coopers

chartered consulting engineers

Kennedy House,
31 Stamford St,
Altrincham,
Cheshire
WA14 1ES

Our Ref: 8353WCH260430L

By EMAIL

30 April 2026

For the Attention of Mr E. Lehman

Dear Elliot,

Re: Supplemental Ground Investigation and Remediation Strategy for Land Adjacent to Bealey Industrial Estate, Radcliffe.

Coopers (Chester) Ltd, hereafter referred to as Coopers, undertook supplemental ground investigations at the above site on behalf of Westchurch Homes. This correspondence includes an interpretative assessment of the ground conditions, contaminated land, and hazardous ground gas for the purposes of formal submission to supplement previous works. Please find enclosed the following appended documents:

- Appendix 1 - Referenced Drawings
- Appendix 2 - Referenced Desk Study Data
- Appendix 3 - Exploratory Hole Logs
- Appendix 4 - Chemical Test Data
  Geotechnical Test Data
- Appendix 5 - Ground Gas Monitoring Results
  - Gas Monitor Calibration Certificates
  - Gas Ventilation Calculations
  - Gas Membrane Product Specification
- Appendix 6 - Risk Assessments
- Appendix 7 - Tier 1 Risk Assessment Screening Values
  - Controlled Water Receptor Threshold Values
  - Legislation Framework which Drives the Contamination Assessment of Land in England and Wales

This correspondence and following sections should be provided to Bury Council and NHBC for formal approval.

Prepared by

B W Hill
BSc (Hons), CSci, MIEnvSc, FGS

Checked and Approved by

P R Sykes
BSc (Hons), MSc (Eng), CGeol, FGS

THE GEOLOGICAL SOCIETY
CGeol
CHARTERED GEOLOGIST
Fellow No. 17046

Contents

Section ..... **Page No.**

1. Background 3
   - 1.1 Site Location 3
   - 1.2 Development Proposals 3
   - 1.3 Previous Investigations 4
   - 1.4 Existing and Former Use 5
2. Supplemental Ground Investigation 6
   - 2.1 Consultations 6
   - 2.2 Objectives 6
   - 2.3 Methodology 7
   - 2.4 Exploratory Holes 7
   - 2.5 In-situ Testing 7
   - 2.6 Monitoring Wells 7
   - 2.7 Sampling/Testing Strategy 7
   - 2.8 Ground Conditions 8
3. Contamination Assessment 9
   - 3.1 General 9
   - 3.2 Initial Conceptual Site Model (CSM) 9
   - 3.3 Investigation Strategy and Sampling Protocols 14
   - 3.4 Contamination Results (Soils) – Initial Assessment Against Screening Values 15
   - 3.5 Contamination Results (Waters) – Initial Assessment 23
   - 3.6 Contamination Assessment & Recommended Remedial Actions 29
   - 3.7 Development Impacts and Preferential Pathway 34
   - 3.8 Conclusions 34
4. Hazardous Ground Gas Assessment 34
   - 4.1 General 34
   - 4.2 Initial Conceptual Site Model 35
   - 4.3 Conceptual Model Summary 41
   - 4.4 Profile of Potential Hazardous Ground Gases 42
   - 4.5 Investigation Strategy, Monitoring Wells and Response Zones 44
   - 4.6 Ground Gas Monitoring 46
   - 4.7 Ground Gas Assessment 48
   - 4.8 Conclusions 50
5. Remediation Proposals 51
   - 5.1 Summary 51
   - 5.2 Pre-development Remediation & Enabling Works 51
   - 5.3 Outline Earthworks Specification 57
   - 5.4 Remediation Thresholds and Criteria for Reuse 58
   - 5.5 Build Phase Garden/Landscaping - Remediation 58
   - 5.6 Build Phase Garden/Landscaping - Validation 60
   - 5.7 Build Phase Garden/Landscaping – Soil Testing 61
   - 5.8 Potable Water Supply Pipelines 62
   - 5.9 Build Phase Gas Mitigation Designs 62
   - 5.10 Build Phase Gas Mitigation Verification Plan 66
   - 5.11 Inspection Regime and Photographs. 67
   - 5.12 Potable Water Supply Pipelines 71
   - 5.13 Material Management Plans and Exemptions – All Plots. 71
6. Conclusions 72
   - 6.1 General 72

1. Background

1.1 Site Location

The site is located approximately 1.58km to the north-east of Radcliffe Town Centre at National Grid Reference SD 797 081. Access to the proposed site was located off Wild Street and the adjacent Bealey Industrial Estate located to the north west of Dumers Lane (A6053). The location of the site is shown on Drawing No. 8353/L1 & 8353/AP in Appendix 1 (extracts in Figures 1 and 2).





Figures 1 and 2: Extract of Sie Location Plan and Aerial Photograph.

1.2 Development Proposals

The site is proposed for development by Westchurch, comprising of a residential development of 77 No. dwellings together with vehicular / pedestrian access, open space, landscaping and other related infrastructure. The dwellings comprise traditional 2 story buildings, consisting of a combination of detached, semi-detached and mews properties, with the mews buildings including self-contained apartments over separate floors. The detached and semi-detached properties have private gardens, whilst the mews buildings contain communal landscaped areas. An extract of the overall layout is shown in Figure 3, with drawings reflecting the layout (Foundation Plan and Build Phase Remediation Plan) contained in Appendix 1.

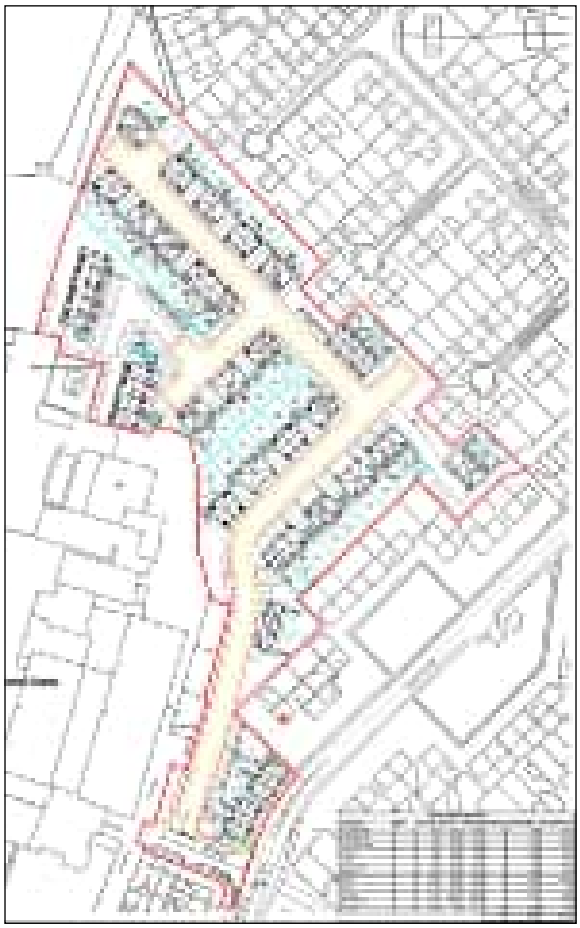


Figure 3: Extract of Proposed Site Layout.

1.3 Previous Investigations

Consultations with Bury Council (Appendix 2) referenced a previous ground investigation had been supplied to the Council for part of the site and the land to the north of the site, included in the following:

- Leyden Kirkby Associates (LKA) "Ground Investigation and Risk Assessment Report", referenced CL1192-02, Draft A, dated 30 November 2007.

The Council were able to supply a copy for review, but stated the information would be subject to copyright and hence we have no reliance on the information provided, and the data has not been included within this report. The LKA report included inconsistencies, where the exploratory hole references differed between the plan, logs, and testing (site plan references the window samples as WS1-WS12, but the logs provided are WS101-WS112, the chemical test results reference samples WS102-WS108, then WS9-WS12).

The following reports have been supplied by Coopers, the results of which are summarised in subsequent sections:

- Coopers "*Site Investigation Report for Land Adjacent to Bealey Industrial Estate, Radcliffe*", referenced No. 8353si, dated 8 November 2024.
- Coopers "Build Phase Remediation Strategy", referenced 8353bprs, dated 2 April 2026.

Coopers have undertaken previous investigations on numerous sites in the local area, as referenced in Figure 4.



Figure 4: Extract of Previous ground investigations/assessments within the local area.

1.4 Existing and Former Use

The desk study data records the site to have consisted of agricultural land from 1850. From 1891 the north western parts of the site consisted of a reservoir and settling tanks to the adjacent Broad Dumers Paper Works, located to the south west of the site (refer to Figures 5 and 6). A raised tramway was recorded within the site. In the 1980's the reservoir and settling tanks were infilled and the paper works repurposed by the existing Bealey Industrial Estate.

The land to the south of the site (beyond Dumers Lane) was the former Bealey's Bleach and Chemical Works, now occupied by housing. A diverted channel of water, named Bealey's Goit, ran from the River Irwell to the north west of the site and fed the onsite reservoir and channeled water to the former bleach & chemical works. An offshoot from Bealey's Goit is considered likely to be culverted in the southern part of the site.

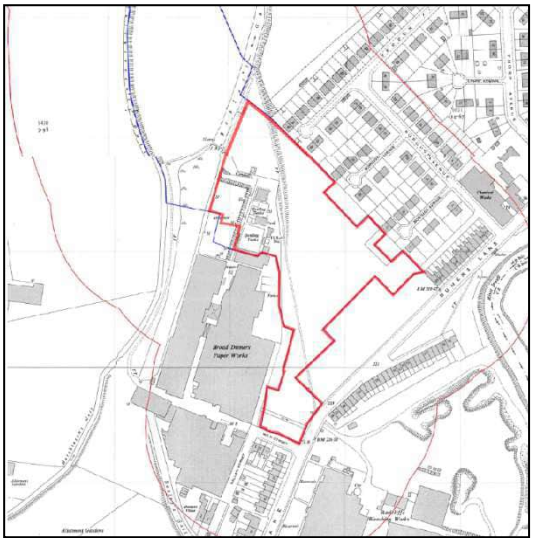


Figure 5: Extract of 1891 Ordnance Survey map from previous desk study (note the site boundary is approximate and areas have changed.



Figure 6: Annotated aerial photograph of the site on 12 June 1948 with approximate site boundary (image from Historic England)

2. Supplemental Ground Investigation

2.1 Consultations

Coopers Site Investigation Report (referenced in Section 1.3) detailed an initial consultation with Bury Council's Environmental Protection Department, and the results of an Environmental Search Request, referenced ES897.210224.1, dated 21 February 2024. Following previous planning submissions of the Site Investigation Report to Bury Council's planning department, Bury Council's Environmental Protection Department provided a planning consultation response within a correspondence referenced CL1099.200125.1, dated 20 January 2025. The Environment Agency also responded to the planning submission, within a correspondence referenced SO/2025/124668/03-L01, dated 7 November 2025.

Prior to undertaking the supplemental investigations Coopers held discussions with Bury Council's Environmental Protection Department on 16 January 2026. Further information was supplied regarding the Council's records relating to a historical planning application relating to historical filling on the site supplied under a Freedom of Information request, FOI2526.1095, supplied on 23 February 2026.

Coopers requested a paid consultation with the Environment Agency's Contaminated Land Officer, via their Sustainable Places Team to discuss the proposed investigation and assessments. A formal response was received on 18 February 2026 to advise the Environment Agency have suspended their voluntary cost-recovered service and advised for future consultations to be provided via the local planning authority.

2.2 Objectives

The previous Coopers Site Investigation Report, assessed the ground conditions associated within accessible parts of the site, with recommendations for further works, including the following:

- Complete ground gas monitoring and further water sampling from monitoring wells and report on findings.
- Undertake additional investigation and testing of soils within the area of current commercial use, including electrical substations, concurrent with demolition.
- Report on the findings of the investigation during the demolition to finalise remediation proposals for formal approval with the local authority.
- Remediation and enabling works strategy required.

Additional consideration and testing has been undertaken to further define the risks associated with Per- and polyfluoroalkyl substances (PFAS) as referenced by the local authority and Environment Agency. Additional targeted water monitoring and testing towards the areas of the former reservoir, and closest surface water receptors have been undertaken. No investigation has been possible below the existing electrical substations and further works are recommended with respect to associated contaminants. Additional grading analysis has been undertaken on the reservoir infill materials in accordance with recommendations from the proposed remediation contractor. Whilst live services were present the exploratory holes were permitted in close proximity following tracing and marking out by the utilities company.

2.3 Methodology

Coopers proposed additional small diameter boreholes within the areas of the former trading units, settling tanks and some trial pits within the settling tanks to define variations in the ground conditions. Deeper cable percussive boreholes were proposed within the former reservoir/tanks, to address the contamination assessment requirements.

2.4 Exploratory Holes

The locations of the exploratory holes are recorded on Coopers Drawing No. 8353/01 in Appendix 1, Copies of the exploratory holes logs undertaken within the site are contained in Appendix 3, including the following:

- 14 No. trial pits, referenced TP01 to TP09, excavated 26 September 2024, TP101 to TP104, excavated 9 February 2026.
- 26 No. small diameter boreholes, referenced WS01 to WS09, drilled 21-22 March 2024, WS101 to WS104, drilled 30 September 2024, WS201 to WS212, incl. WS205a, drilled 19-23 January 2026.
- 3 No. Cable Percussive Boreholes, referenced BH01 to BH03, drilled 9 February 2026.
- 4 No. hand dug pits, referenced HDTP01 to WDTP03, excavated 30 September 2024, and HDP01, dated 21 January 2026.

2.5 In-situ Testing

The investigations included testing to allow inferred strength of the ground, including SPT testing in small diameter boreholes and cable percussive boreholes. Hand shear vanes were recorded from natural cohesive strata.

2.6 Monitoring Wells

Monitoring wells were installed with selected boreholes to allow monitoring for the potential presence of hazardous ground gas and sampling of groundwater. All monitoring wells included bentonite sealants above and below the response zones to limit downward migration. Subject to approvals of the assessments of groundwater risk the monitoring wells will be decommissioned with removal or pipework and bentonite to seal the well position.

2.7 Sampling/Testing Strategy

Selected samples were commissioned for laboratory testing, including specific types of analysis to define the extent of potential contaminants and physical properties based upon the conceptual site model (detailed in Section 3.2). Testing included analysis of standard metals, PAH-16, asbestos, sulphates, speciated aliphatic and aromatic hydrocarbons (TPH-CWG), volatile and semi-volatile organic carbons (VOC/SVOC), and per and poly fluorinated alkali substances (PFAS). Additional analysis was undertaken for selected leachates and quantification of asbestos, later stages included water sampling. Bulk gas analysis was undertaken to verify gas monitoring results. Bulk fragments of suspected Asbestos Containing Materials were subject to confirmation testing for asbestos. Geotechnical testing was undertaken on selected samples for classification testing

A summary of the numbers of samples commissioned for chemical and geotechnical testing are provided in Tables 1 to 4.

Table 1: Summary of Number of Samples Scheduled for Chemical Testing Laboratory Testing for Soils

Strata	Metals, TOC, PAH-16	Asbestos	Sulphates	TPH (CWG)	VOC	SVOC	PFAS	PCB (WHO12)
Topsoil	1	1	1	1	-	-	-	-
Madeground (Topsoil)	2	2	2	1	-	-	-	-
Made Ground	30	30 (4)	30	12	11	11	7	2
Clay	1	0	1	-	-	-	-	-
Sand	1	0	1	1	-	-	-	-
Gravel	1	0	1	-	-	-	-	-
Peat	1	0	1	-	-	-	-	-
Bulk ACM	-	1	-	-	-	-	-	-

Table 2: Summary of Number of Samples Scheduled for Chemical Testing Laboratory Testing for Waters/Leachates

Strata	Metals, TOC, PAH-16	DOC/$CACO_3$	Sulphates	TPH (CWG)	VOC	PFAS (25)
Groundwater	12	12	12	12	12	12
Surface Water (receptor)	6	6	6	6	6	6
Leachates	6	-	-	-	-	-

Table 3: Summary of Number of Samples Scheduled for Chemical Testing Laboratory Testing for Bulk Gas

Strata	Methane	Carbon Dioxide	Carbon Monoxide	Hydrogen Sulphide	Oxygen/Nitrogen/ Hydrogen
Ground Gas	9	9	9	9	9

Table 4: Summary of Number of Samples Scheduled for Geotechnical Laboratory Testing

Strata	Atterberg Limits	Particle Size Distribution	Recycled Aggregate Constituent Testing
Madeground	-	-	5
Clay	3	-	-
Silt	-	1	-
Sand	-	1	-

2.8 Ground Conditions

Hardstanding, Foundations and Services: Surface tarmac and concrete hardstanding within industrial unit areas. Remnant substructures to former buildings and reservoir present within the site, to be cleared prior to development.

Topsoil: Encountered in open parts of the site, sandy/gravelly silt with inclusions of fragmented brick, concrete, glass, plastic and ash.

Madeground (general): The general madeground deposits on the site were relatively shallow (<1.0m) reworked natural granular strata with local pockets of clay. The madeground contained inclusions of ash, clinker, burnt shale, fragmented concrete, brick and ceramics. In places inclusions of metal, rubber, glass, tarmac, coal, timber and plastic were noted. The madeground depth is relatively deeper in the southern periphery of the site (1.5-2.8m deep), adjacent to Wild Street.

Madeground (reservoir/settling tanks): The infilling of the reservoirs/settling tanks in the 1980s consisted of an upper material of gravel with moderate cobble content sizes, compromising of a high proportion of materials of demolition provenance (e.g. brick and concrete). In places visible fragments of cement asbestos sheeting was present in the upper materials. The deeper material was reworked clays with gravels of metal, brick and plastic.

*Natural Drift: A*lluvium highly varied, primarily soft/firm clay, very loose/loose sand, and loose to medium dense gravel. Localised areas of soft silt and peat identified. Deeper stiff glacial clay identified.

Bedrock: Not encountered (anticipated to be circa 20m depth).

Groundwater: Frequent shallow perched groundwater. Commonly 2m to 3m depth, but variable and in places <1m.

3. Contamination Assessment

3.1 General

The assessment of the potential contamination was based upon the initial Conceptual Site Model (CSM), in accordance with guidance and legislation, discussed in Appendix 7. The investigation works were undertaken in phases during staged vacant possession and vegetation clearance works. Subject to decommissioning of the electrical substation further testing will be required in this area.

3.2 Initial Conceptual Site Model (CSM)

The initial CSM was established based upon the current and former use, in conjunction with knowledge gained from the previous investigations in the local area, and consultation with Bury Council's Contaminated Land Department. The CSM includes an initial appraisal of potential sources, likely pathways and receptors, summarised below.

The historical OS maps (Appendix 2) and Local Authority Consultations (Appendix 2) demonstrate the site to have been utilised as open land, filter beds, and reservoirs from the former Dumers Paper Works (subsequently Broad Dumers Paper Works). A tramway connecting to Radcliffe Bleach and Chemical Works, electricity substations, and Bealeys Goit (part infilled). The historical maps/Local Authority response record surrounding area to include Eaton Hill Cotton Mill (later a dye works, then dye and finishing), a gasometer, Dumers Paper Works, Radcliffe Bleach and Chemical Works (later bleaching works), a chemical works, engineering works, infilled reservoirs, areas of waste disposal activity and a sewage works (refer to Figure 5 and 6 in Section 1.4).

The specific potential sources of contaminants are defined in the following sections, based upon industry profiles, ground investigation and historical data.

Paper Manufacturing Works - General.

The site was within the grounds of the former "Broad Dumers Works (Paper)", which was established between the Ordnance Survey map editions of 1850 and 1890. Trade Directories of 1888 recorded the site to have been operated by John Wild and Sons. The site consisted of open grounds, reservoirs, electrical substation, filter beds and settling tanks for the works. A section of Bealey's Goit is recorded adjacent to the site, consisting of a cut to channel water from the River Irwell to the Bealey's Vitriol Works (latterly named Radcliffe Bleach and Chemical Works) located to the south of the site. The paper works was last referenced on Ordnance Survey maps of 1977, and by 1985 as Bealey Industrial Estate.

The former Department of Environment - Industry Profile "*Pulp and Paper Manufacturing Works*" records the main groups of contaminants as follows:

- Metals and Metallic Compounds
- Inorganic compounds
- Acids and Alkalis
- Solvents
- Other Organic Compounds
- Oils
- Asbestos
- Polychlorinated Biphenyls (PCBs)

CIRIA C819 (2024) "*Good Practice Guidance on Some Per- and Polyfluoroalkyl Substances (PFAS) in Soil and the Water Environment*" references that surface coatings in the paper industry are also an industry where PFAS are used.

Each of the forms of contaminants are detailed/discussed in the following sections.

The former reservoirs/filter beds/settling tanks in the north western part of the site are recorded as a historical landfill, detailed within Bury Council "*Environmental Search Report*" (Appendix 2), and further information provided regarding historical filling from Bury Council under a Freedom of Information request (Appendix 2). The landfill was a pre-licensed site, owned by Wimpy Waste Management and latterly Beazer. Planning permission for the landfill was granted by Greater Manchester Council in 1982 for the filling with inert and construction waste, followed by permission in 1989 to raise levels using materials from levelled buildings.

The information supplied with specific reference to the conditions imposed for the infilling in the 1982 planning application, referenced on the decision notice of 13th October 1982 as follows:

"*The materials to be tipped shall be restricted to builders' waste arising within the site: there shall be no importation of material*".

"*The site shall be tipped level with the surrounding land, and finished with light shale or cinders. No revisions will be permitted without the written agreement of the local planning authority*".

Additional information was provided following a site visit on 4th August 1982:

Site Note: "*Particularly difficulty to obtain access to the site. Large buildings now dilapidated. Tanks and reservoir adjacent to a group of single story buildings besides the main complex. Proposal to demolish existing chimney (built 1907) and to use rubble to fill tanks, etc. Do not intend to bring any rubble into site*".

Report: "*Large industrial premises which are now vacant and becoming derelict. GMC have spoken to the agent and they have informed me verbally that there will be no importation of materials because the fill will come from the 1907 Brick Chimney when demolished. It is expected to take 3 months. Remainder of consultations + discussions to be undertaken by GMC – It is probably debatable whether P.P.* [Planning Permission] *is required.*"

The Council's report also references that local areas of filling within the influencing distance of the site may have been carried out for which no records are held.

Metals and PAH Compounds

The Bury Council "*Environmental Search Report*" (Appendix 2) references an investigation to the immediate north of the site by a third party where madeground deposits of 1-2m in depth were identified including ash and clinker inclusions. These forms of deposits are derived from partial combustion of low grade coal and fusing to walls of boiler systems within furnaces. The type of contaminants are commonly associated with elevated concentrations of metals and PAH compounds, which are relatively stable and bound to the soil (due to the method of formation from combustion). Elevated concentrations of these compounds are relatively common which can provide risks to human health from chronic exposure.

The information supplied by Bury Council in 2026 included details from the 1982 Greater Manchester Council planning application for infilling of the reservoirs, where recommendations were made to add "shale or cinders" to the surface following completion (Appendix 2). Historically it was commonly considered that cinders, clinker and similar forms of materials from residual combustion of low grade coals improved soil fertility, although latterly identified as commonly associated with elevated metal and PAH compounds.

Paper Manufacturing/Industry - Petroleum Range Hydrocarbons and Volatile Organic Carbons.

The open parts of the site have been located adjacent to the former paper mill, works and industrial estate where storage or disposal of waste fuels, oils and lubricants may have occurred. The historical OS maps reference 3 No. circular tanks adjacent to settling tanks in 1975, which were removed between 1982 and 1990. The nature and types of products stored in the tanks are unknown, however are more likely to have been settling tanks for waters, given the reference to an adjacent sluice to a settling tank, lack of clear access road/path for filling and location in the context of the works.

The historical maps record a former tramway track running through the site to the Radcliffe Bleach and Chemical Works to the south of Dumers Lane. The track was established by 1891 and removed between 1910 and 1922. Concentrations of fuel and lubricating oils and preservative products for the sleepers, such as creosote, maybe present along the railway lines running across the site. Therefore, hydrocarbons and VOC's may be present in elevated concentrations along these routes.

The presence of fuels, oils and lubricants will commonly be identified by clear visual and olfactory signs of contaminants, these however can be more difficult to detect where older spillages/release occurs where the products are diluted and the more volatile fractions degrade/volatilise. Confirmation testing of soils are required to identify the presence of potential contaminants.

Once released into the soils these contaminants will be mobile and follow complex pathways with groundwater movements. These contaminants will commonly pose risks to human health from multiple exposure pathways, including inhalation of vapours/dusts, dermal contact with impacted soils and secondary ingestion (via hand to mouth or vegetable growth). The high mobility of these contaminants can pose risks to controlled waters where pathways exist to reach aquifers or perched groundwater/water courses.

Paper Manufacturing/Industry – Polychlorinated Biphenyls (PCBs)

The site contained an electrical substation, recorded on historical Ordnance Survey maps as established between 1937 and 1956 in the northern part of the site. An existing electrical substation transformer is also recorded on service plans adjacent to the southern part of the site.

Electrical substations are commonly associated with the historical use of Polychlorinated Biphenyls (PCBs). PCBs were used between the 1950s and the late 1970s as a dielectric fluid in most capacitors (used to stabilise fluctuations in electrical current, mainly on industrial sites) and <1% of transformers (used to change voltage of power supply). PCBs are a restricted substance which is prohibited for manufacture in the UK, first controlled under the 1986 Control of Pollution Regulations (*Department of Environment Industry Profile – Engineering Works: Electrical and Electronic Equipment, Manufacturing Works*).

PCBs provide a risk to human health and ecosystems, which are recorded to cause chloracne (skin condition) in humans and found in animals to reduce the autoimmune system, damage liver, effect reproduction and cause cancers, amongst other health effects (*HSE website*). PCBs are stable and highly persistent once released into the environment, characterised by their very low mobility, as highly viscous fluids or solids. PCBs bioaccumulate within a food chain and considered a high risk to fresh water ecosystems, although low risk to groundwater (*Department of Environment Industry Profile – Engineering Works: Electrical and Electronic Equipment, Manufacturing Works*).

Given the age of the substation this would be considered to have contained PCBs with the potential for release to the subsurface during maintenance or through leaks. PCBs in these areas would be very local to the source with investigation required beneath the structures following decommissioning to confirm the potential presence. It should be noted that these areas must be tested by laboratory analysis as PCBs commonly have no olfactory indication and are only observed as an oily liquid at high concentrations.

Paper Manufacturing/Industry – Asbestos Fibres or Asbestos Containing Materials (ACMs).

The recorded historical filling of the reservoirs/settling tanks in 1982 (discussed previously) is considered to have a high risk of asbestos containing materials used within the fill operations. The other madeground deposits on the site may include asbestos fibres or materials if generated with inclusions from former buildings.

The original buildings were built prior to the common use of asbestos, however expansions, renovations and changes are considered highly likely and may have used a variety of types and forms of ACMs. Corrugated sheeting on industrial units was particularly common, along with pipe lagging and Asbestos Insulating Boards (AIB). On some sites surplus materials during renovation works were buried in open ground to avoid additional disposal costs. Burial pits are very unlikely to found during investigation works however would be located during development phase works where specialist removal and disposal under consultation with qualified asbestos consultants is advised.

Coopers site walkover has identified suspected fly tipped ACM materials at surface. If these materials are disturbed or degrade then asbestos fibres can be released into the soils.

Paper Manufacturing/Industry - Per- and Polyfluoroalkyl Substances (PFAS)

Paper and cardboard manufacturing facilities are listed as sites which use PFAS as coatings to paper and cardboard. CL:AIRE Technical Bulletin 22 (2023) referenced the PFAS use/profile as follows:

> *"Fluorochemicals are used in the paper and cardboard industries to manufacture grease- and water- repellent materials, which includes food packaging as a food contact material. These include plates, popcorn bags, burger wrappers, greaseproof paper, microwaveable containers, biscuit, bread and pastry packaging and pizza boxes.*
>
> *Facilities which manufacture, process, or finish papers or cardboard may require investigation to assess environmental impacts from PFAS.*
>
> *PFAS coatings applied to paper and cardboard tend to be blends or polymers, potentially comprising >100 differing polyfluorinated PFAS. A wide variety of polyfluorinated surfactants, side-chain fluorinated polymers and sulfonamido phosphate diesters.*
>
> *(SAmPAPs), that transform to generate PFOS, were used in food contact materials, until 3M ceased production in 2000. PFAS coatings containing side-chain fluorinated polymers and phosphate diesters (diPAPs) based on 8:2 fluorotelomers (PFOA precursors) have been replaced by products based on 6:2 fluorotelomers (PFHxA precursors). In addition, food contact materials have been manufactured that are based on perfluoropolyethers (PFPE)."*

The Environment Agency have undertaken research into PFAS release from current paper production facilities with "*An Investigation of PFAS Emissions from UK Paper Mills*" Report No. UC16743.3, dated 20th June 2023. *"* It should be noted that this related to the contemporary paper industry, and practices may have differed in the past (site was known to be derelict by 1982). The investigation included testing of input paper, including recycled coated paper, input waters, effluent, sludge and output products. The paper drew the following conclusions.

> "*Papers mills are a discharge point of a small amount of PFOS, PFOA and PFHxS . Based on this dataset, the PFOS, PFOA and PFHxS originate in the input water rather than the recycled waste paper stream and may be concentrated into effluent and crumb during the process".*

The site was recorded to be derelict by 1982. PFAS chemicals predate this and may have been used at the site, subject to the type of paper production undertaken. CIRIA C819 references the types of PFAS used within the paper industry as below (note these were also used in other industries and determining provenance of PFAS requires consideration of the different components/combinations of materials, which have changed over time):

Table 5: Commonly detected PFAS associated within the paper industry (Based upon CIRIA C819 – Table 3.2).

Carboxylic Acids			
CAS No.	Name	Acronym	Alkyl Chain Length
375-95-1	Perfluorononanoic acid	PFNA	C9
335-76-2	Perfluorodecanoic acid	PFDA	C10
2058-94-8	Perfluoroundecanoic acid	PFUnA	C11
307-55-1	Perfluorododecanoic acid	PFDoA	C12
72629-94-8	Perfluorotridecanoic acid	PFTrDA	C13
Sulfonic Acids			
CAS No.	Name	Acronym	Alkyl Chain Length
375-73-5	Perfluorobutane sulfonic acid	PFBS	C4
1763-23-1	Perfluorooctane sulfonic acid	PFOS	C8

Pathways of Mobile Contaminants.

The preferential pathway for most mobile contaminants will be via madeground or utilities trenches, due to the less consolidated nature of the material, combined with typical larger variations of gravel/cobble inclusions. These can result in complex migration pathways and local attenuation around built structures (e.g. chambers, foundations, etc). Where contaminants enter natural strata the migration will commonly be dictated the particle size of the strata types and following the trends of the shallow groundwater. Cohesive materials will commonly limit migration pathways and result in perching of shallow groundwater, whilst granular strata will commonly allow migration. Any contaminants in bedrock will commonly migrate along fractures and fissures within the shallow rock, which are dictated by weathering condition more so than strata type.

The historical maps identified a former well in the southern part of the site, and the former path of the culverted section of Bealey's Goit. These provide preferential pathways for migration of contaminants and direct pathways to impact controlled water receptors.

The desk study information supported the likely presence of madeground overlying alluvium. Deeper glacial clays were likely with bedrock in the region of 20m below ground level.

Receptors – Human Health.

The primary human receptors are assumed to be the future residents with exposure to contaminants within gardens or properties through inhalation (vapours or dusts), dermal (soil contact), or ingestion (via hand to mouth or particles adhered to vegetable growth). Other common human health receptors can be contractors on site, adjacent residents, utilities company workers and landscape gardeners. Whilst it is difficult to account for non-conventional uses of the site the likely exposure of these key receptors is considered in the context of the contamination findings in subsequent sections.

Receptors – Controlled Waters.

The drift and bedrock geology is designated as a "Secondary A Aquifer", described as "*permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.*"

The Groundsure Report (Appendix 2) references the site to lie outside of a groundwater source protection zone.

There are 5 No. historical potable water groundwater abstractions recorded within 2000m of the site, relating to 2 No. sites, located 1700m south (Total Fitness Gym), and 1914m (Castlebrook Water Company), both of which are within separate fault blocks to the site. There are 2 No. active groundwater abstraction licenses and 15 No. historical groundwater abstraction licenses within 2000m of the site. The active licenses relate to Bury Golf Club for irrigation, located 1169m to the south east of the site and Danish Crown UK Ltd (process water), located 1992m south east of the site, both within separate fault blocks. The historical licensed abstractions are located >1000m from the site, relating to a variety of uses including irrigation, pollution remediation, general cooling, process water, and expired versions of the active permits (all different fault blocks from the site).

Historical Ordnance Survey maps identify the presence of a former groundwater abstraction well adjacent to the tramway in 1890. The well was located away from the buildings of the paper works (which utilised reservoir water and contained other referenced wells outside of the site, likely to relate to use for steam production on the locomotives to Radcliffe Bleach and Chemical Works to the south of the site. The well was not referenced on the subsequent map edition of 1910 and tramway removed by 1930.

The closest surface water receptor to the site is a section of Bealey's Goit which runs to the north of the site. The surface water is a historical cut to divert water from the River Irwell for use at a former bleach/dye works to the south of the site. The watercourse terminates close to the site, although sections may be culverted within the site, based upon the historical maps, and current surface position in the region.

The hydrogeological conditions are considered of relatively lower sensitivity, situated outside of a groundwater source protection, although designated as a Secondary A Aquifer for both drift and bedrock (bedrock is overlain by deeper glacial till).

The primary controlled water receptors are considered likely to be the surface waters associated Bealey's Goit close to the site, with the deeper bedrock aquifer protected by deeper glacial clays (underlying the alluvium). The superficial aquifer (alluvium) directly underlies the madeground and will contribute to the regional watercourses.

Where mobile contaminants are present these could pose a risk to these receptors, where further assessments would be required.

The sensitive change of use to residential land use will often result in remediation criteria for protection of human health that are less than for the protection of controlled waters, but can depend on the properties and risks of the specific contaminants, depths/extent, and migration pathways.

3.3 Investigation Strategy and Sampling Protocols

The ground investigation was designed to get a general coverage across the site and target specific areas to address local variations. The targets for the investigation are listed in Table 6 below, however limitations due to existing use, services will necessitate further investigation following site clearance and disconnection/diversion of services.

Table 6: List of targets for ground investigation due to contamination risk, likely risks and accessibility

Target for Investigation	Reason	Accessible for investigation
Former Reservoir	Filled Ground (recorded landfill)	Yes
Settling Tanks	Filled Ground (recorded landfill)	Yes
Thin Filter Beds	Filled Ground	Yes
Former Tramway	Oils/lubricants/timber treatment	Yes
Electrical Substation	PCB potential	No (live)
Existing Works/Units	Variable Fuels/Oils/Solvents	Yes
Historical Well	Pathway for migration of contaminants	No (services)

The area of the existing trading units in the southern part of the site were permitted for additional investigation following vacant possession in 2026. Limitations to the investigation were associated with live services, although these did not require a wide offset following tracing. The electrical substations were live and therefore investigation of the locations directly beneath these were not possible. Whilst the overall coverage achieved within these areas are reasonable additional works are required following decommissioning of the on site electrical substation.

The investigation included combinations of shallow hand dug pits (where limitations to the investigation necessitated this approach), small diameter boreholes to depths of up to 5.45m, mechanical trial pits to depths of up to 3.0m, and cable percussive boreholes to depths of up to 10m. Details of the numbers of the different types of exploratory holes are provided in Section 2.4.

Chemical Testing was undertaken on specified suites summarised in Tables 1 to 4 in Section 2.7. All samples were taken in specified containers, agreed/supplied by the laboratory. Samples were returned to Coopers storage in refrigerators, removed at the time of collection for transit to the laboratory in cool boxes with ice packs. Coopers held a meeting with DETS technical director regarding sampling protocols for PFAS analysis, part of the working committee for PFAS analysis. Specific containers were provided which were PFAS free, and procedures following AGS guidance adopted to avoid contaminating the samples with products from the site engineer's equipment or procedures.

It should be noted that the laboratory testing references the PFAS analysis as deviating due to being over temperature. We have raised the problem with DETS as the samples cannot be below 4°c (to avoid freezing) but not above 5°c (deviation limit). As referenced, the samples were stored in fridges on the day of collection and transported to the laboratory in cool boxes with ice packs. DETS reported the temperatures recorded are not the soil sample but the packaging/boxes upon receipt the day after collection. We consider all our works have been to achieve valid results, minimizing sample deviations.

3.4 Contamination Results (Soils) – Initial Assessment Against Screening Values

The laboratory testing was scheduled in batches for accredited analysis by DETS. The results of the testing are provided within the following laboratory certificates, contained in Appendix 4:

- DETS Test Report No. 24-06432, dated 11 April 2024.
- DETS Test Report No. 24-07560, dated 17 April 2024.
- DETS Test Report No. 24-20913, dated 8 October 2024.
- DETS Test Report No. 24-21167, dated 14 October 2024.
- DETS Test Report No. 24-22203, dated 22 October 2024.
- DETS Test Report No. 24-22201, dated 22 October 2024.
- DETS Test Report No. 26-01654, dated 16 February 2026.
- DETS Test Report No. 26-01999 ,dated 16 February 2026.
- DETS Test Report No. 26-03725, dated 4 March 2026.
- DETS Test Report No. 26-03725-1, dated 5 March 2026.
- DETS Test Report No. 26-05674, dated 24 March 2026.
- DETS Test Report No. 26-05668, dated 25 March 2026
- DETS Test Report No. 26-06843, dated 8 April 2026.
- DETS Test Report No. 26-07988, dated 20 April 2026.

Bulk Samples (circa 50kg) were submitted for aggregate testing of the former reservoir/settling tank infill by Murray Rix, with subcontracted testing for asbestos undertaken by Envirolab. The following laboratory certificates represent the results of the testing, provided in Appendix 4:

- EnviroLab, Report No. 26-02897-1, dated 13 March 2026.
- Murray Rix Report No. MRN 26099-7, dated 26 March 2026.

Soil samples were reviewed against available generic Tier 1 screening values for residential gardens with plant uptake, contained in Appendix 7, with associated explanation sheets. The results of which are discussed in subsequent sections.

Metal and PAH compounds (Soils)

Elevated concentrations of metals and PAH compounds above the Tier 1 thresholds for residential gardens, summarised in Table 7 (below):

Table 7: Summary of elevated metal and PAH contaminants within soil samples

Determinant	Concentration in mg/kg (above Tier 1)	Tier 1 Threshold in mg/kg	Elevated samples
Arsenic	49-150	37	12 of 40 No.
Beryllium	2.8	1.7	4 of 40 No.
Copper	200-440	100-200 (*)	5 of 40 No.
Lead	210-470	200	12 of 40 No.
Nickel	80	60-110	1 of 40 No.
Zinc	240-310	200-300 (*)	2 of 40 No.
Benzo(a)pyrene	3.1-3.2	2.2	2 of 40 No.
Dibenzo(a.h)anthracene	0.44	0.24	1 of 40 No.

Notes to Table 7:
** - Phytotoxic threshold for gardens where thresholds vary by pH*

Topsoil, madeground and shallow alluvium clay were identified to contain elevated concentrations of metals across the site. The natural granular strata and peat did not contain any elevated concentrations. The elevated PAH compounds were specific to the area of the infilled reservoirs. Further discussions and assessments of these forms of contaminants are provided in Section 3.6.

Petroleum Range Hydrocarbons (Soils)

The samples outside of the reservoir/settling tanks identified no elevated concentrations of petroleum range hydrocarbons. Samples from WS101 at 3.0-4.0m depth within the former reservoir identified elevated concentrations of mid to high carbon range aromatic hydrocarbons. A sample from WS212 at 0.7m adjacent to a former tank within the settling tank area identified a slightly elevated concentration within the C12-C16 aromatic range (summarised in Table 8).

Table 8: Summary of elevated TPH contaminants within soil samples

TPH Ranges	WS212 0.7m	WS101 3.0-4.0m	Tier 1 Threshold in mg/kg
Aromatic >C12-C16	145	498	140
Aromatic >C16-C21	-	1760	250
Aromatic >C21-C35	-	1362	890

Further discussions of the petroleum range hydrocarbons are provided in Section 3.6.

Volatile and Semi-Volatile Organic Carbons (VOCs and SVOCs) (Soils)

Samples from 13 No. exploratory holes were sent for laboratory testing for VOCs/SVOCs, targeted within areas on or adjacent to the trading estate, former tanks and areas of filling. No detected VOCs (excluding xylene at LOD) and no detected non-PAH SVOCs were recorded within the samples tested, the distribution of the samples tested are shown in Figure 7. The absence of detected VOCs/SVOCs is determined to not require additional assessments.



Figure 7: Samples tested for VOCs/SVOCs represented within green squares.

Polychlorinated Biphenyls (PCBs)

The conceptual site model references the potential for PCBs within close proximity to the existing electrical substations. The relatively high viscosity indicating the most likely location for PCBs to be present are within shallow soils directly beneath the substations. The southern electrical substation is offsite and proposed to remain, whilst the electrical substation in the northern part of the site is live and requires decommissioning.

Targeted testing for PCBs (refer to Figure 8) in the locations close to the substations has identified no detectable concentrations of PCBs. Testing of the filled materials within the reservoir has also not identified any evidence of PCBs within these materials.



Figure 8: Annotated site plan referencing the locations of electrical substations (purple circles) and samples tested for PCBs (green triangles).

Whilst no evidence of PCBs has been identified, further testing of the shallow soils under the northern electrical substation is required.

Asbestos Containing Soils (ACS)

Laboratory testing identified the presence of amosite and chrysotile asbestos, with reference to fibre bundles, loose fibres, loose insulation, and cement fragments observed. 1 No. bulk cement fragment observed during excavation of trial pit TP01 within the former reservoir, this was tested and confirmed to contain chrysotile. A relatively high proportion of exploratory holes tested from the reservoir/settling tank area identified asbestos containing soils, identified in 8 No. of 11 No. locations (72.7%) tested. Outside of the reservoir/settling tank area, 3 No. of the 7 No. located (43%) of the madeground within the general trading estate identified asbestos, whilst none of the 12 samples from the open area of the site contained asbestos fibres, although surface fly-tipping of suspected cement asbestos was observed. Quantification of the amount of asbestos relative the soil sample was undertaken on selected samples. Where presence as fibres bundles these were identified to be between 0.002% to 0.004%, whilst a sample with inclusions of cement ACM was identified at 0.035% (although the percentage is dependent on the size/mass of the ACM inclusion relative to the soil.

The general distribution of identified asbestos containing soils are represented in Figure 9, which represent the identification of fibres within samples selected for analysis, representing fibres within a medium, where soil heterogeneity and source influence the distribution (not forming hotspots for delineation of mobile fuel spillages).



Figure 9: Distribution of exploratory holes where testing identified asbestos (red circles) and no asbestos (green circles).

There are no GAC for asbestos containing soils and further discussions are provided in Section 3.6, following the qualitative initial assessment within CIRIA C733.

Per- and Polyfluoroalkyl Substances (PFAS) (Soils)

Chemical testing of madeground soil samples for the DETS multi-PFAS soil suite was undertaken on the margins of the former paper mill and the reservoir/settling tank filled area (refer to Figure 10). Only one location, WS207, was identified to have no detected concentrations above LOD. The results identified concentrations of the following PFAS types above the laboratory detection limit:

- N-ethylperfluoro-1-octanesulfonamidoacetic acid (N-EtFOSAA)
- Perfluorohexanesulfonate (PFHxS)
- Perfluoro-n-pentanoic acid (PFPeA)
- Perfluorooctanesulfonate (PFOS)
- Perfluoro-1-octanesulfonamide (PFOSA)
- Perfluoro-n-octanoic acid (PFOA)



Figure 10: Distribution of exploratory holes where testing identified PFAS (red squares) and no detected PFAS (green squares).

CIRIA C819 references the initial stages of Generic Quantitative Risk Assessment are via screening against Generic Assessment Criteria with initial screening values provided by the C4SL Consortium, for PFOS, PFOA, PFHxS, and PFNA, with numerous clarifications, limitations and cumulative Hazard Quotients to factor. Where toxicological data is available a selected number of PFAS have referenced Relative Potency Factors (RPF). A summary of the results is provided in Table 9, followed by discussion of each identified PFAS.

Table 9: Identified PFAS chemicals above LOD.

PFAS Identified above LOD	LOD	SoBRA C4SL (resi+plant)	SoBRA C4SL (resi+POS)	BH01 (2.2m)	BH02 (4.5m)	BH03 (2.2m)	WS206 (0.3m)	WS207 (0.8m)	WS210 (1.6m)	WS211 (0.5m)
N-ethylperfluoro-1-octanesulfonamidoacetic acid (N-EtFOSAA total)	0.4	-	-	-	0.56	-	-	-	-	-
N-ethylperfluoro-1-octanesulfonamidoacetic acid (N-EtFOSAA Linear)	*0.4*	-	-	-	*0.47*	-	-	-	-	-
Perfluorohexanesulfonate (PFHxS) (Branched)	0.1	8.1 (*1)	79 (*1)	0.18	-	-	-	-	0.17	-
Perfluoro-n-pentanoic acid (PFPeA)	0.2	-	-	-	-	-	0.43	-	-	-
Perfluorooctanesulfonate (PFOS) (Linear+Branched)	0.8	13.0	79	-	-	3.1	33	-	-	3.4
Perfluorooctanesulfonate (PFOS - (Branched)	*0.3*	-	-	-	-	*0.4*	*3.6*	-	-	*0.67*
Perfluorooctanesulfonate (PFOS - (Linear)	*0.6*	-	-	-	-	*2.7*	*29*	-	-	*2.8*
Perfluoro-1-octanesulfonamide (PFOSA)	0.4	-	-	-	-	-	0.87	-	-	-
Perfluoro-n-octanoic acid (PFOA)	0.30	7.6	79	-	-	0.36	-	-	-	-

Notes to Table 9:
All units in µg/kg
**1 – C4SL thresholds provided for combined linear and branched PFHxS. The laboratory limit of detection for the combined PFHxS is 0.2µg/kg, with no detected combined concentrations above this limit.*

- **N-ethylperfluoro-1-octanesulfonamidoacetic acid (N-EtFOSAA)** - $C_{12}H_6F_{19}NO_4S$

Identified in 1 No. soil sample from deeper madeground in the former reservoir (BH202) at 4.5m depth at a concentration of 0.56µg/kg relative to the LOD of 0.4µg/kg. N-EtFOSAA does not have an interim C4SL GACs and is not listed as having any identified RPFs. N-EtFOSAA is not listed as a type of PFAS associated with the paper industry.

Referenced detailed information on PFAS chemicals are provided by the Interstate Technology Regulatory Council (ITRC) in the USA within website section on PFAS (https://pfas-1.itrcweb.org/). This defines N-EtFOSAA as within the Non-Polymer Class, Sub Class of Polyfluoroalkyl Substances, grouped with Perfluoroalkane sulfonamido substances, within the subgroup of EtFASAA. These are listed as potential precursors to both per and poly fluoroalkyl substances.

The absence of sufficient toxicological data to determine thresholds, can only allow a qualitative assessment that the concentrations present are close to the LODs and not prevalent across the site.

Concentrations of N-EtFOSAA are therefore not considered a significant risk to human health.

Perfluorohexanesulfonate (PFHxS) - $C_6F_{13}O_3S$

Identified branched form of PFHxS in 2 No. soil samples from sample in the former settling tank area in BH01, at 2.2m depth at a concentration of 0.18µg/kg and from madeground in the southern part of the site in WS210 at 1.6m of 0.17µg/kg, relative to LOD of 0.10µg/kg.

Testing of linear and total PFHxS has a higher LOD of 0.2µg/kg with no samples identified above LOD. Total PFHxS has a referenced interim C4SL threshold for residential gardens of 8.1µg/kg and POS (residential) threshold of 79µg/kg. The soil concentrations of 0.17µg/kg to 0.18µg/kg for branched PFHxS, with total PFHxS of <0.20 µg/kg considered to be significantly lower than the GAC.

PFHxS was not listed as associated with paper production, although the EA did reference the presence in feedwater within current paper manufacturing.

Concentrations of PFHxS are well below the GAC which are therefore not considered a significant risk to human health.

Perfluoro-n-pentanoic acid (PFPeA) - $C_5HF_9O_2$ C_4F_9COOH

Identified in 1 No. soil sample from adjacent to the former paper mill at WS206 – 0.3m, at a concentration of 0.43µg/kg above the LOD of 0.2µg/kg.

PFPeA has no referenced interim C4SL GAC, although contains a liver toxicity RPF of between 0.01 to 0.05 of PFOA. This would put the equivalent range where PFPeA would be considered to pose a risk in residential gardens as likely to fall between 152µg/kg to 760µg/kg. The soil concentration of 0.43µg/kg is considered significantly lower than the GAC-RPF for residential gardens.

PFPeA was not listed as associated with paper production, although the EA did reference the association with food wrappers.

Concentrations of PFPeA are well below the GAC-RPF ranges, which are therefore not considered a significant risk to human health.

- **Perfluorooctanesulfonate (PFOS)** - $C_8F_{17}SO_3H$ $C_8HF_{17}O_3S$

Identified in 3 No. soil samples:
- Former settling tanks in BH03 at 2.2m depth, concentration of 3.1µg/kg.
- Adjacent to Trading Estate/Former Paper Mill in the southern/central part of the site in WS206 at 0.3m depth, concentration of 33µg/kg.
- Former Settling tanks in WS211 at 0.5m depth, concentration of 3.4µg/kg.

PFOS has a referenced interim C4SL threshold for residential gardens of 13µg/kg and POS (residential) threshold of 79µg/kg. The concentrations in the settling tank area were 3.1-3.4µg/kg, below the residential thresholds. The sample from WS206 adjacent to the trading estate in the southern/central part of the site was 33µg/kg, above the residential garden (with plant uptake) threshold, but below the POS threshold.

PFOS was listed as associated with paper production, and the EA referenced the presence in feedwater within current paper manufacturing.

The soil concentrations adjacent to the existing trading estate in the southern parts of the site (area of WS206) are classified as above the GAC for garden growing mediums, requiring further assessment/remedial action. No remedial action/assessments are likely to be required for public open space areas for PFOS. Further discussions of the risks posed by PFOS are provided in Section 3.6.

- **Perfluoro-1-octanesulfonamide (PFOSA)** - $C_8F_{17}SO_2NH_2$ $C_8H_2F_{17}NO_2S$

Identified in 1 No. soil sample from adjacent to the former paper mill at WS206 – 0.3m, at a concentration of 0.87µg/kg above the LOD of 0.4µg/kg.

PFOSA has no referenced interim C4SL GAC, although is referenced in CIRIA C819 as having a liver toxicity RPF of "none", and no stated internal RPF, indicative that this substance has a relatively low equivalent toxicity relative to PFOA.

PFOSA was not listed as a common contaminat associated with paper production, and the EA did not reference the presence as associated with current paper mills.

Concentrations of PFOSA are well below the RPF ranges which are therefore not considered a significant risk to human health.

- **Perfluoro-n-octanoic acid (PFOA)** - $C_8HF_{15}O_2$

Identified in 1 No. soil sample from deeper madeground in the area of former filter beds/filling (BH202) at 2.2m depth at a concentration of 0.36µg/kg relative to the LOD of 0.30µg/kg. PFOA has an interim C4SL GAC of 7.6µg/kg.

PFOA was not listed as associated with paper production, although the EA referenced the presence in feedwater within current paper manufacturing.

Concentrations of PFOA are well below the GAC which are therefore not considered a significant risk to human health.

3.5 Contamination Results (Waters) – Initial Assessment

General

As referenced within the conceptual site model, the site is located adjacent to Bealey's Goit (surface water), with drift alluvium defined as a Secondary A aquifer. Bedrock is also defined as a Secondary A aquifer, although at depths of circa 20m, and overlain by deeper lower permeability glacial till. No ground abstraction wells are present within the areas local to the site and the site is outside of a groundwater source protection zone.

Following review of the previous Coopers Site Investigation Report by the Environment Agency, the response highlighted the requirements for further testing and assessments of groundwater, including analysis for PFAS chemicals associated with the adjacent former Paper Mill. The Environment Agency advised they were unable to provide any voluntary advice service to discuss the proposals for further testing, where the approaches and methods were therefore discussed between Coopers and a proposed remediation contractor.

It was determined that deeper monitoring wells to intercept the groundwater should be completed, with wells including a base seal comparable to relatively lower permeable layers to limit downward migration of contaminants, and wells to be decommissioned subject to review and agreements in sufficiency of the data to enable assessments.

It was agreed to undertake targeted monitoring towards the former reservoir and settling tanks due to the relatively higher risk posed by the former infilling activities and association between PFAS chemicals and feedwater in current paper mills (discussed in Section 3.2). 4 No. borehole locations were agreed for testing to establish the areal distribution, and gradients of shallow waters in the target area, along with 2 No. locations of surface samples from Bealey's Goit were proposed for testing, one located adjacent to the filled terminus of the Goit adjacent to the site boundary, and one approximately 75m upflow of the site boundary to determine concentrations prior to having any influence from the site waters (locations reflected in Coopers Drawing No. 8353/01 and extract in Figure 11 (below).

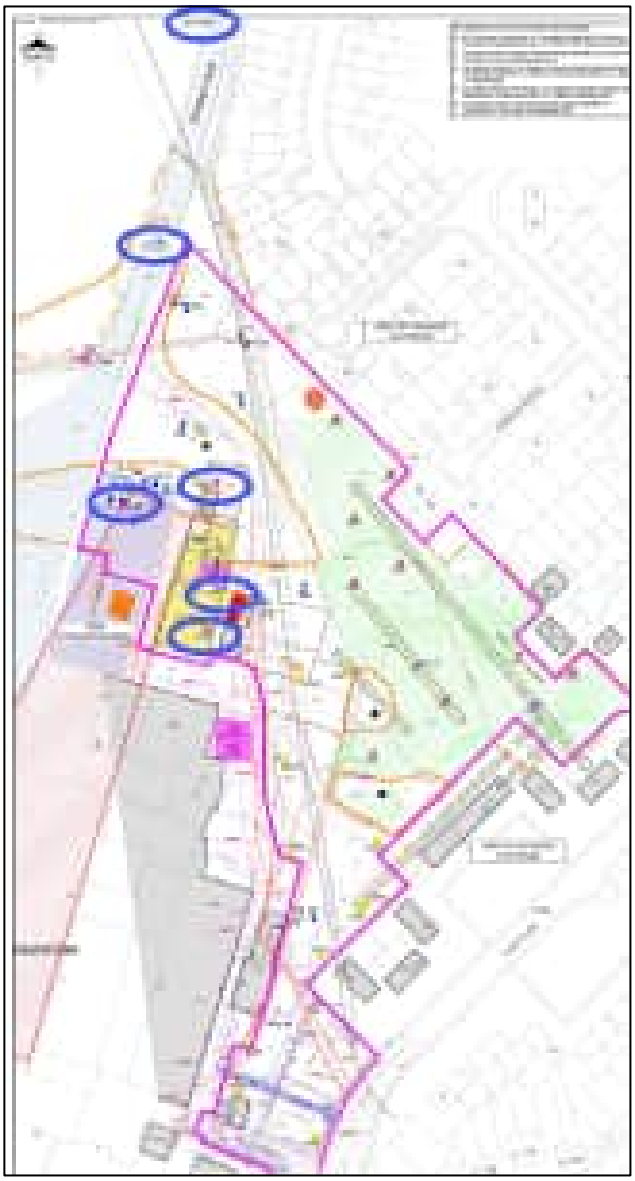


Figure 11: Extract of site plan showing water sampling locations highlighted with Blue Circles (note Bealey's Goit is the historical location, which has been filled adjacent to the site.

Suites of analysis included full metals, pH, DOC, $CaCO_3$, PAH-16, VOCs, TPH-CWG, VOCs, and PFAS. Borehole samples were obtained following purging 3 times the well volume, with samples obtained utlising a low flow pump to allow testing of the volatile components. Specialist containers and sample procedures were adopted for PFAS following advice from DETS director.

Water Testing Results – Metals and PAH Compounds

A summary table of the metal and PAH compound groundwater and surface water testing from the 3 rounds of monitoring is provided in Table 10. The majority of the testing showed no significantly elevated results, comparable with the adjacent surface waters from Bealey's Goit. Samples from the surface water in the Goit were also comparable or lower than the up flow sampling (100m north of the site). The main variation was variable spikes in the PAH compounds from water samples in borehole BH03, discussed further below.

Table 10: Summary of the metal and PAH water sampling over 3 rounds of monitoring.

Determinant	Groundwater Quality	EQS			Groundwater results	Surface Water Results	
		Long Term (mean) fresh water	Annual Average (inland surface water)	Maximum Allowable (inland surface water)		Up Flow	Adjacent
Arsenic	10	50	-	-	0.59-2.9	1.80-3.34	1.58-2.70
Boron	1000	-	-	-	89.23-174.4	44.20-54.62	47.28-72.26
Cadmium	5.0	-	0.08-0.25	0.45-1.5	<0.03-0.14	<0.03	<0.03
Chromium	50	3.4	-	-	<0.25-0.85	0.90-1.20	0.55-0.75
Copper	2000	1	-	-	<0.40-3.29	1.69-2.35	1.33-1.69
Lead	10	-	1.2	14	0.10-1.96	0.84-1.24	0.20-0.48
Nickel	20	-	4	34	1.39-7.07	1.72-2.10	1.71-2.05
Zinc	-	10.9	-	-	69.54-163.1	69.54-76.72	59.38-69.60
pH	-	-	-	-	6.8-7.4	7.1-7.4	7.0-7.3
DOC	-	-	-	-	3.7-7.7	<2.0-5.5	4.3-7.2
Alkalinity ($CaCO^3$)	-	-	-	-	140-550	88-110	94-200
Anthracene	-	-	0.1	0.1	<0.01-2.1	<0.01	<0.01
Benzo(a)pyrene	0.01	-	$1.7x10^{-4}$	0.27	<0.01-44	<0.01	<0.01
Fluoranthene	-	-	0.0063	0.12	<0.01-5.0	<0.01	<0.01
Naphthalene	-	-	2	130	<0.05-2.1	<0.05	<0.05
PAH compounds (benzo(b)fluoranthene + benzo(k)fluoranthene + benzo(ghi)perylene + indeno(1,2,3-cd)pyrene)	0.1	-	$1.7x10^{-4}$	0.27	<0.08-119.6	<0.08	<0.08

Notes to Table 10:

- *All units are in µg/l.*

Borehole BH03 identified a spike in PAH compounds on the second monitoring visit, summarised in Table 11. The preceding weather conditions were comparable (Figure 12), water levels similar, all samples taken after bailing 3 times well volume, recharging fast and sampling undertaken with flow pumps. The same site engineer undertook all of the monitoring visits and reported nothing different on the sampling procedures. The soil samples on the site had slightly elevated concentrations of PAH compounds, with the most logical explanation would be sediment containing higher PAH values. A forensic assessment of the source signature double ratios (Figure 13) indicate the sediment material is likely to be coal derived, which can include materials derived from coal (such as coal tar). Sampling for petroleum range hydrocarbons (discussed in sections below) identified no detectable concentrations, from BH03 further supporting the likely potential being sediment with materials derived from coal.

Table 11: Summary of the PAH water sampling results from BH03.

Determinant	5 March 2026 3.20m depth	18 March 2026 3.17m depth	31 March 2026 3.18m depth
Naphthalene	0.16	2.1	<0.05
Acenaphthylene	0.02	0.65	<0.01
Acenaphthene	0.22	3.1	0.13
Fluorene	0.10	2.0	0.02
Phenanthrene	0.54	43	0.10
Anthracene	0.13	3.5	0.03
Fluoranthene	0.99	70	0.2
Pyrene	0.95	64	0.2
Benzo(a)anthracene	0.52	45	0.09
Chrysene	0.57	41	0.12
Benzo(b)fluoranthene	0.86	51	0.17
Benzo(k)fluoranthene	0.31	34	0.06
Benzo(a)pyrene	0.70	44	0.11
Indeno(1,2,3-c,d)pyrene	0.54	32	0.11
Dibenzo(a,h)anthracene	0.09	2.9	0.02
Benzo(g,h,i)perylene	0.52	32	0.11
PAH Total	7.2	470	1.5

Notes to Table 11:

- *All units are in µg/l.*

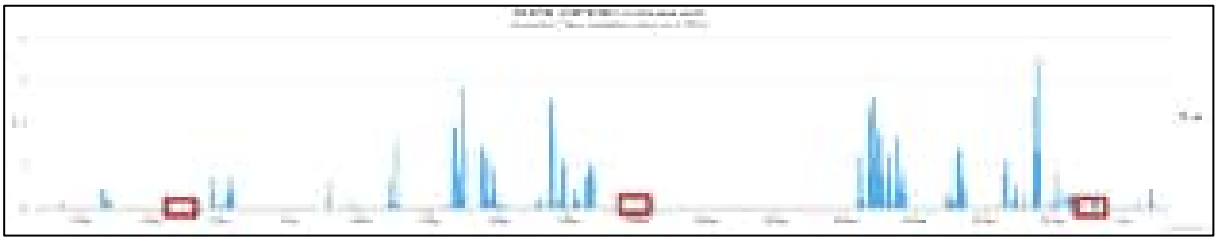


Figure12: Hourly rainfall in Radcliffe in mm, relative to water sampling visits (red rectangles).

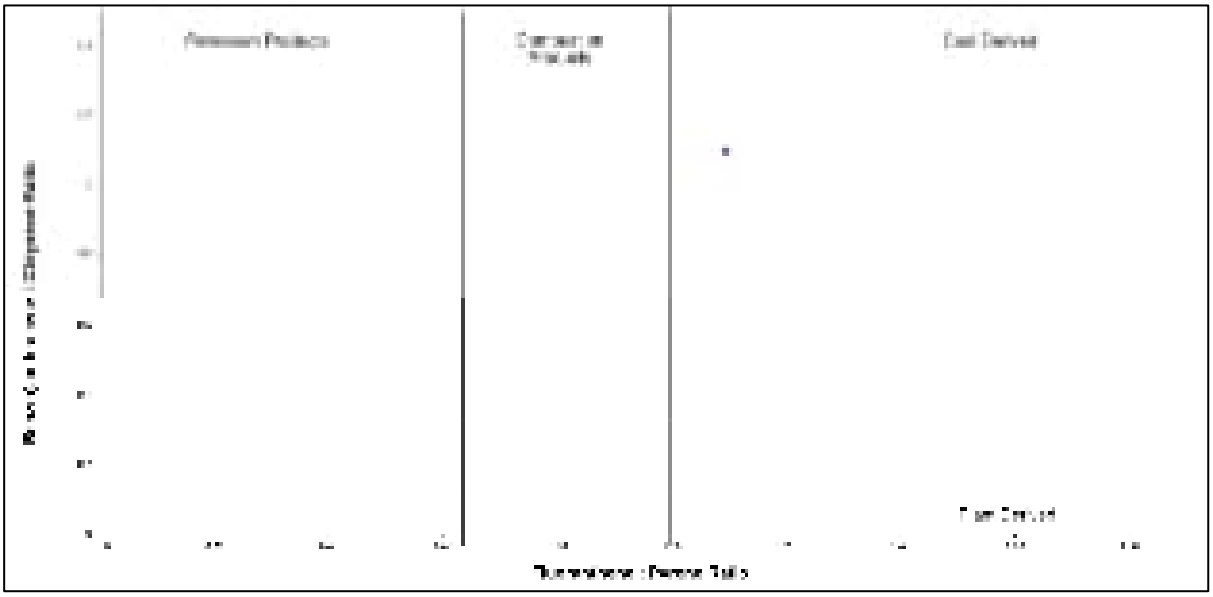


Figure 13: Source Signature Double Ratio Plot of potential origin of elevated PAH compounds from water sampling on 18 March 2026.

The initial results indicate the concentrations of metal and PAH results are not posing a significant risk to controlled waters, representing typically low concentrations, with no elevated concentrations identified in the surface water receptor. Further discussions of the impacts from the development to pathways are included in Section 3.7.

Water Testing Results – Petroleum Range Hydrocarbons and Volatile Organic Carbons

Samples from low pumping of boreholes and surface water sampling of Bealey's Goit, identified no detectable Volatile Organic Carbons in any of the samples. Based upon the absence of any identified VOCs within soils or waters, these are not considered as a potential significant risk to controlled waters.

Water samples tested for carbon banded aliphatic and aromatic petroleum range hydrocarbons has identified the majority of samples tested to have below detection limit concentrations. 1 No. sample from 75m up flow of the site and 1 No. sample from BH02 identified mid-range aliphatic hydrocarbons, summarised in Table 12.

Table 12: Summary of identified Petroleum Range Hydrocarbon.

TPH Ranges	BH02 – 3.56m depth Visit of 18 March 2026	Surface Water (Up Flow) Visit of 31 March 2026
Aliphatic C10-12	68	6.5
Aliphatic C12-16	870	16
Aliphatic C16-21	14	37
Aliphatic C21-35	<1	12

Notes to Table 12:

- *All units are in µg/l.*

There are no generic assessment criteria for aliphatic and aromatic range hydrocarbons in relation to surface or groundwater (only BTEX). The soil concentrations have identified evidence of petroleum range hydrocarbons with potential to pose risks to human health from mid-carbon aromatic ranges where remedial works are required. Whilst the water results are indicating no significant persistent risk to ground or surface waters from petroleum hydrocarbons it can only be concluded that there is no extensive plume to be modeled, and removal of any impacted soils would help to reduce the overall risk of mobilising petroleum range hydrocarbons to impact surface or ground water. Further discussions of the impacts from the development to pathways are included in Section 3.7.

Water Testing Results – Per- and Polyfluoroalkyl Substances (PFAS)

Chemical testing has identified the majority of the samples to contain detectable concentrations of PFOS, with identified levels above detection limit for other types of PFAS, summarised in Table 13.

Table 13: Summary of PFAS testing.

PFAS Identified above LOD	LOD (ng/l)	BH01 (ng/l)	BH02 (ng/l)	BH03 (ng/l)	WS212 (ng/l)	Goit (Up Flow) (ng/l)	Goit (Adjacent) (ng/l)
Perfluoro-n-butanoic acid (PFBA)	10	-	<10 - 51	-	-	-	-
Perfluoro-n-pentanoic acid (PFPeA)	3	4.4 - 17	<3.0 - 4.7	-	-	-	-
Perfluoro-1-butanesulfonate (PFBS)	3	<3.0 - 3.9	-	-	<3.0 - 6.6	-	-
Perfluoro-n-hexanoic acid (PFHxA)	3	4.6 - 8.5	<3.0 – 3.2	-	3.1 - 3.4	-	-
Perfluoro-n-heptanoic acid (PFHpA)	3	3.7 - 6.7	<3.0 - 3.1	-	3.3 - 3.5	-	-
Perfluoro-n-octanoic acid (PFOA)	3	4.4 - 43	6.9 - 43	5.1 - 32	7.6 - 55	3.2 - 32	<3.0 - 31

CIRIA C819, Chapter 13.2 and 13.3 references the approaches to assessments of risks to surface waters and groundwater. For surface waters PFOS and derivatives have an EU Annual Average (AA) EQS of 0.65ng/l, and a Maximum Allowable Concentration (MAC) for inland waters 36,000ng/l. For other surface waters the AA-EQS is 0.13ng/l, and MAC is 7200ng/l.

In relation to the above AA-EQS it should be noted these are below the accredited limits of detection by DETS, and the background levels of PFOS identified by the Environment Agency (CIRIA C819 – Figure 4.2) are reported at units scales to 0.05µg/l (50ng/l).

CIRIA C819 references that DEFRA have not released any groundwater quality standards for PFAS chemicals and the starting point for assessments as Drinking Water thresholds by DWI (2022). These use a tiered approach by water companies to test for specified PFAS types, with designations for any concentrations as follows:

Tier 1 = <0.01µg/l (<10ng/l) - Continue to monitor quarterly, risk assessments and hazard assessments.

Tier 2 = <0.1µg/l (<100ng/l) - Continue to monitor monthly to quarterly, risk assessments and hazard assessments, notify liaison inspector, prepare to prevent water supply to consumers if further samples identify >0.1µg/l (>100ng/l).

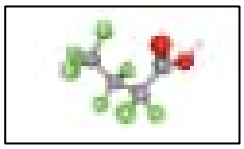
Tier 3 = ≥0.1µg/l (≥100ng/l) – Notifications to UKHSA and local authorities, review of blended waters, combined and final waters, resampling to be fast tracked, prepare emergency procedures to prevent consumer exposure, review hydrological conditions and catchment.

The results indicate the presence of various types of PFAS within the site, several orders of magnitude below the MAC, but above the AA-EQS, comparable to background levels for Perfluorooctanesulfonate (PFOS), and within thresholds permitted for drinking water (albeit with heightened testing and monitoring requirements), defined as Tier 2 class waters.

Perfluoro-n-octanoic acid (PFOA) concentrations are slightly higher than surface water samples from Bealey's Goit, although no measurable difference at the terminus of the Goit, adjacent to the site, and those 75m up flow from the site.

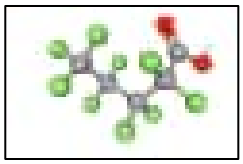
The samples from Bealey's Goit and Borehole BH03 (north of the settling tanks) identified no other forms of PFAS (other than PFOA). The samples from the former reservoir and settling tanks identified other types of PFAS, discussed below.

Perfluoro-n-butanoic acid (PFBA) - $C_4HF_7O_2$ C_3F_7COOH



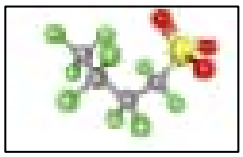
- Identified at 51ng/l above detection limit of 10ng/l within 1 No. of 3 No. sampling visits within the former reservoir (BH02) at a depth of 3.56m.
- Not identified within any soil samples.
- Not listed as associated with the paper industry.
- Not reported as identified with current paper mill feedwater.
- Concentrations within drinking water levels (Tier 2).

Perfluoro-n-pentanoic acid (PFPeA) - $C_5HF_9O_2$ C_4F_9COOH



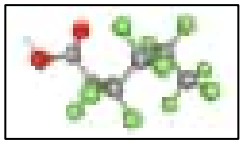
- Identified at 4.4ng/l to 17ng/l within BH01 (settling tanks) and <3.0 ng/l to 4.7ng/l within BH02 (former reservoir).
- Identified within one soil sample, but not from any within the reservoir/settling tank area.
- PFPeA was not listed as associated with paper production, although the EA did reference the association with food wrappers.
- Concentrations within drinking water levels (Tier 2).

Perfluoro-1-butanesulfonate (PFBS) - $C_4HF_9O_3S$ $C_4F_9SO_3H$



- Identified at <3.0 ng/l to 3.9ng/l within BH01 (settling tanks) and <3.0ng/l - 6.6ng/l within WS212 (settling tanks).
- PFBS was not identified within any soil samples.
- PFBS was not listed as associated with paper production, although the EA did reference the presence in feedwater within current paper manufacturing.
- Concentrations within drinking water levels (Tier 1).

Perfluoro-n-hexanoic acid (PFHxA) - $C_6HF_{11}O_2$ $C_5F_{11}COOH$



- Identified at 4.6ng/l to 8.5ng/l within BH01 (settling tanks), <3.0ng/l – 3.2ng/l within BH02 (reservoir) and 3.1ng/l – 3.4ng/l within WS212 (settling tanks).
- PFHxA was not identified within any soil samples.
- PFHxA was not listed as associated with paper production, although the EA did reference the presence in feedwater within current paper manufacturing.
- Concentrations within drinking water levels (Tier 1).

Perfluoro-n-octanoic acid (PFHpA) - $C_7HF_{13}O_2$ $C_6F_{13}COOH$



- Identified within all water samples (as referenced previously) at 3.7ng/l to 6.7ng/l within BH01 (settling tanks), <3.0ng/l – 3.1ng/l within BH02 (reservoir) and 3.3ng/l – 3.5ng/l within WS212 (settling tanks).
- PFHpA was not identified within any soil samples.
- PFHpA was not listed as associated with paper production, although the EA did reference the presence in effluent samples within current paper manufacturing.
- Concentrations within drinking water levels (Tier 1).

Perfluoro-n-heptanoic acid (PFOA) - $C_8HF_{15}O_2$



- Identified at 4.4ng/l to 43ng/l within BH01 (settling tanks), 6.9ng/l – 43ng/l within BH02 (reservoir), 5.1ng/l - 32ng/l within BH03 (north of settling tanks) and 7.6ng/l – 55ng/l within WS212 (settling tanks).
- PFOA was identified within 1 No. soil sample from BH03.
- PFOA was listed as associated with paper production, and the EA referenced the presence in some effluent samples and crumb samples within current paper manufacturing (also identified in field blanks).
- Concentrations within drinking water levels (Tier 2).

The results of the PFAS testing of groundwater samples and surface water samples are indicating the results are not significantly elevated. The results fall within Tier 1 or Tier 2 DWI thresholds, and significantly lower than EQS-MAC.

3.6 Contamination Assessment & Recommended Remedial Actions

Metal and PAH Compounds

The testing of soils across the site have identified the presence of slighted elevated concentrations of metals and PAH above chronic exposure thresholds for residential gardens, with no consistent significant concentrations present within groundwater. The concentrations are not considered to be approaching levels where acute human health exposure risks occur (following SOBRA, 2020, *Development of Acute Generic Assessment Criteria for Assessing Risks to Human Health from Contaminants in Soil).* These forms of contaminants are primarily a risk to the future residents from exposure to contaminated soils in residential garden growing mediums, hand to mouth ingestion (including uptake through vegetable/fruit grown within the gardens) with secondary transfer of soils to properties and formation of dusts. Remedial actions will be required to break the exposure pathway between the residents and the madeground deposits within the site.

TPH Compounds

The testing of soils and waters have identified the presence of elevated petroleum range hydrocarbons within the area of the former reservoir and settling tanks. Soil samples identified elevated concentrations above residential garden threshold for the aromatic mid-high carbon ranges. Within these fractions the primary pathway for human health exposure is through dermal and secondary ingestion, with a less significant vapour inhalation pathway. Modelling of the health risks within CLEA 1.071 (Appendix 6) demonstrates that outside of the garden growing medium the concentrations present are below the human health risks from vapour inhalation, such that breaking the exposure pathway between the residents and the madeground deposits will be sufficient for protection of human health (no vapour inhalation risks). A summary of the results and thresholds for soils in relation to human health is provided in Table 14.

Table 14: Summary of elevated TPH contaminants within soil samples

TPH Ranges	Maximum Soil Concentration	**Standard Residential Gardens** (dermal, ingestion, indoor & outdoor inhalation – Tier 1)	**At depth below Buildings & Gardens** (indoor & outdoor inhalation)	**At depth below Public Open Space** (outdoor inhalation)
Aromatic >C12-C16	498	140	2,004	100%
Aromatic >C16-C21	1760	250	35,773	100%
Aromatic >C21-C35	1362	890	100%	100%

Notes to Table 14:

- *All units are in mg/kg (unless stated as percentage).*

There was no evidence of consistent elevated concentrations of petroleum hydrocarbons typical of a plume, with one number water sample identifying a spike in mid carbon range aliphatic hydrocarbons. There was no evidence of hydrocarbons within surface water samples from Bealey's Goit adjacent to the site (although present upstream on one occasion). The identified concentrations are not considered to be posing a significant risk to controlled waters at present, with consideration of the impacts from pathway formation from development to be the primary factor on the potential future risks (discussed in Section 3.7).

Volatile and Semi-Volatile Organic Carbons (VOCs and SVOCs) (Soils)
No detected VOCs and SVOCs (excluding PAH compounds) within samples of soils or water. No further assessments required.

Polychlorinated Biphenyls (PCBs)
The testing of samples close to the electric substations has not identified indications of the presence of PCBs. The electrical substation in the north of the site is to be decommissioned and further testing will be required beneath the substation to confirm if PCBs are present.

Any detectable PCBs are likely to be above residential garden thresholds (derived within CLEA 1.071 with application of Toxicity Equivalency Factors) and would require removal from these areas.

Asbestos Containing Soils (ACS) - General
The previous sections provide details as to the presence of Asbestos Containing Soils (ACSs) in the form of free fibres within the madeground and topsoil, and cement asbestos fragments within the infilled reservoir.

As referenced above there are requirements for protection of residents for Inorganic/PAH Compounds and TPH compounds, however ACSs can pose risks to construction workers and adjacent members through inhalation pathways which differ significantly. The approaches to assessment of asbestos containing soils are detailed in the following guidance:

- CIRIA C733, 2014, "*Asbestos in Soils and Madeground*".
- CL:AIRE, 2016. "*Control of Asbestos Regulations 2012 - Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials: Industry guidance.*"
- CIRIA C765, 2017, "*Asbestos in Soil and Made Ground Good Practice Guide.*"

There are no acceptable generic thresholds for Asbestos Containing Soils (ACSs) by designated end use. CIRIA C733 advocates a staged approach with initial qualitative assessment (below), and where higher risks are identified then further detailed quantitative assessments and exposure assessments should be complete. It should be noted there is no generic threshold for determining relative lower or higher risks, although risk assessment tools have been released by CL:AIRE to aid assessments. The approach of several companies to infer laboratory detection limit or withdrawn ICRCL threshold as an applicable threshold for risk is not appropriate, as detailed within CIRIA C733 "*the value of 0.001 per cent mentioned in ICRCL should not be used in this capacity.*" This is further detailed that "*It is not a level below which ICRCL considered that risks are acceptable or below which potential civil liberties could be assumed to be negligible. So, it is not an appropriate generic assessment criterion for ACSs.*"

In addition to the normal contaminated land legislation the following regulations and acts apply to asbestos exposure:

- Control of Asbestos Regulations, 2012.
- Health and Safety at Work Act, 1974.
- Construction (Design and Management) Regulations, 2015.
- Management of Health and Safety at Work Regulations, 1999.

Asbestos Containing Soils (ACS) - Initial Qualitative Assessment

Exposure Risks

The primary asbestos risk to human health is through the inhalation of respirable fibres, where they can provide non-malignant pleural disease, asbestosis, lung cancer, and mesothelioma. CIRIA C733 details that environmental exposure (non-work related) to asbestos is not considered a concern for non-malignant pleural disease and asbestosis, with asbestos related lung cancer and mesothelioma the primary human health risks. The HSE have stated that occupational exposure to asbestos is "*the single greatest cause of work-related deaths in UK*" with an estimated circa 4000 deaths annually in the UK alone (CIRIA C733).

Initial Asbestos Analysis and Supplemental Investigation Method

To undertake a robust qualitative assessment of the risks a method of qualitative assessment has been assessed by SOBRA within the publication "*Summer Workshop Report – Asbestos in Soils*" (2015). The approach is based upon assessments of the nature of the asbestos, the soil characteristics, quality of the data and the receptor types during each activity where asbestos containing soils are liable to be disturbed. The approach assessed by SOBRA has been included into assessment tools by CL:AIRE/JIWG and a summary of the SOBRA approach is provided in Table 15 (below), followed by appraisal of each criteria.

Table 15 - Qualitative Assessments Criteria Based Upon SOBRA Guidance

Assessment Criteria		Explanation
Asbestos Nature	Asbestos type	whether chrysotile, amosite, crocidolite or a mixture of fibre types
	Asbestos composition	whether bonded, unbonded, and whether in a poor or good condition
	Asbestos quantity	percentage asbestos content in the soil
	ACM matrix	the ACM matrix degradation rate – i.e. the potential release rate of asbestos fibres from the matrix
	Respirable fibres	the respirable fibre index – a measure of the proportion of respirable fibres in the ACM, as opposed the total fibre count
Soil Characteristics	Soil type	sand, loam, silt, clay and aggregates
	Moisture content	-
	Depth to ACS	-
	Ground cover and propensity for surface wind erosion	-
	Heterogeneity of ground conditions	spatial scale of variation
Data	Data Quality	assessment of the ground investigation to characterise the asbestos in soils (see below)
Receptor	Age group	-
	Exposure frequency	-
	Exposure duration	-
	Activity level	associated with physical intensity of soil disturbance activity and propensity for dust generation

Asbestos Nature:

- Fibre bundles of chrysotile and amosite (0.002-0.004%) in 8 No. of 11 No. samples from the former reservoir/settling tank area, and 3 No. of 7 No. samples from the madeground within the trading estate, and None of the 12 No. samples from the open area of the site.
- Microscopic debris was measures (0.035% of the soil sample) in 2No. of 30No. samples, reported as cement and insulating material.
- Cement Asbestos Fragments (15% chrysotile) observed in reservoir.
- The potential fibre release to the air from small amounts of fibre bundles would be relatively low.
- The potential for degradation and release of large volumes of asbestos fibres from material with frequent cement sheeting is high if this material is heavily worked.

Soil Characteristics:

- The ACS was a madeground with little limitations on atmospheric release provided by granular nature of the constituents of the host material.
- The silt/clay content of the soils hold a greater proportion of moisture and therefore relatively less liable to release fibres than granular soils. CIRIA C733 details the relative proportion of asbestos release from cohesive strata to sand strata is 40%. Given the soil type a high release rate is anticipated.

Data Quality:

- A relatively large sample population has been subject to testing by laboratories for the size of the site, with the data supporting the results of previous investigations.
- The asbestos fibres are frequent in areas of the former reservoir/settling tanks, and common in the trading estate area, such that it is not viable to distinguish areas as absent of asbestos without high density sampling, which will commonly identify sporadic presence (not forming hotspot/plumes like fuel spillages).
- The fragmented ACMs were visibly identified within the area of the reservoir infill.
- It should be made clear that with any investigation there is a potential for undisclosed contaminants to be found. With ACMs the common risk is the deliberate burial in discrete locations. These are difficult to disclose during the investigations and during any soil disturbance contractors would be required to identify any potential suspected ACMs and appoint qualified/licensed persons to confirm the materials and provide/agree the information for safe removal.
- It should be noted that evidence of previous fly-tipping and potential for asbestos containing materials at surface, with risk that debris and fibres will be local to the area of storage. Advice on the safe removal of ACMs requires advice from specialist asbestos consultants.

Receptor:

- The receptor sensitivity varies by work activity and stage. The primary phase of soil disturbance would be during the excavation works to regrade site levels and construction of roads/sewers. The receptors most exposed to soil dusts would be the contractors, due to proximity, who are less sensitive receptors, due to age.
- The site is located in close to offsite residential housing. Adjacent residents would be considered less likely to be impacted (due to proximity to the work areas) but more sensitive to exposure (due to age, with infants and children potentially playing in the gardens subject to occupation at the time of construction).
- The future residents are the most sensitive receptor if asbestos containing soils were present within the growing medium of gardens/landscaping, due to the potential for repeat and long-term exposure. It is generally accepted that no acceptable amounts of asbestos within residential gardens/POS are acceptable under planning regimes for new developments. As outlined previously the madeground deposits also contain other forms of contaminants such that an inert cover system is proposed (remediation detailed in Section 5.5).

The above qualitative assessment shows the risks posed by asbestos would be unacceptable for long term exposure within a soil in a residential open space area and proposed gardens, which also contains other forms of contaminants. The proposals are for inclusion of an inert cover system within the proposed gardens/landscaping to break the exposure pathway between the most sensitive receptors and the contaminants.

During excavation works within the former reservoir an asbestos consultant/contractor should be in attendance to hand pick any ACM fragments. Whilst this will not remove all asbestos, the higher risk of significant fibre release would be mitigated by ACM removal. During these works mitigation measures to control dusts and air monitoring will be required. Further details for asbestos mitigation works will be provided within a proposed remediation and enabling works strategy.

Further details of the remediation are provided in Section 5.

The print sheets for the JIWG decision support tools released by CL:AIRE have been provided in Appendix 6, confirming the remediation works would be classified as being an activity where Control of Asbestos Regulations (CAR) apply to workers, and the remediation works would be sufficient to be determined as negligible risk upon completion. A summary of the receptor ranking tool results are provided in Table 16 and 17, below. It should be noted that the sheets work on the basis of the ACMs being within a soil, and do not apply to ACMs outside of a soil where much more significant risks are present and must be strictly managed from CAR under guidance from an asbestos consultant.

Table 16: Summary of CL:AIRE Decision Support Tools for Qualitative Assessment of Receptor Risks – ACM Materials in Reservoir

Future Residents – Post Remediation (cover system)		Future Residents – No Remediation	
Source Hazard	Low	Source Hazard	Low
Emission-Exposure	Low	Emission-Exposure	Medium
Receptor	High	Receptor	High
Pathway	Negligible	Pathway	Medium
Overall Risk	Negligible	Overall Risk	Medium
Adjacent Residents (During Soil Excavation/Movement)		Contractors (During Soil Excavation/Movement)	
Source Hazard	Low	Source Hazard	Low
Emission-Exposure	Medium	Emission-Exposure	Medium
Receptor	High	Receptor	Medium
Pathway	Medium	Pathway	High
Overall Risk	Medium	Overall Risk	High

Table 17: Summary of CL:AIRE Decision Support Tools for Qualitative Assessment of Receptor Risks – Free Fibres/Debris in madeground/soil

Future Residents – Post Remediation (cover system)		Future Residents – No Remediation	
Source Hazard	Medium	Source Hazard	Medium
Emission-Exposure	Low	Emission-Exposure	Medium
Receptor	High	Receptor	High
Pathway	Negligible	Pathway	Medium
Overall Risk	Negligible	Overall Risk	Medium
Adjacent Residents (Madeground During Soil Excavation/Movement)		Contractors (Madeground During Soil Excavation/Movement)	
Source Hazard	Medium	Source Hazard	Low
Emission-Exposure	Medium	Emission-Exposure	Medium
Receptor	High	Receptor	Medium
Pathway	Medium	Pathway	High
Overall Risk	Medium	Overall Risk	High

Asbestos Containing Soils (ACS) - Conclusions

The initial qualitative assessment has identified the potential medium to high risks if madeground was to remain within the gardens and if no measures were undertaken to manage or control dusts formed during soil movements/earthworks. These risks can be reduced to negligible via breaking the exposure pathway to the future residents from placement of cover systems in gardens and management of dust formation through dampening down soils during periods of dry weather, with removal of identifiable ACMs during works within the former reservoir/settling tank area prior to development.

Per- and Polyfluoroalkyl Substances (PFAS)

The testing has identified 1 No. soil sample to contain concentrations of PFOS above residential garden GAC, but below thresholds for public open space. Water samples have not identified significantly elevated PFAS from the former reservoirs/tanks to the former paper mill, and surface water sampling. Remedial actions will be required to break the exposure pathway between the residents and the madeground deposits with PFOS, although other contaminants are also present which require the same within the site. Further discussions of the impacts from the development to pathways are included in Section 3.7.

Controlled Waters

The program of water sampling have not identified a consistent significant risk to controlled waters. Localised mid to high carbon range TPHs have been identified within the former reservoir/settling tank area and localised removal of the source soils are proposed which would further reduce the associated risks.

3.7 Development Impacts and Preferential Pathway

The development of residential houses can result in changes to the pathways for migration of mobile contaminants, gases and vapours to impact receptors in the future (both human and controlled waters). The most common factors to be considered are the intended foundation construction and formation of sewers, which can result in the potential to bypass existing natural attenuation provided by lower permeability strata.

The intended foundation construction consists of piled foundations. The determination of the type, number of piles (and therefore the loads) against pile length is largely commercial and typically determined by the contractors. It is assumed that the piles would likely be friction bearing within the glacial clay at depths up to 15m.

Driven concrete piles will seal against glacial strata during construction, limiting migration pathways. Where movement occurs during the driving process a pile whip process can result in voids in the upper sections of the ground adjacent to the pile, resulting in an increase in void space and associated migration pathways (particularly at shallow depths where gas/vapour migration can become significant – discussed in Section 4). Bedrock is anticipated to be at depths of 20m where driven piles would not intercept this, resulting in no significant pathway potential.

The drainage layout records the surface and foul water sewers are up to 3m below proposed floor slab levels, with all drainage designed to drain via gravity to public sewers to the south of the site. Areas of flood attenuation storage are below parking/roads, within 2.5m of surface. No proposed drainage to surface waters are included.

3.8 Conclusions

The phased investigation works identified the presence of contaminants on site with the primary risk to future residents through exposure to contaminants within residential gardens. Remedial measures are required to protect the future residents from exposure to the contaminants, with assessments and proposals provided in Section 6.

Further testing for PCBs are required after decommissioning of the electrical substation.

Measures are required to mitigate dust formation and segregate any identifiable ACM materials, with particular measures adopted during earthworks.

4. Hazardous Ground Gas Assessment

4.1 General

All information and advice regarding requirements for gas precaution measures are considered to be provisional until approval from statutory bodies has been granted. The assessment within this report assessment upon completion of additional monitoring. The approaches to ground gas investigations and assessments of risks are detailed within the following British Standards:

- BS 8485:2015+A1:2019 '*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.'*
- BS 8576:2013 '*Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs).'*

The British Standards references numerous specific papers regarding ground gas research. Papers referenced in this report include publications released after the latest updates to the British Standard. Of particular relevance to this site are the following publications, discussed and referenced in subsequent sections, some of which were released between commencing investigation and report production:

- BRE BR211 (2023) "*Radon – Guidance on Protective Measures for New Buildings (including supplementary advice for extensions, conversions and refurbishment projects)*."
- CIRIA C735 (2014) "*Good Practice on the Testing and Verification of Protection Systems for Buildings Against Ground Gases*."
- CL:AIRE (2021) "*Good Practice in the Risk Assessment for Coal Mine Gas Emissions*".
- Lucas, S., and Wilson, S. (2020) "*Corrosion and Puncture Resistance of Aluminium Foil Gas Membranes beneath Concrete Slabs*" in Geosynthetics International, Vol. 27-4.
- NHBC Foundation, Report No. NF94 (2023) "*Hazardous Ground Gas – An Essential Guide for Housebuilders*".

Coopers have appraised the potential risk of ground gases to provide an initial conceptual model in terms of source-pathway-receptor, following current standards and guidance. Based upon this conceptual model it was determined that gas monitoring was required (completed at the time of this report) to assess potential risks associated with areas of infilling.

4.2 Initial Conceptual Site Model

General: - In accordance with BS8485, Clause 4, "*To complete an assessment of the risks posed by the presence of permanent and other ground gases, the potential sources of gas in and around a site should be identified; guidance on the collection of the relevant information is provided in BS 8576.*"

In accordance with BS8576, Clause 6, the development of a preliminary conceptual site model is the first stage in determining the requirements for a program for gas monitoring. The initial stage of which is identification of "*Potential sources of hazardous gases based on a review of the current and previous uses of the site and neighbouring land, and the underlying natural and man-made geology and hydrogeology*;"

The following sections include a more detailed discussion of the risks posed by known and common sources of hazardous ground gases, the pathways for gas mitigation and the potential impact to the receptors. To aid classification of the risk of different sources of hazardous ground gas a decision matrix has been provided in BS8576, Clause 8.7, Figure 7, which classifies the generation potential of sources of hazardous ground gas from very low to very high.

The Initial Conceptual Site Model (ICSM) identified the potential sources were limited to localised areas of deeper infill materials. Whilst the infill materials were primarily of inert demolition origin, these did include some material with higher degradable organic carbon content.

In order to robustly determine the potential risks relating to hazardous ground gas Coopers have revisited the ICSM for common sources of hazardous ground gas. The sections below define the site as having low to moderate risk sources of hazardous ground gas close to the former reservoir/settling tank and very low risk elsewhere.

Initial Conceptual Model - Potential Sources

The below information includes a detailed appraisal of common sources of hazardous ground gases, with the associated potential migration pathways to reach receptors specific to each source.

Common Hazardous Ground Gas Source Identification – Historical Landfills and Filling (on and off site):

A detailed review of multiple sources of information has been undertaken to assess the potential for landfill gases to impact the proposed development. The reviews have included the findings of a Groundsure Report (Appendix 2), Bury Council "*Environmental Search Report*" (Appendix 2), and further information provided regarding historical filling from Bury Council under a Freedom of Information request (Appendix 2).

The Bury Council "*Environmental Search Report*" (Appendix 2) references the former reservoirs and settling tanks to the paper mill are recorded as a historical landfill site. The landfill was a pre-licensed site, owned by Wimpy Waste Management and latterly Beazer. Planning permission for the landfill was granted by Greater Manchester Council in 1982 for the filling with inert and construction waste, followed by permission in 1989 to raise levels using materials from demolished buildings.

The information supplied with specific reference to the conditions imposed for the infilling in the 1982 planning application, referenced on the decision notice of 13th October 1982 as follows:

"*The materials to be tipped shall be restricted to builders' waste arising within the site: there shall be no importation of material*".

"*The site shall be tipped level with the surrounding land, and finished with light shale or cinders. No revisions will be permitted without the written agreement of the local planning authority*".

Additional information was provided following a site visit on 4th August 1982:

Site Note: "*Particularly difficulty to obtain access to the site. Large buildings now dilapidated. Tanks and reservoir adjacent to a group of single story buildings besides the main complex. Proposal to demolish existing chimney (built 1907) and to use rubble to fill tanks, etc. Do not intend to bring any rubble into site*".

Report: "*Large industrial premises which are now vacant and becoming derelict. GMC have spoken to the agent and they have informed me verbally that there will be no importation of materials because the fill will come from the 1907 Brick Chimney when demolished. It is expected to take 3 months. Remainder of consultations + discussions to be undertaken by GMC – It is probably debatable whether P.P.* [Planning Permission] *is required.*"

The Council's report also references that local areas of filling within the influencing distance of the site may have been carried out for which no records are held.

The gas generation potential of landfills is defined by the types of waste and the age since deposition. The primary gases associated with historical landfills are methane and carbon dioxide from the bacterial decay of organic constituents (other secondary gases and vapours also associated). The decay begins shortly after deposition and can take many years to stabilise. During the active phase of decay high concentrations and flow rates would be characteristic, whilst older landfills will commonly display high concentrations from gases held within pore spaces, but at low flow rates due to the reduction in ongoing decay. BS8576 designates landfill risks by type and age as detailed in Table 18 (the standards are >10 years ago, the boundaries may be considered to need revising):

Table 18: Landfill Risk Designation by Type from BS8576

Landfill Type/Age	Risk Designation	Comments
Municipal landfill sites	Very High Risk	
Landfill 1990's onwards	Very High Risk	
Landfill mid 1960's to 1990	High Risk	
Landfill 1945 to 1965	Moderate Risk	This could also be "low" or, if disturbed, "high".
Inert landfill sites	Very Low Risk	Lack of regulation in the past means that most sites are never entirely inert – they can include timber, plasterboard and even domestic refuse and consequently care is needed when assessing such sites. They might require a higher risk classification

The landfill of inert and construction wastes in 1982 and demolition of buildings used to raise levels are likely to be primarily materials with little organic content, such as brick and concrete, although timber and other wastes are present. The very low risk designation for inert landfills is therefore considered to not apply, and a more realistic low to moderate risk designation would be assigned.

Common Hazardous Ground Gas Source Identification - Underground Coal Mine Workings and Mine Shafts (on / off site): As detailed within Coopers Site Investigation Report - Section 12, the site is situated within a Coal Authority coal mine reporting area but designated as outside of a high-risk development area. This risk designation is applied where no shallow mine workings, mine entries or other significant mining related hazard exists.

Coal is commonly associated with trapped hazardous gases within pore spaces, primarily comprising of methane and carbon dioxide, although other gases including carbon monoxide can be present. Numerous historical coal mining disasters are attributed to the release of mine gas. Following abandonment of former coal mines these gases can migrate towards the surface where they can pose a significant risk to human health, including loss of life from asphyxiation and explosion.

CL:AIRE have released guidance "*Good Practice in the Risk Assessment for Coal Mine Gas Emissions*", 2021. The procedures follow the same initial approach outlined in BS8485 of formation of an initial conceptual site model through desk study data, determining source-pathway-receptor relationship and investigations to monitor gases based upon the model. The main variations are that the interpretation and designation of gas risks requires specific classification based upon the nature of the mine workings, and that adoption of gas screening values within BS8485 may not be appropriate, particularly where pathways of gas migration bypass the shallow soils, such as mine shafts, faults or future development pathways. The initial appraisal coal mine gas risk classification within CL:AIRE (2021) are summarised in Table 19.

Table 19: Summary of Risk Designations of Coal Mine Gas Emissions based upon CL:AIRE Guidance (2021)

Risk Designation	Criteria	Requirements
No Risk	• Outside of Coal Authority Coal Mining Reporting Area.	• No mitigation measures required for coal mine gases.
Negligible Risk	• Mine Entries >50m from site boundary. • Workings >150m depth. • No faults or other potential pathways connecting surface to deeper unflooded mine workings • Outside area of past or probably shallow workings on Coal Authority viewer.	• Findings of assessment to be provided in report. • No mitigation measures required for coal mine gases.
Low Risk	• Workings 30-150m but permanently flooded or covered by 10m+ of low permeability (<$1x10^{-6}$ m/s hydraulic conductivity) superficial deposits. • Mine Entries >50m from site boundary	• Findings of assessment to be provided in report. • No mitigation measures required for coal mine gases. • Review of assessment once development designs are finalised.

Table 19 continued on following page.

Table 19…continued: Summary of Risk Designations of Coal Mine Gas Emissions based upon CL:AIRE Guidance (2021)

Risk Designation	Criteria	Requirements
Moderate Risk	• None of the high risk criteria below.	• Detailed mine gas risk assessment required. • Findings of assessment to be provided within a report. • Assessment of mitigation measures based upon risk-based design. • Review of assessment once development designs are finalised.
High Risk	• Mine Entries on site or within 20m of site boundary. • Workings below site at <30m depth and unflooded or variable water levels. • Faults of other pathways connecting surface to deeper unflooded workings. • Within area of past or probable shallow workings on Coal Authority viewer.	• Assess if mine gas risks can be mitigated, if not there will be requirements to change the development proposals. • Detailed mine gas risk assessment required. • Findings of assessment to be provided within a report. • Assessment of mitigation measures based upon risk-based design. • Review of assessment once development designs are finalised.

The site is underlain by deep workings at depths of circa 195m to 368m last worked in 1894. The seams at this depth would have flooded and designated as a negligible risk on this basis. Based upon the CL:AIRE approach the designation is defined as a negligible risk where no mitigation measures are required.

Former Ponds and Natural Organic Rich Material (on/off site): - The historical OS maps record no historical ponds on or close to the site. Drift strata includes alluvium where deposits of natural organic materials such as silt and peat can be present.

Natural organic strata is commonly associated with elevated concentrations of gases trapped within the pore spaces of the soil, but at low flow rates as a result of the older natural deposits where degradable plant matter has largely decayed leaving little ongoing degradation. These can pose risks where groundwater fluctuates resulting in displacement of hazardous ground gas, but generally classified as a very low risk source.

Deep Madeground (on site): - Potential for reworked ground on land adjacent to the paper mill, with mill race (Goit) adjacent to the site. Historical maps do not record any ground disturbance and land remaining largely the same since late 1800s. Madeground gas risk would depend on the type of materials and age of deposition.

The investigations identified no defined deep madeground areas within the fields on the site, with localised areas of deeper madeground in the southern part of the site (up to 2.8m deep), consisting of reworked natural granular strata with local pockets of clay, common inclusions of ash, clinker, burnt shale, fragmented concrete, brick and ceramics, localised inclusions of metal, rubber, glass, tarmac, coal, timber and plastic.

The ground gas risk posed by areas of deep madeground vary by the type and age of the materials deposited. NHBC NF94 (2023) describes the following:

"Made Ground soils are not inherently a significant source of hazardous ground gas. Typically, substantial proportions of putrescible materials such as vegetation, food waste, paper, cardboard, wood are required to be a source of gas in the ground. The likely source of Made Ground on site needs to be considered when determining if it is a credible source of gas. Shallow Made Ground comprising predominantly construction and demolition waste is not a credible source. Made Ground comprising reworked natural soils is very unlikely to be a significant source of gas. The type of organic material is also relevant, ashy Made Ground may have a high TOC, but it is not readily degradable. Infilled features can be sources of ground gas."

The general fills are reworked natural and no significant amounts of organic materials are present. Deep madeground is not defined as a potential source within the initial conceptual site model.

Radon (on site): - As detailed within Coopers Site Investigation Report - Section 13 (Radon), the site lies within an area where radon protection measures are not required for new buildings.

Petroleum Hydrocarbons/Volatile Substance Vapours (on site): - The contamination section (Section 16) details areas of weathered petroleum range hydrocarbons were limited to the areas of the former reservoir/settling tanks. The vapour inhalation pathway for petroleum range hydrocarbons differs between the more volatile lower carbon ranges and less volatile higher carbon ranges. Older petroleum contaminants tend to have volatilized with low risks posed.

As detailed within the remediation proposals, the area is intended to be excavated and removal of any localised mobile contaminants, subject to completion and verification there should be allowance for residual mitigation for vapour inhalation risks.

Radon (on site): - The desk study report text contained conflicting information. The executive summary defined the site as within an area where <1% of properties contained radon above the action level, whilst the main body of the report referenced that between 1% to 3% of properties were above the action level. The enclosed Groundsure Report confirmed that the risk designation was defined as between 1% to 3%. Both <1% and 1-3% are classed as areas where new buildings are designated as not requiring radon protection measures in accordance with BRE Report BR 211 (2023) "*Radon Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)*".

The Groundsure Report was undertaken in 2019 and predated the updated radon dataset from BGS and UKHSA in December 2022. Coopers have reviewed the UK radon maps based upon the worst case designations within a 1m square which confirms the radon risk designation has remained as 1-3% of properties and therefore does not require radon mitigation measures for the new buildings.

Petroleum Hydrocarbons/Volatile Substance Vapours (on site): - The contamination section (Section 3 of this report) details there were no identified petroleum hydrocarbon or other volatile contaminants from the investigation, although further investigation is required within the farmyard following vacant possession of the site. Where present the vapours from petroleum range hydrocarbons will commonly require a higher level of protection than other forms of hazardous ground gas. Given the ground investigation this common source of hazardous vapours can be determined as not applicable.

Future Filling (on site): - Proposals for cutting and filling the site have not been provided. The site topography is on a gentle gradient and based upon the surrounding land use is unlikely to have substantial changes to the proposed levels. If level raising is required the imported materials will be required to be tested/inspected to confirm they are inert and not providing an additional gas risk.

Potential Pathways

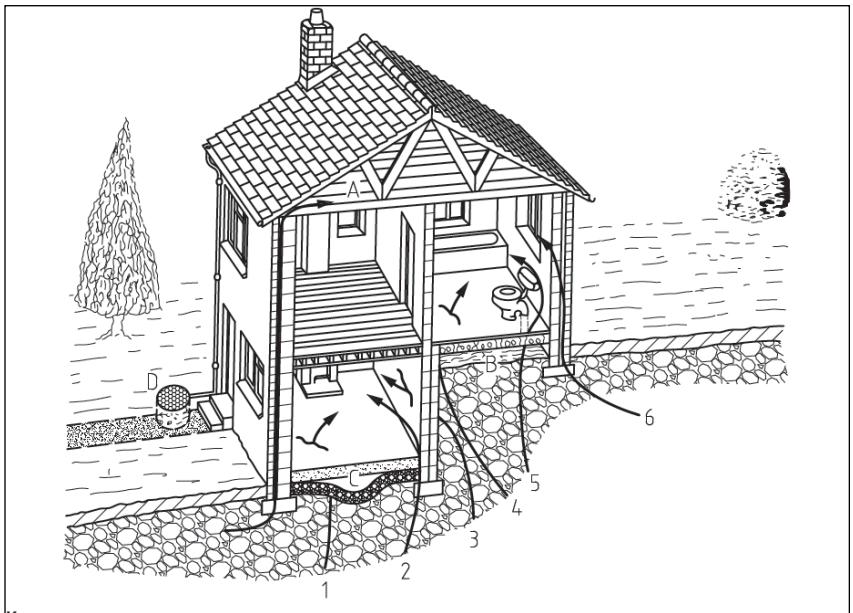
The primary pathway for migration of hazardous ground gases commonly follow pathways created by the built environment, such as foundations, pipelines and trenches associated with services. These pathways are often difficult to assess by monitoring and require consideration of the potential increased risk where pathways will be created by the development. Madeground deposits will commonly have high gas transmissivity due to the common gravel to cobble sized inclusions and poor consolidation from works were placed in an uncontrolled manner. The natural shallow drift strata are alluvium, which are commonly silts, clays and fine sands with potential for limited migration of gases. The deeper glacial clays would be limiting to gas migration due to the fine cohesive soils.

As referenced above, the primary risks are defined with variations in ground conditions associated with the infilled reservoirs/settling tanks. The primary pathway for gas migration would be vertically through the infill, with less migration laterally through the natural alluvium with variable water.

Deeper sources of hazardous ground gas can form complex pathways, although no deeper sources are present on this site.

The presence of groundwater can significantly limit the potential for lateral migration from distant sources, although they also have the potential for dissolved gases which can give false representation of gas risks within monitoring wells. Foundation construction, ground improvement, and service trenches can change the existing ground gas migration pathways and create preferential pathways to the subfloor of the buildings which would not be identified during gas monitoring. These construction methods would require consideration of a precautionary design where hazardous ground gases are present.

Once gases generated have reached the surface they will dissipate rapidly through atmospheric diffusion unless confined by buildings, as summarised in Figure 14 (below), or low points such as trenches. Hazardous gases beneath buildings can migrate through cracks or spaces in the floor slab and collect within the buildings. Any work in a confined space (including trenches) must assess the potential for hazardous gases to be present and health and safety provisions should be applied in accordance with HSE guidance.



Key

1 Through cracks and openings in solid concrete ground slabs if present due to shrinkage and curing
2 Through construction joints and openings at wall-foundation interface with ground slab if not sealed
3 Through cracks in walls below ground level
4 Through numerous gaps and openings in suspended block and beam floors or timber floors
5 Through gaps around service pipes and ducts or within the ducts
6 Through cavity walls

A Roof voids
B Beneath suspended floors
C Within settlement voids below floor slab
D Drains and soakaways (or similar voids)

Figure 14: Potential pathways for hazardous ground gas to ingress into residential buildings (from BS8485)

Receptors

***Future Occupants**:* The primary receptors are anticipated to be the future occupants of the residential houses via the build up and ingress of potential hazardous gases/vapours through the ground floor slabs of the properties. These are considered highly sensitive receptors for the purposes of the conceptual model.

***Adjacent residents**:* These can be exposed to hazardous gas if sources of gas are generated on site and migrate beyond the site boundary or preferential pathways exist for the horizontal migration of gases beyond the site boundary. The likelihood of this occurring is minimal due to the low potential for gas generation on site and pathways for gas migration being primarily vertical.

Construction/Maintenance Workers: Other receptors include construction workers, primarily through work within trenches or excavations where preferential pathways for the migration and collection of gases could occur. HSE guidance on safe work in confined space details potential dangers from gases within trenches, assessments required and precautions to take prior to entering a confined space. The appointment of a supervisor to ensure the necessary procedures and precautions are in place where construction workers intend to enter a confined space is advisable in accordance with HSE guidance.

4.3 Conceptual Model Summary

The conceptual model has demonstrated that the main potential gas risks are associated with the former landfill operations associated with filling of reservoirs and raising of levels with inert and construction wastes, in addition to materials derived from historical demolition. The risk designation of the type of landfill is considered to be low to moderate, subject to the types of waste present. Other potential sources (deep madeground, alluvium, and coal workings) are designated as low risk, very low risk or negligible risk.

A summary of the ground gas risks is provided in Table 20 below with extract of conceptual model in Figure 15.

Table 20: Summary of Initial Conceptual Model Associated with Hazardous Ground Gases

Sources	Gas	Receptor	Pathway	Risk
Landfills (off site)	Methane, carbon dioxide, & carbon monoxide (other trace gases)	Future occupants, construction/ maintenance workers/off site residents	Gas present at shallow depths with preferential pathways following built structures of granular strata.	Landfill was inert and construction waste relating to infilled reservoirs in 1980's. Raising of levels with materials from the former buildings in late 1980's. Pre-licensed landfill may have other types of waste and potential presence of degradable organic materials. Age and nature of the wastes would be defined as **low to moderate risk**.
Coal Mining – Underground Workings (on/offsite)	Methane, carbon dioxide, & carbon monoxide.	Future occupants, construction/ maintenance workers/off site residents	Negligible pathways to surface from deep workings.	Deep workings, last mining in late 1800's. Mine workings at depth would be flooded **– Negligible risk.**
Former Ponds and Natural Organic Strata (on/offsite)	Methane & carbon dioxide	Future occupants, construction/ maintenance workers/off site residents	Gas present at shallow depths with preferential pathways following built structures of granular strata.	No former ponds. Alluvium may contain peat pockets or peat or organic silt. Materials would not be actively generating gas, with residual gas trapped on pore space of soils. Unless groundwater fluctuations the potential risks for significant gas is designated as a **very low risk**.

Table 20 Continued on following page.

Table 20…continued: Summary of Initial Conceptual Model Associated with Hazardous Ground Gases

Sources	Gas	Receptor	Pathway	Risk
Deep Madeground (on site)	Primary risks from Methane & carbon dioxide	Future occupants, construction/ maintenance workers/off site residents	Gas present at shallow depths with preferential pathways following built structures of granular strata.	Excludes madeground from landfill and raising of levels from former buildings over the landfill (detailed in landfill section). Initial conceptual model defines potential for madeground associated with open land adjacent to the former paper mill. No significant ground workings recorded on historical maps. Intrusive investigation will identify the depth of madeground and the nature of the materials – **Low Risk**.
Radon (on site)	Radon	Future Residents	Exposure to radon gases migrating into buildings through floor slab construction.	The site is within an area where **No Radon Protection Measures** are required.
Petroleum Hydrocarbons/ VOCs (on site)	Hydrocarbon vapours	Future occupants	Primarily vertical pathway of hazardous vapours which can migrate into buildings and enclosed spaces	The primary risk is chronic exposure. These source of the vapours can pose risks to controlled waters and human health from other exposure pathways where removal is proposed. No VOCs identified. **Site Unaffected following remediation.**

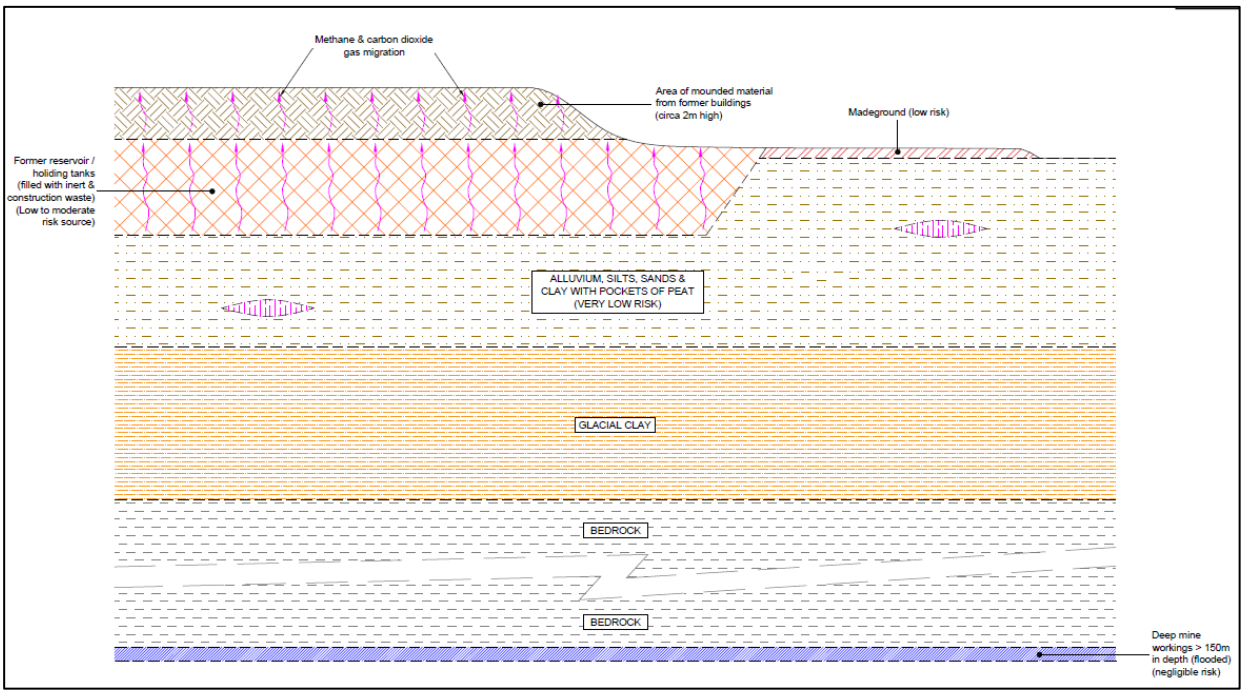


Figure 15: Extract of Coopers Ground Gas Conceptual Model

4.4 Profile of Potential Hazardous Ground Gases

The primary hazardous ground gases with the potential to be generated from the defined sources are methane and carbon dioxide. Other forms of hazardous ground gas can be present and provide a higher risk at lower concentrations, such as carbon monoxide and hydrogen sulphide. The properties, pathways and hazards posed by these gases differ, with summary profile of the gases of concern contained in Tables 21 to 24 below.

Table 21: Profile of Methane as Significant Hazardous Ground Gas from BS8576

Methane - CH_4
Methane is a colourless, odourless, flammable gas. Methane is explosive at concentrations of between about 5% and 15% v/v (volume fraction) in air. Below 5% v/v (the lower explosive limit – LEL) there is insufficient methane to support combustion and above 15% v/v (the upper explosive limit – UEL) there is insufficient oxygen to support combustion. The flammability range of methane varies depending on the concentrations of other gases present. For example: • where carbon dioxide concentrations are >25% v/v, methane is non-flammable; and • if the oxygen concentration is reduced, the limits of flammability are reduced (e.g. at 13.45% v/v oxygen, the LEL and UEL are altered to 6.5% v/v and 7% v/v respectively, whilst at 13.25% oxygen, the mixture is incapable of propagating flame (see [14]). Methane is a low toxicity gas but can result in asphyxiation due to its ability to displace air and hence oxygen. Oxygen starvation occurs at 33% v/v methane, whilst at 75% v/v methane, death results after 10 minutes. Methane is less dense than air.

Table 22: Profile of Carbon Dioxide as Significant Hazardous Ground Gas from BS8576

Carbon Dioxide - CO_2
Carbon dioxide (CO_2) is a colourless, odourless gas. It is both highly toxic and an asphyxiant and can cause adverse health effects in concentrations greater than 0.5% v/v. It is denser than air. • 3% v/v carbon dioxide can result in headaches and shortness of breath, with increasing severity up to 5% v/v or 6% v/v; • 6% to 10-11% v/v causes visual distortion, headaches, increased heart rates, dizziness, mental depression, tremors and rapid loss of consciousness (less than 15 minutes) possibly resulting in death; • >22% v/v is likely to result in death. The Health and Safety Executive has published the following limiting concentrations for work-related exposure: • Long-term exposure limit (LTEL – 8 hour period): 0.5% v/v; and • Short-term exposure limit (STEL – 15 minute period): 1.5% v/v. An additional hazard arises if air containing more than 0.5% carbon dioxide provides the combustion air to a central heating boiler or similar apparatus (e.g. it is drawn in from the sub-floor void). In these circumstances, there is a danger that carbon monoxide could be formed.

Table 23: Profile of Carbon Monoxide as Significant Hazardous Ground Gas from BS8576

Carbon Monoxide - CO
Carbon monoxide (CO) is a colourless, odourless gas. It is highly toxic, flammable an explosive at higher concentrations. Primary risks are as an asphyxiant and can cause adverse health effects at low concentrations. It is denser than air. The effects of exposure to different concentrations of carbon monoxide are: • 35ppm – 6 to 8 hours exposure, headaches and dizziness • 100ppm – 2 to 3 hours exposure, slight headache, • 200ppm – 2 to 3 hours exposure, slight headache, loss of judgement. • 400ppm – 1 to 2 hours frontal headache. • 800ppm – 45 minutes exposure, dizziness, nausea and convulsions. Insensible within 2 hours. • 1600ppm – 20 minutes exposure, headache, tachycardia, dizziness, and nausea. Death in <2 hours. • 3200ppm – 5 to 10 minutes exposure, headache, dizziness, nausea. Death in <30 minutes. • 6400ppm – 1 to 2 minutes exposure, headache & dizziness. Convulsions, respiratory arrest, and death in <20 minutes. • 12800ppm – 2 to 3 breaths, loss of consciousness. Death in <3 minutes. The Health and Safety Executive has published the following limiting concentrations for work-related exposure: • Long-term exposure limit (LTEL – 8 hour period): 30ppm; and • Short-term exposure limit (STEL – 15 minute period): 200ppm

Table 24: Profile of Hydrogen Sulphide as Significant Hazardous Ground Gas from BS8576

Hydrogen Sulphide – H_2S
Hydrogen sulphide (H_2S) is a colourless gas, with distinctive odour of rotten eggs at low concentrations (<1ppm), but at higher concentrations (>50ppm) anaesthesia of olfactory senses. It is highly toxic at low concentrations and flammable at higher concentrations. Can be classified as an annoyance or nuisance at very low concentrations due to odour. The effects of exposure to different concentrations of hydrogen sulphide are: • 10-20ppm – eye irritation. • 50-100ppm – serious eye damage. • 150-250ppm – loss of olfactory sense. • 320-530ppm – pulmonary oedema, risk of death. • 530-1000ppm – strong stimulation of central nervous system, hyperpnoea followed by respiratory arrest. • 1000-2000ppm – immediate collapse and paralysis of respiration. The Health and Safety Executive has published the following limiting concentrations for work-related exposure: • Long-term exposure limit (LTEL – 8 hour period): 5ppm; and • Short-term exposure limit (STEL – 15 minute period): 10ppm

4.5 Investigation Strategy, Monitoring Wells and Response Zones

***Investigation Strategy*:**
BS8576 (2013) defines that investigation and mitigation is not required where there is no credible source. Very low potential sources may be viable to discount if no credible pathway exists. Where low to high ground gas risks exist then an investigation and monitoring strategy is required.

BS8576 (2013), Chapter 8.4 advocates that the monitoring should commonly be targeted to identify the risks in relation to the source-pathway-receptor model. This targeted method supersedes the approach of CIRIA C665 (2007) which made recommendations for prescriptive spacing of monitoring wells based upon source classification and receptor sensitivity. BS8576 (2013), Chapter 8.4, provides examples of sites where non-targeted methods would be appropriate, as below:

i) Permanent and consistent on site gas source;
ii) VOCs in wide and undefined extent;
iii) Where the conceptual model is unable to suitably define the gas targets, such that a phased monitoring approach would be appropriate.

Coopers appraisal of the gas risk defined that a targeted approach was required to target the areas of the landfill and areas of deeper madeground. Monitoring wells in other areas of the site were required to identify if horizontal gas migration from the landfill is present and identify if significant gas concentrations are present of the other defined sources (deep madeground and alluvium).

The investigation was phased with initial areas available for investigation limited to the eastern parts of the site, with further access made to allow investigation of the north western areas of the site, including the former reservoir. Monitoring wells were installed in all of Coopers' small diameter boreholes (excluding WS102 which terminated on an obstruction during the hand dug service inspection pit). The locations of the boreholes are provided on Coopers Drawing No. 8353/01 in Appendix 1, with annotated extract in Figure 16.

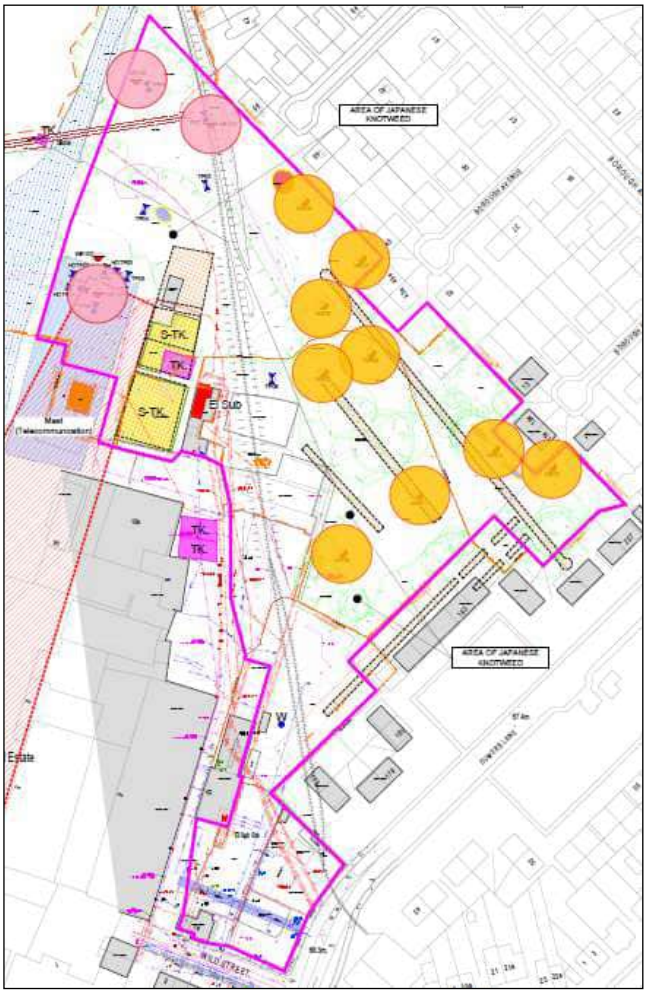


Figure 16: Showing gas monitoring positions in relation to varying sources. The orange circles represent the initial phase of investigation and the red circles are the secondary phase

Details of the monitoring wells and response zones are provided in the borehole logs, contained in Appendix 3 and summarised in Table 25 within Section 4.6. The gas monitoring wells constructed on behalf of Coopers consisted of 50mm HDPE pipe with slotted sections, geosoc surround to prevent silting up and inert gravel surround. Bentonite seals were constructed above the response zone to limit atmospheric gas ingress. A dual valve system with down feed was constructed to homogenise stratified gases, compliant with BS8576 (2013), was included, as shown in Figure 17, with flush stopcock cover.

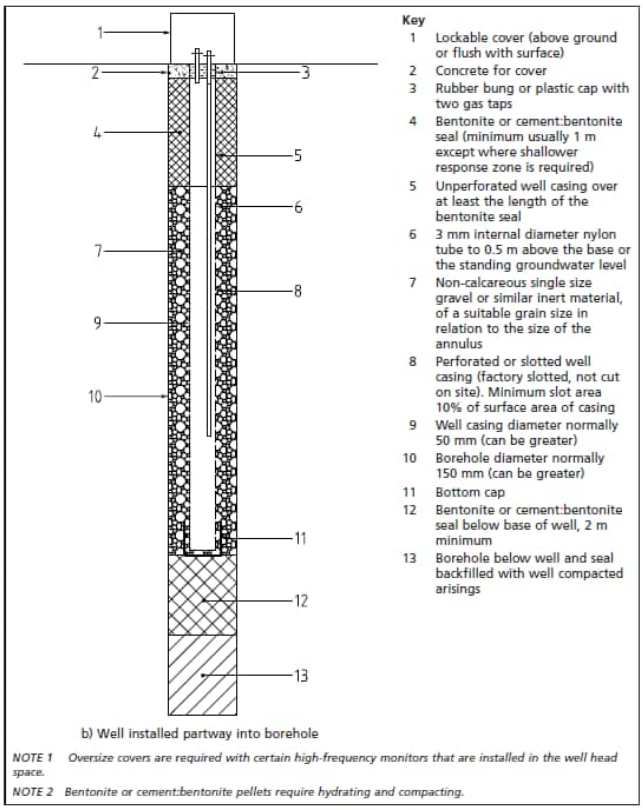


Figure 17: Extract of borehole monitoring well installation as recommended by BS8576

4.6 Ground Gas Monitoring

As detailed in BS8485(2015)+A1:2019 the gas monitoring procedures are to follow BS8576 (2013). This removes prescribed monitoring periods and frequencies with the onus transferred to the consultants to justify that their monitoring data is sufficient to characterise the site. Specific guidance on the requirements for gas monitoring duration is detailed within BS8576, Clause 8.6, in which the consultants should assess and appraise the risks based upon the levels of protection, as follows "*Gas monitoring does not necessarily need to be carried out under worst case conditions. It does not necessarily need to be at low or falling atmospheric pressure, but rather should be continued until it is unlikely that additional data will change the interpretation of the data, the outcome of the risk assessment, and the proposed remedial actions. This requires continued assessment of data as the monitoring progresses. One of the main considerations is to assess whether gas flow rates or concentrations could possibly increase and thereby affect the risk assessment and hence the choice of protective measures.*"

The approach to determining the sufficiency of the data is provided within BS8576, Annex F: Assessment of Whether Sufficient Gas Monitoring Data Have Been Collected. Table F.1 to F.3 within the BS8576 provide a decision matrix to appraise the sufficiency of the gas data.

For the purposes of practicality it is common practice to undertake an initial predefined set of monitoring visits to establish the ranges and variations that occur under different conditions and times. The monitoring proposed is to include 6 No. visits over a period of just under 3 months, which would be commonly considered appropriate for initial appraisal purposes. At the time of this report production gas monitoring was completed and included a range of atmospheric pressure and weather conditions, typically valid to allow an appraisal of variations occurring as a result of changes in conditions. Charts highlighting the pressure conditions over the monitoring period are included in Figures 18 and 19 demonstrating the pressure ranges and targeting of low pressure systems, and further evidence of the pressure conditions are provided in Figures 20 and 21.

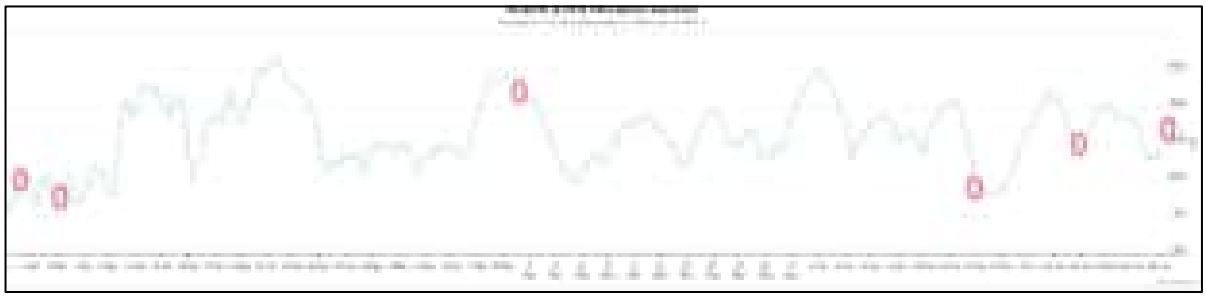


Figure 18: Graph plotting atmospheric pressure conditions in Radcliffe over ground gas monitoring period in April 2024 to June 2024. Circles represent gas monitoring visits.

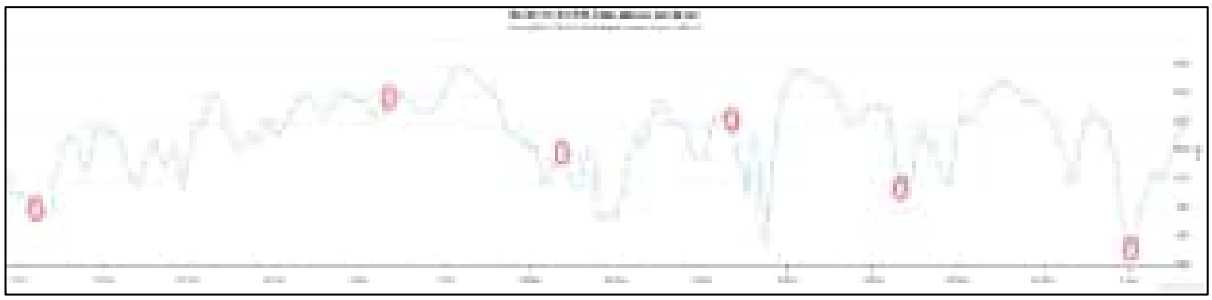
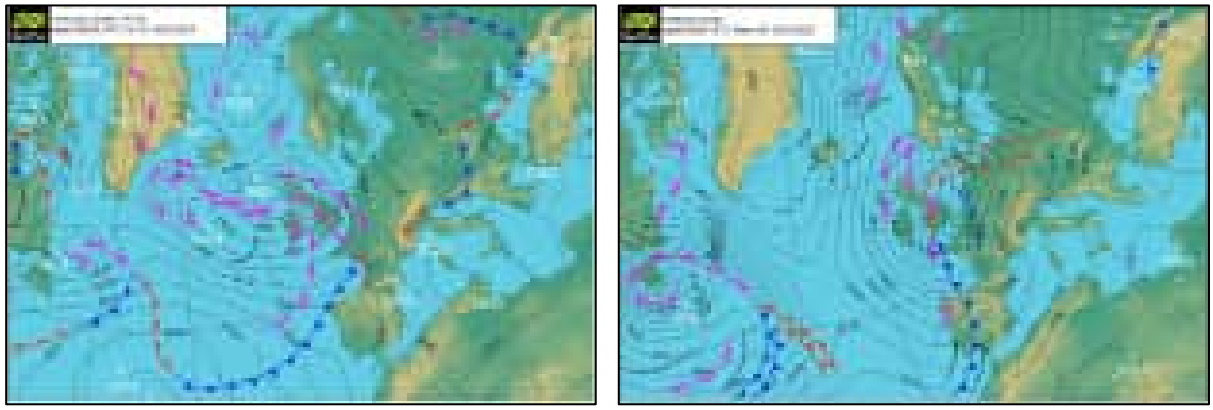


Figure 19: Graph plotting atmospheric pressure conditions in Radcliffe over ground gas monitoring period in October 2024 to January 2025. Circles represent gas monitoring visits.



Figures 20 and 21: Met Office Pressure Charts showing low pressure system on monitoring visits on 14 June 2024 (left) and 6 January 2025 (right)

Coopers monitoring was undertaken with GA5000 gas analyser, manufactured by QED (formerly Geotechnical Instruments). The initial phase of monitoring was undertaken within a 24-month manufacturer calibration, with certificate provided in Appendix 5. The secondary phase occurred after the manufacturer closed their UK and European operations, with equipment calibration and certification being undertaken in the USA. The return time for the instrument calibration had been advised to be 2 months. Coopers ordered a second GA5000 to allow calibration to be staggered, and in the interim undertook Gresham Tube samples for laboratory testing to confirm the results of the instrument (which is out of calibration). Laboratory certification for the Gresham Tube testing is contained in Appendix 5.

The monitoring procedures by Coopers include an initial flow reading recorded at 10 second intervals over a period of 1 minute (to allow rates to stabilise), followed by continuous monitoring of gas concentrations at 15 second intervals over a period of at least 5 minutes, as recommended within BS8576. Following completion of the monitoring the bung is removed, water levels measured, followed by replacement of the bung and closing of valves. Gresham tube sampling immediately follows the gas monitoring stage.

The summary of peak and steady concentrations, flow rates and any relevant notes relating to the monitoring are contained on a summary table in Appendix 5. The range of results identified to date are summarised in Table 25 below.

Table 25: – Summary of Ground Gas Monitoring

Borehole	Target Strata/Source	Response Zone (m bgl)	Pressure Range (mbar) (*1)	Peak Carbon Dioxide (% by Vol.)	Peak Methane (% by Vol.)	Min. Oxygen (% by Vol.)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	Water Level (m bgl)	Steady Flow (l/h)
Initial Phase (April to June 2024)										
WS01	Pathways/Control – Sand	0.5-1.6	991-1020	2.6-6.1	0.0-0.1	14.6-18.1	0	0-2	Dry	0.1-0.3
WS02	Pathways/Control – Clay and Sand	1.0-3.0	992-1020	2.1-3.8	0.0-0.1	17.2.-19.5	0	1-2	2.02-2.39	0.0-0.4
WS03	Shallow Madeground	0.5-1.0	991-1020	1.4-2.9	0.0-0.1	17.8-20.5	0-1	1-2	Dry	0.2-0.3
WS04	Pathways/Control – Gravel	1.0-2.0	992-1020	0.1-3.0	0.0-0.1	19.2-21.4	0	1-2	Dry	0.0-0.4
WS05	Pathways/Control – Sand/Gravel	0.5-1.5	992-1020	2.2-4.2	0.0-0.1	15.3-18.8	0-1	1-2	Dry	0.0-0.3
WS06	Shallow Madeground	0.5-1.1	991-1019	0.3-8.3	0.0-0.2	10.7-21.5	0-1	1-3	0.67-0.99	0.0-2.1
WS07	Shallow Madeground – Clay	1.0-3.0	992-1020	2.8-4.8	0.0-0.1	15.9-18.7	0-1	1-2	1.21-1.59	0.0-0.3
WS08	Pathways/Control – Gravel	1.0-1.8	991-1020	3.0-4.6	0.0-0.1	15.5-18.1	0-1	1-2	Dry	0.0-0.4
WS09	Pathways/Control – Sand/Gravel	1.0-2.45	990-1019	2.9-5.3	0.0-0.1	15.7-17.3	0	0-2	Dry	0.0-0.3
Secondary Phase (October 2024 onwards)										
WS101	Landfill – Former Reservoir	1.0-3.5	985	0.1-5.4	0.1-1.9	0.5-21.3	0	0-3	3.20-Dry	0.0-0.2
WS103	Deep Madeground	1.0-2.5	986	1.7-3.0	0.1-0.3	16.1-19.1	0	0-3	Dry	0.0-0.3
WS104	Madeground	1.0-1.5	986	1.4-2.2	0.1-0.3	19.0-21.7	0	0-2	Dry	0.0-0.3

4.7 Ground Gas Assessment

For the majority of sources of hazardous ground gas, the methods for risk assessment follow the guidance within BS 8485:2015+A1:2019 '*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.'* The approach is required to consider the monitoring data in relation to the conceptual site model, not in isolation, with development of Gas Screening Values based upon the concentrations and flow rates, as follows:

$$GSV = \frac{concentration\ (by\ vol.)}{100} \times flowrate\ (l/hr)$$

The site specific GSVs for methane and carbon dioxide are used to correlate gas risks based upon thresholds outlined within BS8485, summarised in Table 26. The standards reference that the GSV should be used as an aid to the ground gas risk assessment, and not replacing it. The decisions of requirements for mitigation requires determination by appropriately experienced persons with justification.

Table 26: Thresholds for Gas Screening Values (GSV) in accordance with BS8485:2015+A1:2019

BS8485:2015+A1:2019		
Classification	GSV (methane and carbon dioxide)	Limitations for Consideration
CS1	<0.07 L/hr	<1% CH4, <5% CO2
CS2	<0.70 L/hr	Flow <70 L/hr
CS3	<3.5 L/hr	-
CS4	<15 L/hr	-
CS5	<70 L/hr	-
CS6	>70 L/hr	-

No GSVs are provided for other hazardous gases being monitored, such as carbon monoxide or hydrogen sulphide. As detailed within BS8576 the only existing thresholds available to assess these are for occupational exposure limits (OEL). For carbon monoxide the short term OEL_{ST} is 200ppm and the long term OEL_{LT} is 30ppm. For hydrogen sulphide the OEL_{ST} is 10ppm and OEL_{LT} is 5ppm.

It should be noted that the OEL_{LT} is based upon 8 hour exposure limit converted to an annual mean and the OEL_{ST} is based upon 15 minute exposures converted to an annual mean. The OEL's may therefore be inappropriate for residential end use. For carbon monoxide it may be suitable to assume the European Standard EN50291 (supersedes BS7860) for domestic carbon monoxide detectors in residential properties lower alarm limit of 30ppm is appropriate and is in correlation with the OEL_{LT}. It may be considered that where hydrogen sulphide is present in any consistent notable presence it could pose a risk to residential human health and will require assessment.

As referenced previously the Gas Screening Values (GSVs) can be used to correlate gas risk against the conceptual site model. The GSV designations for methane and carbon dioxide are provided in Table 27.

Table 27 – Summary of GSV's for Each Borehole

Borehole Reference	Characteristic Carbon Dioxide (%)	Characteristic Methane (%)	Characteristic Flow Rate (l/hr)	GSV Carbon Dioxide	GSV Methane	BS8485 CS Class
Initial Phase (April to June 2024)						
WS01	6.1	0.1	0.3	0.0183	0.0003	CS1
WS02	3.8	0.1	0.4	0.0152	0.0004	CS1
WS03	2.9	0.1	0.3	0.0078	0.0003	CS1
WS04	3.0	0.1	0.4	0.0120	0.0004	CS1
WS05	4.2	0.1	0.3	0.0126	0.0003	CS1
WS06	8.3	0.2	2.1	0.1743	0.0042	CS2
WS07	4.8	0.1	0.3	0.0144	0.0003	CS1
WS08	4.6	0.1	0.4	0.0184	0.0004	CS1
WS09	5.3	0.1	0.3	0.0159	0.0003	CS1
Secondary Phase (October 2024 to January 2025)						
WS101	5.4	1.9	0.2	0.0108	0.0038	CS1
WS102	3.0	0.3	0.3	0.0090	0.0009	CS1
WS103	2.2	0.3	0.3	0.0066	0.0009	CS1

Notes to Table 27:

- *Where applicable zero values have been changed to instrument LOD as GSVs include multiplication of values.*
- *Characteristic carbon dioxide and methane and flow rates are typically the maximum values during the monitoring, although consideration of steady state can be justified if monitoring data and assessment justify these are representative.*

The monitoring identified a spike in flow rates within borehole WS06 of 2.1 l/hr on 1 No. monitoring visit. The monitoring well was installed in natural strata, with no significant methane or carbon dioxide concentrations identified during that monitoring visit. During this visit the groundwater was close to the top of the response zone, which can result in anomalous flow rates due to a pressure differential within the well headworks. The other monitoring visits all identified negligible flow rates.

Sporadic spikes in carbon dioxide above 5% were identified in boreholes WS01, WS06 and WS09. WS01 and WS09 were control positions with response zones in natural strata, however WS06 contained shallow madeground with high perched groundwater (as described above). BS8485 provides clarification that peak concentrations are not thresholds for ground gas assessment, and that consideration of the peak values may result in changes to the ground gas designations, where supported by the conceptual site model. These monitoring wells were not within any defined likely source and considered to represent the variations that occur on sites, with any higher flow rates in WS06 not due to gas generation, such that a designation of gas regime of CS1 would be applied.

Methane above 1% was identified within the former reservoir where the same approach to consider the gas results in the context of the conceptual site model applies. The former reservoir and settling tanks were defined as a historical landfill, infilled with demolition materials, of which some include materials with the potential to degrade (e.g. timber). Given the age since deposition was >40 years the primary phase of gas generation of degradable organic carbon through bacterial action has reduced and residual methane is present. A precautionary gas regime of Characteristic Situation 2 (CS2) would be considered for plots over the former reservoir due to the slightly increased methane over a defined source of gas.

The site is proposed for residential development with small, enclosed spaces and sensitive receptors to the ingress of hazardous ground gas. The development includes pre-development works (detailed in Section 5), including proposals for excavation and removal of any unsuitable materials from the former reservoir/settling tank, reducing the gas generation by these actions. The development will include piled foundations which can generate preferential pathways for gas migration towards the underside of the building. Whilst on the balance of works the gas generation potential will be reduced, precautionary mitigation measures are warranted for the proposed plots over the reservoir/settling tanks.

The precautionary mitigation measures would be determined as CS2 gas mitigation measures for plots over the former reservoir/hold tanks. Based upon the current development layout the plots proposed for mitigation are Plots 52 to 76, as recorded on the build phase remediation plan in Appendix 1.

Gas mitigation details are provided in Appendix 1, with membrane specification and ventilation calculations in Appendix 5. The design justification (design report) is included in Section 5.9 and verification plan/strategy in Section 5.11

4.8 Conclusions

The gas monitoring data and conceptual model define there elevated concentrations of methane from the former reservoir/holding tank areas, where a precautionary Characteristic Situation 2 (CS2) gas regime with associated mitigation designs is considered for the sensitive end use. Other areas with slightly elevated carbon dioxide and flow rates influenced by water are considered as a Characteristic Situation 1 (CS1) gas regime where no gas mitigation measures are proposed.

The proposed buildings are intended to be constructed with driven concrete piled foundations (determined by Coopers). The pathways for gas migration through the precast concrete are relatively low, although pile whip can result in void space migration in the areas adjacent to the pile. The precautionary CS2 mitigation measures would be suitable for this intended foundation type. If changes to the proposed foundations increased the preferential pathway for gas migration under the building (e.g. vibro stone columns) this would require prior assessment and approval by Coopers.

The design and justification of the gas mitigation measures specific to the proposed construction is included in Section 5.9. Independent verification of the installation will be required, detailed in Section 5.11.

5. Remediation Proposals

5.1 Summary

The phases of investigations have identified areas of contaminated soils and hazardous ground gas specific to parts of the site. The proposed remediation will be primarily undertaken within the development phase, with works undertaken to remove the source of contaminants or break the exposure pathway. Predevelopment works will be required to remove remnant substructures to facilitate the development, with regrading of levels relative to the proposed finished levels. The proposed levels include areas to be cut around the former reservoir/tank, where further measures are required to manage and control works in this area due to the presence of ACMs. Further testing is required for the area of the electrical substation, additional testing will be required for imported soils for use during the development. Summary of additional works required are shown in Table 28:

Table 28: Additional works relating to testing, assessments, remediation, mitigation and management.

Item	Requirements	Stage	Plots
A1	Testing of soils following decommissioning of substation	Earthworks	70-77
A2	Management/Removal of ACMs	Earthworks	60-77
B1	Inert cover system in gardens	Build Phase	All
B2	Chemical testing of any imported soils (if required)	Build Phase	All
B3	Verification of gas mitigation measures	Build Phase	52-77
C1	Completion Report	Build Phase	All

5.2 Pre-development Remediation & Enabling Works

Prestart Works.

Identification of services and proposals for decommissioning/abandoning

Live services are recorded on site plan, including below ground telecoms and electricity cables. All requirements for stand offs, and exclusions should be defined and agreed with the developer in advance.

Identification of Invasive Weeds

Previously defined invasive plant species have been recorded within the site. Specialist consultants should advise on requirements for treatment/removal or exclusion zones prior to commencing works.

Establish Condition and Standoff Requirements for land use beyond the site

The site is located adjacent to residential and commercial properties. Prior to commencing works a clear understanding of the formal agreements are required as to the limitations for proposed works in the vicinity of adjacent land use. This must ensure no adverse impacts to buildings, infrastructure, trees or land use beyond the boundary, with cognisance of the proposed end use.

Site Clearance

The site contains surface debris and evidence of potential fly-tipped materials, including potential ACMs. These will require inspection, segregation and suitable disposal off site. No surface/fly-tipped wastes can be deposited on site. Any suspected Asbestos Containing Materials (ACMs) will require separation and disposal under the supervision of a qualified asbestos consultant/contractor and, where required, may need a license or notification with the HSE.

Management of Removal of Substructures and Unsuitable Materials.

The substructures should be removed from the areas of the proposed construction works. The base of the excavation should be surveyed to inform geotechnical assessments for the proposed foundation construction.

All remnant substructures should be removed where practicable, provided removal does not pose a risk of damage to boundary or offsite structures and are located outside of any defined/agreed safe stand off to the adjacent canal and roads. Surveys should be provided of any deep removed structures and these provided to the developer prior to infilling to determine if further excavations to homogenise the depth of infill relative to the development is required.

Any substructures considered by the contractors as not viable for removal and to be potentially left in situ must be agreed with Westchurch Homes in advance and be accurately surveyed for assessments of the geotechnical and geoenvironmental implications prior to backfilling.

The contractors should be cognisant that remnant substructures and former service trenches may form a preferential pathway for migration of mobile contaminants and keep an adequate inspection program to identify if suspected contaminants are present. In the event of identification of suspected previously undisclosed contaminants, the independent geoenvironmental consultant shall be notified to attend site and sample any potential contaminants and seek agreement for appropriate remedial works, if required.

Tank Identification and Removal.

In the event of identification of any suspected below ground fuel storage tanks the works should halt whilst inspection and testing are undertaken. Any liquids will require testing and pumping into a tanker for safe disposal offsite. Where potential explosive gases are present within the tanks these will require specialist contractors to undertake degassing and certification prior to removal. All tank structures and surrounding impacted materials should be removed from site.

Following removal of the tanks and surrounding areas the resultant excavation should have sampling/testing undertaken to determine if further remediation and hotspot removal is required. At the conclusion of remediation the validated void should be surveyed.

Well Treatment

As referenced previously, there is a historical groundwater abstraction well recorded on an early Ordnance Survey map in the southern part of the site. Unless previously decommissioned this can provide a preferential pathway for mobile contaminants to impact deeper aquifers. The contractor will be required to maintain adequate measures to identify any suspected well and decommission this in accordance with EA guidance.

Subject to the size and location of the well a designed reinforced concrete cover may be required to mitigate against potential for future settlement.

Management of Dusts, Asbestos Fibres and ACM removal.

Asbestos identification within madeground:
The madeground within the site has been identified to contain asbestos fibre bundles (amosite and chrysotile), microscopic ACM debris (chrysotile) in the form of insulating material and cement material, and visible fragments of cement sheeting containing chrysotile.

Asbestos Regulations and Classification:

In addition to the normal contaminated land legislation the following regulations and acts apply to asbestos exposure:

- Control of Asbestos Regulations, 2012.
- Health and Safety at Work Act, 1974.
- Construction (Design and Management) Regulations, 2015.
- Management of Health and Safety at Work Regulations, 1999.

The excavation of the soils containing asbestos fibres and Asbestos Containing Materials (ACM's) requires assessments compliant with the Control of Asbestos Regulations (CAR) (2012). Specific guidance on interpretations of asbestos impacted soils are provided within the following publications:

- CIRIA C733, 2014, "*Asbestos in Soils and Madeground*".
- CL:AIRE, 2016. "*Control of Asbestos Regulations 2012 - Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials: Industry guidance.*"
- CIRIA C765, 2017, "*Asbestos in Soil and Made Ground Good Practice Guide.*"

Where asbestos containing soils are classified in accordance with CAR they can fall into three designations:

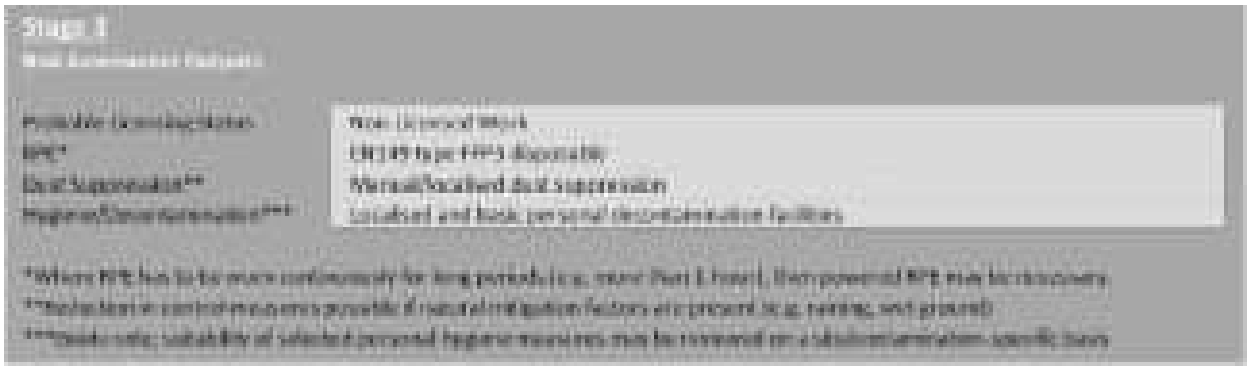
- Licensed Asbestos Works (LAW);
- Notifiable Non-Licensed Works (NNLW);
- Non-Licensed Works (NLW);

CL:AIRE CAR-SOIL (2016) provides flow charts, and discussion through each stage of the assessment to assist in the designation, with accompanying qualitative decision support tool to assist in the determination and requirements. The initial stage of the assessment defines where an Asbestos Containing Soils is defined as any ACM under CAR, which excludes trace asbestos content compliant with HSE L143.

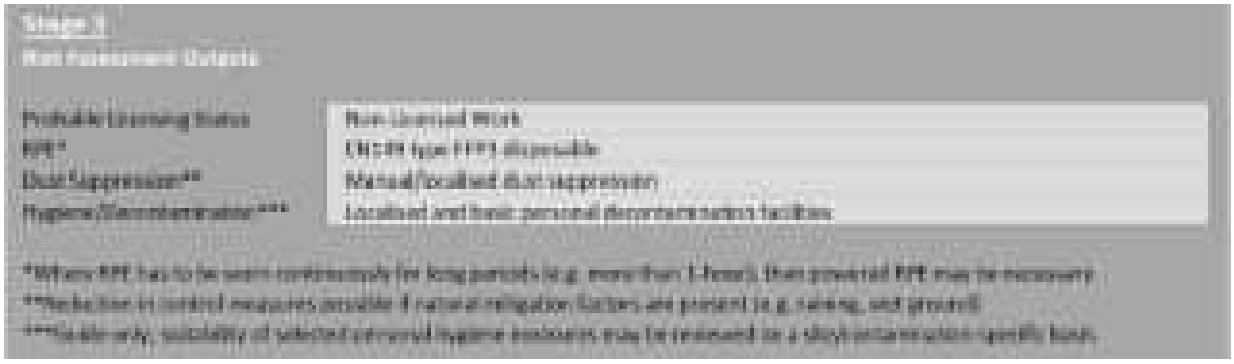
The identification of asbestos was primarily in the form of fibre bundles of chrysotile and amosite, with quantification at 0.002% to 0.004%. The amount of asbestos in soils samples containing ACM debris were identified to contain 0.035% although the percentage is dependent on the size/mass of the ACM inclusion relative to the soil sample.

The CLAIRE CAR-SOIL decision support tool print sheets which are included in Appendix 6, are summarised as follows:

General Madeground with Fibre bundles: Percentage of host material (max. asbestos proportional to percentage of samples containing fibres) calculated at 0.004%. Hazard defined as Medium Risk, Exposure defined as a Low Risk designation. Combined Hazard Rating – **MEDIUM RISK**, works classed as **Non-Licensed**, as referenced below:



General Madeground with ACM debris: Percentage of host material (mean asbestos proportional to percentage of samples containing ACM debris) calculated at 0.035%. Hazard and Exposure are both defined as a low risk designation. Combined Hazard Rating – **LOW RISK**, works classed as **Non-Licensed**, as referenced below:



Whilst the generic tools are an aid to site specific assessments (not replacing them) these would generally fit the considerations for asbestos containing soils on this site. Controls would be considered to ensure the non-visible fibres/debris does not cause an unacceptable level of risk to workers during the excavations to comply with CAR.

As discussed within CIRIA C733 the risks from asbestos exposure are primarily via inhalation of fibres (although consideration of secondary exposure can be significant on higher risk sites), which must become airborne to be inhaled. The release of airborne asbestos fibres from a soil decreases exponentially with increase in moisture content, such that at 20% moisture content there are no significant airborne fibres from soil disturbance. The most effective means of minimising asbestos release is to therefore dampen soils during dry periods of weather. It is recommended that verification monitoring is to be completed to ensure the mitigation works were sufficient (discussed below).

Asbestos Validation Requirements – Air Monitoring

As discussed above, during earthworks which involve disturbance of madeground there will be requirements for local/manual dust suppression and RPE during periods of dry weather with monitoring to confirm no significant airborne fibres are released.

It is recommended therefore that air monitoring by a specialist asbestos consultant is undertaken prior to starting works to establish a background level. It is noted that the air monitoring accredited limit of detection of 0.01f/ml is not a threshold for safe levels or where civil liberties are not exceeded. The monitoring should be undertaken to obtain the lowest concentrations possible (longer pumping duration/volumes) to be used as a baseline to establish potential risks. This requires cognisance of the calculation of fibre levels (not just Lowest Order of Detection - LOD).

The verification approach for asbestos air monitoring is reflective of the site specific risk, factoring in the source, type of works, duration of works, and the persons potentially exposed. These works have disclosed the site to be of relatively low asbestos risk, with procedures below provided for the initial works, and should be revised if higher fibre concentrations or large amounts of ACMs are identified during the works.

The initial monitoring proposals can be reduced, subject to the confidence in the works and findings of the monitoring results. The tiered approach is subject to the results being provided to the independent verification consultant and agreement that it is appropriate to reduce the monitoring frequency. The tiers of monitoring are detailed in Table 29, below, and will be refined once the remediation program has been determined.

Table 29: Site Specific Tiered Approach to Air Monitoring

Tier	Monitoring Frequency	Monitoring Duration	Monitoring Locations and Requirements
0	Once	Prior to any soil working.	Site boundary – 2 No. upwind, and 2 No. downwind positions. All monitoring to utilise maximum feasible sample volumes to characterise background site conditions. Prevalent wind direction to be recorded.
1	Twice Weekly	During all excavations and soil movements associated with zones of asbestos impacted topsoil.	Adjacent working areas (downwind), site boundary. Prevalent wind direction to be recorded.

Notes to Table 29:
1) Monitoring frequency and duration is subject to revision dependant upon the duration, and findings of air monitoring. Prior to reducing monitoring frequency the results of the asbestos air monitoring must be provided to Coopers to confirm appropriate.

The results of the air monitoring must be provided to the verification consultants within 48 hours of the completion of the monitoring to ensure the results can be appraised and records verified for approval. The results will be compared with background levels to ascertain if a significant increase in fibre release has occurred (not just LOD).

Liability associated with disturbing soils containing asbestos are complex with guidance highlighting that air monitoring following HSG248 (with optical microscopy) may not be sufficient to remove liabilities in which exceedances of background levels can be considered as having increased the level of risks. Whilst studies are ongoing there are very few sources of current background urban air concentrations to correlate against. To determine this a wide range program of background monitoring would be needed including Scanning Electron Microscopy / Transmission Electron Microscopy (SEM/TEM) testing. Discussions with laboratories have confirmed that there are insufficient facilities to deal with SEM/TEM testing for every site where asbestos is in the ground (as a common contaminant on all sites). Irrespective these tests can't be completed in real time and therefore can't be used as a real time guide to the remediation works and mitigation complete. Air monitoring to lower levels of detection can be completed but from Coopers previous experience these can't reach the quoted levels needed to achieve background levels with any great reliability (unless background levels are relatively high). This situation has been discussed within the guidance without any realistic means of resolution. It is understood that the Asbestos Working Group of SOBRA are working on this as active research as it is hoped that a satisfactory way of assessments and practical monitoring can be provided. In the meantime, the principals of the science behind asbestos air fibre mitigation are the most appropriate and we therefore consider air monitoring to be supportive to demonstrate this, rather than outright proof that no liabilities are present.

Earthworks/Remediation Contractor Requirements:

The contractor is responsible for all forms of dust mitigation, controls, and management of the verification of asbestos. Any advice or recommendations made by the appointed asbestos consultants should be followed and documented. Should monitoring results disclose fibre concentrations approaching the HSE clearance indicator of 0.01f/ml or significantly above background levels, then the remediation contractor should change the procedures for asbestos airborne fibre mitigation measures (such as increased soaking of soils and misting systems) and procedures documented. Where fibre concentrations above the clearance indicator level of 0.01f/ml are present all madeground processing works should cease and the asbestos monitoring consultants are to meet with Coopers, remediation contractors and the developer to assess and revise the mitigation procedures and monitoring requirements.

The contractor must keep an accurate record of soil working on this site. This should include a daily record of soil movements, specifically listing which areas of topsoil impacted by asbestos are subject to excavation, processing and placement. Each monitoring position should be given a daily reference number and marked on a plan in relation to the specific works that day, along with prevalent wind direction.

Asbestos Monitoring Consultant Requirements:

The accredited asbestos monitoring consultants are responsible for recording the monitoring data, technical advice and feedback to the remediation contractor. The monitoring data should include all relevant information to allow correlation of monitoring data, including locations of monitoring in relation to an accurate site plan, weather conditions, sample volumes, fibre count, graticule diameter, number of fields examined, exposed filter diameter, and fibre concentrations.

The air monitoring should work to the minimum detection limits defined within HSG248. For initial monitoring to establish background levels the appointed contractor should attempt to increase sample volumes to as large as reasonably practicable to enable lower fibre concentrations to be appraised.

ACM Removal/Disposal:

The contractor must maintain adequate supervision of the works to disclose the potential presence of ACMs within the madeground. Where potential ACMs are present these will require hand picking and safe removal from site under the supervision of specialist asbestos consultants/contractors with adequate documentation to confirm removal. The asbestos consultants may identify additional measures to be required for the safe segregation and removal and these measures which should be recorded for reference purposes.

All ACM material removed from site should be included in waste transfer documents, detailing the location for intended disposal.

Deep Excavations

It is assumed that the predevelopment earthworks will include deep excavations and adequate methods and safety measures are required to mitigate against destabilising the ground surrounding the site and uncontrolled collapse impacting persons or equipment within the site. The contractor should have adequate management and access to geotechnical advisors to determine any necessary temporary works solutions.

Management and controls to protect surface waters

The site is located adjacent to the terminus of Bealey's Goit. The contractor should determine standoffs and measures to maintain the integrity of the water body and prevent pollution. Specialist care is required to relation to surface runoff from the site, and adequate measures are needed to prevent this entering Bealey's Goit.

Management and controls to protect groundwater

The bedrock and alluvium drift strata are designated as a Secondary A aquifer with the potential for a historical groundwater abstraction well in the south of the site. The contractor will be required to decommission any groundwater abstraction wells (if present) in accordance with EA guidance. If areas of mobile contaminants are identified these are likely to require removal.

Identification of Mobile/Volatile Contaminants

Coopers have not identified the presence of distinct plumes of volatile/mobile contaminants, with localised soils in the area of the former reservoir/settling tanks. In the event that visual/olfactory contaminants are present these should be reported to the geo-environmental consultants for site attendance, classification and testing. The criteria for reuse are provided within Section 6, although no soils with distinct odours should be present within the upper 2m due to the potential to cause nuisance to the future end users.

Hotspot Removal and Validation.

Excavation of any hotspots require supervision by the geoenvironmental consultants. Excavated soils should be stored on bunded impermeable membranes whilst testing is undertaken, prior to either treatment or disposal. The excavation should be inspected and tested to confirm successful removal. Validation testing should be undertaken with sample locations recorded in relation to a survey of the excavations. Testing is required on the sides of the excavation at 10m spacing (min. two samples per face), and the base at 10m^2 area (min 2 samples).)

Testing of Soil for Reuse.

The geotechnical and chemical testing of soils intended for reuse will be subject to the material type, locations of intended use and if imported or site derived. Confirmation of the suitability of the general bulk filling works is required to confirm the soil nature is as previously disclosed. The chemical testing frequency and criteria for use is specified in Section 5.7.

5.3 Outline Earthworks Specification

The excavations to remove remnant substructures and unsuitable materials will require backfilling with suitable materials placement to an agreed specification. The depth of infill requires careful material control and placement to mitigate against adverse settlement. The placement requires consideration of the proposals for foundation construction which include piled foundations, where over compaction or placement of unsuitable materials can limit the proposed construction.

It is recommended that Westchurch Homes hold discussions with the consultants and contractors regarding the following items:

- Material Specification and Performance Criteria for earthworks in areas of the proposed buildings, roads, parking/driveways and gardens/landscaping.

- Discussions on the methods for infilling and determining if uniform or variable placement specification should be completed for different areas of the site (e.g. if roads and plots will be placed to different criteria).
- The requirements for provision of pile mats and suitable underlying ground for the intended piling rig.
- Proposed regrade levels.
- Considerations of the heterogeneity of the materials, and the requirements for material testing at predetermined frequencies, material classification, plant specification for placement, and layer thickness/compaction methods.

THIS IS NOT A DETAILED STRATEGY OR SPECIFICATION AND HAS BEEN PRODUCED AS A GUIDE TO INFORM THE DEVELOPER OF THE CONSIDERATIONS IN RELATION TO EARTHWORKS.

5.4 Remediation Thresholds and Criteria for Reuse

The Coopers site investigation report included thresholds for remediation specific to the intended end use. Tier 1 thresholds for metals, PAH-16, and TPH contaminants are considered applicable for soils intended for reuse within the growing medium of residential gardens/landscaping, a copy of which is contained in Appendix 7.

Specific thresholds were derived for the following forms of contaminants within garden growing mediums, referenced within Section 3 of this report, summarised in Table 30

Table 30: Summary of PCB Human Health Thresholds for End Use

	Residential Gardens (mg/kg)
Perfluorooctanesulfonate (PFOS)	13.0
Perfluoro-n-octanoic acid (PFOA)	7.6

No acceptable amounts of asbestos are permitted within garden/landscaping growing mediums.

5.5 Build Phase Garden/Landscaping - Remediation

The contaminants identified were considered to pose a potential significant risk to human health where chronic exposure to soils occur within garden and landscaping growing mediums. The contamination encountered was present in the shallow madeground across the site, and the contaminants are therefore likely to be site-wide based on the nature of the current/former land use and the ground conditions encountered during the phases of site investigation.

The depths of garden activities and use of the garden area has to be reasonable. It is not feasible to carry out risk assessments regarding extreme land use; therefore, it has been assumed that the majority of domestic gardening occurs within the upper 0.6m of soil. The predominant depth of regular excavation will be up to 0.2m due to the planting of annual and biannual bedding plants with shallow weeding. It is anticipated that the deeper planting will be associated with the planting of deep potted shrubs, and is generally restricted to few occasions over several years.

It is anticipated that the majority of the gardens will comprise lawn and ornamental bedding. Residents may utilise their rear garden as allotments and grow vegetables. It is anticipated that the deepest cropping vegetable will be the potato and generally crops to depths of up to 0.5m (it should be noted that potatoes are generally over dug where by during the growth of the crop soil is piled onto the plant). It is therefore considered that the initial 0.6m depth of garden will be the threshold zone for risk to the resident for non-mobile contaminants. This assessment concurs with the findings of BRE Report 465, Cover Systems for Land Regeneration. It is highly unlikely that the resident will excavate to depths in excess of 0.6m. If this does occur, it will be on the basis of once or possibly twice a year for a very small period of time.

It is highly unlikely that the residents will be planting vegetables for consumption within the front gardens/borders of the houses, and the development layout shows the frontages are primarily parking bays and borders. It should be noted that it is unlikely that clauses will be present within the deeds to restrict this practice; however, we have to assume reasonable practices within these areas of the site. It is traditional to plant lawn and bedding plants, or pave the entire area of the front garden depending upon the resident's proficiency regarding gardening. It is generally assumed that the aesthetic value of having a vegetable patch in the front garden is significantly low, and produce may be lost by theft from passers-by. The potential for human health risk regarding the consumption of vegetables grown in these areas is hence negligible and should not be considered. The assumed typical planting within the plot frontages are therefore designated as 0.45m.

The transporting of soils into the property also poses a risk to the residents. The soils caked on shoes and adhered to clothing due to contact with soils will dry, desiccate and form dust in the houses.

Any excavations associated with the constructing of extensions to the property should only be completed after consulting the Planning Department of Bury Council.

Children may come into contact with soils during unsupervised playtime through direct ingestion and during supervised playtime through inadvertent consumption of soils from toys, which have come into contact with soils. When very young children excavate in soils, it is anticipated the maximum depth will be in the order of 0.2m to 0.3m. It is anticipated that parents will not leave young children unsupervised in garden areas for any significant period of time.

Based upon the conceptual model the proposed reasonable use of the garden growing medium is restricted to 0.6m, and frontages as 0.45m, with consideration of contaminants within this zone requiring remedial actions, discussed in the following sections.

To protect the future residents from exposure to contaminants the madeground can be excavated from the 0.6m growing medium in rear gardens and 0.45m in frontages for replacement with inert subsoil and topsoil. Subject to the proposals for cutting and filling as part of regrading site levels the madeground depth within parts of the site the natural strata may be less than 0.6m deep, where the inert cover would in places remove the entirety of the madeground. Where the madeground is removed prior to the 0.6m inert cover depth the proposed gardens would be as demonstrated in Figure 22. Where madeground is still present at the base of the 0.6m cover layer a high tensile strength geotextile will be placed at the base to prevent inadvertent exposure to the underlying contaminants or cross-mixing. The cover system for the proposed gardens would be as demonstrated in Figure 23.

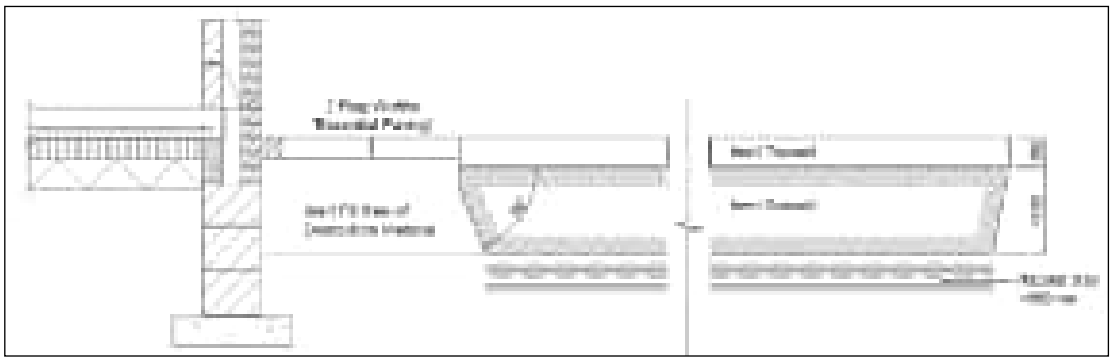


Figure 22: Inert Cover within Proposed Gardens where Contaminants are <600mm in Depth

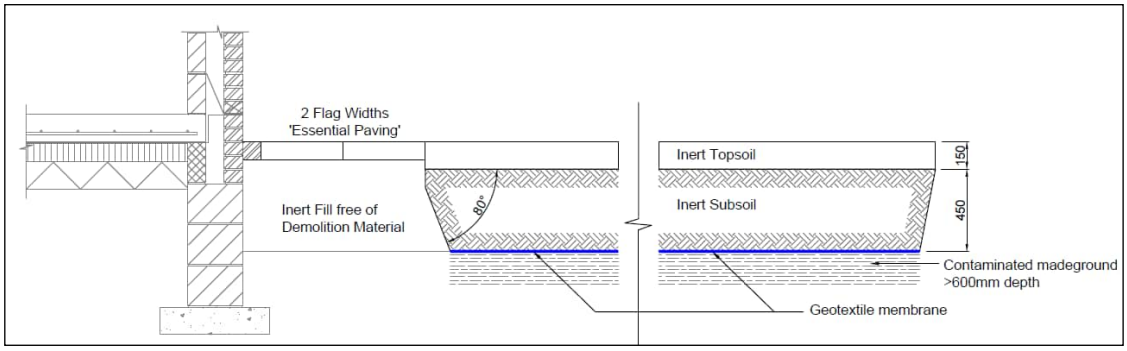


Figure 23: Inert Cover within Proposed Gardens where Contaminants are >600mm in Depth

It is likely that the inert subsoil and topsoil to be placed within the gardens will be inert natural soils imported to site. Verification testing of any soils intended for gardens are required to be considered appropriate to ensure it has not been cross-mixed during generation. Further discussions of soil testing are provided in Section 5.7.

Following placement of the inert subsoil and topsoil the depth of the inert cover will be confirmed via excavation of validation holes, to the full cover depth or natural strata. The validation holes should prove the presence of the geotextile or natural strata at the base of the validation holes. The validation strategy for verification of inert cover systems within gardens is provided in Section 5.6.

5.6 Build Phase Garden/Landscaping - Validation

The remediation for the removal/capping of the madeground from the proposed gardens and landscaping in all parts of the site will be subject to validation. Where the individual gardens are proposed for placement of an inert cover/removal of contaminated soil to natural, the inert cover depth and geotextile/natural strata at the base should be verified via validation holes. The validation of the placement of inert cover growing mediums will consist of:

Upon completion of the gardens to finished level, Coopers are to attend site to excavate validation holes to prove cover thickness of the growing medium. This will be undertaken on a spacing as follows (following guidance by Bury Council):

- 1 No. validation hole per completed 1 No. rear gardens.
- 1 No. validation hole per completed 1 No. front gardens/front landscaped borders.
- Validation holes within public open space on 25m grid.

The procedures for the validation works are as follows:

- Upon completion of gardens/landscaping/POS to finished level, Coopers are to attend site to excavate validation holes to prove cover thickness of the growing medium.

- The validation holes must not be pre-dug and be in locations of Coopers choosing. Placement of pipes and removal to validate depths are not considered as independent validation.
- Photographic evidence to demonstrate the location of the validation hole, the nature of the inert material and the depth of cover (refer to Photographs 1 to 4).
- Appropriate chemical testing certificates will be required to verify suitability for use.
- Upon completion of the validation Coopers will produce a validation completion report to include all photographic records and verification documents required for statutory approvals.




Photographs 1 and 2: Examples of validation photographs demonstrating validation hole location and soils forming inert cover.




Photographs 3 and 4: Examples of validation photographs demonstrating inert cover depth and geotextile.

Upon completion of the development a validation completion report will be produced confirming the remediation requirements have been achieved including testing of all soils.

5.7 Build Phase Garden/Landscaping – Soil Testing

The subsoils and topsoil intended for reuse within the proposed gardens should be stockpiled for testing prior to placement. It is anticipated that the majority or all of the soils for placement within the gardens will be inert natural strata and topsoil from the site. The soils testing during the site investigation and conceptual model indicate no significant risk of contaminants within these strata, unless accidentally cross-mixed during placement.

Should imported soils be required for use within the proposed gardens these will require testing prior to use, with suites and quotas subject to provenance. The source of any imported soils and indicative testing should be provided to Coopers in advance, to determine if appropriate for delivery to site for testing.

Once soils are delivered to site or generated from site and stockpiled the materials should be segregated by source and end use for testing by Coopers. Sample frequencies are provided within Table 31 (below), based upon Bury Council guidance, although all imported soils (including for general filling) will require testing.

Table 31: Sample testing quota and suites by source for reuse in garden growing medium

Strata Type	Origin	Sample quote	Testing Suite
Subsoil	Brownfield / Manufactured / Site Won	1:100m^3 (min. 3 samples)	Standard Metals, PAH-16, TPH-CWG, pH, TOC, and asbestos (other analysis may be required if unverified or specific risks, e.g. PCB, VOC, SVOC suites)
	Greenfield	1:250m^3 (min. 3 samples)	Standard Metals, PAH-16, pH, TOC, and asbestos
Topsoil	Brownfield / Manufactured / Site Won	1:50m^3 (min. 6 samples)	Standard Metals, PAH-16, TPH-CWG, pH, TOC, and asbestos (other analysis may be required if unverified or specific risks, e.g. PCB, VOC, SVOC suites)
	Greenfield	1:250m^3 (min. 3 samples)	Standard Metals, PAH-16, pH, TOC, and asbestos
Imported Crushed Brick/Concrete (if present within inert cover depths)	N/A	1:1000m^3 (min. 3 samples)	Standard Metals, PAH-16, pH, TOC, and asbestos

The criteria for acceptance of soils for use are defined in Coopers Tier 1 thresholds, enclosed to this document.

5.8 Potable Water Supply Pipelines

The appended documents include a UU pipeline risk assessment (Appendix 6) which defines the requirement for source removal to permit Polyethylene pipes within the proposed pipelines based upon ground investigation results. Subject to regrading levels and predevelopment works further testing may redefine the risks.

5.9 Build Phase Gas Mitigation Designs

Introduction

The ground gas assessment has identified areas of residual risk due within the former reservoir/settling tanks which require designs to protect the future residents from ingress of hazardous ground gas into enclosed spaces.

Typical construction details for the gas protection system are included within Appendix 1. The Design System is summarised as below:

Floor Slab Construction:	- Precast Suspended Floor with Subfloor Void (Block and Beam).
Superstructure Build:	Timber Frame
Design Criteria:	Characteristic Situation 2
Coopers Drawing No.	- 8353-LRHHRH-CS2-PC-G-01
Designer:	B. W. Hill, *BSc (Hons), CSci, MIEnvSc, FGS* *Member of British Verification Council – Ground Gas Protection Systems.*

Ground Gas Summary

The refined conceptual model, based upon the gas monitoring, has indicated that there are elevated concentrations of methane associated with the former reservoirs and settling tanks to the paper mill. Remedial works are considered likely to reduce some of the residual risks, however protective measures for the proposed buildings to the equivalent of Characteristic Situation 2 are proposed for residual risk.

Design Summary/Overview

This design report follows the recommended approaches within BS8485:2015+A1:2019 and referenced papers. The ground gas assessments were provided by Coopers (Section 4). The reporting and specification of the gas mitigation measures covered by this report is outlined in Figure 24. The proposals for verification of the gas mitigation measures by Coopers are contained within Section 5.10 and 5.11.

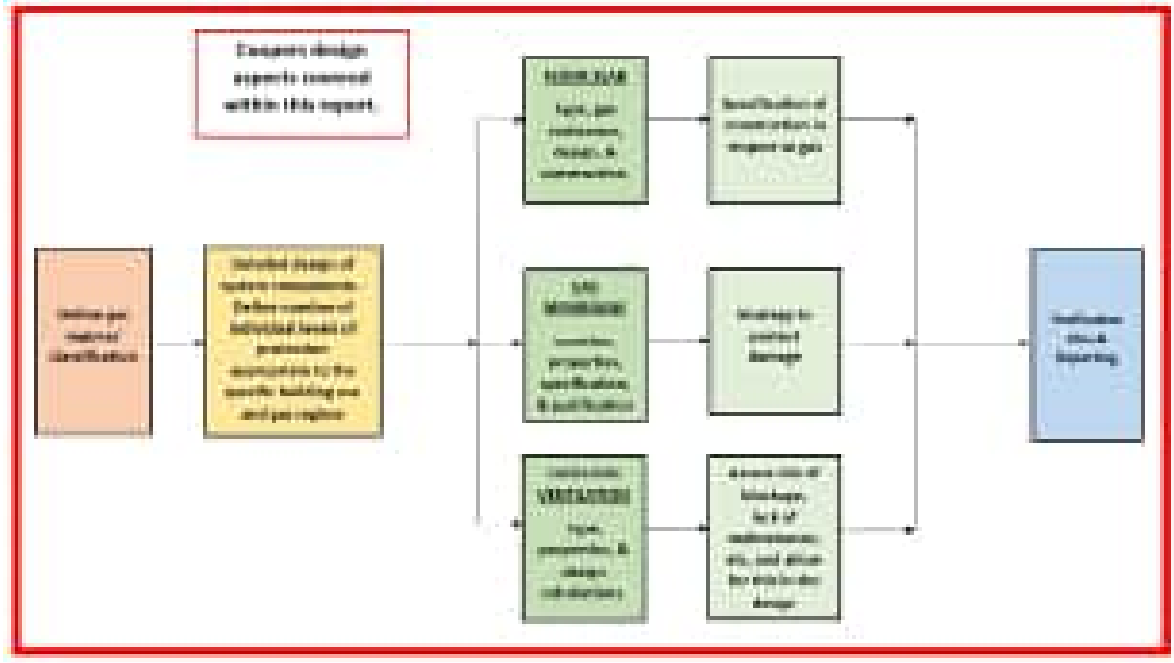


Figure 24: Gas design process

Design Documents

The following documents are contained in Appendices 1, Drawings to this design report:

- Coopers Drawing No. 8353-LRHHRH-CS2-PC-G-01– Characteristic Situation 2 (CS2) Gas Mitigation Measures for Timber Frame Housing and Precast (Block and Beam) Floor with Ventilated Subfloor Void.
- Coopers Gas Mitigation Ventilation Calculation – Print sheets.
- Visqueen Product Specifications – HC Blok (product types may change prior to commencement).

Design Standards/Guidance

The site-specific gas mitigation detail is provided on Coopers Drawing No. 8353-LRHHRH-CS2-PC-G-01 – *Typical Gas Precaution Detail for Characteristic Situation 2 (CS2) Gas Mitigation Measures for Timber Frame Housing and Precast (Block and Beam) Floor with Ventilated Subfloor Void* (Appendix 5).

The designs of gas mitigation measures are commonly more complex than simple 2 dimension sections through buildings, with consideration of the detailing through wall cavities, edges, joints, service penetrations and complex 3D shapes such as corners, door thresholds and transitions to internal garages. Coopers have provided 3D construction guides to demonstrate acceptable methods of the common complex areas of the designs, alternative preformed or construction options are available, however we would advocate that any variation to Coopers designs should be approved prior to construction.

The gas mitigation measures are defined as Characteristic Situation 2 (CS2) following the BS8485 system. The buildings are timber frame construction, with no internal garages. The proposed buildings are intended for domestic end use, and are classified as "Type A" buildings within BS8485, as follows:

Type A building*: private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises.*

Under the BS8485 points system, for Type A buildings, a design score of 3.5 points is required for a CS2 regime, as per Section 7.1, Table 4, within the standards. The points achieved are via the following:

- Structural Barrier (Floor Slab Construction).
- Gas Resistant Membrane.
- Ventilation Protection Measures.

The points achieved for each component are provided in Table 32 (below), followed by a discussion of each component within the subsequent sections of this report.

Table 32: Summary of Gas Mitigation Designs

Design Component	Type Proposed	Points Allocations
Structural Barrier (Floor Slab Construction)	Precast suspended segmental floor	0 points
Gas Resistant Membrane	Proprietary Gas Membrane with Independent Validation	2 points
Ventilation Protection Measures	Passive sub floor dispersal with very good performance	2.5 points
	TOTAL	4.5 points

Notes to Table 32:
The points allocation above are discussed in relation to each component within the subsequent sections, with an explanation. The points system has not been used to replace the design justification.

Gas Mitigation Design – Characteristic Situation 2 – Structural Barrier

BS8485:2015+A1:2019, Annex A provides informative commentary on floor slab construction in relation to gas ingress and risk values. The developer is proposing the construction of a precast suspended floor slab (block and beam) with a non-structural, reinforced concrete screed finish. Precast suspended floor slabs provide significantly less resistance to gas ingress compared with cast in situ reinforced concrete floors slabs and rafts due to the gaps at the boundary between individual components allowing gas ingress. The reinforced concrete screed will offer some effectiveness to limit gas ingress, however this is relatively thin (subject to design, circa 75mm), non-structural where micro crack widths will allow more gas ingress in comparison to other floor slabs. BS8485 defines the overall very high risk for gas ingress to the proposed buildings through these types of floor slab construction.

Given the design system for the proposed floor slabs the structural barrier is determined as being insufficient to contribute towards the allocated points for gas mitigation.

Gas Mitigation Design – Characteristic Situation 2 – Gas Resistant Membrane

The developer's preferences for construction of the gas membrane is to locate this beneath the insulation to provide separation and protection from the overlying concrete screed. The membrane is to step over party walls and internal faces of party walls for sealing beneath the sole plates of the timber frame (to mitigate slip surfaces). The membrane in this location will be punctured by fixing of the timber frame to the sole plates where specified tapes are required to seal the punctures.

BS8485:2015+A1:2019, Annex C provides informative commentary on the choice and selection of gas resistant membranes on a site specific basis, including the properties of the materials, the reliance on the membrane within the design system, the robustness of the materials to survive construction, the installation methods and the requirements for verification.

The site is designated as a Characteristic Situation 2 (lower gas regime) risk with membrane protection for methane gas ingress. The membrane installation will require taped or welded jointing and verification proposals will be required to include inspection of the membrane.

As previously referenced, the location of the gas membrane conflicts with timber frame construction on external and party walls. The proposed construction location results in the gas membrane being in the location of the fixing sole plates for the timber frame which have fixing bolts which penetrate the gas membrane. In these locations a butyl based double sided tape is required to seal the gas membrane to the bolts. The gas membrane requires separation from the cavity tray on the external wall for moisture release pathways, which will necessitate forming the gas membrane around the cranked vents prior to dropping a single course. The enclosed Coopers gas detail, drawing No. 8353-LRHHRH-CS2-PC-VC-G-01 (Appendix 1) shows a representation of the gas membrane position in 3D.

The gas membrane is not the primary form of protection within the designs (which is the subfloor ventilation layer, discussed in sections below), however should the ventilation layer become blocked in the future, the floor slab offers little resistance to gas ingress and the membrane would need to be sufficient to mitigate gas ingress to the enclosed spaces of the building.

The selected gas membrane for this site consists of a Visqueen NF400, which has a BBA Agrément Certificate, with a mass of >370g/m^2. The membrane has minimum thickness of 0.4mm, meeting the design requirements for this site, and following advice within BS8485. The membrane can be taped or welded at the installation contractor's discretion. All ancillary products and tapes must be from the membrane manufacturer to ensure compatibility for adequate sealing. All sections of formed corners, returns, service entry pipes which are not preformed will require use of detailing tape which includes an aluminium core to mitigate gas transmission.

The membrane is considered to be sufficiently robust to limit methane ingress, of sufficient mass for welding (>370g/m^2) and taped application. The position above the precast floor slab and beneath a screed will not pose high risk of stress from construction, with testing confirming tensile strength, elongation and nail tear resistance following BS EN 12311 with values provided stating these were considered to pass with no significant deterioration.

To achieve the requirements for designation of 2 points within BS8485 independent verification is required in accordance with CIRIA C735.

Gas Mitigation Design – Sub Floor Ventilation

BS8485:2015+A1:2019, Annex B provides informative commentary on performance of different forms of subfloor ventilation, largely based upon the research by Department of the Environment, Transport and the Regions (DETR) Partners in Technology (PiT) (1997) *"Passive Venting of Soil Gases Beneath Buildings Research Report – Volume 1, Guide for Design*" and "*Volume 2, Computational Fluid Dynamics Modelling: Example Output*". Models were based upon limited parameters for small (5m by 5m) and large buildings (30m width) with recommendations for designs based upon the results.

The Coopers referenced typical gas mitigation construction detail includes a minimum 150mm subfloor void, with side ventilation including standard cranked venting/air bricks at 2m centres, and internal walls containing connecting pipe work of 75mm at 1m centres. The subsequent sections detail the calculations and justification for the appropriate designs.

Coopers Designs include

- 150mm sub floor void (min.).
- Cranked external venting to air bricks at 2m spacing on at least 3 sides (frontages commonly not possible where level access is required).
- Internal wall venting pipes of 75mm diameter at 1m spacing.

Venting Performance

- Periscopic ventilation = 6600mm^2 (typical ventilation per periscopic vent, subject to product types)
- Internal cross ventilation connection = 4417.86mm^2 (75mm diameter pipe, area is πr^2)

Ventilation Designs and Calculations

The appended Coopers ventilation calculations (Appendix 5) provides further commentary of the design system and ventilation performance and the suitability of the ventilation proposals for the gas regime.

5.10 Build Phase Gas Mitigation Verification Plan

Introduction

CIRIA C735 details the verification plan should include a brief summary of the ground gas regime, including description of the types of gas/vapour identified, the nature/levels of risk, and the remediation objectives with respect to the gas regime. Further details are provided within C735 that the verification plan should consider the complexity of the designs, the number of plots/buildings, and the installation workforce in relation to the gas regime, summarised in Table 33.

Table 33 – Risk Based Approach to Determine Gas Inspection Programme

Consideration	Assessment Criteria
Gas Regime	Risk based upon Characteristic Situation and levels of protection.
Complexity of Designs	Based upon number of penetrations, building shape, steps in slab levels, etc.
Number of Plots/Buildings	The number of plots; where greater numbers are considered a high risk of variation and build duration.
Installation workforce	NVQ Level 2 qualification or general ground works contractor.

The ground gas regime is discussed in Section 4 of this report.

The buildings are standard residential houses, without basements, lift shafts, or columns, which are relatively simple for construction. There are 3 No. mews buildings proposed for protection such that the risks of incorrect installation are significant but does not allow for variations in verification if consistent personnel are undertaking the installation (as confidence in the installers will not be achieved over the short duration of construction time). The installation workforce is unknown at this stage but are considered likely to be non-specialist installers (ground works contractors) for plots with CS2 protection measures.

5.11 Inspection Regime and Photographs.

As detailed within CIRIA C735, the verification plan should define the following items in respect of the proposed inspection regime:

- Consideration of the need for, and scope of inspection/verification.
- Who will carry out the inspections (in terms of competence and independence).
- Over what period and at what frequency these inspections will take place.
- What elements of the gas protection system will be inspected.
- How the inspections will be recorded and reported (written records, pro forma, photographs, drawings, etc.

Coopers consider that independent inspections (not by the installer/supplier) should be undertaken to confirm the gas mitigation measures were installed in accordance with the designs, which are likely to be required by Bury Council for all plots.

The inspections are to be undertaken by Coopers, as independent of all installers/suppliers, and members of the British Verification Council – Ground Gas Protection Systems (BVC). Coopers have provided guidance on the inspection of ground gas mitigation measures within publications (CIEH). Further experience and details of the verifiers will be provided as part of the verification reporting.

The items to be inspected by Coopers are outlined in Table 34 (below). It is considered that the inspections would be required for the gas membrane installation stage for all plots, as this is when most liable to failures occurring (defects in sealants, sealing to service entry points, corners, damage, etc). Periodic inspection of the subfloor ventilation layers is to vary based upon the gas regime (less sensitive to damage or incorrect application).

Table 34 - Gas Mitigation Measures Inspection Criteria

Inspection Criteria	Detailed Inspection Notes
1. Product Verification	*Confirmation that suitable products have been installed to consist of photographs of product types (manufacturer/name), labels on packaging and delivery tickets. Gas Membrane **AND** tapes*
2. General Condition	*The membrane is to be inspected to ensure there are no tears, punctures or rips. Take photographs of full plot status for each plot being inspected.*
3. Membrane Subgrade	*Commonly either insulation or sand blinding, check no gravel or other items with the potential to puncture when weight is applied.*
4. Jointing/Welds	*Checking the overlaps between membranes are correctly sealed, with correct tapes with sufficient overlaps or a good quality heat sealed weld if this method being utilised. Take photographs of at least one jointing section per plot being inspected to show sufficient overlap and use of tapes.*
5. Creases/folds	*Care must be taken to ensure that creases & folds within the membrane do not span over the jointing sections (bridging) as this provides an unacceptable gas pathway.*
6. Service Entry Points	*Verification of the presence of preformed tophats sealed to the pipe and membrane. If service entries are constructed using detailing strip or equivalent product then ensure adequate seal is achieved. Ensure installation is carried out in accordance with manufacturers guidance. Take photographs of all tophat installations.*
7. Corner Sections	*Not cut and folded where punctures are present but concealed with tapes. Either formed with Detailing Strip or preformed corner units.*
8. Reinforcement Spacers	*Use of metal spacers/ties with potential to puncture the membrane would only be permitted with protection board.*

Table 34 continued on following page

Table 34…continued - Gas Mitigation Measures Inspection Criteria

Inspection Criteria		Detailed Inspection Notes
9. Membrane Dirt/Debris		*Whilst we appreciate the membranes are constructed on a real-world construction site, the membrane must be free of debris such as stones or mortar that would be liable to damage the membrane when weight is applied through subsequent construction. Whilst mud is inevitable on the membrane it must be kept to a minimal level to allow the membrane to be inspected and defects disclosed. If the membrane is not visible due to the amount of mud then it will be failed and need to be cleaned for reinspection.*
10. Puncture Repairs		*Punctures are relatively common and occasional damage with proper repair is not considered to be indicative of defective workmanship. All punctures require a patch that spans the damaged section by at least 150mm on each side.*
11. Party Walls		*The use of temporary blockwork for shuttering commonly involves placing the gas membrane above the blocks for the initial concrete pour. When this is removed we advocate placing the membrane back to run flat through the party wall to allow this to be sealed and inspected on the subsequent plot. Alternative approaches are available but the membrane must not be cut and patched after the second plot is cast (due to additional damage, difficult repairs, and lack of inspection at this stage). Also if robust details adopted the membrane will need to drop through the cavity.*
12. Door Thresholds		*Care is required in relation to gas membrane positions through the wall cavity to the external wall around the door thresholds, closing the cavity, and protection beneath any sills. The use of preformed cloaking units and/or detailing strip protection would be recommended.*
13. Wall Cavity Inspection		*Confirming that proprietary gas membrane or gas DPC spans the external walls. Check for rips across cavity. Check for jointing detail of gas resistant DPC or membrane across cavity to main membrane. Take photographs for all plots inspected.*
14. Internal Garage		*One of the most common problems/defects in construction occur for internal garages where the membrane positions need to account for variations in proposed slab level. If internal garage then **phone office** during the visit to confirm the following items:*
a)	**Sloping Floor**	*Check if the developer has sloping garages, if so these are critical to membrane positioning and requires particular attention to membrane positions.*
b)	**Internal Walls**	*If sloping floor then check the membrane transitions at a low level through the internal wall to the plot to ensure it will not be exposed above the frontage of the sloping garage.*
c)	**External Walls**	*If sloping floor then check the membrane steps up within the external wall cavity of the internal garage to ensure it is not exposed above the fall of the garage.*
d)	**Pillars**	*Check the pillar/garage entrance section for the use of detailed strip to ensure not exposed around the entrance and closure of the cavity – refer to construction guide for details.*
15. Stepped Slab		*Check sufficient overlap of gas membrane to span the step between plots. Particular attention to be paid to the formation of corners to the external walls in line with Plot specific construction detail.*
a)	**Wall Ties**	*Check sealing of wall ties as per plot specific construction detail at approximately 0.9m centres. Take photographs of all wall ties and distances between each ensure detail strip secured to tie – refer to detail.*
16. Timber Frames – 1st Stage Inspection		*High risk, common problems/defects in construction in relation to fixings to masonary through membrane and sealing around external vents. Multiple positions failures can occur. Verify membrane routing and ensure a detailed inspection of every periscopic vent is undertaken.*
a)	**Periscopic Vents**	*Ensure they are formed and sealed with Detailing Strip.*
17. Timber Frames – 2nd Stage Inspection		*Checking the joiners' fixings between the soleplate and the gas membrane ensuring the fixing aligns with the position of the double-sided butyl tape to ensure an adequate seal is formed protecting against a gas pathway.*
a)	**Soleplate fixings**	*Check every fixing usually spaced at 0.60m centres across the soleplate both around the perimeter and internal party walls. Fixing and double-sided butyl tape must align with one another.*
18. External Wall Venting		*Check positioning of vents are on 3 sides of dwelling at approximately 2m centres. Take photographs of vents on external walls for each plot. (May be possible to photograph other plots on site which are at stage of installing vents. Will be useful for these plots later on).*
19. Subfloor Venting Type Checked		*If stone venting then check the stone is single sized, 20-40mm. May need to do this on adjacent plots, stockpile or ask for delivery tickets. Some designs need drains laid in the stone so check the construction details, if dims given then measure with tape and photograph*
20. Subfloor Venting Thickness		*The venting medium (void/stone) is of a designated thickness as shown on the gas design details. Photograph thickness of adjacent plots showing how large the void dimension will be with a staff. If not visible on adjacent plots request this item be provided for future inspection.*
21. Internal/Partition Wall Venting		*Check the spacing and dimensions of any interconnecting pipes between the subfloor venting medium. This can vary by size of building and design approaches so be careful to check against the gas details*

The inspection will be recorded on hand written records at the time of the visit (not retrospective on return from the visit), with pro forma based upon Table 34 (above). These will be provided with plot specific certification, including photographic records, to demonstrate plot specific installation. Example photographic records are provided in Photographs 5 to 17, below.




Photographs 5 and 6: Showing example of pipe layout and spacing. The typical spacing is 1 No. 75mm diameter pipe every 1m. This can change depending upon the pipe diameter (dependent upon site specific construction variations). This may not be able to be directly observed on each plot, depending upon the site-specific design of gas protection measures. If not recorded then observation of other plots under construction or requesting photographs to be taken by construction management can be deemed appropriate depending upon confidence in the construction as site progresses

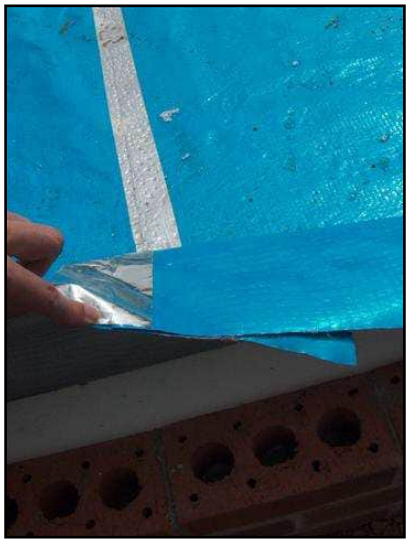



Photographs 7 and 8: Verify presence of cranked vents along the external walls and sufficient spacing. Areas of access points to internal garages or external adjoining garages may not be possible to have cranked venting and alternative construction options should be discussed where necessary



Photograph 9: Check general condition of membrane for punctures/tears etc – take panoramic photograph showing general condition. Note that the membrane colour represented in the photographs is the Visqueen Gas Barrier, not the NF400 (blue on both sides, translucent) for CS2 mitigation





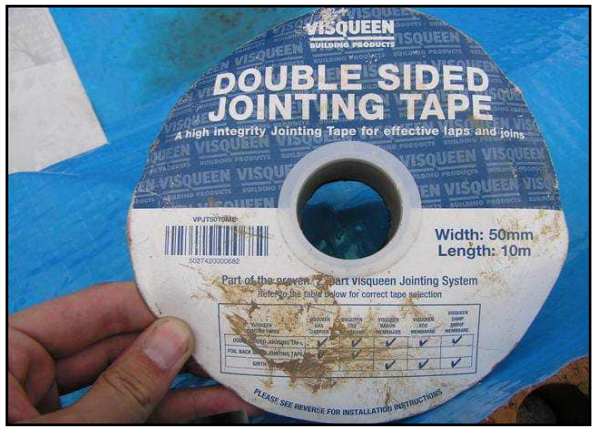
Photographs 10 and 11: Check >150mm overlaps of membranes and proprietary tapes placed and sealed with photographs taken. Note that the membrane colour represented in the photographs is the Visqueen Gas Barrier, not the NF400 (blue on both sides, translucent) for CS2 mitigation.





Photographs 12 and 13: Check tophat is sealed to membrane and pipework with tapes, and Jubilee clip. Note that the membrane colour represented in the photographs is the Visqueen Gas Barrier, not the NF400 (blue on both sides, translucent) for CS2 mitigation.





Photographs 14 and 15: Verify product types through visual inspection. If new delivery of product types is present and copies of supply tickets are not available then inspect product labels to confirm manufacturers and product types. Note that the membrane colour represented in the photographs is the Visqueen Gas Barrier, not the NF400 (blue on both sides, translucent) for CS2 mitigation.



Photograph 16: Showing the presence of double-sided butyl tape in place in the location of the soleplate joint to the gas membrane during the second stage inspection



Photograph 17: Showing the presence of double-sided butyl tape in place in multiple locations of the soleplate joint to the gas membrane during the second stage inspection

5.12 Potable Water Supply Pipelines

A UU pipeline risk assessment is included within Appendix 6, which defines the requirement for source removal to permit Polyethylene pipes within the proposed pipelines based upon ground investigation results. Subject to regrading levels and predevelopment works further testing may redefine the risks.

5.13 Material Management Plans and Exemptions – All Plots.

Soils are considered a commodity which requires careful planning and management to ensure the suitability for reuse as part of a sustainable development policy. The reuse and any direct transfer of soils for use within the site are designated as a waste process, where registrations are recommended to follow the CL:AIRE Definition of Waste – Code of Practice (DoW-CoP) to ensure the soils are not designated as illegally deposited waste.

The Environment Agency have advised the following:

The CL:AIRE Definition of Waste: Development Industry Code of Practice (version 2) provides operators with a framework for determining whether or not excavated material arising from site during remediation and/or land development works is waste or has ceased to be waste. Under the Code of Practice:

- *Excavated materials that are recovered via a treatment operation can be reused on-site providing they are treated to a standard such that they are fit for purpose and unlikely to cause pollution*
- *Ereated materials can be transferred between sites as part of a hub and cluster project*
- *Some naturally occurring clean material can be transferred directly between sites.*

Developers should ensure that all contaminated materials are adequately characterised both chemically and physically, and that the permitting status of any proposed on-site operations are clear. If in doubt, the Environment Agency should be contacted for advice at an early stage to avoid any delays.

We recommend that developers should refer to:

- *The position statement on the Definition of Waste: Development Industry Code of Practice*
- *The waste management page on GOV.UK*

Coopers and Bury Council's Contaminated Land Department have discussed contractors proposals for material management. Coopers sought a paid consultation with the Environment Agency regarding contaminated land department regarding the ground conditions and material management/reuse, but advised they have temporarily suspended the discretionary consultation service. The response recommends that any assessments or proposals should go via Bury Council Planning Department.

The materials previously deposited within the former reservoir/settling tanks in the 1980s are reported to have originated from demolition works on the site in the 1980's, with no imported soils. Coopers commissioned aggregate testing at the request of the proposed contractors, with results presented in Appendix 4. The results show the amount of soil/stone and non-brick/concrete/stone inclusions varies from 4.6% to 42% across the samples, with majority of the material consisting of brick, concrete or stone.

Where following the DoW-CoP the developer should establish a Material Management Plan (MMP) showing the location of the materials to be stockpiled and progressively used. The proposals should be agreed between the developer and their contractor. Reuse of natural soils on the site of origin are not considered to require an independent suitably Qualified Person (QP) review and completion the declarations for registration under the CL:AIRE system.

If soils are intended for transfer to another site, the MMP should be provided to document the management practices in place prior to generation and the intended transfer. The receiving sites MMP and CL:AIRE registration will then reflect the practices established.

6. Conclusions

6.1 General

The phased ground investigation has identified the presence of areas of elevated metal concentrations, PFAS, petroleum hydrocarbons and asbestos fibres within areas of the site, and presence of hazardous ground gas associated with the infilled reservoir. Remediation and mitigation measures are required to protect the future residents with associated verification. The assessments and proposals included within this correspondence should be agreed with Bury Council.

Further action which Coopers consider will be required could include, but not necessarily be limited to:

- Submit all reports/correspondences to Bury Council for approval.
- Following decommissioning of the electrical substation further testing for PCBs is required.
- Produce Material Management Plan detailing the intended reuse or transfer of soils.
- During earthworks and regarding contractors will be required to remove any identified ACMs, and identify any previously undisclosed contaminants.
- Localised removal of petroleum range hydrocarbon impacted soils from the former reservoir.
- All imported soils to be subject to chemical testing to confirm suitability for use.
- Verification of gas mitigation measures for protection of human health.
- A validation completion report will be required to be submitted to Bury Council upon completion of the development.

Appendix 1

Referenced Drawings

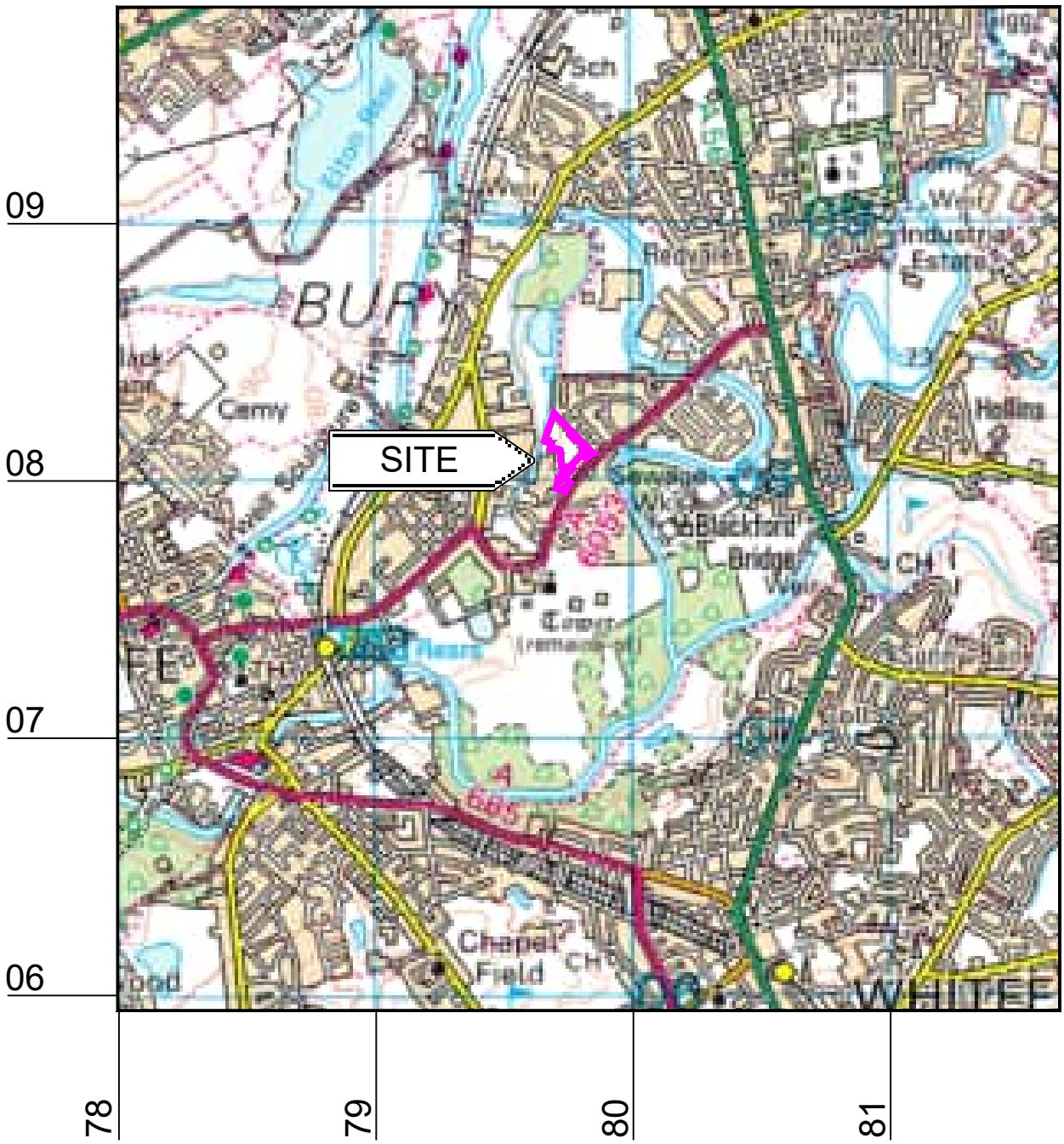
Drawing No.	Revision	Title
8353/L1	A	Site Location Plan
8353/AP	A	Aerial Photograph
8353/01	E	Site Plan
8353/200	-	Hazardous Ground Gas Conceptual Model
8353/Fd/01	-	Foundation Plan (Sheet 1 of 2)
8353/Fd/01	-	Foundation Plan (Sheet 2 of 2)
8353/BPRP	A	Build Phase Remediation Plan
8353/LRH/CS2/PC/PE/G/01	-	Typical Gas Precaution Detail to a Precast Concrete Slab and a Vented Void

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

SCALE	1:25000@A4	Land Adjacent to Bealey Industrial Estate, Radcliffe.			
DATE	17.10.24				
DRAWN	AH	SITE LOCATION PLAN			
CHEK'D	BH	Drg No:	8353 / L1	Rev:	A

NORTH

National Grid reference of the proposed site.	SD 797 081



© Copyright

0 200 400 600 800 1000 1500 2000

SCALE BAR (m)

The original of this drawing contained coloured symbols and/or features.
Any black and white reproduction should not be relied upon.

REVISION BOX				
Rev.	Date	Revision	By	Appd.
A	02.04.26	Grid reference corrected.	AH	BH

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

SCALE	1:2000 @A4	Land Adjacent to Bealey Industrial Estate, Radcliffe.			
DATE	17.10.24				
DRAWN	AH	AERIAL PHOTOGRAPH			
CHEK'D	BH	Drg No:	8353 / AP	Rev:	A

© Copyright

NORTH

KEY

Site boundary



0 10 20 40 60 80 100 120 140 160 180 200

SCALEBAR (m)

The original of this drawing contained coloured symbols and/or features.
Any black and white reproduction should not be relied upon.

REVISION BOX

Rev.	Date	Revision	By	Appd.
A	21.04.26	Site boundary updated.	AH	BH

© Copyright The original of this drawing contained coloured symbols and/or features. Any black and white reproduction should not be relied upon.

NORTH

This drawing is to be read in conjunction with the following:-

a) RJP Surveying Consultants Ltd, Proposed Development at Dummers Lane, Radcliffe, Topographical Survey, ref. WH062 / T00, dated January 2024.

b) Westchurch Homes, Bealey Industrial Estate, Radcliffe, Site Location Plan, ref. BIE-LOC-001, dated February 2024.

c) Groundsure Insights, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GD-HMJ-3VX-27B-I11_1250 & ref. GS-HMJ-3VX-27B-I11_LS, dated 15 February 2024.

d) Groundsure Enviro+Geo Insight, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GS-B5J-QUX-W33-1YT, dated 15 February 2024.

e) Avoin Maa Surveys Ltd, Bealey Industrial Estate, Radcliffe, ref. 0924/WEST/11199, dated 19 September 2024.

AREA OF JAPANESE KNOTWEED

AREA OF JAPANESE KNOTWEED

THIS DRAWING SHOULD ONLY BE PRINTED IN COLOUR

SCALEBAR (m) 0 5 10 15 20 25 30 35 40 45 50

KEY TO EXPLORATORY HOLES

(All positions are approximate unless otherwise stated)

- Surface water sampling locations SWS SE & SWS SW taken by Coopers between 05 - 31 March 2026
- Cable percussive boreholes BH01 - BH03 drilled for Coopers between 09 - 12 February 2026
- Window sample boreholes WS201 - WS212 inc. WS205a drilled for Coopers between 19 - 23 January 2026
- Trial pits excavated by Coopers: TP01 - TP09 on 26 September 2024 TP101 - TP104 on 09 February 2026
- Window sample boreholes WS01 - WS09 drilled for Coopers between 21 & 22 March 2024
- Window sample boreholes WS101 - WS104 drilled for Coopers on 30 September 2024
- Hand dug trial pits excavated by Coopers: HDTP01 - HDTP03 on 30 September 2024 HDP01 on 21 January 2026

KEY TO EXISTING FEATURES

(All positions are approximate unless otherwise stated)

- Surveyed trees (taken from ref. a)
- Surveyed foliage (taken from ref. a)
- Surveyed building (taken from ref. a)
- Surveyed steel containers (taken from ref. a)
- Surveyed temporary structures (taken from ref. a)
- Presence of Japanese Knotweed observed by Coopers between 21 & 22 March 2024
- Flytipping observed by Coopers between 21 & 22 March 2024
- Flytipping of possible asbestos containing materials observed by coopers between 21 & 22 March 2024
- Surveyed telecommunications mask (taken from ref. a)
- Surveyed overhead cable (taken from ref. a)
- Surveyed fence (taken from ref. a)
- Surveyed bottom of bank (taken from ref. a)
- Topographical contours (taken from ref. a)
- Site boundary

KEY TO FORMER FEATURES

(All positions are approximate unless otherwise stated)

- Former electricity substation (taken from ref. c)
- Former reservoir (taken from ref. c)
- Former extent of Bealey's Goit (taken from ref. c)
- Former water feature with flow direction (taken from ref. c)
- Former well (taken from ref. c)
- Former tank (taken from ref. c)
- Former settling tanks (taken from ref. c)
- Former filter beds (taken from ref. c)
- Former tramway (taken from ref. c)
- Former landfill (taken from ref. d)

KEY TO ACCESS

(All positions are approximate unless otherwise stated)

- Area accessible for SI

KEY TO SURVEYED SERVICES

(All positions are approximate unless otherwise stated)
(Taken from ref. e)

- Foul Drainage
- Surface Drainage
- Electricity
- Gas
- Ground Probing Radar
- Water
- Cable Television
- British Telecom
- Pipe
- Unknown
- Electricity (TFR) Taken From Records
- Gas (TFR) Taken From Records
- Water (TFR) Taken From Records

REVISION BOX				
Rev.	Date	Revision	By	Appd.
A	03.10.24	Surveyed services added to plan. Site boundary updated, site re-centered and sheet size updated to A1. Latest Coopers exploratory holes added to plan.	AH/OS	BH
B	27.02.26	Latest Coopers exploratory hole locations added to plan.	AH	BH
C	15.04.26	Key updated.	AH	BH
D	21.04.26	Site boundary updated.	AH	BH
E	22.04.26	Coopers surface water sample locations added to plan.	AH	ST

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

Client
WESTCHURCH HOMES LTD

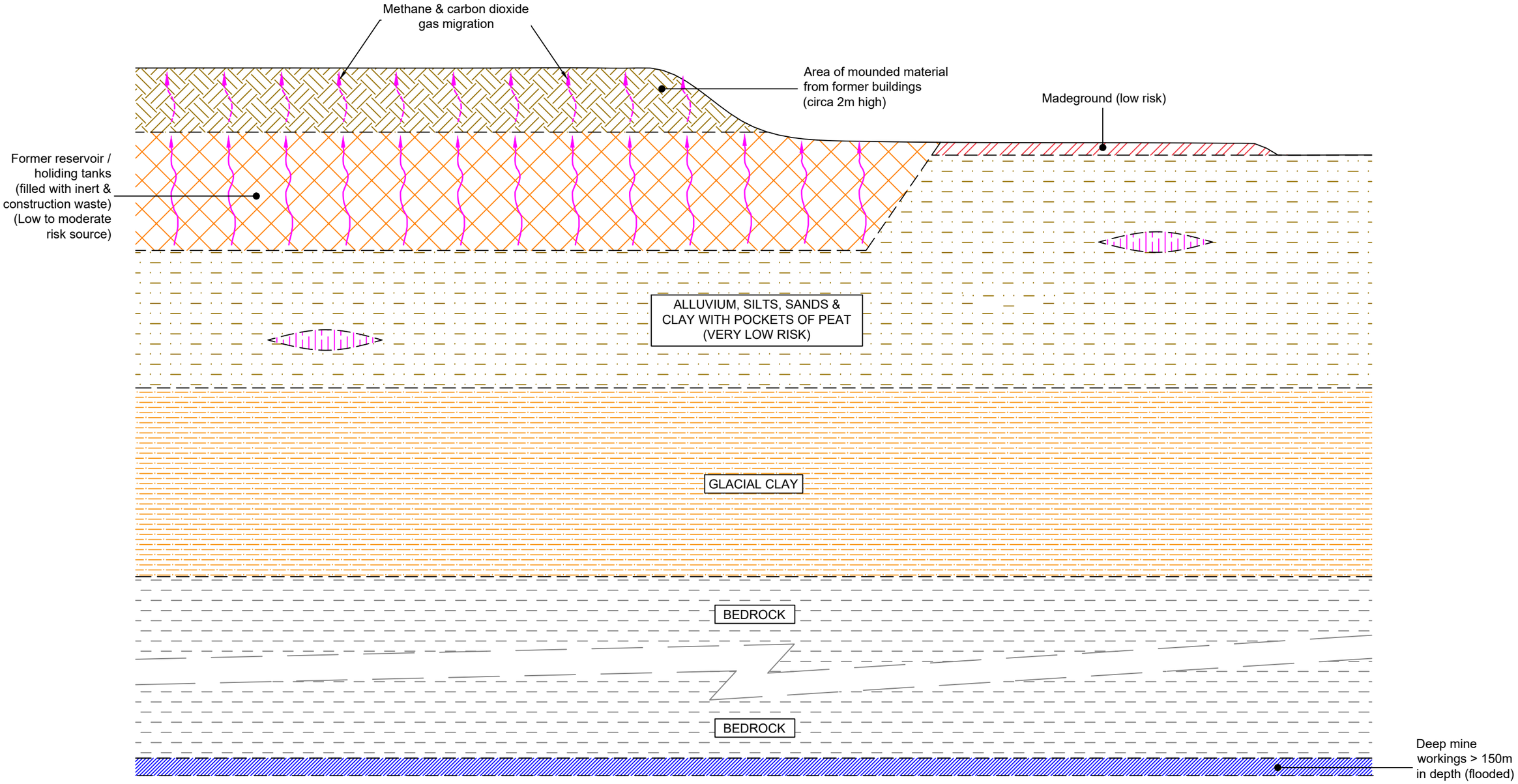
Project
Land Adjacent to Bealey Industrial Estate, Radcliffe.

Title
SITE PLAN

DRAWING NUMBER
8353 / 01

SCALE at A1	1:500	
DATE	11.04.24	REVISION
DRAWN	OS	E
CHECKED	BH	

DO NOT SCALE



THIS DRAWING SHOULD ONLY BE PRINTED IN COLOUR

© Copyright The original of this drawing contained coloured symbols and/or features. Any black and white reproduction should not be relied upon.

SCALE	NTS @ A3
DATE	09.10.24
DRAWN	AH
CHEK'D	BH

Rev	Drwn	Date	App'd	Comments

Land Adjacent to Bealey Industrial Estate, Radcliffe.

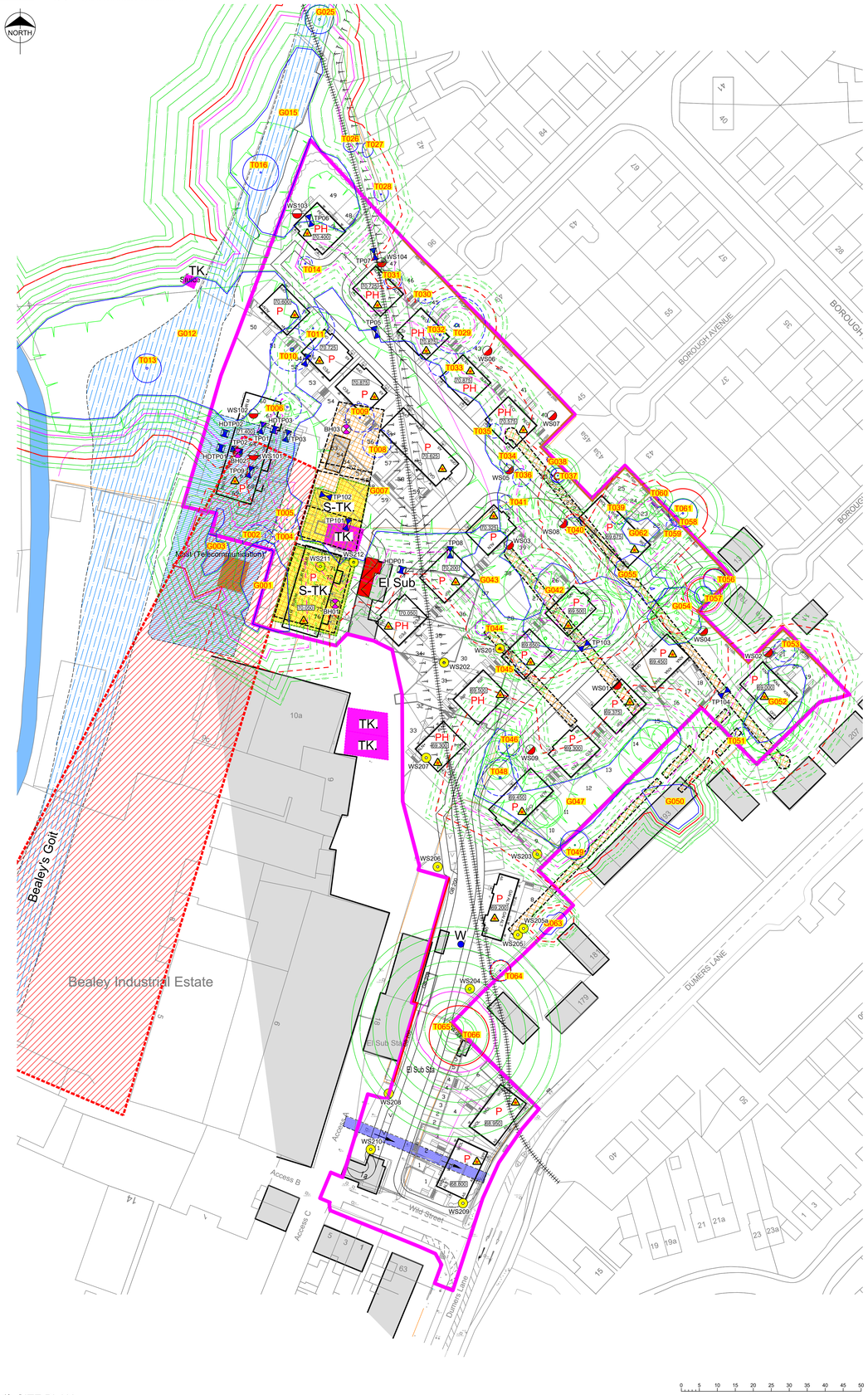
HAZARDOUS GROUND GAS CONCEPTUAL MODEL

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

Drawing No. 8353 / 200

Rev. -

DO NOT SCALE © Copyright The original of this drawing contained coloured symbols and/or features. Any black and white reproduction should not be relied upon.



1) SITE PLAN
(Scale 1:500)

0 5 10 15 20 25 30 35 40 45 50
SCALEBAR (m)

LEGEND

(All positions are approximate unless otherwise stated)
(All references refer to those stated within General Notes)

KEY TO EXPLORATORY HOLES

(All positions are approximate unless otherwise stated)

- Cable percussive boreholes BH01 - BH03 drilled for Coopers between 09 - 12 February 2026
- Window sample boreholes WS201 - WS212 inc. WS205a drilled for Coopers between 19 - 23 January 2026
- Trial pits excavated by Coopers: TP01 - TP09 on 26 September 2024 TP101 - TP104 on 09 February 2026
- Window sample boreholes WS01 - WS09 drilled for Coopers between 21 & 22 March 2024
- Window sample boreholes WS101 - WS104 drilled for Coopers on 30 September 2024
- Hand dug trial pits excavated by Coopers: HDTP01 - HDTP03 on 30 September 2024 HDP01 on 21 January 2026

KEY TO EXISTING FEATURES

(All positions are approximate unless otherwise stated)

- Hutchinson's Goit (taken from OS tile)
- Surveyed trees (taken from ref. a)
- Surveyed foliage (taken from ref. a)
- Surveyed building (taken from ref. a)
- Surveyed steel containers (taken from ref. a)
- Surveyed temporary structures (taken from ref. a)
- Surveyed telecommunications mask (taken from ref. a)
- Surveyed fence (taken from ref. a)
- Surveyed bottom of bank (taken from ref. a)

KEY TO FORMER FEATURES

(All positions are approximate unless otherwise stated)

- Former electricity substation (taken from ref. c)
- Former reservoir (taken from ref. c)
- Former extent of Bealey's Goit (taken from ref. c)
- Former water feature with flow direction (taken from ref. c)
- Former well (taken from ref. c)
- Former tank (taken from ref. c)
- Former settling tanks (taken from ref. c)
- Former filter beds (taken from ref. c)
- Former tramway (taken from ref. c)
- Former landfill (taken from ref. d)

KEY TO PROPOSED FEATURES

(All positions are approximate unless otherwise stated)

- Proposed plot locations (taken from ref. b)
- 89.300 Slab levels (taken from ref. e)
- GB 200 Gravel board and depth (taken from ref. e)
- RW 1300 Retaining wall and height (taken from ref. e)
- Site boundary (taken from ref. b)

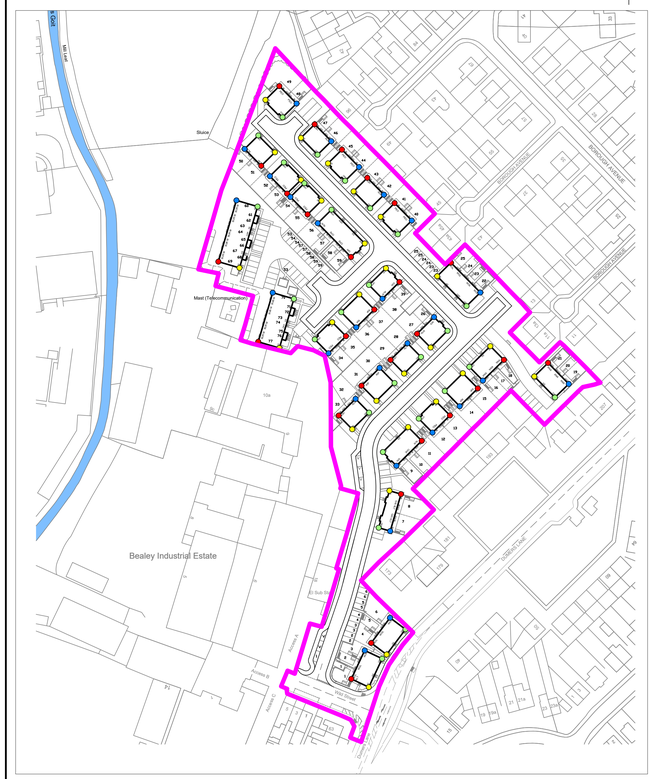
KEY TO TREE CONTOURS

(All positions are approximate unless otherwise stated)

- G003 Surveyed group of trees (taken from ref. f)
- T051 Surveyed individual tree (taken from ref. f)
- 1500 / 1000 / 500 Indicates minimum depth of foundation required in areas affected by existing trees/hedgerows with a CLAY subsoil (TREES RETAINED). Not applicable to foundations in a granular subsoil. Dashed lines indicates tree proposed to be removed (Premier Guarantee Technical Manual 16 - Section 3.6)
- Denotes 1.5m foundation depth contour of existing tree height - for heave precautions. Dashed lines indicates tree proposed to be removed. (Premier Guarantee Technical Manual 16 - Section 3.6)
- CONC Cast foundations within this zone would require prior agreement with Premier Guarantee, subject to site specific assessments of tree influence >2.5m.

2) CORNER ID PLAN

(Scale 1:1000)



0 5 10 20 30 40 50 60 70 80 90 100
SCALEBAR (m)

KEY TO CORNERS

- Front left corner
- Rear left corner
- Rear right corner
- Front right corner

3) ANTICIPATED FOUNDATION TYPES

P PILED FOUNDATIONS WITH ASSOCIATED REINFORCED CONCRETE GROUND BEAMS

-Proposed for foundations where depth to suitable bearing strata is >2.5m below proposed FFL.
-Confirmation of the suitability for the proposed piled foundations should be sought from the piling contractor prior to construction.
-The determination of the pile types and lengths is typically determined by the piling contractors. For budget appraisal purposes we would anticipate the pile lengths will be up to be 10-15m in length.
-Piling platform to be designed in accordance with BR470 and subject to the rig specifications.
-Confirmation should sought from the local authority regarding noise or vibration issues associated with driven piles.

FOUNDATION ANOMALIES

Indicates foundations and slabs which may be affected by trial pits, trees / hedges or former features. The foundation and slab type indicated may have to be amended and appropriate foundations and slabs adopted to suit local ground conditions exposed at the time of construction and agreed with Premier Guarantee/Local Authority Inspectors.

PH PILED FOUNDATIONS WITH ASSOCIATED REINFORCED CONCRETE GROUND BEAMS WITH HEAVE PRECAUTIONS

-Proposed for foundations where depth to suitable bearing strata is >2.5m below proposed FFL, with heave influence on the foundation design.
-Compressible material required beneath all ground beams to account for 100mm of compression, and for internal face of ground beams on external walls to account for 25mm of compression.
-Further cable percussive boreholes within areas of proposed piling may be required by piling contractors.
-Confirmation of the suitability for the proposed piled foundations should be sought from the piling contractor prior to construction.
-The determination of the pile types and lengths is typically determined by the piling contractors. For budget appraisal purposes we would anticipate the pile lengths will be up to be 10-15m in length.
-Piling platform to be designed in accordance with BR470 and subject to the rig specifications.
-Confirmation should sought from the local authority regarding noise or vibration issues associated with driven piles.

4) SUB STRUCTURE READY MIX CONCRETE DESIGNATIONS BY END USE

Use as substructure and ground floors	Ready-mixed concrete (designated mix)
General Use:	
· Rough blinding (non-structural)	- GEN1
· Infill	- GEN1
· Unreinforced oversite concrete below timber floors	- GEN1
· Structural blinding and overbreak	- GEN1
· In situ external concrete for drives and paths	- PAV1
· In situ external concrete foundations for precast concrete paving slabs	- GEN1
· Fill to wall cavity	- GEN1
· Solid filling under steps	- GEN1
Floor Slabs	
· House or garage with reinforced concrete floor slab, either suspended or precast.	- RC35
· House with non-reinforced slab (ground bearing) with either:	
a) Permanent finish to be added, e.g. screed or floating floor.	- GEN1
b) No permanent finish to be added, e.g. carpet.	- GEN2
· Garage with non-reinforced slab (ground bearing)	- GEN3
Foundations:	
· Strip foundations	- GEN1
· Trench fill	- GEN1
· Other mass concrete foundations	- GEN1
· Reinforced concrete footing	- RC35

Notes:

1) Worst case sulphate conditions over the entire site are Design Sulphate Class DS-1, ACEC Class AC-1/AC-1s, and Design Chemical Class DC-1.
2) Classification and designation in accordance with BRE Special Digest 1 "Concrete in Aggressive Ground" and BS8500 -1, 2006.
3) The above conditions represent the worst case conditions identified within the testing of soils on the site.
4) Any fill material to be imported onto the site should be tested and should not exceed the classifications given above.

5) SUB-STRUCTURE BRICKWORK / BLOCKWORK AND MORTAR REQUIREMENTS

Brickwork or blockwork below DPC to be in accordance with BS5628 (Part3), Table 12, assuming **Design Sulfate Class, DS-1**, sulfate and acid conditions and **Aggressive Chemical Environment for Concrete, AC-1/AC-1s**, in accordance with BRE Special Digest 1. The developer must provide sulfate class to the manufacturer when ordering products.

Mortar designation below DPC to be in accordance with BS5628 (Part3), Table 12, assuming **Design Sulfate Class, DS-1**, sulfate and acid conditions and **Aggressive Chemical Environment for Concrete, AC-1/AC-1s**, in accordance with BRE Special Digest 1. The developer must provide sulfate class to the supplier when ordering mortar.

Footnotes:

(1) Some autoclaved aerated concrete blocks of a lower compressive strength and density than that quoted in the British Standards above may be suitable for foundations for two storey dwellings where the height of blockwork is less than 1250mm below finished ground level. Subject to the prior approval of Premier Guarantee or submission of a valid Agrément Certificate from the manufacturer.
(2) The developer must obtain written approval from Premier Guarantee before using lower strength and lower density concrete blocks in foundations deeper than 1250mm below finished ground level.

Drainage Pipework Requirements

Drainage Pipework to be in accordance with BS5911, assuming Design Sulfate Class, DS-1, sulfate and acid conditions and Aggressive Chemical Environment for Concrete, AC-1/AC-1s, in accordance with BRE Special Digest. 1.

6) GROUND GAS

Subject to predevelopment remediation works, it is assumed that gas/vapour mitigation measures are required for plots over or close to the historical landfill of the former reservoir/holding tanks.

7) CONTAMINATION

Subject to predevelopment remediation works, it is assumed that all gardens and landscaping will require inert cover systems (0.6m depth, min 0.15m of topsoil) overlying a geotextile.

8) FOUNDATION ANOMALIES

Backfilled trial pits, or historical features (such as recorded former walls) may be encountered during foundation excavations as noted on the plot specific remarks on the table. The following procedures should be adopted where such features are encountered:

1) Start foundation excavations in areas of potential anomaly to locate any features present.
2) When likely foundation anomaly is identified halt the foundation excavation - DO NOT attempt to dig out areas where fills may be deep.
3) Record the location of the feature relative to the proposed footprint and contact Coopers for engineering design. This may include a beam design to span the feature, therefore it is imperative that the deep fills are not excavated prior to confirmation of engineering designs.
4) Do not continue foundation excavations for the plot until directly advised to do so by Westchurch Homes Ltd. Office or Coopers.

FOR GUIDANCE PURPOSES ONLY

THIS DRAWING SHOULD ONLY BE PRINTED IN COLOUR

CDM HIGH RISK ASSESSMENT

FOR ALL RISKS REFER TO WESTCHURCH HOMES LTD DESIGN RISK ASSESSMENT PACKAGE

GENERAL NOTES

1. This drawing is to be read in conjunction with the following:-
   a) RJP Surveying Consultants Ltd, Proposed Development at Dummers Lane, Radcliffe, Topographical Survey, ref. WH062 / T00, dated January 2024.
   b) Westchurch Homes, Bealey Industrial Estate, Radcliffe, Site Location Plan, ref. BIE-LOC-001, dated February 2024.
   c) Groundsure Insights, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GD-HMJ-3VX-27B-I11, 1250 & ref. GS-HMJ-3VX-27B-I11_LS, dated 15 February 2024.
   d) Groundsure Enviro+Geo Insight, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GS-BSJ-QUX-W33-1YT, dated 15 February 2024.
   e) Pell Frischmann, Bealey Lane, Detailed Design, External Works, ref. 110081-PEF-HEW-01-DR-C-00001, rev. P01, dated 08 May 2025.
   f) Enzygo, Dumers Lane, Bury, Arboricultural Impact Assessment, ref. 893.002.ENZ.XX.00.RP.AR.45.102, dated November 2025.
2. The foundation types indicated are based upon the facts established from observations and field tests during the trial pit investigations. It should be recognised that natural strata may vary considerably from point to point and the groundwater regime may be influenced by seasonal or other factors. The foundation types indicated are therefore for 'GUIDANCE PURPOSES ONLY' and should be constantly reviewed in the light of the actual conditions exposed on site during the construction work.
3. The site investigation has identified the shrinkage potential of the clays to be high shrinkage potential as defined within the Premier Guarantee Technical Manual. The foundation designs to accommodate heave are based upon **HIGH** shrinkage potential in accordance with Section 3.6 of Premier Guarantee Technical Manual.
4. Where necessary foundations should be stepped in accordance with current Premier Guarantee recommendations.
5. This drawing should not be relied upon for housetype names / references.

BASIS OF ASSESSMENT AND GUIDANCE ON FOUNDATION CONSTRUCTION:

General

-The foundation types have been proposed based upon the developer's commercial preferences for foundation types with depths.
-It is acknowledged that trench stability can influence the suitability of foundation construction and we would advocate trial excavations with the developer and contractors to appraise the influence, limitations and changes/measures that can be adopted.

Investigation Areas

-Specific features from the historical Ordnance Survey maps have been accurately overlaid to disclose potential abnormal ground conditions. Specific targeting and delineation of these features are required to enable an accurate assessment.
-The remarks section of the foundation schedule details plot specific features likely to be encountered and may include recommendations for further investigation prior to construction.
-Where the ground conditions differ from those indicated in this drawing we would advocate the developer contacts Coopers to confirm or recommend procedures for reappraisals prior to casting the foundations, and may require further ground investigation.

External Works

-The foundation schedule includes specific designs to account for the proposed slab levels and underbuild.
-Where retaining walls are proposed in close proximity to plots, the foundations may need to be constructed at the same time as the plot/garage foundations, and specific discussions with Coopers structural engineers are recommended should potential conflicts be considered.
-The assessments make no account of proposed utilities excavations and should deep excavations be proposed the formation depths should be appraised to determine if these need to be set a lower level.

Tree Influence and Formation Depths

-The tree survey (as referenced in General Note 1d) was current at the time of the original revision of this drawing. The developer should be aware that trees which are <¦ mature height may be subject to substantial changes in growth over time and therefore reappraisals of tree heights and foundation depths at the time of construction/felling may be required.
-The tree influence depths in clay strata are recorded on the foundation schedule (where applicable) and must be considered as the minimum foundation depths. Outside of these areas shallower foundations may be possible, subject to engineering approvals.
-The foundations have set minimum formation levels from proposed ground levels in accordance with Premier Guarantee Guidance. These do not include formation depths that account for potential seasonal variations in the shallow ground conditions. Subject to the time of year of the construction, foundation depths may be increased, subject to inspection by Building Control/Insurers.
-Trees or hedgerows which are to be planted must be considered. No allowance has been made for them on this drawing as it is assumed that any proposed trees and or hedgerows will be sited to avoid affecting any proposed dwelling foundation.
-Currently the Premier Guarantee have a cut off for the maximum depth of trenchfill foundation for plots which are impacted by existing trees of 2.50m. Where tree contours take foundations deeper than this depth, piled foundations should be adopted unless agreed otherwise with the Premier Guarantee.
-Coopers assessment of tree influence has followed the approaches discussed in Premier Guarantee Technical Manual 16 - Section 3.6 and online tree calculations. The tree influence depths (accounting for both heave and potential subsidence) are determined as the deeper of: i) current tree height (mature if >50% of mature height) influence depth against current ground level, ii) mature height tree influence (where trees are to remain) against proposed ground level (accounting for underbuild). Heave influence zones are based upon tree influence from current tree height (mature if >50% of mature height) against existing ground level).

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

Client
WESTCHURCH HOMES LTD

Project
Land Adjacent to Bealey Industrial Estate, Radcliffe.

Title
FOUNDATION PLAN (SHEET 1 OF 2)

DRAWING NUMBER	SCALE at A0	1:1000, 1:500	
8353 / Fd / 01	DATE	27.03.26	REVISION
	DRAWN	AH	-
	CHECKED	BH	

DO NOT SCALE

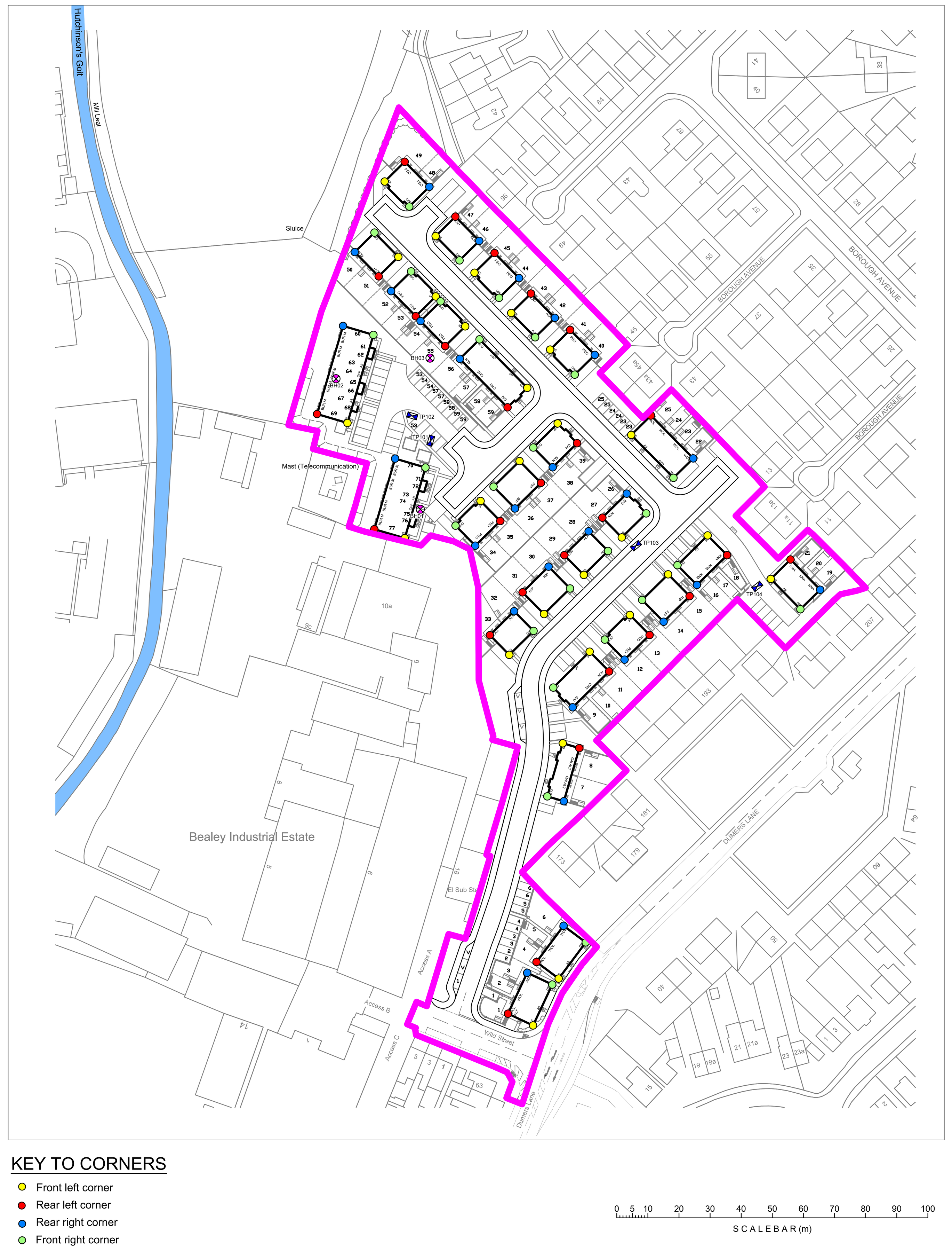
© Copyright — The original of this drawing contained coloured symbols and/or features. Any black and white reproduction should not be relied upon.

9) SUMMARY OF ANTICIPATED FOUNDATION AND GROUND FLOOR SLAB REQUIREMENTS

Plot Ref	Existing Ground Level (at time of investigation)				Proposed Slab Level (FFL)	Anticipated Formation Level				Depth from Existing Topography to Formation Level				Depth from Slab Level to Formation Level				Anticipated Slab Requirements	Anticipated Foundation Requirements	Safe Bearing Pressure kN/m²	Anticipated Bearing Strata	Other Remarks
	FLH (mAOD)	RLH (mAOD)	RRH (mAOD)	FRH (mAOD)	(mAOD)	FLH (mAOD)	RLH (mAOD)	RRH (mAOD)	FRH (mAOD)	FLH (m)	RLH (m)	RRH (m)	FRH (m)	FLH (m)	RLH (m)	RRH (m)	FRH (m)					
Plot 1 - 3	68.610	68.490	68.620	68.740	68.800	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	No tree influence, historical referenced location of culverted Bealeys Goit
Plot 4 - 6	68.750	68.590	68.630	68.780	68.950	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	No existing tree influence.
Plot 7 & 8	68.510	68.580	68.650	68.530	69.200	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	No existing tree influence.
Plot 9 - 11	68.210	67.900	68.890	69.030	69.450	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 12 & 13	68.090	68.060	68.050	68.120	69.300	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	Local areas of clay with heave potential.
Plot 14 & 15	68.250	68.270	68.040	68.170	69.375	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	Local areas of clay with heave potential.
Plot 16 - 18	68.350	68.520	68.050	68.250	69.450	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	Local areas of clay with heave potential.
Plot 19 - 21	68.250	67.570	67.590	68.140	69.000	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	Local areas of clay with heave potential.
Plot 22 - 25	67.950	67.950	67.890	68.000	69.675	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 26 & 27	68.080	68.370	68.070	68.000	69.500	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 28 & 29	68.320	68.430	68.500	68.370	69.650	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 30 & 31	68.600	68.490	68.600	68.500	69.500	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 32 & 33	68.840	69.040	68.760	68.620	69.300	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 34 & 35	69.400	69.190	68.880	69.350	70.050	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 36 & 37	68.630	68.750	68.910	69.090	70.200	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 38 & 39	68.270	68.150	68.390	68.510	70.325	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 40 & 41	67.930	67.580	67.920	68.100	70.575	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 42 & 43	68.410	67.590	67.500	68.320	70.875	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 44 & 45	69.850	67.940	67.620	68.000	70.875	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 46 & 47	70.000	70.120	68.110	69.970	70.725	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 48 & 49	70.340	70.180	70.170	70.080	70.400	Piled foundation with associated ground beams including heave precaution measures												Precast (block & beam) with 300mm sub floor void due to heave	PH	N/A	N/A	Local areas of clay with heave potential.
Plot 50 & 51	70.060	70.500	70.470	70.310	70.600	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 52 & 53	70.220	70.540	70.490	70.110	70.725	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 54 & 55	70.850	71.040	70.580	70.290	70.875	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 56 - 59	70.050	70.040	71.000	71.000	70.625	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 60 - 69	74.050	73.990	71.170	71.090	71.400	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.
Plot 70 - 77	69.210	69.920	69.800	71.840	70.050	Piled foundation with associated ground beams												Precast (block & beam)	P	N/A	N/A	All granular strata - no heave precautions.

10) CORNER ID PLAN

(Scale 1:1000)



KEY TO CORNERS

- Front left corner
- Rear left corner
- Rear right corner
- Front right corner

THIS DRAWING SHOULD ONLY BE PRINTED IN COLOUR

CDM HIGH RISK ASSESSMENT

FOR ALL RISKS REFER TO WESTCHURCH HOMES LTD DESIGN RISK ASSESSMENT PACKAGE

GENERAL NOTES

1. This drawing is to be read in conjunction with the following:-
   a) RJP Surveying Consultants Ltd, Proposed Development at Dummers Lane, Radcliffe, Topographical Survey, ref. WH062 / T00, dated January 2024.
   b) Westchurch Homes, Bealey Industrial Estate, Radcliffe, Site Location Plan, ref. BIE-LOC-001, dated February 2024.
   c) Groundsure Insights, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GD-HMJ-3VX-27B-I11_1250 & ref. GS-HMJ-3VX-27B-I11_LS, dated 15 February 2024.
   d) Groundsure Enviro+Geo Insight, Land Adjacent to Bealey Industrial Estate, Radcliffe, ref. GS-B5J-QUX-W33-1YT, dated 15 February 2024.
   e) Pell Frischmann, Bealey Lane, Detailed Design, External Works, ref. 110081-PEF-HEW-01-DR-C-00001, rev. P01, dated 08 May 2025.
   f) Enzygo, Dumers Lane, Bury, Arboricultural Impact Assessment, ref. 893.002.ENZ.XX.00.RP.AR.45.102, dated November 2025.
2. The foundation types indicated are based upon the facts established from observations and field tests during the trial pit investigations. It should be recognised that natural strata may vary considerably from point to point and the groundwater regime may be influenced by seasonal or other factors. The foundation types indicated are therefore for 'GUIDANCE PURPOSES ONLY' and should be constantly reviewed in the light of the actual conditions exposed on site during the construction work.
3. The site investigation has identified the shrinkage potential of the clays to be high shrinkage potential as defined within the Premier Guarantee Technical Manual. The foundation designs to accommodate heave are based upon **HIGH** shrinkage potential in accordance with Section 3.6 of Premier Guarantee Technical Manual.
4. Where necessary foundations should be stepped in accordance with current Premier Guarantee recommendations.
5. This drawing should not be relied upon for housetype names / references.

BASIS OF ASSESSMENT AND GUIDANCE ON FOUNDATION CONSTRUCTION:

General
-The foundation types have been proposed based upon the developer's commercial preferences for foundation types with depths.
-It is acknowledged that trench stability can influence the suitability of foundation construction and we would advocate trial excavations with the developer and contractors to appraise the influence, limitations and changes/measures that can be adopted.

Investigation Areas
-Specific features from the historical Ordnance Survey maps have been accurately overlaid to disclose potential abnormal ground conditions. Specific targeting and delineation of these features are required to enable an accurate assessment.
-The remarks section of the foundation schedule details plot specific features likely to be encountered and may include recommendations for further investigation prior to construction.
-Where the ground conditions differ from those indicated in this drawing we would advocate the developer contacts Coopers to confirm or recommend procedures for reappraisals prior to casting the foundations, and may require further ground investigation.

External Works
-The foundation schedule includes specific designs to account for the proposed slab levels and underbuild.
-Where retaining walls are proposed in close proximity to plots, the foundations may need to be constructed at the same time as the plot/garage foundations, and specific discussions with Coopers structural engineers are recommended should potential conflicts be considered.
-The assessments make no account of proposed utilities excavations and should deep excavations be proposed the formation depths should be appraised to determine if these need to be set a lower level.

Tree Influence and Formation Depths
-The tree survey (as referenced in General Note 1d) was current at the time of the original revision of this drawing. The developer should be aware that trees which are <½ mature height may be subject to substantial changes in growth over time and therefore reappraisals of tree heights and foundation depths at the time of construction/felling may be required.
-The tree influence depths in clay strata are recorded on the foundation schedule (where applicable) and must be considered as the minimum foundation depths. Outside of these areas shallower foundations may be possible, subject to engineering approvals.
-The foundations have set minimum formation levels from proposed ground levels in accordance with Premier Guarantee Guidance. These do not include formation depths that account for potential seasonal variations in the shallow ground conditions. Subject to the time of year of the construction, foundation depths may be increased, subject to inspection by Building Control/Insurers.
-Trees or hedgerows which are to be planted must be considered. No allowance has been made for them on this drawing as it is assumed that any proposed trees and or hedgerows will be sited to avoid affecting any proposed dwelling foundation.
-Currently the Premier Guarantee have a cut off for the maximum depth of trenchfill foundation for plots which are impacted by existing trees of 2.50m. Where tree contours take foundations deeper than this depth, piled foundations should be adopted unless agreed otherwise with the Premier Guarantee.
-Coopers assessment of tree influence has followed the approaches discussed in Premier Guarantee Technical Manual 16 - Section 3.6 and online tree calculations. The tree influence depths (accounting for both heave and potential subsidence) are determined as the deeper of: i) current tree height (mature if >50% of mature height) influence depth against current ground level, ii) mature height tree influence (where trees are to remain) against proposed ground level (accounting for underbuild). Heave influence zones are based upon tree influence from current tree height (mature if >50% of mature height) against existing ground level).

11) NOTES TO TABLE 9

1. Gables determined by viewing plots from the road side;
   FLH - Front Left Hand,
   RLH - Rear Left Hand,
   RRH - Rear Right Hand,
   FRH - Front Right Hand.
2. Where slab levels differ between adjacent plots by 600mm or greater the provision of retaining walls between the plots is anticipated. To avoid imposing unnecessary loading on the wall, the foundation for the dwelling on the retained side may have to be deepened. This drawing does NOT take into consideration the potential influence on the foundation level of the anticipated retaining walls. Once retaining wall positions have been finalised the information may have to be reviewed and foundation depths amended to ensure than no footings are not subjected to any additional loadings.
3. The above table does not include an assessment of the proposed house drainage.

FOR GUIDANCE PURPOSES ONLY

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

Client
WESTCHURCH HOMES LTD

Project
Land Adjacent to Bealey Industrial Estate, Radcliffe.

Title
FOUNDATION PLAN (SHEET 2 OF 2)

DRAWING NUMBER	SCALE at A0	1:1000	REVISION
8353 / Fd / 02	DATE	27.03.26	-
	DRAWN	AH	
	CHECKED	BH	

DO NOT SCALE | © Copyright
The original of this drawing contained coloured symbols and/or features.
Any black and white reproduction should not be relied upon.

NORTH

KEY

(All positions are approximate unless otherwise stated)

- Areas of gardens / landscaping with inert cover:
  Rear gardens = 600mm
  Fronts / borders / open space = 450mm
- Characteristic Situation 2 gas precaution measured required
- Site boundary (taken from ref. a)

Sluice

Mast (Telecommunication)

BOROUGH AVENUE

DUMERS LANE

Access A

Access B

Access C

Wild Street

Dumers Lane

10a

El Sub Sta

ustrial Estate

0 5 10 15 20 25 30 35 40 45 50
SCALEBAR (m)

THIS DRAWING SHOULD ONLY BE PRINTED IN COLOUR

This drawing is to be read in conjunction with the following:-

a) Westchurch Homes, Bealey Industrial Estate, Radcliffe, Site Location Plan, ref. BIE-LOC-001, dated February 2024.

FOR GUIDANCE PURPOSES ONLY

REVISION BOX				
Rev.	Date	Revision	By	Appd.
A	29.04.26	Zones updated.	AH	BH

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

Client
WESTCHURCH HOMES LTD

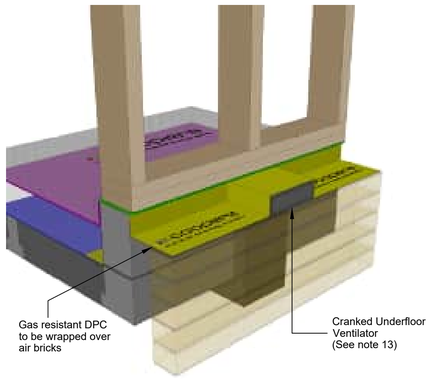
Project
Land Adjacent to Bealey Industrial Estate, Radcliffe.

Title
BUILD PHASE REMEDIATION PLAN

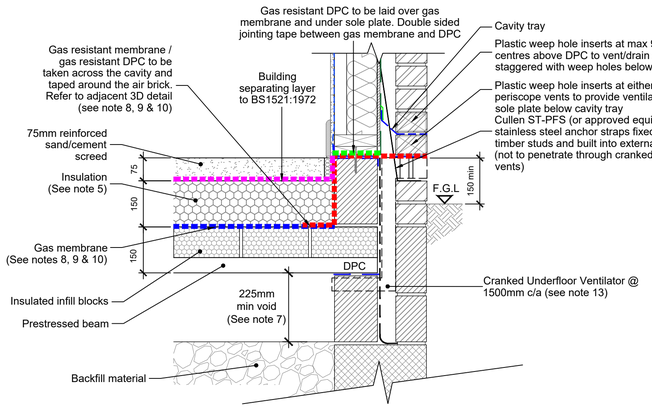
DRAWING NUMBER
8353 / BPRP

SCALE at A1	1:500	
DATE	30.03.26	REVISION
DRAWN	AH	A
CHECKED	BH	

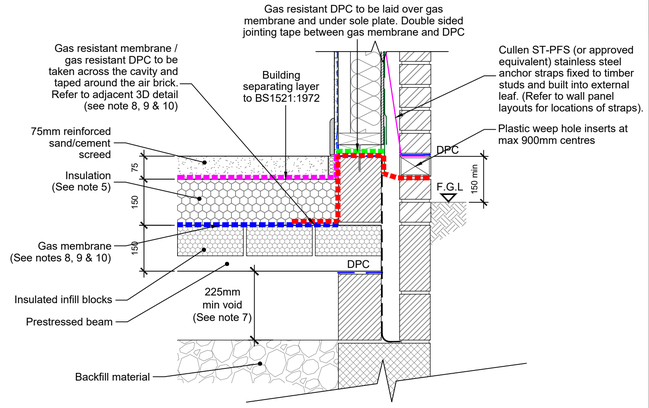
THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE RELEVANT HOUSE TYPE DRAWINGS, FOUNDATION PLAN & SCHEDULE AND THE SITE SPECIFIC GROUND GAS & SITE INVESTIGATION REPORTS



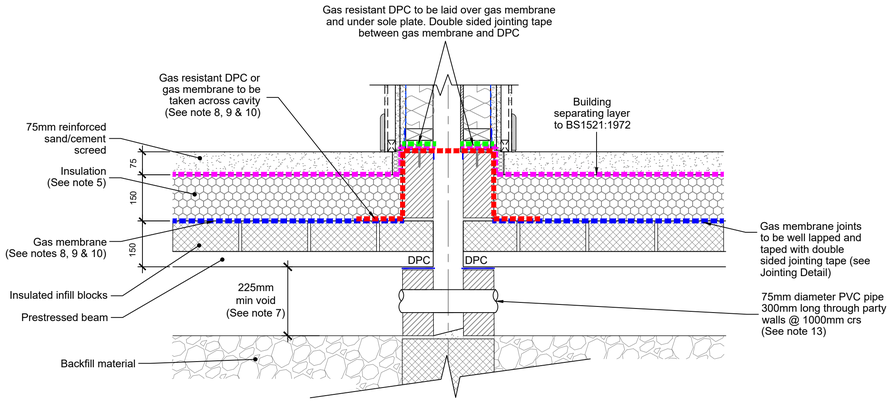
3D FINISH AROUND AIR BRICKS



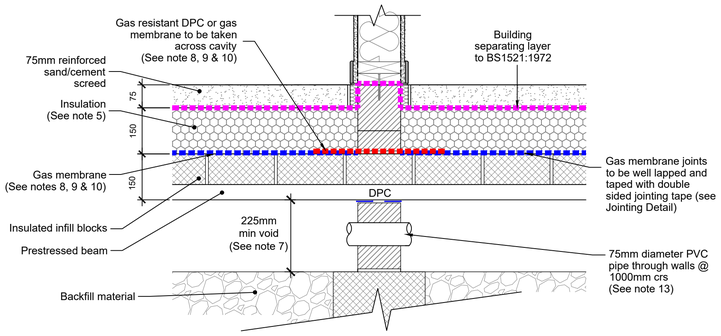
SLAB EDGE DETAIL AT EXTERNAL WALL
SECTION WITH CRANKED UNDERFLOOR VENTILATOR



SLAB EDGE DETAIL AT EXTERNAL WALL
SECTION BETWEEN CRANKED UNDERFLOOR VENTILATOR

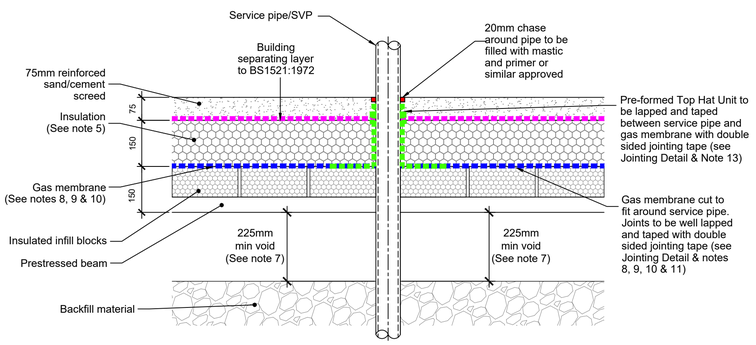


SLAB EDGE DETAIL AT PARTY WALL

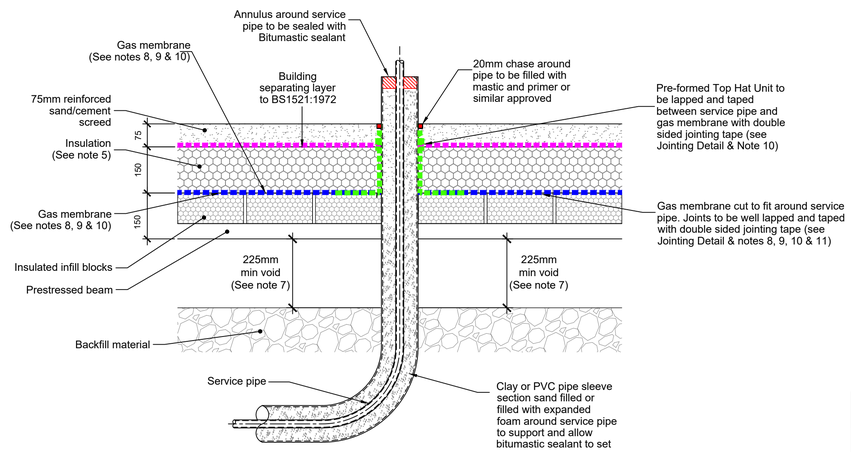


INTERNAL WALL DETAIL

ACCESSIBLE THRESHOLD DETAIL - GROUND
FALLING AWAY FROM DWELLING



SERVICE ENTRY



SLEEVED SERVICE ENTRY

NOTES

1. Coopers take no responsibility for the inappropriate use of this detail on a development. It is the responsibility of the Developer to commission a suitably qualified geo-environmental consultant to assess the relevant ground gas conditions at a development based upon the findings of in situ monitoring and/or qualitative risk assessment.
2. Coopers drawing is in accordance with current best practice with respect to design of measures and specification of membranes for the adequate protection of dwellings from the ingress of harmful ground gases. The details contained on this drawing are generic and for guidance purposes only. Any proposed amendments to the detail due to variations on specific house types should be referred back to Coopers for review and approval prior to implementation on site.
3. This drawing was prepared for the purpose stated. New products, improved practices and legislation may necessitate an alteration to this drawing in whole or in part after its submission. It is recommended that this drawing is referred to Coopers for reappraisal no later than one year from the date on this drawing. Continued use of this drawing beyond this date is at the Developers own risk.
4. Refer to precast slab drawing for relevant house types.
5. Refer to insulation details on specific house type slab drawings.
6. For details of proposed foundations refer to site specific foundation plan and site investigation report.
7. The minimum clear void below the suspended precast concrete ground floor is to be 225mm (plus heave thickness, where applicable) and should be adequately ventilated in accordance with the Westchurch details. The base of the void is to be within 450mm of the outer ground level unless masonry is designed by a structural engineer. The backfill material should be effectively drained.
8. The gas resistant membrane should be a minimum 400µm proprietary gas membrane with min. Methane Transmission rate of <40 ml/m²/day/atm. This membrane must have a low permeability to carbon dioxide and methane and also acts as a damp proof membrane as well as a barrier to radon gas. **The specification of the gas membrane should be submitted to Coopers for approval prior to use.**
9. All gas membranes should be installed to the manufacturers guidelines and recommendations. Special care must be taken to ensure that the gas membrane is not snagged, torn, punctured, stretched or in any way damaged during construction. All damaged areas of the gas membrane must be replaced or repaired to manufacturers recommendations.
10. Joints between sheets of gas membrane should be well lapped (150mm min) and taped between sheets with a double sided butyl based tape in accordance with manufacturers recommendations. Depending on the manufacturer, girth jointing strap can be provided, as shown below, for additional security. If welded joints are to be undertaken this should be agreed in advance.
11. All service entry points should be fitted with pre-formed gas resistant top hats unless agreed in advance. Tophats should be sealed to the pipe and gas membrane using butyl based double sided tape and fixed to the pipe with a jubilee clip.
12. Gas Risk defined in accordance with BS 8485.
13. Coopers designs for sub-floor passive ventilation propose external vents on at least 3 sides of the building and venting through all internal walls. These designs account for a range of potential traditional residential houses and contractors should contact the developer's engineers if the house type specific variations of venting differ from these designs. In the event of any discrepancies between the developers house type drawings and this drawing then Coopers drawing takes precedence unless the developer has calculations to prove that this design meets the minimum requirements in accordance with BS 8485.
14. A protection layer is recommended between the aluminium foil membrane and concrete. In accordance with ICE paper (Lucas & Wilson 2019) this should consist of a "geotextile-non woven needle-punched fleece with a mass per unit area of 300g/m²".
15. It is recommended that the installation of the Gas membrane system is verified by Coopers (or another independent gas-environmental consultant). This will require multiple phases to be agreed upon in the toolbox talk.

© Copyright The original of this drawing contained coloured symbols and/or features. Any black and white reproduction should not be relied upon.

Gas Mitigation Designs:
1) This design detail is specific to the referenced site and must not be transferred or used on other developments.
2) Any changes to the design proposals are subject to prior approval by Coopers. Verifiers should not accept variations to Coopers designs unless taking the role of the designer.
3) Any doctoring or this drawing is strictly prohibited, to do so maybe unlawful.
4) The final issue of this drawing is to be provided with a design report to comply with NHBC NF94 and BS8485. If no report has been provided with this drawing it should be considered as unsuitable for approval and construction.

This typical detail is provided as a guide for construction of Gas membrane installation only. House type specific variations are required to account for slopes on garage floor slabs, stepped slab levels, full building level access, party wall temporary shuttering, corner unit construction, cloaking units around doors, piers, and other similar specific considerations. We would advocate the contractors hold pre-construction discussions with Coopers (and the verification consultants if another consultant) on the approaches and considerations for specific house type construction prior to commencing installation. Should variations be constructed without prior consent these will be deemed by Coopers as a defect and not suitable for construction or approval by us or third parties.

This detail was current at the time of issue but should be reviewed by Coopers within 12 months of the date of issue to ensure it meets with current guidance and best practice. Beyond 12 months of issue the developer uses this detail at their own risk.

INSTALLATION, INSPECTION AND TESTING
1. A Ciria C735 compliant verification strategy is likely to be required, subject to approval by the Local Authority and NHBC.

FOR GUIDANCE PURPOSES ONLY

Note: If intended contracted installer is proposing heat welded joints these can have <150mm overlaps provided joint integrity not compromised.

JOINTING DETAIL
(See note 10)

CDM HIGH RISK ASSESSMENT
FOR ALL RISKS REFER TO DESIGN RISK ASSESSMENT

coopers
chartered consulting engineers
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU
Tel: 01244 684910
Email: admin@coopers.co.uk
Web: http://coopers.co.uk

CLIENT
Westchurch Homes

PROJECT
Land Adjacent to Bealey Industrial Estate, Radcliffe.

TITLE
CHARACTERISTIC SITUATION 2 (CS2) GAS MITIGATION MEASURES FOR TIMBER FRAME HOUSING AND PRECAST (BLOCK AND BEAM) FLOOR WITH VENTILATED SUBFLOOR VOID

DRAWN BY	AH
DATE	29.04.26
SCALE(S)	NTS (A1)

DRAWING NUMBER: 8353-LRHHRH-CS2-PC-G-01
REVISION: -

Appendix 2

Referenced Desk Study Data

DEPARTMENT OF
OPERATIONS

Sian Callister
Coopers (Chester) Ltd
Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Date 21 February 2024
Reference ES897.210224.1

Dear Sian

ENVIRONMENTAL SEARCH REQUEST
Land Adjacent to Bealey Industrial Estate, Radcliffe

Further to your recent enquiry regarding the above site, the Environment Section holds the following information:

The site is approximately 4 hectares in area and is located at National Grid Reference 379725 408182. The current OS plan is attached showing its location.

Please be careful to check the approximate scales on each plan enclosed as some will vary dependant on the search parameters.

Contamination issues at or immediately adjacent to the site

The site is currently mainly occupied by rough grassland and vegetation with yards and storage containers, a carwash, cafe, vehicle storage and a communications mast located in the southern part the site. Previous land uses at the site have included filter beds, settling tanks, reservoirs and tanks associated with a Dumers Paper Works (later Broad Dumers Paper Works), a tramway associated with Radcliffe Bleach and Chemical Works, electricity sub-stations, a garage colony, Bealey's Goit (partially infilled) and open land.

Within the wider area previous land uses have included Eaton Hill Cotton Mill (later a dyeing works, then dyeing and finishing), a gasometer, Dumers Paper Works, Radcliffe Bleach and Chemical Works (later bleaching works), a chemical works, engineering works, infilled reservoirs, areas of waste disposal activity and a sewage works.

This Section holds the following information relating to the ground conditions at the site. The location of these reports is shown on the attached plan.

CL399 – Land at Bury Road / Dumers Lane, Radcliffe

The following report was submitted in support of a proposed commercial development:

- Preliminary Risk Assessment, Leyden Kirby Associates, CL1192, 22 October 2007.
- Ground Investigation and Risk Assessment, Leyden Kirby Associates, CL1192-02, 30 November 2007.

The investigation identified up to 10m of waste within the former Bury Road, Radcliffe Landfill in the north of the site and approximately 1-2m of made ground containing ash/clinker in the southern part of the site. High concentrations of methane were recorded but flow rates were low. The groundwater encountered within the former landfill and the surface waters in Swan Lodge appeared to be in hydraulic continuity. No elevated concentrations of contaminants were found when compared to the then generic assessment criteria for commercial land use. Elevated levels of ammonia were identified in groundwater samples. Further investigation and risk assessment was recommended. No development took place.

Landfill Sites within 250 metres

We are aware of two registered landfills within 250m of the site and a location plan is enclosed (summarised below):

Landfill Name:	**Bury Road, Radcliffe (Crawford Bros)**
File reference:	**C008** **Grid Ref.: 379380 408810**
Site is an old refuse tip and has been filled with domestic, commercial, construction, difficult and non-hazardous industrial waste. The licence was granted to Wimpy Waste Management, Licence No. RD/LIC/0057/76. Filling took place between pre 1949 and late 1980s. We do not know if any landfill containment measures have been implemented at the site.	

Landfill Name:	**Dumers Lane, Radcliffe**
File reference:	**C011** **Grid Ref.: 379700 408130**
The site is a former bleachworks, initially the reservoirs and settling tanks were infilled, then the buildings levelled to raise site levels. The site has been filled with construction and inert waste. It is a pre-licensed site, originally owned by Wimpy Waste Management Limited and then owned by Beazer. Planning permission was given in 1982 for the infilling of the lagoons and in 1989 for raising site levels.	

Please note that the boundaries indicated on the enclosed plan are approximate only and may not reflect the actual extent of fill.

Local areas of landfilling at or within influencing distance of the site may have been carried out for which we hold no records. Please consult historical maps and other sources of information to identify potential areas of filling.

Further information on landfills may be available from the Environment Agency by telephoning 03708 506 506, emailing enquiries@environment-agency.gov.uk or visiting their Website: https://www.gov.uk/government/organisations/environment-agency and completing any on-line enquiry form. Note that the Environment Agency may make a reasonable charge for supplying this information

Sites determined as statutory contaminated land within 250 metres

No areas of land at or near the site have been determined as Contaminated Land under Part 2A of the Environmental Protection Act (EPA) 1990.

As the site has had a previous potentially contaminating land use, the property is considered a potential site of concern. However, the site is not considered a high priority for further investigation under Part 2A of the EPA 1990 and it is considered very unlikely that the site will be investigated in the near future, unless additional evidence that there may be a significant contaminated land issue at the site comes to light.

It would be considered prudent to conduct a detailed desk study, site reconnaissance and historical search to indicate potential problems which may require further investigations and / or remedial action. Extracts from historical mapping have been included for your information.

Historical maps for the site

Extracts from Ordnance Survey historical maps 1848, 1893, 1910, 1930, 1937, 1957 and 1984 are enclosed. Please refer to the maps for details of past uses at the site and surrounding land.

Aerial Photographs for the site

Aerial photography of the site from the 1940s, 1979, 1989, 1997-9, 2000, 2005-6 and 2009-11 surveys are enclosed for your information.

Please note that the quality of the earlier photography is limited, however, they do provide an extra source of information which is generally useful for the site and surrounding land.

Solid & Drift Geology for the site

The following information has been taken from the British Geological Survey 1:50000 scale digital map:

DRIFT	ALLUVIAM	
SOLID	MIDDLE COAL MEASURES FORMATION	PEEL HALL ROCK SANDSTONE

Please note that the 1:50 000 scale data may be used as a guide to the geology at a local level but should not be relied on for site specific geology. If more-detailed information is required then the 1:10000 scale maps, which provide the most-detailed interpretations available, should be consulted.

Aquifers and groundwater vulnerability classification at the site

The Environment Agency designate aquifers based on the Water Framework Directive. The designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) but also their role in supporting surface water flows and wetland ecosystems. The aquifer designation data is based on geological mapping provided by the British Geological Survey. Both the bedrock and superficial deposits are classified on the same scale.

Based on these designations, the bedrock beneath the site is classified as **Secondary A** (Middle Coal Measures and Peel Hall Rock Sandstone)**.** Please see below for the descriptions of this classification:

- **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.

The Environment Agency still recommend that the older groundwater vulnerability maps are used to classify soil leaching potential. The site is located over soils classified as **HU**. Please see below for the description of this classification:

- **Soils of High Leaching Potential, HU:** Soils at the site are classified as HU. Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst-case vulnerability classification of soils of high leaching potential (H) is assumed, until proved otherwise.

Radon Affected Areas at the site

Part of the site is located within a Category 2 Radon Affected Area, where 1 to 3 percent of homes are likely to be above the Action Level.

The UK Health Security Agency recommends a radon 'Action Level' of 200 Becquerels per cubic metre for the annual average of radon gas concentration in a home. Where 1% or more of homes are estimated to exceed the Action Level, the area should be regarded as a Radon Affected Area.

Further information on Radon can be obtained from the UK Health Security Agency, from the British Geological Survey or at www.ukradon.org.

Environmental Permits at the site

We are not aware of any sites with Integrated Pollution Prevention Control (IPPC) Part A1, or Local Authority Integrated Pollution Prevention and Control (LAIPPC) Part A2 Permits within 250m of the site.

We are aware of three sites with a Local Authority Pollution Prevention and Control (LAPPC) Part B Permits within 250m of the site.

The location of the Permitted Process is indicated on the enclosed plan and information on each is presented in the table below:

PPC Regs Schedule 1	Process Reference	Operator	Grid Ref.	Process (and Pollutants)
Part B	LAPPC04-14	M&S Commercials, Unit 5, Bealey Ind Est, Dumers Lane	379685 407999	Vehicle Respraying (VOCs, Particulates) ACTIVE
Part B	LAPPC10-01	Academy Group, Eton Business Park, Bury Road, Radcliffe, M26 2ZS	379442 408463	Waste Oil Burner <0.4mw (Particulates) REVOKED
Part B	LAPPC10-02	CCP Building Products, Eton Way North, Radcliffe, M26 2ZT	379550 408304	Bulk Cement (Particulates) SURRENDERED

Further information of the above authorisations is available for viewing within the PPC Public Register held at 3 Knowsley Place, Duke Street, Bury. Please contact us to arrange a visit if required.

Please note that other processes that do not fall under these regulations or are exempt may exist within influencing distance of the site of interest and may cause pollution and/or nuisance to new receptors.

Statutory nuisance notices in force at the site

We have searched the Environmental Services Authority database for nuisance and pollution incidents.

No nuisance incidents have been logged against the address supplied within the last 12 months.

No pollution incidents have been logged against the address supplied within the last 12 months.

No Statutory Notices for nuisance have been served against the address supplied or the immediate area within the last 12 months.

Other information on pollution incidents may be held by the Environment Agency (contact details given above), Health & Safety Executive on www.hse.gov.uk or by contacting the Manchester office on 0161 952 8200, Greater Manchester Fire Brigade on www.manchesterfire.gov.uk and Greater Manchester Police on 0161 872 5050 or their website: www.gmp.police.uk.

Ecological designations within 250 metres

We have records of one Site of Biological Importance (SBI) within 250m of the site. The location of each SBI is indicated on the enclosed plan and information on each SBI is presented in the table below:

Map ref.	Site Name	Grid Reference	Site Grade
C28	Swan Lodge	37960 40850	B

There are no Sites of Special Scientific Interest (SSSI) within 250m of the site.

Private Water Supplies within 1000 metres

We are not aware of any private water abstractions regulated under the Private Water Supplies (England) Regulations 2016 within 1000m of the site.

Air Quality Management Area (AQMA) at the site

The site is not located within an area predicted to exceed the national Air Quality Objectives for Nitrogen Dioxide (NO_2) as detailed in the Air Quality (England) Regulations 2015. Therefore in line with the EPUK Guidance, an air quality impact assessment will not be normally be required if the site were to be redeveloped.

However, in line with the principles of Good Practice set out in the EPUK Guidance, we would welcome proposals to mitigate any potential impact of any redevelopment on local air quality through the provision of electric vehicle charging points to encourage the use of low emission vehicles.

Environmental Information Regulations 2004

The Environmental Information Regulations enable individuals and organisations to request environmental information held by public bodies. In the majority of cases, we will endeavour to respond to your request within 20 working days, extended to a maximum of 40 working days should

the request be complex or voluminous. Public Bodies are allowed to make a reasonable charge for supplying the information requested, and we will contact you if a charge is applicable.

You are welcome to have access to any public registers or to examine the information free of charge. If you wish to do so, please contact the Council to arrange viewing.

If you are dissatisfied with your response, you have the right to complain to the Local Authority, who will conduct an internal review to try and resolve any issues or problems. Please complete a 'Report a Problem' complaint form available from our website: www.bury.gov.uk or by contacting customer services on 0161 253 5353. Should you still not be satisfied with your response, you may then appeal to the Information Commissioner. Details can be found on the following website: www.informationcommissioner.gov.uk or by contacting 01625 545 700.

Payment Receipt

I acknowledge your payment of £135.00. Should you require any further information please contact me on the number given above.

Customer Satisfaction Survey

The Environment Section, as part of its commitment to Customer Care, is looking at ways to improve its service. Our commitment is to listen to our customers and offer courteous, helpful advice and assistance.

With regards to your information request I should be grateful if you could complete the enclosed questionnaire to help us assess if we are meeting your needs.

Information collected in the survey will be strictly confidential and will enable us to provide a quality service. Thank you for your co-operation.

Should you require any further information please contact me on the number given above.

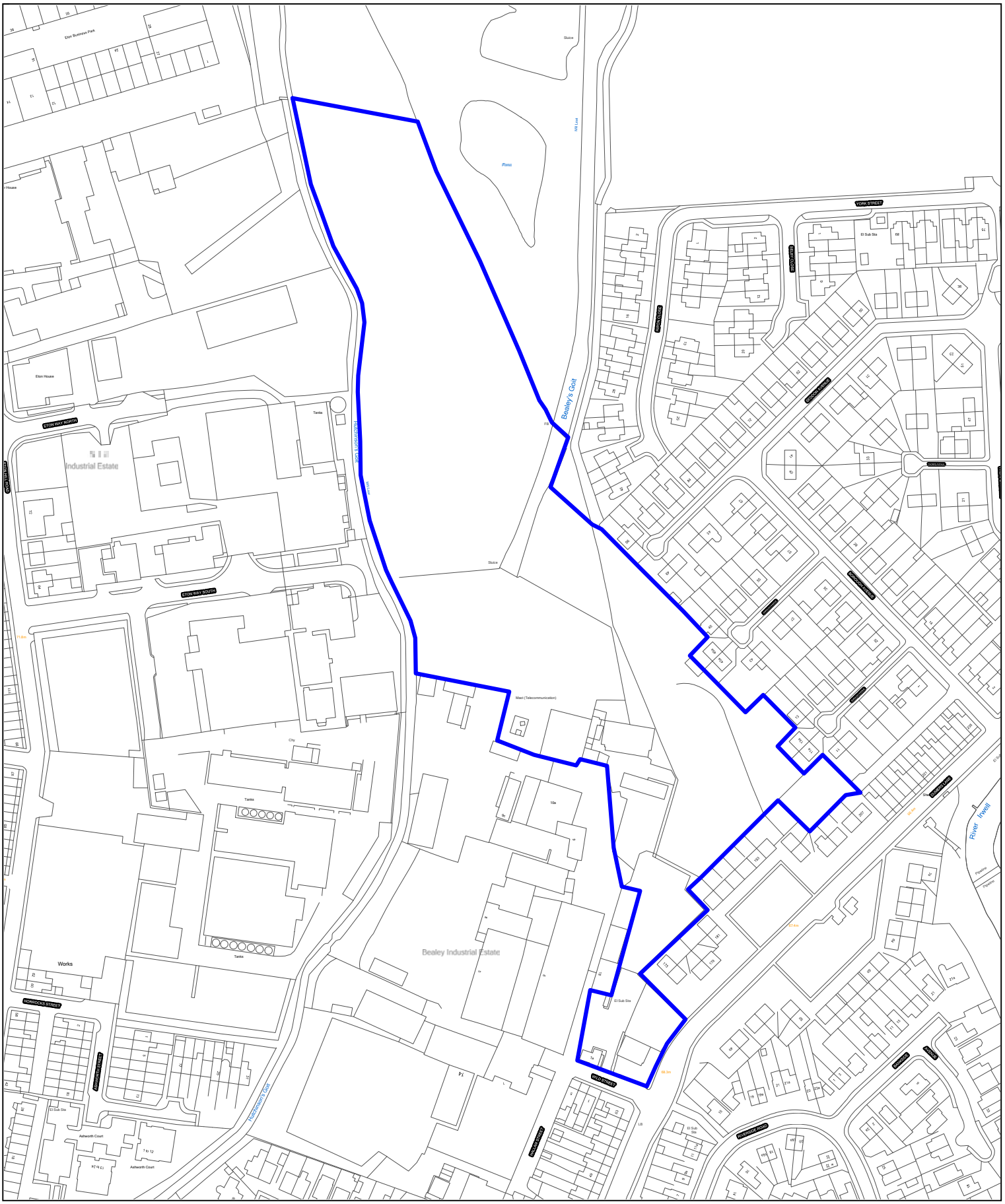
Yours sincerely



Rebecca Jones
Environmental Protection Officer

The above details are based upon records currently held by the Environment Section and are believed to be accurate at the time of printing. However, this Division can accept no responsibility for their accuracy or completeness.

Privacy Policy: Please visit www.bury.gov.uk/privacy to read our recently updated Privacy Policy which explains how Bury Council uses and shares your personal data to give you the best possible experience across our services.



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

Current OS Map

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

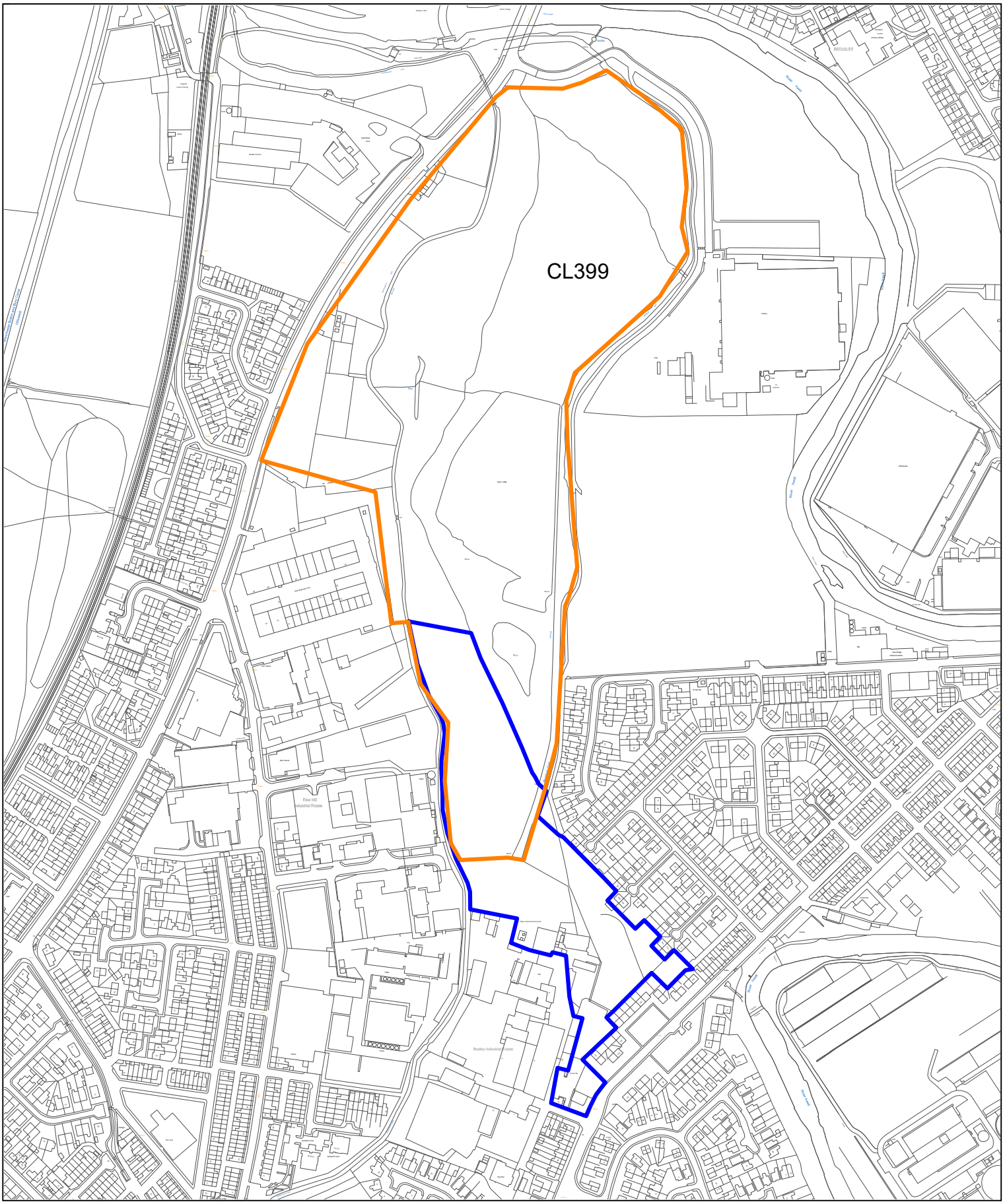
0 0.1

kilometres

Scale 1:2,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

Site Investigation Reports

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

Site Investigation Reports

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

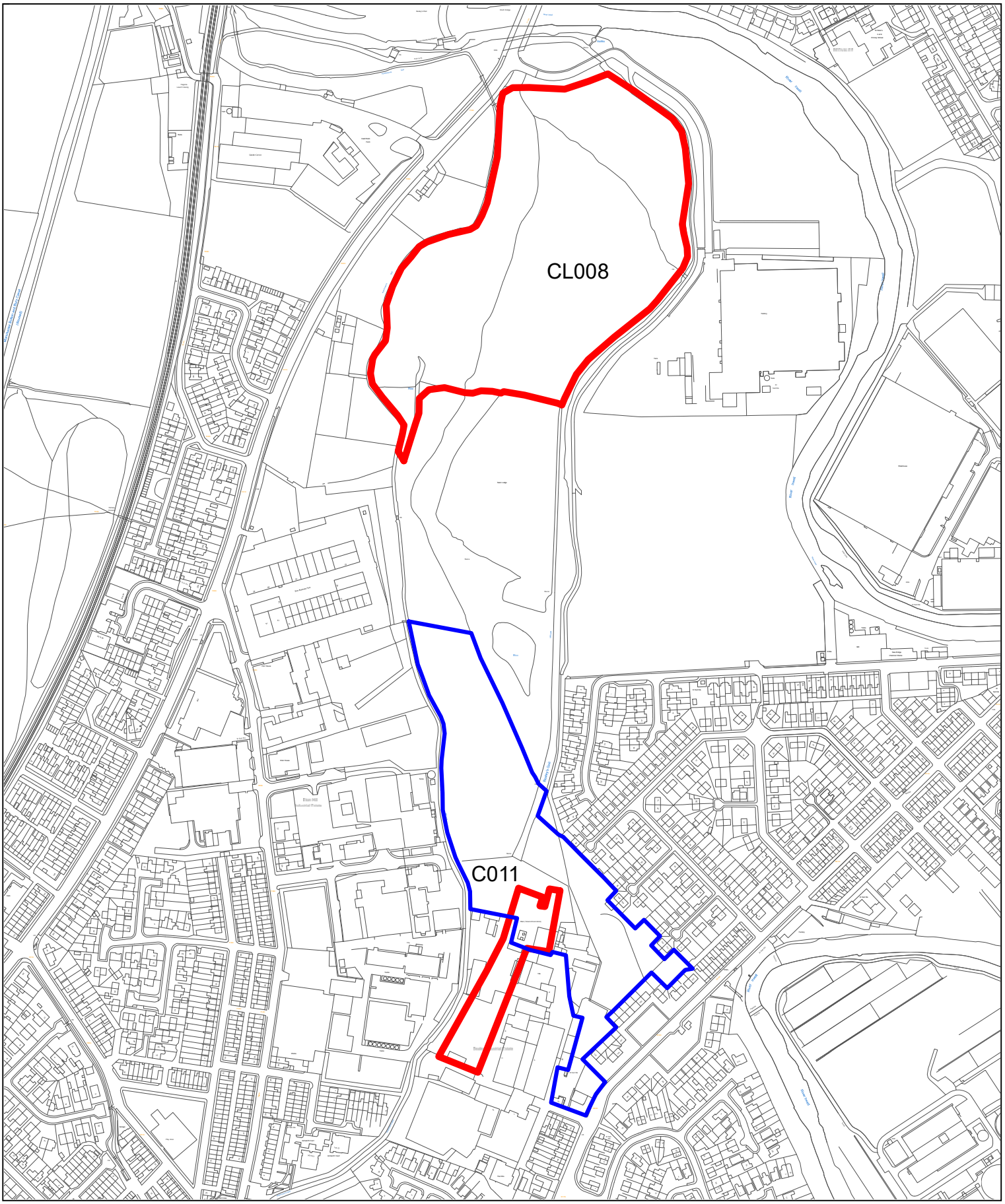
0 0.25

kilometres

Scale 1:5,000

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

Landfill Sites

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

Landfill Sites

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

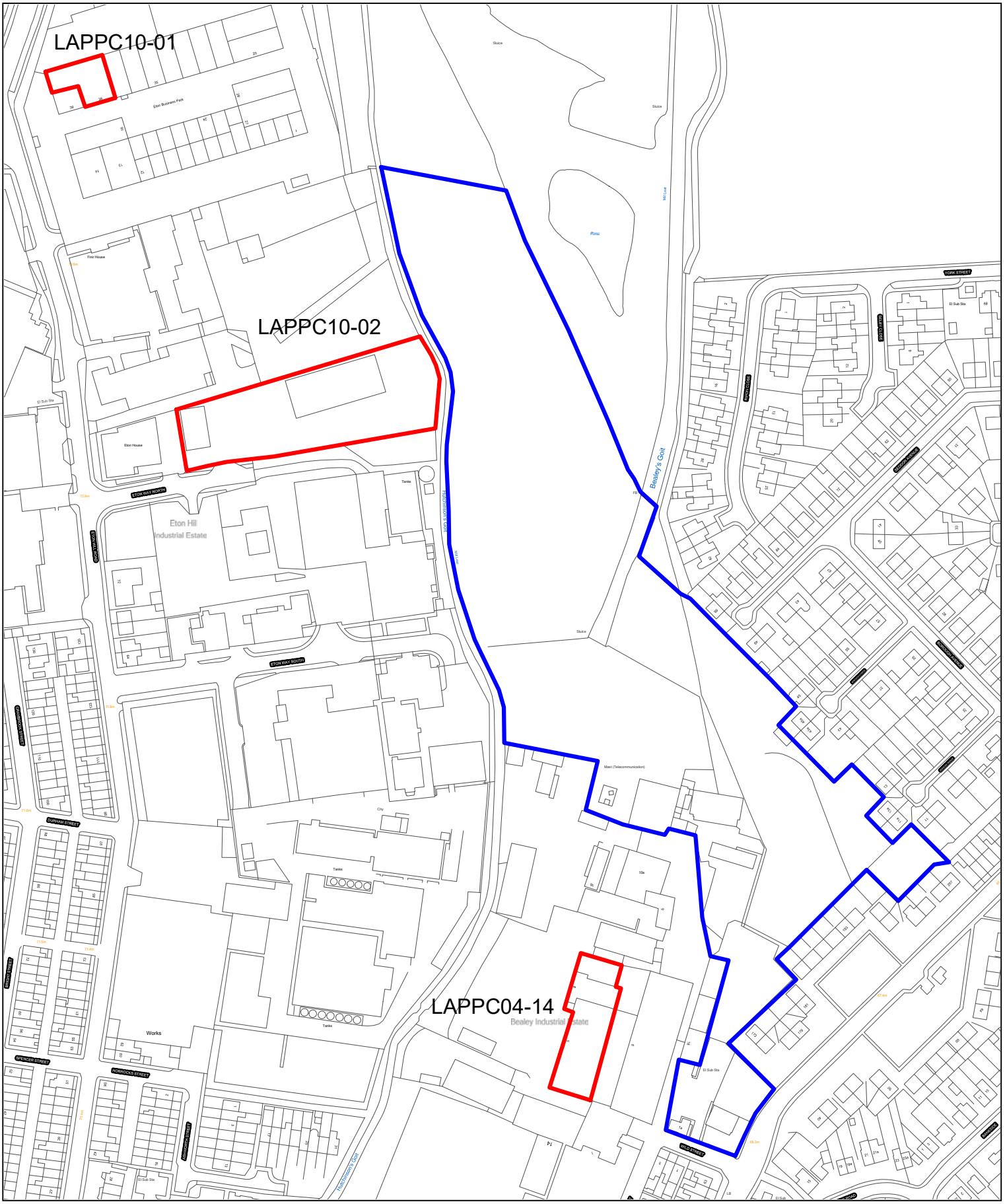
0 0.25

kilometres

Scale 1:5,000

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

Part B Process

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

Environmental Permits

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

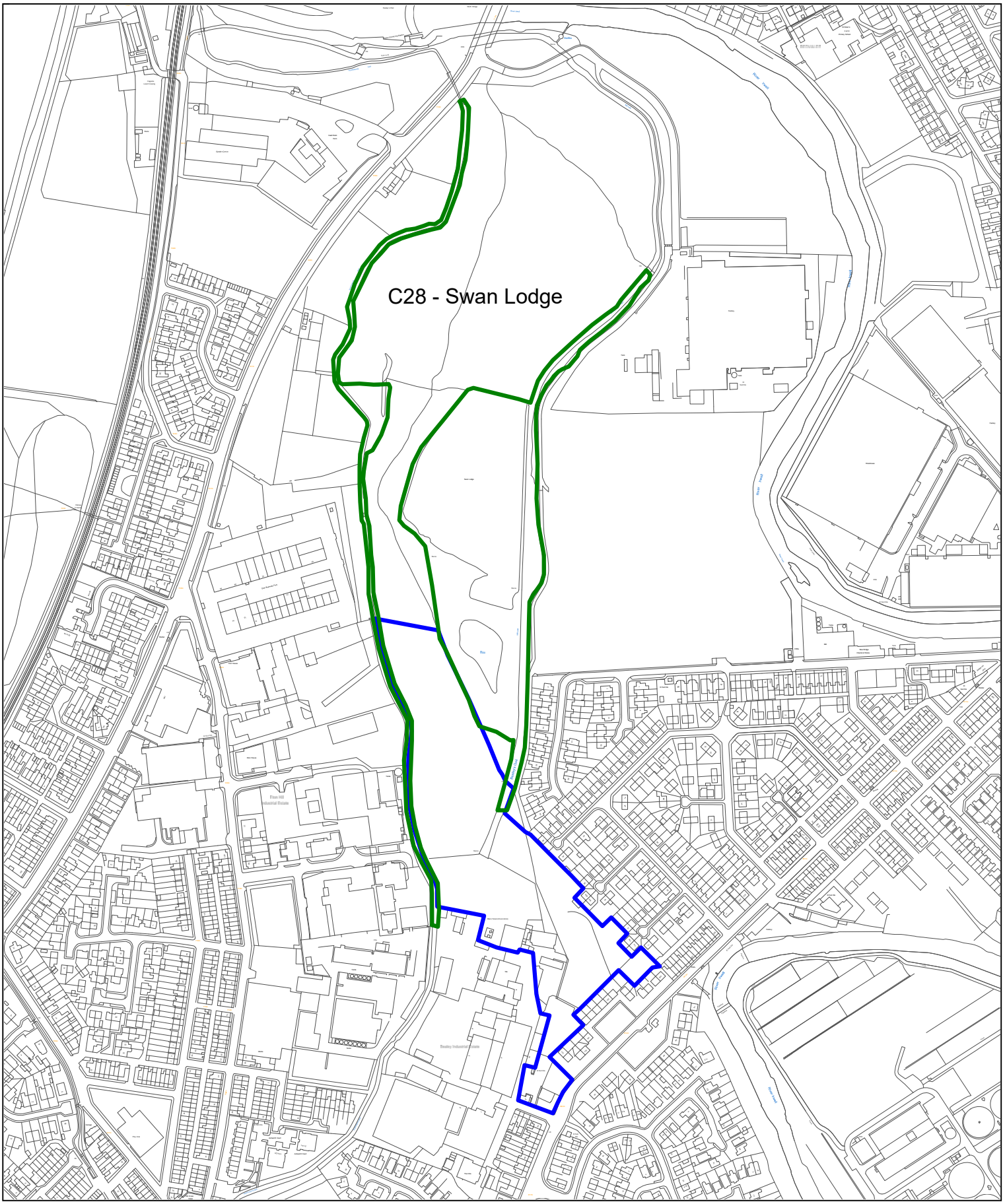
0 0.1

kilometres

Scale 1:2,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

Site of Biological Importance

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

Ecological Designations

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

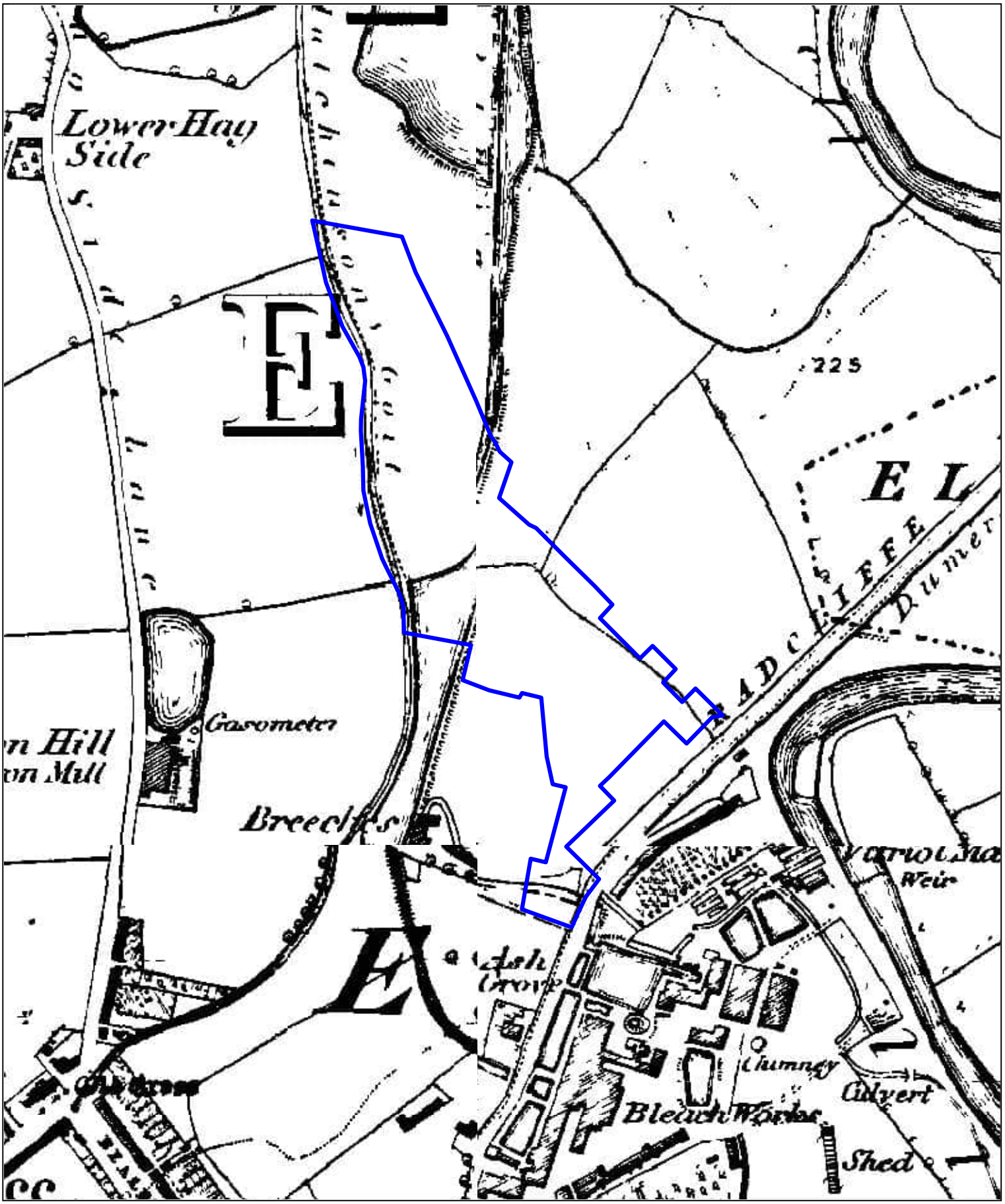
0 0.25

kilometres

Scale 1:5,000

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1848 Historical Map Extract

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

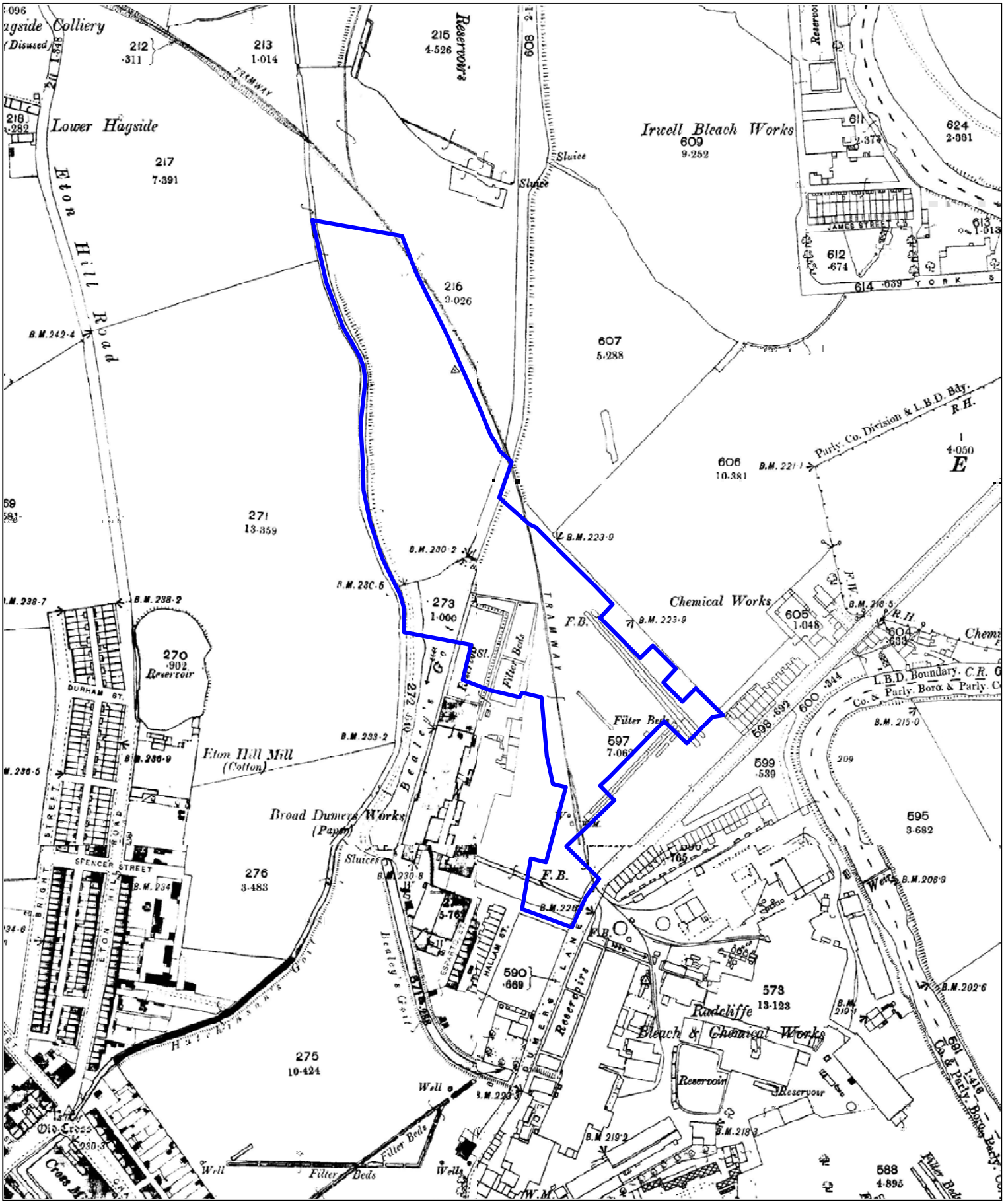
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1893 Historical Map Extract

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

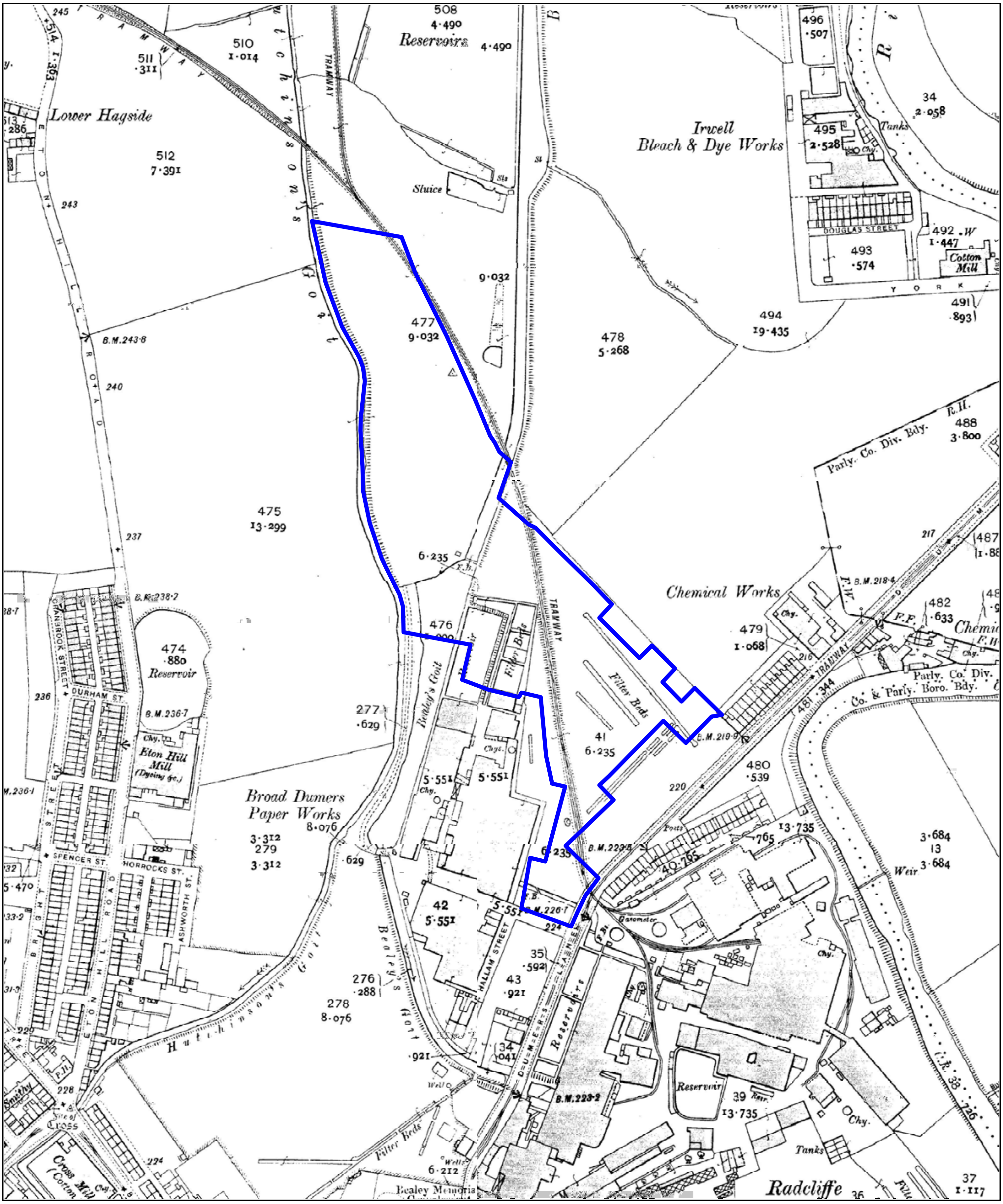
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:
Land Adjacent to Bealey Industrial Estate, Radcliffe

1910 Historical Map Extract

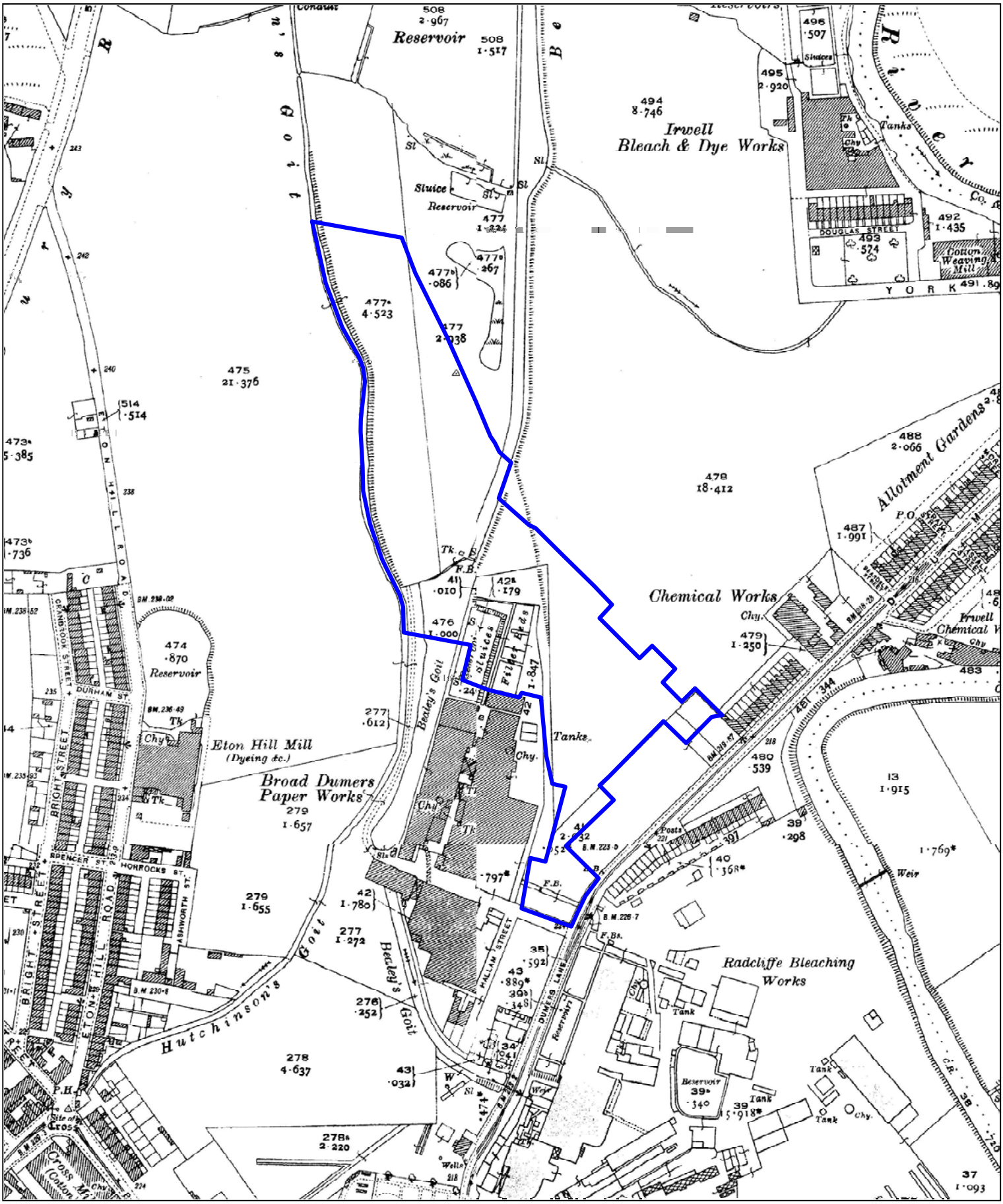
Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

0 0.2
kilometres
Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1930 Historical Map Extract

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

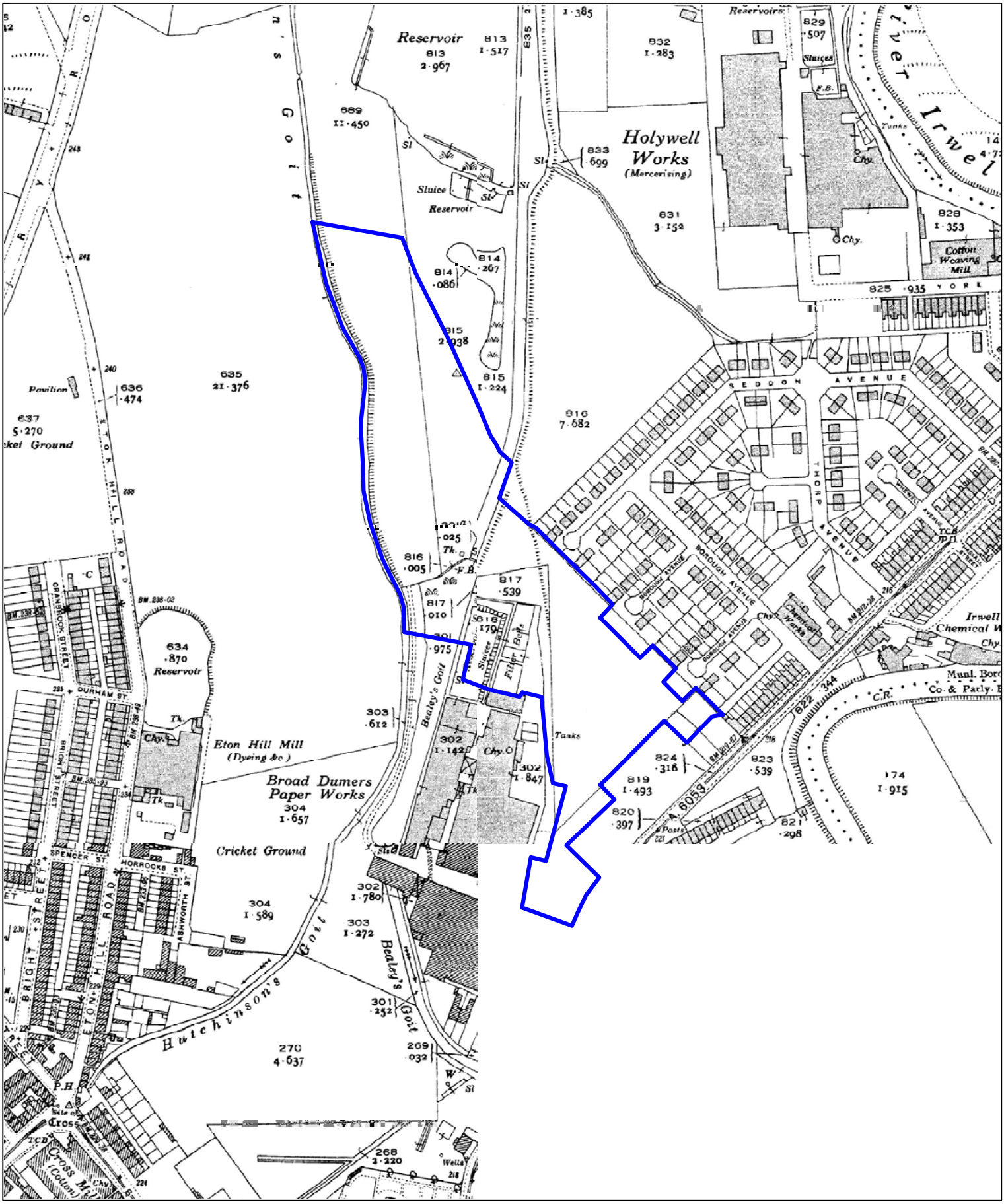
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1937 Historical Map Extract

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

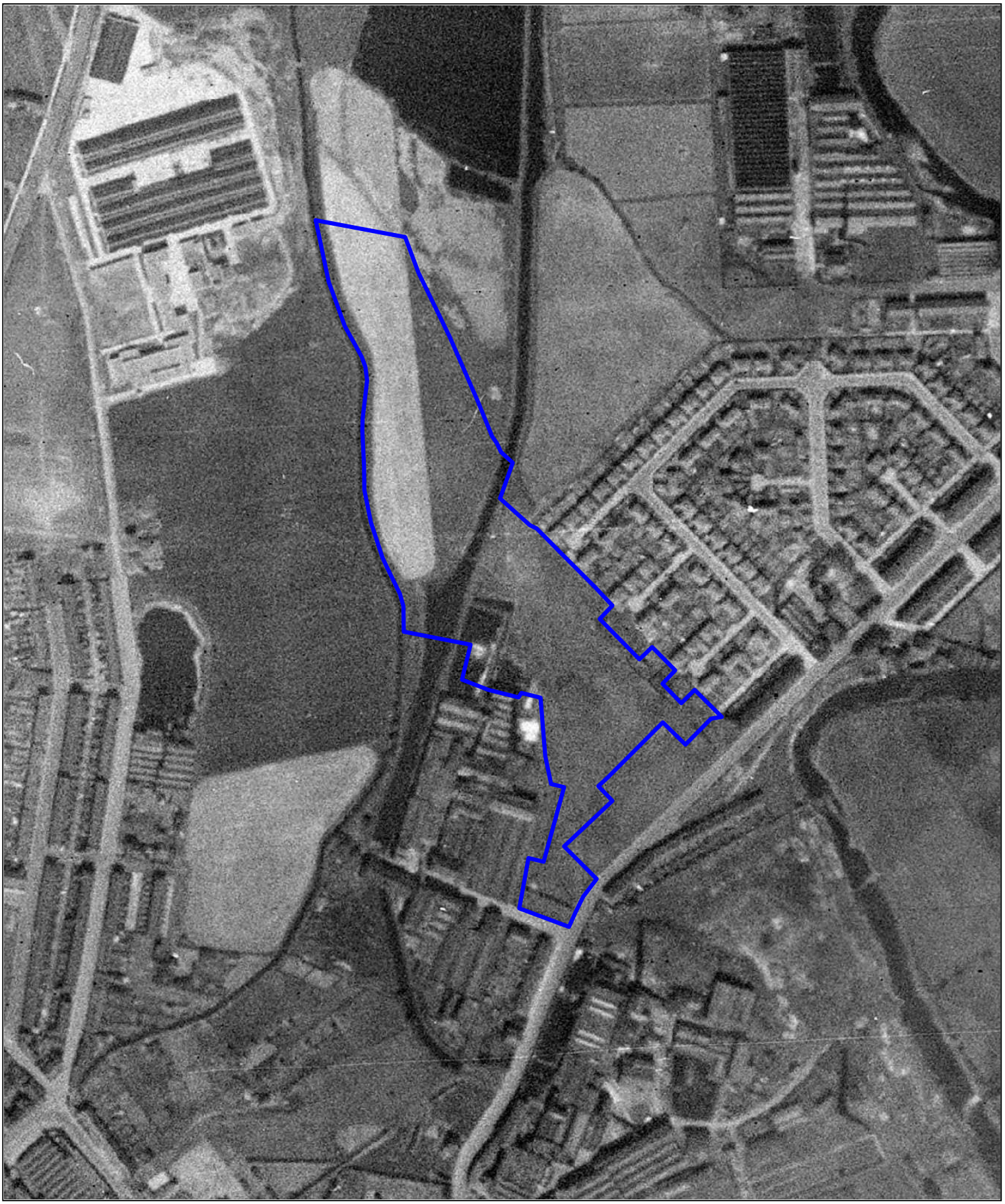
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1940s Aerial Photograph

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

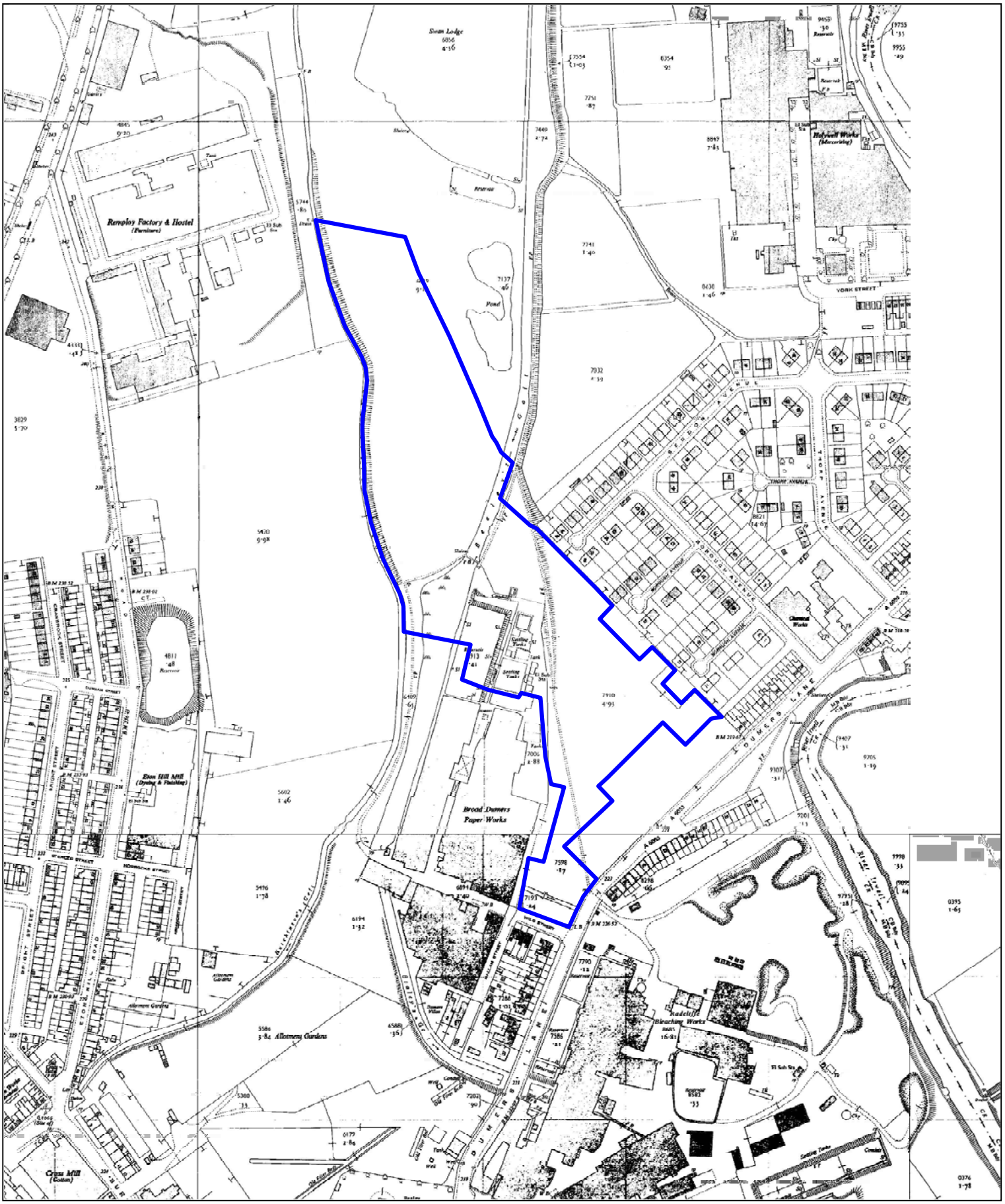
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1957 Historical Map Extract

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

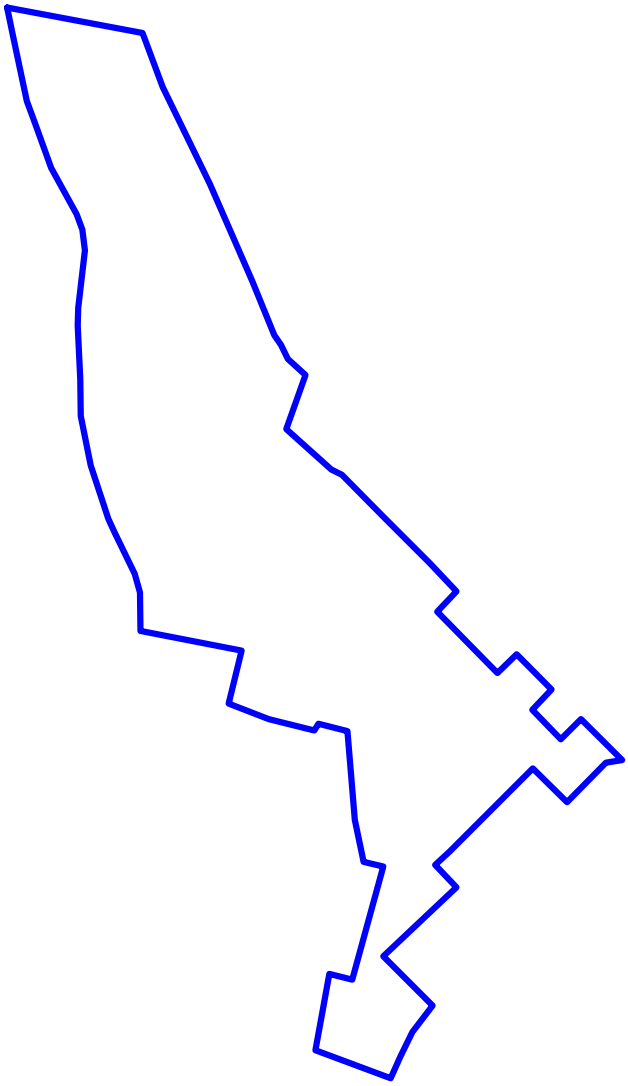
0 0.2

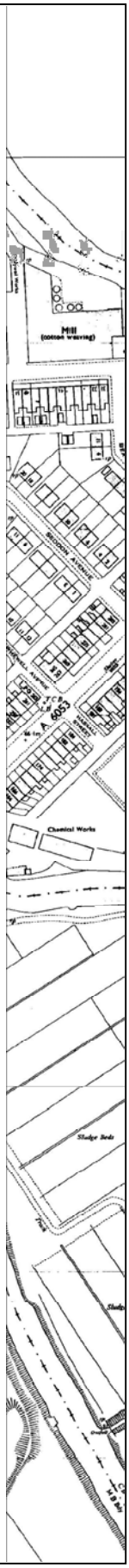
kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024





KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1972 Historical Map Extract

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

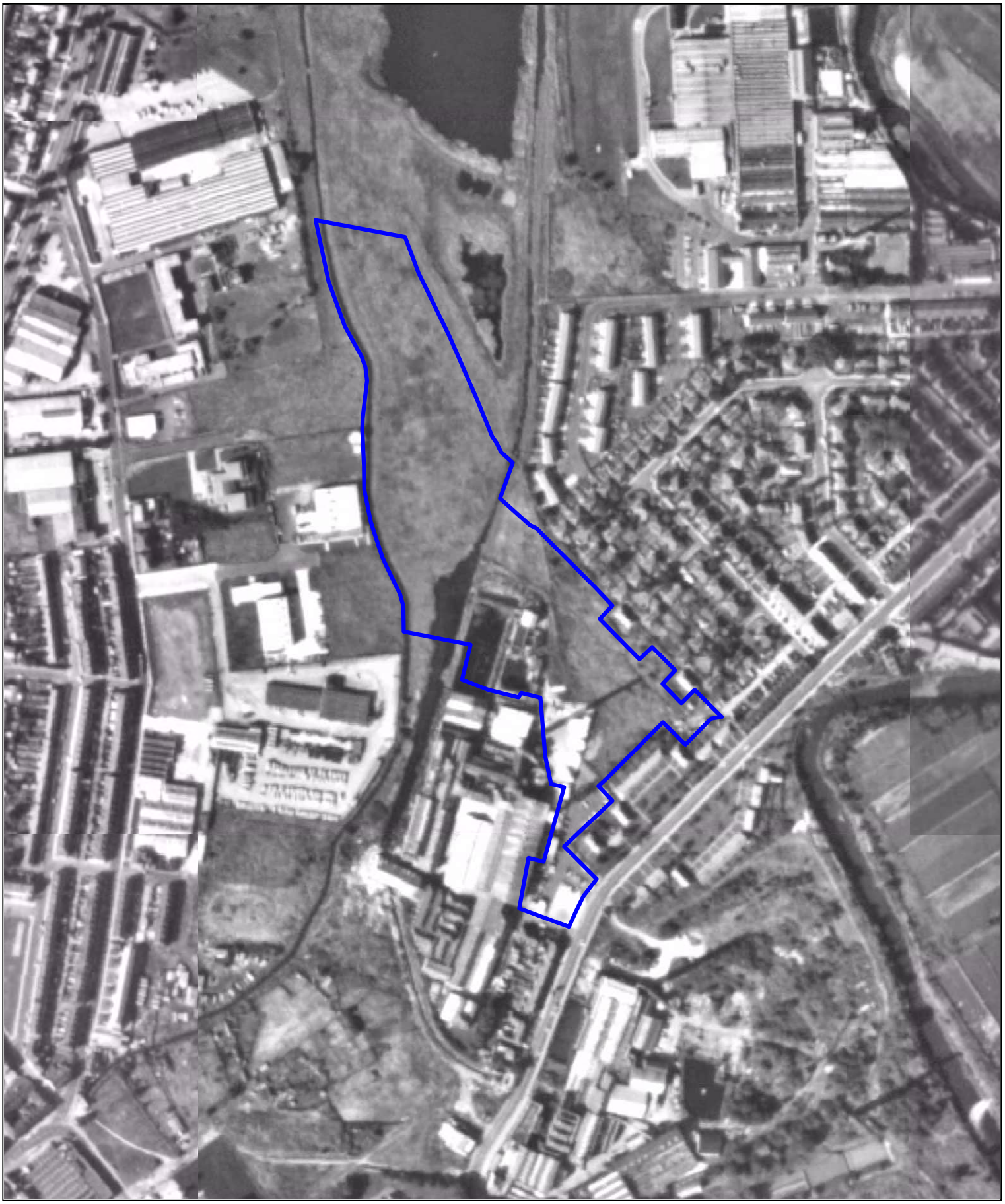
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1979 Aerial Photograph

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

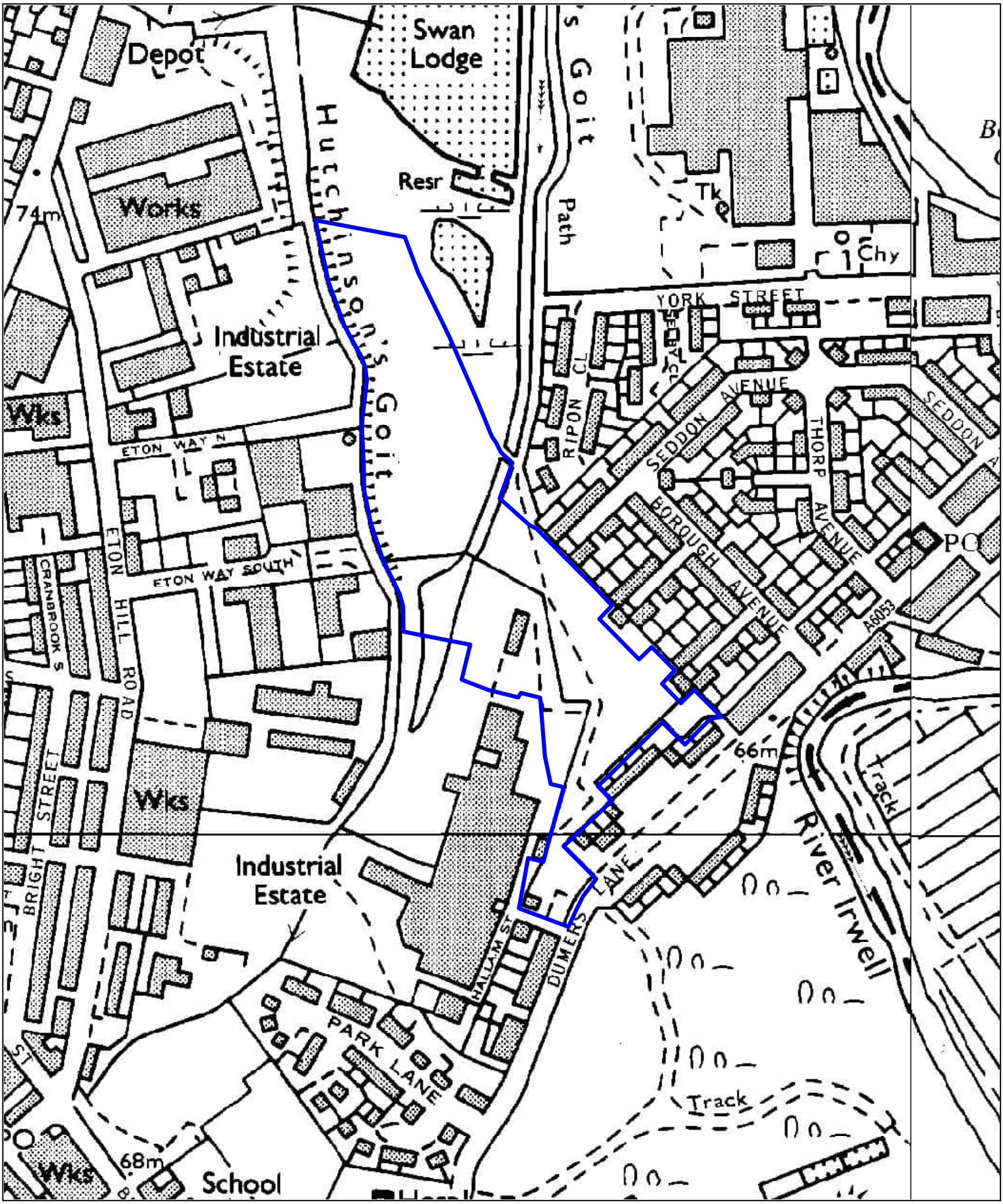
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1984 Historical Map Extract

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1989 Aerial Photograph

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

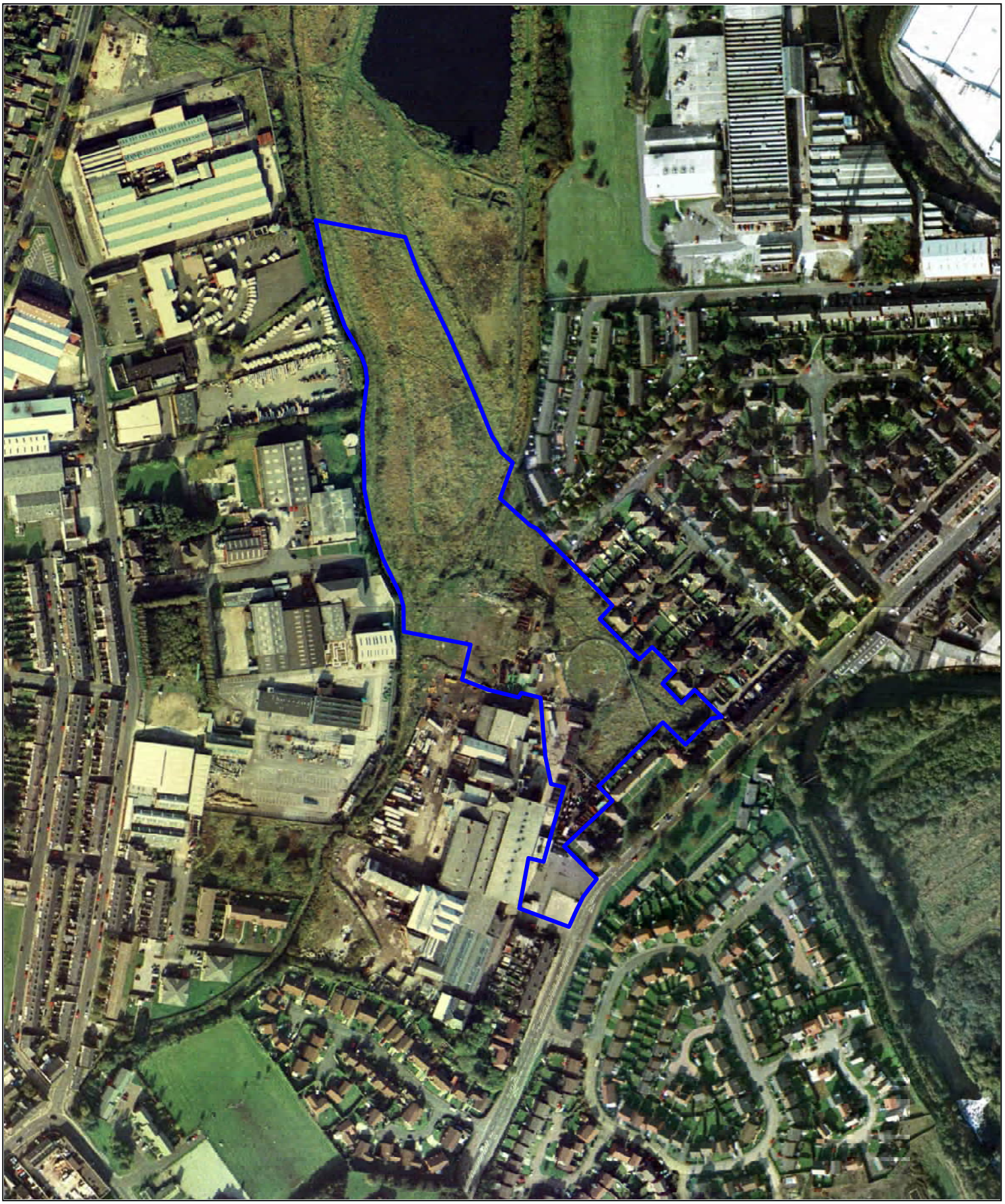
0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

1997-9 Aerial Photograph

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

2000 Aerial Photograph

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

2005-6 Aerial Photograph

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024



KEY:

Site Boundary

TITLE:

Land Adjacent to Bealey Industrial Estate, Radcliffe

2007-9 Aerial Photograph

Bury Council

Crown Copyright and Database Rights 2024
Ordnance Survey 100023063

0 0.2

kilometres

Scale 1:3,500

NGR: 379725 408182

DATE: February 2024

Dear Requestor

Request for Information - Freedom of Information Act 2000 (FOIA)

FOI2526.1095

In response to your Freedom of Information request, the Council's response to your request is as follows:

Request

I write to request all information held on C/13614/82

Response

Please see the attached document

The supply of information in response to a Freedom of Information request does not confer an automatic right to re-use the information. Under UK copyright law you can use any information supplied for the purpose of private study and non-commercial research without requiring permission. Similarly, information supplied can also be re-used for the purposes of news reporting, an exception to this is photographs.

For other forms of re-use, for example publishing the information, you would need the permissions of the organisation or the person who owns the copyright. In the case of information produced by government departments and agencies you can re-use the information under the Open Government Licence. For more information about this please see:-

http://www.nationalarchives.gov.uk/doc/open-government-licence/open-government-licence.htm

If, the copyright is identified as belonging to somebody else, you will need to apply for permission. For information how to obtain permission from a third party, please go to Intellectual Property Office's website at www.ipo.gov.uk

If you are dissatisfied with the handling of your request, you have the right to ask for an internal review. Internal review requests should be submitted within two months of the date of receipt of the response to your original letter and should be addressed to; The FOIA Reviewing Officer, foi@bury.gov.uk

Regards
Policy Compliance Service
Department of Corporate Core Services
www.bury.gov.uk/FOI

Planning permission

Report by [illegible]

Date August 4th 1981

File CI/136/14/12/77

Subject Former John Laird + Sons Ltd Premises
DEMOLITION + FILLING OF BASEMENTS + Planning
2 DETACHED HOUSES

Discussion and Conclusions

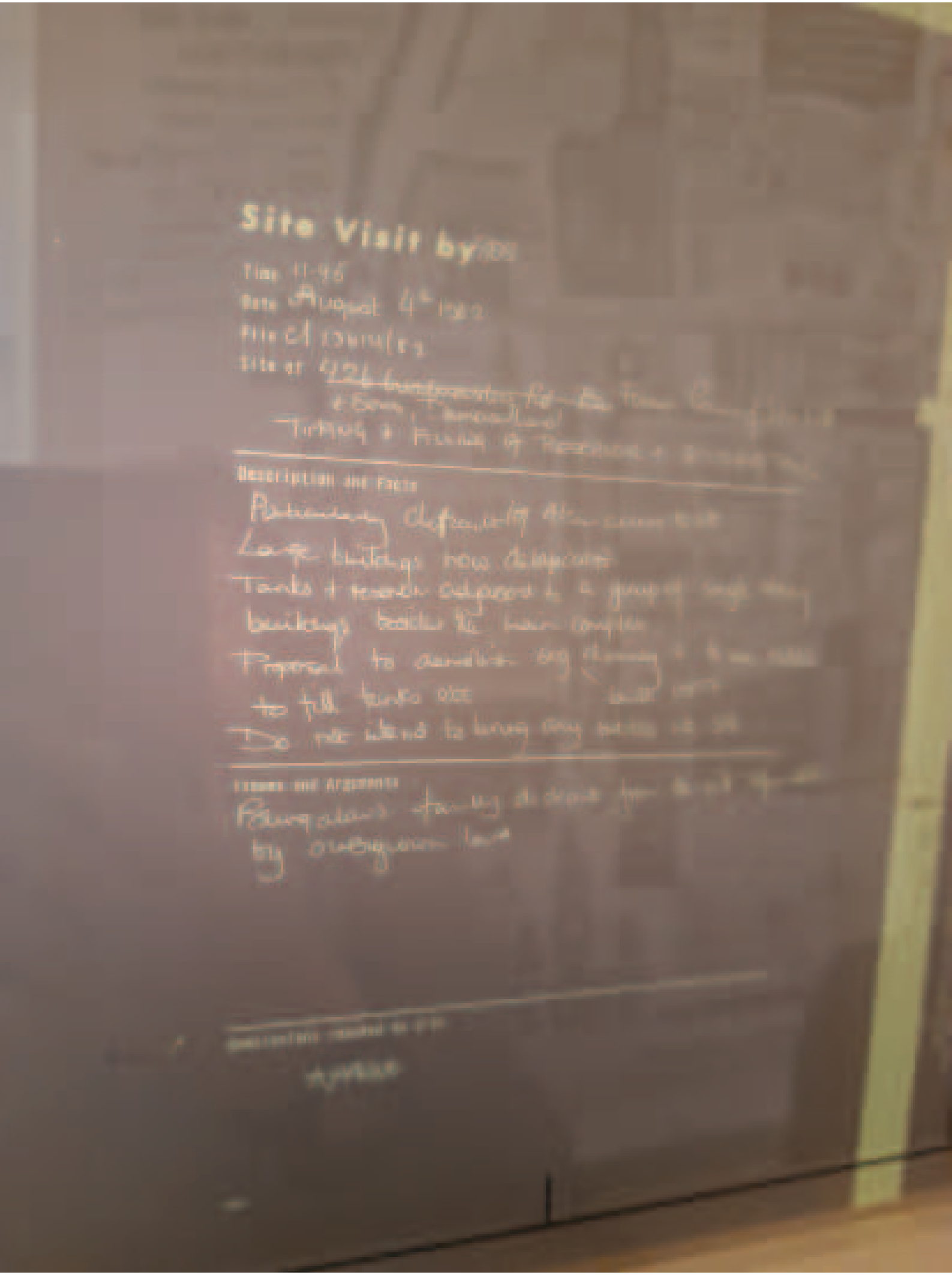
Danger included [illegible] premises [illegible]
Volume + bulking overlies
GMC have objected to Agent + they have refused
me verbally that Alive will be no objections
of materials because the still have [illegible]
the 15th Oct Closing when demolished it
is expected to take 3 months
Remainder of consultations + documents to be received
by GMC - is partially [illegible]
required.

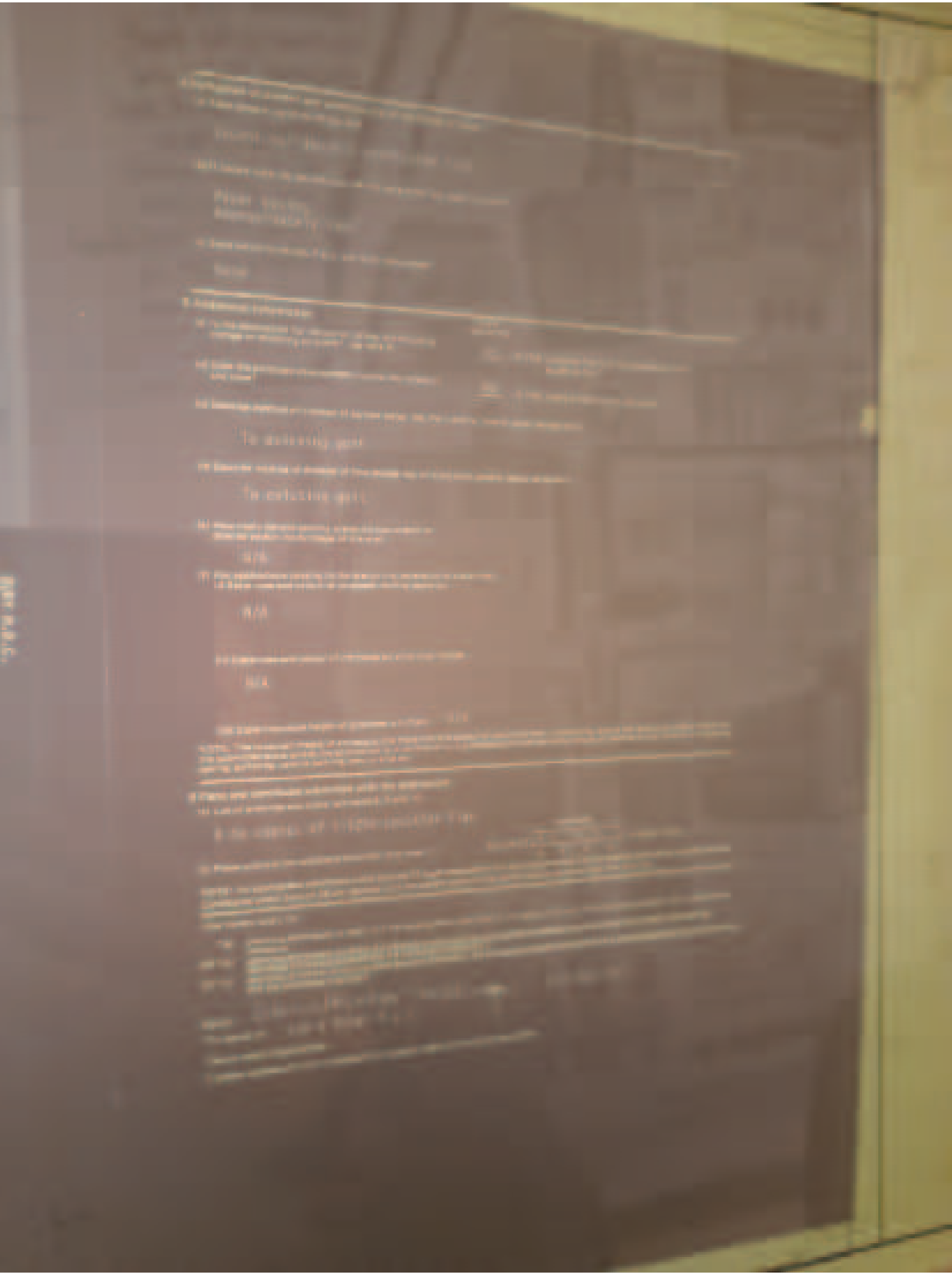
Recommendations

~~Approve~~ No objections

1 [illegible]

2 [illegible]


Site Visit by
Time 11:45
Date August 4th 1962
Present Owners
Site at 424
Description and Facts
Issues and Arguments




Broad Oaks
Paper Works

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Land Adjacent to Bealey Industrial Estate, Radcliffe, M26 2BD

Order Details

Date: 15/02/2024

Your ref: 8353_-_PO_9951-BH

Our Ref: GS-B5J-QUX-W33-1YT

Site Details

Location: 379691 408199

Area: 4.05 ha

Authority: Bury Metropolitan Borough Council ↗



Summary of findings p. 2 >

Aerial image p. 9 >

OS MasterMap site plan p.13 >

groundsure.com/insightuserguide ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
14 >	1.1 >	Historical industrial land uses >	25	30	73	101	-
23 >	1.2 >	Historical tanks >	6	9	37	84	-
28 >	1.3 >	Historical energy features >	4	4	10	23	-
30	1.4	Historical petrol stations	0	0	0	0	-
30 >	1.5 >	Historical garages >	0	0	0	3	-
31	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
32 >	2.1 >	Historical industrial land uses >	29	40	100	142	-
44 >	2.2 >	Historical tanks >	12	14	59	172	-
53 >	2.3 >	Historical energy features >	7	12	15	42	-
56	2.4	Historical petrol stations	0	0	0	0	-
56 >	2.5 >	Historical garages >	0	0	0	5	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
58	3.1	Active or recent landfill	0	0	0	0	-
58 >	3.2 >	Historical landfill (BGS records) >	0	0	0	1	-
59 >	3.3 >	Historical landfill (LA/mapping records) >	0	0	1	3	-
59 >	3.4 >	Historical landfill (EA/NRW records) >	1	0	1	1	-
60 >	3.5 >	Historical waste sites >	2	0	1	0	-
61 >	3.6 >	Licensed waste sites >	0	1	0	3	-
62 >	3.7 >	Waste exemptions >	2	0	2	6	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
64 >	4.1 >	Recent industrial land uses >	8	9	31	-	-
67	4.2	Current or recent petrol stations	0	0	0	0	-
68	4.3	Electricity cables	0	0	0	0	-
68	4.4	Gas pipelines	0	0	0	0	-
68	4.5	Sites determined as Contaminated Land	0	0	0	0	-

68 >	4.6 >	Control of Major Accident Hazards (COMAH) >	0	0	1	1	-
69	4.7	Regulated explosive sites	0	0	0	0	-
69 >	4.8 >	Hazardous substance storage/usage >	0	0	1	1	-
69 >	4.9 >	Historical licensed industrial activities (IPC) >	0	0	0	3	-
70 >	4.10 >	Licensed industrial activities (Part A(1)) >	0	0	1	23	-
74 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	3	3	-
75	4.12	Radioactive Substance Authorisations	0	0	0	0	-
75 >	4.13 >	Licensed Discharges to controlled waters >	0	0	10	39	-
82 >	4.14 >	Pollutant release to surface waters (Red List) >	0	0	0	2	-
83	4.15	Pollutant release to public sewer	0	0	0	0	-
83 >	4.16 >	List 1 Dangerous Substances >	0	0	0	4	-
84 >	4.17 >	List 2 Dangerous Substances >	0	0	1	2	-
84 >	4.18 >	Pollution Incidents (EA/NRW) >	2	1	5	2	-
85 >	4.19 >	Pollution inventory substances >	0	0	0	2	-
87 >	4.20 >	Pollution inventory waste transfers >	0	0	0	2	-
92	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
93 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
95 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
97 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
98	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
98	5.5	Groundwater vulnerability- local information	None (within 0m)				
99 >	5.6 >	Groundwater abstractions >	0	0	0	0	17
104 >	5.7 >	Surface water abstractions >	0	0	0	6	16
110 >	5.8 >	Potable abstractions >	0	0	0	0	5
111	5.9	Source Protection Zones	0	0	0	0	-
111	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
112 >	6.1 >	Water Network (OS MasterMap) >	4	1	7	-	-

114 >	6.2 >	Surface water features >	1	2	4	-	-
114 >	6.3 >	WFD Surface water body catchments >	2	-	-	-	-
114 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
115 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
116 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
117 >	7.2 >	Historical Flood Events >	1	1	8	-	-
118	7.3	Flood Defences	0	0	0	-	-
118	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
118	7.5	Flood Storage Areas	0	0	0	-	-
119 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
120 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
121 >	8.1 >	Surface water flooding >	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding >					
123 >	9.1 >	Groundwater flooding >	Moderate (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
124	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
125	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
125	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
125	10.4	Special Protection Areas (SPA)	0	0	0	0	0
125	10.5	National Nature Reserves (NNR)	0	0	0	0	0
126 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	4
126	10.7	Designated Ancient Woodland	0	0	0	0	0
126	10.8	Biosphere Reserves	0	0	0	0	0
127	10.9	Forest Parks	0	0	0	0	0
127	10.10	Marine Conservation Zones	0	0	0	0	0
127 >	10.11 >	Green Belt >	0	0	1	1	4
127	10.12	Proposed Ramsar sites	0	0	0	0	0

128	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
128	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
128	10.15	Nitrate Sensitive Areas	0	0	0	0	0
128	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
129 >	10.17 >	SSSI Impact Risk Zones >	2	-	-	-	-
130	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
131	11.1	World Heritage Sites	0	0	0	-	-
131	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
131	11.3	National Parks	0	0	0	-	-
131	11.4	Listed Buildings	0	0	0	-	-
132	11.5	Conservation Areas	0	0	0	-	-
132	11.6	Scheduled Ancient Monuments	0	0	0	-	-
132	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
133 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
134	12.2	Open Access Land	0	0	0	-	-
134	12.3	Tree Felling Licences	0	0	0	-	-
134	12.4	Environmental Stewardship Schemes	0	0	0	-	-
134	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
135 >	13.1 >	Priority Habitat Inventory >	0	1	11	-	-
136 >	13.2 >	Habitat Networks >	1	1	1	-	-
136	13.3	Open Mosaic Habitat	0	0	0	-	-
137	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
138 >	14.1 >	10k Availability >	Identified (within 500m)				
139 >	14.2 >	Artificial and made ground (10k) >	0	2	2	5	-
141 >	14.3 >	Superficial geology (10k) >	1	1	1	5	-

142	14.4	Landslip (10k)	0	0	0	0	-
143 >	14.5 >	Bedrock geology (10k) >	3	1	8	6	-
144 >	14.6 >	Bedrock faults and other linear features (10k) >	3	2	4	13	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
146 >	15.1 >	50k Availability >	Identified (within 500m)				
147 >	15.2 >	Artificial and made ground (50k) >	0	0	0	2	-
148	15.3	Artificial ground permeability (50k)	0	0	-	-	-
149 >	15.4 >	Superficial geology (50k) >	1	1	0	3	-
150 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
150	15.6	Landslip (50k)	0	0	0	0	-
150	15.7	Landslip permeability (50k)	None (within 50m)				
151 >	15.8 >	Bedrock geology (50k) >	3	1	3	2	-
152 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
152 >	15.10 >	Bedrock faults and other linear features (50k) >	3	2	1	6	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
154 >	16.1 >	BGS Boreholes >	0	1	49	-	-
Page	Section	Natural ground subsidence >					
157 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
158 >	17.2 >	Running sands >	Low (within 50m)				
160 >	17.3 >	Compressible deposits >	Moderate (within 50m)				
162 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
163 >	17.5 >	Landslides >	Very low (within 50m)				
164 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
166	18.1	BritPits	0	0	0	0	-
167 >	18.2 >	Surface ground workings >	21	27	62	-	-
171 >	18.3 >	Underground workings >	0	0	1	3	1
171	18.4	Underground mining extents	0	0	0	0	-
172 >	18.5 >	Historical Mineral Planning Areas >	0	0	0	1	-

172	18.6	Non-coal mining	0	0	0	0	0
172 >	18.7 >	JPB mining areas >	Identified (within 0m)				
173	18.8	The Coal Authority non-coal mining	0	0	0	0	-
173	18.9	Researched mining	0	0	0	0	-
173	18.10	Mining record office plans	0	0	0	0	-
173	18.11	BGS mine plans	0	0	0	0	-
174 >	18.12 >	Coal mining >	Identified (within 0m)				
174	18.13	Brine areas	None (within 0m)				
174	18.14	Gypsum areas	None (within 0m)				
174	18.15	Tin mining	None (within 0m)				
174	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
175	19.1	Natural cavities	0	0	0	0	-
175	19.2	Mining cavities	0	0	0	0	0
175	19.3	Reported recent incidents	0	0	0	0	-
175	19.4	Historical incidents	0	0	0	0	-
176	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
177 >	20.1 >	Radon >	Between 1% and 3% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
179 >	21.1 >	BGS Estimated Background Soil Chemistry >	5	6	-	-	-
180	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
180	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects >	On site	0-50m	50-250m	250-500m	500-2000m
181	22.1	Underground railways (London)	0	0	0	-	-
181	22.2	Underground railways (Non-London)	0	0	0	-	-
182	22.3	Railway tunnels	0	0	0	-	-
182 >	22.4 >	Historical railway and tunnel features >	8	1	3	-	-
183	22.5	Royal Mail tunnels	0	0	0	-	-

183	22.6	Historical railways	0	0	0	-	-
183	22.7	Railways	0	0	0	-	-
183	22.8	Crossrail 1	0	0	0	0	-
183	22.9	Crossrail 2	0	0	0	0	-
184	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 23/05/2019

Site Area: 4.05ha

Recent site history - 2015 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 11/06/2015

Site Area: 4.05ha

Recent site history - 2011 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 01/05/2011

Site Area: 4.05ha

Recent site history - 2000 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 27/06/2000

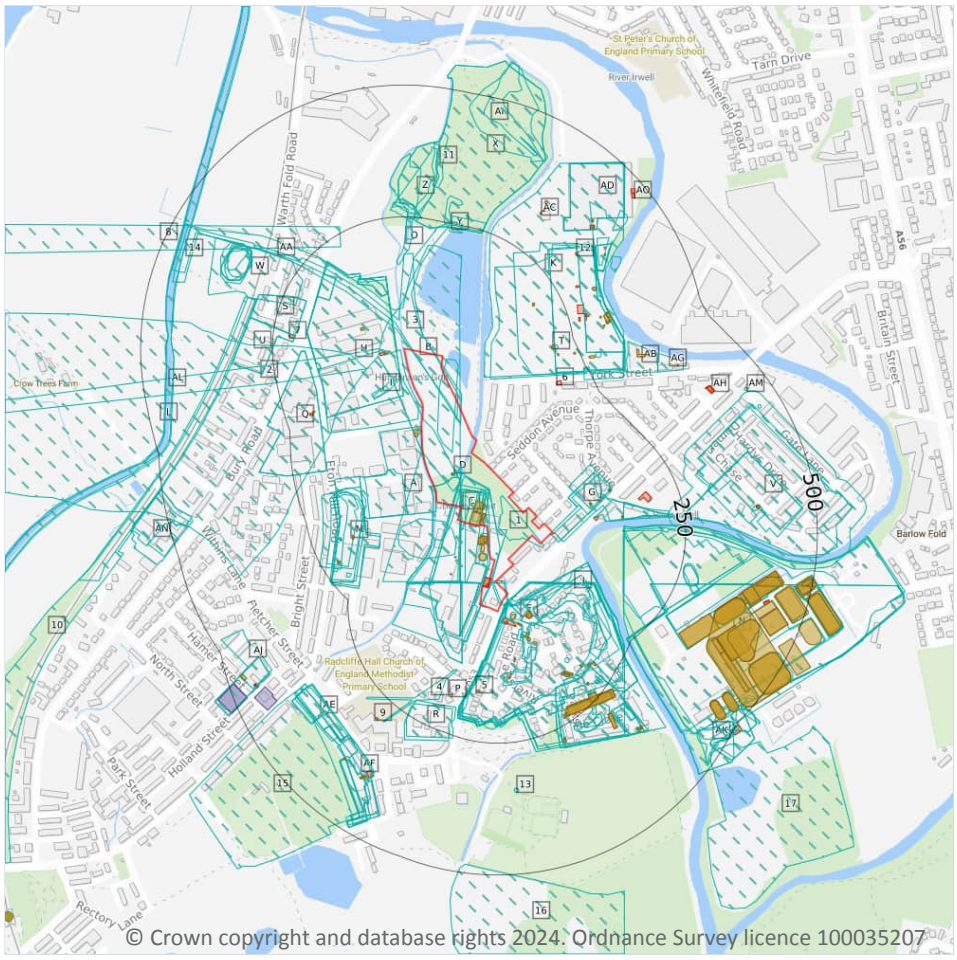
Site Area: 4.05ha

OS MasterMap site plan



Site Area: 4.05ha

1 Past land use



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

1.1 Historical industrial land uses

Records within 500m	229

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14 >**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Filter Beds**	**1908**	**665809**

ID	Location	Land use	Dates present	Group ID
2	**On site**	**Tramway Sidings**	**1890**	**670775**
3	**On site**	**Tramway Sidings**	**1908**	**760082**
A	**On site**	**Unspecified Commercial/Industrial**	**1991**	**643336**
B	**On site**	**Colliery**	**1890**	**645263**
B	**On site**	**Refuse Heap**	**1890**	**677999**
C	**On site**	**Filter Beds**	**1928**	**665807**
C	**On site**	**Chemical Works**	**1891**	**682692**
C	**On site**	**Paper Works**	**1955**	**714228**
C	**On site**	**Paper Works**	**1908 - 1927**	**717984**
C	**On site**	**Paper Works**	**1938**	**722933**
C	**On site**	**Unspecified Works**	**1965 - 1977**	**725705**
C	**On site**	**Unspecified Commercial/Industrial**	**1928**	**738364**
C	**On site**	**Industrial Estate**	**1988 - 1991**	**746445**
C	**On site**	**Unspecified Commercial/Industrial**	**1890**	**748711**
C	**On site**	**Unspecified Commercial/Industrial**	**1908**	**758297**
C	**On site**	**Filter Beds**	**1928 - 1938**	**767953**
C	**On site**	**Filter Beds**	**1955**	**788270**
D	**On site**	**Unspecified Tank**	**1955**	**674783**
D	**On site**	**Unspecified Tank**	**1927**	**733526**
D	**On site**	**Unspecified Tank**	**1938**	**777880**
E	**On site**	**Railway Sidings**	**1907**	**751453**
E	**On site**	**Railway Sidings**	**1891**	**756383**
F	**On site**	**Tramway Sidings**	**1890**	**776867**
G	**On site**	**Chemical Works**	**1908**	**783716**
C	1m S	Unspecified Tanks	1928 - 1955	733436
G	2m SE	Chemical Works	1891	783345
B	3m NW	Unspecified Tank	1988 - 1991	779255
C	4m S	Unspecified Commercial/Industrial	1907 - 1938	704501

ID	Location	Land use	Dates present	Group ID
C	5m S	Unspecified Tank	1977	674782
H	7m NW	Industrial Estate	1988 - 1991	767287
C	8m S	Unspecified Commercial/Industrial	1932	703963
C	8m S	Unspecified Commercial/Industrial	1915	709107
C	8m S	Unspecified Commercial/Industrial	1923	747453
E	8m S	Wire Works	1938	641134
E	8m S	Bleaching Works	1923	744678
E	8m S	Bleach and Chemical Works	1891	753134
E	8m S	Bleaching Works	1932	763679
E	9m S	Unspecified Works	1965	730389
E	9m S	Bleach and Chemical Works	1907	699288
E	9m S	Bleach and Chemical Works	1915	781398
E	10m S	Bleaching Works	1955	777831
E	13m S	Vitriol Manufactory	1851	675148
E	13m S	Unspecified Works	1977	745660
H	14m NW	Unspecified Works	1991	766276
E	14m S	Bleach Works	1851	658162
H	15m NW	Unspecified Factory	1965	670600
H	15m NW	Unspecified Works	1977	723827
C	21m S	Refuse Heap	1890	678029
E	25m S	Unspecified Tank	1891 - 1907	702569
I	25m NW	Unspecified Ground Workings	1988 - 1991	716820
C	34m S	Unspecified Commercial/Industrial	1891	781088
I	47m NW	Unspecified Ground Workings	1977	763499
A	48m W	Unspecified Works	1977	679066
E	48m SE	Unspecified Tank	1891 - 1907	752478
E	62m S	Unspecified Tank	1977	723357
E	63m S	Unspecified Tank	1907	739491

ID	Location	Land use	Dates present	Group ID
J	65m SE	Refuse Heap	1965	677980
K	66m N	Unspecified Works	1991	782230
G	67m E	Chemical Works	1928	729789
K	75m N	Unspecified Mill	1988	734409
L	77m NW	Colliery	1890	645264
G	82m E	Unspecified Works	1965	679049
G	84m E	Chemical Works	1908 - 1928	734395
E	90m S	Unspecified Ground Workings	1851	648149
F	108m NW	Unspecified Ground Workings	1977 - 1991	748275
F	108m NW	Unspecified Ground Workings	1965	754469
J	109m SE	Railway Sidings	1891	708931
J	110m SE	Railway Sidings	1907	724609
M	122m SW	Unspecified Mill	1965 - 1977	759196
M	125m SW	Unspecified Works	1991	679067
M	129m W	Unspecified Mill	1955	721686
4	130m S	Filter Beds	1891	665808
N	131m E	Sewage Works	1915 - 1955	786107
N	132m E	Sludge Beds	1974	720162
N	132m E	Sewage Works	1974	758926
N	133m E	Unspecified Works	1965	679047
N	133m E	Sewage Works	1981	787106
N	133m E	Sludge Beds	1981	757718
G	135m E	Unspecified Works	1965	679048
M	136m W	Unspecified Mill	1927 - 1938	732313
M	142m W	Unspecified Mill	1908	736511
K	144m NE	Unspecified Mill	1977	702994
J	147m SE	Unspecified Tank	1907	674817
M	147m W	Unspecified Mill	1890	781543

ID	Location	Land use	Dates present	Group ID
E	157m SE	Chimney	1851	684330
O	159m N	Refuse Heap	1908	678000
M	165m W	Cotton Mill	1851	644066
E	168m SE	Unspecified Tank	1932 - 1938	700387
E	169m SE	Unspecified Tanks	1955	666452
F	169m NW	Unspecified Depot	1991	668817
Q	179m NW	Unspecified Commercial/Industrial	1988	643339
Q	179m NW	Unspecified Works	1991	679064
E	181m S	Unspecified Commercial/Industrial	1977	643335
M	193m SW	Gasometer	1851	655145
K	194m NE	Tallow and Candle Works	1955	670839
K	194m NE	Unspecified Works	1955 - 1965	723223
E	198m SE	Unspecified Tank	1915	674818
R	199m S	Hospital	1988 - 1991	745118
E	200m SE	Unspecified Tank	1923	674819
R	204m S	Hospital	1908	779688
S	204m NW	Unspecified Works	1965	679065
S	204m NW	Unspecified Commercial/Industrial	1977	752450
N	207m SE	Sewage Works	1938	701259
O	208m N	Unspecified Ground Workings	1965	747650
U	209m NW	Unspecified Warehouse	1965	652408
U	209m NW	Unspecified Commercial/Industrial	1977 - 1991	705324
N	209m SE	Sewage Works	1907	738790
T	209m NE	Unspecified Tank	1988 - 1991	717653
M	211m SW	Unspecified Tank	1955	674784
E	218m SE	Unspecified Tank	1915 - 1923	762572
V	221m E	Cabinet Works	1955 - 1965	767569
W	222m NW	Colliery	1890	645262

ID	Location	Land use	Dates present	Group ID
M	226m SW	Unspecified Tank	1927 - 1938	789827
E	226m SE	Unspecified Tank	1938	729661
8	227m NW	Cuttings	1890	642632
E	229m SE	Chimney	1965 - 1977	695696
E	229m SE	Unspecified Tank	1907 - 1923	754354
E	231m SE	Shed	1851	659596
E	232m SE	Unspecified Tanks	1907	666451
X	233m N	Refuse Heap	1977	695335
X	233m N	Unspecified Disused Tip	1988 - 1991	784021
Y	235m N	Unspecified Ground Workings	1908 - 1938	704929
V	244m E	Cotton Weaving Mill	1928 - 1938	720424
Z	246m N	Unspecified Heap	1927 - 1938	766137
Z	246m N	Refuse Heap	1908	790849
Y	246m N	Unspecified Pit	1965	691002
V	246m E	Unspecified Commercial/Industrial	1974 - 1981	774222
N	255m SE	Unspecified Heap	1955	775400
N	256m SE	Unspecified Heap	1938	757010
N	256m SE	Unspecified Heap	1928	763138
Z	256m N	Unspecified Ground Workings	1955	698465
E	258m SE	Unspecified Heap	1965 - 1991	707221
AA	258m NW	Tunnel	1908	671553
E	259m SE	Refuse Heap	1938 - 1955	782857
E	261m SE	Refuse Heap	1932	756807
K	262m NE	Bleach Works	1891	658144
K	262m NE	Bleach and Dye works	1908 - 1938	788876
N	264m SE	Filter Beds	1907	746097
N	264m SE	Filter Beds	1923	753518
N	264m SE	Filter Beds	1915	789860

ID	Location	Land use	Dates present	Group ID
N	265m SE	Unspecified Tanks	1965 - 1974	752748
E	270m S	Unspecified Tank	1907 - 1923	708695
T	276m NE	Chimney	1965 - 1991	717375
N	278m SE	Unspecified Heap	1915	778676
E	286m SE	Filter Beds	1915	750653
AA	287m NW	Air Shafts	1908	685376
E	287m SE	Filter Beds	1923	777946
E	293m SE	Filter Beds	1915	768200
10	295m NW	Railway Sidings	1955	768828
L	297m NW	Railway Sidings	1908 - 1938	751945
V	303m E	Weaving Mill	1955	670969
V	305m E	Cotton Weaving Mill	1965	705007
11	312m N	Unspecified Ground Workings	1965	745144
K	313m NE	Unspecified Tank	1977 - 1991	717499
AB	314m NE	Cotton Mill	1908	644065
K	316m NE	Unspecified Tanks	1908 - 1938	715467
W	329m NW	Refuse Heap	1955	789769
AD	331m N	Unspecified Warehouse	1977	716907
AD	331m N	Unspecified Warehouse	1988	770363
W	332m NW	Refuse Heap	1938	743550
W	332m NW	Refuse Heap	1908	774527
W	332m NW	Refuse Heap	1927	782616
W	333m NW	Refuse Heap	1890	742535
N	333m SE	Sewage Tanks	1981	657309
N	333m SE	Unspecified Tanks	1965 - 1974	743387
AD	334m NE	Oil and Tallow Works	1908	652452
AD	337m NE	Tallow and Candle Works	1928	670840
AD	337m NE	Candle Works	1938	691499

ID	Location	Land use	Dates present	Group ID
13	337m S	Unspecified Tank	1923	674816
14	343m NW	Tramway Sidings	1908	782847
AD	344m NE	Unspecified Works	1965	709445
E	344m SE	Unspecified Tank	1932	762255
E	344m SE	Unspecified Tank	1938	789995
AE	346m SW	Unspecified Commercial/Industrial	1977	718948
AE	346m SW	Unspecified Mill	1965	750445
E	346m SE	Unspecified Tank	1915	694415
W	347m NW	Refuse Heap	1965 - 1988	779349
AE	348m SW	Unspecified Mill	1955	696615
AE	348m SW	Unspecified Works	1988 - 1991	728251
E	350m SE	Unspecified Tank	1923	712578
AF	350m SW	Unspecified Works	1965	727566
AF	350m SW	Unspecified Commercial/Industrial	1977	774253
AF	354m SW	Unspecified Works	1988 - 1991	751996
AG	356m NE	Chemical Works	1908	682691
AE	357m SW	Unspecified Mill	1908 - 1938	711306
AE	357m SW	Unspecified Commercial/Industrial	1891	782718
N	360m SE	Sewage Tanks	1981	657312
AD	361m NE	Refuse Heap	1965	677981
N	365m SE	Filter Beds	1907 - 1923	788606
AF	375m S	Tower Works	1955	778655
15	379m SW	Bleach Works	1851	658161
AF	384m S	Unspecified Commercial/Industrial	1908	694693
AF	384m S	Tower Works	1927 - 1938	704950
AF	384m S	Unspecified Commercial/Industrial	1891	771773
N	399m SE	Unspecified Tank	1965	674824
AD	401m NE	Unspecified Heap	1928	650894

ID	Location	Land use	Dates present	Group ID
AI	405m N	Refuse Heap	1965	714403
AJ	414m SW	Unspecified Works	1965	679063
AI	416m N	Refuse Heap	1928 - 1955	725785
AJ	421m SW	Soap Works	1891	682700
AJ	421m SW	Unspecified Commercial/Industrial	1908 - 1927	717282
N	423m SE	Unspecified Tanks	1965 - 1974	722463
N	435m E	Unspecified Tanks	1915 - 1923	767640
AL	437m W	Disused Canal	1977	706247
AL	437m W	Disused Canal	1988 - 1991	788290
AK	442m SE	Unspecified Heap	1932 - 1938	758564
AK	444m SE	Refuse Heap	1955	719870
AM	453m E	Settling Tanks	1938	681805
AN	454m W	Unspecified Mill	1927 - 1955	709866
AN	455m W	Unspecified Mill	1965	781443
AM	455m E	Settling Tanks	1938	681804
AK	458m SE	Refuse Heap	1923	698127
AK	458m SE	Unspecified Heap	1915	739377
AN	462m W	Unspecified Mill	1908	711488
N	464m E	Unspecified Tanks	1907	694169
N	464m E	Unspecified Tanks	1915 - 1932	781203
N	468m E	Unspecified Tanks	1938	743645
N	470m E	Sewage Tanks	1955	657313
AK	470m SE	Unspecified Ground Workings	1907	648151
N	470m E	Unspecified Tanks	1965	734496
N	471m E	Unspecified Tanks	1974	703358
AK	473m SE	Unspecified Heap	1915 - 1923	716003
AK	475m SE	Unspecified Ground Workings	1907	648150
N	481m E	Unspecified Tanks	1908	747584

ID	Location	Land use	Dates present	Group ID
16	483m S	Refuse Heap	1977	787422
17	485m SE	Sludge Lagoons	1981	681460
N	493m E	Unspecified Tanks	1932 - 1938	726516
N	497m E	Sewage Tanks	1955	657314

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**136**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14 >**

ID	Location	Land use	Dates present	Group ID
C	**On site**	**Tanks**	**1972**	**87872**
C	**On site**	**Settling Tanks**	**1956 - 1972**	**88914**
C	**On site**	**Tanks**	**1985 - 1992**	**93701**
C	**On site**	**Settling Tanks**	**1956**	**94451**
C	**On site**	**Unspecified Tank**	**1956**	**99752**
D	**On site**	**Unspecified Tank**	**1930 - 1937**	**92083**
C	4m S	Tanks	1956	102405
C	4m S	Tanks	1956	97968
B	7m NW	Tanks	1985 - 1992	96177
C	7m S	Tanks	1972 - 1985	100959
C	7m S	Unspecified Tank	1972	84768
C	8m S	Tanks	1930 - 1937	90813
E	26m S	Unspecified Tank	1893 - 1909	89857
H	32m NW	Unspecified Tank	1992	84771

ID	Location	Land use	Dates present	Group ID
E	45m S	Tanks	1956	103342
E	52m SE	Gasometer	1909	78092
E	52m SE	Unspecified Tank	1893	85025
C	62m S	Unspecified Tank	1930	84769
C	63m S	Unspecified Tank	1930 - 1937	95707
E	69m S	Unspecified Tank	1975 - 1980	90948
E	76m S	Unspecified Tank	1975 - 1980	89663
H	84m NW	Unspecified Tank	1956	96469
G	88m E	Unspecified Tank	1956	88654
E	90m S	Unspecified Tank	1922 - 1932	96774
E	93m S	Tanks	1922	87873
G	105m E	Unspecified Tank	1956	91060
E	121m S	Tanks	1956	98807
G	133m E	Unspecified Tank	1956 - 1985	94629
G	133m E	Unspecified Tank	1956	97001
5	153m S	Unspecified Tank	1922 - 1932	89005
M	169m SW	Unspecified Tank	1930 - 1937	103296
E	169m SE	Unspecified Tank	1922 - 1932	95054
E	170m SE	Unspecified Tank	1956 - 1975	94687
E	170m SE	Unspecified Tank	1980	91980
P	177m S	Unspecified Tank	1956	99256
P	177m S	Unspecified Tank	1956	90569
Q	193m W	Unspecified Tank	1972	84770
K	196m N	Unspecified Tank	1976 - 1992	91665
E	198m SE	Unspecified Tank	1922 - 1932	93363
E	205m SE	Unspecified Tank	1956	93997
T	206m NE	Unspecified Tank	1992	84776
T	210m NE	Tanks	1956	100428

ID	Location	Land use	Dates present	Group ID
M	215m SW	Unspecified Tank	1930 - 1937	102970
E	217m SE	Unspecified Tank	1922	85027
E	223m SE	Settling Tanks	1956 - 1975	99725
E	223m SE	Settling Tanks	1980	92197
E	224m SE	Settling Tanks	1956	91365
E	225m S	Settling Tanks	1932	93153
E	230m S	Tanks	1956	103632
E	232m S	Unspecified Tank	1932	85026
E	234m SE	Tanks	1909	87876
T	239m NE	Unspecified Tank	1992	84772
T	263m NE	Tanks	1992	87156
E	271m S	Unspecified Tank	1909 - 1922	94386
E	286m SE	Tanks	1980	98066
E	287m SE	Tanks	1956 - 1975	90555
9	290m S	Unspecified Tank	1975 - 1998	96640
N	304m SE	Settling Tanks	1956	95997
N	304m SE	Humus Tanks	1968 - 1969	101213
K	307m NE	Unspecified Tank	1930	84774
K	310m NE	Unspecified Tank	1890	84775
K	311m NE	Unspecified Tank	1976 - 1992	94127
K	316m NE	Tanks	1910 - 1937	100450
K	317m NE	Tanks	1956	98251
12	318m NE	Unspecified Tank	1976	84759
K	320m NE	Unspecified Tank	1992	101937
K	321m NE	Unspecified Tank	1956 - 1976	103287
K	322m NE	Unspecified Tank	1956	98149
K	322m NE	Tanks	1956	93468
AC	327m N	Tanks	1976	87154

ID	Location	Land use	Dates present	Group ID
AC	334m N	Tanks	1976	87155
N	340m SE	Settling Tanks	1981 - 1987	99521
N	340m SE	Settling Tanks	1968	99464
N	340m SE	Tanks	1989	101671
N	340m SE	Settling Tanks	1969	103588
N	341m SE	Tanks	1992	104226
AB	345m NE	Tanks	1969 - 1995	104203
E	347m SE	Unspecified Tank	1956 - 1992	95946
E	347m SE	Unspecified Tank	1909 - 1932	95091
E	348m SE	Unspecified Tank	1956 - 1968	93999
AC	349m N	Unspecified Tank	1976	84758
AB	350m NE	Unspecified Tank	1890	84773
N	357m SE	Tanks	1989	100456
AD	362m NE	Unspecified Tank	1930 - 1937	88825
N	362m SE	Settling Tanks	1956 - 1969	95683
N	367m SE	Settlings Tanks	1956	78421
N	367m SE	Humus Tanks	1968 - 1969	98394
N	367m SE	Settling Tanks	1956 - 1987	103088
AD	368m NE	Unspecified Tank	1930 - 1937	90624
N	370m SE	Unspecified Tank	1956	97759
N	370m SE	Settling Tanks	1932	101430
N	373m SE	Aeration Tanks	1981 - 1987	95780
N	374m SE	Aeration Tanks	1956 - 1969	95872
N	374m SE	Settling Tanks	1956	95304
N	381m SE	Tanks	1989	101340
AD	381m NE	Unspecified Tank	1976	84760
AF	387m SW	Unspecified Tank	1956 - 1994	95441
N	389m E	Aeration Tanks	1956	103615

ID	Location	Land use	Dates present	Group ID
AG	389m NE	Unspecified Tank	1970	93129
AG	389m NE	Unspecified Tank	1956	103706
AG	390m NE	Unspecified Tank	1956	91508
AG	390m NE	Unspecified Tank	1969	92411
AG	390m NE	Unspecified Tank	1995	97339
N	390m SE	Aeration Tank	1956 - 1969	93211
AF	391m S	Unspecified Tank	1956 - 1998	94223
AF	391m S	Unspecified Tank	1980 - 1992	101029
N	395m E	Settling Tanks	1930 - 1937	93336
N	397m SE	Unspecified Tank	1956	99296
N	408m SE	Settling Tanks	1956 - 1981	93693
N	411m E	Aeration Tanks	1956 - 1969	97495
N	411m E	Aeration Tanks	1970	90286
N	422m SE	Aeration Tanks	1956 - 1981	96856
N	423m SE	Aeration Tanks	1956 - 1968	92635
N	435m E	Tanks	1922 - 1932	96253
AK	436m SE	Sludge Holding Tanks	1981 - 1987	96323
N	436m E	Settling Tanks	1956	93293
AK	437m SE	Tanks	1989	103834
AK	438m SE	Tanks	1992	96370
AK	442m SE	Sludge Holding Tanks	1981 - 1987	97258
AK	443m SE	Tanks	1989	93906
AK	445m SE	Tanks	1992	89885
N	448m SE	Settling Tanks	1981 - 1987	103131
N	450m SE	Tanks	1989	96403
AJ	464m SW	Unspecified Tank	1929 - 1937	97446
N	471m E	Tanks	1956 - 1969	101963
N	472m E	Tanks	1909 - 1932	89542

ID	Location	Land use	Dates present	Group ID
N	472m E	Settling Tanks	1956 - 1968	93519
N	477m SE	Aeration Tanks	1981	85898
N	481m E	Tanks	1910	91042
N	481m E	Settling Tanks	1930 - 1937	93373
N	493m E	Unspecified Tank	1956	84767
N	497m E	Settling Tanks	1956 - 1969	91208
N	497m SE	Tanks	1956	87874
N	498m E	Settling Tanks	1932	92173
N	498m E	Tanks	1909 - 1922	101507
N	500m E	Tanks	1956 - 1968	94775

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**41**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14 >**

ID	Location	Land use	Dates present	Group ID
C	**On site**	**Electricity Substation**	**1956**	**45637**
C	**On site**	**Electricity Substation**	**1956 - 1972**	**55676**
C	**On site**	**Electricity Substation**	**1980 - 1992**	**57576**
C	**On site**	**Electricity Substation**	**1975**	**57711**
C	0m S	Electricity Substation	1994 - 1998	46895
E	17m S	Electricity Substation	1994 - 1998	53975
E	24m S	Electricity Substation	1992	53935
H	38m NW	Electricity Substation	1956 - 1992	57801

ID	Location	Land use	Dates present	Group ID
E	52m SE	Gasometer	1909	46144
G	81m E	Electricity Substation	1992	45648
G	132m E	Electricity Substation	1985 - 1992	50498
G	132m E	Electricity Substation	1972	59435
G	173m E	Electricity Substation	1995	45649
6	185m NE	Electricity Substation	1992	45670
E	187m SE	Electricity Substation	1956	56825
Q	198m W	Electricity Substation	1987 - 1992	52297
7	208m NW	Electricity Substation	1987 - 1992	50885
M	215m SW	Electricity Substation	1956	55906
K	267m NE	Electricity Substation	1992	45671
K	269m NE	Electricity Substation	1992	45672
K	279m NE	Electricity Substation	1992	52977
K	282m NE	Electricity Substation	1956 - 1985	55173
K	285m NE	Electricity Substation	1992	45673
AD	370m NE	Electricity Substation	1992	45667
AD	374m NE	Electricity Transformer	1976	46545
AF	376m S	Electricity Substation	1956	45638
V	388m E	Electricity Substation	1995	59332
V	388m E	Electricity Substation	1956 - 1970	57139
AF	392m S	Electricity Substation	1956 - 1998	47202
AH	398m E	Electricity Substation	1956 - 1969	52486
AH	400m E	Electricity Substation	1995	50012
AH	400m E	Electricity Substation	1956 - 1970	55428
N	419m SE	Electricity Substation	1989	48208
N	419m SE	Electricity Substation	1992	50559
AJ	446m SW	Electricity Substation	1956 - 1994	57450
AJ	449m SW	Electricity Substation	1985 - 1987	51206

ID	Location	Land use	Dates present	Group ID
AJ	451m SW	Electricity Substation	1956	58081
AO	468m NE	Electricity Substation	1995	45669
AO	473m NE	Electricity Substation	1989	45668
AK	497m SE	Electricity Substation	1987	53466
AK	497m SE	Electricity Substation	1989	47944

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	3

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14 >**

ID	Location	Land use	Dates present	Group ID
AJ	426m SW	Garage	1987 - 1994	18556
AJ	475m SW	Garage	1956	16941
AJ	475m SW	Garage	1956 - 1966	17769

This data is sourced from Ordnance Survey / Groundsure.

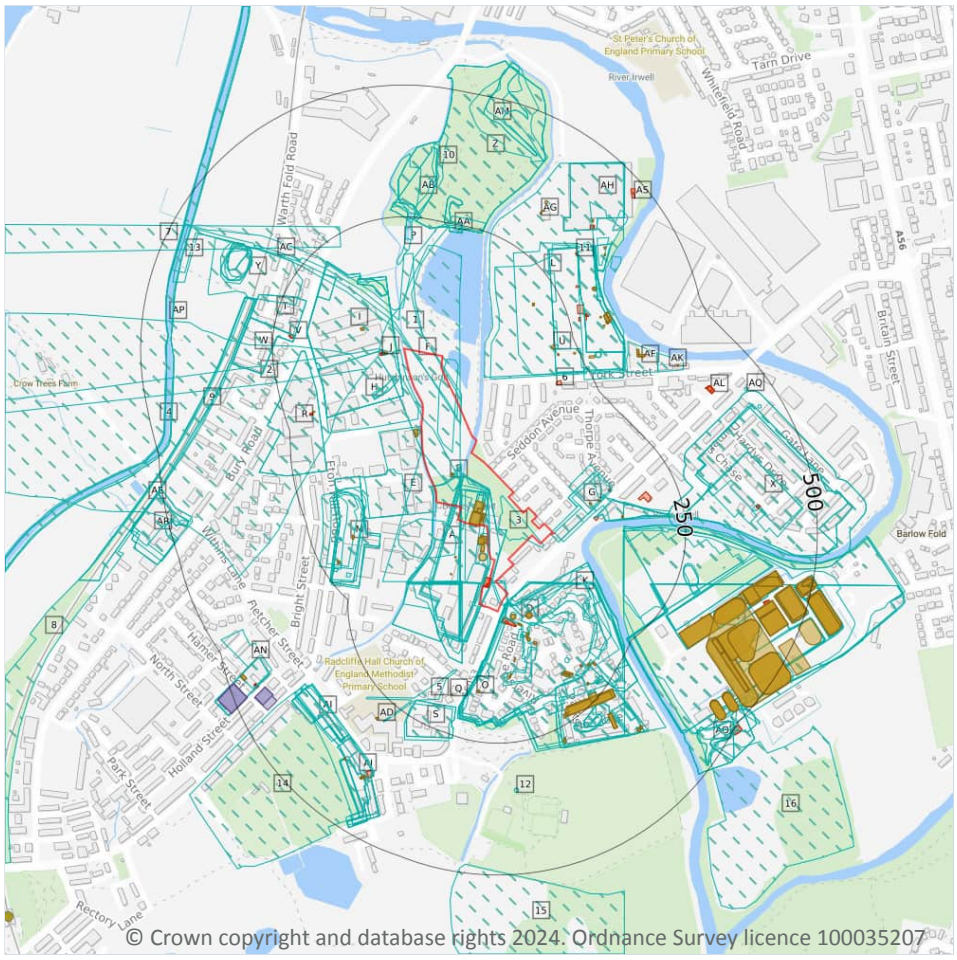
1.6 Historical military land

Records within 500m	0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



2.1 Historical industrial land uses

Records within 500m	311

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 32 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Tramway Sidings**	**1908**	**760082**
2	**On site**	**Tramway Sidings**	**1890**	**670775**
3	**On site**	**Filter Beds**	**1908**	**665809**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Paper Works**	**1938**	**722933**
A	**On site**	**Paper Works**	**1927**	**717984**
A	**On site**	**Paper Works**	**1908**	**717984**
A	**On site**	**Unspecified Commercial/Industrial**	**1890**	**748711**
A	**On site**	**Industrial Estate**	**1991**	**746445**
A	**On site**	**Unspecified Works**	**1977**	**725705**
A	**On site**	**Unspecified Works**	**1965**	**725705**
A	**On site**	**Industrial Estate**	**1988**	**746445**
A	**On site**	**Paper Works**	**1955**	**714228**
A	**On site**	**Filter Beds**	**1955**	**788270**
A	**On site**	**Filter Beds**	**1938**	**767953**
A	**On site**	**Chemical Works**	**1891**	**682692**
A	**On site**	**Filter Beds**	**1928**	**767953**
A	**On site**	**Filter Beds**	**1928**	**665807**
A	**On site**	**Unspecified Commercial/Industrial**	**1928**	**738364**
A	**On site**	**Unspecified Commercial/Industrial**	**1908**	**758297**
B	**On site**	**Unspecified Tank**	**1938**	**777880**
B	**On site**	**Unspecified Tank**	**1927**	**733526**
B	**On site**	**Unspecified Tank**	**1955**	**674783**
C	**On site**	**Tramway Sidings**	**1890**	**776867**
D	**On site**	**Railway Sidings**	**1907**	**751453**
D	**On site**	**Railway Sidings**	**1891**	**756383**
E	**On site**	**Unspecified Commercial/Industrial**	**1991**	**643336**
F	**On site**	**Colliery**	**1890**	**645263**
F	**On site**	**Refuse Heap**	**1890**	**677999**
G	**On site**	**Chemical Works**	**1908**	**783716**
A	1m S	Unspecified Tanks	1955	733436
G	2m SE	Chemical Works	1891	783345

ID	Location	Land Use	Date	Group ID
F	3m NW	Unspecified Tank	1991	779255
F	3m NW	Unspecified Tank	1988	779255
A	4m S	Unspecified Commercial/Industrial	1938	704501
A	5m S	Unspecified Tank	1977	674782
H	7m NW	Industrial Estate	1991	767287
A	7m S	Unspecified Tanks	1938	733436
A	7m S	Unspecified Tanks	1928	733436
A	8m S	Unspecified Commercial/Industrial	1915	709107
A	8m S	Unspecified Commercial/Industrial	1907	704501
A	8m S	Unspecified Commercial/Industrial	1932	703963
A	8m S	Unspecified Commercial/Industrial	1923	747453
D	8m S	Bleaching Works	1932	763679
D	8m S	Bleach and Chemical Works	1891	753134
D	8m S	Wire Works	1938	641134
D	9m S	Unspecified Works	1965	730389
D	9m S	Bleach and Chemical Works	1915	781398
D	9m S	Bleach and Chemical Works	1907	699288
D	9m S	Bleaching Works	1923	744678
D	10m S	Bleaching Works	1955	777831
D	13m S	Vitriol Manufactory	1851	675148
D	13m S	Unspecified Works	1977	745660
I	14m NW	Unspecified Works	1991	766276
D	14m S	Bleach Works	1851	658162
I	15m NW	Unspecified Works	1977	723827
I	15m NW	Unspecified Factory	1965	670600
I	15m NW	Industrial Estate	1988	767287
A	21m S	Refuse Heap	1890	678029
D	25m S	Unspecified Tank	1891	702569

ID	Location	Land Use	Date	Group ID
H	25m NW	Unspecified Ground Workings	1991	716820
H	25m NW	Unspecified Ground Workings	1988	716820
D	26m S	Unspecified Tank	1907	702569
A	34m S	Unspecified Commercial/Industrial	1908	704501
A	34m S	Unspecified Commercial/Industrial	1891	781088
A	38m S	Unspecified Commercial/Industrial	1938	704501
A	39m S	Unspecified Commercial/Industrial	1927	704501
H	47m NW	Unspecified Ground Workings	1977	763499
E	48m W	Unspecified Works	1977	679066
D	48m SE	Unspecified Tank	1891	752478
D	51m SE	Unspecified Tank	1907	752478
D	62m S	Unspecified Tank	1977	723357
D	63m S	Unspecified Tank	1907	739491
K	65m SE	Refuse Heap	1965	677980
L	66m N	Unspecified Works	1991	782230
G	67m E	Chemical Works	1928	729789
L	75m N	Unspecified Mill	1988	734409
4	77m NW	Colliery	1890	645264
G	82m E	Unspecified Works	1965	679049
G	84m E	Chemical Works	1908	734395
G	84m E	Chemical Works	1928	734395
D	90m S	Unspecified Ground Workings	1851	648149
C	108m NW	Unspecified Ground Workings	1991	748275
C	108m NW	Unspecified Ground Workings	1977	748275
C	108m NW	Unspecified Ground Workings	1965	754469
C	108m NW	Unspecified Ground Workings	1988	748275
K	109m SE	Railway Sidings	1891	708931
K	110m SE	Railway Sidings	1907	724609

ID	Location	Land Use	Date	Group ID
M	122m SW	Unspecified Mill	1977	759196
M	122m SW	Unspecified Mill	1965	759196
M	125m SW	Unspecified Works	1991	679067
M	129m W	Unspecified Mill	1955	721686
5	130m S	Filter Beds	1891	665808
N	131m E	Sewage Works	1955	786107
N	132m E	Sludge Beds	1974	720162
N	132m E	Sewage Works	1974	758926
N	133m E	Unspecified Works	1965	679047
N	133m E	Sewage Works	1981	787106
N	133m E	Sludge Beds	1981	757718
G	135m E	Unspecified Works	1965	679048
M	136m W	Unspecified Mill	1938	732313
M	136m W	Unspecified Mill	1927	732313
M	142m W	Unspecified Mill	1908	736511
L	144m NE	Unspecified Mill	1977	702994
K	147m SE	Unspecified Tank	1907	674817
M	147m W	Unspecified Mill	1890	781543
D	157m SE	Chimney	1851	684330
P	159m N	Refuse Heap	1908	678000
M	165m W	Cotton Mill	1851	644066
D	168m SE	Unspecified Tank	1932	700387
D	168m SE	Unspecified Tank	1938	700387
C	169m NW	Unspecified Depot	1991	668817
D	169m SE	Unspecified Tanks	1955	666452
R	179m NW	Unspecified Works	1991	679064
R	179m NW	Unspecified Commercial/Industrial	1988	643339
D	181m S	Unspecified Commercial/Industrial	1977	643335

ID	Location	Land Use	Date	Group ID
M	193m SW	Gasometer	1851	655145
L	194m NE	Unspecified Works	1955	723223
L	194m NE	Tallow and Candle Works	1955	670839
D	198m SE	Unspecified Tank	1915	674818
S	199m S	Hospital	1991	745118
S	199m S	Hospital	1988	745118
D	200m SE	Unspecified Tank	1923	674819
S	204m S	Hospital	1908	779688
T	204m NW	Unspecified Commercial/Industrial	1977	752450
T	204m NW	Unspecified Works	1965	679065
N	207m SE	Sewage Works	1932	786107
N	207m SE	Sewage Works	1938	701259
P	208m N	Unspecified Ground Workings	1965	747650
W	209m NW	Unspecified Commercial/Industrial	1991	705324
W	209m NW	Unspecified Commercial/Industrial	1977	705324
W	209m NW	Unspecified Warehouse	1965	652408
W	209m NW	Unspecified Commercial/Industrial	1988	705324
N	209m SE	Sewage Works	1915	786107
N	209m SE	Sewage Works	1907	738790
N	209m SE	Sewage Works	1923	786107
U	209m NE	Unspecified Tank	1991	717653
U	209m NE	Unspecified Tank	1988	717653
M	211m SW	Unspecified Tank	1955	674784
L	215m NE	Unspecified Works	1965	723223
D	218m SE	Unspecified Tank	1915	762572
D	218m SE	Unspecified Tank	1923	762572
X	221m E	Cabinet Works	1965	767569
X	221m E	Cabinet Works	1955	767569

ID	Location	Land Use	Date	Group ID
Y	222m NW	Colliery	1890	645262
M	226m SW	Unspecified Tank	1938	789827
M	226m SW	Unspecified Tank	1927	789827
D	226m SE	Unspecified Tank	1938	729661
7	227m NW	Cuttings	1890	642632
D	229m SE	Chimney	1977	695696
D	229m SE	Chimney	1965	695696
D	229m SE	Unspecified Tank	1915	754354
D	229m SE	Unspecified Tank	1907	754354
D	229m SE	Unspecified Tank	1923	754354
D	231m SE	Shed	1851	659596
D	232m SE	Unspecified Tanks	1907	666451
Z	233m N	Unspecified Disused Tip	1991	784021
Z	233m N	Refuse Heap	1977	695335
Z	233m N	Unspecified Disused Tip	1988	784021
AA	235m N	Unspecified Ground Workings	1938	704929
AA	235m N	Unspecified Ground Workings	1927	704929
AA	235m N	Unspecified Ground Workings	1908	704929
X	244m E	Cotton Weaving Mill	1938	720424
X	244m E	Cotton Weaving Mill	1928	720424
AB	246m N	Unspecified Heap	1938	766137
AB	246m N	Unspecified Heap	1927	766137
AB	246m N	Refuse Heap	1908	790849
AA	246m N	Unspecified Pit	1965	691002
X	246m E	Unspecified Commercial/Industrial	1981	774222
X	246m E	Unspecified Commercial/Industrial	1974	774222
N	255m SE	Unspecified Heap	1955	775400
N	256m SE	Unspecified Heap	1938	757010

ID	Location	Land Use	Date	Group ID
N	256m SE	Unspecified Heap	1928	763138
AB	256m N	Unspecified Ground Workings	1955	698465
D	258m SE	Unspecified Heap	1991	707221
D	258m SE	Unspecified Heap	1977	707221
D	258m SE	Unspecified Heap	1965	707221
D	258m SE	Unspecified Heap	1988	707221
AC	258m NW	Tunnel	1908	671553
D	259m SE	Refuse Heap	1955	782857
D	259m SE	Refuse Heap	1938	782857
D	261m SE	Refuse Heap	1932	756807
L	262m NE	Bleach and Dye works	1938	788876
L	262m NE	Bleach Works	1891	658144
L	262m NE	Bleach and Dye works	1928	788876
L	262m NE	Bleach and Dye works	1908	788876
N	264m SE	Filter Beds	1915	789860
N	264m SE	Filter Beds	1907	746097
N	264m SE	Filter Beds	1923	753518
N	265m SE	Unspecified Tanks	1965	752748
N	265m SE	Unspecified Tanks	1974	752748
D	270m S	Unspecified Tank	1915	708695
D	270m S	Unspecified Tank	1907	708695
D	270m S	Unspecified Tank	1923	708695
U	276m NE	Chimney	1991	717375
U	276m NE	Chimney	1977	717375
U	276m NE	Chimney	1965	717375
U	276m NE	Chimney	1988	717375
N	278m SE	Unspecified Heap	1915	778676
D	286m SE	Filter Beds	1915	750653

ID	Location	Land Use	Date	Group ID
AC	287m NW	Air Shafts	1908	685376
D	287m SE	Filter Beds	1923	777946
D	293m SE	Filter Beds	1915	768200
8	295m NW	Railway Sidings	1955	768828
9	297m NW	Railway Sidings	1938	751945
AE	299m NW	Railway Sidings	1927	751945
AE	299m NW	Railway Sidings	1908	751945
X	303m E	Weaving Mill	1955	670969
X	305m E	Cotton Weaving Mill	1965	705007
10	312m N	Unspecified Ground Workings	1965	745144
L	313m NE	Unspecified Tank	1991	717499
L	313m NE	Unspecified Tank	1977	717499
L	313m NE	Unspecified Tank	1988	717499
AF	314m NE	Cotton Mill	1908	644065
L	316m NE	Unspecified Tanks	1938	715467
L	316m NE	Unspecified Tanks	1928	715467
L	316m NE	Unspecified Tanks	1908	715467
Y	329m NW	Refuse Heap	1955	789769
AH	331m N	Unspecified Warehouse	1977	716907
AH	331m N	Unspecified Warehouse	1988	770363
Y	332m NW	Refuse Heap	1938	743550
Y	332m NW	Refuse Heap	1908	774527
Y	332m NW	Refuse Heap	1927	782616
Y	333m NW	Refuse Heap	1890	742535
N	333m SE	Sewage Tanks	1981	657309
N	333m SE	Unspecified Tanks	1974	743387
N	333m SE	Unspecified Tanks	1965	743387
AH	334m NE	Oil and Tallow Works	1908	652452

ID	Location	Land Use	Date	Group ID
AH	337m NE	Candle Works	1938	691499
AH	337m NE	Tallow and Candle Works	1928	670840
12	337m S	Unspecified Tank	1923	674816
13	343m NW	Tramway Sidings	1908	782847
AH	344m NE	Unspecified Works	1965	709445
D	344m SE	Unspecified Tank	1932	762255
D	344m SE	Unspecified Tank	1938	789995
AI	346m SW	Unspecified Commercial/Industrial	1977	718948
AI	346m SW	Unspecified Mill	1965	750445
D	346m SE	Unspecified Tank	1915	694415
Y	347m NW	Refuse Heap	1977	779349
Y	347m NW	Refuse Heap	1965	779349
Y	347m NW	Refuse Heap	1988	779349
AI	348m SW	Unspecified Mill	1955	696615
AI	348m SW	Unspecified Works	1991	728251
AI	348m SW	Unspecified Works	1988	728251
D	350m SE	Unspecified Tank	1923	712578
AJ	350m SW	Unspecified Commercial/Industrial	1977	774253
AJ	350m SW	Unspecified Works	1965	727566
AJ	354m SW	Unspecified Works	1991	751996
AJ	354m SW	Unspecified Works	1988	751996
AK	356m NE	Chemical Works	1908	682691
AI	357m SW	Unspecified Mill	1938	711306
AI	357m SW	Unspecified Mill	1927	711306
AI	357m SW	Unspecified Mill	1908	711306
AI	357m SW	Unspecified Commercial/Industrial	1891	782718
N	360m SE	Sewage Tanks	1981	657312
AH	361m NE	Refuse Heap	1965	677981

ID	Location	Land Use	Date	Group ID
N	365m SE	Filter Beds	1915	788606
N	365m SE	Filter Beds	1907	788606
N	365m SE	Filter Beds	1923	788606
AJ	375m S	Tower Works	1955	778655
14	379m SW	Bleach Works	1851	658161
AJ	384m S	Tower Works	1938	704950
AJ	384m S	Tower Works	1927	704950
AJ	384m S	Unspecified Commercial/Industrial	1908	694693
AJ	384m S	Unspecified Commercial/Industrial	1891	771773
N	399m SE	Unspecified Tank	1965	674824
AH	401m NE	Unspecified Heap	1928	650894
AM	405m N	Refuse Heap	1965	714403
AN	414m SW	Unspecified Works	1965	679063
AM	416m N	Refuse Heap	1955	725785
AM	419m N	Refuse Heap	1938	725785
AM	419m N	Refuse Heap	1928	725785
AN	421m SW	Unspecified Commercial/Industrial	1927	717282
AN	421m SW	Unspecified Commercial/Industrial	1908	717282
AN	421m SW	Soap Works	1891	682700
N	423m SE	Unspecified Tanks	1974	722463
N	424m SE	Unspecified Tanks	1965	722463
N	435m E	Unspecified Tanks	1915	767640
AP	437m W	Disused Canal	1991	788290
AP	437m W	Disused Canal	1977	706247
AP	437m W	Disused Canal	1988	788290
N	437m E	Unspecified Tanks	1923	767640
AO	442m SE	Unspecified Heap	1932	758564
AO	442m SE	Unspecified Heap	1938	758564

ID	Location	Land Use	Date	Group ID
AO	444m SE	Refuse Heap	1955	719870
AQ	453m E	Settling Tanks	1938	681805
AR	454m W	Unspecified Mill	1955	709866
AR	455m W	Unspecified Mill	1965	781443
AQ	455m E	Settling Tanks	1938	681804
AO	458m SE	Unspecified Heap	1915	739377
AO	458m SE	Refuse Heap	1923	698127
AR	462m W	Unspecified Mill	1938	709866
AR	462m W	Unspecified Mill	1927	709866
AR	462m W	Unspecified Mill	1908	711488
N	464m E	Unspecified Tanks	1915	781203
N	464m E	Unspecified Tanks	1907	694169
N	464m E	Unspecified Tanks	1923	781203
N	468m E	Unspecified Tanks	1932	781203
N	468m E	Unspecified Tanks	1938	743645
N	470m E	Sewage Tanks	1955	657313
AO	470m SE	Unspecified Ground Workings	1907	648151
N	470m E	Unspecified Tanks	1965	734496
N	471m E	Unspecified Tanks	1974	703358
AO	473m SE	Unspecified Heap	1915	716003
AO	473m SE	Unspecified Heap	1923	716003
AO	475m SE	Unspecified Ground Workings	1907	648150
N	481m E	Unspecified Tanks	1908	747584
15	483m S	Refuse Heap	1977	787422
16	485m SE	Sludge Lagoons	1981	681460
N	493m E	Unspecified Tanks	1932	726516
N	493m E	Unspecified Tanks	1938	726516
N	497m E	Sewage Tanks	1955	657314

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	257

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 32 >**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Settling Tanks**	**1956**	**94451**
A	**On site**	**Unspecified Tank**	**1956**	**99752**
A	**On site**	**Settling Tanks**	**1956**	**88914**
A	**On site**	**Settling Tanks**	**1972**	**88914**
A	**On site**	**Tanks**	**1972**	**87872**
A	**On site**	**Unspecified Tank**	**1956**	**99752**
A	**On site**	**Settling Tanks**	**1956**	**88914**
A	**On site**	**Settling Tanks**	**1956**	**94451**
A	**On site**	**Tanks**	**1985**	**93701**
A	**On site**	**Tanks**	**1992**	**93701**
B	**On site**	**Unspecified Tank**	**1930**	**92083**
B	**On site**	**Unspecified Tank**	**1937**	**92083**
A	4m S	Tanks	1956	102405
A	4m S	Tanks	1956	97968
F	7m NW	Tanks	1985	96177
A	7m S	Tanks	1972	100959
F	7m NW	Tanks	1992	96177
A	7m S	Unspecified Tank	1972	84768
A	8m S	Tanks	1985	100959
A	8m S	Tanks	1930	90813
A	8m S	Tanks	1937	90813
D	26m S	Unspecified Tank	1893	89857
D	26m S	Unspecified Tank	1909	89857

ID	Location	Land Use	Date	Group ID
J	32m NW	Unspecified Tank	1992	84771
D	45m S	Tanks	1956	103342
D	45m S	Tanks	1956	103342
D	52m SE	Unspecified Tank	1893	85025
D	52m SE	Gasometer	1909	78092
A	62m S	Unspecified Tank	1930	84769
A	63m S	Unspecified Tank	1930	95707
A	63m S	Unspecified Tank	1937	95707
D	69m S	Unspecified Tank	1975	90948
D	69m S	Unspecified Tank	1980	90948
D	76m S	Unspecified Tank	1975	89663
D	76m S	Unspecified Tank	1980	89663
I	84m NW	Unspecified Tank	1956	96469
I	85m NW	Unspecified Tank	1956	96469
G	88m E	Unspecified Tank	1956	88654
G	88m E	Unspecified Tank	1956	88654
D	90m S	Unspecified Tank	1922	96774
D	90m S	Unspecified Tank	1932	96774
D	93m S	Tanks	1922	87873
G	105m E	Unspecified Tank	1956	91060
G	105m E	Unspecified Tank	1956	91060
D	121m S	Tanks	1956	98807
D	121m S	Tanks	1956	98807
G	133m E	Unspecified Tank	1985	94629
G	133m E	Unspecified Tank	1956	97001
G	133m E	Unspecified Tank	1956	94629
G	133m E	Unspecified Tank	1972	94629
O	153m S	Unspecified Tank	1922	89005

ID	Location	Land Use	Date	Group ID
O	153m S	Unspecified Tank	1932	89005
M	169m SW	Unspecified Tank	1930	103296
M	169m SW	Unspecified Tank	1937	103296
D	169m SE	Unspecified Tank	1922	95054
D	169m SE	Unspecified Tank	1932	95054
D	170m SE	Unspecified Tank	1975	94687
D	170m SE	Unspecified Tank	1956	94687
D	170m SE	Unspecified Tank	1980	91980
D	170m SE	Unspecified Tank	1956	94687
Q	177m S	Unspecified Tank	1956	99256
Q	177m S	Unspecified Tank	1956	90569
R	193m W	Unspecified Tank	1972	84770
L	196m N	Unspecified Tank	1992	91665
L	197m N	Unspecified Tank	1976	91665
D	198m SE	Unspecified Tank	1922	93363
D	198m SE	Unspecified Tank	1932	93363
D	205m SE	Unspecified Tank	1956	93997
D	205m SE	Unspecified Tank	1956	93997
U	206m NE	Unspecified Tank	1992	84776
U	210m NE	Tanks	1956	100428
U	210m NE	Tanks	1956	100428
M	215m SW	Unspecified Tank	1930	102970
M	215m SW	Unspecified Tank	1937	102970
D	217m SE	Unspecified Tank	1922	85027
D	223m SE	Settling Tanks	1975	99725
D	223m SE	Settling Tanks	1956	99725
D	223m SE	Settling Tanks	1980	92197
D	224m SE	Settling Tanks	1956	91365

ID	Location	Land Use	Date	Group ID
D	225m S	Settling Tanks	1932	93153
D	230m S	Tanks	1956	103632
D	231m S	Tanks	1956	103632
D	232m S	Unspecified Tank	1932	85026
D	234m SE	Tanks	1909	87876
U	239m NE	Unspecified Tank	1992	84772
U	263m NE	Tanks	1992	87156
D	271m S	Unspecified Tank	1909	94386
D	271m S	Unspecified Tank	1922	94386
D	286m SE	Tanks	1980	98066
D	287m SE	Tanks	1956	90555
D	287m SE	Tanks	1975	90555
D	287m SE	Tanks	1956	90555
AD	290m S	Unspecified Tank	1980	96640
AD	290m S	Unspecified Tank	1987	96640
AD	290m S	Unspecified Tank	1992	96640
AD	290m S	Unspecified Tank	1996	96640
AD	290m S	Unspecified Tank	1994	96640
AD	290m S	Unspecified Tank	1998	96640
AD	290m S	Unspecified Tank	1975	96640
N	304m SE	Settling Tanks	1956	95997
N	304m SE	Humus Tanks	1968	101213
N	304m SE	Humus Tanks	1969	101213
N	304m SE	Settling Tanks	1956	95997
L	307m NE	Unspecified Tank	1930	84774
L	310m NE	Unspecified Tank	1890	84775
L	311m NE	Unspecified Tank	1992	94127
L	313m NE	Unspecified Tank	1976	94127

ID	Location	Land Use	Date	Group ID
L	316m NE	Tanks	1910	100450
L	316m NE	Tanks	1930	100450
L	316m NE	Tanks	1937	100450
L	317m NE	Tanks	1956	98251
L	318m NE	Tanks	1956	98251
11	318m NE	Unspecified Tank	1976	84759
L	320m NE	Unspecified Tank	1992	101937
L	321m NE	Unspecified Tank	1956	103287
L	321m NE	Unspecified Tank	1976	103287
L	322m NE	Unspecified Tank	1956	98149
L	322m NE	Tanks	1956	93468
L	323m NE	Tanks	1956	93468
AG	327m N	Tanks	1976	87154
AG	334m N	Tanks	1976	87155
N	340m SE	Settling Tanks	1981	99521
N	340m SE	Settling Tanks	1987	99521
N	340m SE	Settling Tanks	1968	99464
N	340m SE	Tanks	1989	101671
N	340m SE	Tanks	1989	101671
N	340m SE	Settling Tanks	1969	103588
N	341m SE	Tanks	1992	104226
AF	345m NE	Tanks	1970	104203
AF	345m NE	Tanks	1969	104203
AF	345m NE	Tanks	1995	104203
D	347m SE	Unspecified Tank	1981	95946
D	347m SE	Unspecified Tank	1987	95946
D	347m SE	Unspecified Tank	1909	95091
D	347m SE	Unspecified Tank	1922	95091

ID	Location	Land Use	Date	Group ID
D	347m SE	Unspecified Tank	1932	95091
D	348m SE	Unspecified Tank	1992	95946
D	348m SE	Unspecified Tank	1956	93999
D	348m SE	Unspecified Tank	1968	93999
D	348m SE	Unspecified Tank	1989	95946
D	348m SE	Unspecified Tank	1989	95946
D	348m SE	Unspecified Tank	1969	95946
D	348m SE	Unspecified Tank	1956	95946
AG	349m N	Unspecified Tank	1976	84758
AF	350m NE	Unspecified Tank	1890	84773
N	357m SE	Tanks	1989	100456
N	357m SE	Tanks	1989	100456
AH	362m NE	Unspecified Tank	1930	88825
AH	362m NE	Unspecified Tank	1937	88825
N	362m SE	Settling Tanks	1969	95683
N	362m SE	Settling Tanks	1956	95683
N	363m SE	Settling Tanks	1956	95683
N	363m SE	Settling Tanks	1968	95683
N	367m SE	Humus Tanks	1969	98394
N	367m SE	Settlings Tanks	1956	78421
N	367m SE	Settling Tanks	1956	103088
N	367m SE	Humus Tanks	1968	98394
AH	368m NE	Unspecified Tank	1930	90624
AH	368m NE	Unspecified Tank	1937	90624
N	370m SE	Unspecified Tank	1956	97759
N	370m SE	Unspecified Tank	1956	97759
N	370m SE	Settling Tanks	1932	101430
N	373m SE	Aeration Tanks	1981	95780

ID	Location	Land Use	Date	Group ID
N	373m SE	Aeration Tanks	1987	95780
N	374m SE	Aeration Tanks	1968	95872
N	374m SE	Settling Tanks	1956	95304
N	374m SE	Settling Tanks	1956	95304
N	375m SE	Aeration Tanks	1969	95872
N	381m SE	Tanks	1989	101340
N	381m SE	Tanks	1989	101340
AH	381m NE	Unspecified Tank	1976	84760
N	383m SE	Settling Tanks	1987	103088
AJ	387m SW	Unspecified Tank	1966	95441
AJ	387m SW	Unspecified Tank	1956	95441
AJ	387m SW	Unspecified Tank	1985	95441
AJ	387m SW	Unspecified Tank	1987	95441
AJ	388m SW	Unspecified Tank	1994	95441
N	389m E	Aeration Tanks	1956	103615
AK	389m NE	Unspecified Tank	1956	103706
AK	389m NE	Unspecified Tank	1970	93129
N	389m E	Aeration Tanks	1956	95872
AK	390m NE	Unspecified Tank	1956	91508
AK	390m NE	Unspecified Tank	1969	92411
AK	390m NE	Unspecified Tank	1995	97339
N	390m SE	Aeration Tank	1956	93211
N	390m SE	Aeration Tank	1968	93211
N	391m SE	Aeration Tank	1969	93211
N	391m SE	Aeration Tank	1956	93211
AJ	391m S	Unspecified Tank	1956	94223
AJ	391m S	Unspecified Tank	1980	101029
AJ	391m S	Unspecified Tank	1987	101029

ID	Location	Land Use	Date	Group ID
AJ	391m S	Unspecified Tank	1992	101029
AJ	392m S	Unspecified Tank	1975	94223
AJ	392m S	Unspecified Tank	1956	94223
AJ	392m S	Unspecified Tank	1996	94223
AJ	392m S	Unspecified Tank	1994	94223
AJ	392m S	Unspecified Tank	1998	94223
N	395m E	Settling Tanks	1930	93336
N	395m E	Settling Tanks	1937	93336
N	397m SE	Unspecified Tank	1956	99296
N	397m SE	Unspecified Tank	1956	99296
N	408m SE	Settling Tanks	1981	93693
N	409m SE	Settling Tanks	1956	93693
N	409m SE	Settling Tanks	1968	93693
N	410m SE	Settling Tanks	1969	93693
N	410m SE	Settling Tanks	1956	93693
N	411m E	Aeration Tanks	1956	97495
N	411m E	Aeration Tanks	1969	97495
N	411m E	Aeration Tanks	1956	95872
N	411m E	Aeration Tanks	1970	90286
N	422m SE	Aeration Tanks	1981	96856
N	423m SE	Aeration Tanks	1969	96856
N	423m SE	Aeration Tanks	1956	96856
N	423m SE	Aeration Tanks	1956	92635
N	423m SE	Aeration Tanks	1968	92635
N	435m E	Tanks	1922	96253
N	435m E	Tanks	1932	96253
AO	436m SE	Sludge Holding Tanks	1981	96323
AO	436m SE	Sludge Holding Tanks	1987	96323

ID	Location	Land Use	Date	Group ID
N	436m E	Settling Tanks	1956	93293
AO	437m SE	Tanks	1989	103834
AO	437m SE	Tanks	1989	103834
AO	438m SE	Tanks	1992	96370
N	438m E	Settling Tanks	1956	93293
AO	442m SE	Sludge Holding Tanks	1981	97258
AO	442m SE	Sludge Holding Tanks	1987	97258
AO	443m SE	Tanks	1989	93906
AO	443m SE	Tanks	1989	93906
AO	445m SE	Tanks	1992	89885
N	448m SE	Settling Tanks	1981	103131
N	448m SE	Settling Tanks	1987	103131
N	450m SE	Tanks	1989	96403
N	450m SE	Tanks	1989	96403
AN	464m SW	Unspecified Tank	1929	97446
AN	464m SW	Unspecified Tank	1937	97446
N	471m E	Tanks	1969	101963
N	471m E	Tanks	1956	101963
N	472m E	Tanks	1909	89542
N	472m E	Tanks	1922	89542
N	472m E	Tanks	1932	89542
N	472m E	Settling Tanks	1956	93519
N	472m E	Settling Tanks	1968	93519
N	477m SE	Aeration Tanks	1981	85898
N	481m E	Tanks	1910	91042
N	481m E	Settling Tanks	1930	93373
N	481m E	Settling Tanks	1937	93373
N	493m E	Unspecified Tank	1956	84767

ID	Location	Land Use	Date	Group ID
N	497m E	Settling Tanks	1969	91208
N	497m E	Settling Tanks	1956	91208
N	497m SE	Tanks	1956	87874
N	497m E	Settling Tanks	1956	91208
N	497m E	Settling Tanks	1968	91208
N	498m E	Tanks	1909	101507
N	498m E	Tanks	1922	101507
N	498m E	Settling Tanks	1932	92173
N	500m E	Tanks	1956	94775
N	500m E	Tanks	1968	94775

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**76**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 32 >**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Electricity Substation**	**1956**	**55676**
A	**On site**	**Electricity Substation**	**1972**	**55676**
A	**On site**	**Electricity Substation**	**1975**	**57711**
A	**On site**	**Electricity Substation**	**1956**	**45637**
A	**On site**	**Electricity Substation**	**1980**	**57576**
A	**On site**	**Electricity Substation**	**1987**	**57576**
A	**On site**	**Electricity Substation**	**1992**	**57576**
A	0m S	Electricity Substation	1996	46895
A	0m S	Electricity Substation	1994	46895
A	0m S	Electricity Substation	1998	46895

ID	Location	Land Use	Date	Group ID
D	17m S	Electricity Substation	1996	53975
D	17m S	Electricity Substation	1994	53975
D	17m S	Electricity Substation	1998	53975
D	24m S	Electricity Substation	1992	53935
J	38m NW	Electricity Substation	1956	57801
J	38m NW	Electricity Substation	1956	57801
J	38m NW	Electricity Substation	1972	57801
J	38m NW	Electricity Substation	1992	57801
J	39m NW	Electricity Substation	1985	57801
D	52m SE	Gasometer	1909	46144
G	81m E	Electricity Substation	1992	45648
G	132m E	Electricity Substation	1985	50498
G	132m E	Electricity Substation	1972	59435
G	133m E	Electricity Substation	1992	50498
G	173m E	Electricity Substation	1995	45649
6	185m NE	Electricity Substation	1992	45670
D	187m SE	Electricity Substation	1956	56825
D	187m SE	Electricity Substation	1956	56825
R	198m W	Electricity Substation	1992	52297
R	199m W	Electricity Substation	1987	52297
V	208m NW	Electricity Substation	1992	50885
V	209m NW	Electricity Substation	1987	50885
M	215m SW	Electricity Substation	1956	55906
M	216m SW	Electricity Substation	1956	55906
L	267m NE	Electricity Substation	1992	45671
L	269m NE	Electricity Substation	1992	45672
L	279m NE	Electricity Substation	1992	52977
L	282m NE	Electricity Substation	1985	55173

ID	Location	Land Use	Date	Group ID
L	283m NE	Electricity Substation	1956	55173
L	284m NE	Electricity Substation	1956	55173
L	284m NE	Electricity Substation	1972	55173
L	285m NE	Electricity Substation	1992	45673
AH	370m NE	Electricity Substation	1992	45667
AH	374m NE	Electricity Transformer	1976	46545
AJ	376m S	Electricity Substation	1956	45638
X	388m E	Electricity Substation	1995	59332
X	388m E	Electricity Substation	1956	57139
X	388m E	Electricity Substation	1969	57139
X	388m E	Electricity Substation	1956	57139
X	388m E	Electricity Substation	1970	57139
AJ	392m S	Electricity Substation	1980	47202
AJ	392m S	Electricity Substation	1987	47202
AJ	392m S	Electricity Substation	1992	47202
AJ	392m S	Electricity Substation	1975	47202
AJ	392m S	Electricity Substation	1956	47202
AJ	392m S	Electricity Substation	1996	47202
AJ	392m S	Electricity Substation	1994	47202
AJ	392m S	Electricity Substation	1998	47202
AL	398m E	Electricity Substation	1969	52486
AL	400m E	Electricity Substation	1995	50012
AL	400m E	Electricity Substation	1956	55428
AL	400m E	Electricity Substation	1970	55428
AL	400m E	Electricity Substation	1956	52486
N	419m SE	Electricity Substation	1989	48208
N	419m SE	Electricity Substation	1989	48208
N	419m SE	Electricity Substation	1992	50559

ID	Location	Land Use	Date	Group ID
AN	446m SW	Electricity Substation	1956	57450
AN	449m SW	Electricity Substation	1994	57450
AN	449m SW	Electricity Substation	1985	51206
AN	449m SW	Electricity Substation	1987	51206
AN	451m SW	Electricity Substation	1956	58081
AS	468m NE	Electricity Substation	1995	45669
AS	473m NE	Electricity Substation	1989	45668
AO	497m SE	Electricity Substation	1987	53466
AO	497m SE	Electricity Substation	1989	47944
AO	497m SE	Electricity Substation	1989	47944

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**5**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

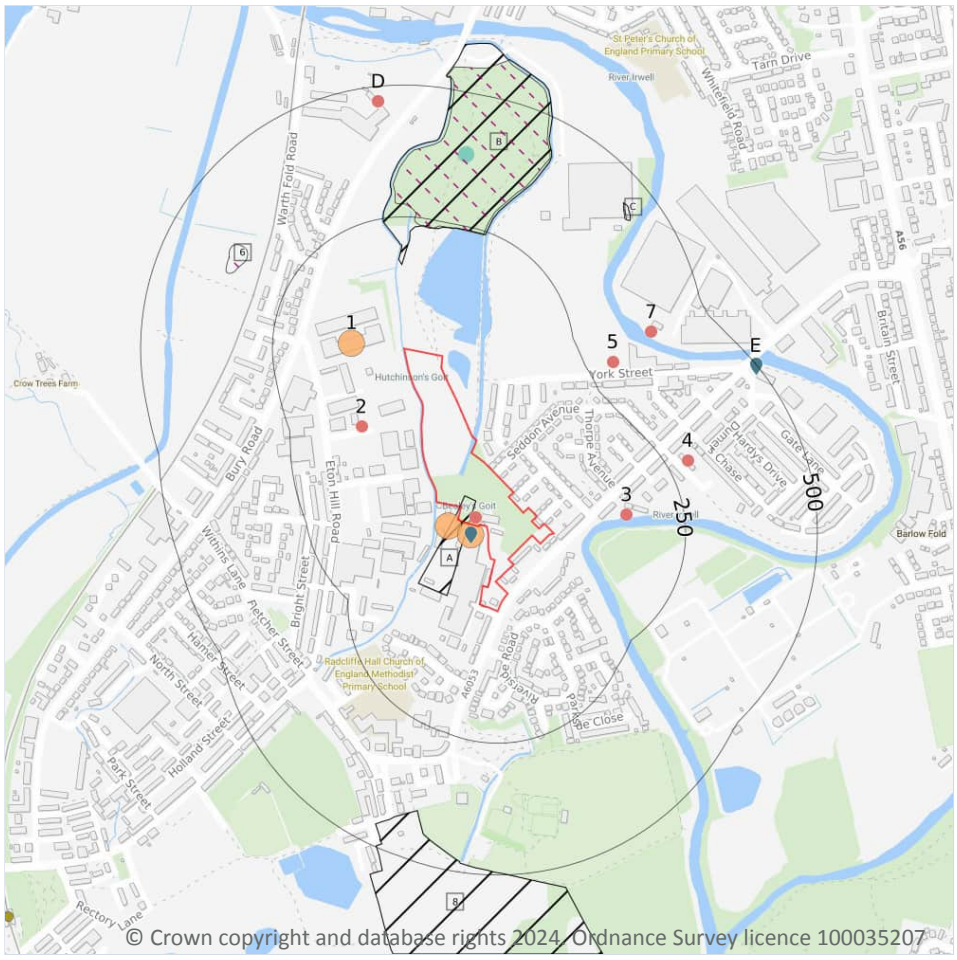
Features are displayed on the Past land use - un-grouped map on **page 32 >**

ID	Location	Land Use	Date	Group ID
AN	426m SW	Garage	1994	18556
AN	428m SW	Garage	1987	18556
AN	475m SW	Garage	1956	16941

ID	Location	Land Use	Date	Group ID
AN	475m SW	Garage	1966	17769
AN	475m SW	Garage	1956	17769

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Historical landfill (EA/NRW)

Historical landfill (BGS)

Historical landfill (LA/OS)

Historical waste sites

Licensed waste sites

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	1

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

Features are displayed on the Waste and landfill map on **page 58 >**

ID	Location	Address	BGS Number	Risk	Waste Type
B	382m N	Crawford Bros Ltd, Bury Rd, Radcliffe, Manchester	1678	No risk to aquifer	N/A

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	**4**

Landfill sites identified from Local Authority records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 58 >**

ID	Location	Site address	Source	Data type
B	233m N	Refuse Tip	1975 mapping	Polygon
6	344m NW	Refuse Tip	1964 mapping	Polygon
C	433m NE	Refuse Tip	1969 mapping	Polygon
C	435m NE	Refuse Tip	1969 mapping	Polygon

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	**3**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 58 >**

ID	Location	Details		
A	**On site**	**Site Address: Land off Dumers Lane, Radcliffe, Bury, Greater Manchester** **Licence Holder Address: -**	**Waste Licence: -** **Site Reference: C011** **Waste Type: Inert** **Environmental Permitting Regulations (Waste) Reference: -** **Licence Issue: -** **Licence Surrender: -**	**Operator: -** **Licence Holder: -** **First Recorded -** **Last Recorded: -**

ID	Location	Details		
B	159m N	Site Address: Land At Bury Road, Radcliffe, Bury, Greater Manchester Licence Holder Address: Gunnersbury House, Chiswick High Road, London	Waste Licence: Yes Site Reference: C008,RD/LIC/057/76 Waste Type: Inert, Industrial, Commercial, Household, Special Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 13/07/1978 Licence Surrender: 21/03/1991	Operator: Crawford Brothers Limited Licence Holder: Wimpey Waste Management Limited First Recorded - Last Recorded: -
8	407m S	Site Address: Tower Farm, Off Church Street East, Radcliffe, Bury, Greater Manchester Licence Holder Address: The Octagon, 143, Derby Road, Nottingham	Waste Licence: Yes Site Reference: C010, RD/LIC/201/80, RD/LIC/018/76 Waste Type: Inert, Industrial, Commercial, Household, Special, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 13/06/1978 Licence Surrender: 10/03/1993	Operator: - Licence Holder: P D Pollution Control Limited First Recorded 31/12/1980 Last Recorded: 31/12/1992

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m **3**

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 58 >**

ID	Location	Address	Further Details	Date
A	**On site**	**Site Address: Bealley Industrial Estate, MANCHESTER, Greater Manchester, M26 2BD**	**Type of Site: Waste Transfer Unit Planning application reference: 32752/96 Description: No Buildings. An application (ref: 32752/96) for Detailed Planning permission was submitted to Bury M.B.C. on 13th December 1996. Data source: Historic Planning Application Data Type: Point**	**-**
A	**On site**	**Site Address: 10A, Bealey Industrial Estate, Dumers Lane, Radcliffe, Manchester, Greater Manchester, M26 2BD**	**Type of Site: Waste Transfer Station Planning application reference: 56753 Description: Scheme comprises change of use to indoor waste transfer station for recycling non-hazardous household, commercial and industrial skip waste. Data source: Historic Planning Application Data Type: Point**	**18/12/2013**

ID	Location	Address	Further Details	Date
1	75m NW	Site Address: Remploy Ltd, Eton Hill Road, Radcliffe, MANCHESTER, Greater Manchester, M26 2XS	Type of Site: Recycling Storage (Conversion) Planning application reference: 49849 Description: Scheme comprises change of use to include the reception, storage and treatment to recycle electrical and electronic equipment. An application (ref: 49849) for detailed planning permission was granted by Bury M.B.C. Planning decision obtained Data source: Historic Planning Application Data Type: Point	-

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m **4**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 58 >**

ID	Location	Details		
A	19m S	Site Name: Abbey Skip Hire Ltd Site Address: Unit 10a Bealey Industrial Estate, Dumers Lane, Radcliffe, Bury, Lancashire, M26 2BD Correspondence Address: -	Type of Site: 75kte HCl Waste TS + treatment Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 642023 EPR reference: EA/EPR/BB3703GM Operator: Abbey Skip Hire Limited Waste Management licence No: 401511 Annual Tonnage: 0	Issue Date: 14/08/2014 Effective Date: 14/08/2014 Modified: - Surrendered Date: 14/08/2014 Expiry Date: - Cancelled Date: - Status: Surrendered
E	497m E	Site Name: Royden Polythene (exports) Ltd Site Address: Unit B, Dumers Lane, Radcliffe, Bury, Lancashire, M26 2QJ Correspondence Address: -	Type of Site: Material Recycling Treatment Facility Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ROY001 EPR reference: EA/EPR/AP3698CD/S002 Operator: Royden Polythene (Exports) Ltd Waste Management licence No: 50101 Annual Tonnage: 0	Issue Date: 19/11/2002 Effective Date: - Modified: - Surrendered Date: Apr 23 2007 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered

ID	Location	Details		
E	497m E	Site Name: Royden Polythene (exports) Ltd Site Address: Unit B, Dumers Lane, Radcliffe, Bury, Lancashire, M26 2QJ Correspondence Address: -	Type of Site: Material Recycling Treatment Facility Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ROY001 EPR reference: EA/EPR/AP3698CD/S002 Operator: Royden Polythene (exports) Ltd Waste Management licence No: 50101 Annual Tonnage: 0	Issue Date: 19/11/2002 Effective Date: - Modified: - Surrendered Date: Apr 23 2007 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered
E	497m E	Site Name: Royden Polythene (exports) Ltd Site Address: Unit B, Dumers Lane, Radcliffe, Bury, Lancashire, M26 2QJ Correspondence Address: -	Type of Site: Material Recycling Treatment Facility Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 632483 EPR reference: EA/EPR/AP3698CD Operator: Royden Polythene (Exports) Limited Waste Management licence No: 50101 Annual Tonnage: 0	Issue Date: 19/11/2002 Effective Date: 19/11/2002 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Surrendered

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m **10**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

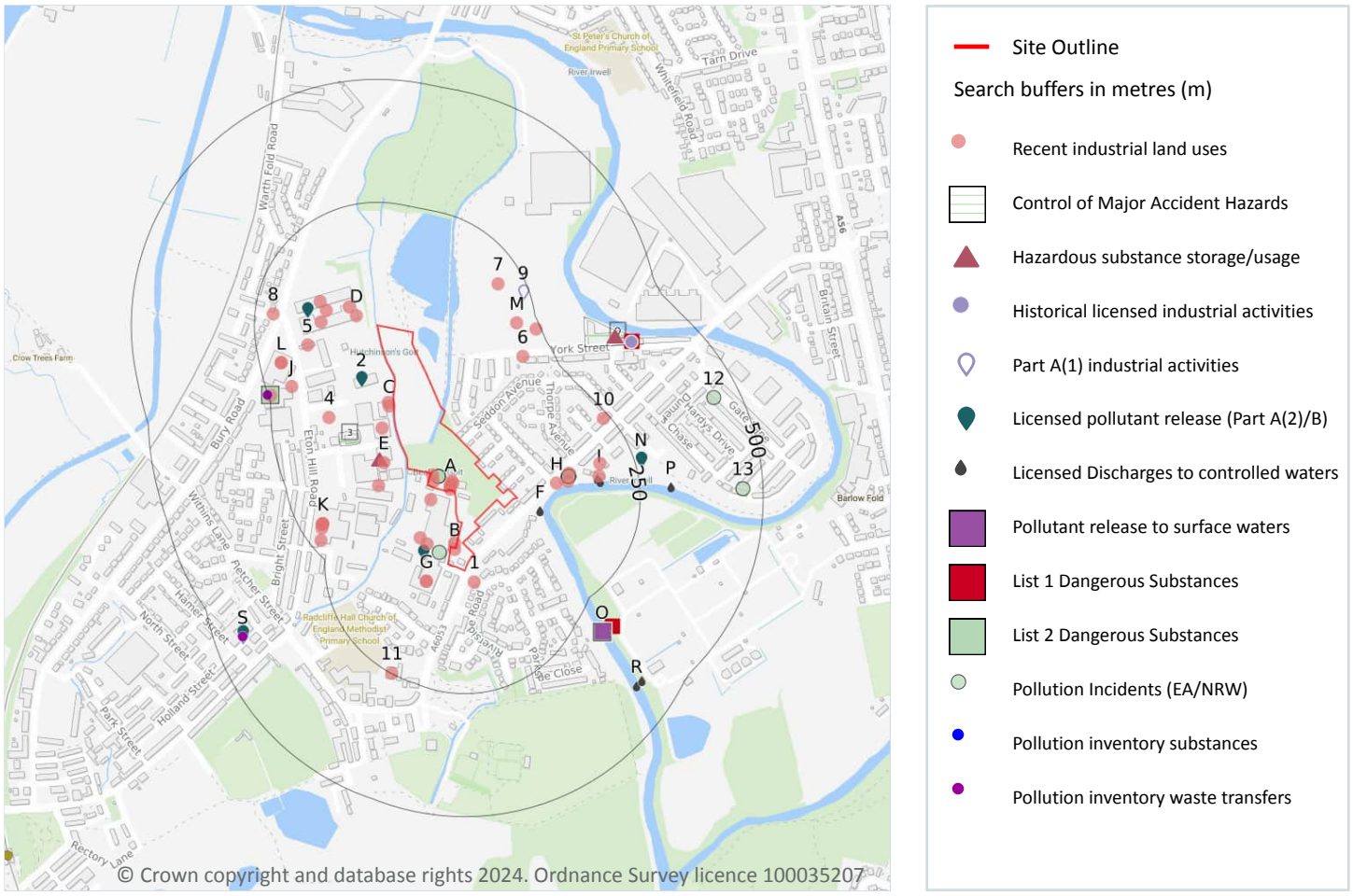
Features are displayed on the Waste and landfill map on **page 58 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	**On site**	**Bealey Industrial Estate Yard opposite 10a Dumers Lane MANCHESTER M26 2BD**	**EPR/GF0307SS /A001**	**Storing waste exemption**	**Non-Agricultural Waste Only**	**Storage of waste in secure containers**
A	**On site**	**Bealey Industrial Estate Yard opposite 10a Dumers Lane MANCHESTER M26 2BD**	**EPR/GF0307SS /A001**	**Storing waste exemption**	**Non-Agricultural Waste Only**	**Storage of waste in a secure place**

ID	Location	Site	Reference	Category	Sub-Category	Description
2	115m NW	Country Supplies Eton Way North Manchester M26 2AB	EPR/PE5588YH /A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
3	142m E	-	WEX219320	Using waste exemption	Not on a farm	Use of waste in construction
4	288m E	Radcliffe & Radvales FRMS Phase 1, Morris Street, off Dumers Lane, Radcliffe, M262HF	WEX178612	Using waste exemption	Not on a farm	Use of waste in construction
5	297m NE	-	WEX208933	Using waste exemption	Not on a farm	Use of waste in construction
7	389m NE	-	WEX208936	Using waste exemption	Not on a farm	Use of waste in construction
D	470m N	-	WEX348669	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	470m N	-	WEX348669	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	470m N	-	WEX348669	Treating waste exemption	Not on a farm	Sorting mixed waste

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

4.1 Recent industrial land uses

Records within 250m	48

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Company	Address	Activity	Category
A	**On site**	**Tank**	**Greater Manchester, M26**	**Tanks (Generic)**	**Industrial Features**
A	**On site**	**Tank**	**Greater Manchester, M26**	**Tanks (Generic)**	**Industrial Features**
A	**On site**	**Tank**	**Greater Manchester, M26**	**Tanks (Generic)**	**Industrial Features**

ID	Location	Company	Address	Activity	Category
A	**On site**	**Tank**	**Greater Manchester, M26**	**Tanks (Generic)**	**Industrial Features**
A	**On site**	**Tank**	**Greater Manchester, M26**	**Tanks (Generic)**	**Industrial Features**
A	**On site**	**Pylon**	**Greater Manchester, M26**	**Electrical Features**	**Infrastructure and Facilities**
A	**On site**	**Mast (Telecommunication)**	**Greater Manchester, M26**	**Telecommunications Features**	**Infrastructure and Facilities**
B	**On site**	**Electricity Sub Station**	**Greater Manchester, M26**	**Electrical Features**	**Infrastructure and Facilities**
B	5m S	Tranzcare Travel	Gate House 1b Bealey Industrial Estate, Hallam Street, Radcliffe, Greater Manchester, M26 2BD	Vehicle Hire and Rental	Hire Services
C	10m NW	Tank	Greater Manchester, M26	Tanks (Generic)	Industrial Features
C	11m NW	Tank	Greater Manchester, M26	Tanks (Generic)	Industrial Features
A	25m S	Glosta Engineering	Unit 9c Bealey Industrial Estate, Hallam Street, Radcliffe, Greater Manchester, M26 2BD	Packaging	Industrial Products
C	28m W	Champion Mouldings Ltd	Eton Hill Industrial Estate, Eton Way South, Radcliffe, Greater Manchester, M26 2ZT	Rubber, Silicones and Plastics	Industrial Products
1	30m S	Electricity Sub Station	Greater Manchester, M26	Electrical Features	Infrastructure and Facilities
D	47m NW	I T Parts & Spares Ltd	Unit 1, Eton Business Park, Eton Hill Road, Radcliffe, Greater Manchester, M26 2ZS	Electronic Equipment	Industrial Products
E	47m W	Fragrance Oils International Ltd	-, Eton Hill Road, Radcliffe, Greater Manchester, M26 2FR	Cosmetics, Toiletries and Perfumes	Consumer Products
B	48m S	M & S Commercials Ltd	Unit 5 Bealey Industrial Estate, Hallam Street, Radcliffe, Greater Manchester, M26 2BD	Vehicle Repair, Testing and Servicing	Repair and Servicing
G	56m S	Norlift Ltd	Unit 1c Bealey Industrial Estate, Hallam Street, Radcliffe, Greater Manchester, M26 2BD	Lifting and Handling Equipment	Industrial Products
G	56m S	Wax on Wax Off Car Wash	Unit 1c Bealey Industrial Estate, Hallam Street, Radcliffe, Greater Manchester, M26 2BD	Vehicle Cleaning Services	Personal, Consumer and Other Services

ID	Location	Company	Address	Activity	Category
B	65m S	Bealey Industrial Estate	Greater Manchester, M26	Business Parks and Industrial Estates	Industrial Features
D	68m NW	Poole Projects Ltd	Unit 28 Eton Business Park, Eton Hill Road, Radcliffe, Greater Manchester, M26 2ZS	Wood Products Including Charcoal, Paper, Card and Board	Industrial Products
E	69m SW	Chimney	Greater Manchester, M26	Chimneys	Industrial Features
H	86m E	Electricity Sub Station	Greater Manchester, M26	Electrical Features	Infrastructure and Facilities
H	108m E	Works	Greater Manchester, M26	Unspecified Works Or Factories	Industrial Features
D	108m NW	Eton Business Park	Greater Manchester, M26	Business Parks and Industrial Estates	Industrial Features
D	115m NW	Mossglade Fabrics Ltd	Unit 20 Eton Business Park, Eton Hill Road, Radcliffe, Greater Manchester, M26 2ZS	Lingerie and Hosiery	Consumer Products
H	116m E	M N D Recovery Service	Irwell Bank Business Park 150-160, Dumers Lane, Radcliffe, Greater Manchester, M26 2GF	Scrap Metal Merchants	Recycling Services
D	126m NW	Tottington Motor Company	Unit 35, Eton Business Park, Eton Hill Road, Radcliffe, Greater Manchester, M26 2ZS	Secondhand Vehicles	Motoring
4	132m W	Industrial Estate	Greater Manchester, M26	Business Parks and Industrial Estates	Industrial Features
5	148m NW	Conservatory Insulations	Eton House, Eton Hill Road, Radcliffe, Greater Manchester, M26 2ZT	Construction Completion Services	Construction Services
I	173m E	Works	Greater Manchester, BL9	Unspecified Works Or Factories	Industrial Features
I	183m E	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
6	193m NE	Electricity Sub Station	Greater Manchester, M26	Electrical Features	Infrastructure and Facilities
7	199m N	Tank	Greater Manchester, M26	Tanks (Generic)	Industrial Features
J	200m W	Electricity Sub Station	Greater Manchester, M26	Electrical Features	Infrastructure and Facilities
K	205m SW	McKenzie Martin	Eton Hill Works, Eton Hill Road, Radcliffe, Greater Manchester, M26 2US	Cooling and Refrigeration	Industrial Products

ID	Location	Company	Address	Activity	Category
K	205m SW	Displad Ltd	Eton Hill Works, Eton Hill Road, Radcliffe, Greater Manchester, M26 2DL	Office and Shop Equipment	Industrial Products
L	207m NW	J Rosenthal & Son	Britannia House 158, Bury Road, Radcliffe, Greater Manchester, M26 2JR	Beds and Bedding	Consumer Products
L	207m NW	J Rosenthal & Son	Britannia House 158, Bury Road, Radcliffe, Greater Manchester, M26 2JR	Textiles, Fabrics, Silk and Machinery	Industrial Products
K	208m SW	G J Plastics	Unit 2 Department 1 Eton Hill Works, Eton Hill Road, Radcliffe, Manchester, Greater Manchester, M26 2US	Office and Shop Equipment	Industrial Products
M	210m NE	Tank	Greater Manchester, M26	Tanks (Generic)	Industrial Features
K	212m SW	Banners N Display	Unit 2 Eton Hill Works, Eton Hill Road, Radcliffe, Manchester, Greater Manchester, M26 2US	Signs	Industrial Products
8	213m NW	Electricity Sub Station	Greater Manchester, M26	Electrical Features	Infrastructure and Facilities
K	228m SW	Works	Greater Manchester, M26	Unspecified Works Or Factories	Industrial Features
10	239m E	Georgina's Cakery	277, Dumers Lane, Radcliffe, Greater Manchester, M26 2GN	Baking and Confectionery	Foodstuffs
M	241m NE	Tank	Greater Manchester, M26	Tanks (Generic)	Industrial Features
J	246m W	B E P	Eton Hill Road, Radcliffe, Manchester, Greater Manchester, M26 2ZT	Industrial Coatings and Finishings	Industrial Products
11	248m S	Bealey Community Hospital	-, Dumers Lane, Radcliffe, Greater Manchester, M26 2QD	Hospitals	Health Practitioners and Establishments

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	2

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Company	Address	Operational status	Tier
3	73m W	Fragrance Oils (International) Limited	Fragrance Oils (International) Limited, Radcliffe, Eton Hill Industrial Estate, Eton Hill Road, Radcliffe, Bury, Lancashire, M26 2FR	Current COMAH Site	COMAH Lower Tier Operator
Q	313m NE	J and W Whewell Limited	J and W Whewell Limited, Newbridge Chemical Works, York Street, Radcliffe, Bury, Greater Manchester, M26 2GL	Historical COMAH Site	COMAH Lower Tier Operator

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	2

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Details	
E	52m W	Application reference number: No Details Application status: Approved Application date: No Details Address: Fragrance Oils International Ltd, Eton Hill Road, Radcliffe, Bury, Manchester, M26 2FR	Details: No Details Enforcement: No Details Date of enforcement: No Details Comment: No Details
Q	370m NE	Application reference number: No Details Application status: Approved Application date: No Details Address: J and W Whewell Ltd, Newbridge Chemical Works, York Street, Radcliffe, Bury, Manchester, England, M26 2GL	Details: No Details Enforcement: No Details Date of enforcement: No Details Comment: No Details

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	3

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Details	
Q	388m NE	Operator: J and W Whewell Ltd Address: New Bridge Chemical Works, York Street, Radcliffe, Manchester, M26 2GL Process: Acid Processes Permit Number: AZ7432	Original Permit Number: IPCAPP Date Approved: 30-7-1998 Effective Date: 1-8-1998 Status: Superseded By Variation
Q	388m NE	Operator: J and W Whewell Ltd Address: New Bridge Chemical Works, York Street, Radcliffe, Manchester, M26 2GL Process: Acid Processes Permit Number: BE1224	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Superseded By Variation
Q	388m NE	Operator: J and W Whewell Ltd Address: New Bridge Chemical Works, York Street, Radcliffe, Manchester, M26 2GL Process: Acid Processes Permit Number: BU4350	Original Permit Number: IPCMINVAR Date Approved: 16-5-2003 Effective Date: 26-5-2003 Status: Revoked - Now Ippc

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m **24**

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Details	
9	238m NE	Operator: Unifi dyed yarns Limited Installation Name: UNIFI DYED YARNS Process: COATING, PRINTING AND TEXTILES; PRE-TREATING BY WASHING ETC >10T/DAY Permit Number: BX0393IP Original Permit Number: BP9684IP	EPR Reference: - Issue Date: 21/01/2004 Effective Date: 01/02/2004 Last date noted as effective: 21/03/2023 Status: Revoked
J	252m W	Operator: BEP SURFACE TECHNOLOGIES LIMITED Installation Name: Eton Hill Road EPR/BX2914IK Process: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M Permit Number: BX2914IK Original Permit Number: BX2914IK	EPR Reference: EPR/BX2914IK Issue Date: 26/07/2017 Effective Date: 26/07/2017 Last date noted as effective: 23/11/2023 Status: Effective

ID	Location	Details	
J	252m W	Operator: BEP SURFACE TECHNOLOGIES LIMITED Installation Name: Eton Hill Road EPR/BX2914IK Process: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Permit Number: BX2914IK Original Permit Number: BX2914IK	EPR Reference: EPR/BX2914IK Issue Date: 26/07/2017 Effective Date: 26/07/2017 Last date noted as effective: 23/11/2023 Status: Effective
J	252m W	Operator: BEP Surface Technologies Ltd Installation Name: BEP SURFACE TECHNOLOGIES Process: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M Permit Number: NP3631MQ Original Permit Number: BX2914IK	EPR Reference: - Issue Date: 12/07/2007 Effective Date: 23/07/2007 Last date noted as effective: 21/03/2023 Status: Superceded
J	252m W	Operator: BEP Surface Technologies Ltd Installation Name: Eton Hill Road EPR/BX2914IK Process: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Permit Number: NP3833CY Original Permit Number: BX2914IK	EPR Reference: - Issue Date: 26/07/2017 Effective Date: 26/07/2017 Last date noted as effective: 21/03/2023 Status: Effective
J	252m W	Operator: BEP Surface Technologies Ltd Installation Name: Eton Hill Road EPR/BX2914IK Process: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M Permit Number: NP3833CY Original Permit Number: BX2914IK	EPR Reference: - Issue Date: 26/07/2017 Effective Date: 26/07/2017 Last date noted as effective: 21/03/2023 Status: Effective
Q	388m NE	Operator: Sulfo Surfactants Limited Installation Name: New Bridge Chemical Works - EPR/BM0044IW Process: ASSOCIATED PROCESS Permit Number: BM0044IW Original Permit Number: BM0044IW	EPR Reference: EPR/BM0044IW Issue Date: 25/05/2023 Effective Date: 25/05/2023 Last date noted as effective: 23/11/2023 Status: Effective
Q	388m NE	Operator: Sulfo Surfactants Limited Installation Name: New Bridge Chemical Works - EPR/BM0044IW Process: ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES Permit Number: BM0044IW Original Permit Number: BM0044IW	EPR Reference: EPR/BM0044IW Issue Date: 25/05/2023 Effective Date: 25/05/2023 Last date noted as effective: 23/11/2023 Status: Effective
Q	388m NE	Operator: Sulfo Surfactants Limited Installation Name: New Bridge Chemical Works - EPR/BM0044IW Process: ORGANIC CHEMICALS; OXYGEN CONTAINING COMPOUNDS EG ALCOHOLS Permit Number: BM0044IW Original Permit Number: BM0044IW	EPR Reference: EPR/BM0044IW Issue Date: 25/05/2023 Effective Date: 25/05/2023 Last date noted as effective: 23/11/2023 Status: Effective

ID	Location	Details	
Q	388m NE	Operator: Sulfo Surfactants Limited Installation Name: New Bridge Chemical Works - EPR/BM0044IW Process: ORGANIC CHEMICALS; PHOSPHORUS CONTAINING COMPOUNDS EG SUBSTITUTED PHOSPHINES Permit Number: BM0044IW Original Permit Number: BM0044IW	EPR Reference: EPR/BM0044IW Issue Date: 25/05/2023 Effective Date: 25/05/2023 Last date noted as effective: 23/11/2023 Status: Effective
Q	388m NE	Operator: Sulfo Surfactants Limited Installation Name: New Bridge Chemical Works - EPR/BM0044IW Process: ORGANIC CHEMICALS; SULPHUR CONTAINING COMPOUNDS EG SULPHIDES Permit Number: BM0044IW Original Permit Number: BM0044IW	EPR Reference: EPR/BM0044IW Issue Date: 25/05/2023 Effective Date: 25/05/2023 Last date noted as effective: 23/11/2023 Status: Effective
Q	388m NE	Operator: J AND W WHEWELL LTD Installation Name: - Process: ORGANIC CHEMICALS; PHOSPHORUS CONTAINING COMPOUNDS EG SUBSTITUTED PHOSPHINES Permit Number: BM0044 Original Permit Number: BM0044	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS
Q	388m NE	Operator: J AND W WHEWELL LTD Installation Name: - Process: ORGANIC CHEMICALS; SULPHUR CONTAINING COMPOUNDS EG SULPHIDES Permit Number: BM0044 Original Permit Number: BM0044	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS
Q	388m NE	Operator: J AND W WHEWELL LTD Installation Name: - Process: ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES Permit Number: BM0044 Original Permit Number: BM0044	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS
S	442m SW	Operator: COLOUR ANODISING LIMITED Installation Name: Anotec Works EPR/BN5386IN Process: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M Permit Number: BN5386IN Original Permit Number: BN5386IN	EPR Reference: EPR/BN5386IN Issue Date: 15/06/2017 Effective Date: 15/06/2017 Last date noted as effective: 23/11/2023 Status: Effective
S	442m SW	Operator: COLOUR ANODISING LIMITED Installation Name: Anotec Works EPR/BN5386IN Process: ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES Permit Number: BN5386IN Original Permit Number: BN5386IN	EPR Reference: EPR/BN5386IN Issue Date: 15/06/2017 Effective Date: 15/06/2017 Last date noted as effective: 23/11/2023 Status: Effective

ID	Location	Details	
S	442m SW	Operator: COLOUR ANODISING LIMITED Installation Name: Anotec Works EPR/BN5386IN Process: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Permit Number: BN5386IN Original Permit Number: BN5386IN	EPR Reference: EPR/BN5386IN Issue Date: 15/06/2017 Effective Date: 15/06/2017 Last date noted as effective: 23/11/2023 Status: Effective
S	442m SW	Operator: COLOUR ANODISING LTD Installation Name: ANOTEC WORKS EPR/BN5386IN Process: SOLVENT EMISSIONS DIRECTVE; ACTIVITIES EXCEEDING SOLVENT THRESHOLD Permit Number: WP3234YA Original Permit Number: BN5386IN	EPR Reference: - Issue Date: 15/06/2017 Effective Date: 15/06/2017 Last date noted as effective: 28/09/2020 Status: EFFECTIVE
S	442m SW	Operator: COLOUR ANODISING LTD Installation Name: COLOUR ANODISING RADCLIFFE Process: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M Permit Number: QP3634AD Original Permit Number: BN5386IN	EPR Reference: - Issue Date: 02/11/2015 Effective Date: 02/11/2015 Last date noted as effective: 21/03/2023 Status: Superceded
S	442m SW	Operator: COLOUR ANODISING LTD Installation Name: Anotec Works EPR/BN5386IN Process: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Permit Number: WP3234YA Original Permit Number: BN5386IN	EPR Reference: - Issue Date: 15/06/2017 Effective Date: 15/06/2017 Last date noted as effective: 21/03/2023 Status: Effective
S	442m SW	Operator: COLOUR ANODISING LTD Installation Name: COLOUR ANODISING RADCLIFFE Process: SOLVENT EMISSIONS DIRECTVE; ACTIVITIES EXCEEDING SOLVENT THRESHOLD Permit Number: QP3634AD Original Permit Number: BN5386IN	EPR Reference: - Issue Date: 02/11/2015 Effective Date: 02/11/2015 Last date noted as effective: 21/03/2023 Status: Superceded
S	442m SW	Operator: COLOUR ANODISING LTD Installation Name: Anotec Works EPR/BN5386IN Process: ORGANIC CHEMICALS; NITROGEN CONTAINING COMPOUNDS EG AMINES Permit Number: WP3234YA Original Permit Number: BN5386IN	EPR Reference: - Issue Date: 15/06/2017 Effective Date: 15/06/2017 Last date noted as effective: 21/03/2023 Status: Effective
S	442m SW	Operator: COLOUR ANODISING LTD Installation Name: COLOUR ANODISING RADCLIFFE Process: SOLVENT EMISSIONS DIRECTVE; ACTIVITIES EXCEEDING SOLVENT THRESHOLD Permit Number: BN5386IN Original Permit Number: BN5386IN	EPR Reference: - Issue Date: 23/11/2004 Effective Date: 23/11/2004 Last date noted as effective: 21/03/2023 Status: Superceded

ID	Location	Details	
S	442m SW	Operator: COLOUR ANODISING LTD Installation Name: Anotec Works EPR/BN5386IN Process: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M Permit Number: WP3234YA Original Permit Number: BN5386IN	EPR Reference: - Issue Date: 15/06/2017 Effective Date: 15/06/2017 Last date noted as effective: 21/03/2023 Status: Effective

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m **6**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Address	Details	
B	53m S	M & S Commercials, Unit 5, Bealy Industrial Estate, Dumers Lane, Radcliffe, M26 2BD	Process: Coating Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
2	62m NW	Country Concrete Products (Formerly Country Supplies), Eton Way North, Radcliffe, M26 2ZT	Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
D	145m NW	Academy Group, Eton Business Park, Bury Road, Radcliffe, M26 2ZS	Process: Waste Oil Burner 0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
N	263m E	Funeralcare, Morris St, Radcliffe, M26 2GH	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
N	263m E	Funeralcare, Morris Street, Radcliffe, M26 2GH	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
S	439m SW	Anodising & Plating Ltd, Holland St, M26 2RH	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	49

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Address	Details	
F	53m SE	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: NPSWQD010892 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 24/10/2012 Effective Date: 31/03/2013 Revocation Date: 01/11/2018
F	53m SE	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: NPSWQD010892 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 24/10/2012 Effective Date: 31/03/2013 Revocation Date: 01/11/2018
F	53m SE	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: NPSWQD010892 Permit Version: 3 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 02/11/2018 Effective Date: 02/11/2018 Revocation Date: -
F	53m SE	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: NPSWQD010892 Permit Version: 3 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 02/11/2018 Effective Date: 02/11/2018 Revocation Date: -
I	166m E	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 016982087 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1900 Revocation Date: 01/01/1900

ID	Location	Address	Details	
I	166m E	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0060 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: SURRENDERED UNDER EPR 2010 Issue date: 14/04/2009 Effective Date: 14/04/2009 Revocation Date: 02/07/2013
I	166m E	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0026 Permit Version: 1 Receiving Water: -	Status: REVOKED - UNSPECIFIED Issue date: 01/04/1991 Effective Date: 01/04/1991 Revocation Date: 31/12/1994
I	166m E	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: MISCELLANEOUS DISCHARGES - EMERGENCY DISCHARGES Permit Number: 01BRY0060 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 13/04/2009
I	171m E	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0026 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 01/01/1995 Effective Date: 01/01/1995 Revocation Date: 22/03/2010
I	171m E	DUMERS LANE PUMPING STATION, OPPOSITE 201 DUMERS LANE, RADCLIFFE, BURY, M26 2GE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: NPSWQD010892 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 23/03/2010 Effective Date: 23/03/2010 Revocation Date: 30/03/2013
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 31/01/1985 Revocation Date: 29/08/1989
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 4 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 13/02/1990 Revocation Date: 30/06/1990

ID	Location	Address	Details	
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 12/01/1980 Revocation Date: 30/01/1985
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 7 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/12/2000 Effective Date: 01/04/2004 Revocation Date: 14/12/2008
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 7 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/12/2000 Effective Date: 01/04/2004 Revocation Date: 14/12/2008
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 5 Receiving Water: RIVER IRWELL	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/07/1990 Revocation Date: 30/12/2000
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 12/01/1980 Revocation Date: 30/01/1985
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 8 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 15/12/2008 Effective Date: 15/12/2008 Revocation Date: 30/12/2008
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 3 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 30/08/1989 Revocation Date: 12/02/1990

ID	Location	Address	Details	
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 5 Receiving Water: RIVER IRWELL	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/07/1990 Revocation Date: 30/12/2000
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 10 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 14/10/2008 Effective Date: 01/01/2010 Revocation Date: 07/02/2019
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 3 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 30/08/1989 Revocation Date: 12/02/1990
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 31/01/1985 Revocation Date: 29/08/1989
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 6 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/12/2000 Effective Date: 31/12/2000 Revocation Date: 31/03/2004
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 4 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 13/02/1990 Revocation Date: 30/06/1990
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 6 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/12/2000 Effective Date: 31/12/2000 Revocation Date: 31/03/2004

ID	Location	Address	Details	
O	304m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 9 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 15/12/2008 Effective Date: 31/12/2008 Revocation Date: 31/12/2009
P	312m E	MORRIS STREET CSO (BRY0137), OUTSIDE 2 MORRIS STREET, RADCLIFFE, BURY, M26 2HF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: EPRJB3893EY Permit Version: 1 Receiving Water: RIVER IRWELL	Status: NEW ISSUED UNDER EPR 2010 Issue date: 14/05/2021 Effective Date: 14/05/2021 Revocation Date: 13/05/2022
P	312m E	MORRIS STREET CSO (BRY0137), OUTSIDE 2 MORRIS STREET, RADCLIFFE, BURY, M26 2HF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: EPRJB3893EY Permit Version: 2 Receiving Water: RIVER IRWELL	Status: NEW ISSUED UNDER EPR 2010 Issue date: 14/05/2021 Effective Date: 14/05/2022 Revocation Date: -
O	312m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 12 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 08/02/2019 Effective Date: 08/12/2021 Revocation Date: 09/12/2021
O	312m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 13 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 10/12/2021 Effective Date: 10/12/2021 Revocation Date: 31/03/2022
O	312m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 14 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 10/12/2021 Effective Date: 01/04/2022 Revocation Date: 30/05/2023
O	312m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 11 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 08/02/2019 Effective Date: 08/02/2019 Revocation Date: 07/12/2021

ID	Location	Address	Details	
O	312m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 016950033 Permit Version: 15 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 24/05/2023 Effective Date: 31/05/2023 Revocation Date: -
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 3 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 30/08/1989 Revocation Date: 12/02/1990
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 6 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/12/2000 Effective Date: 31/12/2000 Revocation Date: 31/03/2004
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 5 Receiving Water: RIVER IRWELL	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/07/1990 Revocation Date: 30/12/2000
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 31/01/1985 Revocation Date: 29/08/1989
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 7 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/12/2000 Effective Date: 01/04/2004 Revocation Date: 14/12/2008

ID	Location	Address	Details	
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 9 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 15/12/2008 Effective Date: 31/12/2008 Revocation Date: 31/12/2009
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 12/01/1980 Revocation Date: 30/01/1985
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 4 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 13/02/1990 Revocation Date: 30/06/1990
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 8 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 15/12/2008 Effective Date: 15/12/2008 Revocation Date: 30/12/2008
R	420m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 10 Receiving Water: RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 14/10/2008 Effective Date: 01/01/2010 Revocation Date: 07/02/2019
R	423m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 11 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 08/02/2019 Effective Date: 08/02/2019 Revocation Date: 07/12/2021

ID	Location	Address	Details	
R	423m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 13 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 10/12/2021 Effective Date: 10/12/2021 Revocation Date: 31/03/2022
R	423m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016950033 Permit Version: 12 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 08/02/2019 Effective Date: 08/12/2021 Revocation Date: 09/12/2021
R	423m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 14 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 10/12/2021 Effective Date: 01/04/2022 Revocation Date: 30/05/2023
R	423m SE	BURY WASTEWATER TREATMENT WORKS, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER, BL9 9TF	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: 016950033 Permit Version: 15 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 24/05/2023 Effective Date: 31/05/2023 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**2**

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Address	Details	
O	304m SE	UNITED UTILITIES WATER PLC, BURY STW, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER	Permit Number: 016950033 Permit Version: 7 Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Sewage Disposal Works - water company	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Catchment: - Approval Date: 01/04/2004
O	304m SE	UNITED UTILITIES WATER PLC, BURY STW, CROSSFIELD STREET, BLACKFORD BRIDGE, BURY, GREATER MANCHESTER	Permit Number: 016950033 Permit Version: 6 Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Discharge Type: Sewage Disposal Works - water company	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Catchment: - Approval Date: 31/12/2000

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	**0**

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	**4**

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Name	Status	Receiving Water	Authorised Substances
O	304m SE	Bury Stw	Active	-	-
O	304m SE	Bury Stw	Not Active	River Irwell, Manchester Ship Canal	Pentachlorophenol
O	317m SE	Bridgehall Dyeing And Finishing Company Ltd.	Active	River Irwell, Manchester Ship Canal	Pentachlorophenol
Q	388m NE	J & W Whewell Ltd	Active	-	Mercury (other)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	3

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Name	Status	Receiving Water	Authorised Substances
J	246m W	Bep Surface Technologies	Active	-	Chromium, Copper
O	304m SE	Georgia-pacific Gb Limited	Active	-	Pentachlorophenol - ARCHIVE (List 1)
O	304m SE	Bury Wwtw (north West Water Ltd)	Active	River Irwell	Chromium, Copper, Iron, Lead, Nickel, pH, Zinc, Atrazine & Simazine

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	10

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 64 >**

ID	Location	Details	
A	**On site**	**Incident Date: 01/07/2002** **Incident Identification: 88496** **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 4 (No Impact)**
A	**On site**	**Incident Date: 01/07/2002** **Incident Identification: 88496** **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 4 (No Impact)**
B	20m S	Incident Date: 26/09/2001 Incident Identification: 33139 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)

ID	Location	Details	
H	113m E	Incident Date: 21/02/2003 Incident Identification: 138296 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	113m E	Incident Date: 03/01/2003 Incident Identification: 128987 Pollutant: Sewage Materials Pollutant Description: Process Effluent	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	113m E	Incident Date: 02/09/2002 Incident Identification: 104722 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	113m E	Incident Date: 23/06/2003 Incident Identification: 168205 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	113m E	Incident Date: 17/01/2003 Incident Identification: 131615 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)
12	448m E	Incident Date: 04/10/2001 Incident Identification: 34642 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
13	458m E	Incident Date: 29/05/2003 Incident Identification: 161572 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	**2**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 64 >**

ID: J, Location: 252m W, Permit: BX2914IK
Operator: BEP Surface Technologies Ltd
Activity: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M
Address: BEP SURFACE TECHNOLOGIES Eton Hill Road Radcliffe Lancashire M26 2ZT
Sector: Metals, Sub-sector: Surface treatment
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Air	Particulate matter - PM2.5	1000kg	Below Reporting Threshold
Wastewater	Nickel	20kg	Below Reporting Threshold
Air	Particulate matter - total	10000kg	Below Reporting Threshold
Air	Hydrogen cyanide	100kg	Below Reporting Threshold
Air	Carbon dioxide	10000000kg	Below Reporting Threshold
Air	Chromium	10kg	Below Reporting Threshold
Air	Copper	10kg	Below Reporting Threshold
Air	Nickel	10kg	Below Reporting Threshold
Wastewater	Chromium	20kg	Below Reporting Threshold
Wastewater	Copper	20kg	Below Reporting Threshold
Air	Particulate matter - PM10	1000kg	Below Reporting Threshold

ID: S, Location: 443m SW, Permit: BN5386IN
Operator: COLOUR ANODISING LTD
Activity: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M
Address: Anotec Works Holland Street Lancashire M26 2RH
Sector: Metals, Sub-sector: Surface treatment
Releases:

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Wastewater	Nickel	20kg	Below Reporting Threshold
Wastewater	Zinc	100kg	Below Reporting Threshold
Air	Sulphur oxides (SO2 and SO3) as SO2	100000kg	Below Reporting Threshold
Air	Carbon dioxide	10000000kg	Below Reporting Threshold
Air	Nitrous oxide	10000kg	Below Reporting Threshold
Air	Nitrogen oxides (NO and NO2) as NO2	100000kg	Below Reporting Threshold

Route	Substance	Reporting threshold (kg)	Quantity (kg)
Wastewater	Chromium	20kg	Below Reporting Threshold
Wastewater	Copper	20kg	Below Reporting Threshold
Wastewater	Lead	20kg	Below Reporting Threshold

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	**2**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 64 >**

ID: J, Location: 252m W, Permit: BX2914IK
Operator: BEP Surface Technologies Ltd
Activity: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M
Address: BEP SURFACE TECHNOLOGIES Eton Hill Road Radcliffe Lancashire M26 2ZT
Sector: Metals, Sub-sector: Surface treatment
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R4	Recycling/reclamation of metals and metal compounds	2.8	absolute value	20 01 01	paper and cardboard	No
R1	Use principally as a fuel or other means to generate energy	4.4265	absolute value	20 03 01	mixed municipal waste	No
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	2.4	absolute value	12 01 17	waste blasting material other than those mentioned in 12 01 16	No

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.06	absolute value	16 03 06	organic wastes other than those mentioned in 16 03 05	No
R4	Recycling/reclamation of metals and metal compounds	4.564	absolute value	20 01 40	metals	No
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.42	absolute value	20 01 36	discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35	No
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.08	absolute value	15 02 02	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.48	absolute value	15 01 10	packaging containing residues of or contaminated by dangerous substances	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	1.275	absolute value	12 01 08	machining emulsions and solutions containing halogens	Yes

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	14.2	absolute value	11 01 09	sludges and filter cakes containing dangerous substances	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.209	absolute value	20 01 14	acids	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	1.04	absolute value	16 03 03	inorganic wastes containing dangerous substances	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.16	absolute value	06 03 13	solid salts and solutions containing heavy metals	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.05	absolute value	06 01 06	other acids	Yes

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.195	absolute value	13 02 05	mineral-based non-chlorinated engine, gear and lubricating oils	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	4	absolute value	11 02 05	wastes from copper hydrometallurgical processes containing dangerous substances	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.42	absolute value	20 01 35	discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components (6)	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	8	absolute value	12 01 09	machining emulsions and solutions free of halogens	Yes

ID: S, Location: 443m SW, Permit: BN5386IN
Operator: COLOUR ANODISING LTD
Activity: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M
Address: Anotec Works Holland Street Lancashire M26 2RH
Sector: Metals, Sub-sector: Surface treatment
Releases:

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R5	Recycling/reclamation of other inorganic materials	15.5	absolute value	20 03 01	mixed municipal waste	No

Route	Route description	Quantity (tonnes)	Release level	EWC code	EWC description	Hazardous waste
R4	Recycling/reclamation of metals and metal compounds	2.5	absolute value	20 01 40	metals	No
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	3	absolute value	06 02 04	sodium and potassium hydroxide	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	0.2	absolute value	11 01 05	pickling acids	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	94.08	absolute value	11 01 06	acids not otherwise specified	Yes
D9	Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numberes D1 to D12 (eg evaporation, drying, calcination, etc.)	10.6	absolute value	11 01 07	pickling bases	Yes
D5	Specially engineered landfill (eg placement into lined discrete cells which are capped and isolated from one another and the environment, etc)	42	absolute value	11 01 09	sludges and filter cakes containing dangerous substances	Yes
R4	Recycling/reclamation of metals and metal compounds	0.033	absolute value	20 01 21	fluorescent tubes and other mercury-containing waste	Yes
R5	Recycling/reclamation of other inorganic materials	5.05	absolute value	16 03 03	inorganic wastes containing dangerous substances	Yes

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

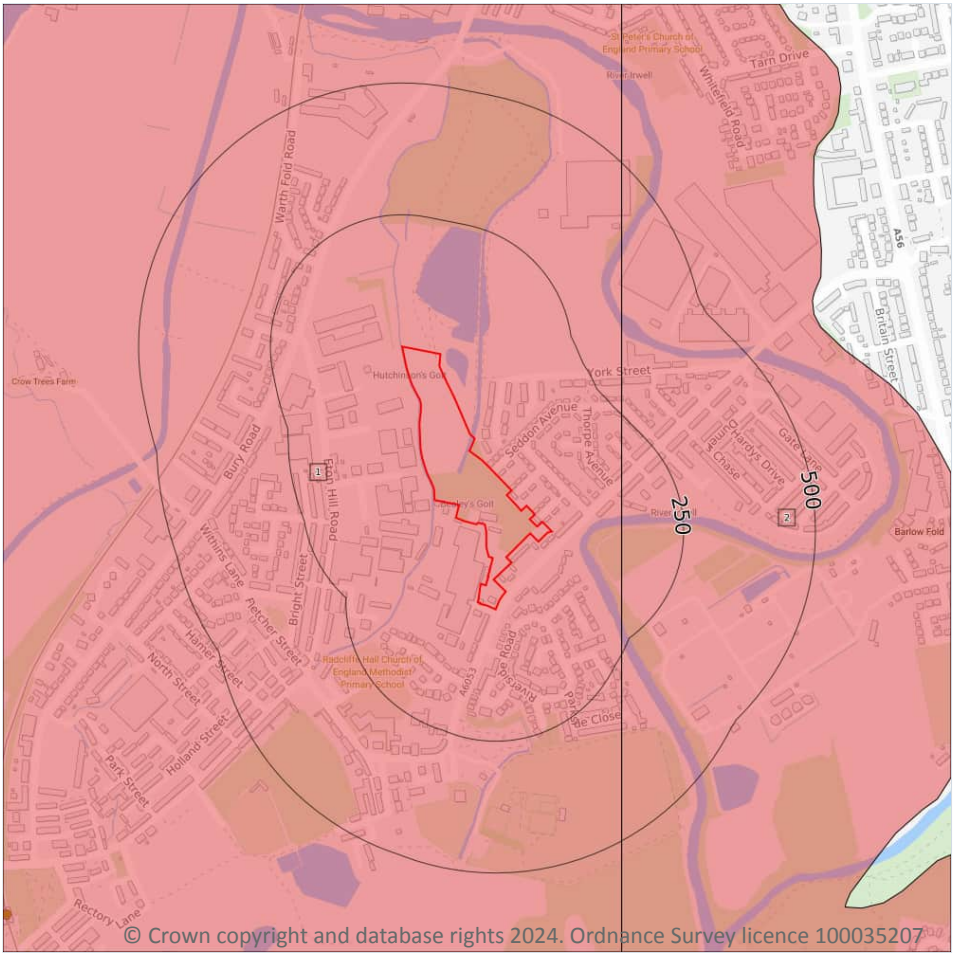
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	2

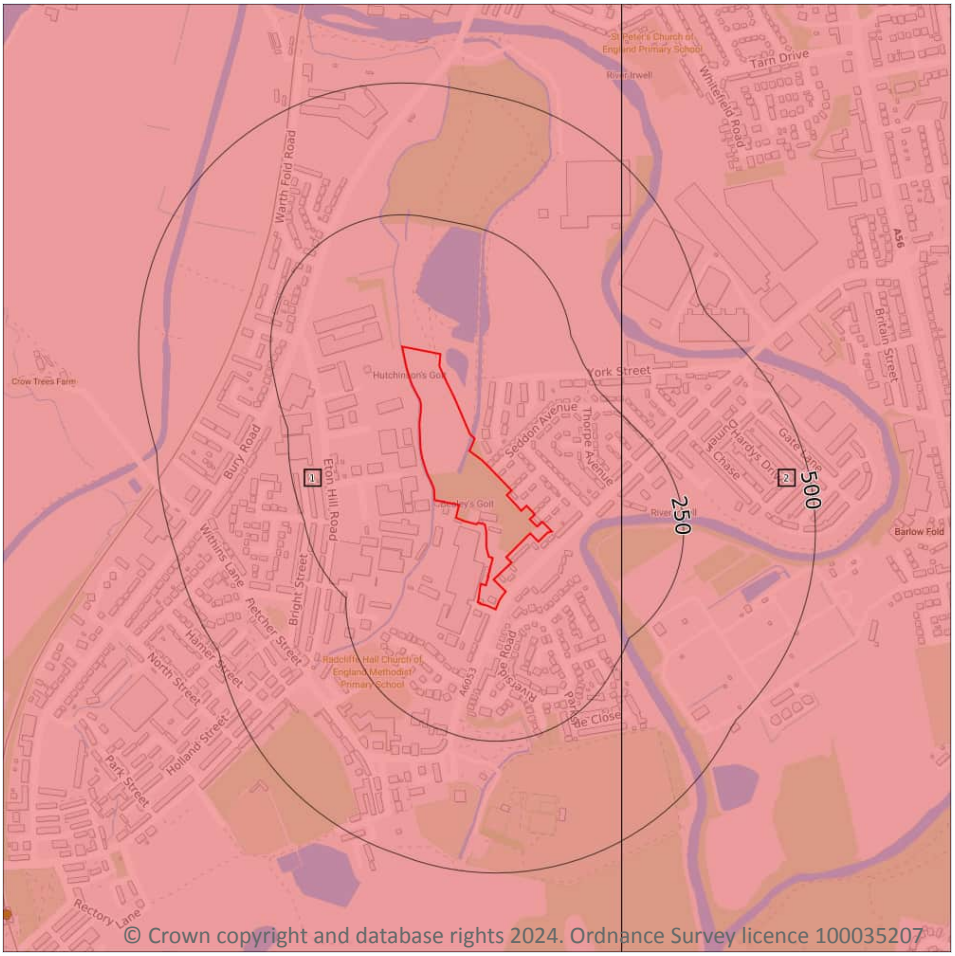
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 93 >**

ID	Location	Designation	Description
1	**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	132m 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

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	2

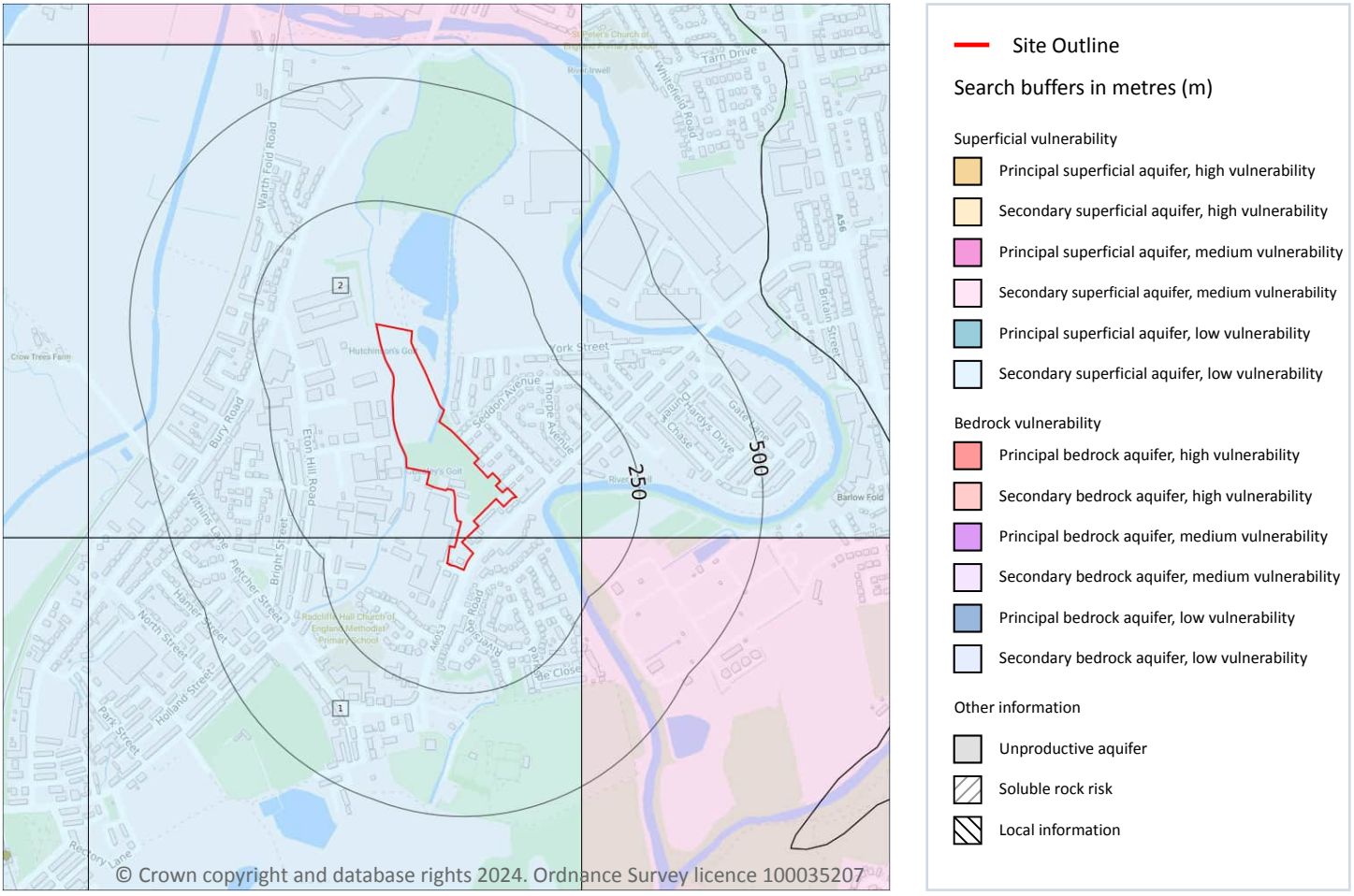
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 95 >**

ID	Location	Designation	Description
1	**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	132m 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

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 97 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

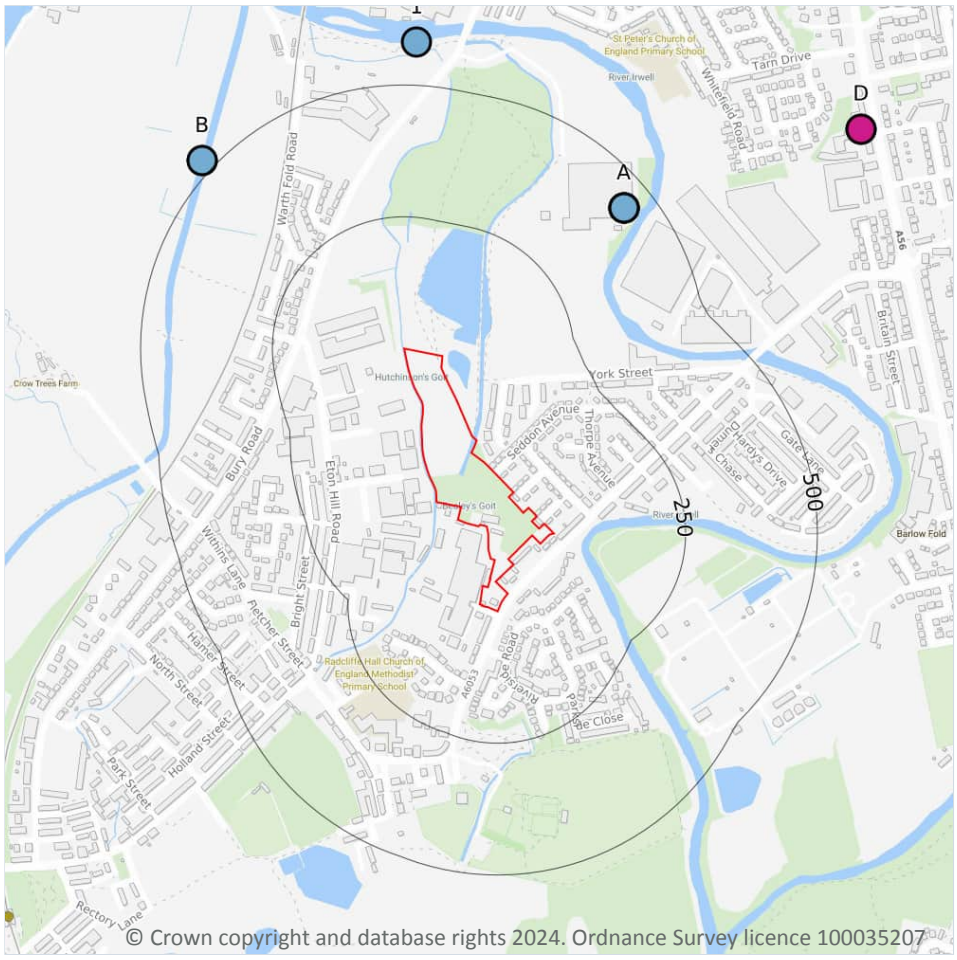
5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	17

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 99 >**

ID	Location	Details	
D	903m NE	Status: Historical Licence No: 2569001258 Details: Pollution Remediation Direct Source: Ground Water - North West Region Point: "WELL POINT SYSTEM AT MANCHESTER ROAD, BURY" Data Type: Point Name: TOTALFINAELF UK LTD Easting: 380450 Northing: 408850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/06/2002 Expiry Date: - Issue No: 1 Version Start Date: 12/06/2002 Version End Date: -
D	903m NE	Status: Historical Licence No: 2569001258 Details: Pollution Remediation Direct Source: Ground Water - North West Region Point: WELL POINT SYSTEM AT MANCHESTER ROAD, BURY Data Type: Point Name: TOTALFINAELF UK LTD Easting: 380450 Northing: 408850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 12/06/2002 Expiry Date: - Issue No: 1 Version Start Date: 12/06/2002 Version End Date: -
-	1169m SE	Status: Active Licence No: 2569002264R02 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: Bury Golf Club Limited Easting: 380963 Northing: 407673	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 50 Original Application No: NPS/WR/016967 Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date: -
-	1169m SE	Status: Historical Licence No: 2569002264R1 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: RAYMOND ADAMS Easting: 380963 Northing: 407673	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 50 Original Application No: - Original Start Date: 01/06/2007 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -

ID	Location	Details	
-	1177m SE	Status: Historical Licence No: 2569002264 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY" Data Type: Point Name: BURY GOLF CLUB Easting: 380970 Northing: 407670	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/04/1997 Expiry Date: 16-Apr-07 Issue No: 100 Version Start Date: 17/04/1997 Version End Date: -
-	1177m SE	Status: Historical Licence No: 2569002264 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: RAYMOND ADAMS Easting: 380970 Northing: 407670	Annual Volume (m^3): 9000 Max Daily Volume (m^3): 55 Original Application No: - Original Start Date: 17/04/1997 Expiry Date: 16/04/2007 Issue No: 101 Version Start Date: 27/01/2004 Version End Date: 16/04/2007
-	1177m SE	Status: Historical Licence No: 2569002264R1 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: A BOREHOLE AT BURY GOLF CLUB, BLACKFORD BRIDGE, BURY Data Type: Point Name: RAYMOND ADAMS Easting: 380970 Northing: 407670	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 50 Original Application No: - Original Start Date: 01/06/2007 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -
-	1642m S	Status: Historical Licence No: 2569004030 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "WELLPOINT SYSTEM AT PREMISES, RADCLIFFE" Data Type: Point Name: JAMES HALSTEAD LTD Easting: 379600 Northing: 406300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/01/1995 Version End Date: -

ID	Location	Details	
-	1642m S	Status: Historical Licence No: 2569004030 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: WELLPOINT SYSTEM AT PREMISES, RADCLIFFE Data Type: Point Name: POLYFLOR LTD Easting: 379600 Northing: 406300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
-	1642m S	Status: Historical Licence No: 2569004030 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: WELL POINT SYSTEM AT PREMISES RADCLIFFE Data Type: Point Name: POLYFLOR LTD Easting: 379600 Northing: 406300	Annual Volume (m^3): 68200 Max Daily Volume (m^3): 382 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
-	1699m S	Status: Historical Licence No: NW/069/0004/004 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT WHITEFIELD, MANCHESTER Data Type: Point Name: Total Fitness Health Clubs Limited Easting: 380450 Northing: 406381	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 29/01/2014 Expiry Date: 31/03/2020 Issue No: 1 Version Start Date: 29/01/2014 Version End Date: -
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS, BURY NEW ROAD, WHITEFIELD, BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -

ID	Location	Details	
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS BURY NEW ROAD WHITEFIELD BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 17/02/2005 Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -
-	1914m E	Status: Historical Licence No: 2569002272 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, PILSWORTH, BURY" Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -
-	1914m E	Status: Historical Licence No: 2569002272 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, PILSWORTH, BURY Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -
-	1992m SE	Status: Active Licence No: 2569004042 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, STANLEY ROAD, WHITEFIELD Data Type: Point Name: DANISH CROWN UK LIMITED Easting: 380900 Northing: 406300	Annual Volume (m^3): 7000 Max Daily Volume (m^3): 21 Original Application No: 2396B Original Start Date: 18/07/1973 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2008 Version End Date: -

ID	Location	Details	
-	1992m SE	Status: Historical Licence No: 2569004042 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, STANLEY ROAD, WHITEFIELD" Data Type: Point Name: DANISH BACON INDEPENDENT DBI LTD Easting: 380900 Northing: 406300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/07/1973 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1986 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m	**22**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 99 >**

ID	Location	Details	
A	444m NE	Status: Historical Licence No: 2569001245 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -

ID	Location	Details	
A	444m NE	Status: Historical Licence No: 2569001245 Details: Boiler Feed Direct Source: "Surface, Non-Tidal - North West Region" Point: "RIVER IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -
A	444m NE	Status: Historical Licence No: 2569001245 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: UNIFI DYED YARNS LTD Easting: 380000 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/11/1993 Expiry Date: - Issue No: 101 Version Start Date: 01/03/2000 Version End Date: -

ID	Location	Details	
B	524m NW	Status: Historical Licence No: 2569004054 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "THE MANCHESTER, BOLTON AND BURY CANAL AT BANK TOP, BURY" Data Type: Point Name: BRITISH WATERWAYS Easting: 379200 Northing: 408790	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 04/12/1998 Version End Date: -
B	524m NW	Status: Historical Licence No: 2569004054 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: THE MANCHESTER, BOLTON AND BURY CANAL AT BANK TOP, BURY Data Type: Point Name: BRITISH WATERWAYS BOARD Easting: 379200 Northing: 408790	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 04/12/1998 Version End Date: -
1	582m N	Status: Historical Licence No: NW/069/0001/004 Details: Hydroelectric Power Generation Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT BEALEY'S WEIR Data Type: Point Name: Resolution Hydro Limited Easting: 379607 Northing: 409015	Annual Volume (m^3): 80000000 Max Daily Volume (m^3): 259200 Original Application No: NPS/WR/004482 Original Start Date: 20/12/2010 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2019 Version End Date: -
-	691m N	Status: Historical Licence No: 2569001158 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -

ID	Location	Details	
-	691m N	Status: Historical Licence No: 2569001158 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT RADCLIFFE, MANCHESTER" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -
-	691m N	Status: Historical Licence No: 2569001158 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): 3636800 Max Daily Volume (m^3): 14183.52 Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -
-	691m N	Status: Historical Licence No: 2569001158 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT RADCLIFFE, MANCHESTER Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 379400 Northing: 409100	Annual Volume (m^3): 3636800 Max Daily Volume (m^3): 14183.52 Original Application No: - Original Start Date: 29/03/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -
-	911m SW	Status: Historical Licence No: 2569004004 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY SURFACE DRAINAGE ATRADCLIFFE Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378800 Northing: 407800	Annual Volume (m^3): 40004.8 Max Daily Volume (m^3): 109.104 Original Application No: - Original Start Date: 28/01/1966 Expiry Date: - Issue No: 101 Version Start Date: 05/05/2001 Version End Date: -

ID	Location	Details	
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Boiler Feed Direct Source: "Surface, Non-Tidal - North West Region" Point: "WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW" Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOIR, FED BY & O/FLOW TO UNNAMED TRIB OF R IRW Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -

ID	Location	Details	
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOR FED BY UNNAMED TRIBUTARY OF RIVER IRWELL Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): 270000 Max Daily Volume (m^3): 8728.32 Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1019m NW	Status: Historical Licence No: 2569004019 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: WITHINS RESERVOR FED BY UNNAMED TRIBUTARY OF RIVER IRWELL Data Type: Point Name: ST REGIS PAPER COMPANY U K LTD Easting: 378600 Northing: 408700	Annual Volume (m^3): 270000 Max Daily Volume (m^3): 8728.32 Original Application No: - Original Start Date: 20/01/1966 Expiry Date: - Issue No: 102 Version Start Date: 05/05/2001 Version End Date: -
-	1423m N	Status: Historical Licence No: 2569001056 Details: Dust suppression Direct Source: "Surface, Non-Tidal - North West Region" Point: "THE RIVER IRWELL AT HINDS LANE, BURY" Data Type: Point Name: J B SKIPS & SERVICES LTD Easting: 379450 Northing: 409850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1997 Version End Date: -
-	1423m N	Status: Historical Licence No: 2569001056 Details: Dust suppression Direct Source: Surface, Non-Tidal - North West Region Point: THE RIVER IRWELL AT HINDS LANE, BURY Data Type: Point Name: J B SKIPS & SERVICES LTD Easting: 379450 Northing: 409850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/1997 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	5

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 99 >**

ID	Location	Details	
-	1699m S	Status: Historical Licence No: NW/069/0004/004 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT WHITEFIELD, MANCHESTER Data Type: Point Name: Total Fitness Health Clubs Limited Easting: 380450 Northing: 406381	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 29/01/2014 Expiry Date: 31/03/2020 Issue No: 1 Version Start Date: 29/01/2014 Version End Date: -
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS, BURY NEW ROAD, WHITEFIELD, BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -
-	1700m S	Status: Historical Licence No: 2569004056 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: LAND AT TOTAL FITNESS BURY NEW ROAD WHITEFIELD BURY Data Type: Point Name: TOTAL FITNESS UK LTD Easting: 380450 Northing: 406380	Annual Volume (m^3): 24000 Max Daily Volume (m^3): 166 Original Application No: - Original Start Date: 17/02/2005 Expiry Date: 31/03/2011 Issue No: 1 Version Start Date: 17/02/2005 Version End Date: -

ID	Location	Details	
-	1914m E	Status: Historical Licence No: 2569002272 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, PILSWORTH, BURY" Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -
-	1914m E	Status: Historical Licence No: 2569002272 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, PILSWORTH, BURY Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

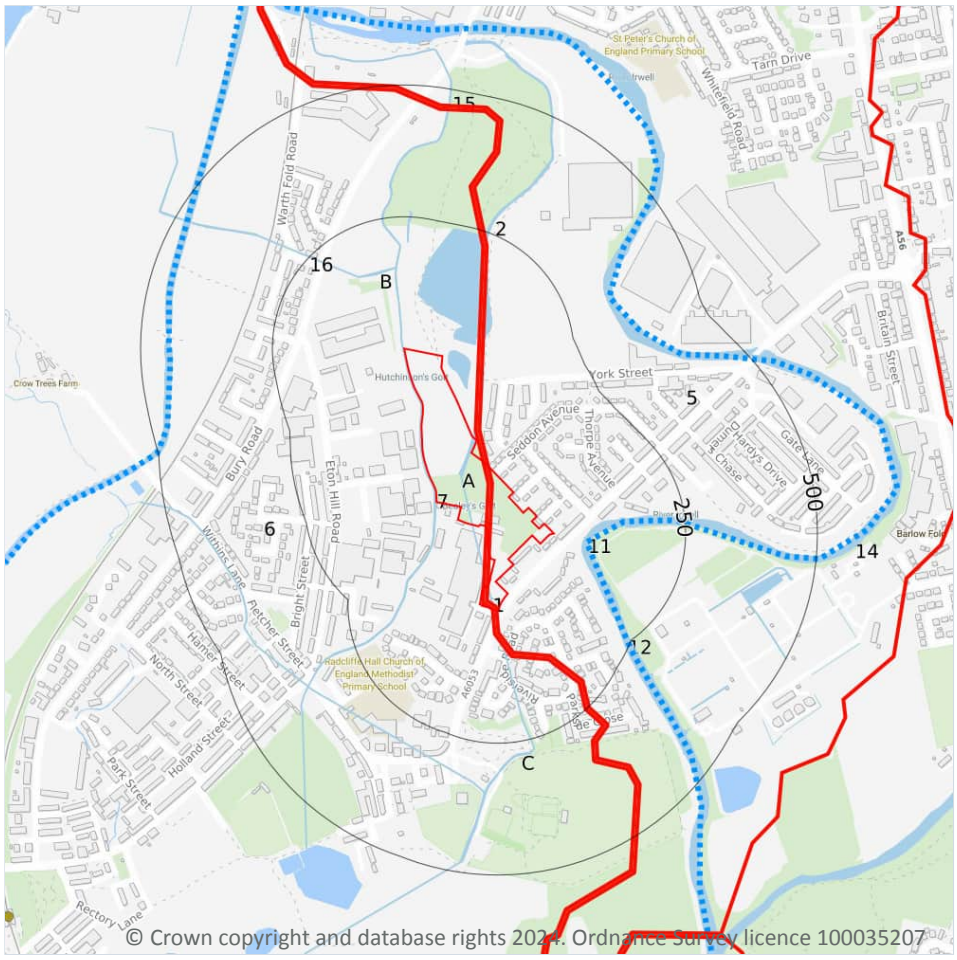
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	12

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 112 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	On site	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Bealey's Goit

ID	Location	Type of water feature	Ground level	Permanence	Name
2	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**Bealey's Goit**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**-**
A	**On site**	**Inland river not influenced by normal tidal action.**	**On ground surface**	**Watercourse contains water year round (in normal circumstances)**	**Bealey's Goit**
7	1m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hutchinson's Goit
11	57m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
12	64m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Irwell
14	65m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Irwell
B	150m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
15	153m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hutchinson's Goit
16	161m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
C	208m S	Manmade watercourse for water transfer.	On ground surface	Watercourse contains water year round (in normal circumstances)	Bealey's Goit

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	7

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 112 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	2

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 112 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
5	**On site**	**River**	**Irwell (Rossendale STW to Roch)**	**GB112069064620**	**Croal Irwell**	**Irwell**
6	**On site**	**River**	**Irwell (Roch to Croal)**	**GB112069060840**	**Croal Irwell**	**Irwell**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	2

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 112 >**