



PHASE I GEO-ENVIRONMENTAL SITE ASSESSMENT

Land off Rochdale Road
Manchester,
M4 4HY

Prepared for:

Portwood Developments Ltd

Report Ref: 12-922-R1
Date Issued: December 2018



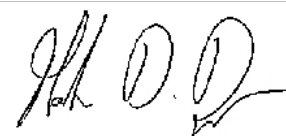
E3P

Heliport Business Park,
Liverpool Road,
Eccles,
Manchester,
M30 7RU

Tel : + 00 (0) 161 707 9612
<http://www.e3p.co.uk>

Registered in England
No.: 807255262

QUALITY ASSURANCE

REMARKS	Final
DATE	December 2018
PREPARED BY	R Walker
QUALIFICATIONS	BSc(Hons), FGS, IAEG
SIGNATURE	
CHECKED BY	A Edgar
QUALIFICATIONS	
SIGNATURE	
AUTHORISED BY	M Dyer
QUALIFICATIONS	
SIGNATURE	
PROJECT NUMBER	12-922

IMS Template Reference:
QR011

EXECUTIVE SUMMARY

Site Address	Land off Rochdale Road, Manchester, M4 4HY.	
Grid Reference	E384710, N399150.	
Site Area	0.5Ha.	
Current Site Use	The subject site is an irregular shaped parcel of land located to the east of Manchester City Centre. The site is currently occupied a carpark and Car Tyre depot repair garage and sales forecourt. The site is predominantly hard standing. 3No. single and two-storey structures are located in the north east and south of the site. The western site boundary is formed by what appears to be a brick retaining wall supporting the site with the adjacent land at a notably lower elevation. It would appear that this retaining wall would suggest that there may be subterranean structures beneath the existing hardstanding and buildings.	
Proposed Development	Demolition of existing buildings and structures; development of three new buildings comprising residential apartments and duplex homes (Use Class C3), commercial unit (Use Class E), basement car parking, new landscaping and public realm, and associated engineering and infrastructure works.	
Environmental Setting	<i>Drift Geology</i>	Glacial Till - BGS borehole logs indicate Clays.
	<i>Bedrock Geology</i>	Chester Formation - Sandstone.
	<i>Hydrogeology</i>	Undifferentiated aquifer strata overlying a Principal Aquifer (Bedrock Geology).
	<i>Hydrology</i>	Nearest surface water feature is the River Irk
	<i>Flood Risk</i>	The site is located within Flood Zone 1. A limited potential for groundwater flooding is recorded.
	<i>Ecology</i>	No potential habitats have been identified within the preliminary assessment.
	<i>Subsidence Hazards</i>	No hazard identified in data searches.
Site History	Historical mapping suggests that the site was occupied by terraced housing c.1848. The houses appear to have been demolished pre-1892, with the site being the location of a large unlabelled structure, considered to be part of the Rochdale Road Gas works facility to the north with tramline infrastructure recorded within the site boundaries. Historical mapping and aerial imagery suggest that the subject site was located at the same level as Rochdale Road to the east with the Gas Works facility to the west at a notably lower elevation. Mapping suggests that train tracks crossed the subject site leading to high level platforms allow the raw product (coal) to be tipped into hoppers below before entering the retort facility for refining. The Gasometers used to store the finished product (town gas) are sited to the west outside the subject site as as the former tar tanks and other ancillary infrastructure that would suggest potentially significant historical contamination. It would appear that the subject site was levelled by the construction of a retaining wall and then backfilling to create the industrial building with rail lines indicating use as locomotive or goods shed outside of the amn works.	

EXECUTIVE SUMMARY

Site History	The site layout was then revised with the site then comprising yard space with a weighbridge noted c.1948. By 1962 the rail infrastructure and large building have been cleared and replaced by 2 no small depots. By 1989, the site has reached its present-day configuration
Utility Locations	A formal GPR survey has not been completed, however a review of online records indicates service infrastructure is within and adjacent to the site.
Landfill Sites & Ground Gases	No landfills are recorded within 250m of the site. There is the possibility that the north of the site has been raised and infilled with unknown material which may have the potential to generate hazardous ground gas.
Invasive Plant Species	No invasive plant species were identified during the site assessment. The client should satisfy themselves that no invasive species are present on site.
Radon	Unaffected – No special precaution required.
Coal Mining / Land Stability	A Low risk to the development from coal mine workings has been identified.

Preliminary Geotechnical Appraisal

Based on the desk study information, the following geotechnical assessment has been made:

- Given the development history of the site, there is likely to be significant thicknesses of Made Ground fill deposits and obstructions on the site with potentially former covered subterranean structures.
- Existing buildings will require demolition with all relic foundations grubbing out, prior to the construction of the proposed development;
- All proposed structures must consider the existing boundary retaining wall; and,
- Investigation will be required in order to assess the underlying Made Ground and natural deposits and undertake in-situ geotechnical testing to determine the likely foundation solution.
- The retaining structure surrounding the western and northern flanks of the site will require assessment from a competent engineer.

Contaminated Land Risk Assessment

Human Health

Substantial thicknesses of Made Ground are considered likely to be present on site. These deposits may be a potential source of heavy metal, asbestos, hydrocarbon, VOC and SVOC contamination.

Existing buildings may have asbestos within the building fabric. This will require identification via an asbestos survey and specialist removal prior to demolition (if encountered). Whilst there is also the possibility of ACM within Made Ground deposits.

Short-term risk to construction workers posed by contaminants are likely to be mitigated by the use of appropriate Personal Protective Equipment (PPE) and with adequate provision of welfare facilities.

Future residential end users may be exposed to these potential contaminants should areas of landscaping form part of the proposed development however, this can likely be mitigated through provision of a clean cover layer.

Controlled Waters

Hydrocarbon compounds may be present within the Made Ground which have leaked into the ground during onsite industrial activity, and/or from leaking vehicle fuel tanks. The site is however understood to be underlain by low permeability Glacial Till which will limit the vertical migration of any mobile contaminants. Given the significant distance from the site to the nearest surface water feature, the risks are considered low.

EXECUTIVE SUMMARY

Notwithstanding the above, investigation of the former garage and the wider site will be required to fully ascertain the risks to Controlled Waters.

Ground Gas

Potential Made Ground deposits and possible hydrocarbon contamination present on the site may be a source of carbon dioxide and methane. Carbon dioxide and methane have associated asphyxiation and explosive risks respectively and if present the risks can be appropriately mitigated through the careful design of building structures.

Further investigation of these risks will likely be required to confirm the necessity for any mitigation measure within the proposed development.

Conclusions & Recommendations

The Phase 1 Desk Study indicates that the main gas production works was located to the west of the subject site, at a lower elevation, therefore the potential for significant or gross contaminant impact associated with this historical industrial land use is reduced. The primary contamination issues will be associated with prolonged use within an industrial context.

It is highly probable that the underlying and anticipated deep Made Ground will be impacted by inorganic metalloid compounds, PAH and possible petroleum range hydrocarbons that could result in significant costs should it be necessary to excavate and remove bulk materials from site to construct a basement.

The upfilled nature of the site, possible subterranean structures, retaining walls, former foundations and infrastructure represent a significant geotechnical hazard.

A detailed Phase II intrusive Geo-Environmental Ground Investigation should be undertaken in order to confirm the findings of the initial conceptual site model and value engineer a development solution.

A geotechnical assessment of the retaining wall is recommended.

Full asbestos surveys of all onsite structures will be required prior to demolition.

Table of Contents

1. INTRODUCTION.....	1
1.1 Background	1
1.2 Proposed Development	1
1.3 Objectives.....	1
1.4 Limitations	1
1.5 Sources of Information.....	1
1.6 Confidentiality	1
2. SITE SETTING.....	2
2.1 Site Details	2
2.2 Current Site Use	2
2.3 Surrounding Area	3
3. SITE HISTORY	4
3.1 On-Site Historical Development.....	4
3.2 Off-Site Historical Development.....	5
3.3 Planning History	7
4. ENVIRONMENTAL SETTING	8
4.1 Geology and Hydrogeology	8
4.2 Geotechnical Data	8
4.3 Coal Mining	9
4.3.1 Coal Mining Information	9
4.3.2 Coal Mining Risk Assessment.....	10
4.4 Hydrology	11
4.5 Radon Risk Potential	11
4.6 Industrial Land Uses	11
4.7 Sensitive Land Uses.....	11
4.8 Site Sensitivity Assessment	11
4.9 Preliminary Geotechnical Assessment.....	12
4.1 Unexploded Ordnance.....	12
5. CONSULTATIONS.....	13
5.1 Landfill Sites and Waste Treatment Sites	13
5.2 Regulatory Database	13
6. INITIAL CONCEPTUAL SITE MODEL	14
6.1 Initial CSM	14
7. CONCLUSIONS AND RECOMMENDATIONS.....	16

APPENDICES

Appendix I Limitations

Appendix II Glossary

Appendix III Drawings

Drawing No 12-922-001 – Site Location Plan

Drawing No 12-922-002 – Historical Features Plan

Appendix IV Photographs

Appendix V Historical Maps

Appendix VI Coal Authority Mining Report

1. INTRODUCTION

1.1 Background

E3P Ltd has been jointly commissioned by Portwood Developments Ltd to undertake a Phase I Geo-Environmental Site Assessment at land off Rochdale Road in Manchester.

This report is required to determine potential contaminated land and geotechnical liabilities associated with a proposed future residential development.

1.2 Proposed Development

Demolition of existing buildings and structures; development of three new buildings comprising residential apartments and duplex homes (Use Class C3), commercial unit (Use Class E), basement car parking, new landscaping and public realm, and associated engineering and infrastructure works.

1.3 Objectives

The objectives of the Geo-Environmental Investigation are to:

- Review historical plans, geology, hydrogeology, site sensitivity, flood-plain issues, mining records and any local authority information available in order to complete a Desk Study in line with Environment Agency (EA) document Model Procedures for the Management of Contaminated Land (Contaminated Land Report 11 (CLR11));
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors;
- Assess the desk study information and where possible, provide preliminary recommendations in relation to foundations, pavement construction and floor slabs; and,
- Provide recommendations regarding future works required and undertake a preliminary pre-construction cost appraisal.

1.4 Limitations

The limitations of this report are presented in Appendix I.

1.5 Sources of Information

Background information was sought from the following sources:

- Envirocheck Search;
- Historical mapping dated 1848 to 2018. A selection of historical maps are reproduced in Appendix V;
- On-line planning records held by Manchester City Council;
- Environment Agency Groundwater Vulnerability Map (magic.defra.gov.uk/magicmap.aspx);
- Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007); and,
- British Geological Survey Map.

1.6 Confidentiality

E3P has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.



2. SITE SETTING

2.1 Site Details

Site Address	Land off Rochdale Road, Manchester, M4 4HY
Grid Reference	E384710, N399150
Site Area	0.5Ha

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented in Appendix III as Drawing 10-747-001.

2.2 Current Site Use

E3P has undertaken a site assessment using available satellite imagery of the entire site and a description of the key findings is summarised in Table 2.1.

Table 2.1 Site Description

Occupancy/use	The subject site is an irregular shaped parcel of land located to the east of Manchester City Centre. The site is currently occupied a carpark and Car Tyre depot repair garage and sales forecourt. The site is predominantly hard standing. 3No. single and two-storey structures are located in the north east and south of the site. The western site boundary is formed by what appears to be a brick retaining wall supporting the site with the adjacent land at a notably lower elevation. It would appear that this retaining wall would suggest that there may be subterranean structures beneath the existing hardstanding and buildings.	
Structures	The site is predominantly covered by hard standing. 3No. single and two-storey structures are located in the north east and south of the site. No further structures have been identified within the site boundary.	
Access	Access to the site can be gained via Rochdale Road to the south only. High walls and palisade fencing block access from other locations.	
Slope	The site is largely level, however the land to the east is significantly lower in elevation with the change formed by a large brick retaining wall.	
Retaining structures	Along the western site boundary, a retaining structure is recorded above Gould Street and the elevation drops away to the north. Whilst unproven, it is likely this retaining structure extends along the north site boundary also.	
Surface Cover (%)	Buildings:	20%
	Hardstand:	78%
	Soft cover:	2%
Vegetation/Ecology	Localised areas of rough scrub vegetation are present in the north west and western site boundaries. The nature of this vegetation is undetermined. An ecological survey may be required to confirm the absence of invasive species.	
Hazardous Material Storage	No Above Ground Storage Tanks (AST) or Underground Storage Tanks (UST) were observed at the site during the preliminary site walkover. Due to the historical site usage it is likely that hazardous materials storage will have occurred on the site.	

Asbestos Containing Material (ACM)	No evidence of ACM was noted across the site during the site assessment. However, given the age of the onsite structures it is likely that ACM will be contained within the building fabric. A pre-demolition asbestos survey will be required within all existing buildings within the site boundary.
Polychlorinated Biphenyls (PCBs)	There is no equipment identified which may contain PCBs onsite or within the vicinity of the site.
Waste Storage	Potentially hazardous waste streams associated with the onsite Tyre works may be generated. However, none were able to be discerned during the assessment.
Drainage	A formal drainage survey has not been completed, however a review of online records held by United Utilities indicates the presence of services running underneath the adjacent public highways.

2.3 Surrounding Area

The surrounding area land uses are summarised in Table 2.2.

Table 2.2 Surrounding Land Uses

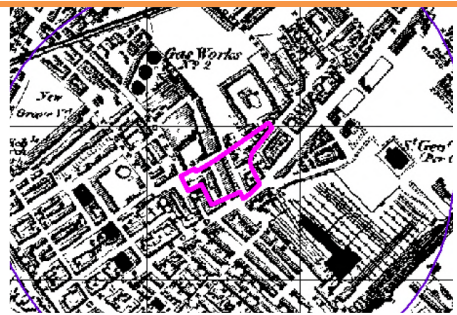
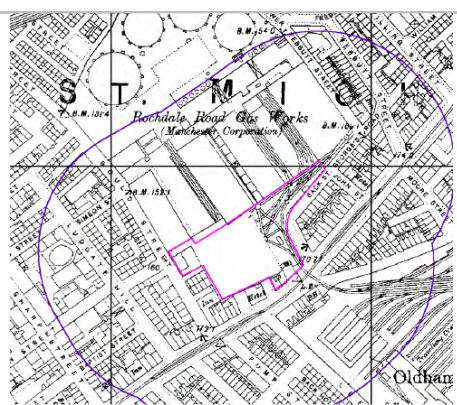
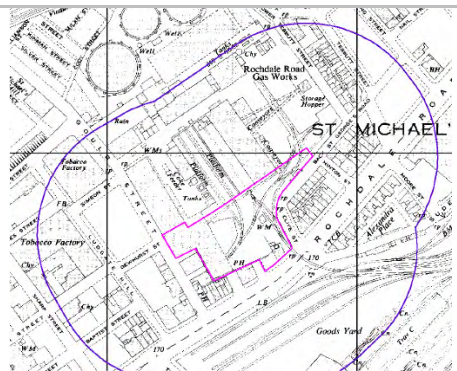
DIRECTION	LAND USE
North	Commercial units.
East	Commercial unit, car parking and Rochdale Road
South	Commercial units and Rochdale Road
West	Residential units and the Marble Arch Inn.

3. SITE HISTORY

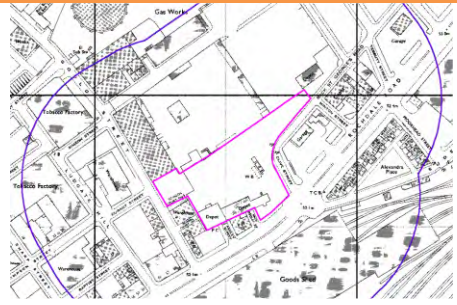
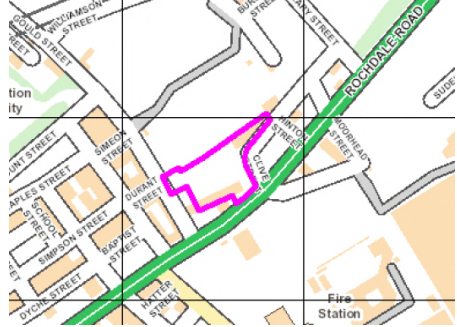
3.1 On-Site Historical Development

A review of historical mapping pertinent to the site is summarised in Table 3.1 below. In addition, historical site features are presented on Drawing No 10-747-003 in Appendix III.

Table 3.1 Site Historical Development

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1848 - 1892	The site is shown to comprise a series of rows of what appears to be terraced houses extending roughly north to south and accessed from Rochdale Road to the south.	
1850 1:1,056	No significant changes.	
1892 - 1948	Terraced housing no longer shown to be present on site. The site appears to be occupied by a large building which likely comprises part of the adjacent Rochdale Road Gas Works facility to the north. Rail lines/tramlines are located in the east of the site.	
1948 - 1968	The large structure which previously occupied the majority of the site has been partially altered/cleared, with the proportion of the site covered by buildings greatly reduced. The south western portion of the site appears to still be covered by buildings. Further railway/tram tracks are present in the centre and southern part of the site. A weigh bridge is recorded in the central area of the site.	



MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1968 - 1989	The site appears to have been largely cleared of rail/tram tracks, with the weigh bridge remaining and two depots recorded on the southern site boundary A school playing yard is located in the north west of the site.	
1989 - 2018	The school playing yard and the weighbridge are no longer mapped. A further depot unit has been built in the north eastern part of the site.	
2018	No significant changes to date. The site is shown in its present-day layout.	

3.2 Off-Site Historical Development

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 250m radius of the site is summarised below in Table 3.2.

Table 3.2 Surrounding Potentially Contaminative Land Uses.

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Rochdale Road Gas Works (Inc tanks, wells, gasometers, coke feeder, and several unidentified structures) Then Depot Then Unmarked	1m	Pre 1892- Pre 1978 Pre 1910- Post 1999 Post 1999- Present	N
Street Tramway Then Demolished	5m	Pre 1892- Pre 1948 Pre 1948- Present	S
Garage Then Vacant Then Demolished	10m	Pre 1968- Pre 2008 Pre 2008- Pre 2012 Pre 2012- Present	SW
Oldham Road Goods Station Then Fire Station & Depot Then Fire Station & Car Park	25m	Pre 1848- Pre 1989 Pre 1989- Pre 1994 Pre 1994- Present	SE
Paper Works Then Ruin Then Warehouse Then Works Then Apartments	65m	Pre 1952- Pre 1958 Pre 1958- Pre 1968 Pre 1968- Pre 1983 Pre 1983- Pre 2008 Pre 2008- Present	W

Timber Yard Then Tobacco Works Then Unmarked	70m	Pre 1848- Pre 1908 Pre 1908- Post 1990 Post 1990- Present	NW
Garage	75m	Pre 1958- Present	E
Sudell Street Industrial Estate	75m	Pre 1983- Present	SE
Electrical Substation Then Demolished	80m	Pre 1994- Pre 2008 Pre 2008- Present	SW
Trolleybus Depot (Mancs Corportaion) Then Bus Depot Then Demolished	90m	Pre 1948- Pre 1968 Pre 1968- Pre 1983 Pre 1983- Present	E
Electrical Substation Then Demolished	110m	Pre 1968- Pre 1978 Pre 1978- Present	NNE
Spring & Axle Works Then Dyche Trading Estate Then Apartment Building	120m	Pre 1948- Pre 1978 Pre 1978- Pre 2008 Pre 2008- Present	W
Coal Yard Then Demolished	120m	Pre 1850- Pre 1922 Pre 1922- Present	SSW
Garage Then Apartments	125m	Pre 1952- Pre 2008 Pre 2008- Present	WSW
Printing Works Then Trading Estate Then Apartments	150m	Pre 1908- Pre 1968 Pre 1968- Pre 2018 Pre 2018- Present	W
St Michaels Mill Then Demolished	170m	Pre 1948- Pre 1958 Pre 1958- Present	NNW
Saw Mill Then Demolished Then Car Park	180m	Pre 1968- Pre 1978 Pre 1978- Pre 2008 Pre 2008- Present	W
Works Then Garage	195m	Pre 1958- Pre 1968 Pre 1968- Present	NW
Railway	200m	Pre 1848- Present	N
Garage Then Depot Then Car Hire Centre Then Demolished	200m	Pre 1952- Pre 1992 Pre 1992- Pre 2008 Pre 2008- Pre 2017 Pre 2017- Present	SW
Tripe Works Then Disused Then Asphalt Works Then Depot Then Disused	210m	Pre 1948- Pre 1958 Pre 1958- Pre 1968 Pre 1968- Pre 1983 Pre 1983- Pre 2018 Pre 2018- Present	N
Rubber Works Then Demolished	220m	Pre 1922- Pre 2018 Pre 2018- Present	NNW
Bolt Works Then Collyhurst Foundry Then Disused	235m	Pre 1908- Pre 1948 Pre 1948- Pre 1953 Pre 1953- Present	N
Union Bridge Iron Works Then Works Then Empty Then Hotel & Commercial Development	250m	Pre 1892- Pre 1972 Pre 1972- Pre 1990 Pre 1990- Pre 2018 Pre 2018- Present	NW
Smithy Then unmarked Then Garage Then unmarked Then Locksmiths	250m	Pre 1892- Pre 1948 Pre 1948- Pre 1952 Pre 1952- Pre 1993 Pre 1993- Pre 2018 Pre 2018- Present	SW

3.3 Planning History

E3P has undertaken a detailed search of on-line planning records held by Manchester City Council which has identified the following;

- Archaeological and ecological surveys are unlikely to be required based on the findings of an adjacent property off Rochdale Road;
- Permission granted to Mobil Oil Ltd for the installation of a 36,000 litre double compartment underground fuel storage tank in July 1989 at Rochdale Road Service Station, approximately 10m southwest of the site, and;
- An application for the construction of a residential development approximately 200m northwest of the site, including a detailed Phase I report. This report noted that bored or continuous flight auger piles would likely be necessary due to the shallow ground conditions. It also highlighted a possibility of flooding for below ground structures.



4. ENVIRONMENTAL SETTING

4.1 Geology and Hydrogeology

The British Geological Survey (BGS) map for the site, (1:50,000, Solid & Drift edition) and online records indicates the site is underlain by the geological sequence presented in Table 4.1.

Table 4.1 Summary of Underlying Geology

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Drift	Glacial Till	Sands, Clay and Gravels	Secondary Undifferentiated
Solid	Chester Formation	Sandstone	Principal Aquifer

Table 4.2 Summary of BGS Borehole Records

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
~40m SW	14.55m	1.68m	Boulder Clay >14.55m	Not encountered
~140m NE	14.90m	0.80m	Firm Clay to 2.60m Very stiff clay 14.30m (Brick culvert noted from 4.45-4.87m)	Sandstone Rockhead 14.30-14.90

Table 4.3 Faulting

LOCATION	DESCRIPTION
20m SW	Unnamed fault - downthrow NE
100m NE	Unnamed fault - downthrow SW

The Envirocheck Report indicates that the site is not located within a Groundwater Source Protection Zone. Furthermore, there are no groundwater / potable abstractions within 500m of the site.

Based on the local topography and the location of surface watercourses, it is considered likely that shallow groundwater, if present, will flow in a northerly direction, following the topographical gradient towards the River Irk to the north.

4.2 Geotechnical Data

Geotechnical Data presented within a commercially available environmental database is summarised within Table 4.4 (overleaf).

Table 4.4 Summary of Geotechnical Data

HAZARD	DESIGNATION
Shrink-Swell Clay	Very Low Risk
Landslides	Very Low Risk
Ground Dissolution	No Hazard
Compressible Ground	No Hazard
Collapsible Deposits	Very Low Risk
Running Sand	Very Low Risk

4.3 Coal Mining

The Envirocheck Report states the site is in an area which may be affected by coal mining.

The Coal Authority operates a risk-based approach to the assessment of potential instability issues associated with future development of land located within the pre-defined Coal Authority Consultation Areas. This risk-based approach sub-divides the potential risk into 'Low & High' Risk Categories.

The Risk Categories can be defined as:

Low Risk Sites - Deemed to be land where coal mining has taken place, however it was at such depth not to pose a risk to new development and it therefore contains no known recorded risks and as such no further assessment is required.

For Low Risk Sites, the Coal Authority categorically state:

*"If your proposed development is within the Development Low Risk Area **there is no need for you to submit any coal mining information with your planning application** and The Coal Authority will not be consulted by the LPA. The LPA will include our Standing Advice as an informative note within the decision notice".*

High Risk Sites are deemed to be landholdings located within an area known to contain legacy risks that include:

- Mine entries (shaft or Adit);
- Shallow Coal Workings (recorded and probable);
- Workable coal seam outcrops;
- Mine gas sites and areas;
- Recorded coal mining related hazards;
- Geological features (fissures and break lines); and,
- Former surface mining sites (sometimes using historic opencast extraction methods).

4.3.1 Coal Mining Information

Prior to the enactment of the Coal Mines Regulation Act (1872) which came into force on the 1st January 1883, there was no statutory requirement to record the extent of abandoned mine workings and as such the Coal Authority has no knowledge of extensive workings throughout the UK Coal Fields where shallow workings are present at a depth which could result in a subsidence event in the future (through successive cavitation) associated with failure of support mechanism.

To determine if a site may have unrecorded or recorded coal mine workings requires a consideration of a wide range of information and E3P has completed a review of relevant information in relation to potential coal mining activities. Table 4.5 (overleaf) provides a summary of pertinent coal mining information.

Table 4.5 Coal Mining Information

SOURCES OF INFORMATION	SUMMARY
Coal Authority Interactive Map	Use of the Coal Authority Interactive Map indicated that: - The site is not located in an area of probable shallow coal workings, - The site is not located within 250m of an identified mine entrance, - The site is not located in an area affected by surface mining, - The site is not located within a development high risk area.
British Geological Survey Mapping	The 1:50,000 solid geological map for the area indicates the presence of 4 coal seams outcropping approximately 1km east of the site, which are thought to underlie the site. The youngest of these, the Openshaw Seam, is considered to be at considerable depth.
Review of Coal Authority Archive	No Coal Authority archives / Mine Abandonment Plans are made available.
Historical Ordnance Survey Mapping	Historical mapping shows no evidence of coal mining in the area; however, mapping is only available since 1850 so any coal mining prior to that date would be unrecorded.
Historical Site Investigations	E3P has not been provided with any historic site investigation reports.

4.3.2 Coal Mining Risk Assessment

This Risk Assessment comprises a desk-based review of all available information on the coal mining issues which are relevant to the application site deemed to be located within a 'High Risk' area. This includes:

- Interpretation of information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Setting out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and,
- Demonstrating to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

The Coal Mining Risk Assessment is summarised in Table 4.6.

Table 4.6 Summary of Coal Mining Risk Assessment

COAL MINING RISK ASSESSMENT	YES / NO	RISK ASSESSMENT
Recorded Underground Coal Mining at Shallow Depth (<30m)	No	Low
Recorded Underground Coal Mining at Shallow Depth (>30m)	No	Low
Unrecorded Underground Coal Mining at Shallow Depth (<30m)	No	Low
Mine Entries (Shaft / Adits)	No	Low
Coal Mining Geology – Fractures / Fissures	No	Low
Recorded Gas Emissions	No	Low
Recorded Mining Surface Hazard	No	Low
Surface Mining (opencast)	No	Low

Based on the above, a low risk to the development from coal mine workings has been identified.

4.4 Hydrology

Surface water features within 250m of the subject site are summarised in Table 4.7.

Table 4.7 **Surface Water Features**

SURFACE WATER FEATURE	QUALITY	DISTANCE (m)	DIRECTION
River Irk	Poor	193m	North West

The site is located within a currently defined Flood Risk Zone 1; defined as land assessed as having less than 1 in 1,000 annual probability of river or sea flooding (<0.1%), and as such is considered to be unaffected by river flooding. In addition, the Envirocheck Report states there is a limited potential for groundwater flooding to occur at the site.

4.5 Radon Risk Potential

The Envirocheck Report indicates the site is situated in an area where less than 1% of homes are above the Action Level and that the BGS reports that full radon protective measures are not necessary in the construction of new dwellings or extensions.

4.6 Industrial Land Uses

There are 57 registered Trade Directory entries on or within 250m of the site; of which 12 No. are still active.

The closest active entries relate to A1 Tyre Dealers (on site), Perfect Auto Repairs (on site), Brewery (58m west), Car Garage (63m west), painting suppliers (58m east), catering suppliers (182m west) and a Printers (207m, north west).

There is one formerly registered Fuel Stations entry shown to have been located on the site; 'Rochdale Road Service Station' stated as obsolete.

4.7 Sensitive Land Uses

The closest residential properties are high rise apartments located to the south west of the site.

The site is located within a predominantly commercial/industrial area and no other environmentally sensitive land uses have been identified within close proximity to the site.

4.8 Site Sensitivity Assessment

The site is assessed to be located within a **Moderate** sensitivity setting as discussed within Table 4.8.

Table 4.8 Site Sensitivity Assessment

SENSITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	The site is not located within a groundwater source protection zone.	Low
Distance to the closest groundwater abstraction point.	There are no groundwater abstractions within 500m of the site.	Low
Aquifer Classification in Superficial Drift Deposits.	The underlying Secondary undifferentiated aquifer within the superficial deposits is regarded as Unproductive.	Low
Aquifer classification in Bedrock.	The underlying bedrock is classified as a Principal aquifer.	Moderate/ High
Is the site underlain by low permeability Drift to depths in excess of 10.0m?	Borehole records for the subject site suggest drift is present to depths in excess of 10.0m	Low
Is the site located within 50m of a surface watercourse?	The risk to surface water (River Irk to the north) is considered low based on the distance.	Low
Sensitive land uses within close proximity (e.g. residential, school, nursery, local nature reserves etc.)	The closest residential properties comprise high rise apartments and these are located beyond the road adjacent to the west of the site. No other environmentally sensitive land uses have been identified within close proximity to the site.	Low/ Moderate
Overall Site Environmental Sensitivity		Moderate

4.9 Preliminary Geotechnical Assessment

Based on the desk study information, the following geotechnical assessment has been made:

- Given the development history of the site, there is likely to be significant thicknesses of Made Ground fill deposits and obstructions across the site;
- Existing buildings will require demolition with all relic foundations grubbing out, prior to the construction of the proposed development; and,
- Investigation will be required in order to assess the underlying Made Ground and natural deposits and undertake in-situ geotechnical testing to determine the likely foundation solution.
- The retaining structure surrounding the western and northern flanks of the site will require assessment from a competent geotechnical engineer.

4.1 Unexploded Ordnance

The regional unexploded bomb risk map from Zetica indicates that the site is in an area at moderate risk from possible Unexploded Ordnance (UXO) resulting from the Second World War. (Zetica, 2014).

5. CONSULTATIONS

5.1 Landfill Sites and Waste Treatment Sites

There are no recorded active landfill or waste treatment sites within 250m of the site.

5.2 Regulatory Database

The information summarised in Table 5.1 has been obtained from a commercially available environmental database. The summary table only includes records from within 250m of the subject site and not otherwise detailed in the report.

Table 5.1 *Summary of Environmental Data*

RECORD	ENTRIES WITHIN 250m	DETAILS
Contaminated Land Register Entries and Notices	0	None Identified (N/A).
Authorised industrial processes (IPC/IPPC/LAPPC).	1	108m west of the site for the processing of tobacco at the Manchester Tobacco Company, authorisation was revoked in 2005.
Fuel Stations Entries	2	Both obsolete, 1No. previously located on the site, the other 155m south west of the site.
Licensed radioactive substances	1	Use of radioactive substance located 215m south west of the site at Brooke Edgley Specialist Technical Services Ltd. The license is listed as revoked/cancelled.
Enforcements, prohibitions or prosecutions	0	N/A
Discharge Consents	0	N/A
Pollution Incidents	0	N/A
Consents issued under the Planning (Hazardous Substances) Act 1990	0	N/A
Control of Major Accident Hazard (COMAH) sites	0	N/A

6. INITIAL CONCEPTUAL SITE MODEL

6.1 Initial CSM

In accordance with Environment Agency, CLR 11 (2004) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), E3P Ltd has developed an initial CSM to identify potential contamination sources, migration pathways and receptors within the study area. This is summarised within Table 6.1.

Table 6.1 Initial Conceptual Site Model

SOURCE	PATHWAY	RECEPTOR
Human Health		
Heavy metals / Semi Volatile Organic Compounds (SVOC) associated within Made Ground and historical uses on and adjacent to the site such as gas works, railway land and depots.	Dermal Contact and Ingestion Consumption of Home-grown Produce	Construction Workers Residential End Users
Discussion: The presence of variable Made Ground associated with historic activities/previous developments is anticipated to underlie the site. Made Ground may be a potential source of heavy metals and semi-volatile Polycyclic Aromatic Hydrocarbons (PAH) which may pose a short-term risk to construction workers who may come into contact with impacted soils during earthworks. All construction works must be undertaken using the appropriate Personal Protective Equipment (PPE) to remove this potential risk. Given the proposed development is likely to comprise a high-rise development with limited areas of landscaping future residential users are unlikely to come into contact with impacted soils within any garden and landscaped areas. However, if areas of landscaping are included as part of the proposed development and if impacted soils are identified then localised remediation or an appropriate cover system, designed in accordance with BRE465 (Cover Systems for Land Regeneration), will remove the exposure pathway and therefore risk to future residential site users.		
Volatile hydrocarbon compounds associated with former gas works/railway land/garages/former fuel filling station etc	Volatilisation / Accumulation, Vapour Inhalation	Construction Workers, Residential End Users
Discussion: Anticipated Made Ground on site is a potential source of hydrocarbon compounds. The historical commercial/industrial land uses both on site and in the surrounding area, including the gas works plant, fuel filling station, railway tracks, goods shed and garages, as well as the current land uses are potential sources of hydrocarbons, SVOCs, VOCs and chlorinated hydrocarbons associated with the use and storage of fuels and chemicals. Hydrocarbon compounds, SVOCs, VOCs and chlorinated hydrocarbons may pose a risk to construction workers if they come into contact with impacted soil during further earthworks, however appropriate PPE/ Respiratory Protective Equipment (RPE) will ensure they are at no unacceptable risk. Future residential end users may come into contact with impacted soil in landscaped areas, if proposed, and via indoor inhalation of vapours.		

Asbestos Containing Materials (ACM) within Made Ground/Existing Buildings	Fibre / Dust Inhalation	Construction Workers Residential End Users Third Party Property
Discussion: No ACM was identified during the external walkover survey; however, the presence of ACM underlying Made Ground and within the fabric of the existing buildings cannot be discounted. ACM poses a risk through fibre and dust inhalation and if present may pose a risk to construction workers during any future earthworks / demolition and to adjacent third-party property should dust be generated during those works. These risks can be mitigated through the development of a detailed enabling works strategy following guidance and protocol specified within the Control of Asbestos Regulations (2012) and industry best practice as detailed in CIRIA733 (Asbestos in Soil and Made Ground: A guide to understanding risk). A pre-demolition asbestos survey will likely be required in all existing on-site buildings.		
Hazardous Ground Gases		
Methane and Carbon Dioxide associated with possible on-site fill material	Inhalation Accumulation	Construction Workers Residential End Users
Discussion: The presence of historic Made Ground and possible hydrocarbon contamination may be a source of hazardous ground gas (such as carbon dioxide & methane) which may pose a risk to construction workers and residential end users. Carbon dioxide and methane have associated asphyxiation and explosive risks, respectively. Should a ground gas risk be identified to end users, the risks can be mitigated through the adoption of suitable control measures within the building construction using guidance presented within CIRIA 665 (Assessing Risk Posed by Hazardous Ground Gases to Buildings) and BS8485 (Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments).		
Controlled Waters		
Hydrocarbon compounds associated with former/current site uses	Vertical / Lateral Migration	Principal Aquifer River Irk
Discussion: The presence of mobile hydrocarbon compounds within the groundwater associated with the former gas works, railway tracks, fuel filling station and garages and also associated with historic spillages from vehicles currently on the site cannot be discounted, however there is a limited potential for contamination to controlled waters. The Principle Aquifer within the underlying bedrock geology is considered a potential receptor, however, given the absence of any potable groundwater abstractions within close proximity to the site and the likely presence of substantial thicknesses of impermeable clays beneath the site the overall sensitivity of this receptor is reduced. Given the significant distance of the site from the River Irk; the site is considered to pose a low risk to this watercourse.		
Buildings and Infrastructure		
pH & Sulphate	Corrosion of Concrete	Foundations / Concrete
Discussion Presence of pH and sulphate within any Made Ground deposits may result in corrosion of buried concrete within the proposed development. Assessment must be undertaken to confirm the levels of pH and sulphate within Made Ground deposits and thus determine the concrete classification		

7. CONCLUSIONS AND RECOMMENDATIONS

Site Summary

The site was historically been occupied by residential housing which was subsequently cleared at which point the site was then occupied by part of an adjacent gas works which included several railway lines and depots. The gas works was subsequently cleared from the site and more recently the site has been occupied by several depots, a garage and a fuel filling station.

These uses are considered to have the potential to be sources of heavy metal, polycyclic aromatic hydrocarbon (PAH), petroleum hydrocarbon, asbestos and ground gas impact to the sub-surface.

Contamination Issues

Human Health	Substantial thicknesses of Made Ground are considered likely to be present on site. These deposits may be a potential source of heavy metal, asbestos, hydrocarbon, VOC and SVOC contamination. Existing buildings may have asbestos within the building fabric. This will require identification via an asbestos survey and specialist removal prior to demolition (if encountered). Whilst there is also the possibility of ACM within Made Ground deposits. Short-term risk to construction workers posed by contaminants are likely to be mitigated by the use of appropriate Personal Protective Equipment (PPE) and with adequate provision of welfare facilities. Future residential end users may be exposed to these potential contaminants should areas of landscaping form part of the proposed development.
Controlled Waters	Hydrocarbon compounds may be present within the Made Ground which have leaked into the ground during onsite industrial activity, and/or from leaking vehicle fuel tanks. The site is however understood to be underlain by low permeability Glacial Till which will limit the vertical migration of any mobile contaminants. Given the significant distance from the site to the nearest surface water feature, the risks are considered low. Notwithstanding the above, investigation of the former fuel filling station and the wider site will be required to fully ascertain the risks to Controlled Waters.
Ground Gas	Potential Made Ground deposits and possible hydrocarbon contamination present on the site may be a source of carbon dioxide and methane. Carbon dioxide and methane have associated asphyxiation and explosive risks respectively and if present the risks can be appropriately mitigated through the careful design of building structures. Further investigation of these risks will likely be required to confirm the necessity for any mitigation measure within the proposed development.
Potable Waters	It is recommended that a UKWIR assessment is completed to determine the required potable water pipe infrastructure.

Geotechnical Issues

Based on the desk study information, the following geotechnical assessment has been made:

- Given the development history of the site, there is likely to be significant thicknesses of Made Ground fill deposits and obstructions across the site;
- Existing buildings will require demolition with all relic foundations grubbing out, prior to the construction of the proposed development; and,
- Investigation will be required in order to assess the underlying Made Ground and natural deposits and undertake in-situ geotechnical testing to determine the likely foundation solution.
- The structural integrity of the retaining wall will require assessment by a competent geotechnical engineer

END OF REPORT

APPENDIX I LIMITATIONS



1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the Client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.



APPENDIX II GLOSSARY

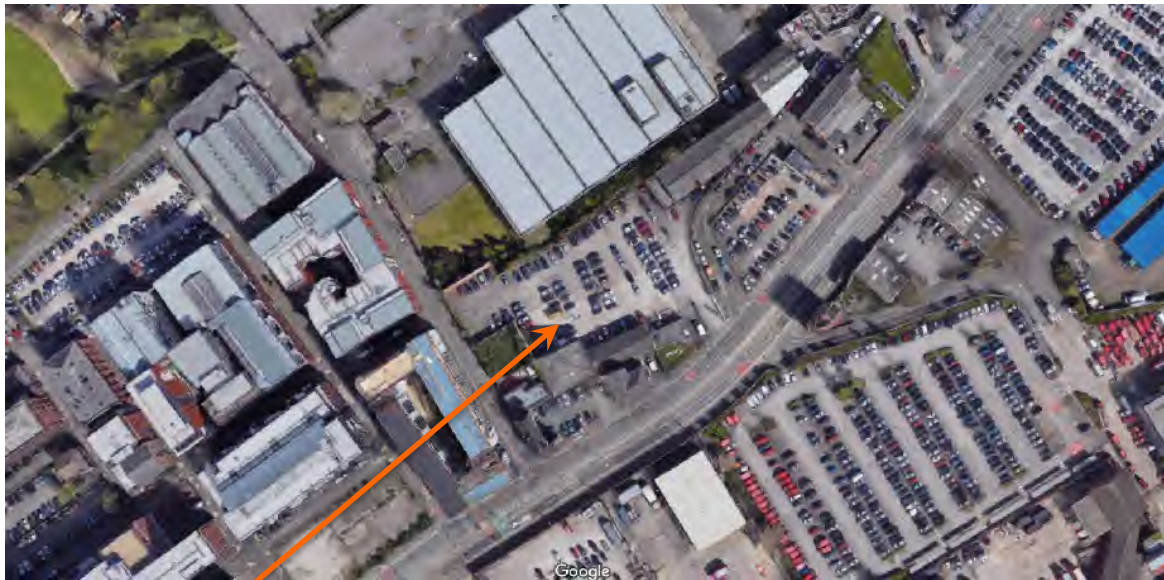


TERMS

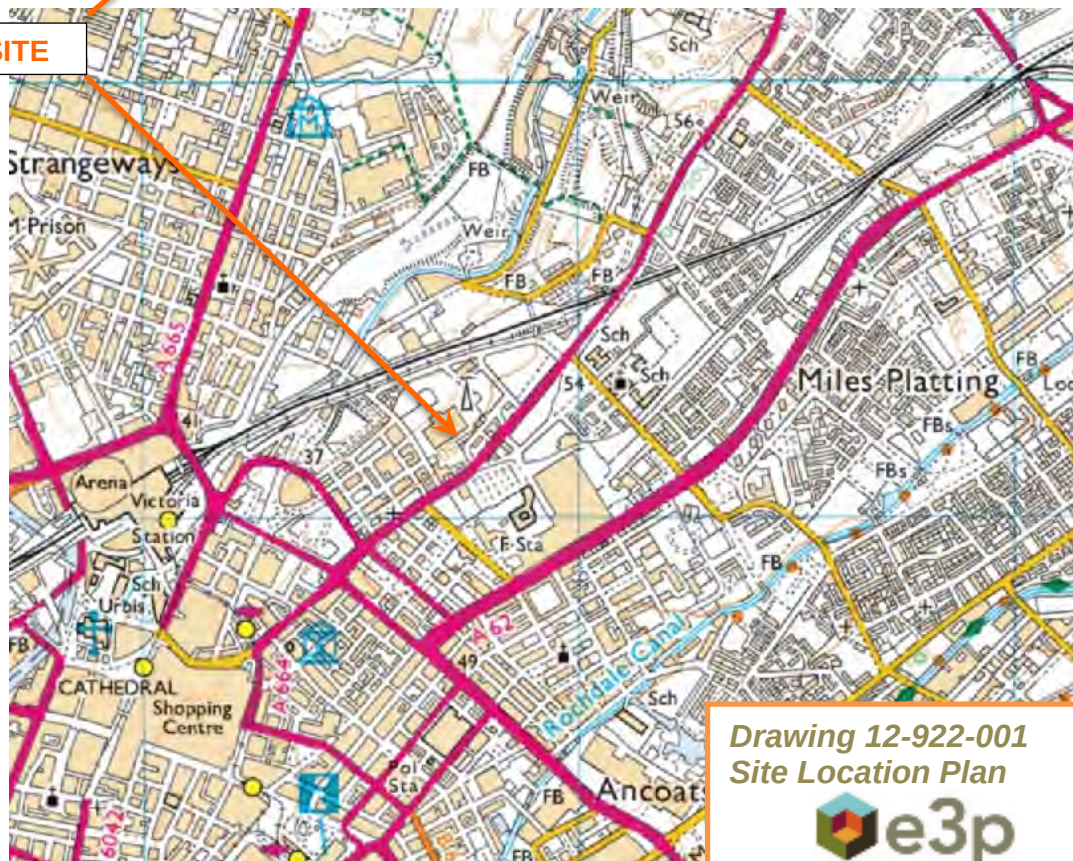
AST	Above Ground Storage Tank	SGV	Soil Guideline Value
BGS	British Geological Survey	SPH	Separate Phase Hydrocarbon
BSI	British Standards Institute	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes	SPT	Standard Penetration Test
CIEH	Chartered Institute of Environmental Health	SVOC	Semi Volatile Organic Compound
CIRIA	Construction Industry Research Association	UST	Underground Storage Tank
CLEA	Contaminated Land Exposure Assessment	VCCs	Vibro Concrete Columns
CSM	Conceptual Site Model	VOC	Volatile Organic Compound
DNAPL	Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB)	WTE	Water Table Elevation
DWS	Drinking Water Standard	m	Metres
EA	Environment Agency	km	Kilometres
EQS	Environmental Quality Standard	%	Percent
GAC	General Assessment Criteria	%v/v	Percent volume in air
GL	Ground Level	mb	Milli Bars (atmospheric pressure)
GSV	Gas Screening Value	l/hr	Litres per hour
HCV	Health Criteria Value	µg/l	Micrograms per Litre (parts per billion)
ICSM	Initial Conceptual Site Model	ppb	Parts Per Billion
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene)	mg/kg	Milligrams per kilogram (parts per million)
ND	Not Detected	ppm	Parts Per Million
LMRL	Lower Method Reporting Limit	mg/m³	Milligram per metre cubed
NR	Not Recorded	m bgl	Metres Below Ground Level
PAH	Polycyclic Aromatic Hydrocarbon	m bcl	Metre Below Cover Level
PCB	Poly-Chlorinated Biphenyl	mAOD	Metres Above Ordnance Datum (sea level)
PID	Photo Ionisation Detector	kN/m²	Kilo Newtons per metre squared
QA	Quality Assurance	µm	Micro metre
SGV	Soil Guideline Value		

APPENDIX III DRAWINGS





SITE



*Drawing 12-922-001
Site Location Plan*





Key:

Historical Features

- Former Residential Buildings (Pre 1850 - Pre 1891)
- Former Buildings (Pre 1891 - Pre 1948)
- Former Railway Sidings (Pre 1891 - Pre 1989)
- Former Buildings (Pre 1959 - Pre 1989)
- Former Works Buildings (Pre 1956 - Pre 1989)
- Former Depot Buildings (Pre 1966 - Pre 2000)

Notes:

--	--	--	--	--	--

P1	-	05.11.2018	DRAFT	RW	MD
Phase	Revision	Date	Issue	Drawn	Authorised
Client:		Job No:	Date:		
Mulbury		12-922	05.11.2018		
		Drawing No:	Scale:		
		003	N.T.S		

Job Title:	Drawing Title:
Rochdale Road	Historical Features Plan



Environmental Engineering Partnerships Ltd
City Helport & Business Centre
Eccles, Manchester, M30 7RU
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

The client must not amend any drawing, design or other intellectual property produced by E3p Ltd without permission in writing from E3p Ltd in advance of any amendments being made. E3p Ltd shall not be liable for any damage and/or losses obtained in advance of the amendments being made. E3p Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.

APPENDIX IV PHOTOGRAPHS





PLATE 1 – VIEW ACROSS SITE



PLATE 2 – VIEW OF ARCHES ALONG BOUNDARY





PLATE 3 – VIEW OF RETAINING WALL AT SITE BOUNDARY



PLATE 4 – VIEW OF SLOPE AND LEVEL CHANGE EXTERNALLY

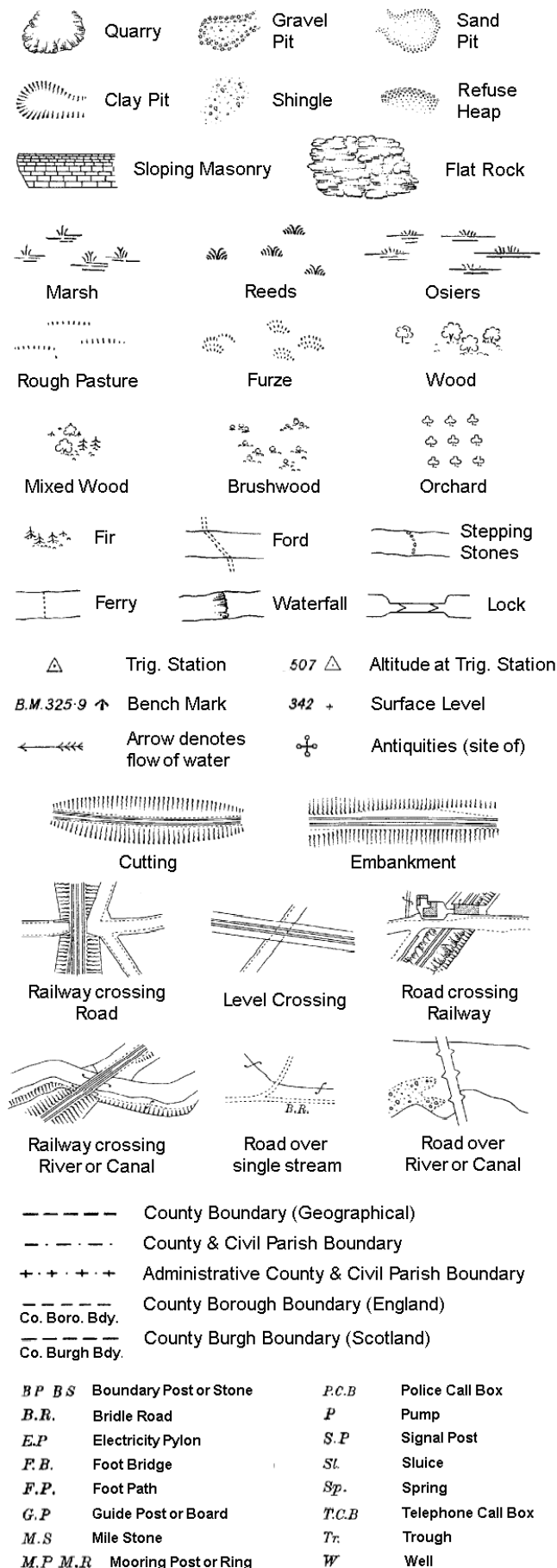


APPENDIX V HISTORICAL MAP

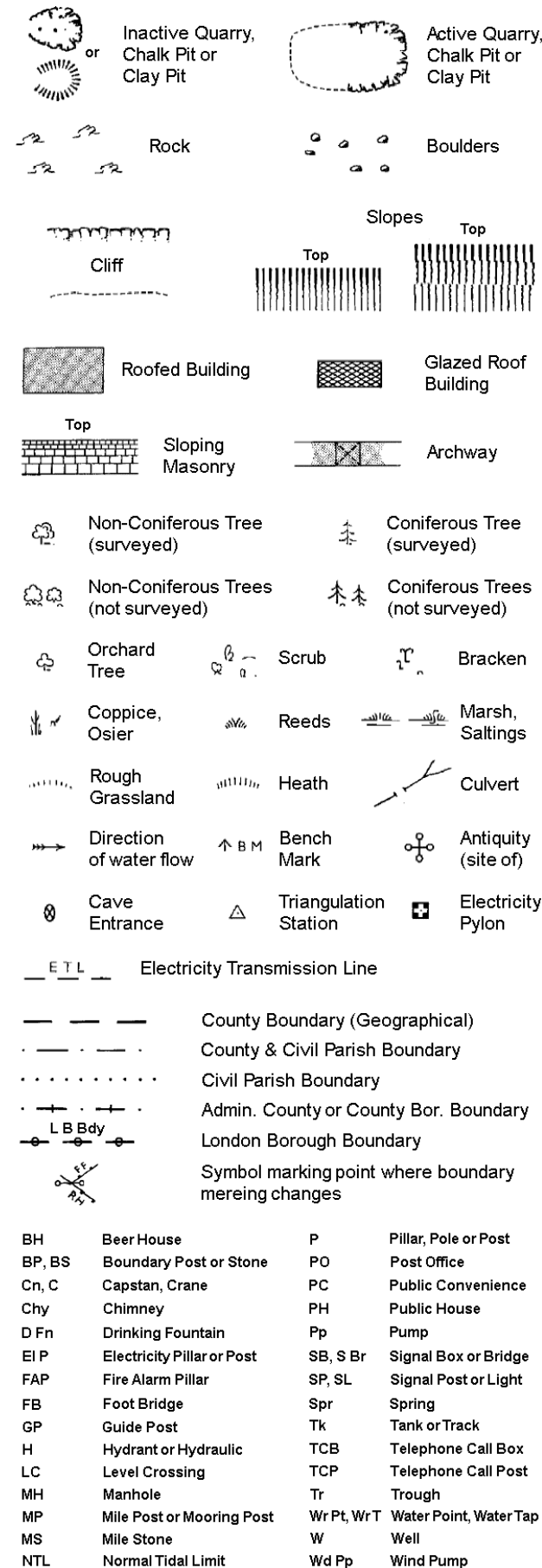


Historical Mapping Legends

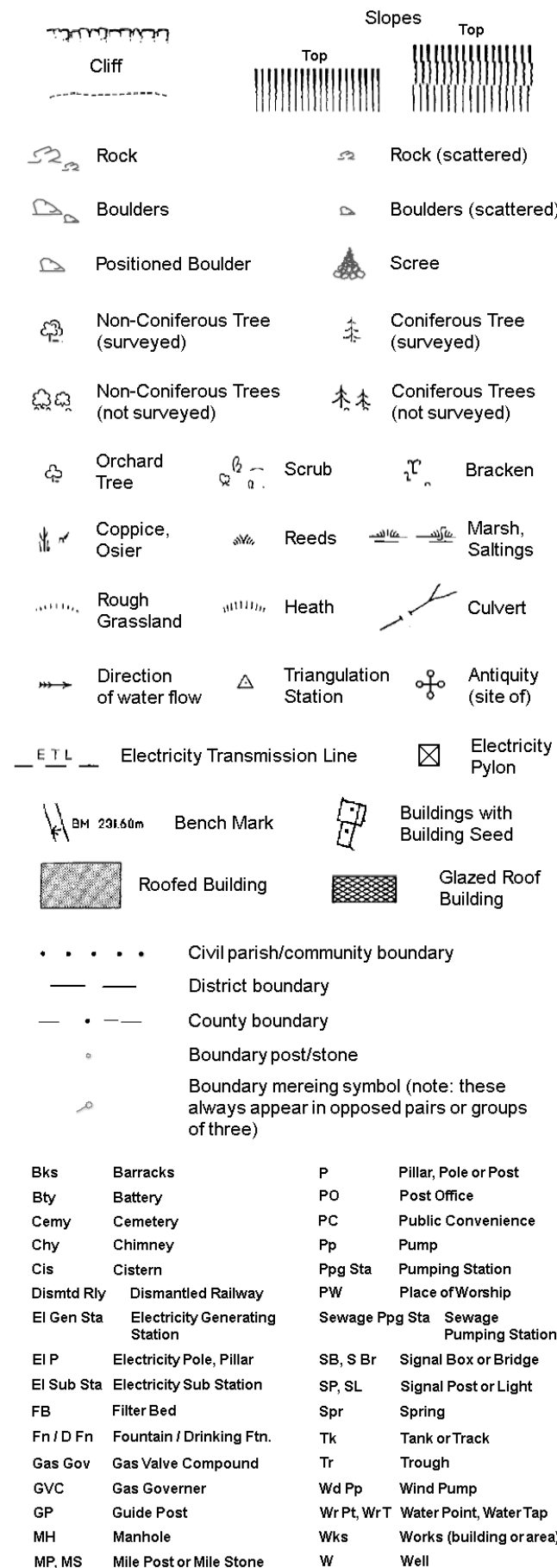
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



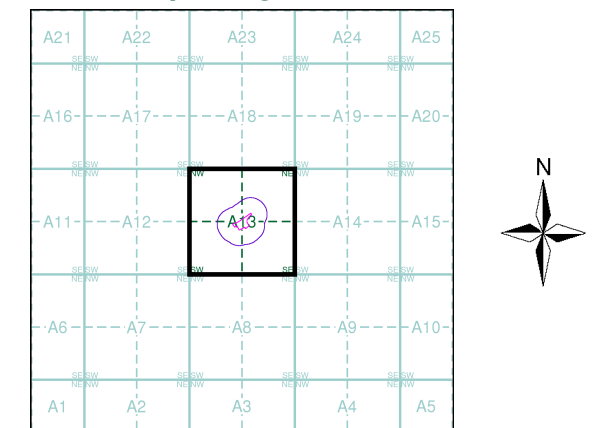
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1892 - 1893	2
Lancashire And Furness	1:2,500	1908	3
Lancashire And Furness	1:2,500	1922 - 1933	4
Ordnance Survey Plan	1:1,250	1948 - 1949	5
Ordnance Survey Plan	1:2,500	1951	6
Ordnance Survey Plan	1:1,250	1952 - 1953	7
Ordnance Survey Plan	1:2,500	1953 - 1955	8
Ordnance Survey Plan	1:1,250	1958 - 1963	9
Ordnance Survey Plan	1:2,500	1959 - 1966	10
Ordnance Survey Plan	1:2,500	1966 - 1969	11
Ordnance Survey Plan	1:1,250	1968 - 1990	12
Additional SIMs	1:1,250	1978 - 1984	13
Additional SIMs	1:1,250	1983 - 1986	14
Ordnance Survey Plan	1:1,250	1988 - 1989	15
Large-Scale National Grid Data	1:1,250	1992	16
Large-Scale National Grid Data	1:1,250	1993 - 1995	17
Large-Scale National Grid Data	1:1,250	1994	18
Large-Scale National Grid Data	1:1,250	1996	19

Historical Map - Segment A13



Order Details

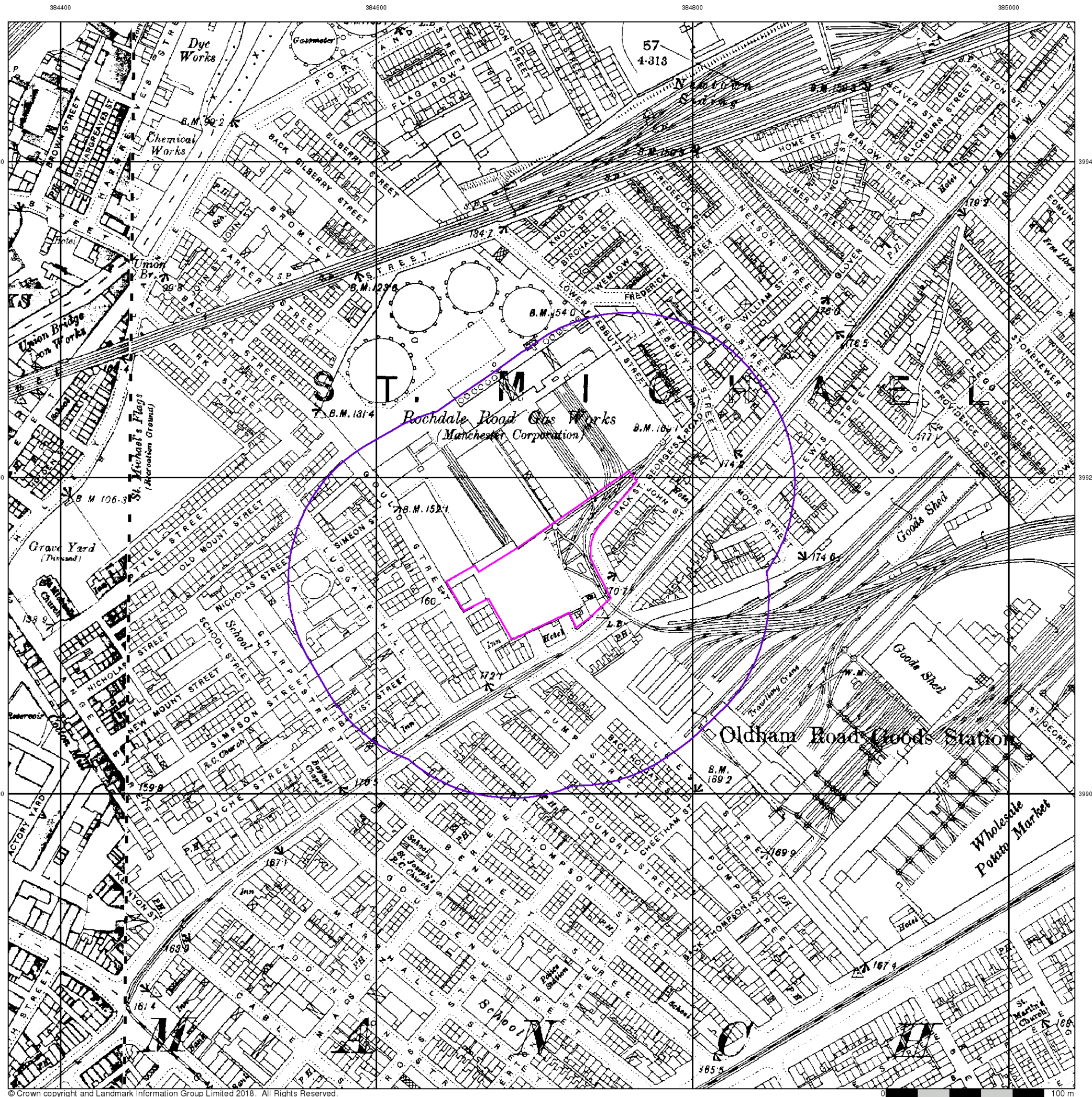
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



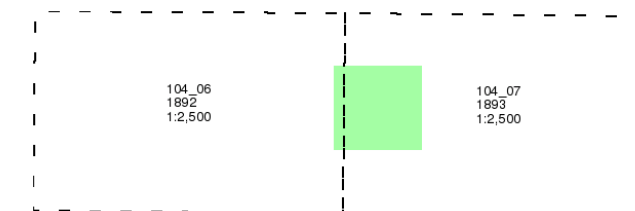
Lancashire And Furness

Published 1892 - 1893

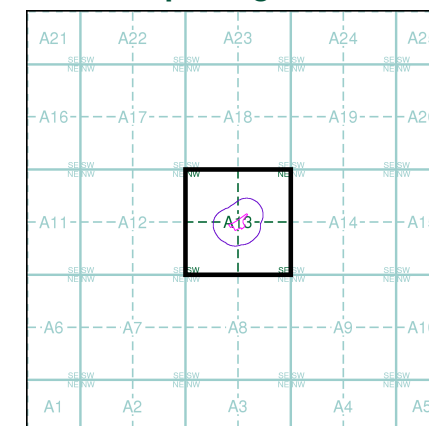
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



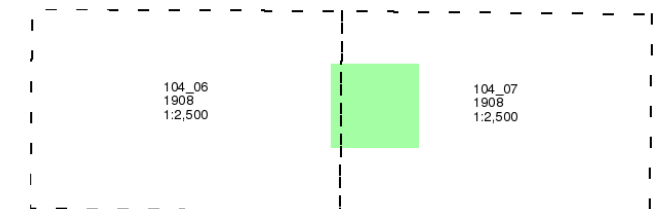
Lancashire And Furness

Published 1908

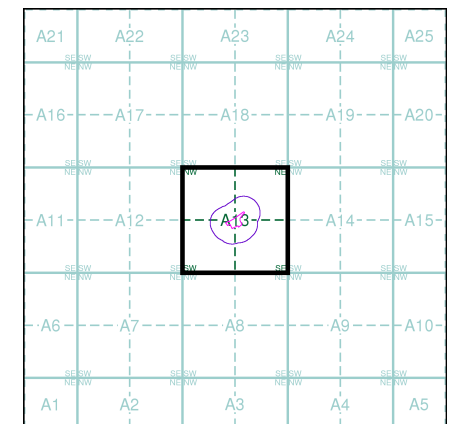
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

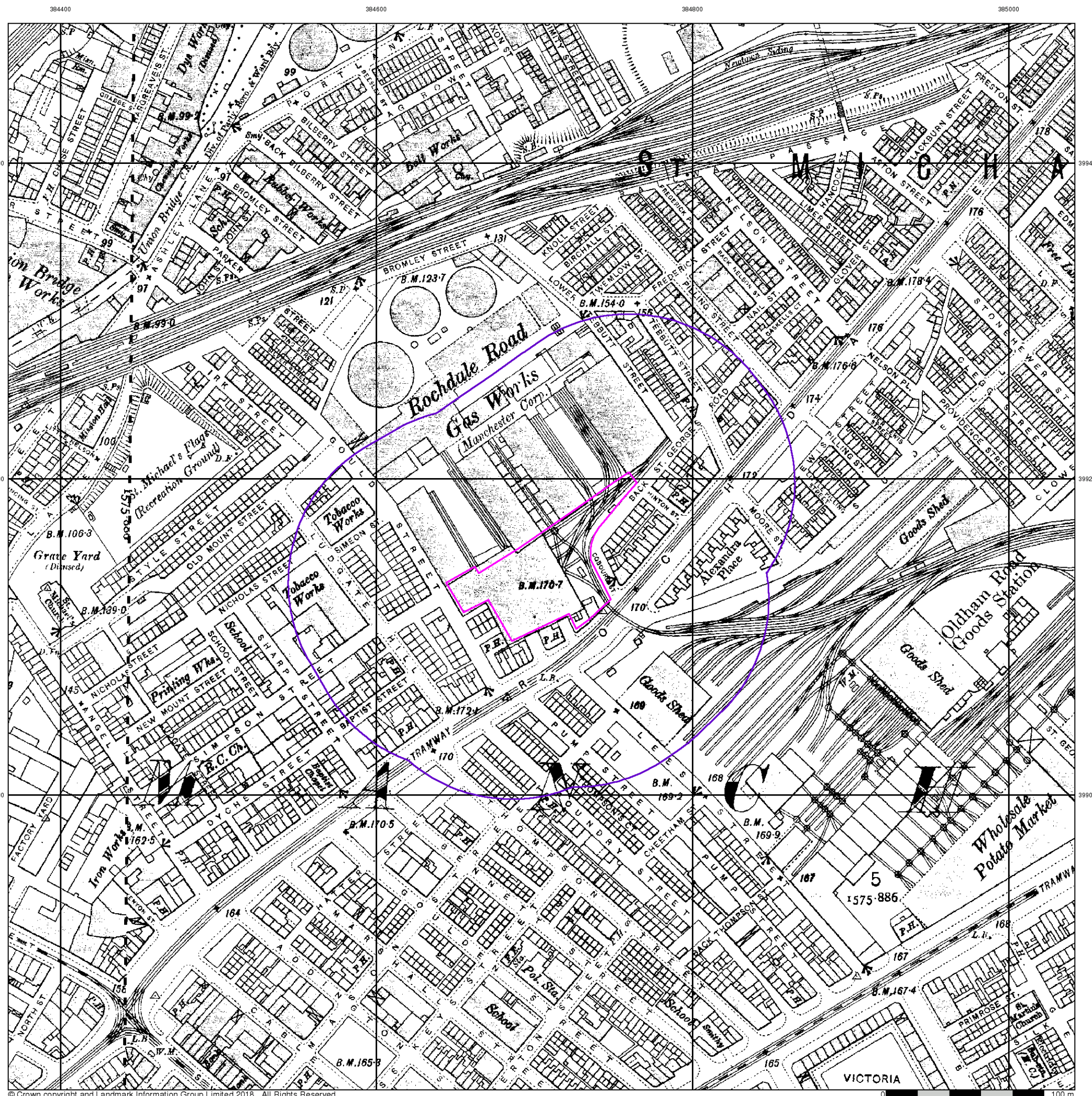
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

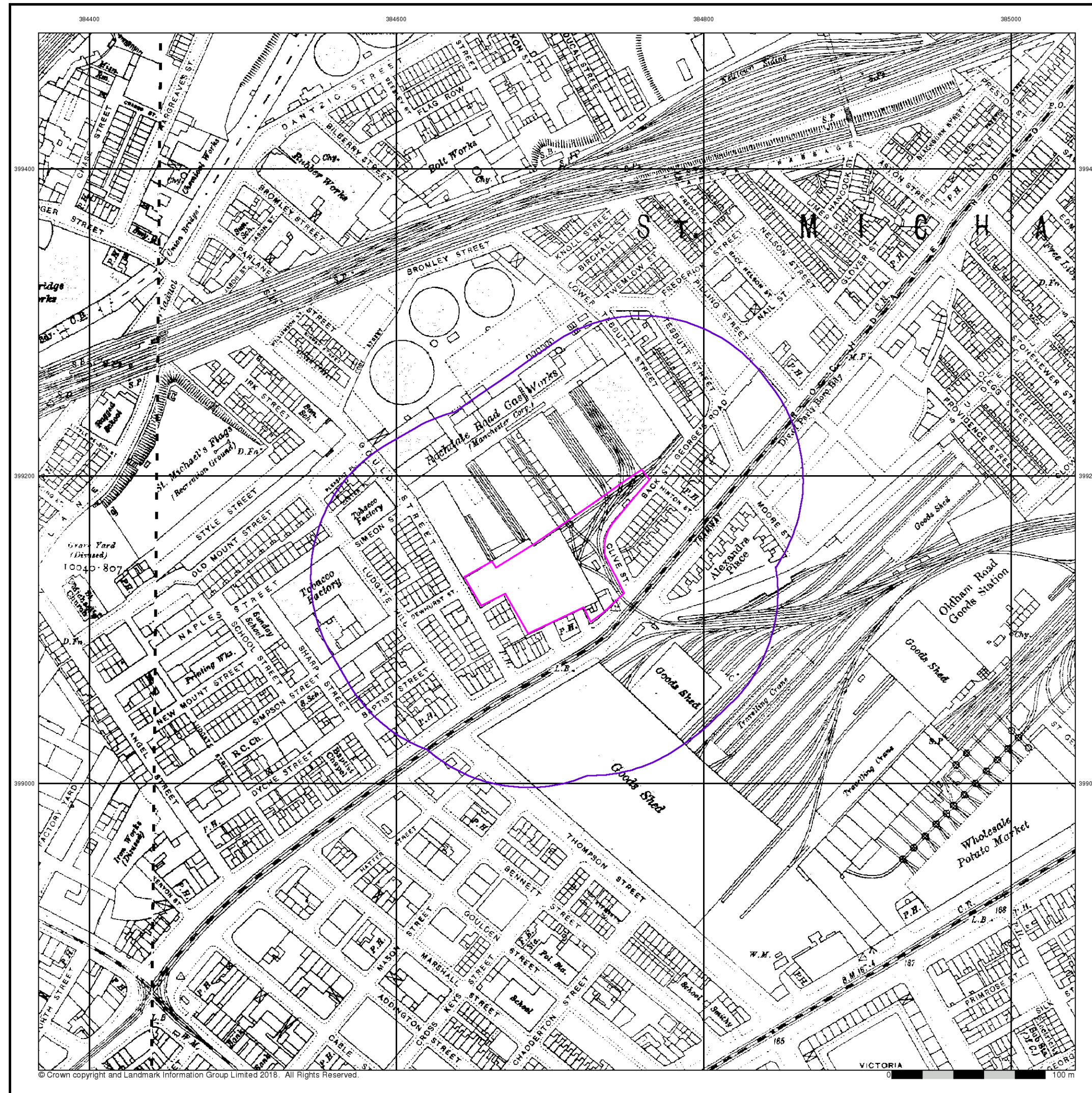
Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





© Crown copyright and Landmark Information Group Limited 2018. All Rights Reserved.



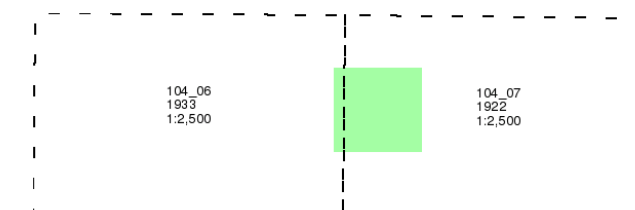
Lancashire And Furness

Published 1922 - 1933

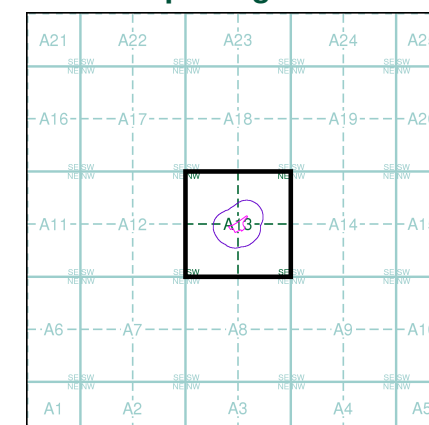
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

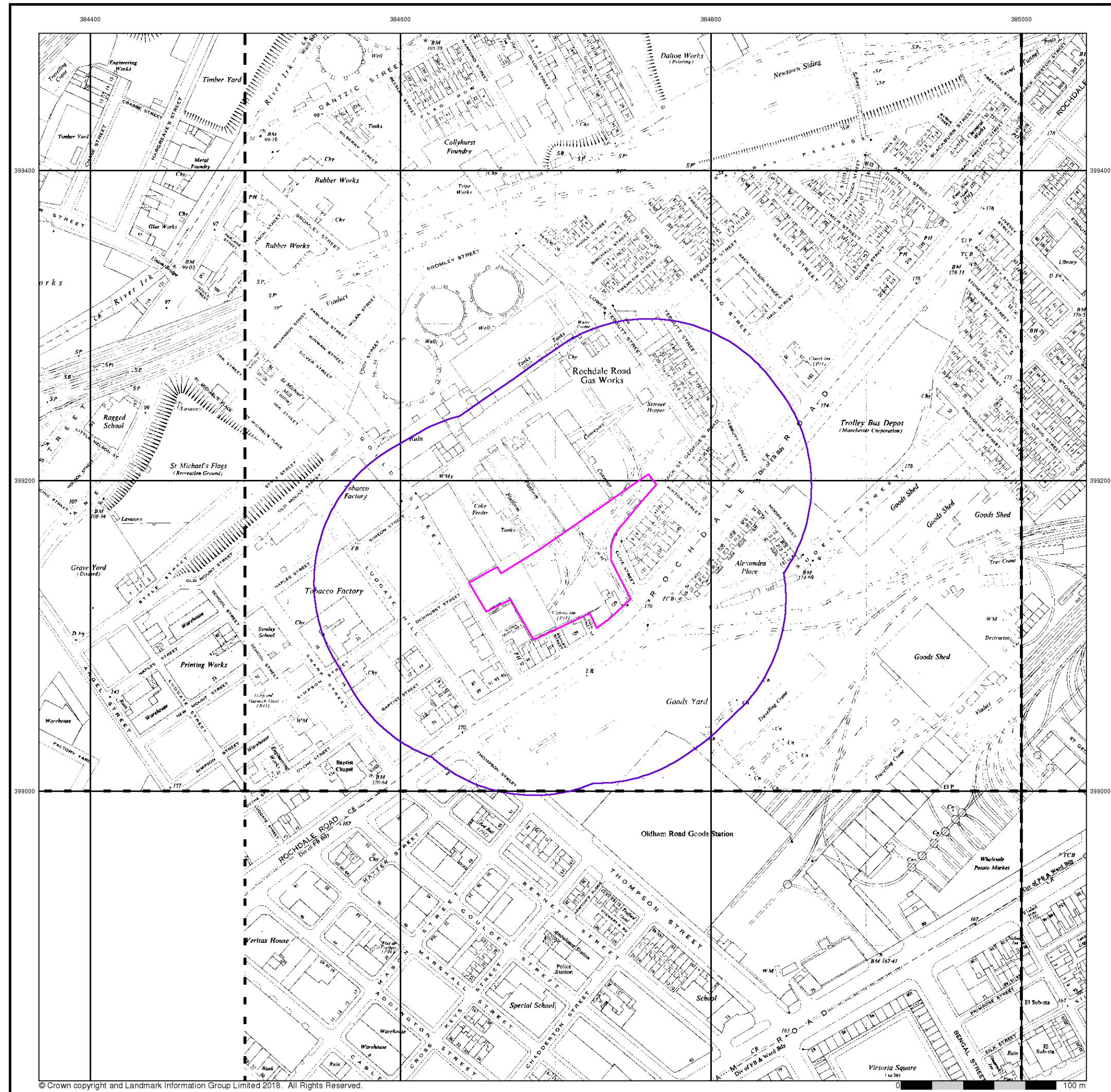
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Ordnance Survey Plan

Published 1948 - 1949

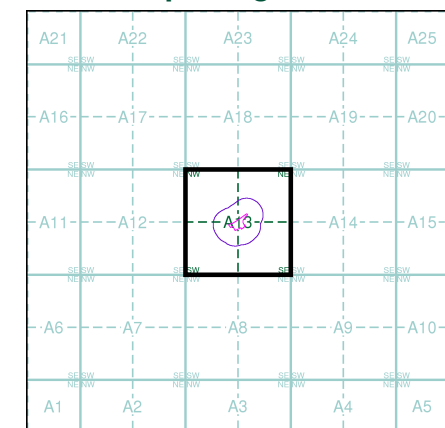
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

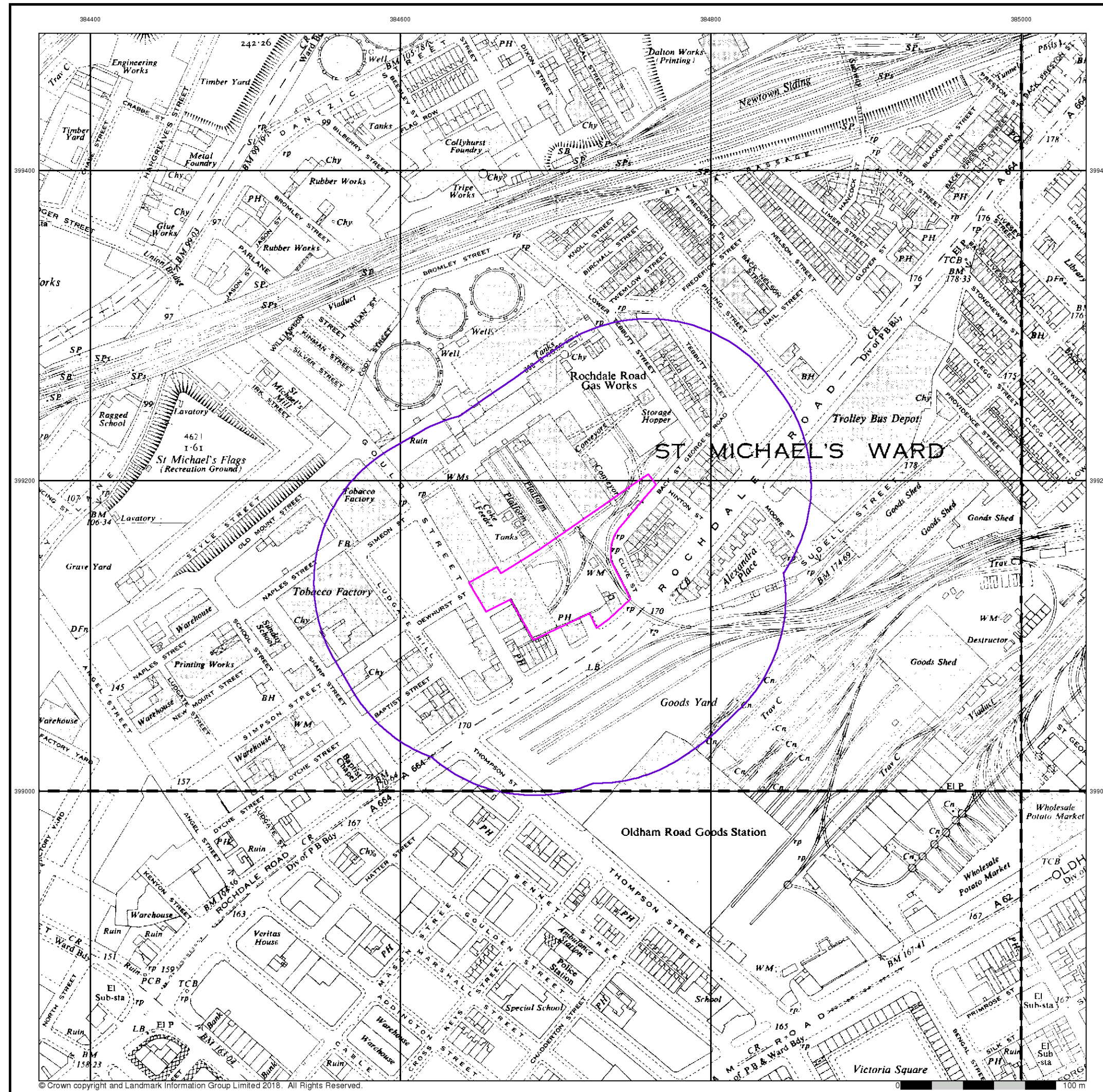
SJ8499SW 1949 1:1,250	SJ8499SE 1949 1:1,250	SJ8599SW 1949 1:1,250
	SJ8498NE 1948 1:1,250	SJ8598NW 1948 1:1,250

Historical Map - Segment A13



Order Details
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details
87, Rochdale Road, MANCHESTER, M4 4HY



Ordnance Survey Plan

Published 1951

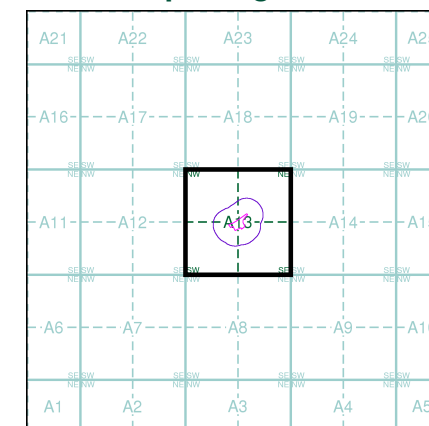
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ8499	SJ8599
1951	1951
12,500	12,500
SJ8498	SJ8598
1951	1951
12,500	12,500

Historical Map - Segment A13



Order Details

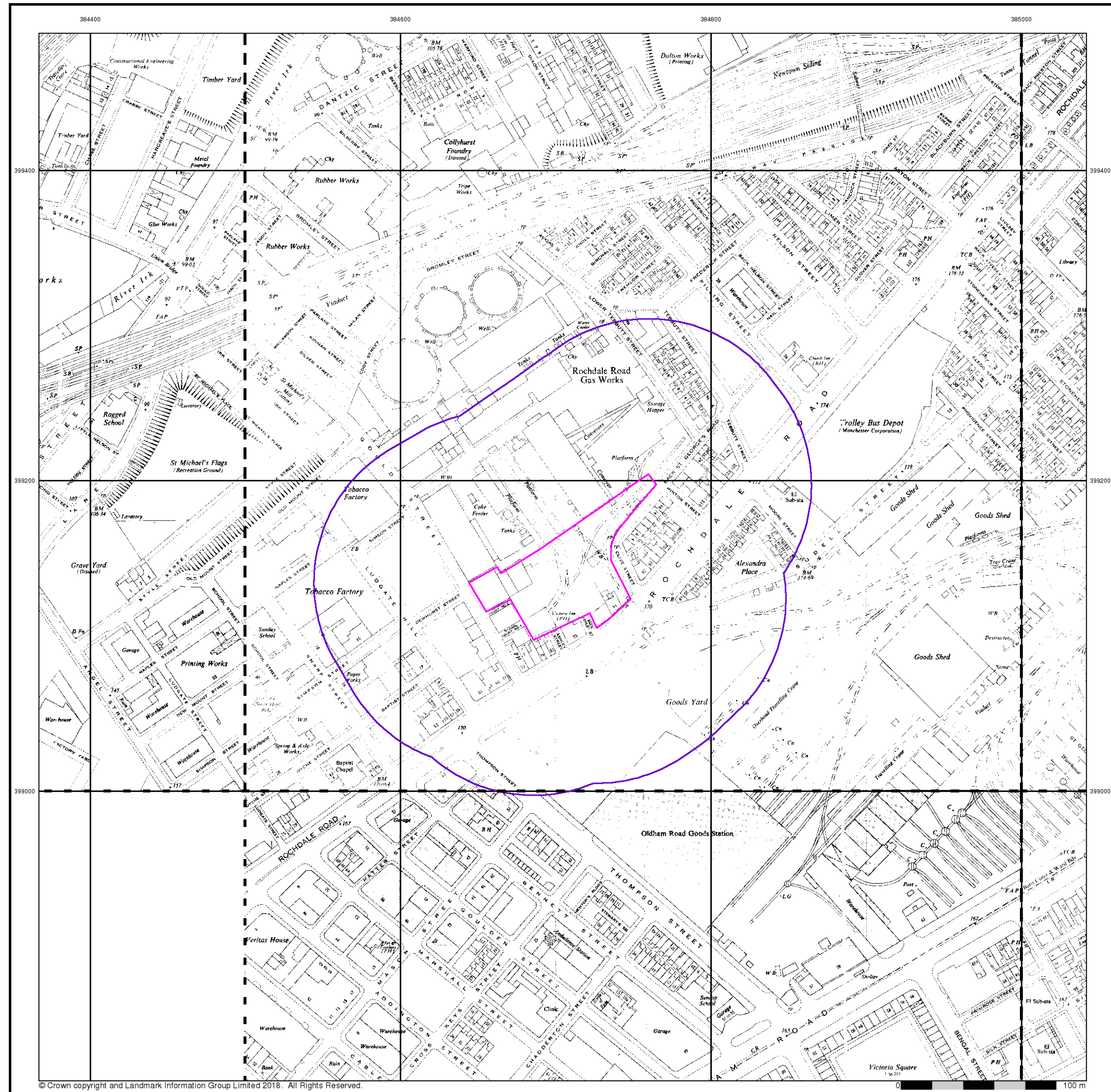
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



© Crown copyright and Landmark Information Group Limited 2018. All Rights Reserved.



Ordnance Survey Plan

Published 1952 - 1953

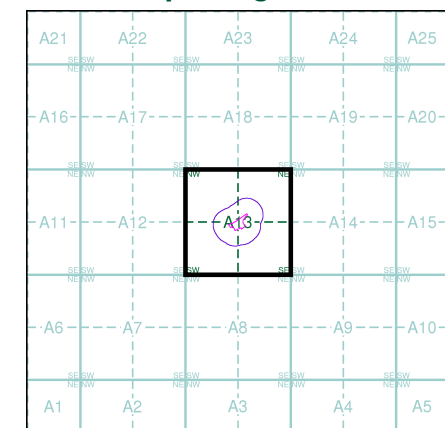
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ8499SW	SJ8499SE	SJ8599SW
1952	1952	1952
1:1,250	1:1,250	1:1,250
	SJ8498NE	SJ8598NW
	1953	1952
	1:1,250	1:1,250

Historical Map - Segment A13

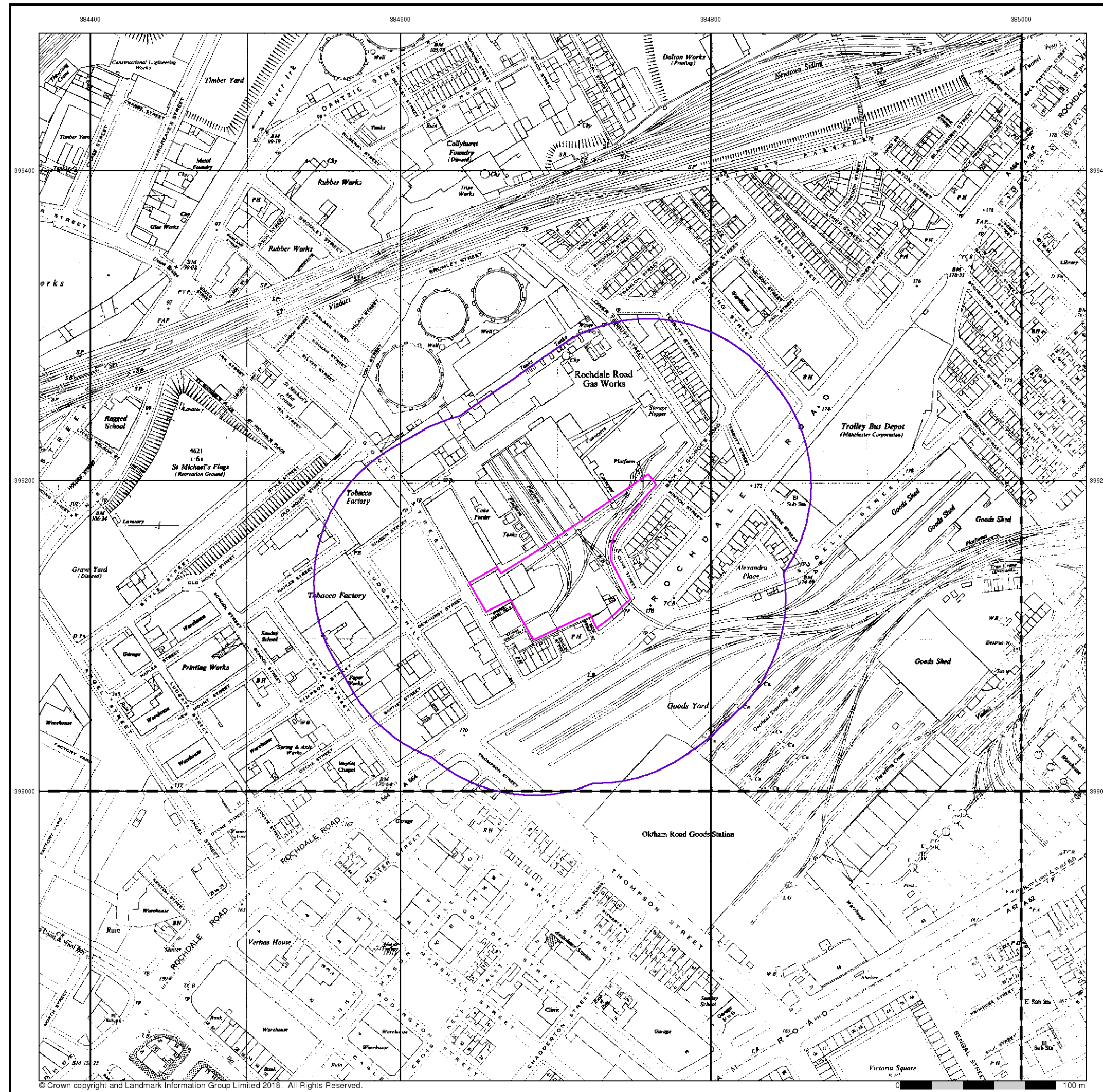


Order Details

Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY



© Crown copyright and Landmark Information Group Limited 2018. All Rights Reserved.



Ordnance Survey Plan

Published 1953 - 1955

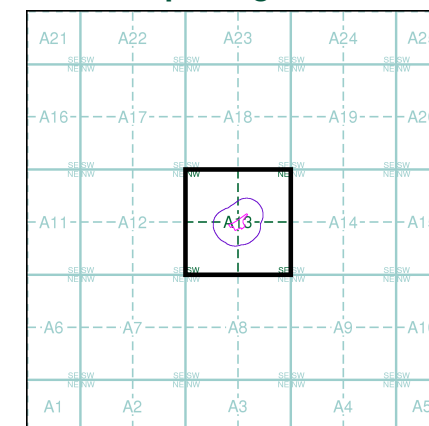
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ8499	SJ8599
1953	1954
12,500	12,500
SJ8498	SJ8598
1955	1953
12,500	12,500

Historical Map - Segment A13



Order Details

Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Ordnance Survey Plan

Published 1958 - 1963

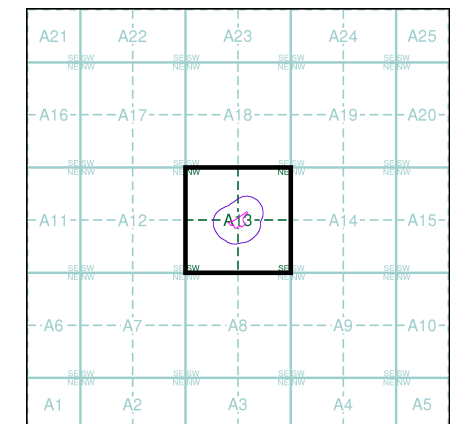
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ8499SW 1963 1:1,250	SJ8499SE 1958 1:1,250	SJ8599SW 1960 1:1,250
SJ8498NW 1963 1:1,250	SJ8498NE 1963 1:1,250	SJ8598NW 1963 1:1,250

Historical Map - Segment A13



Order Details

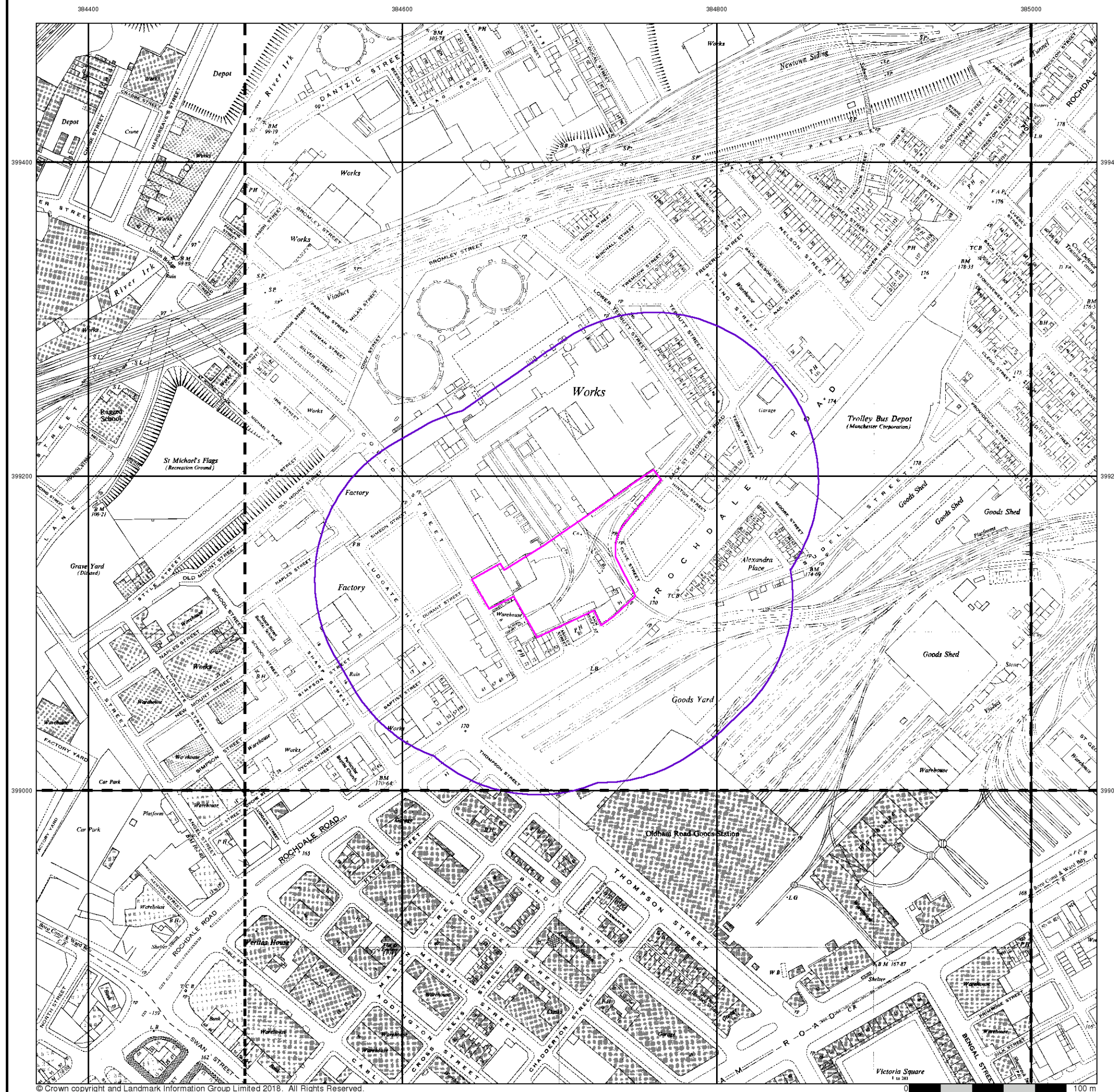
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

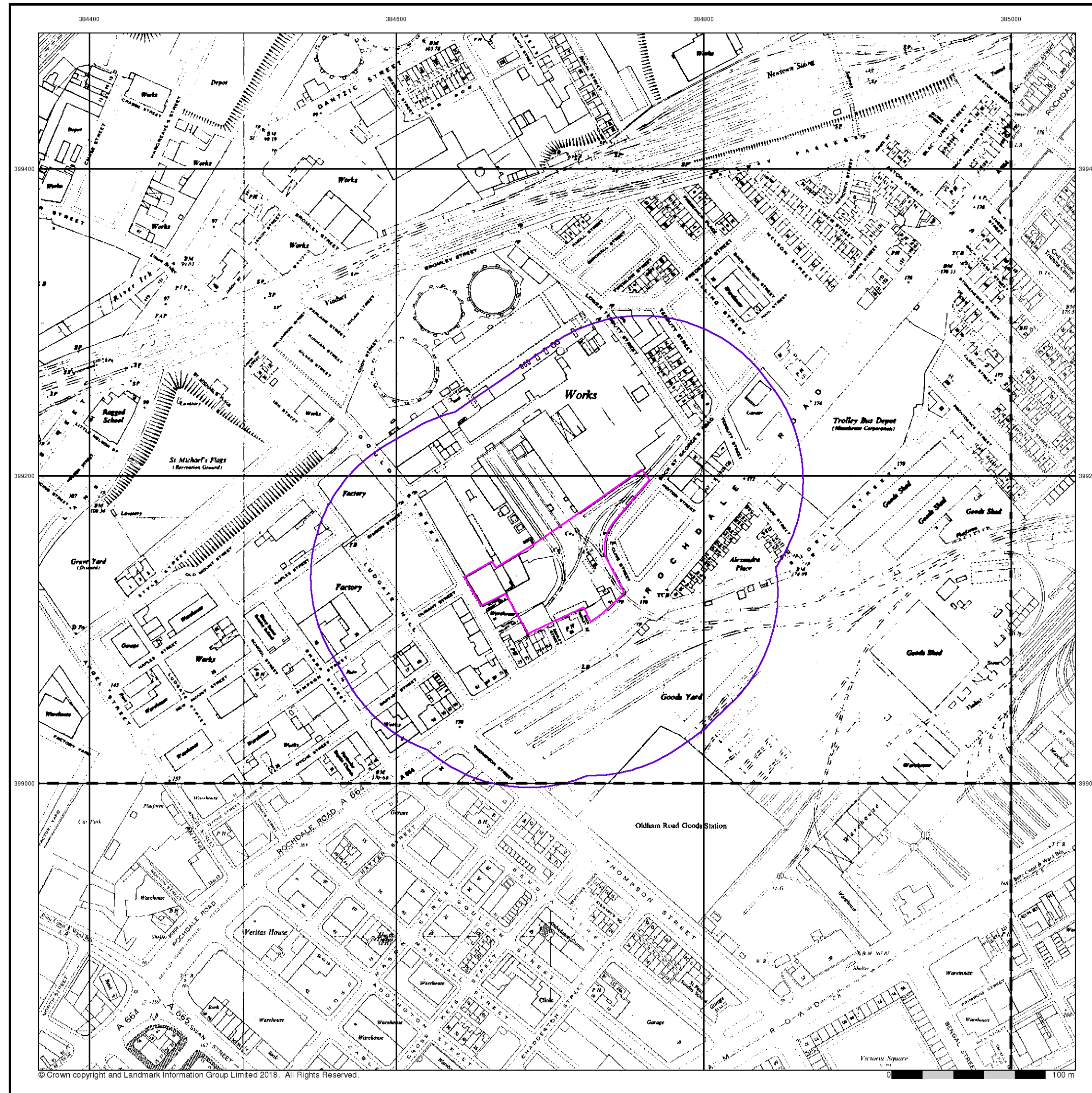
Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





Ordnance Survey Plan

Published 1959 - 1966

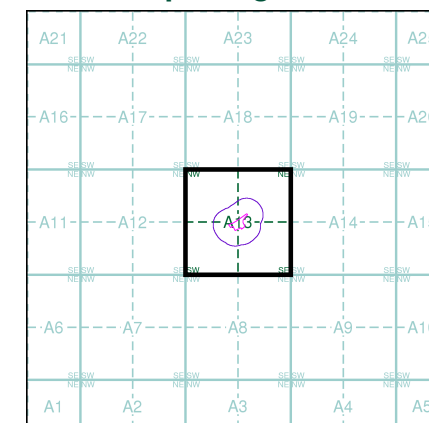
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ8499 1959 12,500	SJ8599 1966 12,500
SJ8498 1965 12,500	SJ8598 1965 12,500

Historical Map - Segment A13



Order Details

Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Ordnance Survey Plan

Published 1966 - 1969

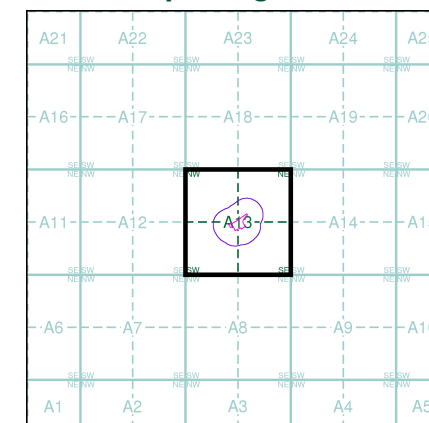
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ8499	1966	12,500
SJ8498	1969	12,500
SJ8598	1969	12,500

Historical Map - Segment A13



Order Details

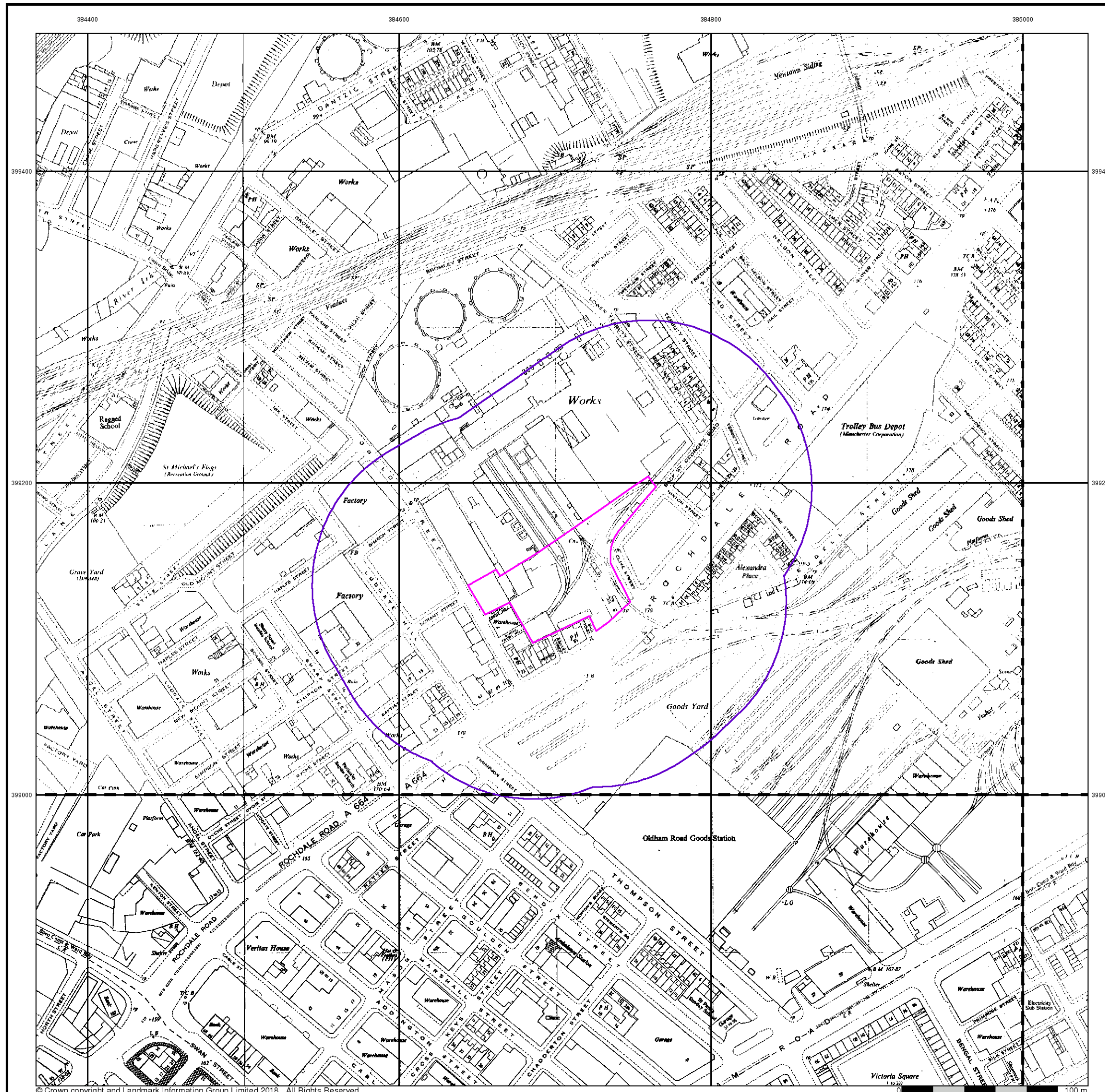
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

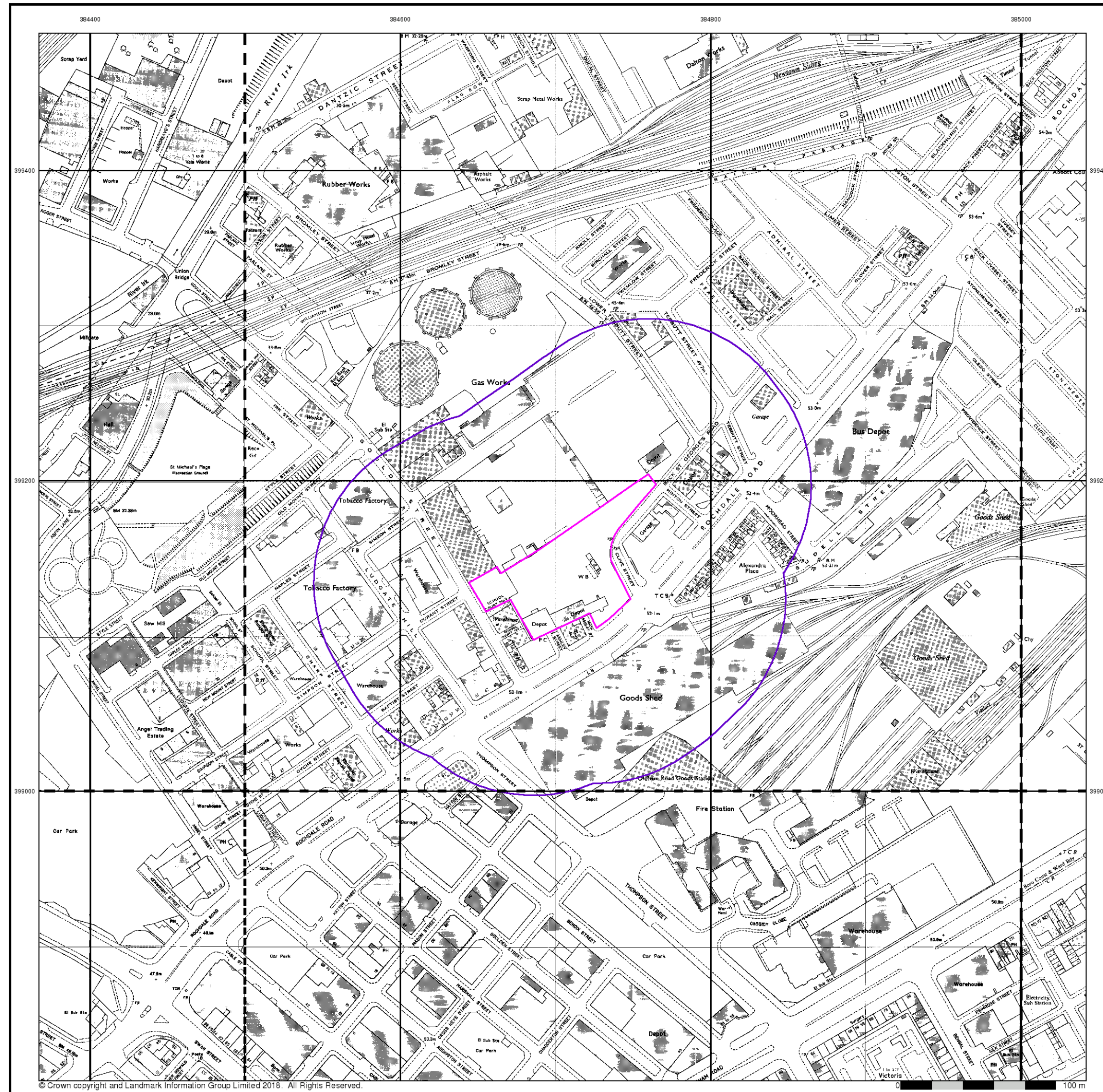
Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





© Crown copyright and Landmark Information Group Limited 2018. All Rights Reserved.



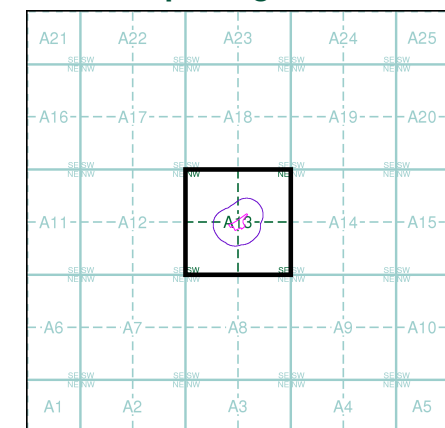
Ordnance Survey Plan
Published 1968 - 1990
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ8499SW 1990 1:1,250	SJ8499SE 1970 1:1,250	SJ8599SW 1970 1:1,250
SJ8498NW 1986 1:1,250	SJ8498NE 1986 1:1,250	SJ8598NW 1968 1:1,250

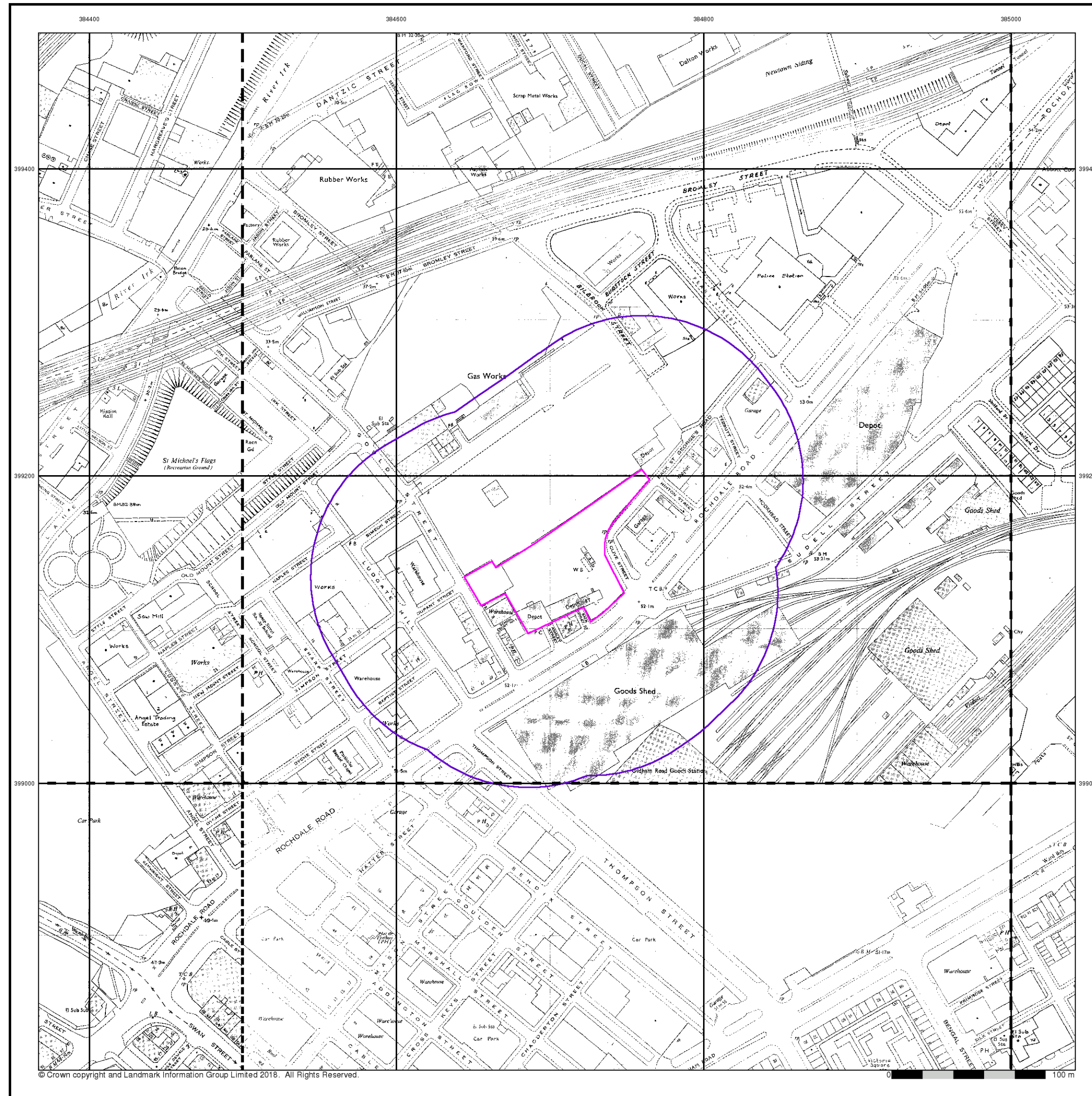
Historical Map - Segment A13



Order Details
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details
87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Additional SIMs

Published 1978 - 1984

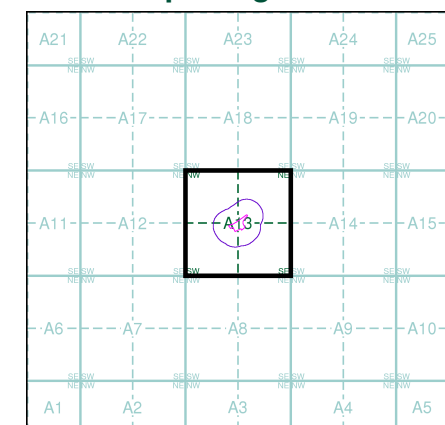
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ8499SW	SJ8499SE	SJ8599SW
1984	1978	1980
1:1,250	1:1,250	1:1,250
SJ8498NW	SJ8498NE	SJ8598NW
1980	1984	1978
1:1,250	1:1,250	1:1,250

Historical Map - Segment A13



Order Details

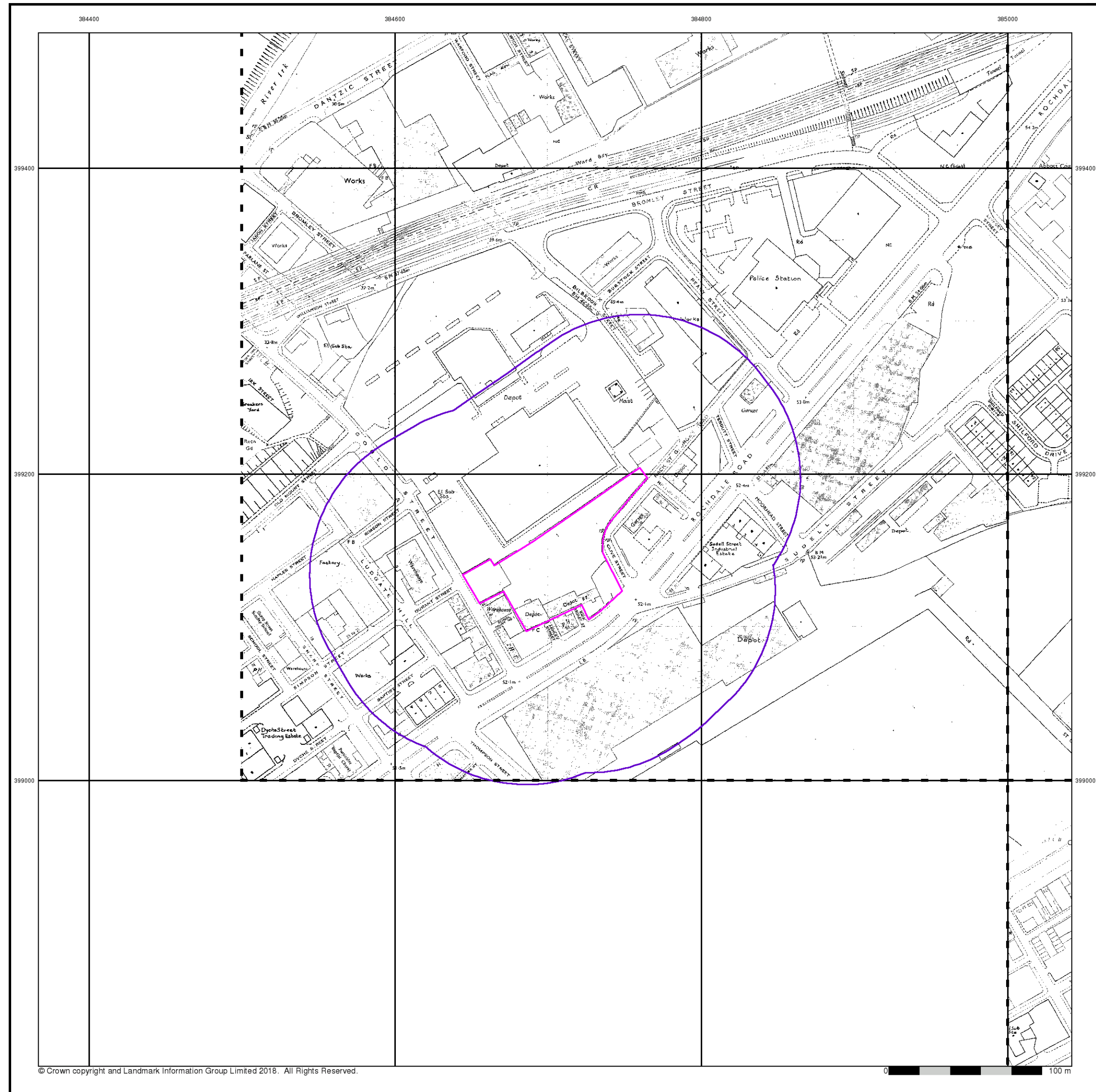
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



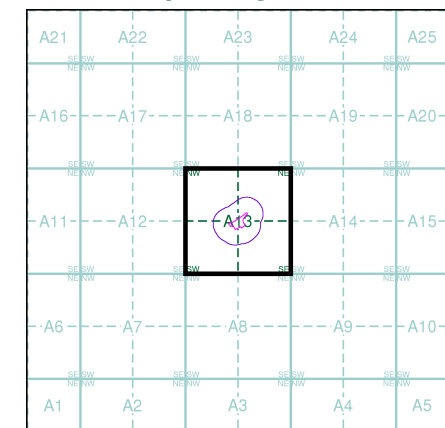
Additional SIMs
Published 1983 - 1986
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

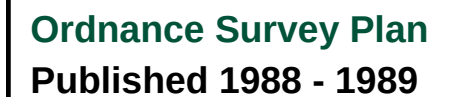
SJ8499SE	SJ8599SW
1984	1986
1:1,250	1:1,250
SJ8598NW	
1983	
1:1,250	

Historical Map - Segment A13



Order Details
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details
87, Rochdale Road, MANCHESTER, M4 4HY

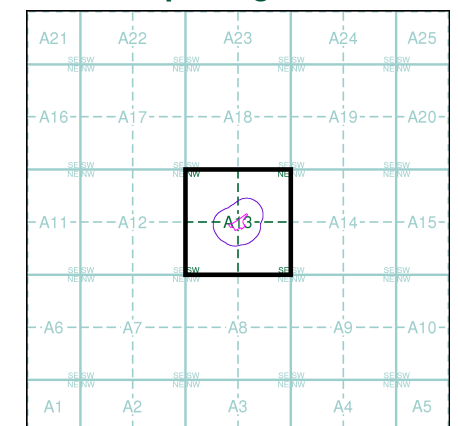


Source map scale - 1:1,250

Map Name(s) and Date(s)

SJ8499SE 1989 1:1,250	SJ8599SW 1988 1:1,250
	SJ8598NW 1988 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark[®]
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Large-Scale National Grid Data

Published 1992

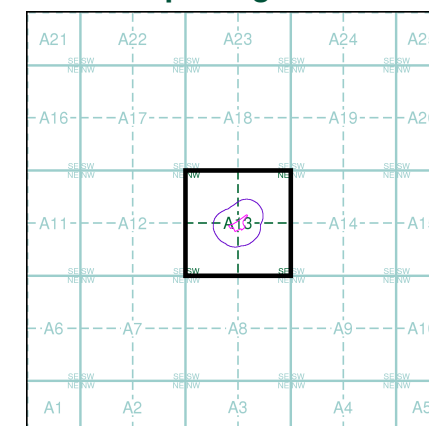
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ8499SW	SJ8499SE	SJ8599SW
1992	1992	1992
1:1,250	1:1,250	1:1,250
SJ8498NW	SJ8498NE	SJ8598NW
1992	1992	1992
1:1,250	1:1,250	1:1,250

Historical Map - Segment A13



Order Details

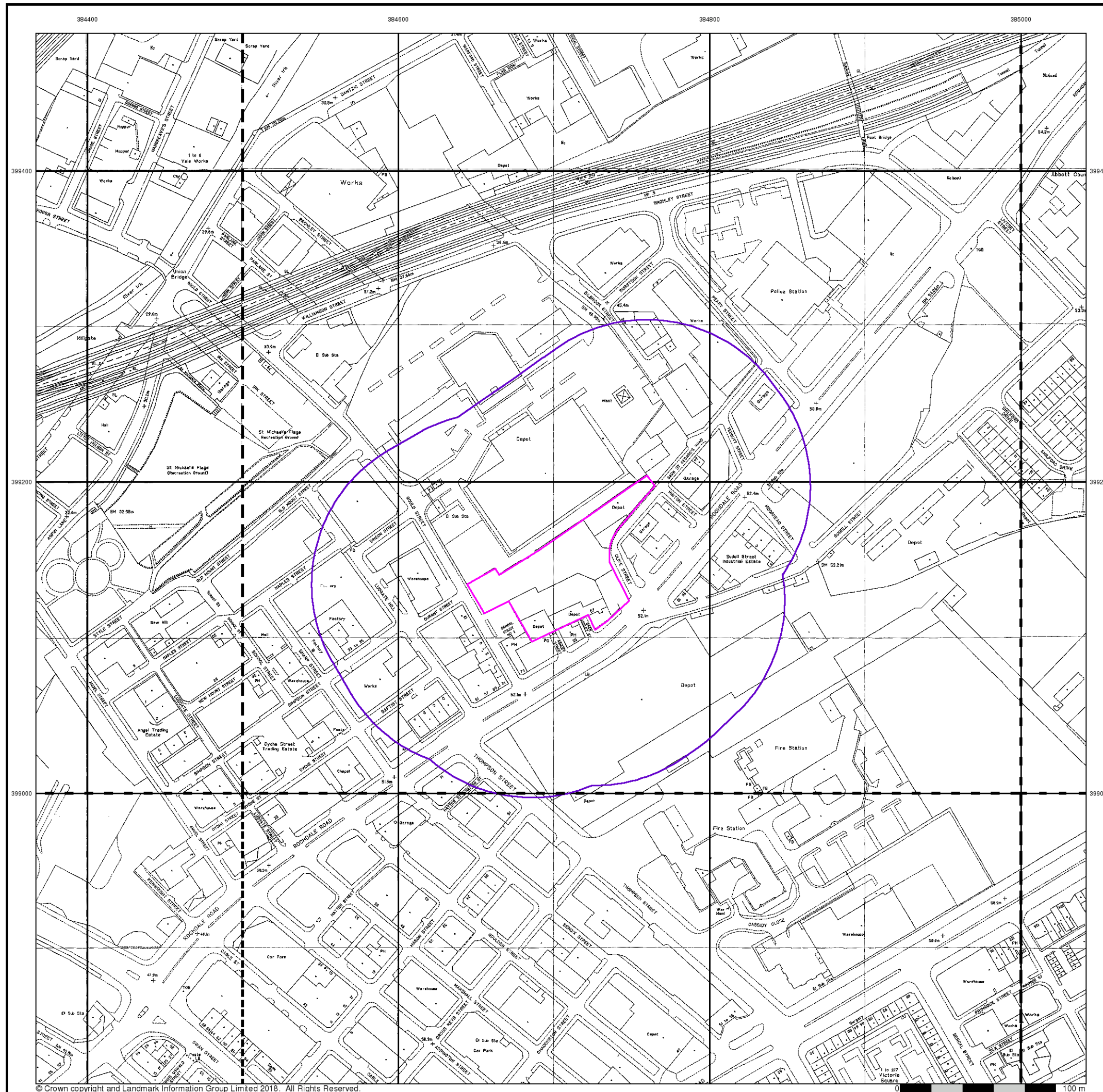
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk





Large-Scale National Grid Data

Published 1993 - 1995

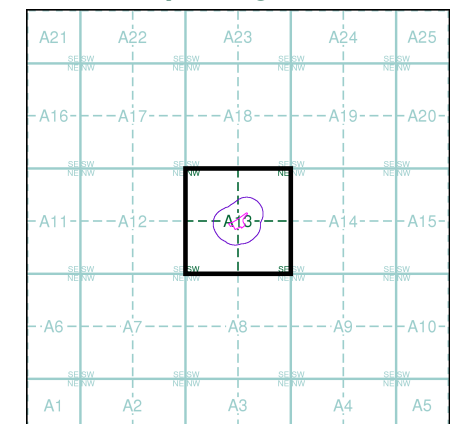
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ8499SW	SJ8499SE	SJ8599SW
1995	1993	1993
1:1,250	1:1,250	1:1,250
	SJ8498NE	SJ8598NW
	1995	1994
	1:1,250	1:1,250

Historical Map - Segment A13



Order Details

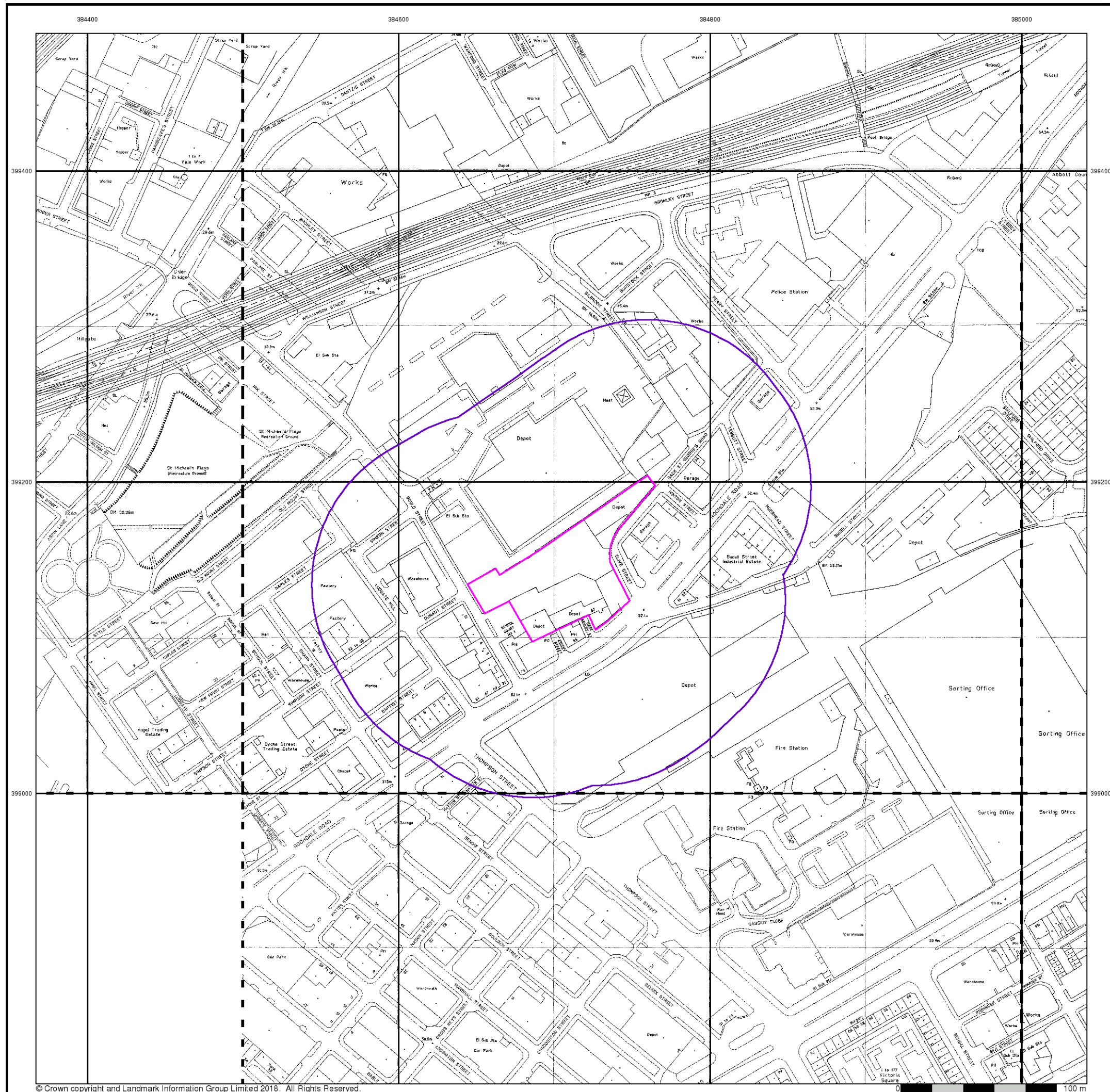
Order Number: 185084606_1_1
Customer Ref: 12922
National Grid Reference: 384710, 399150
Slice: A
Site Area (Ha): 0.5
Search Buffer (m): 100

Site Details

87, Rochdale Road, MANCHESTER, M4 4HY

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



**APPENDIX VI
COAL AUTHORITY REPORT**





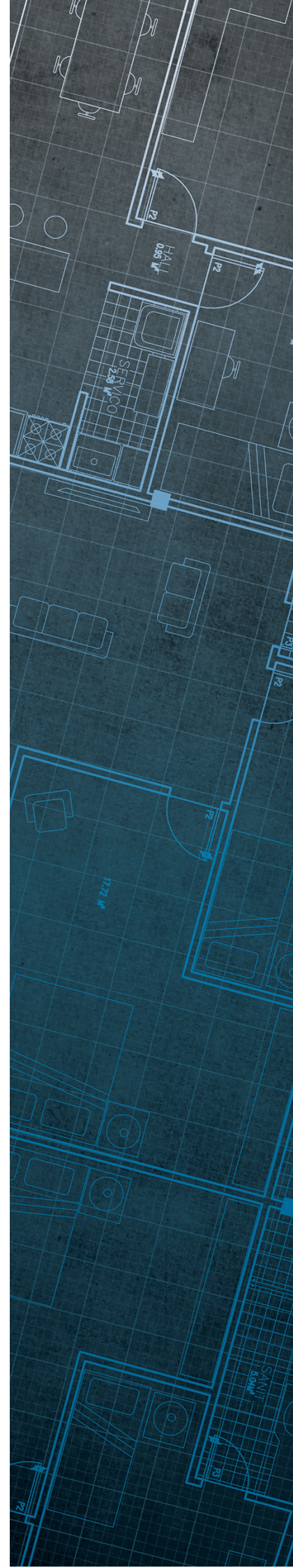
The Coal
Authority

Consultants Coal Mining Report

Rochdale Road
Manchester
M4 4HY

Date of enquiry:	9 November 2018
Date enquiry received:	9 November 2018
Issue date:	9 November 2018

Our reference:	51001967077001
Your reference:	12922/30686



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

E3P

Enquiry address

Rochdale Road
Manchester
M4 4HY

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

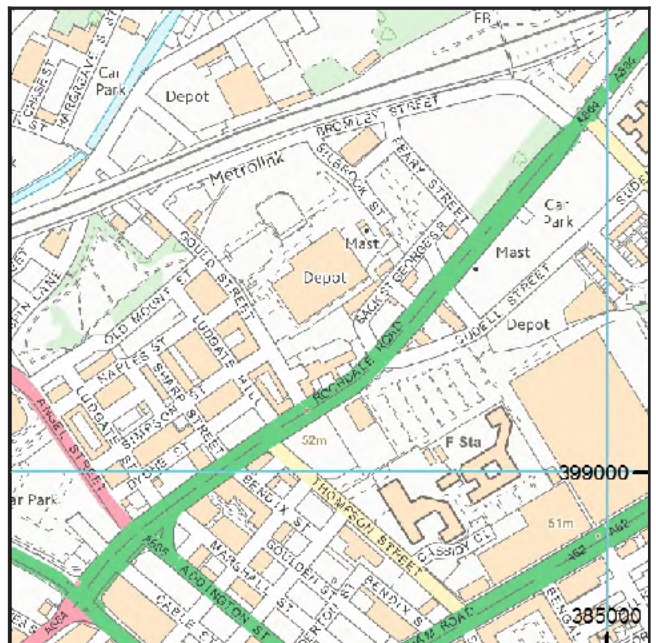
www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.

Ordnance Survey Licence number: 100020315

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	BRADFORD FOUR FEET	Coal	35CU	265	North-East	18.4	South-West	120	1900
unnamed	PARKER	Coal	35BR	450	North	7.8	South-West	80	1935
unnamed	PARKER	Coal	35BQ	625	East	22.5	South	80	1935
unnamed	ROGER	Coal	35B2	820	North-East	21.6	South	180	1965
unnamed	ROGER	Coal	35B0	875	East	19.0	South-West	180	1949

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

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NW645		
-------	--	--

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

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.

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.

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 in an area where a notice to withdraw support was given in 1955.

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.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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 **call us on 0345 762 6848** or **email us at groundstability@coal.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.

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.

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.