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<i>Plan Reference</i>	<i>Revision</i>	<i>Title</i>
GRO-22366-P01	-	Project Location Plan
GRO-22366-P02	-	Preliminary Development Constraints Plan
GRO-22366-P03	-	Illustrative Preliminary CSM

1.0 INTRODUCTION

1.1 Project Objectives

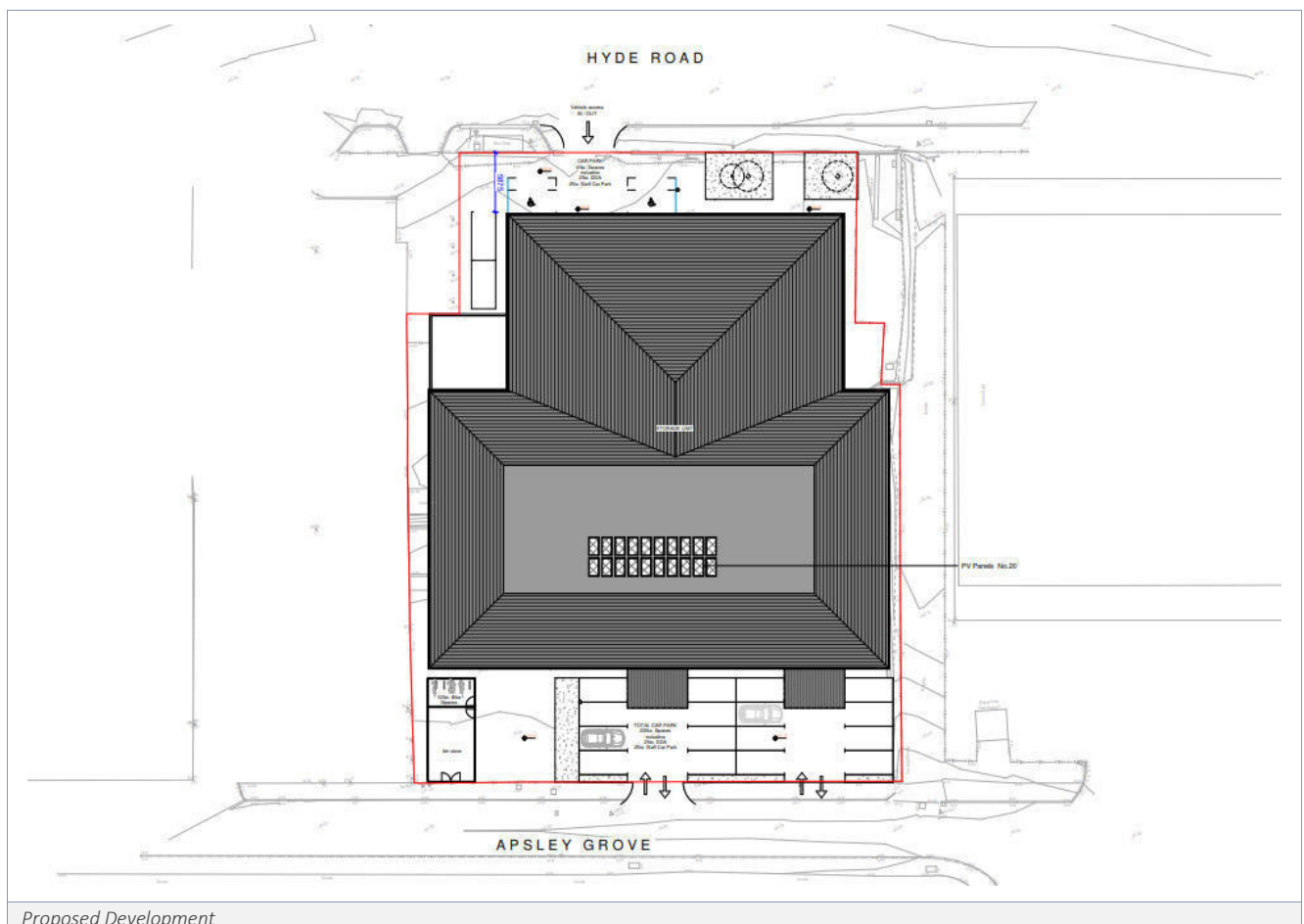
Groundtech Consulting Limited have been instructed by Paul Butler Associates on behalf of Crown Advisory to undertake a Preliminary Risk Assessment for a site at 14 Hyde Road in Ardwick.

The objectives of the Preliminary Risk Assessment were to establish the site's environmental and geotechnical background in order to generate a Conceptual Site Model to identify any potential constraints and linkages which may affect the redevelopment of the site.

The report has been undertaken to fulfil the requirements of a preliminary risk assessment in accordance with LCRM "Land Contamination Risk Management".

1.2 Proposed Development

The proposed development is for commercial end use comprising of a self-storage building, bin store and car park.



1.3 Limitations

This Preliminary Risk Assessment is based on information obtained from a number of sources, and the information is assumed to be correct.



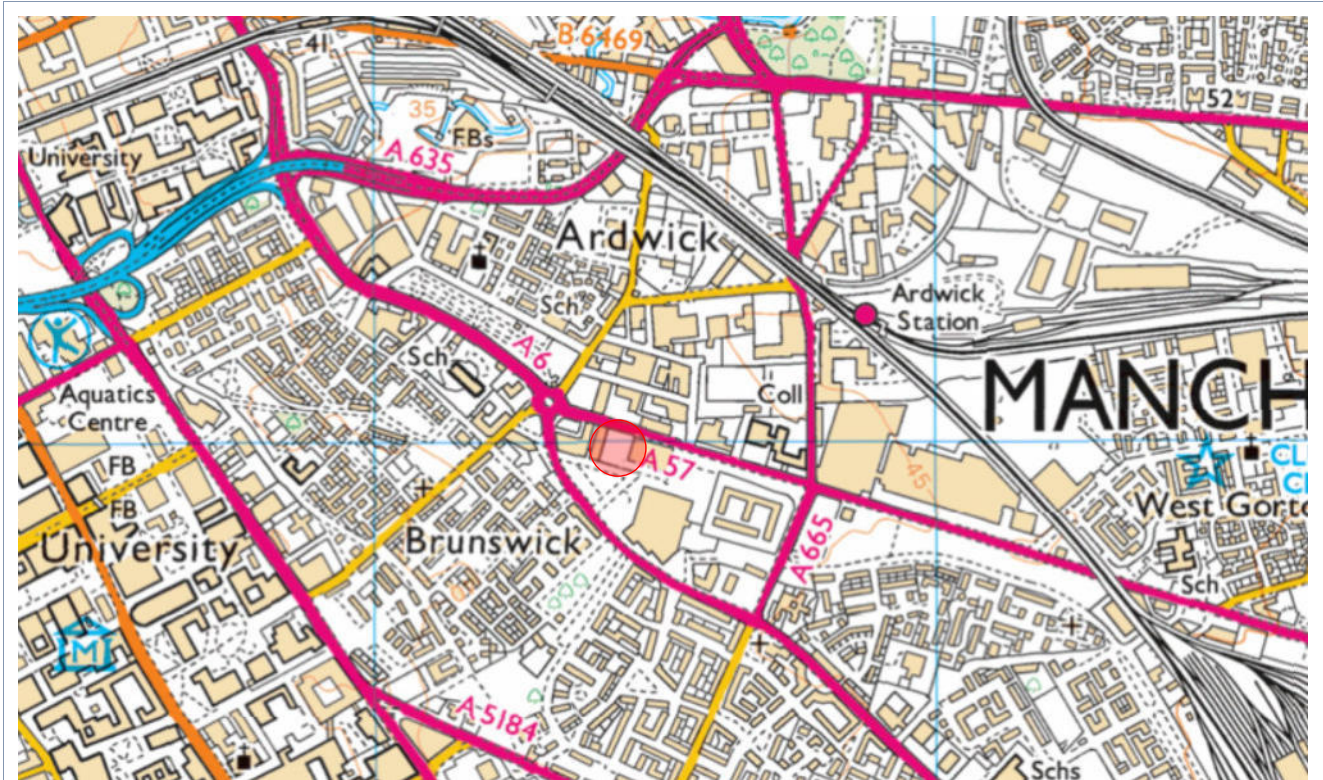
Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

The assessment has been prepared for the exclusive use of the client. No third parties may rely on or reproduce the contents of the report without the written permission of Groundtech Consulting Limited. If any unauthorised third party comes into possession of the report they rely on it at their own risk and Groundtech Consulting Limited will not be obliged to provide a duty of care.

2.0 SITE SETTING

2.1 Location

The site is located circa 2 miles south east of Manchester City Centre, as shown on the Project Location Plan GRO-22366-P01 and is approximately centred on National Grid Reference 385431, 396989.



Project Location

Access to the site is gained off Hyde Road to the north and Apsley Grove to the south.

2.2 Site Description

The site is circa 0.29 ha in area and is roughly rectangular in shape. The topography of the site slopes down gently from north to south however, a sharp change in level of circa 0.5m to 1.0m occurs across the central area.

Onsite Features

Currently, the site is utilised for car sales and is predominantly formed by a tarmac surfaced car park.

Two storage containers used as commercial buildings are located on the central part of the site, at the top of the land that slopes down sharply. A lean-to car wash is situated midway along the western site boundary.

No trees are present onsite however, overgrown shrubs and bushes are present around the perimeter.

Boundaries and Surrounding Land Use

Metal security fencing runs along the northern, eastern and southern site boundaries whereas, brick walls associated with neighbouring buildings are present along the western boundary.

The site is surrounded by the following land uses / features:

- North - Hyde Road followed by a car park and commercial buildings.
- East - Hardsurfaced public footpath followed by commercial buildings and car parking.
- West - Commercial buildings including a public house and a car service/repair centre.
- South - Apsley Grove and a public car park.

Photographs are presented in *Appendix 2*, and any relevant features are recorded on the Preliminary Development Constraints Plan *GRO-22366-P02*.

3.0 ENVIRONMENTAL SETTING

3.1 Site History

Available historical maps have been obtained, a list of dates and scale are listed in the table below:

Scale	Date
1:500	1891.
1:1,056 and 1:1,250	1851, 1953, 1950-54, 1960, 1969-74, 1974-76, 1977-78, 1983, 1984-89, 1991-92, 1994, 1992-95, 1993-95, 1994-95, 1995, 2003.
1:2,500	1889-93, 1908, 1922, 1932-33, 1948-49, 1949-50, 1950-51, 1965, 1970, 1995.
1:10,000/10,560	1848, 1890-94, 1905, 1923, 1931-34, 1938, 1956, 1968, 1972, 1980-81, 1985, 1988-91, 1994, 2001, 2010, 2022.

The plans were examined and potential issues have been identified and summarised in the table below:

Date	Site	Surrounding Area
1848 & 1851	Buildings associated with Hyde Road House are present in the northern and southern parts of the site. A pump is located in the central northern area. Gardens are present to the south of the northern buildings.	Ardwick Hall and associated grounds are to the immediate north beyond Hyde Road. Ardwick Villa, Apsley House and Apsley Place within 100m to the west. Open ground to the south. Ardwick Cemetery c.100m north east of the site.
1891	Hyde Road House has been demolished and replaced by a Drill Shed which dominates the central and eastern areas. The pump is no longer shown.	Residential and commercial building development to the east and south of the site.
1889-1893	No significant change.	Union Carriage Works and Corporation Works c.200m south.
1908	The Drill Shed building has extended into the south western corner of the site.	No significant change.
1922	No significant change.	The onsite Drill Shed has extended to the immediate west. Engraving Works c.150m north. The Carriage Works 200m to the south has become a saw mill .
1948-49	No significant change.	Methylated Spirit Works c.80m north east. Paint and Varnish Works c.100m north east. Waterproof Garment Works c.90m north.
1950-54	TA Centre depicted on site together with a war memorial in the north east corner.	Automobile Works c.50m north west.
1969-74	War memorial no longer present and several buildings demolished .	Depot c.10m east. Residential properties to the south and east demolished. Automobile Works now a Clothing Works .
1974-76	Drill Shed replaced by a sports centre.	Increased demolition of buildings in the general area.
1984-89	No change.	Depot to the east demolished and replaced with a playground.
2023	Buildings onsite demolished .	No significant change.

The historical plans are presented in Appendix 3.

3.2 Geology

The following British Geological Survey (BGS) records and other available information were inspected to accurately determine the geology underlying the site:

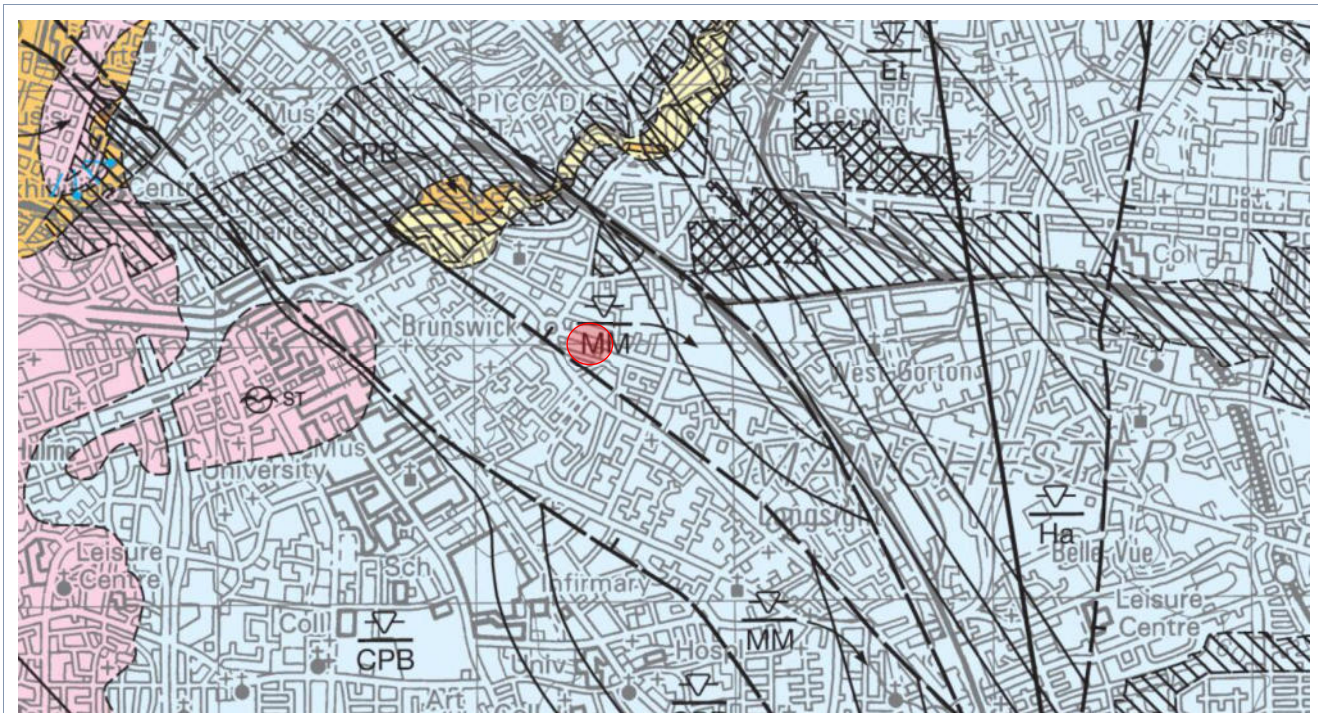
- 1:50,000 Scale Geological Sheet 85, Manchester – Solid and Drift Edition.
- BGS Records.

Made Ground

The available geological plans do not indicate any Made Ground to be present beneath the site. However, numerous onsite buildings have been demolished therefore, Made Ground is anticipated.

Superficial Deposits

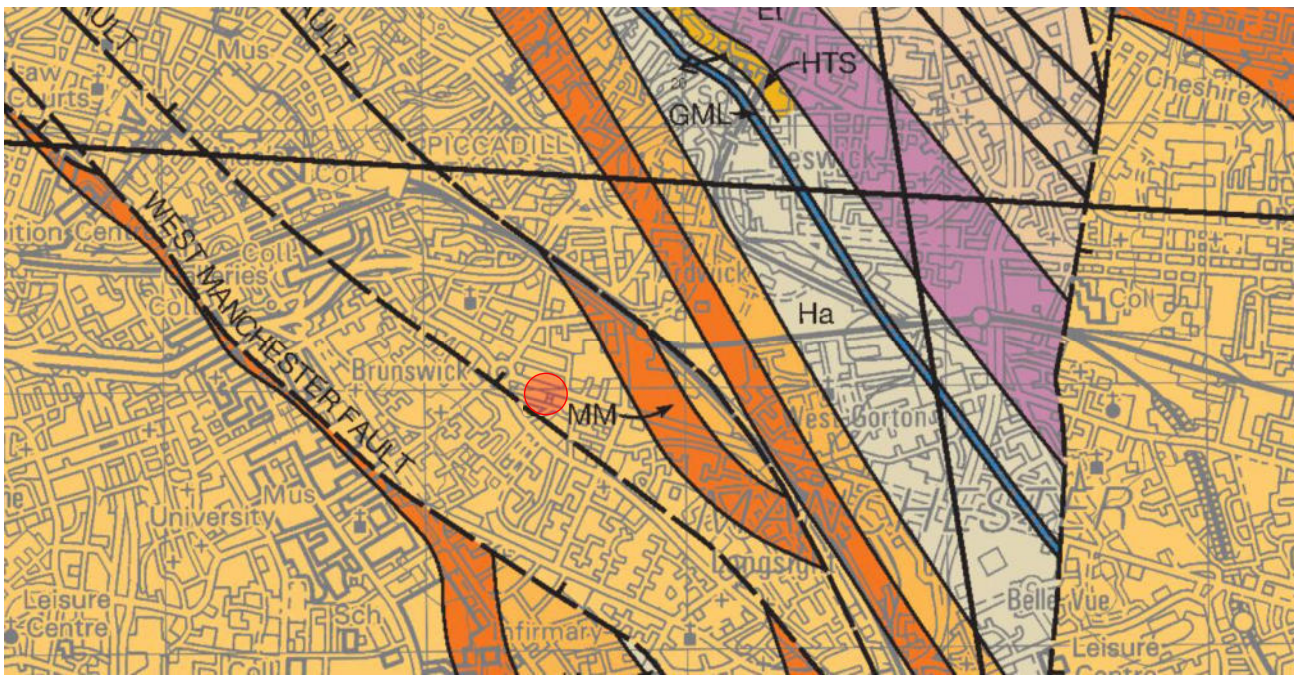
The site is indicated to be underlain by Glacial Till which typically consists of clay with common pebbles, cobbles and some boulders.



Geological Map – Superficial Deposits

Solid Geology

The site is indicated to be underlain by the Chester Pebble Beds Formation which typically comprises sandstone.



Geological Map – Solid Geology

Geological Faults

The Eastern Manchester Fault runs approximately 50m south of the site in an approximate north west to south east direction with strata downthrown to the north east.

BGS Records

The nearest borehole record is approximately 25m east of the site. Records indicate fill material consisting of black organic clay, topsoil, bricks and ash to around 2.6m bgl followed by stiff sandy Clay to depths of 2.9m bgl underlain by weathered Sandstone.

A second borehole is located 30m north of the site. Records from this identify fill material consisting of soft clay, brick and topsoil to depths of 2.0m bgl. This is underlain by soft sandy Clay with fissures and stone to 3.2m bgl where a sewer pipe is encountered. Weathered Sandstone is recorded after the sewer pipe from 3.65m bgl.

The BGS records are presented in *Appendix 4*.

3.3 Hydrogeology

The superficial Glacial Till deposits in this area are classified by the Environment Agency as a Secondary Undifferentiated Aquifer. This is assigned when it is not possible to attribute either category A or B to a soil 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.

The bedrock is classified as a Principal Aquifer. This is where the geology is of high intergranular and/ or fracture permeability which usually provides 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.

The soils beneath the site are indicated to be of low leaching potential. Pollutants are unlikely to move down through the soil due to low permeability.

There are no groundwater Source Protection Zones within 500m of site.

Nineteen groundwater abstraction licences are present within 2000m of the site, six of which are active. The nearest active abstraction point is 1225m west of the site.

There are no potable water abstraction licenses onsite or within 2000m.

3.4 Hydrology

The Corn Brook, an underground watercourse, is shown to cross the north western corner of the site. This is likely to be culverted.

There are no surface water features located within 250m of the site.

There are no surface water abstraction licences within 2000m.

The Risk of Flooding from Rivers and Seas (RoFRaS) is low and the site is not located within a flood risk zone.

There are no records of historical flood events onsite or within 250m.

3.5 Environmental Consultations

A request has been submitted to the Contaminated Land Officer at Manchester City Council for information pertaining to the site. This information will be forwarded on once received.

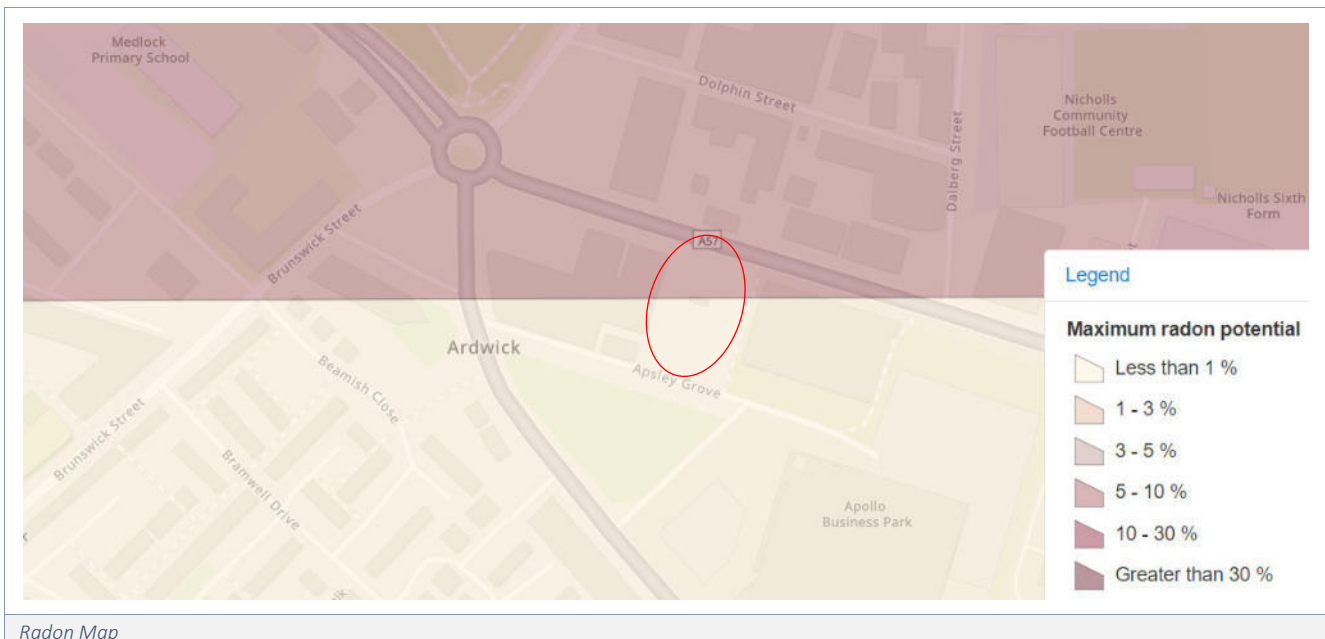
An environmental search has been conducted through Groundsure, which accesses British Geological Survey and Environment Agency databases. The complete Groundsure Report can be found in *Appendix 5* and a summary of the more relevant points is presented in the table below.

Record	<250m	250 – 500m	Description
<i>Authorised Processes</i>	3	1	<i>No Part A authorisations are within 500m of the site. The nearest current Part B authorisation to the site is located 181m north west and relates to the unloading of petrol into storage at service stations.</i>
<i>Pollution Incidents</i>	0	4	<i>The nearest incident was 466m north east of the site which had a minor impact to land relating to commercial and household waste.</i>
<i>Landfill and Waste Treatment</i>	0	2	<i>Historical waste site located c.343m south east of the project location and a licensed metal recycling site is c.499m north.</i>
<i>Discharge Consents</i>	0	0	-
<i>Petrol Filling Stations</i>	1	0	<i>One open petrol filling station is present 190m west of the site.</i>
<i>Current Industrial Uses</i>	40	N/A	<i>Knitwear company to the immediate east. Electricity substation 8m east. Vehicle repair and servicing c.17m west.</i>

3.6 Radon

The new radon map launched by UKHSA in December 2022 has been examined which defines areas requiring radon protective measures. The maximum radon potential of the southern half of the site is less than 1%

indicating no radon measures are required. However, the maximum radon potential of the northern site area is 5 to 10% indicating full radon measures are needed in proposed structures.



The radon data in the Groundsure report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland and indicates that the percentage is less than 1% and radon measures are not required. However, the Groundsure report is pre-December 2022 when the updated radon maps were released.

Given the differing requirements for radon measures at the site based on the above searches, a site-specific radon search should be carried out through the BGS to confirm the level of radon protection required.

3.7 Coal Authority Consultation

The site lies in an area where the Law Society and Coal Authority recommends a mining search is undertaken due to past or current mining possible affecting the site.

A search was carried out with the Coal Authority. The report is presented in *Appendix 6* and the main findings are outlined below.

Past Mining

The site is not within a surface area that could be affected by any past recorded underground coal mining.

Present Mining

The site is not within the zone of influence of any present underground coal workings.

Future Mining

The property is not in an area where the Coal Authority has received an application for and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Mine Entries

There are no records of any mine entries on or within 20m of site boundary.

Coal Mining Geology

The Authority is not aware of any damage arising due to geological faults or lines of weakness that have been affected by coal mining.

Opencast Coal Mining

The property is not in an area affected by past or present coal mining extracted by opencast methods. The property is also not in an area affected by a proposed opencast coal mine.

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

There is no record of mine gas emission requiring action by the Coal Authority within the boundary of the property.

Withdrawal of Support

The property is not in an area which notice of entitlement to withdraw support has been published.

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.

Online Coal Authority Interactive Map

The online Coal Authority Interactive Map has been examined and the follow information has been determined:

- *No mine entries are shown onsite or within the surrounding area.*
- *The site is not within a Development High Risk Area.*
- *The site is not in an area affected by past or present surface mining.*
- *The site is not shown to be affected by past or probable shallow coal mine workings.*

3.8 UXO Risk

A Provisional Explosive Ordnance Desk Top Study has been commissioned for the site. The full report is presented in *Appendix 7* and a summary of the findings is presented below:

- *There are no recorded incidents of the site being subject to bombardment throughout WW1.*
- *Manchester was the subject of several attacks throughout WW2, the most devastating being the Christmas raids over 2 nights (22nd – 24th December 1940).*
- *Both the Site and its surrounding area was the subject of heavy bombing throughout this period.*
- *The site area may have been utilised by military personnel.*

It is recommended that a Full UXO Desk Top Study is carried out before intrusive works begin on site or a UXO Risk Mitigation Engineer is present on site during all ground works.

4.0 LAND QUALITY CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

4.1 Introduction

The potential level of risk posed by contaminants in soil and/or groundwater will be influenced by the type and concentration of the contamination at source, the likelihood of exposure occurring, the potential pollution linkages and the likely chronic or acute effects on the receptors.

A contaminant is defined as a substance that has the potential to cause harm, a risk is considered to exist if such a substance is present at sufficient concentrations to cause harm and if a pathway is present a receptor could be exposed to the contaminant.

Section 4.0 compiles the information from the previous sections to assemble a Conceptual Site Model to inform the risk assessment process. The potential sources identified on the site and off the site that are within influencing distance are assessed to determine if pollution linkages exist and an unacceptable risk is posed to human health and controlled waters. The assessment has been carried out on a qualitative basis and aims to produce a complete and comprehensive Preliminary Conceptual Site Model, the potential pollution linkages are displayed on GRO-22366-P03 - Illustrative Preliminary CSM.

Three potential types of impacts exist for a site and all three need to be considered in the qualitative preliminary risk assessment:

- *Impacts from sources on the subject site.*
- *Impacts to the surrounding area from the subject site.*
- *Impacts to the subject site from the surrounding area.*

4.2 Potential Contamination Sources

Onsite Sources and Associated Contaminants (CoC)

From the information obtained during the preliminary risk assessment, several potential onsite sources of contamination have been identified which could affect the proposed commercial development.

The earlier historical records indicate that Hyde Road House and gardens were initially on the site. This building was then demolished, and a new building was erected which over the years has been used as a drill shed and sports centre. All buildings onsite have been demolished.

Made Ground is therefore likely to be present beneath the site associated with the demolition of the former buildings. Contaminants of Concern associated with Made Ground may include heavy metals, speciated Polycyclic Aromatic Hydrocarbons (PAHs), asbestos and permanent ground gases.

The site has more recently been used as a car sales yard with a small car wash in the western area therefore, there is the potential for localised hydrocarbon contamination to be present.

The northern half of the site is indicated to be in an area requiring full radon precautions.

Offsite Sources and Associated Contaminants (CoC)

A number of potential sources of contamination have been identified within influencing distance of the site that could impact the redevelopment of the site for commercial end use as outlined below:

- *Vehicle repair garage to the immediate west*

- *Electricity substation 8m east*
- *Former depot 10m east*
- *Former automobile works 50m north west*
- *Former methylated spirits works 80m north east*
- *Paint/varnish works 100m north east*
- *Ardwick Cemetery 100m north east*
- *Former Engraving Works 150m north*
- *Petrol station 190m west*
- *Former carriage/corporation works 200m south*
- *Former saw mill 200m south*

The vehicle repair garage, depot, automobile works, methylated spirits works, paint/varnish works, petrol station and carriage/corporation works could be a potential source of fuel derived hydrocarbons, oil, VOCs, SVOCs, acids and alkalis.

The electricity substation may be a source of PolyChlorinated Biphenyls (PCBs) used as cooling agents in transformers.

The engraving works could be a possible source of metals.

Ardwick cemetery could be a source of permanent ground gases. In addition, borehole records 25m east and 30m north indicate the presence of deep Made Ground to depths of between 2.0m and 2.6m bgl which could also be a possible source of ground gases.

The saw mill could be a source of resins/adhesives, resin hardeners, catalysts, sizing agents, inorganic and organic pigments, dyes, binders, organic solvents, additives and preservative treatment chemicals.

4.3 Pollution Linkages

The definition of a pollution linkage is a medium which allows a contaminant to impact a receptor. Potential pollution linkages have been recognised for the commercial development from the identified contamination sources that exist.

At this stage, the contaminants identified above are considered to potentially pose an unacceptable risk to human health and controlled waters through the following pollution linkages:

- *Direct soil and dust ingestion.*
- *Dermal contact with soil both indoors and outdoors.*
- *Indoor air inhalation from soil and vapour.*
- *Outdoor inhalation of soil and vapour.*
- *Migration and accumulation of ground gas into internal spaces.*
- *Impaction of groundwater from soil contamination (diffuse and point).*
- *Impaction of groundwater from groundwater plume.*
- *Migration of soil and groundwater contamination impacting surface waters.*

4.4 Receptors

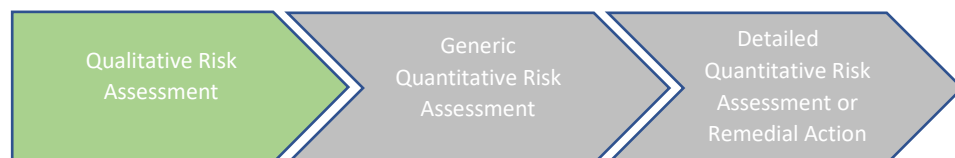
Receptors generally fall into the categories of human health or controlled waters within the river basin system. The recognised receptors are listed below:

- *Commercial site end users.*
- *Principal bedrock Aquifer.*
- *Corn Brook (underground watercourse beneath the north west corner of the site.*
- *Potable water supply pipes.*

4.5 Preliminary Conceptual Site Model (CSM)

The factual information obtained from the searches and summarised in Section 2.0 and 3.0 has been used to compile a Preliminary CSM. Using Source-Pathway-Receptor assessment criteria that is applicable in the UK, a risk assessment has been completed to determine if a plausible pollution linkage exists between the identified contaminants and receptors. The risk classification has been estimated in accordance with the CIRIA C552 assessment criteria outlined in *Appendix 8*.

Human Health Pollution Linkage Assessment



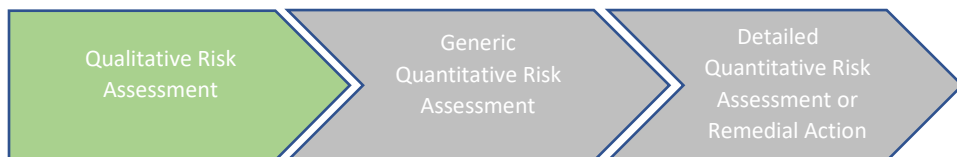
- The table below represents the first stage in the land quality risk assessment process - **the Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
PL1	Contaminated Soils	Ingestion of soil and dust. Dermal contact with soil.	Unlikely to Low Likelihood	Medium	Moderate to Low	<i>Pollution Linkage 1 refers to proposed site users coming into contact with contaminated soils on the site.</i> <i>The site is currently used as car parking for a car dealership and a small car wash is present in the western area. Historically, the site has also been used as a drill shed and sports centre as well as for residential purposes. All former buildings onsite have been demolished and therefore, Made Ground will be present beneath the site which could be a source of metals, PAHs and asbestos.</i> <i>Numerous industrial premises have been located within 250m of the site however, the Glacial Till deposits in the general area will have restricted the migration of potential mobile contamination onto the subject site. However, migration may have occurred from the neighbouring repair garage or former adjacent depot.</i> <i>The nearby electricity substation to the east may be a potential source of PCBs however, PCBs are immobile and will not have impacted the site.</i>

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
						The proposed development is for a new commercial building which would likely encompass the majority of the site footprint together with car parking and a bin store. The hardstanding will effectively break the pathway to potentially contaminated soils. However, a pathway to contaminated soils will exist in any limited areas of soft landscaping and a potential pollution linkage exists.
PL2	Contaminated Soils	Inhalation of vapour.	Low likelihood	Medium to Severe	Moderate to Low	This pollution linkage refers to volatile vapours migrating into confined spaces within the proposed development. Contamination may be present within the underlying Made Ground soils beneath the site if hydrocarbons have migrated onto site from the adjacent garage or depot. Therefore, a potential pollution linkage may exist.
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users.	Unlikely	Medium	Low	Pollution Linkage 3 relates to contamination on the subject site affecting adjacent site users. Significant mobile contamination is not anticipated to be present beneath the site therefore, a realistic pollution linkage is not considered to exist.
PL4	Contaminated Soils	Attacking potable water supply pipe.	Unlikely to Low Likelihood	Medium	Moderate to Low	Pollution Linkage 4 refers to the possible contaminants permeating potable water supply pipes and consumption by the future site end users of the tainted water supply.

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	Rationale and Action
						Made Ground is likely to be present at installation depth which may be contaminated with a range of Contaminants of Concern including localised hydrocarbons. New water supply pipes will be included as part of the development therefore a potential pollution linkage is considered to exist. A local water company risk assessment is likely to be required prior to construction to advise on the level of protection required for the potable water supply.
PL5	Ground Gas	Migration and accumulation of ground gas in internal spaces.	Likely	Medium to Severe	Moderate	Made Ground is likely to be present beneath the site due to the presence of previous residential and commercial buildings which have been demolished. Depending on the composition of any backfill material, ground gases may be generated. Ardwick Cemetery is located 100m north east of the site which could be a source of ground gases. In addition, borehole records 25m east and 30m north indicate the presence of deep Made Ground to depths of between 2.0m and 2.6m bgl which could also be a possible source of ground gases. The north of the site is indicated to lie within an area requiring full radon precautions within foundations however, the southern area is in an area requiring none. A site-specific radon search should be carried out through the BGS to confirm the exact level of radon precautions required for the site. Potential sources of permanent ground gases and radon have been identified and a pollution linkage is considered to exist.

Controlled Waters Pollution Linkage Assessment



- The table below represents the first stage in the land quality risk assessment process – **Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
PL6	Contaminated Soils	Impaction of groundwater from soil contamination (diffuse and point). Impaction of groundwater from groundwater plume.	Unlikely	Medium	Low	Potentially contaminated Made Ground is likely to be present beneath the site as a consequence of both residential and commercial buildings being present on site in addition to a car park and small car wash. However, it is unlikely that gross mobile contamination is present at the site therefore contamination is likely to be relatively immobile. Geological maps indicate that the site is underlain by Glacial Till (Secondary Undifferentiated Aquifer) and the bedrock is the Chester Pebble Beds Formation (Principal Aquifer). However, a pollution linkage is not considered to exist between potentially contaminated soils and the Principal Aquifer as the cohesive superficial Glacial Till deposits will have restricted the downward migration of potential contaminants. The site is not within 500m of a Source Protection Zone and therefore the groundwater is not considered to be a sensitive resource. In addition, there are no potable water abstraction licences within 2000m.

Conceptual Site Model					Qualitative Risk Assessment	
PL	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	Rationale
						Furthermore, the proposed development will be predominantly covered with hardsurfacing and a new drainage system installed. This will considerably reduce infiltration and leaching of potential contaminants. Therefore, a viable pollution linkage is not considered to exist.
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium	Low	Pollution Linkage 7 refers to the impaction of the Corn Brook, which is an underground watercourse beneath the north west corner of the site, from contaminated soils and groundwater. This watercourse is likely to be culverted. A significant source of mobile contamination has not been identified onsite which may have impacted the brook. Therefore, a pollution linkage is not considered to exist at this stage.

5.0 GROUND ENGINEERING RECOMENDATIONS AND POTENTIAL LIMITATIONS

5.1 Preliminary Foundation Assessment

It is proposed construct a self-storage building onsite which will be surrounded by car parking and a bin store.

Geological plans show the site to be underlain by superficial Glacial Till and the bedrock is the Chester Pebble Beds Formation which typically comprises sandstone.

Made Ground is likely to be present beneath the site as a consequence of residential and commercial buildings onsite being demolished. In addition, borehole records 25m east and 30m north indicate the presence of deep Made Ground to depths of between 2.0m and 2.6m bgl.

Foundation designs will be dictated by the depth of Made Ground present beneath the site. If shallow Made Ground is present, traditional strip/trench fill and/or pad foundations may be a viable option constructed in the underlying natural Glacial Till deposits depending on the anticipated loadings of the proposed structure. However, if anticipated loadings for the proposed development are high or deep Made Ground is encountered, foundations may need to be piled transferring loads to the underlying sandstone bedrock.

Foundations will need to be designed such that they do not undermine the neighbouring structures.

The above preliminary foundation recommendations are based on desk-based information and should be confirmed by a ground investigation in accordance with current guidance.

5.2 Additional Limitations

UXO

A potential risk from UXO has been identified at the site. It is recommended that the following risk mitigation strategy be executed prior to any intrusive works:

- *Full UXO Desk Top Study be carried out for the Site prior to intrusive works.*
- *or*
- *a UXO Risk Mitigation Engineer be on Site for all ground works.*

Coal Mining

The site is not indicated to be within an area affected by a legacy shallow coal mining.

SuDS

Made Ground and natural Clay are likely to be present beneath the site therefore, a SuDS drainage solution is unlikely to be feasible for the proposed commercial development.

Underground Watercourse

The Corn Brook, which is described as an underground watercourse, is shown to pass beneath the north western part of the site. This feature is probably culverted and therefore its position should be considered in the final development proposals.

6.0 CONCLUSIONS AND GROUND INVESTIGATION SCOPE RATIONALE

6.1 Land Quality

The earliest historical maps indicate that Hyde Road House was present onsite until the 1890s. Following its demolition, a new building was erected on site which has been historically utilised as both a drill shed and sports centre. This building no longer resides on site and the area is instead used as a hardsurfaced car park for a car dealership.

Based on the history of the site, there is the potential for contaminated soils to be present beneath the site. The site will be predominantly covered with hardsurfacing which will break the pathway to potentially contaminated soils. A potential pollution linkage will exist in any limited areas of soft landscaping. The risk to human health is therefore considered to be *Moderate to Low*.

The risk from volatile vapours is considered to be *Low*.

There is considered to be a *Moderate to Low* risk of contaminated soils attacking potable water supply pipes.

Potential onsite and offsite sources of ground gases have been identified therefore, the risk from permanent ground gases is considered to be *Moderate*.

The north of the site is indicated to lie within an area requiring full radon precautions within foundations however, the southern area is in an area requiring none. A site-specific radon search should be carried out through the BGS to confirm the exact level of radon precautions required for the site.

A significant source of mobile contamination has not been identified therefore the risk to controlled waters is considered to be *Low*.

6.2 Ground Engineering

Foundation designs will be dictated by the depth of Made Ground present beneath the site. If shallow Made Ground is present, traditional strip/trench fill and/or pad foundations may be a viable option constructed in the underlying natural Glacial Till deposits depending on the anticipated loadings of the proposed structure. However, if anticipated loadings for the proposed development are high or deep Made Ground is encountered, foundations may need to be piled transferring loads to the underlying sandstone bedrock.

6.3 Additional Considerations

A potential risk from UXO has been identified at the site. It is recommended that either a full UXO Desk Top Study be carried out for the Site prior to any intrusive works commencing or a UXO Risk Mitigation Engineer be on Site for all ground works.

Made Ground and natural Clay are likely to be present beneath the site therefore, a SuDS drainage solution is unlikely to be feasible for the proposed commercial development.

The Corn Brook, which is described as an underground watercourse, is shown to pass beneath the north western part of the site. This feature is probably culverted and therefore its position should be considered in the final development proposals.

6.4 Recommended Ground Investigation Scope of Investigation

Based on the information in this report we consider a main investigation is required in accordance with BS 10175:2017 and BS 22475. The following scope of works is recommended based on the Preliminary CSM compiled, additional works may be required as the result of planning conditions for the proposed development:

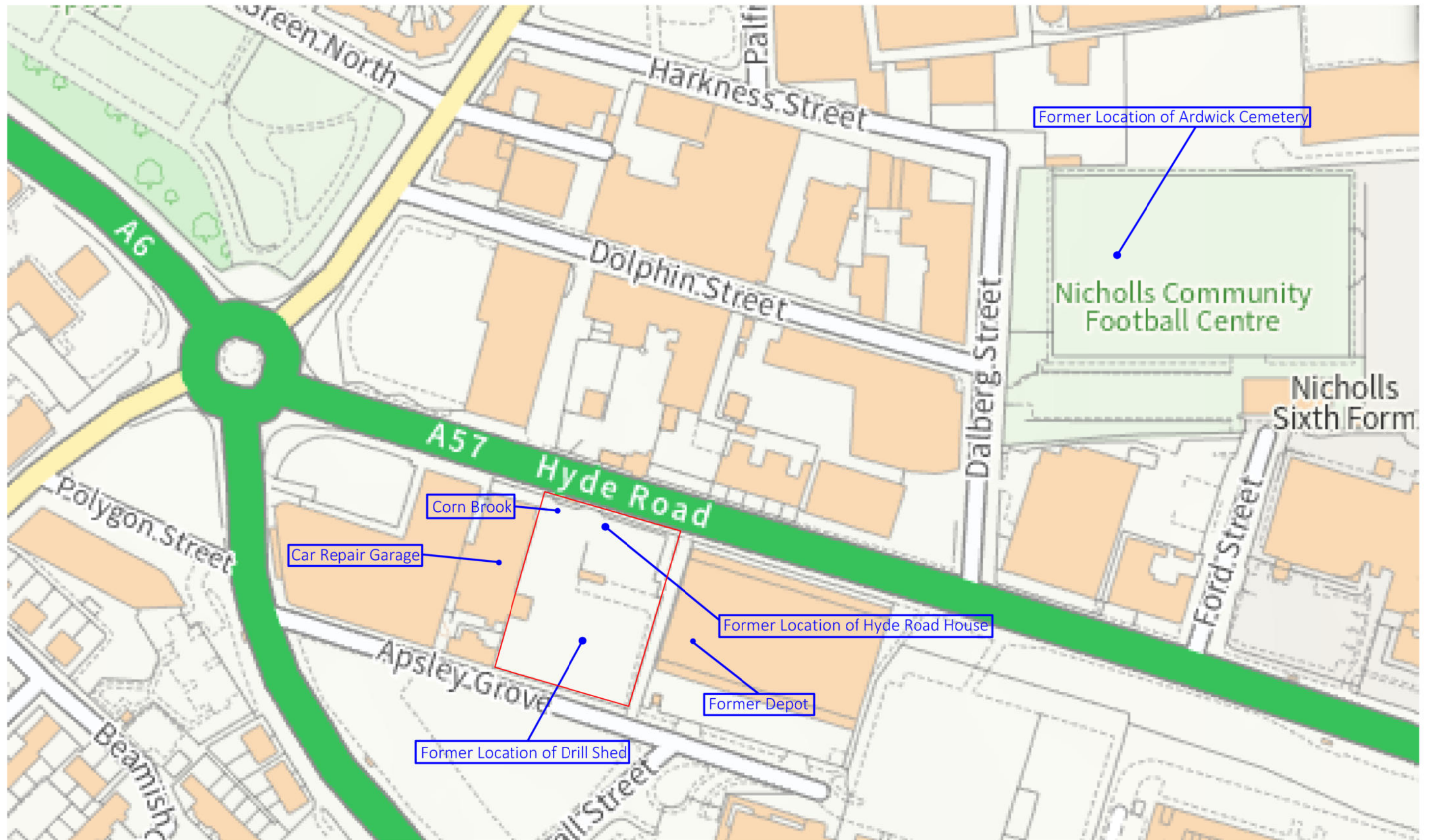
Method of Investigation	G / E
<i>UXO supervision or commission of a Detailed UXO Desk Top Study Report</i>	-
<i>10 No. windowless sample boreholes to c. 5m bgl.</i>	G / E
<i>Shallow gas monitoring installations.</i>	E
<i>Chemical testing comprising metals, PAHs, TPH CWG, VOCs, SVOCs and asbestos.</i>	E
<i>Geotechnical testing comprising aggressivity, classification, strength and stiffness analysis.</i>	G
<i>Ground gas and groundwater monitoring.</i>	E

Note **Environmental (E) / Geotechnical (G)**

APPENDIX 1 - Plans



GROUNDTECH CONSULTING	CLIENT CROWN ADVISORY	DATE MARCH 2023			Status		Notes Site Location
	PROJECT TITLE 14 HYDE ROAD, ARDWICK	SCALE NTS			Preliminary		
	PLAN TITLE PROJECT LOCATION PLAN	PLAN NUMBER GRO-22366-P01			Draft		
			Rev.	Details		Issued	
						For comment	
						Approved	



GROUNDTECH
CONSULTING



CLIENT
CROWN ADVISORY

PROJECT TITLE
14 HYDE ROAD, ARDWICK

PLAN TITLE
PRELIMINARY DEVELOPMENT CONSTRAINTS PLAN

DATE
MARCH 2023

SCALE
NTS

PLAN NUMBER
GRO-22366-P02

Rev. Details

Date

Status

Preliminary

Draft

Issued

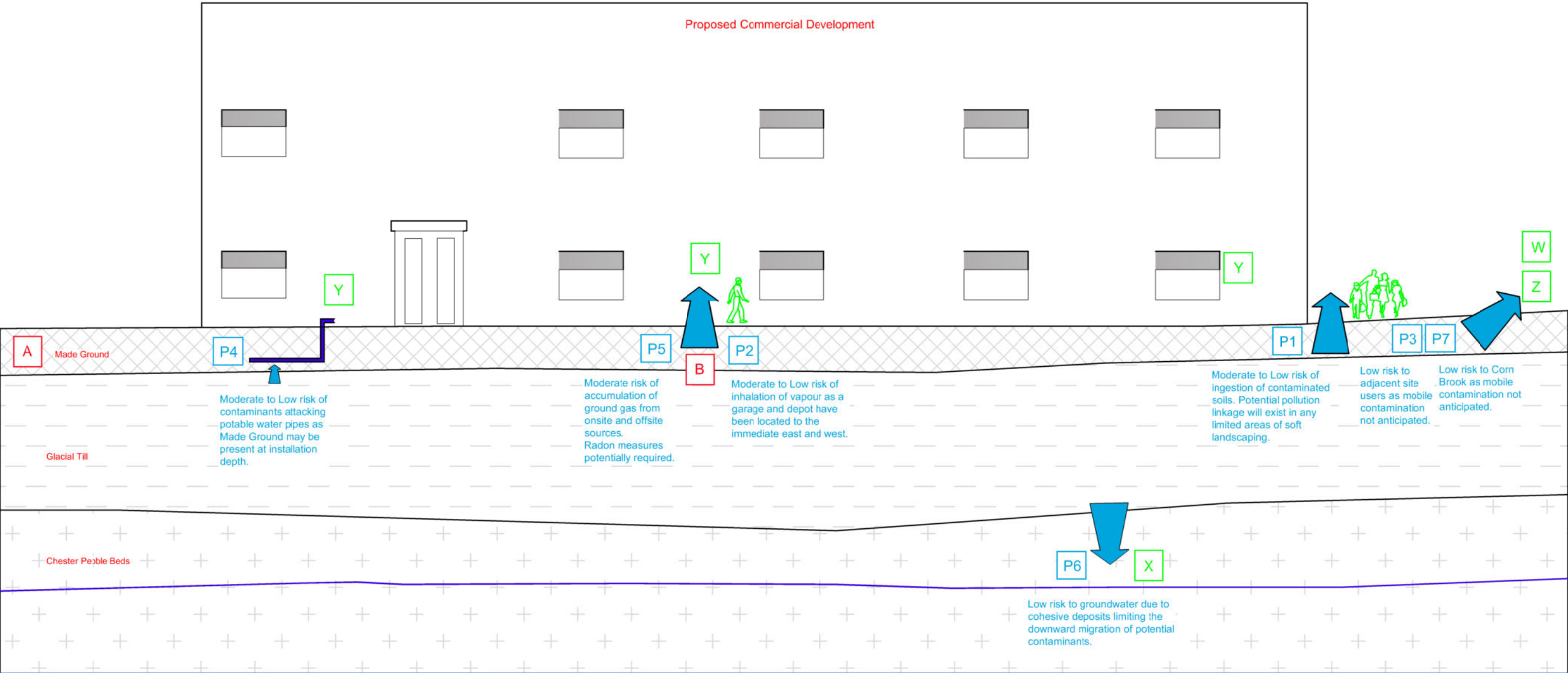
For comment

Approved

Notes



SOURCES	POLLUTION LINKAGES	RECEPTORS
A. Contaminated soils / Made ground. B. Ground gas.	P1. Ingestion of soil and dust. P2. Inhalation of vapour. P3. Inhalation of soil dust by adjacent site users. P4. Attacking of potable water supply pipe. P5. Migration and accumulation of ground gas in internal places. P6. Impaction of groundwater from soil contamination. P7. Migration of soil and groundwater contamination impacting surface waters.	W. Corn Brook beneath the north west corner of the site. X. Groundwater within the Principal Aquifer. Y. Site end users. Z. Adjacent site users.



GROUNDTECH CONSULTING 	CLIENT	DATE				Status		Notes
	CROWN ADVISORY	MARCH 2023				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	14 HYDE ROAD, ARDWICK	NTS				Issued		
	PLAN TITLE	PLAN NUMBER				For Comment		
	ILLUSTRATIVE PRELIMINARY CSM	GRO-22366-P03	Rev.	Details	Date	Approved		





APPENDIX 2 - Photographs



Photograph 1 - North east of the site and one of the commercial units currently present on site.



Photograph 2 – Southern half of the site.



Photograph 3 – Northern half of the site.



Photograph 4 - South west of the site including the car wash/valet area.



APPENDIX 3 - Historical Maps



EMAPSITE™

Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: 1056 Scale Town Plan
Map date: 1851
Scale: 1:1,056
Printed at: 1:1,056

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

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Site Details:
14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: County Series Town Plan
Map date: 1891
Scale: 1:500
Printed at: 1:1,000



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

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

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Revised N/A
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Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: County Series

Map date: 1889-1893

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1889
Revised N/A
Edition 1889
Copyright N/A
Levelled N/A

Surveyed 1893
Revised N/A
Edition 1893
Copyright N/A
Levelled N/A



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Production date: 10 October 2022

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



Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: County Series

Map date: 1908

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1891
Revised 1905
Edition 1908
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Surveyed 1891
Revised 1905
Edition 1908
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Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: County Series

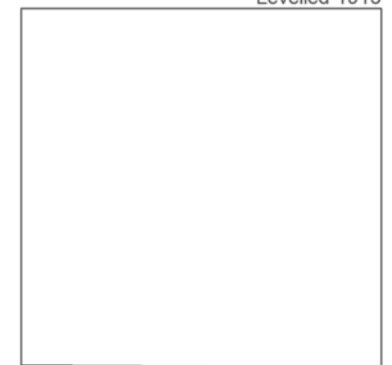
Map date: 1922

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1922
Revised 1916
Edition 1922
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Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: County Series

Map date: 1932-1933

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1873
Revised 1933
Edition N/A
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Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: National Grid

Map date: 1948-1949

Scale: 1:1,250

Printed at: 1:2,000



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Revised 1948
Edition N/A
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Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: National Grid

Map date: 1949-1950

Scale: 1:2,500

Printed at: 1:2,500



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Surveyed 1949
Revised 1949
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Site Details:

14 Hyde Road, Manchester, M12 6BW

Client Ref: EMS_816110_1009512
Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: National Grid

Map date: 1950-1951

Scale: 1:2,500

Printed at: 1:2,500



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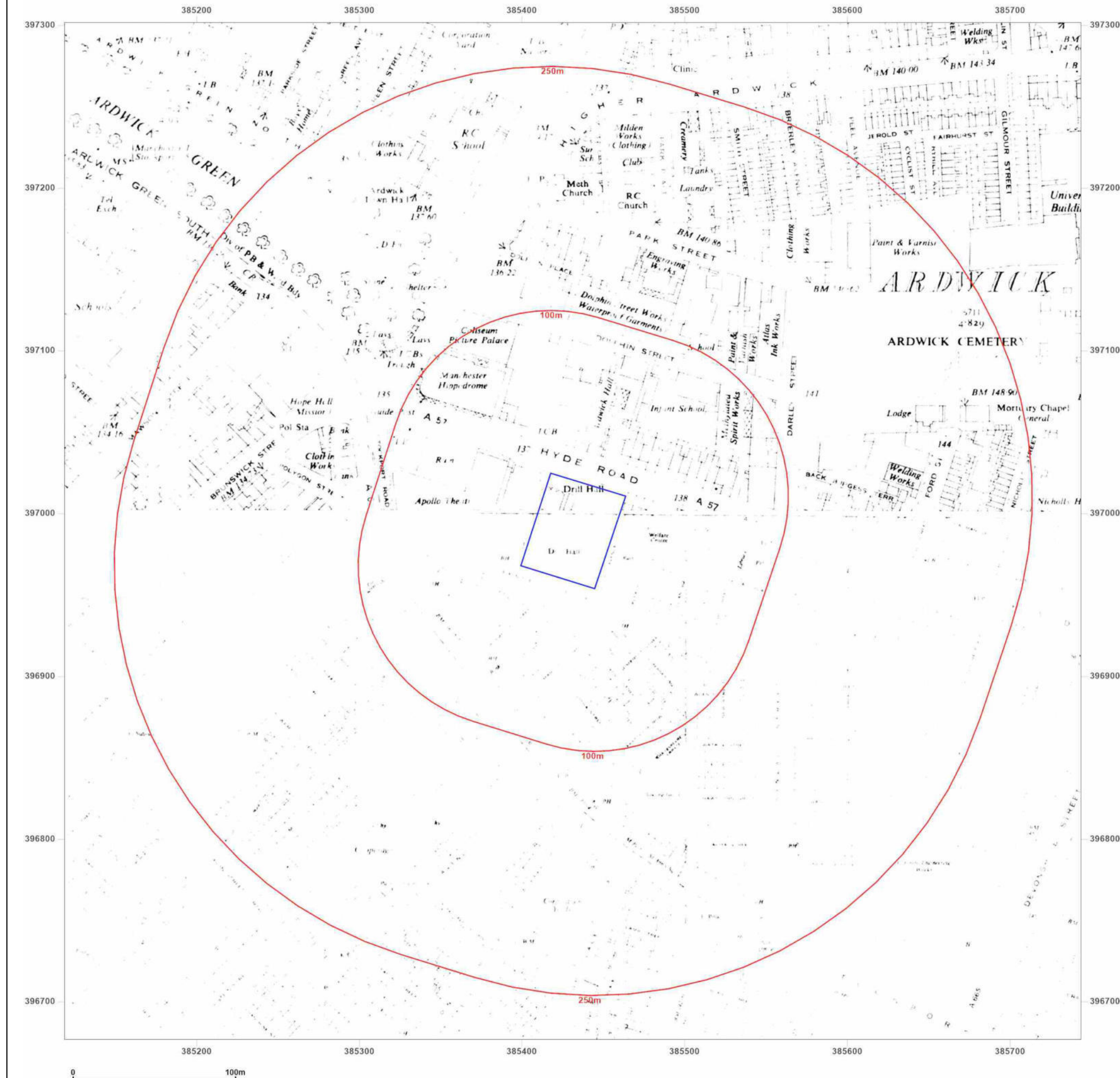


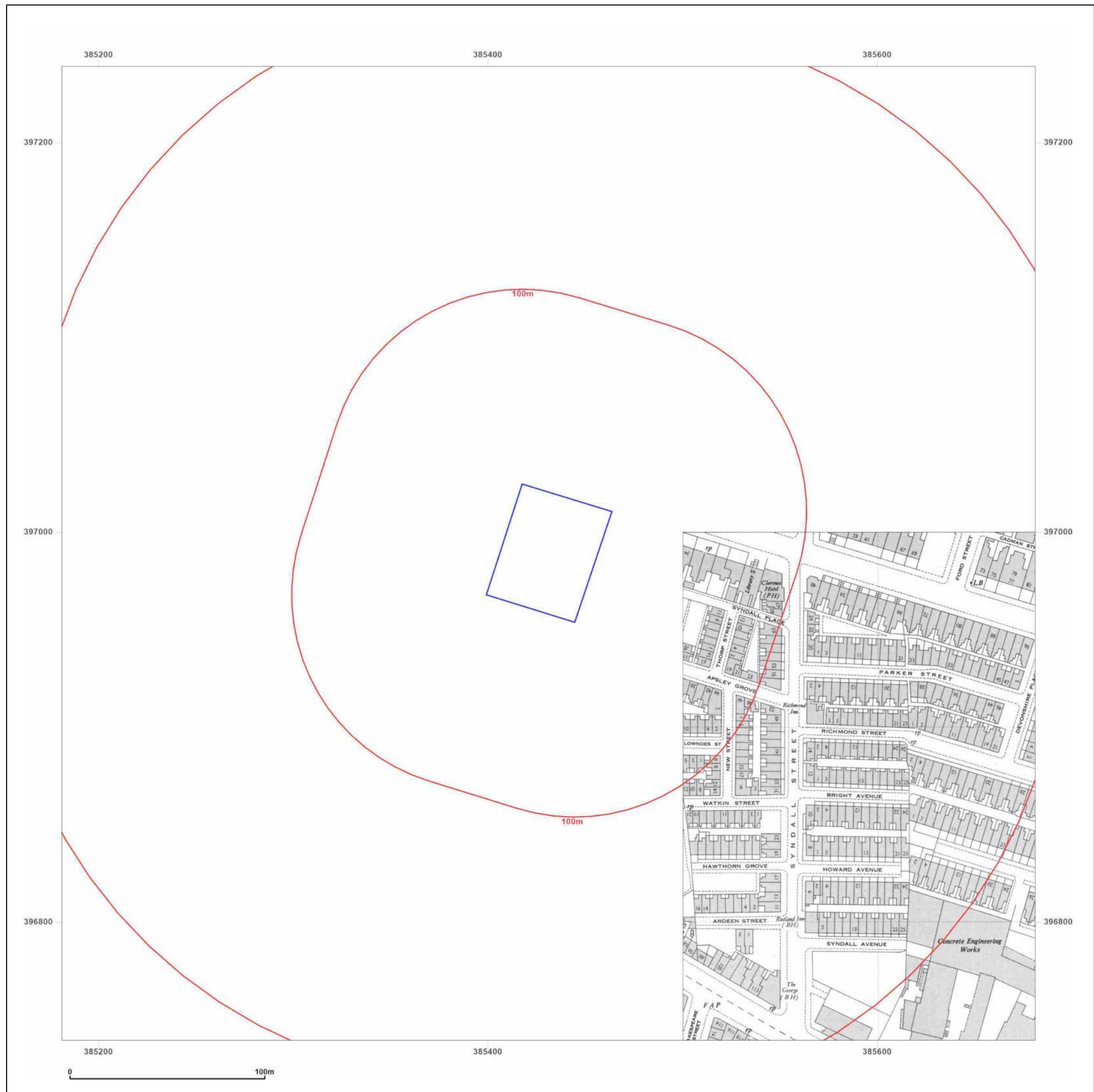
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Production date: 10 October 2022

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Site Details:

14 Hyde Road, Manchester, M12
6BW

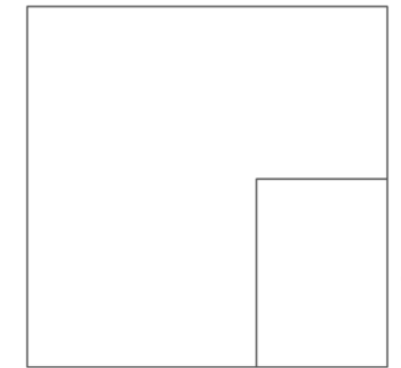
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Report Ref: EMS-816110_1049479
Grid Ref: 385431, 396989

Map Name: National Grid

Map date: 1953

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1953
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