Piccadilly Gardens Redevelopment

Phase 1 Desk Study

6 August 2026

Prepared For

Galliford Try on behalf of Manchester City Council



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Phase 1 Desk Study

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06/08/2026	C05	Updates to proposed development regarding pavilion	B. Douglas

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1. Introduction

Civic Earth Limited was appointed by Galliford Try on behalf of Manchester City Council (the Client) to undertake a Phase 1 Desk Study and preliminary risk assessment for the proposed redevelopment of Piccadilly Gardens (herein referred to as “the Site”) in Manchester.

The aim of this report is to evaluate potential human health, environmental and geotechnical risks and constraints associated with the Proposed Development, including:

- Information obtained from a review of available historical mapping and environmental disclosure report;
- A summary of the anticipated ground conditions and associated geotechnical and geoenvironmental constraints based on review of available published and unpublished records;
- A preliminary qualitative contamination source-pathway-receptor risk assessment based on the available desk study information and the current proposed redevelopment plans; and
- Recommendations for ground investigation and further assessment, if required.

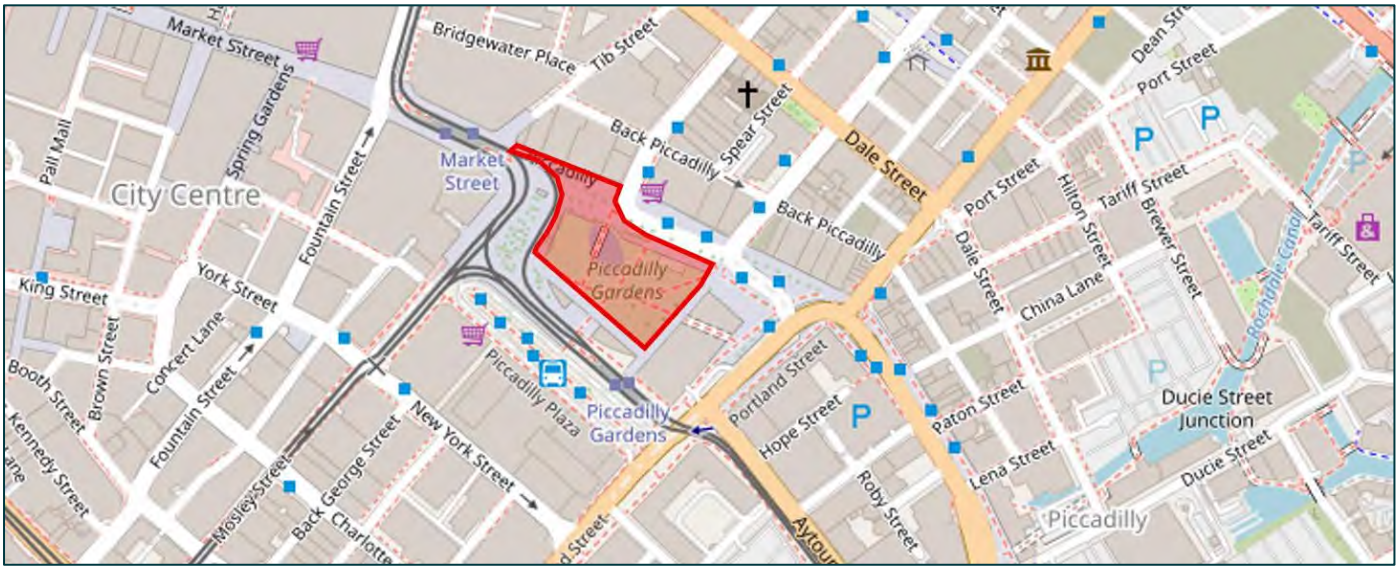
This document is intended to support the planning application for the development and to inform the scope for further site investigation, if required. It is assumed that ecological, flooding and archaeological desk studies/assessments will be undertaken by others and fall outside the scope of this report.

2. Site Context

2.1. Site Location

Piccadilly Gardens is located in the City Centre of Manchester. The postcode is M1 1AF and the National Grid coordinates for the approximate centre of the Site are 384374E, 398284N. The Proposed Development area is irregular in shape as illustrated in Plate 1 (indicated by the red line boundary) and is approximately 0.93 ha in size.

Plate 1: Site Location Plan (©OpenStreetMap Contributors)



2.2. Site Description

A site walkover for the wider Piccadilly Gardens area, including the Site, was carried out on 30 April 2026 by an engineer from Civic Earth. Full details of the Site walkover are included in the Site walkover record and photographs included in Appendix A.

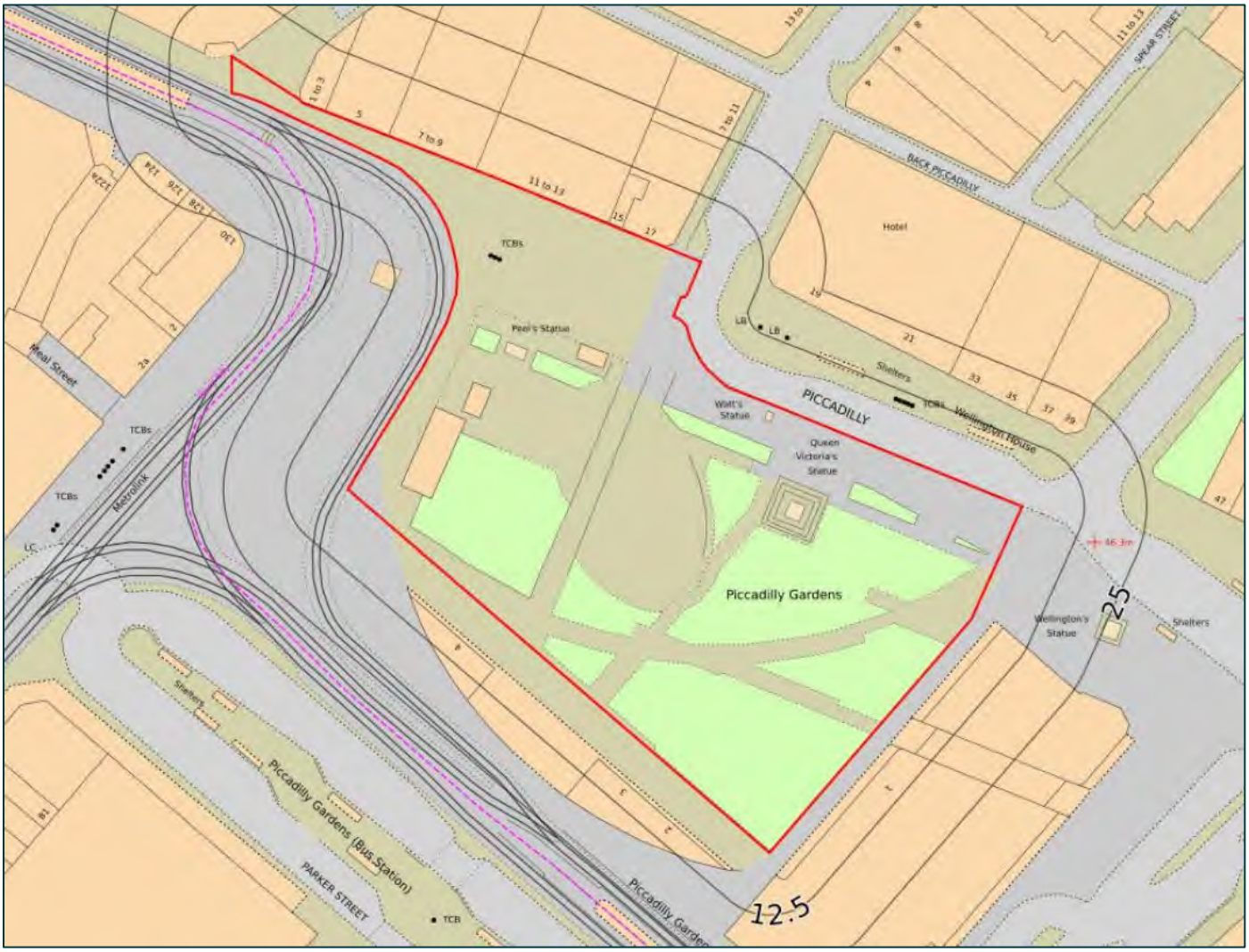
The Site is irregular in shape and is bound to the north by pedestrian walkways along Piccadilly, to the east by the commercial multi-storey building in the east of Piccadilly Gardens with Portland Street immediately beyond, to the south and west by active tram lines and the Piccadilly Gardens tram stop and bus terminus with Parker Street with Mosley Street immediately beyond. The Site is situated adjacent to a prominent transport and commercial hub, and is surrounded by a dense concentration of cafés, restaurants and retail premises. As a result, the area experiences consistently high levels of pedestrian activity and ongoing commercial use. Active highways / roads are also present immediately beyond the Site boundaries. The Site layout is illustrated in Plate 2.

The main area of the Site is occupied by The Piccadilly Gardens, which is currently hoarded off from the general public. This area of the Site is broadly rectangular in shape and comprises a mix of hardstanding and soft landscaped surfaces, including a concrete water feature, an elevated footway and surrounding grassed areas. The condition of the grass cover is variable, with areas of good growth present alongside patches of poor or absent vegetation, resulting in exposed topsoil, particularly across the western part of the Site. Access to the hoarded area is provided via a padlocked metal gate located on the northern boundary, opposite Oldham Street. Two small electrical substations / units were observed within the hoarded area of the Site.

During the Site walkover, trenching works within the western site area were observed, exposing layers of Made Ground beneath the existing surface. These exposures suggest that the Site is underlain by artificially placed fill beneath the current landscaping and hardstanding, likely associated with the historical redevelopment of the Site.

The Site is predominantly flat with ground levels ranging between +44m above Ordnance Datum (mOD) in the northwest at Market Street, +45mOD in the southwest and +46mOD at Portland Street. There is both ramped and stepped access to the soft landscaped area in the centre of the Site, and a drop down from the tram stop onto Parker Street.

Plate 2: OS MasterMap Site Plan (excerpt from Enviro + Geo Insight Report)



2.3. Proposed Development

The Proposed Development is understood to include the redevelopment and reconfiguration of Piccadilly Gardens comprising works to the public realm including public open space and use of space for events, together with decommissioning and removal of the existing fountain; creation of play space, lawn area, hard and soft landscaping; lighting; and drainage and other associated infrastructure; and a severable plot for a future ancillary structure with associated interim landscaping. The proposals make provision for a future structure within the Gardens, which will complement the ongoing investment in and refurbishment of the Piccadilly Gardens landscape. It is understood that the structure does not form part of the application and will be brought forward under a separate full planning application.

3. Historical Development

3.1. Sources of Information

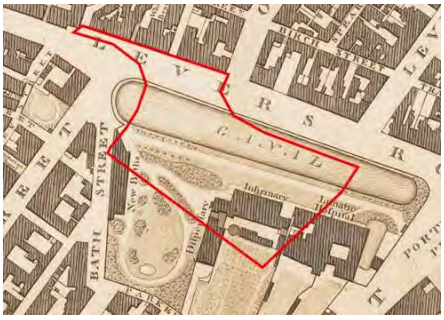
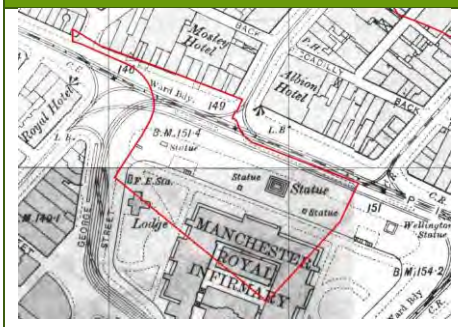
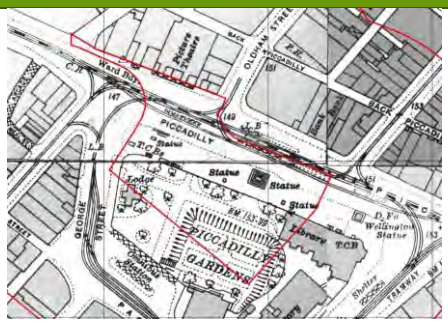
The historical development of the Site has been traced from Ordnance Survey mapping (included in Appendix B), historical satellite mapping included in the Groundsure Enviro + Geo Insight report (included in Appendix C), and publicly available mapping resources[1,2]. The distances stated are approximate.

3.2. Site History

3.2.1. On-Site

The pertinent history of the Site is summarised in Table 1 along with relevant excerpts from historical maps, and aerial photographs. It is noted that prior to the presence of the *Infirmary* which was built in 1755[3], the Site contained *Daub Holes* (*Clay Pits*), one of which is considered likely to have been redeveloped into the *Canal* indicated in the earliest available map records.

Table 1: Summary of Site History

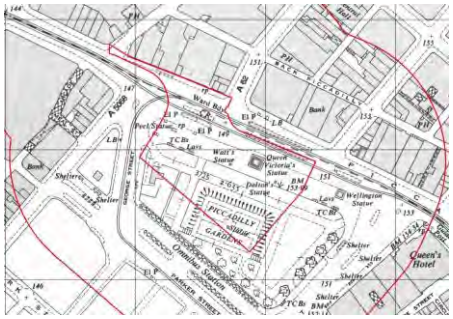
1794 – 1:2,160	1851 – 1:2,500 (Limited Coverage)	1889 to 1893 – 1:2,500
		
Earliest available mapping indicates the Site housed an *Infirmary* and *Asylum*, with *Dilpenfery* [Dispensary], *Baths*, associated gardens and a *Canal* in the north of the Site. The northwest of the Site included Levers Row.	The *Baths* in the west have been extended south beyond the Site. Levers Row has been renamed Piccadilly.	The *Baths* have been demolished with a *Lodge* now indicated, the *Canal* has been infilled, and the layout of the *Manchester Royal Infirmary* has altered. A Tramway is present in the north of the Site along Piccadilly.
1908 – 1:2,500	**1922 – 1:2,500**	**1931 to 1933 – 1:2,500**
		
A *Fire Engine Station* is present within the northwestern central site area adjacent to the *Lodge*.	The main *Infirmary* buildings have been demolished, with one structure and the *Lodges* remaining south of the Site. A *Library* has been constructed in the east of the Site. The *Fire Engine Station* is no longer indicated. Mapping coverage from 1915 to 1916 indicates that the *Infirmary* buildings were demolished between 1908 and 1915.	*Piccadilly Gardens*, indicated to be at a sunken level, are indicated in the south of the Site. Anecdotal information indicates that this represents a former basement from the demolished *Infirmary*[4].

[1] National Library of Scotland https://maps.nls.uk/ (Accessed April 2026)

[2] The University of Manchester John Rylands Research Institute and Library https://www.library.manchester.ac.uk/rylands/special-collections/subject-areas/map-collections-travel-and-discovery/online-map-collection/ (Accessed April 2026)

[3] Glinert, Ed (24 April 2008). *The Manchester Compendium: A Street-by-Street History of England's Greatest Industrial City.*

[4] https://www.manchestersfinest.com/news/a-lunatic-asylum-the-berlin-wall-spice-what-happened-to-piccadilly-gardens/ (Accessed April 2026)

1938 – 1:10,560	1950 to 1954 – 1:2,500	1954 to 1955 – 1:2,500
		
The *Library* and remaining *Infirmary* structures have been demolished, and the *Tramway* is no longer indicated.	No significant changes are noted between 1938 and 1954.	The *Tramway* is present on this map edition, with a reduced number of tracks.
1965 – 1:2,500	**1969 to 1970 – 1:2,500**	**1985 to 1990 – 1:1,250**
		
The *Tramway* is no longer indicated.	A *Fountain* has been added to *Piccadilly Gardens*.	An *Electricity Substation* is indicated in the east of the Site.
1992 – 1:1,250	**2000 – Aerial Imagery**	**2003 – Aerial Imagery**
		
The *Tramways* have been reinstated along Mosley Street immediately adjacent to the western site boundary.	Aerial imagery dated 2000 indicates that no significant changes have occurred between 1992 and 2000.	The soft landscaping has undergone redevelopment, with the sunken garden infilled and at the same level as the surrounding areas, the fountain relocated and the extent of the gardens extended north. No significant changes were noted between 2003 and 2025.

3.2.2. Off-Site

Earliest available mapping dated 1794 indicates that Manchester was already highly developed, with the Site surroundings an urban setting with residential, commercial and retail land uses. *Mr Drinkwater's Cotton Works* and adjacent *Coal Wharf* are indicated c.300m to the southeast, with Shooter's Brook river immediately south of these. Numerous small ponds are indicated in the wider southern and southeastern site surroundings.

By 1851, immediately to the south of the Site within the *Manchester Royal Infirmary*, *Sulphur Baths*, a *Plaster Room* and a *Dead House* are indicated in the south of the buildings. Large scale mapping identifies numerous industrial land uses in the surrounding areas, including *Portland Street Mill (Silk)* with associated *Dye House* and *Chimney* c.80m to the southeast, a *Cotton Finishing Works* c.90m north, *Dale Street Wire Mill* with associated *Chimney* c.105m north, *Candle Wick Manufactory* and a *Small Ware Mill (Cotton Thread)* c.210m east, a *Cotton Mill, Timber Yard, Chorlton Street Iron Works (Mill Work and Iron Foundry* and *Stone Yard* c.260m south. Other industries included; *Coal Yards* and *Steel Works* c.195m south; *Hope Foundry (Iron)* c.225m northeast; *Newton Street Iron Works (Mechanical Engineering)* c.270m northeast; *Minshull Street Iron Works (Engines and Machines)* c.275m south; *Iron Warehouses*

with *Fire Brick* and *Tile Wharf*, as well as *Lime and Sand Wharf* and *Lime Pits* c.300m northeast; a *Machine Manufactory* with associated *Chimney* c.175m northeast; a *Machine Manufactory* and *Sawmill* c.100m north; a *Cabinet Manufactory* c.360m southwest; a *Coach Manufactory* c.370m west; a *Machine Manufactory* with associated *Copper Roller Engraving Works* and *Engine House* c.545m southwest; a *Smithy* c.110m north; *The Manchester Surveyors of Highways' Store Yards* with *Wharfs, Stone Yards* and *Smithy* c.205m southeast; *Warehouses* c.150m north; *Timber Yards* c.200m east, as well as c.155m and c.160m south; *Town's Yard* with *Fire Engine House* and *Work Shops* c.460m southwest; and the *London Road Train Station* was also noted c.500m southeast. Among these, other small *timber yards, sawmills, stables, wharfs, mills, foundries* and *storage yards* were indicated, and *Tramways* are present north, south and east of the Site.

Mapping dated 1889 to 1896 indicates that *London Road Train Station* has expanded north, with a *Goods Station* and connecting *railway lines* indicated c.345m southeast, and *Piccadilly Mill (Cotton)* with *Canal* is indicated c.295m southeast. While it is noted to be a smaller scale map than the 1851 edition, and as such less detail is included, industrial use is still indicated. However, a *Foundry (Disused)* is indicated c.550m east indicative of industrial decline at the end of the 19th Century.

By 1905 to 1908, the *Wharfs* are still in use with *Warehouses* nearby to the east of the Site, and *Smithfield Market and Fish Market* indicated c.350m north. *Piccadilly Mill (Cotton)* previously indicated is now indicated as *Piccadilly Printing Works*. A large *Electricity Station* is indicated c.530m south in the 1915 to 1916 mapping, and a *Fire Station* is indicated c.480m southeast. No significant changes were noted in the subsequent map records until 1931 to 1934, when *Piccadilly Printing Works* had been demolished and *Aytoun Street* where it was located widened. No other significant changes to the overall street layout are indicated by the mapping. *Warehouses* are indicated c.150m to c.200m north.

Mapping dated 1950 to 1956 indicates that the commercial and presumed residential structures immediately southwest of the Site have been redeveloped into *Car Parks*. Further *Warehouses* are indicated c.90m north of the Site. The network of *Tramways* has been demolished. By 1969 to 1976 the *Car Parks* immediately southwest have been redeveloped into *Piccadilly Plaza*, and *London Road Train Station* has been renamed *Piccadilly Station*. Shooter's Brook in the wider southern site surroundings has been culverted. A *Clothing Factory*, *Industry House* and *Warehouses* are indicated between c.180m east and c.230m east, with *Garages* and *Works* c.270m northeast to c.425m northeast. The *Clothing Factory* has a *Basin* and links to the *Rochdale Canal*. A *Good's Shed* is still present c.275m southeast associated with *Piccadilly Station*.

By 1980 to 1985 *Smithfield Market* and *Fish Market* has been demolished and replaced by a *Car Park*, and the commercial / residential structures c.120m northwest have been redeveloped into a *Bus Station*, and *Arndale Shopping Centre.* Mapping dated between 1988 and 1995 indicates that the *Tramways* have been replaced, with a slightly different and reduced layout through the city centre, identified as the *Metrolink*. An Electricity Substation is indicated c.110m to the west. While the Works and Wharfs remained present in mapping until 2015, mapping dated 2025 indicates these have been removed.

3.3. Planning History

Review of the Manchester City Council planning portal[5] includes the following selected applications within, as well as immediately adjacent to, the Site:

- **Reference 056972/VO/CITY2/99**: City Council Development for commercial office development with car parking at ground floor. The application was approved in September 1999.
- **Reference 056973/VO/CITY2/99**: City Council Development for regeneration of existing gardens, Parker Street bus station and associated highways. The application was approved in December 1999.
- **Reference 057537/LO/CITY1/99**: Listed Building Consent for renovation and relocation of Peel statue / Watt statue / Wellington statue and Victoria as part of regeneration. The application was approved in April 2000.
- **Reference 059749/VO/CITY2/00**: City Council Development for mixed use development comprising offices, retail or restaurants, hotel, serviced apartments or residential. The application was approved in September 2000.
- **Reference 059750/VO/CITY2/00**: City Council Development for office building with public and semi-public space at ground floor. The application was approved in September 2000.
- **Reference 059751/LO/CITY2/00**: Listed Building Consent / City Council Development for repositioning of statue "adrift" in connection with redevelopment of current site. The application was approved in December 2000.
- **Reference 063523/FO/CITY2/01**: Erection of 8 storey building for the following mix of uses: 2 levels of basement car parking, hotel, residential or serviced apartment reception and office use at ground floor, offices, residential or serviced apartments or hotel use, and plant room on top floor. The application was approved in December 2001.
- **Reference 116923/FO/2017**: Demolition and redevelopment of the current single storey building and retaining wall and erection of two buildings linked by a green roof and a central covered walkway from Parker Street to comprise 2 to 3 floors including mezzanine level and roof top terrace with outdoor seating and associated improvements to Piccadilly Gardens including formation of raised grass areas, replacement paving, replacement of some existing

[5] https://pa.manchester.gov.uk/online-applications/ (Accessed April 2026)

trees, new lighting, additional lawned areas and cycle stands. The application was withdrawn in March 2019.

- **Reference 132578/FO/2021**: Application for physical works to the Pavilion and surrounding Public Realm. The application was approved in April 2022.
- **Reference 137706/NMC/2023**: Nonmaterial amendment to planning permission 132578/FO/2021 to amend extend of demolition and including omission of a structural column. The application was approved in August 2023.
- **Reference 143158/FO/2025**: Use of land for the operation of temporary bar with associated development until 30th September 2025. The application was withdrawn by October 2025.
- **Reference 144971/VO/2026**: City Council Development for the phased erection of a 2.4m high hoarding got a temporary period of 18 months. The application was approved in March 2026.

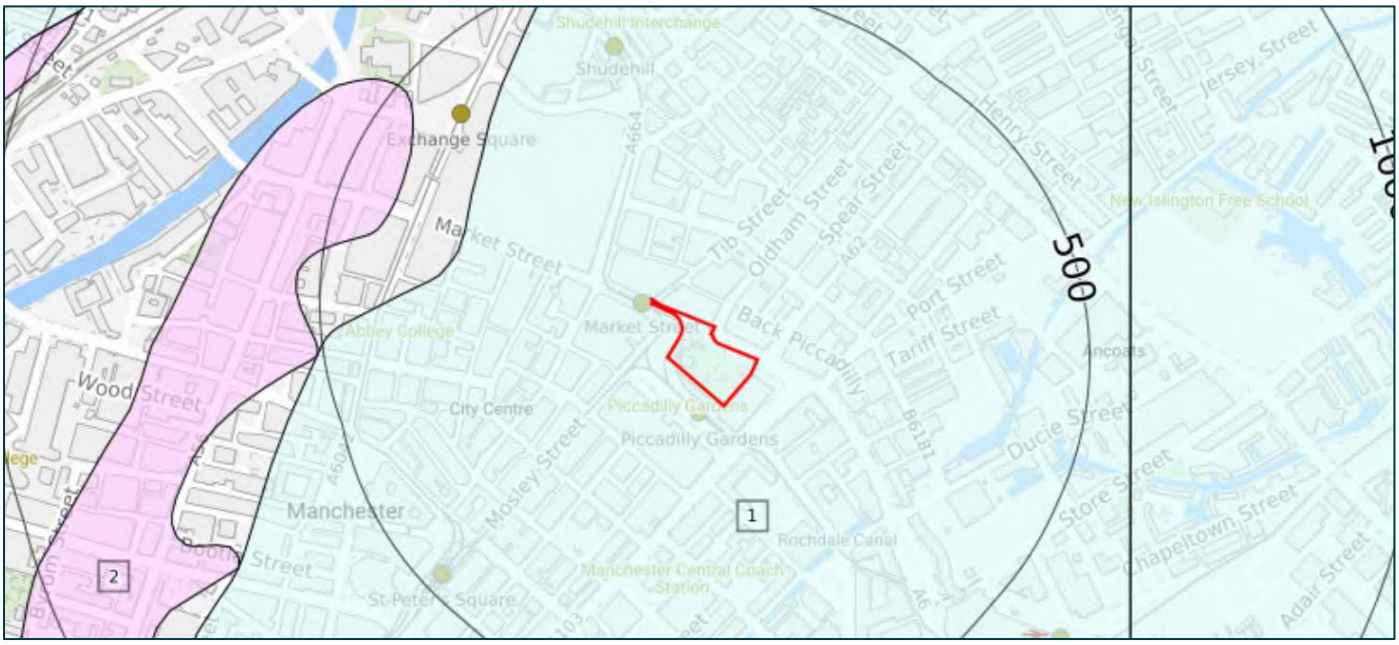
It is noted that a full review of the planning history has not been undertaken.

4. Anticipated Ground Conditions

4.1. Published Geology

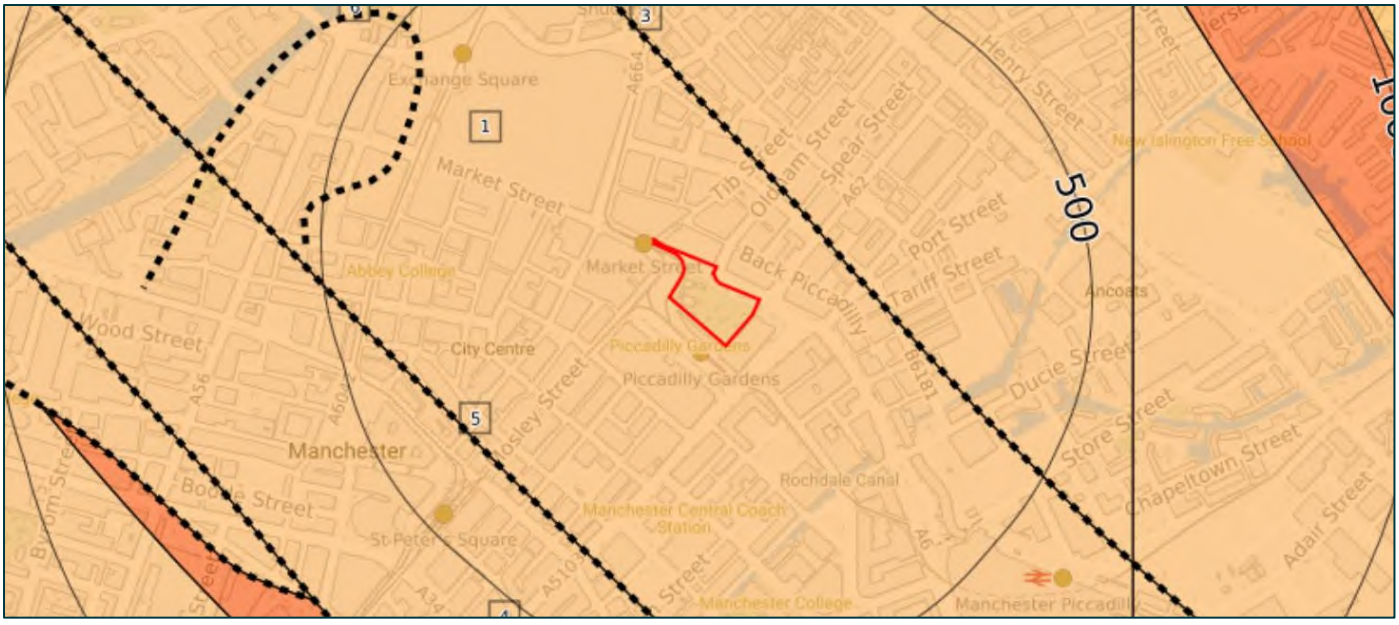
With reference to the British Geological Survey (BGS) website[6], BGS Sheet 85[7], BGS Sheet SJ 89 NW[8], and the Groundsure Enviro + Geo Insight report (included in Appendix C), superficial deposits comprising Till (diamicton) are mapped beneath the Site as illustrated in Plate 3.

Plate 3: Superficial Geology (based on excerpt from Groundsure Enviro + Geo Insight Report)



The superficial deposits are indicated to be underlain by the bedrock of the Chester Formation (Pebbly (Gravelly) Sandstone) as illustrated in Plate 4. The Chester Formation is underlain by the Manchester Marls Formation and the Collyhurst Sandstone Formation in succession. There are 2 records of bedrock faults which pass within 500m of the Site boundary; a northwest to southeast orientated fault c.135m northeast of the Site boundary, and a parallel fault orientated northwest to southeast c.360m to the southwest. There is also a record of a buried superficial deposit filled channel or valley c.405m west of the Site.

Plate 4: Bedrock Geology (based on excerpt from Groundsure Enviro + Geo Insight Report)



[6] British Geological Survey (BGS), www.bgs.ac.uk (Accessed April 2026)

[7] BGS (2011) Manchester, Sheet 85. Bedrock and Superficial. 1:50,000.

[8] BGS (2004) Manchester and Salford, Sheet SJ 89 NW. 1:10,000.

With reference to the BGS Lexicon[6], the strata anticipated at the Site are described as follows:

- **Till (Diamicton)**: unsorted and unstratified drift, generally over-consolidated material, consisting of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape.
- **Chester Formation (Sandstone):** red-brown, yellow, or yellow-mottled, very fine- to coarse-grained sandstones that are commonly cross-bedded, locally micaceous, silty or argillaceous, pebbly or conglomeratic, and generally friable.
- **Manchester Marls Formation (Mudstone):** red marl (calcareous mudstone and siltstone) with thin beds of fossiliferous marine limestone and dolomite; locally green; sandy in places especially in the top part; local breccias and pebbly beds.
- **Collyhurst Sandstone Formation (Sandstone):** soft red sandstone with abundant beds of 'millet seed' sand grains alternating with beds of fine-grained sharp sand; some interbedded grey sandstones locally.

With reference to the Groundsure Enviro + Geo Insight report obtained for the Site, while no deposits of Artificial Made Ground (undivided) are indicated to be present on-site, Infilled Ground is indicated to be present in the north of the Site, corresponding to the location and shape of the historical canal. It is noted that general Made Ground is anticipated to be present across the Site given the historical development of the Site, including the infill of the other clay pits, former sunken gardens and multiple phases of redevelopment across the Site. As outlined in Section 2.2, Made Ground was observed in the trenches being carried out by others at the time of the Site walkover.

4.2. Unpublished BGS Geology

There are a total of 73 historical BGS borehole records within 250m of the Site (see Section 16.1 of the Groundsure report, Appendix C); a single record is located on-site, relating to a trial pit in the northern centre of the Site which recorded hardstanding of flagstone to a depth of 0.05m below ground level (mbgl), underlain by Made Ground of sand, cement and 'limestone hardcore' to a depth of 0.60mbgl. The natural underlying granular superficial deposits were recorded to a depth of at least 1.30mbgl, where the pit was terminated.

There are 7 records within 100m of the Site, 4 of which are available for review and relate to trial pits excavated in the north and east of the Site to depths of between 0.27m below ground level (mbgl) and 1.70mbgl, and the ground conditions are recorded to comprise hardstanding of flagstone, concrete (occasionally as 2 layers with ash in between), cobble sets, limestone hardcore, or tarmac to depths of between 0.12mbgl and 0.83mbgl over Made Ground. The Made Ground is described as brown, medium grained sand and gravel with occasional ash, or as soft brown clay and sand fill or as ash to depths of at least 1.30mbgl. The base of the hardstanding / Made Ground was proven in 2 of the trial pits, with the natural underlying deposits described as brown, medium grained sand or sand and gravel to depths of between at least 1.30mbgl and 1.70mbgl.

There are 18 records within 150m of the Site, 12 of which are available for review. The ground conditions encountered Made Ground described as ash and slag over sandy topsoil, or as dense rubble including pieces of brick, tile, concrete, clay pipe and burnt wood to depths of between 0.30mbgl and 3.35mbgl. The Made Ground is recorded to overlie weathered boulder clay to a depth of 2.69mbgl, with the unweathered Boulder Clay encountered to depths of between 14.17mbgl and 15.79mbgl where bedrock, described as the Weathered Bunter Sandstone and the unweathered Bunter Sandstone (an obsolete name of the Chester Formation), was encountered underlying the Boulder Clay to a maximum borehole depth of 23.77mbgl.

Of the 47 remaining records within 250m of the Site, while 39 records are available for review, only 20 records encountered bedrock; the upper surface of the Weathered Sandstone (occasionally recovered as sand) was recorded at depths of between 9.60mbgl and 16.67mbgl, with the upper surface of the underlying unweathered Chester Formation encountered at depths of between 12.37mbgl and 19.81mbgl. The Chester Formation was encountered to depths of between at least 15.24mbgl and at least 23.93mbgl.

4.3. Surface Mining and Ground Workings

A review of the Mining Remediation Authority (MRA) Interactive Viewer[9] indicates that the Site lies within a 'Coal Mining Reporting Area'; however, the Site lies outside a 'Development High Risk Area'. A Consultant's Coal Mining Report (CCMR) has been obtained for the wider Piccadilly Gardens area (see Appendix E) which summarises the following:

- There are no records of past underground mining;
- There are no records of probable unrecorded shallow workings within the Site;
- There are no spine roadways recorded at shallow depth or mine entries within 100m of the Site boundary;
- There are no records of abandoned mine plan catalogues that intersect with some or all of the Site boundary;
- There are no outcrops, faults, fissures or breaklines recorded on the Site;
- There are no records of opencast mines within 500m of the Site boundary;

[9] Mining Remediation Authority Interactive Viewer Map, https://datamine-cauk.hub.arcgis.com/ (Accessed November 2025)

- There are no records of MRA managed tips within 500m of the Site boundary;
- There are no records of site investigations, remediated sites or coal mining subsidence within 50m of the Site boundary;
- There are no records of mine gas or mine water treatment schemes within 500m of the Site; and
- There are no records of future underground mining, coal mining licencing, court orders or Section 46 notices (which state the land is at risk from subsidence) at the Site.

Based on the above, the risks from legacy coal mining activities at the Site with respect to the Proposed Development is considered to be low.

The Groundsure Enviro + Geo Insight report obtained for the Site (see Appendix C) also identified the following:

- There are no records of surface British Pits (BritPits) within 500m of the Site;
- There are 7 records of surface ground workings on site relating to 6 ponds and 1 unspecified pit (dated between 1848 and 1956);
- There is a single further record of surface ground workings within 250m of the Site for unspecified ground workings (dated 1931);
- No records of underground workings within 250m of the Site;
- A single record of a natural sinkhole located c.355m northwest of the Site, estimated to be 1m in diameter and located on Withy Grove (dated 2022); and
- No records of natural or mining cavities within 500m of the Site.

The distribution of the surface ground workings is illustrated in Plate 5. It is noted that available historical information indicates that the Site was previously excavated for clay prior to the construction of Manchester Royal Infirmary[3].

Plate 5: Surface Ground Workings (based on excerpt from Groundsure Enviro + Geo Insight Report)



4.4. Railway Infrastructure

With reference to the Groundsure Enviro + Geo Insight report (Appendix C), there are no records of historical railway infrastructure within 250m of the Site. There are no record of underground railways within 250m of the Site.

There is a single record on site relating to existing railway lines, described as 'Light Rail'. There are a further 34 records within 250m of the Site relating to Multi Track, Light Rail and Tram services.

It is noted that there is a single record relating to HS2 c.500m southeast of the Site; the records relate to a bridge/viaduct and the Groundsure report notes that the section is scheduled for cancellation (at the time of the production of the Groundsure report).

4.5. Hydrology and Hydrogeology

The Environment Agency (EA) has produced an aquifer designation system consistent with the requirements of the Water Framework Directive (WFD). The designations have been set for superficial and bedrock geologies and are based on the importance of aquifers for potable water supply and their role in supporting surface water bodies and wetland ecosystems.

The superficial Till is designated as a Secondary Undifferentiated aquifer (assigned where it is not possible to attribute

either category A or B to a rock type, and 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). The underlying Chester Formation is designated as a Principal aquifer (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).

The Site is not located within a groundwater Source Protection Zone (SPZ). There are 26 records relating to groundwater abstraction records reported within 1km of the Site, the nearest of which is located c.355m southwest relating to the historical abstraction for general cooling; it is assumed that groundwater is abstracted from the Principal aquifer within the Chester Formation. The nearest active abstraction record is c.1.1km south of the Site for a heat pump. There are 9 records within 1km of the Site relating to potable abstractions, the closest of which is located c.930m northwest of the Site (a historical licence). There are no surface water abstractions recorded within 1km of the Site.

The nearest surface water body to the Site is the inland Rochdale Canal which is located c.260m southeast of the Site. The Site is located within the WFD catchment area for the Irwell / Manchester Ship Canal which is located c.595m to the northwest of the Site. Based on Civic Earth's in-house data, groundwater flow is anticipated to flow towards the southwest towards the River Medlock. The open channel of the River Medlock is located c.610m south of the Site at its closest point; the Medlock flows through a concrete culvert between London Road (c.830m southeast of the Site) until reappearing at the surface beneath Princess Street c.800m southwest of the Site. In addition, the culverted Shooter's Brook (understood to be a sewer) passes c.390m southeast of the Site in a general northeast-southwest orientation.

4.6. Ground Hazards

The risks associated with potential geological hazards at the Site have been assessed using the Enviro + Geo Insight report and are summarised in Table 2.

Table 2: Geological Hazards

Hazard	Risk
Shrink-swell clays	Very low
Running Sands	Very low
Compressive Deposits	Negligible
Collapsible Deposits	Very low
Landslides	Very low
Ground Dissolution	Negligible

It is noted that as detailed in Section 4.3, a record relating to a natural sinkhole caused by water dissolution was indicated c.355 m northwest of the Site on Withy Grove.

4.7. Unexploded Ordnance (UXO)

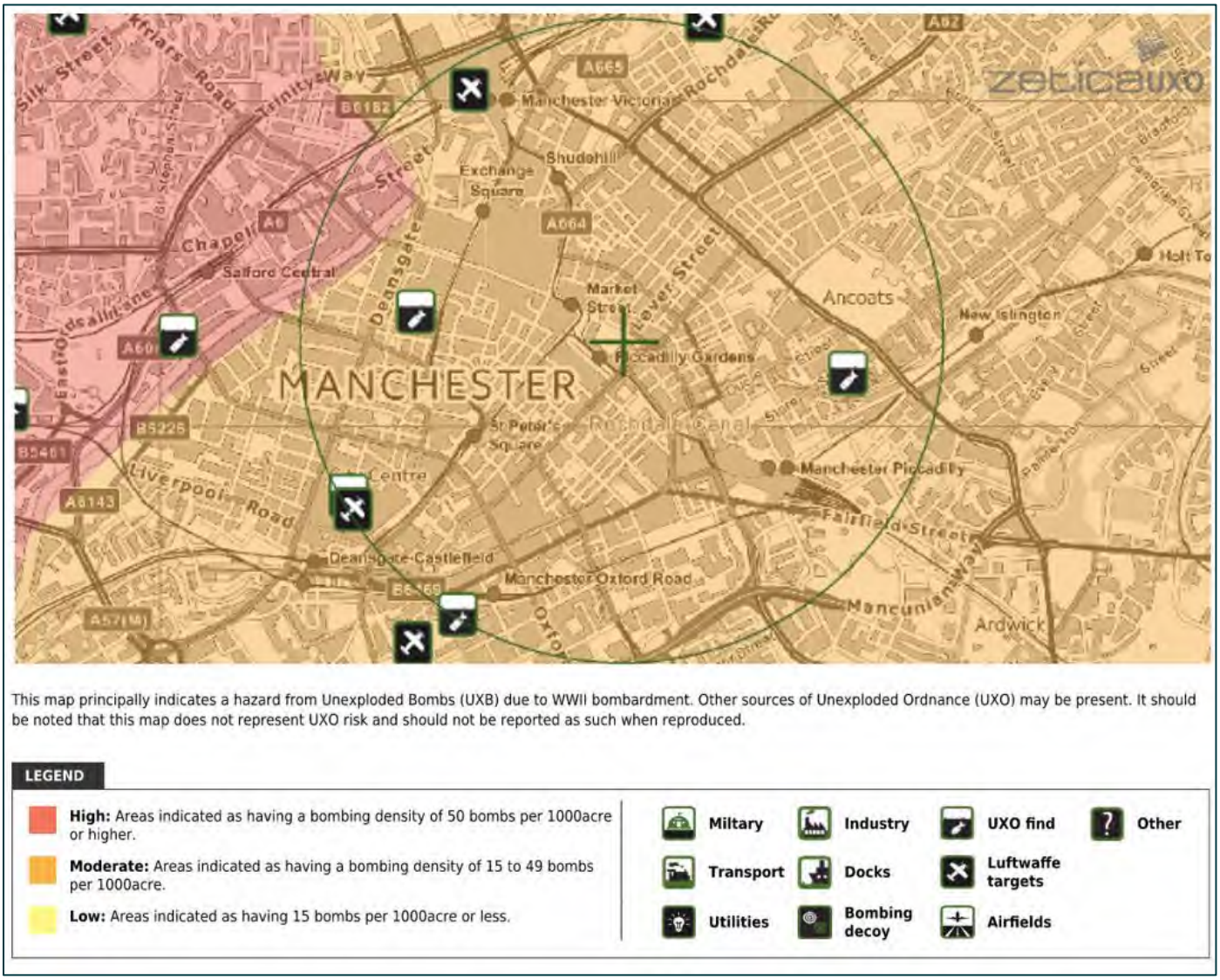
A review of publicly available risk mapping[10] indicates that the Site is located within an area of moderate hazard from Unexploded Bombs (UXB) due to WWII bombardment, as illustrated in Plate 6.

A Preliminary Unexploded Ordnance (UXO) Risk Assessment has been carried out by RMS UXO which concludes that the Site and the wider Piccadilly Gardens area are located in an area that was subjected to a high level of bombing during WWII, with an airfield located within 5km of the Site, and a history of military activity within 15km of the Site. Subsequently, a Detailed UXO Risk Assessment was carried out for the Site by RMS UXO. The Detailed UXO Risk Assessment concludes that the Site is at a low risk; however it is recommended that site briefings on the potential threat of UXO as well as an appropriate emergency response plan is in place prior to intrusive investigations at the Site.

The Preliminary UXO Risk Assessment for the wider Piccadilly Gardens area (including the Site) and the Detailed UXO Risk Assessment for the Site are included in Appendix F.

[10] https://zeticauxo.com/guidance/risk-maps/ (Accessed April 2026)

Plate 6: UXB Risk Mapping (Zetica Online)



5. Environmental Setting

5.1. Environmental Disclosure Report

The Groundsure Enviro + Geo Insight report (included in Appendix C) has been used to provide information on the environmental setting of the Site, to assist in identifying possible sources of ground contamination. A summary of the pertinent records generally within 250m from the Site is provided below in Table 3. For full details the Groundsure Enviro + Geo Insights reports should be referred to. The records generally reflect the key pertinent features identified on the historical mapping. It is noted that the distances stated are approximate.

Table 3: Summary of Pertinent Information from the Environmental Disclosure Report

Environmental Record	Record Details	Distance from Site
Historical Industrial Land Uses	2 records of historical industrial land uses on the Site relating to an unspecified pit and a bus station. 2 records within 5m of the Site relating to unspecified commercial/industrial and unspecified ground works. A further 5 records between 5m and 250m of the Site relating to bus stations, an infirmary and unspecified commercial/industrial land use.	On-site 2m NW, 5m NW Various within 250m
Historical Tanks	No records of historical tanks on the Site. 1 record of an unspecified tanks within 250m of the Site.	- 245m E
Historical Energy Features	1 record of an electricity substation on the Site. 7 records within 250m relating to electricity substations, the closest of which is 140m west of the Site.	On-site Various within 250m
Historical Garages	No records of historical garages on the Site. 3 records within 100m of garages, the closest of which is recorded 70m northeast of the Site. A further 2 records between 100m and 250m relating to historical garages.	- Various within 100m Various within 250m
Historical or Active Landfills	No records identified on or within 250m of the Site.	-
Historical Waste Sites	No records identified on or within 250m of the Site.	-
Licensed Waste Sites	No records identified on or within 250m of the Site.	-
Waste Exemptions	No records of waste exemptions on the Site. 2 records within 250m of waste exemptions for using and treating waste by screening and blending of waste in construction.	- 190m W
Recent Industrial Land Uses	No records of recent industrial land use on the Site. 1 record within 50m relating to a tram, metro and light railway station and stops. 6 records between 50m and 100m relating to bus and coach stations, used cars, adhesives and sealants, office equipment and electronic industrial and consumer products. 13 records between 100m and 150m relating to hire services, distribution and haulage, waste collection and processing, construction services, engineering services, agricultural machinery and goods, consumer products, industrial products and an electricity sub station. A further 30 records between 150m and 250m of industrial land uses relating to repairs and servicing, vehicle parts, consumer products, engineering services, a business / industrial park, health support services, industrial products, hire services, electricity sub stations, air and water filtration products, a bakery, publishers and electronic equipment.	- 25m W Various within 100m Various within 150m Various within 250m
Current or Recent Petrol Stations	No records identified on or within 250m of the Site.	-

Environmental Record	Record Details	Distance from Site
Licensed Pollutant Releases	No records of licensed pollutant releases on the Site. 1 record within 250m relating to historical permits for dry cleaning.	- 105m N
Radioactive Substance Authorisations	No records identified on or within 250m of the Site.	-
Licensed Discharge Consent to Controlled Waters	No records identified on or within 250m of the Site.	-
Pollution Incidents	1 record of a pollution incident on the Site with no detailed pollutant, which resulted in a minor impact to land. No further records identified within 250m of the Site.	On-site
Environmental Designations	The Site is located within an SSSI Impact Risk Zone – further details are included within the Groundsure Enviro + Geo Insight report.	On-site

5.2. Radon

With reference to the Groundsure Enviro + Geo Insights report, the Site does not lie within a Radon Affected Area as less than 1% of properties are estimated to have a radon level at or above the action level. No radon protective measures are therefore considered necessary. It is noted however that if new basements are proposed which shall be occupied or part occupied (if a building is incorporated), current guidance requires monitoring for radon, irrespective of the initial risk assessment. This should be considered in terms of the lower ground floor levels and whether they constitute basements.

6. Preliminary Risk Assessment

6.1. Introduction

Historical contamination of land may present harm to human health and the environment. Current UK legislation stipulates that the risk associated with potential land contamination is assessed and remediated, if necessary. Under the Town and Country Planning Act 1990 (as amended), potential land contamination is a "material planning consideration" together with the National Planning Policy Framework[11] (revised in December 2024, as amended in February 2025), which means that a planning authority must consider contamination when they prepare development plans or consider individual applications for planning permission.

Additionally, Part 2A of the Environmental Protection Act 1990 requires that a significant source-pathway-receptor linkage exists to determine a site as contaminated land. This means that there has to be a contaminant present, a receptor that could be harmed by this contaminant, and a pathway linking the two. Part 2A deals with the contamination risk from a site in its current use, however, the planning system requires that the proposed use is considered. Where remediation is carried out under the planning system, it should be ensured that the Site is in such a condition that it would still not meet the definition of contaminated land under Part 2A.

6.2. Preliminary Conceptual Site Model

A preliminary conceptual model has been compiled for the Site with respect to the Proposed Development to identify the potential sources of contamination and the associated potential contaminant linkages. This model also informs the potential need for further investigation at the Site.

6.2.1. Potential Sources

Potential contamination sources can include both current and historical activities on-site and off-site in the surrounding area. The potential sources outlined in Table 4 have been identified at the Site.

Table 4: Potential Sources

Hazard	Description
Historical and current land uses – On-site	Historical mapping and available anecdotal information indicate that the Site was occupied by clay pits, hospital buildings, a canal, a library, fire engine house, a bus station, sunken public gardens which were subsequently redeveloped, and an electricity substation as well as the surrounding road and tramway networks, and an unspecified pit. There is considered to be potential for contamination related to the historical use. The historical commercial / industrial activities are considered to be potential sources of a wide range of contaminants including heavy metals, hydrocarbons, asbestos containing materials, chlorinated solvents, Per- and polyfluoroalkyl substances (PFAS) (associated with the fire station), and polychlorinated biphenyls (PCBs) (associated with the substation).
Historical and current land uses – Off-site	Historical off-site industrial uses including bus station, lime house, dead house, plaster room, dye house, copper works, tile works, cotton mills, steel works, iron foundries, various manufactories, wharfs, timber yards, stone yards, wire mills, storage yards, smithies, engine houses, chimneys, warehouses, train stations, bus stations, electricity substations, tanks, car parks and the train/tram network. These historical industries and uses could be potential sources of a wide range of contaminants including heavy metals, hydrocarbons, asbestos containing materials, , anthrax (associated with the plaster works which often used animal hair as a binding agent), chlorinated solvents, pathogens (associated with the dead house) and PCBs.
Made Ground – Site and Off-site	Potential for Made Ground to be present due to historical development on and off-site, which could be a potential source of a wide range of contaminants including heavy metals, hydrocarbons and asbestos.
Ground gases / vapour	Made Ground can be a source of ground gas where an appreciable organic content is present. If present, degradation of hydrocarbons/organic chemicals can also produce organic vapours and ground gases.
Groundwater	Perched water in the Made Ground and superficial Till may be a source of contamination resulting from impacts from the previous on and off-site sources. Potential contaminants in water would be similar to those potentially present in the soils, as discussed above.

6.2.2. Potential Pathways

The potential migration pathways that may be present are outlined in Table 5.

[11] Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework

Table 5: Potential Pathways

Hazard	Description
Ingestion and inhalation	Contamination within the Made Ground can result in the ingestion or inhalation of contaminated soils (and asbestos fibres if present) where soil is exposed and inhalation of ground gases/vapours.
Direct / dermal contact	Direct/dermal contact with contaminated soils or shallow groundwater can result in the uptake of contaminants through the skin (where soil is exposed) or permeation of contaminants through structures.
Root uptake	Uptake of phytotoxic contaminants by plants and vegetation within areas of soft landscaping.
Lateral and vertical migration	Leaching from potential contamination in the soils may impact the perched water in the Made Ground and superficial Till deposits. It is noted the nearest identified surface water receptor is the Rochdale Canal c.185m southeast of the Site. The anticipated cohesive superficial soils are likely to limit vertical and shallow lateral migration of contaminants. It is noted that Shooter's Brook and the River Medlock are culverted structures at their closest points to the Site.
Ground gas / vapour migration	Lateral migration of ground gases and/or vapours through the soil matrix could lead to accumulation within buildings (if a building is incorporated), posing a risk of asphyxiation or explosion.
Drainage and services	Could provide a preferential pathway for dissolved phase contaminant migration and/or ground gases/vapour transport.
Foundations (shallow, piled)	Could provide a preferential pathway for dissolved phase contaminant migration and/or ground gases/vapour transport.

6.2.3. Potential Receptors

The potential receptors have been identified based on the proposed end use of the Site and are outlined in Table 6.

Table 6: Potential Receptors

Hazard	Description
Future site users	Users and occupiers are considered to be at risk from possible contamination associated within shallow soils and groundwater, if source and pathway are present.
Construction workers	Considered to be at risk from potential contamination within soils and groundwater during groundworks. Such persons are likely to be in close contact with potentially contaminated materials on-site associated with the current and historical uses of the Site and surrounding area.
Off-site residents	Potentially at risk from potential contaminants in wind-blown dust and potential odours/vapours generated during development works.
Controlled waters	Potentially at risk from the leaching and vertical/lateral migration of contaminants from potentially contaminated soils and groundwater. Migration anticipated to be reduced by cohesive horizons in the Made Ground and anticipated cohesive superficial Till deposits.
Buildings (if a building is incorporated) / Infrastructure / services	Potentially at risk from ground gas migration, aggressive ground conditions and contaminants that may permeate through underground services such as water supply pipes.
Plants and vegetation	Primarily at risk from phytotoxic contaminants such as boron, copper, nickel and zinc.

6.2.4. Preliminary Risk Assessment

A preliminary qualitative risk assessment has been undertaken for the Site based on the findings of the conceptual site model and the potential contaminant linkages that may exist at the Site in accordance with the Land Contamination Risk Management Guidance (LCRM)[12]. The magnitude of the risks associated with potential contaminant linkages has been assessed using criteria broadly based on those presented in CIRIA Report C552[13], and are summarised in Table 7. The risk assessment methodology is presented in Appendix G.

[12] Environment Agency (2025). Land Contamination Risk Management (LCRM).

[13] CIRIA (2001) Contaminated Land Risk Assessment. A guide to good practice. C552

Table 7. Preliminary Qualitative Risk Assessment

Potential Source/Medium	Potential Exposure Route	Potential Receptor	Severity	Probability	Risk Rating	Comments
Explosive/ asphyxiating gases/vapours from underlying soils and potential on and off-site sources (*Made Ground)*	Migration of gases and vapours through the surface via permeable soils and drainage & services	Internal building spaces (if a building is incorporated) & future occupiers	Medium	Low Likelihood	Moderate/Low	Variable thicknesses of Made Ground anticipated due to former development of site including infilled clay pits and canal. *Assessment of underlying geology and ground gas monitoring recommended to assess ground gas regime.*
Organic/ inorganic contaminants within underlying soils and perched groundwater within the Made Ground associated with historical on-site land uses including *clay pits, infirmary, canal, plaster room, fire engine house, infilled ground and electricity substation.*	Direct/indirect ingestion of soil and dust, inhalation of particle vapours and asbestos fibres and dermal contact	Construction workers	Medium	Likely	Moderate	Potential for shallow soils to be impacted with asbestos and/or contaminants. Considered risk could be mitigated by use of appropriate PPE. *Further chemical analysis and assessment of shallow soils required to assess risk.*
		Future site users	Medium	Likely	Moderate	Potential for shallow soils to be impacted with asbestos and/or contaminants. Likely proposed soft landscaping will require growth medium to mitigate potential risks. Assessment of risk from potential vapour intrusion into buildings (if proposed) required. *Chemical analysis and assessment of shallow soils required to assess risk.*
		Off-site residents	Medium	Low likelihood	Moderate/Low	Potential for shallow soils to be impacted with asbestos and/or contaminants. Assumes that appropriate practices are adopted to prevent dust generation during construction e.g., dampening down and covering stockpiles etc.
	Direct contact with underground structures and services	Buildings and structures, buried services	Mild	Likely	Moderate/low	Buried concrete to be designed as appropriate for ground conditions. Potential for contamination within Made Ground where new buried water supply pipes will be laid. *Chemical assessment of soils required to assess risk.*
	Root uptake	Plants and vegetation	Minor	Likely	Low	Potential for shallow soils to be impacted with contaminants. It is considered likely that a suitable growth medium will be required for new areas of soft landscaping to mitigate risks to receptors. *Chemical analysis and assessment of shallow soils required to assess risk.*
	Vertical and lateral migration, pathways created during construction activities	Shallow Secondary Undifferentiated aquifer (*Till*)	Medium	Likely	Moderate	Potential for contaminants within the soil to leach to the underlying aquifer within superficial deposits. Cohesive horizons within Made Ground may mitigate migration of contaminants. *Analysis and assessment of soils and groundwater required to assess risk.*
		Principal aquifer (*Chester Formation*)	Medium	Likely	Moderate	Potential for contaminants within the soil to leach to the underlying aquifer within bedrock. Cohesive horizons within overlying anticipated cohesive superficial deposits will mitigate migration of contaminants.

Potential Source/Medium	Potential Exposure Route	Potential Receptor	Severity	Probability	Risk Rating	Comments
		Local surface water bodies (*Rochdale Canal, Shooter's Brook, Medlock River*)	Mild	Low likelihood	Low	Potential for shallow soils and perched water to be impacted with contaminants based on historical and current site use. However, the nearest surface water body is located c.185m to the southeast of the Site. Cohesive horizons within Made Ground and superficial deposits may mitigate migration of contaminants. River Medlock and Shooter's Brook are culverted at their closest points to the Site. *Analysis and assessment of soils and groundwater required to assess risk.*
Organic / inorganic contaminants within shallow groundwater aquifers (*Till – Secondary Undifferentiated aquifer*)	Direct contact and ingestion of contaminated groundwater	Future site users	Medium	Unlikely	Low	Formal soft landscaping and hardstanding are proposed across the Site which will limit the exposure to future site users. Construction workers may come into contact with shallow water during excavation works; however, contact between future site users/off-site residents and shallow aquifer considered unlikely. *Assessment of groundwater profile and contamination is required to assess risk.*
		Construction workers	Medium	Low likelihood	Moderate/low	
		Off-site residents	Medium	Unlikely	Low	
	Inhalation of vapours	Future site users	Medium	Low likelihood	Moderate/low	Potential for elevated hydrocarbon concentrations in shallow groundwater from historical site uses. *Assessment of groundwater profile and contamination is required to assess risk.*
	Lateral migration	Local surface water bodies (*Rochdale Canal, Shooter's Brook, Medlock River)*	Medium	Low likelihood	Moderate/low	Potential for shallow water to be impacted with contaminants based on historical and current site use. The nearest surface water is c.185m to the southeast. Cohesive horizons within Made Ground and superficial deposits may mitigate migration of contaminants. River Medlock and Shooter's Brook are culverted at their closest points to the Site. *Analysis and assessment of soils and groundwater required to assess risk.*
	Vertical migration, pathways created during construction activities	Principal aquifer (*Chester Formation*)	Medium	Low likelihood	Moderate/low	Potential for contaminants within the shallow groundwater to migrate to underlying bedrock aquifer. Considered likely that anticipated cohesive horizons of superficial deposits will limit potential for vertical migration of potential contaminants to bedrock aquifer in these areas. *Assessment of groundwater profile and contamination is required to assess risk.*
	Direct contact with underground services	Buildings and structures	Mild	Likely	Moderate/low	Buried concrete to be designed as appropriate for ground conditions. *Assessment of groundwater profile and contamination is required to assess risk.*

7. Geotechnical Preliminary Risk Assessment

Based on the desk study review of the ground model for the Proposed Development of the Site, the potential geotechnical risks are outlined in Table 8.

Table 8. Preliminary Geotechnical Risk Assessment

Geotechnical Hazard	Consequence and Impacted Parties	Risk Rating	Description
Third party infrastructure – Buried services, electricity substation and existing transport network	Access restrictions for ground investigation, damage to third party infrastructure.	High	A utilities search has not been undertaken as part of this desktop review. Service plans should be obtained and investigation is required to confirm the presence / absence of any buried services. The Site is immediately adjacent to multiple types of active public transport and highways. Road closure, pedestrian routes and agreement with service providers likely to be required.
Unexploded Ordnance	Damage to infrastructure, utilities and loss of life.	Moderate/Low	The Detailed UXO Risk Assessment for the Site concluded a low UXO risk, with UXO awareness for site operatives and an emergency response plan required to be in place prior to intrusive investigations.
Historical and existing buildings and structures, retaining walls, voids	Access restrictions for ground investigation, and below ground obstructions including existing and historical foundations and retaining structures.	Moderate	Existing and historical structures and foundations including the current structure along with its foundations. If still present, obstructions may affect activities such as piling, excavations and earthworks as well as the design and construction for the proposed structures. Hard material could potentially be processed and reused as engineered fill. In addition, the existing and historical structures and foundations provide a constraint for ground investigation. Depending on the findings and Proposed Development plans with respect to formation levels, further analysis/assessment may be required.
Variable thickness of Made Ground	Damage to proposed structures through settlement, insufficient bearing capacity, potential for differential settlement	Moderate	Various construction and demolition of buildings have historically taken place within the Site, including infilling of clay pit and canal, and there is therefore the potential for a variable thickness of Made Ground that will need to be considered in terms of foundation and pavement design as well as compression / heave associated with the cohesive deposits. Potential for variable thickness and composition of Made Ground that will need to be considered. Investigation required to obtain geotechnical data on underlying ground conditions to determine geotechnical design parameters for proposed structures, pavements, car parks and roads.
Aggressive ground conditions	Structural damage to foundations	Moderate	Investigation recommended to obtain soil and groundwater samples for sulphate and pH analysis, to allow concrete design assessment to be undertaken.
Unknown ground and groundwater conditions	Damage to infrastructure, unsafe or uneconomic design, reduced bearing capacity of shallow foundations / piled foundations.	Moderate	The thickness and variability of the ground and groundwater conditions is unknown. Investigation of shallow and deep soils and groundwater level required to obtain information for geotechnical design.
Shallow groundwater	Dewatering possibly required during construction if encountering a shallow water table.	Moderate/Low	Investigation of shallow groundwater conditions required to confirm groundwater profile.

Geotechnical Hazard	Consequence and Impacted Parties	Risk Rating	Description
Legacy Coal Mining Workings	Potential for historical coal mining workings, damage to structures through settlement, insufficient bearing capacity, collapse of workings, causing settlement. Collapse of workings, damage to human health and/or building from mine gas.	Low	Consultant's coal report concluded a low risk to the Site from historical coal mining, and the Groundsure Enviro + Geo Insight report did not contain records relating to non-coal mining activities. A single record of a sinkhole (a natural dissolution feature) was recorded c.355m northwest of the Site.
Archaeological Artefacts	Potential for artefacts of archaeological significance due to historical land use within the Site.	Moderate	Civic Heritage have undertaken an archaeological desk-based assessment under a separate cover[14], which recommended that an archaeological watching brief is implemented during intrusive ground investigations over the Site of the clay pits and the infirmary.

[14] Civic Heritage (2026) Piccadilly Gardens, Manchester. Archaeological Desk-based Assessment. Reference 61438-CIV-XX-XX-R-G-3000 Rev00. Dated 15 July 2026.

8. Conclusions and Recommendations

8.1. Conclusions

This Phase 1 Desk Study Report has been produced to evaluate the potential risks to human health and the environment, and to identify potential geotechnical constraints associated with the Proposed Development.

The preliminary qualitative risk assessment indicates there is a moderate risk to identified receptors from potential contaminants associated with the current and former uses of the Site and surrounding area and potential Made Ground associated with the former development of the Site. Of note, historical industries identified at the Site include clay pits, canal, fire engine house and infirmary. In addition, the assessment has identified a number of potential geotechnical constraints associated with the potential for below ground obstructions, variable thickness of Made Ground, aggressive ground conditions, on site traffic infrastructure and existing buried services beneath the Site.

The Detailed UXO Risk Assessment for the Site boundary concluded that there was a low risk to the Site, however UXO awareness for site operatives and an emergency response plan are recommended prior to intrusive ground investigation.

It is understood that Civic Heritage have undertaken an archaeological desk-based assessment under a separate cover[14], which recommended that an archaeological watching brief is implemented during intrusive ground investigations over the Site of the clay pits and the infirmary.

8.2. Recommendations

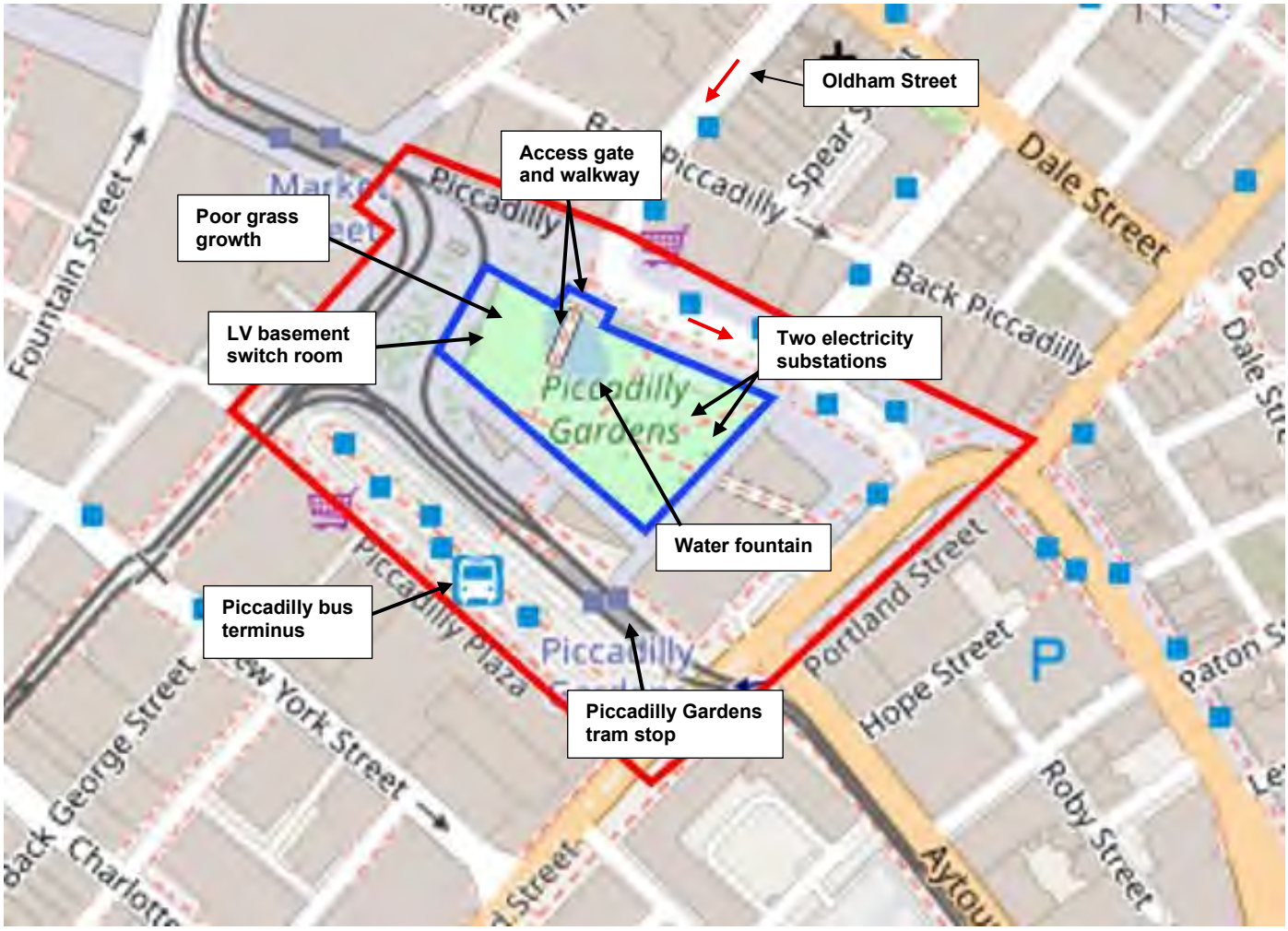
Based on the findings of this report, it is recommended that an intrusive ground investigation is undertaken to assess for the identified contaminants of concern, to evaluate the potential contaminant linkages through soil, leachate and groundwater sampling, and enable a remediation strategy to be developed, if required. This investigation should include laboratory analysis of soil and groundwater samples for the identified contaminants of concern and a ground gas monitoring programme to confirm the ground gas regime at the Site. In addition, the ground investigation can be used to obtain data to inform the geotechnical design of the project.

It is anticipated that an archaeological watching brief will be required during the intrusive ground investigation.

Appendix A – Site Walkover Record and Photographs

Project Name:			
Address:	Piccadilly Gardens, Manchester, M1 1AF	Job Number:	51334
Date:	30/04/2026	Engineer:	HM
Weather:	Sunny, warm, slight breeze		

Site Layout Plan



Site Access

Pedestrian Access	Piccadilly Gardens can be accessed from the surrounding streets and is heavily pedestrianised, allowing easy movement throughout the site. The hoarded area is accessed via a padlocked gate on the north side of the fencing, opposite Oldham Street.
Vehicular Access	Vehicular access to Piccadilly Gardens is via Oldham Street (travelling south), which becomes Piccadilly.
Parking Arrangements	There is very limited formal parking in the area, and pedestrian bollards restrict vehicle access into the hoarded area. A dedicated parking permit / permission would be required along Piccadilly, or within the pedestrianised area to the north of the hoarding.

Restrictions	The area is heavily pedestrianised and is likely to be busy throughout the day. It is also a known hub for anti-social behaviour. One-way systems around central Manchester limit vehicular approaches, and there is limited formal parking nearby.
Access for Site Investigation (Drilling Rigs, Excavators etc.)	Access for site investigation plant (e.g., drilling rigs and excavators) would be subject to the same access restrictions at the site entrance, including pedestrian volumes and limited vehicle ingress.
Surface Covering	
Type of Cover	Within the hoarded area, the surface cover comprises a mix of hardstanding and soft landscaping. The area includes a concrete water feature and an elevated footway formed into raised ground, surrounded by areas of grass and exposed ground. The wider Piccadilly Gardens comprises a concrete pavilion and tarmacked roads bounding the site.
Quality of Cover	Grass cover within the hoarded area is of poor quality, with significant localised removal and patchy growth, resulting in exposed topsoil with intermittent grass coverage.
Evidence of Existing Boreholes	None observed.
Topography	
Flat / Sloping / Stepped etc.	An elevated access walkway is present on entry to the hoarded area, sloping gradually from northeast to southwest. The hoarded area is otherwise generally level. Piccadilly Gardens is broadly flat, having been levelled when the former sunken garden was removed.
Evidence of Subsistence	None observed.
Significant Slopes	None observed.
Local Depressions	None observed.
Vegetation	
Trees (Type & Estimated Height)	Trees were observed along the northeastern and western boundaries of the hoarded area. Trees on the northeastern boundary are small and located within large planters, whereas trees on the western boundary are planted in-ground within tree pits fitted with drainage grilles.
Other Vegetation	Short, managed grass cover is present across the eastern portion of the hoarded area.
Japanese Knotweed	None observed.
Giant Hogweed	None observed.
Himalayan Balsam	None observed.
Signs of Stressed Vegetation / Poor Growth / Disease	Localised areas of grass removal were noted, exposing topsoil, particularly across the western portion of the hoarded area.

Services	
Location and Details of Manhole Covers, Wells, Marker Pegs	A drainage grate and underground chamber associated with the LV basement switch room are located in the western part of the hoarded area. Multiple water and electricity manhole covers present within the hoarded area, likely associated with the water fountain feature which occupies much of the area.
Utility Scar Features	An LV basement switch room present below ground level, with a metal ventilation grille at the surface level.
Overhead Services	None observed.
Water Supply	Water manhole covers were observed around the perimeter of the water fountain feature.
Buildings and Structures	
Number, Height, Construction Material, Roof Construction Material	No buildings are located within the hoarded area. Within the wider surrounding area, Piccadilly Gardens tram stop is situated to the southeast of the hoarded area. The area to the south and east comprises numerous cafes and restaurants, indicating a predominantly commercial and leisure-related land use within the immediate vicinity.
Current Uses	Piccadilly Gardens tram stop, cafes and restaurants within the wider area of the site.
Evidence of Subsistence / Cracking / Water Damage	No evidence observed.
Presence of Potential Asbestos Containing Material (ACM)	None observed.
Existing Foundations	None observed.
Existing Basements / Cellars	None observed.
Surface Water and Groundwater	
Evidence of Flooding	No evidence noted.
Evidence of High Water Table	No evidence noted.
Rivers, Springs, Wells, Ponds, Ditches, Streams (incl. Flow Direction and Size)	None observed.
Potential Sources of Contamination	
Fly Tipped Material	Minor littering was observed across the site, with litter particularly accumulating around the water feature.
Evidence of Filled Ground	Trenching associated with ongoing works within the red site boundary has exposed made ground layers at the site. The presence of the LV basement

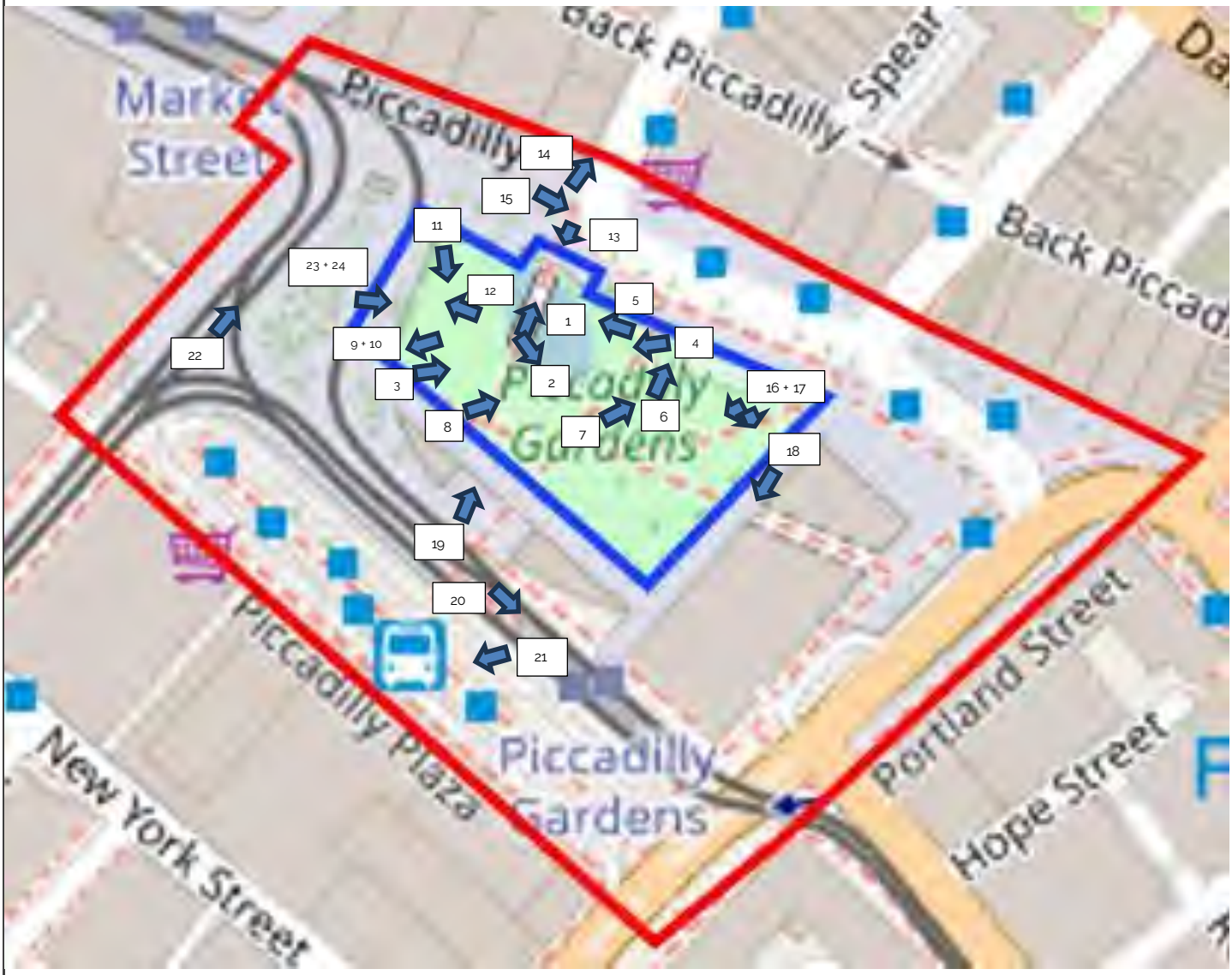
	switch room below ground level further evidences that site comprises artificially placed land.
Evidence of Tanks (USTs, ASTs, Interceptors, Pipework) incl. Fuel Spillages	No evidence noted.
Stored Substances	No evidence noted.
Electricity Substations	Two electricity substations are located to the west of the hoarded area.
Other Identified Potential Sources	There is potential for localised soil contamination associated with substance misuse activity within the site.
Surrounding Land Use	
Residential / Commercial / Industrial incl. Type of Industry / Commercial Activity	Piccadilly Gardens is a prominent and highly active location within Manchester, functioning as a key transport hub for the city. The area is served by tram lines running between Market Street and Piccadilly Gardens along the western and southern portions of the wider site boundary. There is also heavy commercial activity with restaurants, cafes and shops, contributing to the significant pedestrianisation.
Railways / Viaducts / Bridges	None observed.
Tunnels	None observed.
Other Identified Pertinent Uses	None observed.
Anecdotal Information	
Tenants / Landowners / Client	-
Neighbours / Locals	-
Other Comments	
Trenching was ongoing during the walkover within the wider red line site boundary, exposing layers of infilled and Made Ground layers beneath the existing ground level. Food market stalls were observed immediately to the north-west of the hoarded area.	

CIVIC

Site Walkover Record

Project Name:			
Address:	Piccadilly Gardens, Manchester, M1 1AF	Job Number:	51334
Date:	30/04/2026	Engineer:	HM
Weather:	Sunny, warm, slight breeze		

Photo Location Plan



Site Photos



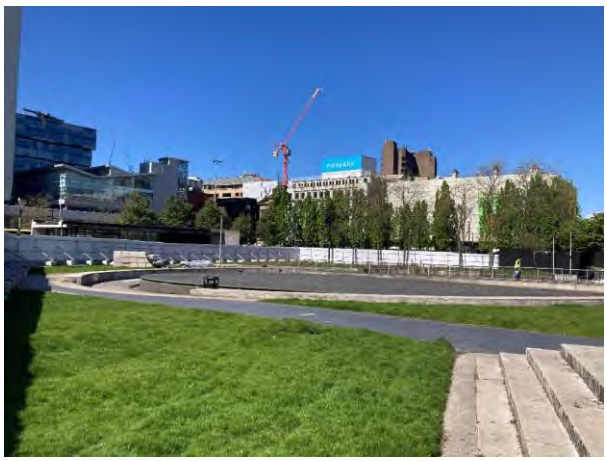
1. Site access point and walkway, facing north.



2. View showing the risen walkway above the water fountain feature, facing southeast.



3. General view of the hoarded area, facing northeast.



4. General view of the hoarded area, facing southwest.



5. Tree planters along the northeastern boundary of the hoarded area, facing northwest.



6. Queen Victoria statue in the northeastern corner of the hoarded area, facing north.

Site Photos



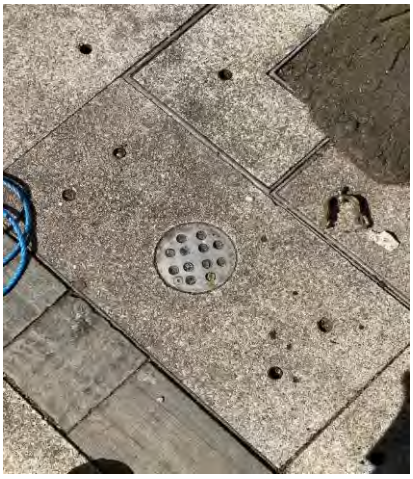
7. Manhole cover in the northeast corner of the hoarded area, facing northeast.



8. General view of hoarded area, facing northeast.



9. Manhole cover in the southwest part of the hoarded area, facing southwest.



10. One of several drainage grates underneath the trees along the western Site boundary.



11. The western section of the hoarded area with poor grass growth and exposed topsoil, facing southeast.



12. LV basement switch room underneath the Site, facing west.

Site Photos	
	
13. Pedestrian access to the Site through the padlocked gate, facing south.	14. View showing the one-way road system moving south along Oldham Street, facing north.
	
15. View showing the junction of Oldham Street and Picadilly to the north of the hoarded area, facing east.	16. An electrical substation to the east of the hoarded area, facing southeast.
	
17. A second electrical substation adjacent to the substation shown in Photo 16, facing southwest.	18. Row of commercial buildings in the western portion of Piccadilly Gardens, facing southeast.

Site Photos



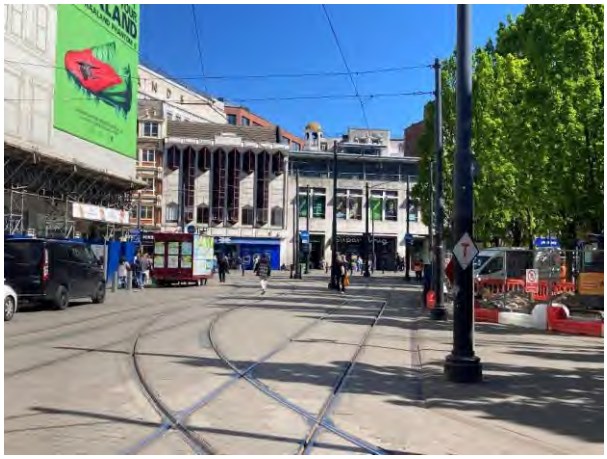
19. General view of Piccadilly Gardens, facing north.



20. View showing Piccadilly Gardens tram stop, facing southeast.



21. View showing Piccadilly Gardens bus terminus, facing southeast.



22. View of tram lines running north along the western boundary of the hoarded area, facing northeast.

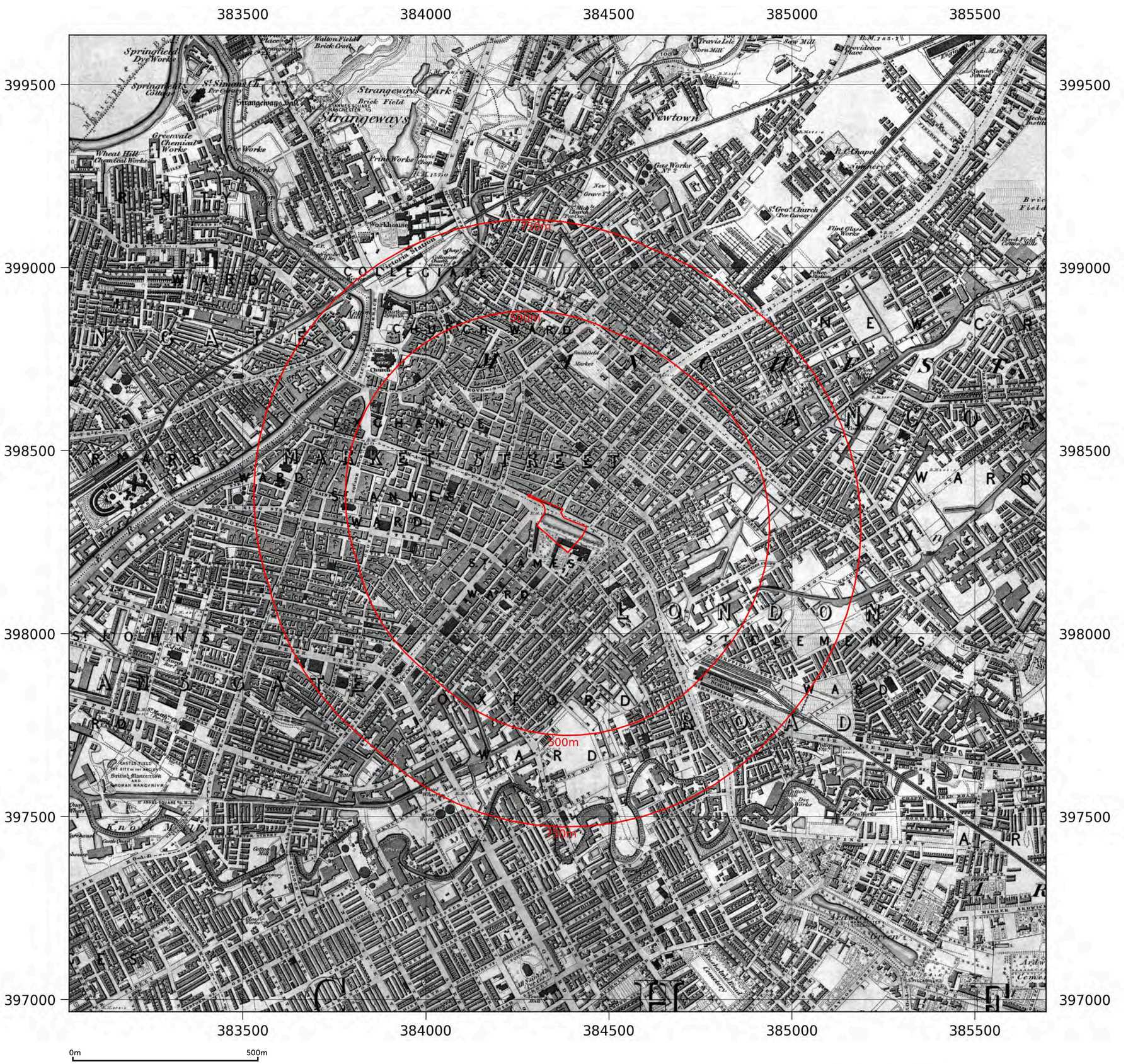


23. View of ongoing trenching which exposes the made ground layers of Piccadilly Gardens, facing east.



24. View of the exposed material, facing east.

Appendix B – Historical Mapping



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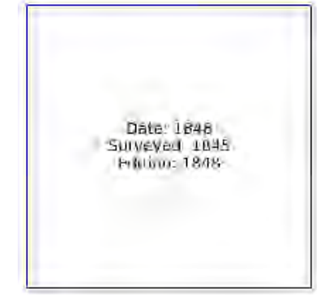
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Map Insight

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Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

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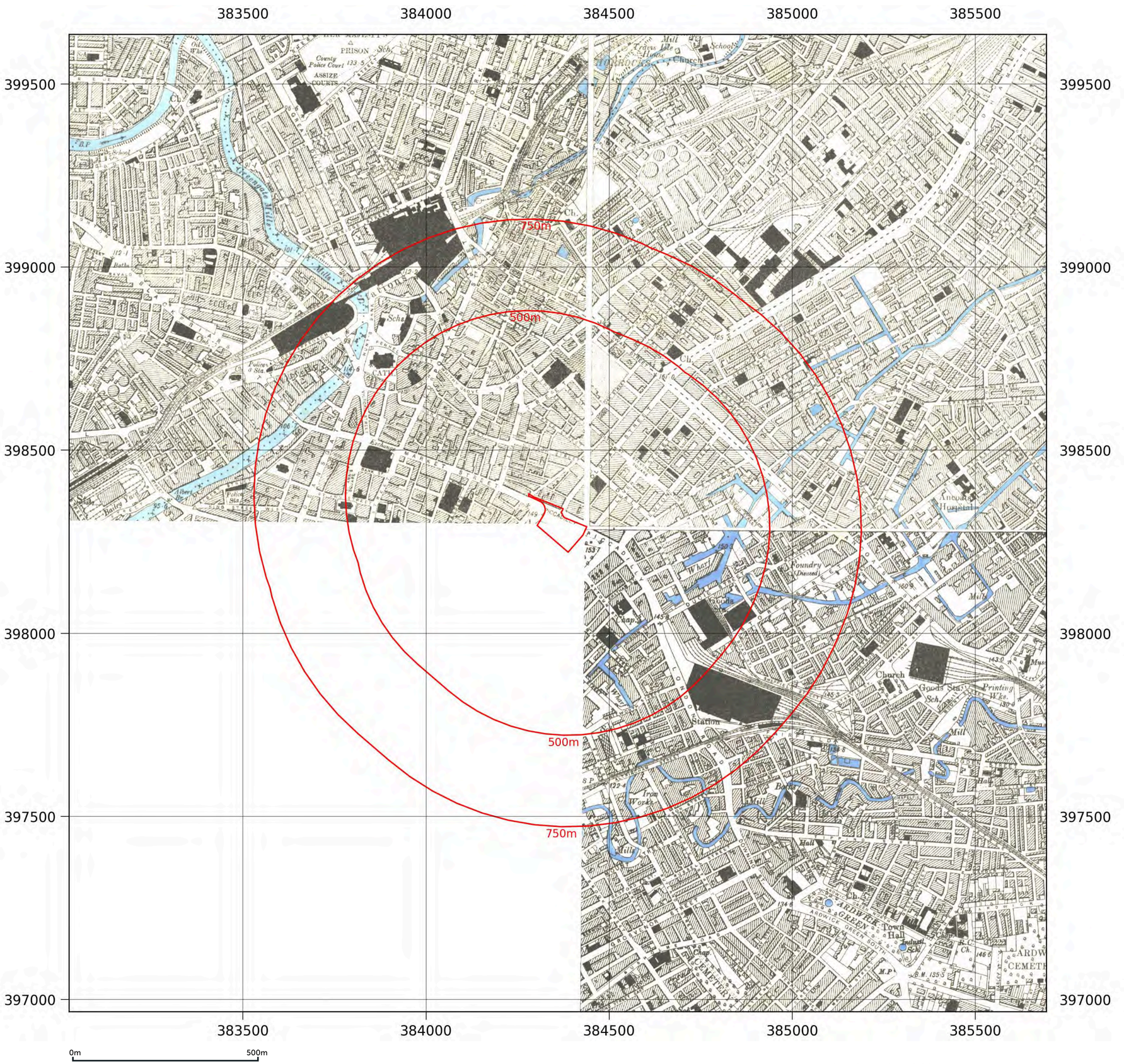
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	County Series
Map date:	1890-1894
Scale:	1:10,560
Printed at:	1:10,560

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Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	County Series
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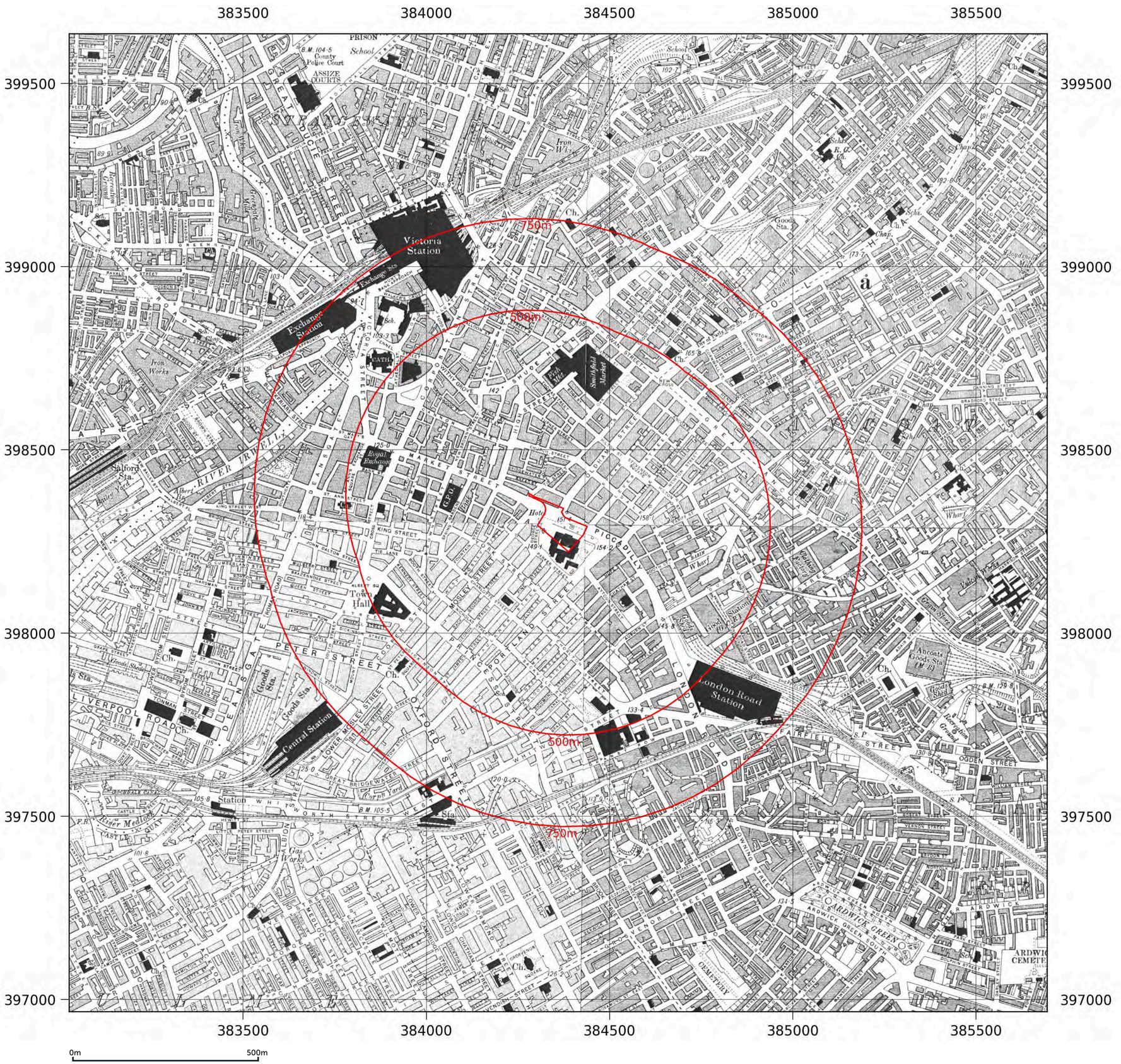
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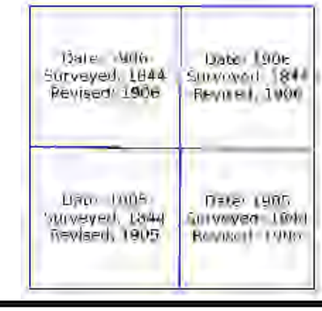
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Map Insight

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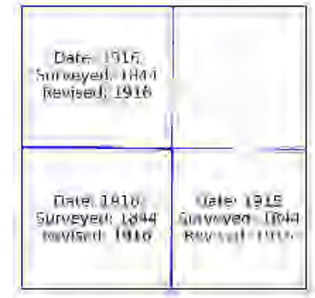
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Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	County Series
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750m
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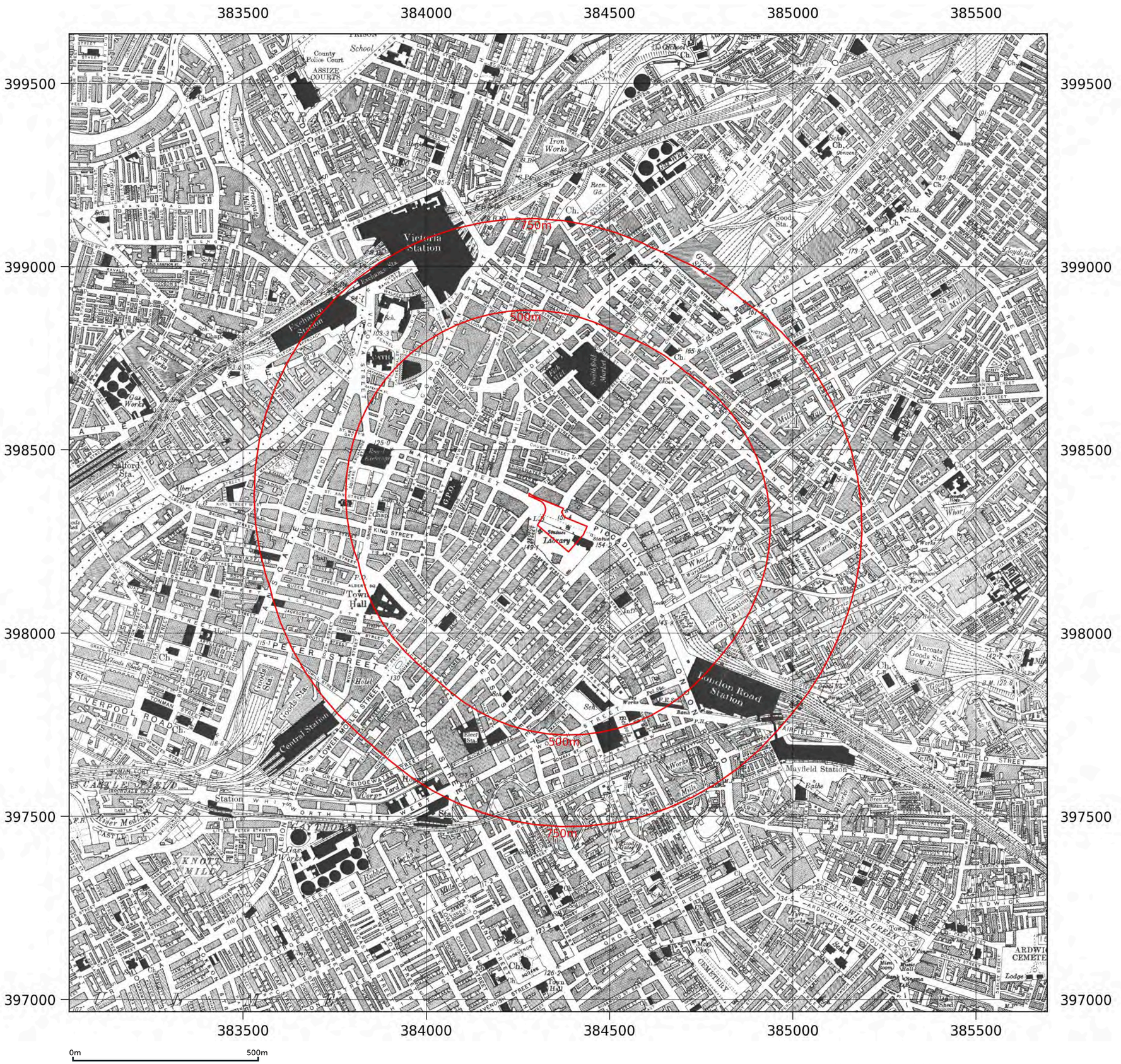
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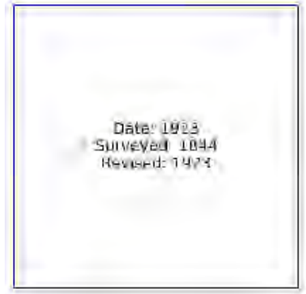
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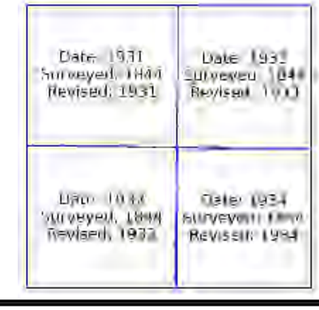
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Grid ref:	384366.01, 398291.58
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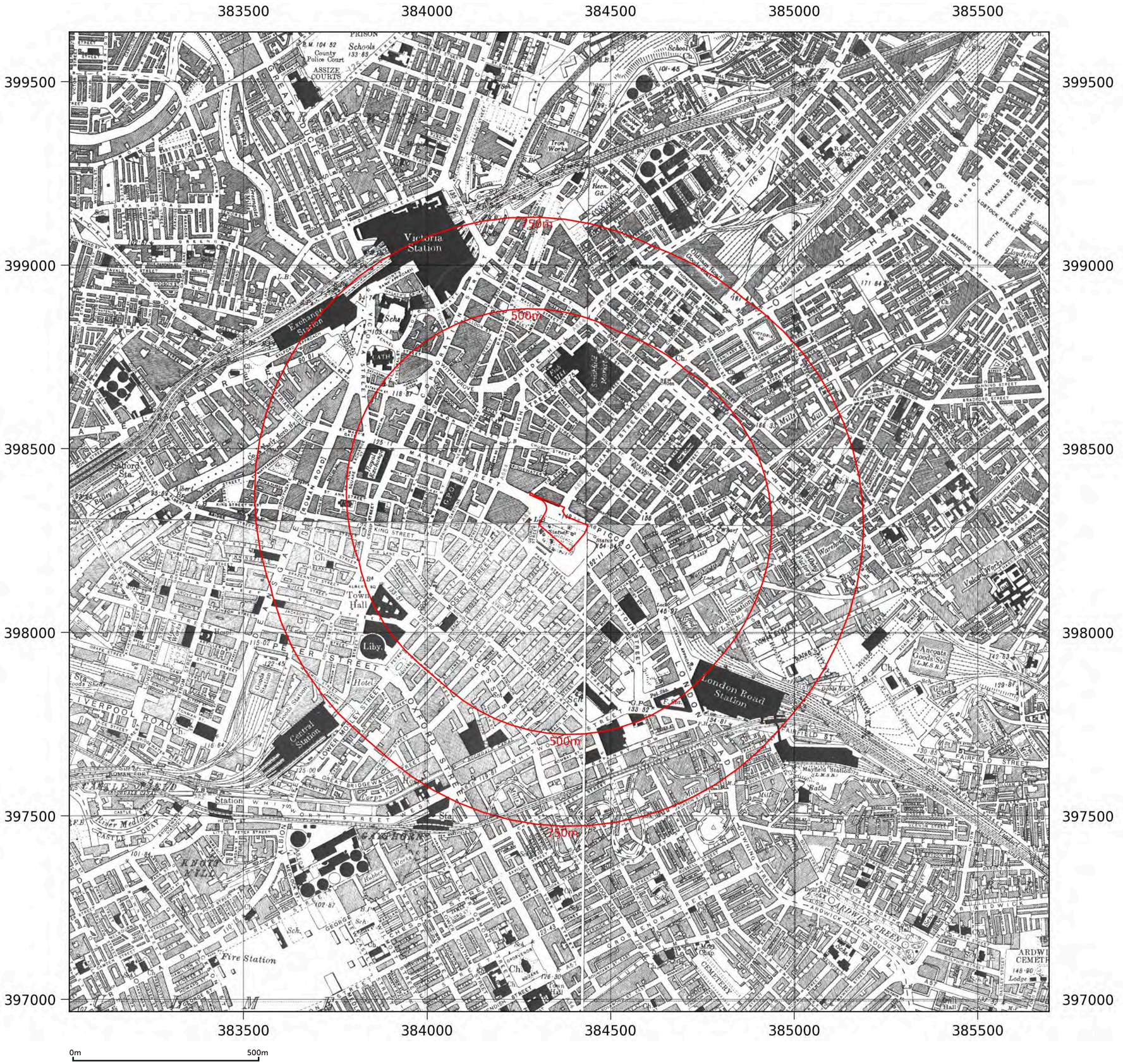
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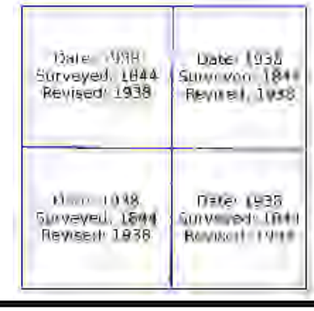
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Production date:	21 May 2026

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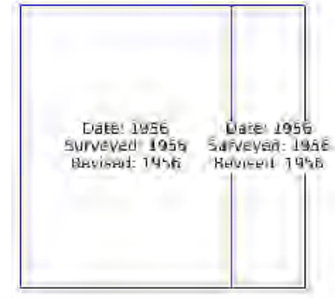
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Client ref:	51334 Piccadilly Gardens, Manchester
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STRANGEWAYS NEWTOWN ANCOATS KNOTT MILL GAYTHORN E FIELD

Victoria Station Exchange Station Oldham Road Goods Station London Road Station Central Station MARKET

750m 500m 500m 750m

0m 500m

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Grid ref:	384366.01, 398291.58
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Map name:	National Grid
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750m 500m 500m 750m

CITY CENTRE BRUNSWICK

Victoria Station Piccadilly Station Exchange Station (Disused) Goods Station

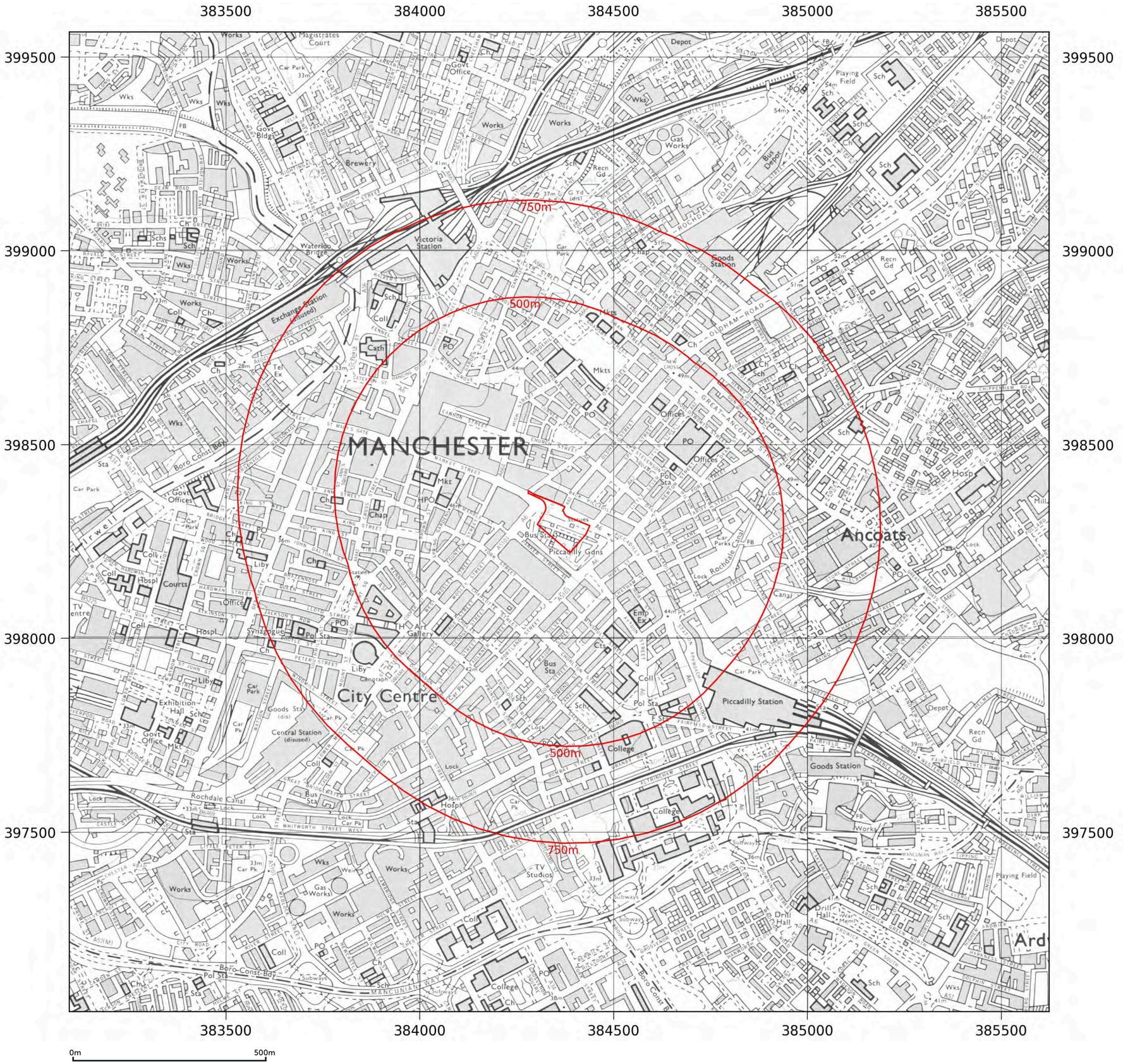
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Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
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Map name:	National Grid
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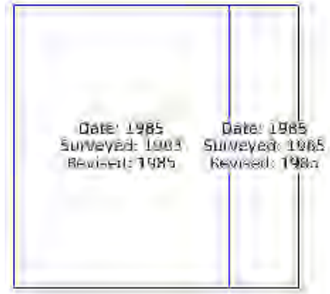
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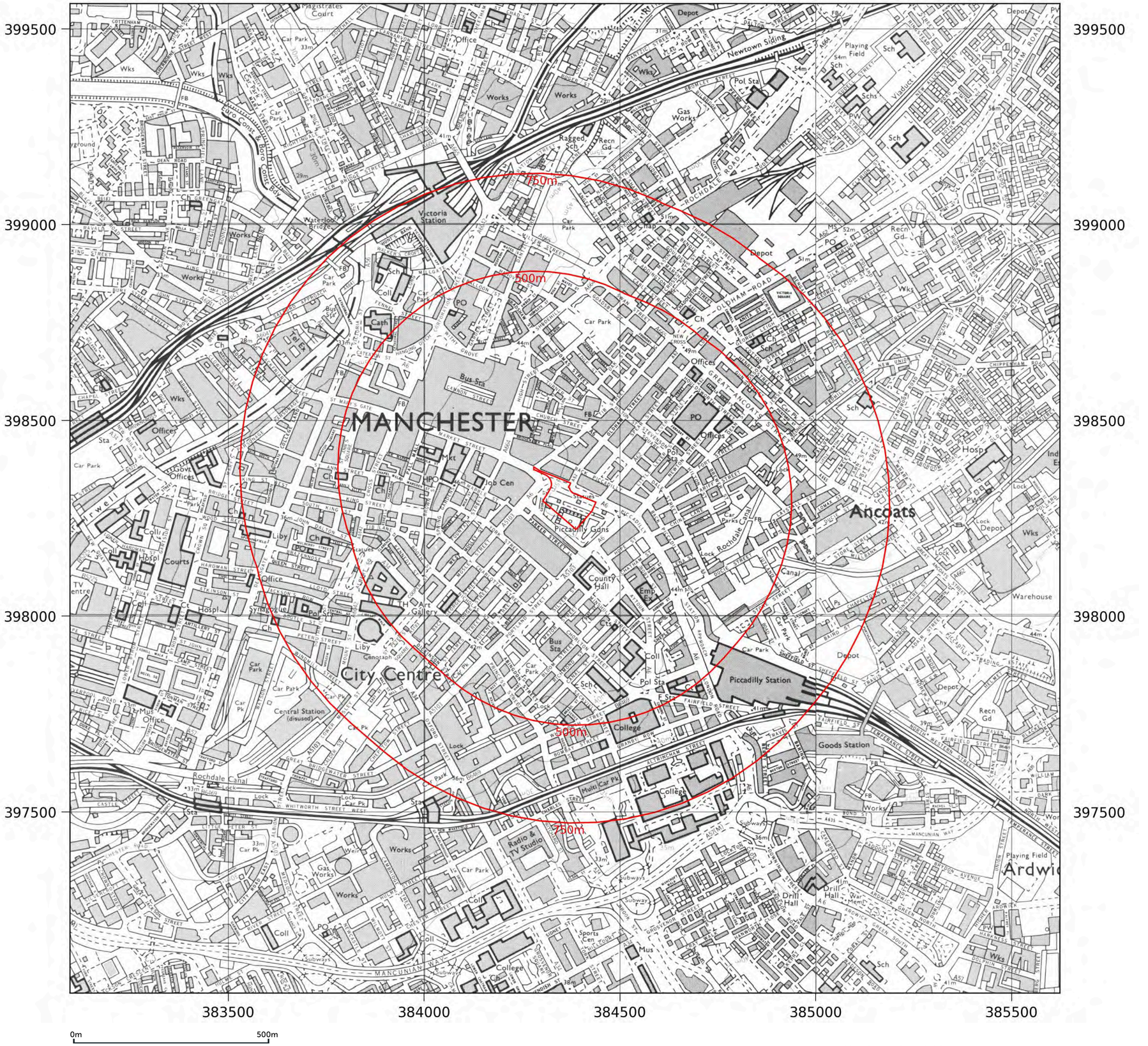
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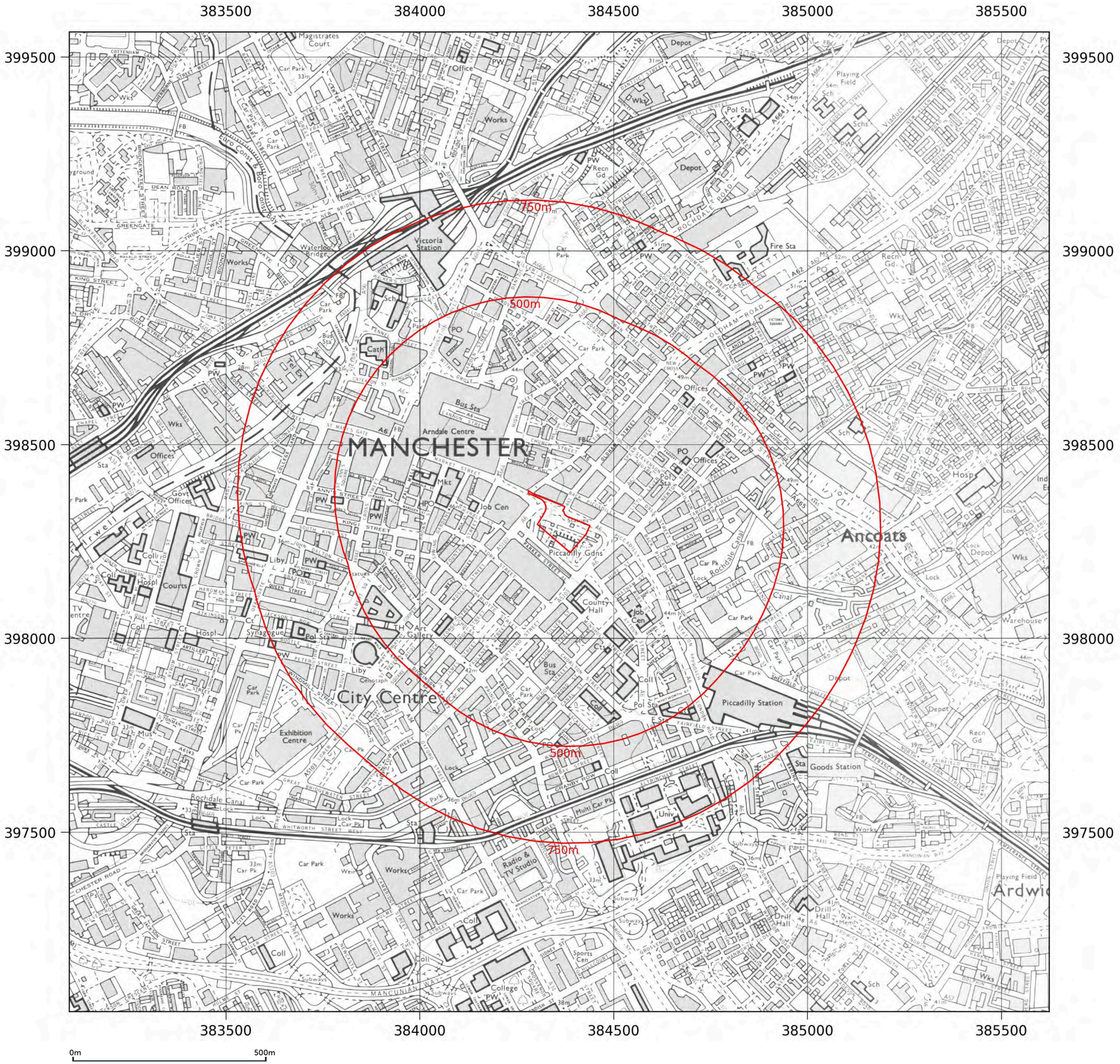
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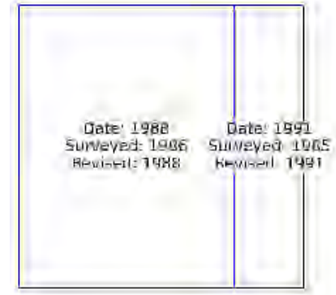
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Map Insight

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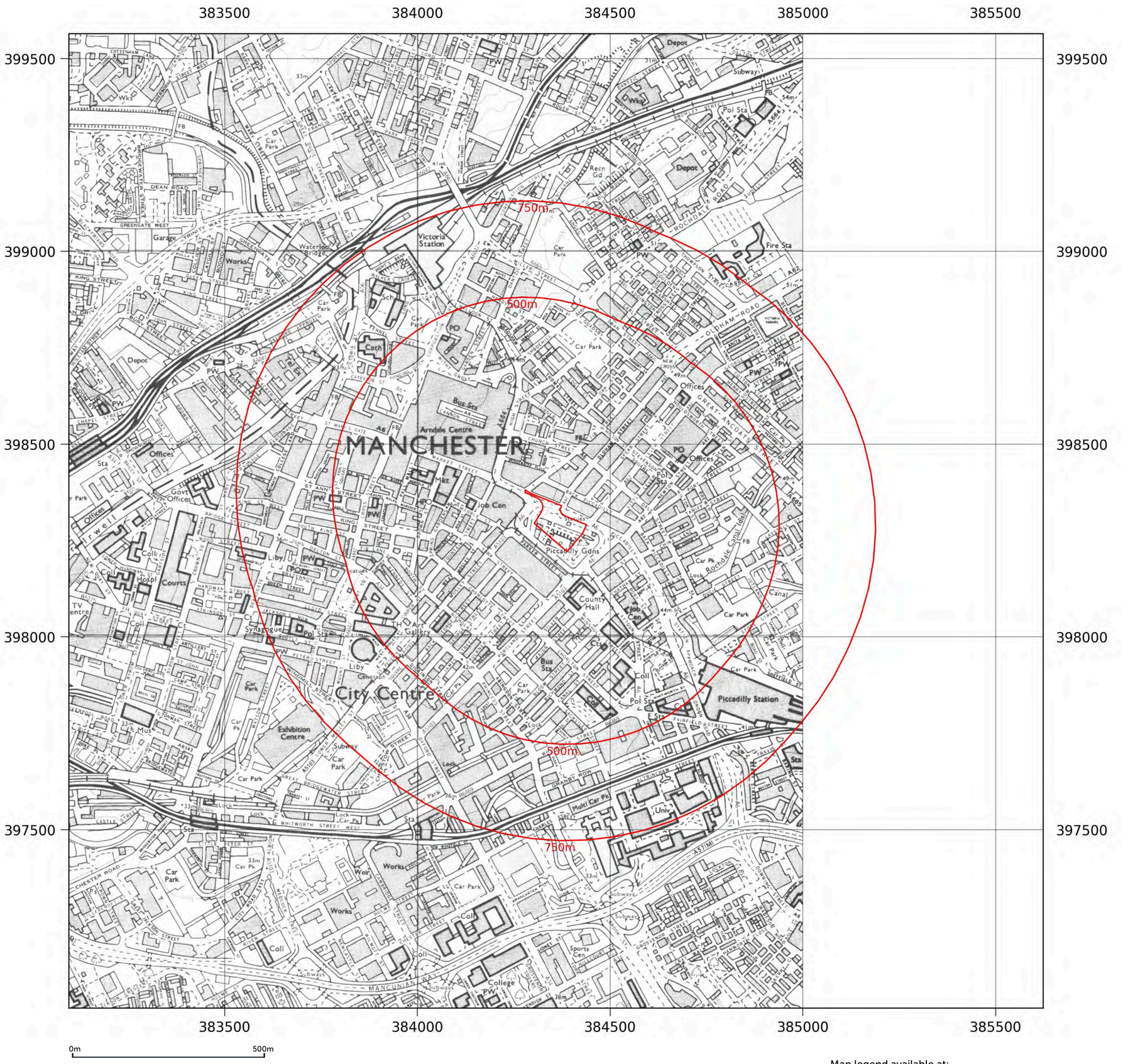
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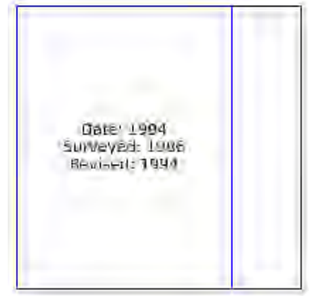
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Map Insight

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Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1994
Scale:	1:10,000
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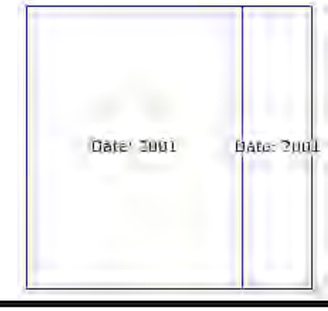
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Map Insight

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Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	2001
Scale:	1:10,000
Printed at:	1:10,000

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MANCHESTER
Shopping Centre
Arena
Victoria Station
Piccadilly Station
Piccadilly Gdns Bus Sta
Ancoats
City Centre
GMex
Medlock Bridge
Bridgewater Hall
The British Council
New Broadcasting House
University
Student Village
Sports Centre
Gartside Gardens
Poland Street Industrial Estate
Hoyle Street Industrial Estate
Central Retail Park
Ardwick
Ardwick Green Park
Industrial Park
Butler Street Bridge
Corn Exchange
Courts
Warehouses
Offices
Car Park
Depot
Brewery
Factory
Metrolink
Rochdale Canal
Ashton Canal
HM Prison
Industrial Area
Coll
Liby
Mus
Univ
Sch
Hospl
Pol Sta
Fire Sta
Tram Sta
Coach Sta
Cath
HPO
TH
Art Gallery
Television Centre
Recn Gd
Sports Ground
TA Centre
Tel Ex
Ind Est
Works
Subways
750m
500m
250m

0m 500m

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Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	2010
Scale:	1:10,000
Printed at:	1:10,000

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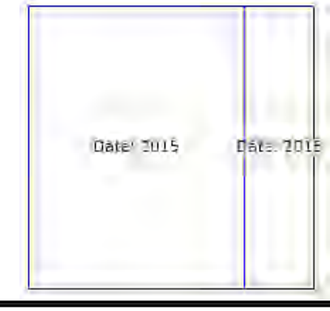
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	2015
Scale:	1:10,000
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383500 384000 384500 385000 385500

399500 399000 398500 398000 397500

750m
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750m

MANCHESTER
Victoria Station
Arena
Victoria Bridge
Arndale Shopping Centre
Cathedral
Piccadilly
Piccadilly Station
Ancoats
City Centre
Manchester Central
Bridgewater Hall
Medlock Bridge
Hulme
Ardwick
Cambridge Industrial Area
Scotland Bridge
Metrolink
Depot
Recn Gd
School
Pol Sta
Car Park
Industrial Estate
Central Retail Park
Bus Sta
Coach Sta
Art Gallery
Campus
University
New Broadcasting House
Sports Centre
Gartside Gardens
Ardwick Green Park
Enterprise Park
Ind Est
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TA Centre
Warehouses
Courts
Hotel
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TA Centre
Sports Ground
Butler Street Bridge
Metrolink Sta
Piccadilly Sta
Victoria Sta
Scotland Bridge
Albert Memi
Television Centre
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Enterprise Park
Sports Ground
Ardwick Green North
Ardwick Green South
Higher Ardwick
Great Ancoats Street
Oldham Road
Rochdale Canalway
Ashton Canal
Mancunian Way
Deansgate
Whitworth Street West
Great Bridgewater Street
Chester Road
Princess Street
Oxford Street
Portland Street
Fairfield Street
Store Street
Ashton Old Road
Hyde Road
Ancoats Dispensary
Ancoats Hospital
Ancoats Urban Village
Ancoats Conservation Area
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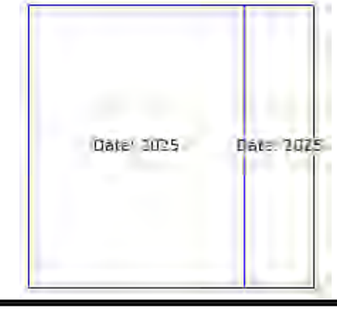
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	2025
Scale:	1:10,000
Printed at:	1:10,000

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383500 384000 384500 385000 385500

399500 399000 398500 398000 397500

MANCHESTER
Manchester Victoria
Exchange Square
Shudehill
Bus Station
Coach Station
Piccadilly Gardens
Market Street
Ancoats
New Islington
Salford Central
Deansgate-Castlefield
Deansgate
Manchester Oxford Road
Manchester Piccadilly
St Peter's Square
City Centre
Sports/Leisure Centre
Fire Station
Education Facility
Museum
Library
Art Gallery
Coach Station
PO
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750m
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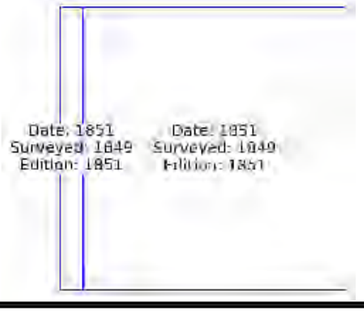
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Map Insight

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Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	1056 Scale Town Plans
Map date:	1851
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Printed at:	1:1,056

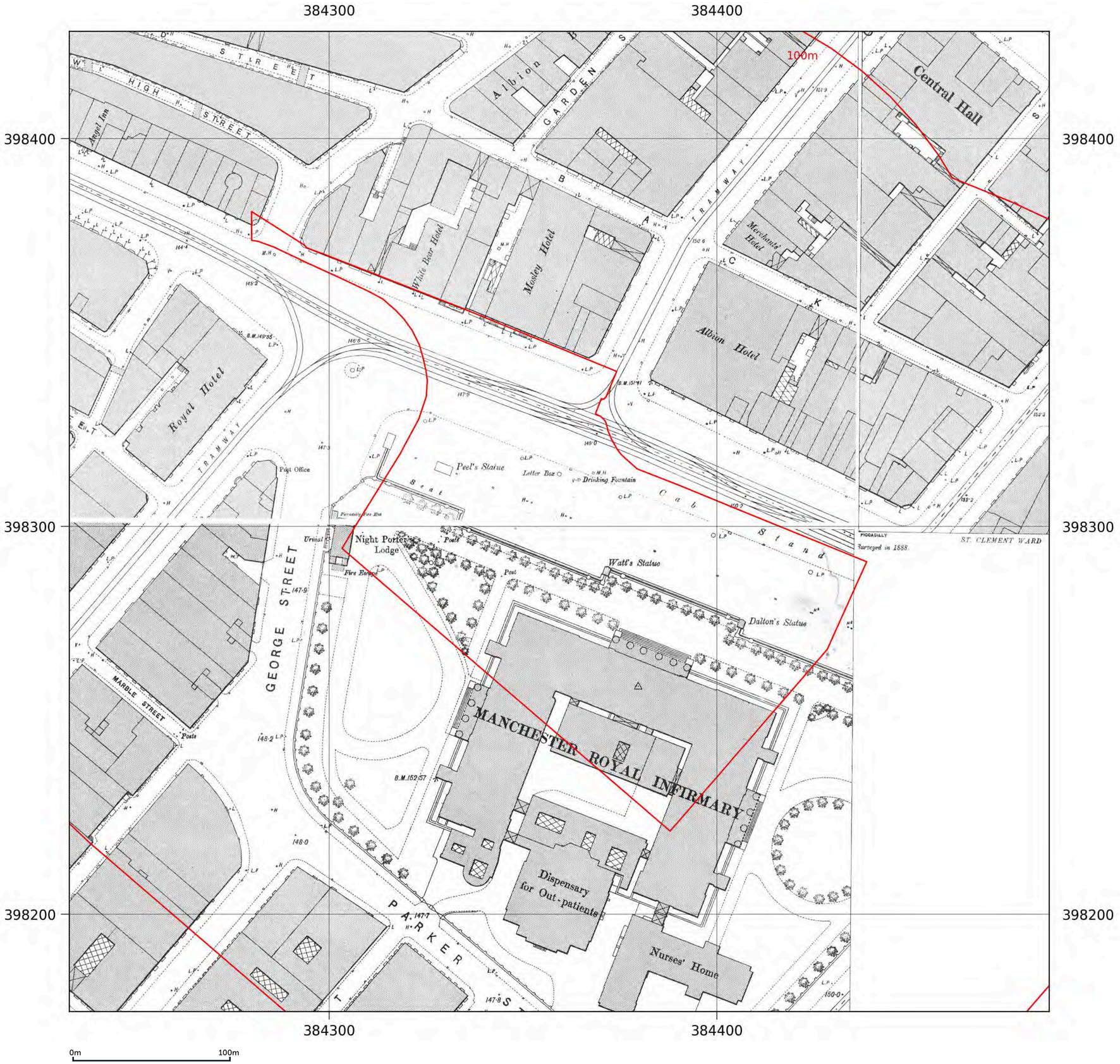
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Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	500 Scale Town Plans
Map date:	1891
Scale:	1:500
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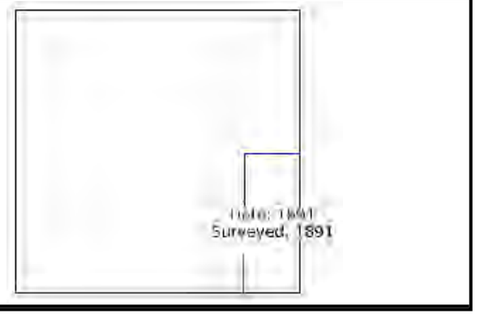
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	500 Scale Town Plans
Map date:	1891
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Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	County Series
Map date:	1889-1893
Scale:	1:2,500
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384100 384200 384300 384400 384500 384600

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250m

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Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	County Series
Map date:	1908
Scale:	1:2,500
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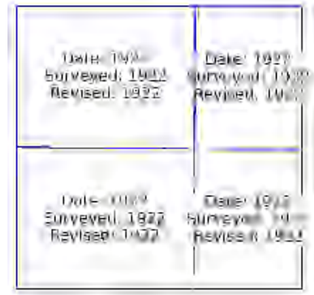
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	County Series
Map date:	1922
Scale:	1:2,500
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Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

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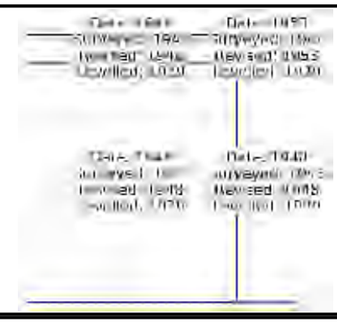
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1948-1953
Scale:	1:1,250
Printed at:	1:2,000

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Warehouse
Rylands Building
Sevendale House
Central Hall
Queen's Hotel
Grand Hotel
Telephone Exchange
Hostel (National Service Hostels Corporation Ltd)
York House
St James Garage
Omnibus Station
Piccadilly Gardens
Bank
Printing Works

0m 100m

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Map legend available at:
knowledge.groundsure.com/hubfs/groundsure_legend.pdf

Groundsure
LOCATION INTELLIGENCE

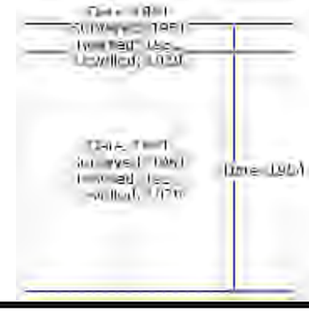
Ordnance Survey
Licensed Data

Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1951-1954
Scale:	1:1,250
Printed at:	1:2,000

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

384200 384300 384400 384500 384600

398500 398400 398300 398200 398100

250m
100m
100m

0m 100m

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Map legend available at:
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1951-1954
Scale:	1:1,250
Printed at:	1:2,000

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250m

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LOCATION INTELLIGENCE

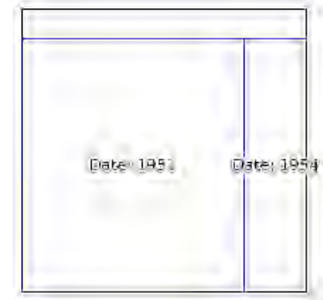
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1951-1954
Scale:	1:1,250
Printed at:	1:2,000

N W E S



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384200 384300 384400 384500 384600

398500 398400 398300 398200 398100

250m
100m
100m

0m 100m

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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1950-1954
Scale:	1:2,500
Printed at:	1:2,500

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384100 384200 384300 384400 384500 384600

398600 398500 398400 398300 398200 398100 398000

250m

100m

100m

0m 100m

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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1954-1955
Scale:	1:2,500
Printed at:	1:2,500

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384100 384200 384300 384400 384500 384600

398600 398500 398400 398300 398200 398100 398000

250m

105m

100m

0m 100m

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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1965
Scale:	1:2,500
Printed at:	1:2,500

N W E S



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01273 257 755

384100 384200 384300 384400 384500 384600

398600 398500 398400 398300 398200 398100 398000

250m

100m

100m

Rylands Building
Central Hall
Sevendale House
Warehouse
Bank
GENERAL POST OFFICE
Car Park
Cinema
Telephone Exchange
Grand Hotel
Queen's Hotel
Bradley House
Employment Exchange
Central Blood Bank (National Blood Transfusion Service)
Manchester City Art Gallery
Union Club
Atheneum
Danlee Buildings
York House
Omnibus Station
Government Offices (MOD)
Manchester City Police Courts
Solway House
Robv House
King George Service Club (YMCA)
Brunswick Hotel
Kenilworth Hotel
Kensington Hotel
Wholesale Market
Works
Shelter
Ruin
Public Library
Police Station
Post Office
Gents
Ladies
Lav
Basin
Lock
Canal
Tunnel
Aqueduct
Weir
Sluice
Culvert
Pond
Reservoir
Sewage Works
Refuse Tip
Quarry
Pit
Sand Pit
Gravel Pit
Chalk Pit
Clay Pit
Mine
Adit
Shaft
Level
Tramway
Railway
Railway Station
Railway Bridge
Railway Tunnel
Railway Viaduct
Railway Siding
Railway Turntable
Railway Crossing
Railway Embankment
Railway Cutting
Railway Level Crossing
Railway Footbridge
Railway Overbridge
Railway Underbridge
Railway Platform
Railway Signal
Railway Signal Box
Railway Signal Gantry
Railway Signal Post
Railway Signal Tower
Railway Signal Box
Railway Signal Gantry
Railway Signal Post
Railway Signal Tower

0m 100m

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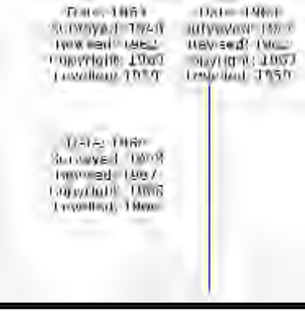
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1963-1968
Scale:	1:1,250
Printed at:	1:2,000

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01273 257 755

384200 384300 384400 384500 384600

398500 398400 398300 398200 398100

250m

100m

100m

0m 100m

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LOCATION INTELLIGENCE

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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1969-1970
Scale:	1:2,500
Printed at:	1:2,500

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01273 257 755

384100 384200 384300 384400 384500 384600

398600 398500 398400 398300 398200 398100 398000

250m
100m
100m

0m 100m

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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1969-1970
Scale:	1:2,500
Printed at:	1:2,500

N W E S



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01273 257 755

384100 384200 384300 384400 384500 384600

398600 398500 398400 398300 398200 398100 398000

250m

100m

100m

0m 100m

Map legend available at:
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Groundsure LOCATION INTELLIGENCE

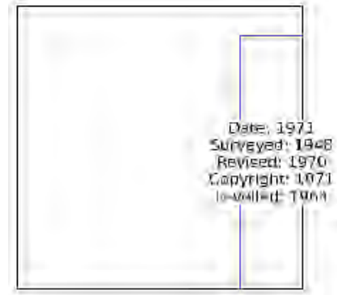
Ordnance Survey Licensed Data

Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1971
Scale:	1:1,250
Printed at:	1:2,000

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info@groundsure.com
01273 257 755

384200 384300 384400 384500 384600

398500 398400 398300 398200 398100

250m
100m
100m

Sevendale House
Queen's Hotel
Grand Hotel
Central Blood Bank (National Blood Transfusion Service)
Employment Exchange
Roby House
Stevenson Square
Piccadilly
Hilton St
Spear Street
Lever Street
Little Lever Street
Bunsen Street
Cavell Street
Back Piccadilly
Mangle St
Hope Street
Circus Street
Chatham Street
Gore Street
Roby Street
Aytoun Street
Bloom Street
Bank
P H
P Cs
Shelter
T C B
L B
B M 47·9m
47·2m
47·5m
B M 46·99m
46·0m
B M 44·82m
44·5m

0m 100m

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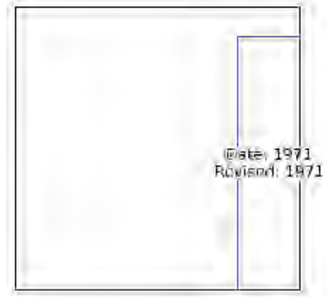
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1971
Scale:	1:1,250
Printed at:	1:2,000

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Groundsure
LOCATION INTELLIGENCE

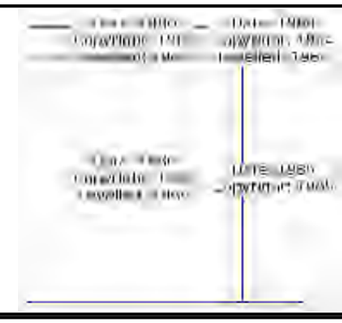
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Licensed Data

Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1980-1985
Scale:	1:1,250
Printed at:	1:2,000

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384200 384300 384400 384500 384600

398500 398400 398300 398200 398100

250m

100m

100m

0m 100m

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LOCATION INTELLIGENCE

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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1986-1990
Scale:	1:1,250
Printed at:	1:2,000

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01273 257 755

384200 384300 384400 384500 384600

398500 398400 398300 398200 398100

250m

100m

100m

CENTRAL WARD

Piccadilly Gardens

Bus Station

Central Hall

Chatsworth House

Portland Hotel

Grand Hotel

Britannia Hotel

County Hall

Information Bureau

Piccadilly Plaza

Telephone Exchange

Multistorey Car Park

Warehouse

Car Park

Job Centre

Library

York House

Faulkner House

Peel's Statue

Watt's Statue

Queen Victoria's Statue

Wellington's Statue

0m 100m

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Map legend available at:
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Groundsure LOCATION INTELLIGENCE

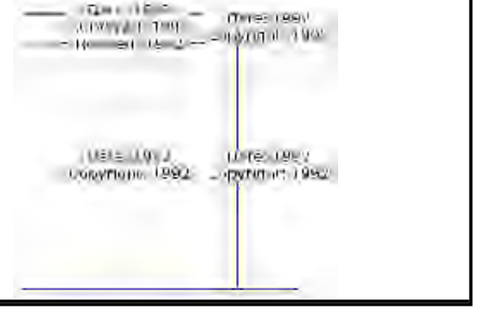
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1992
Scale:	1:1,250
Printed at:	1:2,000

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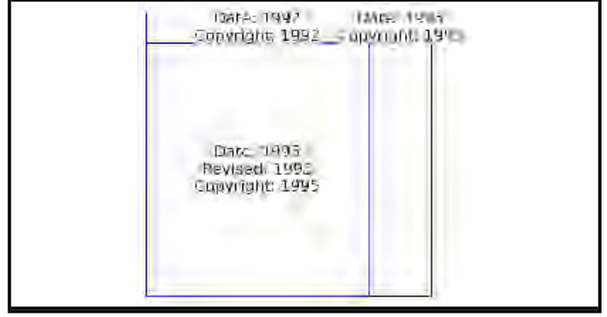
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1992-1995
Scale:	1:1,250
Printed at:	1:2,000

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01273 257 755

384200 384300 384400 384500 384600

398500 398400 398300 398200 398100

250m
100m
100m

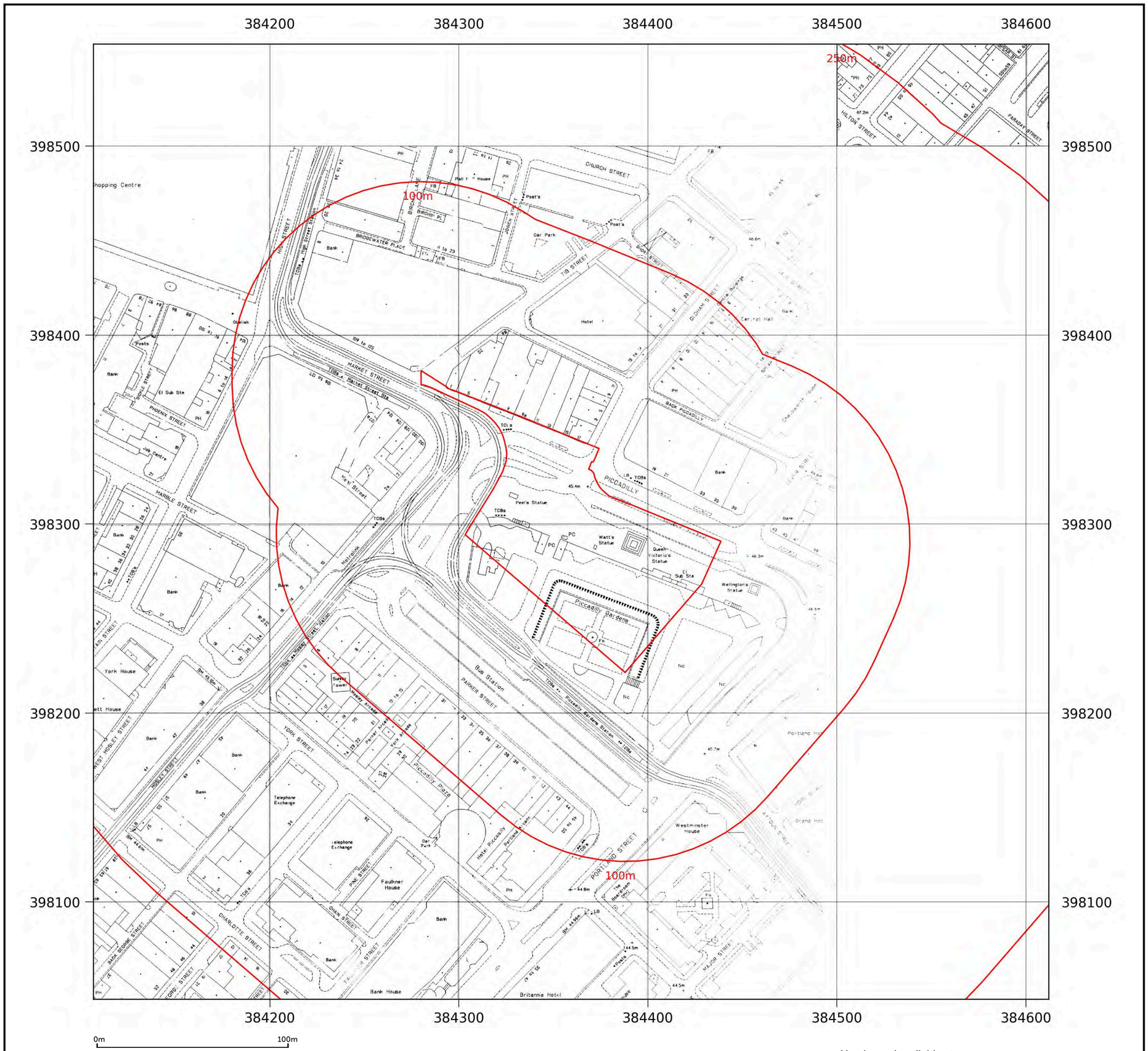
0m 100m

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Map legend available at:
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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	National Grid
Map date:	1995
Scale:	1:1,250
Printed at:	1:2,000

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LOCATION INTELLIGENCE

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Map Insight

Site details:	Piccadilly Gardens, Manchester
Client ref:	51334 Piccadilly Gardens, Manchester
Report ref:	GS-8XB-8H7-F4I-G2G
Grid ref:	384366.01, 398291.58
Production date:	21 May 2026

Map name:	LandLine
Map date:	2003
Scale:	1:1,250
Printed at:	1:1,250

N W E S



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384300 384400 384500

398400 398300 398200

Bank, FB, Car Park, Hotel, Bank, Central Hall, PH, Chatsworth House, Bank, Bank, Bank, TCBs, Peel's Statue, Watt's Statue, Queen Victoria's Statue, Piccadilly Gardens, Statue, Market Street Sta, Metrolink, Bank, Sorley Tower, Bus Station, Piccadilly Gardens Station, Parker Arcade, Piccadilly Plaza, Exchange, Portland Hotel, Portland Hotel, 46.6m, 45.4m, 46.3m, 46.6m, 45.7m

0m 50m

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Groundsure LOCATION INTELLIGENCE

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Appendix C – Groundsure Enviro + Geo Insight Report

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Piccadilly Gardens, Manchester

Order Details

Date: 21/05/2026

Your ref: 51334 Piccadilly Gardens, Manchester

Our Ref: GS-TJI-JR5-P91-G6M

Site Details

Location: 384366 398291

Area: 0.93 ha

Authority: Manchester City Council ↗

Site plan



Quick Links

Summary of findings p. 2 >

OS MasterMap site plan p.14 >

Aerial image p. 9 >

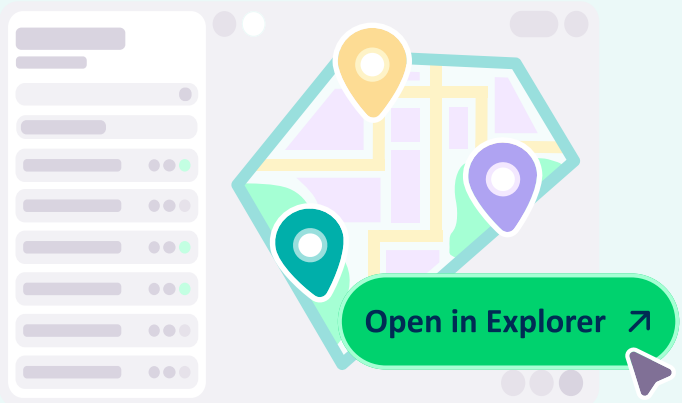
Insight User Guide ↗

Open this site in Explorer!

Access the data now in our interactive workspace.

- Map and interpret 130+ datasets across 170 years
- Generate insights and visuals quickly
- Revisit and collaborate with your team

Access to Groundsure Explorer requires an Insights account.
12 months access begins at purchase.



Contact us with any questions at:
info@groundsure.com ↗
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Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	2	5	2	76	-
19 >	1.2 >	Historical tanks >	0	0	1	5	-
19 >	1.3 >	Historical energy features >	1	0	7	24	-
21 >	1.4 >	Historical petrol stations >	0	0	0	1	-
21 >	1.5 >	Historical garages >	0	0	5	44	-
23	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
24 >	2.1 >	Historical industrial land uses >	2	5	5	116	-
29 >	2.2 >	Historical tanks >	0	0	1	11	-
30 >	2.3 >	Historical energy features >	2	0	11	39	-
32 >	2.4 >	Historical petrol stations >	0	0	0	1	-
32 >	2.5 >	Historical garages >	0	0	9	60	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
36	3.1	Active or recent landfill	0	0	0	0	-
36	3.2	Historical landfill (BGS records)	0	0	0	0	-
37	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
37	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
37	3.5	Historical waste sites	0	0	0	0	-
37	3.6	Licensed waste sites	0	0	0	0	-
37 >	3.7 >	Waste exemptions >	0	0	2	11	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
39 >	4.1 >	Recent industrial land uses >	0	1	49	-	-
43	4.2	National Geographic Database (NGD) - Current or recent tanks	0	0	0	-	-
43 >	4.3 >	Current or recent petrol stations >	0	0	0	1	-
43	4.4	Electricity cables	0	0	0	0	-
43	4.5	Gas pipelines	0	0	0	0	-

44	4.6	Sites determined as Contaminated Land	0	0	0	0	-
44	4.7	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
44	4.8	Regulated explosive sites	0	0	0	0	-
44	4.9	Hazardous substance storage/usage	0	0	0	0	-
44	4.10	Historical licensed industrial activities (IPC)	0	0	0	0	-
45	4.11	Licensed industrial activities (Part A(1))	0	0	0	0	-
45 >	**4.12 >**	**Licensed pollutant release (Part A(2)/B) >**	0	0	1	2	-
45	4.13	Radioactive Substance Authorisations	0	0	0	0	-
46 >	**4.14 >**	**Licensed Discharges to controlled waters >**	0	0	0	14	-
48	4.15	Pollutant release to surface waters (Red List)	0	0	0	0	-
48	4.16	Pollutant release to public sewer	0	0	0	0	-
48	4.17	List 1 Dangerous Substances	0	0	0	0	-
48	4.18	List 2 Dangerous Substances	0	0	0	0	-
48 >	**4.19 >**	**Pollution Incidents (EA/NRW) >**	1	0	0	1	-
49	4.20	Pollution inventory substances	0	0	0	0	-
49	4.21	Pollution inventory waste transfers	0	0	0	0	-
49	4.22	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
50 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
52 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
53 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
54	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
54	5.5	Groundwater vulnerability- local information	None (within 0m)				
55 >	**5.6 >**	**Groundwater abstractions >**	0	0	0	4	61
72	5.7	Surface water abstractions	0	0	0	0	0
72 >	**5.8 >**	**Potable abstractions >**	0	0	0	0	10
75	5.9	Source Protection Zones	0	0	0	0	-
75	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m

76	6.1	Water Network (OS NGD)	0	0	0	-	-
76	6.2	Surface water features	0	0	0	-	-
77 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
77 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
78 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
79	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
79	7.2	Historical Flood Events	0	0	0	-	-
79	7.3	Flood Defences	0	0	0	-	-
80	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
80	7.5	Flood Storage Areas	0	0	0	-	-
81	7.6	Flood Zone 2	None (within 50m)				
81	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
82 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
84 >	9.1 >	Groundwater flooding >	Moderate (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
85	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
85	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
85	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
85	10.4	Special Protection Areas (SPA)	0	0	0	0	0
86	10.5	National Nature Reserves (NNR)	0	0	0	0	0
86	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
86	10.7	Designated Ancient Woodland	0	0	0	0	0
86	10.8	Biosphere Reserves	0	0	0	0	0
87	10.9	Forest Parks	0	0	0	0	0
87	10.10	Marine Conservation Zones	0	0	0	0	0
87	10.11	Green Belt	0	0	0	0	0

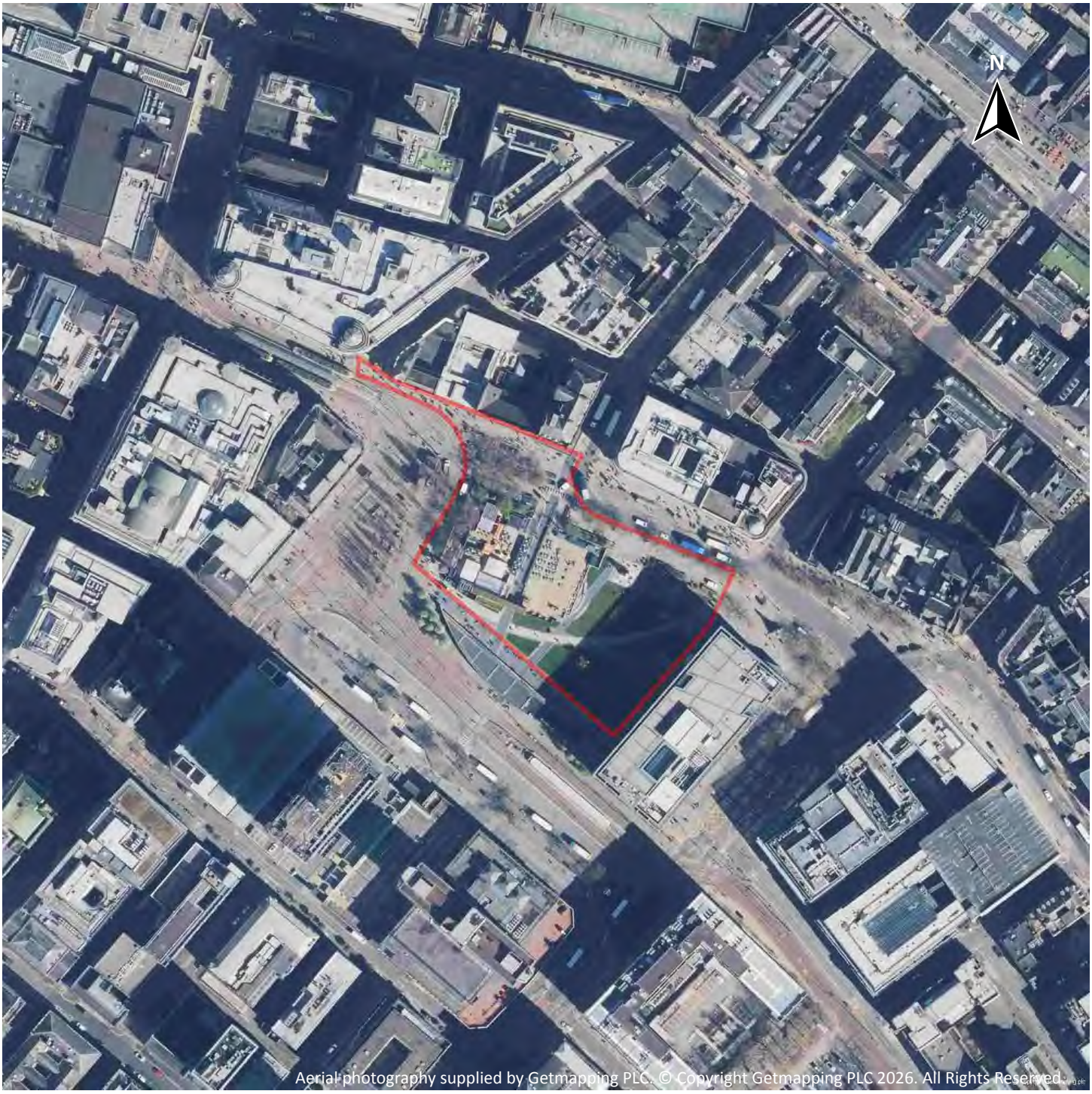
87	10.12	Proposed Ramsar sites	0	0	0	0	0
87	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
88	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
88	10.15	Nitrate Sensitive Areas	0	0	0	0	0
88 >	**10.16 >**	**Nitrate Vulnerable Zones >**	0	1	0	1	2
89 >	**10.17 >**	**SSSI Impact Risk Zones >**	1	-	-	-	-
90	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
91	11.1	World Heritage Sites	0	0	0	-	-
92	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
92	11.3	National Parks	0	0	0	-	-
92 >	**11.4 >**	**Listed Buildings >**	3	6	62	-	-
95 >	**11.5 >**	**Conservation Areas >**	2	0	2	-	-
96	11.6	Scheduled Ancient Monuments	0	0	0	-	-
96	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	**Agricultural designations >**	On site	0-50m	50-250m	250-500m	500-2000m
97 >	**12.1 >**	**Agricultural Land Classification >**	Urban (within 250m)				
98	12.2	Open Access Land	0	0	0	-	-
98	12.3	Tree Felling Licences	0	0	0	-	-
98	12.4	Environmental Stewardship Schemes	0	0	0	-	-
98	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
99	13.1	Priority Habitat Inventory	0	0	0	-	-
99	13.2	Habitat Networks	0	0	0	-	-
99	13.3	Open Mosaic Habitat	0	0	0	-	-
99	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
100 >	**14.1 >**	**10k Availability >**	Identified (within 500m)				
101 >	**14.2 >**	**Artificial and made ground (10k) >**	1	0	0	1	-

102 >	14.3 >	Superficial geology (10k) >	1	0	0	1	-
103	14.4	Landslip (10k)	0	0	0	0	-
104 >	14.5 >	Bedrock geology (10k) >	1	0	1	1	-
105 >	14.6 >	Bedrock faults and other linear features (10k) >	0	0	1	2	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
106 >	15.1 >	50k Availability >	Identified (within 500m)				
107 >	15.2 >	Artificial and made ground (50k) >	0	0	0	1	-
108	15.3	Artificial ground permeability (50k)	0	0	-	-	-
109 >	15.4 >	Superficial geology (50k) >	1	0	0	1	-
110 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
110	15.6	Landslip (50k)	0	0	0	0	-
110	15.7	Landslip permeability (50k)	None (within 50m)				
111 >	15.8 >	Bedrock geology (50k) >	1	0	1	0	-
112 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
112 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	1	2	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
113 >	16.1 >	BGS Boreholes >	1	1	71	-	-
Page	Section	Natural ground subsidence >					
118 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
119 >	17.2 >	Running sands >	Very low (within 50m)				
120 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
121 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
122 >	17.5 >	Landslides >	Very low (within 50m)				
123 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
125	18.1	BritPits	0	0	0	0	-
126 >	18.2 >	Surface ground workings >	7	1	0	-	-
126	18.3	Underground workings	0	0	0	0	0
126	18.4	Underground mining extents	0	0	0	0	-

127	18.5	Historical Mineral Planning Areas	0	0	0	0	-
127	18.6	Non-coal mining	0	0	0	0	0
127 >	18.7 >	JPB mining areas >	Identified (within 0m)				
127	18.8	The Coal Authority non-coal mining	0	0	0	0	-
128	18.9	Researched mining	0	0	0	0	-
128	18.10	Mining record office plans	0	0	0	0	-
128	18.11	BGS mine plans	0	0	0	0	-
128 >	18.12 >	Coal mining >	Identified (within 0m)				
129	18.13	Brine areas	None (within 0m)				
129	18.14	Gypsum areas	None (within 0m)				
129	18.15	Tin mining	None (within 0m)				
129	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes >	On site	0-50m	50-250m	250-500m	500-2000m
130	19.1	Natural cavities	0	0	0	0	-
131	19.2	Mining cavities	0	0	0	0	0
131 >	19.3 >	Reported recent incidents >	0	0	0	1	-
131	19.4	Historical incidents	0	0	0	0	-
Page	Section	Radon >					
132 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
134 >	21.1 >	BGS Estimated Background Soil Chemistry >	1	0	-	-	-
134 >	21.2 >	BGS Estimated Urban Soil Chemistry >	5	5	-	-	-
135 >	21.3 >	BGS Measured Urban Soil Chemistry >	1	0	-	-	-
Page	Section	Railway infrastructure and projects >	On site	0-50m	50-250m	250-500m	500-2000m
136	22.1	Underground railways (London)	0	0	0	-	-
136	22.2	Underground railways (Non-London)	0	0	0	-	-
137	22.3	Railway tunnels	0	0	0	-	-
137	22.4	Historical railway and tunnel features	0	0	0	-	-
137	22.5	Royal Mail tunnels	0	0	0	-	-

137	22.6	Historical railways	0	0	0	-	-
137 >	**22.7 >**	**Railways >**	0	22	13	-	-
139	22.8	Crossrail 2	0	0	0	0	-
139 >	**22.9 >**	**HS2 >**	0	0	0	1	-

Recent aerial photograph



Capture Date: 07/04/2023

Site Area: 0.93ha

Recent site history - 2022 aerial photograph



Capture Date: 18/10/2022

Site Area: 0.93ha

Recent site history - 2015 aerial photograph



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Capture Date: 11/06/2015

Site Area: 0.93ha

Recent site history - 2009 aerial photograph

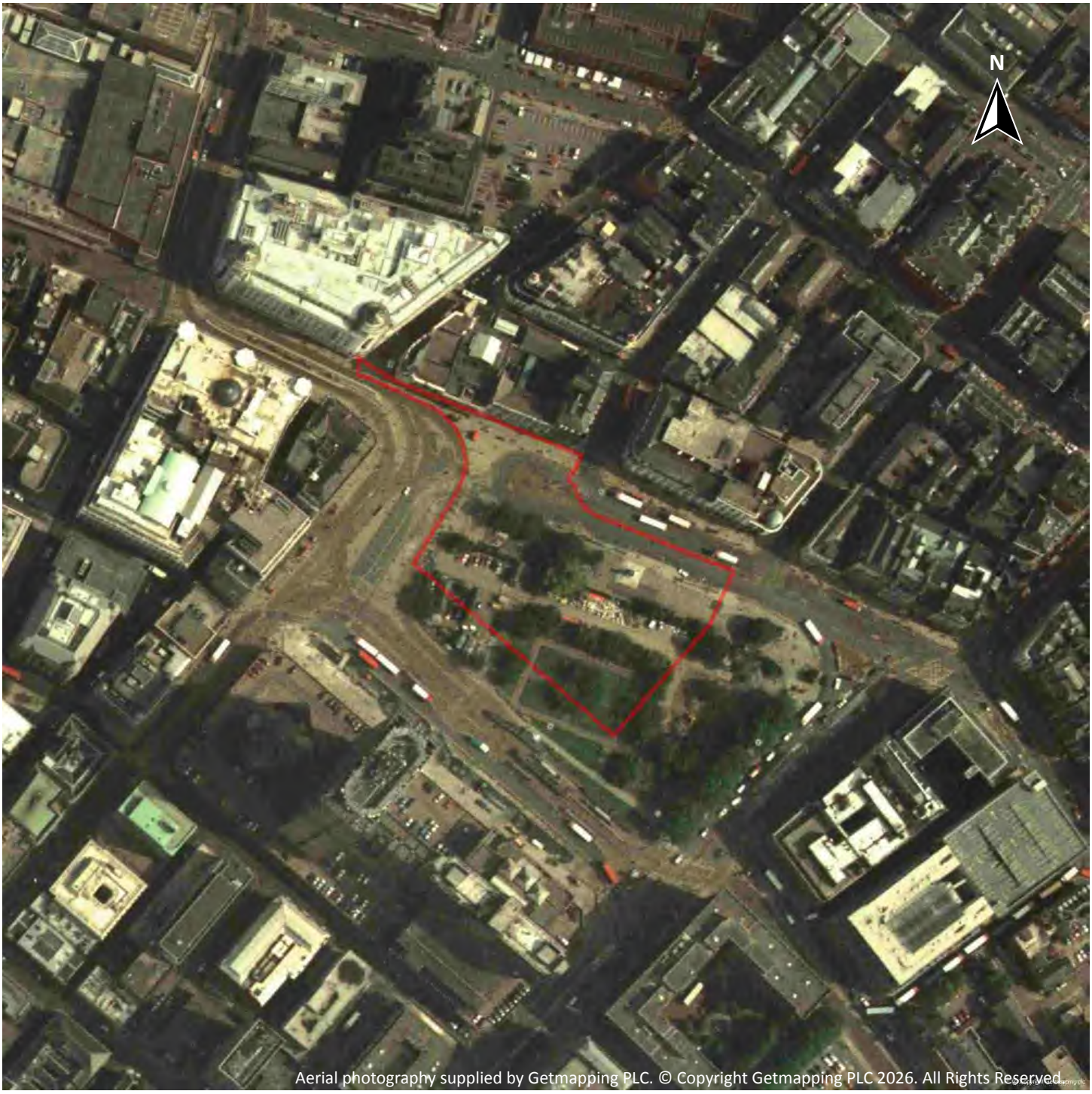


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Capture Date: 02/06/2009

Site Area: 0.93ha

Recent site history - 2000 aerial photograph

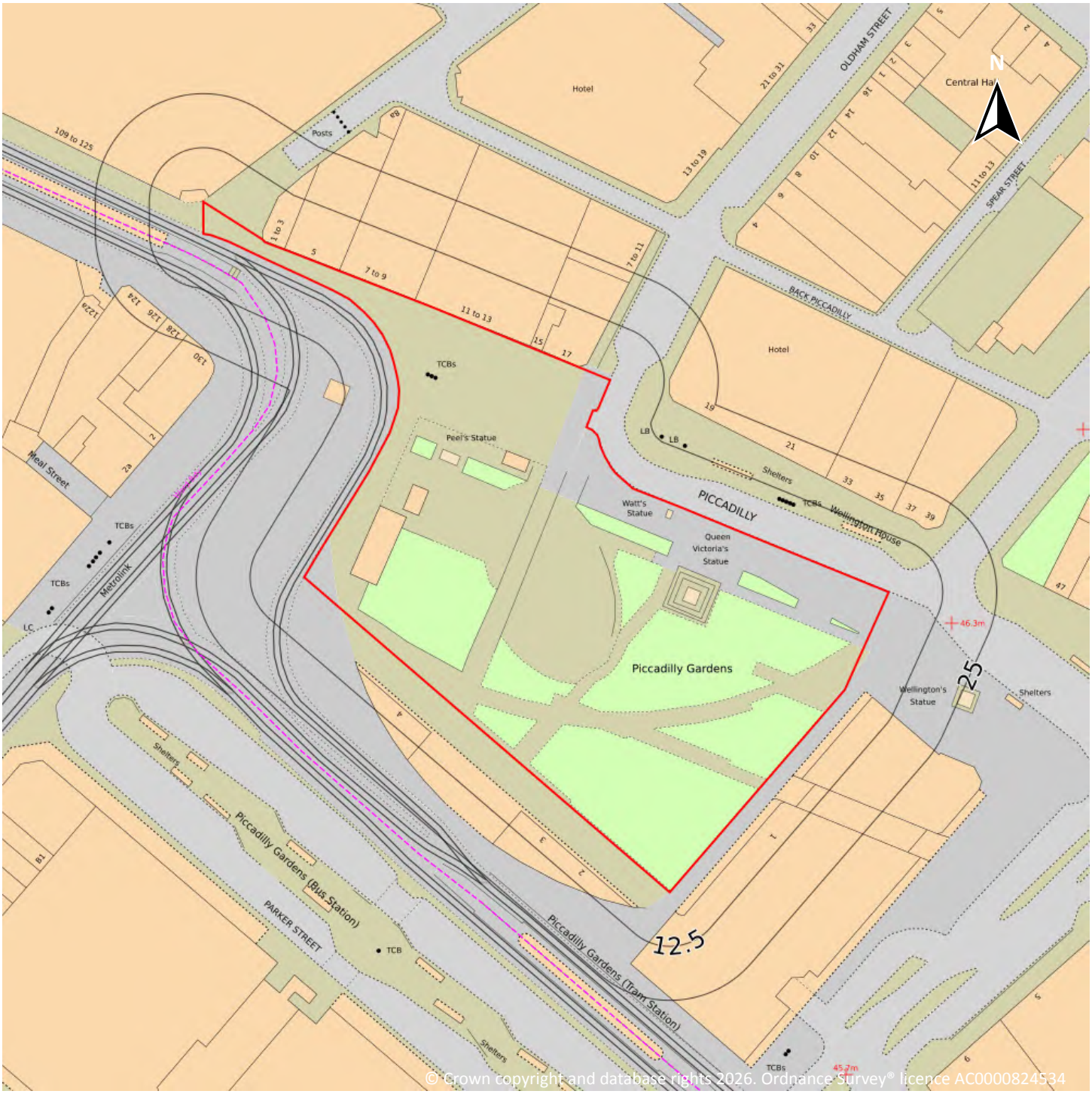


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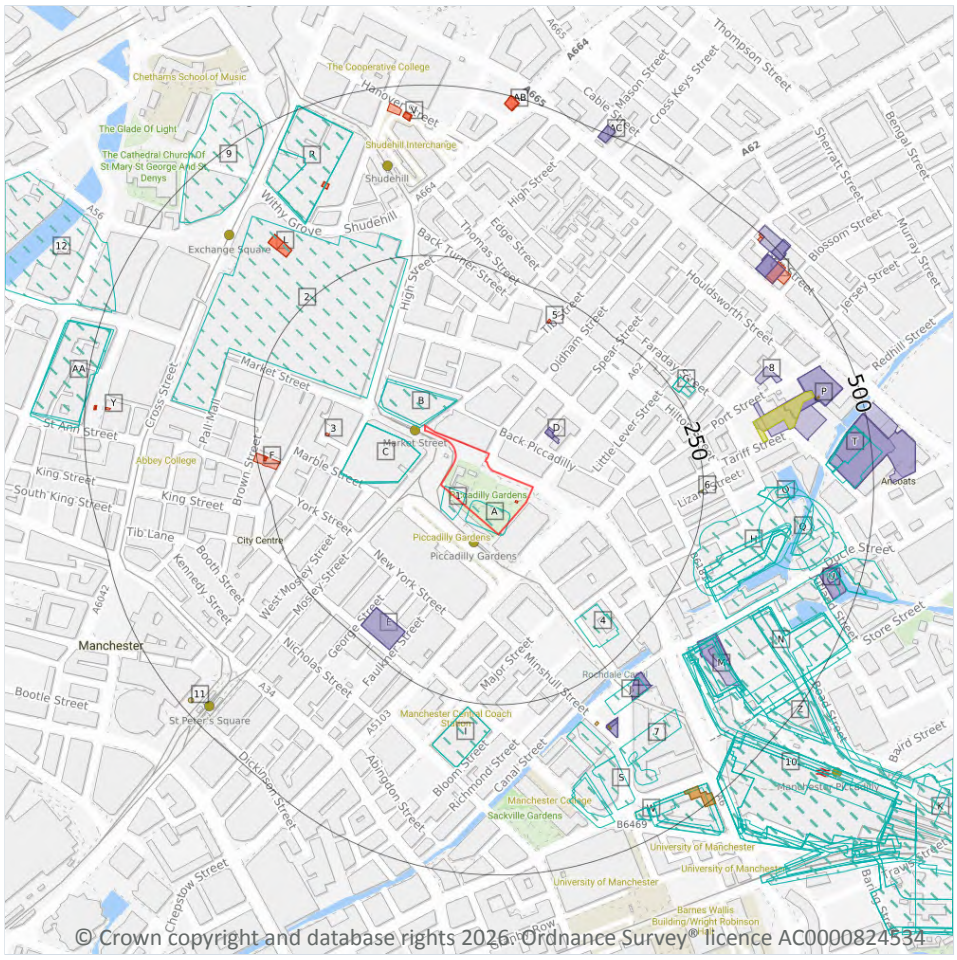
Site Area: 0.93ha

OS MasterMap site plan



Site Area: 0.93ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	85

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 15 >**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Bus Station**	**1980**	**856993**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Pit**	**1956**	**829200**
B	2m NW	Unspecified Commercial/Industrial	1938	822319
B	5m NW	Unspecified Ground Workings	1931	814712
C	30m SW	Unspecified Commercial/Industrial	1938	863152
C	30m SW	Unspecified Commercial/Industrial	1931	916926
C	30m SW	Unspecified Commercial/Industrial	1916	975940
2	94m NW	Bus Station	1985 - 1994	1003820
4	169m SE	Infirmary	1915 - 1923	927980
G	252m NE	Police Station	1980	878328
G	252m NE	Police Station	1972	902865
G	252m NE	Police Station	1985 - 1994	982704
H	256m E	Unspecified Wharf	1956	911131
I	257m S	Bus Station	1980	955883
I	257m S	Bus Station	1985 - 1994	980000
H	278m SE	Unspecified Wharf	1934	878421
H	278m SE	Unspecified Wharf	1915	898283
H	283m SE	Unspecified Wharf	1890 - 1905	889162
H	283m SE	Unspecified Wharf	1923	966170
J	290m SE	Unspecified Works	1915 - 1923	906852
H	292m SE	Unspecified Warehouses	1915	905537
H	292m SE	Unspecified Warehouses	1934 - 1938	946791
H	299m SE	Unspecified Warehouse	1923	848351
J	300m SE	Unspecified Wharf	1915 - 1923	939828
K	319m SE	Railway Sidings	1956	876887
K	320m SE	Railway Sidings	1915	915846
K	320m SE	Railway Sidings	1934 - 1938	949229
K	322m SE	Railway Sidings	1923	905187
M	323m SE	Goods Shed	1934 - 1938	870710

ID	Location	Land use	Dates present	Group ID
M	323m SE	Goods Shed	1915	952942
N	323m SE	Unspecified Commercial/Industrial	1956	822578
M	325m SE	Goods Shed	1905	1000082
M	325m SE	Goods Shed	1923	1005563
M	328m SE	Railway Building	1890	855053
O	330m E	Unspecified Wharf	1915	912805
O	330m E	Unspecified Wharf	1938	913142
O	330m E	Unspecified Wharf	1934	972541
Q	337m E	Unspecified Wharf	1923	880327
N	338m SE	Goods Station	1890 - 1938	971315
K	341m SE	Railway Sidings	1890 - 1905	987455
R	344m NW	Unspecified Commercial/Industrial	1938	896898
R	346m NW	Unspecified Commercial/Industrial	1931	897663
R	346m NW	Unspecified Commercial/Industrial	1916	1007943
O	356m E	Unspecified Wharf	1923	994604
7	359m SE	Unspecified Mill	1915 - 1923	957908
S	367m SE	Unspecified Works	1923	835387
S	372m S	Ice Works	1915	811460
S	377m SE	Unspecified Ground Workings	1934 - 1938	941370
S	379m S	Unspecified Wharf	1890	848597
Q	390m E	Unspecified Wharf	1934 - 1938	865478
Q	393m E	Unspecified Mills	1915 - 1923	1009839
Q	395m E	Unspecified Wharf	1915	886637
T	431m E	Sawmill	1921	886642
T	431m E	Sawmill	1933 - 1938	997195
9	432m NW	Unspecified Commercial/Industrial	1931 - 1938	933047
U	436m E	Unspecified Wharf	1934 - 1938	938829
U	436m E	Unspecified Wharf	1915	1003093

ID	Location	Land use	Dates present	Group ID
T	436m E	Sawmills	1923	841266
K	454m SE	Railway Sidings	1848	957691
K	454m SE	Railway Station	1956	987387
W	455m SE	Police Station	1985 - 1994	900043
W	455m SE	Police Station	1972	997158
W	455m SE	Police Station	1980	998537
W	456m SE	Fire Station	1985 - 1994	924437
W	456m SE	Fire Station	1980	946883
W	456m SE	Fire Station	1956 - 1972	975293
K	456m SE	Railway Stations	1934 - 1938	929717
K	456m SE	Railway Stations	1915	964201
U	458m E	Unspecified Wharf	1923	984311
W	458m SE	Police Station	1915 - 1923	945957
W	459m SE	Fire Station	1934 - 1938	890052
K	459m SE	Railway Station	1890 - 1905	870454
K	459m SE	Railway Station	1923	900955
10	461m SE	Railway Station	1848	871010
K	463m SE	Railway Station	1985 - 1994	880012
K	463m SE	Railway Station	1972	909665
K	463m SE	Railway Station	1980	915234
W	466m SE	Police Station	1934 - 1938	939637
Z	470m SE	Railway Building	1938	854283
Z	470m SE	Grain Store	1915 - 1923	1004630
AA	478m W	Unspecified Commercial/Industrial	1894 - 1906	992714
AA	482m W	Unspecified Commercial/Industrial	1916	875232
AA	482m W	Unspecified Commercial/Industrial	1931 - 1938	961293
12	484m W	Unspecified Commercial/Industrial	1931 - 1938	988325
W	485m SE	Fire Engine Station	1915 - 1923	892976

This data is sourced from Ordnance Survey® / Groundsure.

1.2 Historical tanks

Records within 500m	6

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 15 >**

ID	Location	Land use	Dates present	Group ID
6	246m E	Unspecified Tank	1891	115118
J	310m SE	Unspecified Tank	1891	115128
J	324m SE	Unspecified Tank	1891	115127
P	437m E	Unspecified Tank	1954 - 1965	131075
W	465m SE	Gas Meter Testing Station	1948	114574
11	481m SW	Unspecified Tank	1994 - 1999	127488

This data is sourced from Ordnance Survey® / Groundsure.

1.3 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, 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 15 >**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Electricity Substation**	**1986 - 1995**	**75360**
3	140m W	Electricity Substation	1995	65525
5	210m NE	Electricity Substation	1980 - 1992	81900
F	218m W	Electricity Substation	1954	79307
F	235m W	Electricity Substation	1954	71856

ID	Location	Land use	Dates present	Group ID
F	235m W	Electricity Substation	1969	79845
F	235m W	Electricity Substation	1948 - 1951	74838
F	235m W	Electricity Substation	1968	89174
L	320m NW	Electricity Substation	1954	72456
L	321m NW	Electricity Substation	1954	71816
L	338m NW	Electricity Substation	1948 - 1951	83345
R	376m N	Electricity Substation	1954	84957
R	376m NW	Electricity Substation	1948 - 1954	78967
V	448m N	Electricity Substation	1986 - 1992	75984
V	448m N	Electricity Substation	1948 - 1954	83829
V	449m N	Electricity Substation	1980	89195
V	457m N	Electricity Substation	1954	65344
X	459m NE	Electricity Substation	1954	74979
X	459m NE	Electricity Substation	1988 - 1995	76125
X	460m NE	Electricity Substation	1953 - 1954	70849
X	462m NE	Electricity Substation	1984	73045
Y	462m W	Electricity Substation	1980	65348
W	465m SE	Gas Meter Testing Station	1948	68685
AB	479m N	Electricity Substation	1986 - 1992	79156
AB	479m N	Electricity Substation	1954	84310
AB	480m N	Electricity Substation	1948 - 1951	76863
AB	480m N	Electricity Substation	1980	82719
Y	483m W	Electricity Substation	1989 - 1995	71917
Y	483m W	Electricity Substation	1948 - 1970	71005
Y	484m W	Electricity Substation	1986	92052
X	491m NE	Electricity Substation	1995	65346
X	497m NE	Electricity Substation	1988	65345

This data is sourced from Ordnance Survey® / Groundsure.

1.4 Historical petrol stations

Records within 500m	1

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
P	337m E	Service Garage	1948	1605

This data is sourced from Ordnance Survey® / Groundsure.

1.5 Historical garages

Records within 500m	49

Garages digitised from historical Ordnance Survey® mapping at high-detail 1:1,250 and 1:2,500 scale, 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 15 >**

ID	Location	Land use	Dates present	Group ID
D	73m NE	Garage	1951	27319
D	76m N	Garage	1965	26660
D	77m N	Garage	1954	25983
E	197m SW	Garage	1954 - 1965	26811
E	198m SW	Garage	1948 - 1951	24760
J	289m SE	Garage	1971	29430
J	289m SE	Garage	1971	24616
J	289m SE	Garage	1948	25851
J	296m SE	Garage	1971	30716
J	296m SE	Garage	1948	26557

ID	Location	Land use	Dates present	Group ID
J	320m SE	Garage	1970	25502
J	321m SE	Garage	1948 - 1964	24192
J	321m SE	Garage	1971	28076
J	321m SE	Garage	1955	25106
J	321m SE	Garage	1984	28011
J	321m SE	Garage	1965	24283
M	324m SE	Garage	1971	27265
M	324m SE	Garage	1990	25749
P	337m E	Service Garage	1948	22113
P	337m E	Garage	1954	28029
P	338m E	Garage	1965	27894
P	341m E	Garage	1954	26837
M	344m SE	Garage	1971	27721
P	345m E	Garage	1971	29460
8	362m NE	Garage	1971	26421
P	386m E	Garage	1990	22883
P	387m E	Garage	1971	25929
P	419m E	Garage	1971 - 1990	26160
P	420m E	Garage	1971	30586
T	435m E	Garage	1990	29828
T	435m E	Garage	1971	27951
U	440m E	Garage	1971	25790
U	440m E	Garage	1954 - 1969	23299
T	445m E	Garage	1996	29201
U	451m E	Garage	1954	25167
U	451m E	Garage	1971	26513
X	458m NE	Garage	1963	28014
X	458m NE	Garage	1995	26641

ID	Location	Land use	Dates present	Group ID
X	458m NE	Garage	1965 - 1969	27095
X	458m NE	Garage	1988	28800
X	458m NE	Garage	1953 - 1954	24261
AC	487m N	Garage	1963	29223
AC	487m N	Garage	1988	29965
AC	487m N	Garage	1995	27989
X	489m NE	Garage	1995	30670
X	491m NE	Garage	1988	23707
X	491m NE	Garage	1953 - 1963	29011
X	491m NE	Garage	1965 - 1984	28047
X	491m NE	Garage	1954	29188

This data is sourced from Ordnance Survey® / Groundsure.

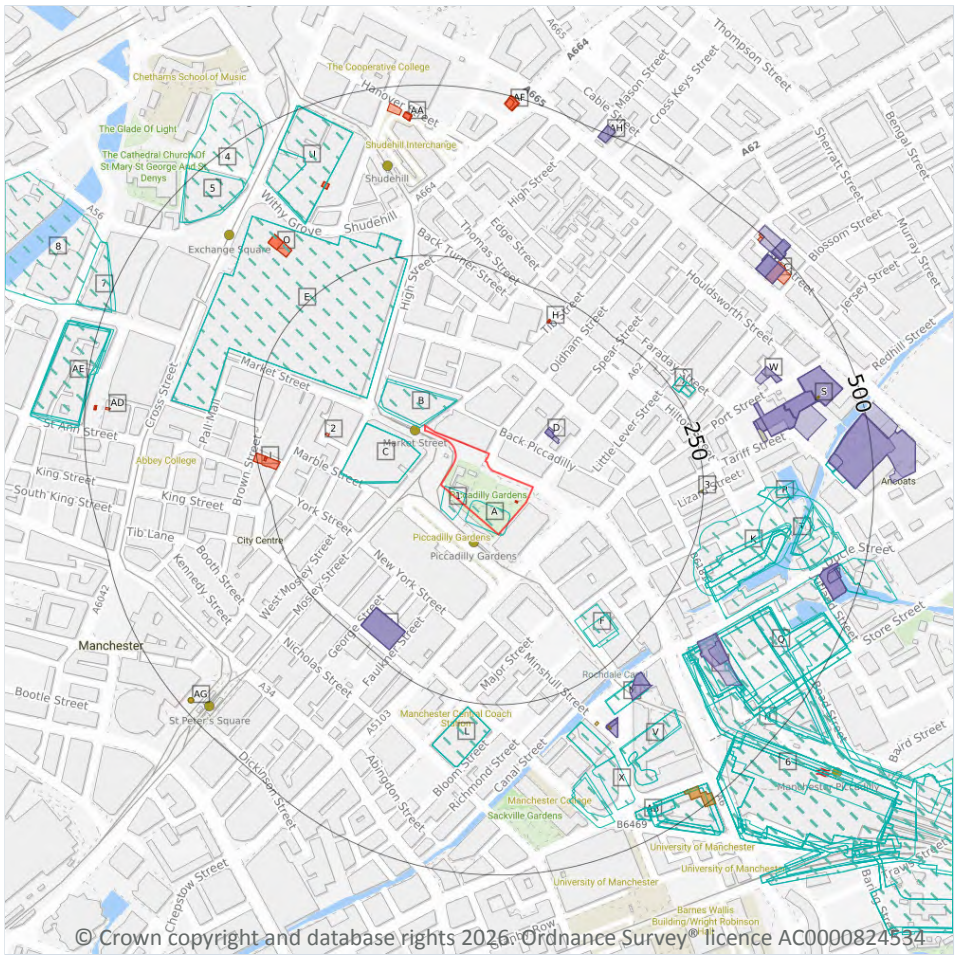
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical petrol stations
- Historical garages

2.1 Historical industrial land uses

Records within 500m	128

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 24 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Bus Station**	**1980**	**856993**
A	**On site**	**Unspecified Pit**	**1956**	**829200**
B	2m NW	Unspecified Commercial/Industrial	1938	822319

ID	Location	Land Use	Date	Group ID
B	5m NW	Unspecified Ground Workings	1931	814712
C	30m SW	Unspecified Commercial/Industrial	1938	863152
C	30m SW	Unspecified Commercial/Industrial	1931	916926
C	30m SW	Unspecified Commercial/Industrial	1916	975940
E	94m NW	Bus Station	1988	1003820
E	94m NW	Bus Station	1985	1003820
E	94m NW	Bus Station	1994	1003820
F	169m SE	Infirmary	1923	927980
F	188m SE	Infirmary	1915	927980
J	252m NE	Police Station	1972	902865
J	252m NE	Police Station	1980	878328
J	252m NE	Police Station	1985	982704
K	256m E	Unspecified Wharf	1956	911131
L	257m S	Bus Station	1988	980000
L	257m S	Bus Station	1980	955883
L	257m S	Bus Station	1985	980000
L	257m S	Bus Station	1994	980000
J	259m NE	Police Station	1988	982704
J	259m NE	Police Station	1994	982704
K	278m SE	Unspecified Wharf	1934	878421
K	278m SE	Unspecified Wharf	1915	898283
K	283m SE	Unspecified Wharf	1905	889162
K	283m SE	Unspecified Wharf	1890	889162
K	283m SE	Unspecified Wharf	1923	966170
M	290m SE	Unspecified Works	1923	906852
M	291m SE	Unspecified Works	1915	906852
K	292m SE	Unspecified Warehouses	1938	946791
K	292m SE	Unspecified Warehouses	1934	946791

ID	Location	Land Use	Date	Group ID
K	292m SE	Unspecified Warehouses	1915	905537
K	299m SE	Unspecified Warehouse	1923	848351
M	300m SE	Unspecified Wharf	1923	939828
M	301m SE	Unspecified Wharf	1915	939828
N	319m SE	Railway Sidings	1956	876887
N	320m SE	Railway Sidings	1938	949229
N	320m SE	Railway Sidings	1934	949229
N	320m SE	Railway Sidings	1915	915846
N	322m SE	Railway Sidings	1923	905187
P	323m SE	Goods Shed	1938	870710
P	323m SE	Goods Shed	1934	870710
P	323m SE	Goods Shed	1915	952942
Q	323m SE	Unspecified Commercial/Industrial	1956	822578
P	325m SE	Goods Shed	1905	1000082
P	325m SE	Goods Shed	1923	1005563
P	328m SE	Railway Building	1890	855053
R	330m E	Unspecified Wharf	1938	913142
R	330m E	Unspecified Wharf	1934	972541
R	330m E	Unspecified Wharf	1915	912805
T	337m E	Unspecified Wharf	1923	880327
Q	338m SE	Goods Station	1938	971315
Q	338m SE	Goods Station	1934	971315
Q	338m SE	Goods Station	1915	971315
N	341m SE	Railway Sidings	1905	987455
U	344m NW	Unspecified Commercial/Industrial	1938	896898
U	346m NW	Unspecified Commercial/Industrial	1931	897663
U	346m NW	Unspecified Commercial/Industrial	1916	1007943
Q	348m SE	Goods Station	1905	971315

ID	Location	Land Use	Date	Group ID
Q	348m SE	Goods Station	1890	971315
Q	348m SE	Goods Station	1923	971315
R	356m E	Unspecified Wharf	1923	994604
V	359m SE	Unspecified Mill	1923	957908
V	361m SE	Unspecified Mill	1915	957908
X	367m SE	Unspecified Works	1923	835387
X	372m S	Ice Works	1915	811460
N	376m SE	Railway Sidings	1890	987455
X	377m SE	Unspecified Ground Workings	1938	941370
X	377m SE	Unspecified Ground Workings	1934	941370
X	379m S	Unspecified Wharf	1890	848597
T	390m E	Unspecified Wharf	1938	865478
T	390m E	Unspecified Wharf	1934	865478
T	393m E	Unspecified Mills	1923	1009839
T	393m E	Unspecified Mills	1915	1009839
T	395m E	Unspecified Wharf	1915	886637
Y	431m E	Sawmill	1921	886642
Y	431m E	Sawmill	1938	997195
Y	431m E	Sawmill	1933	997195
4	432m NW	Unspecified Commercial/Industrial	1938	933047
Z	436m E	Unspecified Wharf	1938	938829
Z	436m E	Unspecified Wharf	1934	938829
Z	436m E	Unspecified Wharf	1915	1003093
5	436m NW	Unspecified Commercial/Industrial	1931	933047
Y	436m E	Sawmills	1923	841266
N	454m SE	Railway Sidings	1848	957691
N	454m SE	Railway Station	1956	987387
AB	455m SE	Police Station	1972	997158

ID	Location	Land Use	Date	Group ID
AB	455m SE	Police Station	1988	900043
AB	455m SE	Police Station	1980	998537
AB	455m SE	Police Station	1985	900043
AB	455m SE	Police Station	1994	900043
AB	456m SE	Fire Station	1972	975293
AB	456m SE	Fire Station	1956	975293
AB	456m SE	Fire Station	1988	924437
AB	456m SE	Fire Station	1980	946883
AB	456m SE	Fire Station	1985	924437
AB	456m SE	Fire Station	1994	924437
N	456m SE	Railway Stations	1938	929717
N	456m SE	Railway Stations	1934	929717
N	456m SE	Railway Stations	1915	964201
Z	458m E	Unspecified Wharf	1923	984311
AB	458m SE	Police Station	1923	945957
AB	459m SE	Fire Station	1938	890052
AB	459m SE	Fire Station	1934	890052
N	459m SE	Railway Station	1905	870454
N	459m SE	Railway Station	1890	870454
N	459m SE	Railway Station	1923	900955
AB	461m SE	Police Station	1915	945957
6	461m SE	Railway Station	1848	871010
N	463m SE	Railway Station	1972	909665
N	463m SE	Railway Station	1988	880012
N	463m SE	Railway Station	1980	915234
N	463m SE	Railway Station	1985	880012
N	463m SE	Railway Station	1994	880012
AB	466m SE	Police Station	1938	939637

ID	Location	Land Use	Date	Group ID
AB	466m SE	Police Station	1934	939637
N	470m SE	Railway Building	1938	854283
N	470m SE	Grain Store	1915	1004630
N	472m SE	Grain Store	1923	1004630
AE	478m W	Unspecified Commercial/Industrial	1894	992714
AE	481m W	Unspecified Commercial/Industrial	1906	992714
AE	482m W	Unspecified Commercial/Industrial	1931	961293
AE	482m W	Unspecified Commercial/Industrial	1916	875232
AE	483m W	Unspecified Commercial/Industrial	1938	961293
7	484m W	Unspecified Commercial/Industrial	1931	988325
AB	485m SE	Fire Engine Station	1923	892976
AB	485m SE	Fire Engine Station	1915	892976
8	489m W	Unspecified Commercial/Industrial	1938	988325

This data is sourced from Ordnance Survey® / Groundsure.

2.2 Historical tanks

Records within 500m	**12**

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 24 >**

ID	Location	Land Use	Date	Group ID
3	246m E	Unspecified Tank	1891	115118
M	310m SE	Unspecified Tank	1891	115128
M	324m SE	Unspecified Tank	1891	115127
S	437m E	Unspecified Tank	1954	131075
S	437m E	Unspecified Tank	1954	131075
S	437m E	Unspecified Tank	1965	131075
S	437m E	Unspecified Tank	1954	131075

ID	Location	Land Use	Date	Group ID
AB	465m SE	Gas Meter Testing Station	1948	114574
AG	481m SW	Unspecified Tank	1996	127488
AG	481m SW	Unspecified Tank	1995	127488
AG	481m SW	Unspecified Tank	1994	127488
AG	481m SW	Unspecified Tank	1999	127488

This data is sourced from Ordnance Survey® / Groundsure.

2.3 Historical energy features

Records within 500m	**52**

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 24 >**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Electricity Substation**	**1986**	**75360**
A	**On site**	**Electricity Substation**	**1995**	**75360**
2	140m W	Electricity Substation	1995	65525
H	210m NE	Electricity Substation	1992	81900
H	210m NE	Electricity Substation	1986	81900
H	211m NE	Electricity Substation	1980	81900
I	218m W	Electricity Substation	1954	79307
I	218m W	Electricity Substation	1954	79307
I	235m W	Electricity Substation	1969	79845
I	235m W	Electricity Substation	1954	71856
I	235m W	Electricity Substation	1968	89174
I	235m W	Electricity Substation	1948	74838
I	235m W	Electricity Substation	1951	74838
O	320m NW	Electricity Substation	1954	72456
O	321m NW	Electricity Substation	1954	71816

ID	Location	Land Use	Date	Group ID
O	338m NW	Electricity Substation	1951	83345
O	338m NW	Electricity Substation	1948	83345
U	376m N	Electricity Substation	1954	84957
U	376m NW	Electricity Substation	1951	78967
U	376m NW	Electricity Substation	1948	78967
U	376m NW	Electricity Substation	1954	78967
AA	448m N	Electricity Substation	1992	75984
AA	448m N	Electricity Substation	1951	83829
AA	448m N	Electricity Substation	1948	83829
AA	448m N	Electricity Substation	1986	75984
AA	448m N	Electricity Substation	1954	83829
AA	449m N	Electricity Substation	1980	89195
AA	457m N	Electricity Substation	1954	65344
AC	459m NE	Electricity Substation	1954	74979
AC	459m NE	Electricity Substation	1988	76125
AC	460m NE	Electricity Substation	1953	70849
AC	460m NE	Electricity Substation	1954	70849
AC	462m NE	Electricity Substation	1984	73045
AD	462m W	Electricity Substation	1980	65348
AB	465m SE	Gas Meter Testing Station	1948	68685
AC	471m NE	Electricity Substation	1995	76125
AF	479m N	Electricity Substation	1992	79156
AF	479m N	Electricity Substation	1954	84310
AF	480m N	Electricity Substation	1986	79156
AF	480m N	Electricity Substation	1951	76863
AF	480m N	Electricity Substation	1948	76863
AF	480m N	Electricity Substation	1980	82719
AF	481m N	Electricity Substation	1954	84310

ID	Location	Land Use	Date	Group ID
AD	483m W	Electricity Substation	1995	71917
AD	483m W	Electricity Substation	1958	71005
AD	483m W	Electricity Substation	1948	71005
AD	483m W	Electricity Substation	1955	71005
AD	483m W	Electricity Substation	1970	71005
AD	483m W	Electricity Substation	1989	71917
AD	484m W	Electricity Substation	1986	92052
AC	491m NE	Electricity Substation	1995	65346
AC	497m NE	Electricity Substation	1988	65345

This data is sourced from Ordnance Survey® / Groundsure.

2.4 Historical petrol stations

Records within 500m **1**

Petrol stations digitised from historical Ordnance Survey® mapping at high-detail 1:1,250 and 1:2,500 scale. 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 24 >**

ID	Location	Land Use	Date	Group ID
S	337m E	Service Garage	1948	1605

This data is sourced from Ordnance Survey® / Groundsure.

2.5 Historical garages

Records within 500m **69**

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 24 >**

ID	Location	Land Use	Date	Group ID
D	73m NE	Garage	1951	27319

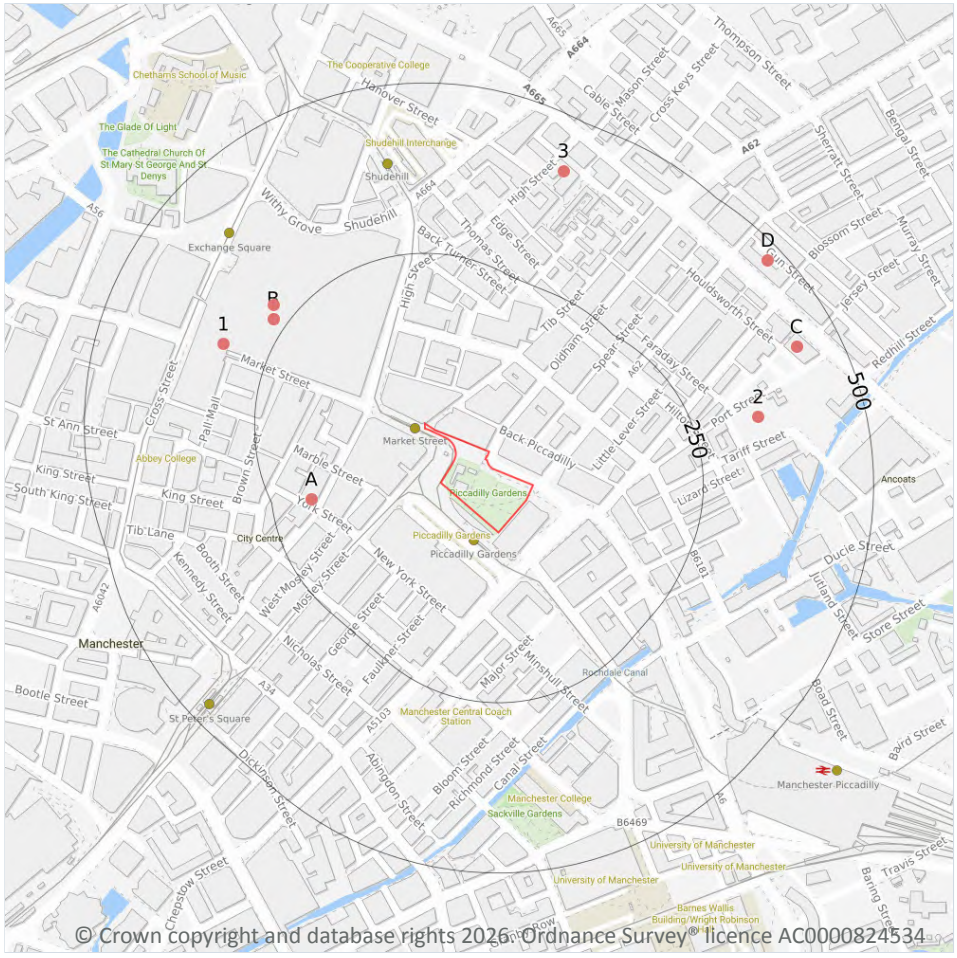
ID	Location	Land Use	Date	Group ID
D	76m N	Garage	1965	26660
D	77m N	Garage	1954	25983
D	77m N	Garage	1954	25983
G	197m SW	Garage	1954	26811
G	197m SW	Garage	1954	26811
G	197m SW	Garage	1965	26811
G	198m SW	Garage	1948	24760
G	198m SW	Garage	1951	24760
M	289m SE	Garage	1971	29430
M	289m SE	Garage	1971	24616
M	289m SE	Garage	1948	25851
M	296m SE	Garage	1971	30716
M	296m SE	Garage	1948	26557
M	320m SE	Garage	1970	25502
M	321m SE	Garage	1953	24192
M	321m SE	Garage	1948	24192
M	321m SE	Garage	1964	24192
M	321m SE	Garage	1971	28076
M	321m SE	Garage	1955	25106
M	321m SE	Garage	1984	28011
M	321m SE	Garage	1965	24283
P	324m SE	Garage	1971	27265
P	324m SE	Garage	1990	25749
S	337m E	Garage	1954	28029
S	337m E	Service Garage	1948	22113
S	338m E	Garage	1965	27894
S	341m E	Garage	1954	26837
P	344m SE	Garage	1971	27721

ID	Location	Land Use	Date	Group ID
S	345m E	Garage	1971	29460
S	346m E	Garage	1971	29460
W	362m NE	Garage	1971	26421
W	375m NE	Garage	1971	26421
S	386m E	Garage	1990	22883
S	387m E	Garage	1971	25929
S	387m E	Garage	1971	25929
S	419m E	Garage	1990	26160
S	420m E	Garage	1971	30586
S	420m E	Garage	1971	26160
Y	435m E	Garage	1990	29828
Y	435m E	Garage	1971	27951
Y	436m E	Garage	1971	27951
Z	440m E	Garage	1971	25790
Z	440m E	Garage	1954	23299
Z	440m E	Garage	1954	23299
Z	440m E	Garage	1954	23299
Z	440m E	Garage	1965	23299
Z	440m E	Garage	1969	23299
Y	445m E	Garage	1996	29201
Z	451m E	Garage	1954	25167
Z	451m E	Garage	1971	26513
AC	458m NE	Garage	1963	28014
AC	458m NE	Garage	1995	26641
AC	458m NE	Garage	1965	27095
AC	458m NE	Garage	1969	27095
AC	458m NE	Garage	1988	28800
AC	458m NE	Garage	1954	24261

ID	Location	Land Use	Date	Group ID
AC	458m NE	Garage	1953	24261
AH	487m N	Garage	1988	29965
AH	487m N	Garage	1963	29223
AH	487m N	Garage	1995	27989
AC	489m NE	Garage	1995	30670
AC	491m NE	Garage	1988	23707
AC	491m NE	Garage	1963	29011
AC	491m NE	Garage	1953	29011
AC	491m NE	Garage	1954	29188
AC	491m NE	Garage	1965	28047
AC	491m NE	Garage	1969	28047
AC	494m NE	Garage	1984	28047

This data is sourced from Ordnance Survey® / Groundsure.

3 Waste and landfill



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	13

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.

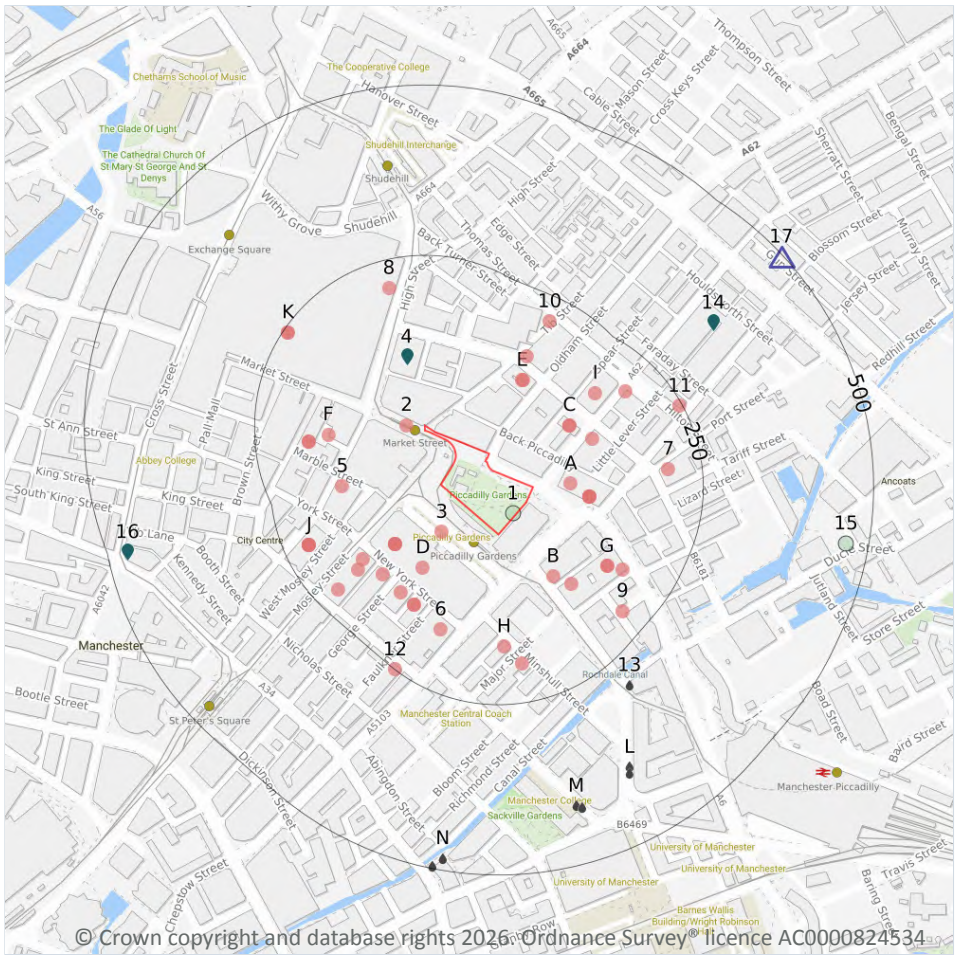
Features are displayed on the Waste and landfill map on **page 36 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	192m W	11 York Street, York Street, Manchester, M2 2be	WEX111733	Using waste exemption	Not on a farm	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
A	192m W	11 York Street, York Street, Manchester, M2 2be	WEX111733	Treating waste exemption	Not on a farm	Screening and blending of waste
B	270m NW	Arndale House Arndale Centre Manchester M4 3aq	EPR/KF0334ZH /A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in secure containers
B	270m NW	Arndale House Arndale Centre Manchester M4 3aq	EPR/KF0334ZH /A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in a secure place
B	270m NW	Arndale House Arndale Centre Manchester M4 3aq	EPR/KF0334ZH /A001	Treating waste exemption	Non-agricultural waste only	Preparatory treatments (baling, sorting, shredding etc)
B	282m NW	1st Floor, Arndale House, Manchester, M4 3aq	WEX067421	Treating waste exemption	Not on a farm	Sorting mixed waste
1	318m W	Arndale House Arndale Centre Manchester M4 3aq	EPR/VF0609LD /A001	Treating waste exemption	Non-agricultural waste only	Crushing waste fluorescent tubes
2	345m E	-	WEX398142	Using waste exemption	Not on a farm	Use of waste in construction
3	422m N	Smithfield Ph 6 Goadsby Street Manchester M4 1eh	EPR/EE5250VR /A001	Using waste exemption	Non-agricultural waste only	Use of waste in construction
C	436m NE	-	WEX007769	Treating waste exemption	Not on a farm	Screening and blending of waste
C	436m NE	-	WEX007769	Using waste exemption	Not on a farm	Use of waste in construction
D	476m NE	41-45, Great Ancoats Street, Manchester, M4 5ae	WEX105955	Treating waste exemption	Not on a farm	Screening and blending of waste
D	476m NE	41-45, Great Ancoats Street, Manchester, M4 5ae	WEX105955	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



4.1 Recent industrial land uses

Records within 250m	50

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Company	Address	Activity	Category
2	27m W	Market Street (Manchester Metrolink)	Greater Manchester, M1	Tram, Metro and Light Railway Stations and Stops	Public Transport, Stations and Infrastructure
3	52m SW	Bus Station	Greater Manchester, M1	Bus and Coach Stations, Depots and Companies	Public Transport, Stations and Infrastructure

ID	Location	Company	Address	Activity	Category
A	56m E	Sell This Car Ltd	49, Piccadilly, Manchester, Greater Manchester, M1 2AP	Secondhand Vehicles	Motoring
A	84m E	Oil Colour Chemists Association	Fourth Floor 59, Piccadilly, Manchester, Greater Manchester, M1 2AQ	Adhesives and Sealants	Industrial Products
A	84m E	Lucas Products & Services	Fourth Floor 59, Piccadilly, Manchester, Greater Manchester, M1 2AQ	Office and Shop Equipment	Industrial Products
A	84m E	Justice Fire & Security	59, Piccadilly, Manchester, Greater Manchester, M1 2AQ	Electronic Equipment	Industrial Products
A	84m E	Leodis Stairlifts	59, Piccadilly, Manchester, Greater Manchester, M1 2AQ	Disability and Mobility Equipment	Consumer Products
B	101m SE	One 9 Scaffolding Ltd	9, Portland Street, Manchester, Greater Manchester, M1 3BE	Construction and Tool Hire	Hire Services
C	106m NE	Max White Business Services Ltd	Chatsworth House 19, Lever Street, Manchester, Greater Manchester, M1 1BY	Distribution and Haulage	Transport, Storage and Delivery
C	106m NE	Mail Boxes Etc Manchester Piccadilly	Chatsworth House 19, Lever Street, Manchester, Greater Manchester, M1 1AN	Distribution and Haulage	Transport, Storage and Delivery
D	109m SW	Weeshred Ltd	Fourteenth Floor City Tower, Piccadilly Plaza, Manchester, Greater Manchester, M1 4HN	Waste Collection, Processing and Disposal Equipment	Industrial Products
D	110m SW	Greener Home Project	City Tower, Piccadilly Plaza, Manchester, Greater Manchester, M1 4BT	Construction Completion Services	Construction Services
D	110m SW	Wedding Cars Hire Manchester	13th Floor City Tower, Piccadilly Plaza, Manchester, Greater Manchester, M1 4BT	Vehicle Hire and Rental	Hire Services
D	110m SW	L G L Worldwide Logistics Ltd	City Tower, Piccadilly Plaza, Manchester, Greater Manchester, M1 4BT	Distribution and Haulage	Transport, Storage and Delivery
C	113m NE	Westlakes Engineering	20, Dale Street, Manchester, Greater Manchester, M1 1EZ	Structural Engineers	Engineering Services
E	119m NE	Hempology	Unit 4b Afflecks Arcade, 3539 Oldham Street, Manchester, Greater Manchester, M1 1JG	Agricultural Machinery and Goods	Industrial Products
E	119m NE	Kustom Korner	Aflex Place 52, Church Street, Manchester, Greater Manchester, M4 1PW	Clothing, Components and Accessories	Consumer Products

ID	Location	Company	Address	Activity	Category
B	128m SE	Unified Theory of Everything	The Grand 1, Aytoun Street, Manchester, Greater Manchester, M1 3DA	Published Goods	Industrial Products
F	142m W	Electricity Sub Station	Greater Manchester, M2	Electrical Features	Infrastructure and Facilities
5	145m W	Rental Cars	35, Fountain Street, Manchester, Greater Manchester, M2 2AN	Vehicle Hire and Rental	Hire Services
G	151m SE	Pure Electric	4-10, London Road, Manchester, Greater Manchester, M1 3AN	Electrical Equipment Repair and Servicing	Repair and Servicing
G	151m SE	Halfords	6-10, Piccadilly, Manchester, Greater Manchester, M1	Vehicle Parts and Accessories	Motoring
E	154m N	Virtual Hideout	51, Church Street, Manchester, Greater Manchester, M4 1PD	Hobby, Sports and Pastime Products	Consumer Products
D	155m SW	Atkins Group	Fifth Floor the Exchange 3, New York Street, Manchester, Greater Manchester, M1 4HN	Civil Engineers	Engineering Services
D	158m SW	British Engineering Services	5, New York Street, Manchester, Greater Manchester, M1 4JB	Civil Engineers	Engineering Services
D	159m SW	Aecom Europe Ltd	1, New York Street, Manchester, Greater Manchester, M1 4HD	Civil Engineers	Engineering Services
D	159m SW	Bruntwood	Faulkner House, Faulkner Street, Manchester, Greater Manchester, M1 4DY	Business Parks and Industrial Estates	Industrial Features
D	159m SW	St John Ambulance	Faulkner House, Faulkner Street, Manchester, Greater Manchester, M1 4DY	Ambulance and Medical Transportation Services	Health Support Services
6	163m SW	Daisy Group Plc	Bank Chambers, Faulkner Street, Manchester, Greater Manchester, M1 4EH	Radar and Telecommunications Equipment	Industrial Products
H	165m S	Print Chain	Barlow House 4, Minshull Street, Manchester, Greater Manchester, M1 3DZ	Published Goods	Industrial Products
I	166m NE	The Real Camera Co	Sevendale House 5-7, Dale Street, Manchester, Greater Manchester, M1 1JA	Photographic and Optical Equipment	Household, Office, Leisure and Garden
F	171m W	Ultimate Commercial Interiors	605 Bloc, 17 Marble Street, Manchester, Greater Manchester, M2 3AW	Office and Shop Equipment	Industrial Products
F	171m W	Crookes Walker Consulting Ltd	Bloc Suite 9a 17 Marble Street, Manchester, Greater Manchester, M2 3AW	Civil Engineers	Engineering Services

ID	Location	Company	Address	Activity	Category
G	172m SE	Enterprise Rent-A-Car	Ground Floor, Car Park 1 Chatham Street, Manchester, Greater Manchester, M1 3AY	Vehicle Hire and Rental	Hire Services
D	174m SW	A D T Fire & Security	1, New York Street, Manchester, Greater Manchester, M1 4HD	Special Purpose Machinery and Equipment	Industrial Products
H	192m S	Beast Prosthetics	Saco House 6, Minshull Street, Manchester, Greater Manchester, M1 3ED	Disability and Mobility Equipment	Consumer Products
I	195m NE	Manchester Coach Hire	26a, Lever Street, Manchester, Greater Manchester, M1 1DW	Vehicle Hire and Rental	Hire Services
7	200m E	Slack & Andrews Manufacturing Jewellers Ltd	Dale House 35, Dale Street, Manchester, Greater Manchester, M1 2HF	Jewellery, Gems, Clocks and Watches	Consumer Products
8	209m N	Aigo Digital	Manchester Arndale Market 49, High Street, Manchester, Greater Manchester, M4 3AH	Electrical Equipment Repair and Servicing	Repair and Servicing
9	211m SE	Electricity Sub Station	Greater Manchester, M1	Electrical Features	Infrastructure and Facilities
J	213m SW	The Quantum Print	Ground Floor, Barnett House, 53, Fountain Street, Manchester, Greater Manchester, M2 2AN	Published Goods	Industrial Products
J	213m SW	National Safety Centre	Barnett House 53, Fountain Street, Manchester, Greater Manchester, M2 2AN	Special Purpose Machinery and Equipment	Industrial Products
J	213m SW	Aquacleanse Ltd	Ground Floor, Barnett House, 53, Fountain Street, Manchester, Greater Manchester, M2 2AN	Air and Water Filtration	Industrial Products
J	213m SW	Print-print	Barnett House 53, Fountain Street, Manchester, Greater Manchester, M2 2AN	Published Goods	Industrial Products
10	213m NE	Electricity Sub Station	Greater Manchester, M4	Electrical Features	Infrastructure and Facilities
D	215m SW	Booth King Partnership Ltd	First Floor Calico, 55 Mosley Street, Manchester, Greater Manchester, M2 3HQ	Civil Engineers	Engineering Services
K	243m NW	Specsavers Hearcare	89, Halle Mall Man, Manchester, Greater Manchester, M4 2HU	Disability and Mobility Equipment	Consumer Products
K	243m NW	Eggfree Cake Box	Kiosk3, Manchester Arndale, Barbirolli Mall, City Centre, Manchester, Greater Manchester, M4 2HU	Baking and Confectionery	Foodstuffs

ID	Location	Company	Address	Activity	Category
11	246m NE	Minuteman Press	27a, Hilton Street, Manchester, Greater Manchester, M1 1EL	Published Goods	Industrial Products
12	250m SW	Vina Karaoke Bar	Lindencourt House 34, Charlotte Street, Manchester, Greater Manchester, M1 4FD	Electronic Equipment	Industrial Products

This data is sourced from Ordnance Survey®.

4.2 National Geographic Database (NGD) - Current or recent tanks

Records within 250m	0

Current or recent tanks identified from the Ordnance Survey® NGD.

This data is sourced from Ordnance Survey®.

4.3 Current or recent petrol stations

Records within 500m	1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 39 >**

ID	Location	Company	Address	LPG	Status
17	497m NE	OBSOLETE	27, Gun Street, Ancoats, Manchester, Greater Manchester, M4 5DN	Not Applicable	Obsolete

This data is sourced from Experian.

4.4 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.5 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.6 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.

4.7 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.

4.8 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.

4.9 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.

4.10 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.

4.11 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.

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

Records within 500m	3

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 39 >**

ID	Location	Address	Details	
4	104m N	Johnsons Cleaners UK Ltd, 24 High Street, City Centre, Manchester, M4 1QB	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
14	358m NE	Express Printers Manchester Ltd, Hery Street, Ancoats, M60 4HB	Process: Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
16	471m W	Johnsons Cleaners UK Ltd, 59 Cross Street, Albert Square, Manchester, M2 4JW	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.13 Radioactive Substance Authorisations

Records within 500m	0

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

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

4.14 Licensed Discharges to controlled waters

Records within 500m	14

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 39 >**

ID	Location	Address	Details	
13	293m SE	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
L	392m SE	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
L	392m SE	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
L	401m SE	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
M	414m S	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
M	414m S	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: -

ID	Location	Address	Details	
M	420m S	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
M	420m S	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
N	482m 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
N	482m 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
N	482m 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
N	497m 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
N	497m 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
N	497m 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

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

4.15 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.

4.16 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.

4.17 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.

4.18 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.

4.19 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 39 >**

ID	Location	Details	
1	**On site**	**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)**
15	467m E	Incident Date: 22/02/2003 Incident Identification: 138638 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

4.20 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.

4.21 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.

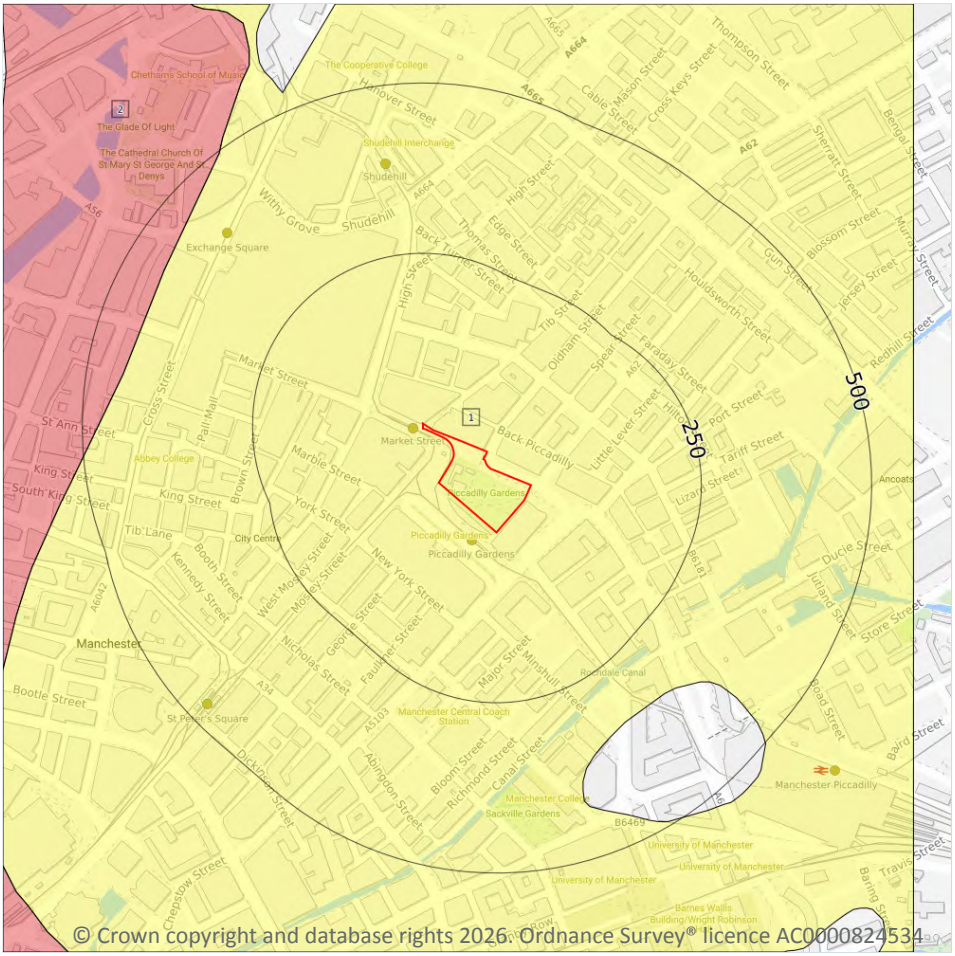
4.22 Pollution inventory radioactive waste

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

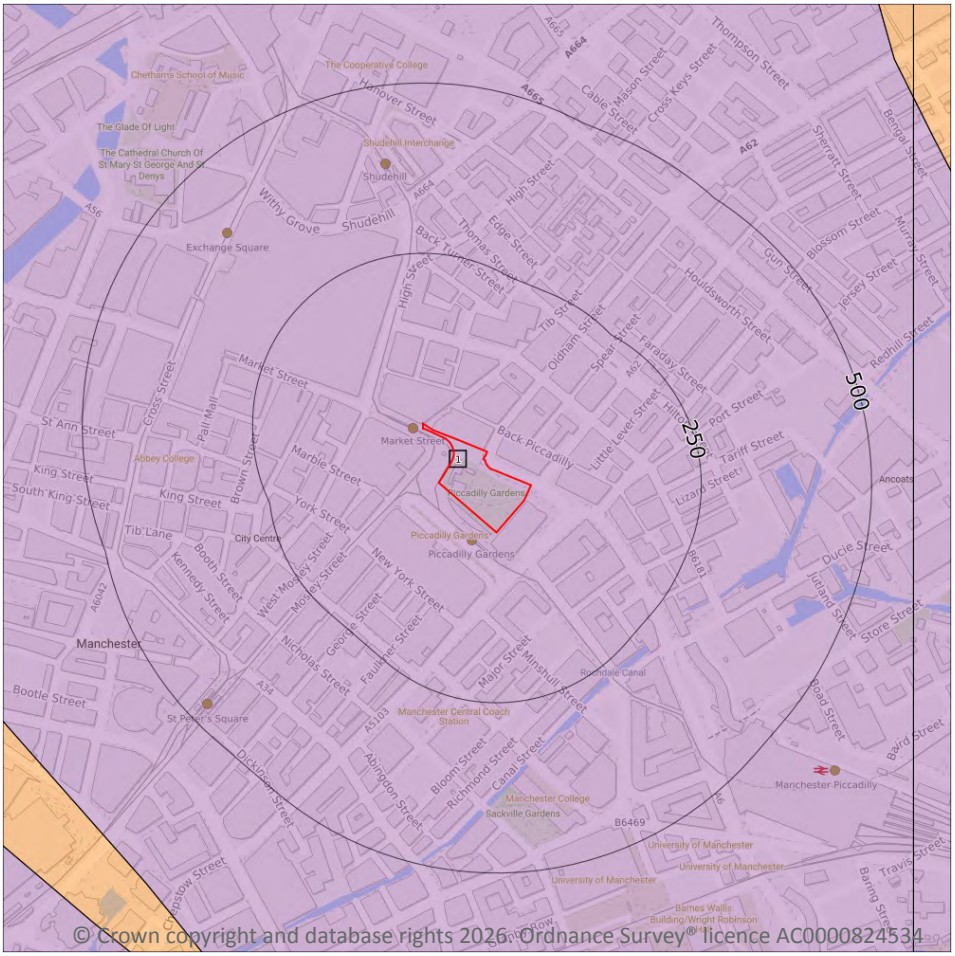
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 50 >**

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	436m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	1

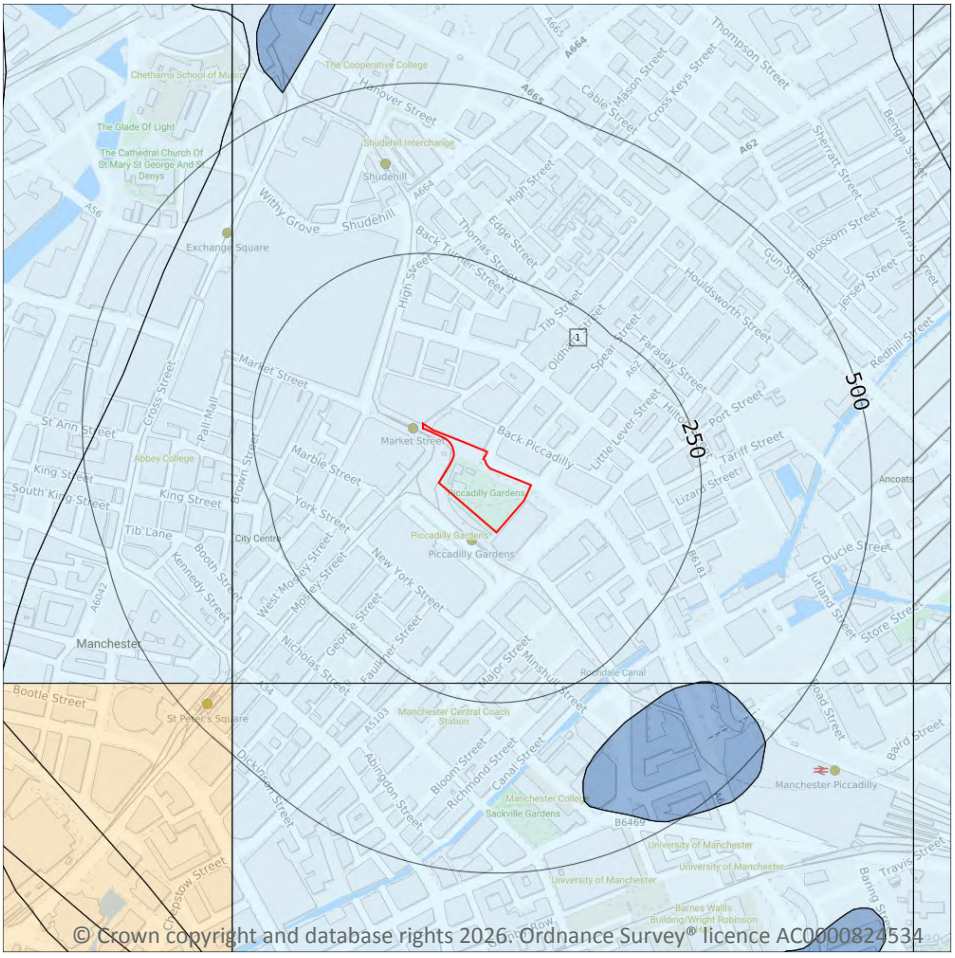
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 52 >**

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

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 53 >**

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: >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.

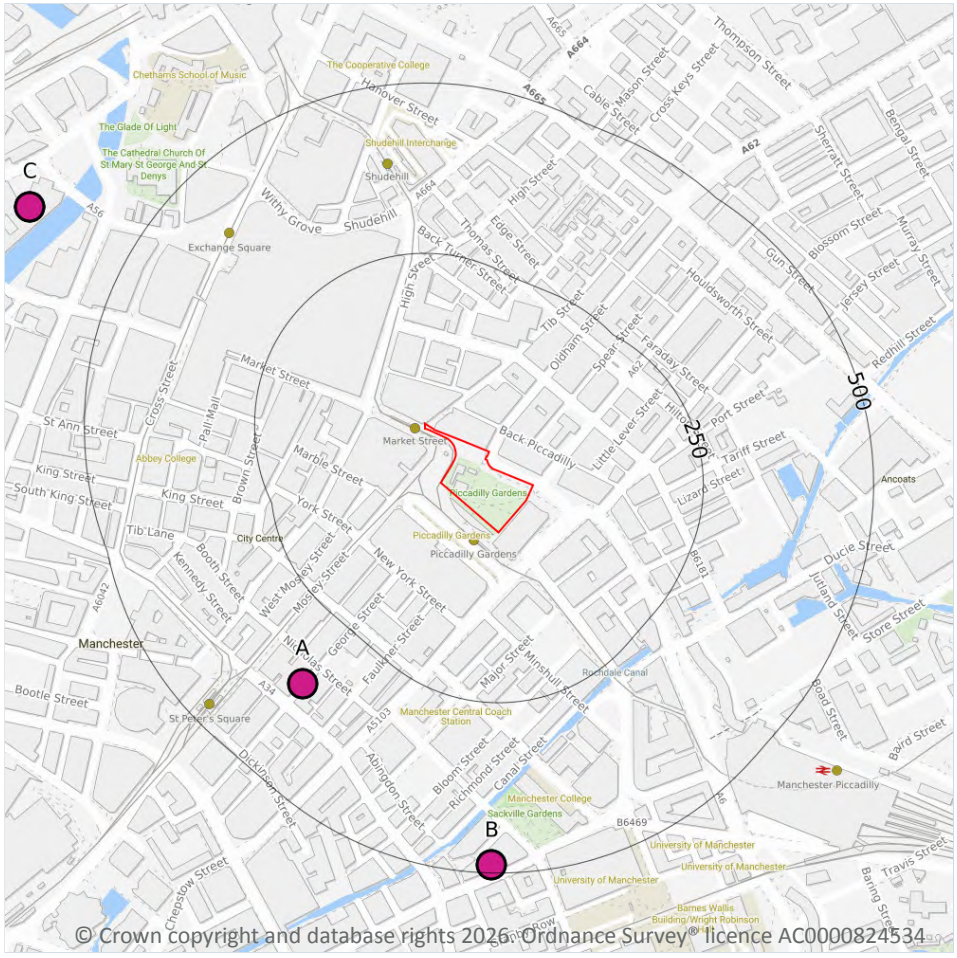
5.5 Groundwater vulnerability- local information

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



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5.6 Groundwater abstractions

Records within 2000m	65

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 55 >**

ID	Location	Details	
A	356m SW	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: -
A	356m SW	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: -
B	489m S	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: -
B	489m S	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: -

ID	Location	Details	
C	662m 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 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: -
C	662m 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: -
C	662m 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: -
-	931m NW	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: -

ID	Location	Details	
-	931m NW	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: -
-	931m NW	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: -
-	931m NW	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: -
-	931m NW	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	
-	931m NW	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: -
-	947m 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: -
-	952m NW	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: -
-	952m NW	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: -

ID	Location	Details	
-	952m NW	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: -
-	952m NW	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: -
-	952m NW	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: -
-	952m NW	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: -

ID	Location	Details	
-	969m NW	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: -
-	969m NW	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: -
-	969m NW	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: -
-	969m NW	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: -

ID	Location	Details	
-	969m NW	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: -
-	969m NW	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: -
-	1085m S	Status: Active Licence No: NW/069/0006/009 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BH1, SCIENCE AND ENGINEERING BUILDING Data Type: Point Name: Manchester Metropolitan University Easting: 383998 Northing: 397209	Annual Volume (m^3): 176000 Max Daily Volume (m^3): 908 Original Application No: NPS/WR/033653 Original Start Date: 22/05/2024 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 22/05/2024 Version End Date: -
-	1085m S	Status: Active Licence No: NW/069/0006/009 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BH1, SCIENCE AND ENGINEERING BUILDING Data Type: Point Name: Manchester Metropolitan University Easting: 383998 Northing: 397209	Annual Volume (m^3): 176000 Max Daily Volume (m^3): 908 Original Application No: NPS/WR/033653 Original Start Date: 22/05/2024 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 22/05/2024 Version End Date: -

ID	Location	Details	
-	1090m SE	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: -
-	1090m SE	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: -
-	1149m 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): 283240 Max Daily Volume (m^3): 1532 Original Application No: NPS/WR/015264 Original Start Date: 01/04/2010 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date: -
-	1149m 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): 283240 Max Daily Volume (m^3): 1532 Original Application No: NPS/WR/015264 Original Start Date: 01/04/2010 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date: -

ID	Location	Details	
-	1149m S	Status: Historical 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): 283240 Max Daily Volume (m^3): 1532 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: -
-	1149m S	Status: Historical 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): 283240 Max Daily Volume (m^3): 1532 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: -
-	1164m 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): 543120 Max Daily Volume (m^3): 1488 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: -
-	1199m SW	Status: Active Licence No: NW/069/0004/021/R01 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (A) Data Type: Point Name: Science Museum Group Easting: 383198 Northing: 397829	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/040753 Original Start Date: 04/04/2024 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 04/04/2024 Version End Date: -
-	1199m SW	Status: Historical Licence No: NW/069/0004/021 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (A) Data Type: Point Name: Science Museum Group Easting: 383198 Northing: 397829	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/035329 Original Start Date: 31/03/2023 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 31/03/2023 Version End Date: -

ID	Location	Details	
-	1244m W	Status: Active Licence No: NW/069/0004/021/R01 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (B) Data Type: Point Name: Science Museum Group Easting: 383143 Northing: 397845	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/040753 Original Start Date: 04/04/2024 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 04/04/2024 Version End Date: -
-	1244m W	Status: Historical Licence No: NW/069/0004/021 Details: Heat Pump Direct Source: Ground Water - North West Region Point: CHESTER FORMATION AT SCIENCE MUSEUM (B) Data Type: Point Name: Science Museum Group Easting: 383143 Northing: 397845	Annual Volume (m^3): 346000 Max Daily Volume (m^3): 1728 Original Application No: NPS/WR/035329 Original Start Date: 31/03/2023 Expiry Date: 31/03/2024 Issue No: 1 Version Start Date: 31/03/2023 Version End Date: -
-	1318m 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: 384085 Northing: 399685	Annual Volume (m^3): 75000 Max Daily Volume (m^3): 300 Original Application No: NPS/WR/037017 Original Start Date: 17/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 29/06/2023 Version End Date: -
-	1331m 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): 45460 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	
-	1331m 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): 45460 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: -
-	1331m 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: -
-	1331m 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: -
-	1469m N	Status: Historical Licence No: 2569004021 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, DERBY STREET, CHEETHAM, MANCHESTER Data Type: Point Name: LANCASHIRE DAIRIES LTD Easting: 383900 Northing: 399800	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: 01/04/1993 Version End Date: -

ID	Location	Details	
-	1469m N	Status: Historical Licence No: 2569004021 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, DERBY STREET, CHEETHAM, MANCHESTER Data Type: Point Name: LANCASHIRE DAIRIES LTD Easting: 383900 Northing: 399800	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: 01/04/1993 Version End Date: -
-	1484m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1493m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1501m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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	
-	1519m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1524m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1538m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1563m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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	
-	1576m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1585m SW	Status: Active Licence No: NW/069/0004/003 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BOREHOLE AB1 AT MANCHESTER METROPOLITAN UNIVERSITY Data Type: Point Name: Manchester Metropolitan University Easting: 383741 Northing: 396774	Annual Volume (m^3): 615183 Max Daily Volume (m^3): 2760 Original Application No: NPS/WR/037062 Original Start Date: 20/09/2013 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 29/11/2024 Version End Date: -
-	1586m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1597m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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	
-	1605m SW	Status: Historical 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): 260172 Max Daily Volume (m^3): 712.8 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: -
-	1622m 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): 615183 Max Daily Volume (m^3): 2760 Original Application No: NPS/WR/037062 Original Start Date: 20/09/2013 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 29/11/2024 Version End Date: -
-	1622m SW	Status: Historical 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): 274115 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: -
-	1622m SW	Status: Historical 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): 274115 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: -

ID	Location	Details	
-	1650m W	Status: Historical Licence No: NW/069/0004/022 Details: Dewatering Direct Source: Ground Water - North West Region Point: ABSTRACTION AREA AT TRINITY ISLANDS, MANCHESTER Data Type: Poly4 Name: Renaker Build Ltd Easting: 382705 Northing: 397822	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: NPS/WR/036441 Original Start Date: 05/09/2023 Expiry Date: 31/10/2024 Issue No: 1 Version Start Date: 05/09/2023 Version End Date: -
-	1864m NE	Status: Active Licence No: 2569005015 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: B/HOLE, LITTLE GREEN WORKS, COLLYHURST RD, MANCHESTER 10 Data Type: Point Name: Packaging Products (Coatings) Ltd Easting: 385000 Northing: 400100	Annual Volume (m^3): 438689 Max Daily Volume (m^3): 1636.56 Original Application No: NPS/WR/044087 Original Start Date: 16/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 06/03/2025 Version End Date: -
-	1864m NE	Status: Historical Licence No: 2569005015 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "B/HOLE, LITTLE GREEN WORKS, COLLYHURST RD, MANCHESTER 10" Data Type: Point Name: PACKAGING PRODUCTS LTD Easting: 385000 Northing: 400100	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 16/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 21/02/1995 Version End Date: -
-	1970m 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): 2049840 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: -

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

5.7 Surface water abstractions

Records within 2000m	0

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.

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

5.8 Potable abstractions

Records within 2000m	10

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 55 >**

ID	Location	Details	
-	931m NW	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: -
-	931m NW	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: -

ID	Location	Details	
-	931m NW	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: -
-	952m NW	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: -
-	952m NW	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: -
-	952m NW	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: -

ID	Location	Details	
-	969m NW	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: -
-	969m NW	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: -
-	969m NW	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: -
-	1469m N	Status: Historical Licence No: 2569004021 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, DERBY STREET, CHEETHAM, MANCHESTER Data Type: Point Name: LANCASHIRE DAIRIES LTD Easting: 383900 Northing: 399800	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: 01/04/1993 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m	0

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

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

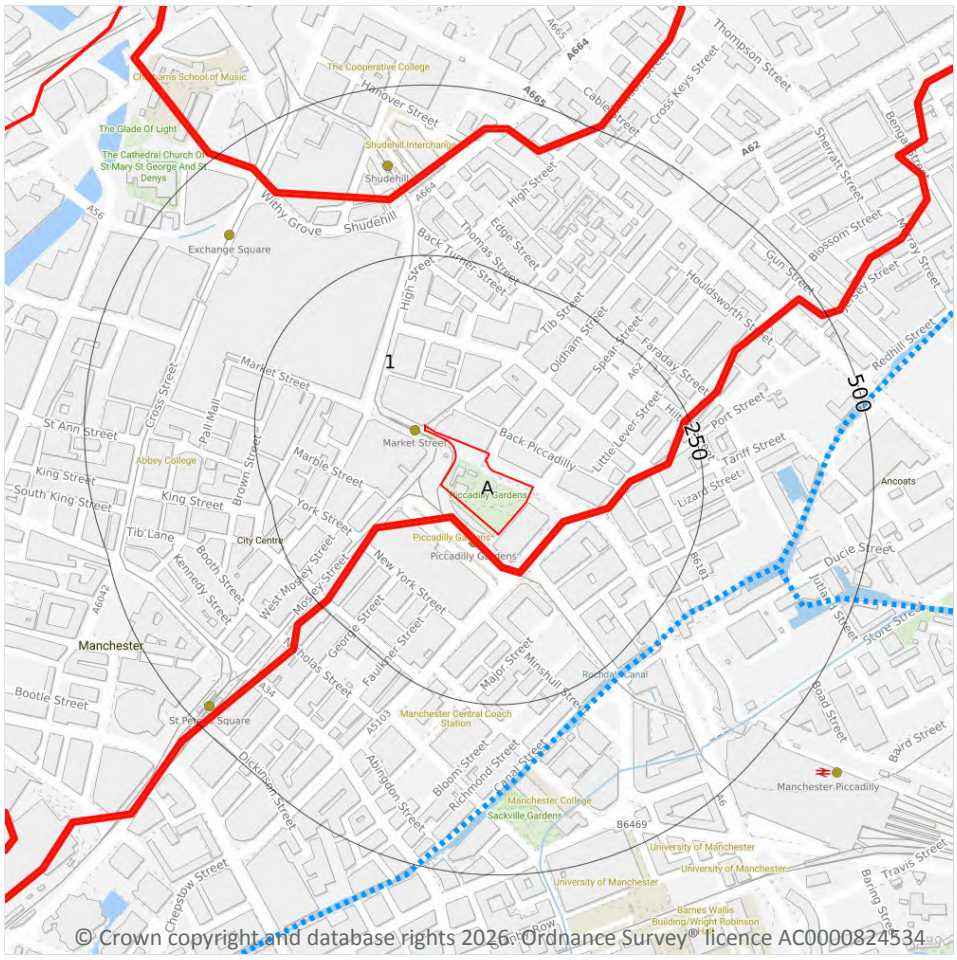
5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



Site Outline

Search buffers in metres (m)

Water Network (OS NGD)

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 NGD)

Records within 250m	0

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

This data is sourced from the Ordnance Survey®.

6.2 Surface water features

Records within 250m	0

Covering rivers, streams and lakes (some overlap with OS NGD 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.

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 76 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Irwell / Manchester Ship Canal (Irk to confluence with Upper Mersey)**	**GB112069061452**	**Croal Irwell**	**Irwell**

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

6.4 WFD Surface water bodies

Records identified	1

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

Features are displayed on the Hydrology map on **page 76 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	605m NW	River	Irwell / Manchester Ship Canal (Irk to confluence with Upper Mersey)	GB112069061452 ↗	No longer applicable	Does not require assessment	Moderate	2022

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 76 >**

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.

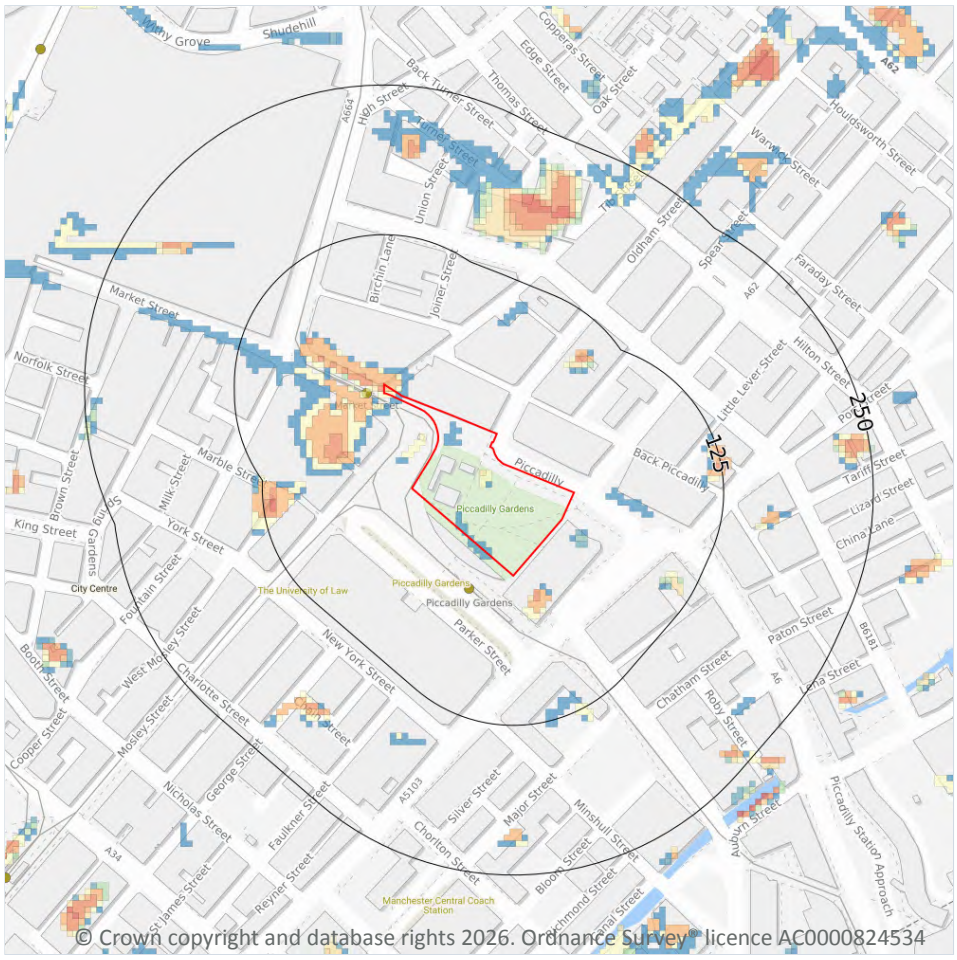
7.7 Flood Zone 3

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



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 82 >**

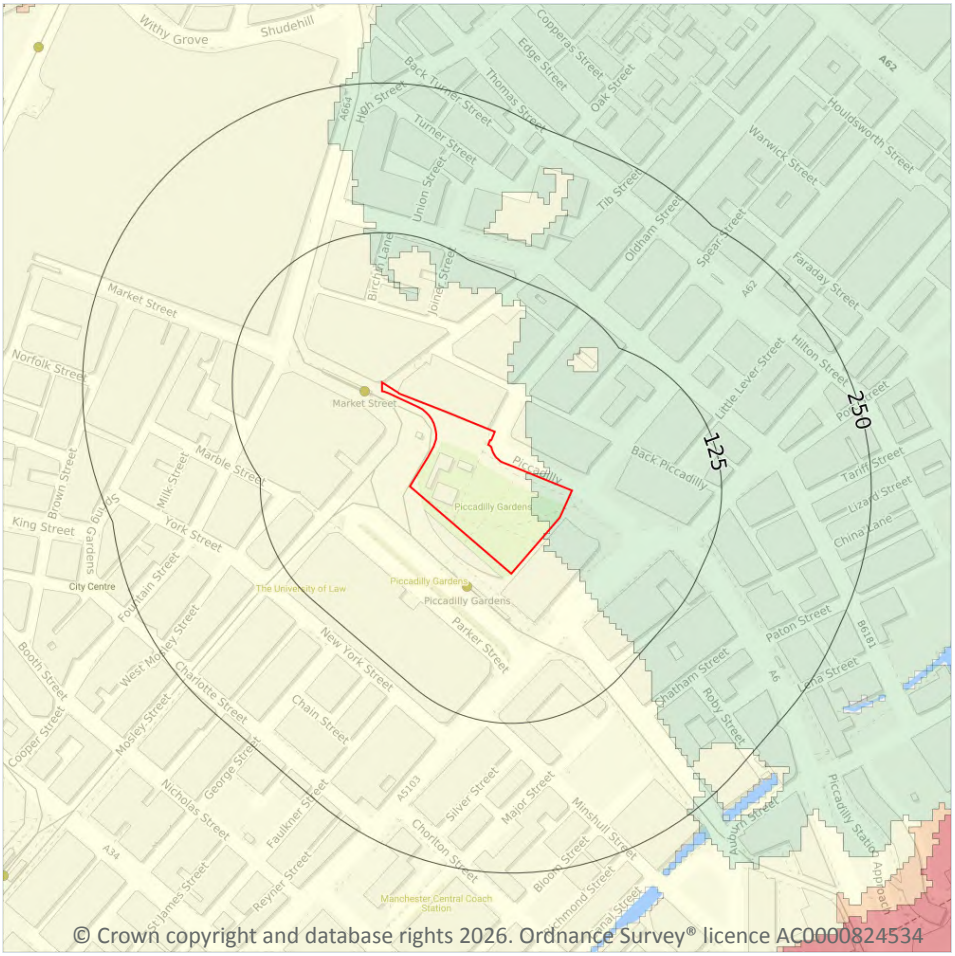
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

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**

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 84 >**

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

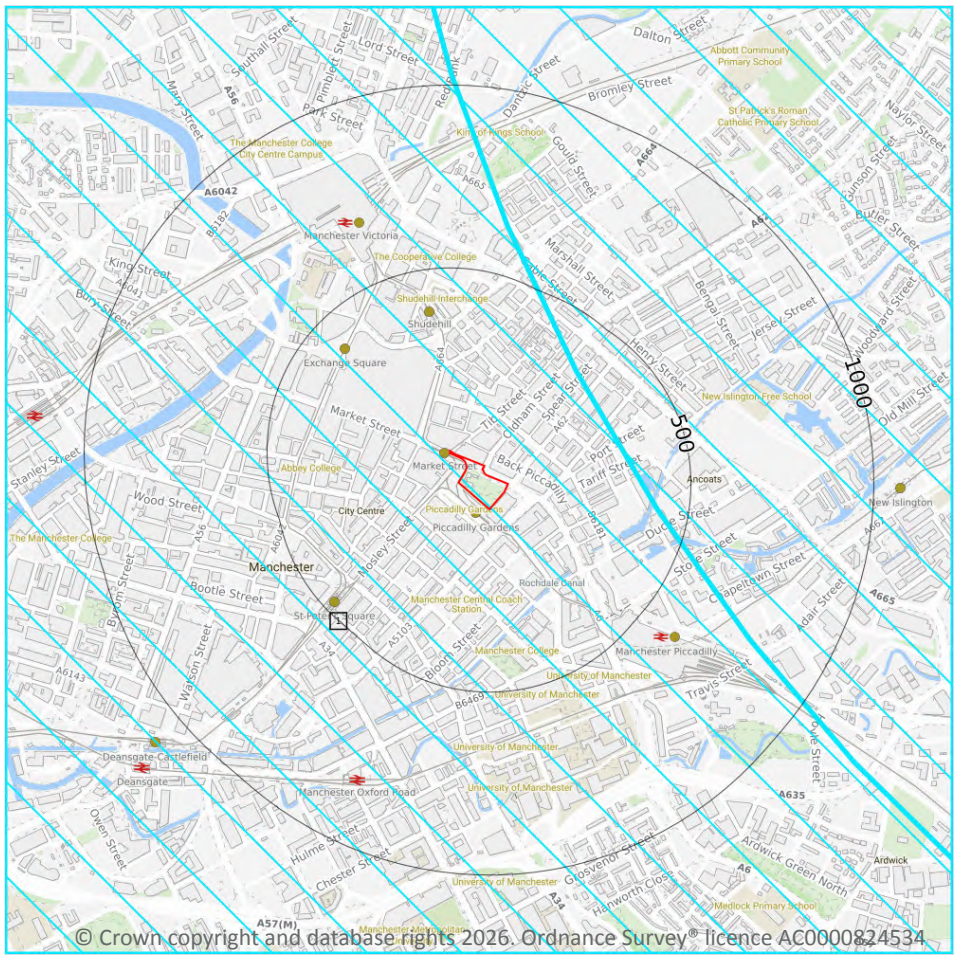
Records within 2000m	4

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
27m NE	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	Existing
288m NW	River Irk (Moston Brook to River Irwell) NVZ	Surface Water	638	Existing
707m NW	Irwell / Man. Ship Canal (Kearsley to Irlam Locks) NVZ	Surface Water	643	Existing
1232m 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 89 >**

ID	Location	Type of developments requiring consultation
1	**On site**	**https://irz.geodata.org.uk/IRZ/step2.html?irzcode=0000000630000&notes=&location=383272,400229%20(IRZ%20polygon%20centre)**

This data is sourced from Natural England.

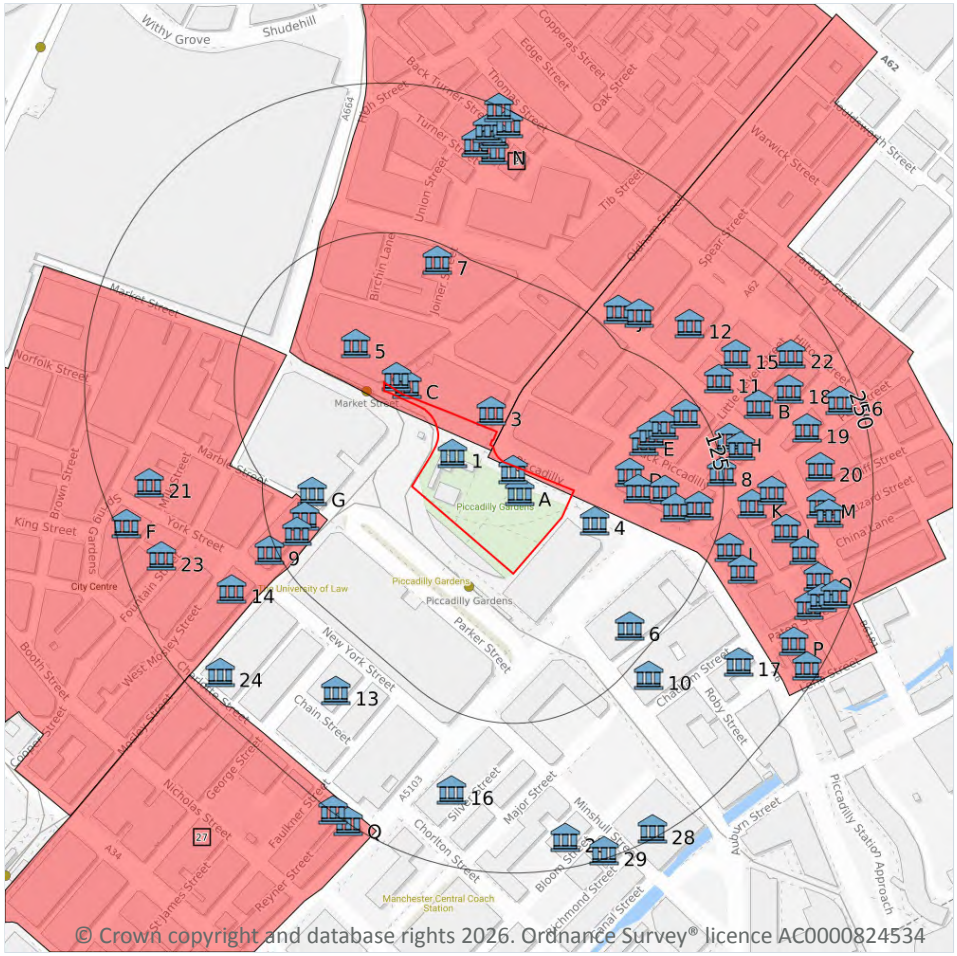
10.18 SSSI Units

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	71

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 91 >**

ID	Location	Name	Grade	Reference Number	Listed date
1	**On site**	**Peel Statue**	**II**	**1271114**	**03/10/1974**
A	**On site**	**Queen Victoria Monument**	**II**	**1246945**	**03/10/1974**
A	**On site**	**Watt Statue**	**II**	**1246946**	**03/10/1974**
C	9m NE	1, Piccadilly	II	1246874	03/10/1974
C	10m NE	Electricity Junction Box, Tib Street	II	1485437	15/02/2024

ID	Location	Name	Grade	Reference Number	Listed date
3	14m N	15 And 17, Piccadilly (See Details For Further Address Information)	II	1271118	20/06/1988
4	26m SE	Wellington Statue	II	1271115	03/10/1974
5	41m NW	Rylands Building (Debenhams)	II	1219831	06/06/1994
D	49m E	47 Piccadilly Including Warehouse Facing Back Piccadilly	II	1271231	06/06/1994
D	54m E	49 Piccadilly	II	1246670	06/06/1994
E	71m NE	8, Lever Street	II	1219353	03/10/1974
D	76m E	Gardens Hotel And Shops	II	1246920	06/06/1994
E	81m NE	10, Lever Street	II	1200802	03/10/1974
G	83m W	No. 10 Mosley Street	II	1220063	03/10/1974
D	85m E	Clayton House, 59, Piccadilly And 61 Piccadilly	II	1246671	06/06/1994
E	93m NE	12 And 14, Lever Street	II	1219363	03/10/1974
G	93m W	12, Mosley Street	II	1197928	03/10/1974
6	102m SE	The Portland Thistle Hotel	II	1246951	18/12/1963
G	103m W	Harvest House	II	1220153	03/10/1974
D	105m E	St Margarets Chambers	II	1246265	06/06/1994
7	111m NE	Unicorn Hotel	II	1464011	28/06/2019
E	113m NE	22, Dale Street	II	1283060	06/06/1994
8	124m E	Kingsley House	II	1271451	06/06/1994
9	131m SW	Colwyn Chambers	II	1197929	25/04/1985
H	137m E	Nos. 24, 26, And 28, Dale Street	II	1209604	03/10/1974
I	138m E	Halls Buildings	II	1271112	20/06/1988
10	141m SE	Grand Hotel	II	1197797	20/10/1987
H	144m E	Nos. 17-25, Newton Street, And Nos. 32 And 34, Dale Street	II	1246267	06/06/1994
J	144m NE	Dale Street Chambers	II	1246279	06/06/1994
K	149m E	8-12, Newton Street	II	1271450	06/06/1994
11	153m NE	25 And 27, Dale Street (See Details For Further Address Information)	II	1197771	06/06/1994
J	155m NE	3, Dale Street	II	1209576	06/06/1994

ID	Location	Name	Grade	Reference Number	Listed date
I	155m SE	77-83, Piccadilly	II	1271232	20/06/1988
K	165m E	14 And 16, Newton Street (See Details For Further Address Information)	II	1246266	06/06/1994
12	169m NE	Sevendale House	II	1200847	06/06/1994
13	170m SW	Telephone Buildings	II	1255051	20/06/1988
B	170m NE	29 And 31, Dale Street	II	1209666	06/06/1994
14	173m SW	Royal Bank Of Scotland	II*	1220165	25/02/1952
15	177m NE	Watts Brothers	II	1200803	06/06/1994
L	180m E	56, Dale Street	II	1209799	06/06/1994
16	188m S	Britannia Hotel	II*	1246952	25/02/1952
17	190m SE	Barclays Bank	II	1246668	20/06/1988
18	199m NE	45 And 47, Newton Street	II	1246268	06/06/1994
L	199m E	Eleska House	II	1200842	06/06/1994
19	201m E	Bradley House	II	1197772	06/06/1994
20	206m E	35, Dale Street	II	1209673	06/06/1994
M	207m E	45, Dale Street	II	1283061	06/06/1994
21	211m W	Former National Westminster Bank On Corner At Junction With Spring Gardens	II*	1255042	04/01/1972
M	214m E	47, Dale Street	II	1209675	17/09/1992
N	214m NE	1, Kelvin Street	II	1200822	06/06/1994
22	214m NE	49, Newton Street (See Details For Further Address Information)	II	1271452	06/06/1994
N	215m N	Warehouse, Workshop And Shops	II	1390870	25/05/2004
O	217m E	64 And 66, Dale Street	II	1200843	06/06/1994
23	217m W	Estate Exchange	II*	1200835	03/10/1974
O	218m SE	Numbers 13 And 15 And Attached Railings	II	1246661	06/06/1994
P	219m SE	The Brunswick Hotel	II	1271113	03/10/1974
24	223m SW	The Portico Library And The Bank Public House	II*	1197930	25/02/1952
25	224m S	8, Minshull Street (See Details For Further Address Information)	II	1219858	06/06/1994

ID	Location	Name	Grade	Reference Number	Listed date
O	226m SE	19, Paton Street	II	1271230	06/06/1994
N	227m NE	Workshops, Shop And Warehouse	II	1096052	26/02/2003
N	229m N	38 Back Turner Street	II	1390869	25/05/2004
O	235m E	68, Dale Street	II	1282972	06/06/1994
26	235m E	Newton Buildings	II	1246388	20/06/1988
P	239m SE	107, Piccadilly	II	1246944	03/10/1974
N	240m NE	7, Kelvin Street	II	1291627	06/06/1994
F	240m W	41, Spring Gardens	II	1270679	03/10/1974
28	243m SE	City Police Courts	II*	1219894	03/10/1974
29	244m S	Minshull House	II	1197926	06/06/1994
Q	248m SW	Fraser House	II	1283064	03/10/1974
N	249m NE	42, 44 And 46 Thomas Street (Including 41, 43 And 45 Back Turner Street)	II	1452606	23/07/2018
Q	249m SW	Lindencourt House	II	1208396	03/10/1974

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

11.5 Conservation Areas

Records within 250m **4**

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 91 >**

ID	Location	Name	District	Date of designation
2	**On site**	**Smithfield**	**Manchester**	**01/02/1987**
B	**On site**	**Stevenson Square**	**Manchester**	**01/02/1987**
F	76m W	Upper King Street	Manchester	04/11/1970
27	237m SW	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.

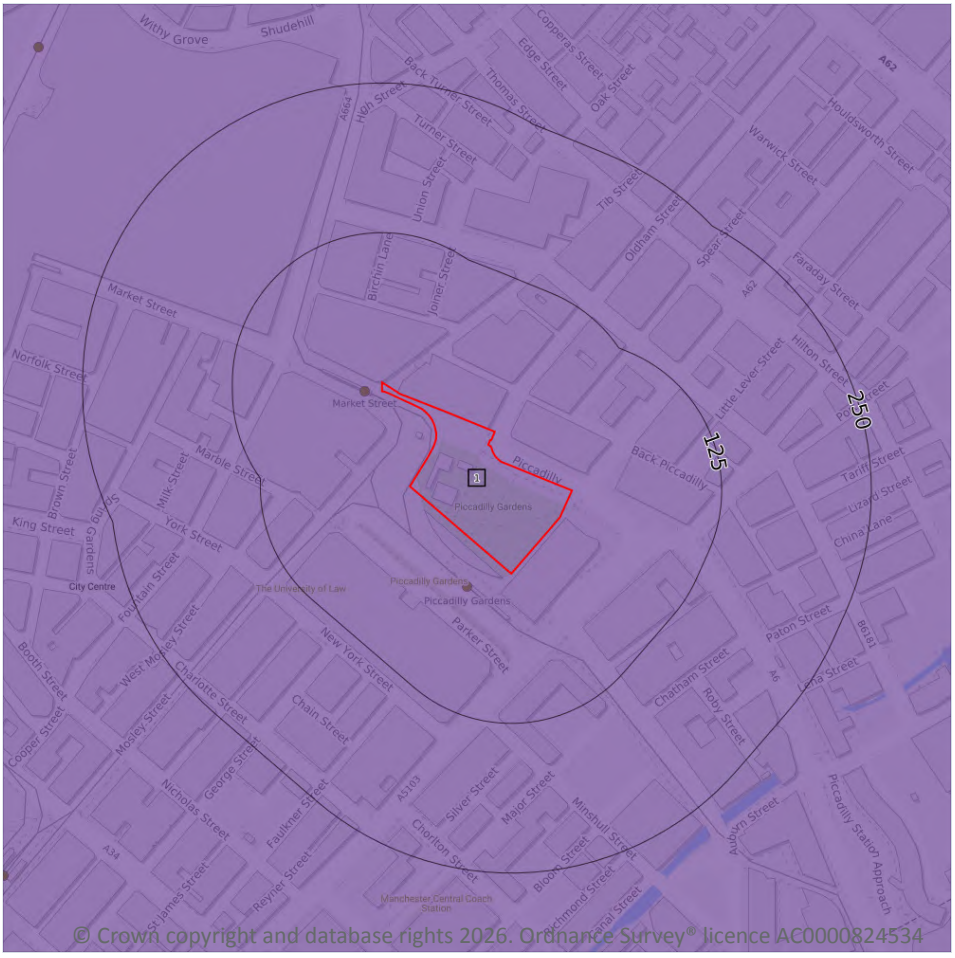
11.7 Registered Parks and Gardens

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 97 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	**Non-agricultural/no quality assigned**

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.

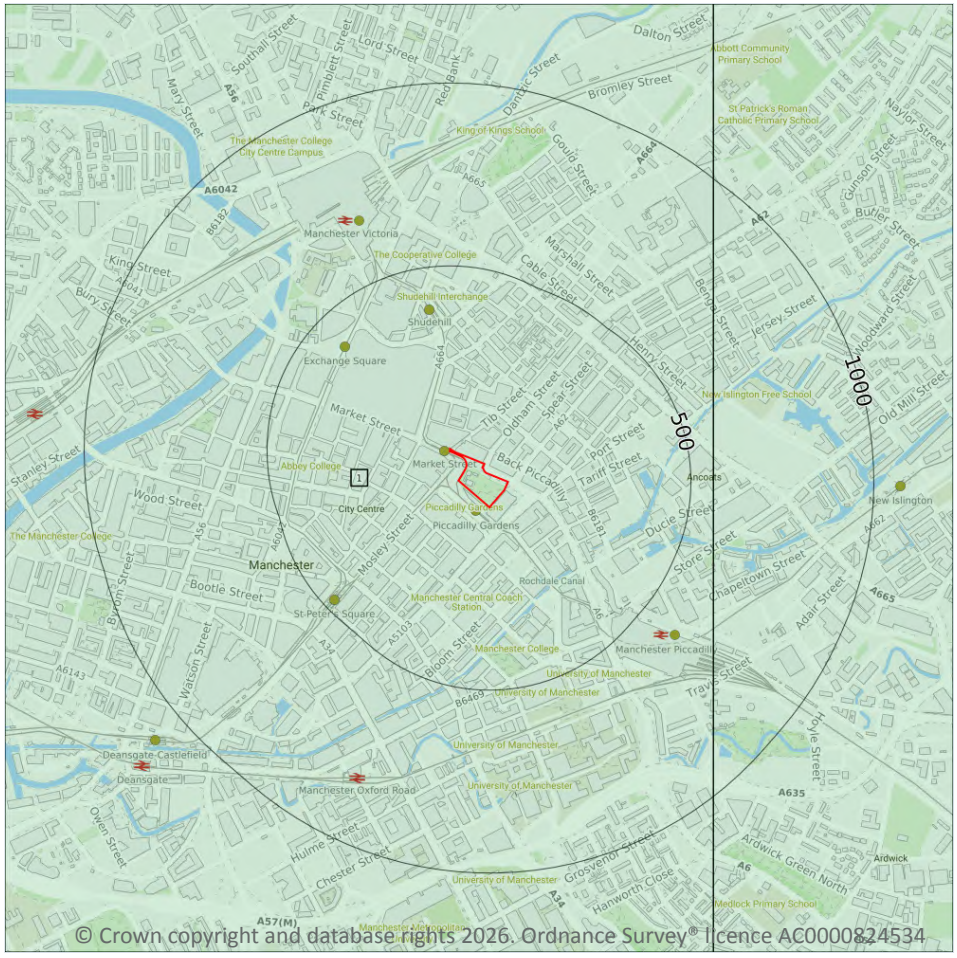
13.4 Limestone Pavement Orders

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

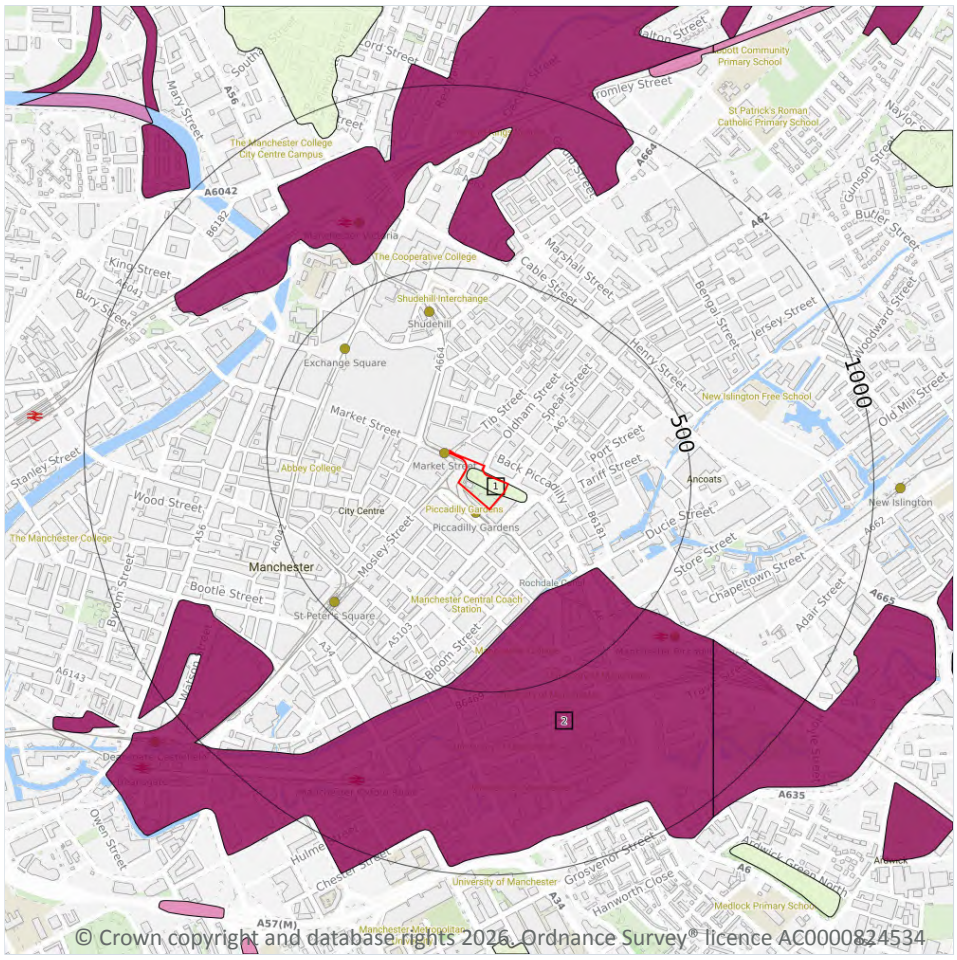
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 100 >**

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

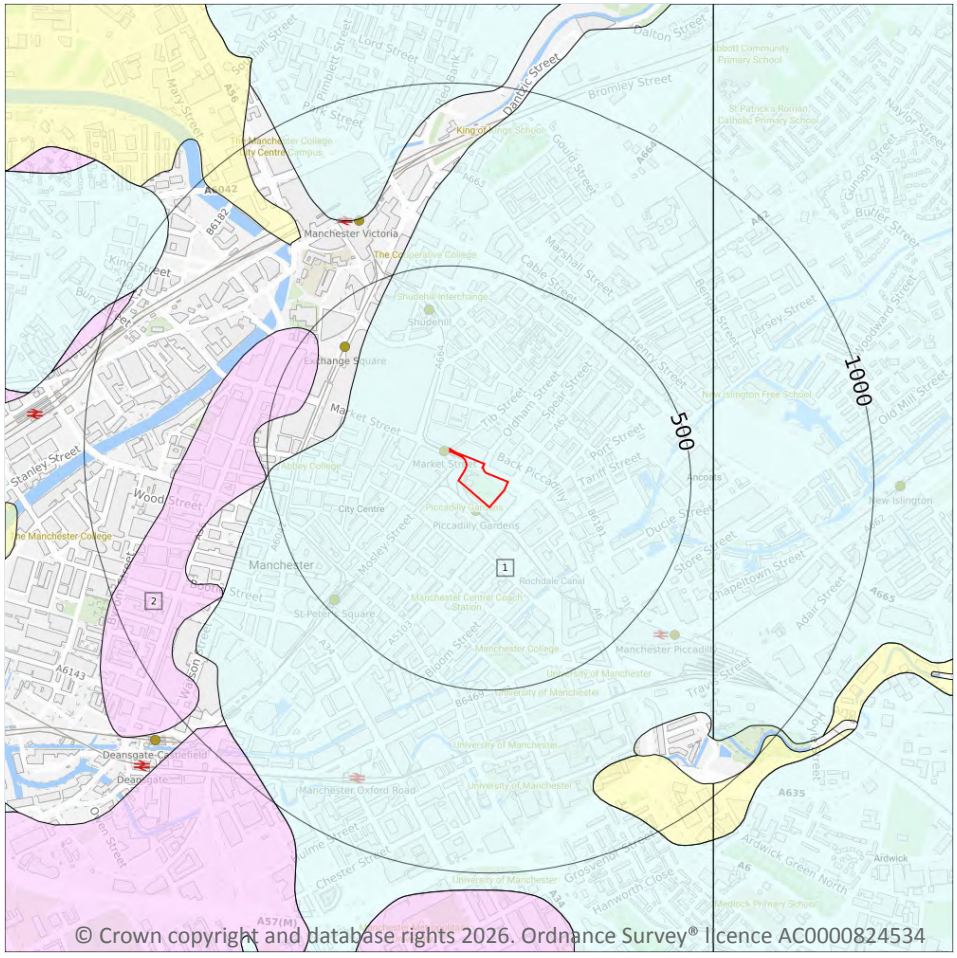
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 101 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**WMGR-ARTDP**	**Infilled Ground**	**Artificial deposit**
2	272m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



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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 102 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**Till, Devensian-Diamicton**	**Diamicton**
2	413m W	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian-Sand And Gravel	Sand and gravel

This data is sourced from the British Geological Survey.

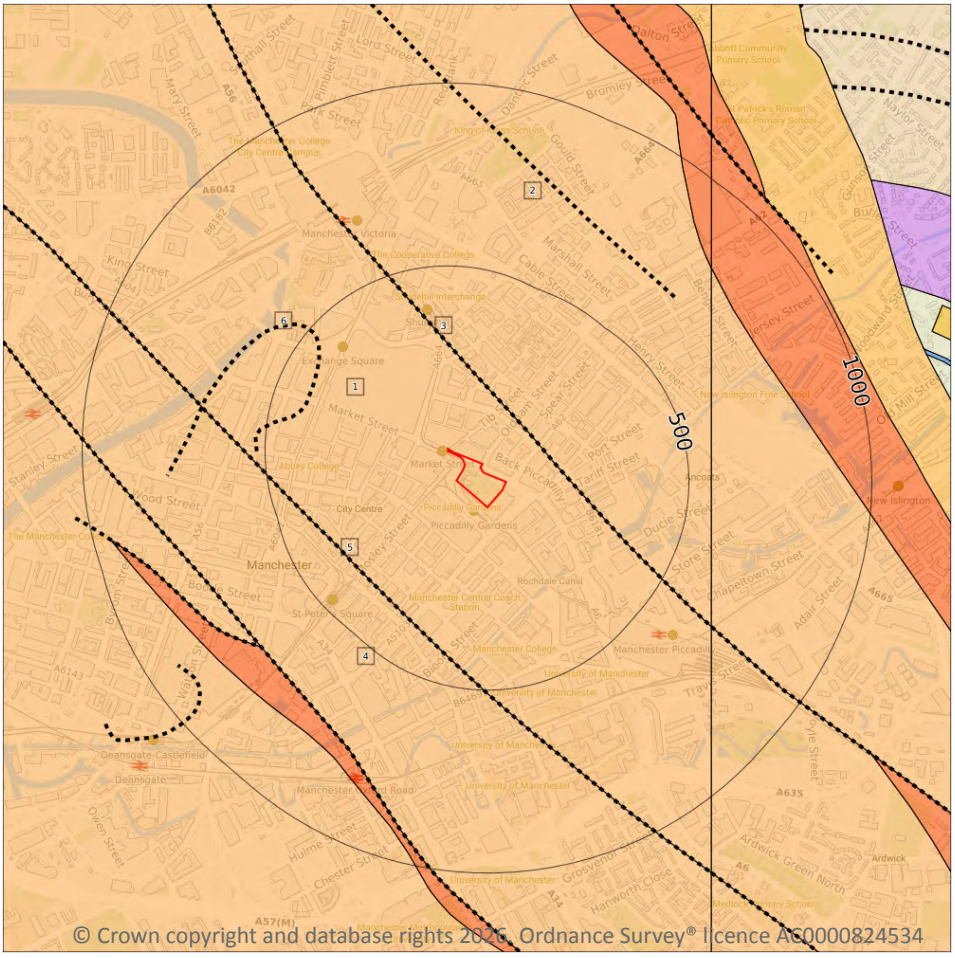
14.4 Landslip (10k)

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	3

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 104 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CHES-PESST**	**Chester Formation-Pebbly (Gravelly) Sandstone**	**Olenekian**
2	135m NE	CHES-PESST	Chester Formation-Pebbly (Gravelly) Sandstone	Olenekian
4	360m SW	CHES-PESST	Chester Formation-Pebbly (Gravelly) Sandstone	Olenekian

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	3

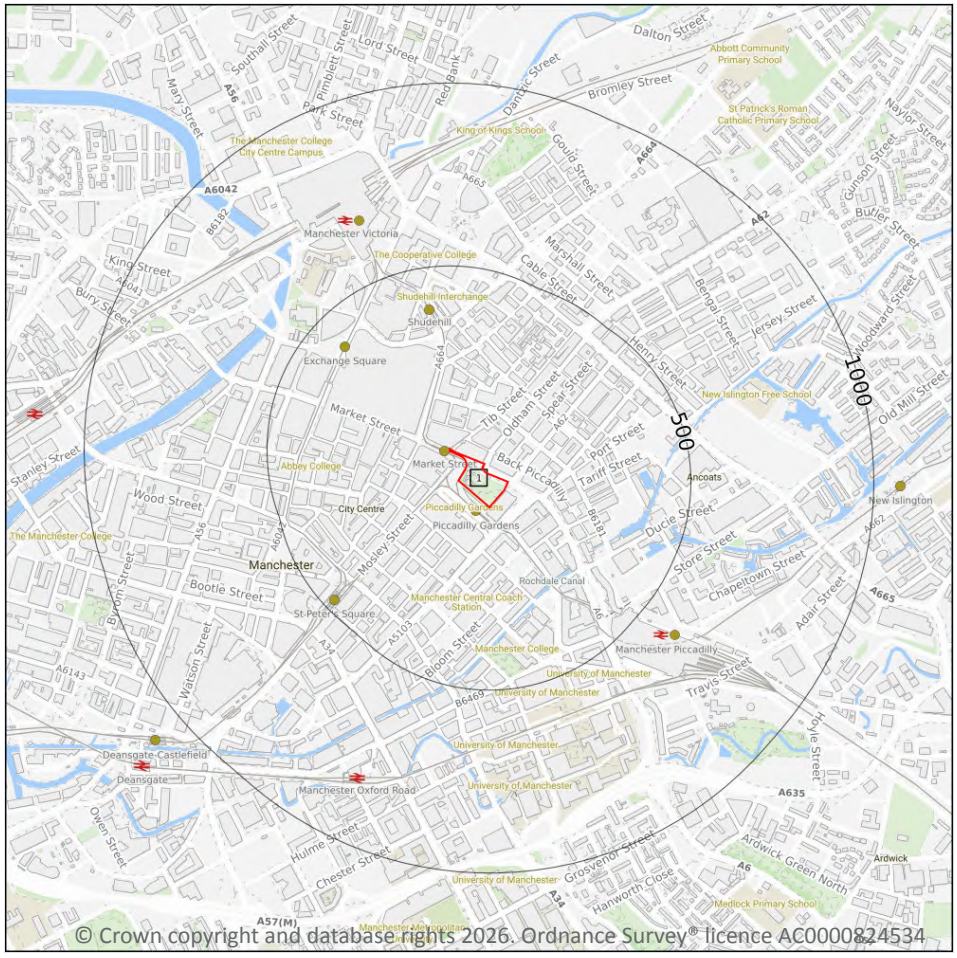
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 104 >**

ID	Location	Category	Description
3	135m NE	FAULT	Fault, inferred, displacement unknown
5	360m SW	FAULT	Fault, inferred, displacement unknown
6	406m W	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley; beads to outside

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

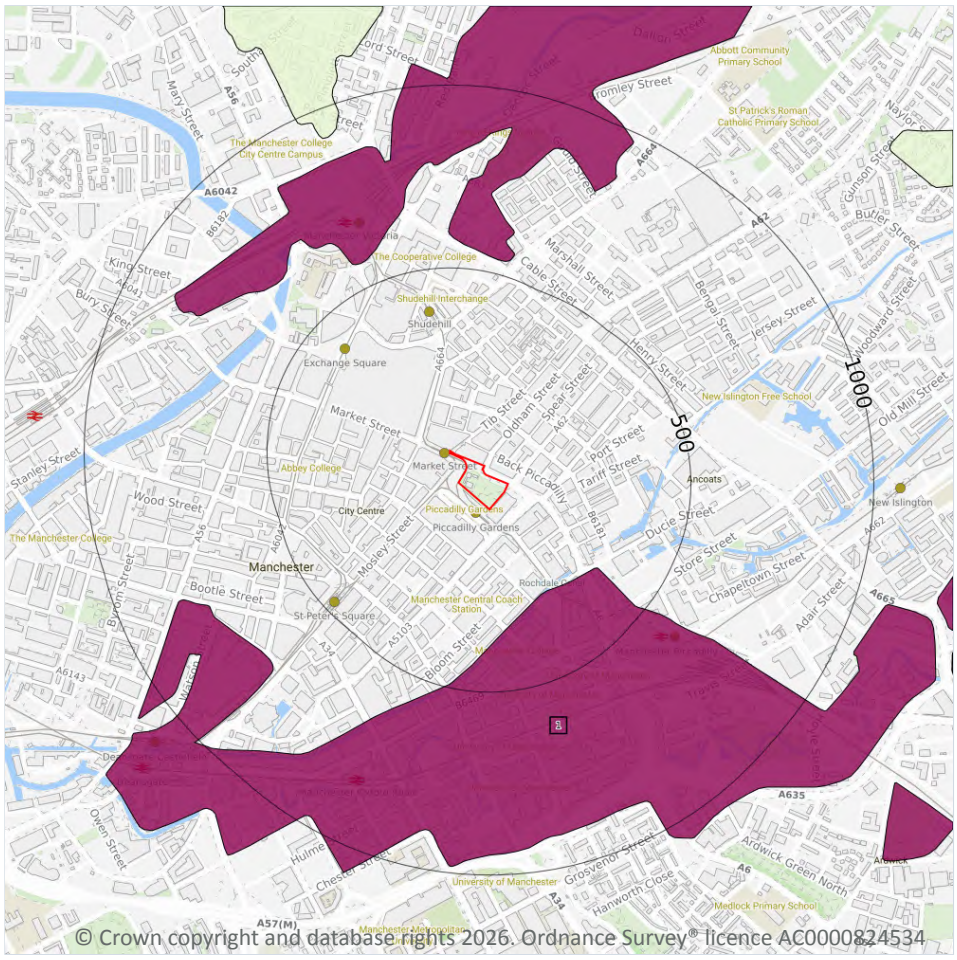
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 106 >**

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 107 >**

ID	Location	LEX Code	Description	Rock description
1	272m SE	MGR-ARTDP	Made Ground	Artificial deposit

This data is sourced from the British Geological Survey.

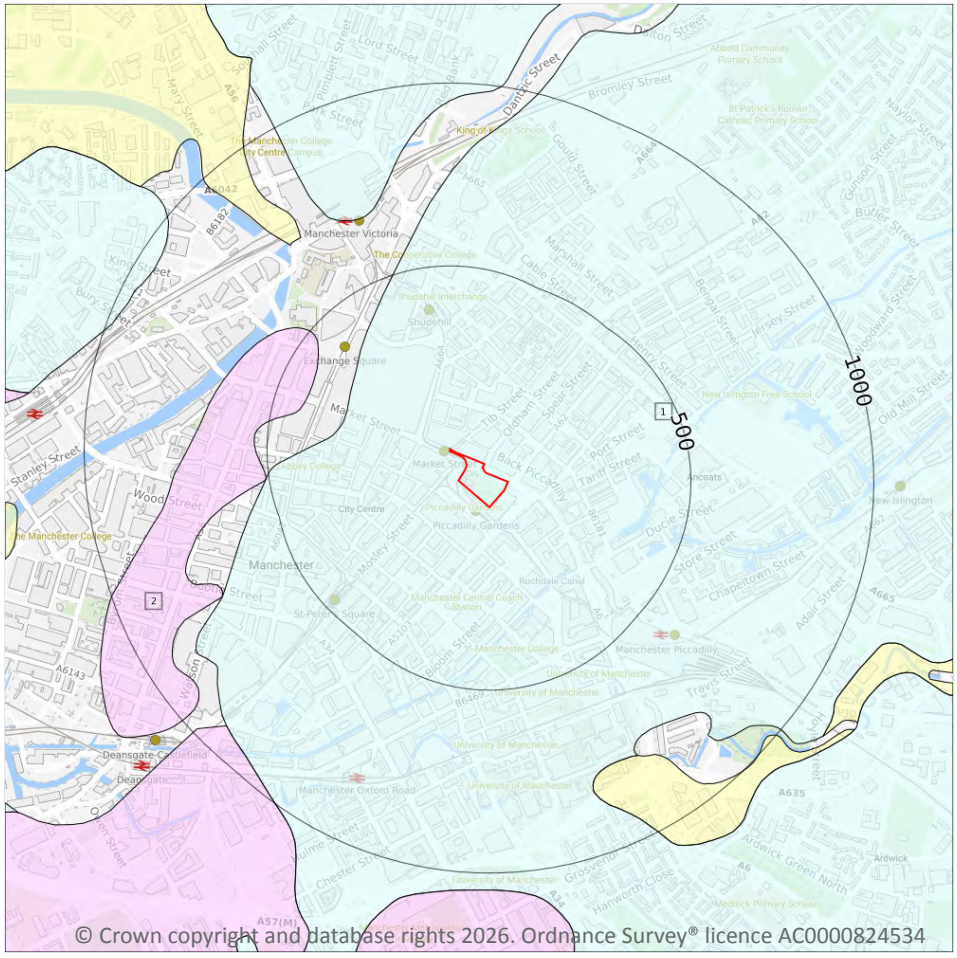
15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m	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 109 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**Till, Devensian**	**Diamicton**
2	414m W	GFSDD-XSV	Glaciofluvial sheet deposits, Devensian	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.

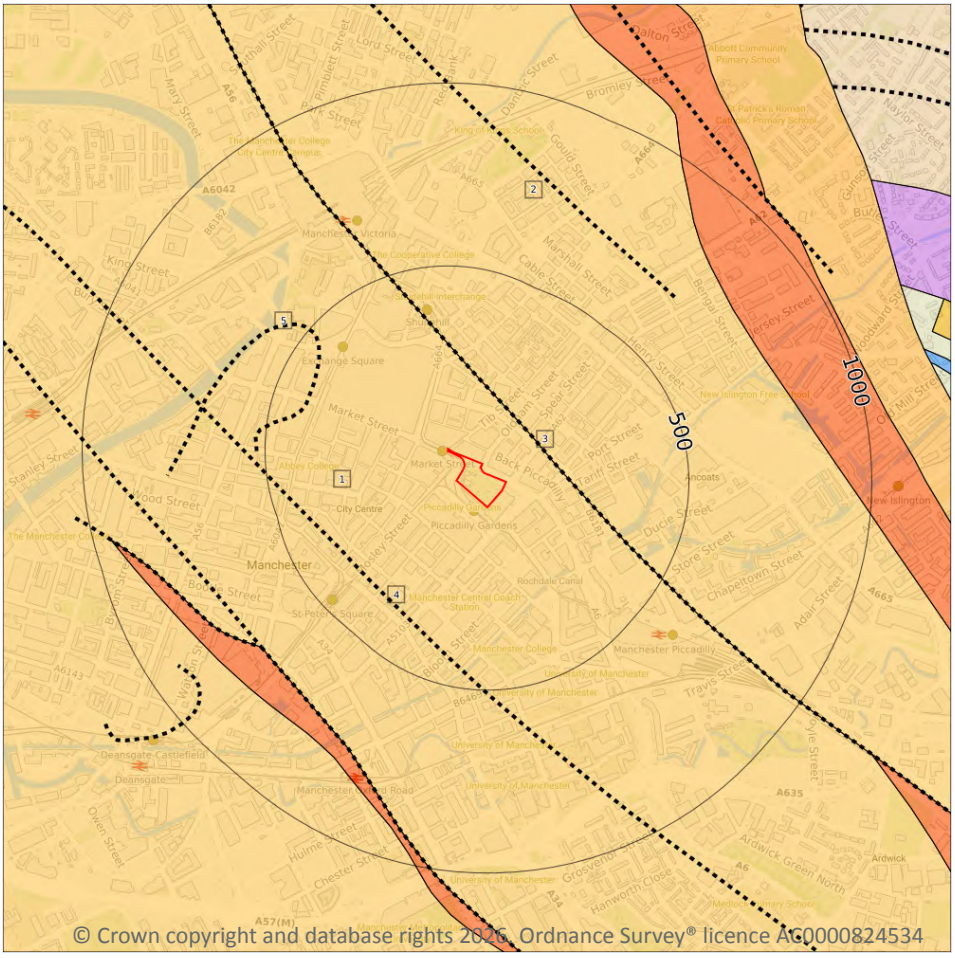
15.7 Landslip permeability (50k)

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 111 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**CHES-SDST**	**Chester Formation-Sandstone**	**Olenekian**
2	135m NE	CHES-SDST	Chester Formation-Sandstone	Olenekian

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	3

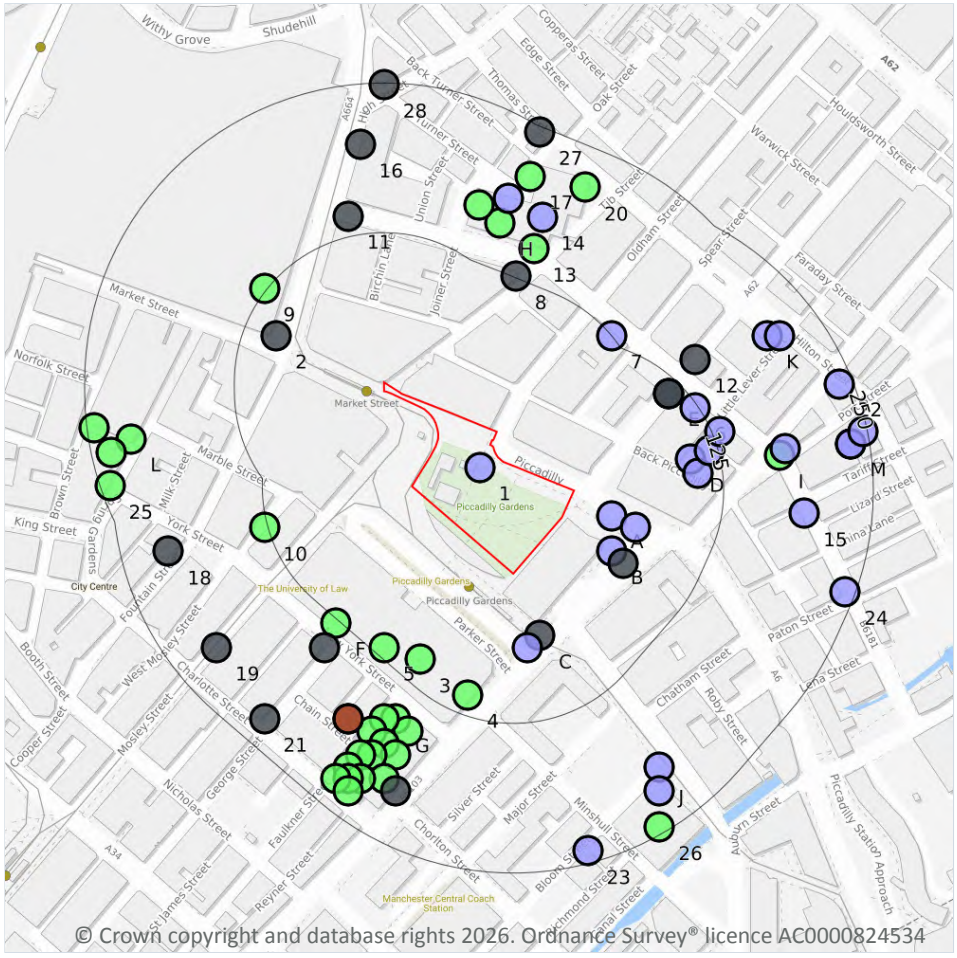
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 111 >**

ID	Location	Category	Description
3	135m NE	FAULT	Fault, inferred, crossmark on downthrow side, throw in metres
4	360m SW	FAULT	Fault, inferred, crossmark on downthrow side, throw in metres
5	406m W	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley; beads to outside

This data is sourced from the British Geological Survey.

16 Boreholes



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Site Outline

Search buffers in metres (m)

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

16.1 BGS Boreholes

Records within 250m	73

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 113 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	**On site**	**384360 398310**	**PICCADILLY GARDENS TP1**	**1.3**	**N**	**1043464** ↗
A	37m SE	384470 398270	PICCADILLY GARDENS TP2	1.3	N	1043465 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	50m SE	384470 398240	PICCADILLY GARDENS TP4	0.27	N	1043467 ↗
C	56m SE	384410 398170	PORTLAND STREET 6	-	Y	N/A
A	60m SE	384490 398260	PICCADILLY GARDENS TP3	0.83	N	1043466 ↗
C	63m S	384400 398160	PICCADILLY GARDENS TP5	1.7	N	1043468 ↗
B	64m SE	384480 398230	PORTLAND STREET 7	-	Y	N/A
2	98m NW	384190 398420	OBELISK, MARKET ST. 1	-	Y	N/A
D	101m E	384536 398317	GRAND HOTEL BACK PICCADILLY 2	4.0	N	20241357 ↗
D	104m E	384542 398305	GRAND HOTEL BACK PICCADILLY 1	4.0	N	20241354 ↗
3	105m SW	384310 398150	PICCADILLY HOTEL. NO.4 BH	20.42	N	1042501 ↗
4	108m S	384350 398120	CITY CENTRE - PHASE 2 37	19.49	N	1043535 ↗
E	114m NE	384518 398372	LEVER STREET 4	-	Y	N/A
E	114m NE	384518 398372	LEVER STREET 4A	-	Y	N/A
5	117m SW	384280 398160	PICCADILLY HOTEL. TOWER BLOCK NO.7	23.77	N	1042502 ↗
D	118m E	384552 398324	GRAND HOTEL BACK PICCADILLY 3	4.0	N	20241358 ↗
6	123m NE	384540 398360	DALE STREET/STEVENSON SQUARE/NEWTON STREET 5	5.5	N	13468814 ↗
7	125m NE	384470 398420	DALE STREET/STEVENSON SQUARE/NEWTON STREET 6	7.0	N	13468815 ↗
8	126m N	384390 398470	CHURCH STREET / HIGH STREET 1	-	Y	N/A
9	127m NW	384180 398460	HIGH STREET MANCHESTER 2	15.0	N	1042521 ↗
F	128m SW	384240 398180	PICCADILLY HOTEL. TOWER BLOCK NO.10	23.93	N	1042503 ↗
10	128m W	384180 398260	BARCLAY'S BANK, YORK STREET. 3 BH'S	15.85	N	1042520 ↗

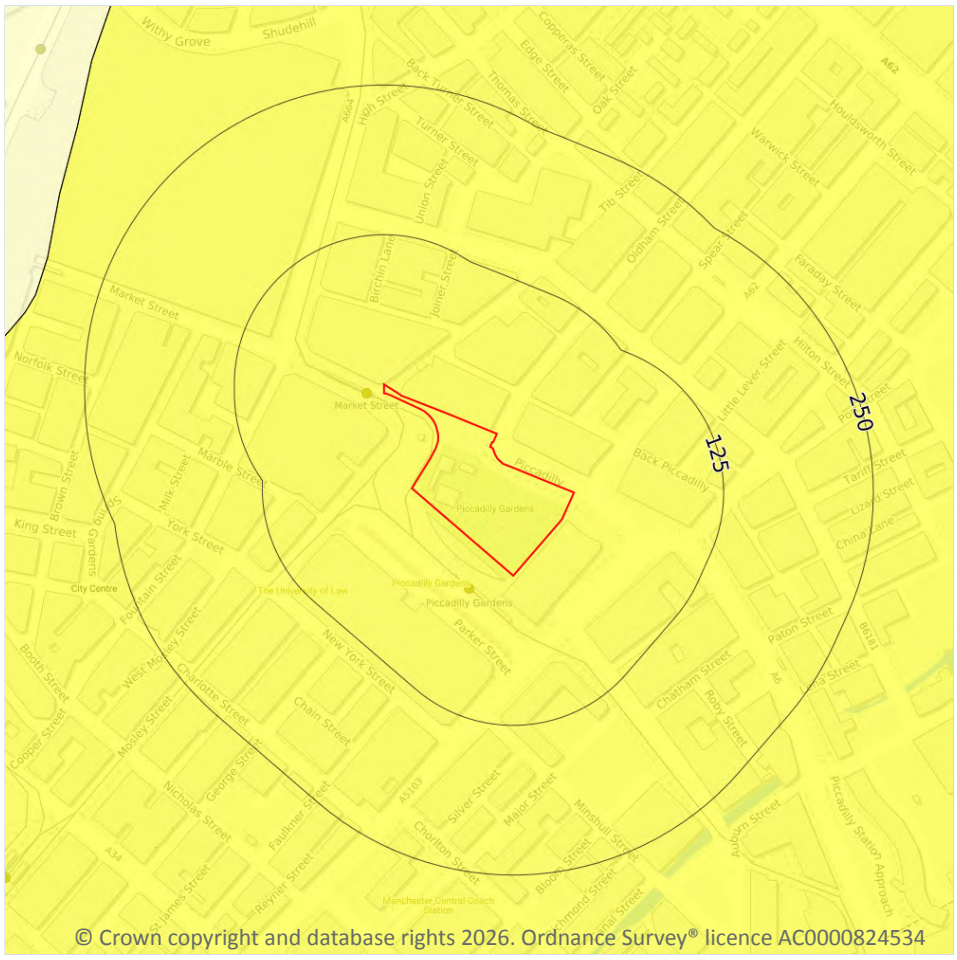
ID	Location	Grid reference	Name	Length	Confidential	Web link
D	131m E	384560 398340	DALE STREET/STEVENSON SQUARE/NEWTON STREET 4	5.0	N	13468813 ↗
11	142m N	384250 398520	CHURCH STREET / HIGH STREET 2	-	Y	N/A
12	149m NE	384540 398400	LEVER STREET 3	-	Y	N/A
F	150m SW	384230 398160	GEORGE STREET SEWER REPLACEMENT SCHEME 1	-	Y	N/A
13	153m N	384405 398493	CHURCH ST CAR PK MANCH 1	15.24	N	1042733 ↗
G	156m SW	384290 398100	PORTLAND STREET MANCHESTER 9	13.71	N	1043779 ↗
G	158m SW	384300 398090	PORTLAND STREET MANCHESTER 14	21.33	N	1043784 ↗
G	162m SW	384280 398100	PORTLAND STREET MANCHESTER 5	17.37	N	1043775 ↗
H	163m N	384377 398514	CHURCH ST CAR PK MANCH 2	10.97	N	1042734 ↗
H	168m NE	384359 398529	CHURCH ST CAR PK MANCH 3	15.24	N	1042735 ↗
I	174m E	384610 398320	CITY CENTRE - PHASE 2 36	29.0	N	1043534 ↗
G	177m SW	384270 398090	PORTLAND STREET MANCHESTER 4	13.62	N	1043774 ↗
G	178m SW	384280 398080	PORTLAND STREET MANCHESTER 8	13.59	N	1043778 ↗
I	180m E	384615 398326	PORT STREET HILTON STREET DALE STREET STAGE II SEWER REPLACEMENT SCHEME 1	7.2	N	15637492 ↗
14	180m N	384412 398519	CHURCH ST CAR PK MANCH 5	7.62	N	1042737 ↗
G	180m SW	384290 398070	PORTLAND STREET MANCHESTER 13	13.71	N	1043783 ↗
G	182m SW	384250 398100	NO DETAILS	-1.0	N	1042454 ↗
H	185m N	384384 398535	CHURCH ST CAR PK MANCH 4	7.62	N	1042736 ↗
G	192m SW	384270 398070	PORTLAND STREET MANCHESTER 7	19.38	N	1043777 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
15	193m E	384631 398272	PORT STREET HILTON STREET DALE STREET STAGE II SEWER REPLACEMENT SCHEME 8	0.6	N	15637499 ↗
G	198m SW	384260 398070	PORTLAND STREET MANCHESTER 3	13.71	N	1043773 ↗
16	200m N	384260 398580	CHURCH STREET / HIGH STREET 3	-	Y	N/A
J	202m SE	384510 398060	BLOOM STREET/ABINGDON STREET 1	8.0	N	1045703 ↗
G	203m SW	384280 398050	PORTLAND STREET MANCHESTER 12	13.71	N	1043782 ↗
G	206m SW	384290 398040	PORTLAND STREET 5/5A	-	Y	N/A
K	207m NE	384600 398420	DALE STREET/STEVENSON SQUARE/NEWTON STREET 7	4.5	N	13468816 ↗
17	208m N	384402 398553	CHURCH ST CAR PK MANCH 6	15.24	N	1042738 ↗
18	211m W	384100 398240	FOUNTAIN STREET MAIN DRAINAGE 3	-	Y	N/A
19	211m SW	384140 398160	MOSLEY STREET SEWER RECONSTRUCTION 1	-	Y	N/A
G	212m SW	384250 398060	PORTLAND STREET MANCHESTER 2	12.37	N	1043772 ↗
G	214m SW	384260 398050	PORTLAND STREET MANCHESTER 11	12.64	N	1043781 ↗
K	215m NE	384610 398420	DALE STREET/STEVENSON SQUARE/NEWTON STREET 7A	7.0	N	13468817 ↗
L	215m W	384069 398334	SPRING GARDENS, MANCHESTER 2	21.33	N	15634879 ↗
20	217m N	384448 398544	CHURCH ST CAR PK MANCH 7	13.41	N	1042739 ↗
J	219m SE	384510 398040	MANCHESTER FGC/3235. 1	10.0	N	1042544 ↗
G	220m SW	384250 398050	PORTLAND STREET MANCHESTER 6	12.19	N	1043776 ↗
G	226m SW	384240 398050	PORTLAND STREET MANCHESTER 1	18.25	N	1043771 ↗
21	228m SW	384180 398100	GEORGE STREET SEWER REPLACEMENT SCHEME 2	-	Y	N/A
G	228m SW	384250 398040	PORTLAND STREET MANCHESTER 10	18.89	N	1043780 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
L	234m W	384052 398323	SPRING GARDENS, MANCHESTER 3	13.1	N	15634880 ↗
M	235m E	384670 398330	HILTON STREET MANCHESTER 1	4.57	N	1045735 ↗
M	235m E	384670 398330	HILTON STREET MANCHESTER 3	1.52	N	1045737 ↗
22	239m E	384660 398380	DALE STREET/STEVENSON SQUARE/NEWTON STREET 3	6.3	N	13468812 ↗
23	240m S	384450 397990	BLOOM STREET/ABINGDON STREET 2	8.0	N	1045704 ↗
24	242m E	384665 398206	PORT STREET HILTON STREET DALE STREET STAGE II SEWER REPLACEMENT SCHEME 9	6.5	N	15637500 ↗
25	242m W	384051 398295	SPRING GARDENS, MANCHESTER 4	19.2	N	15634881 ↗
L	244m W	384038 398343	SPRING GARDENS, MANCHESTER 1	17.98	N	15634876 ↗
26	244m SE	384510 398010	MANCHESTER FGC/3235. 2	18.0	N	1042545 ↗
27	245m N	384410 398590	THOMAS STREET HIGH STREET 7	-	Y	N/A
M	246m E	384680 398340	HILTON STREET MANCHESTER 2	4.57	N	1045736 ↗
28	249m N	384280 398630	THOMAS STREET HIGH STREET 4	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	1

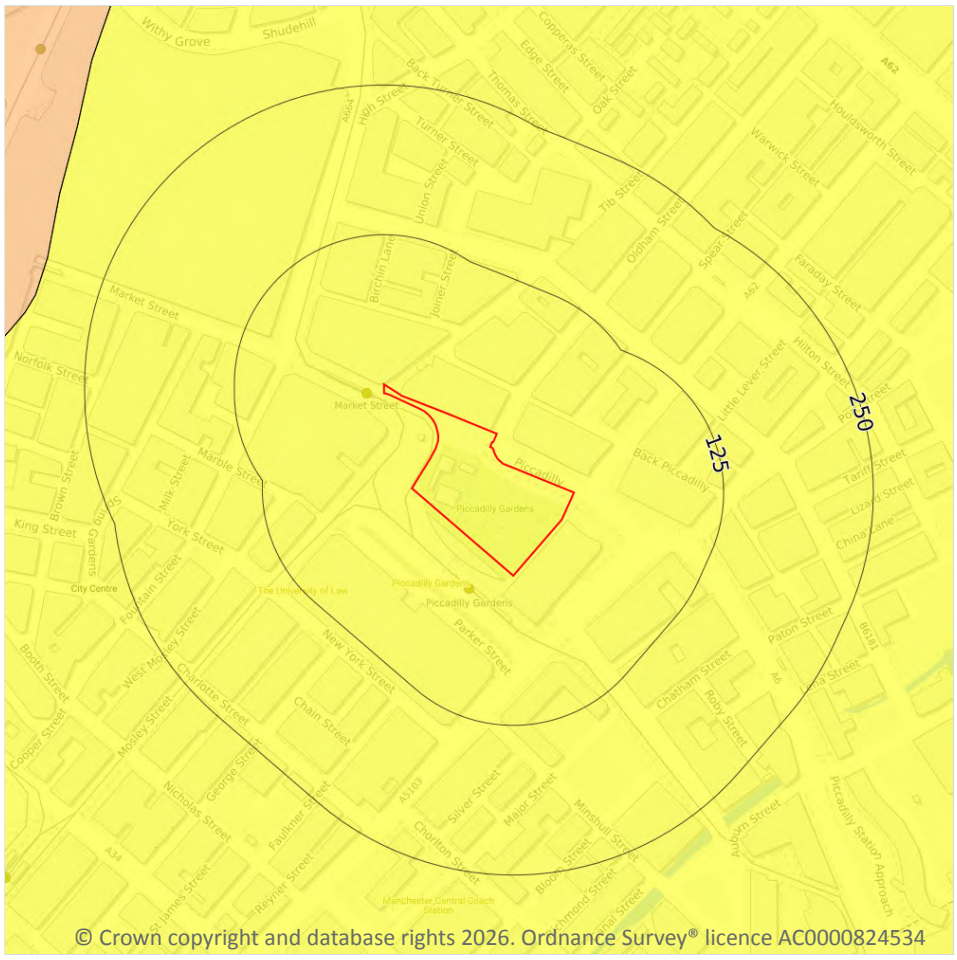
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 118 >**

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



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17.2 Running sands

Records within 50m	1

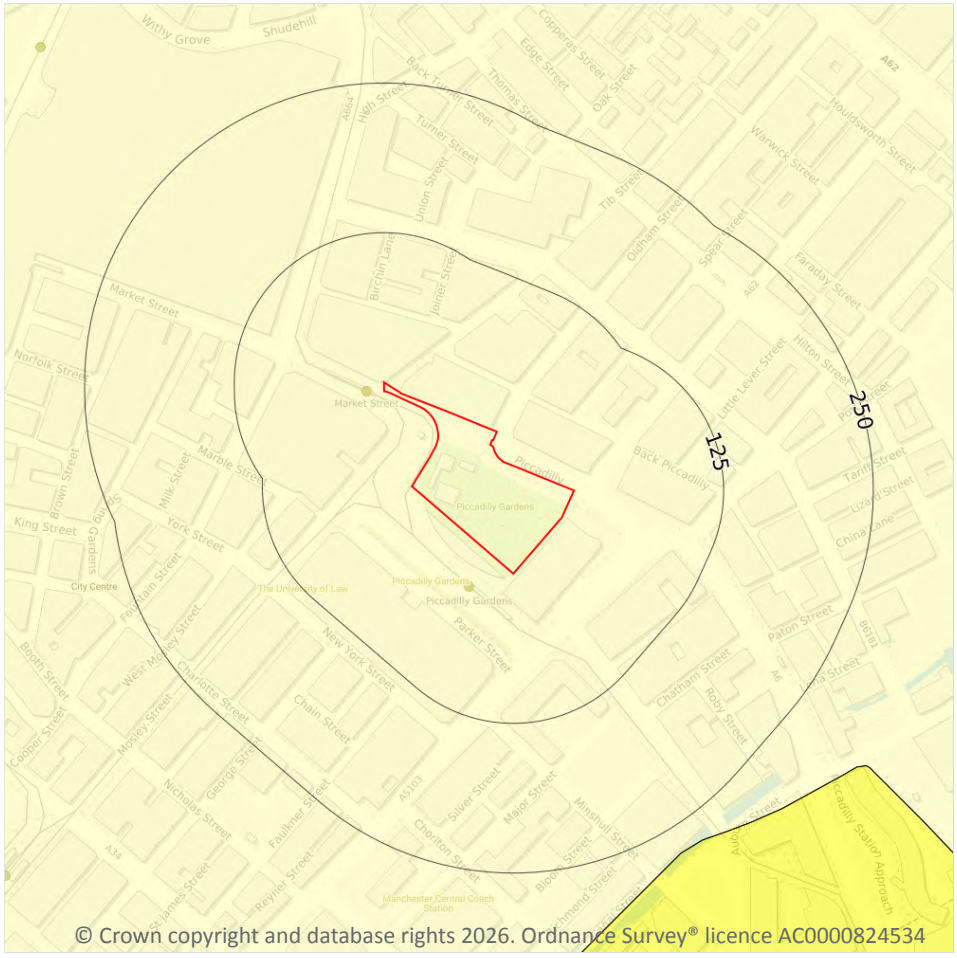
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 119 >**

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	1

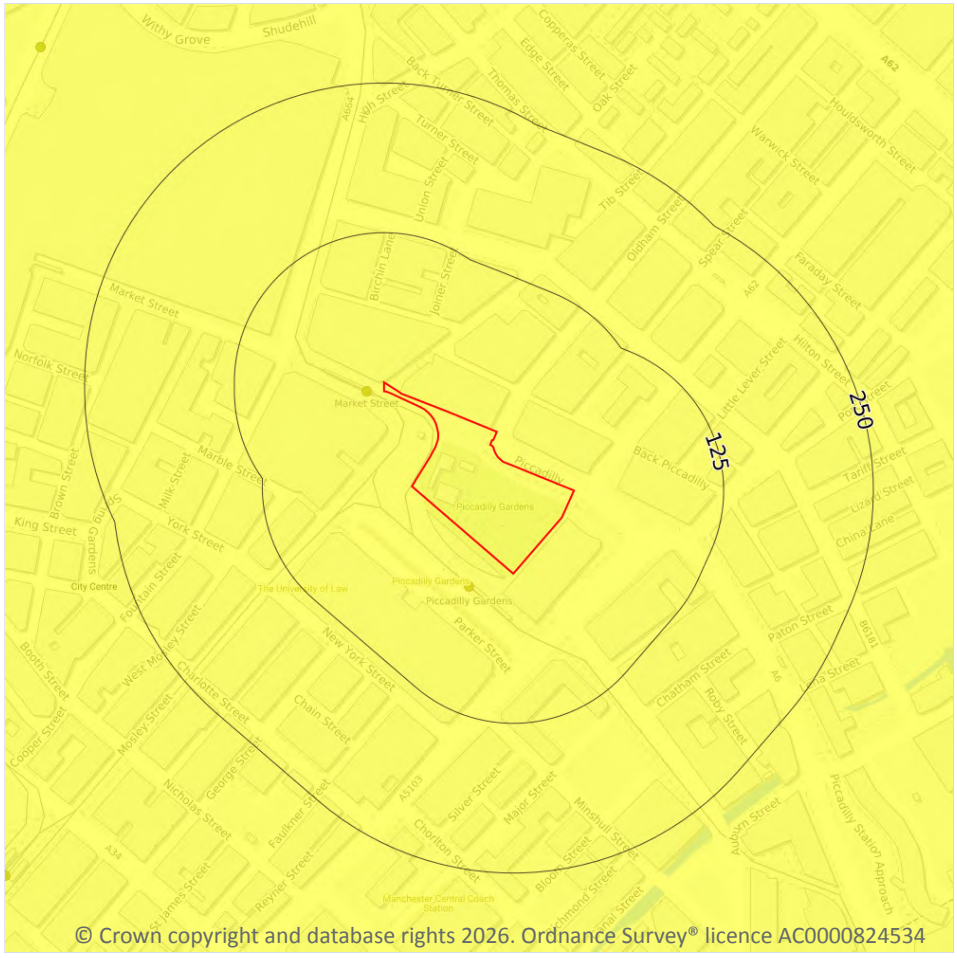
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 120 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	1

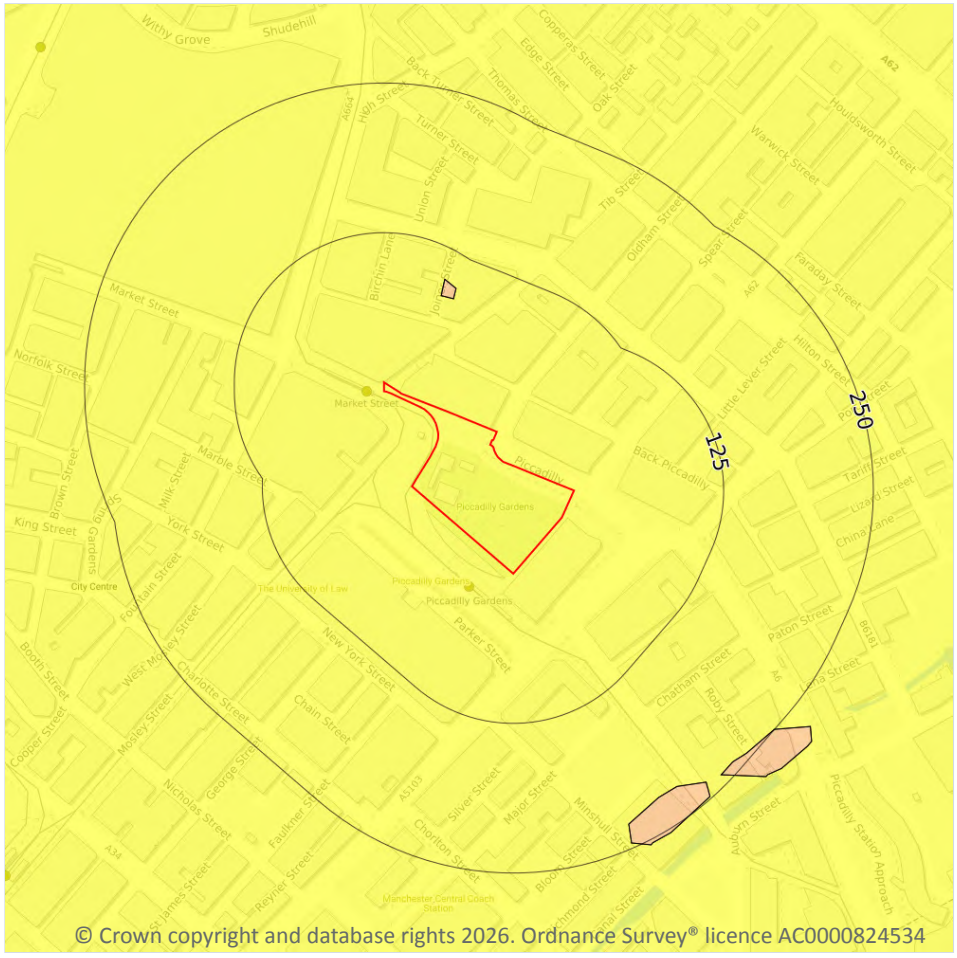
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 121 >**

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

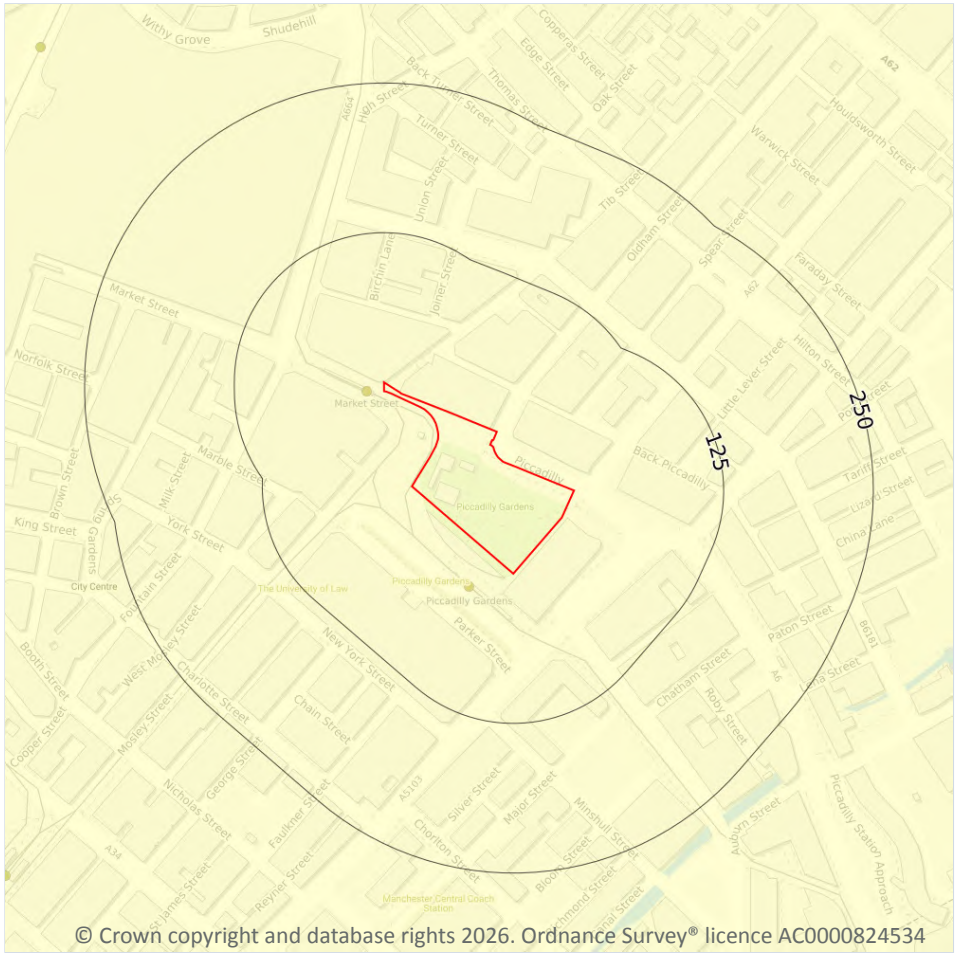
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 122 >**

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



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Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

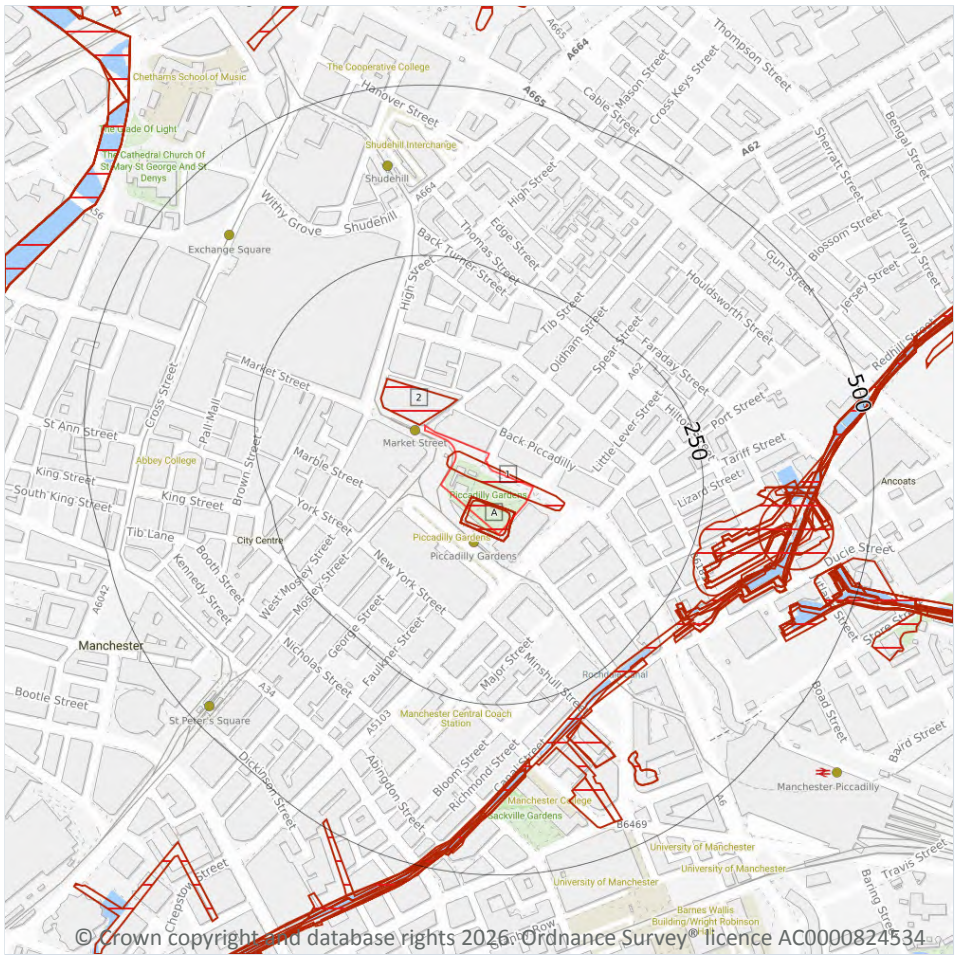
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 123 >**

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 and ground workings



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18.1 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.

18.2 Surface ground workings

Records within 250m	8

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 and ground workings map on **page 125 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	**On site**	**Pond**	**1848**	**1:10560**
A	**On site**	**Pond**	**1972**	**1:10000**
A	**On site**	**Pond**	**1988**	**1:10000**
A	**On site**	**Pond**	**1980**	**1:10000**
A	**On site**	**Pond**	**1985**	**1:10000**
A	**On site**	**Pond**	**1994**	**1:10000**
A	**On site**	**Unspecified Pit**	**1956**	**1:10560**
2	5m NW	Unspecified Ground Workings	1931	1:10560

This is data is sourced from Ordnance Survey®/Groundsure.

18.3 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.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from 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 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.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 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.

18.13 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.

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 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 Ground cavities and sinkholes



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19.1 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.

19.2 Mining cavities

Records within 1000m	0

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.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	1

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

Features are displayed on the Ground cavities and sinkholes map on **page 130 >**

ID	Location	Name	Date	Cause	Estimated diameter	Description	Accuracy
1	354m NW	Withy Grove, Manchester ↗	28/11/2022	Water dissolving surface rock	1m	Diamond Bus North West's 8 service has been affected by the sinkhole, which is on Withy Grove in Manchester city centre	50m

This data is sourced from Groundsure.

19.4 Historical incidents

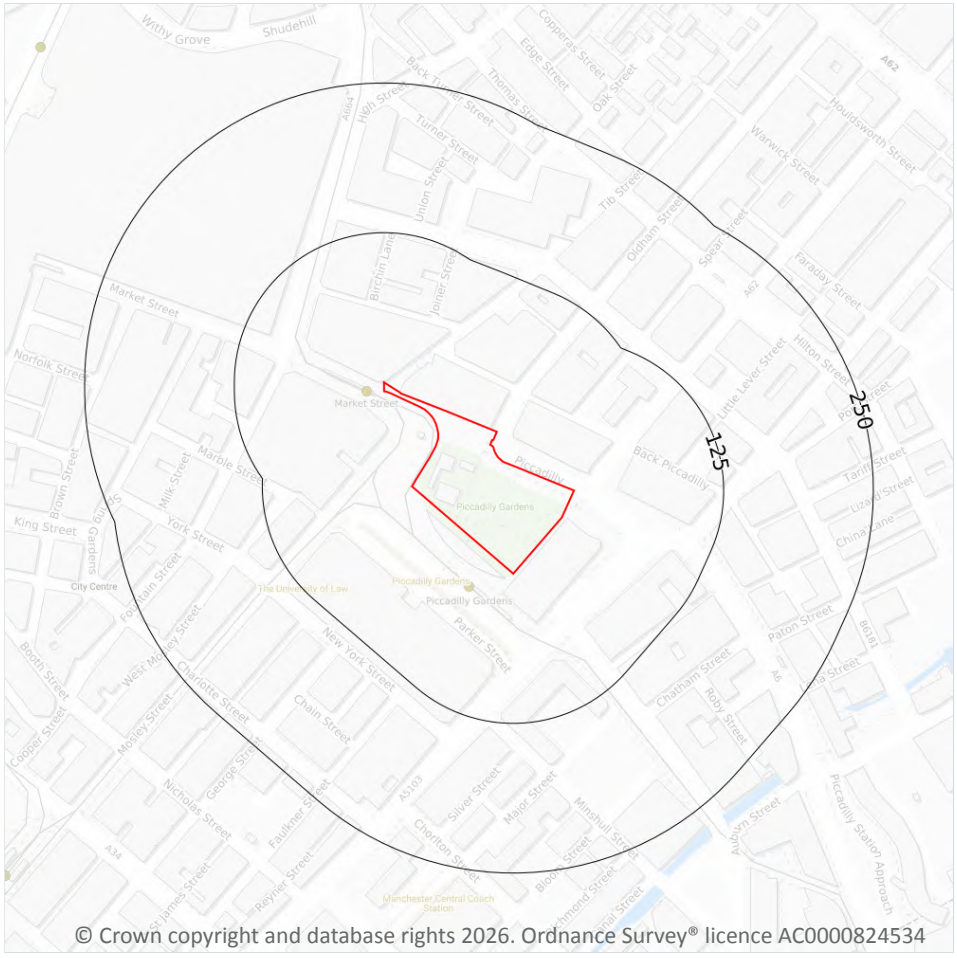
Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey® maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey® mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

20 Radon



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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%

20.1 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 132 >**

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.

21 Soil chemistry

21.1 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.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	10

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	**3**	**0.5**	**65**	**45**	**0.4**	**29**	**28**	**6**	**6**
On site	**3**	**0.5**	**57**	**39**	**0.4**	**32**	**26**	**7**	**5**
On site	**3**	**0.5**	**65**	**45**	**0.3**	**31**	**26**	**6**	**5**
On site	**4**	**0.7**	**56**	**38**	**0.5**	**35**	**29**	**8**	**6**
On site	**4**	**0.7**	**58**	**40**	**0.3**	**35**	**25**	**7**	**5**
3m W	4	0.7	64	44	0.5	33	30	7	6
19m N	5	0.9	54	37	0.5	37	27	9	6

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)
21m S	3	0.5	77	53	0.5	33	30	7	6
25m SE	4	0.7	68	47	0.3	37	26	8	5
27m NE	5	0.9	54	37	0.4	37	24	8	5

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

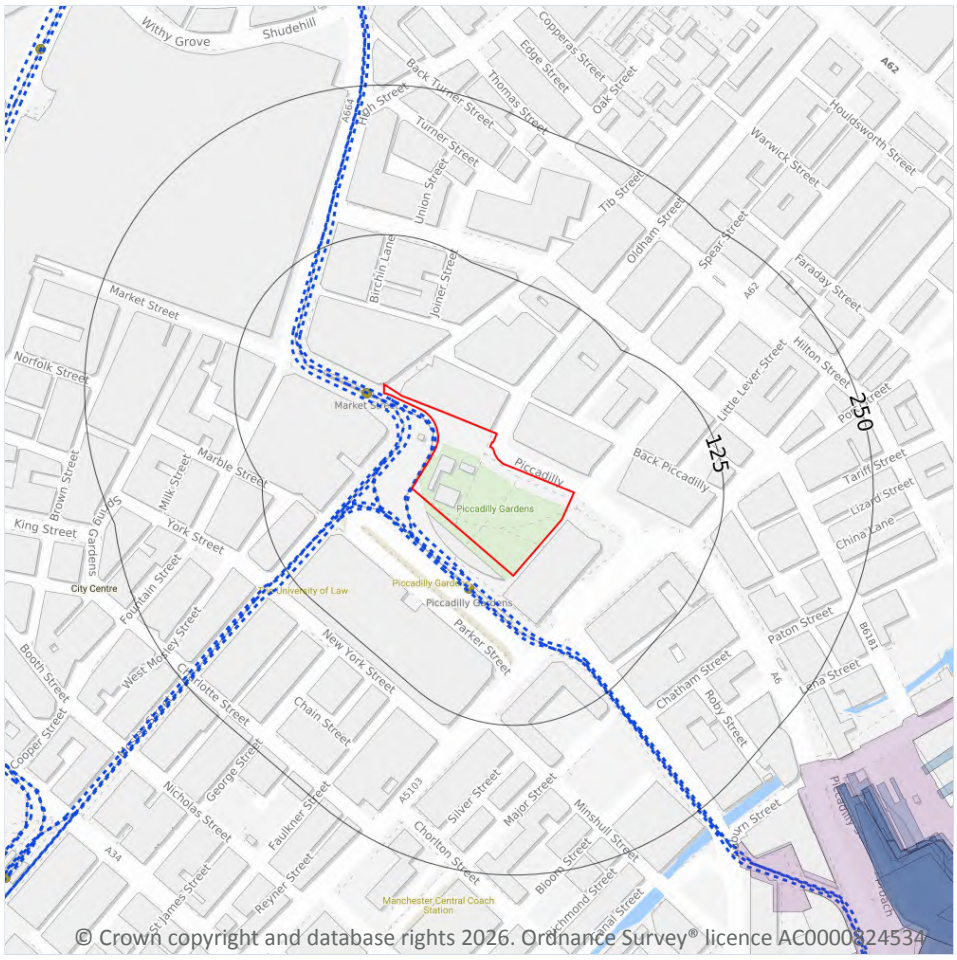
Records within 50m	**1**

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.

Location	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Lead (mg/kg)	Tin (mg/kg)	Sample Type
On site	**2.5**	**0.3**	**28.6**	**7.1**	**5.4**	**20.1**	**3.2**	**Topsoil**

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



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Site Outline

Search buffers in metres (m)

- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

22.1 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.

22.2 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.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey® mapping.

This data is sourced from the Ordnance Survey®.

22.4 Historical railway and tunnel features

Records within 250m	0

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.

This data is sourced from Ordnance Survey®/Groundsure.

22.5 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.

22.6 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.

22.7 Railways

Records within 250m	35

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 136 >**

Location	Name	Type
On site		**light_rail**
1m NW	Not given	Single Track
2m SW		light_rail
3m SW		light_rail
4m SW		light_rail
6m SW	Not given	Multi Track
7m SW	Not given	Multi Track
11m SW		light_rail
26m SW		light_rail
26m SW	Metrolink	light_rail
30m W	Not given	Single Track
30m W	Not given	Multi Track
31m SW	Not given	Multi Track
31m SW	Not given	Multi Track
31m SW		light_rail
31m SW		light_rail
31m SW		light_rail
32m SW	Not given	Multi Track
32m SW	Not given	Multi Track
33m NW	Not given	Multi Track
33m NW		light_rail
34m SW		light_rail
62m SE	Not given	Multi Track
65m SW		light_rail
67m W	Metrolink	light_rail
70m W	Not given	Multi Track
75m SE	Metrolink	light_rail
81m NW		light_rail

Location	Name	Type
88m NW		light_rail
94m SE	Metrolink	light_rail
97m SE		light_rail
146m SW		light_rail
147m SE	Metrolink	tram
147m SW	Metrolink	light_rail
161m SW	Not given	Multi Track

This data is sourced from Ordnance Survey® and OpenStreetMap.

22.8 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.

22.9 HS2

Records within 500m	1

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 136 >**

Location	Track Type	Speed (mph)	Speed (km/h)	Status
497m SE	Bridge/Viaduct	50mph	80kph	Section is scheduled for cancellation

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-conditions-april-2026/ ↗.

Fire Insurance Plans

Groundsure
LOCATION INTELLIGENCE

Address
Piccadilly Gardens, Manchester

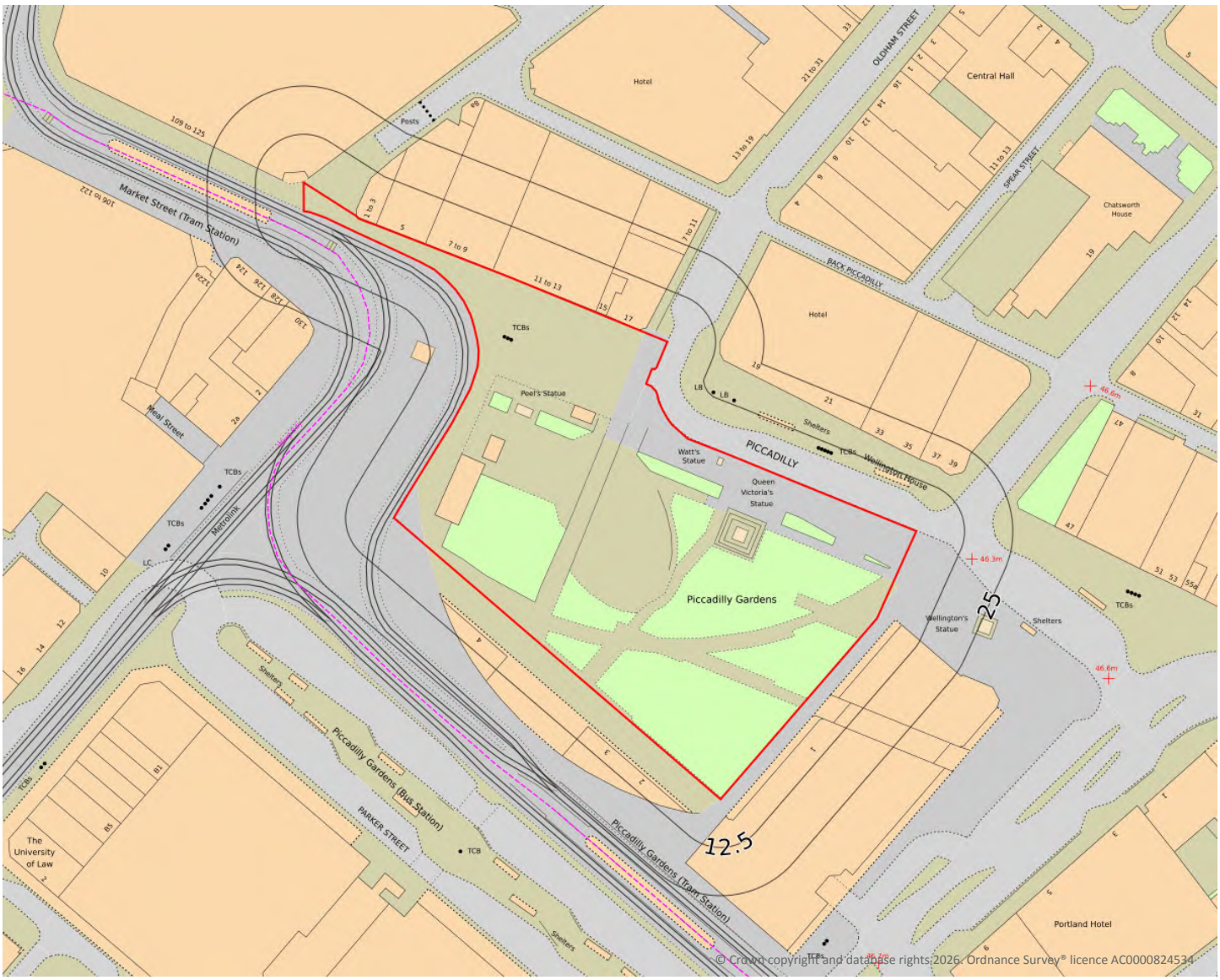
Your reference
51334 Piccadilly Gardens, Manchester

Date
21/05/2026

Groundsure reference
GS-XHF-OBW-UFB-PEO

Grid reference
384366 398291

N

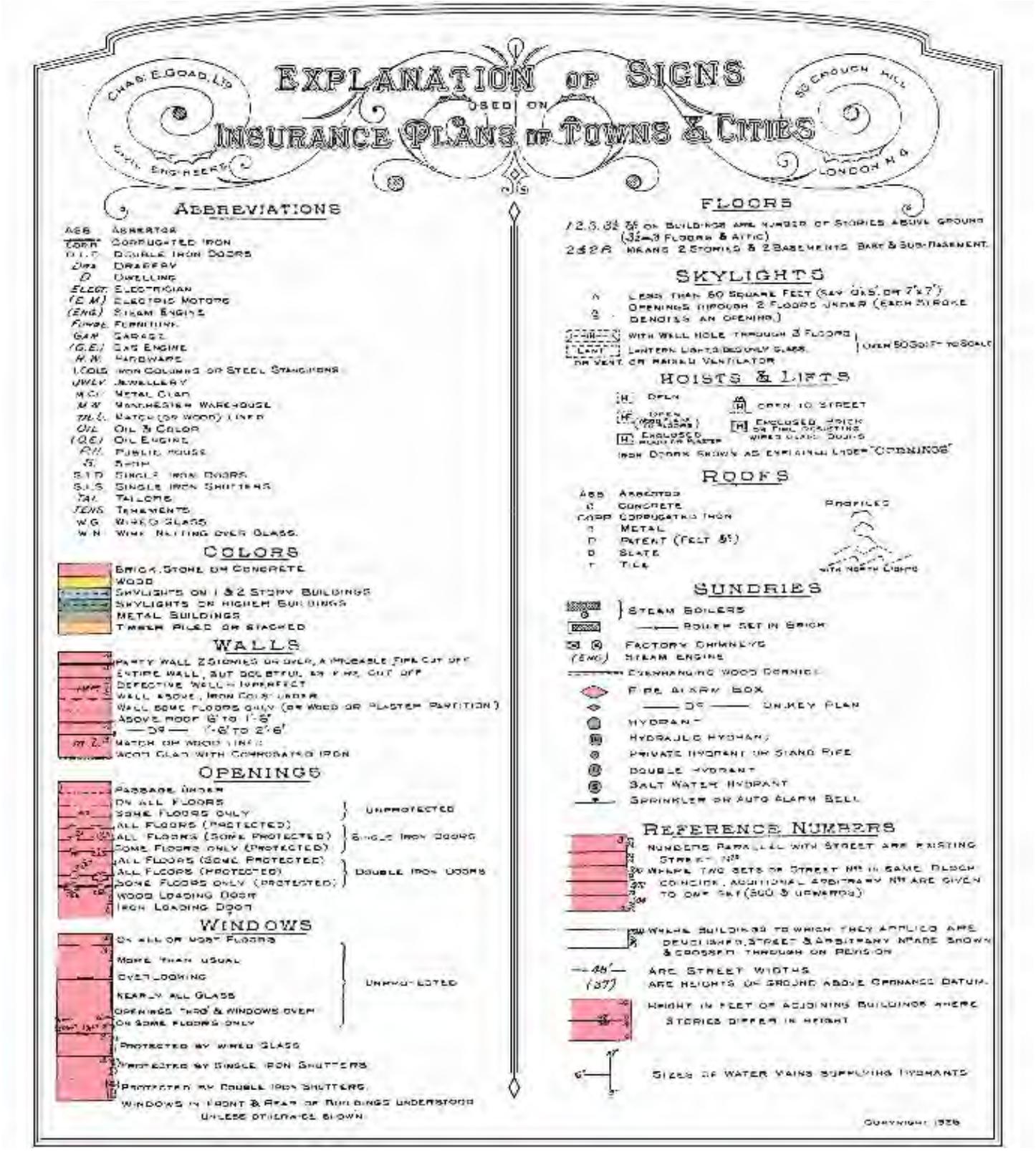


Groundsure
LOCATION INTELLIGENCE

1960, 1960, 1962 Manchester, 3-plan composite



Legend


EXPLANATION OF SIGNS
USED ON
INSURANCE PLANS OF TOWNS & CITIES
CHAS. E. GOAD, LTD
CIVIL ENGINEERS
56 CROUCH HILL
LONDON N.8
ABBREVIATIONS
COLORS
WALLS
OPENINGS
WINDOWS
FLOORS
SKYLIGHTS
HOISTS & LIFTS
ROOFS
SUNDRIES
REFERENCE NUMBERS
Profiles
COPYRIGHT 1926

Further Information

This report contains all Goad plans available for your chosen location. Where plans cover only part of the mapped area, modern background mapping has been included for additional context.

Charles E. Goad

Goad plans were originally produced as Fire Insurance Plans (F.I.Ps) by Charles E. Goad Ltd. in the late 19th century. In addition to showing the materials used in building construction and the location of water supplies, the maps show the location of particular fire hazards such as chemical storage and processing areas, ovens and other such areas which are of interest to contaminated land practitioners. The first plans appeared in 1886, and by 1896 the collection comprised 73 volumes of plans for 37 cities. By 1912 the collection had grown to 124 volumes across 57 cities, though following this there was no significant expansion to new towns. Many cities saw significantly expanded coverage between 1928 and 1935, and regular revision of plans continued until the 1970s.

The maps were produced for the most important towns and cities in Great Britain at a scale of 1:480 (1 inch to 40 feet). Coverage for these towns varies according to the town's relative importance at the time, from an industrial and social perspective. All maps shown in this report are north-orientated and seamlessly stitched together with other maps of a similar age. Gaps in the mapping are filled in with contemporary mapping to provide a clear location context for the study site.

Contact Us

Groundsure Limited: Nile House, Nile Street, Brighton, BN1 1HW

info@groundsure.com ↗

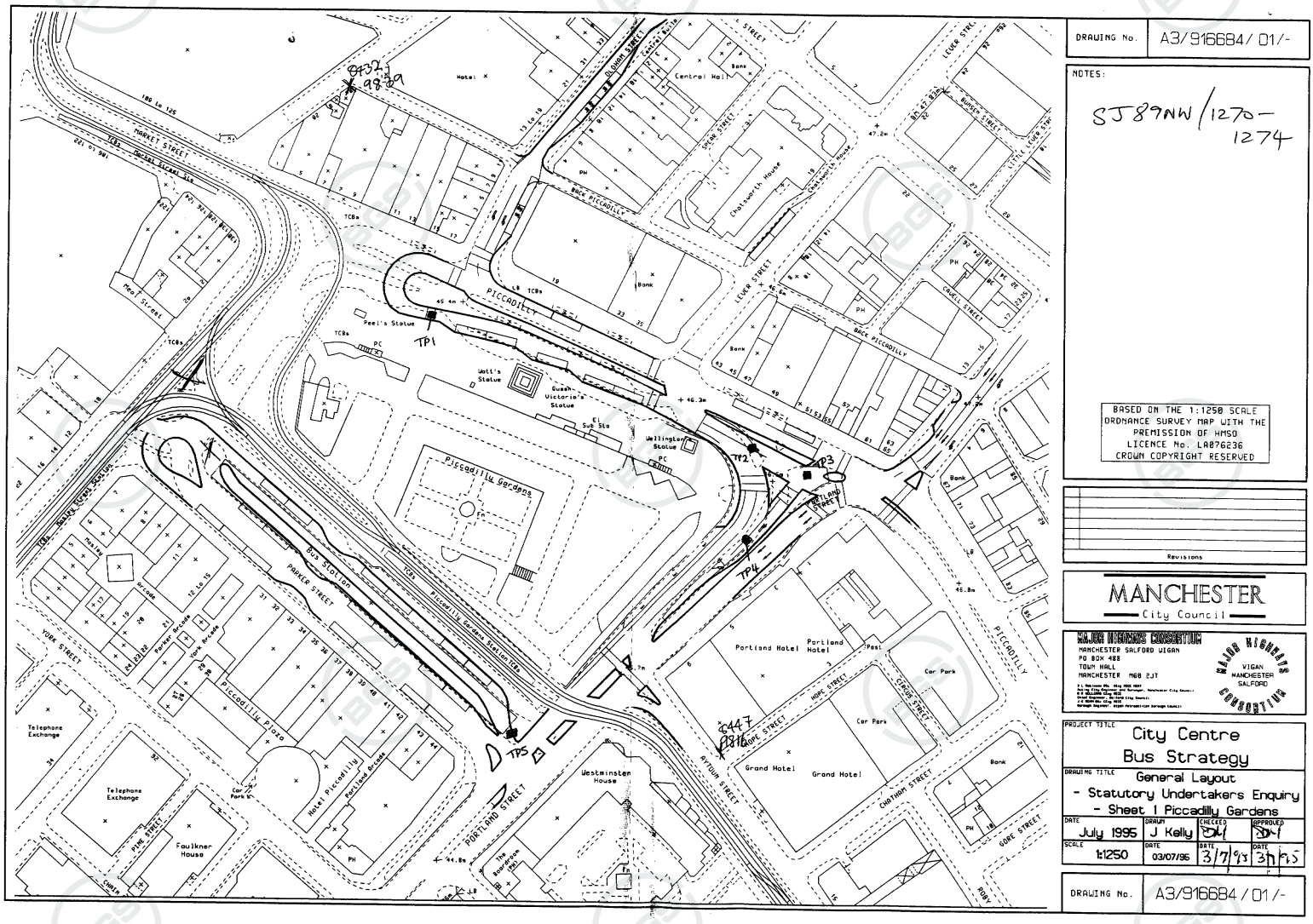
01273 257 755

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www.groundsure.com/terms-conditions-april-2026/ ↗

Appendix D – BGS Borehole Records

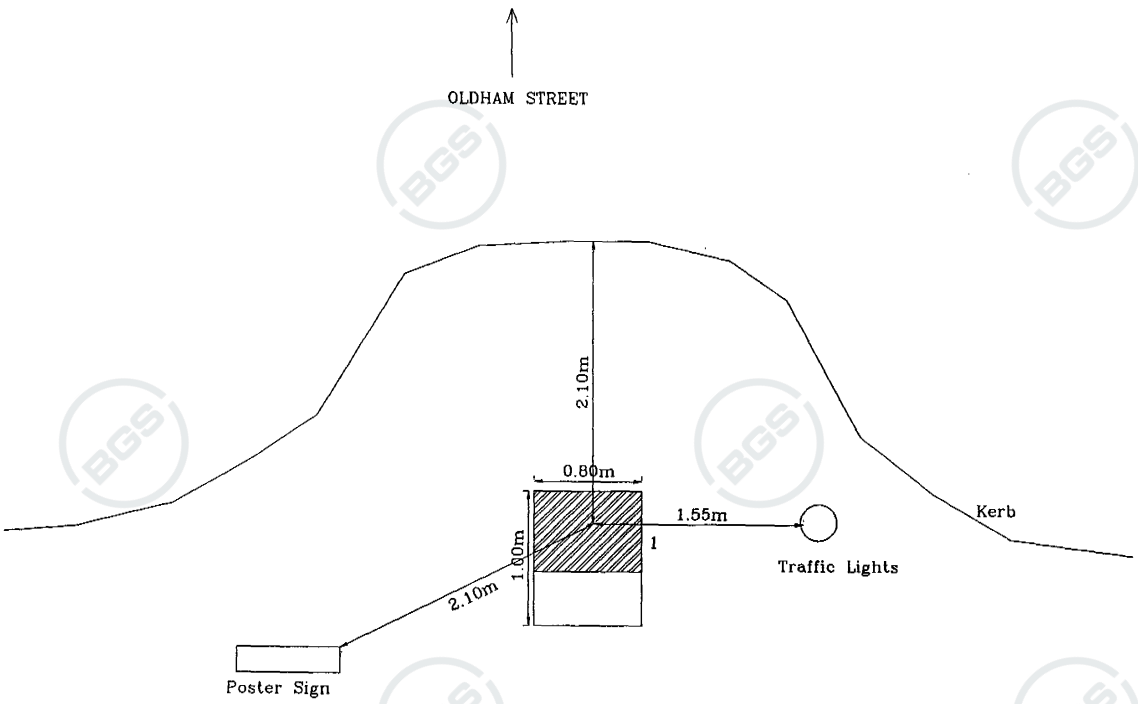

DRAWING No. A3/916684/01/-
NOTES:
SJ89NW/1270-1274
BASED ON THE 1:1250 SCALE ORDNANCE SURVEY MAP WITH THE PERMISSION OF HMSO LICENCE No. LA076236 CROWN COPYRIGHT RESERVED
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MAJOR HIGHWAYS CONSULTANTS
MANCHESTER SALFORD WIGAN
PO BOX 488
TOWN HALL
MANCHESTER M60 2JT
WIGAN MANCHESTER SALFORD
PROJECT TITLE City Centre Bus Strategy
DRAWING TITLE General Layout - Statutory Undertakers Enquiry - Sheet 1 Piccadilly Gardens
DATE July 1995
DRAWN J Kelly
CHECKED
APPROVED
SCALE 1:1250
DATE 03/07/95
DRAWING No. A3/916684/01/-
PICCADILLY
PICCADILLY GARDENS
PORTLAND STREET
MARKET STREET
PARKER STREET
Bus Station
Piccadilly Plaza
Portland Hotel
Grand Hotel
Car Park
Westminster House
Faulkner House
Telephone Exchange
Peel's Statue
Watt's Statue
Queen Victoria's Statue
Wellington Statue
TP1
TP2
TP3
TP4
TP5

British Geological Survey

BGS ID: 1043464 : BGS Reference: SJ89NW1270
British National Grid (27700) : 384360,398310

SJ89NW 8436 9831 12 TU

Piccadilly Gardens
Manchester City Council



Trial Pit No:	1
Location:	OLDHAM St
Date:	24-Aug-95
Job No.	8125-2

SERVICES EXPOSED	DEPTH	DIA.	TYPE
1	0.98m	600mm	Steel GAS pipe
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

No. Men	2	
TIME START OF BREAKING OUT:		
TIME COMPLETE BREAKING OUT:		
TOTAL TIME BREAKING OUT:		HRS
TIME START OF DIGGING:	14.00	
TIME COMPLETED DIGGING:	15.15	
TOTAL TIME DIGGING	1.25	HRS
REINSTATEMENT	0.5	HRS

SOIL DESCRIPTION

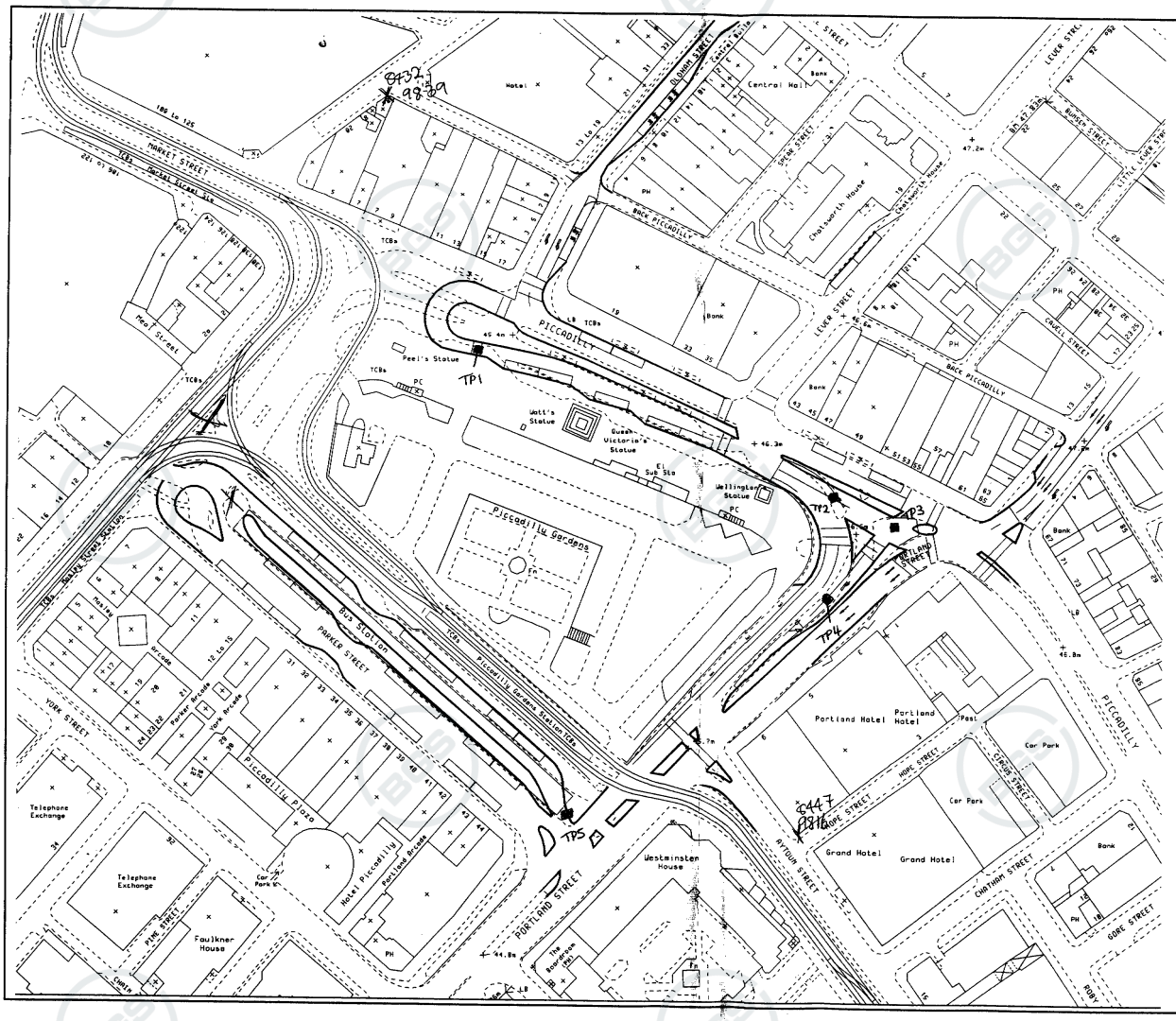
0.0m *Flagstone*
0.05m MADE GROUND (sand and cement mix)
0.15m MADE GROUND (limestone hardcore)
0.80m Brown medium grained SAND
1.30m End of Pit

STRATA SURVEYS LIMITED

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043465 : BGS Reference: SJ89NW1271
British National Grid (27700) : 384470,398270



DRAWING No. A3/916684/01/-

NOTES:

SJ89NW/1270–1274

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MAJOR HIGHWAYS CONSULTANTS
MANCHESTER SALFORD WIGAN
PO BOX 488
TOWN HALL
MANCHESTER M60 2JT
WIGAN MANCHESTER SALFORD

PROJECT TITLE: City Centre Bus Strategy

DRAWING TITLE: General Layout - Statutory Undertakers Enquiry - Sheet 1 Piccadilly Gardens

DATE	DRAWN	CHECKED	APPROVED
July 1995	J Kelly	DM	DM
SCALE 1:1250	DATE 03/07/96	DATE 3/7/96	DATE 3/7/96

DRAWING No. A3/916684/01/-

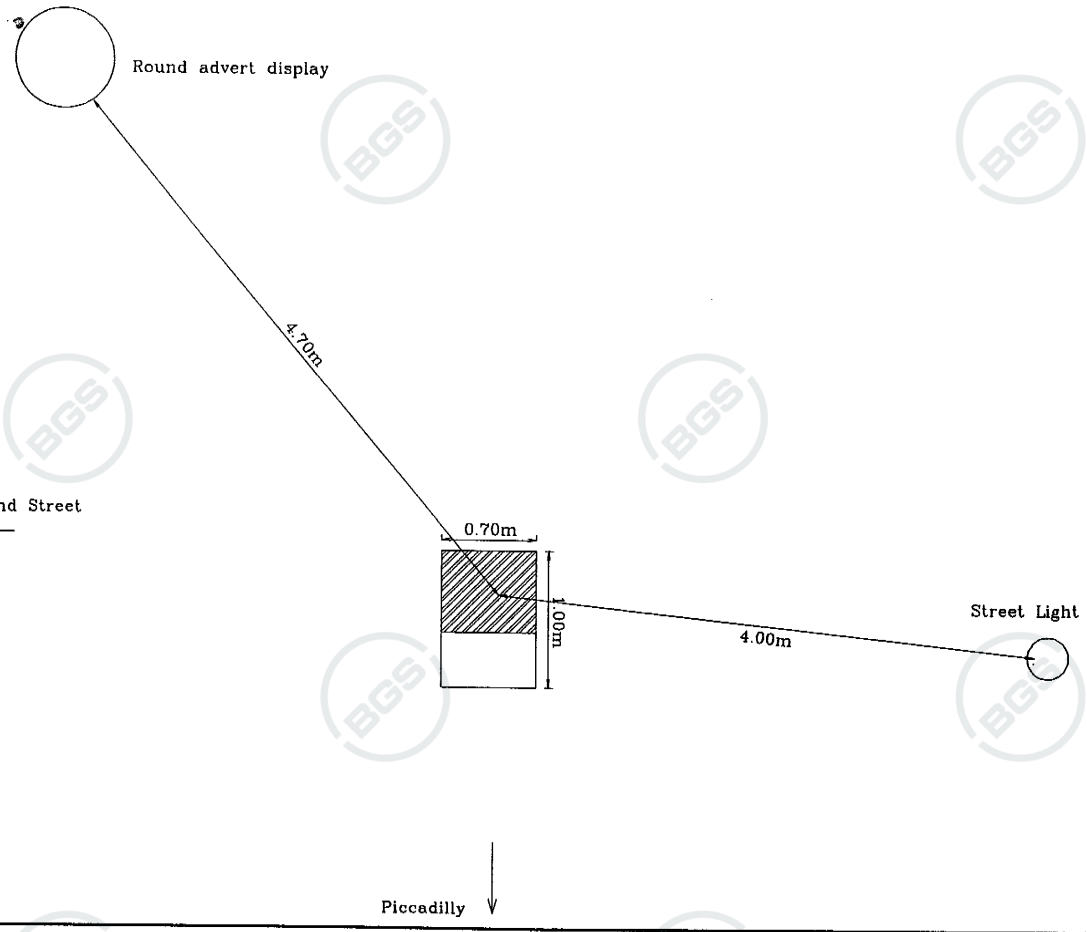
Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043465 : BGS Reference: SJ89NW1271
British National Grid (27700) : 384470,398270

SJ89NW 8447 9827 127.1

Piccadilly Gardens
Manchester City Council



STRATA SURVEYS LIMITED

Trial Pit No: 2

Location: Portland St

Date: 24-Aug-95

Job No. 8125-2

SERVICES EXPOSED	DEPTH	DIA.	TYPE
1	1.07m	800mm	Steel GAS pipe
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

No. Men:	2	
TIME START OF BREAKING OUT:		
TIME COMPLETE BREAKING OUT:		
TOTAL TIME BREAKING OUT:		HRS
TIME START OF DIGGING:	15.45	
TIME COMPLETED DIGGING:	16.30	
TOTAL TIME DIGGING	0.75	HRS
REINSTATEMENT	0.5	HRS

SOIL DESCRIPTION

0.0m Flagstone

0.05m MADE GROUND (sand and cement mix)

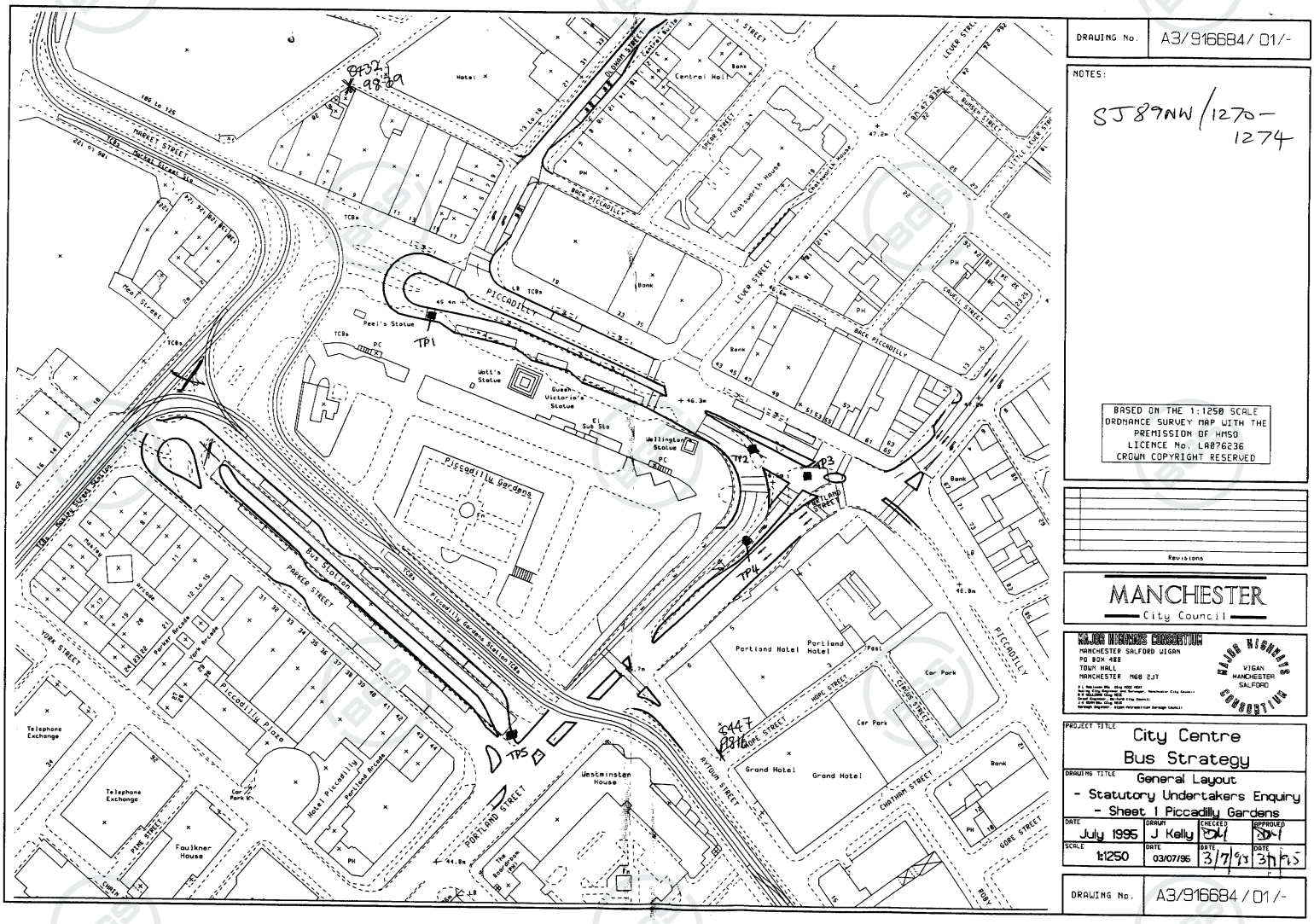
0.15m MADE GROUND (concrete)

0.25m MADE GROUND (Brown medium grained sand and gravel and occasional ash fill)

0.80m MADE GROUND (Soft to firm brown clay and sand fill)

1.30m End of Pit

Contact BGS: ngdc@bgs.ac.uk

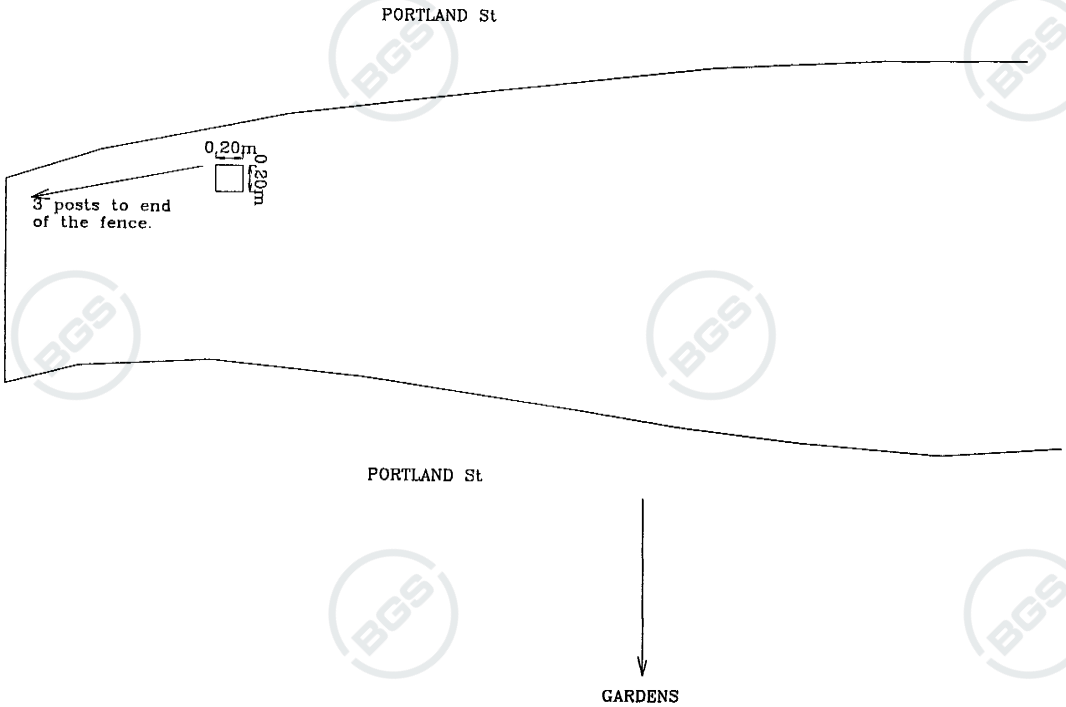

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PO BOX 488
TOWN HALL
MANCHESTER M60 2JT
WIGAN MANCHESTER SALFORD
PROJECT TITLE City Centre Bus Strategy
DRAWING TITLE General Layout - Statutory Undertakers Enquiry - Sheet 1 Piccadilly Gardens
DATE July 1995
DRAWN J Kelly
CHECKED
APPROVED
SCALE 1:1250
DATE 03/07/95
DRAWING No. A3/916684/01/-
PICCADILLY
PICCADILLY GARDENS
PORTLAND STREET
MARKET STREET
PARKER STREET
Bus Station
Piccadilly Plaza
Portland Hotel
Grand Hotel
Car Park
Westminster House
Faulkner House
Telephone Exchange
Peel's Statue
Watt's Statue
Queen Victoria's Statue
Wellington Statue
TP1
TP2
TP3
TP4
TP5

British Geological Survey

BGS ID: 1043467 : BGS Reference: SJ89NW1273
British National Grid (27700) : 384470,398240

SJ89NW 8447 9824 1773

Piccadilly Gardens
Manchester City Council



Trial Pit No:	4
Location:	Portland St
Date:	24-Aug-95
Job No.	8125-2

SERVICES EXPOSED	DEPTH	DIA.	TYPE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

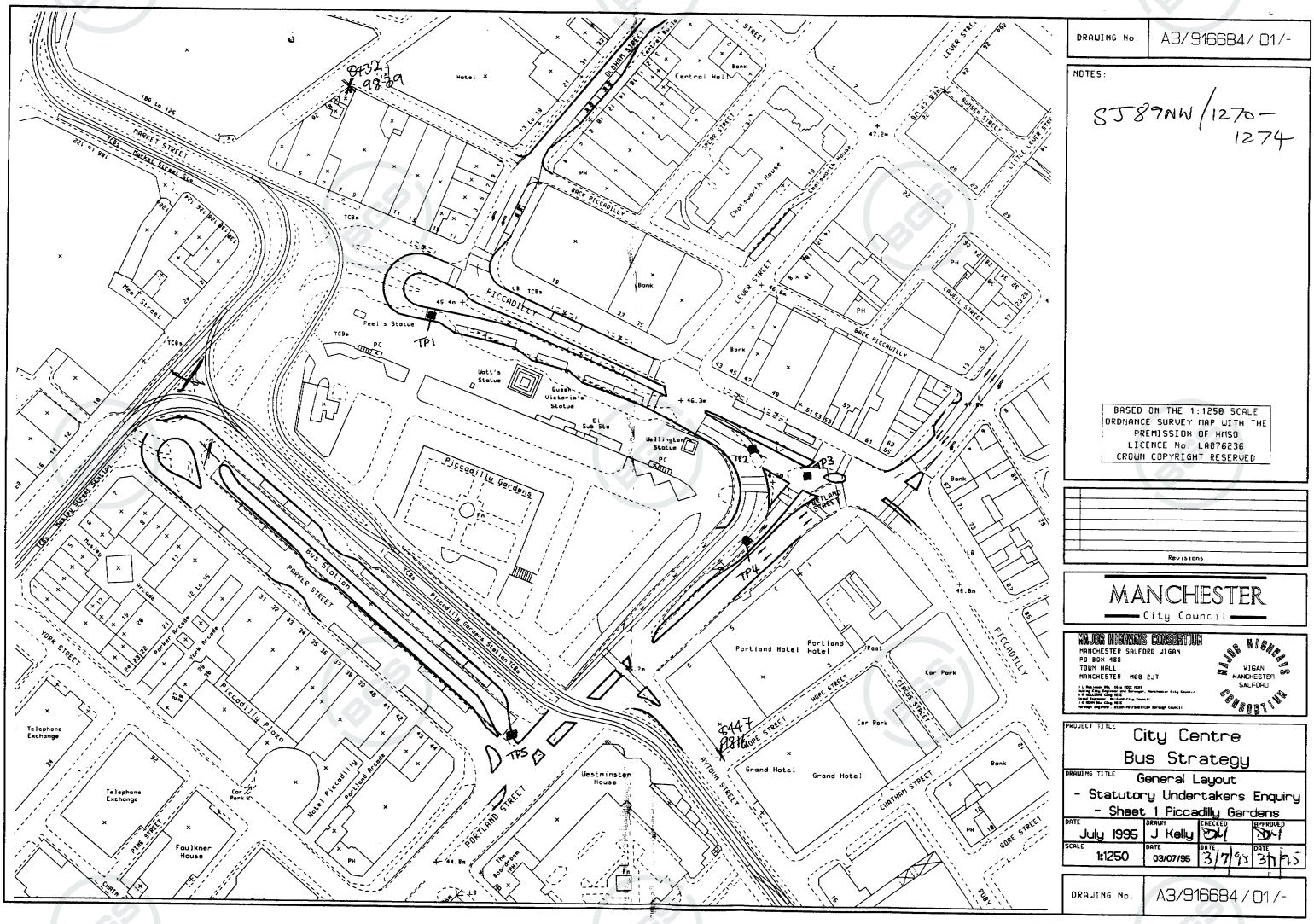
No. Men:	2	
TIME START OF BREAKING OUT:	19.30	
TIME COMPLETE BREAKING OUT:	19.40	
TOTAL TIME BREAKING OUT:	10 mins	HRS
TIME START OF DIGGING:		
TIME COMPLETED DIGGING:		
TOTAL TIME DIGGING		HRS
REINSTATEMENT	5 mins	HRS

SOIL DESCRIPTION

0.0m Tarmac
0.10m MADE GROUND (ash and sand)
0.23m Tarmac
0.27m End of Pit

STRATA SURVEYS LIMITED

Contact BGS: ngdc@bgs.ac.uk


DRAWING No. A3/916684/01/-
NOTES:
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PO BOX 488
TOWN HALL
MANCHESTER M60 2JT
WIGAN MANCHESTER SALFORD
PROJECT TITLE City Centre Bus Strategy
DRAWING TITLE General Layout - Statutory Undertakers Enquiry - Sheet 1 Piccadilly Gardens
DATE July 1995
DRAWN J Kelly
CHECKED
APPROVED
SCALE 1:1250
DATE 03/07/95
DRAWING No. A3/916684/01/-
PICCADILLY
PICCADILLY GARDENS
PORTLAND STREET
MARKET STREET
PARKER STREET
Bus Station
Piccadilly Plaza
Portland Hotel
Grand Hotel
Car Park
Westminster House
Faulkner House
Telephone Exchange
Peel's Statue
Watt's Statue
Queen Victoria's Statue
Wellington Statue
TP1
TP2
TP3
TP4
TP5

British Geological Survey

BGS ID: 1043466 : BGS Reference: SJ89NW1272
British National Grid (27700) : 384490,398260

SJ89NW 8449 9826 1272

Piccadilly Gardens
Manchester City Council

PICCADILLY

Metal Post Fence

11 posts to end of the fence

0.50m

0.40m

4 Posts to end of the fence

PICCADILLY

STRATA SURVEYS LIMITED

Trial Pit No: 3

Location: Piccadilly

Date: 24-Aug-95

Job No. 8125-2

SERVICES EXPOSED	DEPTH	DIA.	TYPE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

No. Men:	2	
TIME START OF BREAKING OUT:	16.15	
TIME COMPLETE BREAKING OUT:	16.45	
TOTAL TIME BREAKING OUT:	0.5	HRS
TIME START OF DIGGING:		
TIME COMPLETED DIGGING:		
TOTAL TIME DIGGING		HRS
REINSTATEMENT	0.3	HRS

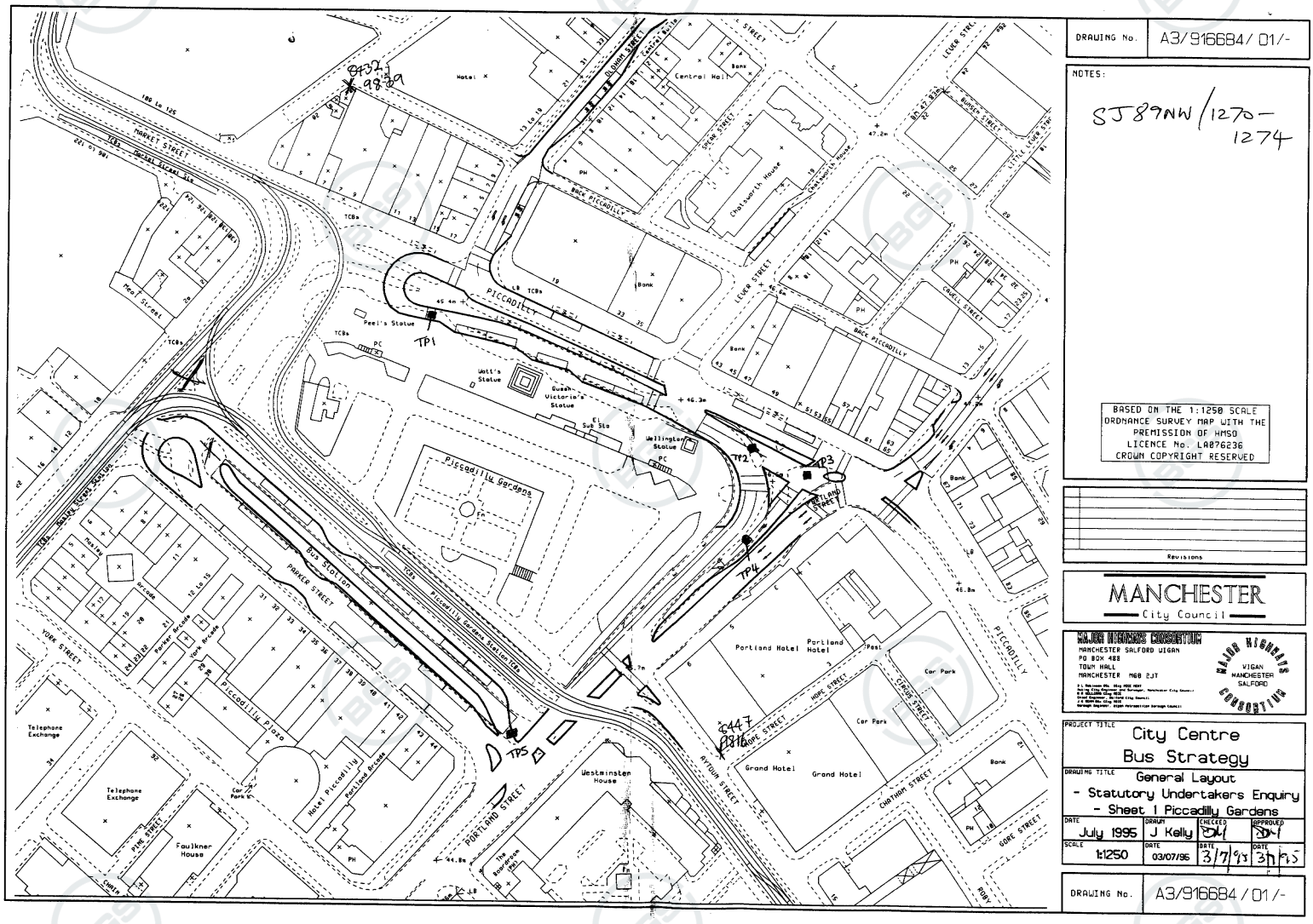
SOIL DESCRIPTION

0.0m Tarmac
0.02m MADE GROUND (concrete lean mix)
0.16m MADE GROUND (cobble sets)
0.52m MADE GROUND (ash)
0.59m MADE GROUND (concrete)
0.83m End of Pit

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043468 : BGS Reference: SJ89NW1274
British National Grid (27700) : 384400,398160



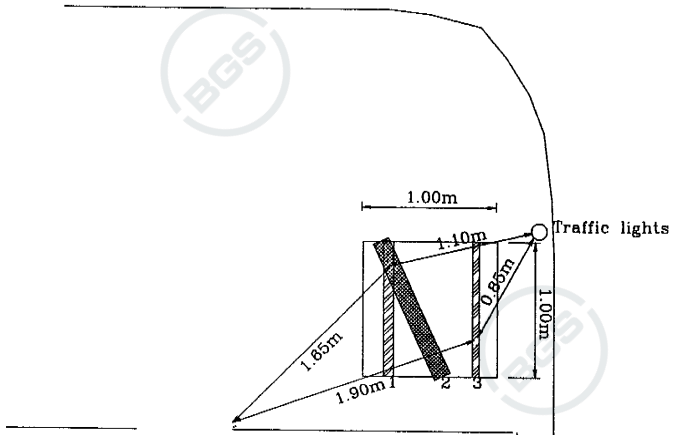
Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043468 : BGS Reference: SJ89NW1274
British National Grid (27700) : 384400,398160

SJ89NW 8440 9816 127

Piccadilly Gardens
Manchester City Council



Trial Pit No:	5
Location:	Bus Station
Date:	24-Aug-95
Job No.	8125-2

SERVICES EXPOSED	DEPTH	DIA.	TYPE
1	1.10m	75mm	Yellow Plastic pipe
2	0.25m	125mm	Grey plastic pipe
3	0.15m	50mm	Metal Pipe
4			
5			
6			
7			
8			
9			
10			
11			

No. Men:	2	
TIME START OF BREAKING OUT:	19.45	
TIME COMPLETE BREAKING OUT:	20.30	
TOTAL TIME BREAKING OUT:	0.75	HRS
TIME START OF DIGGING:	20.30	
TIME COMPLETED DIGGING:	21.30	
TOTAL TIME DIGGING	1	HRS
REINSTATEMENT	0.5	HRS

SOIL DESCRIPTION

0.0m Tarmac

0.12m MADE GROUND (sand and cement mix)

0.20m Brown medium grained SAND and GRAVEL

1.70m End of Pit

STRATA SURVEYS LIMITED

Contact BGS: ngdc@bgs.ac.uk

CLIENT	JOB NO	LOCATION	BOREHOLE NO
ALSTON MURPHY ASSOCIATES	C10242	BACK PICCADILLY MANCHESTER	BH2
DATE: NOVEMBER 1999 — SCALE: 1 to 25	BORING METHOD: DYNAMIC SAMPLING		Sheet: 1

Drilling & Casing Progress	SAMPLE/TEST Type & No.	SAMPLE/TEST Depth(M)	SPT N – value or COHESION	DESCRIPTION	O D LEVEL	LEGEND	DEPTH
16TH				MADE GROUND – Floorboards overlying concrete screed.			0.0
				MADE GROUND – Black ash, brick and concrete fill.			0.15
				Very stiff medium brown/grey mottled slightly sandy silty CLAY with fine to coarse gravel and traces of coal.			0.30
	U	1.00	> 240.00				
	U	1.50	> 240.00				
	U	2.00	> 240.00				
	U	2.50	160.00				
	U	3.00	> 240.00				
	U	3.50	> 240.00				
16TH	U	4.00	> 240.00				4.00

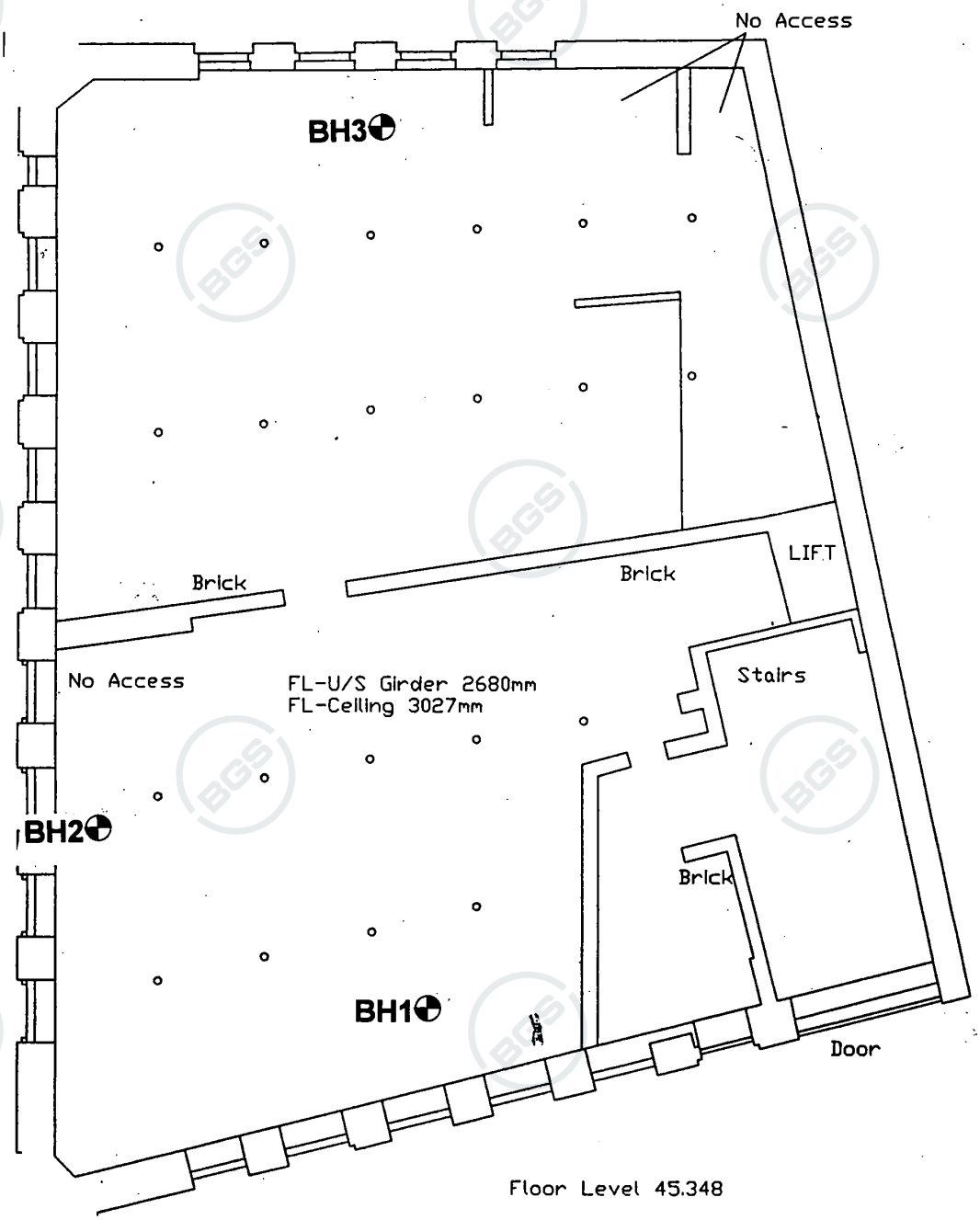
Dunelm
0191 378 6808 FAX 0191 378 3762

BOREHOLE LOGSHEET

Water Observations, Remarks, Etc
Borehole dry.

Floor Level 51.810

BASEMENT



Floor Level 45.348

CLIENT	JOB NO	LOCATION	BOREHOLE NO
ALSTON MURPHY ASSOCIATES	C10242	BACK PICCADILLY MANCHESTER	BH1
DATE: NOVEMBER 1999 — SCALE: 1 to 25	BORING METHOD: DYNAMIC SAMPLING		Sheet: 1

Drilling & Casing Progress	SAMPLE/TEST Type & No.	SAMPLE/TEST Depth(M)	SPT N – value or COHESION	DESCRIPTION	O D LEVEL	LEGEND	DEPTH
16TH							0.0
				MADE GROUND – Floorboards overlying concrete screed.			0.15
				MADE GROUND – Black ash, brick and concrete fill.			0.80
	U	1.00	>240.00	Very stiff medium brown/grey mottled slightly sandy silty CLAY with fine to coarse gravel and traces of coal.			
	U	1.50	>240.00				
	U	2.00	220.00				
	U	2.50	148.00				
	U	3.00	148.00				
	U	3.50	>240.00				
16TH	U	4.00	>240.00				4.00

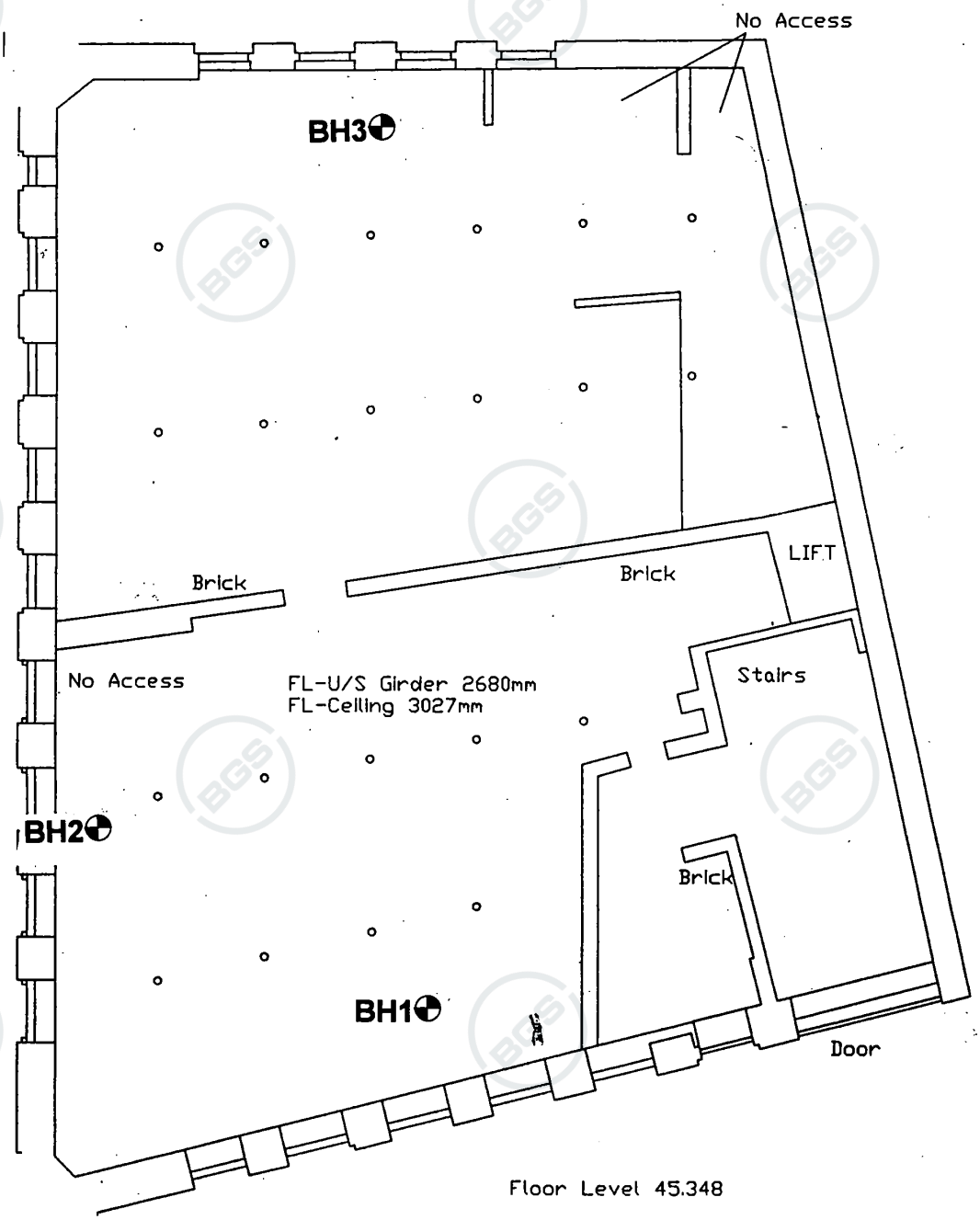
Dunelm
0191 376 6808 FAX 0191 378 3762

BOREHOLE LOGSHEET

Water Observations, Remarks, Etc
Borehole dry.

Floor Level 51.810

BASEMENT



Floor Level 45.348

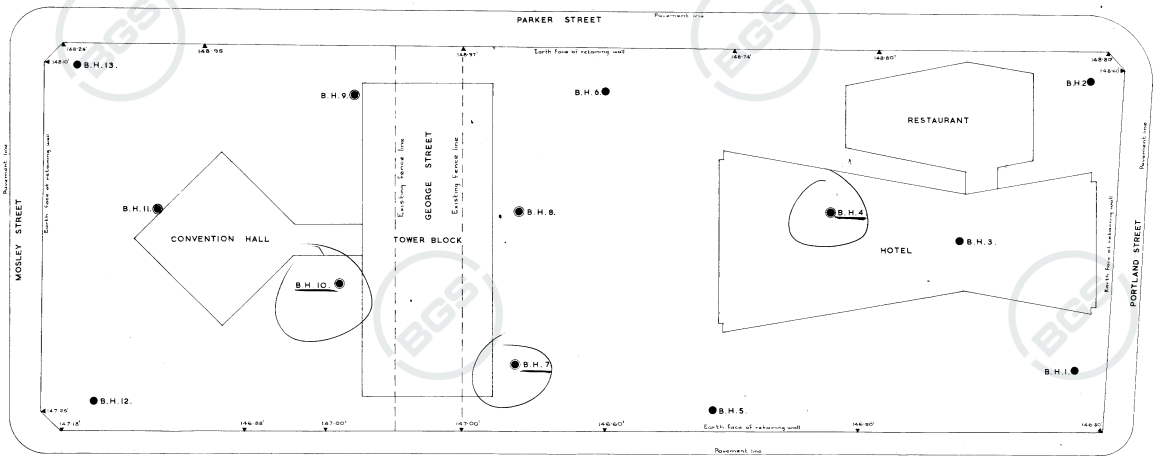
British Geological Survey

BGS ID: 1042501 : BGS Reference: SJ89NW335
British National Grid (27700) : 384310,398150

23
3216
LOC

SJ 89 NW 335-337

Fig. 21



KEY TO BORINGS	
● – 8 & 6 in. dia. borings with 3 in diamond core drilling.	
● – 8 in dia. borings.	
GROUND LEVELS FT. ABOVE N.D.	
1 146·9	8 148·5
2 148·7	9 148·8
3 148·0	10 148·9
4 149·1	11 148·2
5 146·5	12 147·9
6 148·1	13 148·5
7 147·4	

LOCATION NO. 3216
PICCADILLY, MANCHESTER.

SITE PLAN SHOWING POSITIONS OF BOREHOLES

SCALE 1/32" TO 1'-0"

SOIL MECHANICS LTD.
65, OLD CHURCH STREET,
LONDON S.W. 3.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042501 : BGS Reference: SJ89NW335
British National Grid (27700) : 384310,398150

SJ89 NW/335

Fig.4.

BOREHOLE LOG

4
3216
LOC

LOCATION NO. 3216. PICCADILLY MANCHESTER

CARRIED OUT FOR Piccadilly Manchester Properties LTD.

BOREHOLE NO. 4. DIAMETER: 8 in. and NX (3 in. nominal)

GROUND LEVEL: +149·1 ft. N.D. DATE: 1th. to 10th. and 26 to 27th. August 1959

DESCRIPTION	REDUCED LEVEL	LEGEND	SAMPLE	DEPTH	THICKNESS	W
Ash and slag over sandy topsoil with brick fragments (MADE GROUND)	+149·1		1	0' 0"	0.91 3'0"	
	+146·1		2 3	0.91 3'0"		
Firm to stiff, grey and brown mottled sandy silty CLAY with a little gravel (WEATHERED BOULDER CLAY)			4		1.68 5'6"	19
	140·6		5	2.69 8'6"		
			6			18
Slightly laminated. Stiff brown silty CLAY with a few fine and medium gravel sized rock fragments (including coal) and occasional sandy layers. (BOULDER CLAY)			7		4.04 13'3"	
			8			18
			9			
Soft to firm brown laminated slightly silty CLAY with occasional pockets of red sand and gravel (GLACIAL LAKE DEPOSITS)	+127·4		10	6.63 21'9"	1.30 4'3"	
	+123·1		11 12	7.93 26'0"		29
			13			15
			14			
Stiff, becoming very stiff below 34 ft. brown sandy silty clay with some gravel sized rock fragments. (BOULDER CLAY) Cobble; Sand layer; Much gravel			15		6.25 20'6"	8
			16			
			17			12
			18			
Sandstone fragments	+102·6		19 20	14.17 46'6"		
Soft red weakly cemented SANDSTONE (WEATHERED BUNTER SANDSTONE)					1.83 6'0"	Core Recovery
	+96·6		21	16.00 52'6"		
Marl band; Marl pebbles. Moderately hard but weakly cemented red SANDSTONE (BUNTER SANDSTONE)			22 23 24 25		4.42 14'6" Penetrated	65 % 60 % 60 % 95 %
Marl band.			26			~~95 %~~
	+82·1			20.42 67'0"		
END OF BOREHOLE						

W = Natural moisture content.

No water encountered in borehole.

SCALE: 1 in. = 5 ft. ● Disturbed Sample ▮ Core Sample △ Water Sample

SOIL MECHANICS LTD., 65, OLD CHURCH ST., S.W.3.

Contact BGS: ngdc@bgs.ac.uk

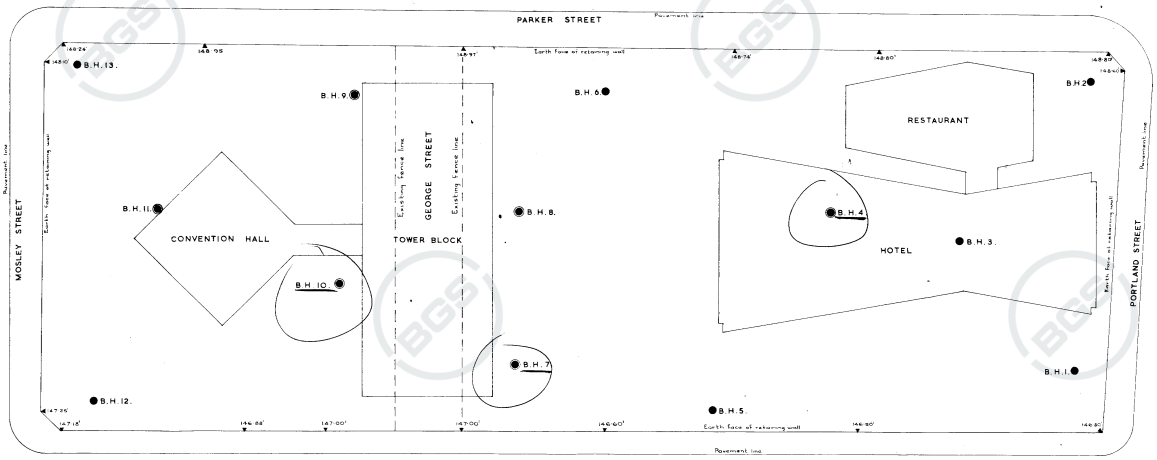
British Geological Survey

BGS ID: 1042502 : BGS Reference: SJ89NW336
British National Grid (27700) : 384280,398160

23
3216
LOC

SJ 89 NW 335-337

Fig. 21



KEY TO BORINGS	
● – 8 & 6 in. dia. borings with 3 in diamond core drilling.	
● – 8 in dia. borings.	
GROUND LEVELS FT. ABOVE N.D.	
1 146·9	8 148·5
2 148·7	9 148·8
3 148·0	10 148·9
4 149·1	11 148·2
5 146·5	12 147·9
6 148·1	13 148·5
7 147·4	

LOCATION NO. 3216
PICCADILLY, MANCHESTER.

SITE PLAN SHOWING POSITIONS OF BOREHOLES

SCALE 1/32" TO 1'-0"

SOIL MECHANICS LTD.
65, OLD CHURCH STREET,
LONDON S.W. 3.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042502 : BGS Reference: SJ89NW336
British National Grid (27700) : 384280,398160

SJ89 NW/336 Fig.7.

BOREHOLE LOG

7
3216
LOC

LOCATION NO. 3216 PICCADILLY MANCHESTER

CARRIED OUT FOR Piccadilly Manchester Properties Ltd.

BOREHOLE NO. 7. DIAMETER: 8 in. 6in. and N x (3 in. nominal)

GROUND LEVEL: + 147.4 ft. N.D. DATE: 29th July to 6th and 21st. to 25th. August 1959.

DESCRIPTION	REDUCED LEVEL	LEGEND	SAMPLE	DEPTH	THICKNESS	W%
	+147.4			0'0"		
Dense rubble including pieces of brick tile concrete earthenware pipe and burnt wood. (MADE GROUND)			1		3.35 11'0"	
	+136.4			3.35 11'0"		
Firm brown silty CLAY with a few fine and medium gravel sized rock fragments (including coal) and occasional sand pockets. (BOULDER CLAY)			2 4 3 5		2.74 9'0"	19 17
	+127.4		6	6.10 20'0"		
Firm brown laminated slightly silty CLAY with bands of sandy silty and fine sand. Occasionally a little fine gravel. (GLACIAL LAKE DEPOSITE)	+121.9		7 8	7.77 25'6"	1.68 5'6"	17
Stiff to very stiff brown sandy silty CLAY with some gravel sized rock fragments and limestone boulders between 27' and 36 ft. and at 46 ft. (BOULDER CLAY)			9 10 11 12 13 14 15 16		6.86 22'6"	14 10
Limestone boulder. Laminated clay. Sand and gravel.			17 18 19 20 21	14.63 48'0"		
	+99.4		22			
Red fine and medium sand with pieces of weakly cemented red SANDSTONE. (WEATHERED BUNTER SANDSTONE)			23 24 25	16.15 53'0"	1.52 5'0"	
	+94.4					
Thin bedded slightly marly			26 27			
Thin bedded and friable. Moderately hard but weakly cemented red SANDSTONE generally fine and medium grained. Cross-bedded. (BUNTER SANDSTONE)			28 29 30		7.62 25'0" Penetrated.	
Marl band.			31			
Thin bedded			32 33	23.77 78'0"		
	+69.4					
END OF BOREHOLE						

Water encountered at 15 ft. 6 in. below ground level rose to 14 ft. in 15 mins. Sealed off at 16 ft.

W = natural moisture content.

Core Recovery

95 %
60 %
25 %
90 %
60 %
70 %
100 %
100 %

SCALE: 1 in. = 5 ft. ■ Disturbed Sample ▮ Core Sample △ Water Sample

SOIL MECHANICS LTD., 65, OLD CHURCH ST., S.W.3.

Contact BGS: ngdc@bgs.ac.uk

CLIENT	JOB NO	LOCATION	BOREHOLE NO
ALSTON MURPHY ASSOCIATES	C10242	BACK PICCADILLY MANCHESTER	BH3
DATE: NOVEMBER 1999 — SCALE: 1 to 25	BORING METHOD: DYNAMIC SAMPLING		Sheet: 1

Drilling & Casing Progress	SAMPLE/TEST Type & No.	SAMPLE/TEST Depth(M)	SPT N – value or COHESION	DESCRIPTION	O D LEVEL	LEGEND	DEPTH
16TH							0.0
				MADE GROUND – Floorboards overlying 0.40m void.			
				MADE GROUND – Light brown sand, ash and brick fill.			0.50
				Very stiff medium brown/grey mottled slightly sandy silty CLAY with fine to coarse gravel and traces of coal.			0.60
	U	1.00	>240.00				
	U	1.50	>240.00				
	U	2.00	>240.00				
	U	2.50	220.00				
	U	3.00	224.00				
	U	3.50	>240.00				
16TH	U	4.00	>240.00				4.00

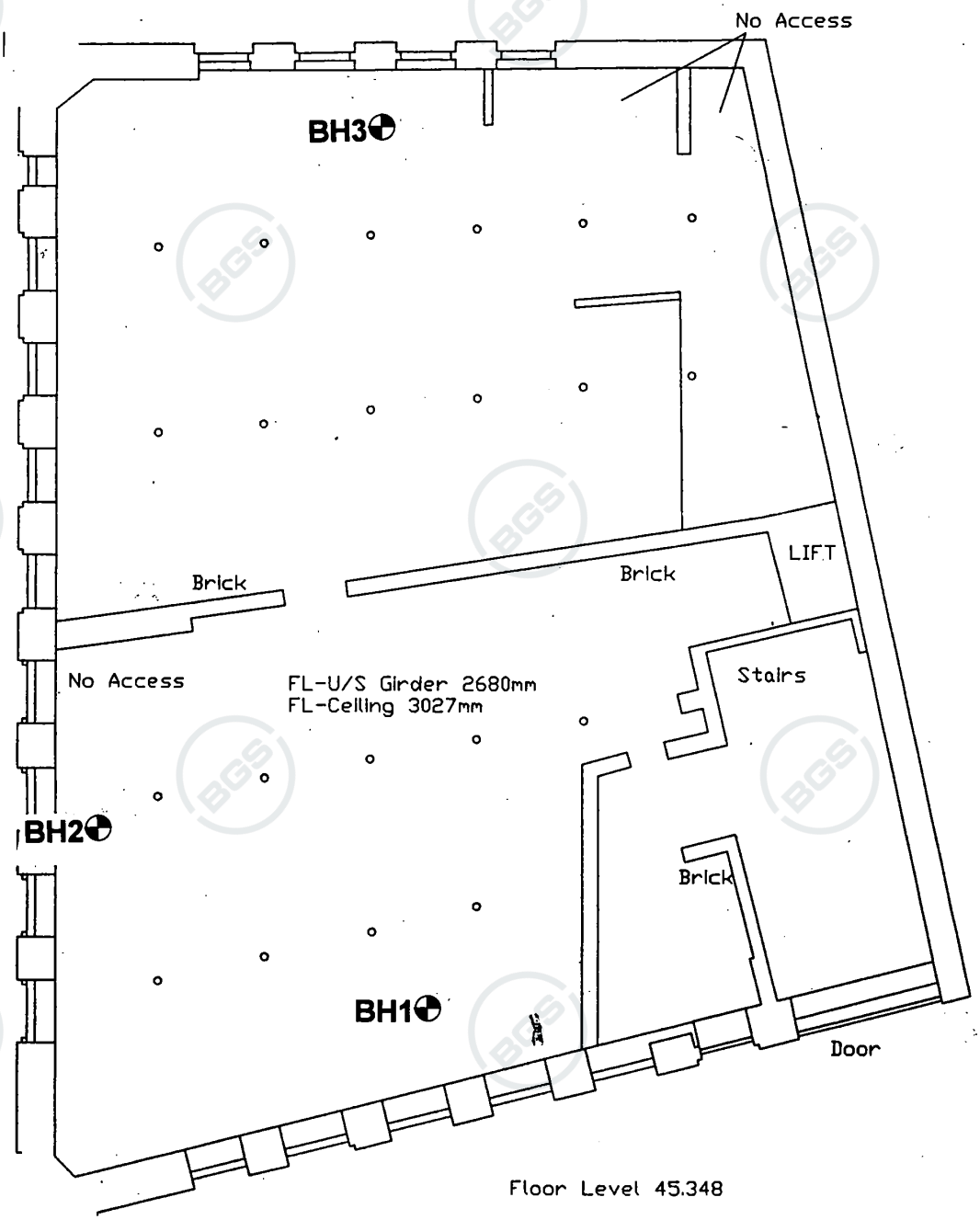
Dunelm
0191 375 6808 FAX 0191 378 3762

BOREHOLE LOGSHEET

Water Observations, Remarks, Etc
Borehole dry.

Floor Level 51.810

BASEMENT



Floor Level 45.348

British Geological Survey

BGS ID: 13468814 : BGS Reference: SJ89NW3782
British National Grid (27700) : 384540,398360

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SITE INVESTIGATION FOR Main Drainage — DATE COMMENCED 20.4.83

LOCATION Newton Street — REF: — BORING METHOD Cable Percussive

BOREHOLE No. 5 — BORING DIAMETER 150mm — 384543

GRID REFERENCE — SCALE: 1:50 (Approx) — 398366

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legen
20.4.83			0.05		Bituminous surfacing					
			0.15		Setts					
			0.45		Concrete					
			1.70		Soft to firm black silty CLAY with stone, sand, ashes and bricks etc. - Made Ground	D1 D2 U1	0.5 1.0 1.50	1.95		
			2.40		Very soft to soft brown silty and sandy CLAY with brick, stone & coal inclusions -Made Ground.	D3	2.0			
			4.70		Stiff to very stiff silty and sandy CLAY with stone inclusions and sand lenses.	U2 D4 U3 D5 U4	2.50 3.00 3.50 4.00 4.50	2.95 3.95 4.70		
			4.95		Medium dense brown SAND with gravel.	P1	4.70	5.150	21	
20.4.83	4.70	Dry	5.50		Very stiff brown silty and sandy CLAY with stone inclusions.	D6	5.50			

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:-

SAMPLE TEST KEY — D – DISTURBED SAMPLE; B – BULK SAMPLE; U – UNDISTURBED SAMPLE; P – SPT SAMPLE; W – WATER SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Trial pit excavated to 1.50 metres

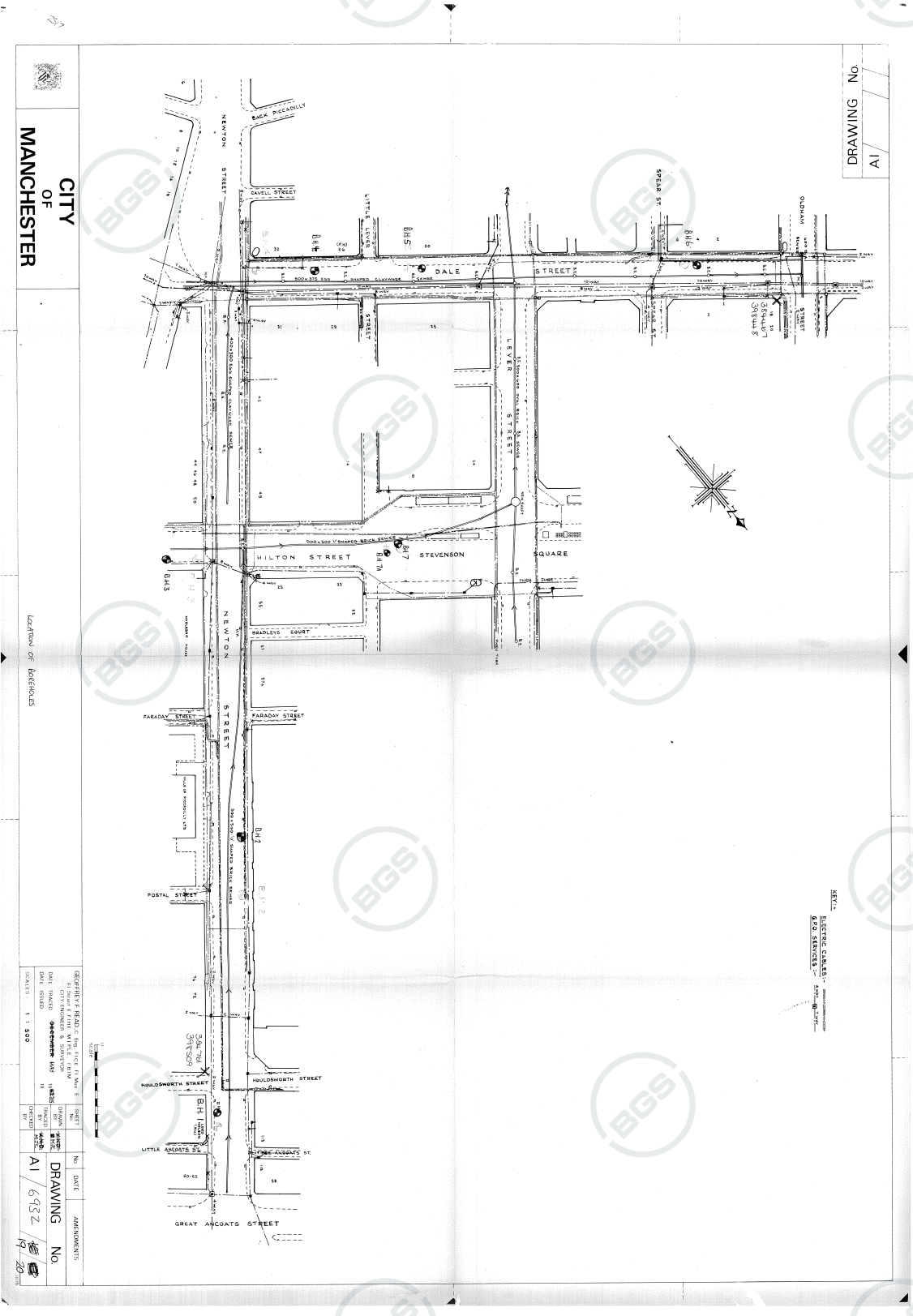
Borehole backfilled on completion. No final overnight water level observed.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468814 : BGS Reference: SJ89NW3782
British National Grid (27700) : 384540,398360



Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468815 : BGS Reference: SJ89NW3783
British National Grid (27700) : 384470,398420

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SITE INVESTIGATION FOR Main Drainage — DATE COMMENCED 24. 4. 1983

LOCATION Newton Street — REF: — BORING METHOD Cable Percussive

BOREHOLE No. 6 — BORING DIAMETER 150mm — 384478

GRID REFERENCE — SCALE: 1.50 (Approx) — 398423

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legend
24.4.83			0.15		Bituminous surfacing					
			0.35		Concrete					
			0.85		Clay, stone, ashes, brick pieces	D1	0.50			
					Stiff/very stiff brown silty and sandy CLAY with grey fissures, stone and coal inclusions	D2	1.0			
						U1	1.50	1.95		
						D3	2.0			
						U2	2.50	2.95		
						04	3.0			
						U3	3.50	3.95		
						D5	4.0			
						U4	4.5	4.95		
						D6	5.0			
						U5	5.50	5.95		
						D7	6.0			
						U6	6.50	6.95		
4.4.83	6.00	Dry	7.00							

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

SAMPLE TEST KEY: D – DISTURBED SAMPLE; B – BULK SAMPLE; U – UNDISTURBED SAMPLE; P – SPT SAMPLE; W – WATER SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Trial hole excavated to 1.50 metres

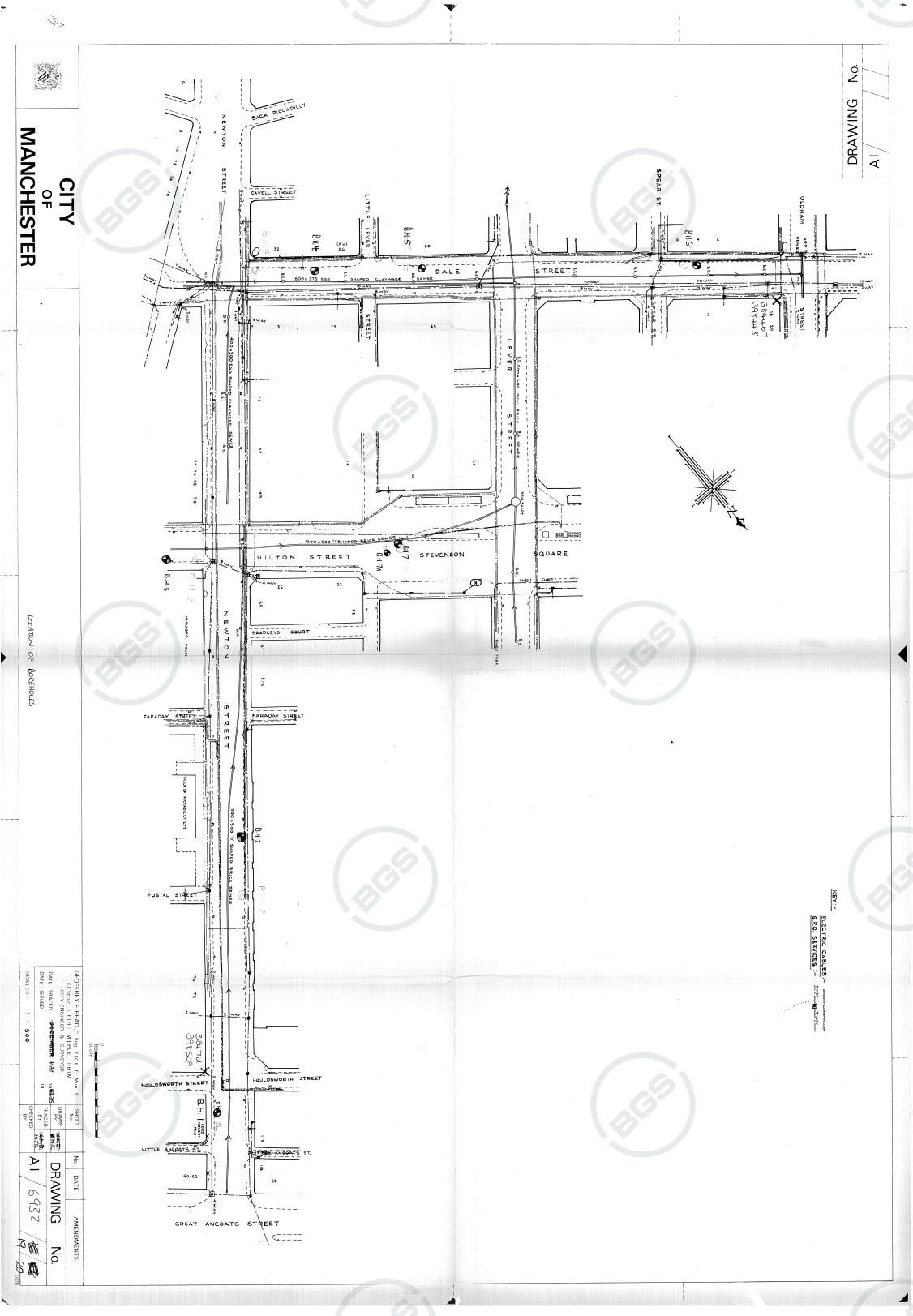
Borehole backfilled on completion. No final overnight water level observed.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468815 : BGS Reference: SJ89NW3783
British National Grid (27700) : 384470,398420



Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042521 : BGS Reference: SJ89NW343
British National Grid (27700) : 384180,398460

SJ 89 NW/343

GEO-RESEARCH LTD.
BRIGHTON ROAD,
HEATON NORRIS,
STOCKPORT, CHESHIRE.

CONTRACT: H. SAMUEL LTD.

LOCATION: MANCHESTER.

Borehole No. 2.
Sheet No. 1
Date Commenced 30/5/73.
Date Completed 1/6/73.
Scale 1 : 50

Stratum	Legend	Thickness	Depth	Sample No.	N Value	Level	Remarks
			G.L.				
Brown sandy silty clay FILL			1.000	D1			Damp
			1.500	U1			
		2.130	2.200	D2			
Stiff brown/grey silty CLAY with occasional pebbles			3.000	U2			Damp
			3.750	D3			
		2.300	4.500				
BRICK and CONCRETE SEWER			5.500	B1			Water Added
		1.300	5.800	D4			
Stiff brown sandy silty CLAY with occasional pebbles and small rock fragments			6.000	U3			
			6.750	D5			
			7.500	U4			Damp
			8.250	D6			
			9.000	U5			
			9.750	D7			
		4.700	10.500				

Continued on Sheet 2.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042521 : BGS Reference: SJ89NW343
British National Grid (27700) : 384180,398460

SJ89 NW343

GEO-RESEARCH LTD.
BRIGHTON ROAD,
HEATON NORRIS,
STOCKPORT, CHESHIRE.

Borehole No. 2.
Sheet No. 2
Date Commenced 30/5/73.
Date Completed 1/6/73.
Scale 1:50

CONTRACT: H. SAMUEL LTD.

LOCATION: MANCHESTER.

Stratum	Legend	Thick-ness	Depth	Sample No.	N Value	Level	Remarks
			10.500				
Stiff brown sandy silty CLAY with occasional pebbles and small rock fragments			11.000	U6			Damp
			11.750	D8			
			12.500	U7			
			13.250	D9			
		3.370	13.870	D10			
Weathered orange/brown SANDSTONE			14.500	D11			Water Added
			14.900	P1			P1 75 blows for 0.070 total.
		1.130	15.000				
Borehole Complete							On completion of borehole at 15.000, Casing at 14.000, Water Nil. Borehole backfilled as casing withdrawn.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042521 : BGS Reference: SJ89NW343
British National Grid (27700) : 384180,398460

GEO–RESEARCH LIMITED.

LABORATORY TEST RESULTS SITE H.SAMUEL LTD, MANCHESTER. B/HOLE 2.

			CLASSIFICATION				TRIAXIAL COMPRESSION						CHEMICALS		
Depth m.	Sample	Description	Liquid Limit	Plastic Limit	Plast. Index	Classification	Moist Cont. %D.W.	Wet Bulk Density kg/cu.m.	Lateral Pressure kN/sq.m.	Deviator Stress Failure kN/sq.m.	Shear Strength Cohesion kN/sq.m.	Angle Degree	SO_3 Water p p 100,000	pH.	SO_3 Soil %D.W.
2.20	D2	Brown silty CLAY with occasional pebbles					35.4							7.5	0.02
3.00	U2	Very stiff brown/grey silty CLAY with occasional pebbles					17.6 18.0	2110 1990	100 200	330 382	110	13°			
3.75	D3	Brown and grey silty CLAY with occasional pebbles					20.2								
6.00	U3	Brown silty CLAY with occasional pebbles	42	16	26	CI	19.3								
6.75	D5	Brown silty CLAY with occasional pebbles					25.0								
7.50	U4	Stiff brown silty CLAY with shale fragments and occasional pebbles					14.5 14.7	2190 2160	100 200	162 174	84	0°			
9.00	U5	Brown sandy silty CLAY with occasional pebbles	33	14	19	CL	14.1								
9.95	D7	Brown silty CLAY with occasional pebbles					16.6								

SJ 89 NW/343

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042521 : BGS Reference: SJ89NW343
British National Grid (27700) : 384180,398460

GEO–RESEARCH LIMITED.

LABORATORY TEST RESULTS SITE H.SAMUEL LTD. MANCHESTER. B/HOLE 2. (Cont'd)

			CLASSIFICATION				TRIAXIAL COMPRESSION						CHEMICALS		
Depth m.	Sample	Description	Liquid Limit	Plastic Limit	Plast. Index	Classification	Moist Cont. %D.W.	Wet Bulk Density kg/cu.m.	Lateral Pressure kN/sq.m.	Devistor Stress Failure kN/sq.m.	Sheer Strength Cohesion kN/sq.m.	Angle Degree	SO_3 Water p p 100,000	pH.	SO_3 Soil %D.W.
11.00	U6	Stiff brown silty CLAY with pebbles, shale and sandstone fragments					15.5 15.5 15.9	2170 2170 2180	100 200 400	208 237 243	100	3^{o}			
13.25	D9	Brown silty CLAY with occasional pebbles					16.9								

SJ 89 NW/343

Contact BGS: ngdc@bgs.ac.uk

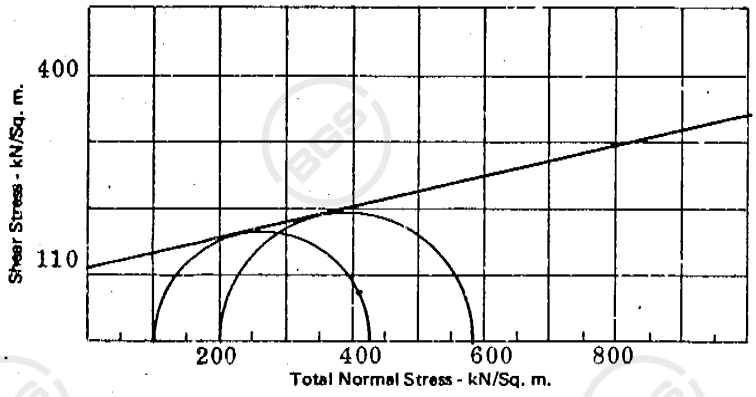
British Geological Survey
BGS ID: 1042521 : BGS Reference: SJ89NW343
British National Grid (27700) : 384180,398460

SJ 89 NW/343

GEO – RESEARCH LTD

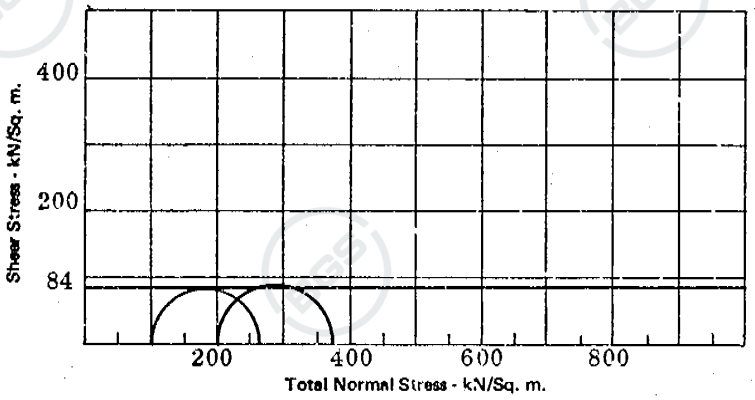
MOHRS' STRESS DIAGRAMS

SITE NAME H.SAMUEL LTD., MANCHESTER.



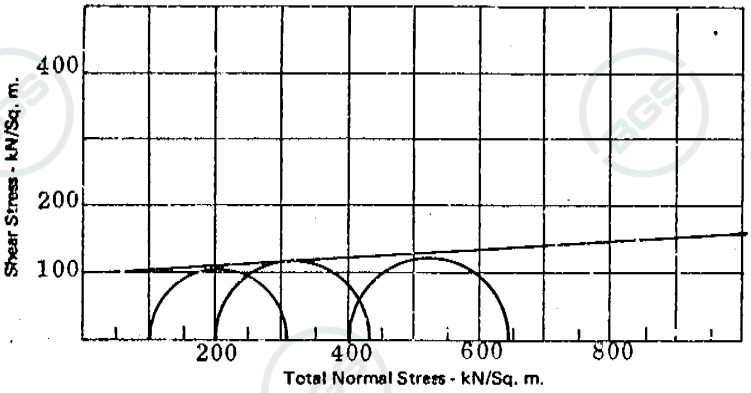
B.H. No. 2. U2
Depth: 3.00m
Description: Very stiff brown/grey silty CLAY with occasional pebbles.

c = 110
ϕ = 13°



B.H. No. 2. U4
Depth: 7.50m
Description: Stiff brown silty CLAY with shale fragments and occasional pebbles

c = 84
ϕ = 0°



B.H. No. 2. U6
Depth: 11.00m
Description: Stiff brown silty CLAY with pebbles, shale and sandstone fragments

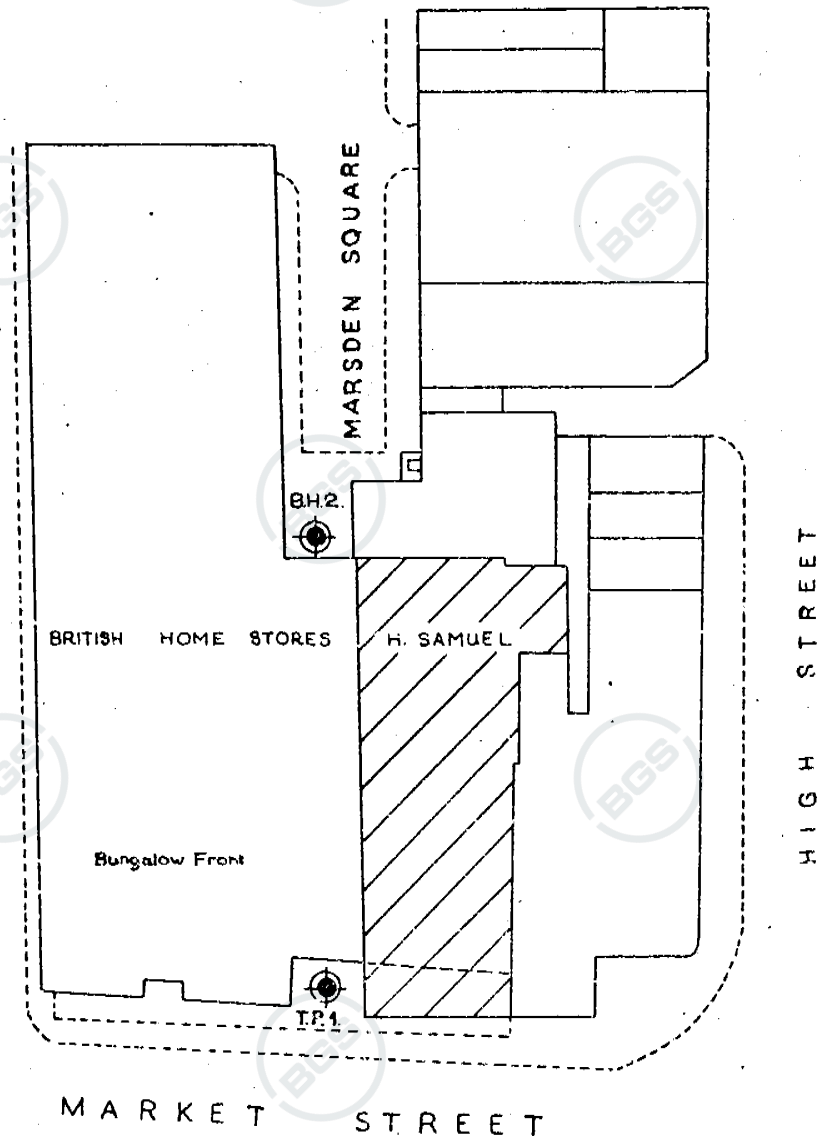
c = 100
ϕ = 3°

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042521 : BGS Reference: SJ89NW343
British National Grid (27700) : 384180,398460

SJ 89 NW/343



SITE SKETCH PLAN SHOWING BOREHOLE AND TEST PIT POSITIONS FOR H.SAMUEL LTD., [MANCHESTER]. Scale: 1:500.

Contact BGS: ngdc@bgs.ac.uk

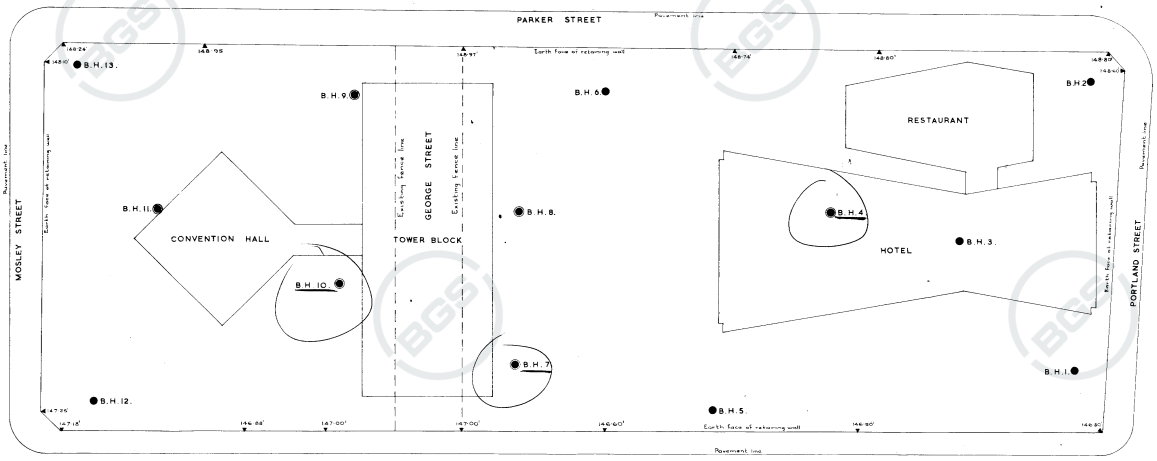
British Geological Survey

BGS ID: 1042503 : BGS Reference: SJ89NW337
British National Grid (27700) : 384240,398180

23
3216
LOC

SJ 89 NW 335-337

Fig. 21



KEY TO BORINGS	
● – 8 & 6 in. dia. borings with 3 in diamond core drilling.	
● – 8 in dia. borings.	
GROUND LEVELS FT. ABOVE N.D.	
1 146·9	8 148·5
2 148·7	9 148·8
3 148·0	10 148·9
4 149·1	11 148·2
5 146·5	12 147·9
6 148·1	13 148·5
7 147·4	

LOCATION NO. 3216
PICCADILLY, MANCHESTER.

SITE PLAN SHOWING POSITIONS OF BOREHOLES

SCALE 1/32" TO 1'-0"

SOIL MECHANICS LTD.
65, OLD CHURCH STREET,
LONDON S.W. 3.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042503 : BGS Reference: SJ89NW337
British National Grid (27700) : 384240,398180

SJ89NW/337 Fig. 10.

BOREHOLE LOG

01 3216 LOC

LOCATION NO. 3216. PICCADILLY, MANCHESTER.

CARRIED OUT FOR PICCADILLY MANCHESTER PROPERTIES LTD.

BOREHOLE NO. 10 DIAMETER: 8 and 6 in., 146 mm. and NX. (3 in. nominal)

GROUND LEVEL: + 148·9 ft. N.D. DATE: 4th. to 28th. JULY, 1959.

DESCRIPTION	REDUCED LEVEL	DEPTH	THICKNESS
MADE GROUND comprising fragments of brick, some sand and occasional pieces of metal and glass.	+ 148·9	0'0"	3·05 10'0"
Firm to stiff brown silty CLAY with occasional fine and medium gravel size sub-angular pieces of rock. Stratum fissured and weathered in top 5 ft. (BOULDER CLAY)	+ 138·9	3·05 10'0"	2·90 9'6"
Firm to stiff brown laminated silty CLAY with some small pockets of brown fine sand. At top of stratum, a thin seam of very sandy (fine) SILT with small lenses of brown clay. (GLACIAL LAKE DEPOSITS)	+ 129·4	5·94 19'6"	2·59 8'6"
	+ 120·9	8·53 28'0"	
Firm to stiff becoming stiff (38 ft) brown silty slightly sandy CLAY with some fine and a few medium gravel size sub-angular pieces of rock. Stratum becomes more sandy between 33 and 38 ft. and below 45 ft. (BOULDER CLAY)			6·10 20'0"
	+ 100·9	14·63 48'0"	0·61 2'0"
Stiff brown finely laminated silty CLAY.	+ 98·9	15·24 50'0"	
Soft red brown slightly micaceous fine and medium grained SANDSTONE, partially reduced to sand and with thin lense of soft red mudstone and medium and fine gravel in the top 6 in.			
Soft to medium hard red-brown weakly cemented medium and coarse grained SANDSTONE. Slightly pebbly (fine and medium gravel size) from 53 ft. 6 in. to 57 ft. 3 in. and 64 ft. to 68 ft. 6 in. (BUNTER SANDSTONE)			8·66 28'6" Penetrated.
Breccia of mudstone and shale fragments in soft sandstone matrix.			
Soft red-brown marl.			
	+ 70'4	23·93 78'6"	
END OF BOREHOLE			

Borehole dry throughout except on one occasion as follows:-

Date	Time	Depth of Borehole	Depth to Water
14-7.	07.30	32'6"	28'0"

Water shelled out before continuing with the boring.

NOTES:

(1) Borehole put down 5 ft. S.E. of original position (towards George Street) as agreed by Consultant Engineer on 7 July. First attempt in original position penetrated brick masonry and concrete to a depth of 8 ft. Borehole abandoned at 8 ft. When steelwork was encountered.

(2) Observation well installed at 35 ft. below ground level on 29·7·57 and withdrawn on 31·8·59. The well remained dry for the whole period.

CORE RECOVERY	
19	50 %
	52 %
20	79 %
21	92 %
22	91 %
23	88 %
24	90 %
25	

W = Moisture content

SCALE: 1 in. = 5 ft. ● Disturbed Sample ▮ Core Sample △ Water Sample

SOIL MECHANICS LTD., 65, OLD CHURCH ST., S.W.3.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042520 : BGS Reference: SJ89NW342
British National Grid (27700) : 384180,398260

SJ 89 NW/342

DETAILS OF BOREHOLES.

VERTICAL SCALE: 1" TO 5'.

BOREHOLE No 1.

Ground level 160.00 O.D.

- Made ground
- 154.8 O.D. (approx. lower gnd. floor level)
- Brown grey very stiff mottled boulder clay.
- 134.8 O.D. (approx. basement level.)
- Stiff brown varied clay.
- Stiff to very stiff brown sandy boulder clay.
- Brown clayey sand.
- Very stiff brown sandy boulder clay.
- Red sandstone.

No water encountered.

BOREHOLE COMPLETED 22·4·61.

BOREHOLE No 2.

153.3 O.D. (approx. ground floor level.)

Ground level 154.8 O.D.

- Made ground
- Very stiff brown grey mottled boulder clay.
- Stiff brown varied clay.
- Stiff to very stiff brown sandy boulder clay.

No water encountered

BOREHOLE COMPLETED 28·4·61

BOREHOLE No 3.

Ground level 153.3 O.D.

- Made ground
- Very stiff brown grey mottled boulder clay.
- Dark brown clay with small stones and some wood.
- Stiff to very stiff brown sandy boulder clay.

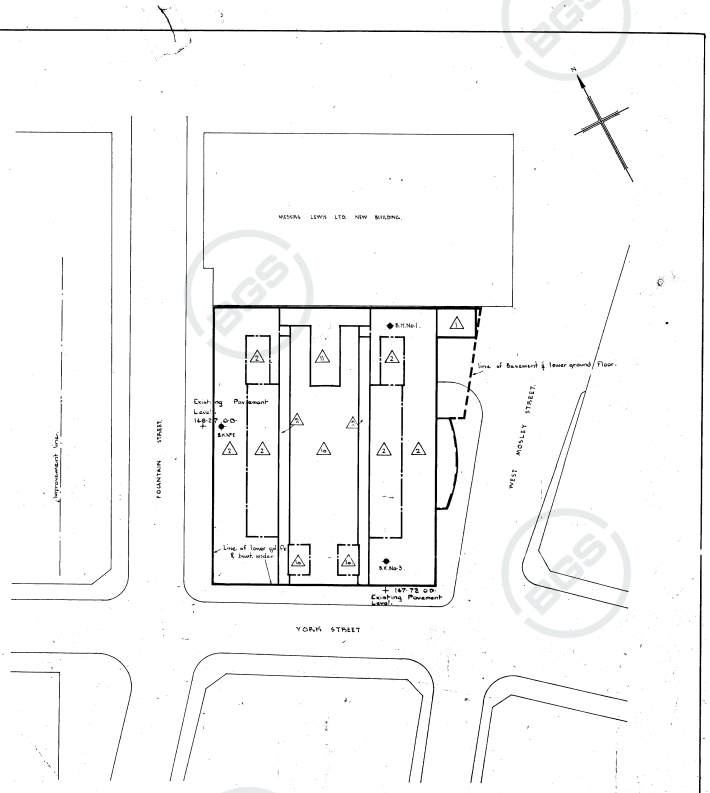
No water encountered.

BOREHOLE COMPLETED 29·4·61

The attention of any Contractor tendering for work on this site is drawn to the following points:-

1. No guarantee can be given as to the extent to which the details of the borholes accurately represent the subsoil and ground water conditions on the site generally.
2. Any water levels indicated on these drawings will be subject to seasonal and other fluctuations.

O.D. refers to Ordnance Datum (Newlyn).



SITE PLAN.

Scale: 1/8" to 1'-0"

Proposed buildings indicated thus –

Number of storeys indicated thus :- (Note: Basement and sub-basement not included in Number of storeys shown.)

Boreholes indicated thus :- ◆ B.H.No 2.

Borehole No 1 is located in existing car park.
No 2 is located in existing Telegraph Construction Office (Headroom approx. 11'-0").
No 3 is located in existing Voucher Stationery Store (Headroom approx 10'-0").

BARCLAYS BANK LTD.
YORK ST., MANCHESTER.

GREEN, LLOYD, & SON.
ARCHITECTS.

SITE EXPLORATION

CONTRACT Manchester
No C/2163
DWG No 1
DATE ISSUED 20·1·61

REVISIONS
1. 17.1.61

W. V. ZINN & ASSOCIATES.
COLLINGHAM HOUSE,
EAGLE STREET,
HOLBORN, W.C.1.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468813 : BGS Reference: SJ89NW3781
British National Grid (27700) : 384560,398340

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

ITE INVESTIGATION FOR Main Drainage — DATE COMMENCED 21. 4. 1983

OCATION Newton Street — REF: — BORING METHOD Cable Percussive

OREHOLE No. 4 — BORING DIAMETER 150mm 384569

RID REFERENCE — SCALE: 1.50 (approx) 398344

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legend
1.4.83			0.10		Bituminous surfacing					
			0.35		Concrete					
			1.30		Firm brown silty and sandy CLAY with ashes, stone, brick pieces & grey fissures - Made Ground		D1	0.50		
							D2	1.00		
					Very stiff brown silty and sandy CLAY with grey fissures, stone and coal inclusions	U1	1.50	1.95		
						D3	2.00			
						U2	2.50	2.95		
						D4	3.00			
						U3	3.50	3.95		
						D5	4.00			
						U4	4.50	4.95		
1.4.83	4.40	Dry	5.00							

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:-

SAMPLE TEST KEY

D – DISTURBED SAMPLE
B – BULK SAMPLE
U – UNDISTURBED SAMPLE
P – SPT SAMPLE
W – WATER SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

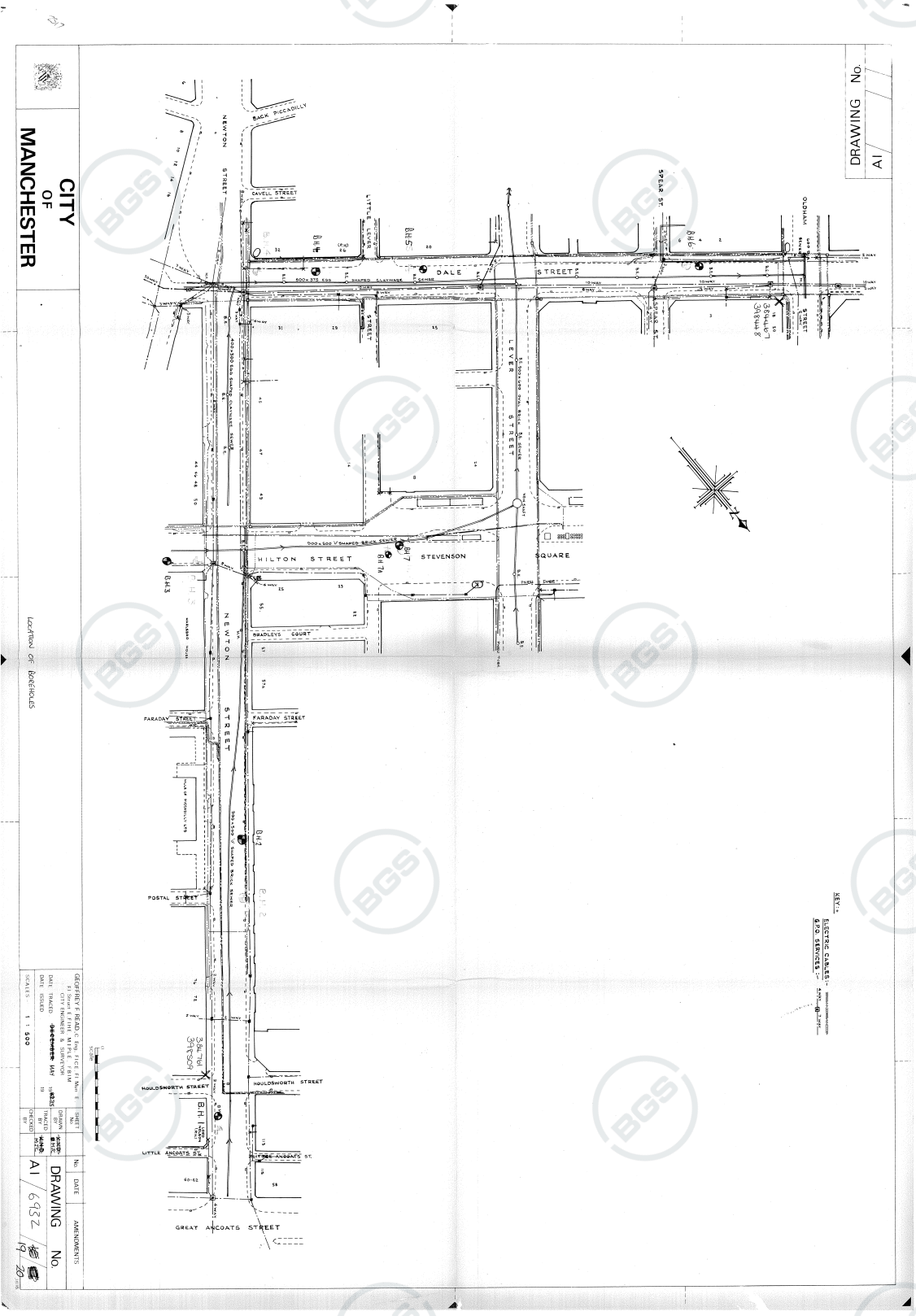
Borehole backfilled on completion. No final overnight water level observed.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468813 : BGS Reference: SJ89NW3781
British National Grid (27700) : 384560,398340



Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042733 : BGS Reference: SJ89NW539
British National Grid (27700) : 384405,398493

SJ 89 NW / 539

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

PARKSIDE LANE

LEEDS LS11 5SX.

384405 398493

Contract No. M40/3/F1612 Borehole No. 1

Location Church Street, Ground Level 146.6 44.69m

Client Manchester City Engineer Date 8th August, 1970

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ø deg.	m.c %	y lb/cu. ft.	N
~~WOOD FLOOR~~		5"	5"						
BASEMENT		8'8"	8'3"						
MADE GROUND:- CONCRETE		8'10"	2"						
MADE GROUND:- HARD CORE		9'4"	6"						
Stiff brown boulder CLAY		13'6"	4'2"	14'6" []	860	0	27.7	123	
Firm brown laminated CLAY		17'6"	4'0"	18'6" []	1870	0	16.8	132	
Stiff brown boulder CLAY		36'0"	18'6"	23'9" []	1800	0	19.5	127	
				28'6" []	4800	0	11.8	141	
				33'3" []	1900	0	14.7	133	
Hard brown sandy stony boulder CLAY		44'0"	8'0"	38'0" []	4600	16	12.8	137	
				42'6" []	1150	30	8.1	122	
Very dense red SAND with occasional GRAVEL		47'6"	3'6"	47'6"					80 for 4½"
SANDSTONE BOULDER		50'0"	2'6"	49'6"					80 for 6"

Water Struck at None Encountered Maximum Observed Water Level

Undisturbed Sample []
Disturbed Sample o
Water Sample ▲
Penetration Test I

c = Cohesion
ø = Angle of Internal Friction
m.c = Moisture Content
y = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043779 : BGS Reference: SJ89NW1585
British National Grid (27700) : 384290,398100

MESSRS. FITZROY ROBINSON AND PARTNERS
JOHN F. FARQUHARSON & PTNRS.
34, QUEEN ANNE ST,
LONDON W1.
CONSULTING ENGINEERS

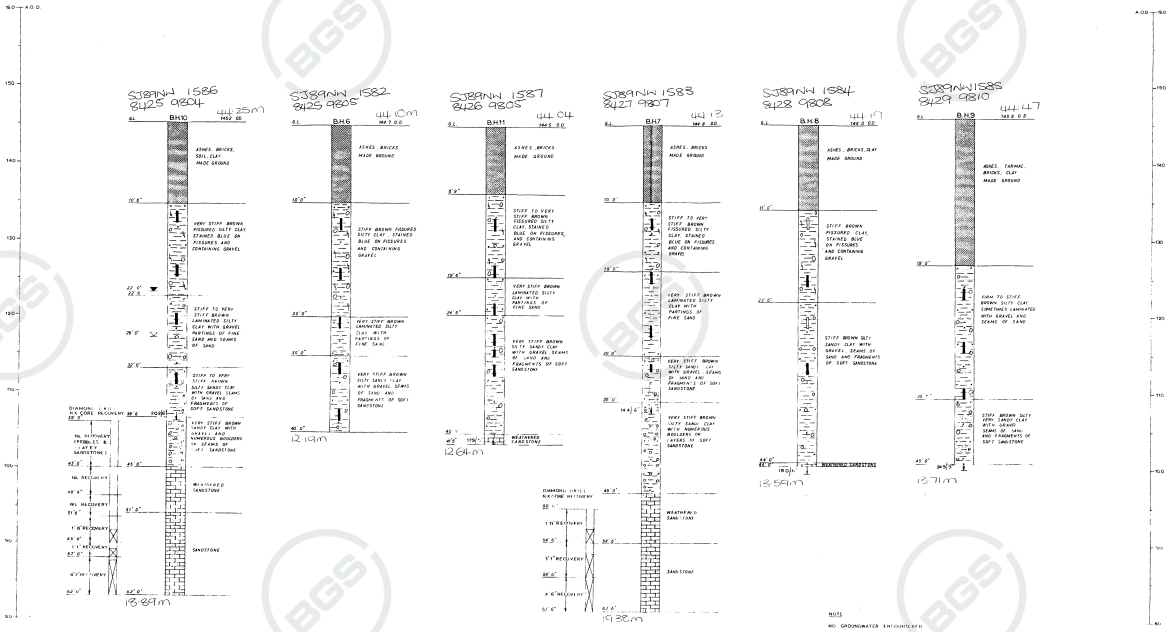
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 2745../3.....
DATE... FEBRUARY .....1967.
DRAWN BY. ...
CHECKED BY. ...

* SJ89NW/1582-1587

SECTIONS OF BORINGS



KEY

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- No. of blows for 12" penetration
- In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1"=5'
Horizontal

LEVELS:
Reduced levels refer to Newlyn/Liverpool Ordnance Datum and are based on bench mark(s) of value

SOIL AND ROCK TYPES:

Gravel	Limestone or Chalk
Sand	Sandstone
Silt	Mudstone
Cobbles	Coal
Clay	Shale
Fissured clay	
Peat	
Marl	Made ground

Composite soils shown by combination of above.

GEOLOGICAL FORMATIONS:

NOTES:

1) This drawing forms an integral part of the report and should only be read in that context.

2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent & which they are representative of the site generally there may be special conditions at the site which have not been disclosed by the borings.

3) Indicated groundwater levels will be subject to seasonal and other fluctuations, the absence of groundwater may not necessarily be a permanent feature of the site.

LE GRAND ADSCO
CIVIL ENGINEERING DIVISION OF
LE GRAND SUTCLIFF & GELL LIMITED
THE GREEN,
SOUTHALL, MIDDLESEX.
TEL. SOUTHALL 2211 7 Cables ADSELLEY SOUTHALL
MEMBER OF THE STONE - PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043784 : BGS Reference: SJ89NW1590
British National Grid (27700) : 384300,398090

MESSRS FITZROY ROBINSON AND PARTNERS

JOHN F FARQUHARSON & PTNRS
34, QUEEN ANNE ST,
LONDON W1

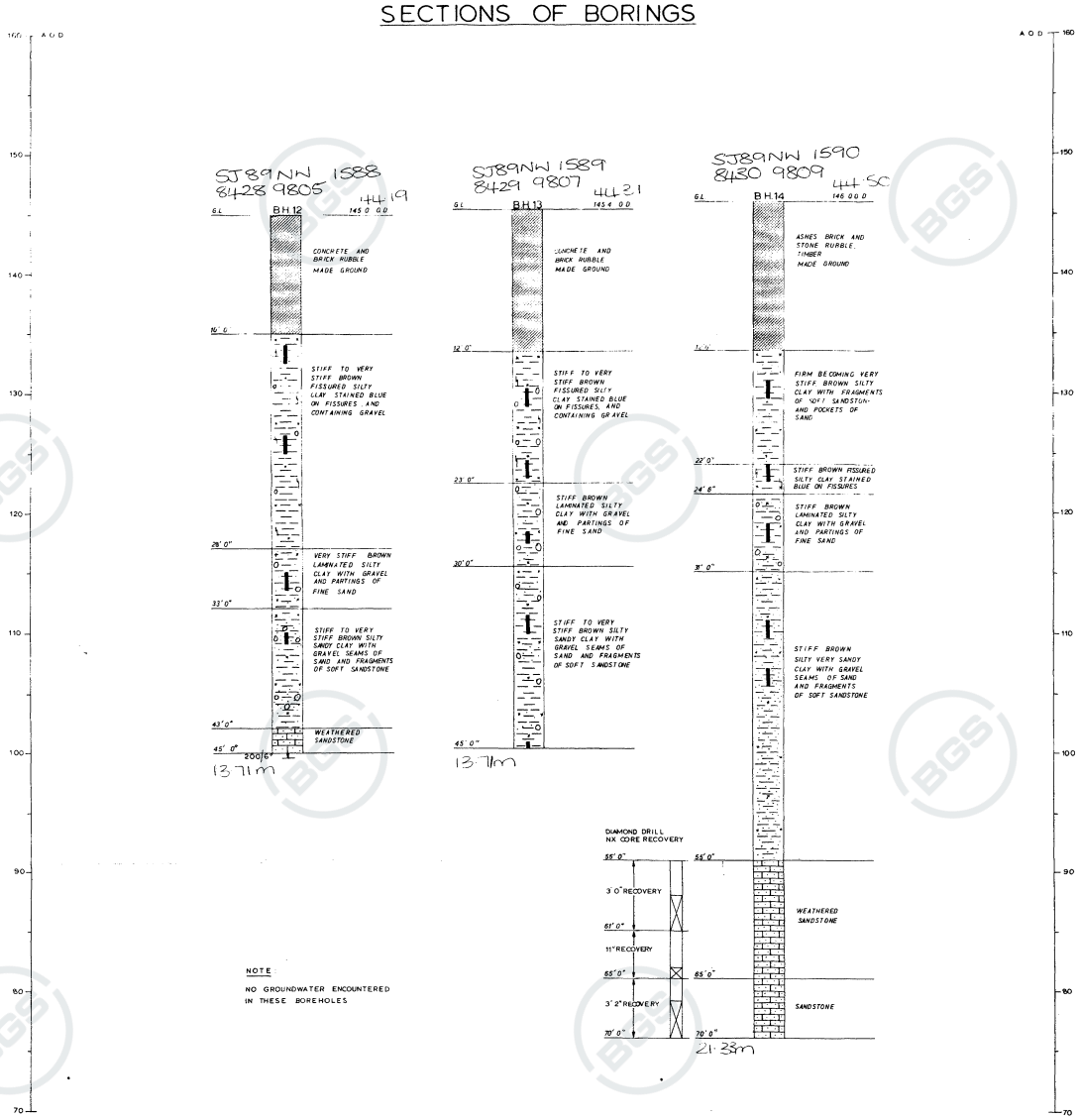
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SITE INVESTIGATION
AT
PORTLAND STREET, MANCHESTER

DRAWING NO 2745 / 4
DATE FEBRUARY 1967
DRAWN BY
CHECKED BY

SJ89NW/1588-1590

SECTIONS OF BORINGS



NOTE

NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES

KEY:

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:

Vertical 1" = 5'
Horizontal:

LEVELS:

Reduced levels refer to Newlyn/Liverpool Ordnance Datum and are based on bench mark located at ..... value.....

SOIL AND ROCK TYPES:

Gravel			Limestone or Chalk
Sand			Sandstone
Silt			Mudstone
Uncemented calcareous matter (including shell beds)			Coal
Clay			Shale
Fissured clay			
Peat			
Marl			Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043784 : BGS Reference: SJ89NW1590
British National Grid (27700) : 384300,398090

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34, QUEEN ANNE ST.,
LONDON W.1

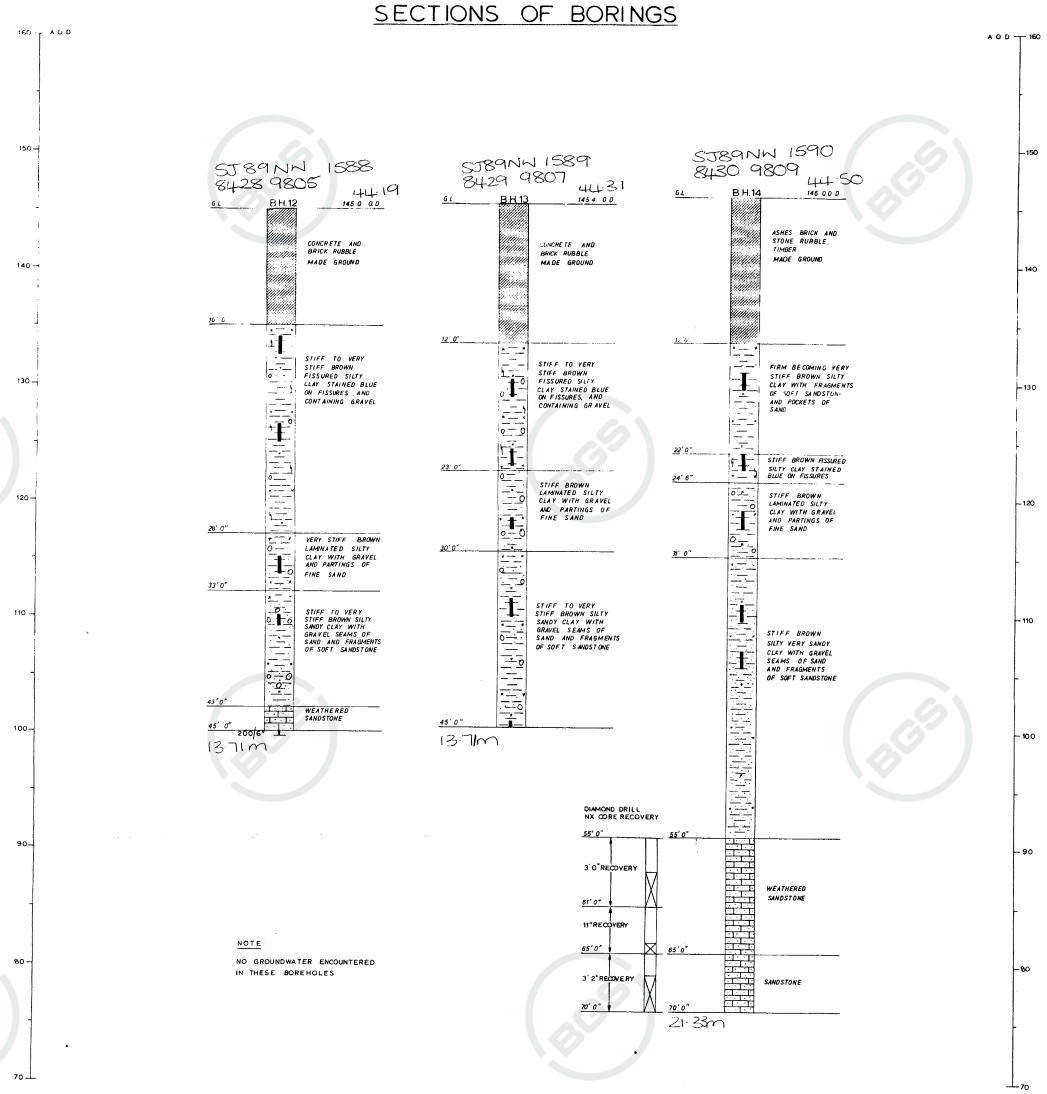
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SITE INVESTIGATION
AT
PORTLAND STREET, MANCHESTER

DRAWING NO. 2745 / 4
DATE FEBRUARY 1967
DRAWN BY
CHECKED BY

* SJ89NW/1588 4590

SECTIONS OF BORINGS



NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES

KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1" = 5'
Horizontal:

LEVELS:
Reduced levels refer to Newlyn/Liverpool Ordnance Datum and are based on bench mark located at:
.....
value.....

SOIL AND ROCK TYPES:

Gravel		Limestone or Chalk	
Sand		Sandstone	
Silt		Mudstone	
Unicemented calcareous matter (including shell beds)		Coal	
Clay		Shale	
Fissured clay			
Peat			
Marl		Made ground	

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:
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MEMBER OF THE STONE-PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043775 : BGS Reference: SJ89NW1581
British National Grid (27700) : 384280,398100

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JOHN F. FARQUHARSON & PTNRS.
34, QUEEN ANNE ST,
LONDON. W.1.
CONSULTING ENGINEERS

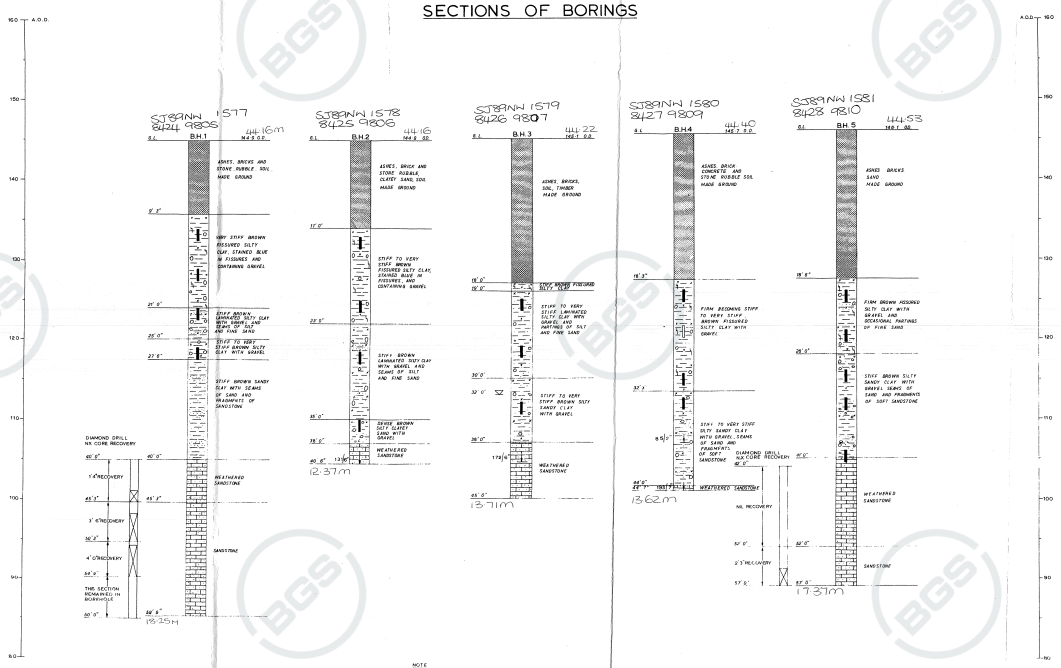
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 3745 . . /2. . . . .
DATE . . F.E.BRUARY. . . . . 1967.
DRAWN BY . . . . . .
CHECKED BY . . . . . .

* SJ 89 NW/1577–1581

SECTIONS OF BORINGS



KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- X In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical: 1"=5'
Horizontal:

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark located at
.....
Issue .....

SOIL AND ROCK TYPES:
- Gravel
- Sand
- Silt
- Limestone or Chalk
- Sandstone
- Mudstone
- Unclassified glaciolacustrine boulder clay (Mostly Till, Clay)
- Coal
- Clay
- Shale
- Fissured clay
- Peat
- Marl
- Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:
1) This drawing forms an integral part of the report and should only be read in that context.
2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent to which they are representative of the site generally there may be special conditions at the site which have not been disclosed by the borings.
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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042734 : BGS Reference: SJ89NW540
British National Grid (27700) : 384377,398514

SJ 89 NW / 540

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

PARKSIDE LANE

LEEDS LS11 5SX.

84377 98514

Contract No. M4043/F1612 Borehole No. 2

Location Church Street. Ground Level 146.6 44.69

Client Manchester City Engineer Date 3rd August, 1970

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ø deg.	m.c %	y lb/cu. ft.	N
REINFORCED CONCRETE		1'0"	1'0"						
BASEMENT			8'3"						
		9'3"							
REINFORCED CONCRETE		9'9"	6"						
MADE GROUND:- HARDCORE		11'0"	1'3"	11'3"					
Firm brown laminated CLAY		13'9"	2'9"		2250	0	21.4	130	
				14'9"	1750	0	20.0	130	
Stiff brown boulder CLAY				19'3"	2400	0	14.3	137	
			22'3"						
				24'0"	3200	0	13.8	134	
				27'6"	3000	0	18.2	133	
				34'6"	3400	0	15.1	143	
		36'0"							

Water Struck at None Encountered Maximum Observed Water Level

Undisturbed Sample []
Disturbed Sample o
Water Sample Δ
Penetration Test I

c = Cohesion
ø = Angle of Internal Friction
m.c = Moisture Content
y = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042735 : BGS Reference: SJ89NW541
British National Grid (27700) : 384359,398529

SJ 89 NW / 541

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

PARKSIDE LANE
LEEDS LS11 5SX.

84359 98529

Contract No. M4043/F1612 Borehole No. 3

Location Church Street, Ground Level 146.6

Client Manchester City Engineer Date

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ø deg.	m.c %	y lb/cu. ft.	N
REINFORCED CONCRETE		8"	8"						
MADE GROUND:- Red BRICK HARDCORE		2'9"	2'1"						
				3'6"	5000	6	17.3	131	
Stiff brown mottled CLAY			5'3"	6'6"	3000	0	18.0	136	
		8'0"		9'6"	2900	0	19.5	133	
Stiff brown boulder CLAY			9'0"	14'6"	1650	0	20.0	131	
		17'0"							
Firm brown laminated CLAY			5'0"	18'6"	550	0	28.4	121	
		22'0"		23'3"	970	0	16.8	131	
Stiff brown boulder CLAY			7'0"						
		29'0"		28'9"	1500	0	27.3	127	
Firm brown laminated CLAY		32'0"	3'0"						
Hard brown sandy boulder clay				34'0"	3500	7	11.4	125	
			9'0"						
				39'0"	2700	28	8.3	144	
		41'0"		42'6"	100	31	12.4	120	
Very dense, clayey sand and gravel.			5'0"	44'0"					100*
		46'0"							
Very dense red SAND			4'0"	49'0"					120*
		50'0"							

Water Struck at None Encountered Maximum Observed Water Level

Undisturbed Sample [] * Extrapolated Value
Disturbed Sample o
Water Sample Δ
Penetration Test I

c = Cohesion
ø = Angle of Internal Friction
m.c = Moisture Content
y = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043774 : BGS Reference: SJ89NW1580
British National Grid (27700) : 384270,398090

MESSRS. FITZROY ROBINSON AND PARTNERS.

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LONDON. W.1.
CONSULTING ENGINEERS.

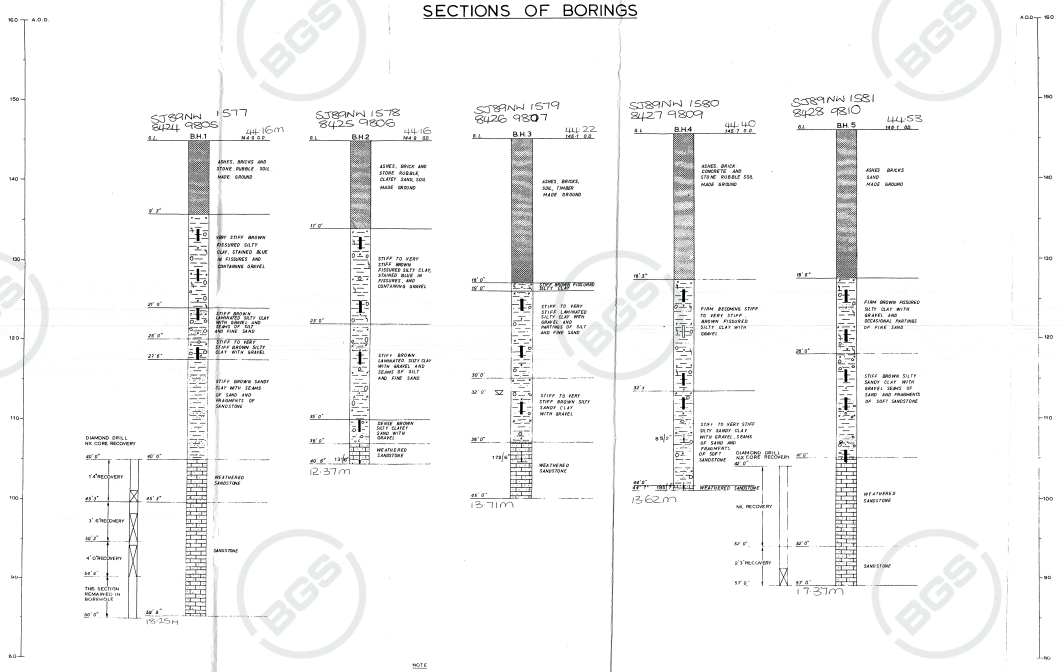
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 3745 . . /2. . . . .
DATE . . F.E.BRUARY. . . . . 1967.
DRAWN BY . . . . .
CHECKED BY . . . . .

* SJ 89NW/1577–1581

SECTIONS OF BORINGS



NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES EXCEPT No. 1

KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical: 1"=5'
Horizontal:

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark located at
.....
Issue .....

SOIL AND ROCK TYPES:
- Gravel
- Sand
- Silt
- Limestone or Chalk
- Sandstone
- Mudstone
- Coal
- Shale
- Fissured clay
- Peat
- Made ground
- Marl

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:
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3) Indicated groundwater levels will be subject to seasonal and other fluctuations the absence of groundwater may not necessarily be a permanent feature of the site.

LE GRAND ADSCO
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LE GRAND SUTCLIFF & GELL LIMITED
THE GREEN,
SOUTHALL, MIDDLESEX.
TEL: SOUTHALL 2271-7 Cables: ADSELLCO SOUTHALL

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043778 : BGS Reference: SJ89NW1584
British National Grid (27700) : 384280,398080

MESSRS. FITZROY ROBINSON AND PARTNERS
JOHN F. FARQUHARSON & PTNRS.
34, QUEEN ANNE ST,
LONDON W1.
CONSULTING ENGINEERS

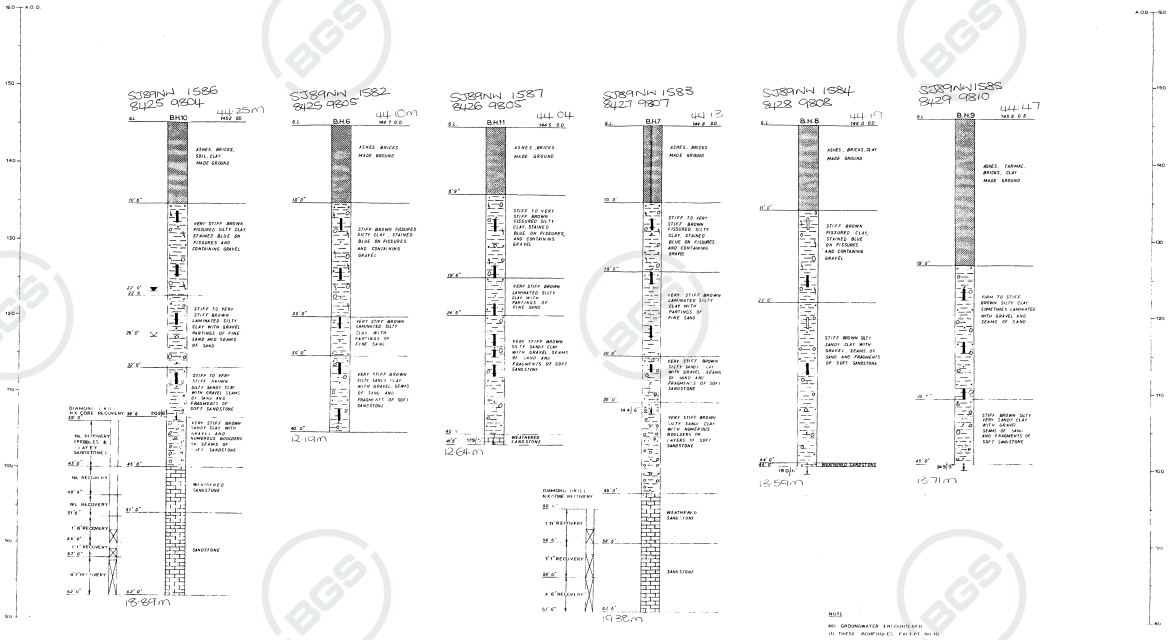
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 2745../.3.....
DATE... FEBRUARY .....1967.
DRAWN BY. ...
CHECKED BY. ...

* SJ89NW/1582-1587

SECTIONS OF BORINGS



KEY

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- No. of blows for 12" penetration
- In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1"=5'
Horizontal

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark(s) of value

SOIL AND ROCK TYPES:

Gravel	Limestone or Chalk
Sand	Sandstone
Silt	Mudstone
Undrained cohesive material (Clay, silt, etc.)	Coal
Clay	Shale
Fissured clay	
Peat	
Marl	Made ground

Composite soils shown by combination of above.

GEOLOGICAL FORMATIONS:

NOTES:

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NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES, EXCEPT No 10

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15637492 : BGS Reference: SJ89NW3984
British National Grid (27700) : 384615,398326

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SITE INVESTIGATION FOR	Main Drainage	DATE COMMENCED	26.3.85
LOCATION	Port Street REF:	BORING METHOD	Shell and Auger
BOREHOLE No.	1	BORING DIAMETER	150mm 384615
GRID REFERENCE		SCALE:	1 : 50 approx. 398326

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legend
26.3.85			0.05		Bituminous Surfacing					
			0.30		Setts					
			0.45		Clayey bricks, stones & Ashes	D1	0.4			
			1.30		Stiff brown clay, ashes, stones etc.-Made Ground	D2 D3	0.5 1.0			
			3.40		Stiff brown silty and sandy CLAY with grey fissures and stone inclusions.	U1 D4 U2 D5	1.45 2.10 2.50 3.20	1.90 2.95 		
26.3.85	6.00	Dry	7.20		Stiff to firm brown silty and sandy CLAY with grey fissures, stone inclusions and thick bands of brown silty SAND.	U3 D6 U4 D7 U5 D8 U6	3.60 4.30 4.45 5.20 5.50 6.20 6.55	4.05 4.90 5.95 7.00		

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None Observed			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

SAMPLE TEST KEY

D – DISTURBED SAMPLE
P – SPT SAMPLE
B – BULK SAMPLE
W – WATER SAMPLE
U – UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

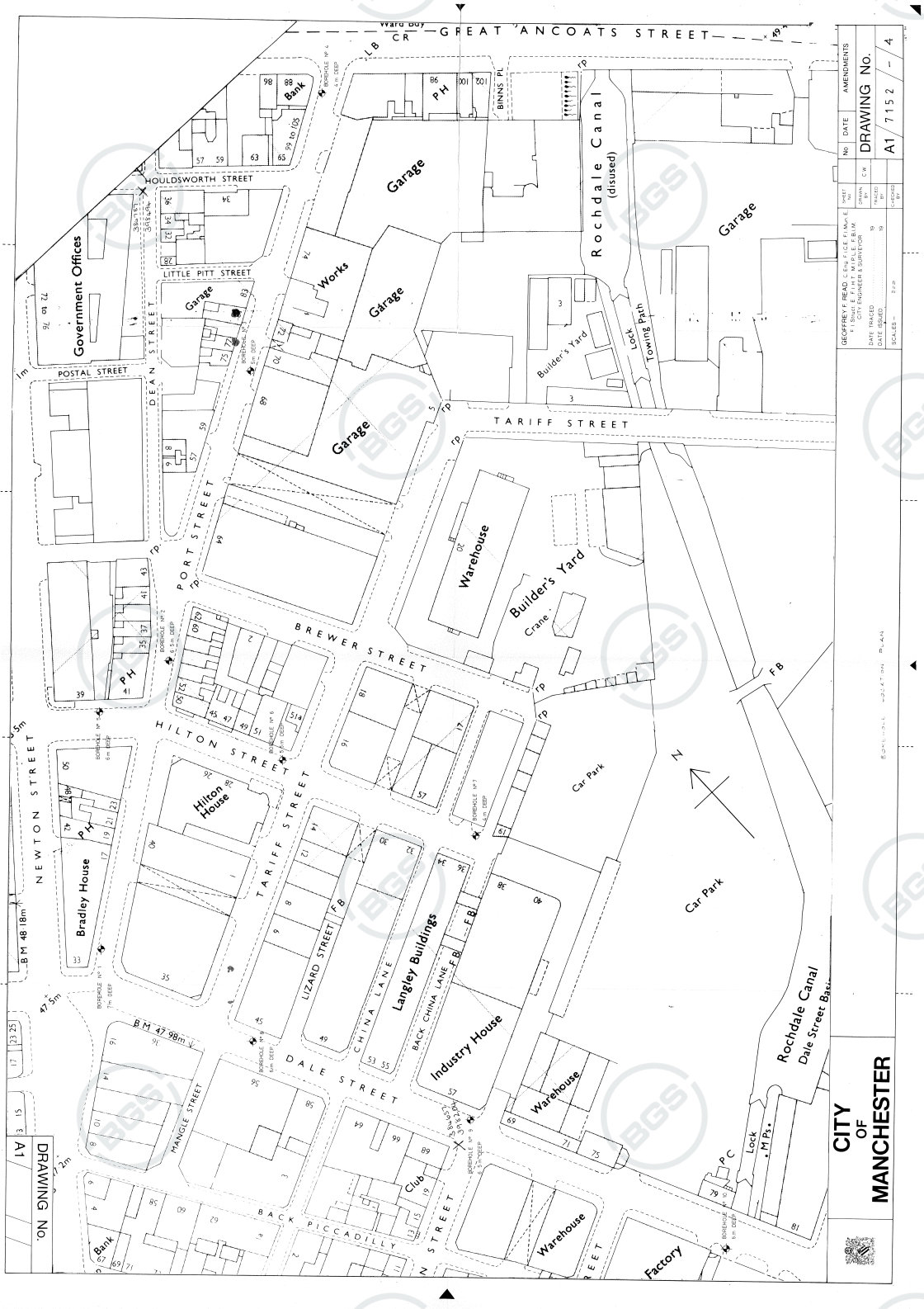
ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Trial hole excavated to 1.10m below ground level.
Borehole backfilled with concrete on completion.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk


GREAT ANCOATS STREET
HOULDSWORTH STREET
LITTLE PITT STREET
POSTAL STREET
DEAN STREET
PORT STREET
TARIFF STREET
BREWER STREET
HILTON STREET
NEWTON STREET
LIZARD STREET
CHINA LANE
BACK CHINA LANE
DALE STREET
MANGLE STREET
BACK PICCADILLY
BINNS PL
Rochdale Canal (disused)
Rochdale Canal
Dale Street Basin
Lock
Towing Path
Builder's Yard
Crane
Car Park
Government Offices
Hilton House
Bradley House
Langley Buildings
Industry House
Warehouse
Factory
Club
Bank
PH
Works
Garage
F B
P C
BM 47.98m
BM 48.18m
CITY OF MANCHESTER
DRAWING No.
A1/7152 - 4
AMENDMENTS
DATE
No
GEOFFREY F. READ C. Eng. F.I.C.E. F.I.Mun.E.
CITY ENGINEER & SURVEYOR
DATE TRACED
DATE ISSUED
SCALES
SHEET No.
DRAWN
CHECKED
TRACED
N

British Geological Survey

BGS ID: 1042737 : BGS Reference: SJ89NW543
British National Grid (27700) : 384412,398519

SJ 89 NW / 543

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

PARKSIDE LANE

LEEDS LS11 5SX.

84412 98519

Contract No. M4043/F1612 — Borehole No. 5

Location Church Street. — Ground Level 150.2

Client Manchester City Engineer — Date 19th August, 1970

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ø deg.	m.c %	y lb/cu. ft.	N
ROAD SURFACING		3"	3"						
COBBLE STONES		1'0"	9"						
MADE GROUND: Soft CLAY		3'6"	2'6"	4'0" []	3200	6	19.3	126	
Stiff brown boulder CLAY				8'6" []	4800	0	18.5	129	
			21'6"						
				13'6" []	4400	0	18.9	136	
				18'6" []	1500	0	20.3	123	
				23'6" []	2100	0	21.5	126	
		25'0"							

Water Struck at None Encountered — Maximum Observed Water Level

Undisturbed Sample []
Disturbed Sample o
Water Sample Δ
Penetration Test I

c = Cohesion
ø = Angle of Internal Friction
m.c = Moisture Content
y = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043783 : BGS Reference: SJ89NW1589
British National Grid (27700) : 384290,398070

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34, QUEEN ANNE ST,
LONDON W1

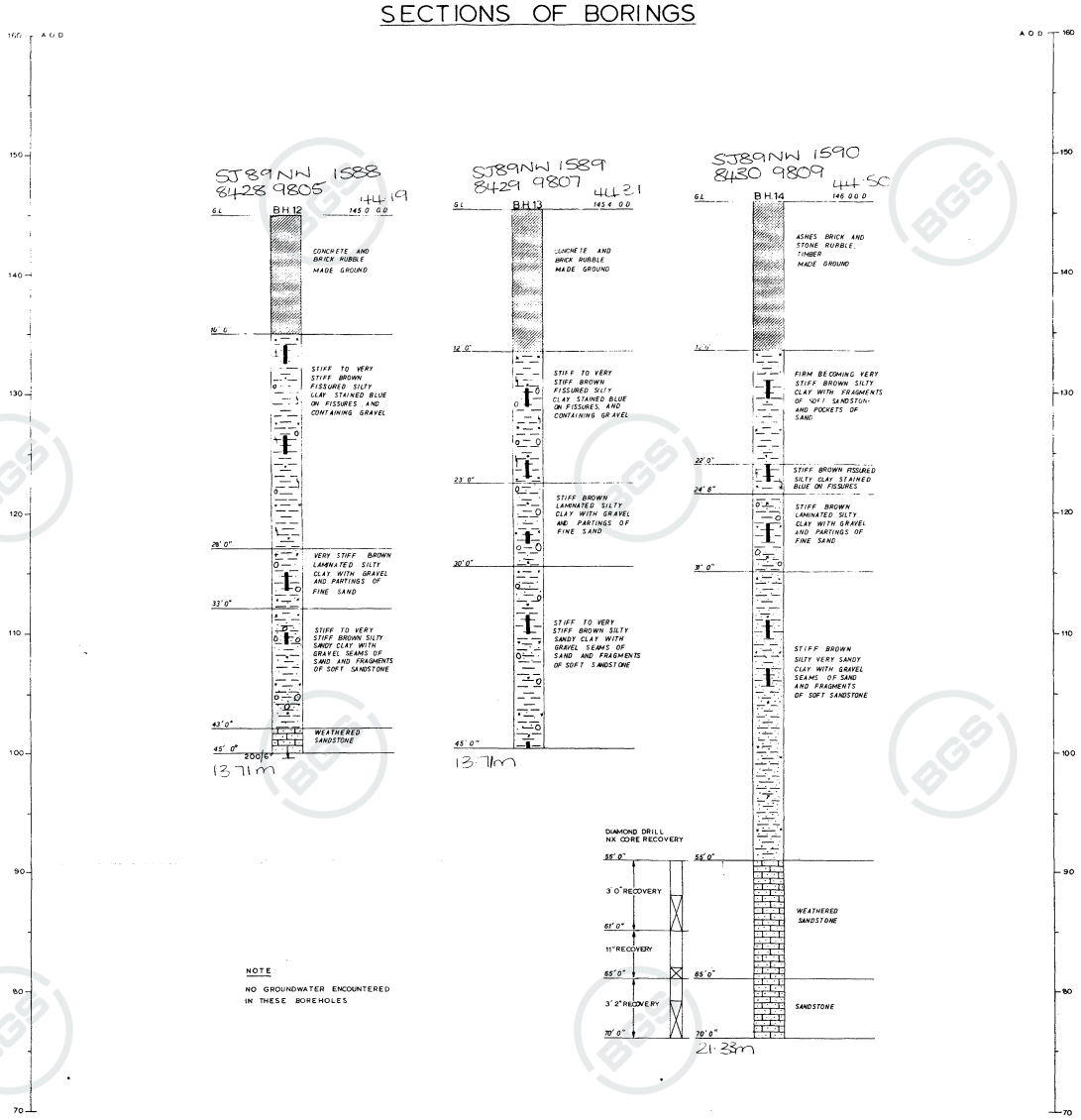
CONSULTING ENGINEERS

SITE INVESTIGATION
AT
PORTLAND STREET, MANCHESTER

DRAWING NO 2745 / 4
DATE FEBRUARY 1967
DRAWN BY
CHECKED BY

SJ89NW/1588-1590

SECTIONS OF BORINGS



NOTE

NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES

KEY:

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:

Vertical 1" = 5'
Horizontal:

LEVELS:

Reduced levels refer to Newlyn/Liverpool Ordnance Datum and are based on bench mark located at ..... value.....

SOIL AND ROCK TYPES:

Gravel			Limestone or Chalk
Sand			Sandstone
Silt			Mudstone
Uncemented calcareous matter (including shell beds)			Coal
Clay			Shale
Fissured clay			
Peat			
Marl			Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:

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THE GREEN,
SOUTHALL, MIDDLESEX.

TEL: SOUthall 2211/7 Cables: ADRILLCO SOUTHA

MEMBER OF THE STONE-PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey
BGS ID: 1043783 : BGS Reference: SJ89NW1589
British National Grid (27700) : 384290,398070

MESSRS. FITZROY ROBINSON AND PARTNERS

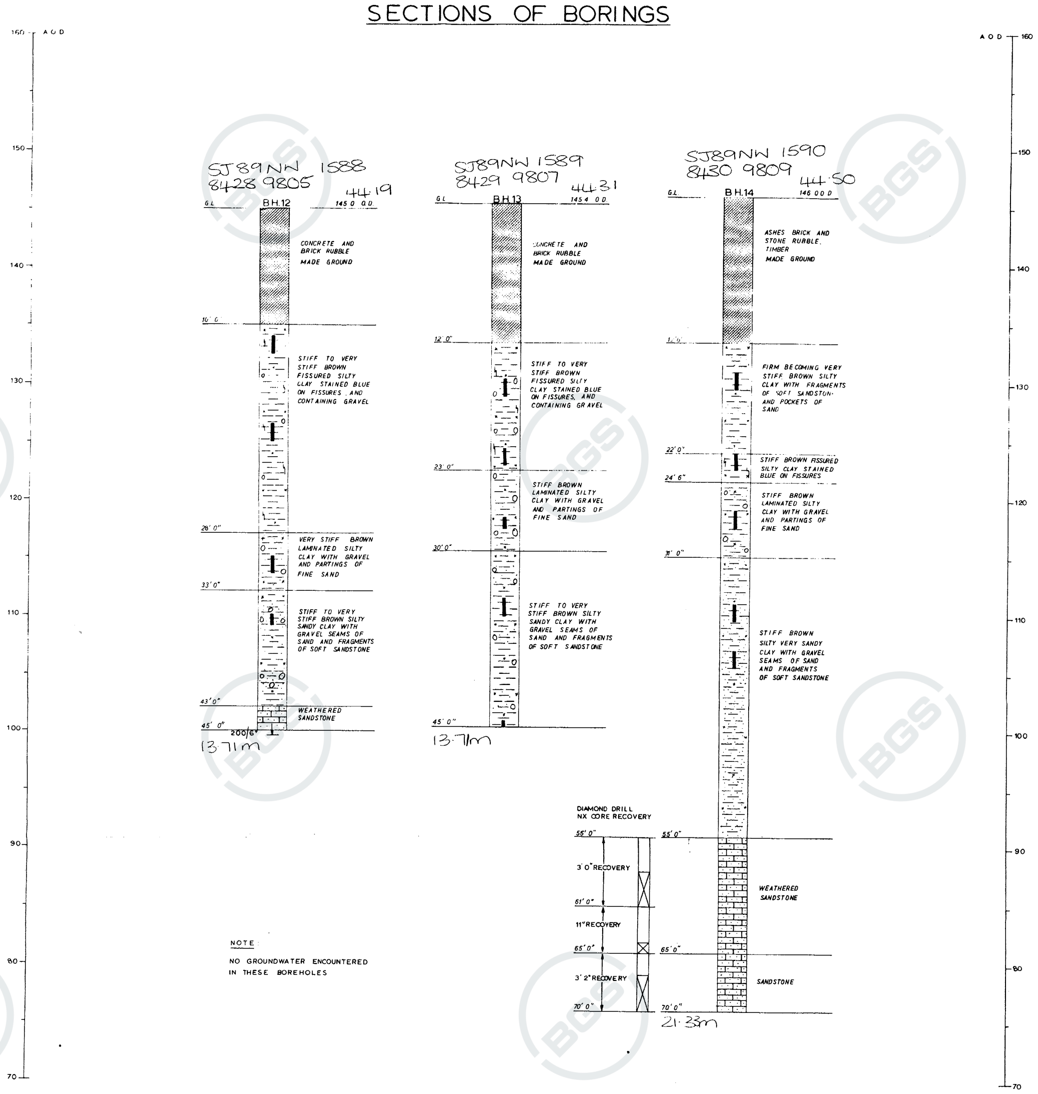
JOHN F. FARQUHARSON & PTNRS
34, QUEEN ANNE ST,
LONDON W1
CONSULTING ENGINEERS

SITE INVESTIGATION
AT
PORTLAND STREET, MANCHESTER

DRAWING NO. 2745 / 4
DATE FEBRUARY 1967
DRAWN BY
CHECKED BY

SJ89NW/1588-1590

SECTIONS OF BORINGS



NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES

KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- X In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1" - 5'
Horizontal

LEVELS:
Reduced levels refer to Newlyn/Liverpool Ordnance Datum and are based on bench mark located at: .... value..........

SOIL AND ROCK TYPES:

	Gravel		Limestone or Chalk
	Sand		Sandstone
	Silt		Mudstone
	Uncemented calcareous matter (including shell beds)		Coal
	Clay		Shale
	Fissured clay		
	Peat		
	Marl		Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042736 : BGS Reference: SJ89NW542
British National Grid (27700) : 384384,398535

SJ 89 NW | 542

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

PARKSIDE LANE

LEEDS LS11 5SX.

84384 98535

Contract No. M4043/F1612 Borehole No. 4

Location Church Street, Ground Level 150.2 45.79

Client Manchester City Engineer Date 9th August, 1970

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ø deg.	m.c %	y lb/cu. ft.	N
ROAD SURFACING		1"	1"						
STONE SETS		6"	5"						
MADE GROUND: Ash & Brick		3'0"	2'6"	3'6"	800	0	52.7	112	
MADE GROUND: Soft grey stony CLAY		5'6"	2'6"	6'0"	3400	0	16.9	128	
Stiff brown boulder CLAY			12'3"	9'0"	2900	0	19.2	128	
				13'6"	3500	0	19.3	131	
		17'9"		18'9"	1400	0	21.8	122	
Firm brown laminated CLAY		22'0"	4'3"						
Stiff brown boulder CLAY			3'6"	24'0"	3000	0	14.8	134	
		25'6"							

Water Struck at None Encountered Maximum Observed Water Level

Undisturbed Sample []
Disturbed Sample o
Water Sample Δ
Penetration Test I

c = Cohesion
ø = Angle of Internal Friction
m.c = Moisture Content
y = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043777 : BGS Reference: SJ89NW1583
British National Grid (27700) : 384270,398070

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CONSULTING ENGINEERS

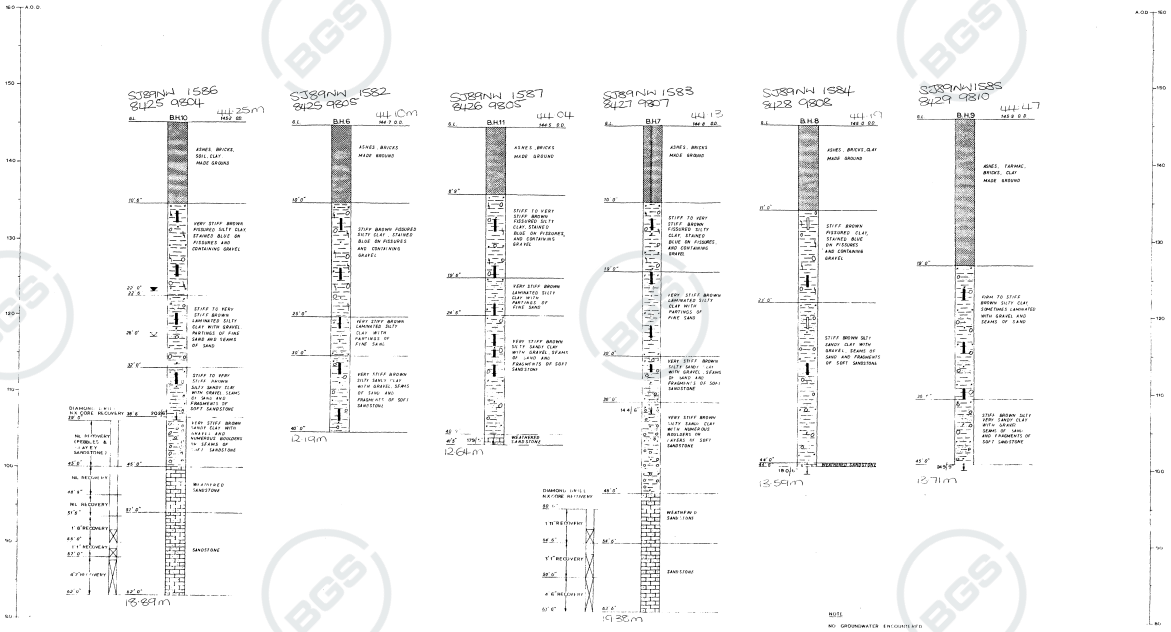
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 2745../.3.....
DATE... FEBRUARY .....1967.
DRAWN BY. ...
CHECKED BY. ...

* SJ89NW/1582-1587

SECTIONS OF BORINGS



KEY

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- No. of blows for 12" penetration
- In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1"=5'
Horizontal

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark(s) of value

SOIL AND ROCK TYPES:

Gravel	Limestone or Chalk
Sand	Sandstone
Silt	Mudstone
Unpenetrated groundwater level in bore hole	Coal
Clay	Shale
Fissured clay	
Peat	
Marl	Made ground

Composite soils shown by combination of above.

GEOLOGICAL FORMATIONS:

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NOTE
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THE GREEN,
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TEL. SOUthall 2211 7 Cables ADSELLCO SOUTHALL
MEMBER OF THE STONE - PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15637499 : BGS Reference: SJ89NW3990
British National Grid (27700) : 384631,398272

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

384631

SITE INVESTIGATION FOR	Main Drainage	DATE COMMENCED	22.3.85 398272
LOCATION	Dale Street REF:	BORING METHOD	Hand Dug
BOREHOLE No.	8	BORING DIAMETER	150mm
GRID REFERENCE		SCALE:	1 : 10 approx.

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
22.3.85			0.05		Bituminous Surfacing					
					Reinforced Concrete					
			0.40		Setts, clay, gravel, ashes etc. Made Ground.					
22.3.85	-	Dry	0.60							

WATER OBSERVATIONS DURING BORING				WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION		
DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)	DATE	WATER LEVEL	DEPTH OF CASING
None Observed						

REMARKS:-

SAMPLE TEST KEY: D – DISTURBED SAMPLE; B – BULK SAMPLE; U – UNDISTURBED SAMPLE; P – SPT SAMPLE; W – WATER SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

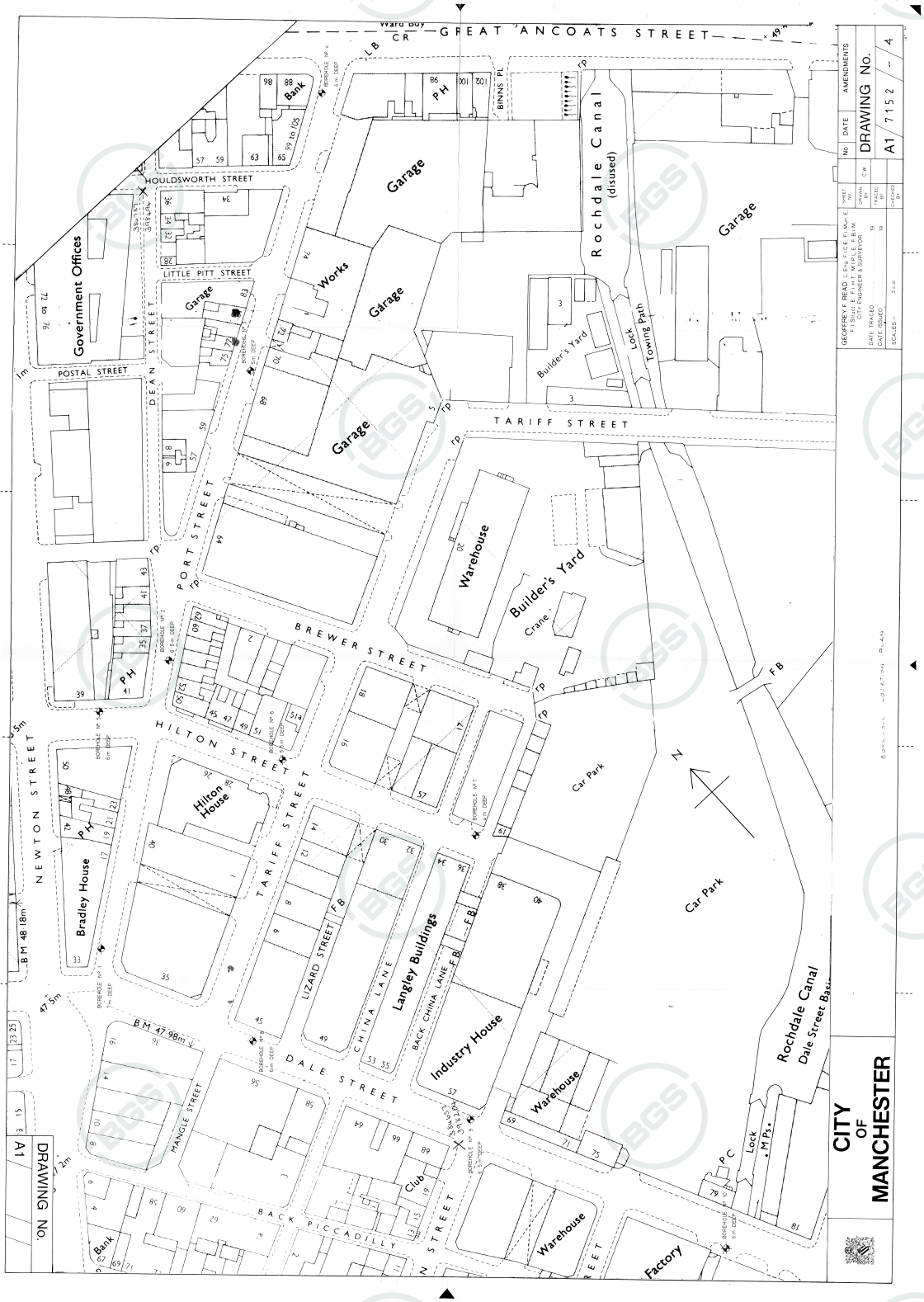
ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Borehole abandoned on encountering a 100mm gas main, at 0.6m deep, 0.2m from the kerb.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk


GREAT ANCOATS STREET
HOULDSWORTH STREET
LITTLE PITT STREET
POSTAL STREET
DEAN STREET
PORT STREET
TARIFF STREET
BREWER STREET
HILTON STREET
NEWTON STREET
LIZARD STREET
CHINA LANE
BACK CHINA LANE
DALE STREET
MANGLE STREET
BACK PICCADILLY
BINNS PL
Rochdale Canal (disused)
Rochdale Canal
Dale Street Basin
Lock
Towing Path
Builder's Yard
Crane
Car Park
Garage
Works
Warehouse
Factory
Club
Bank
PH
Government Offices
Hilton House
Bradley House
Langley Buildings
Industry House
BM 47.98m
BM 48.18m
47.5m
CITY OF MANCHESTER
DRAWING No.
A1/7152 - 4
AMENDMENTS
DATE
No
GEOFFREY F. READ C. Eng. F.I.C.E. F.I.Mun.E.
CITY ENGINEER & SURVEYOR
DATE TRACED
DATE ISSUED
SCALES
DRAWN
TRACED
CHECKED

British Geological Survey

BGS ID: 1043773 : BGS Reference: SJ89NW1579
British National Grid (27700) : 384260,398070

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CONSULTING ENGINEERS

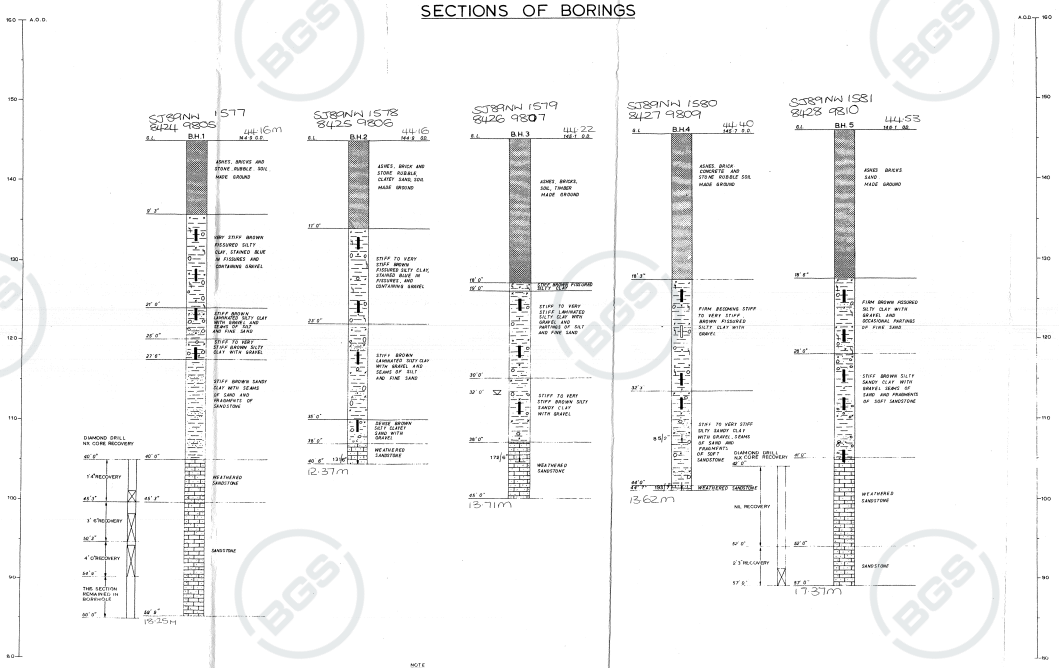
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 3745 . . /2. . . . .
DATE . . FEBRUARY . . . . . 1967.
DRAWN BY . . . . . .
CHECKED BY . . . . . .

* SJ 89 NW/1577–1581

SECTIONS OF BORINGS



KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical: 1"=5'
Horizontal:

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark located at
.....
Issue .....

SOIL AND ROCK TYPES:
Gravel, Sand, Silt, Unconsolidated glaciofluvial material (including 'Till' Drift), Clay, Fissured clay, Peat, Marl, Limestone or Chalk, Sandstone, Mudstone, Coal, Shale, Made ground
(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045703 : BGS Reference: SJ89NW3509
British National Grid (27700) : 384510,398060

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW 3509

SITE INVESTIGATION FOR	MAIN DRAINAGE	DATE COMMENCED	27.2.86
LOCATION	BLOOM STREET	BORING METHOD	CABLE PERCUSSION
BOREHOLE No.	1. (SHEET 1 OF 2)	BORING DIAMETER	150mm
GRID REFERENCE		SCALE:	1:50 (approx.)

8451
9806

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legend
			0.05		Bituminous surfacing					
			0.20		Setts					
			1.80		Sandy CLAY with ash, cinders, brick pieces, gravel. sand, soil etc. with timber between 1.20m and 1.30m MADEGROUND	D1	0.50			
						D2	1.00			
						D3	1.50			
					Stiff becoming very stiff brown silty and sandy CLAY with occasional grey fissures, some fine - medium gravel, coal fragments and occasional small sand lenses.	P4	1.85	2.15	11	
						U5	2.40	2.85		
						D6	2.90			
						U7	3.40	3.85		
						D8	3.90			
						U9	4.45	4.95		
						D10	5.00			
						U11	5.50	5.95		
						D12	6.00			
						U13	6.45	6.95		
						D14	7.00			

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:-
Borehole Dry

SAMPLE TEST KEY

D – DISTURBED SAMPLE
P – SPT SAMPLE
B – BULK SAMPLE
W – WATER SAMPLE
U – UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045703 : BGS Reference: SJ89NW3509
British National Grid (27700) : 384510,398060

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW 3509

SITE INVESTIGATION FOR	MAIN DRAINAGE	DATE COMMENCED	27.2.86
LOCATION	BLOOM STREET	BORING METHOD	CABLE PERCUSSION
BOREHOLE No. 1	(Sheet 2 of 2)	BORING DIAMETER	150mm
GRID REFERENCE		SCALE:	1:50 (approx)

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
					As above	U15	7.50	7.95		
27.2.86	3.00	Dry	8.00		End of Borehole	D16	8.00			

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

Borehole dry

SAMPLE TEST KEY

D – DISTURBED SAMPLE
P – SPT SAMPLE
B – BULK SAMPLE
W – WATER SAMPLE
U – UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043782 : BGS Reference: SJ89NW1588
British National Grid (27700) : 384280,398050

MESSRS FITZROY ROBINSON AND PARTNERS

JOHN F FARQUHARSON & PTNRS
34, QUEEN ANNE ST,
LONDON W1

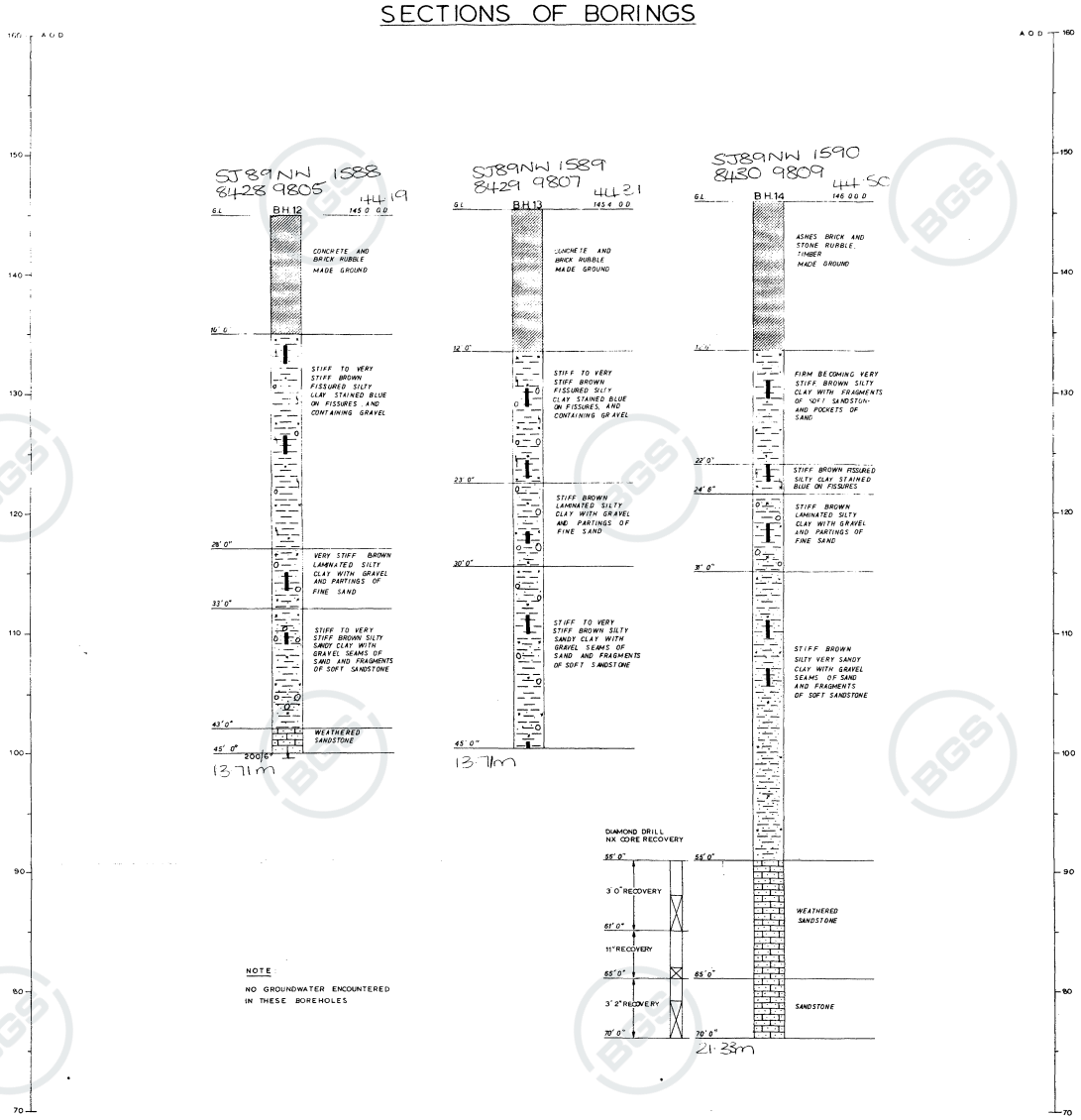
CONSULTING ENGINEERS

SITE INVESTIGATION
AT
PORTLAND STREET, MANCHESTER

DRAWING NO 2745 / 4
DATE FEBRUARY 1967
DRAWN BY
CHECKED BY

SJ89NW/1588-1590

SECTIONS OF BORINGS



NOTE

NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES

KEY:

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:

Vertical 1" = 5'
Horizontal:

LEVELS:

Reduced levels refer to Newlyn/Liverpool Ordnance Datum and are based on bench mark located at ..... value.....

SOIL AND ROCK TYPES:

Gravel			Limestone or Chalk
Sand			Sandstone
Silt			Mudstone
Uncemented calcareous matter (including shell beds)			Coal
Clay			Shale
Fissured clay			
Peat			
Marl			Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:

1) This drawing forms an integral part of the report and should only be read in that context.
2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent to which they are representative of the site generally; there may be special conditions at the site which have not been disclosed by the borings.
3) Indicated groundwater levels will be subject to seasonal and other fluctuations; the absence of groundwater may not necessarily be a permanent feature of the site.

LE GRAND ADSCO
CIVIL ENGINEERING DIVISION OF
LE GRAND SUTCLIFF & GELL LIMITED
THE GREEN,
SOUTHALL, MIDDLESEX.

TEL: SOUthall 2211/7 Cables: ADRILLCO SOUTHA

MEMBER OF THE STONE-PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043782 : BGS Reference: SJ89NW1588
British National Grid (27700) : 384280,398050

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34, QUEEN ANNE ST.,
LONDON W.1

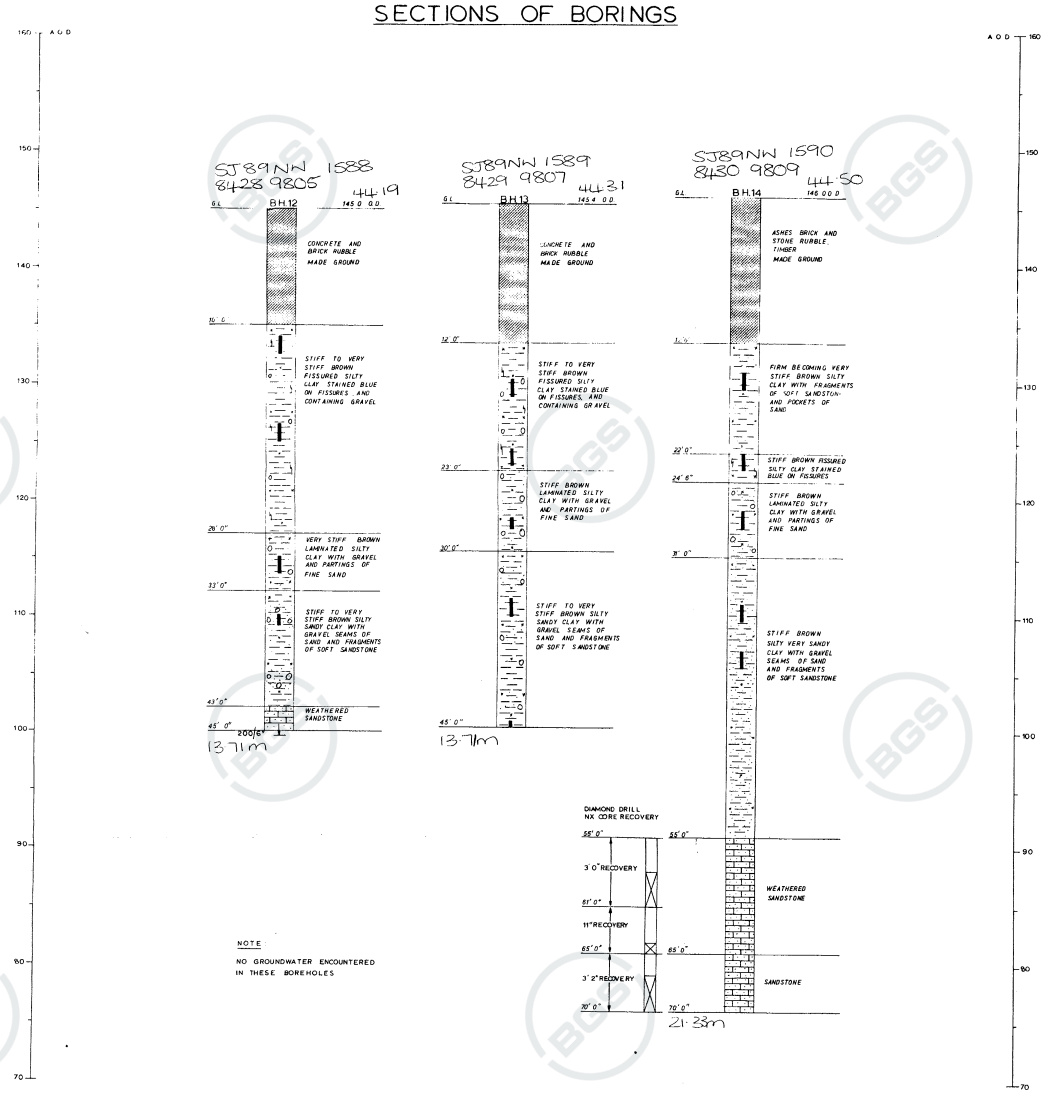
CONSULTING ENGINEERS

SITE INVESTIGATION
AT
PORTLAND STREET, MANCHESTER

DRAWING NO. 2745 / 4
DATE FEBRUARY 1967
DRAWN BY
CHECKED BY

SJ89NW/1588/590

SECTIONS OF BORINGS



NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES

KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1" = 5'
Horizontal:

LEVELS:
Reduced levels refer to Newlyn/Liverpool Ordnance Datum and are based on bench mark located at:
.....
value.....

SOIL AND ROCK TYPES:
- Gravel
- Sand
- Silt
- Unicemented calcareous matter (including shell beds)
- Clay
- Fissured clay
- Peat
- Marl
- Limestone or Chalk
- Sandstone
- Mudstone
- Coal
- Shale
- Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:
1) This drawing forms an integral part of the report and should only be read in that context.
2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent to which they are representative of the site generally; there may be special conditions at the site which have not been disclosed by the borings.
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MEMBER OF THE STONE-PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468816 : BGS Reference: SJ89NW3784
British National Grid (27700) : 384600,398420

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SITE INVESTIGATION FOR Main Drainage — DATE COMMENCED 8.5.83

LOCATION Newton Street REF: — BORING METHOD Cable Percussive

BOREHOLE No. 7 — BORING DIAMETER 150mm — 384606

GRID REFERENCE — SCALE: 1.50 — 398426

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
8.5.83			0.05		Bituminous surfacing					
			0.15		Setts					
			0.35		Concrete					
			0.85		Ashes, brick, etc. Made Ground	D	0.50			
			2.45		Soft/Firm black-brown silty and sandy CLAY, with stone and coal inclusions.	D2 U1 D3	1.00 1.50 2.00	1.95		
			3.10		Very stiff brown silty & sandy CLAY with grey fissures & stone and coal includions.	U2 D4	2.50 3.00	2.95		
8.5.83	3.00	Dry	4.50		Stiff brown silty and sandy CLAY with grey fissures & stone and coal inclusions.	U3 D5	3.50 4.00	3.95		

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

SAMPLE TEST KEY

D – DISTURBED SAMPLE
B – BULK SAMPLE
U – UNDISTURBED SAMPLE
P – SPT SAMPLE
W – WATER SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Trial pit to 1.5m

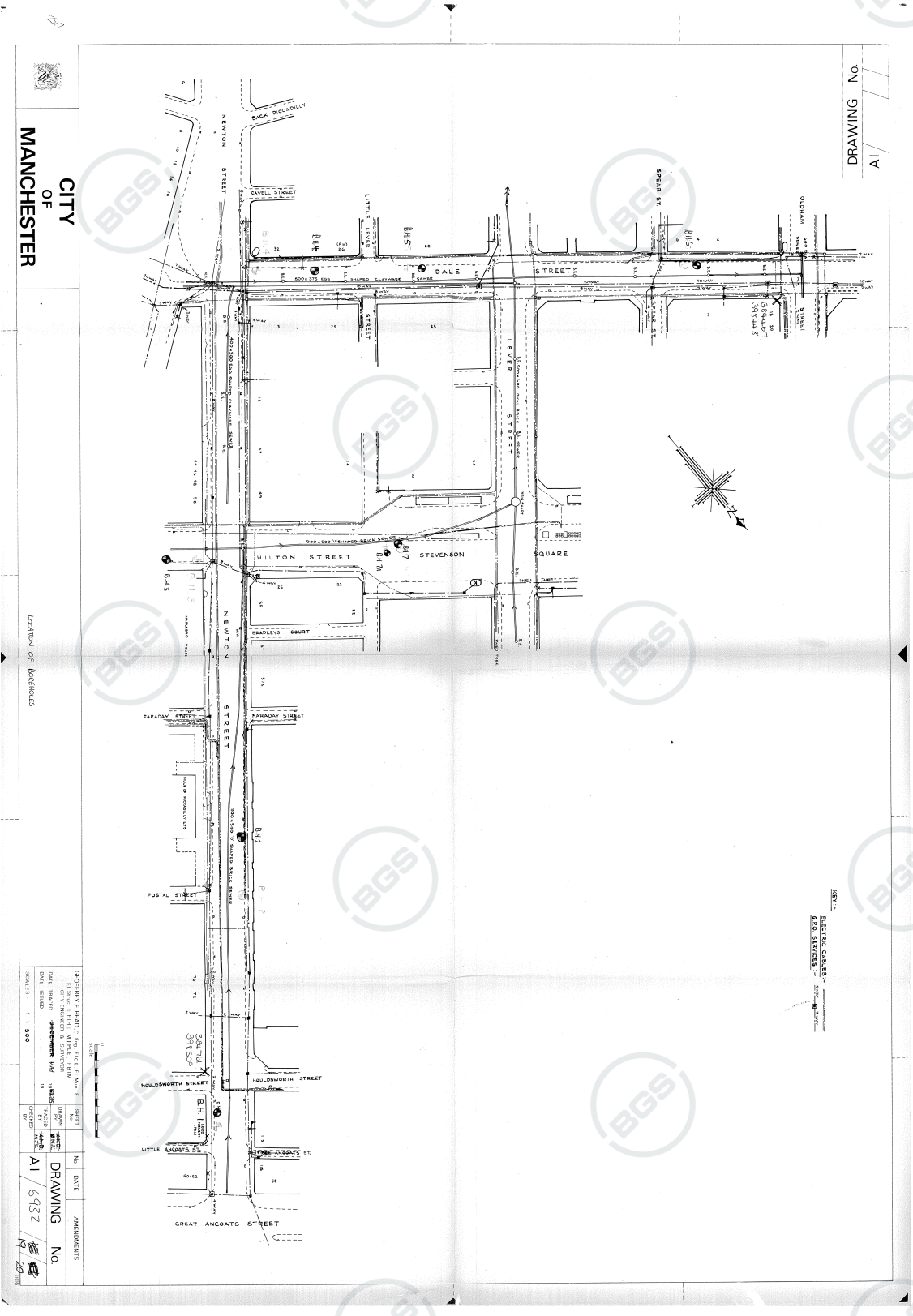
Borehole backfilled on completion. No final overnight water level observed.
Hard obstruction encountered at 4.50m below ground level - borehole abandoned.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468816 : BGS Reference: SJ89NW3784
British National Grid (27700) : 384600,398420



Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042738 : BGS Reference: SJ89NW544
British National Grid (27700) : 384402,398553

SJ 89 NW / 544

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

PARKSIDE LANE
LEEDS LS11 5SX.

84402 98553

Contract No. M4043/F1612 Borehole No. 6

Location Church Street. Ground Level 146.6 4469

Client Manchester City Engineer Date 14th August, 1970

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ø deg.	m.c %	y lb/cu. ft.	N
REINFORCED BREEZE SLABS		9"	9"						
BASEMENT		9'3"	8'6"						
CONCRETE		9'6"	3"						
MADE GROUND: HARDCORE		10'6"	1'0"	11'9" □	760	0	23.6	127	
Firm brown laminated CLAY		14'6"	4'0"	14'6" □	2600	0	20.0	129	
Stiff brown boulder CLAY			21'6"	18'3" □	2800	0	14.7	138	
				23'0" □	2000	5	15.4	136	
				28'6" □	2300	0	10.0	138	
				33'9" □	6300	0	11.0	142	
		36'0"							
Very dense clayey sand and gravel			8'0"	39'6" □	1150	27	9.6	142	
		44'0"		43'6" I					100
Hard very sandy stony BOULDER CLAY			5'6"	45'6" □	1800	33	9.4	144	
		49'6"		48'6" □			11.5		
Red Dense SAND		50'0"	6"						

Water Struck at None Encountered — Maximum Observed Water Level

Undisturbed Sample []
Disturbed Sample o
Water Sample ▲
Penetration Test I

c = Cohesion
ø = Angle of Internal Friction
m.c = Moisture Content
y = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043772 : BGS Reference: SJ89NW1578
British National Grid (27700) : 384250,398060

MESSRS. FITZROY ROBINSON AND PARTNERS.

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CONSULTING ENGINEERS

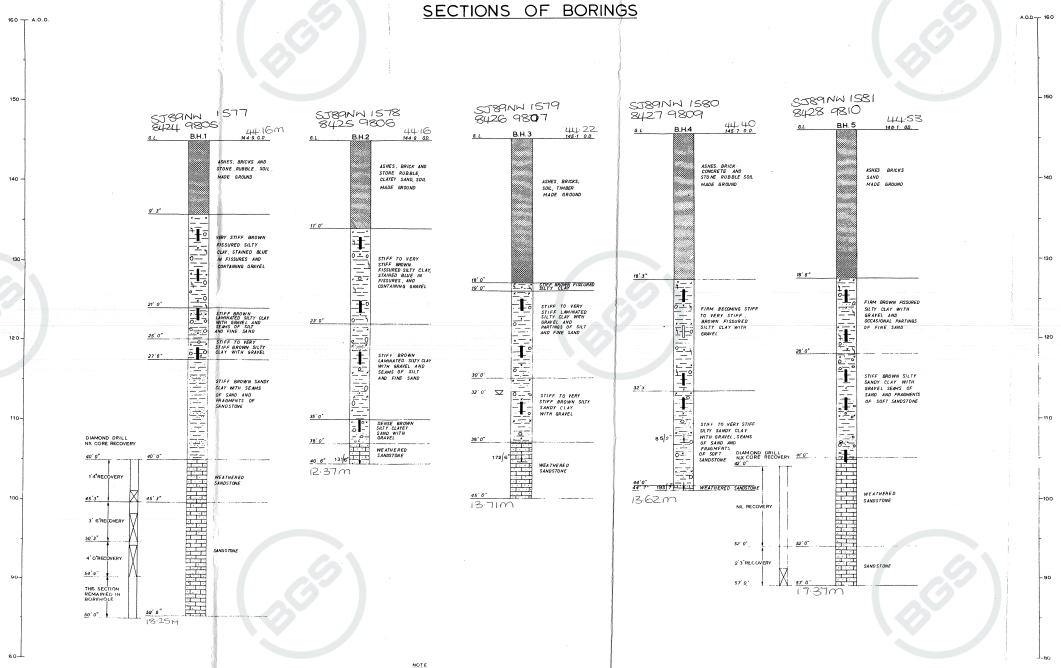
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 3745 . . /2. . . . .
DATE . . F.E.BRUARY . . . . . 1967.
DRAWN BY . . . . . .
CHECKED BY . . . . . .

* SJ 89 NW/1577–1581

SECTIONS OF BORINGS



NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES EXCEPT No. 1

KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical: 1"=5'
Horizontal:

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark located at
.....
Issue .....

SOIL AND ROCK TYPES:
- Gravel
- Sand
- Silt
- Limestone or Chalk
- Sandstone
- Mudstone
- Unclassified glaciolacustrine boulder clay (Till)
- Coal
- Clay
- Shale
- Fissured clay
- Peat
- Marl
- Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:
1) This drawing forms an integral part of the report and should only be read in that context.
2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent to which they are representative of the site generally there may be special conditions at the site which have not been disclosed by the borings.
3) Indicated groundwater levels will be subject to seasonal and other fluctuations the absence of groundwater may not necessarily be a permanent feature of the site.

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TEL: SOUTHALL 2271-7 Cables: ADSELLCO SOUTHALL

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043781 : BGS Reference: SJ89NW1587
British National Grid (27700) : 384260,398050

MESSRS. FITZROY ROBINSON AND PARTNERS
JOHN F. FARQUHARSON & PTNRS.
34, QUEEN ANNE ST,
LONDON W1.
CONSULTING ENGINEERS

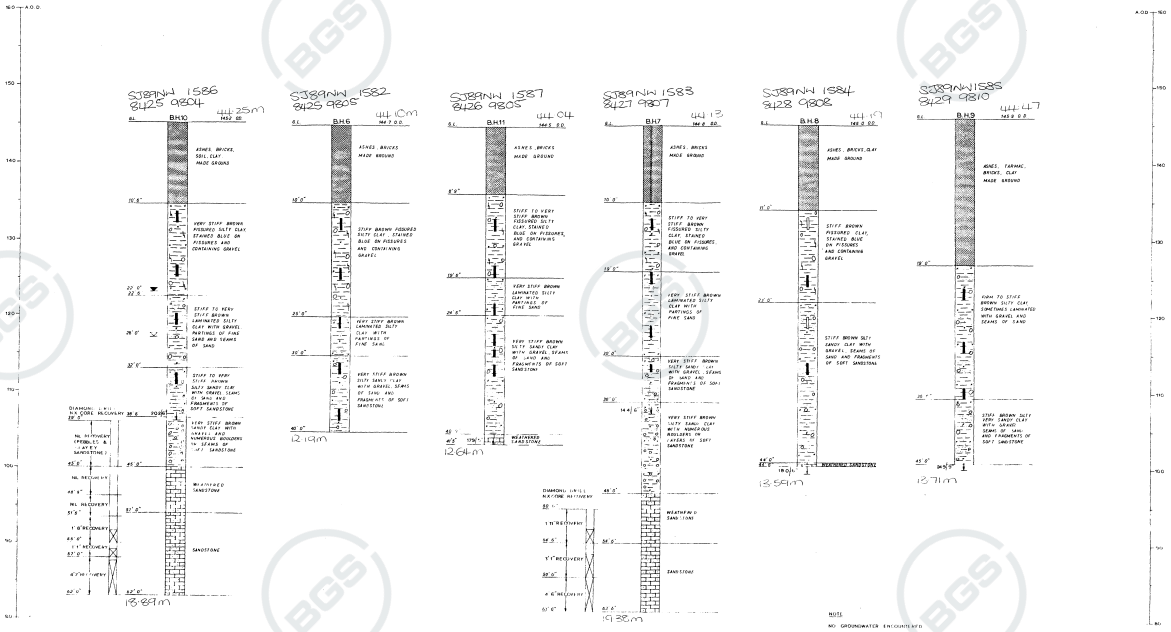
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 2745../.3.....
DATE... FEBRUARY .....1967.
DRAWN BY. ...
CHECKED BY. ...

* SJ89NW/1582-1587

SECTIONS OF BORINGS



KEY

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- No. of blows for 12" penetration
- In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1"=5'
Horizontal

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark(s) of value

SOIL AND ROCK TYPES:

Gravel	Limestone or Chalk
Sand	Sandstone
Silt	Mudstone
Cobbles	Coal
Clay	Shale
Fissured clay	
Peat	
Marl	Made ground

Composite soils shown by combination of above.

GEOLOGICAL FORMATIONS:

NOTES:

1) This drawing forms an integral part of the report and should only be read in that context.

2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent & which they are representative of the site generally, there may be special conditions at the site which have not been disclosed by the borings.

3) Indicated groundwater levels will be subject to seasonal and other fluctuations, the absence of groundwater may not necessarily be a permanent feature of the site.

NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES, EXCEPT No 10

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MEMBER OF THE STONE - PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468817 : BGS Reference: SJ89NW3785
British National Grid (27700) : 384610,398420

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SITE INVESTIGATION FOR Main Drainage — DATE COMMENCED 22.5.83

LOCATION Newton Street — REF: — BORING METHOD Cable Percussive

BOREHOLE No. 7A — BORING DIAMETER 150mm — 384611

GRID REFERENCE — SCALE: 1.50 (approx) — 398426

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
22.5.83			0.05		Bituminous Surfacing					
					Cinders	D1	0.5			
			1.45			D2	1.0			
					Soft/firm brown sandy and silty CLAY with brick, ash and stone inclusions	U1	1.5	1.95		
			2.40			D3	2.0			
					Very stiff brown silty and sandy CLAY with grey fissures, sand lenses and stone inclusions	U2	2.5	2.95		
						D4	3.0			
						U3	3.5	3.95		
						D5	4.0			
						U4	4.5	4.95		
						D6	5.0			
						U5	5.5	5.95		
						D7	6.0			
						U6	6.5	6.95		
22.5.83	6.0	Dry	7.00							

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

SAMPLE TEST KEY

D – DISTURBED SAMPLE — B – BULK SAMPLE — U – UNDISTURBED SAMPLE
P – SPT SAMPLE — W – WATER SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

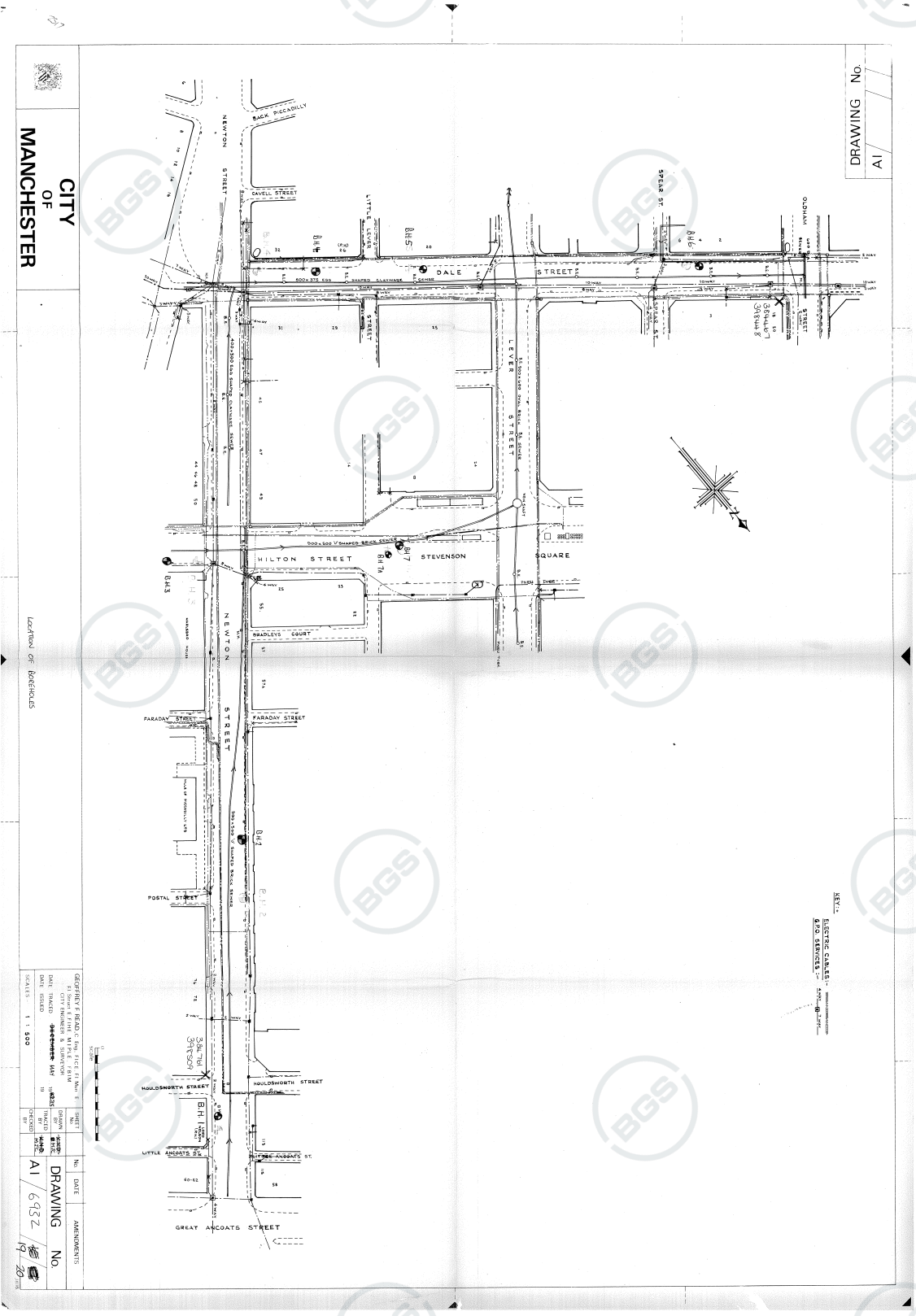
Trial hole excavated to 1.50m
Borehole backfilled on completion. No final overnight water observed

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468817 : BGS Reference: SJ89NW3785
British National Grid (27700) : 384610,398420



Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634879 : BGS Reference: SJ89NW3970
British National Grid (27700) : 384069,398334

Cementation Ground Engineering — **soil mechanics department**

BOREHOLE No. 2

CONTRACT	Spring Gardens, Manchester.	REPORT No.	705/72/IRW
Bored for	Messrs. Pell Frischmann and Partners.	Ground Level	384069 398334
Site Address	Spring Gardens/Brown Street, Manchester.	Boring Commenced Boring Completed	6.10.72 10.10.72

Type and Dia. of Boring: Hand Excavation GL–10'6" Shell and Auger 10 ins. dia. 10'6"–50'0"
Rotary Coring, 4⅛ ins. dia. 50'0"–70'0", Water Flush.

Water Strikes	Water Levels Recorded During Boring									
1. None. 2. 3.	Hole Depth Casing Depth Water Level									

Remarks

Description	Depth	Legend	Ref. No.	Type	Depth	N blows/ft
Made ground (flagstones, ash, rubble, clay, etc.)						
	10'6"		3868	J	11'0"	
Stiff brown silty clay with traces of silt in blue stained fissures. Locally faintly laminated. (Boulder Clay).			3869	U	11'6"–13'0"	
			3870	J	14'0"	
			3871	U	16'6"–18'0"	
			3872	J	17'6"	
	19'6"					
Firm brown laminated clay with silt in laminations.			3873	U	21'6"–23'0"	
			3874	J	24'0"	
			3875	U	26'6"–28'0"	
			3876	J	29'0"	
			3877	U	30'0"–31'6"	
			3878	J	32'6"	
	33'6"					
Very stiff brown sandy clay with small coal and mudstone fragments. (Sandy Boulder Clay)						

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Note.—Unless classification tests have been made and the results are included in this Report, the descriptions of strata given above have been obtained by inspection in accordance with British Standard Code of Practice CP 2001 (1957) Site Investigations. To ensure agreement as to interpretation, clients are requested to check the descriptions against the samples submitted.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634879 : BGS Reference: SJ89NW3970
British National Grid (27700) : 384069,398334

Cementation Ground Engineering — soil mechanics department

BOREHOLE No. 2
Continuation Sheet No. 1

CONTRACT Spring Gardens, Manchester.

REPORT No. 705/72/IRW

Scale 1 inch = 5 ft.

Description	Depth	Legend	Ref. No.	Type	Depth	N blows/ft
Very stiff brown sandy clay with small coal and mudstone fragments. (Sandy Boulder Clay). (Cont'd).			3879	U	35'0"–36'6"	
			3880	J	38'0"	
			3881	U	40'0"–41'6"	
			3882	J	42'6"	
			3883	U	45'0"–46'6"	
	46'6"					
Red-brown clayey sand.			3884	J	47'0"	
			3885	U	47'6"–48'0"	
	50'0"					
Weakly cemented medium red sandstone locally reduced to sand.			3886	J	51'0"	90+
	60'0"					
Moderately cemented medium red sandstone.						
	70'0"					

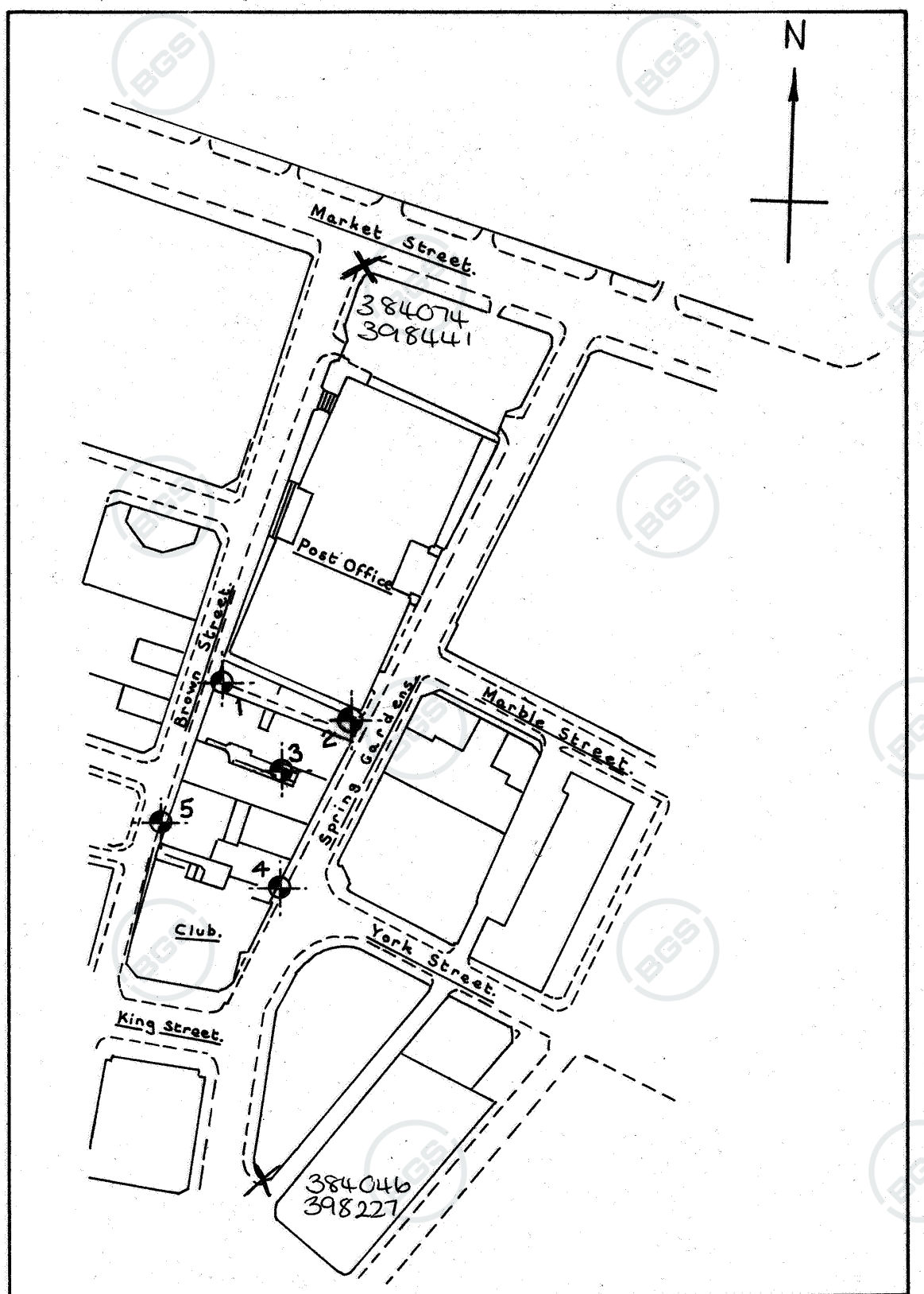
Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634879 : BGS Reference: SJ89NW3970
British National Grid (27700) : 384069,398334



Cementation Ground Engineering

soil mechanics department

SPRING GARDENS, MANCHESTER.

Approximate Location of Boreholes.

Scale 1 : 2500

Drawing No. 705/72/1

U.D.O.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042739 : BGS Reference: SJ89NW545
British National Grid (27700) : 384448,398544

SJ 89 NW / 545

HOLST & CO. LTD.

SITE INVESTIGATION DEPT.

PARKSIDE LANE

LEEDS LS11 5SX.

384448 398544

Contract No. M4043/F1612 Borehole No. 7

Location Church Street, Ground Level 153.0

Client Manchester City Engineer Date

BOREHOLE LOG

STRATA	Legend	Depth below Ground Level	Thickness of Strata	Type of Sample	c lb/sq. ft.	ø deg.	m.c %	y lb/cu. ft.	N
CONCRETE		1'0"	1'0"						
Brick WALL			7'0"						
MADE GROUND:- Soft brown CLAY with Brick Rubble		8'0" / 8'9"	9"	9'0" U	4800	8	16.3	134	
Stiff brown boulder CLAY				13'6" U	3800	0	18.5		
			13'9"						
				18'6" U	2700	0	20.9	126	
		22'6"							
Firm brown laminated CLAY			8'6"						
				29'0" U	1700	5	14.8	138	
		31'0"							
Hard brown boulder CLAY				34'0"	2350	0	14.6	137	
			11'6"						
				39'0" U	6700	0	11.2	148	
		42'6"							
Very dense brown sand with gravel.				43'0" I					
		44'0"	1'6"						

Water Struck at None Encountered Maximum Observed Water Level

Undisturbed Sample []
Disturbed Sample o
Water Sample Δ
Penetration Test I

c = Cohesion
ø = Angle of Internal Friction
m.c = Moisture Content
y = Bulk Density
N = Standard Penetration Value

Water levels are subject to seasonal or tidal variation and should not be taken as constant

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042544 : BGS Reference: SJ89NW350
British National Grid (27700) : 384510,398040

Soil Mechanics

BOREHOLE No. 1

Sheet 1 of 2

Equipment & Methods: Cable tool boring. Dando 150, 150mm diameter to 10.50m

Location No. 7285/22

Location: MANCHESTER CROWN COURT SJ89NW 350 845-980

Carried out for: Property Services Agency

Ground Level: 49.90 m A.O.D.

Coordinates:

Date: 26.08.88 to 30.08.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
Solway House Ground Floor consisting of concrete and box tiles.	44.90		(0.25)					
	44.65		0.25					
VOID/CELLAR			(4.35)					
Solway House basement floor at 4.60m.								
Concrete.	40.30		4.60					
			(0.30)					
Brick rubble. (Foremans desciption).	40.00		4.90					
			(0.40)					
Soft, brown, slightly sandy clay with occasional brick fragments up to cobble size. (MADE GROUND)	39.60		5.30					
			(0.70)					
	38.90		6.00	5.70 – 6.15	U	1		
				6.20	D	2		
Firm becoming stiff to very stiff, brown CLAY with a little sand and fine gravel.				6.30 – 6.75	D	3	S N=11	
Between about 6.30 and 6.75m, soft to firm, locally with occasional brown to red brown, silty fine sand lenses.				7.00 – 7.45	U	4		
				7.50	D	5		
Below about 7.50m, slightly sandy to sandy, locally very silty indistinctly thinly laminated, and with rare to occasional gravel including coal fragments.				7.60 – 8.05	D	6	S N=18	
			(4.00)	8.20 – 8.65	U	7		
				8.70	D	8		
Between about 9.10 and 9.60m, up to cobble size grey fine to medium grained sandstone fragments very strong.				8.80 – 9.25	D	9	S N=53	
				8.80 – 9.60	B	10		
				9.60 – 9.90	U	11		
				10.00	D	12		

Remarks

1. Compressor used to break out ground floor and basement floor, 150mm casing installed.
2. Chiselling from 4.90 to 5.30m for 1 hour, 9.10 to 9.60m for 2.50 hours.

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 24.10.88/14.15 (Ver 3.2.13)

Logged by: N.D.

Scale: 1:50

Fig. 2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042544 : BGS Reference: SJ89NW350
British National Grid (27700) : 384510,398040

Soil Mechanics

BOREHOLE No. 1

Sheet 2 of 2

Equipment & Methods: As sheet 1

Location No. 7285/22

Location: MANCHESTER CROWN COURT

SJ89NW 350 845-980

Carried out for: Property Services Agency

Ground Level: –

Coordinates: As sheet 1

Date:

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
very dense red brown, locally brown, fine to medium SAND with rare fine to medium gravel (Weathered SANDSTONE)	34.90		(4.00)					
			10.00	10.10 – 10.35	D	13	50	
	34.40		(0.50p) 10.50	10.40 – 10.44	D	14	(50)	
BOREHOLE ENDS AT 10.50 m.								

Water Level Observations During Boring

Date	Time	Depth of Hole (m)	Depth of Casing (m)	Depth to Water (m)	Remarks
1988					
26.08	–	5.70	5.60	DRY	Water added
26.08	–	7.60	6.90	DRY	Water added
26.08	1600	8.10	6.90		
30.08	0800	8.10	6.90	DRY	
30.08	–	10.50	10.00	DRY	BH complete

Remarks

3. Chiselling from 10.00 to 10.40m for 1 hour.
4. Borehole dry during drilling.
5. Borehole cleaned out to 10.50m and backfilled on completion.

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. (c) Soil Mechanics
All depths and reduced levels in metres. Thicknesses given in brackets in depth column. 24.10.88/14.15 (Ver 3.2.13)

Logged by: N.D.

Scale: 1:50

Fig. 2

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043776 : BGS Reference: SJ89NW1582
British National Grid (27700) : 384250,398050

MESSRS. FITZROY ROBINSON AND PARTNERS
JOHN F. FARQUHARSON & PTNRS.
34, QUEEN ANNE ST,
LONDON W1.
CONSULTING ENGINEERS

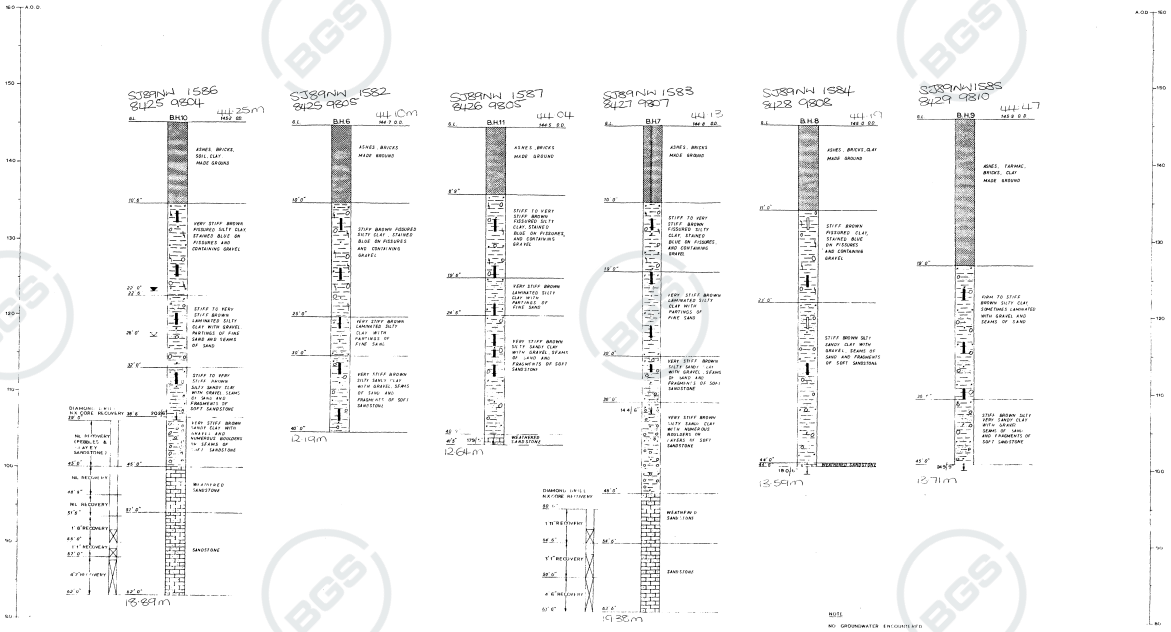
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 2745../.3.....
DATE... FEBRUARY .....1967.
DRAWN BY. ...
CHECKED BY. ...

* SJ89NW/1582-1587

SECTIONS OF BORINGS



KEY

- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- No. of blows for 12" penetration
- In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1"=5'
Horizontal

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark(s) of value

SOIL AND ROCK TYPES:

Gravel	Limestone or Chalk
Sand	Sandstone
Silt	Mudstone
Undrained cohesive material	Coal
Clay	Shale
Fissured clay	
Peat	
Marl	Made ground

Composite soils shown by combination of above.

GEOLOGICAL FORMATIONS:

NOTES:

1) This drawing forms an integral part of the report and should only be read in that context.

2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent & which they are representative of the site generally there may be special conditions at the site which have not been disclosed by the borings.

3) Indicated groundwater levels will be subject to seasonal and other fluctuations, the absence of groundwater may not necessarily be a permanent feature of the site.

NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES, EXCEPT No 10

LE GRAND ADSCO
CIVIL ENGINEERING DIVISION OF
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THE GREEN,
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TEL. SOUthall 2211 7 Cables ADSELLCO SOUTHALL
MEMBER OF THE STONE - PLATT GROUP

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043771 : BGS Reference: SJ89NW1577
British National Grid (27700) : 384240,398050

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LONDON. W.1.
CONSULTING ENGINEERS

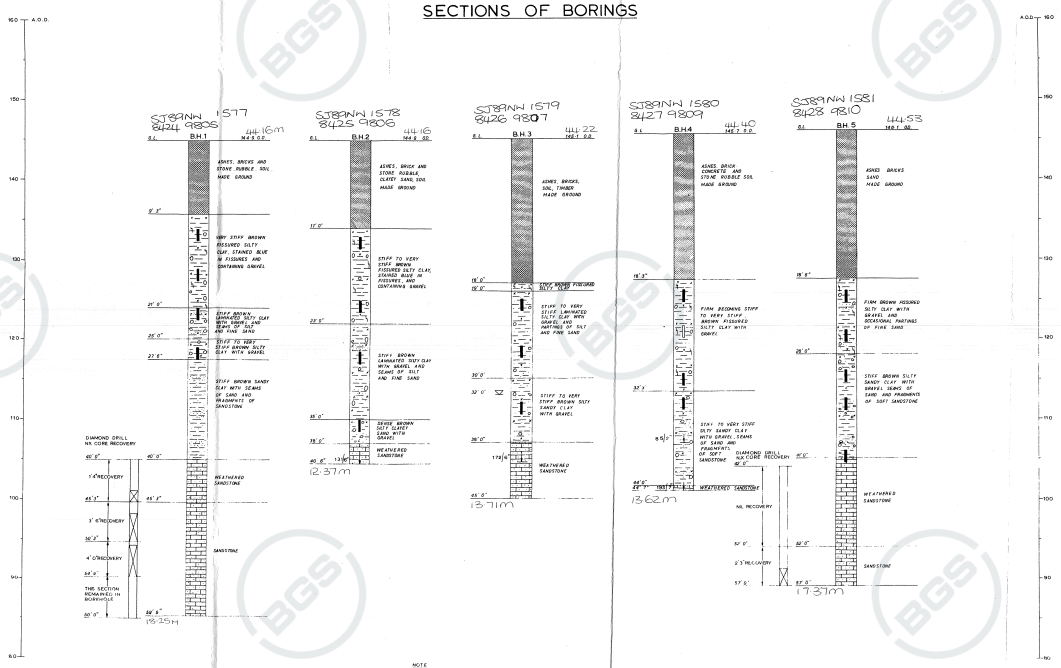
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 3745 . . /2. . . . .
DATE . . F.E.BRUARY . . . . . 1967.
DRAWN BY . . . . .
CHECKED BY . . . . .

* SJ 89 NW/1577–1581

SECTIONS OF BORINGS



NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES EXCEPT No. 1

KEY:
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- 25 No. of blows for 12" penetration
- × In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical: 1"=5'
Horizontal:

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark located at . . . . . value . . . . . .

SOIL AND ROCK TYPES:
- Gravel
- Sand
- Silt
- Limestone or Chalk
- Sandstone
- Mudstone
- Unclassified glaciolacustrine boulder clay (Till)
- Coal
- Clay
- Shale
- Fissured clay
- Peat
- Marl
- Made ground

(composite soils shown by combination of above)

GEOLOGICAL FORMATIONS:

NOTES:
1) This drawing forms an integral part of the report and should only be read in that context.
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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1043780 : BGS Reference: SJ89NW1586
British National Grid (27700) : 384250,398040

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CONSULTING ENGINEERS

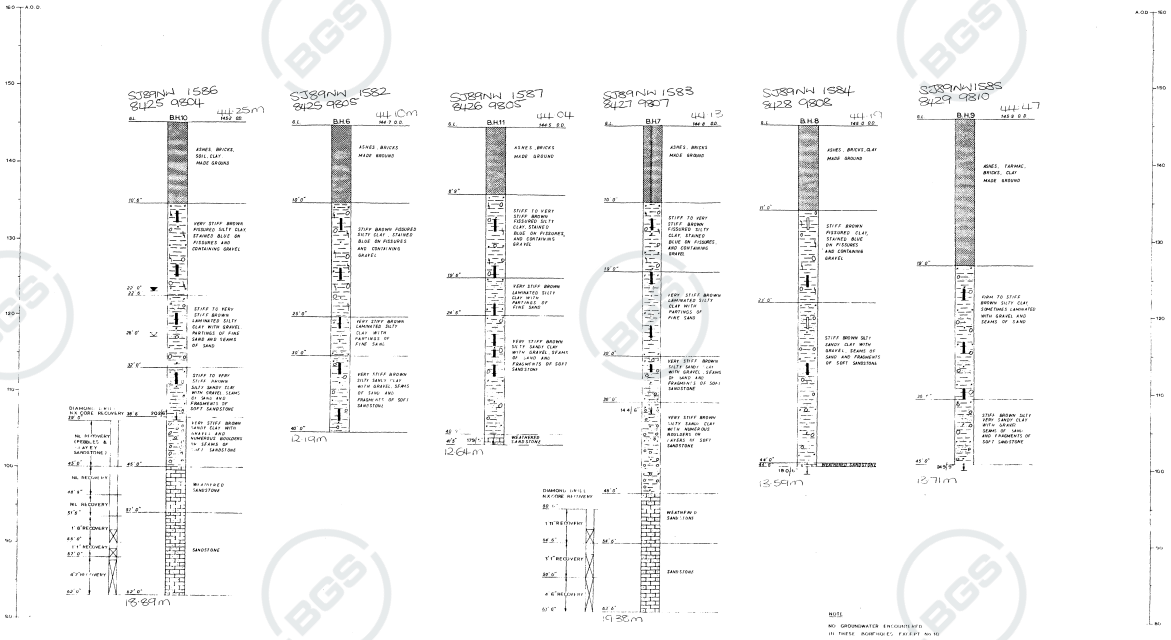
SITE INVESTIGATION
AT

PORTLAND STREET, MANCHESTER

DRAWING NO. 2745../.3.....
DATE....FEBRUARY.....1967.
DRAWN BY. ...
CHECKED BY. ...

* SJ89NW/1582-1587

SECTIONS OF BORINGS



KEY
- Standing water level
- Water struck level
- Artesian water struck level (Water levels with dates)
- Undisturbed soil core
- Slipped soil core
- Standard penetration test
- No. of blows for 12" penetration
- In-situ vane test
- Rotary core/Percentage recovery

SCALES:
Vertical 1"=5'
Horizontal

LEVELS:
Reduced levels refer to Newlyn / Liverpool Ordnance Datum and are based on bench mark(s) of value

SOIL AND ROCK TYPES:
Gravel, Sand, Silt, Clay, Fissured clay, Peat, Limestone or Chalk, Sandstone, Mudstone, Coal, Shale, Marl, Made ground
Composite soils shown by combination of above.

GEOLOGICAL FORMATIONS:

NOTES:
1) This drawing forms an integral part of the report and should only be read in that context.
2) Boring details shown have been accurately recorded but no guarantee can be given as to the extent & which they are representative of the site generally there may be special conditions at the site which have not been disclosed by the borings.
3) Indicated groundwater levels will be subject to seasonal and other fluctuations, the absence of groundwater may not necessarily be a permanent feature of the site.

NOTE
NO GROUNDWATER ENCOUNTERED IN THESE BOREHOLES, EXCEPT No 10

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Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634880 : BGS Reference: SJ89NW3971
British National Grid (27700) : 384052,398323

Cementation Ground Engineering — **soil mechanics department**

BOREHOLE No. 3

CONTRACT: Spring Gardens, Manchester.	REPORT No. 705/72/IRW
Bored for: Messrs. Pell Frischmann.	Ground Level: 384052 398323
Site Address: Spring Gardens/Brown Street, Manchester.	Boring Commenced 14.10.72; Boring Completed 16.10.72
Type and Dia. of Boring: Hand Excavation GL–4'6"; Shell and Auger 8 ins. dia. 4'6"–43'0"	

Water Strikes	Water Levels Recorded During Boring									
1. None.	Hole Depth									
2.	Casing Depth									
3.	Water Level									

Remarks: Unable to advance borehole by Shell and Auger Techniques below 43'0"

Description	Depth	Legend	Ref. No.	Type	Depth	N blows/ft
Made ground (concrete, etc.)	0'6"					
Made ground (brick and concrete fragments, ash, sand, etc.)			512	J	3'0"	
	4'6"		513	J	4'9"	
Stiff brown fissured silty clay with occasional pockets of sand, and small mudstone and coal fragments. (Boulder Clay).			514	U	5'0"–6'6"	
			515	J	8'0"	
			516	U	10'0"–11'6"	
			517	J	13'0"	
			518	U	15'0"–16'6"	
	16'0"		519	J	16'3"	
Grey-brown sand with gravel.	16'6"					
Brown sandy clay.						
	18'0"		520	J	18'3"	
Firm brown laminated clay with dustings of silt in laminations. Band of stiff grey-brown sandy stoney clay at top.			521	U	19'6"–21'0"	
			522	J	23'0"	
			523	U	24'6"–26'0"	
	28'0"		524	J	28'6"	
Stiff brown sandy clay with small coal fragments and pebbles. (Sandy Boulder Clay).			525	U	29'6"–31'0"	
			526	J	33'0"	
			527	U	34'6"–36'0"	

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Note.—Unless classification tests have been made and the results are included in this Report, the descriptions of strata given above have been obtained by inspection in accordance with British Standard Code of Practice CP 2001 (1957) Site Investigations. To ensure agreement as to interpretation, clients are requested to check the descriptions against the samples submitted.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634880 : BGS Reference: SJ89NW3971
British National Grid (27700) : 384052,398323

Cementation Ground Engineering — soil mechanics department

BOREHOLE No. 3
Continuation Sheet No. 1

CONTRACT **Spring Gardens, Manchester.**

REPORT No. 705/72/IRW

Scale 1 inch = 5 ft.

Description	Depth	Legend	Samples & S.P.T. Ref.No.	Type	Depth	N blows/ft
Stiff brown sandy clay with small coal fragments and pebbles. (Sandy Boulder Clay). (Cont'd).			528	J	38'0"	
	39'0"		529	J	39'6"	
Red-brown clayey sand with some gravel.			530	U	39'6"-41'0"	
	43'0"					

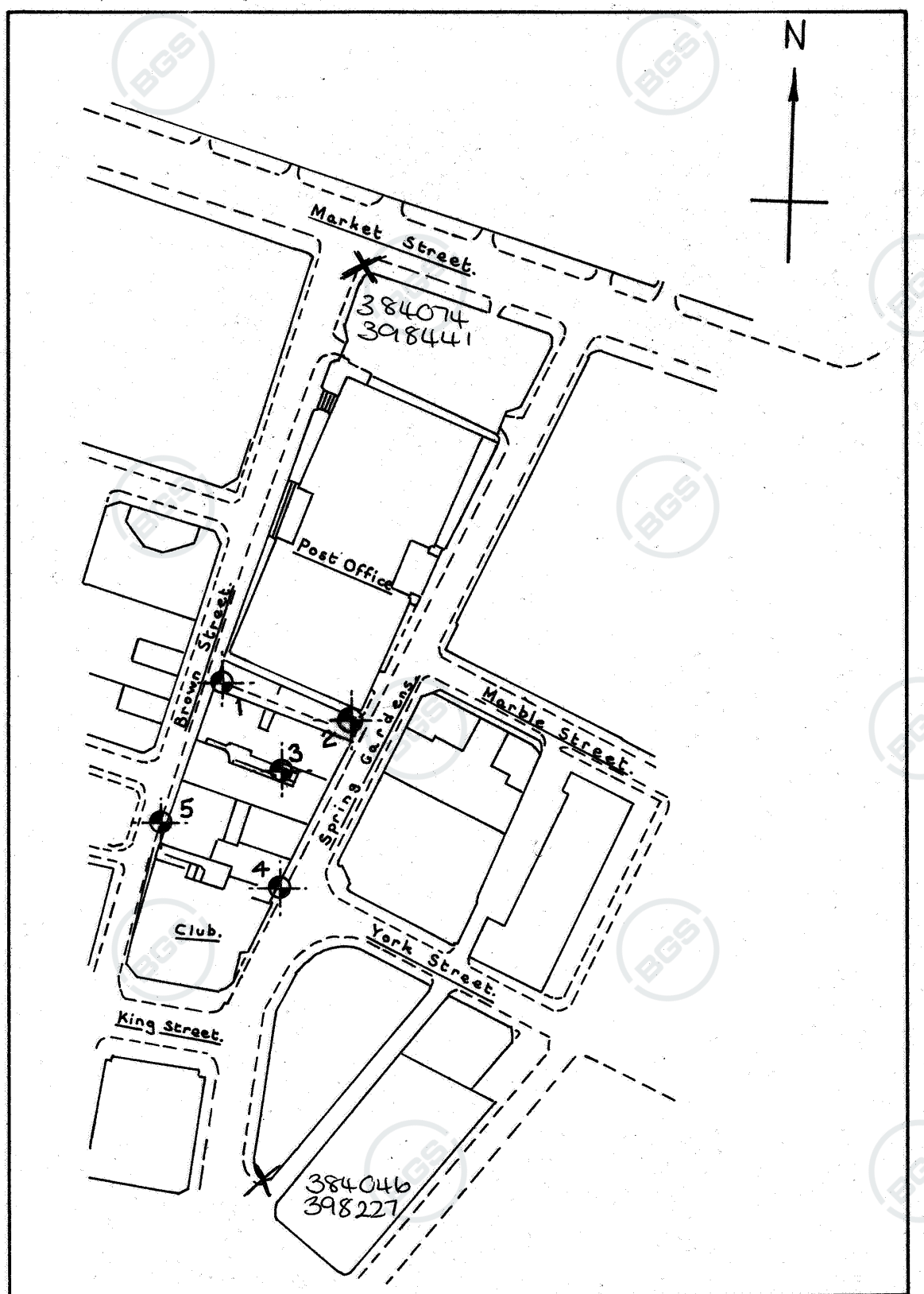
Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Note.—Unless classification tests have been made and the results are included in this Report, the descriptions of strata given above have been obtained by inspection in accordance with British Standard Code of Practice CP 2001 (1957) Site Investigations. To ensure agreement as to interpretation, clients are requested to check

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634880 : BGS Reference: SJ89NW3971
British National Grid (27700) : 384052,398323



Cementation Ground Engineering

soil mechanics department

SPRING GARDENS, MANCHESTER.

Approximate Location of Boreholes.

Scale 1 : 2500

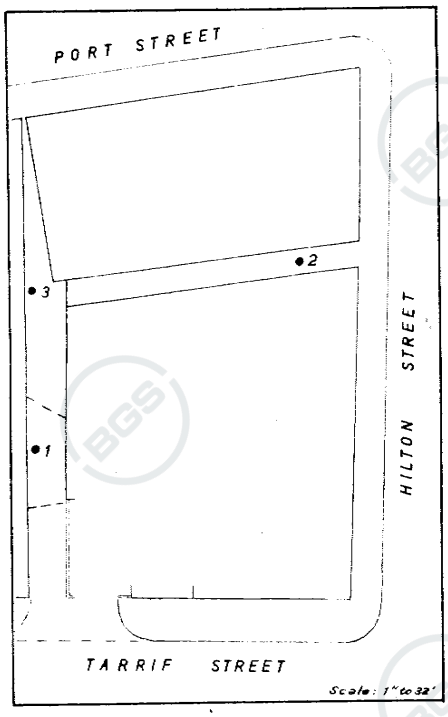
Drawing No. 705/72/1

U.D.O.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045735 : BGS Reference: SJ89NW3541
British National Grid (27700) : 384670,398330



1

Depth	Nature of Strata	E	Pf	Pl	C
0	Made Ground				
5½					
11	Stiff Brown Clay	120	5	10·4	2·6
14		67	3·4	10·2	3·6
15					

SJ89NW 3541
8467 9833

2

Depth	Nature of Strata	E	Pf	Pl	C
0	Made Ground				
5½					
11	Stiff Brown Clay with some grey streaks	61	6·3	14	5·5
14		133	6·9	10·2	1·8
15					

SJ89NW 3542
8468 9834

3

Depth	Nature of Strata
0	Made Ground
4½	
5	Stiff Brown Clay

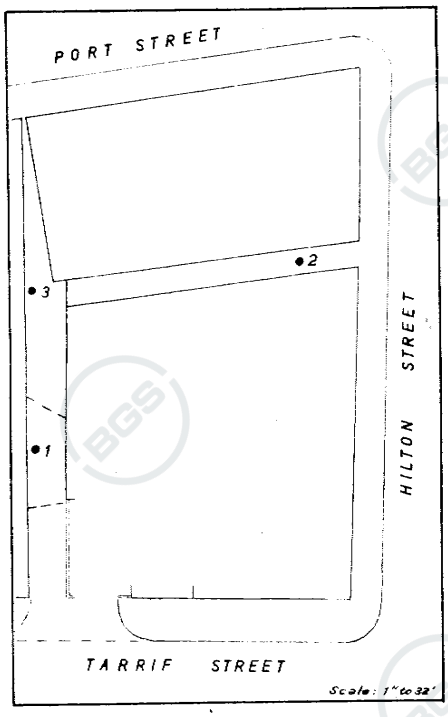
SJ89NW 3543
8467 9833

BOREHOLE LOGS & PRESSUREMETER TESTS
HILTON STREET
MANCHESTER

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045737 : BGS Reference: SJ89NW3543
British National Grid (27700) : 384670,398330



1

Depth	Nature of Strata	E	Pf	Pl	C
0	Made Ground				
5½					
11	Stiff Brown Clay	120	5	10·4	2·6
14		67	3·4	10·2	3·6
15					

SJ89NW 3541
8467 9833

2

Depth	Nature of Strata	E	Pf	Pl	C
0	Made Ground				
5½					
11	Stiff Brown Clay with some grey streaks	61	6·3	14	5·5
14		133	6·9	10·2	1·8
15					

SJ89NW 3542
8468 9834

3

Depth	Nature of Strata
0	Made Ground
4½	
5	Stiff Brown Clay

SJ89NW 3543
8467 9833

BOREHOLE LOGS & PRESSUREMETER TESTS
HILTON STREET
MANCHESTER

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468812 : BGS Reference: SJ89NW3780
British National Grid (27700) : 384660,398380

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SITE INVESTIGATION FOR Main Drainage — DATE COMMENCED 22.4.83

LOCATION Newton Street — REF: — BORING METHOD Cable Percussive

BOREHOLE No. 3 — BORING DIAMETER 150mm — 384664

GRID REFERENCE — SCALE: 1:50 (approx.) — 398381

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
22.4.83			0.05		Bituminous Surfacing					
			0.15		Setts					
			0.65		CLAY, ashes and stone. Made Ground.	D1	0.50			
			1.45		CLAY with bricks and ashes. Made Ground.	D2	1.00			
					Stiff to very stiff silty and sandy CLAY with grey fissures, stone and coal inclusions.	U1	1.50	1.95		
						D3	2.00			
						U2	2.50	2.95		
						D4	3.00			
						U3	3.50	3.95		
						D5				
						U4	4.50	4.95		
						D6	5.00			
						U5	5.50	5.95		
						D7	6.30			
22.4.83	5.45	Dry	6.30							

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

SAMPLE TEST KEY

D – DISTURBED SAMPLE
B – BULK SAMPLE
U – UNDISTURBED SAMPLE
P – SPT SAMPLE
W – WATER SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Trial pit excavated to 1.50m

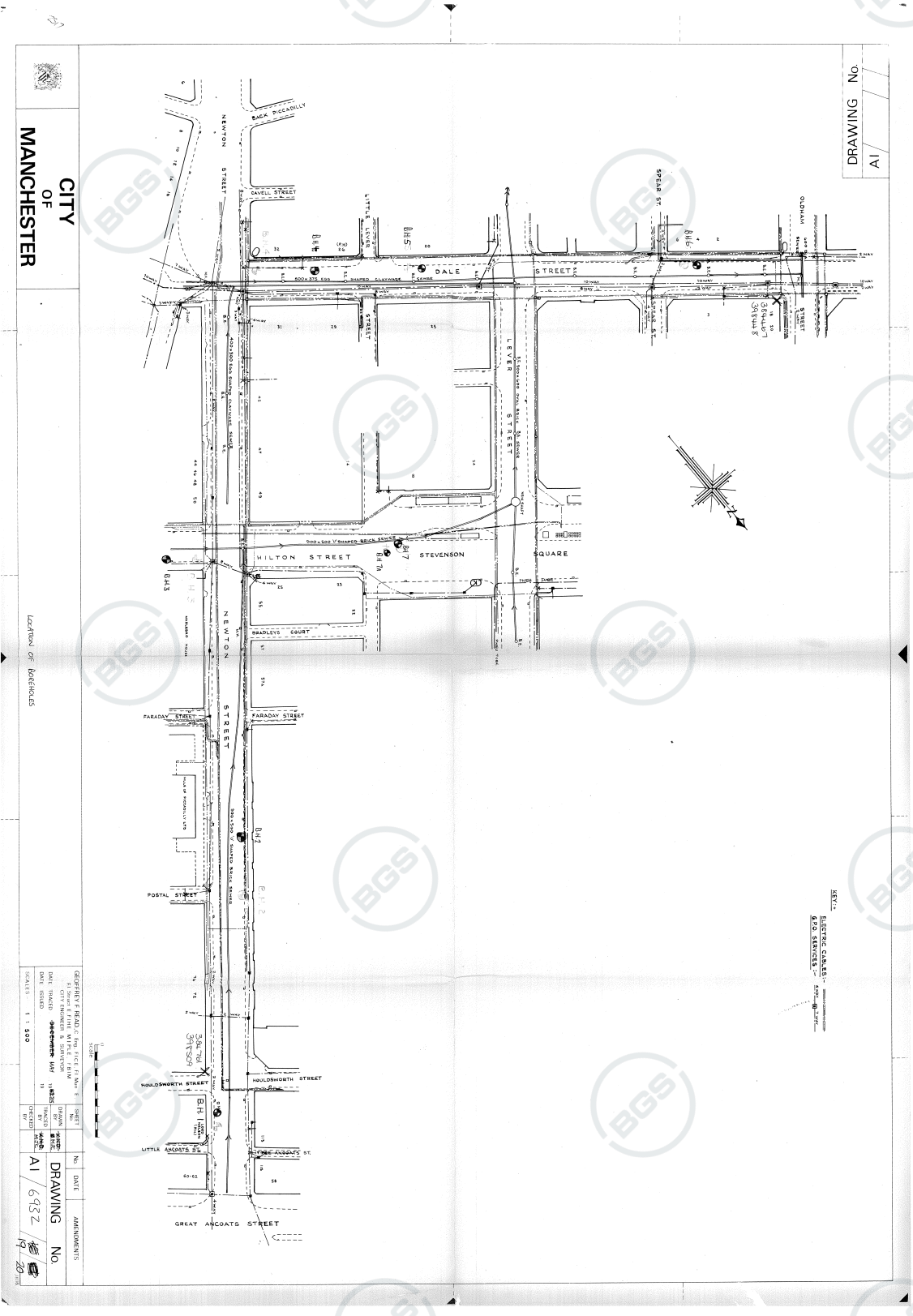
Borehole backfilled on completion. No final overnight water level observed.

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 13468812 : BGS Reference: SJ89NW3780
British National Grid (27700) : 384660,398380



Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045704 : BGS Reference: SJ89NW3510
British National Grid (27700) : 384450,397990

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW3510

SITE INVESTIGATION FOR	MAIN DRAINAGE	DATE COMMENCED	7.3.86
LOCATION	BLOOM STREET	BORING METHOD	CABLE PERCUSSION
BOREHOLE No.	2 (Sheet 1 of 2)	BORING DIAMETER	150 mm
GRID REFERENCE	8445 9799	SCALE:	1:50(approx.)

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
			0.20		Bituminous surfacing onto setts					
			0.40		Road Stone					
					Firm/stiff brown CLAY with ash, cinders, coal, brick, concrete, gravel, wood, sand etc.	D1	0.50			
						D2	1.00			
					MADE GROUND	W6	1.50			
						D3	1.70			
			2.20			U4	1.70	2.15		
					Stiff becoming very stiff brown silty and sandy CLAY with grey fissures in upper zone, some fine to medium gravel, coal fragments some laminae and lenses of sand and silt and a band of very silty clayey sand from 3.50m - 3.60m.	P5	2.30	2.60	17	
						U7	2.70	3.15		
						D8	3.20			
						P9	3.75	4.05	24	
						U10	4.30	4.75		
						D11	4.80			
						U12	5.40	5.85		
						D13	5.90			
						U14	6.40	6.85		
						D15	6.90			

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
1.70	slow	1.65	not sealed

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:-
water encountered at 1.70m and rose to 1.65m over 20 minutes.

SAMPLE TEST KEY

D - DISTURBED SAMPLE
P - SPT SAMPLE
B - BULK SAMPLE
W - WATER SAMPLE
U - UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N - VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045704 : BGS Reference: SJ89NW3510
British National Grid (27700) : 384450,397990

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

SJ89NW 3510

SITE INVESTIGATION FOR MAIN DRAINAGE — DATE COMMENCED 7.3.86

LOCATION Bloom Street — BORING METHOD Cable Percussion

BOREHOLE No.2 (sheet 2 of 2) — BORING DIAMETER 150mm

GRID REFERENCE — SCALE: 1:50 (approx.)

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	SAMPLE DEPTH PENETRATION To	No. of Blows	Legend
					As above					
						U16	7.50	7.95		
7.3.86	3.00	1.70	8.00		END OF BOREHOLE	D17	8.00			

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:–

SAMPLE TEST KEY

D – DISTURBED SAMPLE
P – SPT SAMPLE
B – BULK SAMPLE
W – WATER SAMPLE
U – UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

M/c 5931

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15637500 : BGS Reference: SJ89NW3991
British National Grid (27700) : 384665,398206

MANCHESTER CITY COUNCIL

CITY ENGINEER AND SURVEYORS DEPARTMENT

384665
398206

SITE INVESTIGATION FOR	Main Drainage	DATE COMMENCED	21.3.85
LOCATION	Dale Street REF:	BORING METHOD	Shell and Auger
BOREHOLE No.	9	BORING DIAMETER	150mm
GRID REFERENCE		SCALE:	1 : 50 approx.

DATE	CASING DEPTH (m)	WATER LEVEL MORNING & EVENING	DEPTH OF STRATA BELOW GL	Reduced Level	DESCRIPTION	No. and Type of Sample	SAMPLE DEPTH PENETRATION From	To	No. of Blows	Legend
21.3.85			0.1		Bituminous Surfacing					
			0.2		Setts					
			0.3		Ashes and Cinders					
			0.5		Concrete					
			1.50		Claybound ashes, stones, brick pieces etc - Made Ground	D1	0.5			
			5.50		Stiff and very stiff brown silty and sandy CLAY with grey fissures, stone inclusions and sand lenses	U1	1.5	1.95		
						P1	2.0			
						U2	2.5	2.95		
						D3	3.0			
						U3	3.5	3.95		
						D4	4.0			
						U4	4.5	4.95		
						D5	5.0			
			6.0		Brown SILT	U5	5.5	5.95		
21.3.85	5.5	Dry	6.50		Brown/grey SILT	D6	6.5			

WATER OBSERVATIONS DURING BORING

DEPTH OF WATER ENTRY (m)	ESTIMATED SEE PAGE	STANDING LEVEL (m)	DEPTH OF CASING WHEN SEALED (m)
None Observed			

WATER LEVEL IN CASED/UNCASED BOREHOLE ON COMPLETION

DATE	WATER LEVEL	DEPTH OF CASING

REMARKS:-

SAMPLE TEST KEY

D – DISTURBED SAMPLE
P – SPT SAMPLE
B – BULK SAMPLE
W – WATER SAMPLE
U – UNDISTURBED SAMPLE

NOTE: WHERE FULL 0.3 PENETRATION HAS NOT BEEN ACHIEVED, THE NUMBER OF BLOWS FOR THE QUOTED PENETRATION IS GIVEN (NOT N – VALUE)

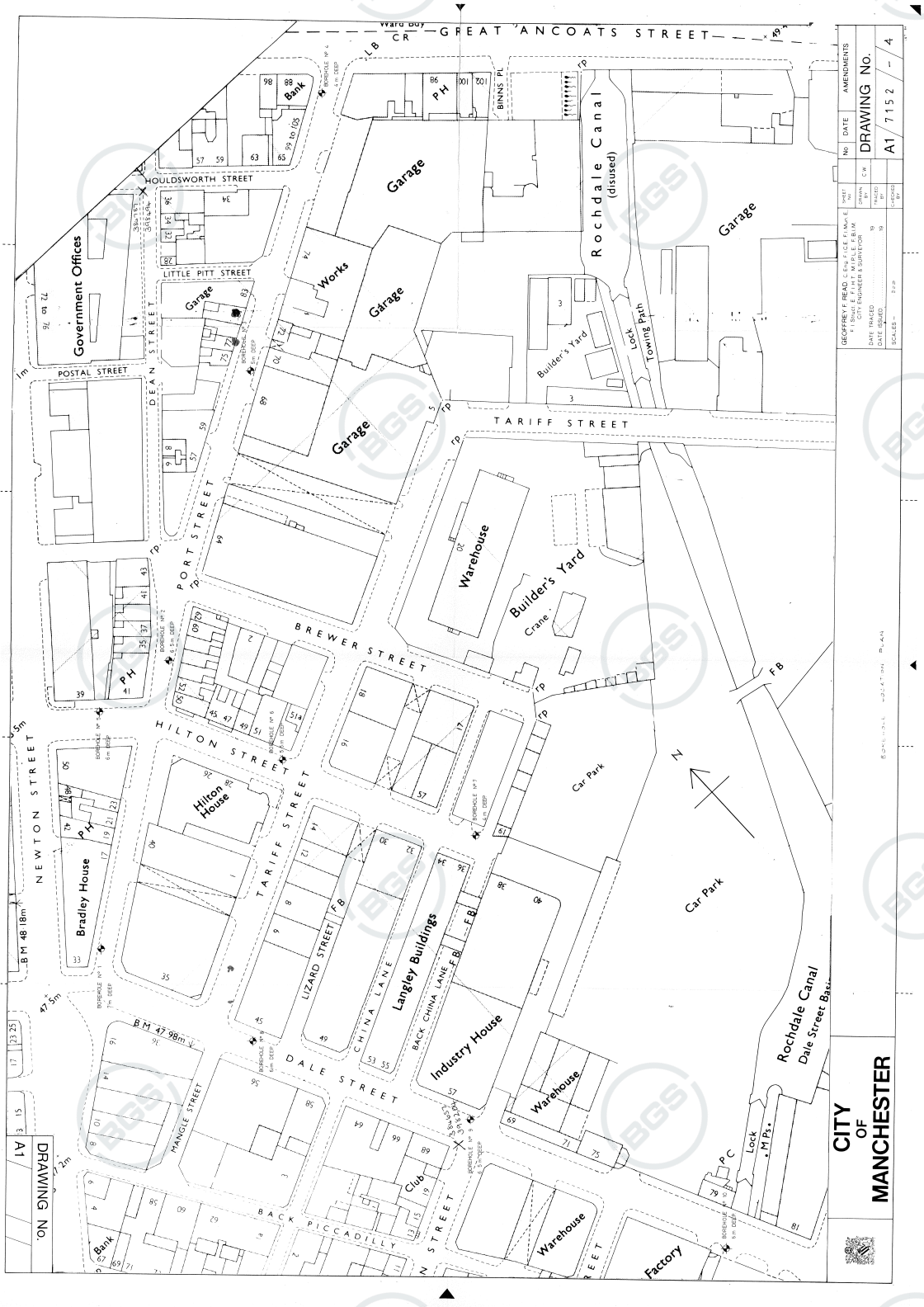
ALL DEPTHS AND REDUCED LEVELS IN (m) UNLESS OTHERWISE STATED

REMARKS

Trial hole excavated to 1.50m below ground level
Borehole backfilled with concrete on completion

M/c 5931

Contact BGS: ngdc@bgs.ac.uk


GREAT ANCOATS STREET
HOULDSWORTH STREET
LITTLE PITT STREET
POSTAL STREET
DEAN STREET
PORT STREET
TARIFF STREET
BREWER STREET
HILTON STREET
NEWTON STREET
LIZARD STREET
CHINA LANE
BACK CHINA LANE
DALE STREET
MANGLE STREET
BACK PICCADILLY
BINNS PL
Rochdale Canal (disused)
Rochdale Canal
Dale Street Basin
Government Offices
Garage
Works
Warehouse
Builder's Yard
Crane
Lock
Towing Path
Car Park
Hilton House
Bradley House
Langley Buildings
Industry House
Factory
Club
Bank
PH
PC
FB
CITY OF MANCHESTER
DRAWING No.
A1/7152 - 4
AMENDMENTS
DATE
No
GEOFFREY F. READ
CITY ENGINEER & SURVEYOR

British Geological Survey

BGS ID: 15634881 : BGS Reference: SJ89NW3972
British National Grid (27700) : 384051,398295

Cementation Ground Engineering — **soil mechanics department**

BOREHOLE No. 4

CONTRACT: Spring Gardens, Manchester.	REPORT No. 705/72/IRW
Bored for: Messrs. Pell Frischmann and Partners.	Ground Level 384051 398295
Site Address: Spring Gardens/Brown Street, Manchester.	Boring Commenced 16.10.72; Boring Completed 18.10.72
Type and Dia. of Boring: Hand Excavation, GL–11'9", Shell and Auger 10 ins. diameter 11'9"–52'0" Rotary Coring, 4⅛ ins. dia. 52'0"–63'0", Water Flush.	

Water Strikes	Water Levels Recorded During Boring	
1. 34'6"	Hole Depth	38'6"
2 seepage	Casing Depth	38'0"
3.	Water Level	None.

Remarks: Water level 33'0" after period of 30 mm. following ground water strike. Boulder encountered at 41'0", cleared at 43'0".

Scale 1 inch = 5 ft.

Description	Depth	Legend	Samples & S.P.T. Ref. No.	Type	Depth	N blows/ft
Made ground (tarmac, concrete, etc.)						
Made ground (sand, gravel etc.)	1'3"					
	11'9"					
Firm to stiff brown fissured silty clay with pockets of sand and small coal fragments (Boulder Clay).			2804	J	12'6"	
			2805	U	13'0"–14'6"	
			2806	J	15'6"	
			2807	U	18'0"–19'6"	
			2808	J	20'6"	
	21'6"					
Firm brown laminated clay becoming stiff toward base.			2809	U	23'0"–24'6"	
			2810	J	25'6"	
			2811	U	28'0"–29'6"	
	30'0"					
Very stiff brown sandy clay with pockets or bands of brown sand. (Sandy Boulder Clay).			2812	J	31'6"	
			2813	U	33'0"–34'6"	

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Note.—Unless classification tests have been made and the results are included in this Report, the descriptions of strata given above have been obtained by inspection in accordance with British Standard Code of Practice CP 2001 (1957) Site Investigations. To ensure agreement as to interpretation, clients are requested to check the descriptions against the samples submitted.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634881 : BGS Reference: SJ89NW3972
British National Grid (27700) : 384051,398295

Cementation Ground Engineering — soil mechanics department

BOREHOLE No. 4
Continuation Sheet No. 1

CONTRACT **Spring Gardens, Manchester.**

REPORT No. **705/72/IRW**

Scale 1 inch = 5 ft.

Description	Depth	Legend	Ref. No.	Type	Depth	N blows/ft
Very stiff brown sandy clay with pockets or bands of brown sand. (Sandy Boulder Clay). (Cont'd).			2815	J	35'6"	
			2816	U	38'0"–39'6"	
			2817	J	40'6"	
	42'6"					
Red-brown clayey sand.			2818	J	43'6"	
			2819	U	44'0"–45'6"	
			2820	J	46'6"	
	49'6"		2821	U	49'0"–50'6"	
Brown laminated clay with silt in laminations.			2822	J	51'0"	
	51'6"					
Red-brown clayey sand with some gravel.			2823	J	52'6"	140+
	53'6"		2814	W	(34'6")	
Moderately cemented medium red sandstone with marl pellets.						
	63'0"					

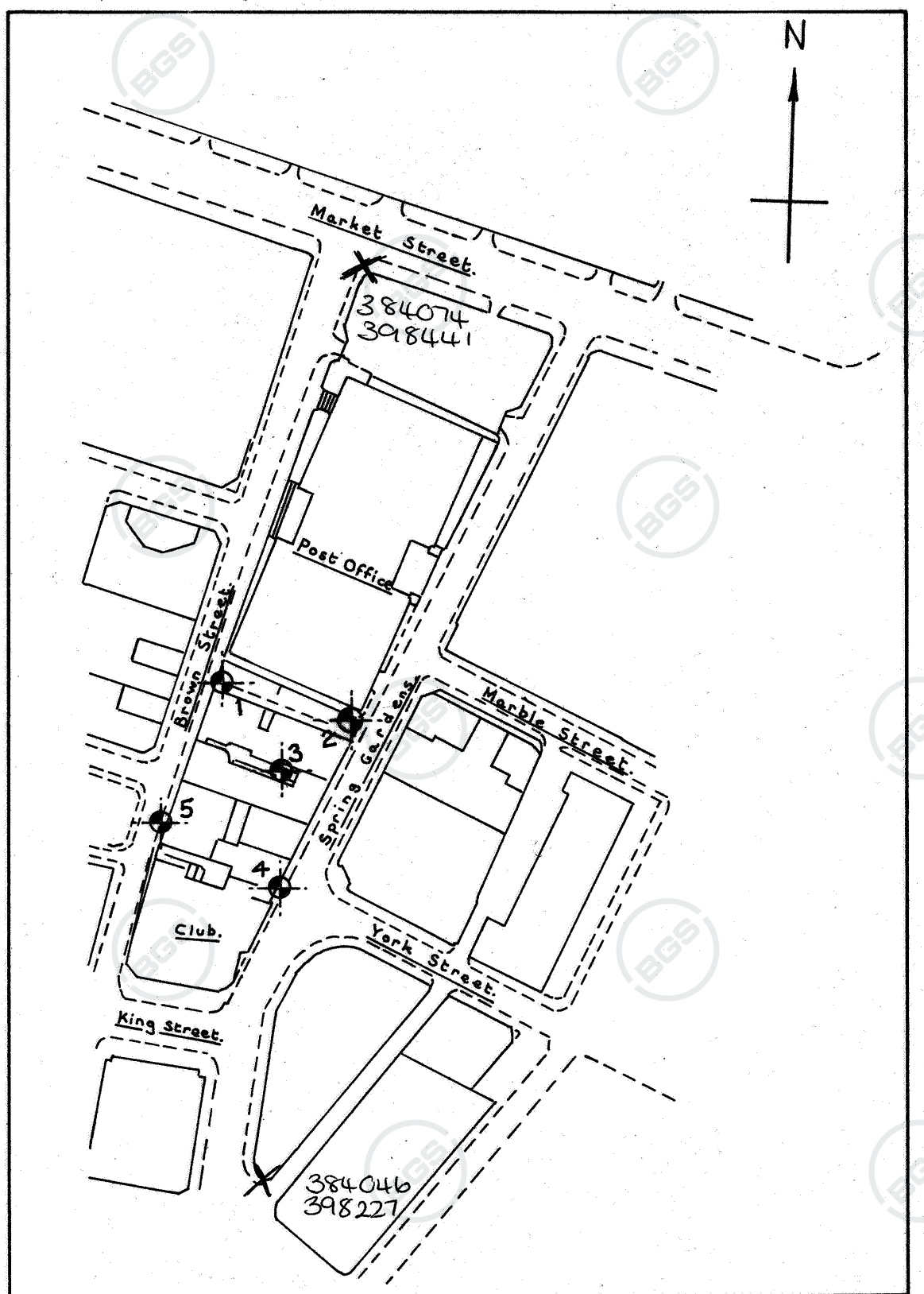
Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Note.—Unless classification tests have been made and the results are included in this Report, the descriptions of strata given above have been obtained by inspection in accordance with British Standard Code of Practice CP 2001 (1957) Site Investigations. To ensure agreement as to interpretation, clients are requested to check

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634881 : BGS Reference: SJ89NW3972
British National Grid (27700) : 384051,398295



Cementation Ground Engineering

soil mechanics department

SPRING GARDENS, MANCHESTER.

Approximate Location of Boreholes.

Scale 1 : 2500

Drawing No. 705/72/1

U.D.O.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634876 : BGS Reference: SJ89NW3969
British National Grid (27700) : 384038,398343

Cementation Ground Engineering — **soil mechanics department**

BOREHOLE No. 1

CONTRACT	Spring Gardens, Manchester.	REPORT No.	705/72/IRW
Bored for	Messrs. Pell Frischmann and Partners.	Ground Level	384038 398343
Site Address	Spring Gardens/Brown Street, Manchester.	Boring Commenced Boring Completed	3.10.72 5.10.72
Type and Dia. of Boring	Hand Excavation GL–5'0" Shell and Auger 10 ins. dia. 5'0"–46'0" Rotary Coring $4\frac{1}{8}$ ins. dia. 46'0"–59'0" Water Flush.		

Water Strikes	Water Levels Recorded During Boring									
1. None. 2. 3.	Hole Depth Casing Depth Water Level									

Remarks

Description	Depth	Legend	Ref. No.	Type	Depth	N blows/ft
Made ground (flagstones etc.)						
Made ground (ash fill etc.)	2'9"					
	4'0"		3847	J	4'3"	
Made ground (brown silty clay, pockets of sand, small brick fragments, cinders, decayed wood etc.)			3848	U	5'0"–6'6"	
			3849	J	7'6"	
			3850	U	10'0"–11'6"	
	12'3"		3851	J	12'6"	
Stiff brown silty clay with traces of silt in blue stained fissures. Locally faintly laminated. (Boulder Clay).		×	3852	U	13'3"–14'9"	
			3853	J	15'9"	
		×	3854	U	18'0"–19'6"	
		×	3855	J	20'9"	
	22'0"					
Firm brown laminated clay.			3856	U	23'0"–24'6"	
			3857	J	25'9"	
			3858	U	28'0"–29'6"	
	30'0"		3859	J	30'6"	
Very stiff brown sandy clay with small coal fragments (Sandy Boulder Clay).			3860	J	32'3"	
			3861	U	32'9"–34'3"	

Scale 1 inch = 5 ft.

Samples & S.P.T.

Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Note.—Unless classification tests have been made and the results are included in this Report, the descriptions of strata given above have been obtained by inspection in accordance with British Standard Code of Practice CP 2001 (1957) Site Investigations. To ensure agreement as to interpretation, clients are requested to check the descriptions against the samples submitted.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634876 : BGS Reference: SJ89NW3969
British National Grid (27700) : 384038,398343

Cementation Ground Engineering — soil mechanics department

BOREHOLE No. 1
Continuation Sheet No. 1

CONTRACT **Spring Gardens, Manchester.**

REPORT No. 705/72/IRW

Scale 1 inch = 5 ft.

Description	Depth	Legend	Samples & S.P.T. Ref.No.	Type	Depth	N blows/ft
Very stiff brown sandy clay with small coal fragments (Sandy Boulder Clay). (Cont'd)			3862	J	35'6"	
	39'6"		3863	U	38'6"-40'0"	
Red-brown clayey sand.			3864	D	40'6"	100+
			3865	J	42'3"	
	44'3"					
Weakly cemented medium red sandstone, locally reduced to sand.			3866	D	45'3"	200+
	46'0"		3867	J	46'0"	
Moderately cemented medium red sandstone. Marl band about 1 inch thick at 48'0".						
	59'0"					

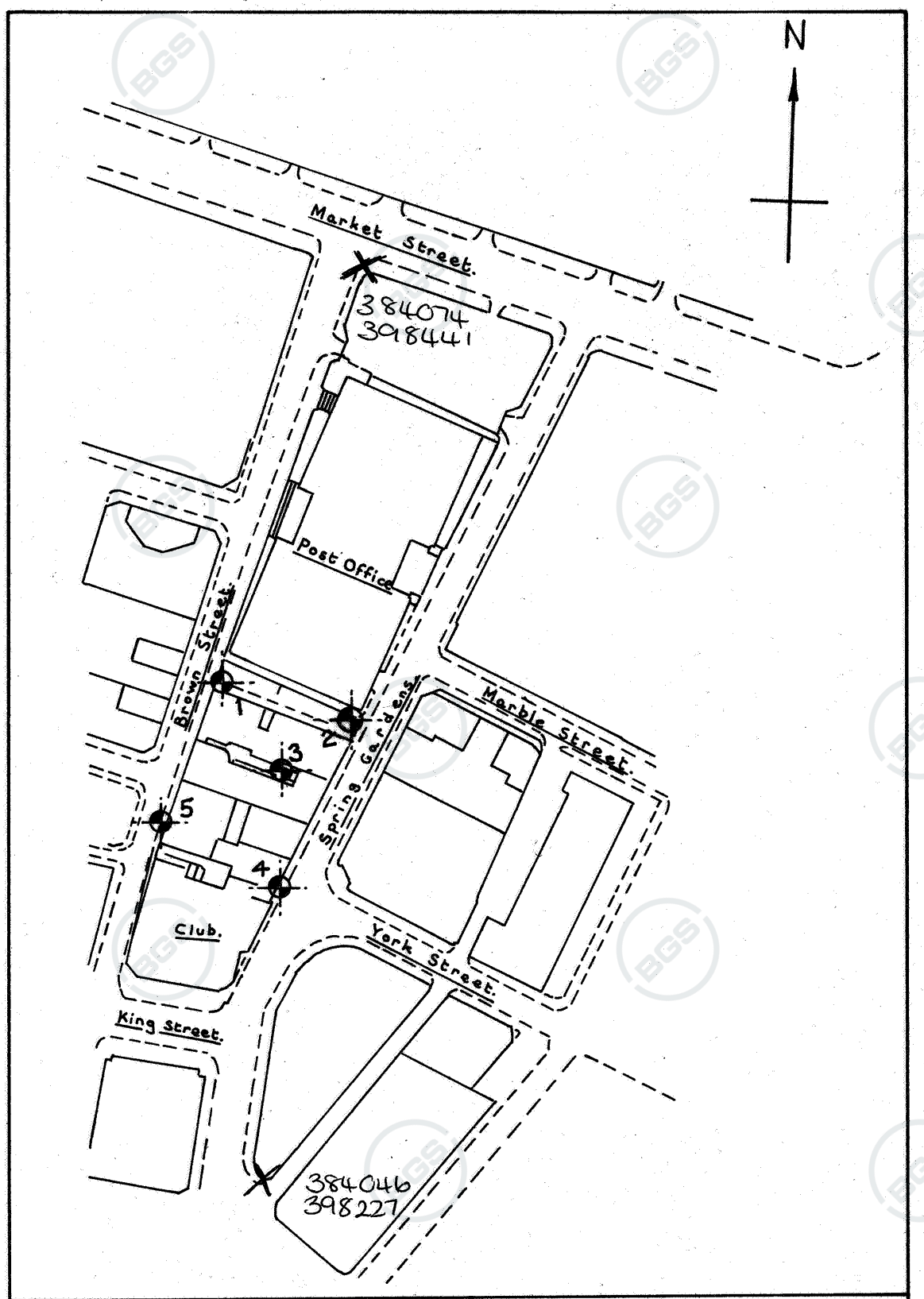
Code: U—Undisturbed Sample D—Large Disturbed Sample J—Jar Sample W—Water Sample

Note.—Unless classification tests have been made and the results are included in this Report, the descriptions of strata given above have been obtained by inspection in accordance with British Standard Code of Practice CP 2001 (1957) Site Investigations. To ensure agreement as to interpretation, clients are requested to check

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 15634876 : BGS Reference: SJ89NW3969
British National Grid (27700) : 384038,398343



Cementation Ground Engineering

soil mechanics department

SPRING GARDENS, MANCHESTER.

Approximate Location of Boreholes.

Scale 1 : 2500

Drawing No. 705/72/1

U.D.O.

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042545 : BGS Reference: SJ89NW351
British National Grid (27700) : 384510,398010

Soil Mechanics

BOREHOLE No. 2

Sheet 1 of 4

Equipment & Methods: Cable tool boring, Dando 150. 150mm diameter to 8.40m then rotary drilling T6H size using coreline and water flush to 10.00m. (150mm diameter casing used to 14.20m)

Location No. 7285/22

Location: MANCHESTER CROWN COURT SJ89NW 351 845-980

Carried out for: Property Services Agency

Ground Level: 44.50 m A.O.D.

Coordinates:

Date: 18.08.88 to 21.08.88

Description	Reduced Level	Legend	Depth (Thick)	Samples/Tests: Depth	Sample Type	Sample No.	Test	Field Records
Cobblestones and reinforced concrete. (Foremans desciption).	44.50		(0.60)					
	43.90		0.60					
VOID/CELLAR Solway House basement floor at 3.60m.			(3.00)					
Concrete.	40.90		3.60					
	40.70		(0.20) 3.80					
Brown mottled red brown, sandy, fine to coarse GRAVEL of brick and concrete with occasional cobbles of brick. (MADE GROUND)			(2.05)	4.00 – 4.45	U	1		
				4.50	D	2	S	
				4.60 – 5.05	D	3	N=29	
				4.60 – 5.10	B	4		
				5.40 – 5.85	D	5	S N=10	
	38.65		5.85	5.60 – 6.50	B	6		
Soft becoming stiff at about 6.50m, grey brown, slightly sandy, locally friable CLAY with occasional fine to medium gravel.			(2.05)	6.00 – 6.45	U	7		
				6.50	D	8		
				6.60 – 7.05	D	9	S N=20	
	36.60		7.90	7.50 – 7.95	U	10		
				8.00	D	11		
				8.10 – 8.33	D	12	S 50	
Very dense, brown, clayey/weakly cemented, silty, fine to medium SAND with rare to occasional fine to medium gravel and silty clay lenses.			(2.40)	8.40 – 10.00	W: 100 Red Brwn	TCR: 78	SCR: 78	RQD: 78	If: 100 400 530

Remarks

1. Compressor used to break out ground floor and basement floor, 150mm casing installed.
2. Chiselling from 4.00 to 5.20m for 2.50 hours.

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics 24.10.88/14.18 (Ver 3.2.13)

Logged by: N.D.

Scale: 1:50

Fig. 3

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1042545 : BGS Reference: SJ89NW351
British National Grid (27700) : 384510,398010

Soil Mechanics

BOREHOLE No. 2

Sheet 2 of 4

Equipment & Methods: As sheet 1

Location No. 7285/22

Location: SJ89NW 351

MANCHESTER CROWN COURT

Carried out for: Property Services Agency

Ground Level: -

Coordinates: As sheet 1

Date

Description	Reduced Level	Legend	Depth (Thick)	Drilling Records: Depth	Drilling Records: W	Mechanical core log: TCR	Mechanical core log: SCR	Mechanical core log: RQD	Mechanical core log: If	Field Records and Test Results
Very dense, brown, clayey SAND. (As sheet 1)	34.20		(2.40) 10.30							
Firm to stiff, brown to brown grey, sandy locally slightly sandy CLAY with occasional fine to medium gravel and sand pockets and lenses.			(1.50)	10.00 - 11.50	100 Red Brwn	33				SPT 11.50-11.87 D.13. S 57
	32.70		11.80	11.50 - 12.50	100 Red Brwn	0				SPT 12.50-12.79 D.14. S 88
Very dense locally weakly cemented, red brown, fine to medium SAND with rare fine gravel. Below about 14.00m, fine to coarse locally fine to medium SAND.										12.80-14.00 B.15.
Weakly cemented/very weak sandstone.				12.50 - 14.00	50 Red Brwn	0				SPT 14.00-14.14 D.16.S(68)
Weakly cemented/very weak sandstone.			(6.20 pen)	14.00 - 15.00	50 Red Brwn	0				14.00-15.00 B.17
Below about 16.00m, with some very weak, fine to coarse grained very weak sandstone bands. (Weathered SANDSTONE)				15.00 - 16.00	20 Red Brwn	0				SPT 15.00-15.05 D.18.S(50)
										15.00-16.00 B.19
				16.00 - 17.00	0	0				SPT 16.00-16.05 D.20.S(50)
										16.00-17.00 B.21
				17.00 - 18.00	0	0				SPT 17.00-17.05 D.22.S(50)
BOREHOLE ENDS AT 18.00 m.	26.50		18.00							

Remarks

3. Chiselling 13.70 to 14.10m for 1.50 hours, 14.80 to 15.00 for 1 hour, 15.70 to 15.90m for 1 hour.
4. Standpipe installed at basement floor level. See sheet 4 for details.

Notes:

Materials are described in accordance with Appendices. For explanation of symbols and abbreviations see Fig. 1. All depths and reduced levels in metres. Thicknesses given in brackets in depth column.

(c) Soil Mechanics

24.10.88/14.18 (Ver 3.2.13)

Logged by: N.D.

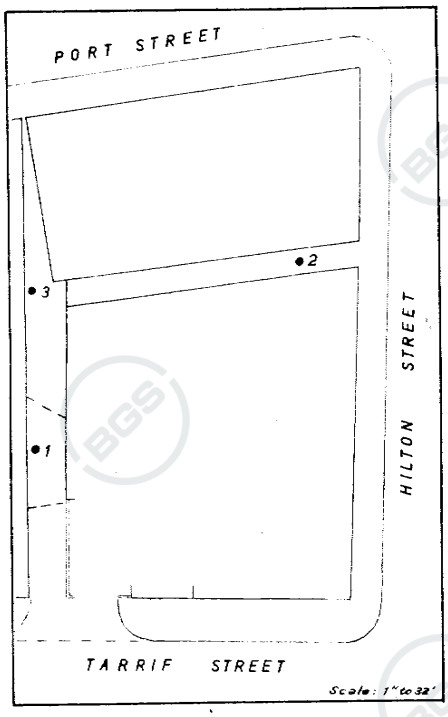
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Fig. 3

Contact BGS: ngdc@bgs.ac.uk

British Geological Survey

BGS ID: 1045736 : BGS Reference: SJ89NW3542
British National Grid (27700) : 384680,398340



1

Depth	Nature of Strata	E	Pf	Pl	C
0	Made Ground				
5½					
11	Stiff Brown Clay	120	5	10·4	2·6
14		67	3·4	10·2	3·6
15					

SJ89NW 3541
8467 9833

2

Depth	Nature of Strata	E	Pf	Pl	C
0	Made Ground				
5½					
11	Stiff Brown Clay with some grey streaks	61	6·3	14	5·5
14		133	6·9	10·2	1·8
15					

SJ89NW 3542
8468 9834

3

Depth	Nature of Strata
0	Made Ground
4½	
5	Stiff Brown Clay

SJ89NW 3543
8467 9833

BOREHOLE LOGS & PRESSUREMETER TESTS
HILTON STREET
MANCHESTER

Contact BGS: ngdc@bgs.ac.uk

Appendix E – Consultant's Coal Mining Report

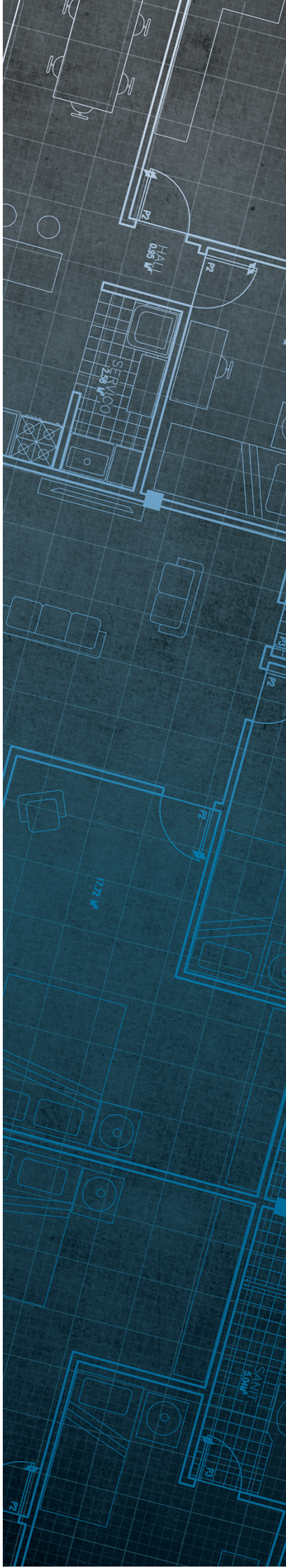
The Coal Authority

Consultants

Coal Mining Report

Piccadilly Gardens, Manchester
Greater Manchester

Date of enquiry:	**27 April 2026**
Date enquiry received:	**27 April 2026**
Issue date:	**27 April 2026**
Our reference:	**51003566956001**
Your reference:	**GS-CC2-DMP-MQR-UTG**



Consultants

Coal Mining Report

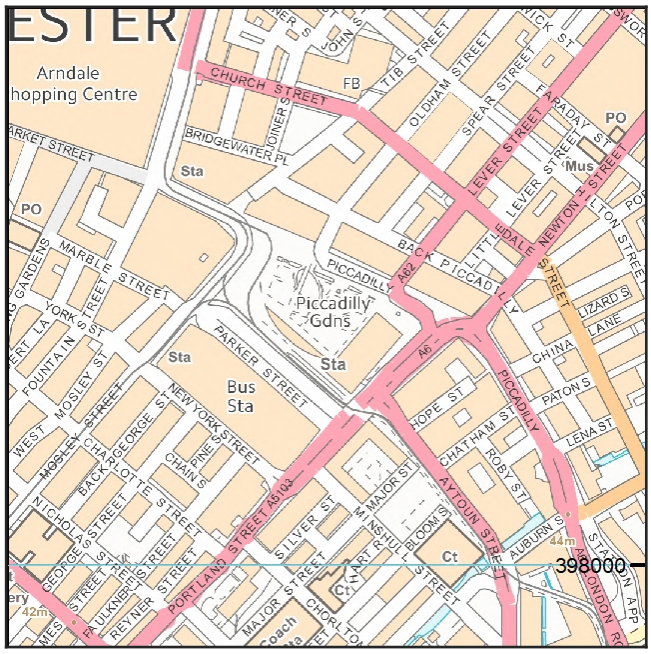
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

Piccadilly Gardens, Manchester
Greater Manchester



Approximate position of property

Map data

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How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

reports@miningremediation.gov.uk

Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
None.

Spine roadways at shallow depth
No spine roadway recorded at shallow depth.

Mine entries
None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers
None available.

Outcrops
No outcrops recorded.

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips
None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **email us at reports@miningremediation.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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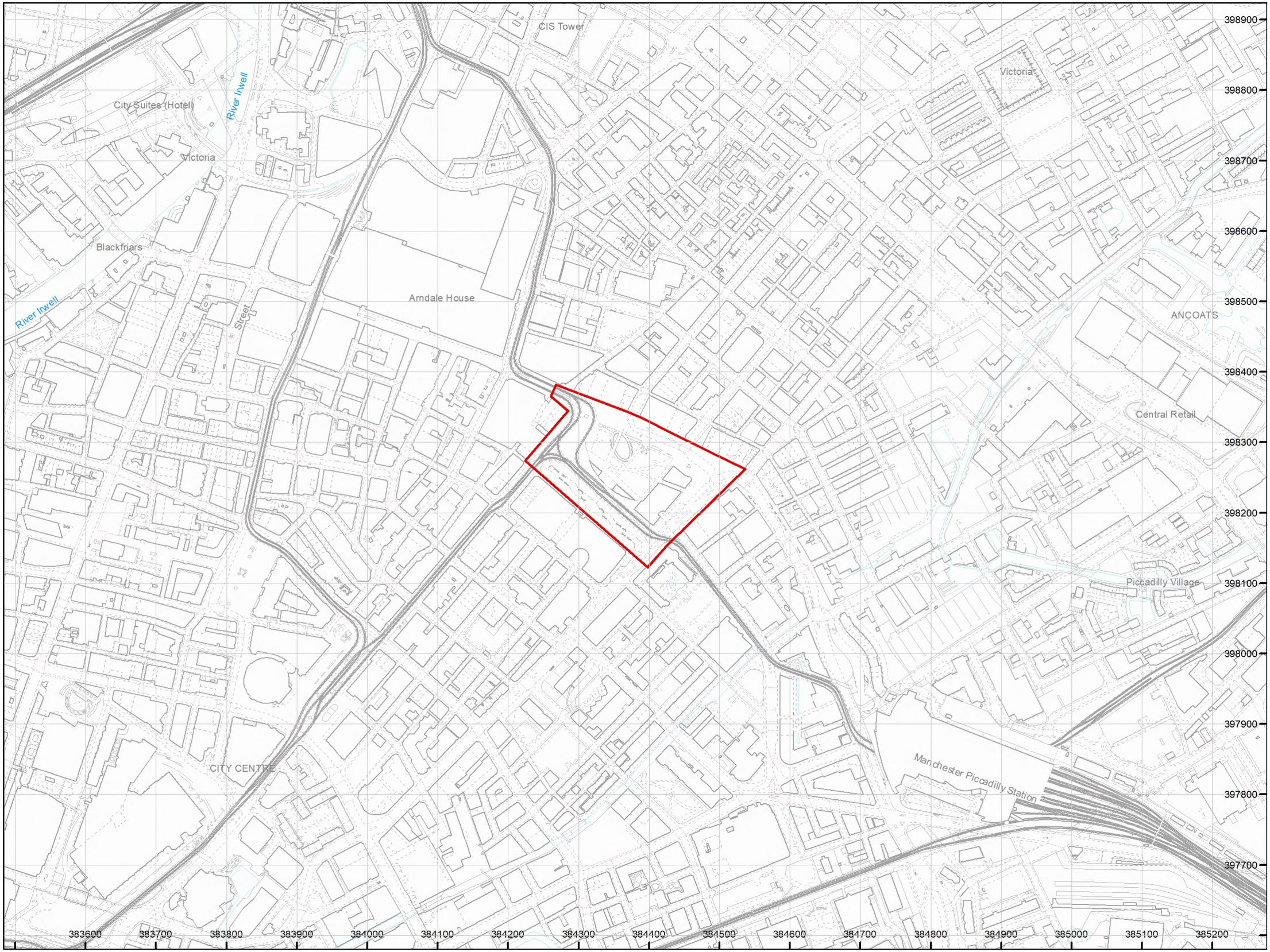
Summary of findings

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The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

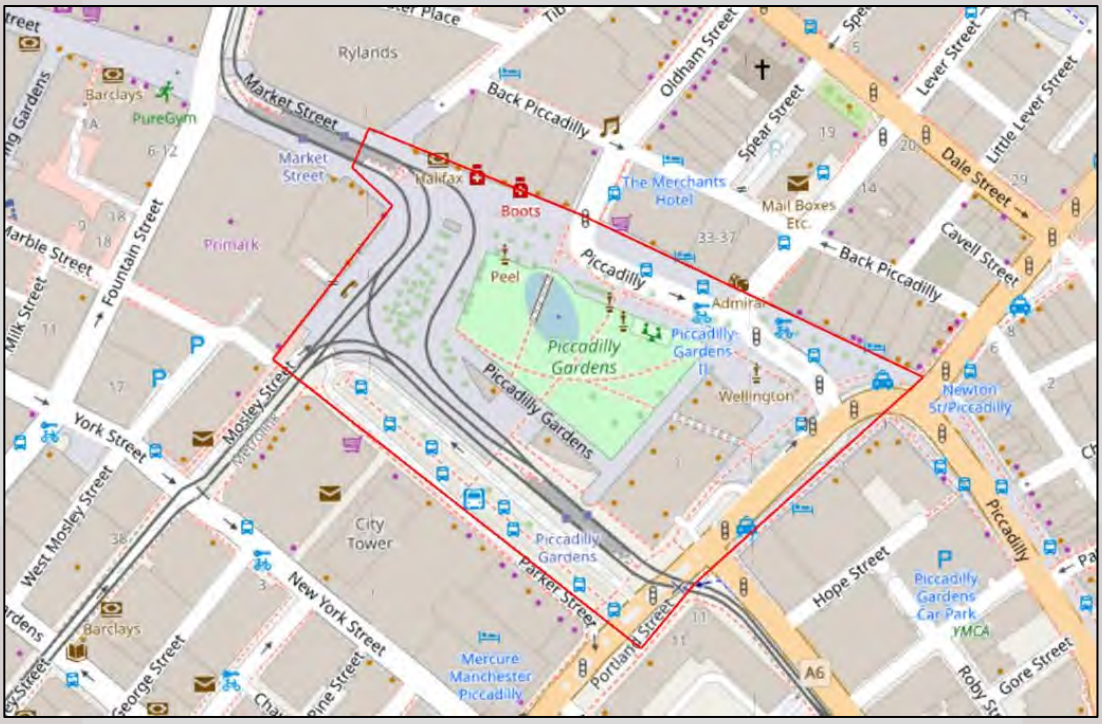
Approximate position of the enquiry boundary shown



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Appendix F – UXO Risk Assessments

Preliminary Unexploded Ordnance (UXO) Risk Assessment







RMS UXO PROJECT NUMBER	INO6440	**AUTHOR**	H. Merritt
VERSION NUMBER	001	**Reviewed and Approved By**	K. Kneebone
CLIENT	Civic Earth Limited	**Issue Date**	29/04/2026
SITE	Piccadilly Gardens, Manchester, M1 1AF		
RECOMMENDATION	Further Assessment Recommended - Detailed UXO Risk Assessment		

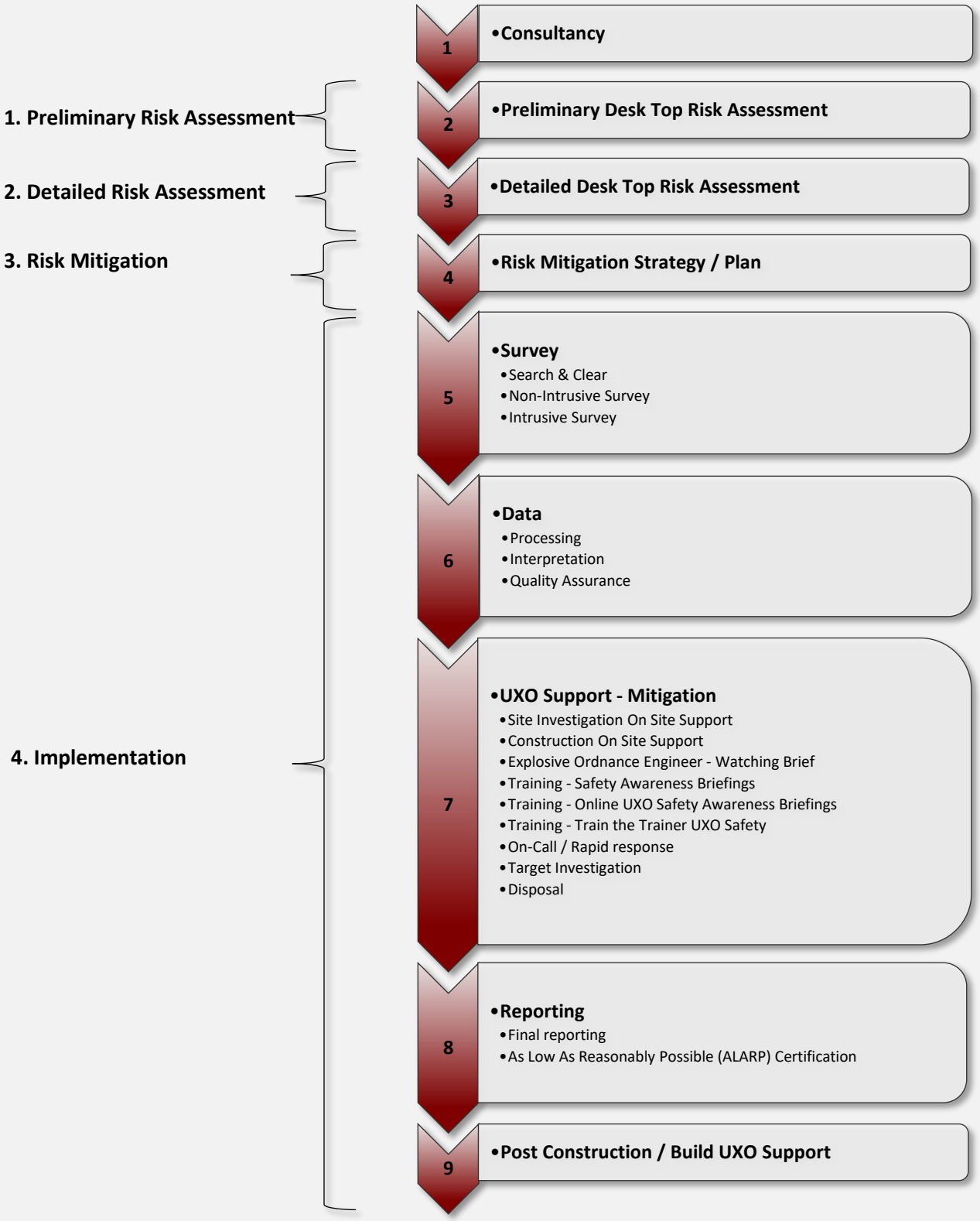
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UK UXO Risk Mitigation Process

CIRIA 681 Phases

RMS UXO Detailed Phases



1. Purpose of Assessment

This Preliminary UXO Risk Assessment serves as a qualitative screening tool to evaluate the likelihood of encountering unexploded ordnance (UXO). The assessment takes into account the basic factors impacting the potential presence of UXO, as detailed in Stage One of the CIRIA UXO risk management process, to provide an informed understanding of the associated risks at the site.

2. Location

The site is situated in Manchester and is approximately centred on the National Grid Reference: SJ 84357 98278. Approximately 440m north-west of Manchester Picadilly Station.

3. Background

This assessment, undertaken by RMS UXO Limited, (RMS UXO), serves as an initial analysis aimed at understanding the potential risks associated with unexploded ordnance (UXO). The assessment is conducted following the guidelines specified by CIRIA C681, "Unexploded Ordnance, a Guide for the Construction Industry".

The data compilation and analysis have been carried out by a team of UXO specialists at RMS UXO. Various resources have been used for this assessment; including but not limited to, extensive historical archives, comprehensive library documents, unique geo-databases, and other online materials.

The assessment is structured around the following key aspects to provide a preliminary understanding of the UXO risk profile for the site:

- Primary site Information
- Former Military Involvement
- Indicators of potential aerial dropped UXO threats
- Assessment of any Risk Reduction Factors
- Overview of Proposed Intrusive Activities
- Need for Extended Investigation

The main objective is to identify any need for a more Detailed UXO Risk Assessment. This preliminary analysis aims to go through the basic risk factors associated with UXO at the site, serving as a practical ‘initial move’ in the UXO risk management process. The report and its conclusions will be based on preliminary research from RMS UXO’s team at the time of production.

4. Considerations

Risk Pathway	Risk Source	✓/✗	Source Data
History of Military Activity	Military Installations	✓	1 RAF airfield was recorded within a 5km radius of the site.
	Bombing Decoy Sites	✗	No decoy sites were recorded within a 5km radius of the site.
	Ranges	✗	No ranges were recorded within a 1km radius of the site.
	EOC/UXO	✗	No EOC tasks or UXO finds were recorded within a 1km radius of the site.
	Defensive Features	✗	No Allied defensive features were recorded within a 1km radius of the site.
	HAA	✓	There were HAA recorded in an approximate 15km radius of the site.
	Ordnance Depot/ Factories	✗	No Ordnance depot/factories were recorded in proximity to the site.
Air Raid Activity	HE/IB Bomb Strikes	✓	HE and IB Bomb strikes were recorded on site.
	Bomb Damage	✓	There is evidence of bomb damage on site.
	Bombing Density	A medium bombing density was recorded for the area of Manchester.	
Site History and Development			
Pre-WWII History	Pre-WWII mapping show that the site consisted of open ground and tram lines.		
Post-WWII History	Post-WWII mapping shows that the site retained its pre-war composition, post-war aerial photography confirms this.		
Site Access	The site is anticipated to have received a low-to-medium level of access.		
Proposed Works	RMS UXO were not aware of any future site works at the time of writing the report.		
Conclusions			
Based on the research undertaken, there are multiple recorded bomb strikes on site and it is clear That the site in question sustained damage from bombing in WWII. Therefore, there is a potential risk posed by UXO the extent of which needs clarification.			

5. Recommendations

As per CIRIA C681 the Preliminary UXO Risk Assessment aims to evaluate the potential risk from UXO, based on historical data including wartime bombing records. Recommendations suggest advancing to a Detailed UXO Risk Assessment per CIRIA guidelines for a thorough examination of wartime conditions in the anticipated work area. This entails obtaining local bombing records, WWII-era aerial imagery, and other historical data. Before, or instead of a Detailed Assessment, implementing UXO Risk Mitigation Measures for planned intrusive works is advisable.

Should the client possess any subjective or data-driven insights into UXO risks on-site, contacting RMS UXO is encouraged.

This report has been constructed with professional thought and care by RMS UXO. Historical data has been meticulously collected and reviewed from third party sources. The validity of this information has been checked to the best of our ability, but RMS UXO holds no accountability for errors resulting from missing or incomplete information. Moreover, despite best efforts to compile a comprehensive historical dataset RMS UXO disclaims responsibility for any subsequent modifications to risk evaluations or mitigation proposals that may be necessitated by the discovery of additional information post factum.

EXPERTISE, INTEGRITY, PROFESSIONALISM

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Detailed Unexploded Ordnance (UXO) Risk Assessment

Project Name: Piccadilly Gardens

Prepared for: Civic Earth Limited

Prepared by: H. Merritt

Site: Piccadilly Gardens, Manchester, M1 1AF

Date: 27/05/2026

Document Name: INO6440 - Detailed UXO Risk Assessment - Piccadilly Gardens

Version: INO6440-001

Reviewed By: K. Kneebone

Approved By: C. Reid

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B-1: EXAMPLES OF ANTI-AIRCRAFT PROJECTILES

B-2: EXAMPLES OF ANTI-AIRCRAFT PROJECTILES

B-3: LAND SERVICE AMMUNITION - ROCKETS

C-1: HIGH EXPLOSIVE BOMBS

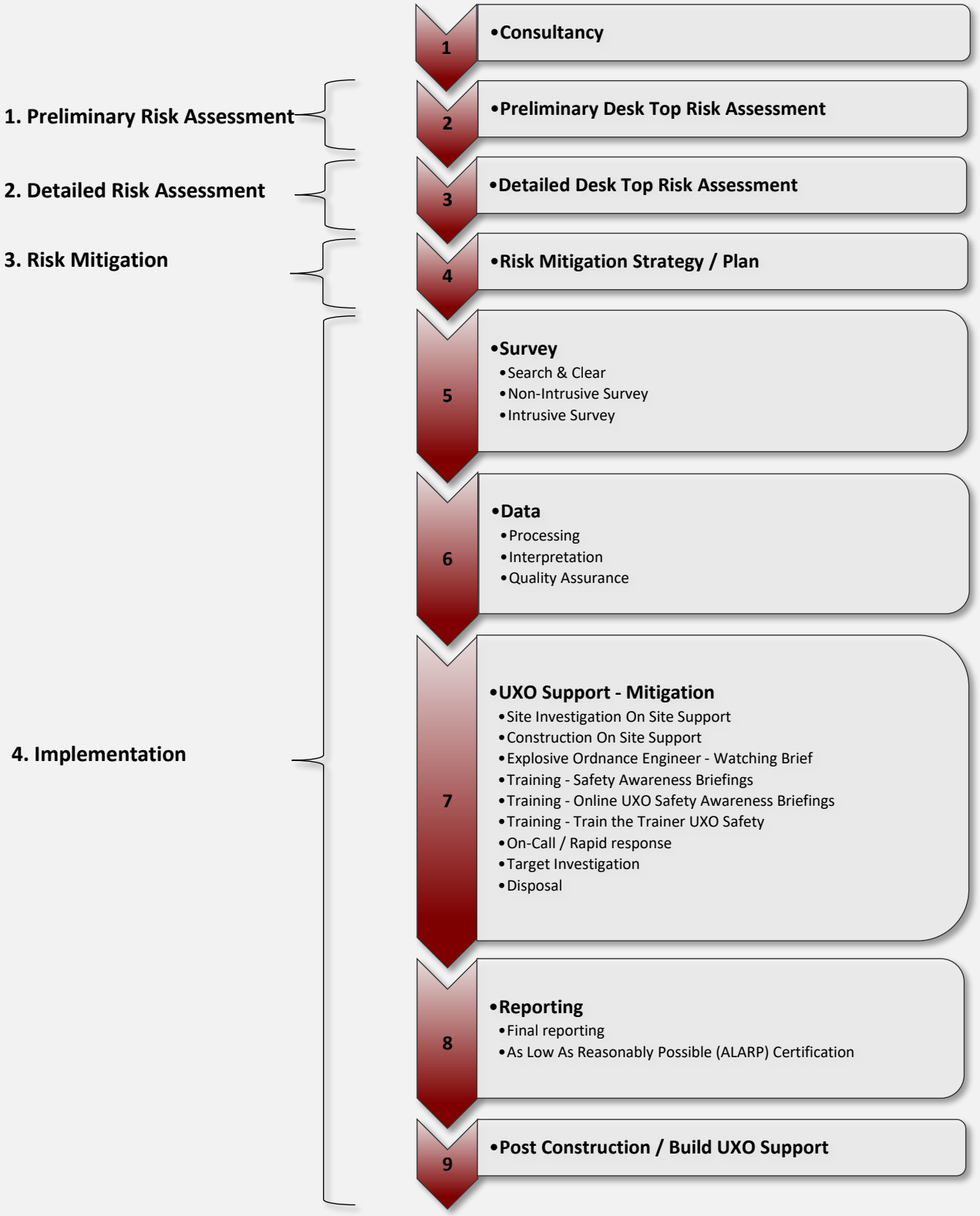
C-2: HIGH EXPLOSIVE BOMBS

C-3: INCENDIARY BOMBS

Acronyms & Abbreviations

AA	Anti-Aircraft
AAA	Anti-Aircraft Ammunition
ALARP	As Low As Reasonably Practicable
AOD	Above Ordnance Datum
ARP	Air Raid Precaution
AXO	Abandoned Explosive Ordnance
BD	Bomb Disposal
BDO	Bomb Disposal Officer
bgl	Below Ground Level
BGS	British Geological Survey
BH	Borehole
BPD	Bomb Penetration Depth
CDP	Cast Driven Piles
CFA	Continuous Flight Auger
CIRIA	Construction Industry Research and Information Association
CPT	Cone Penetration Testing
CS	County Series
EO	Explosive Ordnance
EOC	Explosive Ordnance Clearance
EOD	Explosive Ordnance Disposal
GI	Ground Investigation
GIS	Geographic Information Systems
GL	Ground Level
GP	General Purpose
GPS	Global Positioning Systems
HAA	Heavy Anti-Aircraft
HE	High Explosive
HO	Home Office
HSE	Health and Safety Executive
IB	Incendiary Bomb
kg	Kilograms
km	Kilometres
LAA	Light Anti-Aircraft
LCC	London County Council
LE	Low Explosive
LSA	Land Service Ammunition
m	Metres
MoD	Ministry of Defence
mm	Millimetres
NEQ	Net Explosive Quantity
NFF	National Filling Factory
NGR	National Grid Reference
OD	Ordnance Datum
OS	Ordnance Survey
PM	Parachute Mine
PoW	Prisoner of War
RADAR	Radio Detection And Ranging
RAF	Royal Air Force
RN	Royal Navy
RNAS	Royal Naval Air Service
ROF	Royal Ordnance Factory
SAA	Small Arms Ammunition
TA	Territorial Army
TNT	Trinitrotoluene
UK	United Kingdom
UN	United Nations
USAAF	United States Army Air Force
UXB	Unexploded Bomb
UXO	Unexploded Ordnance
V	Weapons Vergeltungswaffe– Vengeance Weapons
WD	War Department
WWI	World War One
WWII	World War Two
ZAA	'Z' Anti-Air Rocket Battery

UK UXO Risk Mitigation Process



1. Executive Summary

1.1 Site Overview

The client has specified the site location as Piccadilly Gardens, Manchester, M1 1AF and is approximately centred on the National Grid Reference: SJ 84346 98309.

RMS UXO Limited, (RMS UXO) was commissioned by Civic Earth Limited to conduct an Unexploded Ordnance (UXO) Desk Study Risk Assessment for Piccadilly Gardens. The primary objective of this document is to evaluate the UXO risks present at the specified site and its surrounding areas, in compliance with the Construction Industry Research and Information Association (CIRIA) C681 guide on 'Unexploded Ordnance (UXO), a Guide for the Construction Industry'.

1.2 Proposed Works

Any details regarding future development works are currently unknown to RMS UXO.

1.3 Summary of Available Information

- During WWII, the Borough of Manchester sustained a low-medium density bombing campaign according to The National Archives statistics, with an average of 27.1 items of ordnance recorded per 1,000 acres.
- The Manchester Blitz Maps recorded within a 500m radius of the site 3 HE bombs and 57 Incendiary Bombs, the nearest of these being multiple Incendiaries adjacent to the northern boundary of the site. There is a possibility that additional HE bombs, UXBs and IB clusters may have struck certain areas of the site unrecorded due to open ground across parts of the site, masking any evidence of such strikes. It should also be noted that abandoned bombs and UXBs were recorded in the wider surrounds to the site.
- Manchester Blitz Maps reveal that structures in proximity to the site were damaged. The site itself is not recorded as being damaged, this is due to it comprising of open ground in which damage was not recorded for.
- High-resolution aerial photographs around the Manchester area in 1944 and 1948 corroborate with pre-war OS mapping and reveal the site comprised a mixture of hardstanding roads, tramlines and the open Picadilly gardens. A high-resolution aerial photograph around the Manchester area in 1999 shows the site in its modern-day composition.
- The site is anticipated to have received relatively high levels of access and observation due to its consistent usage and observation as air raid shelters. Although, during any bombing raids or after any consequent damage on site (nonvisible) the anticipated level of access may have dropped significantly.
- RMS UXO's geo-referenced database has not identified any Allied defensive features within a 1km radius of the site. Furthermore, no evidence has been located to suggest that the site formerly had any military occupation or usage that could have led to contamination with items of British / Allied ordnance. As such, the risk of LSA and SAA is negligible.
- There are HAA batteries within proximity to the site where unexploded HAA may have landed unnoticed. However, as the site was covered in hardstanding in WWII the risk associated with HAA shells is deemed negligible
- During post-war development works, there are no records of UXO being found on site.

Risk Level					
Low					
Table 1.4.1 - Risk Assessment					
Type of work	Potential Hazard	Likelihood (L)	Severity	Risk Rating	Risk Zone
Future developments	HE Bombs	1	5	5	Low
Future developments	HAA	1	5	5	Low
Future developments	IBs	1	4	4	Low

1.5 Project Specific Recommendations

The below recommendation table is provided as an overview of the methods required to adequately mitigate the risk of UXO and is in accordance with the CIRIA 681 Guidelines.

	Table 1.5.1 - MITIGATION METHOD – Low Risk Areas	YES	NO	TBC*
1	**Project Specific Risk Mitigation Strategy** A project specific overarching strategy to manage UXO project risk on more complex sites. Developed in line with the clients construction plan and methods of construction to be used.		✓	
2	**Safety Awareness Briefings** Explosive Ordnance Safety and Awareness Training is provided to site personnel to make them aware of the potential threat from UXO on the work site, what UXO might look like and what to do if suspected UXO is encountered.	✓		
3	**Site Specific Safety Instructions – Emergency Response Plan** Provides site management teams the training, information and guidance to respond to a UXO related incident. Delivered by experienced EOD qualified personnel and often employed alongside an on-call offsite EOD responder.	✓		
4	**On-call EOD Engineer – Off-site Responder** A retained service whereby a qualified EOD engineer will respond to a suspicious find on-site.			✓
5	**Onsite EOD Engineer – Support to Site Investigation** Providing Realtime on-site EOD support to site investigation activities. Delivering safety briefings & employing handheld survey instruments ahead of trial pit excavations, drilling activities etc.		✓	
6	**Onsite EOD Engineer- Watching Brief** Providing a reactive on-site support where pro-active UXO risk mitigation measures, are not practical. Supervising all open/bulk excavations, responding to suspicious finds & managing UXO related incidents.		✓	

	Table 1.5.1 - MITIGATION METHOD – Low Risk Areas	YES	NO	TBC*
7	**Non-Intrusive Survey** The collection of survey data which is then processed & interpreted offsite. The purpose of the survey is to locate sub-surface anomalies/targets which may be UXO related. Usually employed on greenfield sites or sites which have not previously been developed.		✓	
8	**Intrusive Survey** For sites where a non-intrusive UXO survey cannot reach the maximum depth of UXO risk, or the site is not suitable for a non-intrusive survey such as a brownfield site the intrusive UXO survey provides a suitable alternative. Designed to survey point specific locations where deep engineering works are being undertaken such a piling, pile clusters and sheet piled walls.		✓	
9	**Search & Clearance** For areas where a non-intrusive survey is not viable or cost effective two-man UXO Specialist teams can be deployed to conduct a manual Search & Clear operation of the site location with handheld UXO detection equipment.		✓	
10	**Data Management** Data processing, Interpretation or QA (of third-party survey data) The processing and interpretation of third-party survey data for the purpose of UXO clearance.		✓	
11	**Target Investigation** The investigation of anomalies/targets identified by previously undertaken surveys. Conducted by a two-man EOD team using handheld locators/detectors.		✓	
12	**UXO Removal & Disposal** The removal from site of safe to move or inert items of UXO for disposal off-site.			✓
13	**UXO Disposal** The disposal of UXO onsite. This may be through explosive means, burning or mechanical dismantling methods.			✓

*Note: These are mitigation options that may be required.

For the complete list of UXO risk mitigation measures available please refer to section 6 within the report.

2. Project Context

2.1 Project Rational & Scope

Objective

The objective of this assessment is to evaluate the potential for encountering unexploded ordnance (UXO) at the Piccadilly Gardens during the proposed developments. This assessment adheres to the UXO risk management process and follows CIRIA Guidelines.

Aims

The primary aim of this report is to examine the likelihood of encountering explosive ordnance during the planned works at Piccadilly Gardens. Based on the findings, risk mitigation measures will be recommended to either eliminate or minimize the threat from UXO.

Issues Addressed

The report will focus on the following key issues:

- The risk of UXO contamination at the site.
- The possibility of remaining UXO on site.
- The potential for encountering UXO during intrusive works.
- The risk of ordnance initiation.
- The consequences of initiating or encountering ordnance.
- Appropriate risk mitigation measures will be recommended, contingent on the assessed level of risk and specific site conditions.

Tasks:

- **Preliminary Site Assessment:** Conduct an initial review of historical data and previous studies related to the site.
- **Data Collection:** Gather relevant data through field surveys etc.
- **Data Analysis and Risk Assessment:** Analyse the collected data to identify UXO threats and assess risks.
- **Mitigation Planning:** Develop a set of tailored risk mitigation measures.

Responsibilities:

- RMS UXO will be responsible for all data collection, analysis, and reporting.
- The client is responsible for providing access to the site and any existing data or reports.

Limitations and Assumptions:

- The assessment is based on the data available at the time of the study.
- Any changes in project scope or site conditions must be communicated to RMS UXO for re-assessment.

3. Methodology

3.1 Methods

Risk Assessment Process

Our risk evaluation employs a systematic methodology, focusing on several crucial aspects:

- Assessing historical UXO contamination at the location.
- Assessing the likelihood – pathways for UXO to have contaminated the site.
- Assessing the likelihood of UXO being still present
- Estimating the likelihood of encountering UXO during upcoming activities.
- Assessing the chances of UXO functioning as designed.
- Understanding the implications of either encountering or UXO detonating.

To comprehensively cover these aspects, we've considered:

- Past records of bombings and military engagements.
- Conditions and historical context of the site during times of conflict.
- Post-conflict developments and any documented UXO removal efforts.
- The characteristics and scale of the planned activities.
- The variety of munitions that could have affected the area.

Sources of Information

To ensure a thorough and comprehensive report, material from the following sources has been consulted:

- The National Archives.
- Local Historical Archives.
- Relevant Government Departments.
- Information provided by client.
- RMS UXO's comprehensive historical archives and UXO geo-database.
- Open sources such as published books and internet resources.

Reliability and Limitations

As of the date this document was issued, all contained information is verified to be both current and accurate. Our databases undergo systematic updates to include the most recent data, and RMS UXO has employed rigorous precision and specialised expertise in the creation of this document.

Our risk evaluations are grounded in thorough investigation and supported by data from multiple, verified external sources. While every measure has been taken to ensure the reliability of this data, it is understood that historical records may contain inherent limitations. Consequently, RMS UXO disclaims liability for any inaccuracies present in external data sets beyond our purview.

4. Site Profile

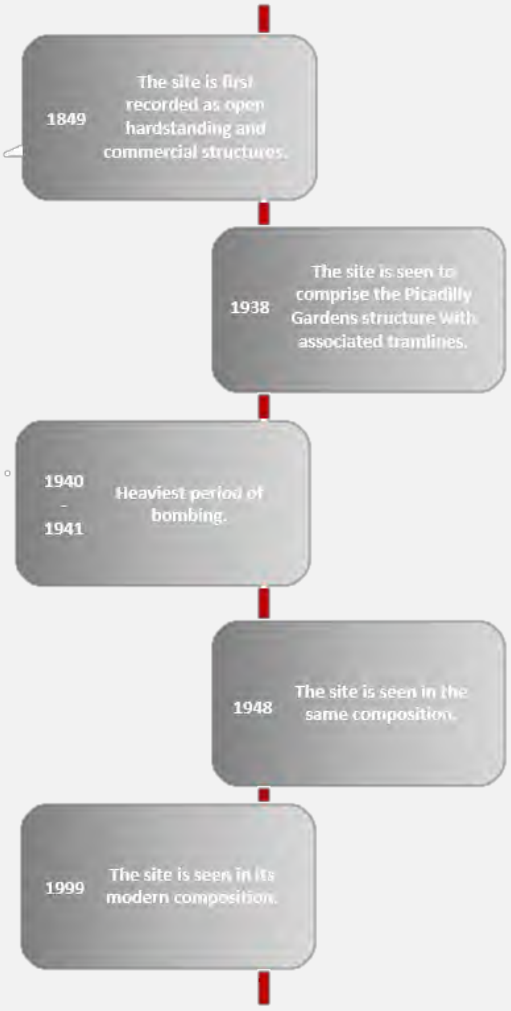
4.1 Location

The Client has defined the site as Piccadilly Gardens and is approximately centred on the National Grid Reference: SJ 84346 98309.

The site is situated in the Borough of Manchester, approximately 440m north-west of Manchester Picadilly Station.



4.2 Historical Context & Previous Studies



Military Activity & WWII Site Utilisation: The site has not been identified as an area of military activity during the war.

Bombing Decoys: Records indicate no bombing decoys in the immediate area.

Air Delivered Ordnance: Archival records confirm the deployment of HE and Incendiary bombs via aerial delivery in the vicinity of Manchester between 1940 and 1945. The Manchester Blitz Maps recorded within a 500m radius of the site 3 HE bombs and 57 Incendiary Bombs, the nearest of these being multiple Incendiaries adjacent to the northern boundary of the site.

Anti-Aircraft Defences: There are 32 Heavy-Anti-Aircraft (HAA) gun batteries located within an approximate 15 kilometres radius from the site. These pose a risk of UXO contamination primarily due to storage of ammunition and partially due to searchlights rendering them clear targets for bombing at night. The closest is located approximately 1.9km to the north of the site with the main risk associated with this site is that unexploded HAA shells can land up to an average of 15km from the firing point. However, as the site was covered in hardstanding in WWII the risk associated with HAA shells is deemed negligible

Aerial Photography: High-resolution aerial photographs around the Manchester area in 1944, 1948 corroborate with OS mapping and reveal the site comprised a mixture of hardstanding roads, tramlines and the open Picadilly gardens.

Access to the Site: The site is anticipated to have received relatively high levels of access and observation due to its consistent usage and observation as air raid shelters. Although, during any bombing raids or after any consequent damage on site (nonvisible) the anticipated level of access may have dropped significantly.

Bomb Damage Maps: Manchester Blitz Maps reveal that structures in proximity to the site were damaged. The site itself is not recorded as being damaged, this is due to it comprising of open ground in which damage was not recorded for.

Pre-WWII Maps: Historical maps dated 1938, have been consulted and show the site comprised a mixture of hardstanding roads, tramlines and the open Picadilly gardens.

Post-War Maps & Historical Records: A thorough review of post-WWII maps and historical records show post-war the site retained its pre-war composition until at least 1972 as this is the last set of available mapping.

Modern Development: Further development has been minimal and comprised the modernisation of the roads and gardens.

Intentional or Unintentional Disposal: Records indicate no instances of disposal of UXO, within the confines of site. However, due to UXO finds in the wider study area of Manchester this cannot be entirely discounted.

4.3 Proposed Work & Risk Pathways

The planned activities at Piccadilly Gardens are currently unknown. However, if future tasks are to take place, they inherently create risk pathways for potential encounters with Unexploded Ordnance. The probability of encountering UXO is contingent upon the type and depth of the intrusive work being conducted. Consequences of UXO initiation could range from critical injuries to personnel to substantial damage to equipment and project delays.

To mitigate these risks, a comprehensive approach will be employed, considering historical data, site-specific conditions, and previous UXO clearance operations. Tailored risk mitigation strategies will be developed to address the unique risk pathways associated with the proposed work. Considering the range of UXO that could exist within the site, intrusive works could introduce a high-risk scenario.

While not every UXO encountered in this manner is guaranteed to activate upon contact, the discovery of one could have severe repercussions. These could range from endangering personnel and damaging equipment to causing substantial delays in project timelines.

4.4 Potential Hazards

German Air Delivered Ordnance

To gain a comprehensive understanding of the impact of air raids on Manchester during wartime, a comprehensive examination of record sets was conducted at the National Archives and within online sources.

World War I

WWI bombs were smaller and dropped from a lower altitude, resulting in limited penetration depths. The risk of encountering unexploded WWI bombs today is very low.

World War II

Primary strategic targets in Britain included airfields, depots, docks, warehouses, wharves, railways, factories, and power stations. Later in the war the Luftwaffe bombing started to include civilian areas and sites of cultural and historical significance.

The most intensive period of bombing over London occurred in December 1940, a phase known as "The Christmas Blitz."

WWII Home Office Bombing Statistics

The table below shows the quantity of German aerial delivered bombs (excluding 1kg incendiaries and anti-personnel bombs) dropped on the area of Manchester from 1940 to 1945.

Table 4.4.1 - Record of German Ordnance Dropped on Manchester	
Area (Acres)	27255
High Explosive Bombs	712
Parachute Mines	18

Oil Bombs	7
Phosphorus Bombs	-
Fire Pots	-
V1	1
V2	-
Total	738
Bombs per 1000 Acres	27.1

During WWII, the Borough of Manchester sustained a low-medium density bombing campaign according to The National Archives statistics, with an average of 27.1 items of ordnance recorded per 1,000 acres.

Records of the 1kg incendiary and anti-personnel bombs were not routine as they were too numerous to record. Although risk from IB's is less than that of HE bombs they were still designed to harm. Anti-personnel bombs are rare to find today but are potentially more dangerous. Although statistics for these bombs were not often recorded, it is important to carefully consider when evaluating risk to personnel and equipment.

Primarily HE bombs are most commonly associated with historical military activities in the area of Manchester. These UXO items are typically found in undisturbed soil, up to a standard depth of 9m.

4.4.2	Type of UXO	Characteristics
HE	High Explosive Bombs	The most commonly deployed German High Explosive (HE) bombs during WWII were the SC50, with 97% of all bombs dropped being in the 50kg, 250kg, and 500kg range. These bombs, which comprised 40-50% explosive fill, were capable of creating entry holes as small as 20cm in diameter and could easily penetrate the ground if they failed to detonate on impact. HE bombs were the primary ordnance used by the Luftwaffe in terms of weight. Post-air raid assessments often struggled to identify unexploded ordnance (UXO) due to the extensive damage caused by detonated bombs, which sometimes rendered the small entry holes of UXO undetectable, especially in certain ground conditions. This is further complicated as Air Raid Precautions (ARP) documents highlight the risk of misidentifying large UXO damage as resulting from an exploded 50kg bomb. As a result, UXO pose a significant risk to current intrusive works.
LIB	Large Incendiary Bombs	Large Incendiary Bombs (IBs) were less common than the 1kg variants but were used more frequently than Parachute Mines and Anti-Personnel bomblets. In instances where these large IBs penetrated the ground, complete combustion did not always take place. As a result, they could remain a hazard for any intrusive works, maintaining a risk due to their potential unburnt components.
IB	1kg Incendiary Bombs	In terms of the number of weapons dropped, small IBs were the most numerous. Millions of these were dropped throughout WWII. Large IB's were not as common as the 1kg IBs, although they were more frequently deployed than PMs and AP bomblets.
PM	Parachute Mine or G Mine	These were deployed less frequently than HE and IBs due to size, cost, and the difficulty of deployment
AP	SD-2 Anti-Personnel Bomblets	Anti-Personnel (AP) bomblets, though not widely used, are generally regarded as posing a low risk to most operations in the UK. The SD2 bomblets, typically packed in containers with 6 to 108 submunitions, had limited ability to penetrate the ground. They would have likely been identified during post-raid surveys, barring instances where they landed in

4.4.2	Type of UXO	Characteristics
		water, dense vegetation, or amidst bomb rubble, where their detection might have been more challenging
V-1	Vergeltungswaffe-1, Flying Bomb, Buzz Bomb, or Doodlebug	The V-1 was a pivotal advancement in military weaponry during WWII. It holds the distinction of being the first guided missile utilized in the conflict, serving as a precursor to modern cruise missiles. This innovative design was propelled by a pulsejet, marking a significant technological breakthrough at the time
V-2	Vergeltungswaffe 2 (Reprisal Weapon 2)	The V-2 was the first ballistic missile in military history. It was predominantly employed by the German Army against Belgian and British targets during the latter stages of World War II. Notably, the V-2 holds the distinction of being the first man-made object to reach space, achieving an altitude of 189 km (117 miles) during test flights in 1944.

German Air-delivered Ordnance Failure Rate

It has been estimated that approximately 10% of the HE bombs dropped during WWII failed to explode as designed. This estimate is probably based on the statistics of wartime recovered UXBs and therefore will not have taken account of the unknown numbers of UXBs that were not recorded at the time and is probably an underestimate.

The reasons for failures include:

- Fuse or gaine malfunction due to manufacturing fault, sabotage (by forced labour) or faulty installation.
- Clockwork mechanism failure in delayed action bombs.
- Failure of the bomber aircraft to arm the bombs (e.g. charge the electrical condensers which supplied the energy to initiate the detonation sequence) due to human error or equipment defect.
- Jettison of the bomb before it was armed or from a very low altitude.

Allied Explosive Ordnance

The potential risk of encountering Allied ordnance on construction sites is particularly high in areas with a history of military activity, including munitions from military exercises, poor disposal practices, or defensive placements against enemy occupation. Such areas may contain remnants like Land Service Ammunition (LSA) and Small Arms Ammunition (SAA).

While there's no evidence of military use at the specific site in question that could lead to contamination with Allied ordnance, urban areas like this one are still at risk from unexploded Anti-Aircraft projectiles from WWII. This is particularly relevant considering the Ministry of Defence's WWII defence tactics against the Luftwaffe, which involved heavy and light anti-aircraft artillery and 'Z' batteries to protect major towns, cities, and strategic locations. The table below offers further details on these defence systems and the associated risks.

4.4.3	Type of UXO	Characteristics
LSA	Land Service Ammunition	LSA resulting from historic military activity is commonly encountered across the UK by the public and construction industry alike. Such finds are much more common in rural areas than in urban environments and can often be anticipated in areas such as former RAF stations or ranges. However, many such items are encountered entirely by surprise where the landowner or developer has no knowledge of any previous military use of the land.

4.4.3	Type of UXO	Characteristics
	Mortars	A mortar is typically a simple, lightweight, man-portable, muzzle-loaded cannon, consisting of a smooth-bore metal tube fixed to a base plate (to spread out the recoil) with a lightweight bipod mount and a sight. Mortars are typically used as indirect fire weapons for close fire support with a variety of ammunition. Mortars launch high explosive or carrier shells in high-arching ballistic trajectories.
	Grenades	A grenade is a small explosive weapon typically thrown by hand (also called hand grenade) but can also refer to a shell (explosive projectile) shot from the muzzle of a rifle (as a rifle grenade) or a grenade launcher.
	Mines	A landmine is an explosive weapon often concealed under or camouflaged on the ground and designed to destroy or disable enemy targets as they pass over or near it. Land mines are divided into two types: anti-tank mines, which are designed to disable tanks or other vehicles; and anti-personnel mines, which are designed to injure or kill people
	Rockets	During World War II, a variety of rockets were mounted on planes, including air-to-air rockets, air-to-surface rockets, and guided bombs
SAA	Small Arms Ammunition	The most common type of ordnance encountered on land used by the military are items of Small Arms Ammunition (SAA). SAA refers to the complete round or cartridge designed to be discharged from varying sized hand-held weapons such as rifles, machine guns and pistols. SAA can include bullets, cartridge cases and primers/caps
	.303	It was the standard British and Commonwealth military cartridge for rifles and machine guns (Bren Gun) from 1889 until it was replaced by the 7.62×51mm NATO in the 1950s.
	7.92mm BESA	The British military's Besa machine gun was chambered for the 7.92×57mm Mauser and was used in armoured vehicles during World War II.
	9x19mm	These rounds were issued for use with Sten guns, the Lanchester sub machine gun and the Browning Hi Power pistol and were produced in huge quantities.
	20mm Hispano	Used in the Hispano 20mm Cannon, which was installed in various fighter planes including the spitfire and the hurricane.
	20mm Oerlikon	A semi-rimmed round that was used in the 20mm Oerlikon gun, which was a key weapon in defending ships and aircraft. During WWII, twin and quadruple Oerlikon mounts were developed, both for army and for navy use

4.4.4	Type of UXO	Characteristics
AAA	Anti-Aircraft Artillery	At the start of WWII, two types of AAA guns were deployed: Heavy Anti-Aircraft Artillery (HAA), firing large shells (3.7” plus calibre) and Light Anti-Aircraft Artillery (LAA) employing smaller calibre weapons, firing .303”, 20mm and 40mm shells.
LAA	Light Anti-Aircraft	The Light Anti-Aircraft (LAA) artillery, notably the 40mm Bofors and 20mm Oerlikon guns, played a significant role in WWII, primarily targeting fast, low-flying aircraft. These mobile units were strategically repositioned along town perimeters and near key industrial sites, enhancing their operational flexibility. However, this mobility results in limited historical records regarding their exact locations. The 40mm Bofors gun, widely utilized due to its capacity to fire up to 120 projectiles per minute over a range of 1,800 meters, was a common fixture. The RAF Regiment initially employed the 20mm Oerlikon gun, capable of discharging up to 330 rounds per minute up

4.4.4	Type of UXO	Characteristics
		to 4,000 meters, before gradually integrating the Bofors gun from 1943 onwards, often maintaining a mix of both types until the end of the war. All Allied military airfields were fortified with these LAA batteries, strategically placed in isolated positions to optimize defence during aerial attacks. The primary function of these batteries was to intercept fast, low-flying German fighter bombers. The ammunition used in LAA batteries consisted of small projectiles equipped with contact fuses and either a high-explosive or incendiary charge, designed to detonate upon impact. In instances where these projectiles failed to hit their intended targets, they would fall back to the ground with their charges intact. Despite their reduced risk compared to larger ordnance, the 40mm projectiles, resembling large-calibre small arms ammunition, still pose a considerable safety concern.
HAA	Heavy Anti-Aircraft	Heavy Anti-Aircraft (HAA) batteries, equipped with large guns like the 3.7" Quick Firing (QF), were strategically positioned for engaging high-flying bomber aircraft. These installations, often permanent gun emplacements, were a key component of the UK's aerial defence during WWII. In addition to firing large High Explosive (HE) projectiles, triggered by various fuses including impact, area and time delay mechanisms, local ammunition caches were commonly situated near strategic location like defended roadblocks or pillboxes. The closest HAA Batteries to the site in question is located approximately 1.9 kilometres to the north-east, yet their effective range was up to 15km. This proximity and operational range underscore the potential risk of encountering Allied ordnance, especially in areas with a historical military presence.
ZAA	Z (Rocket) Batteries:	A Z-Battery comprised a grid formation of 64 rocket projectors which fired 2" and later 3" Unrotated Projectile (UP) rockets to a maximum altitude of 5,800m; a ground range of some 9,000m. They were deployed in cities all around the UK from 1941 and proved to be an effective addition to the existing AA guns. The rockets measured 0.9m (2") and 1.8m (3") in length with four stabilising fins at the base and were fitted with 3.5kg or 8.2kg HE warheads. The larger warhead had an effective airborne blast radius of up to 20m. Some variants deployed a form of aerial mine described as a "small yellow bomb" which was designed to detach from the rocket at height and descend on a parachute with the objective of becoming snagged on target aircraft and then detonating.

4.5 Site Geology & Bomb Penetration Depth

Assessing ground conditions is a key factor in determining both the maximum penetration depths of unexploded ordnance (UXO) and the likelihood of hidden munitions.

Should there be any changes in site investigation protocols, construction methods, or focus areas within the project site, immediate communication with RMS UXO is advised. This action allows for a timely reassessment of existing UXO risks and the adjustment of risk mitigation plans. Certain soil and rock conditions, such as iron-rich or mineralised soils, can impact the effectiveness of UXO risk reduction methods like magnetometer surveys. Identifying the source of altered soil types is essential for accurately assessing the ground state at the time of potential UXO contamination. This information aids

in fine-tuning the calculations for average and maximum bomb penetration depths, thereby enabling more targeted risk reduction strategies in line with ALARP guidelines.

Table 4.5.1 - GROUND TYPE	DEPTH
Made Ground	0.0 – 3.2m
Brown, grey very stiff mottled boulder clay	3.2 – 6.25m
Stiff brown varied clay	6.25 – 7.7m
Stiff to very stiff brown sandy boulder clay	7.7 – 13.5 (borehole continues)

Following a review of the BGS borehole log "SJ89NW342 – BARCLAY'S BANK, YORK STREET. 3 BH'S (located 130m south-west of the site), RMS UXO have been able to provide an estimate of the likely maximum bomb penetration depth:

The estimated average bomb penetration depths accounting for ground composition are:

500kg	<8m

The estimated bomb penetration depth for 50kg and 250kg bombs would be expected to be at shallower depths.

The calculation of bomb penetration depths involves several key factors.

These factors include the bomb being dropped from a significant height, leading to an impact speed of 260 m/s from heights above 5,000m. The angle of impact with the ground varies between 10 and 15 degrees from the vertical, and the bomb remains stable during its descent and upon ground penetration. Additionally, no slowing mechanisms are attached to the bomb, and the soil composition is consistent. When released from a high altitude, the bomb generally enters the ground at an angle of 10 to 15 degrees to the vertical. It maintains this angle until its momentum is nearly depleted, at which point it shifts suddenly to a horizontal position before coming to rest. The term 'offset' refers to the gap between the centre of the entry hole and the bomb's final position. Significant sideways movement from the initial entry path is not uncommon. For attacks from lower altitudes, the angle of impact can be 45 degrees or more, often resulting in increased lateral movement during penetration.

Determining the average impact velocity of World War II bombs like the 50kg, 250kg, and 500kg high-explosive (HE) bombs is not straightforward due to several factors, including the altitude from which they were dropped, their design/shape, and the mediums they passed through.

4.6 Lateral Off-set or 'J-Curve'

The lateral off-set, or 'J-curve' effect, is an important aspect of bomb trajectory, primarily influenced by the bomb's interaction with the ground upon impact. Bombs would typically fall nose-first and result in a varied deceleration between the nose and tail upon contact with the ground with the nose slowing down before the tail. This differential in speeds leads to a notable shift in trajectory and often results in the bomb either achieving a horizontal orientation or, in certain scenarios, curving upward in a J-shaped trajectory.

The horizontal distance between the bomb's entry hole and its final resting position is known as the offset and is typically a distance of about one third of the bombs penetration depth for bombs dropped from high altitudes.

5. Risk Analysis

5.1 Analysis

For each type of investigative method that might be used, RMS UXO has carried out unique calculations to rate the risks. The risks associated with encountering and activating UXO can vary widely. These variations depend on several factors, including the amount of high-explosive material in the UXO and the intensity with which it is encountered. Ground investigation specific to this research location have been prepared to help analyse these risks, as the likelihood of encountering UXO can differ based on the nature of the intrusive activities being conducted.

5.2 Risk Levels and Interpretation

Risk Rating

RMS UXO's Risk Assessment gauges and categorises the dangers presented by the most likely hazardous items during various operations on the site. The Hazard Assessment Score is calculated by evaluating the likelihood of coming across UXO and the potential outcomes of triggering it.

Firstly, the probability of encountering UXO (PE) has been considered and rated for the different construction techniques, as detailed below. The probability of detonating a UXO (PD) has been considered and rated for the different construction techniques, as detailed below.

Table 5.2.1 - Probability of Encounter (PE)	Rating
Highly likely and frequent.	5
Probable and likely to happen.	4
Occasional, increased chance or probability.	3
Remote, unlikely to happen but could	2
Improbable, highly unlikely	1
Impossible	0

Table 5.2.2 - Probability of Detonation (PD)	Rating
Highly likely and frequent.	5
Probable and likely to happen.	4
Occasional, increased chance or probability.	3
Remote, unlikely to happen but could.	2
Improbable, highly unlikely.	1
Impossible	0

Next, the probability of encountering and detonating the UXO (PE x PD) has been used to generate an overall likelihood rating (L).

Each potential risk has been assessed separately to generate the overall likelihood of encountering and detonation a UXO:

For the purpose of this risk assessment, the following values have been applied;

- German HE Bombs - PE= 2 and PD= 2. Therefore, the overall likelihood (L) =4.
- IBs - PE= 2 and PD= 2. Therefore, the overall likelihood (L) = 4.

- HAA - PE= 2 and PD= 2. Therefore, the overall likelihood (L) = 4.

Table 5.2.3 L = PE x PD	Likelihood of Encounter and Detonation	Rating
21 to 25	Frequent, highly likely, almost certain.	5
16 to 20	Probable, more likely to happen than not.	4
10 to 15	Occasional, increased chance or probability.	3
6 to 9	Remote, unlikely to happen but could.	2
1 to 5	Improbable, highly unlikely.	1
0	Impossible	0

L ranges from 25, a certainty of UXO being encountered and detonated on the site by engineering activity, to 0, a certainty that UXO does not occur on the site and will not be detonated by engineering activity.

The likelihood of encountering and detonating UXO during site works is multiplied by the severity of such an event occurring (L x S), in order to provide a risk level using the following matrix.

Table 5.2.4 - Severity (S)	Rating
Multiple fatalities	5
Major injury, long term health issues, single fatality	4
Minor injury, short term health issues, no fatalities.	3
First aid case but no lost time or ill health.	2
Minor injuries, no first aid.	1
No injuries.	0

This risk matrix is underpinned by historical data, site-specific conditions, and expert analysis. The likelihood and severity ratings assigned are not just theoretical estimates but are grounded in a detailed understanding of the site's past and present characteristics. These factors combine to form a risk profile that guides our UXO mitigation strategy and ensures all necessary precautions are tailored to the site's unique context.

The final risk assessment for the site is given in Table 5.2.6.

Table 5.2.5	Severity (s)					
Likelihood (L)		1	2	3	4	5
	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5

Table 5.2.6 - Risk Assessment Table					
Type of work	Potential Hazard	Likelihood (L)	Severity	Risk Rating	Risk Zone
Future developments	HE Bombs	1	5	5	Low
Future developments	HAA	1	5	5	Low
Future developments	IBs	1	4	4	Low

6. Risk Mitigation & Recommendations

6.1 Recommended Risk Mitigation Measures

The recommendation table below is provided as an overview of the methods required to adequately mitigate the risk of UXO and is in accordance with the CIRIA 681 Guidelines. All of the methods listed are acceptable methods of mitigating explosive risk but do have limitations and should be employed only if viable, interpretable data can be collected.

This is particularly true of intrusive surveys, carried out on sites which are not suitable for this type of method, be it as a result of the underlying strata not allowing sufficient depth penetration or the magnetic environment being too high for the sensors to adequately detect a bomb at the distances from the probe as specified. There is also a reluctance by UXO contractors to raise these constraints once identified on site as it is in their interest to have their survey rigs fully employed.

As this is a direct conflict of interest, RMS UXO has made the decision to not own survey rigs and offer this service, when appropriate, in partnership with UK market leading geotechnical providers – combining our UXO knowledge and our partners ground engineering expertise.

	Table 6.1.1 - MITIGATION METHOD – Low Risk Areas	YES	NO	TBC*
1	**Project Specific Risk Mitigation Strategy** A project specific overarching strategy to manage UXO project risk on more complex sites. Developed in line with the clients construction plan and methods of construction to be used.		✓	
2	**Safety Awareness Briefings** Explosive Ordnance Safety and Awareness Training is provided to site personnel to make them aware of the potential threat from UXO on the work site, what UXO might look like and what to do if suspected UXO is encountered.	✓		
3	**Site Specific Safety Instructions – Emergency Response Plan** Provides site management teams the training, information and guidance to respond to a UXO related incident. Delivered by experienced EOD qualified personnel and often employed alongside an on-call offsite EOD responder.	✓		
4	**On-call EOD Engineer – Off-site Responder** A retained service whereby a qualified EOD engineer will respond to a suspicious find on-site.			✓
5	**Onsite EOD Engineer – Support to Site Investigation** Providing Realtime on-site EOD support to site investigation activities. Delivering safety briefings & employing handheld survey instruments ahead of trial pit excavations, drilling activities etc.		✓	
6	**Onsite EOD Engineer- Watching Brief** Providing a reactive on-site support where pro-active UXO risk mitigation measures, are not practical. Supervising all open/bulk excavations, responding to suspicious finds & managing UXO related incidents.		✓	
7	**Non-Intrusive Survey** The collection of survey data which is then processed & interpreted offsite. The purpose of the survey is to locate sub-surface anomalies/targets which may be UXO related. Usually employed on greenfield sites or sites which have not previously been developed.		✓	

	Table 6.1.1 - MITIGATION METHOD – Low Risk Areas	YES	NO	TBC*
8	**Intrusive Survey** For sites where a non-intrusive UXO survey cannot reach the maximum depth of UXO risk, or the site is not suitable for a non-intrusive survey such as a brownfield site the intrusive UXO survey provides a suitable alternative. Designed to survey point specific locations where deep engineering works are being undertaken such a piling, pile clusters and sheet piled walls.		✓	
9	**Search & Clearance** For areas where a non-intrusive survey is not viable or cost effective two-man UXO Specialist teams can be deployed to conduct a manual Search & Clear operation of the site location with handheld UXO detection equipment.		✓	
10	**Data Management** Data processing, Interpretation or QA (of third-party survey data) The processing and interpretation of third-party survey data for the purpose of UXO clearance.		✓	
11	**Target Investigation** The investigation of anomalies/targets identified by previously undertaken surveys. Conducted by a two-man EOD team using handheld locators/detectors.		✓	
12	**UXO Removal & Disposal** The removal from site of safe to move or inert items of UXO for disposal off-site.			✓
13	**UXO Disposal** The disposal of UXO onsite. This may be through explosive means, burning or mechanical dismantling methods.			✓

*Note: These are mitigation options that may be required.

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RMS UXO has consulted its internal databases, as well as reference books and archived information, to gather relevant data. Additionally, historic mapping and aerial photography were sourced from the National Archives and other relevant government offices. Information has also been obtained from local county councils and record offices.

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This report has been constructed with professional thought and care by RMS UXO. Historical data has been meticulously collected and reviewed from third party sources. The validity of this information has been checked to the best of our ability, but RMS UXO holds no accountability for errors resulting from missing or incomplete information. Moreover, despite best efforts to compile a comprehensive historical dataset RMS UXO disclaims responsibility for any subsequent modifications to risk evaluations or mitigation proposals that may be necessitated by the discovery of additional information post factum.

SITE LOCATION

A-1





Approx. Site Boundary	—

RMS UXO

Produced by and Copyright to RMS UXO Limited

CLIENT:	PROJECT:	DATE:
Civic Earth Limited	Piccadilly Gardens	27/05/2026
SOURCE: Google Earth, OpenStreetMap	**REPORT REFERENCE:** INO6440	N

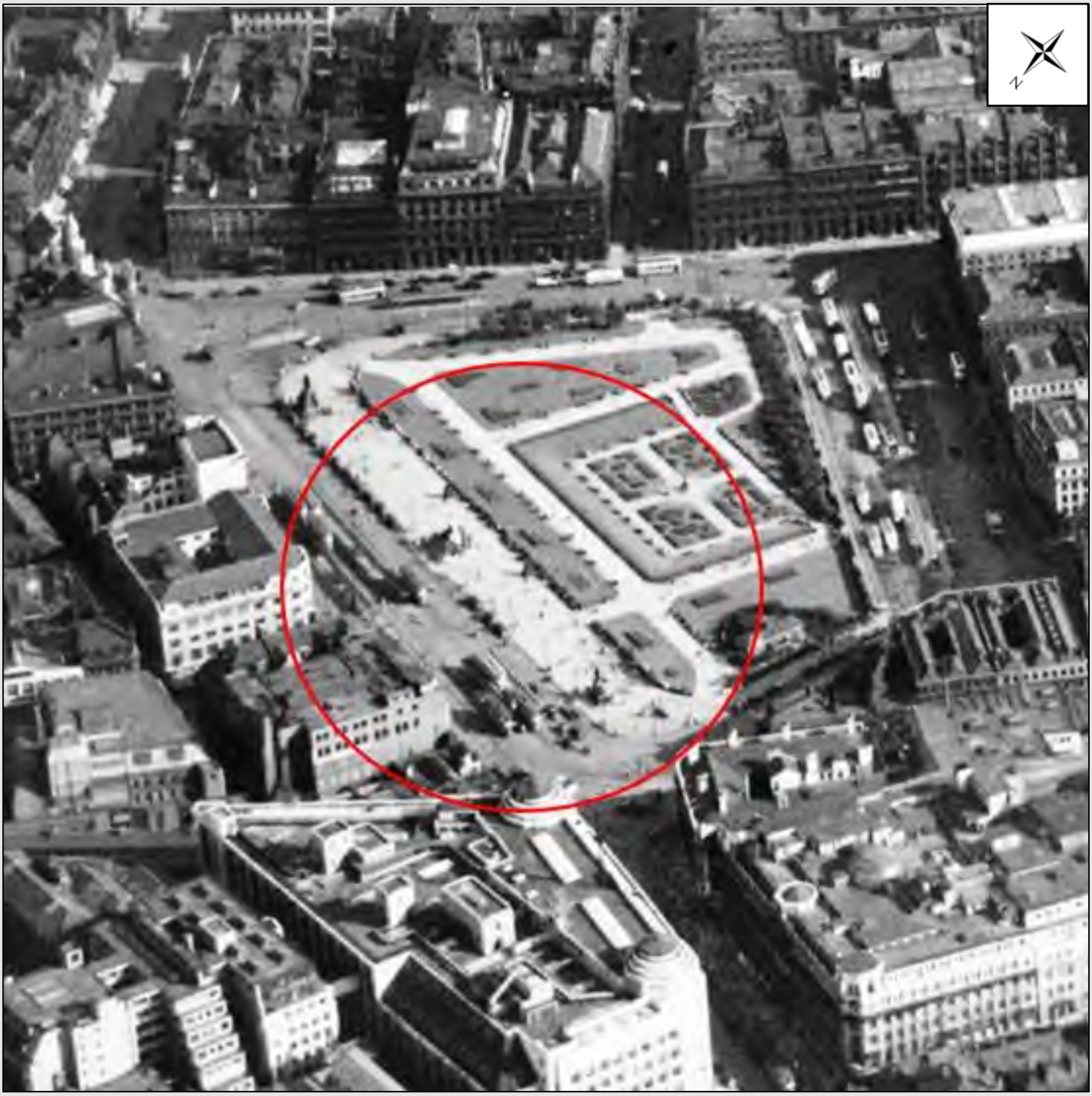


Approx. Site Boundary	

RMS UXO

Produced by and Copyright to
RMS UXO Limited

CLIENT:	PROJECT:	DATE:
Civic Earth Limited	Piccadilly Gardens	27/05/2026
SOURCE:	REPORT REFERENCE:	N
OpenStreetMap	INO6440	



Manchester - 1937

Approx. Site Boundary	

RMS UXO

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RMS UXO Limited

CLIENT:	PROJECT:	DATE:
Civic Earth Limited	Piccadilly Gardens	27/05/2026
SOURCE:	REPORT REFERENCE:	
Historic England	INO6440	



Manchester – May 1944



Manchester – May 1948

Approx. Site Boundary	

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SOURCE:	REPORT REFERENCE:	
Historic England	INO6440	

MANCHESTER BLITZ MAP – BOMB STRIKES

A-5



Approx. Recorded IB Strike Locations	
Approx. Recorded HE Bomb Strike Locations	
Approx. Site Boundary	

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SOURCE: Manchester Evening News, University of Manchester	**REPORT REFERENCE:** INO6440		N

MANCHESTER BLITZ MAP – DAMAGE

A-6



Approx. Recorded Demolished Buildings	
Approx. Recorded Major Damage	
Approx. Site Boundary	

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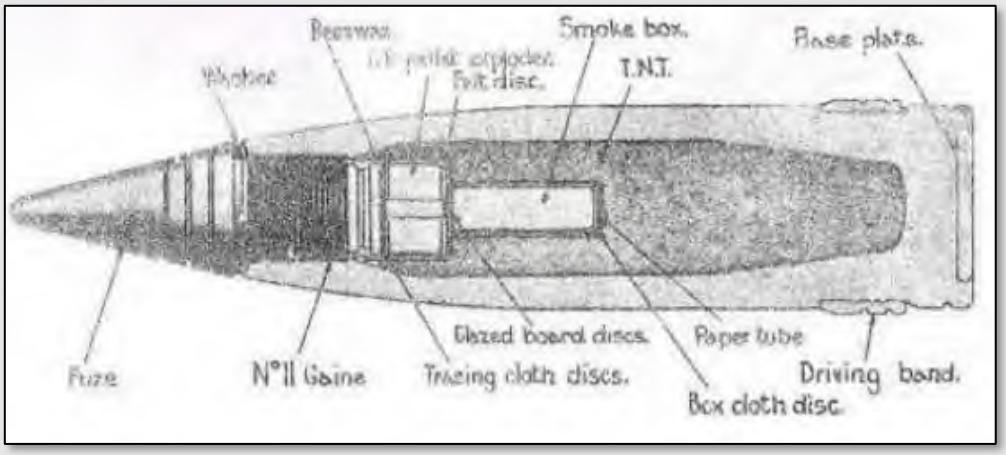
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SOURCE: Manchester Evening News, University of Manchester	**REPORT REFERENCE:** INO6440		N

3.7 Inch QF Anti-Aircraft Projectile







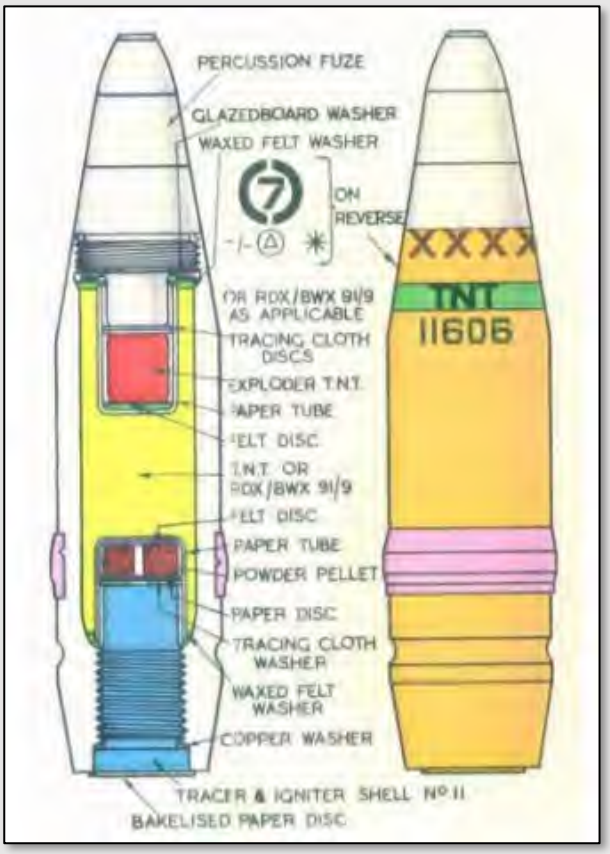
Total Weight	Projectile Weight 28lb (12.6 kg) Explosive Weight 2.52lbs
Dimensions	3.7in x 14.7in (94mm x 360mm) Rate of Fire 10 to 20 rounds per minute
Fuse Type	Mechanical Time Fuze
Use	The 3.7in AA Mks 1-3 were the standard Heavy Anti-Aircraft guns of the British Army. Ceiling 30,000ft to 59,000ft

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40mm Bofors Projectile







Total Weight	Projectile Weight 1.96lb (0.86kg) Explosive Weight 300g (0.6lb)
Dimensions	Dimensions 40 x 180mm
Fuse Type	Impact Fuze
Ceiling	23,000ft (7000m)
Remarks	Light quick fire high explosive antiaircraft projectile. Each projectile fitted with small tracer element. If no target hit, shell would explode when tracer burnt out. Designed to engage aircraft flying below 2,000ft

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3in Unrotated Projectile (UP) Anti-Aircraft Rocket (“Z” Battery)

This antiaircraft artillery, designed specifically for the Royal Navy, saw significant deployment in the initial stages of the Second World War. Known as the UP, it was not only utilised at sea but also found applications on land through single and 128-round launchers, commonly referred to as Z Batteries. The ammunition for this system features a cylindrical steel casing that tapers towards the bottom, equipped with external threading for secure attachment to the rocket motor's shell ring







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SC 50

Bomb Weight: 40-54kg (110-119lb)

Explosive Weight: c25kg (55lb)

Fuze Type: Impact fuze/electro-mechanical time delay fuze

Bomb Dimensions:1,090 x 280mm (42.9 x 11.0in)

Body Diameter: 200mm (7.87in)

Use: Against lightly damageable materials, hangars, railway rolling stock, ammunition depots, light bridges and buildings up to three stories.

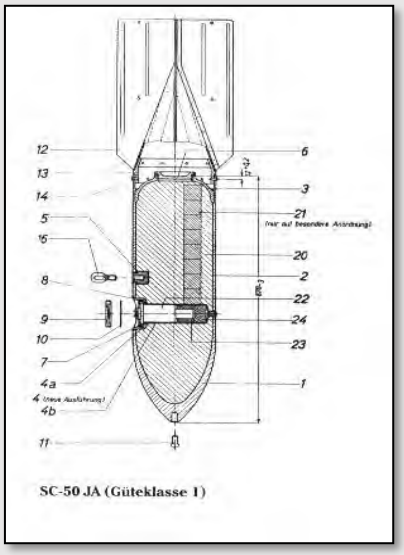
Remarks: The smallest and most common conventional German bomb. Nearly 70% of bombs dropped on the UK were 50kg.



50kg bomb, London Docklands



Minus tail section



SC 250

Bomb weight: 245-256kg (540-564lb)

Explosive weight: 125-130kg (276-287lb)

Fuze type: Electrical impact/mechanical time delay fuze.

Post-1943 – Type 50 (Y) electric anti-disturbance fuze

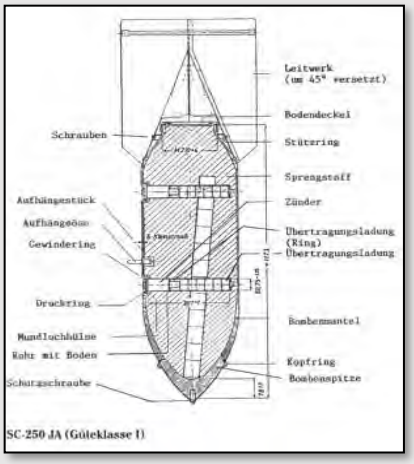
Bomb dimensions: 1640 x 512mm (64.57 x 20.16in)

Body diameter: 368mm (14.5in)

Use: Against railway installations, embankments, flyovers, underpasses, large buildings and below-ground installations.



250kg bomb, Hawkinge



SC 500

Bomb weight: 480-520kg (1,058-1,146lb)

Explosive weight: 250-260kg (551-573lb)

Fuze type: Electrical impact/mechanical time delay fuze.

Post-1943 – Type 50 (Y) electric anti-disturbance fuze

Bomb dimensions: 1957 x 640mm (77 x 25.2in)

Body Diameter: 470mm (18.5in)

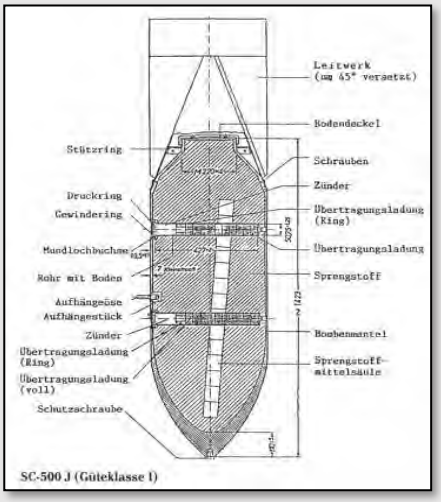
Use: Against fixed airfield installations, hangars, assembly halls, flyovers, underpasses, high-rise buildings and below-ground installations.



50kg bomb included for size comparison (see above)



500kg bomb, Felixstowe beach, April 2008



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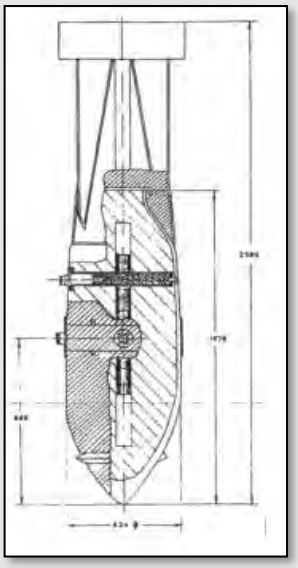
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SC 1000

Bomb weight: 993-1,027kg (2189-2,264lb)
Explosive weight: 530-590kg (1,168-1,300lb)
Fuze type: Electrical impact fuze.
Bomb dimensions: 2,580 x 654mm (101.6 x 2.5in)
Body diameter: 654mm (25.75in)
Use: Against unarmoured sea and land targets
Remarks: Known as the 'Hermann'



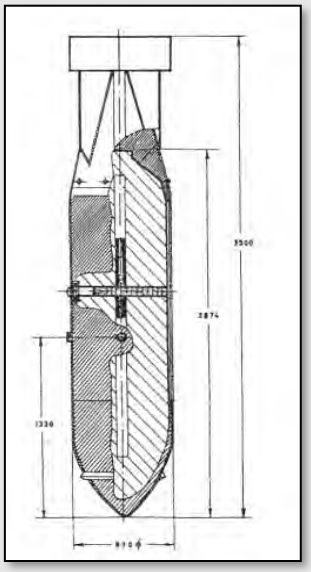


SC 1800

Bomb weight: 1,767-1,879kg (3,896-4,142lb)
Explosive weight: 1,000kg (2,205lb)
Fuze Type: Electrical impact fuze
Bomb Dimensions: 3500 x 670mm (137 x 26in)
Use: Against building complexes and large merchant vessels
Remarks: Known as the 'Satan'

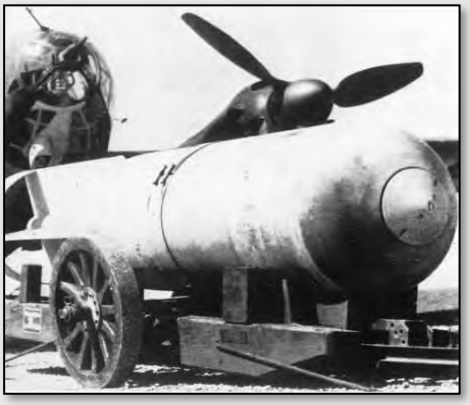


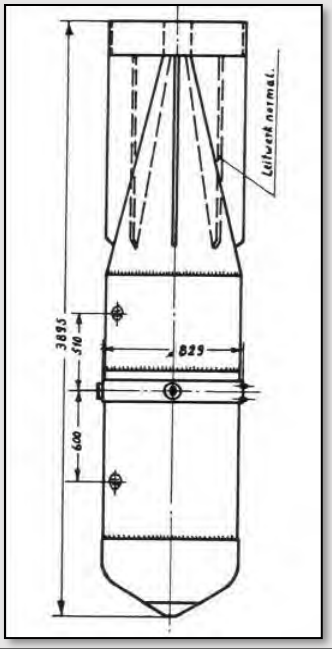
1800kg bomb, Bristol, 1941



SC 2500

Bomb Weight: Bomb weights have been quoted as 1,950kg (4,300lb) and 2,500kg (5,512lb)
Explosive Weight: 1,700kg (3,748lb)
Fuze Type: Electrical impact fuze
Bomb Dimensions: 3,895 x 829mm (153.3 x 32.6in)
Body Diameter: 829mm (32.6in)
Use: Against building complexes and merchant vessels.
Remarks: The SC 2500 has an aluminium body with a welded head and tailpiece. Known as the 'Max'. Only a limited number were deployed.





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1kg Incendiary Bomb

Bomb weight: 1.0 and 1.3kg (2.2 and 2.87lb)

Filling: 680gm (1.3lb) Thermite

Fuze type: Impact fuze

Bomb dimensions: 350 x 50mm (13.8 x 1.97in)

Body diameter: 50mm (1.97in)

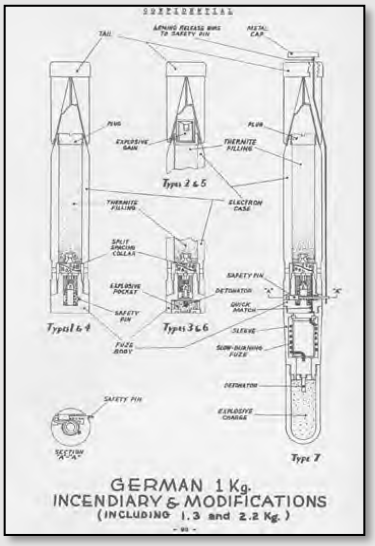
Use: As incendiary – dropped in clusters against towns and industrial complexes

Remarks: Jettisoned from air-dropped containers. Magnesium alloy case. Sometimes fitted with high explosive charge





1. Scaffold pipe
2. Incendiary 1kg bomb
3. Incendiary bomb recently found on site in UK



C-50 A Phosphorous Bomb

Bomb weight: 41kg (90.4lb)

Explosive weight: 0.03kg (0.066lb)

Incendiary filling: 12kg (25.5lb) liquid filling with phosphor igniters in glass phials

Fuze type: Electrical impact fuze

Bomb dimensions: 1,100 x 2800mm (43.3 x 11in)

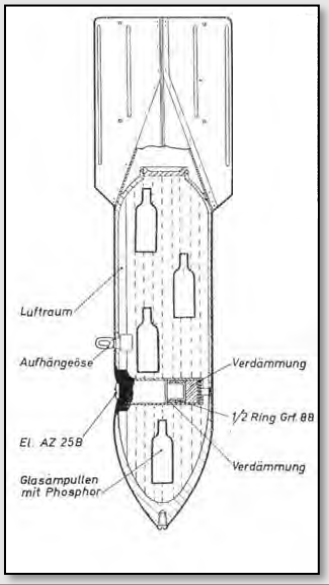
Body diameter: 200mm (2.87in)

Use: Against all targets where an incendiary effect is to be expected

Remarks: Early fill was a phosphorous/carbon disulphide incendiary mixture



Phosphorous Bomb, M25/A2, Kent



Flam C-250 'Oil Bomb'

Bomb weight: 125kg (276lb)

Explosive weight: 1kg (2.2lb)

Flammable weight: 74kg (163lb)

Filling: Mixture of 30% petrol and 70% crude oil

Fuze type: Super-fast electrical impact fuze

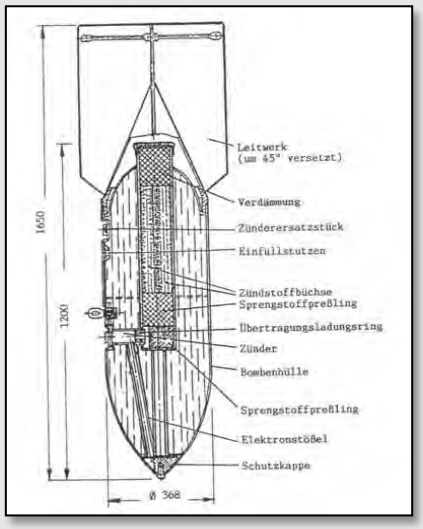
Bomb dimensions: 1,650 x 512.2mm (65 x 20.2in)

Body diameter: 368mm (14.5in)

Use: Often used for surprise attacks on living targets, against troop barracks and industrial installations

Remarks: Thin casing – not designed for ground penetration





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Appendix G – Risk Assessment Methodology

Civic Earth Risk Assessment Methodology

Civic Earth's risk assessment methodology is based on the CIRIA C552 (2001) Contaminated Land Risk Assessment – A Guide to Good Practice[1].

The assessment approach is to quantify the potential risk at Phase 1 Stage via risk estimation and risk evaluation. This defines the overall risk category that can be used to identify likely actions to address the potential risk or undertake further risk evaluation.

The methodology is a qualitative approach and is undertaken for each identified potential contaminant linkage (source-pathway-receptor) identified for the site in accordance with the October 2020 Land Contamination Risk Management Guidance (LCRM)[2].

The methodology requires the classification of the following:

- The magnitude of the consequence (severity) of a risk occurring; and
- The magnitude of the probability (likelihood) of a risk occurring.

The potential consequences of contamination risks occurring at a site are classified in accordance with Table 1 below, which is based on CIRIA guidance[1].

Table 1: Classification of Consequence Ratings

Classification	Definition of Consequence	Examples
Severe	Short-term (acute) risks to human health. Short-term (acute) risk of pollution of sensitive water resource or ecosystem Catastrophic damage to crops/ building/ property/ infrastructure, including off-site soils	High concentration of cyanide on the surface of an informal recreation area Major spillage of contaminants from site into controlled waters Explosion causing building collapse
Medium	Long-term (chronic) risks to human health Long-term (chronic) pollution of sensitive water resource Significant change in an ecosystem/contamination of off-site soils	Concentrations of a contaminant on site exceeding the generic or site specific assessment criteria Leaching of contaminants from a site into a major or minor aquifer Death of species within a designated nature reserve
Mild	Pollution of non-sensitive water resource Significant damage to crops/ buildings/ property /infrastructure Damage to an ecosystem or sensitive buildings/structures/services	Pollution of a non-classified groundwater Damage to a building rendering it unsafe to occupy (e.g. foundation damage resulting in instability)
Minor	Easily preventable non-permanent effects Harm, although not necessarily significant harm, which may result in financial loss or expenditure resolve Easily repairable effects of damage to building/ structures/ services	Presence of contamination at concentrations which require the use of personal protective equipment during site work Loss of plants in a landscaping scheme/discolouration of concrete

The potential probability of the risks being realised are classified in accordance with the ratings set out in Table 2, which are based on CIRIA guidance[1]. It should be noted that where a potential contaminant linkage has not been identified the likelihood is considered to be negligible.

[1] CIRIA, (2001). Contaminated Land Risk Assessment. A Guide to Good Practice. CIRIA C552.

[2] Environment Agency (2020). *Land Contamination Risk Management (LCRM)*.

Table 2: Classification of Probability Ratings

Classification	Definition of Consequence
High likelihood	There is a contaminant linkage and an event that either appears very likely in the short term and almost inevitable in the long term, or there is evidence at the receptor that an event has occurred
Likely	There is a contaminant linkage and all the elements are present in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term
Low likelihood	There is a contaminant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place and is less likely in the short term
Unlikely	There is a contaminant linkage but circumstances are such that it is improbable that an event would occur even in the very long term

In accordance with C552, the risk classifications for each potential contaminant linkage are classified in accordance with the matrix of consequence and probability set out in Table 3. The definitions for the risk classifications are presented in Table 4.

Table 3: Risk Classification Matrix

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Very Low
	Unlikely	Moderate/Low	Low	Very Low	Very Low

Table 4: Risk Classification Definitions

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

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