CCG-C-23-13856

PHASE I GEOENVIRONMENTAL REPORT FOR LAND AT NO. 39 – 41 RICHMOND STREET MANCHESTER M1 3WB

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1.0 INTRODUCTION

CC GEOTECHNICAL LIMITED (***CCG***) is providing consultancy services to ***Mason and Marlow*** (the *Client*) in connection with the proposed redevelopment of a parcel of land at 39 – 41 Richmond Street, Manchester, M1 3WB.

Following the demolition of an existing building and subsequent site clearance works, it is understood that the site is to be redeveloped for residential use by the construction of a 4-storey apartment block, forming 4nr self-contained apartments.

The existing and proposed site layouts are shown on ***Mason and Marlow*** architectural drawings contained herein.

The proposed development falls within the administrative jurisdiction of ***MANCHESTER CITY COUNCIL***.

This Phase I report was devised to generally comply with the relevant principles and requirements of a wide range of guidance including BS5930:1999 as amended 2007: "*Code of Practice for Site Investigations*", BS10175: 2011 "*Investigation of Potentially Contaminated Sites - Code of Practice*", and the DEFRA/Environment Agency Report CLR11 "*Model Procedures for the Management of Land Contamination*".

This report should be read in conjunction with the Notes on Limitations, given in Appendix B.

2.0 PURPOSE & AIMS OF THE STUDY

The primary aim of the Phase I Desk Study was to assess whether the site is likely to be affected by contamination to an extent that it may pose a risk to human health and/or the built environment and/or the wider natural environment or is affected by any other natural or man-made features which may impact on the proposed redevelopment.

Specific tasks undertaken to achieve these objectives were as follows:

- Undertaking of a review of available historical mapping, environmental databases, and Environment Agency data
- Undertaking of a site walkover inspection
- Development of Preliminary Conceptual Model
- Development of a Phase 2 intrusive investigation strategy

3.0 SITE DATA

3.1 Site Location

The site is located immediately to the south of Richmond Street, M1 3WB as illustrated on ***CCG*** Drawing No. CCG-C-23-13856-1 and Aerial Plate No. CCG-C-23-13856-2 contained herein.

The ***ORDNANCE SURVEY*** coordinates for the approximate site centre are 384338 397827.

3.2 Site Description & Walkover Observations

The site was visited during April 2023 on completion of a review of relevant historical and environmental mapping data (provided in Appendix D). Photographs taken at the time of the site visit are presented in Appendix E.

The site is situated predominantly within the commercial sector of Manchester. It comprises a rectangular shaped parcel of land which extends to the approximate dimensions of c. 10m x 8m; its long axis being on a northwest – southeast alignment.

It is bound to the north by public pavements extending along Richmond Street, and to the east by a small hard paved car parking facility. Its remaining boundaries are adjoined by developments of commercial buildings fronting on to Richmond Street and Canal Street respectively.

Structures occupying the study site comprise a 2-storey commercial building (Vanilla), constructed in painted traditional brick elevations under pitched roofing materials. It was observed that this building occupies the full footprint of the study site.

The surface topography along Richmond Street and within the small car parking facility immediately adjacent the northeastern section of the site was seen to be sensibly flat with surface cover comprising a combination of concrete block and black bituminous paving.

Given that the site and its immediate environs are currently developed for mixed commercial land uses, it is assumed that buried services associated with these properties may extend beneath the site.

Vehicle and pedestrian access can be made via Richmond Street to the north.

The information obtained from the visit is summarised in Table 1 hereunder.

Table 1: Summary of Walkover Observations

FEATURE	OBSERVATION
Current Use of Land	Developed for commercial land use
Context	Commercial
Topography / Surfaces	The surface topography along Richmond Street and within the small car parking facility immediately adjacent the northeastern section of the site was seen to be sensibly flat with surface cover comprising a combination of concrete block and black bituminous paving.
Dimensions	c. 10m x 8n; its long axis being on a northwest – southeast alignment
Access	Vehicle and pedestrian access can be made via Richmond Street to the north.
Buildings Adjacent to the Site	Commercial / light industrial
Services	Given that the site and its immediate environs are currently developed for mixed commercial land uses, it is assumed that buried services associated with these properties may extend beneath the site.
Material storage	None observed
Waste disposal	None observed
Other potential contamination	Hydrocarbons associated with adjacent car parking facilities
Ecology*	None observed

**These comments on the ecology are for initial preliminary assessment only and are based on observations undertaken by a person who is a trained ecologist but who has not undertaken a comprehensive Phase I Habitat Survey or similar.*

Based on the above site observations, there is a potential for the presence of contamination associated with the historic development of the site and its immediate surroundings.

4.0 SITE HISTORY

The history of the site and its immediate surrounds was investigated by consultation with a range of archive resources. Geographical information, historical mapping and environmental data were primarily based on a GroundSure Reports (CMAPS-AAG-1097625-4165-120423) dated April 2023 presented in Appendix D.

A summary of the historical mapping data is given hereunder:

Table 2: Historical Map Review

YEAR	SCALE	ON SITE	ADJACENT TO SITE	<250M
1848 1851 1891	1:10,560 1:1,056 1:500	2nr terraced residential properties delineating Richmond Street to the NW	NE/SW: Terraced residential properties delineating Richmond Street to the NW SE: Unspecified properties delineating Canal Street to the SE	Much of the land surrounding the site is developed for mixed residential and commercial / industrial land use c.5m SE: Warehouse c.15m S: Smithy c.40m SE: Rochdale Canal adjacent Ashlar Stone and Flag Wharfs, Engine House and Coal Wharf to the SE c.60m N: The Copper and Zine Packing Manufacturing Company c.75m E: Machine Manufactory with associated Chimneys, Tram Road and Weighing Machine c.80m NE: Road and Street Cleansing Company Yard c.80m NW: Coal Yard c.100m SE: Slate Wharf c.120m N: Timber Yard c.140m NW: Victoria File Works, adjacent Plush Manufactory to the SW and Button Manufactory to the NE with associated Reservoirs to the SE c.140m SW: Union Iron Works c.150m NE: Timber Yard, adjacent Charlton Street Iron Works to the E c.180m NW: Silver Street Mill (Cotton)
1889-93 1890-94 1891-96 1905-06	1:2,500 1:10,560 1:10,560 1:10,560	No significant change	No significant change	c.150m SW: Eagle Foundry (Iron) c.240m SW: Old Garratt Dye Works c.250m SE: Railway Viaduct recognised
1908 1922	1:2,500 1:2,500	No significant change	No significant change	c.110m SW: Tramway established along Princess Street

1923 1923 1923	1:10,560 1:10,560 1:10,560			c.110m S: Tramway established along Whitworth Street c.170m NW: Tramway established along Portland Street c.170m SW: Electricity Station c.220m E: Ice Works recognised
1932 1931-34 1938 1938	1:2,500 1:10,560 1:10,560 1:10,560	No significant change	No significant change	c.210m E: Road layout changes, including Aytoun Street with Tramway extending to the N
1948 1950-54 1954-55 1956	1:1,250 1:2,500 1:2,500 1:10,560	No significant change	NE/SW: Terraced residential properties no longer recognised [vacant land]	No Tramways are recognised on the land surrounding the site c.50m N: Much of the land from 50m N of the site is vacant land c.150m S: Country Garage recognised c.240m N: Ruin c.240m NE: Garage recognised
1960-64 1965 1969-70 1972 1980-81 1985 1984-86 1988-91 1990-92 1994 1994 1994 1992-95 1990-95 2001	1:1,250 1:2,500 1:2,500 1:10,000 1:10,000 1:10,000 1:1,250 1:10,000 1:1,250 1:1,250 1:1,250 1:10,000 1:1,250 1:1,250 1:10,000	No significant change	No significant change	c.50m N: Omnibus Station c.50m NW: Car Parks
2003 2010 2023	1:1,250 1:10,000 1:10,000	No significant change	SW: Unspecified properties, extending to the SW	No significant change

5.0 ENVIRONMENTAL SETTING

5.1 Documented Geology

The geology of the site was researched by reference to Crofts R.G *et.al* (2012) '*Geology of the Manchester district: a brief explanation of the geological map Sheet 85 Manchester (England and Wales)*' ***British Geological Survey,*** Keyworth, Nottingham, and the ***British Geological Survey*** (BGS) 1:50, 000 scale Sheet 085 Manchester (2010 - 2011), and 1:10, 000 scale (Solid and Drift Editions) geological mapping data.

The ***BGS*** 1:10, 000 Scale Drift Geological map indicate that the study site is underlain by artificial made ground deposits of an unknown composition thickness and extent, overlying natural drift deposits comprising impermeable diamicton (boulder clay) comprising gravel sand silt and clay deposits of glacial origin (*Pleistocene Epoch - Late Quaternary - Devensian Sub Age*).

The solid geology is documented to comprise the Chester Formation (*formerly Chester Pebble Beds Formation*) of the Sherwood Sandstone Group comprising red – brown horizontally-bedded conglomerate with subordinate lenticular beds of trough cross-bedded pebbly sand with localised argillaceous mudstone bedding of the Early Triassic Period (*Olenekian Age*).

The nearest geological line of weakness (fault, inferred), extending on a northwest – southeast alignment, lies c. 47m southwest of the study site.

The '*Indicative Atlas of Radon in England and Wales*' (Miles. J.C.H *et.al*, 2007) Map 13 '*Northern Welsh Marches and Liverpool',* shows the site to be situated within an area where it is believed that less than 1% of the properties within the area are affected by Radon and therefore Basic Radon Protection Measures will be required for new structures in contact with the ground.

Geological Information obtained from the GroundSure Environmental Report is presented in Appendix D, and summarised hereunder:

Table 3: Summary of Geological Data from GroundSure Report

GEOLOGY		
Data	**Distance**	**Comments**
Artificial Ground	On Site	Artificial ground and/or reworked ground deposits associated with the development of the site & its immediate surroundings.
Superficial Deposits / Drift Geology	On Site	Diamicton of glacial origin
Permeability of Drift Cover	Maximum Permeability	High
	Minimum Permeability	Low
Bedrock and Solid Geology	On Site	Chester Formation
Permeability of Bedrock: On Site	Maximum Permeability	High
	Minimum Permeability	Moderate
Geological Lines of Weakness	On Site	No records
	<250m	None
Radon Affected Area	On Site	Less than 1% of properties
Radon Protection	On Site	No Radon Protection Measured required
MINING, GROUNDWORKINGS AND NATURAL CAVITIES		
Data	**Distance**	**Comments**
Natural cavities	<500m	No records
BritPits	<500m	No records
Surface ground workings	<250m	19-21m SE: Canal 24m SE: Canal 115m NE: Ponds 147m E: Unspecified Wharf 174m NE: Unspecified Wharf 242m E: Unspecified Ground Workings
Underground workings	<1000m	No records
Historical Mineral Planning Areas	<500m	No records
Non-coal mining	<500m	No records
Mining cavities	<1000m	914m SE: Manchester. Mineral: Fireston, Hearthstone, Honestone, Ragstone, Sandstone, Scythestone, Silver Sand, Whetstone
Coal mining	On Site	The site is located within a coal mining area as defined by the Coal Authority
Brine areas	On Site	No records
Gypsum areas	On Site	No records
Tin mining	On Site	No records
Clay mining	On Site	No records

HAZARDS		
Data	**Distance**	**Comments**
Maximum shrink swell clays	On site	Very Low
Maximum running sands	On site	Very Low
Maximum compressible deposits	On site	Very Low
Maximum collapsible deposits	On site	Very Low
Maximum landslides	On site	Very Low
Maximum ground dissolution of soluble rocks	On site	Negligible

5.2 Historical Coal Mining

The appended environmental data, ***BGS*** mapping data confirms that the site is not located within an area where it is believed to be underlain by coal bearing strata which may have been worked in the past. Hence, a Coal Mine Risk Assessment Report is not required.

5.3 Hydrology and Hydrogeology

Information on hydrology and hydrogeology obtained from a GroundSure Environmental Report is presented in Appendix D, and summarised hereunder:

Table 5: Summary of Hydrology and Hydrogeological Data from GroundSure Environmental Report

HYDROGEOLOGY AND HYDROLOGY		
Aquifer in Made Ground Deposits	On site	**Made Ground: Unproductive**: Likely to be generally granular and permeable and will permit vertical and lateral transmission of groundwater.
Aquifer within Superficial Drift Deposits	On site	**Diamicton: Secondary Undifferentiated:** These are drift deposits with low permeability that have negligible significance for water supply or river base flow
Aquifer within Bedrock Deposits	On site	**Chester Formation - Principal:** Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
Groundwater Abstraction Licenses	<1000m	96m SE: West Contracting. Licence No: NW/069/0006/001 288m NW: British Telecom. Licence No: 2569007069 747m S: Manchester Metropolitan University. Licence No: NW/069/0006/003 940m E: Moseley Rubber Co Ltd. Licence No: 2569006001
Surface Water Abstraction Licenses	<1000m	No Records

Potable Water Abstraction Licences	<1000m	No records
Source Protection Zones	<500m	485m SW: Type: 3 [Total catchment]
Source Protection Zones (confined aquifer)	<500m	No records
Water Network (OS Mastermap)	<250m	25m SE: Canal 38m S: Canal 38m S: Inland river not influenced by normal tidal action 122m SE: Inland river not influenced by normal tidal action 242m S: Inland river not influenced by normal tidal action
Surface water features	<250m	6nr surface water features within 250m of the study site
WFD Surface water body catchments	On Site	On Site: Medlock (Lumb Brook to Irwell). Operational catchment: Roch Irk Medlock
WFD Surface water bodies	<250m	18m SE: Rochdale Canal. Overall rating: Moderate [2019]
WFD Groundwater bodies	<250m	On Site: Manchester and East Cheshire Permo-Triassic Sandstone Aquifers. Overall rating: Poor [2019]
FLOODING		
Risk of Flooding from Rivers and Sea (RoFRaS)	<50m	No records
Historical Flood Events	<250m	No records
Flood Defences	<250m	No records
Areas Benefitting from Flood Defences	<250m	No records
Flood Storage Areas	<250m	No records
Flood Zone 2	<50m	No records
Flood Zone 3	<50m	No records
Surface water flooding: Highest risk	On Site	Negligible
	<50m	1 in 100 year, 0.3m – 1.0m
Groundwater flooding: Highest risk	On Site	Moderate
	<50m	Moderate - High

For simplified interpretation, the geological succession underlying the site may be regarded as a series of discrete units in terms of their hydrogeological significance, as illustrated hereunder:

Table 6: Hydrogeological Interpretation

UNIT	PROPERTIES	HYDROGEOLOGICAL DESIGNATION
Made / Reworked Ground	If present, likely to be generally granular and permeable and will permit vertical and lateral transmission of groundwater.	Unproductive Aquifer
Diamicton	These are drift deposits with low permeability that have negligible significance for water supply or river base flow	Secondary Undifferentiated
Chester Formation	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers	Principal

6.0 FURTHER ENVIRONMENTAL DATA

Environmental data was researched using several sources including Environment Agency Maps and GroundSure Envirosight Report presented in Appendix D and is summarised hereunder in Table 6. This environmental data has been used to carry out a Preliminary Qualitative Risk Assessment (Tier 1) and formulate the preliminary conceptual model as discussed in Section 8.0 of this report.

Table 7: Summary of Environmental Data

POTENTIALLY CONTAMINATIVE USES IDENTIFIED FROM 1:10,000 SCALE MAPPING		
Data	**Distance**	**Comments**
Historical industrial land uses	<250m	48m N: Bus Station [1978-94] 147m E: Unspecified Wharf [1890] 151m E: Ice Works [1915] 168m S: Unspecified Mills [1916-38] 168m S: Unspecified Commercial / Industrial [1905-23] 174m NE: Unspecified Wharf [1915-23] 187m E: Unspecified Works [1923] 203m W: Electricity Station [1916-23] 214m SE: Unspecified Commercial / Industrial [1923] 226m SE: Unspecified Commercial / Industrial [1923] 235m E: Unspecified Mill [1915-23] 242m E: Unspecified Ground Workings [1934-38] 244m E: Police Station [1978-94] 249m NE: Unspecified Works [1915-23]
Historical tanks	<250m	209m S: Unspecified Tank [1891] 209m SW: Unspecified Tank [1891] 214m SW: Unspecified Tank [1891] 216-17m S: Tanks / Unspecified Tanks [1891-93] 218m NE: Unspecified Tank [1891] 219-20m S: Unspecified Tank [1891-93] 225m S: Unspecified Tank [1891] 233m NE: Unspecified Tank [1891]

		233m S: Unspecified Tank [1891] 236m S: Tanks [1891] 239m S: Unspecified Tank [1891]
Historical energy features	<250m	151-52m SW: Electric Station [1948-55] 158m SW: Electric Station [1908-22] 202m W: Electric Station [1950-55]
Historical petrol stations	<250m	No records
Historical garages	<250m	142m SE: Garage [1948-90] 230-31: Garage [1955-84] 244-45m NW: Garage [1948-65]
Historical military land	<250m	No records
Records of Current Industrial Land Use		
Data	**Distance**	**Comments**
Recent industrial land uses	<200m	59m S: Landing Stage [Moorings and Unloading Facilities] 78m NE: Sports Fashion Distribution UK Ltd [Distribution and Haulage] 86m N: Coach Station [Bus and Coach Stations, Depots and Companies] 102m E: Electric Sub-Station [Electrical Features] 136m E: United Global [Distribution and Haulage] 137m N: Broome & Wellington [Medical Equipment, Supplies and Pharmaceuticals] 137m N: Newso Insider Ltd [Published Goods] 141m N: Cundall [Civil Engineers] 141m N: Medusa 19 Ltd [Colours, Chemicals and Water Softeners and Supplies] 141m NW: Leaflet Distribution Manchester [Distribution and Haulage] 142m NW: Scrap a Car Manchester [Scrap Metal Merchants] 142m NW: Rina [Civil Engineers] 170m NE: Landing Stage [Moorings and Unloading Facilities] 188m SW: Electric Sub-Station [Electrical Features] 192m NW: China House [Sand, Gravel and Clay Extraction and Merchants] 203m W: Enviro Response [Civil Engineers] 206m N: Print Chain [Published Goods] 215m NW: Vina Karaoke Bar [Electronic Equipment] 220m NW: Hon Kong Printing Co Ltd [Published Goods] 223m W: Storebox [Container and Storage] 233m NW: Scrap That Car [Scrap Metal Merchants] 234m N: Mistral Group [New Vehicles]
Current or recent petrol stations	<250m	No records
Electricity cables	<250m	No records
Gas pipelines	<250m	No records
Sites determined as Contaminated Land	<250m	No records
Control of Major Accident Hazards (COMAH)	<250m	No records
Regulated explosive sites	<250m	No records
Hazardous substance storage/usage	<250m	No records
Historical licensed industrial activities (IPC)	<250m	No records
Licenced industrial activities (Part A(1))	<250m	No records
Licensed pollutant release (Part A(2)/B)	<250m	No records
Radioactive Substance Authorisations	<250m	No records
Licensed Discharges to controlled waters	<250m	82m S: GSHP Serving Origin Development. Effluent Type: Trade Discharges – Cooling Water 99m SW: GSHP Serving Origin Development. Effluent Type: Trade Discharges – Cooling Water 157m E: Chorlton Street. Effluent Type: Sewage Discharges – Sewer Storm Overflow – Water Company 165m SE: Chorlton Street. Effluent Type: Sewage Discharges – Sewer Storm Overflow – Water Company 239m E: Minshull Street / Whitworth Street. Effluent Type: Sewage Discharges – Sewer Storm Overflow – Water Company 241m E: Aytoun Street. Effluent Type: Sewage Discharges – Sewer Storm Overflow – Water Company
Pollutant release to surface waters (Red list)	<250m	No records
Pollutant release to public sewer	<250m	No records
List 1 Dangerous Substances	<250m	No records
List 2 Dangerous Substances	<250m	No records
Pollution Incidents (EA/NRW)	<250m	No records
Pollution inventory substances	<250m	No records
Pollution inventory waste transfers	<250m	No records
Pollution inventory radioactive waste	<250m	No records
WASTE AND LANDFILL		
Data	**Distance**	**Comments**
Active or recent landfill	<500m	No records
Historical landfill (BGS records)	<500m	No records
Historical landfill (LA/mapping records)	<500m	No records
Historical landfill (EA/NRW records]	<500m	No records
Historical waste sites	<500m	No records
Licensed waste sites	<500m	No records

Waste exemptions	<500m	259m SW: Linear Network: Mainline Railway Between Manchester Airport and Barrow-in-Furness [Disposing of waste exemption] 261m SW: Bridgewater House [Disposing of waste exemption] 353m E: Michael Smith Building [Treating waste exemption] 367m W: New Build Construction Works by Russells [Using / Treating waste exemptions] 436m S: N/A [Treating waste exemption] 490m NW: 11 York Street [Using / Treating waste exemption]
ENVIRONMENTAL DESIGNATIONS		
Data	**Distance**	**Comments**
Sites of Special Scientific Interest (SSSI)	<500m	None
Conserved wetland sites (Ramsar sites)	<500m	None
Special Areas of Conservation (SAC)	<500m	None
Special Protection Areas (SPA)	<500m	None
National Nature Reserves (NNR)	<500m	None
Local Nature Reserves (LNR)	<500m	None
Designated Ancient Woodland	<500m	None
Biosphere Reserves	<500m	None
Forest Parks	<500m	None
Marine Conservation Zones	<500m	None
Green Belt	<500m	None
Proposed Ramsar sites	<500m	None
Possible Special Areas of Conservation (PSAC)	<500m	None
Potential Special Protection Areas (pSPA)	<500m	None
Nitrate Sensitive Areas	<500m	None
Nitrate Vulnerable Zones	<500m	None

7.0 PREVIOUS SITE INVESTIGATIONS / REPORTS

Searches and consultations have not established evidence that previous ground investigation works have been undertaken on this site.

8.0 PRELIMINARY QUALITATIVE RISK ASSESSMENT (TIER 1)

8.1 Introduction

Based on the foregoing study, there is a low potential for the presence of contamination associated with the historic developments within and/or immediately adjoining the study site of the site, and previous land uses and hence a preliminary risk assessment was undertaken.

The risk assessment methodologies adopted by ***CCG*** are based on current available guidance from several sources and are included in Appendix D.

The Tier 1 Risk Assessment and Preliminary Conceptual Model (PCM) were formulated using the information discussed above and based on the following assumptions:

- Following the demolition of an existing building and subsequent site clearance works, it is understood that the site is to be redeveloped for residential use by the construction of a 4-storey apartment block, forming 4nr self-contained apartments

  The existing and proposed site layouts are shown on ***Mason and Marlow*** architectural drawings contained herein.

- Drinking water will be from a mains supply.

In constructing the Preliminary Conceptual Model (PCM)***, CCG*** applied the guidance contained in CIRIA C552: 2001. This recommends use of a Risk Matrix which classifies risk based on the product of Probability of a source being present, and the Consequence of receptors being exposed to the source. Guidance tables setting out the classifications of probability and consequence together with a risk matrix are given in Tables 8 - 9 hereunder. In using this approach ***CCG*** recommends actual intrusive investigation of any Risk Classification of "*Moderate*" or over.

Table 8: Matrix of consequences against probability to gain a risk classification [CIRIA C552, 2001]

		CONSEQUENCE			
		SEVERE	**MEDIUM**	**MILD**	**MINOR**
Probability	**High Likelihood**	Very High Risk	High Risk	Moderate Risk	Moderate / 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

Table 9: Classification Definitions (C552 CIRIA, 2001)

CLASSIFICATION	DEFINITION
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard. Or there is evidence that server harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that such harm would be server, or if any harm were to occur it is more likely that harm would be relatively mild. Investigation (if not undertaken already) is normally required to clarify the risk and to determine to potential liability. Some remedial works may be required in the longer term.
Moderate / Low	
Low	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild
Very Low	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be server.

8.2 Preliminary Conceptual Model

By application of the risk assessment methodology outlined above, the following PCM was constructed.

Table 10: Preliminary Conceptual Model (PCM)

POLLUTANT LINKAGE	SOURCE	PATHWAY	RECEPTOR	PROBABILITY	CONSEQUENCE	RISK RATING
1	Broad spectrum of heavy metals, aggressive pH, hydrocarbons, PAH`s in Made Ground associated with the development of the site & adjoining area	Soil and / or soil dust ingestion	Construction workers Future occupants Offsite receptors Flora	Likely	Medium	Moderate
2	Asbestos containing materials (ACM) in made ground soils associated with the development of the site & adjoining area	Fibre Inhalation	Construction workers occupants Offsite receptors	Likely	Severe (ACM)	High
3	Inhalation of vapours associated with potential made ground deposits etc.	Inhalation	Future worker / occupants	Unlikely	Medium	Moderate
4	Inhalation of ground gases from onsite or offsite sources i.e. made ground soils etc.	Inhalation	Future worker / occupants	Unlikely	Medium	Moderate
5	pH & Sulphate attack on concrete	Direct contact	Fabric of building	Likely	Mild	Moderate / Low
6	Organic contamination associated with adjacent car parking facilities	Direct contact with water mains	Potable water supply	Unlikely	Medium	Moderate

The contaminants of concern associated with those risks which require intrusive investigation were researched by reference to published industry profiles, and are summarised hereunder:

Table 11: Summary of Contaminants of Concern based on PCM

LINKAGE NO.	METALS	NON-METALS	ORGANICS	GASES	OTHERS
PL1, PL2, PL4, PL6	Cd, Cr, Ni, Cu, Pb, Hg, Se, Zn	As, sulphates	TPHCWG, PAH's, BTEX, Volatiles (by PID)	-	pH Asbestos
PL3	-	-	-	CH_4, CO_2, H_2S	-
PL1-PL6	Cd, Cr, Ni, Cu, Pb, Hg, Se, Zn	As, sulphates	TPHCWG, BTEX PAH's, Volatiles (by PID)	CH_4, CO_2, H_2S	pH Asbestos

8.3 Summary of Risks

The foregoing analysis has identified a significant number of potential risks, and if present, taking account of the use of the site as a caravan park, these could adversely impact on human or environmental receptors, and since no previous site investigation has been undertaken, an intrusive phase of investigation is recommended to determine whether the postulated pollutant linkages are present on site.

9.0 AIMS AND PROPOSED SCOPE OF PHASE II INTRUSIVE INVESTIGATION

Based on the findings above, it is recommended that an intrusive investigation be undertaken. The Phase II Intrusive Investigation should include for exploratory holes to be sunk through made ground into the underlying natural strata.

The primary objectives of a ground investigations are to obtain enough data to reliably ascertain ground conditions on site, and to aid

confirmation of the potential pollution linkages identified within the Preliminary Conceptual Model above. Enough soil and groundwater/soil leachate contamination data should be obtained to reliably allow the Preliminary Conceptual Model to be tested and refined by the performance of a quantitative risk assessment.

Using the guidance contained in BS10175: 2011 and R&D Technical Report P5-0066/TR: 2000, and given the nature of the proposed redevelopment, following the demolition of the existing building and subsequent site clearance works, it is proposed that 3nr borehole be sunk to a notional depth of 5mbgl, or refusal in rock head, whichever is the lesser using light dynamic sampling methods with associated *in-situ* testing.

Given the potential for the presence of underlying made ground deposits of an unknown thickness – composition and extent, it is recommended that 3nr boreholes be utilised for the installation of standpipes, thus enabling a programme of ground gas monitoring to be undertaken. To comply with CIRIA C665 for a "*Moderate*" risk site, it is proposed that gas monitoring is undertaken as a minimum on 6nr occasions, distributed over a period of 3-months.

The prime objective of any intrusive ground investigation is to provide reliable soil / groundwater (or soil leachate) contamination data and to assess the potential risk to human health and sensitive environmental receptors, and to provide suitable foundation options for the proposed redevelopment.

The proposed scope of works is summarised in Table 12 hereunder:

Table 12: Proposed Scope of Works

RISK	METHOD OF ASSESSMENT
Is the superficial ground impacted by contamination to the extent it may present a risk to human health?	Using the guidance contained in BS10175: 2011 and R&D Technical Report P5-0066/TR: 2000, and given the nature of the redevelopment, to assess the underlying ground conditions at depth, it is proposed that 3nr borehole be sunk to a notional depth of 5mbgl, or refusal in rock head, whichever is the lesser using light dynamic sampling methods with associated in-situ testing. Broad spectrum contamination analyses will be performed on subsamples of recovered made ground (3nr analyses) to suite in Table 11
What are the geotechnical properties of the ground?	Standard Penetration Test's (SPT's) to be carried out at regular depth increments throughout the boreholes, with HSV tests to be carried out in cohesive strata on recovered soils. A programme of soil engineering laboratory testing will be carried out. The *in-situ* tests and soil engineering test data will be used in formulating suitable foundation solutions.
Is the site affected by migrating gas from made ground deposits &/or nearby pond?	The evidence of the desk study is that there is a low – moderate risk of the site being contaminated by ground gases and therefore 3nr boreholes will be utilised for the installation of gas / groundwater monitoring standpipes. CIRIA C665 recommends monitoring on 6nr occasions distributed over a period of 3 months.
Does the site pose a risk to the underlying aquifer	Soil water samples will be recovered from the standpipes and will be analysed to the suite proposed in Table 11. In the event that water does not accumulate in the standpipes, soil leachate analyses will be undertaken to the suite in Table 7. The results will be assessed against Drinking Water Standards and Environmental Quality Standards.

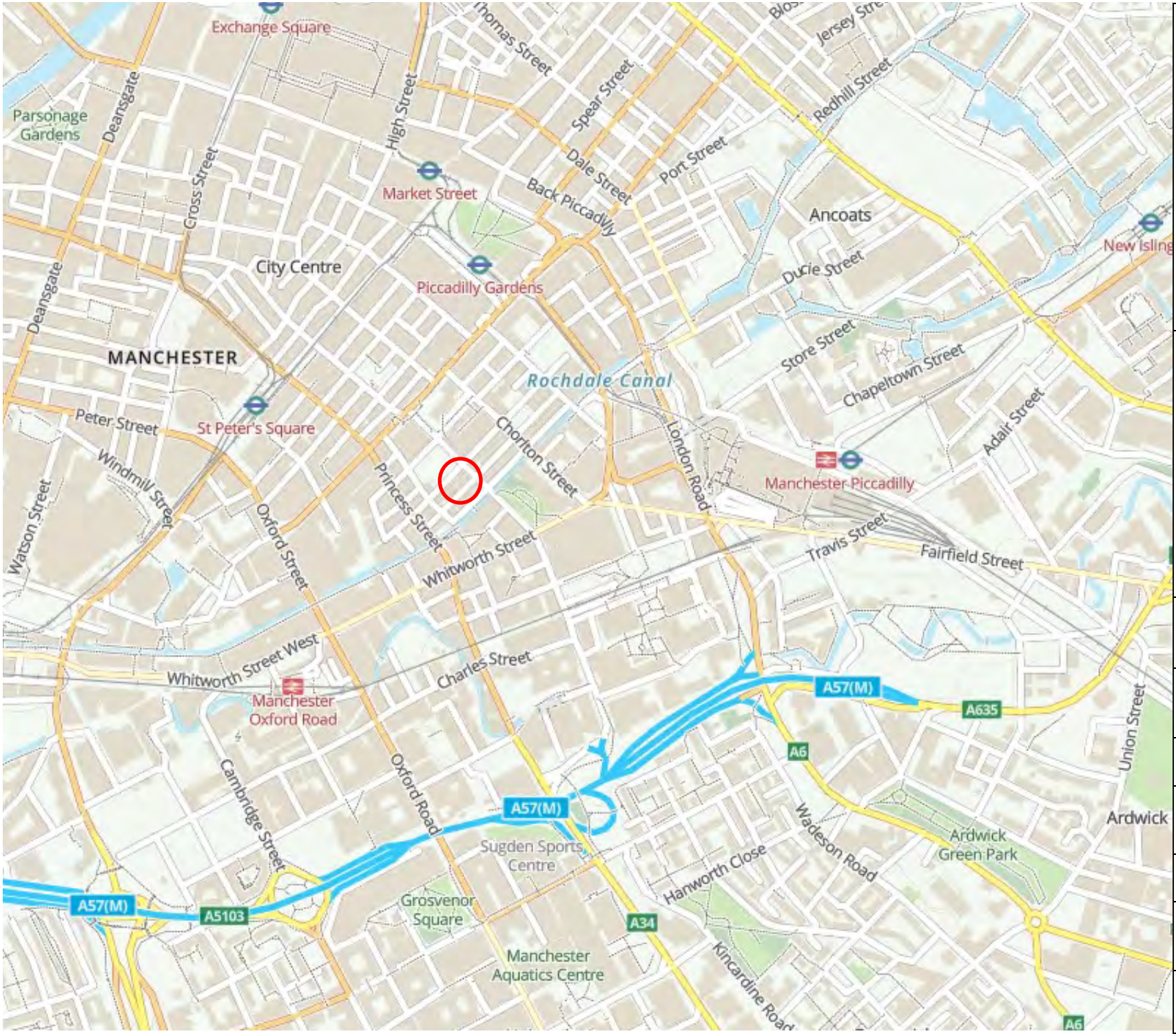
The layout of the proposed intrusive investigation is as annotated on ***CCG*** Drawing No. CCG-C-23-13856-3 '*Site Investigation Plan'* contained herein.

Please note to ensure that no borehole position impacts on any buried service, the final positioning of the borehole will be determined following a review of '*Clients'* buried service drawings.

Given that the site is to be redeveloped for residential use, contamination data obtained as part of the above recommended Phase II intrusive investigation will be based on criteria contained in publication LQM/CIEH S4UL`s for Human Health Risk Assessment (2015) (***CCG*** Licence No. S4UL3233), applicable to the "*Residential*" land use, *Without Plant Uptake* scenario. Given this document does not provide criteria for Lead contaminants, it is proposed that Lead results are compared to the C4SL published by DEFRA SP1010 Development of Category 4 Screening Levels for '*Residential Land'* use.

APPENDIX A: DRAWINGS:

23-13856 – SITE LOCATION PLAN
23-13856 – AERIAL PLATE
ARCHITECTURAL DRAWINGS



DO NOT SCALE

Notes: Study Site

CC GEOTECHNICAL LIMITED
UNIT 1 DELTIC WAY
KNOWSLEY INDUSTRIAL ESTATE
LIVERPOOL
L33 7BA
0151 545 2750

Client:
Mason & Marlowe Ltd

Project:
Phase I Desk Study Report for Land at Vanilla Café Bar, Richmond Street, Manchester, M1 3WB

Title:
Aerial Photograph

Scale:	Issue:
NTS	01
Drawn by:	Date:
DG	April 2023
Project No.	Drawing No.
CCG-C-23-13856	01

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DO NOT SCALE

Notes: Study Site

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UNIT 1 DELTIC WAY
KNOWSLEY INDUSTRIAL ESTATE
LIVERPOOL
L33 7BA
0151 545 2750

Client:
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Project:
Phase I Desk Study Report for Land at Vanilla Café Bar, Richmond Street, Manchester, M1 3WB

Title:
Aerial Photograph

Scale:	Issue:
NTS	01
Drawn by:	Date:
DG	April 2023
Project No.	Drawing No.
CCG-C-23-13856	02

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29

31

PH

33

39 to 41

WS03/s

40

WS02/s

WS01/s

43

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34 to 42

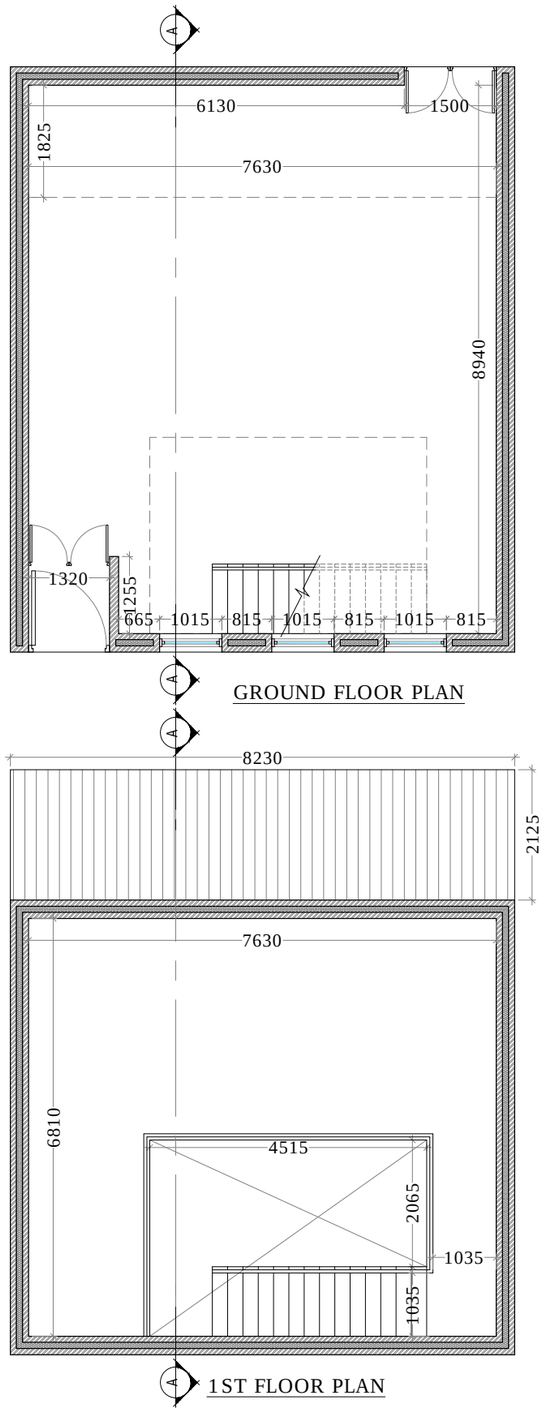
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SACKV

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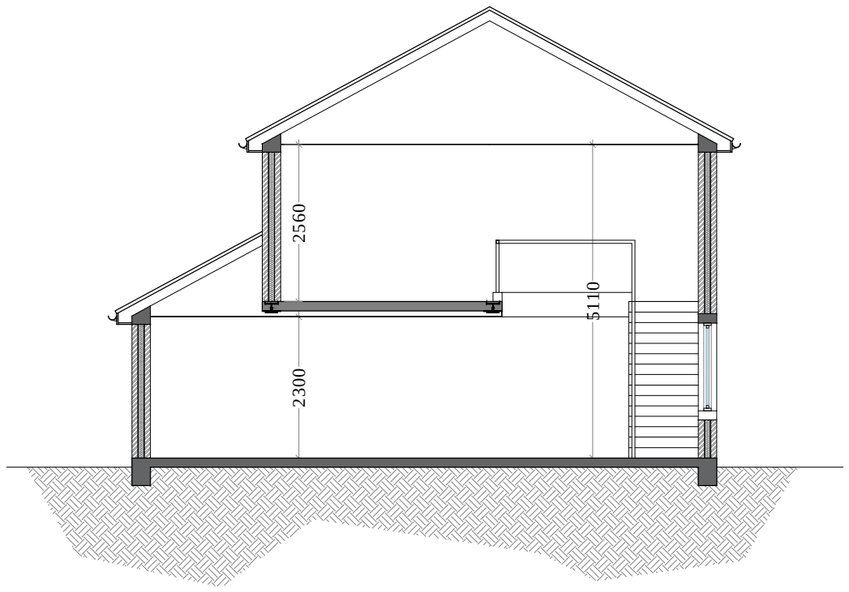
CC GEOTECHNICAL LTD
Units 1&2
Deltic Way
Knowsley Industrial Estate
L33 7BA
Tel: (0151) 545 2750
Fax: (0151) 548 7892
enquiries@ccgeotechnical co.uk
www.ccgeotechnical.co.uk

Client	Mason & Marlow			
Site	Richmond Street, Manchester, M1			
Drawing	Ground Investigation Layout			
Job No.	**Dwg. No.**	**Rev. No.**	**Scale@A3**	**Date**
22-13856	4	0	1:2500	April 23



GROUND FLOOR PLAN

1ST FLOOR PLAN



SECTION AA

General Notes

No.	Revision/Issue	Date

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Mason and Marlowe Ltd.

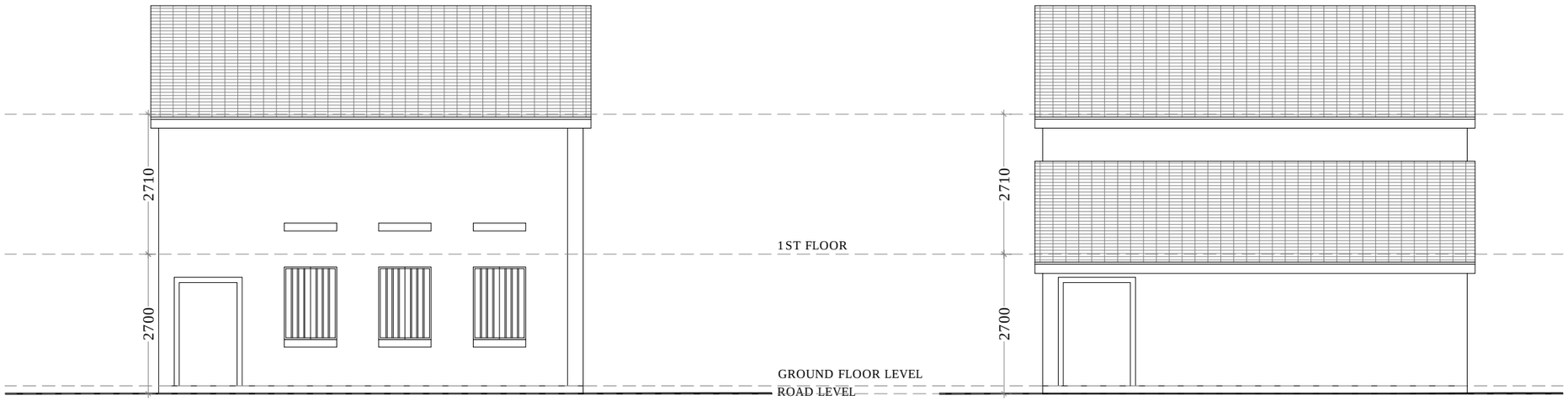
Project Managers and Quanity Surveyors

3 Colmam Gardens,
Salford Quays, M5 3NT

Project Name and Address

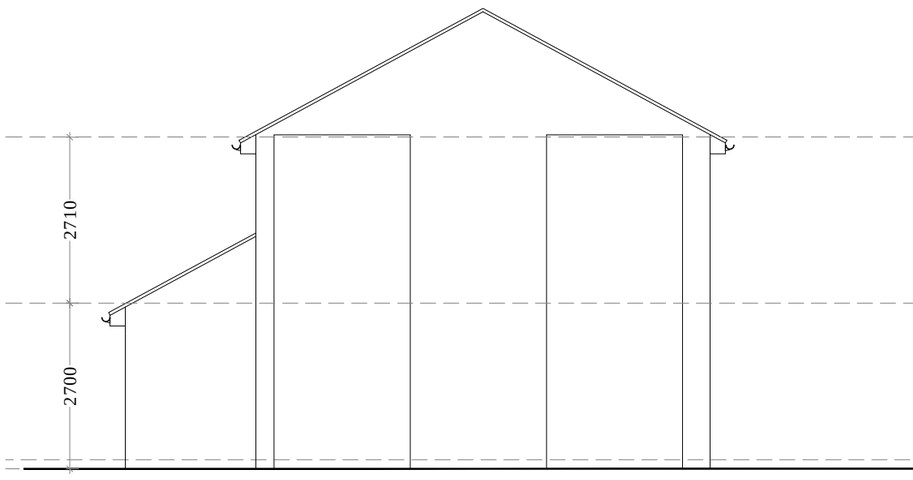
Vanilla,
39-41 Richmond St,
Manchester M1 3WB

Project	Sheet
Date: 10/09/2022	A3
Scale: 1/100	

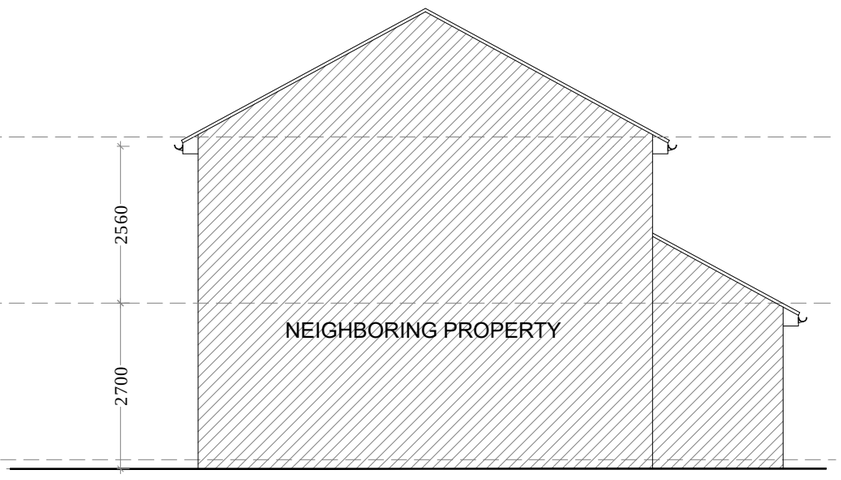


FRONT ELEVATION

REAR SIDE ELEVATION



LEFT SIDE ELEVATION



RIGHT SIDE ELEVATION

General Notes

No.	Revision/Issue	Date

Firm Name and Address

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Mason and Marlowe Ltd.

Project Managers and Quanity Surveyors

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Salford Quays, M5 3NT

Project Name and Address

Vanilla,
39-41 Richmond St,
Manchester M1 3WB

Project

Date
10/09/2022

Scale
1/100

Sheet
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BACK ELEVATION

RIGHT SIDE ELEVATION

General Notes

No.	Revision/Issue	Date

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Mason and Marlowe Ltd.

Project Managers and Quanity Surveyors

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Salford Quays, M5 3NT

Project Name and Address

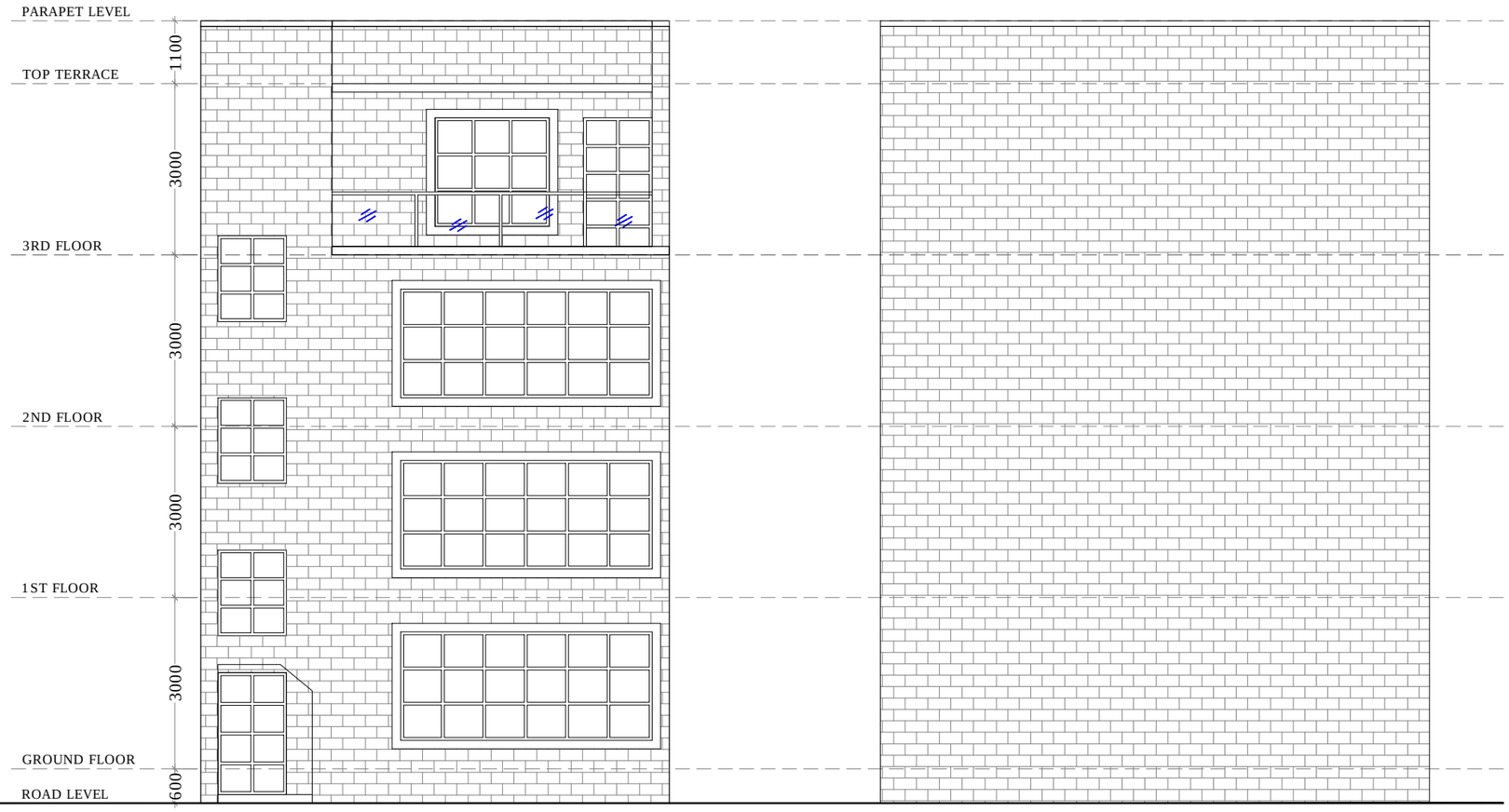
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39-41 Richmond St,
Manchester M1 3WB

Project

Date
19/07/2022

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FRONT ELEVATION

LEFT SIDE ELEVATION

General Notes

No.	Revision/Issue	Date

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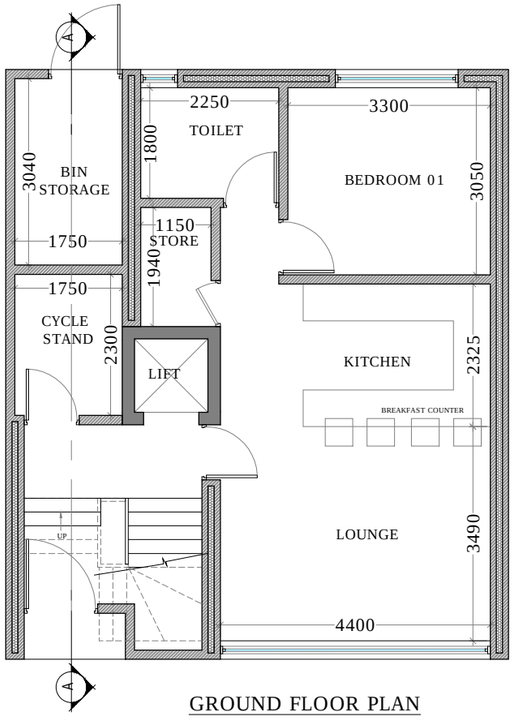
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3 Colmam Gardens,
Salford Quays, M5 3NT

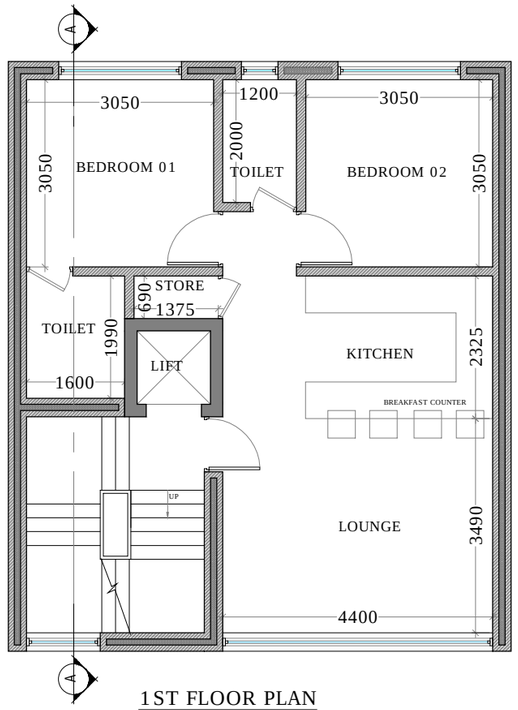
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39-41 Richmond St,
Manchester M1 3WB

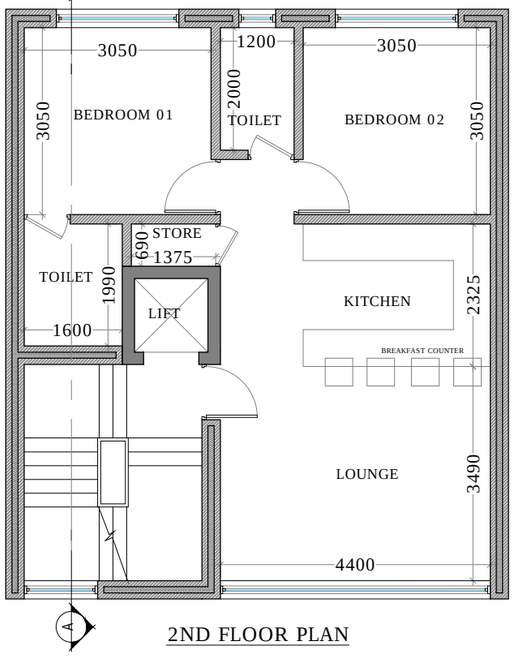
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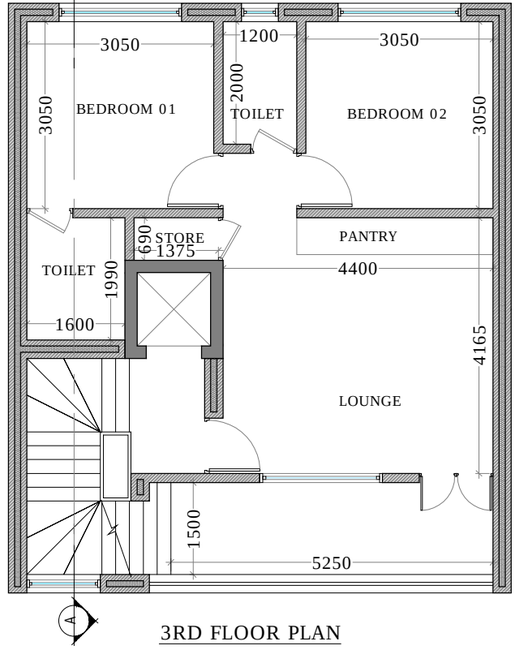
GROUND FLOOR PLAN



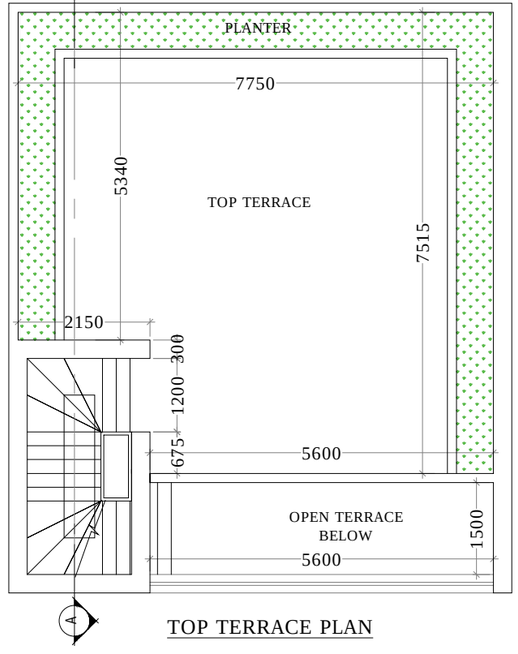
1ST FLOOR PLAN



2ND FLOOR PLAN



3RD FLOOR PLAN



TOP TERRACE PLAN

General Notes

No.	Revision/Issue	Date

Firm Name and Address

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Mason and Marlowe Ltd.

Project Managers and Quanity Surveyors

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Salford Quays, M5 3NT

Project Name and Address

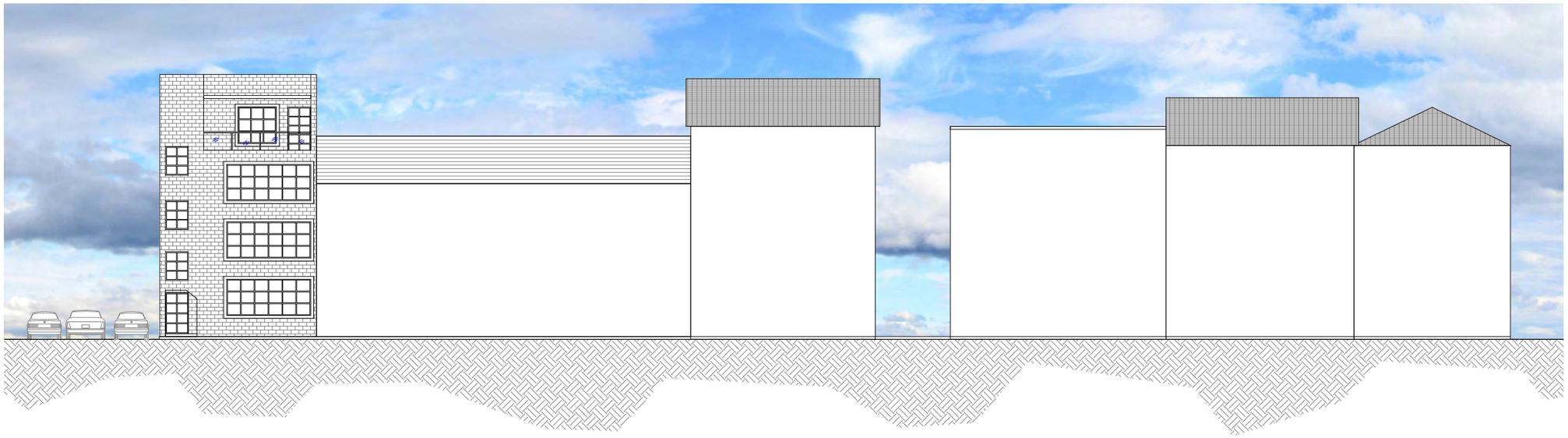
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39-41 Richmond St,
Manchester M1 3WB

Project

Date
19/07/2022

Scale
1/100

Sheet
A3



PROPOSED STREET ELEVATION

General Notes

No.	Revision/Issue	Date

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Mason and Marlowe Ltd.

Project Managers and Quanity Surveyors

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39-41 Richmond St,
Manchester M1 3WB

Project Name and Address

Vanilla,
39-41 Richmond St,
Manchester M1 3WB

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APPENDIX B: NOTES ON LIMITATIONS

Standard Terms and Conditions of Engagement
Notes on Limitations
For: Geoenvironmental and Geotechnical Consultancy Services

General

CC GEOTECHNICAL LTD has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from ***CC GEOTECHNICAL LTD,*** and a charge may be levied against such approval.

CC GEOTECHNICAL LTD accepts no responsibility or liability for:

- The consequences of this document being used for any purpose or project other than for which it was commissioned and/or
- The consequences of use of this document by any party with whom an agreement has not been executed.

Phase I Environmental Audits / Desk Studies

The work undertaken to provide the basis of a Phase 1 Desk Study report comprises a study of available documented information from a variety of sources (including the client), together with (where appropriate) a walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in a Desk Study report have been dictated by finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in the report, ***CC GEOTECHNICAL LTD*** reserves the right to review such information and to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits

The investigation of the site has been carried out with the intention of providing enough information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated to potential human targets, building materials, the environment (including adjacent land), and surface and groundwater.

The amount of exploratory work and chemical testing undertaken may have been restricted by the timescale available, and the locations of the exploratory holes may have been restricted to areas unoccupied by the building(s) on the site, and further restricted by the existence of buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, several important engineering and environmental issues may need to be resolved.

For those reasons, if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of site conditions. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” of contamination where concentrations may be significantly higher than those encountered.

Geoenvironmental Ground Investigations

The investigation of the site has been carried out to provide sufficient information within the agreed scope of the investigation, under the general headings of type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions, to provide a reasonable assessment of the environmental risks together with engineering and development implications.

If costs have been included in relation to the site remediation, these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of the site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions present on the sites which have not been disclosed by this investigation, and which have therefore not been considered in this report.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal, weather, or other effects.

The risk assessment and opinions provided, inter alia, take into consideration currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

APPENDIX C: CURRENT CONTAMINATED LAND GUIDANCE / LEGISLATION & RISK ASSESSMENT METHODOLOGIES

CURRENT CONTAMINATED LAND LEGISLATION / GUIDANCE & ENVIRONMENTAL RISK ASSESSMENT METHODLOGY

LEGISLATION OVERVIEW

This report includes hazard identification and risk assessment in line with the risk-based methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a "suitable for use approach". When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land.

Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:

Significant harm is being caused or there is a significant possibility of such harm being caused;
or
Pollution of controlled waters is being, or is likely to be, caused."

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

"the entry into controlled waters of **any** poisonous, noxious or polluting matter or **any** solid waste matter".

To assist in establishing if there is a "significant possibility of significant harm" there must be a "significant pollutant linkage" for potential harm to exist. That means there must be a source(s) of contamination, sensitive receptors present and a connection or pathway between the two. This combination of source-pathway-receptor is termed a "pollutant linkage or SPR linkage."

Part IIA of The Environmental Protection Act 1990 is supported by a substantial quantity of guidance and other Regulations, especially DEFRA Circular 01/2006 Contaminated Land (this replaces DETR Circular 02/2000). Part IIA defines the duties of Local Authorities in dealing with it. Except for situations of very high pollution risk, Part IIA places contaminated land responsibility on thee planning and redevelopment process. In situations where there is very high pollution risk direct action from the Local Authority is usually necessary. Planning Policy Statement 23 (PPS23) provides guidance on the planning process and requires that sites which have been developed shall not be capable of being determined "contaminated land" under Part IIA.

The criteria for assessing levels of pollutants and hence determining whether a site represents a hazard are based on a range of techniques, models, and guidance. Within this context it is relevant to note that Government objectives are:

(a) to identify and remove unacceptable risks to human health and the environment;
(b) to seek to bring damaged land back into beneficial use;
(c) to seek to ensure that the cost burdens faced by individuals, companies and society are proportionate, manageable, and economically sustainable.

These three objectives underlie the "suitable for use" approach to remediation of contaminated land. The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach then consists of three elements:

(a) ensuring that land is suitable for its current use - in other words, identifying any land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise; the contaminated land regime provides the regulatory mechanisms to achieve this;

(b) ensuring that land is made suitable for any new use, as planning permission is given for that new use - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and

(c) limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought - in other words, recognising that the risks from contaminated land can be satisfactory assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby running the risk of distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

The mere presence of pollutants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the current and proposed end use of the site.

RISK ASSESSMENT METHODOLOGY

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby "risk" is defined as:

"(a) The probability, or frequency, or occurrence of a defined hazard; and
(b) The magnitude (including the seriousness) of the consequences."

The UK's approach to the assessment of environmental risk is set out in by the Department of the Environment (2000) publication "A Guide to Risk Assessment and Risk Management for Environmental Protection." This established an iterative, systematic staged process which comprises:

(a) Hazard identification
(b) Hazard assessment
(c) Risk estimation
(d) Risk evaluation
(e) Risk Assessment

At each stage during the investigation process the above steps are repeated as more detailed information becomes available for the site.

CLR11- 'Model Procedures for the Management of Land Contamination', a document published by the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency (EA) outlines a tiered approach to the assessment of risks posed by contaminated land, as summarised hereunder:

Tier 1: Preliminary Risk Assessment
A Preliminary Risk Assessment is usually undertaken as part of a desk study, outlines potential risks posed by potential contamination to all receptors by defining plausible "pollution linkages" and developing a preliminary conceptual model (PCM). The purpose of this model is to define all possible complete pollution linkages, where the requisite source – pathway – target elements are present, and these elements being defined as:

- a contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor
- a pathway is the means by or through which a contaminant meets, or otherwise affects, the receptor
- a receptor (target) is an entity (human being, aquatic environment, flora, and fauna etc) that is vulnerable to the adverse effects of the contaminant

This relationship is termed a "pollution linkage". It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, i.e.

- if there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- if there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

The absence of one or more of each component (source, pathway, receptor) would prevent a pollutant linkage being established and there would be no significant environmental risk.

The PCM is subject to continual refinement as additional data becomes available. As part of a Phase I Investigation (Desk Study and site walk over) a PCM is formed. Based on the PCM, potential pollutant linkages can be assessed. If the PCM and hazard assessment indicate that a pollution linkage is not of significance, then no further assessment or action is required due to this linkage. For each significant and possible linkage, a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is usually termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the PCM and assess the level of risk from each pollutant linkage. Risk assessment will usually include Tier 2 Generic Quantitative Risk Assessment and / or, if necessary, a Tier 3 Detailed Quantitative Risk Assessment.

Tier 2: Generic Quantitative Risk Assessment (GQRA)
GQRA requires an intrusive investigation to characterise the site assisting in the re-assessment of the source-pathway receptor linkage. The conceptual model should be refined accordingly.

Upon completion of an intrusive investigation, it must be decided whether Generic Assessment Criteria (GAC) are suitable for assessing the risk posed by potential contamination at the site. If GAC are deemed unacceptable for risk assessment purposes or cannot be developed a Tier 3 Detailed Quantitative Risk Assessment (DQRA) is required.

If GQRA reveals that unacceptable risks are not present, then no further action is required. If GQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable not required, an Options Appraisal should be undertaken. If further risk assessment is required, the scope nature of further risk assessment must be decided – it is possible that a Tier 3 DQRA will be undertaken in this scenario.

Tier 3: Detailed Quantitative Risk Assessment (DQRA)
DQRA is used when pollutant linkages require further assessment. DQRA is often undertaken for pollutant linkages where GAC are unavailable or inappropriate for or more conservative than the actual circumstances of the site. Site specific data is used to create Site Specific Assessment Criteria (SSAC) and enable a more accurate assessment of the risks. Further investigation may or may not be required to formulate SSAC depending on the site-specific conditions and information already obtained.

If DQRA reveals that unacceptable risks are not present, then no further action is required. If DQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is deemed not suitable not

required, an Options Appraisal should be undertaken. If further risk assessment is required, the scope and nature of further risk assessment must be decided at this point.

NOTE: A Tier 1 Preliminary Risk Assessment is undertaken as part of a Desk Study Report and a Preliminary Conceptual Model is developed for all pollutant linkages. However, the methodologies for assessing the risks to human health, risks to controlled waters and risk posed by ground gas using quantitative techniques vary considerably, therefore GQRA and DQRA for human health, controlled waters and ground gas must be undertaken separately. The risk assessment methodologies where quantitative assessment is used for risks to human health, risks to controlled waters and risks posed by ground gas, if relevant, are described hereunder.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO HUMAN HEALTH

Background
In March 2002, the Department for Environment, Food and Rural Affairs (DEFRA) and the EA published the Contaminated Land Exposure Assessment (CLEA) Model and a series of related reports. These were designed to provide a scientifically based framework for the assessment of chronic risks to human health from contaminated land. These reports (CLR7-10) together with associated "SGV" documents have since been withdrawn (August 2008) and the following documents have been published as revised guidance to the CLEA assessment:

Environment Agency : 2008: Updated Technical Background to the CLEA model Science Report SC050021/SR3
Environment Agency : 2008: Human Health Toxicological Assessment of Contaminants in Soil SC050021/SR2

Additional guidance on statistical assessment replacing CLR 7 is provided in:

CL:AIRE :2008 Guidance on Comparing Data with a Critical Concentration

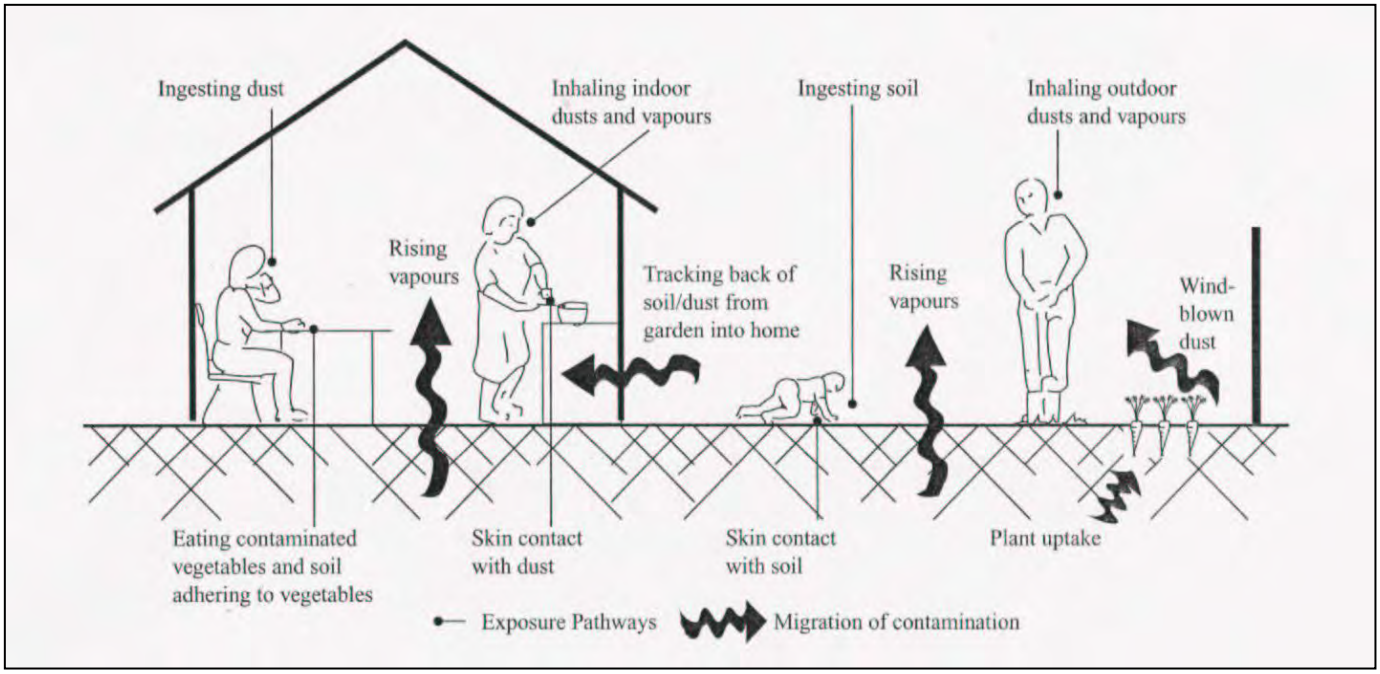
Other guidance/software used in spatial / statistical assessment is provided in:

USEPA 2006: Data Quality Assessment: Statistical Methods for Practitioners
Spatial Analysis and Decision Assistance (SADA) – The University of Tennessee

A different approach to the statistical appraisal of data is required depending on whether the assessment of risk is to assess whether land is Contaminated Land in accordance with regulations, or whether the assessment is to determine whether the site is suitable for new development in according with Planning guidance. This is discussed further in CL:AIRE :2008 "Guidance on Comparing Data with a Critical Concentration".

A program for the derivation of GAC`s based on the above guidance is provided by the Environment Agency and is entitled "CLEA Software Version 1.04".

The CLEA model has been developed to calculate an estimated tolerable daily soil intake (TDSI) for site users given a set 'default' exposure pathway. Ten human exposure pathways are covered in the CLEA model as presented below:



Ingestion
ingestion of outdoor soil
ingestion of indoor dust
ingestion of home grown produce

ingestion of soil attached to home grown produce

Dermal Contact
dermal contact with outdoor soil
dermal contact with indoor dust

Inhalation
inhalation of outdoor dust
inhalation of indoor dust
inhalation of outdoor soil vapour
inhalation of indoor soil vapour

It should be noted that there are other potential exposure pathways on some sites not included in the CLEA model e.g., certain organic compounds can pass through plastic water pipes into drinking water supply.

Where contaminated water is present at a depth less than 2.00mbgl and there is a potential risk of inhalation of vapours (only when volatile compounds are present) the risk from inhalation of vapours from soil water will be assessed using a UK compliant version of BP Risk v4.02.

The presence and/or significance of each of the above exposure pathways are dependent on the type of land use being considered and the nature of the contaminant under scrutiny. Accordingly, the CLEA model considers for principle 'default' land use types and makes a series of 'default' assumptions about human exposure frequency, duration and critical human target groups for each land use considered:

residential
allotments
commercial / industrial land use

The above land use categories defined in the CLEA are detailed below:

Residential: This generic scenario assumes a typical residential property consisting of a two-storey house built on a ground-bearing slab with a private garden consisting of lawn, flowerbeds, and a small fruit and vegetable patch. The occupants are assumed to be parents with young children, who make regular use of the garden area.

Allotments: This generic scenario assumes a plot of open space (about 250 m2), commonly made available by the local authority to tenants to grow fruit and vegetables for their own consumption. There are usually several plots to a site and the overall site area may cover more than a hectare. The tenants are assumed to be parents or grandparents and that young children make occasional accompanied visits to the plot.

Commercial/Industrial: There are many kinds of workplace and work-related activities. This generic scenario assumes a typical commercial or light industrial property consisting of a three-storey building at which employees spend most time indoors and are involved in office based or relatively light physical work.

Human Health Risk Assessment Methodology
Assessment of risk for the protection of human health is undertaken using the methodology as outlined previously, and summarised hereunder:

Tier 1 Preliminary Risk Assessment
Tier 2 Generic Quantitative Risk Assessment
Tier 3 Detailed Quantitative Risk Assessment

The Tier 1 Preliminary Risk Assessment is undertaken as part of the desk study report and includes the development of a Preliminary Conceptual Model. Tier 2 and Tier 3 Quantitative Risk Assessments are undertaken to develop and refine the Preliminary Conceptual Model aiding a more detailed assessment of the risk posed by contaminants revealed by site investigation and soil / soil water chemical analyses.

The methods used by CC GEOTECHNICAL LTD to derive assessment criteria, to statistically analyse chemical data and to compare chemical data to the derived assessment criteria are discussed hereunder.

Derivation of Generic Assessment Criteria (GAC) and Site-Specific Assessment Criteria (SSAC)
GAC`s are derived based on the proposed land use and the associated applicable exposure pathways. It should be noted that there are difficulties in establishing soil concentrations of contaminants beyond which risks from exposure to these contaminants would be 'unacceptable' and the GAC value does not necessarily equate to the level for "significant possibility of significant harm" as defined in Part IIA of The Environmental Protection Act (1990) to determine whether land is "contaminated." This ultimately requires detailed 'toxicological' information of the health effects of individual contaminants and a scientific judgement on what constitutes an 'unacceptable' risk. The primary purpose of the CLEA derived GAC's are as 'minimal risk thresholds' for the assessment of human health risks in relation to land use.

Minimal risk thresholds calculated using generic input parameters for each of the above land uses are termed Generic Assessment Criteria (GAC) and are used for Generic Quantitative Risk Assessment (GQRA). However, further assessment may be required taking into consideration site specific factors such as the way the land is used, the soil type, the building characteristics, and the exact nature of the receptor, to determine whether there is a significant possibility of risk to human health to site users. Such an assessment is known as a Detailed Quantitative Risk Assessment (DQRA) and the resultant threshold concentrations are known as Site Specific Assessment Criteria (SSAC). Such assessments should be conducted with the agreement of the local authority (or the Environment Agency) since it is the authority that determines whether land is Contaminated Land or whether Planning Permission for a new development may be granted.

For the purposes of this report, assessment criteria have been derived in accordance with current guidance based on the conceptual model for the proposed land use using the CLEA v1.04 software. These criteria are not intended to indicate whether the site may be contaminated land, nor do they replace any published soil guideline values. However, the values are intended to provide guidance for the local authority on whether the site may be considered uncontaminated. If, based on the site's proposed future use, the site would be considered by the local authority to be uncontaminated and therefore, on the basis of soil concentrations, fit for purpose, then no further risk assessment based on soil concentrations and the risk to human health would be necessary. However, should these criteria be exceeded, or the conceptual site model vary from the model used in the risk assessment to derive these values then the risk assessment should be updated accordingly.

For contaminants routinely analysed where inhalation is a significant pathway (naphthalene, phenanthrene, Aromatic EC5-EC7, Aromatic EC7-EC8, Aromatic EC8-EC10, Aromatic EC10-EC12, Aromatic EC12-EC16, Aliphatic EC5-EC6, Aliphatic EC8_EC10, Aliphatic EC10-EC12, Aliphatic EC12-EC16), plots of the GAC as a function of Soil Organic Matter (SOM) are used to determine if they pose a potential risk to human health, which are presented hereunder. Where there is an exceedance further assessment may be undertaken.

Statistical Assessment of Soil Contamination Data & Comparison of Contamination Data to Threshold Values
In any site investigation only a small fraction of the soil on the site is analysed. Therefore, the mean derived from the contamination data for a contaminant may not be the same as the true mean for the contaminant distribution on the site. To improve the reliability of any assessment a statistical analysis is undertaken in line with the CL:AIRE document "Guidance on Comparing Soil Contamination Data with a Critical Concentration".

Statistical assessment of soil data is undertaken using programs based on the guidance in the CL:AIRE document or the USEPA software ProUCL v4.0.

Where the number of results in a dataset is less than four, a statistical assessment is not undertaken, and the assessment is performed by comparison of the maximum value(s) with a Health Criteria Value (HCV), such as Generic Assessment Criteria value(s).

For the Planning situation, the regulator needs to check whether the concentration of contaminants is low compared to the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is lower than the HCV.

For the Part IIA scenario the regulator needs to determine whether the concentration of contaminants is greater than the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is higher than the HCV. However, the regulator may proceed with determination if there is just a 51% probability, "on the balance of probabilities".

The Outlier Test used in the statistical assessment may not be able identify separate populations if numerous populations are present. To ensure that this is not the case a spatial assessment of the data will be undertaken using SADA.

If the screening levels are exceeded, then more sophisticated quantitative risk assessment or remedial action may be undertaken. The benefits of undertaking a quantitative risk assessment must be weighed against the likelihood that it will bring about cost savings in the proposed remediation.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO CONTROLLED WATER

Definition of Controlled Waters
The term 'controlled waters' is defined in Section 104 of the Water Resources Act 1991 as:

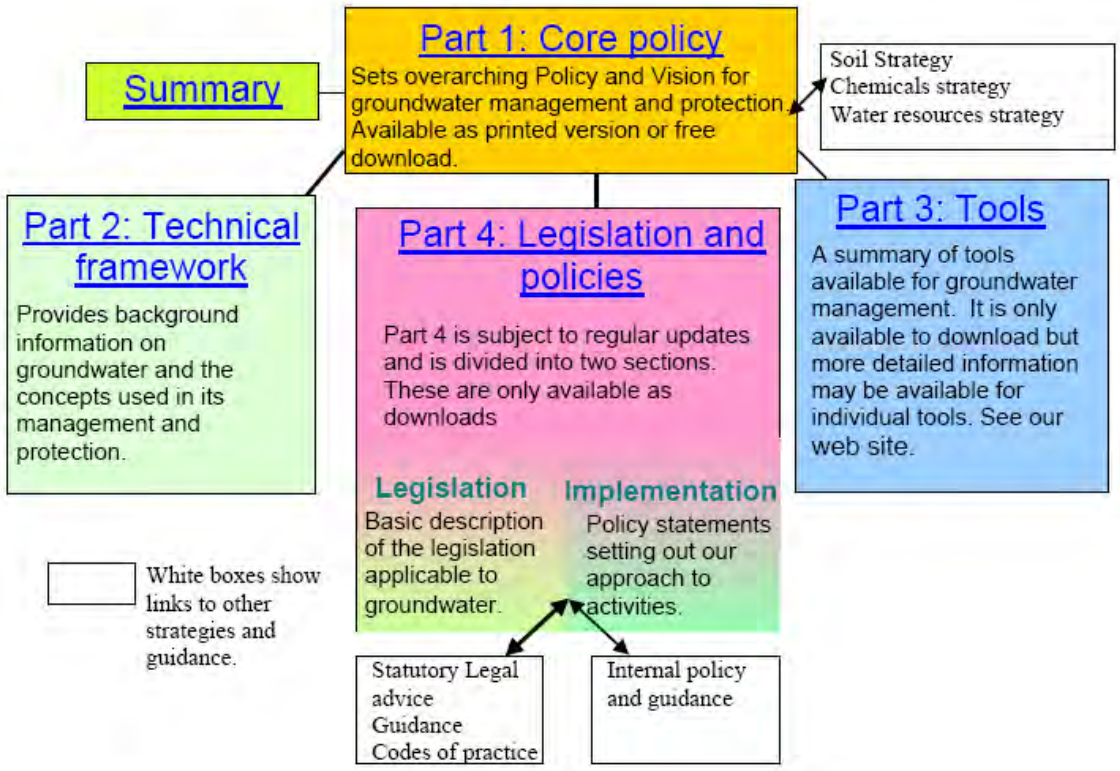
"Territorial Waters…which extend seawards for three miles…, coastal waters…, inland freshwaters, waters in any relevant lake or pond or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata."

Note that the definition of groundwater under the Water Resources Act 1991 includes all water within underground strata (including soil / pore water in the unsaturated zone). The definition of groundwater under the Groundwater Directive however is limited to water in the saturated zone. For the purposes of Part IIA of the Environmental Protection Act 1990, the Environment Agency recommends that the groundwater within the saturated zone only is considered as the receptor (rather than soil / pore water).

Environment Agency Guidance
Legislation and guidance surrounding the protection of controlled waters in the UK is abundant and can be complex. The Environment Agency's overall position on groundwater is "To protect and manage groundwater resources for present and future generation in ways that are appropriate for the risks that we identify" (Groundwater Protection : Policy and Practice GP3, 2006). In brief, the core objectives of the existing legislation serve to enforce this position.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document was influential as it provided a focus for key developments such as Source Protection Zones (SPZs) and Groundwater Vulnerability Maps. The Policy was then revised in 1998, since which there have been substantial changes in legislation, driven by Europe. Key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991. Further to legislative changes, gaps identified in the 1998 PPPG required addressing. These changes are reflected in the forthcoming Environment Agency Policy document entitled Groundwater Protection : Policy and Practice (GP3), a draft version of which was available for public consultation (Parts 1 to 3) ending July 2006 with Part 4 issued in March 2008. Part 4 includes a section on key groundwater legislation and the Environment Agency's interpretation of it.

The following gives a breakdown of the structure of the document (taken from the Environment Agency GP3 draft consultation document, 2006)



Controlled Water Risk Assessment Methodology
The risk posed to controlled water is assessed by CC GEOTECHNICAL in accordance with current guidance as outlined hereunder.

In order for a developer of a potentially contaminated site to fulfil their obligations under the legislation, a site assessment would be required to be undertaken in order to identify any potential risks to controlled waters and to derive suitable clean-up criteria if necessary to ensure the protection of controlled waters. The general approach for Groundwater Protection is detailed further in Part 3 of GP3.

When assessing groundwater impact the Environment Agency advocate the application of their framework methodology "Remedial Targets Methodology – Hydrogeological Risk Assessment for Land Contamination" Environment Agency (2006). The methodology has four levels of assessment as described below:

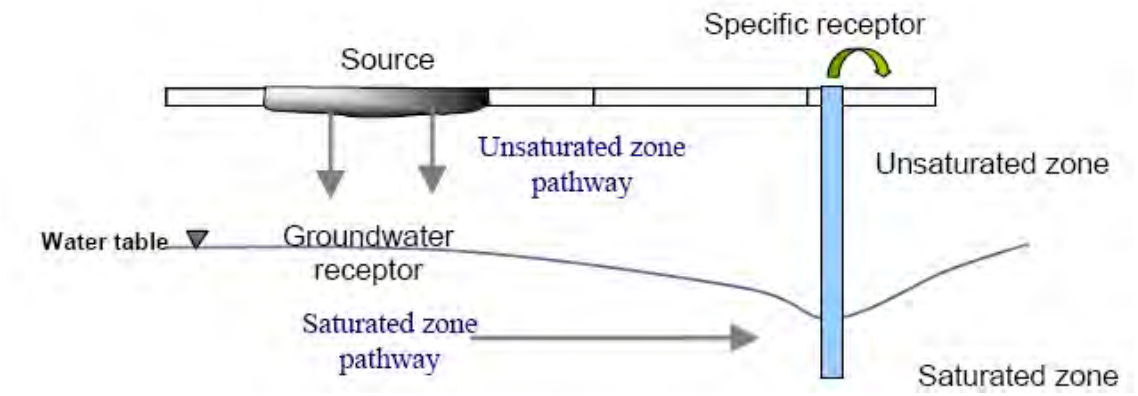
Level 1 considers whether contaminant concentrations in "pore water" in contaminated soil are enough to impact on the receptor, ignoring dilution, dispersion, and attenuation along the pathway. The "pore water" concentration is determined from:
measured "pore water" concentrations or perched water quality
ii) soil leaching tests
iii) theoretical calculations based on soil/water partitioning equations

Level 2 considers dilution by the receiving groundwater or surface water body and whether this is enough to reduce contaminant concentrations to acceptable levels. The remedial target is defined as the target concentration multiplied by a dilution factor (DF).

Levels 3 and 4 consider whether natural attenuation (including dispersion, retardation, and degradation) of the contaminant as it moves through the unsaturated and saturated zones to the receptor are enough to reduce contaminant concentrations to acceptable levels. The remedial target is defined as target concentration multiplied by a dilution factor (DF) and attenuation factor (AF). In Level 3 simple analytical models are used to calculate the significance of attenuation. The Environment Agency has released a "Remedial targets worksheet v3.1" to carry out basic calculations using a conservative approach up to Level 3 using basic principles assuming a simple migration of contaminants from the source zone into the aquifer receptor. Level 4 assessment uses more sophisticated numerical models and allows for the introduction of additional geological horizons and is used mainly to determine whether soil contaminants will reach their target within a specified timeframe. Use of such software should only be used once agreement has been obtained from the Environment Agency.

Three main stages apply to any risk assessment of controlled waters, these are:

1. Risk Screening (Tier 1 Preliminary Risk Assessment): The understanding of the Conceptual Site Model (CSM) is the key to assessing any site. Using a robust CSM, potential pathways or receptors may be screened out from any further assessment at an early stage. For example, if the pathway through the unsaturated zone is blocked by the presence of a significant thickness of low permeability clay. A greater understanding of the CSM is achieved with each tier of risk assessment. An example of a basic CSM is given below (taken from the Environment Agency GP3 draft consultation document, 2006):



2. Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Level 1): When undertaking the Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Tier 1), comparison of chemical analytical results is made with screening criteria. Published values of screening criteria with which chemical test results can be compared are published in the following guidance:

Water Supply (Water Quality) Regulations 2000
The Private Water Supplies Regulations 1991
Environmental Quality Standards for surface waters based on The EC Dangerous Substances Directive (76/464/EEC and Daughter Directives)
The Surface Waters(Abstraction for Drinking Water Classification) Regulations 1996
World Health Organisation Drinking Water Standards 2004

Should the Level 1 assessment indicate threshold levels to be exceeded, then there are three alternative ways in which to proceed:

To devise suitable remedial solutions
To carry out more investigation, sampling, and analysis
To conduct a site specific Detailed Quantitative Risk Assessment (DQRA) to determine if the materials are suitable for their proposed use, or devise site specific clean-up level

3. Detailed Quantitative Risk Assessment (EA Remedial Targets Methodology Levels 2 to 4): The decision to carry out a DQRA will be dependant on the extent and implications of the initial qualitative and generic assessment. The scope of any such assessment will be accurately defined by the outcomes of the previous levels of assessment. The conceptual model will be sufficiently refined by this stage that only certain contaminants of concern, certain pathways and certain receptors will require further assessment, the remainder having been screened out.

Additional site-specific data is normally required for this stage of assessment, as explained above, more processes that are capable of affecting contaminant concentrations are considered (such as dilution and attenuation).

Remediation criteria, if derived, will therefore be specific to each site and will be based on a detailed assessment of the potential impact at the identified receptor or compliance point. A greater level of confidence can be placed on the predicted impact on the compliance point following a DQRA.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED BY GROUND GAS

Origin of Ground and Landfill Gases
When carrying out a ground gas risk assessment, the origin or source of the gases is important as potential risks will vary depending on the source. This Appendix relates to the risk of the two main ground gases of concern; methane and carbon dioxide and does not apply to other ground gases (e.g. radon or vapours from hydrocarbon spills). Methane and carbon dioxide are major constituents of landfill gas but can also occur from a variety of anthropogenic and natural sources, as summarised in Table 5 below:

Gas	Source	Comments
Landfill Gas	Anaerobic decomposition of degradable waste within landfill sites. Typically, 60% methane and 40% carbon dioxide during methanogenic phase.	Composition varies over time, particularly in early stages. Contains a range of minor constituents (particularly carbon monoxide and hydrogen sulphide).
Landfill Associated Gases	- Anaerobic degradation of leachate external to the site; - Degassing of dissolved gases in groundwater; - Evolution of gases following interaction between leachate and groundwater	Can result in secondary (external) production of methane or carbon dioxide.
Made Ground	Anaerobic degradation of organic components	Very variable depending on source
Sewer Gas, Cess Pits	Anaerobic degradation of organic components of sewage producing methane and carbon dioxide.	Often characterised by hydrogen sulphide odour.
Mains Gas	Leakage from underground pipework or storage tanks. Mainly methane but often contains higher alkanes.	An odourise is added to permit detection of leaks. Typically, 90% CH4, but 1 to 27% C2-C4 alkanes, May

Gas	Source	Comments
		also contain other trace gases e.g., CO, helium, and CO2 (from degradation of CH4 in the ground).
Other Anthropogenic Sources	- Degradation of leaked or spilled hydrocarbons or other industrial chemicals; - Anaerobic degradation of organic contaminants in groundwaters (e.g., silage liquor); - Reactions between monitoring well construction components and environment; - Burial grounds/cemeteries.	Hydrocarbon spillages often have an 'oily' odour. Fuel spillages common – Petrol or Diesel and can contain a wide range of VOC's. Can degrade to produce methane / carbon dioxide.
Alluvium / Marsh / Peat Gas	Anaerobic microbial degradation of organic material (usually waterlogged vegetation / peat). Often associated with the presence of alluvial deposits or dredging's.	
Geogenic Gas	Natural seepages of carbon dioxide and hydrocarbon gases derived from geologic sources such as coal seams and deep oil / gas source formations. Can be present in solution in groundwaters.	Methane most common but can contain carbon dioxide and higher alkanes.
Mine Gases	Various types. Most common is "fire damp" with high methane, produced by the desorption of gas trapped in coal. "Black damp" (Scythe gas) with high carbon dioxide and denser than air. "White damp" is high in carbon monoxide.	Methane most common. Can contain higher alkanes, carbon dioxide and carbon monoxide. Often low in oxygen.
Natural Shallow Ground Gas	Various types - high carbon dioxide formed by subsurface aerobic activity leading to depleted oxygen and elevated carbon dioxide; - chemical degradation of rocks (e.g., carbonates) producing carbon dioxide; - carbon dioxide production in root zone of soils by plants.	Gases can be emitted from ground under falling barometric pressure conditions.

Table 5. Potential Sources of Ground Gases

This Appendix does not provide guidance for the assessment of risk when other gases are present due to 'Other Sources' from the above table (particularly organic compounds such as BTEX and VOC's or for the risk from radon or hydrogen sulphide).

To determine the origin of the gas a range of factors must be considered together, including;

1. Proximity of likely sources
2. Ground conditions (geology, hydrogeology, anthropogenic pathways etc)
3. Properties of gases present including:
    - Chemical composition
    - Physical properties
    - Ratios of components e.g., methane : carbon dioxide
4. Timeframe of activities such as infilling periods, capping works, installation of gas control systems etc

Identification of the originating source may be problematic given that there may be more than one source present and trace gas analysis may be required. Identification of the sources of the gases encountered during monitoring is usually carried out through a process of eliminating the most unlikely potential sources (given the site setting) and selecting those which are most likely.

Hazards Associated with Presence of Methane

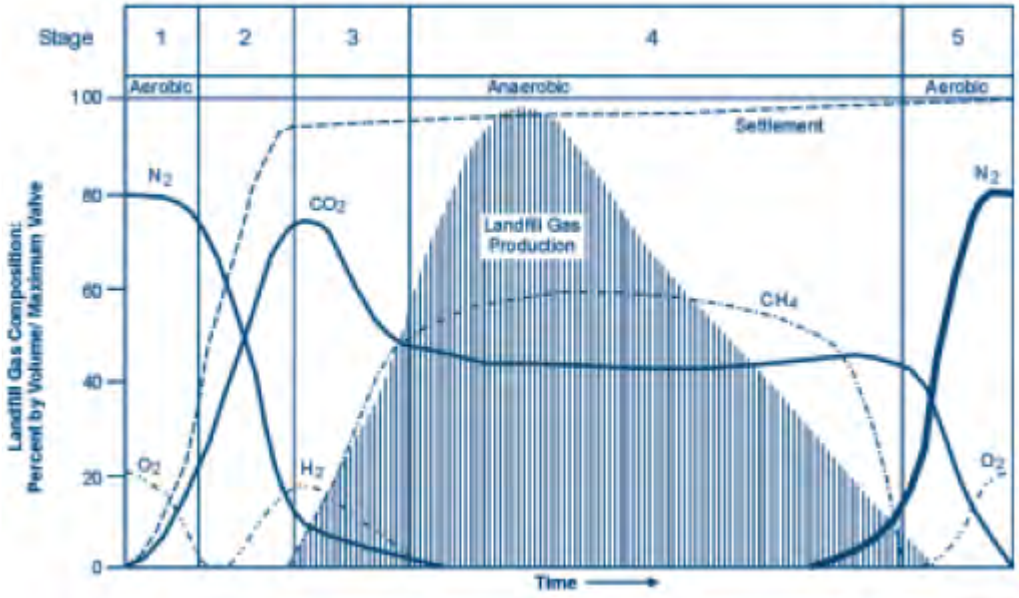
Methane gas is combustible and potentially explosive. When the concentration of methane in air is between the limits of 5.0%v/v and 15.0%v/v an explosive mixture is formed. The Lower Explosive Limit (LEL) of methane is 5.0%v/v, which is equivalent to 100% LEL. The 15.0%v/v limit is known as the Upper Explosive Limit (UEL), but concentrations above this level cannot be assumed to represent safe concentrations. Further, the LEL and UEL will vary (up and down) depending upon the proportion of other gases (including oxygen). However, the fact that methane is a colourless, odourless gas means that there is no simple indicator of the presence of the gas until such a time as explosive limits are reached, and an incident occurs. Methane is lighter than air and has a low toxicity. However, at high concentrations it can result in asphyxiation due to oxygen displacement.

Hazards Associated with Presence of Carbon Dioxide

Carbon dioxide is a colourless, odourless gas, which, although non-flammable, is both toxic and an asphyxiant. As carbon dioxide is denser than air, it will collect in low points and depressions. The UK Health & Safety Executive (HSE) has published information relating to concentrations of carbon dioxide that humans may be exposed to, which uses concentrations contained in the Control of Substances Hazardous to Health Regulations 2002 (as amended). These are the Long-Term Occupational Exposure Limit (LTOEL, 8-hour period) and the Short-Term Occupational Exposure Limit (STOEL, 15-minute period), which are 0.5% and 1.5% carbon dioxide, respectively.

Parameters Influencing the Rate of Ground Gas Production

The figure below is taken from EA guidance document LFTGN 03 illustrates typical ground gas generation curves from biodegradable materials:



The production of methane and carbon dioxide at a landfill site may be expected to be considerable and ongoing. Concentrations of methane will eventually decrease, followed by concentrations of carbon dioxide, but the duration and rate of gas production can vary markedly between sites. Five distinct phases of gas production occur during the process which are, in order of event as marked above, as follows:

1. An aerobic phase involving oxygen depletion and temperature increase through aerobic respiration;
2. The establishment of anaerobic conditions and the evolution of carbon dioxide and hydrogen through acidogenic activity;
3. Commencement of methanogenic activity; the establishment of populations of methanogenic bacteria;
4. A phase of stable methanogenic activity, which may go on for many tens of years;
5. A phase of decreasing methanogenic activity, representing depletion of the organic material and a return to aerobic conditions.

The time scale for the return to the normal ground gas concentrations will be highly variable, depending upon the types and quantities of materials present. In addition, the optimum parameters influencing the rate of decomposition and ground gas production within the ground at a site are as follows:

High water content with adequate rainfall and water infiltration to provide moisture content between approximately 20 to 26%;
Conditions that either are or are very close to anaerobic;
High proportion of biodegradable materials;
A pH between 6.5 and 8.5, ideally verging slightly on the acidic between pH 6 to 7;
Temperature between 25°C and 55°C;
The ratio of the biochemical and chemical oxygen demands (BOD:COD);
High permeability;
Small particle size, as finer subsurface materials possess a greater surface area to provide a growing 'face' for the micro-organisms, but high fines levels reduce permeability and reduces decomposition rate.

For this reason, it is vital that sources of methane and carbon dioxide are identified prior to the commencement of any work on a construction site, and that the ground gas regime is characterised at the worst temporal conditions a site may experience. From this, a risk assessment is carried out to identify the risk at the site from ground gases so that suitable protection measures can be designed and incorporated into a development to prevent a dangerous build-up of gas occurring.

Factors Influencing the Migration and Behaviour of Ground Gases
There are many factors that influence the migration of ground gases which can affect the risk from a gassing source:

driving force – pressure differential along a pathway, diffusion and dissolved in solution;
meteorological conditions – short term and seasonal conditions including atmospheric pressure changes (e.g. rapidly falling pressure causes gas to expand increasing emission rates), rainfall, frozen ground and thawing, temperature;
geological and groundwater conditions – these can have the over riding influence on the direction/pathways and quantity of migrating gas;
anthropogenic influences – man-made pathways include mine shafts, service runs/drains, foundation piles, underground voids/pits/basements, foundation/building design/construction

Current Guidance
Previous versions of Building Regulations Approved Document C provided statutory guidance stating that consideration should be given to appropriate action and / or specific solutions in situations where methane concentration exceeded 1%v/v or carbon dioxide concentrations exceeded 5%v/v. The latest Building Regulations Approved Document C (DoE 2004) no longer endorses this approach and recommends the use of a risk-based approach to interpreting a gas monitoring survey. This is in line with current EA guidance for landfill gas (LFTGN 03, 2004) which recommends the use of a structured risk-based approach like that outlined in CLR 11. On this basis, recent guidance has been produced in 2006 and 2007 with the aim of providing up to date advice in relation to residential and commercial development. The guidance does not address issues associated with gas derived from landfills, for this refer to "Guidance on the Management of Landfill Gas" (Environment Agency 2004) for an overview.

Recent guidance relevant to gas assessments for residential and commercial development includes;

Wilson et al. (CIRIA C665, December 2007) "Assessing Risks Posed by Hazardous Ground Gases for Buildings."
This document provides up to date advice on all aspects of ground gas risk assessment such as investigation, monitoring programmes, data collection and interpretation. The guidance presents separate methodologies for the characterisation of:
All development types except low rise housing with gardens (Situation A)
Low rise housing with gardens (Situation B)

Boyle and Witherington (NHBC / RSK Group, Report 10627-R01(04) January 2007) "Guidance on the Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present."
This document presents the "Traffic Lights System" detailed below and is relevant only for low rise properties (e.g., bungalows and town houses) that have a ventilated sub-floor void (i.e. Situation B as described in CIRIA C665).

British Standard (BS 8485, December 2007) "Code of Practice for the Characterization and Remediation from Ground Gas in Affected Developments"
This document provides an overview of gas characterisation and assessment. The Standard is intended to be used by designers of gas protection measures and regulators involved in the assessment of design solutions.

Further guidance, Wilson, and Card (CIEH) "Ground Gas Handbook for Designers and Regulators" providing practical guidance on ground gas assessments and the design and evaluation of protection measures, is expected to be published in March 2009.

Each of these documents continues to highlight the importance of, and give further guidance towards, carrying out a tiered risk-based decision-making process in accord with government policy on dealing with contamination from historic or natural sources and highlight the importance of the Conceptual Model in site characterisation.

Ground Gas Risk Assessment Methodology
Assessment of risk posed by ground gas is undertaken using the methodology as outlined previously, and summarised hereunder:

Tier 1 Preliminary Risk Assessment
Tier 2 Generic Quantitative Risk Assessment
Tier 3 Detailed Quantitative Risk Assessment

The methodology used in each of the above assessments with concern to ground gas is discussed hereunder.

Tier 1 Preliminary Risk Assessment
All potential sources of methane and carbon dioxide are identified in the Preliminary Conceptual Model and the generation potential determined. The background information discussed earlier is referred to in order to determine the potential for a source to generate ground gas.

CIRIA C665 provides idealised monitoring frequency / period dependant upon generation potential of gas source and sensitivity of the proposed land use as below:

Idealised Frequency and Period of Monitoring (after Table 5.5a and 5.5b, CIRIA C665)

		Generation Potential of Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	4/1	6/2	6/3	12/6	12/12
	Moderate (Flats)	6/2	6/3	9/6	12/12	24/24
	High (Residential with Gardens)	6/3	9/6	12/6	24/12	24/24

Notes
1. First number is the number of readings and the second is the minimum period in months (e.g., 6/2 – six sets of readings over two months).
2. At least two sets of readings must be at low (preferably under 1,000 mb) and falling pressure.

The monitoring programme is decided using the above table prior to the intrusive site investigation. However, if the intrusive investigation reveals that the potential source is better or worse than anticipated the monitoring programme should be modified accordingly. For example, if the made ground contains no evidence of organic material and comprises entirely granular brick fill, the potential for that made ground to generate ground gas is reduced considerably.

Tier 2 Generic Quantitative Risk Assessment
Generic Quantitative Risk Assessment is undertaken upon completion of the required gas monitoring period.

All three current guidance documents propose that both ground gas concentrations and flow rates are used to calculate the limiting gas well gas volume flow rates for methane and carbon dioxide, based on the ground gas conditions monitored for during the worse-case temporal conditions. This limiting gas well volume flow rate is termed the Gas Screening Value (GSV, note that this was termed borehole gas volume flow), and is calculated as follows:

GSV (l/hr) = [gas well gas concentration (%v/v)] x [gas well flow rate (l/hr)]

100

GSV's are compared to typical max concentrations and limiting gas screening values derived for either Situation A - All development except low rise housing with gardens, or Situation B low rise housing with gardens (NHBC Traffic Light System). Table 8.5 from CIRIA C665 is used for comparison of gas screening values for "Situation A Developments" and is presented hereunder:

Characteristic Situation (CIRIA R149)	Comparable Partners in Technology gas Regime (see Box 8.2)	Risk Classification	Gas Screening Value (CH4 or CO2) (l/hr)1	Additional Factors	Typical Source of Generation
1	A	Very low risk	<0.07	Typically, methane ≤ 1% and/or carbon dioxide ≤ 5%. Otherwise consider increase to Situation 2	Natural soils with low organic content "Typical" made ground
2	B	Low risk	<0.7	Borehole air flow rate not to exceed 70l/hr. Otherwise consider increase to characteristic Situation 3	Natural soil, high peat/organic content. "Typical" made ground
3	C	Moderate risk	<3.5		Old landfill, inert waste, mineworking flooded
4	D	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protective measures.	Mineworking susceptible to flooding, completed landfill (WMP 26B criteria)
5	E	High risk	<70		Mineworking unflooded inactive with shallow workings near surface
6	F	Very high risk	>70		Recent landfill site

Table 8.5 from CIRIA C665 Modified Wilson and Card Classification

Table 8.7 is used for comparison of gas screening values for "Situation B Developments" and is presented hereunder:

Traffic Light	Methane1		Carbon Dioxide2	
	Typical max concentration3 (% by volume)	Gas screening value2,4 (litres/hour)	Typical max concentration3 (% by volume)	Gas screening value2,4 (litres/hour)
Green	1	0.13	5	0.78
Amber 1	5	0.63	10	1.60
Amber 2	20	1.60	30	3.10
Red				

Notes:
1. The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter will be the decoder as to what Traffic Light is allocated;
2. Borehole Gas Volume Flow Rate, in litres per hour as defined in Wilson and Card (1999), is the borehole flow rate multiplied by the concentration in the air stream of the gas being considered;
3. The Typical Maximum Concentration can be exceeded in certain circumstances should the Conceptual Site Model indicate it is safe to do so;
4. The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment considering site-specific conditions.

Table 8.7 from CIRIA C665 - NHBC Traffic light system for 150 mm void

Dependant on the outcome of the assessment of risk posed by ground gas it is determined whether gas protection measures are required for the proposed development, and or whether a detailed quantitative risk assessment is required for the site.

Selection & Design of Protective Measures
Table 8.6 and Box 8.4 of CIRIA C665 contain information on the detailed design of protection measures and were initially intended for the purposes of determining then level of protection measures a development requires. These tables and related text include some useful information on the design of gas protection measures, however BS84845:2007, which supersedes the guidance included within CIRIA C665, is used for selection of gas protection measures.

BS8485: 2007 uses a scoring system dependant on the Characteristic Situation / NHBC Traffic Light and proposed end use of the site. The scoring system is summarised in BS8485:2007 Table 2 as presented hereunder:

Characteristic gas	NHBC traffic	Required gas protection

situation, CS	light	Non-managed property e.g., private housing	Public building (a)	Commercial buildings	Industrial buildings (b)
1 2 3	Green Amber 1 Amber 2	0 3 4	0 3 3	0 2 2	0 1 (c) 2
4 5 6	Red	6 (d)	5(d) 6(e)	4 5 7	3 4 6
NOTE Traffic light indications are taken from NHBC Report no.:10627-RO1 (04) and are mainly applicable to low-rise residential housing1. These are for comparative purposes but the boundaries between the traffic light indications and CS values do not coincide.					
a) Public buildings include, for example, managed apartments, schools, and hospitals. b) Industrial buildings are generally open and well ventilated. However, areas such as office pods might require a separate assessment and may be classified as commercial buildings and require a different scope of gas protection to the main building. c) Maximum methane concentration 20% otherwise consider and increase to CS3. d) Residential building on higher traffic light/CS sites is not recommended unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g., high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations. e) Consideration of issues such as ease of evacuation and how false alarms will be handled are needed when completing the design specification of any gas protection scheme					
1 The NHBC guidance and CIRIA C665 guidance refers to low rise housing (which is up to three storeys without lifts) that is constructed with a 150mm ventilated sub-floor void.					

BS8485:2007 Table 2 Required gas protection by characteristic gas situation and type of building

Once a score is assigned, a combination of protection systems / elements is chosen from BS8485:2007 Table 3 shown below:

PROTECTION ELEMENT/SYSTEM		SCORE	COMMENTS
a) Venting/dilution (See Annex A BS8485)			
Passive sub floor ventilation (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.)A	Very good performance	2.5	Ventilation performance in accordance with Annex A (BS8485)
	Good performance	1	If passive ventilation is poor this is generally unacceptable, and some form of active system will be required.
Subfloor ventilation with active abstraction/pressurization (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.)A		2.5	There must be robust management systems in place to ensure the continued maintenance of any ventilation system. Active ventilation can always be designed to meet good performance.
Ventilated car park (basement or under croft)		4	Mechanically assisted systems come in two forms: extraction and positive pressurization.
b) Barriers			
Floor slabs Block and beam floor slab Reinforced concrete ground bearing slab Reinforced concrete ground bearing foundation raft with limited-service penetrations that are cast into slab Reinforced concrete cast in situ suspended floor slab with minimal service penetrations and water bars around all slab penetrations and at joints Fully tanked basement		 0 0.5 1.5 1.5 2	It is good practice to install ventilation in all foundation systems to effect pressure relief as a minimum. Breaches in floor slabs such as joints must be effectively sealed against gas ingress in order to maintain these performances.
c) Membranes			
Taped and sealed membrane to reasonable levels of workmanship/in line with current good practice with validation B,C		0.5	The performance of membranes is heavily dependent on the quality of design of the installation, resistance to damage after installation, and the integrity of joints.
Proprietary gas resistant membrane to reasonable levels of workmanship /in line with good practice under independent inspection (CQA)B,C		1	
Proprietary gas resistant membrane installed to reasonable levels of workmanship/in line with current good practice under CQA with integrity testing and independent validation		2	
d) Monitoring and detection (not applicable to non-managed property, or in isolation)			
Intermittent monitoring using handheld equipment		0.5	Where fitted, permanent monitoring systems ought to be installed in the underfloor venting/dilution system in the first instance but can also be provided within the occupied space as a fail safe.
Permanent monitoring and alarm system A	Installed in the underfloor venting/dilution system	2	
	Installed in the building	1	
e) Pathway Intervention			
Pathway intervention		-	This can consist of site protection measures for off-site or on-site sources (see Annex A, BS8485)
NOTE In practice the choice of materials might well rely on factors such as construction method and the risk of damage after installation. It is important to ensure that the chosen combination gives an appropriate level of protection			
It is possible to test ventilation systems by installing monitoring probes for post installation validation. If a 1 200g DPM material is to function as a gas barrier it should be installed according to BRE 212 /BRE 414 being taped and sealed to all penetrations			

Polymeric Materials> 1200 g (proportional to thickness) but their physical properties mean that they are more robust and resistant to damage.

BS8485:2007 Table 3 Solution Scores

Where the gas situation is 4 or more (and for NHBC Red situations) the site requires a comprehensive risk assessment to confirm the scope of protection measures. These are higher risk sites and reliance on Table 2 and 3 alone is not enough.

For a site which is impacted by migratory gases from an off-site source, the development may be protected by imposing pathway intervention methods, which if successfully validated, could also remove the need for further analysis. It is essential that the gas regime in these circumstances has been fully characterised and that the only source impacting the site is located off site and that the pathway is clearly defined, and its interception equally proven before construction commences. Pathway intervention methods may include vertical membrane installations, venting trenches, rows of stone columns, activated trenches and various proprietary systems. These systems are particularly relevant to domestic housing where there is limited scope for foundation type solutions.

CURRENT GUIDANCE ON REMEDIATION

When risk assessment of the site has been completed and it indicates that remedial works are required, the main guidance in managing this process is set out in the DEFRA/EA publication CLR11 (2004) "Model Procedures for the Management of Land Contamination." The stages of managing remediation are as follows:

(a) Options Appraisal and develop Remediation Strategy;
(b) Develop Implementation Plan and Verification Plan;
(c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health, and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

APPENDIX D: COMMERCIAL ENVIRONMENTAL DATA

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Vanilla Cafe Bar, Vanilla 39-41 Richmond Street, M1 3WB

Order Details

Date: 12/04/2023

Your ref: CMAPS-AAG-1097625-4165-120423

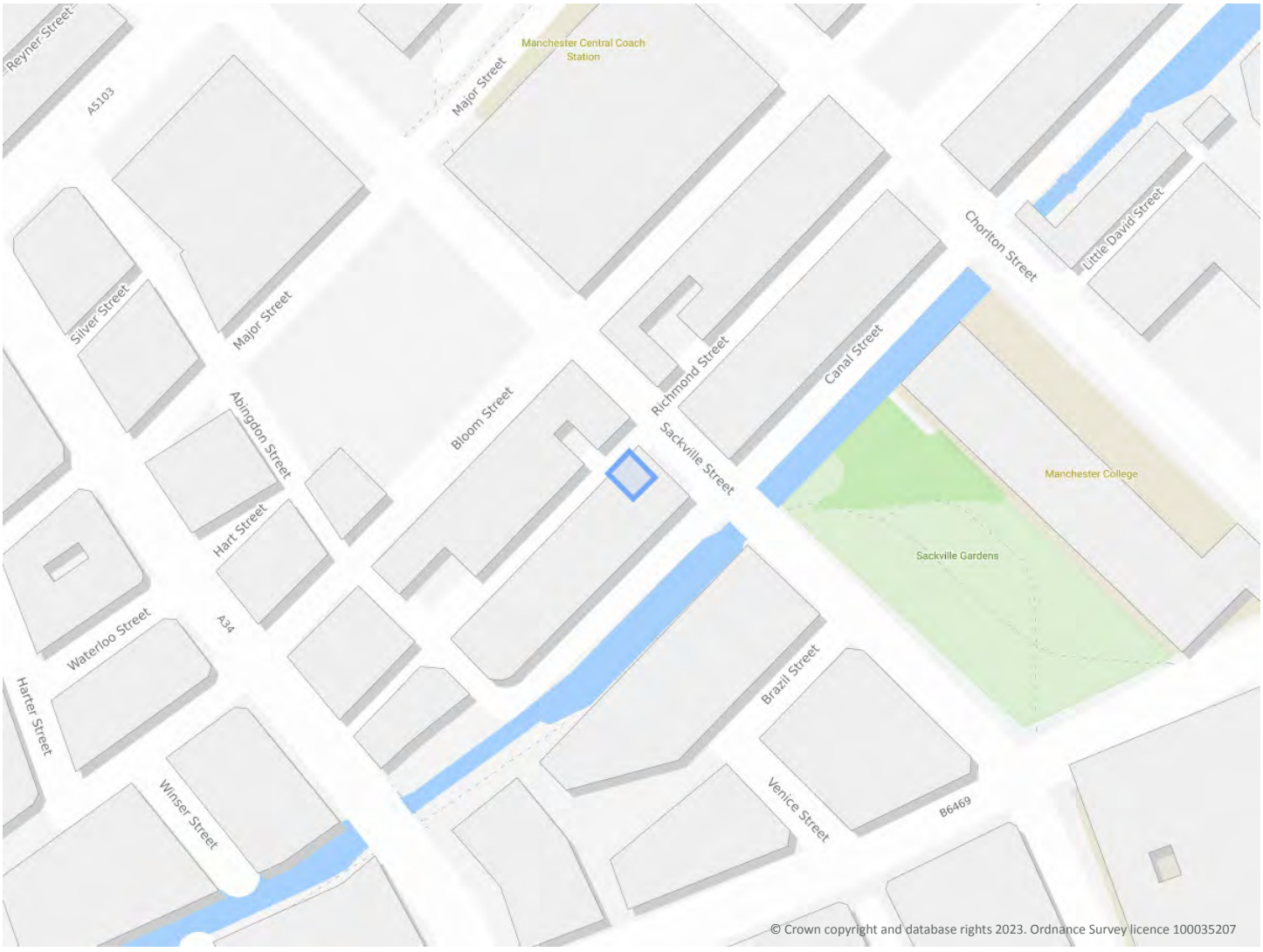
Our Ref: CMAPS-AAG-1097625-4165-120423EDRGEO

Site Details

Location: 384338 397827

Area: 0.01 ha

Authority: Manchester City Council



Summary of findings p. 2

OS MasterMap site plan p.12

Aerial image p. 8

groundsure.com/insightuserguide

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

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	0	2	18	90	-
18	1.2	Historical tanks	0	0	17	43	-
20	1.3	Historical energy features	0	0	5	8	-
21	1.4	Historical petrol stations	0	0	0	0	-
21	1.5	Historical garages	0	0	7	11	-
22	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
23	2.1	Historical industrial land uses	0	4	26	148	-
30	2.2	Historical tanks	0	0	18	56	-
33	2.3	Historical energy features	0	0	7	25	-
34	2.4	Historical petrol stations	0	0	0	0	-
35	2.5	Historical garages	0	0	23	26	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
37	3.1	Active or recent landfill	0	0	0	0	-
37	3.2	Historical landfill (BGS records)	0	0	0	0	-
38	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
38	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
38	3.5	Historical waste sites	0	0	0	0	-
38	3.6	Licensed waste sites	0	0	0	0	-
38	3.7	Waste exemptions	0	0	0	8	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
40	4.1	Recent industrial land uses	0	0	22	-	-
42	4.2	Current or recent petrol stations	0	0	0	0	-
42	4.3	Electricity cables	0	0	0	0	-
42	4.4	Gas pipelines	0	0	0	0	-
42	4.5	Sites determined as Contaminated Land	0	0	0	0	-

43	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
43	4.7	Regulated explosive sites	0	0	0	0	-
43	4.8	Hazardous substance storage/usage	0	0	0	0	-
43	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
43	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
44	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	0	0	1	-
44	**4.12**	**Radioactive Substance Authorisations**	0	0	0	8	-
45	**4.13**	**Licensed Discharges to controlled waters**	0	0	13	31	-
51	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
52	4.15	Pollutant release to public sewer	0	0	0	0	-
52	4.16	List 1 Dangerous Substances	0	0	0	0	-
52	4.17	List 2 Dangerous Substances	0	0	0	0	-
52	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	0	2	-
53	4.19	Pollution inventory substances	0	0	0	0	-
53	4.20	Pollution inventory waste transfers	0	0	0	0	-
53	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
54	**5.1**	**Superficial aquifer**	Identified (within 500m)				
56	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
58	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
59	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
59	5.5	Groundwater vulnerability- local information	None (within 0m)				
60	**5.6**	**Groundwater abstractions**	0	0	2	2	53
75	**5.7**	**Surface water abstractions**	0	0	0	0	2
76	**5.8**	**Potable abstractions**	0	0	0	0	9
78	**5.9**	**Source Protection Zones**	0	0	0	1	-
78	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
79	**6.1**	**Water Network (OS MasterMap)**	0	3	2	-	-

80	6.2	Surface water features	0	2	4	-	-
80	6.3	WFD Surface water body catchments	1	-	-	-	-
81	6.4	WFD Surface water bodies	0	1	0	-	-
81	6.5	WFD Groundwater bodies	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
82	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
82	7.2	Historical Flood Events	0	0	0	-	-
82	7.3	Flood Defences	0	0	0	-	-
83	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
83	7.5	Flood Storage Areas	0	0	0	-	-
84	7.6	Flood Zone 2	None (within 50m)				
84	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding	
85	8.1	Surface water flooding	1 in 100 year, 0.3m - 1.0m (within 50m)

Page	Section	Groundwater flooding	
87	9.1	Groundwater flooding	Moderate-High (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
88	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
88	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
88	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
88	10.4	Special Protection Areas (SPA)	0	0	0	0	0
89	10.5	National Nature Reserves (NNR)	0	0	0	0	0
89	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
89	10.7	Designated Ancient Woodland	0	0	0	0	0
89	10.8	Biosphere Reserves	0	0	0	0	0
90	10.9	Forest Parks	0	0	0	0	0
90	10.10	Marine Conservation Zones	0	0	0	0	0
90	10.11	Green Belt	0	0	0	0	0
90	10.12	Proposed Ramsar sites	0	0	0	0	0

90	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
91	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
91	10.15	Nitrate Sensitive Areas	0	0	0	0	0
91	**10.16**	**Nitrate Vulnerable Zones**	0	0	0	0	4
92	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
93	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
94	11.1	World Heritage Sites	0	0	0	-	-
95	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
95	11.3	National Parks	0	0	0	-	-
95	**11.4**	**Listed Buildings**	0	6	62	-	-
98	**11.5**	**Conservation Areas**	1	0	1	-	-
99	11.6	Scheduled Ancient Monuments	0	0	0	-	-
99	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
100	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
101	12.2	Open Access Land	0	0	0	-	-
101	12.3	Tree Felling Licences	0	0	0	-	-
101	12.4	Environmental Stewardship Schemes	0	0	0	-	-
101	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
102	13.1	Priority Habitat Inventory	0	0	0	-	-
102	13.2	Habitat Networks	0	0	0	-	-
102	13.3	Open Mosaic Habitat	0	0	0	-	-
102	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
103	**14.1**	**10k Availability**	Identified (within 500m)				
104	**14.2**	**Artificial and made ground (10k)**	0	1	0	1	-
105	**14.3**	**Superficial geology (10k)**	1	0	0	1	-

106	14.4	Landslip (10k)	0	0	0	0	-
107	14.5	Bedrock geology (10k)	1	0	0	1	-
108	14.6	Bedrock faults and other linear features (10k)	0	1	0	1	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
109	15.1	50k Availability	Identified (within 500m)				
110	15.2	Artificial and made ground (50k)	0	1	0	0	-
111	15.3	Artificial ground permeability (50k)	0	1	-	-	-
112	15.4	Superficial geology (50k)	1	0	0	1	-
113	15.5	Superficial permeability (50k)	Identified (within 50m)				
113	15.6	Landslip (50k)	0	0	0	0	-
113	15.7	Landslip permeability (50k)	None (within 50m)				
114	15.8	Bedrock geology (50k)	1	0	0	1	-
115	15.9	Bedrock permeability (50k)	Identified (within 50m)				
115	15.10	Bedrock faults and other linear features (50k)	0	1	0	1	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
116	16.1	BGS Boreholes	0	9	96	-	-
Page	Section	Natural ground subsidence					
121	17.1	Shrink swell clays	Very low (within 50m)				
122	17.2	Running sands	Very low (within 50m)				
123	17.3	Compressible deposits	Very low (within 50m)				
125	17.4	Collapsible deposits	Very low (within 50m)				
126	17.5	Landslides	Very low (within 50m)				
127	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
129	18.1	Natural cavities	0	0	0	0	-
130	18.2	BritPits	0	0	0	0	-
130	18.3	Surface ground workings	0	8	6	-	-
131	18.4	Underground workings	0	0	0	0	0
131	18.5	Historical Mineral Planning Areas	0	0	0	0	-

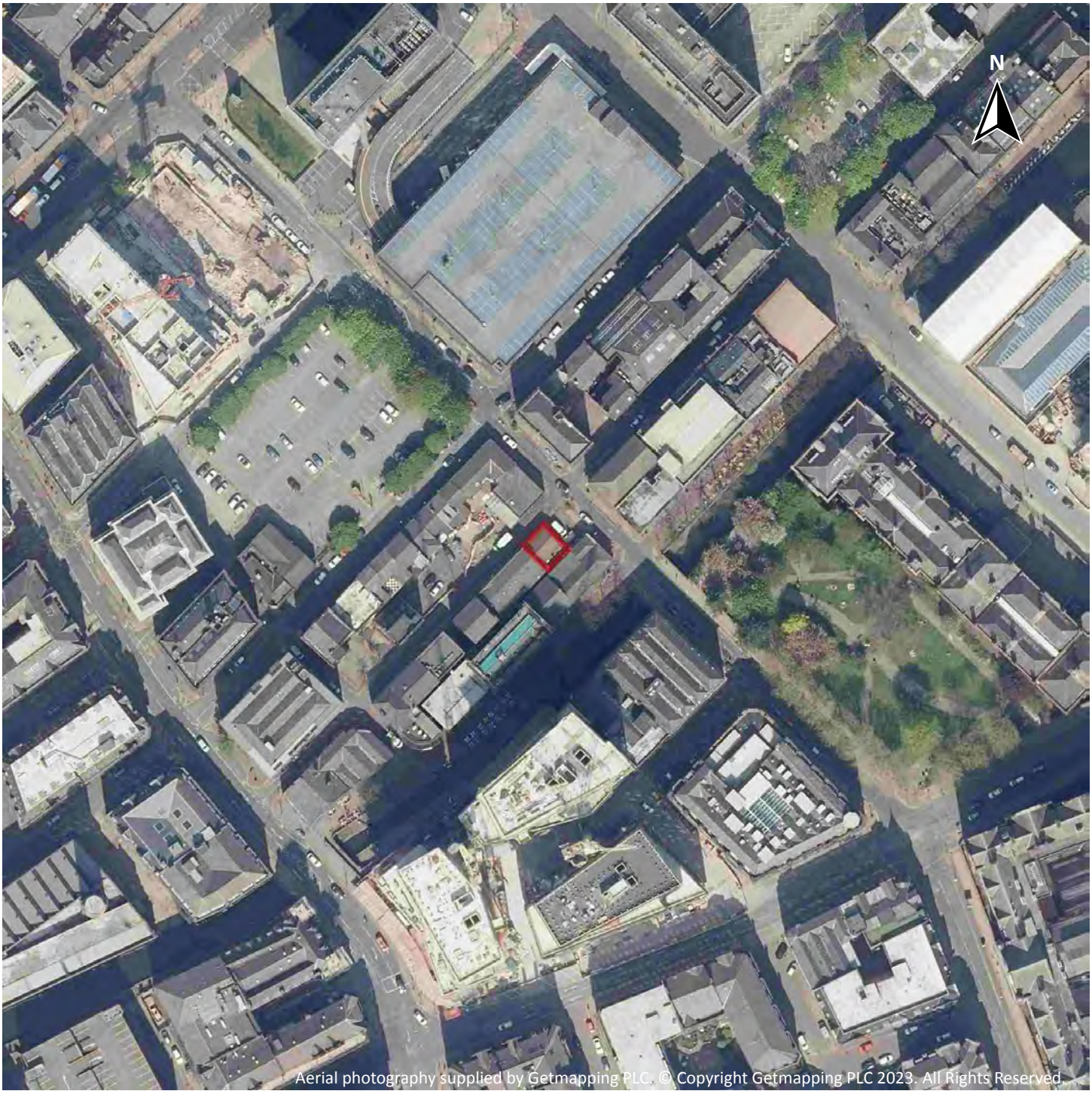
131	18.6	Non-coal mining	0	0	0	0	0
131	**18.7**	**Mining cavities**	0	0	0	0	1
132	**18.8**	**JPB mining areas**	Identified (within 0m)				
132	**18.9**	**Coal mining**	Identified (within 0m)				
133	18.10	Brine areas	None (within 0m)				
133	18.11	Gypsum areas	None (within 0m)				
133	18.12	Tin mining	None (within 0m)				
133	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
134	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
136	**20.1**	**BGS Estimated Background Soil Chemistry**	1	0	-	-	-
136	**20.2**	**BGS Estimated Urban Soil Chemistry**	1	3	-	-	-
137	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
138	21.1	Underground railways (London)	0	0	0	-	-
138	21.2	Underground railways (Non-London)	0	0	0	-	-
139	21.3	Railway tunnels	0	0	0	-	-
139	**21.4**	**Historical railway and tunnel features**	0	0	3	-	-
139	21.5	Royal Mail tunnels	0	0	0	-	-
139	21.6	Historical railways	0	0	0	-	-
140	**21.7**	**Railways**	0	0	2	-	-
140	21.8	Crossrail 1	0	0	0	0	-
140	21.9	Crossrail 2	0	0	0	0	-
140	**21.10**	**HS2**	0	0	0	2	-

Recent aerial photograph

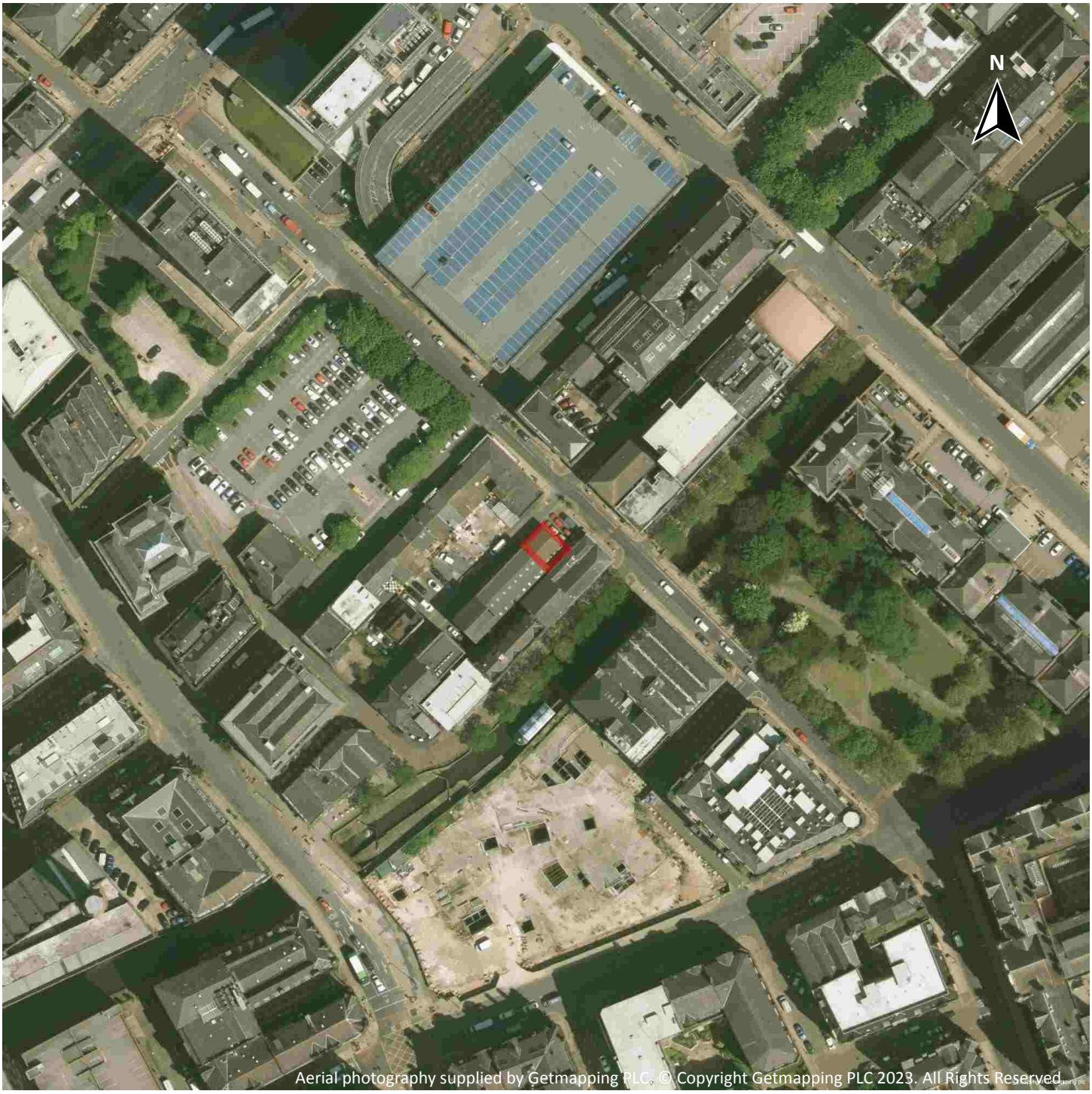


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Capture Date: 22/04/2019

Site Area: 0.01ha

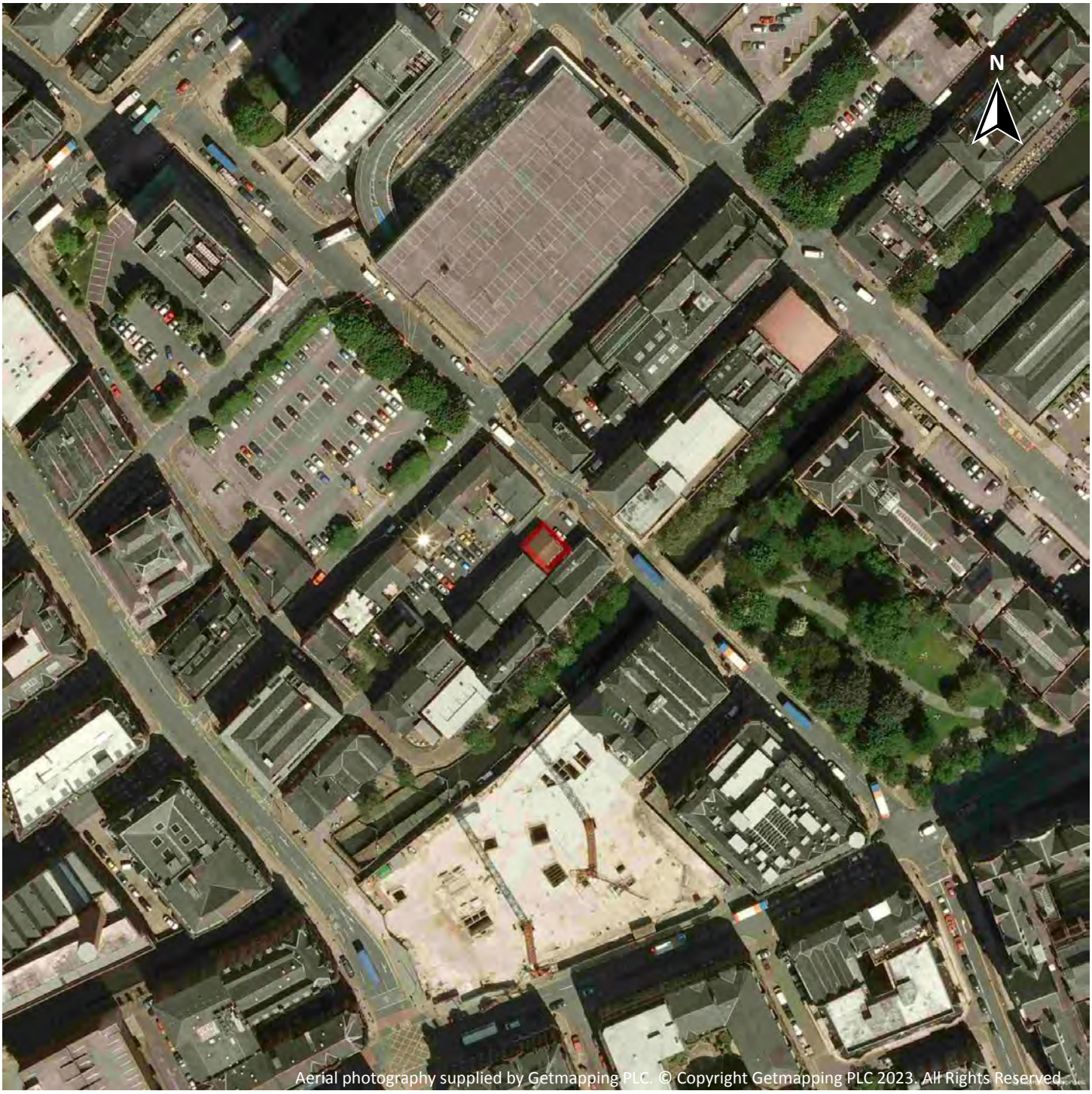
Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.01ha

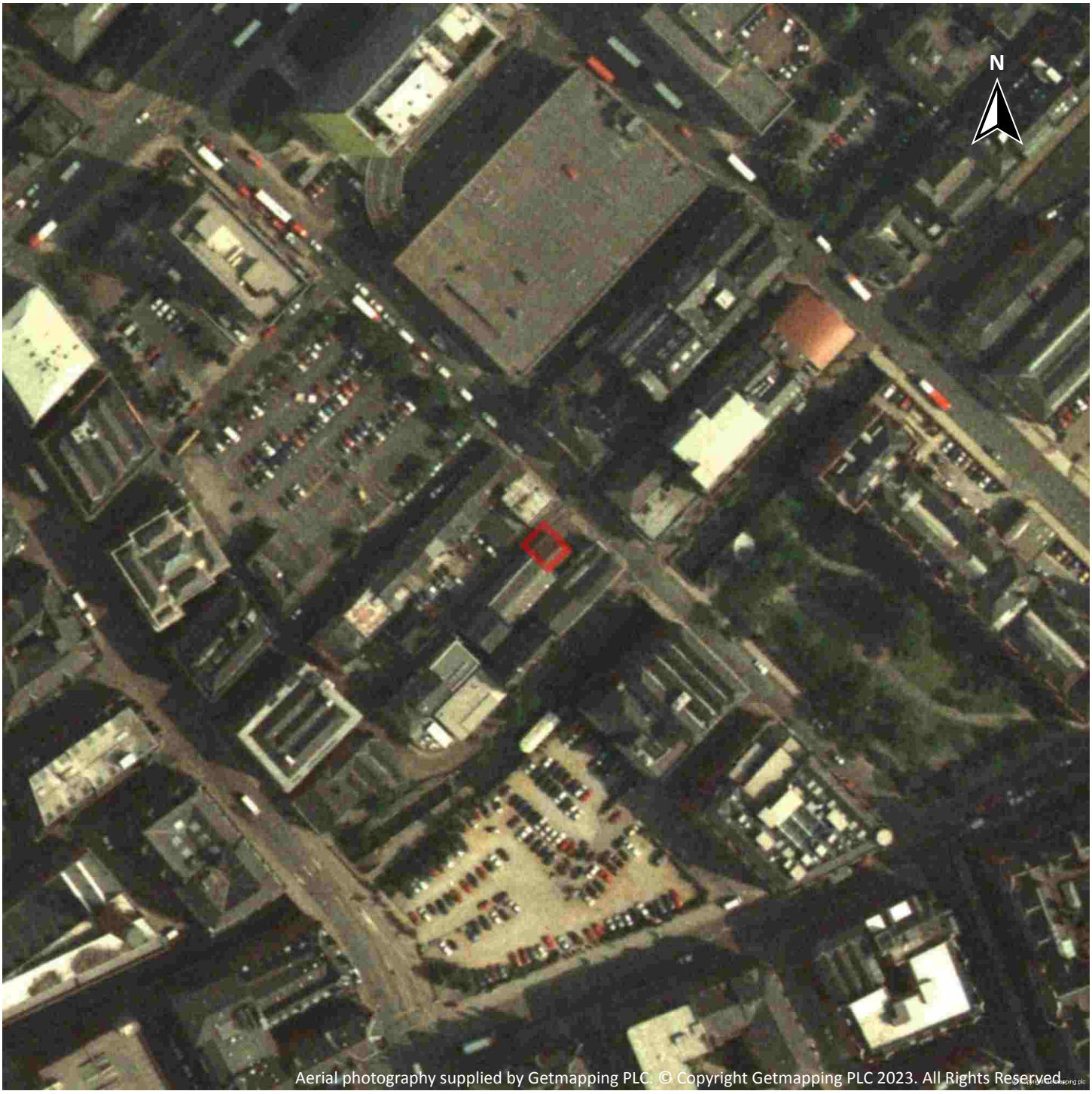
Recent site history - 2009 aerial photograph



Capture Date: 02/06/2009

Site Area: 0.01ha

Recent site history - 2000 aerial photograph

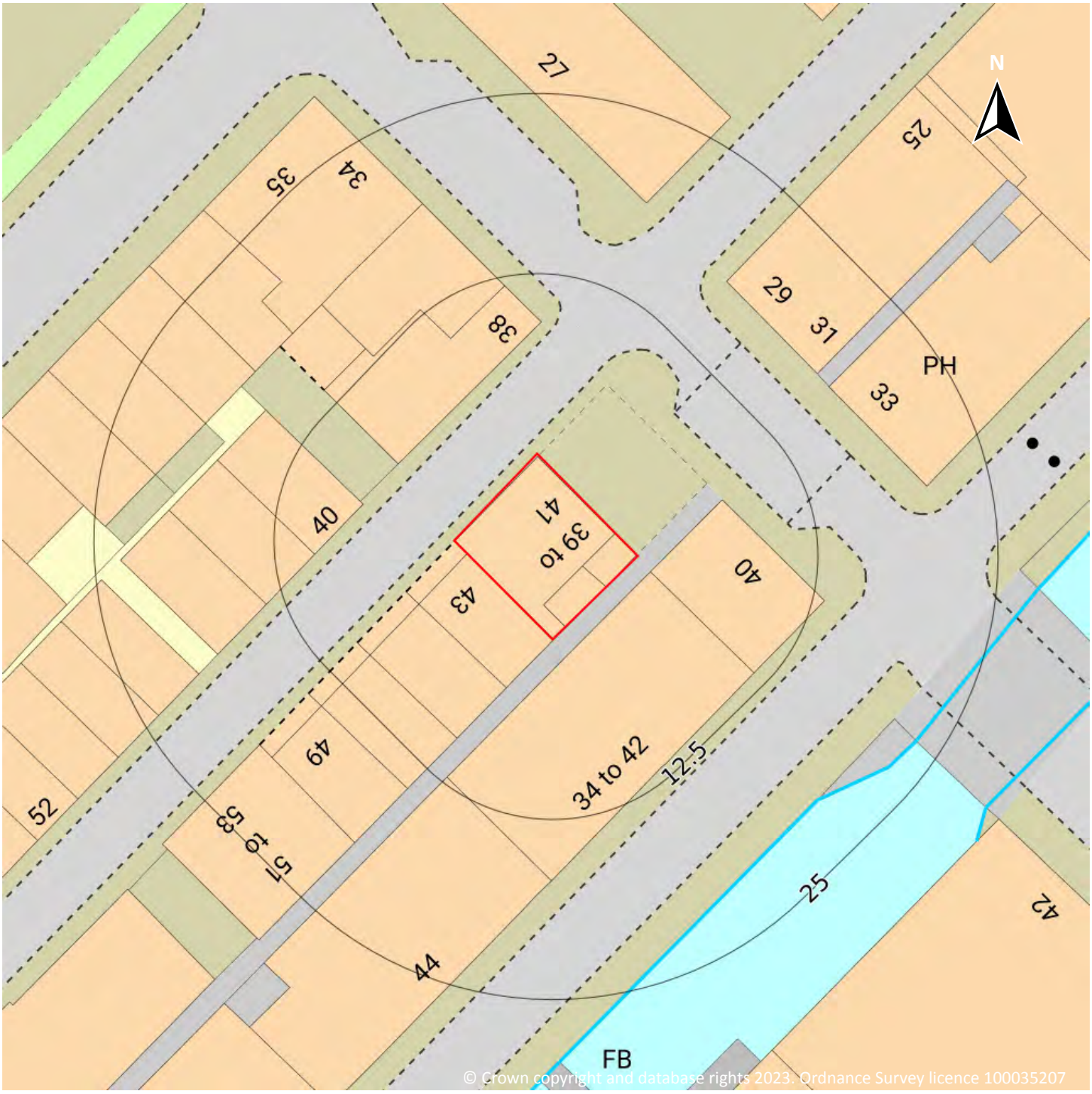


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Capture Date: 19/06/2000

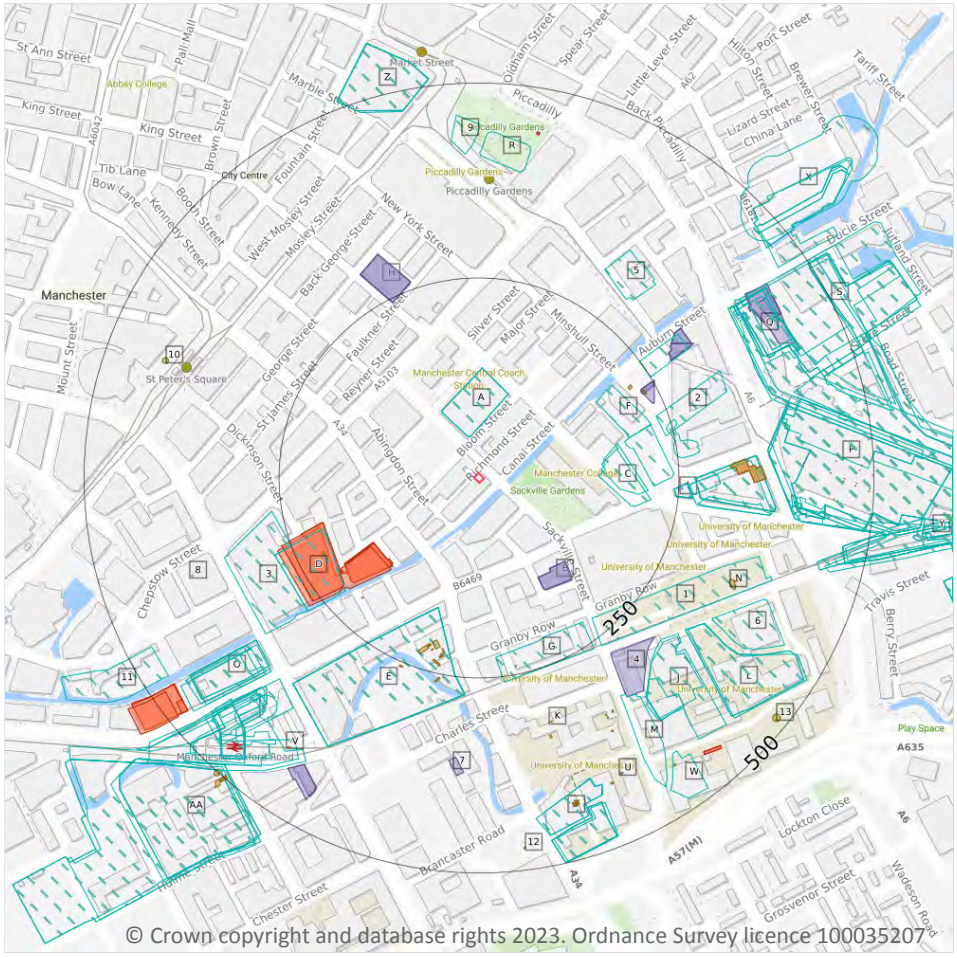
Site Area: 0.01ha

OS MasterMap site plan



Site Area: 0.01ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	110

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 13**

ID	Location	Land use	Dates present	Group ID
A	48m N	Bus Station	1978	884077

ID	Location	Land use	Dates present	Group ID
A	48m N	Bus Station	1985 - 1994	952978
C	147m E	Unspecified Wharf	1890	826601
C	151m E	Ice Works	1915	808540
E	168m S	Unspecified Mills	1916	861845
E	168m S	Unspecified Commercial/Industrial	1923	874542
E	168m S	Unspecified Commercial/Industrial	1905	968335
E	168m S	Unspecified Mills	1932 - 1938	989884
F	174m NE	Unspecified Wharf	1915 - 1923	848098
C	187m E	Unspecified Works	1923	830436
D	203m W	Electricity Station	1916 - 1923	992043
G	214m SE	Unspecified Commercial/Industrial	1923	796719
1	226m SE	Unspecified Commercial/Industrial	1923	796723
2	235m E	Unspecified Mill	1915 - 1923	946972
C	242m E	Unspecified Ground Workings	1934 - 1938	906423
I	244m E	Police Station	1985 - 1994	879174
I	244m E	Police Station	1971	907595
I	244m E	Police Station	1978	978804
F	249m NE	Unspecified Works	1915 - 1923	898319
3	250m W	Unspecified Commercial/Industrial	1923	796724
I	263m E	Fire Station	1934 - 1938	857211
I	264m E	Police Station	1915 - 1923	846961
I	271m E	Fire Station	1985 - 1994	864327
I	271m E	Fire Station	1978	872224
I	271m E	Fire Station	1956 - 1971	924791
I	276m E	Fire Engine Station	1915 - 1923	869627
5	292m NE	Infirmary	1915 - 1923	975872
J	307m SE	Unspecified Works	1915 - 1923	954702
J	311m SE	Iron Works	1890	822793

ID	Location	Land use	Dates present	Group ID
I	319m E	Police Station	1934 - 1938	903287
L	323m SE	Unspecified Mills	1934 - 1938	854159
L	323m SE	Unspecified Mills	1915	967472
L	326m SE	Unspecified Mills	1923	914258
M	327m SE	Unspecified Works	1915 - 1923	951103
J	333m SE	Railway Sidings	1915 - 1923	959198
6	343m SE	Unspecified Works	1915 - 1923	934829
O	349m SW	Hospital	1956 - 1971	915521
O	349m SW	Hospital	1978	957282
O	351m SW	Hospital	1916	938342
O	359m SW	Gas Works	1851	802208
O	360m SW	Hospital	1923	848326
O	363m SW	Hospital	1932 - 1938	949847
P	366m E	Railway Sidings	1915	849007
P	366m E	Railway Stations	1915	887476
P	366m E	Railway Sidings	1934 - 1938	899923
P	366m E	Railway Stations	1934 - 1938	900032
O	366m SW	Coal Wharf	1851	794097
P	366m E	Railway Station	1923	941202
P	366m E	Railway Station	1890 - 1905	959335
P	371m E	Railway Station	1956	935665
P	375m E	Railway Sidings	1890 - 1905	979002
O	379m SW	Railway Station	1988 - 1994	912150
P	379m NE	Railway Sidings	1923	879517
O	382m SW	Tanks	1851	832185
O	383m SW	Railway Building	1956	820261
Q	384m NE	Railway Building	1890	820433
Q	387m NE	Goods Shed	1915	885654

ID	Location	Land use	Dates present	Group ID
Q	387m NE	Goods Shed	1934 - 1938	924820
O	387m SW	Railway Station	1956	923967
P	388m NE	Railway Sidings	1956	950162
P	388m E	Railway Station	1985 - 1994	890876
P	388m E	Railway Station	1971	897274
P	388m E	Railway Station	1978	897926
O	389m SW	Railway Sidings	1985 - 1994	928139
Q	389m NE	Goods Shed	1905	923774
Q	389m NE	Goods Shed	1923	979300
R	390m N	Unspecified Pit	1956	840494
O	391m SW	Railway Sidings	1905 - 1938	864885
O	391m SW	Railway Station	1905 - 1938	962635
P	391m E	Railway Station	1851	942543
O	391m SW	Railway Station	1896	887032
S	399m NE	Unspecified Commercial/Industrial	1956	796797
T	404m S	Unspecified Works	1923	932223
T	405m S	Unspecified Works	1915	929652
P	406m E	Railway Buildings	1923	833658
9	409m N	Bus Station	1978	842917
P	413m E	Railway Sidings	1851	923729
O	425m SW	Railway Station	1971	960776
O	425m SW	Railway Station	1985	962611
O	425m SW	Railway Station	1978	981767
W	426m SE	Unspecified Works	1915 - 1923	972915
S	428m NE	Goods Station	1890 - 1938	979048
T	438m S	Unspecified Mills	1890	858454
T	438m S	Unspecified Mills	1915	960133
T	438m S	Unspecified Mills	1934 - 1938	967294

ID	Location	Land use	Dates present	Group ID
T	440m S	Unspecified Mills	1923	975952
O	446m SW	Railway Sidings	1896	989778
P	455m E	Railway Building	1938	820435
P	455m E	Grain Store	1915 - 1923	946860
P	461m E	Railway Building	1905 - 1938	893315
X	462m NE	Unspecified Wharf	1956	971868
X	464m NE	Unspecified Warehouse	1923	807197
11	466m SW	Corporation Yard	1905 - 1938	920120
X	468m NE	Unspecified Warehouses	1915	933374
X	468m NE	Unspecified Warehouses	1934 - 1938	964840
Y	468m E	Railway Sidings	1994	844263
Y	468m E	Railway Sidings	1985 - 1988	878187
Y	468m E	Railway Sidings	1971	884730
Y	468m E	Railway Sidings	1978	900007
X	471m NE	Unspecified Wharf	1890 - 1923	976213
Z	474m N	Unspecified Commercial/Industrial	1938	873846
Z	475m N	Unspecified Commercial/Industrial	1931	885632
Z	475m N	Unspecified Commercial/Industrial	1916	924604
X	476m NE	Unspecified Wharf	1934	971276
AA	487m SW	Unspecified Works	1985 - 1994	862878
AA	487m SW	Unspecified Works	1978	976366
AA	491m SW	Unspecified Commercial/Industrial	1896	857423
AA	492m SW	Rubber Works	1916	915281
AA	496m SW	Rubber Works	1923 - 1938	926915
AA	496m SW	Unspecified Commercial/Industrial	1905	944072

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	60

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 13**

ID	Location	Land use	Dates present	Group ID
E	209m S	Unspecified Tank	1891	115962
D	209m SW	Unspecified Tank	1891	115964
D	214m SW	Unspecified Tank	1891	115965
E	216m S	Tanks	1891	106792
E	216m S	Unspecified Tank	1893	115963
E	217m S	Unspecified Tank	1891	115949
F	218m NE	Unspecified Tank	1891	115912
E	219m S	Unspecified Tank	1891	115947
E	219m S	Unspecified Tank	1891	115960
E	220m S	Unspecified Tank	1891 - 1893	141146
E	220m S	Unspecified Tank	1891	115961
E	225m S	Unspecified Tank	1891	115959
E	225m S	Unspecified Tank	1891	115948
F	233m NE	Unspecified Tank	1891	115913
E	233m S	Unspecified Tank	1891	115958
E	236m S	Tanks	1891	106786
G	239m S	Unspecified Tank	1891	115946
E	254m S	Tanks	1891	106787
E	255m S	Tanks	1891	106782
I	316m E	Gas Meter Testing Station	1948	120722
K	319m S	Unspecified Tank	1891	115941

ID	Location	Land use	Dates present	Group ID
K	336m S	Unspecified Tank	1891	115940
M	337m SE	Unspecified Tank	1891	115944
M	338m SE	Unspecified Tank	1891	115942
N	341m E	Unspecified Tank	1952 - 1955	134489
M	342m SE	Unspecified Tank	1891	115945
N	347m E	Unspecified Tank	1891	115938
M	359m SE	Unspecified Tank	1891	115943
8	382m W	Unspecified Tank	1891	115956
P	409m E	Unspecified Tank	1891	115916
P	411m E	Unspecified Tank	1891	115915
U	413m SE	Unspecified Tank	1891	115939
V	416m SW	Unspecified Tank	1955	136262
V	417m SW	Unspecified Tank	1953	136354
U	419m SE	Tanks	1891	106779
10	419m W	Unspecified Tank	1994 - 1999	133983
T	426m S	Tanks	1962 - 1969	129099
T	427m S	Unspecified Tank	1950 - 1953	134156
T	429m S	Unspecified Tank	1948	137703
T	429m S	Unspecified Tank	1955	144222
W	439m SE	Unspecified Tank	1889 - 1908	134036
P	444m E	Unspecified Tank	1891	115922
P	449m E	Unspecified Tank	1891	115926
P	452m E	Unspecified Tank	1891	115914
P	455m E	Unspecified Tank	1891	115911
P	461m E	Unspecified Tank	1891	115923
P	462m E	Unspecified Tank	1891	115924
12	470m S	Unspecified Tank	1891	115782
P	476m E	Unspecified Tank	1891	115925

ID	Location	Land use	Dates present	Group ID
P	477m E	Unspecified Tank	1891	115921
13	480m SE	Unspecified Tank	1952 - 1955	131015
P	481m E	Unspecified Tank	1891	115917
P	484m E	Unspecified Tank	1891	115918
P	493m E	Unspecified Tank	1891	115927
P	495m E	Unspecified Tank	1891	115928
O	497m SW	Unspecified Tank	1955	135180
O	497m SW	Tanks	1950	106780
O	497m SW	Unspecified Tank	1948 - 1953	141893
P	498m E	Unspecified Tank	1891	115920
O	498m SW	Unspecified Tank	1922	115957

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**13**

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 13**

ID	Location	Land use	Dates present	Group ID
D	151m SW	Electricity Station	1950	68267
D	151m SW	Electricity Station	1948	73425
D	152m SW	Electricity Station	1955	77896
D	158m SW	Electricity Station	1908 - 1922	81883
D	202m W	Electricity Station	1950 - 1955	66381
I	316m E	Gas Meter Testing Station	1948	63684
R	440m N	Electricity Substation	1986 - 1995	72406

ID	Location	Land use	Dates present	Group ID
W	449m SE	Electricity Substation	1968 - 1998	81695
W	449m SE	Electricity Substation	1970 - 1984	85141
O	466m SW	Hydraulic Power Station	1948 - 1979	64692
O	468m SW	Hydraulic Power Station	1948 - 1973	64396
O	470m SW	Electricity Substation	1948 - 1999	65682
O	481m SW	Hydraulic Power Station	1932	78003

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	18

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 13**

ID	Location	Land use	Dates present	Group ID
B	142m SE	Garage	1985 - 1990	27728
B	142m SE	Garage	1948 - 1968	26993
F	230m NE	Garage	1948 - 1971	25857
F	231m NE	Garage	1955 - 1965	25421
F	231m NE	Garage	1968 - 1984	24849

ID	Location	Land use	Dates present	Group ID
H	244m NW	Garage	1948 - 1953	24294
H	245m NW	Garage	1953 - 1965	27406
4	276m SE	Garage	1952 - 1955	26338
F	283m NE	Garage	1948	24212
F	283m NE	Garage	1971	22467
F	296m NE	Garage	1971	23089
F	297m NE	Garage	1948 - 1971	25009
7	353m S	Garage	1948 - 1955	24945
Q	403m NE	Garage	1990	23753
Q	404m NE	Garage	1971	20840
Q	416m NE	Garage	1971	21466
V	425m SW	Garage	1955 - 1990	26377
V	425m SW	Garage	1948 - 1998	27861

This data is sourced from Ordnance Survey / Groundsure.

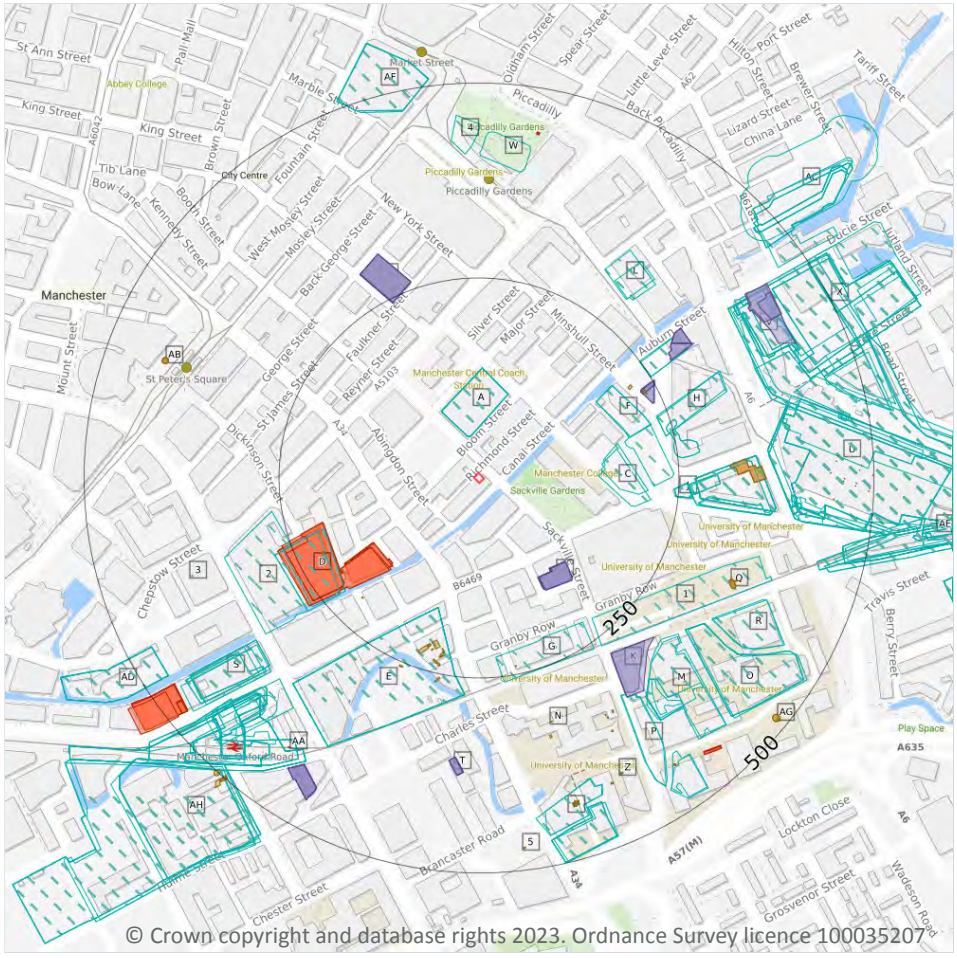
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	178

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 23**

ID	Location	Land Use	Date	Group ID
A	48m N	Bus Station	1988	952978
A	48m N	Bus Station	1978	884077
A	48m N	Bus Station	1985	952978

ID	Location	Land Use	Date	Group ID
A	48m N	Bus Station	1994	952978
C	147m E	Unspecified Wharf	1890	826601
C	151m E	Ice Works	1915	808540
E	168m S	Unspecified Mills	1938	989884
E	168m S	Unspecified Mills	1932	989884
E	168m S	Unspecified Mills	1916	861845
E	168m S	Unspecified Commercial/Industrial	1905	968335
E	168m S	Unspecified Commercial/Industrial	1923	874542
F	174m NE	Unspecified Wharf	1923	848098
F	174m NE	Unspecified Wharf	1915	848098
C	187m E	Unspecified Works	1923	830436
D	203m W	Electricity Station	1916	992043
D	212m W	Electricity Station	1923	992043
G	214m SE	Unspecified Commercial/Industrial	1923	796719
1	226m SE	Unspecified Commercial/Industrial	1923	796723
H	235m E	Unspecified Mill	1923	946972
H	235m E	Unspecified Mill	1915	946972
C	242m E	Unspecified Ground Workings	1938	906423
C	242m E	Unspecified Ground Workings	1934	906423
J	244m E	Police Station	1971	907595
J	244m E	Police Station	1988	879174
J	244m E	Police Station	1978	978804
J	244m E	Police Station	1985	879174
J	244m E	Police Station	1994	879174
F	249m NE	Unspecified Works	1923	898319
2	250m W	Unspecified Commercial/Industrial	1923	796724
F	250m NE	Unspecified Works	1915	898319
J	263m E	Fire Station	1938	857211

ID	Location	Land Use	Date	Group ID
J	263m E	Fire Station	1934	857211
J	264m E	Police Station	1923	846961
J	266m E	Police Station	1915	846961
J	271m E	Fire Station	1971	924791
J	271m E	Fire Station	1956	924791
J	271m E	Fire Station	1988	864327
J	271m E	Fire Station	1978	872224
J	271m E	Fire Station	1985	864327
J	271m E	Fire Station	1994	864327
J	276m E	Fire Engine Station	1923	869627
J	278m E	Fire Engine Station	1915	869627
L	292m NE	Infirmary	1923	975872
L	294m NE	Infirmary	1915	975872
M	307m SE	Unspecified Works	1923	954702
M	311m SE	Iron Works	1890	822793
J	319m E	Police Station	1938	903287
J	319m E	Police Station	1934	903287
O	323m SE	Unspecified Mills	1938	854159
O	323m SE	Unspecified Mills	1934	854159
O	323m SE	Unspecified Mills	1915	967472
O	326m SE	Unspecified Mills	1923	914258
P	327m SE	Unspecified Works	1923	951103
P	328m SE	Unspecified Works	1915	951103
M	333m SE	Railway Sidings	1923	959198
M	333m SE	Unspecified Works	1915	954702
M	335m SE	Railway Sidings	1915	959198
R	343m SE	Unspecified Works	1915	934829
R	344m SE	Unspecified Works	1923	934829

ID	Location	Land Use	Date	Group ID
S	349m SW	Hospital	1971	915521
S	349m SW	Hospital	1956	915521
S	349m SW	Hospital	1978	957282
S	351m SW	Hospital	1916	938342
S	359m SW	Gas Works	1851	802208
S	360m SW	Hospital	1923	848326
S	363m SW	Hospital	1938	949847
S	363m SW	Hospital	1932	949847
U	366m E	Railway Sidings	1938	899923
U	366m E	Railway Stations	1938	900032
U	366m E	Railway Sidings	1934	899923
U	366m E	Railway Stations	1934	900032
U	366m E	Railway Sidings	1915	849007
U	366m E	Railway Stations	1915	887476
S	366m SW	Coal Wharf	1851	794097
U	366m E	Railway Station	1905	959335
U	366m E	Railway Station	1890	959335
U	366m E	Railway Station	1923	941202
U	371m E	Railway Station	1956	935665
U	375m E	Railway Sidings	1905	979002
U	375m E	Railway Sidings	1890	979002
S	379m SW	Railway Station	1988	912150
S	379m SW	Railway Station	1994	912150
U	379m NE	Railway Sidings	1923	879517
S	382m SW	Tanks	1851	832185
S	383m SW	Railway Building	1956	820261
V	384m NE	Railway Building	1890	820433
V	387m NE	Goods Shed	1938	924820

ID	Location	Land Use	Date	Group ID
V	387m NE	Goods Shed	1934	924820
V	387m NE	Goods Shed	1915	885654
S	387m SW	Railway Station	1956	923967
U	388m NE	Railway Sidings	1956	950162
U	388m E	Railway Station	1971	897274
U	388m E	Railway Station	1988	890876
U	388m E	Railway Station	1978	897926
U	388m E	Railway Station	1985	890876
U	388m E	Railway Station	1994	890876
S	389m SW	Railway Sidings	1988	928139
S	389m SW	Railway Sidings	1985	928139
S	389m SW	Railway Sidings	1994	928139
V	389m NE	Goods Shed	1905	923774
V	389m NE	Goods Shed	1923	979300
W	390m N	Unspecified Pit	1956	840494
S	391m SW	Railway Station	1938	962635
S	391m SW	Railway Sidings	1938	864885
S	391m SW	Railway Station	1932	962635
S	391m SW	Railway Sidings	1932	864885
S	391m SW	Railway Station	1916	962635
S	391m SW	Railway Sidings	1916	864885
S	391m SW	Railway Station	1905	962635
S	391m SW	Railway Sidings	1905	864885
S	391m SW	Railway Sidings	1923	864885
S	391m SW	Railway Station	1923	962635
U	391m E	Railway Station	1851	942543
S	391m SW	Railway Station	1896	887032
X	399m NE	Unspecified Commercial/Industrial	1956	796797

ID	Location	Land Use	Date	Group ID
Y	404m S	Unspecified Works	1923	932223
Y	405m S	Unspecified Works	1915	929652
U	406m E	Railway Buildings	1923	833658
4	409m N	Bus Station	1978	842917
U	413m E	Railway Sidings	1851	923729
S	425m SW	Railway Station	1971	960776
S	425m SW	Railway Station	1978	981767
S	425m SW	Railway Station	1985	962611
P	426m SE	Unspecified Works	1923	972915
X	428m NE	Goods Station	1938	979048
X	428m NE	Goods Station	1934	979048
X	428m NE	Goods Station	1915	979048
X	430m E	Goods Station	1905	979048
X	430m E	Goods Station	1890	979048
X	430m E	Goods Station	1923	979048
Y	438m S	Unspecified Mills	1938	967294
Y	438m S	Unspecified Mills	1934	967294
Y	438m S	Unspecified Mills	1915	960133
Y	438m S	Unspecified Mills	1890	858454
P	438m SE	Unspecified Works	1915	972915
Y	440m S	Unspecified Mills	1923	975952
S	446m SW	Railway Sidings	1896	989778
U	455m E	Railway Building	1938	820435
U	455m E	Grain Store	1915	946860
U	456m E	Grain Store	1923	946860
U	461m E	Railway Building	1938	893315
U	461m E	Railway Building	1934	893315
AC	462m NE	Unspecified Wharf	1956	971868

ID	Location	Land Use	Date	Group ID
U	464m E	Railway Building	1915	893315
U	464m E	Railway Building	1905	893315
U	464m E	Railway Building	1923	893315
AC	464m NE	Unspecified Warehouse	1923	807197
AD	466m SW	Corporation Yard	1938	920120
AD	466m SW	Corporation Yard	1932	920120
AD	466m SW	Corporation Yard	1916	920120
AD	466m SW	Corporation Yard	1905	920120
AD	466m SW	Corporation Yard	1923	920120
AC	468m NE	Unspecified Warehouses	1938	964840
AC	468m NE	Unspecified Warehouses	1934	964840
AC	468m NE	Unspecified Warehouses	1915	933374
AE	468m E	Railway Sidings	1971	884730
AE	468m E	Railway Sidings	1988	878187
AE	468m E	Railway Sidings	1978	900007
AE	468m E	Railway Sidings	1985	878187
AE	468m E	Railway Sidings	1994	844263
AC	471m NE	Unspecified Wharf	1905	976213
AC	471m NE	Unspecified Wharf	1890	976213
AC	471m NE	Unspecified Wharf	1923	976213
AF	474m N	Unspecified Commercial/Industrial	1938	873846
AF	475m N	Unspecified Commercial/Industrial	1931	885632
AF	475m N	Unspecified Commercial/Industrial	1916	924604
AC	476m NE	Unspecified Wharf	1934	971276
AC	476m NE	Unspecified Wharf	1915	976213
AH	487m SW	Unspecified Works	1988	862878
AH	487m SW	Unspecified Works	1978	976366
AH	487m SW	Unspecified Works	1985	862878

ID	Location	Land Use	Date	Group ID
AH	487m SW	Unspecified Works	1994	862878
AH	491m SW	Unspecified Commercial/Industrial	1896	857423
AH	492m SW	Rubber Works	1916	915281
AH	496m SW	Rubber Works	1938	926915
AH	496m SW	Rubber Works	1932	926915
AH	496m SW	Unspecified Commercial/Industrial	1905	944072
AH	496m SW	Rubber Works	1923	926915

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**74**

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 23**

ID	Location	Land Use	Date	Group ID
E	209m S	Unspecified Tank	1891	115962
D	209m SW	Unspecified Tank	1891	115964
D	214m SW	Unspecified Tank	1891	115965
E	216m S	Tanks	1891	106792
E	216m S	Unspecified Tank	1893	115963
E	217m S	Unspecified Tank	1891	115949
F	218m NE	Unspecified Tank	1891	115912
E	219m S	Unspecified Tank	1891	115947
E	219m S	Unspecified Tank	1891	115960
E	220m S	Unspecified Tank	1891	141146
E	220m S	Unspecified Tank	1891	115961
E	221m S	Unspecified Tank	1893	141146
E	225m S	Unspecified Tank	1891	115959

ID	Location	Land Use	Date	Group ID
E	225m S	Unspecified Tank	1891	115948
F	233m NE	Unspecified Tank	1891	115913
E	233m S	Unspecified Tank	1891	115958
E	236m S	Tanks	1891	106786
G	239m S	Unspecified Tank	1891	115946
E	254m S	Tanks	1891	106787
E	255m S	Tanks	1891	106782
J	316m E	Gas Meter Testing Station	1948	120722
N	319m S	Unspecified Tank	1891	115941
N	336m S	Unspecified Tank	1891	115940
P	337m SE	Unspecified Tank	1891	115944
P	338m SE	Unspecified Tank	1891	115942
Q	341m E	Unspecified Tank	1955	134489
Q	341m E	Unspecified Tank	1955	134489
Q	341m E	Unspecified Tank	1952	134489
P	342m SE	Unspecified Tank	1891	115945
Q	347m E	Unspecified Tank	1891	115938
P	359m SE	Unspecified Tank	1891	115943
3	382m W	Unspecified Tank	1891	115956
U	409m E	Unspecified Tank	1891	115916
U	411m E	Unspecified Tank	1891	115915
Z	413m SE	Unspecified Tank	1891	115939
AA	416m SW	Unspecified Tank	1955	136262
AA	417m SW	Unspecified Tank	1953	136354
Z	419m SE	Tanks	1891	106779
AB	419m W	Unspecified Tank	1996	133983
AB	419m W	Unspecified Tank	1995	133983
AB	419m W	Unspecified Tank	1994	133983

ID	Location	Land Use	Date	Group ID
AB	419m W	Unspecified Tank	1999	133983
Y	426m S	Tanks	1968	129099
Y	427m S	Unspecified Tank	1950	134156
Y	427m S	Tanks	1969	129099
Y	427m S	Tanks	1962	129099
Y	427m S	Unspecified Tank	1953	134156
Y	429m S	Unspecified Tank	1948	137703
Y	429m S	Unspecified Tank	1955	144222
Y	429m S	Unspecified Tank	1955	144222
P	439m SE	Unspecified Tank	1889	134036
P	439m SE	Unspecified Tank	1908	134036
P	439m SE	Unspecified Tank	1889	134036
U	444m E	Unspecified Tank	1891	115922
U	449m E	Unspecified Tank	1891	115926
U	452m E	Unspecified Tank	1891	115914
U	455m E	Unspecified Tank	1891	115911
U	461m E	Unspecified Tank	1891	115923
U	462m E	Unspecified Tank	1891	115924
5	470m S	Unspecified Tank	1891	115782
U	476m E	Unspecified Tank	1891	115925
U	477m E	Unspecified Tank	1891	115921
AG	480m SE	Unspecified Tank	1955	131015
AG	480m SE	Unspecified Tank	1952	131015
U	481m E	Unspecified Tank	1891	115917
U	484m E	Unspecified Tank	1891	115918
U	493m E	Unspecified Tank	1891	115927
U	495m E	Unspecified Tank	1891	115928
S	497m SW	Unspecified Tank	1955	135180

ID	Location	Land Use	Date	Group ID
S	497m SW	Tanks	1950	106780
S	497m SW	Unspecified Tank	1948	141893
S	498m SW	Unspecified Tank	1953	141893
U	498m E	Unspecified Tank	1891	115920
S	498m SW	Unspecified Tank	1922	115957

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**32**

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 23**

ID	Location	Land Use	Date	Group ID
D	151m SW	Electricity Station	1950	68267
D	151m SW	Electricity Station	1948	73425
D	152m SW	Electricity Station	1955	77896
D	158m SW	Electricity Station	1908	81883
D	159m SW	Electricity Station	1922	81883
D	202m W	Electricity Station	1955	66381
D	202m W	Electricity Station	1950	66381
J	316m E	Gas Meter Testing Station	1948	63684
W	440m N	Electricity Substation	1995	72406
W	441m N	Electricity Substation	1986	72406
P	449m SE	Electricity Substation	1968	81695
P	449m SE	Electricity Substation	1970	85141
P	449m SE	Electricity Substation	1970	85141
P	449m SE	Electricity Substation	1970	85141
P	449m SE	Electricity Substation	1998	81695

ID	Location	Land Use	Date	Group ID
P	450m SE	Electricity Substation	1984	85141
S	466m SW	Hydraulic Power Station	1979	64692
S	466m SW	Hydraulic Power Station	1948	64692
S	468m SW	Hydraulic Power Station	1951	64396
S	468m SW	Hydraulic Power Station	1973	64396
S	468m SW	Hydraulic Power Station	1948	64396
S	470m SW	Electricity Substation	1979	65682
S	471m SW	Electricity Substation	1951	65682
S	471m SW	Electricity Substation	1988	65682
S	471m SW	Electricity Substation	1973	65682
S	471m SW	Electricity Substation	1948	65682
S	471m SW	Electricity Substation	1985	65682
S	472m SW	Electricity Substation	1996	65682
S	472m SW	Electricity Substation	1995	65682
S	472m SW	Electricity Substation	1994	65682
S	472m SW	Electricity Substation	1999	65682
S	481m SW	Hydraulic Power Station	1932	78003

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	49

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 23**

ID	Location	Land Use	Date	Group ID
B	142m SE	Garage	1990	27728
B	142m SE	Garage	1990	27728
B	142m SE	Garage	1985	27728
B	142m SE	Garage	1964	26993
B	142m SE	Garage	1948	26993
B	142m SE	Garage	1965	26993
B	142m SE	Garage	1965	26993
B	143m SE	Garage	1955	26993
B	143m SE	Garage	1968	26993
B	143m SE	Garage	1950	26993
F	230m NE	Garage	1952	25857
F	230m NE	Garage	1948	25857
F	231m NE	Garage	1955	25421
F	231m NE	Garage	1965	25421
F	231m NE	Garage	1968	24849
F	231m NE	Garage	1984	24849
F	231m NE	Garage	1964	25857
F	231m NE	Garage	1971	25857
I	244m NW	Garage	1948	24294
I	244m NW	Garage	1953	24294
I	245m NW	Garage	1953	27406
I	245m NW	Garage	1953	27406
I	245m NW	Garage	1965	27406

ID	Location	Land Use	Date	Group ID
K	276m SE	Garage	1952	26338
K	276m SE	Garage	1955	26338
F	283m NE	Garage	1948	24212
F	283m NE	Garage	1971	22467
F	296m NE	Garage	1971	23089
F	297m NE	Garage	1971	25009
F	297m NE	Garage	1948	25009
T	353m S	Garage	1955	24945
T	353m S	Garage	1953	24945
T	353m S	Garage	1948	24945
V	403m NE	Garage	1990	23753
V	404m NE	Garage	1971	20840
V	416m NE	Garage	1971	21466
AA	425m SW	Garage	1955	26377
AA	425m SW	Garage	1965	26377
AA	425m SW	Garage	1965	26377
AA	425m SW	Garage	1968	26377
AA	425m SW	Garage	1987	27861
AA	425m SW	Garage	1969	27861
AA	425m SW	Garage	1948	27861
AA	425m SW	Garage	1953	27861
AA	425m SW	Garage	1962	27861
AA	425m SW	Garage	1990	26377
AA	425m SW	Garage	1985	26377
AA	426m SW	Garage	1995	27861
AA	426m SW	Garage	1998	27861

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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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	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

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.

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

3.5 Historical waste sites

Records within 500m	0

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

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	8

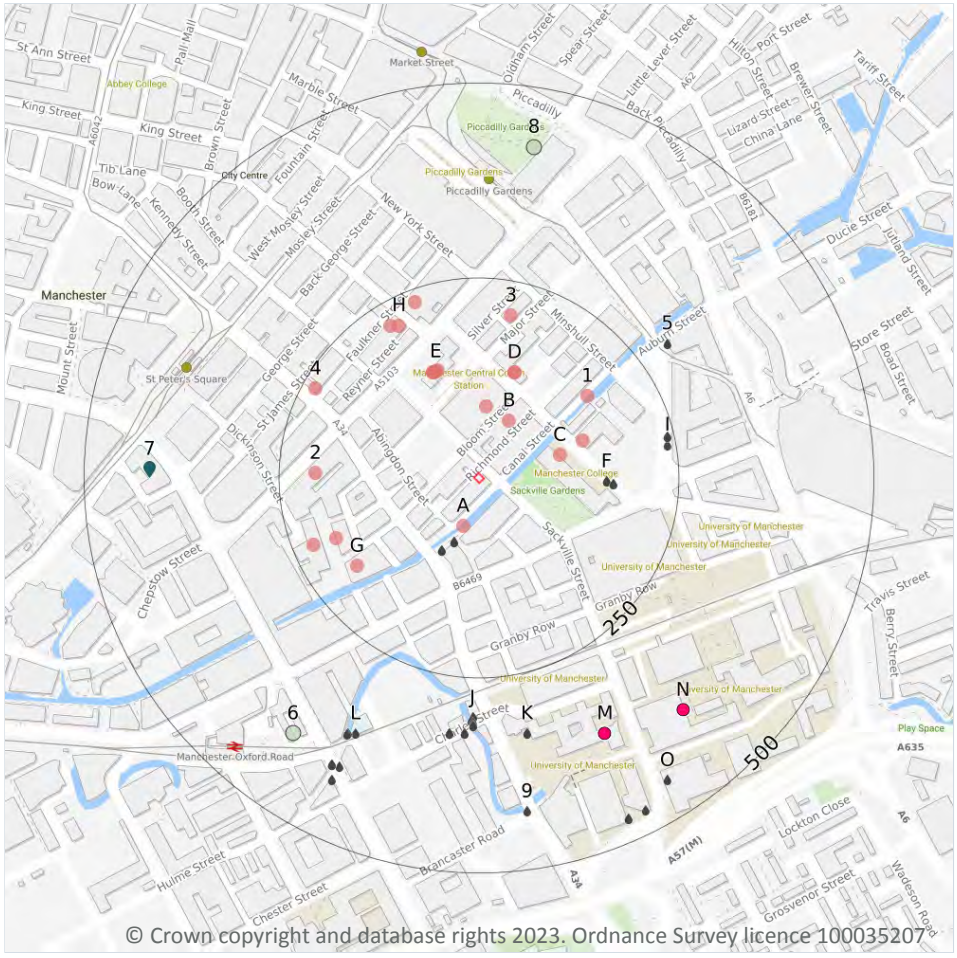
Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 37**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	259m SW	LINEAR NETWORK: MAINLINE RAILWAY BETWEEN MANCHESTER AIRPORT AIRPORT AND BARROW-IN-FURNESS	EPR/BE5446FE/A001	Disposing of waste exemption	Non-Agricultural Waste Only	Deposit of waste from a railway sanitary convenience
A	261m SW	Bridgewater House 60 Whitworth Street MANCHESTER M1 6LT	EPR/NF0707MF/A001	Disposing of waste exemption	Non-Agricultural Waste Only	Deposit of waste from a railway sanitary convenience
1	353m E	Michael Smith Building, Dover Street, Manchester, M13 9PL	WEX086269	Treating waste exemption	Not on a farm	Treatment of kitchen waste in a wormery
B	367m W	New Build Construction Works by Russells, 3 St Peter Square, Manchester, M2 3DF	WEX118443	Treating waste exemption	Not on a farm	Screening and blending of waste
B	367m W	New Build Construction Works by Russells, 3 St Peter Square, Manchester, M2 3DF	WEX118443	Using waste exemption	Not on a farm	Use of waste in construction
2	436m S	-	WEX264013	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	490m NW	11 York Street, York Street, Manchester, M2 2BE	WEX111733	Treating waste exemption	Not on a farm	Screening and blending of waste
C	490m NW	11 York Street, York Street, Manchester, M2 2BE	WEX111733	Using waste exemption	Not on a farm	Use of waste in construction

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

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

Radioactive Substance Authorisations

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	22

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Company	Address	Activity	Category
A	59m S	Landing Stage	Greater Manchester, M1	Moorings and Unloading Facilities	Water
B	78m NE	Sports Fashion Distribution UK Ltd	Richmond House 15, Bloom Street, Manchester, Greater Manchester, M1 3HZ	Distribution and Haulage	Transport, Storage and Delivery

ID	Location	Company	Address	Activity	Category
B	86m N	Coach Station	Greater Manchester, M1	Bus and Coach Stations, Depots and Companies	Public Transport, Stations and Infrastructure
C	102m E	Electricity Sub Station	Greater Manchester, M1	Electrical Features	Infrastructure and Facilities
C	136m E	United Global	47, Chorlton Street, Manchester, Greater Manchester, M1 3FY	Distribution and Haulage	Transport, Storage and Delivery
D	137m N	Broome & Wellington	Boulton House 17-21, Chorlton Street, Manchester, Greater Manchester, M1 3HY	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
D	137m N	Newsco Insider Ltd	Eighth Floor Boulton House 17-21, Chorlton Street, Manchester, Greater Manchester, M1 3HY	Published Goods	Industrial Products
E	141m N	Cundall	Manchester, Greater Manchester, M1	Civil Engineers	Engineering Services
E	141m N	Medusa 19 Ltd	2nd Floor, Manchester, Greater Manchester, M1 1EZ	Colours, Chemicals and Water Softeners and Supplies	Industrial Products
E	141m NW	Leaflet Distribution Manchester	53, Portland Street, Manchester, Greater Manchester, M1 3LF	Distribution and Haulage	Transport, Storage and Delivery
E	142m NW	Scrap a Car Manchester	53, Portland Street, Manchester, Greater Manchester, M1 3LF	Scrap Metal Merchants	Recycling Services
E	142m NW	Rina	53, Portland Street, Manchester, Greater Manchester, M1 3LF	Civil Engineers	Engineering Services
1	170m NE	Landing Stage	Greater Manchester, M1	Moorings and Unloading Facilities	Water
G	188m SW	Electricity Sub Station	Greater Manchester, M1	Electrical Features	Infrastructure and Facilities
G	192m SW	China House	Greater Manchester, M1	Sand, Gravel and Clay Extraction and Merchants	Extractive Industries
2	203m W	Enviro Response	Gainsborough House 109, Portland Street, Manchester, Greater Manchester, M1 6DN	Civil Engineers	Engineering Services
3	206m N	Print Chain	Barlow House 4, Minshull Street, Manchester, Greater Manchester, M1 3DZ	Published Goods	Industrial Products
H	215m NW	Vina Karaoke Bar	Lindencourt House 34, Charlotte Street, Manchester, Greater Manchester, M1 4FD	Electronic Equipment	Industrial Products

ID	Location	Company	Address	Activity	Category
H	220m NW	Hong Kong Printing Co Ltd	41, Faulkner Street, Manchester, Greater Manchester, M1 4EE	Published Goods	Industrial Products
G	223m W	Storebox	Linley House, Dickinson Street, Manchester, Greater Manchester, M1 4LF	Container and Storage	Transport, Storage and Delivery
4	233m NW	Scrap That Car	91, Princess Street, Manchester, Greater Manchester, M1 4HT	Scrap Metal Merchants	Recycling Services
H	234m N	Mistral Group	9, Charlotte Street, Manchester, Greater Manchester, M1 4ET	New Vehicles	Motoring

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	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	1

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 40**

ID	Location	Address	Details	
7	416m W	The Laundry Shop, Unit 5, Peter House, Oxford Street, Manchester	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	8

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

Features are displayed on the Current industrial land use map on **page 40**

ID	Location	Address	Details	
M	359m SE	Umist, Po Box 88, Sackville Street, Manchester, M60 1QD	Operator: Umist Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AC8878 Date of approval: 31/03/1991	Effective from: 31/03/1991 Last date of update: 01/01/2015 Status: Revoked/cancelled
M	359m SE	Umist, Po Box 88,sackville Street, Manchester, M60 1QD	Operator: Umist Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AC8886 Date of approval: 06/03/2001	Effective from: 06/03/2001 Last date of update: 01/01/2015 Status: Revoked/cancelled
M	359m SE	Umist, Po Box 88, Sackville Street, Manchester, M60 1QD	Operator: Umist Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AG4009 Date of approval: 16/01/1995	Effective from: 16/02/1995 Last date of update: 01/01/2015 Status: Superseded By Variation
M	359m SE	Umist, Po Box 88, Sackville Street, Manchester, M60 1QD	Operator: Umist Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AG4009 Date of approval: 30/01/1997	Effective from: 25/02/1997 Last date of update: 01/01/2015 Status: Superseded By Variation

ID	Location	Address	Details	
M	359m SE	Umist, Po Box 88, Sackville Street, Manchester, M60 1QD	Operator: Umist Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AG4009 Date of approval: 13/11/1997	Effective from: 11/12/1997 Last date of update: 01/01/2015 Status: Superseded By Variation
M	359m SE	Umist, Po Box 88, Sackville Street, Manchester, M60 1QD	Operator: Umist Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AG4009 Date of approval: 09/04/2002	Effective from: 06/05/2002 Last date of update: 01/01/2015 Status: Revoked/cancelled
N	391m SE	North Campus, Manchester, M1 3BU	Operator: The University of Manchester Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BX8645 Date of approval: 02/09/2004	Effective from: 01/10/2004 Last date of update: 01/01/2020 Status: Issued
N	391m SE	North Campus, Manchester, M1 3BU	Operator: The University of Manchester Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BX8661 Date of approval: 01/10/2004	Effective from: 01/10/2004 Last date of update: 01/01/2020 Status: Issued

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

4.13 Licensed Discharges to controlled waters

Records within 500m **44**

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 40**

ID	Location	Address	Details	
A	82m S	GSHP SERVING ORIGIN DEVELOPMENT, 56 PRINCESS STREET, MANCHESTER, M1 6JA	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: NPSWQD004449 Permit Version: 3 Receiving Water: GROUNDWATER	Status: SURRENDERED UNDER EPR 2010 Issue date: 28/10/2011 Effective Date: 01/04/2013 Revocation Date: 03/10/2014
A	82m S	GSHP SERVING ORIGIN DEVELOPMENT, 56 PRINCESS STREET, MANCHESTER, M1 6JA	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: NPSWQD004449 Permit Version: 1 Receiving Water: GROUNDWATER	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 05/03/2009 Effective Date: 01/04/2009 Revocation Date: 15/04/2009

ID	Location	Address	Details	
A	82m S	GSHP SERVING ORIGIN DEVELOPMENT, 56 PRINCESS STREET, MANCHESTER, M1 6JA	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: NPSWQD004449 Permit Version: 2 Receiving Water: GROUNDWATER	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 16/04/2009 Effective Date: 16/04/2009 Revocation Date: 31/03/2013
A	99m SW	GSHP SERVING ORIGIN DEVELOPMENT, 56 PRINCESS STREET, MANCHESTER, M1 6JA	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: NPSWQD004449 Permit Version: 2 Receiving Water: GROUNDWATER	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 16/04/2009 Effective Date: 16/04/2009 Revocation Date: 31/03/2013
A	99m SW	GSHP SERVING ORIGIN DEVELOPMENT, 56 PRINCESS STREET, MANCHESTER, M1 6JA	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: NPSWQD004449 Permit Version: 3 Receiving Water: GROUNDWATER	Status: SURRENDERED UNDER EPR 2010 Issue date: 28/10/2011 Effective Date: 01/04/2013 Revocation Date: 03/10/2014
A	99m SW	GSHP SERVING ORIGIN DEVELOPMENT, 56 PRINCESS STREET, MANCHESTER, M1 6JA	Effluent Type: TRADE DISCHARGES - COOLING WATER Permit Number: NPSWQD004449 Permit Version: 1 Receiving Water: GROUNDWATER	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 05/03/2009 Effective Date: 01/04/2009 Revocation Date: 15/04/2009
F	157m E	CHORLTON STREET CSO 281J2, CHORLTON STREET, MANCHESTER, GREATER MANCHESTER, M1 3HW	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0162 Permit Version: 4 Receiving Water: SHOOTERS BROOK TRIB RVR MEDLOC	Status: VARIED UNDER EPR 2010 Issue date: 11/04/2018 Effective Date: 11/04/2018 Revocation Date: -
F	157m E	CHORLTON STREET CSO 281J2, CHORLTON STREET, MANCHESTER, GREATER MANCHESTER, M1 3HW	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0162 Permit Version: 3 Receiving Water: DUKES TUNNEL	Status: VARIED UNDER EPR 2010 Issue date: 05/02/2016 Effective Date: 05/02/2016 Revocation Date: 10/04/2018
F	165m E	CHORLTON STREET CSO 281J2, CHORLTON STREET, MANCHESTER, GREATER MANCHESTER, M1 3HW	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0162 Permit Version: 1 Receiving Water: DUKES TUNNEL	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 02/09/2010

ID	Location	Address	Details	
F	165m E	CHORLTON STREET CSO 281J2, CHORLTON STREET, MANCHESTER, GREATER MANCHESTER, M1 3HW	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0162 Permit Version: 2 Receiving Water: DUKES TUNNEL	Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: 04/02/2016
I	239m E	MINSHULL ST/WHITWORTH ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0355 Permit Version: 1 Receiving Water: -	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 01/01/1995 Revocation Date: 18/07/2014
I	241m E	AYTOUN ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982630 Permit Version: 1 Receiving Water: SHOOTERS BROOK	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 30/09/1994 Revocation Date: 30/10/2018
I	241m E	AYTOUN ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0318 Permit Version: 1 Receiving Water: SHOOTERS BROOK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/1995
5	292m NE	AYTOUN ST/AUBURN ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0370 Permit Version: 1 Receiving Water: -	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 01/01/1995 Revocation Date: 27/03/2015
J	301m S	PRINCESS ST/GRANBY ROW CS, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982956 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: CONSENT REVOKED - DISCHARGE CEASED (WRA 91, SCHED 10 & 6) Issue date: - Effective Date: 23/06/1995 Revocation Date: 31/03/1998
J	301m S	PRINCESS ST/WHITWORTH ST CSO 282MN, 67 WHITWORTH ST, MANCHESTER, GREATER MANCHESTER, M1 6LQ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982950 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 23/06/1995 Revocation Date: 19/10/2020

ID	Location	Address	Details	
J	305m S	PRINCESS ST/WHITWORTH ST CSO 282MN, 67 WHITWORTH ST, MANCHESTER, GREATER MANCHESTER, M1 6LQ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982950 Permit Version: 2 Receiving Water: RIVER MEDLOCK VIA SWS	Status: VARIED UNDER EPR 2010 Issue date: 20/10/2020 Effective Date: 20/10/2020 Revocation Date: -
J	308m S	CHARLES ST PRINCESS ST CSO 28116, 106 PRINCESS STREET, MANCHESTER, M1 6NG	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0166 Permit Version: 3 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 21/03/2018 Effective Date: 01/04/2018 Revocation Date: -
J	311m S	CHARLES ST PRINCESS ST CSO 28116, 106 PRINCESS STREET, MANCHESTER, M1 6NG	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0166 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 02/09/2010
J	311m S	CHARLES ST PRINCESS ST CSO 28116, 106 PRINCESS STREET, MANCHESTER, M1 6NG	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0166 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: 31/03/2018
J	311m S	WHITWORTH ST/SACKVILLE ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0253 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/2017
J	321m S	CHARLES STREET CSO, 7 CHARLES STREET, MANCHESTER, M1 7EN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0183 Permit Version: 3 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 19/03/2018 Effective Date: 01/04/2018 Revocation Date: -
J	321m S	CHARLES STREET CSO, 7 CHARLES STREET, MANCHESTER, M1 7EN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0183 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: 31/03/2018

ID	Location	Address	Details	
J	321m S	CHARLES STREET CSO, 7 CHARLES STREET, MANCHESTER, M1 7EN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0183 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 02/09/2010
J	323m S	112-116 PRINCESS STREET, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991403 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 24/04/1989 Revocation Date: 31/03/1992
J	323m S	112-116 PRINCESS STREET, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991403 Permit Version: 3 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 11/02/1993 Revocation Date: 01/11/1994
J	323m S	112-116 PRINCESS STREET, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991403 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/04/1992 Revocation Date: 10/02/1993
K	326m S	112-116 PRINCESS STREET, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991403 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 24/04/1989 Revocation Date: 31/03/1992
K	326m S	112-116 PRINCESS STREET, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991403 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/04/1992 Revocation Date: 10/02/1993
L	358m SW	YORK ST/CHARLES ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0281 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 09/08/2019
L	362m SW	MEDLOCK ST(OFF CHARLES ST), MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0343 Permit Version: 1 Receiving Water: -	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/1995

ID	Location	Address	Details	
L	362m SW	MALLARD STREET/CHARLES STREET CSO, MALLARD STREET, MANCHESTER, GREATER MANCHESTER, M1 6EY	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982736 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 30/09/1994 Revocation Date: 09/07/2020
L	364m SW	MALLARD STREET/CHARLES STREET CSO, MALLARD STREET, MANCHESTER, GREATER MANCHESTER, M1 6EY	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982736 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 10/07/2020 Effective Date: 10/07/2020 Revocation Date: -
L	406m SW	OXFORD ROAD/GROSVENOR STREET CSO, 137 OXFORD ROAD, MANCHESTER, GREATER MANCHESTER, M1 7DZ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0189 Permit Version: 4 Receiving Water: RIVER MEDLOCK VIA SWS	Status: VARIED UNDER EPR 2010 Issue date: 29/03/2021 Effective Date: 29/03/2021 Revocation Date: -
L	407m SW	OXFORD ROAD/GROSVENOR STREET CSO, 137 OXFORD ROAD, MANCHESTER, GREATER MANCHESTER, M1 7DZ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0189 Permit Version: 3 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 05/02/2016 Effective Date: 05/02/2016 Revocation Date: 28/03/2021
L	407m SW	OXFORD/NEW WAKEFILD ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0165 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1995 Revocation Date: 31/03/1998
L	407m SW	OXFORD ROAD/GROSVENOR STREET CSO, 137 OXFORD ROAD, MANCHESTER, GREATER MANCHESTER, M1 7DZ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0189 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 02/09/2010
L	407m SW	OXFORD ROAD/GROSVENOR STREET CSO, 137 OXFORD ROAD, MANCHESTER, GREATER MANCHESTER, M1 7DZ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0189 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: 04/02/2016

ID	Location	Address	Details	
L	425m SW	OXFORD RD, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0342 Permit Version: 1 Receiving Water: -	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 19/12/1999
9	425m S	BBC VEHICLE MAINTENANCE BASE SWO, PRITCHARD STREET, MANCHESTER, GREATER MANCHESTER	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991346 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 22/09/1994 Revocation Date: 22/09/1994
O	450m SE	MOUNT ST/RUTLAND ST, MANCHESTER, GREATER MANCHESTER	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0287 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: -
O	471m SE	MOUNT STREET/GREEK STREET CSO, MANCUNIAN WAY, (OPP TO GEORGE BEGG BUILDING), MANCHESTER, GREATER MANCHESTER, M1 7DN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0187 Permit Version: 4 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 10/07/2020 Effective Date: 10/07/2020 Revocation Date: -
O	471m SE	MOUNT STREET/GREEK STREET CSO, MANCUNIAN WAY, (OPP TO GEORGE BEGG BUILDING), MANCHESTER, GREATER MANCHESTER, M1 7DN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0187 Permit Version: 2 Receiving Water: RIVER MEDLOCK	Status: VARIED UNDER EPR 2010 Issue date: 03/09/2010 Effective Date: 03/09/2010 Revocation Date: 04/02/2016
O	471m SE	MOUNT STREET/GREEK STREET CSO, MANCUNIAN WAY, (OPP TO GEORGE BEGG BUILDING), MANCHESTER, GREATER MANCHESTER, M1 7DN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0187 Permit Version: 1 Receiving Water: RIVER MEDLOCK	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: - Effective Date: 01/01/1995 Revocation Date: 02/09/2010

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 40**

ID	Location	Details	
6	400m SW	Incident Date: 12/07/2001 Incident Identification: 15886 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
8	424m N	Incident Date: 12/02/2002 Incident Identification: 57989 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

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

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

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

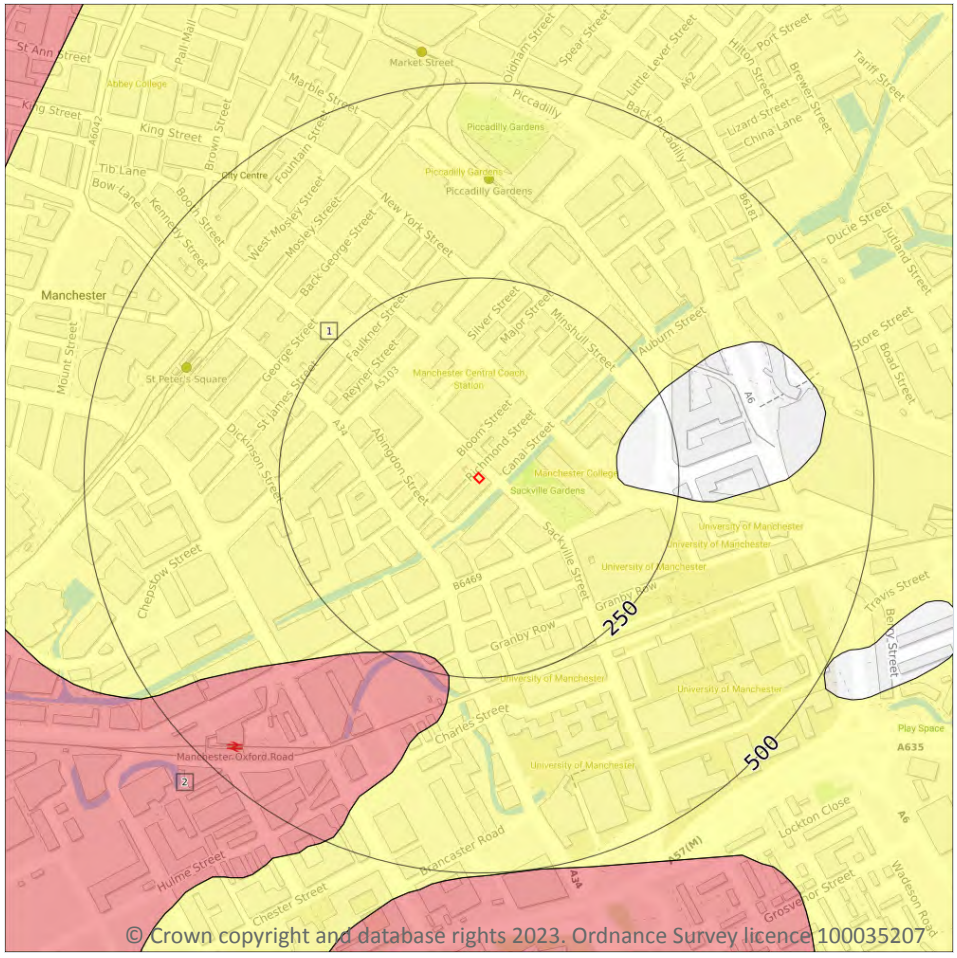
4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

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

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	2

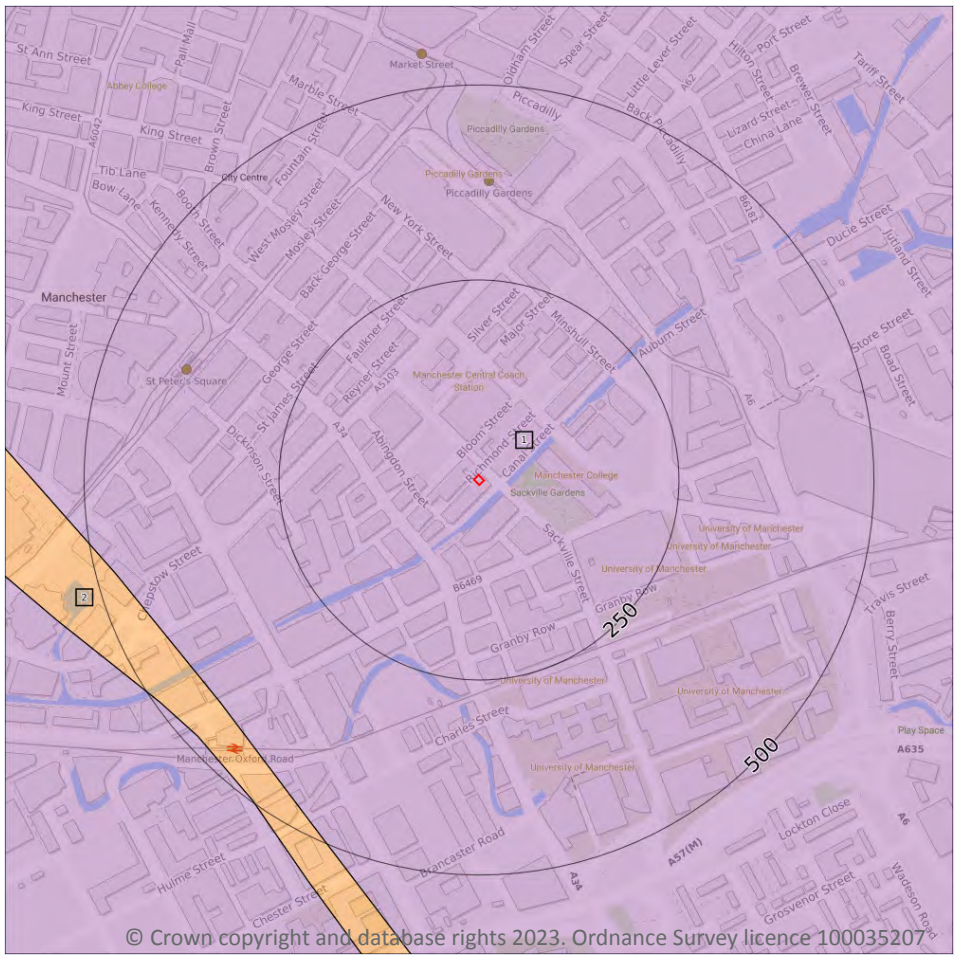
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 54**

ID	Location	Designation	Description
1	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
2	231m 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

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

Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m	2

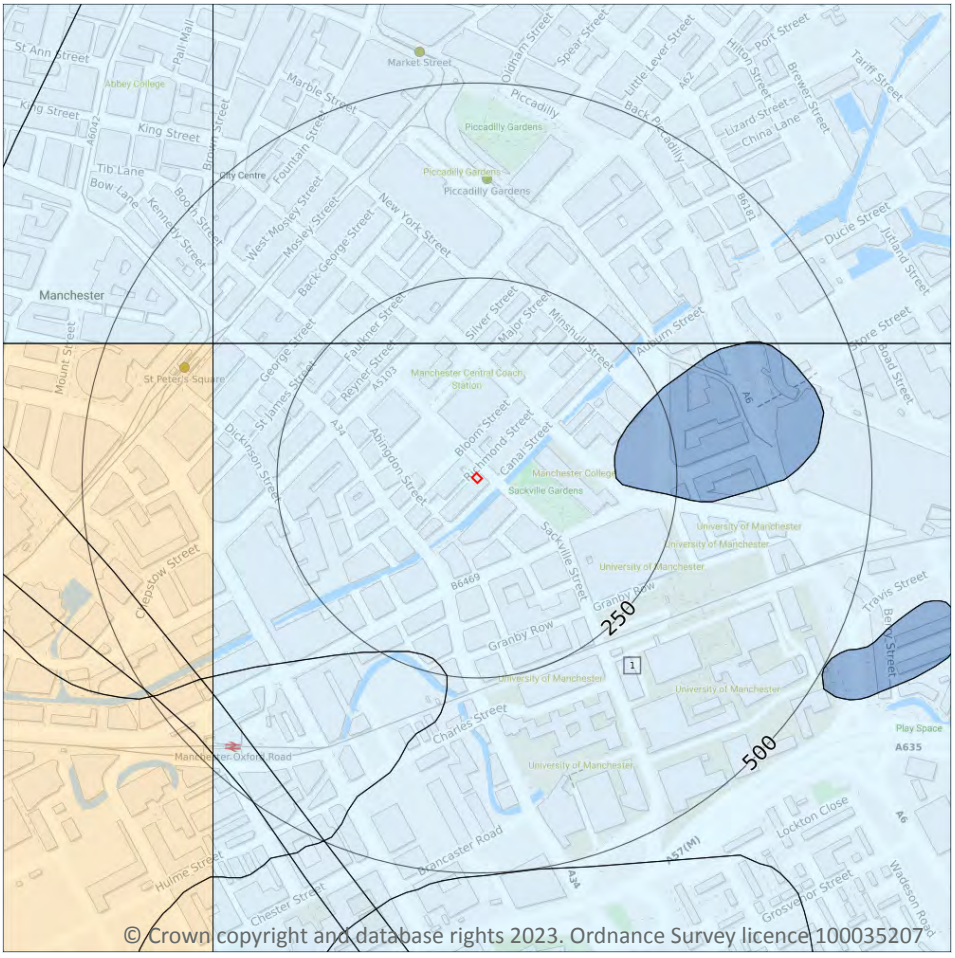
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 56**

ID	Location	Designation	Description
1	**On site**	**Principal**	**Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers**
2	433m SW	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-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 58**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	**Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year**	**Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Low**	**Vulnerability: Low Aquifer type: Principal Flow mechanism: Well connected fractures**

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

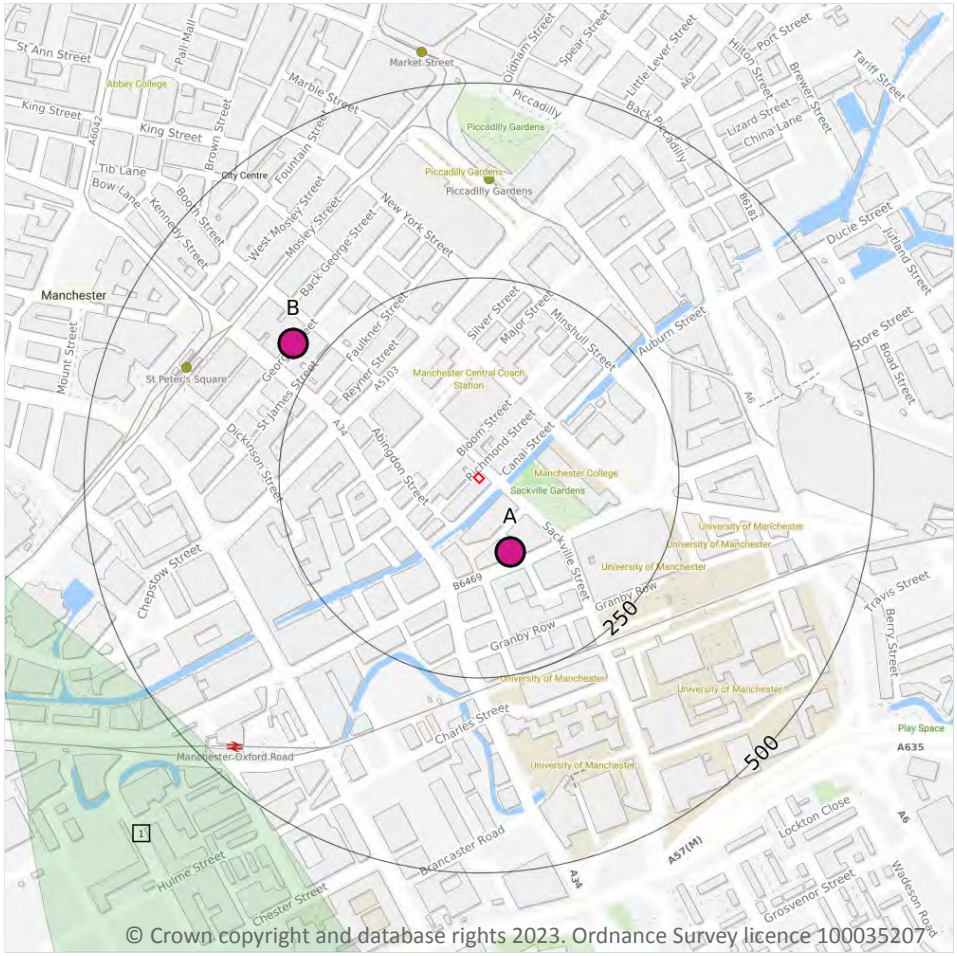
5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	57

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 60**

ID	Location	Details	
A	96m SE	Status: Historical Licence No: NW0690006001 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: BOREHOLES AT ORIGIN DEVELOPMENTS, MANCHESTER Data Type: Point Name: West Contracting Easting: 384378 Northing: 397733	Annual Volume (m^3): 139128 Max Daily Volume (m^3): 1010 Original Application No: - Original Start Date: 19/01/2009 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 19/01/2009 Version End Date: -
A	96m SE	Status: Historical Licence No: NW/069/0006/001 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: BOREHOLES AT ORIGIN DEVELOPMENTS, MANCHESTER Data Type: Point Name: West Contracting Easting: 384378 Northing: 397733	Annual Volume (m^3): 139128 Max Daily Volume (m^3): 1010 Original Application No: - Original Start Date: 19/01/2009 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 19/01/2009 Version End Date: -
B	288m NW	Status: Historical Licence No: 2569007069 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT GEORGE ST, MANCHESTER" Data Type: Point Name: BRITISH TELECOM Easting: 384100 Northing: 398000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 100 Version Start Date: 27/01/1971 Version End Date: -
B	288m NW	Status: Historical Licence No: 2569007069 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT GEORGE ST, MANCHESTER Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC Easting: 384100 Northing: 398000	Annual Volume (m^3): 1100 Max Daily Volume (m^3): 860 Original Application No: - Original Start Date: 01/04/1984 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2007 Version End Date: -

ID	Location	Details	
-	747m S	Status: Active Licence No: NW/069/0006/003 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE 1 AT LOWER CHATHAM STREET Data Type: Point Name: Manchester Metropolitan University Easting: 384180 Northing: 397091	Annual Volume (m^3): 283,240 Max Daily Volume (m^3): 1,532 Original Application No: NPS/WR/015264 Original Start Date: 04/04/2014 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date: -
-	747m S	Status: Active Licence No: NW/069/0006/003 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BOREHOLE 1 AT LOWER CHATHAM STREET Data Type: Point Name: Manchester Metropolitan University Easting: 384180 Northing: 397091	Annual Volume (m^3): 283,240 Max Daily Volume (m^3): 1,532 Original Application No: NPS/WR/015264 Original Start Date: 04/04/2014 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date: -
-	940m E	Status: Historical Licence No: 2569006001 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, BROADIE ST, ARDWICK, MANCHESTER" Data Type: Point Name: MOSELEY RUBBER CO LTD Easting: 385240 Northing: 397540	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 08/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 08/02/1966 Version End Date: -
-	940m E	Status: Historical Licence No: 2569006001 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, BROADIE ST, ARDWICK, MANCHESTER Data Type: Point Name: MOSELEY RUBBER CO LTD Easting: 385240 Northing: 397540	Annual Volume (m^3): 331858 Max Daily Volume (m^3): 909.2 Original Application No: - Original Start Date: 08/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 08/02/1966 Version End Date: -

ID	Location	Details	
-	1075m NW	Status: Historical Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT DIAL HOUSE, CHAPEL ST, SALFORD" Data Type: Point Name: BRITISH TELECOM Easting: 383700 Northing: 398700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 100 Version Start Date: 27/01/1971 Version End Date: -
-	1075m NW	Status: Historical Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIAL HOUSE, CHAPEL ST, SALFORD Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC Easting: 383700 Northing: 398700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 101 Version Start Date: 01/04/1984 Version End Date: -
-	1075m NW	Status: Active Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIAL HOUSE CHAPEL STREET SALFORD Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC Easting: 383700 Northing: 398700	Annual Volume (m^3): 45 Max Daily Volume (m^3): 30 Original Application No: 2333 Original Start Date: 27/01/1971 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2007 Version End Date: -
-	1099m W	Status: Historical Licence No: 2569007089 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: 2 BOREHOLES AT GARTSIDE STREET MANCHESTER Data Type: Line Name: HER MAJESTY'S COURT SERVICE Easting: 383335 Northing: 398310	Annual Volume (m^3): 200000 Max Daily Volume (m^3): 1179 Original Application No: - Original Start Date: 26/01/2005 Expiry Date: 31/03/2011 Issue No: 2 Version Start Date: 10/07/2008 Version End Date: -

ID	Location	Details	
-	1206m W	Status: Historical Licence No: NW/069/0004/019 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: Ground Water - North West Region Point: ST JOHNS MANCHESTER Data Type: Poly4 Name: Manchester Quays Development (MGY) Ltd Easting: 383094 Northing: 398099	Annual Volume (m^3): 543,120 Max Daily Volume (m^3): 1,488 Original Application No: - Original Start Date: 13/09/2019 Expiry Date: 31/12/2020 Issue No: 1 Version Start Date: 13/09/2019 Version End Date: -
-	1243m SW	Status: Active Licence No: NW/069/0004/003 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT MANCHESTER METROPOLITAN UNIVERSITY Data Type: Point Name: Manchester Metropolitan University Easting: 383715 Northing: 396746	Annual Volume (m^3): 274,115 Max Daily Volume (m^3): 751 Original Application No: NPS/WR/008077 Original Start Date: 20/09/2013 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/01/2015 Version End Date: -
-	1243m SW	Status: Active Licence No: NW/069/0004/003 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BOREHOLE AT MANCHESTER METROPOLITAN UNIVERSITY Data Type: Point Name: Manchester Metropolitan University Easting: 383715 Northing: 396746	Annual Volume (m^3): 274,115 Max Daily Volume (m^3): 751 Original Application No: NPS/WR/008077 Original Start Date: 20/09/2013 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/01/2015 Version End Date: -
-	1246m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW11 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383204 Northing: 397298	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -

ID	Location	Details	
-	1249m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW9 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383223 Northing: 397253	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1249m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW10 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383211 Northing: 397276	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1261m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW8 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383224 Northing: 397225	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1286m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW6 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383171 Northing: 397275	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -

ID	Location	Details	
-	1286m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW5 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383193 Northing: 397230	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1307m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW7 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383184 Northing: 397203	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1325m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW4 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383159 Northing: 397210	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1339m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW3 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383140 Northing: 397217	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -

ID	Location	Details	
-	1357m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW2 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383113 Northing: 397230	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1374m SW	Status: Active Licence No: NW/069/0006/010 Details: Dewatering Direct Source: Ground Water - North West Region Point: BOREHOLE PW1 CHESTER FORMATION AT CROWN STREET Data Type: Point Name: Renaker Build Ltd Easting: 383085 Northing: 397249	Annual Volume (m^3): 260,172 Max Daily Volume (m^3): 712.80 Original Application No: NPS/WR/034474 Original Start Date: 24/09/2021 Expiry Date: 31/03/2023 Issue No: 1 Version Start Date: 24/09/2021 Version End Date: -
-	1451m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1451m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -

ID	Location	Details	
-	1451m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1451m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1451m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1451m N	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1476m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1476m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1476m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1476m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1476m N	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1476m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1497m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1497m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -

ID	Location	Details	
-	1497m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1497m N	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1497m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1497m N	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1736m SE	Status: Historical Licence No: NW/069/0004/005 Details: Heat Pump Direct Source: Ground Water - North West Region Point: AREA OF ABSTRACTION - LOWER CARBONIFEROUS LIMESTONE Data Type: Poly4 Name: G T Energy UK Limited Easting: 385729 Northing: 396778	Annual Volume (m^3): 2,049,840 Max Daily Volume (m^3): 8640 Original Application No: - Original Start Date: 17/01/2013 Expiry Date: 16/01/2037 Issue No: 2 Version Start Date: 11/06/2013 Version End Date: -
-	1881m N	Status: Historical Licence No: 2569004011 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT DERBY BREWERY, CHEETHAM, MANCHESTER 3" Data Type: Point Name: JOSEPH HOLT LTD Easting: 384100 Northing: 399700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1966 Version End Date: -
-	1881m N	Status: Historical Licence No: 2569004011 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT DERBY BREWERY, CHEETHAM, MANCHESTER 3" Data Type: Point Name: JOSEPH HOLT LTD Easting: 384100 Northing: 399700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1966 Version End Date: -
-	1881m N	Status: Active Licence No: 2569004011 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT DERBY BREWERY, CHEETHAM, MANCHESTER 3 Data Type: Point Name: JOSEPH HOLT LTD Easting: 384100 Northing: 399700	Annual Volume (m^3): 45,460 Max Daily Volume (m^3): 181.84 Original Application No: 0423 Original Start Date: 17/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1966 Version End Date: -

ID	Location	Details	
-	1881m N	Status: Active Licence No: 2569004011 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT DERBY BREWERY, CHEETHAM, MANCHESTER 3 Data Type: Point Name: JOSEPH HOLT LTD Easting: 384100 Northing: 399700	Annual Volume (m^3): 45,460 Max Daily Volume (m^3): 181.84 Original Application No: 0423 Original Start Date: 17/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 17/02/1966 Version End Date: -
-	1969m S	Status: Active Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383865 Northing: 395909	Annual Volume (m^3): 227,000 Max Daily Volume (m^3): 900 Original Application No: NPS/WR/015793 Original Start Date: 15/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 08/05/2014 Version End Date: -
-	1969m S	Status: Active Licence No: 2569007007 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383865 Northing: 395909	Annual Volume (m^3): 227,000 Max Daily Volume (m^3): 900 Original Application No: NPS/WR/015793 Original Start Date: 15/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 08/05/2014 Version End Date: -
-	1970m S	Status: Historical Licence No: 2569007007 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER" Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/08/1995 Version End Date: -

ID	Location	Details	
-	1970m S	Status: Historical Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER" Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 16/08/1995 Version End Date: -
-	1970m S	Status: Historical Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	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: 31/12/2003 Version End Date: -
-	1970m S	Status: Historical Licence No: 2569007007 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, MOSS SIDE, MANCHESTER Data Type: Point Name: SCOTTISH COURAGE BREWING LTD Easting: 383900 Northing: 395900	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: 31/12/2003 Version End Date: -
-	1970m S	Status: Historical Licence No: 2569007007 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383900 Northing: 395900	Annual Volume (m^3): 227000 Max Daily Volume (m^3): 900 Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 23/11/2009 Version End Date: -

ID	Location	Details	
-	1970m S	Status: Historical Licence No: 2569007007 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES MOSS SIDE MANCHESTER Data Type: Point Name: Heineken UK Ltd Easting: 383900 Northing: 395900	Annual Volume (m^3): 227000 Max Daily Volume (m^3): 900 Original Application No: - Original Start Date: 15/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 23/11/2009 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m **2**

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 60**

ID	Location	Details	
-	1881m W	Status: Historical Licence No: 2569007053 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: "Surface, Non-Tidal - North West Region" Point: "R IRWELL AT IRWELL WORKS, ORDSALL LANE, SALFORD" Data Type: Point Name: CDS COMPUTER DESIGN SYSTEMS LTD Easting: 382500 Northing: 397400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/11/1987 Version End Date: -
-	1881m W	Status: Historical Licence No: 2569007053 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Surface, Non-Tidal - North West Region Point: R IRWELL AT IRWELL WORKS, ORDSALL LANE, SALFORD Data Type: Point Name: CDS COMPUTER DESIGN SYSTEMS LTD Easting: 382500 Northing: 397400	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/01/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/11/1987 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	9

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 60**

ID	Location	Details	
-	1451m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1451m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1451m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383820 Northing: 399190	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1476m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -
-	1476m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1476m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383830 Northing: 399220	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1497m N	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date: -

ID	Location	Details	
-	1497m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -
-	1497m N	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD Easting: 383850 Northing: 399250	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m	**1**

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

Features are displayed on the Abstractions and Source Protection Zones map on **page 60**

ID	Location	Type	Description
1	485m SW	3	Total catchment

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

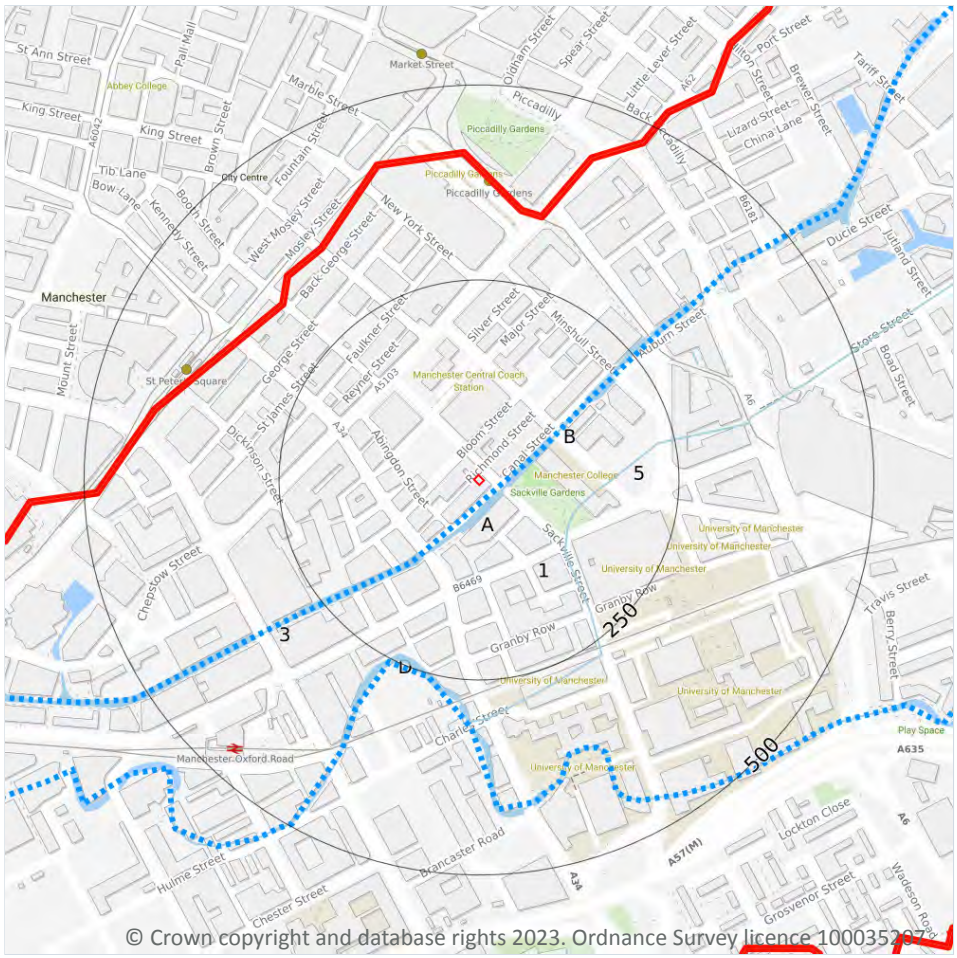
5.10 Source Protection Zones (confined aquifer)

Records within 500m	**0**

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

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

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	5

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

Features are displayed on the Hydrology map on **page 79**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	25m SE	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal

ID	Location	Type of water feature	Ground level	Permanence	Name
3	38m S	Canal. A manmade watercourse for inland navigation.	On ground surface	Watercourse contains water year round (in normal circumstances)	Rochdale Canal
A	38m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
5	122m SE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	242m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Medlock

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**6**

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 79**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

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

Features are displayed on the Hydrology map on **page 79**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Medlock (Lumb Brook to Irwell)**	**GB112069061152**	**Roch Irk Medlock**	**Irwell**

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

6.4 WFD Surface water bodies

Records identified	2

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 79**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
B	18m SE	Canal	Rochdale Canal, western section	GB71210517	Moderate	Fail	Moderate	2019
7	253m S	River	Medlock (Lumb Brook to Irwell)	GB112069061152	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 79**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**GB41201G101100**	**Poor**	**Poor**	**Poor**	**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.

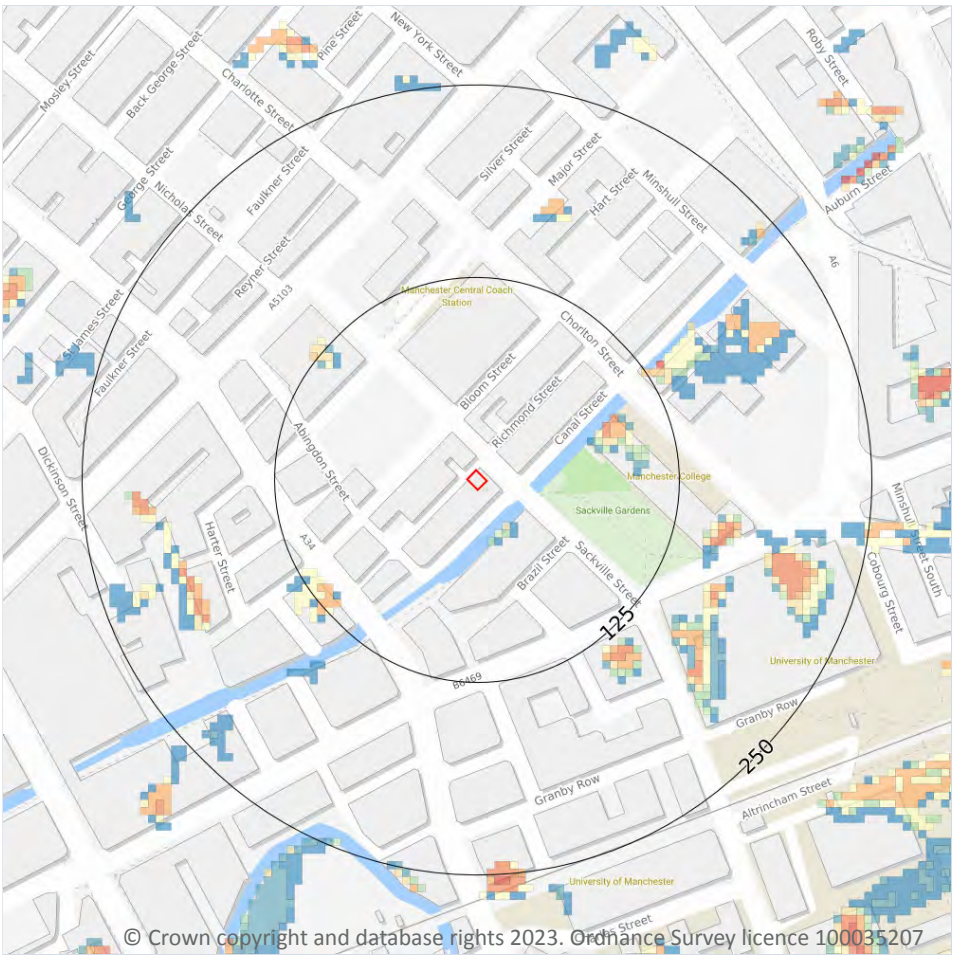
7.7 Flood Zone 3

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



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8.1 Surface water flooding

Highest risk on site	**Negligible**
Highest risk within 50m	**1 in 100 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 85**

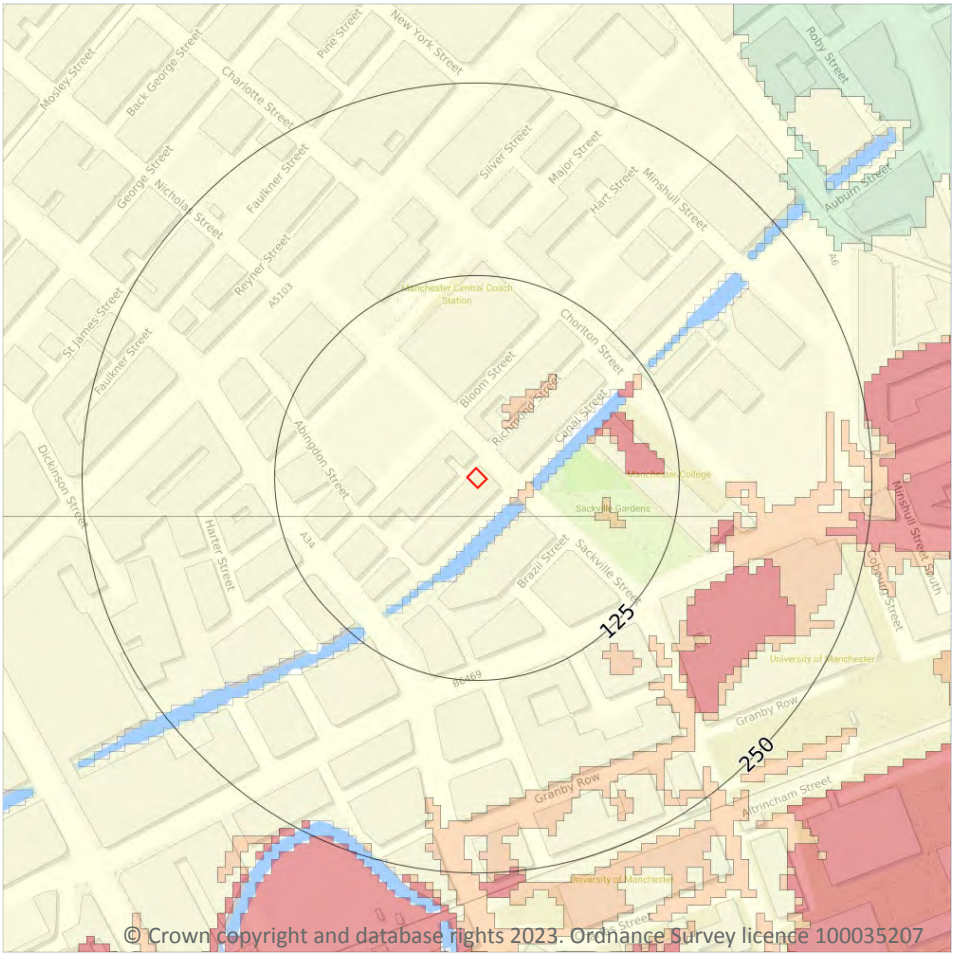
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

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

This data is sourced from Ambiental 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-High**

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 87**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	0

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

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	4

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

Location	Name	Type	NVZ ID	Status
566m N	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	Existing
805m N	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	Existing
1194m NW	Irwell / Man. Ship Canal (Kearsley to Irlam Locks) NVZ	Surface Water	643	Existing
1782m N	Irwell / Man. Ship Canal (Kearsley to Irlam Locks) NVZ	Surface Water	643	Existing

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 92**

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

This data is sourced from Natural England.

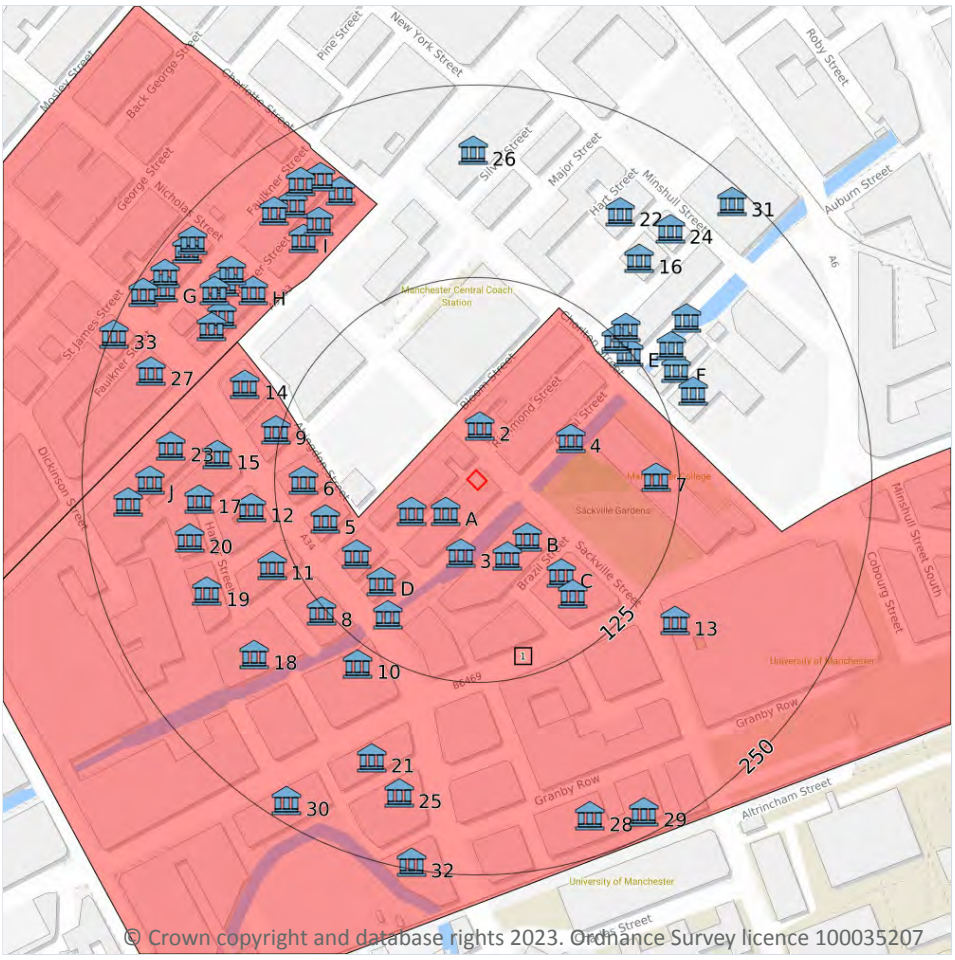
10.18 SSSI Units

Records within 2000m	0

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

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

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	68

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

Features are displayed on the Visual and cultural designations map on **page 94**

ID	Location	Name	Grade	Reference Number	Listed date
A	24m SW	51 and 53, Richmond Street, Piccadilly, Manchester, M1	II	1270835	06/06/1994
2	29m N	27, Sackville Street, Piccadilly, Manchester, M1	II	1247607	06/06/1994
A	42m SW	Former Warehouse, Piccadilly, Manchester, M1	II	1431770	19/01/2016

ID	Location	Name	Grade	Reference Number	Listed date
3	42m S	Boundary Wall To Rochdale Canal Between Princess Street and Sackville Street Rochdale Canal Boundary Wall To Canal Street Between Princess Street and Sackville Street, Piccadilly, Manchester, M1	II	1247555	06/06/1994
B	44m SE	42 and 44, Sackville Street, Piccadilly, Manchester, M1	II	1270791	03/10/1974
B	47m S	3, Brazil Street, Piccadilly, Manchester, M1	II	1283077	06/06/1994
4	61m NE	Rochdale Canal Boundary Wall To Canal Between Sackville Street and Chorlton Street, Piccadilly, Manchester, M1	II	1270837	06/06/1994
C	76m SE	46, Sackville Street, Piccadilly, Manchester, M1	II	1247608	06/06/1994
D	86m SW	New Union Public House, Piccadilly, Manchester, M1	II	1247444	03/10/1974
D	86m SW	109, Princess Street, Piccadilly, Manchester, M1	II	1270914	03/10/1974
C	91m SE	Regency House With Barclays Bank, Piccadilly, Manchester, M1	II	1254835	06/06/1994
5	96m W	Brazil House, Piccadilly, Manchester, M1	II	1270871	03/10/1974
D	100m SW	Rochdale Canal Lock Number 87, To East of Princess Street, With Cast Iron Footbridge Beside Street, Piccadilly, Manchester, M1	II	1247580	06/06/1994
6	106m W	103, Princess Street, Piccadilly, Manchester, M1	II*	1247391	11/05/1972
7	110m E	The Shena Simon Sixth-Form College, Piccadilly, Manchester, M1	II	1270607	06/06/1994
E	124m NE	39, Chorlton Street, Piccadilly, Manchester, M1	II	1283091	06/06/1994
E	125m NE	The Churchill Public House, Piccadilly, Manchester, M1	II	1197758	06/06/1994
8	127m SW	Lionesse House, Piccadilly, Manchester, M1	II	1247387	06/06/1994
9	128m W	101, Princess Street, Piccadilly, Manchester, M1	II	1270899	03/10/1974
E	134m NE	9, Richmond Street, Piccadilly, Manchester, M1	II	1247476	06/06/1994
10	137m SW	Central House, Piccadilly, Manchester, M1	II	1247389	03/10/1974
11	139m SW	Rhodesia House, Piccadilly, Manchester, M1	II	1270911	06/06/1994
12	141m W	Transact House, Piccadilly, Manchester, M1	II	1247386	06/06/1994
F	143m NE	Mintierna House, Piccadilly, Manchester, M1	II	1197759	06/06/1994
F	146m E	Minshull House, Piccadilly, Manchester, M1	II	1283092	08/05/1990
F	149m NE	Rochdale Canal Lock Number 86, To East of Chorlton Street, Piccadilly, Manchester, M1	II	1247481	06/06/1994

ID	Location	Name	Grade	Reference Number	Listed date
13	152m SE	institute of Science and Technology (University of Manchester), Piccadilly, Manchester, M1	II	1247609	03/10/1974
14	157m W	Former Pickles Building, Piccadilly, Manchester, M1	II	1246955	03/10/1974
15	163m W	Eastern House Portland House, Piccadilly, Manchester, M1	II	1247058	06/06/1994
F	167m NE	Rochdale Canal Boundary Wall To Canal Between Chorlton Street and Minshull Street, Piccadilly, Manchester, M1	II	1247478	06/06/1994
16	174m NE	11, Bloom Street, Piccadilly, Manchester, M1	II	1208005	06/06/1994
17	175m W	Langley Buildings, Piccadilly, Manchester, M1	II	1247385	06/06/1994
18	179m SW	Former Electricity Power Station, Piccadilly, Manchester, M1	II	1255031	06/06/1994
19	184m W	104, Bloom Street (See Details For Further Address information), Piccadilly, Manchester, M1	II	1218476	06/06/1994
20	184m W	2, Harter Street, Piccadilly, Manchester, M1	II	1200841	06/06/1994
H	185m NW	70 and 72, Portland Street (See Details For Further Address information), Deansgate, Manchester, M1	II	1271071	06/06/1994
21	187m S	Lancaster House, Deansgate, Manchester, M1	II*	1254887	03/10/1974
I	187m NW	52 and 54, Portland Street, Deansgate, Manchester, M1	II	1246953	06/06/1994
I	191m NW	44-50, Portland Street, Deansgate, Manchester, M1	II	1247041	06/06/1994
H	192m NW	Nos 74-78, and No 80 (The Grey Horse Public House) and Attached Railings, Portland Street, Deansgate, Manchester, M1	II	1246954	06/06/1994
22	192m NE	8, Minshull Street (See Details For Further Address information), Piccadilly, Manchester, M1	II	1219858	06/06/1994
23	193m W	Basil House, Piccadilly, Manchester, M1	II	1246956	06/06/1994
H	194m NW	Circus Tavern and Attached Railings, Deansgate, Manchester, M1	II	1247057	06/06/1994
24	201m NE	Minshull House, Piccadilly, Manchester, M1	II	1197926	06/06/1994
I	202m NW	Fraser House, Deansgate, Manchester, M1	II	1283064	03/10/1974
25	203m S	Asia House, Deansgate, Manchester, M1	II*	1247432	03/10/1974
H	204m NW	57, Faulkner Street, Deansgate, Manchester, M1	II	1218005	06/06/1994
H	204m NW	55, Faulkner Street (See Details For Further Address information), Deansgate, Manchester, M1	II	1217991	06/06/1994
H	205m NW	59 and 61, Faulkner Street, Deansgate, Manchester, M1	II	1282964	06/06/1994

ID	Location	Name	Grade	Reference Number	Listed date
J	206m W	109 and 111, Portland Street, Piccadilly, Manchester, M1	II	1271095	06/06/1994
26	207m N	Britannia Hotel, Piccadilly, Manchester, M1	II*	1246952	25/02/1952
I	210m NW	45 and 47, Faulkner Street, Deansgate, Manchester, M1	II	1200830	20/06/1988
I	213m NW	No. 49, Faulkner Street, Deansgate, Manchester, M1	II	1200831	06/06/1994
I	216m NW	Lindencourt House, Deansgate, Manchester, M1	II	1208396	03/10/1974
27	217m W	No. 36, Princess Street, No. 94, Portland Street, and No. 75, Faulkner Street, Deansgate, Manchester, M1	II	1247384	06/06/1994
I	219m NW	Nos. 41 and 43, Faulkner Street, Deansgate, Manchester, M1	II	1200829	03/10/1974
J	221m W	113-119, Portland Street, Piccadilly, Manchester, M1	II	1246957	28/02/1989
28	224m S	orient House, Piccadilly, Manchester, M1	II	1200838	20/06/1988
G	233m NW	No. 56, Faulkner Street, Deansgate, Manchester, M1	II	1200832	06/06/1994
29	235m SE	Granby House, Piccadilly, Manchester, M1	II	1218253	03/10/1974
G	236m NW	46, 48 and 50, Faulkner Street, Deansgate, Manchester, M1	II	1282962	06/06/1994
G	236m NW	16, Nicholas Street, Deansgate, Manchester, M1	II	1271453	06/06/1994
30	237m SW	india House (including Attached Wrought Iron Gateway Linked To Lancaster House), Deansgate, Manchester, M1	II*	1254836	03/10/1974
G	237m NW	52 and 54, Faulkner Street, Deansgate, Manchester, M1	II	1282963	06/06/1994
31	241m NE	City Police Courts, Piccadilly, Manchester, M1	II*	1219894	03/10/1974
G	243m NW	87-91, Princess Street, Deansgate, Manchester, M1	II	1247390	06/06/1994
32	246m S	Manchester House, Deansgate, Manchester, M1	II	1270897	06/06/1994
33	248m W	34, Princess Street, Deansgate, Manchester, M1	II	1247383	06/06/1994

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

11.5 Conservation Areas

Records within 250m	2

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

Features are displayed on the Visual and cultural designations map on **page 94**

ID	Location	Name	District	Date of designation
1	**On site**	**Whitworth Street and Princess Street**	**Manchester**	**01/09/1974**
G	166m NW	George Street	Manchester	01/06/1985

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

11.6 Scheduled Ancient Monuments

Records within 250m	**0**

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

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

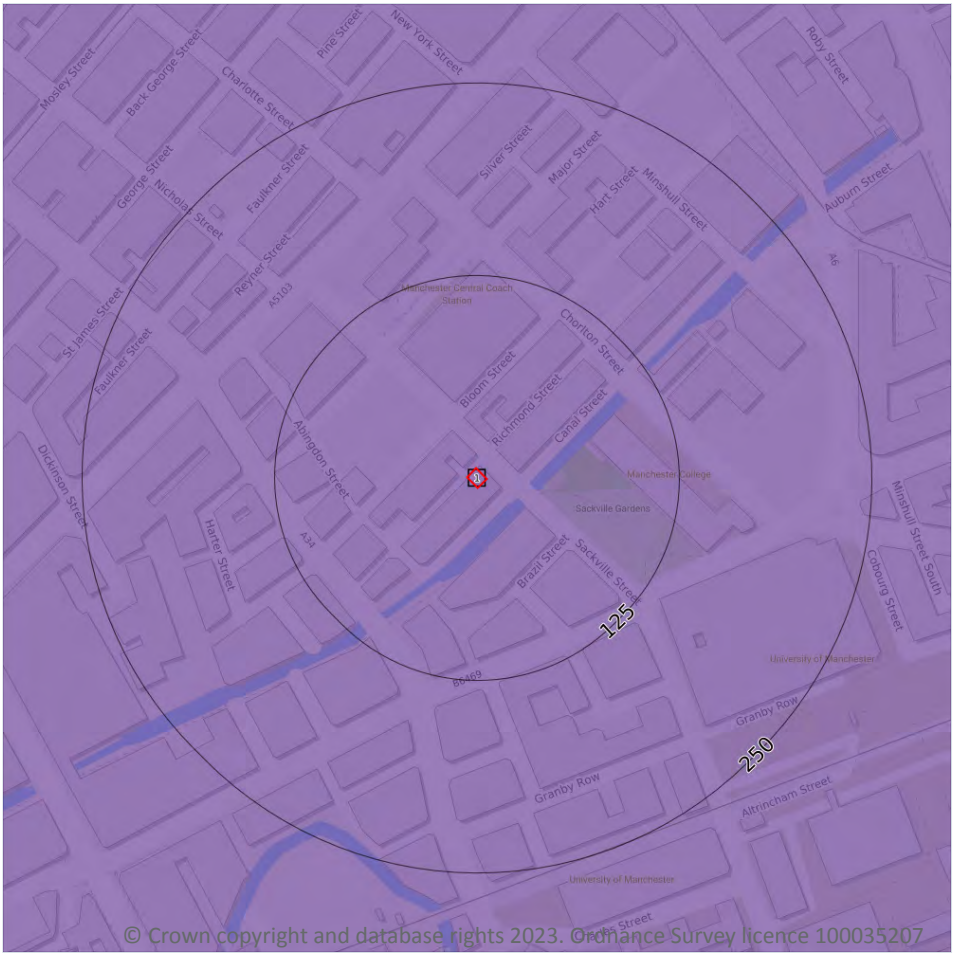
11.7 Registered Parks and Gardens

Records within 250m	**0**

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	1

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

Features are displayed on the Agricultural designations map on **page 100**

ID	Location	Classification	Description
1	**On site**	**Urban**	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m	0

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

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

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

This data is sourced from Natural England.

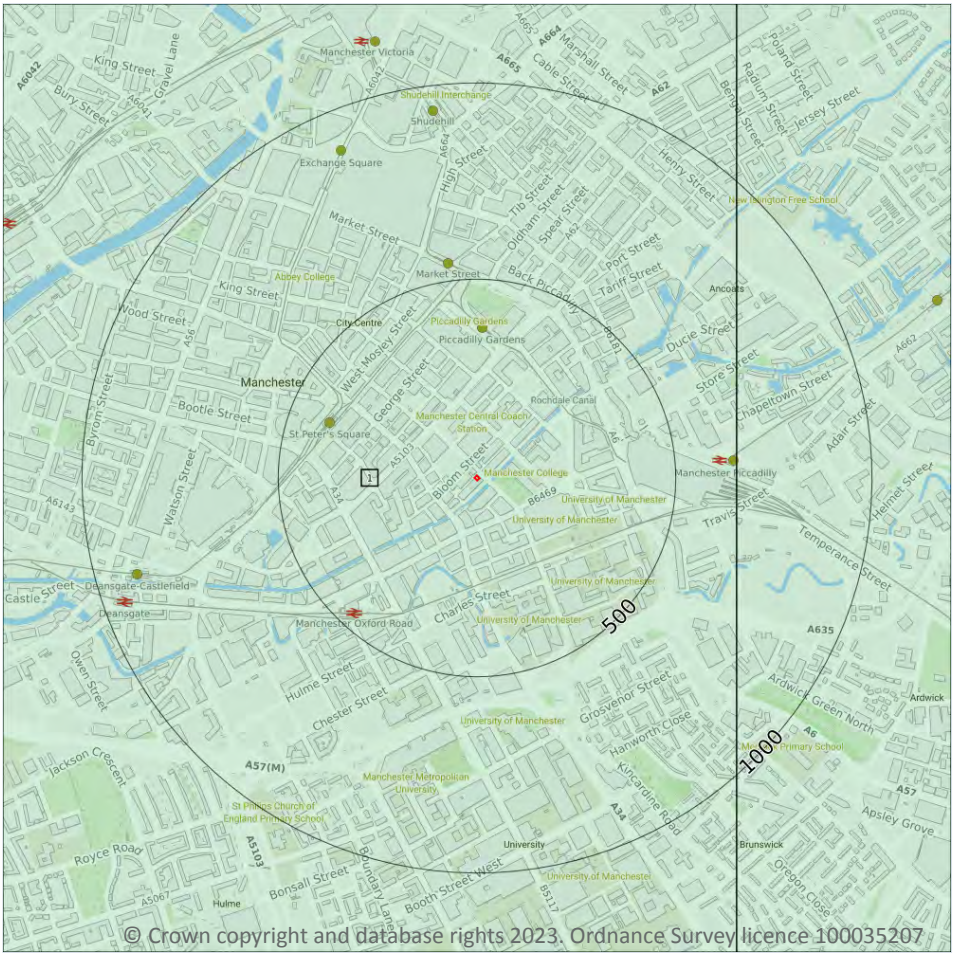
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	1

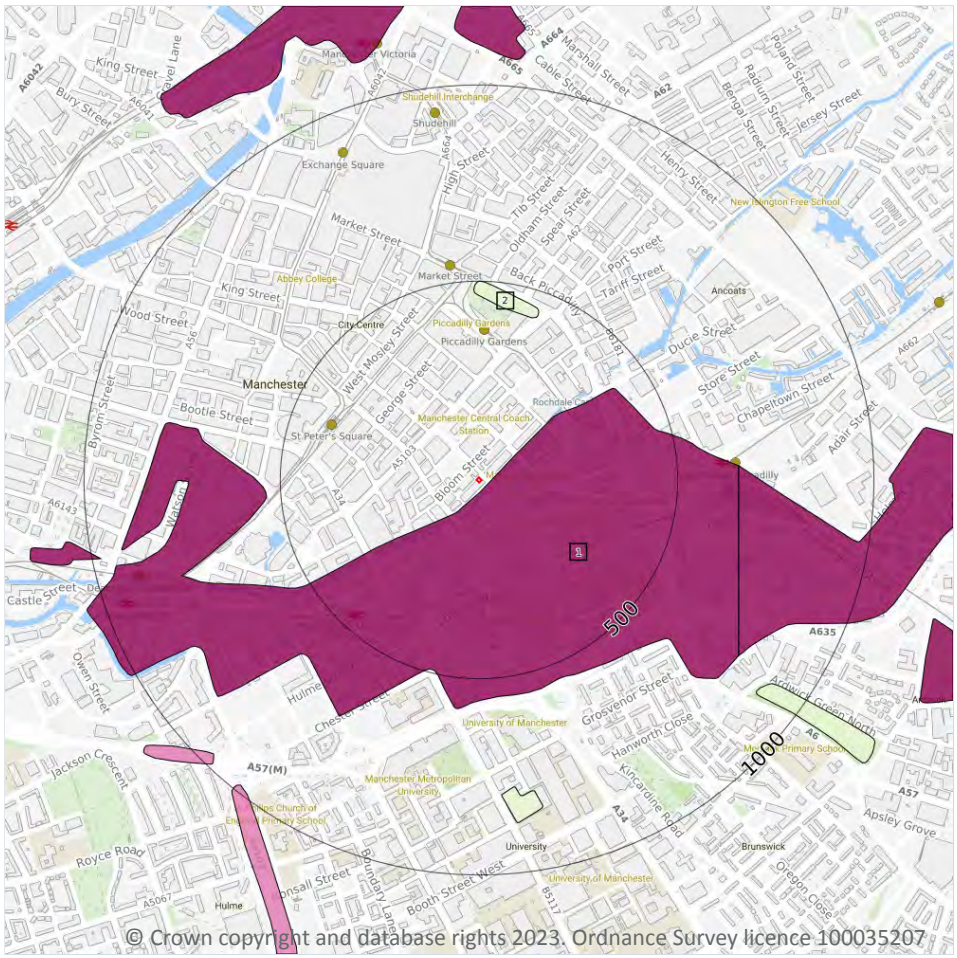
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 103**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ89NW**

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m	2

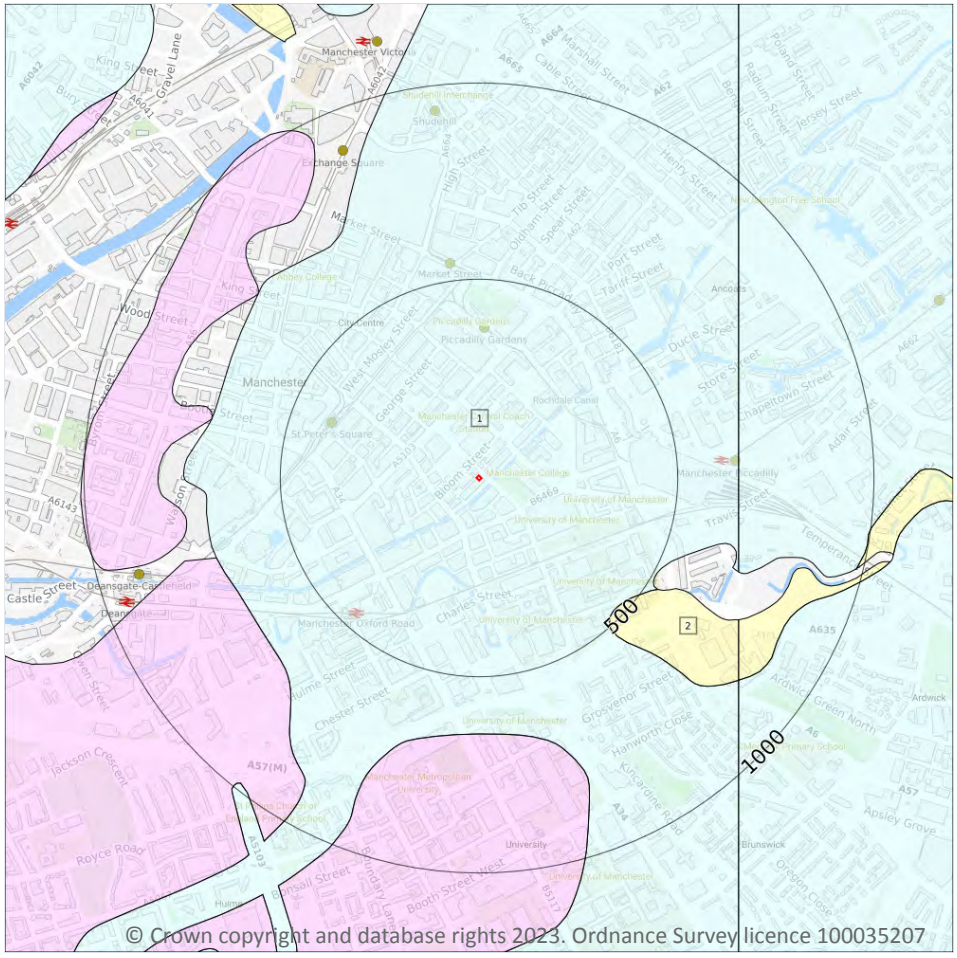
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 104**

ID	Location	LEX Code	Description	Rock description
1	18m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	429m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m **2**

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 105**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**Till, Devensian - Diamicton**	**Diamicton**
2	477m SE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

This data is sourced from the British Geological Survey.

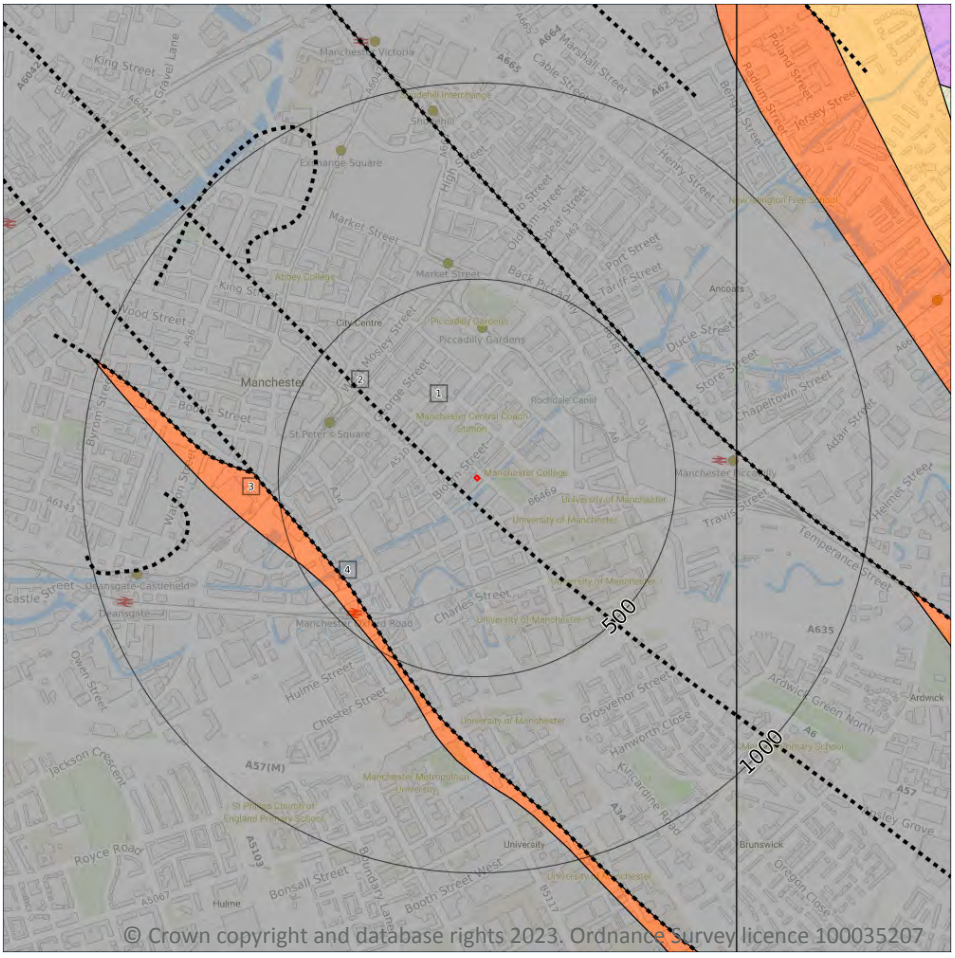
14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m	2

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 107**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CPB-SDST**	**Chester Pebble Beds Formation - Sandstone**	**Early Triassic Epoch**
3	420m SW	MM-MDST	Manchester Marls Formation - Mudstone	Late Permian Epoch [Obsolete name]

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	2

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 107**

ID	Location	Category	Description
2	47m SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
4	420m SW	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



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Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

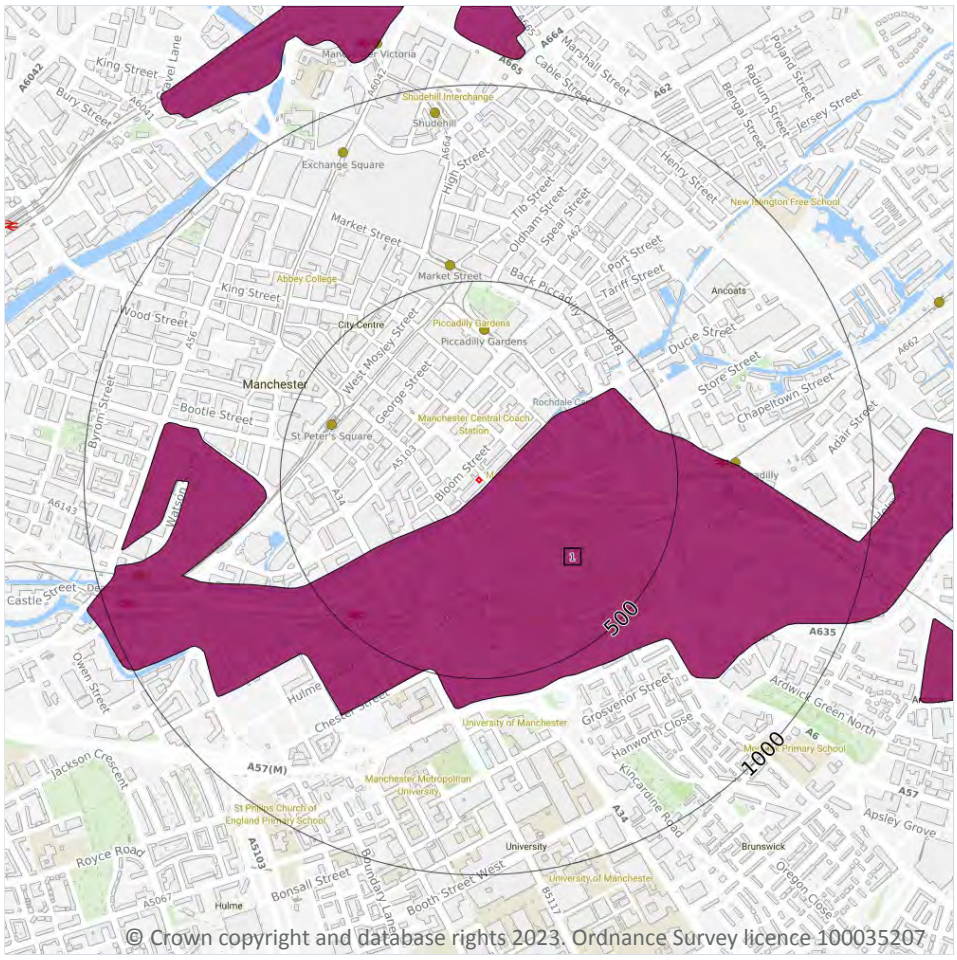
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 109**

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

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 110**

ID	Location	LEX Code	Description	Rock description
1	18m SE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

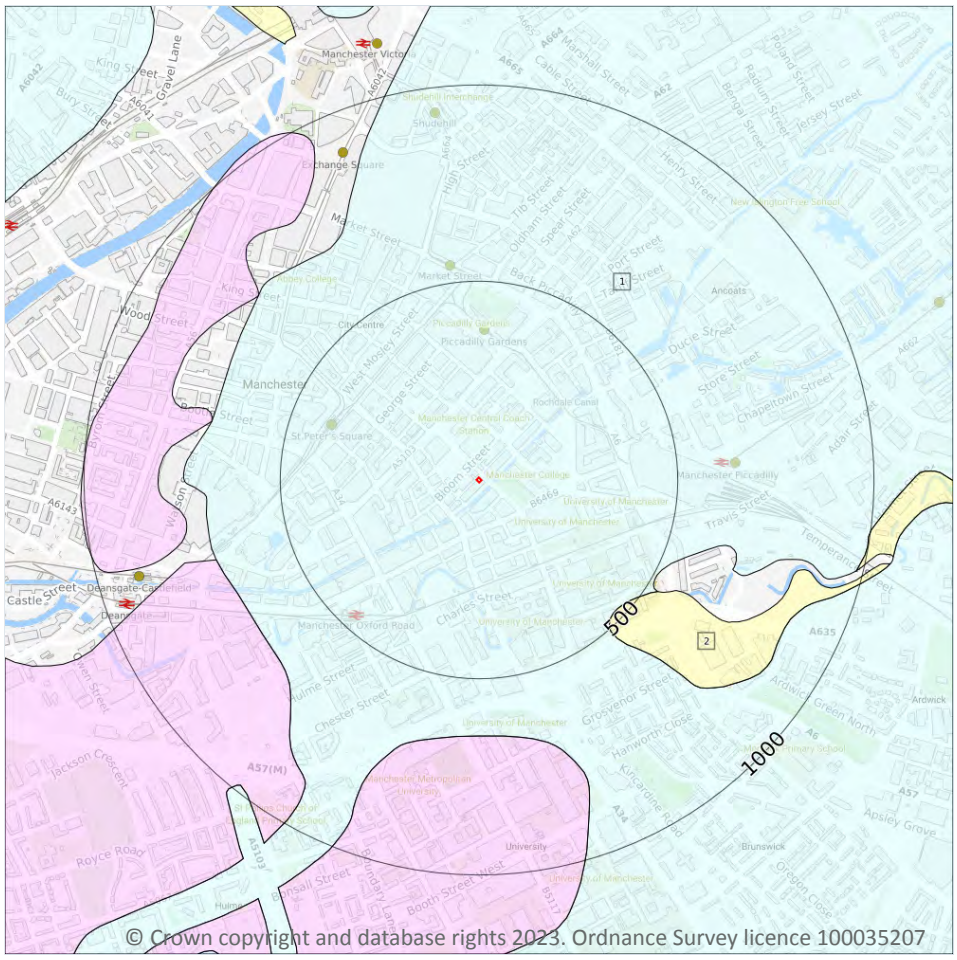
Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
18m SE	Mixed	Very High	Low

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m **2**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 112**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	477m SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Low**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

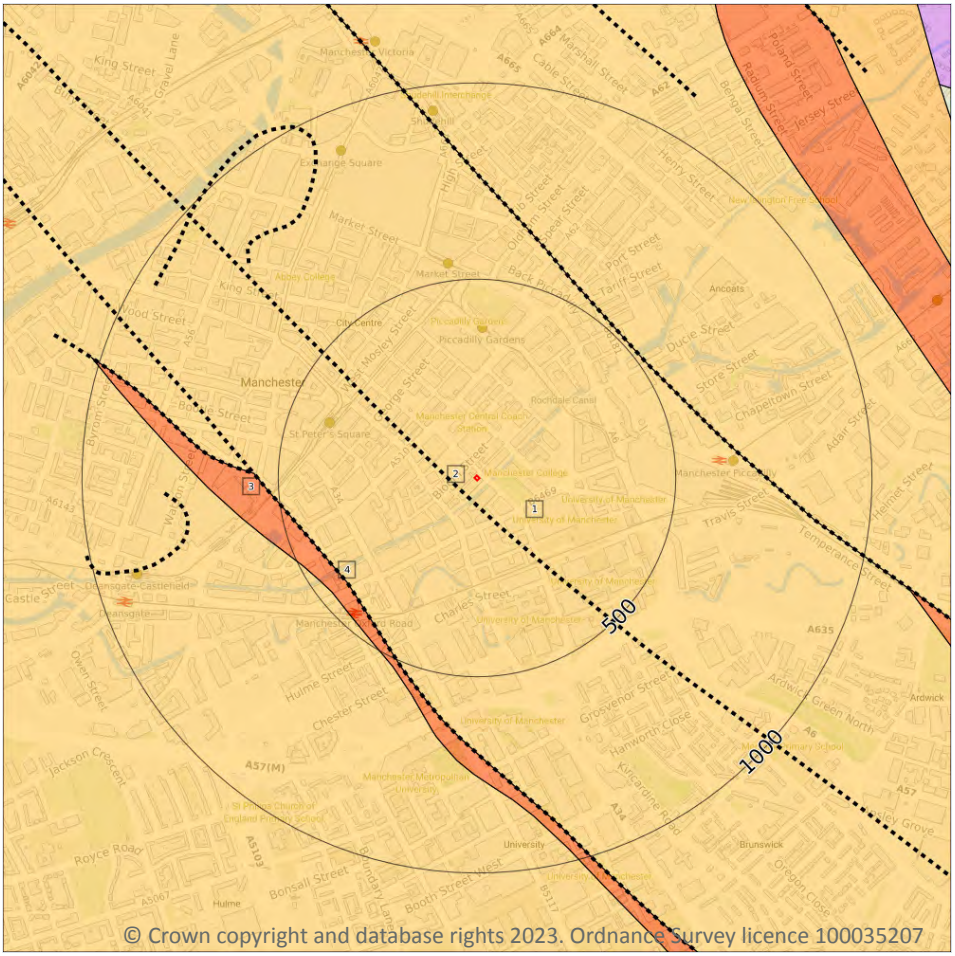
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **2**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 114**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CHES-SDST**	**CHESTER FORMATION - SANDSTONE**	**OLENEKIAN**
3	420m SW	MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE	-

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**High**	**Moderate**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	2

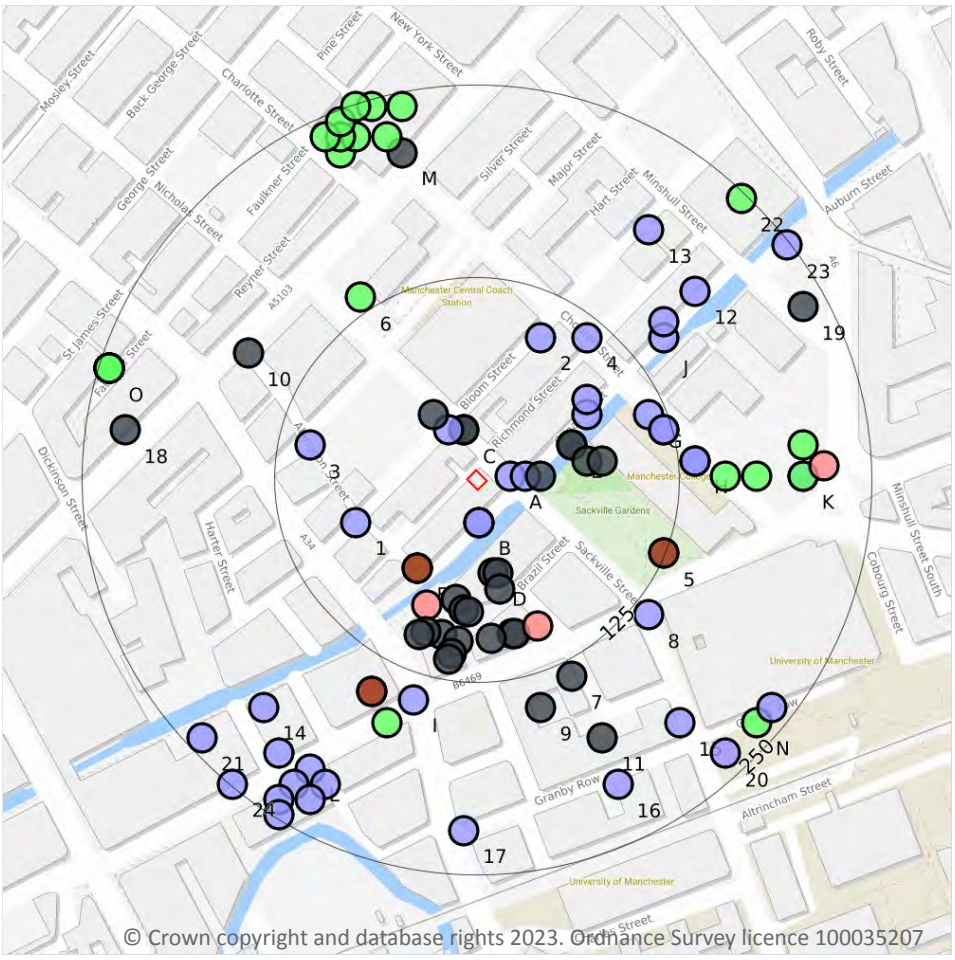
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 114**

ID	Location	Category	Description
2	47m SW	FAULT	Fault, inferred
4	420m SW	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



16.1 BGS Boreholes

Records within 250m	105

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

Features are displayed on the Boreholes map on **page 116**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	16m E	384360 397830	CANAL STREET SEWER RENEWAL SCHEME 3	7.1	N	1045629
B	21m S	384340 397800	CANAL STREET SEWER RENEWAL SCHEME 2	5.8	N	1045634
B	21m S	384340 397800	CANAL STREET SEWER RENEWAL SCHEME 1	5.8	N	1045633

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	25m E	384370 397830	CANAL STREET SEWER RENEWAL SCHEME 3	6.0	N	1045635
C	27m N	384330 397860	SACKVILLE STREET / BLOOM STREET 2	-	Y	N/A
C	27m N	384330 397860	SACKVILLE STREET / BLOOM STREET 1	-	Y	N/A
C	32m NW	384320 397860	BLOOM STREET/ABINGDON STREET 4	8.7	N	1045706
A	35m E	384380 397830	SACKVILLE GARDENS 3	-	Y	N/A
C	46m NW	384310 397870	SACKVILLE STREET / BLOOM STREET 3	-	Y	N/A
D	55m S	384349 397767	PRINCESS STREET, MANCHESTER BH101	-	Y	N/A
D	56m S	384352 397767	PRINCESS STREET, MANCHESTER TP101	-	Y	N/A
E	60m E	384400 397850	SACKVILLE GARDENS T1	-	Y	N/A
E	60m E	384400 397850	SACKVILLE GARDENS 2	-	Y	N/A
F	64m SW	384300 397770	BLOOM STREET/ABINGDON STREET 7	10.5	N	1045709
F	64m SW	384300 397770	NO DETAILS	-1.0	N	1042456
D	66m S	384353 397757	PRINCESS STREET, MANCHESTER TP106	-	Y	N/A
E	67m E	384410 397840	SACKVILLE GARDENS 1	-	Y	N/A
F	72m S	384325 397750	PRINCESS STREET, MANCHESTER TP107	-	Y	N/A
E	76m E	384420 397840	SACKVILLE GARDENS T2	-	Y	N/A
1	77m W	384260 397800	BLOOM STREET/ABINGDON STREET 6	1.2	N	1045708
E	78m NE	384410 397870	CANAL STREET SEWER RENEWAL SCHEME 4	4.7	N	1045636
F	79m S	384330 397743	PRINCESS STREET, MANCHESTER TP102	-	Y	N/A
F	79m S	384333 397742	PRINCESS STREET, MANCHESTER BH102	-	Y	N/A
F	82m S	384306 397746	ORIGIN DEVELOPMENT, BH 1 (RECHARGE)	90.0	N	18108076
E	84m NE	384410 397880	CANAL STREET SEWER RENEWAL SCHEME 2	6.7	N	1045628
F	96m S	384361 397728	PRINCESS STREET, MANCHESTER TP105	-	Y	N/A
2	96m NE	384380 397920	BLOOM STREET/ABINGDON STREET 3	8.95	N	1045705
F	96m S	384363 397728	PRINCESS STREET, MANCHESTER BH105	-	Y	N/A
F	96m SE	384378 397733	ORIGIN DEVELOPMENT, BH 2 (ABH)	90.0	N	18108077
F	97m S	384348 397725	PRINCESS STREET, MANCHESTER TP110	-	Y	N/A
F	97m S	384316 397727	PRINCESS STREET, MANCHESTER TP108	-	Y	N/A

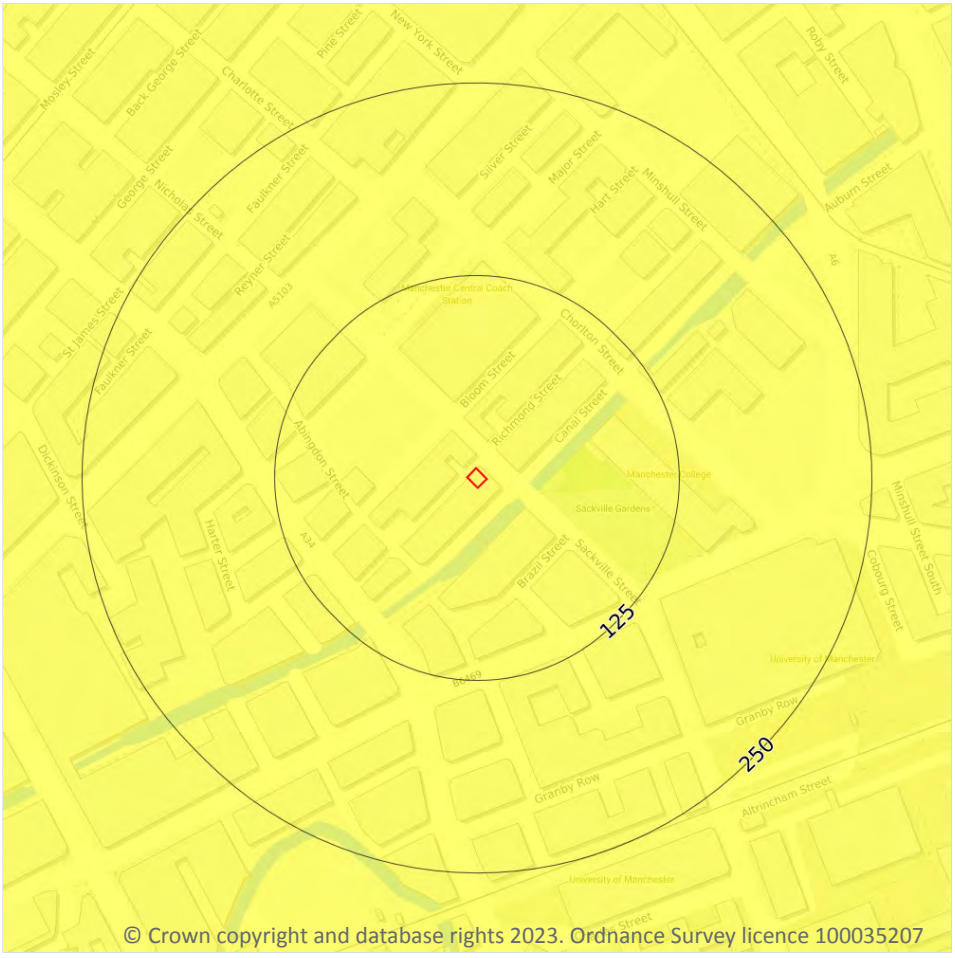
ID	Location	Grid reference	Name	Length	Confidential	Web link
F	98m S	384305 397729	PRINCESS STREET, MANCHESTER TP103	-	Y	N/A
F	99m S	384326 397723	PRINCESS STREET, MANCHESTER TP109	-	Y	N/A
F	101m S	384301 397727	PRINCESS STREET, MANCHESTER BH103	-	Y	N/A
3	105m W	384230 397850	BLOOM STREET/ABINGDON STREET 5	9.05	N	1045707
F	107m S	384322 397715	PRINCESS STREET, MANCHESTER TP104	-	Y	N/A
F	112m S	384320 397711	PRINCESS STREET, MANCHESTER BH104	-	Y	N/A
4	112m NE	384410 397920	CANAL STREET SEWER RENEWAL SCHEME 4A	5.5	N	1045630
G	114m E	384450 397870	CANAL STREET SEWER RENEWAL SCHEME 7	4.6	N	1045639
G	120m E	384460 397860	CANAL STREET SEWER RENEWAL SCHEME 8	6.6	N	1045640
G	120m E	384460 397860	CANAL STREET SEWER RENEWAL SCHEME 5	6.3	N	1045631
5	124m E	384460 397780	HIGH SCHOOL MANCHESTER OB	-1.0	N	1045473
6	135m NW	384263 397946	PORTLAND STREET & CAR PARK. BH'S 6	12.19	N	1042483
7	136m SE	384400 397700	GRANBY VILLAGE MANCHESTER 2	-	Y	N/A
H	136m E	384480 397840	CANAL STREET SEWER RENEWAL SCHEME 10	5.2	N	1045642
H	136m E	384480 397840	CANAL STREET SEWER RENEWAL SCHEME 9	7.2	N	1045641
8	136m SE	384450 397740	SACKVILLE STREET 1	7.5	N	1043691
I	142m S	384297 397685	MANCHESTER CORP. SHOOTERS BROOK RELIEF SEWER	7.62	N	1042252
9	147m S	384380 397680	GRANBY VILLAGE MANCHESTER 1	-	Y	N/A
I	148m SW	384270 397690	GALBRAITH STREET MANCHESTER OB	-1.0	N	1045470
J	148m NE	384460 397920	CANAL STREET SEWER RENEWAL SCHEME 5	4.2	N	1045637
J	155m NE	384460 397930	CANAL STREET SEWER RENEWAL SCHEME 6	4.0	N	1045638
H	155m E	384500 397830	CANAL STREET SEWER RENEWAL SCHEME 6	11.0	N	1045632
I	162m S	384280 397670	GRANBY ROW / WHITWORTH STREET 5A	15.0	N	1045816
10	164m NW	384190 397910	PORTLAND STREET 4/4A	-	Y	N/A
H	175m E	384520 397830	MANCHESTER METROPOLITAN UNIVERSITY 3	14.6	N	1043371
11	180m SE	384420 397660	GRANBY VILLAGE MANCHESTER 3	-	Y	N/A
12	183m NE	384480 397950	CANAL STREET SEWER RENEWAL SCHEME 1	5.5	N	1045627
13	192m NE	384450 397990	BLOOM STREET/ABINGDON STREET 2	8.0	N	1045704

ID	Location	Grid reference	Name	Length	Confidential	Web link
14	198m SW	384200 397680	WHITWORTH ST MANCHESTER 2	7.3	N	1042855
15	200m SE	384470 397670	SACKVILLE STREET 2	8.6	N	1043692
K	205m E	384550 397830	MANCHESTER METROPOLITAN UNIVERSITY TP1	4.1	N	1043372
K	205m E	384550 397830	MANCHESTER METROPOLITAN UNIVERSITY 2	11.4	N	1043370
K	207m E	384550 397850	MANCHESTER METROPOLITAN UNIVERSITY 1	10.6	N	1043369
L	211m SW	384230 397640	INDIA HOUSE WHITWORTH STREET 5	4.3	N	1045679
M	212m N	384290 398040	PORTLAND STREET 5/5A	-	Y	N/A
16	212m SE	384430 397630	GRANBY ROW / WHITWORTH STREET 3	9.43	N	1045814
L	214m SW	384210 397650	WHITWORTH ST MANCHESTER 4	7.1	N	1042857
L	215m SW	384240 397630	INDIA HOUSE WHITWORTH STREET 4	4.5	N	1045678
K	219m E	384564 397837	MANCHESTER PURE ICE WORKS, WHITWORTH STREET	108.05	N	1042397
17	221m S	384330 397600	GRANBY ROW / WHITWORTH STREET 4	10.0	N	1045815
M	224m N	384280 398050	PORTLAND STREET MANCHESTER 12	13.71	N	1043782
M	224m NW	384250 398040	PORTLAND STREET MANCHESTER 10	18.89	N	1043780
18	224m W	384110 397860	PORTLAND STREET 3	-	Y	N/A
L	225m SW	384220 397630	INDIA HOUSE WHITWORTH STREET 6	4.6	N	1045680
L	229m SW	384230 397620	INDIA HOUSE WHITWORTH STREET 1	5.5	N	1045675
M	230m N	384260 398050	PORTLAND STREET MANCHESTER 11	12.64	N	1043781
M	233m N	384250 398050	PORTLAND STREET MANCHESTER 6	12.19	N	1043776
19	234m NE	384550 397940	MINSHULL STREET MAIN DRAINAGE	-	Y	N/A
20	235m SE	384500 397650	GRANBY ROW UMIST CAMPUS 1	8.9	N	1043355
N	235m SE	384520 397670	GRANBY ROW UMIST CAMPUS 2	13.3	N	1043356
N	236m SE	384530 397680	GRANBY ROW / WHITWORTH STREET 2	8.0	N	1045813
M	237m NW	384240 398050	PORTLAND STREET MANCHESTER 1	18.25	N	1043771
L	239m SW	384210 397620	INDIA HOUSE WHITWORTH STREET 7	6.5	N	1045681
21	240m SW	384160 397660	WHITWORTH ST MANCHESTER 1	7.3	N	1042854
M	241m N	384290 398070	PORTLAND STREET MANCHESTER 13	13.71	N	1043783
M	243m N	384250 398060	PORTLAND STREET MANCHESTER 2	12.37	N	1043772

ID	Location	Grid reference	Name	Length	Confidential	Web link
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 10	11.0	N	1045859
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 7	10.3	N	1045856
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 1	11.0	N	1045850
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 12	10.8	N	1045861
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 3	11.5	N	1045852
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 5	11.5	N	1045854
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 2	10.5	N	1045851
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 6	10.2	N	1045855
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 9	9.8	N	1045858
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 11	11.0	N	1045860
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 4	10.2	N	1045853
O	243m W	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 8	10.5	N	1045857
M	246m N	384270 398070	PORTLAND STREET MANCHESTER 7	19.38	N	1043777
22	246m NE	384510 398010	MANCHESTER FGC/3235. 2	18.0	N	1042545
L	247m SW	384210 397610	INDIA HOUSE WHITWORTH STREET 2	6.5	N	1045676
23	248m NE	384540 397980	AYTOUN STREET MANCHESTER BH3	2.4	N	1045731
24	249m SW	384180 397630	WHITWORTH ST MANCHESTER 3	7.5	N	1042856
M	249m N	384260 398070	PORTLAND STREET MANCHESTER 3	13.71	N	1043773

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

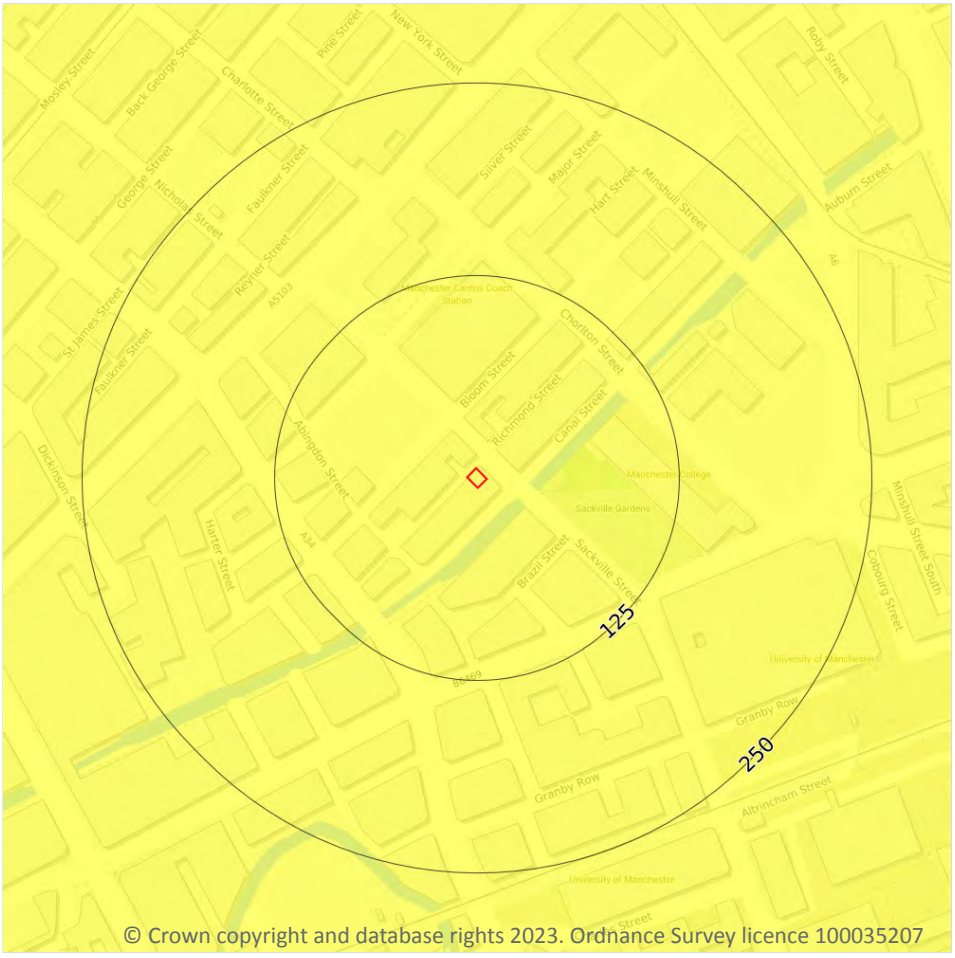
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 121**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

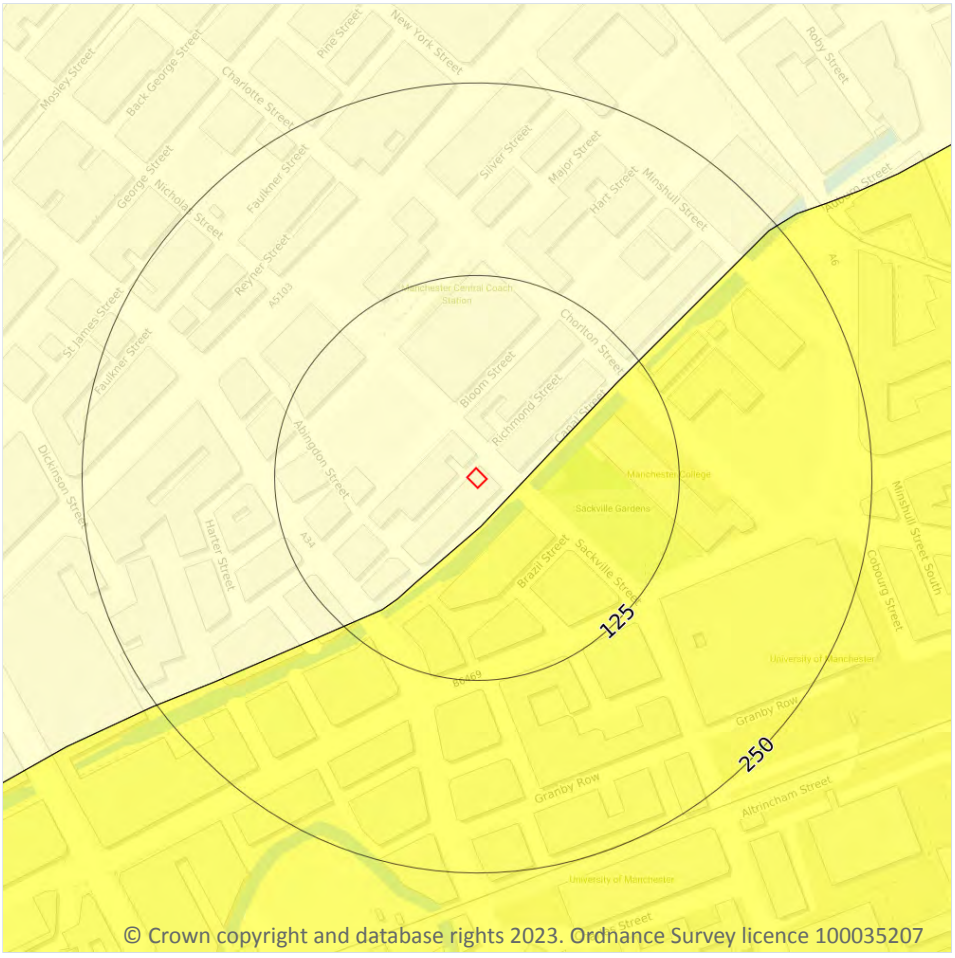
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 122**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	2

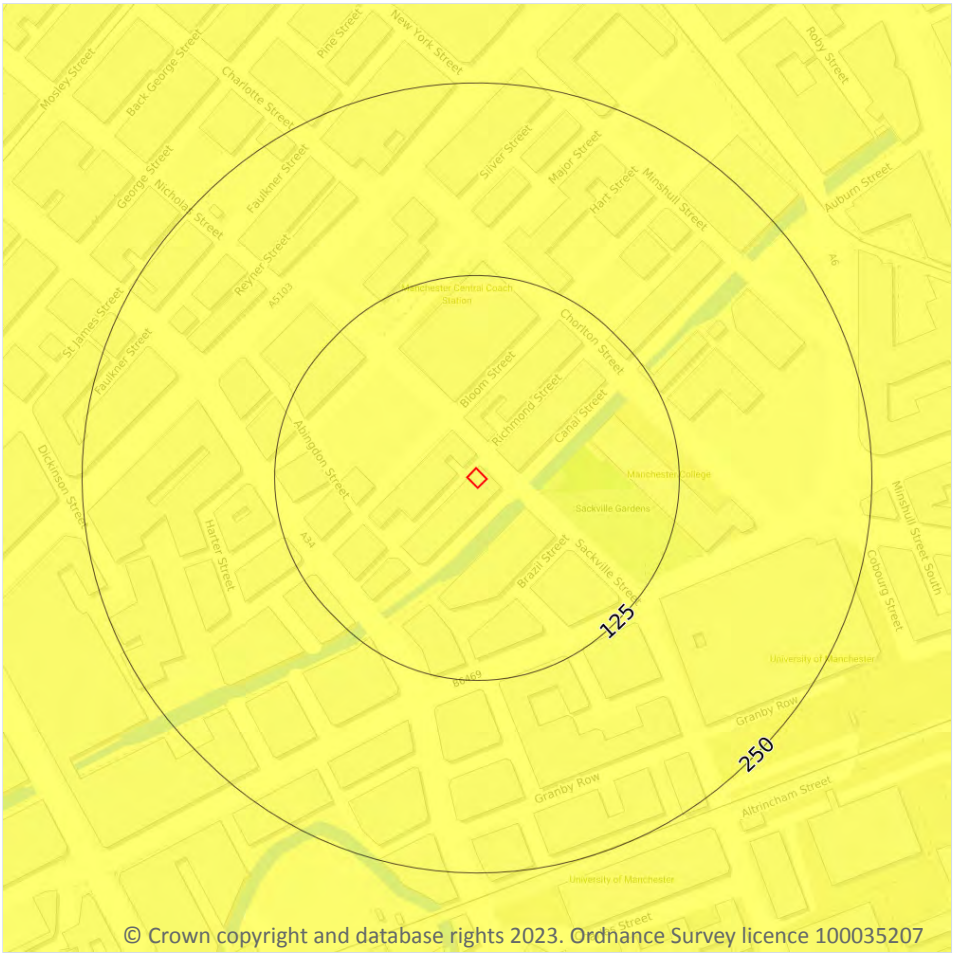
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 123**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
18m SE	Very low	Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

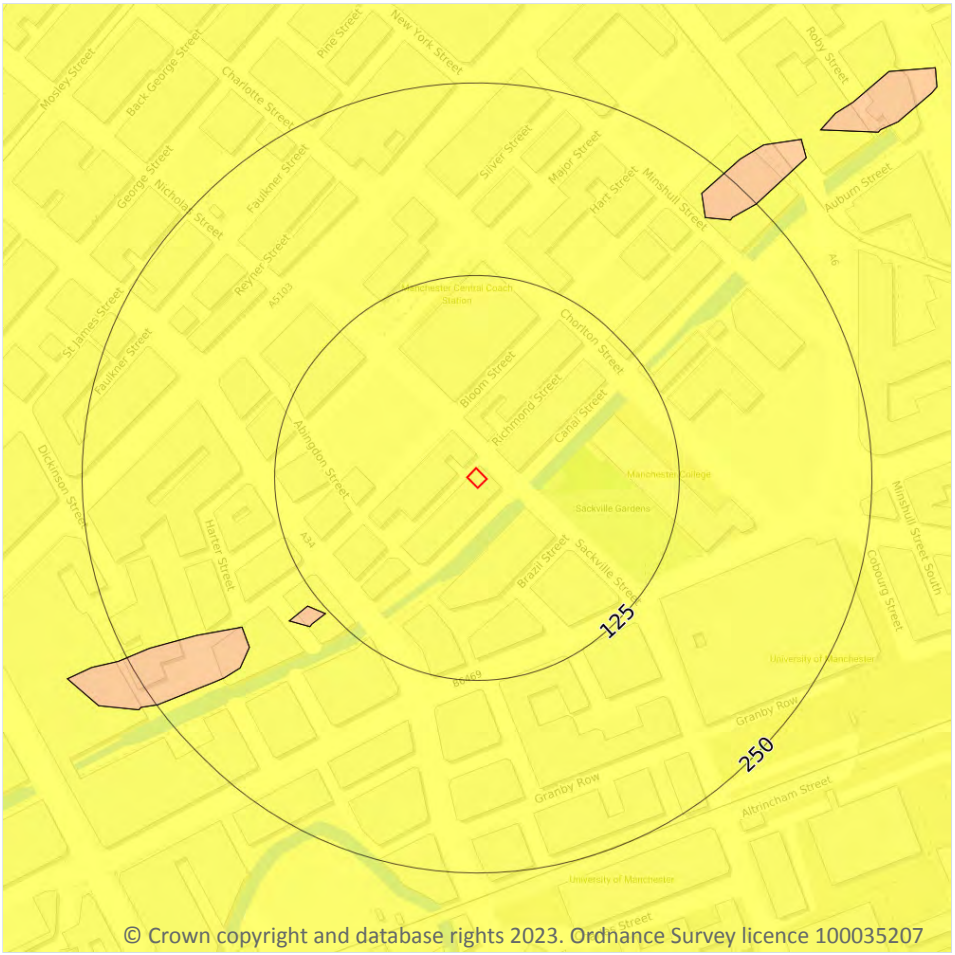
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 125**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

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

Features are displayed on the Natural ground subsidence - Landslides map on **page 126**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m	1

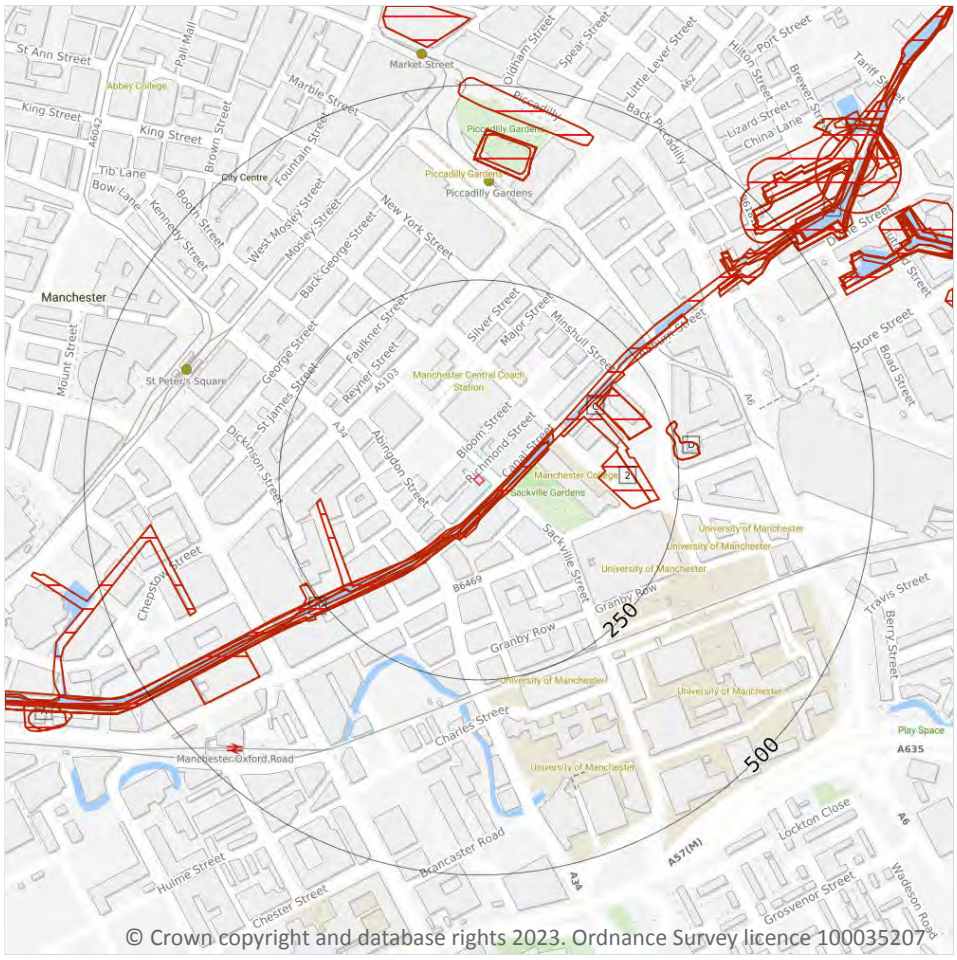
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 127**

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

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	14

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 129**

ID	Location	Land Use	Year of mapping	Mapping scale
1	19m SE	Canal	1956	1:10560
A	20m SE	Canal	1896	1:10560
A	21m SE	Canal	1988	1:10000
B	24m SE	Canal	1938	1:10560
B	24m SE	Canal	1932	1:10560
B	24m SE	Canal	1916	1:10560
B	24m SE	Canal	1905	1:10560
B	24m SE	Canal	1923	1:10560
C	115m NE	Ponds	1890	1:10560
2	147m E	Unspecified Wharf	1890	1:10560
C	174m NE	Unspecified Wharf	1923	1:10560
C	174m NE	Unspecified Wharf	1915	1:10560
D	242m E	Unspecified Ground Workings	1938	1:10560
D	242m E	Unspecified Ground Workings	1934	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	1

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 129**

ID	Location	Mine Address	Mineral	Data source	Publisher
-	914m SE	Manchester, Greater Manchester	Firestone, Freestone, Hearthstone, Honestone, Ragstone, Sandstone, Scythestone, Silver Sand, Whetstone	'Underground Manchester - Secrets of the city revealed'	Willow Publishing

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	1

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

Location	Details
On site	**In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk.**

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	1

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

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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

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

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

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

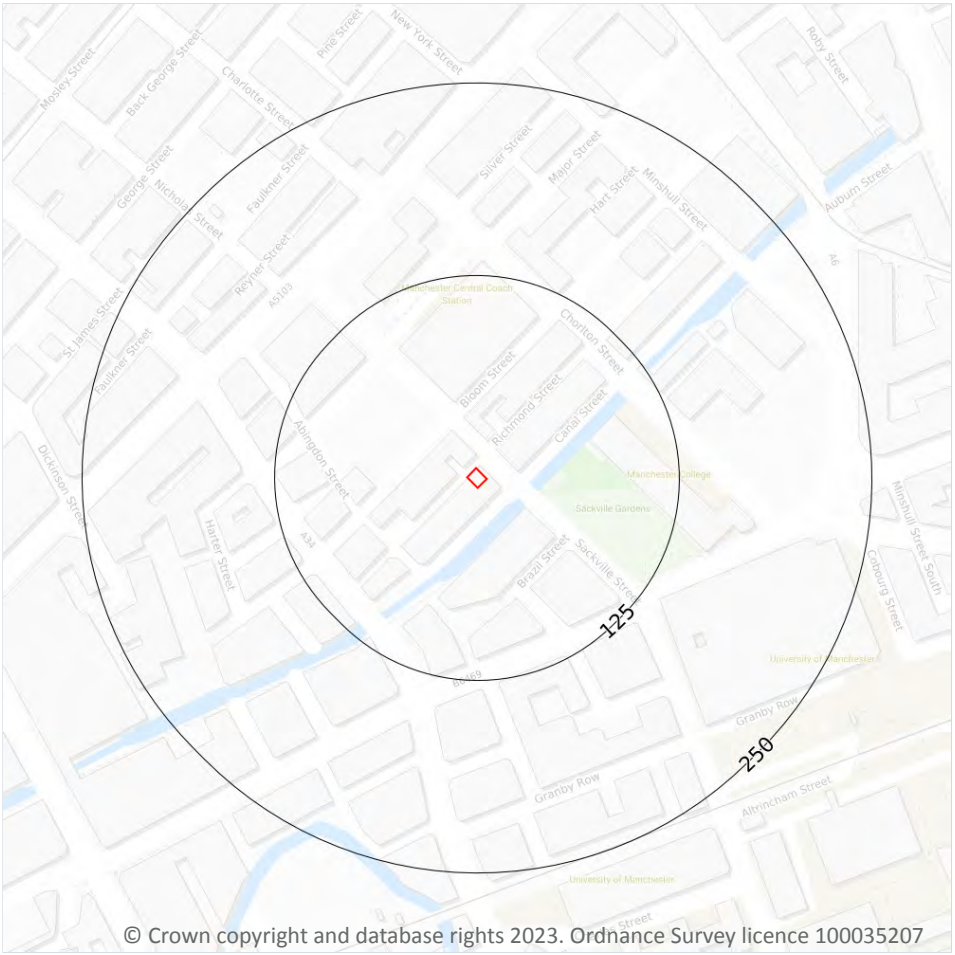
18.13 Clay mining

Records on site	0

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

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

19 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 134**

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

This data is sourced from the British Geological Survey and UK Health Security Agency.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	1

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**30 - 45 mg/kg**

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	4

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	**30**	**5.3**	**112**	**77**	**0.5**	**74**	**35**	**29**	**7**
21m S	32	5.6	114	78	0.6	77	37	30	7
32m W	21	3.7	114	78	0.6	66	39	23	7
43m SW	21	3.7	118	81	0.6	66	40	24	8

This data is sourced from the British Geological Survey.

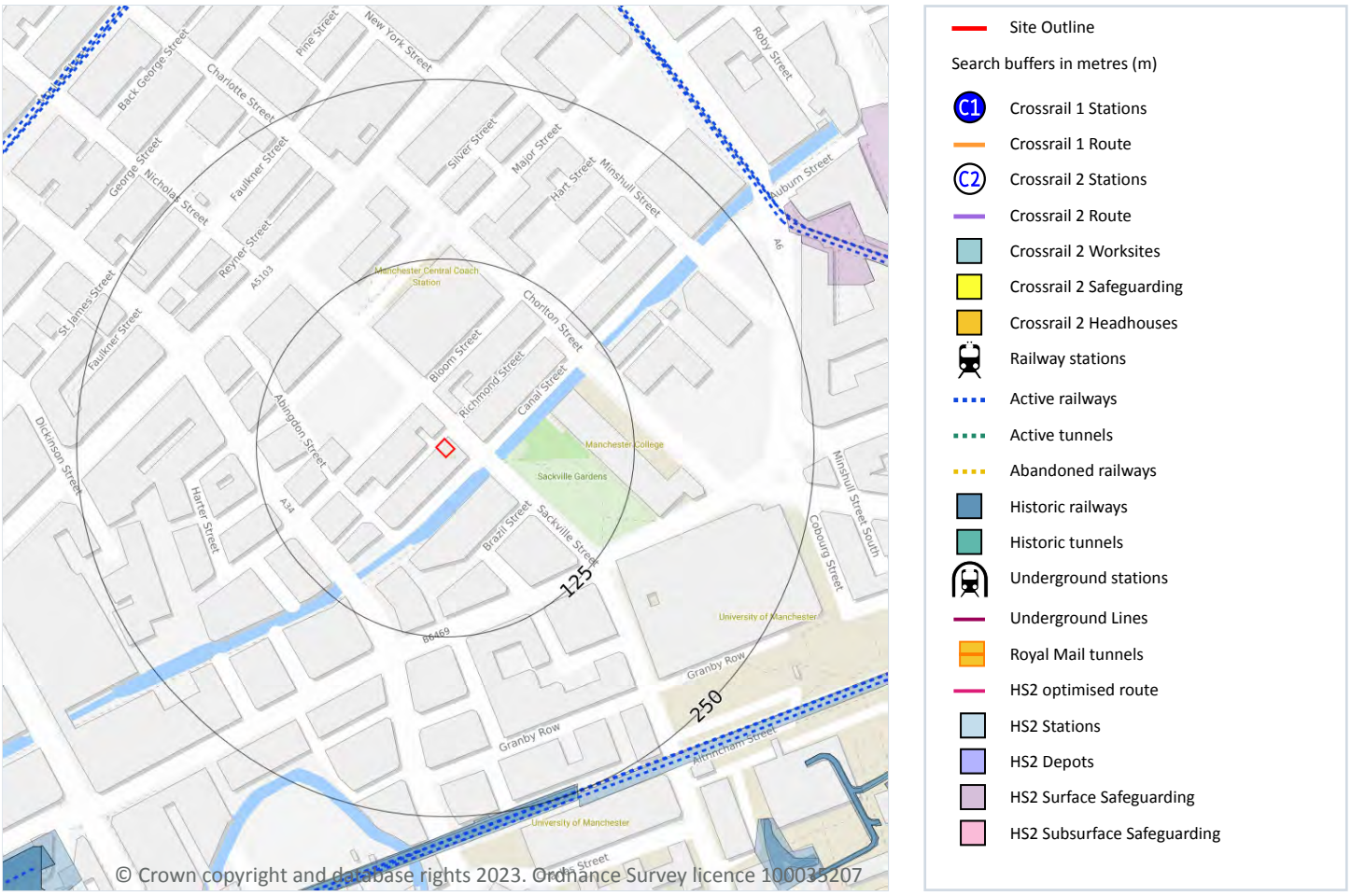
20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



21.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	3

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

Features are displayed on the Railway infrastructure and projects map on **page 138**

Location	Land Use	Year of mapping	Mapping scale
245m S	Railway	1922	-
245m S	Railway	1932	-
246m S	Railways	1893	-

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	2

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 138**

Location	Name	Type
249m S	Not given	Multi Track
250m S		rail

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	2

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

Features are displayed on the Railway infrastructure and projects map on **page 138**

Location	Track Type	Speed (mph)	Speed (km/h)	Status
489m E	Bridge/Viaduct	50mph	80kph	Current preferred consultation route

Location	Track Type	Speed (mph)	Speed (km/h)	Status
491m E	Bridge/Viaduct	50mph	80kph	Current preferred consultation route

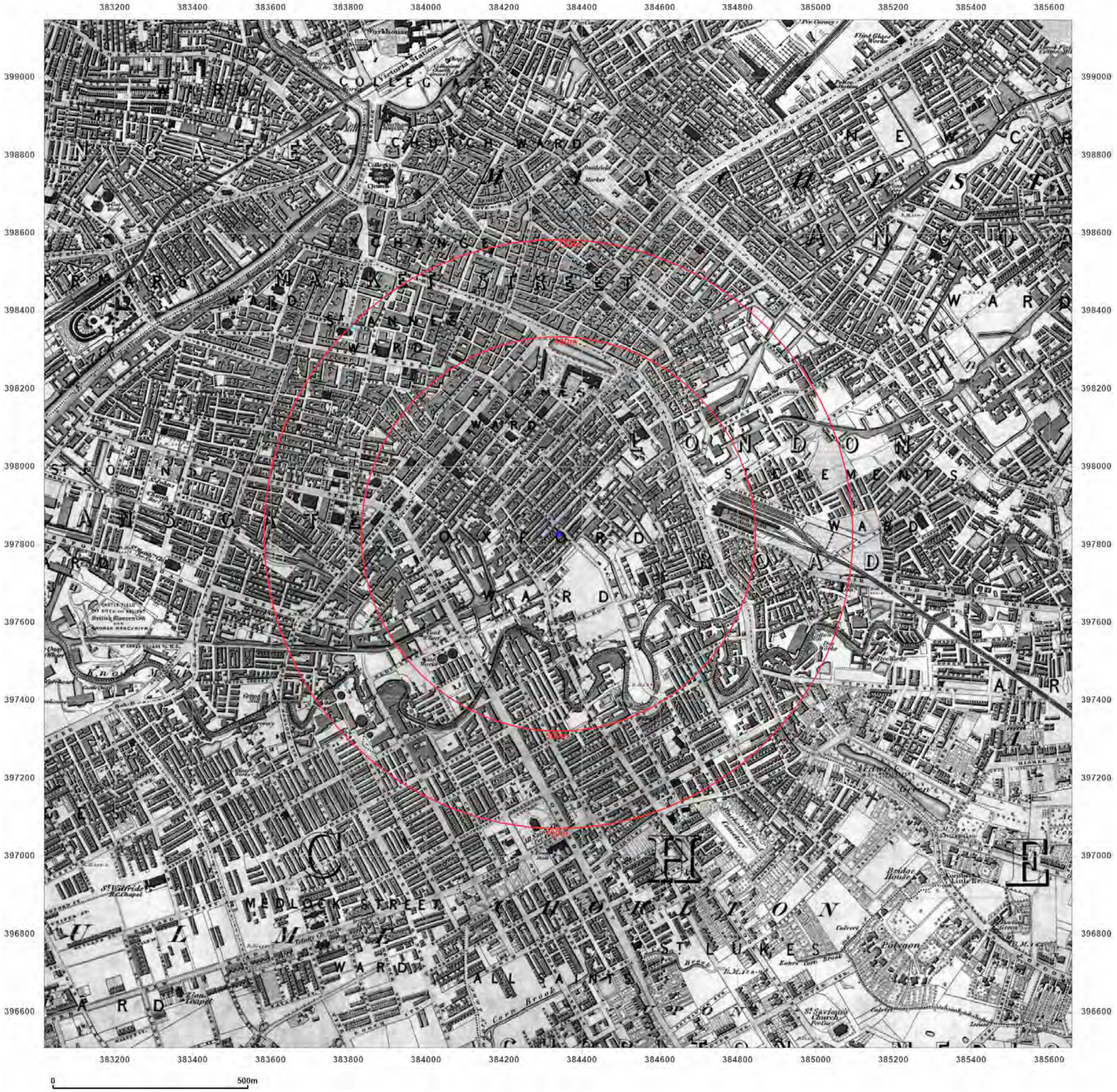
This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

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Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: County Series

Map date: **1848**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1845
Revised N/A
Edition 1848
Copyright N/A
Levelled N/A

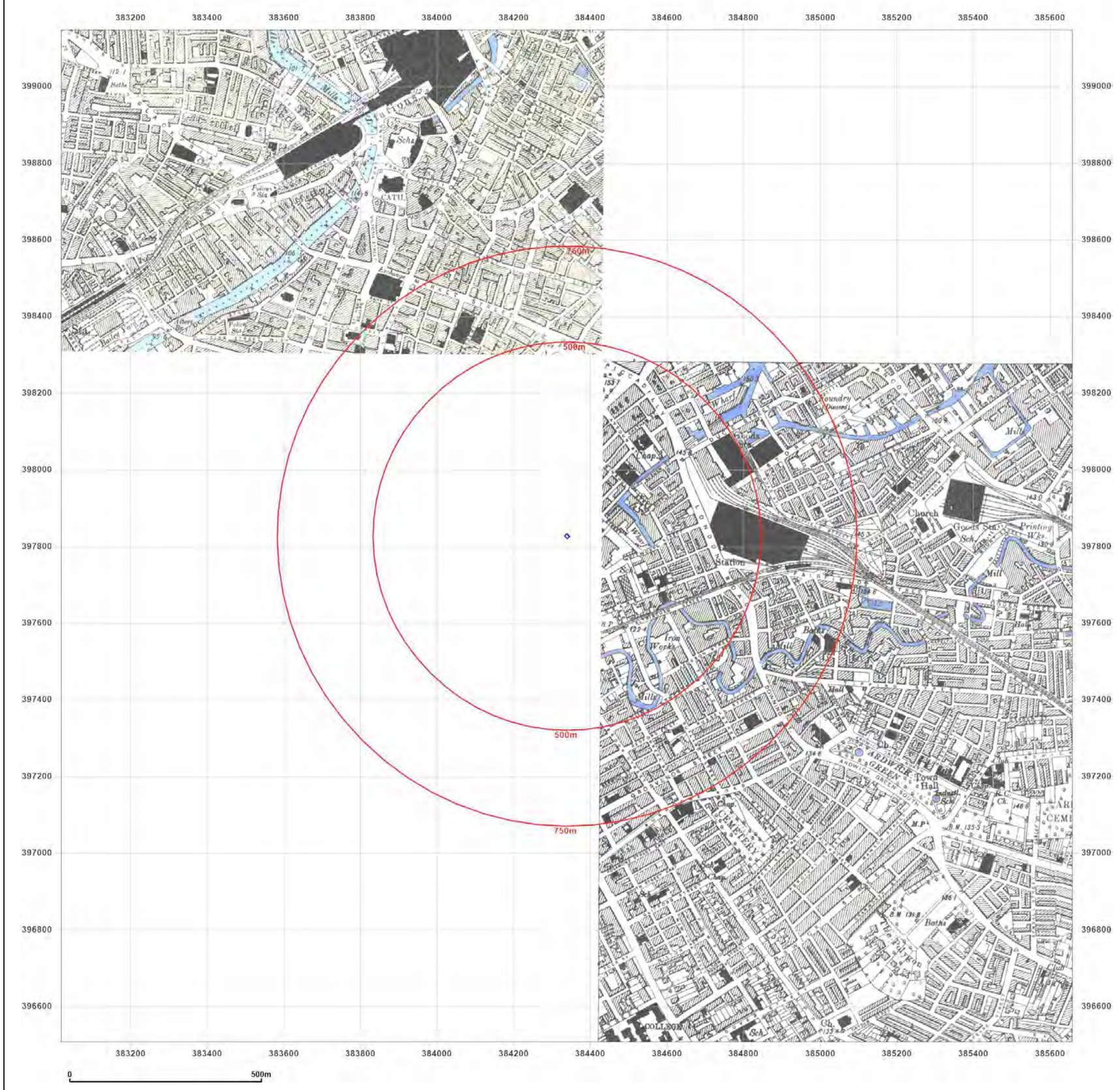
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Map Name: County Series

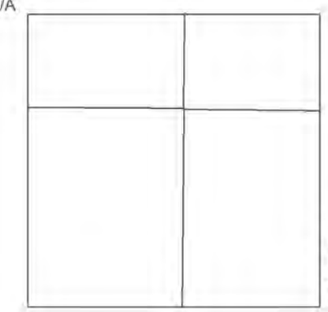
Map date: **1890-1894**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1889
Revised 1889
Edition 1894
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Surveyed 1890
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Edition 1890
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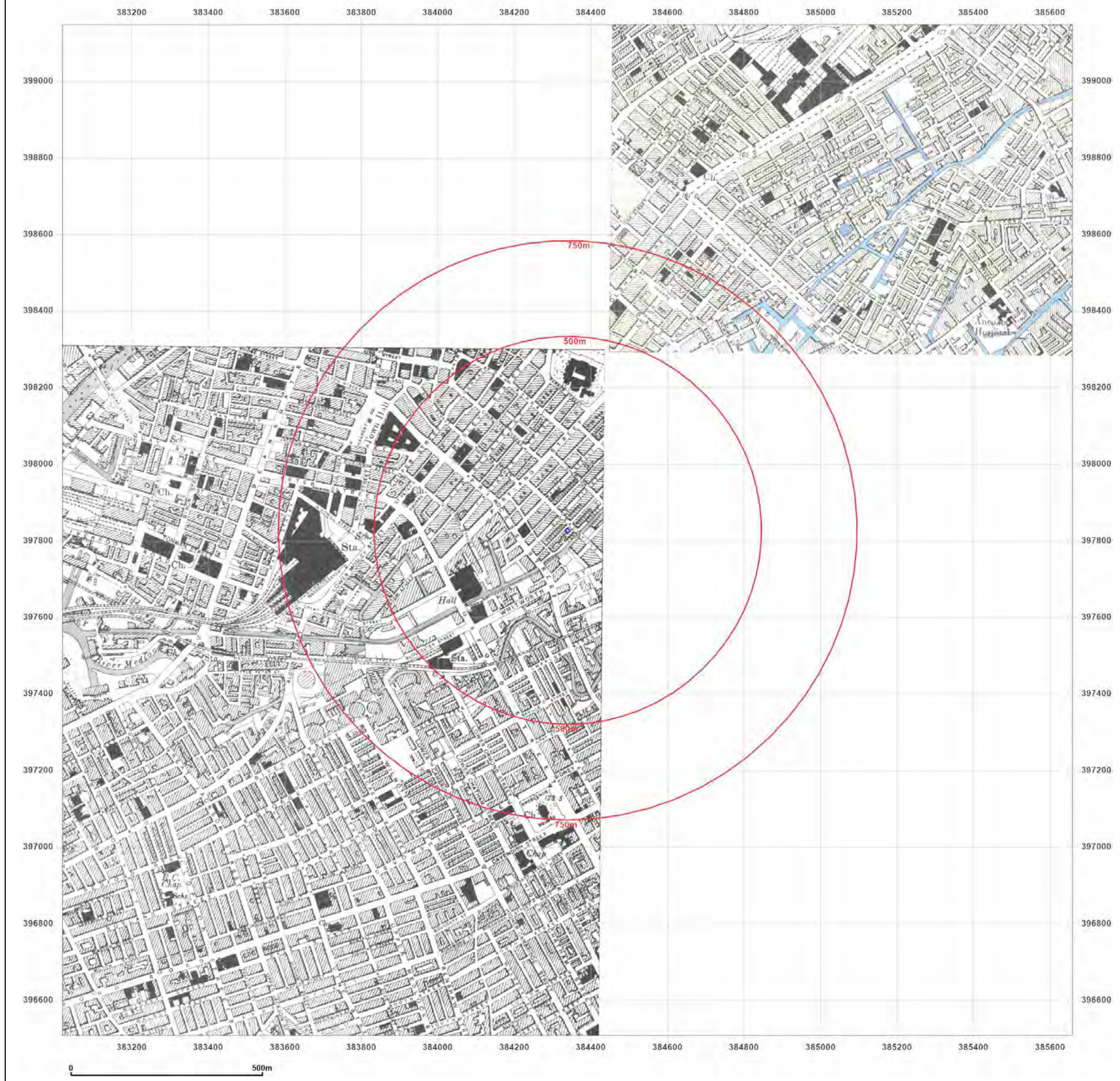
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Grid Ref: 384338, 397827

Map Name: County Series

Map date: **1891-1896**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1894
Revised 1896
Edition 1896
Copyright N/A
Levelled N/A

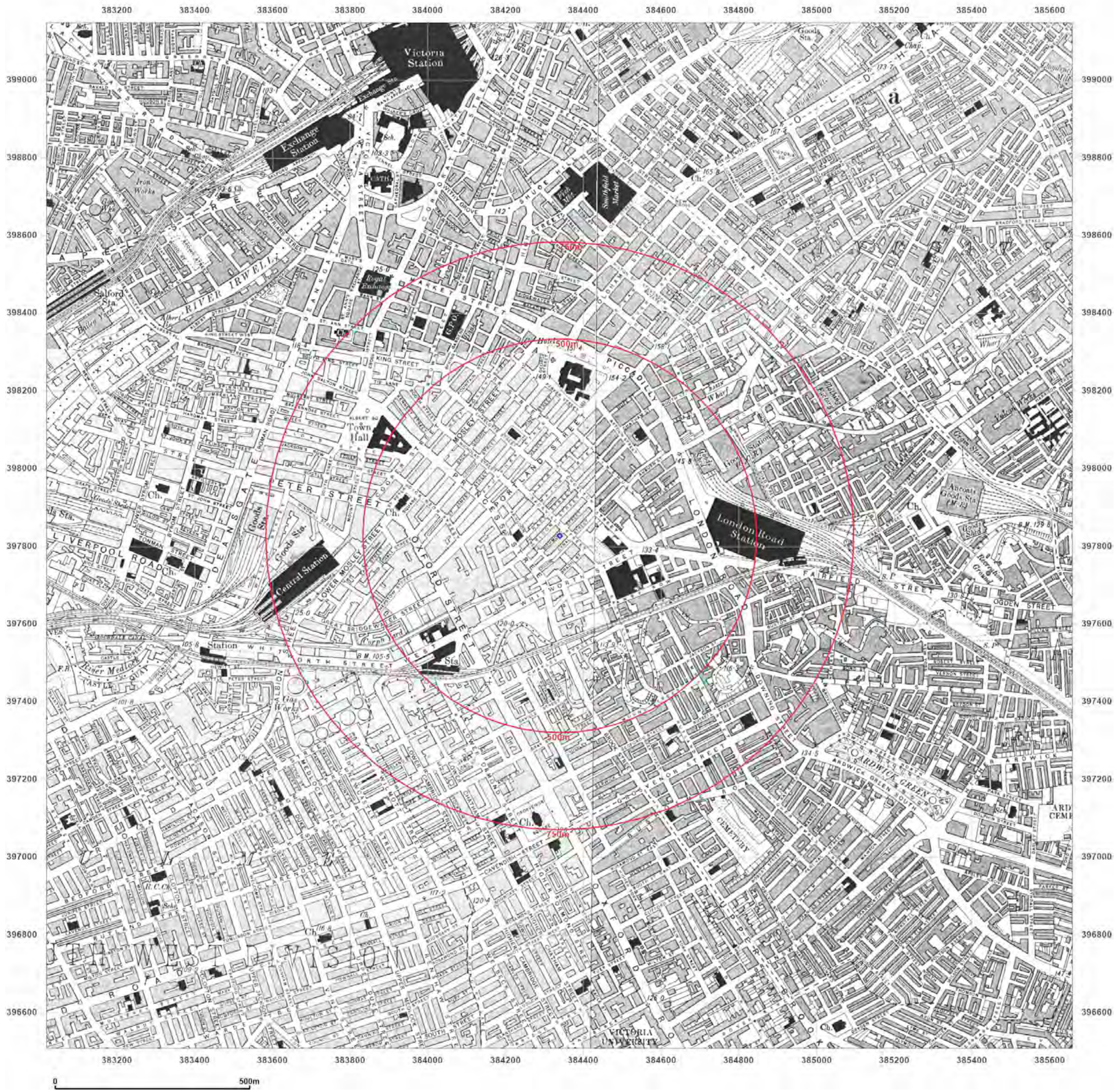
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Map Name: County Series

Map date: **1905-1906**

Scale: 1:10,560

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Revised 1906
Edition 1906
Copyright N/A
Levelled N/A

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Edition 1906
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Revised 1905
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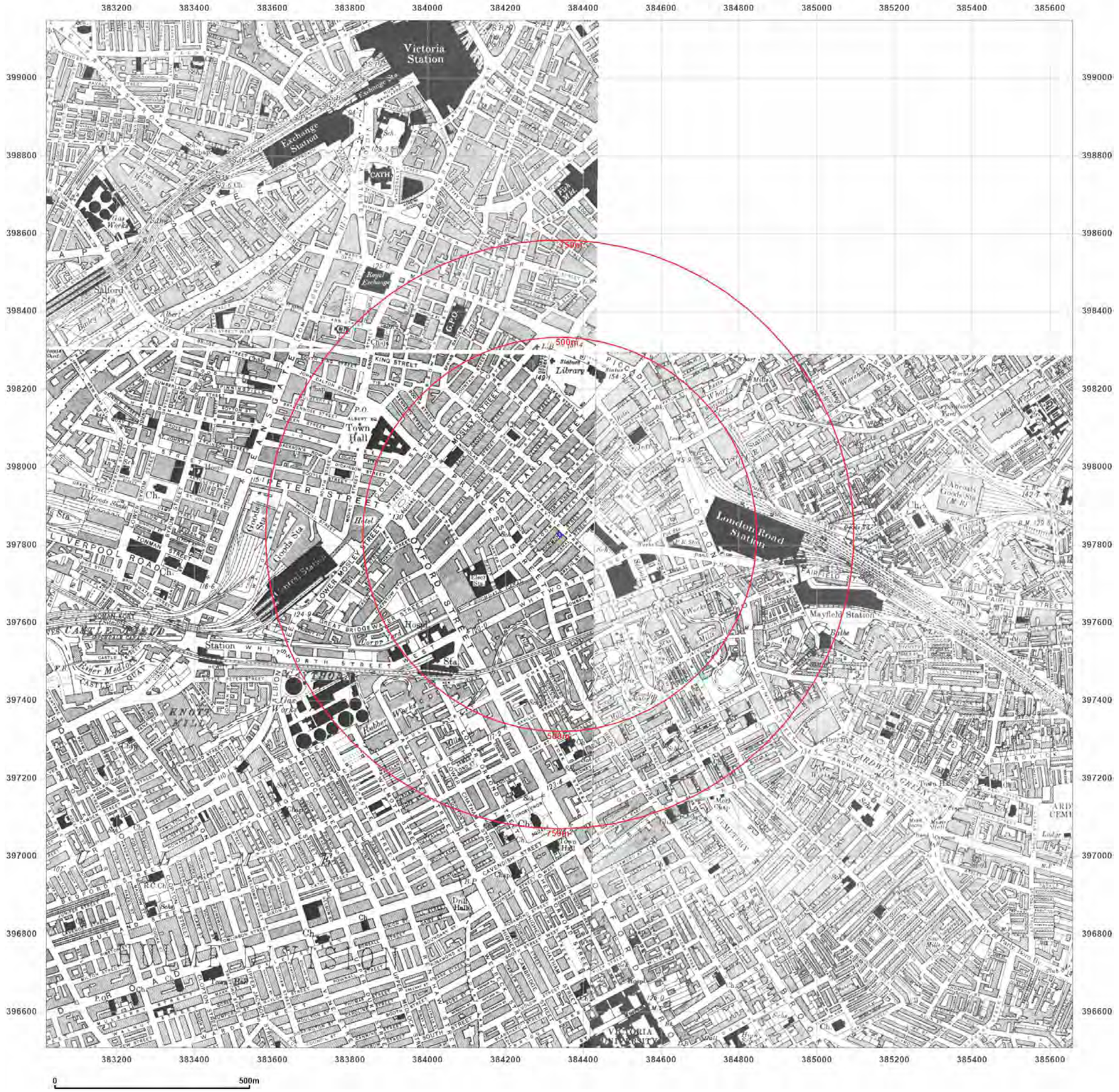
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Map Name: County Series

Map date: **1923**

Scale: 1:10,560

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Edition 1923
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Levelled 1915

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Edition 1923
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Levelled 1915

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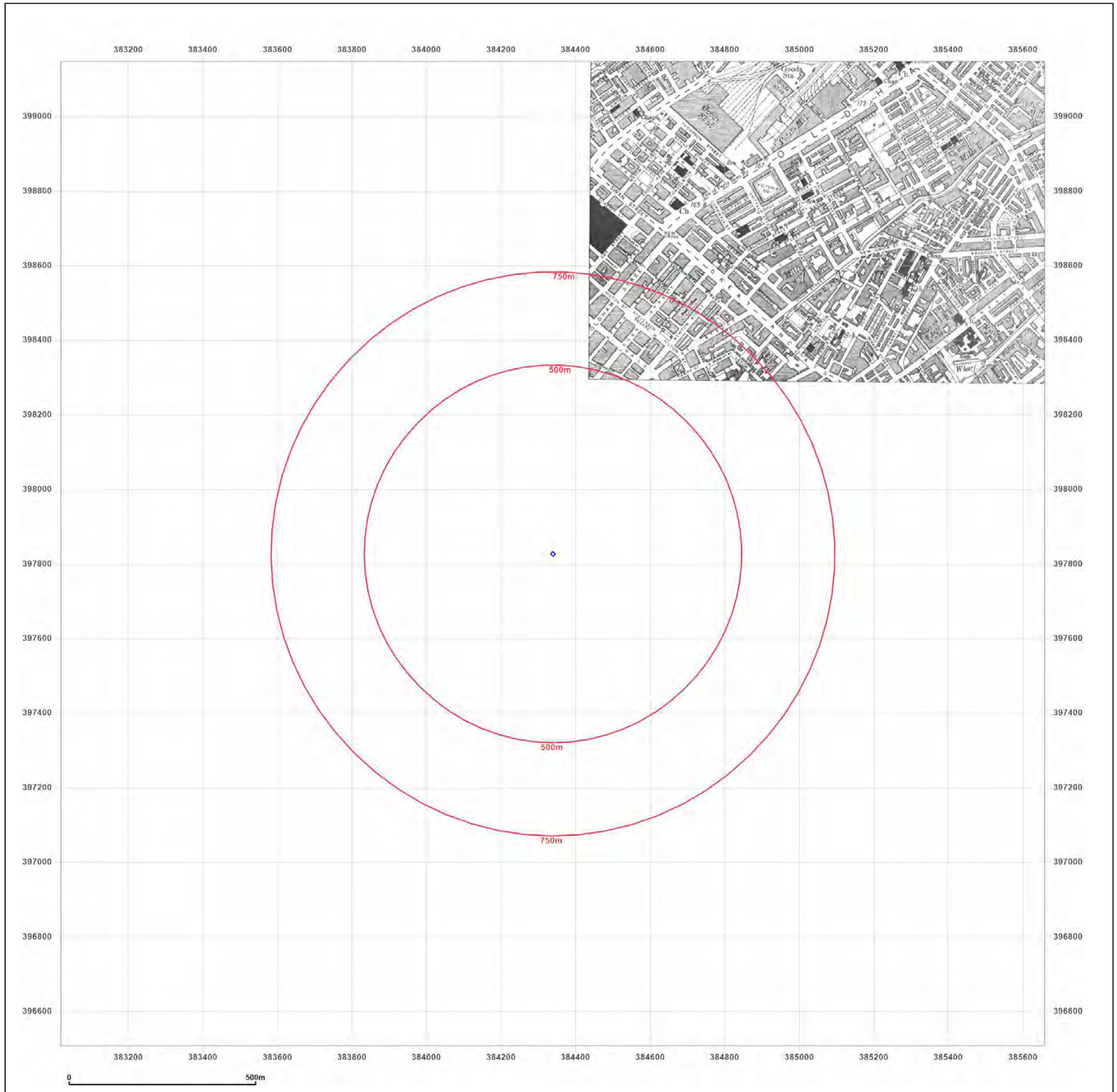
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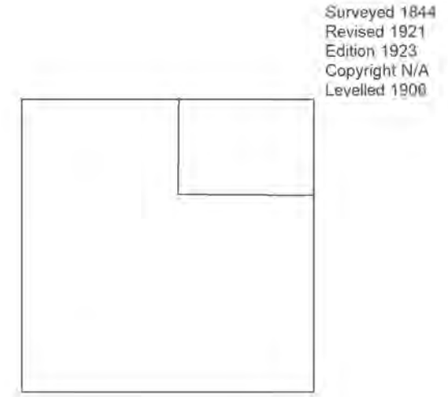
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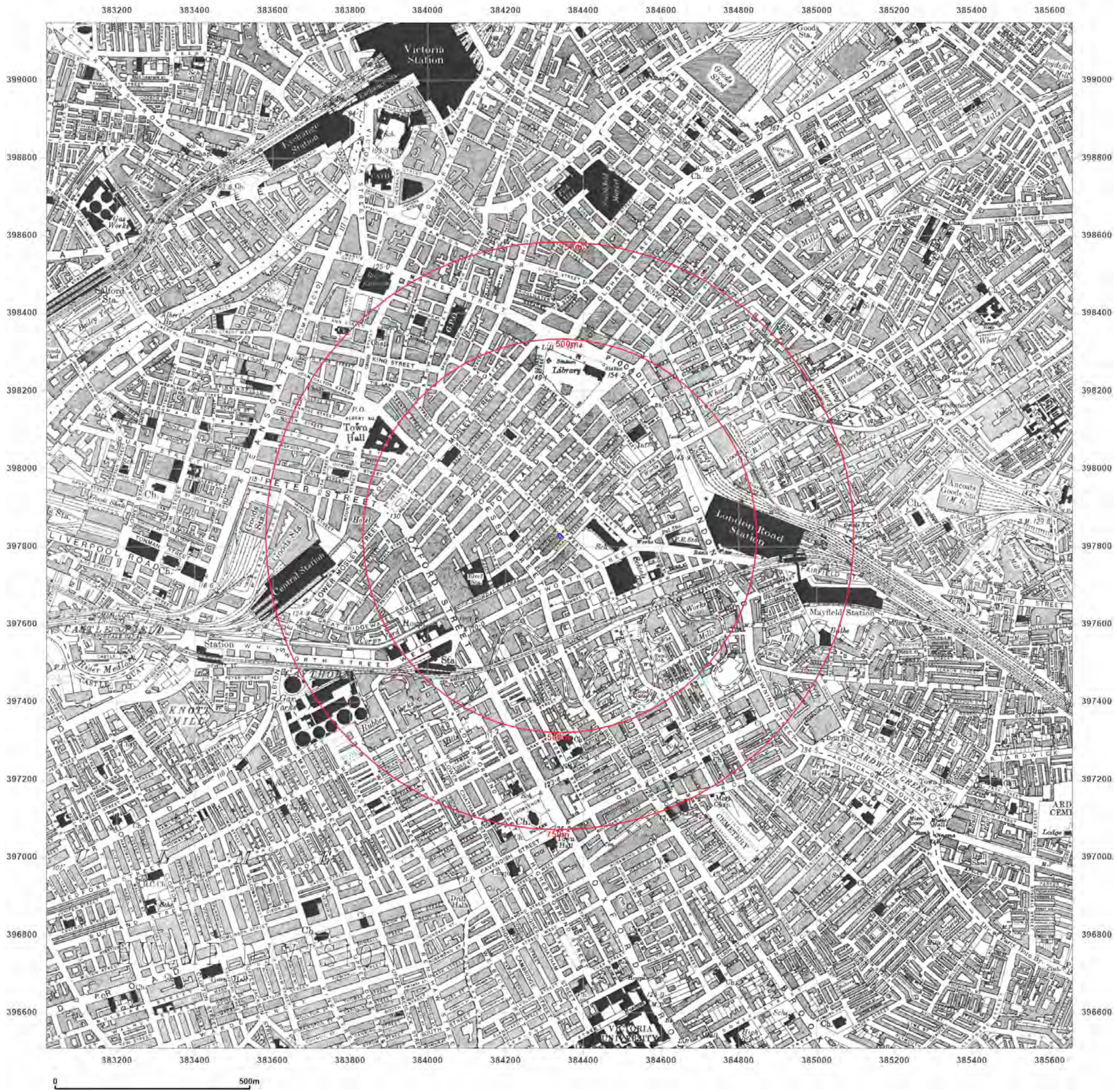
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Map Name: County Series

Map date: **1923**

Scale: 1:10,560

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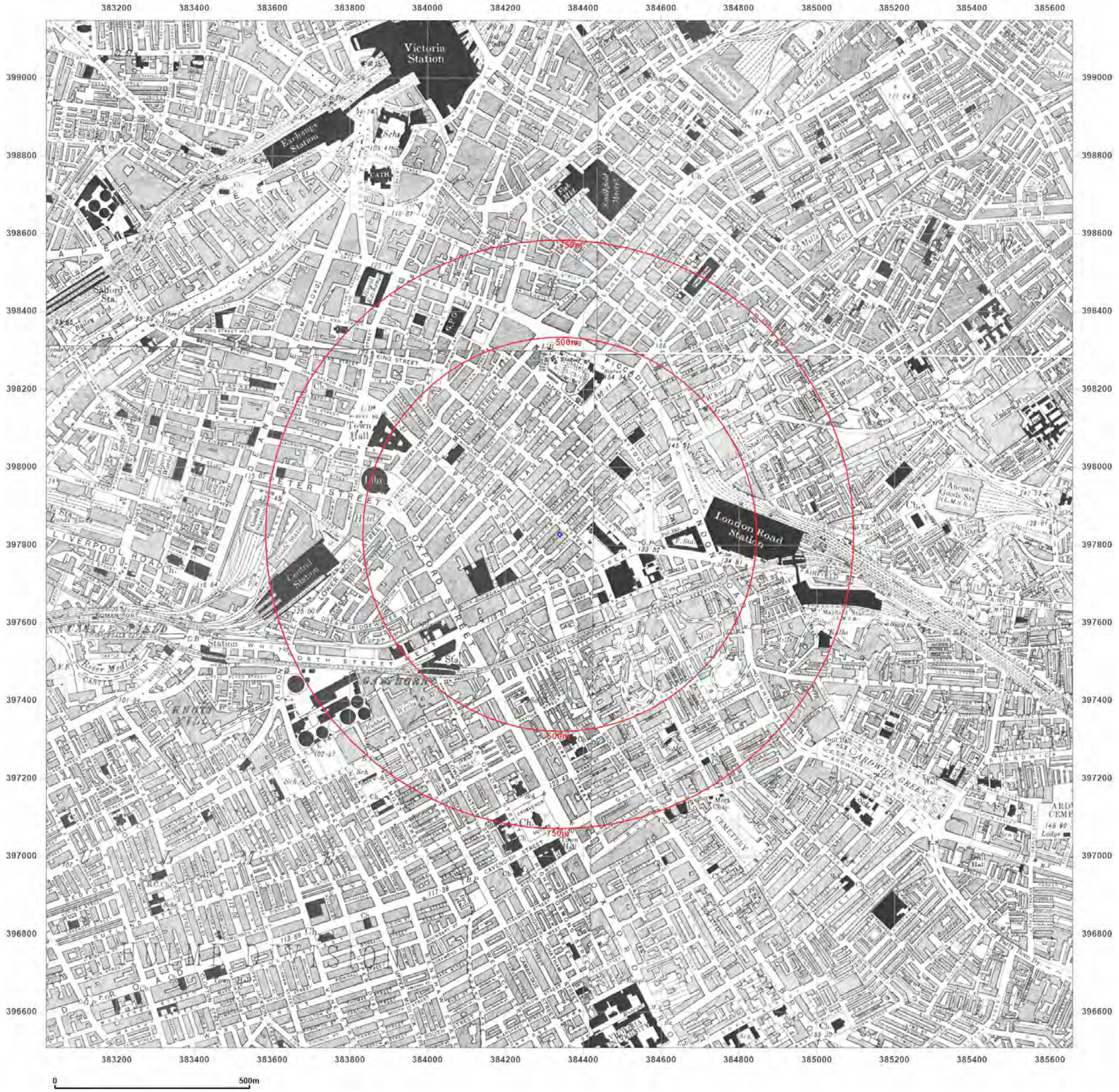
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Grid Ref: 384338, 397827

Map Name: County Series

Map date: **1931-1934**

Scale: 1:10,560

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Edition 1931
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Levelled 1927

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Edition 1933
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Revised 1934
Edition 1934
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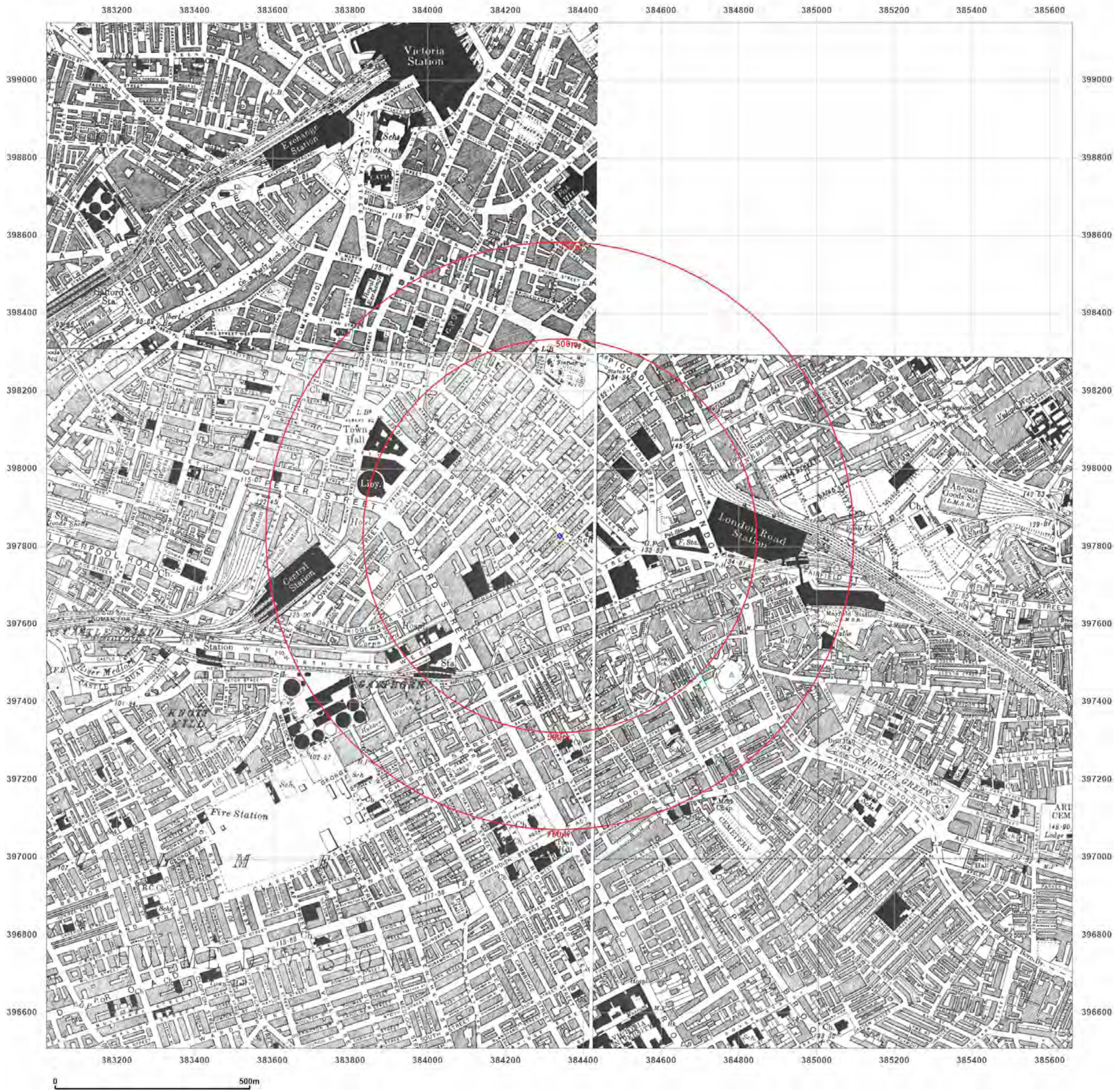
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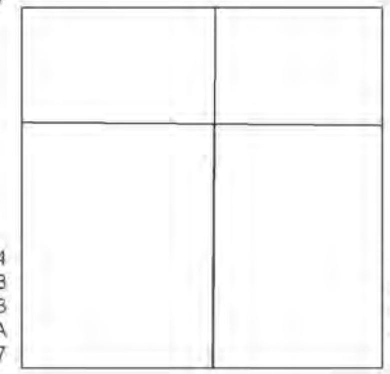
Map date: **1938**

Scale: 1:10,560

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Revised 1938
Edition 1938
Copyright N/A
Levelled 1927



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Revised 1938
Edition 1938
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Levelled 1927

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Revised 1938
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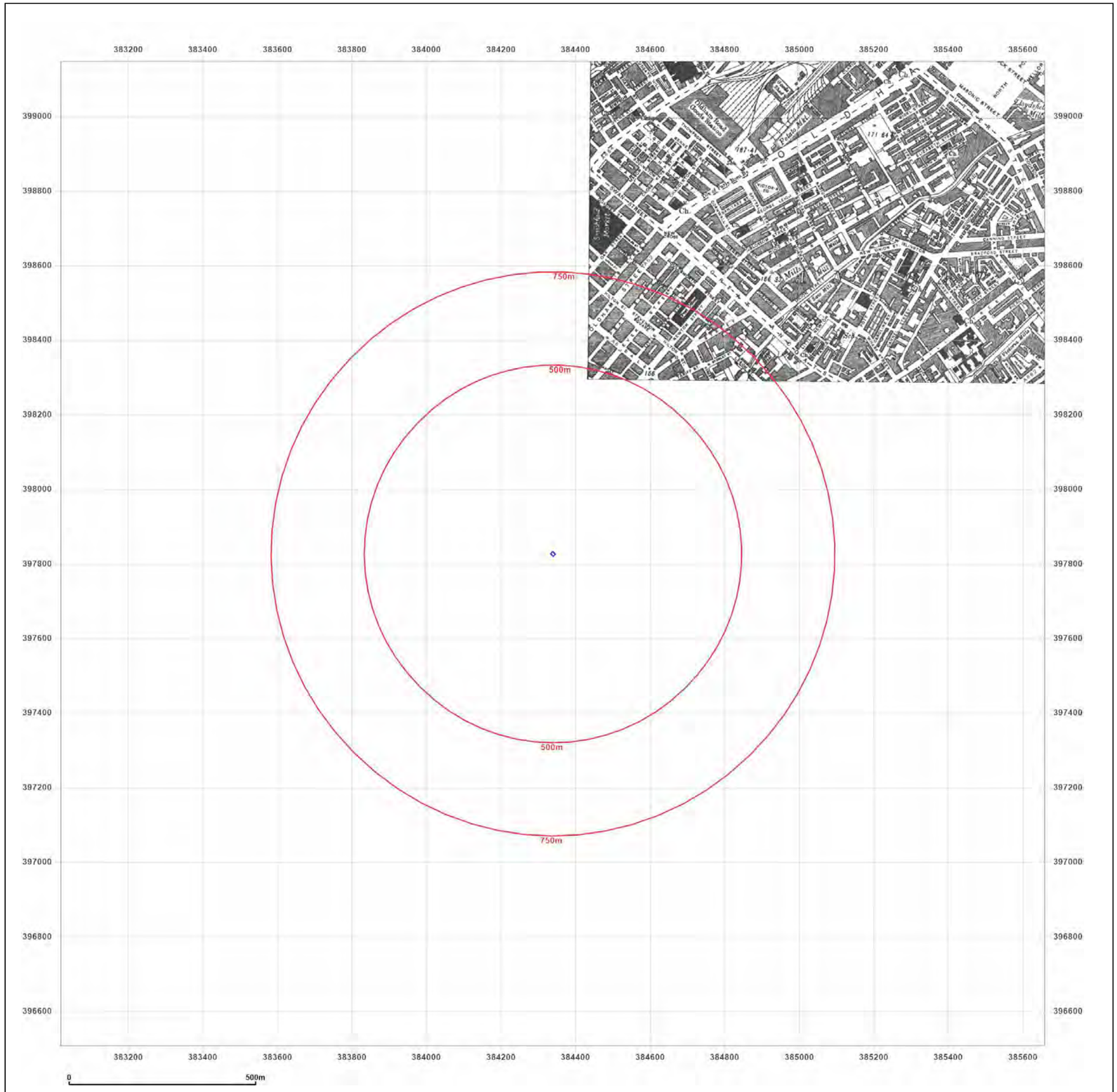
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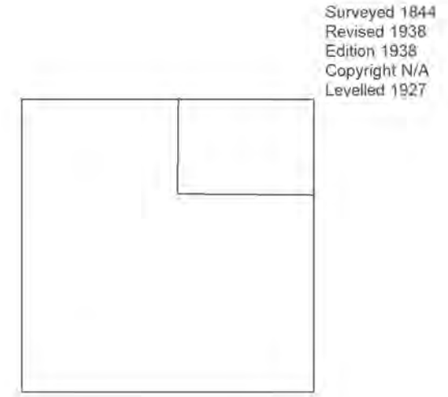
Map Name: County Series

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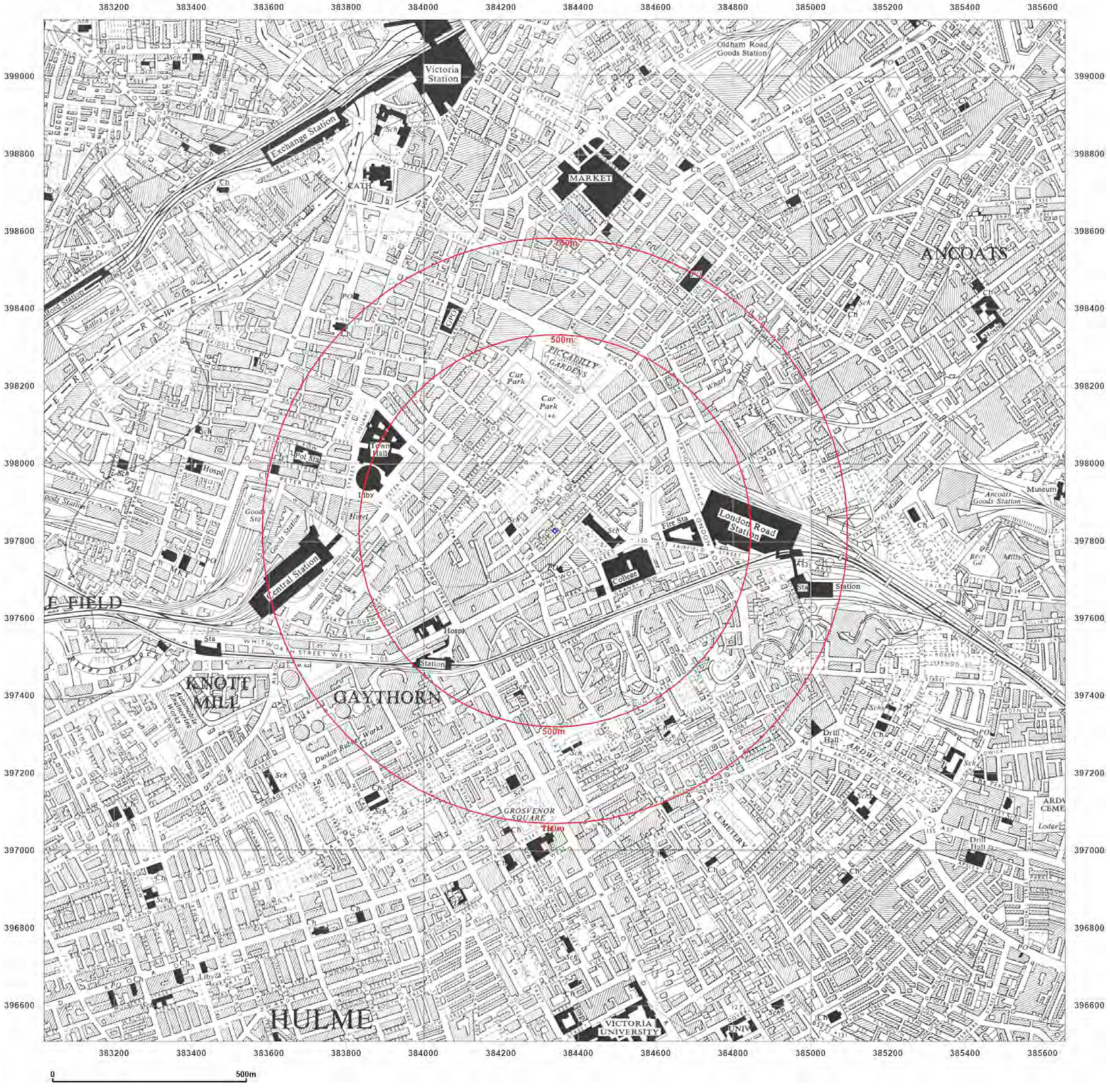
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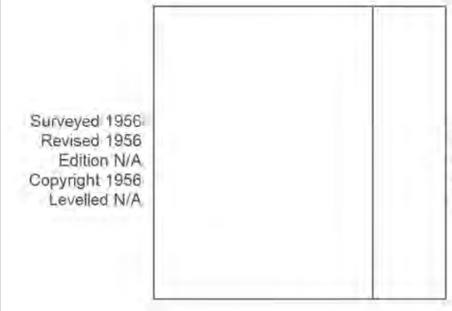
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Map date: **1956**

Scale: 1:10,560

Printed at: 1:10,560

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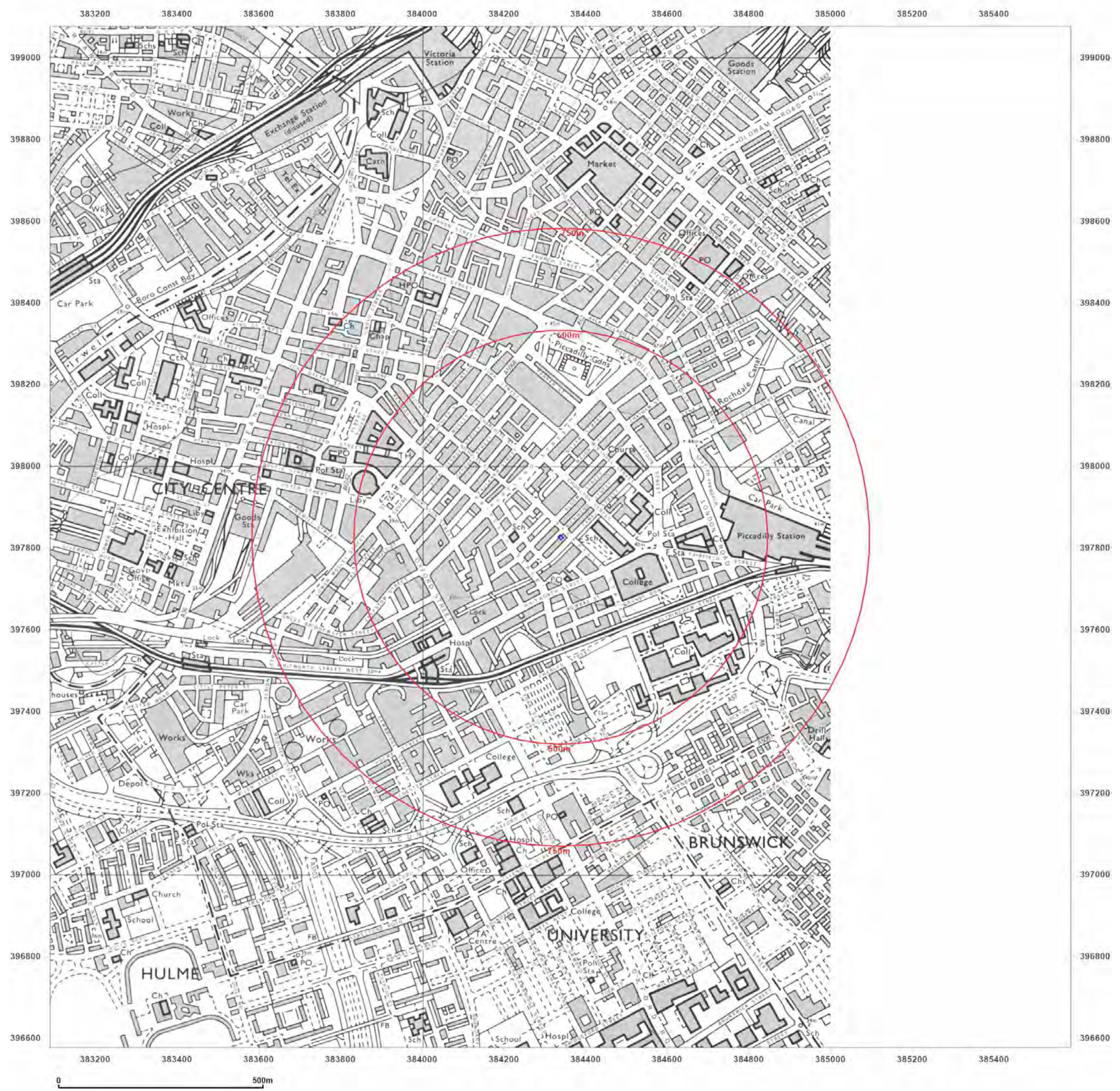
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Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1972**

Scale: 1:10,000

Printed at: 1:10,000

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Revised 1972
Edition N/A
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Levelled 1972

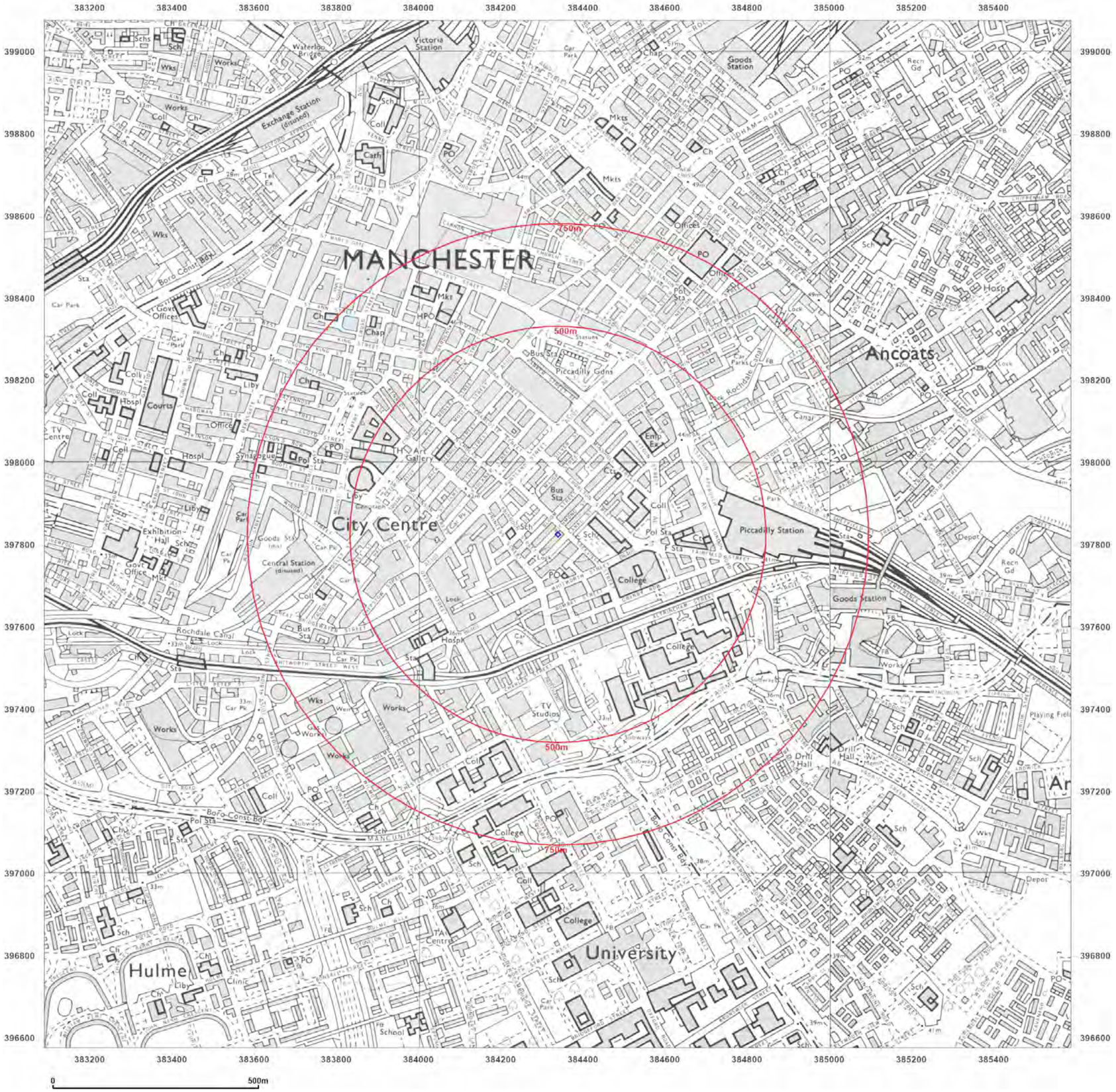
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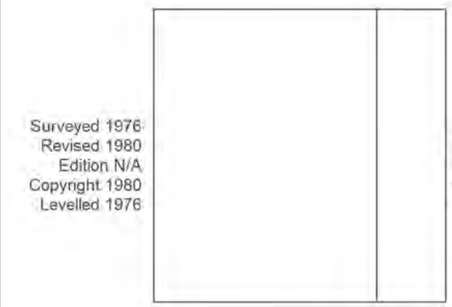
Map Name: National Grid

Map date: **1980-1981**

Scale: 1:10,000

Printed at: 1:10,000

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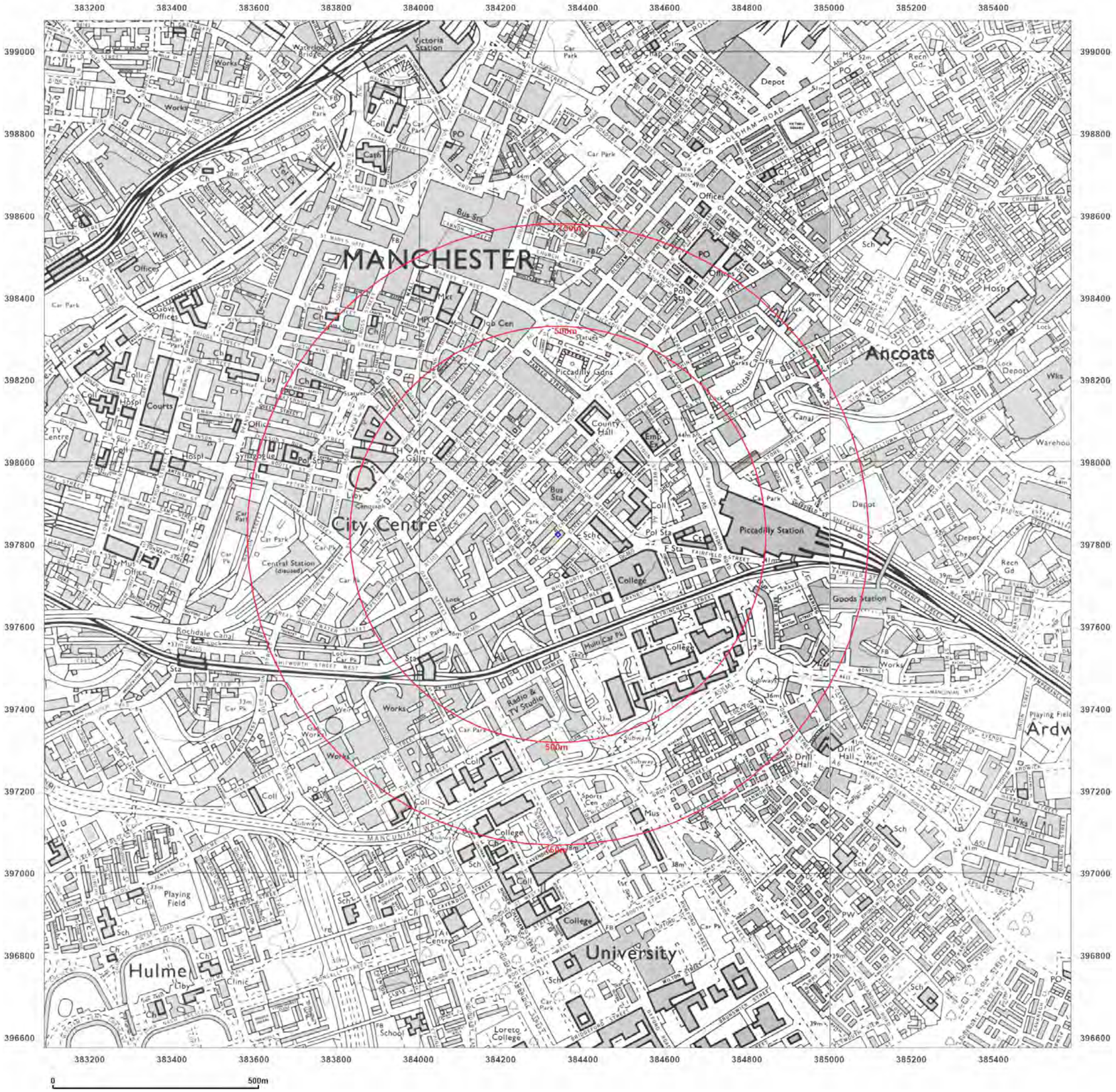
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Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

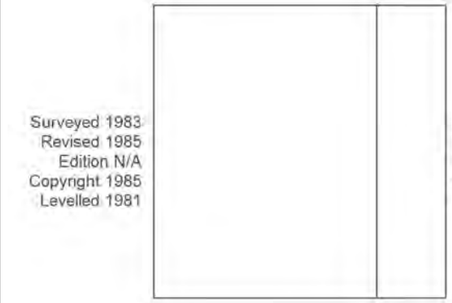
Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

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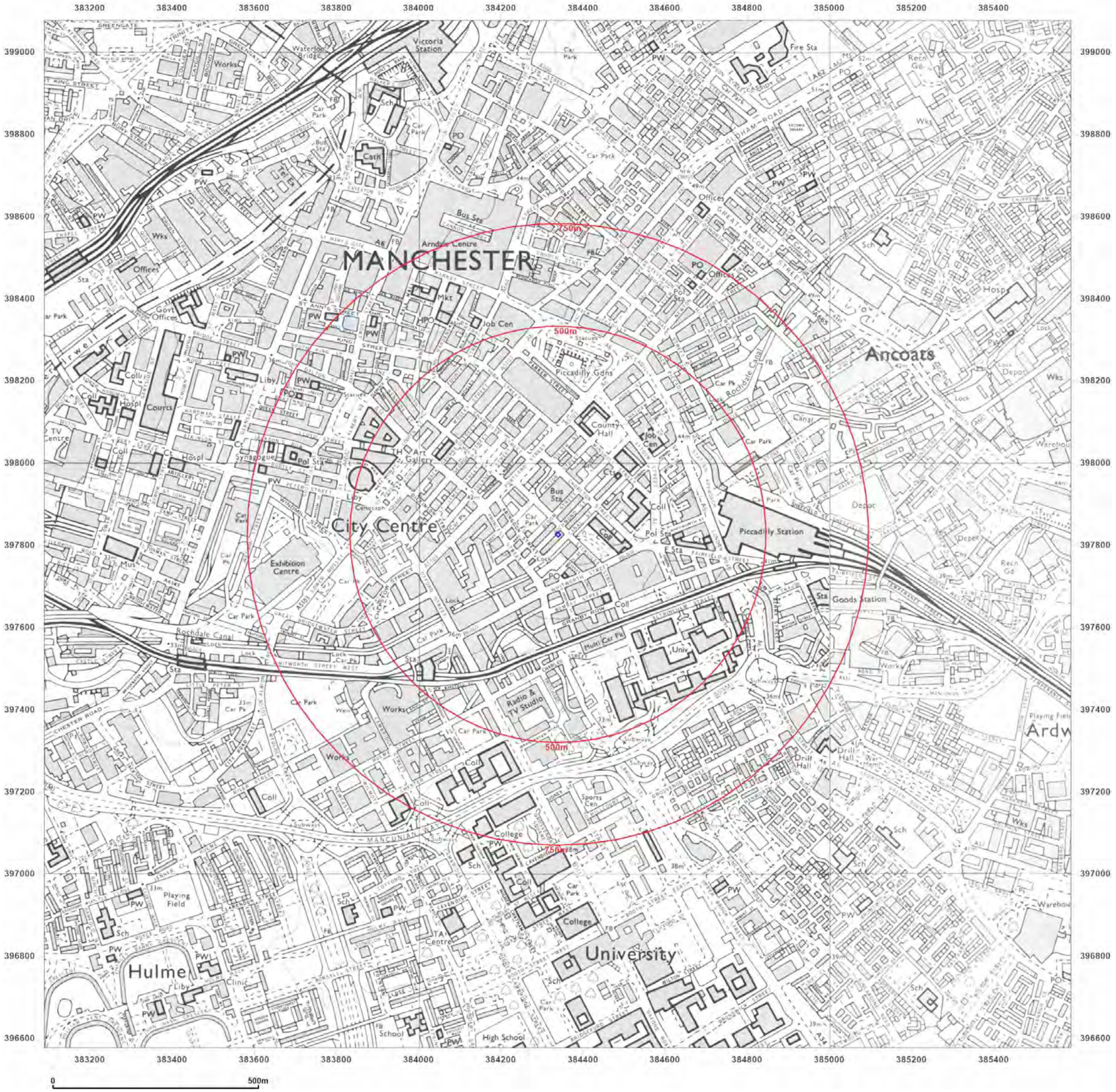
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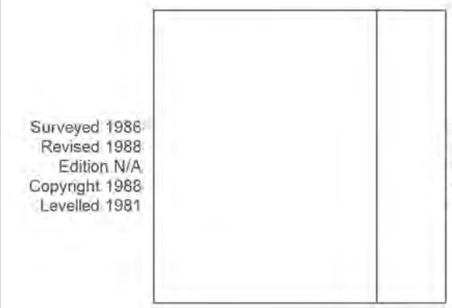
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Map date: **1988-1991**

Scale: 1:10,000

Printed at: 1:10,000

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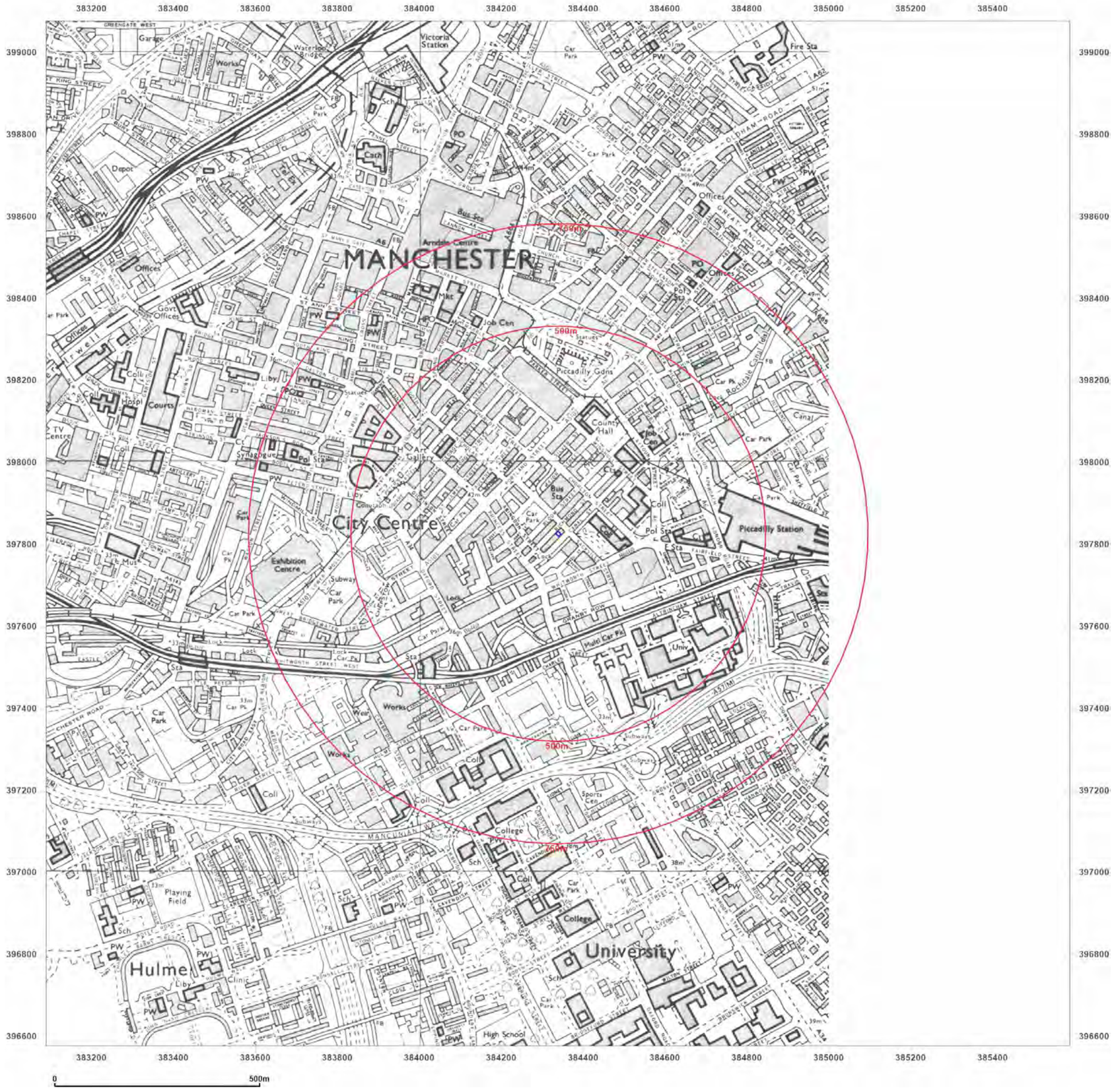
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Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1994**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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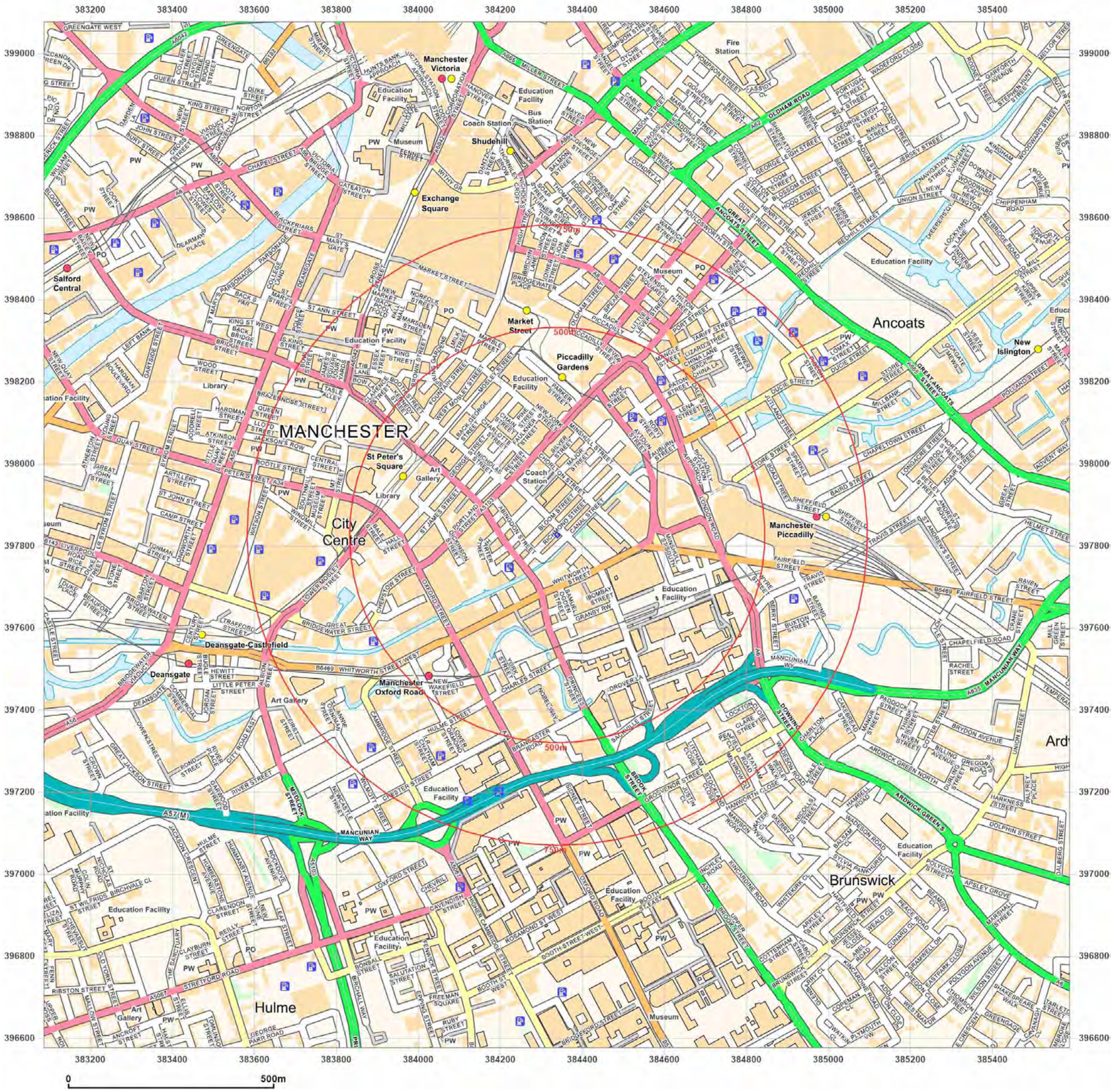
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **2023**

Scale: 1:10,000

Printed at: 1:10,000

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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: 1056 Scale Town Plan

Map date: **1851**

Scale: 1:1,056

Printed at: 1:1,056

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Surveyed 1849
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

Surveyed 1849
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

Surveyed 1849
Revised N/A
Edition 1851
Copyright N/A
Levelled N/A

Surveyed 1849
Revised N/A
Edition 1851
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![CCG logo]

Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: County Series Town Plan

Map date: **1891**

Scale: 1:500

Printed at: 1:1,000

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

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

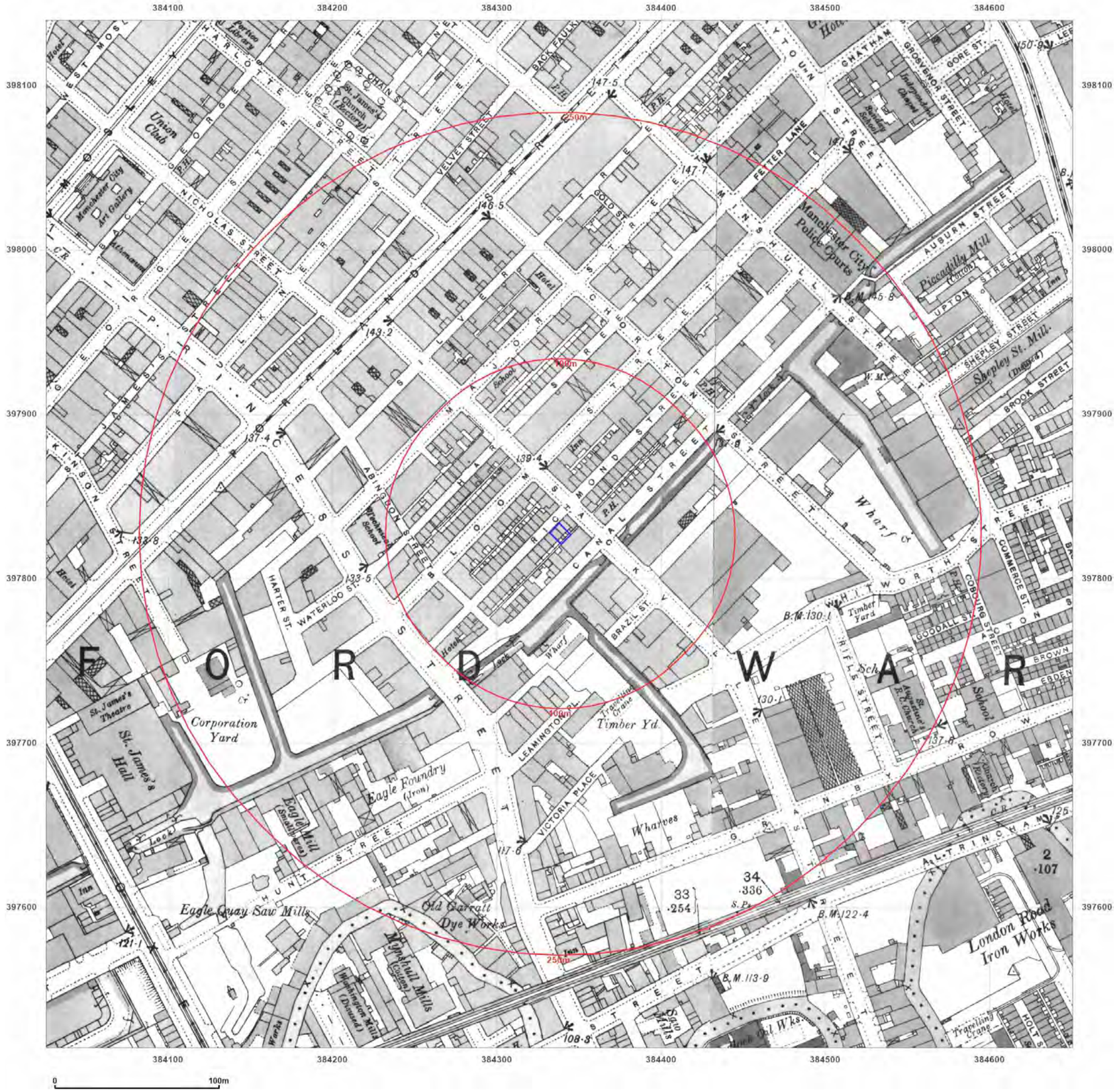
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

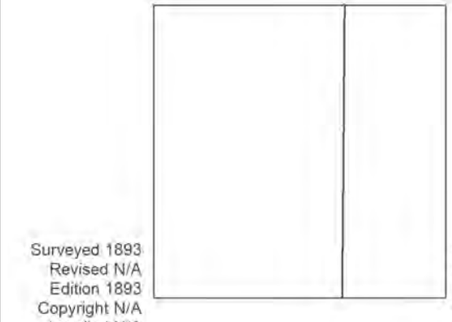
Map Name: County Series

Map date: **1889-1893**

Scale: 1:2,500

Printed at: 1:2,500

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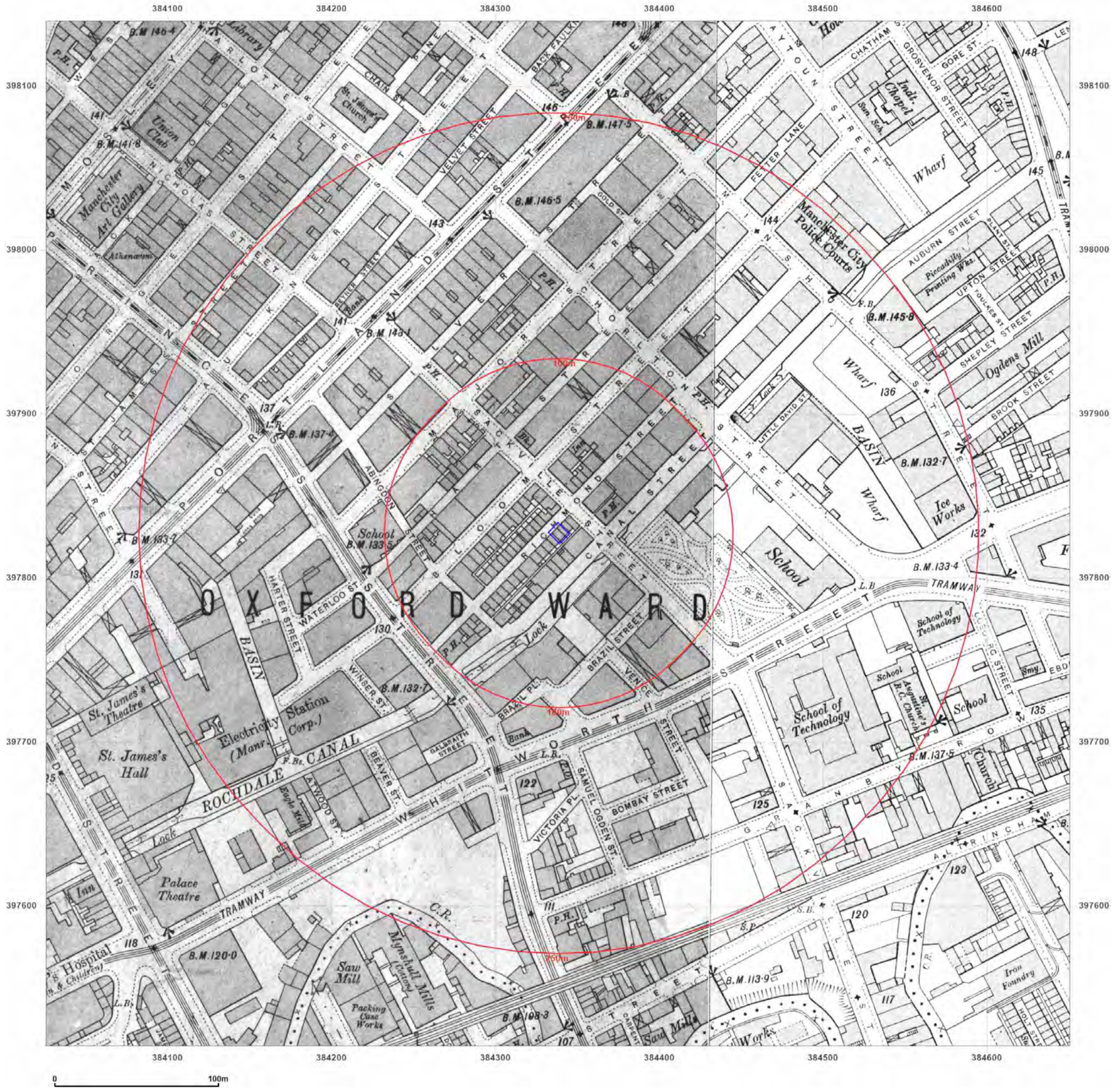
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Site Details:

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Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

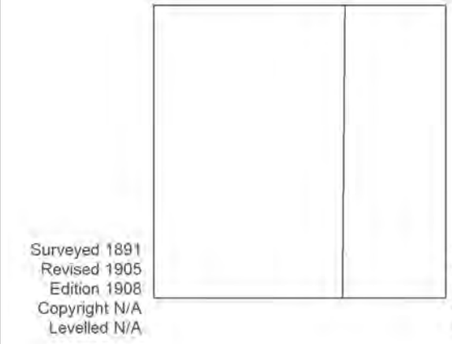
Map Name: County Series

Map date: **1908**

Scale: 1:2,500

Printed at: 1:2,500

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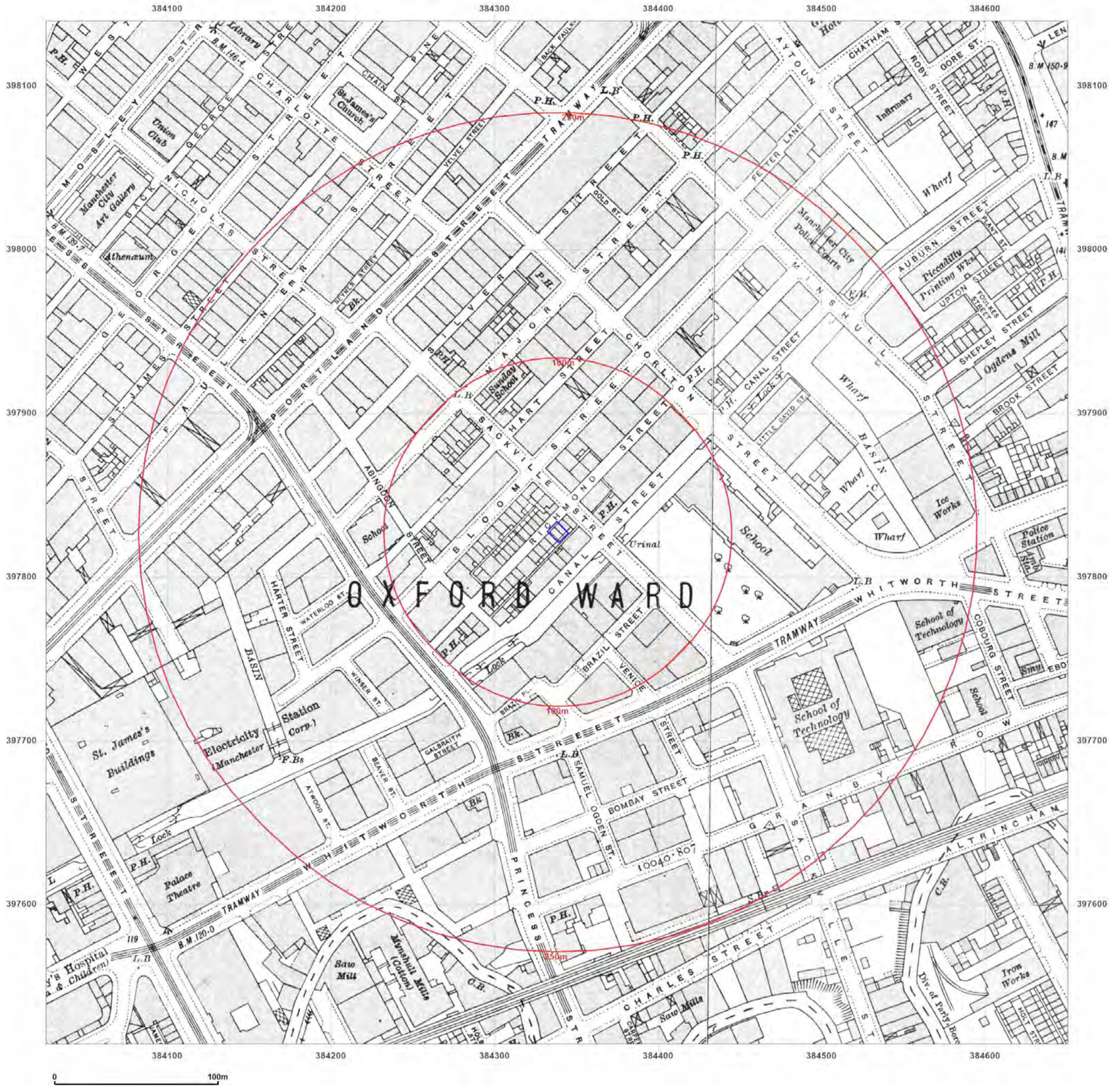
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Site Details:

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Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

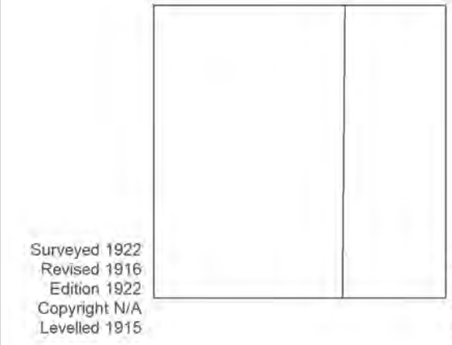
Map Name: County Series

Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

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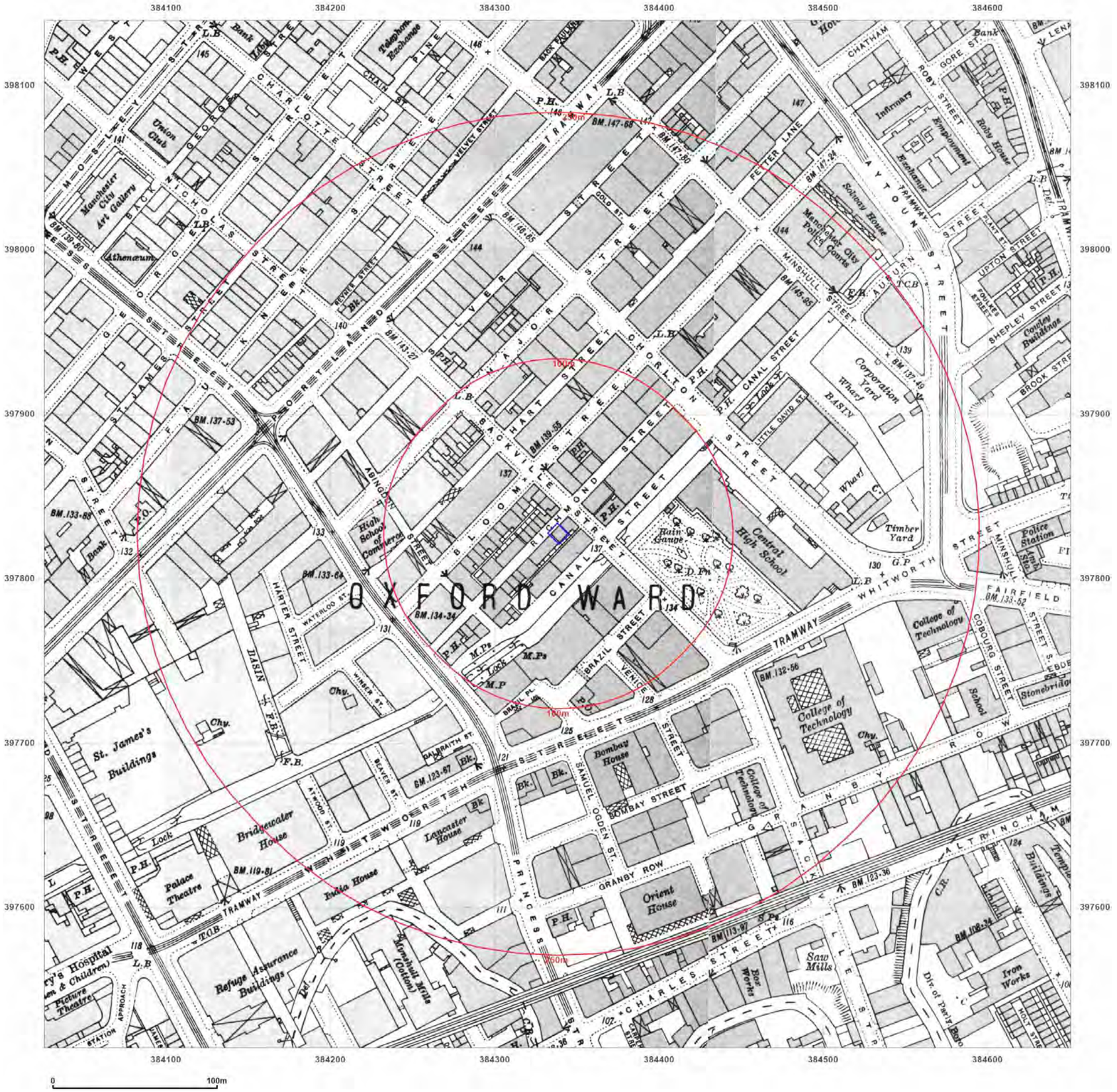
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Site Details:

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Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

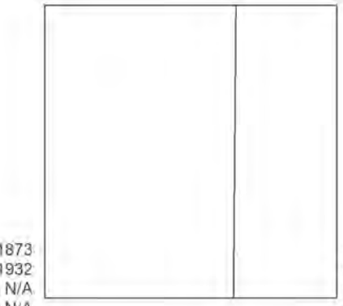
Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1873
Revised 1932
Edition N/A
Copyright N/A
Levelled 1927

Surveyed 1873
Revised 1932
Edition N/A
Copyright N/A
Levelled 1927

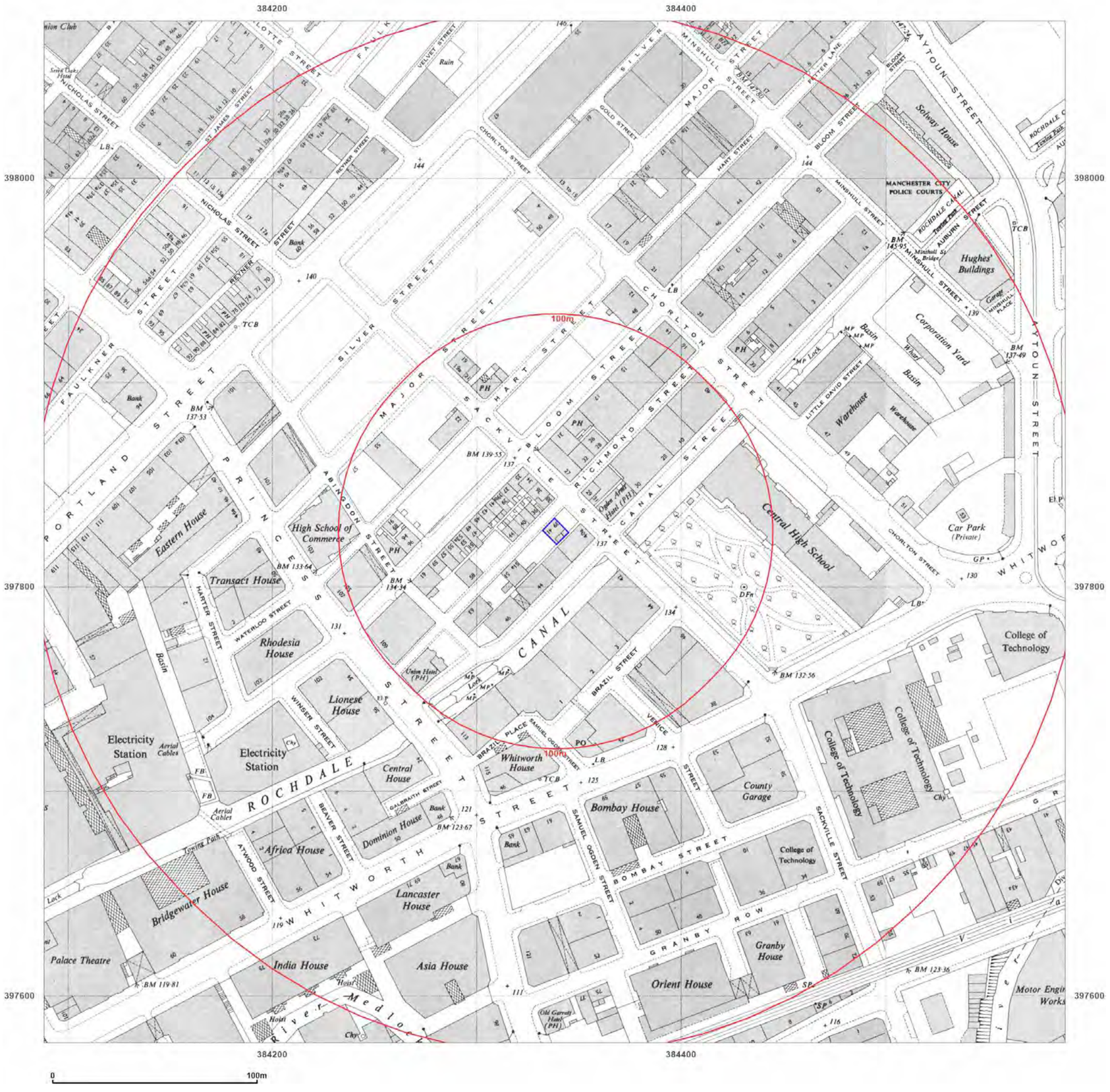
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Site Details:

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Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1948**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1948
Revised 1948
Edition N/A
Copyright 1948
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1948
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1948
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1948
Levelled 1929

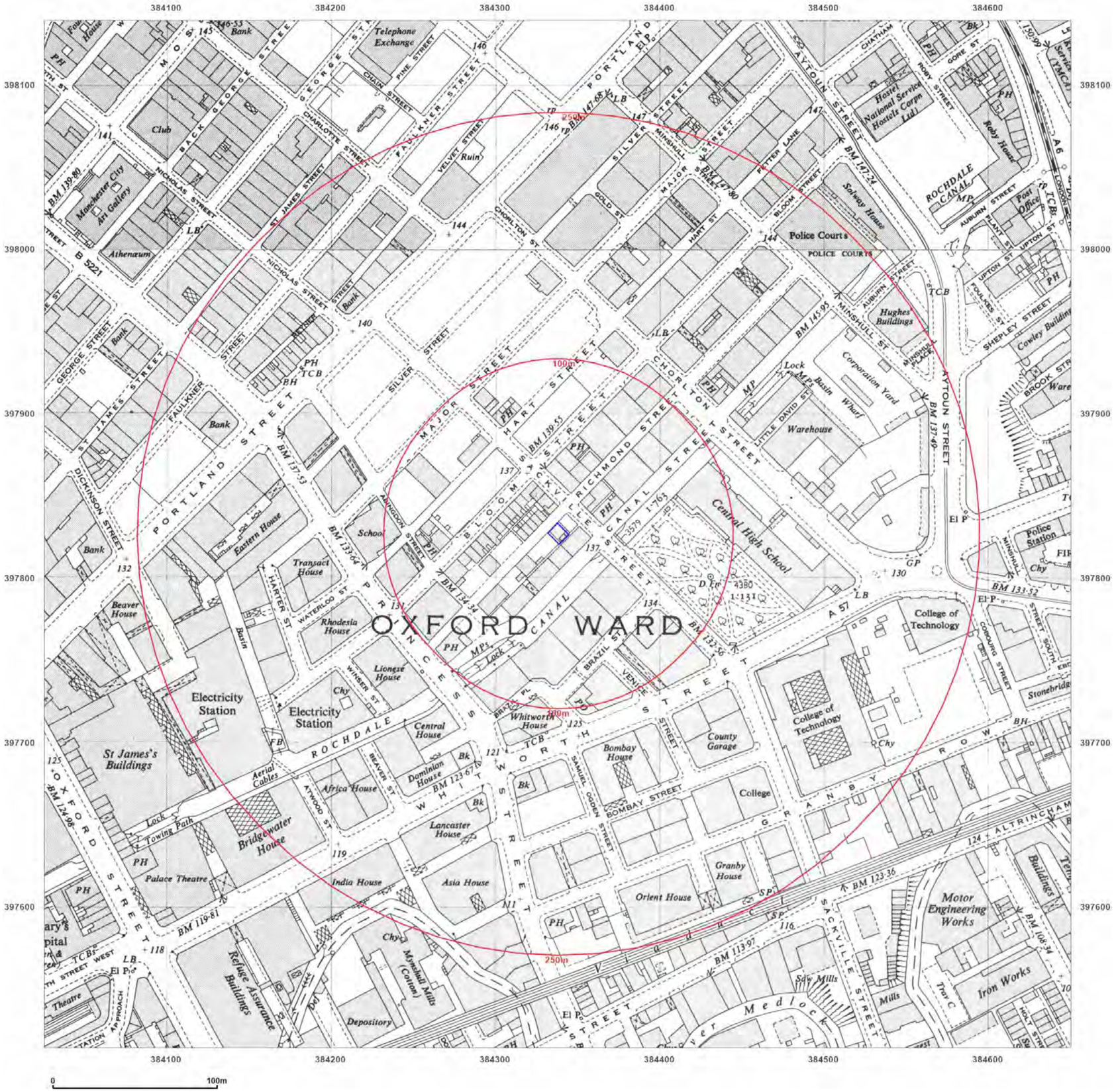
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Site Details:

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Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1950-1954**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1948
Revised 1948
Edition N/A
Copyright 1954
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1950
Levelled 1929

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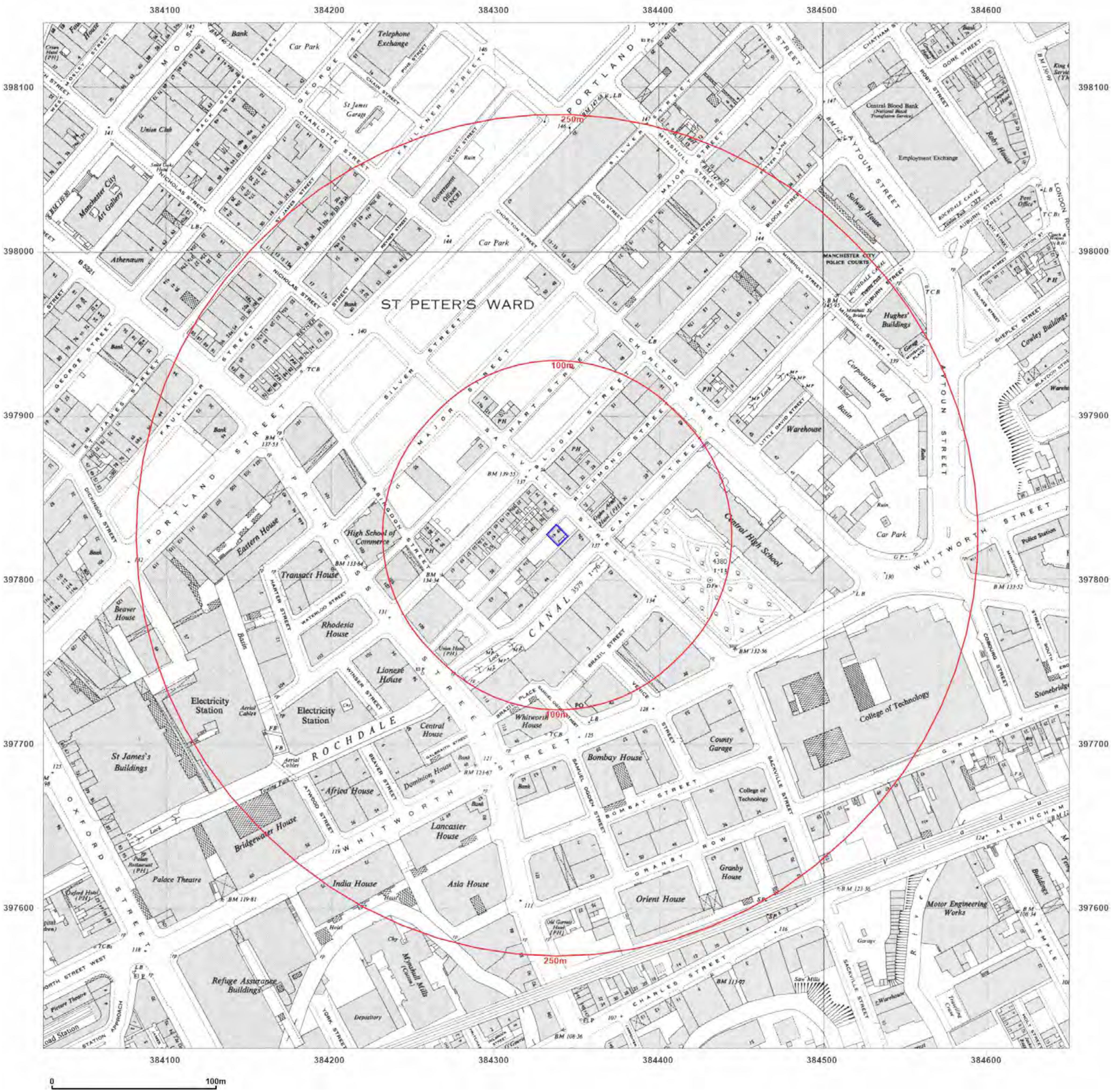
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Site Details:

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Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1954-1955**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1953
Revised 1953
Edition N/A
Copyright 1954
Levelled 1929

Surveyed 1953
Revised 1953
Edition N/A
Copyright N/A
Levelled 1929

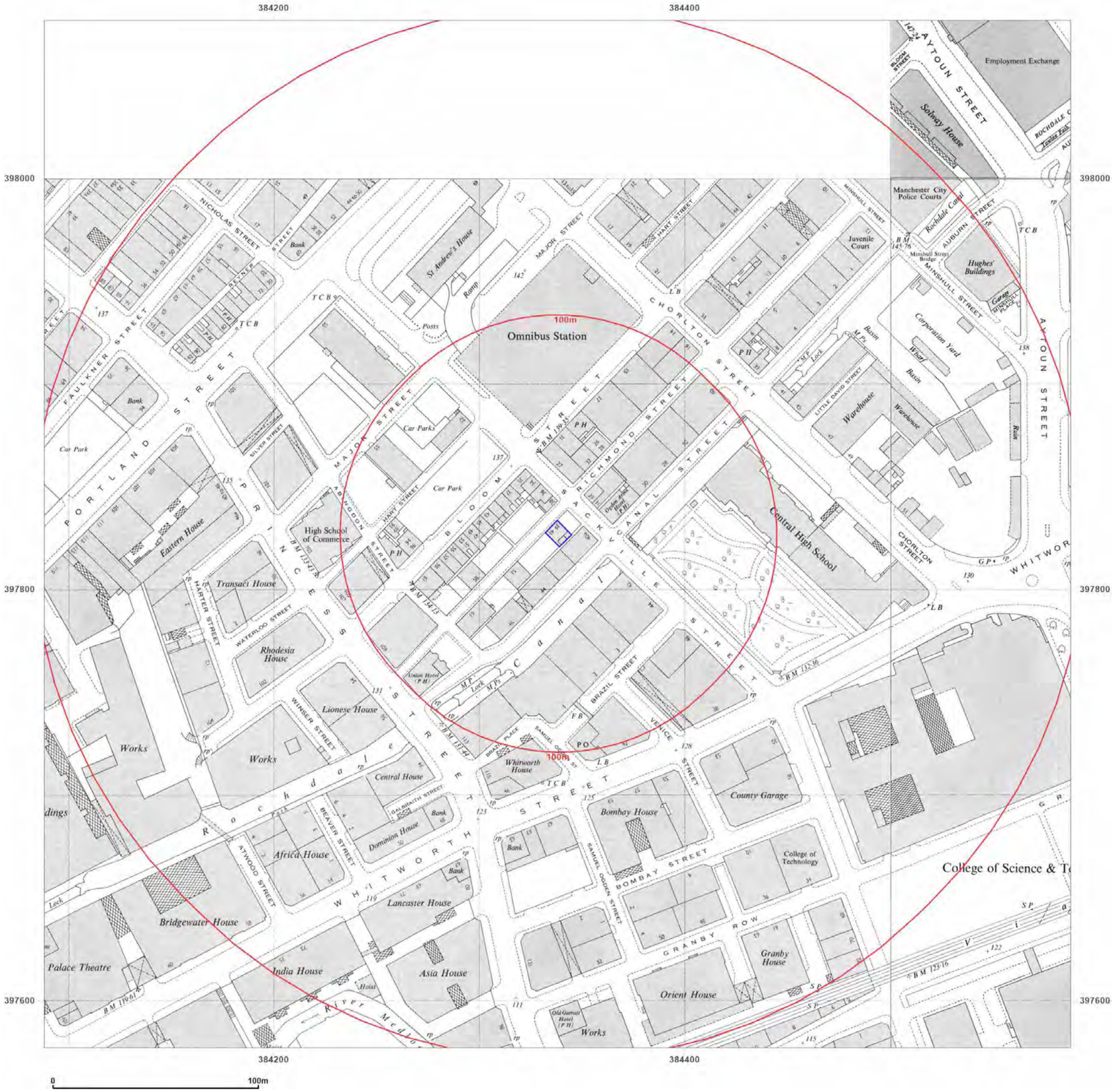
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1960-1964**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1953
Revised 1953
Edition N/A
Copyright 1960
Levelled 1929

Surveyed 1948
Revised 1963
Edition N/A
Copyright 1964
Levelled 1958

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1959

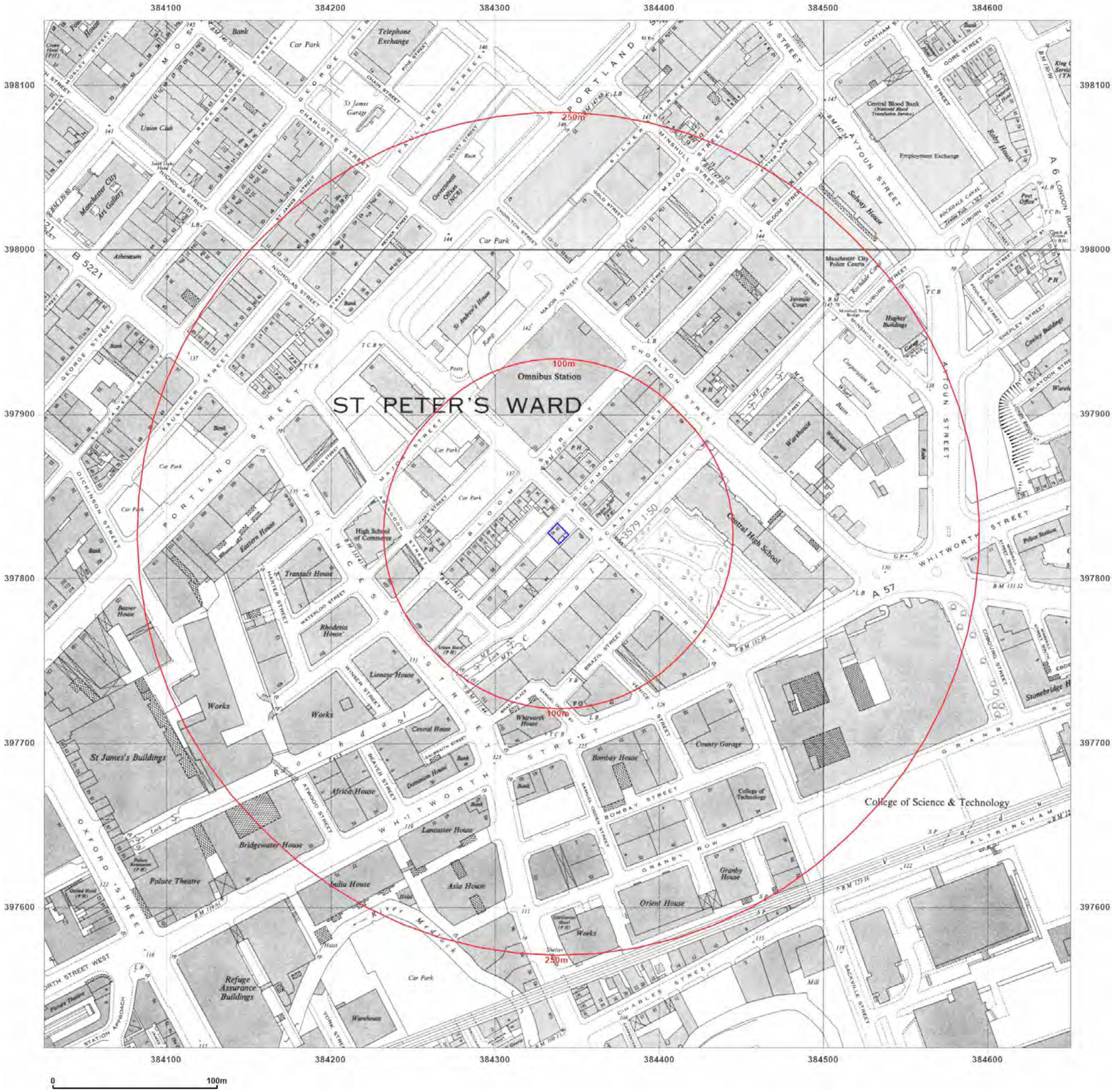
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1965**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed N/A
Revised 1964
Edition N/A
Copyright 1965
Levelled 1959

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1965
Levelled 1959

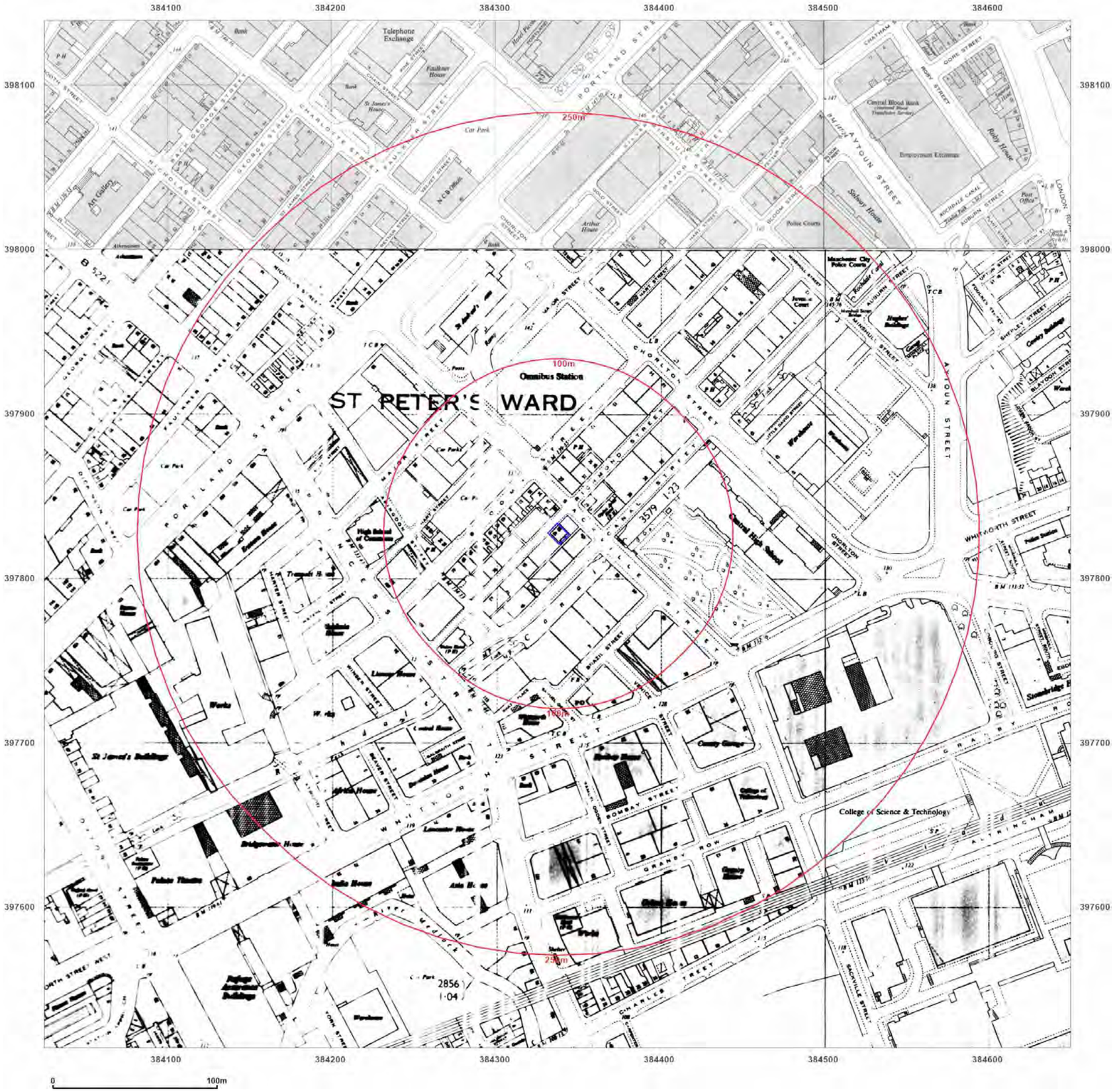
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Site Details:

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Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1969-1970**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1967
Revised 1967
Edition N/A
Copyright 1969
Levelled 1964

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

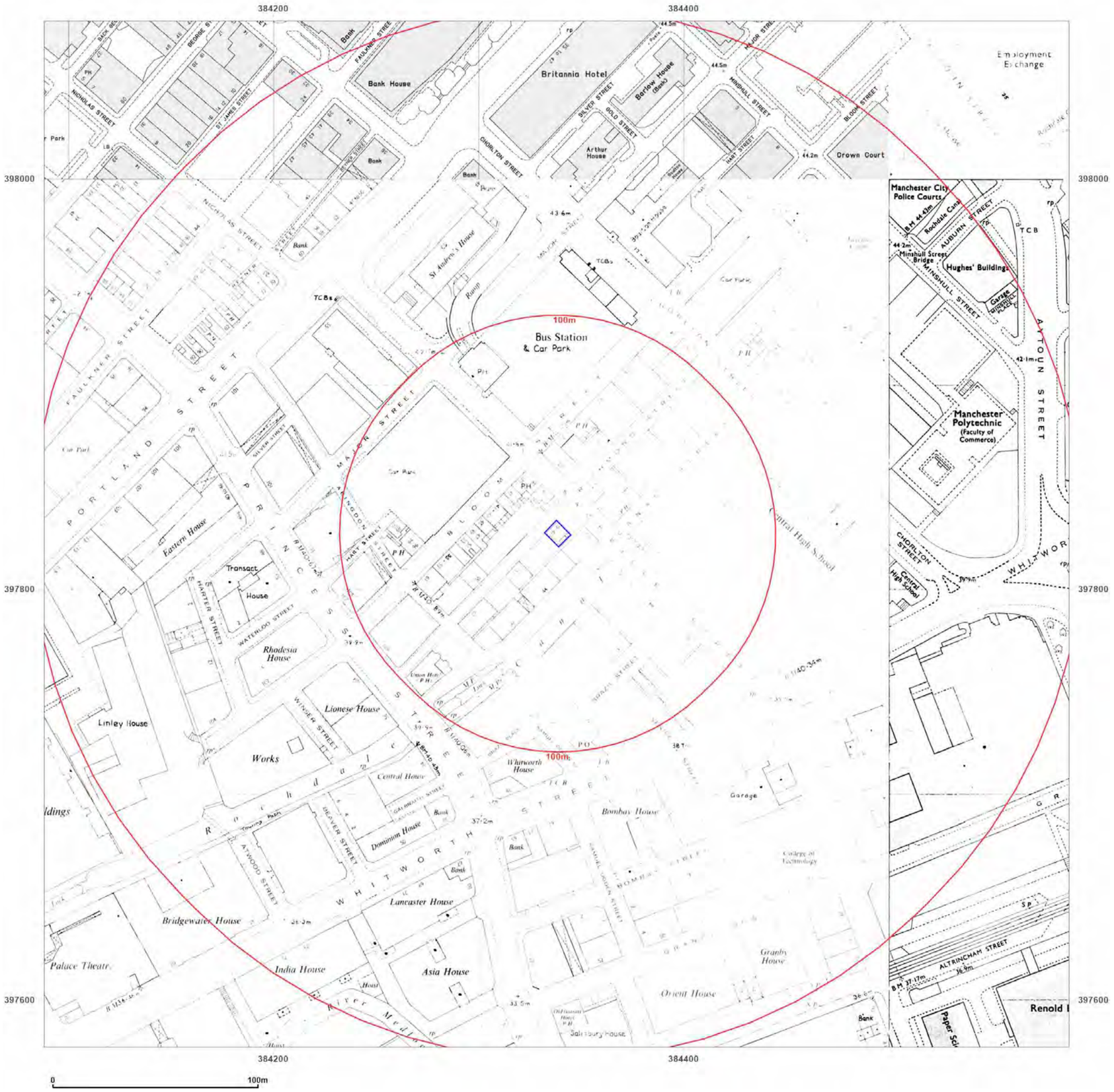
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1984-1986**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1948 Revised 1985 Edition N/A Copyright 1986 Levelled 1964	Surveyed N/A Revised N/A Edition N/A Copyright 1985 Levelled N/A
Surveyed N/A Revised N/A Edition N/A Copyright 1985 Levelled 1963	Surveyed 1964 Revised 1984 Edition N/A Copyright 1984 Levelled 1964

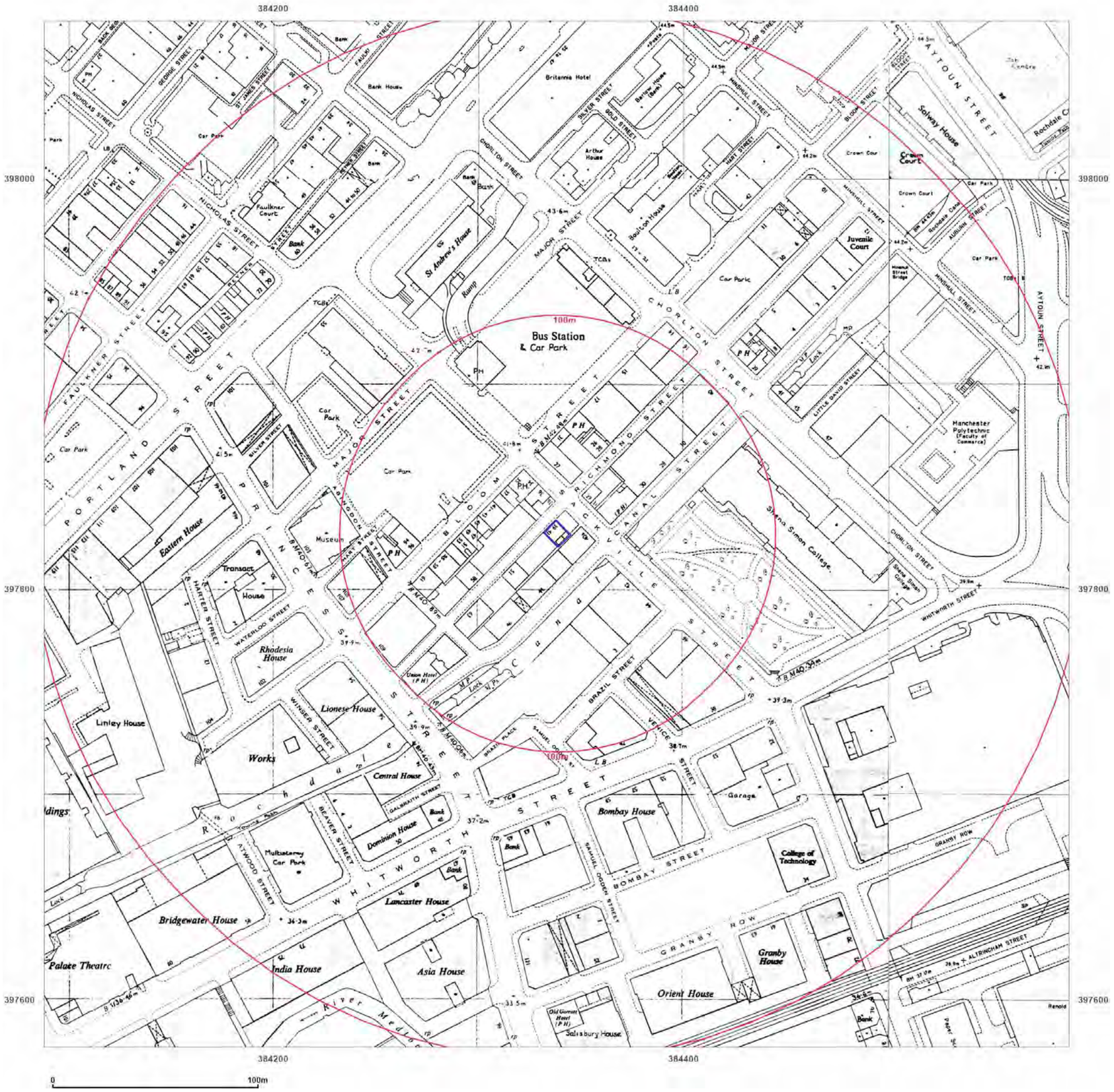
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1990-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A	Surveyed 1963 Revised 1990 Edition N/A Copyright 1990 Levelled 1963
Surveyed 1963 Revised 1990 Edition N/A Copyright 1990 Levelled 1963	Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A

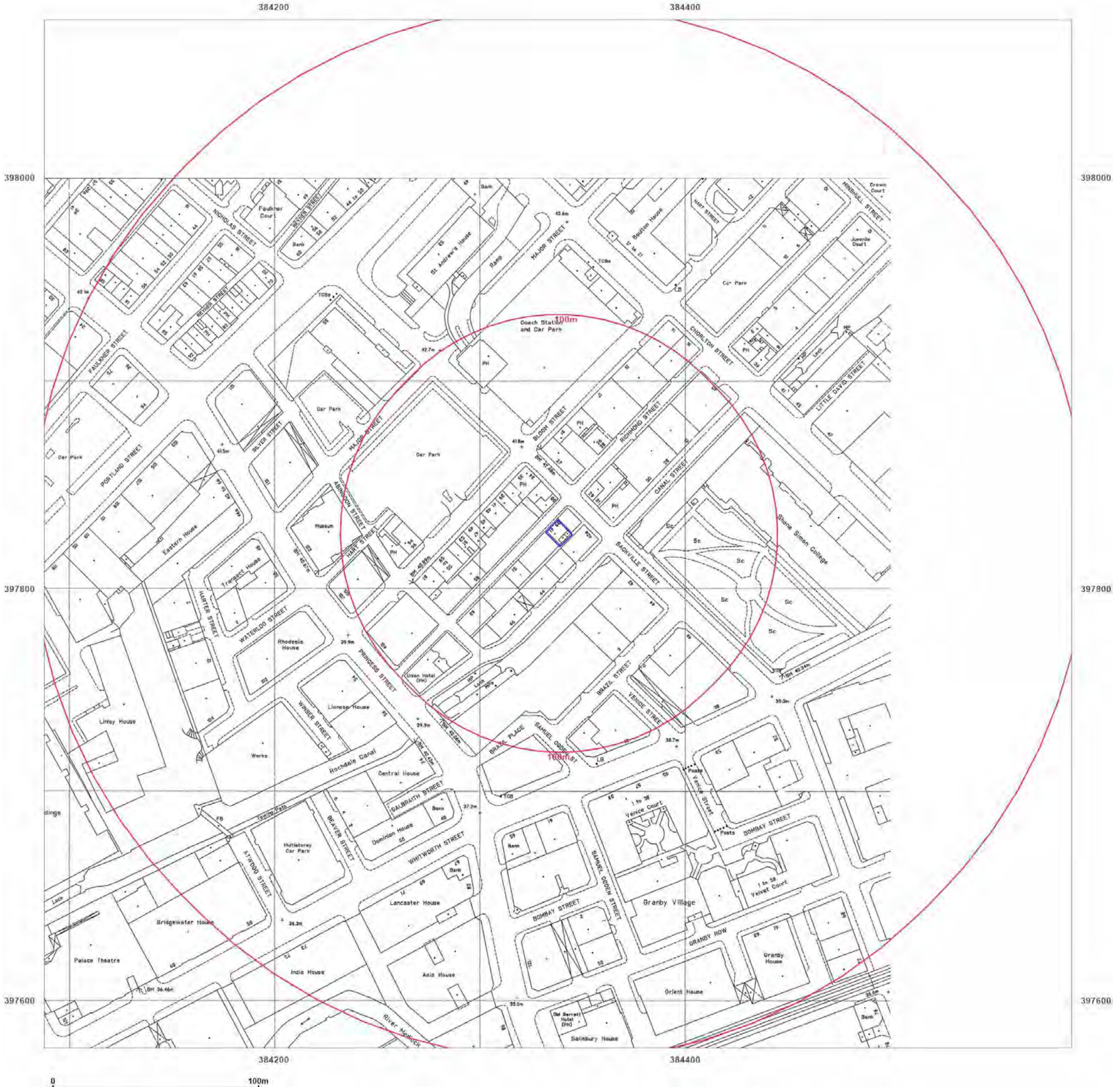
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

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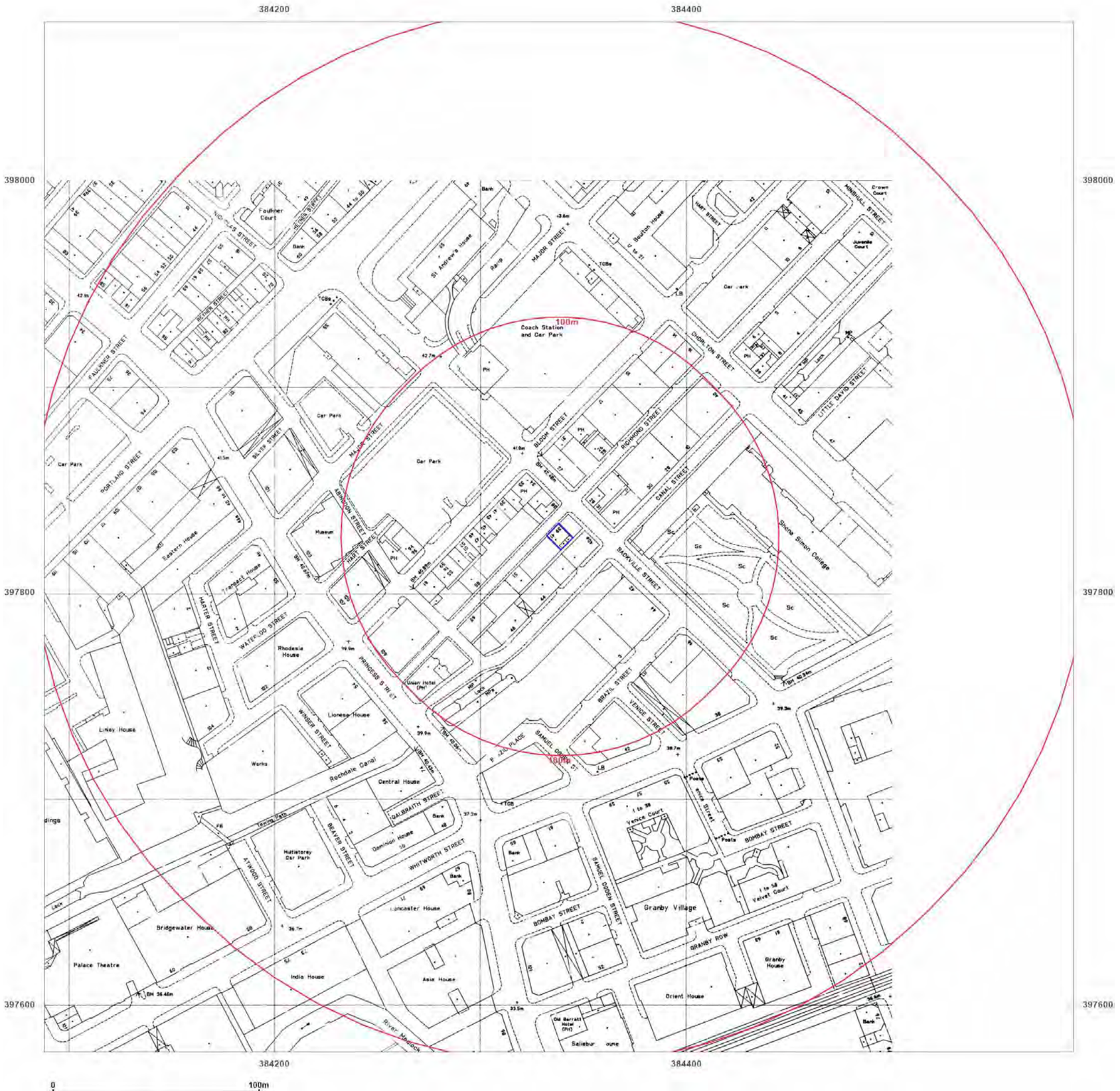
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

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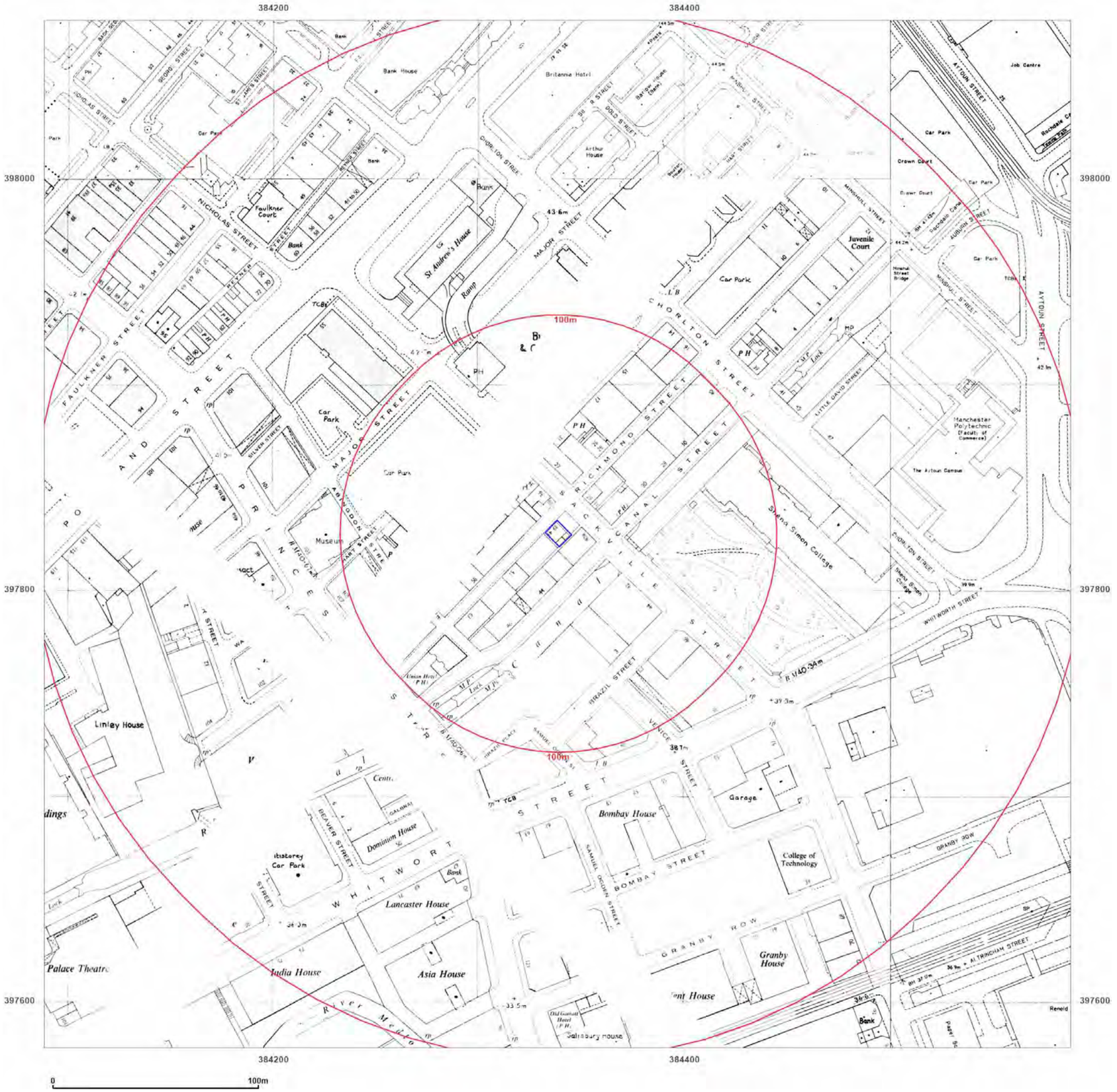
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Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1990-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Revised 1995
Edition N/A
Copyright 1995
Levelled N/A

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

Surveyed 1963
Revised 1990
Edition N/A
Copyright 1990
Levelled 1963

Surveyed 1995
Revised 1995
Edition N/A
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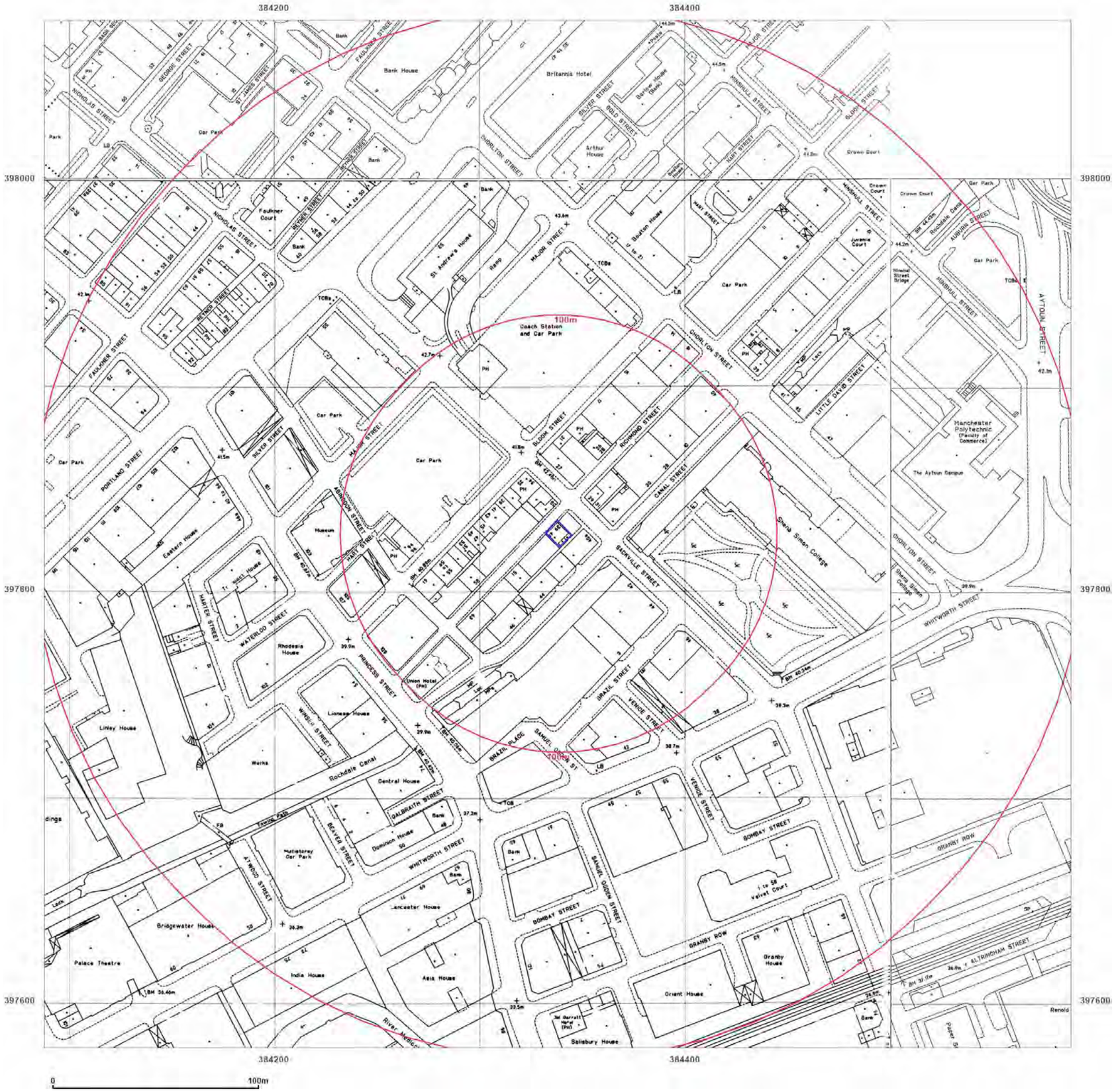
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Production date: 12 April 2023

Map legend available at:
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
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Edition N/A
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Surveyed 1992
Revised 1992
Edition N/A
Copyright 1992
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Surveyed 1995
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Edition N/A
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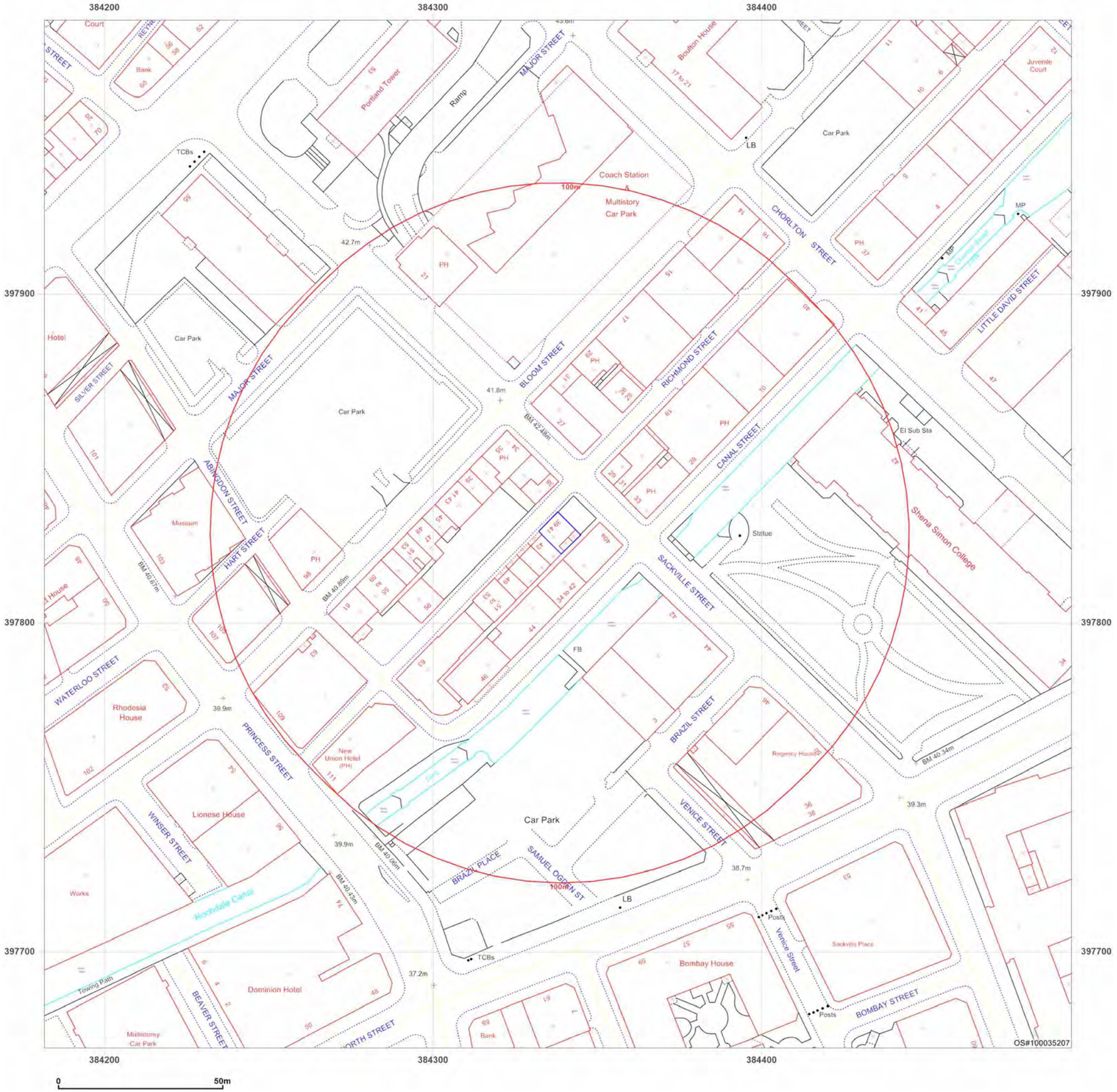
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Site Details:

Vanilla Cafe Bar, Vanilla 39-41
Richmond Street, M1 3WB

Client Ref: CMAPS-AAG-1097625-4165-120423
Report Ref: CMAPS-AAG-1097625-4165-120423HIS
Grid Ref: 384338, 397827

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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Production date: 12 April 2023

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APPENDIX E: SITE PHOTOGRAPHS



1. Study site as seen from public pavements extending along Richmond St
2. Study site as seen from Sackville St'





3. Study site as seen from public pavements extending along Sackville St'
4. Commercial building fronting on to Sackville St' adjoining the study site





5. Study site as seen from the junction of Sackville St' & Richmond St'
6. Commercial building occupying the study site





7. Car parking facility adjoining the study site
8. Commercial building occupying the study site

