

Manchester Airport Building 401

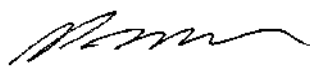
Phase 1 Tier 1 Geo-environmental and geotechnical
Assessment

Manchester Airport Group Ltd

Project number: 60663052

15 September 2021

Quality information

Prepared by	Checked by	Verified by	Approved by
			
PP			
Robert Eaton Senior Environmental Consultant	Mark Newman Senior Geo-environmental Consultant	Iain McBurnie Regional Director	Vin Bamford Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
00	15/09/21	Issue 01		Vin Bamford	Project Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Manchester Airport Group Ltd

Prepared by:

Robert Eaton
Senior Geo-Environmental Consultant
AECOM
1 New York Street
Manchester, M1 4HD, UK

© 2021 AECOM Infrastructure & Environment UK Limited. All Rights Reserved.

This document has been prepared by AECOM Infrastructure & Environment UK Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Limitations

AECOM Limited ("AECOM") has prepared this Report for the sole use of **Manchester Airport Group Ltd** ("Client") in accordance with the terms and conditions of appointment (**Project number: 60663052**) dated **20 August 2021**. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by AECOM. This Report may not be relied upon by any other party without the prior and express written agreement of AECOM.

Where any conclusions and recommendations contained in this Report are based upon information provided by others, it has been assumed that all relevant information has been provided by those parties and that such information is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from others.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken between **24th August 2021** and **15th September 2021** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM's attention after the date of the Report.

The site reconnaissance consisted of a general external inspection of the site aimed at identifying any obvious signs of geotechnical hazards and potential sources of ground contamination affecting the site. An environmental compliance audit and/or detailed structural inspection of existing buildings were outside the project brief. Similarly, the site visit excluded detailed consideration of the ecological or archaeological aspects of the site, and if such are believed to be of potential significance then it is recommended that specialist advice is sought.

Any risks identified in this Report are perceived risks, based on the information reviewed during the desk study and therefore partially based on conjecture from available information. The study is limited by the non-intrusive nature of the work and actual risks can only be assessed following a physical investigation of the site.

The opinions expressed in this report and the comments and recommendations given are based on a desk assessment of readily available information and an initial site reconnaissance by an AECOM Engineer. At this stage intrusive investigations have yet to be undertaken at site to establish actual ground and groundwater conditions and to provide data for an assessment of the geo-environmental status of the site.

Copyright

© This Report is the copyright of AECOM. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

Table of Contents

1.	Introduction.....	7
1.1	Terms of Appointment	7
1.2	Report Objectives	8
1.3	Sources of Information.....	8
2.	Site Setting	9
2.1	Location	9
2.2	Description and Setting.....	9
3.	Geological and Environmental Setting.....	10
3.1	Introduction	10
3.2	Geology and Soils.....	10
3.3	Hydrogeology.....	13
3.4	Hydrology.....	15
4.	Historical & Planned Development	16
4.1	Historical Ordnance Survey Mapping & Aerial Photographs.....	16
4.2	Planning Authority Records.....	17
4.3	Records from MAG	18
4.4	Unexploded Ordnance Risk	18
5.	Review of Historical Reports.....	19
5.1	ESG Factual Report on Ground Investigation (Feb 2017)	19
5.2	Project Quantum Site Assessment (Feb 2019)	20
5.3	Historical Reports for Adjacent DNATA Warehouse Site	20
6.	Regulated Activities and Statutory Consultation	24
6.1	Introduction	24
6.2	Regulated Processes.....	24
6.3	Licensed Waste Management Facilities.....	25
6.4	Industrial Land Use.....	26
6.5	Sensitive Land Uses	28
7.	Site Reconnaissance	29
8.	Preliminary Ground Model.....	30
8.1	Groundwater	30
8.2	Preliminary Gas Risk Assessment (based on RB17)	31
9.	Initial Conceptual Model	32
9.1	Introduction	32
9.2	Assessment Framework	32
9.3	Sources of Potential Contamination.....	32
9.4	Summary of potential sources	34
9.5	Potential Receptors	35
9.6	Potential Pathways	36
10.	Environmental Risk Assessment	38
10.1	Risk Assessment Principles	38
10.2	Risk Assessment Framework.....	38
10.3	LCRM Assessment of Risk	39
10.4	Preliminary Risk Assessment.....	39
10.5	Discussion of Acute Risk to Future Construction Workers & Off-Site Receptors.	47
11.	Waste Management & Potential Reuse of Site-Won Material.....	48
11.1	Initial Assessment of Probable Waste Generation	48

11.2	Initial Assessment of Probable Material Available for Reuse	48
11.3	Outline Recommendations.....	48
12.	Review of Geotechnical Risk and Preliminary Engineering Assessment.....	49
12.1	Geotechnical Risk.....	49
12.2	Preliminary Engineering Assessment.....	50
13.	Conclusions	51
13.1	Geo-environmental Risks Review.....	51
13.2	Geotechnical Risks and issues	52
14.	Recommendations.....	53
15.	References	54

Figures

Figure 1 Screenshot of relevant exploratory hole locations from BGS GeoIndex Viewer.....	11
--	----

Tables

Table 2-1. Features Surrounding the Site.....	9
Table 3-1. Geological Succession from Published Mapping.....	10
Table 3-2. Geological Succession from BGS borehole Logs.....	11
Table 3-3. Estimated Soil Chemistry	12
Table 3-4. Surface Water Quality	15
Table 4-1 MAG Records.....	18
Table 6-1 Summary of Regulatory Information.....	24
Table 6-2 Potentially Contaminative Industrial Land Use on and Within 250 m of the Site	26
Table 8-1. Preliminary Ground Model.....	30
Table 9-1 Potential Sources of Contamination	34
Table 9-2 Potential Receptors.....	36
Table 9-3 Potential Pathways.....	37
Table 10-1 Description of Severity of Risk.....	38
Table 10-2 Likelihood of Risk Occurrence.....	38
Table 10-3 Risk based on Comparison of Likelihood and Severity.....	39
Table 10-4 Conversion to LCRM Risk Categories.....	39
Table 10-5 Potential Sources, Pathways and Receptors.....	40
Table 15-1: Classification of Probability and Impact.....	60
Table 15-2: Risk Matrix.....	60
Table 15-3: Classification of Risk Rating	60

Appendices

Appendix A Figures	55
Appendix B GroundSure Report and Historic Mapping (including Google Earth Pro aerial photography)	56
Appendix C BGS Recorded Borehole Logs	57
Appendix D Zetica Online UXO planning	58
Appendix E Site Reconnaissance Photo Log.....	59
Appendix F Geotechnical Risk Register.....	60

1. Introduction

1.1 Terms of Appointment

On the instructions of Manchester Airport Group (MAG) (the Client), AECOM Infrastructure and Environment UK Limited (AECOM) has carried out a Phase 1 Geotechnical and Geo-environmental Desk Study of the site known as Building 401.

The work has been carried out in accordance with the AECOM fee proposal dated 07 April 2021, reference MAG_B401_Ph1.

1.1.1 Background and Proposed Development

The report has been produced on the assumption that the site will be redeveloped to incorporate a single warehouse structure divided into three units with incorporated offices. The current proposed warehouse shall cover c.7,056m² occupying approximately one third of the site area. The remainder of the site shall comprise of associated infrastructure, including lorry and car parking, two new access routes into site from Avro Way, and soft landscaping. Figure 3 shows the current proposed development.

The development of the site is anticipated to require the following stages:

- Demolition of the existing building 401 on the site;
- Demobilisation of the temporary structures of the airport bus depot;
- Site earthworks, including excavation levelling and landscaping for external areas;
- Installation of services and site drainage; and
- Construction of the new building and associated infrastructure.

AECOM are privy to a number of existing reports on the site including reports undertaken by AECOM on or in the vicinity of the site previously. These include:

- Project Quantum (AECOM) Report No: MAN-19 60592411, February 2019 – High level desk study and walkover; and
- Manchester Airport Bus Depot Relocation, Wilmslow: Factual Report on Ground Investigation (ESG) Report No: F6042-16, February 2017.

1.2 Report Objectives

The primary objectives of this report are to:

- determine whether potentially contaminative uses have taken place within, or in close proximity to, the site which could have led to the contamination of underlying soils or groundwater; and
- to understand the effects of the geological conditions and site activities on the geotechnical properties for site redevelopment.

This Phase 1 Tier 1 report is prepared to advise on site conditions under the requirements of Town and Country Planning Act 1990 (as amended), the National Planning Policy Framework (2012) and considers the potential implications of Part 2A of the Environmental Protection Act 1990 (Part 2A) and the associated Contaminated Land (England) Regulations 2006 and Contaminated Land Statutory Guidance (2012).

This report has been prepared in general accordance with the technical guidance and procedures described in the UK Government guidance Land Contamination: Risk Management (LC:RM) (2019, revised 2021), British Standard (BS) 5930:2015 (as amended) Code of Practice for Site Investigations (BSI), BS:EN 1997 Eurocode 7 – Geotechnical Design (BSI) and BS 10175:2011 (as amended) Investigation of Potentially Contaminated Sites – Code of Practice (BSI), to:

- Describe the geology, hydrogeology, and shallow mining potential;
- Describe the environmental setting/ sensitivity and current/ historical land use of the site and surrounding area;
- Describe the findings of a site reconnaissance visit;
- Summarise the history of the site;
- Summarise the underlying geology and hydrogeology;
- Summarise the findings of any historical ground investigation work;
- Provide an initial Conceptual Site Model (CSM) for the prevailing ground conditions;
- Using the source-pathway-receptor model present a preliminary qualitative risk assessment of potential land contamination risks to human (chronic), environmental, or controlled water receptors from contamination sources on or in the vicinity of the site, via transport pathways;
- Present a preliminary qualitative evaluation of potential geotechnical issues; and
- Identify the potential need for further intrusive ground investigation and potential need for remediation works. The purpose of such to substantiate the findings of the preliminary risk assessment and thereby refine the CSM.

1.3 Sources of Information

This report has been prepared using a combination of published records from publicly available sources (e.g. British Geological Survey (BGS), Environment Agency, Defra). As part of this assessment a site-specific Groundsure Report has been acquired, including published environmental, geological and hydrogeological data and mapping, and historical mapping for the area.

In addition, information provided by the Client, and from other sources such as the previous reports at or in the vicinity of the site as noted in Section 1.1.1, the Local Authority Environmental Health / Contaminated Land Officer, and observations made during the site reconnaissance have also been reviewed where available.

Specific information sources are referenced throughout the document and a bibliography is included in Section 14 of the report

2. Site Setting

2.1 Location

The site is located on the north east side of the junction of Avro Way and Pinfold Lane (M90 5XR) and is centred on National Grid Reference 380906 384825. The site is within Manchester Airport's landside western commercial and industrial development c.14km south of Manchester city centre. A site location plan is provided as Figure 1.

2.2 Description and Setting

The site covers an area of approximately 2.11 hectares and is defined by the red line boundary shown in Figure 2.

The site is broadly rectangular in shape oriented North East to South West, and is predominantly level with ground elevations ranging from c.68m Above Ordnance Datum (AOD) to c.70mAOD.

The site is currently occupied by commercial development and at the time of this report the site is broadly split into two.

The majority of the north eastern half of the site is occupied by the current MAG Building 401 which covers c.6,785m². To the immediate north west of the building is tarmac and concrete hard standing. To the immediate east is a grass landscaped area with small trees and shrubs which rises gently to Avro Way. To the south of the building the area is slightly larger and comprises a tarmac and concrete area in front of eight lorry bays for the building, with an entrance from Pinfold Lane and associated landscaping.

The south western side of the site is broadly divided into two. The far south western portion lies outside of the fenced boundary for the current development on the site and comprises a broadly level wooded area. The north eastern portion between the wooded area and the main building is an area of tarmac hard standing which was previously the car parking area for building 401. This tarmac area is currently occupied by a 'temporary' bus depot service area for airport vehicles. All of the structures in this area are temporary and stand atop the hard standing, including mobile offices, multiple fuel terminals, associated storage tanks and a vehicle wash. This area also includes a second entrance from Pinfold Lane to the South.

Building 401 is currently derelict and has been empty for some time. The last usage of the site was by an airline food company 'LSG SkyChefs' which is understood to have moved to renovated facilities in building 402 to the immediate north of the site, with additional buildings within the commercial/ industrial estate.

A brief study of the site as Building 401 was undertaken as part of AECOMs Project Quantum. This involved a brief focused desk review and walkover. The review was largely focused upon potential contaminative uses of the site from current operations and onsite storage of materials. A summary of the findings of the Project Quantum site assessment is presented in Section 5.2.

Relevant features immediately surrounding the site are summarised in Table 2-1.

Table 2-1. Features Surrounding the Site

Direction	Summary
North East	Immediately adjacent to site is Avro Way. Beyond the road is car parking for a series of offices to the north of the site. Further from site is a large goods building, which operates as the transfer from land to airside of goods.
South East	Immediately adjacent to site is Pinfold Lane. The other side of the road is a large recently constructed warehouse building used by the Dubai National Air Travel Agency (DNATA). The building is a logistics site dealing with airline goods. C.100m east from site is a large fuel storage facility servicing the airport. The closest above ground tanks are approximately 160m from site.
South West	Immediately adjacent to the site is Wilmslow Old Road, a narrow dead-end road allowing access to The Romper public house. To the immediate south across the junction of the road with Pinfold Lane is a church and associated graveyard.
North West	Immediately adjacent to the site is a shared access road to the rear of building 401 and the building 402 site which borders the site, broadly mirroring the Building 401 site with a structure in the north east portion and car parking within the south west section.

3. Geological and Environmental Setting

3.1 Introduction

The environmental setting including the topography, geology, hydrogeology and hydrology are the key factors that influence the way in which contaminants in the soil or groundwater can be transported on or off site, and also the way in which contamination can affect applicable receptors including controlled waters and users of the site.

The environmental setting of the Site has been assessed by making reference to the information sources detailed in Section 1.3.

3.2 Geology and Soils

3.2.1 Published Geology & Exploratory Hole Records

AECOM has reviewed publicly available information. The published 1:50,000 and 1:63,000 geological maps of the area produced by the BGS (Sheet 98, Stockport, Drift, 1971 and Sheet 98, Stockport, Solid, 1977) indicates the site is underlain by the geological succession summarised in Table 3.1. Extracts of the superficial deposit and bedrock maps are included as part of the Groundsure Geo-Insight Report (Appendix B).

Table 3-1. Geological Succession from Published Mapping

Age	Group	Geological Stratum	Stratum	Description
Quaternary - Devensian	N/A	Diamicton Till	Superficial Deposits*	A wide range of deposits and geomorphologies associated with glacial and inter-glacial periods during the Quaternary
Triassic	Sidmouth Mudstone Formation	Bollin Mudstone Member	Bedrock	Upper: laminated reddish-brown and greenish-grey mudstone with siltstones. Lower: structureless and laminated, dominantly reddish-brown mudstone. (Within the lower part of the member, a unit termed the 'Lower Keuper Sandstone' has been recognised in the Stockport area. This unit closely resembles the Tarporley Siltstone Formation of adjacent areas.)

**While anticipated due to the developed nature of the site, no artificial deposits are recorded on the geological mapping*

Source: bgs.ac.uk (BGS Lexicon of Named Rock Unites)

The BGS maintains an archive of historical exploratory hole records throughout the UK. AECOM has searched the database and those which are publicly available and considered to provide useful information on the ground profile at the site, have been referenced in producing this report. The extract below shows those boreholes recorded by the BGS in the site area. The black boreholes are not publicly available, leaving 8no. boreholes located within the site which may be publicly available. Of these only 3no. have online records. These are the three to the west of building 401 (SJ88SW235, SJ88SW236 and SJ88SW237).

Presented in

Table 3-2 is a summary of the three boreholes, with full copies of the exploratory hole records included as Appendix C. Relevant information from the records is considered as part of the Preliminary Ground Model in Section 8.

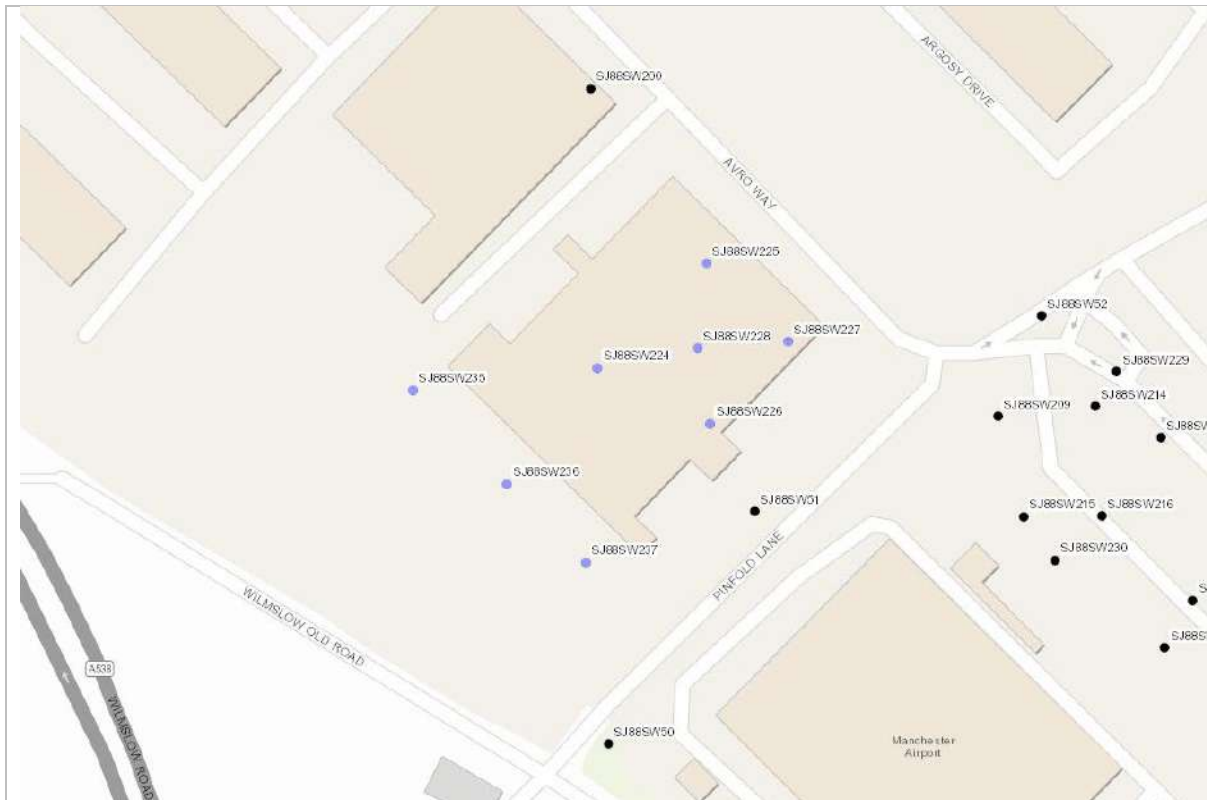


Figure 3-1 Screenshot of relevant exploratory hole locations from BGS GeoIndex Viewer

Table 3-2. Geological Succession from BGS borehole Logs

Borehole	Made Ground mbgl (Thickness m)	Description summary	Superficial Deposits mbgl (Thickness m)	Description summary
SJ88SW235 (BH6)	0.60 (0.60)	Soft Medium brown Clay with stones and broken tarmac	4.00 (3.40)	Very soft becoming stiff with depth, Mottled brown and grey CLAY
SJ88SW236 (BH7)	1.20 (1.20)	Loose concrete, brick, stone, tarmac and Clay over reinforced concrete between 0.6mbgl and 0.9mbgl below which is hardcore fill.	4.00 (2.80)	Firm to stiff, to stiff, Dark reddish brown slightly marly CLAY
SJ88SW237 (BH8)	0.70 (0.70)	Soft to form dark brown and black silty Clay (disturbed - fill)	4.00 (3.30)	Firm to stiff mottled brown and grey CLAY becoming stiff and marly at 1.3mbgl.

Note: mbgl = metres below ground level.

3.2.2 Soils and Soil Chemistry

Information obtained from Soilsclapes online mapping (<http://www.landis.org.uk/soilsclapes/> Accessed 06/09/2021) describes the soils within the vicinity of the site as slowly permeable, seasonally wet, slightly acid but base-rich, loamy and clayey soils. (Soilsclapes Classification 18). These soils have impeded drainage, draining typically to steam networks, and have moderate fertility.

Natural England reports the Agricultural Land Use Classification for land in England. Information obtained from Natural England website (<http://publications.naturalengland.org.uk/> - ALC Map North West) reports the Agricultural Land Use Classification to be Good to Moderate agricultural land.

However, it is noted that the location of the site lies within the footprint of Manchester Airport and its infrastructure. The site and surrounding area are predominantly given over to industrial use. As such, it is considered that the ground conditions at the site are unlikely to relate to the soils and agricultural land classifications of the wider area as noted above.

The BGS Soil Chemistry datasets provide indicative information on regional concentrations of five potentially harmful elements (PHEs): arsenic (As), cadmium (Cd), chromium (Cr), nickel (Ni) and lead (Pb) in soil, as presented within the Groundsure Report. Elevated concentrations of these PHEs can exist because of natural geological conditions or possible anthropogenic contamination. The following BGS estimated soil chemistry levels are attributed to the vicinity of the site based on the geometric mean concentrations of available data (presented in Table 3-3).

Table 3-3. Estimated Soil Chemistry

Potentially Harmful Element	Maximum onsite estimated geometric mean concentration (mg/kg)
Arsenic	15
Cadmium	1.8
Chromium	60-90
Lead	100
Lead (Bioaccessible)	60
Nickel	15

3.2.3 Ground Stability Records

Table 3.3 shows the variable risk of ground stability hazards across the site, taken from the Groundsure report:

Table 3.3. Ground Stability Records

Hazard Type	Hazard Potential	Description
Collapsible Ground Stability	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
Compressible Ground Stability	Negligible	Compressible strata are not thought to occur.
Ground Dissolution Stability	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.
Landslide Ground Stability	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered
Running Sand Ground Stability	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.
Shrinking or Swelling Clay Ground Stability	Very low	Ground conditions predominantly low plasticity.

3.2.4 Mining and Mineral Extraction

Aggregate/Mineral Quarrying and Mining

The Groundsure report presents publicly available information on mining and quarrying operations, past and present that have taken place within 250m of the site.

The Groundsure report checks databases held by The British Geological Survey, The Coal Authority, Mining Searches UK, Kaolin and Ball Clay Association (UK), Stantec UK Ltd, Johnson Poole and Bloomer, Cheshire Brine Subsidence Compensation Board and British Gypsum; as well as records of surface and ground workings identified from Ordnance Survey and Groundsure mapping.

Of those databases and mapping only one entry is noted within 250m of the site. A surface ground working named as a 'pond' was noted 133m North East of the site located within the area of landscaping at the southern side of Pinfold Lane within the area of the large airport fuel depot.

The GroundSure data identifies no other features within 250m of the site. Within 250m to 500m from the site the only features recorded relate to other small surface ground workings, the largest relating to a reservoir and pump house for Manchester Airport's fire management system.

The Project area also lies within an area defined as the Cheshire Brine Compensation District and as such, it is recommended that a Cheshire Salt Search is obtained.

Coal Mining

Reference to the Coal Authority Interactive Map indicates the following in relation to the site:

- The site is within a surface coal resource area;
- Areas of known probable past shallow coal mine workings are not indicated at the site;
- The site is not within a High-Risk Development Area; and
- There are no mine entries on or within 1km of the site the site.

Surface Coal Resource Areas are defined as coal resources capable of being extracted by surface mining methods, often referred to as 'opencast'. This information is used by Local Planning Authorities as part of the duty to safeguard minerals from unnecessary sterilisation and is derived from Coal Authority and British Geological Survey data.

It should be noted that Surface Coal Resource Area is very broad, covering the Liverpool and Greater Manchester Area, and extending as far south as Birmingham. With no surface features recorded in the site vicinity relating to open cast coal mining and as the site is not within a 'High Risk Development Area' for coal mining, a site-specific Coal Mining Risk Assessment is not recommended at this stage. However, this would be subject to review dependent upon any future ground investigation data.

3.2.5 Radon

The Groundsure report indicates that the site is not within a radon affected area. The site is identified as having less than 1% of properties are above the UK 'Action Level'. This classification identifies no specific radon protective measures are likely to be considered necessary for the proposed development.

3.3 Hydrogeology

3.3.1 Aquifer Classification

The Environment Agency's Groundwater Protection Policy adopts aquifer designations that are consistent with the Water Framework Directive. Definitions of the various aquifer types can be found on the Environment Agency section of the gov.uk website. The following classifications are taken from this system:

Superficial Aquifers

Devensian Glacial Till: Classified as a Secondary Undifferentiated Aquifer. These designations are described by the EA as being 'assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type'.

Bedrock Aquifers

Bollin Mudstone Member: Classified as a Secondary B Aquifer. These are described by the EA as 'predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers'.

3.3.2 Groundwater Vulnerability

The Environment Agency's Groundwater Vulnerability Mapping available from the online Defra Magic Mapping (magic.defra.gov.uk) identifies the groundwater vulnerability to pollution of an area. All associated terminology/definitions can be found on the Environment Agency section of the gov.uk website.

The Magic Mapping shows the site and surrounding area to have a 'medium to low' classification for groundwater vulnerability. However, the Groundsure Report (Source: British Geological Survey and the Environment Agency) breaks this down by aquifer; and identifies both the superficial and bedrock aquifers to be of low vulnerability.

3.3.3 Source Protection Zones

In terms of identifying the risk of contamination from potential polluting activities in a given area to groundwater sources (e.g. wells, boreholes, and springs) used for supplying public drinking water, the EA identifies Source Protection Zones (SPZ).

These show the extent of a groundwater source catchment and are divided into three zones, definitions of which can be found on the Environment Agency section of the gov.uk website.

The mapping produced by the EA and supplied both within the Groundsure report and EA mapping from Magic Maps, indicates that the site is not within a SPZ.

The nearest SPZ is c.6.5km south east of site. The EA mapping from Magic Maps also identifies that the site is not within a Drinking Water Safeguard Zone for either surface water or groundwater.

3.3.4 Licensed Groundwater Abstractions

No Licensed Groundwater Abstractions have been identified within 2km of the site.

AECOM has contacted the local authority (Greater Manchester City Council) for details of private water supplies and ground water abstractions. As of the time of this report no response has been received for records held by the local council.

3.3.5 Risk of Flooding from Groundwater

The GroundSure report identifies that the risk of flooding from Groundwater both onsite and within 50m are considered to be 'Low' based upon a 1 in 100-year return period and a 5m Digital Terrain Model (DTM).

The Low risk identified is considered to present a limited potential for groundwater flooding to occur at the site.

3.4 Hydrology

3.4.1 Surface Water Courses and Drainage

There are no ponds, streams, or drainage ditches on or adjacent to the site. The site is however is understood to be included within Manchester Airports drainage and fire management systems.

The site lies on the boundary of two Water Framework Directive (WFD) surface water body catchments. The boundary runs along the southern boundary of the site. to the north of this line, including the site area, is within the catchment of Timperley Brook. To the south of the boundary the area is within the River Bollin (River Dean to Ashley Mill) catchment.

The nearest Water Framework Directive-relevant surface watercourse/feature to the site is the River Bollin located approximately 259m South of the site at its closest point, flowing in a south-westerly direction.

Table 3-4 summarises the surface water quality information available for the watercourses of the two catchments associated with the site.

Table 3-4. Surface Water Quality

Surface Water Feature	Distance (m)	GQA (Overall)	GQA (Chemical)	GQA (Ecological)	Upstream / Downstream of Site
Bollin (River Dean to Ashley Mill)	259m (S)	Moderate	Good	Moderate	Downstream
Timperley Brook	2314m (NW)	Moderate	Good	Moderate	Downstream

It should be noted, as above, that the site is understood to be included within Manchester Airports drainage system and fire management areas. As such, it is unlikely that in its current state that the surface waters of the site would be in connection to the nearby water courses. In this area it is understood that the drainage waters from the airport pass through a monitoring and filtrations system before being outlet ultimately to the River Bollin.

3.4.2 Licensed Surface Water Abstractions

No surface water abstractions have been identified within 1km of the site.

3.4.3 Risk of Flooding from Surface Water

The indicative floodplain map for the area, published by the Environment Agency, shows that the site does not lie within a Flood Zone. Therefore, the site is not considered to be susceptible to fluvial/marine flooding.

The Groundsure Report presents surface water flood mapping which highlights the highest risk onsite is a 1 in 30 year risk of 0.1m-0.3m flooding. The area with this designation is focused on a small area in centre of the current building 401 onsite. This is likely associated with the current part basement of the building.

Based on the Groundsure Report and EA mapping, the site is not at risk of significant and extensive surface water flooding as a result of extreme rainfall events.

4. Historical & Planned Development

4.1 Historical Ordnance Survey Mapping & Aerial Photographs

Historical Ordnance Survey (OS) maps of the Site and the wider environs were provided in the Groundsure Report (scales 1:2,500, 1:10,560 and 1:10,000) and from Google Earth Pro and these are reviewed in this section. Copies of these maps are presented as Appendix B.

The historical Ordnance Survey (OS) maps obtained with the Groundsure report date between 1877 and 2021.

Table 4.1 presents a summary of the main features present on and within approximately 250m radius of the Site boundary. AECOM notes that only indicative map scales are provided. Where dates are stated, these refer to the dates of maps on which the features are present, have changed use or are no longer annotated, and do not necessarily refer to the exact dates of existence of a particular feature. Development that may have occurred between map editions is recorded as occurring on the latter published map, hence there are some limitations to the accuracy to the date of development unless supplementary evidence is available:

Table 4.1 Summary of Historical Mapping

Date	Key Features on-site	Key Features off site (250m)
1877 (1:2500)	Partial map does not cover site	- Land use is predominantly agricultural with field boundaries and paths/tracks - Yewtree Lane is noted c.150m NE running NW to SE. - A pond is noted c.200m NE close to a number of buildings (Manor Farm). - Lilac Cottage is noted c.110m S of site to the East of the church.
1881 (1:2500)	The site is presumed agricultural land with two field boundaries crossing the site NW to SE dividing the site into broadly three equal sections.	- Land use is predominantly agricultural with field boundaries and paths/tracks - Pinfold Lane runs along the SE boundary meeting the crossroad with Wilmslow Road. - A pond is noted c.20m S of site. - The Red Lion Inn (Romper) and All Saints Church are in their current location on the crossroads. - A smithy is noted attached to the Inn. - Oak Farm is noted c.200m W. - The Grange, a collection of buildings with ponds is noted c.175 E.
1898 (1:2500)	The southernmost field boundary is no longer present.	A square pond/ reservoir is attached to Oak Farm.
1899 (10:10560)	No notable change	No notable change
1909 (1:2500)	No notable change	No notable change
1910 (10:10560)	No notable change	No notable change
1935 (1:2500)	Partial map does not cover site	No notable change
1938 (10:10560)	No notable change	The area of Manchester Airport to the east of site now contains no mapping other than three large buildings noted c.250 E of site.
1954 (10:10560)	The site is occupied by a series of looped hardstanding areas associated with the Ringway Airport (Manchester Airport). These are understood to be taxiing and aircraft storage.	Hangar 3 and Hangar 5 of Manchester Airport are present c.25m S and SE including a bund between the two. Hangar 4 lies further south c.150m for site.
1967 (10:10560)	Partial map does not cover site	Partial map - No notable change
1968 (1:2500)	No notable change	- Peters Croft is present next to the church c.75m S - VHF Receiver Station present c.200m NW. - Oak Field farm has expanded. - A tank is noted c.75m SE associated with Hangar 3.

Date	Key Features on-site	Key Features off site (250m)
1969 (1:2500)	No notable change	No notable change
1974 (1:2500)	No notable change	Partial map - No notable change
1981 (10:10000)	No notable change	- Wilmslow Road is now Wilmslow Old Road - A new larger Wilmslow Road curves part the site c.50m W. running N to S. - Wilmslow Road joins a roundabout junction to the north of Oak Farm over 250m from site which adjoins the M56.
1987 (1:2500)	- A smaller building is present in the location of Building 401 including lorry entrances to the building and the entrances from Pinfold lane and Avro Way. - An electrical substation is noted on the West side of the building. - Western half of the site remains with partial hard standing.	- Avro Way is present on the NE site boundary - Cargo Centre is now present c.20m NE. - An elongate building is added to Hangar 4. - A large tank is noted c.100m north of site (associated with fire water (Project Quantum))
1990 (10:10000)	No notable change	No notable change
1992 (1:2500)	The building has expanded NW and the access has moved north with it.	No notable change
1995 (1:2500) 1995 (1:10000)	- The building has expanded SW. - The substation is no longer noted. - A light tower is noted in the SW half of the site which is now as hard standing. - The site is broadly as it is at present	- Building 402 is now present to the immediate NW with associated infrastructure including an electrical substation on the site boundary. - An embankment is present along Wilmslow road to the W. - An office building is noted c.100m N.
2001 (10:10000)	No notable change	- Hangar 5 to the E of site is no longer present. - A small expansion to Building 402 N of site.
2003 (1:2500)	No notable change	No notable change
2010 (10:10000)	No notable change	No notable change
2021 (10:10000)	No notable change	- Hangar 3 is no longer present (It is known that in 2021 DNATA warehouse was built across the former Hangar 3 and 5 sites. - Oak Farm is no longer Present. Two very large warehouses replace it with associated access roads as part of a large commercial industrial development (World Logistics Hub) including warehouses for Amazon, Thomas Cook, DHL and others.
Aerial Photography 2000 to 2021	No notable difference from mapping	Between 2013 and 2016 a large area c. 70m S of site adjacent to the church and extending to c.600m from site is a large hard standing parking area.

4.2 Planning Authority Records

Online planning application records on the Manchester City Council Website are available to the public. Those planning applications within 250m of the site are solely for the development of the World Logistics Hub, including specific applications for a number of the large warehouse buildings and general applications for the wider development.

It should be noted that a portion of Manchester Airports developments are considered permitted development and as such do not necessarily require planning applications with the council and therefore would not be recorded in this register.

4.3 Records from MAG

AECOM reviewed Manchester Airport Groups history on 06 September 202a via their 'Our History' page on their website (<https://www.manchesterairport.co.uk/about-us/manchester-airport-and-mag/history/>). A summary of findings that may relate to the Building 401 site are summarised in Table 4-1 below.

Table 4-1 MAG Records

Date	Details of Development
1935	Building of Manchester Airport, formerly known as Ringway Airport
1938	Ringway Airport opens
1939-45	Last aeroplane flies on the 1 st September 1939 due to the Second World War. Ringway Airport becomes an aircraft manufacturing centre for war planes.
1969	The runway is extended to 2745m.
1986	Opening of the World Freight Terminal.

4.4 Unexploded Ordnance Risk

4.4.1 Wartime Land-Use

Based on a review of historical maps (state ages of maps and reference them), the site was located within part of what was later Manchester Airport during Wartime Britain and based on CIRIA C681 could have been close to areas targeted by aerial bombing. While the main airport buildings were not immediately close to site at this time, the site was occupied by aircraft storage and hard standing attached to the runway and taxiing layout at the time. Historic photography shows the site containing fighter planes.

The site was located near to wartime sites of interest, which include military bases, ports, or industrial centres, notably the airport and as such a risk of potential unexploded ordnance (UXO) is considered to be present.

4.4.2 Post War Development

An analysis of the post war historical mapping from the Groundsure Report shows little change to the site until the 1980s when the site was developed as Building 401, a commercial/ industrial warehouse for the airport. No immediate redevelopment within the area is noted in the post-war years, which could potentially indicate redevelopment as a consequence of bomb damage.

The potential for encountering UXO during the course of the development are considered low within Building 401 primarily due to the presence of a half basement. The parking area within the western half of the site has seen little development and historic mapping indicates that hard standing associated with the former airfield may still be present beneath the current hardstanding cover. Due to the lack of previous disturbance in this area, there may be a higher risk of encountering UXO.

4.4.3 Unexploded Ordnance Mapping

The regional UXO mapping published by Zetica (Appendix D) shows that the site lies within a zone classified as having a low risk of UXO. In areas with a low risk of UXO, it is estimated that 15 bombs failed to explode within an area of 1,000 acres.

However, the site is within the vicinity of Manchester Airport with a Luftwaffe Target noted c.175m SE of the site which appears to be associated with historical airport buildings which are understood to have manufactured planes. In addition, it is understood from the historic mapping and historic photography that the site was used as a taxiing and storage area for fighter aircraft.

Based on the findings of this initial assessment, AECOM recommends that a detailed UXO Assessment is undertaken prior to the commencement of any intrusive investigation.

5. Review of Historical Reports

5.1 ESG Factual Report on Ground Investigation (Feb 2017)

The 2017 ESG factual report produced for BAM construction summarises a ground investigation undertaken by Jacobs in June 2016.

The ground investigation comprised three concrete cores (CC1-CC3), four window sample boreholes (WS1-WS4) and three dynamic cone probes (DCP1-DCP3) (Figure 5-1).

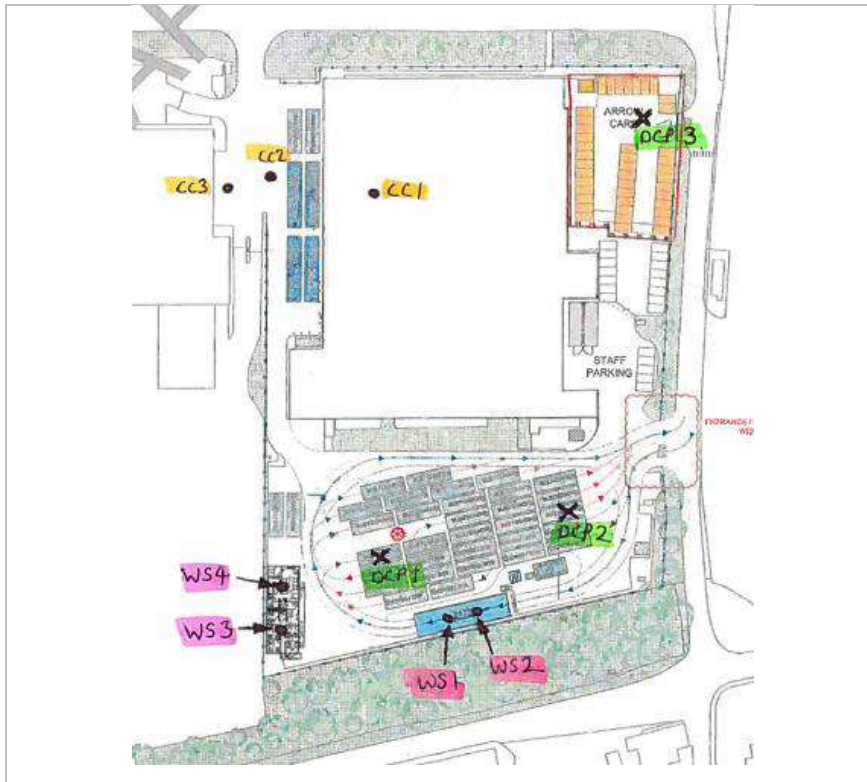


Figure 5-1 Extract of Borehole Location Plan – ESG Factual Report 2017

The borehole logs for the window samples indicated a made ground thickness of 0.8-1.0mbgl typically comprising 0.1m of macadam over orange/ brown Sand to 0.7mbgl in WS1 and WS2, over reworked Clay to 1.0m. WS3 and WS4 identified a thinner sand layer underlain by a black ashy gravel over the reworked clays extending to 0.8mbgl. WS4 also noted a type 1 sub-base style gravel below the macadam.

All four locations encountered Glacial Till below the Made Ground extending to the base of the boreholes at a maximum of 4.45mbgl. The Glacial Till comprised orangish brown CLAY described as firm to stiff, increasing in stiffness with depth. WS3 noted no recovery and a light brown sand between 3.8mbgl and 4.2mbgl. Thin sand bands of less than 5cm were also noted in the CLAY above.

Three boreholes drilled to 4mbgl encountered groundwater which rose to depths between 3.9mbgl and 3.4mbgl. Some limited waters and seepage were noted at around 1mbgl within the Made Ground.

DCP and Concrete cores identified concrete up to a thickness of 0.35m. It should be noted that based on BGS borehole and anecdotal evidence, it is considered likely that the original aircraft taxi and storage hard standing is present below the current hard standing in some areas of the site. The potential for two layers of concrete should be factored into any further ground investigation or development.

5.2 Project Quantum Site Assessment (Feb 2019)

The overall objective of Project Quantum was to produce holistic executive summary reports for assets of the airport site. For each asset an asset fact file based upon a site walkover and workshop with MAG staff as well as publicly available data.

Building 401 was classified as asset MAN-19, for which the walkover assessment was undertaken on 03/12/2018. It should be noted that this assessment was for Building 401 only and not the current redline boundary of the site provided as part of this brief, however off-site descriptions were included which covered the current site area.

The report identified that VLF testing had identified a failure of the HV cable between the Hangar 4 substation and 'Z' substation. The failure of the cable was believed to be below Building 401. At the time it was proposed that MAG would divert the cable and relocate the 'Z' substation prior to demolishing the existing building in April 2019. Hangar 3 was demolished and the HV cable was relocated in advance of the construction of the DNATA warehouse on the Hangar 3 site.

The report identifies Building 401 as an office and warehouse described as the former Skychefs catering building noted as disused. It is understood that air-conditioning and refrigeration units are anticipated to still be present within the site.

The south western portion of the current site is described in the report as the temporary MAG bus depot, including refuelling points, port-a-cabin offices, and a bus washing facility. Within this area are a number of storage facilities including: two diesel storage tanks, an AdBlue storage tank, and storage of drums of cleaning chemicals associated with the bus washing facility.

Offsite, the report identifies a mobile diesel refuelling tank within the carparking area of Building 402 to the north. It is noted that the tank had been leaking, however the leak had been contained largely within the tank's incorporated bund.

To the south of the site within the former Hangar 3 site there was a foul water pumping station prior to development, this remains in place in the north west corner of the DNATA site. The report also identified a former refuelling depot within the Hangar 3 site to the south which was remediated due to hydrocarbon contamination, and a former sweeper tip at the Hangar 5 site to the south east, the contents of which were unknown but believed to include material from the former hangar. Both of these sites have been redeveloped with the DNATA warehouse and as such Made Ground is inferred to have been removed or remediated as part of the development.

The report includes a preliminary risk assessment chiefly comprising a tabulated preliminary conceptual model (CM) and risk assessment. The findings of this risk assessment identified the site to be of Low Risk.

While samples were obtained during the assessment, no geotechnical or environmental chemical data is included within the report. As such, no further comment can be made upon the chemical or geotechnical characteristics of the strata.

5.3 Historical Reports for Adjacent DNATA Warehouse Site

The plot to the south of the site is currently occupied by the DNATA warehouse completed in 2019. Prior to this the site was occupied by Hangar 3 and a storage yard which was itself previously Hangar 5. A number of reports have been undertaken on the DNATA site and surrounding area. These are briefly summarised below.

5.3.1 Arcadis Geraghty & Miller International Inc. Hangar 3 Fuelling Farm, Tier 1 Environmental Assessment Report. (June 2003)

Arcadis Geraghty & Miller International Inc., Hangar 3 Fuelling Farm, Tier 1 Environmental Assessment Report. June 2003. Report Number: 919120003.

An environmental assessment of the Hangar 3 fuelling farm located approximately 200m south west of the site, consisting of an intrusive investigation and groundwater monitoring. Olfactory evidence of contamination was identified in the area surrounding the tank farm, which had no visible drainage around the fuelling area. It was reported that gas oil Tank 1 had split earlier in 2003.

Light Non-aqueous Phase Liquid (LNAPL) was encountered in BH2 between 1.0mbgl and 1.3mbgl, and was indicative of a diesel fuel source within the made ground. Results of the site investigation indicated that the soil had been impacted by hydrocarbons with BH2 exceeding the action level set in the report. Groundwater at BH2 was impacted by naphthalene. Contamination was reported to be localised within the Made Ground surrounding the underground storage tank (UST).

5.3.2 Scott Wilson, Hangar 5 Site Interpretive Geo-Environmental Assessment on Ground Investigation (March 2005)

Scott Wilson, Hangar 5 Site, Manchester Airport, Interpretive Geo-Environmental Assessment on Ground Investigation. March 2005. Report Number: D107899/07.1/INT/H5/01.

An intrusive investigation of the ground conditions in the vacant land directly northeast of historical Hangar 3 located approximately 150m southwest of the site, comprised of various trials pit locations and window samples.

The area was considered to present a moderate risk to controlled waters based on elevated concentrations of copper, sulphide, sulphate, ammoniacal nitrogen, polycyclic aromatic hydrocarbons (PAHs) and total petroleum hydrocarbons (TPH) within groundwater sampled from the superficial glacial till.

Ground conditions agreed with the published geology comprising of made ground to a maximum depth of 0.95mbgl. Superficial geology of glacial till was encountered to a proven depth of 3.40mbgl. Bedrock of weathered mudstone was observed from 1.90mbgl to 3.90mbgl. Perched groundwaters were encountered within the superficial glacial till, however consistent groundwaters were not encountered laterally across the site during the investigation.

5.3.3 OPUS International Consultants (UK) Ltd., Hangar 3 Fuelling Farm, Supplementary Environmental Investigation (Feb 2013)

OPUS International Consultants (UK) Ltd., Hangar 3 Fuelling Farm, Manchester Airport, Supplementary Environmental Investigation. February 2013. Report Number: J-W0364_R1.

An intrusive environmental investigation of the ground conditions at historical Hangar 3, to assess potential contamination within the vicinity of the UST.

The report concluded that there was significant hydrocarbon contamination within the made ground. Soil contamination was present within all of the exploratory wells undertaken. However, it was not present in all of the deeper groundwater samples and was therefore considered to be limited in extent to the soil contamination 'hotspot' surrounding the USTs.

5.3.4 URS Proposed Motor Transport Building, Geotechnical & Geo-Environmental Desk Study (Nov 2013)

URS, Manchester Airport Proposed Motor Transport Building, Geotechnical & Geo-Environmental Desk Study Report. November 2013, Report Number: 47066850/MTB/MARP007.

An investigation into the geotechnical and geo-environmental conditions for a proposed motor transport building located in the current vacant land adjacent to Hangar 3, located approximately 150m southwest.

The report highlighted the current at the time of the report (2013) and historical environmental conditions surrounding the site and used the information to populate a conceptual site model for the proposed development. The risk for contamination of deeper groundwaters was considered likely due to the nature of the superficial geology comprising permeable layers of sand and silt. The remaining risks to construction workers, current and future land users, and development infrastructure were considered low to moderate / low.

5.3.5 URS Proposed Motor Transport Building, Geo-Environmental & Geotechnical Interpretative Report (March 2014).

URS, Manchester Airport Proposed Motor Transport Building, Geo-Environmental & Geotechnical Interpretative Report. March 2014. Report Number: 47066850/MTB/MARP002.

An interpretive report of the intrusive ground investigation for the proposed motor transport building located in the current vacant land adjacent to Hangar 3, located approximately 150m southwest of the site. The investigation comprised of 3 No. boreholes, 14 No. window samples and 12 No. dynamic cone penetrometer holes.

The report identified that where made ground was encountered, it was not considered a suitable bearing stratum for future structural foundations due to the heterogeneity of the material under a ground bearing capacity of 100kN/m². Varying CBR values were determined for pavement design, dependant on the underlying geology and subgrade thickness. A UST and refuelling island had been identified on site, however AECOM (formally URS) de-commissioned and removed the UST and associated contaminated soils in August 2014.

Results obtained from soil analysis indicated no significant exceedances of contaminants at the site, with the exception of asbestos containing materials (ACMs), it was therefore considered that contaminants posed a low risk in terms of chronic exposure to receptors. Trace amounts of amosite and crocidolite asbestos were obtained from 2 of 15 soils samples taken within the Made Ground.

Groundwater was observed at depths ranging from 0.80mbgl and 3.70mbgl across three separate monitoring rounds. Elevated levels of copper, selenium, phenol, and sulphate were interpreted from the groundwater samples obtained and deemed a potential risk to controlled waters. The potential for groundwater migration was considered to be minimal due to the perched nature of the groundwater bodies encountered and the presence of significant thicknesses of discontinuous clays.

The geology encountered throughout the geotechnical investigation comprised of Made Ground to a depth of 1.20mbgl, superficial deposits ranging from 0.20mbgl to 7.70mbgl, and bedrock of weather mudstone ranging from 3.70mbgl to 8.00mbgl.

5.3.6 URS Former Re-Fuelling Depot, Verification Report (Nov 2014)

URS, Manchester Airport Former Re-Fuelling Depot, Verification Report. November 2014. Report Number: 47066850.

A verification report for the remediation of the historical Hangar 3 refuelling area, located approximately 200m southwest.

A total of 5 USTs were removed, with associated pipework and saturated soils which were removed from the areas surrounding the tanks to a depth of 5mbgl. 20 No. soil samples were obtained from the excavation to verify that impacted soils had been delineated and successfully removed. The analysed verification samples reported concentrations of contaminants below the remediation target levels set for the project. The excavation was backfilled with engineered fill to a highway specification.

Impacted soils were noted to extend beneath the roadway to the southwest along the line of pipework, although determining the extent of the contamination was beyond the proposed scope, and it was therefore not removed as part of the remediation process. No significant thickness of LNAPL was identified during the investigation and as such the potential for migration of contamination within these soils post remediation was considered limited.

5.3.7 Brownfield Solutions Ltd HV Cable, Factual Environmental Report (May 2017)

Brownfield Solutions Ltd., Manchester Airport HV Cable, Factual Environmental Report. May 2017. Report Number: LC/C3450/6933.

A factual Environmental Investigation carried out by Brownfield Solutions Ltd. to determine the ground conditions for the installation of a high voltage electricity cable directly underneath the DNATA site, located approximately 150m southwest of the site. The investigation comprised of several window sample boreholes positioned on the periphery of the historic maintenance hangar, however samples taken were not screened against any specific criteria. The report indicated the potential presence of PAHs in borehole WS102A, located on the north west boundary of the site and Pinfold Lane. No other olfactory or gross contamination evidence was present.

Made Ground was encountered in all exploratory wells to a depth of 1.75m, comprised of macadam surfacing over limestone and brick subbase. Superficial geology was only encountered in WS101 and WS103, with bedrock encountered in WS103 at a depth of 1.05m. Perched groundwater was encountered within the Made Ground at a depth of 0.20m.

6. Regulated Activities and Statutory Consultation

6.1 Introduction

The key relevant features that characterise the site and surrounding area are summarised in this section, along with an indication of the risk to the land quality of the site.

Information on groundwater and surface water abstractions is detailed in Section 3.3.4 and 3.4.2 and is not repeated here.

Generally, any regulated activities within 250 m of the site could, depending upon their nature, represent potential off-site sources of contamination. Whilst a 1 km search area was generally adopted, this section places emphasis on those activities present within 250 m.

6.2 Regulated Processes

Table 6-1 summarises information on regulated processes contained in the Groundsure report (Appendix B). The report collates data from a variety of sources including the Environment Agency (EA) and the British Geological Survey (BGS). All data suppliers are referenced in the report.

Table 6-1 Summary of Regulatory Information

Subject	Number present				Distance	Details
	On site	0-250 m	250-500 m	500-1000 m		
<u>Agency & Hydrological</u>						
Contaminated Land Register Entries and Notices	0	0	0	0		None listed
Licenced discharge to controlled waters	0	0	0	11	314m SE x2 and 328m NE 342m NE	4 of the 11 licences are potentially active. Of those potentially active: 3 Relate to the Manchester airport site drainage and containment system – Trade Discharge – site drainage to River Bollin. The Romper PS Public House, Sewage and trade combined - unspecified to River Bollin. Those revoked are mostly Manchester airport drainage and aircraft stand drainage.
Historical Licensed industrial activities (IPC)	0	0	0	0		None listed
Licensed industrial activities (Part A(1))	0	0	0	0		None listed
Licensed pollutant release (Part A(2)/B)	0	0	2	2	98m SE 229m SE 270m SW 496m SE	Fls Aerospace Ltd - Respraying of Road Vehicles (Historic) Airline Services Limited, Hanger 4 Western Maintenance Area – Dry Cleaning (Historic) BP Airport City, BP Airport City SF Connect - Unloading of Storage Petrol into Storage at Service Stations (Current) Air Livery Plc – Respraying of Road Vehicles (Current)
Pollutant release to Surface Waters (Red List)	0	0	0	0		

Subject	Number present				Distance	Details
	On site	0-250 m	250-500 m	500-1000 m		
Pollutant release to public sewers	0	0	0	0		None listed
Pollution Incidents (EA/NRW)	0	0	0	0		None listed
Pollution Inventory substances	0	0	0	0		None listed
Pollution Inventory waste transfers	0	0	0	0		None listed
Control of Major Accident Hazards Sites (COMAH)	0	0	1	0	115m E -	Air BP Limited current COMAH site – COMAH Lower Tier Operator
Regulated Explosive Sites	0	0	0	0		None listed
Hazardous substance storage/usage	0	0	2	1	187m E - 273m NE -	2 entries: Air BP Ltd - Storage of Jet fuel A1 Shell UK Ltd – Hazardous Substances Consent for Storage of Aviation AVGAS
Radioactive Substance Authorisations	0	0	0	0		None listed
Pollution inventory radioactive waste	0	0	0	0		None listed
List 1 Dangerous Substances	0	0	0	0		None listed
List 2 Dangerous Substances	0	0	0	0		None listed

Source: Envirocheck Report

6.3 Licensed Waste Management Facilities

The Groundsure report provides details of waste facilities within 1km of the site based upon data from the Environment Agency, British Geological Survey, Ordnance Survey/ Groundsure records and mapping, and Local Authority records.

With reference to the above data the Groundsure report identified no recorded licensed waste management facilities or landfilling operations, past and present, within 500m of the site.

The report does identify 9No. waste exemptions 'Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit'.

The closest 6No. of waste exemptions related to the use of waste material on construction or wood cutting and pulverising in relation to construction works; including at Building 402 to the north and Hangar 3 to the south largely as part of the remediation works on the former fuel tank area, or the DHL warehouse to the south west

The remaining 3no. related to Hale Depot / Hale motorway maintenance compound for storage of waste in secure containers and treatment of waste aerosol cans.

It should be noted that as part of the Project Quantum review of buildings associated with the airport, most of the of the buildings reviewed by their nature as commercial / industrial premises have some storage of potentially contaminative materials. The security of these storage facilities is monitored by the airport.

With reference to the historical data there have clearly been demolition and construction activities both in the vicinity of the site and onsite and therefore the presence of made ground should not be overlooked.

6.4 Industrial Land Use

The Groundsure Report collates data on potentially contaminative active and inactive industrial land uses, tanks, fuel station entries, Points of Interest, Gas Pipelines and Underground Electrical Cables within 500m of the site, that may have the potential to have caused contamination.

Various active and inactive entries for these land uses have been identified on or within the vicinity of the site. Table 6-2 summarises those entries that may have the potential to have caused contamination within a search radius of 250 m of the Site.

Table 6-2 Potentially Contaminative Industrial Land Use on and Within 250 m of the Site

Subject	Location	Details
Historical Industrial Land Uses	On Site	Airport - 3no entries 1953, 1989, 1953
	Off-Site	11m SW Smithy 1938
		17m SW Smithy 1910
		20m SW Smithy 1899
		48m N Airport 1989
		164m E Unspecified Tanks 1989
		175m NE Airport 1967
		175m NE Airport 1975
		177m NW Wireless Station 1989
		205m W Unspecified Tank 1989
		231m SE Unspecified Works 1974
Historical Tanks	On Site	No Entries
	Off-Site	59m SE Unspecified Tank 1987
		60m SE Unspecified Tank 1968
		60m SE Unspecified Tank 1973
		101m N Unspecified Tank 1995
		101m N Unspecified Tank 1987
		101m N Unspecified Tank 1990
		101m N Unspecified Tank 1991
		146m SE Tanks 1995
		146m SE Tanks 1996
		158m SE Tanks 1995
		158m SE Tanks 1996
		159m E Tanks 1987
		159m E Tanks 1990
		161m E Tanks 1995
		161m E Tanks 1996
		187m E Unspecified Tank 1995
		187m E Unspecified Tank 1996
		206m SE Unspecified Tank 1987
		206m SE Unspecified Tank 1990
		207m W Unspecified Tank 1987
		209m E Unspecified Tank 1987
		209m E Unspecified Tank 1990
		209m SE Unspecified Tank 1995
		209m SE Unspecified Tank 1996
		209m E Unspecified Tank 1995
		209m E Unspecified Tank 1996
		214m E Unspecified Tank 1995
		214m E Unspecified Tank 1996
		222m E Unspecified Tank 1987
		222m E Unspecified Tank 1990
		226m E Unspecified Tank 1995
		226m E Unspecified Tank 1996
		238m E Unspecified Tank 1987
		238m E Unspecified Tank 1990
		239m E Unspecified Tank 1995
		239m E Unspecified Tank 1996

Subject	Location	Details
		246m E Unspecified Tank 1987 246m E Unspecified Tank 1990 247m E Unspecified Tank 1995 247m E Unspecified Tank 1996
	On Site	Electricity Sub Station - Electrical Features
Recent industrial land uses	Off-Site	58m NW Alpha LSG – Aeroplanes 65m SE Tank - Tanks (Generic) 103m N Air Canada - Distribution and Haulage 108m N Tank - Tanks (Generic) 108m N Supply 2 Order - Container and Storage 111m N N N R Global Logistics - Distribution and Haulage 111m N Warme Heating Ltd - Industrial Repairs and Servicing 111m N Davies Turner Plc - Distribution and Haulage 111m N T Q Express - Airlines and Airline Services 112m N Select Euro Transport - Distribution and Haulage 114m N R & M Developments Ltd - Civil Engineers 114m N A Z Freight Services Ltd - Airlines and Airline Services 114m N Noatum Logistics Ltd - Distribution and Haulage 114m N E M S Cargo Ltd - Distribution and Haulage 114m N Atlantic Pacific Global Logistics - Distribution and Haulage 114m N Evolution Logistics - Distribution and Haulage 114m N Air Sea Worldwide - Airlines and Airline Services 118m N Future Forwarding - Distribution and Haulage 118m N Puma Cargo Ltd - Distribution and Haulage 118m N C B I Global Freight Management - Distribution and Haulage 118m N A I T Worldwide Logistics Ltd - Airlines and Airline Services 118m N Maurice Ward Group - Distribution and Haulage 119m N Electricity Sub Station - Electrical Features 125m NW Mapcargo - Distribution and Haulage 125m NW Air Menzies International - Distribution and Haulage 133m NW D B Schenker - Distribution and Haulage 133m NW Tranzfast Logistica UK Ltd - Airlines and Airline Services 133m NW Red Head International - Distribution and Haulage 136m N Vantec World Transport Manchester - Distribution and Haulage 164m NW Tank - Tanks (Generic) 164m E Electricity Sub Station - Electrical Features 166m SE Tank - Tanks (Generic) 168m E Tank - Tanks (Generic) 169m W Electricity Sub Station - Electrical Features 176m NW Electricity Sub Station - Electrical Features 180m SE Airline Services Ltd - Aeroplanes 186m E Tank - Tanks (Generic) 187m N AFI - Airlines and Airline Services 190m W Electricity Sub Station - Electrical Features 194m NE Airline Cargo Management Ltd - Airlines and Airline Services 194m NE Dunwoody Airline - Distribution and Haulage 194m NE Air Liaison - Airlines and Airline Services 194m NE Singapore Airlines Cargo - Distribution and Haulage 194m NE Omni Airline Services - Distribution and Haulage 194m NE Globe Air Cargo - Airlines and Airline Services 200m E Tank - Tanks (Generic) 202m N Trilogy Freight - Distribution and Haulage 202m N S O S Air Cargo Ltd - Distribution and Haulage 202m N Blacksmith Freight Services - Distribution and Haulage 202m N Fedex Trade Networks - Airlines and Airline Services 207m E Tank - Tanks (Generic) 209m E Tank - Tanks (Generic) 214m W Tank - Tanks (Generic) 215m SE Tank - Tanks (Generic) 219m E Tank - Tanks (Generic) 223m E Tank - Tanks (Generic) 225m W Electricity Sub Station - Electrical Features 231m NE Electricity Sub Station - Electrical Features 233m SE Aeroco Group - Aviation Engineers 238m E Tank - Tanks (Generic) 238m E Tank - Tanks (Generic)
	On Site	Electricity Substation 1987

Subject	Location	Details
Historic Energy Features	Off-Site	106m N Electricity Substation 1995
		106m N Electricity Substation 1987
		106m N Electricity Substation 1990
		106m N Electricity Substation 1991
		156m E Electricity Substation 1987
		156m E Electricity Substation 1990
		156m E Electricity Substation 1987
		156m E Electricity Substation 1990
		156m E Electricity Substation 1995
		156m E Electricity Substation 1996
		228m NE Electricity Substation 1992
		229m NE Electricity Substation 1987
Fuel Station & Garages Entries	On Site	N/A
	Off-Site	284m SW BP Wilmslow Road - Open
Gas Pipelines*1	On Site	N/A
	Off-Site	N/A
Underground Electrical Cables	On Site	N/A
	Off-Site	N/A

*1 While not identified in the Groundsure potentially due to sensitivity, it is known that the main pressurised fuel line to the airport runs within the vicinity of the site. It is broadly understood to pass to the north of the site.

6.5 Sensitive Land Uses

The Groundsure Report and Defra Magic Mapping identify adjacent sensitive land uses based upon factors such as Sites of Special Scientific Interest (SSSI), Environmentally Sensitive Areas, Areas of Outstanding Natural Beauty, World Heritage sites, Nature Reserves, National Parks, Nitrate Sensitivity Areas/Vulnerability Zones, and Special Protection Areas.

The Groundsure Sensitive Land Use Map and Magic Maps indicate that the site is not within an area of sensitive land use. However, the site is located within the area of three SSSI impact risk zones.

The nearest SSSI for which the site is in the impact risk zone is Cotteril Clough 345m South of the site.

The impact risk zone is described in the GroundSure report as being 'Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts'. No specific impacts are ascribed to Cotteril Clough.

The impact risk zone is large and encompasses the wider airport area and beyond. Due to the developed nature of this area and as the site is located within the airport and captured within its drainage system it is unlikely that there is notable potential for the development to impact upon the SSSI of Cotteril Clough.

No nitrate sensitive areas or nitrate vulnerable zones are located within 2km of the study site.

7. Site Reconnaissance

An external inspection of the site was completed by a suitably qualified and experienced AECOM Engineer on 08/09/2021. The aim of the visit was to identify the range of activities carried out on the site and any obvious potential sources of ground contamination or geotechnical issues.

The principal observations made during the visit are summarised below. A photographic record of the visit is included as Appendix E.

The site is broadly level and generally in line with the elevations of the surrounding area, there is a slight raise in the form of a c.1m grass shallow embankment up to Building 401 from the western carparking area and again on the eastern side of the building to Avro Way.

The majority of the north eastern half of the site is occupied by the current MAG Building 401 which covers c.6785m². To the immediate North West of the building is tarmac and concrete hard standing. To the immediate east is a grass landscaped area with small trees and shrubs which rises gently to Avro Way. To the south of the building the area is slightly larger and comprises a tarmac and concrete area in front of eight lorry bays for the building with an entrance from Pinfold Lane and associated landscaping.

Within the area north west of the building is the 'Z' sub-station which is understood to be disused. The substation comprises electrical units close to the building and a small metal service building adjacent.

The area to the south of the building is currently occupied by a number of airport busses in various states of repair. At the western end of this area close to the main entrance to the site is a brick gas utility house. In the eastern corner of these area is a former customer entrance and hydraulic lift to a service door. This corner contains a number of air-conditioning and refrigeration units on pallets as well as what appears to be a small oil tank. These appear to have been removed from the building as part of some decommissioning works.

The South Western side of the site is broadly divided into two. The far South Western portion lies outside of the fenced boundary for the current development on the site and comprises a broadly level wooded area. The north eastern portion between the wooded area and the main building, is an area of tarmac hard standing which was previously the car parking area for building 401. This tarmac area is currently occupied by a 'temporary' bus depot service area for airport vehicles. All of the structures in this area are temporary and stand atop the hard standing including mobile offices, multiple fuel terminals (two diesel and one AdBlue) and associated storage tanks and a vehicle wash. The fuel tank and pump in the southern end of site appears to have had a number of leaks or spills however these are predominantly caught in the tanks own internal bund. Some spilling outside of this is present but within the areas of the interceptor which crosses the front of this area. Additional interceptors are noted along the other tank area and vehicle wash. The vehicle wash and the site offices are raised on additional concrete foundations. The MAG bus depot area adjoins the main entrance from Pinfold Lane to the South.

Building 401 is currently derelict and is understood to have been empty for some time. The last usage of the site was by an airline food company 'LSG SkyChefs' for which liveries are still present on the building. Access was not obtained to the interior of the building however it is noted through the entrance that wall some panelling has been removed to access ducting and it is assumed some level of decommissioning of the building has taken place.

The building is comprised of a half-height brick base with corrugated steel construction above to c.2 stories. The other of the building appears to be predominantly in good repair with the exceptions of some fascia panels.

Services are noted across the site broadly following routes around the outside of building 401, noted onsite were at least drainage and telecoms. The current temporary bus depot buildings have new services for drainage noted.

8. Preliminary Ground Model

Based on the review of published geological and hydro-geological information, the three historical borehole records available onsite, and the previous ground investigation data included in the ESG Factual Report; the ground conditions within the site are considered to comprise the following sequence presented in Table 8-1.

Table 8-1. Preliminary Ground Model

Geology		Groundwater	
Stratum	Typical Description	Anticipated Thickness (m)	
Made Ground (Hard Standing)	Thin macadam or	Macadam c.0.1mbgl	N/A
	Concrete hard standing	Concrete c.0.35m with potential for second deeper layer below.	
Made Ground	Shallow made ground predominantly hardcore fill or ashy gravels over orange brown Clay fill and reworked natural Clay.	c.1mbgl	Potential for perched groundwater within granular Made Ground.
Superficial Strata	Orangish brown and grey CLAY with some Sand bands c. 4m	c.4.5mbgl	Groundwater encountered at 4mbgl in onsite boreholes.
Bedrock	Mudstones	Previous reports at the Hangar 3 and Hangar 5 sites to the south suggest	It is not anticipated that groundwater shall be encountered

From previous ground investigations in the area which extend deeper than those onsite c.4.45mbgl bedrock is anticipated to be relatively shallow c.4-5mbgl.

8.1 Groundwater

The onsite borehole logs identify perched groundwaters at c.1mbgl with the Made Ground at two of the four window samples from the ESG report. all four window samples identify ground water at c.4mbgl within the superficial deposits which ties in with the thin sand bands identified within one of the boreholes at this depth.

Wider ground investigations from the Hangar 3 and 5 sites identified laterally discontinuous sand bands within the superficial deposits some of which contained perched waters including where these overlay the bedrock. This may potentially tie with the encountered groundwater onsite at c.4mbgl potentially suggesting bedrock of a similar depth.

From the reports addressing the hydrocarbon impact of the refuelling station at Hangar 3 to the south of the site, a south westerly groundwater gradient is noted down ground level gradient and towards Cotteril Clough. It is likely that if present the site shall share a similar groundwater gradient however it is noted that the site lies just to the north of the boundary of the Timperley Brook catchment rather than River Bollin Catchment.

Preliminary Gas Risk Assessment (based on RB17)

CL: AIRE Research Bulletin RB17 (2012)¹ presents a pragmatic approach to Ground gas risk assessment. This assessment can be undertaken with no gas monitoring data, based instead upon other characteristics of the site including ground conditions, chemistry, and site history.

Limited previous ground investigation data is available for the site including no chemical analysis to determine the Total Organic Content of the onsite strata to allow for a full assessment under RB17. However, review of the available information on the site allows for a speculative initial assessment of potential ground gas risks at the site to be made.

Taking into consideration the ESG and BGS boreholes onsite, it is anticipated that the Made Ground on site is at least c.1m thick outside of Building 401. The depth of the Made Ground beneath the Building itself is unknown. It is also anticipated that there may be areas of deeper made ground around other structures including drainage, gas, and electrical services onsite. It is taken that the Made Ground beneath the building will have been in place for >20 years, while outside the building the timing of any resurfacing of the parking and hard standing areas is unknown.

Previous investigations on the Hangar 3 and 5 sites to the south and south east identify broadly a TOC of less than 1%.

On review of the available information against RB17 Table 1, the Site could have an initial speculative classification as a Characteristic Situation 1 (CS1) (in line with BS 8485 and CIRIA C665). However, data for the site is limited and with the commercial/ industrial nature and known historic contamination of the surrounding area, and the unknown details of the building and any potential contamination of Site, it is recommended that a suitable programme of ground gas monitoring is undertaken as part of any future investigation.

¹ CL:AIRE (2012) Research Bulletin 17, A pragmatic Approach to Ground Gas Risk Assessment

9. Initial Conceptual Model

9.1 Introduction

This section is aimed at identifying possible risks, if any, arising from substances used or deposited on-site, or from other sources of land contamination. Both past and current potentially contaminative land uses have been considered. It is based on the proposed site redevelopment which will comprise a single large warehouse building split into three units each with internal office units, and associated access roads parking and landscaping as identified in Section 1.1.1.

9.2 Assessment Framework

The Site, in terms of potential land contamination, will be regulated by the Local Authority Manchester City Council under the Town and Country Planning Act 1990 (as amended), taking account of the National Planning Policy Framework 2019, with the Environment Agency, Natural England and English Heritage acting as potential statutory consultees.

Environmental liabilities can arise through provisions contained within statutory legislation including Part 2A of the EPA 1990, the Environmental Damage (Prevention and Remediation) Regulations 2009, the Water Resources Act 1991, the Groundwater Regulations 2009 and the Water Act 2003.

Current best practice recommends that the determination of health hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Statutory Guidance to Part 2A (2012) and Land Contamination: Risk Management (LCRM).

The "suitable for use" approach is adopted for the assessment of contaminated land where remedial measures are undertaken where unacceptable risks to human health or the environment are realised taking into account the use (or proposed use) of the land in question and the environmental setting. The proposed end-use for the Site is a commercial development including a single large warehouse with associated internal office units.

The risk assessment process for environmental contaminants is based on a source-pathway-receptor analysis. These terms can be defined as follows:

- **Source:** hazardous substance that has the potential to cause adverse impacts; and
- **Pathway:** route whereby a hazardous substance may come into contact with the receptor: examples include ingestion of contaminated soil and leaching of contaminants from soil into watercourses; and
- **Receptor:** target that may be affected by contamination: examples include human occupants/ users of site, water resources (surface waters or groundwater), or structures.

For a risk to be present, there must be a relevant/ viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

The following sections details the iCM which has been developed for the Site with a view to assessing the potential risks/ liabilities and constraints associated with the Site in its current condition prior to any proposed redevelopment. Risks associated with the proposed redevelopment have also been assessed based on a commercial/industrial future land use scenario, including any potential sources of contamination, potential receptors and potential contaminant pathways identified during this desk-based assessment.

9.3 Sources of Potential Contamination

9.3.1 ONSITE

The Historic mapping and aerial photography show onsite that the site was initially open presumed farmland. By 1954 (between 1938 and 1954) the site was occupied by a series of looped hardstanding areas associated with the Ringway Airport (Later Manchester Airport). These are understood to be for taxiing and aircraft storage and were operational during WW2. The current Building 401 was first developed by 1987 (potentially from 1959) and expanded over the years to the present layout c.1995. Building 401 was used last by LSG Skycheffs for the storage and manufacture of airline foods. It is known that the building is currently derelict, and it is understood to still contain refrigeration units and air conditioning units. Other buildings in the area are known to use generators onsite.

Based on the above the following potential sources of contamination may be found at the proposed development site:

- *Made Ground associated with the development of Building 401 and its infrastructure*
- *Made Ground associated within the former aircraft standing areas.*
- *Current 'Z' electrical substation onsite (potentially disused) and other electrical housings across the site.*
- *Building 401 refrigeration and air-conditioning equipment*
- *Building 401 potential electrical and heating generators onsite*
- *Mag Bus Depot 2 Diesel fuel above ground storage tanks onsite*
- *Mag Bus Depot AdBlue above ground storage tanks onsite*
- *Mag Bus Depot vehicle wash chemicals above ground storage in various containers and an IBC onsite*
- *Mag Bus Depot potential spillages and leaks of fuels and oils.*

9.3.2 OFF SITE

The maps show that significant off-site historic development which might affect the proposed development including: Former Hangar 3 and Hangar 5 to the south of the site, Hangar 3 is known to have included a refuelling depot which historically had leaked and since been remediated; Building 402 and associated sub-station immediately to the north of the site including parking and above ground fuel storage; Parking for the cargo centre to the north east and Avro Way runoff. Further from site there is also the large airport fuel depot. It should be noted however that Hangar 3, 5 and the airport fuel depot are down hydraulic gradient from the site.

Based on the above the following potential sources of contamination may be found at the proposed development site:

- *Electrical sub-station on northern boundary associated with Building 402.*
- *Above ground diesel fuel tank associated with Building 402.*
- *Made Ground potential contamination associated with Building 402.*
- *Made Ground historic contamination including potential hydrocarbon impact within area surrounding Hangar 3 and 5 (outwith DNATA development).*
- *Foul pumping station to south west of site.*
- *Runoff of potential spills of fuels and oils from Avro Way.*

9.4 Summary of potential sources

With reference to the DoE Industry Profile including for Airports; Road vehicle fuelling, service and repair; Table 9-1 indicates the potential contaminants that may be associated with the current land use.

Table 9-1 Potential Sources of Contamination

Source Reference	Location	Potential Sources	Associated Contaminants of Potential Concern (CoPC)
S1	On Site	Made Ground – Building 401 including refrigeration and air-con units, and electrical generators	Heavy metals, Total Petroleum Hydrocarbons (TPH), Semi-volatile Organic Compounds (VOCs), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), phenols, sulphate, ammoniacal nitrogen, asbestos, asbestos containing materials (ACMs), Ground gases including carbon dioxide and methane. Electricals: polychlorinated biphenyl (PCB), Refrigeration and air-con: Organics, solvents, hydrocarbons (eg. Tetrafluoroethane, Chloro-Fluorocarbons, Chloro-Fluorocarbon, Polystyrene and Acrylonitrile). Ground gases including carbon dioxide and methane.
S2	On Site	Made Ground – former aircraft standings	Heavy metals, PAH, TPH (including aviation kerosene and gasoline, gas oil and diesel) SVOCs, VOCs, acids, alkalis, glycols (e.g. Antifreeze and de-icing agents), organic solvents, fire-fighting agents, washing agents, cleaners and lubricants, solvents (e.g. paints and thinners). Phosphoric acid, corrosion inhibitors, PCBs and ACMs Ground gases including carbon dioxide and methane.
S3	On Site	Electrical Substation 'Z' and electrical housings	Heavy metals, PCBs
S4	On Site	MAG Bus depot including vehicle wash, and fuel and AdBlue storage tanks.	Heavy metals, organics, inorganics, PAH, TPH, SVOCs, VOCs, solvents, glycols (e.g. Anti-freeze), fuel additives (AdBlue) and detergents. Ground gases including carbon dioxide and methane.
S5	Off Site	Made Ground – Building 402 site including associated electrical substation, chemical storage, and diesel tank.	Heavy metals, Total Petroleum Hydrocarbons (TPH), Semi-volatile Organic Compounds (VOCs), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAHs), phenols, sulphate, ammoniacal nitrogen, asbestos, asbestos containing materials (ACMs), Ground gases including carbon dioxide and methane. Electricals: polychlorinated biphenyl (PCB).
S6	Off Site	Made ground associated with current and past land uses of the surrounding airport infrastructure including Hangar 5 and Hangar 3 inc refuelling depot and foul water pump.	Heavy metals, PAH, TPH (including aviation kerosene and gasoline, gas oil and diesel) SVOCs, VOCs, acids, alkalis, glycols (e.g. Antifreeze and de-icing agents), organic solvents, fire-fighting agents, washing agents, cleaners and lubricants, solvents (e.g. paints and thinners). Phosphoric acid, corrosion inhibitors, PCBs, and ACMs. Ground gases including carbon dioxide and methane.

9.5 Potential Receptors

9.5.1 On-Site Receptors

Potential on-site receptors have been identified as follows:

Human Health

- Future construction and maintenance workers²
- Future site visitors
- Future site users (commercial)

Water Environment

- Shallow aquifer within the superficial Glacial Till deposits is classified as a Secondary Undifferentiated aquifer.
- The deep aquifer within the Bollin Mudstone Member is classified as a Secondary B aquifer.

Buildings & Infrastructure

- Concrete foundations
- Building structures
- Underground services
- Gas/ damp membranes

9.5.2 Off-Site Receptors

Human Health

- Adjacent site users (commercial)

Water Environment

- The shallow aquifer within the superficial Glacial Till deposits is classified as a Secondary Undifferentiated aquifer.
- The deep aquifer within the Bollin Mudstone Member is classified as a Secondary B aquifer.
- The nearest surface Water Cotteril Clough 345m SW of the site.

² This report and the preliminary risk assessment included does not consider acute linkages for construction and maintenance workers. AECOM anticipates that these acute linkages will be managed by appropriate health and safety measures.

9.5.3 Summary of Potential Receptors

Potential receptors associated with the potential development are shown on Table 9-2:

Table 9-2 Potential Receptors

Receptor Reference	Receptor	Description
R1	Human Health: Acute	Future site users – Site visitors.
R2	Human Health: Chronic	Future site users – workers at the site.
R3	Human Health: Acute	Adjacent site users – workers and road users (During construction phase)
R4	Water Environment: Superficial Aquifer	Secondary Undifferentiated Aquifer in the Superficial Glacial Till
R5	Water Environment: Bedrock Aquifer	Secondary B Aquifer in the Bollin Mudstone Member
R6	Water Environment: Surface waters	Cotteril Clough 345m SW of the site
R7	Flora	Plants, trees, and landscaping
R8	Buildings & Infrastructure: Concrete	Future proposed foundations and services at the site may be impacted by contamination in the ground. Concrete foundations can be corroded if perched groundwaters or leachates have high sulphate levels.
R9	Buildings & Infrastructure: Structures	Proposed structures may be impacted by accumulation of ground gases.
R10	Buildings & Infrastructure: Services	Potable water supply pipes and other service may be impacted by contamination in the ground. Toxic and corrosive contaminants can migrate through water supply pipes
R11	Buildings & Infrastructure: Gas/ damp membranes	Potential for hydrocarbons in soils and ground waters may deteriorate membranes.

9.6 Potential Pathways

9.6.1 On-Site Pathways

On-site pathways include direct contact, ingestion and dermal absorption of soil and inhalation of soil particles and soil vapour derived from soils, spillage / loss and run off from surface of site, leaching of chemicals and vertical migration via permeable unsaturated strata to shallow groundwater, lateral migration of impacted shallow groundwater to surface water features off-site, vertical migration of shallow impacted groundwater to deeper groundwater, direct contact of buried concrete, services and pipes with contaminated soils and the migration of hazardous gases and chemicals via permeable strata.

9.6.2 Off-Site Pathways

Off-site pathways include migration and leaching of hazardous gases and chemicals via permeable unsaturated strata, contact with shallow impacted groundwater travelling horizontally offsite, migration of CoPC via underground drainage/ sewers (including granular backfilling materials) and spillage/loss/runoff via on land rivers.

9.6.3 Summary of Potential Pathways

Potential pathways associated with the proposed development are shown in Table 9-3.

Table 9-3 Potential Pathways

Pathway Reference	Receptor	Description
P1	Human Health	Direct Pathway: Direct contact, dermal absorption, or ingestion of soil.
P2	Human Health	Indirect Pathway: Inhalation of soil particulates derived from soils.
P3	Human Health	Indirect Pathway: Inhalation of soil vapour derived from soils or groundwater
P4	Human Health	Indirect Pathway: Migration of hazardous gases/vapours via permeable strata into confined spaces (asphyxiation/ explosion)
P5	Water Environment: Groundwater	Indirect Pathway: Leaching of chemicals and vertical / lateral migration via permeable unsaturated strata to shallow and/ or deep groundwater
P6	Water Environment: Groundwater	Indirect Pathway: Vertical migration of impacted shallow groundwater to the deeper Secondary B aquifer.
P7	Water Environment: Groundwater/ surface water	Indirect Pathway: Lateral migration of impacted groundwater to off-site surface water.
P8	Water environment: Surface water	Indirect pathway: Migration via underground drainage / sewers (including granular backfilling materials), spillage / loss / run-off from the surface direct to receiving water.
P9	Buildings & Infrastructure: Concrete	Direct Pathway: Direct contact of buried concrete with contaminated soils (i.e. hydrocarbons) and aggressive ground conditions (pH and sulphate).
P10	Buildings & Infrastructure: Supply pipes	Direct Pathway: Direct contact of services and supply pipes with contaminated soils.
P11	Buildings & Infrastructure: Structures	Indirect Pathway: Migration of hazardous gases/vapours via permeable strata into enclosed spaces and service/utility trenches
P12	Buildings & Infrastructure: Gas/ damp membranes	Indirect Pathway: Potential for hydrocarbons in soils and ground waters may deteriorate membranes.
P13	Ecosystems: Flora.	Direct pathway: Direct contact with contaminated soils.

10. Environmental Risk Assessment

10.1 Risk Assessment Principles

Current best practice recommends that the determination of hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Environment Agency guidance on LCRM.

For a risk to be present, there must be a viable contaminant linkage; i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

Assessments of risks associated with each of these contaminant linkages are discussed in the following sections.

Using criteria broadly based on those presented in the National House Building Council/Environment Agency/Chartered Institute of Environmental Health publication R&D 66 (NHBC/EA/CIEH, 2008), the magnitude of the risk associated with potential contamination at the Site has been assessed. To do this an estimate is made of:

- The magnitude of the potential consequence (i.e. severity);
- The magnitude of probability (i.e. likelihood).

The severity of the risk is classified according to the criteria in Table 10-1.

10.2 Risk Assessment Framework

Table 10-1 Description of Severity of Risk

Term	Description
Severe	– Highly elevated concentrations likely to result in significant harm to human health. – Catastrophic damage to crops, buildings or property (e.g. by explosion). – Equivalent to EA Category 1 pollution incident including persistent and/or extensive effects of water quality. – Major damage to aquatic or other ecosystems.
Medium	– Elevated concentrations which could result in significant harm to human health. – Significant damage to crops, buildings or property (e.g. damage to building rendering it unsafe). – Equivalent to EA Category 2 pollution incident including significant effect on water quality. – Significant damage to aquatic or other ecosystems.
Mild	– Exposure to human health unlikely to lead to significant harm. – Minor damage to crops, buildings or property (e.g. surface spalling to concrete). – Equivalent to EA Category 3 pollution incident including minimal or short-lived effect on water quality. – Minor or short-lived damage to aquatic or other ecosystems.
Minor	– No measurable effect on humans. – Repairable effects of damage to buildings, structures, and services. – Equivalent to insubstantial pollution incident with no observed effect on water quality of ecosystems.

The probability of the risk occurring is classified according to the criteria in Table 10-2.

Table 10-2 Likelihood of Risk Occurrence

Likelihood	Explanation
High	Contaminant linkage may be present that appears very likely in the short-term and risk is almost certain to occur in the long term, or there is evidence of harm to the receptor.
Likely	Contaminant linkage may be present, and it is probable that the risk will occur over the long term.
Low	Contaminant linkage may be present and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	Contaminant linkage may be present but the circumstances under which harm would occur even in the long-term are improbable.

An overall evaluation of the level of risk is gained from a comparison of the severity and probability, as shown in Table 10-3.

Table 10-3 Risk based on Comparison of Likelihood and Severity

		Severity			
Likelihood		SEVERE	MEDIUM	MILD	MINOR
	HIGH	Very High	High	Moderate	Low
	LIKELY	High	Moderate	Moderate/Low	Low
	LOW	Moderate	Moderate/Low	Low	Very Low
	UNLIKELY	Moderate/Low	Low	Very Low	Very Low

10.3 LCRM Assessment of Risk

In 2019, the UK government issued new guidance on the evaluation and management of contaminated land, LCRM. Current contaminated land guidance in LCRM (Environment Agency, 2020) categorises risk at Stage 1 Tier 1 (i.e. PRA) as follows:

- Acceptable;
- Unacceptable.

However, no framework for assessing the risk has been published to accompany the guidance, so the CIEH & NHBC R&D 66 assessment framework constitutes best practice in this regard. To align the risk rankings in Section 10.2 with the LCRM rankings and with the Part 2A definitions, the following matrix has been utilised. This conversion is demonstrated in Table 10-4 below:

Table 10-4 Conversion to LCRM Risk Categories

	Acceptable	Unacceptable
Very Low		
Low		
Moderate/Low		
Moderate*		
High		
Very High		

* This risk category spans both acceptable and unacceptable. This is intentional as it is this risk band that tends to have the greatest level of uncertainty associated with it. Acceptability will dependent on site-specific circumstances and level of confidence in the available evidence

For a risk to be unacceptable, the contaminant linkage should be associated with at least a “medium” severity as defined in Table A4.3 in Annex 4 of R&D66 and the probability should (in the majority of cases) be at least “likely” as defined in Table A4.4 of R&D66

These risk categories represent the level of risk as it is currently understood from the information available at this time.

10.4 Preliminary Risk Assessment

An iCM illustrating plausible contaminant linkages has been formulated for this site. The qualitative preliminary risk assessment of the possible linkages of the above sources (S1 to S6), transport pathways (P1 to P11) and receptors (R1 to R12) is provided in the Table 10-5.

The level of risk is determined based on the current condition of the Site (i.e. the effects of mitigation measures are not included).

The preliminary risk assessment undertaken with in this section does not consider acute linkages for construction and maintenance workers. AECOM anticipates that these acute linkages will be managed by appropriate health and safety measures.

Table 10-5 Potential Sources, Pathways and Receptors

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (LCRM)	Linkage Reference	Justification
On-Site sources of CoPCs Made Ground and potential contaminants associated with Building 401, former aircraft standings, electrical substation 'Z' and MAG bus depot. (S1, S2, S3, S4)	Direct contact, dermal absorption, or ingestion of soil (P1)	Human Health: Acute: Future site visitors (R1)	Medium	Unlikely	Acceptable	L1	The site is currently occupied by the derelict building 401 and MAG bus depot. With the exception of a fenced off area of woodland in the western end of the site the majority of the site is covered by hard standing. The proposed development is anticipated to include a single large warehouse type building, access, and parking with limited landscaping. The previous and current land use at the site and limited ground investigation indicates the presence of c.1m of made ground which could be more extensive within the building and services footprints. Due to the age of the building and services onsite and identification of asbestos lagged piping within the Hangar 3 site during the DNATA development, there is the potential for Asbestos to be present on site. Based on the current site use and the proposed development it is unlikely in its current or future state to allow dermal contact with, or ingestion of, CoPCs within the soils. The risk of dermal contact and ingestion shall be greatest during the construction phase. As with all construction works the Principal Contractor will need to comply with the CDM 2015 regulations and, therefore, the workforce should be appropriately protected from exposure to potential contaminants during construction.
		Human Health: Chronic: Future site users (R2)					
	Indirect Pathway: Inhalation of soil particulates derived from soils (P2)						
		Adjacent site users – workers and road users (During construction phase) (R3)	Medium	Low	Acceptable	L2	See L1 – For adjacent site users the risk of dermal contact and ingestion of wind-blown soils shall be greatest during the construction phase. As with all construction works the Principal Contractor will need to comply with the CDM 2015 regulations and, therefore, the workforce should be appropriately protected from exposure to potential contaminants during construction.
	Inhalation of Soil Vapour (P3)	Human Health: Acute: Future site visitors (R1) Human Health: Chronic: Future site users (R2)	Medium	Unlikely	Acceptable	L2	See L1

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (LCRM)	Linkage Reference	Justification
		Adjacent site users – workers and road users (During construction phase) (R3)	Medium	Low	Acceptable	L3	See L1
	Migration of hazardous gases/vapours into confined spaces (Human Health) (P4)	Human Health: Acute: Future site visitors (R1) Human Health: Chronic: Future site users (R2)	Medium	Likely	Unacceptable	L4	The speculative RB17 assessment indicates a potential CS2 status based on the current limited borehole logs and potential TOC based upon previous reports from the wider area. However as noted this is only speculative in review of RB17 which is only a reliable pragmatic approach with robust site data available. As the site is proposed to be a single very large warehouse split into three large units with regular ventilation from regular use of access doors, the potential for gas build up in the main warehouse floor areas would be relatively limited however the building will include confined spaces and service ducts, offices and other areas where the accumulation of hazardous gases and vapours would be more likely. <i>It is recommended, further investigation should be carried out prior to development to include a suitable ground gas monitoring programme, ground gas risk assessment; and gas mitigation measures, if necessary, should be implemented based upon the assessment.</i>
		Buildings & Infrastructure: Structures, Services & Membranes (R9, R10, R11)	Medium	Low	Acceptable	L5	See L4: The potential for the accumulation of hazardous gases within confined spaces within the buildings and infrastructure have the potential to develop a risk of explosion
	Leaching of chemicals and vertical / lateral migration via permeable unsaturated strata to shallow groundwater (P5)	Shallow groundwater – Secondary un-differentiated Aquifer (R3)	Medium	Likely	Unacceptable	L6	It is anticipated that potential CoPCs may be present on-site associated with the potential sources identified within the iCM. These CoPCs are considered to have the potential to leach to sub strata. The limited ground investigation available for the site identified a variably granular / cohesive made ground to c.1mbgl over a predominantly cohesive glacial till. The till is identified as orangish brown and grey firm to stiff Clays, however shallow sand bands are noted c.3.5-4.0mbgl The wider ground investigations from previous reports are known to identify more extensive sand bands both shallower and deeper than those identified onsite. These are understood to be laterally discontinuous over larger areas.

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (LCRM)	Linkage Reference	Justification
							Seepage and limited groundwater strikes were identified c.1mbgl at the base of the made ground. Further groundwater strikes were identified at all four ESG window samples at c.4.0mbgl coinciding with the deeper sand bands. While the superficial deposits are predominantly cohesive the presence of sand bands known to be more extensive in the wider area, and shallow perched groundwaters, it is considered possible that vertical migration of contaminants could occur between the Made Ground and the shallow potentially perched groundwater. <i>A ground investigation is recommended to understand the hydraulic conductivity beneath the site.</i>
	Vertical migration of impacted shallow groundwater to the deeper secondary B aquifer (P6)	Deep Groundwater Secondary B aquifer of the Bollin Mudstone Member (R4)	Medium	Low	Acceptable	L7	See L6: While the ground investigation onsite has not identified bedrock, it is understood to comprise weathered mudstones over more competent mudstone bedrock. The underlying bedrock is noted to be of 'low permeability with migration of water only taking place along 'fractures or granular lenses'. While it is possible that granular lenses are present in the bedrock which may be in contact with granular lenses within the superficial deposits; the predominantly cohesive nature of the two strata are likely to inhibit vertical migration to the underlying aquifer.
	Lateral migration of impacted groundwater off-site to surface water (P7)	Surface Waters, Cotteril Clough (R5)	Medium	Low	Acceptable	L8	It is possible that there could be lateral migration of contaminated ground water with potential impacts to off-site surface waters including Cotteril Clough 345m SW. Study of the former refuelling depot at Hangar 3 to the south of the site indicated a south west groundwater gradient and identified with regards to hydrocarbon leakage a plume extending to the south west in accordance with this. While the building 401 site lies on the boarder of a different water catchment it is considered likely that migration of contaminants would be to Cotteril Clough which lies down gradient of the site. However, it is acknowledged that the superficial deposits are predominantly cohesive clays with negligible permeability and as such the potential for migration over this distance would be limited. It is possible however, should more extensive sand bands be present on site, that there could be an increased risk for migration.

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (LCRM)	Linkage Reference	Justification
							A ground investigation is recommended to understand the hydraulic conductivity beneath the site.
	Lateral migration of surface waters / shallow ground waters via underground drainage / sewers (including granular backfilling materials), spillage / loss / run-off from the surface direct to surface water (P8)	Surface Waters, Cotteril Clough (R5)	Medium	Unlikely	Acceptable	L8	It is considered unlikely that there should be lateral migration of contaminated surface and shallow groundwater via existing services and runoff with potential impacts to off-site surface waters including Cotteril Clough 345m SW. The site is located within the Manchester Airport drainage system. Waters going to drains are monitored as part of the airports environmental procedures and treated if required before being released to surface water. The site itself currently has interceptors down gradient from their above ground fuel storage tanks which themselves are internally banded.
	Direct contact of buried concrete with contaminated soils (P9)						A ground investigation would be required to understand the hydraulic conductivity beneath the site.
	Direct contact of services and supply pipes with contaminated soils (P10)	Buildings & Infrastructure: Concrete and Services (R8, R10)	Medium	Likely	Unacceptable	L9	Since Made Ground is expected to be present across most of the site to variable extent, it is possible for buried concrete and services and supply pipes associated with the development to come into contact with contaminants such as sulphate and hydrocarbons. Aggressive ground conditions can pose a risk to underground structures, services, and concrete foundations. As such the risk is considered medium and the likelihood likely therefore the risk is moderate. A ground investigation would be required to understand the chemical status of the shallow strata beneath the site with respect to underground structures.

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (LCRM)	Linkage Reference	Justification
	Indirect Pathway: Migration of hazardous gases/vapours via permeable strata into enclosed spaces and service/utility trenches (P11)	Buildings & Infrastructures (Structures and services (R9, R10)	Medium	Likely	Unacceptable	L10	See L5 and L9
	Indirect Pathway: Potential for hydrocarbons in soils and ground waters may deteriorate membranes (P12)	Buildings & Infrastructures (Gas/damp membranes R11)	Medium	Likely	Unacceptable	L11	See L9
	P13 – Direct contact with contaminated soils	R7 – Flora & fauna	Mild	Low	Acceptable	L12	Contaminants may be present onsite which may present a risk to ecological receptors such as flora or fauna. However, the proposed development is understood to include only limited soft landscaping and as such the risk is considered Low. It is recommended that for landscaped areas a suitable growing medium is utilised either imported or site won. Environmental chemical analysis of site soils as part of an intrusive ground investigation could support the use of site won materials should this be required.

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (LCRM)	Linkage Reference	Justification
Off-Site sources of CoPCs Made Ground and contamination associated with current and historic surrounding land uses, including Building 402 and associated diesel tank and substation, and the wider airport infrastructure including Hangar 3 and 5. (S5, S6)	Direct contact, dermal absorption, or ingestion of soil (P1)	Human Health: Acute: Future site visitors (R1)	Medium	Unlikely	Acceptable	L13	There is the potential for CoPCs to be present within near surface Made Ground and contaminated shallow soils, derived from the off-site sources notably the storage and use of fuels within building 402 to the immediate north of the site and the electrical substation on the site boundary. As with L1: Due to the site and wider area being predominantly commercial/ industrial in use with limited landscaping or bare soils, the likelihood of direct contact is considered unlikely and the risk is considered low.
	Indirect Pathway: Inhalation of soil particulates derived from soils (P2)	Human Health: Chronic: Future site users (R2)					This would potentially differ should future development works be undertaken on the surrounding sites. However, as with all construction works the Principal Contractor will need to comply with the CDM 2015 regulations and, therefore, the workforce should be appropriately protected from exposure to potential contaminant during construction and mitigation measures be in place for off site migrations of wind-blown materials.
	Inhalation of soil vapour (P3)	Human Health: Acute: Future site visitors (R1)	Medium	Unlikely	Acceptable	L14	See L13
		Human Health: Chronic: Future site users (R2)				L15	See L13
	Migration of hazardous gases/vapours into confined spaces (P4)	Human Health: Chronic: Future site users (R2)	Medium	Low	Acceptable	L16	See L4: There is the potential for CoPCs to be present within near surface Made Ground and contaminated shallow soils, derived from the off-site sources notably the storage and use of fuels within building 402 to the immediate north of the site. However due to the distance from site the likelihood is considered lower than those potential sources onsite
		Buildings & Infrastructure: Structures, Services & Membranes (R9, R10, R11)	Medium	Low	Acceptable	L17	See L16 and L5. However, due to the distance from site the likelihood is considered lower than those potential sources onsite

Source	Pathway	Receptor	Potential Severity	Likelihood of Occurrence	Potential Risk (LCRM)	Linkage Reference	Justification
	Leaching of chemicals and vertical / lateral migration via permeable unsaturated strata to shallow and/ or deep groundwater (P5)	Secondary Undifferentiated Aquifer in superficial Glacial Till (R3) Deep Groundwater Secondary B aquifer of the Bollin Mudstone Member (R4)	Medium	Low	Acceptable	L19	There is the potential for CoPCs derived from off-site sources S5 & S6 to be present and for vertical migration to occur between the contaminated surface soils and shallow groundwater/ deep groundwater (see L6 and L7). This would be most prevalent for migration within shallow granular made ground of leaked hydrocarbons from locations such as the storage tank at BH402 which was noted in Project Quantum to have leaked. PCBs associated with the electrical substation while not particularly mobile may be present onsite due to the proximity to the boundary. While present the likelihood is considered low due to the mobility of the potential contaminants and distance
	Vertical migration of impacted shallow groundwater to the deeper secondary B aquifer (P6)	Deep Groundwater Secondary B aquifer of the Bollin Mudstone Member (R4)	Medium	Low	Acceptable	L20	See L7
	Indirect Pathway: Migration of hazardous gases/vapours via permeable strata into enclosed spaces and service/utility trenches (P11)	Buildings & Infrastructures (Structures and services (R9, R10)	Medium	Low	Acceptable	L21	See L10: However, due to distance the likelihood of gas / vapour migration from off site is considered low.

10.5 Discussion of Acute Risk to Future Construction Workers & Off-Site Receptors.

AECOM understands that the proposed development works will be undertaken in compliance with Construction Design and Management (CDM) 2015 regulations.

Prior to work commencing, a health and safety risk assessment should be carried out by the appointed Principal Contractor / developed in accordance with current health and safety regulations. This assessment should cover potential risks to construction staff, permanent site staff and the local population. Based on the findings of this risk assessment, appropriate mitigation measures should be implemented during the construction period.

The greatest potential for generation of dust will be during the Site works and therefore dust generation should be kept to a minimum in accordance with general best practice, as outlined in, for example, 'Environmental Good Practice on Site', CIRIA Publication C692 to reduce this risk.

The risk to construction workers during the excavation and construction phases in terms of potential exposure to high concentrations of contaminants is considered to be low given the historic and current land uses identified at the Site. Should gross contamination be identified during the construction phase, then this may pose a potential acute risk to construction works. In addition, due to the age of the building present onsite it is possible that asbestos or ACM may be present onsite which poses its own acute risks.

It is likely to be able to be effectively managed through good health and safety practices and protocols. Adoption of appropriate dust suppression techniques would also mitigate the degree of potential particulate migration off-site

11. Waste Management & Potential Reuse of Site-Won Material

11.1 Initial Assessment of Probable Waste Generation

The current proposed development plans indicate a large single warehouse building to cover the majority of the site area, however, no specific design plans are currently available. Based upon the proposed redevelopment, it is probable that general construction and soil waste will be generated for the site as part of the development.

11.2 Initial Assessment of Probable Material Available for Reuse

Based on the proposed redevelopment, the earthworks design would likely include cut and fill works, cut / fill balance, and an investigation of the potential to include for the re-use of site won materials during the earthworks.

11.3 Outline Recommendations

It would be prudent to undertake a hazardous waste assessment on samples collected during any future ground investigations, to determine the classification of soils for any off-site disposal and to determine the chemical suitability of soils for consideration for re-use as site won materials. This initial assessment could support the determination of costings for disposal of site generated soils if they are unsuitable for use.

12. Review of Geotechnical Risk and Preliminary Engineering Assessment

12.1 Geotechnical Risk

A preliminary geotechnical risk register is given in Appendix F which describes the main ground related hazards on the site (excluding ground contamination) and mitigation measures which may be implemented to eliminate or reduce the risk by means for further investigation or during the design.

The most significant risks are:

1. Former foundations and voids associated with former developments including basements and service ducts ground have implications for surface/foundation stability and settlement, especially under increased loading from structures or earthworks.
2. Any existing Made Ground is unlikely to provide a suitable founding stratum for structural foundations and potentially unsuitable for pavement. Although ground investigation will be required to confirm this. The extent and characteristics of the Made Ground should be investigated most notably beneath the current structures
3. While the current limited ground investigation data and GroundSure report identified firm to stiff shallow natural strata and negligible compressibility of underlying strata; should the presence of weak and compressible soils be identified onsite these may pose a risk of excessive total or differential settlement of foundations.
4. Where ground may be required to be re-graded, the material will require classification for re-use. Glacial Till is a highly variable material and will need classification for re-use.
5. While the site is broadly level and it is anticipated that the proposed development would not require notable slopes or embankments, should these be required slope stability of embankments and cuttings should be assessed. The long-term settlement of raised areas should be assessed, if excessive total and differential settlement are a concern for the proposed area of the scheme.
6. High, perched or variable ground water levels which may impact earthworks, causing instability in excavations, cuttings, and temporary works. The current limited ground investigation onsite has identified perched groundwater within Made Ground and the superficial deposits.
7. Unknown/unrecorded buried structures: The nature of the foundations of building 401 are current unknown, it is understood that building 402 has a partial sub-basement. There are also a number of underground services onsite including a large manhole area in the south west of the site the nature of which is unknown.
8. Potential obstructions to piling or drilling from boulders in the Glacial Till, previous underground structures or foundations or variable rock head level and into variable properties of rock.
9. Striking underground services during ground investigation or construction.
10. Chemically aggressive ground conditions.

To mitigate these risks, it is recommended that:

1. A thorough ground investigation is carried out including a more extensive UXO survey for the scheme and in areas where proposed buildings. Dependent upon the nature of the foundations and potential for basements. It may be prudent to undertake the investigations post demolition of the above ground structures at the site.
2. The extent of and potentially highly variable thickness of Made Ground, weak and compressible materials or soils, should be assessed during a ground investigation and foundations should be placed on a suitable bearing stratum below any Made Ground or weak and compressible soil. It may require excavation and replacement, or treatment for new hardstanding areas.
3. The ground conditions should be characterised below structures by a ground investigation. A variety of foundations may be required to support the design loads including shallow spread and deep piles.
4. For pavement design, the proposed sub-grade level for access roads/car parks should be confirmed prior to construction. Any soft ground or unsuitable materials should be excavated out and replaced with engineering fill, before starting any pavement construction works.

5. Where ground is to be regraded, testing should be carried to assess its suitability for reuse.
6. An investigation into the groundwater levels including seasonal variation is recommended prior to commencement of any detailed earthworks or foundation design. If required, the use of special measures to control groundwater.
7. Slope stability should be undertaken for detailed earthworks design. The long-term settlement of raised areas should be assessed, if excessive total and differential settlement are a concern for the proposed area of the scheme.
8. Establish site procedures to be undertaken in the event underground services are encountered, including risk assessment and method statement. Ensure any existing services are identified and fully traced prior to commencement of GI and construction works. Utilities diversion.
9. Ground investigation for the proposed site extents and any likely structure locations to reduce risk of potential obstructions.
10. Carrying out PAS128 surveys or using cable avoidance tools prior to breaking ground.
11. Chemical testing of soil to BRE requirements to support selection of underground materials.

12.2 Preliminary Engineering Assessment

12.2.1 Foundations

Subject to the findings of a ground investigation and detailed design, generally for lightly loaded structures with no concern for excessive total and differential settlement, the underlying stiff/dense Glacial Deposits may be suitable for the use of traditional spread foundations founded within the formation. However, bearing resistance of foundation stratum and settlement tolerance of the proposed structures will need to be considered for suitability of any spread foundations. In general, foundations should be located within natural ground beneath any fill, Made Ground, highly compressible soil, and below the depth of effect of variations due to vegetation, seasonal and climatic change. Depending on the depth of the suitable foundation formation, piled foundations may be considered based on economical and construction reasons.

Piled foundations may be considered for more heavily loaded structures and for economical and construction reasons as mentioned above. Based upon the nature of the proposed development it is likely that some form of piled foundations will be required.

Piles may encounter boulders within the Glacial Till, obstructions from existing and or historical underground structures or foundations and or variable rock head level and into variable properties of rock, these should be taken into consideration.

Where structures are located within influencing distance of any existing or future trees, reference should be made to Chapter 4.2 of NHBC's Standards.

12.2.2 Ground Floor Slabs

The potential use of ground bearing floor slabs would be determined following the ground investigation.

12.2.3 Excavations

Where excavations for foundations, earthworks, and drainage are required, stability of excavated areas should be considered. Close or continuous support will be required for any manned entry to excavations.

Shallow groundwater may be encountered and may require groundwater control during excavation. Detailed information regarding the groundwater regime will be available following the ground investigation and subsequent monitoring.

12.2.4 Soakaways

The ground conditions are unlikely to be suitable for the use of soakaways, where cohesive Glacial Till or cohesive materials are present, due to their low permeability. Therefore, surface water run-off should be directed to main drainage subject to appropriate consent to discharge.

13. Conclusions

The following is a summary of the review of the information sources listed in Section 1.3:

The site is located on the north east side of the junction of Avro Way and Pinfold Lane (M90 5XR) and is centred on National Grid Reference 380906 384825 and covers an area of approximately 2.11 hectares. The environmental setting identified in the ICM is considered to be of Low to Moderate risk based on the below information:

- The superficial strata are predominantly cohesive Glacial Till comprising clays and sand bands. The bedrock is of the Bollin Mudstone Member and is anticipated to comprise weathered mudstones over more competent mudstone with depth. The superficial strata anticipated to be relatively thin with bedrock anticipated at c.4.5m – 5.5mbgl based upon wider historic ground investigations.
- There is anticipated to be Made Ground on site based on current and historical land use at the site including: hardstanding areas for taxiing and aircraft storage during WW2, Building 401 first developed onsite by 1987 (potentially from 1959) expanding over the years and the temporary bus depot for MAG including refuelling facilities and a vehicle wash.
- The superficial deposits are noted as a secondary undifferentiated aquifer and the bedrock a secondary B aquifer. Groundwater was identified in the limited ground investigations onsite, to be present perched within the Made Ground and Superficial Glacial Till associated with granular sand lenses.
- No ground gas monitoring has been available for the site for this assessment and while a speculative RB17 assessment identifies a CS1 classification, a suitable gas monitoring programme and risk assessment should be undertaken as part of any future investigation.

13.1 Geo-environmental Risks Review

Onsite potential sources of contamination have been identified through this desk study review including:

- Made Ground associated with past land use/development;
- Ground gases: methane and carbon dioxide generated from Made Ground and naturally occurring strata;
- Soil vapours: volatile organic compounds may be present emanating from soil/groundwater sources of organic contaminants;
- Asbestos associated with Made Ground and the current structures;
- Potential presence of UXO.

Offsite sources of contamination have also been identified and include:

- Made Ground and shallow natural soils associated with past land use/development.

Potential receptors identified as being at risk from contamination in association with usage of the site and proposed redevelopment include human health (current and future site users and adjacent site users), controlled waters (Secondary Undifferentiated, and Secondary B Aquifers underlying the site) and current and future developments and landscaping.

A risk assessment has been carried out in accordance with LC:RM. The potential geo-environmental risks that have been identified have been assessed by the preliminary risk assessment as being Low to Moderate risk, with the majority being low or Moderate/Low risk based on the existing information.

Those linages considered as potentially “Unacceptable” risks at this stage under LC:RM include:

- Human Health: Gases and vapours (Moderate)
- Controlled Waters: leaching of chemicals to shallow groundwaters (Moderate)
- Buildings & Infrastructure: direct contact of CoPCs in soils with concrete and services and gas/ groundwater membranes (Moderate)
- Buildings & Infrastructure: migration of Gases and vapours services (Moderate)

13.2 Geotechnical Risks and issues

Potential geotechnical hazards identified include:

- Any existing Made Ground in its current state is unlikely to provide a suitable founding stratum for structural foundations and potentially unsuitable for pavement. Made Ground is anticipated in most areas of the site. The extent and characteristics of the Made Ground will need to be investigated further, notably within the footprint of the current Building 401 and across the footprint of the proposed building.
- Potential unsuitable ground for pavement construction.
- High, perched or variable ground water levels which may impact earthworks, causing instability in excavations, cuttings and temporary works.
- Potential obstructions to piling or drilling from boulders in the Glacial Till deposits, previous underground structures or foundations.
- Striking underground services during ground investigation or construction.
- Chemically aggressive ground conditions.
- Soil shrink and heave and potential effect on foundations and pavement construction from any trees retained or removed as part of landscaping within the proposed development.

14. Recommendations

Once the layout and nature of the development /buildings are finalised a ground investigation will be required in order to inform the detailed design of the site.

The geo-environmental investigation should be designed with due consideration of the requirements of BS 10175:2017.

The geotechnical elements of the investigation should be designed with consideration of BS EN 1997-1:2004, BS EN 1997-2:2007 (Eurocode 7: Geotechnical Design – Parts 1 and 2) and BS 5930:1999.

In summary, key objectives to be addressed by the investigation include:

- Confirmation of the ground (and groundwater) conditions and validation of the CSM;
- Chemical status of Made Ground and natural soils for the purpose of risk assessment to human health, groundwater and for preliminary waste classification;
- Chemical status of groundwater in order to determine risks to controlled waters;
- Ground gas monitoring to determine the potential risks to the proposed development and surrounding properties;
- Identification of geotechnical design parameters for earthworks and preliminary foundation design; and
- Confirmation of infiltration characteristics.

By undertaking an intrusive ground investigation, an assessment of the ground and groundwater profiles may be carried out and the geotechnical and geo-environmental risks associated with the site made. This will allow a refined risk assessment and CM to be developed in accordance with LCRM methodology. The investigation will allow a quantitative assessment as to whether any of the potential risks identified in this study are present and are of material concern to the development.

Due to the location of the site within the wider operating areas of the airport during WWII and its use as aeroplane standing, it is recommended that the Client commissions a specialist UXO report in advance of any future intrusive site works or development. The report should be prepared with cognisance of CIRIA publication C681 (Stone et al., 2009).

15. References

- (n.d.). Retrieved October 2016, from Google Maps: (www.google.co.uk/maps) accessed October 2016.
- (n.d.). Retrieved October 2016, from Bing Maps : (www.bing.com/mapspreview)
- (n.d.). Retrieved October 2016, from Old-Maps.co.uk: (www.old-maps.co.uk)
- "What's in Your Backyard?" tool. (n.d.). Retrieved October 2016, from Environment Agency website: (www.environment-agency.gov.uk)
- AECOM. (February 2016). *Teesside Airport Station Footbridge and Platforms Preliminary Structural Examination, reference 60472466/REP/001*.
- BGS. (1987). Map sheet 33, 1:50,000 series, Stockton, Solid and Drift edition.
- BGS Map Viewer. (n.d.). Retrieved October 2016, from British Geological Survey: (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>)
- BS10175. (2011). Code of Practice for Potentially Contaminated Sites.
- CIRIA Publication C692. (n.d.). Environmental Good Practice on Site.
- CIRIA Report C552. (n.d.). Contaminated Land Risk Assessment: A Guide to Good Practice.
- CLR11. (2004). Model Procedures for the Management of Land Contamination.
- Contaminated Land (England) Regulations. (2006).
- Contaminated Land (England) Statutory Guidance. (2012).
- Defra Magic Maps application. (n.d.). Retrieved November 2016, from Defra Magic Map: (<http://magic.defra.gov.uk/MagicMap.aspx>)
- Environment Agency. (2020). *Land contamination risk management*. Retrieved November 22, 2019, from <https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks>
- Environmental Protection Act. (1990). Part 2A.
- Groundwater Regulations. (2009).
- Statutory Guidance to Part 2A. (2012).
- The National Planning Policy Framework. (2012).
- Town and Country Planning Act. (1990). (as amended).
- Water Act. (2003).
- Water Resources Act. (1991).

Appendix A Figures

Site Location:
MAG building 401

Site Redline Boundary

Project No. 60663052

Image taken from Google Earth Pro





Site Red Line Boundary

Site Location:
MAG building 401

Site Redline Boundary

Project No. 60663052

Image taken from Google Earth Pro





- © 2021 RPS Group
- Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
 2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.
 3. This drawing should be read in conjunction with all other relevant drawings and specifications.

P01	First Issue	LL	MJH	02/08/21
Rev	Description	By	Ckd	Date



Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T: 01636 605 700 E: rpsnewark@rpsgroup.com



Project MAG, Building 401, Manchester
Airport

Title Masterplan Option 16B

RPS Project Number NK020598	Scale @ A1 1:500	Date Created 02/08/21
Task Team Manager KRP	Information Author LL	Task Information Manager MJH
Status S2 (Suitable for Information)	Document Number 020598-RPS-SI-XX-DR-A-9030	Revision P01
Project Code - Originator - Zone - Level - Type - Role - Drawing Number rpsgroup.com		

Appendix B GroundSure Report and Historic Mapping (including Google Earth Pro aerial photography)

AVRO WAY, MANCHESTER, M90 5PY

Order Details

Date: 26/08/2021
Your ref: MAG_Building_401
Our Ref: GS-8153066
Client: Aecom Infrastructure and Environment UK Ltd

Site Details

Location: 380906 384825
Area: 2.11 ha
Authority: [Manchester City Council](#)



Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.13 groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	<u>Historical industrial land uses</u>	3	3	6	7	-
15	1.2	<u>Historical tanks</u>	0	0	13	24	-
17	1.3	<u>Historical energy features</u>	1	0	6	4	-
18	1.4	Historical petrol stations	0	0	0	0	-
18	1.5	Historical garages	0	0	0	0	-
18	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
19	2.1	<u>Historical industrial land uses</u>	3	5	6	9	-
20	2.2	<u>Historical tanks</u>	0	0	41	45	-
24	2.3	<u>Historical energy features</u>	1	0	12	4	-
25	2.4	Historical petrol stations	0	0	0	0	-
25	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
26	3.1	Active or recent landfill	0	0	0	0	-
26	3.2	Historical landfill (BGS records)	0	0	0	0	-
27	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
27	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
27	3.5	Historical waste sites	0	0	0	0	-
27	3.6	Licensed waste sites	0	0	0	0	-
27	3.7	<u>Waste exemptions</u>	0	1	4	4	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
29	4.1	<u>Recent industrial land uses</u>	1	0	61	-	-
33	4.2	<u>Current or recent petrol stations</u>	0	0	0	1	-
34	4.3	Electricity cables	0	0	0	0	-
34	4.4	Gas pipelines	0	0	0	0	-
34	4.5	Sites determined as Contaminated Land	0	0	0	0	-



34	4.6	<u>Control of Major Accident Hazards (COMAH)</u>	0	0	1	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35	4.8	<u>Hazardous substance storage/usage</u>	0	0	2	1	-
36	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
36	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
36	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	2	2	-
37	4.12	Radioactive Substance Authorisations	0	0	0	0	-
37	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	0	11	-
39	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
39	4.15	Pollutant release to public sewer	0	0	0	0	-
39	4.16	List 1 Dangerous Substances	0	0	0	0	-
39	4.17	List 2 Dangerous Substances	0	0	0	0	-
40	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
40	4.19	Pollution inventory substances	0	0	0	0	-
40	4.20	Pollution inventory waste transfers	0	0	0	0	-
40	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
41	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
43	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
45	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
46	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
46	5.5	Groundwater vulnerability- local information	None (within 0m)				
47	5.6	Groundwater abstractions	0	0	0	0	0
48	5.7	<u>Surface water abstractions</u>	0	0	0	0	5
49	5.8	Potable abstractions	0	0	0	0	0
49	5.9	Source Protection Zones	0	0	0	0	-
50	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
51	6.1	Water Network (OS MasterMap)	0	0	0	-	-



51	6.2	Surface water features	0	0	0	-	-
52	6.3	<u>WFD Surface water body catchments</u>	2	-	-	-	-
52	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
53	6.5	<u>WFD Groundwater bodies</u>	2	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
54	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
54	7.2	Historical Flood Events	0	0	0	-	-
54	7.3	Flood Defences	0	0	0	-	-
54	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
55	7.5	Flood Storage Areas	0	0	0	-	-
56	7.6	Flood Zone 2	None (within 50m)				
56	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
57	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
59	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
60	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	1	1
61	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
61	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
61	10.4	Special Protection Areas (SPA)	0	0	0	0	0
61	10.5	National Nature Reserves (NNR)	0	0	0	0	0
62	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
62	10.7	<u>Designated Ancient Woodland</u>	0	0	1	0	9
63	10.8	Biosphere Reserves	0	0	0	0	0
63	10.9	Forest Parks	0	0	0	0	0
63	10.10	Marine Conservation Zones	0	0	0	0	0
63	10.11	<u>Green Belt</u>	0	0	0	1	2
64	10.12	Proposed Ramsar sites	0	0	0	0	0



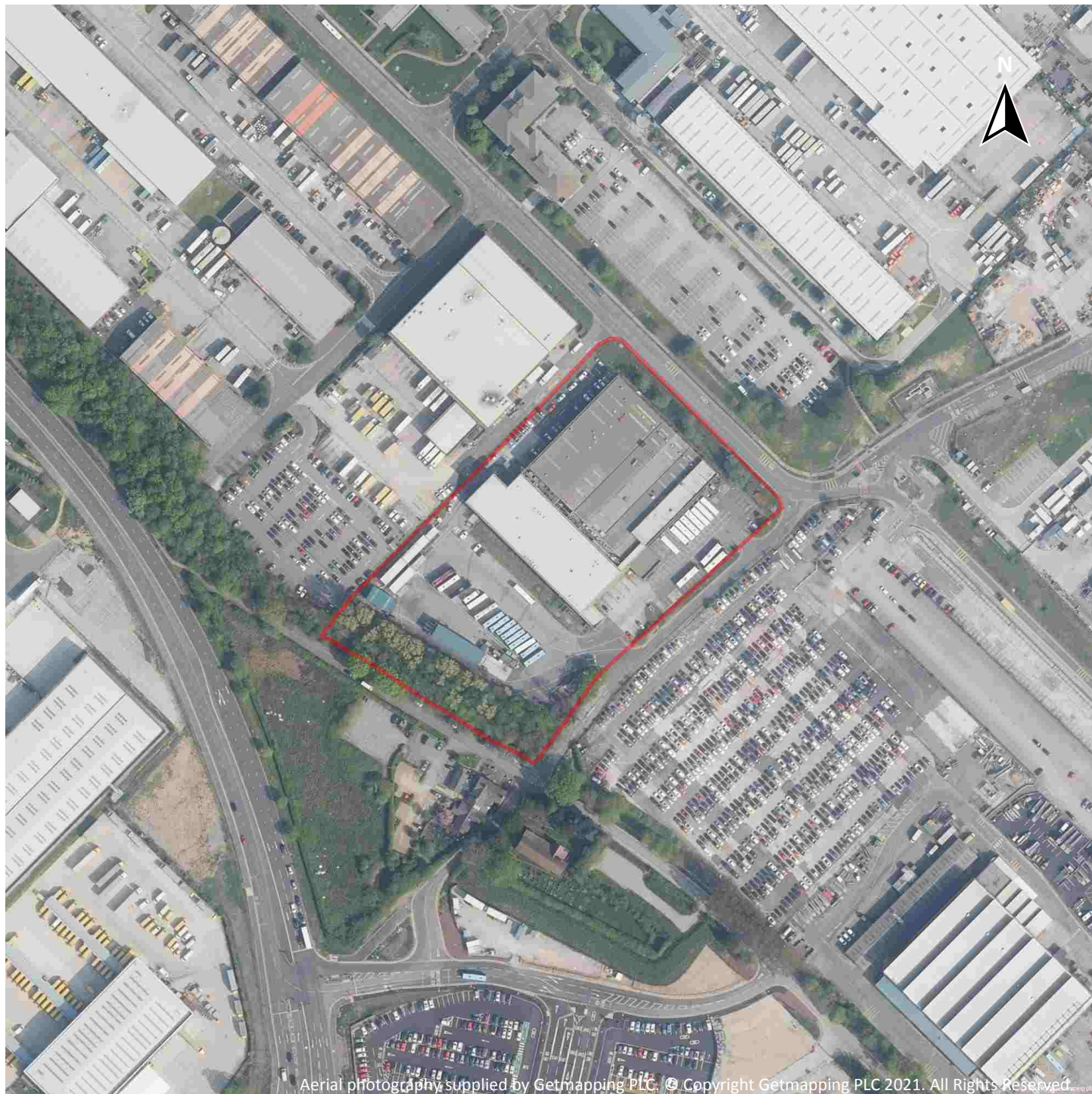
64	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
64	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
64	10.15	Nitrate Sensitive Areas	0	0	0	0	0
65	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
66	<u>10.17</u>	<u>SSSI Impact Risk Zones</u>	3	-	-	-	-
68	<u>10.18</u>	<u>SSSI Units</u>	0	0	0	1	1
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
70	11.1	World Heritage Sites	0	0	0	-	-
70	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
70	11.3	National Parks	0	0	0	-	-
70	11.4	Listed Buildings	0	0	0	-	-
71	11.5	Conservation Areas	0	0	0	-	-
71	11.6	Scheduled Ancient Monuments	0	0	0	-	-
71	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
72	<u>12.1</u>	<u>Agricultural Land Classification</u>	Grade 3 (within 250m)				
73	12.2	Open Access Land	0	0	0	-	-
73	12.3	Tree Felling Licences	0	0	0	-	-
73	12.4	Environmental Stewardship Schemes	0	0	0	-	-
73	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
74	<u>13.1</u>	<u>Priority Habitat Inventory</u>	3	3	3	-	-
75	13.2	Habitat Networks	0	0	0	-	-
75	13.3	Open Mosaic Habitat	0	0	0	-	-
75	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
76	<u>14.1</u>	<u>10k Availability</u>	Identified (within 500m)				
77	14.2	Artificial and made ground (10k)	0	0	0	0	-
78	<u>14.3</u>	<u>Superficial geology (10k)</u>	1	0	1	0	-

79	14.4	Landslip (10k)	0	0	0	0	-
80	14.5	<u>Bedrock geology (10k)</u>	1	0	3	0	-
81	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	2	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
82	15.1	<u>50k Availability</u>	Identified (within 500m)				
83	15.2	Artificial and made ground (50k)	0	0	0	0	-
83	15.3	Artificial ground permeability (50k)	0	0	-	-	-
84	15.4	<u>Superficial geology (50k)</u>	1	0	0	0	-
85	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
85	15.6	Landslip (50k)	0	0	0	0	-
85	15.7	Landslip permeability (50k)	None (within 50m)				
86	15.8	<u>Bedrock geology (50k)</u>	1	0	1	0	-
87	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
87	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	0	1	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
88	16.1	<u>BGS Boreholes</u>	9	4	27	-	-
Page	Section	Natural ground subsidence					
91	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
92	17.2	<u>Running sands</u>	Very low (within 50m)				
93	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
94	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
95	17.5	<u>Landslides</u>	Very low (within 50m)				
96	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
97	18.1	Natural cavities	0	0	0	0	-
98	18.2	BritPits	0	0	0	0	-
98	18.3	<u>Surface ground workings</u>	0	0	1	-	-
98	18.4	Underground workings	0	0	0	0	0
98	18.5	Historical Mineral Planning Areas	0	0	0	0	-



99	18.6	Non-coal mining	0	0	0	0	0
99	18.7	Mining cavities	0	0	0	0	0
99	18.8	JPB mining areas	None (within 0m)				
99	18.9	Coal mining	None (within 0m)				
99	18.10	<u>Brine areas</u>	Identified (within 0m)				
100	18.11	Gypsum areas	None (within 0m)				
100	18.12	Tin mining	None (within 0m)				
100	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
101	19.1	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
102	20.1	<u>BGS Estimated Background Soil Chemistry</u>	3	0	-	-	-
102	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
102	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
103	21.1	Underground railways (London)	0	0	0	-	-
103	21.2	Underground railways (Non-London)	0	0	0	-	-
103	21.3	Railway tunnels	0	0	0	-	-
103	21.4	Historical railway and tunnel features	0	0	0	-	-
103	21.5	Royal Mail tunnels	0	0	0	-	-
104	21.6	Historical railways	0	0	0	-	-
104	21.7	Railways	0	0	0	-	-
104	21.8	Crossrail 1	0	0	0	0	-
104	21.9	Crossrail 2	0	0	0	0	-
104	21.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 22/04/2019

Site Area: 2.11ha



Contact us with any questions at:

info@groundsure.com

08444 159 000

Date: 26 August 2021

Recent site history - 2016 aerial photograph



Capture Date: 21/04/2016

Site Area: 2.11ha



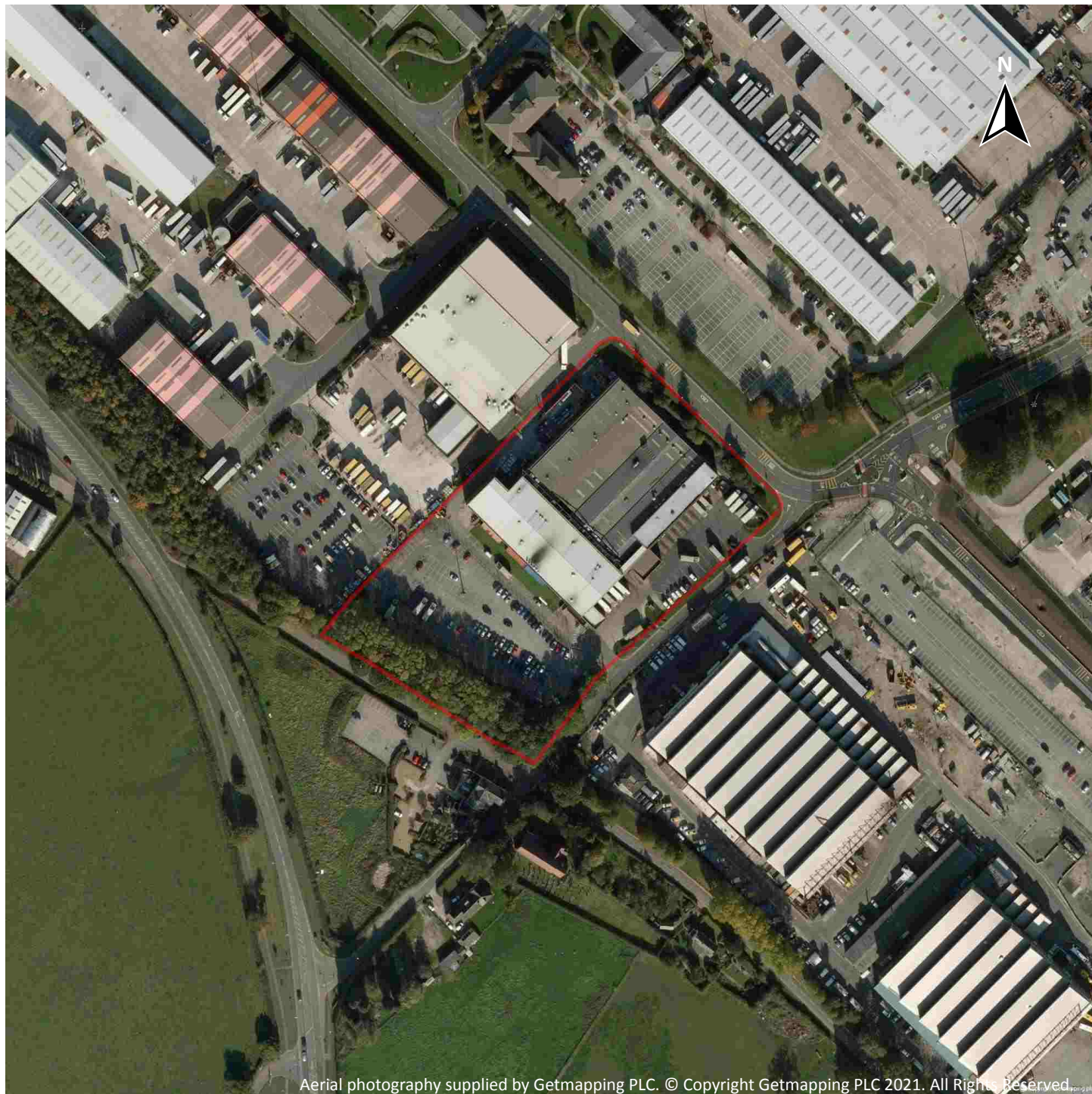
Contact us with any questions at:

info@groundsure.com

08444 159 000

Date: 26 August 2021

Recent site history - 2010 aerial photograph



Capture Date: 17/10/2010

Site Area: 2.11ha



Recent site history - 2005 aerial photograph



Capture Date: 02/09/2005

Site Area: 2.11ha



Recent site history - 2000 aerial photograph

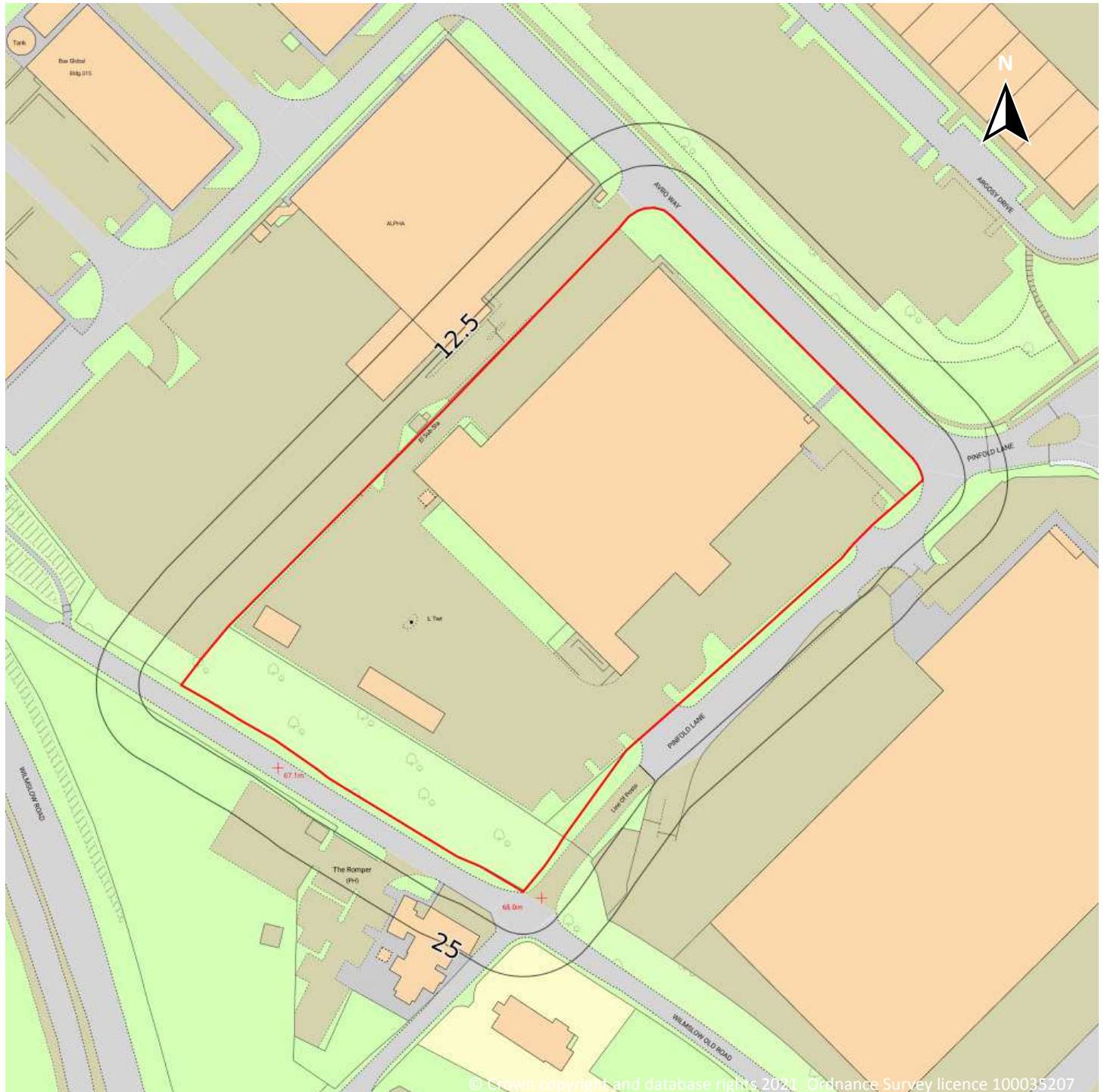


Capture Date: 27/06/2000

Site Area: 2.11ha



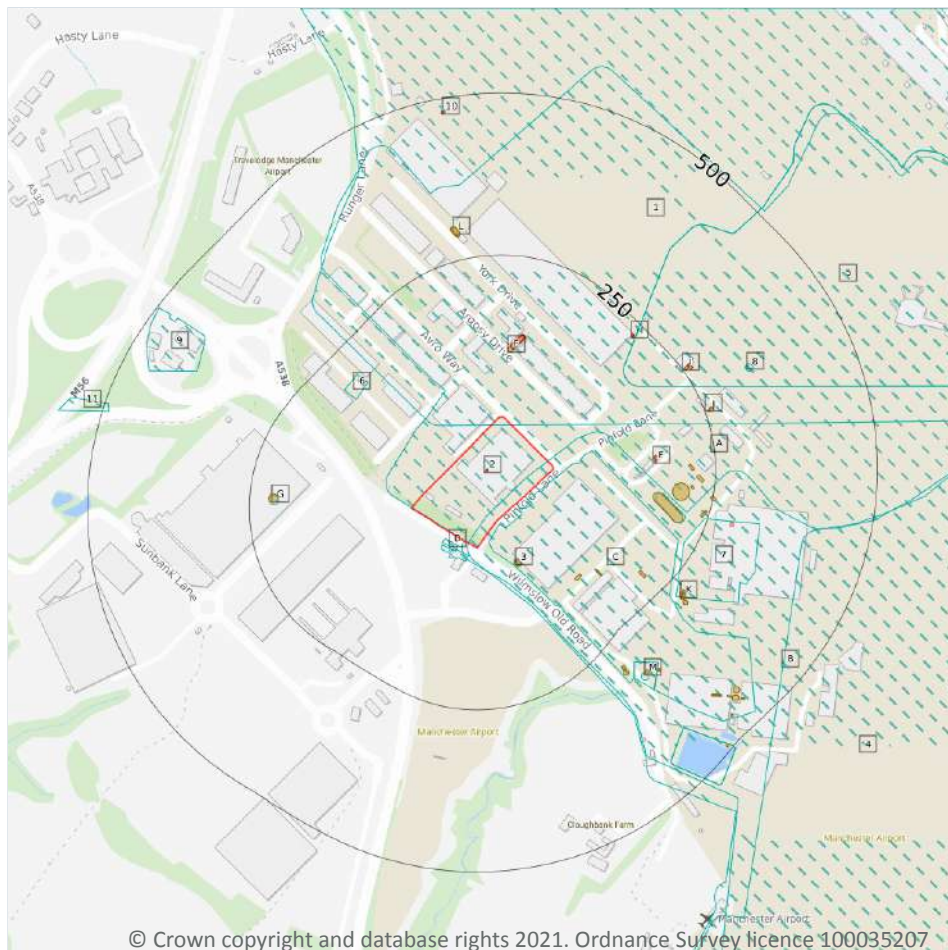
OS MasterMap site plan



Site Area: 2.11ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

1.1 Historical industrial land uses

Records within 500m

19

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	On site	Airport	1995	845359



ID	Location	Land use	Dates present	Group ID
A	On site	Airport	1989	878654
B	On site	Airport	1953	989364
C	6m SE	Unspecified Commercial/Industrial	1974	796960
D	11m SW	Smithy	1938	943361
D	17m SW	Smithy	1899 - 1910	885346
A	164m E	Unspecified Tanks	1989	815435
4	175m NE	Airport	1974 - 1975	897813
5	175m NE	Airport	1967	844689
6	177m NW	Wireless Station	1989	802256
G	205m W	Unspecified Tank	1989	825000
7	231m SE	Unspecified Works	1974	830660
M	299m SE	Sewage Works	1974	811850
M	320m SE	Unspecified Tank	1974	824998
8	334m NE	Unspecified Tank	1975	824999
9	392m NW	Unspecified Depot	1989 - 1995	914596
B	422m SE	Unspecified Pit	1989	853250
B	422m SE	Unspecified Pit	1974	950609
11	490m W	Cuttings	1995	963338

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

37

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

Features are displayed on the Past land use map on **page 14**



ID	Location	Land use	Dates present	Group ID
3	59m SE	Unspecified Tank	1968 - 1987	126292
E	101m N	Unspecified Tank	1987 - 1995	146099
C	146m SE	Tanks	1995 - 1996	126339
C	158m SE	Tanks	1995 - 1996	142707
A	159m E	Tanks	1987 - 1996	137116
A	187m E	Unspecified Tank	1995 - 1996	131170
C	206m SE	Unspecified Tank	1987 - 1996	128311
G	207m W	Unspecified Tank	1987	114872
A	209m E	Unspecified Tank	1987 - 1996	143016
A	214m E	Unspecified Tank	1995 - 1996	143549
A	222m E	Unspecified Tank	1987 - 1996	125562
A	238m E	Unspecified Tank	1987 - 1996	147552
A	246m E	Unspecified Tank	1987 - 1996	148025
I	252m NE	Unspecified Tank	1987 - 1992	125764
J	255m E	Unspecified Tank	1995 - 1996	131304
J	257m E	Unspecified Tank	1987 - 1990	149283
K	273m SE	Tanks	1968	125152
K	273m SE	Tanks	1968	136089
K	276m SE	Unspecified Tank	1987	114873
K	285m SE	Unspecified Tank	1987 - 1996	129923
L	286m N	Tanks	1995	136308
L	287m N	Tanks	1990 - 1991	135148
M	289m SE	Unspecified Tank	1995 - 1996	139784
M	296m SE	Unspecified Tank	1995 - 1996	145845
M	321m SE	Unspecified Tank	1987 - 1996	149270
M	334m SE	Unspecified Tank	1987 - 1990	127696
M	336m SE	Unspecified Tank	1995	128767
B	419m SE	Unspecified Tank	1987 - 1990	133887



ID	Location	Land use	Dates present	Group ID
B	420m SE	Unspecified Tank	1995	143162
B	421m SE	Unspecified Tank	1987 - 1995	130265
B	436m SE	Unspecified Tank	1995 - 1996	123647
B	438m SE	Unspecified Tank	1987	136269
B	444m SE	Unspecified Tank	1995 - 1997	127078
B	455m SE	Unspecified Tank	1968	141112
B	456m SE	Unspecified Tank	1968	139281
B	464m SE	Unspecified Tank	1995 - 1997	129845
B	490m SE	Unspecified Tank	1995 - 1997	147089

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

11

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

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
2	On site	Electricity Substation	1987	61802
E	106m N	Electricity Substation	1995	66850
E	106m N	Electricity Substation	1987 - 1991	78382
F	156m E	Electricity Substation	1987 - 1996	67847
F	156m E	Electricity Substation	1987 - 1990	73083
H	228m NE	Electricity Substation	1992	68947
H	229m NE	Electricity Substation	1987	64893
I	259m NE	Electricity Substation	1992	64065
I	259m NE	Electricity Substation	1987	79361



ID	Location	Land use	Dates present	Group ID
A	286m E	Electricity Substation	1987	61807
10	476m N	Electricity Substation	1990	61816

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

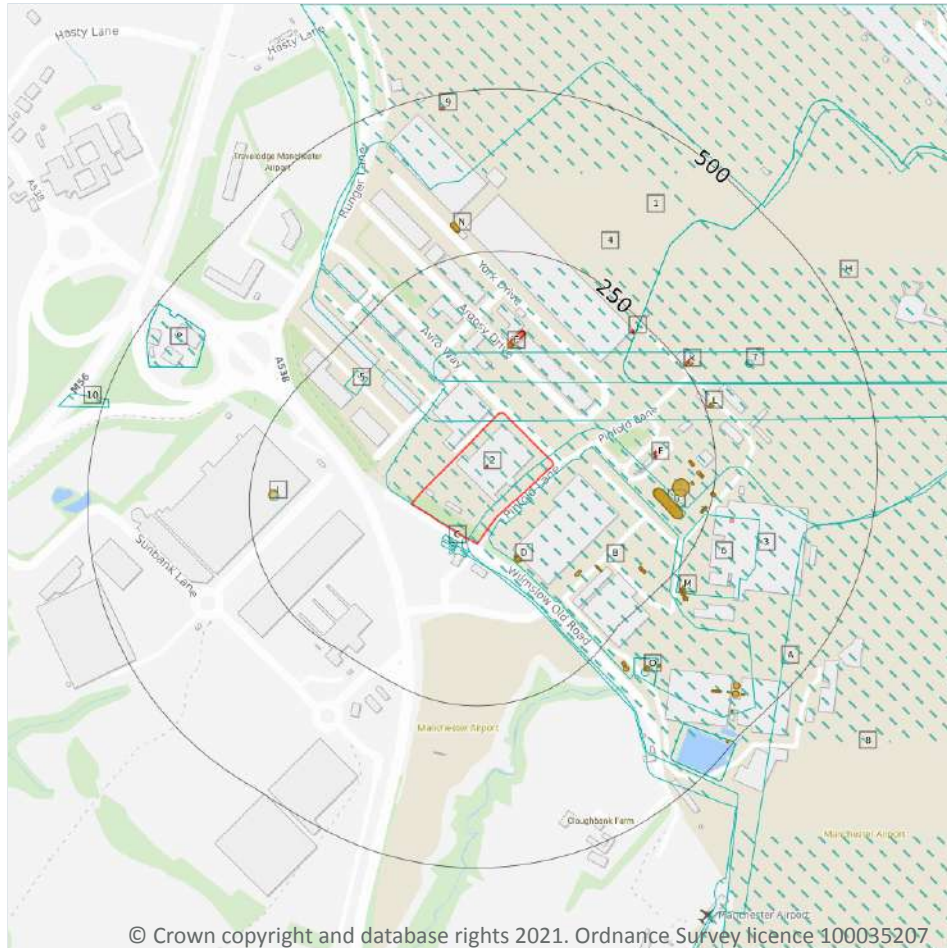
0

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

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



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

2.1 Historical industrial land uses

Records within 500m

23

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
1	On site	Airport	1995	845359
3	On site	Airport	1989	878654
A	On site	Airport	1953	989364



ID	Location	Land Use	Date	Group ID
B	6m SE	Unspecified Commercial/Industrial	1974	796960
C	11m SW	Smithy	1938	943361
C	17m SW	Smithy	1910	885346
C	20m SW	Smithy	1899	885346
4	48m N	Airport	1989	878654
G	164m E	Unspecified Tanks	1989	815435
H	175m NE	Airport	1967	844689
H	175m NE	Airport	1975	897813
5	177m NW	Wireless Station	1989	802256
I	205m W	Unspecified Tank	1989	825000
6	231m SE	Unspecified Works	1974	830660
O	299m SE	Sewage Works	1974	811850
O	320m SE	Unspecified Tank	1974	824998
7	334m NE	Unspecified Tank	1975	824999
P	392m NW	Unspecified Depot	1995	914596
P	392m NW	Unspecified Depot	1989	914596
8	400m E	Airport	1974	897813
A	422m SE	Unspecified Pit	1989	853250
A	422m SE	Unspecified Pit	1974	950609
10	490m W	Cuttings	1995	963338

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

86

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

Features are displayed on the Past land use - un-grouped map on **page 19**



ID	Location	Land Use	Date	Group ID
D	59m SE	Unspecified Tank	1987	126292
D	60m SE	Unspecified Tank	1968	126292
D	60m SE	Unspecified Tank	1973	126292
D	60m SE	Unspecified Tank	1968	126292
E	101m N	Unspecified Tank	1995	146099
E	101m N	Unspecified Tank	1987	146099
E	101m N	Unspecified Tank	1990	146099
E	101m N	Unspecified Tank	1991	146099
B	146m SE	Tanks	1995	126339
B	146m SE	Tanks	1996	126339
B	158m SE	Tanks	1995	142707
B	158m SE	Tanks	1996	142707
G	159m E	Tanks	1987	137116
G	159m E	Tanks	1990	137116
G	161m E	Tanks	1995	137116
G	161m E	Tanks	1996	137116
G	187m E	Unspecified Tank	1995	131170
G	187m E	Unspecified Tank	1996	131170
B	206m SE	Unspecified Tank	1987	128311
B	206m SE	Unspecified Tank	1990	128311
I	207m W	Unspecified Tank	1987	114872
G	209m E	Unspecified Tank	1987	143016
G	209m E	Unspecified Tank	1990	143016
B	209m SE	Unspecified Tank	1995	128311
B	209m SE	Unspecified Tank	1996	128311
G	209m E	Unspecified Tank	1995	143016
G	209m E	Unspecified Tank	1996	143016
G	214m E	Unspecified Tank	1995	143549



ID	Location	Land Use	Date	Group ID
G	214m E	Unspecified Tank	1996	143549
G	222m E	Unspecified Tank	1987	125562
G	222m E	Unspecified Tank	1990	125562
G	226m E	Unspecified Tank	1995	125562
G	226m E	Unspecified Tank	1996	125562
G	238m E	Unspecified Tank	1987	147552
G	238m E	Unspecified Tank	1990	147552
G	239m E	Unspecified Tank	1995	147552
G	239m E	Unspecified Tank	1996	147552
G	246m E	Unspecified Tank	1987	148025
G	246m E	Unspecified Tank	1990	148025
G	247m E	Unspecified Tank	1995	148025
G	247m E	Unspecified Tank	1996	148025
K	252m NE	Unspecified Tank	1992	125764
K	253m NE	Unspecified Tank	1987	125764
L	255m E	Unspecified Tank	1995	131304
L	255m E	Unspecified Tank	1996	131304
L	257m E	Unspecified Tank	1987	149283
L	257m E	Unspecified Tank	1990	149283
M	273m SE	Tanks	1968	136089
M	273m SE	Tanks	1968	125152
M	273m SE	Tanks	1968	136089
M	276m SE	Unspecified Tank	1987	114873
M	277m SE	Tanks	1968	125152
M	285m SE	Unspecified Tank	1987	129923
M	285m SE	Unspecified Tank	1990	129923
N	286m N	Tanks	1995	136308
M	287m SE	Unspecified Tank	1995	129923



ID	Location	Land Use	Date	Group ID
M	287m SE	Unspecified Tank	1996	129923
N	287m N	Tanks	1990	135148
N	287m N	Tanks	1991	135148
O	289m SE	Unspecified Tank	1995	139784
O	289m SE	Unspecified Tank	1996	139784
O	296m SE	Unspecified Tank	1995	145845
O	296m SE	Unspecified Tank	1996	145845
O	321m SE	Unspecified Tank	1987	149270
O	321m SE	Unspecified Tank	1990	149270
O	323m SE	Unspecified Tank	1995	149270
O	323m SE	Unspecified Tank	1996	149270
O	334m SE	Unspecified Tank	1987	127696
O	334m SE	Unspecified Tank	1990	127696
O	336m SE	Unspecified Tank	1995	128767
A	419m SE	Unspecified Tank	1987	133887
A	419m SE	Unspecified Tank	1990	133887
A	420m SE	Unspecified Tank	1995	143162
A	421m SE	Unspecified Tank	1987	130265
A	422m SE	Unspecified Tank	1995	130265
A	436m SE	Unspecified Tank	1995	123647
A	436m SE	Unspecified Tank	1996	123647
A	438m SE	Unspecified Tank	1987	136269
A	444m SE	Unspecified Tank	1995	127078
A	444m SE	Unspecified Tank	1997	127078
A	455m SE	Unspecified Tank	1968	141112
A	456m SE	Unspecified Tank	1968	139281
A	464m SE	Unspecified Tank	1995	129845
A	464m SE	Unspecified Tank	1997	129845



ID	Location	Land Use	Date	Group ID
A	490m SE	Unspecified Tank	1995	147089
A	490m SE	Unspecified Tank	1997	147089

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

17

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

Features are displayed on the Past land use - un-grouped map on **page 19**

ID	Location	Land Use	Date	Group ID
2	On site	Electricity Substation	1987	61802
E	106m N	Electricity Substation	1995	66850
E	106m N	Electricity Substation	1987	78382
E	106m N	Electricity Substation	1990	78382
E	106m N	Electricity Substation	1991	78382
F	156m E	Electricity Substation	1987	67847
F	156m E	Electricity Substation	1990	67847
F	156m E	Electricity Substation	1987	73083
F	156m E	Electricity Substation	1990	73083
F	156m E	Electricity Substation	1995	67847
F	156m E	Electricity Substation	1996	67847
J	228m NE	Electricity Substation	1992	68947
J	229m NE	Electricity Substation	1987	64893
K	259m NE	Electricity Substation	1992	64065
K	259m NE	Electricity Substation	1987	79361
G	286m E	Electricity Substation	1987	61807
9	476m N	Electricity Substation	1990	61816

This data is sourced from Ordnance Survey / Groundsure.



2.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

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

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m**0**

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m**0**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

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

3.5 Historical waste sites

Records within 500m**0**

Waste site records derived from Local Authority planning records and high detail historical mapping.

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

3.6 Licensed waste sites

Records within 500m**0**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

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

3.7 Waste exemptions

Records within 500m**9**

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

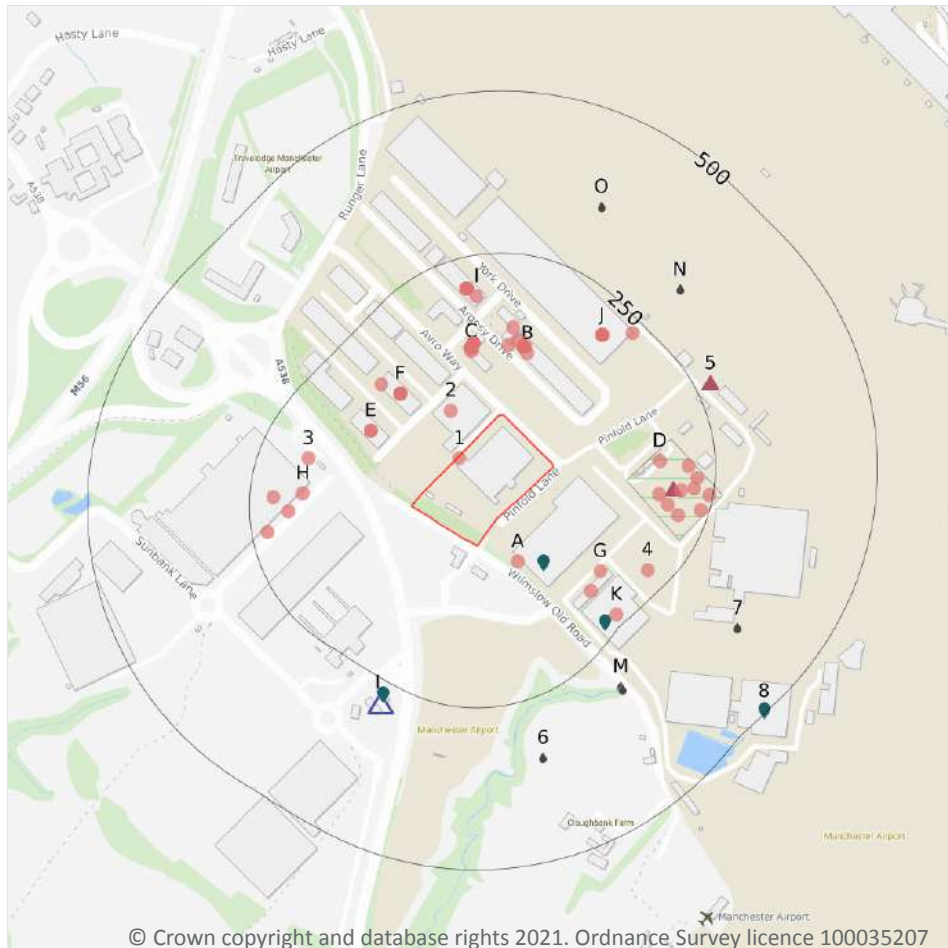
Features are displayed on the Waste and landfill map on **page 26**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	43m NW	BAM Construction, Pinfold Lane, Avro Way, World Freight Terminal, Manchester Airport, Manchester, M90 5AF	WEX089429	Using waste exemption	Not on a farm	Use of waste in construction
A	126m SE	Hanger 3 Fuelling Farm Olympic House MANCHESTER M90 1QX	EPR/UE5840MZ/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
A	126m SE	Materials Innovation Factory University of Liverpool Grove Street Liverpool L69 7ZJ	EPR/HE5744GP/A001	Treating waste exemption	Non-Agricultural Waste Only	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	126m SE	Materials Innovation Factory University of Liverpool Grove Street Liverpool L69 7ZJ	EPR/HE5744GP/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
2	213m SW	MAG DHL Warehouse Sunbank Lane	EPR/JE5382DE/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
3	282m E	Manchester Airport, Pinfold Lane, off Avro Way, Manchester, M90 5XA	WEX162999	Using waste exemption	Not on a Farm	Use of waste in construction
B	473m NW	Hale Depot, M56 Hunction 6, Wilmslow Road Roundabout, Hale, Altrincham, WA15 8XL	WEX164848	Treating waste exemption	Not on a Farm	Treatment of waste aerosol cans
B	473m NW	Hale Motorway Maintenance Compound, Wilmslow Road Roundabout, Hale, Altrincham, WA15 8XL	WEX168955	Storing waste exemption	Not on a farm	Storage of waste in secure containers
B	473m NW	Hale Motorway Maintenance Compound, Wilmslow Road Roundabout, Hale, Altrincham, WA15 8XL	WEX168955	Storing waste exemption	Not on a farm	Storage of waste in a secure place

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



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- ▲ Current or recent petrol stations
- Control of Major Accident Hazards
- ▲ Hazardous substance storage/usage
- ◆ Licensed pollutant release (Part A(2)/B)
- ◆ Licensed Discharges to controlled waters

4.1 Recent industrial land uses

Records within 250m

62

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Company	Address	Activity	Category
1	On site	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
2	58m NW	Alpha LSG	402 Avro Way, Manchester Airport, Manchester, Greater Manchester, M90 5AF	Aeroplanes	Industrial Products
A	65m SE	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features



ID	Location	Company	Address	Activity	Category
B	103m N	Air Canada	Building 300, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UY	Distribution and Haulage	Transport, Storage and Delivery
B	108m N	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
C	108m NW	Supply 2 Order	Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Container and Storage	Transport, Storage and Delivery
B	111m N	N N R Global Logistics	Unit 2 Building 301, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UX	Distribution and Haulage	Transport, Storage and Delivery
B	111m N	Warme Heating Ltd	Unit 6 Building 301, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UX	Industrial Repairs and Servicing	Repair and Servicing
B	111m N	Davies Turner Plc	Unit 10 Building 301, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UX	Distribution and Haulage	Transport, Storage and Delivery
B	111m N	T Q Express	Unit 7 Building 301, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UX	Airlines and Airline Services	Transport, Storage and Delivery
B	112m N	Select Euro Transport	Unit 11 Building 301, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UX	Distribution and Haulage	Transport, Storage and Delivery
C	114m N	R & M Developments Ltd	Room 212, Building 308 World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Civil Engineers	Engineering Services
C	114m N	A Z Freight Services Ltd	Building 308 Room 5 Manchester Airport, Ringway Road, Manchester, Greater Manchester, M90 5PZ	Airlines and Airline Services	Transport, Storage and Delivery
C	114m N	Noatum Logistics Ltd	Room 219 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
C	114m N	E M S Cargo Ltd	Room 11-14 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
C	114m N	Atlantic Pacific Global Logistics	Room 201-202 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
C	114m N	Evolution Logistics	Room 108-110 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery



ID	Location	Company	Address	Activity	Category
C	114m N	Air Sea Worldwide	Room 101-102 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Airlines and Airline Services	Transport, Storage and Delivery
C	118m N	Future Forwarding	Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
C	118m N	Puma Cargo Ltd	Room 11-14 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
C	118m N	C B I Global Freight Management	Room 213-214 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
C	118m N	A I T Worldwide Logistics Ltd	Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Airlines and Airline Services	Transport, Storage and Delivery
C	118m N	Maurice Ward Group	Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
B	119m N	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
E	125m NW	Mapcargo	1st Floor Building 314, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5EX	Distribution and Haulage	Transport, Storage and Delivery
E	125m NW	Air Menzies International	Building 314, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5EX	Distribution and Haulage	Transport, Storage and Delivery
F	133m NW	D B Schenker	Building 315 World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5BG	Distribution and Haulage	Transport, Storage and Delivery
F	133m NW	Tranzfast Logistica UK Ltd	Building 315, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5BG	Airlines and Airline Services	Transport, Storage and Delivery
F	133m NW	Red Head International	Building 315, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5BG	Distribution and Haulage	Transport, Storage and Delivery
B	136m N	Vantec World Transport Manchester	Room 117-119 Building 308, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5PZ	Distribution and Haulage	Transport, Storage and Delivery
F	164m NW	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features



ID	Location	Company	Address	Activity	Category
D	164m E	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
G	166m SE	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
D	168m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
H	169m W	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
3	176m NW	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
G	180m SE	Airline Services Ltd	Hangar 4, Pinfold Lane, Manchester Airport, Manchester, Greater Manchester, M90 5YF	Aeroplanes	Industrial Products
D	186m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
I	187m N	A F I	Unit 1/A Building 303, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UJ	Airlines and Airline Services	Transport, Storage and Delivery
H	190m W	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
J	194m NE	Airline Cargo Management Ltd	Building 300, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5BA	Airlines and Airline Services	Transport, Storage and Delivery
J	194m NE	Dunwoody Airline	Building 300, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UY	Distribution and Haulage	Transport, Storage and Delivery
J	194m NE	Air Liaison	Building 300, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UY	Airlines and Airline Services	Transport, Storage and Delivery
J	194m NE	Singapore Airlines Cargo	Building 300, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UY	Distribution and Haulage	Transport, Storage and Delivery
J	194m NE	Omni Airline Services	Building 300, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5BA	Distribution and Haulage	Transport, Storage and Delivery
J	194m NE	Globe Air Cargo	Building 300, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UY	Airlines and Airline Services	Transport, Storage and Delivery
D	200m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features



ID	Location	Company	Address	Activity	Category
I	202m N	Trilogy Freight	Unit 1a Building 303, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UJ	Distribution and Haulage	Transport, Storage and Delivery
I	202m N	S O S Air Cargo Ltd	Unit 1a Building 303, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UJ	Distribution and Haulage	Transport, Storage and Delivery
I	202m N	Blacksmith Freight Services	Unit 5 Building 303, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UJ	Distribution and Haulage	Transport, Storage and Delivery
I	202m N	Fedex Trade Networks	Unit 2 Building 303, World Freight Terminal, Manchester Airport, Manchester, Greater Manchester, M90 5UJ	Airlines and Airline Services	Transport, Storage and Delivery
D	207m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
D	209m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
H	214m W	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
4	215m SE	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
D	219m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
D	223m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
H	225m W	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
J	231m NE	Electricity Sub Station	Greater Manchester, M90	Electrical Features	Infrastructure and Facilities
K	233m SE	Aeroco Group	Hangar 4 Western Maintenance Area, Manchester Airport, Manchester, Greater Manchester, M90 5YP	Aviation Engineers	Engineering Services
D	238m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features
D	244m E	Tank	Greater Manchester, M90	Tanks (Generic)	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 29**



ID	Location	Company	Address	LPG	Status
L	284m SW	BP	Wilmslow Road, Icon Manchester Airport, Altrincham, Greater Manchester, WA15 0PT	No	Open

This data is sourced from Experian.

4.3 Electricity cables

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

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

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

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

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

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	1
----------------------------	----------

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Company	Address	Operational status	Tier
D	115m E	Air BP Limited	Air BP Limited, Manchester Airport, Pinfold Lane, Manchester, Greater Manchester, M90 5AX	Current COMAH Site	COMAH Lower Tier Operator

This data is sourced from the Health and Safety Executive.



4.7 Regulated explosive sites

Records within 500m

0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

3

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Details	
D	187m E	Application reference number: 065383/HSC/SOUTH2/02 Application status: Approved Application date: 03/10/2002 Address: Air BP Ltd, c/o Manchester Airport Storage and Hydrant Company Ltd, Pinfold Lane, Manchester Airport, Manchester, Greater Manchester, England, M90 5XA	Details: Storage Of Jet A1 Fuel Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
D	187m E	Application reference number: 065383/HSC/SOUTH2/02 Application status: Historical Consent Application date: 03/10/2002 Address: Pinfold Lane, Manchester Airport, Manchester, M90 5XA	Details: Storage Of Jet A1 Fuel Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
5	273m NE	Application reference number: 059375/HSC/SOUTH2/00 Application status: Unknown Application date: 31/01/2001 Address: Shell UK Ltd, Pinfold Lane, Manchester Airport, Ringway, M90 5XR	Details: Hazardous Substances Consent For Storage Of Aviation AVGAS Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.



4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

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

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

Records within 500m

4

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Address	Details	
A	98m SE	Fls Aerospace Ltd, Runger Lane, M90 5FL	Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
K	229m SE	Airline Services Limited, Hanger 4, Western Maintenance Area, Manchester Airport M90 5YP	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
L	270m SW	BP Airport City, BP Airport City SF Connect, Airport City South, Wilmslow Road, Manchester, WA15 OPT	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified



ID	Location	Address	Details	
8	496m SE	Air Livery Plc, Off Pinfold Lane, Hanger 2, Manchester Airport, Manchester, M90 5BA	Process: Respraying of Road Vehicles Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

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

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	11
----------------------------	-----------

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Address	Details	
M	310m SE	MANCHESTER AIRPORT DOUBLEWOOD BROOK, DOUBLE WOOD BROOK OUTFALL, MANCHESTER AIRPORT, MANCHESTER, GREATER MANCHESTER, M90 1QX	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016992832 Permit Version: 1 Receiving Water: COTTERIL CLOUGH BROOK	Status: SURRENDERED UNDER EPR 2010 Issue date: - Effective Date: 30/09/1994 Revocation Date: 16/11/2015
M	314m SE	MANCHESTER AIRPORT: SITE DRAINAGE, AND CONTAINMENT SYSTEM, OLYMPIC HOUSE, OFF THE DOMESTIC APPROACH ROAD, MANCHESTER, M90 1QX	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRCB3299EN Permit Version: 1 Receiving Water: RIVER BOLLIN & NEARBY TRIBS	Status: NEW ISSUED UNDER EPR 2010 Issue date: 30/10/2015 Effective Date: 16/11/2015 Revocation Date: 14/02/2019
M	314m SE	MANCHESTER AIRPORT: SITE DRAINAGE, AND CONTAINMENT SYSTEM, OLYMPIC HOUSE, OFF THE DOMESTIC APPROACH ROAD, MANCHESTER, M90 1QX	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRCB3299EN Permit Version: 1 Receiving Water: RIVER BOLLIN & NEARBY TRIBS	Status: NEW ISSUED UNDER EPR 2010 Issue date: 30/10/2015 Effective Date: 16/11/2015 Revocation Date: 14/02/2019



ID	Location	Address	Details	
M	314m SE	MANCHESTER AIRPORT: SITE DRAINAGE, AND CONTAINMENT SYSTEM, OLYMPIC HOUSE, OFF THE DOMESTIC APPROACH ROAD, MANCHESTER, M90 1QX	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRCB3299EN Permit Version: 2 Receiving Water: RIVER BOLLIN & NEARBY TRIBS	Status: VARIED UNDER EPR 2010 Issue date: 15/02/2019 Effective Date: 15/02/2019 Revocation Date: -
M	314m SE	MANCHESTER AIRPORT: SITE DRAINAGE, AND CONTAINMENT SYSTEM, OLYMPIC HOUSE, OFF THE DOMESTIC APPROACH ROAD, MANCHESTER, M90 1QX	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRCB3299EN Permit Version: 2 Receiving Water: RIVER BOLLIN & NEARBY TRIBS	Status: VARIED UNDER EPR 2010 Issue date: 15/02/2019 Effective Date: 15/02/2019 Revocation Date: -
N	328m NE	MANCHESTER AIRPORT: SITE DRAINAGE, AND CONTAINMENT SYSTEM, OLYMPIC HOUSE, OFF THE DOMESTIC APPROACH ROAD, MANCHESTER, M90 1QX	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRCB3299EN Permit Version: 1 Receiving Water: RIVER BOLLIN & NEARBY TRIBS	Status: NEW ISSUED UNDER EPR 2010 Issue date: 30/10/2015 Effective Date: 16/11/2015 Revocation Date: 14/02/2019
N	328m NE	MANCHESTER AIRPORT: SITE DRAINAGE, AND CONTAINMENT SYSTEM, OLYMPIC HOUSE, OFF THE DOMESTIC APPROACH ROAD, MANCHESTER, M90 1QX	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: EPRCB3299EN Permit Version: 2 Receiving Water: RIVER BOLLIN & NEARBY TRIBS	Status: VARIED UNDER EPR 2010 Issue date: 15/02/2019 Effective Date: 15/02/2019 Revocation Date: -
6	342m S	THE ROMPER PS, THE ROMPER PUBLIC HOUSE, WILMSLOW ROAD, ALTRINCHAM, GREATER MANCHESTER, WA15 8XJ	Effluent Type: SEWAGE & TRADE COMBINED - UNSPECIFIED Permit Number: 016993171 Permit Version: 1 Receiving Water: COTERILL CLOUGH	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 20/03/1997 Effective Date: 20/03/1997 Revocation Date: -
O	355m NE	AIRCRAFT STANDS SWO, MANCHESTER AIRPORT PLC, RINGWAY	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991392 Permit Version: 1 Receiving Water: RIVER BOLLIN	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/10/1994 Revocation Date: 31/10/1994
O	355m NE	AIRCRAFT STANDS SWO, MANCHESTER AIRPORT PLC, RINGWAY	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991392 Permit Version: 2 Receiving Water: RIVER BOLLIN	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/11/1994 Revocation Date: 02/12/1994



ID	Location	Address	Details	
7	377m SE	MANCHESTER AIRPORT DOUBLEWOOD BROOK, DOUBLE WOOD BROOK OUTFALL, MANCHESTER AIRPORT, MANCHESTER, GREATER MANCHESTER, M90 1QX	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 016990207 Permit Version: 1 Receiving Water: COTTERILL CLOUGH BROOK	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/06/1980 Revocation Date: 26/04/1991

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

4.14 Pollutant release to surface waters (Red List)

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

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

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

4.15 Pollutant release to public sewer

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

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

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

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

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

4.17 List 2 Dangerous Substances

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

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m**0**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

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

4.19 Pollution inventory substances

Records within 500m**0**

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

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

4.20 Pollution inventory waste transfers

Records within 500m**0**

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

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

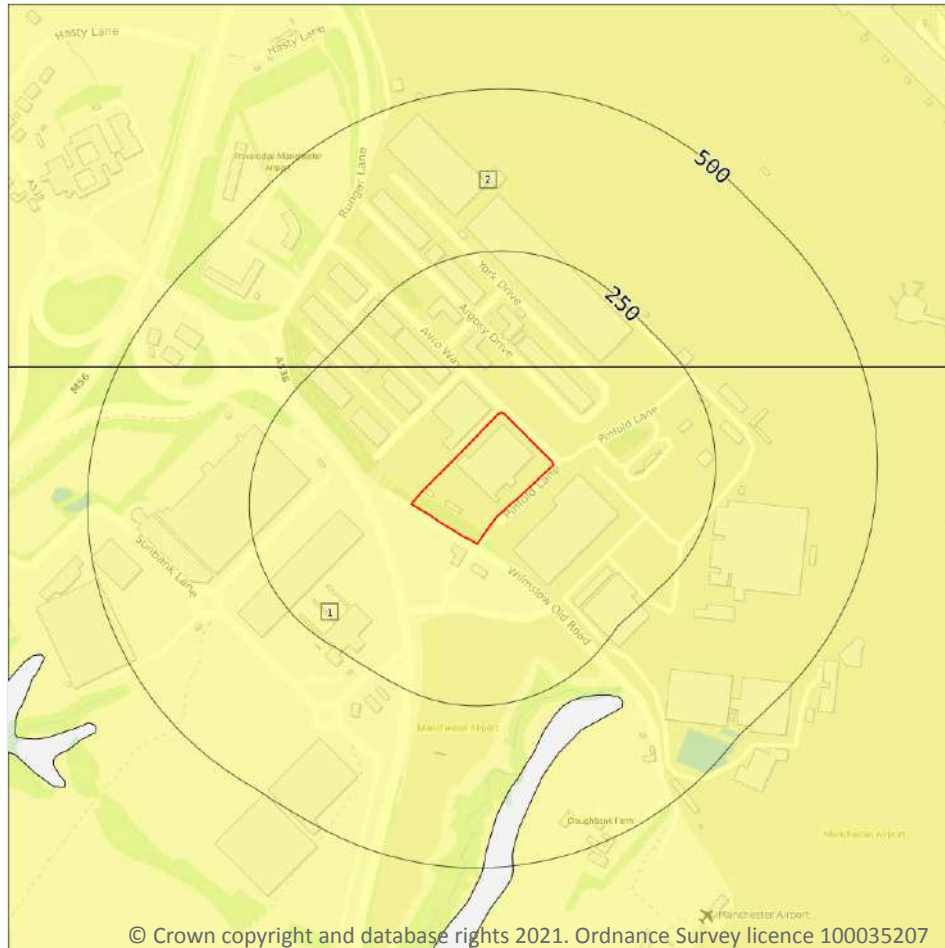
4.21 Pollution inventory radioactive waste

Records within 500m**0**

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

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

5 Hydrogeology - Superficial aquifer



— Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m

2

Aquifer status of groundwater held within superficial geology.

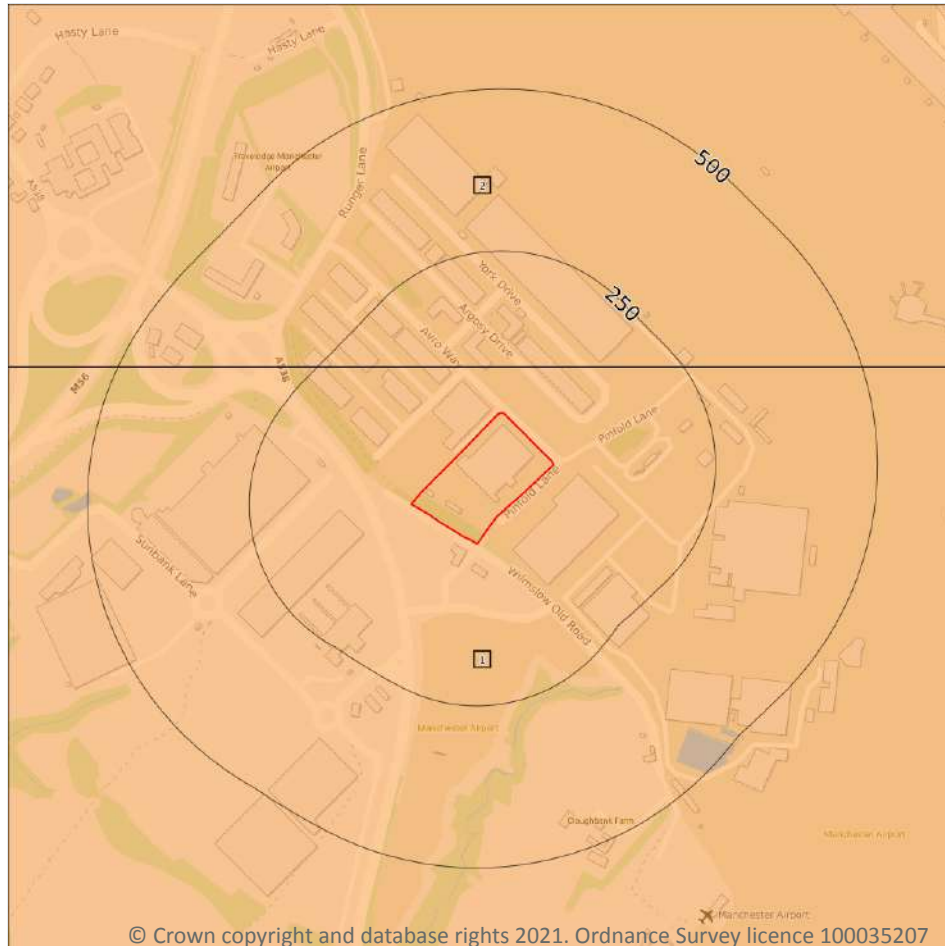
Features are displayed on the Hydrogeology map on **page 41**

ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	71m N	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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



Bedrock aquifer



— Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m

2

Aquifer status of groundwater held within bedrock geology.

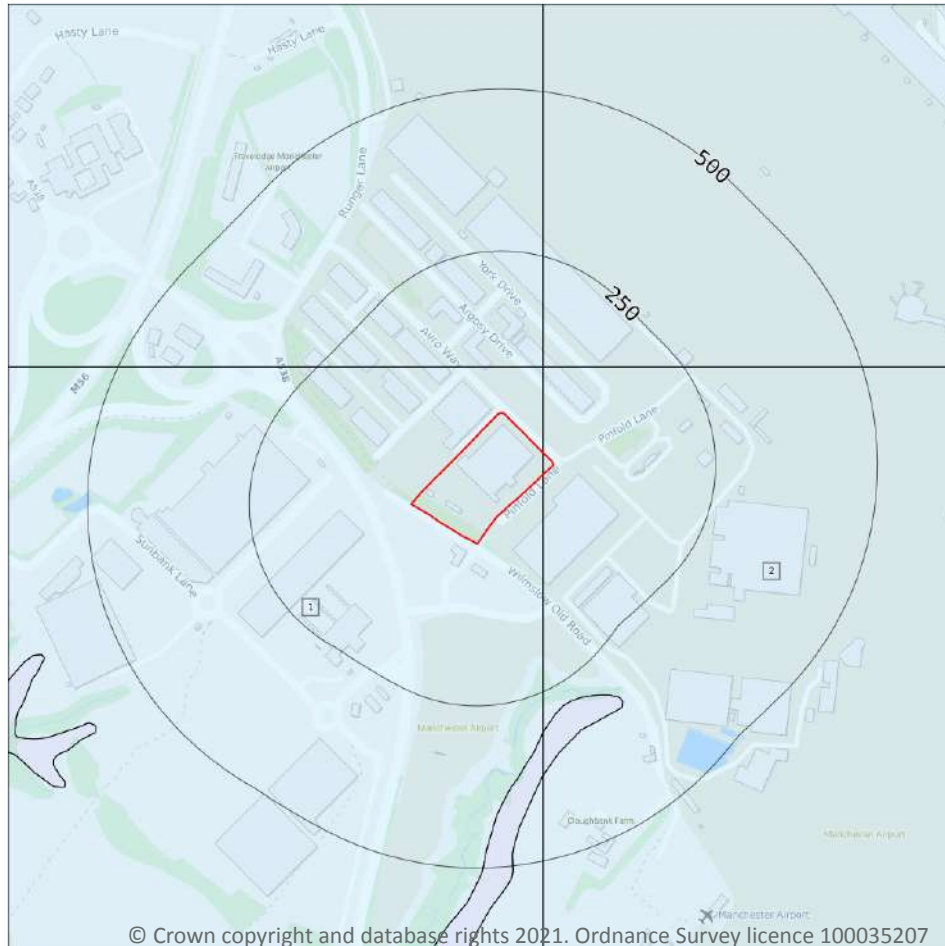
Features are displayed on the Bedrock aquifer map on **page 43**

ID	Location	Designation	Description
1	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers
2	71m N	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers

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



Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m

2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 45**

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

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site

0

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

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

5.5 Groundwater vulnerability- local information

Records on site

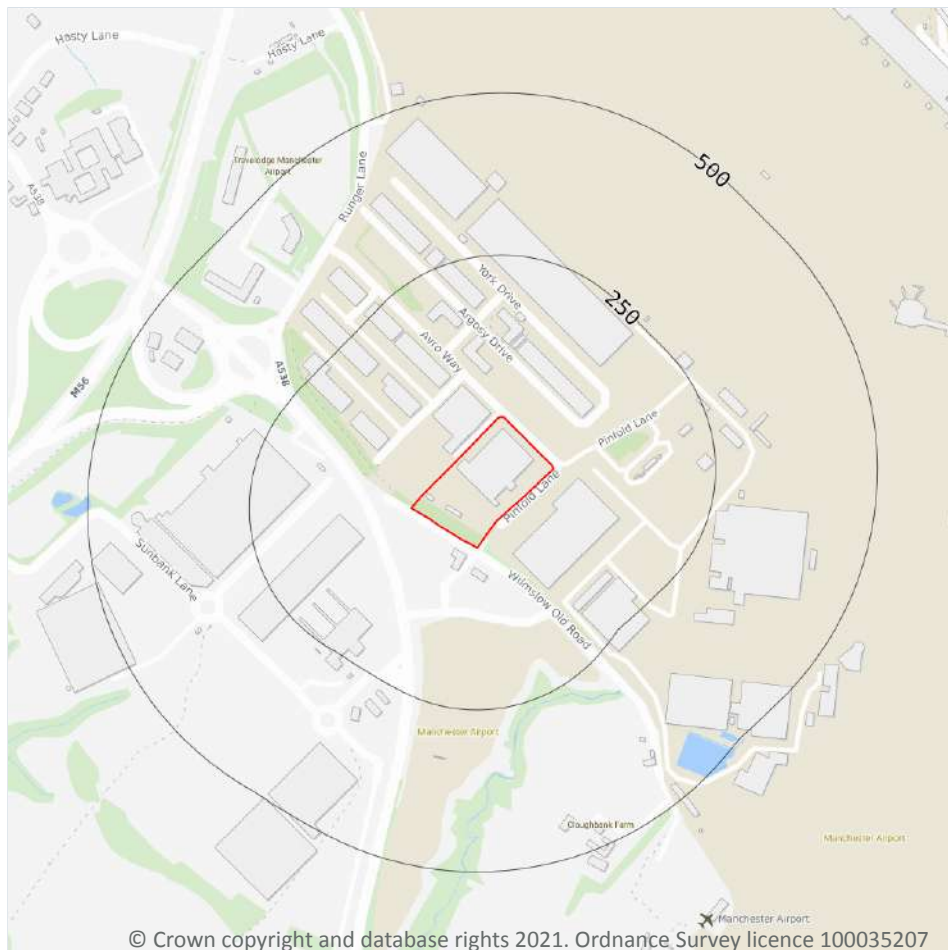
0

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

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



Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)**
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

0

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

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

5.7 Surface water abstractions

Records within 2000m

5

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 47**

ID	Location	Details	
-	1827m NW	Status: Historical Licence No: 2569017036/R1 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: UNDERGROUND STORAGE TANK FED BY LOCAL SURFACE DRAINAGE Data Type: Point Name: RINGWAY GOLF CLUB LIMITED Easting: 379536 Northing: 386114	Annual Volume (m ³): 5000 Max Daily Volume (m ³): 71.5 Original Application No: - Original Start Date: 28/04/2004 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 28/04/2004 Version End Date: -
-	1827m NW	Status: Active Licence No: 2569017036/R02 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: UNDERGROUND STORAGE TANK FED BY LOCAL SURFACE DRAINAGE Data Type: Point Name: RINGWAY GOLF CLUB LIMITED Easting: 379536 Northing: 386114	Annual Volume (m ³): 5,000 Max Daily Volume (m ³): 60 Original Application No: - Original Start Date: 01/04/2018 Expiry Date: 31/03/2030 Issue No: 1 Version Start Date: 01/04/2018 Version End Date: -
-	1842m NW	Status: Historical Licence No: 2569017036 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: UNDERGROUND STORAGE TANK FED BY LOCAL SURFACE DRAINAGE Data Type: Point Name: THE SECRETARY Easting: 379500 Northing: 386100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/07/1999 Expiry Date: 12/07/2004 Issue No: 1 Version Start Date: 13/07/1999 Version End Date: -



ID	Location	Details	
-	1842m NW	Status: Historical Licence No: 2569017036/R1 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: UNDERGROUND STORAGE TANK FED BY LOCAL SURFACE DRAINAGE Data Type: Point Name: RINGWAY GOLF CLUB LIMITED Easting: 379500 Northing: 386100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 28/04/2004 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 28/04/2004 Version End Date: -
-	1842m NW	Status: Historical Licence No: 2569017036/R1 Details: Spray Irrigation - Direct Direct Source: Surface, Non-Tidal - North West Region Point: UNDERGROUND STORAGE TANK FED BY LOCAL SURFACE DRAINAGE Data Type: Point Name: RINGWAY GOLF CLUB LIMITED Easting: 379500 Northing: 386100	Annual Volume (m ³): 5000 Max Daily Volume (m ³): 71.5 Original Application No: - Original Start Date: 28/04/2004 Expiry Date: 31/03/2018 Issue No: 1 Version Start Date: 28/04/2004 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m

0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

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

5.9 Source Protection Zones

Records within 500m

0

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

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



5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

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

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



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ⋯ WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

0

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

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.



This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	2
------------------------	----------

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

Features are displayed on the Hydrology map on **page 51**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River WB catchment	Timperley Brook	GB112069061260	Bollin, Dean, Upper Mersey	Upper Mersey
2	On site	River WB catchment	Bollin (River Dean to Ashley Mill)	GB112069061381	Bollin, Dean, Upper Mersey	Upper Mersey

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

6.4 WFD Surface water bodies

Records identified	2
---------------------------	----------

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

Features are displayed on the Hydrology map on **page 51**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
3	259m S	River	Bollin (River Dean to Ashley Mill)	GB112069061381	Moderate	Good	Moderate	2016
-	2314m NW	River	Timperley Brook	GB112069061260	Moderate	Good	Moderate	2016

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



6.5 WFD Groundwater bodies

Records on site

2

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 51**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Weaver and Dane Quaternary Sand and Gravel Aquifers	<u>GB41202G991700</u>	Poor	Poor	Good	2015
A	On site	Weaver and Dane Quaternary Sand and Gravel Aquifers	<u>GB41202G991700</u>	Poor	Poor	Good	2016

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



7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

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

7.2 Historical Flood Events

Records within 250m

0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

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

7.3 Flood Defences

Records within 250m

0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

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

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

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



7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

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

7.7 Flood Zone 3

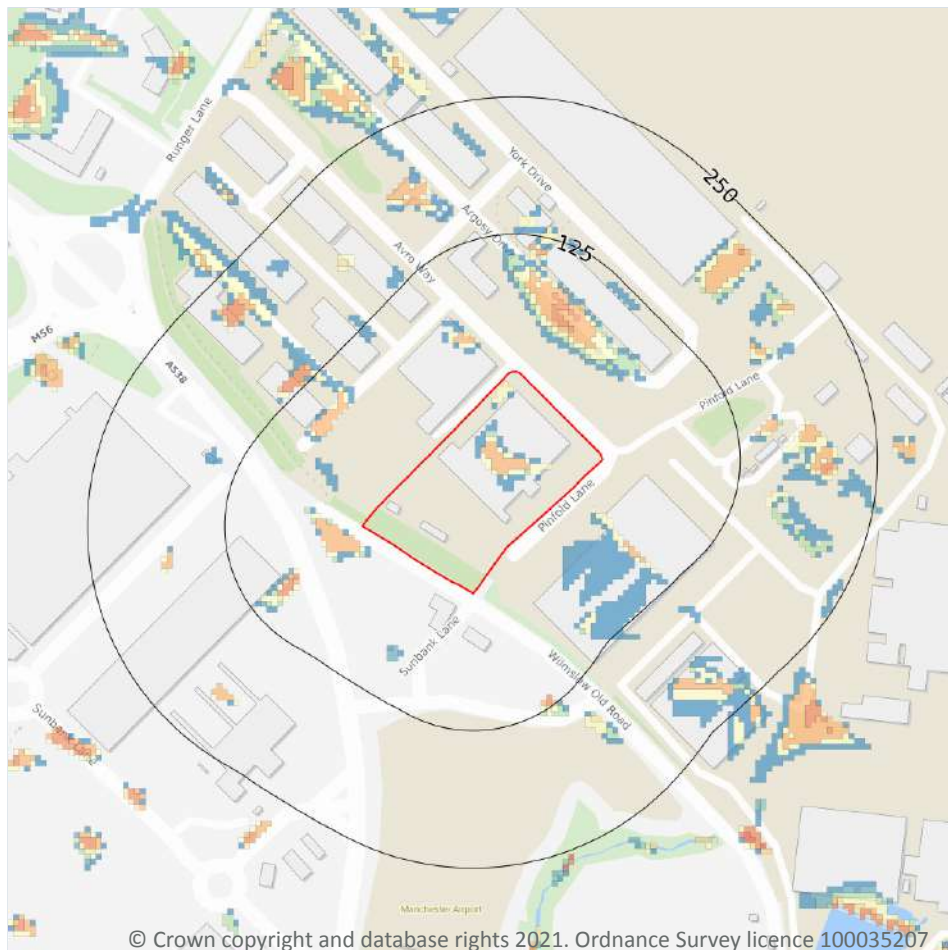
Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

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

8 Surface water flooding



— Site Outline

Search buffers in metres (m)

1 in 1000 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period

- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site

1 in 30 year, 0.1m - 0.3m

Highest risk within 50m

1 in 30 year, 0.1m - 0.3m

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

Features are displayed on the Surface water flooding map on **page 57**

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

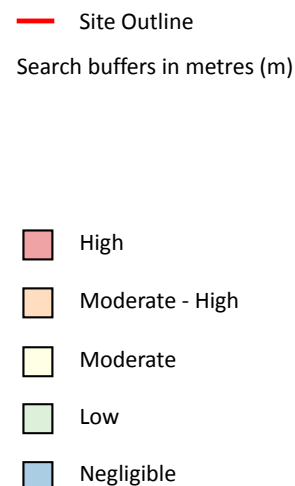
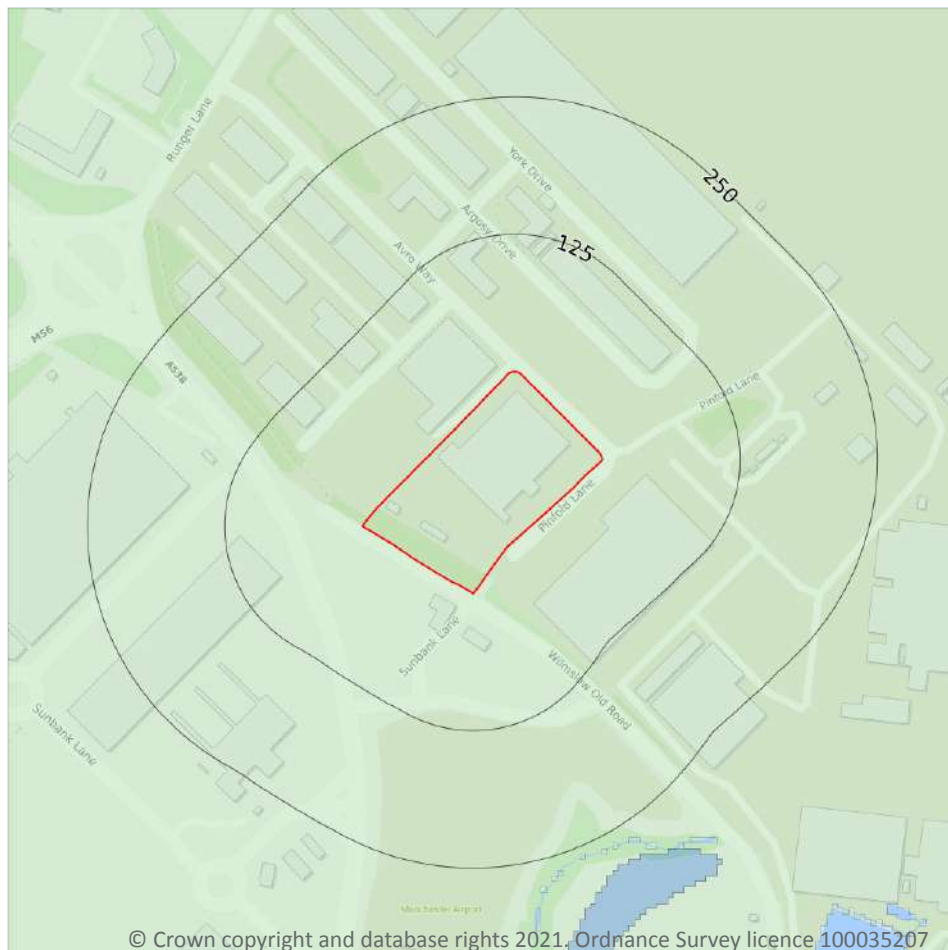
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

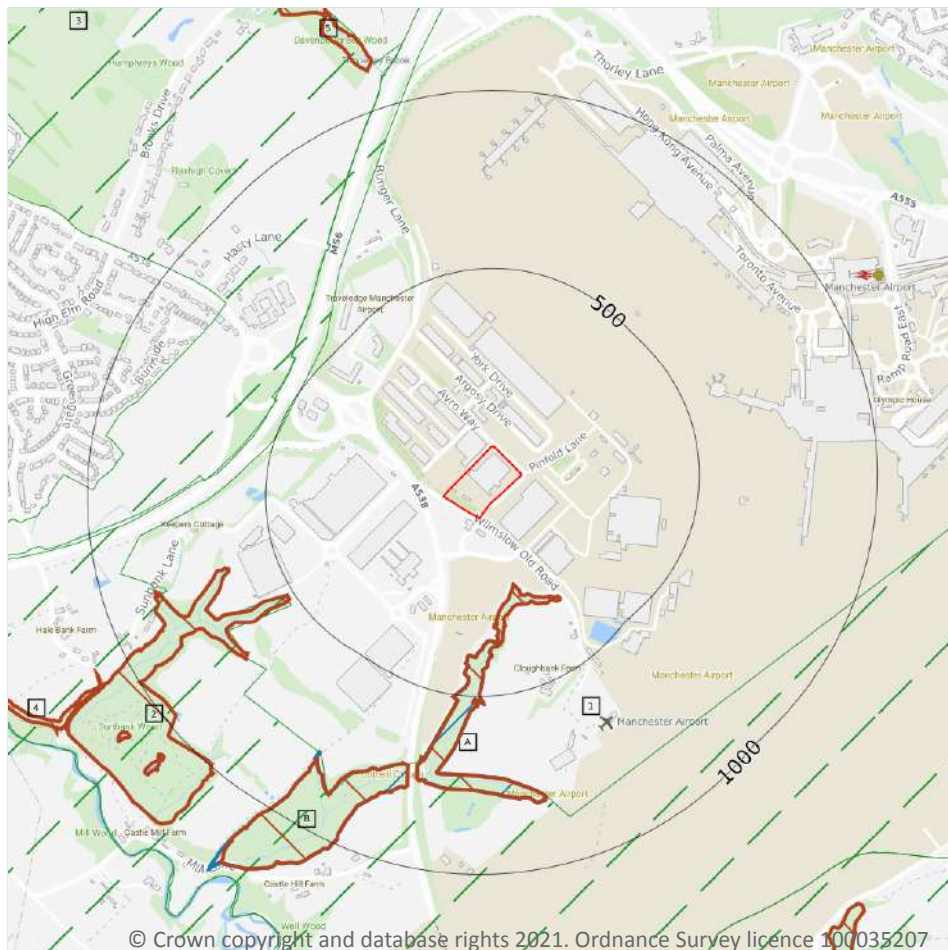
Low

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 59**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- Designated Ancient Woodland
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

2

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

Features are displayed on the Environmental designations map on **page 60**

ID	Location	Name	Data source
A	345m S	Cotteril Clough	Natural England



ID	Location	Name	Data source
B	720m S	Cotteril Clough	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0
-----------------------------	----------

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0
-----------------------------	----------

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0
-----------------------------	----------

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0
-----------------------------	----------

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m

0

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

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

10.7 Designated Ancient Woodland

Records within 2000m

10

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

Features are displayed on the Environmental designations map on **page 60**

ID	Location	Name	Woodland Type
A	210m SE	Cotterill Clough	Ancient & Semi-Natural Woodland
2	519m SW	Sunbank Wood	Ancient & Semi-Natural Woodland
B	720m S	Cotterill Clough	Ancient & Semi-Natural Woodland
4	1093m SW	Bollin Bank	Ancient & Semi-Natural Woodland
5	1112m N	Davenport Green Wood	Ancient & Semi-Natural Woodland
-	1259m W	Hennersley Bank	Ancient & Semi-Natural Woodland
8	1512m SE	Oversley Farm Wood	Ancient & Semi-Natural Woodland
-	1513m W	Warburton Wood	Ancient & Semi-Natural Woodland
-	1877m SW	Unknown	Ancient Replanted Woodland
-	1889m S	Unknown	Ancient & Semi-Natural Woodland

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



10.8 Biosphere Reserves

Records within 2000m

0

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

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

10.9 Forest Parks

Records within 2000m

0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

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

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

10.11 Green Belt

Records within 2000m

3

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

Features are displayed on the Environmental designations map on **page 60**

ID	Location	Name	Local Authority name
1	344m S	Merseyside and Greater Manchester	Manchester
3	542m NW	Merseyside and Greater Manchester	Trafford
6	1224m SW	Merseyside and Greater Manchester	Cheshire East

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



10.12 Proposed Ramsar sites

Records within 2000m

0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

This data is sourced from Natural England.



10.16 Nitrate Vulnerable Zones

Records within 2000m

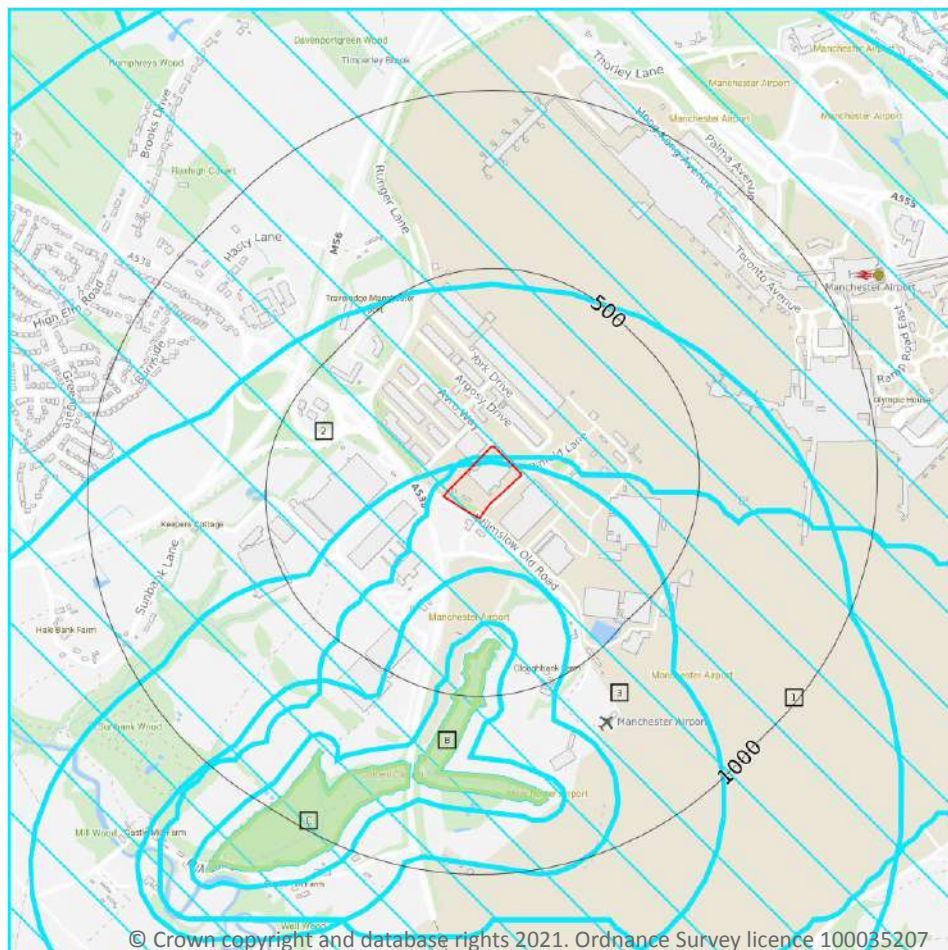
0

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

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



SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

3

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

Features are displayed on the SSSI Impact Zones and Units map on **page 66**

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha Residential - Residential development of 100 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 2m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location). Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply
2	On site	Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Residential - Residential development of 100 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply



ID	Location	Type of developments requiring consultation
3	On site	Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha Residential - Residential development of 100 units or more. Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons/manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream (NB this does not include discharges to mains sewer which are unlikely to pose a risk at this location). Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

2

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

Features are displayed on the SSSI Impact Zones and Units map on **page 66**

ID:	B
Location:	345m S
SSSI name:	Cotteril Clough
Unit name:	Eastern Woodland
Broad habitat:	Broadleaved, Mixed And Yew Woodland - Lowland
Condition:	Favourable
Reportable features:	



Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	13/06/2013
Wet woodland	Favourable	13/06/2013

ID: C
Location: 720m S
SSSI name: Cotteril Clough
Unit name: Western Woodland
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	30/05/2014
Wet woodland	Favourable	30/05/2014

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



11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m

0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

11.3 National Parks

Records within 250m

0

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

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

11.4 Listed Buildings

Records within 250m

0

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



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

11.5 Conservation Areas

Records within 250m

0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m

0

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

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

11.7 Registered Parks and Gardens

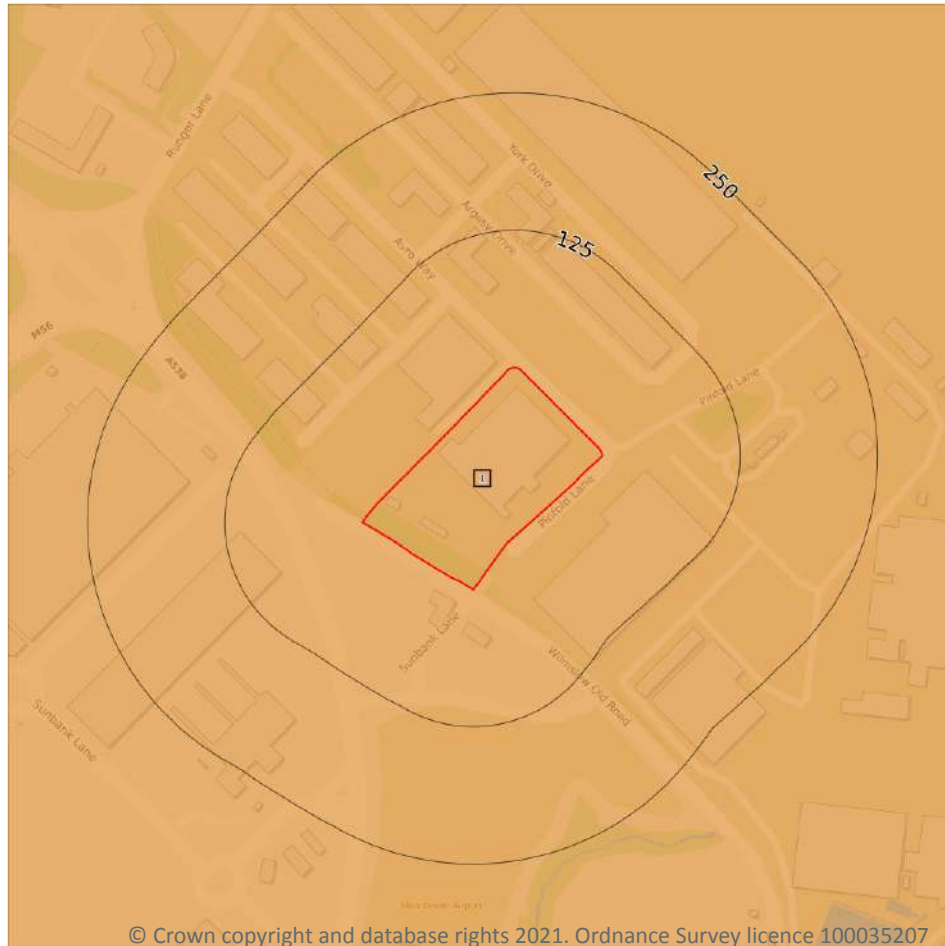
Records within 250m

0

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

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

12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

1

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

Features are displayed on the Agricultural designations map on **page 72**

ID	Location	Classification	Description
1	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

This data is sourced from Natural England.



12.2 Open Access Land

Records within 250m

0

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

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

12.3 Tree Felling Licences

Records within 250m

0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

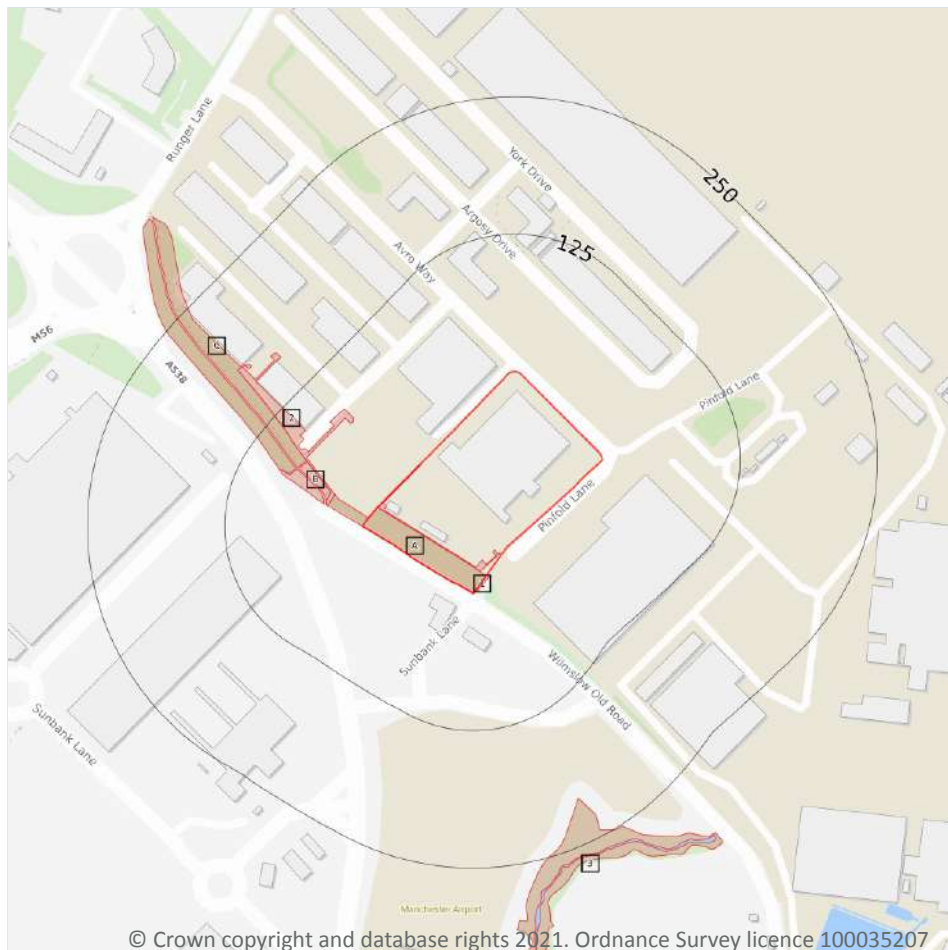
Records within 250m

0

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

This data is sourced from Natural England.

13 Habitat designations



- Site Outline
- Search buffers in metres (m)
- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders
- Habitat Networks
- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m

9

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

Features are displayed on the Habitat designations map on **page 74**

ID	Location	Main Habitat	Other habitats
1	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	37m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)



ID	Location	Main Habitat	Other habitats
B	40m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	41m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	77m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	80m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	210m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

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

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

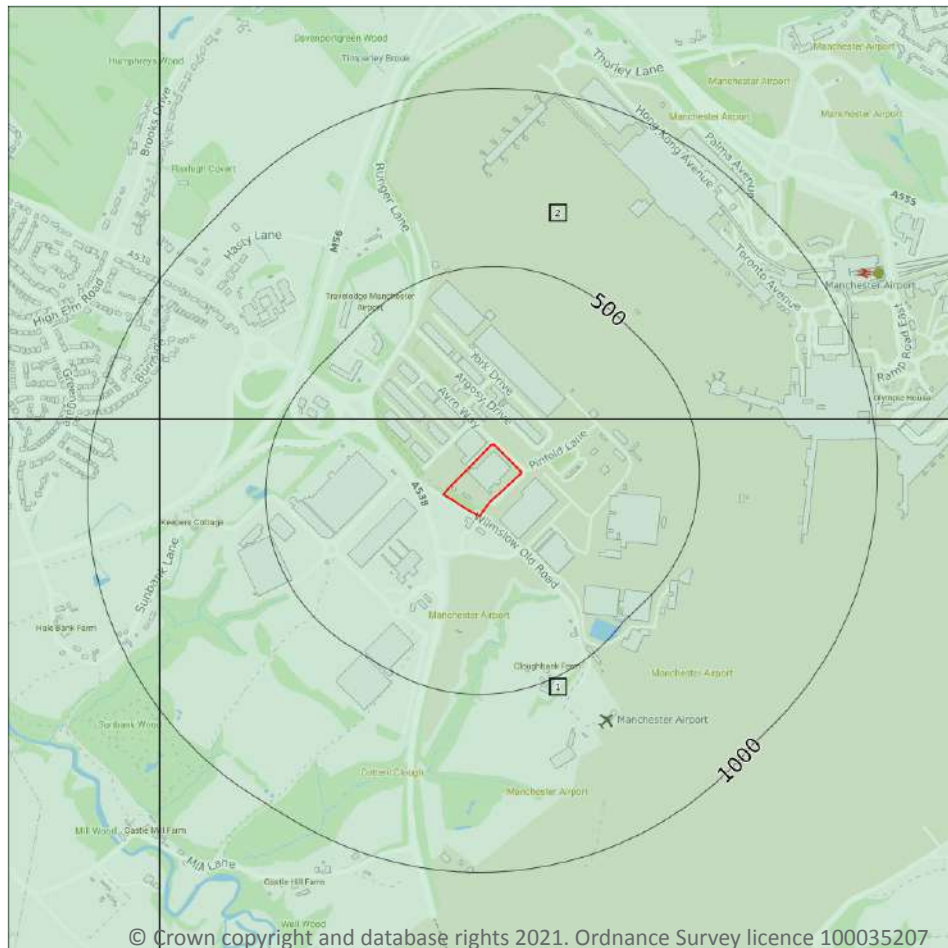
0

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

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

2

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 76**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	SJ88SW
2	71m N	No coverage	Full	Full	No coverage	SJ88NW

This data is sourced from the British Geological Survey.



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

14.2 Artificial and made ground (10k)

Records within 500m

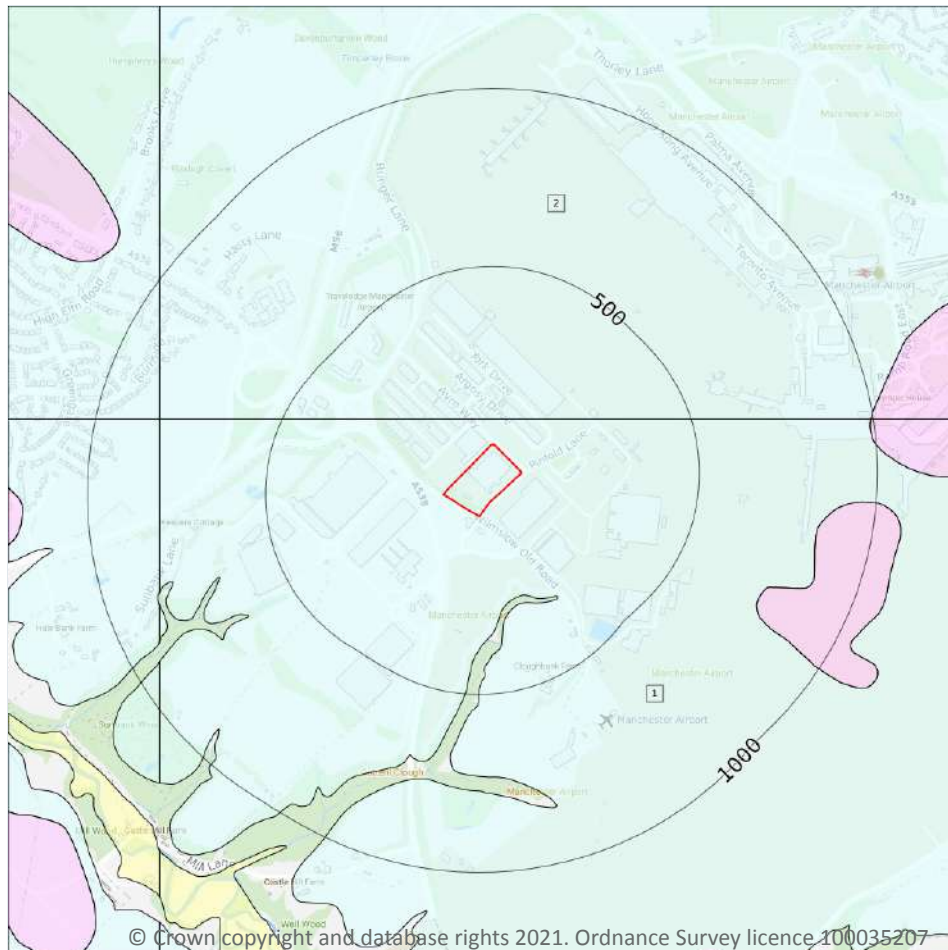
0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m

2

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 78**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	71m N	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton

This data is sourced from the British Geological Survey.



14.4 Landslip (10k)

Records within 500m

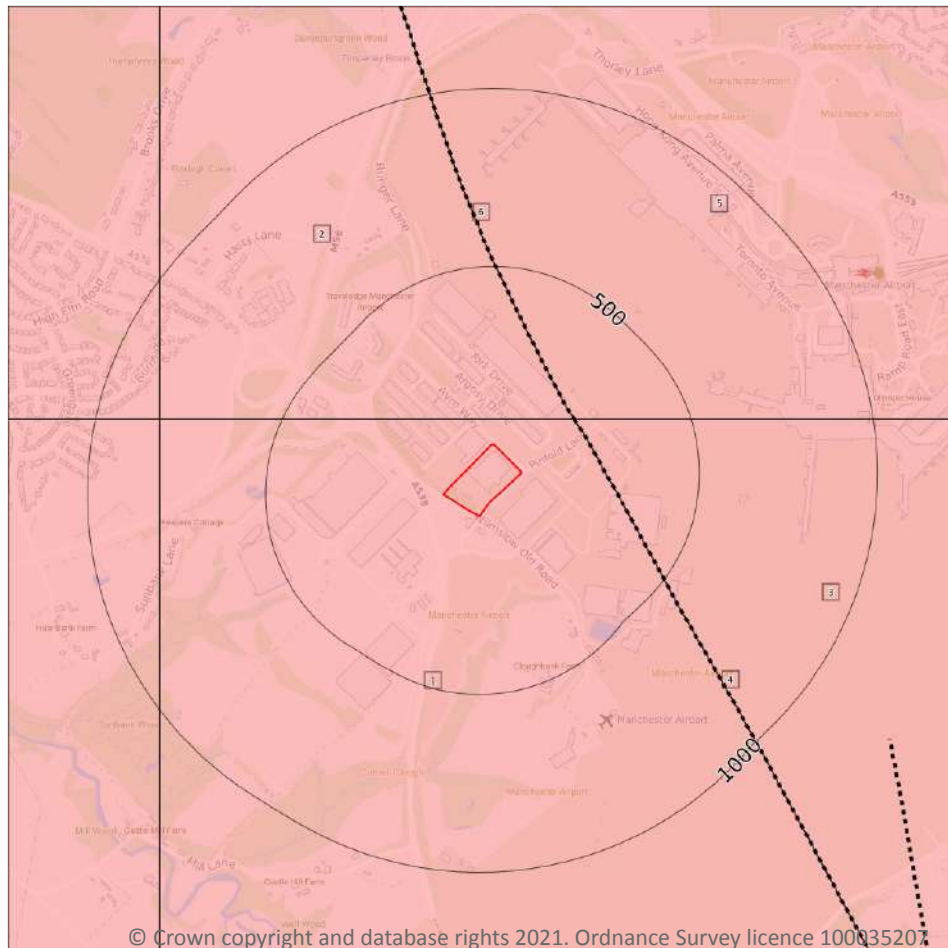
0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m

4

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 80**

ID	Location	LEX Code	Description	Rock age
1	On site	BOM-MDST	Bollin Mudstone Member - Mudstone	Anisian Age
2	71m N	BOM-MDST	Bollin Mudstone Member - Mudstone	Anisian Age
3	206m NE	BOM-MDST	Bollin Mudstone Member - Mudstone	Anisian Age
5	210m NE	BOM-MDST	Bollin Mudstone Member - Mudstone	Anisian Age



This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

2

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 80**

ID	Location	Category	Description
4	206m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
6	210m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline
Search buffers in metres (m)

☐ Geological map tile

15.1 50k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 82**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	Full	EW098_stockport_v4

This data is sourced from the British Geological Survey.



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

15.2 Artificial and made ground (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

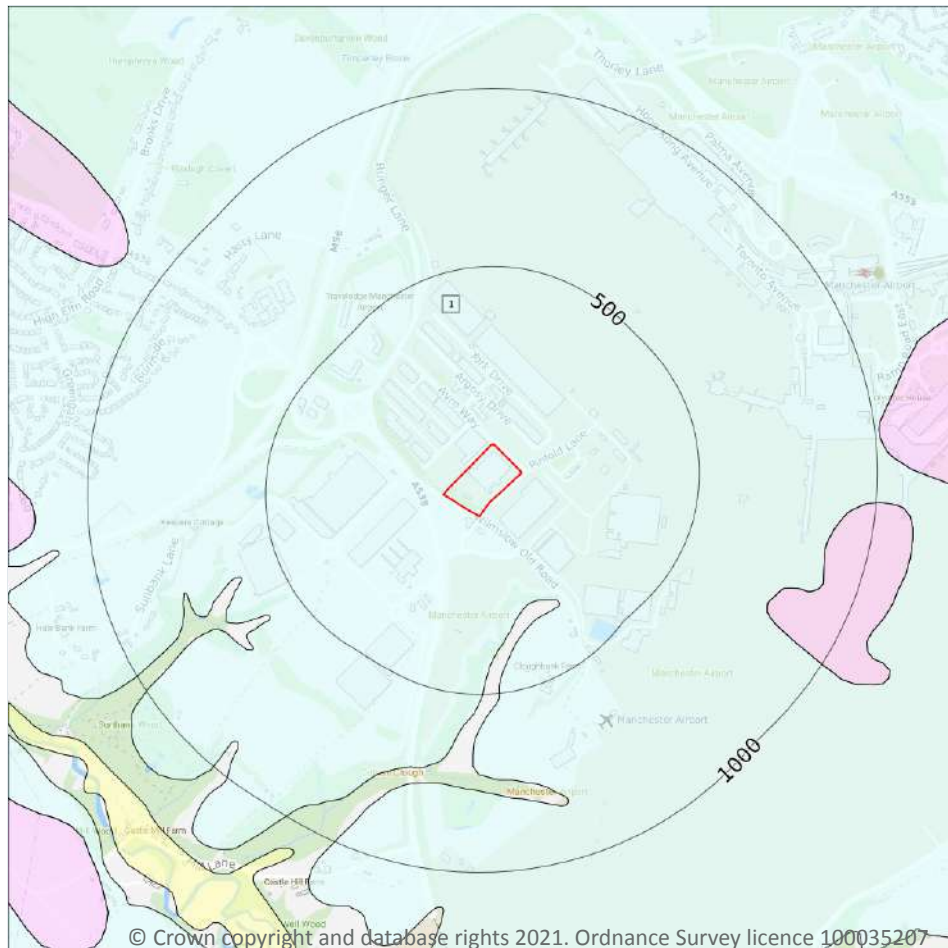
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



- Site Outline
- Search buffers in metres (m)
- Landslip (50k)
- Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 84**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m**1**

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

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m**0**

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

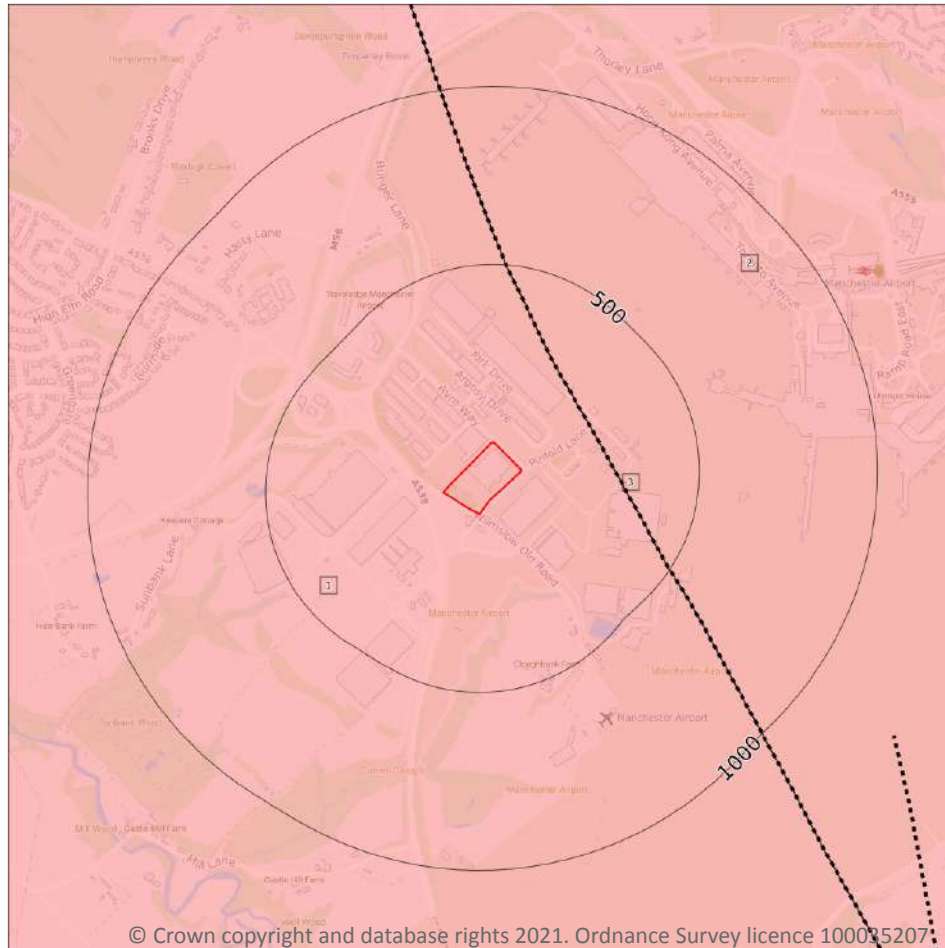
Records within 50m**0**

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m

2

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 86**

ID	Location	LEX Code	Description	Rock age
1	On site	BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE	ANISIAN
2	229m NE	BOM-MDST	BOLLIN MUDSTONE MEMBER - MUDSTONE	ANISIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Low	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

1

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

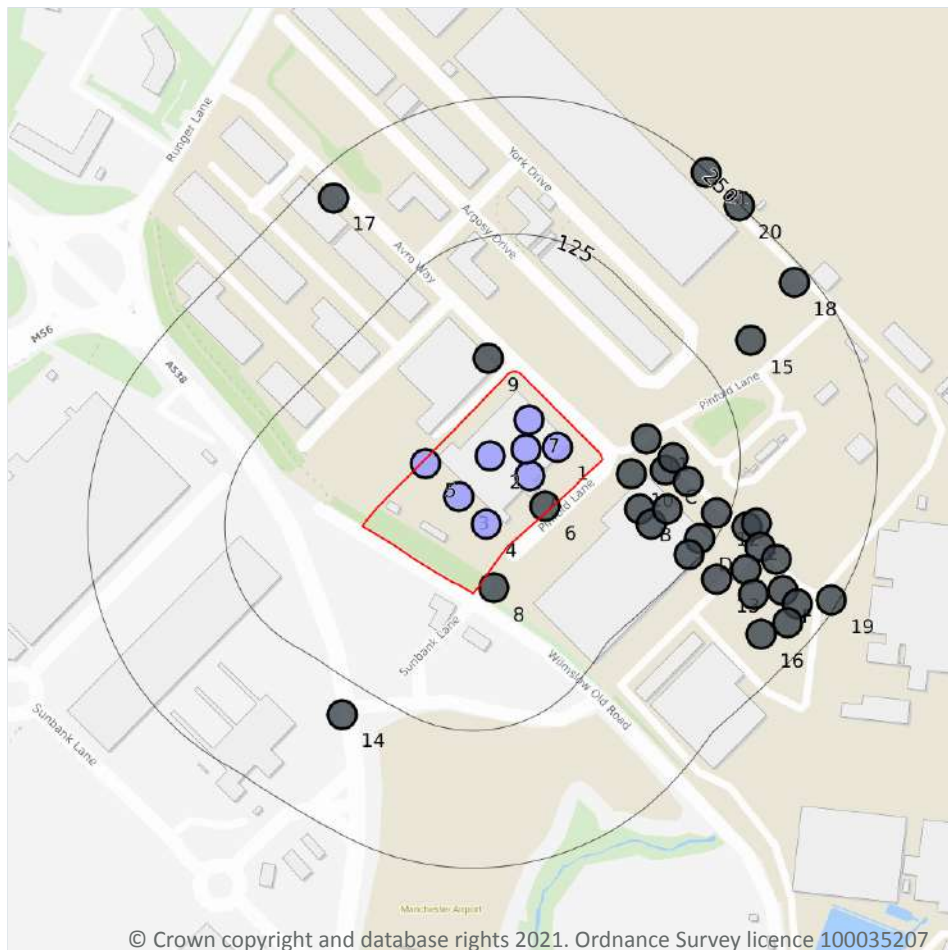
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 86**

ID	Location	Category	Description
3	229m NE	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

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

© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

16.1 BGS Boreholes

Records within 250m

40

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

Features are displayed on the Boreholes map on **page 88**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	380975 384860	MARRIOTT IN-FLITE SERVICES LTD, MANCHESTER AIRPORT 4	4.0	N	17877423
2	On site	380914 384852	MARRIOTT IN-FLITE SERVICES LTD, MANCHESTER AIRPORT 1	4.0	N	17877420



ID	Location	Grid reference	Name	Length	Confidential	Web link
3	On site	380885 384815	CATERAIR INTERNATIONAL, MANCHESTER AIRPORT BH7.	4.0	N	18525494
4	On site	380910 384790	CATERAIR INTERNATIONAL, MANCHESTER AIRPORT BH8.	4.0	N	18525495
5	On site	380855 384845	CATERAIR INTERNATIONAL, MANCHESTER AIRPORT BH6.	4.0	N	18525493
6	On site	380964 384806	SURFACE WTR OUTFALL R BOLLIN	-	Y	N/A
7	On site	380949 384885	MARRIOTT IN-FLITE SERVICES LTD, MANCHESTER AIRPORT 2	4.0	N	17877421
A	On site	380950 384834	MARRIOTT IN-FLITE SERVICES LTD, MANCHESTER AIRPORT 3	4.0	N	17877422
A	On site	380946 384858	MARRIOTT IN-FLITE SERVICES LTD, MANCHESTER AIRPORT 5	4.5	N	17877424
8	12m SE	380917 384732	SURFACE WTR OUTFALL R BOLLIN	-	Y	N/A
9	23m NW	380912 384941	CARGO PHASE 4 DEVELOPMENT 1	-	Y	N/A
10	29m SE	381042 384836	MTMF RINGWAY 1	-	Y	N/A
11	44m E	381056 384868	SURFACE WTR OUTFALL R BOLLIN	-	Y	N/A
B	56m SE	381050 384804	MTMF RINGWAY TP 2	-	Y	N/A
C	58m E	381073 384839	MTMF RINGWAY TP 1	-	Y	N/A
C	64m E	381080 384850	HANGAR 5 MANCHESTER AIRPORT H5WS1	-	Y	N/A
B	73m SE	381060 384790	HANGAR 5 MANCHESTER AIRPORT H5WS2	-	Y	N/A
B	74m SE	381075 384804	MTMF RINGWAY TP 3	-	Y	N/A
C	80m E	381094 384829	MTMF RINGWAY 2	-	Y	N/A
D	113m SE	381104 384777	MTMF RINGWAY TP 4	-	Y	N/A
12	115m SE	381120 384800	HANGAR 5 MANCHESTER AIRPORT H5WS3	-	Y	N/A
D	117m SE	381095 384762	MTMF RINGWAY 3	-	Y	N/A
E	145m SE	381147 384787	MTMF RINGWAY TP 5	-	Y	N/A
13	150m SE	381120 384740	HANGAR 5 MANCHESTER AIRPORT H5WS4	-	Y	N/A
E	151m E	381156 384791	SURFACE WTR OUTFALL R BOLLIN	-	Y	N/A
14	155m SW	380779 384617	SURFACE WTR OUTFALL R BOLLIN	-	Y	N/A
E	164m SE	381159 384769	MTMF RINGWAY 4	-	Y	N/A

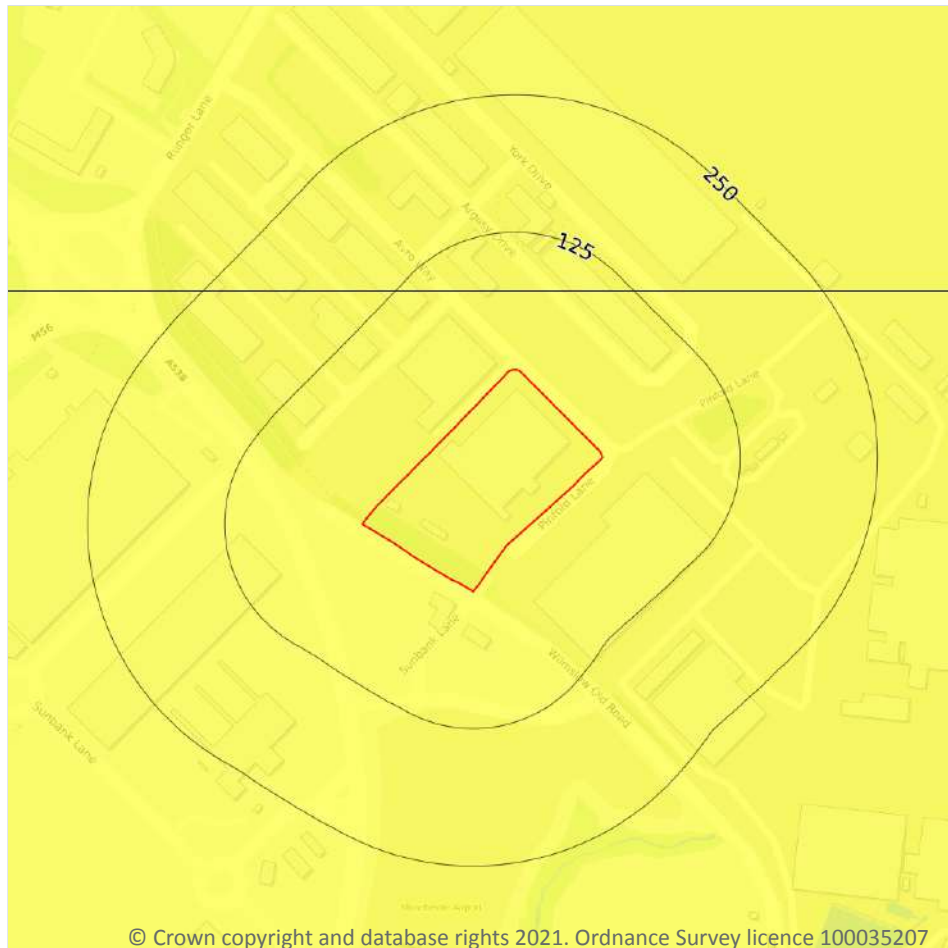


ID	Location	Grid reference	Name	Length	Confidential	Web link
E	164m SE	381146 384749	MTMF RINGWAY TP 7	-	Y	N/A
15	172m NE	381151 384957	SURFACE WTR OUTFALL R BOLLIN	-	Y	N/A
E	182m SE	381174 384758	MTMF RINGWAY TP 6	-	Y	N/A
E	184m SE	381153 384726	MTMF RINGWAY TP 8	-	Y	N/A
F	202m SE	381180 384730	HANGAR 5 MANCHESTER AIRPORT H5WS5	-	Y	N/A
16	214m SE	381160 384690	HANGAR 5 MANCHESTER AIRPORT H5WS6	-	Y	N/A
F	220m SE	381193 384718	MTMF RINGWAY TP 9	-	Y	N/A
F	224m SE	381184 384700	MTMF RINGWAY 5	-	Y	N/A
17	226m NW	380771 385087	CARGO PHASE 4 DEVELOPMENT 2	-	Y	N/A
18	235m NE	381190 385010	AIRCRAFT WASTE DISPOSAL 1	-	Y	N/A
19	244m SE	381224 384721	SURFACE WTR OUTFALL R BOLLIN	-	Y	N/A
20	249m NE	381140 385080	INTERNATIONAL APRON EXTENSION PHASE II TP3	-	Y	N/A
21	249m NE	381110 385110	INTERNATIONAL APRON EXTENSION PHASE II TP2	-	Y	N/A

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



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

17.1 Shrink swell clays

Records within 50m

1

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

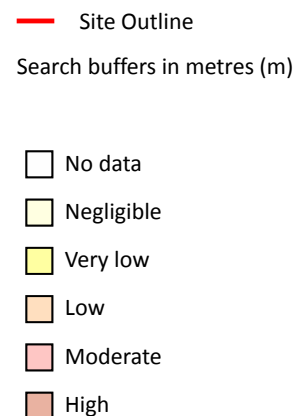
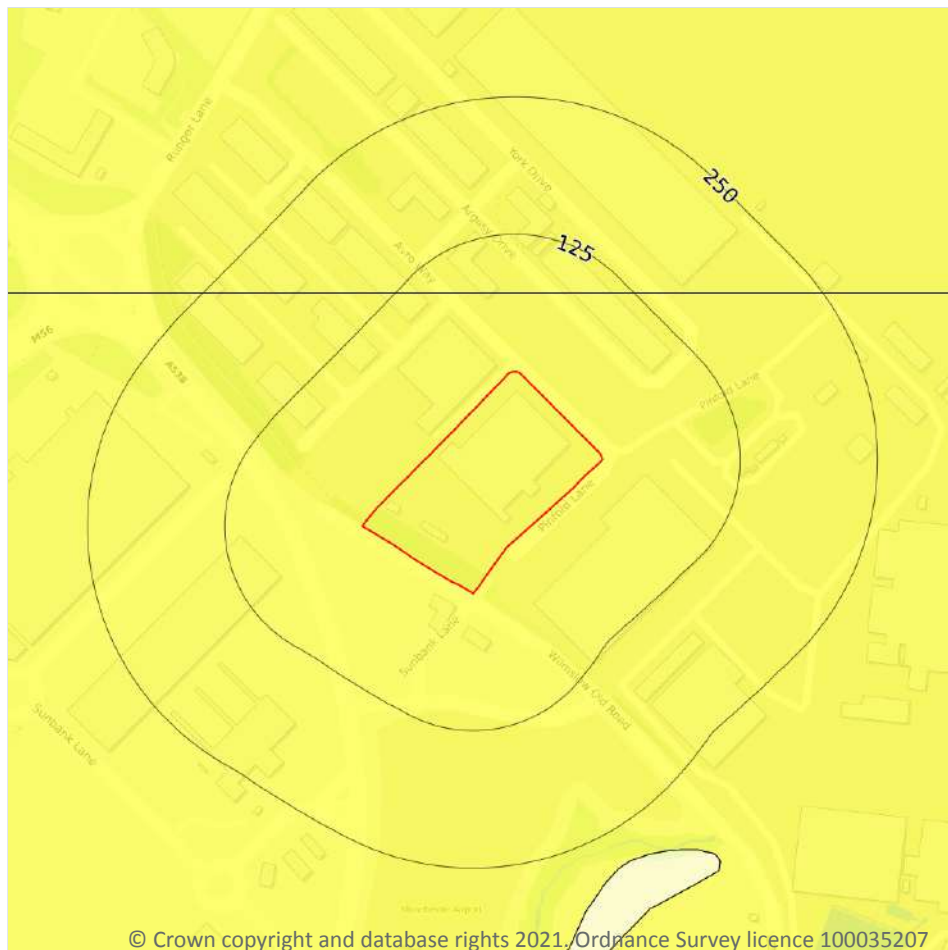
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 91**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Running sands map on **page 92**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



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

17.3 Compressible deposits

Records within 50m

1

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

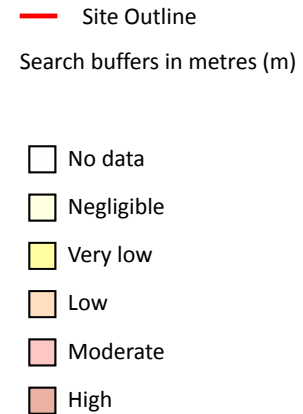
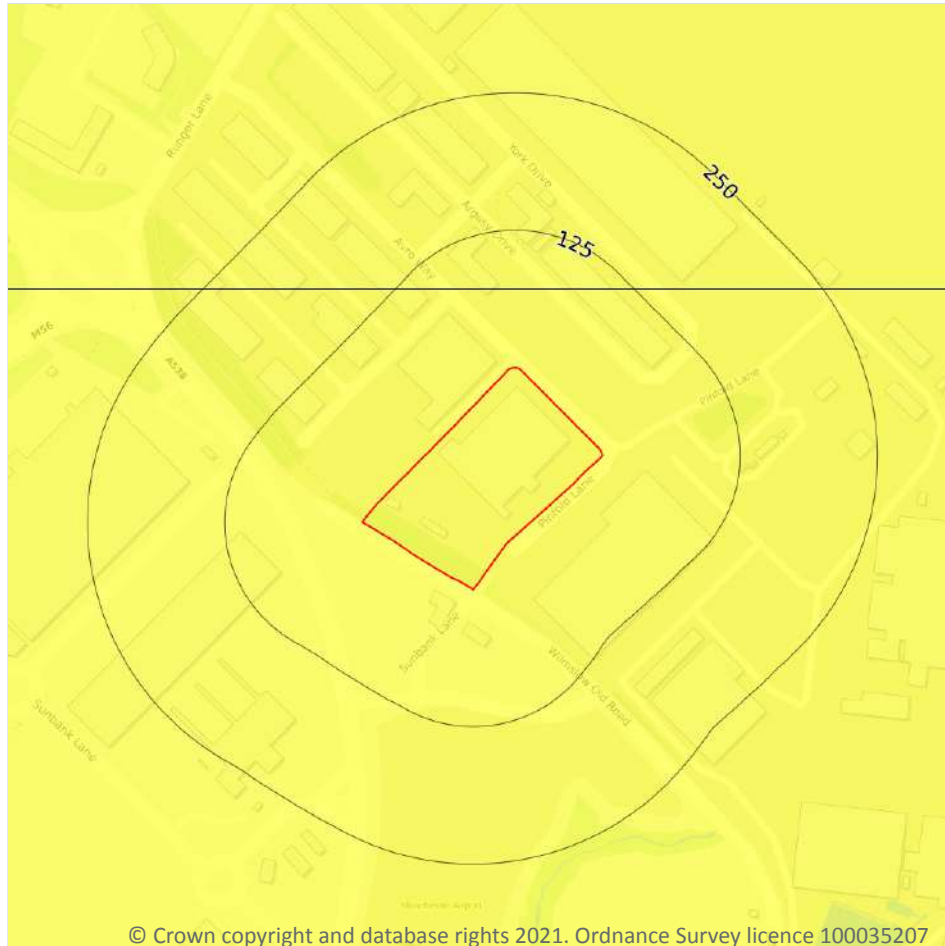
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 93**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m

1

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

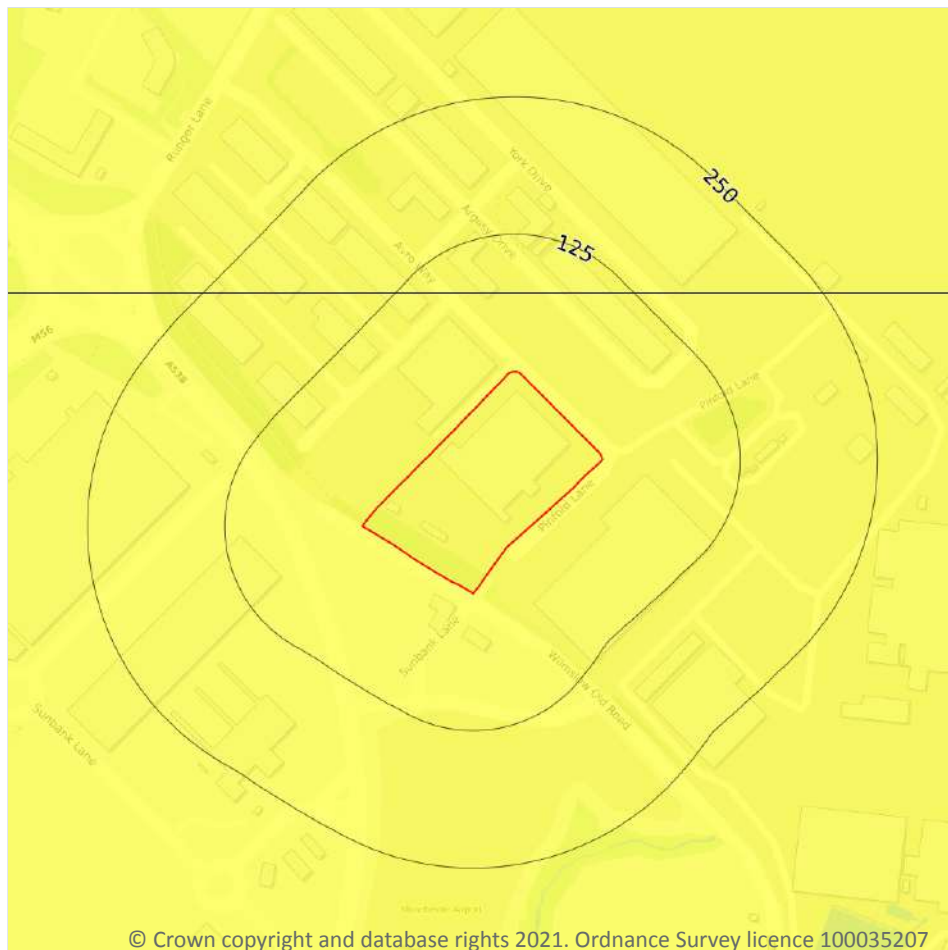
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 94**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



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

17.5 Landslides

Records within 50m

1

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

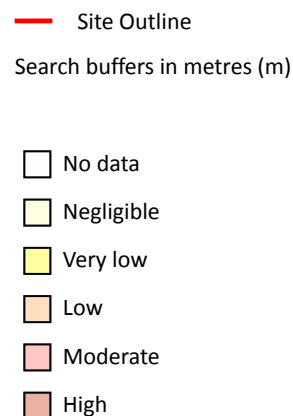
Features are displayed on the Natural ground subsidence - Landslides map on **page 95**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

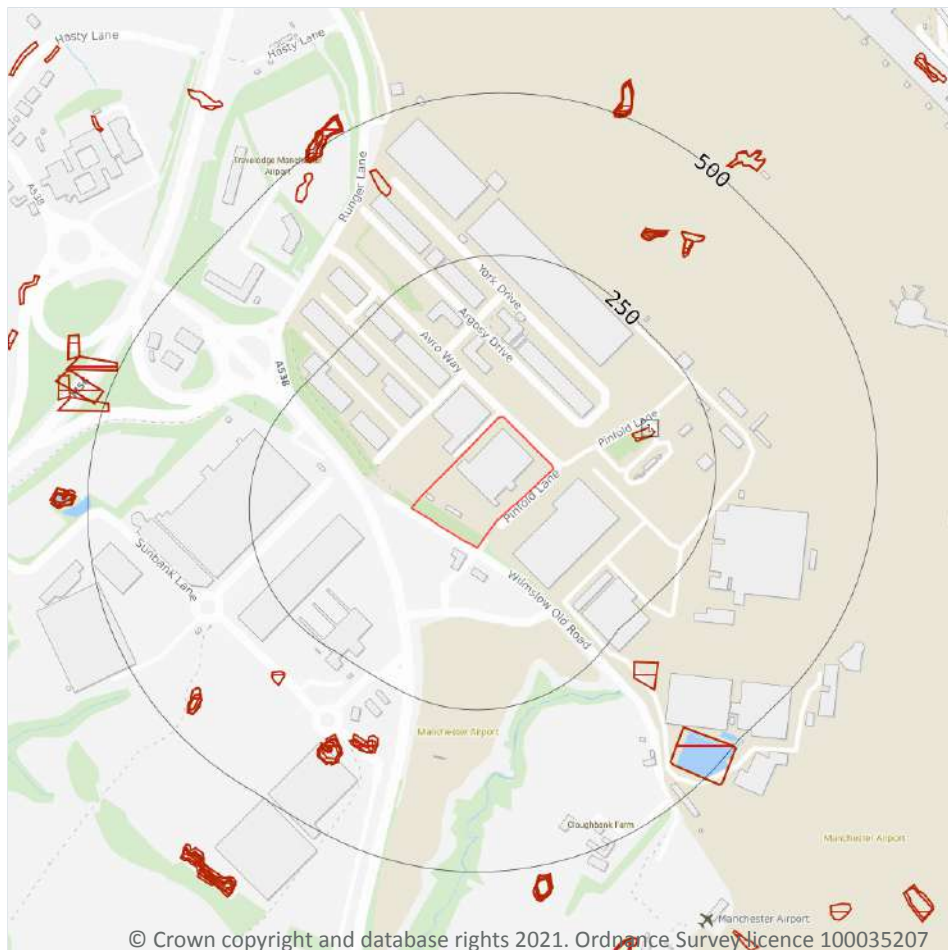
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 96**

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

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m

0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m

0

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

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

1

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 97**

ID	Location	Land Use	Year of mapping	Mapping scale
1	133m NE	Pond	1974	1:10000

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

0

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

This data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

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

This data is sourced from the British Geological Survey.



18.6 Non-coal mining

Records within 1000m

0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

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

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site

0

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

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site

0

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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site

1

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



Location	Details
On site	The site is located within the Cheshire Brine Compensation District. The extraction of brine over many years has caused some properties within the Cheshire area to be at risk of subsidence. This subsidence can occur a considerable distance from the location of the extraction and further assessment is recommended. A Cheshire Salt search can be obtained direct from Groundsure or your preferred search provider.

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

18.11 Gypsum areas

Records on site	0
-----------------	---

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
-----------------	---

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

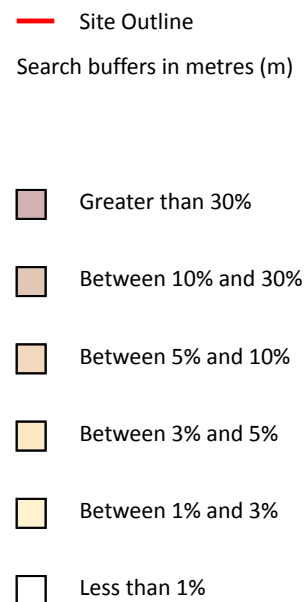
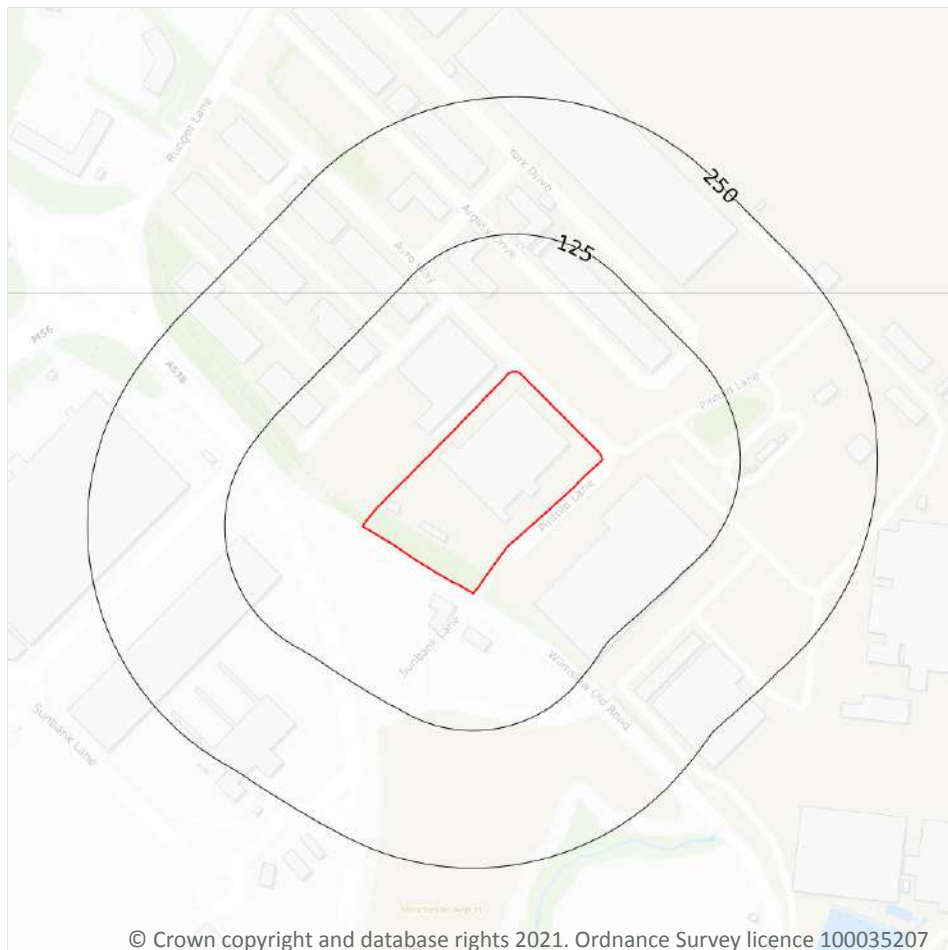
18.13 Clay mining

Records on site	0
-----------------	---

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

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

19 Radon



19.1 Radon

Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 101**

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

This data is sourced from the British Geological Survey and Public Health England.



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

3

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

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

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

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

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects

21.1 Underground railways (London)

Records within 250m**0**

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m**0**

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m**0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m**0**

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

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m**0**

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



This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m

0

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

This data is sourced from HS2 Ltd.



Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

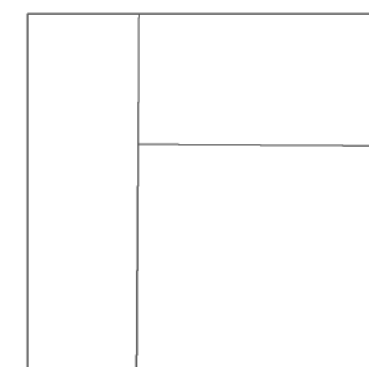
Map date: 1872-1877

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1877
Revised 1877
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

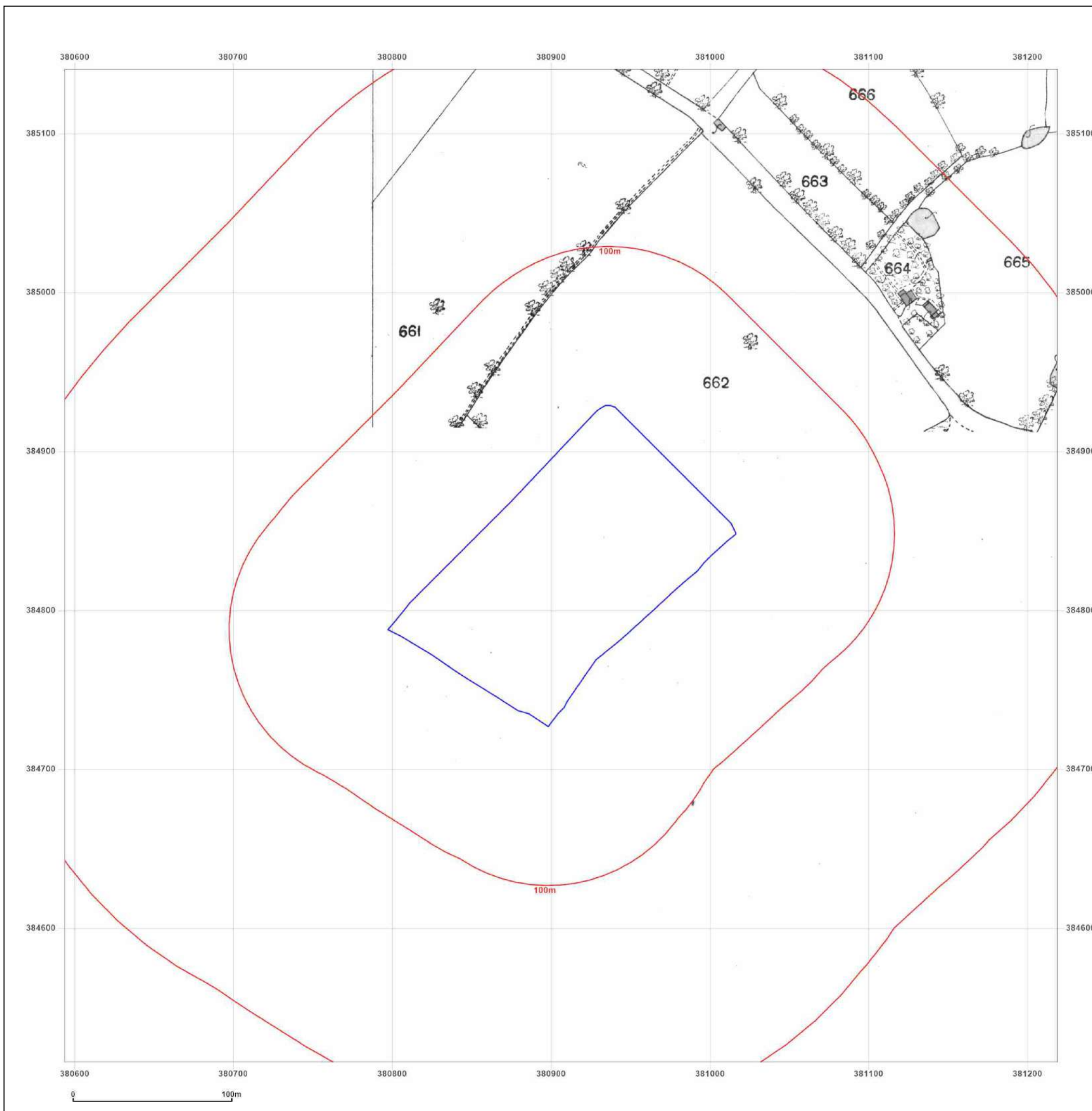


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

Map date: 1872-1881

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1879
Revised 1879
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1872
Revised 1872
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1881
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1877
Edition N/A
Copyright N/A
Levelled N/A

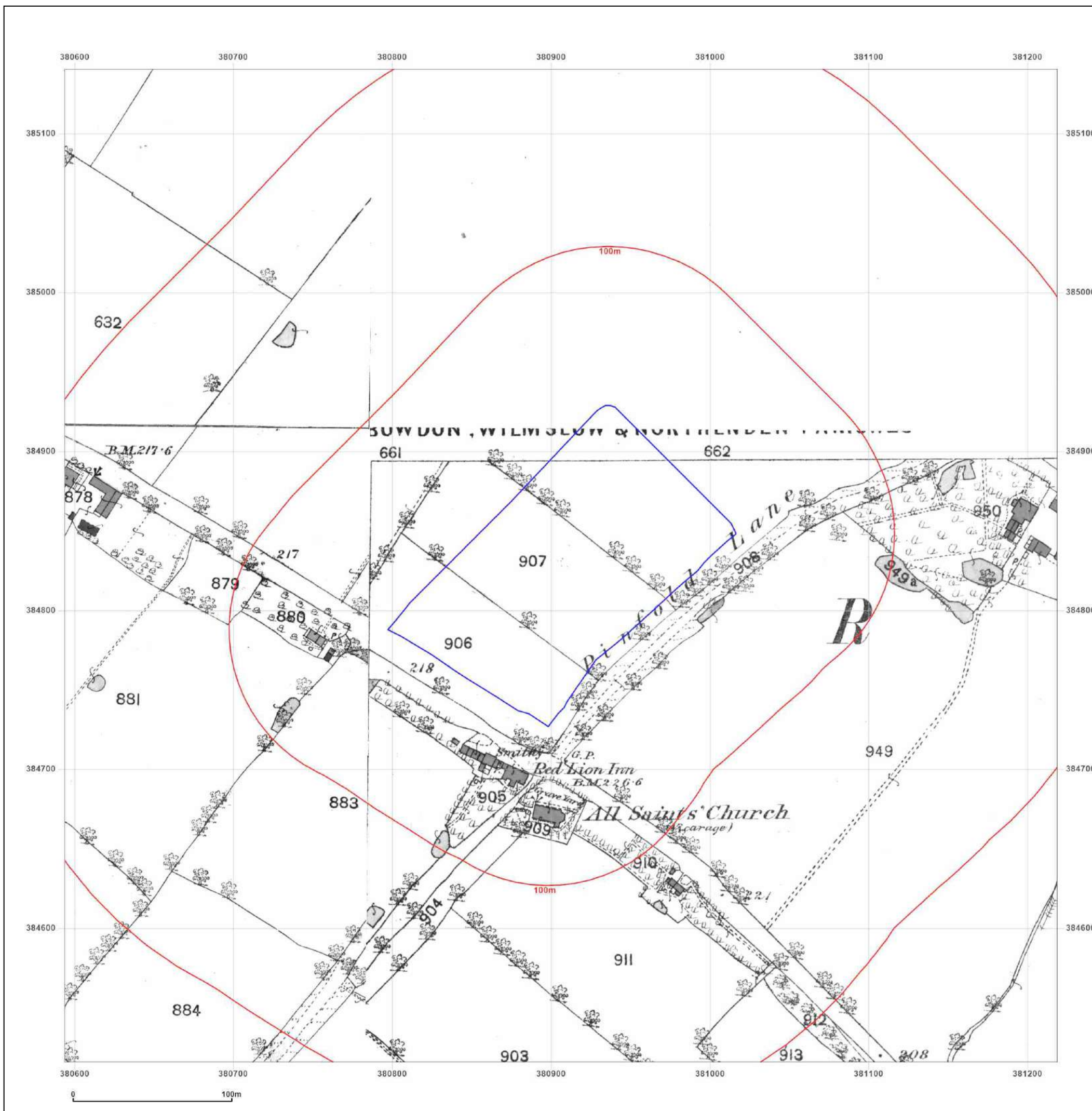


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1877
Revised 1897
Edition 1898
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1897
Edition 1898
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1897
Edition 1898
Copyright N/A
Levelled N/A

Surveyed 1877
Revised 1897
Edition 1898
Copyright N/A
Levelled N/A

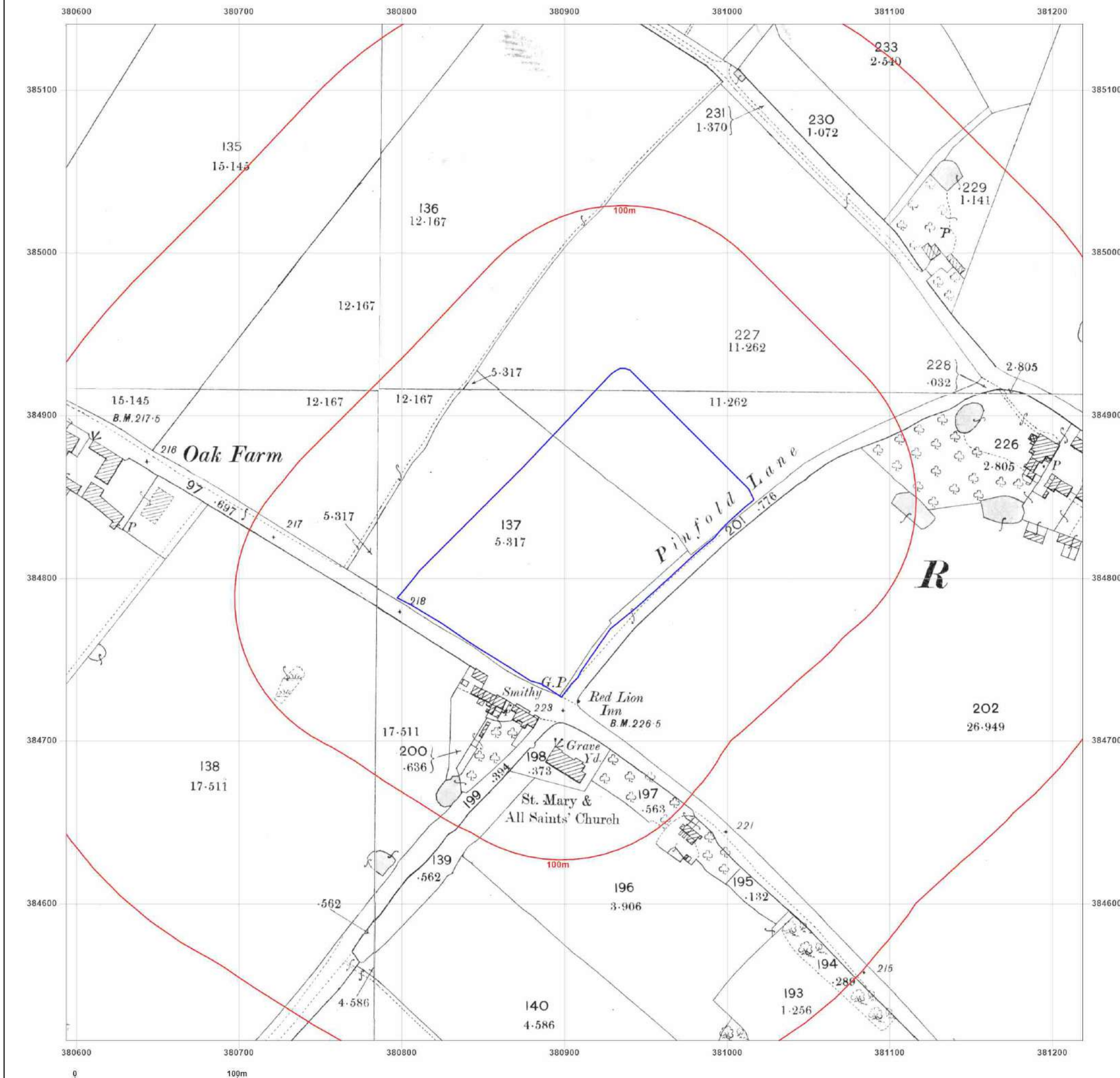


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

Map date: 1909

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1909
Revised 1908
Edition 1909
Copyright N/A
Levelled N/A

Surveyed 1909
Revised 1908
Edition 1909
Copyright N/A
Levelled N/A

Surveyed 1909
Revised 1908
Edition 1909
Copyright N/A
Levelled N/A

Surveyed 1909
Revised 1908
Edition 1909
Copyright N/A
Levelled N/A

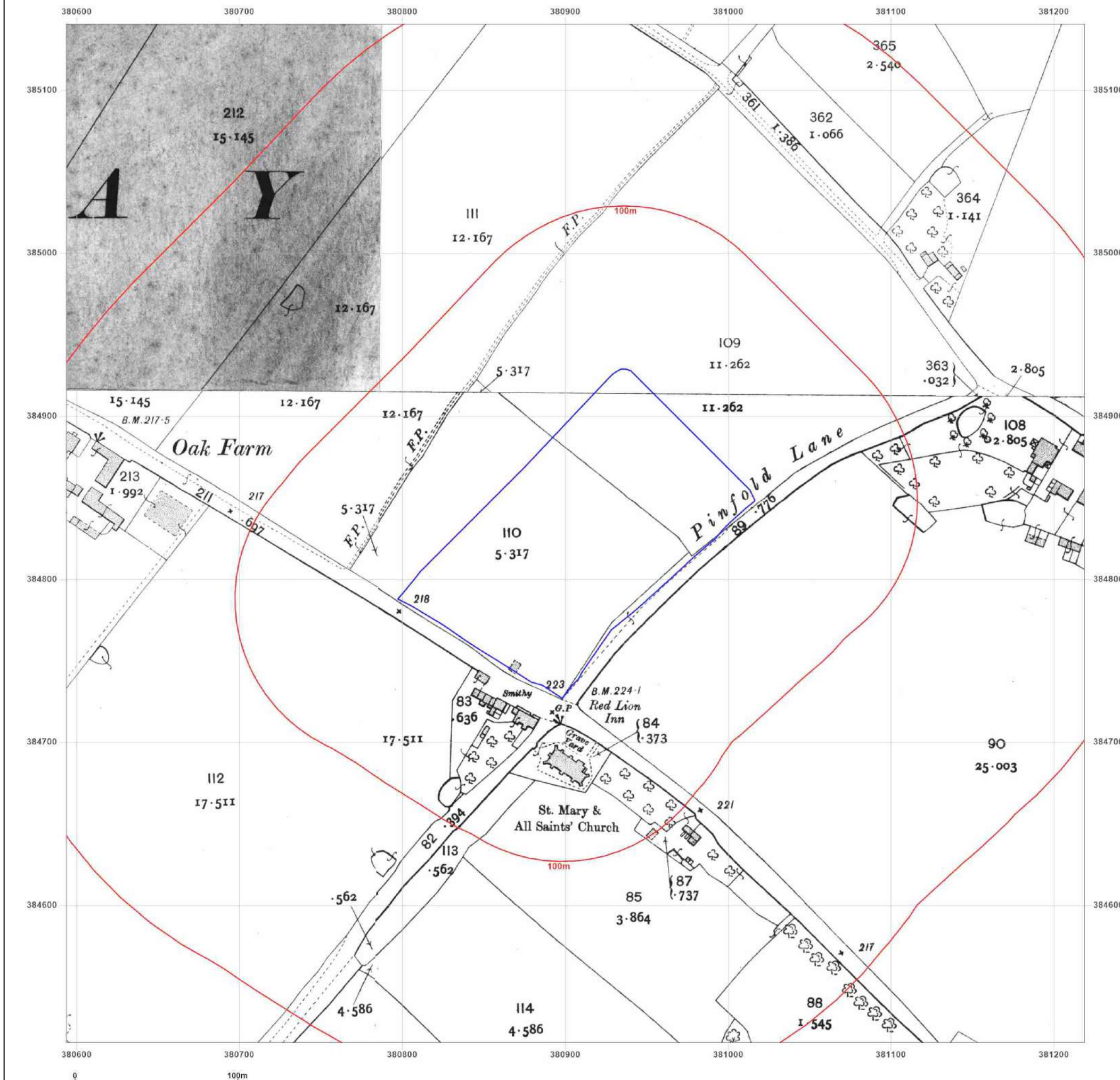


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

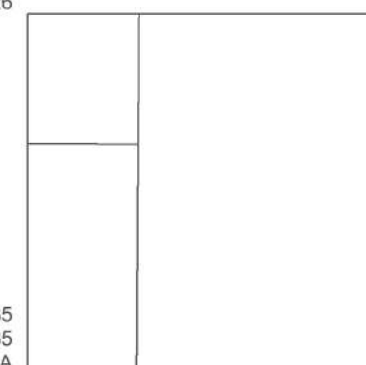
Map date: 1935

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1935
Revised 1935
Edition N/A
Copyright N/A
Levelled 1926



Surveyed 1935
Revised 1935
Edition N/A
Copyright N/A
Levelled 1926

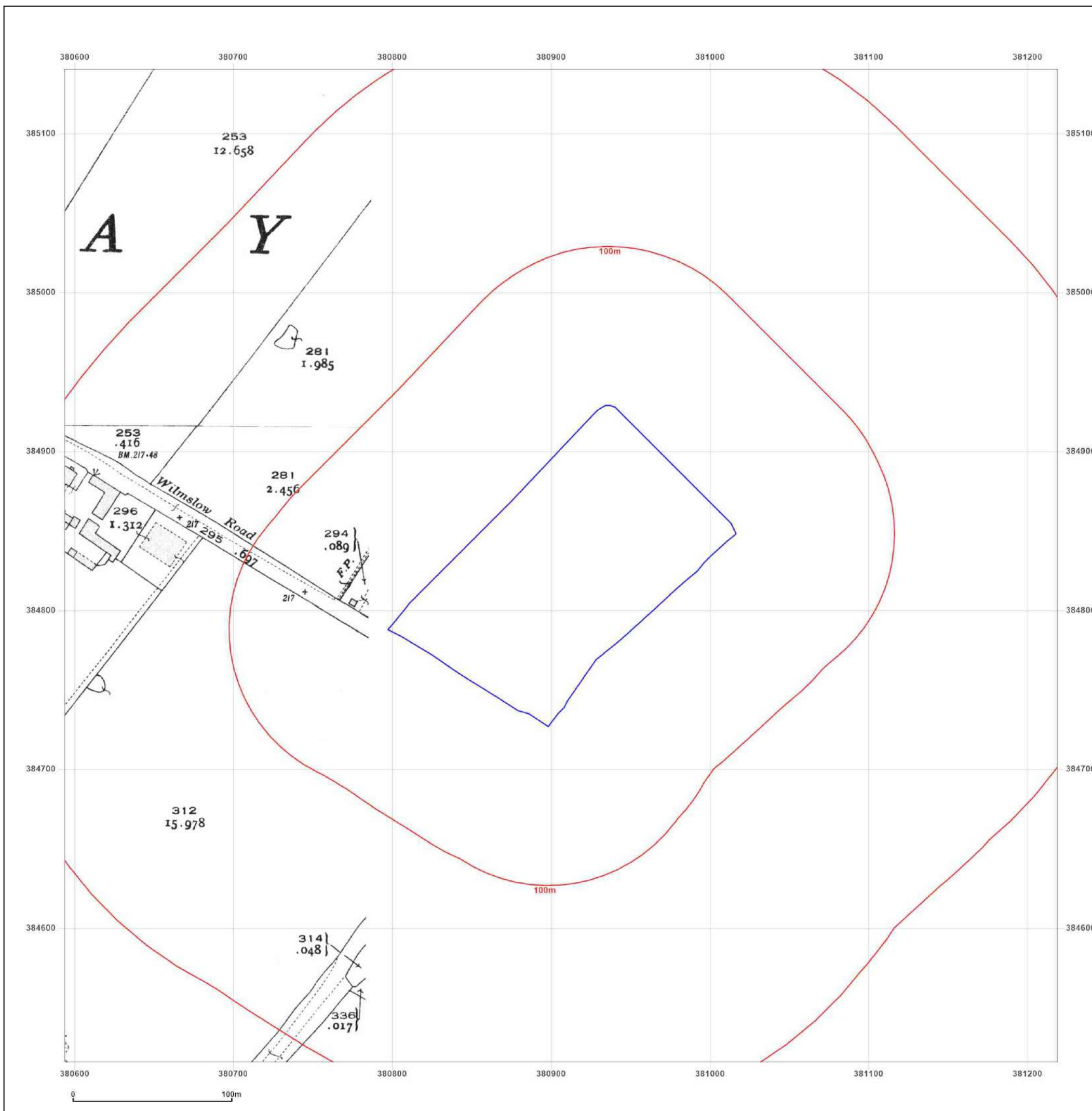


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1963-1968

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1959

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

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1968
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1968
Levelled 1959

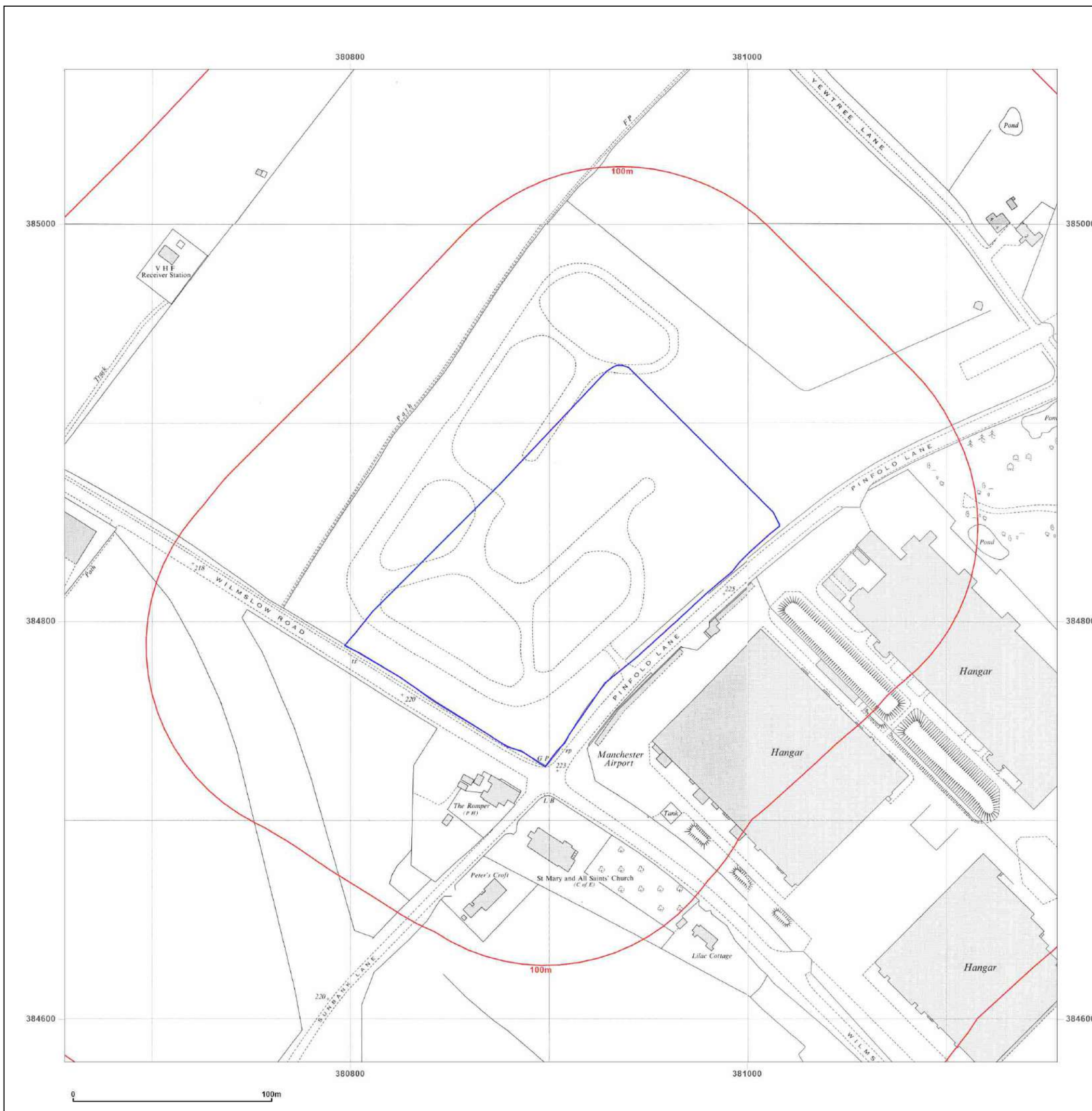


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1964-1969

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1959

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1959

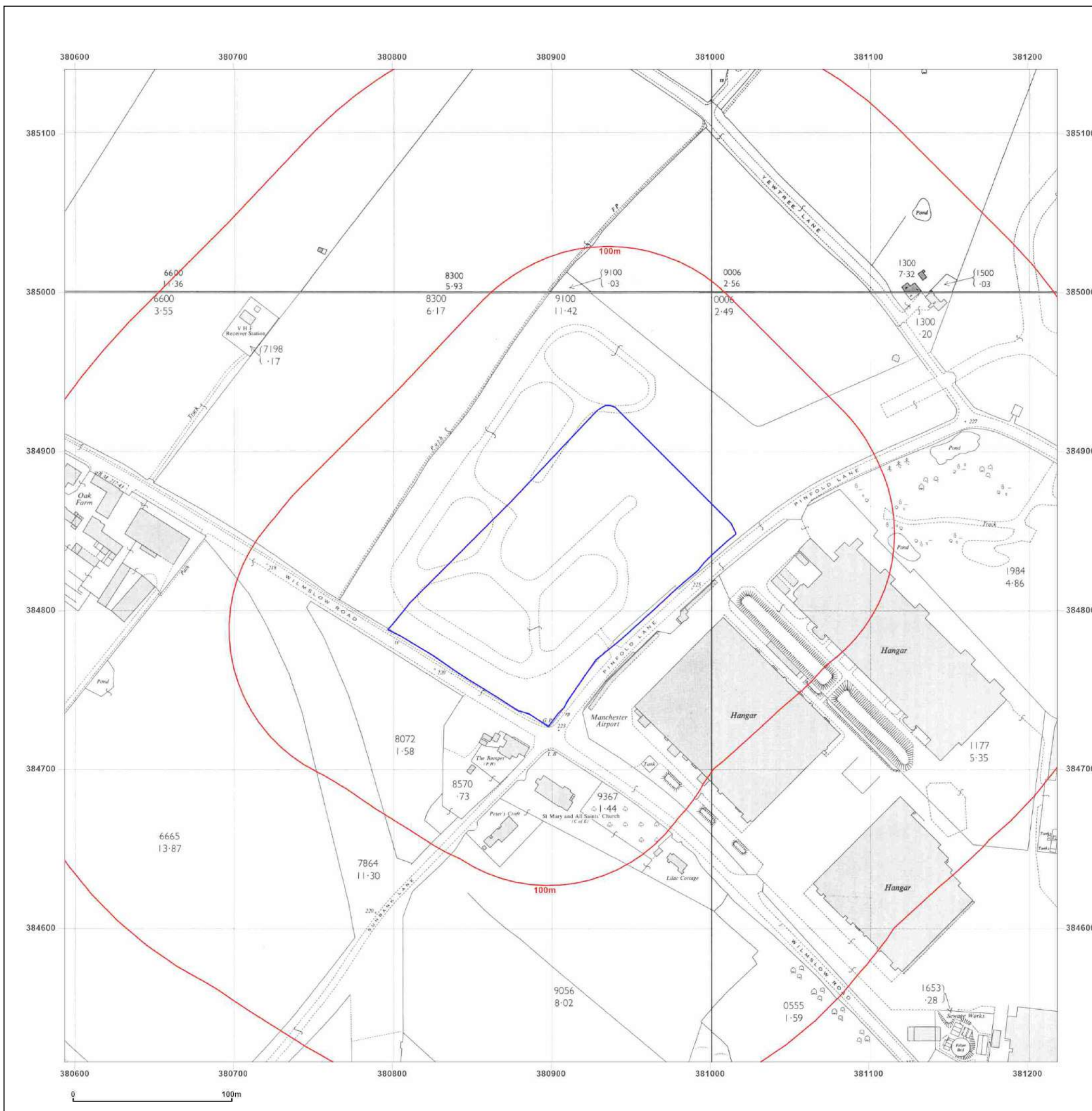


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1973-1974

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1962
Revised 1973
Edition N/A
Copyright 1974
Levelled 1959

Surveyed 1968
Revised 1973
Edition N/A
Copyright 1973
Levelled 1959



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1987

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1959
Revised 1987
Edition N/A
Copyright 1987
Levelled 1959

Surveyed 1959
Revised 1987
Edition N/A
Copyright 1987
Levelled 1959

Surveyed 1959
Revised 1987
Edition N/A
Copyright 1987
Levelled 1959

Surveyed 1959
Revised 1987
Edition N/A
Copyright 1987
Levelled 1959

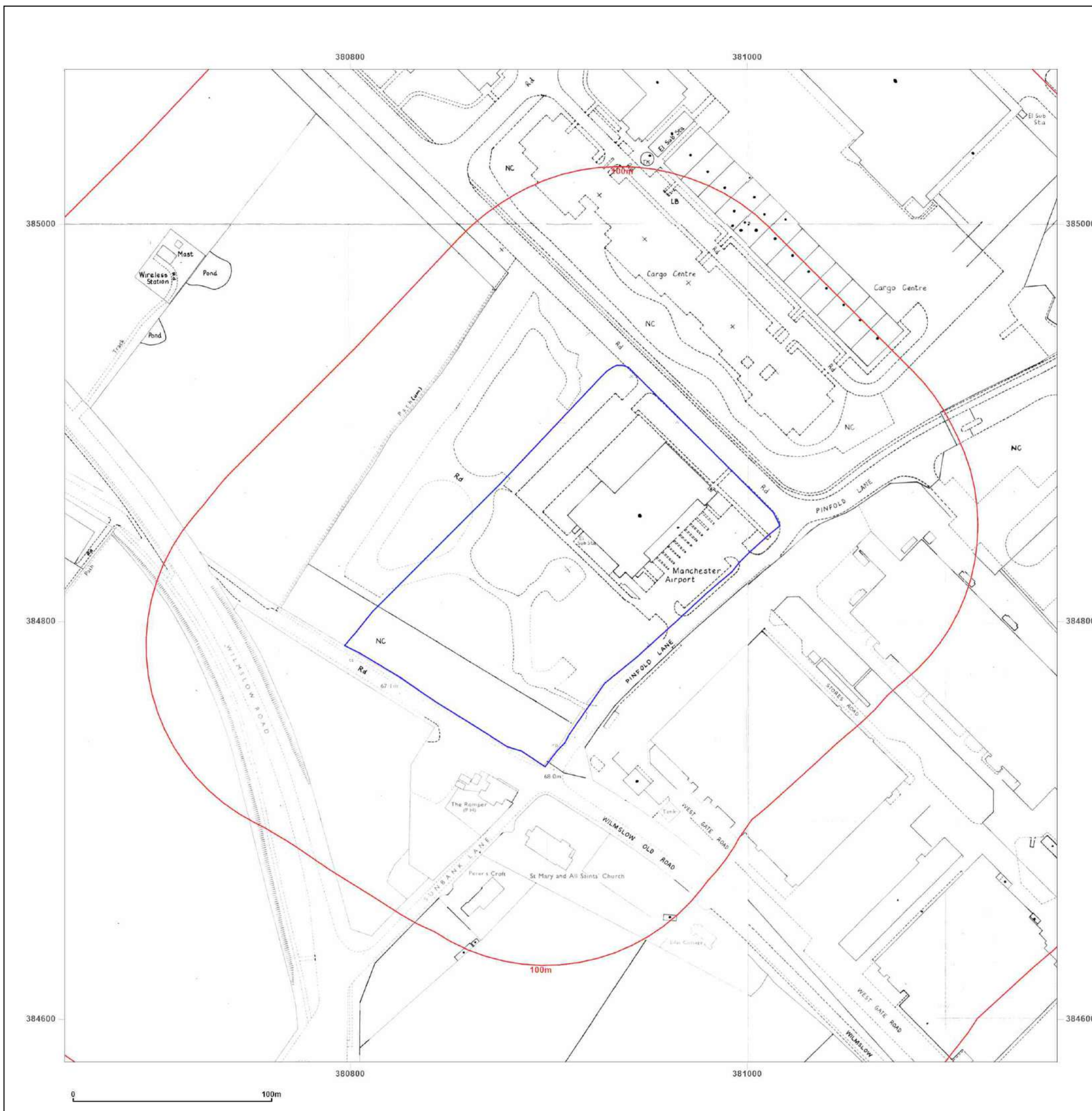


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1990-1992

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1959
Revised 1990
Edition N/A
Copyright 1990
Levelled 1959

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

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

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

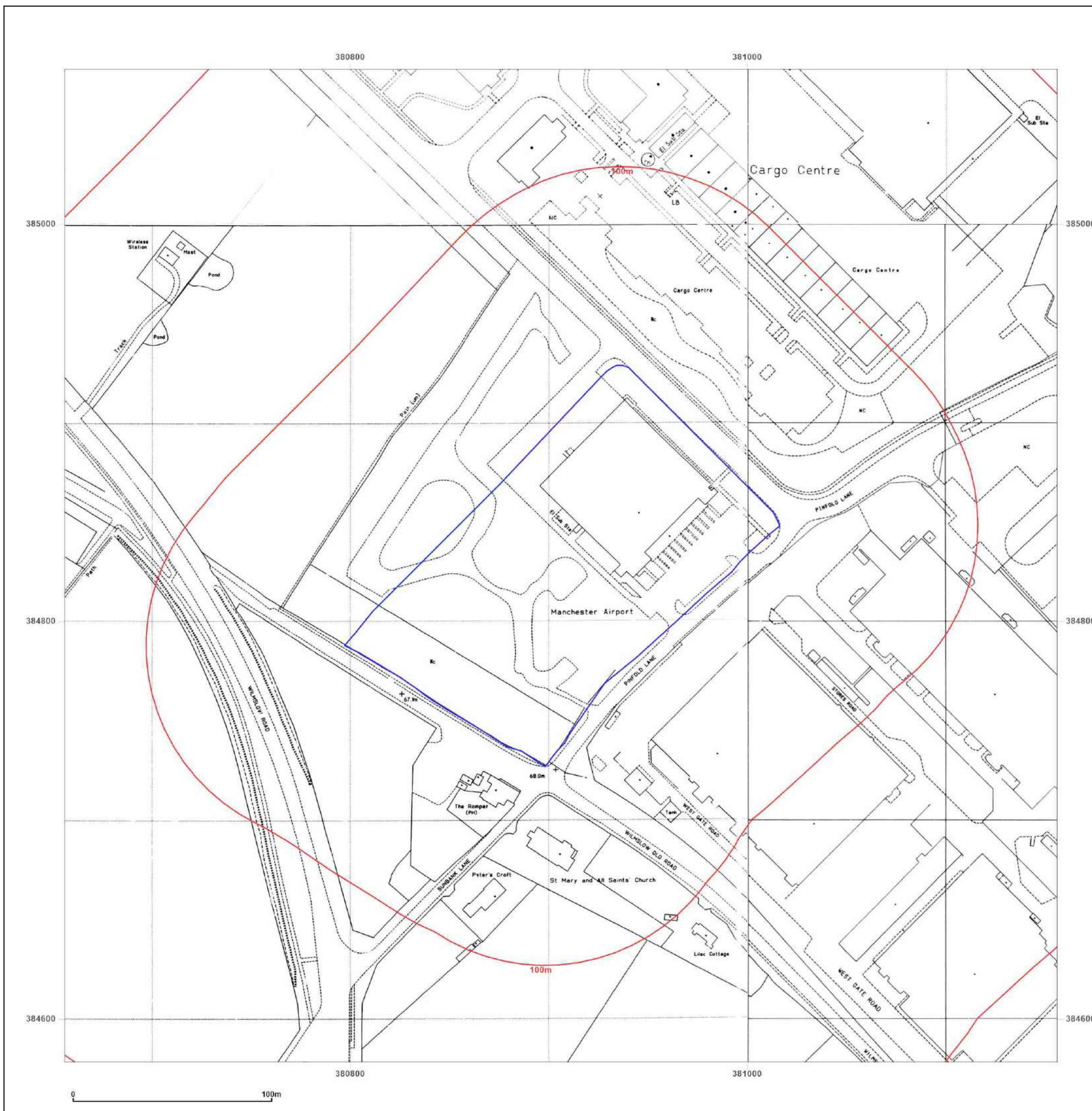


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1991-1995

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1959
Revised 1991
Edition N/A
Copyright 1991
Levelled 1959

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

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

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

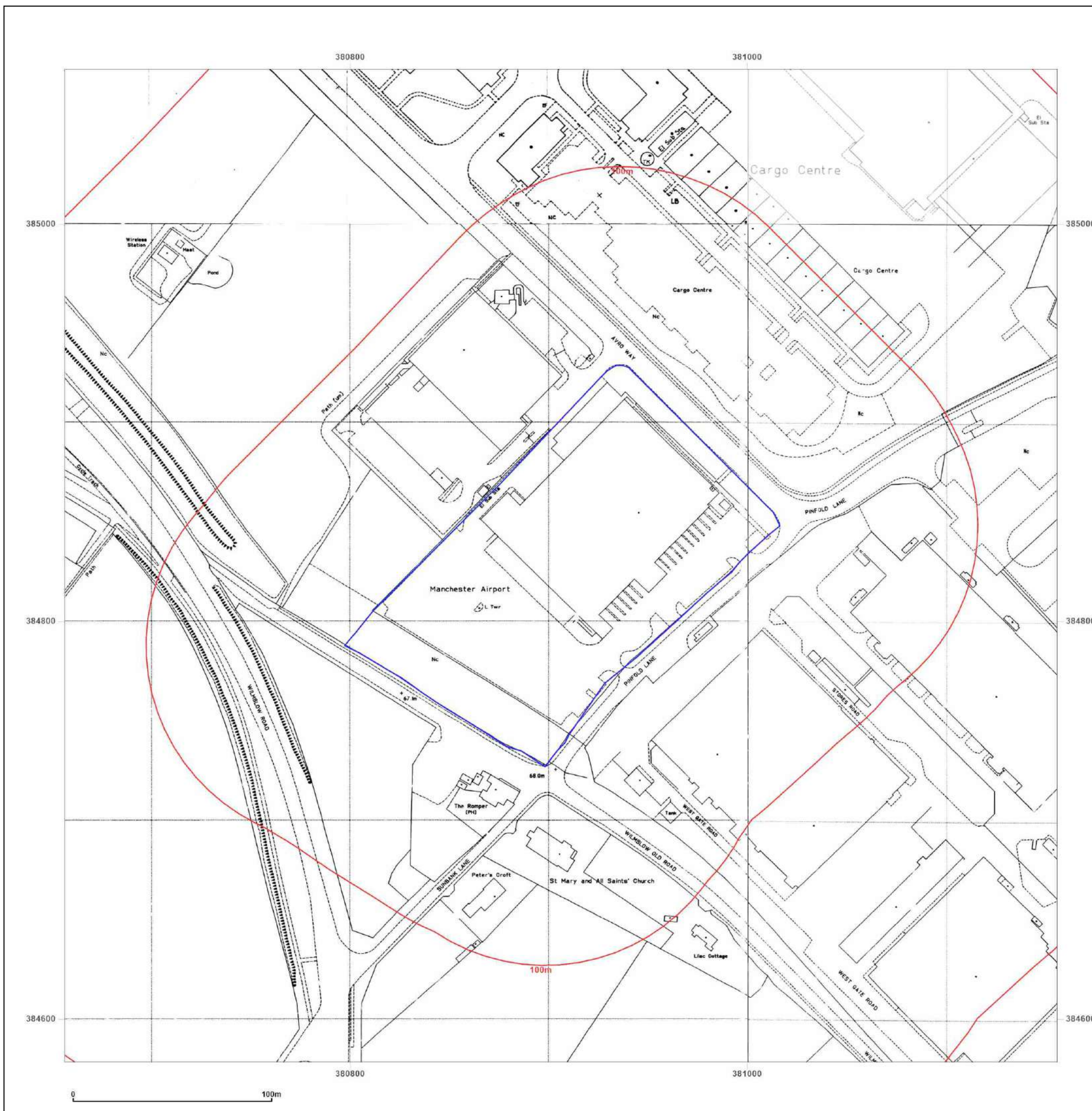


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

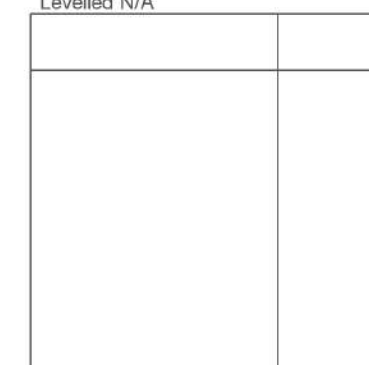
Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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



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

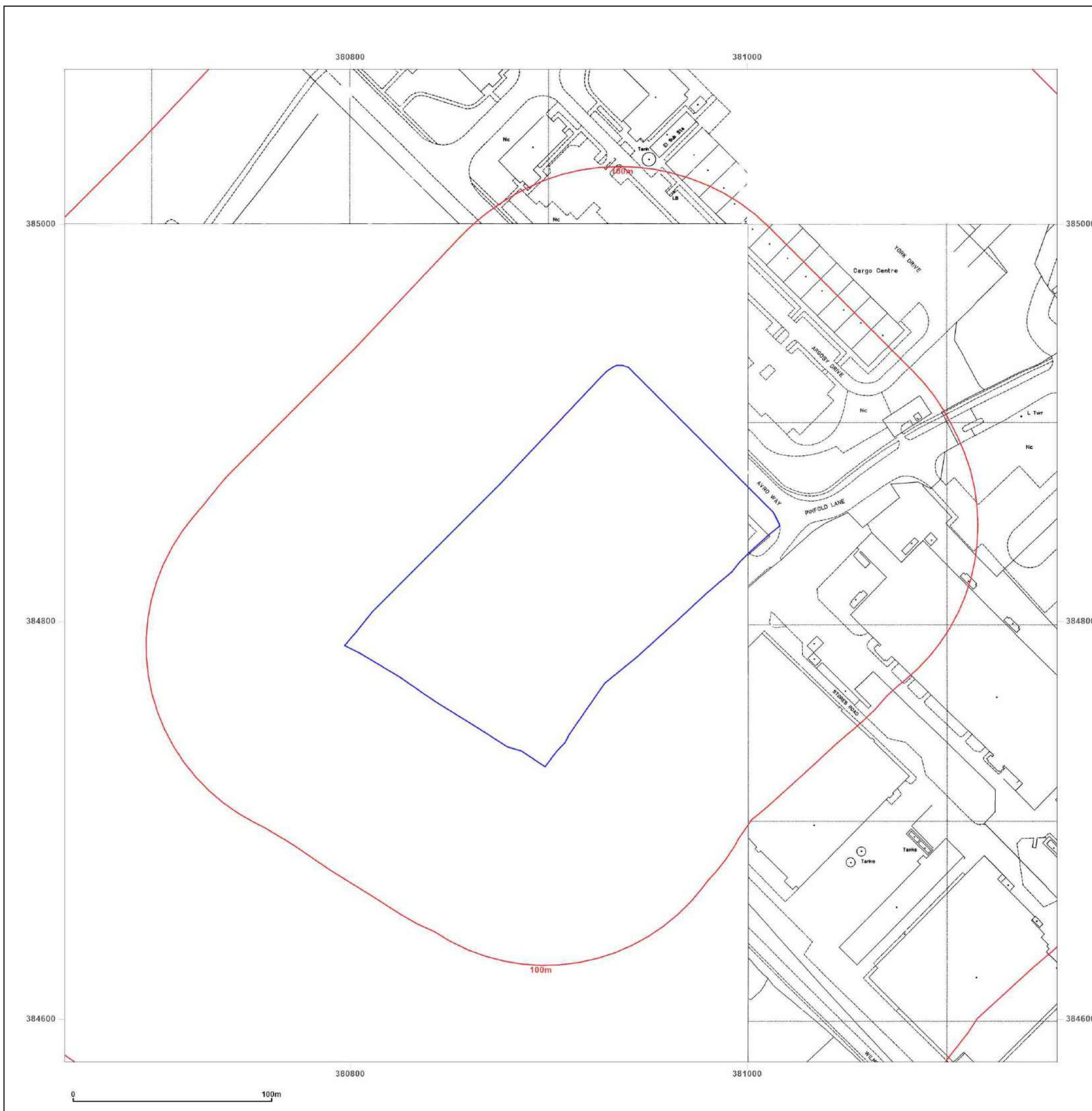


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

Map date: 1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1874
Revised 1897
Edition 1899
Copyright N/A
Levelled N/A

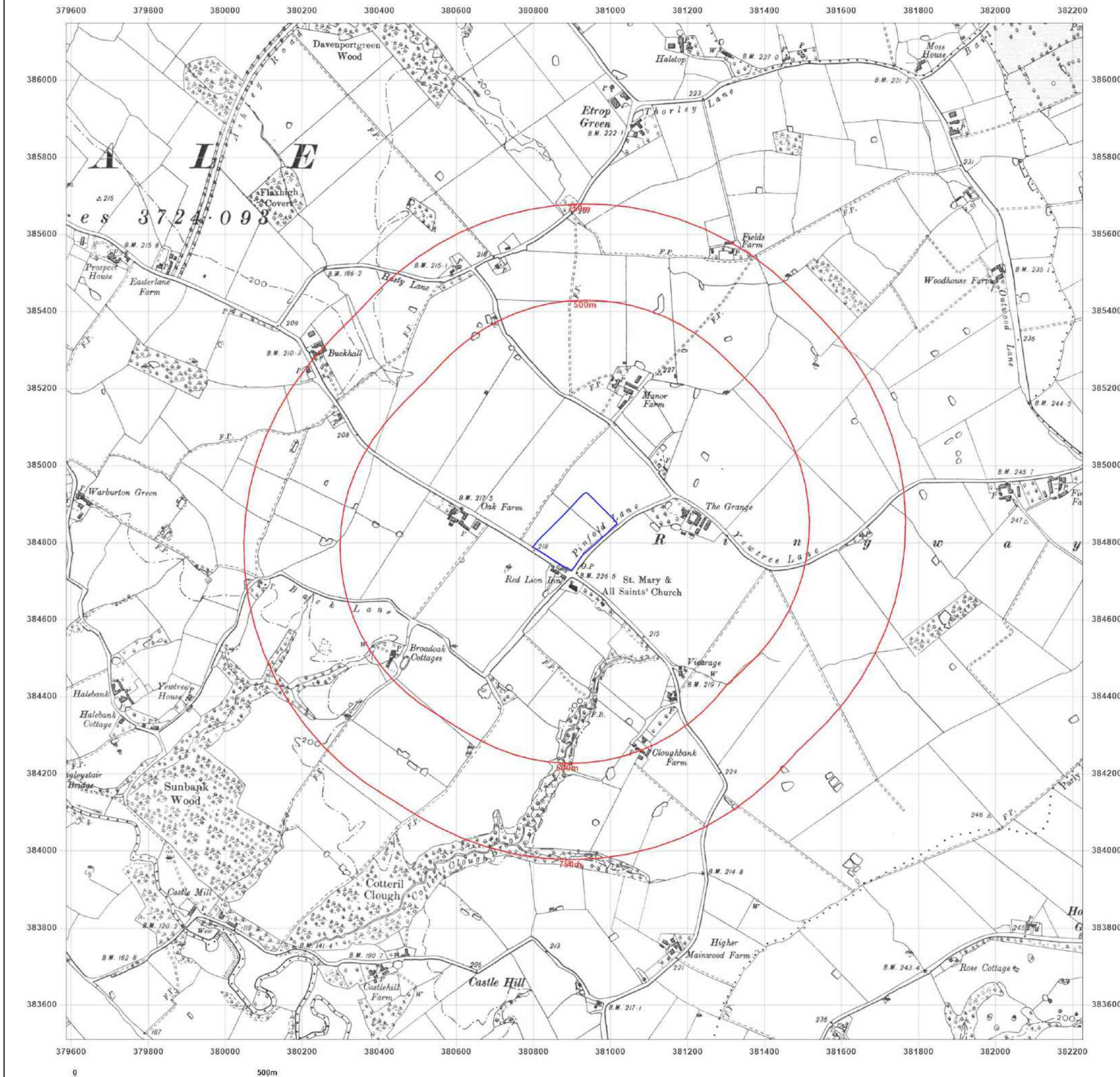


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

Map date: 1910

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1874
Revised 1910
Edition 1910
Copyright N/A
Levelled N/A

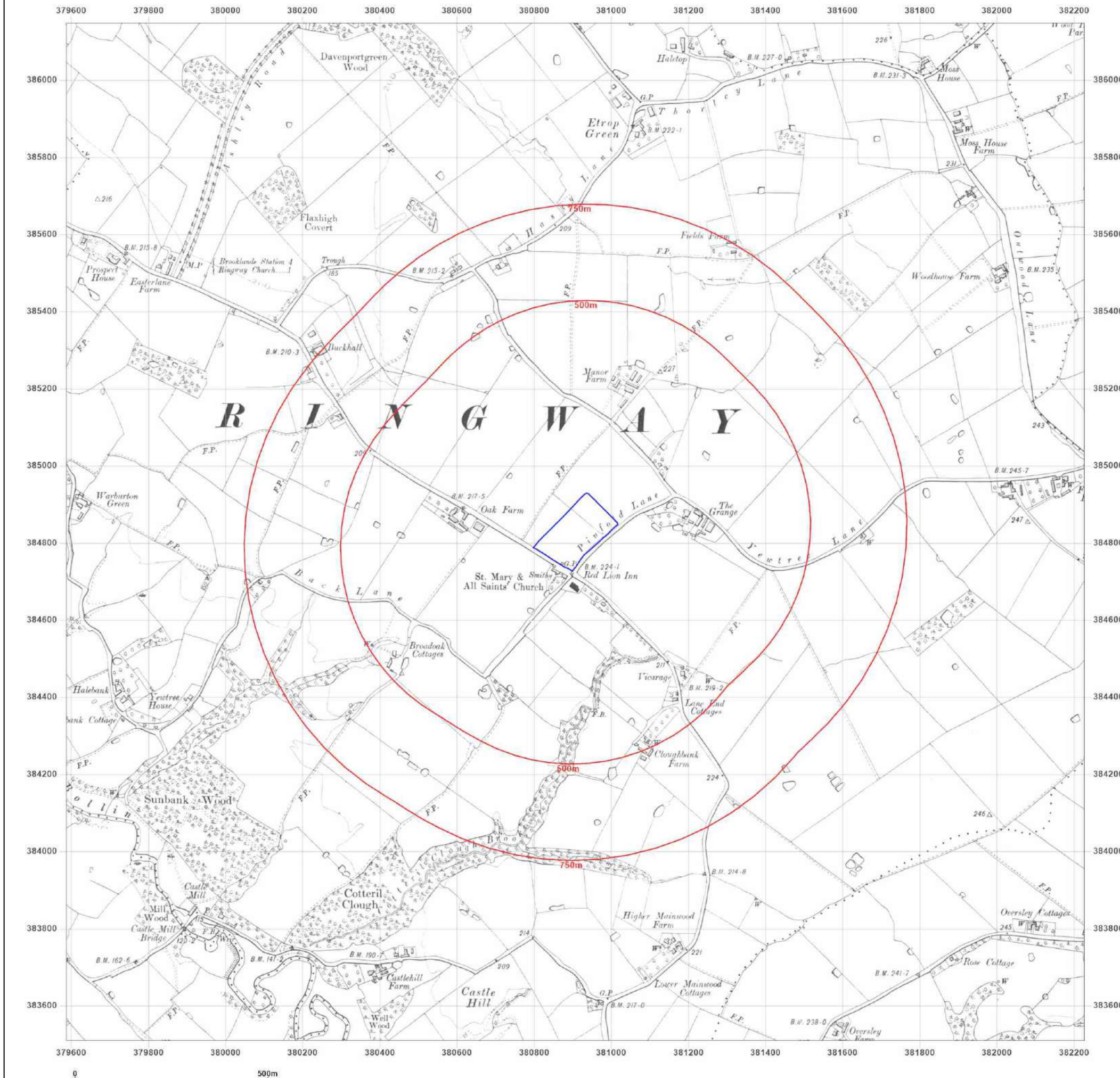


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1874
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

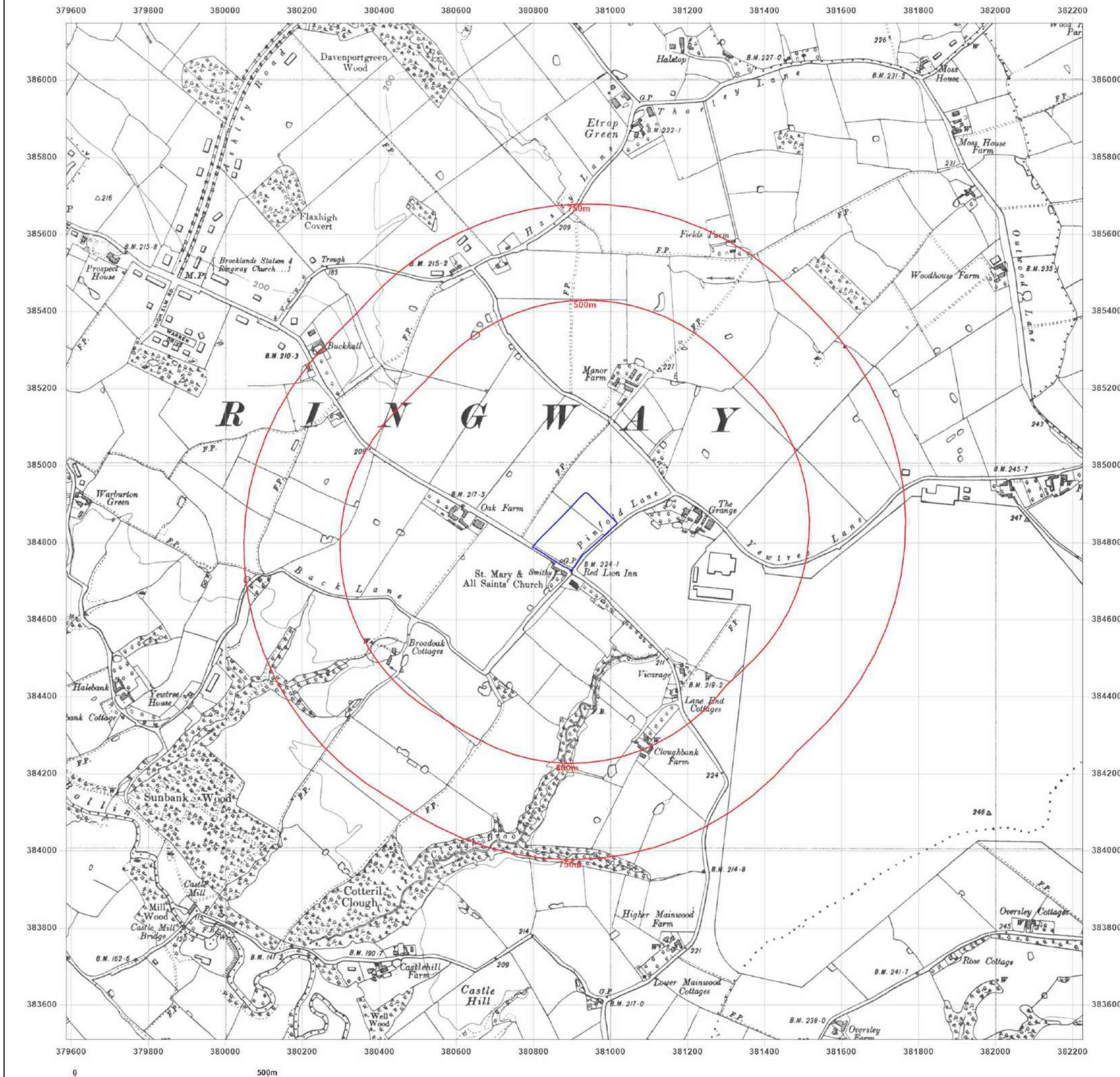


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: Provisional

Map date: 1954

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1949
Revised 1954
Edition N/A
Copyright N/A
Levelled N/A

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

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

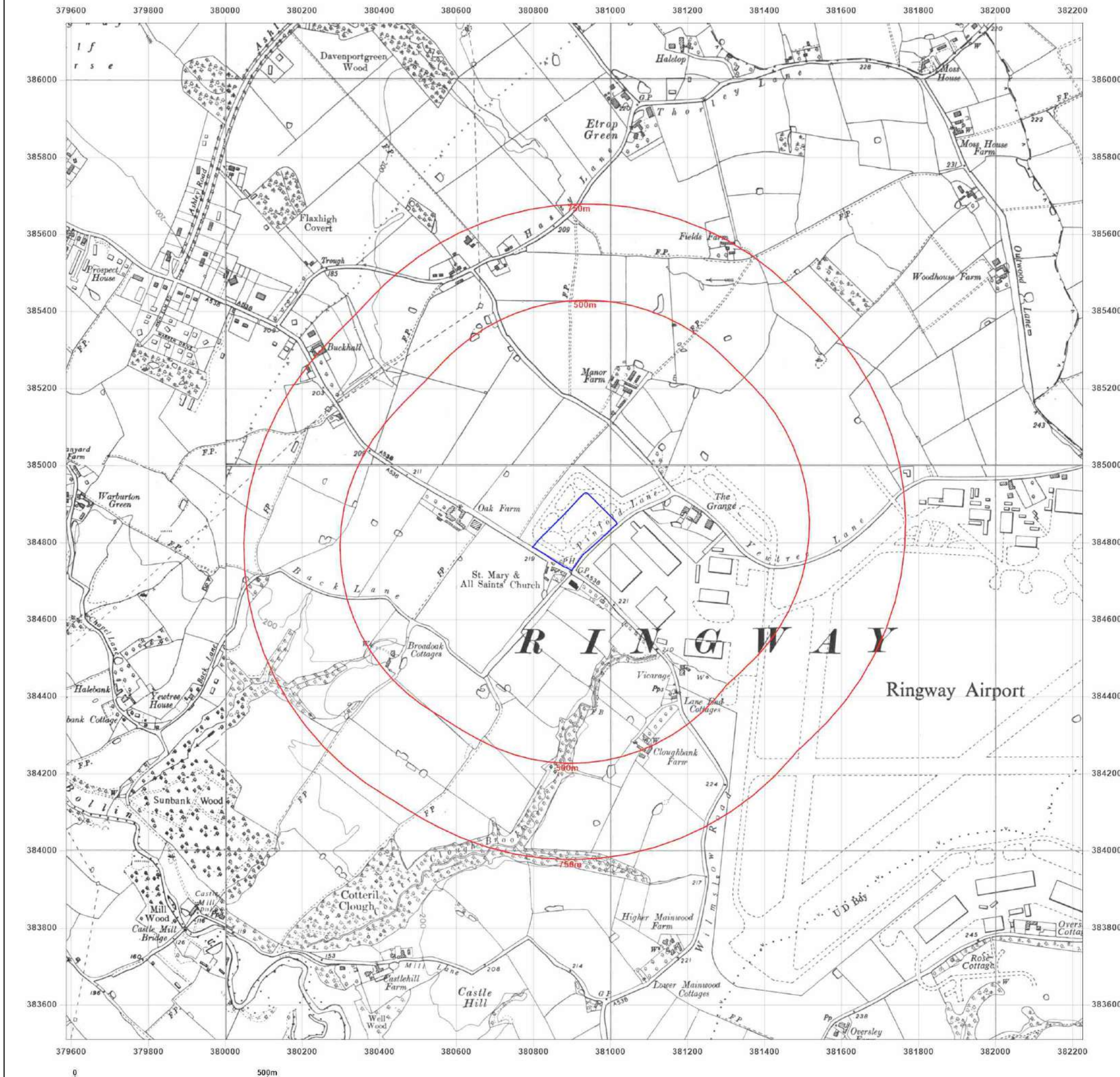


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: Provisional

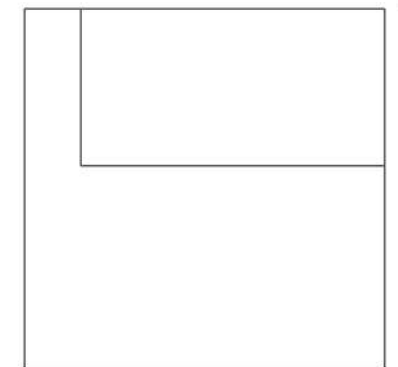
Map date: 1967

Scale: 1:10,560

Printed at: 1:10,560



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



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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

Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1976-1981

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1976
Revised 1979
Edition N/A
Copyright 1980
Levelled 1976

Surveyed 1975
Revised 1977
Edition N/A
Copyright 1977
Levelled 1964

Surveyed 1973
Revised 1981
Edition N/A
Copyright 1981
Levelled 1981

Surveyed 1973
Revised 1976
Edition N/A
Copyright 1976
Levelled 1977

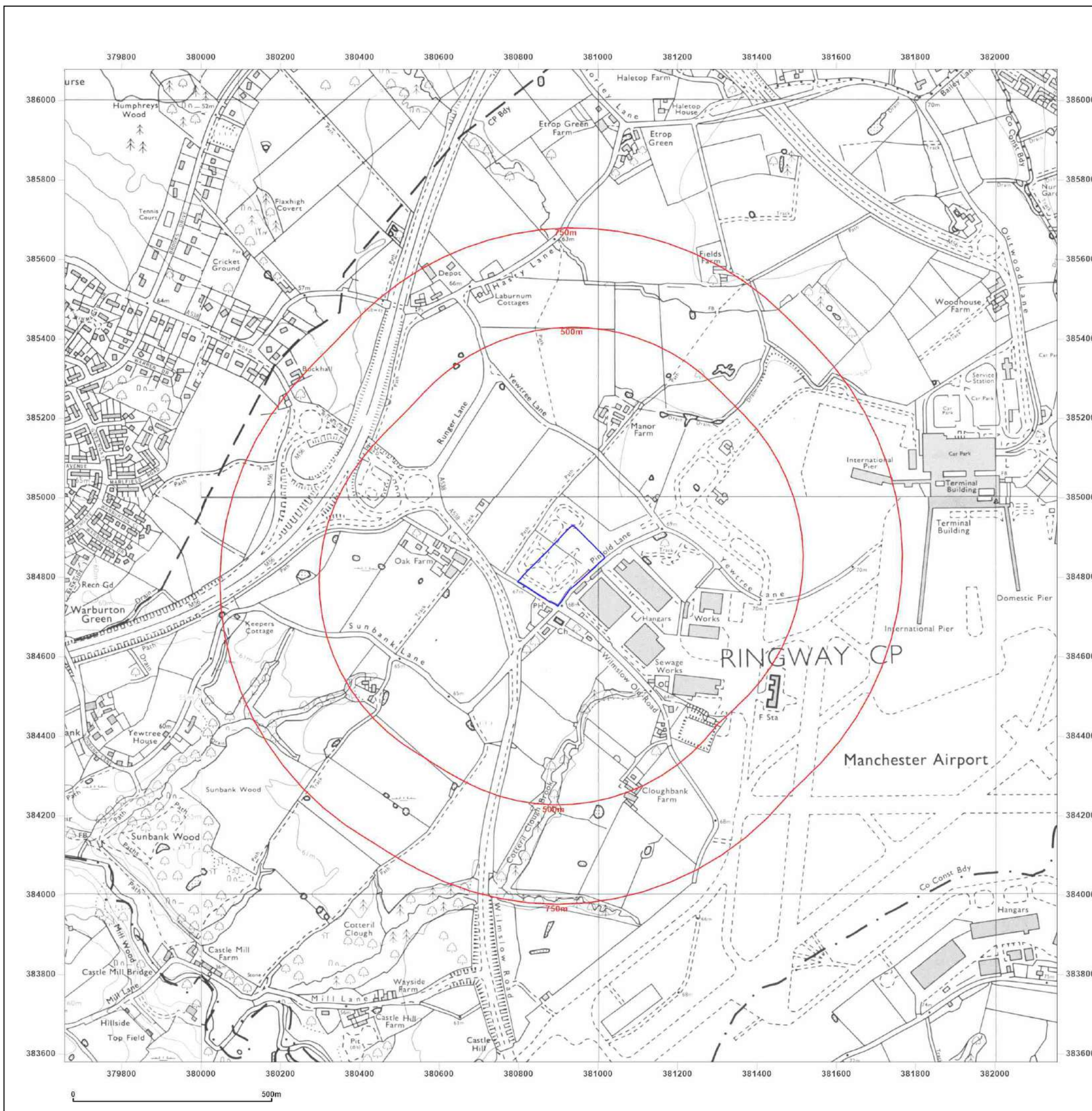


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 1989-1990

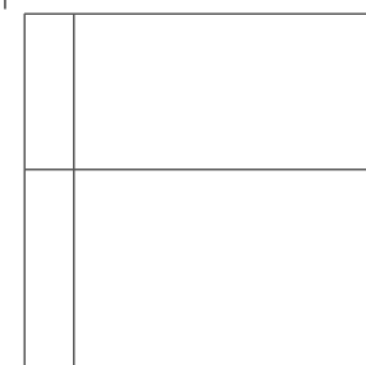
Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1988
Revised 1990
Edition N/A
Copyright 1990
Levelled 1981

Surveyed 1984
Revised 1989
Edition N/A
Copyright 1989
Levelled 1981



Surveyed 1974
Revised 1989
Edition N/A
Copyright 1989
Levelled 1981

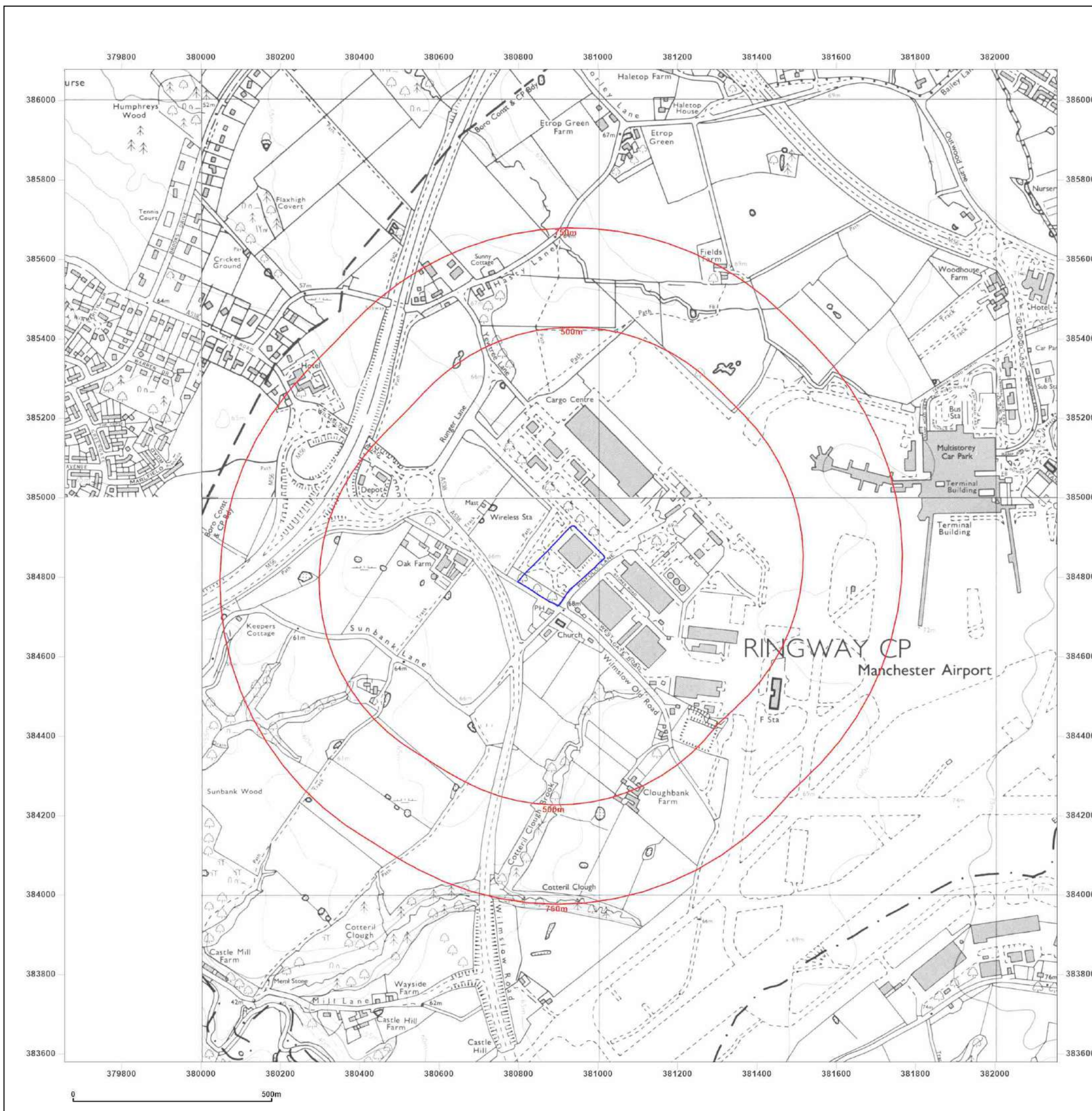


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

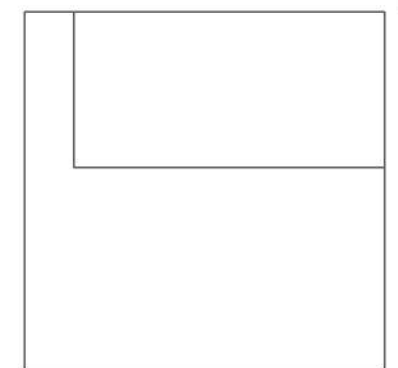
Map date: 1995

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1984
Revised 1995
Edition N/A
Copyright 1995
Levelled 1981

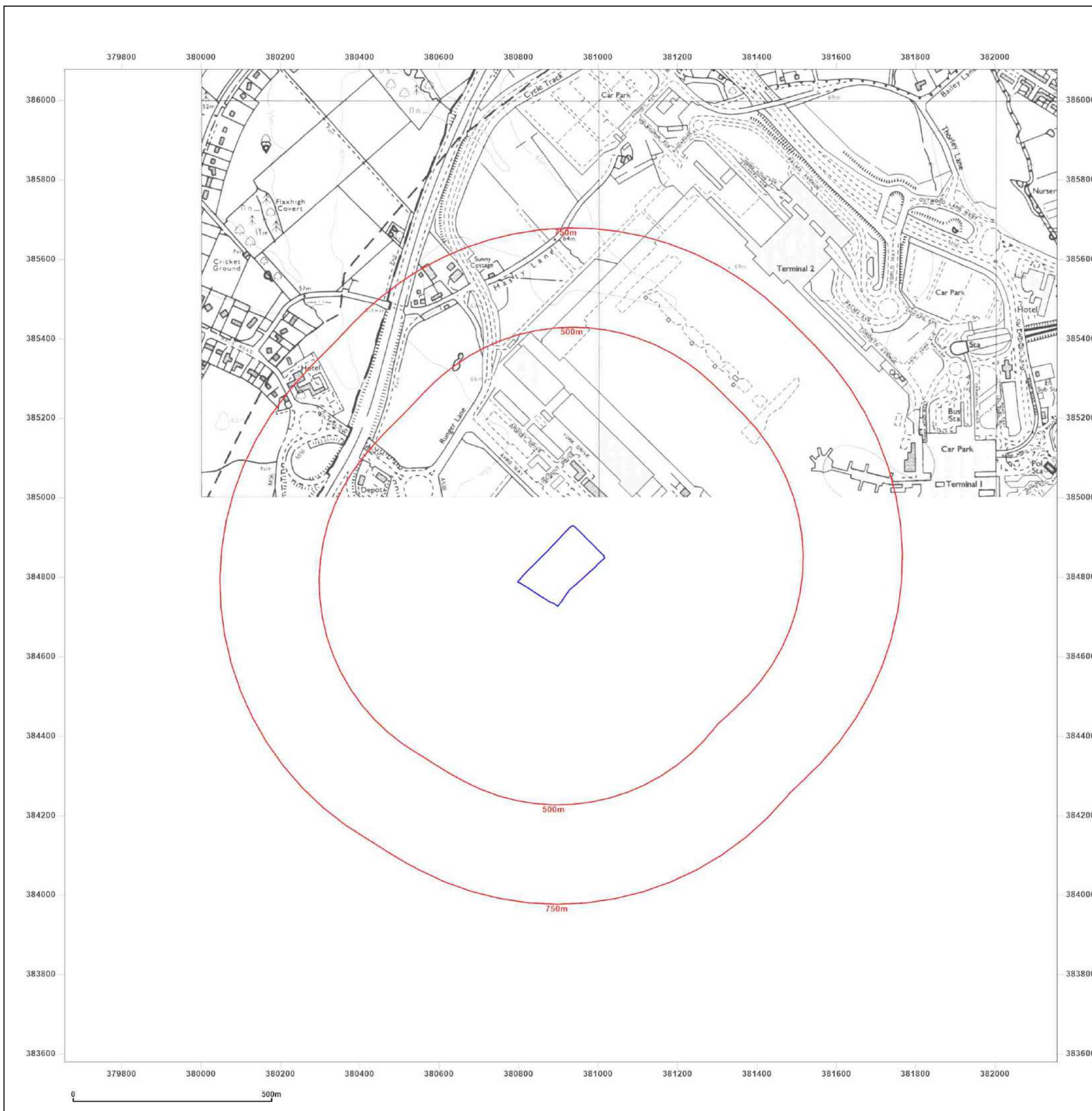


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

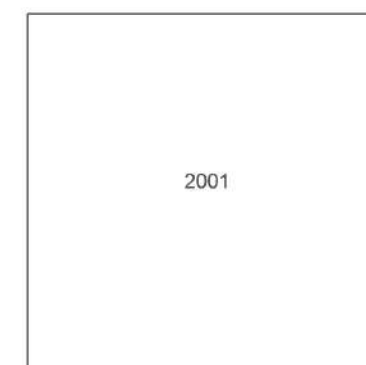
Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

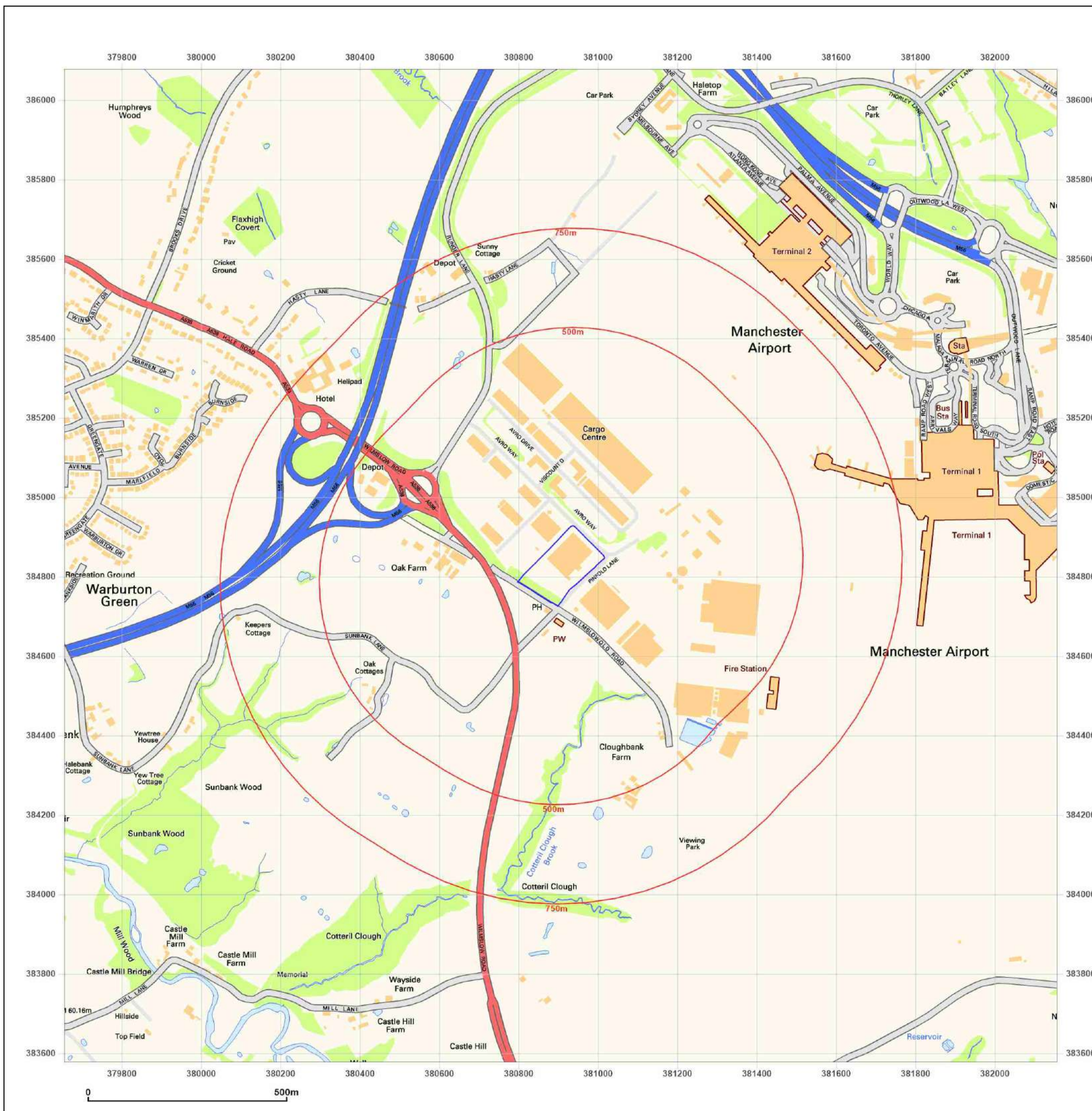


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

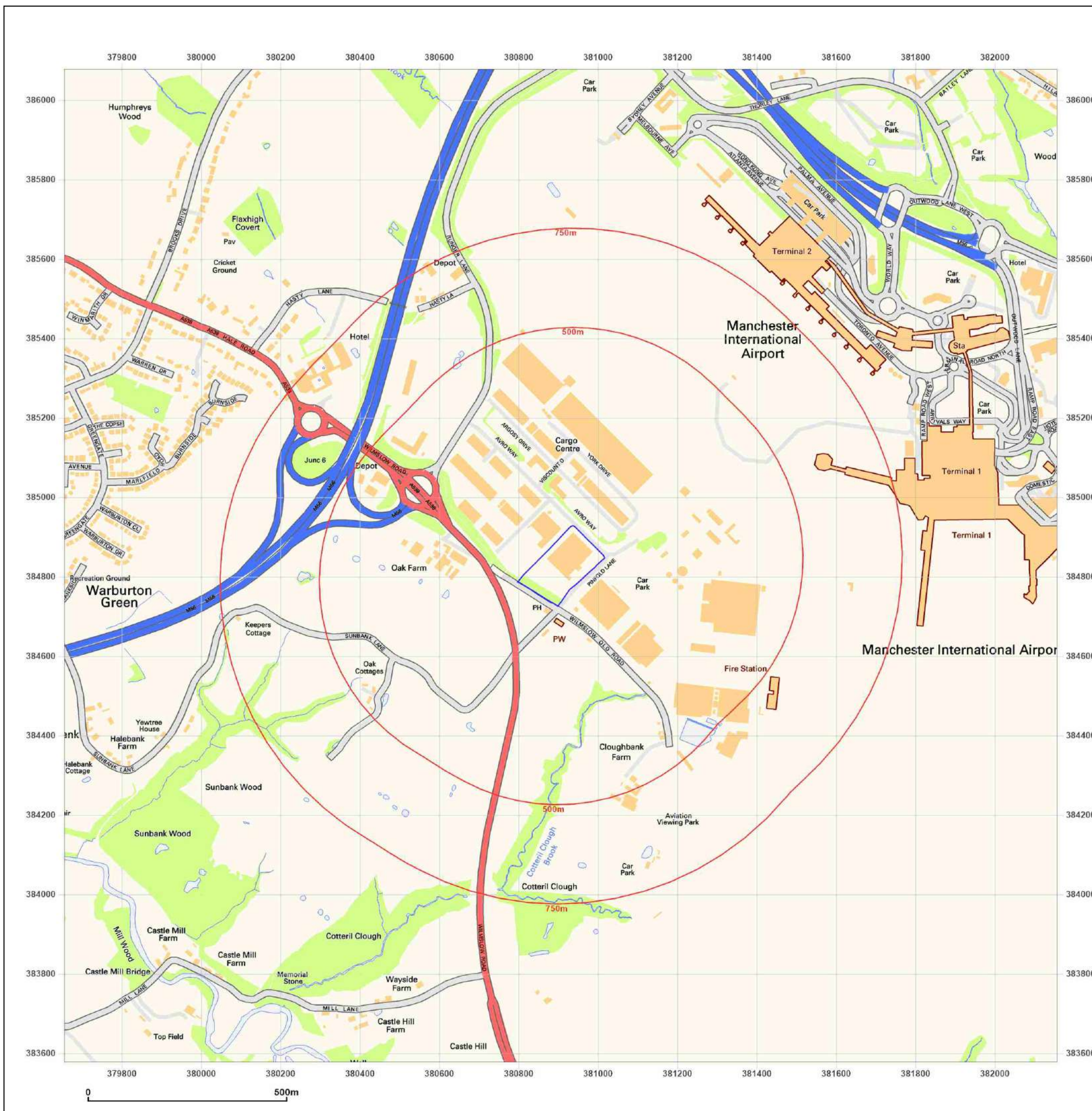


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



Site Details:

AVRO WAY, MANCHESTER,
M90 5PY

Client Ref: MAG_Building_401
Report Ref: GS-8153065
Grid Ref: 380906, 384828

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000

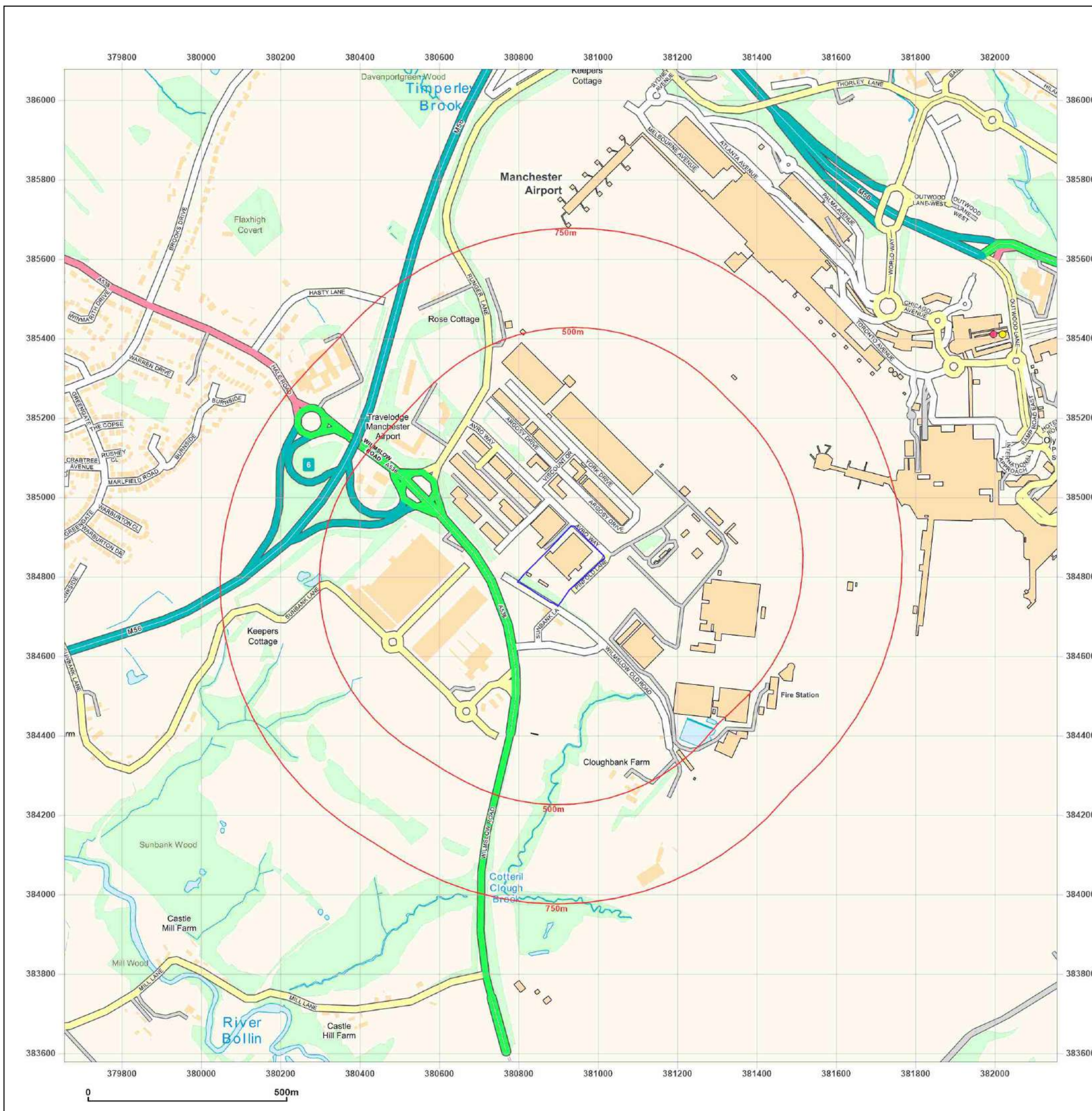


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 26 August 2021

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



2000

Legend

 MAG Building 401



Google Earth

Image © 2021 The GeoInformation Group



300 m

2003

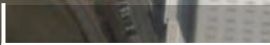
Legend

 MAG Building 401



Google Earth

Image © 2021 Maxar Technologies

  300 m

2005

Legend

 MAG Building 401



300 m



2009

Legend

 MAG Building 401



300 m



2010

Legend

 MAG Building 401

Google Earth

Image © 2021 Bluesky



300 m



2013

Legend

 MAG Building 401



 N

300 m

2016

Legend

 MAG Building 401



Google Earth

Image © 2021 Maxar Technologies

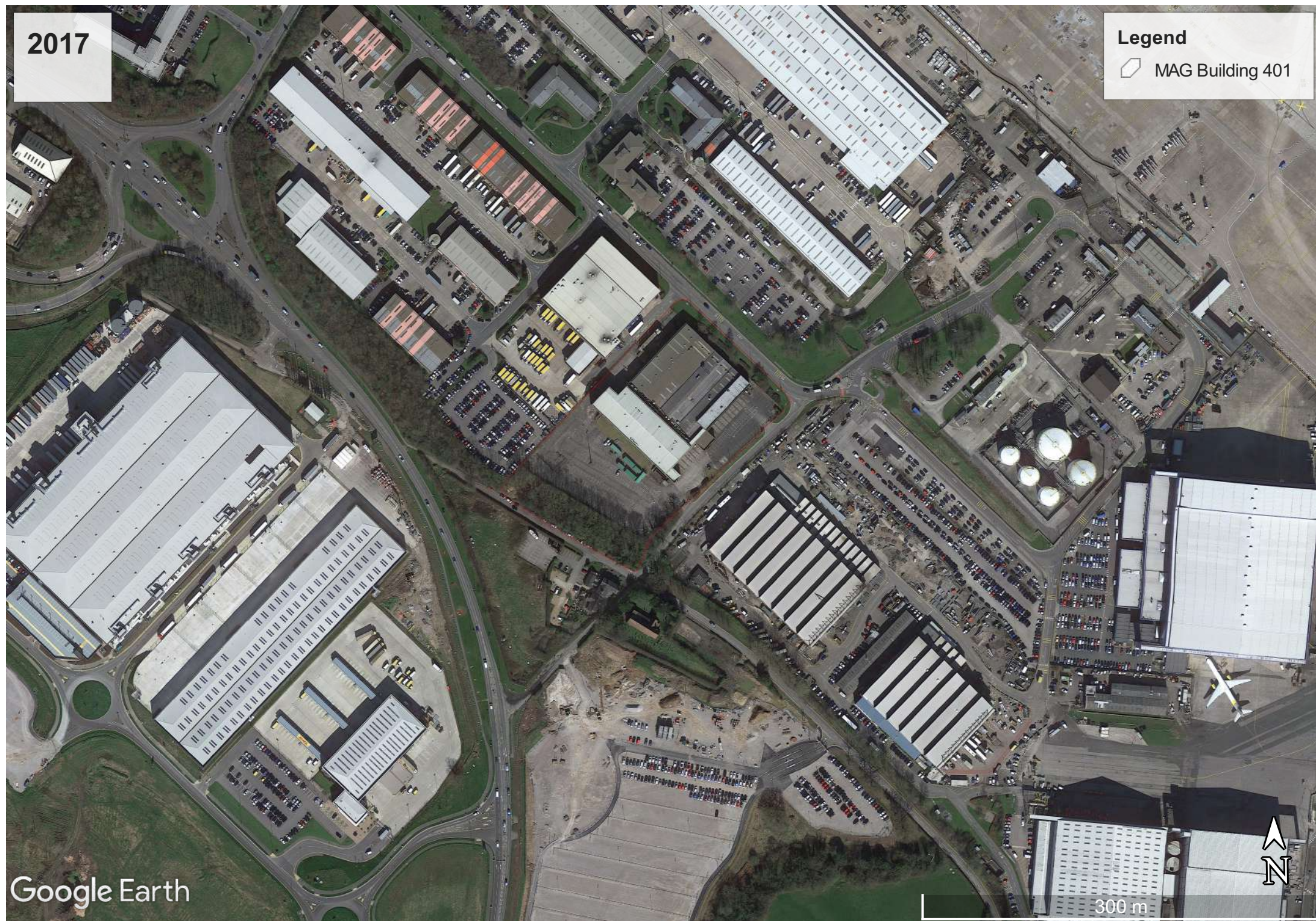


300 m

2017

Legend

 MAG Building 401



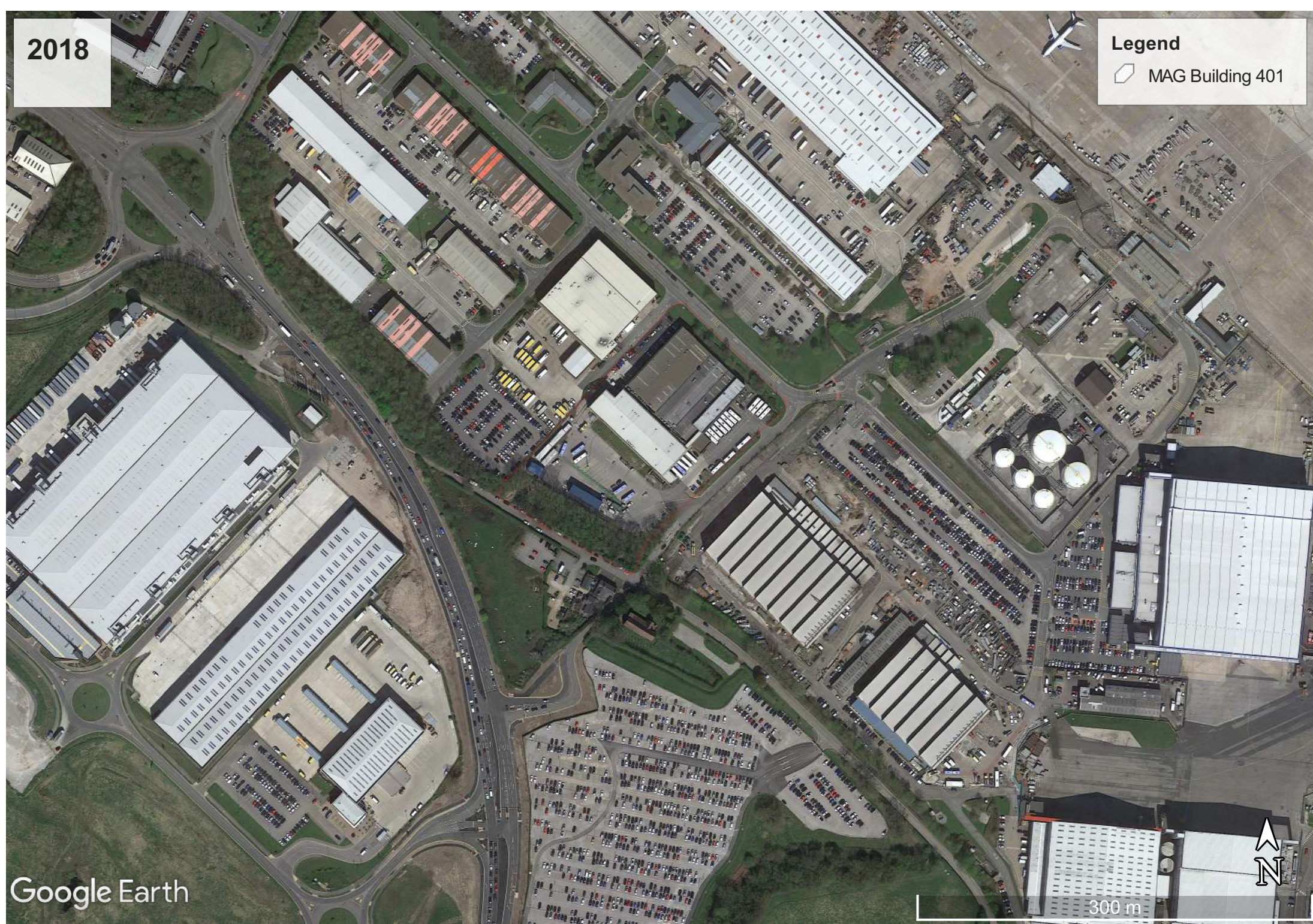
Google Earth

300 m

2018

Legend

 MAG Building 401



Google Earth



300 m

2019

Legend

 MAG Building 401



Google Earth



300 m

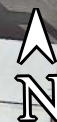
2020

Legend

 MAG Building 401

Google Earth

300 m



2021

Legend

 MAG Building 401

Google Earth



300 m



Appendix C BGS Recorded Borehole Logs

DUNELM DRILLING CO.

BOREHOLE RECORD

Contract No. C7100

Client: WHITE YOUNG CONSULTING ENGINEER

Ground Level.

Location CATERAIR MANCHESTER AIRPORT

Date 4/1/94

BOREHOLE No...... **BH6 + BH7**

Depth	Thick- ness	Legend	Description of Strata	Type of Sample	C kN/m ²	M %	Ø	Density Kg/m ³	N
<u>BH6</u>									
0.60	0.60		SOFT MOIST MEDIUM BROWN CLAY WITH STONES AND BROKEN TARMAC - <u>MADE GROUND</u>	U100 0.75	45.4	27.4	-	1820	
	0.90		FIRM MOTTLED BROWN AND GREY <u>CLAY</u>	U100 1.60	31.9	23.5	-	1885	
1.50			INITIALLY VERY SOFT	U100 2.75	89.2	21.5	-	2030	
	2.50		REDDISH BROWN CLAY	U100 4.00	111.1	20.4	-	2040	
			SLIGHTLY MAZLY WITH OCCASIONAL GREY VEINS						
			BECOMING STIFF WITH DEPTH						
4.00									
<u>DRY</u>									
<u>BH7</u>									
0.60	0.60		LOOSE CONCRETE, BRICKS, STONES, CLAY AND TARMAC	SPT 0.90					12
0.90	0.30		REINFORCED CONCRETE OBSTRUCTION	U100 1.50	86.2	19.6	-	2110	
1.20	0.30		MED. DENSE HARDLORE <u>FILL</u> (POSSIBLE OLD RUNWAY)	U100 2.50	180.0	21.8	-	2060	
	1.10		FIRM TO STIFF MEDIUM BROWN AND GREY MOTTLED <u>CLAY</u>	U100 4.00	108.0	15.9	-	2030	
2.30			FIRM TO STIFF TO STIFF						
	1.70		DARK REDDISH BROWN						
			SLIGHTLY MAZLY <u>CLAY</u>						
4.00									
SLIGHT WATER IN UPPER MADE GROUND - REMAINDER DRY									
Water Struck at <u>AS SHOWN</u> Standing Water Level <u> </u>									

DUNELM DRILLING CO.

BOREHOLE RECORD

Contract No. C7100

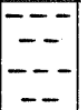
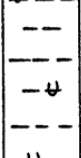
Client: WHITE YOUNG CONSULTING ENGINEER

Ground Level.

Location. CATERAIR MANCHESTER AIRPORT

Date 4/1/94

BOREHOLE No. BH6 + BH7

Depth	Thick- ness	Legend	Description of Strata	Type of Sample	C kN/m ²	M %	Ø	Density Kg/m ³	N
<u>BH6</u>									
0.60	0.60		SOFT MOIST MEDIUM BROWN CLAY WITH STONES AND BROKEN TARMAC - <u>MADE GROUND</u>	U100 0.75	45.4	27.4	-	1820	
1.50	0.90		FIRM MOTTLED BROWN AND GREY <u>CLAY</u>	U100 1.60	31.9	23.5	-	1885	
2.50	1.00		INITIALLY VERY SOFT REDDISH BROWN CLAY SLIGHTLY MARELY WITH OCCASIONAL GREY VEINS	U100 2.75	89.2	21.5	-	2030	
4.00	1.50		BECOMING STIFF WITH DEPTH	U100 4.00	111.1	20.4	-	2040	
<u>DRY</u>									
<u>BH7</u>									
0.60	0.60		LOOSE CONCRETE, BRICKS, STONES, CLAY AND TARMAC	SPT 0.90					12
0.90	0.30		REINFORCED CONCRETE OBSTRUCTION						
1.20	0.30		MED. DENSE HARDLORE <u>FILL</u> (POSSIBLE OLD RUNWAY)	U100 1.50	86.2	19.6	-	2110	
2.30	1.10		FIRM TO STIFF MEDIUM BROWN AND GREY MOTTLED <u>CLAY</u>	U100 2.50	180.0	21.8	-	2060	
4.00	1.70		FIRM TO STIFF TO STIFF DARK REDDISH BROWN SLIGHTLY MARELY <u>CLAY</u>	U100 4.00	108.0	15.9	-	2030	
SLIGHT WATER IN UPPER MADE GROUND - REMAINDER DRY									
Water Struck at <u>AS SHOWN</u> Standing Water Level <u> </u>									

DUNELM DRILLING CO.

BOREHOLE RECORD

Contract No. C7100

Client: WHITE YOUNG CONSULTING ENGINEERS

Ground Level.....

Location..... **CATERAIR MANCHESTER AIRPORT**

Date 4/1/94

BOREHOLE No. BH8

[illegible]

Water Struck at.....DRY.....

Standing Water Level.....

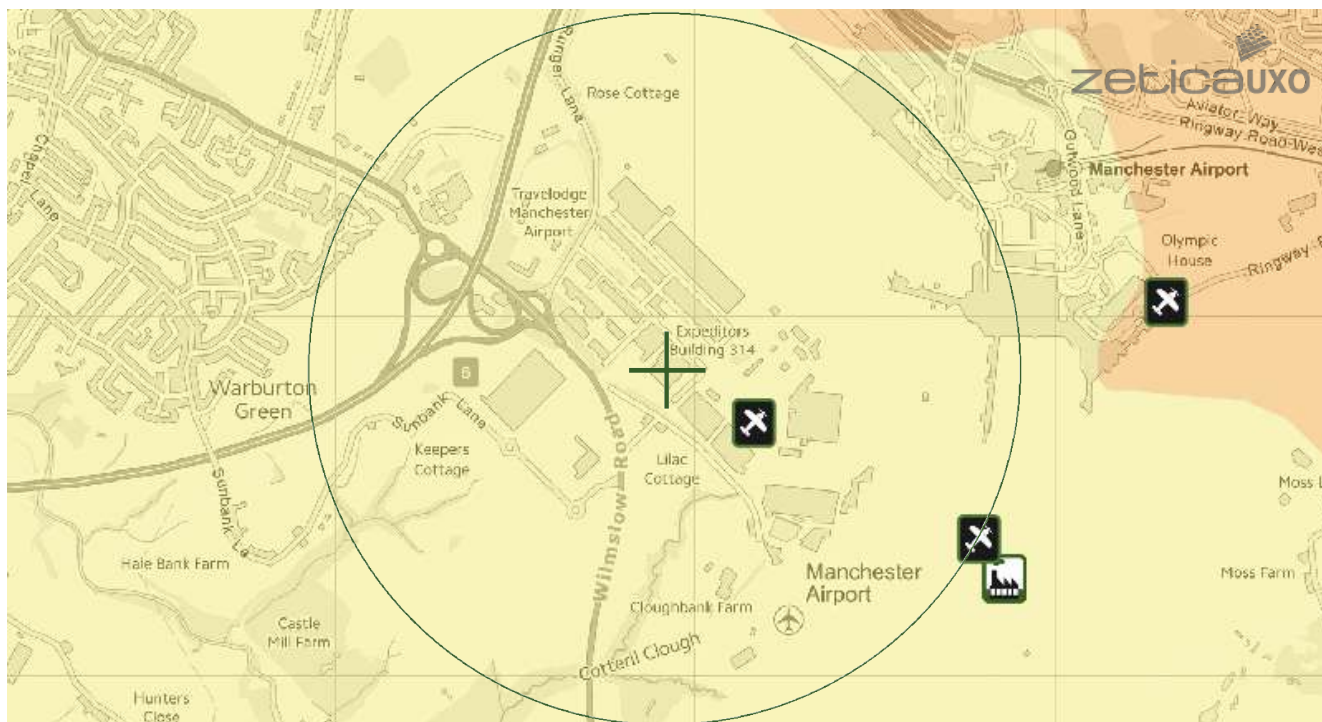
Appendix D Zetica Online UXO planning

UNEXPLODED BOMB RISK MAP



SITE LOCATION

Map Centre: 380927,384856



LEGEND

- High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- Low:** Areas indicated as having 15 bombs per 1000acre or less.

- military**
- industry**
- UXO find**
- transport**
- dock**
- Luftwaffe targets**
- utilities**
- Bombing decoy**
- other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Appendix E Site Reconnaissance Photo Log

Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 1 Substation 'Z' on northern side of the Building 401



PHOTO No. 2 Electrical housing adjacent to substation 'Z'



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 3 Small substation on northern boundary of site within Building 402 site.



PHOTO No. 4 View west from north east corner of site showing rear of Building 401 and Building 402 on the right of frame.



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 5 View north east of site showing slight landscaped rise to Avro Way from site and part brick part corrugated metal construction of Building 401.



PHOTO No. 6 view north from south east site boundary of Building 401 showing lorry access points and part tiled brick half floor with two story warehouse above with apparent office windows. Also shown MAG busses in various state of repair.



Site Location:
MAG building 401

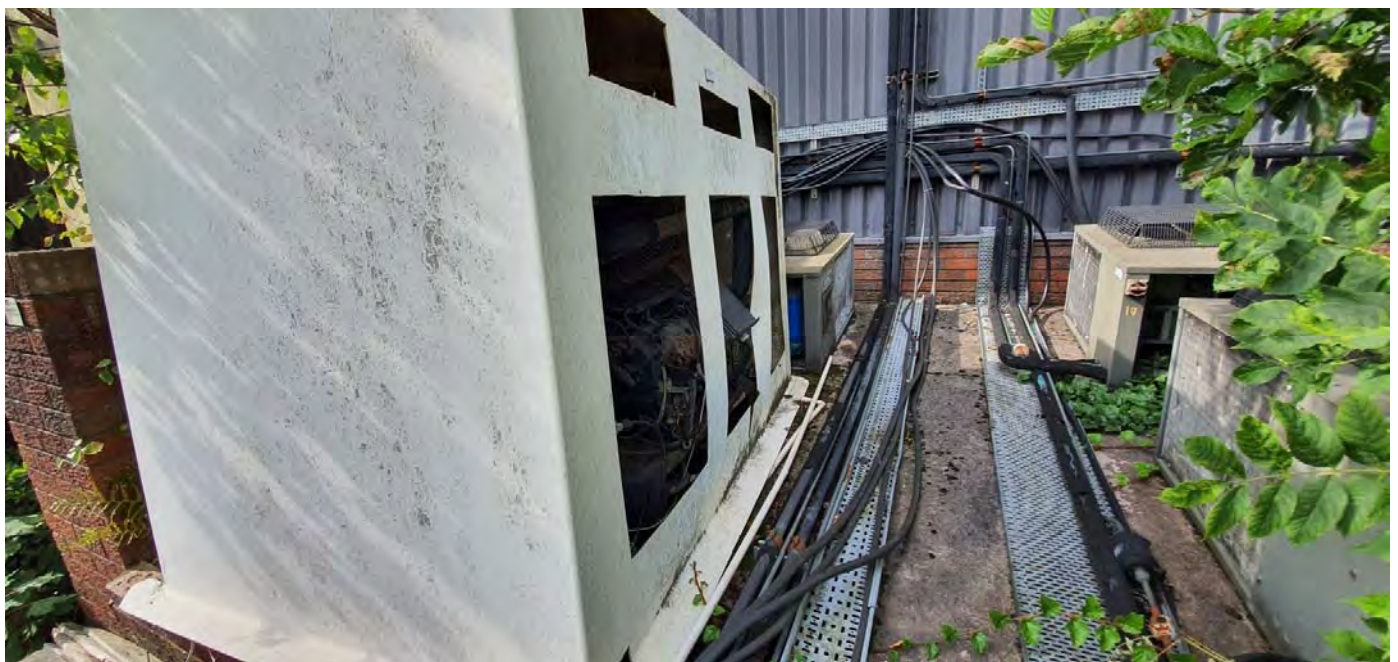
Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 7 South eastern end of site showing customer entrance to Building 401 and hydraulic lift. Including storage area with aircon and refrigeration units and an empty oil tank stored on pallets



PHOTO No. 8 Closer image of storage area showing partial brick and concrete cover service duct area.



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 9 view south east of site showing DNATA warehouse and chainlink fencing



PHOTO No. 10 View of south east entrance to site from Pinfold Lane



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 11 Gas housing building on eastern side of main entrance from Pinfold Lane



PHOTO No. 12 View west across main south entrance to site showing bollards and diesel fueling tank



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 13 View of southern diesel tank with internal pump



PHOTO No. 14 view of interceptor for southern diesel tank with some spillage noted



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 15 view in south west corner of site, metal and concrete manholes potentially associated with interceptor.



PHOTO No. 16 Electrical box south western corner of site



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 17 View north west across MAG Bus Depot showing porta-cabin type offices and bus wash on left of image



PHOTO No. 18 View west of bus wash including storage of cleaning chemicals and light pole



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 19 View south towards main entrance from Pinfold Lane



PHOTO No. 20 view south across MAG Bus Depot



Site Location: MAG building 401	Compiled Photo Log: Site Reconnaissance for MAG Building 401 (08/09/2021)	Project No. 60663052
------------------------------------	--	----------------------

PHOTO No. 21 View east from western side of site with bus wash on left of frame showing diesel storage, adblue storage and cleaning equipment



PHOTO No. 22 View of cleaning chemical storage at bus wash also showing raised concrete foundations to was house.



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 23 View south showing western side of bus wash and chainlink fence between the depot and wooded area (far west end of site)



PHOTO No. 24 view north into wooded area on north western corner of depot area with bus store on right including skip and trailer storage



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 25 view north of bus storage and potential maintenance building in north western corner of site



PHOTO No. 26 View east through temporary offices showing raised concrete foundation pads



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 27 View south along western side of Building 401 showing slight raise in grass embankment



PHOTO No. 28 Main entrance to Building 401 in central south of site showing raised walkway to main doors



Appendix F Geotechnical Risk Register

A Geotechnical Risk Register has been compiled to show the degree of risk attached to various ground related aspects of the proposed scheme. The purpose of the register is to produce an assessment of the risk to the project posed by site specific ground related problems and identify suitable mitigation measures to control the risk to an acceptable level. The risk register should be developed and refined as the geotechnical design and assessment progresses such that the register will allow management of the geotechnical risks.

The degree of risk (R) is determined by combining an assessment of the likelihood (L) of the hazard with an assessment of the severity (S) of the hazard. The scale against which the likelihood and severity are measured, and the resulting degree of risk determined is presented in the risk register for the proposed scheme below.

Table 15-1: Classification of Probability and Impact

Likelihood (L)		Severity (S)	
Very Likely	5	Very High	5
Likely	4	High	4
Probable	3	Medium	3
Unlikely	2	Low	2
Negligible	1	Very Low	1

Table 15-2: Risk Matrix

Likelihood	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Severity				

Table 15-3: Classification of Risk Rating

Risk rating	Response
Intolerable	Unacceptable
Substantial	Early Attention
Tolerable	Regular Attention
Trivial	Monitor

Geotechnical Risk Register

Identified Geotechnical Hazard	Location	Cause	Risk before Control			Consequence	Possible Mitigation Measures
			L	S	RR (LxS)		
Aggressive Ground Chemistry	Scheme Wide	Made Ground, Glacial Till and Bollin Mudstone Member are potentially sulphide/sulphate bearing stratum.	4	3	12	Deleterious effects on buried concrete/piles;	Analyse BRE test results and design concrete mix during detailed design in accordance with BRE guidance.
Frost susceptible soils	Scheme Wide	Construction of pavement. Silt-rich soils .	2	3	6	Surface Damage or alternative design. Frost heave.	Ground Investigation to identify underlying ground conditions and assess risk. Increase pavement thickness to incorporate risk.
Shrinkable Clay Soils	Scheme Wide	Artificial and or Superficial deposits.	2	3	6	Damage to structures due to seasonal subsidence and heave of clay soils, and near trees	Check Atterberg limits of cohesive soil and specify foundations according to relevant guidance. E.g. NHBC
Challenges re-using site won material for earthworks.	Scheme Wide	Potential Cobbles and boulders in Glacial Till	3	3	9	Potential difficulty compacting Glacial Till as an engineered fill due to potential presence of coarse granular material. Increased costs from importing suitable material.	Import suitable engineering fill or remove coarse material from existing site won material. Carry out testing to classify material.
Variable thickness and composition of superficial deposits and Made Ground/Variable hard ground	Scheme Wide	The inherent variability of glacial tills and Made Ground or variable rock head level and variable properties of rock	3	3	9	Unsuitable method of construction. Potential presence of boulders/buried concrete structures may obstruct piling/drilling. Obstruction or difficult to excavate or drill through. Additional cost	Ground investigation for the proposed site extents and any likely structure locations to reduce risk of potential obstructions or difficult ground.
The presence of weak and compressible soils	Scheme Wide	Presence of soft cohesive and loose granular Glacial deposits. Glacial tills are typically highly variable in composition. Compressible materials may be present. Made Ground is expected in many areas across the site.	3	4	12	Differential settlement as a result of differing foundation material. Failure of structures or earthworks.	Carry out suitable ground investigation and specify appropriate foundations. .
Weak pavement formation	Scheme Wide	Site soils including Made Ground may be variable or possess low Cu/CBR/Stiffness values. This may result in weak	3	2	6	Increased cost such as resurfacing access roads and car park may be required.	Investigation including Compaction and California Bearing Ratio testing to inform pavement design and potentially the reuse of site materials . Undertake remediation for instance implementation of mechanical compaction, thicker capping

		pavement formation and differential settlement					material, ground improvement (lime improvement/soil stabilisation) or excavation and replace.
Coal mining	Scheme Wide	Unidentified/identified voids associated with recorded or unrecorded mine workings and abandoned shafts have severe implications for surface stability; especially under increased loading from structures or earthworks.	4	5	20	Severe damage to structures, potential for injuries or fatalities in event of a complete collapse.	A thorough ground investigation is carried out follow by a Coal Mining Risk Assessment (CMRA) for the scheme and in areas where proposed buildings, or structures that are at risk of mining related subsidence. Undertake a mining risk assessment with recommendations for remediation measures.
Historic development of site.	Scheme Wide	Known and unknown/unrecorded buried structures.	2	3	6	Costs due to damage to plant and delays removing obstructions. Potential settlement issue in areas between proposed and existing foundations of previous structures.	Ground investigation for the proposed site extents and any likely structure locations to reduce risk of potential obstructions. Proposed work to be located away from existing foundations.
Re-grading of site	Scheme Wide	Slope stability and long-term settlement of raised earthwork.	3	3	9	Failure of earthworks slopes and serviceability issues with excessive total and differential settlement, if this is a concern to the area of the scheme	Carry out a ground investigation and design earthworks appropriately.
UXO	Scheme Wide	Potential UXO related to historical military activity as a result of being part of the Airport during WWII)	3	5	15	H&S Impact during excavations, ground investigation, piling and construction.	Commission of a specialist UXO desk study to further clarify the risk at the site and specify appropriate mitigation for ground investigation and construction.

