

Townside Fields, Bury

Phase 2 Interpretative Report (Contamination)

For

Bury Council

Project Number:

13819

July 2022

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Document History and Status

Revision	Date	Purpose/Status	Author	Check	Review
P01	July 2022	Client Information	MB	PK	PK

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Document Details

Last saved	26/07/2022 16:40
Report Version	P01
File Name	13819-CRH-XX-XX-RP-LQ-0002 LQS Report.docx
Author	Michael Baber / Peter Kenny
Project Partner	Simon Boots
Project Number	13819
Project Name	Townside Fields, Bury

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1.0 SUMMARY OF ACTIONS

HUMAN HEALTH	Based on preliminary investigation data, no specific remedial action is considered to be required, however, further investigation is required due to the presence of suspected hydrocarbon contaminated soils and to provide addition coverage across the site. It is likely that soft cover systems will be required in areas of soft landscaping and gardens.
CONTROLLED WATERS	Groundwater sampling and analysis has not been conducted as part of this preliminary investigation and should be undertaken during future investigation works.
BUILDINGS AND STRUCTURES/ SERVICES	The site is currently considered to be a CIRIA Characteristic Situation Two and as such, gas protection measures are likely to be required. Further investigation, monitoring and assessment is required to confirm the ground gas regime at the site and the potential for vapour generation. Notwithstanding this, a watching brief should be maintained across the site during redevelopment works, such that any unforeseen sources of hydrocarbon / volatile contamination can be identified and evaluated. The presence of TPH and PAH concentrations in soil indicate a likely need for protection of public water supply network. The infrastructure designer should assess the requirements for pipework with respect to soil contamination and consult statutory utility companies and relevant guidance as necessary.
SITE WORK CONTROLS	A watching brief should be maintained throughout intrusive ground works by the Contractor such that any previously unidentified contamination or asbestos containing materials (ACM) can be identified and referred to an experienced Environmental Consultant for evaluation. Groundworks should be undertaken by a suitably qualified Contractor in accordance with the Control of Asbestos Regulations 2012, associated Approved Code of Practice (ACoP) and guidance prepared by CL:AIRE and the Joint Industry Working Group (JIWG), and CIRIA.
REGULATORY APPROVAL	This report should be submitted to the Regulators (Contaminated Land Officer / Environment Agency) for comment via the planning process, in order to discharge conditions relating to desk study and ground investigation. It should be noted that further investigation and assessment are likely to be required in this regard. A method statement for contamination (Groundworks / Remediation Specification) and verification reporting may require agreement via the planning process
WASTE	A hazardous properties assessment indicates that none of the samples of Made Ground soils have been classified as hazardous. Further testing may be required to determine the final classification of the excavated soils that are actually removed if they differ substantially from those that have currently been tested. It is noted that waste assessment is required to accord with the Environmental Permitting and Planning Legislation and also to control costs during development
GEOTECHNICAL ACTIONS	To be confirmed following completion of geotechnical specific ground investigation works. It should be noted that deep Made Ground has been encountered on site and the full thickness of the Made Ground was not confirmed in several locations.
DOCUMENTATION	The following are required to control site works: Remediation Specification; Verification Report; and, Health and Safety documentation.

2.0 EXECUTIVE SUMMARY

SITE LOCATION	The site is located off Market Street in Bury, Greater Manchester. It is approximately 300m to the south of Bury town centre and the approximate National Grid Reference at the centre of the site is 380500, 410315, postcode BL9 0EQ.
PROPOSED REDEVELOPMENT	Redevelopment proposals are currently at Masterplan stage and have not yet been finalised. Masterplan options currently include a variety of mixed-use residential and commercial schemes, with associated access, infrastructure, hardstanding and landscaped areas.
ENVIRONMENTAL SETTING	The geological sequence is anticipated to be Made Ground overlying Glacial Till and Glaciofluvial Deposits. Bedrock beneath the site is indicated to be the Pennine Lower Coal Measures Formation (mudstone, siltstone, sandstone and coal seams). The site is considered to have a Moderate hydrogeological Sensitivity associated with the presence of superficial and bedrock Secondary A Aquifers, and a Low / Moderate hydrological Sensitivity due to presence of the River Irwell and River Roch over 700m from the site
CURRENT USE AND HISTORY	The site is currently disused having more recently been used as a park with large pond. Historical maps indicate that the site was largely occupied by railway sidings, platforms, goods sheds and cattle pens in the west of the site, likely associated with the former abattoirs to the north west. Extensive ground workings to reduce site levels around 1890's appear to have taken place to facilitate the expansion of the railway sidings. Later, the site was used as public open space and a pond was present in the central and eastern section of the site along with three large pyramid features, still present today.
GEOTECHNICAL HAZARDS	To be confirmed following geotechnical specific ground investigation works appropriate for the proposed development.
CONTAMINATION ISSUES	Risk Summary: • End Users. A LOW – MODERATE RISK has been identified for site end users associated with the presence of suspected hydrocarbon impacted soils encountered in several locations. • Groundwater. Generally, a LOW RISK has been identified from the potential migration of dissolved phase and mobile contaminants to the underlying Secondary A Aquifer. However, it is noted that suspected hydrocarbon impacted soils were encountered which will require further investigation and targeted groundwater sampling to confirm potential risks to groundwater. • Surface Water. A LOW RISK has been identified from migration of potential contaminants given the nearest surface watercourse is >700m from the site. • Ground Gas. At this stage, the site has been classified as a CIRIA Characteristic Situation Two and gas protection measures are required. However, further investigation, monitoring and assessment is required to confirm the ground gas regime. Consideration will also need to be given to potential risks posed by vapours given the presence of suspected hydrocarbon impacted soils. • Services. The presence of TPH and PAH concentrations in soils indicates a possible need for protection of public water supply pipework, such as the use of organic resistant pipework. • Groundworks. A LOW – MODERATE RISK to groundworkers who may come into contact with contaminated soils and waters has been identified based on the assumption that basic health and safety provisions are in place.

	It should be noted that this assessment is based on preliminary data and these risk ratings should be refined following completion of additional ground investigation works.
GEOTECHNICAL RECOMMENDATIONS	Geotechnical constraints and design parameters have not been considered as part of this preliminary investigation. Once proposals have been finalised, geotechnical investigation should be designed and undertaken based on the proposed development. A desk based slope stability appraisal should be conducted in the first instance. Investigations and slope stability analysis is also likely to be required subject to final redevelopment proposals.
ENVIRONMENTAL RECOMMENDATIONS	Although soil concentrations have not been recorded above screening criteria used, areas of suspected hydrocarbon contamination have been encountered and will require further investigation and assessment. Localised remediation may be required in this regard, subject to findings. Future investigations should include cable percussion boreholes, which will be able to penetrate the full thickness of Made Ground and confirm the nature and composition of underlying soils. Installations should also be fitted into boreholes, with response zones across the full depth of the Made Ground. Additional monitoring for bulk gases is recommended to allow confirmation of the ground gas regime and refinement of current recommendations in terms of gas protection measures. This should also include monitoring of additional installations as noted above. Consideration of potential vapours will also be required. The nature and composition of soils with the pyramid structures will need to be assessed to confirm if this material is suitable to be reused on site, or if it requires off site disposal. Testing of asphalt on site should be conducted to confirm the potential presence or otherwise of coal tar.

3.0 INTRODUCTION

3.1. Appointment and Scope

- 3.1.1. This report has been produced by Campbell Reith Hill LLP (CampbellReith) on behalf of Bury Council (the Client) to summarise environmental information relating to land known as Townside Fields, Bury (hereafter referred to as the site). The references and limitations associated with this report follow the main text. Figures showing the location of the site and the development proposals are presented in Appendix A.
- 3.1.2. The report has been produced in general accordance with the procedures for ground investigation, interpretation and reporting set out in Land Contamination Risk Management (LCRM), BS 5930:2015, BS 10175:2011 (+A2:2017) and BS EN 1997 (Eurocode 7). The objective of the report is to collate and interpret Phase 1 Desk Study information and Phase 2 exploratory data from preliminary ground investigation in order to provide:
- a) a conceptual model for the site ground conditions (soil, water and gas)
 - b) a generic quantitative risk assessment (human health, controlled waters and gas)
 - c) outline recommendations for land contamination issues
- 3.1.3. The contamination appraisal is intended to identify remedial requirements necessary to permit the redevelopment of the site. Development proposals have not yet been finalised, however, Masterplan options have been advanced for several options which typically comprise mixed-use residential and commercial schemes, with access and infrastructure, landscaped areas and associated hardstanding for parking.
- 3.1.4. This assessment considers the objectives of the National Planning Policy Framework which requires information to demonstrate that a site is suitable for its new use (taking account of ground conditions and land instability) and not capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990 (after remediation). The NPPF requires adequate site investigation information, prepared by a competent person, with the minimum requirement comprising a desk study and site reconnaissance.
- 3.1.5. It should be recognised that further appraisals, investigations, specification and validation will be required to accord with the recommendations stated herein.
- 3.1.6. The report is based on a recent preliminary site investigation commissioned for this project and a review of readily available information as referenced. A site walkover was undertaken by a representative of CampbellReith in December 2021. The desk study information is presented in Appendix B. The site investigation report produced by Dunelm Geotechnical & Environmental (Ref: M1062/01), dated April 2022, is contained in Appendix C.

4.0 SITE DESCRIPTION AND ENVIRONMENTAL SETTING

4.1. Site Location

- 4.1.1. The site location is presented in Figure 1. The site is located off Market Street in Bury, Greater Manchester. It is approximately 300m to the south of Bury town centre and the approximate National Grid Reference at the centre of the site is 380500, 410315, postcode BL9 0EQ.

4.2. Site Layout

- 4.2.1. An annotated site layout plan is presented in Figure 2. The site forms a roughly rectangular shaped parcel of land covering an approximate area of 3.0 hectares.
- 4.2.2. The site comprises a low-lying central area of relatively flat land with slopes leading up to surrounding higher ground present along the northern and southern areas of the site. A masonry arch bridge (Market Street) spans the eastern section of the site. The bridge abutments are formed into the slopes in the north and south of the site. An access track slopes down along the southern boundary from vehicle access gates off Market Street. Pedestrian access can also be gained from the east via Town Fields Close.
- 4.2.3. Three large pyramid features, predominantly grass covered, are present in the western area of the site. A former pond is present in the central and eastern areas of the site. The ground in this area remained boggy / saturated (noting that the site visit was undertaken following a prolonged period of heavy rainfall) and small areas of standing water were noted. Similar conditions were noted within the former pond area during the intrusive works.
- 4.2.4. The majority of the site has a rough grass and scrub cover, with mature and semi mature trees present throughout. Footpaths are also present in the west of the site, leading around the pyramid features.
- 4.2.5. A small triangular/pyramid shaped concrete structure, potentially the plinth for a former statue [10], is present in the central area of the site, within the former pond area.

4.3. Invasive Plant Species

- 4.3.1. Although not observed during the site walkover and at the time of the investigation, the potential presence of invasive plant species, such as Japanese Knotweed, has not been assessed as part of this report.
- 4.3.2. A Phase I habitat survey has been undertaken by TEP and is included in Appendix B. Although invasive species were not identified on site during the ecological survey, this was conducted outside of the optimum survey period and some species may have been missed. TEP recommends that further survey within the optimum survey period may be required to confirm the presence or absence of invasive species, particularly as Japanese Knotweed has been recorded on site historically.

4.4. Surrounding Land Use

- 4.4.1. Land to the north of the site is occupied Bury College buildings (Woodbury Centre and Business Solutions) and areas of car parking. To the east, residential properties around Town Fields Close are present. A railway line is present to the south, beyond which is Bury College and residential

properties on Westminster Street. Tramlines form the western site boundary with a multi-storey car park and hotel located beyond.

4.5. Redevelopment Proposal

- 4.5.1. At this stage, redevelopment proposals are at Masterplan stage and have not yet been finalised. Masterplan options currently include a variety of mixed-use residential and commercial schemes, with associated access, infrastructure, hardstanding and landscaped areas. Additionally, limited residential development, most likely in the eastern area of the site, is anticipated to include private garden areas.
- 4.5.2. Based on the above and given that redevelopment proposals will include residential end use, the end user sensitivity following redevelopment of the site is considered as High.

4.6. Published Geology

- 4.6.1. The site geology as recorded by the BGS is presented as Figure 3.
- 4.6.2. The anticipated geology as established during desk study research (with those anticipated nearest surface listed first) is summarised in Table 4.1. Two historical boreholes are present to the south of the site [2] recording cohesive Made Ground overlying cohesive and granular Glacial Till which in turn overlies mudstone and sandstone of the Pennine Lower Coal Measures with a weathered upper profile.

TABLE 4.1: Summary of Anticipated Geology

Strata	Typical Description
<i>Artificial Deposits</i>	
Made Ground	Firm to stiff sandy clay with gravel of brick / possible rail ballast / mining waste and colliery spoil.
<i>Superficial Deposits</i>	
Glacial Deposits	Firm to stiff sandy clay and medium dense sandy gravel and sand with occasional cobbles and boulders.
Glaciofluvial Deposits	Sand and gravel with cobbles and boulders.
<i>Bedrock</i>	
Pennine Lower Coal Measures (PLCM)	Mudstone and siltstone interbedded with subordinate medium-grained sandstones, seatearths and coal seams (upper weathered profile reduced to clay / sand / gravel).

Structural Geology

- 4.6.3. The published information indicates the bedrock dips towards the west-southwest by 5° to 15° [3] although the inherently complex faulting of the coal seams results in a variable dip across the area. Several northwest to southeast trending faults with downthrows to the southwest and northeast are present in the surrounding area. One such fault with a southwest downthrow is located 15m beyond the south-western corner of the site. Smaller unrecorded and complex faulting is likely to be present within the underlying coal measures.

Coal Seams

- 4.6.4. The Cannel Coal Seam outcrops approximately 225m southwest of the site and the Arley Coal Seam 148m northeast. The downthrow of the fault to the southwest has juxtaposed the older Arley Coal to a similar level of the Cannel Seam. Owing to the southerly dip of the strata it is anticipated that the Arley seam is located at some depth beneath the site.
- 4.6.5. The Arley seam is recorded to have a thickness of 0.9m to 2.0m. The seam is anticipated to terminate at the location of the fault at the south-western corner of the site. The published information [4] indicates this seam was exploited via deep mining, crop working and opencast excavation.

4.7. Natural Ground Hazards

- 4.7.1. A summary of the Hazard Ratings for natural ground subsidence hazards from the Groundsure Report [1] are presented in Table 4.2 and assessed against available information on ground conditions to provide updated hazards ratings.

TABLE 4.2: Summary of Natural Ground Subsidence Hazards

Hazard	Groundsure Hazard Rating	Comment
Shrink swell clays	Very Low	Ground conditions predominantly low plasticity.
Running sands	Very Low	Running sand conditions are unlikely. May occur if water table rises.
Compressible deposits	Very Low - Negligible	Compressible strata are not thought to occur.
Collapsible deposits	Very Low - Negligible	Collapsible deposits are unlikely to be present.
Landslides	Very Low	Slope stability problems are not likely to occur within the site area.
Ground dissolution	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution.

- 4.7.2. A number of historical boreholes are available for the site and adjacent area. A summary of these boreholes and the strata encountered is included in Table 4.3.

TABLE 4.3: Historical Exploratory Holes

Strata	Top of strata (m bgl)	Base of strata (m bgl)	Thickness	Reference
Made Ground (cohesive/granular /concrete)	0	0.7 – 1.8	0.6 – 2.7	[2]
Glacial Till	1.7 – 2.7	4.0 – 8.4	2.3 – 5.7	

Strata	Top of strata (m bgl)	Base of strata (m bgl)	Thickness	Reference
Bedrock	4.0 – 8..4	11.1+	8.25+	

4.8. Coal Mining

4.8.1. A review of the Coal Authority's interactive map viewer [5] has been undertaken and indicated the following:

- Two mine entries are located approximately 50m to the south of the site;
- The site is adjacent to a development high risk area on the eastern boundary;
- Probable shallow workings are located adjacent to the eastern boundary of the site;
- A worked coal outcrop is indicated approximately 70m to the east of the site; and,
- The site is within a surface coal resource area.

4.9. Seismicity

The national forward to BS EN 1998-1:2004+A1:2013 'Eurocode 8: Design of Structures for Earthquake Resistance – Part 1' states there are no requirements in the UK to consider seismic loading, and the whole of the UK may be considered an area of very low seismicity in which the provisions of EN 1998 need not apply.

4.10. Hydrogeology

4.10.1. The site hydrogeology is summarised in Table 4.4 and is based on factual data provided by the Groundsure report [1].

TABLE 4.4: Summary of Hydrogeology

Type	Description
Superficial Deposits: [Glacial Till] [Glaciofluvial Deposits]	Secondary A Aquifer. 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.
Bedrock Geology: [Pennine Lower Coal Measures Formation]	Secondary A Aquifer. 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.
Groundwater Vulnerability	Noted as moderate based on a combined classification for both superficial and bedrock aquifers.
Source Protection Zone (SPZ)	None located within 1km of the site.
Groundwater Bodies	Northern Manchester Carboniferous Aquifers. Overall water quality rating noted as poor (2019).

- 4.10.2. The site is considered to have a Moderate Sensitivity with respect to hydrogeology. The sensitivity is based upon the definitions provided in NHBC R&D66¹, as amended to include the requirements of the Water Framework Directive and the EA's River Basin Catchment Plans.

4.11. Hydrology

- 4.11.1. The site hydrology is summarised in Table 4.5 and is based on factual data provided by the Groundsure report [1].

TABLE 4.5: Summary of Hydrology

Type	Distance	Description
Surface Waters	On site	Pond in central and eastern section of site.
	700m W	River Irwell, overall water quality rating Moderate, 2019.
	780m E	River Roch, overall water quality rating Moderate, 2019.
Surface Water Catchment	On site (east)	River Roch (Spodden to Irwell).
	On site (west)	River Irwell (Rossendale STW to Roch).
Surface Water Abstractions	745m NW	For general use, operated by Cemex UK Materials Limited.
Surface Water Flooding	On site	Flood Zone 1 [6].

- 4.11.2. The site is considered to have a Low / Moderate Sensitivity with respect to hydrology. The sensitivity is based upon the guidance detailed for the hydrogeological assessment above.

4.12. Radon

- 4.12.1. With reference to the Groundsure Report [1] and the Radon Atlas of England and Wales [7], the site is located in an area where <1% of homes are above the action level for radon.
- 4.12.2. As such the associated risk to any structures and buildings proposed in the area is considered to be LOW, where radon protection measures are not required for new buildings.
- 4.12.3. If basements are proposed as part of the site redevelopment, radon risk should be reconsidered.

4.13. Sensitive Land Uses

- 4.13.1. A preliminary review has been made of Designated Ecological and Heritage sites and these are summarised in Table 4.6 below. The Local Authority may also consider non-designated heritage and archaeological sites as significant, and these are not appraised except where noted. The Groundsure Report should be referred to for further details [1].

TABLE 4.6: Summary of Designated Sites

Type	Description
Ecological	No records within 1km
Heritage	Several Grade II Listed buildings located between 163m and 249m
	Conservation area (Bury Town Centre) located 105m to the north west

¹ Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66: 2008 Volume 1 (Environment Agency, NHBC and CIEH)

5.0 SITE HISTORY AND INDUSTRIAL SETTING

5.1. Site History

- 5.1.1. Information relating to the site history has been obtained by reference to the Groundsure Report [1] and is summarised for the site and its surroundings in Error! Reference source not found. and Error! Reference source not found..

TABLE 5.1: Site History

Date	Development
1849 – 1851	An area of land in the north west of the site appears to be part of a network of ornamental gardens, which extend off site to the north. The extreme eastern area of the site is occupied by a small building and grounds. Railway lines/sidings are present along the southern area of the site, generally running east to west. A bridge is present in the south east area of the site, spanning the railway lines in the south. Three rectangular structures are present in the western area of the site, associated with the railway lines.
1890 - 1891	The majority of the site is shown to be occupied by railway lines/sidings and is labelled as a “goods station”. The site now appears to be within a cutting, with slopes shown along the northern and southern areas of the site. The bridge in the south east has now been extended to span across the full eastern area of the site and is noted as Market Street. The rectangular buildings in the west of the site are noted as “goods sheds” and further small buildings are now shown in the east, one of which is noted as a “signal box”. Two irregular shaped structures are located adjacent to the goods shed in the west, possibly part of a platform for the railway lines.
1908 – 1910	Cattle pens are shown in the north west of the site and a crane is present adjacent to the goods sheds. A signal bridge is located in the south.
1928 – 1938	No significant changes noted.
1955 – 1959	A tank is shown adjacent to the southern site boundary.
1976 – 1984	Railway infrastructure and associated buildings including the goods sheds have been cleared from site. A pond is located in the central and eastern area of the site. In the west, three large pyramid shaped features are present and a further pyramid is present straddling the eastern boundary. Site is noted as “Townside Field”. A small triangular shaped feature is also present in the central area of the site within the pond. A subway is shown on the western site boundary linking the site to the west beneath the adjacent railway lines.
1992	No significant changes noted.
2001 – Present	No significant changes noted.

TABLE 5.2: Adjacent Land History

Date	Development
1849 -1851	Majority of land immediately to the north remains free from significant development. An area of ornamental gardens extends off site to the north. Railway lines extend off site to the east and west. A rope walk is located to the east of the site and land immediately to the south remains undeveloped with the exception of railway lines to south west, beyond which, sloping ground is detailed. A woollen mill, station and goods sheds are present to the west.

Date	Development
1890 – 1891	An abattoir is present approximately 30m to the north west of the site. Extensive residential development is now shown on the land adjacent to the north east of the site and extensive railway sidings lead off site to the east. A small reservoir is located beyond the railway lines to the south west of the site. The mill to the west is now noted as “cotton waste”.
1908 – 1910	The abattoir to the north west has been extended and the layout of the good shed to the west has been altered with the addition of some smaller buildings. A further railway line leading from the south west is shown to the south of the site, within a cutting. An area of ground workings is present approximately 180m to the south east.
1928 – 1938	A school and bakery are now shown to the north of the site. A school is also present to the south beyond the railway lines along with associated playing fields.
1955 – 1959	Bury Technical College is located immediately to the north of the site.
1976 – 1984	A garage and a works are now located to the north east of the site, where the bakery was formerly located. A college is now located to the south. The Town Hall is located approximately 120m to the west of the site, beyond a subway and carpark area.
2010	The college to the south has been extended.
2021	Land to the west is now occupied by hotel and multi-storey car park.

- 5.1.2. In summary, the site was largely occupied by railway sidings with goods sheds and cattle pens in the west of the site, likely associated with the former abattoirs to the north west. Extensive ground workings to reduce site levels around 1890's appear to have taken place to facilitate the expansion of the railway sidings. Later, the site was used as public open space and a pond was present in the central and eastern section of the site along with three large pyramid features, still present today.

5.2. Regulatory Consultation

- 5.2.1. The Environmental Health team at Bury Council have been contacted with regards to the current status and proposed redevelopment of the site.
- 5.2.2. The Council has confirmed that they do not currently hold any information relating to ground conditions at the site. The Council notes that the site was historically used as railway land with lines, sidings and a goods station and was later developed as a lake and area of public open space. The Council states that if the site is to be redeveloped, characterisation of the ground conditions including sampling of soils will be required.
- 5.2.3. The council has identified several landfill sites located within 250m of the site. This includes a landfill named as Peel College, Bury (Ref: C087) located adjacent to the south of the site and was noted to have been backfilled with unknown materials pre-licensing act (1974).
- 5.2.4. Land to the west of the site is also noted to be a landfill (not identified as such within the Groundsure Report) (Ref: C078). The Council states that the land was filled with inert waste as part of a reclamation scheme in 1973. Ground investigations from 2005/06 are stated to have encountered reworked natural clays over shallow demolition wastes. This site was redeveloped

in 2000s for use as a hotel, offices and car park and remedial measures including earthworks and gas protection measures are stated to have been completed.

- 5.2.5. It is noted that no areas of land at or near to the site have been determined as Contaminated Land under Part 2A of the Environmental Act (EPA) 1990. As the site has previous potentially contaminating land use, the site is considered to be a potential site of concern by the council, however, the site is not high priority for investigation under Part 2A of the EPA. The Council further states that it would be prudent to conduct assessments and sampling to indicate potential problems which may require further investigation and/or remedial action.
- 5.2.6. It is confirmed that the site is not located in an area affected by radon. There are no records associated with nuisance incidents or pollution incidents within the last 12 months.
- 5.2.7. The eastern area of the site, in the area of the former lake, is designated as a Site of Biological Importance (SBI).
- 5.2.8. The Environmental Report from Bury Council is included in Appendix B.

5.3. Unexploded Ordnance (UXO)

- 5.3.1. A preliminary review has been made of the UXO risk presented by the site based upon CIRIA C681 ('Unexploded Ordnance (UXO) – A guide for the construction industry') [8] and the assessment matrices presented in Tables 5.1-5.3 therein.
- 5.3.2. Reference to the Zetica unexploded bomb risk maps [9] indicates that the site is located within a "low" risk area in relation to the potential presence of unexploded ordnance being present on site.
- 5.3.3. Notwithstanding this, any works that disturb the ground such as demolition and groundworks should include UXO tool-box talks and further advice sought from a specialist if suspicious articles are encountered.

5.4. Tunnels and Infrastructure

- 5.4.1. Historical plans indicate that a subway was previously present on the western site boundary. A masonry arched bridge (Market Street) also spans the east of the site in a roughly north-north-west to south-south-east orientation.
- 5.4.2. Given the extensive nature of previous development across the site, associated tunnels, service ducts, basements and substructures should be anticipated to be present.
- 5.4.3. It should be noted that the above review does not constitute a formal review of all buried structures and utilities that may be present at the site.

5.5. Current Industrial Setting

- 5.5.1. Table 5.3 summarises identified industrial features, which may present a potential source of contamination to the site based upon the Groundsure Report. The Groundsure Report should be consulted for further details. Unless otherwise stated, only those features that are within the stated review distances have been included.

TABLE 5.3: Industrial Setting

Type	Distance Reviewed	Distance from Site	Description
Contaminated land register entries and notices	<500m	-	None identified.
Landfills	<250m	On site	Historical Landfill Local Authority / Historical Mapping. Railway Cuttings, no further details supplied.
		8m S	EA historical landfill site. Site address given as Peel College, Greater Manchester (Ref: C087). No further details provided.
		129m NW & 198m W	EA historical landfill site. Railway cutting east and west of Manchester Road, Bury (Ref: RD/LIC/503/88, C077). Licence holder Bury MBC, June 1988. Waste type noted as inert.
		226m S	EA historical landfill site. Wellington Road, Bury, Greater Manchester (Ref: C085). Operator: County Borough of Bury, October 1971. Waste type noted as industrial, commercial household, liquid, sludge.
Waste Transfer / Treatment Stations	<100m	-	None identified.
Potentially Infilled Land	<250m	On site	Infilled ground – artificial deposit.
			Made ground – artificial deposit.
			Worked ground – void.
		15m NW	Infilled ground – artificial deposit.
		236m S	Worked ground – void.
		240m S	Made ground – artificial deposit.
		249m S	Worked ground – void.
		249m S	Worked ground – void.
Pollution Incidents	<50m	On site	None identified.
Environmental Permits	<150m	-	None noted, other than those covered under waste.
Discharge Consents	<100m	-	None identified.
Abstractions	<250m	-	None identified.
Fuel Stations	<200m	141m NE	Angouleme Way, Bury (noted as obsolete).
Contemporary trade directory entries – active	<100m	0 – 100m	Includes: business park, industrial estate, substation, tram and railway lines and infrastructure.
Contemporary trade directory entries – non active	<100m	0 – 100m	Includes: tanks, railways, railway buildings, railway station, goods station, abattoirs and cattle pens, substations, rope walk, garages, reservoir, cuttings and unspecified pits.
Control of Major Accident Hazards (COMAH) Sites	<500m	-	None identified.

6.0 PRELIMINARY CONCEPTUAL SITE MODEL & QUALITATIVE RISK ASSESSMENT

6.1. Introduction

- 6.1.1. Current practice for land contamination evaluation involves classification of risk for each of the identified contaminant source-pathway-receptor pollutant linkages. These are summarised below, considering the desk study information obtained. This information has been utilised to design the site investigation considering the proposed end use.

6.2. Classification of Risk

- 6.2.1. Risk is defined by the combination of two factors: i) the probability of an occurrence (expressed as a likelihood); and ii) the consequence of it happening (expressed as a severity). The procedure for classifying risk is summarised in Table 6.1. The categories of risk have been based upon those defined in the Guidance for the Safe Development of Housing on Land Affected by Contamination, R&D66: 2008 Volume 1 (Environment Agency, NHBC and CIEH). The categories are defined in the Environmental Risk Assessment Supporting Information section to the rear of this report, together with definitions of the classifications of probability and consequence.

TABLE 6.1: Classification of Risk

		Consequence			
		Severe	Medium	Mild	Minor
Probability (Likelihood)	High likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

6.3. Potential Sources of Contamination

- 6.3.1. Table 6.2 summarises the potential contamination sources that have been identified on or near the site. The potential contaminant types associated with these is then given based upon a review of LCRM, industry profiles, and anecdotal information:

TABLE 6.2: Potential Sources of Contamination

Feature on or near site	Potential Contaminant
Presence of Made Ground indicated to be present in the south east of the site (BGS plans) and infilled ground in the west and to the west of the site. Made Ground is also anticipated to be present associated with previous development, including ash and railway ballast. Additionally, the nature and composition of the material within the pyramids is unknown. Made Ground may also include coal mining derived waste/spoil.	M, IC, OC (TPH, PAH, VOC, SVOC), ACM, GG, CF.

Feature on or near site	Potential Contaminant
Potential presence of impacted Made Ground and natural soils associated with former land use including railway land, substation, abattoirs, garages and works.	M, IC, OC (TPH, PAH, VOC, SVOC, PCB), ACM, GG. Abattoirs have a notional potential for pathogens, however, this will diminish over time.
Notes: M – Metals and metal compounds. IC – Inorganic Compounds (including acids and alkalis, sulphates, sulphides, ammonia and others), OC – Organic Compounds (including TPH – Total Petroleum Hydrocarbons, PAH – Polycyclic Aromatic Hydrocarbons, VOC – Volatile Organic Compounds, SVOC - Semi Organic Compounds, phenols). ACM – Asbestos Containing Materials / Asbestos in Soil. R - Radioactivity. PCB – Poly chlorinated biphenyls. GG – Ground Gases (including both 'bulk gasses' and volatile compounds). CF – Elevated Calorific Values.	

- 6.3.2. Given the previous land use and extensive development across the site, there is the potential for a wide range of below ground infrastructure including tanks, pipeline, drains and adits that may locally contain contamination.
- 6.3.3. Made Ground associated with the use of the site as railway land is anticipated to be present. This is likely to contain ballast type materials, which can include steam locomotive ash. Additionally, materials used as infill may have been sourced from the general area and therefore has the potential to contain a wide array of contamination, including asbestos.
- 6.3.4. The Made Ground indicated to be present in the south east of the site (and leading off to the south) on geological plans may potentially contain coal mining waste arisings, some of which may have a high calorific value. Such materials have a notational potential to combust under the right conditions and may be present locally across the site.

6.4. Receptors and Exposure Pathways

- 6.4.1. Potential risks have been identified based on the proposed site use, the receptors and potential pathways by which the receptor/s may be exposed to the contaminant source/s. These are presented in Table 6.3 and have been used to inform the site investigation

TABLE 6.3: Receptors and Exposure Pathways

Receptor	Pathway	Risk
End Users	Ingestion of soil / dust	Moderate
Neighbours		Low / Moderate
Construction Workers		Moderate
End Users	Inhalation of soil / dust	Moderate
Neighbours		Low / Moderate
Construction Workers		Moderate
End Users	Dermal contact with soil / dust / water	Moderate
Neighbours		Low / Moderate
Construction Workers		Moderate
End Users		Low / Moderate

Receptor	Pathway	Risk
Neighbours	Inhalation of vapour from soil / dust	Low / Moderate
Construction Workers		Moderate
End Users	Consumption of vegetables / plants	Low / Moderate (locally Moderate, where private gardens are proposed)
End Users	Migration of soil gases to confined spaces / structures	Moderate
Construction Workers		Moderate
Building		Moderate
End Users	Inhalation of vapour from groundwater	Low / Moderate
Neighbours		Low / Moderate
Construction Workers		Low / Moderate
Surface Waters	Migration of water borne contaminants from on site	Low
Groundwater Aquifer	Contaminant migration from surface and/or subsurface to groundwater	Moderate
Groundwater Aquifer	Migration of water borne contamination from off-site	Moderate
End Users	Movement of contaminants to engineered structures (water pipes)	Moderate
Sensitive Land Use (SSSI etc.)	Uptake by flora / fauna associated with sensitive land use	Low

- 6.4.2. Based on the preliminary conceptual site model, a MODERATE RISK is considered to be appropriate with respect to potential ingestion/inhalation or soil and soil derived dust, and potential direct contact with underlying soils. This is primarily due to the anticipated residential development to potentially include private gardens.
- 6.4.3. There is the potential for the localised presence of soil vapours associated with impacted Made Ground; however, these are not anticipated to be widespread. Therefore, at this stage, a MODERATE RISK is considered to exist with the potential for vapour intrusion into proposed buildings.
- 6.4.4. In general, a LOW / MODERATE RISK has been identified with respect to the potential for vapours to be present in groundwater. Again, this is likely to be localised in and around areas of impacted Made Ground and infilled land.
- 6.4.5. Made Ground is recorded to be present in discreet areas of the site and immediately adjacent. Further, Made Ground is anticipated to be present across the majority of the site, associated with previous onsite development, use of the site as railway land and areas of infilled ground indicated on plans. Therefore, there is considered to be a MODERATE RISK associated with the potential

for hazardous ground gas generation. Although not indicated to be present on site (two entries are indicated to be present 60m to the south of the site), historical entries into the Coal Measures bedrock may also present a potential source of ground gas risk.

- 6.4.6. With regards to surface waters, a pond was previously indicated to be present on site, however, during the site walkover this was not present and only boggy ground was evident. The River Irwell is present approximately 700m to the west of the site and the River Roch is approximately 780m to the east. Given these distances, it is highly unlikely that any onsite contamination could potentially migrate and enter these rivers and therefore a LOW RISK to surface watercourses has been attributed.
- 6.4.7. Both superficial strata across the site and the underlying bedrock are classified as Secondary A Aquifers. Although Glacial Till is indicated to be present on site (BGS plans), historical information suggests that the site has been subject to ground workings to facilitate the development of the site for railway land. This is likely to have removed much a significant proportion of the Glacial Till, which would have had the effect of limiting downward migration of dissolved phase/mobile contaminants. Therefore, a MODERATE RISK has been identified for groundwater from on site sources.
- 6.4.8. There also remains the potential that groundwater beneath the site has been impacted from use of the surrounding land, including adjacent railway land, mills, abattoirs adjacent to the north west, garages and works adjacent to the north east. Therefore, a MODERATE RISK has been identified for groundwater from on off-site sources.
- 6.4.9. In accordance with the phased process of assessment recommended in BS 10175: 2011 +A1:2013 and BS 5930: 1999 +A3:2015, intrusive investigation(s) should be undertaken to appraise potential land contamination. This should include an investigation of the general ground conditions and target the most likely potential pollutant linkages as discussed in Table 6.4.

TABLE 6.4: Targeted Pollutant Linkages

Issue	Exploration
End user exposure to Made Ground soils.	General investigation coverage across the site with sampling from soils within the top 1m of the site.
Tanks	Trial pits and boreholes with installations provided for ground gas, vapour and groundwater monitoring and sampling.
Potential vertical migration of contamination to underlying groundwater	Targeted and general site coverage. Boreholes with targeted groundwater specific installations provided.
Ground gas and vapour generation from the Made Ground infilling and boiler rooms	Targeted ground gas monitoring installations within the proposed building footprints.

- 6.4.10. Considering the past and current uses of the site, a contamination analysis suite should be applied that considered metals, semi-metals, inorganic chemicals and speciated hydrocarbon contaminants in order to provide data for human health risk assessment. In addition, the presence of asbestos in soils should be appraised by testing. Such testing should be completed in accordance with UKAS and MCERTS standards. Subject to the determination of the final objectives of the ground investigation, the test suite may also be modified to facilitate the classification of waste soil arisings.

7.0 SITE INVESTIGATION

7.1. Scope of Works

7.1.1. The exploratory locations are shown on Drawing No. M1062/02 within the Dunelm Geotechnical and Environmental factual report presented in Appendix C. The preliminary investigation works comprised:

- 10 no. Trial Pits (TP01-TP04, TP04A, TP05-TP09) to a maximum depth of 4.0m below ground level.
- 6 no. Windowless Sample Boreholes (WS01-WS06) to a maximum depth of 4.45m below ground level.

7.1.2. The following exploratory holes were terminated before the target depth was reached:

- TP04 was terminated at 1.2m due to encountering suspected services, relocated to TP04A.
- WS01 was terminated at 2.05m due to encountering hard strata
- WS02 was terminated at 3.42m due to encountering hard strata
- WS03 was terminated at 2.38m due to encountering hard strata
- WS04 was terminated at 2.16m due to encountering hard strata
- WS05 was terminated at 4.07m due to encountering hard strata
- WS06 was terminated at 4.45m due to encountering hard strata

7.2. Ground Conditions

7.2.1. The ground conditions encountered during the site investigation generally consisted of Made Ground over superficial deposits of assumed Glacial Till, typically described as slightly gravelly silt and brown clayey sand. Bedrock was not encountered during the intrusive investigation works. The general distribution of each stratum is shown in Table 7.1.

TABLE 7.1: Soil Profile

Stratum	From		To		Thickness (m)
	(m bgl)	(m AOD)	(m bgl)	(m AOD)	
Made Ground	0	+88.36	4.45	+83.92	>4.45
Glacial Till	0.2	+85.50	3.42	+83.11	Not proven

Made Ground

7.2.2. From ground level, Made Ground deposits were encountered in all exploratory hole locations. The Made Ground generally comprised the following types of material:

- Brown sandy gravelly clay. Gravel comprised sandstone, mudstone, brick and concrete with paving stone cobbles.
- Dark brown and black, gravelly clayey sand with ash. Gravel comprised brick, concrete, limestone, sandstone and mudstone with occasional brick cobbles.

- Brown occasionally clayey gravelly sand with ash and fragments of glass, tile and plastic

7.2.3. TP01, TP02, TP03, TP04, TP04A, TP07, WS05 and WS06 terminated within the Made Ground.

Glacial Till

7.2.4. Below the Made Ground, natural superficial deposits interpreted to be Glacial Till were encountered in TP05, TP06, TP08, TP09 and WS01 to WS04.

7.2.5. The Glacial Till was generally described as light grey and brown slightly gravelly silt, with gravel comprising siltstone and mudstone. Brown clayey sand was encountered beneath the Made Ground in TP08

TABLE 7.2: Summary of Soil Parameters for Glacial Till

Soil Parameters	Number of tests	Range of results
Liquid Limit (%)	4	35 – 39
Plastic Limit (%)	4	13 – 18
Plasticity Index (%)	4	21 – 22
Plasticity	4	Medium
Moisture Content (%)	6	13 – 21
Water soluble sulphate content (mg/l)	1	93.1
Soil pH	1	7.9

Installations

7.2.6. The ground conditions encountered with respect to the monitoring installations are summarised in Table 7.3. Visits have been made to site on 3 occasions March 2022 to monitor gas and groundwater levels within the installations and to obtain samples.

TABLE 7.3: Standpipe Summary

Exploratory Hole	Response Zone (m bgl)	Response Zone Strata (m bgl)	
WS01	0.50-1.50	0.50-1.50	Gravelly silt
WS02	1.00-3.00	1.00-3.00	Gravelly silt
WS03	0.90-2.38	0.90-1.40	Made Ground
		1.40-2.38	Gravelly silt
WS04	0.50-2.00	0.50-1.00	Made Ground
		1.00-2.00	Gravelly silt
WS05	1.00-2.00	1.00-2.00	Made Ground
WS06	1.00-2.00	1.00-2.00	Made Ground

7.3. Groundwater Observations

- 7.3.1. Groundwater monitoring was undertaken on 3rd, 17th, and 31st March 2022. Water strikes were not observed during the site works. The results of the monitoring visits are summarised in Table 7.4 below.

TABLE 7.4: Groundwater Observations

Exp Hole	Standing Water Level During Monitoring			
	Shallowest		Deepest	
	m bgl	m AOD	m bgl	m AOD
WS01	0.56	83.84	1.11*	83.29
WS02	1.26	85.27	1.83	84.70
WS03	1.32	84.74	1.56	84.50
WS05	1.20	86.88	1.59	86.49
WS06	1.39	86.97	1.67	86.72
*Note: The standing water level of WS01 was recorded as “dry” on 31/03/2022.				

7.4. Contamination Observations and Testing

- 7.4.1. Olfactory and visual evidence of potential contamination is summarised in Table 7.5.

TABLE 7.5: Summary of Evidence of Contamination

Exploratory Hole	Depth (m bgl)	Comment	
TP03	2.20	Made Ground	Strong hydrocarbon odour
TP09	0.50-2.60	Made Ground	Slight hydrocarbon odour

- 7.4.2. A cover of Made Ground was recorded at all exploratory hole locations, at thickness varying from 0.2m to 4.45m (note at several locations the full thickness of the Made Ground was not proven), presenting potential contamination risks from anthropogenic materials and a potential risk of ground gas generation from organic materials.
- 7.4.3. Table 7.6 summarises the chemical suites that were analysed based upon the preliminary conceptual model and observed site conditions.

TABLE 7.6: Laboratory Tests (Environmental)

Test type	Number
SOIL	
Moisture content, metals, inorganics (pH, cyanide - total, total organic Carbon, sulphide, sulphate as SO ₄ - total), petroleum hydrocarbons, polycyclic aromatic hydrocarbons, phenols.	13
TPH CWG	2
Asbestos screen	8

8.0 GENERIC QUANTITATIVE RISK ASSESSMENT

8.1. Assessment Framework

- 8.1.1. Subsequent to the identification and quantification of contaminant species in soils, waters and gases, it is necessary to select a method for assessing their significance in view of the current and proposed future use of the land. The initial assessment comprises comparison of identified contaminant levels to generic screening values that have been prepared to assess the risk to human, controlled water and gas risk receptors. The guidance used to provide this initial screening is listed in Table 8.1.
- 8.1.2. With respect to Human Health Risk Assessment the screening values for a Residential with Plant Uptake end use as defined in Environment Agency Guidance SR3² have been selected based upon the proposed development which will likely include residential properties with private gardens. This is considered to be a highly conservative assessment scenario and consideration should be given to more appropriate risk assessment based on the proposed final Masterplan. The assessment assumes a Soil Organic Matter (SOM) content of 6% based on average site derived SOM data from the Made Ground of 7.6%.
- 8.1.3. Controlled Water Risk Assessment has been undertaken using as available Drinking Water Standards (DWS) due to the site's location being over 700m from the nearest surface water course and the presence of a Secondary A Aquifer beneath the site. The specific legislation and/or guidance that dictate the water quality standards adopted are contaminant specific and these are referenced in the Summary of Water Analysis table. The water quality standards have been chosen in accordance with section 4.2 of the EA's Remedial Targets Methodology as informed by the EA's Groundwater Protection Guides (2017), and documents listed in Table 8.1³.
- 8.1.4. For further detailed information on the current Regulations and selection of appropriate threshold values, please refer to the rear of this report text.

TABLE 8.1 Generic Quantitative Screening Values

	Key Guidance
Soil	LQM/CIEH S4ULs for Human Health Risk Assessment.*
	Defra Development of Category 4 Screening Levels Main Report and associated documents
	Environment Agency CLEA Version 1.06 software. Environment Agency Science Reports SC050021 SR2/SR3
	Generic Assessment Criteria based upon Environment Agency CLEA UK Beta Version 1.0.
Water	EA Groundwater Protection Guides, March 2017.
	The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015
	Water Environment (Water Framework Directive) (England and Wales) (Amendment) Regulations 2015
	EC and UK Drinking Water Standards.

² Updated Technical Background to the CLEA Model, Science Report SC050021/SR3

³ <https://www.gov.uk/government/collections/groundwater-protection>

	Key Guidance
	WHO Drinking Water Standards.
	Background Water Quality.
Gas	CIRIA C748, 'Guidance on the use of plastic membranes as VOC vapour barriers'.
	CIRIA C735, 'Good practice on the testing and verification of protection systems for buildings against hazardous ground gases'.
	BS 8576:2013, 'Guidance on investigations for ground gas – permanent gases and VOCs'
	CIRIA Report C665, 'Assessing Risks Posed by Hazardous Ground Gases to Buildings'
	CIRIA Report C682, 'VOCs Handbook: investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination'
	British Standard BS:8485+A1:2019, 2015, 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.
	CIRIA Report 150 'Methane Investigation Strategies'.
	BRE 414 'Protective Measures for Housing on Gas Contaminated Land', 2001.
	The Building Regulations 2000, Approved Document C, Section 2. Updated 2004.
	BR211, 'Radon: Guidance on Protective Measures for New Buildings', 2015.
	Health Protection Agency Publication HPA RPD-033, 2007,' Indicative Atlas of Radon in England and Wales.

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8.2. Soil

- 8.2.1. The results have been reviewed for evidence of potential zoning across the site and/or between the various soil strata. As a consequence, the statistical assessment has treated the site as a single averaging area and screened in its entirety. The assessment has included the upper 1.0m depth of the Made Ground. Additional tables are presented where appropriate to reflect distinct ground characteristics relevant to the conceptual model.
- 8.2.2. The statistics associated with soil analysis are summarised in Table 8.2. The Mean Value (95%ile) and Maximum Value Tests were undertaken on the sample population/s for those parameters exceeding the screening levels. Where the 95%ile exceeds the screening values, these results are highlighted and discussed. The remainder are not considered indicative of significant contamination for the proposed end use.

TABLE 8.2: Summary of Soil Analysis

Contaminant	Units	Exceeding	Max	95% UCL	GAC
Metals & Inorganics					
Arsenic	mg/kg	0 / 13	23	-	37 ^B
Beryllium	mg/kg	0 / 13	1.3	-	1.7 ^A
Boron	mg/kg	0 / 13	0.5	-	530 ^A
Cadmium	mg/kg	0 / 13	0.4	-	22 ^B
Chromium	mg/kg	0 / 13	110	-	910 ^A

Chromium - Hexavalent	mg/kg	0 / 13	<1	-	21 ^B
Copper	mg/kg	0 / 13	490	-	2900 ^A
Lead	mg/kg	0 / 13	110	-	200 ^B
Mercury	mg/kg	0 / 13	0.29	-	42 ^A
Nickel	mg/kg	0 / 13	68	-	140 ^A
Selenium	mg/kg	0 / 13	<0.5	-	270 ^A
Vanadium	mg/kg	0 / 13	450	-	480 ^A
Zinc	mg/kg	0 / 13	400	-	4800 ^A
Cyanide	mg/kg	0 / 13	0.6	-	24 ^C
Sulphate as SO4	mg/kg	- / 13	1840	-	n/a
Sulphide	mg/kg	- / 13	170	-	n/a
Total Petroleum Hydrocarbons					
GRO >C8-10	mg/kg	- / 13	<0.1	-	n/a
EPH >C10-12	mg/kg	0 / 13	<10	-	420 ^A
EPH >C12-16	mg/kg	0 / 13	24	-	710 ^A
EPH >C16-21	mg/kg	0 / 13	110	-	980 ^A
EPH >C21-40	mg/kg	- / 13	150	-	n/a
Aliphatics >C5-6	mg/kg	0 / 2	<0.01	-	160 ^A
Aliphatics >C6-8	mg/kg	0 / 2	<0.01	-	530 ^A
Aliphatics >C8-10	mg/kg	0 / 2	<0.01	-	150 ^A
Aliphatics >C10-12	mg/kg	0 / 2	<1.5	-	760 ^A
Aliphatics >C12-16	mg/kg	0 / 2	<1.2	-	4300 ^A
Aliphatics >C16-21	mg/kg	0 / 2	<1.5	-	110000 ^A
Aliphatics >C21-35	mg/kg	0 / 2	<3.4	-	110000 ^A
Aliphatics >C35-44	mg/kg	0 / 2	<3.4	-	110000 ^A
Aromatics >C5-7	mg/kg	0 / 2	<0.01	-	350 ^A
Aromatics >C7-8	mg/kg	0 / 2	<0.01	-	790 ^A
Aromatics >C8-10	mg/kg	0 / 2	<0.01	-	200 ^A
Aromatics >C10-12	mg/kg	0 / 2	<0.9	-	420 ^A
Aromatics >C12-16	mg/kg	0 / 2	<0.5	-	710 ^A
Aromatics >C16-21	mg/kg	0 / 2	<0.6	-	980 ^A
Aromatics >C21-35	mg/kg	0 / 2	<1.4	-	1700 ^A
Aromatics >C35-44	mg/kg	0 / 2	<1.4	-	1700 ^A
Polycyclic Aromatic Hydrocarbons					
Naphthalene	mg/kg	0 / 13	0.97	-	13 ^A
Acenaphthylene	mg/kg	0 / 13	0.04	-	1000 ^A
Acenaphthene	mg/kg	0 / 13	2	-	1200 ^A
Fluorene	mg/kg	0 / 13	1.6	-	930 ^A
Phenanthrene	mg/kg	0 / 13	4.4	-	470 ^A
Anthracene	mg/kg	0 / 13	1.4	-	11000 ^A
Fluoranthene	mg/kg	0 / 13	4.1	-	930 ^A
Pyrene	mg/kg	0 / 13	3.4	-	2100 ^A
Benzo (a) anthracene	mg/kg	0 / 13	1.4	-	13 ^A
Chrysene	mg/kg	0 / 13	1.3	-	27 ^A
Benzo (b) fluoranthene	mg/kg	0 / 13	1.1	-	3.7 ^A
Benzo (k) fluoranthene	mg/kg	0 / 13	0.45	-	100 ^A
Benzo (a) pyrene	mg/kg	0 / 13	0.84	-	5 ^B
Indeno (1,2,3 - cd) pyrene	mg/kg	0 / 13	0.29	-	42 ^A
Dibenzo (ah) anthracene	mg/kg	0 / 13	<0.03	-	0.31 ^A
Benzo (ghi) perylene	mg/kg	0 / 13	0.29	-	350 ^A
Speciated Phenols					
Cresols	mg/kg	- / 13	<0.5	-	n/a

Naphthols (2-Naphthalenesulfonic acid, 1-hydroxy-)	mg/kg	- / 13	<0.5	-	n/a
Phenol	mg/kg	0 / 13	<0.5	-	430 ^A
Resorcinol	mg/kg	- / 13	<0.5	-	n/a
Trimethylphenol	mg/kg	- / 13	<0.5	-	n/a
Xylenols & Ethylphenols	mg/kg	- / 13	<0.5	-	n/a
Phenols (Total)	mg/kg	- / 13	<0.5	-	430 ^A
Asbestos	Present	- / 8	Absent	-	Present

Residential with Plant Uptake assuming 6.0% SOM Generic Assessment Criteria.

^A LQM/CIEH Suitable for use Levels (S4UL). Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL 3036. All rights reserved. Top two consumption group applied. ^B Defra Category 4 Screening Levels (C4SLs). ^C Acute Risk GAC (SoBRA derived). '-' Not calculated (fewer than 3 samples or no exceedances); n/a not available.

- 8.2.3. Across all soil samples, there were no recorded exceedances against the 'Residential with Plant Uptake' contaminant concentration thresholds. The use of this threshold is considered to represent a conservative assessment given the anticipated mixed-use residential and commercial schemes.

8.3. Asbestos

- 8.3.1. It is noted that there are no UK generic quantitative assessment criteria for asbestos in soils. A summary of the results for asbestos is presented below. Additional guidance on this topic is presented in CIRIA C7334.
- 8.3.2. A total of eight representative samples of Made Ground were screened for the presence of asbestos. None of the samples were found to contain asbestos and suspected asbestos containing materials were not encountered during the intrusive works.

8.4. Groundwater

- 8.4.1. Groundwater samples were not tested as part of this preliminary investigation. It should be noted that no evidence to suggest gross contamination of groundwater was encountered during the intrusive investigation and subsequent monitoring works. However, given that there were observations of soils impacted by suspected hydrocarbons, future investigations should include appropriate sampling, testing and assessment of groundwater.

8.5. Ground Gas

- 8.5.1. Three return visits for gas monitoring were undertaken on 3rd, 17th, and 31st March 2022. Atmospheric pressure varied between 1004 and 1028 mbar at the time of monitoring.
- 8.5.2. The notable pre-purge results, where carbon dioxide exceeded 1.5%, methane 1% and/or oxygen fell below 18%, are summarised in Table 8.6.

TABLE 8.6: Summary Gas Concentrations and Flow Rates

Borehole	Date	Gas Concentration (%)			Average Flow Rate (l/hr)
		CO ₂	CH ₄	O ₂	
WS02	03/03/2022	-	<0.1	12.8	<0.1

⁴ CIRIA - Asbestos in soil and made ground: a guide to understanding and managing risks, March 2014

Borehole	Date	Gas Concentration (%)			Average Flow Rate (l/hr)
		CO ₂	CH ₄	O ₂	
WS03	03/03/2022	4.4	<0.1	12.5	<0.1
WS05	03/03/2022	4.7	<0.1	14.6	0.1
WS03	17/03/2022	3.2	<0.1	15.0	<0.1
WS05	17/03/2022	4.6	<0.1	4.7	<0.1
WS03	31/03/2022	2.3	<0.1	17.8	<0.1
WS05	31/03/2022	6.4	<0.1	2.8	<0.1
WS06	31/03/2022	1.6	<0.1	19.1	<0.1

*All percentage figures are by measurement of volume. Bracketed figures are post purge. *Gas sample obtained. '-' Results do not exceed thresholds. 'n/r' Positive flow not recorded*

- 8.5.3. Elevated concentrations of carbon dioxide were recorded in WS03 and WS05 in all three rounds of monitoring and at WS06 on the 31st March 2022 monitoring visit. The maximum concentration of 6.4% v/v was recorded in WS05 during the monitoring visit of 31st March 2022.
- 8.5.4. No detectable concentrations of methane were recorded across the three rounds of monitoring.
- 8.5.5. Oxygen concentrations of less than 18% v/v were recorded in WS03 and WS05 in all three rounds of monitoring, showing a negative correlation with the elevated carbon dioxide concentrations. WS02 also recorded a depressed oxygen concentration of 12.8% on the monitoring visit of 3rd March 2022, although the other bulk gases monitored at this location were not recorded at elevated concentrations.
- 8.5.6. Carbon monoxide was detected at concentrations of 1.0ppm at WS01 and WS05 on the monitoring visit of 3rd March 2022, however, was otherwise not detected during the monitoring programme.
- 8.5.7. No detectable concentrations of hydrogen sulphide were detected at any of the monitoring locations across the three visits.
- 8.5.8. The above analysis is based upon recorded steady-state gas concentrations rather than peak gas concentrations, although it is noted that these values are identical in all but three cases in the monitoring dataset, within which there are no significant variations.
- 8.5.9. Steady-state gas flow rates were generally not recorded across the rounds of gas monitoring, with single the exception of WS05 on 3rd March 2022, where an average flow rate of 0.1 l/hr was recorded.
- 8.5.10. Based upon the guidance presented in Table 8.1, an assessment has been made of the requirements for gas protection that consider sources of gas generation, potential exposure routes, and applicable, representative gas flows and concentrations. This is summarised below:
- Potential on-site source of generation. Ground gas generation is possible from Made Ground deposits present on site and any areas of infill.
 - Potential off-site Source of generation. Several historical landfills are present within the vicinity of the site.

- Representative Concentrations and Gas Flows. The highest carbon dioxide concentration of 6.4% v/v and a flow rate of 0.1 l/hr will be applied during the calculation of the gas screening value.
- Exposure Routes. Gas at the site primarily presents a concern following ingress into confined spaces both during and after construction.

- 8.5.11. The Gas Screening Value (GSV) for the site has been calculated using maximum recorded carbon dioxide concentration from laboratory gas analysis of 6.4% v/v and a flow rate of 0.1 l/hr. The GSV of 0.064 l/hr indicates the site is classified as a CIRIA Characteristic Situation 1 and as such, gas protection measures are not required.
- 8.5.12. It is however acknowledged that CIRIA 665 recommends that where concentrations of carbon dioxide in excess of 5% v/v are encountered, consideration should be given to the classification of the site as a CIRIA Characteristic Situation 2. Based on the ground conditions encountered to date and the elevated concentrations of carbon dioxide recorded, further ground gas monitoring is required to confirm the ground gas regime at the site. Appropriate assessment will also be required to confirm the requirement for ground gas protections measures with due cognisance for the proposed development type.
- 8.5.13. The council has identified several landfill sites located within 250m of the site. This includes a landfill named as Peel College, Bury (Ref: C087) located adjacent to the south of the site and was noted to have been backfilled with unknown materials pre-licensing act (1974). Land to the west of the site is also noted to be a landfill (not identified as such within the Groundsure Report) (Ref: C078). The Council states that the land was filled with inert waste as part of a reclamation scheme in 1973. Given the several decades that have passed since the backfilling occurred, the maximum gas generation is likely to have already occurred. As such, the historical landfills are not considered to present a significant source of ground gas to the site.
- 8.5.14. With regards to soil vapour, given the presence of suspected hydrocarbon impacted soils, further investigation and assessment is required to determine the extent of the hydrocarbons and the potential for the generation of vapour that could potentially pose a risk to the proposed development.

9.0 WASTE SOILS

9.1. Hazardous Properties

- 9.1.1. A hazardous properties assessment (HPA) has been carried out in accordance with the current technical guidance on classification of hazardous waste (Environment Agency: Guidance on the Classification and Assessment of Waste WM3 Version 1.1, May 2018). The data have been assessed using the HazWasteOnline waste classification tool and the outputs are included as Appendix D. Asbestos is not included in the HPA and is discussed separately.
- 9.1.2. In total, the HPA has been carried out for 13 no. samples collected from the Made Ground.
- 9.1.3. At this stage, none of the Made Ground samples analysed have been identified as containing hazardous properties that would potentially indicate a hazardous waste classification.

9.2. Asbestos

- 9.2.1. Asbestos is not included in the HazWasteOnline assessment. If the waste contains fibres that are free and dispersed, then the waste will be hazardous if the waste as a whole contains 0.1% or more asbestos. Also, if waste contains identifiable pieces of asbestos containing material (i.e. any particle of a size that can be identified as potentially being asbestos by a competent person if examined by the naked eye), then the waste is regarded as hazardous.

9.3. Inert Soils Description

- 9.3.1. Uncontaminated natural soils would be considered inert by merit of their visual description and would be expected to be described under EWC 17 05 04 (soil and stones other than those mentioned in 17 05 03).
- 9.3.2. With respect to non-hazardous Made Ground soils there is a requirement to carry out analysis for Waste Acceptance Criteria (WAC - see below) to inform whether the soils may be suitable for disposal as inert waste; however, for those soils that contain anthropogenic inclusions an assessment of the inclusions is also required in order to determine potential suitability for classification as inert waste, regardless of the WAC result.
- 9.3.3. Inert waste is defined within the Landfill (England and Wales) Regulations 2002 (as amended) and the EEC Council Decision 2003/33/EC. 'Soils and Stones' can be judged inert where they exclude contamination, topsoil and peat. However, "If the listed wastes are contaminated or contain other material or substances such as metals, asbestos, plastics, chemicals, etc. to an extent which increases the risk associated with the waste sufficiently to justify their disposal in other classes of landfills, they may not be accepted in a landfill for inert waste" (excerpt from Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC (2003/33/EC)).
- 9.3.4. The logs indicate that the Made Ground soils may contain anthropogenic inclusions such as 'metals, asbestos, plastics, chemicals, etc. to an extent which increases the risk' and as such may not be suitable for disposal as inert waste regardless of the WAC result.

9.4. Waste Compliance: WAC Results

- 9.4.1. Waste Acceptance Criteria (WAC) results have not been obtained at this time. Subject to development proposals, WAC testing should be undertaken to inform if pre-classified soils are suitable for disposal at inert or hazardous landfill based on solid and leachate criteria (there are no WAC for non-hazardous landfills)
- 9.4.2. Landfill WAC analysis (specifically leaching test results) must not be used for waste classification and hazardous waste assessment purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

9.5. Landfill Tax

- 9.5.1. With respect to soils disposal at landfill reference should be made to HMRC Excise Notice LFT1: a general guide to Landfill Tax to determine the appropriate rate of landfill tax. There are two rates of tax, both of which are charged on a per weight basis: the lower rate applies to those less polluting wastes listed in the Landfill Tax (Qualifying Material) Order 2011, as amended, and the standard rate applies to all other taxable waste.
- 9.5.2. The only determining factor as to whether waste is lower rated is whether it is listed in the Landfill Tax (Qualifying Material) Order 2011. Whether or not waste is considered to be inert for environmental protection purposes is not relevant to matters of tax liability and a separate assessment should be made for this as the cost differential is significant. Equally, the fact that waste is listed in the Landfill Tax (Qualifying Material) Order 2011 does not mean that the waste is inert for environmental protection purposes.

10.0 REVISED CONCEPTUAL MODEL

- 10.1.1. Guidance for contaminated land advocates the assessment of risk by determining the presence of pollutant linkages and weighting the likelihood of harm occurring with the potential severity of that harm. The framework is set out in various publications by the DETR, Environment Agency, Institute for Environment and Health, NHBC and CIRIA.
- 10.1.2. Tables 6.2 - 6.3 indicate the potential contaminants, pollutant linkages and receptors that have been considered at the site. Following the investigation of these and Generic Quantitative Risk Assessment (for human health, controlled waters and gas) a qualitative risk assessment for each receptor is presented below in Tables 10.1 - 10.5. For the purpose of this assessment, the descriptions of risk presented in Table 6.1 have been used which take into account the magnitude of the source contamination identified, likelihood of exposure via a pathway and significance of harm likely to result on the given receptor:

TABLE 10.1: Groundworkers (Assuming Basic PPE)*

Pathway	Risk	Comment
Ingestion of soil/dust	Low	Redevelopment or maintainance of the site may involve ground workers coming into contact with the underlying soils and water.
Inhalation of soil/dust	Low	
Dermal contact with soil/dust/water	Low	
Inhalation of vapour from soil/dust	Low – Moderate	Although test results indicate contaminant concentrations below screening criteria, it should be noted that hydrocarbon impacted soils have been encountered on site and further occurrences of impact soils should be anticipated, given the development history of the site.
Inhalation of vapour from groundwater	Low	
Migration of soil gases to confined spaces	Low – Moderate	
		Normal Health and Safety precautions associated with a site where potential contamination may exist (of the levels identified), will mitigate the general risk.
		There is a potential risk if previously unforeseen contamination is later found to be present.

* Separate assessments are required in relation to asbestos risk.

TABLE 10.2: End Users during Occupation

Pathway	Risk	Comment
Inhalation of dust	Low	Although test results indicate contaminant concentrations below screening criteria, it should be noted that hydrocarbon impacted soils have been encountered on site and further occurrences of impact soils should be anticipated, given the development history of the site.
Ingestion of soil/dust	Low	
Dermal contact with soil/dust/water	Low	
Consumption of vegetables/plants	Low – Moderate	

Pathway	Risk	Comment
Inhalation of vapour from soil/dust	Low – Moderate	Elevated concentrations of carbon dioxide have been recorded in a number of installations. Further monitoring and assessment is recommended to confirm the requirement for ground gas protection measures.
Inhalation of vapour from groundwater	Low	
Migration of soil gases to confined spaces/structure	Low – Moderate	
Movement of contaminants to engineered structures (e.g. water pipes)	Low – Moderate	Inspections across former building footprints should be completed post demolition and a watching brief maintained throughout groundworks.
Uptake by flora/fauna	Low	
		There is a potential risk if previously unforeseen contamination is later found to be present.

TABLE 10.3: Controlled Waters

Pathway	Risk	Comment
Migration of water borne contaminants from site to surface waters	Low	Nearest surface watercourse >700m from site.
Migration of water borne contamination from off site	Low	Site underlain by superficial and bedrock Secondary A Aquifers, however, low permeability clay (Glacial Till) encountered in exploratory holes.
Migration of contamination from surface and/or subsurface to groundwater	Low	
		No significant contamination identified on site from analysis of soils. Localised areas of suspected hydrocarbon impacted soils have been encountered. Future investigations should include for the provision of groundwater sampling, analysis and assessment.

Table 10.4: Buildings

Pathway	Risk	Comment
Movement of contaminants to engineered structures (e.g. water pipes)	Low – Moderate	Consideration will be required with respect to potable supply pipework due to the presence of Made Ground which has been shown to contain hydrocarbons. Liaison with the water supply provider will be required to determine if remedial actions are required.
Migration and accumulation of flammable gases beneath the building footprint.	Low	Detectable concentrations of methane have not been recorded during monitoring.

TABLE 10.5: Offsite Receptors

Pathway	Risk	Comment
Dermal contact with soil/dust/water	Low	No significant contamination identified on site. Presence of low permeability clay will reduce the potential for migration of contamination to off site receptors.
Inhalation/ingestion of dust	Low	
Inhalation of vapour from soil/dust	Low	
Inhalation of vapour from groundwater	Low	
Migration of soil gases to confined spaces/structure	Low	
Movement of contaminants to engineered structures (e.g. water pipes)	Low	

11.0 ENVIRONMENTAL CONCLUSIONS AND RECOMMENDATIONS

11.1. Summary of Risk

- 11.1.1. The preliminary site investigation commissioned by CampbellReith incorporated contamination testing of soil and monitoring of groundwater and ground gas across the site. In addition, available Desk Study information has been consulted.
- 11.1.2. The site is considered to lie in area of Moderate environmental sensitivity with respect to Hydrogeology and a Low to Moderate environmental sensitivity with respect to Hydrology. Proposals are still at Masterplanning stage and are anticipated to comprise a mixed-use residential and commercial development, which is considered to be of High end user sensitivity. At this stage, the site is considered to present a Low to Moderate risk in relation to contamination issues.

11.2. Summary of Contamination

- 11.2.1. Desk study and subsequent site investigation and chemical analysis has identified the following key contamination issues at the site:
- Soils: No elevated contaminant concentrations recorded in representative samples of Made Ground soils. Asbestos in soils has not been detected. Areas of suspected hydrocarbon impacted soils encountered.
 - Groundwater: Groundwater sampling and analysis not undertaken as part of this preliminary investigation. No observations of suspected impacted groundwater during intrusive investigation or subsequent monitoring works.
 - Ground gas: Elevated concentrations of carbon dioxide have been recorded.
- 11.2.2. A number of actions will be required to address land contamination issues at the site, and these are described below. These relate to:
- Additional Site Investigation
 - Outline Remedial Recommendations
 - Remediation and Verification Control Documents
 - Waste Management

11.3. Additional Site Investigation/Assessment

- 11.3.1. Further ground investigation is recommended to confirm the findings of the preliminary investigation completed to date. This should include cable percussion boreholes which will be able to penetrate the full thickness of Made Ground and confirm the condition of underlying soils. It would be prudent to fit installations across the full thickness of Made Ground to allow further appropriate groundwater and ground gas monitoring, sampling and assessment.
- 11.3.2. Consideration should also be given to undertaking additional monitoring for bulk gases to confirm the requirements for ground gas protection measures. This should also include monitoring of additional installations as noted above. Where elevated concentrations of bulk gases are recorded, sampling and analysis of gas should be undertaken to provide confirmation of the concentrations recorded. Consideration of vapours will also be required.

- 11.3.3. It is also recommended that further investigation works are undertaken to further inspect and delineate areas where suspected hydrocarbon contamination has been encountered. This is likely to comprise a series of trial pits and/ or boreholes. Groundwater sampling, analysis and assessment should also be undertaken.
- 11.3.4. The nature and composition of soils with the pyramid structures will also need to be assessed to confirm if this material is suitable to be reused on site, or if off site disposal is required.
- 11.3.5. Future investigations and assessment will need to be undertaken to confirm the geotechnical properties of the underlying strata to inform development proposals including foundation design parameters, earthworks, etc.
- 11.3.6. As several slopes are present on site, consideration will need to be given to their stability. A desk based slope stability appraisal should be conducted in the first instance. Investigations and slope stability analysis is also likely to be required subject to final redevelopment proposals.
- 11.3.7. Several asphalt paths / roads are present on site. Subject to proposals, if these are to be broken out to facilitate development testing should be undertaken to confirm the presence or otherwise of potential coal tar. This will allow consideration of potential disposal and reuse options.

11.4. Outline Remedial Recommendations

- 11.4.1. The following section details outline remedial recommendations. These should be considered in light of the recommendations for any further works presented above which could lead to their modification. Detailed remedial works should be finalised in a Groundworks/ Remediation Specification.
- 11.4.2. During redevelopment works, a watching brief should be maintained throughout the groundworks in order to identify any previously undetected areas of contamination, such as asbestos containing materials and/or stained/odorous soils. These should be assessed by an Environmental Consultant if identified.

End Users

- 11.4.3. The assessment generally identified a LOW – MODERATE RISK for site end users associated with contamination at the site, due mainly to the presence of suspected hydrocarbon impacted soils. It is acknowledged that these were typically at depth, however, given the limited coverage of the preliminary investigation, further investigation and assessment is required to refine the risk.
- 11.4.4. At this stage, it is anticipated that a soft cover system of chemically validated soils is installed within all areas of soft landscaping that directly overlie impacted soils. The thickness of this capping layer is anticipated to be 600mm in private garden areas and 450mm in communal landscaped areas, subject to additional investigation and risk assessment.
- 11.4.5. In addition, any excavations should be backfilled with soils which are suitable for use and in accordance with the appropriate Remediation and/or Groundworks Specification compiled by the Engineer.
- 11.4.6. Imported materials for soft landscaped areas will require provision for testing in accordance with the Remediation Specification and compliance with an agreed set of limiting values will be required. Records as detailed within the Remediation Specification and/or Groundworks Specification should be maintained to certify the source, chemical suitability and appropriate placement of the soils.

Groundworkers

- 11.4.7. The qualitative assessment identified a potentially LOW – MODERATE RISK to groundworkers who may come into contact with contaminated soils and waters.
- 11.4.8. The Contractor should prepare risk assessments and method statements in view of the identified and foreseeable ground conditions and include these within the Health and Safety Plan: for example, these should consider worker protection from skin contact, ingestion and inhalation of contaminants, asbestos in soils and ground gas. In order to achieve satisfactory control, CampbellReith recommend that Health and Safety provisions in accordance with HSE Publication HS(G) 66 and CIRIA Report 132 are considered. The Contractor must also control matters such as any contracted CDM responsibilities.
- 11.4.9. In relation to asbestos in soils, although not encountered during the preliminary investigation, the potential presence of asbestos and asbestos containing materials cannot be ruled out and should be anticipated based on previous land use. The Contractor should formulate their working arrangements in view of the requirements of the Control of Asbestos Regulations (2012) and the associated ACoP (L143). Additional interpretation on the application of these regulations is presented in publications prepared by CL:AIRE and the Joint Industry Working Group (CAR-SOIL™ Control of Asbestos Regulations 2012, Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials, 2016; and the associated JIWG decision support tool, 2017). Additional guidance is provided in CIRIA C765, Asbestos in Soil and Made Ground Good Practice Site Guide, 2017.

Controlled Waters

- 11.4.10. The qualitative assessment identified a potentially LOW RISK for groundwater due to the fact that gross contamination of soils was not encountered during the preliminary investigation and the presence of low permeability Glacial Till overlying the bedrock Secondary A Aquifer.
- 11.4.11. It should be noted that localised areas of suspected hydrocarbon impacted soils were encountered during the preliminary investigation and this may have led to localised contamination of perched groundwater within the Made Ground soils. This will require further consideration during subsequent investigation works.
- 11.4.12. The qualitative assessment identified a potentially LOW RISK for surface waters due to the location of the site being >700m from the nearest surface water course.
- 11.4.13. At this stage, taking into account the above information widescale remedial works are not anticipated to be required for controlled waters, however, this should be confirmed through appropriate sampling, analysis and risk assessment.

Ground Gas/Vapours

- 11.4.14. At this stage, the ground gas risk assessment indicates that the site may potentially be classified as CIRIA Characteristic Situation 2 and as such gas protection measures would potentially be required. Further investigation, monitoring and assessment is recommended to confirm the ground gas regime at the site, which may enable these measures to be revised.
- 11.4.15. Further consideration will also be required with regards to potential vapours associated with areas of hydrocarbon impacted soils.

Services

- 11.4.16. The presence of elevated TPH and PAH concentrations in the soil indicates a possible need for protection of public water supply pipework, such as the use of organic resistant pipework. The infrastructure designer should assess requirements for pipework with respect to soil contamination and consult statutory utility companies and relevant guidance as necessary. Guidance on this topic is presented in UKWIR Report 'Publication UKWIR Report Ref 10/WM/03/21: Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites - Final Project Report, as amended by the Contaminated Land Assessment Guidance (Water UK, January 2014).

11.5. Remediation and Verification Control Documents

- 11.5.1. Following on from the recommendations made herein, in order to control the environmental works on site and facilitate the collection of records required for the Verification Report, a Remediation/ Groundworks Specification will be required. The Specification should detail necessary requirement for inspections/ record keeping/ actions for unforeseen contamination/ detail the requirements for the control of imported material and waste management.
- 11.5.2. The Specification will require submission to the Local Authority for review and approval as part of the planning process, to fulfil the requirements of the anticipated land quality planning condition. Failure to submit the required documentation could result in refusal to discharge associated Land Quality Planning Conditions, and discussions should be held with the relevant Officer at an early stage to ensure all necessary information is obtained and collated for their review and approval. Additional discussions may be required with the NHBC and/or Building Control, such matters are not detailed herein. Once approved it will be the Contractor's obligation to fulfil the agreed requirements of the Specification.
- 11.5.3. Should the groundworks encounter fuel tanks, removal of any such features is required in accordance with an appropriate tank removal specification and Contractor's method statements which meet the requirements of the appropriate Environment Agency Pollution Prevention Guidelines (PPG).

11.6. Waste Management

- 11.6.1. A hazardous properties assessment (HPA) of waste soils has been undertaken as part of this report. Based on the assessment, none of the samples tested are considered to contain hazardous properties and asbestos has not been encountered.
- 11.6.2. All waste related activities must be undertaken in accordance with the Waste Management and Landfill Regulations. Any proposed reuse of materials must be in accordance with the Waste (England and Wales) Regulations 2011 (as amended). With respect to waste soils disposal, as a minimum, the following information should be collected and retained by the Contractor for subsequent validation:
- source and origin of the waste;
 - information on the process producing the waste;
 - European Waste Catalogue code and characteristics of material;

- for hazardous waste, definition of the relevant properties according to the Hazardous Waste Directive (Annex III 91/689/EC);
 - confirmation that waste is not prohibited waste;
 - appearance of the waste;
 - landfill class; and,
 - Duty of Care records including full and completed chain of custody documentation.
- 11.6.3. The final waste classification is the responsibility of the Contractor and should be determined in conjunction with the receiving landfill and in liaison with the Environment Agency (and their technical guidance). It is noted that, depending on the landfill selected, additional soils testing information and independent verification of the materials being received by the landfill is likely to be required.
- 11.6.4. As the correct classification of waste is likely to have a significant impact on the redevelopment budget, the waste classification should be reviewed independently by a consultant at an early stage in the project management stage. In addition, contractors should be asked to confirm that their tenders consider the full requirements of the Landfill Directive and associated waste legislation. This is to ensure waste is correctly classified and costed at the inception of the project.
- 11.6.5. The Landfill Directive states that all hazardous and non-hazardous waste requires treatment prior to disposal to landfill. Treatment must provide a 'three – point step'. As such, provision for treating (including physical separation) should be made for all arisings that are likely to be classified as hazardous or non-hazardous so that each of the above three requirements are met.
- 11.6.6. A separate assessment should be made for the rate of Landfill Tax (where applicable) in accordance with HMRC Excise Notice LFT1.

TECHNICAL REFERENCES

Reference*	Reference Title	Type
[1]	Groundsure Report (Reference CAR1-8402039), dated December 2021	Report
[2]	British Geological Survey (BGS) GeoIndex (https://mapapps2.bgs.ac.uk/geoindex/home.html)	Website
[3]	British Geological Survey (BGS) Drift and solid Sheet 85, 1:50,000 scale map.	Map
[4]	British Geological Survey (BGS) Geology of the Manchester district: a brief explanation of the geological map Sheet 85 Manchester, 2012	Memoir
[5]	BGS Coal Authority Interactive viewer (http://mapapps.bgs.ac.uk/coalauthority/home.html)	Website
[6]	Flood Map for Planning (https://flood-map-for-planning.service.gov.uk/)	Website
[7]	Radon Atlas for England and Wales (https://www.ukradon.org/information/ukmaps)	Website
[8]	CIRIA C681 – Unexploded Ordnance (UXO): A guide for the Construction Industry	CIRIA Publication
[9]	Zetica (https://zeticauxo.com/downloads-and-resources/risk-maps/)	Website
[10]	East of the M60, "Whatever Happened to Pyramid Park?". Dated, May 2018 (https://mancunian1001.wordpress.com/2018/05/15/whatever-happened-to-pyramid-park/)	Website

ENVIRONMENTAL RISK ASSESSMENT SUPPORTING INFORMATION

Soil Screening Values

The Environment Agency has published non statutory technical guidance for Regulators and their advisors to assess the chronic risk posed to human health from land contamination, known as the Contaminated Land Exposure Assessment (CLEA) Framework.

The CLEA Framework documents and associated risk assessment model are subject to ongoing technical review. In July 2008 guidance documents CLR7 to 10, which previously underpinned the CLEA Framework, were withdrawn. In January 2009 the Environment Agency published CLEA V1.04 risk assessment software and associated guidance documents⁵ as a replacement to the previous CLEA UK Beta Version and documents CLR 7 to 10. Further revisions were made in September 2009 to CLEA V1.05 and October 2009 to CLEA 1.06 risk assessment software.

Soil Guideline Values (SGVs) were produced by Defra/EA and Generic Assessment Criteria (GACs) were produced by CampbellReith and others. These were based on the CLEA model and supporting guidance (SR2 and SR3) and where based on a minimal/tolerable level of risk.

In December 2014 DEFRA released final versions of the C4SLs (Category 4 Screening Levels) for 6 No. contaminants (As, benzene, BaP, Cd, Cr VI and Pb) together with a Policy Companion Document and an Erratum. These represent contaminant soil concentrations which present an acceptable (Low) level of risk, within the context of Part 2A, i.e. they are representative of Category 4 sites. In the Contaminated Land Statutory Guidance (April 2012), sites under Part 2A assessments are categorised 1 - 4, with Category 1 being definitely Part 2A and Category 4 definitely not Part 2A ('where there is no risk or the level of risk posed is low').

The C4SLs were produced using the CLEA model and follow the general approach of SR3, although, changes were made to exposure parameters and to the toxicological basis of the assessments. The C4SLs are based on a low level of toxicological concern (LLTC) and are, by definition, less conservative than Health Criteria Values (HCVs) which are the basis for assessments defined in SR2 and used in the generation of SGVs and GACs. They are, therefore, indicative of a low level of risk.

Since their release, DEFRA have confirmed that C4SLs can be used in the planning regime and DCLG (Department for Communities and Local Government) amended Planning Practice Guidance (PPG) on Land Affected by Contamination (12 June 2014)⁶ which stated that C4SLs provide a simple test for deciding when land is suitable for use and definitely not contaminated land'. On 03 September 2014 the Secretary for the Environment, Lord de Mauley, issued a letter (attached) to all Local Authorities which references DCLG's PPG and confirms that C4SLs could be used in planning and provide a simple test for establishing when sites are suitable for use.

LQM/CIEH issued S4ULs in December 2014 for 89 contaminants (metals, BTEX, banded TPH, speciated PAH, chlorinated solvents, phenols, chlorophenols, chlorobenzenes, pesticides and a number of miscellaneous others). The S4ULs have generally adopted the revisions to the exposure modelling that were developed in the production of the C4SLs. Critically, however, they are based on HCVs to produce concentrations which are indicative of a minimal/tolerable level of risk.

S4ULs are therefore used as the preliminary stage of soil assessments since they are indicative of minimal/tolerable level of risk. If these are exceeded then the C4SLs are used (if available) to determine if the risk could be described as low.

Where CLEA compliant S4ULs or C4SLs are not available reference is made to Generic Assessment Criteria (GAC) derived using the CLEA UK model (beta version). These are currently used for cyanide. Where referred to, the non-compliant standing of these values is considered.

⁵ Environment Agency Report Ref: SC050021/SR2 - *Human Health Toxicological Assessment of Contaminants in Soil*. January 2009.
Environment Agency Report Ref: SC050021/SR3 - *Updated background to the CLEA model*. January 2009.

⁶ <http://planningguidance.planningportal.gov.uk/blog/guidance/land-affected-by-contamination/land-affected-by-contamination-guidance/>

Selection of Appropriate [Tier 2] Soil Screening Values

The CLEA model is based upon defined exposure scenarios and six generic land uses have been established for the C4SLs and S4ULs. These set out a discrete set of circumstances where exposure may occur, including a source, the pathways, and the exposed population.

The three generic land use scenarios used in the development of SGVs are:

- commercial/Industrial;
- allotments; and,
- residential with plant uptake,
- residential without plant uptake,
- public open space (residential)
- public open space (parks)

It is noted that the CLEA screening values are generic and not always applicable. Where the CLEA conceptual model is not appropriate it will be necessary to develop site specific Detailed Quantitative Risk Assessment screening values as a further stage of assessment.

It is noted that the CLEA model does not consider risks from contaminated waters beneath the site to human health and the model also assumes that no free product is present. Should such conditions exist at the subject site the requirement for application of an alternative risk assessment model should be assessed. Alternatively, construction workers are potentially exposed to acute risk and therefore require separate consideration.

Statistical Analysis of Soil Analytical Results

Statistical analysis of soil based analytical results has been undertaken in accordance with CL:AIRE Guidance on Comparing Soil Contamination Data with a Critical Concentration (May 2008). The use of the Mean Value Test and Maximum Value Test is still considered appropriate for site assessments. Although the guidance advocates use of the one - sample t test, this is a variation of the mean value test and establishes the confidence level at which the assessor can determine whether a particular screening level has/has not been succeeded. The mean value test used herein is set at the 95th percentile confidence limit in order to be risk conservative.

The Maximum Value Test is a statistical tool that is used to identify outlier values from a numerical distribution of results for a given determinant. These outlier values can be excluded and considered separately, and the remaining values are then used to calculate upper bound 95th percentile values (95thile) (Mean Value Test) for comparison with the screening values.

The results are reviewed prior to any statistical analysis in order to determine if zoning of the soils is apparent and hence whether the site requires to be divided into averaging areas. Additional tables are presented where appropriate to reflect distinct ground characteristics relevant to the conceptual model.

Water Screening Values

This assessment considers potential risks to controlled waters (groundwater and surface waters) in relation to risks from any historical contamination. The most stringent test is that defined for Contaminated Land under Part 2A of the Environmental Protection Act, 1990. However, it should be recognised that a wider evaluation of risk is considered within the planning regime and CLR 11.

The Environment Agency has a wider policy agenda for the protection of controlled waters that will impinge upon judgements in relation to land contamination issues. This includes those for the Water Framework Directive and Groundwater Directive and wider legislation for both groundwater, surface water and associated elements (such as fisheries)⁷.

The results of water analysis have been compared to screening values selected to assess the potential risk to the identified controlled water receptors in the Conceptual Model. The specific standards utilised for this purpose are considered in the assessment table footnotes and typically comprise: Environmental Quality Standards for the protection of aquatic life; Surface Water Standards; EC, UK and WHO Drinking Water Standards; or Background water quality (where no applicable standard exists).

The initial assessment considers the sensitivity of the receptor in the selection of the screening value. Advice for this purpose has been obtained principally from Environment Agency Technical Advice to Third Parties on Pollution of Controlled Waters for Part 2A of the Environmental Protection Act 1990, No 07/02, EA, 2002 (INFO-RA2-3e), as informed by the EA's GP3.

Where a viable pollutant linkage is considered to be present and the screening criteria exceeded, a Qualitative Risk Assessment is presented with associated recommendations. Depending on the specific objectives, policy and practice of the Environment Agency, discussion of water screening values may be subsequently required.

Definitions of Consequence, Probability and Risk

The following classification has been taken from Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66: 2008 Volume 1 (Environment Agency, NHBC and CIEH).

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 (i.e. severity).

[takes into account both the potential severity of the hazard and the sensitivity of the receptor]

b) the magnitude of probability (i.e. likelihood).

[takes into account both the presence of the hazard and receptor and the integrity of the pathway]

⁷ Refer to Environment Agency Publications for Groundwater Protection Policy and Practice (GP3)

Classification of Consequence

Classification	Definition	Examples
Severe	Highly elevated concentrations likely to result in "significant harm" to human health as defined by the EPA 1990, Part 2A, if exposure occurs. Equivalent to EA Category 1 pollution incident including persistent and/or extensive effects on water quality; leading to closure of a potable abstraction point; major impact on amenity value or major damage to agriculture or commerce. Major damage to aquatic or other ecosystems, which is likely to result in a substantial adverse change in its functioning or harm to a species of special interest that endangers the long-term maintenance of the population. Catastrophic damage to crops, buildings or property.	Significant harm to humans is defined in circular 01.2006 as death, disease*, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Major fish kill in surface water from large spillage of contaminants from site. Highly elevated concentrations of List I and II substances present in groundwater close to small potable abstraction (high sensitivity). Explosion, causing building collapse (can also equate to immediate human health risk if buildings are occupied).
Medium	Elevated concentrations which could result in "significant harm" to human health as defined by the EPA 1990, Part 2A if exposure occurs. Equivalent to EA Category 2 pollution incident including significant effect on water quality; notification required to abstractors; reduction in amenity value or significant damage to agriculture or commerce. Significant damage to aquatic or other ecosystems, which may result in a substantial adverse change in its functioning or harm to a species of special interest that may endanger the long-term maintenance of the population. Significant damage to crops, buildings or property.	Significant harm to humans is defined in circular 01/2006 as death, disease*, serious injury, genetic mutation, birth defects or the impairment of reproductive functions. Damage to building rendering it unsafe to occupy e.g. foundation damage resulting in instability. Ingress of contaminants through plastic potable water pipes.
Mild	Exposure to human health unlikely to lead to "significant harm". Equivalent to EA Category 3 pollution incident including minimal or short lived effect on water quality; marginal effect on amenity value, agriculture or commerce. Minor or short lived damage to aquatic or other ecosystems, which is unlikely to result in a substantial adverse change in its functioning or harm to a species of special interest that would endanger the long-term maintenance of the population.	Exposure could lead to slight short-term effects (e.g. mild skin rash). Surface spalling of concrete.

Classification	Definition	Examples
	Minor damage to crops, buildings or property.	
Minor	No measurable effect on humans. Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems. Repairable effects of damage to buildings, structures and services.	The loss of plants in a landscaping scheme. Discoloration of concrete.

Classification of Probability

Classification	Definition	Examples
High likelihood	There is pollutant linkage and an event would appear very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.	a) Elevated concentrations of toxic contaminants are present in soils in the top 0.5m in a residential garden. b) Ground/groundwater contamination could be present from chemical works, containing a number of USTs, having been in operation on the same site for over 50 years.
Likely	There is pollutant linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.	a) Elevated concentrations of toxic contaminants are present in soils at depths of 0.5-1.0m in a residential garden, or the top 0.5m in public open space. b) Ground/groundwater contamination could be present from an industrial site containing a UST present between 1970 and 1990. The tank is known to be single skin. There is no evidence of leakage although there are no records of integrity tests.
Low likelihood	There is pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a long period such an event would take place, and is less likely in the shorter term.	a) Elevated concentrations of toxic contaminants are present in soils at depths >1m in a residential garden, or 0.5-1.0m in public open space. b) Ground/groundwater contamination could be present on a light industrial unit constructed in the 1990s containing a UST in operation over the last 10 years – the tank is double skinned but there is no integrity testing or evidence of leakage.
Unlikely	There is pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.	a) Elevated concentrations of toxic contaminants are present below hardstanding. b) Light industrial units <10 yrs old containing a double-skinned UST with

Classification	Definition	Examples
		<i>annual integrity testing results available.</i>

Note: A pollution linkage must first be established before probability is classified. If there is no pollution linkage then there is no potential risk. If there is no pollution linkage then there is no need to apply tests for probability and consequence.

For example if there is surface contamination and a principal aquifer is present at depth, but this principal aquifer is overlain by an aquiclude of significant thickness then there is no pollution linkage and the risks to the principal aquifer are not assessed. The report should identify both the source and the receptor but state that because there is no linkage there are no potential risks.

Description of the classified risks

Very high risk

There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without remediation action OR there is evidence that severe harm to a designated receptor is already occurring. Realisation of that risk is likely to present a substantial liability to be site owner/or occupier. Investigation is required as a matter of urgency and remediation works likely to follow in the short-term.

High risk

Harm is likely to arise to a designated receptor from an identified hazard at the site without remediation action. Realisation of the risk is likely to present a substantial liability to the site owner/or occupier. Investigation is required as a matter of urgency to clarify the risk. Remediation works may be necessary in the short-term and are likely over the longer term.

Moderate risk

It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Further investigative work is normally required to clarify the risk and to determine the potential liability to site owner/occupier. Some remediation works may be required in the longer term.

Low risk

It is possible that harm could arise to a designated receptor from identified hazard, but it is likely at worst, that this harm if realised would normally be mild. It is unlikely that the site owner/or occupier would face substantial liabilities from such a risk. Further investigative work (which is likely to be limited) to clarify the risk may be required. Any subsequent remediation works are likely to be relatively limited.

Very low risk

It is a low possibility that harm could arise to a designated receptor, but it is likely at worst, that the harm if realised would normally be mild or minor.

No potential risk

There is no potential risk if no pollution linkage has been established.

LIMITATIONS

Environmental & Geotechnical Interpretative Reports

1. This report provides available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the client.
2. Where any data or information supplied by the client or other external source, including that from previous studies, has been used, it has been assumed that the information is correct. No responsibility can be accepted by CampbellReith for inaccuracies within this data or information. In relation to historic maps the accuracy of maps cannot be guaranteed and it should be recognized that different conditions on site may have existed between and subsequent to the various map surveys.
3. This report is limited to those aspects of historical land use and enquiries related to environmental matters reported on and no liability is accepted for any other aspects. The opinions expressed cannot be absolute due to the limit of time and resources implicit within the agreed brief and the possibility of unrecorded previous uses of the site and adjacent land.
4. The material encountered and samples obtained during on-site investigations represent only a small proportion of the materials present on the site. There may be other conditions prevailing at the site which have not been revealed and which have therefore not been taken into account in this report. These risks can be minimised and reduced by additional investigations. If significant variations become evident, additional specialist advice should be sought to assess the implications of these few findings.
5. The generalised soil conditions described in the text are intended to convey trends in subsurface conditions. The boundaries between strata are approximate and have been developed on interpretations of the exploration locations and samples collected.
6. Water level and gas readings have been taken at times and under conditions stated on the exploration logs. It must be noted that fluctuations in the level of groundwater or gas may occur due to a variety of factors which may differ from those prevailing at the time the measurements were taken.
7. Please note that CampbellReith cannot accept any liability for observations or opinions expressed regarding the absence or presence of asbestos or on any product or waste that may contain asbestos. We recommend that an asbestos specialist, with appropriate professional indemnity insurance, is employed directly by the client in every case where asbestos may be present on the site or within the buildings or installations. Any comments made in this report with respect to asbestos, or asbestos containing materials, are only included to assist the client with the initial appraisal of the project and should not be relied upon in any way.
8. The findings and opinions expressed are relevant to those dates of the reported site work and should not be relied upon to represent conditions at substantially later dates.
9. This report is produced solely for the benefit of the client, and no liability is accepted for any reliance placed upon it by any other party unless specifically agreed in writing.

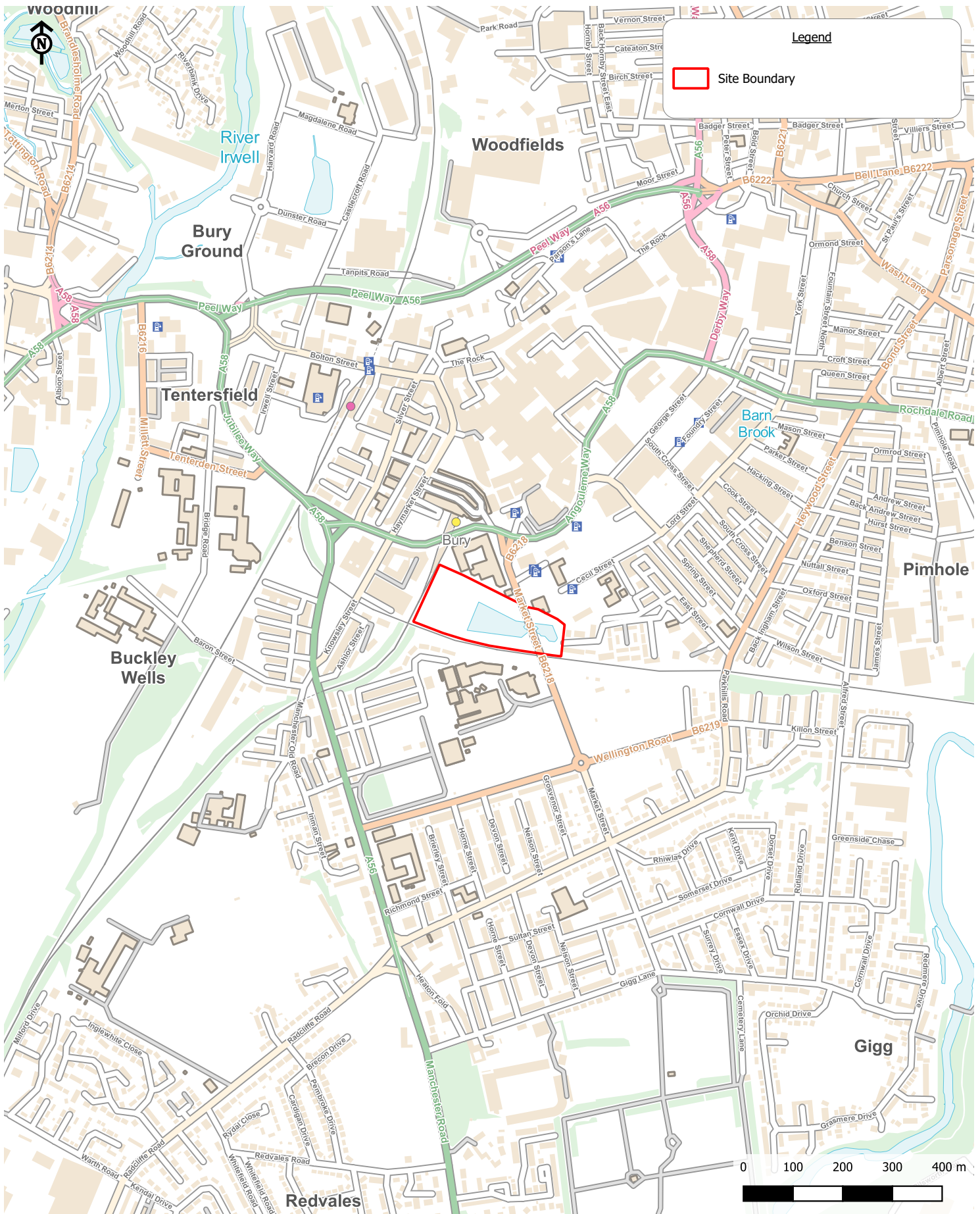
Appendix A: Figures

Figure 1: Site Location

Figure 2: Annotated Site Layout

Figure 3: Geology

Proposed Masterplan Options



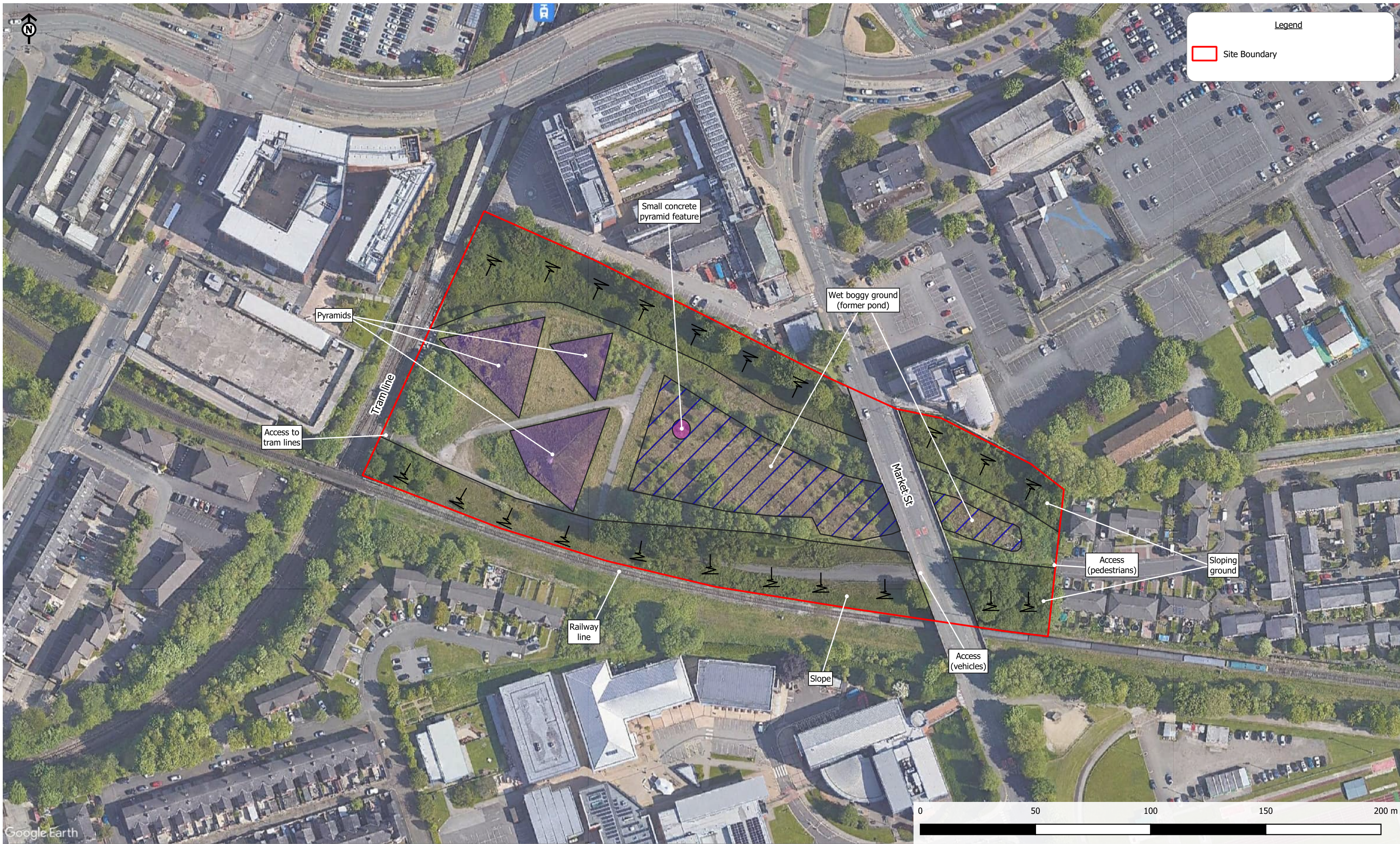
Townside Fields, Bury
 Client: Bury Council

Figure 1:
 Site Location

Scale: 1:10000@A4
 CampbellReith OS Copyright: © Crown copyright. All rights reserved. Licence number 100020027
 Contains Ordnance Survey data © Crown copyright and database right 2022.
 Job Number: 13819
 Drawn by - Checked by: RLF - PK
 Drg No - Status/Revision: 13819-CRH-XX-XX-FG-G-7000 - P1
 File location: N:\13750 - 13999\13819 M- Townside Fields Bury\Project_Workspaces (pdf in Outputs)
 Date (Revision History): 06/01/2022 (P1, First Issue, 06/01/22, RLF)

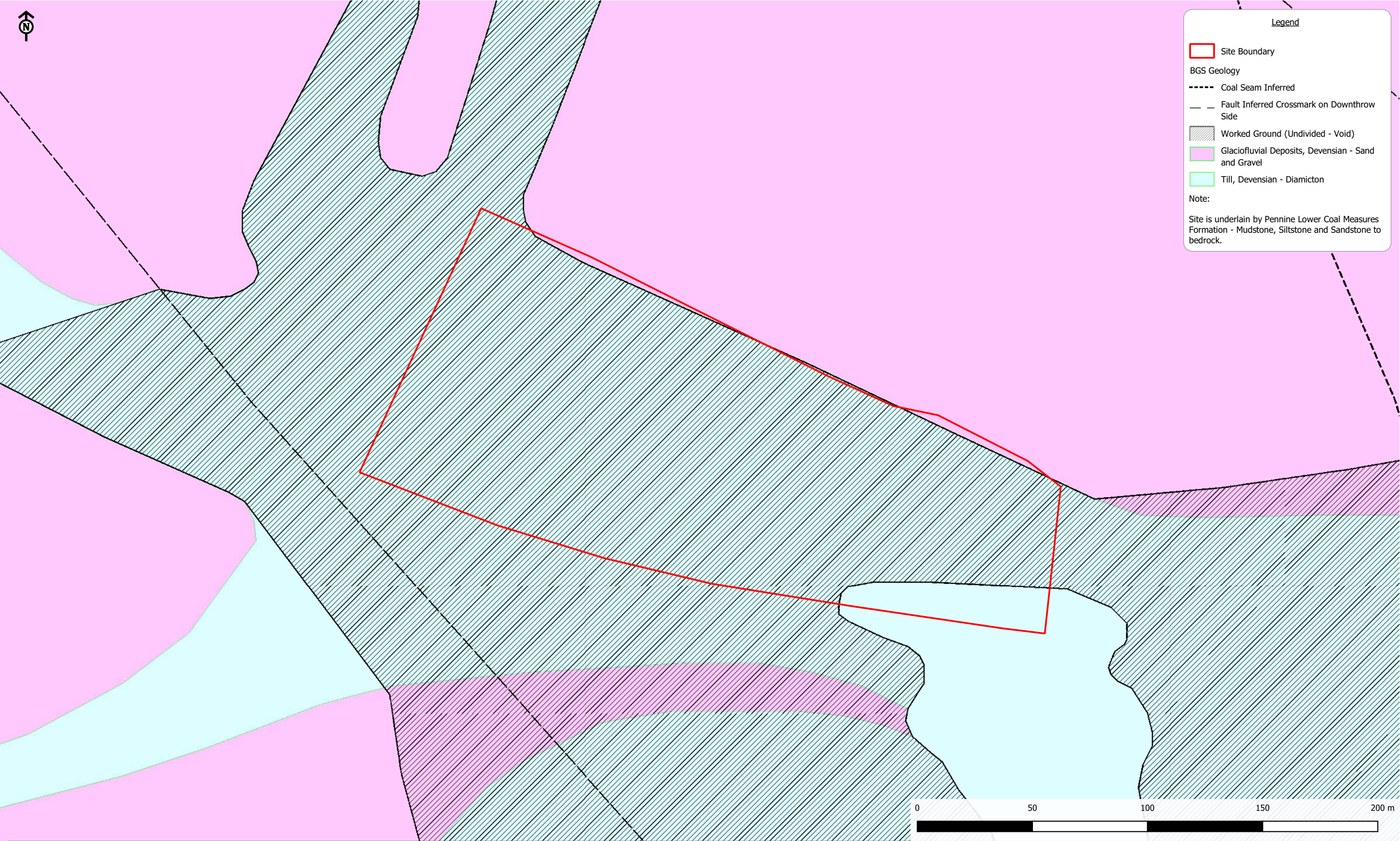
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Townside Fields, Bury
 Client: Bury Council

Figure 2:
 Annotated Site Layout



Townside Fields, Bury

Client: Bury Council

Figure 3:
Geology as indicated by BGS information



- Notes**
1. Drawing to be read in conjunction with all specifications forming part of the project package.
 2. Do not scale off this drawing.
 3. This drawing must not be copied in whole without written consent of Optimised Environments Ltd.

- Site boundary (approx 1.77 ha)
- Townfields Close Sheltered Housing Scheme
- TFGM boundary (approx 0.98 ha)

Client
Bury Council

Project
Pyramid Park

Drawing Title
Preferred Option

Scale 1:2000 @ A3 **Date** 10/03/2023

By OZ **Status** INFORMATION

Checked KB **Approved** JF

Dwg no. 01



Appendix B: Desk Study Information

Groundsure Report (Ref: CAR1-8402039), dated December 2021

Bury Council Environmental Search Report (Ref: ES859.120122.1), dated January 2022

Zetica UXO Risk Map

TEP, Phase 1 Habitat Survey

380496.279317755, 410320.24760762806

Order Details

Date: 15/12/2021
Your ref: SO2021021M_Townfields_Bury_-_BT
Our Ref: CAR1-8402039
Client: CampbellReith

Site Details

Location: 380496 410320
Area: 3.0 ha
Authority: [Bury Metropolitan Borough Council](#)



Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.13 groundsure.com/insightuserguide

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	29	12	31	99	-
21	1.2	Historical tanks	1	0	4	15	-
22	1.3	Historical energy features	1	1	1	10	-
23	1.4	Historical petrol stations	0	0	0	1	-
23	1.5	Historical garages	1	0	5	8	-
24	1.6	Historical military land	0	0	0	1	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
25	2.1	Historical industrial land uses	37	17	41	147	-
34	2.2	Historical tanks	2	0	6	29	-
36	2.3	Historical energy features	2	2	2	26	-
37	2.4	Historical petrol stations	0	0	0	2	-
38	2.5	Historical garages	2	0	9	20	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
40	3.1	Active or recent landfill	0	0	0	0	-
40	3.2	Historical landfill (BGS records)	0	0	0	0	-
41	3.3	Historical landfill (LA/mapping records)	2	0	3	0	-
41	3.4	Historical landfill (EA/NRW records)	0	1	3	1	-
42	3.5	Historical waste sites	0	0	0	0	-
42	3.6	Licensed waste sites	0	0	0	0	-
43	3.7	Waste exemptions	0	0	6	6	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
44	4.1	Recent industrial land uses	0	2	8	-	-
45	4.2	Current or recent petrol stations	0	0	1	1	-
46	4.3	Electricity cables	0	0	0	0	-
46	4.4	Gas pipelines	0	0	0	0	-
46	4.5	Sites determined as Contaminated Land	0	0	0	0	-



46	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
46	4.7	Regulated explosive sites	0	0	0	0	-
47	4.8	Hazardous substance storage/usage	0	0	0	0	-
47	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
47	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
47	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	0	2	-
48	4.12	Radioactive Substance Authorisations	0	0	0	0	-
48	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	4	0	-
49	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
49	4.15	Pollutant release to public sewer	0	0	0	0	-
49	4.16	List 1 Dangerous Substances	0	0	0	0	-
49	4.17	List 2 Dangerous Substances	0	0	0	0	-
49	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	2	0	-
50	4.19	Pollution inventory substances	0	0	0	0	-
50	4.20	Pollution inventory waste transfers	0	0	0	0	-
50	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
51	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
53	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
55	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
56	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
56	5.5	Groundwater vulnerability- local information	None (within 0m)				
57	5.6	<u>Groundwater abstractions</u>	0	0	0	0	10
60	5.7	<u>Surface water abstractions</u>	0	0	0	0	30
67	5.8	<u>Potable abstractions</u>	0	0	0	0	2
68	5.9	Source Protection Zones	0	0	0	0	-
68	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
69	6.1	Water Network (OS MasterMap)	0	0	0	-	-



69	<u>6.2</u>	<u>Surface water features</u>	1	0	0	-	-
70	<u>6.3</u>	<u>WFD Surface water body catchments</u>	2	-	-	-	-
70	<u>6.4</u>	<u>WFD Surface water bodies</u>	0	0	0	-	-
71	<u>6.5</u>	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
72	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
72	7.2	Historical Flood Events	0	0	0	-	-
72	7.3	Flood Defences	0	0	0	-	-
73	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
73	7.5	Flood Storage Areas	0	0	0	-	-
74	7.6	Flood Zone 2	None (within 50m)				
74	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
75	<u>8.1</u>	<u>Surface water flooding</u>	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
77	<u>9.1</u>	<u>Groundwater flooding</u>	Moderate (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
78	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
79	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
79	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
79	10.4	Special Protection Areas (SPA)	0	0	0	0	0
79	10.5	National Nature Reserves (NNR)	0	0	0	0	0
80	<u>10.6</u>	<u>Local Nature Reserves (LNR)</u>	0	0	0	0	2
80	10.7	Designated Ancient Woodland	0	0	0	0	0
80	10.8	Biosphere Reserves	0	0	0	0	0
80	10.9	Forest Parks	0	0	0	0	0
81	10.10	Marine Conservation Zones	0	0	0	0	0
81	<u>10.11</u>	<u>Green Belt</u>	0	0	0	0	6
81	10.12	Proposed Ramsar sites	0	0	0	0	0



81	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
82	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
82	10.15	Nitrate Sensitive Areas	0	0	0	0	0
82	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
83	<u>10.17</u>	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
84	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
85	11.1	World Heritage Sites	0	0	0	-	-
86	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
86	11.3	National Parks	0	0	0	-	-
86	<u>11.4</u>	<u>Listed Buildings</u>	0	0	12	-	-
87	<u>11.5</u>	<u>Conservation Areas</u>	0	0	1	-	-
87	11.6	Scheduled Ancient Monuments	0	0	0	-	-
88	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
89	<u>12.1</u>	<u>Agricultural Land Classification</u>	Urban (within 250m)				
90	12.2	Open Access Land	0	0	0	-	-
90	12.3	Tree Felling Licences	0	0	0	-	-
90	12.4	Environmental Stewardship Schemes	0	0	0	-	-
90	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
91	<u>13.1</u>	<u>Priority Habitat Inventory</u>	0	0	3	-	-
92	13.2	Habitat Networks	0	0	0	-	-
92	13.3	Open Mosaic Habitat	0	0	0	-	-
92	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
93	<u>14.1</u>	<u>10k Availability</u>	Identified (within 500m)				
95	<u>14.2</u>	<u>Artificial and made ground (10k)</u>	3	1	5	15	-
97	<u>14.3</u>	<u>Superficial geology (10k)</u>	2	2	1	14	-



98	14.4	Landslip (10k)	0	0	0	0	-
99	14.5	<u>Bedrock geology (10k)</u>	1	1	3	11	-
100	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	1	4	12	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
102	15.1	<u>50k Availability</u>	Identified (within 500m)				
103	15.2	<u>Artificial and made ground (50k)</u>	1	0	0	0	-
104	15.3	Artificial ground permeability (50k)	0	0	-	-	-
105	15.4	<u>Superficial geology (50k)</u>	2	1	1	5	-
106	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
106	15.6	Landslip (50k)	0	0	0	0	-
107	15.7	Landslip permeability (50k)	None (within 50m)				
108	15.8	<u>Bedrock geology (50k)</u>	1	1	1	4	-
109	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
109	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	1	3	7	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
111	16.1	<u>BGS Boreholes</u>	1	6	9	-	-
Page	Section	Natural ground subsidence					
113	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
115	17.2	<u>Running sands</u>	Very low (within 50m)				
116	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
117	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
118	17.5	<u>Landslides</u>	Very low (within 50m)				
119	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
121	18.1	Natural cavities	0	0	0	0	-
122	18.2	BritPits	0	0	0	0	-
122	18.3	<u>Surface ground workings</u>	7	10	27	-	-
124	18.4	Underground workings	0	0	0	0	0
124	18.5	Historical Mineral Planning Areas	0	0	0	0	-



124	18.6	Non-coal mining	0	0	0	0	0
<u>124</u>	<u>18.7</u>	<u>Mining cavities</u>	0	0	0	1	0
125	18.8	JPB mining areas	None (within 0m)				
<u>125</u>	<u>18.9</u>	<u>Coal mining</u>	Identified (within 0m)				
125	18.10	Brine areas	None (within 0m)				
126	18.11	Gypsum areas	None (within 0m)				
126	18.12	Tin mining	None (within 0m)				
126	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<u>127</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>128</u>	<u>20.1</u>	<u>BGS Estimated Background Soil Chemistry</u>	2	1	-	-	-
128	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
128	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
129	21.1	Underground railways (London)	0	0	0	-	-
129	21.2	Underground railways (Non-London)	0	0	0	-	-
130	21.3	Railway tunnels	0	0	0	-	-
<u>130</u>	<u>21.4</u>	<u>Historical railway and tunnel features</u>	13	1	25	-	-
131	21.5	Royal Mail tunnels	0	0	0	-	-
<u>132</u>	<u>21.6</u>	<u>Historical railways</u>	0	1	1	-	-
<u>132</u>	<u>21.7</u>	<u>Railways</u>	0	27	11	-	-
134	21.8	Crossrail 1	0	0	0	0	-
134	21.9	Crossrail 2	0	0	0	0	-
134	21.10	HS2	0	0	0	0	-

Recent aerial photograph

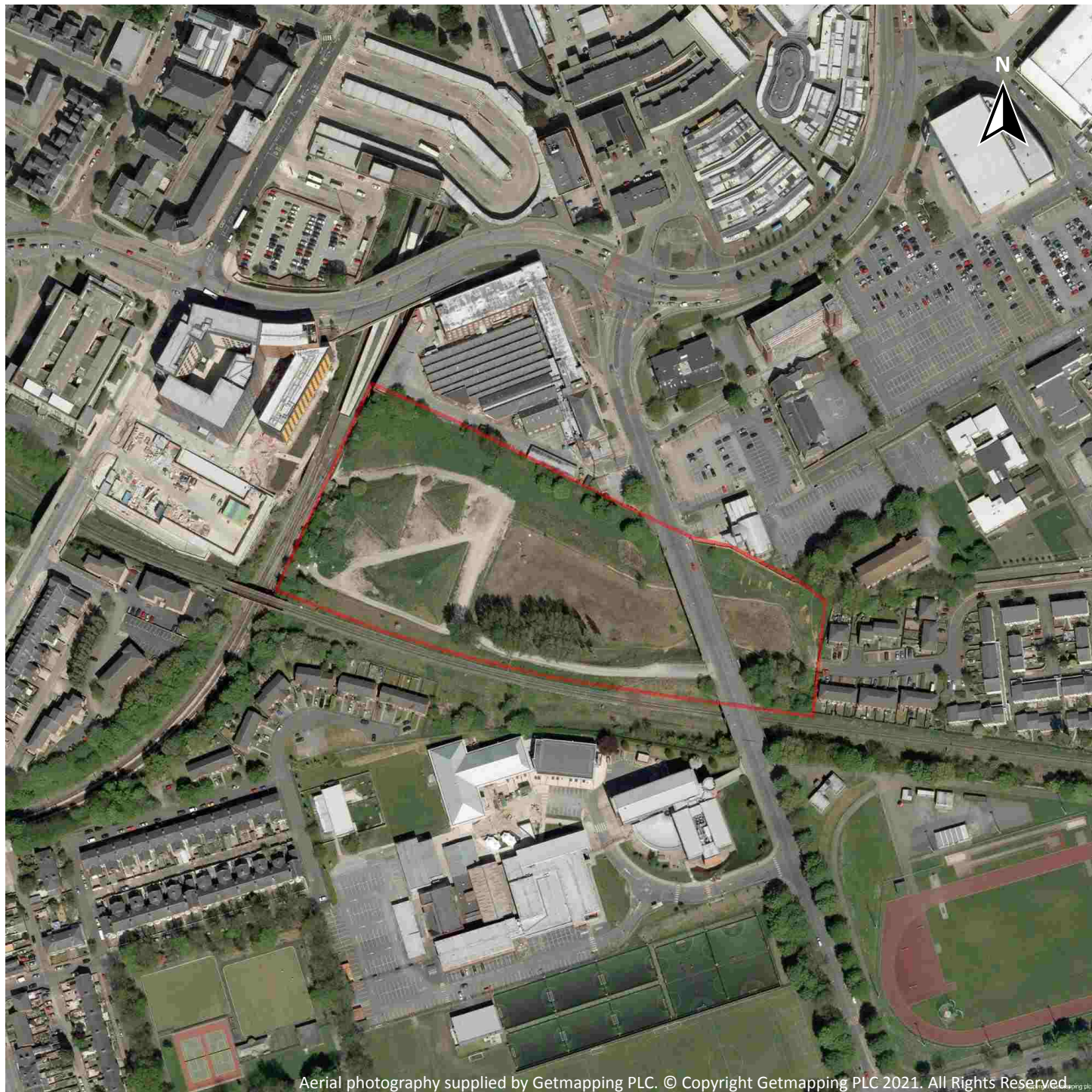


Capture Date: 23/05/2019

Site Area: 3.0ha



Recent site history - 2011 aerial photograph



Capture Date: 02/05/2011

Site Area: 3.0ha



Recent site history - 2001 aerial photograph



Capture Date: 07/05/2001

Site Area: 3.0ha



Recent site history - 2000 aerial photograph



Capture Date: 27/06/2000

Site Area: 3.0ha



Recent site history - 1999 aerial photograph



Capture Date: 10/09/1999

Site Area: 3.0ha



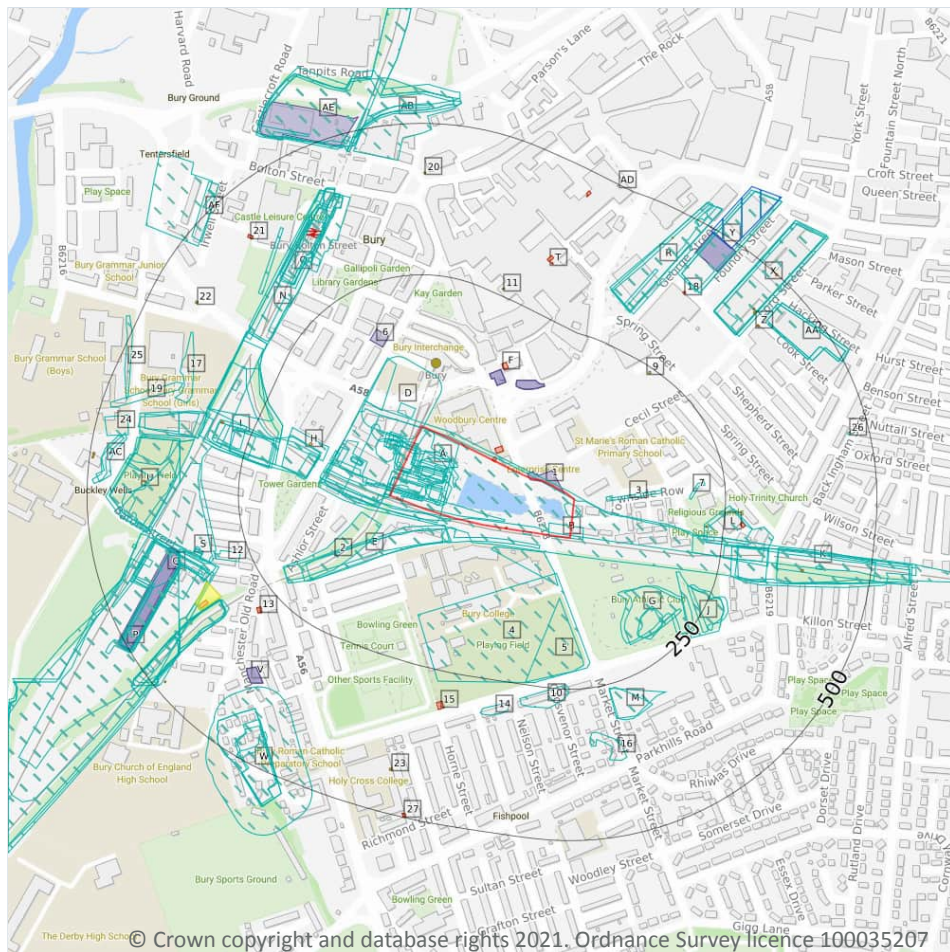
OS MasterMap site plan



Site Area: 3.0ha



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
- Historical military land

1.1 Historical industrial land uses

Records within 500m

171

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	On site	Railway Building	1908	669848



ID	Location	Land use	Dates present	Group ID
A	On site	Cuttings	1967	642627
A	On site	Unspecified Ground Workings	1983	648197
A	On site	Goods Station	1891	670814
A	On site	Railway Station	1967	672378
A	On site	Railway Station	1956	710323
A	On site	Railway Building	1928 - 1938	695286
A	On site	Goods Station	1956	704804
A	On site	Railway Sidings	1851	784708
A	On site	Railway Building	1956	710609
A	On site	Unspecified Ground Workings	1851	711501
A	On site	Railway Building	1908	713585
A	On site	Railway Building	1908	717270
A	On site	Unspecified Ground Workings	1983	721331
A	On site	Goods Station	1908	722157
A	On site	Railway Building	1956	729163
A	On site	Railway Building	1851	738547
A	On site	Goods Station	1928 - 1938	741455
A	On site	Railway Building	1928 - 1938	742970
A	On site	Railway Building	1967	744386
A	On site	Railway Sidings	1851	750909
A	On site	Railway Buildings	1851 - 1891	776094
A	On site	Railway Building	1891	778899
B	On site	Cuttings	1851	642625
B	On site	Unspecified Heap	1983	650927
B	On site	Railway Building	1908	670229
B	On site	Railway Sidings	1908 - 1967	701768
C	On site	Railway Sidings	1891	708354
D	On site	Abattoirs	1908 - 1928	772090



ID	Location	Land use	Dates present	Group ID
A	1m S	Railway Sidings	1851	715107
A	1m NW	Railway Station	1908 - 1938	779060
A	9m W	Railway Station	1851	732921
A	9m W	Railway Station	1967	714384
E	16m S	Cuttings	1967	694256
B	16m S	Unspecified Ground Workings	1983	648198
A	20m NW	Unspecified Pit	1983	691011
E	20m S	Cuttings	1956	781507
D	22m NW	Goods Station	1891	670806
E	23m S	Cuttings	1908 - 1938	726997
B	29m S	Unspecified Pit	1983	757007
2	48m SW	Cuttings	1983	774559
3	53m E	Rope Walk	1851	641265
A	58m NW	Railway Station	1891	704384
4	61m S	Unspecified Pit	1956 - 1967	768010
A	62m NW	Railway Building	1938	725531
A	64m NW	Railway Building	1908 - 1928	780127
D	71m NW	Cuttings	1891	642626
5	101m S	Unspecified Pit	1983	738603
G	121m SE	Refuse Heap	1938	745846
H	124m NW	Woollen Mill	1851	670979
G	127m SE	Sand Pit	1956	643771
I	131m NW	Railway Sidings	1956 - 1967	765766
H	132m NW	Cuttings	1967	764234
H	134m NW	Cuttings	1908	698529
I	134m NW	Cuttings	1983	722520
G	174m SE	Unspecified Ground Workings	1928	648195
G	176m SE	Refuse Heap	1908	732533



ID	Location	Land use	Dates present	Group ID
J	184m E	Unspecified Pit	1908	752070
7	190m E	Unspecified Ground Workings	1956	648199
8	196m W	Railway Sidings	1891 - 1938	745623
I	201m W	Cuttings	1908 - 1938	726618
I	201m NW	Cuttings	1891	762473
K	201m E	Cuttings	1891	742739
I	205m W	Cuttings	1851	774242
I	207m W	Cuttings	1967	726854
J	210m E	Unspecified Pit	1928 - 1938	738019
J	214m E	Unspecified Ground Workings	1956	648201
L	218m E	Unspecified Mill	1967	656769
L	225m E	Unspecified Commercial/Industrial	1956	643328
I	227m NW	Cuttings	1956 - 1967	738420
I	241m W	Cuttings	1956	717327
10	243m S	Unspecified Pit	1908	691009
L	255m E	Cuttings	1851	787672
M	257m S	Unspecified Pit	1955	748810
M	257m S	Unspecified Pit	1974 - 1981	732035
I	259m W	Cuttings	1891	760018
12	264m W	Railway Building	1891	670227
K	267m E	Cuttings	1908 - 1938	764310
K	275m E	Cuttings	1983	714344
L	278m E	Cuttings	1956 - 1967	711784
14	284m S	Unspecified Pit	1908	691005
N	288m NW	Railway Sidings	1967 - 1983	738242
O	289m NW	Railway Sidings	1956	765595
N	290m NW	Railway Building	1851	669846
I	303m NW	Railway Building	1956	669845



ID	Location	Land use	Dates present	Group ID
P	306m SW	Railway Sidings	1891	781999
P	307m W	Railway Sidings	1956 - 1969	740950
O	309m NW	Railway Station	1851	758271
Q	310m W	Railway Building	1891	698729
R	313m NE	Unspecified Foundry	1908 - 1938	736073
R	314m NE	Unspecified Foundry	1956	750021
O	314m NW	Railway Station	1967	747305
O	314m NW	Railway Station	1956	768551
R	315m NE	Unspecified Works	1967	679052
O	316m NW	Railway Station	1908 - 1938	788801
O	317m NW	Railway Sidings	1851	767367
P	318m SW	Railway Sidings	1908 - 1938	789578
R	319m NE	Rope Walk	1851	641264
S	322m W	Railway Building	1956	727077
O	324m NW	Railway Station	1891	773134
Q	324m SW	Railway Buildings	1908	681650
S	324m W	Railway Building	1928	707123
S	324m SW	Railway Building	1928	732407
S	324m SW	Cuttings	1928	731298
16	324m S	Unspecified Ground Workings	1891	648196
S	324m W	Railway Buildings	1908	681647
I	325m NW	Cuttings	1956	705879
I	327m W	Cuttings	1891 - 1938	757141
S	328m SW	Cuttings	1908	769756
S	328m SW	Cuttings	1938	788819
S	330m SW	Cuttings	1956	753126
S	330m SW	Cuttings	1967 - 1983	772665
Q	332m W	Carriage Shed	1928 - 1938	718586



ID	Location	Land use	Dates present	Group ID
P	333m SW	Railway Sidings	1955 - 1956	727070
U	336m W	Sawmills	1928 - 1938	696865
O	339m NW	Railway Station	1983	753891
I	341m W	Cuttings	1851	703289
O	342m NW	Railway Sidings	1851	641526
K	344m E	Cuttings	1851	782827
K	345m E	Cuttings	1956 - 1967	729213
U	347m W	Sawmills	1956	698663
U	353m W	Unspecified Mills	1969	653118
U	353m W	Timber Yard	1908	642780
Q	359m W	Carriage Shed	1956	715340
Q	361m W	Railway Building	1969 - 1974	698481
P	362m W	Railway Sidings	1974 - 1991	696872
Q	362m W	Railway Building	1980	729199
I	364m W	Cuttings	1969 - 1980	748529
17	365m NW	Unspecified Ground Workings	1908	648129
W	375m SW	Nursery	1955	752968
X	380m NE	Unspecified Mill	1928 - 1938	727597
X	380m NE	Unspecified Commercial/Industrial	1891 - 1908	736006
X	382m NE	Unspecified Works	1967 - 1983	761901
X	383m NE	Unspecified Mill	1956	718356
19	388m NW	Unspecified Pit	1891	691010
Y	395m NE	Tram Depot	1928 - 1938	704547
Y	397m NE	Tram Depot	1956	724533
Y	397m NE	Unspecified Depot	1967 - 1983	783304
Q	406m W	Engine House	1851	676173
O	407m NW	Railway Building	1851	669852
K	409m E	Railway Building	1908	670228



ID	Location	Land use	Dates present	Group ID
W	416m SW	Nursery	1938	784532
W	416m SW	Nursery	1908	787770
S	417m SW	Railway Building	1891	670238
S	423m SW	Cuttings	1969	706843
S	425m SW	Cuttings	1974 - 1980	772664
Q	426m W	Railway Building	1928	670226
W	429m SW	Nursery	1928	735774
AA	430m NE	Unspecified Commercial/Industrial	1891 - 1908	705891
AA	430m NE	Iron Works	1928 - 1938	758785
AA	434m NE	Iron Works	1956	716018
AA	434m NE	Unspecified Works	1967 - 1983	784523
W	437m SW	Nurseries	1965 - 1981	718272
AB	441m N	Unspecified Commercial/Industrial	1956 - 1967	722632
W	441m SW	Refuse Heap	1851	677985
24	443m W	Cuttings	1851	642633
AC	444m W	Unspecified Ground Workings	1956	780608
Q	447m W	Railway Sidings	1851	740602
AC	449m W	Unspecified Ground Workings	1928 - 1938	770525
25	462m W	Unspecified Ground Workings	1908	648127
26	464m E	Pump	1851	675592
AE	469m N	Railway Sidings	1956 - 1967	749849
AE	470m N	Railway Sidings	1928	699340
AE	470m N	Railway Sidings	1938	752531
AF	474m NW	Police Station	1967	680444
AF	474m NW	Iron Foundry	1851	683056
AE	476m N	Railway Sidings	1908	764894
AE	479m N	Railway Sidings	1851 - 1891	759352
AE	482m N	Railway Building	1908 - 1928	779059



ID	Location	Land use	Dates present	Group ID
S	484m SW	Railway Building	1891	670237
AB	488m N	Railway Sidings	1851	777041

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

20

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

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

ID	Location	Land use	Dates present	Group ID
B	On site	Unspecified Tank	1957	100914
H	152m NW	Unspecified Tank	1891	99775
L	220m E	Unspecified Tank	1957	94380
L	221m E	Unspecified Tank	1957	100583
9	240m NE	Unspecified Tank	1891	102230
11	260m NE	Unspecified Tank	1930 - 1937	101735
I	299m NW	Unspecified Tank	1937	84748
K	386m E	Unspecified Tank	1957	95200
U	403m W	Unspecified Tank	1930 - 1937	98102
Z	416m NE	Unspecified Tank	1973 - 1987	101865
20	417m N	Unspecified Tank	1930 - 1937	103985
22	422m NW	Unspecified Tank	1957	90910
23	425m S	Unspecified Tank	1982 - 1992	103422
Z	427m NE	Tanks	1973	87167
Z	431m NE	Unspecified Tank	1891	94993
R	454m NE	Unspecified Tank	1891	82565



ID	Location	Land use	Dates present	Group ID
S	480m SW	Unspecified Tank	1910	100168
AC	492m W	Unspecified Tank	1957 - 1968	98588
AD	497m NE	Unspecified Tank	1891	82566
X	497m NE	Unspecified Tank	1891	102533

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	13
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Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

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

ID	Location	Land use	Dates present	Group ID
C	On site	Electricity Substation	1992	53258
C	13m NE	Electricity Substation	1976 - 1981	52205
F	142m NE	Electricity Substation	1993 - 1998	50919
L	277m E	Electricity Substation	1976 - 1992	55447
13	281m SW	Electricity Substation	1980 - 1996	51172
15	299m S	Electricity Substation	1982 - 1992	56922
T	333m NE	Electricity Substation	1993 - 1998	47160
T	335m NE	Electricity Substation	1973 - 1987	52184
S	348m SW	Electricity Substation	1994 - 1996	56797
18	382m NE	Electricity Substation	1993 - 1998	48594
21	417m NW	Electricity Substation	1973 - 1992	47966
AD	458m NE	Electricity Substation	1998	45020
27	493m S	Electricity Substation	1982 - 1992	54358

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 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
S	325m SW	Petroleum Spirit Store	1930	1412

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

14

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

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

ID	Location	Land use	Dates present	Group ID
1	On site	Garage	1976 - 1981	17318
F	113m NE	Garage	1957	17408
F	114m NE	Garage	1957	16198
F	126m NE	Garage	1992	18426
F	126m NE	Garage	1976 - 1981	18999
6	146m NW	Garage	1957	18416
V	359m SW	Garage	1957	16795
V	359m SW	Garage	1957 - 1980	19868
Q	360m W	Carriage Shed	1957 - 1992	17959
Q	360m W	Carriage Shed	1968	18561



ID	Location	Land use	Dates present	Group ID
Q	361m W	Carriage Shed	1891 - 1937	18091
Y	443m NE	Garage	1973	16462
Y	443m NE	Garage	1982	18635
AE	482m N	Garage	1978	18125

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

1

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.

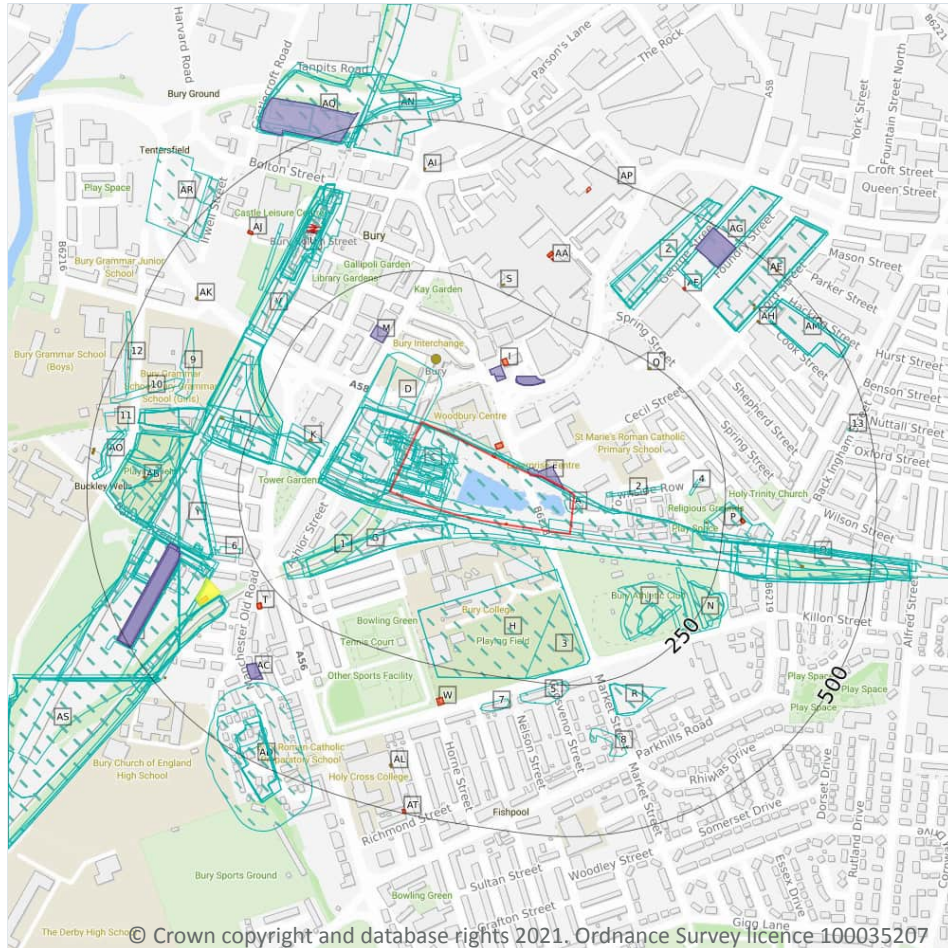
Features are displayed on the Past land use map on **page 14**

ID	Location	Site Name	Date of Operation	Activities
Y	487m NE	Bury	circa WWI	National Shell Factory; 18pdr and 4.5in shell, rectifying shell

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

242

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 25**

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Heap	1983	650927
A	On site	Cuttings	1851	642625
B	On site	Railway Sidings	1956	701768



ID	Location	Land Use	Date	Group ID
B	On site	Railway Sidings	1938	701768
B	On site	Railway Sidings	1967	701768
B	On site	Railway Sidings	1928	701768
B	On site	Railway Sidings	1908	701768
B	On site	Railway Building	1908	670229
C	On site	Unspecified Ground Workings	1983	721331
C	On site	Unspecified Ground Workings	1983	648197
C	On site	Goods Station	1956	704804
C	On site	Railway Building	1956	729163
C	On site	Railway Building	1956	710609
C	On site	Railway Station	1956	710323
C	On site	Railway Sidings	1851	750909
C	On site	Unspecified Ground Workings	1851	711501
C	On site	Railway Sidings	1851	784708
C	On site	Railway Buildings	1851	776094
C	On site	Railway Building	1851	738547
C	On site	Cuttings	1967	642627
C	On site	Goods Station	1938	741455
C	On site	Railway Building	1938	695286
C	On site	Railway Building	1938	742970
C	On site	Railway Buildings	1891	776094
C	On site	Railway Building	1891	778899
C	On site	Goods Station	1891	670814
C	On site	Railway Station	1967	672378
C	On site	Railway Building	1967	744386
C	On site	Goods Station	1928	741455
C	On site	Railway Building	1928	742970
C	On site	Railway Building	1928	695286



ID	Location	Land Use	Date	Group ID
C	On site	Railway Building	1908	713585
C	On site	Railway Building	1908	717270
C	On site	Goods Station	1908	722157
C	On site	Railway Building	1908	669848
D	On site	Abattoirs	1928	772090
E	On site	Railway Sidings	1891	708354
C	1m S	Railway Sidings	1851	715107
C	1m NW	Railway Station	1938	779060
C	1m NW	Railway Station	1928	779060
C	1m NW	Railway Station	1908	779060
C	9m W	Railway Station	1851	732921
C	9m W	Railway Station	1967	714384
G	16m S	Cuttings	1967	694256
B	16m S	Unspecified Ground Workings	1983	648198
C	20m NW	Unspecified Pit	1983	691011
G	20m S	Cuttings	1956	781507
D	22m NW	Goods Station	1891	670806
G	23m S	Cuttings	1938	726997
G	23m S	Cuttings	1928	726997
G	23m S	Cuttings	1908	726997
D	24m NW	Abattoirs	1908	772090
B	29m S	Unspecified Pit	1983	757007
1	48m SW	Cuttings	1983	774559
2	53m E	Rope Walk	1851	641265
C	58m NW	Railway Station	1891	704384
H	61m S	Unspecified Pit	1956	768010
H	61m S	Unspecified Pit	1967	768010
C	62m NW	Railway Building	1938	725531



ID	Location	Land Use	Date	Group ID
C	64m NW	Railway Building	1928	780127
C	65m NW	Railway Building	1908	780127
D	71m NW	Cuttings	1891	642626
3	101m S	Unspecified Pit	1983	738603
J	121m SE	Refuse Heap	1938	745846
K	124m NW	Woollen Mill	1851	670979
J	127m SE	Sand Pit	1956	643771
L	131m NW	Railway Sidings	1956	765766
K	132m NW	Cuttings	1967	764234
L	133m NW	Railway Sidings	1967	765766
K	134m NW	Cuttings	1908	698529
L	134m NW	Cuttings	1983	722520
J	174m SE	Unspecified Ground Workings	1928	648195
J	176m SE	Refuse Heap	1908	732533
N	184m E	Unspecified Pit	1908	752070
4	190m E	Unspecified Ground Workings	1956	648199
L	196m W	Railway Sidings	1891	745623
L	201m W	Cuttings	1938	726618
L	201m W	Cuttings	1928	726618
L	201m W	Cuttings	1908	726618
L	201m NW	Cuttings	1891	762473
O	201m E	Cuttings	1891	742739
L	205m W	Railway Sidings	1908	745623
L	205m W	Cuttings	1851	774242
L	206m W	Railway Sidings	1938	745623
L	206m W	Railway Sidings	1928	745623
L	207m W	Cuttings	1967	726854
N	210m E	Unspecified Pit	1938	738019



ID	Location	Land Use	Date	Group ID
N	210m E	Unspecified Pit	1928	738019
N	214m E	Unspecified Ground Workings	1956	648201
P	218m E	Unspecified Mill	1967	656769
P	225m E	Unspecified Commercial/Industrial	1956	643328
L	227m NW	Cuttings	1956	738420
L	227m NW	Cuttings	1967	738420
L	241m W	Cuttings	1956	717327
5	243m S	Unspecified Pit	1908	691009
P	255m E	Cuttings	1851	787672
R	257m S	Unspecified Pit	1955	748810
R	257m S	Unspecified Pit	1981	732035
R	257m S	Unspecified Pit	1974	732035
L	259m W	Cuttings	1891	760018
6	264m W	Railway Building	1891	670227
O	267m E	Cuttings	1938	764310
O	267m E	Cuttings	1928	764310
O	267m E	Cuttings	1908	764310
O	275m E	Cuttings	1983	714344
P	278m E	Cuttings	1956	711784
P	278m E	Cuttings	1967	711784
7	284m S	Unspecified Pit	1908	691005
U	288m NW	Railway Sidings	1967	738242
V	288m NW	Railway Sidings	1983	738242
U	289m NW	Railway Sidings	1956	765595
V	290m NW	Railway Building	1851	669846
L	303m NW	Railway Building	1956	669845
X	306m SW	Railway Sidings	1891	781999
Y	307m W	Railway Sidings	1956	740950



ID	Location	Land Use	Date	Group ID
Y	307m W	Railway Sidings	1967	740950
U	309m NW	Railway Station	1851	758271
X	310m W	Railway Building	1891	698729
Z	313m NE	Unspecified Foundry	1938	736073
Z	313m NE	Unspecified Foundry	1928	736073
Z	313m NE	Unspecified Foundry	1908	736073
Z	314m NE	Unspecified Foundry	1956	750021
U	314m NW	Railway Station	1967	747305
U	314m NW	Railway Station	1956	768551
Z	315m NE	Unspecified Works	1967	679052
U	316m NW	Railway Station	1938	788801
U	316m NW	Railway Station	1928	788801
U	316m NW	Railway Station	1908	788801
U	317m NW	Railway Sidings	1851	767367
X	318m SW	Railway Sidings	1938	789578
X	318m SW	Railway Sidings	1928	789578
X	318m SW	Railway Sidings	1908	789578
Z	319m NE	Rope Walk	1851	641264
X	322m W	Railway Building	1956	727077
U	324m NW	Railway Station	1891	773134
X	324m W	Railway Building	1928	707123
X	324m SW	Railway Buildings	1908	681650
X	324m SW	Railway Building	1928	732407
X	324m SW	Cuttings	1928	731298
8	324m S	Unspecified Ground Workings	1891	648196
X	324m W	Railway Buildings	1908	681647
L	325m NW	Cuttings	1956	705879
L	327m W	Cuttings	1938	757141



ID	Location	Land Use	Date	Group ID
L	327m W	Cuttings	1891	757141
L	327m W	Cuttings	1928	757141
L	327m W	Cuttings	1908	757141
X	328m SW	Cuttings	1938	788819
X	328m SW	Cuttings	1908	769756
X	330m SW	Cuttings	1983	772665
X	330m SW	Cuttings	1956	753126
X	330m SW	Cuttings	1967	772665
X	332m W	Carriage Shed	1938	718586
X	332m W	Carriage Shed	1928	718586
X	333m SW	Railway Sidings	1956	727070
X	333m SW	Railway Sidings	1967	740950
AB	336m W	Sawmills	1938	696865
AB	336m W	Sawmills	1928	696865
U	339m NW	Railway Station	1983	753891
L	341m W	Cuttings	1851	703289
U	342m NW	Railway Sidings	1851	641526
O	344m E	Cuttings	1851	782827
O	345m E	Cuttings	1967	729213
AB	346m W	Railway Sidings	1956	740950
X	347m W	Railway Sidings	1969	740950
AB	347m W	Sawmills	1956	698663
AB	353m W	Unspecified Mills	1969	653118
AB	353m W	Timber Yard	1908	642780
O	359m E	Cuttings	1956	729213
X	359m W	Carriage Shed	1956	715340
X	361m W	Railway Building	1969	698481
X	361m W	Railway Building	1974	698481



ID	Location	Land Use	Date	Group ID
X	362m W	Railway Sidings	1980	696872
X	362m W	Railway Building	1980	729199
L	364m W	Cuttings	1980	748529
L	364m W	Cuttings	1969	748529
L	364m W	Cuttings	1974	748529
9	365m NW	Unspecified Ground Workings	1908	648129
AD	375m SW	Nursery	1955	752968
X	375m SW	Railway Sidings	1956	727070
AE	380m NE	Unspecified Mill	1938	727597
AE	380m NE	Unspecified Commercial/Industrial	1891	736006
AE	380m NE	Unspecified Mill	1928	727597
AE	380m NE	Unspecified Commercial/Industrial	1908	736006
AE	382m NE	Unspecified Works	1983	761901
AE	382m NE	Unspecified Works	1967	761901
AE	383m NE	Unspecified Mill	1956	718356
10	388m NW	Unspecified Pit	1891	691010
AG	395m NE	Tram Depot	1938	704547
AG	395m NE	Tram Depot	1928	704547
AG	397m NE	Unspecified Depot	1983	783304
AG	397m NE	Tram Depot	1956	724533
AG	397m NE	Unspecified Depot	1967	783304
X	406m W	Engine House	1851	676173
U	407m NW	Railway Building	1851	669852
O	409m E	Railway Building	1908	670228
AD	416m SW	Nursery	1938	784532
AD	416m SW	Nursery	1908	787770
X	417m SW	Railway Building	1891	670238
X	423m SW	Cuttings	1969	706843



ID	Location	Land Use	Date	Group ID
X	425m SW	Cuttings	1980	772664
X	425m SW	Cuttings	1974	772664
X	425m W	Railway Sidings	1974	696872
X	426m W	Railway Building	1928	670226
AD	429m SW	Nursery	1928	735774
AM	430m NE	Iron Works	1938	758785
AM	430m NE	Unspecified Commercial/Industrial	1891	705891
AM	430m NE	Iron Works	1928	758785
AM	430m NE	Unspecified Commercial/Industrial	1908	705891
AM	434m NE	Unspecified Works	1983	784523
AM	434m NE	Iron Works	1956	716018
AM	434m NE	Unspecified Works	1967	784523
AD	437m SW	Nurseries	1981	718272
AD	437m SW	Nurseries	1974	718272
AD	437m SW	Nurseries	1965	718272
AN	441m N	Unspecified Commercial/Industrial	1956	722632
AN	441m N	Unspecified Commercial/Industrial	1967	722632
AD	441m SW	Refuse Heap	1851	677985
11	443m W	Cuttings	1851	642633
AO	444m W	Unspecified Ground Workings	1956	780608
X	447m W	Railway Sidings	1851	740602
AO	449m W	Unspecified Ground Workings	1938	770525
AO	449m W	Unspecified Ground Workings	1928	770525
12	462m W	Unspecified Ground Workings	1908	648127
13	464m E	Pump	1851	675592
AQ	469m N	Railway Sidings	1956	749849
AQ	469m N	Railway Sidings	1967	749849
AQ	470m N	Railway Sidings	1938	752531



ID	Location	Land Use	Date	Group ID
AQ	470m N	Railway Sidings	1928	699340
AR	474m NW	Iron Foundry	1851	683056
AR	474m NW	Police Station	1967	680444
AQ	476m N	Railway Sidings	1908	764894
AQ	479m N	Railway Sidings	1891	759352
AQ	482m N	Railway Building	1908	779059
X	484m SW	Railway Building	1891	670237
AQ	485m N	Railway Building	1928	779059
AS	487m SW	Railway Sidings	1965	740950
AN	488m N	Railway Sidings	1851	777041
AS	490m SW	Railway Sidings	1991	696872
AS	490m SW	Railway Sidings	1988	696872
AS	490m SW	Railway Sidings	1977	696872
AS	492m SW	Railway Sidings	1955	727070
AQ	495m N	Railway Sidings	1851	759352

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

37

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 25**

ID	Location	Land Use	Date	Group ID
B	On site	Unspecified Tank	1957	100914
B	On site	Unspecified Tank	1957	100914
K	152m NW	Unspecified Tank	1891	99775
K	152m NW	Unspecified Tank	1891	99775
P	220m E	Unspecified Tank	1957	94380



ID	Location	Land Use	Date	Group ID
P	221m E	Unspecified Tank	1957	100583
Q	240m NE	Unspecified Tank	1891	102230
Q	240m NE	Unspecified Tank	1891	102230
S	260m NE	Unspecified Tank	1930	101735
S	260m NE	Unspecified Tank	1937	101735
L	299m NW	Unspecified Tank	1937	84748
O	386m E	Unspecified Tank	1957	95200
O	386m E	Unspecified Tank	1957	95200
AB	403m W	Unspecified Tank	1930	98102
AB	403m W	Unspecified Tank	1937	98102
AH	416m NE	Unspecified Tank	1973	101865
AH	417m NE	Unspecified Tank	1982	101865
AH	417m NE	Unspecified Tank	1982	101865
AH	417m NE	Unspecified Tank	1987	101865
AI	417m N	Unspecified Tank	1930	103985
AI	417m N	Unspecified Tank	1937	103985
AK	422m NW	Unspecified Tank	1957	90910
AK	422m NW	Unspecified Tank	1957	90910
AL	425m S	Unspecified Tank	1982	103422
AL	425m S	Unspecified Tank	1992	103422
AH	427m NE	Tanks	1973	87167
AH	431m NE	Unspecified Tank	1891	94993
AH	431m NE	Unspecified Tank	1891	94993
Z	454m NE	Unspecified Tank	1891	82565
X	480m SW	Unspecified Tank	1910	100168
X	480m SW	Unspecified Tank	1910	100168
AO	492m W	Unspecified Tank	1968	98588
AO	492m W	Unspecified Tank	1957	98588



ID	Location	Land Use	Date	Group ID
AO	492m W	Unspecified Tank	1957	98588
AP	497m NE	Unspecified Tank	1891	82566
AE	497m NE	Unspecified Tank	1891	102533
AE	498m NE	Unspecified Tank	1891	102533

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	32
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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 25**

ID	Location	Land Use	Date	Group ID
E	On site	Electricity Substation	1992	53258
E	On site	Electricity Substation	1992	53258
E	13m NE	Electricity Substation	1976	52205
E	13m NE	Electricity Substation	1981	52205
I	142m NE	Electricity Substation	1993	50919
I	142m NE	Electricity Substation	1998	50919
P	277m E	Electricity Substation	1981	55447
P	277m E	Electricity Substation	1976	55447
P	277m E	Electricity Substation	1992	55447
P	277m E	Electricity Substation	1992	55447
T	281m SW	Electricity Substation	1996	51172
T	281m SW	Electricity Substation	1994	51172
T	282m SW	Electricity Substation	1984	51172
T	282m SW	Electricity Substation	1980	51172
W	299m S	Electricity Substation	1982	56922
W	299m S	Electricity Substation	1992	56922



ID	Location	Land Use	Date	Group ID
AA	333m NE	Electricity Substation	1993	47160
AA	333m NE	Electricity Substation	1998	47160
AA	335m NE	Electricity Substation	1973	52184
AA	335m NE	Electricity Substation	1982	52184
AA	335m NE	Electricity Substation	1982	52184
AA	335m NE	Electricity Substation	1987	52184
X	348m SW	Electricity Substation	1996	56797
X	348m SW	Electricity Substation	1994	56797
AF	382m NE	Electricity Substation	1993	48594
AF	382m NE	Electricity Substation	1998	48594
AJ	417m NW	Electricity Substation	1992	47966
AJ	418m NW	Electricity Substation	1984	47966
AJ	418m NW	Electricity Substation	1973	47966
AP	458m NE	Electricity Substation	1998	45020
AT	493m S	Electricity Substation	1992	54358
AT	494m S	Electricity Substation	1982	54358

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 25**

ID	Location	Land Use	Date	Group ID
X	325m SW	Petroleum Spirit Store	1930	1412
X	325m SW	Petroleum Spirit Store	1930	1412

This data is sourced from Ordnance Survey / Groundsure.



2.5 Historical garages

Records within 500m

31

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 25**

ID	Location	Land Use	Date	Group ID
F	On site	Garage	1981	17318
F	On site	Garage	1976	17318
I	113m NE	Garage	1957	17408
I	114m NE	Garage	1957	16198
I	119m NE	Garage	1957	17408
I	126m NE	Garage	1992	18426
I	126m NE	Garage	1992	18426
I	126m NE	Garage	1981	18999
I	127m NE	Garage	1976	18999
M	146m NW	Garage	1957	18416
M	146m NW	Garage	1957	18416
AC	359m SW	Garage	1957	16795
AC	359m SW	Garage	1957	19868
AC	360m SW	Garage	1980	19868
X	360m W	Carriage Shed	1957	17959
X	360m W	Carriage Shed	1968	18561
X	360m W	Carriage Shed	1957	17959
X	360m W	Carriage Shed	1982	17959
X	361m W	Carriage Shed	1891	18091
X	361m W	Carriage Shed	1910	18091
X	361m W	Carriage Shed	1930	18091
X	361m W	Carriage Shed	1891	18091
X	361m W	Carriage Shed	1910	18091

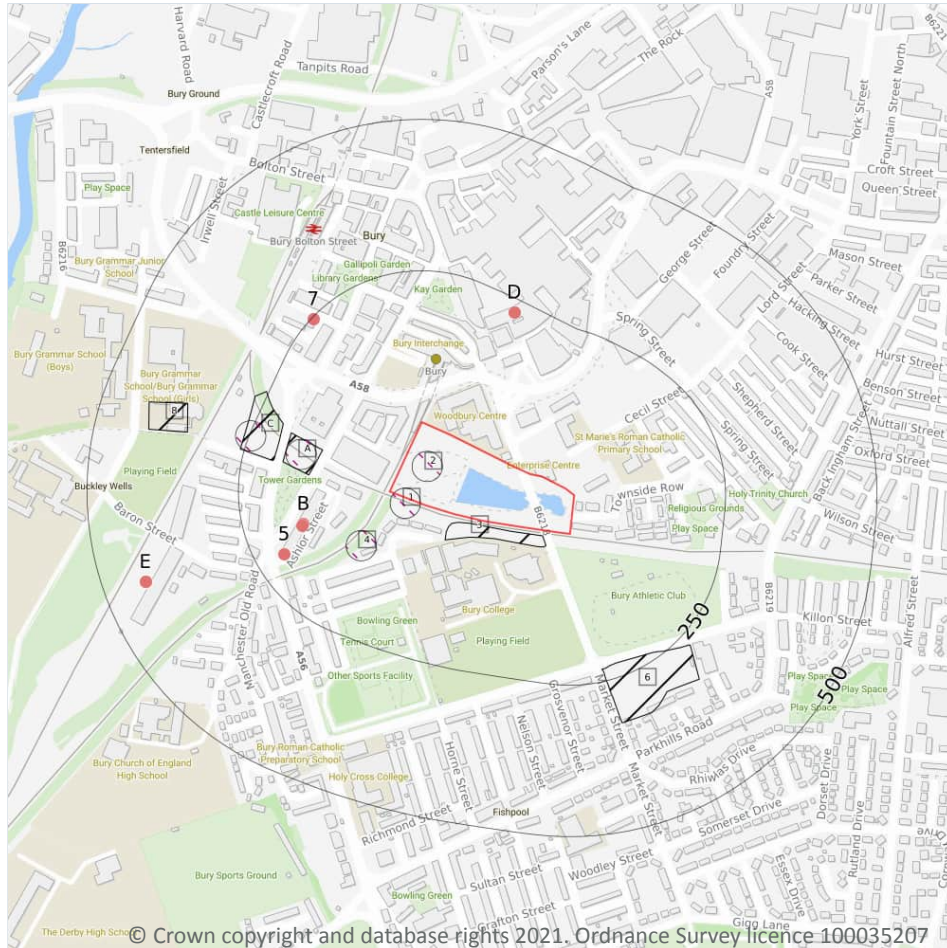


ID	Location	Land Use	Date	Group ID
X	361m W	Carriage Shed	1930	18091
X	361m W	Carriage Shed	1937	18091
X	362m W	Carriage Shed	1992	17959
AG	443m NE	Garage	1973	16462
AG	443m NE	Garage	1982	18635
AG	443m NE	Garage	1982	18635
AQ	482m N	Garage	1978	18125
AQ	482m N	Garage	1978	18125

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)
- 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 40**

ID	Location	Site address	Source	Data type
1	On site	Railway Cuttings	Historical Mapping	Point
2	On site	-	Historical Mapping	Point
4	76m SW	Railway Cuttings	Historical Mapping	Point
A	134m NW	Railway Cuttings	Historical Mapping	Point
C	222m W	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 40**

ID	Location	Details		
3	8m S	Site Address: Peel College, Greater Manchester Licence Holder Address: -	Waste Licence: - Site Reference: C087 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded - Last Recorded: -
A	129m NW	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



ID	Location	Details		
C	198m W	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
6	226m S	Site Address: Wellington Road, Bury, Greater Manchester Licence Holder Address: -	Waste Licence: - Site Reference: C085 Waste Type: Industrial, Commercial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: County Borough of Bury Licence Holder: - First Recorded 30/06/1971 Last Recorded: 31/10/1971
8	348m W	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

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

3.5 Historical waste sites

Records within 500m	0
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Waste site records derived from Local Authority planning records and high detail historical mapping.

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

12

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.

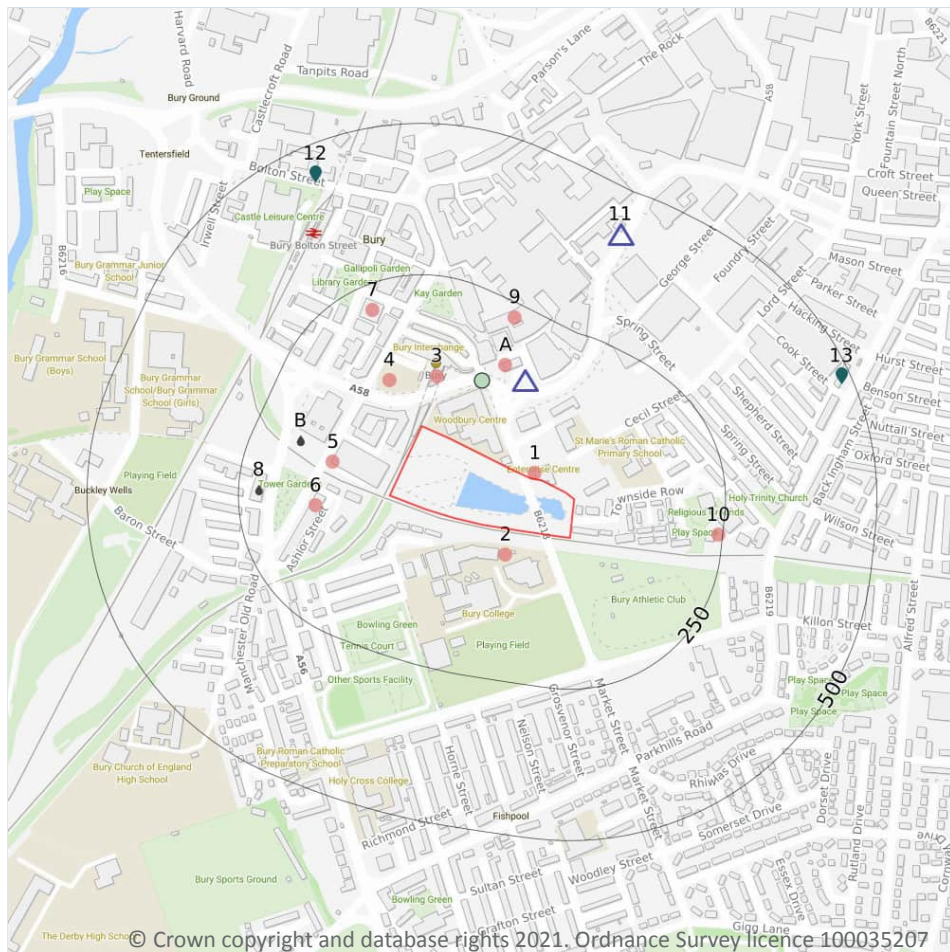
Features are displayed on the Waste and landfill map on **page 40**

ID	Location	Site	Reference	Category	Sub-Category	Description
B	153m W	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
B	156m W	-	WEX204196	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
5	203m SW	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
D	227m NE	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
D	227m NE	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
7	247m NW	3, ST. MARYS PLACE, BURY, BL9 0DZ	WEX096857	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
E	431m W	-	WEX142868	Storing waste exemption	Not on a farm	Storage of waste in secure containers
E	431m W	-	WEX142868	Using waste exemption	Not on a farm	Use of waste in construction
E	431m W	-	WEX142868	Using waste exemption	Not on a farm	Burning of waste as a fuel in a small appliance
E	431m W	-	WEX142868	Disposing of waste exemption	Not on a farm	Deposit of waste from a railway sanitary convenience
E	431m W	-	WEX142868	Treating waste exemption	Not on a farm	Screening and blending of waste
E	431m W	-	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
- 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

10

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 44**

ID	Location	Company	Address	Activity	Category
1	9m N	Enterprise Centre	Greater Manchester, BL9	Business Parks and Industrial Estates	Industrial Features
2	43m S	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities



ID	Location	Company	Address	Activity	Category
3	86m N	Bury (Manchester Metrolink)	Greater Manchester, BL9	Tram, Metro and Light Railway Stations and Stops	Public Transport, Stations and Infrastructure
4	93m NW	Mast (Telecommunication)	Greater Manchester, BL9	Telecommunications Features	Infrastructure and Facilities
5	108m NW	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
6	124m W	The Safety Consultancy	15, Knowsley Street, Bury, Greater Manchester, BL9 OST	Special Purpose Machinery and Equipment	Industrial Products
A	150m NE	Electricity Sub Station	Greater Manchester, BL9	Electrical Features	Infrastructure and Facilities
7	208m NW	Bury Archives Service	Moss Street, Bury, Greater Manchester, BL9 ODR	Container and Storage	Transport, Storage and Delivery
9	227m NE	Eggfree Cake Box	15, Princess Parade, Bury, Greater Manchester, BL9 OQL	Baking and Confectionery	Foodstuffs
10	243m E	Sawmill	Greater Manchester, BL9	Wood Products Including Charcoal, Paper, Card and Board	Industrial Products

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 44**

ID	Location	Company	Address	LPG	Status
A	141m NE	OBSOLETE	Angouleme Way, Bury, Greater Manchester, BL9 OBZ	Not Applicable	Obsolete
11	427m N	SAVE	Angouleme Way, Bury, Greater Manchester, BL9 OBZ	Not Applicable	Obsolete

This data is sourced from Experian.



4.3 Electricity cables

Records within 500m**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m**0**

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

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.

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

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

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

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

2

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 44**

ID	Location	Address	Details	
12	452m NW	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
13	485m NE	Bury Engine Centre, Cook Street, Bury, BL9 ORP	Process: Waste Oil Burner 0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

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

4

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 44**

ID	Location	Address	Details	
B	172m NW	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
B	172m NW	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
B	172m NW	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: -
8	217m W	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: -

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

2

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 44**

ID	Location	Details	
A	109m NE	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)
A	109m NE	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)

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

4.19 Pollution inventory substances

Records within 500m	0
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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
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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.

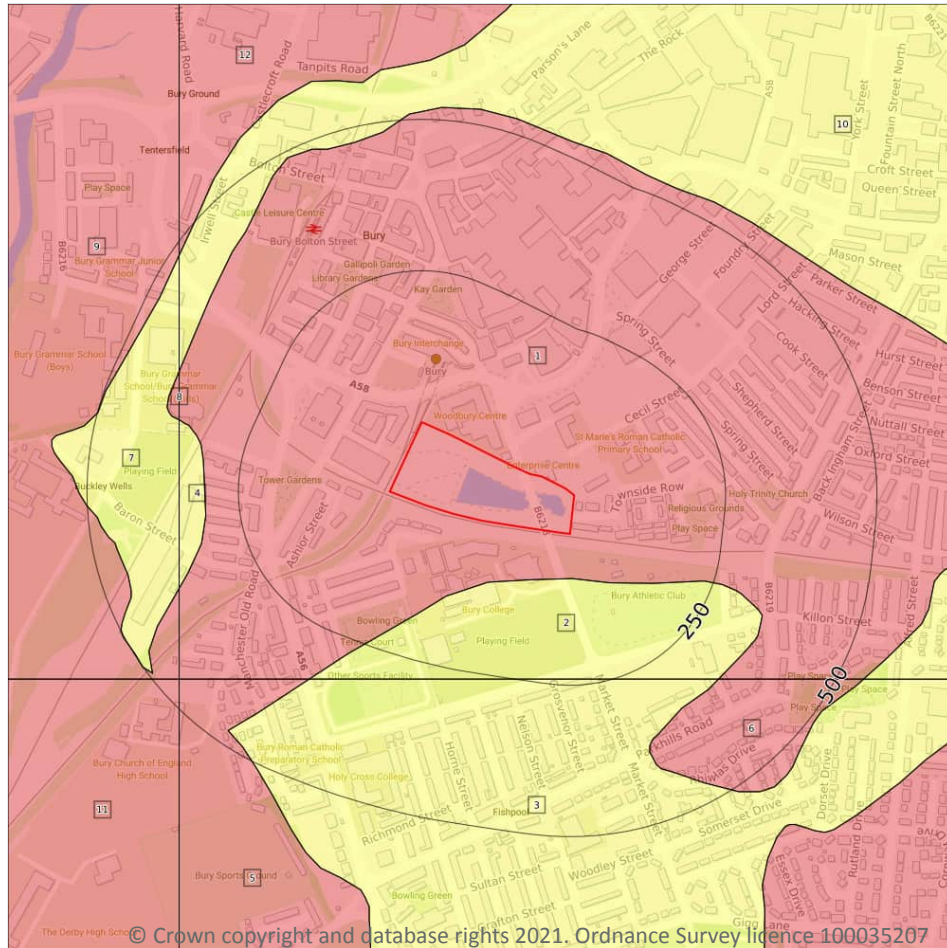
4.21 Pollution inventory radioactive waste

Records within 500m	0
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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

12

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 51**

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	74m 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

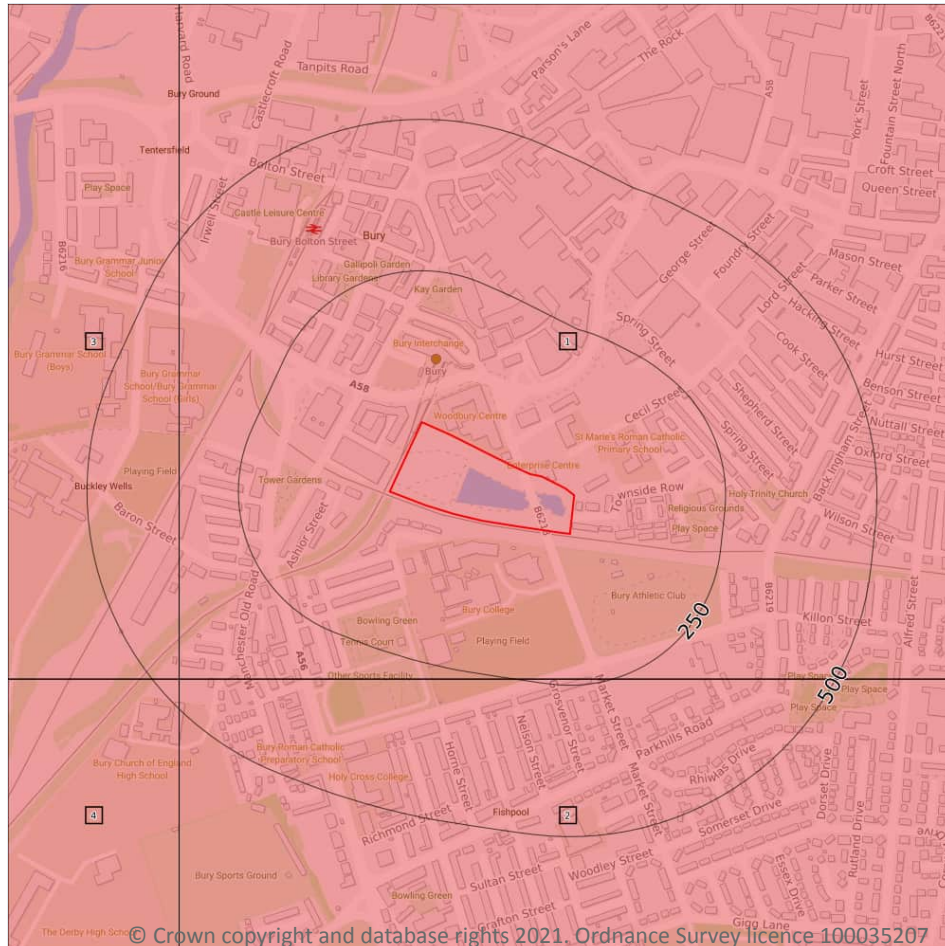


ID	Location	Designation	Description
3	240m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	305m 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	337m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
6	342m SE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
7	348m 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
8	367m 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
9	383m 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
10	399m NW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
11	466m 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
12	486m 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

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

4

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 53**

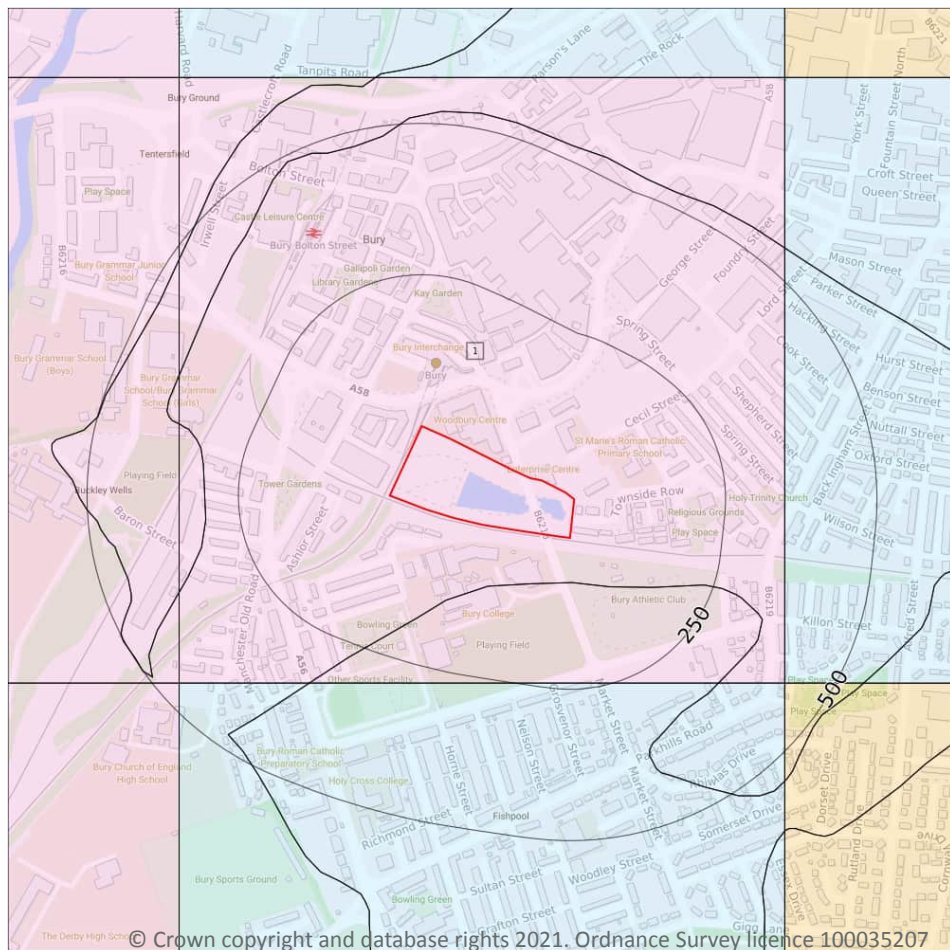
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	240m S	Secondary 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

ID	Location	Designation	Description
3	348m 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
4	466m 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

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



— Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m

1

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 55**

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

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
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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.

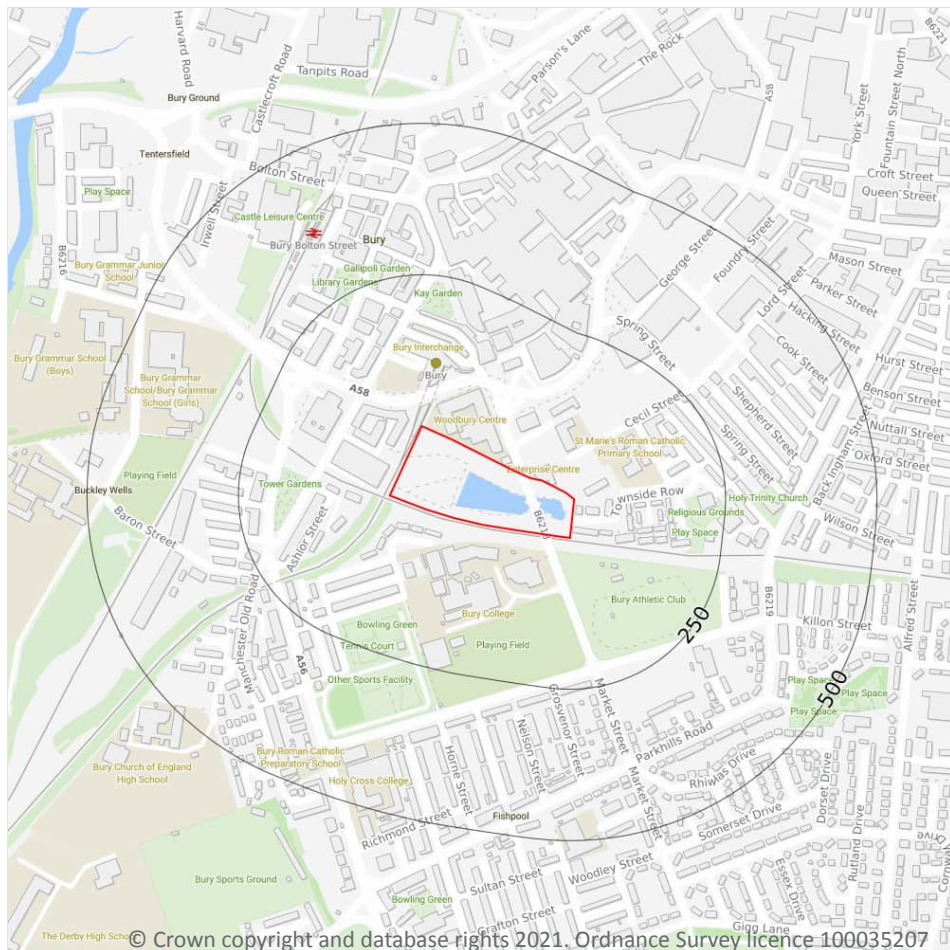
5.5 Groundwater vulnerability- local information

Records on site	0
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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

10

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 57**

ID	Location	Details	
-	1274m 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: -
-	1274m 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: -
-	1361m 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: -
-	1361m 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	
-	1403m 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: -
-	1403m 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: -
-	1650m E	Status: Historical Licence No: 2569002059 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: "WELL AT SPOUT BANK FARM, HEAP BRIDGEBURY, LANCASHIRE" Data Type: Point Name: FISH Easting: 382300 Northing: 410200	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: -
-	1650m E	Status: Historical Licence No: 2569002059 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: WELL AT SPOUT BANK FARM, HEAP BRIDGEBURY, LANCASHIRE Data Type: Point Name: FISH Easting: 382300 Northing: 410200	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	
-	1855m SE	Status: Historical Licence No: 2569002272 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, PILSWORTH, BURY" Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -
-	1855m SE	Status: Historical Licence No: 2569002272 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, PILSWORTH, BURY Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -

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

5.7 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 57**

ID	Location	Details	
-	744m NW	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: -



ID	Location	Details	
-	744m NW	Status: Active 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: -
-	1008m 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: -
-	1008m 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: -
-	1055m 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: -
-	1403m 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: -



ID	Location	Details	
-	1403m 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: -
-	1403m 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: -
-	1403m 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: -
-	1491m SW	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: - Original Start Date: 20/12/2010 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2019 Version End Date: -
-	1536m 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: -



ID	Location	Details	
-	1536m 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: -
-	1536m 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: -
-	1536m 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: -
-	1636m 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	
-	1636m 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: -
-	1636m 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: -
-	1636m 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: -
-	1636m 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: -
-	1636m 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	
-	1694m NW	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 (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 10/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 25/02/1975 Version End Date: -
-	1879m 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 (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/01/1975 Version End Date: -
-	1879m 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 (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 07/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 03/01/1975 Version End Date: -
-	1879m 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 (m³): - Max Daily Volume (m³): - 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	
-	1879m 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: -
-	1904m SW	Status: Historical Licence No: 2569004054 Details: Process water Direct Source: "Surface, Non-Tidal - North West Region" Point: "THE MANCHESTER, BOLTON AND BURY CANAL AT BANK TOP, BURY" Data Type: Point Name: BRITISH WATERWAYS Easting: 379200 Northing: 408790	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 04/12/1998 Version End Date: -
-	1904m SW	Status: Historical Licence No: 2569004054 Details: Process water Direct Source: Surface, Non-Tidal - North West Region Point: THE MANCHESTER, BOLTON AND BURY CANAL AT BANK TOP, BURY Data Type: Point Name: BRITISH WATERWAYS BOARD Easting: 379200 Northing: 408790	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/04/1969 Expiry Date: - Issue No: 100 Version Start Date: 04/12/1998 Version End Date: -
-	1918m E	Status: Active Licence No: NW/069/0002/002 Details: Hydroelectric Power Generation Direct Source: Surface, Non-Tidal - North West Region Point: RIVER ROCH AT HEAP BRIDGE WEIR Data Type: Point Name: Brother Investments Ltd Easting: 382536 Northing: 410666	Annual Volume (m ³): 76,032,000 Max Daily Volume (m ³): 345,600 Original Application No: - Original Start Date: 17/09/2010 Expiry Date: 31/03/2026 Issue No: 2 Version Start Date: 18/09/2015 Version End Date: -

ID	Location	Details	
-	1939m 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: -
-	1972m 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: -

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

5.8 Potable abstractions

Records within 2000m

2

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 57**

ID	Location	Details	
-	1855m SE	Status: Historical Licence No: 2569002272 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, PILSWORTH, BURY" Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -



ID	Location	Details	
-	1855m SE	Status: Historical Licence No: 2569002272 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, PILSWORTH, BURY Data Type: Point Name: CASTLEBROOK WATER CO. LTD Easting: 381680 Northing: 408700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 10/04/2000 Expiry Date: - Issue No: 3 Version Start Date: 10/09/2002 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m	0
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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.

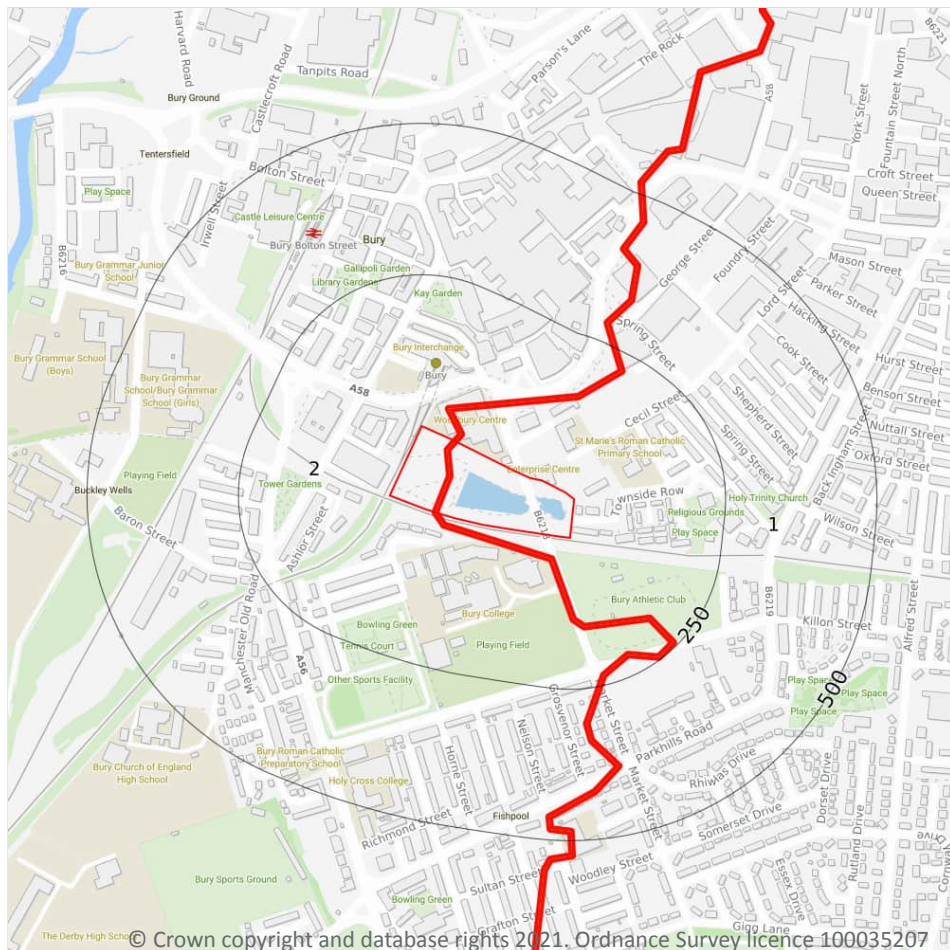
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0
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Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

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

6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

0

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

1

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.



Features are displayed on the Hydrology map on **page 69**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	2
------------------------	----------

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 69**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River	Roch (Spodden to Irwell)	GB112069064600	Roch Irk Medlock	Irwell
2	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	2
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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 69**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	706m W	River	Irwell (Rossendale STW to Roch)	GB112069064620	Moderate	Fail	Moderate	2019
-	777m E	River	Roch (Spodden to Irwell)	GB112069064600	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 69**

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

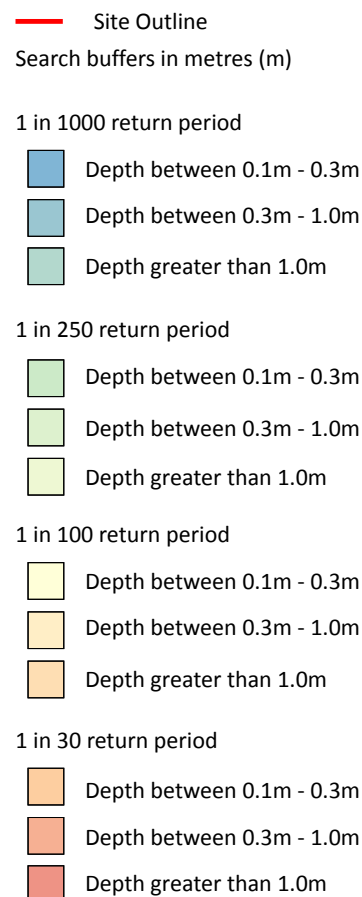
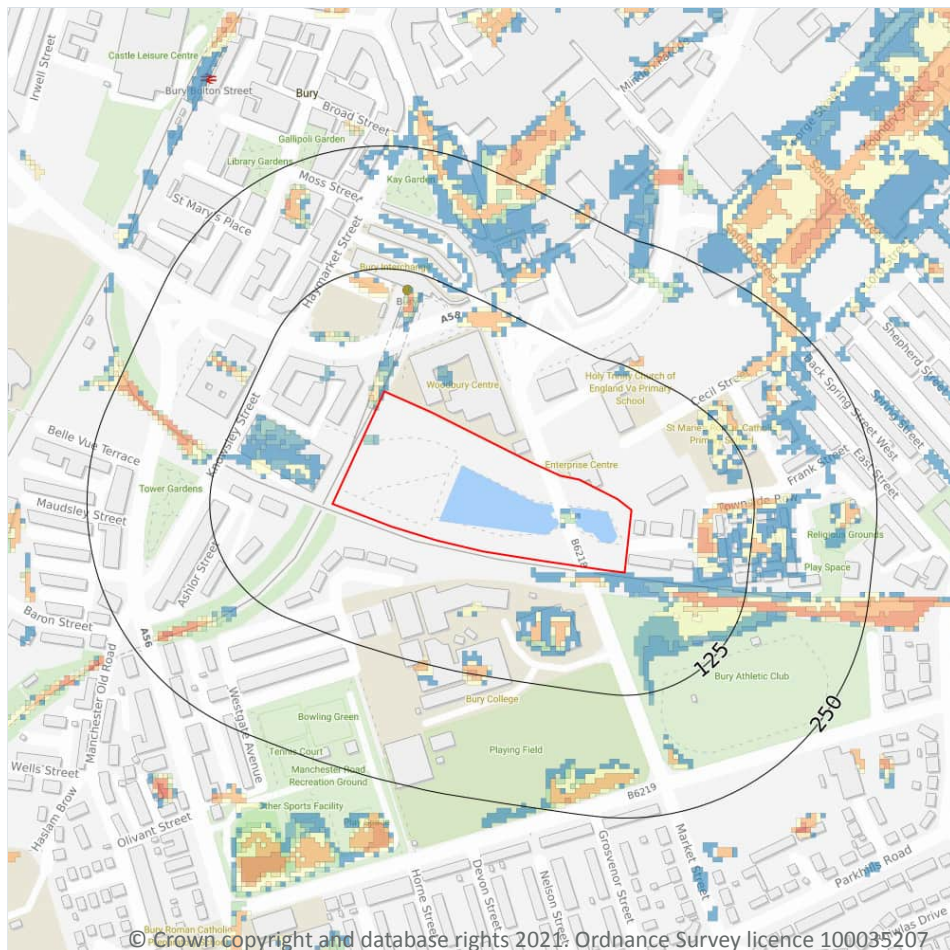
0

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



8.1 Surface water flooding

Highest risk on site

1 in 100 year, 0.1m - 0.3m

Highest risk within 50m

1 in 30 year, 0.1m - 0.3m

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 75**

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

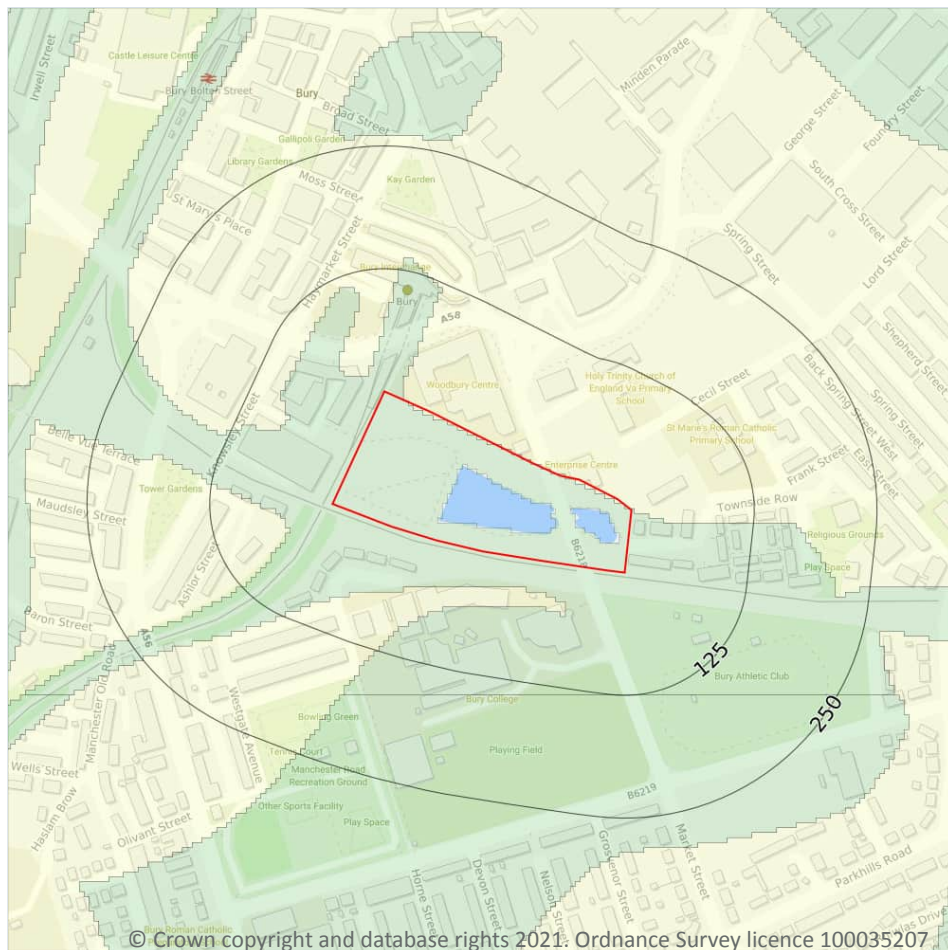
a site. The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

Highest risk on site

Moderate

Highest risk within 50m

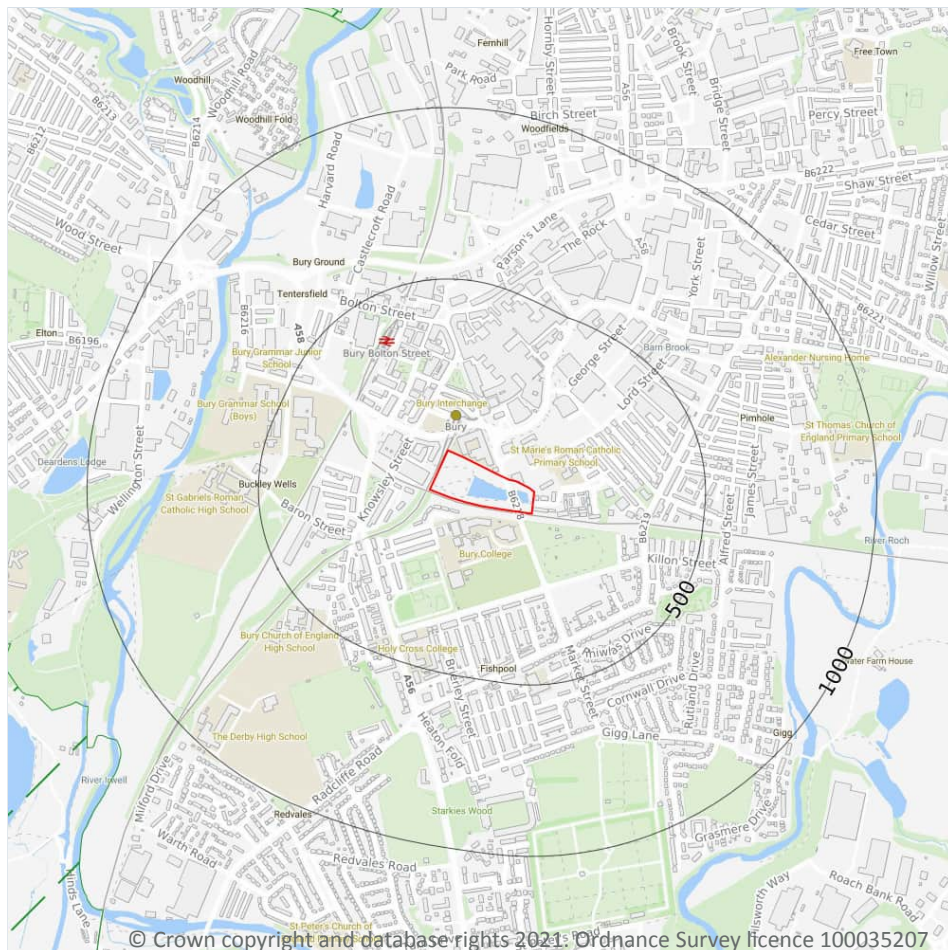
Moderate

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 77**

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.

