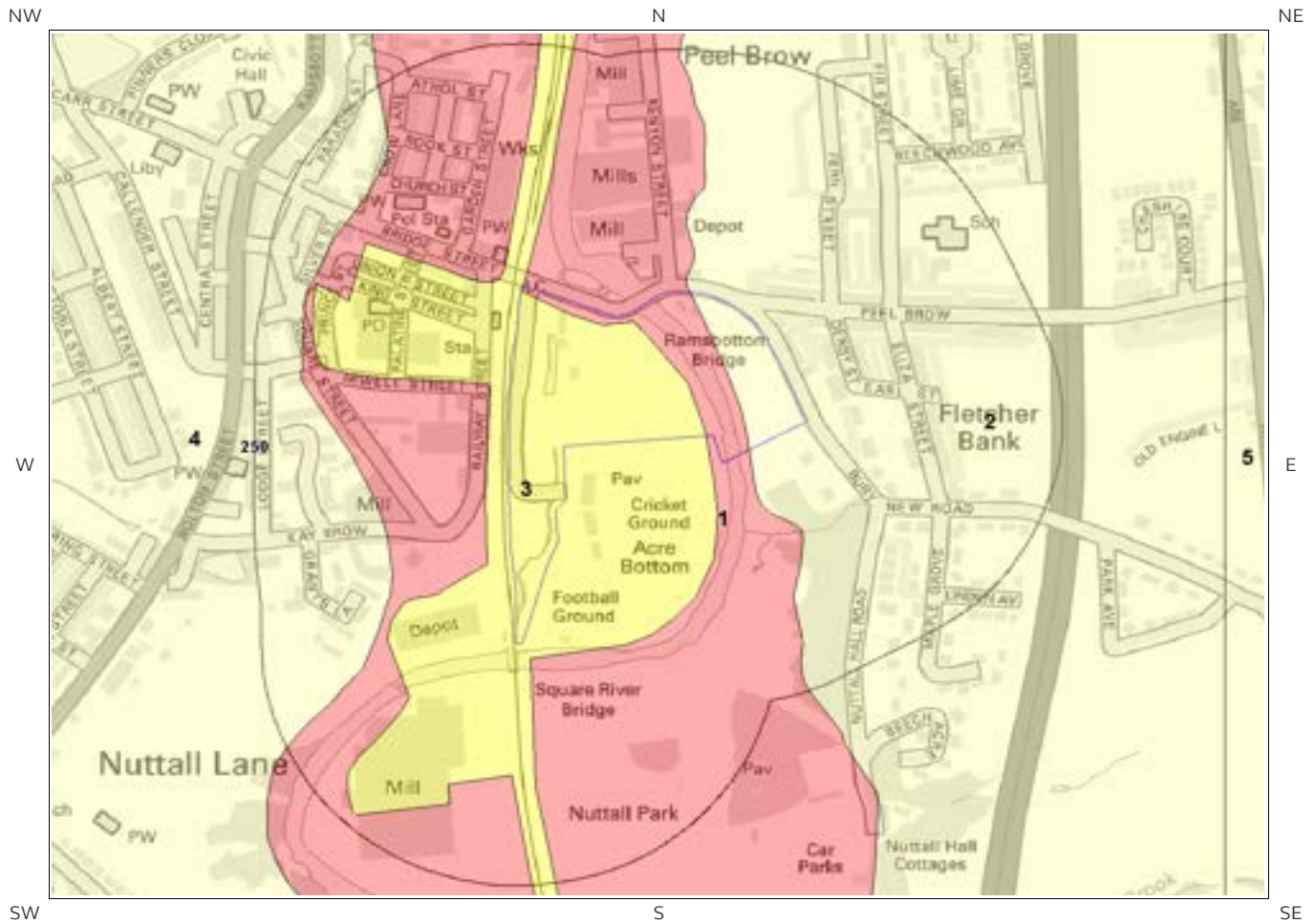


**Ground Dissolution
Soluble Rocks Legend**

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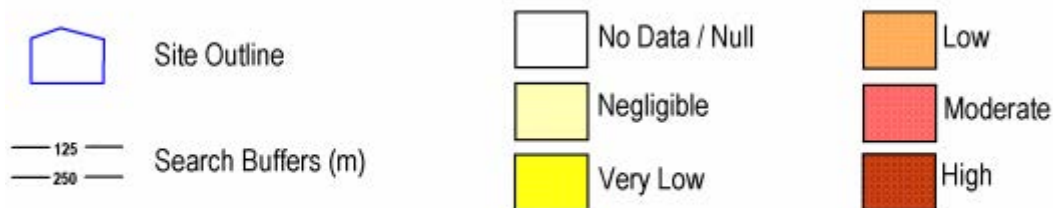


6.4 Compressible Deposits map

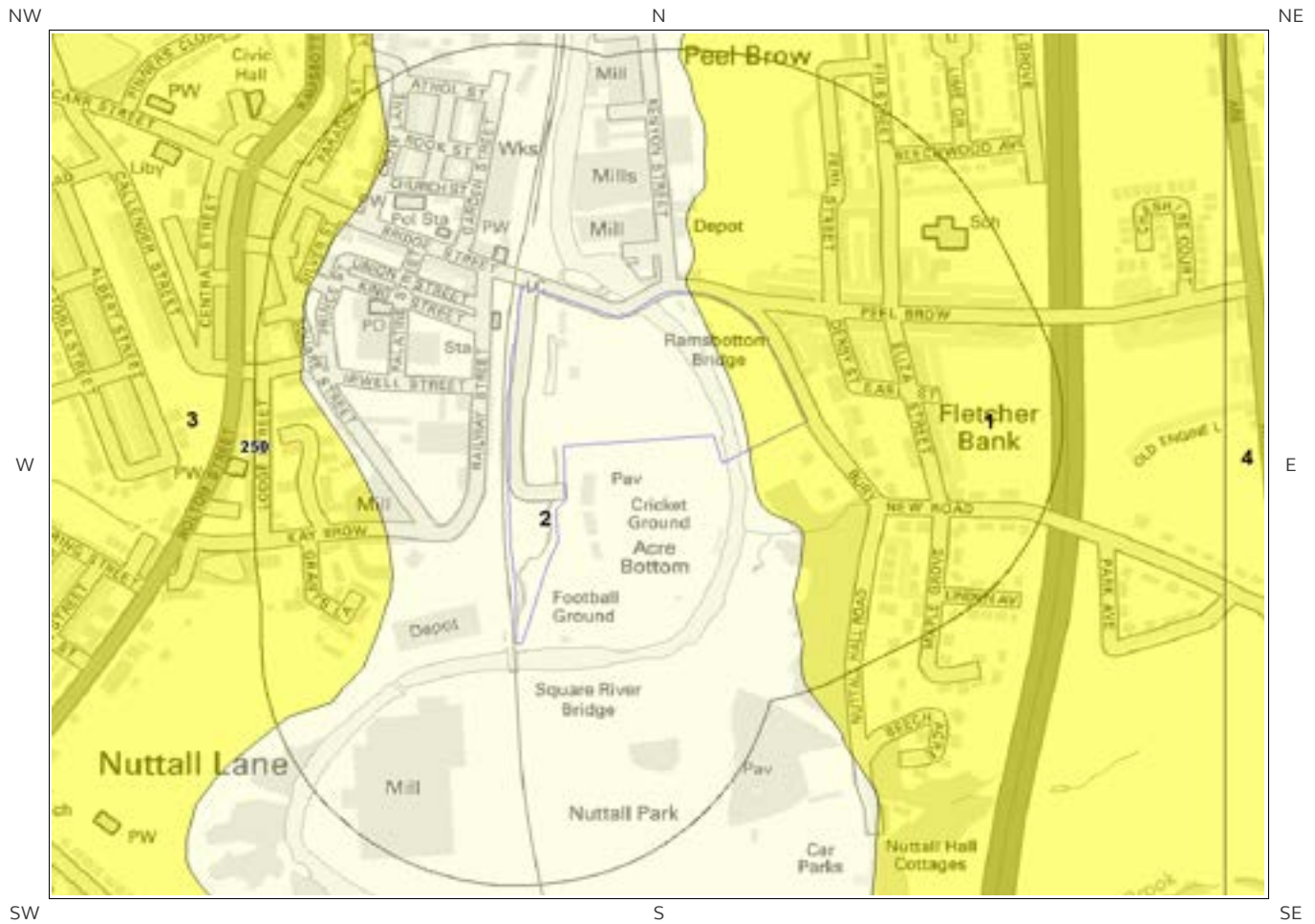


Compressible Deposits Legend

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6.5 Collapsible Deposits map



Collapsible Deposits Legend

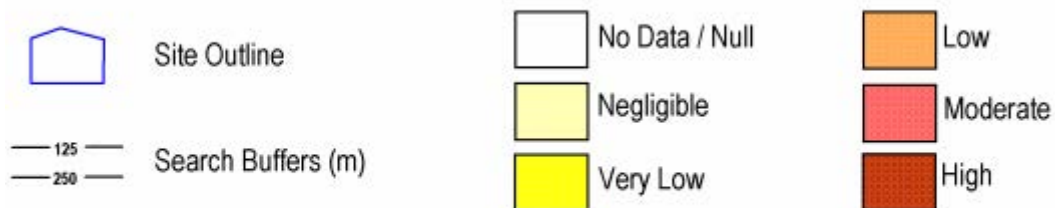
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6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

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

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

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

6.1 Shrink-Swell Clays

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

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

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	0.0	On Site	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

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

ID	Distance (m)	Direction	Hazard Rating	Details
3	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
4	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

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

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

6.4 Compressible Deposits

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

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

6.5 Collapsible Deposits

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

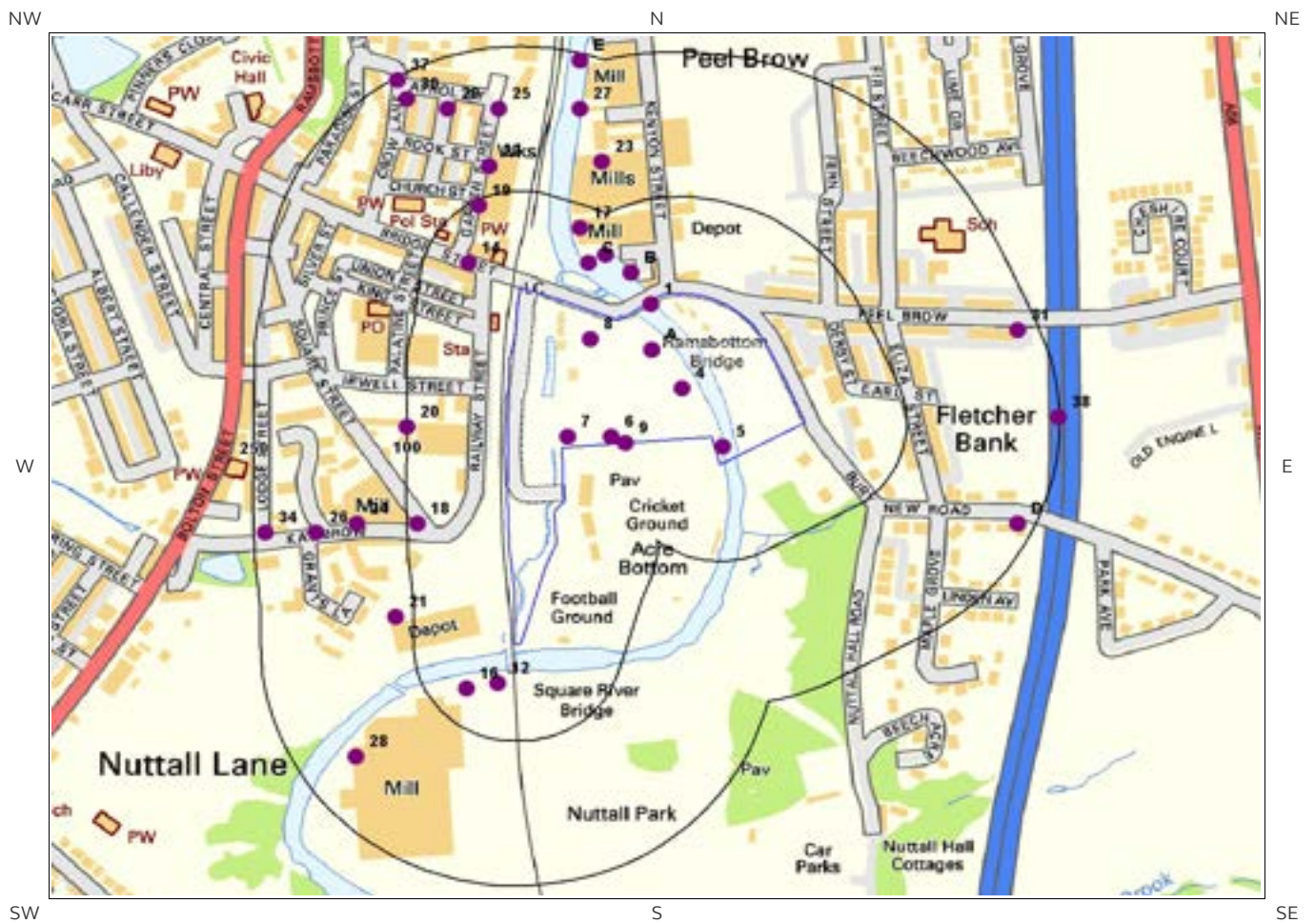
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

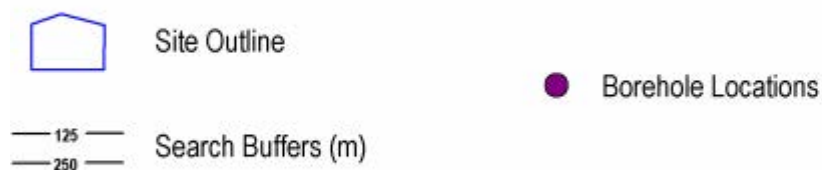
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased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

7 Borehole Records map



Borehole Records Legend

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7 Borehole Records

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

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

38

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	379439 416827	SD71NE153	Not available	RIVER IRWELL RAMSBOTTOM TP F
2A	0.0	On Site	379440 416780	SD71NE172	Not available	RIVER IRWELL RAMSBOTTOM TP4
3A	0.0	On Site	379440 416780	SD71NE173	Not available	RIVER IRWELL RAMSBOTTOM TP4A
4	0.0	On Site	379470 416740	SD71NE168	Not available	RIVER IRWELL RAMSBOTTOM BH3
5	0.0	On Site	379510 416680	SD71NE174	Not available	RIVER IRWELL RAMSBOTTOM TP5
6	0.0	On Site	379400 416690	SD71NE187	66	RAMSBOTTOM PAPER MILLS
7	0.0	On Site	379358 416690	SD71NE7	66	RAMSBOTTOM PAPER MILLS
8	0.0	On Site	379380 416791	SD71NE8	Not available	RAMSBOTTOM PAPER MILLS
9	1.0	S	379414 416683	SD71NE6	108	RAMSBOTTOM PAPER MILLS
10B	35.0	NW	379420 416860	SD71NE167	Not available	RIVER IRWELL RAMSBOTTOM BH2
11B	35.0	NW	379420 416860	SD71NE171	Not available	RIVER IRWELL RAMSBOTTOM TP3
12	44.0	SW	379289 416434	SD71NE154	Not available	RIVER IRWELL RAMSBOTTOM TP G
13C	45.0	N	379378 416870	SD71NE151	Not available	RIVER IRWELL RAMSBOTTOM TP D
14	57.0	NW	379260 416870	SD71NE117	7	STUBBINS LANE BURY 1
15C	58.0	N	379395 416878	SD71NE152	Not available	RIVER IRWELL RAMSBOTTOM TP E
16	66.0	SW	379258 416429	SD71NE155	Not available	RIVER IRWELL RAMSBOTTOM TP H
17	76.0	N	379370 416906	SD71NE150	Not available	RIVER IRWELL RAMSBOTTOM TP C
18	90.0	W	379210 416600	SD71NE81	Not available	BOLTON ST/KAY BROW RAMSBOT BH1
19	94.0	NW	379270 416930	SD71NE118	6	STUBBINS LANE BURY 2
20	99.0	W	379200 416700	SD71NE192	Not available	RAMSBOTTOM
21	118.0	W	379188 416503	SD71NE5	142	HEPBURNS BLEACH WORKS
22	129.0	N	379280 416970	SD71NE119	4	STUBBINS LANE BURY 3

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23	148.0	N	379391 416975	SD71NE149	Not available	RIVER IRWELL RAMSBOTTOM TP B
24	150.0	W	379150 416600	SD71NE82	Not available	BOLTON ST/KAY BROW RAMSBOT BH2
25	186.0	N	379290 417030	SD71NE120	5	STUBBINS LANE BURY 4
26	190.0	W	379110 416590	SD71NE83	Not available	BOLTON ST/KAY BROW RAMSBOT BH3
27	194.0	N	379370 417030	SD71NE170	Not available	RIVER IRWELL RAMSBOTTOM TP2
28	196.0	SW	379149 416358	SD71NE156	Not available	RIVER IRWELL RAMSBOTTOM TP J
29	198.0	N	379240 417030	SD71NE121	5	STUBBINS LANE BURY 5
30	225.0	NW	379200 417040	SD71NE122	4	STUBBINS LANE BURY 6
31	229.0	NE	379800 416800	SD71NE47	Not available	M66 BURY EASTERLY BY- PASS. 5882/1-4
32D	234.0	SE	379800 416600	SD71NE45	Not available	M66 BURY EASTERLY BY- PASS. 152E-W
33D	234.0	SE	379800 416600	SD71NE44	Not available	M66 BURY EASTERLY BY- PASS. 5881/1-4A
34	240.0	W	379060 416590	SD71NE84	Not available	BOLTON ST/KAY BROW RAMSBOT BH4
35E	242.0	N	379370 417080	SD71NE169	Not available	RIVER IRWELL RAMSBOTTOM TP1
36E	242.0	N	379370 417080	SD71NE166	Not available	RIVER IRWELL RAMSBOTTOM BH1
37	247.0	NW	379190 417060	SD71NE123	4	STUBBINS LANE BURY 7
38	249.0	E	379840 416710	SD71NE46	Not available	M66 BURY EASTERLY BY- PASS. 153

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

#6: scans.bgs.ac.uk/sobi_scans/boreholes/22663
#7: scans.bgs.ac.uk/sobi_scans/boreholes/22483
#8: scans.bgs.ac.uk/sobi_scans/boreholes/22484
#9: scans.bgs.ac.uk/sobi_scans/boreholes/22482
#14: scans.bgs.ac.uk/sobi_scans/boreholes/22593
#19: scans.bgs.ac.uk/sobi_scans/boreholes/22594
#20: scans.bgs.ac.uk/sobi_scans/boreholes/22668
#21: scans.bgs.ac.uk/sobi_scans/boreholes/22481
#22: scans.bgs.ac.uk/sobi_scans/boreholes/22595
#25: scans.bgs.ac.uk/sobi_scans/boreholes/22596
#29: scans.bgs.ac.uk/sobi_scans/boreholes/22597
#30: scans.bgs.ac.uk/sobi_scans/boreholes/22598
#31: scans.bgs.ac.uk/sobi_scans/boreholes/22523
#32D: scans.bgs.ac.uk/sobi_scans/boreholes/22521
#33D: scans.bgs.ac.uk/sobi_scans/boreholes/22520
#37: scans.bgs.ac.uk/sobi_scans/boreholes/22599
#38: scans.bgs.ac.uk/sobi_scans/boreholes/22522
