



Former Police Station, Bury

Combined Phase 1 Desk Study and Phase 2 Geo-Environmental Ground Investigation Report

For: Bury Metropolitan Borough Council

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1.0 INTRODUCTION

This *Combined Phase 1 Desk Study and Phase 2 Geo-Environmental Ground Investigation* report has been prepared at the request of Bury Metropolitan Borough Council. Instructions were received in November 2022. Desk study works were undertaken between 11th and 30th November 2022 and the ground investigation works were undertaken on 16th November 2022.

Proposed Development

This *Combined Phase 1 and Phase 2 Geo-Environmental Ground Investigation* is to be used to permit an assessment of the geo-environmental setting of the site in terms of a future land sale with a proposed end use for the site to be developed into a low-rise residential development with associated private gardens, access and parking bays. At the time of writing, a proposed development plan was not available.

1.1 Brief

The brief was to carry out a Combined Phase 1 and Phase 2 Geo-Environmental Investigation for the site based upon the proposed development outlined in Section 1.0. The site area is shown on the site location plan contained in Appendix 2.

The investigation was to include the following:

- a) Assess the probable ground conditions and contaminated land conditions on and below the site based on existing and historic site and relevant off-site activities to produce a Preliminary Risk Assessment for potential human health, ground gas and controlled waters receptors and to determine potential development issues (i.e. sub-surface features – obstructions, infilling, compressible ground, faulting, mineral extraction, mining and land instability).
- b) Design and undertake an appropriate intrusive ground investigation including installing appropriate exploratory holes, collect representative samples, arranging appropriate chemical testing in accordance with the latest legal

framework, record olfactory and / or visual evidence of contamination and undertake on site in-situ and laboratory geotechnical testing

- c) Revise the conceptual models within the Preliminary Risk Assessment to accommodate the findings of the ground investigation works in terms of the risk to human health, controlled waters and the wider environment;
- d) Identify the risks and evaluate whether a Phase 3 numerical risk assessment and / or a Remedial Strategy, is required
- e) Undertake an assessment of the geological findings to provide outline recommendations for foundations, floor slabs and external areas.

A summary of the information / data sources is detailed in Section 2.2. A report was to be provided to summarise findings and to provide recommendations.

The limitations of this investigation work and report are included in Appendix 1.

1.2 Third Parties

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2.0 DESK STUDY

2.1 Documentation

The following documents were obtained and examined during the desk study:

- a) Aerial photographs of the site dated; May 2019, May 2011, May 2001, June 2000 and September 1999. The photographs are contained within the Groundsure Enviro + Geo Insight report in Appendix 5.
- b) Historical Ordnance Survey maps dated between 1849 and 2022, at scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.
- c) Groundsure maps, all dated 2022 as follows:
 - Historical Land Use map;
 - Environmental Permits, Incidents and Registers map;
 - Landfill and other Waste Sites map;
 - Current Land Use map;
 - Hydrogeology and Hydrology maps;
 - Environment Agency / Natural Resources Wales flood maps;
 - Designated Environmentally Sensitive Sites map;
 - Geological maps and Ground Working map;
 - Mining, Extraction & Natural Cavities map;
 - Natural Ground Subsidence maps;
 - Borehole Records map;
 - Railways and Tunnels map.

These maps are contained within the Enviro + Geo Insight report in Appendix 5.

- d) A combined Enviro + Geo Insight report was obtained from Groundsure, an environmental database company, which provides a list of recorded past and present activities at or adjacent to the site which could have an impact on the levels of contamination in the soils and groundwater at the site. The report is contained in Appendix 5.

e) The following sources were obtained and examined from the British Geological survey. All items were copied under licence; [C18/01] British Geological Survey ©UKRI. All rights reserved:

- The British Geological Survey (BGS) 1:50,000 drift geological map (Sheet ref 85 dated 2001).

f) A Zetica UXO Risk Map was obtained and is included in Appendix 7.

g) The BGS Geological *Memoir The Geology of Manchester and the South-East Lancashire Coalfield*, (Tonks et. al 1931)

2.2 Site Location and Description

The site is a c. 0.7Ha site, located to the south of Lower Bank Street, Bury, at the approximate postcode BL9 0JW. The National Ordnance Survey grid reference for the centre of the site is 380096E, 410680N. The site currently comprises a vacant area of land. The site is bound by residential properties and Irwell Street to the west, Jubilee Way (A58) to the south, a car park to the east and Lower Bank Street to the north. Access to the site is off Lower Bank Street to the north. The site is shown on the below aerial image:



Figure 1; Aerial image dated April 2021.

A Site Location Plan is contained in Appendix 2.

2.3 Walkover Survey

The site was visited on 31st October 2022 in overcast weather conditions and the objectives of the site walkover were, where applicable:

- to identify and assess visual and olfactory evidence of contamination (e.g. staining of concrete / soils, odours, presence of gas protection measures etc.);
- to identify locations of potential sources of contamination and assess their conditions (i.e. tank location, presence / condition of secondary containment / bunds, location of fill points, process areas);
- to identify surrounding land uses and any potentially contaminating activities;
- to identify / verify the presence of potential receptors (on- and off-site) which may be affected by identified sources;
- to obtain information on activities / procedures and standards of housekeeping etc.;
- to assess site access and potential investigation locations and constraints; and
- to assess any visual subsurface geotechnical features / anomalies (e.g. foundations, Made Ground, subsidence etc.).

The findings of the walkover survey are discussed below:

Site Description

The site was noted to be a vacant parcel of land with fencing around all boundaries, with the exception of the eastern boundary which comprised a retaining wall. The ground underfoot was noted to be hardstanding throughout, comprising crush and cobbles of red brick and concrete. No buildings or features of note are present on-site. A concrete boulder has been placed at the site entrance to prevent unauthorised access.

The topography of the site slopes gently from c. 90.82m AOD in the north western corner of the site up to c. 93.94m AOD in the south eastern corner of the site.



Figure 2: Photographs showing the site from the north looking south.

Dense vegetation and established trees were noted along the southern and eastern boundaries of the site, especially in the south-eastern corner of the site, where a gate has been placed.



Figure 3: Photographs showing the established trees along the south-eastern site boundary, looking south from the adjacent off-site car park (left) and looking east (right).

Services

An off-site electricity sub-station was noted adjacent to the north-eastern site corner, with a corresponding overhead line and pole near the northern site boundary. Numerous manholes were noted along the northern site boundary near the site

entrance. Two electricity boxes were also noted off site, immediately adjacent to the fence delineating the western site boundary.



Figure 4: Photographs showing the off-site electricity sub-station near the north-eastern site corner (left) and manholes noted along the northern site boundary (right).

Retaining wall

A brick and concrete retaining wall, approximately 3m tall was noted along the eastern site boundary, anticipated to have been constructed to allow the creation of the car parking to the east. The wall appears to be in good condition following the on-site demolition of the former police station.



Figure 5: Photographs showing the retaining wall along the eastern site boundary.

Contamination

No evidence of contamination (i.e. spillages or leakages) were identified. No other potential sources of contamination were noted during the site walkover.

The Site Walkover Photograph Location Plan and the Walkover Photographs are contained within Appendix 3.

2.4 Site History

The site development history has been researched by reference to historical maps, street plans and aerial photographs. The historical maps are included in Appendix 3 to this report and the principal observations which are divided into on-site history and off-site history are summarised below:

On-Site History

Date	Site Feature
1849 – 1891	On the earliest historical map, the site comprises a field with a pathway, oriented E-W, crossing the site in the southern section with associated vegetation.
1891 – 1973	By 1891, the site has now been developed into a school with associated grounds in the northern section. The southern section comprises part of the terraced house development along Irwell Street, as well as unknown buildings in the south-eastern site corner.
1973 – 2017	By 1980 a police station headquarters is built in place of the old school in the northern site section. The southern site section remains part of the Irwell Street terraced developments. An electricity sub-station is also recorded.
2017 – 2022	By 2017 the police station building is demolished, and the terraced house are no longer present, replaced by the Jubilee Way (A58). The site remained mostly unchanged since.



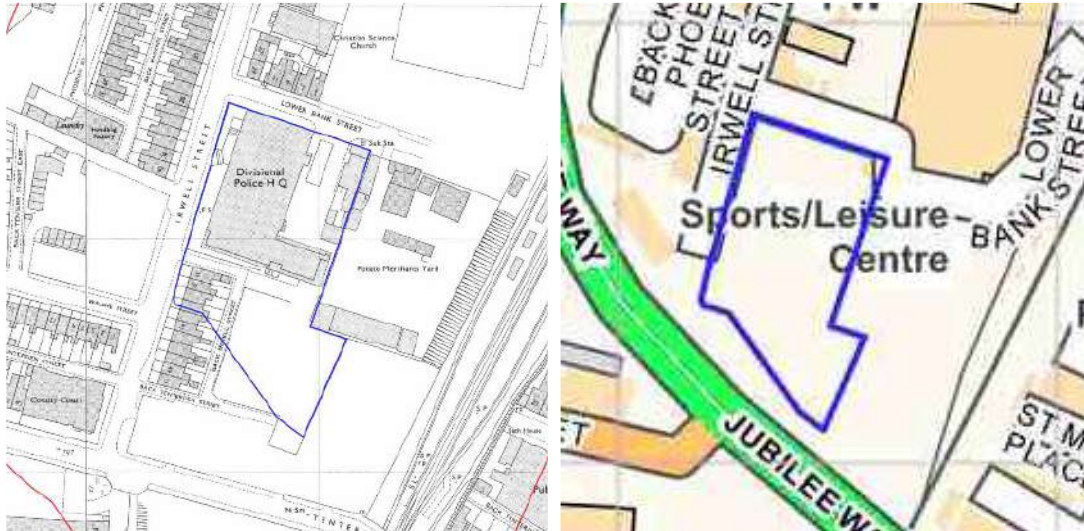


Figure 6: Extracts of the OS historical maps dated 1849 (top left), 1910 (top right), 1973 (bottom left) and 2022 (bottom right).

Off Site History:

Date	Site Feature	Distance (m)	Direction
1937 - 2003	A Laundry is recorded by the late 1930s, by 1973 a Handbag Factory is noted adjacent to the laundry, no longer recorded as Laundry by 1980, referred to as Works until 1984. The Works are last recorded in 2003.	60	W
1891 - 1910	The Phoenix Iron Foundry and an associated reservoir are recorded from 1891, by 1910 the foundry is redeveloped into terraced housing.	70 - 100	NW
1957 - 1973	Works are recorded from the late 1950s, no longer present by 1973.	70	NE
1849 - 2022	The East Lancashire Railway Bury Bolton Street Station is first recorded on the earliest historical maps in 1849. The station remains unchanged until the present.	80	E
1910 - 1957	A Tramway is recorded from 1910 to the north of the site on Bolton Street, not recorded by 1957.	100	N
1910 - 1973	A School is recorded to the east of the site in 1910, referred to as Sunday School by 1930. It is no longer present by 1973, replaced by a building of unknown purpose.	100	E
1910 - 2022	The Bury Grammar School is first recorded in 1910, which remains unchanged until the present day.	100	SW
1930 - 2010	A Police Station is present to the south-west of the site in the 1930s, later recorded as the Magistrates Court from 1973 until 1995. On the most recent records it is recorded as the Bury Grammar Junior School until no longer present in 2010.	120	SW
1891 - 1937	The Irwell Print Works are recorded in 1891, referred to as the Tentersfield Mill by 1910, later the Tentersfield Hat Works by 1930. The Works are no longer recorded by 1937.	150	NW

1891 - 1973	The Bolton Street Goods Station is recorded from 1891, an adjacent garage is first noted in 1973. No longer recorded after 1973.	210	N
1910 - 1930	A Rope Walk is present on the historical records from 1919 to the north of the site, no longer recorded by 1930.	250	N
1937 - 2001	A Raincoat Factory is recorded to the north-west of the site from the late 1930s, referred to as Factory by 1957. The Factory is later recorded as Clothing Factory by 1973 and a Garage by 1992. The Garage is no longer recorded by 2001.	250	NW
1891 - 1930	A Timber Yard is present to the northwest of the site from the early 1890s, no longer present on historical records by 1930.	250	NW

Given the relatively industrial nature of the area, numerous other mills, dye works, brick fields, engineering works, factories and works are located between 200m and 500m of the site however have not been summarised above.

2.5 Geology and Mining

2.5.1 BGS Geological Map

The BGS 1:50,000 Solid and Drift Geological Map of the area (Sheet No: 85 dated 2001) indicates that the site is underlain by Glaciofluvial Sheet Deposits across the majority of the site, which typically comprise **sand** and **gravel**, while the site section along the western site boundary lies an area of Glacial Till, typically comprising a heterogenous mixture of **clays**, **sands** and **gravels**. The site is underlain by bedrock of the Pennine Lower Coal Measures which comprises **mudstone**, **siltstone** and **sandstone**.



Figure 7: Extracts of the BGS 1:50,000 drift (left) and bedrock (right) geological map. Pink = Glaciofluvial Deposits, Blue = Glacial Till, Light Orange = River Terrace Deposits, Light Grey = Lower Pennine Coal Measures, Light Green = Cannel Rock

The BGS geological maps record Made Ground and worked ground within 500m of the site, the nearest noted 3m south of the site, pertaining to artificial ground, anticipated to be associated with the widespread historical and recent industrial activities in the area.



Figure 8: Extract showing the location of the Made Ground (dark purple) and worked ground (pink)

No bedrock dip is recorded on the geological map, however, based on the younging direction the bedrock is anticipated to be dipping south / south-west. A fault was recorded 16m south from the site, downthrowing to the south-west. Another linear feature was recognised on-site, pertaining to an infilled glacial valley margin.

2.5.2 BGS Borehole Logs

There were no available BGS boreholes on-site. There were 9 No. BGS boreholes available in close proximity to the site within a comparable geological setting. The pertinent information from the borehole logs is outlined below:

BGS Borehole References: SD81SW44-48 and SD81SW332-335

These boreholes are located approximately c.137m – 169m north-east, east and south-east of the site and were excavated to depths of between 7.32m and 24.69m bgl at in December 1963. The logs recorded the following pertinent information:

- Made Ground comprising asphalt and concrete to a depth of 0.35m underlain by;
- Made Ground comprising ash, gravel and rounded cobbles to a depth of 0.60m bgl, underlain by;

- Medium dense, brown, mottled black, sandy, clayey, fine to coarse GRAVEL with high cobble content to a depth of 3.00m bgl, underlain by;
- Brown, silty, fine to coarse SAND with occasional clay bands to a depth of 3.60m bgl, underlain by;
- Medium dense, brown, very sandy, fine to coarse GRAVEL to a depth of 5.50m bgl, underlain by;
- Very stiff, dark brown, slightly gravelly CLAY to a depth of 7.50m bgl.

The majority of the boreholes encountered no groundwater, except one which recorded a small strike at 5.00m bgl.

2.5.3 BGS Geohazards

Data Type	Details
Ground Stability Data	➤ The Potential for Shrinking or Swelling Clay Ground Stability Hazards is regarded as negligible to very low. ➤ The Potential for Landslide Ground Stability Hazards is regarded as very low. ➤ The Potential for Dissolution Ground Stability Hazards is regarded as negligible. ➤ The Potential for Compressible Ground Stability Hazards is regarded as negligible. ➤ The Potential for Collapsible Ground Stability Hazards is regarded as very low. ➤ The Potential for Running Sand Ground Stability Hazards is regarded as very low.

For further details please see the Groundsure Enviro + Geo Insight report contained in Appendix 5.

2.5.4 BGS Estimated Soil Chemistry

The BGS have estimated that the superficial deposits across the site to naturally comprise of the following determinands:

- Arsenic – 15mg/kg – 25mg/kg
- Cadmium – 1.8mg/kg
- Chromium – 60mg/kg – 90/kg
- Nickel – 15mg/kg – 30mg/kg
- Lead – 100mg/kg – 200mg/kg
- Bioaccessible Lead – 60mg/kg – 120mg/kg

2.5.5 Coal Mining

The site lies within a Coal Authority Coal Mining Reporting Area but there are no outcrops, mine entries or Development High Risk Areas recorded on-site, however, a coal seam, the Arley Mine, outcrops 300m north-east of the site with an associated Development High Risk Area. No mine shafts, recorded underground workings, recorded shallow workings or probable shallow workings are recorded within 400m of the site.

Although the Arley Mine is a prominent coal seam in the Manchester and south-east Lancashire coalfield, the presence of shallow workings beneath the site is deemed unlikely. This is as numerous faults are recorded in the area, including a fault partially located between the site and the outcrop, as shown in the below extract. A fault is also located along the southwestern boundary of the site, therefore any coal seams are likely to have been influenced by the faults. The BGS Geological *Memoir The Geology of Manchester and the South-East Lancashire Coalfield*, (Tonks et. al 1931) states that 'in the Bury and Bolton districts the Lower Coal Measures are not well known, being poorly exposed and much faulted' which further indicates that no significant mining has been undertaken in the area.

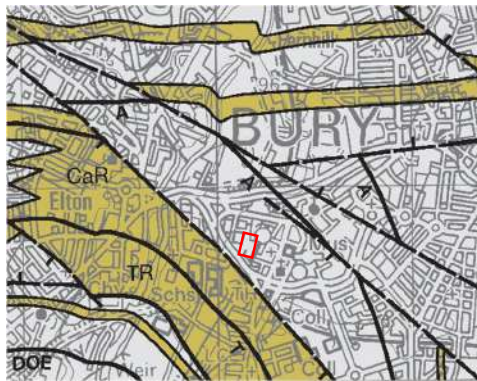


Figure 3 - Extract from the BGS 1:50,000 solid geological map (sheet: 85, dated: 2010). Solid black lines = coal seams. Arley seam labelled A. Dashed lines = Faults – tick marks on downthrow side. Site shown in red.

Additionally, based on the BGS geological map, the site is located along the valley edge of a buried channel. The mapped locations of buried channels are known to be inaccurate, however, deep drift deposits may be present on-site if the site lies within or along the boundary of the buried channel. The BGS drift thickness model estimates that the mean thickness of drift in the area is between 10m and 40m thick.

Furthermore, no coal mining features have been recorded in close proximity to the site on historical mapping and given the presence of developments throughout the site history including churches, it is unlikely that mining has occurred on-site since the mid-19th Century.

Therefore, the coal mining risk is deemed low.

2.5.6 Non-Coal Mining

The Groundsure Enviro + Geo Insight report (contained in Appendix 5) indicates that no current non-coal mining is recorded on-site or within 1km from site. However, a historical non-coal mining feature was recorded within 622m south of the site, pertaining to the abandoned firestone, sandstone, whetstone etc. Schofield Hey Quarry. No information pertaining to the operation dates was available.

2.5.7 Salt Mining / Brine Extraction

The site does not lie within a recognised salt mining or brine extraction area.

2.5.8 Historical Surface Excavations

No recorded historic surface excavations exist on-site. However, 35 No. surface excavations including cuttings, unspecified ground workings, ponds, refuse heaps and more have been recorded in close proximity to the site. Therefore, the presence of unrecorded historical excavations on-site cannot be discounted.

2.5.9 Mineral Safeguarding

Where mineral resources are present the mineral planning authority may designate areas as Mineral Safeguarding Areas (MSA) and Mineral Consultation Areas (MCA). These are aimed to safeguard mineral resource areas from unnecessary sterilization by non-mineral development. The BGS Mineral Resources maps designate the areas of potential mineral resources and where active / lapsed planning permission was granted for mineral extraction.

The BGS Mineral Resources Map for Greater Manchester indicates that the site lies within an area of workable surface coal resources and Glaciofluvial deposits

resources. However, no surface or underground planning permissions (valid or expired) or active / inactive mineral works exist on-site.

2.6 Previous Ground investigations

E3P have previously undertaken a ground investigation on-site in November 2019. The ground investigation included 5 No. trial pits targeting the southern section of the site, formerly utilised as a car park. Full information is included within the E3P *Demolition Works Environmental Validation* report (Ref. 12-761-R2-3, November 2019). It should be noted that all of the exploratory hole logs were not contained within the report, the available exploratory hole logs are contained in Appendix 14.

The typical ground conditions were encountered as follows:

- **Made Ground** comprising slightly gravelly, slightly sandy **clay** and sandy **gravel** of brick, concrete, glass, mudstone, slate, slag and clinker and macadam to depths of between 0.30m and 2.60m bgl, underlain by;
- **Glaciofluvial Deposits** comprising loose sandy GRAVEL to depths of between 0.40m and 1.60m bgl, and firm, brown, gravelly clay to a depth of at least 1.90m bgl.

Deep Made Ground has been recorded in E3P TP304, to a depth of at least 2.60m bgl. The full depth of the encountered Made Ground was not recorded.

Underground Storage Tanks

2 No. steel Underground Storage Tanks (USTs) were recorded in the central-northern site section, encased within a concrete cradle. The site investigation undertaken by E3P concluded that the tanks were suitable for safe lifting. Impacted liquid within the tanks was removed from site by a vacuum tanker for off-site disposal and the tank was safely removed from the site. On 5th March 2019, E3P undertook validation testing of the excavation around the where the USTs had been located. The testing included two samples per exposed face of the excavation and two from the base.



Figure 4 - E3P Photographs showing the tanks (left) and the exposed concrete cradle (right).

In order to determine if there was any evidence of wider hydrocarbon impact from the base of the UST cradle, two trial pits were excavated in down gradient locations. No significantly elevated concentrations were recorded in these sampling locations but a 'hydrocarbon type liquid' that was present in the ground to the south and down gradient of where the USTs had been located:



Figure 5 - E3P photos showing 'hydrocarbon liquid' down gradient of USTs.

From the above photos it can be seen that only a very small volume /area of impacted soils was found.

E3P undertook five delineation excavations further down gradient of where the 'hydrocarbon impacted' had been detected. The impacted soils were excavated and placed on a Visqueen sheet to prevent cross contamination. The excavation was subsequently validated with four samples from the exposed faces (HC1–4) and one (HC-B) from the base. No significantly elevated concentrations were recorded when compared to Tier 1 screening values for a commercial end use, but concentrations are elevated above residential end use screening values.

Based on the works undertaken E3P summarised that the hydrocarbon impact does not appear to have migrated off-site. Connell Bros were instructed to leave the residually impacted soils on-site. The excavated soils were tested and later disposed as Hazardous Waste.

Chemical Testing

Extensive chemical testing of the solid samples was undertaken to assess the possible contamination in the Made Ground and underlying subsoils, as well as additional testing of the crush derived from the demolition of the former police station and the resulting stockpiles. Furthermore, samples of the hydrocarbon-affected subsoil and samples derived from the location of the USTs were also tested for the presence of Petroleum Hydrocarbons. The chemical testing revealed elevated concentrations of heavy metals (mainly arsenic, barium, chromium, copper, lead and zinc) and PAHs within discreet locations, the majority within the Made Ground. Elevated sulphate and total sulphur were recorded in all of the crush samples and in trial pits TP301-5. High concentrations of TPH compounds were recorded in all of the samples tested, especially high values were recorded in stockpile samples. Asbestos was recorded in TP102 (<0.001% chrysotile) and SP101-2 and SP104 (<0.001% amosite). An ACM (Asbestos-Containing Material) bonded sheet was recorded on-site, comprising chrysotile cement-type material. The elevated concentrations are below screening values for a commercial end use scenario, however, the screening values for a residential end-use scenario are in exceedance.

2.7 Hydrology and Hydrogeology

Environmental data relevant to the site and its immediately surrounding area has been obtained from sources available in the public domain. In addition, an environmental report was obtained from Groundsure. The Enviro + Geo Insight report and associated maps that have been inspected are presented in Appendix 5 and the principal observations in relation to waters and flooding can be summarised as follows:

Data Type	Details
Flooding	➤ With respect to rivers and seas, the site lies within a Flood Zone 1. ➤ Minor areas of the site are recorded to be at risk of surface water flooding is negligible. ➤ However, the eastern site section is noted to be at moderate risk, and the western site section is noted to be at low risk of groundwater flooding based on the BGS groundwater flooding map.
Surface Water Features	➤ No surface water features exist on-site or within 250m of the site. ➤ River Irwell is present 303m west of the site.
Surface Water Abstractions	➤ There are no surface water abstraction licenses recorded on-site. ➤ There are 30 No. surface water abstractions recorded within 2km of the site, the majority are historical. The nearest active surface water abstraction is located 1672m south of the site and pertains to the abstraction of water from the River Irwell at Resolution Hydro Limited for hydroelectric power generation.
Superficial Aquifer	➤ The site is underlain by superficial deposits classified as: ○ A Secondary A Aquifer in the Glaciofluvial Deposits - <i>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.</i> ○ A Secondary Undifferentiated Aquifer in the Glacial Till - <i>Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.</i>
Bedrock Aquifer	➤ The site is underlain by bedrock classed as a Secondary A Aquifer - <i>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.</i>
Groundwater Abstractions	➤ There are no recorded groundwater abstraction licenses located on-site. ➤ There are 9 No. groundwater abstraction licenses located within 2km of the site, all are historical. The nearest historical groundwater abstraction license is located 1968m east and pertains to the abstraction of groundwater from a well at Waterford Farm, Heap Bridge by Wilkinson for general use.
Source Protection Zones	➤ There are no recorded Source Protection Zones recorded on-site or within 500m of the site.
Nitrate Vulnerable Zones	➤ There are no nitrate vulnerable zones on-site or within 2km of the site.
Licensed Discharge Consents	➤ There are no recorded licensed discharges to controlled waters consents on-site. ➤ There are 16 No. licensed discharge consents to controlled waters within 500m of the site, all but three were revoked in 1956-2022.
Pollution Incidents to Controlled Waters	➤ There are no recorded pollution incidents to controlled waters located on-site. ➤ 6 No. pollution incidents are recorded within 500m of the site, the nearest was located 389m west and pertained to an incident in July 2001 involving crude sewage which was recorded as a Category 3 (Minor Impact) to controlled waters.

For further details please see the Groundsure Enviro + Geo Insight report contained in Appendix 5.

2.8 Hazardous Installations, Landfill and Waste

The following information relating to hazardous installations, landfill and waste obtained from the Groundsure Enviro + Geo Insight report, published information and the walkover survey can be summarised as follows:

Data Type	Details
Environment Agency Recorded Active Landfill Sites	➤ There are no Environment Agency recorded landfill sites located on-site or within 500m of the site.
Environment Agency Recorded Historical Landfill Sites	➤ There are no Environment Agency recorded historical landfills located on-site. ➤ There are 5 No. Environment Agency recorded historical landfills within 500m of the site, the nearest landfill was located 149m south of the site and was infilled from February to June 1988.
BGS Recorded Historical Landfill Sites	➤ There are no BGS recorded historical landfill sites located on-site or within 500m of the site.
Local Authority Recorded Historical Landfill Sites	➤ There are no Local Authority recorded historical landfill sites located on-site. ➤ There are 5 No. Local Authority recorded historical landfills within 500m of the site, pertaining to railway cuttings.
Local Authority Pollution Prevention and Control (Part A(2) and Part B Activities and Enforcements)	➤ There are no Local Authority Part A(2) or Part B Activities or Enforcements located on-site. ➤ There are 6 No. Local Authority Part A(2) or Part B Activities located within 500m of the site, the nearest is located 144m north east of the site and pertains to dry cleaning activities. ➤ There are a further 3 No. Environment Agency recorded Part A(1) Licensed Industrial Activities located within 500m of the site, all have been superseded. The nearest is located 492m north-west of the site and pertains to Bury Metal Treatment Facility.
Registered Radioactive Substances	➤ There are no Registered Radioactive Substances recorded on-site or within 500m of the site.
Registered Waste Treatment, Transfer or Disposal Sites	➤ There are no waste treatment, transfer or disposal sites located on-site. ➤ There are 22 No. waste exemptions recorded within 2km of the site, pertaining to storing waste in secure containers, screening and binding of waste, use of waste in construction, storing mixed waste, manual treatment of waste, burning waste in the open and recovery of scrap metal. The nearest and the majority are located 223m south west of the site. ➤ There are 6 No. historical waste sites recorded within 500m of the site, all pertaining to Scrap Metal Works, located 393m – 425m west of the site, active between 1968 and 1978.

Industrial Land Use	➤ There are no current industrial land uses recorded on-site. ➤ There are 23 no. recent industrial land uses recorded within 250m of the site, the nearest is located 4m north-east and pertains to an electricity substation. ➤ There are no historical tanks recorded on-site. From previous ground investigation, however, it is noted that 2 No. underground tanks have been removed from the central site section, anticipated to have been associated with the historical police station building. ➤ There are 89 No. historical tanks recorded within 500m of the site including settling tanks and unspecified tanks and more. ➤ There are no petrol or fuel sites located on-site or within 500m of the site. ➤ There are 2 No. recent petrol stations recorded within 500m of the site, both are obsolete, the nearest is located 284m north-east of the site. ➤ There are 2 No. historical petrol stations recorded within 450m south of the site, pertaining to a petroleum spirit store in 1930. ➤ There are no recent or historical garages recorded on-site. ➤ There are 38 No. historical garages recorded within 500m of the site, pertaining to garages and carriage sheds. ➤ There are no historical industrial land uses recorded on-site. ➤ There are 316 No. historical industrial land uses recorded within 500m of the site including a police station, an iron foundry, railway sidings, cuttings, railway station, unspecified ground workings, hat works, unspecified pits, refuse heaps, goods warehouse, goods station woollen mill, rope walks, sawmills, abattoirs, bleach works, timber yard, tan yard, pump house, tannery, unspecified wharf, engine house, chemical works, gasometer and more. ➤ There are 3 No. historical energy features recorded on-site, all pertaining to an electricity substation from 1973 to 1992. ➤ There are 50 No. historical energy features located within 500m of the site, pertaining to electricity substations and electricity transformers.
Dangerous Substances	➤ There are no recorded discharges of dangerous substances on-site. ➤ There are 2 No. COMAH site located within 500m of the site, both are historical, pertaining to a historical metal treatment site 464m north-west from site and a historical NIHHS site 486m north-west of the site.
Hazardous Building Materials	➤ Possible Asbestos Containing Materials could be encountered on-site. The presence of fuels and other contaminants cannot be ruled out due to the nature of the site.

For further details please see the Groundsure Enviro + Geo Insight report contained in Appendix 5.

2.9 Radon

The Indicative Atlas of Radon in England and Wales produced by the Health Protection Agency and British Geological Survey indicates the site lies within a lower probability area as less than 1% of homes are above the action level. Consequently, BR211 (2015) indicates that no protection measures are necessary in the construction of new dwellings or extensions on-site.

See Section 19.1 of the Groundside Combined Enviro + Geo Insight report contained in Appendix 5 for further details.

2.10 Unexploded Ordnance (UXO)

The Zetica UXO risk map, contained in Appendix 7, indicates that the site lies within an area of low risk.

2.11 Animal Burial Sites

The Animal Health and Veterinary Laboratories Agency (AHVLA) no longer routinely respond to consultations relating to records of animal burial sites. Based upon a review of the site history it is considered unlikely that the site has been subject to recorded animal burials.

2.12 Archaeology

We do not anticipate that the site will be affected by archaeological issues, however consultation with the county archaeologist is recommended.

2.13 Ground Conditions and Geotechnical Hazards

The anticipated typical ground conditions across the site are as follows:

- **Made Ground** comprising slightly gravelly, slightly sandy **clay** and sandy **gravel** of brick, concrete, glass, mudstone, slate, slag and clinker and macadam to depths of between 0.30m and 2.60m bgl, underlain by;
- **Glaciofluvial Deposits** comprising loose sandy GRAVEL to depths of between 0.40m and 1.60m bgl, and firm, brown, gravelly clay to a depth of at least 1.90m bgl.
- **Glaciofluvial Deposits** comprising brown, silty, fine to coarse SAND with occasional clay bands to a depth of 3.60m bgl, underlain by;
- **Glaciofluvial Deposits** comprising medium dense, brown, very sandy, fine to coarse GRAVEL to a depth of 5.50m bgl, underlain by;
- **Glacial Till** comprising very stiff, dark brown, slightly gravelly CLAY to a depth of 7.50m bgl.

Geotechnical Hazard Identification

Potential geotechnical hazards based on the expected ground conditions that may require further consideration at the site are outlined below:

Factors	Remarks	Considerations	Risk
Made Ground	Made Ground of variable composition, anticipated to comprise concrete and brick crush, asphalt and possible asbestos may be present on-site. May be deep in places, approx. 2.60m bgl based on E3P ground investigation.	Made Ground may settle variably, have highly inconsistent bearing capacity and may suffer significant movements that may be problematic for foundations, externals and infrastructure elements without treatment. The presence of Made Ground may be problematic for foundations as there may be loose / soft spots within the Made Ground and it may not be suitable to utilise traditional foundations.	Moderate
Aggressive Ground and Groundwater	While the risk posed from the natural strata is anticipated to be very low, given the anticipated presence of widespread Made Ground of mixed composition there is potential for aggressive ground conditions to be present on-site.	Acidic ground / groundwater and sulphate may attack the concrete and steel used in foundations and react with aggregates. The oxidation of pyrite and other sulphides can also occur due to geotechnical activities. This can lead to the generation of high concentrations of sulphate and low pH that attacks construction materials and may lead to the precipitation of gypsum resulting in the heave of foundations and floor slabs. Pyrite oxidation can also be triggered by mixing susceptible materials with lime or cement resulting in high pH that can lead to the expansion of some sulphates that cause heave of stabilised soils. Elevated concentrations of SO₄ and sulphur were recorded in the central and southern site sections, based on the chemical laboratory testing results following the ground investigation undertaken by E3P.	Moderate
Obstructions	Remnants of underground foundations, storage tank concrete walls, floors and slabs may be present across site associated with the previous site use as a police station headquarters.	May act as obstructions to excavations and / or the chosen foundation solution or act as 'hard spots' within the ground if left in-situ.	Moderate
Retaining Wall	A brick and concrete retaining wall is present along the eastern site boundary. It is approximately 3m tall and was noted to be in good condition.	The retaining wall will need to be inspected and remedial measures may need to be undertaken prior to development, subject to an assessment of the impact upon Third Party assets.	Moderate
Soft Spots from UST excavation	Soft spots may be present across the site associated with localised excavations i.e., removal of USTs from the central site section.	Soft spots may cause differential settlement of foundations therefore there will be a requirement for localised deepening of foundations where soft spots are present.	Low to Moderate

2.14 Sources of Contamination and Probable Contaminants

Based on the desk study information the following potentially contaminative on-site sources have been identified:

Potentially Contaminative Source	Associated Determinands	Remarks	Hazard
Made Ground	Likely to contain heavy metals (mainly arsenic, barium, chromium, copper, lead and zinc), PAHs, TPH and asbestos as recorded previously by E3P. Ground Gas – carbon dioxide, methane, hydrogen sulphide, VOCs	Made Ground is anticipated across the site and may be deep in places, based on the findings of the E3P site investigation. Walkover survey and E3P ground investigation evidence suggests that concrete and red brick cobbles may also be present beneath the crush on-site.	Moderate
Historical On-Site Buildings (School, Police Station)	Unknown, possible wide range of determinands including metals, semi-metals, PAHs, hydrocarbons and asbestos.	The site used to contain a school and later a police station building. Historical site uses may have led to widespread contamination or contaminative hotspots.	Low to Moderate
Historical and Current Off-Site Industrial Land Uses	Unknown, possible wide range of determinands including metals, semi-metals, PAHs, hydrocarbons and asbestos.	Unknown – contaminants likely to reside within on-site made ground if impact has occurred.	Low to Moderate
Historical On-Site Tank	Unknown hydrocarbons.	2 No. USTs were located in the central site section. The contents of the tanks are unknown, however, it is anticipated to comprise unknown 'hydrocarbon' material. Due to the anticipated presence of granular Made Ground and granular Glaciofluvial deposits, there is a potential for hydrocarbon contamination across the site in a very localised area.	Low to Moderate
Off-Site Landfills (149-468m S, NE, W, 1970s – 1990s)	Ground Gas – carbon dioxide, methane, hydrogen sulphide, VOCs	Numerous landfills have been located within 500m from the site. The landfills are known to have been infilled between the 1970s and the 1990s. Based on the infill date and the proximity to the site the landfills may pose a ground gas risk on-site.	Moderate
Potentially Organic Glaciofluvial Deposits	Ground Gas – carbon dioxide and methane	Glaciofluvial deposits are recorded on-site, which may contain organic rich pockets or peat inclusions.	Low to Moderate

It should be noted that potentially contaminative unrecorded historic activities may have occurred (e.g. the use or deposition of Made Ground from off-site during historic on-site developments) and in this event, further contaminative sources may be present.

Unknowns

Following the desk study, the areas of uncertainty are summarised as follows:

- Extent, composition and thickness of Made Ground and superficial deposits.
- Presence and extent of underground obstructions.
- Presence of perched water within the Made Ground.
- Presence of shallow groundwater within the superficial deposits.

2.15 Pathways for Contamination

Human Health

The pathways along which contamination could potentially reach the receptors on-site during use and after completion of development works are detailed in 'Updated Technical Background to the CLEA Model' (Environment Agency 2009) but can be summarised as follows:

End Users (Residential With Home Grown Produce Land Use Scenario):

- Ingestion of soil directly and indoor dust* (including on home grown produce)
- Inhalation of soil dust (indoor and outdoor);
- Dermal contact with soil (indoor and outdoor);
- Inhalation of soil vapours (indoor and outdoor);
- Oral background;
- Inhalation background.

** Treated as one pathway*

Controlled Waters

The pathways along which contamination could potentially reach the controlled waters receptors during use and after completion of development works are as follows:

- Vertical migration along current and / or future foundations and pooling at base / beneath foundations.
- Vertical migration through granular deposits.
- Lateral migration along low permeability natural deposits and pooling at relative low points (if cohesive deposits present).
- Negligible infiltration through low-permeability natural cohesive deposits.
- Migration through porous bedrock.
- Migration along groundwater flow.
- Overland flow (not considered a feasible pathway given lack of nearby surface water features within 250m)

Ground Gas

The pathways along which ground gas could potentially reach the receptors on-site during use and after completion of the development works are as follows;

- Migration through fractures and fissures in bedrock
- Preferential migration along foundations, service ducts / trenches
- Migration within groundwater
- Ingress through wall cavities and floors and accumulation
- Inhalation of ground gas and vapours

2.16 Receptors of Contamination

Human Health receptors for these pathways include the following:

- End Users (residential land use scenario)
- Construction workers.
- The general public and adjacent site users.

Controlled waters receptors for these pathways include the following:

- Groundwater contained within the underlying Secondary A and Secondary Undifferentiated Aquifers within the superficial deposits and the Principal Aquifer within the bedrock.
- Surface Water – River Irwell 303m W of site.

Other receptors for these pathways include the following:

- Subsurface plastic (e.g. potable plastic water pipe).
- Building fabric (e.g. concrete foundations, etc.)

2.17 Conceptual Model

Source	Pathway	Receptor	Likelihood	Risk
On-Site Made Ground	Ingestion of soil and dust (indoor and outdoor)	End-user General public	Likely: Widespread Made Ground may be present, may be deep in places (approx. 2.60m bgl), according to the previous ground investigation by E3P. The Made Ground is of unknown composition but is likely to comprise granular material (e.g. brick, asphalt, concrete) given the site history, therefore, the contaminants of concern are likely PAHs, TPHs and asbestos (from ACMs), as seen in chemical results provided by E3P. Widespread low level contamination across site is possible, however localised hotspots may also be present. Dermal, ingestion and inhalation pathways could be negated across the majority of the site if hardstanding is present following development (building and pathways), however, any soft landscaping will be at increased risk.	MODERATE
	Dermal contact with contaminated soil (indoor and outdoor)			
	Inhalation of dust (indoor and outdoor), airborne fibres and soil vapours	Construction workers	Likely: Construction workers are at the highest risk due to acute interaction with soils. Widespread Made Ground is anticipated, with possible sources of contamination located sitewide. Additionally appropriate PPE and health and safety measures is anticipated to significantly reduce the risk.	MODERATE
	Inhalation of ground gas			
	Migration through ground vertically into aquifer groundwater	Secondary A and Secondary Undifferentiated Aquifers and Principal Aquifer	Low Likelihood: Potential contaminative hotspots and widespread low-level contamination may be present, however, the contaminants of concern are likely of low mobility and solubility (PAHs and TPH). Therefore, vertical migration is unlikely. Additionally, if the site is covered in hardstanding following development, infiltration of water will be low, further reducing the possible migration of contaminants. Furthermore, low-permeability Glacial Till is anticipated below the cohesive and granular Glaciofluvial Deposits, which will negate migration to the underlying Principal Aquifer. Migration through granular Glaciofluvial Deposits is possible, however, vertical continuity of granular deposits, that could facilitate vertical migration of contaminants into the superficial aquifers, is unknown.	LOW TO MODERATE
	Migration through ground laterally into surface water Overland flow	River Irwell (303m W)	Low Likelihood: River Irwell is located within 303m west of the site. Due to the significant distance from site it is unlikely that feasible pathways exist to facilitate lateral migration and no continuous shallow groundwater table is anticipated, therefore overland flow and lateral migration to surface water features are not considered feasible pathways.	VERY LOW
Historical On-Site Buildings (School, Police Station)	Ingestion of soil and dust (indoor and outdoor)	End-user General public	Likely: A school and a police station existed on-site historically (1890s – 2010s). Potential contaminative activities may have been undertaken. Widespread contamination is possible, given the recent activity on-site. If, the site is covered in hardstanding following development, potential pathways for contamination will be significantly reduced, however, any potential gardens and soft landscaping may be at increased risk of contamination.	MODERATE
	Dermal contact with contaminated soil (indoor and outdoor)			
	Inhalation of dust (indoor and outdoor), airborne fibres and soil vapours	Construction workers	Likely: Construction workers are at the highest risk due to acute interaction with soils, however, appropriate PPE and health and safety measures is anticipated to significantly reduce the risk.	MODERATE
	Migration through ground vertically into aquifer groundwater	Secondary A Aquifer and Principal Aquifer	Low Likelihood: Contaminative hotspots may be present based on the history of the site use, however due to the presence of cohesive deposits and lack of a continuous groundwater regime the likelihood of vertical migration of contamination into the underlying aquifers is deemed low. Additionally, the contamination likely to be present may be of low mobility and solubility, further reducing the likelihood of migration. Furthermore, following the development of the site the ground will be largely covered in hardstanding, further reducing the possibility of vertical migration of contamination.	LOW TO MODERATE

	Migration through ground laterally into surface water Overland flow	River Irwell (303m W)	Low Likelihood: River Irwell is located 303m W from site, and due to the significant distance from site and no continuous shallow groundwater table anticipated on-site, overland flow and lateral migration to surface water features are not considered feasible pathways.	VERY LOW
Historical On-Site Tank	Ingestion of soil and dust (indoor and outdoor)	End-user	Likely: 2 No. Underground Storage Tanks (USTs) were recorded in the central-northern site section, encased within concrete by E3P. Hydrocarbon-type liquid was recorded in the soils in the localities assessed as possible contamination pathways delineated from the tanks.	MODERATE
	Dermal contact with contaminated soil (indoor and outdoor)	General public		
	Inhalation of dust (indoor and outdoor), airborne fibres and soil vapours	Construction workers	Likely: Construction workers are at increased risk of coming in contact with the contamination due to close interaction with potentially contaminated soils. The risk remains moderate, as a potentially contaminative hydrocarbon-type liquid has previously been recorded by E3P and feasible pathways have been identified.	MODERATE
	Migration through ground vertically into aquifer groundwater	Secondary A and Secondary Undifferentiated Aquifers and Principal Aquifer	Low Likelihood: The hydrocarbon may be low-end TPH and therefore mobile, however due to the presence of cohesive deposits and lack of a continuous groundwater regime the likelihood of vertical migration of contamination into the underlying aquifers is deemed low. Furthermore, following the development of the site the ground will be largely covered in hardstanding, further reducing the possibility of vertical migration of contamination.	LOW TO MODERATE
	Migration through ground laterally into surface water Overland flow	River Irwell (303m W)	Low Likelihood: River Irwell is located 303m W from site, and due to the significant distance from site and no continuous shallow groundwater table anticipated on-site, overland flow and lateral migration to surface water features are not considered feasible pathways.	VERY LOW
Historical and Current Off-Site Industrial Land Uses	Ingestion of soil and dust (indoor and outdoor)	End-user	Low Likelihood: Numerous mills with associated reservoirs, factories, works, schools, an active railway and other industrial activities were recorded near the site. Due to the relative vicinity to the site, potentially contaminative hotspots may be present on site, associated with the neighbouring industrial activities.	LOW TO MODERATE
	Dermal contact with contaminated soil (indoor and outdoor)	General public		
	Inhalation of dust (indoor and outdoor), airborne fibres and soil vapours	Construction workers	Likely: Construction workers are at the highest risk due to acute interaction with soils. Widespread Made Ground is anticipated, with possible sources of contamination located sitewide. Additionally appropriate PPE and health and safety measures is anticipated to significantly reduce the risk.	LOW TO MODERATE
	Migration through ground vertically into aquifer groundwater	Secondary A and Secondary Undifferentiated Aquifers and Principal Aquifer	Low Likelihood: No significant impact from off-site sources was noted in the E3P investigation. Also, due to the presence of cohesive deposits and lack of a continuous groundwater regime the likelihood of vertical migration of contamination into the underlying aquifers is deemed low. Furthermore, following the development of the site the ground will be largely covered in hardstanding, further reducing the possibility of vertical migration of contamination.	LOW

	Migration through ground laterally into surface water Overland flow	River Irwell (303m W)	Low Likelihood: River Irwell is located 303m W from site, and due to the significant distance from site and no continuous shallow groundwater table anticipated on-site, overland flow and lateral migration to surface water features are not considered feasible pathways.	VERY LOW
Potentially Organic Glaciofluvial Deposits	Inhalation of ground gas	End-user General public	Low Likelihood: Glaciofluvial deposits are recorded on-site which may be organic or contain peat inclusions. Organic deposits including peat are typically a high concentration but low generation ground gas source, as only organic inclusions may be present within the glaciofluvial deposits rather than significant deposits of peat, both the ground gas concentrations and generation are anticipated to be low. Additionally, BS8576 (2013) Table 6: Decision Matrix Tool classifies natural soil strata with a low degradable content (i.e. alluvium and peat) as very low risk. Consequently, the on-site risk from organic Glaciofluvial Deposits is deemed low.	LOW
Off-Site Landfills (149-468m S, NE, W, 1970s – 1990s)	Inhalation of ground gas	End-user General public	Likely: Although the landfills are off-site, they are located in the vicinity of the site, between 149m and 468m. They all are known to have been active until the 1970s, 1980s and early 1990s, which is why these landfills are considered to pose a high risk of ground gas generation. However, the pathways for contamination will be reduced by the presence of low permeability clay in the vicinity of the site.	LOW TO MODERATE

A diagram of the conceptual site model is included within Appendix 2.

2.18 Preliminary Risk Assessment Summary

Human Health

Based on the human health conceptual model the risk to human health is deemed moderate to end users and construction workers given the possibility of feasible contaminative linkages. Appropriate PPE and site management, risks to construction workers can be further mitigated.

Ground Gas

Potential ground gas sources have been identified on-site and in close proximity to the site, therefore the risk is deemed low to moderate. Therefore, ground gas monitoring will be required on-site, including the installation of 3 No. monitoring wells and 6 No. monitoring visits over 3 months.

If any organic rich Made Ground deposits are identified or if previously unrecorded potential ground gas sources are recorded during the ground investigation works, then additional ground gas monitoring may be required. The length and frequency of the ground gas monitoring regime and the sampling method, initial results and alterations to the conceptual model are subject to the findings of the ground investigation works and development constraints (i.e. development timescales and liaison with the local authority).

Controlled Waters

Sensitive receptors have been identified on site (Secondary A Aquifer and Principal Aquifer) and although no significant contaminative linkages have been identified for surface water features, feasible pathways exist for the underlying aquifers. Consequently, the risk to controlled waters is deemed low to moderate.

If unrecorded contaminative sources are noted, the above conceptual models may require re-assessment / re-appraisal.

2.19 Scope of Phase 2 Intrusive Geo-Environmental Ground Investigation

As a result of the preliminary risk assessment a Phase 2 intrusive geo-environmental ground investigation should be carried out to quantify the identified risks. This intrusive ground investigation works should include the collection of appropriate samples – solid, leachate and / or liquid, if determined necessary, across the site for appropriate chemical testing as detailed above.

Furthermore, to determine the geotechnical and geological properties of the underlying ground conditions, appropriate intrusive works and associated testing should be undertaken. The rationale and aims for these Phase 2 environmental, geotechnical and geological investigative works are detailed below.

In order to provide adequate assessment in terms of both environmental and geotechnical site parameters, ground investigation works will be required on a spatial basis. The proposed initial ground investigation works should comprise the following:

- Dynamic Sample Boreholes
- Trial Pits

The rationale for the exploratory holes is discussed below:

- To allow the collection of samples from any Made Ground and natural deposits for chemical laboratory testing (solid samples) for an appropriate suite of determinands and for soluble sulphate (2:1 extract) and / or total sulphate and pH testing to determine the suitable concrete classification in associated with relevant guidance e.g. BRE Special Digest 1.
- To determine the extent, composition and depth of any Made Ground.
- Enable in-situ and ex-situ geotechnical testing, of the underlying natural deposits for the purposes of sub-structure design.

3.0 GROUND INVESTIGATION SCOPE

The ground investigation works were undertaken on 16th November 2022 and comprised 6 No. dynamic sample boreholes and 9 No. trial pits. Subsequent chemical and geotechnical laboratory testing was undertaken between 17th November and 15th December 2022.

Dynamic sampling boreholes were undertaken by PM Sampling Ltd. Excavation of trial pits was carried out by Hurt Plant Ltd. Testing of soil samples for environmental and geotechnical purposes was carried out by i2 Analytical in accordance with the Environment Agency's MCERTS (Monitoring Certification) quality assurance accreditation scheme. These organisations were appointed directly by IGE Consulting to carry out these contracting works.

The ground investigation was undertaken in general accordance with:

- BS 5930 (2015) + A1 (2020) Code of Practice for Ground Investigation;
- BS 1377 (1990) Methods of test for Soils for Civil Engineering Purposes;
- BS 10175 (2011) Investigation of Potentially Contaminated Sites – Code of Practice; and
- BS EN 1997-2 (2007) Eurocode 7 – Geotechnical Design – Ground Investigation and Testing.

The sampling strategy for the site has been completed in accordance with CLR4 and the design of the investigation was carried out in accordance with R&D Technical Report P 5-TR066, LCRM (2020) and BS 8485 (2015) + A1 (2019). Further details pertaining to the ground investigation works are outlined in the following sections.

The limitations of the investigation work and report are included in Appendix 1.

3.1 Trial Pits

In total, 9 No. trial pits were excavated to depths of between 0.50m – 3.80m bgl (94.20m – 87.24m AOD). The trial pits were placed spatially across the site to gain a

representative view of the ground conditions, with the exception of TP03 which was placed to target the historical tanks excavated by E3P in 2020.

Trial pit logs are contained in Appendix 8 and the locations of the trial pits are shown on the Exploratory Hole Location Plan in Appendix 2.

3.2 Dynamic Sample Boreholes

6 No. dynamic sample boreholes were undertaken on a spatial basis to depths of between 1.50m and 5.45m bgl (93.20m – 85.59m AOD). The dynamic sample boreholes were undertaken in order to achieve the following:

- to establish the thickness, extent and characteristics of Made Ground and natural superficial deposits;
- to undertake in-situ geotechnical testing within these deposits;
- to obtain samples from these deposits for classification and laboratory testing;
- to install ground gas and groundwater monitoring wells

The following dynamic sampling boreholes were installed with a standpipe to allow for monitoring of the underlying groundwater depth, if present, together with ground gas concentrations:

Exploratory Hole	Response Zone Stratum	Response Zone Depth m bgl (m AOD)	
		Top of Response Zone	Base of Response Zone
DS01	Glaciofluvial Deposits comprising firm to stiff, dark brown, slightly gravelly, sandy CLAY, dark brown, gravelly, clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of sandstone and mudstone.	1.00 (92.94)	5.00 (88.94)
DS03	Made Ground , comprising dark brown, very clayey, fine to coarse SAND; and Glaciofluvial Deposits , comprising soft to firm and firm to stiff, slightly gravelly, sandy CLAY and brown, gravelly, slightly clayey, fine to coarse SAND.	1.00 (93.70)	4.00 (90.70)
DS05	Made Ground , comprising firm, gravelly, sandy CLAY; and Glaciofluvial Deposits , comprising brown, gravelly, slightly clayey, fine to coarse SAND.	1.00 (92.40)	3.00 (90.40)

The monitoring wells are constructed of a 50mm diameter HDPE plain pipe to the depth of the response zone which is screened with slotted pipe with bentonite seals top and bottom. The monitoring well is topped with a flush lockable cover.

The locations of the trial pits are shown on the Exploratory Hole Location Plan in Appendix 2 and the dynamic sample borehole logs and photographs are contained in Appendix 9.

3.2 Site Testing and Sampling

The following site tests and sampling were carried out:

- a) Retrieval of dynamic sample liners from between 1.20m and 5.00m bgl.
- b) Standard Penetration Tests (SPTs) were undertaken at regular 1.00m intervals between 1.20m and 5.00m bgl within the dynamic sample boreholes.
- c) Where possible, ex-situ shear strength testing was undertaken within cohesive / fine grained material (clay) from the trial pits using a hand shear vane (HSV) 19mm vane in accordance with BS1377-9. All hand shear vane tests are ex-situ tests.

3.3 Laboratory Testing

3.3.1 Chemical Laboratory Testing

10 No. soil samples were sub-sampled from the samples obtained during exploratory hole construction and sent to i2 Analytical laboratories for chemical testing. These samples were placed into sterile sealed containers to facilitate MCERTS chemical laboratory testing of potential contaminants. Chemical testing suites were based upon a wide range of possible contaminative sources, outlined below:

Asbestos ID, sulphate, pH, nitrate, total and free cyanide, arsenic, barium, beryllium, boron, cadmium, chromium, chromium (hexavalent), copper, lead, mercury, nickel, selenium, vanadium, zinc, Total Petroleum Hydrocarbon screen and Speciated Polyaromatic Hydrocarbons.

3.3.2 Geotechnical Laboratory Testing

The following geotechnical laboratory tests were carried out on selected samples obtained from across the site:

- a) Determination of moisture content, liquid limit and plastic limit in accordance with BS1377 – 2: Methods 3.2, 4.4 & 5.
- b) BRE Special Digest Suite for aggressive ground conditions.
- c) Determination of particle size analysis by dry / wet sieving in accordance with BS1377 Part 2, Method 9.2 (1990).

4.0 GROUND INVESTIGATION FINDINGS

4.1 Ground Conditions

The typical ground conditions on-site can be summarised as follows:

- In the southern site section, **Made Ground** comprising soft, dark brown, slightly gravelly, sandy **clay** with occasional rootlets and wood fragments to a depth of between 0.05m and 0.20m (94.65m – 90.84m AOD), underlain by;
- **Made Ground** comprising dark greyish brown, mottled red, slightly clayey, fine to coarse **sand** and angular to subangular, fine to coarse **gravel** of concrete, red brick, macadam, metal and timber to a depth of between 0.50m and 2.50m bgl (TP03) (94.25m – 88.54m AOD), underlain by;
- **Made Ground** comprising brown, mottled greyish brown and orangish brown, slightly gravelly, clayey, fine to coarse **sand** to a depth of between 0.80 and 1.50m bgl (93.90m – 89.54m AOD), underlain by;
- **Glaciofluvial Deposits**, comprising soft to firm, grey, mottled yellowish brown, slightly gravelly, sandy **clay**, brown, very clayey, fine to coarse **sand**, and brown, sandy, clayey, subrounded to well rounded, fine to coarse **gravel** in a matrix of orangish brown, clayey, fine to coarse **sand** to a depth of between 1.10m and 3.50m bgl, underlain by (93.60m – 87.54m AOD), underlain by;
- In places, **Glacial Till**, comprising firm, slightly gravelly, slightly sandy **clay** and brown, slightly gravelly, slightly clayey, fine to coarse **sand**, to a depth of between 3.30m and at least 5.45m bgl (91.40m – 85.59m AOD).

4.1.1 Notable Exceptions

The following notable exceptions to the above typical ground conditions were noted:

- Made Ground was encountered throughout the excavated depth of the pit in TP01 (northern site section) to a depth of 3.80m bgl (88.70m AOD). The total depth of the Made Ground in TP01 was not proven.
- Glacial Till was encountered in 4 No. exploratory holes only: TP02 (northern site section), TP04 (central site section), WS01 (northern site section), WS03 (eastern site section), comprising firm, slightly gravelly, slightly sandy **clay** and brown, slightly gravelly, slightly clayey, fine to coarse **sand**, to a depth of between 3.30m and at least 5.45m bgl (91.40m – 85.59m AOD).

- Exploratory holes TP09 and TP09A (south-eastern site section) were both terminated at 0.50m (93.84m – 93.83m AOD) due to hard digging on a concrete obstruction encountered at termination depth.

4.2 Visual and Olfactory Contamination Findings

During the intrusive exploratory hole investigation works, the soils were examined carefully for both visual and olfactory evidence of contamination. Evidence for possible hydrocarbon contamination in the form of a strong possible hydrocarbon odour and a lens of black, clayey sand with possible hydrocarbon sheen. This was recorded in TP03 at 3.20m bgl in the natural deposits of greyish brown, slightly clayey, fine to coarse **sand** and subangular to subrounded, fine to coarse **gravel**.

No other visual and olfactory evidence for contamination was encountered throughout the site.

4.3 Water Strikes

No water strikes were recorded within the underlying strata. Ingresses were recorded due to water contained in granular Made Ground and granular Glaciofluvial deposits.

Exploratory Hole	Depth (m bgl)	Comments
TP02	0.70	Slight water ingress.
TP03	3.20	Moderate water ingress.
TP04	1.80	Slight water ingress.

For further details pertaining to the water strikes please refer to the trial pit and dynamic sample borehole logs contained in Appendix 8 and Appendix 9 respectively.

4.4 Geotechnical Site Testing

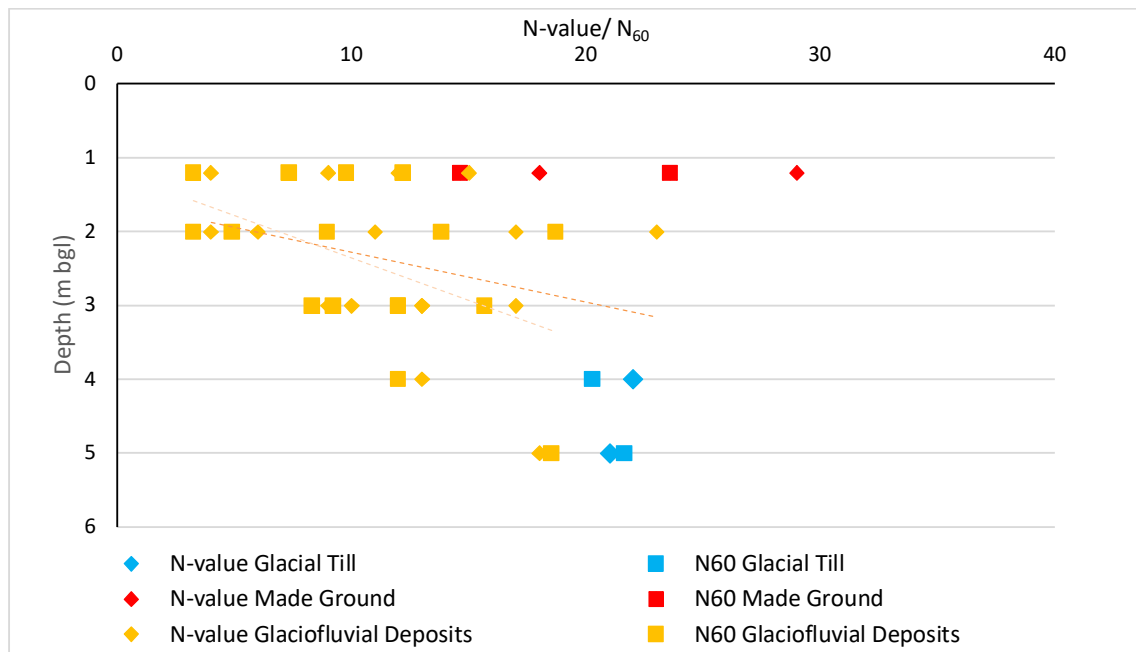
The results of the in-situ site tests undertaken during the ground investigation are summarised below.

4.4.1 Standard Penetration Tests

Standard penetration tests (SPT) were undertaken at regular 1.00m intervals during the construction of the dynamic sample boreholes. The following table outlines the uncorrected N-values and corrected N_{60} (energy ratio of 62%), derived from the standard penetration tests undertaken in the Made Ground, Glaciofluvial Deposits and Glacial Till strata during the ground investigation works:

Deposit Type	Depth Range of Test Start Depths m bgl (m AOD)	Number of Tests	Uncorrected N-value Range	Uncorrected N-value Average	Corrected N_{60} Range	Corrected N_{60} Average
Made Ground	1.20 (93.50 – 89.84)	2	18 – 29	24	15 – 24	19
Glaciofluvial Deposits	1.20 – 5.00 (93.50 – 86.04)	16	4 – 23	12	3 – 19	11
Glacial Till	4.00 – 5.00 (90.70 – 86.04)	2	21 – 22	22	20 – 22	21

The following scatter graph shows that generally there is an increase in the N-values / N_{60} values recorded within the Glaciofluvial Deposits with depth. However, the N-values / N_{60} values are noted to be very variable.



For detailed, specific information pertaining to the Standard Penetration Tests (SPTs), refer to the dynamic sampling borehole logs contained within Appendix 9.

4.4.2 Hand Shear Vane (19mm) Tests

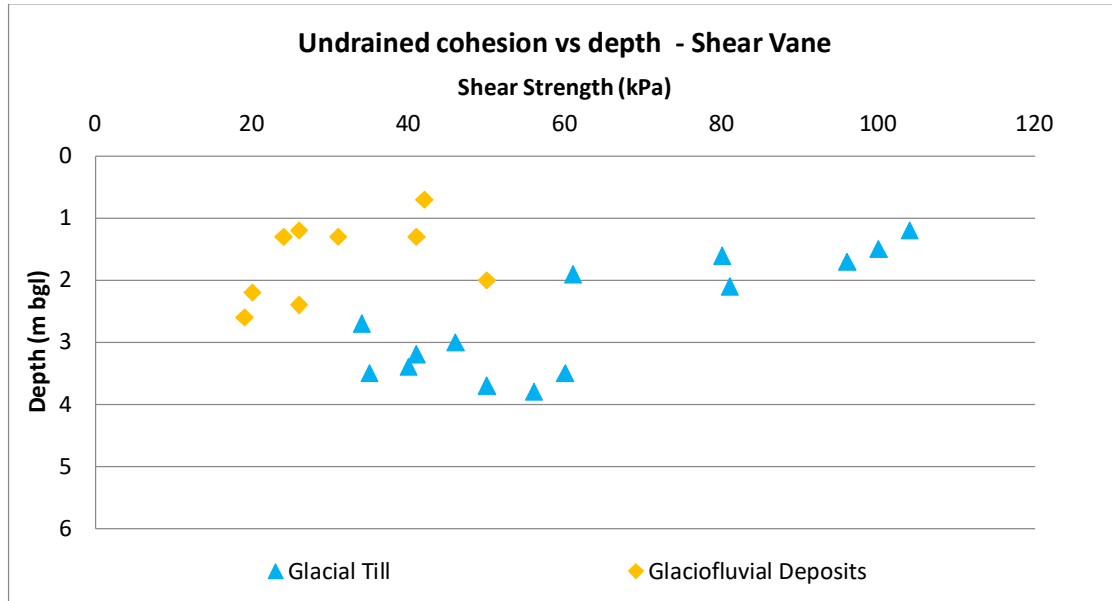
Where possible, both in-situ and ex-situ shear strength testing was undertaken on samples of cohesive material (clay) within trial pits and dynamic sampling boreholes using a hand shear vane (19mm vane) in accordance with BS1377-9.

The following table outlines the undrained shear strength values obtained within the Made Ground, Glaciofluvial Deposits and Glacial Till strata during the ground investigation:

Depth (m bgl)	Number of Tests	Depth Range m bgl (m AOD)	Shear Strength Range (kPa)	Shear Strength Median (kPa)	Shear Strength Average (kPa)
Glaciofluvial Deposits	9	0.70 – 2.60 (94.00 – 88.44)	19 – 50	26	31
Glacial Till	14	1.50 – 3.80 (93.20 – 87.24)	34 – 104	58	63

The below graph shows that no significant correlation between the shear strength of the Glacial Till and depth can be derived as the shear strength results are highly variable. The variability is anticipated to be due to the presence of secondary granular constituents (i.e. sand, gravel and silt).

No correlation can be derived for the Glaciofluvial deposits given the limited number of tests undertaken, however, the shear strength tests indicate that the cohesive Glaciofluvial Deposits are of low strength.



4.5 Geotechnical Laboratory Testing

The results of the geotechnical laboratory tests undertaken during the ground investigation are summarised below.

4.5.1 Atterberg Limit Tests

Atterberg limit tests were undertaken on a single sample of the Made Ground and 3 No. samples of the Glacial Till. The results of the Atterberg tests are as follows:

Sample	Sample Depth (m bgl)	Strata	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Passing through 425 micron (%)	Modified Plasticity Index
TP02	2.8	GT	16	25	14	11	83	9
TP04	1.2	GT	21	32	17	15	98	15
WS01	1.0 – 1.8	GT	18	36	18	18	95	17
WS05	1.0 – 1.6	MG	17	36	18	18	99	18
Average			18	32	17	16	94	15

MG = Made Ground, GT = Glacial Till. Green = Low Volume Change Potential.

The Atterberg Limit tests indicate that the Made Ground sample from WS05 at 1.00m-1.60m and the Glacial Till sample from WS01 at 1.00m – 1.80m bgl are of medium

plasticity and the remaining 2 No. Glacial Till samples (TP02 & TP04) are of low plasticity in-line with BS14688 Part 2.

The Made Ground and the Glacial Till deposits are of low volume change potential in-line with NHBC Chapter 4.2 guidance. Full geotechnical test results are contained in Appendix 8.

4.5.2 BRE Special Digest Suite Testing

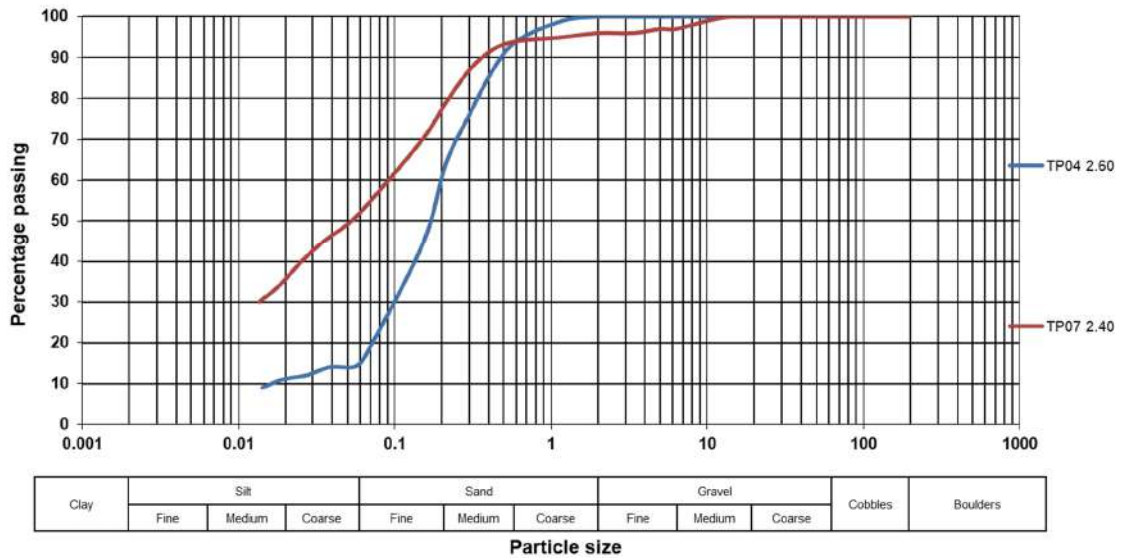
BRE SD1 testing suites were undertaken on a single sample of Made Ground, 2 No. samples of Glaciofluvial Deposits and a single sample of Glacial Till in order to determine the design sulphate levels and subsequently the Aggressive Chemical Environment for Concrete (ACEC)

Sample	Depth (m bgl)	Strata	DS Class	ACEC Class
DS03	0.40	Made Ground	DS-1	AC-1
TP02	1.30	Glaciofluvial Deposits	DS-1	AC-1
TP04	1.20	Glacial Till	DS-1	AC-1
TP08	2.00	Glaciofluvial Deposits	DS-3	AC-3

4.5.3 Particle Size Distribution and Sedimentation

Particle Size Distribution (PSD) and Sedimentation analysis were undertaken on 2 No. samples of Glacial Till deposits. The results have been summarised below:

Sample	Sample Depth (m bgl)	Cobbles / Boulders (%)	Gravel (%)	Sand (%)	Silt & Clay (%)
TP04	2.60	0%	0%	84%	16%
TP07	2.40	0%	4%	43%	53%



4.6 Environmental Laboratory Test Results

The findings of the chemical test results, summarised below, will be assessed against generic assessment criteria (GAC) for the purposes of screening allowable concentrations in comparison to the measured site concentrations. The GAC are defined based on the critical receptors identified at the site. Receptors are considered in relation to:

- Human health receptors (e.g. end-users, construction workers and the general public) via measured solid concentrations, and;
- Additional receptors may be relevant dependant on the site e.g. flora/fauna, water, buried concrete.

The GAC adopted for assessment of soils in relation to Human Health are based on published LQM/CIEH S4ULs (2015) for those compounds for which published criteria are available for varying scenarios (residential, commercial, allotment, public open space). In the absence of LQM/CIEH S4ULs (2015) the following GAC defining documents are adopted - CL:AIRE Soil GAC for Human Health Assessment (2010) and Category 4 Screening Levels (C4SLs) (2014).

The primary risk to human receptors from free cyanide in soils is an acute risk (i.e. a single dose could have a lethal affect as opposed to adverse effects from cumulative intake (chronic affect)). There is no current UK guidance available for calculating acute risks from free cyanide, therefore an in-house methodology has been used to derive an acute GAC of 60 mg/kg for all exposure scenarios. The value is given for Free or Easily Liberatable Cyanide but should be used to assess Total Cyanide in the absence of cyanide speciation. In cases where the Total Cyanide exceeds the GAC then analysis for Free or Easily Liberatable Cyanide should be completed.

Chemical laboratory test results have been assessed against their relevant human health Generic Assessment Criteria (GAC) for the residential with plant uptake land use scenario.

4.6.1 Made Ground Samples

5 No. samples of the Made Ground were sent for chemical analysis. Exceedances were found in 4 No. Made Ground Samples. Out of the 16 PAH compounds, exceedances were noted in 3 No. of the samples (TP01 @ 0.20m bgl, TP03 @ 0.30m bgl and TP09 @ 0.20m bgl) and concerned 4 No. PAH compounds. Elevated concentrations of Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenz(a,h)anthracene were noted in all affected samples, with the Benzo(a)anthracene exceedance only present in TP09 at 0.20m bgl.

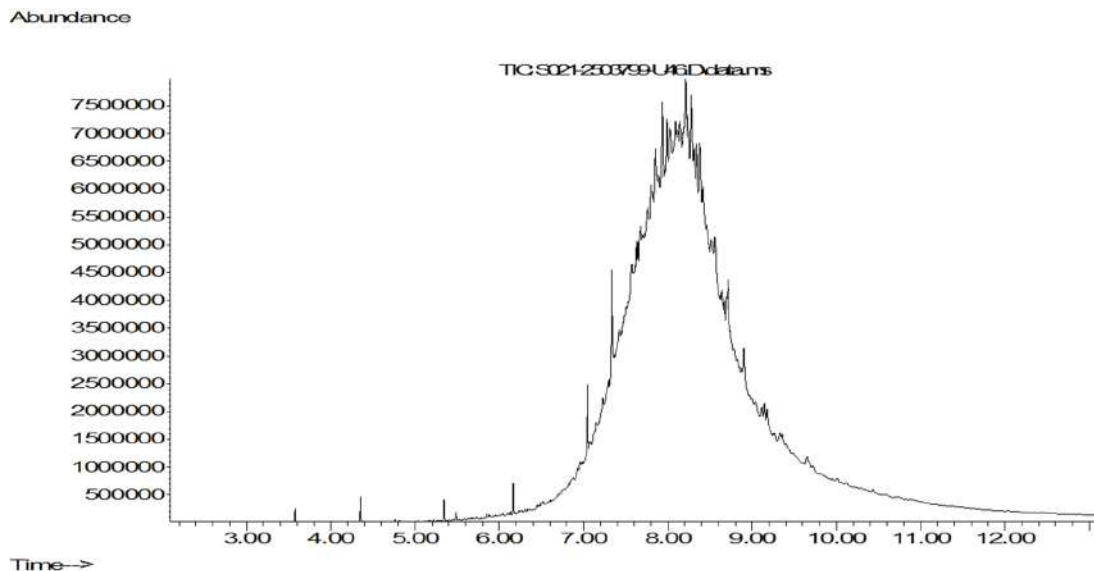
GAC exceedances of lead were detected in 2 No. samples (TP08 at 1.30m and TP09 at 0.20m bgl), both located in the southern site section, with the values ranging from 720mg/kg to 1100mg/kg of lead. Slightly elevated concentrations of TPH were noted in 3 No. samples of the Made Ground, however the values, which ranged from 95mg/kg to 190mg/kg of the TPH C10 – C25, and 100mg/kg – 460mg/kg of the TPH C25 – C40, are not considered significant enough to warrant forensic testing.

No further exceedances in the compounds analysed were found in the selected Made Ground samples.

4.6.2 Targeted Natural Deposit Sample

A single sample of natural Glaciofluvial Deposits was taken from TP03 at 3.30m bgl, which was targeted due to the presence of a strong hydrocarbon odour and black sheen in a localised pocket in the stratum. High concentrations of Total Petroleum Hydrocarbons (TPHs) were found in the sample, with the value for TPH C6 – C40 recorded as high as 16,000mg/kg. TPH-CWG testing was undertaken which found that the majority of the TPHs detected in the sample were present in the fraction C21 – C35 (10,000mg/kg aliphatic and 3,400mg/kg aromatic), which is a heavier-end fraction, above the range of petrol or diesel.

Forensic TPH analysis was undertaken, which gave the following chromatograph:



It can be seen that the sample is mostly represented by an Unresolved Complex Mixture (UCM), which is the large 'bump' in the centre of the graph, in the range C10 to greater than C40, with both aliphatic and aromatic product sources. The lab reported that *'The trace does not match the standard product profiles but is suggestive of lube oil from engine petrol'*.

It is important to note that the contamination was sampled directly, so these findings are not representative of the entirety of the site or even of the stratum in which the contamination was found, due to the relatively small scale of the contamination. The contaminative material comprises high-end TPHs signifying high density and low mobility substances. No other similar contaminative hotspots were found on-site, therefore it is anticipated that the presence of contamination in TP03 is an isolated

event with a low likelihood of spreading. No further exceedances in the compounds analysed were found in the selected samples of the Glaciofluvial Deposits.

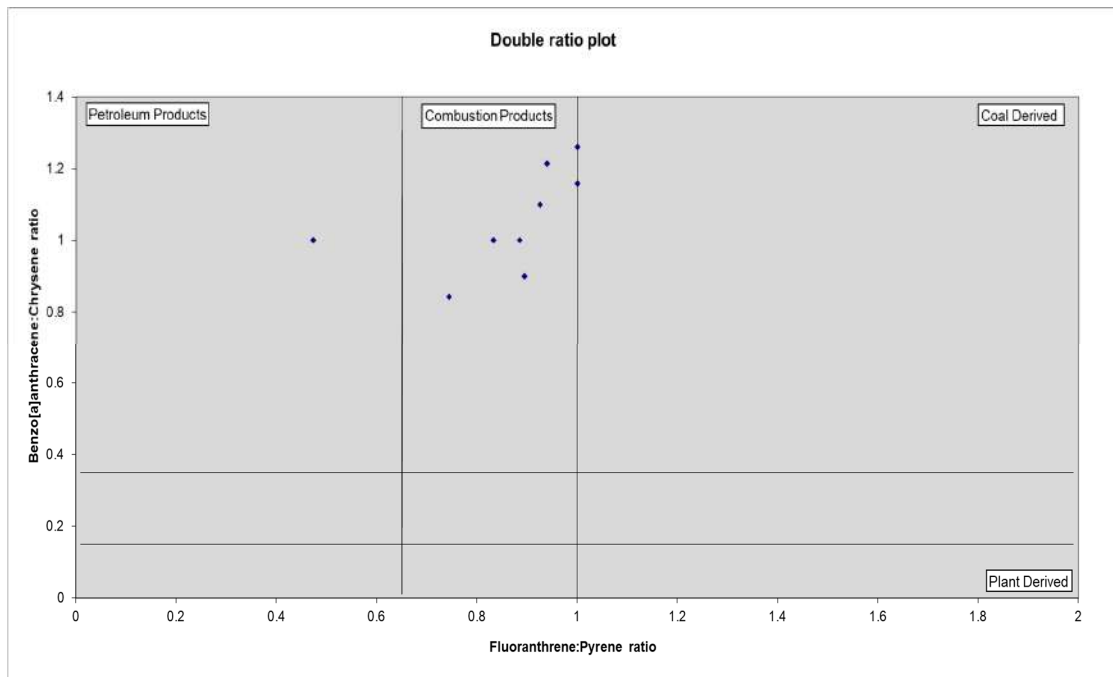
4.6.3 Natural Deposits Samples

There were no GAC exceedances recorded in the (non-targeted) samples of the natural Glaciofluvial and Glacial Till superficial deposits. No elevated TPH was detected in any natural samples other than the targeted sample discussed above.

Full chemical test results are contained in Appendix 7.

4.6.4 Double Ratio Plot for PAHs

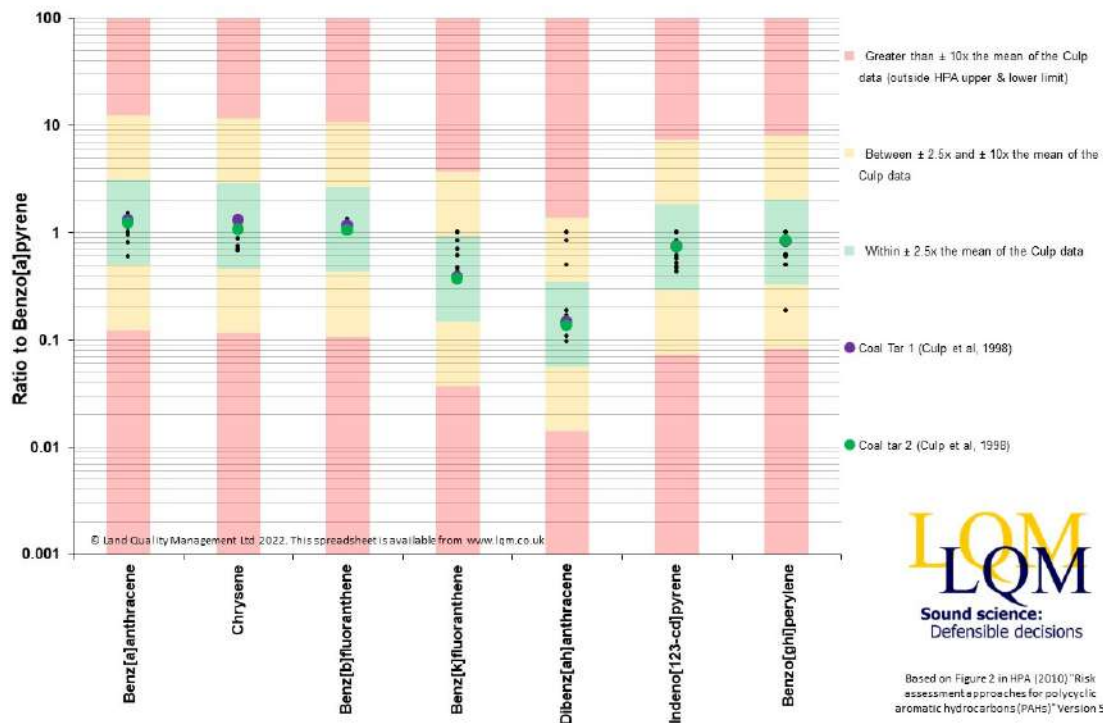
A Double Ratio Plot for all of the PAH compounds analysed across the site was produced to reveal the possible sources of the substances found on-site:



As seen above, the majority of the PAHs on-site are derived from combustion processes but could also stem specifically from the combustion of coal-derived materials, i.e., clinker. A single exception is noted within the results, signifying a petroleum product; this is unsurprising as it has been found in TP03 at 3.30m bgl, which is a sample targeted for its strong hydrocarbon odour, and where TPH exceedances have been found, as discussed above.

4.6.5 PAH Surrogate Marker

The 'surrogate marker' approach has been used to assess PAHs based on Benzo(a)pyrene (BaP) representing a complex mixture of PAHs. The following graph shows the PAH data from the soil samples plotted against the PAH data from the Culp et al. (1998)¹ study, the pivotal toxicity study from which the surrogate marker approach was derived:



*LQM PAH profiling tool used. Where a concentration of <0.05mg/kg was present, a value of 0.05mg/kg was used for graphing purposes.

As shown in the above graph, the distribution of PAHs in the topsoil samples are similar to those in the Culp et al. (1998)¹ study, with the majority being within just 2.5x the mean of the Culp et al. (1998)¹ data. Based on this information alone, it is appropriate to use the surrogate marker approach.

Using the Surrogate Marker approach, the concentrations of BaP are above the pC4SL surrogate marker GAC in 3 No. of the samples (TP01 @ 0.20m bgl, TP03 @ 0.30m bgl and TP09 @ 0.20m bgl). These are the same Made Ground samples identified above in which individual PAHs were also in exceedance of their individual

¹ Culp et al. (1998), *A comparison of the tumors induced by coal tar and benzo[a]pyrene in a 2-year bioassay*, **Carcinogenesis**, vol.19, no.1, pp.117–124.

S4ULs, so this separate assessment concurs that the concentrations of PAHs are not at an acceptable level in these samples.

4.7 Ground Gas Monitoring Results

3 No. wells were installed on site in order to allow monitoring and subsequent ground gas risk assessment to be undertaken. The response zones for the monitoring wells are detailed in Section 2.1. Following 2 No. visits to date, the below results have been recorded:

Gas Monitoring Well	Steady O ₂ Concentration (%)	Peak CO ₂ Concentration (%)	Peak CH ₄ Concentration (%)	Peak H ₂ S Concentration (ppm)	Atmospheric Pressure (mbar)	Steady Gas Flow (l/hr)
DS01	18.8 – 16.8	2.7 – 1.5	<0.1	<1	1017 – 997	0.1 – <0.1
DS03	13.7 – 13.4	3.4 – 2.6	<0.1	<1	1017 – 998	<0.1
DS05	15.0 – 14.5	4.6	<0.1	<1	1017 – 998	<0.1

The ground gas monitoring results are contained in Appendix 12.

4.8 Groundwater Depth Monitoring

The above wells were also installed for the purposes of groundwater depth monitoring. Groundwater monitoring is ongoing, however, after 2 No. visits the following results have been recorded:

Groundwater Monitoring Well	Response Zone (m bgl)	Water Level (m bgl)	Remarks
DS01	1.00 – 5.00	3.91 – 4.18	-
DS03	1.00 – 4.00	DRY	-
DS05	1.00 – 3.00	2.93 – 2.95	-

The groundwater depth monitoring results are contained in Appendix 12.

4.9 Services

4.9.1 Potable Water Supply Assessment

A United Utilities Risk Assessment (UURA) has been undertaken for the site, based on the chemical laboratory testing results contained within Appendix 9. The UURA is contained in Appendix 13 and recommends PE Barrier (Type A) Pipework.

4.9.2 Underground Services On-Site

From service plans obtained prior to commencing site investigation, an on-site sewer is recorded in the southern site section, suspected to follow the direction of the former police station access road.

5.0 ENVIRONMENTAL CONCLUSIONS

5.1 Assessment of Environmental Results

Soil sample analyses have assessed the presence of contaminants and visual and olfactory evidence of contamination from trial pits and dynamic sample boreholes and the concentrations at which they occur on a spatial basis across the site.

Based on the above chemical test results, human health GAC exceedances for the residential with plant uptake land use scenario have been recorded within 3 No. Made Ground samples submitted for chemical testing and comprised PAH and lead exceedances and slightly elevated concentrations of TPHs.

A single sample of natural Glaciofluvial Deposits was taken from TP03 at 3.30m bgl, which was targeted due to the presence of a strong hydrocarbon odour and black sheen in a discrete pocket within the stratum. Testing concluded that the contaminative compound present in this sample was consistent with the C21-C35 TPHs corresponding with lube oils. The sample was described as lube oil (petrol engines), consistent with the location of former USTs. It is important to note that this is not a representative result for the entirety of the site, neither is it a representation of contamination within the stratum, as this contamination was recovered as an isolated hotspot.

No GAC exceedances were recorded in any of the other natural samples submitted for chemical analysis.

No asbestos was recorded in any of the samples tested.

5.2 Updated Conceptual Models

5.2.1 Human Health Risk Assessment

Widespread on-site Made Ground associated with the demolition of the former police station, as well as the former on-site USTs, historical site uses, off-site historical and current industrial activities were identified as potential sources of contamination.

Following the ground investigation and chemical testing of Made Ground and natural deposit samples, exceedances of GACs were found in 4 No. of the tested samples. Given the PAH and lead exceedances and the elevated TPH, the Made Ground cannot be discounted as a potential contaminative source, however, based on the double ratio plot detailed in Section 4.6.4, in all samples but one (TP03 @ 3.30m) the PAH compounds were found to be combustion / coal derived, which means that these compounds are encapsulated in clinker / slag / coal gravel. Therefore, the main pathway to human health from the PAHs and lead is by ingestion by direct contact. This will be prevalent in gardens and soft landscaping, therefore, remedial measures will be required in these areas.

A single GAC exceedance was noted within the targeted sample of the Glaciofluvial Deposits (TP03 at 3.30m bgl), where high concentrations of TPH C12-C35 were found. The contaminant was submitted for further testing, which concluded that it is derived from a possible petrol engine lube oil presence on-site, consistent with the location of the former USTs recovered from the site by E3P during previous site investigation. It is important to note that this contaminative hotspot is considered an isolated occurrence, as no other locations on-site recorded a similar level of TPH concentration. As the TPH found in this site comprises heavy-end TPH of low mobility and volatility, the risk to human health through vapour inhalation is low, as vapours are unlikely to be produced from such compounds. The E21-E35 TPHs are also known to be of low mobility, therefore the spread of the contamination across the affected stratum and across the site will be reduced. It is possible, however, that this contaminative hotspot will pose risk to human health via ingestion, as the site will be developed into a residential low-rise neighbourhood with associated private gardens and soft landscaping, where direct contact with contaminated soils will be possible.

Following site development, the site will mostly be covered by hardstanding, however, in any possible areas of private gardens and soft landscaping the end user will be at increased risk of contact with the Made Ground. As a contaminative linkage has been identified, the risk to human health in areas of gardens and soft landscaping is deemed **moderate to high**. Consequently, remedial measures comprising a suitable cover system should be implemented in any private gardens and soft landscaping.

5.2.2 Ground Gas Risk Assessment

Potential ground gas sources have been identified on-site and in close proximity to the site, including Made Ground, potential organic glaciofluvial deposits and off-site historical landfills.

Made Ground

The Made Ground on-site was noted to vary significantly across site, with at least three discrete layers identified in the exploratory holes, where it was recorded to comprise soft, dark brown, slightly gravelly, sandy **clay**, dark greyish brown, mottled red, slightly clayey, fine to coarse **sand** and brown, mottled greyish brown and orangish brown, slightly gravelly, clayey, fine to coarse **sand** with low cobble content. Organic fragments were recorded in places, however the on-site organic matter in the Made Ground comprised occasional roots and rootlets. No degradable or putrescible material was noted. Although the Made Ground is deep in places, it is not considered to have a significant ground gas generating potential and is therefore discounted as a source.

Off-Site Historical Landfills

3 No. landfills were recorded within 149m – 468m of the site, noted to have been inactive since the 1970s – 1990s. Due to the time since infilling (50 to 30 years ago), the landfills are considered to be a potentially viable ground gas source. However, due to the distance between the locations of the historical landfills and the site, it is unlikely that the migration of ground gas below the site would occur. In addition, cohesive low-permeability Glaciofluvial Deposits and Glacial Till were recorded on-site, which would further reduce the possibility of migration. Consequently, the ground gas risk from the off-site landfills is deemed to be low to moderate.

Possibly Organic Glaciofluvial Sheet Deposits

Glaciofluvial Sheet Deposits were recorded on site in all of the exploratory holes undertaken, however, no significant evidence for high organic content was noted, with the average organic matter content of the natural deposits being less than 5%. Consequently, Glaciofluvial Deposits on-site are discounted as a potential ground gas source. Also, due to the presence of cohesive Glaciofluvial Deposits and Glacial Till on site, the potential pathways for contamination may be reduced across the site, as

the granular deposits are not confirmed to be laterally continuous. Consequently, the risk from the potentially organic Glaciofluvial Deposits is deemed to be low.

GSV Calculation

The results of the 2 No. ground gas monitoring visits to date have been assessed in accordance with BS 8485+A1 (2019). The characteristic Gas Screening Value (GSV) is calculated by dividing the maximum methane or carbon dioxide concentration by 100 and multiplying by the maximum steady flow rate recorded at the same monitoring point (the instrument detection limit of 0.1 l/hr is utilised when below detection limit flow rates are recorded). If required, the worst case GSV can be calculated by dividing the maximum carbon dioxide and methane concentration by 100 and multiplying by the maximum steady flow rate on-site.

Ground gas monitoring has recorded a maximum peak carbon dioxide concentration of 4.6% v/v in WS03 and no methane concentrations above the instrument detection limit of <0.1% v/v. No steady flow rates above detection limits were recorded.

As no steady flow rates were recorded on-site, the GSV and the worst case GSV for carbon dioxide at the site can be calculated as $(4.6/100) \times 0.1 = 0.0046 \text{ l/hr}$

The GSV and the worst case GSV for methane can be calculated as $(0.1/100) \times 0.1 = 0.0001 \text{ l/hr}$.

Consequently, at this stage, the ground gas risk on-site is deemed to be very low and in-line with Characteristic Situation 1 (CS1) in line with the GSV. However, ground gas monitoring is ongoing at the time of writing and this conclusion will be required to be updated in a revision or addendum to this report once complete.

Radon

The Indicative Atlas of Radon in England and Wales produced by the Health Protection Agency and British Geological Survey, contained within Section 19.1 of the Groundside Combined Enviro + Geo Insight report indicates that the site lies within a lower probability area as <1% of homes are above the action level.

Consequently, BR211 (2015) indicates that no radon protection measures are necessary in the construction of new dwellings or extensions.

5.2.3 Controlled Waters Risk Assessment

Potential contaminative sources to controlled waters have been identified on-site and in close proximity to the site, including Made Ground, on-site former police station and former USTs, as well as current and historical off-site industrial activities.

Made Ground

The Made Ground was recorded as variable across site, with at least three discrete layers identified in the exploratory holes, as detailed in Section 5.2.2. Three samples of Made Ground sent for chemical testing recorded elevated concentrations of PAH compounds, as well as lead. Although the concentrations of these compounds were noted to be elevated, based on the double ratio plot detailed in Section 4.6.4, in all samples but one (TP03 @ 3.30m) the PAH compounds were found to be combustion / coal derived, which means that these compounds are encapsulated in clinker / slag / coal gravel. Therefore, these are immobile and controlled waters will not be affected by these. Consequently, the potential for the Made Ground to pose a risk for controlled waters is low.

Former Police Station and Underground Storage Tanks

The site has been used as a headquarters for the Bury Police from the early 1970s until 2017, when it was demolished. Two USTs were removed by E3P in 2020.

A single sample of Glaciofluvial Sheet deposits (TP03 @ 3.30m bgl) was collected directly to target the encountered contaminative hydrocarbon hotspot associated with the location of the former tanks. It is important to note that this is not a representative result for the entirety of the site, neither is it a representation of contamination within the stratum, as this contamination was recovered as an isolated hotspot, hence the high concentration values of TPHs recorded in this sample. Multiple other locations on-site have been surveyed and chemically tested, however TP03 remains the only locality where any contamination has been encountered.

Furthermore, following the site investigation undertaken by E3P, the sources of the potential contamination on-site, and the possible sources of the encountered contaminative hotspot (i.e., former USTs) have been removed, so no additional contamination will occur in the future. Additionally, the TPH contamination was not recorded as widespread, and the amount noted was very small in volume (see E3P photographs above). Consequently, the majority of the substance encountered has been sampled. The recorded substance was described as lube oil, as discussed in Section 5.1, therefore it is a low mobility and high-density compound. Consequently, migration along any contaminative pathways to controlled waters is unlikely, therefore the risk from the USTs and the former police station is deemed to be low.

Off-Site Current and Historical Industrial Activities

Numerous industrial activities were recorded off-site in the immediate vicinity of the site. Mills with associated reservoirs, works, factories and schools were noted near the site, and associated contamination was identified by the Phase 1 CSM as possibly being present on-site. Following site investigation, no significant evidence for contamination derived from the current and historical industrial activities near the site was found. Due to the distance from site of current industrial activities, and lack of other potential contaminative pathways, the risk associated with the current and historical industrial activities is deemed low.

No controlled waters remediation will be necessary.

5.3 Outline Remedial Strategy

As discussed in Section 5.2.1 GAC exceedances were noted within Made Ground (TP01 @ 0.20m, TP03 @ 0.30m, and TP09 @ 0.20m), and a single targeted Glaciofluvial deposits sample (TP03 @ 3.30m). As sources for contamination and feasible pathways across site have been identified in gardens and areas of soft landscaping, a suitable remedial strategy is required, in the form of a clean cover system to break any pathways to the end user:

5.3.1 Cover System Requirements

The following procedure is outlined for use in private gardens (and areas of soft landscaping) where the Made Ground is deeper than 600mm (300mm below for soft landscaping) below finalised levels:

1. Excavate to 600mm bgl in private gardens, (300mm bgl in soft landscaping areas)
2. A 600mm clean cover system is recommended to be added to the private gardens (300mm in areas of proposed soft landscaping). This is to consist of:
 - a. No less than 150mm and no more than 300mm suitable topsoil, in accordance with BS:3882 (2015), underlain by;
 - b. Suitable subsoil to a total (topsoil + subsoil) depth 600mm (300mm in areas of soft landscaping), underlain by;
 - c. A 'no-dig' geotextile.
3. Validate in line with the below strategy.

Where Made Ground is shallower than 600mm below finalised levels in private gardens (300mm in soft landscaped areas), excavating to the required depth for a cover system in these areas would constitute source removal. Therefore, where this is the case, the following procedure is proposed:

1. Excavate to the base of the Made Ground (<600mm in private gardens / <300mm in areas of soft landscaping areas respectively). A clean cover system is not necessary.
2. Add suitable subsoil and topsoil to create a garden or soft landscaping to Client's standard specification.

5.3.2 Cover System Validation

Once the clean cover system has been installed, validation requirements include:

- Details of the source of the cover material (site-won or imported)
- Chemical test results to demonstrate that the soil is free from contamination and 'suitable for use', chemical testing should be undertaken both at source

and at site. The following information must also be provided for both site-won and imported soil:

- The sampling density undertaken for gardens and for landscaped areas (in line with below soil importation requirements)
- Testing results (in line with below soil importation requirements)
- Waste transfer notes to provide evidence of source
- Confirmation of cover depth by either measurement tape or topographical survey with photographs at a frequency of one pit per three plots.

The above remedial measures should be reassessed following the receipt of a finalised externals layout including levels.

5.3.3 Testing of Imported Materials

Soils intended for use in private gardens and soft landscaping must be tested to confirm their suitability for use. Imported topsoil and subsoil is required to be tested at source prior to import to confirm suitability. All topsoil and subsoil, whether site-won or imported is required to be tested at the following frequency:

Source	Material End Use	Sampling Frequency ¹	Testing Suites ³ (see below)
Greenfield Source:	Topsoil	1 per 200m ³	A, B, C, D, F
	Subsoil	1 per 200m ³	A, B, C, D, G
Brownfield Source:	Topsoil	1 per 50m ³	A, B, C, D, F
	Subsoil	1 per 100m ³	A, B, C, D, G
	General Fill ²	1 per 1000m ³	A, B, C, E, H

1) Minimum 3 samples regardless of volume.

2) General Fill² is material used primarily to raise levels, specifically not within areas of private gardens, public open space, or soft landscaping, e.g. 6F2

3) In addition to the standard suites given, the laboratory testing suite should include any additional contaminants of concern based on the source of the samples.

Once tested, the results are to be compared against the following Acceptability Criteria:

Suite	Determinand (mg/kg unless stated)	Acceptability Criteria for:			
		Private Gardens	Public Open Space (residential)	Soft Landscaping or Public Open Space (Park)	General Fill
A	Asbestos (%)	ND	ND	ND	<0.001 – 0.01%
B	pH	>6 - <8 ⁽³⁾	>6 - <8 ⁽³⁾	>6 - <8 ⁽³⁾	>5 - <10 ⁽³⁾
	Total Cyanide	0.5 ⁽³⁾	0.5 ⁽³⁾	0.5 ⁽³⁾	0.5 ⁽³⁾
	Free Cyanide	0.5 ⁽³⁾	0.5 ⁽³⁾	0.5 ⁽³⁾	0.5 ⁽³⁾
	Soluble Sulphate (mg/l)	500 ⁽³⁾	500 ⁽³⁾	500 ⁽³⁾	500 ⁽³⁾
C	Arsenic	37	79	170	640
	Beryllium	1.7	2.2	63	12
	Boron	290	21000	46000	240000
	Cadmium	11	120	560	190
	Chromium (III)	910	1500	33000	8600
	Chromium (VI)	6	7.7	220	33
	Copper	2400	12000	44000	68000
	Lead	200 ⁽¹⁾	630 ⁽¹⁾	1300	2330 ⁽¹⁾
	Inorganic Mercury	40	120	240	1100
	Nickel	130	230	800	980
	Selenium	250	1100	1800	12000
	Vanadium	410	2000	5000	9000
	Zinc	3700	81000	170000	730000
D	Naphthalene	2.3	4900	1200	
	Acenaphthylene	170	15000	29000	
	Acenaphthene	210	15000	29000	
	Fluorene	170	9900	20000	
	Phenanthrene	95	3100	6200	
	Anthracene	2400	74000	150000	
	Fluoranthene	280	3100	6300	
	Pyrene	620	7400	15000	
	Benzo(a)anthracene	7.2	29	49	
	Chrysene	15	57	93	
	Benzo(b)fluoranthene	2.6	7.1	13	
	Benzo(k)fluoranthene	77	190	370	
	Benzo(a)pyrene	2.2	5.7	11	
	Indeno(1,2,3-cd)pyrene	27	82	150	
	Dibenz(a,h)anthracene	0.24	0.57	1.1	
E	Benzo(ghi)perylene	320	640	1400	
	Total PAHs				1000 ⁽⁴⁾
F	TPH-CWG - Aliphatic >EC5 - EC6	42	570000	95000	
	TPH-CWG - Aliphatic >EC6 - EC8	100	600000	150000	
	TPH-CWG - Aliphatic >EC8 - EC10	27	13000	14000	
	TPH-CWG - Aliphatic >EC10 - EC12	130	13000	21000	
	TPH-CWG - Aliphatic >EC12 - EC16	1100	13000	25000	
	TPH-CWG - Aliphatic >EC16 - EC21	65000	250000	450000	
	TPH-CWG - Aliphatic >EC21 - EC35				
	TPH-CWG - Aliphatic > EC35 - EC44	65000	250000	450000	
	TPH-CWG - Aromatic >EC5 - EC7	70	56000	76000	
	TPH-CWG - Aromatic >EC7 - EC8	130	56000	87000	
	TPH-CWG - Aromatic >EC8 - EC10	34	5000	7200	
	TPH-CWG - Aromatic >EC10 - EC12	74	5000	9200	
	TPH-CWG - Aromatic >EC12 - EC16	140	5100	10000	
	TPH-CWG - Aromatic >EC16 - EC21	260	3800	7600	
	TPH-CWG - Aromatic >EC21 - EC35	1100	3800	7800	
	TPH-CWG - Aromatic > EC35 - EC44	1100	3800	7800	

G	TPH > EC6 - EC40				5000 ⁽⁴⁾
H	Benzene	0.087	72	90	
	Toluene	130	56000	87000*	
	Ethylbenzene	47	24000	17000*	
	p & m-xylene	56	41000	17000* ^{**}	
	o-xylene	60	41000	17000*	
	MTBE (Methyl Tertiary Butyl Ether)	LOD ⁽³⁾	LOD ⁽³⁾	LOD ⁽³⁾	

LQM/CIEH S4ULs for Human Health Risk Assessment (3rd edition, 2015) used unless stated:

- 1) Category 4 Screening Levels (March 2014)
- 2) CL:AIRE Soil GAC for Human Health Assessment (January 2010)
- 3) In-house screening criteria used as no GAC methodology currently exists
- 4) Hazardous waste thresholds. This limit only applies to imported material, not to in-situ soil.

Assumed 1% SOM (most conservative) for those values dependent upon SOM.

ND = Not Detected

LOD = Limit of Detection

*Exceeds vapour saturation limit

**Exceeds solubility saturation limit

6.0 GEOTECHNICAL CONCLUSIONS

6.1 Geotechnical Assessment of Ground Conditions

The ground investigation works have revealed that the ground conditions at the site are relatively consistent comprising Made Ground, underlain by Glaciofluvial Deposits, underlain by Glacial Till.

The principal strata identified are outlined in further detail below.

6.1.1 Made Ground – Cohesive

Cohesive Made Ground was recorded in all exploratory holes and typically comprised soft, dark brown, slightly gravelly, sandy **clay** with occasional rootlets and wood fragments to a depth of between 0.05m and 0.20m (94.65m – 90.84m AOD).

Given the shallow, and largely granular nature of the Made Ground and hand dug pits being excavated to 1.20m bgl in every exploratory hole location, a limited number of the standard penetration tests were undertaken within the stratum. Two Standard Penetration Tests were undertaken within the Made Ground which recorded N-values of between 18 and 29 and corrected N60 values of between 15 and 24 (average 19).

A single Atterberg test was undertaken within the Made Ground, indicating that the stratum is generally of medium plasticity and low volume change potential in-line with BS14688 Part 2 and NHBC Chapter 4.2 guidance.

6.1.2 Made Ground – Granular

Granular Made Ground was recorded in all exploratory holes beneath the cohesive Made Ground. The granular Made Ground typically comprised dark greyish brown, mottled red, slightly clayey, fine to coarse **sand** and angular to subangular, fine to coarse **gravel** of concrete, red brick, asphalt, metal and timber to a depth of between 0.50m and 2.50m bgl (TP03) (94.25m – 88.54m AOD) and brown, mottled greyish brown and orangish brown, slightly gravelly, clayey, fine to coarse **sand** to a depth of between 0.80 and 1.50m bgl (93.90m – 89.54m AOD).

A shallow obstruction, comprising a suspected concrete slab has also been encountered during ground investigation in TP09 and TP09A at the consistent depth of 0.50m bgl, in the south-eastern site section, following hard digging in the aforementioned exploratory holes.

6.1.3 Glaciofluvial Deposits

Glaciofluvial Deposits were encountered in 13 No. holes of the 17 No. of exploratory holes undertaken on-site and comprised comprising soft to firm, grey, mottled yellowish brown, slightly gravelly, sandy **clay**, brown, very clayey, fine to coarse **sand**, and brown, sandy, clayey, subrounded to well rounded, fine to coarse **gravel** in a matrix of orangish brown, clayey, fine to coarse **sand** to a depth of between 1.10m and 3.50m bgl, underlain by (93.60m – 87.54m AOD).

16 No. Standard Penetration Tests were undertaken within the Glaciofluvial Deposits which recorded N-values of between 4 and 23 (average 12) and corrected N60 values of between 3 and 19 (average 11).

9 No. Hand Shear Vane tests were undertaken within the cohesive Glaciofluvial Deposits which recorded shear strengths of 19kPa and 50kPa (average 31 kPa).

6.1.4 Glacial Till

Glacial Till was encountered in 4 No. exploratory holes only: TP02 (northern site section), TP04 (central site section), WS01 (northern site section), WS03 (eastern site section), comprising firm, slightly gravelly, slightly sandy **clay** and brown, slightly gravelly, slightly clayey, fine to coarse **sand**.

Glacial Till was present to a depth of at least 5.45m bgl in all exploratory holes the deposits were encountered.

Two Standard Penetration Tests were undertaken within the Glacial Till which recorded N-values of between 21 and 21 (average 22) and corrected N60 values of between 20 and 22 (average 21).

14 No. Hand Shear Vane tests were undertaken within the Glacial Till which recorded shear strengths of between 34kPa and 104kPa (average 63kPa), increasing with depth.

Three Atterberg tests undertaken within the Glacial Till indicate that the stratum is generally of low to medium plasticity and low volume change potential in-line with BS14688 Part 2 and NHBC Chapter 4.2 guidance.

6.2 Groundwater

Water strikes were noted in 3 No. exploratory holes at depths of between 0.70m and 3.20m bgl within the Glaciofluvial Deposits and Made Ground. Based on the variable groundwater depths the water strikes are anticipated to represent perched water rather than a continuous shallow groundwater regime.

Consequently, temporary works including dewatering may be required for excavation works (i.e., for drainage and foundation excavation).

6.3 Mining / Geological Assessment

Ground investigation works to investigate the solid geology were beyond the scope of these works, however, the site is underlain by bedrock of the Pennine Lower Coal Measures. The site lies within a Coal Authority Coal Mining Reporting Area, however there are no outcrops, mine entries or Development High Risk Areas recorded on-site or within 250m from site. The coal mining risk has been deemed low above (see Section 2.5.5).

The site does not lie within the Cheshire Brine Subsidence Compensation District.

6.4 Foundations

It should be noted that no proposed development plan has been provided at this stage. Based on existing site levels traditional strip / trench foundation solutions are not deemed suitable to be used at this stage. This is due to the deep Made Ground

encountered in the northern site section, highly variable shallow superficial strata, and the presence of soft clays and loose sand. Consequently, it is considered necessary to utilise a piled foundation or a ground improvement i.e., Vibro Stone Column (VSC) solution subject to liaison with piling and ground improvement specialists.

If ground improvement is the preferred method for the proposed plots, the ground to be improved by VSC will include Made Ground and shallow superficial deposits to depths of between 3 – 5m bgl. This will provide the necessary uniformity and result in a minimum acceptable bearing capacity of 125kN/m². Consideration is required for the retaining wall along the eastern site boundary as well as existing services and the requirement for a non-percussive piling solution.

If a piled foundation solution is utilised, then further deeper boreholes maybe required to inform the piled foundation design in line with NHBC / Premier Guarantee guidance e.g. 5m past the toe of the proposed pile.

If ground improvement / piled solution is utilised, it is recommended that a temporary working platform is undertaken in line with BRE470 with appropriate in-situ testing undertake to validate the installation. The movement / tracking of the piling rig between plots and access onto site should be considered within the design, given the stepped nature of the plots in close proximity. It is recommended that suitable plate incremental tests take to appropriate pressures are undertaken following completion of the temporary working platforms to ensure that they have been installed appropriately.

There are established trees along the eastern and southern site boundaries. No arboricultural survey was available at the time of completing the report. We would recommend a tree survey is undertaken to allow for detailed design, i.e., requirement for localised deepening of foundations and heave protection measures.

It is recommended that any localised 'soft spot' areas encountered during excavation works should be removed and foundations extended down to suitable formation strata.

The above conclusions are based on the existing site levels and are subject to proposed levels. Following receipt of a finalised proposed development plan including proposed level and further works (i.e. following demolition of existing building), a foundation zoning plan can be produced to allow detailed foundation design.

6.5 Floor Slabs

Based on existing levels, the presence of >600mm of Made Ground across the site and variable foundation depths, generally greater than 1.50m bgl, a suspended floor slab will be required for the proposed plots in line with NHBC / Premier guidance.

6.6 Earthworks and External Areas

6.6.1 Highways and External areas

Given the granular nature of the Made Ground, it is envisaged that any loose spots can be re-engineered, therefore the hard-surfaced external works including the access road and pavements may be constructed on proof-rolled Made Ground formations across the site.

6.6.2 Earthworks

The proposed earthworks and engineering works are to be undertaken to achieve the following key geotechnical outcomes:

- Excavate and remove any ground obstructions and re-engineer to a specified engineering specification appropriate to specific site areas e.g. proposed roads, pavements, soft landscaped areas.
- Undertake appropriate excavation works and suitable backfill to permit the installation by Third Parties of the required drainage and services across the site to the agreed drainage design.

Classification

This Specification should be read in conjunction with the following:

- The Manual of Contract Documents for Highway Works, Volume 1, Specification for Highway Works, Series 600, Earthworks as amended in (November 2005); and,

- Soils for Civil Engineering Purposes (BS1377) 1999.

The contractor should ensure that all earthworks materials comply with Clause 601 of the Specification for Highway Works and shall fall into one of the other of the following general classifications as defined in Table 6/1 of the Specification for Highway Works:

- General granular fill (Class 1),
- General cohesive fill (Class 2), excluding class 2A and 2E,
- Selected granular fill (Class 6).

In addition to any grading requirement the maximum particle size of any fill material shall be no more than two-thirds of the compacted layer thickness. The only exception to this shall be that cobbles having an equivalent diameter of more than 150mm shall not be deposited within the restored surface level unless directed otherwise by the engineer. Un-burnt colliery spoil, pulverised fuel ash (PFA) or furnace bottom ash shall not be used as a fill material.

Engineering Specification

The contractor should employ a suitably experienced engineer to be present on site during these earthwork operations to ensure soil suitability, placement, compaction and testing is undertaken in accordance with this specification and to ensure that any unforeseen circumstances, such as adverse weather, do not compromise the earthworks process.

Works should be halted during periods of intermittent or prolonged rainfall to ensure the materials are not placed in a manner that would result in softening of either the formation or the newly placed material. It will be the contractor's responsibility to determine appropriate weather conditions and determine the suitability of works. Particular attention must be given to variable weather conditions when re-engineering clay soils as a moisture content fluctuation (2%+/-) of the tolerable limit will result in unacceptable degree of compaction loss.

Due to the presence of deep Made Ground and loose granular deposits it is considered that all excavations are supported or battered back in accordance with guidance contained in CIRIA R97. Given the lack of recorded groundwater or perched water, the requirement for temporary works including dewatering is not considered likely.

Earthworks Placement Specification

END USE	DETAILS	REQUIREMENT
External Areas - Highways, driveways, drainage runs, backfill behind retaining walls	Site	Method of compaction in line with Department of Transport Specification for Earthworks Series 600 Method 2 to achieve CBR >5%. Formation level for adoptable highways to achieve CBR >15% utilising 450mm diameter plate and in line with local / county highways guidance. Engineering advice to be sort if unachievable / uneconomic.
Soft Landscaping - Private Gardens / Public Open Space	Site	Compacted to achieve <30mm settlement. Subsoil material should not be excessively tracked with plant – should permit surface water drainage.

6.6.3 Stockpile Management

During the course of the development there will also be areas of stockpiled soils intended for use within the proposed development. These will have been subjected to off-site testing and approved for use on site. It is imperative that the stockpiles are well managed to avoid inadvertent mixing or depositing of surplus or deleterious materials that would compromise the continued use. We would recommend that the site management reviews the proposed positions for placement of stockpiles and places either fencing or warning signs to ensure compliance.

6.6.4 Export of Materials

Any soils to be removed from site must be classified in accordance with WM3 under the definition of waste and chemically tested to determine their destination, i.e. reuse or landfill. Waste ticket records must also be retained as proof of the export of materials from site.

6.7 Concrete Classification

In accordance with BRE Special Digest 1: Concrete in Aggressive Ground (2005), soluble sulphates, total sulphur, soluble magnesium, soluble nitrate and soluble chloride within the Made Ground were recorded within design sulphate levels DS-1 to DS-2 and subsequently within the Aggressive Chemical Environment for Concrete (ACEC) classification of AC-2.

Soluble sulphates, total sulphur, soluble magnesium, soluble nitrate and soluble chloride within the Glacial Till were recorded within design sulphate levels DS-1 to DS-3 and subsequently within the Aggressive Chemical Environment for Concrete (ACEC) classification of AC-3.

It should be noted that some samples of Made Ground and Glacial Till where only pH and sulfate were tested (not the BRE SD1 Suite) were utilised within the BRE calculation due to the elevated concentrations of soluble sulfate noted.

Therefore, special precautions are required regarding the use of concrete within the natural superficial deposits to adhere with an AC-3 concrete classification.

7.0 RECOMMENDATIONS

- Following any variation in a finalised proposed development detailed design including earthworks design, proposed levels and it is recommended that the above conclusions are re-appraised to determine the suitability.
- Due to the presence of deep Made Ground, variable superficial deposits, and the presence of soft clays and sands across the site, ground improvement solution comprising Vibro Stone Columns (VSCs) or piled foundation solution are deemed suitable to be utilised across the site, subject to consultation with ground improvement specialists.
- The conclusions of this report should be agreed with relevant regulatory authorities prior to the commencement of works.
- It is recommended that an arboricultural survey is undertaken for detailed design of foundations given the established trees and moderate plasticity clays on-site.
- If any hereto unidentified visual or olfactory evidence of contamination is encountered during earthworks or construction work, then the Local Authority Environmental Health Officer and Environment Agency should be contacted immediately to determine appropriate mitigation measures.
- Remedial measures comprising a clean cover system are deemed necessary with respect to human health. No remedial measures are deemed necessary with respect to controlled waters.
- It is recommended that the presence and associated constraints of all site services are established prior to significant intrusive works beginning.
- It is recommended that plate bearing tests should be undertaken on the existing site level to obtain CBR values prior to the completion of the earthworks activity once the proposed formation level for highway design is available.
- It is recommended that the ground gas and groundwater monitoring is completed, and that the above conclusions in relation to the ground gas regime are subject to re-appraisal following the completion of the ground gas monitoring visits.

APPENDIX 1

LIMITATIONS OF INVESTIGATION WORK AND REPORT AND CONTAMINATED LAND LEGISLATIVE FRAMEWORK

LIMITATIONS OF REPORT

This consultancy report was compiled and carried out by IGE Consulting Limited ('IGE') for the client, as defined in the main report (the 'client'), on the basis of a defined programme and scope of works and the terms of a contract between IGE and the client. IGE undertook this with all reasonable skill and care, taking into account the limits of the scope of works required by the client, the prevailing site conditions, the time scale involved and the resources, including financial and manpower resources, agreed between IGE and the client. IGE cannot accept responsibility to any parties whatsoever, following the issue of this report, for any matters arising which may be considered outwith the agreed scope of works.

Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices. This report may not be relied upon, or transferred to, by any other party without the written agreement of its author. If a third party relies on this report, it does so wholly at its own and sole risk and IGE disclaims any liability to such parties.

It is IGE's understanding that this report is to be used for the purpose described in the 'Brief' section of this report. That purpose was a significant factor in determining the scope and the services to be provided. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without IGE's review and advice shall be at the client's sole and own risk.

The information contained in this report is protected by disclosure under Part 3 of the Environmental Information Regulations 2004 pursuant to the provisions of Regulation 12(5) without the consent in writing of a Director of IGE.

This report is a function of the date it was written and should be read in light of any subsequent changes in legislation, statutory requirements and industry practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal

provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of IGE. In the absence of such written advice of IGE, reliance on the report in the future shall be at the client's own and sole risk. Should IGE be requested to review the report in the future, IGE shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between IGE and the client.

The observations and conclusions described in this report are based solely upon the scope of works agreed between the client and IGE. IGE has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report. IGE is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the agreed scope of works. For the avoidance of doubt, this report is strictly limited to the nature of contamination contained within the ground and groundwater at the site. The report does not cover environmental aspects such as air or noise pollution and ground vibrations and the like. In addition, ecological matters relating to wildlife, flora and fauna have not been investigated as part of this report. In particular, the site has not been inspected for the presence or otherwise of invasive species (e.g. Japanese Knotweed). It is recommended that the client appoints a specialist in this subject to carry out a detailed inspection / survey of the site if its presence is suspected. Where mention has been made to the suspected presence asbestos or asbestos-containing materials this is for indicative purposes only and does not constitute or replace full and proper surveys.

Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. The geo-environmental sections are written in broad agreement with BS 10175:2011+A2 2017.

LIMITATIONS OF INVESTIGATION WORK

Desk Study References

This report is based upon IGE's observations of existing physical conditions at the site gained from a walkover survey of the site together with IGE's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. Reliance has been placed on this publicly available data obtained from the sources identified in the main report. When using the information, it has been assumed that it is correct. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst IGE have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified. No responsibility can be accepted for errors within third party items presented in this report. IGE did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services. IGE is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to IGE and including the doing of any independent investigation of the information provided to IGE except when otherwise provided in the terms of the contract between the client and IGE.

Historical Mapping

Historical Ordnance Survey maps do not provide a comprehensive description of a site history. They provide details of the site from a date prior to the publication of the map (i.e. a snapshot in time). The period between map editions can be substantial (i.e. several decades). Not all map series are available for every date range in many areas of the UK and therefore there will be gaps in this mapped record for some sites. Potentially contaminative land uses could have been present and removed during such periods and may therefore not form a part of this particular record. In addition, there will be potentially contaminative land uses which are not identified on the map records such as small scale storage / use of hazardous materials, illegal / unlicensed

waste disposal activities etc. Different map series identify different features utilising different symbols which can result in features that remain on-site being removed from maps. Some features are also not mapped for security reasons (e.g. airfields and other military installations). These areas are mostly shown as blank areas on historical maps.

Site Walkover

During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not be made known or accessible.

Flooding

Flooding in this report is defined as flooding caused by the sea, ditches, rivers, streams, ponds, lakes, reservoirs and the like. It does not extend to flooding caused by surcharged piped drainage systems and investigations into flooding of this nature are excluded from this report.

Extent of Contamination Studies

Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

The conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the reporting in full. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

PLANNING CONTEXT

The National Planning Policy Framework (NPPF, 2019) states that the purpose of the planning system is to contribute to the achievement of sustainable development. In order to do this the planning system has three overarching objectives, one of which directly relates to the potential for pollution and contaminated land:

- *‘environmental objective - to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy’.*

In accordance with this environmental objective, Paragraph 118 clarifies that ‘making effective use of land’ includes to:

- *‘give substantial weight to the value of using suitable brownfield land within settlements for homes and other identified needs, and support appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land’.*

In accordance with this environmental objective, Paragraph 170 clarifies that conserving and enhancing the natural environment includes:

- *‘preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability’; and*
- *‘remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate’.*

Paragraph 178 of the NPPF states that planning policies and decisions for developments should also ensure that:

- *‘a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation)’; and,*

- *'after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990'; and*
- *'adequate site investigation information, prepared by a competent person, is available to inform these assessments'.*

This report has been prepared and authorised by staff that are competent as defined in the NPPF.

CONTAMINATED LAND LEGISLATIVE FRAMEWORK

Environmental risks are assessed in accordance with Contaminated Land (England) (Amendment) Regulations (2012), Part IIA of the Environmental Protection Act 1990, and Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, DEFRA (2012). Part IIA provides a statutory definition of contaminated land. To fall within this definition it is necessary that, as a result of the condition of the land, substances may be present on or under the land such that:

- (a) Significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) Significant pollution of controlled waters is being caused, or there is a significant possibility of such pollution being caused.

Risk from contamination is assessed by consideration of possible linkages between contaminant sources and potential receptors which could be harmed or polluted and the potential pathways between them – known as the Contaminant Linkage. For a risk of pollution or environmental harm to occur as a result of ground contamination, all of the following elements must be present:

- A source – a substance that is capable of causing pollution or harm;
- A receptor – something which could be adversely affected by the contaminant;
- A pathway – a route by which the contaminant can reach the receptor.

If one of these elements is absent there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

The Environment Agency Land Contamination: Risk Management (LCRM 2020) provides the technical framework for structured decision making about land contaminations. LCRM (2020) advocates a phased approach to risk assessment comprising:

- Preliminary Risk Assessment (PRA) – desk study and qualitative assessment;

- Generic Quantitative Risk Assessment (GQRA) – assessment of contaminant concentrations against generic assessment criteria;
- Detailed Quantitative Risk Assessment (DQRA) – detailed site-specific risk assessment and development of site-specific assessment criteria.

Each of these phases follows the same basic steps but adds site specific details and further certainty into the assessment as the stages progress. The basic steps are:

- Hazard Identification and hazard assessment- development or refinement of the source – pathway – receptor conceptual model, and identification of potential pollutant linkages;
- Risk Estimation – qualitative risk estimation predicting magnitude and probability of potential consequences that may arise as a result of a hazard.
- Risk Evaluation – deciding whether a risk is unacceptable.

The key to the classification is that the designation of risk is based upon the consideration of both:

- (a) The magnitude of the potential consequence which takes into account both the potential severity of the hazard and the sensitivity of the receptor;
- (b) The magnitude of probability which takes into account both the presence of the hazard and receptor and the integrity of the pathway.

Generic Quantitative Risk Assessment (GQRA) will utilise generic assessment criteria (GAC) for the purposes of screening allowable concentrations in comparison to the measured site concentrations. The GAC are defined based on the critical receptors identified at the site. Receptors are considered in relation to:

- Human health receptors (e.g. site users) via measured solid concentrations;
- The water environment (e.g. groundwater and surface water) via measured leachate / water concentrations.

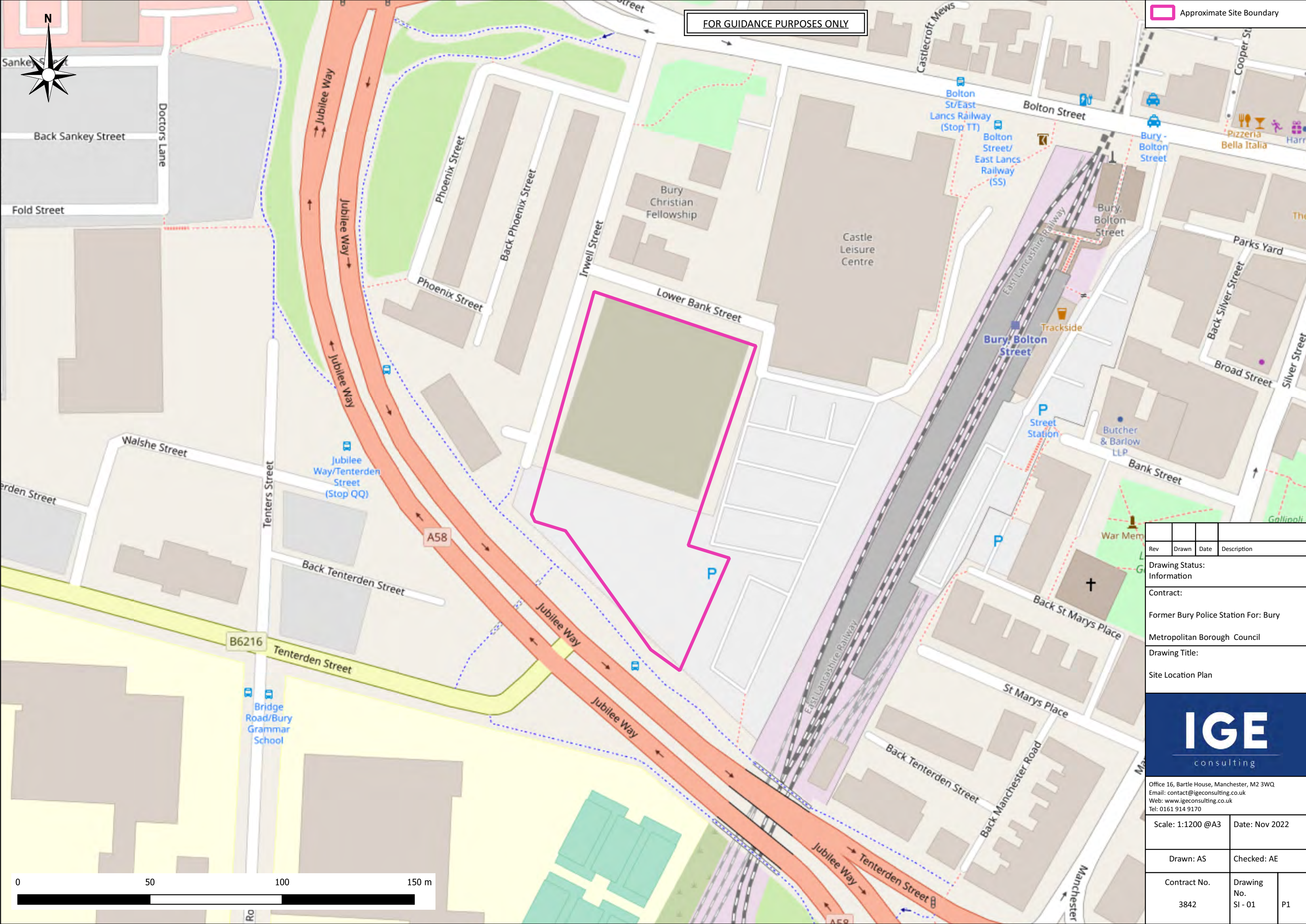
Additional receptors may be relevant dependant on the site e.g. flora/fauna, water supply pipes, buried concrete.

The GAC adopted for assessment of soils in relation to Human Health are based on published Soil Guideline Values (SGV) in 2009 for those compounds for which published criteria are available for varying scenarios (residential, commercial, allotment). In the absence of SGVs the following GAC defining documents are adopted - LQM/CIEH S4ULs (2015), CL:AIRE Soil GAC for Human Health Assessment (2010) and Category 4 Screening Levels (C4SL's) (2014).

GACs for waters must be selected to assess potential risks to the identified environmental receptors. There are numerous UK and European guidelines for waters based on the site situation and different receptors. GACs utilised include - The River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2009 (Part 7: Groundwater Threshold Values), UK Drinking Water Standards (2000), Environmental Quality Standards, World Health Organisation concentrations, Environment Agency guidance concentrations and United States Environmental Protection Agency – Region 9 GACs.

APPENDIX 2

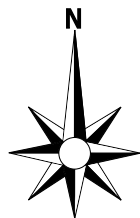
FIGURES AND DRAWINGS



FOR GUIDANCE PURPOSES ONLY

Approximate Site Boundary

Rev	Drawn	Date	Description
Drawing Status: Information			
Contract: Former Bury Police Station For: Bury Metropolitan Borough Council			
Drawing Title: Site Location Plan			
Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:1200 @A3		Date: Nov 2022	
Drawn: AS		Checked: AE	
Contract No. 3842		Drawing No. SI - 01	P1



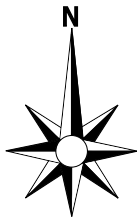
FOR GUIDANCE PURPOSES ONLY

- Approximate Site Boundary
- Existing Electricity Sub-Station
- Area of Former Underground Storage Tanks
- Divisional Police HQ (1973 - 2017)
- Historical St. Mary's Church School (1891 - 1973)
- Historical Buildings of Unknown Use (1910s - 1950s)
- Historical Residential Dwellings (1900s - 1970s)
- Historical Slope (1890s)
- Geological Buried Channel
- E3P Trial Pits 2019
- IGE Trial Pits 2022
- IGE Dynamic Sample Holes 2022



0 10 20 30 40 50 m

Rev	Drawn	Date	Description
Drawing Status: Information			
Contract: Former Bury Police Station			
For: Bury Metropolitan Borough Council			
Drawing Title: Site Features Plan			
IGE consulting			
Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:500 @A3		Date: Nov 2022	
Drawn: AS		Checked: AE	
Contract No. 3842		Drawing No. SI - 02	P2



FOR GUIDANCE PURPOSES ONLY

- Approximate Site Boundary
- Existing Electricity Sub-Station
- Area of Former Underground Storage Tanks
- Divisional Police HQ (1973 - 2017)
- Historical St. Mary's Church School (1891 - 1973)
- Historical Buildings of Unknown Use (1910s - 1950s)
- Historical Residential Dwellings (1900s - 1970s)
- Historical Slope (1890s)
- Geological Burried Channel

0 10 20 30 40 50 m

Rev	Drawn	Date	Description
Drawing Status: Information			
Contract:			
Former Bury Police Station			
For: Bury Metropolitan Borough Council			
Drawing Title:			
Site Features Plan			
IGEconsulting Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:500 @A3		Date: Nov 2022	
Drawn: AS		Checked: AE	
Contract No. 3842		Drawing No. SI - 02	P1

Notes

- 1
- This drawings is indicative and not to scale.
- 2
- This drawing is to be read in conjunction with all relevant Architects and Service Engineers drawings.

Key

- Made Ground
- Topsoil
- Glacial Till – Cohesive
- Glacial Till – Granular Pockets
- Glaciofluvial Sheet Deposits
- Cannel Rock
- Pennine Lower Coal Measures

SOURCES

PATHWAYS

RECEPTORS

Sources

1. On-Site Made Ground
2. On-Site Former Bury Police Station
3. Off-Site Historical and Current Industrial Uses
4. On-Site Former Underground Storage Tanks

Secondary Sources

5. Pooling Beneath Current and / or Future Foundations
6. Pooling in Relative Low Points Above Low Permeability Deposits
7. Pooling within Granular Lenses within Low Permeability Deposits

Ground Gas Sources

1. On-Site Made Ground
2. Off-Site Historical Landfills (149m-468m S/NE/W, 1970s-1990s)
3. Potentially Organic Glaciofluvial Deposits

Pathways To Human Health

1. Dermal Contact
2. Inhalation of Soil Dust and Vapours
3. Ingestion of Soil Directly

Pathways To Controlled Waters

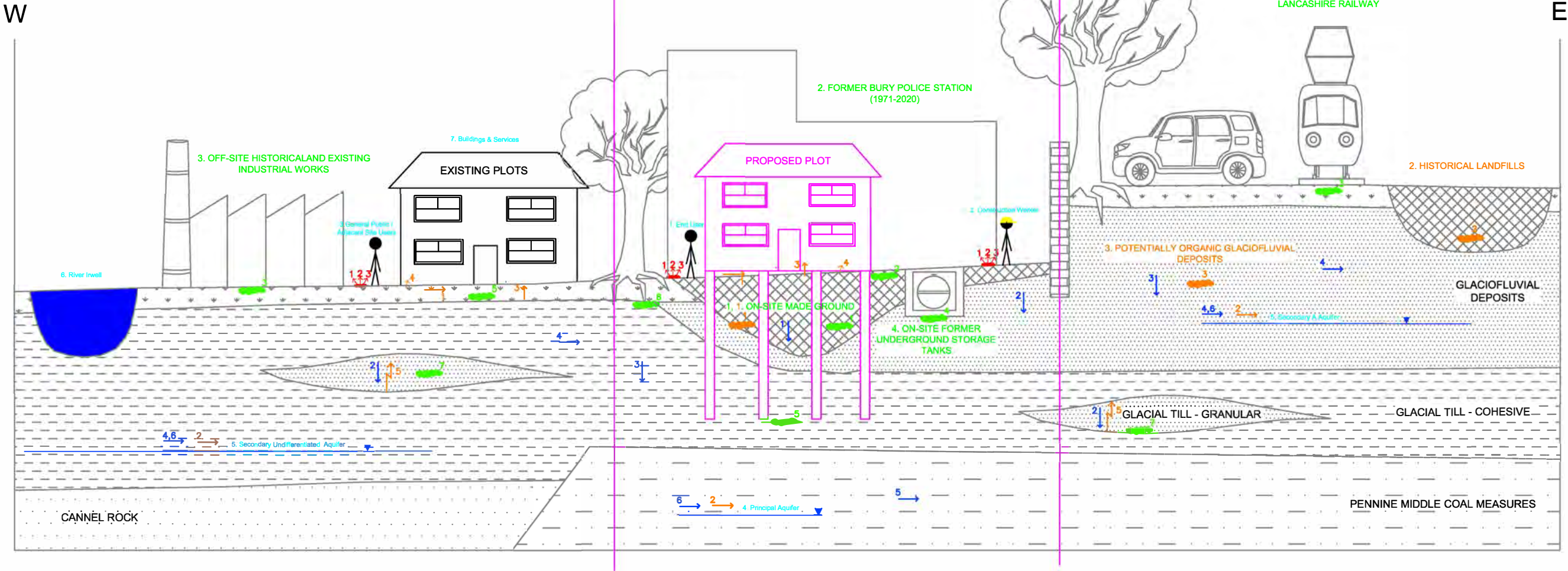
1. Vertical Migration Along Current and Future Foundations
2. Vertical Migration Through Granular Made Ground, Granular Natural Deposits and Granular Lenses Within Natural Cohesive Deposits
3. Negligible Infiltration Through Low Permeability Natural Deposits
4. Lateral Migration Along Low-Permeability Natural Deposits
5. Migration Through Fractures and Fissures in Bedrock
6. Migration Along Groundwater Flow

Ground Gas Pathways

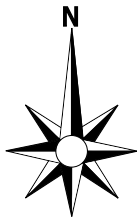
1. Preferential Migration Beneath Hardstanding, Along Foundations, Service Ducts and Trenches
2. Dissolved Gases Within Groundwater
3. Ingress Through Wall Cavities / Floors and Subsequent Accumulation
4. Inhalation of Ground Gas and Vapours
5. Vertical Migration Through Granular Deposits

Receptors

1. End User
2. Construction Workers
3. General Public / Adjacent Site Users
4. Principal Aquifer in Bedrock
5. Secondary A and Undifferentiated Aquifers in Superficial Deposits
6. Surface Water - River Irwell (303m W)
7. Buildings and Services

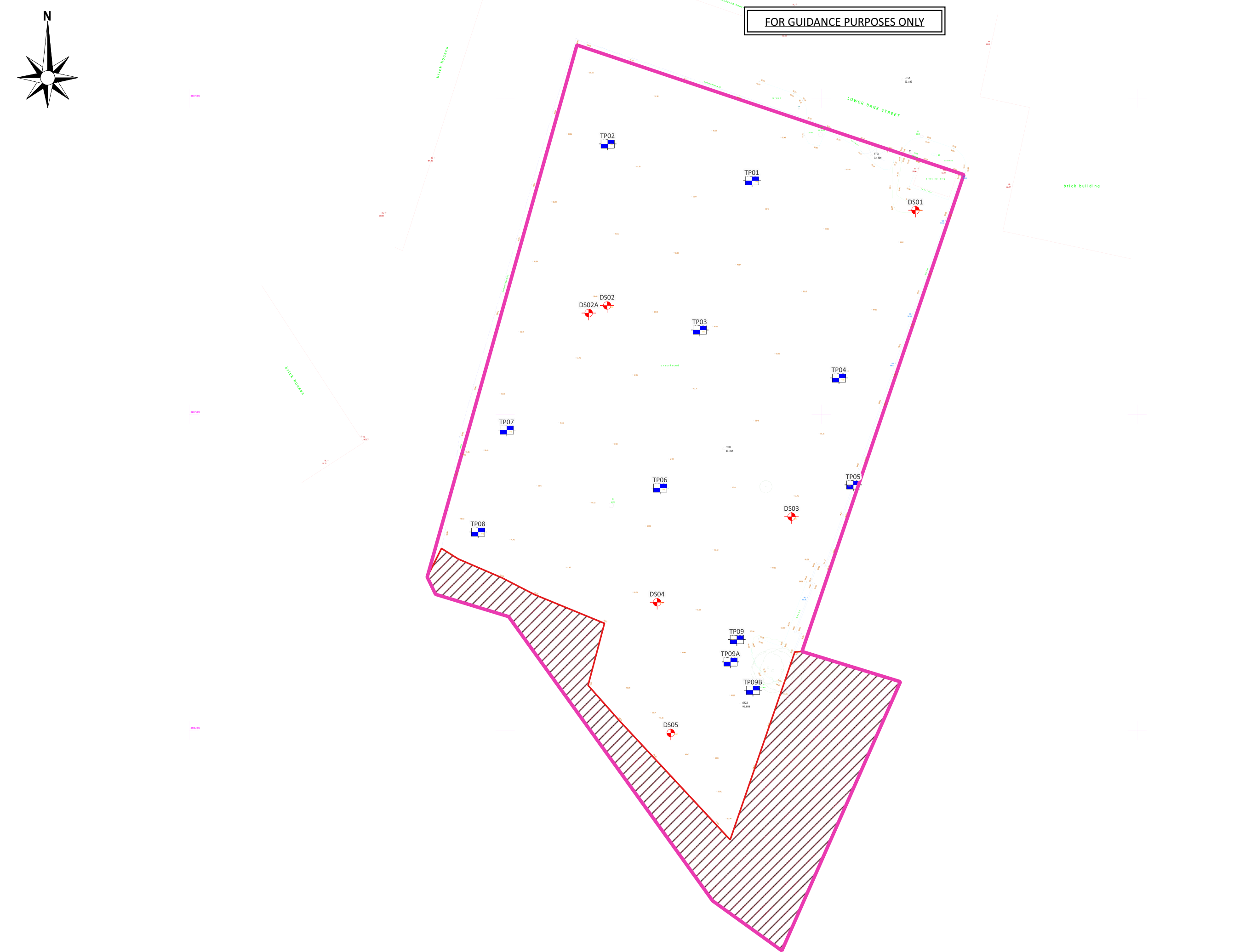


Rev	Drawn	Date	Description
Drawing Status			
INFORMATION			
Contract			
BURY FORMER POLICE STATION			
FOR: BURY METROPOLITAN BOROUGH COUNCIL			
Drawing Title			
CONCEPTUAL SITE MODEL			
IGE consulting			
Office 15, Barile House, Manchester, M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170			
Scale	NTS	Date	DEC 2022
Drawn	AS	Checked	AE
Contract No.	3842	Drawing No.	SI-04 P1

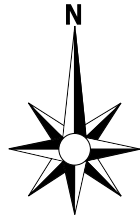


FOR GUIDANCE PURPOSES ONLY

- Approximate Site Boundary
- Inaccessible Area
- IGE Dynamic Sample Holes
- IGE Trial Pits

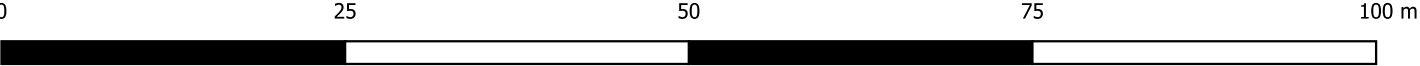
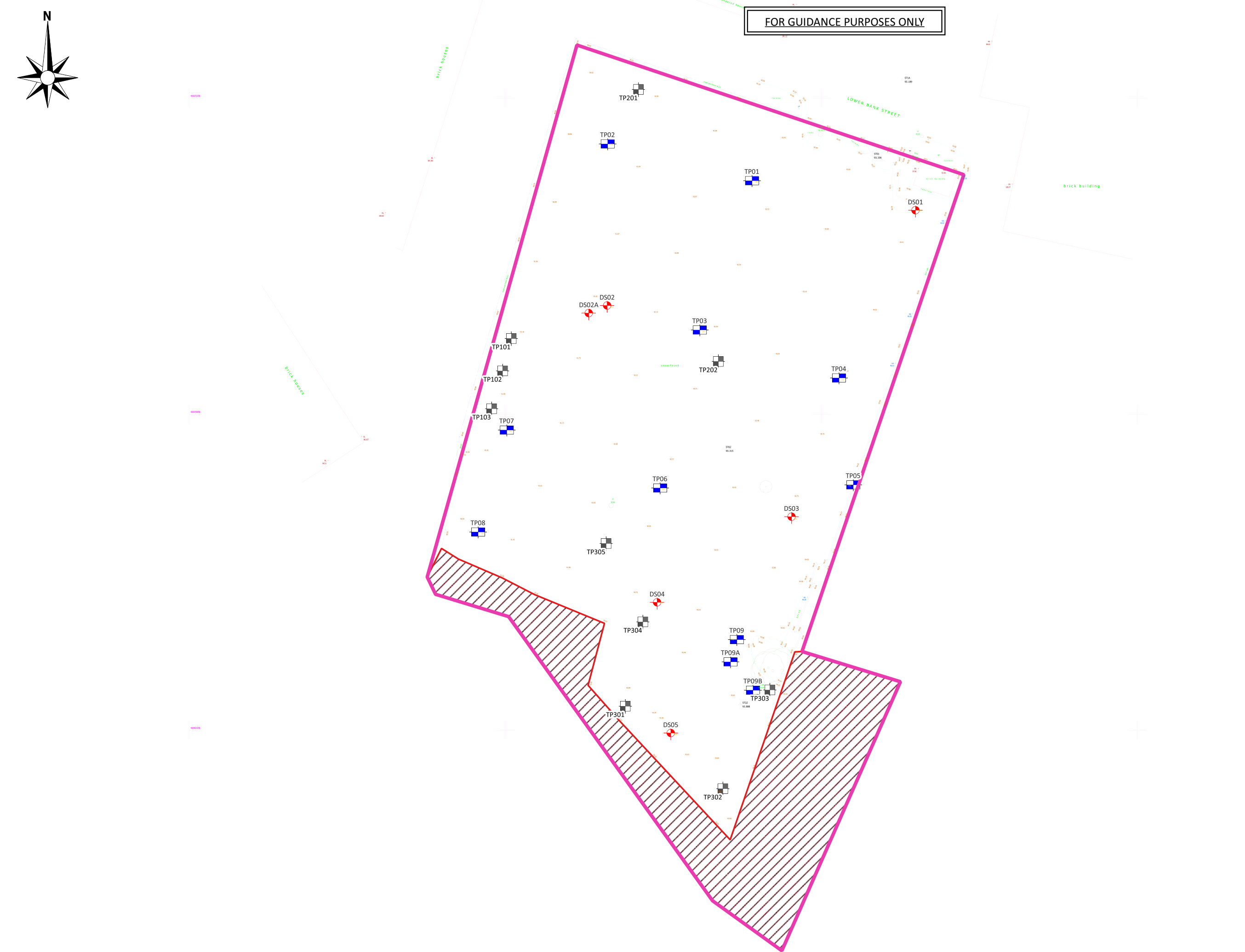


Rev	Drawn	Date	Description
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Contract: Former Bury Police Station			
For: Bury Metropolitan Borough Council			
Drawing Title: Exploratory Hole Location Plan			
IGE consulting			
Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:550 @A3		Date: Dec 2022	
Drawn: AS		Checked: AE	
Contract No. 3842	Drawing No. SI - 05	P1	

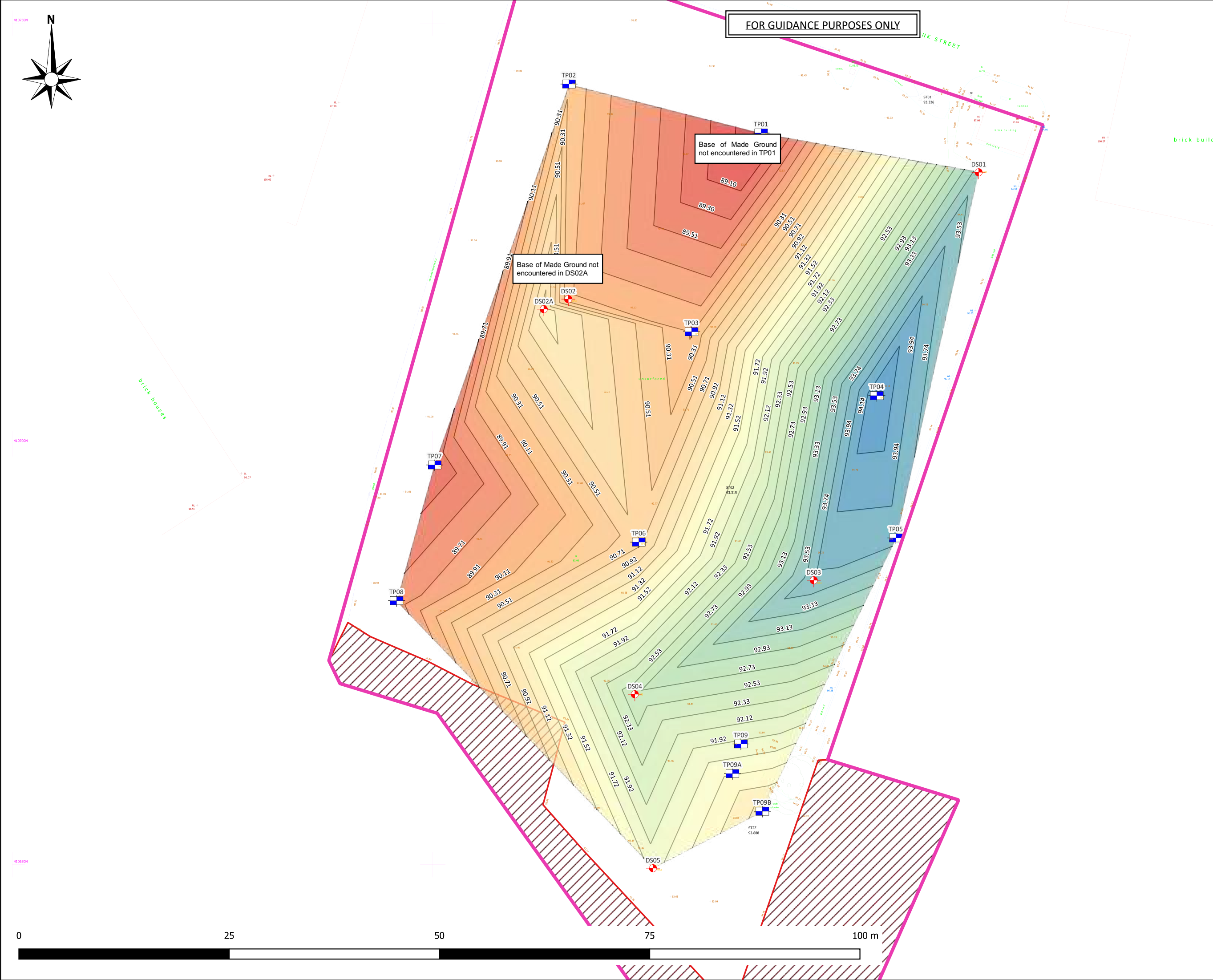


FOR GUIDANCE PURPOSES ONLY

- Approximate Site Boundary
- Inaccessible Area
- IGE Dynamic Sample Holes
- IGE Trial Pits
- E3P Trial Pits 2019



Rev	Drawn	Date	Description
Drawing Status: Information			
Contract: Former Bury Police Station			
For: Bury Metropolitan Borough Council			
Drawing Title: Combined Exploratory Hole Location Plan			
Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:550 @A3		Date: Dec 2022	
Drawn: AS		Checked: AE	
Contract No. 3842	Drawing No. SI - 06	P1	



Approximate Site Boundary

Inaccessible Area

IGE Dynamic Sample Holes

IGE Trial Pits

Made Ground Depth (m AOD)

88.70 - 88.90

88.90 - 89.10

89.10 - 89.30

89.30 - 89.51

89.51 - 89.71

89.71 - 89.91

89.91 - 90.11

90.11 - 90.31

90.31 - 90.51

90.51 - 90.71

90.71 - 90.92

90.92 - 91.12

91.12 - 91.32

91.32 - 91.52

91.52 - 91.72

91.72 - 91.92

91.92 - 92.12

92.12 - 92.33

92.33 - 92.53

92.53 - 92.73

92.73 - 92.93

92.93 - 93.13

93.13 - 93.33

93.33 - 93.53

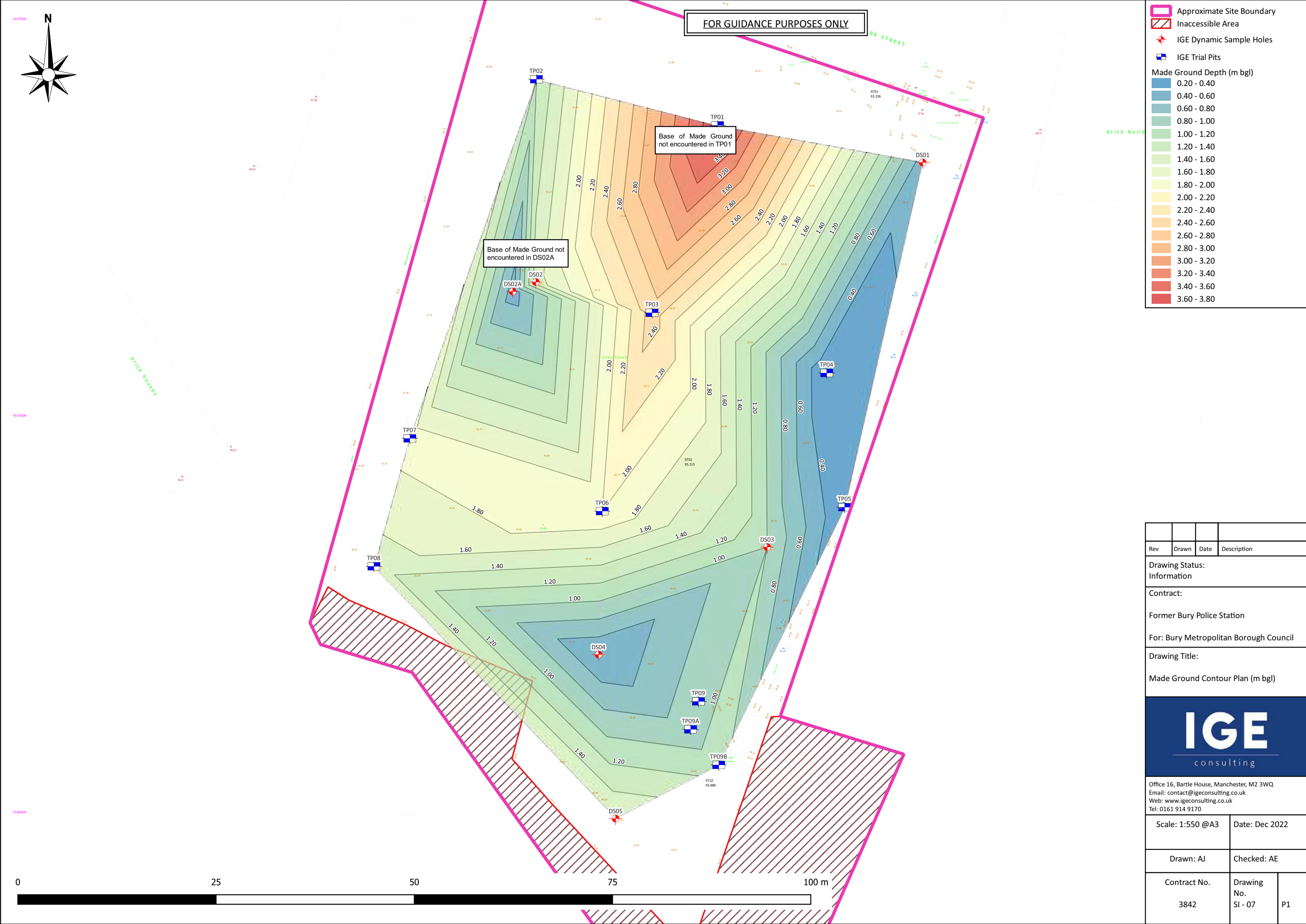
93.53 - 93.74

93.74 - 93.94

93.94 - 94.14

94.14 - 94.34

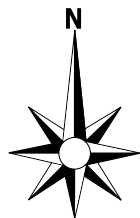
Rev	Drawn	Date	Description
Drawing Status: Information			
Contract:			
Former Bury Police Station			
For: Bury Metropolitan Borough Council			
Drawing Title:			
Made Ground Contour Plan (m AOD)			
IGEconsulting			
Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:550 @A3		Date: Dec 2022	
Drawn: AJ		Checked: AE	
Contract No. 3842		Drawing No. SI - 07	P2



Rev	Drawn	Date	Description
Drawing Status: Information			
Contract:			
Former Bury Police Station			
For: Bury Metropolitan Borough Council			
Drawing Title:			
Made Ground Contour Plan (m bgl)			
IGEconsulting			
Office 16, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:550 @A3		Date: Dec 2022	
Drawn: AJ		Checked: AE	
Contract No. 3842		Drawing No. SI - 07	P1

APPENDIX 3

WALKOVER SURVEY PHOTOGRAPHS AND PHOTOGRAPH LOCATION PLAN



FOR GUIDANCE PURPOSES ONLY

- Approximate Site Boundary
- Site Walkover Photograph Locations



Rev	Drawn	Date	Description
Drawing Status: Information			
Contract: Former Bury Police Station			
For: Bury Metropolitan Borough Council			
Drawing Title: Site Walkover Photograph Location Plan			
IGE consulting			
Office 11, Bartle House, Manchester, M2 3WQ Email: contact@igeconsulting.co.uk Web: www.igeconsulting.co.uk Tel: 0161 914 9170			
Scale: 1:550 @A3		Date: Nov 2022	
Drawn: AS		Checked: AE	
Contract No. 3842	Drawing No. SI - 05	P1	

SITE WALKOVER PHOTOGRAPHS – 31st October 2022



Figure 1 – The site with the concrete slab in the foreground, looking south.



Figure 2 – The eastern site section with the retaining wall as seen from the north, looking south-east.



Figure 3 – The retaining wall along the eastern site boundary, looking south-east.



Figure 4 – The eastern retaining wall, looking east.



Figure 5 – The gated south-eastern site section, with dense vegetation and established trees, looking east.



Figure 6 – The southern site boundary, looking south-west.

SITE WALKOVER PHOTOGRAPHS – 31st October 2022



Figure 7 – The western site boundary, as seen from the southern site section, looking north-west.



Figure 8 – The central site section, as seen from the southern site section, looking north.



Figure 9 – The southwestern site section (old access road) with established trees along the southern site boundary, looking south-west.



Figure 10 – The north-eastern site section, as seen from the central part, looking north-east.



Figure 11 – The western site boundary, looking northwest towards Irwell Street.



Figure 12 – Manholes along the northern site boundary, looking east.

SITE WALKOVER PHOTOGRAPHS – 31st October 2022



Figure 13 – An electricity sub-station adjacent to the northeastern site boundary, looking southeast.



Figure 14 – The eastern site boundary with established trees, as seen from the adjacent off-site car park, looking south.

APPENDIX 4

HISTORICAL ORDNANCE SURVEY MAPS

Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: 1056 Scale Town Plan

Map date: 1849

Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1847
Revised N/A
Edition 1849
Copyright N/A
Levelled N/A



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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1891

Scale: 1:2,500

Printed at: 1:2,500



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

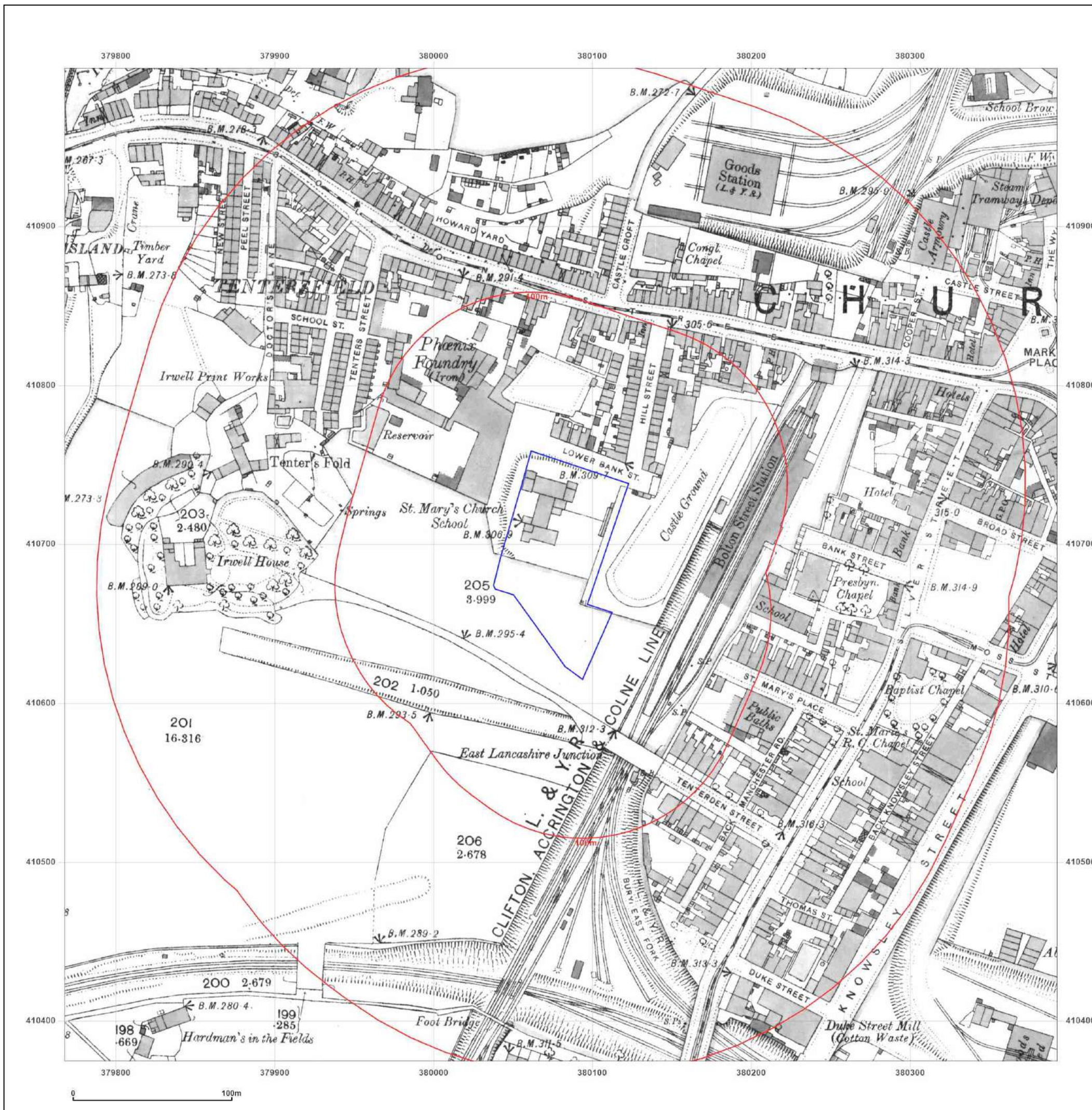


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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series Town Plan

Map date: 1891

Scale: 1:500

Printed at: 1:1,000



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

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

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

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

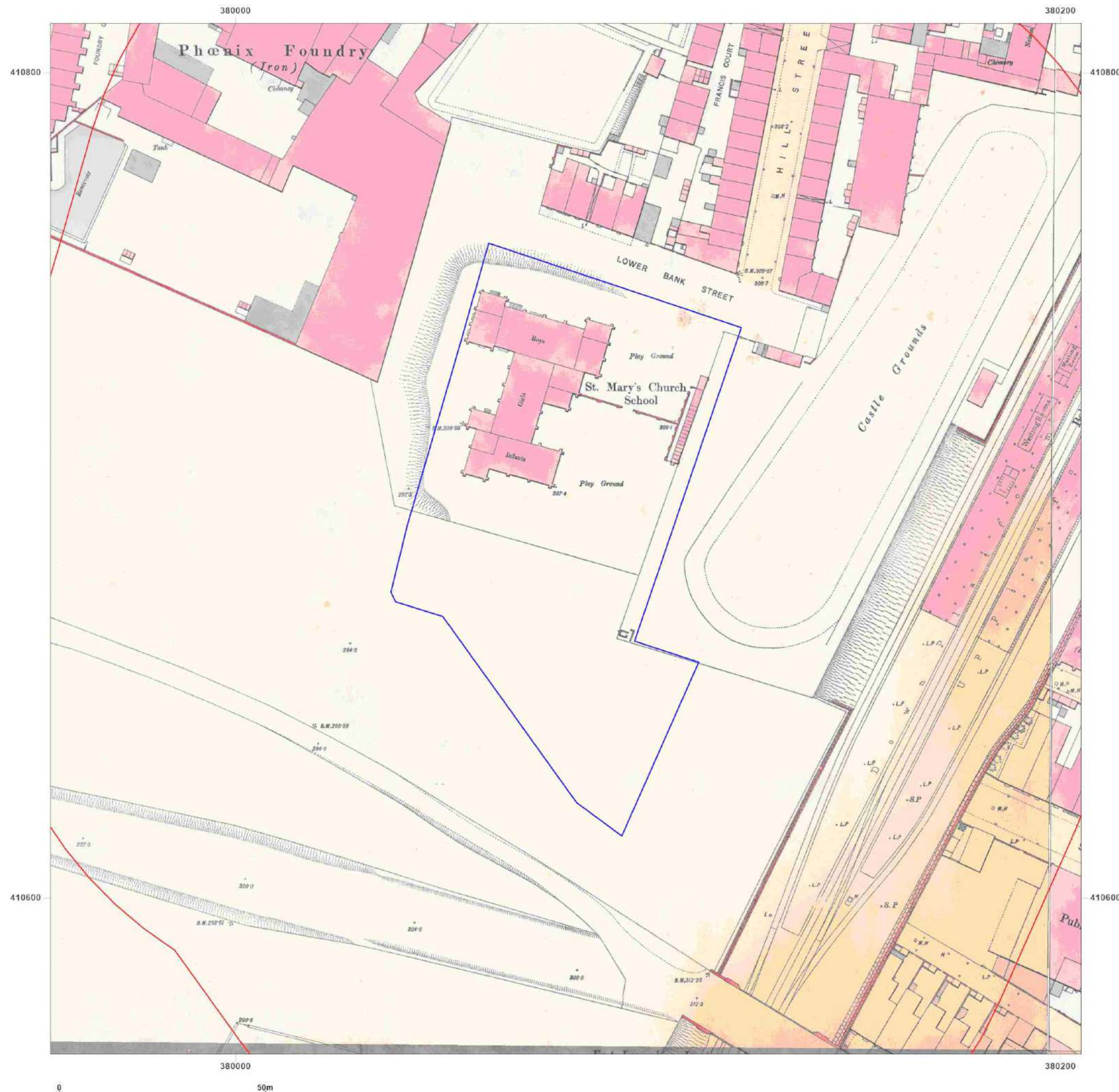


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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1910

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1910
Revised 1910
Edition N/A
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1930

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1930
Revised 1930
Edition N/A
Copyright N/A
Levelled N/A

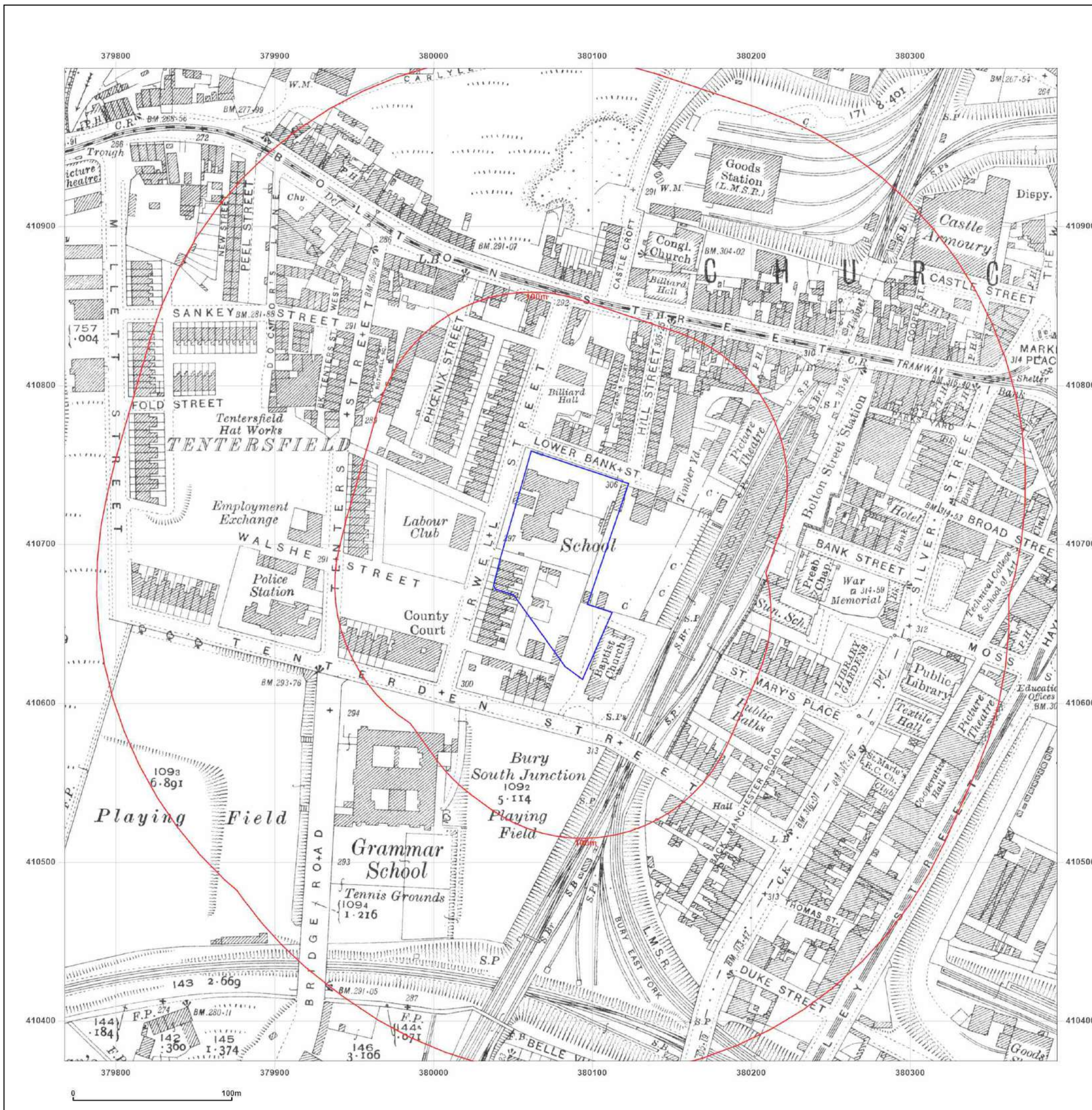


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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1937

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1937
Revised 1937
Edition N/A
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1957

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Levelled 1928

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1928

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1928

Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled 1928

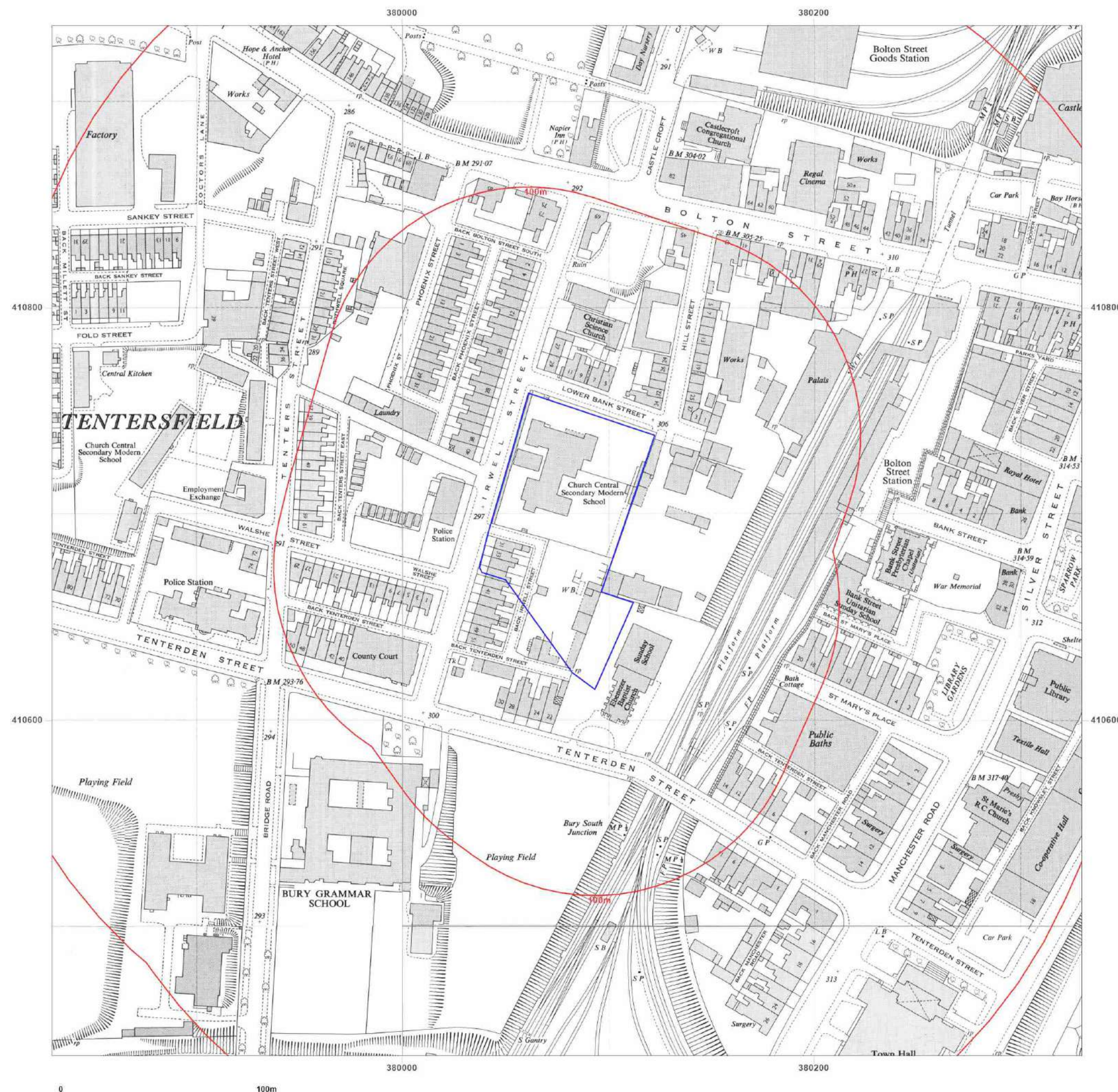


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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1958

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
Revised N/A
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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
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Surveyed N/A
Revised N/A
Edition N/A
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Revised N/A
Edition N/A
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1958-1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1957
Revised 1957
Edition N/A
Copyright 1958
Levelled 1928

Surveyed 1957
Revised 1957
Edition 1959
Copyright 1959
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1969-1973

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
Copyright 1969
Levelled 1963

Surveyed 1957
Revised 1972
Edition N/A
Copyright 1973
Levelled 1963



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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1978

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1978-1980

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1978
Levelled 1963

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

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

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Revised N/A
Edition N/A
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Production date: 09 November 2022

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1982-1984

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1957
Revised 1982
Edition N/A
Copyright 1982
Levelled 1963

Surveyed 1957
Revised 1983
Edition N/A
Copyright 1984
Levelled 1962

Surveyed 1962
Revised 1982
Edition N/A
Copyright 1982
Levelled 1962

Surveyed 1957
Revised 1983
Edition N/A
Copyright 1984
Levelled 1962

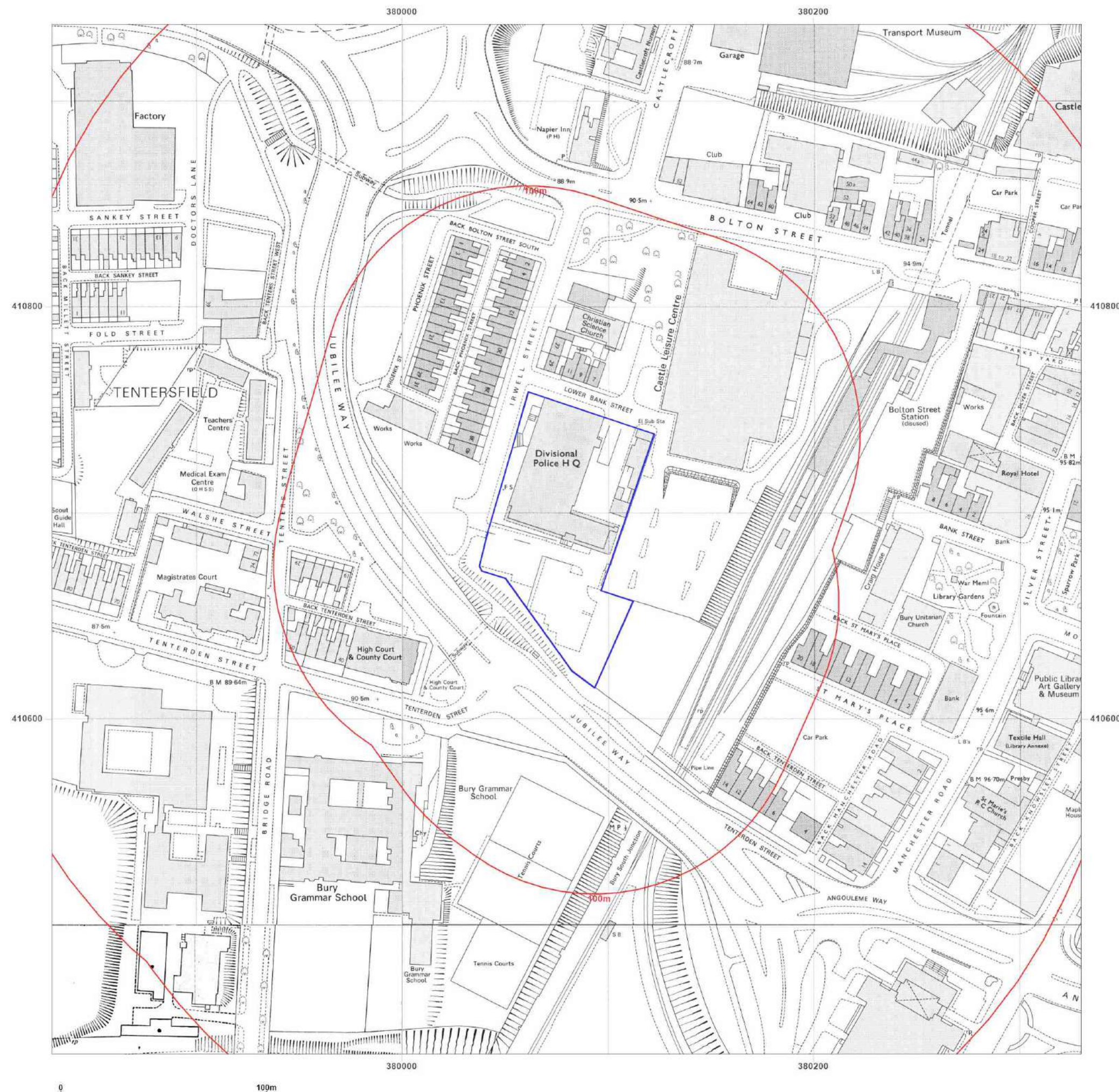


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Production date: 09 November 2022

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www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1992
Revised N/A
Edition N/A
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
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Site Details:

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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1991-1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised 1990
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Surveyed 1992
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1992
Revised 1992
Edition N/A
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Site Details:

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STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1992-1994

Scale: 1:1,250

Printed at: 1:2,000



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Site Details:

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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1991-1994

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1963
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Surveyed 1994
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Site Details:

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STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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Site Details:

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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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Site Details:

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STATION, LOWER BANK
STREET, BURY, BL9 0JW

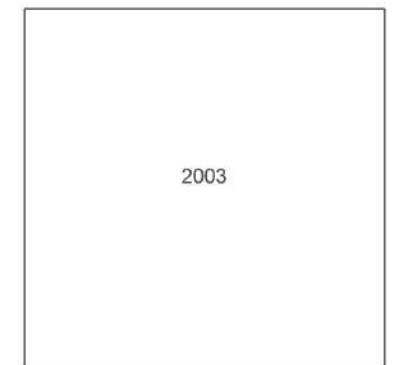
Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1850-1851

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1847
Revised N/A
Edition 1850
Copyright N/A
Levelled N/A

Surveyed 1847
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

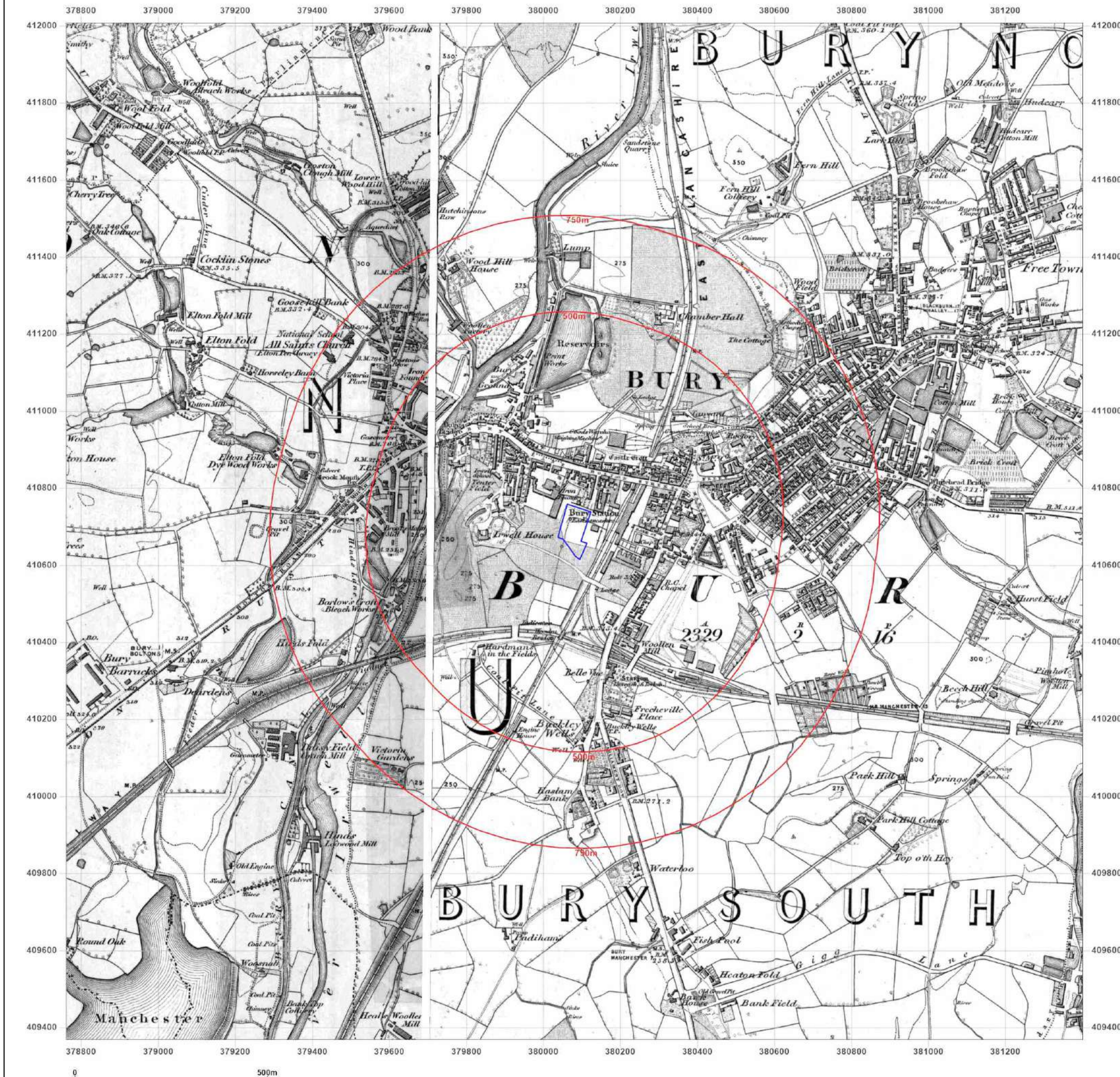


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Production date: 09 November 2022

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Site Details:

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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

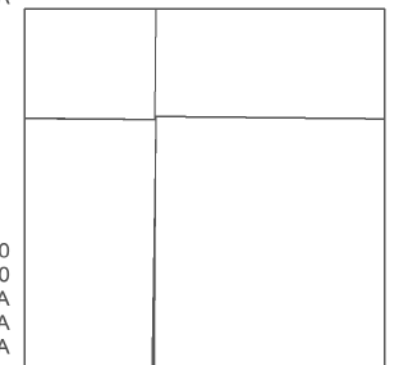
Map date: 1890-1891

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1891
Revised 1891
Edition N/A
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Surveyed 1890
Revised 1890
Edition N/A
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Surveyed 1891
Revised 1891
Edition N/A
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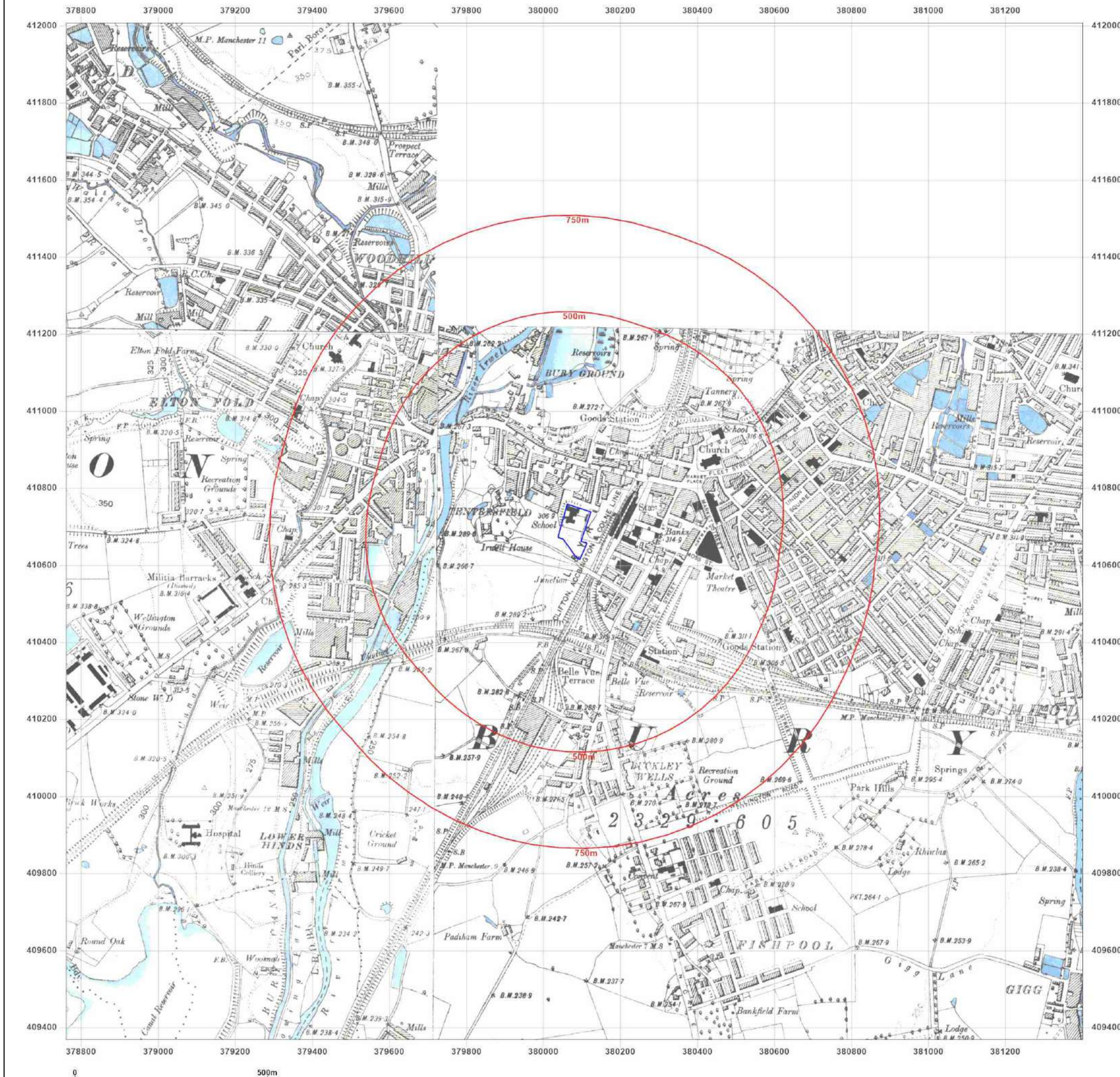


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STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1908-1909

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1909
Edition N/A
Copyright N/A
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Surveyed 1844
Revised 1908
Edition N/A
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Surveyed 1844
Revised 1908
Edition N/A
Copyright N/A
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Surveyed 1844
Revised 1908
Edition N/A
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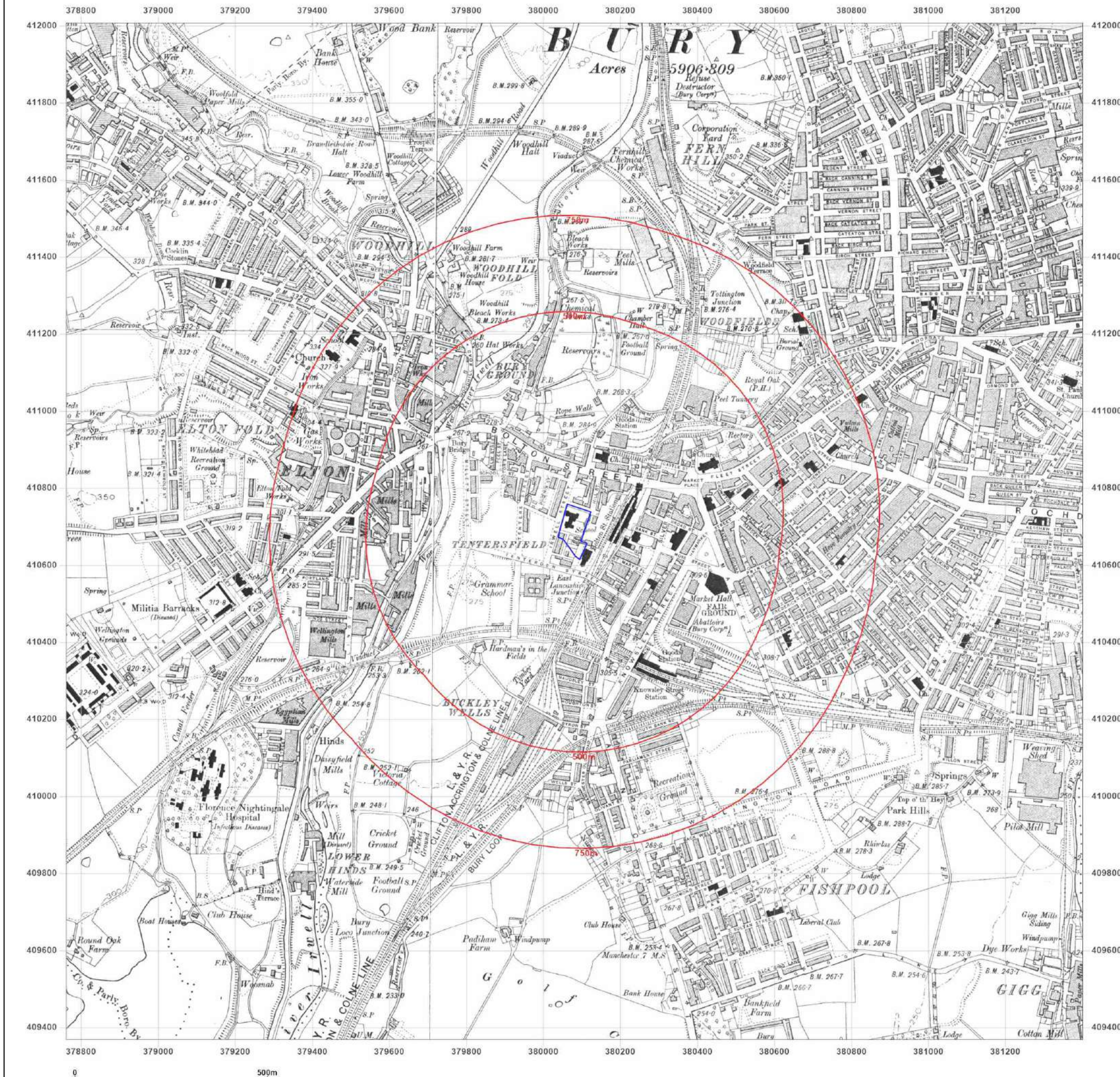


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Site Details:

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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1927-1928

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
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Edition N/A
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Surveyed 1844
Revised 1928
Edition N/A
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Levelled N/A

Surveyed 1844
Revised 1927
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1928
Edition N/A
Copyright N/A
Levelled N/A

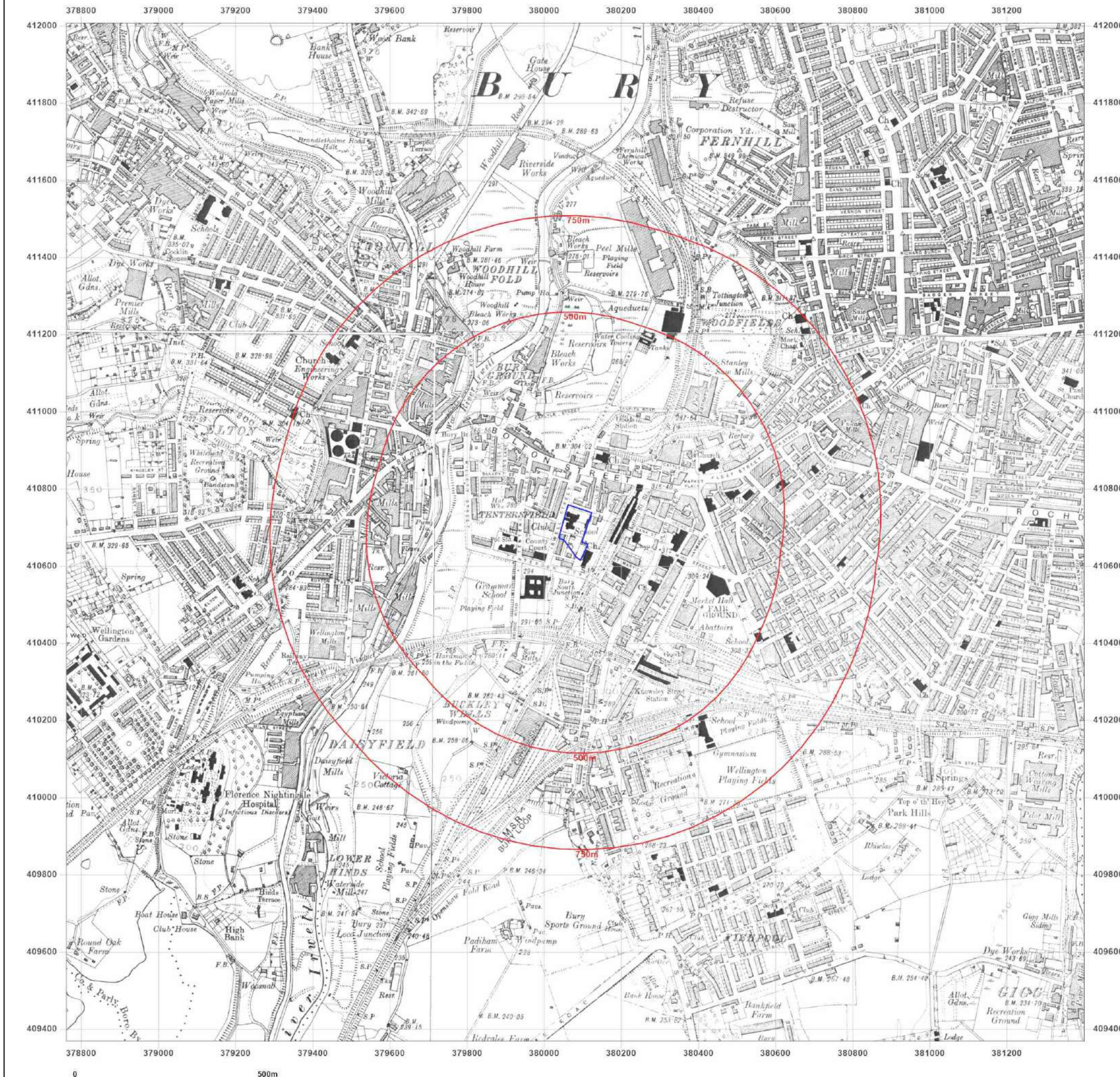


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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1938
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Surveyed 1844
Revised 1938
Edition N/A
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Surveyed 1844
Revised 1938
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

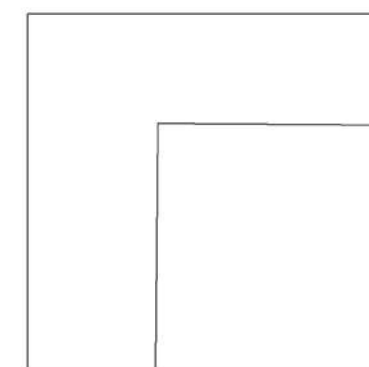
Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1938
Edition N/A
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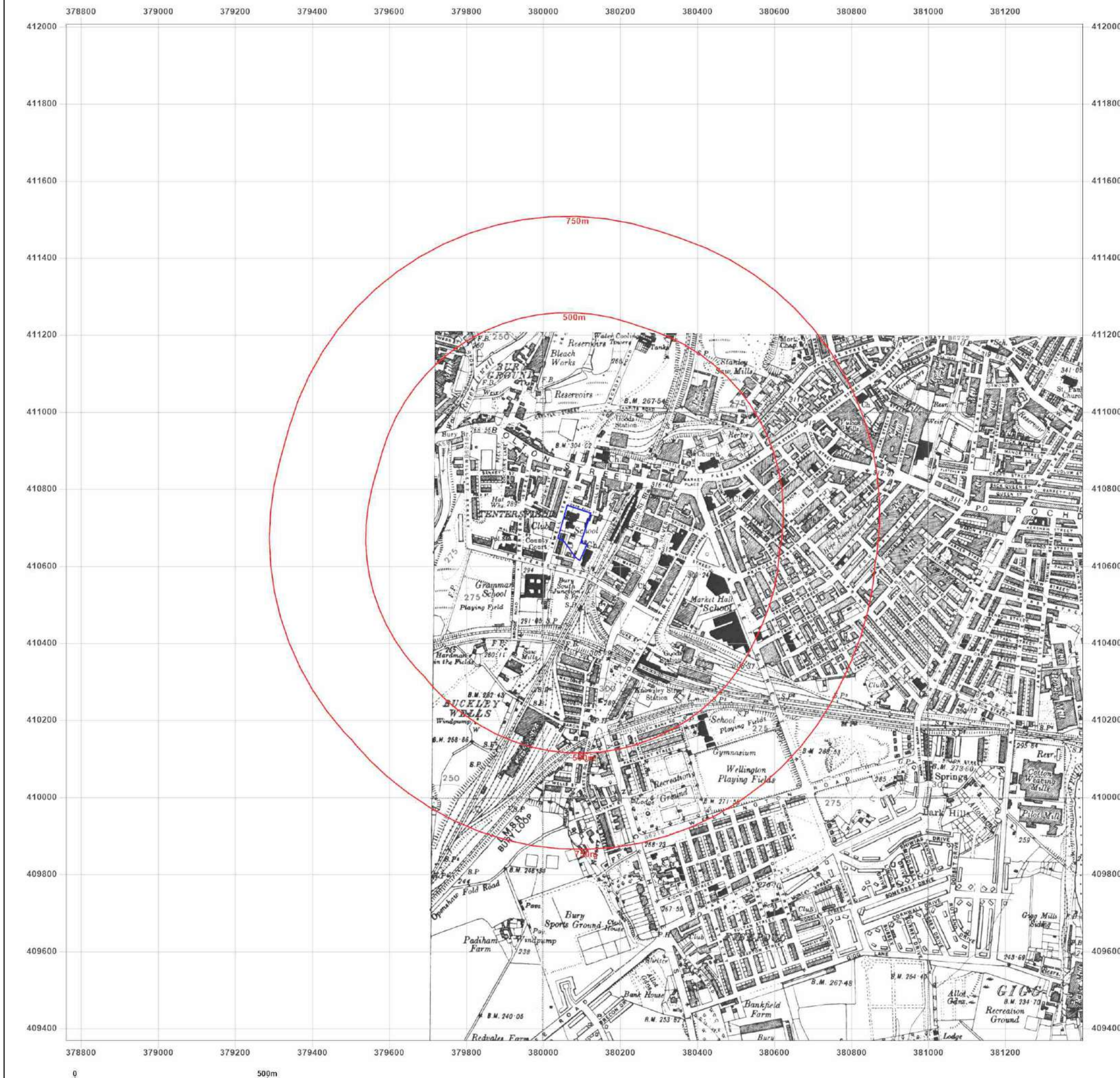


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Site Details:

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STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: Provisional

Map date: 1955-1956

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1949
Revised 1949
Edition N/A
Copyright 1956
Levelled N/A

Surveyed 1949
Revised 1949
Edition N/A
Copyright 1956
Levelled N/A

Surveyed 1950
Revised 1955
Edition 1955
Copyright N/A
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Surveyed 1949
Revised 1955
Edition 1955
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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: Provisional

Map date: 1965-1969

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1969
Revised 1969
Edition N/A
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Site Details:

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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

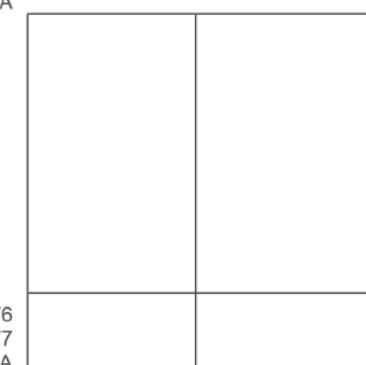
Map date: 1974-1977

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1974
Edition N/A
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Surveyed 1976
Revised 1977
Edition N/A
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Levelled N/A

Surveyed 1974
Revised 1974
Edition N/A
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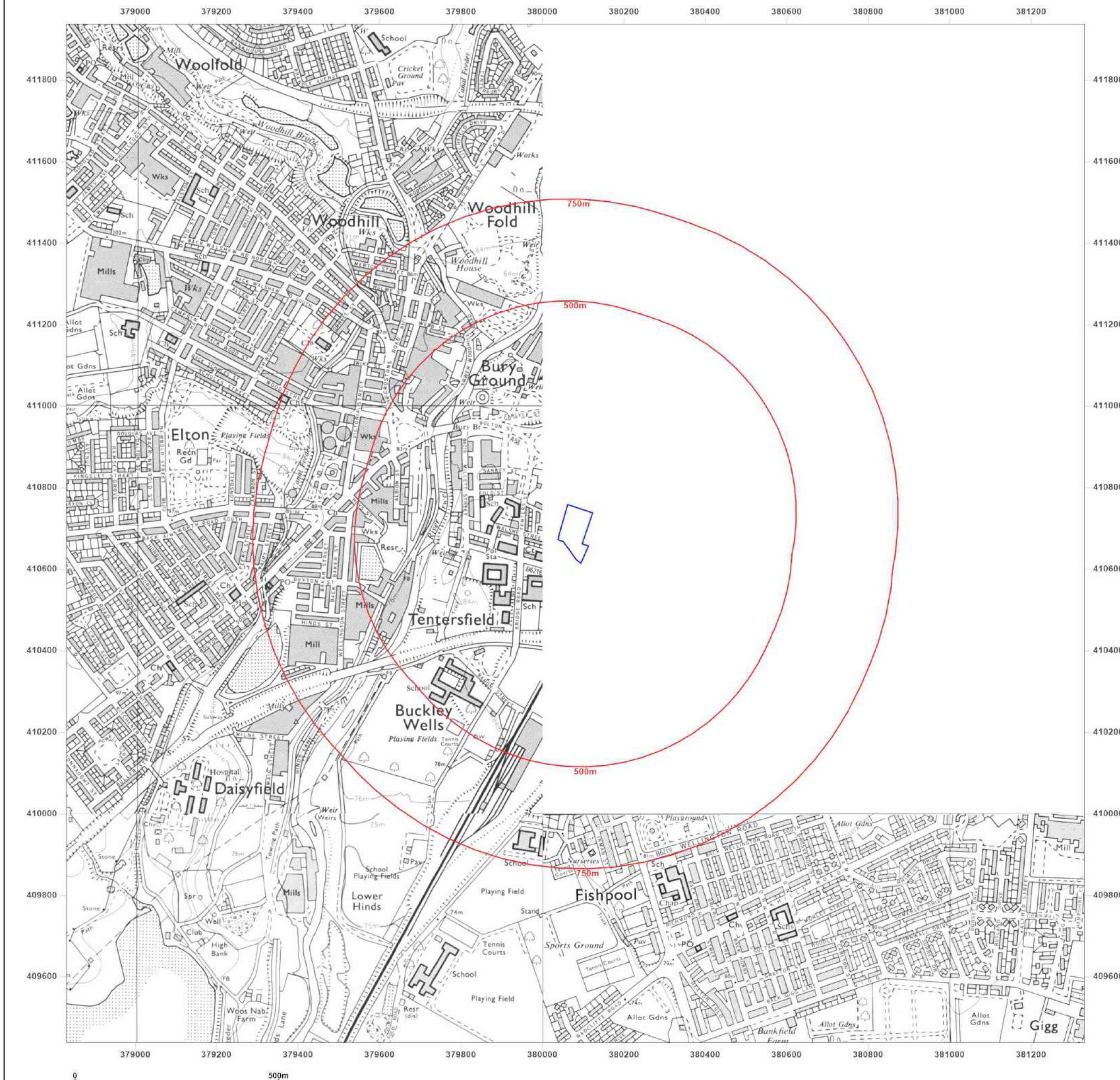


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STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 1980-1983

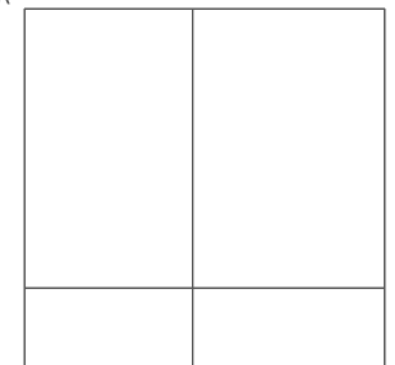
Scale: 1:10,000

Printed at: 1:10,000



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Edition N/A
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Levelled N/A

Surveyed 1977
Revised 1983
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1980
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

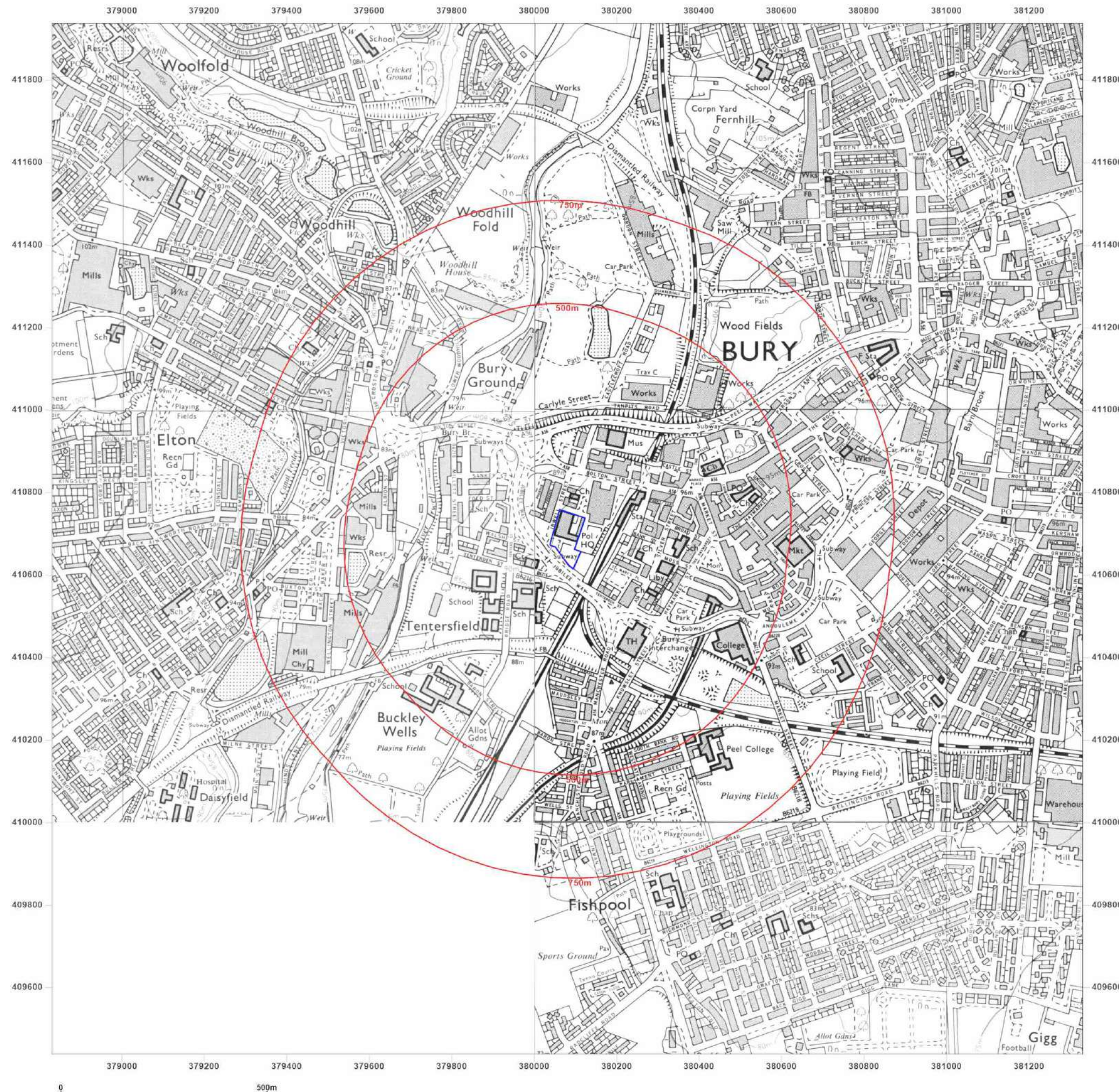


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Site Details:

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STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001

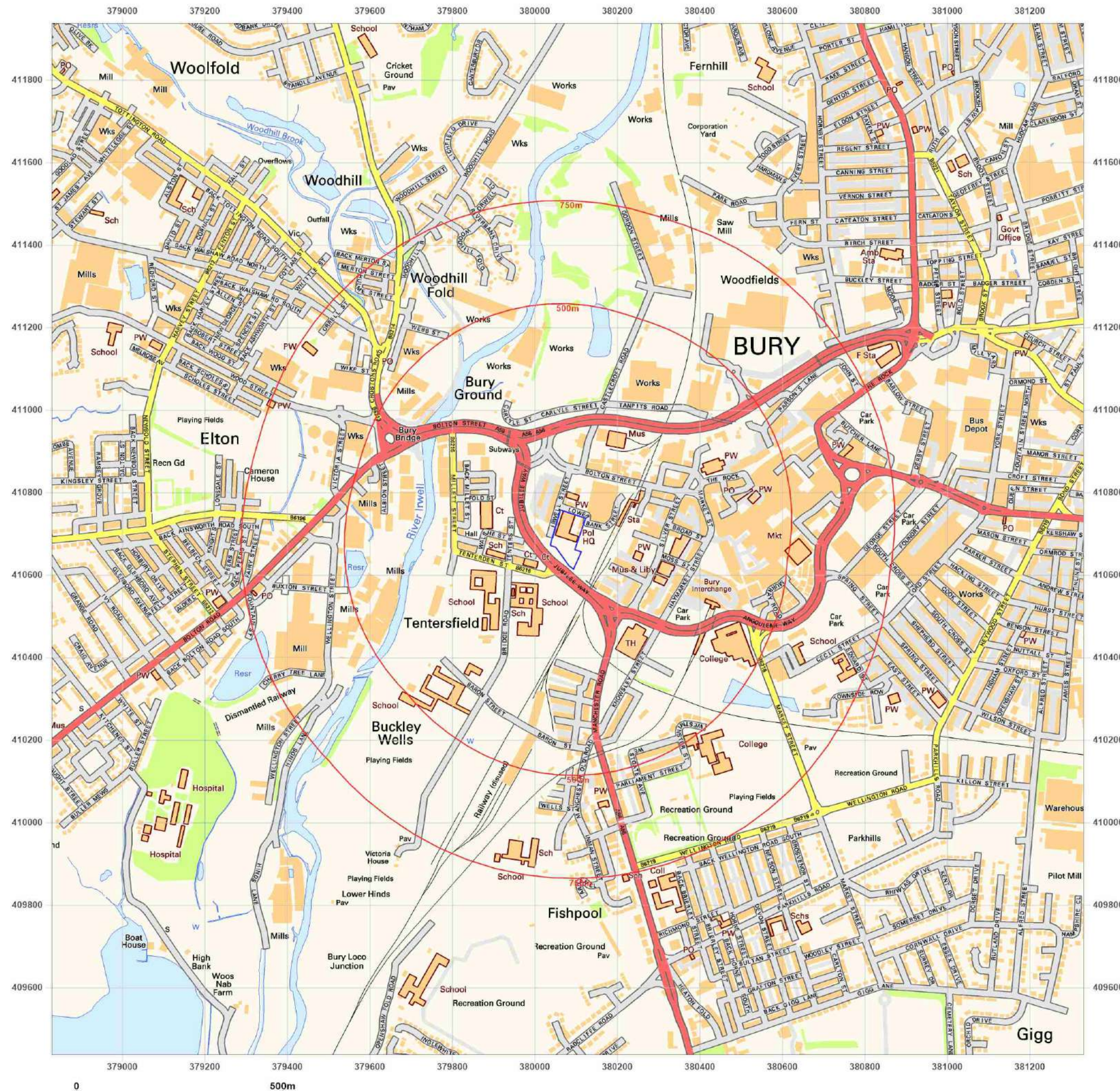


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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

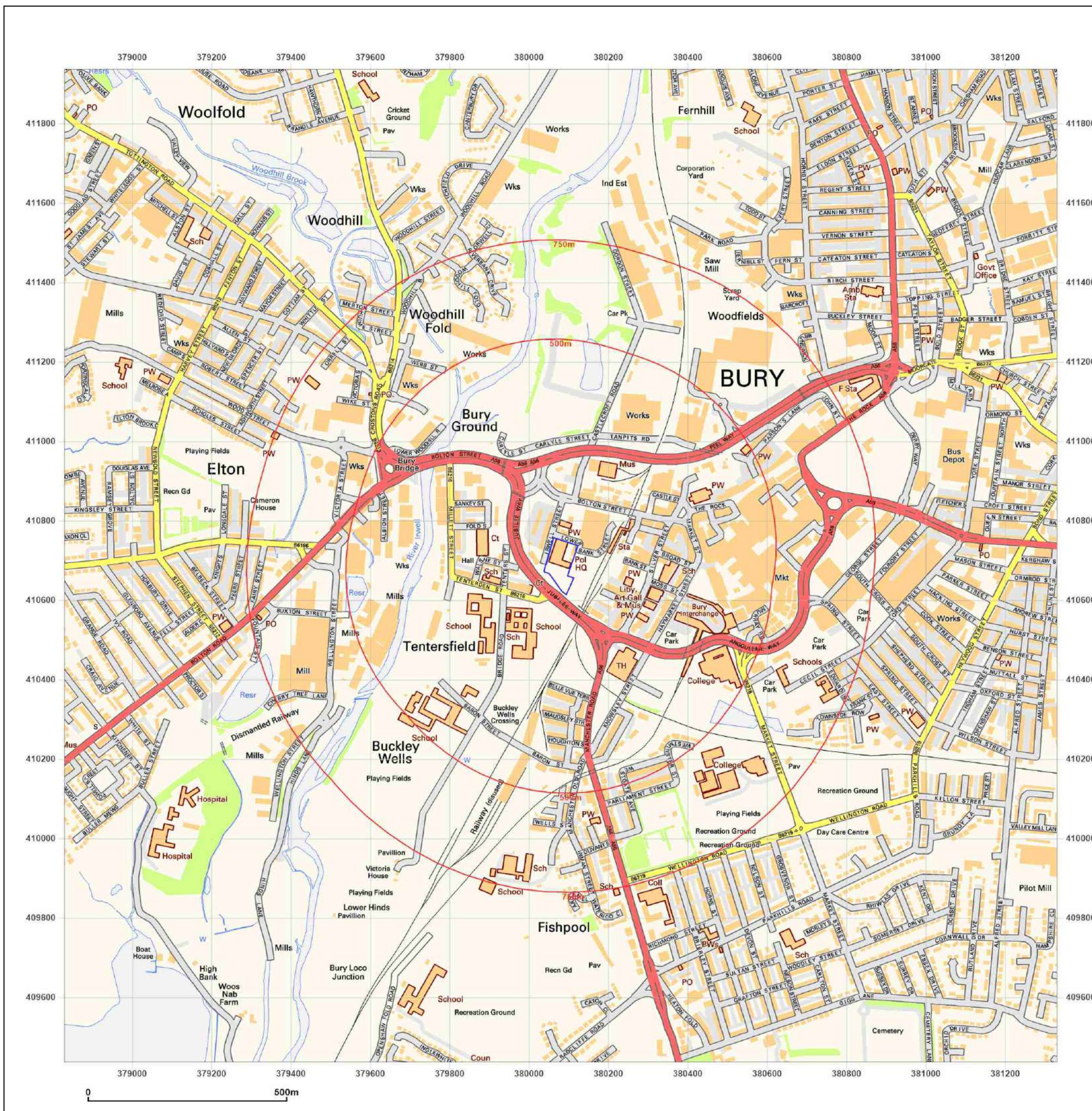


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Site Details:

FORMER BURY POLICE
STATION, LOWER BANK
STREET, BURY, BL9 0JW

Client Ref: 3842
Report Ref: GS-9185288
Grid Ref: 380080, 410687

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000



2022

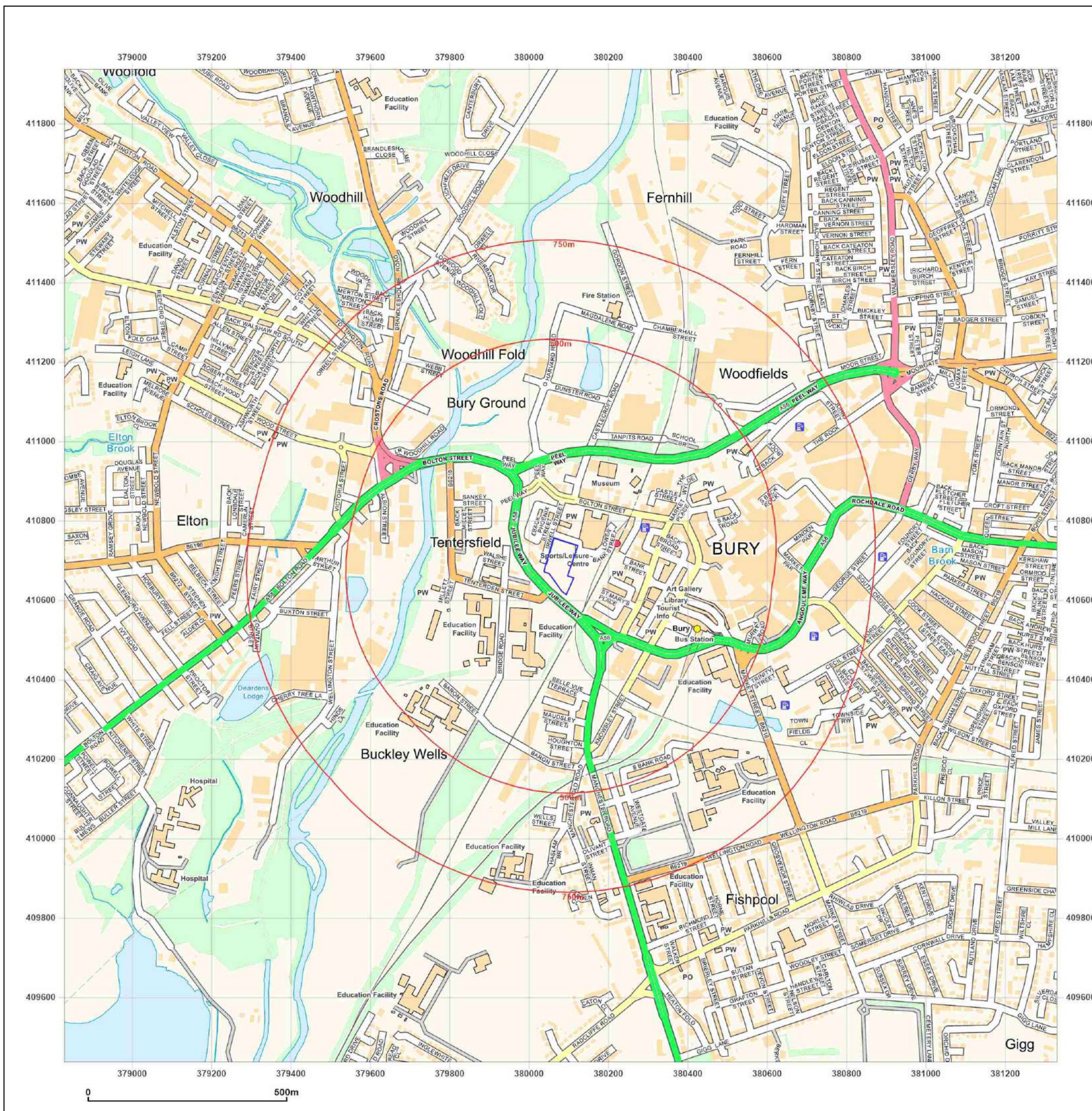


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APPENDIX 5

GROUNDSURE COMBINED ENVIRO AND GEO – INSIGHT REPORT

FORMER BURY POLICE STATION, LOWER BANK STREET, BURY, BL9 0JW

Order Details

Date: 09/11/2022

Your ref: 3842

Our Ref: GS-9185289

Site Details

Location: 380096 410680

Area: 0.7 ha

Authority: [Bury Metropolitan Borough Council](#)



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Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.13 groundsure.com/insightuserguide

Contact us with any questions at:

info@groundsure.com

08444 159 000

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	0	8	59	151	-
22	1.2	Historical tanks	0	1	5	45	-
25	1.3	Historical energy features	1	0	1	16	-
26	1.4	Historical petrol stations	0	0	0	1	-
26	1.5	Historical garages	0	0	6	14	-
27	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
28	2.1	Historical industrial land uses	0	9	93	214	-
40	2.2	Historical tanks	0	2	5	82	-
43	2.3	Historical energy features	3	0	6	44	-
46	2.4	Historical petrol stations	0	0	0	2	-
46	2.5	Historical garages	0	0	10	28	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
48	3.1	Active or recent landfill	0	0	0	0	-
48	3.2	Historical landfill (BGS records)	0	0	0	0	-
49	3.3	Historical landfill (LA/mapping records)	0	0	2	3	-
49	3.4	Historical landfill (EA/NRW records)	0	0	3	2	-
50	3.5	Historical waste sites	0	0	0	6	-
51	3.6	Licensed waste sites	0	0	0	0	-
51	3.7	Waste exemptions	0	0	2	34	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
55	4.1	Recent industrial land uses	0	1	22	-	-
57	4.2	Current or recent petrol stations	0	0	0	2	-
57	4.3	Electricity cables	0	0	0	0	-
58	4.4	Gas pipelines	0	0	0	0	-
58	4.5	Sites determined as Contaminated Land	0	0	0	0	-



58	4.6	<u>Control of Major Accident Hazards (COMAH)</u>	0	0	0	2	-
58	4.7	Regulated explosive sites	0	0	0	0	-
59	4.8	Hazardous substance storage/usage	0	0	0	0	-
59	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
59	4.10	<u>Licensed industrial activities (Part A(1))</u>	0	0	0	3	-
60	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	1	5	-
61	4.12	Radioactive Substance Authorisations	0	0	0	0	-
61	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	3	13	-
63	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
64	4.15	Pollutant release to public sewer	0	0	0	0	-
64	4.16	List 1 Dangerous Substances	0	0	0	0	-
64	4.17	List 2 Dangerous Substances	0	0	0	0	-
64	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	0	6	-
65	4.19	Pollution inventory substances	0	0	0	0	-
65	4.20	Pollution inventory waste transfers	0	0	0	0	-
66	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
67	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
69	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
71	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
72	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
73	5.5	Groundwater vulnerability- local information	None (within 0m)				
74	5.6	<u>Groundwater abstractions</u>	0	0	0	0	9
77	5.7	<u>Surface water abstractions</u>	0	0	0	2	28
84	5.8	Potable abstractions	0	0	0	0	0
84	5.9	Source Protection Zones	0	0	0	0	-
85	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
86	6.1	Water Network (OS MasterMap)	0	0	0	-	-



86	6.2	Surface water features	0	0	0	-	-
87	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
87	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
88	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
89	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
89	7.2	Historical Flood Events	0	0	0	-	-
89	7.3	Flood Defences	0	0	0	-	-
90	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
90	7.5	Flood Storage Areas	0	0	0	-	-
91	7.6	Flood Zone 2	None (within 50m)				
91	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
92	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
94	9.1	<u>Groundwater flooding</u>	Moderate (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
95	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
96	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
96	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
96	10.4	Special Protection Areas (SPA)	0	0	0	0	0
96	10.5	National Nature Reserves (NNR)	0	0	0	0	0
97	10.6	<u>Local Nature Reserves (LNR)</u>	0	0	0	0	2
97	10.7	Designated Ancient Woodland	0	0	0	0	0
97	10.8	Biosphere Reserves	0	0	0	0	0
97	10.9	Forest Parks	0	0	0	0	0
98	10.10	Marine Conservation Zones	0	0	0	0	0
98	10.11	<u>Green Belt</u>	0	0	0	0	4
98	10.12	Proposed Ramsar sites	0	0	0	0	0



98	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
99	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
99	10.15	Nitrate Sensitive Areas	0	0	0	0	0
99	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
100	10.17	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
101	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
102	11.1	World Heritage Sites	0	0	0	-	-
103	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
103	11.3	National Parks	0	0	0	-	-
103	11.4	<u>Listed Buildings</u>	0	0	16	-	-
104	11.5	<u>Conservation Areas</u>	0	1	0	-	-
105	11.6	<u>Scheduled Ancient Monuments</u>	0	0	1	-	-
105	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
106	12.1	<u>Agricultural Land Classification</u>	Urban (within 250m)				
107	12.2	Open Access Land	0	0	0	-	-
107	12.3	Tree Felling Licences	0	0	0	-	-
107	12.4	Environmental Stewardship Schemes	0	0	0	-	-
107	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
108	13.1	<u>Priority Habitat Inventory</u>	0	0	1	-	-
109	13.2	Habitat Networks	0	0	0	-	-
109	13.3	Open Mosaic Habitat	0	0	0	-	-
109	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
110	14.1	<u>10k Availability</u>	Identified (within 500m)				
111	14.2	<u>Artificial and made ground (10k)</u>	0	3	9	7	-
113	14.3	<u>Superficial geology (10k)</u>	2	1	5	6	-



114	14.4	Landslip (10k)	0	0	0	0	-
115	14.5	<u>Bedrock geology (10k)</u>	1	3	1	4	-
116	14.6	<u>Bedrock faults and other linear features (10k)</u>	1	2	2	5	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
117	15.1	<u>50k Availability</u>	Identified (within 500m)				
118	15.2	<u>Artificial and made ground (50k)</u>	0	0	1	1	-
119	15.3	Artificial ground permeability (50k)	0	0	-	-	-
120	15.4	<u>Superficial geology (50k)</u>	2	0	4	5	-
121	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
121	15.6	Landslip (50k)	0	0	0	0	-
122	15.7	Landslip permeability (50k)	None (within 50m)				
123	15.8	<u>Bedrock geology (50k)</u>	1	1	1	3	-
124	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
124	15.10	<u>Bedrock faults and other linear features (50k)</u>	1	1	2	4	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
126	16.1	<u>BGS Boreholes</u>	0	0	13	-	-
Page	Section	Natural ground subsidence					
128	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
130	17.2	<u>Running sands</u>	Very low (within 50m)				
132	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
133	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
134	17.5	<u>Landslides</u>	Very low (within 50m)				
136	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
138	18.1	Natural cavities	0	0	0	0	-
139	18.2	BritPits	0	0	0	0	-
139	18.3	<u>Surface ground workings</u>	0	1	34	-	-
140	18.4	<u>Underground workings</u>	0	0	0	0	3
141	18.5	Historical Mineral Planning Areas	0	0	0	0	-



141	18.6	Non-coal mining	0	0	0	0	0
<u>141</u>	<u>18.7</u>	<u>Mining cavities</u>	0	0	0	0	1
142	18.8	JPB mining areas	None (within 0m)				
<u>142</u>	<u>18.9</u>	<u>Coal mining</u>	Identified (within 0m)				
142	18.10	Brine areas	None (within 0m)				
143	18.11	Gypsum areas	None (within 0m)				
143	18.12	Tin mining	None (within 0m)				
143	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<u>144</u>	<u>19.1</u>	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<u>145</u>	<u>20.1</u>	<u>BGS Estimated Background Soil Chemistry</u>	2	10	-	-	-
146	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
146	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
147	21.1	Underground railways (London)	0	0	0	-	-
147	21.2	Underground railways (Non-London)	0	0	0	-	-
<u>148</u>	<u>21.3</u>	<u>Railway tunnels</u>	0	0	1	-	-
<u>148</u>	<u>21.4</u>	<u>Historical railway and tunnel features</u>	0	14	58	-	-
151	21.5	Royal Mail tunnels	0	0	0	-	-
<u>151</u>	<u>21.6</u>	<u>Historical railways</u>	0	0	1	-	-
<u>151</u>	<u>21.7</u>	<u>Railways</u>	0	5	56	-	-
154	21.8	Crossrail 1	0	0	0	0	-
154	21.9	Crossrail 2	0	0	0	0	-
154	21.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 23/05/2019

Site Area: 0.7ha



Recent site history - 2011 aerial photograph



Capture Date: 02/05/2011

Site Area: 0.7ha



Recent site history - 2001 aerial photograph



Capture Date: 07/05/2001

Site Area: 0.7ha



Recent site history - 2000 aerial photograph



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Capture Date: 27/06/2000

Site Area: 0.7ha



Recent site history - 1999 aerial photograph



Capture Date: 10/09/1999

Site Area: 0.7ha



OS MasterMap site plan

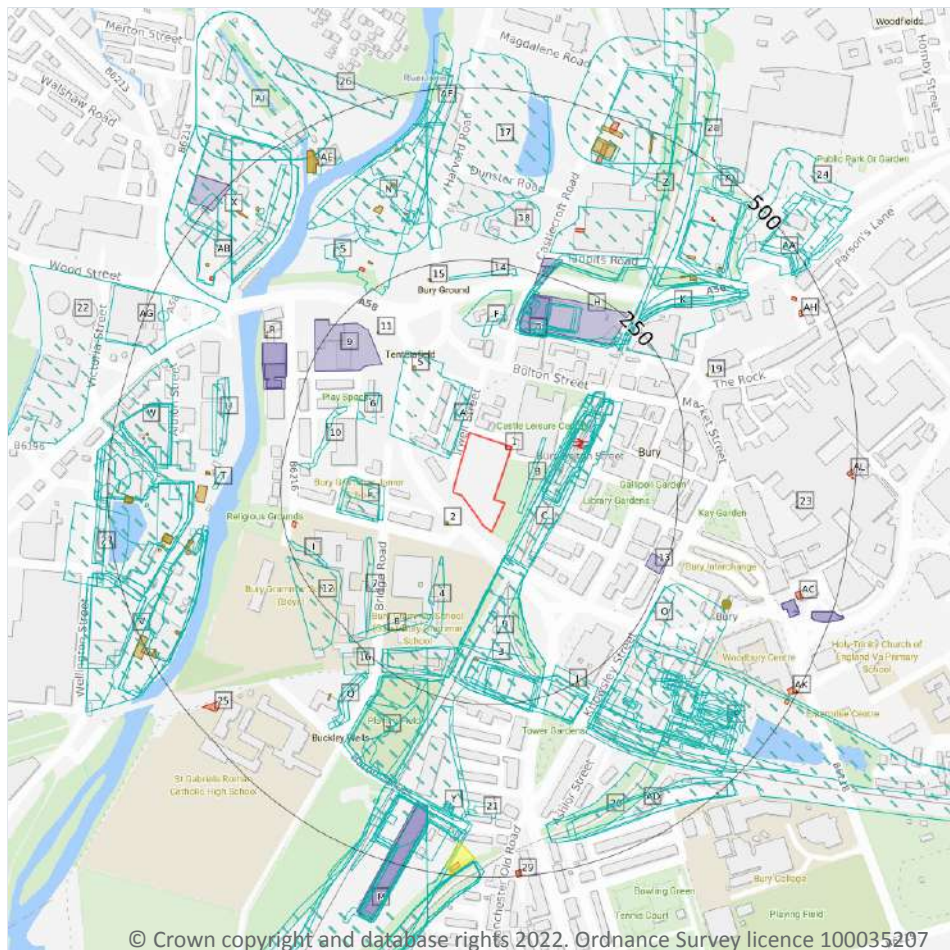


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Site Area: 0.7ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical petrol stations
- Historical garages

1.1 Historical industrial land uses

Records within 500m

218

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
A	14m NW	Police Station	1967	680444



ID	Location	Land use	Dates present	Group ID
A	15m NW	Iron Foundry	1851	683056
B	22m SE	Railway Sidings	1851	641526
C	31m SE	Railway Sidings	1967 - 1983	738242
B	35m SE	Railway Sidings	1956	765595
B	35m SE	Railway Sidings	1851	767367
3	39m S	Railway Sidings	1891 - 1938	745623
D	39m S	Cuttings	1891	762473
D	51m S	Cuttings	1956 - 1967	738420
B	55m E	Railway Station	1956	768551
B	56m E	Railway Station	1908 - 1938	788801
B	57m E	Railway Station	1967	747305
B	60m E	Railway Station	1891	773134
C	63m SE	Railway Building	1851	669846
B	71m E	Railway Station	1851	758271
4	74m SW	Unspecified Ground Workings	1908	648129
B	76m E	Railway Station	1983	753891
D	84m S	Cuttings	1851	774242
D	93m S	Railway Sidings	1956 - 1967	765766
E	99m W	Police Station	1956	773372
E	106m W	Police Station	1928 - 1938	708115
E	109m W	Police Station	1969 - 1974	764108
D	114m S	Railway Building	1956	669845
B	119m NE	Railway Building	1851	669852
6	133m NW	Hat Works	1908 - 1938	753686
7	137m SW	Unspecified Ground Workings	1908	648127
F	140m N	Unspecified Ground Workings	1908	648125
8	149m S	Unspecified Pit	1891	691010
F	154m N	Refuse Heap	1928	677986

ID	Location	Land use	Dates present	Group ID
G	159m N	Railway Building	1908	759053
G	159m N	Railway Sidings	1908	764894
G	162m N	Railway Sidings	1956 - 1967	749849
G	162m N	Railway Building	1956 - 1967	787289
G	163m N	Railway Sidings	1928	699340
H	163m N	Railway Sidings	1938	752531
G	168m N	Railway Sidings	1851 - 1891	759352
D	175m S	Cuttings	1956	705879
D	176m S	Cuttings	1891 - 1938	757141
G	178m N	Goods Warehouse	1851	680002
10	179m NW	Unspecified Ground Workings	1908	648126
G	180m NE	Goods Station	1956 - 1967	727680
D	181m S	Cuttings	1851	703289
G	182m N	Goods Station	1891 - 1938	742162
D	182m S	Cuttings	1891	760018
D	186m S	Cuttings	1983	722520
G	188m N	Weighing Machine	1851	656619
D	189m S	Cuttings	1967	726854
G	190m N	Railway Building	1908 - 1938	735568
G	191m N	Railway Building	1956 - 1967	777577
D	192m S	Cuttings	1969 - 1980	748529
D	195m S	Cuttings	1908 - 1938	726618
D	195m S	Cuttings	1956	717327
12	201m SW	Unspecified Pit	1969 - 1980	773197
G	206m N	Railway Building	1891	776625
I	211m SW	Unspecified Ground Workings	1908	648128
G	214m NE	Railway Building	1908 - 1928	779059
J	214m S	Woollen Mill	1851	670979



ID	Location	Land use	Dates present	Group ID
K	217m NE	Unspecified Commercial/Industrial	1956 - 1967	722632
14	223m N	Rope Walk	1908	641252
L	224m S	Sawmills	1928 - 1938	696865
J	225m S	Cuttings	1967	764234
L	231m S	Sawmills	1956	698663
K	232m NE	Railway Sidings	1851	777041
L	234m S	Unspecified Mills	1969	653118
M	234m S	Railway Sidings	1956 - 1969	740950
N	236m NW	Print Works	1851	680217
16	246m SW	Cuttings	1851	642633
K	256m NE	Railway Sidings	1956 - 1967	720876
O	258m SE	Cuttings	1891	642626
P	259m SE	Railway Sidings	1891	708354
O	260m SE	Abattoirs	1908 - 1928	772090
P	263m SE	Railway Sidings	1908 - 1967	701768
J	265m SE	Cuttings	1908	698529
Q	271m SW	Unspecified Ground Workings	1956	780608
17	271m N	Bleach Works	1956	728342
L	272m S	Timber Yard	1908	642780
N	278m N	Unspecified Tanks	1938	748374
Q	279m SW	Unspecified Ground Workings	1928 - 1938	770525
18	281m N	Unspecified Heap	1967	650904
P	283m SE	Railway Station	1956	710323
P	283m SE	Railway Station	1908 - 1938	779060
P	284m SE	Railway Station	1891	704384
H	284m N	Unspecified Works	1983	679050
P	294m SE	Cuttings	1967	642627
P	294m SE	Railway Station	1967	714384



ID	Location	Land use	Dates present	Group ID
P	295m SE	Unspecified Ground Workings	1851	711501
S	300m NW	Refuse Heap	1928	677996
N	301m N	Hat Works	1908	672168
P	302m SE	Railway Station	1851	732921
P	308m SE	Railway Building	1938	725531
P	308m SE	Railway Building	1908 - 1928	780127
P	310m SE	Railway Sidings	1851	715107
N	311m N	Unspecified Commercial/Industrial	1969 - 1980	722938
K	312m NE	Tan Yard	1851	644813
O	312m SE	Goods Station	1891	670806
N	314m N	Unspecified Commercial/Industrial	1956	695590
N	317m N	Unspecified Tanks	1956	756329
P	318m SE	Unspecified Pit	1983	691011
N	320m N	Unspecified Tanks	1928	715644
N	320m N	Bleach Works	1928 - 1938	720631
P	321m SE	Railway Station	1967	672378
P	324m SE	Railway Buildings	1851 - 1891	776094
P	325m SE	Goods Station	1908	722157
P	329m SE	Goods Station	1928 - 1938	741455
P	333m SE	Goods Station	1956	704804
T	333m W	Pump House	1927 - 1938	724843
U	337m W	Unspecified Wharf	1956	695821
U	342m W	Unspecified Wharf	1908 - 1938	732469
V	359m W	Unspecified Mills	1980	751150
V	359m W	Unspecified Mills	1969 - 1974	778274
V	360m W	Unspecified Mills	1956	706002
K	362m NE	Tannery	1908	790929
V	366m W	Unspecified Commercial/Industrial	1890	643337

ID	Location	Land use	Dates present	Group ID
V	366m W	Unspecified Mills	1908 - 1938	784102
K	366m NE	Unspecified Works	1967 - 1983	738920
K	367m NE	Tannery	1928 - 1956	753897
P	370m SE	Railway Building	1967	744386
K	373m NE	Tannery	1891	747508
T	375m W	Unspecified Mills	1969	752293
W	375m W	Unspecified Mills	1969 - 1974	706833
T	377m W	Unspecified Mill	1956	752632
P	378m SE	Railway Building	1928 - 1938	695286
P	378m SE	Railway Building	1891	778899
P	379m SE	Railway Building	1908	669848
P	380m SE	Railway Building	1956	710609
P	381m SE	Railway Building	1908	713585
T	382m W	Unspecified Commercial/Industrial	1890	643118
T	382m W	Unspecified Mill	1908 - 1938	697934
P	385m SE	Railway Sidings	1851	784708
M	387m S	Railway Sidings	1891	781999
P	389m SE	Goods Station	1891	670814
P	390m SE	Railway Building	1851	738547
X	391m NW	Unspecified Mills	1956 - 1969	731983
X	391m NW	Unspecified Commercial/Industrial	1974 - 1980	772942
20	392m SE	Cuttings	1983	774559
T	393m W	Unspecified Tank	1927	739130
M	393m S	Railway Building	1891	698729
P	393m SE	Unspecified Ground Workings	1983	721331
P	395m SE	Railway Building	1908	717270
Y	395m S	Railway Building	1956	727077
21	397m S	Railway Building	1891	670227



ID	Location	Land use	Dates present	Group ID
X	397m NW	Unspecified Mills	1927 - 1938	695320
X	397m NW	Unspecified Commercial/Industrial	1908	735375
Y	398m S	Railway Buildings	1908	681647
P	398m SE	Railway Building	1928 - 1938	742970
M	399m S	Carriage Shed	1956	715340
Y	399m S	Railway Building	1928	707123
M	399m S	Railway Sidings	1974 - 1991	696872
K	400m NE	Unspecified Ground Workings	1928 - 1938	698099
22	402m NW	Unspecified Commercial/Industrial	1956	758662
M	402m S	Railway Building	1969 - 1974	698481
P	403m SE	Railway Building	1956	729163
M	403m S	Carriage Shed	1928 - 1938	718586
M	404m S	Railway Sidings	1908 - 1938	789578
M	405m S	Railway Buildings	1908	681650
M	409m S	Railway Building	1980	729199
W	411m W	Unspecified Mills	1956	701369
W	411m W	Unspecified Mills	1980	787091
X	413m NW	Disused Canal	1928 - 1938	749853
P	414m SE	Railway Sidings	1851	750909
Z	414m NE	Unspecified Ground Workings	1967	648135
W	415m W	Unspecified Commercial/Industrial	1890	643119
W	415m W	Unspecified Mills	1908 - 1938	737414
AA	416m NE	Unspecified Heap	1891	650906
Z	417m NE	Unspecified Heap	1967	650905
M	420m S	Railway Building	1928	670226
AB	426m NW	Unspecified Mills	1908	771536
P	428m SE	Unspecified Ground Workings	1983	648197
Z	428m N	Unspecified Commercial/Industrial	1956	786805



ID	Location	Land use	Dates present	Group ID
Z	429m N	Unspecified Commercial/Industrial	1928 - 1938	738745
T	429m W	Unspecified Works	1980	764008
M	429m S	Railway Sidings	1955 - 1956	727070
AD	429m S	Cuttings	1967	694256
AD	431m S	Cuttings	1908 - 1938	726997
AE	431m NW	Unspecified Tanks	1956	666445
T	432m W	Unspecified Works	1974	743275
AD	432m S	Cuttings	1956	781507
M	432m S	Engine House	1851	676173
AE	433m NW	Unspecified Tanks	1956	666444
Y	433m S	Railway Building	1928	732407
X	436m NW	Unspecified Tank	1969	674770
Z	437m N	Unspecified Tanks	1928 - 1938	771204
Z	438m NE	Unspecified Tanks	1956	712755
T	441m W	Unspecified Tank	1938	790564
24	442m NE	Refuse Heap	1908	728215
AF	444m N	Chemical Works	1891	720377
V	445m W	Bleach Works	1851	658143
X	446m NW	Iron Works	1908	672247
AF	448m N	Chemical Works	1908	730693
AG	457m NW	Unspecified Works	1969 - 1980	711840
X	457m NW	Iron Foundry	1851	683052
AA	458m NE	Sawmills	1928	721899
AA	460m NE	Sawmills	1938 - 1956	697029
AI	460m NW	Bleach and Dye works	1891	641707
AI	460m NW	Unspecified Commercial/Industrial	1938	725075
T	463m W	Unspecified Tank	1956	740007
AA	466m NE	Unspecified Works	1967	679054



ID	Location	Land use	Dates present	Group ID
AG	466m NW	Gasometer	1851	655131
T	467m W	Unspecified Mill	1851	776620
26	468m N	Unspecified Works	1980	731806
V	470m W	Unspecified Mills	1908 - 1956	754078
V	470m W	Unspecified Mills	1969 - 1974	742936
27	470m W	Unspecified Works	1890	782793
28	471m NE	Cuttings	1967	642629
AJ	475m NE	Refuse Heap	1928 - 1938	744881
AJ	475m NE	Refuse Heap	1956	716616
AA	476m NE	Unspecified Ground Workings	1908	648131
V	477m SW	Filter Beds	1956	665799
Y	477m S	Cuttings	1928	731298
Y	478m S	Cuttings	1956	753126
Y	478m S	Cuttings	1967 - 1983	772665
Y	478m S	Cuttings	1908	769756
Y	478m S	Cuttings	1938	788819
M	479m S	Railway Sidings	1851	740602
V	481m W	Unspecified Commercial/Industrial	1890	643338
AI	486m NW	Unspecified Commercial/Industrial	1956 - 1974	760659
Z	497m NE	Unspecified Works	1967	679051
AJ	500m NE	Unspecified Ground Workings	1928 - 1938	763431

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

51

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 ungrouped 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
2	38m SW	Unspecified Tank	1957	90910
A	80m NW	Unspecified Tank	1891	82567
5	121m NW	Unspecified Tank	1937	82568
D	183m S	Unspecified Tank	1937	84748
11	196m NW	Unspecified Tank	1891	82557
15	225m N	Tanks	1891	87173
J	251m SE	Unspecified Tank	1891	99775
S	282m NW	Unspecified Tank	1959	98541
S	282m NW	Unspecified Tank	1959	102494
S	285m NW	Unspecified Tank	1910 - 1937	95696
19	300m NE	Unspecified Tank	1930 - 1937	103985
L	318m S	Unspecified Tank	1930 - 1937	98102
R	324m NW	Tanks	1891	87170
R	325m NW	Tanks	1891	87172
Q	329m SW	Unspecified Tank	1957 - 1968	98588
N	329m N	Tanks	1930 - 1937	102934
N	342m N	Settling Tanks	1930 - 1937	91628
K	346m NE	Unspecified Tank	1910	99051
K	353m NE	Unspecified Tank	1937	82562
T	353m W	Unspecified Tank	1992 - 1995	95913
T	353m W	Unspecified Tank	1982	102931
T	356m W	Unspecified Tank	1982 - 1995	89919
N	373m N	Unspecified Tank	1891	101046
K	374m NE	Tanks	1910	92777
T	384m W	Unspecified Tank	1968 - 1995	92706
T	391m W	Unspecified Tank	1890	84749
K	396m NE	Tanks	1992	91886

ID	Location	Land use	Dates present	Group ID
K	396m NE	Tanks	1973 - 1984	91111
T	411m W	Unspecified Tank	1982	96257
T	411m W	Unspecified Tank	1992 - 1995	101782
23	420m E	Unspecified Tank	1930 - 1937	101735
N	421m N	Unspecified Tank	1891	95969
T	425m W	Unspecified Tank	1957	92771
T	431m W	Unspecified Tank	1890	84751
AE	437m NW	Tanks	1910	87197
AE	437m NW	Settling Tanks	1930 - 1937	98698
Z	441m N	Tanks	1930 - 1937	102623
V	444m SW	Unspecified Tank	1939	84750
X	444m NW	Unspecified Tank	1891	82559
X	447m NW	Tanks	1930 - 1937	94001
AB	448m NW	Unspecified Tank	1890	82558
W	449m W	Unspecified Tank	1957	82569
W	453m W	Unspecified Tank	1890	82570
T	463m W	Unspecified Tank	1891	98899
T	463m W	Unspecified Tank	1910 - 1939	98201
Z	469m NE	Unspecified Tank	1937	82560
Z	474m N	Tanks	1930 - 1937	93105
T	485m W	Unspecified Tank	1891	82571
V	488m SW	Unspecified Tank	1982 - 1992	103751
V	491m SW	Unspecified Tank	1982 - 1992	101971
V	496m SW	Unspecified Tank	1982 - 1992	99387

This data is sourced from Ordnance Survey / Groundsure.



1.3 Historical energy features

Records within 500m

18

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 ungrouped 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	Electricity Substation	1973 - 1992	47966
I	230m W	Electricity Substation	1968 - 1995	47584
S	279m NW	Electricity Substation	1968 - 1995	56317
H	325m N	Electricity Substation	1983 - 1998	56820
Z	428m N	Electricity Substation	1983 - 1998	48729
AB	431m NW	Electricity Substation	1968 - 1982	56723
K	437m NE	Electricity Substation	1983 - 1998	48562
AC	441m E	Electricity Substation	1993 - 1998	50919
25	453m SW	Electricity Substation	1982 - 1992	52605
AH	458m NE	Electricity Transformer	1973 - 1987	53229
AH	458m NE	Electricity Substation	1993 - 1998	57749
Z	477m N	Electricity Substation	1983 - 1998	55981
Y	480m S	Electricity Substation	1994 - 1996	56797
AK	485m SE	Electricity Substation	1976 - 1981	52205
AL	487m E	Electricity Substation	1973 - 1987	52184
AK	490m SE	Electricity Substation	1992	53258
29	491m S	Electricity Substation	1980 - 1996	51172
AL	494m E	Electricity Substation	1993 - 1998	47160

This data is sourced from Ordnance Survey / Groundsure.



1.4 Historical petrol stations

Records within 500m

1

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 ungrouped 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
Y	450m S	Petroleum Spirit Store	1930	1412

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

20

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 ungrouped 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
9	161m NW	Garage	1992 - 1995	19747
G	164m N	Garage	1992	16174
G	165m N	Garage	1978	18125
G	187m N	Garage	1973 - 1984	17728
13	223m SE	Garage	1957	18416
G	234m N	Garage	1957	16489
G	252m N	Garage	1957	15884
G	262m N	Garage	1958 - 1959	18184
R	275m NW	Garage	1978	15951
R	278m NW	Garage	1969	16209



ID	Location	Land use	Dates present	Group ID
R	278m NW	Garage	1957	16728
R	278m NW	Garage	1957 - 1968	19015
M	405m S	Carriage Shed	1891 - 1937	18091
M	406m S	Carriage Shed	1957 - 1992	17959
M	406m S	Carriage Shed	1968	18561
AC	426m SE	Garage	1957	17408
AC	427m SE	Garage	1957	16198
AC	472m E	Garage	1976 - 1981	18999
AC	472m E	Garage	1992	18426
X	492m NW	Garage	1989 - 1992	17445

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

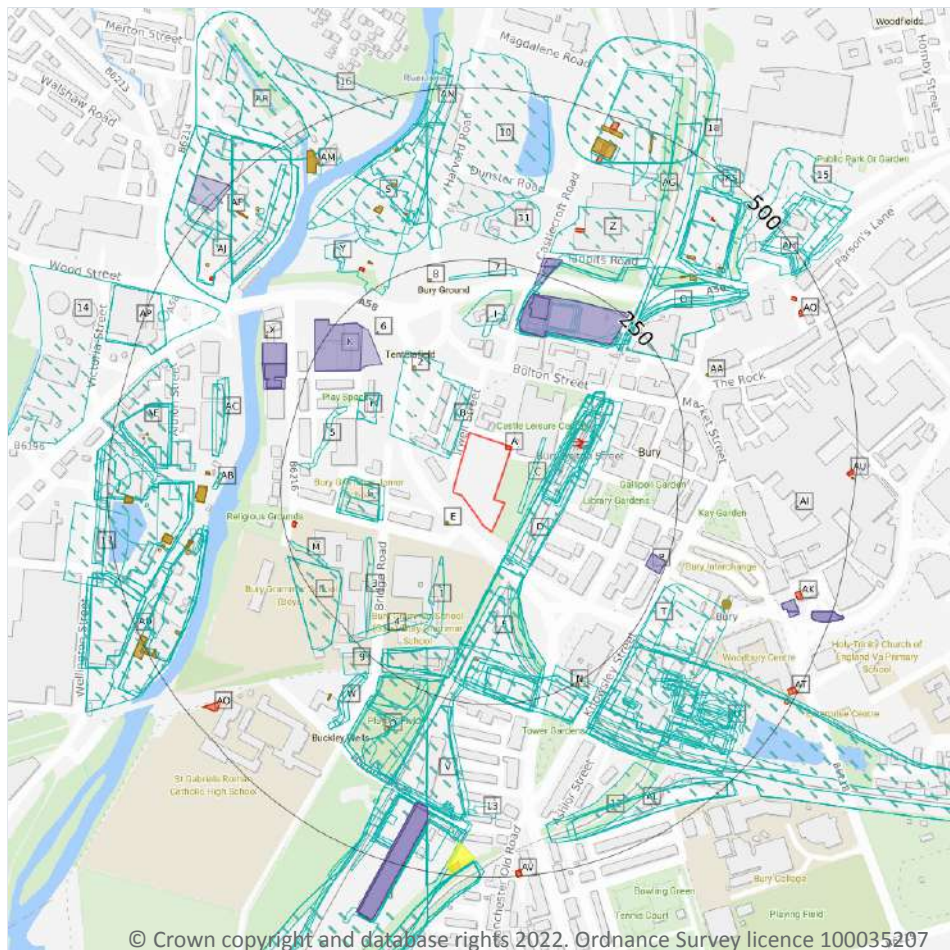
0

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



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical petrol stations
- Historical garages

2.1 Historical industrial land uses

Records within 500m

316

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 28**

ID	Location	Land Use	Date	Group ID
B	14m NW	Police Station	1967	680444
B	15m NW	Iron Foundry	1851	683056
C	22m SE	Railway Sidings	1851	641526

ID	Location	Land Use	Date	Group ID
C	31m SE	Railway Sidings	1967	738242
D	34m SE	Railway Sidings	1983	738242
C	35m SE	Railway Sidings	1956	765595
C	35m SE	Railway Sidings	1851	767367
F	39m S	Cuttings	1891	762473
F	39m S	Railway Sidings	1891	745623
F	51m S	Cuttings	1956	738420
F	51m S	Cuttings	1967	738420
F	52m S	Railway Sidings	1908	745623
C	55m E	Railway Station	1956	768551
C	56m E	Railway Station	1938	788801
C	56m E	Railway Station	1928	788801
C	56m E	Railway Station	1908	788801
C	57m E	Railway Station	1967	747305
C	60m E	Railway Station	1891	773134
D	63m SE	Railway Building	1851	669846
C	71m E	Railway Station	1851	758271
1	74m SW	Unspecified Ground Workings	1908	648129
C	76m E	Railway Station	1983	753891
F	80m S	Railway Sidings	1938	745623
F	80m S	Railway Sidings	1928	745623
F	84m S	Cuttings	1851	774242
F	93m S	Railway Sidings	1956	765766
F	93m S	Railway Sidings	1967	765766
G	99m W	Police Station	1956	773372
G	106m W	Police Station	1938	708115
G	106m W	Police Station	1928	708115
G	109m W	Police Station	1969	764108



ID	Location	Land Use	Date	Group ID
G	109m W	Police Station	1974	764108
F	114m S	Railway Building	1956	669845
C	119m NE	Railway Building	1851	669852
H	133m NW	Hat Works	1938	753686
H	133m NW	Hat Works	1928	753686
H	133m NW	Hat Works	1908	753686
3	137m SW	Unspecified Ground Workings	1908	648127
I	140m N	Unspecified Ground Workings	1908	648125
4	149m S	Unspecified Pit	1891	691010
I	154m N	Refuse Heap	1928	677986
J	159m N	Railway Building	1908	759053
J	159m N	Railway Sidings	1908	764894
J	162m N	Railway Sidings	1956	749849
J	162m N	Railway Building	1956	787289
J	162m N	Railway Building	1967	787289
J	162m N	Railway Sidings	1967	749849
J	163m N	Railway Sidings	1938	752531
J	163m N	Railway Sidings	1928	699340
J	168m N	Railway Sidings	1851	759352
F	175m S	Cuttings	1956	705879
F	176m S	Cuttings	1938	757141
F	176m S	Cuttings	1891	757141
F	176m S	Cuttings	1928	757141
F	176m S	Cuttings	1908	757141
J	176m N	Railway Sidings	1891	759352
J	178m N	Goods Warehouse	1851	680002
5	179m NW	Unspecified Ground Workings	1908	648126
J	180m NE	Goods Station	1956	727680



ID	Location	Land Use	Date	Group ID
J	180m NE	Goods Station	1967	727680
F	181m S	Cuttings	1851	703289
J	182m N	Goods Station	1938	742162
J	182m N	Goods Station	1891	742162
J	182m N	Goods Station	1928	742162
J	182m N	Goods Station	1908	742162
F	182m S	Cuttings	1891	760018
F	186m S	Cuttings	1983	722520
J	188m N	Weighing Machine	1851	656619
F	189m S	Cuttings	1967	726854
J	190m N	Railway Building	1938	735568
J	190m N	Railway Building	1928	735568
J	190m N	Railway Building	1908	735568
J	191m N	Railway Building	1956	777577
J	191m N	Railway Building	1967	777577
F	192m S	Cuttings	1980	748529
F	192m S	Cuttings	1969	748529
F	192m S	Cuttings	1974	748529
F	195m S	Cuttings	1938	726618
F	195m S	Cuttings	1928	726618
F	195m S	Cuttings	1908	726618
F	195m S	Cuttings	1956	717327
L	201m SW	Unspecified Pit	1980	773197
L	201m SW	Unspecified Pit	1969	773197
L	201m SW	Unspecified Pit	1974	773197
J	206m N	Railway Building	1891	776625
M	211m SW	Unspecified Ground Workings	1908	648128
J	214m NE	Railway Building	1908	779059



ID	Location	Land Use	Date	Group ID
N	214m S	Woollen Mill	1851	670979
J	215m NE	Railway Building	1928	779059
O	217m NE	Unspecified Commercial/Industrial	1956	722632
O	217m NE	Unspecified Commercial/Industrial	1967	722632
7	223m N	Rope Walk	1908	641252
Q	224m S	Sawmills	1938	696865
Q	224m S	Sawmills	1928	696865
N	225m S	Cuttings	1967	764234
Q	231m S	Sawmills	1956	698663
O	232m NE	Railway Sidings	1851	777041
Q	234m S	Unspecified Mills	1969	653118
R	234m S	Railway Sidings	1969	740950
S	236m NW	Print Works	1851	680217
Q	242m S	Railway Sidings	1956	740950
9	246m SW	Cuttings	1851	642633
O	256m NE	Railway Sidings	1956	720876
O	256m NE	Railway Sidings	1967	720876
T	258m SE	Cuttings	1891	642626
U	259m SE	Railway Sidings	1891	708354
T	260m SE	Abattoirs	1928	772090
V	260m S	Railway Sidings	1956	740950
V	260m S	Railway Sidings	1967	740950
U	263m SE	Railway Sidings	1938	701768
U	263m SE	Railway Sidings	1928	701768
U	263m SE	Railway Sidings	1908	701768
N	265m SE	Cuttings	1908	698529
U	268m SE	Railway Sidings	1956	701768
U	268m SE	Railway Sidings	1967	701768



ID	Location	Land Use	Date	Group ID
W	271m SW	Unspecified Ground Workings	1956	780608
10	271m N	Bleach Works	1956	728342
Q	272m S	Timber Yard	1908	642780
S	278m N	Unspecified Tanks	1938	748374
W	279m SW	Unspecified Ground Workings	1938	770525
W	279m SW	Unspecified Ground Workings	1928	770525
11	281m N	Unspecified Heap	1967	650904
U	283m SE	Railway Station	1956	710323
T	283m SE	Abattoirs	1908	772090
U	283m SE	Railway Station	1938	779060
U	283m SE	Railway Station	1928	779060
U	283m SE	Railway Station	1908	779060
U	284m SE	Railway Station	1891	704384
Z	284m N	Unspecified Works	1983	679050
U	294m SE	Cuttings	1967	642627
U	294m SE	Railway Station	1967	714384
U	295m SE	Unspecified Ground Workings	1851	711501
Y	300m NW	Refuse Heap	1928	677996
S	301m N	Hat Works	1908	672168
U	302m SE	Railway Station	1851	732921
U	308m SE	Railway Building	1938	725531
U	308m SE	Railway Building	1908	780127
U	310m SE	Railway Sidings	1851	715107
U	311m SE	Railway Building	1928	780127
S	311m N	Unspecified Commercial/Industrial	1980	722938
S	311m N	Unspecified Commercial/Industrial	1969	722938
S	311m N	Unspecified Commercial/Industrial	1974	722938
O	312m NE	Tan Yard	1851	644813



ID	Location	Land Use	Date	Group ID
T	312m SE	Goods Station	1891	670806
S	314m N	Unspecified Commercial/Industrial	1956	695590
S	317m N	Unspecified Tanks	1956	756329
U	318m SE	Unspecified Pit	1983	691011
S	320m N	Unspecified Tanks	1928	715644
S	320m N	Bleach Works	1938	720631
S	320m N	Bleach Works	1928	720631
U	321m SE	Railway Station	1967	672378
U	324m SE	Railway Buildings	1891	776094
U	325m SE	Goods Station	1908	722157
U	329m SE	Goods Station	1938	741455
U	329m SE	Goods Station	1928	741455
U	333m SE	Goods Station	1956	704804
AB	333m W	Pump House	1938	724843
AB	333m W	Pump House	1927	724843
AC	337m W	Unspecified Wharf	1956	695821
U	342m SE	Railway Buildings	1851	776094
AC	342m W	Unspecified Wharf	1938	732469
AC	342m W	Unspecified Wharf	1927	732469
AC	342m W	Unspecified Wharf	1908	732469
AD	359m W	Unspecified Mills	1980	751150
AD	359m W	Unspecified Mills	1969	778274
AD	359m W	Unspecified Mills	1974	778274
AD	360m W	Unspecified Mills	1956	706002
O	362m NE	Tannery	1908	790929
AD	366m W	Unspecified Mills	1938	784102
AD	366m W	Unspecified Mills	1927	784102
AD	366m W	Unspecified Mills	1908	784102



ID	Location	Land Use	Date	Group ID
AD	366m W	Unspecified Commercial/Industrial	1890	643337
O	366m NE	Unspecified Works	1983	738920
O	366m NE	Unspecified Works	1967	738920
O	367m NE	Tannery	1938	753897
O	367m NE	Tannery	1928	753897
O	368m NE	Tannery	1956	753897
U	370m SE	Railway Building	1967	744386
O	373m NE	Tannery	1891	747508
AB	375m W	Unspecified Mills	1969	752293
AE	375m W	Unspecified Mills	1969	706833
AE	375m W	Unspecified Mills	1974	706833
AB	377m W	Unspecified Mill	1956	752632
U	378m SE	Railway Building	1938	695286
U	378m SE	Railway Building	1928	695286
U	378m SE	Railway Building	1891	778899
U	379m SE	Railway Building	1908	669848
U	380m SE	Railway Building	1956	710609
U	381m SE	Railway Building	1908	713585
AB	382m W	Unspecified Mill	1938	697934
AB	382m W	Unspecified Mill	1927	697934
AB	382m W	Unspecified Mill	1908	697934
AB	382m W	Unspecified Commercial/Industrial	1890	643118
U	385m SE	Railway Sidings	1851	784708
R	387m S	Railway Sidings	1891	781999
U	389m SE	Goods Station	1891	670814
U	390m SE	Railway Building	1851	738547
AF	391m NW	Unspecified Commercial/Industrial	1980	772942
AF	391m NW	Unspecified Mills	1969	731983



ID	Location	Land Use	Date	Group ID
AF	391m NW	Unspecified Commercial/Industrial	1974	772942
AF	391m NW	Unspecified Mills	1956	731983
12	392m SE	Cuttings	1983	774559
AB	393m W	Unspecified Tank	1927	739130
R	393m S	Railway Building	1891	698729
U	393m SE	Unspecified Ground Workings	1983	721331
U	395m SE	Railway Building	1908	717270
R	395m S	Railway Building	1956	727077
13	397m S	Railway Building	1891	670227
AF	397m NW	Unspecified Mills	1938	695320
AF	397m NW	Unspecified Mills	1928	695320
AF	397m NW	Unspecified Commercial/Industrial	1908	735375
R	398m S	Railway Buildings	1908	681647
U	398m SE	Railway Building	1938	742970
U	398m SE	Railway Building	1928	742970
R	399m S	Carriage Shed	1956	715340
R	399m S	Railway Building	1928	707123
R	399m S	Railway Sidings	1980	696872
O	400m NE	Unspecified Ground Workings	1938	698099
O	400m NE	Unspecified Ground Workings	1928	698099
14	402m NW	Unspecified Commercial/Industrial	1956	758662
R	402m S	Railway Building	1969	698481
R	402m S	Railway Building	1974	698481
U	403m SE	Railway Building	1956	729163
R	403m S	Carriage Shed	1938	718586
R	403m S	Carriage Shed	1928	718586
R	404m S	Railway Sidings	1938	789578
R	404m S	Railway Sidings	1928	789578



ID	Location	Land Use	Date	Group ID
R	404m S	Railway Sidings	1908	789578
R	405m S	Railway Buildings	1908	681650
R	409m S	Railway Building	1980	729199
AE	411m W	Unspecified Mills	1956	701369
AE	411m W	Unspecified Mills	1980	787091
AF	413m NW	Disused Canal	1938	749853
AF	413m NW	Disused Canal	1928	749853
U	414m SE	Railway Sidings	1851	750909
AG	414m NE	Unspecified Ground Workings	1967	648135
AE	415m W	Unspecified Mills	1938	737414
AE	415m W	Unspecified Mills	1927	737414
AE	415m W	Unspecified Mills	1908	737414
AE	415m W	Unspecified Commercial/Industrial	1890	643119
AH	416m NE	Unspecified Heap	1891	650906
AG	417m NE	Unspecified Heap	1967	650905
R	420m S	Railway Building	1928	670226
AF	426m NW	Unspecified Mills	1938	695320
AF	426m NW	Unspecified Mills	1927	695320
AJ	426m NW	Unspecified Mills	1908	771536
U	428m SE	Unspecified Ground Workings	1983	648197
AG	428m N	Unspecified Commercial/Industrial	1956	786805
AG	429m N	Unspecified Commercial/Industrial	1928	738745
AB	429m W	Unspecified Works	1980	764008
R	429m S	Railway Sidings	1956	727070
R	429m S	Railway Sidings	1967	740950
AL	429m S	Cuttings	1967	694256
AG	430m N	Unspecified Commercial/Industrial	1938	738745
AL	431m S	Cuttings	1938	726997



ID	Location	Land Use	Date	Group ID
AL	431m S	Cuttings	1928	726997
AL	431m S	Cuttings	1908	726997
AM	431m NW	Unspecified Tanks	1956	666445
AB	432m W	Unspecified Works	1974	743275
AL	432m S	Cuttings	1956	781507
R	432m S	Engine House	1851	676173
AM	433m NW	Unspecified Tanks	1956	666444
R	433m S	Railway Building	1928	732407
AF	436m NW	Unspecified Tank	1969	674770
AG	437m N	Unspecified Tanks	1938	771204
AG	437m N	Unspecified Tanks	1928	771204
AG	438m NE	Unspecified Tanks	1956	712755
AB	441m W	Unspecified Tank	1938	790564
15	442m NE	Refuse Heap	1908	728215
AN	444m N	Chemical Works	1891	720377
R	444m S	Railway Sidings	1956	727070
AD	445m W	Bleach Works	1851	658143
AF	446m NW	Iron Works	1908	672247
AN	448m N	Chemical Works	1908	730693
AP	457m NW	Unspecified Works	1980	711840
AP	457m NW	Unspecified Works	1969	711840
AP	457m NW	Unspecified Works	1974	711840
AF	457m NW	Iron Foundry	1851	683052
AH	458m NE	Sawmills	1928	721899
AH	460m NE	Sawmills	1938	697029
AR	460m NW	Unspecified Commercial/Industrial	1938	725075
AR	460m NW	Bleach and Dye works	1891	641707
AB	463m W	Unspecified Tank	1956	740007



ID	Location	Land Use	Date	Group ID
AH	464m NE	Sawmills	1956	697029
AH	466m NE	Unspecified Works	1967	679054
AP	466m NW	Gasometer	1851	655131
AB	467m W	Unspecified Mill	1851	776620
16	468m N	Unspecified Works	1980	731806
AD	470m W	Unspecified Mills	1956	754078
AD	470m W	Unspecified Mills	1969	742936
AD	470m W	Unspecified Mills	1974	742936
17	470m W	Unspecified Works	1890	782793
18	471m NE	Cuttings	1967	642629
R	472m S	Railway Sidings	1974	696872
AS	475m NE	Refuse Heap	1938	744881
AS	475m NE	Refuse Heap	1928	744881
AS	475m NE	Refuse Heap	1956	716616
AH	476m NE	Unspecified Ground Workings	1908	648131
AD	477m SW	Filter Beds	1956	665799
R	477m S	Cuttings	1928	731298
R	478m S	Cuttings	1983	772665
R	478m S	Cuttings	1956	753126
R	478m S	Cuttings	1967	772665
R	478m S	Cuttings	1938	788819
R	478m S	Cuttings	1908	769756
R	479m S	Railway Sidings	1851	740602
AD	481m W	Unspecified Mills	1938	754078
AD	481m W	Unspecified Mills	1927	754078
AD	481m W	Unspecified Mills	1908	754078
AD	481m W	Unspecified Commercial/Industrial	1890	643338
AR	486m NW	Unspecified Commercial/Industrial	1969	760659



ID	Location	Land Use	Date	Group ID
AR	486m NW	Unspecified Commercial/Industrial	1974	760659
AR	486m NW	Unspecified Commercial/Industrial	1956	760659
AG	497m NE	Unspecified Works	1967	679051
AS	500m NE	Unspecified Ground Workings	1938	763431
AS	500m NE	Unspecified Ground Workings	1928	763431

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

89

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 28**

ID	Location	Land Use	Date	Group ID
E	38m SW	Unspecified Tank	1957	90910
E	38m SW	Unspecified Tank	1957	90910
B	80m NW	Unspecified Tank	1891	82567
2	121m NW	Unspecified Tank	1937	82568
F	183m S	Unspecified Tank	1937	84748
6	196m NW	Unspecified Tank	1891	82557
8	225m N	Tanks	1891	87173
N	251m SE	Unspecified Tank	1891	99775
N	251m SE	Unspecified Tank	1891	99775
Y	282m NW	Unspecified Tank	1959	98541
Y	282m NW	Unspecified Tank	1959	102494
Y	285m NW	Unspecified Tank	1910	95696
Y	285m NW	Unspecified Tank	1930	95696
Y	285m NW	Unspecified Tank	1937	95696
AA	300m NE	Unspecified Tank	1930	103985



ID	Location	Land Use	Date	Group ID
AA	300m NE	Unspecified Tank	1937	103985
Q	318m S	Unspecified Tank	1930	98102
Q	318m S	Unspecified Tank	1937	98102
X	324m NW	Tanks	1891	87170
X	325m NW	Tanks	1891	87172
W	329m SW	Unspecified Tank	1968	98588
W	329m SW	Unspecified Tank	1957	98588
S	329m N	Tanks	1930	102934
S	329m N	Tanks	1937	102934
W	329m SW	Unspecified Tank	1957	98588
S	342m N	Settling Tanks	1937	91628
S	343m N	Settling Tanks	1930	91628
O	346m NE	Unspecified Tank	1910	99051
O	346m NE	Unspecified Tank	1910	99051
O	353m NE	Unspecified Tank	1937	82562
AB	353m W	Unspecified Tank	1995	95913
AB	353m W	Unspecified Tank	1992	95913
AB	353m W	Unspecified Tank	1982	102931
AB	356m W	Unspecified Tank	1995	89919
AB	356m W	Unspecified Tank	1992	89919
AB	356m W	Unspecified Tank	1982	89919
S	373m N	Unspecified Tank	1891	101046
S	373m N	Unspecified Tank	1891	101046
O	374m NE	Tanks	1910	92777
O	374m NE	Tanks	1910	92777
AB	384m W	Unspecified Tank	1968	92706
AB	384m W	Unspecified Tank	1969	92706
AB	384m W	Unspecified Tank	1978	92706



ID	Location	Land Use	Date	Group ID
AB	386m W	Unspecified Tank	1995	92706
AB	386m W	Unspecified Tank	1992	92706
AB	387m W	Unspecified Tank	1982	92706
AB	391m W	Unspecified Tank	1890	84749
O	396m NE	Tanks	1992	91886
O	396m NE	Tanks	1978	91111
O	396m NE	Tanks	1978	91111
O	396m NE	Tanks	1984	91111
O	396m NE	Tanks	1973	91111
AB	411m W	Unspecified Tank	1982	96257
AB	411m W	Unspecified Tank	1995	101782
AB	411m W	Unspecified Tank	1992	101782
AI	420m E	Unspecified Tank	1930	101735
AI	420m E	Unspecified Tank	1937	101735
S	421m N	Unspecified Tank	1891	95969
S	421m N	Unspecified Tank	1891	95969
AB	425m W	Unspecified Tank	1957	92771
AB	425m W	Unspecified Tank	1957	92771
AB	431m W	Unspecified Tank	1890	84751
AM	437m NW	Tanks	1910	87197
AM	437m NW	Settling Tanks	1930	98698
AM	437m NW	Settling Tanks	1937	98698
AG	441m N	Tanks	1930	102623
AG	441m N	Tanks	1937	102623
AD	444m SW	Unspecified Tank	1939	84750
AF	444m NW	Unspecified Tank	1891	82559
AF	447m NW	Tanks	1930	94001
AF	447m NW	Tanks	1937	94001



ID	Location	Land Use	Date	Group ID
AF	447m NW	Tanks	1930	94001
AJ	448m NW	Unspecified Tank	1890	82558
AE	449m W	Unspecified Tank	1957	82569
AE	453m W	Unspecified Tank	1890	82570
AB	463m W	Unspecified Tank	1891	98899
AB	463m W	Unspecified Tank	1910	98201
AB	463m W	Unspecified Tank	1930	98201
AB	463m W	Unspecified Tank	1939	98201
AG	469m NE	Unspecified Tank	1937	82560
AG	474m N	Tanks	1930	93105
AG	474m N	Tanks	1937	93105
AB	485m W	Unspecified Tank	1891	82571
AD	488m SW	Unspecified Tank	1982	103751
AD	488m SW	Unspecified Tank	1992	103751
AD	491m SW	Unspecified Tank	1992	101971
AD	492m SW	Unspecified Tank	1982	101971
AD	496m SW	Unspecified Tank	1992	99387
AD	496m SW	Unspecified Tank	1982	99387

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

53

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 28**

ID	Location	Land Use	Date	Group ID
A	On site	Electricity Substation	1984	47966
A	On site	Electricity Substation	1973	47966



ID	Location	Land Use	Date	Group ID
A	On site	Electricity Substation	1992	47966
M	230m W	Electricity Substation	1982	47584
M	230m W	Electricity Substation	1969	47584
M	231m W	Electricity Substation	1968	47584
M	231m W	Electricity Substation	1995	47584
M	231m W	Electricity Substation	1992	47584
M	231m W	Electricity Substation	1978	47584
Y	279m NW	Electricity Substation	1968	56317
Y	280m NW	Electricity Substation	1995	56317
Y	280m NW	Electricity Substation	1992	56317
Y	280m NW	Electricity Substation	1982	56317
Y	280m NW	Electricity Substation	1969	56317
Y	280m NW	Electricity Substation	1978	56317
Z	325m N	Electricity Substation	1998	56820
Z	325m N	Electricity Substation	1983	56820
AG	428m N	Electricity Substation	1998	48729
AG	429m N	Electricity Substation	1983	48729
AJ	431m NW	Electricity Substation	1968	56723
AJ	431m NW	Electricity Substation	1982	56723
AJ	431m NW	Electricity Substation	1969	56723
AJ	432m NW	Electricity Substation	1978	56723
O	437m NE	Electricity Substation	1983	48562
O	437m NE	Electricity Substation	1998	48562
AK	441m E	Electricity Substation	1993	50919
AK	441m E	Electricity Substation	1998	50919
AO	453m SW	Electricity Substation	1982	52605
AO	453m SW	Electricity Substation	1992	52605
AQ	458m NE	Electricity Transformer	1982	53229

ID	Location	Land Use	Date	Group ID
AQ	458m NE	Electricity Transformer	1982	53229
AQ	458m NE	Electricity Transformer	1987	53229
AQ	458m NE	Electricity Substation	1993	57749
AQ	458m NE	Electricity Substation	1998	57749
AQ	458m NE	Electricity Transformer	1973	53229
AG	477m N	Electricity Substation	1998	55981
AG	478m N	Electricity Substation	1983	55981
R	480m S	Electricity Substation	1996	56797
R	480m S	Electricity Substation	1994	56797
AT	485m SE	Electricity Substation	1981	52205
AT	485m SE	Electricity Substation	1976	52205
AU	487m E	Electricity Substation	1982	52184
AU	487m E	Electricity Substation	1982	52184
AU	487m E	Electricity Substation	1987	52184
AU	488m E	Electricity Substation	1973	52184
AT	490m SE	Electricity Substation	1992	53258
AT	490m SE	Electricity Substation	1992	53258
AV	491m S	Electricity Substation	1996	51172
AV	491m S	Electricity Substation	1994	51172
AV	492m S	Electricity Substation	1980	51172
AV	492m S	Electricity Substation	1984	51172
AU	494m E	Electricity Substation	1993	47160
AU	494m E	Electricity Substation	1998	47160

This data is sourced from Ordnance Survey / Groundsure.



2.4 Historical petrol stations

Records within 500m

2

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'.

Features are displayed on the Past land use - un-grouped map on **page 28**

ID	Location	Land Use	Date	Group ID
R	450m S	Petroleum Spirit Store	1930	1412
R	450m S	Petroleum Spirit Store	1930	1412

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

38

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 28**

ID	Location	Land Use	Date	Group ID
K	161m NW	Garage	1995	19747
J	164m N	Garage	1992	16174
J	165m N	Garage	1978	18125
J	165m N	Garage	1978	18125
K	182m NW	Garage	1992	19747
J	187m N	Garage	1984	17728
J	187m N	Garage	1973	17728
P	223m SE	Garage	1957	18416
P	223m SE	Garage	1957	18416
J	234m N	Garage	1957	16489
J	252m N	Garage	1957	15884
J	262m N	Garage	1958	18184

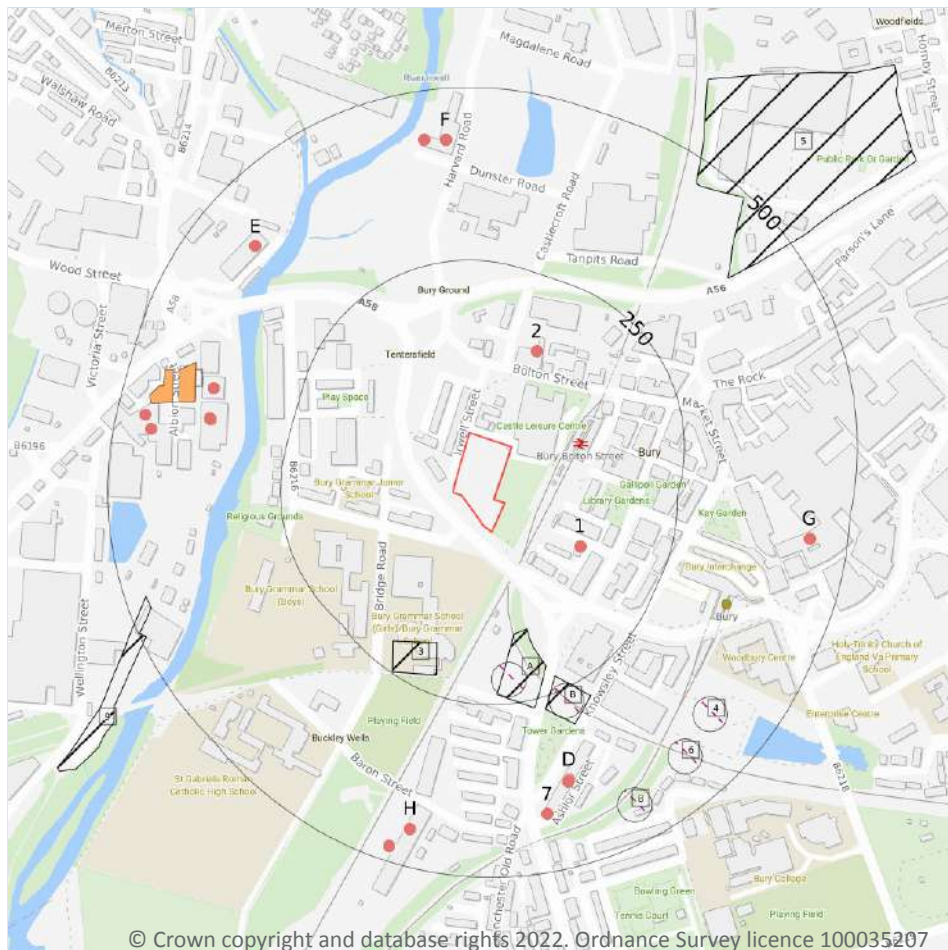


ID	Location	Land Use	Date	Group ID
J	263m N	Garage	1959	18184
X	275m NW	Garage	1978	15951
X	278m NW	Garage	1957	16728
X	278m NW	Garage	1969	16209
X	278m NW	Garage	1968	19015
X	278m NW	Garage	1957	19015
R	405m S	Carriage Shed	1891	18091
R	405m S	Carriage Shed	1910	18091
R	405m S	Carriage Shed	1930	18091
R	405m S	Carriage Shed	1891	18091
R	405m S	Carriage Shed	1910	18091
R	405m S	Carriage Shed	1930	18091
R	405m S	Carriage Shed	1937	18091
R	406m S	Carriage Shed	1982	17959
R	406m S	Carriage Shed	1968	18561
R	406m S	Carriage Shed	1957	17959
R	406m S	Carriage Shed	1957	17959
R	412m S	Carriage Shed	1992	17959
AK	426m SE	Garage	1957	17408
AK	427m SE	Garage	1957	16198
AK	439m SE	Garage	1957	17408
AK	472m E	Garage	1976	18999
AK	472m E	Garage	1992	18426
AK	472m E	Garage	1992	18426
AK	473m E	Garage	1981	18999
AF	492m NW	Garage	1989	17445

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 (LA/OS)
- Historical 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

0

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.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m

5

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

Features are displayed on the Waste and landfill map on **page 48**

ID	Location	Site address	Source	Data type
A	190m S	Railway Cuttings	Historical Mapping	Point
B	242m S	Railway Cuttings	Historical Mapping	Point
4	387m SE	-	Historical Mapping	Point
6	404m SE	Railway Cuttings	Historical Mapping	Point
8	421m SE	Railway Cuttings	Historical Mapping	Point

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

3.4 Historical landfill (EA/NRW records)

Records within 500m

5

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 48**

ID	Location	Details		
A	149m S	Site Address: Railway Cuttings East and West Of Manchester Road, Town Hall, Manchester Road, Bury, Greater Manchester Licence Holder Address: Craig House, 5 Bank Street, Bury	Waste Licence: Yes Site Reference: RD/LIC/503/88, C077 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 20/04/1988 Licence Surrender: -	Operator: - Licence Holder: Bury Metropolitan Borough Council First Recorded 01/02/1988 Last Recorded: 30/06/1988
3	178m S	Site Address: Railway Cutting, Bridge Road-Bellvue Terrace, Bury, Greater Manchester Licence Holder Address: Lester House, Broad Street, Bury	Waste Licence: Yes Site Reference: RD/LIC/650/90,C093 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 06/03/1991 Licence Surrender: 31/12/1993	Operator: - Licence Holder: Bury Metropolitan Borough Council First Recorded 31/03/1991 Last Recorded: 30/09/1992



ID	Location	Details		
B	227m S	Site Address: Railway Cuttings East and West Of Manchester Road, Town Hall, Manchester Road, Bury, Greater Manchester Licence Holder Address: Craig House, 5 Bank Street, Bury	Waste Licence: Yes Site Reference: RD/LIC/503/88, C077 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 20/04/1988 Licence Surrender: -	Operator: - Licence Holder: Bury Metropolitan Borough Council First Recorded 01/02/1988 Last Recorded: 30/06/1988
5	397m NE	Site Address: Woodfields, Bury, Greater Manchester Licence Holder Address: -	Waste Licence: - Site Reference: C079 Waste Type: Industrial, Commercial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: County Borough of Bury Cleansing Department Licence Holder: - First Recorded 31/10/1971 Last Recorded: -
9	468m W	Site Address: Wellington Street, Bury, Greater Manchester Licence Holder Address: -	Waste Licence: - Site Reference: C117 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: -

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

3.5 Historical waste sites

Records within 500m	6
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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 48**

ID	Location	Address	Further Details	Date
C	393m W	Site Address: N/A	Type of Site: Scrap Metal Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1968
C	393m W	Site Address: N/A	Type of Site: Scrap Metal Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1968



ID	Location	Address	Further Details	Date
C	394m W	Site Address: N/A	Type of Site: Scrap Metal Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1978
C	424m W	Site Address: N/A	Type of Site: Scrap Metal Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1968
C	424m W	Site Address: N/A	Type of Site: Scrap Metal Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1968
C	425m W	Site Address: N/A	Type of Site: Scrap Metal Works Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1978

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

3.6 Licensed waste sites

Records within 500m	0
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Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

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

3.7 Waste exemptions

Records within 500m	36
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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 48**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	125m SE	3, ST. MARYS PLACE, BURY, BL9 0DZ	WEX096857	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)



ID	Location	Site	Reference	Category	Sub-Category	Description
2	142m NE	CHAMBERHALL POND, off Castlecroft Road and Magdalne Road, land opposite Dunster Road, Bury, BL9 0LN	WEX170518	Disposing of waste exemption	Not on a farm	Deposit of waste from dredging of inland waters
C	366m W	Bridge Trading Estate Unit 4-5 Bolton Road BURY Lancashire BL8 2AQ	EPR/BF0604N V/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
C	366m W	Bridge Trading Estate Unit 4-5 Bolton Road BURY Lancashire BL8 2AQ	EPR/BF0604N V/A001	Treating waste exemption	Non-Agricultural Waste Only	Preparatory treatments (baling, sorting, shredding etc)
C	367m W	Bridge Trading Estate Unit 4-5 Bolton Road BURY Lancashire BL8 2AQ	EPR/YH0174SY /A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
C	374m W	UNIT 4-5, BRIDGE TRADING ESTATE, BOLTON ROAD, BURY, BL8 2AQ	WEX293444	Storing waste exemption	Not on a Farm	Storage of waste in a secure place
C	374m W	UNIT 4-5, BRIDGE TRADING ESTATE, BOLTON ROAD, BURY, BL8 2AQ	WEX293445	Treating waste exemption	Not on a Farm	Preparatory treatments (baling, sorting, shredding etc)
C	374m W	UNIT 4-5, BRIDGE TRADING ESTATE, BOLTON ROAD, BURY, BL8 2AQ	WEX153843	Storing waste exemption	Not on a farm	Storage of waste in a secure place
C	374m W	UNIT 4-5, BRIDGE TRADING ESTATE, BOLTON ROAD, BURY, BL8 2AQ	WEX153843	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
D	376m S	Westminster House 49 Knowsley Street Greater Manchester BL9 0ST	EPR/FE5285G A/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
D	378m S	-	WEX204196	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
E	411m NW	-	WEX263043	Storing waste exemption	Not on a farm	Storage of waste in a secure place
E	411m NW	-	WEX263043	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
E	411m NW	IRWELL WORKS, UNIT 3, LOWER WOODHILL ROAD, BURY, BL8 1AA	WEX121449	Storing waste exemption	Not on a farm	Storage of waste in a secure place



ID	Location	Site	Reference	Category	Sub-Category	Description
E	411m NW	IRWELL WORKS, UNIT 3, LOWER WOODHILL ROAD, BURY, BL8 1AA	WEX121449	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
7	417m S	WESTMINSTER HOUSE, 49, KNOWSLEY STREET, BURY, BL9 0ST	WEX040540	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
F	425m N	Proposed MKM Builders Merchants, Land off Harvard Way, Bury, BL9 OAP	WEX294825	Treating waste exemption	Not on a Farm	Screening and blending of waste
F	425m N	Proposed MKM Builders Merchants, Land off Harvard Way, Bury, BL9 OAP	WEX294825	Using waste exemption	Not on a Farm	Use of waste in construction
F	428m N	DGS Ltd., LGC Standards, Chamberhall Business Park, Bury., BL9 OAP	WEX125635	Using waste exemption	Not on a farm	Use of waste in construction
G	444m E	14 Princess Parade BURY Lancashire BL9 0QL	EPR/YF0903HZ /A001	Treating waste exemption	Non- Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
G	444m E	14 Princess Parade BURY Lancashire BL9 0QL	EPR/QH0670U W/A001	Treating waste exemption	Non- Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
H	446m S	-	WEX283383	Using waste exemption	Not on a farm	Use of waste in construction
H	446m S	-	WEX283383	Storing waste exemption	Not on a farm	Storage of waste in secure containers
H	446m S	-	WEX283383	Disposing of waste exemption	Not on a farm	Burning waste in the open
H	446m S	-	WEX283383	Disposing of waste exemption	Not on a farm	Deposit of waste from a railway sanitary convenience
H	446m S	-	WEX283383	Treating waste exemption	Not on a farm	Screening and blending of waste
H	446m S	-	WEX283383	Using waste exemption	Not on a farm	Burning of waste as a fuel in a small appliance
C	447m W	ALBION MILL, ALBION STREET, BURY, BL8 2AE	WEX276956	Disposing of waste exemption	Not on a farm	Burning waste in the open

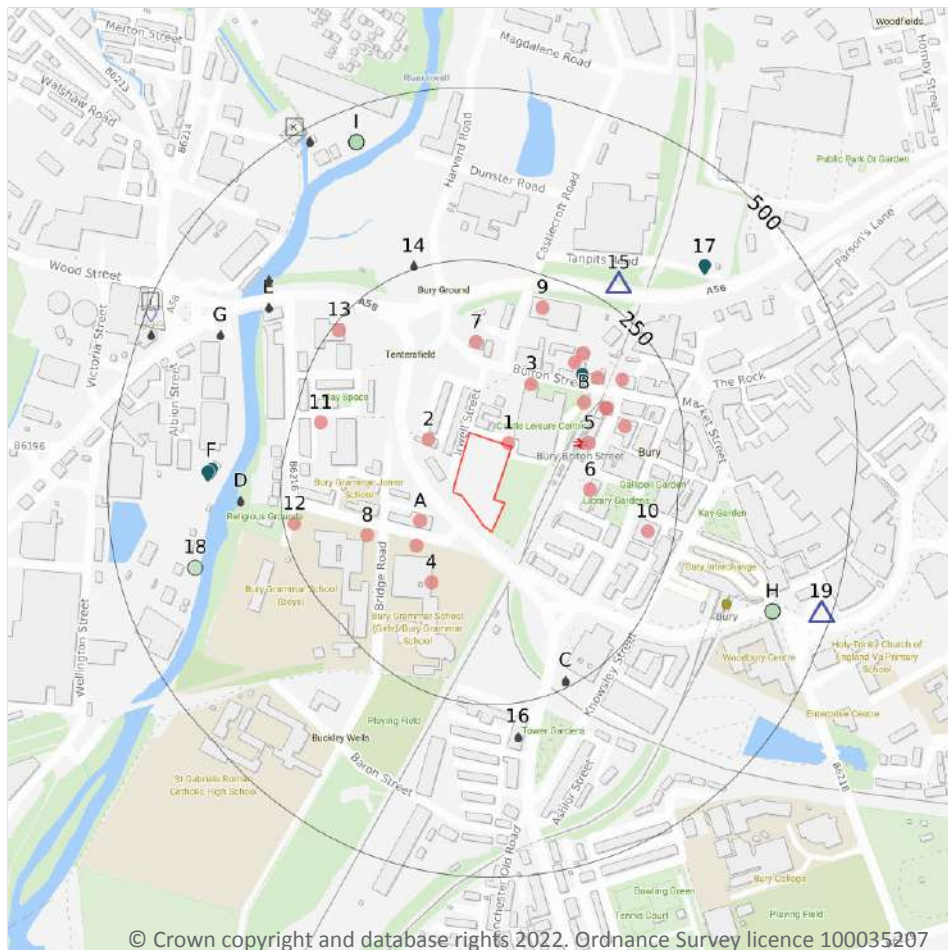


ID	Location	Site	Reference	Category	Sub-Category	Description
C	447m W	ALBION MILL, ALBION STREET, BURY, BL8 2AE	WEX137399	Disposing of waste exemption	Not on a farm	Burning waste in the open
C	459m W	Albion Mill Albion Street BURY Lancashire BL8 2AE	EPR/GE5247Z N/A001	Disposing of waste exemption	Non-Agricultural Waste Only	Burning waste in the open
H	479m S	-	WEX142868	Storing waste exemption	Not on a farm	Storage of waste in secure containers
H	479m S	-	WEX142868	Using waste exemption	Not on a farm	Use of waste in construction
H	479m S	-	WEX142868	Using waste exemption	Not on a farm	Burning of waste as a fuel in a small appliance
H	479m S	-	WEX142868	Disposing of waste exemption	Not on a farm	Deposit of waste from a railway sanitary convenience
H	479m S	-	WEX142868	Treating waste exemption	Not on a farm	Screening and blending of waste
H	479m S	-	WEX142868	Disposing of waste exemption	Not on a farm	Burning waste in the open

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



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- △ Current or recent petrol stations
- Control of Major Accident Hazards
- ⬇ Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

23

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 55**

ID	Location	Company	Address	Activity	Category
1	4m NE	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
2	54m NW	Works	Greater Manchester, BL9	Unspecified Works Or Factories	Industrial Features
A	64m SW	Waste Sure	Unit 1 The Old Court House, Tenterden Street, Bury, Greater Manchester, BL9 0AL	Construction and Tool Hire	Hire Services



ID	Location	Company	Address	Activity	Category
A	93m SW	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
3	96m NE	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
4	112m SW	Chimney	Greater Manchester, BL9	Chimneys	Industrial Features
5	113m E	East Lancashire Railway (Bury Bolton Street Station)	Greater Manchester, BL9	Railways (Heritage, Steam and Miniature)	Tourism
B	123m NE	Water Tower	Greater Manchester, BL9	Water Pumping Stations	Industrial Features
6	125m E	P P O'Connor Plant Ltd	Craig House, 5, Bank Street, Bury, Greater Manchester, BL9 0DN	Demolition Services	Construction Services
7	132m N	One Athletic	Inwood House 5, Castlecroft Road, Bury, Greater Manchester, BL9 0LN	Textiles, Fabrics, Silk and Machinery	Industrial Products
8	140m SW	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
B	147m NE	East Lancashire Railway	Bolton Street Station, Bolton Street, Bury, Greater Manchester, BL9 0EZ	Railways (Heritage, Steam and Miniature)	Tourism
B	147m NE	East Lancashire Railway	Bolton Street Station, Bolton Street, Bury, Greater Manchester, BL9 0EZ	Railway Companies and Information	Transport, Storage and Delivery
B	152m NE	Rosehill Printers Ltd	50a, Bolton Street, Bury, Greater Manchester, BL9 0LL	Published Goods	Industrial Products
B	159m NE	Pearl Car Care Products Ltd	36, Bolton Street, Bury, Greater Manchester, BL9 0LL	Cleaning Equipment and Supplies	Industrial Products
B	167m E	Works	Greater Manchester, BL9	Unspecified Works Or Factories	Industrial Features
B	171m NE	Safecell Security	50b, Bolton Street, Bury, Greater Manchester, BL9 0LL	Electronic Equipment	Industrial Products
B	187m NE	R M S	24a, Bolton Street, Bury, Greater Manchester, BL9 0LQ	Jewellery, Gems, Clocks and Watches	Consumer Products
9	205m N	Castlecroft Motors	Castlecroft Road, Bury, Greater Manchester, BL9 0LN	Vehicle Repair, Testing and Servicing	Repair and Servicing



ID	Location	Company	Address	Activity	Category
10	211m E	Bury Archives Service	Moss Street, Bury, Greater Manchester, BL9 0DR	Container and Storage	Transport, Storage and Delivery
11	211m W	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
12	234m W	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
13	240m NW	R R G Bury (Toyota and Nissan)	Rrg Bury 1, Bolton Street, Bury, Greater Manchester, BL9 0EY	New Vehicles	Motoring

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	2
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Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 55**

ID	Location	Company	Address	LPG	Status
15	284m NE	OBSOLETE	Castlecroft Road, Bury, Greater Manchester, BL9 0LN	Not Applicable	Obsolete
19	484m E	OBSOLETE	Angouleme Way, Bury, Greater Manchester, BL9 0BZ	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0
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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 55**

ID	Location	Company	Address	Operational status	Tier
J	464m NW	Vecom Sillivan Metal Treatment Limited	Vecom Sillivan Metal Treatment Limited, Bury, Sillivan Works, Wood Street, Bury, Lancashire, BL8 2SL	Historical COMAH Site	COMAH Lower Tier Operator
K	486m NW	T W Tyson	T W Tyson, Calor House, Webb Street, Bury, BL8 1AF	Historical NIHHS Site	-

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

0

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.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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.

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m

3

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 55**

ID	Location	Details	
J	492m NW	Operator: VECOM SILLAVAN METAL TREATMENT LTD Installation Name: BURY METAL TREATMENT FACILITY EPR/UP3738ZF Process: ASSOCIATED PROCESS Permit Number: CP3333JG Original Permit Number: UP3738ZF	EPR Reference: - Issue Date: 27/11/2017 Effective Date: 27/11/2017 Last date noted as effective: 13/06/2022 Status: SUPERCEDED
J	492m NW	Operator: VECOM SILLAVAN METAL TREATMENT LTD Installation Name: BURY METAL TREATMENT FACILITY EPR/UP3738ZF Process: SURFACE TREATING METALS AND PLASTICS; ELECTROLYTIC/CHEMICAL >30 CU M Permit Number: CP3333JG Original Permit Number: UP3738ZF	EPR Reference: - Issue Date: 27/11/2017 Effective Date: 27/11/2017 Last date noted as effective: 13/06/2022 Status: SUPERCEDED

ID	Location	Details	
J	492m NW	Operator: VECOM SILLAVAN METAL TREATMENT LTD Installation Name: BURY METAL TREATMENT FACILITY EPR/UP3738ZF Process: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING PHYSICO-CHEMICAL TREATMENT Permit Number: CP3333JG Original Permit Number: UP3738ZF	EPR Reference: - Issue Date: 27/11/2017 Effective Date: 27/11/2017 Last date noted as effective: 13/06/2022 Status: SUPERCEDED

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
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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 55**

ID	Location	Address	Details	
B	144m NE	Alenco Dry Cleaners, 44 Bolton Street, Bury, BL9 0LL	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
F	351m W	Quickmix Concrete, Bridge Trading Estate, Bolton Road, BL8 2AQ	Process: Use of Bulk Cement Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
F	356m W	RMC, Bolton Road, Bury, BL0 9NA	Process: Use of Bulk Cement Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
F	356m W	RMC, Bolton Road, Bury, BL0 9NA	Process: Use of Bulk Cement Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
F	356m W	Cemex UK Materials Ltd, Bolton Road, Bury, BL0 9NA	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
17	381m NE	Beldam Asbestos Co Ltd, Lascar Wks, Tan Pits Lane, BL9 0LX	Process: Asbestos 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

16

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 55**

ID	Location	Address	Details	
C	240m S	360-366 MANCHESTER RD, WALMERSLEY, BURY, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016993231 Permit Version: 1 Receiving Water: TRIN RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 20/06/1963 Revocation Date: 31/03/1997
C	240m S	360-366 MANCHESTER RD, WALMERSLEY, BURY, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016993231 Permit Version: 2 Receiving Water: TRIB RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: - Effective Date: 01/04/1997 Revocation Date: 11/11/2002
C	240m S	360-366 MANCHESTER RD, WALMERSLEY, BURY, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016993231 Permit Version: 3 Receiving Water: TRIB RIVER IRWELL	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 12/11/2002 Effective Date: 12/11/2002 Revocation Date: -
14	254m N	TANPITS ROAD CSO, HARVARD ROAD, BURY, LANCASHIRE, BL9 0NL	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982617 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: VARIED UNDER EPR 2010 Issue date: 09/07/2018 Effective Date: 09/07/2018 Revocation Date: -



ID	Location	Address	Details	
16	298m S	PARK FARM, 206 MANCHESTER RD, WALMERSLEY, BURY, LANCASHIRE, BL9 5NP	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 01M/779 Permit Version: 1 Receiving Water: UNKNOWN	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 02/03/1956 Effective Date: 02/03/1956 Revocation Date: -
D	307m W	MARSDEN ST, BURY, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0014 Permit Version: 1 Receiving Water: -	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 17/09/1992 Revocation Date: 01/01/1995
D	307m W	TANPITS ROAD CSO, HARVARD ROAD, BURY, LANCASHIRE, BL9 0NL	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982617 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 30/09/1994 Revocation Date: 08/07/2018
D	307m W	TANPITS ROAD CSO, HARVARD ROAD, BURY, LANCASHIRE, BL9 0NL	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0098 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/1995
E	343m NW	WOODFIELD CATCHMENT AREA, BURY, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0088 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/07/1991 Revocation Date: 31/12/1994
E	343m NW	WOODFIELD CATCHMENT AREA, BURY, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0088 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 01/01/1995 Revocation Date: 14/07/2014
E	365m NW	WOODFIELD CATCHMENT AREA, BURY, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016951239 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: - Effective Date: 05/02/1988 Revocation Date: 02/07/2016



ID	Location	Address	Details	
G	387m NW	BURY READYMIX PLANT, BRIDGE TRADING ESTATE, BURY/BOLTON ROAD, BURY, GREATER MANCHESTER, BL8 2AQ	Effluent Type: TRADE DISCHARGES - PROCESS EFFLUENT - NOT WATER COMPANY Permit Number: 0174/11 Permit Version: 2 Receiving Water: RIVER IRWELL	Status: SURRENDERED UNDER EPR 2010 Issue date: 01/01/1995 Effective Date: 07/03/2019 Revocation Date: 03/03/2022
G	387m NW	BURY READYMIX PLANT, BRIDGE TRADING ESTATE, BURY/BOLTON ROAD, BURY, GREATER MANCHESTER, BL8 2AQ	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 0174/11 Permit Version: 1 Receiving Water: RIVER IRWELL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/04/1991 Revocation Date: 06/03/2019
K	480m NW	LOWER WOODHILL RD, BURY, LANCASHIRE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0013 Permit Version: 1 Receiving Water: WOODHILL BROOK	Status: VARIED UNDER EPR 2010 Issue date: - Effective Date: 01/01/1995 Revocation Date: 02/09/2010
K	480m NW	LOWER WOODHILL RD, BURY, LANCASHIRE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01BRY0013 Permit Version: 2 Receiving Water: WOODHILL BROOK	Status: SURRENDERED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: 14/07/2014
J	482m NW	DORRON ROLLER LTD, 59 BOLTON ROAD, BURY, GREATER MANCHESTER	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: 016990338 Permit Version: 1 Receiving Water: ELTON BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 23/12/1981 Revocation Date: 20/09/1991

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

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

0

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.

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

4.17 List 2 Dangerous Substances

Records within 500m

0

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.

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m

6

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 55**

ID	Location	Details	
18	389m W	Incident Date: 15/07/2001 Incident Identification: 16544 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	418m SE	Incident Date: 29/05/2001 Incident Identification: 6997 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
H	418m SE	Incident Date: 30/07/2002 Incident Identification: 95921 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
I	451m N	Incident Date: 29/04/2002 Incident Identification: 75468 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)
I	451m N	Incident Date: 29/04/2002 Incident Identification: 75468 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
I	451m N	Incident Date: 29/04/2002 Incident Identification: 75468 Pollutant: Inert Materials and Wastes:Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes:Soils and Clay	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m

0

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.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m

0

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.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



4.21 Pollution inventory radioactive waste

Records within 500m

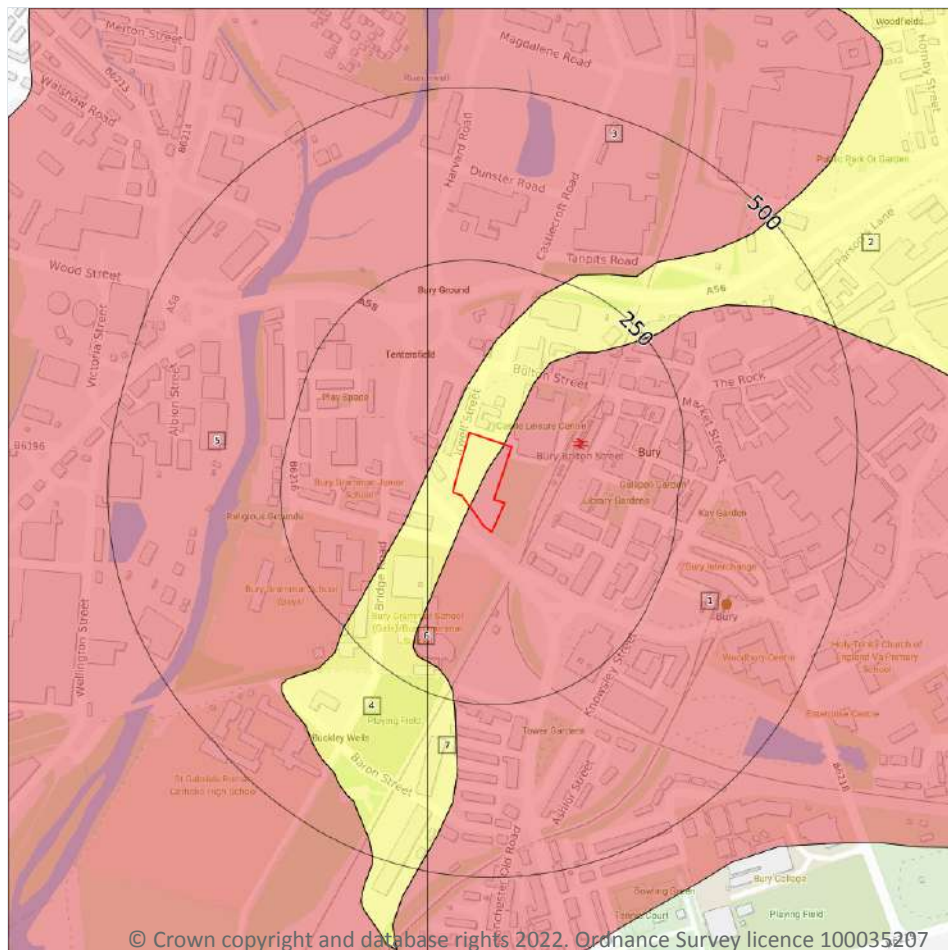
0

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

7

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 67**

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	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

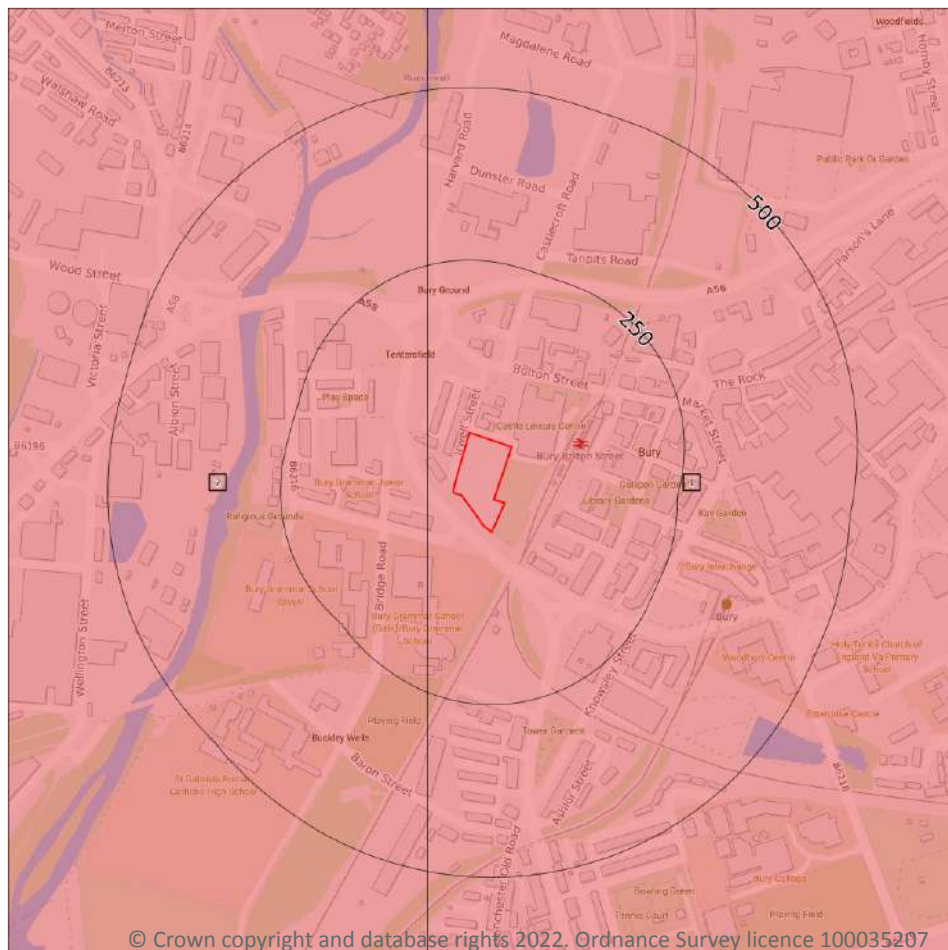


ID	Location	Designation	Description
3	31m NW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	38m W	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
5	43m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
6	142m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
7	209m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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 69](#)

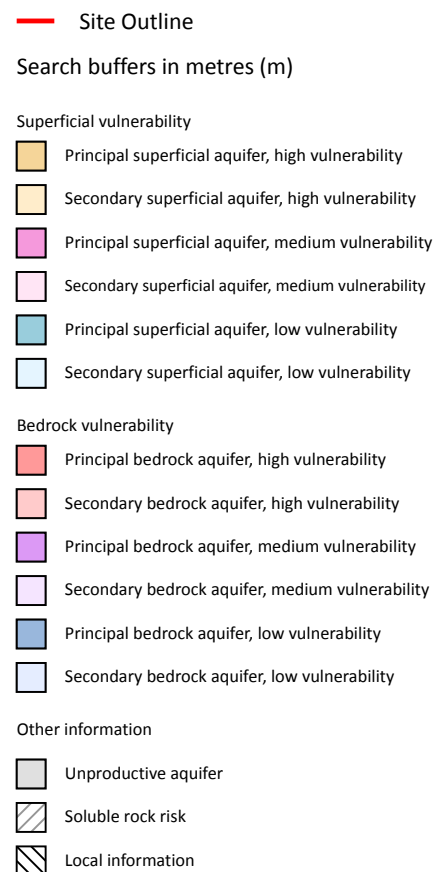
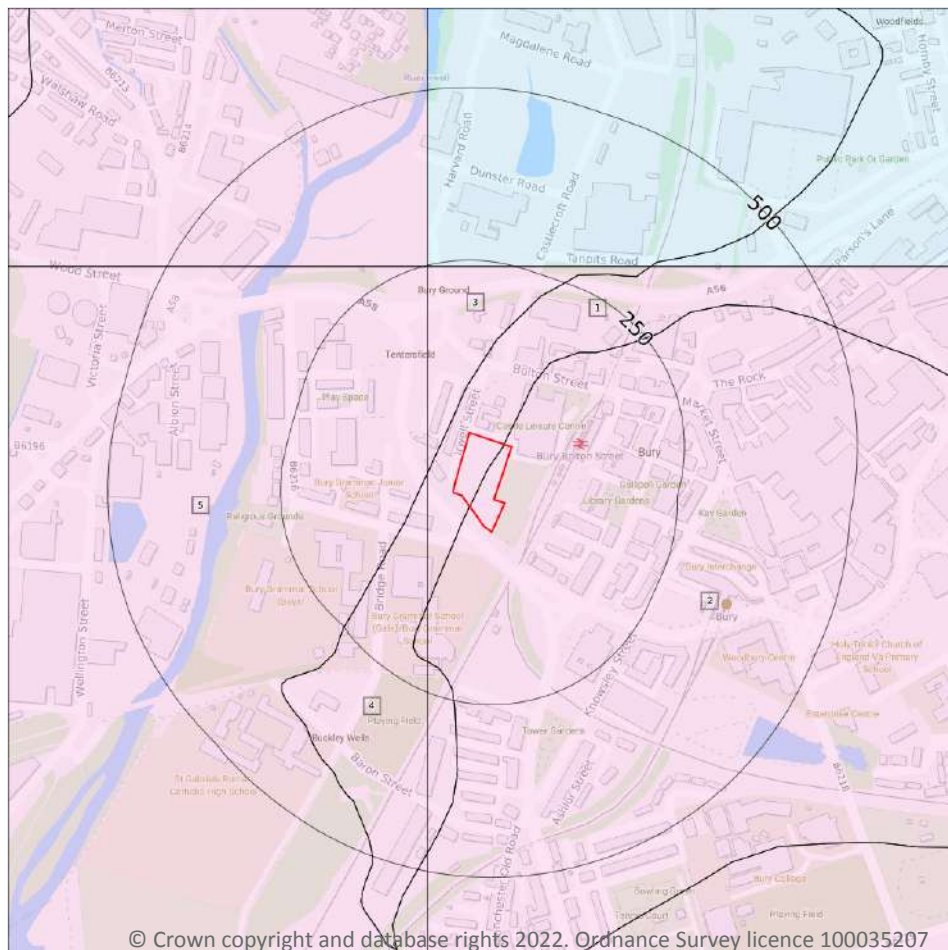
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	38m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers



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

5

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 71**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
3	30m NW	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
4	37m W	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
5	42m W	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	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

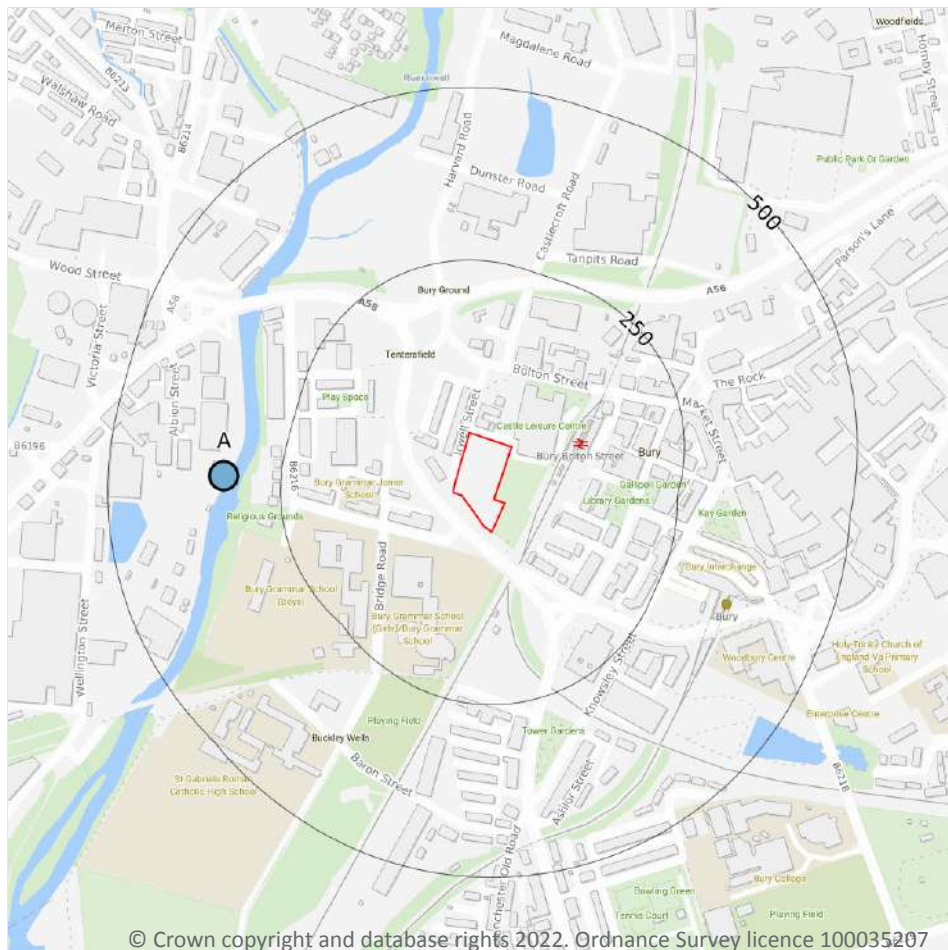
0

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
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

9

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 74**

ID	Location	Details	
-	1633m NW	Status: Historical Licence No: 2569001017 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES,OLIVES PAPERMILLS, BURY" Data Type: Point Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 379000 Northing: 412000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -
-	1633m NW	Status: Historical Licence No: 2569001017 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES,OLIVES PAPERMILLS, BURY Data Type: Point Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 379000 Northing: 412000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -
-	1633m NW	Status: Historical Licence No: 2569001017 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, OLIVES PAPERMILLS, BURY Data Type: Point Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 379000 Northing: 412000	Annual Volume (m ³): 154564 Max Daily Volume (m ³): 1591.1 Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -
-	1800m S	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: -



ID	Location	Details	
-	1800m S	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: -
-	1936m SE	Status: Historical Licence No: 2569002063 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT WATER FARM, HEAP BRIDGE, BURY" Data Type: Point Name: FISH Easting: 381800 Northing: 409700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/02/1966 Version End Date: -
-	1936m SE	Status: Historical Licence No: 2569002063 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT WATER FARM, HEAP BRIDGE, BURY Data Type: Point Name: FISH Easting: 381800 Northing: 409700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/02/1966 Version End Date: -
-	1968m E	Status: Historical Licence No: 2569002085 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT WATERFOLD FARM, HEAP BRIDGE, NEAR BURY" Data Type: Point Name: WILKINSON Easting: 382000 Northing: 410100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 15/02/1966 Version End Date: -

ID	Location	Details	
-	1968m E	Status: Historical Licence No: 2569002085 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT WATERFOLD FARM, HEAP BRIDGE, NEAR BURY Data Type: Point Name: WILKINSON Easting: 382000 Northing: 410100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 15/02/1966 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

30

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 74**

ID	Location	Details	
A	332m W	Status: Historical Licence No: 2569001285 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RMC NORTHERNT BURY CANAL WHARF Data Type: Point Name: CEMEX UK MATERIALS LTD Easting: 379706 Northing: 410696	Annual Volume (m ³): 5500 Max Daily Volume (m ³): 21 Original Application No: - Original Start Date: 23/03/2005 Expiry Date: 31/03/2015 Issue No: 2 Version Start Date: 01/04/2008 Version End Date: -
A	332m W	Status: Historical Licence No: 2569001285R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT RMC NORTHERNT BURY CANAL WHARF Data Type: Point Name: CEMEX UK MATERIALS LTD Easting: 379706 Northing: 410696	Annual Volume (m ³): 5,500 Max Daily Volume (m ³): 21 Original Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 21/12/2018 Version End Date: -



ID	Location	Details	
-	649m N	Status: Historical Licence No: NW/069/0001/007 Details: Hydroelectric Power Generation Direct Source: Surface, Non-Tidal - North West Region Point: RIVER IRWELL AT CHAMBER HALL WEIR Data Type: Point Name: Bury Council Easting: 380014 Northing: 411406	Annual Volume (m ³): 90,000,000 Max Daily Volume (m ³): 340,416 Original Application No: - Original Start Date: 10/06/2016 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 10/06/2016 Version End Date: -
-	929m NW	Status: Historical Licence No: 2569001170 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: KIRKLEES BRK AT WOOLFOLD, BURY93 Data Type: Line Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 378700 Northing: 412500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 23/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -
-	929m NW	Status: Historical Licence No: 2569001170 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "KIRKLEES BRK AT WOOLFOLD, BURY \$93" Data Type: Line Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 378700 Northing: 412500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 23/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -
-	929m NW	Status: Historical Licence No: 2569001170 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: KIRKLEES BRK AT WOOLFOLD, BURY \$93 Data Type: Line Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 378700 Northing: 412500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 23/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -
-	929m NW	Status: Historical Licence No: 2569001170 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: KIRKLEES BRK AT WOOLFOLD, BURY Data Type: Line Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 378700 Northing: 412500	Annual Volume (m ³): 850102 Max Daily Volume (m ³): 3182.2 Original Application No: - Original Start Date: 23/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -



ID	Location	Details	
-	999m SW	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: -
-	999m SW	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: -
-	1279m W	Status: Historical Licence No: 2569001160 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS FED BY ELTON BRK AT BURY [10 Data Type: Point Name: THE ELTON COP DYEING CO LTD Easting: 378800 Northing: 411000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/02/1975 Version End Date: -
-	1474m W	Status: Historical Licence No: 2569001155 Details: Boiler Feed Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY SURFACE DRAINAGE ATBURY, (KNOWN AS PARKERS Data Type: Point Name: CURTAIN STYLING LTD Easting: 378600 Northing: 411000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/01/1975 Version End Date: -



ID	Location	Details	
-	1474m W	Status: Historical Licence No: 2569001155 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY SURFACE DRAINAGE ATBURY, (KNOWN AS PARKERS) Data Type: Point Name: CURTAIN STYLING LTD Easting: 378600 Northing: 411000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/01/1975 Version End Date: -
-	1474m W	Status: Historical Licence No: 2569001155 Details: General use relating to Secondary Category (Medium Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "RESERVOIR FED BY SURFACE DRAINAGE ATBURY, (KNOWN AS PARKERS " Data Type: Point Name: CURTAIN STYLING LTD Easting: 378600 Northing: 411000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/01/1975 Version End Date: -
-	1474m W	Status: Historical Licence No: 2569001155 Details: Boiler Feed Direct Source: "Surface, Non-Tidal - North West Region" Point: "RESERVOIR FED BY SURFACE DRAINAGE ATBURY, (KNOWN AS PARKERS " Data Type: Point Name: CURTAIN STYLING LTD Easting: 378600 Northing: 411000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/01/1975 Version End Date: -
-	1554m W	Status: Historical Licence No: 2569001160 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS FED BY ELTON BRK AT BURY *27 Data Type: Point Name: THE ELTON COP DYEING CO LTD Easting: 378500 Northing: 410900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/02/1975 Version End Date: -



ID	Location	Details	
-	1558m NW	Status: Historical Licence No: 2569001170 Details: Process Water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIR FED BY KIRKLESS BROOK AND SURFACE DRAINAGE Data Type: Point Name: ACTIVECRAFT LTD PAPERMAKERS Easting: 379000 Northing: 411900	Annual Volume (m ³): 850102 Max Daily Volume (m ³): 3182.2 Original Application No: - Original Start Date: 23/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/06/1995 Version End Date: -
-	1571m W	Status: Historical Licence No: 2569001160 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: RESERVOIRS FED BY ELTON BRK AT BURY 88 Data Type: Point Name: THE ELTON COP DYEING CO LTD Easting: 378500 Northing: 411000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/02/1975 Version End Date: -
-	1666m SW	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: -
-	1666m SW	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: -

ID	Location	Details	
-	1666m SW	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: -
-	1666m SW	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: -
-	1672m S	Status: Active 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): 80,000,000 Max Daily Volume (m ³): 259,200 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: -
-	1917m S	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: -

ID	Location	Details	
-	1917m S	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: -
-	1917m S	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: -
-	1917m S	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: -
-	1917m S	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: -
-	1917m S	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	
-	1921m NE	Status: Historical Licence No: 2569001289 Details: Lake & Pond Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: TRIBUTARY OF THE RIVER IRWELL, AT CLARENCE PARK LIDO Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL Easting: 381211 Northing: 412322	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 22/12/2008 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 22/12/2008 Version End Date: -
-	1921m NE	Status: Active Licence No: 2569001289R01 Details: Lake & Pond Throughflow Direct Source: Surface, Non-Tidal - North West Region Point: TRIBUTARY OF THE RIVER IRWELL, AT CLARENCE PARK LIDO Data Type: Point Name: BURY METROPOLITAN BOROUGH COUNCIL Easting: 381211 Northing: 412322	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: NPS/WR/017227 Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0
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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.

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

5.9 Source Protection Zones

Records within 500m	0
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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.



This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site

1

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 86**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	River	Irwell (Rossendale STW to Roch)	GB112069064620	Croal Irwell	Irwell

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

6.4 WFD Surface water bodies

Records identified

1

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 86**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
3	303m W	River	Irwell (Rossendale STW to Roch)	GB112069064620	Moderate	Fail	Moderate	2019

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



6.5 WFD Groundwater bodies

Records on site

1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 86**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Northern Manchester Carboniferous Aquifers	<u>GB41202G101800</u>	Poor	Poor	Good	2019

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



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

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

7.2 Historical Flood Events

Records within 250m**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

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

7.3 Flood Defences

Records within 250m**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

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

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

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

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

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

7.7 Flood Zone 3

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

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



8 Surface water flooding



— Site Outline

Search buffers in metres (m)

1 in 1000 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

1 in 30 year, 0.3m - 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 92**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

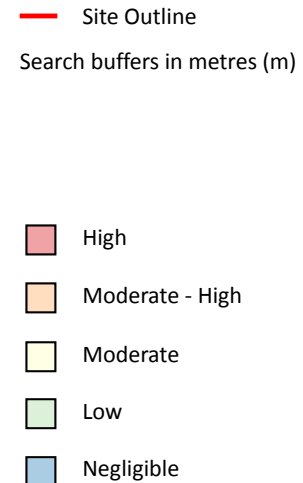
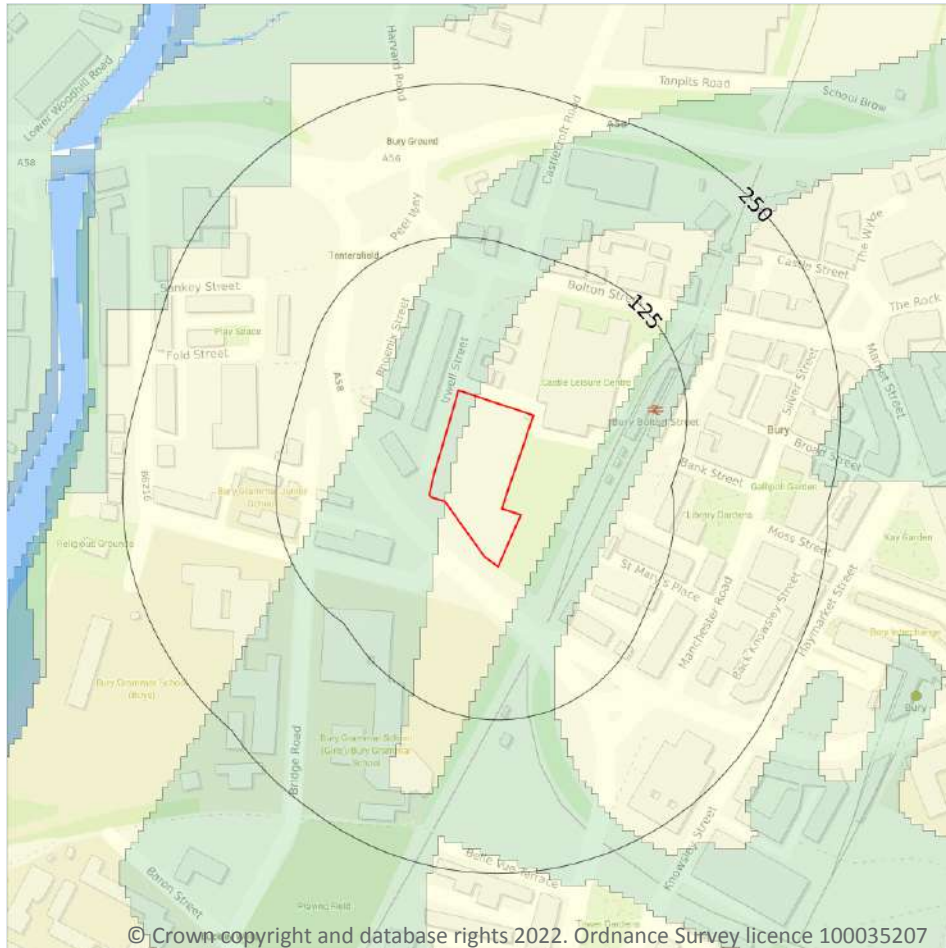
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Moderate

Highest risk within 50m

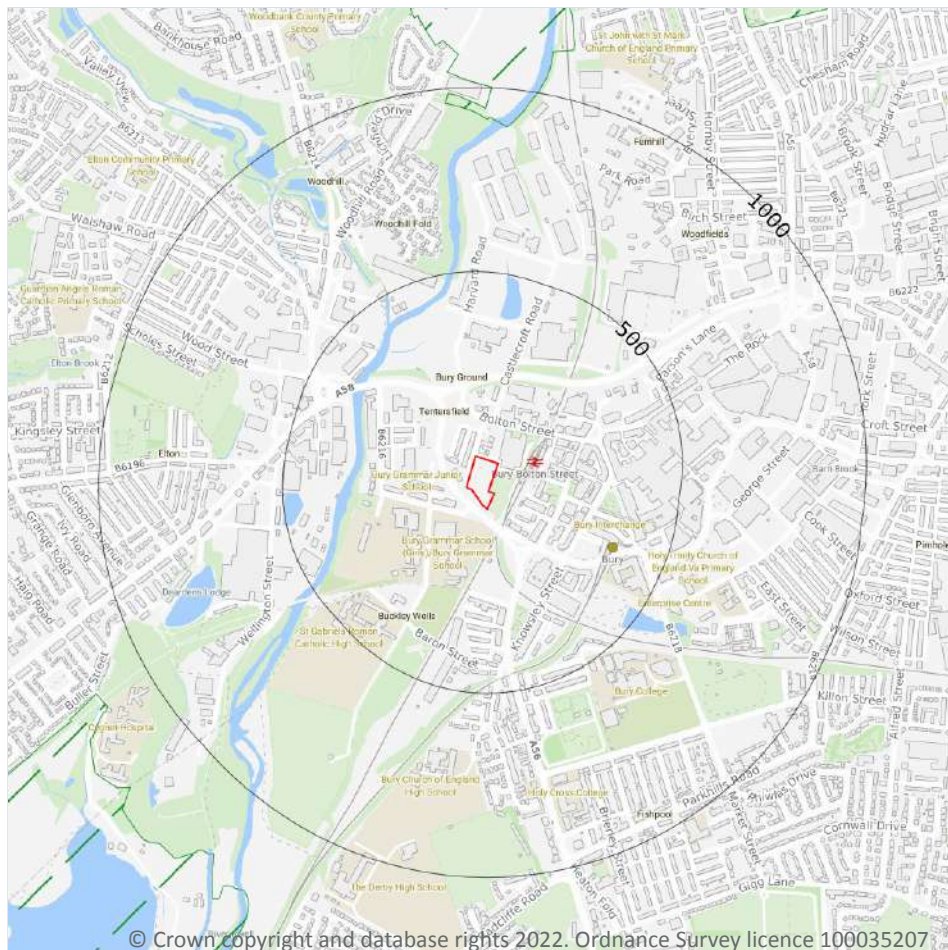
Moderate

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 94**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- + Local Nature Reserves (LNR)
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m

2

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 95**

ID	Location	Name	Data source
-	1749m NE	Chesham Woods	Natural England
-	1950m NW	Kirklees Valley	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.



10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

4

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 95**

ID	Location	Name	Local Authority name
1	897m N	Merseyside and Greater Manchester	Bury
-	1389m W	Merseyside and Greater Manchester	Bury
-	1980m E	Merseyside and Greater Manchester	Rochdale
-	1993m E	Merseyside and Greater Manchester	Bury

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

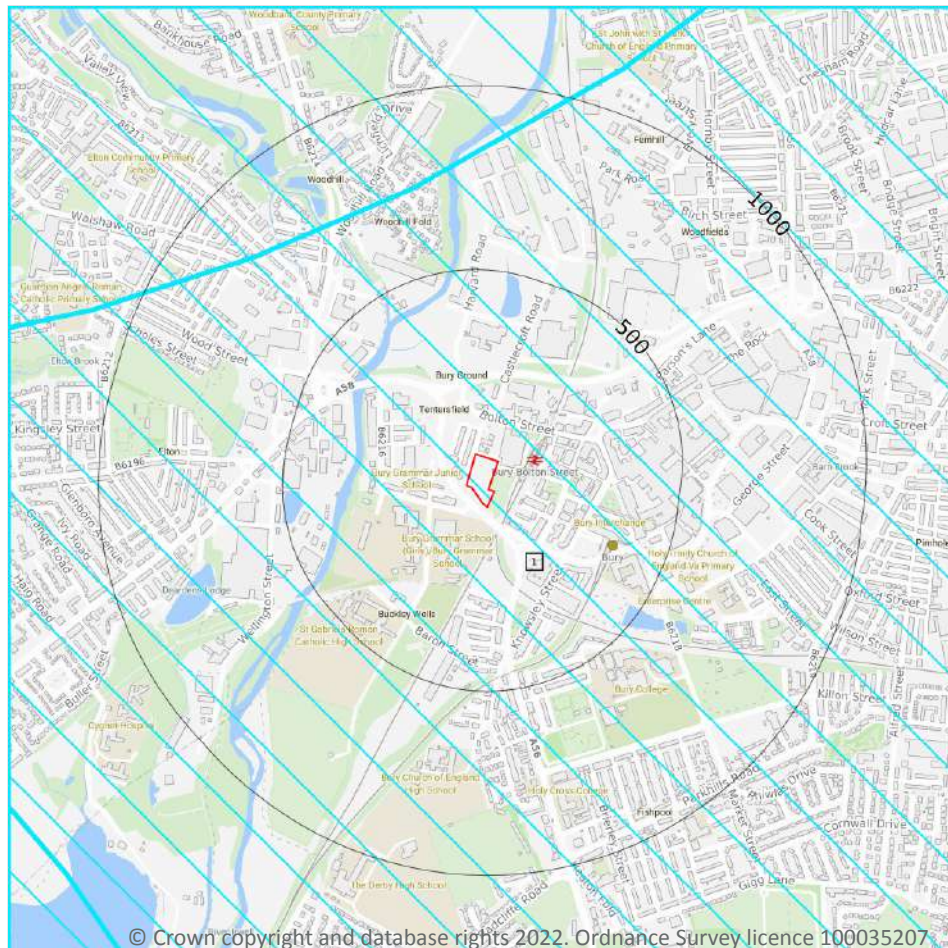
Records within 2000m

0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 100**

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes >50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.



This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

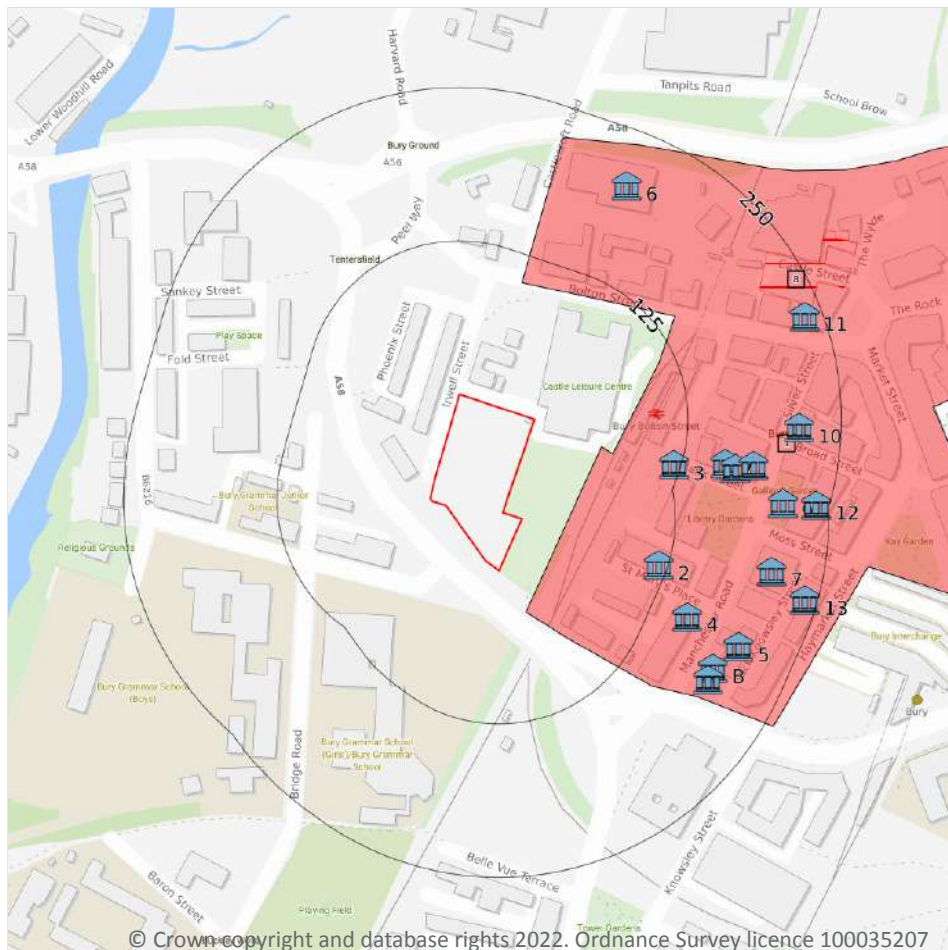
0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

16

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 102**

ID	Location	Name	Grade	Reference Number	Listed date
2	118m SE	Nos. 2-20, St Marys Place, East, Bury, BL9	II	1067219	29/01/1985
3	119m E	Railings At West End of Street and Railings To Steps Down To Railway Level, East, Bury, BL9	II	1067280	29/01/1985
4	156m SE	2-14, Manchester Road, East, Bury, BL9	II	1067233	01/08/1977
A	160m E	2-8, Bank Street, East, Bury, BL9	II	1356790	29/01/1985
A	168m E	Bank Chambers, East, Bury, BL9	II	1067279	29/01/1985



ID	Location	Name	Grade	Reference Number	Listed date
A	182m E	Former Barclays Bank, East, Bury, BL9	II	1356834	18/05/1981
B	192m SE	1, Manchester Road, East, Bury, BL9	II	1067231	29/01/1985
B	192m SE	3, Manchester Road, East, Bury, BL9	II	1356843	29/01/1985
5	204m SE	Church of Saint Marie, East, Bury, BL9	II	1356824	10/11/1951
6	205m NE	Bury Transport Museum, East, Bury, BL9	II	1390768	22/12/2003
7	208m E	Art Gallery and Library, East, Bury, BL9	II	1163708	29/01/1985
9	213m E	War Memorial To The Lancashire Fusiliers, Gallipoli Gardens, East, Bury, BL9	II*	1250814	02/09/1992
10	216m E	Nos. 15-19, Silver Street and No. 5, Broad Street, East, Bury, BL9	II	1067213	29/01/1985
11	235m NE	Old White Lion, East, Bury, BL9	II	1460925	28/03/2019
12	240m E	Bury School of Arts and Crafts, East, Bury, BL9	II	1250802	21/06/1991
13	240m E	Art Picture House, East, Bury, BL9	II	1250829	12/04/1995

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m

1

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 102**

ID	Location	Name	District	Date of designation
1	34m SE	Bury Town Centre	Bury	1978

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



11.6 Scheduled Ancient Monuments

Records within 250m

1

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

Features are displayed on the Visual and cultural designations map on **page 102**

ID	Location	Ancient monument name	Reference number
8	211m NE	Medieval moated site and later fortified manor house known as Bury Castle 100m west of the parish church	1015128

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

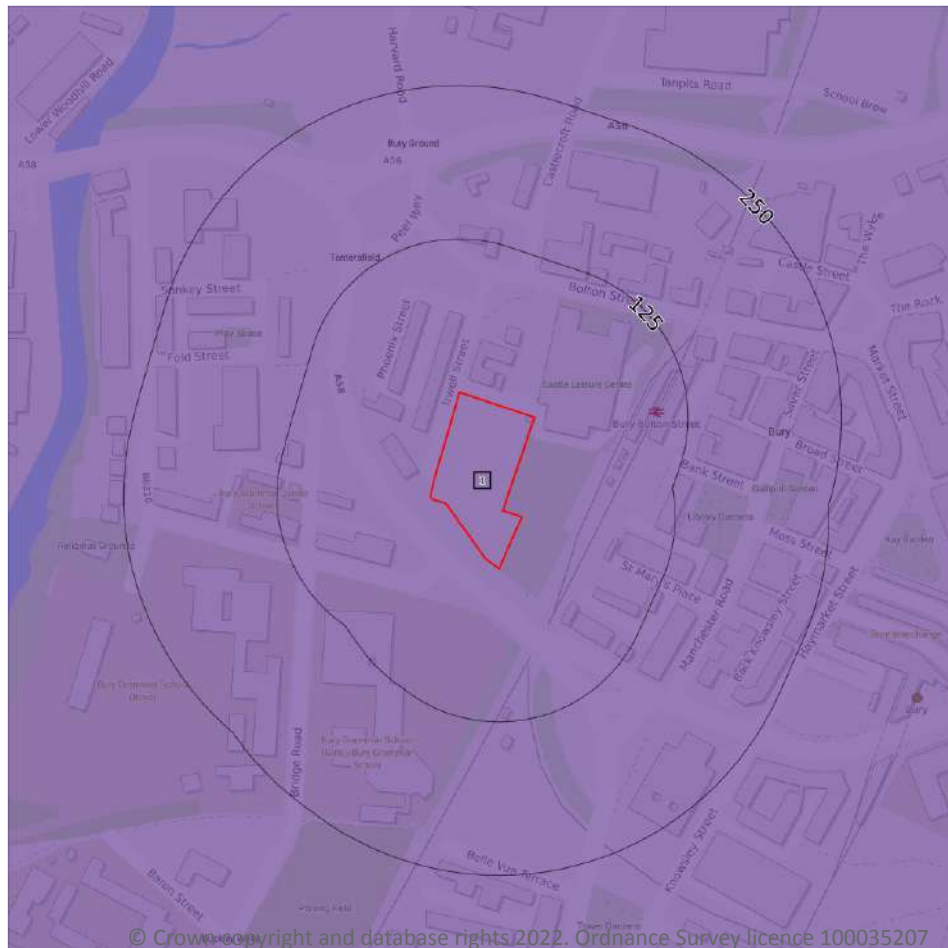
0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 106**

ID	Location	Classification	Description
1	On site	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m**0**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m**0**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m**0**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m**0**

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.



13 Habitat designations



- Site Outline
- Search buffers in metres (m)
- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders
- Habitat Networks
- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m

1

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 108**

ID	Location	Main Habitat	Other habitats
1	237m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.



13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

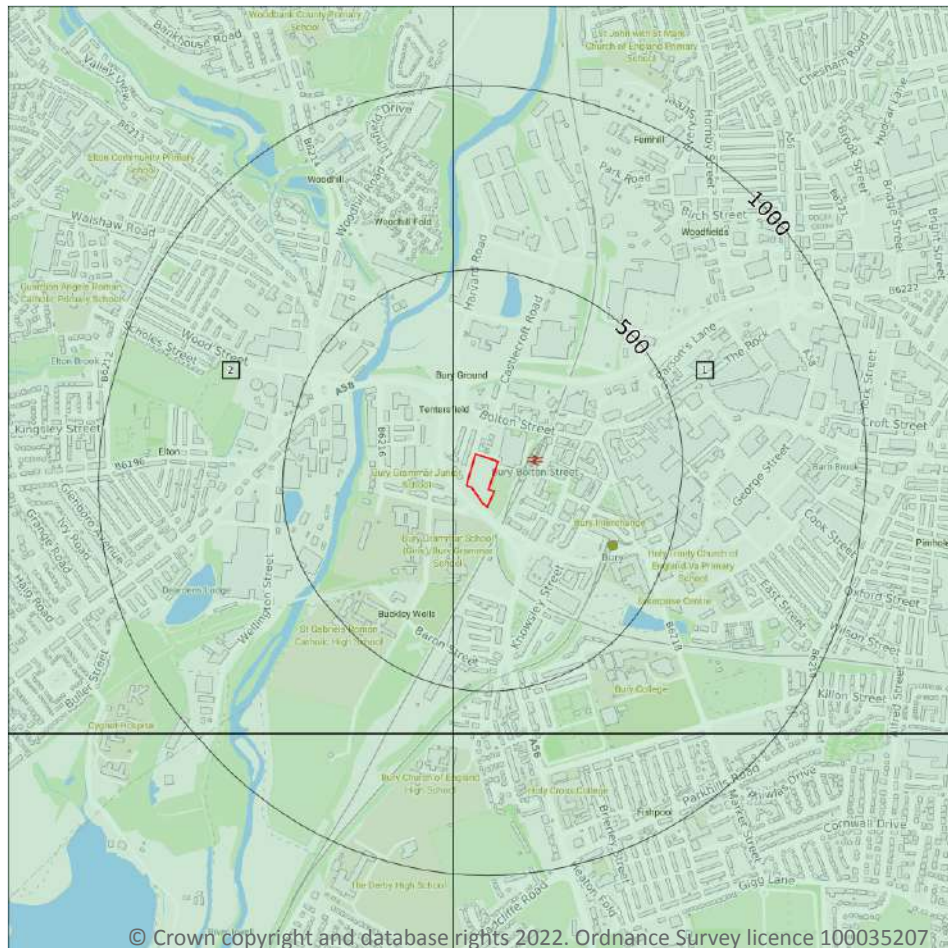
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Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

2

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

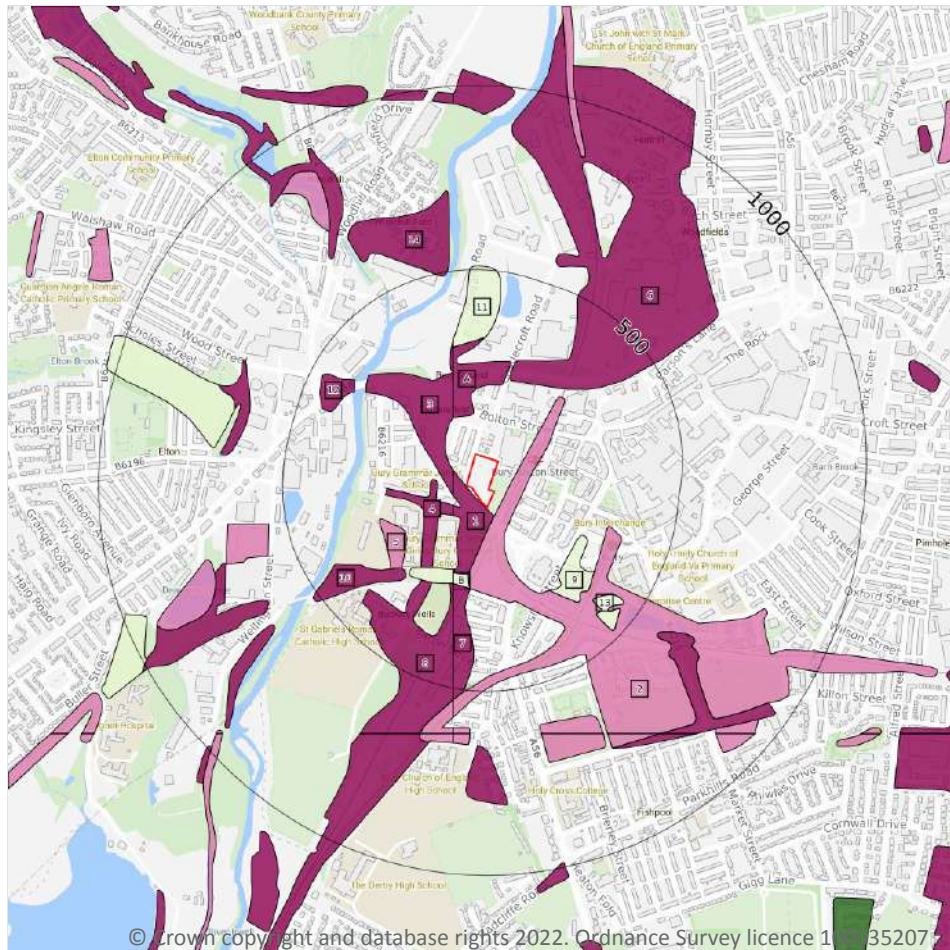
Features are displayed on the Geology 1:10,000 scale - Availability map on **page 110**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	SD81SW
2	38m W	Full	Full	Full	Full	SD71SE

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



- Site Outline**
- Search buffers in metres (m)**
- Reclaimed ground
 - Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

19

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 111**

ID	Location	LEX Code	Description	Rock description
1	3m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	28m SE	WGR-VOID	Worked Ground (Undivided)	Void
3	38m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	65m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

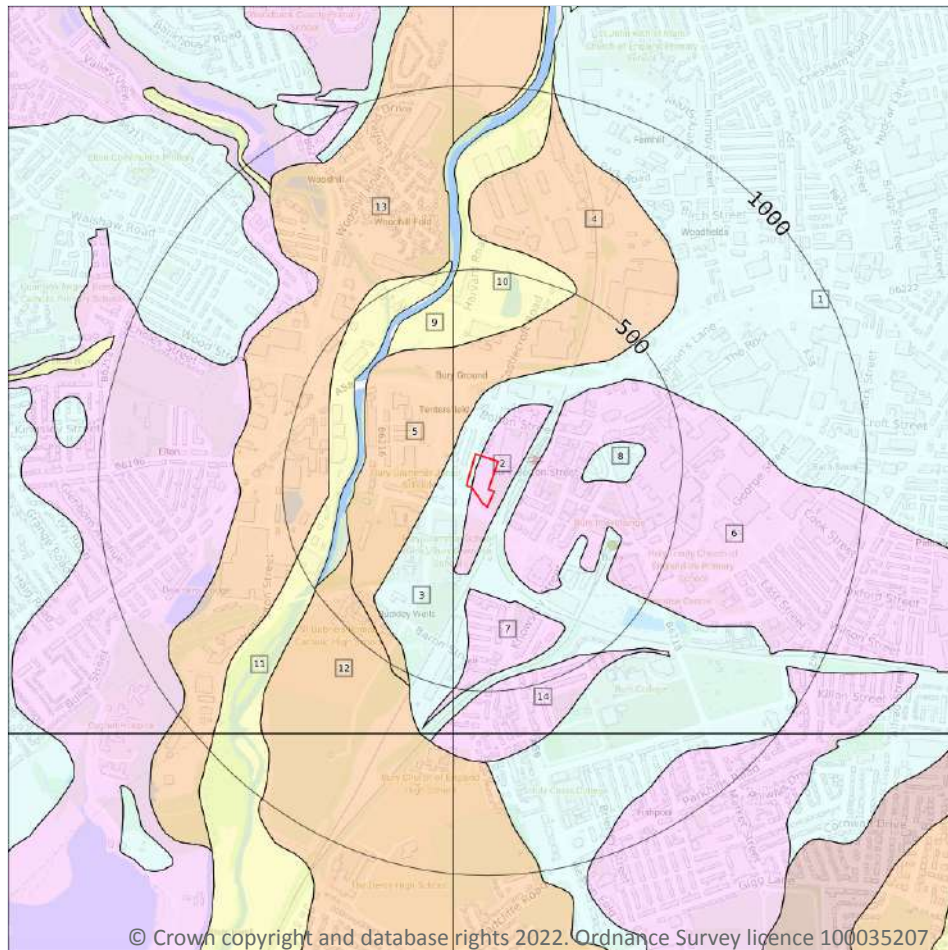


ID	Location	LEX Code	Description	Rock description
A	105m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	191m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit
B	193m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit
5	210m SW	WGR-VOID	Worked Ground (Undivided)	Void
6	220m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	226m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	228m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	229m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	256m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
10	280m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	296m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	296m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
12	369m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
13	382m SE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
14	490m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

14

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 113**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	On site	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
3	38m W	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton



ID	Location	LEX Code	Description	Rock description
4	60m NW	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
5	61m NW	RTD2-XSV	River Terrace Deposits, 2 - Sand And Gravel	Sand And Gravel
6	71m SE	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
7	227m S	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
8	231m E	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
9	296m N	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
10	296m N	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
11	305m W	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
12	351m SW	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
13	374m W	RTD1-XSV	River Terrace Deposits, 1 - Sand And Gravel	Sand And Gravel
14	461m S	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

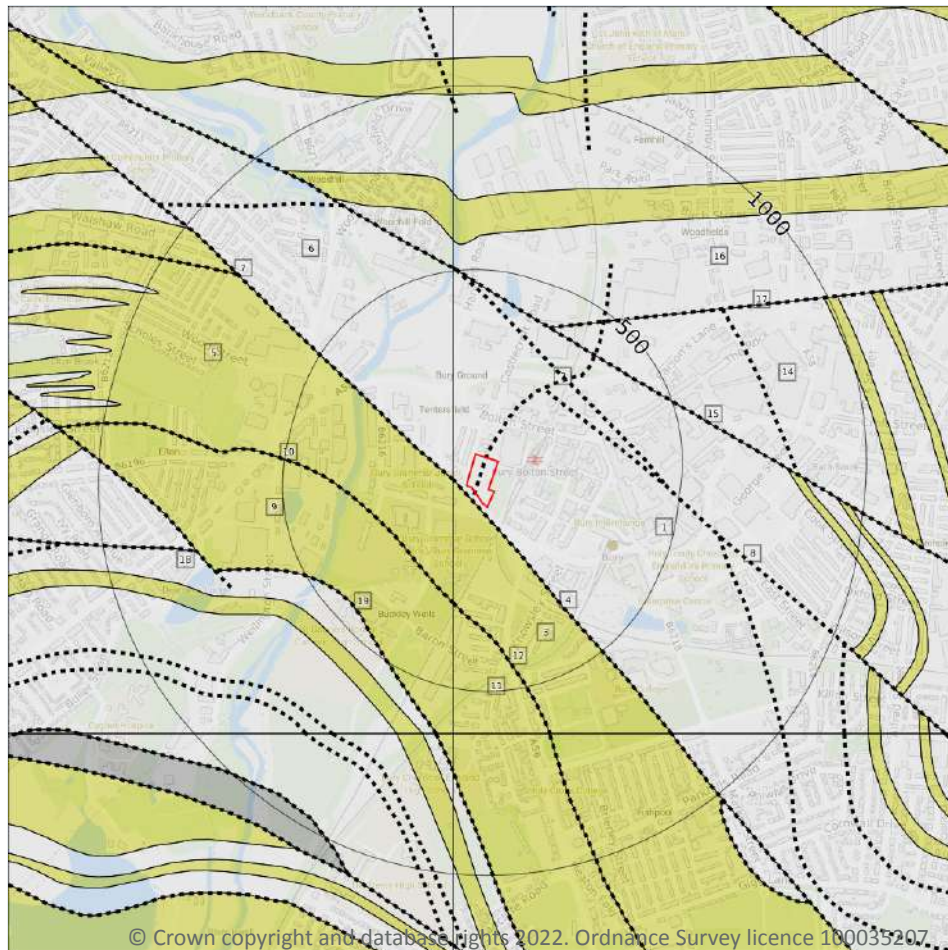
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Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

9

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 115**

ID	Location	LEX Code	Description	Rock age
1	On site	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
3	16m S	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age
5	38m W	CAR-SDST	Cannel Rock (south Lancashire) - Sandstone	Langsettian Sub-age



ID	Location	LEX Code	Description	Rock age
6	40m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
9	237m SW	TRBR-SDST	Trencherbone Rock - Sandstone	Langsettian Sub-age
11	276m S	TRBR-SDST	Trencherbone Rock - Sandstone	Langsettian Sub-age
14	383m NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
16	389m NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
18	447m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

10

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

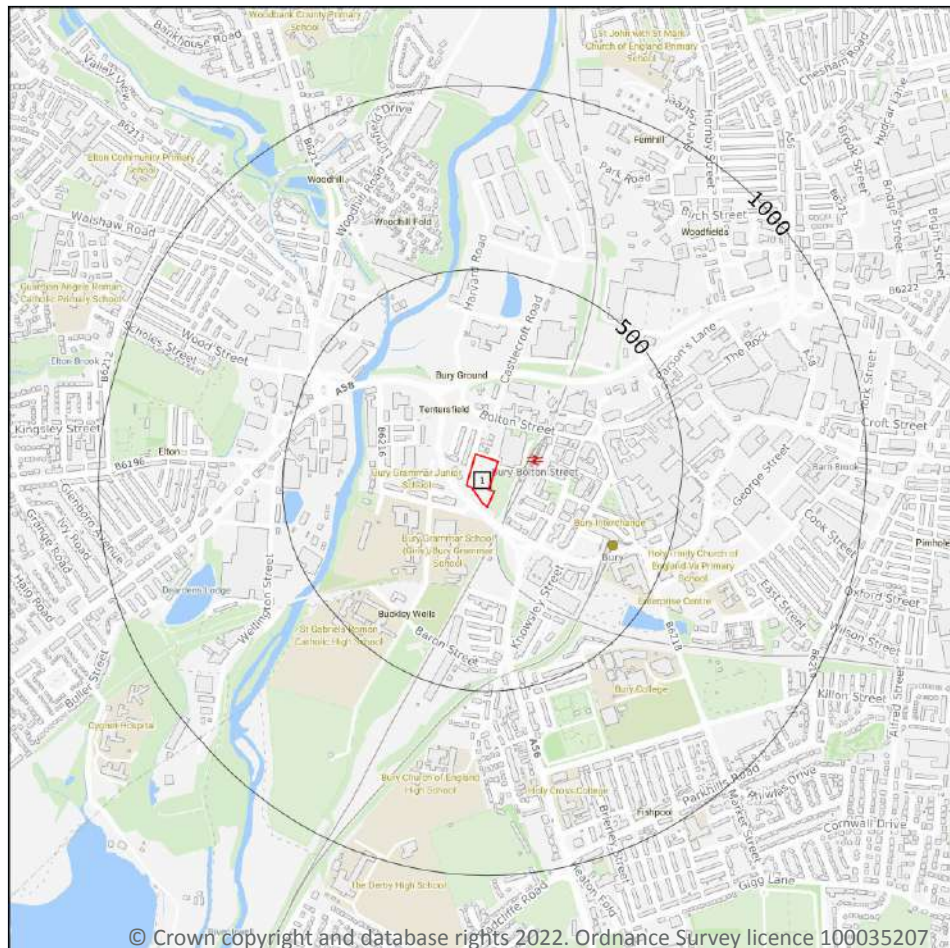
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 115**

ID	Location	Category	Description
2	On site	LANDFORM	Buried channel or valley margin
4	16m S	FAULT	Normal fault, inferred; crossmarks on downthrow side
7	40m W	FAULT	Normal fault, inferred; crossmarks on downthrow side
8	232m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
10	237m SW	ROCK	Coal seam, inferred coincident with bedrock geology boundary
12	276m S	ROCK	Coal seam, inferred coincident with bedrock geology boundary
13	287m NE	ROCK	Coal seam, inferred
15	383m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
17	389m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
19	447m SW	ROCK	Coal seam, inferred coincident with bedrock geology boundary

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline
Search buffers in metres (m)

□ Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

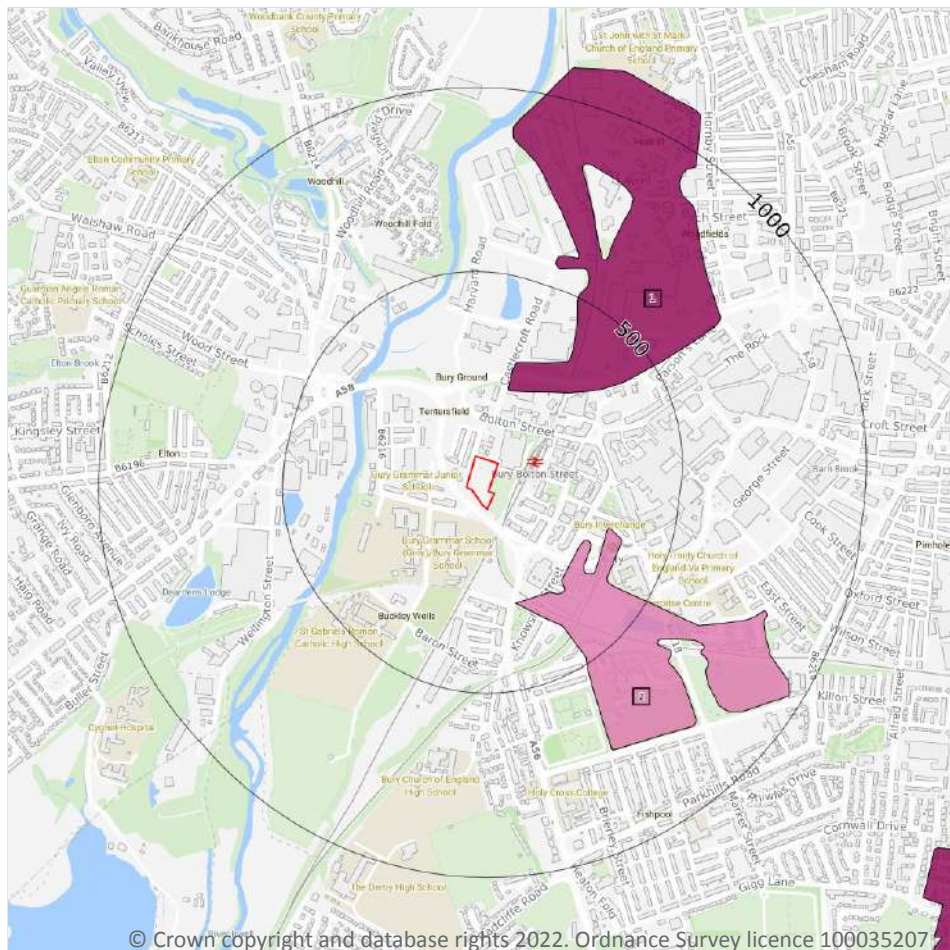
Features are displayed on the Geology 1:50,000 scale - Availability map on **page 117**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	EW085_manchester_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground



- Site Outline
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

2

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 118**

ID	Location	LEX Code	Description	Rock description
1	197m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	267m S	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID

This data is sourced from the British Geological Survey.



15.3 Artificial ground permeability (50k)

Records within 50m

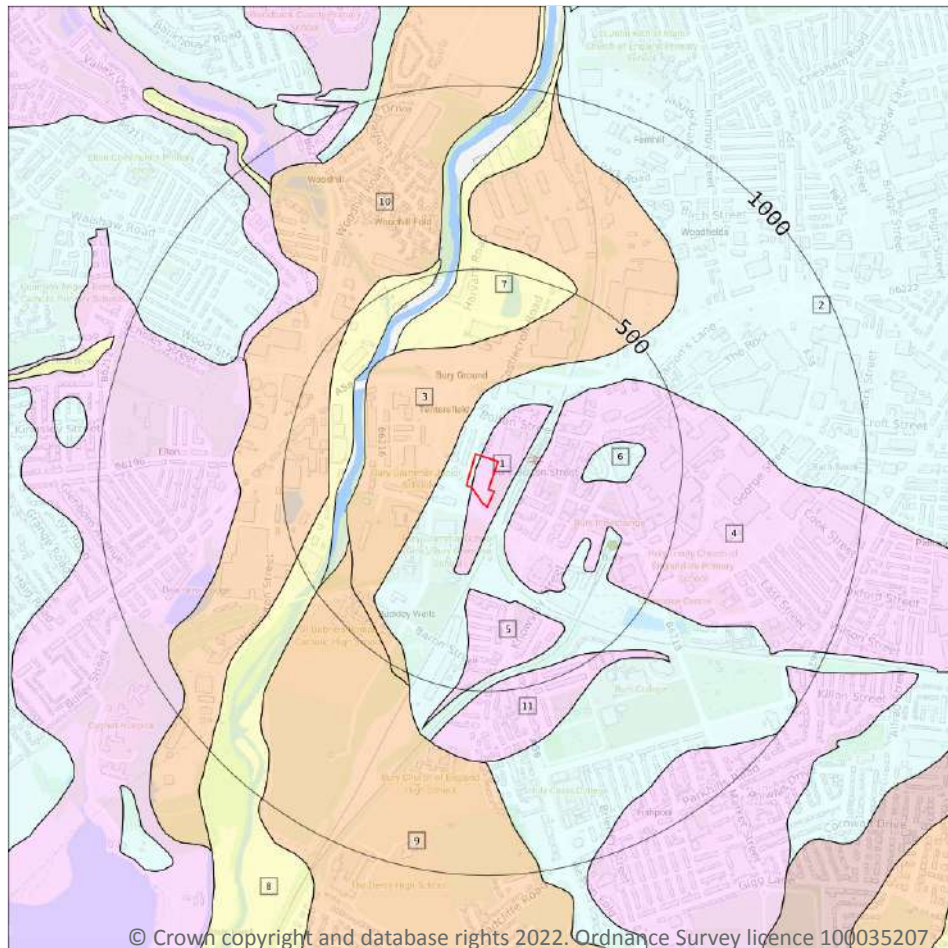
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

11

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 120**

ID	Location	LEX Code	Description	Rock description
1	On site	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
2	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	60m NW	RTD2-XSV	RIVER TERRACE DEPOSITS, 2	SAND AND GRAVEL



ID	Location	LEX Code	Description	Rock description
4	71m SE	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
5	227m S	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
6	231m E	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
7	296m N	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
8	324m W	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
9	351m SW	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
10	374m W	RTD1-XSV	RIVER TERRACE DEPOSITS, 1	SAND AND GRAVEL
11	461m S	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	3
---------------------------	----------

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Low
On site	Intergranular	Very High	High
38m W	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0
----------------------------	----------

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



15.7 Landslip permeability (50k)

Records within 50m

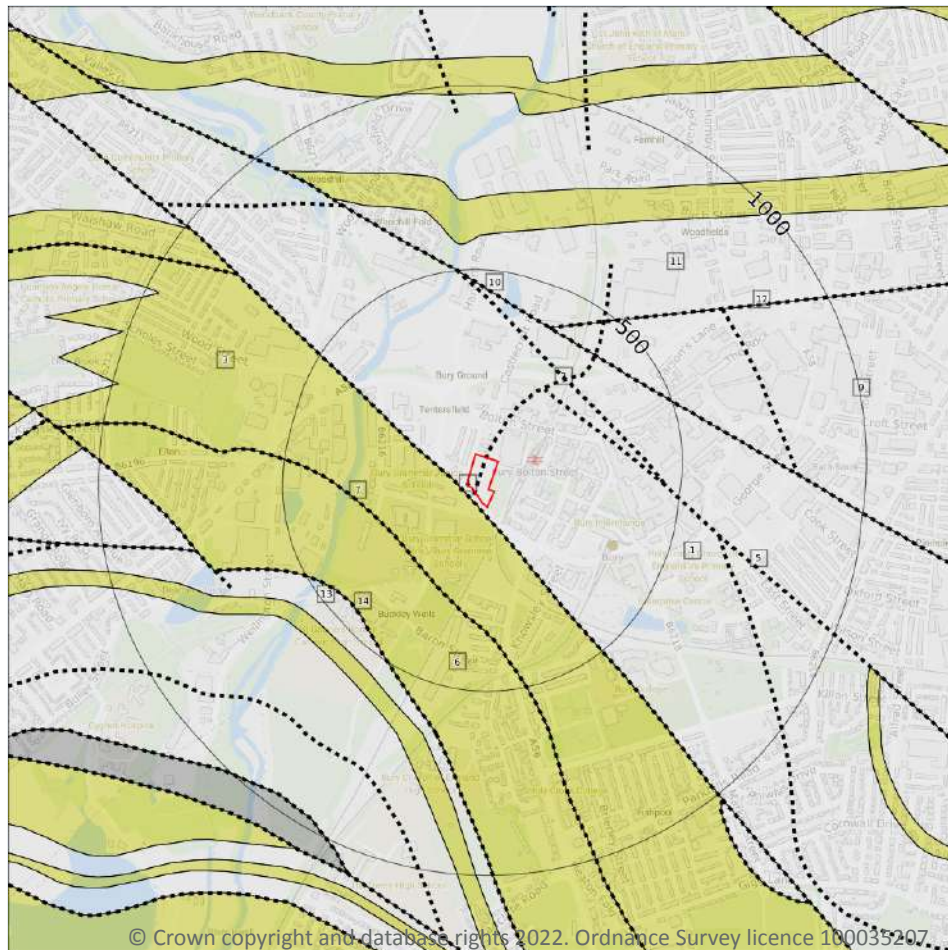
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

---- Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

6

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 123**

ID	Location	LEX Code	Description	Rock age
1	On site	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3	16m S	CAR-SDST	CANNEL ROCK (SOUTH LANCASHIRE) - SANDSTONE	WESTPHALIAN
6	237m SW	TRBR-SDST	TRENCHBONE ROCK - SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
9	383m NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
11	389m NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13	447m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	4
---------------------------	----------

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Moderate	Low
16m S	Fracture	High	Moderate
38m W	Fracture	High	Moderate
40m W	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	8
----------------------------	----------

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 123**

ID	Location	Category	Description
2	On site	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley
4	16m S	FAULT	Fault, inferred
5	231m NE	FAULT	Fault, inferred
7	237m SW	ROCK	Coal seam, inferred

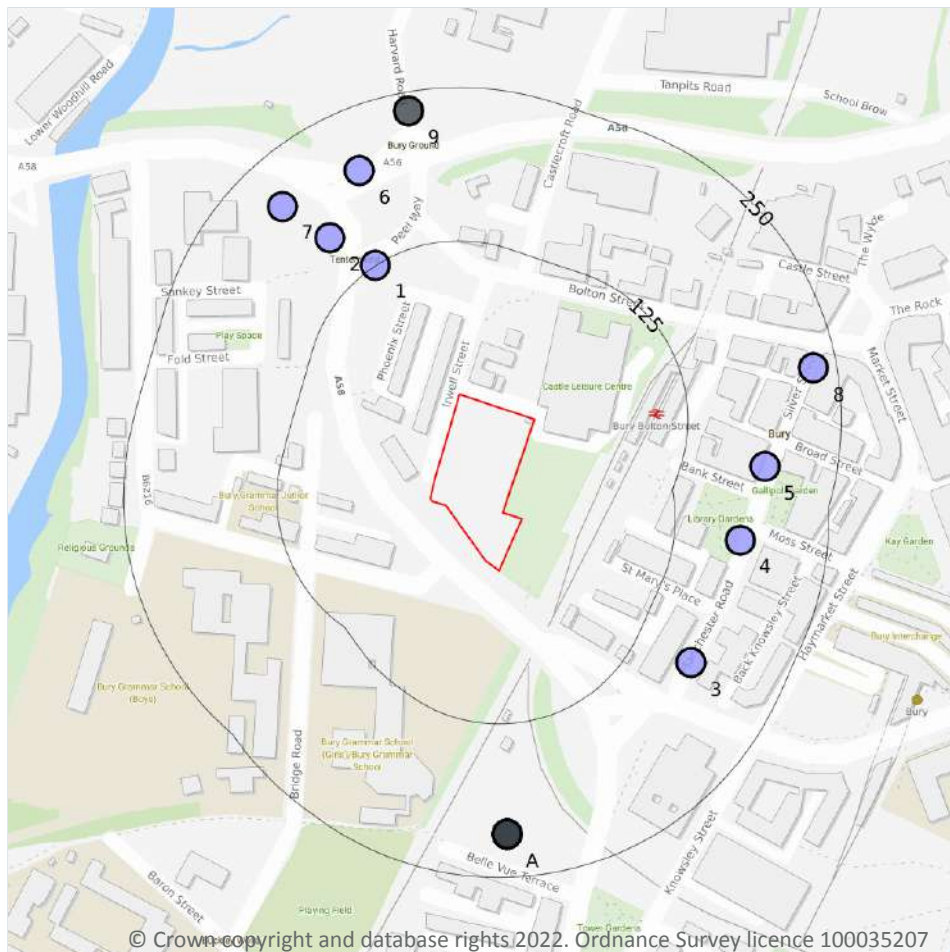


ID	Location	Category	Description
8	288m NE	ROCK	Coal seam, inferred
10	383m NE	FAULT	Fault, inferred
12	389m NE	FAULT	Fault, inferred
14	447m SW	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

13

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 126**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	126m NW	379993 410864	BURY COUNTY BOROUGH, SHALLOW 146	6.25	N	22797
2	165m NW	379956 410886	BURY COUNTY BOROUGH, SHALLOW 145	6.4	N	22796
3	174m SE	380250 410540	BURY TOWN CENTRE SEWERS BH8	7.5	N	30653

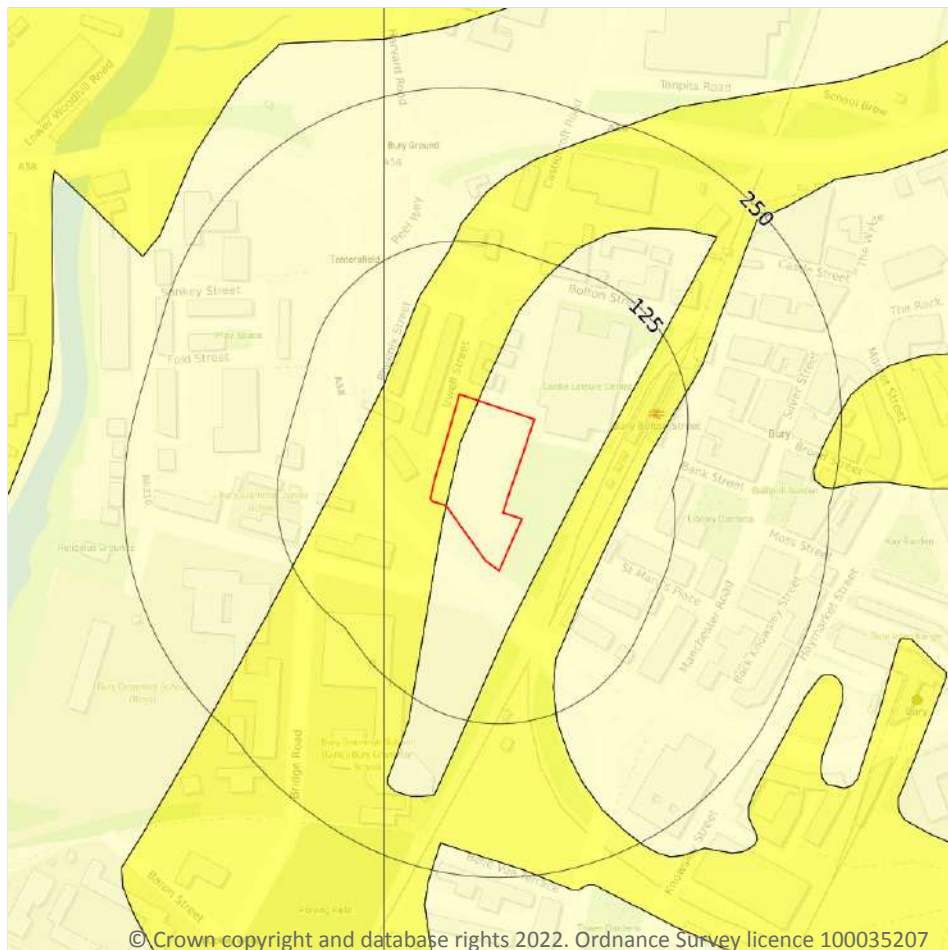


ID	Location	Grid reference	Name	Length	Confidential	Web link
4	179m E	380290 410640	BURY TOWN CENTRE SEWERS BH7	6.2	N	30652
5	191m E	380310 410700	BURY TOWN CENTRE SEWERS BH6	3.6	N	30651
6	200m N	379980 410941	BURY COUNTY BOROUGH, SHALLOW 155	9.45	N	22798
7	211m NW	379917 410912	BURY COUNTY BOROUGH, SHALLOW 144	6.1	N	22795
A	215m S	380100 410400	METROLINK RAILWAY BRDG 2	-	Y	N/A
A	215m S	380100 410400	METROLINK RAILWAY BRDG 3	-	Y	N/A
A	215m S	380100 410400	METROLINK RAILWAY BRDG 1	-	Y	N/A
A	215m S	380100 410400	METROLINK RAILWAY BRDG 4	-	Y	N/A
8	231m E	380350 410780	BURY TOWN CENTRE SEWERS BH5	4.6	N	30650
9	235m N	380020 410990	CARLYLE STREET BURY 1	-	Y	N/A

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

3

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

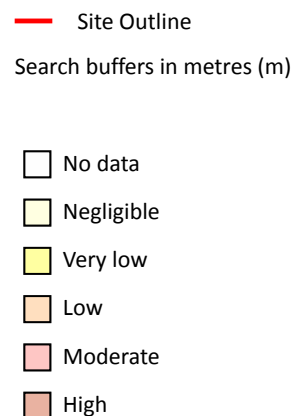
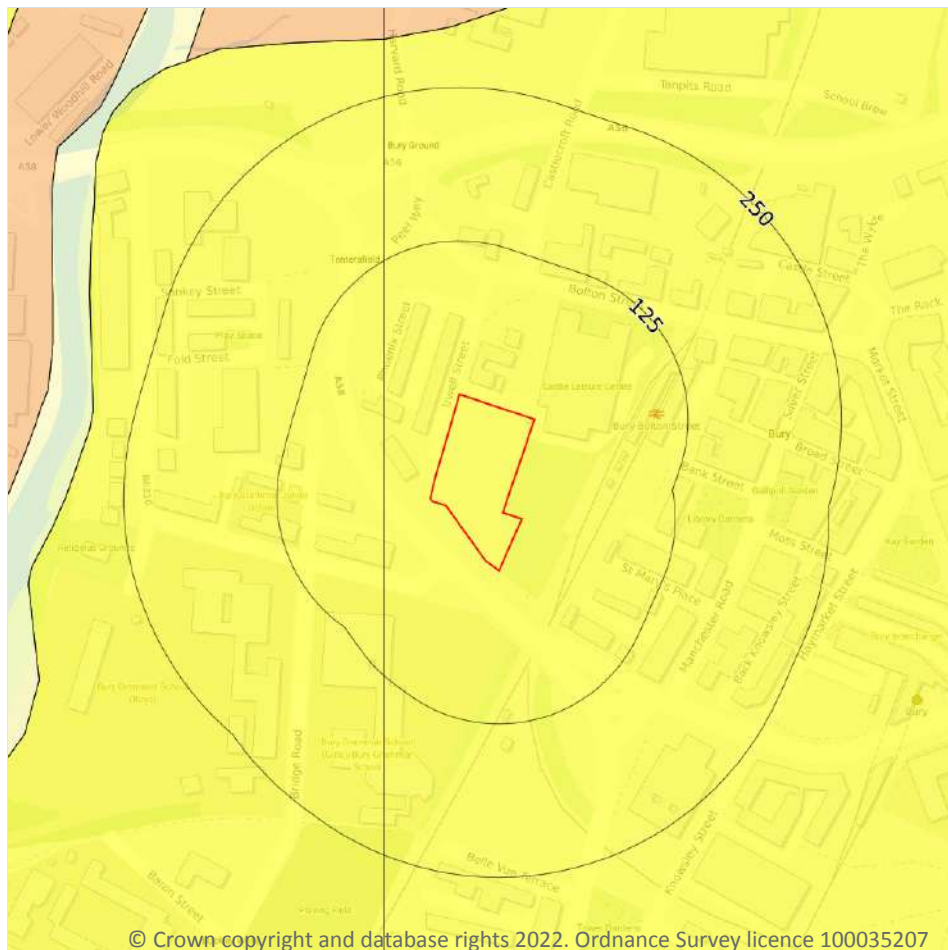
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 128**

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.
On site	Very low	Ground conditions predominantly low plasticity.
38m W	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 130**

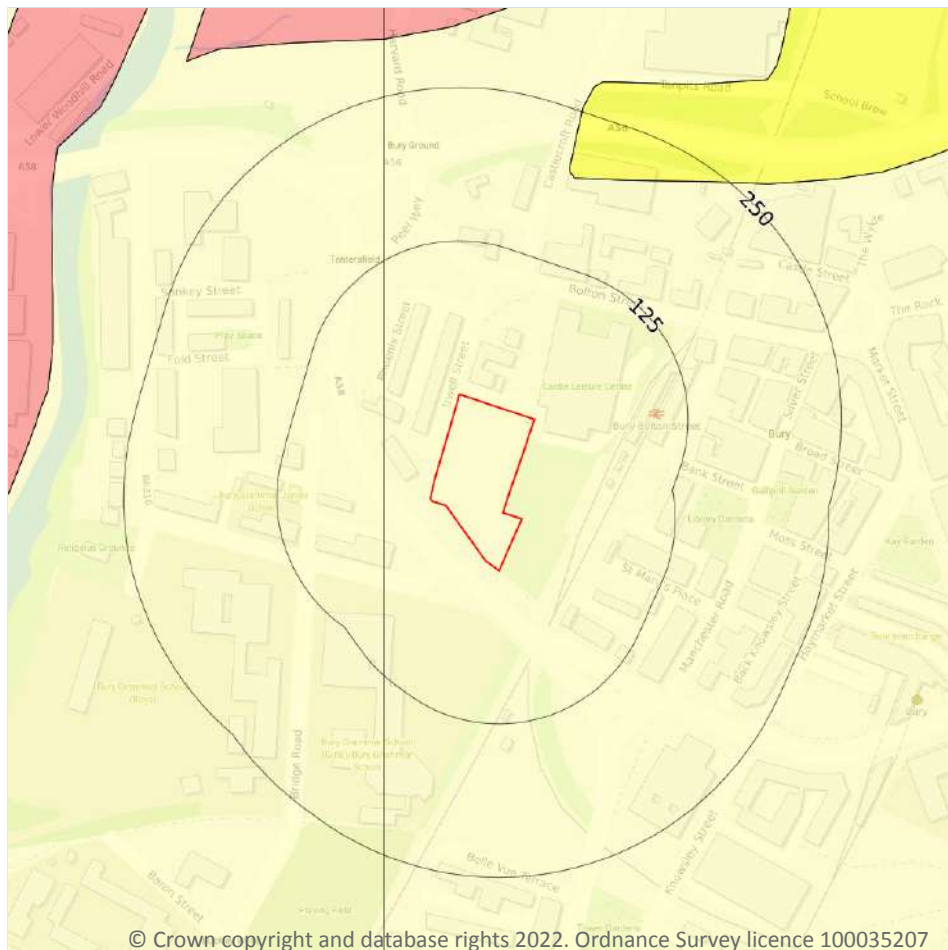
Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

Location	Hazard rating	Details
38m W	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.3 Compressible deposits

Records within 50m

2

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

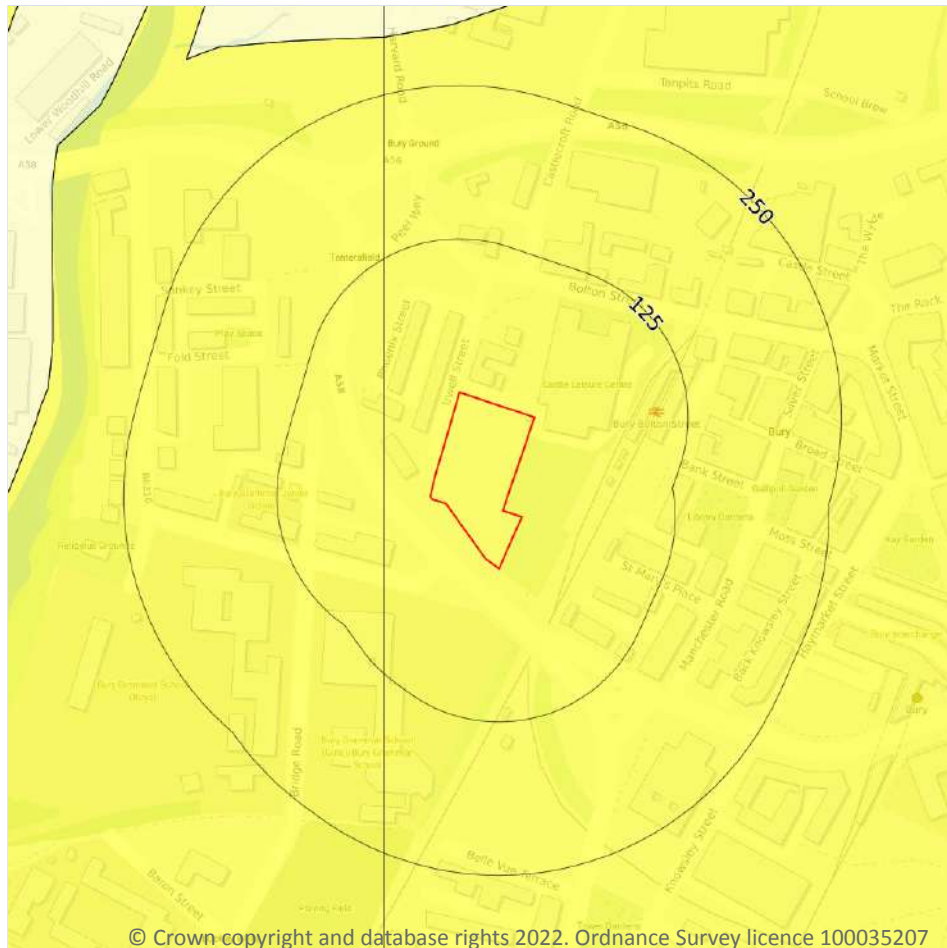
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 132**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.
38m W	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.4 Collapsible deposits

Records within 50m

2

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

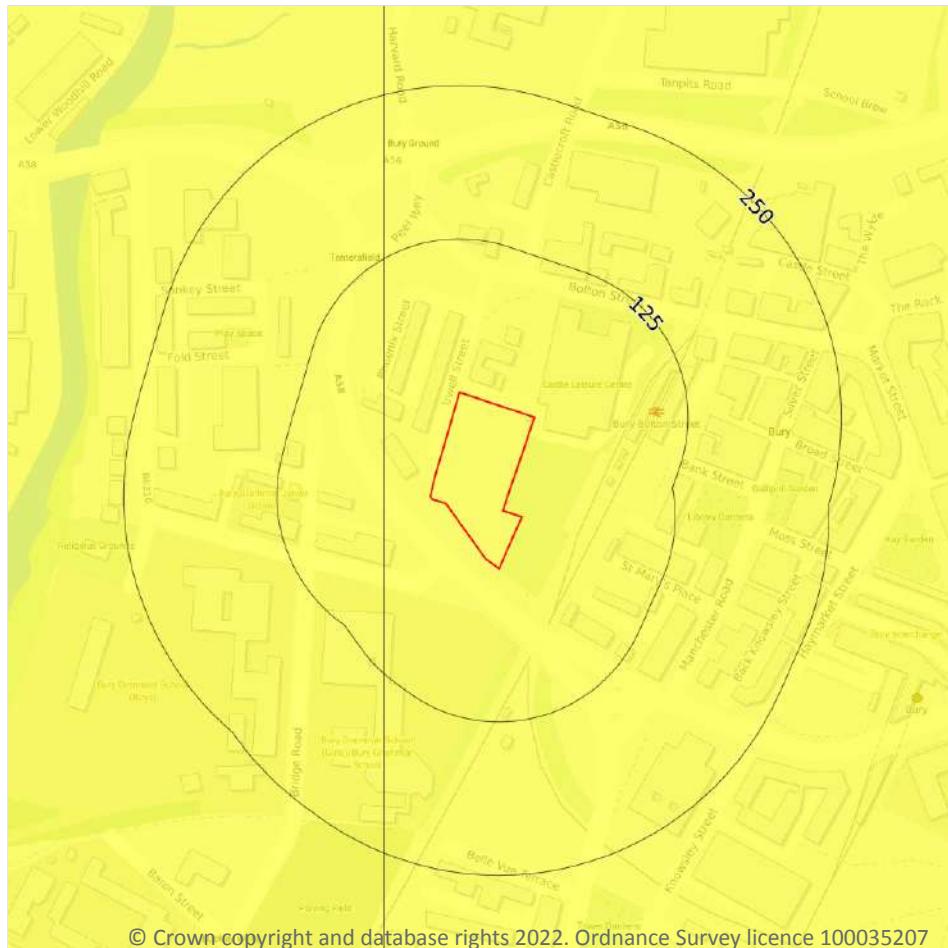
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 133**

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
38m W	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.5 Landslides

Records within 50m

2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 134**

Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

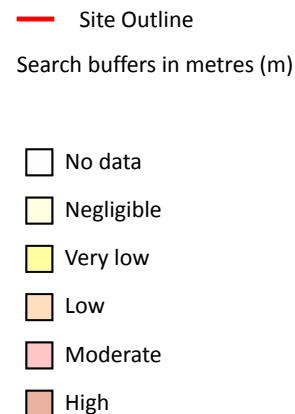
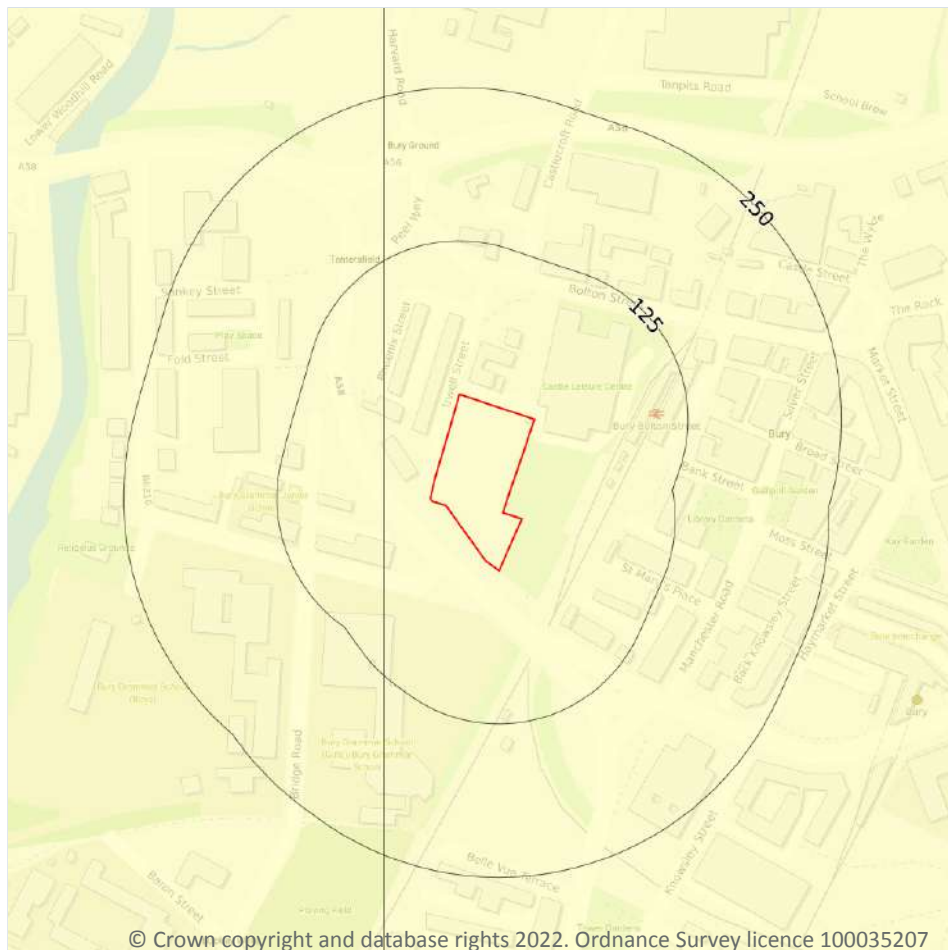


Location	Hazard rating	Details
38m W	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

2

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 136**

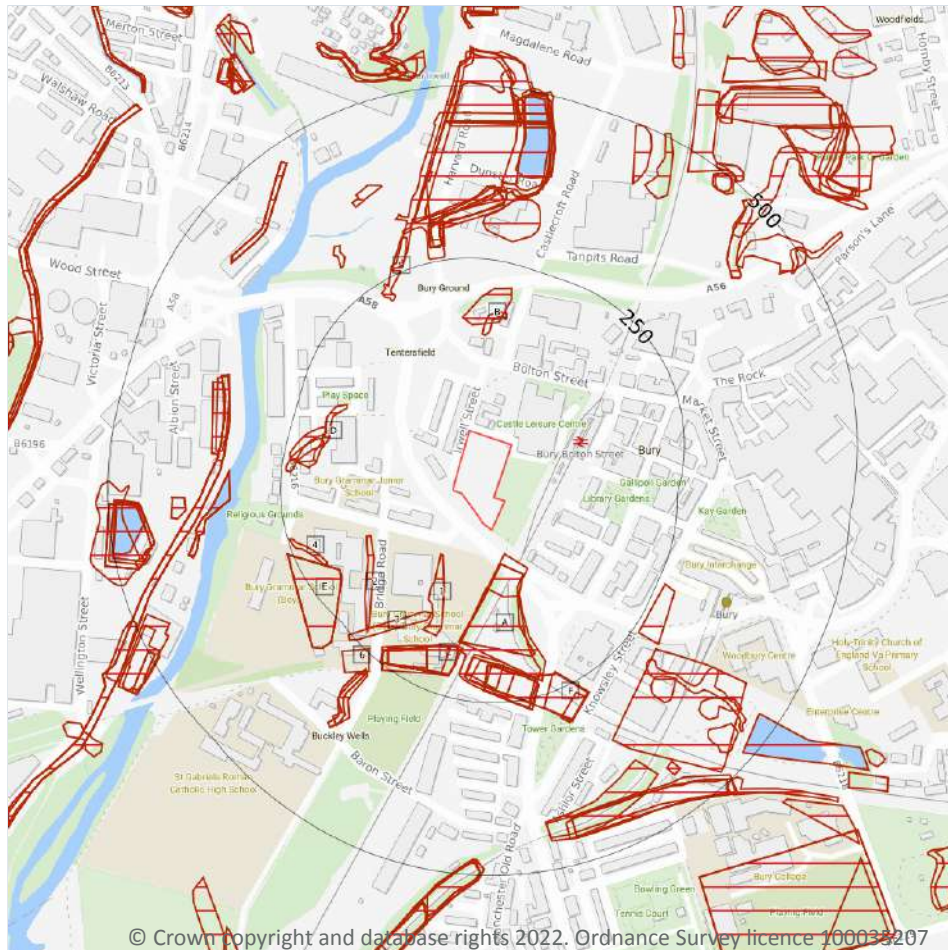
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

Location	Hazard rating	Details
38m W	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m

0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

35

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 138**

ID	Location	Land Use	Year of mapping	Mapping scale
A	39m S	Cuttings	1891	1:10560
A	51m S	Cuttings	1956	1:10560
A	51m S	Cuttings	1967	1:10560
1	74m SW	Unspecified Ground Workings	1908	1:10560
A	84m S	Cuttings	1851	1:10560
2	137m SW	Unspecified Ground Workings	1908	1:10560
B	140m N	Unspecified Ground Workings	1908	1:10560
3	149m S	Unspecified Pit	1891	1:10560
B	154m N	Refuse Heap	1928	1:10560
C	175m S	Cuttings	1956	1:10560
C	176m S	Cuttings	1938	1:10560
C	176m S	Cuttings	1891	1:10560
C	176m S	Cuttings	1928	1:10560
C	176m S	Cuttings	1908	1:10560
D	179m NW	Unspecified Ground Workings	1908	1:10560
C	181m S	Cuttings	1851	1:10560
A	182m S	Cuttings	1891	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	186m S	Cuttings	1983	1:10000
A	189m S	Cuttings	1967	1:10560
C	192m S	Cuttings	1980	1:10000
C	192m S	Cuttings	1969	1:10560
C	192m S	Cuttings	1974	1:10000
A	195m S	Cuttings	1938	1:10560
A	195m S	Cuttings	1928	1:10560
A	195m S	Cuttings	1908	1:10560
A	195m S	Cuttings	1956	1:10560
D	198m W	Pond	1851	1:10560
D	198m W	Pond	1891	1:10560
E	201m SW	Unspecified Pit	1980	1:10000
E	201m SW	Unspecified Pit	1969	1:10560
E	201m SW	Unspecified Pit	1974	1:10000
4	211m SW	Unspecified Ground Workings	1908	1:10560
5	219m NW	Ponds	1851	1:10560
F	225m S	Cuttings	1967	1:10560
6	246m SW	Cuttings	1851	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

3

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 138**

ID	Location	Land Use	Year of mapping	Mapping scale
-	675m W	Tunnel	1938	1:10560
-	675m W	Tunnel	1927	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
-	675m W	Tunnel	1908	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

1

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

Features are displayed on the Mining, ground workings and natural cavities map on **page 138**

ID	Location	Mine Address	Mineral	Data source	Publisher
-	622m S	Schofield Hey Quarry, Britannia Quarries, Lancashire	Firestone, Freestone, Hearthstone , Honestone, Ragstone, Sandstone, Scythestone , Silver Sand, Whetstone	CATALOGUE OF PLANS OF ABANDONED MINES (NON COAL)	-

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site 0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site 1

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site 0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.



18.11 Gypsum areas

Records on site	0
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Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

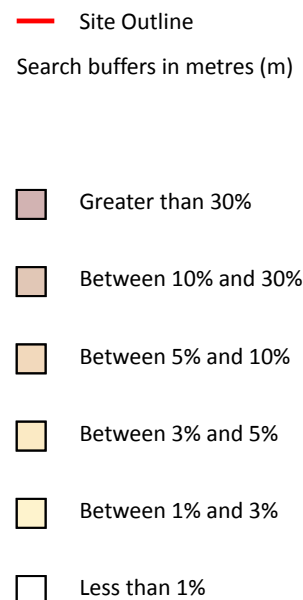
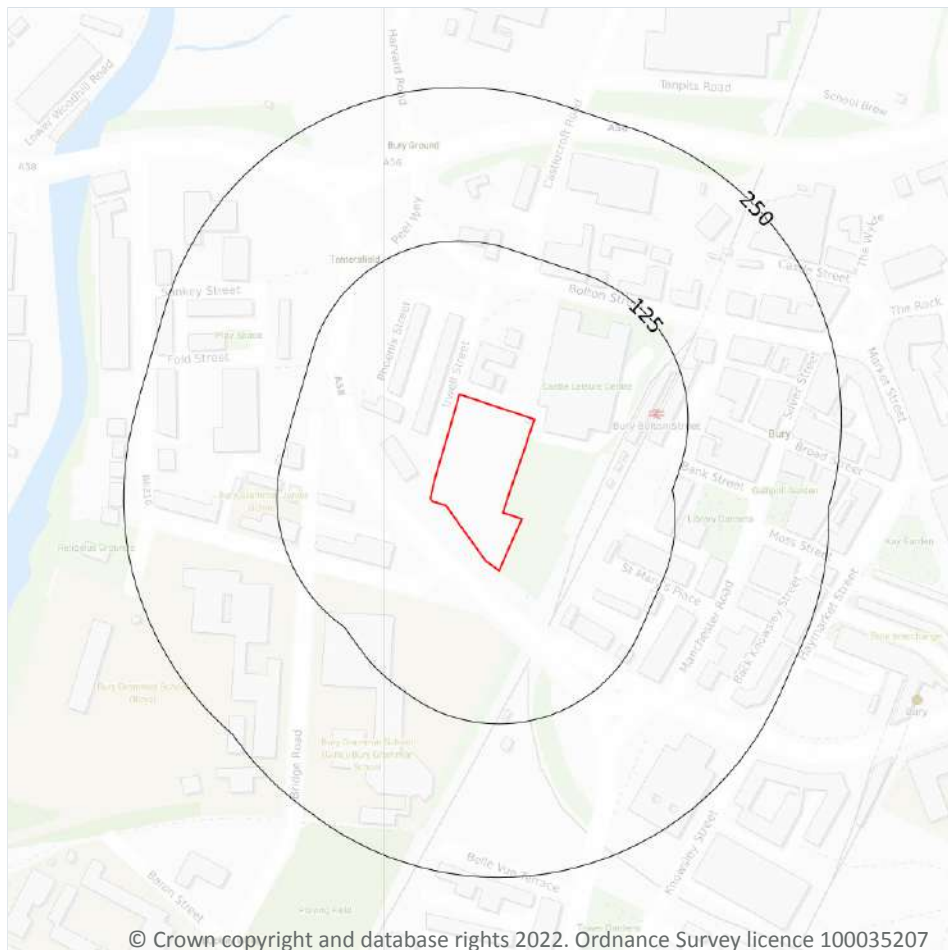
18.13 Clay mining

Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



19.1 Radon

Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 144**

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None**

This data is sourced from the British Geological Survey and Public Health England.



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

12

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
24m SW	15 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
29m S	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
31m NW	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
38m W	15 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
38m W	15 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
38m W	15 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
38m W	15 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
43m W	15 - 25 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
43m W	15 - 25 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
45m W	15 - 25 mg/kg	No data	200 - 300 mg/kg	120 - 240 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg



This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m

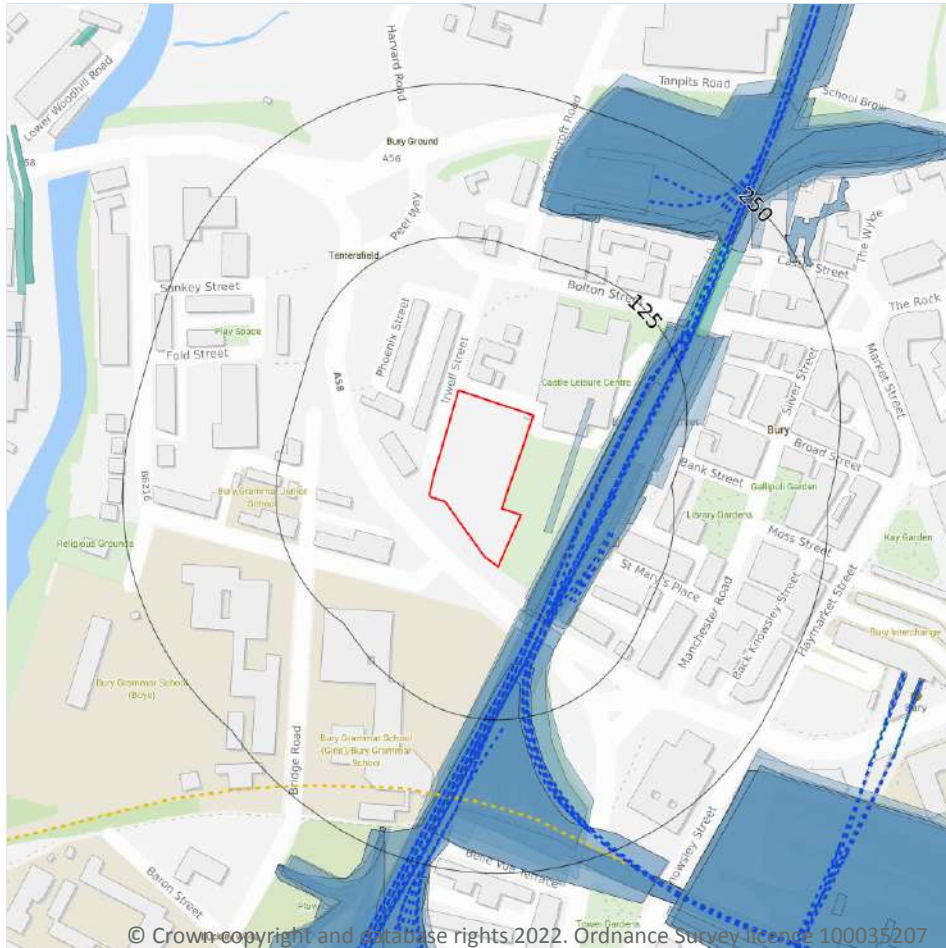
0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.



This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m

1

Railway tunnels taken from contemporary Ordnance Survey mapping.

Features are displayed on the Railway infrastructure and projects map on **page 147**

Location	Type
150m NE	Railway Tunnel

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

72

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 147**

Location	Land Use	Year of mapping	Mapping scale
22m SE	Railway Sidings	1851	10560
31m SE	Railway Sidings	1967	10560
34m SE	Railway Sidings	1983	10000
35m SE	Railway Sidings	1956	10560
35m SE	Railway Sidings	1851	10560
36m SE	Railway Sidings	1910	2500
36m SE	Railway Sidings	1930	2500
36m SE	Railway Sidings	1937	2500
37m SE	Railway Sidings	1891	2500
39m S	Railway Sidings	1891	10560
40m SE	Railway Sidings	1957	1250
44m SE	Railway Sidings	1984	1250
45m SE	Railway Sidings	1992	1250



Location	Land Use	Year of mapping	Mapping scale
48m SE	Railway	1910	-
50m SE	Railway	1893	-
52m S	Railway Sidings	1908	10560
55m SE	Railway Sidings	1978	1250
80m S	Railway Sidings	1938	10560
80m S	Railway Sidings	1928	10560
84m S	Railway Sidings	1978	1250
84m S	Railway Sidings	1973	1250
93m S	Railway Sidings	1956	10560
93m S	Railway Sidings	1967	10560
116m S	Railway Sidings	1996	1250
116m S	Railway Sidings	1994	1250
116m S	Railway Sidings	1957	1250
142m NE	Tunnel	1992	1250
142m NE	Tunnel	1957	2500
142m NE	Tunnel	1910	2500
142m NE	Tunnel	1930	2500
142m NE	Tunnel	1937	2500
142m NE	Tunnel	1978	1250
143m NE	Tunnel	1984	1250
143m NE	Tunnel	1973	1250
143m NE	Tunnel	1957	1250
147m NE	Tunnel	1910	-
147m NE	Tunnel	1893	-
159m N	Railway Sidings	1908	10560
162m N	Railway Sidings	1956	10560
162m N	Railway Sidings	1967	10560
163m N	Railway Sidings	1938	10560



Location	Land Use	Year of mapping	Mapping scale
163m N	Railway Sidings	1928	10560
164m N	Railway	1910	-
164m N	Railway	1893	-
168m N	Railway Sidings	1851	10560
174m NE	Railway Sidings	1957	2500
175m NE	Railway Sidings	1891	500
175m NE	Railway Sidings	1992	1250
175m NE	Railway Sidings	1957	1250
175m NE	Railway Sidings	1910	2500
175m NE	Railway Sidings	1930	2500
175m NE	Railway Sidings	1937	2500
176m NE	Railway Sidings	1984	1250
176m N	Railway Sidings	1891	10560
182m N	Railway Sidings	1891	500
196m S	Railway Sidings	1891	2500
196m S	Railway Sidings	1910	2500
196m S	Railway Sidings	1930	2500
196m S	Railway Sidings	1937	2500
197m NE	Railway Sidings	1973	1250
197m NE	Railway Sidings	1978	1250
216m NE	Railway Sidings	1978	1250
216m NE	Railway Sidings	1973	1250
224m NE	Railway	1893	-
231m NE	Railway Sidings	1978	1250
231m S	Railway Sidings	1957	1250
232m NE	Railway Sidings	1973	1250
232m NE	Railway Sidings	1851	10560
234m S	Railway Sidings	1969	10560



Location	Land Use	Year of mapping	Mapping scale
242m S	Railway Sidings	1956	10560
243m S	Railway Sidings	1957	1250
244m NE	Tramway Sidings	1891	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m **0**

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m **1**

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 147**

Location	Description
191m S	Abandoned

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m **61**

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 147**

Location	Name	Type
46m SE	Not given	Preserved
47m SE	East Lancashire Railway	rail



Location	Name	Type
47m SE		rail
48m SE	Not given	Single Track
48m SE	Not given	Single Track
52m SE	Not given	Preserved
54m S		rail
54m SE	Not given	Preserved
54m SE	East Lancashire Railway	rail
55m SE	Not given	Preserved
56m SE	East Lancashire Railway	rail
57m SE	Not given	Multi Track
58m SE	Not given	Preserved
58m SE	East Lancashire Railway	rail
60m SE		rail
60m SE	Not given	Multi Track
65m SE		rail
66m SE		rail
68m S	Not given	Preserved
69m SE		rail
69m S		rail
69m S	East Lancashire Railway	rail
71m E	Not given	Single Track
72m S	East Lancashire Railway	rail
74m E	East Lancashire Railway	rail
76m E	East Lancashire Railway	Preserved
76m S	Not given	Multi Track
82m S	Not given	Single Track
86m E	Not given	Multi Track
120m NE	East Lancashire Railway	rail



Location	Name	Type
122m NE		rail
123m NE		rail
124m NE	East Lancashire Railway	rail
124m NE	Not given	Preserved
126m NE	Not given	Multi Track
127m NE		rail
128m S	Not given	Preserved
129m S		rail
131m S		rail
142m S		rail
146m NE	Not given	Preserved
147m NE	East Lancashire Railway	rail
147m NE	East Lancashire Railway	rail
149m NE	East Lancashire Railway	rail
153m NE	East Lancashire Railway	Preserved
161m NE	East Lancashire Railway	rail
199m NE		rail
210m NE		rail
211m NE	East Lancashire Railway	rail
212m NE	Not given	Preserved
213m NE	Not given	Multi Track
214m NE	East Lancashire Railway	Preserved
218m NE		rail
223m S	Not given	Multi Track
229m NE		rail
229m NE		rail
229m NE		rail
241m S	Not given	Single Track



Location	Name	Type
246m S	Not given	Preserved
247m S	Not given	Multi Track
249m S		rail

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m 0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m 0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m 0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference>.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



APPENDIX 6

BGS BOREHOLE LOGS, BGS MINERAL RESOURCES MAP FOR LANCASHIRE AND LANCASHIRE JOINT MINERALS PLAN MINERAL SAFEGUARDING MAP

MARKET STREET DEVELOPMENTGEO. RESEARCH LTD., CALE GREEN, STOCKPORT.

British Geological Survey

British Geological Survey

British Geological Survey

No.	Date	Dia.	
44. 96.	6.5.63.		4'6" Fill consisting of rubble, paving stones, etc. 7'0" Soft laminated grey clay. 4'6" Compact sand and gravel and sandstone cobbles. 14'0" Stiff brown boulder clay. 5'9" Dense gravel. 4'9" Stiff brown boulder clay. 12.34m/40'6" End of borehole.
45. 97.	9.5.63.		1'6" Soft grey clay. 1'6" Soft brown peat. 4'6" Soft clay (grey) 2'6" Soft grey sandy boulder clay. 5'0" Compact sand and gravel. 6" grey boulder clay. 3'0" Compact coarse well graded sand and gravel. 11'0" Very stiff brown boulder clay. 2'6" Very dense sand and gravel. 9.75m/32'0" end of Borehole.
46. 98.	10.5.63.		1'6" Soft grey sandy peat. 2'0" soft brown peat. 1'0" Soft grey boulder clay. 2'0" Loose sand and gravel. 4'0" Soft laminated grey clay. 5'0" Compact sand and gravel and cobbles. 1'6" grey boulder clay. 1'0" Compact sand and gravel. 3'6" Very stiff brown boulder clay. 11'6" Very dense sand and gravel and cobbles. 10.06m/33'0" end of borehole.
47. 99.	13.5.63.		1'6" Soft brown peat. 5'0" Soft sandy boulder clay. 6'6" Compact sand and gravel with cobbles. 6'0" Firm brown boulder clay. 14'0" Very stiff brown boulder clay. 10.06m/33'0" end of Borehole.
48. 100.	14.5.63.		2'0" Soft sandy peat. 2'6" Soft brown peat. 2'6" Very soft grey clay. 1'0" Loose grey sand and gravel. 3'0" Soft grey clay. 5'6" Compact sand and gravel. 4'6" Very stiff brown boulder clay. 2'0" Compact sand and gravel. 2'6" Dense laminated silty fine brown sand. 1'6" Very dense well graded medium brown sand with gravel. 9.45m/31'0" end of borehole.

Borough Engineer and Surveyor's Department,
Town Hall,
BURY.

11th June, 1963.

British Geological Survey

British Geological Survey

British Geological Survey

SD 815W

332



CABLE PERCUSSION RECORD SHEET

Location Bury Town Centre Sewers

Client: Bury Metro

Project Ref.:

Borehole No. BH5

Sheet 1 of 1.

Job No.: 8940

Equipment and methods Light Cable Percussion

Casing Diameter (mm) 150

Casing Depth (m) 4.00

Drilled by C.B

Ground level m AOD

Co-ordinates E N

Date 26-11-96

CASING DEPTH (m)	WATER DEPTH (m)	Field Records	SAMPLES / TESTS			Description	Depth & Thickness (m)	Reduced Level (m AOD)	Strata Legend
			Depth (m) from	to	SAMPLE Type & No				
NIL	NIL					MADE GROUND (100mm of tarmac over concrete)	(0.30)		
						MADE GROUND (Brown/black ash with much fine to coarse gravel and occasional concrete fragments)	0.30		
			0.70	0.70	D 1	Loose brown clayey very sandy fine to coarse GRAVEL	(0.50)		
							0.80		
2.50	NIL		1.20	1.65	S 1				
			1.50	1.95	B 1				
2.50	NIL		2.50	2.95	S 2				
			3.00	3.45	B 2				
4.00	NIL		4.20	4.65	S 3				
						Borehole Complete	4.60		

-(26-11)-

Borehole Complete

Remarks

- 1) Service pit dug 0.50m x 0.50m x 1.20m.
- 2) 175mm diameter cast iron pipe exposed 0.40m deep 0.65m away from kerb.
- 3) No groundwater encountered during drilling.

Logged by

GL

Date

14/12

Checked by

Approved by

FIG No.

Scale 1:50



CABLE PERCUSSION RECORD SHEET

Location Bury Town Centre Sewers

Client: Bury Metro

Project Ref.:

Borehole No. BH6

Sheet 1 of 1.

Equipment and methods Light Cable Percussion

Drilled by C.B

Ground level m AOD

Casing Diameter (mm) 150

Co-ordinates E N

Casing Depth (m) 3.00

Date 25-11-96

Job No.: 8940

CASING DEPTH (m)	WATER DEPTH (m)	Field Records	SAMPLES / TESTS			Description	Depth & Thickness (m)	Reduced Level (m AOD)	Strata Legend
			Depth (m) from	to	SAMPLE Type & No	SPT N Value Cy			
NIL	NIL	-(25-11)-					MADE GROUND (150mm of tarmac over concrete)	(0.35)	
							MADE GROUND (Ash, gravel and rounded cobbles)	0.35 (0.25) 0.60	
			0.70	0.70	D 1		Soft light brown sandy CLAY with a little fine gravel	(0.60)	
			1.20 1.20	1.65 1.65	B 1 S 1	14	Firm to stiff dark brown slightly sandy CLAY with some fine to coarse gravel and occasional cobbles	1.20	
2.00	NIL		2.00	2.45	S 2	12			
			2.50	2.95	B 2			(2.40)	
3.00	NIL	-(26-11)-	3.20	3.65	S 3	16			
							Borehole Complete	3.60	

Remarks

- 1) Service pit dug 0.50m x 0.50m x 1.20m.
2) No groundwater encountered during drilling.

Logged by

G.L.

Date

14/12

Checked by

Approved by

FIG No.

Scale 1:50

SD8/SW. 334



CABLE PERCUSSION RECORD SHEET

Location Bury Town Centre Sewers

Client: Bury Metro

Project Ref.:

Borehole No. BH7

Sheet 1 of 1.

Equipment and methods Light Cable Percussion

Drilled by C.B

Ground level m AOD

Casing Diameter (mm) 150

Co-ordinates E N

Casing Depth (m) 5.70

Date 25-11-96

Job No.: 8940

CASING DEPTH (m)	WATER DEPTH (m)	Field Records	SAMPLES / TESTS			Description	Depth & Thickness (m)	Reduced Level (m AOD)	Strata Legend
			Depth (m) from	to	SAMPLE Type & No				
						MADE GROUND (Tarmac)	(0.25)		
						MADE GROUND (Concrete)	0.25		
			0.60	0.60	D 1	Medium dense brown slightly clayey very sandy fine to coarse GRAVEL	(0.25)		
			1.00	1.45	B 1		0.50		
2.00	NIL		2.00	2.45	S 1 11		(2.20)		
						Stiff brown CLAY with a sand band from 3.00m to 3.20m	2.70		
3.50	NIL		3.50	3.95	S 2 15	Medium dense brown clayey sandy fine to coarse GRAVEL with many cobbles	(0.60)		
							3.30		
	PM	4.40 25/11	4.40	4.40	W 1		(2.30)		
	MI	No Rise 5.00 25/11	5.00	5.45	B 2				
5.70	NIL		5.80	6.25	S 3 13	Stiff dark greyish brown slightly sandy CLAY with a little fine to medium gravel	5.60		
							(0.60)		
						Borehole Complete	6.20		

Remarks

- 1) Service pit dug 0.50m x 0.50m x 1.20m.
- 2) Groundwater struck at 5.00m with no rise after 20 mins (not enough for a sample).
- 3) Water level 4.40m 30 mins after pulling casing.

Logged by

GL

Date

14/12

Checked by

Approved by

FIG No.

Scale 1:50

335



Scale 1:50

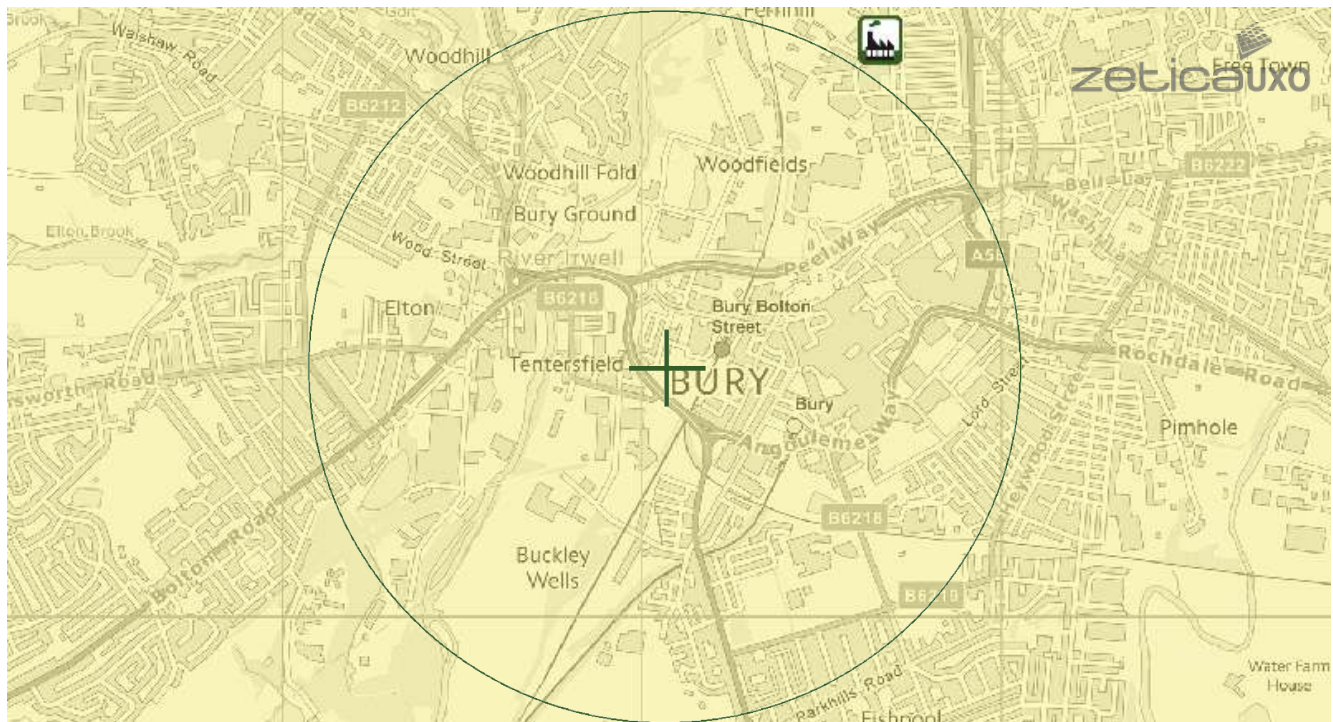
APPENDIX 7
ZETICA UXO RISK MAP

UNEXPLODED BOMB RISK MAP



SITE LOCATION

Map Centre: 380074,410696



LEGEND

- High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- Low:** Areas indicated as having 15 bombs per 1000acre or less.

- military**
- industry**
- UXO find**
- transport**
- dock**
- Luftwaffe targets**
- utilities**
- Bombing decoy**
- other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

APPENDIX 8

TRIAL PIT LOGS AND SOIL INFILTRATION PIT LOGS AND PHOTOGRAPHS

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170				Trial Pit Log ver. 1.1				Trial Pit No. TP01 Sheet 1 of 1				
Project Name: Former Bury Police Station						Level (mAOD): 92.50		Date: 16/11/2022		Project No. 3842		
Location: Bury						Weather: Sunny				Logged By AS		
Client: Bury Metropolitan Borough Council						Co-ords: 380089E - 410737N				Checked By AL		
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description					
	Depth (m)	Type	Results									
	0.20 0.20	B ES					Dark greyish brown, mottled red, slightly clayey, fine to coarse SAND and angular to subangular, fine to coarse GRAVEL of concrete (40%), red brick (30%), asphalt (10%), metal (10%) and timber (10%) with medium cobble content. Cobbles are angular to subangular of concrete (50%) and red brick (50%). MADE GROUND					
												1
												2
												3
				3.80	88.70		Trial Pit terminated at 3.80m.					4
												5
Water Strike												
Depth Strike (mbgl)		Remarks										
		No strike.										
Stability: Occasional small collapses throughout the pit.												
Remarks: Trial Pit terminated at 3.80m bgl at target depth.												

Trial Pit Photos

TP01

Former Bury Police Station



Image 1. TP01 Pit



Image 2. TP01 Spoil



Trial Pit No.

Sheet 1 of 1

ver. 1.1

Project Name: Former Bury Police Station

Level
(mAOD):

91.45

Date:

16/11/2022

Project No.

3842

Location: Bury

Weather:

Sunny

Logged By

AS

Client: Bury Metropolitan Borough Council

Co-ords:

380066E - 410743N

Checked By _____

AL

Water Strike	
Depth Strike (mbgl)	Remarks
0.70	Slight ingress at 0.70m bgl.
Stability: Stable.	
Remarks: Trial Pit terminated at 3.50m bgl at target depth.	

Trial Pit Photos

TP02

Former Bury Police Station



Image 1. TP02 Pit



Image 2. TP02 Spoil

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170				Trial Pit Log ver. 1.1				Trial Pit No. TP03 Sheet 1 of 1					
Project Name: Former Bury Police Station						Level (mAOD): 92.59		Date: 16/11/2022		Project No. 3842			
Location: Bury						Weather: Sunny				Logged By AS			
Client: Bury Metropolitan Borough Council						Co-ords: 380081E - 410713N				Checked By AL			
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description						
	Depth (m)	Type	Results										
	0.30	B		0.50	92.09		Dark greyish brown, mottled red, slightly clayey, fine to coarse SAND and angular to subangular, fine to coarse GRAVEL of concrete (40%), red brick (30%), asphalt (10%), metal (10%) and timber (10%) with medium cobble content. Cobbles are angular to subangular of concrete (50%) and red brick (50%). MADE GROUND						
							Dark brown, very clayey, fine to coarse SAND and angular to subangular, fine to coarse GRAVEL of red brick (50%), concrete (30%), ceramic (10%) and timber (10%) with occasional cobble sized lenses of soft, dark brown, sandy CLAY with slight organic odour. MADE GROUND					1	
							Hard digging at 2.00m bgl due to a concrete obstruction in the western section of the pit.					2	
					2.50	90.09		Brown, slightly gravelly, fine to coarse SAND with low cobble content. Cobbles are subrounded to well rounded of sandstone. Gravel is subrounded to well rounded, fine to coarse of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS					3
		3.30	ES		3.20	89.39		Greyish brown, slightly clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of mudstone and sandstone. Strong hydrocarbon odour. GLACIOFLUVIAL SHEET DEPOSITS					
				3.50	89.09		Trial Pit terminated at 3.50m.					4	
												5	
Water Strike													
Depth Strike (mbgl)		Remarks											
3.20		Moderate water ingress at 3.20m bgl.											
Stability: Stable.													
Remarks: Trial Pit terminated at 3.50m bgl due to water ingress.													

Trial Pit Photos

TP03

Former Bury Police Station



Image 1. TP03 Pit



Image 2. TP03 Spoil

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170		Trial Pit Log ver. 1.1				Trial Pit No. TP04 Sheet 1 of 1		
Project Name: Former Bury Police Station					Level (mAOD): 94.54	Date: 16/11/2022	Project No. 3842	
Location: Bury					Weather: Sunny		Logged By AS	
Client: Bury Metropolitan Borough Council					Co-ords: 380103E - 410706N		Checked By AL	
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description	
	Depth (m)	Type	Results					
	0.10	B	HVP=42	0.20	94.34		Soft, dark brown, slightly gravelly, sandy CLAY with occasional rootlets, wood fragments and low cobble content. Cobbles are angular to subangular, fine to coarse of concrete. Gravel is angular to subangular, fine to coarse of concrete (60%) and sandstone (40%). MADE GROUND	
	0.60 0.70	B		0.80	93.74		Firm, yellowish brown, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse of mudstone and sandstone. GLACIOFLUVIAL SHEET DEPOSITS	
	1.00	B	HVP=104	1.10	93.44		Yellowish brown, mottled grey, slightly clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of sandstone and mudstone with occasional lenses of cobble sized soft to firm, brown, sandy CLAY. GLACIOFLUVIAL SHEET DEPOSITS	
	1.20 1.20 1.20	B ES					Stiff, dark brown, slightly gravelly, slightly sandy CLAY. Gravel is subangular to subrounded, fine to coarse of sandstone. GLACIAL TILL	
	1.90						Becoming firm from 1.90m bgl.	
	2.10							
	2.60	B		2.40	92.14		Brown, slightly gravelly, slightly clayey, fine to coarse SAND with low cobble content. Cobbles are subrounded to well rounded of sandstone. Gravel is subrounded to well rounded, fine to coarse of sandstone. GLACIAL TILL	
				3.30	91.24		Trial Pit terminated at 3.30m.	
	Water Strike Depth Strike (mbgl)Remarks 1.80Slight ingress from 1.80m bgl.							
	Stability: Occasional small collapses between 2.40m and 3.30m bgl.							
Remarks: Trial Pit terminated at 3.30m bgl at target depth.								

Trial Pit Photos

TP04

Former Bury Police Station



Image 1. TP04 Pit



Image 2. TP04 Spoil

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170		Trial Pit Log ver. 1.1			Trial Pit No. TP05 Sheet 1 of 1						
Project Name: Former Bury Police Station				Level (mAOD): 94.02		Date: 16/11/2022		Project No. 3842			
Location: Bury				Weather: Sunny				Logged By AS			
Client: Bury Metropolitan Borough Council				Co-ords: 380105E - 410689N				Checked By AL			
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description				
	Depth (m)	Type	Results								
	0.50	B		0.20	93.82		Soft, dark brown, slightly gravelly, sandy CLAY with occasional rootlets, wood fragments and low cobble content. Cobbles are angular to subangular, fine to coarse of concrete. Gravel is angular to subangular, fine to coarse of concrete (70%) and sandstone (30%). MADE GROUND Orangish brown, very clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of mudstone and sandstone. GLACIOFLUVIAL SHEET DEPOSITS				
				0.70	93.32		Firm, orangish brown, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse of sandstone. GLACIOFLUVIAL SHEET DEPOSITS				
				1.10	92.92		Trial Pit terminated at 1.10m.				
Water Strike Depth Strike (mbgl) Remarks No strike.									TP05 Ground Level MADE GROUND Red Brick GLACIOFLUVIAL SHEET DEPOSITS Concrete		
Stability: Stable. Remarks: Trial Pit terminated at 1.10m bgl at target depth.											

Trial Pit Photos

TP05

Former Bury Police Station



Image 1. TP05 Pit



Image 2. TP05 Spoil

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170				Trial Pit Log ver. 1.1				Trial Pit No. TP06 Sheet 1 of 1				
Project Name: Former Bury Police Station						Level (mAOD): 92.65		Date: 16/11/2022		Project No. 3842		
Location: Bury						Weather: Sunny				Logged By AS		
Client: Bury Metropolitan Borough Council						Co-ords: 380074E - 410688N				Checked By AL		
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description					
	Depth (m)	Type	Results									
	0.20	B					Dark brown, slightly gravelly, very clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of red brick (40%), concrete (30%), sandstone (20%), wood (10%) and plastic (10%) with occasional rootlets and low cobble content. Cobbles are subangular to subrounded, fine to coarse of red brick (60%), sandstone (30%) and wood (10%). MADE GROUND					
	2.20	B		2.00	90.65		Brown, slightly clayey, fine to coarse SAND and subrounded to well rounded, fine to coarse GRAVEL of sandstone and quartzite. GLACIOFLUVIAL SHEET DEPOSITS					
				3.10	89.55		Trial Pit terminated at 3.10m.					
Water Strike Depth Strike (mbgl) Remarks No strike. Stability: Occasional small collapses from 2.00m bgl. Remarks: Trial Pit terminated at 3.10m bgl at target depth.												

Trial Pit Photos

TP06

Former Bury Police Station



Image 1. TP06 Pit



Image 2. TP06 Spoil

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170				Trial Pit Log ver. 1.1				Trial Pit No. TP07 Sheet 1 of 1					
Project Name: Former Bury Police Station						Level (mAOD): 91.04		Date: 16/11/2022		Project No. 3842			
Location: Bury						Weather: Sunny						Logged By AS	
Client: Bury Metropolitan Borough Council						Co-ords: 380050E - 410698N						Checked By AL	
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description						
	Depth (m)	Type	Results										
	0.50	B		0.05	90.99		Soft, dark brown, slightly gravelly, sandy CLAY with occasional rootlets. Gravel is angular to subangular, fine to coarse of concrete (50%), red brick (40%) and wood (10%). MADE GROUND Dark brown, slightly clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of of red brick (60%), concrete (10%), rubber (10%), timber (10%) and sandstone (10%) with low cobble content. Cobbles are angular to subangular of red brick and concrete. MADE GROUND						
	2.00	B	HVP=50	1.90	89.14		Firm, grey, slightly gravelly, sandy CLAY with slight organic odour. Gravel is subangular to subrounded, fine to coarse of mudstone and sandstone. GLACIOFLUVIAL SHEET DEPOSITS Grey, mottled reddish brown, gravelly, silty, fine to coarse SAND. Gravel is subrounded to well rounded, fine to coarse of sandstone. GLACIOFLUVIAL SHEET DEPOSITS						
	2.40	B		2.25	88.79		Dark brown, mottled orangish brown, very sandy, clayey, subrounded to well rounded, fine to coarse GRAVEL of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS						
3.10	B		2.90	88.14		Trial Pit terminated at 3.30m.							
			3.30	87.74									
Water Strike Depth Strike (mbgl)Remarks No strike. Stability: Stable. Remarks: Trial Pit terminated at 3.30m bgl at target depth.													

Trial Pit Photos

TP07

Former Bury Police Station



Image 1. TP07 Pit



Image 2. TP07 Spoil



Trial Pit No.
TP08
Sheet 1 of 1

ver. 1.1

Project No.
3842

Logged By
AS

Checked By
AL

- 1
- 2
- 3
- 4
- 5

Water Strike	
Depth Strike (mbgl)	Remarks
	No strike.
Stability: Stable.	
Remarks: Trial Pit terminated at 3.30m bgl at target depth.	

Trial Pit Photos

TP08

Former Bury Police Station



Image 1. TP08 Pit



Image 2. TP08 Spoil



Trial Pit No.

Sheet 1 of 1

ver. 1.1

Project Name: Former Bury Police Station

Level
(mAOD):

93.84

Date:

16/11/2022

Project No.

3842

Location: Bury

Weather:

Sunny

Logged By

AS

Client: Bury Metropolitan Borough Council

Co-ords:

380087E - 410664N

Checked By

AL

- 1
- 2
- 3
- 4
- 5

Water Strike

Depth Strike (mbgl)

Remarks

No strike.

Stability:

Stable.

Remarks:

Trial Pit terminated at 0.50m bgl due to hard digging on concrete slab.

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170				Trial Pit Log ver. 1.1				Trial Pit No. TP09A Sheet 1 of 1				
Project Name: Former Bury Police Station						Level (mAOD): 93.83		Date: 16/11/2022		Project No. 3842		
Location: Bury						Weather: Sunny				Logged By AS		
Client: Bury Metropolitan Borough Council						Co-ords: 380086E - 410661N				Checked By AL		
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description					
	Depth (m)	Type	Results									
				0.50	93.33		Dark brown, gravelly, slightly clayey, fine to coarse SAND with high cobble content. Cobbles are angular to subrounded of red brick (40%), plastic (20%), concrete (20%) and ceramic (20%). Gravel is angular to subangular, fine to coarse of red brick (60%), concrete (30%) and plastic (30%). MADE GROUND					
							Trial Pit terminated at 0.50m.					1
												2
												3
												4
												5
Water Strike												
Depth Strike (mbgl)		Remarks										
		No strike.										
Stability: Stable.												
Remarks: Trial Pit terminated at 0.50m bgl due to hard digging on concrete slab.												

IGEconsulting Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170				Trial Pit Log ver. 1.1				Trial Pit No. TP09B Sheet 1 of 1			
Project Name: Former Bury Police Station						Level (mAOD): 93.82		Date: 16/11/2022		Project No. 3842	
Location: Bury						Weather: Sunny				Logged By AS	
Client: Bury Metropolitan Borough Council						Co-ords: 380089E - 410656N				Checked By AL	
Water Strike	Samples & In Situ Testing			Depth (mbgl)	Level (mAOD)		Stratum Description				
	Depth (m)	Type	Results								
	1.00	B		0.40	93.42		Dark brown, gravelly, slightly clayey, fine to coarse SAND with medium cobble content. Cobbles are angular to subangular, fine to coarse of red brick (80%), concrete (10%) and ceramic (10%). Gravel is angular to subangular, fine to coarse of red brick (80%), concrete (10%) and ceramic (10%). MADE GROUND				
				0.80	93.02		Reddish brown, clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of red brick (70%) and ceramic (30%). MADE GROUND				
				1.10	92.72		Soft, black, slightly sandy CLAY with slight organic odour. MADE GROUND				
	2.00	B		2.80	91.02		Light brown, slightly clayey, fine to coarse SAND and subrounded to well rounded, fine to coarse GRAVEL of sandstone and quartzite with low cobble content. Cobbles are subrounded to well rounded, fine to coarse of sandstone and quartzite. GLACIOFLUVIAL SHEET DEPOSITS				
							Trial Pit terminated at 2.80m.				
Water Strike Depth Strike (mbgl) Remarks No strike. Stability: Frequent moderate collapses from 1.10m bgl. Remarks: Trial Pit terminated at 2.80m bgl due to the pit collapse.											

Trial Pit Photos

TP09B

Former Bury Police Station



Image 1. TP09B Pit



Image 2. TP09B Spoil

APPENDIX 9

DYNAMIC SAMPLE BOREHOLE LOGS AND PHOTOGRAPHS



Office 16, Bartle House, Oxford Court
Manchester M2 3WQ
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tel: 0161 914 9170

Dynamic Sample Borehole Log

ver. 1.5

Dynamic Sample No.

DS01

Sheet 1 of 1

Project Name:

Former Bury Police Station

Co-ords:

380115E - 410732N

Project No.

3842

Location:

Bury

Level (m AOD):

93.94

Logged By

AS

Client:

Bury Metropolitan Borough Council

Date:

16/11/2022

Checked By

AL

Well / Backfill

Water Strikes

Sample and In Situ Testing

Depth(m)

Type

Results

Depth (m)

Level (m AOD)

Stratum Description

0.50

93.44

Dark brown, gravelly, clayey, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of red brick (40%), sandstone (30%), concrete (20%) and mudstone (10%).
MADE GROUND

1.00

92.94

1.00 - 1.80

B

1.00 - 1.80

ES

1.80 - 1.20

SPT

N=12
(1,2/2,3,4,3)

1.50

HVP=100

1.60

HVP=80

1.70

HVP=96

2.00

SPT

N=23
(4,6/7,6,4,6)

2.30 - 2.90

B

2.10

91.84

Becoming firm from 2.00m bgl

Medium dense, brown, gravelly, clayey, fine to coarse SAND, Gravel is subangular to subrounded, fine to coarse of sandstone and mudstone.
GLACIAL TILL

3.00

SPT

N=17
(2,3/3,4,4,6)

3.00

90.94

Medium dense, dark brown, mottled yellowish brown, slightly gravelly, slightly clayey, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of mudstone.
GLACIAL TILL

3.80

90.14

Medium dense, dark brown, clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of sandstone and mudstone.
GLACIAL TILL

4.00

SPT

N=13
(3,2/3,3,3,4)

4.40 - 5.00

B

4.20

89.74

Firm, dark brown, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse of mudstone and sandstone.
GLACIAL TILL

5.00

SPT

N=18
(2,3/3,4,5,6)

5.45

88.49

Dynamic Sample terminated at 5.45m.

Remarks:

Dynamic Sample Borehole terminated at 5.45m bgl at target depth.

Water Strike

Depth Strike

Remarks

Casing Details

Depth Base

Diameter

Sample Sleeve Runs

Depth Top (m)

Depth Base (m)

Diameter (mm)

No strike.

1.20

2.00

87 100%

2.00

3.00

77 90%

3.00

4.00

67 50%

4.00

5.00

57 70%

Dynamic Sample Borehole Photos

DS01

Former Bury Police Station



Image 1. DS01:
Viewed right to left, top to bottom.
1.20m - 2.00m bgl.
2.00m - 3.00m bgl.
3.00m - 4.00m bgl.
4.00m - 5.00m bgl.



ver. 1.5

Sheet 1 of 1

Checked By
AL

- 1 -
- 2 -
- 3 -
- 4 -
- 5 -
- 6 -

Water Strike		Casing Details		Sample Sleeve Runs		
Depth Strike	Remarks	Depth Base	Diameter	Depth Top (m)	Depth Base (m)	Diameter (mm)
	No strike.			0.50	1.20	67 100%
				1.20	1.50	57 90%

Dynamic Sample Borehole Photos

DS02

Former Bury Police Station



Image 1. DS02:
Viewed right to left, top to bottom
0.00m - 1.20m bgl.
1.20m - 1.50m bgl.



ver. 1.5

Dynamic Sample No.

DS02A

Sheet 1 of 1

Project Name: Former Bury Police Station

Co-ords:	380063E - 410716N
----------	-------------------

Project No.
3842

Location: Bury

Level (m AOD): 91.70

Logged By

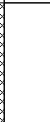
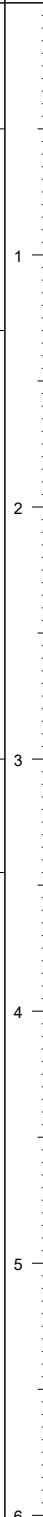
Client: Bury Metropolitan Borough Council

Date: 16/11/2022

Checked By

Weather:	Sunny
----------	-------

AL

Well / Backfill	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)		Stratum Description	
		Depth(m)	Type	Results					
		0.20 - 0.50	B		0.50	91.20		Dark brown, gravelly, clayey, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of concrete (60%) and sandstone (40%). MADE GROUND	
		0.60 - 1.00	B						
		1.20	SPT	N=9 (2,2/3,2,2,2)	1.30	90.40		Becoming medium dense from 2.00m bgl.	
		2.00	SPT	N=11 (3,2/3,3,2,3)					
		3.00	SPT	N=10 (3,4/2,3,3,2)	3.00	88.70		Firm, brown, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS	
					3.45	88.25		Dynamic Sample terminated at 3.45m.	

Remarks:

Dynamic Sample Borehole terminated at 3.45m bgl at target depth.

Water Strike

Depth Strike

Remarks
No strike.

Casing Details

Depth Base

Sample Sleeve Runs

Depth Top (m)	De
---------------	----

Depth top (m)	Depth
1.20	

1.20	
2.00	

Dynamic Sample Borehole Photos

DS02A

Former Bury Police Station



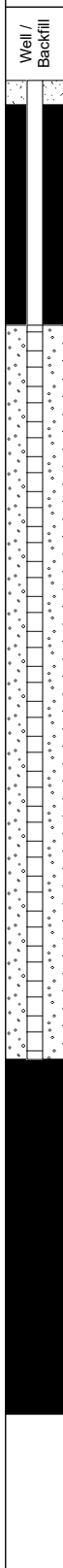
Image 1. DS02A:
Viewed right to left, top to bottom.
1.00m - 2.00m bgl.
2.00m - 3.00m bgl.



ver. 1.5

Sheet 1 of 1

Checked By
AL

Well / Backfill	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)		Stratum Description	
		Depth(m)	Type	Results					
		0.20 - 0.60	B					Dark brown, very clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of concrete (40%), sandstone (40%) and clinker (20%). MADE GROUND	
		0.40	ES						
		1.00 - 1.70	B		1.00	93.70		Soft, orangish brown, slightly gravelly, slightly sandy CLAY. Gravel is subangular to subrounded, fine to coarse of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS	1
		1.20	SPT	HVP=26 N=4 (1,1/1,1,1,1) HVP=24					
		1.30							
		2.00	SPT	N=6 (1,1/1,1,2,2)					2
					2.40	92.30		Brown, gravelly, slightly clayey, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone. GLACIOFLUVIAL SHEET DEPOSITS	
		3.00	SPT	N=13 (2,3/4,3,3,3)					3
		3.10 - 3.60	B		3.10	91.60		Firm, dark brown, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse of mudstone and sandstone. GLACIAL TILL	
		4.00	SPT	N=22 (9,9/8,7,4,3)	4.00	90.70		No recovery, suspected firm to stiff, dark brown, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse of mudstone and sandstone. NO RECOVERY	4
	5.00	SPT	N=21 (3,4/6,5,6,4)					5	
				5.45	89.25		Dynamic Sample terminated at 5.45m.	6	

Remarks:	
----------	--

Dynamic Sample Borehole terminated at 5.45m bgl at target depth.

Water Strike		Casing Details		Sample Sleeve Runs		
Depth Strike	Remarks	Depth Base	Diameter	Depth Top (m)	Depth Base (m)	Diameter (mm)
	No strike.			1.20	2.00	87 70%
				2.00	3.00	77 70%
				3.00	4.00	67 60%
				4.00	5.00	57 0%

Dynamic Sample Borehole Photos

DS03

Former Bury Police Station



Image 1. DS03:
Viewed right to left, top to bottom.
1.20m - 2.00m bgl.
2.00m - 3.00m bgl.
3.00m - 4.00m bgl.

		Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170		Dynamic Sample Borehole Log		Dynamic Sample No. DS04	
				ver. 1.5		Sheet 1 of 1	
Project Name: Former Bury Police Station				Co-ords: 380074E - 410670N		Project No. 3842	
Location: Bury				Level (m AOD): 93.09		Logged By AS	
Client: Bury Metropolitan Borough Council				Date: 16/11/2022		Checked By AL	
Weather: Sunny							

Well / Backfill	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)		Stratum Description	
		Depth(m)	Type	Results					
					0.05	93.04		Soft, dark brown, slightly gravelly, sandy CLAY. Gravel is subangular to subrounded, fine to coarse of concrete (60%) and sandstone (40%). MADE GROUND	
					0.40	92.69		Stiff, orangish brown, slightly gravelly, slightly sandy CLAY. Gravel is subangular to subrounded, fine to coarse of red brick (40%), concrete (30%) and ceramic (20%). MADE GROUND	
								Brown, very gravelly, fine to coarse SAND. Gravel is subrounded to well rounded, fine to coarse of quartzite and sandstone. GLACIOFLUVIAL SHEET DEPOSITS	
		1.20	SPT	N=15 (2,2/3,4,4,4)	1.20	91.89		Medium dense, brown, mottled black, very sandy, clayey, subangular to subrounded, fine to coarse GRAVEL of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS	1
					1.50	91.59		Yellowish brown, gravelly, clayey, fine to coarse SAND. Gravel is subrounded to well rounded, fine to coarse of sandstone and quartzite. GLACIOFLUVIAL SHEET DEPOSITS	
					1.60	91.49		Very loose, brown, mottled yellowish brown, slightly gravelly, slightly clayey, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone. GLACIOFLUVIAL SHEET DEPOSITS	
		2.00	SPT	N=4 (1,2/1,1,1,1)					2
		3.00	SPT	N=13 (2,3/3,2,4,4)					
					3.20	89.89		Becoming medium dense from 3.00m bgl. Medium dense, brown, slightly clayey, fine to coarse SAND and subangular to subrounded, fine to coarse GRAVEL of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS	3
					4.00	89.09		Dynamic Sample terminated at 4.00m.	4
								5	
								6	

Remarks:		Water Strike		Casing Details		Sample Sleeve Runs		
		Depth Strike	Remarks	Depth Base	Diameter	Depth Top (m)	Depth Base (m)	Diameter (mm)
Dynamic Sample Borehole terminated at 4.00m bgl due to borehole collapse			No strike.			1.20	2.00	87 70%
						2.00	3.00	77 60%
						3.00	4.00	67 50%

Dynamic Sample Borehole Photos

DS04

Former Bury Police Station



Image 1. DS04:
Viewed right to left, top to bottom.
1.20m - 2.00m bgl.
2.00m - 3.00m bgl.
3.00m - 4.00m bgl.

IGE consulting		Office 16, Bartle House, Oxford Court Manchester M2 3WQ email: contact@igeconsulting.co.uk web: www.igeconsulting.co.uk tel: 0161 914 9170		Dynamic Sample Borehole Log ver. 1.5				Dynamic Sample No. DS05 Sheet 1 of 1																																																																								
Project Name: Former Bury Police Station				Co-ords: 380076E - 410650N		Project No. 3842																																																																										
Location: Bury				Level (m AOD): 93.40		Logged By AS																																																																										
Client: Bury Metropolitan Borough Council				Date: 16/11/2022		Checked By AL																																																																										
Weather: Sunny																																																																																
<table><tr><td rowspan="2">Well / Backfill</td><td rowspan="2">Water Strikes</td><td colspan="3">Sample and In Situ Testing</td><td rowspan="2">Depth (m)</td><td rowspan="2">Level (m AOD)</td><td rowspan="2">Stratum Description</td><td rowspan="2"></td></tr><tr><td>Depth(m)</td><td>Type</td><td>Results</td></tr><tr><td rowspan="3"></td><td></td><td>1.00 - 1.60</td><td>B</td><td></td><td></td><td></td><td>Firm, gravelly, sandy CLAY with low cobble content. Cobbles are subangular to subrounded of red brick and sandstone. Gravel is subangular to subrounded, fine to coarse of red brick (50%) and sandstone (50%). MADE GROUND</td><td>1</td></tr><tr><td></td><td>1.20</td><td>SPT</td><td>N=18 (4,3/4,5,5,4)</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>2.00</td><td>SPT</td><td>N=17 (4,5/4,5,4,4)</td><td>1.60</td><td>91.80</td><td>Medium dense, brown, gravelly, slightly clayey, fine to coarse SAND with occasional gravel sized lenses of firm to stiff, brown, slightly sandy CLAY. Gravel is subrounded to well rounded, fine to coarse of sandstone. GLACIOFLUVIAL SHEET DEPOSITS</td><td>2</td></tr><tr><td></td><td></td><td>3.00</td><td>SPT</td><td>N=9 (4,2/3,2,2,2)</td><td>3.00</td><td>90.40</td><td>Loose, dark brown, slightly gravelly, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS</td><td>3</td></tr><tr><td></td><td></td><td></td><td></td><td>3.45</td><td>89.95</td><td colspan="2">Dynamic Sample terminated at 3.45m.</td><td>4</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>5</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>6</td></tr></table>								Well / Backfill	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Stratum Description		Depth(m)	Type	Results			1.00 - 1.60	B				Firm, gravelly, sandy CLAY with low cobble content. Cobbles are subangular to subrounded of red brick and sandstone. Gravel is subangular to subrounded, fine to coarse of red brick (50%) and sandstone (50%). MADE GROUND	1		1.20	SPT	N=18 (4,3/4,5,5,4)						2.00	SPT	N=17 (4,5/4,5,4,4)	1.60	91.80	Medium dense, brown, gravelly, slightly clayey, fine to coarse SAND with occasional gravel sized lenses of firm to stiff, brown, slightly sandy CLAY. Gravel is subrounded to well rounded, fine to coarse of sandstone. GLACIOFLUVIAL SHEET DEPOSITS	2			3.00	SPT	N=9 (4,2/3,2,2,2)	3.00	90.40	Loose, dark brown, slightly gravelly, fine to coarse SAND. Gravel is subangular to subrounded, fine to coarse of sandstone and mudstone. GLACIOFLUVIAL SHEET DEPOSITS	3					3.45	89.95	Dynamic Sample terminated at 3.45m.		4									5									6
Well / Backfill	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Stratum Description																																																																									
		Depth(m)	Type	Results																																																																												
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								5																																																																								
								6																																																																								
Remarks:				Water Strike		Casing Details		Sample Sleeve Runs																																																																								
Dynamic Sample Borehole terminated at 3.45m bgl at target depth.				Depth Strike	Remarks	Depth Base	Diameter	Depth Top (m)	Depth Base (m)	Diameter (mm)																																																																						
					No strike.			1.20 2.00	2.00 3.00	87 80% 77 70%																																																																						

Dynamic Sample Borehole Photos

DS05

Former Bury Police Station



Image 1. DS05:
Viewed right to left, top to bottom.
1.20m - 2.00m bgl.
2.00m - 3.00m bgl.

APPENDIX 10

CHEMICAL LABORATORY TEST RESULTS

Agnieszka Stefanowicz

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Analytical Report Number : 22-97493

Replaces Analytical Report Number: 22-97493, issue no. 1
Additional analysis undertaken.

Project / Site name:	Bury Former Police Station	Samples received on:	17/11/2022
Your job number:	3842	Samples instructed on/ Analysis started on:	17/11/2022
Your order number:	3842-17112022-1	Analysis completed by:	14/12/2022
Report Issue Number:	2	Report issued on:	15/12/2022
Samples Analysed:	11 soil samples		

Signed:



Dominika Warjan
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-97493
Project / Site name: Bury Former Police Station
Your Order No: 3842-17112022-1

Lab Sample Number				2503796	2503797	2503798	2503799	2503800
Sample Reference				TP01	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.30	0.30	3.30	1.20
Date Sampled				16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	35	< 0.1	47	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.5	18	9.6	12	12
Total mass of sample received	kg	0.001	NONE	0.7	0.7	1.2	0.3	0.7

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	PDO	N/A	PDO	PDO	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.6	8.1	10.3	7.8	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	%	0.005	MCERTS	-	0.007	-	-	0.021
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	290	33	730	84	200
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.14	0.017	0.37	0.042	0.1
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	143	16.6	366	41.9	103
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	6.2	-	-	2.1
Total Sulphur	%	0.005	MCERTS	-	0.007	-	-	0.014
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	-	5.7	-	-	< 0.5
Ammonium as NH ₄ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	0.57	-	-	< 0.05
Organic Matter	%	0.1	MCERTS	-	-	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	1.7	0.6	2	4.2	1.6
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	< 2.0	-	-	< 2.0
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	< 2.0	9.9	2.3	3.2	6.6
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	0.11	< 0.05	0.24	0.53	0.05
Acenaphthylene	mg/kg	0.05	NONE	0.1	< 0.05	0.13	0.22	< 0.05
Acenaphthene	mg/kg	0.05	NONE	1	< 0.05	1.2	0.18	< 0.05
Fluorene	mg/kg	0.05	NONE	0.98	< 0.05	0.93	0.39	< 0.05
Phenanthrene	mg/kg	0.05	NONE	11	0.08	9.2	0.96	0.05
Anthracene	mg/kg	0.05	NONE	2.3	< 0.05	2.2	0.33	< 0.05
Fluoranthene	mg/kg	0.05	NONE	20	0.16	25	0.9	0.05
Pyrene	mg/kg	0.05	NONE	20	0.15	25	1.9	0.06
Benzo(a)anthracene	mg/kg	0.05	NONE	8.7	0.09	11	< 0.05	< 0.05
Chrysene	mg/kg	0.05	NONE	6.9	0.06	9.5	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	NONE	9.7	0.08	12	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	4.3	< 0.05	4.7	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	9.3	0.06	11	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	4	< 0.05	5.2	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	0.9	< 0.05	1.2	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	4.6	< 0.05	5.5	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	104	< 0.80	123	5.42	< 0.80
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Analytical Report Number: 22-97493
 Project / Site name: Bury Former Police Station
 Your Order No: 3842-17112022-1

Lab Sample Number	2503796	2503797	2503798	2503799	2503800
Sample Reference	TP01	TP02	TP03	TP03	TP04
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20	1.30	0.30	3.30	1.20
Date Sampled	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.4	4.7	8.1	6.1	7.6
Barium (aqua regia extractable)	mg/kg	1	MCERTS	190	80	180	78	120
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.4	1.7	0.6	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	0.4	0.5	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	14	16	23	12	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	5.5	34	13	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	74	13	90	15	21
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	11	11	16	18	30
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	17	22	22	16	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	95	27	80	50	64

Magnesium (water soluble)	mg/kg	5	NONE	-	< 5.0	-	-	25
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	< 2.5	-	-	13

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	-	-	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	-	-	-	11	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	66	-
p & m-xylene	µg/kg	5	MCERTS	-	-	-	170	-
o-xylene	µg/kg	5	MCERTS	-	-	-	43	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	< 5.0	-

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	1	< 0.1
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TPH C10 - C40 EH_CU_ID_TOTAL	mg/kg	10	NONE	640	< 10	320	16000	< 10
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TPH2 (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
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TPH C6 - C40 EH_CU+HS_CU_ID_TOTAL	mg/kg	10	NONE	640	< 10	320	16000	< 10
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TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	NONE	-	-	-	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	NONE	-	-	-	0.089	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	NONE	-	-	-	0.26	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	270	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	10000	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	11000	-

Analytical Report Number: 22-97493
Project / Site name: Bury Former Police Station
Your Order No: 3842-17112022-1

Lab Sample Number				2503796	2503797	2503798	2503799	2503800
Sample Reference				TP01	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.30	0.30	3.30	1.20
Date Sampled				16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
TPH-CWG - Aromatic >EC5 - EC7 _{HS_ID_AR}	mg/kg	0.001	NONE	-	-	-	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS_ID_AR}	mg/kg	0.001	NONE	-	-	-	0.011	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS_ID_AR}	mg/kg	0.001	NONE	-	-	-	0.33	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_ID_AR}	mg/kg	1	MCERTS	-	-	-	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_ID_AR}	mg/kg	2	MCERTS	-	-	-	20	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	-	-	-	200	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	-	-	-	3400	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_ID_AR}	mg/kg	10	NONE	-	-	-	3600	-
TPH (C10 - C25) _{EH_CU_ID_TOTAL}	mg/kg	10	NONE	190	< 10	120	2800	< 10
TPH (C25 - C40) _{EH_CU_ID_TOTAL}	mg/kg	10	NONE	460	< 10	200	13000	< 10
Miscellaneous Organics								
Product ID		N/A	NONE	-	-	-	See Appendix	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 22-97493
Project / Site name: Bury Former Police Station
Your Order No: 3842-17112022-1

Lab Sample Number				2503801	2503802	2503803	2503804	2503805
Sample Reference				TP05	TP08	TP08	TP09	WS01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.30	2.00	0.20	1.00-1.80
Date Sampled				16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	25	< 0.1	22	< 0.1
Moisture Content	%	0.01	NONE	15	23	56	15	13
Total mass of sample received	kg	0.001	NONE	0.7	0.7	0.7	0.7	0.7

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	PDO	PDO	N/A	PDO	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.3	7.7	7.3	9.1	6.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	%	0.005	MCERTS	-	-	0.299	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	230	2800	2900	1100	140
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.11	1.4	1.5	0.56	0.068
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	114	1380	1460	559	67.6
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	6	-	-
Total Sulphur	%	0.005	MCERTS	-	-	0.207	-	-
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	-	-	< 0.5	-	-
Ammonium as NH ₄ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	-	-	< 0.05	-	-
Organic Matter	%	0.1	MCERTS	-	-	18	-	-
Organic Matter (automated)	%	0.1	MCERTS	0.8	5.6	-	1.8	1.3
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	< 2.0	-	-
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	9	4.4	15	< 2.0	3.4
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	7.6	< 5.0	< 5.0

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	0.83	0.24	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	NONE	0.1	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	NONE	0.19	0.32	< 0.05	0.75	< 0.05
Fluorene	mg/kg	0.05	NONE	0.27	0.31	< 0.05	0.64	< 0.05
Phenanthrene	mg/kg	0.05	NONE	0.42	3.2	< 0.05	9.1	< 0.05
Anthracene	mg/kg	0.05	NONE	0.06	0.61	< 0.05	2.4	< 0.05
Fluoranthene	mg/kg	0.05	NONE	0.25	3.4	0.35	31	0.23
Pyrene	mg/kg	0.05	NONE	0.27	3.8	0.47	33	0.26
Benzo(a)anthracene	mg/kg	0.05	NONE	0.11	1.8	0.16	17	0.07
Chrysene	mg/kg	0.05	NONE	0.1	2	0.19	14	0.07
Benzo(b)fluoranthene	mg/kg	0.05	NONE	0.12	1.7	0.26	23	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	NONE	0.07	0.96	0.11	7.7	< 0.05
Benzo(a)pyrene	mg/kg	0.05	NONE	0.1	1.6	0.27	21	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	0.06	0.74	0.14	12	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	< 0.05	0.22	< 0.05	3.5	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	NONE	0.06	0.95	< 0.05	13	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	3.01	21.8	1.95	189	< 0.80
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Analytical Report Number: 22-97493
 Project / Site name: Bury Former Police Station
 Your Order No: 3842-17112022-1

Lab Sample Number				2503801	2503802	2503803	2503804	2503805
Sample Reference				TP05	TP08	TP08	TP09	WS01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.30	2.00	0.20	1.00-1.80
Date Sampled				16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.7	29	14	8.8	8.1
Barium (aqua regia extractable)	mg/kg	1	MCERTS	61	340	190	340	110
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.8	2.3	2.2	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.7	< 0.2
Chromium (hexavalent)	mg/kg	1.2	NONE	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	17	24	17	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	190	80	41	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	23	720	95	1100	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.8	< 0.3	0.7	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	26	22	26	13	31
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	26	37	33	18	28
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	61	110	54	360	75
Magnesium (water soluble)	mg/kg	5	NONE	-	-	35	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	17	-	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	-	-	-	-
o-xylene	µg/kg	5	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	33	< 0.1	< 0.1	< 0.1	< 0.1
TPH C10 - C40 EH_CU_ID_TOTAL	mg/kg	10	NONE	68	22	< 10	200	< 10
TPH2 (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH C6 - C40 EH_CU+HS_CU_ID_TOTAL	mg/kg	10	NONE	68	22	< 10	200	< 10
TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	NONE	-	-	-	-	-

Analytical Report Number: 22-97493
 Project / Site name: Bury Former Police Station
 Your Order No: 3842-17112022-1

Lab Sample Number				2503801	2503802	2503803	2503804	2503805
Sample Reference				TP05	TP08	TP08	TP09	WS01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	1.30	2.00	0.20	1.00-1.80
Date Sampled				16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
TPH-CWG - Aromatic >EC5 - EC7 _{HS_ID_AR}	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS_ID_AR}	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS_ID_AR}	mg/kg	0.001	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_ID_AR}	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_ID_AR}	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_ID_AR}	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_ID_AR}	mg/kg	10	NONE	-	-	-	-	-
TPH (C10 - C25) _{EH_CU_ID_TOTAL}	mg/kg	10	NONE	67	12	< 10	95	< 10
TPH (C25 - C40) _{EH_CU_ID_TOTAL}	mg/kg	10	NONE	< 10	< 10	< 10	100	< 10
Miscellaneous Organics								
Product ID		N/A	NONE	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 22-97493
 Project / Site name: Bury Former Police Station
 Your Order No: 3842-17112022-1

Lab Sample Number				2503806
Sample Reference				WS03
Sample Number				None Supplied
Depth (m)				0.40
Date Sampled				16/11/2022
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	11
Total mass of sample received	kg	0.001	NONE	0.7

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	PDO

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.1
Total Cyanide	mg/kg	1	MCERTS	-
Free Cyanide	mg/kg	1	MCERTS	-
Total Sulphate as SO ₄	%	0.005	MCERTS	0.06
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.15
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	147
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.9
Total Sulphur	%	0.005	MCERTS	0.036
Ammoniacal Nitrogen as NH ₄	mg/kg	0.5	MCERTS	< 0.5
Ammonium as NH ₄ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05
Organic Matter	%	0.1	MCERTS	-
Organic Matter (automated)	%	0.1	MCERTS	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0
Water Soluble Nitrate (2:1) as NO ₃	mg/kg	2	NONE	-
Water Soluble Nitrate (2:1) as NO ₃ (leachate equivalent)	mg/l	5	NONE	-

Speciated PAHs

Naphthalene	mg/kg	0.05	NONE	-
Acenaphthylene	mg/kg	0.05	NONE	-
Acenaphthene	mg/kg	0.05	NONE	-
Fluorene	mg/kg	0.05	NONE	-
Phenanthrene	mg/kg	0.05	NONE	-
Anthracene	mg/kg	0.05	NONE	-
Fluoranthene	mg/kg	0.05	NONE	-
Pyrene	mg/kg	0.05	NONE	-
Benzo(a)anthracene	mg/kg	0.05	NONE	-
Chrysene	mg/kg	0.05	NONE	-
Benzo(b)fluoranthene	mg/kg	0.05	NONE	-
Benzo(k)fluoranthene	mg/kg	0.05	NONE	-
Benzo(a)pyrene	mg/kg	0.05	NONE	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	NONE	-
Dibenz(a,h)anthracene	mg/kg	0.05	NONE	-
Benzo(ghi)perylene	mg/kg	0.05	NONE	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	NONE	-
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Analytical Report Number: 22-97493
 Project / Site name: Bury Former Police Station
 Your Order No: 3842-17112022-1

Lab Sample Number	2503806
Sample Reference	WS03
Sample Number	None Supplied
Depth (m)	0.40
Date Sampled	16/11/2022
Time Taken	None Supplied

Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-
Chromium (hexavalent)	mg/kg	1.2	NONE	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5

Monoaromatics & Oxygenates

Benzene	µg/kg	5	MCERTS	-
Toluene	µg/kg	5	MCERTS	-
Ethylbenzene	µg/kg	5	MCERTS	-
p & m-xylene	µg/kg	5	MCERTS	-
o-xylene	µg/kg	5	MCERTS	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	-
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TPH C10 - C40 EH_CU_ID_TOTAL	mg/kg	10	NONE	-
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TPH2 (C6 - C10) HS_ID_TOTAL	mg/kg	0.1	NONE	-
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TPH C6 - C40 EH_CU+HS_CU_ID_TOTAL	mg/kg	10	NONE	-
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TPH-CWG - Aliphatic >EC5 - EC6 HS_ID_AL	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC6 - EC8 HS_ID_AL	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC8 - EC10 HS_ID_AL	mg/kg	0.001	NONE	-
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_ID_AL	mg/kg	1	MCERTS	-
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_ID_AL	mg/kg	2	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_ID_AL	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_ID_AL	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU+HS_ID_AL	mg/kg	10	NONE	-

Analytical Report Number: 22-97493
 Project / Site name: Bury Former Police Station
 Your Order No: 3842-17112022-1

Lab Sample Number					2503806
Sample Reference					WS03
Sample Number					None Supplied
Depth (m)					0.40
Date Sampled					16/11/2022
Time Taken					None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
TPH-CWG - Aromatic >EC5 - EC7 HS_ID_AR	mg/kg	0.001	NONE	-	-
TPH-CWG - Aromatic >EC7 - EC8 HS_ID_AR	mg/kg	0.001	NONE	-	-
TPH-CWG - Aromatic >EC8 - EC10 HS_ID_AR	mg/kg	0.001	NONE	-	-
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_ID_AR	mg/kg	1	MCERTS	-	-
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_ID_AR	mg/kg	2	MCERTS	-	-
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_ID_AR	mg/kg	10	MCERTS	-	-
TPH-CWG - Aromatic (EC5 - EC35) EH_CU+HS_ID_AR	mg/kg	10	NONE	-	-
TPH (C10 - C25) EH_CU_ID_TOTAL	mg/kg	10	NONE	-	-
TPH (C25 - C40) EH_CU_ID_TOTAL	mg/kg	10	NONE	-	-
Miscellaneous Organics					
Product ID		N/A	NONE	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 22-97493

Project / Site name: Bury Former Police Station

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2503796	TP01	None Supplied	0.2	Brown loam and sand with gravel and stones.
2503797	TP02	None Supplied	1.3	Brown clay and sand.
2503798	TP03	None Supplied	0.3	Brown loam and clay with gravel and stones.
2503799	TP03	None Supplied	3.3	Brown sandy gravel with oil / petroleum.
2503800	TP04	None Supplied	1.2	Brown clay and sand.
2503801	TP05	None Supplied	0.8	Brown clay.
2503802	TP08	None Supplied	1.3	Brown sandy clay with gravel and stones.
2503803	TP08	None Supplied	2	Brown clay and sand.
2503804	TP09	None Supplied	0.2	Brown loam and sand with gravel and stones.
2503805	WS01	None Supplied	1.00-1.80	Brown clay and sand.
2503806	WS03	None Supplied	0.4	Brown sandy clay with gravel.

Analytical Report Number : 22-97493
Project / Site name: Bury Former Police Station

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L023-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS

Analytical Report Number : 22-97493
Project / Site name: Bury Former Police Station

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Product ID in soil	Determination of product ID by interpretation against standard chromatograms - Soil.	In-house method	L064-PL/UK	W	NONE
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
DRO (Soil)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	TPH > C10 Dry soil n-house method with silica gel split/clean up. TPH < C10 by Wet by HS-GC-MS	L088/L076		NONE
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS

Analytical Report Number : 22-97493
Project / Site name: Bury Former Police Station

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

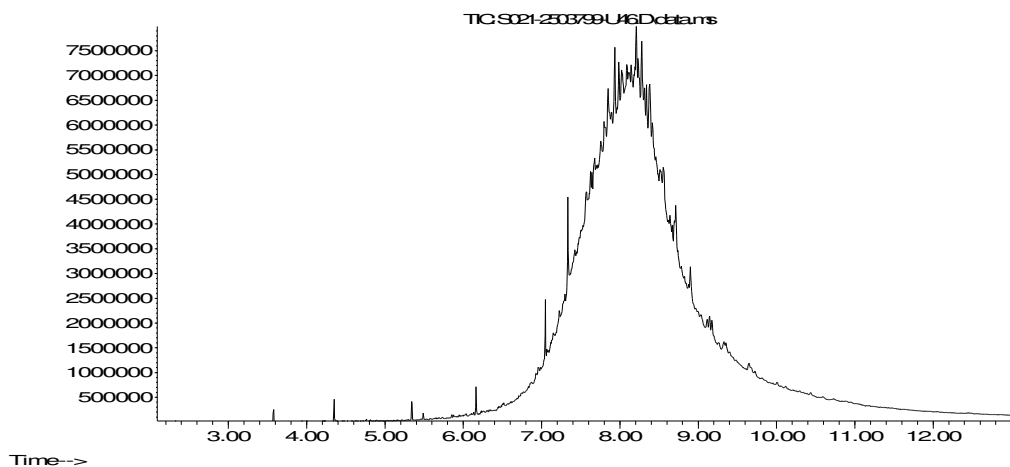
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C. Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
-	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Abundance



The total ion count (TIC trace) shows a carbon range from C10 to greater than C40

The sample TIC trace is complex, showing aromatic and aliphatic product sources.

The trace does not match the standard product profiles but is suggestive of lube oil from engine petrol



Project: Bury Former Police Station

Job No: 3842

Lab Sample Number			2503796	2503797	2503798	2503799	2503800	2503801	2503802	2503803	2503804	2503805	2503806	Statistical Analysis					GAC - S4UL unless stated			C4SL			
Sample Reference			TP01	TP02	TP03	TP03	TP04	TP05	TP08	TP08	TP09	WS01	WS03	Statistical Analysis					Statistical Results			Residential with home grown produce			
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied												
Depth (m)			0.20	1.30	0.30	3.30	1.20	0.80	1.30	2.00	0.20	1.00-1.80	0.40												
Date Sampled			16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022	16/11/2022												
Analytical Parameter (Soil Analysis)			Units	LoD										Count	Standard Deviation	Minimum	Maximum	Average	Maximum	1% Residential with Home Grown Produce	Pass/ Fail	Exceedances	Residential with home grown produce	Pass/ Fail	Exceedances
Stone Content			%	0.1	35	0.1	47	0.1	0.1	0.1	25	0.1	22	0.1	0.1	11	17.36	0.1	47.0	11.8	47.0				
Moisture Content			%	0.01	9.5	18	9.6	12	12	15	23	56	15	13	11	11	13.32	9.50	56.00	17.65	56.00				
Total mass of sample received			kg	0.001	0.7	0.7	1.2	0.3	0.7	0.7	0.7	0.7	0.7	0.7	0.7	11	0.20	0.300	1.200	0.709	1.200				
Asbestos in Soil Screen			Type	N/A	Not-detected	-	Not-detected	Not-detected	-	Not-detected	Not-detected	-	Not-detected	-	Not-detected	0	-	-	-	-	-				
General Inorganics																									
pH - Automated			pH Units	N/A	11.6	8.1	10.3	7.8	7.6	7.3	7.7	7.3	9.1	6.3	9.1	11	1.52	6.30	11.60	8.38					
Total Cyanide			mg/kg	1	1	1	1	1	1	1	1	1	1	1	-	10	0.00	1.00	1.00	1.00	1.00	60	Pass	0	
Free Cyanide			mg/kg	1	1	1	1	1	1	1	1	1	1	-	10	0.00	1.00	1.00	1.00	1.00	60	Pass	0		
Total Sulphate as SO4			%	0.005	-	0.007	-	-	0.021	-	-	0.299	-	-	0.06	4	0.137	0.007	0.299	0.097					
Water Soluble Sulphate as SO4 16hr extraction (2:1)			mg/kg	2.50	290	33	730	84	200	230	2800	2900	1100	140	-	10	1103.57	33.00	2900.00	850.70					
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)			g/l	0.00125	0.14	0.017	0.37	0.042	0.1	0.11	1.4	1.5	0.56	0.068	0.15	11	0.54088	0.01700	1.50000	0.40518					
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)			mg/l	1.25	143	16.6	366	41.9	103	114	1380	1460	559	67.6	147	11	528.79	16.60	1460.00	399.83					
Water Soluble Chloride (2:1) (leachate equivalent)			mg/l	0.5	-	6.2	-	-	2.1	-	-	6	-	-	-	4	2.4	1.9	6.2	4.1					
Total Sulphur			%	0.005	-	0.007	-	-	0.014	-	-	0.207	-	-	0.036	4	0.095	0.007	0.207	0.066					
Ammoniacal Nitrogen as NH4			mg/kg	0.5	-	5.7	-	-	0.5	-	-	0.5	-	0.5	-	4	2.60	0.50	5.70	1.80					
Ammonium as NH4 (10:1 leachate equivalent)			mg/l	0.05	-	0.57	-	-	0.05	-	-	0.05	-	0.05	-	4	0.26	0.05	0.57	0.18					
Organic Matter (automated)			%	0.1	1.7	0.6	2	4.2	1.6	0.8	5.6	18	1.8	1.3	-	10	5.24	0.60	18.00	3.76					
Water Soluble Nitrate (2:1) as N (leachate equivalent)			mg/l	2	-	2	-	-	2	-	-	2	-	2	-	4	0.00	2.00	2.00	2.00					
Water Soluble Nitrate (2:1) as NO3			mg/kg	2	2	9.9	2.3	3.2	6.6	9	4.4	15	2	3.4	-	10	4.32	2.00	15.00	5.78					
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)			mg/l	5	5	5	5	5	5	5	7.6	5	5	5	-	10	0.82	5.00	7.60	5.26					
Speciated PAHs																									
Naphthalene			mg/kg	0.05	0.11	0.05	0.24	0.53	0.05	0.83	0.24	0.05	0.05	0.05	-	10	0.26	0.05	0.83	0.22	0.83	2.30	Pass	0	
Acenaphthylene			mg/kg	0.05	0.1	0.05	0.13	0.22	0.05	0.1	0.05	0.05	0.05	0.05	-	10	0.06	0.05	0.22	0.09	0.22	170	Pass	0	
Acenaphthene			mg/kg	0.05	1	0.05	1.2	0.18	0.05	0.19	0.32	0.05	0.75	0.05	-	10	0.44	0.05	1.20	0.38	1.20	210	Pass	0	
Fluorene			mg/kg	0.05	0.98	0.05	0.93	0.39	0.05	0.27	0.31	0.05	0.64	0.05	-	10	0.36	0.05	0.98	0.37	0.98	170	Pass	0	
Phenanthrene			mg/kg	0.05	11	0.05	9.2	0.96	0.05	0.42	3.2	0.05	9.1	0.05	-	10	4.51	0.05	11.00	3.41	11.00	95	Pass	0	
Anthracene			mg/kg	0.05	2.3	0.05	2.2	0.33	0.05	0.06	0.61	0.05	2.4	0.05	-	10	1.04	0.05	2.40	0.81	2.40	2400	Pass	0	
Fluoranthene			mg/kg	0.05	20	0.16	25	0.9	0.05	0.25	3.4	0.35	0.23	-	10	12.19	0.05	31.00	8.13	31.00	280	Pass	0		
Pyrene			mg/kg	0.05	20	0.15	25	1.9	0.06	0.27	3.8	0.47	33	-	10	12.52	0.06	33.00	8.49	33.00	620	Pass	0		
Benzo(a)anthracene			mg/kg	0.05	8.7	0.09	11	0.05	0.05	0.11	1.8	0.16	17	-	10	6.12	0.05	17.00	3.90	17.00	7.20	Fail	3		
Chrysene			mg/kg	0.05	6.9	0.06	9.5	0.05	0.05	0.1	2	0.19	14	-	10	5.05	0.05	14.00	3.29	14.00	15	Pass	0		
Benzo(b)fluoranthene			mg/kg	0.05	9.7	0.08	12	0.05	0.05	0.12	1.7	0.26	23	-	10	7.81	0.05	23.00	4.70	23.00	2.60	Fail	3		
Benzo(k)fluoranthene			mg/kg	0.05	4.3	0.05	4.7	0.05	0.05	0.07	0.96	0.11	7.7	-	10	2.75	0.05	7.70	1.80	7.70	77	Pass	0		
Benzo(a)pyrene			mg/kg	0.05	9.3	0.06	11	0.05	0.05	0.1	1.6	0.27	21	-	10	7.17	0.05	21.00	4.35	21.00	2.20	Fail	3		
Indeno(1,2,3-cd)pyrene			mg/kg	0.05	4	0.05	5.2	0.05	0.05	0.06	0.74	0.14	12	-	10	3.91	0.05	12.00	2.23	12.00	27	Pass	0		
Dibenz(a,h)anthracene			mg/kg	0.05	0.9	0.05	1.2	0.05	0.05	0.05	0.22	0.05	3.5	-	10	1.10	0.05	3.50	0.61	3.50	0.24	Fail	3		
Benzo(ghi)perylene			mg/kg	0.05	4.6	0.05	5.5	0.05	0.05	0.06	0.95	0.05	13	-	10	4.24	0.05	13.00	2.44	13.00	320	Pass	0		
Total PAH																									
Speciated Total EPA-16 PAHs			mg/kg	0.8	104	0.8	123	5.42	0.8	3.01	21.8	1.95	189	0.8	-	10	68.22	0.80	189.00	45.06					
Heavy Metals / Metalloids																									
Arsenic (aqua regia extractable)			mg/kg	1	5.4	4.7	8.1	6.1	7.6	7.7	29	14	8.8	8.1	-	10	7.16	4.70	29.00	9.95	29.00	37	Pass	0	
Barium (aqua regia extractable)			mg/kg	1	190	80	180	78	120	61	340	190	340	110	-	10	101.78	61.00	340.00	168.90	340.00	-	Pass	0	
Boron (water soluble)			mg/kg	0.2	1.1	0.4	1.7	0.6	0.3	0.4	0.8	2.3	2.2	0.3	-	10	0.78	0.30	2.30	1.01	2.30	290	Pass	0	
Cadmium (aqua regia extractable)			mg/kg	0.2	0.5	0.2	0.4	0.5	0.2	0.2	0.2	0.2	0.7	0.2	-	10	0.18	0.20	0.70	0.33	0.70	11	Pass	0	
Chromium (hexavalent)			mg/kg	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	-	10	0.00	1.20	1.20	1.20	1.20	6	Pass	0	
Chromium (aqua regia extractable)			mg/kg	1	14	16	23	12	22	22	17	24	17	25	-	10	4.54	12.00	25.00	19.20	25.00	910	Pass	0	
Copper (aqua regia extractable)			mg/kg	1	22	5.5	34	13	26	19	190	80	41	26	-	10	54.66	5.50	190.00	45.65	190.00	2400	Pass	0	
Lead (aqua regia extractable)			mg/kg	1	74	13	90	15	21	23	720	95	1100	18	-	10	377.45	13.00	1100.00	216.90	1100.00	200	Fail	2	
Mercury (aqua regia extractable)			mg/kg	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.8	0.3	0.7	0.3	-	10	0.19	0.30	0.80	0.39	0.80	40	Pass	0	
Nickel (aqua regia extractable)			mg/kg	1	11	11	16	18	30	26	22	26	13	-	10	7.65	11.00	31.00	20.40	31.00	130	Pass	0		
Selenium (aqua regia extractable)			mg/kg	1	1	1	1	1	1	1	1	1	1	-	10	0.00	1.00	1.00	1.00	1.00	250	Pass	0		
Vanadium (aqua regia extractable)			mg/kg	1	17	22	22	16	25	26	37	18	28	-	10	6.88	16.00	37.00	24.40	37.00	410	Pass	0		
Zinc (aqua regia extractable)			mg/kg	1	95	27	80	50	64	61	110	54	360	75	-	10	95.13	27.00	360.00	97.60	360.00	3700	Pass	0	
Magnesium (water soluble)			mg/kg	5	-	5	-	-	25	-	-	35	-	5	-	4	15.00	5.00	35.00	17.50					
Magnesium (leachate equivalent)			mg/l	2.5	-	2.5	-	-	13	-	-	17	-	2.5	-	4	7.40	2.50	17.00	8.75					
Monoaromatics & Oxygenates																									
Benzene			µg/kg	1	-	-	-	5	-	-	-	-	-	-	1	-	-	5	5	5.00	5	87	Pass	0	
Toluene			µg/kg	1	-	-	-	11	-	-	-	-	-	-	1	-	-	11	11.00	11	130000	Pass	0		
Ethylbenzene			µg/kg	1	-	-	-	66	-	-	-	-	-	-	1	-	-	66	66.00	66	47000	Pass	0		
p & m-xylene			µg/kg	1	-	-	-	170	-	-	-	-	-	-	1	-	-	170	170.00						

APPENDIX 11
GEOTECHNICAL LABORATORY TEST RESULTS

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: IGE Consulting
Client Address: Office 11, Bartle House,
Oxford Court, Manchester,
M2 3WQ
Contact: Agnieszka Stefanowicz
Site Address: Bury Former Police Station

Client Reference: 3842
Job Number: 22-97367
Date Sampled: 16/11/2022
Date Received: 17/11/2022
Date Tested: 23/11/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

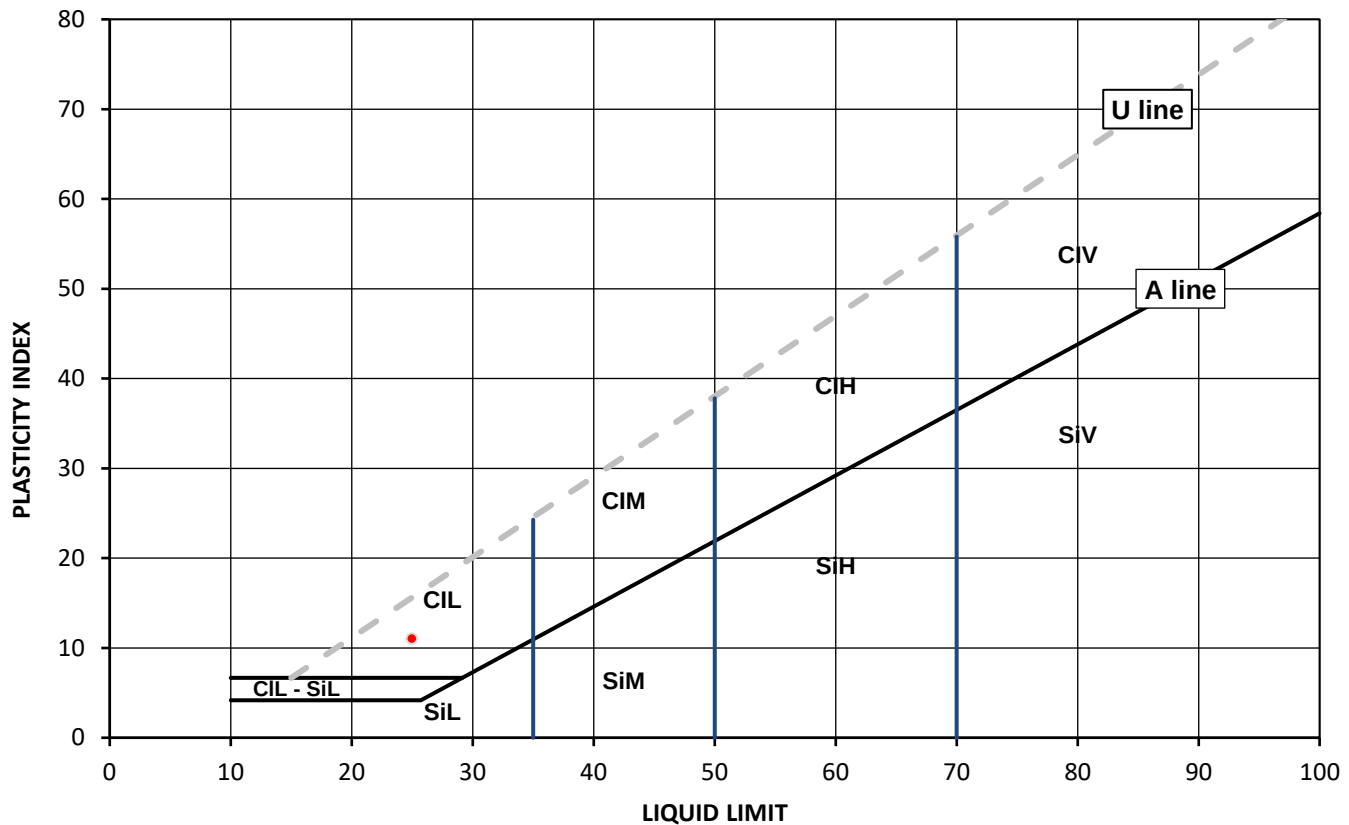
Test Results:

Laboratory Reference: 2503171
Hole No.: TP02
Sample Reference: Not Given
Sample Description: Brown slightly gravelly clayey SAND

Depth Top [m]: 2.80
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
16	25	14	11	83



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	append to classification for organic material (eg CIHO)
	V Very high	
	O Organic	

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: IGE Consulting
Client Address: Office 11, Bartle House,
Oxford Court, Manchester,
M2 3WQ
Contact: Agnieszka Stefanowicz
Site Address: Bury Former Police Station

Client Reference: 3842
Job Number: 22-97367
Date Sampled: 16/11/2022
Date Received: 17/11/2022
Date Tested: 23/11/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

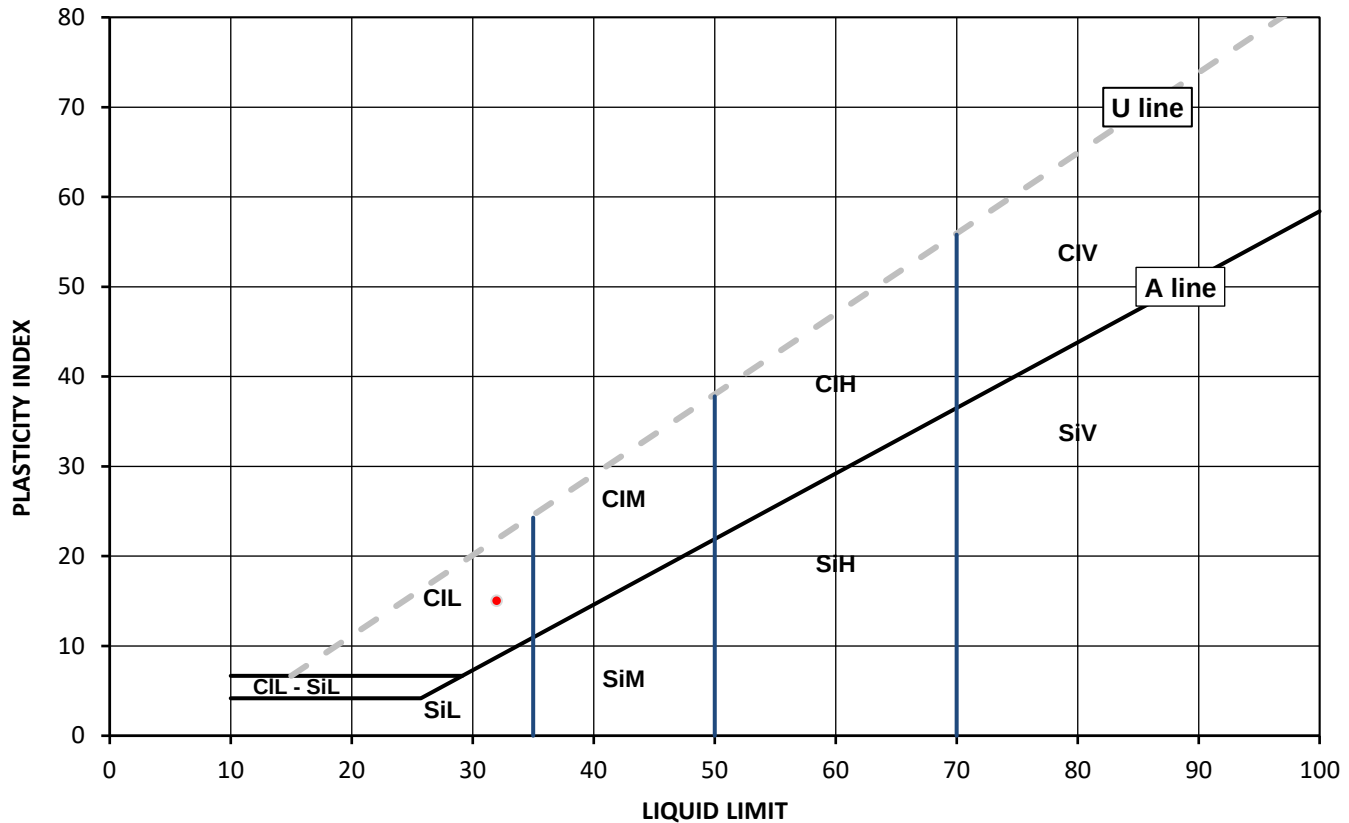
Test Results:

Laboratory Reference: 2503172
Hole No.: TP04
Sample Reference: Not Given
Sample Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
21	32	17	15	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:



Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: IGE Consulting
Client Address: Office 11, Bartle House,
Oxford Court, Manchester,
M2 3WQ
Contact: Agnieszka Stefanowicz
Site Address: Bury Former Police Station

Client Reference: 3842
Job Number: 22-97367
Date Sampled: 16/11/2022
Date Received: 17/11/2022
Date Tested: 23/11/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

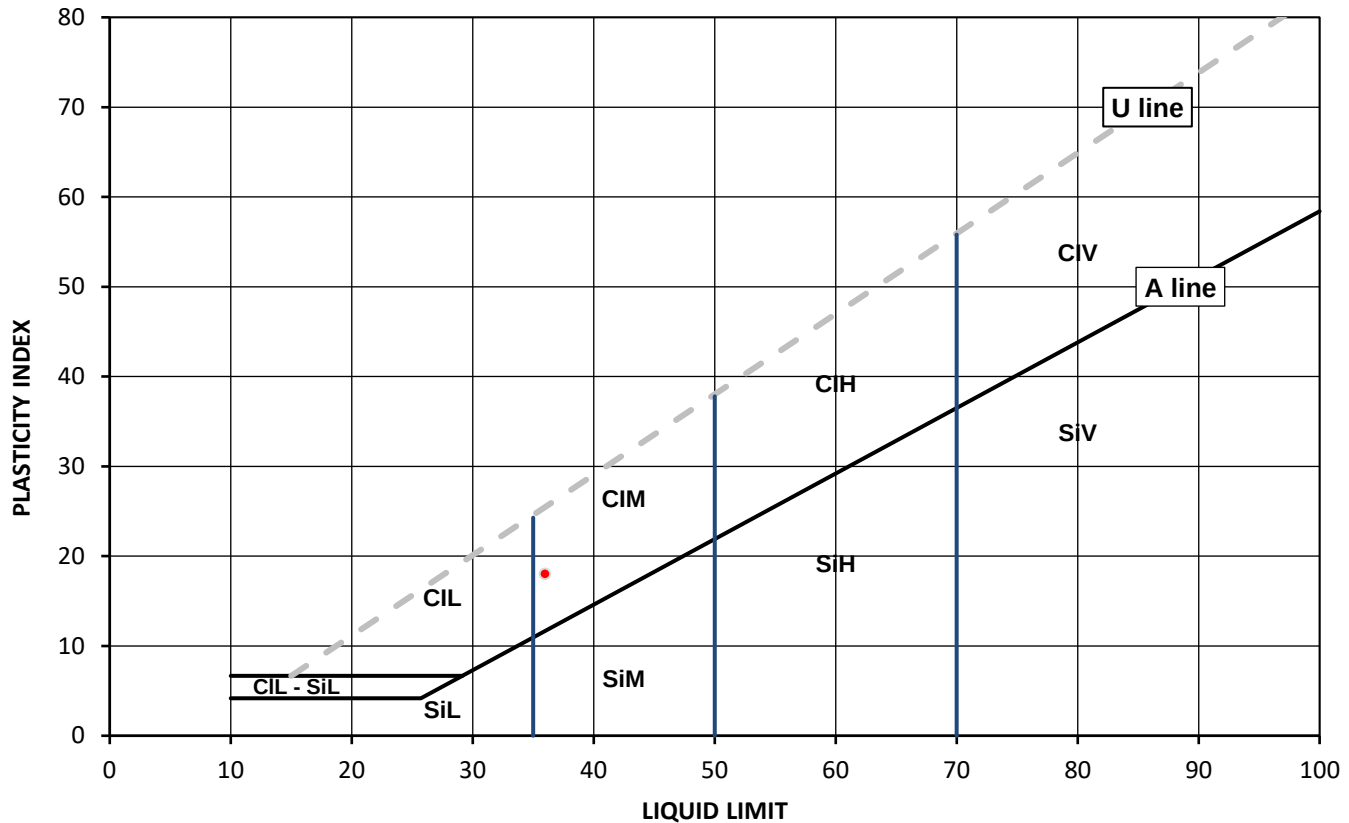
Test Results:

Laboratory Reference: 2503175
Hole No.: WS01
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 1.00
Depth Base [m]: 1.80
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	36	18	18	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

Cl	Clay	Plasticity	L	Low	Liquid Limit	below 35
Si	Silt		M	Medium		35 to 50
			H	High		50 to 70
			V	Very high		exceeding 70
			O	Organic		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Siewior

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: IGE Consulting
Client Address: Office 11, Bartle House,
Oxford Court, Manchester,
M2 3WQ
Contact: Agnieszka Stefanowicz
Site Address: Bury Former Police Station

Client Reference: 3842
Job Number: 22-97367
Date Sampled: 16/11/2022
Date Received: 17/11/2022
Date Tested: 23/11/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

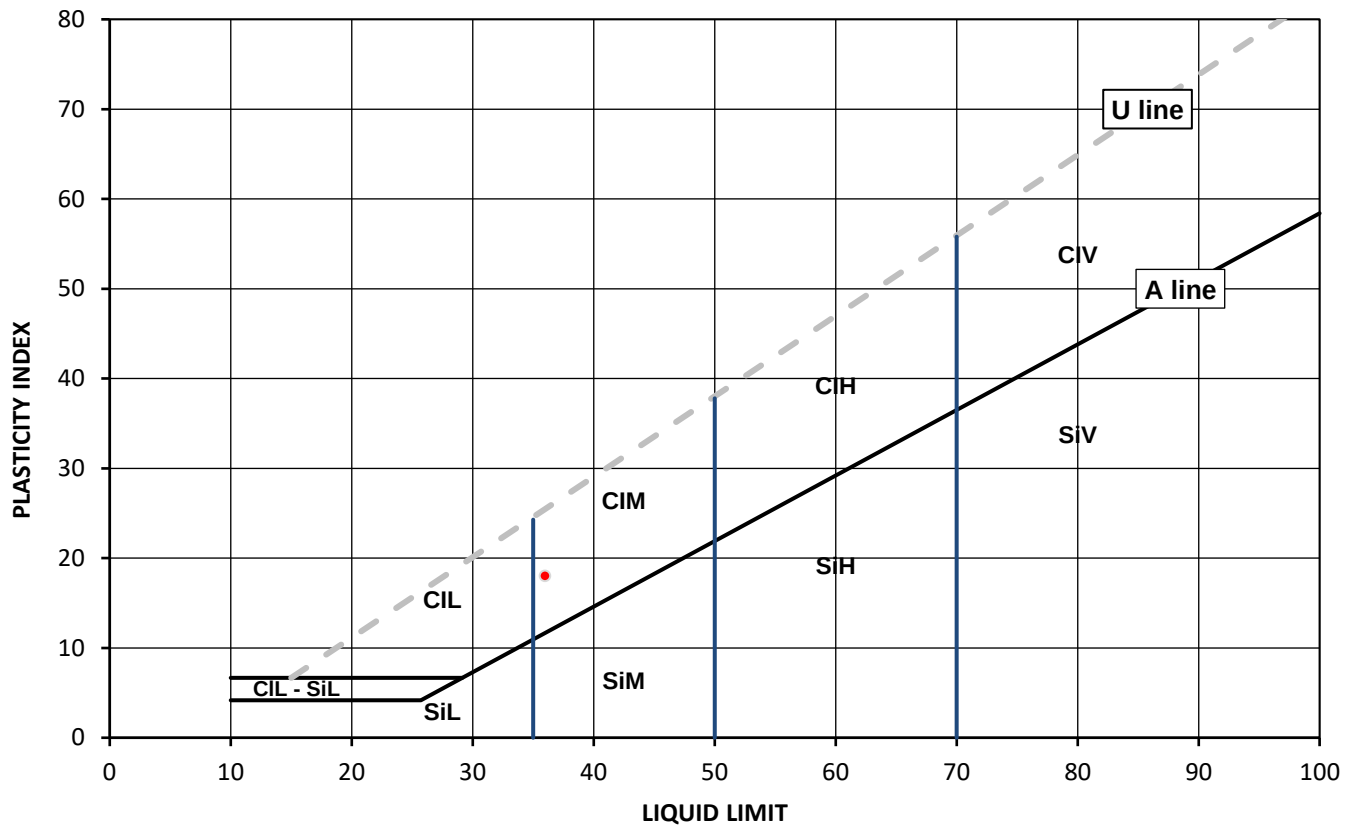
Test Results:

Laboratory Reference: 2503176
Hole No.: WS05
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 1.00
Depth Base [m]: 1.60
Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	36	18	18	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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4041

Client: IGE Consulting
 Client Address: Office 11, Bartle House,
 Oxford Court, Manchester,
 M2 3WQ
 Contact: Agnieszka Stefanowicz
 Site Address: Bury Former Police Station

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Water Content by BS 1377-2:1990: Clause 3.2; Atterberg by BS 1377-2: 1990:
 Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2:
 1990: Clause 8.2

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Client Reference: 3842
 Job Number: 22-97367
 Date Sampled: 16/11/2022
 Date Received: 17/11/2022
 Date Tested: 23/11/2022
 Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W] %	Water Content BS EN ISO 17892-1 [W] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top m	Depth Base m	Type					% Passing 425um %	WL %	Wp %	Ip %	bulk Mg/m3	dry Mg/m3	PD Mg/m3			
2503171	TP02	Not Given	2.80	Not Given	D	Brown slightly gravelly clayey SAND	Atterberg 1 Point	16		83	25	14	11						
2503172	TP04	Not Given	1.20	Not Given	D	Brown slightly gravelly very sandy CLAY	Atterberg 1 Point	21		98	32	17	15						
2503175	WS01	Not Given	1.00	1.80	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	18		95	36	18	18						
2503176	WS05	Not Given	1.00	1.60	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	17		99	36	18	18						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Siewior

Monika Siewior
 Reporting Specialist
 for and on behalf of i2 Analytical Ltd

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 Contact: Agnieszka Stefanowicz
 Site Address: Bury Former Police Station

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Client Reference: 3842
 Job Number: 22-97367
 Date Sampled: 16/11/2022
 Date Received: 17/11/2022
 Date Tested: 23/11/2022
 Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2503171	TP02	Not Given	2.80	Not Given	D	Brown slightly gravelly clayey SAND		16	Sample was quartered, oven dried at 106 °C			
2503172	TP04	Not Given	1.20	Not Given	D	Brown slightly gravelly very sandy CLAY		21	Sample was quartered, oven dried at 106 °C			
2503175	WS01	Not Given	1.00	1.80	D	Brown slightly gravelly sandy CLAY		18	Sample was quartered, oven dried at 108.2 °C			
2503176	WS05	Not Given	1.00	1.60	D	Brown slightly gravelly sandy CLAY		17	Sample was quartered, oven dried at 108.2 °C			

Comments:

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Signed:

Monika Siewior

Monika Siewior
 Reporting Specialist
 for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: IGE Consulting
Client Address: Office 11, Bartle House,
Oxford Court, Manchester,
M2 3WQ
Contact: Agnieszka Stefanowicz
Site Address: Bury Former Police Station

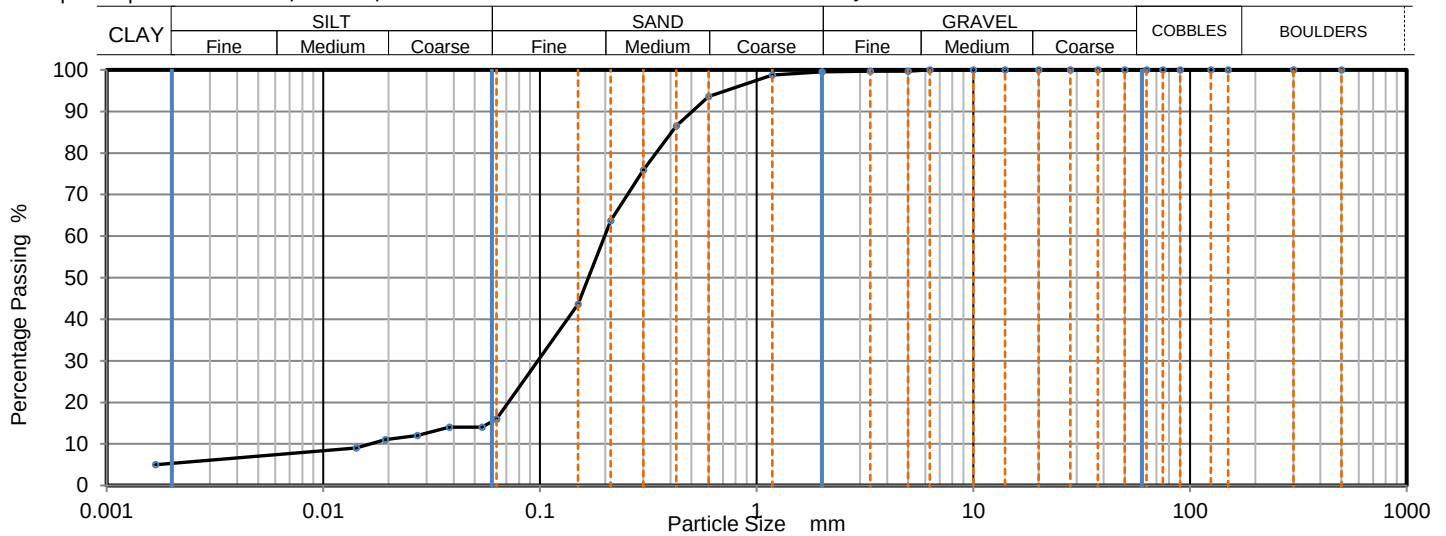
Client Reference: 3842
Job Number: 22-97367
Date Sampled: 16/11/2022
Date Received: 17/11/2022
Date Tested: 24/11/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2503173
Hole No.: TP04
Sample Reference: Not Given
Sample Description: Brown slightly clayey silty SAND
Sample Preparation: Sample was quartered, oven dried at 106 °C and broken down by hand.

Depth Top [m]: 2.60
Depth Base [m]: Not Given
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0630	16
300	100	0.0541	14
150	100	0.0382	14
125	100	0.0272	12
90	100	0.0193	11
75	100	0.0142	9
63	100	0.0117	5
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100	Particle density (assumed) 2.65 Mg/m3	
2	100		
1.18	99		
0.6	94		
0.425	87		
0.3	76		
0.212	64		
0.15	44		
0.063	16		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	84
Silt	9
Clay	6

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	11
Curvature Coefficient	2.7

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Client: IGE Consulting
Client Address: Office 11, Bartle House,
Oxford Court, Manchester,
M2 3WQ
Contact: Agnieszka Stefanowicz
Site Address: Bury Former Police Station

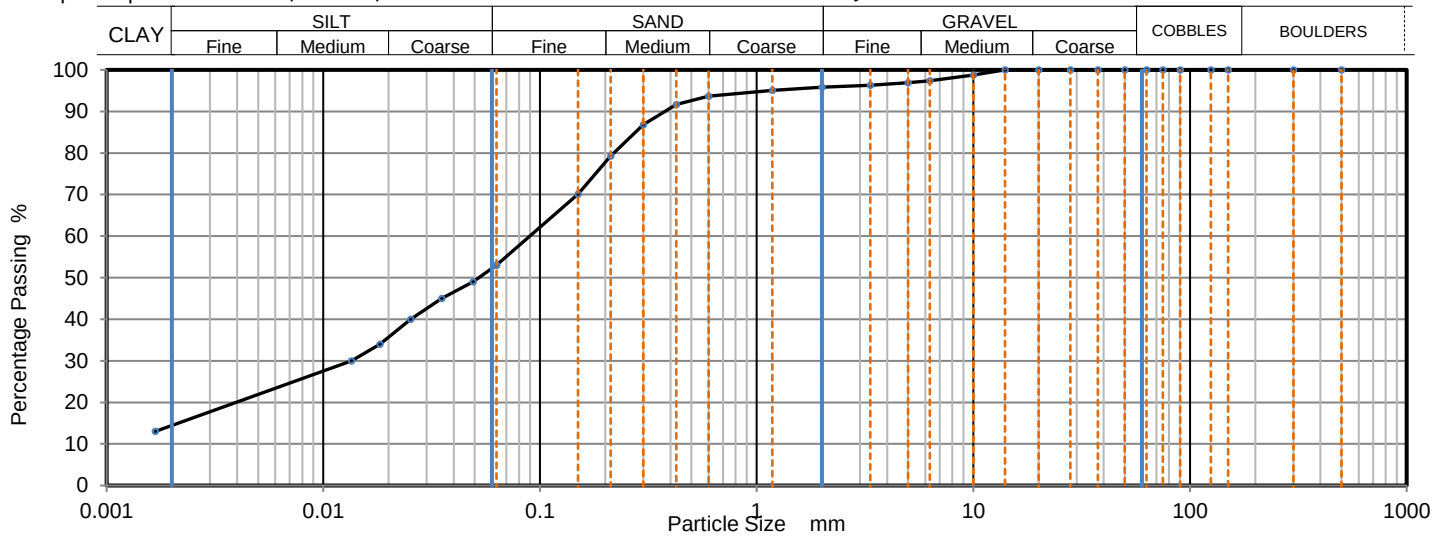
Client Reference: 3842
Job Number: 22-97367
Date Sampled: 16/11/2022
Date Received: 17/11/2022
Date Tested: 24/11/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference: 2503174
Hole No.: TP07
Sample Reference: Not Given
Sample Description: Brownish grey slightly gravelly very sandy CLAY
Sample Preparation: Sample was quartered, oven dried at 106 °C and broken down by hand.

Depth Top [m]: 2.40
Depth Base [m]: Not Given
Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0630	53
300	100	0.0490	49
150	100	0.0351	45
125	100	0.0253	40
90	100	0.0182	34
75	100	0.0135	30
63	100	0.0017	13
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5	97		
3.35	96	Particle density (assumed) 2.65 Mg/m3	
2	96		
1.18	95		
0.6	94		
0.425	92		
0.3	87		
0.212	79		
0.15	70		
0.063	53		

Sample Proportions	% dry mass
Very coarse	0
Gravel	4
Sand	43
Silt	38
Clay	15

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	> 54
Curvature Coefficient	

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:



Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

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APPENDIX 12
GROUND GAS MONITORING RESULTS

Gas Monitoring

Site: Former Bury Police Station Recent weather: Rain Precipitation: None 2hr pre-visit pressure: 1027
 Job No.: 3842 Date: 06.11.2022 Air temperature: 1°C Ground condition: Damp
 Engineer: AS Start time: 09:12 Cloud cover: 25% Pressure trend: Steady 2hr post-visit pressure: 1027
 Visit No.: 1 End time: 09:43 Wind: 1.5 km/h W On-site activities (e.g.construction): None



Exploratory hole	Time	Response zone range	Water level	Base level	Atm. pressure	CH ₄		LEL		Hex		CO ₂		O ₂			H ₂ S		CO		Total Volatiles (PID)		PID CF	Flow	
		(m bgl)	(m bgl)	(m bgl)	(mbar)	(%)		(%)		(%)		(%)		(%)			(ppm)		(ppm)		(ppm)			(l/hr)	
						peak	steady	peak	steady	peak	steady	peak	steady	high	steady	low	peak	steady	peak	steady	peak	steady		peak	steady
DS01	09:12	1.00 - 5.00	3.91	4.27	1017	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	2.7	2.7	19.5	16.8	16.8	<1	<1	<1	<1	0.1	<0.1	1.0	0.1	<0.1
DS03	09:31	1.00 - 4.00	DRY	3.7	107	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	2.6	2.6	19.8	13.7	13.7	<1	<1	<1	<1	1.3	<0.1	1.0	<0.1	<0.1
DS05	09:43	1.00 - 3.00	2.93	2.95	1017	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	4.6	4.6	19.7	15.0	15.0	<1	<1	<1	<1	0.4	<0.1	1.0	<0.1	<0.1

Comments: _____

- Values recorded below instrument detection level.
- Response zone flooded. Results unreliable.

Gas Monitoring

Site: Former Bury Police Station Recent weather: Overcast Precipitation: None 2hr pre-visit pressure: 1008

Job No.: 3842 Date: 14.12.2022 Air temperature: -5°C Ground condition: Snow & ice

Engineer: AS Start time: 08:30 Cloud cover: 15% Pressure trend: Rising 2hr post-visit pressure: 1010

Visit No.: 2 End time: 09:10 Wind: 4.8 km/h SW On-site activities (e.g.construction): None



Exploratory hole	Time	Response zone range	Water level	Base level	Atm. pressure	CH ₄		LEL		Hex		CO ₂		O ₂			H ₂ S		CO		Total Volatiles (PID)		PID CF	Flow	
		(m bgl)	(m bgl)	(m bgl)	(mbar)	(%)		(%)		(%)		(%)		(%)			(ppm)		(ppm)		(ppm)			(l/hr)	
						peak	steady	peak	steady	peak	steady	peak	steady	high	steady	low	peak	steady	peak	steady	peak	steady		peak	steady
DS01	09:12	1.00 - 5.00	4.18	4.28	997	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	1.5	1.5	19.6	18.8	18.8	<1	<1	<1	<1	0.6	0.5	1.0	<0.1	<0.1
DS03	09:31	1.00 - 5.00	DRY	3.71	998	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	3.4	3.4	19.7	13.4	13.4	<1	<1	<1	<1	0.4	<0.1	1.0	<0.1	<0.1
DS05	09:43	1.00 - 4.00	2.95	2.95	998	<0.1	<0.1	<0.1	<0.1	<0.001	<0.001	4.6	4.6	19.3	14.5	14.5	<1	<1	<1	<1	0.5	<0.1	1.0	<0.1	<0.1

Comments: _____

- Values recorded below instrument detection level.
- Response zone flooded. Results unreliable.

APPENDIX 13
UNITED UTILITIES WATER MAIN RISK ASSESSMENT

Supplementary guidance for the selection of water pipes in land potentially affected by contamination

Introduction

In January 2011, UK Water Industry Research (UKWIR) published “Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites” (Ref 10/WM/03/21; the ‘UKWIR Guidance’). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 “Laying Pipes in Contaminated Land” which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as “land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated.” The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions “*except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development*”.

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the ‘UUW Guidance’) which includes the Risk Assessment for Water Pipes (the ‘RA’).

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication “Model Procedures for the Management of Land Contamination” (ref: CLR11) that sets out whether the land through

which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

How to contact us about the information in this leaflet



DeveloperServicesWater@uuplc.co.uk



0345 072 6067

Opening hours:
8am-5pm Mon to Thurs
8am-4.30pm Fri

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

- Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UuW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

- pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 "Guidance on comparing soil contamination data with a critical concentration" may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment's Contaminated Land Research Report "Sampling strategies for contaminated land" prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency's "Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination" (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UuW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

- a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or
- b) more suitable pipe materials; or
- c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175: 2011

"Investigation of Potentially Contaminated Sites Code of Practice"

CLAIRE/CIEH

"Guidance on comparing soil contamination data with a critical concentration" 2008

Department of the Environment Contaminated Land Research Report

"Sampling strategies for contaminated land"
prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency

"Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination"
(ref: R&D Technical Report P5-066/TR) 2000

Environment Agency

"Model Procedures for the Management of Land Contamination" (ref: CLR11), 2004

Environment Agency P5-080/TR3

"The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils", 2005

UK Water Industry Research (UKWIR)

"Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21) January 2011

Water Regulations Advisory Scheme (WRAS)

Information and Guidance Note 9-04-03

"Laying Pipes in Contaminated Land" 2002

Frequently asked questions

Why has UUW published supplementary guidance to the 'UKWIR Guidance for the Selection of Water Pipes to be used in Brownfield Sites'?

UUW agrees with the UKWIR Guidance in principle; we have published supplementary guidance to clarify some of the areas in which it will operate.

Does the UKWIR Guidance only apply to 'brownfield sites'?

Yes, the UKWIR Guidance does apply to brownfield sites; in addition United Utilities Water will apply this guidance and the UUW supplementary guidance to any greenfield sites which are potentially affected by contamination.

Who is responsible for completing/ signing the Risk Assessment for Water Pipes (RA)?

This may be the Developer, the Developers representative, or the competent person directing the land assessment. The signatory of the Risk Assessment for Water Pipes (RA) must ensure that all land assessments have been carried out in accordance with current standards and guidelines by or under the direction of a suitably qualified competent person. For water supply applications on land potentially affected by contamination, UUW requires the competent person to be either a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or a Specialist in Land Condition (SiLC). This level of competency is intended to promote good practice and high professional standards and is no greater than that required for planning purposes by Local Authorities.

Do we need to agree the number and location of soil samples with the Water Company as indicated by the UKWIR guidance following the Preliminary Risk Assessment (PRA)?

Where a preliminary risk assessment (PRA) highlights the need for a site investigation UUW considers it is a responsibility of the qualified competent person directing the land assessment to determine the location and frequency of sampling. UUW's role would be to confirm that the appropriate

choice of pipe material has been made on the basis of the information provided.

What do we do if the pipe route is not known when the Site Investigation report is commissioned?

Where the route of the pipe is not known at the site investigation stage, then any resultant pipe selection needs to take account of any contamination found on the site. Consideration should be given to identifying the route and depth of the pipeline at the site investigation stage to avoid unnecessary testing.

Is it acceptable not to undertake a site investigation and specify the use of barrier pipe which seems to be suitable for all conditions?

Not all brownfield land is contaminated, and because of that a default to barrier pipe is not an acceptable approach to UUW, due to the possibility of higher installation and future maintenance costs. The approach as to whether a site investigation is needed should be risk based. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the ground materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials.

Examples where defaulting to barrier pipe would not be acceptable:

- Where a capping layer (non-contaminated) is introduced within which the pipes will be installed.
- Sites with a potential low risk for contamination.
- Where liquid free phase product (e.g. oil or free solvent layers) is in the ground or groundwater in the vicinity of water pipes.
- Where the route of the pipe could be diverted to another suitable location free from contamination.

Are UUW employees who will assess the Design Proposals for contaminated sites suitably qualified?

It is the role of the Developer's suitably qualified competent person to deal with or direct the assessment of land. UUW's role is to assess the Risk Assessment for Water

Pipes and supporting Site Assessment Report (SAR) which is provided with any new water supply application (ie. it has been provided in the correct format, proposals for pipe selection are included, the methodology is in line with the UKWIR Guidance and UUW Supplementary Guidance, it has been directed by a suitably qualified competent person etc.). If UUW do need to provide assistance or information in deciding pipe materials then the assessment would be carried out under the direction of a suitably qualified competent person.

What happens to existing PE that is in the ground under the "old" guidelines?

The latest UKWIR guidance and UUW's supplementary guidance are intended to be used to decide what pipe materials will be used for new water mains and services. It will have no effect for developers with regard to any parts of UUW's existing network.

Will the Developer be required to submit a fully completed Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, for both the option of a mains requisition application and the option of a self-lay application?

Yes, UUW expect the 'Developer', as defined in UUW Supplementary Guidance, to submit a Risk Assessment for Water Pipes (RA) and supporting Site Assessment Report (SAR), including pipe material recommendation, in respect of any water pipes being installed on the development irrespective of who is to install them.

Does Table 1 in UUW's Risk Assessment for Water Pipes (RA) replace any of the tables to be completed in the Site Assessment Report (SAR) as required in the UKWIR Guidance?

UUW does not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in UUW's RA replaces Table 3.1 of the UKWIR Guidance.

Have any other Water Companies adopted the UKWIR Guidance yet?

You will need to contact the water company concerned if you are intending to install water pipes outside UUW's licensed area.

About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

Risk assessment for water pipes (RA)

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on **0345 072 6067**.

Section 1: Development details	
Development name <i>(if it has one)</i>	Former Bury Police Station
Development address	Irwell Street, Bury, BL0 0JW
OS Grid reference <i>(mid point)</i>	380096E, 410680N
Developer's name	Bury Metropolitan Borough Council
UUW reference number <i>(for UU use only)</i>	
Please provide details below of the current and historical use of the site and adjacent sites. <i>If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.</i> • 1849 – 1891 On the earliest historical map, the site comprises a field with a pathway crossing the site in the southern section oriented E-W, and fences with associated vegetation. • 1891 – 1973 By 1891, the site has now been developed into a school with associated grounds in the northern section. The Southern section comprises part of the terraced house development along Irwell Street, as well as unknown buildings in the south-eastern site corner. • 1973 - 2017 By 1980 a police station headquarters is built in place of the old school in the northern site section. The southern site section remains part of the Irwell Street terraced developments. An electricity sub-station is also recorded. • 2017 – 2022 By 2017 the police station building is demolished and the terraced house are no longer present, replaced by the Jubilee Way (A58). The site remained mostly unchanged since.	
Section 2: Preliminary risk assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☒ Yes ☐ No
If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i> N/A intrusive works being undertaken.	

Section 3: Intrusive site investigation																																	
Have you completed any intrusive site investigation?						☒ Yes ☐ No																											
Have you completed any none intrusive site investigation?						☐ Yes ☒ No																											
Date(s) when the site investigation(s) undertaken						<table><tr><td>1</td><td>6</td><td>1</td><td>1</td><td>2</td><td>0</td><td>2</td><td>2</td></tr><tr><td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td></tr><tr><td>D</td><td>D</td><td>M</td><td>M</td><td>Y</td><td>Y</td><td>Y</td><td>Y</td></tr></table>				1	6	1	1	2	0	2	2	D	D	M	M	Y	Y	Y	Y	D	D	M	M	Y	Y	Y	Y
1	6	1	1	2	0	2	2																										
D	D	M	M	Y	Y	Y	Y																										
D	D	M	M	Y	Y	Y	Y																										
At what level has groundwater been encountered?						<table><tr><td>0.70 - 3.20</td><td>metres below ground level or</td></tr><tr><td colspan="2">☐ Not encountered</td></tr></table>				0.70 - 3.20	metres below ground level or	☐ Not encountered																					
0.70 - 3.20	metres below ground level or																																
☐ Not encountered																																	
Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing. <i>If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.</i>																																	
VOCs, SVOCs, Phenols and Cresols as no soruces identified																																	
If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE. Please provide details below of the rationale behind the intended pipe selection. <i>If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.</i>																																	
N/A																																	
Section 4: Site remediation																																	
Please provide details below of any site remediation (which may include a change in site levels) already completed. <i>If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.</i>																																	
None completed.																																	
Has the PSRAS (Table 1) been completed using appropriate data after remediation?						☐ Yes ☐ No ☐ N/A																											
Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection. <i>If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.</i>																																	
Unknown.																																	

Section 5: Final use of site

Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection.

If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.

None, residential development.

What water pipe materials are intended to be used on site?

☐ PE ☒ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B
Other (please specify):

Section 6: Additional information

Please use the section below to provide any additional details to support your intended pipe selection.

PE Type A barrier pipe deemed appropriate as samples with elevated TPH were recorded in the Made Ground and contaminated natural deposits have been found.

Section 7: Risk assessor

Name and relevant qualifications of person directing the risk assessment for water pipes

Mr Andrew Edwards (CEnv Institution of Environmental Sciences)

Name and address of risk assessor's company

IGE Consulting Ltd.
Office 16, Bartle House, Oxford Court, Manchester, M2 3WQx

Date risk assessment performed

1 9 1 2 2 0 2 2

Section 8: Declaration

I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information. I understand that failure to supply any of the required information may delay my application being processed.

Name

Mr Andrew Edwards CEnv

Company

IGE Consulting Ltd.

Telephone

0161 914 9170

Date

1 9 1 2 2 0 2 2

Please email the completed form and supporting information to DeveloperServicesWater@uuplc.co.uk or post to us at United Utilities Water, Developer Services, Second floor Grasmere House, Lingley Mere, Warrington WA5 3LP.



About us

United Utilities is the North West's water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help your life flow smoothly.

United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
Registered in England and Wales. Registered Number 2366678.

Table 1 - Pipe selection risk assessment summary (PSRAS)

1. Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.

2. If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.

What materials have been tested to populate Table 1 below?

☒ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg								
Test Group	Testing Required?	PE threshold	Metal Pipes/ Barrier Pipe	Laboratory Detection Limit	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth See Note [2]	Maximum site concentration See Note [3]	Locations and depths where concentrations exceed proposed pipeline threshold
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	-	N/A	-	-	-
Total BTEX & MTBE		0.1	Pass	-	N/A	-	-	-
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	-	N/A	-	-	-
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	0.1	Y	33	33	TP05 @ 0.80m, TP03 @ 3.30m
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	10	Y	67	2800	TP05 @ 0.80m, TP03 @ 3.30m
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	10	Y	<10	13000	TP05 @ 0.80m, TP03 @ 3.30m
Phenols* (from SVOC analysis)		2	Pass	-	N/A	-	-	-
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	-	N/A	-	-	-
Ethers*	Only where identified	0.5	Pass	-	N/A	-	-	-
Nitrobenzene*		0.5	Pass	-	N/A	-	-	-
Ketones*		0.5	Pass	-	N/A	-	-	-
Aldehydes*		0.5	Pass	-	N/A	-	-	-
Amines		Fail	Pass	-	N/A	-	-	-
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	-	N/A	-	-	-

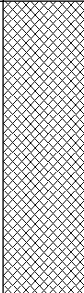
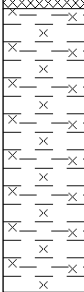
Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.

APPENDIX 14
E3P DEMOLITION WORKS EXPLORATORY HOLE LOGS

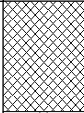
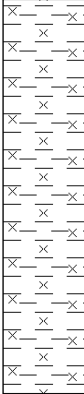
Project Name: Bury Police Station	Project No. 12761	Co-ords: - Level:	Date 11/04/2019
Location: Bury		Dimensions (m):	Scale 1:24
Client: Connell Brothers		Depth 1.85	Logged M. Whittaker

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.70	ES		0.95			MADE GROUND: Black brown slightly sandy slightly gravelly clay. Gravel is fine to coarse angular to sub-angular of brick, concrete, glass, mudstone, sandstone and mixed lithology.	
	1.60	ES		1.85			Firm brown slightly silty gravelly CLAY. Gravel is fine to coarse angular to sub-angular to sub-rounded of mudstone, sandstone and rare coal.	1
							End of Pit at 1.85m	2
								3
								4
								5

Remarks: Complete.

Stability:

Project Name: Bury Police Station	Project No. 12761	Co-ords: - Level:	Date 11/04/2019
Location: Bury		Dimensions (m):	Scale 1:24
Client: Connell Brothers		Depth 1.60	Logged M. Whittaker

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.25	ES		0.35			MADE GROUND: Brown red black slightly sandy gravel. Gravel is fine to coarse angular to sub-angular of brick, asphalt, concrete, slate and mudstone.	
	1.40	ES		1.60			Firm brown slightly silty CLAY.	1
							End of Pit at 1.60m	2
								3
								4
								5

Remarks: Complete.	
Stability:	

Project Name: Bury Police Station	Project No. 12761	Co-ords: - Level:	Date 11/04/2019
Location: Bury		Dimensions (m):	Scale 1:24
Client: Connell Brothers		Depth 1.50	Logged M. Whittaker

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES		0.30			MADE GROUND: Loose brown red black slightly sandy gravel. Gravel is fine to coarse angular to sub-angular of brick, asphalt, concrete, slate and mudstone.	
	1.30	ES		1.50			Firm brown slightly silty gravelly sandy CLAY. Gravel is fine to coarse angular to sub-angular of mudstone, sandstone and rare coal.	1
							End of Pit at 1.50m	2
								3
								4
								5

Remarks: Complete.	
Stability:	



e3p

Trial Pit Log

TrialPit No
TP304
Sheet 1 of 1

Project Name: Bury Police Station

Project No.
12761Co-ords: -
Level:Date
11/04/2019

Location: Bury

Dimensions
(m):Scale
1:24

Client: Connell Brothers

Depth
2.60Logged
M. Whittaker

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.45	ES					MADE GROUND: Black brown slightly sandy clayey gravel. Gravel is fine to coarse angular to sub-angular of slag, clinker, slate, brick, concrete and mixed lithology.	1
	2.20	ES						2
				2.60			End of Pit at 2.60m	3
								4
								5

Remarks: Complete.

Stability:

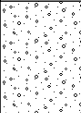
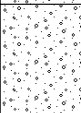


Project Name: Bury Police Station Project No. 12761 Co-ords: -
Level:

Date
11/04/2019

Location: Bury Dimensions (m): Scale 1:24

Client: Connell Brothers Depth 1.90 Logged M. Whittaker

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.35	ES		0.40			Loose brown slightly sandy GRAVEL (Sub-base). Gravel is fine to coarse angular to sub-angular of sandstone.	
							Loose brown slightly silty sandy GRAVEL. Gravel is fine to coarse angular to sub-angular to sub-rounded of mudstone and sandstone.	
	1.80	ES		1.60			Firm to stiff brown silty gravelly CLAY. Gravel is fine to coarse angular to sub-angular of mudstone and sandstone.	
				1.90			End of Pit at 1.90m	
								1
								2
								3
								4
								5

Remarks: Complete.

Stability: