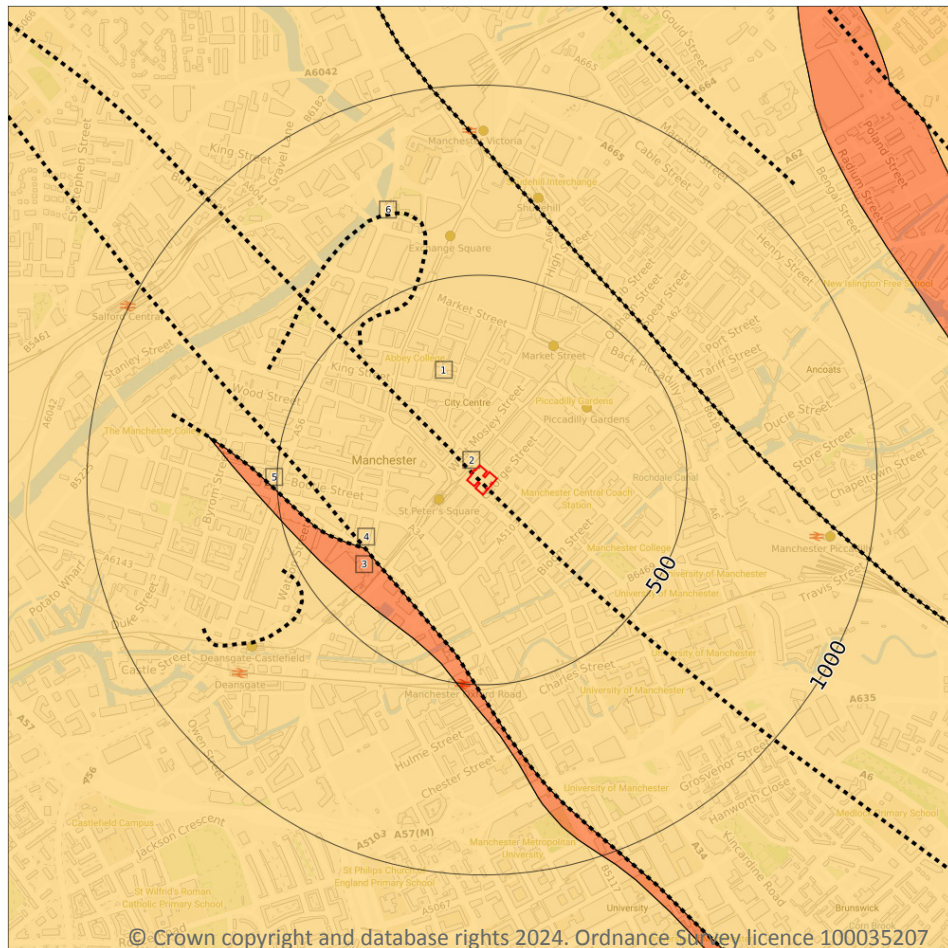


Geology 1:50,000 scale - Bedrock



— 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 117 >](#)

ID	Location	LEX Code	Description	Rock age
1	On site	CHES-SDST	CHESTER FORMATION - SANDSTONE	OLENEKIAN
3	321m SW	MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE	-

This data is sourced from the British Geological Survey.



15.9 Bedrock permeability (50k)

Records within 50m

1

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

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

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

4

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.

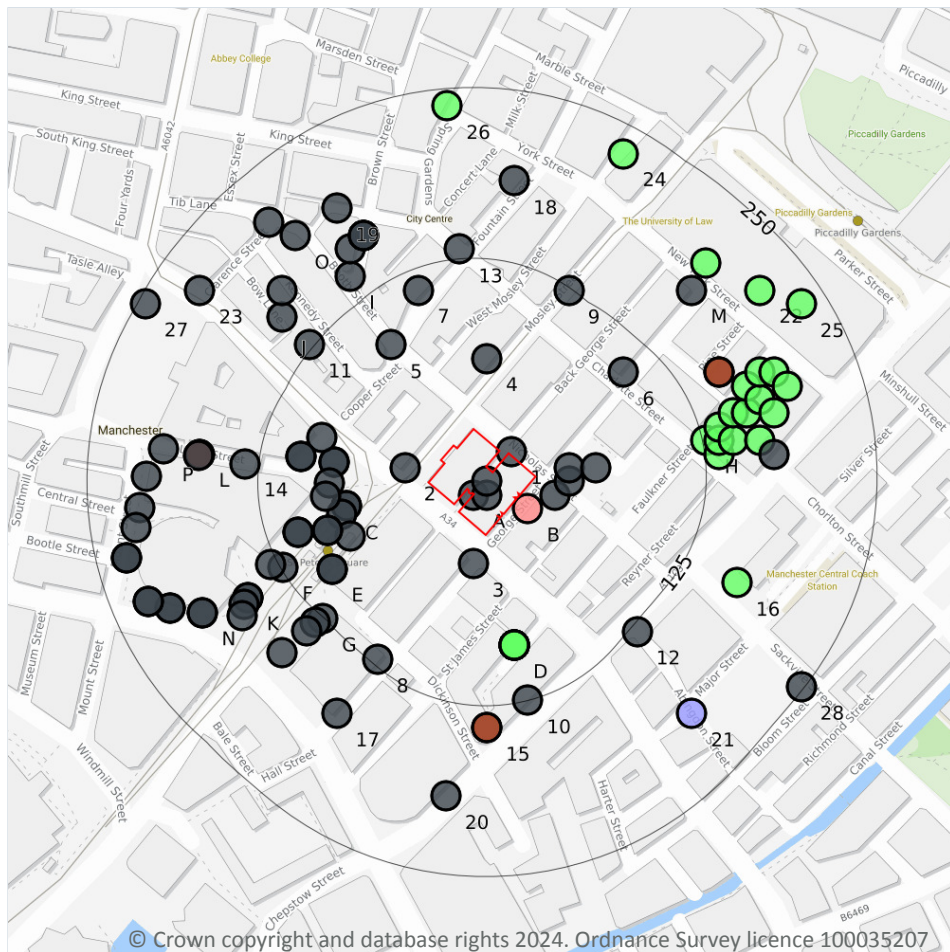
Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 117 >](#)

ID	Location	Category	Description
2	On site	FAULT	Fault, inferred
4	321m SW	FAULT	Fault, inferred
5	322m SW	FAULT	Fault, inferred
6	444m NW	LANDFORM	Approximate margin of buried (superficial deposit-filled) channel or valley

This data is sourced from the British Geological Survey.



16 Boreholes



- Site Outline**
- Search buffers in metres (m)**
- Confidential
 - 0 - 10m
 - 10 - 30m
 - 30m+
 - Unknown

16.1 BGS Boreholes

Records within 250m

117

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 119](#) >

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	On site	384070 398010	ATHENAEUM LINK BH1	-	Y	N/A
A	On site	384080 398010	ATHENAEUM LINK BH2	-	Y	N/A
A	On site	384080 398020	ATHENAEUM LINK BH3	-	Y	N/A



ID	Location	Grid reference	Name	Length	Confidential	Web link
1	2m NE	384098 398042	G.P.O. MANCHESTER	-	Y	N/A
B	11m SE	384110 398000	POST OFFICE GEORGE ST. MANCHESTER	196.6	N	1045475 ↗
B	20m E	384130 398010	GEORGE STREET SEWER REPLACEMENT SCHEME 3	-	Y	N/A
2	20m W	384020 398030	MOSLEY STREET SEWER RECONSTRUCTION 3	-	Y	N/A
3	23m S	384070 397960	GEORGE STREET SEWER REPLACEMENT SCHEME 4	-	Y	N/A
B	25m E	384140 398020	CHINESE CAR PARK MANCHESTER 1A	-	Y	N/A
B	25m E	384140 398030	CHINESE CAR PARK MANCHESTER 2	-	Y	N/A
B	45m E	384160 398030	CHINESE CAR PARK MANCHESTER 3	-	Y	N/A
4	53m N	384080 398110	MOSLEY STREET SEWER RECONSTRUCTION 2	-	Y	N/A
C	63m W	383977 398002	St Peter's Square, Manchester TP142	-	Y	N/A
C	63m W	383977 398002	St Peter's Square, Manchester PC142	-	Y	N/A
C	67m W	383974 397996	St Peter's Square, Manchester BH102	-	Y	N/A
C	70m SW	383980 397980	MOSLEY STREET SEWER RECONSTRUCTION 4	-	Y	N/A
C	71m W	383968 398034	St Peter's Square, Manchester TP141	-	Y	N/A
C	71m W	383968 398034	St Peter's Square, Manchester TP141(A)	-	Y	N/A
C	72m W	383965 398019	St Peter's Square, Manchester BH101	-	Y	N/A
C	76m W	383962 398009	St Peter's Square, Manchester PC121	-	Y	N/A
C	82m W	383963 397984	St Peter's Square, Manchester TP144	-	Y	N/A
C	82m W	383963 397984	St Peter's Square, Manchester PC144	-	Y	N/A
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 10	11.0	N	1045859 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 7	10.3	N	1045856 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 1	11.0	N	1045850 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 12	10.8	N	1045861 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 3	11.5	N	1045852 ↗



ID	Location	Grid reference	Name	Length	Confidential	Web link
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 5	11.5	N	1045854 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 2	10.5	N	1045851 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 6	10.2	N	1045855 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 9	9.8	N	1045858 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 11	11.0	N	1045860 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 4	10.2	N	1045853 ↗
D	84m S	384100 397900	PORTLANDS STREET NW TELECOMS BOARD HQ 8	10.5	N	1045857 ↗
C	85m W	383959 398052	St Peter's Square, Manchester PC229	-	Y	N/A
5	86m NW	384010 398120	CLARENCE STREET / BOOTH STREET / BOW LANE 4	-	Y	N/A
E	95m SW	383967 397956	St Peter's Square, Manchester TP143	-	Y	N/A
E	95m SW	383967 397956	St Peter's Square, Manchester TP143(A)	-	Y	N/A
C	95m W	383944 398038	St Peter's Square, Manchester TP248(A)	-	Y	N/A
C	95m W	383944 398038	St Peter's Square, Manchester TP248	-	Y	N/A
6	100m NE	384180 398100	GEORGE STREET SEWER REPLACEMENT SCHEME 2	-	Y	N/A
C	102m W	383942 397983	St Peter's Square, Manchester BH103A	-	Y	N/A
C	102m W	383942 397983	St Peter's Square, Manchester BH103	-	Y	N/A
7	109m N	384030 398160	FOUNTAIN STREET MAIN DRAINAGE 1	-	Y	N/A
8	121m SW	384000 397890	GEORGE STREET SEWER REPLACEMENT SCHEME 5	-	Y	N/A
F	123m SW	383931 397957	St Peter's Square, Manchester PC221	-	Y	N/A
9	123m NE	384140 398160	MOSLEY STREET SEWER RECONSTRUCTION 1	-	Y	N/A
10	125m S	384110 397860	PORTLAND STREET 3	-	Y	N/A
G	126m SW	383960 397920	MOSLEY STREET SEWER RECONSTRUCTION 5	-	Y	N/A



ID	Location	Grid reference	Name	Length	Confidential	Web link
H	127m E	384240 398050	PORTLAND STREET MANCHESTER 1	18.25	N	1043771 ↗
11	128m NW	383950 398120	KENNEDY STREET MANCHESTER 2	-	Y	N/A
F	130m W	383922 397959	St Peter's Square, Manchester BH104	-	Y	N/A
12	130m SE	384190 397910	PORTLAND STREET 4/4A	-	Y	N/A
G	132m SW	383954 397917	St Peter's Square, Manchester TP244	-	Y	N/A
13	132m N	384060 398190	FOUNTAIN STREET MAIN DRAINAGE 2	-	Y	N/A
14	135m W	383903 398033	St Peter's Square, Manchester PC228	-	Y	N/A
H	135m E	384250 398040	PORTLAND STREET MANCHESTER 10	18.89	N	1043780 ↗
H	137m E	384250 398050	PORTLAND STREET MANCHESTER 6	12.19	N	1043776 ↗
H	139m E	384250 398060	PORTLAND STREET MANCHESTER 2	12.37	N	1043772 ↗
G	140m SW	383948 397911	St Peter's Square, Manchester BH201	-	Y	N/A
15	141m S	384080 397840	NO DETAILS	-1.0	N	1042455 ↗
I	144m NW	383980 398170	CLARENCE STREET / BOOTH STREET / BOW LANE 5	-	Y	N/A
H	147m E	384260 398050	PORTLAND STREET MANCHESTER 11	12.64	N	1043781 ↗
H	152m E	384260 398070	PORTLAND STREET MANCHESTER 3	13.71	N	1043773 ↗
H	155m NE	384250 398100	NO DETAILS	-1.0	N	1042454 ↗
J	156m NW	383930 398140	KENNEDY STREET MANCHESTER 1	-	Y	N/A
K	157m SW	383905 397935	St Peter's Square, Manchester TP145	-	Y	N/A
K	157m SW	383905 397935	St Peter's Square, Manchester TP145(A)	-	Y	N/A
I	160m NW	383980 398190	52-58 BROWN STREET MANCHESTER 1	-	Y	N/A
H	161m E	384270 398070	PORTLAND STREET MANCHESTER 7	19.38	N	1043777 ↗
K	162m SW	383902 397930	St Peter's Square, Manchester BH105	-	Y	N/A
I	163m NW	383990 398200	BOOTH STREET MANCHESTER 2	-	Y	N/A



ID	Location	Grid reference	Name	Length	Confidential	Web link
I	163m NW	383990 398200	BOOTH STREET MANCHESTER 4	-	Y	N/A
I	163m NW	383990 398200	BOOTH STREET MANCHESTER 3	-	Y	N/A
I	163m NW	383990 398200	BOOTH STREET MANCHESTER 1	-	Y	N/A
G	164m SW	383930 397895	St Peter's Square, Manchester PC225	-	Y	N/A
H	167m E	384280 398050	PORTLAND STREET MANCHESTER 12	13.71	N	1043782 ↗
16	167m E	384263 397946	PORTLAND STREET & CAR PARK. BH'S 6	12.19	N	1042483 ↗
K	167m SW	383901 397922	St Peter's Square, Manchester PC224	-	Y	N/A
H	168m E	384270 398090	PORTLAND STREET MANCHESTER 4	13.62	N	1043774 ↗
L	169m W	383870 398040	TOWN HALL MANCHESTER OB	-1.0	N	1045453 ↗
J	169m NW	383930 398160	CLARENCE STREET / BOOTH STREET / BOW LANE 6	-	Y	N/A
L	170m W	383869 398039	St Peter's Square, Manchester BH203	-	Y	N/A
17	170m SW	383970 397850	GEORGE STREET SEWER REPLACEMENT SCHEME 6	-	Y	N/A
H	174m E	384280 398080	PORTLAND STREET MANCHESTER 8	13.59	N	1043778 ↗
H	175m E	384290 398040	PORTLAND STREET 5/5A	-	Y	N/A
M	178m NE	384230 398160	GEORGE STREET SEWER REPLACEMENT SCHEME 1	-	Y	N/A
H	181m E	384290 398070	PORTLAND STREET MANCHESTER 13	13.71	N	1043783 ↗
H	181m E	384280 398100	PORTLAND STREET MANCHESTER 5	17.37	N	1043775 ↗
18	184m N	384100 398240	FOUNTAIN STREET MAIN DRAINAGE 3	-	Y	N/A
19	190m NW	383970 398220	52-58 BROWN STREET MANCHESTER 2	-	Y	N/A
H	190m E	384290 398100	PORTLAND STREET MANCHESTER 9	13.71	N	1043779 ↗
N	191m SW	383872 397924	St Peter's Square, Manchester TP246	-	Y	N/A
N	191m SW	383872 397924	St Peter's Square, Manchester TP246(A)	-	Y	N/A



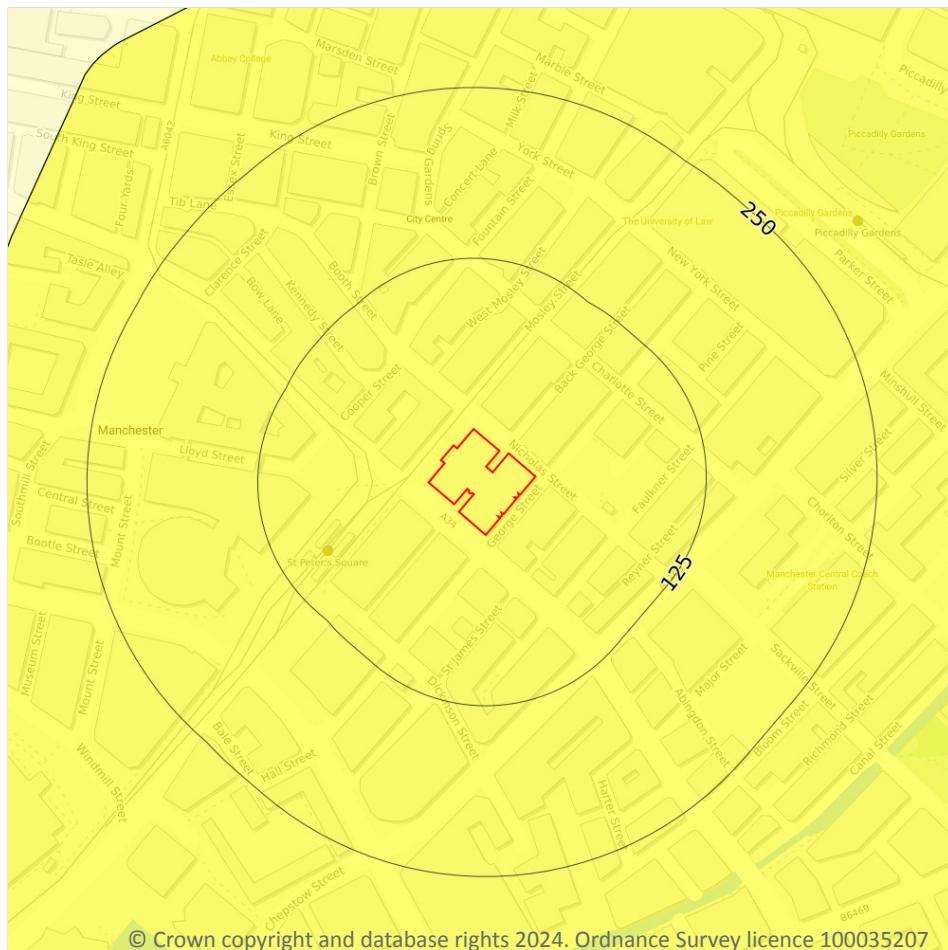
ID	Location	Grid reference	Name	Length	Confidential	Web link
O	192m NW	383940 398200	CLARENCE STREET / BOOTH STREET / BOW LANE 3	-	Y	N/A
20	193m S	384050 397790	PORTLAND STREET 2	-	Y	N/A
P	196m W	383843 398044	St Peter's Square, Manchester PC227	-	Y	N/A
H	196m E	384300 398090	PORTLAND STREET MANCHESTER 14	21.33	N	1043784 ↗
21	200m SE	384230 397850	BLOOM STREET/ABINGDON STREET 5	9.05	N	1045707 ↗
M	200m NE	384240 398180	PICCADILLY HOTEL. TOWER BLOCK NO.10	23.93	N	1042503 ↗
P	206m W	383831 398024	St Peter's Square, Manchester PC226	-	Y	N/A
N	211m W	383848 397927	St Peter's Square, Manchester BH202	-	Y	N/A
N	211m W	383848 397927	St Peter's Square, Manchester BH202(A)	-	Y	N/A
P	212m W	383826 398001	St Peter's Square, Manchester PC122	-	Y	N/A
O	213m NW	383920 398210	CLARENCE STREET / BOOTH STREET / BOW LANE 2	-	Y	N/A
22	214m NE	384280 398160	PICCADILLY HOTEL. TOWER BLOCK NO.7	23.77	N	1042502 ↗
23	216m NW	383870 398160	CLARENCE STREET / BOOTH STREET / BOW LANE 1	-	Y	N/A
P	217m W	383823 397986	St Peter's Square, Manchester BH106	-	Y	N/A
N	223m W	383832 397932	St Peter's Square, Manchester TP146	-	Y	N/A
N	223m W	383832 397932	St Peter's Square, Manchester TP146(A)	-	Y	N/A
P	228m W	383816 397964	St Peter's Square, Manchester TP147	-	Y	N/A
P	228m W	383816 397964	St Peter's Square, Manchester TP147(A)	-	Y	N/A
24	230m NE	384180 398260	BARCLAY'S BANK, YORK STREET. 3 BH'S	15.85	N	1042520 ↗
25	232m NE	384310 398150	PICCADILLY HOTEL. NO.4 BH	20.42	N	1042501 ↗
26	237m N	384051 398295	SPRING GARDENS, MANCHESTER 4	19.2	N	15634881 ↗
27	245m NW	383830 398150	ALBERT SQUARE A	-	Y	N/A
28	248m SE	384310 397870	SACKVILLE STREET / BLOOM STREET 3	-	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).

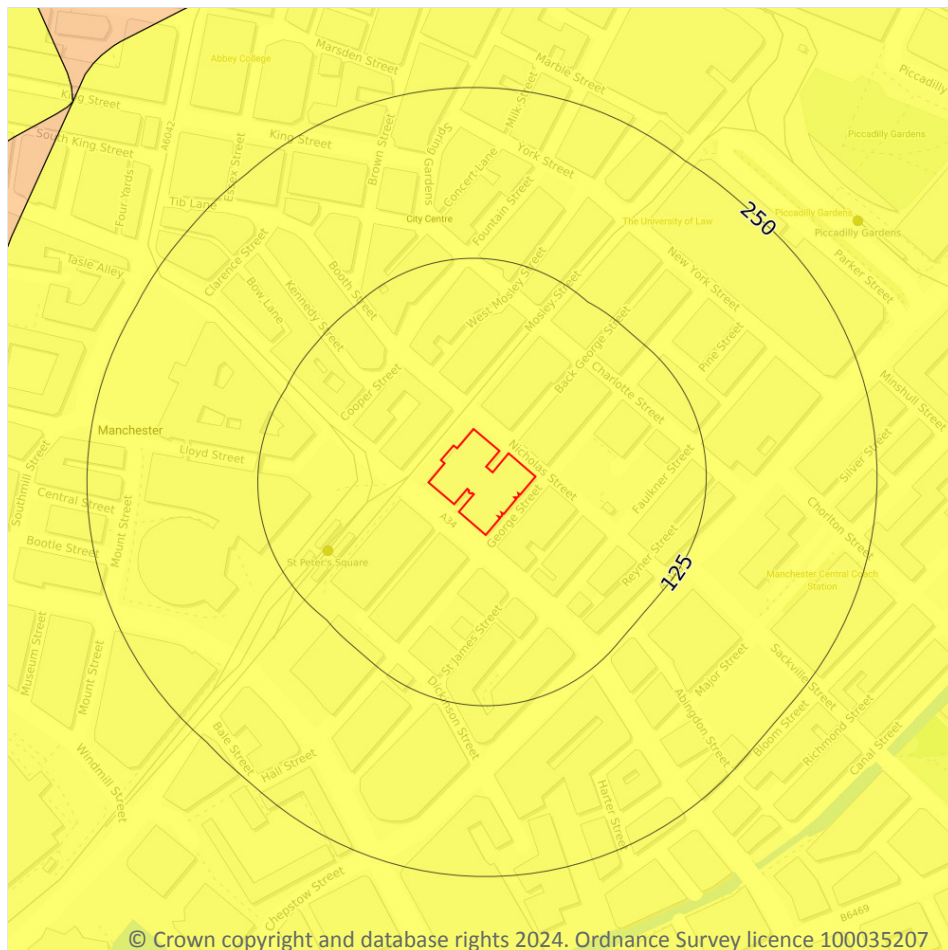
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 126](#) >

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



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

17.2 Running sands

Records within 50m

1

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

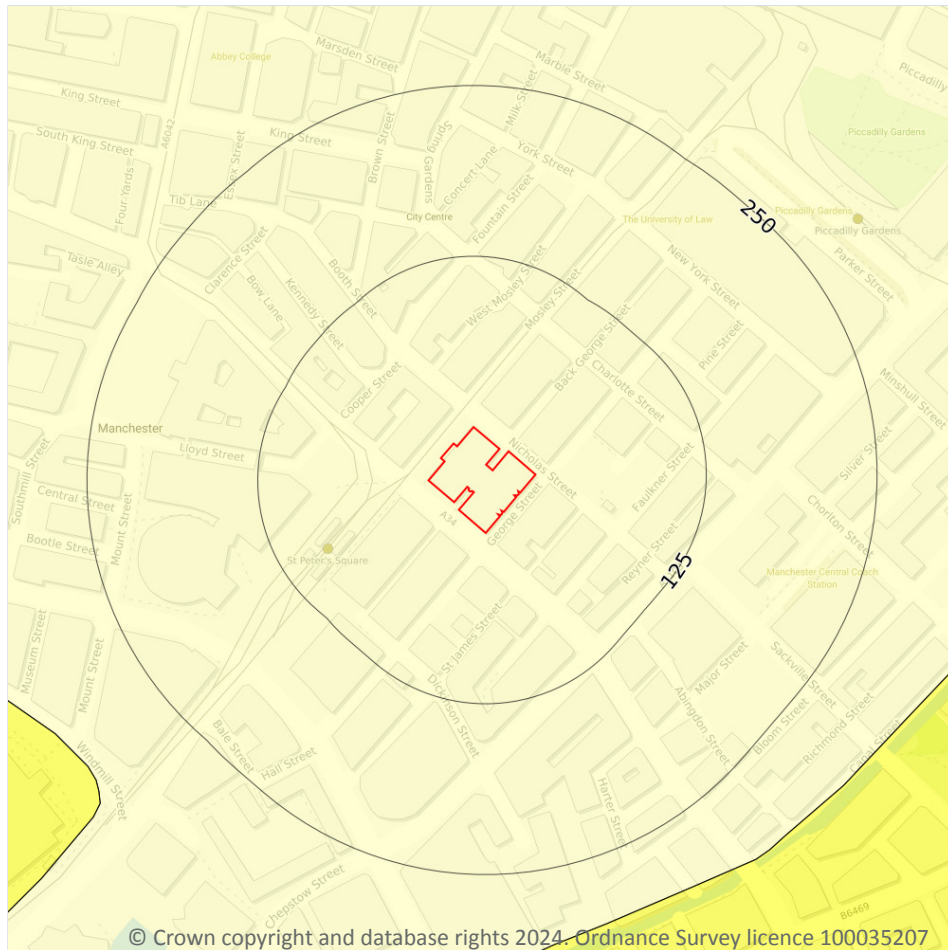
Features are displayed on the Natural ground subsidence - Running sands map on [page 127 >](#)

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.

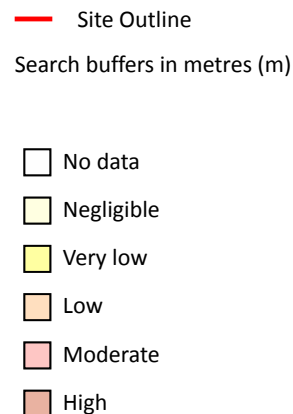
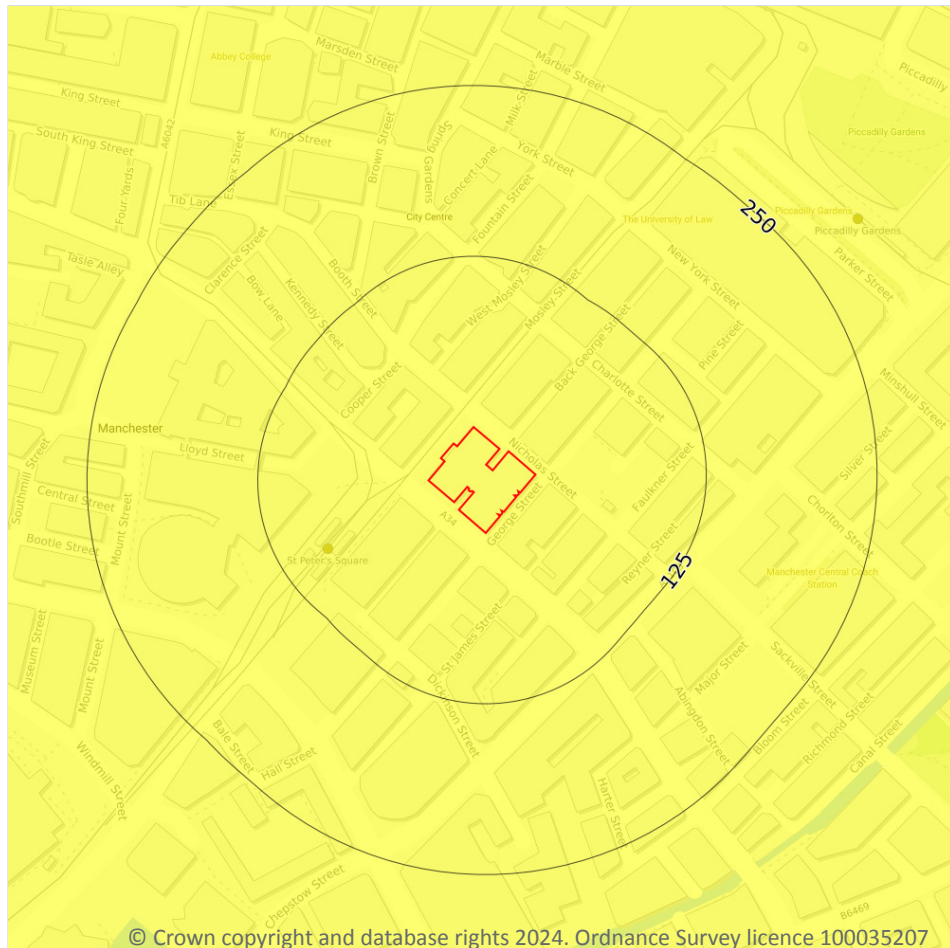
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 128](#) >

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



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.

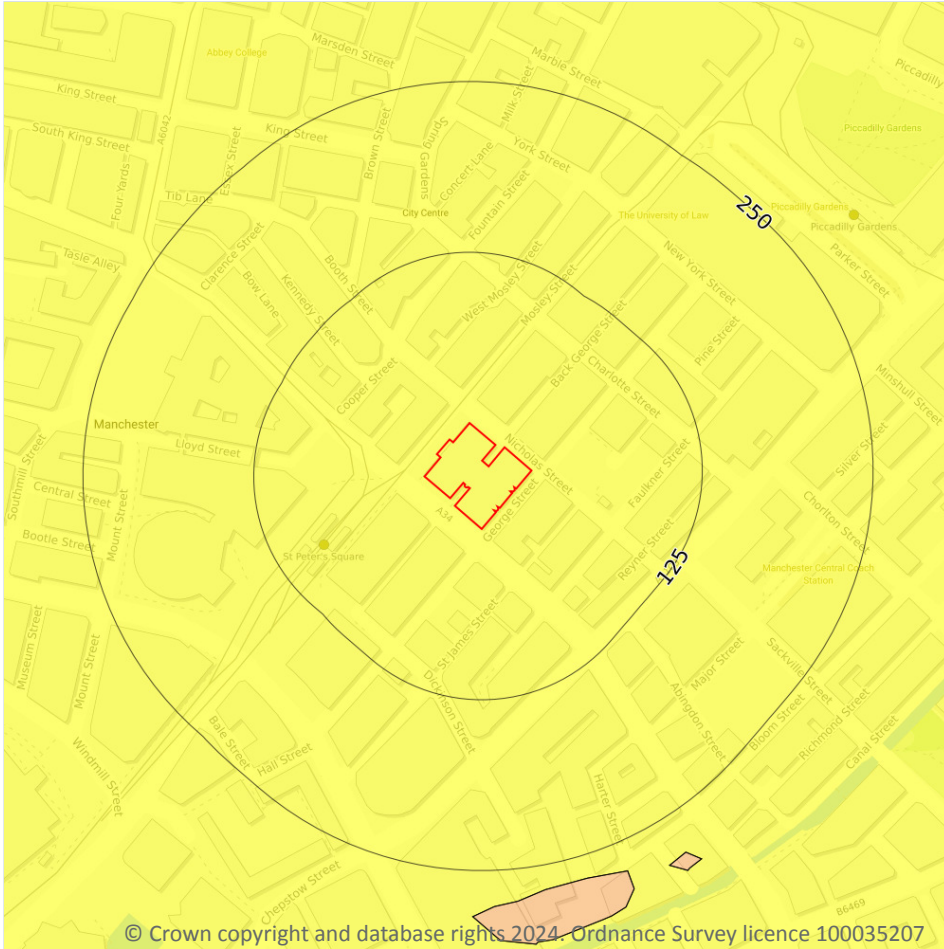
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 129 >](#)

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.

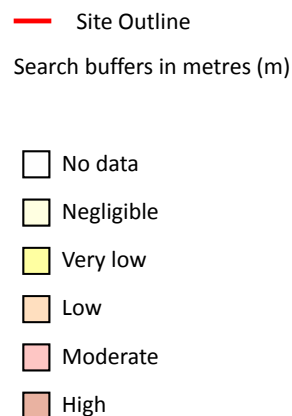
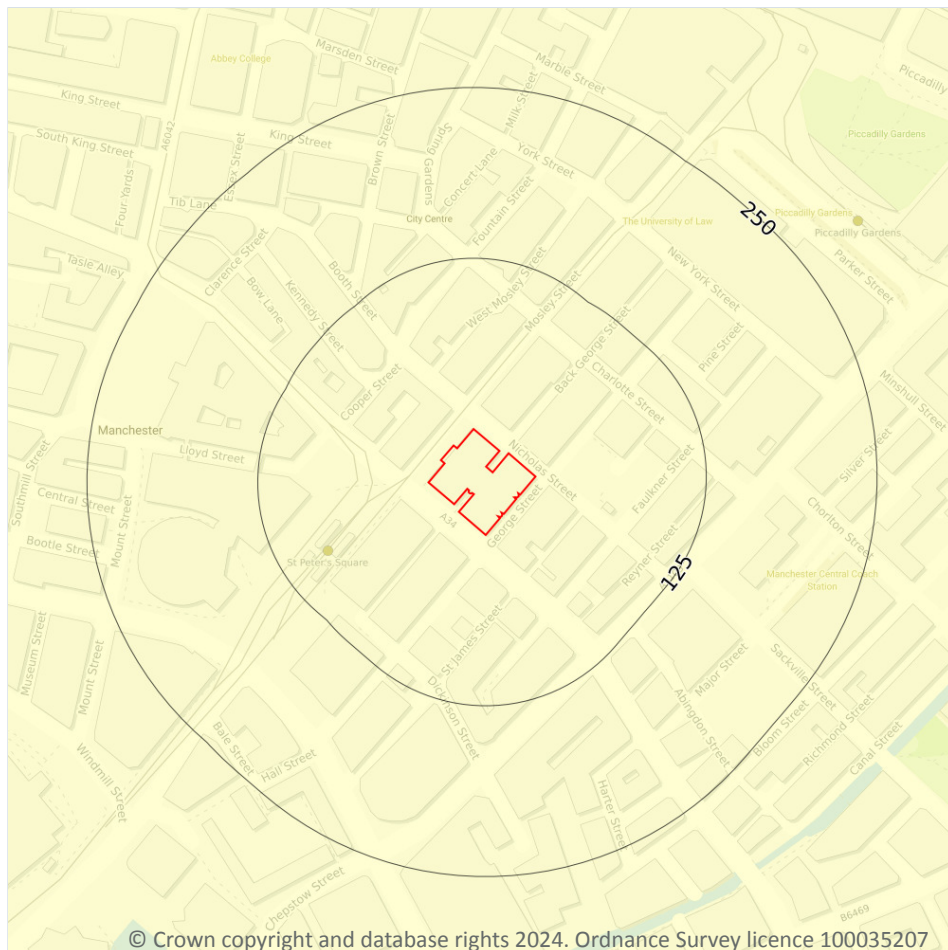
Features are displayed on the Natural ground subsidence - Landslides map on [page 130 >](#)

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 131](#) >

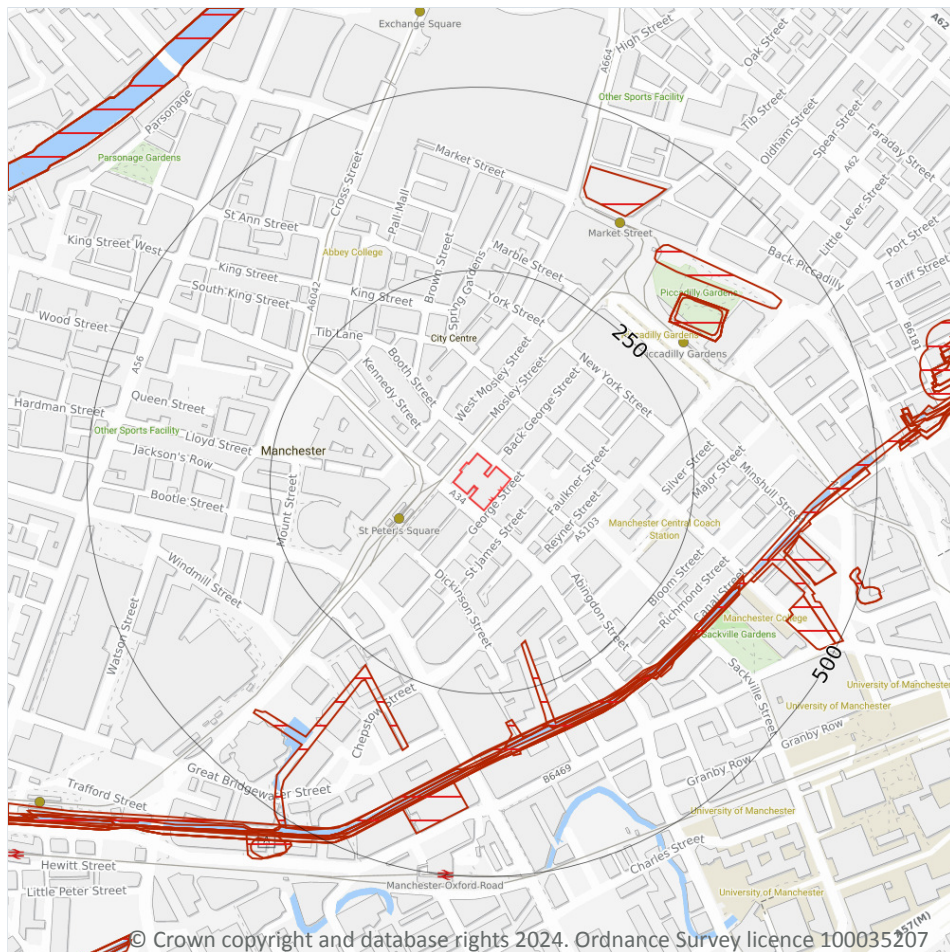
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.



This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
 - Sporadic underground mining of restricted extent possible
 - Localised small scale underground mining possible
 - Small scale mining possible
 - Underground mining known or likely within or in close proximity
 - Underground mining known within or in very close proximity

18.1 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

1

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 133](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	187m S	Canal	1896	1:10560

This 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 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

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

0

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.

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.

19.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

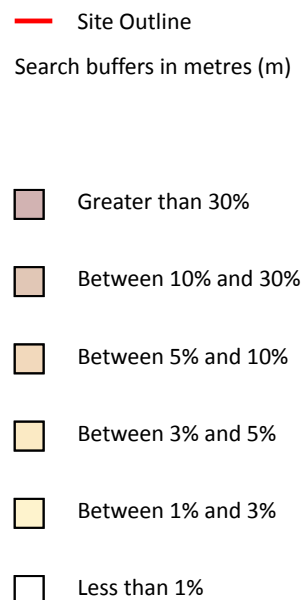
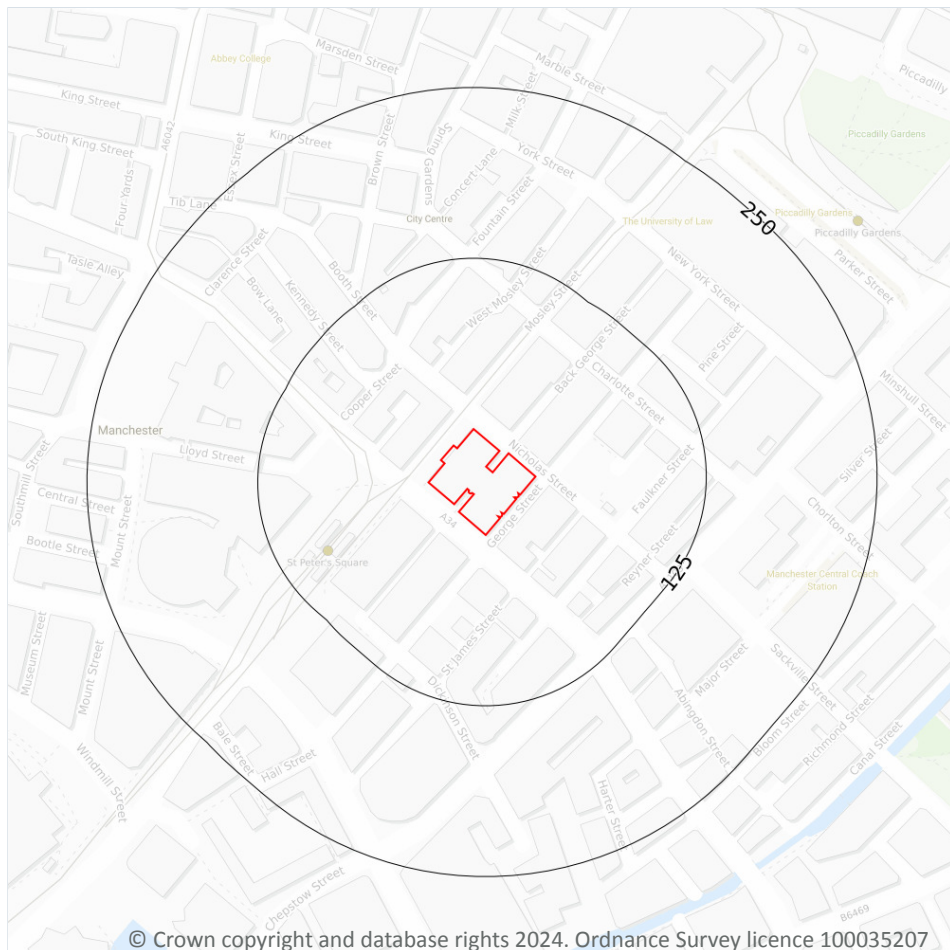
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.



20 Radon



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 140 >](#)

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

8

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
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
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
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
37m W	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
37m W	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
42m W	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
42m W	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	7
--------------------	---

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

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	10	1.8	41	28	0.3	51	25	15	5
On site	12	2.1	43	30	0.3	55	26	17	5
On site	9	1.6	47	32	0.4	48	22	13	5
3m SE	12	2.1	53	36	0.4	55	25	17	6
37m W	12	2.1	83	57	0.4	54	32	16	9
42m N	9	1.6	40	27	0.3	48	24	13	5
42m W	12	2.1	111	76	0.5	55	32	17	13

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0
--------------------	---

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



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

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

1

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

Features are displayed on the Railway infrastructure and projects map on [page 144 >](#)

Location	Land Use	Year of mapping	Mapping scale
190m SW	Tramway Sidings	1891	500

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

30

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 144 >](#)

Location	Name	Type
10m NW		light_rail
10m NW	Not given	Multi Track
14m NW	Metrolink	light_rail
15m W	Not given	Single Track
15m W	Not given	Single Track
17m W	Not given	Single Track
17m W	Not given	Single Track
23m W		light_rail
41m W	Not given	Single Track
41m W	Not given	Single Track
41m W		light_rail
48m W	Not given	Single Track
48m W	Not given	Single Track
52m W		light_rail
52m W	Metrolink	light_rail
53m W	Metrolink	light_rail
56m W	Not given	Single Track
57m W	Not given	Single Track
85m W	Not given	Multi Track
129m SW	Metrolink	light_rail
144m SW	Not given	Single Track
147m SW	Not given	Single Track
151m SW	Not given	Single Track
157m SW	Not given	Single Track



Location	Name	Type
157m SW	Not given	Single Track
162m SW	Not given	Single Track
170m SW		light_rail
176m NE	Not given	Multi Track
202m SW	Not given	Single Track
220m SW	Not given	Multi Track

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

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

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

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

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

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

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

This data is sourced from HS2 Ltd.



Data providers

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

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Client Ref: 2950_TE1764
Report Ref: GS-R15-KXL-MWK-18B
Grid Ref: 384076, 398019

Map Name: 1056 Scale Town Plan

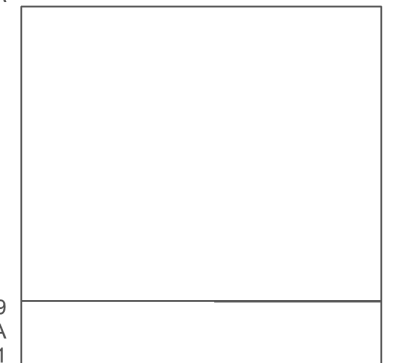
Map date: 1851

Scale: 1:1,056

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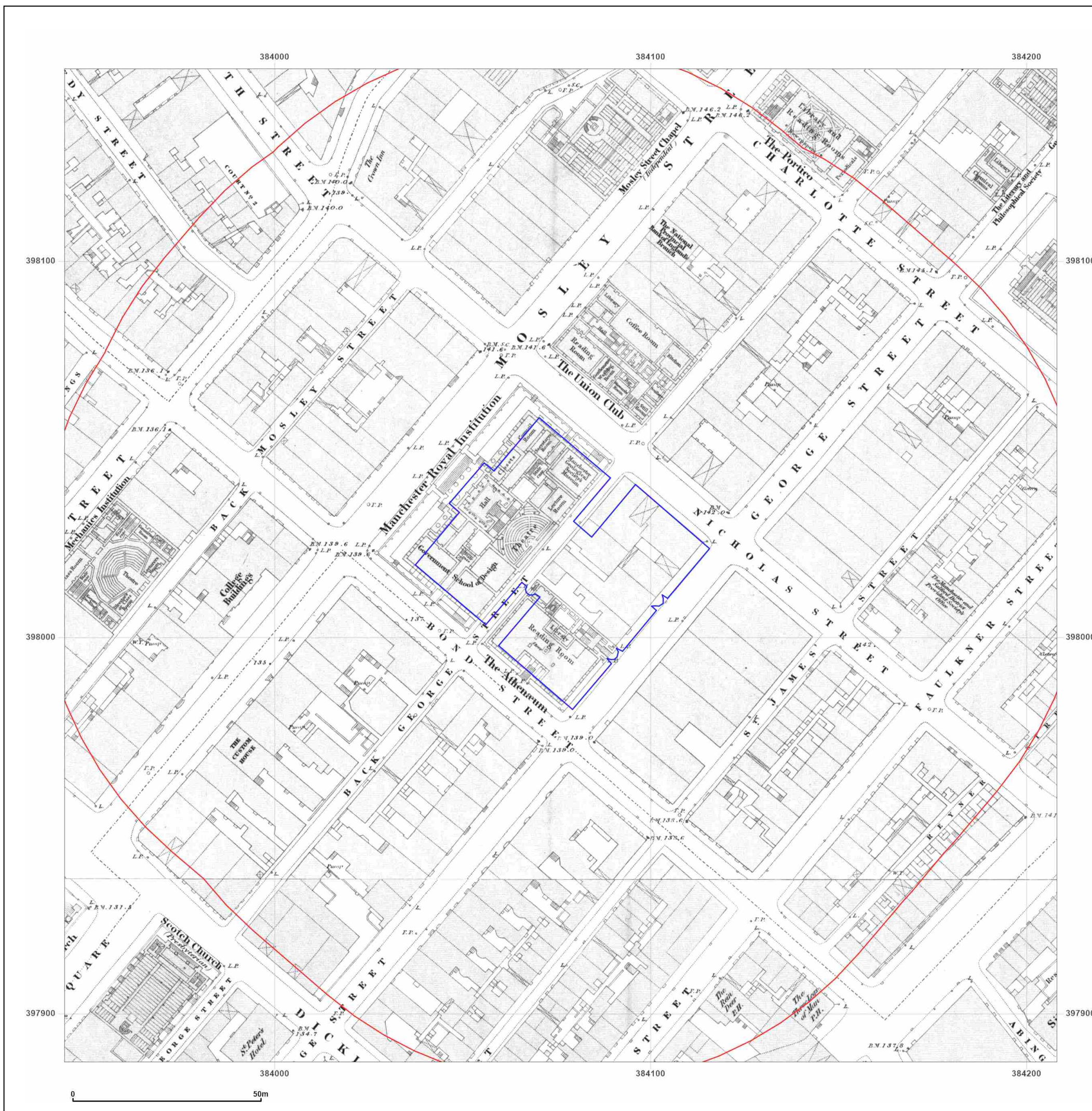


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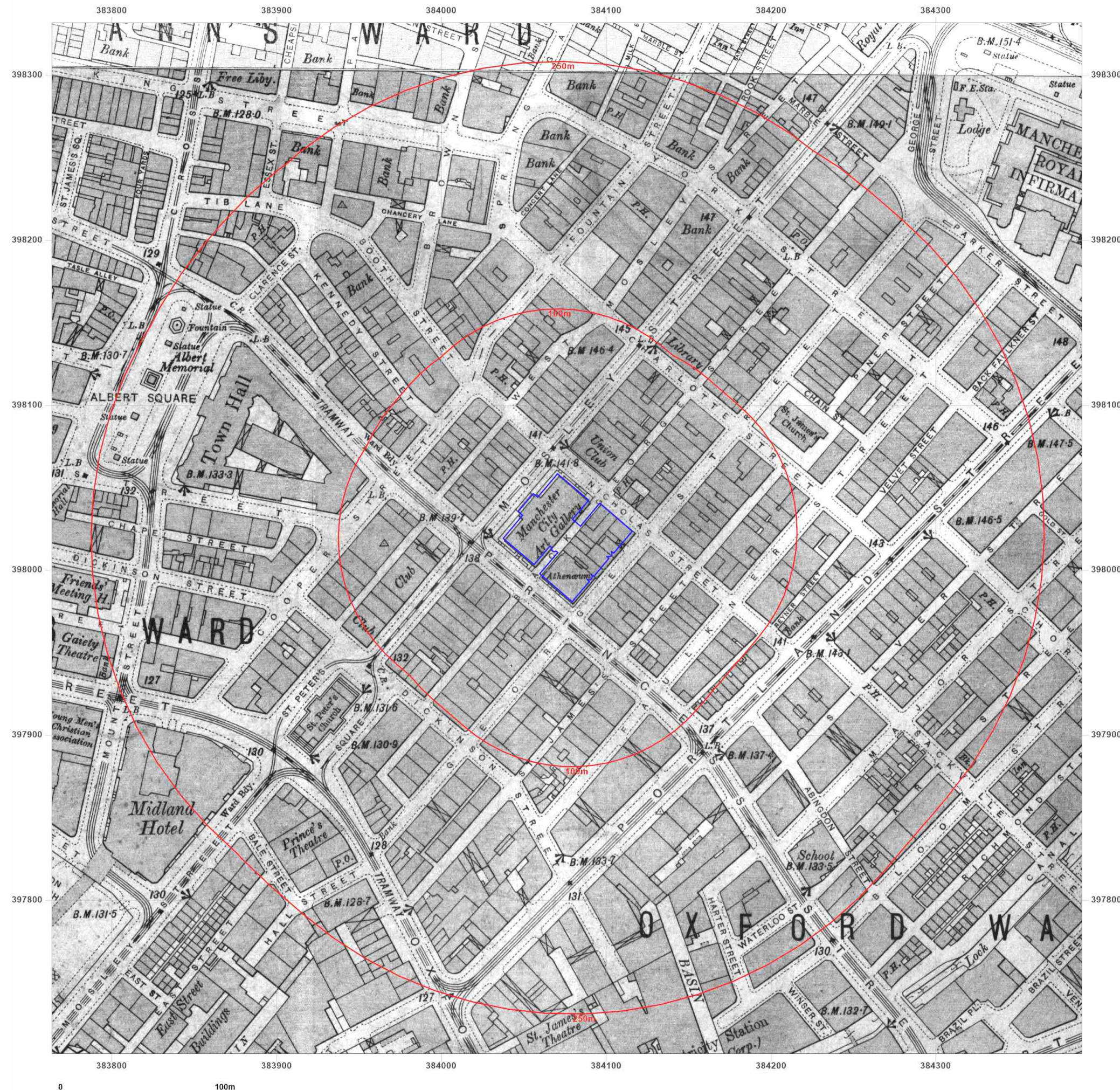


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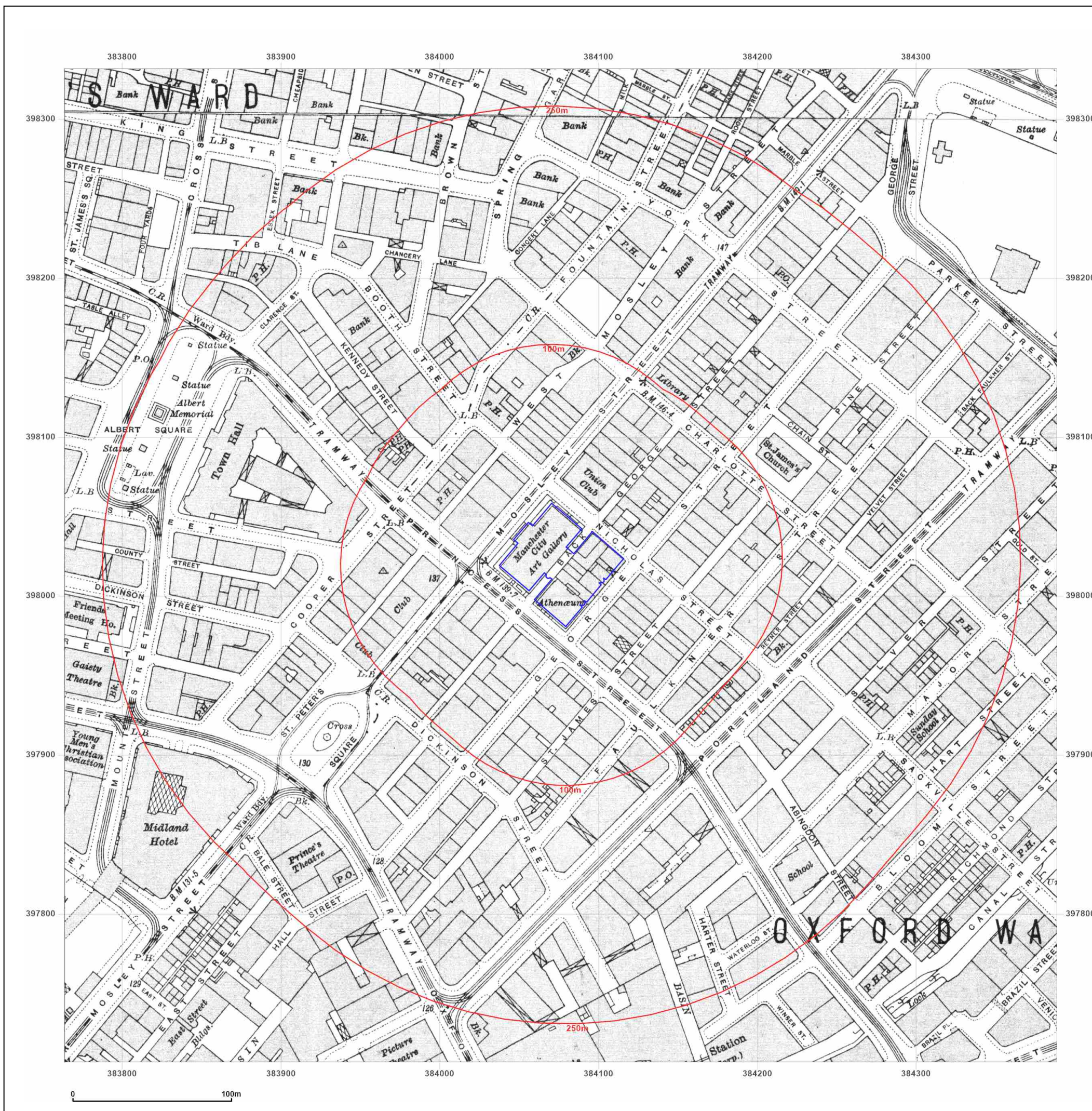


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Map Name: County Series

Map date: 1932-1933

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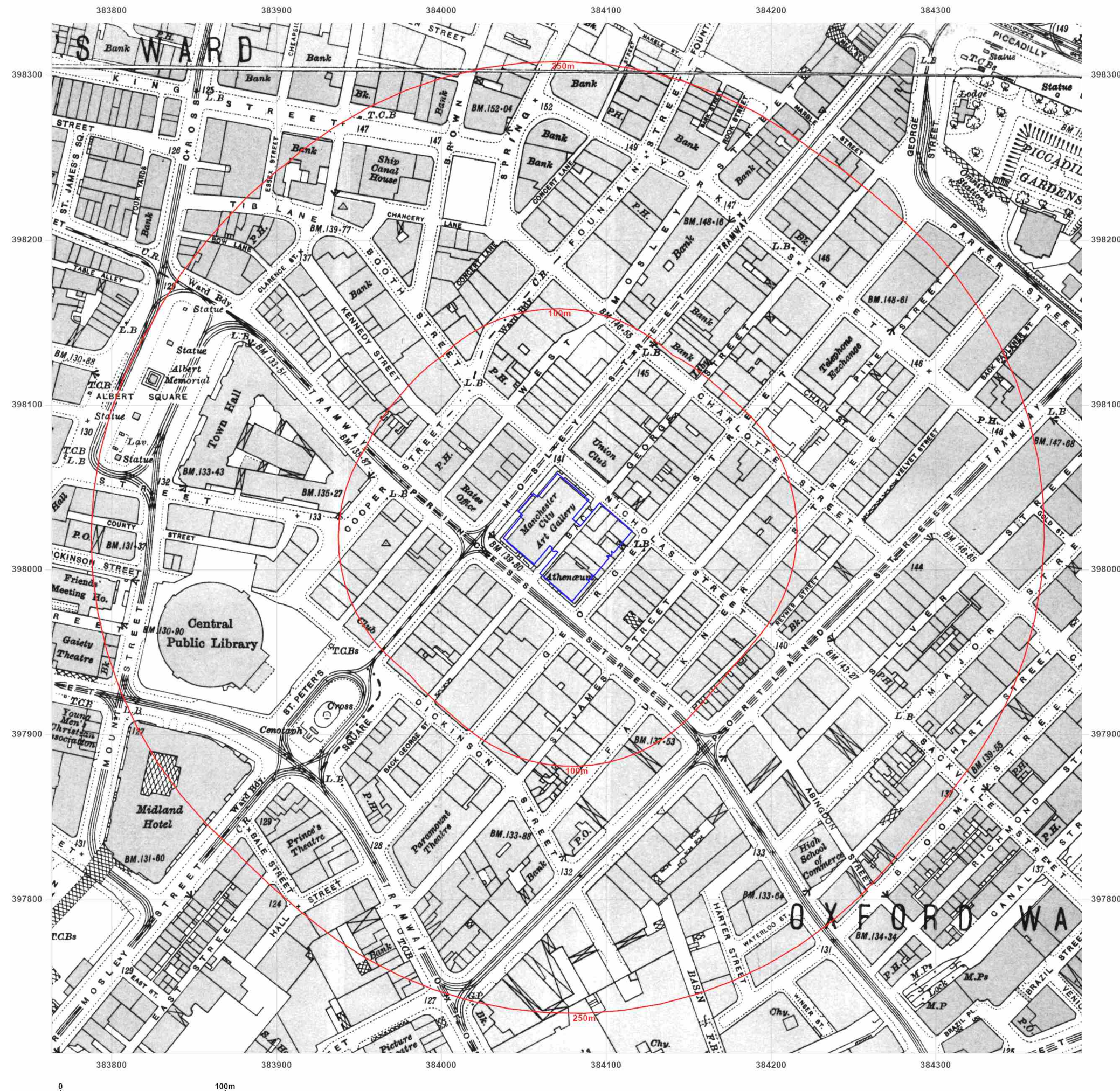


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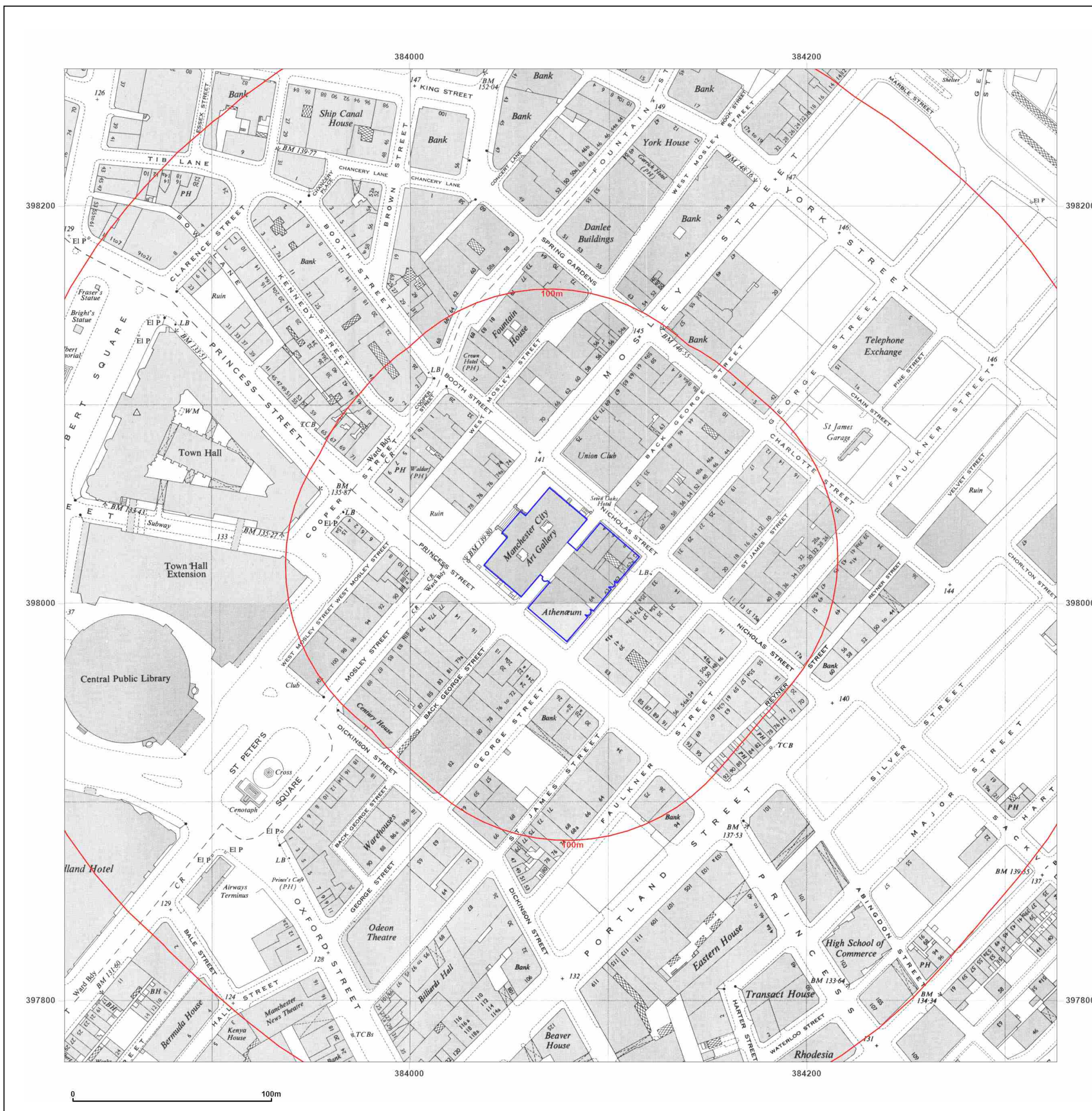


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Map date: 1951

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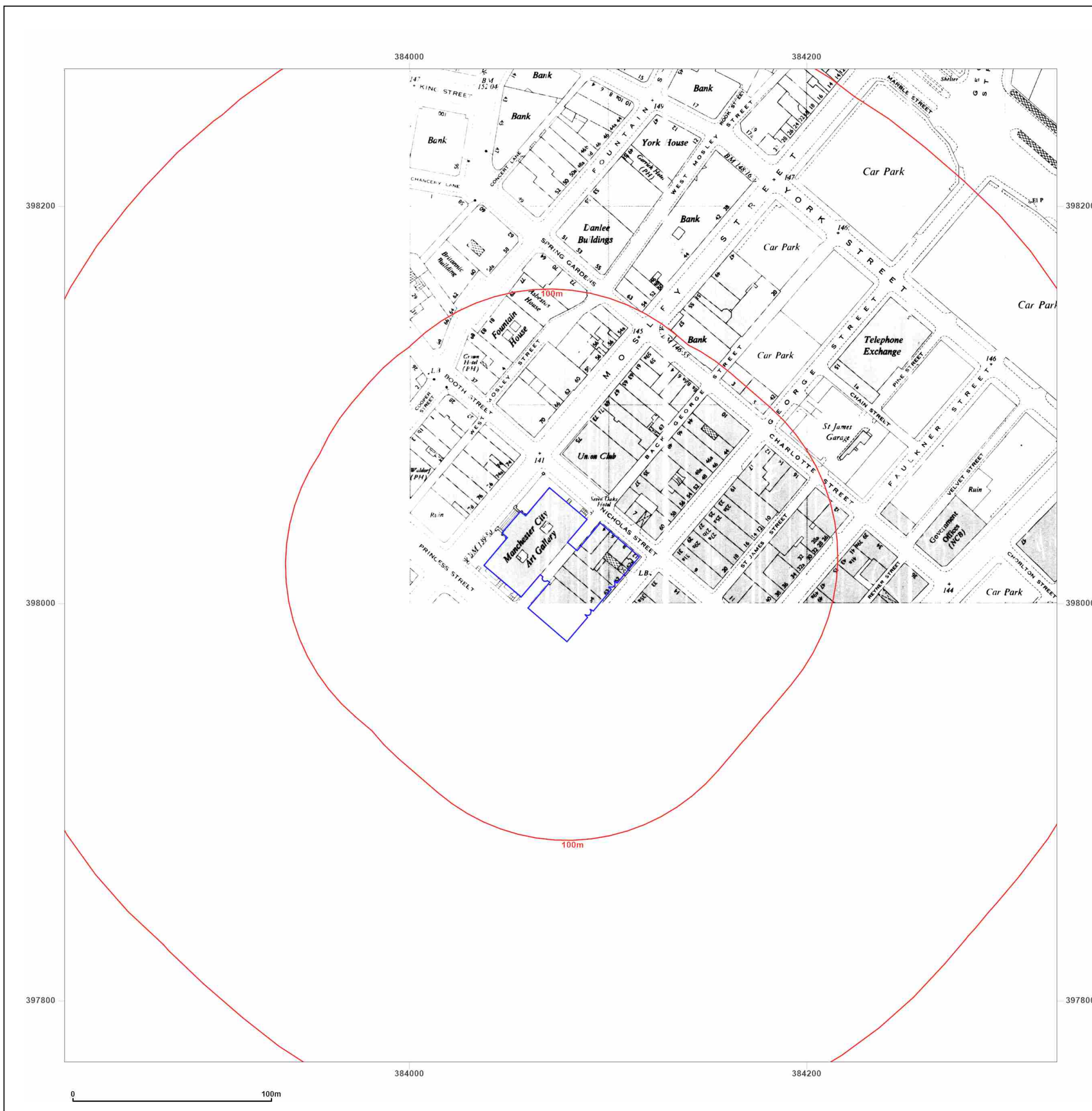


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