ES Volume 4: Appendix 1.1 CVs of EIA Team

Victoria House, Great Ancoats Street

January 2020

Turley

Curriculum Vitae of EIA Team

Table 1: CV of EIA Team

CV of EIA Team
EIA Coordination
Stephen Bell BA (Hons) MTP MRTPI (Senior Director, Head of Planning North) With over 20 years' experience, Stephen has a depth of experience in a number of development sectors including energy infrastructure, residential, retail, logistics and distribution, commercial office accommodation and leisure. He has a comprehensive understanding of planning issues and handles applications and appeals and the co- ordination of Environmental Impact Assessments (EIAs). Stephen has coordinated EIA's for a number of major energy infrastructure projects and urban regeneration projects including Protos.
Amy Longmore BA MA MRTPI (Senior Planner, Turley) Amy is a Senior Planner within Turley and is chartered member of the Royal Town Planning Institute (RTPI). She has over 10 years technical experience as a planning consultant working within a range of development sectors including energy infrastructure, leisure, residential, and commercial. Amy is experienced and competent in coordinating and managing Environmental Impact Assessments (EIAs) for large scale developments, including Nationally Significant Infrastructure Projects.
Elinor George MTCP MRTPI (Senior Planner, Turley) Elinor is a Senior Planner within Turley and is a chartered member of the RTPI. She has over 5 years technical experience as a planner within a range of development sectors including, residential, commercial, education and extra care. Elinor has provided planning advice on major schemes for private and public sector clients, advising on complex planning issues and working with clients and their consultant teams to secure planning permission and/ or allocations.
Townscape and Visual Impact Assessment
Chris Burnett BSc; BLD; CMLI (Partner, Chris Burnett Associates) Chris is principal partner of Chris Burnett Associates, a registered practice of landscape architects, who has undertaken Townscape and Visual Impact Assessments, as part of Environmental Statements, for many tall building developments throughout the UK since 2002. This includes 21 in Manchester and Salford including Beetham Hilton, Owen Street and New Wakefield Street amongst others and 13 others UK wide in Brighton, London, Leicester, Reading and Liverpool.
Heritage Impact Assessment
Katy Lightbody (MA Hons) PGDip CHE MRTPI (Director, Turley) Katy is a Director, Heritage at Turley. She is a chartered member of the Royal Town Planning Institute (RTPI) and an affiliate member of the Institute of Historic Building Conservation (IHBC) and is a heritage specialist and town planner with over 16 years' experience. Covering the north of England, Wales and Scotland, Katy is experienced in advising on the significance and setting of heritage assets and the impact of development on the built historic environment. Katy has advised extensively on complex and major projects across a number of sectors involving the

preparation of ES Built Heritage Chapters and associated Heritage Assessments and Statements. She has a thorough understanding of relevant legislation and the planning policy framework within which she works.

Archaeology

Anthony Martin BA MA MCIfA (Director, Nexus Heritage)

Anthony has over 30 years' experience in archaeological fieldwork, consultancy and management gained on a wide range of projects in the UK and internationally. He has managed the operations of two commercial practices (Gifford and Nexus Heritage), overseeing all aspects of fieldwork and consultancy ensuring the maintenance of health and safety, quality and financial sustainability. His experience covers a broad range of development sectors including mineral extraction, green energy, residential, retail/commercial and residential and a wide range of archaeological and heritage contexts including marine, terrestrial, urban and rural and a multitude of consenting and legislative regimes.

Traffic and Transport

Aaron Tilley CMILT MCIHT (Associate, Curtins)

Aaron has been working in the Transport Planning sector for over 18 years on a wide variety of public and private sector projects. During his career Aaron has provided traffic and transport advice on projects ranging from small residential developments to large mixed use developments across the UK. Aaron has a particularly strong expertise in assisting with the development of access strategies to support the masterplanning process and the delivery of supporting documentation to bring such projects through the planning process. Aaron adopts a comprehensive approach to finding solutions to problems. His experience of working on 'difficult' schemes enables him to provide comprehensive strategic advice during the early stages of the project and throughout the whole process, including matters relating to phasing and implementation. This experience includes CPO and Planning Inquiries, TROs and Stopping Up Orders and the negotiation of S106 and S278 Agreements.

Air Quality

Adam Dawson MSc BSc (Hons) MIAQM AMIEnvSc (Consultant, Hydrock, Specialism: Air Quality)

Adam is part of the team that is responsible for air quality and odour projects as part of our UK-wide Building Performance Engineering business. As a Member of the Institute of Air Quality Management, with 5 years' experience in the delivery of air quality and odour services across a range of sectors including residential, retail, commercial and industrial. Adams key skills lie in his technical understanding of dispersion modelling and air quality assessment.

Blaise Kelly MSc BEng AIAQM AMIEnvSc (Consultant, Hydrock, Specialism: Air Quality)

Blaise leads the Air Quality team and has over 8 years' experience in Air Quality and environmental matters. Blaise has a broad range of simulation experience, ranging from dispersion models, thermal building analysis and traffic modelling. He has undertaken over 50 Air Quality Assessments and ES Chapters. Blaise is a member of the Institute of Environmental Science (IES) an Associate of the Institute for Air Quality Management (IAQM), a Graduate of the Energy Institute (EI) and Chartered Institute for Building Services Engineering (CIBSE) and Professional Graduate of the Institute of Materials, Minerals and Mining (IOM3).

Noise and Vibration

Eddy Goldsmith BEng (Hons), MIOA (Principal Engineer, Hydrock, Specialism: Acoustics)

Eddy is a Principal Acoustic Engineer, holds an Acoustics BEng (hons) from the University of Salford, and has over 6 years consultancy experience. Having supported large scale and contentious projects through planning, and being part of international consultancy teams, Eddy values a holistic approach and communication as fundamentals in delivering projects successfully. His technical knowledge and understanding of key Physics concepts give Eddy the ability to identify noise and vibration design issues during the early stages of a project, all the way through to construction and operational stages.

Ric Hampton BSc (Hons) MIOA (Associate, Hydrock, Specialism: Acoustics)

Ric Hampton is the Associate that heads up the national Acoustics, Air Quality and Utilities teams for Hydrock Consultants based in Bristol. Ric has 15 years' experience in delivering engineering projects within these disciplines, some of Ric's recent relevant Manchester projects include Dantzic Street, Manchester (454 unit residential development over 22 storeys) and Pomona Island, Manchester Phase 1&2 (around 800 residential units over 5 towers). Ric works across sectors and has an excellent understanding of the multi-disciplinary approach; this allows Ric to specialize in unlocking difficult sites, affording pragmatic solutions for noise, air quality and utilities. Ric is a Member of the Institute of Acoustics and as a result, a Suitably Qualified Person for compliance with Building Regulations and BREEAM requirements.

Ground Conditions

Danny Hope BSc (Hons) MSc MCIWEM CWEM CEnv SiLC (Regional Director, Hydrock, Specialism: Ground Conditions)

Danny Hope is Regional Director for the north region for Hydrock Consultants based in Manchester. Danny has 20 years land quality experience, including some of the UK's largest infrastructure projects such as the Greater Manchester Waste PFI, Mersey Gateway and HS2. Danny specialises in site investigation, risk assessment, remedial design, planning and EIA support, earthworks, materials management and verification across all sectors. He is a Specialist in Land Condition (SiLC), Suitably Qualified Person for the National Quality Mark Scheme and a Qualified Person for the sign-off of Waste Code of Practice declarations. Danny is chair of the CIWEM Contaminated Land Network, a member of the SiLC Technical Panel and an assessor for the SiLC scheme.

Eric Cooper BSc (Hons) MSc CGeol FGS SiLC (Technical Director, Hydrock, Specialism: Ground Conditions)

Eric Cooper is Hydrock's Land Quality Technical Director based in Stoke-on-Trent. Eric has over 45 years' experience in the provision of geo-environmental and related services. He is an accredited Specialist in Land Condition (SiLC) and has acquired considerable knowledge in resolving issues, including Part 2A matters, associated with landfill sites, licences and permits, remediation of sites for development, environmental impact and waste recovery. Eric is a specialist in hydrogeological issues including groundwater pollution and the impacts of construction. He has extensive knowledge of legal, contractual, financial and policy issues associated with contaminated land and groundwater and has provided expert witness services.

Water Environment

Chris Cozens, MEng, CEng, MICE (Associate Director, Development Infrastructure, WSP)

Chris is a chartered engineer with over 30 years post graduate experience working with Developers, Contractors and Consultants throughout the UK and Internationally in a broad

range of civil engineering works, private and public-sector Development and building and infrastructure works. He is the discipline lead in the Yorkshire region providing strategic development advice and due diligence, planning support and detailed engineering design, including private and adoptable drainage and highways design, external works and civil engineering, utilities diversions and supply, surface water management, flood prevention and alleviation, flood risk appraisals and NPPF compliant Flood Risk Assessments.

Ecology

Sacha Rogers BSc (Hons) (Managing Director, Penny Anderson Associates Ltd)

Sacha Rogers is the Managing Director of Penny Anderson Associates Ltd. She has worked as a professional ecologist in the public and private sector for over 24 years initially as a Biodiversity Officer for the Environment Agency and latterly as an ecological consultant. Sacha has a broad range of experience in terrestrial and freshwater ecology, EcIA, ecosystem assessment, habitat and protected species survey, European Protected Species Licensing and Habitat Regulations Assessment. She has worked on research projects for Natural England amongst others as well as major infrastructure, residential, mixed use and commercial schemes, including providing evidence as expert witness.

Telecommunications

Danny Scrivener BSc (Hons) (Senior Technical Consultant, Pager Power)

Danny is a senior technical consultant with over 6 years' experience undertaking technical assessments, surveying and consultation with key stakeholders. He has completed technical reports which have removed planning objections and satisfied planning conditions relating to radar, television and communication issues. Between 2013-2017, Danny completed over 150 individual solar glint and glare assessments and drove the development of solar glint and glare software to address the impacts on dwellings, roads, railways and aviation safety. With regard to television reception analysis in Manchester specifically, Danny has completed over 15 reception surveys and numerous more desk-based reports for large building developments in and around the city centre over the last three years.

Wind Assessment and Daylight and Sunlight Assessment

Sam Wallis, BSc (Hons) MRICS, (Managing Partner, GIA)

Sam opened GIA's Manchester office in December 2015. Prior to that, he was a partner at Malcolm Hollis, who he joined in January 2006. He specialises in providing strategic advice to clients on proposed developments, advising on Wind impacts, Rights of Light, Daylight and Sunlight, Shadowing and Environmental Impact matters to assist with the progress of projects. His academic background is in building surveying, having obtained Member of the Royal Institution of Chartered Surveyors status in 2006. He undertakes regular talks and seminars and with the support of the team and individually, acts for numerous developers, institutions, public bodies, land owners and charities throughout the UK and abroad. His primary focus is on strategy and creative solutions to deliver the best potential for clients and end users.

Dr Jon Winchester, Chief CFD Engineer

Dr Jon Winchester holds a BSc in Mathematics, MSc in Mechanical Engineering and PhD in Mechanical Engineering. Jon has been working for Wirth Research for 8 years and has 7 years of experience of CFD for built environment, developing methods for pedestrian comfort analysis, wind loading and natural ventilation. Jon has led multiple architectural CFD projects, including notable projects such as 22 Bishopsgate in the City of London and New City Court in Southwark,

London.

Socio-Economic, Human Health, and Climate Change
Anastasia Fleming, BSc (Hons), PIEMA (EIA Consultant, WYG) Anastasia is an EIA consultant at WYG. Her role focuses on assisting with the management of large-scale EIA projects by completing EIA screening, scoping and Environmental Statement (ES) reports. She assists in completing multiple front-end ES chapters as well as providing technical input in Socio-Economic, Climate Change, Human Health and Cumulative Effects Assessments.
Ross Phillips, BCs(Hons), MRes, PIEMA, MCIEEM (Associate, WYG) Ross has over 12 years' experience of leading and coordinating large multidisciplinary teams in the delivery of EIA and non-EIA projects in the residential, commercial, highways infrastructure and defence sectors. Ross has detailed understanding of the UK planning system and environmental regulations and regularly assumes a project manager role on large projects, which involve liaison with clients and third parties, consultation, management and organisation of colleagues.

MANCHESTER
CITY COUNCIL

Julie Roscoe
Head of Planning

Telephone +44 (0)161 234 4552
j roscoe@manchester gov uk

PO Box 532 Town Hall
Manchester M60 2LA

Your reference.

Our reference. Victoria House PSE

Contact: Angela Leckie
Tel: 0161 234 4776
Fax· 0161 274 0014
Email· a leckie@manchester gov.uk

12th November 2018

FAO Elinor George
Turley
1 New York Street
Manchester M1 4HD

Dear Sir / Madam

Environmental Impact Assessment Regulations, the Town and Country Planning (EIA) (England) Regulations 2017 (as amended) (the "EIA Regulations").

Opinion on Scope of an Environmental Statement under Section (paragraph 1)

Further to your request in respect of the above dated 23rd October 2018.

It is noted that the site is bounded by Great Ancoats Street (north east)Epworth Street (east) beyond existing industrial units (south) and Longacre Street and the Metro-link line (west).

The Proposed Development will comprise residential accommodation for open market sale and proposes two commercial units on the ground floor. Associated ancillary amenity space, access and servicing, and hard and soft landscaping are also proposed. The Proposed Development will extend in height up to 23 storeys above a basement. The accommodation will be arranged in a 23 storey tower and lower 2 storey element. The residential accommodation will comprise a mix of one, two and three bedroom apartments. 158 apartments are proposed The residential accommodation would be supported by a number of high quality shared amenity spaces. It is proposed that this will include a gym, cinema rooms, residential garden and shared dining space The 2 ground floor commercial units would comprise use classes A1, A2, A3, A4 and D1 and extend to 348 sqm

Proposed Heights (approximate)

23 and 3 storey (consultations were on basis of single 23 storey block) (above basement) max height up to 125m

158 Cycle parking spaces are included and no car parking

In coming to a formal opinion on the scope of the Environmental Impact Assessment (EIA), Manchester City Council, as Local Planning Authority, has taken into account the supporting information contained within your Scoping Report.

I have now had a chance to consider your scoping request and I outline my response below This scoping report has been the subject of consultation in accordance with the EIA Regulations.

Overall I can confirm that the content of the submitted 'Formal Scoping Opinion Request' is considered to be appropriate and will form a generally appropriate structure for the Environmental Statement. This is also reflected in the nature of the consultation responses. You should note the specific points which have been made and therefore particularly regard must be given to these

The following consultees were asked to comment on your request and full copies of the comments are attached from those who responded.

- **Greater Manchester Archaeological Unit**
- **Head of Regulatory and Enforcement Services (Contaminated Land Section)**
- **Head of Engineering Services**
- **Head of Regulatory and Enforcement Services (Pollution Services)**
- **United Utilities**
- **Environment Agency**
- **Greater Manchester Ecology Unit**
- **Transport for Greater Manchester.**

Scoping Report

I have the following specific comments to make in respect of the scoping report·

Townscape and Visual Impact

Whilst the comments within your scoping report are noted and are generally acceptable in terms of their consideration in the ES it is considered that view 16 should be relocated to the junction of Baird Street and Sheffield Street or an additional view added here so that impacts can be understood more widely in the context of Crusader Mill

Archaeology and Heritage

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

Transport and traffic

With regards to transport and traffic, the comments within your scoping report are noted and the following additional information should be provided within the EIA.

We would expect all the usual information re· travel plan, cycle parking CMP, accident history, waste management information, also if the basement is adjacent to the highway structural drawings and calculations for the temporary and permanent support works will be submitted for assessment.

Metrolink

The development is in close proximity to the Metrolink Gt Ancoats Street Tunnel and approach retaining walls. Accordingly TfGM will require a fully developed cross section to be drawn to indicate the relationship between the tunnel/retaining walls and the new building (including its foundations/basement).Conditions are likely to be requested to cover a construction management plan (working safely near Metrolink) and to require monitoring of the Metrolink infrastructure during construction

Transport Statement / Assessment

Car Parking

Accessible car parking should be available close to developments ideally within the SRF area Suitable car parking locations should be identified.

Trip Generation

A complete SRF impact approach needs to be undertaken as well as a 'plot by plot' assessment. The 'plot by plot' approach does not adequately predict the final SRF impact/changes to the local highway network.

A multi-modal person trip approach is recommended to be undertaken with vehicular trips percentage share obtained from agreed Census data. The generated trips should be distributed on the network even if the numbers may be relatively small, the trip distribution diagram should be provided

This will help inform if modelling and mitigation measures are required

Junction Upgrades

Assessment of the need to fund required upgrades to the pedestrian/cycle facilities at Adair Street/Great Ancoats Street junction and the pedestrian/cycle facilities at the Pollard Street/Great Ancoats Street junction resulting from the development.

Pedestrian/Cycle Access

A qualitative and quantitative description of the expected travel characteristics of the site and wider Masterplan area should be provided. This should include expected pedestrian and cyclist movements, an audit of existing facilities and propose facilities to fill any existing gaps and to accommodate future predicted demand.

Servicing

The servicing strategy for the area should be supported by swept paths and laybys should be proposed as necessary.

Sustainability

Consideration should also be given to electric car charging points within the development as part of sustainability initiatives

Mitigation Measures

Impacts of the development should be identified through the above assessment work. Appropriate mitigation to accommodate any increases in traffic generation and increased pedestrian and cyclist movements should be provided within the EIA.

The EIA should consider the impact of the development on the existing public transport networks in terms of extension of bus services, additional person trips Mitigation measures should be considered where appropriate.

There will also be the requirement to consider the impact of the development on the public realm and infrastructure in the Portugal Street SRF and Piccadilly HS2 SRF as well as the need to improve linkages to the heart of the City Centre.

Ground conditions

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

Air Quality and Dust

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

Noise and Vibration

The comments within your scoping report are noted and are broadly acceptable in terms of their consideration in the ES. The EIA Scoping Report indicates that the proposed development is to be residential The ES needs to take account of noise and vibration associated with the tramway It should be noted that the existing arrangement includes switches and crossings and these could be introduced into the proposed future Metrolink works as part of further design development (switches and crossings would typically generate higher noise levels than plain line)

Wind and microclimate

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES.

Daylight and sunlight and overshadowing

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

In addition, as the development site is located within a regeneration area, where other sites are likely to come forward for redevelopment in the near future, conclusions should be drawn that there are no overshadowing or overlooking impacts that could impact on the viability of other sites coming forward at a later stage.

Water Resources (including Drainage and Flood Risk)

The comments within your scoping report are noted and are generally acceptable in terms of their consideration in the ES. However the following should be noted.

The area is situated within the Conurbation Core Critical Drainage Area and in accordance with the Manchester City Council SFRA at least a 50% reduction in surface water runoff should be provided through SUDS as part of any brownfield development with the aim of reducing to the Greenfield runoff rates

Surface water should be managed to ensure there is no increased surface water from the proposed development and runoff from extreme events should be retained within the site such that the adjacent third party land is not affected.

The Government has strengthened planning policy on the provision of sustainable drainage systems (SuDS) for 'major' planning applications which was introduced on 6 April 2015 (Paragraph 103 of National Planning Policy Framework and Ministerial Statement on SuDS). As per the guidance issued by the Department of Communities and Local Government (DCLG), all 'major' planning applications being determined from 6 April 2015, must consider sustainable drainage systems.

The suitability of sustainable drainage systems should be assessed in accordance with paragraphs 051, 079 and 080 of the revised NPPF Planning Practice Guidance for Flood Risk and Coastal Change (http.//planningguidance.planningportal.gov uk/blog/ guidance/flood-risk- and-coastal-change/).

Sustainable drainage systems should be designed in line with national Non-Statutory Technical Standards for SuDS (https.//www.gov uk/government/uploads/system/uploads/attachment_data /file/415773/sustainable-drainage-technical-standards.pdf) and local policies EN08, EN14 and EN17 of the Core Strategy

Hydraulic calculations and drawings to support the design need to be provided along with proposed standards of operation and maintenance in accordance with paragraph 081 of NPPF Planning Practice Guidance

If a new surface water outfall is proposed into the River Medlock a Land Drainage Consent from Manchester City Council is required. Consent forms can be obtained on the website at.

http.//www manchester gov.uk/downloads/download/5567/land_drainage_consent_and_gu idance com

If surface water is to be discharged into a United Utilities sewer this should be agreed in principle with them.

Archaeology

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES.

TV and Telecommunications

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

Cumulative impacts

The list of cumulative sites for assessment has been considered in order to assess any cumulative impacts of developments in this part of the City Centre this should include consideration of Burlington House (app ref no 106021), Land at Ducie Street (app ref no 120149), 27 Dale Street (app ref no 116401), Red Lion Street (app ref 113713), Brownsfield Mill (App ref 115401)

Human Health

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

Socio-economic impacts

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

Climate Change

The comments within your scoping report are noted and are acceptable in terms of their consideration in the ES

Matters which can be scoped out

The City Council has considered the remaining matter which you have scoped out of the EIA·

Ecology and Biodiversity

The City Council is in agreement that this matter can be scoped out of the EIA but that the application is supported by the appropriate documentation including any mitigation to minimise any effects as a result of the development

As a result of consultation with statutory consultees at this time additional areas of work are not expected to form part of any EIA. However, the Local Planning Authority would also reserve the right to seek further information in connection with the Environmental Statement as matters arise. This letter also confirms the matters within part I of Schedule 4 to the to the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 that need to be covered within the Environmental Statement.

If you wish to discuss the above please contact Angela Leckie on the above number.

Yours sincerely

Julie Roscoe

for the Head of Planning (attachments sent by e-mail)

MANCHESTER CITY COUNCIL

Angela Leckie <a.leckie@manchester.gov.uk>

Fwd: EIA Scoping consultation

1 message

Gerry Reilly <g.reilly@manchester.gov.uk> 1 November 2018 at 14:15
To: Angela Leckie <a.leckie@manchester.gov.uk>

Kind regards,

Gerry Reilly,
Planning Technician - City Centre Team,
Planning, Building Control and Licensing,
Strategic Development
Tel: External: 0161 234 4618
Tel: Internal 34618
Fax 0161 274 0014
E: g.reilly@manchester.gov.uk
http://www.manchester.gov.uk

Postal address: Manchester City Council, PO Box 532, Town Hall, Manchester, M60 2LA
Location Address: Planning, Manchester City Council, Floor 6 Town Hall Extension, Albert Square, P O Box 532, Manchester M60 2LA (for sat nav systems use M2 5DB)

---------- Forwarded message ---------
From: **Pemberton, Rebecca** <Rebecca.Pemberton@uuplc.co.uk>
Date: Wed, 31 Oct 2018 at 16:47
Subject: RE: EIA Scoping consultation
To: g.reilly@manchester.gov.uk <g.reilly@manchester.gov.uk>
Cc: planning@manchester.gov.uk <planning@manchester.gov.uk>

Hi Gerry,

In response to Screening Request Ref: Land Bounded By Great Ancoats Street (NE), Epworth Street (E), Beyond Existing Industrial Units (S) & Longacre Street & The Metro-Link Line (W). United Utilities does not comment on Screening or Scoping Requests as the level of information we require in terms of understanding any water or wastewater requirements is likely to only become available once the development proposal is progressed nearer to planning application stage. Once the appropriate information is available, we would review and recommend any necessary planning conditions at the planning application consultation stage.

We do however, wish to continue to work closely with local authorities and developers alike in a bid to support sustainable development and economic growth. We would encourage potential developers to contact us at the appropriate time for pre-application discussions. Information for our pre-application services for both water and wastewater is available on our website.

Kind Regards

Rebecca Pemberton

Planning Analyst

Developer Services & Metering

Network Delivery

United Utilities

T: 01925 679399 (internal 79399)

unitedutilities.com



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From: Gerry Reilly [mailto:g.reilly@manchester.gov.uk]
Sent: 29 October 2018 16:29
To: Planning Liaison <Planning.Liaison@uuplc.co.uk>
Subject: Fwd: EIA Scoping consultation

Dear Madam/Sir

The Town and Country Planning (Environmental Impact Assessment) (England) , Regulations 2017 (as amended) - Request for Scoping Opinion)

Please find attached the first of two documents informing you of a request made to Manchester City Council for a Scoping Opinion regarding the above development

The site is located on Land bounded by Great Ancoats Street (north east)Epworth Street (east) beyond existing industrial units (south) and Longacre Street and the Metro-link line (west).

Kind regards,

Gerry Reilly,

Planning Technician - City Centre Team,

Planning, Building Control and Licensing,

Strategic Development

Tel: External: 0161 234 4618

Tel: Internal 34618

Fax 0161 274 0014

E: g.reilly@manchester.gov.uk

http://www.manchester.gov.uk

Postal address: Manchester City Council, PO Box 532, Town Hall, Manchester, M60 2LA

Location Address: Planning, Manchester City Council, Floor 6 Town Hall Extension, Albert Square, P O Box 532, Manchester M60 2LA (for sat nav systems use M2 5DB)

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MANCHESTER CITY COUNCIL

Angela Leckie <a.leckie@manchester.gov.uk>

FW: EIA Scoping consultation; Victoria House, Great Ancoats Street

1 message

Alan Lowe <Alan.Lowe@tfgm.com> 16 November 2018 at 10:16
To: Angela Leckie <a.leckie@manchester.gov.uk>
Cc: Landuse <Landuse@tfgm.com>, Andrew Charnock <Andrew.Charnock@tfgm.com>, David Everson <David.Everson@tfgm.com>, Darren Embury <Darren.Embury@tfgm.com>, Oliver Jones-Orrells <Oliver.Jones-Orrells@tfgm.com>, "g.reilly@manchester.gov.uk" <g.reilly@manchester.gov.uk>, "'Gregg Mitchell' (gmitchell@metrolink.co.uk)" <gmitchell@metrolink.co.uk>, Expansion Department Email <ExpansionDepartment@metrolink.co.uk>

Angela

I refer to the above EIA Scoping consultation and make the following comments from a Metrolink perspective:

The development is in close proximity to the Metrolink Gt Ancoats Street Tunnel and approach retaining walls. Accordingly TfGM will require a fully developed cross section to be drawn to indicate the relationship between the tunnel/retaining walls and the new building (including its foundations/basement).Conditions are likely to be requested to cover a construction management plan (working safely near Metrolink) and to require monitoring of the Metrolink infrastructure during construction.

MANCHESTER CITY COUNCIL

Angela Leckie <a.leckie@manchester.gov.uk>

Re: EIA Scoping consultation

1 message

Neil Bayliss-Rowe <n.bayliss-rowe@manchester.gov.uk> 30 October 2018 at 12:45
To: Gerry Reilly <g.reilly@manchester.gov.uk>
Cc: Angela Leckie <a.leckie@manchester.gov.uk>, Muniza Usmani <m.usmani@manchester.gov.uk>

Hi Gerry,

Please see pre-plan comments recently issued to the developer:

Car Parking
In principle we do accept zero parking in this area however accessible car parking should be available close to developments. Will there be a car park proposed within the SRF area? Suitable car parking locations should be identified.

Trip Generation
Please can you confirm that a complete SRF impact approach is being undertaken as well as a 'plot by plot' assessment. The 'plot by plot' approach does not adequately predict the final SRF impact/changes to the local highway network.

We recommend that a multi-modal person trip approach is undertaken with vehicular trips percentage share obtained from agreed Census data. The generated trips should be distributed on the network even if the numbers may be relatively small, the trip distribution diagram should be provided.

This will help inform if modelling and mitigation measures are required.

Junction Upgrades

- Funding to upgrade the pedestrian/cycle facilities at Adair Street/Great Ancoats Street junction
- Funding to upgrade the pedestrian/cycle facilities at the Pollard Street/Great Ancoats Street junction.

Pedestrian/Cycle Access
A qualitative and quantitative description of the expected travel characteristics of the site and wider Masterplan area should be provided. This should include expected pedestrian and cyclist movements, an audit of existing facilities and propose facilities to fill any existing gaps and to accommodate future predicted demand.

Servicing
We welcome a servicing strategy for the area. This should be supported by swept paths and laybys should be proposed as necessary.

Materials/Commuted Sums
Commuted sums will be required for **a**ny non-standard materials, please note that MCC are currently developing a scheme for Great Ancoats Street and any proposals for the Great Ancoats Street frontage will have to be agreed/ tie in with the MCC scheme.

We would expect all the usual information re: travel plan, cycle parking CMP, accident history, waste management information, also if the basement is adjacent to the highway structural drawings and calculations for the temporary and permanent support works must be submitted for checking:

Thanks,

Neil

Neil Bayliss-Rowe
Highways Development Control Manager
Internal Tel: 801 31171
External Tel: 0161 234 1171
Mobile: 07823354447
Email: n.bayliss-rowe@manchester.gov.uk

Highways Service, Growth and Neighbourhoods Directorate

Manchester City Council
PO Box 532 Town Hall
Manchester
M60 2LA

Web: http://www.manchester.gov.uk

On Mon, 29 Oct 2018 at 12:25, Gerry Reilly <g.reilly@manchester.gov.uk> wrote:

> Dear Madam/Sir
>
> **The Town and Country Planning (Environmental Impact Assessment) (England) , Regulations 2017 (as amended) - Request for Scoping Opinion)**
>
> The site is located on Land bounded by Great Ancoats Street (north east)Epworth Street (east) beyond existing industrial units (south) and Longacre Street and the Metro-link line (west).
>
> Please find attached an explanatory letter and document informing you of a request made to Manchester City Council for a Scoping Opinion regarding the above development.
> Kind regards,
>
> Gerry Reilly,
> Planning Technician - City Centre Team,
> Planning, Building Control and Licensing,
> Strategic Development
> Tel: External: 0161 234 4618
> Tel: Internal 34618
> Fax 0161 274 0014
> E: g.reilly@manchester.gov.uk
> http://www.manchester.gov.uk
>
> Postal address: Manchester City Council, PO Box 532, Town Hall, Manchester, M60 2LA
> Location Address: Planning, Manchester City Council, Floor 6 Town Hall Extension, Albert Square, P O Box 532, Manchester M60 2LA (for sat nav systems use M2 5DB)
>
> ---------- Forwarded message ---------
> From: **Angela Leckie** <a.leckie@manchester.gov.uk>
> Date: Mon, 29 Oct 2018 at 09:35
> Subject: EIA Scoping consultations
> To: Gerry Reilly <g.reilly@manchester.gov.uk>, <mark.worcester@turley.co.uk>
>
> Hi Gerry
>
> Can you please issue the attached letter and document in accordance with the list which I have left on your desk.
>
> Thanks
>
> Angela
>
> Angela Leckie
> Senior Planner
> City Centre Team
>
> Tel (External) 0161 234 4651
> Tel (Internal) 80034651
> email a.leckie@manchester.gov.uk
> www.manchester.gov.uk
> Postal Address
> Angela Leckie
> City Centre Team
> Planning
> Strategic Development
> Manchester City Council
> Floor 6 Town Hall Extension
> Albert Square
> P.O Box 532,

> Manchester, M60 2LA

MANCHESTER CITY COUNCIL

Angela Leckie <a.leckie@manchester.gov.uk>

Scoping Opinion Victoria House, Great Ancoats St

1 message

David Dutton <david.dutton@tameside.gov.uk> 9 November 2018 at 10:05
To: "a.leckie@manchester.gov.uk" <a.leckie@manchester.gov.uk>

Hi Angela

Thank you for consulting the GMEU

I agree with the ecological consultants that ecology can be scoped out of the EIA. There are no significant ecological receptors associated with this site.

As part of any planning application we would expect a bat assessment .

Any questions give me a call,

David Dutton

Ecologist

Planning

Development and Investment

Growth

Tameside MBC | Twitter | Facebook | Instagram

Clarence Arcade | Stamford Street | Ashton-under-Lyne | Tameside | OL6 7PT

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MANCHESTER CITY COUNCIL

Angela Leckie <a.leckie@manchester.gov.uk>

Archaeology - Scoping Opinion Consultation: Land Bounded By Great Ancoats Street (NE), Epworth Street (east) beyond existing industrial units (south) and Longacre Street and the Metrolink line, Manchester

1 message

Myers Andrew <A.Myers@salford.ac.uk> 21 November 2018 at 12:58
To: "Angela Leckie (a.leckie@manchester.gov.uk)" <a.leckie@manchester.gov.uk>

Angela

Thank you for consulting GMAAS on the above.

It is noted that in the Scoping Report there is a section written by Nexus Archaeology. It sets out the approach to the production of a desk-based assessment (DBA). It specifies the framework within which the significance of heritage assets will be assessed and the scale of the impact of the development upon that significance. The DBA will be scoped into the Environmental Statement (ES), with a copy of the DBA being included as an appendix to the ES.

The approach outlined in the Scoping Report is totally acceptable to GMAAS.

Regards

Andrew

Andrew Myers (BA, MSc, PhD, MCIFA, FSA)

(Senior Planning Archaeologist)

Greater Manchester Archaeological Advisory Service

Environment and Life Sciences

Room LG20

Peel Building

University of Salford

Salford

M5 4WX

Tel: 0161 295 6917

MANCHESTER CITY COUNCIL

Angela Leckie <a.leckie@manchester.gov.uk>

Victoria House Scoping Reoprt

1 message

Sue Jones <s.jones1@manchester.gov.uk> 19 November 2018 at 11:09
To: Angela Leckie <a.leckie@manchester.gov.uk>

Hi Angela,

I have reviewed the Scoping Report for Victoria House, (Land bounded by Great Ancoats Street (north east)Epworth Street (east) beyond existing industrial units (south) and Longacre Street and the Metro-link line (west)), and comment as follows:

Air Quality (Chapter 9)

It is accepted that air quality will be dealt with under an ES Chapter and a Non EIA Assessment.

1. There is no car parking associated with this development (operational phase) so an assessment of the traffic impacts on existing receptors will not be required, (agreed).
2. Emissions from any flues associated with the plant room will need to be considered at the development and in the surrounding area, if they exceed the threshold of 5mgNOx/second, (agreed).
3. The application site is within the Greater Manchester Air Quality Management Area (map available at: https://uk-air.defra.gov.uk/aqma/maps) and future occupants of the development may be exposed to air pollution and assessment required (agreed).
4. The construction impacts of the Proposed Development will be undertaken with respect dust and impacts on human health, (agreed).

Noise (Chapter 10)

Environmental Health can agree the noise assessment will be scoped under an EIA Chapter and non EIA assessment.

1. The impact of noise from construction and demolition activities, associated with the construction and operational phases and noise from plant, equipment and operational
uses associated with the Proposed Development will be assessed, (agreed).

Ground Condition/Contaminated Land (Chapter 11)

It is accepted that ground conditions will be dealt with under an ES Chapter.

1. An intrusive investigation at the site (agreed).

Kind regards

Sue

Sue Jones
Neighbourhood Officer
Environmental Protection
Environmental Health
The Neighbourhoods Directorate
Growth & Neighbourhoods
Manchester City Council
Hammerstone Road Depot
Gorton
Manchester
M18 8EQ

External Tel: 0161 234 5004
Internal Tel: 31389
email: s.jones1@manchester.gov.uk
website: www.manchester.gov.uk

We are now on Twitter, for latest news and updates follow us @EnvHealthMcr


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I♥MCR *(optional)*


image001.png
3K

Manchester City Council
PO Box 532
Manchester
Lancashire
M60 2LA

Our ref: SO/2018/118751/01-L01
Your ref: PSE

Date: 09 November 2018

Dear Sir/Madam

VICTORIA HOUSE, ENVIRONMENTAL IMPACT ASSESSMENT, SCOPING OPINION REPORT LAND BOUNDED BY GREAT ANCOATS STREET (NORTH EAST)EPWORTH STREET (EAST) BEYOND EXISTING INDUSTRIAL UNITS (SOUTH) AND LONGACRE STREET AND THE METRO-LINK LINE (WEST).

Thank you for submitting the Scoping Opinion request to the Environment Agency.

We would like to make the following comments.

Ground Conditions

We would expect any Environmental Impact Assessment to consider the impacts the development may have in relation to contamination at the site and detail any required mitigation measures to prevent an adverse impact on the water environment.

If a Preliminary Risk Assessment (as defined in CLR11) highlights potential risks to the water environment we will also require the developer to: undertake a site investigation to determine the nature and extent of contamination; carry out a risk assessment to identify any unacceptable risks to the water environment; and then prepare a remediation strategy to ensure that any unacceptable risks are appropriately mitigated both during and post construction.

Further guidance on the assessment of risks to controlled waters can be found in our document 'Guiding Principles for Land Contamination':

(https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297450/geho1109brgy-e-e.pdf)

Water Resources and Flood Risk

The proposed development site lies within Flood Zone 1 as shown on our published flood map. The Council as Lead Local Flood Authority are the statutory consultee for surface water matters and therefore they will have an overview for flood risk on this development.

Should you wish to discuss anything in further detail please do not hesitate to get in touch.

Yours faithfully

MRS LAILA BERRY
Planning Advisor

Direct dial 02030250761
Direct e-mail laila.berry@environment-agency.gov.uk

Environment Agency
Richard Fairclough House Knutsford Road, Warrington, WA4 1HT.
Customer services line: 03708 506 506
www.gov.uk/environment-agency
Cont/d..

Briefing

Victoria House, Great Ancoats Street

January 2020

List of Cumulative Schemes

1. Schedule 4 of the Town and Country Planning (Environmental Impact Assessment (EIA)) Regulations 2017 requires a description of the likely significant effects resulting from cumulative impacts to be included in an EIA. When considering the cumulative effects the EIA will provide information on how the potential effects of the Proposed Development will combine and interact with the effects of other existing and/or approved projects ('inter-project cumulative effects'), and will also assess the potential effects between topic area of the Proposed Development ('intra-project effects').

2. Inter-project cumulative effects arise as a result of the Proposed Development interacting with other major developments in the vicinity. An example of an inter-project cumulative effect may result from the proposed construction traffic for the project using the same access routes as other construction traffic for another un-related major project.

3. The EIA Regulations 2017 (as amended) only require an assessment of the cumulation of effects with other existing and/or approved projects. Table 1 below lists the projects within a 1km vicinity of the Proposed Development which are of a similar scale and which are currently under construction or have recently been granted planning permission. The existing status of the project is provided, along with a realistic assumption of the future stage of the project at 2021 (the anticipated construction date for the Proposed Development) and 2023 (the anticipated operational date for the Proposed Development).

4. Table 1 also includes three projects that have been recently been approved by Manchester City Council (reference numbers 35, 36 and 37). These projects are within the Portugal Street East Strategic Regeneration Framework Area, and are likely to come forward on a similar timescale to the Proposed Development.

5. There are no known details of the development of the remaining plots within the Portugal Street East Strategic Regeneration Framework Area, and therefore no cumulative assessment has been completed for the remaining plots.

6. A list is provided below of other existing and/or approved projects that are of a similar scale to the Proposed Development and are within a 1km vicinity of the Proposed Development site. A 1km radius was selected as the search area as this was the maximum distance noted by consultants where significant cumulative impacts could arise. The list has been compiled using information available on Manchester City Council's planning application portal, and via a site visit undertaken on 31st October 2018 as well as a review of online mapping resources in August 2019 and January 2020. This list has also been agreed with Manchester City Council.

Turley

Table 1: Table Key

Table reference	Stage of development
On site	Developers are on site but structure has not yet been built
Built	Under construction – core of structure exists but the building works are not yet complete
Complete	The construction works are complete but the development is not yet operational
Operational	Building is operational

Table 2: Cumulative Developments within 1km of the proposed development site

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
1	116099/FO/2017	**London Road Fire Station** 50 London Road, M1 2PH	Refurbishment, restoration, reconfiguration and extension of former London Road Fire Station to create a mixed use development comprising hotel, office, commercial, residential and leisure including highways works and landscaping.	Approved	31 July 2017	On site	Likely to be operational	Likely to be operational
2	110346/FO/2015/C2	**Princess Street / Whitworth Street Corner A**	Two residential buildings (14 and 13 storeys), one hotel building (11 storeys) with ground floor retail, leisure and public space and associated access, landscaping, etc.	Approved	08 January 2016	Built	Likely to be operational	Likely to be operational
3	114585/FO/2016	**Princess Street / Whitworth Street Corner B**	Three residential buildings (15, 11 and 14 storeys) with ground floor commercial and leisure uses, public space and associated access landscaping etc.	Approved	09 March 2016	Built	Likely to be operational	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
4	112034/FO/2016/C2	**Former MMU Ayouton Campus**	Conversion and extension of 12 storey building to 15 storeys and construction of 2 buildings (14 and 16 storeys) to provide residential led mixed use development.	Approved	28 September 2016	Built	Likely to be operational	Likely to be operational
5	109948/FO/2015/N2	**X1 Eastbank Phase II** Land bounded by Great Ancoats Street, Isaac Way and Advent Way	Erection of part 10, part 8, part 7, part 6, part 5 storey building to form 201 residential apartments with ancillary ground floor gym	Approved	11 December 2015	Built	Likely to be operational	Likely to be operational
6	113955/FO/2016	**All Souls Rectory** Every Street	4 storey building to form 10 apartments with associated landscaping, parking, boundary treatment following the demolition of the former All Souls Rectory	Approved	16 December 2016	On site	Likely to be under construction	Likely to be operational
7	115947/FO/2017	**Vesta** Land bounded by Vesta Street, Old Mill Street, Ashton Canal Basin and Ashton Canal Towpath	Erection of part 9, part 8, part 7 storey building to form residential apartments with 3 x 3 storey residential	Approved	04 July 2017	Built	Likely to be operational	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
			dwellings, access from Vesta Street					
8	109676/FO/2015/N2	**Islington Wharf Phase III** Land bounded by Old Mill Street, the Islington Branch Canal Arm, Public footpath adjacent to Ashton Canal and 141 – 155 Great Ancoats Street	Erection of three buildings comprising 101 residential units (10 storey, part 5 part 3 storey, 8 storey), associated vehicular access and landscaping	Approved	11 December 2015	Built	Likely to be operational	Likely to be operational
9	115545/FO/2017	**Oxygen** Land between Millbank Street and Store Street	Resubmission – demolition of existing buildings and erection of 12 townhouses and 345 apartments with ground floor commercial and leisure uses. Part 32, part 15, part 9 storey building	Approved	06 June 2017	Built	Likely to be partly operational and partly under construction	Likely to be operational
10	115178/FO/2017	**Eider House** Part site of existing car park bounded by Ducie Street, the Rochdale Canal, Peak Street, Tariff Street (multi-storey car park) and	Erection of two linked buildings ranging from 8 – 10 storeys to provide residential accommodation and 9 townhouses plus creation of access and servicing	Approved	16 January 2018	On site	Likely to be under construction	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
		remainder of surface car park M1 2JL	and associated landscaping and works following demolition of the existing buildings					
11	114818/FO/2016	**Dakota Hotel** Surface car park bunded by Ducie Street, Rochdale Canal and the remainder of the car park	Erection of 9 storey building to provide 137 hotel bedrooms with ancillary hotel operated restaurant and bar and associated landscaping and highway works	Approved	07 April 2017	Operational	Likely to be operational	Likely to be operational
12	115529/FO/2017	**Mangle Street Apartments** Land to rear of 56 Dale Street, Mangle Street	Construction of 14 new-build residential apartments and ancillary spaces. Minor alterations to Grade II listed building (56 Dale Street).	Approved	03 July 2017	No activity	Likely to be under construction	Likely to be under construction
13	118233/FO/2017	**47-47A Spear Street**	Erection of five storey apartment building above basement level	Approved	10 January 2018	No activity	Likely to be under construction	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
14	120878/FO/2018	**60 Oldham Street & 53 Spear Street**	Conversion to apartments and erection of 7 storey building to form 5no. apartments on empty plot at 53 Spear Street	Approved	21 September 2018	No activity	Likely to be under construction	Likely to be operational
15	109784/FO/2015/C2	**M-One Central** 47 Houldsworth Street	Construction of a new 13 storey building comprising 119 apartments on upper floors and two new ground floor retail / commercial units, with associated public realm, highways and engineering works following demolition of existing building on site.	Approved	04 Feb 2016	Complete	Likely to be operational	Likely to be operational
16	111276/FO/2016/C2	**74-88 Great Ancoats Street**	Resubmission: demolition of existing buildings and redevelopment of site for residential building with ground floor commercial uses (varying from 9 – 15 storeys)	Approved	14 April 2016	Built	Likely to be operational	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
17	120319/DEM/2018	**Central Retail Park** Great Ancoats Street	Prior notification for the proposed demolition of the retail units and associated structures	No objection	10 July 2018	Complete	Likely to be complete	Likely to be complete
18	111587/FO/2016/N1	**New Islington Phase II** Land between New Islington Marina, Coppersmith Road and Winder Drive (Phase 2 New Islington)	Erection of 20no. three storey dwellinghouses, 2no. 6 storey residential buildings.	Approved	18 November 2016	On site	Likely to be operational	Likely to be operational
19	112658/FO/2016/N1	**Old Mill Street Site** Land bounded by Old Mill Street, Weybridge Road, Coppersmith Road and New Islington Marina	Erection of a part 10, part 4 storey residential building including vehicular access	Approved	27 September 2016	Built	Likely to be partially operational and partially under construction	Likely to be operational
20	116190/FO/2017	**Lampwick** Land bounded by Old Mill Street, Ashton Canal and Upper Kirby Street	Erection of a part 6 part 10 storey residential building together with 5 storey link building, access off Upper Kirby Street	Approved	28 July 2017	Built	Likely to be partially under construction and partially operational	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
21	111742/FO/2016/N1	**Blossom Street** Land bounded by George Leigh Street, Bengal Street, Blossom Street and Sherrat Street	Part 8 storey, part 5 storey residential led mixed use building and demolition of existing buildings including the former Smith's Arms public house and express motors buildings	Approved	03 June 2016	Built	Likely to be partially under construction and partially operational	Likely to be operational
22	110077/FO/2015/N1	**Jersey Street Site** Land bounded by Bengal Street, Jersey Street, Murray Street and Blossom Street	Part 7, part 8 storey residential led mixed use building, along with demolition of existing buildings on site.	Approved	11 December 2015	Built	Likely to be operational	Likely to be operational
23	107484/FO/2014/N1	**George Leigh Street, Ancoats** Land bounded by St Michaels Church, Loom Street, Sherratt Street and George Leigh Street	14 x three storey terraced houses in two rows with access from Sherratt Street, along with demolition of existing building on site	Approved	20 February 2015	Operational	Operational	Operational
24	109467/FO/2015/N1	**Edinburgh Castle pub** 15 Blossom Street	Part four, part six storey building and extension to Edinburgh Castle Public House – mixed use including residential commercial and office, along with demolition of	Approved	20 October 2015	Built	Likely to be operational	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
			former backpackers building					
25	109593/FO/2015/N1	**Hood Street Site** Land at Hood Street	Part 9, part 8, part 5 storey residential led mixed use building, access from Jersey Street	Approved	19 October 2015	Built	Likely to be operational	Likely to be operational
26	108566/FO/2015/N2	**Murrays Mills Complex** Bounded by Murray Street, Redhill Street and Jersey Street	Conversion of former Murrays Mill complex, erection of five storey building, demolition of former blowing room and canteen	Approved	02 July 2015	Built	Likely to be operational	Likely to be operational
27	116300/FO/2017	**New Little Mill** Jersey Street	Conversion of existing building plus two storey rooftop extension, along with demolition of three storey block, access off Radium Street	Approved	28 July 2017	Built	Likely to be operational	Likely to be operational
28	106021/FO/2014/C2	**Burlington House**	Erection of 11 storey building comprising 91 residential apartments (Use Class C3)	Approved	15 September 2014	Built	Likely to be operational	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
29	120149/FO/2018	**Lomax Street Manchester** Land at Ducie Street	Erection of 7 to 8 storey residential building (Class C3) to provide 41 apartments with associated landscaping and other works.	Approved	18 March 2019	No activity	Likely to be under construction	Likely to be operational
30	116401/FO/2017	**27 Dale Street**	Erection of 6 storey building (plus plant level) to create office accommodation Class B1 at 1st to 5th floors and ground floor and basement (A1, A3 and A4 use) with repair up to second floor and reinstatement from 2nd floor to roof of former central feature above former entrance block, removal of brick and stone wall to Bunsen Street elevation, remains of existing chimney to gable wall of 25 Dale Street and existing stair and lift core from	Approved	27th October 2017	No activity	Likely to be under construction	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
			basement, ground and 1st floor.					
31	113713/FO/2016	**Red Lion Street** Manchester	Erection of 3, 5, 7 and 8 and 11 storey building to comprise 38 residential apartments above ground floor commercial space and B1 (Office) following demolition of the rear of the building and provision of associated cycle parking, landscaping and ancillary works	Approved	16 December 2016	On site	Likely to be under construction	Likely to be operational
32	115401/FO/2017	**Brownsfield Mill** Binns Place, Manchester	Conversion of building to 31 x apartments (1 x 1 bed, 24 x 2 bed, 6 x 3 bed) with 19 x parking spaces and 31 cycle parking spaces and elevational alterations to include creation of private garden and courtyard spaces with associated hard and soft	Approved	07 September 2017	Built	Likely to be operational	Likely to be operational

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
			landscaping, addition of mesh enclosures to service risers at roof level, erection of external staircase to gable end, insertion of roof lights, redirection of existing bridge., removal of non-original timber infills and insertion of new slimline steel windows, height reduction to existing masonry wall.					
33	124495/FO/2019	**Meininger, Great Ancoats Street** Land at Great Ancoats Street, M4 7DB	Erection of a 12 storey building to create a 212-bedroom hotel (Use Class C1) with ancillary facilities at ground and first floor level and associated servicing, disabled car parking, drop-off area, public realm and hard landscaping works, with access from Pollard Street	Approved	19 December 2019	No activity	Likely to be under construction	Likely to be partially operational and partially under construction

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
34	124472/FO/2019	**Unite Students, Kincardine Court** Kincardine Road, M13 9JA	Erection of a part 4, part 5, part 6 storey extension to existing student accommodation building to form 25 additional student flats (comprising 100 bedrooms) (Use Class Sui Generis) to form 86 student flats in total (329 bedrooms) following removal, modification and reconfiguration of existing car parking, landscaping and boundary treatment together with the erection of a single storey water tank	Approved	6 December 2019	No activity	Likely to be under construction	Likely to be partially operational and partially under construction
Known Developments within the Portugal Street East Regeneration Area								
35	121467/FO/2018	**Public Realm, Portugal East Street** Portugal East Street	Phased demolition of existing buildings including those within Plots A to E and delivery of public realm (including hard and soft landscaping, tree planting and street furniture),	Approved at Planning Committee	16 January 2020	No activity	Likely to be under construction	Likely to be partially operational and partially under construction

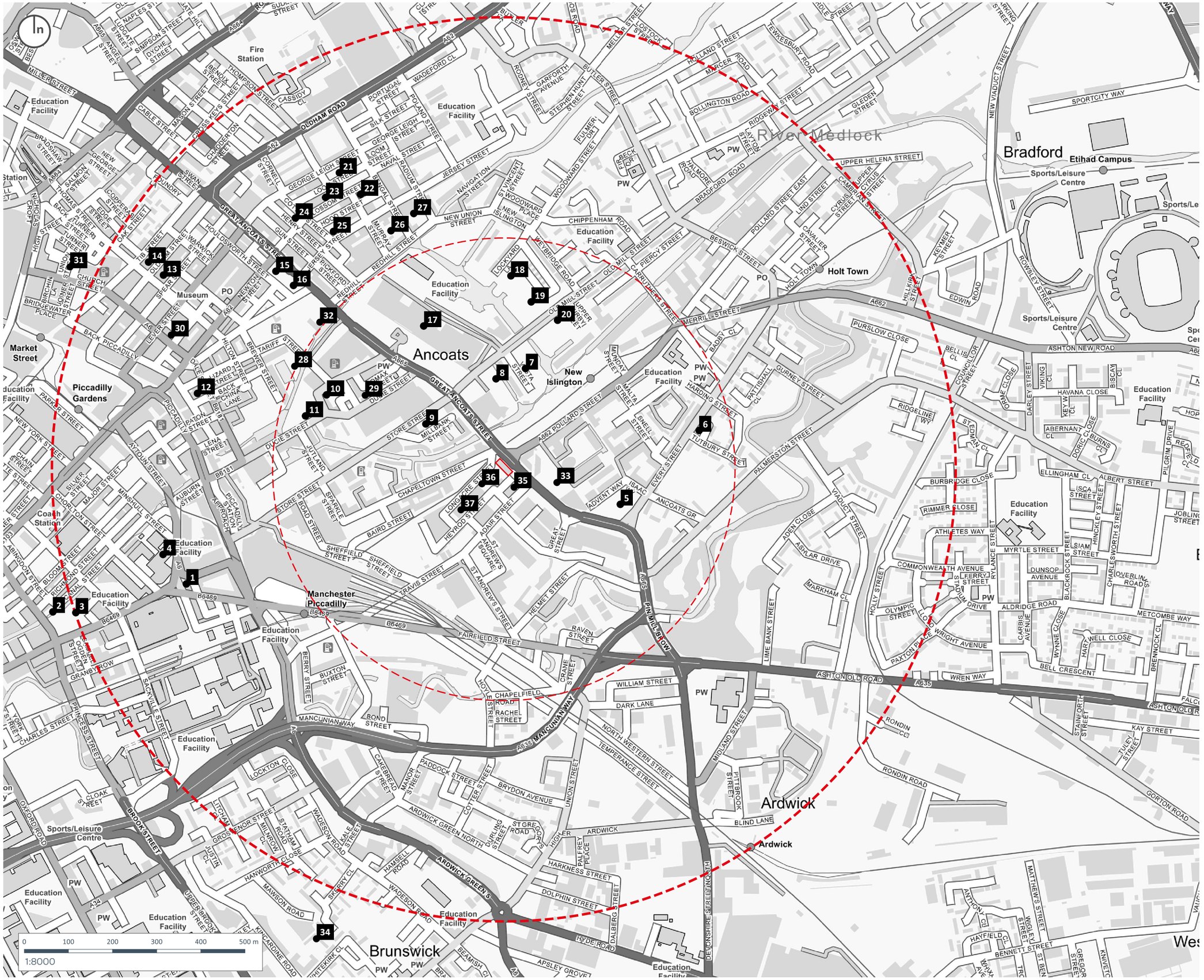
Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
			including a public square, highways improvements and associated works.					
36	121099/FO/2018	**Plots A and B, Portugal East Street**	Construction of two residential buildings (Use Class C3) comprising Block 1 (29 storeys) (224 apartments (4 x 1 bed 1 person, 52 x 1 bed 2 person, 64 x 2 bed 3 person and 104 x 2 bed 4 person) 25% 1 bed and 75 % 2 bed) Block 2 (23 storeys) (264 apartments 44 x1 bed 1 person, 44 x 1 bed 2 person, 92 x 2 bed 3 person and 84 x 2 bed 4 person) (33% 1 bed and 67%% 2 bed) with a linked central podium, to deliver 488 units, shared amenity space, 27 car parking spaces, 492 cycle spaces, landscaping (including new public park) , lighting, highways	Approved at Planning Committee	16 January 2020	No activity	Likely to be under construction	Likely to be partially operational and partially under construction

Map ref	Application ref	Address	Description of Development	Status	Date approved	Existing (2020)	Construction (2021)	Operation (2023)
			and associated works following demolition of existing buildings and structures.					
37	122599/FO/2019	**Plot G, Portugal East Street** 1 Adair Street, Plot G of the Portugal Street East Regeneration Framework	Demolition of existing building and erection of a 13 / part 14 (plant level) storey building to create a 275-bedroom hotel (Class C1) use	Approved	23 September 2019	No activity	Likely to be under construction	Likely to be partially operational and partially under construction

Contact
Katie Purdam
Katie.purdam@turley.co.uk

January 2020

FORM3006



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Application Site

- Application Site
- Study Area 500m
- Study Area 1000m
- Cumulative Scheme

1 London Road Fire Station
2 Princess Street and Whitworth Street Corner A
3 Princess Street and Whitworth Street Corner B
4 Former MMU Aytoun Campus
5 X1 Eastbank Phase II
6 All Souls Rectory
7 Vesta
8 Islington Wharf Phase III
9 Oxygen
10 Eider House
11 Dakota Hotel
12 Mangle Street Apartments
13 47-47A Spear Street
14 60 Oldham Street & 53 Spear Street
15 M-One Central
16 74-88 Great Ancoats Street
17 Central Retail Park
18 New Islington Phase II
19 Old Mill Street Site
20 Lampwick
21 Blossom Street Site
22 Jersey Street Site
23 George Leigh Street, Ancoats
24 Edinburgh Castle Pub
25 Hood Street Site
26 Murrays Mills Complex
27 New Little Mill
28 Burlington House
29 Lomax Street
30 27 Dale Street
31 Red Lion Street
32 Brownsfield Mill
33 Meininger, Great Ancoats Street
34 Unite Students, Kincardine Court
35 Public Realm, Portugal East Street
36 Plots A and B, Portugal East Street
37 Plot G, Portugal East Street

CLIENT:
Forshaw Land & Property Group Ltd

PROJECT:
Victoria House, Great Ancoats Street

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Heritage Assessment

Victoria House, Great Ancoats Street

January 2020

Turley
Heritage

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Executive Summary

1. This Heritage Assessment has been prepared by Turley Heritage on behalf of Foreshaw Land and Property Group ('the Applicant') in connection with a full planning application for the following development (the 'Proposed Development'):

   "Demolition of existing buildings and erection of a residential tower (Use Class C3) with commercial space (Use Class A1, A2, A3, A4 and D1) associated shared amenity spaces, cycle parking, recycling and refuse bin storage, associated plant and public realm enhancements."

2. Under The Planning (Listed Buildings and Conservation Areas) Act 1990, Manchester City Council (MCC), in determining the submitted full planning application has a statutory duty to pay special attention to the desirability of preserving listed buildings, their setting or any features of special interest they may possess. The meaning of 'preservation' in this context, as informed by case law, is taken to be the avoidance of harm.

3. The Proposed Development has the potential to affect the significance of nearby designated and non-designated heritage assets through development within their setting, rather than direct effects.

4. Historic map regression and historic images evidence that the Proposed Development Site (PDS) was typical of the character of this part of Manchester during the 19th century and formed part of a terrace of dwellings, mixed with industrial functions to the rear. The former buildings were demolished during the mid-20th century and the existing storage building with associated yard was built in the late 20th century.

5. To meet the requirements of Paragraph 189 of the National Planning Policy Framework (NPPF) an assessment of the significance and setting of designated and non-designated heritage assets within a 500m Study Area has been undertaken. It is concluded that the PDS holds no visual relationships with the surrounding heritage assets that contribute to their significance. Due to the plain and functional appearance and diminutive scale and form of the existing building, its location in relation to the identified heritage assets and the extent of intervening development, it is also not readily experienced from a large number of the assets identified within the Study Area. Historic map regression and research to date has not identified any historic or functional associations between the PDS and the identified heritage assets that would suggest it yields any heritage value or contributes to their significance.

6. Overall, it is concluded that the PDS makes a neutral contribution to the special interest and significance of the surrounding designated and non-designated heritage assets.

7. Where clearly visible the simple and ordered structure of the elevations and the proposed brick cladding in a muted and neutral tone will ensure the Proposed Development does not conflict with or detract from the former Co-operative Warehouse, Crusader Works or Vulcan Works. The listed structures associated with the Ashton Canal exist in a mixed setting and the Proposed Development will be

viewed within that context. The historic and functional significance of these assets would not be undermined.

8. In relation to the other heritage assets within the Study Area, due to the nature of their significance, the existing character of their setting and elements that contribute to their significance, combined with distance and intervening development (existing and proposed), it is concluded that their significance would be sustained.

9. Verified views have been prepared to assist in the assessment of the impact of the Proposed Development on heritage assets. The assessment reiterates the findings of the impact assessment and demonstrates that the Proposed Development would result in an overall neutral effect to all heritage assets.

10. For these reasons, it is concluded that the requirement of S66 (1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 can be satisfied if MCC grants planning permission.

11. In accordance with Paragraphs 192 and 193 of the National Planning Policy Framework (NPPF), the Proposed Development will sustain the significance of the heritage assets identified in this Statement and will make a positive contribution to local distinctiveness.

12. In relation to Paragraph 200 of the NPPF, the Proposed Development will preserve those aspects of setting that make a positive contribution to the identified listed buildings and conservation areas.

13. The Proposed Development will not harm any of the identified non-designated heritage assets and Paragraph 197 of the NPPF is not engaged.

14. In accordance with Policies EN2 and EN3 of the Manchester Core Strategy and Policy DC18.1 of the saved Citywide Development Control Policies, the Proposed Development will sustain the significance of the historic environment, including nearby listed buildings and the Ancoats Conservation Area. The Proposed Development complies with Policy DC19 by preserving those elements of setting that contribute to the significance of listed buildings.

1. Introduction

1.1 This Heritage Assessment has been prepared by Turley Heritage on behalf of Forshaw Land and Property Group in connection with a full planning application for the demolition of Victoria House, Great Ancoats Street and for the erection of a 25 storey residential tower with associated uses and a commercial unit at ground floor level (hereafter referred to as "the Proposed Development").The Proposed Development Site ("PDS") comprises the Victoria House which is a modern single storey industrial unit currently used as a storage facility.

1.2 This report is a technical appendix (Appendix 9.1) to the Built Heritage Chapter of an Environmental Statement (ES) submitted in connection with the Proposed Development.

1.3 The PDS is relatively close to listed buildings and the Ancoats Conservation Area. Therefore, under the Planning (Listed Buildings and Conservation Areas) Act 1990, Manchester City Council (MCC), in determining the submitted full planning application has a statutory duty to pay special attention to the desirability of preserving listed buildings, their setting or any features of special interest they may possess. 'Preservation' in this context, as informed by case law, is taken to be the avoidance of harm.

1.4 The National Planning Policy Framework (NPPF) provides the Government's national planning policy on the conservation of the historic environment. In respect of information requirements for applications, Paragraph 189 sets out that:

"In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance".

1.5 Section 4 provides statements of significance for the identified designated heritage assets that may be affected by the Proposed Development; proportionate to both the importance of the asset and the likely impacts. This assessment is undertaken on the basis of published information, archival research and on-site visual survey.

1.6 Section 5 provides an assessment of the impact of the Proposed Development on the significance of the identified designated heritage assets, in light of the statutory duty of the Planning (Listed Buildings and Conservation Areas) Act 1990, national policy set out in the NPPF, and local planning policy for the historic environment (set out in detail at **Appendix 1**).

2. Heritage Assets

2.1 The NPPF (2019) defines a heritage asset as:

"A building, monument, site, place, area, or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing)."

Scope and Study Area

2.2 All designated and non-designated heritage assets, both within the PDS and within 500m from the boundary of the site (the 'Study Area') have been identified and the effect of the Proposed Development on these assets has been assessed.

2.3 As aforementioned, this report forms a technical appendix (Appendix 9.1) of an ES and should be read in conjunction with Chapter 9 of the ES dealing with Built Heritage.

Designated Heritage Assets

2.4 Designated heritage assets are those which possess a level of heritage interest that justifies designation and are then subject to particular procedures in planning decisions that involve them.

Listed Buildings

2.5 A total of 20 listed buildings have been identified within the Study Area. The location of each listed building is illustrated on the Heritage Asset Plan at **Appendix 2** of this report. These are:

Table 2.1: Listed Buildings within the Study Area

Name of Asset	Grade
Bridge No 4 over Ashton Canal	II
Ashton Canal Lock No 1 immediately east of Great Ancoats Street	II
Ashton Canal Towpath Bridge over junction with Islington Branch Canal west of Lock No 2	II
Former Church of All Souls	II
Star and Garter Public House	II
Stable Block to south east of Junction Works at Paradise Wharf	II
Ashton Canal Lock No 2 off south end of Vesta Street	II
Brownsfield Mill	II*
Former Junction Works at Paradise Wharf	II
Cooperative Warehouse	II

Name of Asset	Grade
Rochdale Canal Lock No 83 to the east of Tariff Street	II
Rochdale Canal Lock No 82 to the east of Great Ancoats Street	II
Store Street Viaduct	II
Rochdale Canal Towpath Footbridge and associated Ramps opposite Brownsfield Mill	II
Ashton Canal Lock Keepers Cottage beside Lock No 2 at Islington Branch Junction Basin	II
32 and 34 Laystall Street	II
Train Shed at Piccadilly Station	II
Ardwick and Ancoats Hospital	II
Ashton Canal Lock No 3 on south side of Ancoats Hospital	II
Crusader Works	II

Conservation Areas

2.6 The Application Site is not located within a conservation area; however Ancoats Conservation Area is located within the Study Area. The relationship between the Application Site and the conservation area is illustrated on the Heritage Asset Map at **Appendix 2** of this report.

Non-Designated Heritage Assets

2.7 The 'Good Practice Advice Note 2: Managing Significance in Decision-Taking' produced by Historic England (HE) (2015) states that:

"Non-designated heritage assets include those that have been identified in a Historic Environment Record, in a local plan, through local listing or during the process of considering the application."

2.8 An additional three buildings were recorded on the Greater Manchester Historic Environment Record (HER) and have been considered in this report. These have been illustrated on the Heritage Asset Plan at **Appendix 2** of this report and are set out in the Table below:

Table 2.2: Buildings identified on the HER within the Study Area

Building Name	Building Type
Iron and Steel Warehouse	Iron Warehouse, Iron Foundry, Iron Works
Vulcan Works	Chemical Works, Works, Office, Iron Works
Former Bridge Inn Public House	Public House, Brewery Building

Summary

2.9 These designated and non-designated heritage assets have been identified and confirmed through a search of the HER via Greater Manchester Archaeological Advisory Service (dated 25 September 2018), the National Heritage List for England and from information published by MCC. The PDS does not contain any designated or non-designated heritage assets and is not located within a conservation area. Any effects arising from the Proposed Development on built heritage will therefore be indirect in nature, having potential to affect the significance of the identified assets through change within their setting.

3. The Application Site and Surrounding Area

3.1 The PDS is a broadly rectangular area of land located to the east of Manchester City Centre. It is bounded by Great Ancoats Street to the north east, Longacre Street to the north west, Epworth Street to the south west and Heyrod Street to the south east and is currently occupied by a predominantly single storey modern yellow brick building with a corrugated metal shallow pitched roof. At the south eastern end of the site is an adjoining but separately expressed taller building of three storeys with a flat roof. To the rear is a private yard secured by metal railings and a gate.

3.2 The area surrounding the PDS has a mixed character. The site has a close relationship with Great Ancoats Street (the A665) to the north east and the PDS is also close to the route of the tram network and the Ashton Canal. There is still a mix of warehousing and storage facilities in the area surrounding the site, combined with modern residential and commercial developments. New development is of increased height and has introduced a mix of modern architecture. The existing building within the PDS now appears diminutive within this context.

3.3 The closest listed building to the PDS is the former Crusader Works (grade II listed) on Chapeltown Street to the west which is currently being altered and converted into residential apartments. To the north, lining Pollard Street is the Cooperative Warehouse (also grade II listed). Within the wider area there are a number of functional heritage assets associated with the Ashton Canal and a range of other former industrial buildings, including the grade II* listed Brownsfield Mill which is also being converted into residential apartments.

Figure 3.1: PDS (2018)



General History and Development

3.4 The following section provides an overview of the history and development of the PDS and the surrounding area.

3.5 The Ancoats area of Manchester was first developed in the 18th century in the form of small areas of shops and houses lining Great Ancoats Street. It wasn't until the construction of the Rochdale Canal in the late 18th century, however, that large scale development was attracted to the area. The provision of a new method of transportation for raw materials and manufactured goods catalysed the industrialisation of the area in the form of mill buildings constructed on a monumental scale.

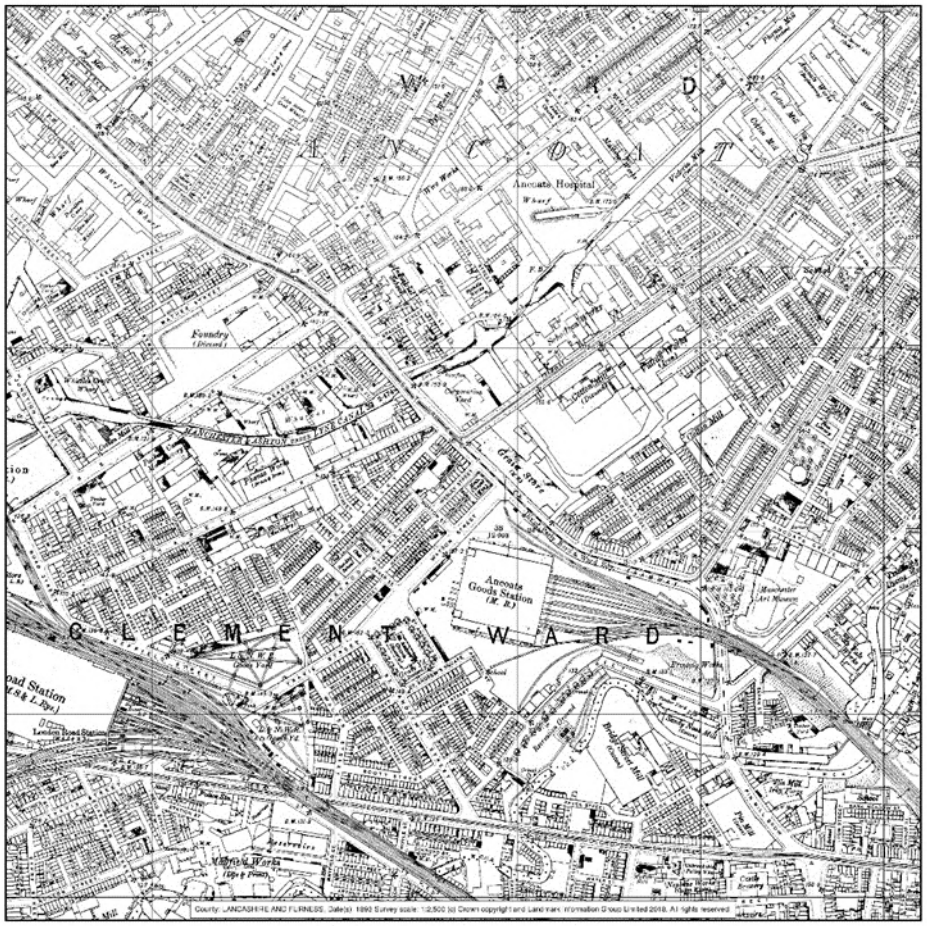
3.6 The first mills were built in Ancoats in the late 1700s and from the opening of the Rochdale Canal in 1804 through to 1912 the area to the north of the canal was developed almost exclusively for the large scale production of cotton and featured a series of grand mills constructed adjacent to the waterway. Ancoats also became densely populated and streets of back-to-back houses and court dwellings were rapidly built.

3.7 The concentrated activity of the cotton industry in the locality precipitated the need for iron works and foundries for the manufacture of machinery, such as those at Vulcan Works and Phoenix Works, close to the PDS.

3.8 The PDS is discernible on early maps of this area of Manchester (Pigot's New Map of Manchester (1819), Johnson's Map of Manchester (1820) and Swire's Map of Manchester (1824)). At this time a small group of terraced houses existed on the site, with a longer terrace extending south westwards on Long Street. The terrace occupying the site and fronting Great Ancoats Street later became named 'Rawlinson's Place'.

3.9 The 1893 OS Map clearly shows the former street layout in the vicinity of the PDS. Longacre Street (formerly known as Long Street) continued south eastwards from Great Ancoats Street until it met Portugal Street East and the PDS formed part of a street block bounded by Great Ancoats Street, Long Street, Wesley Street and Norton Street. The area comprising the PDS formed part of a terrace of dwellings with open land (presumably used for industrial purposes) to the rear. On the northern corner of Wesley Street was a public house, and a Wesleyan Chapel existed further south of the PDS fronting Great Ancoats Street and between Wesley Street and Adair Street. Within the wider area was a mix of housing and industrial concerns including iron works and foundries, textile mills, grain stores, machinery manufactories and Wharves lining the Manchester and Ashton under Lyne Canal. There was a hotel on the corner of Chapel Street (now Chapeltown Street), Great Ancoats Street and Long Street. The former tramways on Great Ancoats Street and Pollard Street are identifiable on the 1893 OS Map.

Figure 3.2: OS Map 1893



3.10 A building and chimney had been added to the rear of the terraced dwellings occupying the PDS by the 1930s suggesting a close interface between dwellings and industrial premises, but the most discernible/significant change occurred in the mid-20th century when the terraced houses lining Great Ancoats Street were demolished. Long Street had been truncated by this time and a large warehouse complex constructed to the south west. This coincided with extensive clearance of terraced housing and back to backs within the wider area, including the loss of St Andrews Church.

Figure 3.3: OS Map 1908

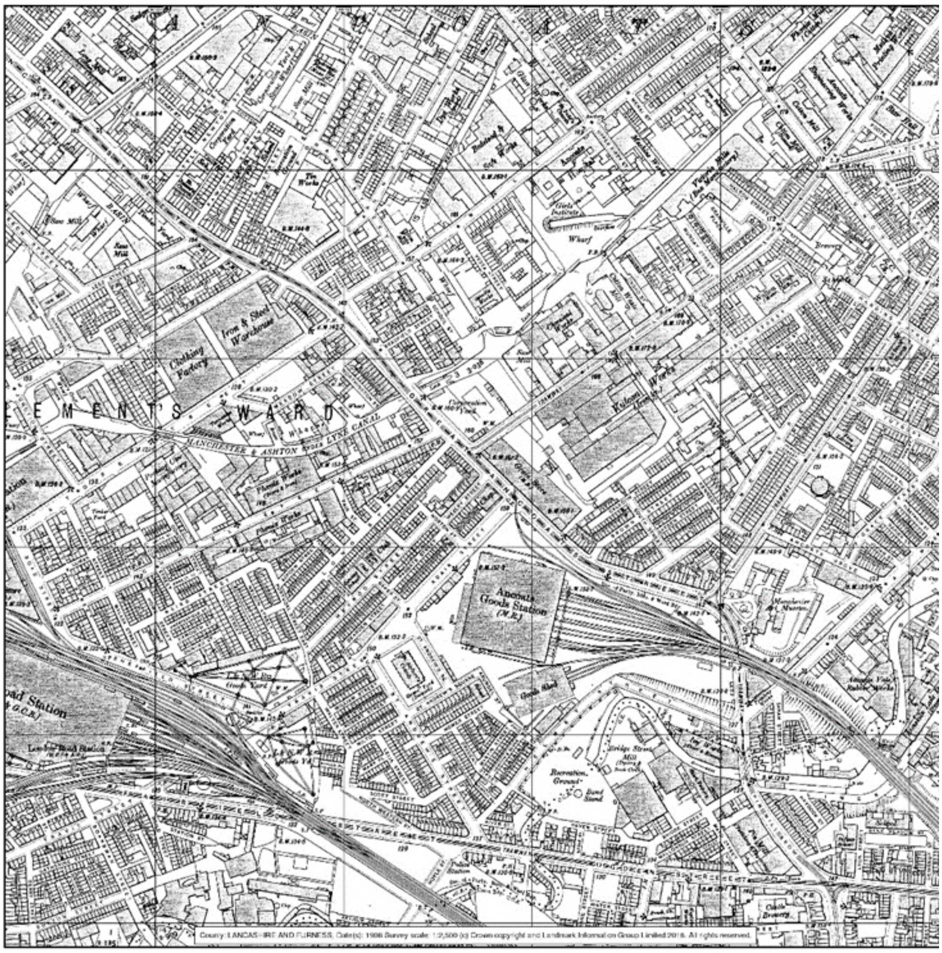
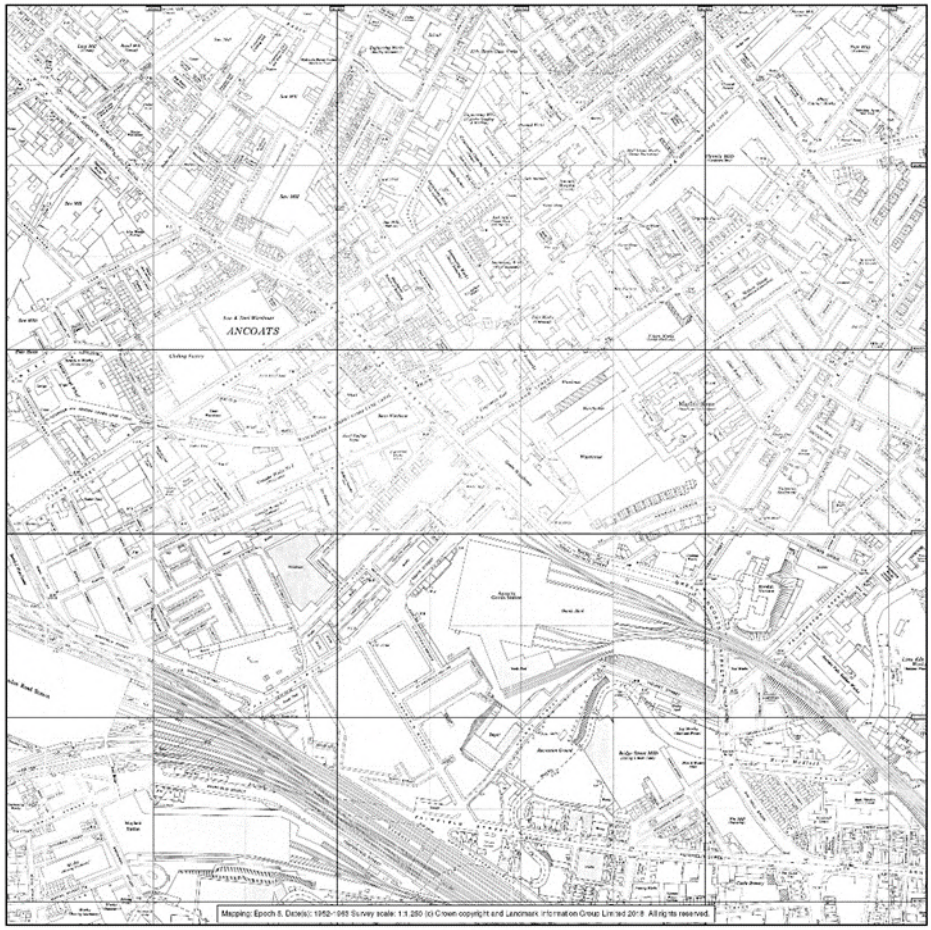


Figure 3.4: OS Map 1932

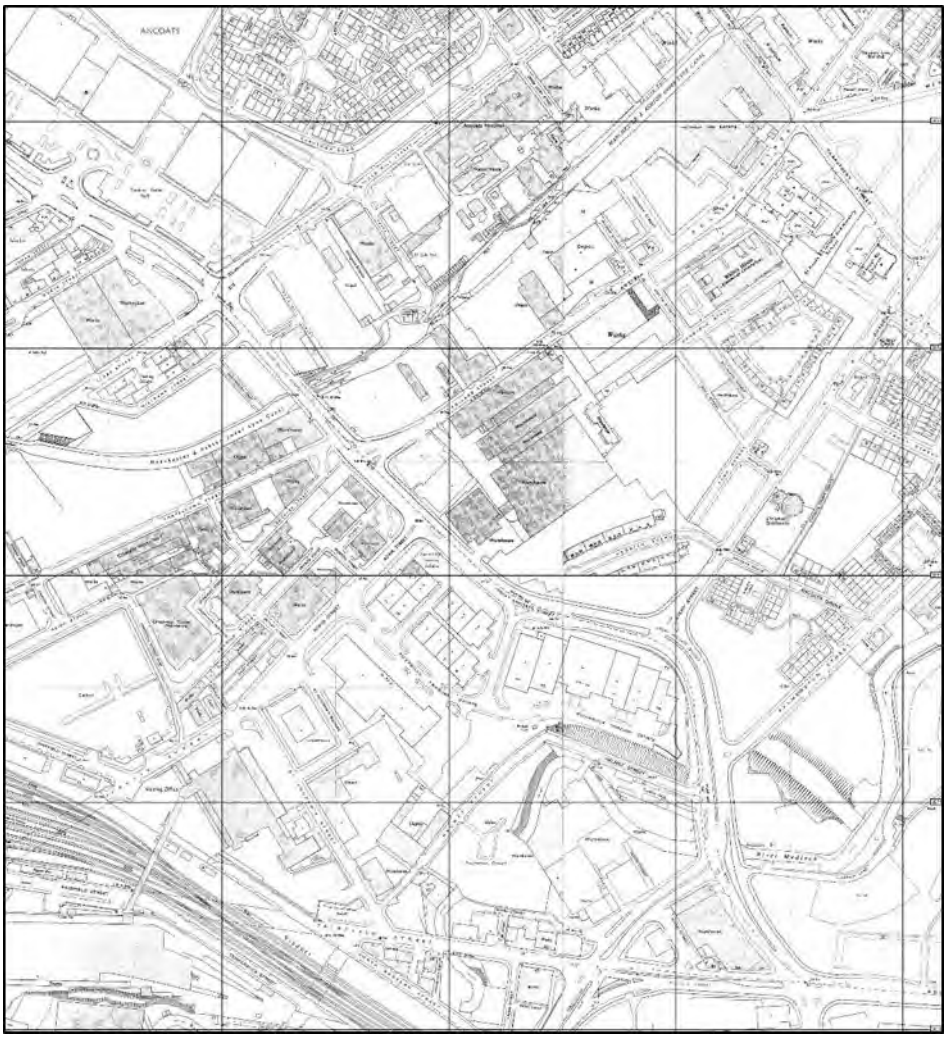


Figure 3.5: OS Map 1963



3.11 By 1979 the current site arrangement had been established. A warehouse had been built within the PDS in the same position as the present building and the Wesleyan Hall to the south had been demolished, creating an area of open hardstanding that exists today. Consistent with the arrangement today, to the rear of the warehouse was another large unit and an enclosed yard. What is evident from historic maps is that at the end of the 20th century the former residential community had been erased and there was a predominance of industrial uses, principally warehouses, works and Piccadilly Trading Estate to the south east of the PDS.

Figure 3.6: OS Map 1979



3.12 That trend is now being reversed and in more recent years there has been considerable investment and regeneration principally involving residential development and conversion of former mills and warehouses into residential apartments.

4. Significance of the Heritage Assets

Significance and Special Interest

4.1 The NPPF defines the significance of a heritage asset as:

"The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting[1]."

Listed Buildings

4.2 Listed buildings are designated heritage assets that hold special architectural or historic interest. The principles of selection for listed buildings are published by the Department of Culture Media and Sport (DCMS)[2].

Conservation Areas

4.3 Conservation areas are designated on the basis of their special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. HE has revised and republished its guidance in respect of conservation areas which provides a framework for the appraisal and assessment of the special interest and significance of a conservation area[3].

Non-Designated Heritage Assets

4.4 Non-Designated Heritage Assets (also identified as 'locally listed assets') are buildings, monuments, sites, places, areas or landscapes identified as having a degree of significance meriting consideration in planning decisions but which are not formally designated heritage assets.

4.5 The 'Good Practice Advice Note 2: Managing Significance in Decision-Taking' produced by HE (2015) states that non-designated heritage assets include those that have been identified in a HER.

Setting

4.6 The NPPF defines the setting of a heritage asset as:

"The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral[4]."

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1 DCLG (2019) National Planning Policy Framework (NPPF) – Annex 2: Glossary
2 DCMS (2018) Principles of Selection for Listed Buildings
3 Historic England (2019) Advice Note 1 (Second Edition): Conservation Area Appraisal, Designation and Management
4 DCLG (2019), National Planning Policy Framework (NPPF) – Annex 2: Glossary

4.7 HE guidance, ***Good Practice Advice Note 3: The Setting of Heritage Assets*** (2017) provides guidance in respect of the setting of heritage assets, providing detail on understanding setting and the associated assessment of the impact of any changes.

4.8 The guidance clarifies that there can be a distinction between views that are valued for reasons other than their contribution to heritage significance such as reasons of landscape character or visual amenity.

4.9 It states that the extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places. It also clarifies that the contribution that setting makes to the significance of the heritage asset does not depend on there being public rights or an ability to access or experience that setting.

4.10 Paragraph 9 of the guidance states that setting is not itself a heritage asset. Its importance lies in what it contributes to the significance of the heritage asset or to the ability to appreciate that significance.

4.11 The guidance highlights a series of other considerations that can be relevant to the assessing the impact of development such as 'change over time', 'cumulative change', 'access and setting', 'buried assets and setting, 'designed settings', 'setting and urban design', and 'setting and economic viability'.

4.12 It is identified within the guidance that views which contribute more to understanding the significance of a heritage asset include the following:

- Those where the composition within the view was a fundamental aspect of the design or function of the heritage asset.
- Those where town- or village-scape reveals views with unplanned or unintended beauty.
- Those with historical associations.
- Those with cultural associations.
- Those where relationships between the asset and other heritage assets or natural features or phenomena are particularly relevant.

4.13 As set out above, a staged approach to assessment is advocated involving identification of the assets that may be affected, assessing the degree to which setting makes a contribution to the significance of the heritage asset or allows significance to be appreciated, assessing the effects of the proposed development and exploring ways to maximise enhancement and avoid or minimise harm.

4.14 In assessing the degree to which these settings and views make a contribution to the significance of the heritage assets or allow significance to be appreciated, the key

attributes of the heritage asset should be addressed and then the following considered:

- The physical surroundings of the asset and its relationship with other assets;
- The asset's intangible associations with its surroundings, and patterns of use;
- The contribution made by noise, smells etc to significance; and
- The way views allow the significance of the asset to be appreciated.

4.15 The Step 2 Checklist provides a list of potential setting attributes that may help to elucidate its contribution to significance under the headings 'The asset's physical surroundings' and 'Experience of the asset'. The Step 3 Checklist provides a list of potential attributes of a development affecting setting that may help to elucidate its implications for the significance of the heritage asset including the 'Location and siting of development', the 'Form and appearance of development', 'Wider effects of the development' and 'Permanence of the development'.

Summary Assessments of Significance

4.16 Tables 4.1 to 4.3 (overleaf) describe the significance and setting of the heritage assets identified within the Study Area. These are proportionate to both the significance of the relevant heritage asset, the nature of the Proposed Development and the likely magnitude and form of effect. As aforementioned at paragraph 1.5 these assessments have been based on existing published information, archival research and on-site visual survey.

4.17 These have been grouped accordingly:

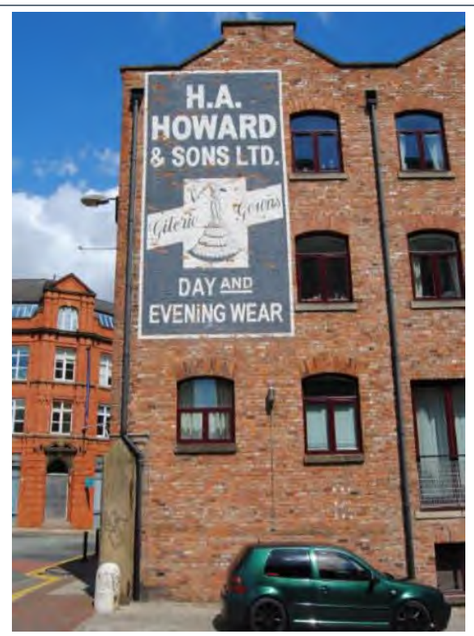
- Listed Buildings within the Study Area;
- Conservation Areas within the Study Area; and
- Buildings identified on the HER within the Study Area.

Table 4.1: Listed Buildings within the Study Area

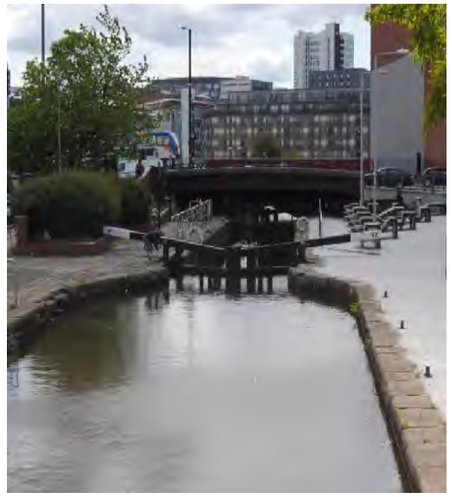
Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Bridge No 4 over Ashton Canal		The Bridge over the Ashton Canal dates to the late 18th and early 19th century (c.1800) and is constructed from red brick in English garden wall bond with sandstone dressings. It consists of a narrow rectangular structure across the canal, with brick piers and cast iron beam.	The structure is of historic interest as a road bridge constructed in the early 19th century as a functional supporting structure as part of the wider Ashton Canal system.	**The Asset's Physical Surroundings** The bridge is located along the Ashton Canal and the forms the road bridge for Carruthers Street. To the north west are the modern residential developments at Piercy Street and Milliners Wharf. To the north east and south west is the Ashton Canal itself. **Experience of the Asset** The bridge is principally experienced from the canal towpath to its south west and north east, allowing for an appreciation of the workings of the canal system. From this point it is clearly read as a functional structure related to the Ashton Canal. **The Asset's Associative Attributes** The bridge has an association with the other series of canal structures constructed as part of the Ashton Canal system in the early 19th century.
Ashton Canal Lock No 1 (Grade II)		Canal Lock No. 1 dates to the late 18th century (c.1792-99) and is constructed from large millstone grit with wooden gates (restored). The lock is a narrow type and is 7-foot wide with pair of gates at both ends. The structure includes a central island with curved taper at both ends and stone staircases flanking the lower entry.	The structure is of historic interest as a lock constructed in the early 19th century as a functional supporting structure as part of the wider Ashton Canal system.	**The Asset's Physical Surroundings** Canal Lock No.1 is located along the Ashton Canal and is bounded by canal towpaths to its north and south. Further north is modern residential development (Islington Wharf) and to the south is Great Ancoats Street. To the east is the Ashton Canal. **Experience of the Asset** The lock is primarily and directly experienced from the canal towpath, allowing for an appreciation of the workings of the canal system. From this point it is clearly read as a functional structure related to the Ashton Canal. The lock is also visible from the area of public realm to the immediate south of Islington Wharf, adjacent to the lock. Due to the modern bridge over the canal, there are no views from the south. **The Asset's Associative Attributes** The lock has an association with the other series of locks constructed as part of the Ashton Canal system in the early 19th century
Ashton Canal Towpath Bridge (Grade II)		The Towpath Bridge dates to the late 18th and early 19th century (c.1800) and is constructed from red brick in English garden wall bond with sandstone dressings. The bridge is an elliptical arch with a keystone and a stone band, together with a parapet with round stone coping. It forms a group with the cottage and lock number 2.	The structure is of historic interest as a towpath bridge constructed in the early 19th century as a functional supporting structure as part of the wider Ashton Canal system.	**The Asset's Physical Surroundings** The bridge is located along the Ashton Cana at its junction with the Islington Branch and is bounded by the canal to its north and south. Further north is the modern residential development around Islington Wharf. To the west and east are areas of open space associated with Islington Wharf and the Lock-Keepers Cottage respectively. **Experience of the Asset** The bridge is principally experienced from the canal towpath to the south, allowing for an appreciation of the grouping of structures and the workings of the canal system. From this point it is clearly read as a functional structure related to the Ashton Canal. The bridge is also experienced in views from the north. **The Asset's Associative Attributes** The bridge has an association with the other series of canal structures constructed as part of the Ashton Canal system in the early 19th century.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Former Church of All Souls (Grade II)		The Former Church of All Souls was designed by the architect William Daley in c.1839-40 for the Dr Samuel Warren. The building is roughly rectangular in plan form and constructed from brown brick with stone dressings under a slate roof. It is designed the Romanesque style with the three bay gabled ends (east and west) containing square pilasters to the corners with stone false machicolation and pyramidal roofs and those flanking the centre of the west front including tall open-arcaded belfry stages. The building is also decorated with lancets, hoodmoulds and arcading. It is no longer in use as a church.	The building is of historic interest as a former church dating to the mid-19th century. It was constructed for the Dr Samuel Warren who had been expelled from the Wesleyan Methodist Connection.	**The Asset's Physical Surroundings** The Former Church of All Souls is bounded by Every Street, Caterham Street and Harding Street. It is surrounded by modern, principally semi-detached houses, however there is a small supermarket to the north west and St Anne's RC Church to the north. **Experience of the Asset** The former church has prominence due to its corner location and in comparison with the scale of the surrounding buildings. Despite the modern development closely positioned around it, the setting of the building has a green quality due to domestic gardens and the grassed areas and trees lining Every Street. The former church is best appreciated from Every Street, Caterham Street and Harding Street where views are gained of the principal elevations of the building with its projecting pyramidal roofs and belfry stages. Due to surrounding topography, intervening trees and development, there are limited other areas to experience or appreciate the listed building. **The Asset's Associative Attributes** The building has no known associative attributes.
Star and Garter Public House (Grade II)		The Star and Garter Public House dates to the mid to late 19th century (c.1877). The building is constructed from red brick with stone dressings under a steeply pitched slate roof. It is irregular in plan form, located on an acutely-angled corner site. The building is designed in an interpretation of the gothic and baroque styles. It is three storeys (including half dormers) with 5 bays to its principal elevation, the 2nd and 5th including coupled windows with pedimented half dormers. The building is decorated with corbelled pilasters, pediments, board patterns and segmental pediments. The doors and windows have decorative stone architraves and the building also has tall chimney stacks.	The building is of historic interest as late 19th century public house.	**The Asset's Physical Surroundings** The Star and Garter Public House is bounded by Fairfield Street to the north and Neild Street to the west and south. Further to the west and south is the former Manchester Mayfield railway station. To the east of the building is an area of hardstanding utilised as a car park. **Experience of the Asset** The public house is a decorative and eye-catching building in a corner location which resonates with both Piccadilly Railway Station and the former Mayfield railway station. The building is most visible from the junction of Fairfield Street and Travis Street. It is from this point that the principal elevations of the building and its position on a prominent corner are most appreciable. The building is more intimately experienced along Neil Street, allowing for its west elevation to be seen. This road also allows for views of the rear elevation of the building. The building is also visible in distant views along Fairfield Street to its west and Travis Street to its north east. **The Asset's Associative Attributes** The building has a limited association in terms of its shared age, materiality and proximity to the former Manchester Mayfield railway station. The building has no other known associative attributes.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Stable Block to Junction Works (Grade II)		The Stable Block dates to the early to mid-19th century and is the former stable block to the Junction Lead Mills. The building is constructed from red brick in English garden wall bond under a pitched slate roof. It is two storeys and rectangular in plan form, with the northern portion slightly lower. It includes three segmental headed stable doorways to the first portion and two in the other, all with altered doors. The windows are also segmental-headed and square-headed. The building also incorporates various cast iron wall braces. It is noted within the listing entry that the building was included for its group value. The building has been modified but its original character and use remains legible.	The building is of historic interest as a former stable block from the early to mid-19th century. The building is also of interest as forming part of the nearby lead works and illustrating the important role of horses and cart transportation during this period.	**The Asset's Physical Surroundings** The former Stable Block is bounded by Paradise Walk to the east, the Ashton Canal to the south and a large area of hardstanding utilised as a car park to the west. To the north of the building is Ducie Street. **Experience of the Asset** The building is principally visible in views from the canal towpath to the south, where the former lead works and stable block can be appreciated together. It is also from this point that the form and character of the building can be most clearly appreciated. The listed building has a close relationship with the modern apartments that have been developed at Paradise Wharf. **The Asset's Associative Attributes** The building has a strong association and group value with the former lead works located to the north west.
Ashton Canal Lock No 2 (Grade II)		Canal Lock No. 2 dates to the late 18th century (c.1792-99) and is constructed from large millstone grit with wooden gates (restored). The lock is a narrow type and is 7-foot wide with pair of gates at both ends. The structure includes a central island with a curved taper at both ends and stone staircases flanking the lower entry. The structure holds group value with the nearby Lock-Keepers Cottage and the bridge over Islington Branch.	The structure is of historic interest as a lock constructed in the early 19th century as a functional supporting structure as part of the wider Ashton Canal system.	**The Asset's Physical Surroundings** Canal Lock No.2 is located along the Ashton Canal and is bounded by canal towpaths to its west and east. Further west is the Lock-Keepers Cottage and to the east is a wall of a former warehouse or mill complex. To the north and south of the structure is the Ashton Canal. **Experience of the Asset** The lock is primarily and directly experienced from the accompanying canal towpath, allowing for an appreciation of the workings of the canal system. From this point it is clearly read as a functional structure related to the Ashton Canal. The lock is also experienced from the area of open green space to its south west, adjacent to the Lock-Keepers Cottage. It is experienced in combination with modern development. **The Asset's Associative Attributes** The lock has an association with the other series of locks constructed as part of the Ashton Canal system in the early 19th century. The lock also holds an association with the nearby Lock-Keepers Cottage and Islington Branch Bridge.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Brownsfield Mill (Grade II*)		Brownfield Mill dates to the early to mid-19th century (c.1820) and consists of a former spinning mill. The building is roughly L-shaped in its plan form and is 7 storeys in height and constructed from red brick. Of the two wings, the eastern wing is the earliest and extends to 7 storeys and 12 bays. It has a series of small rectangular windows with stone sills and brick heads and there is a stair tower and privy tower. The later western wing is of six storeys with seven bays and has loading bays in the second bay. It is of significance as a steam powered cotton spinning mill with a timber frame construction and an internal engine house, unusual for its underground boilers and chimney contained within the stair tower (noted for being the oldest mill of this arrangement in Manchester). It has an internal canal arm at its northern end and a covered courtyard.	The building is of historic interest as a former spinning mill from the early to mid-19th century. The building is also of interest as one of the oldest mills of this arrangement within Manchester.	**The Asset's Physical Surroundings** Brownfield Mill is located along the Rochdale Canal to its south and Great Ancoats Street and Binns Place to its east. The north and west of the building is largely surrounded by large areas of hardstanding utilised as car parks. **Experience of the Asset** The building is principally experienced from its south along the Rochdale Canal towpath, allowing for an appreciation of the principal elevations of the building together with the context of the canal system. Its former relationship with the canal remains legible from this point. The building is also experienced from the modern retail park to the south east where the principal (canal facing) elevation can be best appreciated. The west elevation is experienced from Tariff Street which allows for an appreciation of the continuous arrangement of windows and bays. The north of the building is experienced from Binns Place and Great Ancoats Street. It is from this point that the external stair tower is best appreciated, together with the courtyard area. Due to the open nature of the land around it to the north and west, the building is visible in distant views along Great Ancoats Street, Port Street, Dean Street and Newton Street. The building is increasingly experienced in conjunction with modern development. **The Asset's Associative Attributes** The building has a minor association, in terms of its close proximity and former shared use (now no longer legible) with the canal structures constructed in the early 19th century as part of the Rochdale Canal company network.
Junction Works (Grade II)		The Junction Lead Mills dates to the early to mid-19th century. The building is four storeys, trapeziform in plan form and constructed from red brick. The roof is largely concealed by various gables and a parapet. The building includes loading bays and doorways and segmental headed windows. The interior of the building includes cast-iron columns and timber floors. It holds group value with the nearby former stables to the south east. The building was converted into residential apartments in the late 20th century.	The building is of historic interest as a former lead works dating from the early to mid-19th century. The building is also of interest as retaining an advertisement to one of its elevations from the early 20th century.	**The Asset's Physical Surroundings** Junction Lead Mills is located at Paradise Wharf and is bounded by Ducie Street to its north, with areas of hardstanding / public realm to its west, south and east. Further west is the Ashton Canal, to the south is a modern residential development and to the south east is the former stable block associated with the mills. **Experience of the Asset** The building is principally experienced from along Ducie Street where the architectural detailing and roofline of the building can be appreciated. The signage to the south west elevation is visible in distant views along Ducie Street from the south west. The buildings relationship with the Ashton Canal is also appreciated from this point. The overall form and extent of the building is more directly appreciated from the junction of Ducie Street and Laystall Street to the north. The building is also visible in views from the canal towpath to the south, allowing for both the former lead works and stable block to be appreciated together. The building has a mixed context and its setting contains both modern and traditional buildings. In views of the listed building from Ducie Street, it is experienced in conjunction with modern development. **The Asset's Associative Attributes** The building has a strong association with the former Stable Block located to the south east, being constructed for the lead works. The building has no other known associative attributes.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Co-operative Warehouse (Grade II)		Co-operative Warehouse dates to the late 19th and early 20th century (c.1890-1901) and consists of a large rectangular warehouse. The building is constructed from red brick with sandstone dressings. It is three storeys (with basement) and consists of 32 bays, including a 6-bay office range to one side. The office range includes a stone sill-band and moulded stone cornice to the ground floor windows. At the centre is a large round-headed doorway with a stone architrave and plain pilasters to the upper floors. The building is noted within the listing entry as being included for its group value with Vulcan Works and other industrial buildings	The building is of historic interest as a large warehouse dating from the late 19th and early 20th century.	**The Asset's Physical Surroundings** The Cooperative Warehouse is located along Pollard Street to its north west, with the Vulcan Works to its north east, beyond which is Malta Street. To the east and south of the building are a series of modern residential development blocks. **Experience of the Asset** The building is principally experienced from land to the south of the Ashton Canal Lock No.4. It is from this point that the scale of the principal elevation of the building is appreciable, together with the neighbouring Co-operative Warehouse. The building is more directly experienced along Pollard Street, allowing for an appreciation of the scale of the building within its immediate context. The building is also visible in intermittent views along Vesta Street, Old Mill Street and Redhill Street to the north. **The Asset's Associative Attributes** The building has a minor association with the neighbouring Vulcan Works in terms of their shared age and materiality. There are no other known associative attributes.
Rochdale Canal Lock No 83 (Grade II)		Canal Lock No. 83 dates to the early 19th century (c.1800) and is constructed from coursed squared sandstone with wooden gates (restored). The lock is 14-foot wide with pair of gates at both ends. The structure also forms part of a group including the towpath footbridge and ramps, together with Brownfield Mill.	The structure is of historic interest as a lock constructed in the early 19th century as a functional supporting structure as part of the wider Rochdale Canal system.	**The Asset's Physical Surroundings** Canal Lock No.83 is located along the Rochdale Canal and is bounded by canal towpaths to its west and east. Further to the west and east are large areas of hardstanding utilised as car parks. To the north and south is the Rochdale Canal. Further south is Tarff Street. **Experience of the Asset** The lock is primarily and directly experienced from the accompanying canal towpath, allowing for an appreciation of the workings of the canal system. From this point it is clearly read as a functional structure related to the Rochdale Canal. The lock is also visible from Tariff Street and from the modern footbridge to the south of Brownfield Mill. The Lock is experienced within a changed context and is visible alongside modern buildings of scale. **The Asset's Associative Attributes** The lock has an association with the other series of locks constructed for the Rochdale Canal Company in the early 19th century. The lock is also proximate to and has a physical and associative relationship with Brownfield Mill and the other remaining mill complexes lining Redhill Street.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Rochdale Canal Lock No 82 (Grade II)		Canal Lock No. 82 dates to the early 19th century (c.1800) and is constructed from coursed squared sandstone with wooden gates (restored). The lock is 14-foot wide with a pair of gates at both ends.	The structure is of historic interest as a lock constructed in the early 19th century as a functional supporting structure as part of the wider Rochdale Canal system.	**The Asset's Physical Surroundings** Canal Lock No.82 is located along the Rochdale Canal and is bounded by a pedestrianised area to the west and the canal towpath to the east. To the north and south is the Rochdale Canal. Further south is Great Ancoats Street and its associated modern bridge which crosses the canal. **Experience of the Asset** The lock is primarily and directly experienced from the accompanying canal towpath, allowing for an appreciation of the workings of the canal system. From this point it is clearly read as a functional structure related to the Rochdale Canal. The lock is also experienced from Redhill Street and the modern bridge along Great Ancoats Street. It has a close visual resonance with the mills lining Redhill Street and the Ancoats Conservation Area but is also close to Central Retail Park and has a mixed setting. **The Asset's Associative Attributes** The lock has an association with the other series of locks constructed for the Rochdale Canal Company in the early 19th century. The lock is also proximate to and has a physical and associative relationship with the remaining mill complexes lining Redhill Street.
Store Street Aqueduct (Grade II*)		The Store Street Aqueduct is a canal aqueduct which dates to the late 18th century (c.1794-99) and is constructed from coursed squared sandstone The structure is approximately 70m long, crossing Store Street at approximately 45 degrees with a skewed semi-elliptical archway (the soffit of which is now rendered). The arch incorporates radiating voussoirs to each side with stone banding (two bands to the south and one to the north) and adorned with a coped parapet. The structure is supported by six triangular buttresses on the north side and four buttresses on the south side.	The structure is of historic interest as a purpose built canal aqueduct from the late 18th century. It is of interest as being one of the earliest canal aqueducts in the country with a skewed arch. The structure is also of interest as being constructed for the Ashton Canal system.	**The Asset's Physical Surroundings** The Store Street Aqueduct cuts across Store Street to its north east and south west. To the immediate north and south is the associated Ashton Canal towpath. To the west and east of the structure is the Rochdale Canal and various modern residential developments. **Experience of the Asset** The structure is principally experienced along Store Street where its robustness and form remain legible within the streetscape. It is from this point that the skewed arch of the aqueduct is best appreciated and contributes to an understanding of its original design and function. It is appreciated along the Ashton Canal towpath, allowing for an appreciation of the function of the asset and the scale and height of the structure when viewed from above. The structure is also appreciated in longer distance views along Store Street, particularly at the junctions of Sparkle Street and Boad Street. **The Asset's Associative Attributes** The structure has an association with the other series of canal structures constructed as part of the Ashton Canal system in the early 19th century.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Rochdale Canal Towpath Bridge (Grade II)		The Towpath Footbridge dates to the early 19th century (c.1804) and is constructed from brick ramps with cobbled surfaces and stone slab outer walls with rounded tops. The wooden bridge has been rebuilt. The structure forms part of a group including the Canal Lock No.83, together with Brownfield Mill.	The structure is of historic interest as a towpath footbridge constructed in the early 19th century for the Rochdale Canal Company.	**The Asset's Physical Surroundings** The Towpath Footbridge is located along the Rochdale Canal and is bounded by canal towpaths to its immediate west and east. Further to the west is Brownsfield Mill and to the east is a modern multi-storey car park. To the north and south is the Rochdale Canal. To the south west is a modern footbridge across the canal. **Experience of the Asset** The footbridge is primarily and directly experienced from the accompanying canal towpath to its south west, where the workings and role of the footbridge and the wider canal system can be appreciated. From this point it is clearly read as a functional structure related to the Rochdale Canal. The footbridge is also visible from the canal pathway to its immediate south. **The Asset's Associative Attributes** The towpath footbridge has an association with other canal structures constructed for the Rochdale Canal Company in the early 19th century. The footbridge is also close to and has a physical and associative relationship with Brownsfield Mill.
Ashton Canal Lock Keepers Cottage (Grade II)		Lock-Keepers Cottage dates to the late 18th and early 19th century (c.1800) and is constructed from red brick in English garden wall bond and has a rectangular double depth plan, together with a small extension at the right hand corner. It is two storeys in height with a basement (3 storeys at rear) and has segmental headed windows at ground floor, with an altered door and windows. There is a ridge chimney between the first and second windows and a gable chimney to the right. The right hand return wall has a segmental headed basement doorway beside a lean to and the lower part of the rear corner at this end is slightly chamfered and has a stone quoin reinforcement to protect against chafing of the tow ropes. It forms a group with the towpath bridge and lock number 2.	The building is of historic interest as a lock-keepers cottage constructed in the early 19th century as a functional supporting structure as part of the wider Ashton Canal system.	**The Asset's Physical Surroundings** The Lock-Keepers Cottage is bounded by the Ashton Canal to the south and west. Further to the west is the nearby contemporary towpath bridge over the canal. To the east of the building is the canal and Lock No.2 and to the north is a large modern residential development. **Experience of the Asset** The cottage is principally experienced from the canal towpath to the south, allowing for an appreciation of the picturesque quality of the buildings setting and the relationship the building has with the waterway and other nearby canal infrastructure. The building is also experienced from the north, where its principal elevation is clearly visible. The roofline of the building is appreciable in views from Pollard Street and Great Ancoats Street to the south and more broadly it has a mixed setting containing both large scale modern buildings and more traditional structures contemporary with the cottage. **The Asset's Associative Attributes** The cottage has an association with the other series of canal structures constructed as part of the Ashton Canal system in the early 19th century.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
32 and 34 Laystall Street (Grade II)		No. 32 Laystall Street dates to the late 19th century (c.1888) and is a former garment warehouse. It is constructed of red brick in Flemish bond with dressings of moulded buff and white terracotta and is of an eclectic style with Romanesque detailing including a Tudor flower band and arcaded windows, with terracotta mouldings. The building is three storeys in height and has five window bays with a slightly projecting symmetrical central bay. It has a segmental headed waggon doorway with a terracotta surround enriched with shafts and a keystone. The list description notes that the building has an 'unusual degree of High Victorian decoration' for a relatively small building. The building is currently vacant and the south west elevation has been cladded.	The building is of historic interest as a former garment warehouse dating from the late 19th century.	**The Asset's Physical Surroundings** The listed building fronts Laystall Street and is bounded by Pigeon Street to the west and Brock Street to the east. The building faces the Urban Exchange retail park and is adjacent to a modern residential apartment building to the north east. It forms part of a complex of linked buildings, including a later warehouse to the rear. To the south of the building is an area of hardstanding used as car parking. **Experience of the Asset** The listed building has a decorative and distinctive façade that is clearly appreciable in views from Laystall Street. The building has been compromised by corrugated metal cladding added to the south elevation which is clearly visible as a result of the demolition of former adjoining buildings and the creation of an area of car parking. Overall, the setting of the listed building is mixed. It faces the blank elevation and service yard of the Urban Exchange retail park to the north west, however the modern residential apartment building to the north east has a stepped form that mediates between the height of the listed building and the tallest element on Lomax Street – ensuring that the listed building is not dominated. The later phases of the building are appreciable from Brock Street and Pigeon Street. **The Asset's Associative Attributes** The building has no known associative attributes.
Train Shed at Piccadilly Station (Grade II)		The Train Shed at Piccadilly Station dates to the mid to late 19th century (c.1881) and consists of the principal shed to the railway station. The structure is constructed from a brick undercroft with side walls, supported by an iron frame and cast iron columns. The roof is glazed (modern) and includes semi-circular arched spans. It is rectangular in plan form and includes large round-headed windows in the side walls.	The structure is of historic interest as a train shed dating from the mid to late 19th century. The structure is also of interest as being the second remodelling of the former Store Street / London Road Station built in the early to mid-19th century.	**The Asset's Physical Surroundings** The Train Shed at Piccadilly Station occupies a large portion of the present railway station. It is bounded to the north by Sheffield Street and to the south by Fairfield Street. The structure is largely concealed behind the modern extension to the railway station from the west. **Experience of the Asset** The structure is principally experienced from the south from Fairfield Street. It is set back from the road, enabling the cast iron columns, brick arches and the overall length and scale of the structure to be appreciated. It is visible in views from Sheffield Street and Boad Street to the north and there are distant views of the listed structure from Baird Street to the north east. The shed is experienced in conjunction with the modern additions to the station, the busy surrounding road network and the railway viaduct. It is also experienced in combination with a mixed townscape including the Bulls Head Public House, the highly graded London Road Fire Station and the taller buildings of the UMIST campus and modern apartment buildings further along Fairfield Street. **The Asset's Associative Attributes** The structure has a minor association with the Former Goods Office in terms of its age and close proximity, forming part of the original railway station on the site. The structure has no other known associative attributes.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Ancoats Dispensary (Grade II)		Ancoats Dispensary dates to the mid to late 19th century (c.1879-91) and is a former hospital building. The building was designed by noted architect Thomas Worthington in a neo Gothic style and is civic in character, constructed principally of red brick with stone dressings and bands of black brick. It is two storeys with a basement and attic and is roughly rectangular in plan form. The principal elevation is symmetrically composed with a projecting bay at the centre and each side. It was originally built around the corridor hospital concept and originally had a distinctive H-shaped plan where the main corridor linked a number of blocks containing wards. The building is decorated through the use of a central tower with corner tourelles and a stone coped gable with pointed arched heads of variegated brick. The building has now been derelict for a number of years with loss of fabric (including the upper stages of stonework and roof). It is now enclosed in scaffolding and hoardings.	The building is of historic interest for its former use and the role it played within the Ancoats community. Dating from the mid to late 19th century it is of interest as the only remaining building of the former Ancoats Hospital complex, established to treat patients not eligible for poor law treatment, but not able to afford medical fees. It represents an important part of the social and economic infrastructure of Ancoats. The building is also of interest for its association with the noted architect Thomas Worthington.	**The Asset's Physical Surroundings** The Ancoats Dispensary fronts onto Old Mill Street with Lampwick Lane to the east and vacant land to the south and west. Further south is a modern residential apartment building (Chips). **Experience of the Asset** The building is principally experienced along Old Mill Street where the long frontage of the building addresses the street. It currently has increased prominence due to the vacant land surrounding it and the setting of the building also currently lacks definition – albeit planning permission has been granted for development of the adjacent land. More generally the setting of the former Dispensary is mixed. Stubbs Mill is to the north east set back from the street and opposite the listed building and to the south it is experienced within a context of modern residential apartment buildings in a mix of heights. The building is also visible in intermittent views along the Ashton Canal to its south. **The Asset's Associative Attributes** The building has no known associative attributes.
Ashton Canal Lock No 3 (Grade II)		Canal Lock No. 3 dates to the late 18th century (c.1792-99) and is constructed from large millstone grit with wooden gates (restored). The lock is a narrow type and is 7-foot wide with pair of gates at both ends. The structure includes a central island with a curved taper at both ends and with stone staircases flanking the lower entry.	The structure is of historic interest as a lock constructed in the early 19th century as a functional structure associated with the Ashton Canal system.	**The Asset's Physical Surroundings** Canal Lock No.3 is located on the Ashton Canal and is bounded by canal towpaths to its west and east. Further west is the modern residential development (Chips) and to the south is a large area of open green space located adjacent to the Metrolink station. To the north and south of the structure is the Ashton Canal. **Experience of the Asset** The lock is primarily and directly experienced from the adjoining canal towpaths and from open areas adjacent to the canal where the functional significance of the asset can be appreciated, together with its group value with the other locks and canal structures, including the lock keepers cottage. Beyond the immediate canal setting of the asset, it is experienced as part of a mixed context containing tall modern buildings. **The Asset's Associative Attributes** The lock has an association with the other locks in the series constructed as part of the Ashton Canal system in the early 19th century. The lock also holds an association with the nearby Lock-Keepers Cottage and bridges.

Listed Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Crusader Works (Grade II)		The Crusader Works, formerly the Phoenix Works, was an extensive machine works in Manchester manufacturing machinery for the textile industry. The proprietors, 'Parr, Curtis and Madeley' and its derivative companies held a number of patents and were the largest self-acting mule manufactures in the country. As such, the Phoenix Works, contributed to Manchester's and the UK's textile industry. The special architectural interest of the Crusader Works lies principally in the scale, industrial character and the aesthetic effect of the repetitious bays and windows, particularly of Block 2 along Chapeltown Street, together with the octagonal truncated chimney.	The building is of historic interest as a former cotton spinning mill dating from the mid-19th century.	**The Asset's Physical Surroundings** The Crusader Works is located in an area to the north of Piccadilly Station which historically was dominated by warehouses, mills/works focused around the canal and railway sidings and workers' housing. As previously mentioned, the Crusader Works was part of a larger works on both the north and south sides of Chapeltown Street. Today, much of that historic context has gone and the former works on the north side of the street is now mid-rise c1980s residential apartment blocks in a canal-influenced style. The Metrolink runs to the south of the complex where workers' houses once stood. To the east is a triangular parcel of land which historic maps show was occupied by a foundry, workshops and potentially housing in the 19th century. Beyond which is the mixed character of Great Ancoats Street; part of **Experience of the Asset** The building is principally experienced from Chapeltown Street, where the length and repetitiveness of the principal elevation can be appreciated, together with the scale of the former industrial complex. Views from Portugal Street East enable appreciation of the phasing of the building, together with the projecting octagonal chimney. There are distant views of the building from the south west along Sheffield Street and from the south east. Intermittent views are also possible from Travis Street to the south. The setting of the listed building has been extensively altered and much of the historic context, including a large part of the former Works, has been lost and therefore the extent to which setting contributes to significance is negligible. The view east along Chapeltown Street takes in both Crusader Works and the Albion Works on Pollard Street on the east side of Great Ancoats Street including its chimney. Despite the separation by Great Ancoats Street, the visual relationship provides historic context and is of increased importance given the loss of much of the surrounding historic context. **The Asset's Associative Attributes** There is an associative relationship with a four storey red brick building attached to Crusader Works to the west which formed part of the complex during the 20th century and potentially earlier.

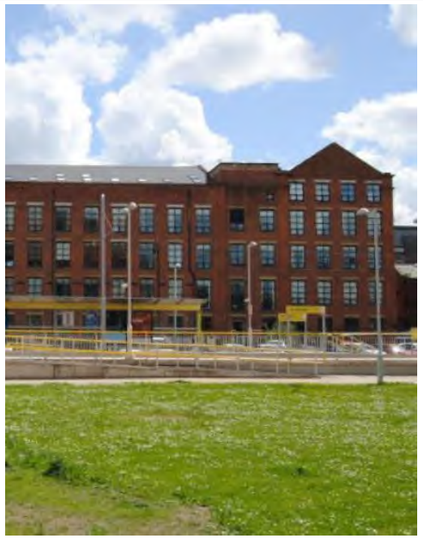
Table 4.2: Conservation Areas within the Study Area

Conservation Areas	Historic Development	Character and Appearance	Contribution made by Setting to Significance
Ancoats Conservation Area	The streets of Ancoats were laid out during the latter part of the 18th Century, with little development taking place other than small houses and shops along Great Ancoats Street and Oldham Road. Survey work for the Rochdale Canal was carried out by James Brindley in 1765 and the first mills were built in Ancoats as early as 1790. From the opening of the Rochdale Canal in 1804 through to 1912, the development of mills continued on a much larger scale, and enough of these buildings	The principal buildings of the conservation area are the monumental cotton spinning mills, located adjacent to the Rochdale Canal. The juxtaposition and interlinking of manufacturing transport and residential uses meant that Ancoats functioned as the first industrial estate in the world and it is representative of industrial activity at a new scale. Ancoats proved to be a suitable location for the larger mills and it eventually became recognised as the place where the Industrial Revolution commenced on a grand scale. The original streets within the area were laid out in the late C18, the first mills were built in 1790 and from the opening of the Rochdale Canal in 1804 through to 1912, the development of mills continued on a much larger scale, and enough of these buildings remain to enable the progress of mill design to be appreciated	**The Asset's Physical Surroundings** The conservation area is well defined, with a clear and logical boundary. The designated area is bordered by Great Ancoats Street to the west and south, Oldham Road to the north, industrial units and modern residential development to the east and the Rochdale Canal/Redhill Street to the south west. The designated area is surrounded by a range of large format modern buildings lining Oldham Road and Great Ancoats Street, together with a finer grain of frontage buildings of a smaller scale. This context varies significantly in quality. Today, it is an integral part of the city and its physical surroundings include the wider urban landscape and townscape of Manchester and this means that its setting is

	remain to enable the progress of mills design to be appreciated today. The first single-class housing area in the country was built in 1889 to provide homes for miller workers in Ancoats. This block, called Victoria Square, was the first example of municipal housing in Manchester, which was followed shortly by the development of model housing in adjacent Anita Street (originally known as Sanitary Street). The substantial economic activity generated by such a concentration of mills was halted by the slump in the cotton industry in the 1930's. Thereafter, the prosperity of the mills declined steadily, and the only new industry to establish itself in Ancoats was newspaper printing.	today. The first single-class housing area in the country was built in 1889 to provide homes for mill workers in Ancoats, and Victoria Square is the first example of municipal housing in Manchester. Ancoats, with its concentration of mill buildings is an important landmark in the history of the Industrial Revolution, representing the chronological development of cotton mill architecture from 1800 to the 1920s. Other key buildings in the conservation area include the Victoria Square housing, the original 1930s Daily Express building, the church of St Peter in Blossom Street and the Crown and Kettle Public House and these contrast with the scale and massing of the mill buildings. The special interest of the conservation area is invested in the juxtaposition and interlinking of manufacturing, transport and residential uses that combine to represent the first industrial estate. Despite pockets of demolition and the insertion of new buildings, the industrial estate remains legible.	regularly changing and is characterised by both a mix of modern and more traditional buildings. **Experience of the Asset** The experience of the conservation area is generally limited to narrow and glimpsed views along the narrow streets that connect with Oldham Street, Great Ancoats Street and Redhill Street. Some of the buildings that line these principal routes are larger and create continuous frontages or a terracing effect that limits the experience of the wider conservation area from its surroundings. The most significant and striking edge is the Redhill Street frontage and as set out above, this is visible from a wide area, accentuating the significance of these assets individually, as a group and also within the context of the conservation area. **The Asset's Associative Attributes** The remaining historic street pattern surrounding the conservation area has some associative value and enhances the definition of the area. Brownsfield Mill has associative attributes that contribute to its significance, linked by the Rochdale Canal. The conservation area also has an association with the Whitworth Street Conservation Area due to its high concentration of textile and cotton warehouses.

Table 4.3: Non-Designated Heritage Assets within the Study Area (Buildings identified on the HER)

Building		Architectural Interest	Historic Interest	Contribution made by Setting to Significance
Iron and Steel Warehouse		The Iron and Steel Warehouse appears to date from the late 19th century. The warehouse comprises a tall brick gabled building to the west with two large central doorways (one blocked) with stone surrounds and to the east of this are three bays of offices/warehousing. The endmost bays are two storey with hipped roofs and decorative brick keystones above the first floor windows. The central bay is stone built with a double hipped roof and pilasters to the first floor. The building was extended and reconfigured during the 20th century.	The building is of historic interest as a former warehouse dating from the late 19th century, with later additions. The building is also of interest as being on the site of the former 'Vulcan Iron Works' in the early to mid-19th century.	**The Asset's Physical Surroundings** The Iron and Steel Warehouse is located on Store Street. To the north of the building is Ducie Street and to the east is an area of hardstanding (utilised as a car park) and Great Ancoats Street. To the west is an adjoining modern industrial unit. **Experience of the Asset** The building is principally experienced from Store Street and at the junction of Store Street and Great Ancoats Street, where the differing phases of construction can be appreciated. The former warehouse is visible from Ducie Street to the north and there are glimpsed views of the building from Millbank Street to the south and Brock Street to the north. The building is experienced in the context of the modern road network and in conjunction with both traditional buildings that resonate with the former industrial use of the warehouse and modern buildings of height. **The Asset's Associative Attributes** The building has no known associative attributes

Vulcan Works		The Former Vulcan Works dates to the late 19th century and is a former iron works. The building is constructed from red brick with sandstone dressings to the windows under a hipped roof of slate. The building is 4-5 storeys and is roughly rectangular in plan form with multiple bays to the principal elevation. There is also a 2 storey office building to its rear. The building was converted into residential apartments in the late 20th or early 21st century.	The building is of historic interest as a late 19th century former iron works.	**The Asset's Physical Surroundings** The Former Vulcan Works is located on Pollard Street, with Malta Street to the north east. To the east is a large area of hardstanding with hoardings. To the south of the building are a series of modern residential buildings. **Experience of the Asset** The building is principally experienced from Pollard Street and the open grassed land to the south east of the Ashton Canal. As with the former Co-operative Warehouse, the non-designated asset establishes a strong linear frontage to Pollard Street and has group value with the neighbouring listed building. The building is also visible in intermittent views along Vesta Street, Old Mill Street and Redhill Street to the north. The building is experienced in a mixed townscape containing open space and buildings of widely varying scale, height and style. **The Asset's Associative Attributes** The building has a minor association with the neighbouring Co-operative Warehouse in terms of their shared age and former industrial use. There are no other known associative attributes.
Former Bridge Inn Public House		The Former Bridge Inn Public House dates to the mid to late 19th century and is a former public house. It is three storeys and roughly square in plan form. There are three bays to the building, the centre of which forms the main entrance and to the right is a projecting bay. The building is constructed from red brick with a rendered ground floor (with rustication). All the windows have been replaced in the 20th century, albeit following the same fenestration detail. Some decorative detailing remains to the lintels of the windows at ground floor. The building now appears to be in office use.	The building is of historic interest as a former public house dating from the mid to late 19th century. Its original name is derived from the bridge adjacent to the building which crosses the River Medlock.	**The Asset's Physical Surroundings** The Former Bridge Inn Public House fronts Fairfield Street to the north and is bounded Corporation Square to the east, beyond which is the River Medlock. To the west is a former modern petrol filling station, now a car wash and to the south is North Western Street and a Piccadilly Railway Station viaduct. **Experience of the Asset** The building is principally experienced from Fairfield Street where its proximity to the River Medlock is also appreciable. The building appears isolated and occupies a changed and mixed setting containing areas of underused land, warehousing and buildings used for storage or as car repair workshops. The viaduct is a dominant feature to the rear of the building. **The Asset's Associative Attributes** The building has no known associative attributes.

Contribution of the PDS to the Significance of Designated and Non-Designated Heritage Assets

4.18 Historic map regression and historic images evidence that the PDS was typical of the character of this part of Manchester during the 19th century and formed part of a terrace of dwellings, mixed with industrial functions to the rear. The former buildings were demolished during the mid-20th century and the existing storage building with associated yard was built in the late 20th century.

4.19 Although visible from the former **Co-operative Warehouse (grade II listed)** and the former **Vulcan Works (non-designated)** in views southwards from Pollard Street, the existing building has no historic relationship or association with these assets and although used for storage purposes, this is a modern operation that does not resonate with the former use of the warehouse and works. It it does not relate to them architecturally or in terms of scale due to its diminutive form.

4.20 The PDS is also visible from a number of the grade II listed structures and buildings associated with the Ashton Canal to the north (**Lock Number 1**, **Lock Number 2**, the **Canal Towpath Bridge** and the **Lockkeepers Cottage**). As with the buildings on Pollard Street, there is no legible functional or historic connection between the PDS and these assets and the existing building is neutral and unremarkable in terms of how it appears in views from the canal.

4.21 The rear of the PDS is clearly visible from the north eastern section of Chapeltown Street in combination with **Crusader Works (grade II listed)** due to demolition works associated with conversion and extension of the former works and due to the open area of land on the corner of Chapeltown Street and Longacre Street. Although clearly visible, the existing building within the PDS is not an aspect of the setting of the works that contributes to its significance. The existing building is plain architecturally and appears diminutive in the context of the other buildings within the view.

4.22 The PDS holds no visual relationships with the surrounding heritage assets that contribute to their significance. Due to the plain and functional appearance and diminutive scale and form of the existing building, its location in relation to the identified heritage assets and the extent of intervening development, it is also not readily experienced from a large number of the assets identified within the Study Area. Historic map regression and research to date has not identified any historic or functional associations between the PDS and the identified heritage assets that would suggest it yields any heritage value or contributes to their significance

4.23 Overall, it is concluded that the PDS makes a neutral contribution to the special interest and significance of the surrounding designated and non-designated heritage assets.

5. Assessment of Impact

Summary of Legislation and National Planning Policy

5.1 Under The Planning (Listed Buildings and Conservation Areas) Act 1990, Manchester City Council, in determining the submitted full planning application has a statutory duty to pay special attention to the desirability of preserving listed buildings, their setting or any features of special interest they may possess. The meaning of 'preservation' in this context, as informed by case law, is taken to be the avoidance of harm.

5.2 The key heritage issues to be taken into consideration are therefore the effect of the Proposed Development on the significance and setting of nearby listed buildings and conservation areas.

5.3 In accordance with paragraph 189 of the NPPF, the significance of the identified designated heritage assets has been assessed at Section 4 of this report.

5.4 Paragraph 192 of the Revised NPPF states that planning authorities should take account of the desirability of sustaining and enhancing the significance of the heritage assets, putting them into viable uses consistent with their conservation, as well as the desirability of new development making a positive contribution to local character and distinctiveness.

5.5 Paragraph 193 confirms that great weight should be given to the asset's conservation and the more important the asset, the greater the weight should be. Conservation is defined as follows:

"The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance."

5.6 Paragraphs 194 to 196 advise on the addressing and balancing of 'harm' where it arises and Paragraph 200 states that local planning authorities should look for opportunities for new development within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.

5.7 The relevant heritage legislation, policy and guidance context for consideration of the Proposed Development is also set out in full in **Appendix 1.**

The Proposed Development

5.8 The PDS forms part of the Portugal Street East Strategic Regeneration Framework (PSE SRF) which is centrally located within the adopted HS2 Manchester Piccadilly Strategic Regeneration Framework (2014) (HS2 SRF). The PSE SRF aims to achieve the following:

"The vision for the Portugal Street East Masterplan is to shape and realise the city's ambitions to regenerate and transform the neighbourhood surrounding the Piccadilly train station and create a sense of place for the area. The successful delivery of the

masterplan will create a new vibrant mixed-use, pedestrian community, which complements the arrival of HS2 and strengthens Manchester's Eastern Gateway."

5.9 The adopted HS2 SRF illustrated how high density of development could be accommodated. The PDS which fronts the ring road is illustrated within the SRF as stepping from 8 – 12 storeys to 13 - 20 storeys. The SRF highlights the need for proposed tall buildings to satisfy the established criteria for assessing the merits of tall buildings within national and local planning policy guidance.

5.10 The Proposed Development involves the demolition of the existing building and the construction of a 25 storey residential tower with a commercial unit at ground floor.

5.11 The Design and Access Statement prepared by Simpson Haugh Architects describes the key principles that have informed the design development of the scheme, including the ability of the site to deliver an appropriate high density landmark and a development that will contribute to the regeneration of the PSE SRF and the HS2 SRF. It is the intention that the building would terminate vistas, create a focal point and present a strong architectural presence. An exemplar building is envisaged with a strong visual profile which makes a positive contribution to the city's skyline. The proposed building will restore the building line to Great Ancoats Street through the creation of a continuous street frontage.

5.12 The southern portion of the building extends to only three storeys, thereby reducing the width of the building. As set out above, the building rises to a height of 25 storeys (including a green roof) and sits above a three storey podium containing active retail use at ground floor. The two forms of the building interlock at first floor to create a colonnade to Great Ancoats Street.

5.13 The vertical form and rational geometric composition of the building has informed the façade design. A regular expressed façade grid has been planned on an 1800mm module and created in brick to reference the prevailing materials of the former industrial buildings near the site. The expressed brickwork grid has a primary grid spanning every two floors and an inset secondary grid to intermediate floors.

5.14 Further emphasis to the grids is provided through the use of stretcher and header brickwork bonds and floor to ceiling windows have deep reveals. The perforated pattern for the rapid vents is based on two different historical brickwork bonds which were found within the local context. Flemish bond has been employed for the outer facades to Great Ancoats Street and Longacre Street and Flemish Cross to the inner facades to the new public square. This provides a contextual visual reference and connection to the historic context of the site.

5.15 The brickwork grid of the façade is continued a further storey above the uppermost residential level to add visual interest and create a lighter top to the building.

5.16 A more detailed description of the Proposed Development and the approach taken to the design of the building is set out in the accompanying Design and Access Statement prepared by Simpson Haugh.

Impact on Significance

5.17 As set out at paragraph 5.2, the PDS does not contain any listed buildings or non-designated heritage assets and is not located within a conservation area. The effects arising from the Proposed Development on built heritage will therefore be indirect in nature, having potential to affect the significance of the identified assets through change within their setting.

Listed Buildings

5.18 To the north east of the site is the grade II listed **Co-operative Warehouse**, a substantial building lining and establishing its principal elevation and long frontage to Pollard Street. It is an assertive and robust red brick building built as a warehouse but converted into residential apartments in the late 20th century. The Proposed Development will be clearly visible from Pollard Street and in combination with the Warehouse in views southwards. In contrast to the existing blank and diminutive building on the PDS, the north east facing elevation of the proposed building will terminate the view from Pollard Street and although taller than the Co-operative Warehouse, the simple and ordered structure of the front elevation will not compete with the façade of the warehouse. The brick construction of the proposed building will resonate with the warehouse, but the muted and neutral tone will ensure that it does not conflict with or detract from the listed building in views where both buildings are experienced.

5.19 The proposed building will be of markedly enhanced quality when compared with the existing building and will establish a more active frontage to Great Ancoats Street in the vicinity of the former Warehouse in contrast with the blank façade of the existing storage unit. For these reasons the setting of the Co-operative Warehouse will be enhanced, however, based on the neutrality of the existing building, it is concluded that the significance of the listed building would be neither enhanced or harmed, its significance would be sustained.

5.20 The Proposed Development will be visible in conjunction with **Crusader Works** in views from the north eastern end of Chapeltown Street. These will be of the rear of the Proposed Development and in combination with the new 10 storey building adjacent to Crusader Works, for which planning permission was granted on 21 October 2016. The change arising from the Proposed Development should be considered in the context of the character of the existing view which includes the former Co-operative Warehouse and the former Vulcan Works beyond with its prominent chimney, the modern residential apartment building on the north side of Chapeltown Street and the grey brick clad Ibis Hotel on the opposite side of Great Ancoats Street which would be screened from view by the Proposed Development.

5.21 The Proposed Development will encroach into views further north along Chapeltown Street but it will still be possible to see the principal elevation of Crusader Works in conjunction with the former Co-operative Warehouse and former Vulcan Works when looking northwards from Chapeltown Street, thereby retaining the resonance between the group of former industrial buildings. Although clearly visible from Crusader Works, given the character of the existing view and the significance and setting of the listed

building, it is not considered that the Proposed Development would be harmful. As previously stated in connection with the former Co-operative Warehouse, the neutral and muted tone of the building and proposed use of brickwork will not compete with the solidity of Crusader Works. The height of the principal elevation of the listed building is likely to preclude views of the Proposed Development from further south on Chapeltown Street.

5.22 The grade II listed **Locks**, **Towpath Bridge** and the **Lockkeepers Cottage** were principally added to the statutory list and ascribed special interest for their historic interest and functional significance in the context of the Ashton Canal. Today, as described in Section 4 of this Statement, they exist in a mixed setting that contains both open space and buildings of differing age, scale, height and style. They have collective group value and the most important and contributory aspect of their setting is the visual and functional connection they still possess with the waterway. The Proposed Development will not affect the significance of these assets, the aspects of setting that contribute to their significance or change the broader character of their setting – their significance will be sustained. The Proposed Development will occupy a context already containing tall modern buildings. It will add definition to views from the canal and will replace an existing plain and neutral building with a high quality residential tower with active ground floor use.

5.23 The grade II listed former **Ancoats Dispensary** is distanced from the PDS to the north east and separated from it by intervening development. The Proposed Development is likely to be visible in views from Old Mill Street but this will be in conjunction with existing tall buildings including Chips, Islington Wharf and the Ibis Hotel and new development consented closer to the former Dispensary on Old Mill Street. The Proposed Development will not harm the significance of the grade II listed building or affect any aspects of setting that contribute to its significance.

5.24 The grade II* listed **Store Street Aqueduct** is located to the west of the PDS and is principally of significance as one of the earliest canal aqueducts in the country with a skewed arch. The Aqueduct is distanced from the PDS and will be separated from the Proposed Development by intervening development. Where visible from the canal towpath/at the threshold of the Aqueduct, the Proposed Development will be visible in conjunction with existing modern buildings, including those currently under construction at the northern end of Store Street. The Proposed Development will not be visible adjacent to the asset from Store Street which is where the functional significance and the stone structure and skewed form of the bridge is most readily appreciated. The Proposed Development will not affect the significance of the grade II* listed Aqueduct.

5.25 The Proposed Development is unlikely to be visible from Laystall Street where the principal decorative façade of **32 Laystall Street** is experienced. It may be visible from Pigeon Street to the south west but this would not affect the significance of the asset, given distance, intervening development and the already mixed setting of the listed building.

5.26 The grade II listed **Former Junction Works** and the separately listed associated **Stable Block** are located to the north west of the PDS, to the south of 32 Laystall Street. The

Junction Works is principally experienced from Ducie Street and the relationship it has with the Ashton Canal and the nearby stable block are important aspects of its setting. The Stable Block to the south east is principally appreciable in views from the canal towpath, where it is visible in association with the neighbouring works. The Proposed Development will not affect the significance or setting of these assets due to the nature of their significance and setting and the distance between them and the PDS.

5.27 Further from the PDS to the north west are the **Rochdale Canal Locks** and the **Rochdale Canal Towpath Footbridge**. With the exception of Lock Number 82, these assets are predominantly below street level and intervisibility between them and the Proposed Development is not possible. The Proposed Development is distanced from Lock Number 82 and taking into consideration the significance of the asset which is principally attributed to its historic and functional importance and those aspects of setting that contribute to its significance, it will not be affected by the Proposed Development.

5.28 The grade II* listed **Brownsfield Mill** is increasingly experienced in the context of modern buildings of scale. It is distanced from the PDS to the north west and due to the extent of existing and consented intervening development its significance will not be affected by the Proposed Development.

5.29 The grade II listed **Former Church of All Souls**, the grade II listed **Star and Garter Public House** and the grade II listed **Train Shed at Piccadilly Station** are all considerably distanced from the Proposed Development at the edge of the Study Area and will experience no change.

Conservation Area

5.30 The south eastern boundary of the **Ancoats Conservation Area** is located approximately 500 metres from the PDS. Given this distance, the significance and setting of the conservation area and how it is experienced and appreciated, the Proposed Development will not affect its significance. The conservation area is already experienced in combination with a mix of existing traditional and modern buildings including those where height has been established such as Islington Wharf. The Proposed Development will be viewed within this context.

Non-Designated Heritage Assets

5.31 Similar considerations to those identified in connection with the Co-operative Warehouse apply when considering the impact of the Proposed Development on the **Former Vulcan Works**. The group value it has with the Co-operative Warehouse would not be affected and the Proposed Development will be visible in the context of the already mixed setting of the asset. The architecture, scale and mass of the proposed building is such that it will not compete with or dominate the former Vulcan Works but will terminate the view southwards from Pollard Street in a more effective way and create an active frontage. It is concluded that the significance of the non-designated heritage asset would be sustained.

5.32 To the north of the grade II* listed Store Street Aqueduct is the **Iron and Steel Warehouse**. The Proposed Development may be visible from this asset, but is likely to

be screened or partially screened when the Oxygen development at the northern end of Store Street is completed. In relation to the Oxygen development it was concluded that the local significance of the building is derived from its industrial architectural interest which is best appreciated from Great Ancoats Street to the east and Store Street to the south. Due to the position of the Proposed Development it will not be visible within these views and the local significance of the building will be sustained.

5.33 The **Former Bridge Inn Public House** is considerably distanced from the PDS at the edge of the Study Area and will experience no change.

Views Assessment

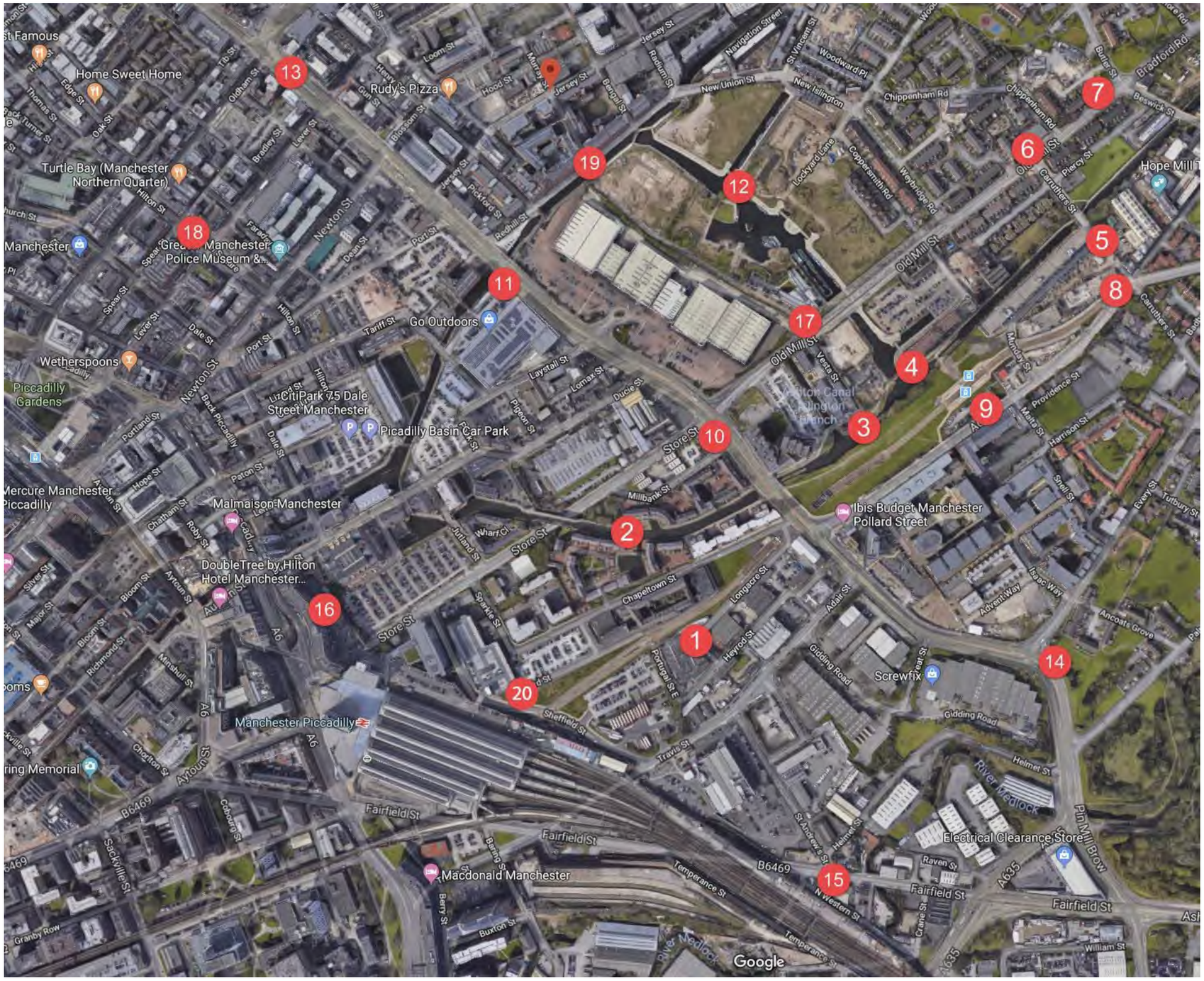
5.34 A range of photomontages (verified views) have been prepared as part of a wider Townscape and Visual Impact Assessment (TVIA) prepared by Chris Burnett Associates which accompanies the planning application. The selection of viewpoints was informed by townscape and heritage considerations.

5.35 Overleaf is a location plan of all the viewpoints included and assessed within the TVIA chapter. Those most relevant to the consideration of heritage matters include:

- **View 3: Ashton Canal**
- **View 9: Pollard Street**
- **View 18: Stephenson Square**
- **View 19: Redhill Street**
- **View 20: Baird Street**

5.36 These views have been assessed overleaf. This should be read in-conjunction with the Impact Assessment set out earlier within this section of the report.

Location of Viewpoints



View 3: Ashton Canal (Existing)	View 3: Ashton Canal (Proposed)
	
Assessment	Assessment
View 3 is taken from the Ashton Canal. The waterway and enclosing walls dominate the foreground of the view. To the right of the image is the grade II listed Lockkeepers Cottage and to the left is the grade II listed Lock Number 2.	The proposed view shows that the Proposed Development will be clearly visible and prominent from this location. The wirelines show that it will be experienced in combination with but taller than the proposed Capital and Centric and Olympian Homes schemes. As set out earlier in this Statement, although clearly visible, the proposed building will be added to an already mixed setting and would not harm the historic interest or legibility of the functional significance of the canal structures and buildings. It is considered that the proposed brick cladding in a lighter tone will complement the prevailing red brick construction of the former industrial buildings and canal structures of the area.

View 9: Pollard Street (Existing)	View 9: Pollard Street (Proposed)
	
Assessment	Assessment
This view is taken from Pollard Street to the north east of the PDS. To the left of the view in the foreground is the non-designated former Vulcan Works, beyond which in the middle distance is the grade II listed former Co-operative Warehouse. To the right of the view is Islington Wharf and in the background a number of other existing buildings are visible including Crusader Works, the end elevation of a modern residential apartment development on Chapeltown Street, and in the distance the Betham Tower and South Tower. The PDS is difficult to discern due to intervening roadworks but is visible in views from Pollard Street.	The proposed view illustrates that the Proposed Development will be clearly visible and prominent in views from Pollard Street, terminating the view south westwards. The view illustrates that the building will be visible in the context of the existing Islington Wharf and in combination with the proposed Olympian Homes development and consented Oxygen towers (shown as wirelines). The proposed views shows the way in which the lighter and more neutral tone of the brick cladding will contrast with the rich red brick construction of the former Warehouse and Works and demonstrates the way in which the building will add definition when compared with the existing diminutive storage facility. It is considered that the ordered grid approach to the architecture of the proposed building complements the more horizontal emphasis of the former industrial buildings.

View 18: Stephenson Square (Existing)	View 18: Stephenson Square (Proposed)
	
Assessment	Assessment
This view is taken from within Stephenson Square Conservation Area, at the south western edge of Stephenson Square itself, close to the junction with Hilton Street and Spear Street.	The proposed view demonstrates that the Proposed Development will not be visible from this part of the conservation area.

View 19: Redhill Street (Existing)	View 19: Redhill Street (Proposed)
	
Assessment	Assessment
The existing View 19 is taken from the edge of the Ancoats Conservation Area, close to the junction of Murray Street with Redhill Street. The foreground of the view is dominated by the Rochdale Canal, beyond which landscaping has been introduced. To the right hand side of the image the rear elevation of Central Retail Park is visible and to the left is the New Islington Free School. In the distance is CHIPS, emerging development on Old Mill Street and the angled form of Islington Wharf.	The proposed view illustrates the Proposed Development viewed in combination with Islington Wharf, the consented Oxygen development and the proposed Olympian Home and Capital and Centric schemes (shown as wirelines). The more muted palette of the building ensures it appears lighter than the solidity of Islington Wharf and the view shows the building as part of a distant backdrop of taller buildings, visible from the edge of the conservation area.

View 20: Baird Street (Existing)	View 19: Baird Street (Proposed)
	
Assessment	Assessment
The existing View 20 is taken from Baird Street, close to the junction with Sheffield Street, to the north side of Manchester Piccadilly Station. The view is dominated by Baird Street in the foreground, with hoardings and a high brick wall to the left, behind which is car parking. To the right is an open green verge with sapling trees. In the centre ground of the image is the prominent pitched roof of the grade II listed Crusader Mill which is under conversion for residential use. To the right is a flat roofed residential development at Portugal Street. To the rear of the view, the Oxygen development on Store Street (which is under construction) rises above the rooflines of these buildings.	The proposed view illustrates that the Proposed Development will be visible in the centre of the view in combination with the Oxygen Development to Store Street and the Olympian Homes schemes however it will appear lower than these buildings and is more distant. The muted tone of the building will however contrast with the more solid brick schemes in the middle ground of the view, resulting in it appearing lighter and more neutral.

Statutory Duty

5.38 The statutory duty of the Planning (Listed Buildings and Conservation Areas) Act 1990 to have special regard to the desirability of preserving the special interest and setting of a listed building is a matter which should be accorded considerable importance and weight. The presumption is therefore that development proposals should not give rise to harm to the special interest of a listed building.

5.39 Where clearly visible the simple and ordered structure of the elevations and the proposed brick cladding in a muted and neutral tone will ensure the building does not conflict with or detract from the former Co-operative Warehouse, Crusader Works or Vulcan Works.

5.40 The listed structures associated with the Ashton Canal exist in a mixed setting and the Proposed Development will be viewed within that context. The historic and functional significance of these assets would not be undermined.

5.41 In relation to the other heritage assets within the Study Area, due to the nature of their significance, the existing character of their setting and elements that contribute to their significance, combined with distance and intervening development (existing and proposed), it is concluded that their significance would be sustained.

5.42 For these reasons, it is concluded that the requirement of S66 (1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 can be satisfied if MCC grants planning permission.

National and Local Planning Policy

5.43 In accordance with Paragraphs 192 and 193 of the National Planning Policy Framework (NPPF), the Proposed Development will sustain or enhance the significance of the heritage assets identified in this report and will make a positive contribution to local distinctiveness.

5.44 In relation to Paragraph 200 of the NPPF, the Proposed Development will preserve those aspects of setting that make a positive contribution to the identified listed buildings and conservation areas.

5.45 The Proposed Development will not harm any of the identified non-designated heritage assets and Paragraph 197 of the NPPF is not engaged.

5.46 In accordance with Policies EN2 and EN3 of the Manchester Core Strategy and Policy DC18.1 of the saved Citywide Development Control Policies, the Proposed Development will sustain the significance of the historic environment, including nearby listed buildings and the Ancoats Conservation Area. The Proposed Development complies with Policy DC19 by preserving those elements of setting that contribute to the significance of listed buildings.

6. Conclusions

6.1 This Heritage Assessment has been prepared by Turley Heritage on behalf of Forshaw Land and Property Group in connection with a full planning application for the demolition of Victoria House, Great Ancoats Street and for the erection of a 25 storey residential tower with associated uses and a commercial unit at ground floor level (hereafter referred to as "the Proposed Development").The Proposed Development Site ("PDS") comprises the Victoria House which is a modern single storey industrial unit currently used as a storage facility.

6.2 The Proposed Development has the potential to affect the significance of nearby designated and non-designated heritage assets through development within their setting, rather than direct effects.

6.3 The PDS holds no visual relationships with the surrounding heritage assets that contribute to their significance. Due to the plain and functional appearance and diminutive scale and form of the existing building, its location in relation to the identified heritage assets and the extent of intervening development, it is also not readily experienced from a large number of the assets identified within the Study Area. Historic map regression and research to date has not identified any historic or functional associations between the PDS and the identified heritage assets that would suggest it yields any heritage value or contributes to their significance. Overall, it is concluded that the PDS makes a neutral contribution to the special interest and significance of the surrounding designated and non-designated heritage assets.

6.4 Where clearly visible the simple and ordered structure of the elevations and the proposed brick cladding in a muted and neutral tone will ensure the Proposed Development does not conflict with or detract from the former Co-operative Warehouse, Crusader Works or Vulcan Works. The listed structures associated with the Ashton Canal exist in a mixed setting and the Proposed Development will be viewed within that context. The historic and functional significance of these assets would not be undermined.

6.5 In relation to the other heritage assets within the Study Area, due to the nature of their significance, the existing character of their setting and elements that contribute to their significance, combined with distance and intervening development (existing and proposed), it is concluded that their significance would be sustained.

6.6 For these reasons, it is concluded that the requirement of S66 (1) of the Planning (Listed Buildings and Conservation Areas) Act 1990 can be satisfied if MCC grants planning permission.

6.7 The Proposed Development accords with Paragraphs 192, 193, 197 and 200 of the NPPF and complies with Policies EN2 and EN3 of the Manchester Core Strategy and Policies DC18.1 and DC19 of the saved Citywide Development Control Policies.

Appendix 1: Heritage Legislation, Planning Policy and Guidance Considerations

Statutory Duties (1990 Act)

The Act sets out the legislative framework within which works and development affecting listed buildings and conservation areas must be considered. This states that:-

"In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses" (s66(1))

The concept of 'preserve' has been interpreted through case law to mean 'to cause no harm'.

National Planning Policy

National Planning Policy Framework, 2019
The National Planning Policy Framework (NPPF) is the full statement of Government planning policies. Chapter 16 outlines the Government's guidance regarding the conservation and enhancement of the historic environment.

Paragraph 189 of the NPPF outlines the information required to support planning applications affecting heritage assets, stating that applicants should describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance.

Paragraph 192 of the NPPF states that planning authorities should take account of the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and the desirability of new development making a positive contribution to local character and distinctiveness.

Paragraph 193 states that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. Conservation is defined as:

"The process of maintaining and managing change to a heritage asset in a way that sustains and, where appropriate, enhances its significance."

Paragraph 194 confirms that any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification.

Paragraph 195 states that where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- the nature of the heritage asset prevents all reasonable uses of the site; and

- no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and

- conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and

- the harm or loss is outweighed by the benefit of bringing the site back into use.

Paragraph 196 states that where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.

Paragraph 200 states that local planning authorities should look for opportunities for new development within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.

In weighing applications that directly or indirectly affect non-designated heritage assets, Paragraph 197 of the NPPF states that a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

Local Planning Policy

Manchester Core Strategy (2012-2027)

Manchester Local Plan
The Manchester Local Plan is formed of the Core Strategy 2012-2027 and Proposals Map, the extant Unitary Development Plan (UDP) Policies and relevant Development Plan Documents (DPDs).

Policy EN 2 of the Core Strategy relates to tall buildings, which are defined as 'buildings which are substantially taller than their neighbourhoods and/or which significantly change the skyline'. It further states that proposals for tall buildings will be supported where it is demonstrated that they:

- *"Are of excellent design quality,*

- *Are appropriately located,*

- *Contribute positively to sustainability,*

- *Contribute positively to place making, for example as a landmark, terminating a view, or by signposting a facility of significance, and*

- *Will bring significant regeneration benefits."*

Policy EN 3 (Heritage) of the Core Strategy states that:

'Throughout the City, the Council will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of the City Centre.

New developments must be designed so as to support the Council in preserving or, where possible, enhancing the historic environment, the character, setting and accessibility of areas and buildings of acknowledged importance, including scheduled ancient monuments, listed buildings, registered parks and gardens, conservation areas and archaeological remains…'

Policy DC18.1 confirms that the Council will give particularly careful consideration to development proposals within Conservation Areas. It states the following:

(a) "The Council will seek to preserve and enhance the character of its designated conservation areas by carefully considering the following issues:

(i) the relationship of new structures to neighbouring buildings and spaces;

(ii) the effect of major changes to the appearance of existing buildings;

(iii) the desirability of retaining existing features, such as boundary walls, gardens, trees, (including street trees);

(iv) the effect of signs and advertisements;

(v) any further guidance on specific areas which has been approved by the Council.

(b) The Council will not normally grant outline planning permission for development within Conservation Areas.

(c) Consent to demolish a building in a conservation area will be granted only where it can be shown that it is wholly beyond repair, incapable of reasonably beneficial use, or where its removal or replacement would benefit the appearance of character of the area.

(d) Where demolition is to be followed by redevelopment, demolition will be permitted only where there are approved detailed plans for that redevelopment and where the Council has been furnished with evidence that the development will be undertaken.

(e) Development proposals adjacent to Conservation Areas will be granted only where it can be shown that they will not harm the appearance or character of the area. This will include the protection of views into and out of Conservation Areas."

Policy DC19 of the UDP relates to the determination of planning applications for development which involve or have an impact on buildings of Special Architectural or Historic Interest. It states that the Council will have regard to protecting their general setting. In giving effect to this policy, the Council will:

(d) "seek to preserve and enhance the settings of listed buildings by appropriate control over the design of new development in their vicinity, control over the use of adjacent land, and where appropriate, by the preservation of trees and landscape features…"

Guidance

National Planning Practice Guidance (Published in 2016 and revised in 2018)
Whilst not planning policy the Planning Practice Guidance provides a clear indication of the Government's approach to the application of national policy contained in the NPPF. Where there is conflict between the guidance in the PPG and earlier documents the PPG will take precedence.

Historic England: Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking in the Historic Environment (2015)
GPA Note 2 provides information to assist in implementing historic environment policy in the Framework and the related guidance given in the NPPG. These include; assessing the significance of heritage assets, using appropriate expertise, historic environment records, recording and furthering understanding, neglect and unauthorised works, marketing and design and distinctiveness.

Guidance: Historic England Good Practice Advice in Planning Note 3 (Second Edition) (December 2017) 'The Setting of Heritage Assets'
Historic England has recently published revised guidance relating to the setting and views of heritage assets. The document gives general advice on understanding setting and how it may contribute to the significance of heritage assets. It also provides advice on how views play a part in setting. It suggests a staged approach to taking decisions on the level of the contribution which setting and related views make to the significance of heritage assets.

The guidance clarifies that there can be a distinction between views that are valued for reasons other than their contribution to heritage significance such as reasons of landscape character or visual amenity.

It states that the extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places. It also clarifies that the contribution that setting makes to the significance of the heritage asset does not depend on there being public rights or an ability to access or experience that setting.

Paragraph 9 of the guidance states that setting is not itself a heritage asset. Its importance lies in what it contributes to the significance of the heritage asset or to the ability to appreciate that significance.

The guidance highlights a series of other considerations that can be relevant to the assessing the impact of development such as 'change over time', 'cumulative change', 'access and setting', 'buried assets and setting, 'designed settings', 'setting and urban design', and 'setting and economic viability'.

It is identified within the guidance that views which contribute more to understanding the significance of a heritage asset include the following:

- Those where the composition within the view was a fundamental aspect of the design or function of the heritage asset.

- Those where town- or village-scape reveals views with unplanned or unintended beauty.

- Those with historical associations.

- Those with cultural associations.

- Those where relationships between the asset and other heritage assets or natural features or phenomena are particularly relevant.

As set out above, a staged approach to assessment is advocated involving identification of the assets that may be affected, assessing the degree to which setting makes a contribution to the significance of the heritage asset or allows significance to be appreciated, assessing the effects of the proposed development and exploring ways to maximise enhancement and avoid or minimise harm.

In assessing the degree to which these settings and views make a contribution to the significance of the heritage assets or allow significance to be appreciated, the key attributes of the heritage asset should be addressed and then the following considered:

- The physical surroundings of the asset and its relationship with other assets;

- The asset's intangible associations with its surroundings, and patterns of use;

- The contribution made by noise, smells etc to significance; and

- The way views allow the significance of the asset to be appreciated.

The Step 2 Checklist provides a list of potential setting attributes that may help to elucidate its contribution to significance under the headings 'The asset's physical surroundings' and 'Experience of the asset'. The Step 3 Checklist provides a list of potential attributes of a development affecting setting that may help to elucidate its implications for the significance of the heritage asset including the 'Location and siting of development', the 'Form and appearance of development', 'Wider effects of the development' and 'Permanence of the development'.

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Appendix 2: Heritage Asset Plan

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NEXUS HERITAGE

Land at Victoria House Great Ancoats Street Manchester

Archaeological Desk-Based Assessment

Report No: 3422.R01b

January 2020

Nexus Heritage Controlled Document – Commercial-in-Confidence

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Note on Transcriptions of Historic Maps

Historical mapping, both Ordnance Survey (OS) and individual cartographer's work relies on the accuracy of the data input into it and the projection used to produce a two dimensional image from three dimensional data. Techniques of survey have evolved and improved over the centuries but pre-OS maps are of widely varying quality and their accuracy is limited by the technology used to create them.

Creating an overlay of historic mapping (including first and second edition OS Maps) and modern OS data can never be completely accurate. Creating a good approximation relies on using digital technologies to estimate and extrapolate the projection, orientation and scale of original maps by correlating known points on the modern OS grid with the historic mapping. This georeferencing 'distorts' the historic mapping to fit the modern grid using a set of known points chosen by the cartographer/illustrator.

Modern digitally produced OS mapping has a stated accuracy tolerance. The most detailed mapping at 1:1,250 (urban) will have a relative error of <±0.5m up to 60m. On the ground that equates to an error between two points which are 60m apart on the ground 95% of the time the scaled measurement would be between 59.1m and 60.9m (paraphrased from https://www.gov.uk/government/publications/land-registry-plans-the-basis-of-land-registryapplications/land-registry-plans-the-basis-of-land-registry-plans-practice-guide-40-supplement-1.).

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1. INTRODUCTION

Forshaw Land and Property Group has commissioned Nexus Heritage to prepare an Archaeological Desk-Based Assessment for an area of land at Victoria House, Great Ancoats Street, Manchester (hereafter the 'Proposed Development Site – 'PDS') for which planning permission is being sought to demolish the existing buildings and erect a residential tower (Use Class C3) with commercial space (Use Class A1, A2, A3, A4 and D1) associated shared amenity spaces, cycle parking, recycling and refuse bin storage, associated plant and public realm enhancements. ("the Proposed Development").

2. LEGISLATIVE AND PLANNING POLICY BACKGROUND

At the national level, the principal legislation governing the protection and enhancement of archaeological monuments of national importance is the Ancient Monuments and Archaeological Areas Act 1979. The 1979 Act provides protection to Scheduled Ancient Monuments.

Other known sites of archaeological significance, usually, but not exclusively, characterised as non-designated archaeological assets can be entered onto county-based Historic Environment Records under the Town and Country Planning Act 1990 and this is the case in Manchester.

The place of non-designated archaeological sites and designated archaeological sites (Scheduled Monuments within the planning system is informed by the National Planning Policy Framework (NPPF), paras. 184 - 202. NPPF is supplemented with on-line planning practice guidance (https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment, accessed 20 Jan. 2020).

With respect to local planning policy the Manchester Local Plan (Manchester City Council 2012) guides development within Manchester. Policies EN3 Heritage and DM1 Development Management apply.

Policy EN3 states that *throughout the City, the Council will encourage development that complements and takes advantage of the distinct historic and heritage features of its districts and neighbourhoods, including those of the City Centre.*

Policy DM1 states that *all development should have regard to specific issues for which more detailed guidance may be given within a supplementary planning document. One of the identified issues is the effect relating to archaeological heritage.*

In addition some UDP policies remain in force. Policy DC20.1 Archaeology applies.

Policy DC20.1 states that:

The Council will give particular careful consideration to development proposals which affect scheduled Ancient Monuments and sites of archaeological interests, to ensure their preservation in place. In particular:

a. Applications for consent to alter scheduled Ancient Monuments or sites of archaeological interest or their settings should be accompanied by an evaluation and assessment of the implications of the proposal.

b. The Council will have special regard to the desirability of securing the preservation of Ancient Monuments and other sites of archaeological interest and their setting in place. It will not permit development that, in its opinion, would adversely affect scheduled Ancient Monuments, or other sites of archaeological interests, and their settings, In exceptional cases where development is inevitable, the Council will look at the scope for combining preservation in place with limited investigation and recording.

c. Where the preservation of scheduled Ancient Monuments and sites of archaeological interest in place is not appropriate, the Council will seek to gain full and proper recording of the site through early consultation between the applicant and approved archaeological organisation.

With respect to good practice in archaeology the professional institute for archaeology in the UK (the Chartered Institute for Archaeologists) has developed a range of regulations, standards and guidelines that are binding on all members and Registered Organisations to ensure that Chartered Institute for Archaeologists members work to high ethical and professional standards.

In addition to these standards and guidance a number of English Heritage and Historic England publications inform the preparation of Environment Statements, including Conservation Principles; Policy and Guidance for the Sustainable Management of the Historic Environment English Heritage (2008), Managing Significance in Decision-Taking in the Historic Environment Historic Environment Good Practice Advice in Planning Note 2 (Historic England 2015) and The Setting of Heritage Assets Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (Historic England 2017).

3. LOCATION, AND TOPOGRAPHICAL BACKGROUND

The PDS is located in Manchester (Fig.1) at national grid reference SJ 85313 98081 and is bounded to the north-east by Great Ancoats Street to the east by Epworth and to the south by existing industrial units. To the west the PDS is bounded by Longacre Street and the Metro-link line.

The PDS comprises an existing single storey industrial unit currently used as a safety deposit centre with a service yard to the rear (Fig. 2).

4. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Introduction

The following section is a summary of the archaeological evidence found within a 250m radius of the PDS; this wider area is referred to as the 'Assessment Area' (Fig. 3). The evidence has been compiled from the Great Manchester Historic Environment Record (GMHER), Manchester Archives and other documentary and cartographic sources. The data collected is considered to provide a good indication of the character, distribution and survival of any potential archaeological assets within and in the vicinity of the PDS and helps define importance. The locations of the identified archaeological assets within the Assessment Area are shown in Fig. 4. The locations of previous and known archaeological investigations, commonly called 'events' is provided in Fig. 5. A detailed in a gazetteer embedded within the figures as appropriate.

In summary, the GMHER identifies 22 archaeological assets within the Assessment Area, but none within the PDS. The Assessment has, however, noted that PDS is within an area, Ancoats, which has been developed since the late 18th century and as the PDS has bene subject to historic development, the remains of which would qualify as non-designated archaeological assets.

The degree of survival of any archaeological remains associated with these archaeological assets is, however, a matter of conjecture as there has been no known ground-truthing undertaken on the PDS.

Historic and Archaeological Narrative

The PDS comprises an existing single storey industrial unit, built between 1965 and 1968 in Ancoats and currently used as a safety deposit centre with a service yard to the rear

The origins of Ancoats are obscure (Rose, Falconer and Holder 2005, 5). Research suggests it was an area of land stretching north and east from the edge of the town of Manchester and was one of the eight medieval hamlets of the town and later one of its 31 townships. Land grants from the 13th century onwards mention Annecotes or Antecotes, a name which may refer to an area of enclosure fields (cotes) or to cottages (cotes) near water (an). Alternately the place-name may derive from the personal name of Anna. Whatever the derivation of the place-name, the Ancoats area was open land with scattered farms and cottages during the medieval period, with the only recorded settlement being Ancoats Hall to the north.

By the 1780s Manchester was expanding and the boundaries of Ancoats were defined when the Manchester and Salford Police Act of 1792 divided the towns into 14 police districts. Ancoats became Police District No. 1. It was the largest police district and when Manchester was incorporated in 1838 it became the New Cross Ward. Ancoats had a population of more than 11,000 in 1801, a number that was to rise significantly in the first half of the 19th century as it developed into one of the world's first industrial suburbs.

Rapid trade and population growth in Manchester had made the cheaper vacant land in its adjoining districts attractive to industrialists and house-builders. Ancoats landowners began to realise the increasing value of their property and in 1775 the starting point for the urban development of Ancoats began when a part of the Great Croft between Ancoats Lane and Oldham Road was developed. The transition from open, rural character to one of expanding

industrial urbanisation can be traced in a cartographic sequence of maps published between 1787 and 2014– which is illustrated in Figs 6-31.

The landscape features shown on the maps dating from 1787-2014 indicate what buildings and structures were on the PDS, when they were demolished and replaced or re-modelled and therefore provide an estimation of what potential archaeological assets may be present on the PDS. The at-a-glance block plan (Fig. 32) provides a visual and comparative reference for a 227 year map regression

Mid-18th century maps, such as that published by Casson and Berry in 1745 (not reproduced), focus on the built environment of Manchester and Salford and the PDS is sufficiently deep into the countryside that it does not feature on the map. Even on the Thomas Tinker map of 1772 (not reproduced) the PDS is not depicted and the thoroughfare that was to become Great Ancoats Street was merely an extension of Millers Lane. However, by the late 18th century mapping produced William Green show pockets of development in Ancoats. Green's map (Fig. 6) depicts the PDS as undeveloped land within a grid of streets apparently laid out to facilitate development to the south-west of Ancoats Lane in a plot on which the name Messrs. Rigby & Co. appears. The street named as Warwick Street forms the southern boundary to the PDS.

The Aston map of 1804 (Fig. 7) appears to maintain the depiction of the PDS as undeveloped land and does not show the grid of streets shown by Green. The Pigot map of 1813 (Fig. 8) shows a near identical situation. The Pigot map of 1819 (Fig 9), however, shows structures on the PDS along the frontages to Ancoats Street and an un-named thoroughfare (later to become known as Riders Row, then Longacre Street, then Long Street) defining the northern boundary of the PDS. There is a gap between the line of structures along the un-named thoroughfare and the much shorter structure, or structures fronting onto Great Ancaots Street. The Swire map of 1824 (Fig.10) identifies the un-named thoroughfare defining the northern boundary of the PDS as Riders Row, but no additional building is depicted.

The Bancks & Co. map of 1828 (Fig. 11) shows no change since 1824, but the Ordnance Survey (OS) map of 1848 (Fig.12) shows a dramatic increase in the built environment of Ancoats and the development within the PDS itself has expanded to fill the frontages of the three thoroughfares which define its north-western (Long Street), north-eastern (Ancoats Street) and south eastern (Wesley Street) limits. Thus, the rapid changes to the PDS of the middle third of the 19th century were recorded by the OS.

The industrialisation of Ancoats continued unabated during the 19th century, with ancillary industry such as timber yards springing up to support the textile mills. The timber yard marked on the PDS in the large-scale and very detailed Adshed map of 1850 (Fig. 13) is recorded in the Pigot Directory of 1838 – John Whitaker is listed at 190 Great Ancoats Street under Timber Merchant. In the accompanying street directory J. Whitaker is identified as the resident at 190 Great Ancoats Street. The Adshed map helpfully differentiates between the uses to which buildings were put and it is clear that the buildings on the PDS were a mix of places of business (fronting onto Long Street and Great Ancoats Street) and private dwellings fronting onto Wesley Street and Long Street. These dwellings both on different thoroughfares, can be classified as terraced houses and appear to have built to different patterns. The two dwellings on Long Street within the footprint of the PDS are rectangular in plan form with a small yard at the rear, itself containing a small structure - possibly a privy. The six dwellings on Wesley Street, which fall within the footprint of the PDS are also rectangular in plan form,

but are wider and deeper than those on Long Street and also have an outrigger to the rear, but a much smaller yard. The Adshed map provides a useful milestone in the development of the PDS and acts a proxy for the possible survival of archaeological remains dating to the 19th century and Fig. 33 shows the Adshed map overlain with the footprint of the Proposed Development to highlight the potential interactions between the Proposed Development and possible archaeological remains.

The 1851 large scale OS map for Ancoats (Fig. 14) depicts a similar scene to the Adshed map, but there is some apparent reorganisation of structures associated with the timber yard and the yards to the rear of the structures, possibly shops, fronting onto Great Ancoats Street are now occupied by small structures.

The OS mapping of 1888-91 (Fig. 15) shows yet further changes at the timber yard and a chimney is identified – suggesting the presence of a boiler (and possibly an associated engine shed) or furnace. There are two new structures fronting onto Long Street and two long, narrow structures adjoining the wall of the alley to the rear of the terraced dwellings on Wesley Street. The 1893 Ordnance Survey map (Fig. 16) shows no changes, but the 1908 OS map (Fig. 17) shows the loss of some buildings. The OS map of 1922 (Fig. 18) identifies the building in the south-eastern corner of the PDS (on the junction of Ancoats Street and Wesley Street) as a public house. The PDS is not recorded in any detail on the Goad insurance map of 1928 (Fig. 19).

The OS map of 1935 (Fig. 20) shows little change, but a wall appears to enclose a yard around the chimney. This map was produced within four years of the 1939 National Register and so some detail on the identity, gender, age, occupation and marital status of some of the occupants of the structures on the PDS can be secured and are shown on Fig. 20.

The 1948 OS (Fig. 21) map tells a very different story about the PDS. Structures towards the north eastern corner of the PDS are no longer mapped, there appears to be no remaining vestige of the timber yard, the yard enclosing the chimney is absent and two of the structures fronting onto Ancoats Street are noted to be in a ruinous state. Whether this was due to aerial bombing during the Second World War is not known. The Record of Location of Aerial Bombs on the City of Manchester made by the Manchester City Council City Architect's Department (Building Surveyor's Division) between 1940 and 1941 does not show a bomb strike on the PDS. The public house identified on the 1935 map appears to be no longer operating and appears to have been remodelled/reused as domestic occupation. The OS map of 1953 (Fig. 22) is identical, but the 1955 OS map (Fig. 23) confirms the absence of the chimney and there are no longer any structures identified as ruins.

The OS map of 1965 (Fig. 24) confirms that there are no longer any structures on the PDS fronting onto Wesley Street, which has been renamed as Epworth Street. Only four structures on the PDS remain – 100 Long Street and (partially) 228, 230 and 232 Great Ancoats Street. By the publication of the 1968 OS map (Fig. 25) the structures fronting onto Great Ancoats Street had been demolished and a long rectangular building is present on the PDS – this is Victoria House. 100 Long Street remained extant in 1968. The 1977 OS map (Fig. 26) confirms that all structures other than Victoria House have been demolished. The 1988 OS map (Fig. 27) shows that Great Ancoats Street has been widened, bringing the carriageway closer the north-eastern boundary of the PDS. Long Acre Street has also been reconfigured. The OS map of 1991 (Fig. 28) shows no meaningful changes on the PDS, but by the publication of the 1994

OS map (Fig. 29) Victoria House had been extended to the north-west so that its north-west facing gable end butted up to the north-western boundary of the PDS. The OS maps of 2002 (Fig. 30) and 2014 (Fig. 31) show no meaningful changes to the PDS.

The footprint of the entire PDS can be considered as an archaeological site with multiple individual features related to domestic occupation and light industry which may be preserved to a greater or lesser degree. The PDS is therefore considered as a potential, single archaeological asset, with various component parts which can be treated thematically - dwellings, industrial production, circulation areas for the movement of people/goods and the portable material culture which accompanies these components.

There have been several archaeological projects in the vicinity of the PDS which have investigated manufacturing and also housing. These projects have shown the degree to which archaeological remains can survive the demolition of 18th and 19th century buildings and the re-use of the areas in which these buildings once stood during the 20th century. The outcomes of these archaeological projects can be used as a predictor of the potential archaeological survival that may be found at the PDS (McPhillips 2004, 2005a, 2005b and 2010; Mottershed 2007 and 2013; Cattel 2011; Miller and Healey 2004; Miller, Wild and McPhillips 2004; Miller and Wild 2004; Healey 2004; McPhillips and Wild 2007; Vallance 2010 and Gregory 2007). These projects confirmed the survival of archaeological remains in the form of sub-surface structural remains and portable material culture of a 19th century cotton mill, smaller scale manufactories such as spindle-whorl makers, toy-makers and cellared and un-cellared terraced houses.

Summary

As demonstrated there are suspected post-medieval archaeological remains on the PDS.

However, the actual survival of any archaeological remains, should they exist, subsequent to clearance and redevelopment of the PDS in the post-War period during the early part of the second half of the 20th century is likely to have been moderated by ground activity associated with such clearance and redevelopment.

With respect to overall potential there are no known prehistoric sites within the PDS and the potential for prehistoric remains is considered to be very low/negligible. The potential for Roman, early medieval and medieval remains to survive *in-situ* within the PDS is similarly considered to be equally low/negligible, reflecting the absence or low-intensity of known archaeological remains form this period in the vicinity and the intensive development of the PDS from the mid-19th century onwards. The greatest potential for buried archaeological remains derives from the construction and use of a complex of structures at the PDS during 19th century.

Some of the potential archaeological remains are related to domestic premises. Any such remains would be categorised as non-designated archaeological assets. The archaeology of the domestic arrangements and living conditions of Manchester during the 19th century is a recognised research priority for North West England (Brennand 2007, 144-145) but any archaeological remains associated with dwellings are likely to be limited to local significance and may be further diminished in value by variable degrees of preservation, coherence and legibility.

There are no overt archaeological research priorities for 19th century timber yards, but as an ancillary trade related to and supporting the textile industry there is a modest research potential. For the purposes of relating this assessment to the terminology of the locally applicable planning policy the term 'significance' can be mapped as 'interest' and in turn can be equated to ;sensitivity' as reported in the ES chapter 10.

The following categories have been used to define the significance (interest) of the suspected archaeological assets.

Significance (Importance)	Description
International (Very Important)	World Heritage Sites. Archaeological sites or monuments of international importance,
National (Important)	Scheduled Ancient Monuments Undesignated archaeological assets of designate-able quality and importance
Regional/County (Medium Important)	Archaeological remains of regional/county importance
Local (Low Importance)	Archaeological remains of district/local importance and/or those sites compromised by poor preservation and/or poor survival of contextual associations
Negligible/None(Not Important)	Areas in which investigative techniques have produced no or only minimal evidence for archaeological remains, or where previous largescale disturbance or removal of deposits can be demonstrated.

Taking into account archaeological, historic, architectural and artistic interests and the value of the archaeological assets to this and future generations it is concluded that any archaeological remains that may be present on the PDS are of Low Significance.

5. SITE CONDITIONS

A visit to the PDS was undertaken on the 5th Nov. 2018 in dry, bright conditions with good visibility and a number of photographs were taken to illustrate the character of the PDS and the Assessment Area.



Plate 1: Sightline towards the PDS looking the south from Great Ancoats Street.



Plate 2: Sightline towards the PDS looking east from Longacre Street.



Plate 3: Sightline towards the PDS, looking north-west from Adair Street



Plate 4: Sightline into the yard at the rear of Victoria House, looking north-west across the PDS.



Plate 5: Sightline to the north-west along Great Ancoats Street at the junction with Epworth Street, the PDS is to the left.

6. PROPOSED DEVELOPMENT AND POTENTIAL ARCHAEOLOGICAL IMPACTS

The applicant wishes to obtain planning permission for development on the PDS. The Proposed Development is for the demolition of the the existing buildings and erection of a residential tower (Use Class C3) with commercial space (Use Class A1, A2, A3, A4 and D1) associated shared amenity spaces, cycle parking, recycling and refuse bin storage, associated plant and public realm enhancements.

Direct Impacts

The assessment of the archaeological assets and archaeological potential of the PDS has been undertaken in the knowledge of the uncertainties that arise when trying to assess a resource that is not wholly known and is often poorly understood. It should be noted that the assessment is based on information held in source repositories and published data. Neither of these represents exhaustive and comprehensive sources of information on the presence/absence of archaeological features. However, from the data available it is possible to offer a quantified and qualified estimation of the known archaeological resource, to determine the potential for as yet unknown or unrecorded archaeological features to be present and identify areas within the PDS where activities are likely to have compromised the survival of archaeological assets. These factors have been taken into consideration during this preparation of this document.

There are no confirmed archaeological remains on the PDS. However, the PDS includes the sites of a number of post-medieval features and structures in the form of domestic dwellings, a Public House and a timber yard. The footprint of the Proposed Development has been overlaid onto the Adshed map of 1950 to provide an indication of the potential impact on archaeological remains (Fig. 33).

Preparatory and construction activities with the potential to impact upon archaeological remains include demolition, ground remediation, excavations for the foundations of buildings, excavations for services such as drains and sewers and excavations in order to lay the sub-grade as a base for paths and circulation areas. Site preparation works and construction may lead to substantial harm/total loss of archaeological assets on the PDS of local (low) importance with some potential to contribute to archaeological and/or historic research objectives.

With respect to pre-existing impacts which may have disturbed or destroyed hitherto unknown or unrecorded archaeological remains at the PDS, site remediation and development during the mid-20th century may have truncated and disturbed near surface archaeological features and deposits predating the 20th century.

The significances of the suspected archaeological assets within the PDS, should they actually be present, may be harmed by the proposed development as it may lead to harm to any sub-surface archaeological assets.

Indirect Impacts on Settings of Archaeological Assets

The effect of development on the significance of the setting of archaeological assets (including archaeological assets) is a material consideration in determining a planning application and NPPF advises Local Planning Authorities that they should require an applicant to provide a description of the significance of the archaeological assets affected and the contribution of their setting to that significance. The significance is the sum of the heritage values ascribed to the asset. The cultural heritage value is, in turn, the sum of four component interests - historical, archaeological, architectural and artistic (Historic England 2017a).

Setting is defined as the surroundings in which an archaeological asset is experienced and all archaeological assets have a setting, irrespective of the form in which they survive and whether they are designated or not. Therefore all the archaeological assets identified during this assessment have settings and it is right and proper for this assessment to identify the key attributes of the archaeological assets and their settings and the potential impact upon the settings occasioned by proposed development within the PDS. In order to identify these key attributes it is necessary to consider the physical surroundings of the assets, including relationships with other assets, including the way the assets are appreciated and the assets' associations and patterns of use.

A consideration of these attributes allows an estimation to be made of whether, how and to what degree setting makes a contribution to the archaeological assets.

Development is capable of affecting the settings of archaeological assets and the ability to understand experience and appreciate them. An assessment of the scope of the magnitude and effect of any impact on settings is part of the remit of this assessment and has been undertaken with reference to the Historic England document *The Setting of Heritage Assets: English Heritage Guidance* (second edition, 2017). It is noted that Historic England states that while heritage assets such as archaeological sites which consist solely of buried remains may not be readily understood by a casual observer, they nonetheless retain a presence in the landscape (in terms of their location, topographical position, and spatial relationship with other heritage assets) and so, like all heritage assets, have a setting. While the form of survival of an asset may influence the contribution its setting makes to its significance, it does not follow that the invisibility of the asset necessarily reduces that contribution.

The value of an archaeological asset can be harmed or lost through alteration within or destruction of its setting. Current policy states that the extent of a setting is not fixed and may change as the asset and its surroundings evolve. It is acknowledged that a setting may make a positive or negative contribution to the value of an archaeological asset, it may affect the ability to appreciate that value or it may be neutral.

Setting is most commonly framed with reference to visual considerations and so lines of sight to or from an archaeological asset will play an important part in considerations of setting. However, non-visual considerations also apply, such as spatial associations and an understanding of the historic relationship between places. As determined by recent judgement there is no overwhelming reason to establish the need for a level of physical and visual

connection between an archaeological asset and its setting in order for any land to be deemed to be within the setting. The recent judgment determined that to adopt an artificially narrow approach to the issue of setting (contrary to the advice within the Historic England guidance) would be an error. There is, therefore, legal precedent to ensure that any assessment does not treat visual connections between any land and an archaeological asset as essential and determinative for the purposes of considerations of setting.

Many archaeological assets within any given landscape may be visible from a number of locations – publically accessible areas such as civic areas, footpaths and streets and also private spaces such as dwellings and private land. The majority of sightlines from to, into and across archaeological assets are, therefore, incidental and are not intrinsically or intimately associated with the significances assigned to them. However, there are instances where the characteristics of sightlines may be have been intentionally designed and as part of the setting are integral to the significance. Alternatively, the landscape characteristics or appreciation of them may have evolved serendipitously to provide the settings of archaeological assets with meaning and therefore contribute to the significance of archaeological assets.

In order to make the setting assessment a reasonable process and taking into account the need to ensure that the approach is proportionate to the significance of the archaeological assets that may be affected some non-designated archaeological assets and designated archaeological assets have been excluded, for the reasons given above. All the archaeological assets within a reasonable visual envelope around the PDS have been considered and whilst the PDS can be said to be within the shared and nested settings of multiple archaeological assets it provides very little contribution to the significances of them, restricted as it is to modern structures, areas of hard standing and some hard landscaping. Therefore, there is no large-scale, appreciable functional or conceptual inter-visibility linking the PDS with many of these archaeological assets and their settings. Taking into account these considerations, separation distances, and the absence of any meaningful sight lines between assets, their settings and the PDS the archaeological assets identified in this assessment do not require a detailed setting assessment.

Mitigation

Where unavoidable impact to an archaeological asset is considered acceptable by a planning authority, policy allows that authority to direct the developer to record and advance understanding of the significance of the archaeological asset before it is lost, using planning conditions or other obligations as appropriate. The extent of the requirement should be proportionate to the nature and level of the asset's significance.

It is proposed that a detailed programme of archaeological works will be prepared for mitigation for those archaeological assets that may be impacted upon which can be conditioned to a planning permission.

The programme of archaeological works would involve three stages (the implementation and scope of the third stage will depend on the result of the first and second stages).

The first stage would be post-determination archaeological interpretation of any phase II

intrusive ground investigation results, such as borehole logs and/or test pit data in order to determine if the results assist in the identification of the presence or absence of archaeological remains. Such an interrogation would inform considerations for a second stage. If warranted a second stage, in the form of an archaeological evaluation could be configured with reference to the standard and guidance published by the Institute for Archaeologists (Institute for Archaeologists 2008c). Depending on the results of the evaluation, a third stage may be warranted, involving archaeological attendances prior to or during construction.

This programme of archaeological works would form a component part of the Proposed Development's Construction Environmental Management Plan, and its implementation could be secured by means of appropriately worded condition applied to a planning permission for the Proposed Development. The proposed mitigation for the archaeological assets on which impacts have been identified has been configured with reference to archaeological best practice and the relevant standards and guidance published by the Chartered Institute for Archaeologists. The impacts for which mitigation is proposed are direct impacts and it should be noted that there is no ability to mitigate (*sensu strictu*) for the direct loss of or disturbance to archaeological remains, as such remains would not be able to return to their original state once disturbed. However, archaeological investigation, recording, reporting, dissemination, publication and archiving may compensate for the loss of archaeological remains where the Proposed Development affects them.

The application of the suggested mitigation measures would ameliorate the harm in NPPF terms as a measures would be adopted to record and advance understanding of the significance of any archaeological asset affected in a manner proportionate to its importance and to make the evidence and archive publicly accessible. The record and understanding of the significance of the archaeological asset assuages harm and consequentially reduces the degree of that harm.

7. CONCLUSIONS

The Proposed Development on the PDS takes the form of a residential tower comprising 1 x ground, 23 levels plus a roof level with full height parapet following demolition of the existing building.

There are no registered World Heritage Sites (or WHS Buffer Zones), Scheduled Ancient Monuments, wholly or partly within in the PDS. Therefore, this Assessment confirms that the PDS does not contain any designated archaeological assets for which there would be a presumption in favour of preservation *in situ* and against development.

There are no known undesignated archaeological assets within the PDS but there are potential archaeological remains at the PDS which may contain reservoirs of information on the 19th communities which lived and worked in the area. Further information on the social dimension of the communities which once lived and worked in the area could no doubt be gleaned from research centred on census records and more detailed trade directory entries. This information could augment and in turn be augmented by the information in the archaeological record. However, for such an intensively developed area, research of this scale is not feasible as part of this assessment.

This Assessment enables an informed, sustainable and responsible approach to development of land at the PDS. The information provided meets the expectations of NPPF in that the applicant has described the significance of archaeological assets that may be affected by the Proposed Development and has also assessed any contribution made by the settings of the identified archaeological assets. It is considered that the level of detail provided is proportionate to the assets' importance and is sufficient to allow the Local Planning Authority to understand the potential impact of the proposal on the significance of the assets.

The Proposed Development would lead to harm to non-designated archaeological assets (should they be present) by means of direct, irreversible and permanent adverse impact and NPPF advises the LPA that *The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.* Therefore, an unweighted test is engaged as the balance is a judgment taking into account two material factors (the scale of any harm or loss and the significance of the heritage asset) and there is no weighting to provide either factor with a particular, or enhanced mass in the balance.

It is concluded that there are no axiomatic reasons arising from archaeological considerations to refuse planning permission. Non-designated archaeological assets may be harmed/lost as a consequence of the proposed development. However, the Council is not obliged to refuse consent in the light of such harms. Rather it must make a balanced judgement with respect to the non-designated archaeological assets.

The application of the suggested mitigation measures would reduce the significance of effect

from moderate (significant) to slight (not significant). The residual environmental effect of the Proposed Development on archaeology is, therefore, not significant. In NPPF terms the scale of harm would be moderated as the mitigation measures would ameliorate harm to non-designated heritage assets (should they be present) due to the adoption of an expedient course of action to record and advance understanding of the significance of any archaeological asset affected in a manner proportionate to its importance and to make the evidence and archive publicly accessible. The record and understanding of the significance of the archaeological asset assuages harm and reduces the consequence and degree of that harm.

The relevant guidance in these matters (Chartered Institute for Archaeologists 2014) notes that while recommendations on further archaeological work may be justified, in most circumstances within the planning framework the provision or recommendations to the Local Planning Authority will be the responsibility of the relevant planning archaeologist. This document does not wish to prejudge the opinion of the Heritage Management Director (Archaeology) of the Greater Manchester Archaeological Advisory Service, but it is considered appropriate and helpful to offer options (see above) for reducing or mitigating harm, should planning permission be granted.

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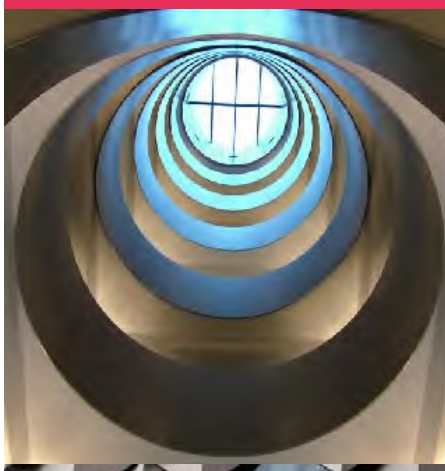
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FIGURES









Victoria House, Manchester

Transport Statement

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Dwg-068957-05001-P02 – Swept Path Analysis

Dwg-068957-05002-P02 – Swept Path Analysis

Appendices

Appendix A – Great Ancoats Street Improvement Scheme

Appendix B – Proposed Site Layout

Appendix C – TRICS Outputs

1.0 Introduction

1.1 Background

1.1.1 Curtins has been appointed on behalf of Forshaw Land and Property Limited to provide all traffic and transport advice in relation to a proposed residential development, with two ground floor commercial units, on Great Ancoats Street/Longacre Street, in Manchester city centre.

1.1.2 The Proposed Development forms a part of the evolving developments which are emerging within the Portugal Street East Strategic Regeneration Framework (PSE SRF).

1.1.3 The site is located at the eastern edge of the city centre district and within the inner ring road. It is within close proximity of emerging districts including New Islington and Holt Town.

1.1.4 In 2014, Manchester City Council (MCC) adopted the 'HS2 Manchester Piccadilly Strategic Regeneration Framework (2014)' (HS2 SRF) following the UK Government's commitment to Phase 2 of High Speed 2. The HS2 SRF was prepared in response to the opportunities provided by HS2, the Northern Hub, and the Northern Powerhouse Rail (NPR), to create a word class transport hub and arrival point into Manchester.

1.1.5 The SRF was subsequently updated in March 2018, becoming the Manchester Piccadilly SRF, to reflect changes to the major transport infrastructure schemes considered previously along with other factors including market position, evolvement of HS2 (including Station design) and emerging SRFs at North Campus. Piccadilly Basin and Aytoun Street/Kampus.

1.1.6 One of the many sub-areas involved in this framework is Portugal Street East, referred to as 'HS2 Update Portugal Street East SRF' (PSE SRF 2018), whose Masterplan is envisioned to shape and realise the city's ambitions to regenerate and transform the neighbourhood surrounding the Piccadilly train station, and to create a sense of place for the area. The PSE SRF is a key driver in the regeneration of the Piccadilly and HS2 area due to its close location to the station and contribution to the arrival experience of visitors and travellers entering the city through Manchester's Eastern Gateway.

1.1.7 Since 2014, the plot masterplan has remained largely as it was illustrated within the original SRF, with the main adaptation being the retention of Longacre Street, serving as a key part of infrastructure for the site. Retaining Longacre Street enables access for service vehicles to the plots to the north of the site, including Victoria House, and reduces the necessity to use Heyrod Street (to the south) as a key vehicle route.

1.1.8 The PSE SRF will be the first area to emerge from the wider Manchester Piccadilly SRF and will set the tone for future proposals in the area.

1.2 Purpose of This Report

1.2.1 This Transport Statement (TS) has been written in order to consider the Proposed Development and its potential impact on the surrounding area from a traffic and transportation perspective.

1.2.2 It is important to note that this report has not been prepared to support the acceptability of the allocated sites within the masterplan from a traffic perspective or identify the potential quantum of development to be delivered at any other plot within the PSE SRF area. Any future planning application for the plots will be supported by a Transport Statement/Assessment.

1.3 Consultation and Scope of the Report

1.3.1 Curtins has undertaken discussions with highways officers at MCC regarding the key issues to consider in order to demonstrate the transport impact of the proposed residential scheme.

1.3.2 On the above basis, this TA contains the following:

- A description of the highway network in the vicinity of the site;
- A review of the accident record in the immediate vicinity of the site for a three-year period;
- A summary of the development proposals;
- A summary of local and national transport planning policy;
- A review of accessibility by all sustainable modes of travel; and
- Review of the potential highway impact resulting from the proposed development.

1.4 Structure of the Report

1.4.1 Following this introduction, **Section 2** of the report provides a comprehensive description of the existing SRF area and its location. This includes the local highway network, Traffic Regulation Orders (TROs) and facilities for pedestrians, cyclists and public transport users.

1.4.2 **Section 2** also reviews the local area in terms of highways safety by way of obtaining records of accidents adjacent to the site over the most recent three-year period available.

1.4.3 The Proposed Development is summarised in **Section 3**, including the proposed parking provision and access arrangements.

1.4.4 The accessibility of the site by sustainable modes of travel is assessed in **Section 4**.

1.4.5 **Section 5** considers the future trip generations associated with the proposed redevelopment.

1.4.6 Relevant local and national transport policy is summarised in **Section 6**, and the report is summarised and concluded in **Section 7**.

2.0 Site Location and Highway Layout

2.1 Site Location

2.1.1 Victoria House is located at the eastern edge of the Manchester city centre district and within the inner ring road. The site is in close proximity to emerging districts including New Islington and Holt Town beside the Piccadilly train station, which can be accessed via an easily walkable journey of under 10 minutes. The Etihad Campus, Northern Quarter and Ancoats areas are also within walking distance of the Site.

2.1.2 As noted previously, the Proposed Development Site (PDS) itself is situated to the north of the defined PSE SRF area. The PSE SRF area is bounded to the north by Metrolink lines, to the west by a surface car park and a Royal Mail vehicle depot, to the south by Adair Street, and to the east by the A665 Great Ancoats Road.

2.1.3 **Figure 2.1** below illustrates the indicative site area in relation to the regional highway network and the wider area.



Figure 2.1 – Site location in relation to the regional highway network

2.1.4 **Figure 2.2** below shows the indicative SRF extents in relation to the local highway network.

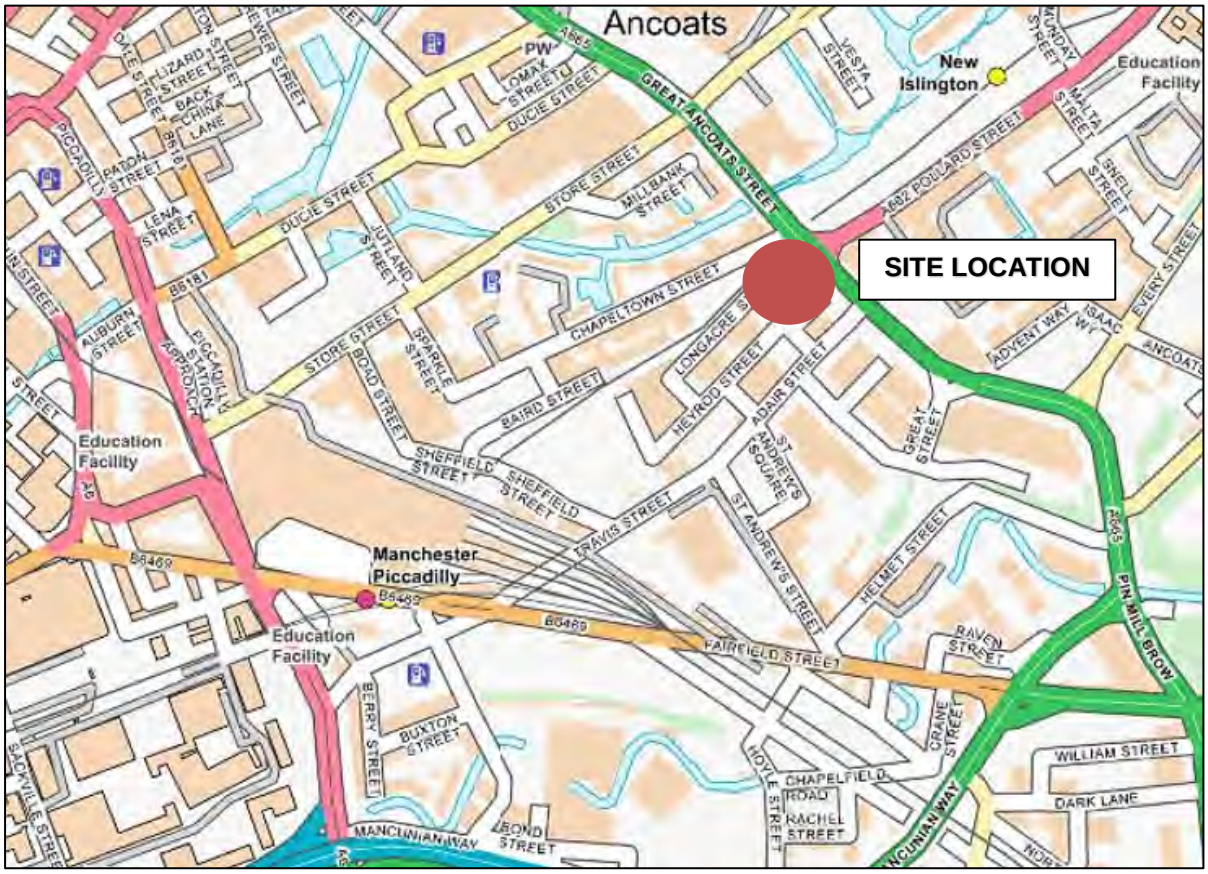


Figure 2.2 – Location plan in relation to the *surrounding highway network*

2.2 Existing Use

2.2.1 The site is currently occupied by Victoria House which is a mid-scale industrial/office unit more recently used as a safety deposit centre, which benefits from a fenced off car park or compound area.

2.3 Existing Access Arrangements

2.3.1 Victoria House has direct frontage onto Great Ancoats Street with access limited to pedestrians only from this aspect.

2.3.2 Vehicular access is provided to the rear of the building via Longacre Street with a dedicated, secure access to an area of hardstanding used for servicing. A separate, gated access point is also provided to the rear via Epworth Street facilitating access to a car parking area with a capacity to accommodate circa 10 vehicles.

2.3.3 Access to Epworth Street is achieved via Adair Street/Norton Street to the south/southeast of the Site.

2.3.4 Longacre Street and Adair Street run parallel to each other on a north-east to south-west alignment.

2.3.5 Adair Street serves as a connection between Manchester Piccadilly and the A665 Great Ancoats Street.

2.3.6 Pedestrian infrastructure exists in the form of footways of circa 2m wide on both sides of all the roads within the PSE SRF area, along with dropped kerbs. There is also street lighting present at regular intervals. Pedestrian infrastructure improves significantly along Portugal Street East to accommodate pedestrians crossing the Metrolink lines, and also along the A665 Great Ancoats Street where much of the footway is protected by fencing.

2.3.7 There are no dedicated cycle lanes on the inner roads within the site due to the narrow width of the roads. There are also no cycle lanes on the wider Adair Street and A665 Great Ancoats Street, however the A665 Great Ancoats Street has advanced cycle stop lanes at the major junctions.

2.4 Surrounding Highway Network

2.4.1 Curtins undertook a site and produced **Drawing 068957-75001-P01** which details all the existing TROs on the highway network within the surrounding area. It is worth noting that the Site is located within a controlled parking zone (CPZ) from 8am – 8pm.

A665 Great Ancoats Street

2.4.2 Situated to the north of the Site, Great Ancoats Street forms one of the primary vehicular routes along the eastern edge of Manchester city centre, serving as the boundary of the New Islington area on the side of the Rochdale Canal. Extending for approximately 1.4km, it links the Northern Quarter from Oldham Road to the A635 outside Ardwick.

2.4.3 In the vicinity of the Site, the carriageway extends along a northwest/southeast alignment, with up to three lanes in either direction. The typical total carriageway width is approximately 18m, including the central reservation and central hatching, although the road widens to accommodate various turning lanes.

2.4.4 There are wide footways of varying width on either side of the carriageway. These footways have additional pedestrian infrastructure such as pedestrian guard rails, dropped kerbs, tactile paving and signalised crossing points at vantage points to enable pedestrians to cross the road in a safe manner.

2.4.5 The A665 is subject to a 30mph speed limit in the vicinity of the site, with street lighting provided along both sides of the carriageway. Advanced cycle stop lanes are also available in both directions, along with traffic calming measures such as yellow box junctions.

2.4.6 There are a number of bus stops located along Great Ancoats Street within the vicinity of the Site, hosting services to various destinations in Manchester city centre and across Greater Manchester.

2.4.7 At the time of preparing this TS, MCC has already commenced on the delivery of improvement works along Great Ancoats Street including pedestrian/cycle infrastructure, carriageway re-surfacing and landscaping. Further details are presented later within this document.

Longacre Street

2.4.8 Longacre Street runs along a southwest/northeast alignment, parallel to Heyrod Street, for approximately 200m and links Heyrod Street to Churchgate Buildings and Chapeltown Street.

2.4.9 Longacre Street is a two-way road with a carriageway width of approximately 5m for most its continuation. The road is subject to a 30mph speed limit with footways of c. 1.5m wide and street lighting provided along both sides of the carriageway.

2.4.10 The usable carriageway width of Longacre Street varies due to on-street parking bays, which are situated at several points along the carriageway (nine bays provided). For the majority of Longacre Street, parking is restricted by double yellow lines. It is not proposed to change the number of on-street parking bays as part of the development.

2.4.11 Longacre Street connects to Portugal Street East via a footway located along the northwest boundary of the site.

Adair Street/Travis Street

2.4.12 Directly south/southeast of the site, Adair Street runs in a southwest direction for a length of approximately 220m before leading to Travis Street, which in turn diverges into Fairfield Street after 270m and leads to Manchester Piccadilly or continues for a further 180m to the A6 London Road which leads to Ardwick.

2.4.13 Adair Street comprises a two-way, single carriageway of approximately 11m in width. The road is well-lit with wide footway provision of approximately 2.5m on both sides of the road and has dropped kerbs. The road is subject to a speed limit of 30mph.

2.4.14 The road narrows at Travis Street to approximately 7m wide, whereas the footways are approximately 2m wide. The road is well lit, with a bus stop outside the SquareOne office building.

2.4.15 To the southwest of the site, Travis Street passes under the Manchester Piccadilly rail line, therefore access is only permitted for vehicles with a height under 4.7m.

2.4.16 On both roads, TROs are present in the form of double yellow parking restrictions. The area is within Zone 4 of MCC's on-street parking bays, which are pay and display for up to 10 hours from Monday to Sunday (8am – 8pm, no charge on bank holidays).

Portugal Street East

2.4.17 Portugal Street East runs along a north/south alignment for an approximate length of 75m between the Metrolink line and Heyrod Street. Bollards have been provided at the meeting point between Portugal Street East and the Metrolink line to stop vehicles crossing the tramline. A turning head is provided at the western edge of the carriageway at its boundary with the Silver Street Car Park.

2.4.18 Portugal Street East is a two-way road with a carriageway width of approximately 5m. The road is subject to a 30mph speed limit with footways of c. 1.5m wide provided along both sides of the carriageway, and street-lighting along the western side of the carriageway.

2.4.19 Parking is restricted along Portugal Street East as there are double yellow lines located along both sides of the carriageway.

2.4.20 Portugal Street East benefits from good pedestrian infrastructure, including dropped kerbs and tactile paving to facilitate crossing, particularly for pedestrians/cyclists who have to cross the Metrolink line to access the Site.

Heyrod Street/Epworth Street

2.4.21 Heyrod Street runs along a southwest/northeast alignment for approximately 180m and connects Portugal Street East to Norton Street. It also serves as an access route for many of the buildings and uses along its length.

2.4.22 Heyrod Street is a two-way road with a carriageway width of approximately 5m for most its continuation. The road is subject to a 30mph speed limit with footways of c. 1.5m wide and street lighting provided along both sides of the carriageway at regular intervals.

2.4.23 The usable carriageway width of Heyrod Street varies due to a loading bay and on-street parking bays, which are situated at several points along the carriageway (eight bays provided). For the majority of Heyrod Street, parking is restricted by double yellow lines.

2.4.24 Towards the east, Heyrod Street continues as Epworth Street for c. 45m and maintains similar characteristics, with the exception of Epworth Street primarily serving as access to the parking compounds of the industrial units, including Victoria House, and taking the form of a turning head at its terminus.

Betley Street/Norton Street

2.4.25 Off Adair Street and approximately 90m apart, both Betley Street and Norton Street are parallel to each other and provide access between Heyrod Street and Adair Street by extending for lengths of c. 40m. Both roads share similar characteristics and are two-way with a carriageway width of approximately 6m.

2.4.26 Both roads have with footways of c. 1.5m wide, however only Norton Street has street lighting provided along one side of the carriageway.

2.4.27 Betley Street and Norton Street are also CPZs from Mondays to Fridays between 8am and 8pm, where the western side of both roads have TROs are present in the form of double yellow parking restrictions. On Betley Street, there are five pay and display bays on the eastern side of the road; whereas on Norton Street, the eastern side of the road primarily serves as access to the neighbouring industrial units and thus have double yellow parking restrictions.

2.4.28 This road forms a signalised junction with the A665 Ring Road. No pedestrian phases are included in signals however there is a dropped kerb crossing with central refuge island provided to enable crossing on Adair Street. Guard rails are also provided to channel pedestrians to the signalised crossing located at the A665/Pollard Street junction which is within 50m of the Pollard Street junction.

Highway Network Infrastructure Summary

2.4.29 The following table presents a high level review of the existing infrastructure in the immediate vicinity of the site.

Road Name	Pedestrian	Cycle	Public Transport
A665 Great Ancoats Street	• Subject to MCC Improvement Scheme. • Wide footways and street lighting. • No crossing facilities at junction with Adair Street. • Well maintained.	• Subject to MCC Improvement Scheme. • Advance stop lines at junction with Pollard Street. • No cycle lanes.	• Simple flag pole bus stops. • No covered waiting facilities at closest bus stops.
Longacre Street	• Wide footway on northern side. • Well maintained	• No cycle facilities	• No bus stops.
Adair Street/Travis Street	• Wide footways along both sides. • Limited tactile paving and junctions. • Wide junction bell mouths.	• No cycle facilities. • Wide carriageway.	• Simple flag pole bus stops. • No covered waiting facilities at closest bus stops.

	• Well maintained.		
Portugal Street East	• Narrow footways. • Due to change as part of recent planning application	• No Cycle facilities	• No bus stops
Heyrod Street/Epworth Street	• Narrow footway. • No tactile paving	• No Cycle facilities	• No bus stops
Betley Street/Norton Street	• Narrow footway. • No tactile paving	• No Cycle facilities	• No bus stops

Table 2.1 – Highway Network Infrastructure Summary

2.5 Great Ancoats Street Improvement Scheme

2.5.1 MCC is progressing with a programme of work that has been designed to improve the physical environment of Great Ancoats Street. When the work is completed it is anticipated that there will be a much more accessible link between the city centre and the Ancoats neighbourhood and the physical environment of the road will be improved.

2.5.2 Once completed, Great Ancoats Street will benefit from;

- Improved crossing locations for pedestrians and cyclists;
- Better access and connectivity between the city centre, Ancoats and New Islington;
- A more pleasant environment with improved street furniture and the provision of trees where possible;
- Wider footways with more standardised materials and less street furniture clutter;
- Less noise from traffic – using innovative materials for carriageway resurfacing, designed to help cut vehicle noise by up to 40%.

2.5.3 The scheme will commence at the Oldham Road/Great Ancoats Street junction and continue up to the Store Street/Great Ancoats Street/Old Mill Street junction. A plan indicating the full extent of the works is included within **Appendix A**.

2.5.4 Cycling corridor provision will be provided via investment in two new parallel routes. The Northern and Eastern Gateway will become the second city centre cycling and walking corridor to be funded by the Greater Manchester Mayor's Challenge Fund. The route will connect the neighbourhoods of Ancoats,

New Islington, New Cross, New Town, Redbank and the Green Quarter by creating a high-quality, continuous east-west walking and cycling route for the north and east city centre.

2.5.5 The Northern and Eastern Gateway scheme has been proposed to complement the £9.1m Great Ancoats Street scheme. It would run parallel to Great Ancoats to the north and include improvements for people travelling on foot or by bike to Thomas Street and Stevenson Square.

2.5.6 Further planned improvements, such as the upgrading of the Rochdale Canal towpath towards Newton Heath as an improved walking and cycling corridor, will provide a strong network of safe routes in the immediate vicinity of the Site.

2.5.7 Whilst the scheme will not directly alter the highways immediately surrounding the Site, the improvements to the pedestrian/cycle infrastructure will benefit future occupiers of the Proposed Development.

2.6 Highway Safety

2.6.1 Personal Injury Accident (PIA) data for the highway network adjacent to the Site has been obtained from Greater Manchester recorded road accident database (http://www.gmtu.gov.uk/gmaccidents/) for the most recent 3 years, the period being 2017 to 2019.

2.6.2 **Figure 2.3** below shows the extent of the highway network that has been considered.

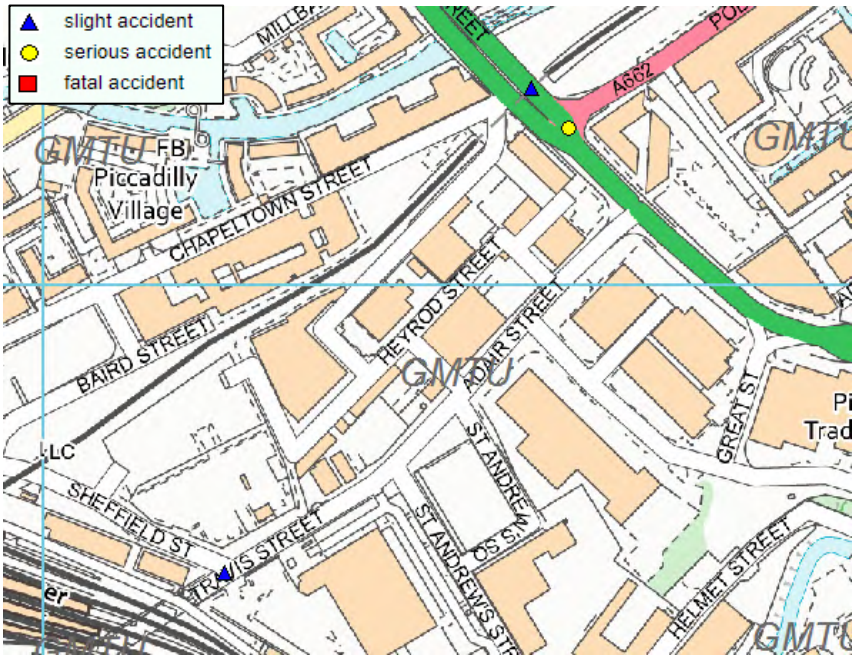


Figure 2.3 – Extent of Study Area

2.6.3 A breakdown of the accidents recorded in the study area is presented in **Table 2.2**:

Junction/Link	Slight	Serious	Fatal	Totals
Portugal Street East	0	0	0	**0**
Longacre Street	0	0	0	**0**
Heyrod Street	0	0	0	**0**
Travis Street/Sheffield Street	1	0	0	**1**
Travis Street/Adair Street	0	0	0	**0**
Adair Street/A665 Great Ancoats Street	0	1	0	**1**
A665 Great Ancoats Street	1	0	0	**1**
Totals	2	1	0	**3**

Table 2.2 – Personal Injury Accident Data Summary

2.6.4 It can be seen from **Table 2.2** that there has been a total of three accidents in the latest three-year period for which data is available. All the accidents resulted in slight or serious injuries. There were no fatal accidents recorded in the study area.

2.6.5 A review of the accident data does not reveal any clusters or patterns for the accidents recorded.

2.6.6 In light of the above, it is not considered that there is an existing safety issue that is likely to be exacerbated by the proposed development.

2.7 Existing Car Parking Facilities

2.7.1 The Site is within Zone 4 of MCC's on-street parking bays, which are pay and display for up to 10 hours from Monday to Sunday (8am – 8pm, no charge on bank holidays). Hence, many on-street parking on the surrounding highway network is observed.

2.7.2 In addition to on-street parking facilities, to assist in assessing the availability of car parks within the vicinity of the Site, **Plan 068957-TS-001-V03_06006** shows car parks that are situated within 1,200m of the Site.

2.7.3 **Table 2.3** summarises available car parks and associated number of spaces within 1,200m of the Site:

Car Park	Car Park Location	Walking Distance (m)	Number of Spaces
1	Sheffield Street	300	160
2	Travis Street	400	62
3	Manchester Piccadilly Station	450	857
4	Store Street RCP Car Park	480	406
5	Piccadilly Place	600	600

Car Park	Car Park Location	Walking Distance (m)	Number of Spaces
6	Piccadilly Parking	500	50
7	Central Car Park	550	33
8	Pigeon Street	550	25
9	Ducie Street Car Park	600	125
10	Gateway House	900	140
11	Tariff Street	900	232
12	Port Street	900	150
13	Tariff Street	950	30
14	Lampwick Lane	950	340
15	Port Street	1,000	20
16	Little Pit Street	1,000	20
17	Port Street	1,000	122
18	Dale Street	1,000	265
19	University of Manchester	1,100	812
20	Sackville Street	1,100	129
21	Chorlton Street	1,100	559
22	The Grand	1,100	83
23	Manchester Palace	1,200	411
Total			**5,631**

Table 2.3 - Existing Off-Site Car Parking Provision

2.7.4 **Table 2.3** demonstrates that there are 23 car parks within 1,200m of the site, providing approximately 5,631 car parking spaces.

2.7.5 The table also shows that there are nine car parks within 600m walk of the Site with a total of 2,318 car parking spaces which could be utilised by future residents and visitors if required.

2.7.6 Curtins has had initial consultations with Q-Park who manage the car park at Piccadilly Place and APCOA who manage Manchester Piccadilly Station car park regarding the availability of parking spaces for long term lease. The response from Q-Park suggest that there are sufficient spaces available for long term lease should it be required by future residents of the proposed scheme.

2.8 Manchester Piccadilly Strategic Regeneration Framework (SRF)

2.8.1 Following the announcement for phase 2 of HS2, TP Bennetts were commissioned by MCC and Transport for Greater Manchester (TfGM) to undertake a study on the regeneration potential of the area around Piccadilly, with a particular focus on the area to the north which includes the proposed development site, and to integrate with the proposals for the Mayfield masterplan.

2.8.2 The Manchester Piccadilly SRF is a high-level document, covering approximately 140 acres of land, intended to offer a framework and set of principles, within which more detailed sub-area guidance and planning applications could come forward.

2.8.3 The SRF was updated in March 2018 and the key themes identified in the SRF are detailed as follows:

- Maximising the opportunity – using the catalyst of HS2's arrival to create a new gateway and extend the boundaries of the city centre eastwards to the inner ring road and beyond;
- Place making – creating a new district focussed around the station and a new Boulevard with public spaces, streets and buildings that generate activity and promote city pride;
- Townscape integration – an area with its own character but also a seamless extension of the city centre which facilitates new routes and better connections;
- Neighbourhoods of choice – a diversity of neighbourhoods that attract people to live, work and socialise in;
- Transport connectivity – creating proposals that capture the potential for Piccadilly Station to be one of the world's great transport buildings which can capitalise on the area's unique location on the doorstep of one of Europe's largest multimodal transport interchanges; and
- Market viability – defining proposals that offer a clear vision to investors and which are flexible and able to adapt to changes in demand.

2.9 Portugal Street East SRF 2018 (PSE SRF)

2.9.1 The PSE SRF provides an update to part of the Manchester Piccadilly SRF area, and relates to land bounded by Portugal Street East, Ashton-under-Lyne Metrolink, Great Ancoats Street and Adair Street.

2.9.2 The PSE SRF provides a set of development principles that form the basis upon which future development proposals will be brought forward.

2.9.3 The key principles relating to highways and transport are as follows:

- More rational street alignments taking into account existing land ownerships and other constraints;
- Review of street widths and the configuration of public spaces, in order to improve the public realm and enhance residential amenity; and
- Removal of the proposed multi-storey car park in favour of parking provision being carefully integrated within individual development.

2.10 Planning Application Ref: 121467/FO/2018

2.10.1 A planning application (App Ref: 121467/FO/2018) for the delivery of public realm works across the Portugal Street East SRF area received consent in January 2020. In order to facilitate the proposed works a number of existing highways will be permanently stopped up including;

- Part of Portugal Street East;
- Epworth Street;
- Churchgate Buildings; and
- Part of Longacre Street.

2.10.2 It is also proposed that Norton Street and the central section of Heyrod Street will be narrowed and new traffic regulation orders will be implemented to introduce a one-way system.

2.10.3 It is intended to narrow Heyrod Street and change the character of the road to provide an avenue with seating. This will enhance the pedestrian environment and provide the opportunity for a pause on the journey along Heyrod Street.

2.10.4 Pedestrian and cycle access will be provided primarily via the north-south routes across the SRF Area and in between each building plot, together with secondary east-west routes for enhanced accessibility. The neighbourhood is envisaged to have a strong connection to the wider pedestrian network and lies on the confluence of key walking routes between Piccadilly Station, Piccadilly Basin, New Islington and Holt Town.

2.10.5 The delivery of significant public realm improvements within the area immediately surrounding the Site will benefit future occupiers of the Proposed Development.

3.0 Development Proposals

3.1 Introduction

3.1.1 This Transport Statement has been prepared in order to support a Full Planning Application for a residential development located off Great Ancoats Street/Longacre Street. The PDS consists of the existing Victoria House building.

3.1.2 The Proposed Development has been developed in line with the key principles outlined in the PSE SRF.

3.1.3 The proposals are summarised as follows:

- 25 Storeys (ground, 23 levels plus a roof level with full height parapet;
- Ground floor commercial unit c. 161sqm;
- The building will contain 177 dwellings;
- The commercial units and bin stores will be serviced from Longacre Street;
- Associated and ancillary development comprising a residential garden, resident's gym and co-work space; and
- Cycle storage.

3.1.4 The ground floor for the site produced by Simpsonhaugh details the Proposed Development and is presented in **Appendix B** at the rear of the document.

3.1.5 The redevelopment of Victoria House will contribute financially towards the delivery of a new public square which will be situated to the south west of the Site along with the improved public realm facilities across the PSE SRF area. The square is proposed to be used by the residents and users of the Proposed Development, and other future developments within the SRF area.

3.1.6 A separate planning application (App Ref 121467/FO/2018), submitted on behalf of all land owners within the PSE SRF area, provides details of the public square and other public realm enhancements. The delivery of the public realm enhancements will therefore be guaranteed through the delivery of the SRF.

3.1.7 It is intended to facilitate the proposed public realm works by stopping sections of the existing highway network as follows:

- Part of Portugal Street East;
- Epworth Street;
- Churchgate Buildings; and
- Part of Longacre Street.

3.1.8 As part of this it is also intended to amend the current layout for Heyrod Street, Betley Street and Norton Street to provide. Figure 3.1 below show illustrates the proposed amendments to the highway network.

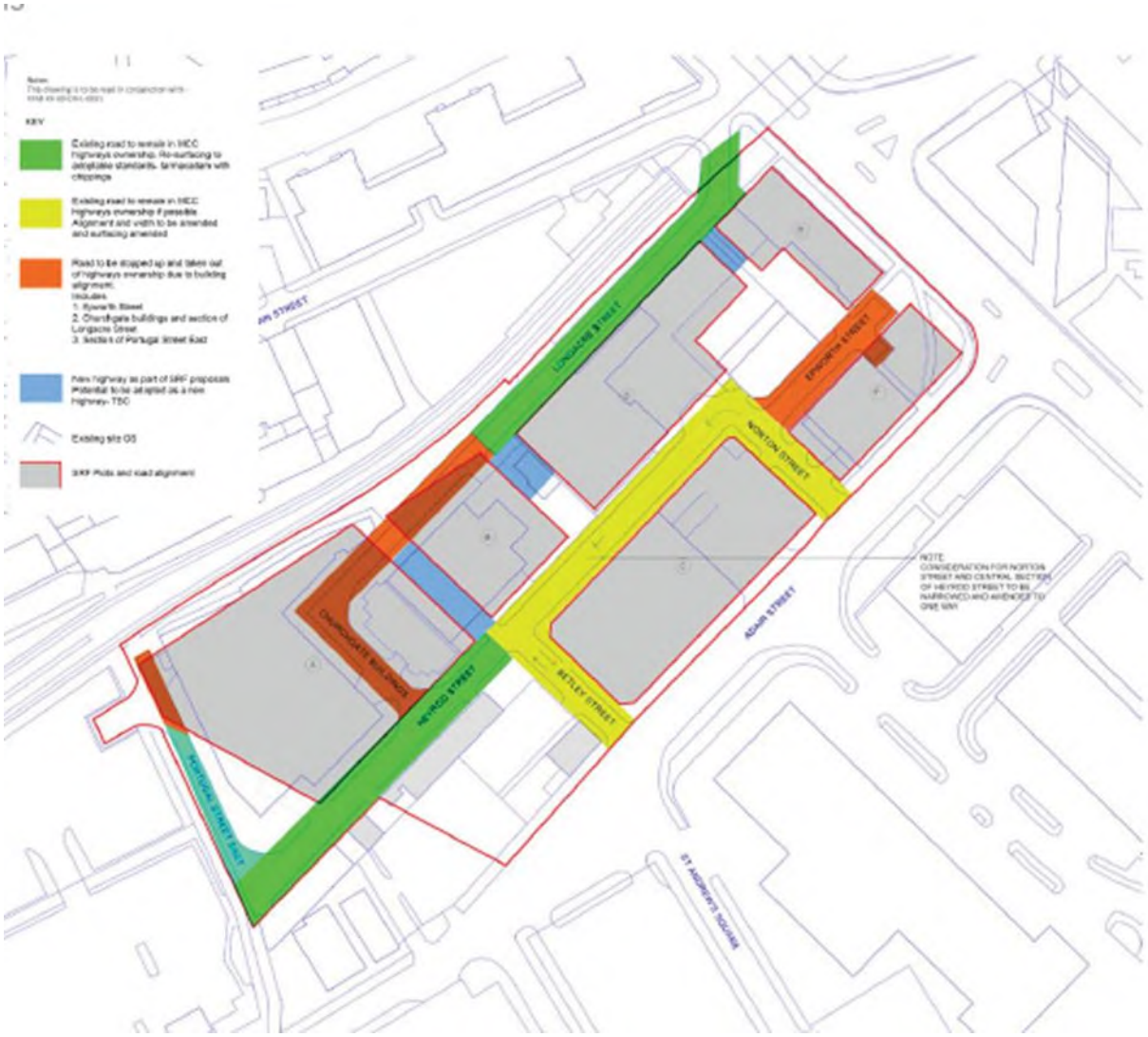


Figure 3.1 – Proposed Amendment to Highway

3.1.9 It is proposed that Norton Street and the central section of Heyrod Street highlighted above will be narrowed and new traffic regulation orders will be implemented for a one-way system.

3.1.10 Consideration will be given to retaining existing pay and display parking bays and where spaces cannot be replaced, appropriate compensation will be discussed with MCC Highways.

3.1.11 Figure 3.2 shows the proposed new highway layout.

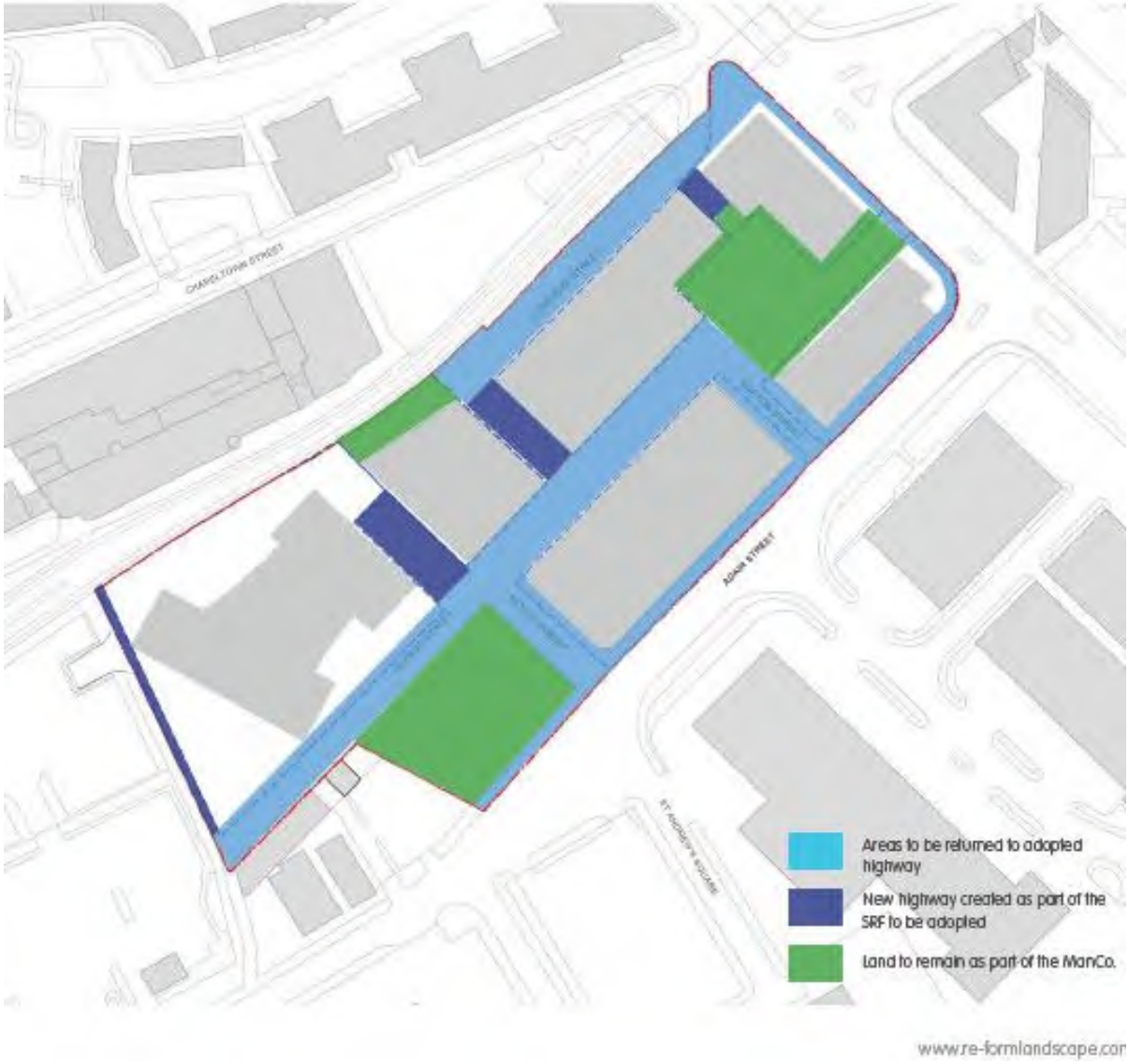


Figure 3.2 – Proposed Highway Layout

3.1.12 As can be seen from Figure 3.2above it is proposed to create a public square and a public park as path of the public realm works. The public square and the park will be retained with the SRF management company's ownership. The above Figure also highlights new roads to be created and offered for adoption under Section 38 of the Highways Act.

3.2 Proposed Access

Vehicular Access

3.2.1 The proposed vehicular access strategy has been developed in accordance with the wider PSE SRF masterplan.

3.2.2 Vehicular access will be taken via Longacre Street providing access to the rear of the building allowing for refuse collection and deliveries.

Pedestrian and Cycle Access

3.2.3 Pedestrian access into the commercial units will be provided via Great Ancoats Street and residential access to the building will be provided from the southern elevation to the building, fronting on to the proposed new square.

3.2.4 It is intended to improve the pedestrian environment surrounding the Site as part the development proposals. It is also important to note that as part of the wider PSE SRF, there are proposals to significantly improve the public realm in the surrounding with a particular focus on pedestrian and cycle friend facilities.

3.2.5 A separate planning application has been approved for the public realm works.

Servicing and Delivery

3.2.6 It is intended that refuse collection will be undertaken on Longacre Street.

3.2.7 **Drawing 068957_05004** details the swept path assessment of an 11m refuse vehicle servicing the site via Longacre Street and confirming that other vehicles will be able to continue along Longacre Street unobstructed.

3.3 Parking Provision

Development Car Parking Provision

3.3.1 MCC car parking guidance for residential developments is provided in the Manchester Residential Quality Guidance published in March 2017.

3.3.2 The document suggests a comply or justify approach to car parking provision for new residential developments. The recommended parking provision for city centre dwellings is stated as "*Developments will be required to provide where possible, an appropriate level of car parking within the constraints of site specific circumstances and other requirements"*

3.3.3 No vehicle parking is proposed given the sites proximity to facilities and public transport provision.

3.3.4 The guidance also details situations where reduced parking provision could be justified as set out below:

"Secure cycle parking in excess of 50% provision relative to apartment numbers, (4 cycle spaces per car park space)"; and

"Identification of sufficient off-site capacity, within 5 minutes' walk of the proposed development, to accommodate designated spaces associated with the development (via a long-term leasehold to be available for the life of the development)".

3.3.5 The guidance documents also further states that:

"the emerging build to rent sector is very much targeted at a younger demographic attracted to the city centre lifestyle and who have a higher potential and tendency to view car ownership as more of a constraint than a requirement. In these scenarios, higher levels of cycle parking provision and car clubs will be appropriate".

3.3.6 It is intended to provide 100% cycle parking provision (1 space per dwelling). It has also been demonstrated in Section 4 that the site is also located within walking distance of numerous car parking spaces, which could be leased for future residents should it be required.

3.3.7 An Interim Travel Plan has also been produced, which promotes sustainable travel and discourages single occupancy car use.

3.3.8 Overall it is considered that the development is located in a highly accessible location and that a Travel Plan would be adopted to encourage future residents to use sustainable modes of transport and to discourage single occupancy car use.

Cycle Parking

3.3.9 It is intended to provide 100% cycle parking spaces within the building. This equates to a minimum of 1 cycle space for every apartment, 177 in total. In addition, it is also anticipated that further cycle parking facilities will be provided within the public realm for the use of the general public.

3.3.10 MCC do not have cycle parking guidance for residential developments in the City Centre and therefore the above provision has been based on what is considered to be more than appropriate for the development. Future residents would be encouraged to cycle through the incentives that would be provided as a part of the travel plan for the site.

3.4 PSE SRF Masterplan

3.4.1 The emerging PSE SRF Masterplan is envisioned to shape and realise the city's ambitions to regenerate and transform the neighbourhood surrounding the Piccadilly train station, and to create a sense of place for the area. It has remained largely as it was illustrated within the original Manchester Piccadilly SRF, with the main adaptation being the retention of Longacre Street, serving as a key part of infrastructure for the site.

3.4.2 The redevelopment of Victoria House utilises Longacre Street as part of the proposed servicing and delivery strategy for the site.

3.4.3 The PSE SRF document established a series of aspirations that have informed the emerging design of public realm, which include:

- "A vibrant place making strategy;
- High quality public and private amenity spaces;
- Excellent pedestrian connections;
- Active frontages;
- Recognise streets are principal public spaces within the city;
- Recognise Manchester's historic urban grain; and
- Consideration of heritage assets."

3.4.4 To accommodate and accomplish the above, an indicative masterplan has been prepared. **Figure 3.3** below comprises the delivery of the following plots for the following purposes (may be subject to change):

- Plot A - Portugal Street East residential tower/Olympian and AECOM Capital;
- Plot B – Residential;
- Plot C – Residential/Aero Works;
- Plot D – Residential;
- Plot E – Residential/Forshaw;
- Plot F – Hotel; and
- Public park and public square.



Figure 3.3 – PSE SRF Indicative Masterplan

3.4.5 The Masterplan proposes to create a new neighbourhood district that responds to the emerging residential user and required uses, have a coherent public realm that flows from street to space creating a legible city network, restore lost connections through the site and improve links to the surrounding city district, and place the focus on a series of key public spaces in the development to create a diverse offer of use for the community.

3.4.6 Pedestrians and general accessibility will be enhanced by reinstating connections by linking footways with existing desire lines to encourage movement within and throughout the site. Edges will be open and positive, contributing to the external streetscape.

3.5 Proposed Access

Vehicular Access/Servicing and Delivery

3.5.1 Each plot will have a dedicated delivery and access strategy. Plots A, C and F will be accessed via Adair Street whilst Plots D and E will be accessed from the re-aligned Longacre Street. Plot B will have access from both streets.

3.5.2 Overall, each plot will be accessed via east-west routes, and Heyrod Street will also be narrowed to focus vehicular movements and minimise the impact on the public realm environment for pedestrians and cyclists. Servicing and emergency vehicles will also be able to navigate the internal road network.

Pedestrian and Cycle Access

3.5.3 Pedestrian and cycle access are intended to be provided primarily via the north-south routes across the sites and in between each building plot, together with secondary east-west routes for better accessibility. The neighbourhood is envisaged to have a strong connection to the wider pedestrian network as highlighted in the HS2 SRF and lies on the confluence of key walking routes between Piccadilly Station, Piccadilly Basin, New Islington and Holt Town.

3.6 Parking Provision

Car Parking Provision

3.6.1 Each plot will provide parking to serve its need and provide appropriate justification in any future TA to support the development.

Cycle Parking

3.6.2 In addition to each plot's individual cycle parking provision, it is also proposed to provide cycle parking facilities within the public realm for the use of the general public.

4.0 Accessibility by Sustainable Modes of Travel

4.1 Introduction

4.1.1 A key element of national, regional and local policy is to ensure that new developments are located in areas where alternative modes of travel are available. It is important to ensure that developments are not isolated but are located close to complementary land uses. This supports the aims of integrating planning and transport, providing more sustainable transport choices, and reducing overall travel and car use.

4.1.2 The accessibility of the proposed development is considered in this context for the following modes of travel:

- Pedestrian Accessibility;
- Accessibility by Cycle; and
- Accessibility by Public Transport.

4.2 Pedestrian Accessibility

4.2.1 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities. The Chartered Institution for Highways and Transportation (CIHT) document entitled *'Providing for Journeys on Foot'* suggests walking distances which are relevant to this planning application. These are reproduced in **Table 4.1**.

	Town Centres (m)	Commuting/School/ Sightseeing (m)	Elsewhere/Local Services (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

Table 4.1 – CIHT Suggested Acceptable Walking Distances

4.2.2 To assist in summarising the accessibility of the site by foot, an indicative pedestrian catchment plan has been produced. **Plan 068957-TS-001-V03_06003** shows distances of 500m, 1,000m and 2,000m which are termed *'Desirable'*, *'Acceptable'* and the *'Preferred Maximum'* by the CIHT for commuting trips.

4.2.3 Within the 500m walk catchment access can be gained to parts of Manchester city centre including the key transport node of Piccadilly rail station and the Ancoats area. Within this area access can be gained to man employment opportunities, retail and leisure facilities as well as bus stops and car parks. For

example, along Great Ancoats Street there is the Urban Exchange, which hosts an Aldi, Marks & Spencer, a gym, and more retail units.

4.2.4 The majority of the central business district is within the 1,000m catchment where access can be gained to financial services and further retail and employment opportunities. Areas of Cotton Fields, New Islington, and the Northern Quarter are also accessible within approximately 500m – 1,000m from the centre of the site, ensuring accessibility to a wide range of key complementary facilities, which are predominantly for leisure and entertainment purposes.

4.2.5 The 2,000m catchment encompasses the majority of the city centre and extends as far as Miles Platting in the North, Etihad Campus to the East, The University of Manchester to the South and Deansgate to the West. Key attractions include Piccadilly Gardens which is a landmark open space in the city centre, Market Street with various retail and leisure facilities, the Etihad Campus which comprises the Manchester City Football Club Stadium, Manchester Tennis and Football Centre, the HSBC UK National Cycling Centre, and Philips Park.

4.2.6 The Site is considered to be highly accessible by foot.

4.3 Accessibility by Cycle

4.3.1 In order to assist in assessing the accessibility of the Site by cycle, **Plan 068957-TS-001-V03_06004** presents an 8km cycle catchment for the SRF area. The 8km cycling distance refers to a recommendation by Cycling England in the document *'Integrating Cycling into Development Proposals'* (2009).

4.3.2 The catchment extends as far as Blackley in the north, Audenshaw to the east, Didsbury in the south and Salford to the west. On-road local cycle routes lead into Manchester city centre and the Northern Quarter to the northeast of the site along the A665 Great Ancoats Street. They also lead towards Miles Platting and Oldham in the northeast along the Ashton Canal.

4.3.3 This network of local cycle routes links to various National Cycle Routes (NCRs) and Regional Cycle Routes (RCRs) including NCR 6, NCR 55, NCR 60, NCR 66 and RCR 86. National Cycle Route 66 is the closest nationally designated route, located approximately 200m to the north of the site.

4.3.4 All these routes are accessible within 1 – 3km, and link future residents to the following areas:

- NCR 6 – extends through Manchester along an approximate north/south alignment to link areas such as Bury in the north to Levenshulme in the south;
- NCR 55 – extends through Manchester in a northwest direction to Preston in the northwest and Stockport/Macclesfield in the south;

- NCR 60 – extends between north and east Manchester, forming part of the Fallowfield Loop line at the Manchester City Stadium;
- NCR 66 – extends northeast from central Manchester along the Rochdale Canal towards Failsworth in both on-road and traffic-free regions;
- RCR 86 – extends east of the city centre via the Etihad Campus and Medlock Valley out to Oldham, runs off-road and is located alongside the River Medlock.

4.4 Accessibility by Public Transport

4.4.1 **Plan 068957-TS-001-V03_06005** demonstrates those areas accessible via public transport within 20, 40 and 60 minutes journey from the SRF area. Accessibility by bus and rail are considered in further detail within the subsections below.

Bus Accessibility

4.4.2 Guidance from the Chartered Institution of Highways and Transportation (CIHT) document 'Guidelines for Planning for Public Transport in Development' indicates that ideally, a bus stop should be located within 400m from a new development.

4.4.3 The nearest bus stop to the site is located approximately 300m walking distance from the site, along Travis Street. **Table 4.2** details the services that call at this stop, and their associated frequencies:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/Hols
147	Manchester Piccadilly - Manchester Metropolitan University - University of Manchester - St Mary's Hospital	10 mins	-	-

Table 4.2 – Summary of Bus Service Frequencies from Travis Street

4.4.4 Bus service 147 serves education facilities such as Manchester Metropolitan University and University of Manchester, as well as St Mary's Hospital at regular intervals for 5 days a week. It is considered that this service will be of great use to future residents, particularly if they attend one of these universities or require access to medical facilities on a regular basis.

4.4.5 Bus stops are also located along Great Ancoats Street (A665) towards the southeast of the site, and at the Manchester Piccadilly Station approximately 500m to the west. **Table 4.3** details the series that call at these stops, and their associated frequencies:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/Hols
From Great Ancoats Street (A665)				
231	Manchester - Clayton - Droylsden - Hartshead - Ashton	3	2	2
From Manchester Piccadilly Station				
192	Manchester – Longsight – Levenshulme – Stockport – Stepping Hill – Hazel Grove	10 mins	10 mins	10 mins
201	Manchester – Gorton – Denton – Hyde – Hattersley	10 mins	10 mis	30 mins
203	Manchester – Reddish – Belle Vue – Stockport	10 mins	10 mins	15 mins
204	Manchester – Gorton – Denton – Haughton Green – Hyde	Hourly in the PM	30 mins in the PM	30 mins
205	Manchester – West Gorton – Dane Bank – Denton	30 mins	30 mins	Hourly
206	Manchester – West Gorton – Denton – Haughton Green – Hyde – Gee Cross	30 mins	30 mins	-
207	Manchester – West Gorton – Town Lane – Haughton Green – Hyde – Gee Cross	2 in the PM	-	-
219	Manchester – Openshaw – Guide Bridge – Ashton – Stalybridge	10 mins	10 mins	20 mins
220	Manchester – Openshaw – Audenshaw – Dukinfield – Stalybridge	1 in the AM	-	-
221	Manchester – Openshaw – Audenshaw – Dukinfield	3 in the PM	-	-

Table 4.3 – Summary of Bus Service Frequencies from Great Ancoats Street (A665) and Manchester Piccadilly Station

4.4.6 In addition to the services identified above, further bus services could be assessed on Fairfield Street and A6 London Road located with 700m of the site which provides numerous and frequent bus services that provide access to further destinations including Stockport, Mottram and Hazel Grove.

4.4.7 Future residents can also board the City Centre Free Bus services at Manchester Piccadilly station in order to access key city centre locations. The frequencies are detailed in **Table 4.4**:

Free Bus Service		Peak Frequency		
		Weekday	Saturdays	Sun/Hols
1	Piccadilly – Piccadilly Gardens – Chinatown – Market Street – Deansgate – Opera House – Albert Square – New York Street – Central Coach Station circular	Every 10 mins	Every 10 mins	Every 12 mins
2	Piccadilly – Oxford Road – Deansgate – Manchester Victoria – Shudehill – Northern Quarter circular	Every 10 mins	Every 10 mins	Every 12 mins
3 Evenings Only	Piccadilly – Oxford Road – Deansgate – Manchester Victoria – Shudehill – Northern Quarter circular	Every 20 mins	Every 15 mins	N/A

Table 4.4 – City Centre Free Bus Services

Rail Accessibility

4.4.8 The nearest train station is Manchester Piccadilly, located approximately 500m to the west of the site. A summary of rail services from Manchester Piccadilly is summarised in **Table 4.5:**

Destination	Service Frequency		
	Peak Weekday	Peak Saturday	Peak Sunday
Birmingham	3 per hour	3 per hour	3 per hour
Blackpool North	3 per hour	2 per hour	1 per hour
Bournemouth	3 per hour	3 per hour	2 per hour
Bristol Temple Meads	2 per hour	2 per hour	1 per hour
Cardiff	1 per hour	1 per hour	1 per hour
Carmarthen	1 per hour	1 per hour	1 per hour
Chester	5 per hour	4 per hour	1 per hour
Crewe	5 per hour	5 per hour	4 per hour
Edinburgh	2 per hour	2 per hour	1 per hour
Glasgow	2 per hour	2 per hour	1 per hour
Hazel Grove	2 per hour	2 per hour	1 per hour
Hull	1 per hour	1 per hour	1 per hour
Leeds	5 per hour	5 per hour	4 per hour
Liverpool Lime Street	4 per hour	4 per hour	3 per hour
Llandudno	2 per hour	1 per hour	1 per hour
London Euston	3 per hour	3 per hour	3 per hour
Manchester Airport	7 per hour	6 per hour	4 per hour
Newcastle	4 per hour	4 per hour	3 per hour
Norwich	2 per hour	2 per hour	1 per hour
Nottingham	1 per hour	1 per hour	1 per hour
Preston	4 per hour	3 per hour	2 per hour
Rose Hill	2 per hour	2 per hour	-
Scarborough	1 per hour	3 per hour	2 per hour
Sheffield	3 per hour	3 per hour	2 per hour
Southport	2 per hour	2 per hour	2 per hour
Stockport	15 per hour	15 per hour	8 per hour
Stoke On-Trent	5 per hour	5 per hour	2 per hour
Wigan	2 per hour	2 per hour	2 per hour
York	4 per hour	4 per hour	3 per hour

Table 4.5 – Summary of Rail Services from Manchester Piccadilly

4.4.9 As can be seen from **Table 4.5**, Manchester Piccadilly Train Station provides frequent access to a considerable number of major cities, as well as a substantial number of surrounding areas within Greater Manchester.

Metrolink (Light Rail)

4.4.10 The nearest Metrolink stops are New Islington and Manchester Piccadilly, located approximately 250m north and 500m west of the Site respectively. As a major public transport hub, **Table 4.5** outlines the frequencies of services calling at Manchester Piccadilly station:

Route	Mon - Thurs	Fri - Sat	Sun/Hols
Altrincham – Piccadilly	05:49 – 23:37	05:49 – 00:37	06:49 – 23:37
Ashton-under-Lyne – Eccles	05:55 – 23:05	05:55 – 00:05	06:56 – 22:56
Bury – Piccadilly	05:52 – 23:40	05:52 – 00:40	06:52 – 23:40
MediaCityUK – Ashton-under-Lyne	05:53 – 23:03	05:53 – 23:03	05:53 – 23:03

Table 4.5 – Summary of Metrolink Services from Manchester Piccadilly

4.4.11 Future residents can benefit greatly from the Metrolink, with services operating throughout the week at regular intervals. In addition to the Metrolink service identified above, residents could connect to other Metrolink services by changing over at St Peters Square or Victoria Station.

4.5 Summary

4.5.1 It is considered the Victoria House site is highly accessible by sustainable modes of transport. The surrounding area exhibits high levels of pedestrian and cycling infrastructure, and there are many public transport opportunities within acceptable walking distance of the Site.

5.0 Traffic Forecasting and Highway Impact

5.1 Introduction

5.1.1 This section of the report details the methodology used to predict the future traffic demand associated with the proposed development and derives future traffic flows in order to ascertain the impact of the proposed development on the local highway network.

5.1.2 As the Proposed Development is a redevelopment of an existing Site and will provide no on-site car parking provision, it is anticipated that the proposed redevelopment would not result in significant additional traffic demand on the surrounding highway network.

5.1.3 The existing Victoria House has a floor area of approximately 950sqm with associated car parking. Under the proposals, the site would be redeveloped to provide 177 residential apartments and ancillary amenities.

5.1.4 Whilst the existing site currently generates vehicle movements on a daily basis, this section assesses the potential future development trips assuming that they will all be entirely new to the surrounding network.

5.2 Potential Future Traffic Generation

5.2.1 To derive the trip rates associated with the proposed redevelopment, a TRICS search was undertaken for privately owned apartment uses across England (excluding Greater London, South East and South West).

5.2.2 TRICS is the industry recognised tool for calculating the anticipated future trip demand of a proposed development. The database contains multi-modal surveys of varying land uses in multiple destinations across the UK, including residential uses.

5.2.3 Survey days were Monday – Friday, and various location and population filters ensured the sites were representative of the proposed development location. The full TRICS outputs are contained within **Appendix C** to the rear of this report.

5.2.4 Based on the accommodation schedule, the proposed development is for 177 apartments. **Table 5.1** provides a summary of the multi-modal trip rates obtained from TRICS for the proposed development, and subsequent trip generations. The trip rates include vehicle, pedestrian, cyclist and public transport users.

Peak Hour	Trip Rates			Trip Generation (177apartments)		
	Arrive	Depart	Total	Arrive	Depart	Total
Vehicles						
AM peak (0800-0900)	0.037	0.112	0.149	7	20	27
PM Peak (1700-1800)	0.16	0.094	0.254	19	17	46
Pedestrians						
AM peak (0800-0900)	0.02	0.151	0.171	4	27	31
PM Peak (1700-1800)	0.173	0.085	0.258	31	15	46
Cyclists						
AM peak (0800-0900)	0.002	0.004	0.006	1	1	2
PM Peak (1700-1800)	0.007	0	0.007	1	0	1
Public Transport Users						
AM peak (0800-0900)	0.006	0.092	0.098	1	1	2
PM Peak (1700-1800)	0.11	0.006	0.116	1	1	2

Table 5.1 – Potential Future Trips: Residential Use based on 177 Apartments

5.2.5 It can be seen from the information presented in **Table 5.1** that under normal circumstances, the proposed residential scheme is anticipated to generate in the order of 27 and 46 two-way vehicle movements during the AM and PM peak hour period respectively.

5.2.6 Clearly, given that the Proposed Development will provide no on-site car parking provision this level of vehicular trip demand to the site will never be realised. The proposed redevelopment is therefore not anticipated to result in any additional traffic impact above what is already generated by the existing uses of Victoria House.

5.2.7 Table 5.1 confirms that majority of movements generated by the Proposed Development will be made on foot with a modest level of public transport users.

5.2.8 The number of cycle movements is extremely low, however, it is considered that these figures will increase given the location of the site, lack of on-site car parking provision and the promotional material that will be contained with the associated Travel Plan.

5.2.9 It is also noted that the surrounding PSE SRF area will be undergoing significant, public realm and pedestrian enhancements that will create an improved environment for pedestrians and cyclists whilst facilitating movement throughout the SRF area towards the central areas of the city.

5.2.10 These levels of traffic are not likely to result in a material impact on the surrounding highway network and are instead likely to be imperceptible to existing road users.

5.2.11 Furthermore, due to the proposed level of car parking, the proposed development is likely to exhibit lower levels of vehicular traffic than indicated in the TRICS assessment above. This would further lessen the development highway impact.

5.3 Potential Highway Impact Summary

5.3.1 It is considered that the increase in vehicular traffic as a result of the development proposals would be imperceptible to existing road users, and the proposals are not expected to result in any material traffic impact on the local highway network when the traffic associated with the extant consent is taken into account.

5.3.2 It is therefore reasonable to conclude that the proposed development would not result in a severe impact on the surrounding area in terms of highways, traffic and transportation.

6.0 Transport Planning Policy

6.1 Introduction

6.1.1 When developing the scheme proposals, it is important to understand the national and local transport related planning policies. This section aims to outline the key policies throughout relevant policy and guidance documents and how the proposals relate to them.

6.2 National Planning Policy Framework

6.2.1 NPPF was first published in March 2012 and subsequently updated in 2019. The document sets out the current national transport planning policy and outlines the important role that transport policies have to play in facilitating sustainable development.

6.2.2 Paragraph 11 states that:

"Plans and decisions should apply a presumption in favour of sustainable development."

6.2.3 For decision taking this means granting permission unless:

"…any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies."

6.2.4 Section 9 of the NPPF is entitled *Promoting Sustainable Transport* and outlines the important role that transport policies have to play in facilitating sustainable development. The section states that:

"The planning system should actively manage patterns of growth …Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes."

6.2.5 Paragraph 103 also emphasises the need for developments to offer a choice of sustainable modes of transport to *"reduce congestion and emissions and improve air quality and public health"* and provide *"safe and suitable access"* (Paragraph 108) for all users.

6.2.6 Paragraph 110 of the NPPF states that applications for development should:

- *"give priority to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- *address the needs of people with disabilities and reduced mobility in relation to all modes of transport; and*

- *create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards."*

6.2.7 The proposals are for the development of a residential scheme to be situated in a highly accessible location. There is good walking and cycling infrastructure adjacent to the site, and there are good links to public transport facilities such as Piccadilly rail station.

6.2.8 Furthermore, the site is located within walking distance of many employment centres, retail and leisure facilities located in the City Centre.

6.2.9 On the above basis it is reasonable to conclude that the proposed development accords with Chapter 9 of the NPPF and the presumption in favour of sustainable development outlined within Paragraph 11.

6.3 National Planning Practice Guidance (NPPG)

6.3.1 In addition to the NPPF, a National Planning Practice Guidance (NPPG) document has also been developed by the government. Within this document there is a specific section that clarifies the over-arching principles on Travel Plans, Transport Assessments and Transport Statements.

6.3.2 The guidance on Transport Assessments and Statements re-iterates the circumstances in which either document would usually be required. The NPPG has been considered in the production of this TS.

6.4 Manchester City Council: Core Strategy

6.4.1 The MCC core strategy promotes similar principles to the NPPF. It contains three specific "Transport" policies, comprising:

- Policy T1 – Sustainable Transport;
- Policy T2 – Accessible areas of opportunity and need; and
- Policy T3 – Strategic Integration.

6.4.2 Policy T1 focuses on sustainable transport and access for all. The accessibility of the site would encourage users of the proposed development to travel by sustainable modes. Furthermore, the site is to be fully permeable, improving the pedestrian environment and access for people who are disabled or mobility impaired.

6.4.3 Policy T2 of the MCC Core Strategy states:

"The Council will actively manage the pattern of development to ensure that new development… Is located to ensure good access to the City's main economic drivers, including the Regional Centre, the Oxford Road Universities and Hospitals and the Airport and to ensure good national and international connections Is easily accessible by walking, cycling and public transport; connecting residents to jobs,

centres, health, leisure, open space and educational opportunities. Particular priority will be given to providing all residents access to strategic employment sites.

6.4.4 It is considered that the location of the Site fulfils the above criteria and therefore accords with policy T2.

6.4.5 Policy T3 is in relation to strategic integration of developments with the sustainable transport network. The proposed development would not prejudice the implementation of any of the strategic integration projects and would provide potential patrons to make these projects economically viable.

6.5 Greater Manchester Spatial Framework (GMSF) 2019 (Draft)

6.5.1 The Greater Manchester Spatial Framework (GMSF) has been prepared to set out the approach to housing and employment land across Greater Manchester for the next 20 years. The plan identifies the amount of new development that will come forward, in terms of housing, offices, and industry and warehousing, and the main areas in which this will be focused.

6.5.2 Policy GM6 of the GMSF, titled 'Accessibility', states:

"In order to accommodate the high levels of economic growth and the associated increase in journeys whilst reducing the congestion and environmental impacts that could adversely affect growth… Key elements of this coordinated approach will include:

- *Designing development and neighbourhoods so as to encourage journeys to be made by walking, cycling and public transport;*
- *Locating development so as to reduce the need to travel by car and the distance travelled, and maximise accessibility by public transport;*
- *Using demand management measures to make best use of our existing highways capacity;*
- *Providing safe and convenient cycle routes that connect people to jobs, key services and recreation opportunities, supported by cycle hire and sharing schemes; and*
- *The continued improvement in public realm in town centres and local neighbourhoods to support the maximum number of local journeys in those locations to be made on foot."*

6.5.3 The proposed development does not contravene the plans set out by the GMSF, instead it supports the plans by having active measures in place (e.g. high level of provision of cycle parking) to encourage future residents to travel sustainably whenever possible.

6.6 Greater Manchester Transport Strategy 2040

6.6.1 In 2015, TfGM began consulting on a 2040 Vision for Transport to deliver a transport system which enables residents, businesses and visitors in Greater Manchester to travel to a wide range of different

destinations and opportunities, and where sustainable transport can be a viable and attractive alternative to the car.

6.6.2 Under Policy 3, the Transport Strategy states that TfGM will "maintain a conurbation-wide programme of travel choices interventions, supported by journey planning tools and information, to encourage travel behaviour change and mode shift, in order to make the most efficient use of available capacity, particularly during peak periods". Such interventions comprise:

- *"Encouraging employers to allow home working on some days;*
- *Measures to encourage people to make at least some of their journeys by public transport, walking and cycling;*
- *Physical measures (bus priority measures, reallocating road space for pedestrian and cycling infrastructure, car share schemes, and constraints on long-stay parking in key centres); and*
- *Promotions and marketing to provide people and businesses with the information, training and incentives to make better informed decisions about how, when and where they travel and the impact of their choices."*

6.6.3 The above measures and additional initiatives have been considered in the accompanying Interim Travel Plan (Document Reference - 68957/FTP/V02).

6.6.4 Under Policy 4, TfGM will also "continue to work with planning authorities and developers to ensure the accessibility of new development by sustainable modes and to reduce the impact on the highway network". This will be in accordance with the principles of:

- *"Reducing the need to travel by car, and the distance travelled;*
- *Maximising accessibility by sustainable modes;*
- *Making the best use of existing infrastructure, particularly through increasing the density of development close to public transport nodes;*
- *Maximising opportunities to provide additional public transport; and*
- *Designing to encourage active travel."*

6.6.5 This report has demonstrated that the development proposals would not adversely impact the transport network, and instead would support the Transport Strategy by enhancing opportunities for sustainable travel by integrating into existing infrastructure.

6.7 Manchester Residential Quality Guidance

6.7.1 The 'Manchester Residential Quality Guidance' document was approved as a material consideration in the Council's decision making as a Local Planning Authority by the executive in December 2016.

6.7.2 The document sets out guidance for design quality standards for residential development in Manchester including maximum car parking provision.

6.7.3 The document seeks to promote development that will be designed with full regard to the principles of sustainability, including accessibility for all, energy efficiency and the contribution that the public realm can make to the 'greening' of the City.

6.7.4 It also seeks to underpin and contribute to the ambitions for the city of being: a beacon for sustainable design; energy-efficient, sustainable and affordable homes to rent and buy; encourage walking, cycling and the use of public transport etc.

6.7.5 The document also seeks to promote the development of neighbourhoods that make it easy for people to get around by means other than the car.

6.8 Conclusions

6.8.1 It is considered that the redevelopment of Victoria House for residential use, and ancillary commercial use, is consistent with national and local transport policies and guidance. The PDS is located within an area which has a range of existing local facilities and an abundance of sustainable travel choices.

7.0 Summary and Conclusions

7.1 Summary

7.1.1 Curtins has been appointed on behalf of Forshaw Land and Property Limited to provide all traffic and transport advice in relation to a proposed residential development, with two ground floor commercial units, on Great Ancoats Street/Longacre Street, in Manchester city centre.

7.1.2 The Proposed Development forms a part of the evolving developments which are emerging within the Portugal Street East Strategic Regeneration framework (PSE SRF).

7.1.3 The PDS is located at the eastern edge of the city centre district and within the inner ring road. It is within close proximity of emerging districts including New Islington and Holt Town and close to Piccadilly rail station, which can be accessed via an easily walkable journey of under 10 minutes. The Etihad Campus, Northern Quarter and Ancoats areas are also within walking distance of the Site.

7.1.4 A thorough review of the accident data for most recent three years for which data is available on the local highway network has demonstrated that there is no existing safety issue that is likely to be exacerbated by the redevelopment of Victoria House.

7.1.5 Accessibility by sustainable modes of travel is excellent and is exceptionally well located to benefit from existing and proposed pedestrian, cycling and public transport infrastructure in the immediate vicinity of the PDS. This will be further enhanced by opening up new routes between the buildings and the high-quality public realm improvements.

7.1.6 It is considered that the Proposed Development is in line with national and local transport policies and guidance. The PDS is located within an area which has a range of existing local facilities and an abundance of sustainable travel choices and would not result in a severe residual impact on the surrounding highway network.

7.2 Conclusions

7.2.1 From a traffic and transportation perspective there are no reasons why the redevelopment of Victoria House for residential and ancillary commercial uses should not be granted planning approval.

Plans

Drawings

Appendix A – Great Ancoats Street Improvement Scheme

Appendix B – Proposed Site Layout

Appendix C – TRICS Outputs

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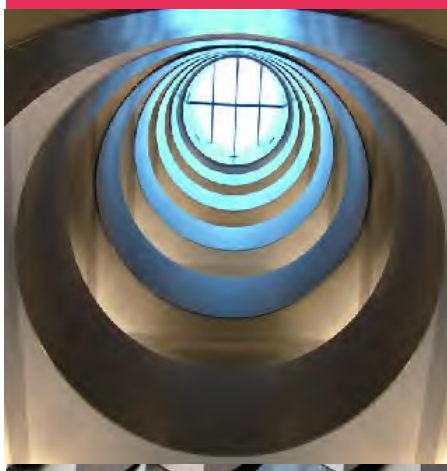
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Victoria House, Manchester
Interim Travel Plan

Curtins Ref: 068957-ITP-001-V02/ITP
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Appendix A – Proposed Site Layout

1.0 Introduction

1.1 Background and Development Proposals

1.1.1 Curtins has been appointed on behalf of Forshaw Land and Property Limited to provide all traffic and transport advice in relation to a proposed residential development, with two ground floor commercial units, on Great Ancoats Street/Longacre Street, in Manchester city centre.

1.1.2 The proposed residential scheme forms a part of the evolving developments which are emerging within the Portugal Street East Strategic Regeneration Framework Area (PSE SRF).

1.1.3 The site is located at the eastern edge of the city centre district and within the inner ring road. It is within close proximity of emerging districts including New Islington and Holt Town.

1.1.4 The proposal has been developed in line with the key principles outlined in the PSE SRF.

1.1.5 The proposals are summarised as follows:

- 25 Storeys (ground, 23 levels plus a roof level with full height parapet;
- Ground floor commercial unit c. 161sqm;
- The building will contain 177 dwellings;
- The commercial units and bin stores will be serviced from Longacre Street;
- Associated and ancillary development comprising a residential garden, resident's gym and co-work space; and
- Cycle storage.

1.1.6 The ground floor for the site produced by Simpsonhaugh details the development proposals and is presented in **Appendix A** at the rear of the document.

1.1.7 The redevelopment of Victoria House will contribute financially towards the delivery of a new public square which will be situated to the south west of the Site. The square is proposed to be used by the residents and users of the Proposed Development, and other future developments within the SRF area.

1.1.8 A separate planning application provides details of the public square and other public realm enhancements.

1.2 What is a Travel Plan?

1.2.1 A Travel Plan (TP) is defined by the Department for Transport (DfT) and by the Department for Communities and Local Government (DCLG) as:

> *"A long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives and is regularly reviewed."*

Source: *National Planning Policy Framework*, DCLG, 2019.

1.2.2 In essence, a TP is intended to encourage people to choose alternative transport modes over single occupancy car use and, where possible, reduce the need to travel at all. Such a plan should include a range of measures designed to achieve this goal.

1.3 Document Purpose

1.3.1 This Interim Travel Plan (ITP) is intended to be read alongside the accompanying Transport Statement (TS), **Ref: 068957-ITP-001-V02/TS**, prepared to consider the development proposals.

1.3.2 An ITP is the first stage of the Travel Plan process and is often prepared during the planning stage prior to the construction of the development. It includes a list of potential measures that could be implemented to affect modal choice, and a management strategy for producing a full Travel Plan in the future.

1.3.3 Transport for Greater Manchester (TfGM) strongly endorses the need for TPs in order to reduce the impact of transport on the local environment, to improve accessibility and to encourage 'active travel' which improves peoples' health. According to TfGM's document '*Transport for Sustainable Communities: a Guide for* Developers', a TP should achieve:

- *"A reduction in car use (particularly for single occupancy trips) and increase travel by sustainable modes, namely active travel and public transport;*
- *A reduction in the impact of the generated traffic, both in the immediate neighbourhood and on the wider highway network;*
- *Safe access for pedestrians and cyclists; and*
- *A coordinated approach to developing and implementing realistic travel options."*

Source: *Transport for Sustainable Communities: a Guide for Developers, 2013*

1.3.4 This document has been written in accordance with the above statement, and the following core guidance documents:

- Transport for Sustainable Communities: a Guide for Developers, TfGM, 2013;
- National Planning Policy Framework, DCLG, 2019;
- National Planning Practice Guidance, DCLG, 2014; and
- Good Practice Guidelines: Delivering Travel Plans through the Planning Process, DfT, 2009.

1.4 Document Structure

1.4.1 Following this introductory section, **Section 2** of the report provides background information on the benefits which can be derived from a successful Travel Plan. It also sets out keys aims and objectives for the Travel Plan process.

1.4.2 **Section 3** describes the existing situation and surrounding area, including the local highway layout.

1.4.3 **Section 4** assesses the accessibility of the site by various means of sustainable modes of travel including public transport, walking and cycling.

1.4.4 **Section 5** outlines various initiatives that will be considered to encourage a modal shift from single occupancy car travel and towards sustainable modes of travel for future employees and visitors.

1.4.5 **Section 6** provides example Travel Plan Targets, outlining the need to present SMART targets following the completion of the base Travel Surveys.

1.4.6 **Section 7** provides details on the monitoring and review process, responsibility and management of the document, and the appointment of a Travel Plan Coordinator (TPC) as the Travel Plan process progresses.

1.4.7 **Section 8** concludes the report by providing an Action Plan which summarises the document and the next steps.

2.0 Travel Plan Benefits

2.1 Introduction

2.1.1 The benefits from a TP can be loosely categorised under three main headings:

- Health Benefits;
- Environmental Benefits; and
- Financial Benefits.

2.1.2 This section explores just some of the benefits which can be gained during a successful Travel Planning process.

2.2 Health Benefits

2.2.1 A reduction in polluting vehicles on the roads surrounding the site will mean better air quality throughout the area. There are also well documented health benefits associated with active travel, yet activity levels are generally low across the UK:

> *"Physical activity levels are low in the UK: only 40% of men and 28% of women meet the minimum recommendations for physical activity in adults."*

Source: *Health Survey for England: CVD and Risk Factors for Adults, Obesity and Risk Factors for Children*, DoH, 2008.

2.2.2 Regular moderate physical activity (including walking and cycling), can help prevent and reduce the risk of cardiovascular disease, cancer, obesity, diabetes, stroke, mental health problems, high blood pressure, and musculoskeletal problems.

2.3 Environmental Benefits

2.3.1 Climate change is a global issue that affects all nations. The British Government has pledged to play its part in reducing emissions which are harmful to the earth by setting carbon reduction targets:

> *"It is the duty of the Secretary of State to ensure that the net UK carbon account for the year 2050 is at least 80% lower than the 1990 baseline."*

Source: *Climate Change Act 2008,* Chapter 27, Part 1, 2008.

2.3.2 Encouraging people to make smarter choices in the way they travel can drastically reduce the impact that a particular development or organisation makes on the environment.

2.4 Financial Benefits

2.4.1 Although secondary to health and environmental benefits, there are also financial benefits to be gained from increasing active travel rates:

> *"The cost of physical inactivity in England – including direct costs of treatment for the major lifestyle-related diseases, and the indirect costs caused through sickness absence – has been estimated at £8.2 billion a year."*

Source: At Least Five a Week: Evidence on the Impact of Physical Activity, DoH, 2004.

2.4.2 Individuals can also benefit financially from travelling to and from a site with a TP in place due to the improved range of transport options available, some of which may be more cost-effective than car travel. In some circumstances, TP measures can remove an individual's need for a car (or their household's need for a second car), removing the capital and on-going cost of car ownership.

2.4.3 An effective TP can help encourage employees, residents and visitors to lessen their environmental impact by reducing emissions from transport, lead a healthier and more active lifestyle, and reduce financial wastage.

2.5 Mutual Benefits

2.5.1 As demonstrated, there are multiple reasons as to why TPs are important to modern society. The initiatives in this TP will have a positive effect on the future employees and visitors of the proposed development. They must be communicated correctly:

> *"It is important that the outcomes sought from the travel plan can be seen as a benefit to all parties, e.g. the developer, occupiers and site users, the community and the local authority. Such benefits can help in gaining widespread commitment."*

Source: *Good Practice Guidelines: Delivering Travel Plans through the Planning Process*, DfH, 2009.

2.6 Travel Plan Objectives

2.6.1 Considering the above benefits, this TP aims to achieve the following objectives:

- **Objective 1 –** To increase the level of cycling to and from the site;
- **Objective 2 –** To increase the level of walking to and from the site;
- **Objective 3 –** To increase the level of public transport use to and from the site;
- **Objective 4 –** To increase the number of people car sharing to and from the site; and in turn
- **Objective 5 –** To reduce single occupancy car travel to and from the site.

3.0 Existing Situation

3.1 Site Location

3.1.1 Victoria House is located at the eastern edge of the Manchester city centre district and within the inner ring road. The site is in close proximity to emerging districts including New Islington and Holt Town beside the Piccadilly train station, which can be accessed via an easily walkable journey of under 10 minutes. The Etihad Campus, Northern Quarter and Ancoats areas are also within walking distance of the Site.

3.1.2 The Site itself is situated to the north of the defined Portugal Street East Strategic Regeneration Framework area (PSE SRF).

3.1.3 The SRF area is bounded to the north by Metrolink lines, to the west by a surface car park and a Royal Mail vehicle depot, to the south by Adair Street, and to the east by the A665 Great Ancoats Road.

3.1.4 **Figure 3.1** below illustrates the indicative site area in relation to the regional highway network and the wider area.



Figure 3.1 – Site location in relation to the regional highway network

3.1.5 **Figure 3.2** below shows the indicative SRF extents in relation to the local highway network.



Figure 3.2 – Location plan in relation to the *surrounding highway network*

3.2 Surrounding Highway Network

A665 Great Ancoats Street

3.2.1 Situated to the north of the Site, Great Ancoats Street forms one of the primary vehicular routes along the eastern edge of Manchester city centre, serving as the boundary of the New Islington area on the side of the Rochdale Canal. Extending for approximately 1.4km, it links the Northern Quarter from Oldham Road to the A635 outside Ardwick.

3.2.2 In the vicinity of the Site, the carriageway extends along a northwest/southeast alignment, with up to three lanes in either direction. The typical total carriageway width is approximately 18m, including the central reservation and central hatching, although the road widens to accommodate various turning lanes.

3.2.3 There are wide footways of varying width on either side of the carriageway. These footways have additional pedestrian infrastructure such as pedestrian guard rails, dropped kerbs, tactile paving and signalised crossing points at vantage points to enable pedestrians to cross the road in a safe manner.

3.2.4 The A665 is subject to a 30mph speed limit in the vicinity of the site, with street lighting provided along both sides of the carriageway. Advanced cycle stop lanes are also available in both directions, along with traffic calming measures such as yellow box junctions.

3.2.5 There are a number of bus stops located along Great Ancoats Street within the vicinity of the Site, hosting services to various destinations in Manchester city centre and across Greater Manchester.

3.2.1 At the time of preparing this TS, MCC has already commenced on the delivery of improvement works along Great Ancoats Street including pedestrian/cycle infrastructure, carriageway re-surfacing and landscaping. Further details are presented later within this document.

Longacre Street

3.2.2 Longacre Street runs along a southwest/northeast alignment, parallel to Heyrod Street, for approximately 200m and links Heyrod Street to Churchgate Buildings and Chapeltown Street.

3.2.3 Longacre Street is a two-way road with a carriageway width of approximately 5m for most its continuation. The road is subject to a 30mph speed limit with footways of c. 1.5m wide and street lighting provided along both sides of the carriageway.

3.2.4 The usable carriageway width of Longacre Street varies due to on-street parking bays, which are situated at several points along the carriageway (nine bays provided). For the majority of Longacre Street, parking is restricted by double yellow lines. It is not proposed to change the number of on-street parking bays as part of the development.

3.2.5 Longacre Street connects to Portugal Street East via a footway located along the northwest boundary of the site.

Adair Street/Travis Street

3.2.6 Directly south/southeast of the site, Adair Street runs in a southwest direction for a length of approximately 220m before leading to Travis Street, which in turn diverges into Fairfield Street after 270m and leads to Manchester Piccadilly or continues for a further 180m to the A6 London Road which leads to Ardwick.

3.2.7 Adair Street comprises a two-way, single carriageway of approximately 11m in width. The road is well-lit with wide footway provision of approximately 2.5m on both sides of the road and has dropped kerbs. The road is subject to a speed limit of 30mph.

3.2.8 The road narrows at Travis Street to approximately 7m wide, whereas the footways are approximately 2m wide. The road is well lit, with a bus stop outside the SquareOne office building.

3.2.9 To the southwest of the site, Travis Street passes under the Manchester Piccadilly rail line, therefore access is only permitted for vehicles with a height under 4.7m.

3.2.10 On both roads, Traffic Regulation Orders are present in the form of double yellow parking restrictions. The area is within Zone 4 of Manchester City Council's on-street parking bays, which are pay and display for up to 10 hours from Monday to Sunday (8am – 8pm, no charge on bank holidays).

Portugal Street East

3.2.11 Portugal Street East runs along a north/south alignment for an approximate length of 75m between the Metrolink line and Heyrod Street. Bollards have been provided at the meeting point between Portugal Street East and the Metrolink line to stop vehicles crossing the tramline. A turning head is provided at the western edge of the carriageway at its boundary with the Silver Street Car Park.

3.2.12 Portugal Street East is a two-way road with a carriageway width of approximately 5m. The road is subject to a 30mph speed limit with footways of c. 1.5m wide provided along both sides of the carriageway, and street-lighting along the western side of the carriageway.

3.2.13 Parking is restricted along Portugal Street East as there are double yellow lines located along both sides of the carriageway.

3.2.14 Portugal Street East benefits from good pedestrian infrastructure, including dropped kerbs and tactile paving to facilitate crossing, particularly for pedestrians/cyclists who have to cross the Metrolink line to access the Site.

Heyrod Street/Epworth Street

3.2.15 Heyrod Street runs along a southwest/northeast alignment for approximately 180m and connects Portugal Street East to Norton Street. It also serves as an access route for many of the buildings and uses along its length.

3.2.16 Heyrod Street is a two-way road with a carriageway width of approximately 5m for most its continuation. The road is subject to a 30mph speed limit with footways of c. 1.5m wide and street lighting provided along both sides of the carriageway at regular intervals.

3.2.17 The usable carriageway width of Heyrod Street varies due to a loading bay and on-street parking bays, which are situated at several points along the carriageway (eight bays provided). For the majority of Heyrod Street, parking is restricted by double yellow lines.

3.2.18 Towards the east, Heyrod Street continues as Epworth Street for c. 45m and maintains similar characteristics, with the exception of Epworth Street primarily serving as access to the parking

compounds of the industrial units, including Victoria House, and taking the form of a turning head at its terminus.

Betley Street/Norton Street

3.2.19 Off Adair Street and approximately 90m apart, both Betley Street and Norton Street are parallel to each other and provide access between Heyrod Street and Adair Street by extending for lengths of c. 40m. Both roads share similar characteristics and are two-way with a carriageway width of approximately 6m.

3.2.20 Both roads have with footways of c. 1.5m wide, however only Norton Street has street lighting provided along one side of the carriageway.

3.2.21 Betley Street and Norton Street are also Controlled Parking Zones from Mondays to Fridays between 8am and 8pm, where the western side of both roads have Traffic Regulation Orders are present in the form of double yellow parking restrictions. On Betley Street, there are five pay and display bays on the eastern side of the road; whereas on Norton Street, the eastern side of the road primarily serves as access to the neighbouring industrial units and thus have double yellow parking restrictions.

3.2.22 This road forms a signalised junction with the A665 Ring Road. No pedestrian phases are included in signals however there is a dropped kerb crossing with central refuge island provided to enable crossing on Adair Street. Guard rails are also provided to channel pedestrians to the signalised crossing located at the A665/Pollard Street junction which is within 50m of the Pollard Street junction.

3.3 Great Ancoats Street Improvement Scheme

3.3.1 MCC is progressing with a programme of work that has been designed to improve the physical environment of Great Ancoats Street. When the work is completed it is anticipated that there will be a much more accessible link between the city centre and the Ancoats neighbourhood and the physical environment of the road will be improved.

3.3.2 Once completed, Great Ancoats Street will benefit from;

- Improved crossing locations for pedestrians and cyclists;
- Better access and connectivity between the city centre, Ancoats and New Islington;
- A more pleasant environment with improved street furniture and the provision of trees where possible;
- Wider footways with more standardised materials and less street furniture clutter;
- Less noise from traffic – using innovative materials for carriageway resurfacing, designed to help cut vehicle noise by up to 40%.

3.3.3 The scheme will commence at the Oldham Road/Great Ancoats Street junction and continue up to the Store Street/Great Ancoats Street/Old Mill Street junction. A plan indicating the full extent of the works is included within **Appendix A**.

3.3.4 Cycling corridor provision will be provided via investment in two new parallel routes. The Northern and Eastern Gateway will become the second city centre cycling and walking corridor to be funded by the Greater Manchester Mayor's Challenge Fund. The route will connect the neighbourhoods of Ancoats, New Islington, New Cross, New Town, Redbank and the Green Quarter by creating a high-quality, continuous east-west walking and cycling route for the north and east city centre.

3.3.5 The Northern and Eastern Gateway scheme has been proposed to complement the £9.1m Great Ancoats Street scheme. It would run parallel to Great Ancoats to the north and include improvements for people travelling on foot or by bike to Thomas Street and Stevenson Square.

3.3.6 Further planned improvements, such as the upgrading of the Rochdale Canal towpath towards Newton Heath as an improved walking and cycling corridor, will provide a strong network of safe routes in the immediate vicinity of the Site.

3.3.7 Whilst the scheme will not directly alter the highways immediately surrounding the Site, the improvements to the pedestrian/cycle infrastructure will benefit future occupiers of the Proposed Development.

4.0 Accessibility by Sustainable Modes of Travel

4.1 Introduction

4.1.1 A key element of national, regional and local policy is to ensure that new developments are located in areas where alternative modes of travel are available. It is important to ensure that developments are not isolated but are located close to complementary land uses. This supports the aims of integrating planning and transport, providing more sustainable transport choices, and reducing overall travel and car use.

4.1.2 The accessibility of the proposed development is considered in this context for the following modes of travel:

- Pedestrian Accessibility;
- Accessibility by Cycle; and
- Accessibility by Public Transport.

4.2 Pedestrian Accessibility

4.2.1 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities. The Chartered Institution for Highways and Transportation (CIHT) document entitled *'Providing for Journeys on Foot'* suggests walking distances which are relevant to this planning application. These are reproduced in **Table 4.1**.

	Town Centres (m)	Commuting/School/ Sightseeing (m)	Elsewhere/Local Services (m)
Desirable	200	500	400
Acceptable	400	1,000	800
Preferred Maximum	800	2,000	1,200

Table 4.1 – CIHT Suggested Acceptable Walking Distances

4.2.2 To assist in summarising the accessibility of the site by foot, an indicative pedestrian catchment plan has been produced. **Plan 068957-ITP-001-V02_06003** shows distances of 500m, 1,000m and 2,000m which are termed *'Desirable'*, *'Acceptable'* and the *'Preferred Maximum'* by the CIHT for commuting trips.

4.2.3 Within the 500m walk catchment access can be gained to parts of Manchester city centre including the key transport node of Piccadilly rail station and the Ancoats area. Within this area access can be gained to man employment opportunities, retail and leisure facilities as well as bus stops and car parks. For

example, along Great Ancoats Street there is the Urban Exchange, which hosts an Aldi, Marks & Spencer, a gym, and more retail units.

4.2.4 The majority of the central business district is within the 1,000m catchment where access can be gained to financial services and further retail and employment opportunities. Areas of Cotton Fields, New Islington, and the Northern Quarter are also accessible within approximately 500m – 1,000m from the centre of the site, ensuring accessibility to a wide range of key complementary facilities, which are predominantly for leisure and entertainment purposes.

4.2.5 The 2,000m catchment encompasses the majority of the city centre and extends as far as Miles Platting in the North, Etihad Campus to the East, The University of Manchester to the South and Deansgate to the West. Key attractions include Piccadilly Gardens which is a landmark open space in the city centre, Market Street with various retail and leisure facilities, the Etihad Campus which comprises the Manchester City Football Club Stadium, Manchester Tennis and Football Centre, the HSBC UK National Cycling Centre, and Philips Park.

4.2.6 The Site is considered highly accessible by foot.

4.3 Accessibility by Cycle

4.3.1 In order to assist in assessing the accessibility of the Site by cycle, **Plan 068957-ITP-001-V02_06004** presents an 8km cycle catchment for the SRF area. The 8km cycling distance refers to a recommendation by Cycling England in the document *'Integrating Cycling into Development Proposals'* (2009).

4.3.2 The catchment extends as far as Blackley in the north, Audenshaw to the east, Didsbury in the south and Salford to the west. On-road local cycle routes lead into Manchester city centre and the Northern Quarter to the northeast of the site along the A665 Great Ancoats Street. They also lead towards Miles Platting and Oldham in the northeast along the Ashton Canal.

4.3.3 This network of local cycle routes links to various National Cycle Routes (NCRs) and Regional Cycle Routes (RCRs) including NCR 6, NCR 55, NCR 60, NCR 66 and RCR 86. National Cycle Route 66 is the closest nationally designated route, located approximately 200m to the north of the site.

4.3.4 All these routes are accessible within 1 – 3km, and link future residents to the following areas:

- NCR 6 – extends through Manchester along an approximate north/south alignment to link areas such as Bury in the north to Levenshulme in the south;
- NCR 55 – extends through Manchester in a northwest direction to Preston in the northwest and Stockport/Macclesfield in the south;

- NCR 60 – extends between north and east Manchester, forming part of the Fallowfield Loop line at the Manchester City Stadium;
- NCR 66 – extends northeast from central Manchester along the Rochdale Canal towards Failsworth in both on-road and traffic-free regions;
- RCR 86 – extends east of the city centre via the Etihad Campus and Medlock Valley out to Oldham, runs off-road and is located alongside the River Medlock.

4.4 Accessibility by Public Transport

4.4.1 **Plan 068957-ITP-001-V02_06005** demonstrates those areas accessible via public transport within 20, 40 and 60 minutes journey from the SRF area. Accessibility by bus and rail are considered in further detail within the subsections below.

Bus Accessibility

4.4.2 Guidance from the Chartered Institution of Highways and Transportation (CIHT) document 'Guidelines for Planning for Public Transport in Development' indicates that ideally, a bus stop should be located within 400m from a new development.

4.4.3 The nearest bus stop to the site is located approximately 300m walking distance from the site, along Travis Street. **Table 4.2** details the services that call at this stop, and their associated frequencies:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/Hols
147	Manchester Piccadilly - Manchester Metropolitan University - University of Manchester - St Mary's Hospital	10 mins	-	-

Table 4.2 – Summary of Bus Service Frequencies from Travis Street

4.4.4 Bus service 147 serves education facilities such as Manchester Metropolitan University and University of Manchester, as well as St Mary's Hospital at regular intervals for 5 days a week. It is considered that this service will be of great use to future residents, particularly if they attend one of these universities or require access to medical facilities on a regular basis.

4.4.5 Bus stops are also located along Great Ancoats Street (A665) towards the southeast of the site, and at the Manchester Piccadilly Station approximately 500m to the west. **Table 4.3** details the series that call at these stops, and their associated frequencies:

Bus Service	Route	Peak Hourly Frequency		
		Mon – Fri	Sat	Sun/Hols
From Great Ancoats Street (A665)				
231	Manchester - Clayton - Droylsden - Hartshead - Ashton	3	2	2
From Manchester Piccadilly Station				
192	Manchester – Longsight – Levenshulme – Stockport – Stepping Hill – Hazel Grove	10 mins	10 mins	10 mins
201	Manchester – Gorton – Denton – Hyde – Hattersley	10 mins	10 mis	30 mins
203	Manchester – Reddish – Belle Vue – Stockport	10 mins	10 mins	15 mins
204	Manchester – Gorton – Denton – Haughton Green – Hyde	Hourly in the PM	30 mins in the PM	30 mins
205	Manchester – West Gorton – Dane Bank – Denton	30 mins	30 mins	Hourly
206	Manchester – West Gorton – Denton – Haughton Green – Hyde – Gee Cross	30 mins	30 mins	-
207	Manchester – West Gorton – Town Lane – Haughton Green – Hyde – Gee Cross	2 in the PM	-	-
219	Manchester – Openshaw – Guide Bridge – Ashton – Stalybridge	10 mins	10 mins	20 mins
220	Manchester – Openshaw – Audenshaw – Dukinfield – Stalybridge	1 in the AM	-	-
221	Manchester – Openshaw – Audenshaw – Dukinfield	3 in the PM	-	-

Table 4.3 – Summary of Bus Service Frequencies from Great Ancoats Street (A665) and Manchester Piccadilly Station

4.4.6 In addition to the services identified above, further bus services could be assessed on Fairfield Street and A6 London Road located with 700m of the site which provides numerous and frequent bus services that provide access to further destinations including Stockport, Mottram and Hazel Grove.

4.4.1 Future residents can also board the City Centre Free Bus services at Manchester Piccadilly station in order to access key city centre locations. The frequencies are detailed in **Table 4.4**:

Free Bus Service		Peak Frequency		
		Weekday	Saturdays	Sun/Hols
1	Piccadilly – Piccadilly Gardens – Chinatown – Market Street – Deansgate – Opera House – Albert Square – New York Street – Central Coach Station circular	Every 10 mins	Every 10 mins	Every 12 mins
2	Piccadilly – Oxford Road – Deansgate – Manchester Victoria – Shudehill – Northern Quarter circular	Every 10 mins	Every 10 mins	Every 12 mins
3 Evenings Only	Piccadilly – Oxford Road – Deansgate – Manchester Victoria – Shudehill – Northern Quarter circular	Every 20 mins	Every 15 mins	N/A

Table 4.4 – City Centre Free Bus Services

Rail Accessibility

4.4.2 The nearest train station is Manchester Piccadilly, located approximately 500m to the west of the site. A summary of rail services from Manchester Piccadilly is summarised in **Table 4.5:**

Destination	Service Frequency		
	Peak Weekday	Peak Saturday	Peak Sunday
Birmingham	3 per hour	3 per hour	3 per hour
Blackpool North	3 per hour	2 per hour	1 per hour
Bournemouth	3 per hour	3 per hour	2 per hour
Bristol Temple Meads	2 per hour	2 per hour	1 per hour
Cardiff	1 per hour	1 per hour	1 per hour
Carmarthen	1 per hour	1 per hour	1 per hour
Chester	5 per hour	4 per hour	1 per hour
Crewe	5 per hour	5 per hour	4 per hour
Edinburgh	2 per hour	2 per hour	1 per hour
Glasgow	2 per hour	2 per hour	1 per hour
Hazel Grove	2 per hour	2 per hour	1 per hour
Hull	1 per hour	1 per hour	1 per hour
Leeds	5 per hour	5 per hour	4 per hour
Liverpool Lime Street	4 per hour	4 per hour	3 per hour
Llandudno	2 per hour	1 per hour	1 per hour
London Euston	3 per hour	3 per hour	3 per hour
Manchester Airport	7 per hour	6 per hour	4 per hour
Newcastle	4 per hour	4 per hour	3 per hour
Norwich	2 per hour	2 per hour	1 per hour
Nottingham	1 per hour	1 per hour	1 per hour
Preston	4 per hour	3 per hour	2 per hour
Rose Hill	2 per hour	2 per hour	-
Scarborough	1 per hour	3 per hour	2 per hour
Sheffield	3 per hour	3 per hour	2 per hour
Southport	2 per hour	2 per hour	2 per hour
Stockport	15 per hour	15 per hour	8 per hour
Stoke On-Trent	5 per hour	5 per hour	2 per hour
Wigan	2 per hour	2 per hour	2 per hour
York	4 per hour	4 per hour	3 per hour

Table 4.5 – Summary of Rail Services from Manchester Piccadilly

4.4.3 As can be seen from **Table 4.5**, Manchester Piccadilly Train Station provides frequent access to a considerable number of major cities, as well as a substantial number of surrounding areas within Greater Manchester.

Metrolink (Light Rail)

4.4.4 The nearest Metrolink stops are New Islington and Manchester Piccadilly, located approximately 250m north and 500m west of the Site respectively. As a major public transport hub, **Table 4.5** outlines the frequencies of services calling at Manchester Piccadilly station:

Route	Mon - Thurs	Fri - Sat	Sun/Hols
Altrincham – Piccadilly	05:49 – 23:37	05:49 – 00:37	06:49 – 23:37
Ashton-under-Lyne – Eccles	05:55 – 23:05	05:55 – 00:05	06:56 – 22:56
Bury – Piccadilly	05:52 – 23:40	05:52 – 00:40	06:52 – 23:40
MediaCityUK – Ashton-under-Lyne	05:53 – 23:03	05:53 – 23:03	05:53 – 23:03

Table 4.5 – Summary of Metrolink Services from Manchester Piccadilly

4.4.5 Future residents can benefit greatly from the Metrolink, with services operating throughout the week at regular intervals. In addition to the Metrolink service identified above, residents could connect to other Metrolink services by changing over at St Peters Square or Victoria Station.

4.5 Summary

4.5.1 It is considered the Victoria House site is highly accessible by sustainable modes of transport. The surrounding area exhibits high levels of pedestrian and cycling infrastructure, and there are many public transport opportunities within acceptable walking distance of the Site.

5.0 Residential Travel Plan Initiatives

5.1 Introduction

5.1.1 Taking into account the location of the proposed development and the accessibility of the site via walking, cycling and public transport, a series of measures and initiatives have been developed to encourage sustainable travel to and from the residential site.

5.1.2 This section of the ITP sets out the initiatives that could be implemented in a full residential Travel Plan in order to reduce residents' dependency on the private car and encourage sustainable modes of travel. The initiatives below are in line with the aims and benefits set out in **Section 2** of this document.

5.2 Production of Residential Welcome Packs

5.2.1 Welcome packs can be critical in influencing travel patterns and therefore it is envisaged that welcome packs will be supplied to all residents upon moving in. The contents of the welcome packs could include:

- Introduction to the TP concept detailing objectives and aspirations;
- Literature on the health benefits of walking, cycling and environmental benefits of sustainable modes of transport;
- Personal travel initiatives;
- Maps showing local walking/cycling routes and places of interest;
- Details of public transport services, including timetables and routes; and
- Details of the Travel Plan Co-ordinator (TPC).

5.2.2 As well as providing such information throughout the welcome packs, community notice boards in communal areas could also be provided to detail relevant information as set out above.

5.3 Measures to Encourage Walking

5.3.1 Walking is the most sustainable and accessible mode of travel. Any individual in relatively fair health can incorporate walking into part of their journey. Furthermore, 30 minutes of moderate activity 5 or more times per week is likely to enhance the health and fitness of the individual.

5.3.2 It has been demonstrated throughout **Section 4** of this ITP that there is an existing high level of pedestrian infrastructure in the surrounding area. It is also intended to improve the pedestrian offering in immediate vicinity of the site as part of the development proposals. The following measures could be considered in order to encourage residents to walk:

- Raise awareness of the health benefits of walking;

- Clear signing of pedestrian routes within and adjacent to the site;
- Information on the local pedestrian routes, including public footpaths; and
- Promote the www.walkit.com website for journey planning on foot.

5.4 Measures to Encourage Cycling

5.4.1 It has been demonstrated throughout **Section 4** of this ITP that there is an existing high level of cycle infrastructure in the surrounding area. The development will also provide 100% cycle parking spaces to encourage cycling. In addition to the above infrastructure, the following measures could also be considered to encourage residents to cycle.

- Information on the local cycle network routes made available through the previously discussed welcome packs;
- Promote the availability of cycling information, including route maps and useful tips and guidance, on the Sustrans website and TfGM's Cycling website: www.sustrans.org.uk / cycling.tfgm.com
- Local cycle clubs/forums to be invited to take part in Travel Plan promotional events to raise awareness;
- Promotion of events such as "National Bike Week"; and
- The setting up of a residential Bicycle User Group (BUG).

5.5 Measures to Encourage Public Transport

5.5.1 It has been demonstrated throughout **Section 4** of this ITP that the site is highly accessible by public transport, and that there are further opportunities throughout Manchester city centre. The following measures will be considered in order to encourage residents to travel by public transport:

- Distribute details of the Traveline Journey Planning tool for the North West. Future residents can contact Traveline by phoning 0871 200 2233. They can also utilise the Traveline website at www.traveline-northwest.co.uk; and TfGM's website at www.tfgm.com
- Provide up to date bus information including timetables and contact information in the welcome packs;
- Advertise any promotions/discounts offered by public transport operators;
- Liaise with bus companies, TfGM and Manchester City Council on any future improvements and/or extensions to local services; and
- Limited time discount tickets could be provided in the previously discussed welcome packs.

5.6 Car Sharing

5.6.1 Car sharing is an effective way of reducing single occupancy car trips if a number of residents travel to the same location each day. It is envisaged that the proposed level of parking provision as well the

rental of the parking spaces will discourage single occupancy car use by residents and encourage sustainable modes of travel such as walking, cycling, public transport and car sharing.

5.6.2 There are organisations which offer a matching service. Residents would be able to use the website; www.carsharegm.com, which has been developed by TfGM, in order to organise car shares. They would have to register themselves with the site, which then searches for appropriate car sharing matches. This scheme could be promoted by the TPC.

5.6.3 Alongside promoting such schemes, there could also be advertisement to raise awareness of car ownership costs. There may also be an opportunity for a proportion of spaces on site to be reserved for car sharers, although this would be considered through the monitoring process should there be a considerable take up of car sharing or identified as an incentive to increase car sharing.

5.7 Car Clubs

5.7.1 Car clubs are seen to be cost-effective and sustainable tools that could be promoted by the TPC. Vehicles are booked for as long or as little as people need them, giving residents a more sustainable and cheaper alternative to car ownership.

5.7.2 Companies such as Enterprise Car Club offer memberships in Manchester with a variety of cars parked in designated bays at many locations around the city, which can be reserved by the hour, day or even longer. The price of the journey depends upon the vehicle type, the duration of the reservation and the miles driven, but starts at £5.20 an hour.

5.7.3 The nearest car club location to the proposed development site is at CHIPS off Old Mill Street, along the Aston Canal Tow Path within approximate 800m walk. Residents would be made aware of this location as well as other car club locations within the city centre and surrounding area.

5.7.1 It is considered that the Car Club could be an attractive facility for residents or employees who do not own a car but require occasional use.

5.7.2 Alongside promoting such schemes, there could also be advertisements to raise awareness of car ownership costs and highlight the social and economic benefits of car sharing.

6.0 Targets

6.1 Introduction

6.1.1 Target setting is an important part of any Travel Plan, providing a focus for the overall process and a measure against which the Travel Plan initiatives can be judged. This section sets out some example targets and provides an overview of the data that should be collected as part of future travel surveys to inform the full Travel Plan once developed.

6.2 Initial Modal Split Targets

6.2.1 As the development has not yet been constructed, it is not possible to undertake any travel surveys and provide a definitive set of targets. Travel Plans rely on the surveys to provide a base level of modal split.

6.2.2 However, it is possible to provide an indication of potential targets, and an example is provided in **Table 6.1** below:

Example of Potential Targets					
Travel Mode	**Existing Modal Split Percentage**	**Short Term Target Modal Shift Change**	**Medium Term Target Modal Shift Change**	**Long Term Target Modal Shift Change**	**Total Target Modal Shift Change**
Car Driver	TBC following surveys	-2%	-4%	-4%	**-10%**
Car Share		-	+1%	+1%	**+2%**
Public Transport		+1%	+1%	+1%	**+3%**
Foot		+1%	+1%	+1%	**+3%**
Cycle		-	+1%	+1%	**+2%**

Table 6.1 – Example of Potential Targets

6.2.3 The example modal split targets above aim for a 10% reduction in single occupancy car trips, whilst aiming for a 10% increase in trips by more sustainable modes such as public transport, walking and cycling.

6.2.4 The above targets are indicative only, and final targets will be decided following the receipt of the travel surveys. Surveys will be commissioned within three months of achieving 75% occupancy.

6.3 Travel Plan Performance Indicators

6.3.1 In addition to the modal split targets, the following Travel Plan performance indicators could be considered:

- Car trips per household – targets could be set on the basis of predicted trip rates for the development as generated by the TRICS assessment carried out in the accompanying Transport Assessment, validated by traffic counts;
- Uptake of alternative modes – targets could be set for bus patronage, membership and use of car clubs, registration and participation in car share schemes, and cycle/pedestrian counts;
- Car ownership and mode of travel – modal split targets could be supplemented by targets related to car ownership, and travel to work/school by mode targets; and
- Travel Plan awareness targets – a target could be set in relation to residents' appreciation of the Travel Plan process and knowledge of the benefits offered by the plan.

6.4 SMART Targets

6.4.1 The above example modal split targets and potential Travel Plan performance indicators are considered to be suitable interim measure before travel surveys are undertaken three months after occupation.

6.4.2 At this point official targets will be set through consultation with Manchester City Council. The official targets will be **SMART** (**S**ite-specific – **M**easurable – **A**chievable – **R**ealistic – **T**imed).

7.0 Monitoring and Review

7.1 Introduction

7.1.1 This section of the report sets out the proposed management arrangements associated with the ITP. It also sets out the next steps with regards to converting this ITP into a full Travel Plan.

7.2 Responsibility and Management

7.2.1 Overall responsibility for the ITP will lie with site owner, Forshaw Land and Property Limited. Following construction and full occupation, the ITP will need to be updated to a full Travel Plan. This will involve undertaken travel surveys to establish the travel patterns of residents.

7.2.2 The travel surveys will be completed by all residents and the survey will be influenced by national travel planning guidance and approved by Manchester City Council. These will extract key travel characteristics such as:

- Post code;
- Purpose of trip;
- Mode of travel;
- Reason for mode of travel; and
- Barriers to other mode choices.

7.2.3 This information will enable analysis to be undertaken to establish final targets associated with the proposals. It will also provide information on the reasons for that modal split and identify any measures that may encourage a modal shift.

7.3 Travel Plan Coordinator (TPC)

7.3.1 When the full Travel Plan is produced, the day to day responsibility will shift from Forshaw Land and Property Limited to the appropriately appointed TPC (Building Management Company). The TPCs will take responsibility for ensuring that the various elements of the plan are monitored and operate effectively to offer a genuine choice of travel modes. Typical duties include:

- Leading on the delivery of the TP;
- Representing the human face of the TP and explaining its purpose and opportunities on offer;
- Promoting individual measures/initiatives in the TP;
- Liaising with public transport operators;
- Monitoring the TP; and
- Taking a key role in reviewing the TP.

7.3.2 A TPC will be nominated for the development in due course.

7.4 Monitoring and Evaluation

7.4.1 The monitoring of travel behaviour is vital to measure progress towards the targets.

7.4.2 Annual monitoring reports will be provided to officers at Manchester City Council following the receipt of the first surveys. Monitoring will be carried out for a period of at least three years from the date of the baseline travel surveys.

8.0 Action Plan

8.1 Introduction

8.1.1 **Table 8.1** below summarises the key actions from the document by providing an Action Plan for the Travel Plan process:

Action	Indicator	Target Date	Responsibility
Appoint TPCs	Development build nearing completion	One month before occupation	Forshaw Land and Property Limited
Produce Welcome Pack	TPCs appointed	First occupation of each element of the development	TPCs
Undertake Initial Travel Surveys	75% occupancy of residential apartments	Within three months	TPCs
Decide Modal Split Targets	Receipt of the initial Travel Surveys	Within one month of undertaking the initial surveys	TPCs/Manchester City Council
Update FTP to a full Travel Plan	Once Modal Split Targets are agreed with Manchester City Council	Within two months of agreeing modal splits with Manchester City Council	TPCs
Present Annual Monitoring Report	Once full Travel Plan is approved by Manchester City Council	Annual for at least three years following the agreement of targets with Manchester City Council	TPCs

Table 8.1 – Action Plan

Plans

Appendix A – Proposed Site Layout

Our Locations

Birmingham
2 The Wharf
Bridge Street
Birmingham B1 2JS
T. 0121 643 4694
birmingham@curtins.com

Bristol
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Bristol
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T. 0117 925 2825
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Cardiff
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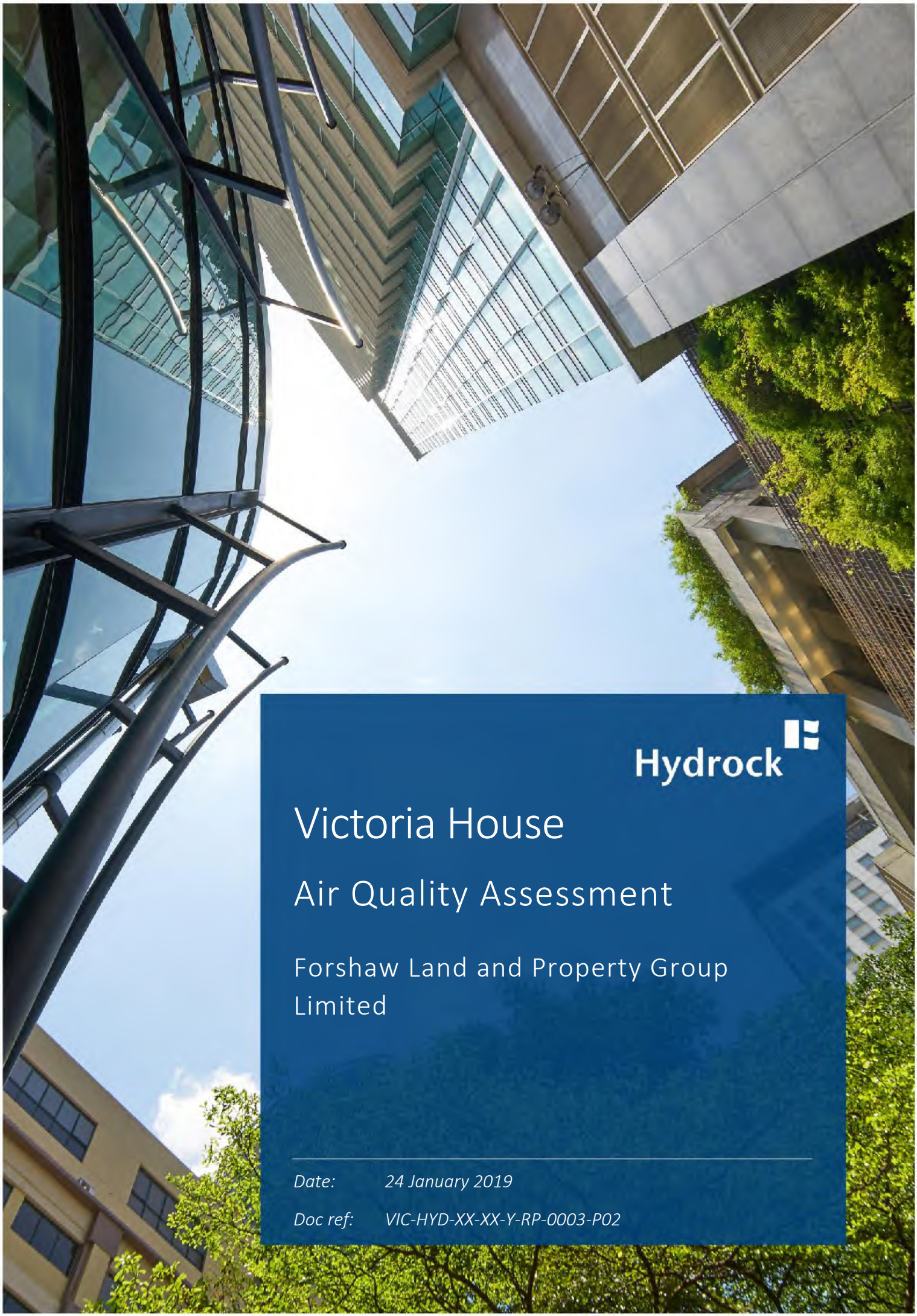
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Hydrock

Victoria House

Air Quality Assessment

Forshaw Land and Property Group Limited

Date: *24 January 2019*

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Appendix A - Construction Dust Mitigation

Appendix B - PM_{10} results (Traffic impacts)

Appendix C – $PM_{2.5}$ results (Traffic impacts)

Appendix D - Percentage increase from construction baseline to construction of development

Appendix E – Windrose for Manchester Airport 2017

Appendix F – Dispersion modelling plots

Appendix G– Construction assessment working

Appendix H– Diffusion tube plots

Executive Summary

Victoria House

Hydrock have been appointed on behalf of Forshaw Land and Property Group Limited to undertake an Air Quality Assessment (AQA) relating to an application that seeks permission to redevelop an existing industrial/commercial premise to provide: a 25-storey residential tower with commercial premises on the ground floor, just off Longacre street, Manchester.

The main purpose of the assessment is to determine the current conditions in the area and what impact future increases in natural vehicle movements and background emissions, not associated with the proposed development, might have the new residential receptors. As construction traffic is predicted to exceed IAQM thresholds an impact assessment relating to construction traffic has also been undertaken. In order to determine the impact of the proposed development a detailed Air Quality Assessment (AQA) will be undertaken using the air dispersion model ADMS Roads (Version 4.1.1) to establish air quality situation under the following scenarios:

- A baseline using 2018 traffic, weather and monitoring data along with 2018 emissions factors (EF) to determine current conditions in the area and validate the model.
- A model with projected traffic increases in 2020, without construction traffic. This has been assessed using 2020 emissions factors (EF).
- A model with projected traffic increases in 2020, with construction traffic. This has been assessed using 2020 emissions factors (EF).
- A model with projected traffic increases in 2022.This has been assessed using both 2015 and 2022 emissions factors (EF).

The assessment indicates that if the proposed development was commissioned the impact on the surrounding receptors, due to temporary construction traffic, would be a **negligible** when compared to a 2020 baseline. Due to existing background/traffic movements some ground and first floor receptors in the development are predicted to experience exceedances of the annual NO_2 National Air Quality Objective (NAQO).

Receptor CR11 has the potential to experience a High impact from construction dust during the construction phase only. With CR9 and CR11 predicted to have Medium impact during construction and demolition phases respectively. CR2, CR11 and CR17 are predicted to have a Medium impact during the trackout phase. All other receptors are likely to experience a Low/Negligible impact from construction dust and Low/Negligible impact for human health effects from PM_{10}.

Provided appropriate mitigation procedures are followed it is expected these impacts can be fully mitigated. It is recommended that a Construction Dust Management Plan (DMP) be submitted to MCC based on mitigation guidance from the IAQM which is provided in this report.

1. INTRODUCTION

Hydrock have been appointed on behalf of Forshaw Land and Property Group Limited to undertake an Air Quality Assessment (AQA) relating to an application that seeks permission to redevelop an existing industrial/commercial premise to provide: a 25-storey residential tower with commercial premises on the ground floor, at the junction with Longacre street and Great Ancoats street, Manchester.

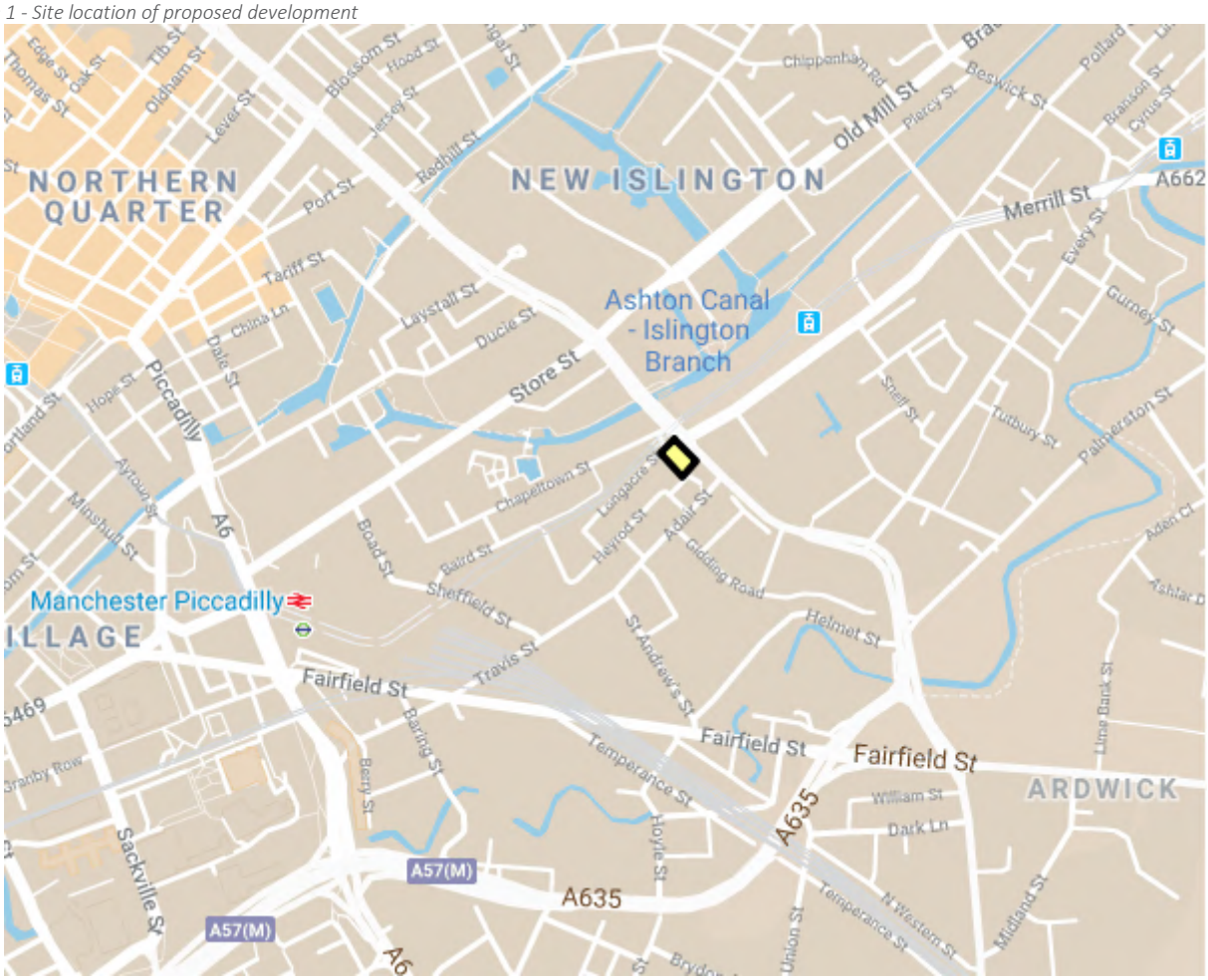
The study area lies within Greater Manchester Combined Authority (GCMA) and is in an Air Quality Management Area (AQMA) for nitrogen dioxide (NO_2) and Particulate Matter less than 10µm (PM_{10}). A number of Automatic and Non-Automatic monitoring sites are in operation in the local authority area, with the data from these being used to validate the model.

A dispersion model has been developed with traffic emissions to estimate the concentrations of NO_2, PM_{10} and Particulate Matter less than 2.5um ($PM_{2.5}$) at the site. This model has been used to predict the changes in concentrations in future years with and without the developments construction traffic in order to estimate any impact increases in emissions might have on nearby receptors.

2. PROPOSED DEVELOPMENT

Proposals have been made to redevelop an existing industrial/commercial premise to provide: a 23-storey residential tower with commercial premises on the ground floor, at the junction with Longacre street and Great Ancoats street, Manchester.

Figure 1 - Site location of proposed development



3. RELEVANT LEGISLATION

3.1 EU

The overriding policy document which governs air regulation is the EU Council Directive on ambient air quality and cleaner air for Europe (2008/50/EC) [1], which came into force in 2008, and provides statutory guidance on air quality. This presents statutory requirements for the protection of human health and ecosystems through long and short-term limit values for: oxides of nitrogen (NOx), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), particulate matter with a diameter of less than 10 microns (PM_{10}), particulate matter with a diameter of less than 2.5 microns ($PM_{2.5}$) carbon monoxide (CO), lead, benzene and ozone (O_3). The above legislation replaces the EU's previous three daughter directives.

The 4th Daughter Directive 2004/107/EC[2] sets target values, where exposure is to be reduced to as low as reasonable possible, for arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons (PaH) within ambient air.

In addition, the Committee on the Medical Effects of Air Pollution (COMEAP)[3], the World Health Organisation (WHO)[4] and the United Nations Economic Commission for Europe (UNECE)[5] provide medical and scientific evidence of the health risks to the general public and recommended concentration limits.

3.2 UK

The above EU limit/target values within the EU Directives 2008/50/EC and 2004/107/EC were transposed into UK Law as part of the Air Quality Standards Regulations[6] which came into force in 2010.

These set out how the government has interpreted these directives and sets out Air Quality Objectives (AQOs) that are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale. One of the main additions to these was the addition of regulatory framework on $PM_{2.5}$.

The Air Quality Strategy 2007 Volume 1[7] outlines the National Air Quality Objectives that should be achieved. Whilst central government is ultimately responsible for meeting these objectives, part of the Environment Act 1995[8] dictates that a local authority is required to assess and periodically review their compliance with the non-binding objectives and any areas that repeatedly exceed the allowed limits should be designated Air Quality Management Areas (AQMAs).

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[1] EC, "Directive 2008/50/EC of the European Parliament and of the Council," May 21, 2008, 50.
[2] EC, 50.
[3] COMEAP, "The Mortality Effects of Long-Term Exposure to Particulate Air Pollution in the United Kingdom" (London: Committee on the Medical Effects of Air Pollutants (COMEAP), November 2010).
[4] WHO, "WHO | Air Pollution," WHO, 2016, http://www.who.int/topics/air_pollution/en/.
[5] UNECE, "Air Pollution - Air Pollution - Environmental Policy - UNECE," 2016, http://www.unece.org/env/lrtap/welcome.html.
[6] Air Quality Standards Regulations 2010.
[7] Defra, "The Air Quality Strategy for England, Scotland, Wales and Northern Ireland - Volume 1" (Department for Food, Environment and Rural Affairs (Defra), July 2007), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69336/pb12654-air-quality-strategy-vol1-070712.pdf.
[8] Environment Agency, "Environment Act 1995" (The Environment Agency, 2002), http://www.legislation.gov.uk/ukpga/1995/25/contents.

Greater Manchester Combined Authority (GMCA)[9] has a town wide AQMA declared for breaches of the annual and short term NO_2 and PM_{10} objectives. The council undertakes annual Air Quality Reports assessing the performance of areas of significant pollution. The most recent Annual Status Report (ASR) was issued in July 2017, based on data from 2016.

In order to determine if an air quality assessment is required, Defra Local Air Quality management (LAQM) Technical Guidance 2016[10], and the IAQM Land-use Planning & Development Control: Planning for Air Quality[11] and the Highways Agency Design Manual for Roads and Bridges[12] is used as guidance.

The National Planning Policy Framework[13] requires that planning decisions for any new development should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. Furthermore, planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.

[9] GMCA, "2016 Air Quality Annual Status Report (ASR) for Greater Manchester" (Greater Manchester Combined Authority (GMCA), July 31, 2017), http://www.manchester.gov.uk/download/downloads/id/25718/greater_manchester_air_quality_annual_status_report_asr_2016.pdf.

[10] Defra, "LAQM Technical Guidance LAQM.TG16," April 2016, 16, http://laqm.defra.gov.uk/documents/LAQM-TG16-April-16-v1.pdf.

[11] IAQM, "Land-Use Planning & Development Control: Planning for Air Quality" (Institute for Air Quality Management (IAQM), January 2017), http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf.

[12] DfT, Design Manual for Roads and Bridges, vol. 12.2.1: Traffic Appraisal of Road Schemes. Section 2: Advice (London: Highways Agency, 1996).

[13] Department for Communities and Local Government, "National Planning Policy Framework," February 2019, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf.

Table 1 - Breakdown of where the NAQO apply taken from Defra TG(16) guidance

Averaging Period	Objectives should apply at:	Objectives should generally NOT apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.
24-hour mean and 8-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties	Kerbside sites (as opposed to other locations at the building façade) or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual Mean and: 24 and 8 hour mean objectives apply. Kerbside site (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railways stations etc. which are not fully enclosed, where members of the public might be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.
15-min mean	All locations where member of the public might reasonably be exposed for a period of 15 minutes	

3.3 Local planning policy/environmental Policy

Local Policy: Greater Manchester combined authority

Greater Manchester Combined Authority has designated the centre of Manchester, its ring road and arterial road leaving the city as an AQMA. GMCA released their Air Quality Strategy Action Plan 2016- 2021[14] which has the primary objective to improve air quality across Greater Manchester and to embed low-emission behaviours into the culture of our organisations and lifestyles by 2025. In order to help achieve this, GMCA have developed 8 actions for managing new developments, the four applicable actions are presented below:

- Greater Manchester councils to adopt the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction as current best practice to assess and mitigate emissions from construction sites.
- GM local authorities will adopt the most recent IAQM/EPUK guidance for air quality assessment as current best practice, to help ensure that planning applications consider potential local air quality impacts and opportunities to improve air quality are realised.
- A centralised database of significant planning applications and air quality assessments will be managed by TfGM, as a record of the cumulative effects of multiple developments and thereby facilitate combined approaches to minimising emissions.

[14] Greater Manchester Combined Authority.2016. Greater Manchester Air Quality Action Plan 2016-2021.

- TfGM will work with the local authorities to encourage travel planning measures in businesses and individuals to affect a significant modal shift.

GMCA also undertakes annual air quality reporting to assessing the performance of areas of significant pollution. GMCA have released the latest diffusion tube monitoring (2017), which is available online[15].

3.3.1.1 Local Policy: Manchester City Council

Development Plan

Manchester City Council (MCC) Core Strategy Development Plan Document (as adopted on 11 July 2012)[16] seeks to improve the air quality of the borough and minimise harm from poor air quality through Policy EN 16 below:

"The Council will seek to improve the air quality within Manchester, and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant. When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas."

[15] https://secure.manchester.gov.uk/downloads/download/4166/air_quality_reports

[16] Manchester City Council.2012. Core Strategy Development Plan Document.

4. ASSESSMENT METHODOLOGY

The assessment has been carried out based on the methodologies and guidance set out in Local Air Quality Management Technical Guidance LAQM TG(16)[17], the Environment Agency and the IAQM and Environmental Protection UK (EPUK) Land-Use Planning & Development Control planning for Air Quality guidance[18].

4.1 Scope of Assessment

The main purpose of the assessment is to determine the current conditions in the area and what impact future increases in construction vehicle movements, associated with the development, might have on existing sensitive receptors. In addition, concentrations at the development site after it has been constructed will also be assessed for exceedances of any relevant NAQO.

A detailed Air Quality Assessment (AQA) will be undertaken using the air dispersion model ADMS Roads to establish the current and future air quality situation in the area. The software is commercially available, has been validated for this type of assessment and is used extensively for AQA's.

ADMS-Roads is able to provide an estimate of air quality both before and after development, considering important input data such as background pollutant concentrations, variable emissions, meteorological data and traffic flows. The model output can be verified against local monitoring data carried out by MCC. This data has been used to validate the model.

This model will consider/use the following data:

- Background concentration data from DEFRA Automatic urban and rural network (AURN) site located at Piccadilly Gardens.
- Annual Average Daily Flow count data taken for DFT traffic counts (7857 and 47457) on the A665. Survey data has been adjusted to 2020 and 2022 using TEMPRO Factors for Manchester.
- Road widths taken from Google Maps.
- Weather data for the year 2018 taken from Manchester Airport station. Data capture for cloud cover was below the 75% criteria, there missing data was substituted from the Rostherne No. 2 station.
- Average diurnal profiles for the AADTs taken from the DfT average.

4.1.1 Assessment Scenarios

Predictions of NO_2, PM_{10} and $PM_{2.5}$ have been made for 4 scenarios and a verification scenario. The verification scenario uses 2018 traffic data and 2018 Emissions Factors (EF) and will be used for verification. The monitored 2018 traffic flows have been factored to 2020, using TEMPRO factors for Manchester (model B) and then anticipated construction traffic added (model C). The monitored 2018 traffic flows were also factored to 2022, using TEMPRO factors for Manchester, and a model was run using 2018 EF (model D) and 2022 EF (model E). A table detailing the different scenarios can be seen below:

[17] Defra, "LAQM Technical Guidance LAQM.TG16."
[18] IAQM, "Land-Use Planning & Development Control: Planning for Air Quality."

Table 2 - Modelled scenarios

Model #	EFT Year	Description
Model A	2018	2018 Verification
Model B	2020	2020 Baseline without construction traffic
Model C	2020	2020 with construction traffic
Model D	2018	Proposed mixed (2022)
Model E	2022	Proposed mixed (2022)

4.1.2 Baseline conditions

GMCA has investigated air quality within the area as part of its responsibilities under the LAQM guidance. As part of this they have placed over 100 diffusion tubes within the local area to monitor concentrations of NO_2; with the closest to the development being approximately 200m away on the A665. There are also a number of automatic background monitoring sites and a number of urban background diffusions tubes within MCC jurisdiction. The measured concentrations for the most applicable sites can be found in Table 3 and Table 4.

Table 3 - Summary of NO_2 monitoring 2013-2018

Site no.	Location	Distance to Kerb (m)	2014	2015	2016	2017	2018
Automatic Monitoring of Nitrogen Dioxide: Annual Mean Concentration							
MAN3	Manchester Piccadilly (Urban background)	30	40	39	40	36	35
Automatic Monitoring of Nitrogen Dioxide: Number of Exceedances of Hourly Mean (200 µg/m3)							
MAN3	Manchester Piccadilly (Urban background)	30	2	1	0	1	0
Automatic Monitoring of PM_{10}: Annual Mean Concentration							
MAN3	Manchester Piccadilly (Urban background)	30	20	20	20	20	21
Automatic Monitoring of PM_{10}: Number of Exceedances of 24 Hour Mean (50 µg/m^3)							
MAN3	Manchester Piccadilly (Urban background)	30	5	3	3	3	2
Automatic Monitoring of $PM_{2.5}$: Annual Mean Concentration							
MAN3	Manchester Piccadilly (Urban background)	30	12	10	10	8	11

Table 4 - Summary of PM_{10} monitoring 2013-2018

Diffusion Tubes: NO_2 Annual Mean Concentration (µg/m3)							
Location	OS X (m)	OS Y (m)	2014	2015	2016	2017	2018
71 (Roadside)	385161	398290	47.39	45.92	51.2	50.4	46.6
59,60,61 (urban background)	384310	398337	36.09	35.51	39.09	40.09	n/a
14 (urban background)	387656	399016	22.92	21.91	23.27	22.10	18.8

Another source of data that presents an indication of local background concentrations are the Defra background maps. The concentrations of relevant EU limit value pollutants from the DEFRA website[19], are presented in Table 5.

Table 5 - Baseline pollutant concentrations and NAQOs

Pollutant		Period	National Air Quality Objectives (NAQO)	Annual Mean
Description	units			
Particulates (PM_{10})	µg/m³	Annual mean	18.00	12.88
Particulates ($PM_{2.5}$)	µg/m³	Annual mean	10.00	8.21
Nitrogen Dioxide (NO_2)	µg/m³	Annual mean	40.00	27.01

The NO_2 concentration from the DEFRA backgrounds maps is in-between the levels recorded by the background diffusion tube (id:14) and the automatic monitoring station (MAN3). The diffusion tube (id:14) is located in a residential area far away from the city centre and is registering a lower background. As a result, the urban background automatic monitoring site (MAN3) located at Piccadilly Gardens is deemed more appropriate due to its location in an urban environment similar to the Proposed Development.

4.1.3 Traffic Data

Traffic flow data was obtained from two DfT counts (7857 and 47457), one north and one south of the Proposed Development on the A665. The 2018 figures were used for model verification. The flows have been factored up to predicted 2020 and 2022 levels using factors from TEMPRO for the Manchester region. The transport consultant (Curtin's), appointed on the scheme, has estimate that construction traffic will be no more than 10% of the baseline. As a result, 10% of HGVs from the 2020 baseline (model B) have been added to generate the traffic numbers for the construction phase of the development (model C). The links included within the model are presented in Table 6 and Figure 2.

The flows provided by the DfT were divided by 24 to get the hourly flows for input into ADMS-Roads.

Table 6 - Hourly flows used in model

	Traffic Flow data				
	Model A				
	L1	L2	L3	L4	L5
LGV	1400	624	624	624	624
HGV	38	22	22	22	22
Speed (mph)	30	30	30	30	30
	Model B				
LGV	1448	645	645	645	645
HGV	39	23	23	23	23
Speed (mph)	30	30	30	30	30
	Model C				
LGV	1448	645	645	645	645

[19] for a 2km radius surrounding the development site (https://uk-air.defra.gov.uk/data/gis-mapping)

HGV	43	25	25	25	25
Speed (mph)	30	30	30	30	30
	Model D and E				
LGV	1487	662	662	662	662
HGV	40	23	23	23	23
Speed (mph)	30	30	30	30	30

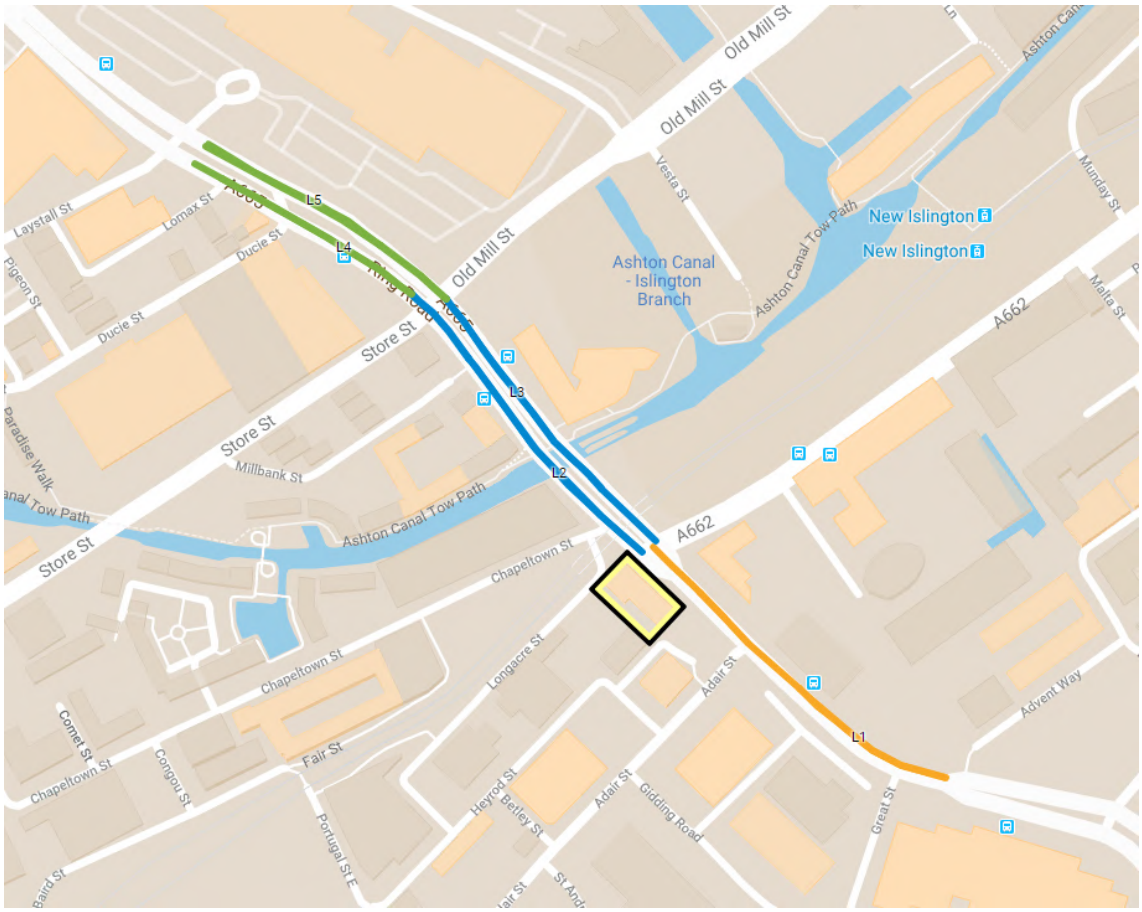


Figure 2 - Roads assessed in the model

4.1.4 Road Geometry

Road widths and canyon heights were taken from Google Maps. The links were split into main sections of road and junctions.

ADMS Roads includes a module to model the effect of street canyons on concentrations. A street canyon is usually defined as when the aspect ratio of the height of buildings along the road is greater than 1/3 the total building to building road width. In this assessment no street canyons were included within the model.

4.1.5 Vehicle Emissions

Vehicle flow and speed data were input into the ADMS Urban model. From this the Emission Factors Toolkit (EFT) Version 8[20] is used to estimate emissions of NOx, PM_{10} and $PM_{2.5}$ for each link.

The average emission factor for NOx, PM_{10} and $PM_{2.5}$ were calculated based on this and input into ADMS-Roads. A time varying profile was used based on average annual diurnal profiles taken from Defra. This was input as a .fac file which ADMS uses to calculate emissions on an hourly basis throughout the year.

For each link vehicles were assumed to travel at the speed limit for that road. At junctions, the first and last five metres of each road, vehicles were assumed to travel at 8kph. Using Google traffic congestion data estimations, areas of typical queues and the times of day these occurred, were identified. These times of day were modelled with a speed of 8kph (see Figure 3 and Figure 4).

Most modern vehicles on the road in the UK meet a particular Euro emissions standard from 1 – 6, with 6 being the newest. Different parts of the country have newer or older vehicles than others. This is defined as the "fleet". The EFT estimates this primarily based on whether the location is within or outside London or in England, Wales or Scotland. In the case of this model the vehicle fleet was taken as "Scotland (urban)".

Emissions factors used in the EFT were derived in 2015. They assume a year on year decrease from this year based on the expectation that emissions from vehicles will significantly decline as engine technology improves and non-Internal Combustion Engine (ICE) vehicles become more prevalent. However, some have questioned the extent of this decline and the IAQM advise that a sensitivity analysis is carried out to predict the effect, should these not be realised[21]. For this reason, it is recommended a sensitivity analysis is carried out to assess the difference in concentrations using the future and current year.

For this assessment, the sensitivity analysis models each scenario with 2018 (worst case) and 2022 (best case) EF to determine the difference the emissions year makes.

[20] Defra, "Emissions Factors Toolkit (EFT) v8.0," November 22, 2017, https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html.
[21] IAQM, "Dealing with Uncertainty in Vehicle NOx Emissions within Air Quality Assessments - Position Statement" (Institute for Air Quality Management (IAQM), March 10, 2016), http://www.iaqm.co.uk/text/position_statements/vehicle_NOx_emission_factors.pdf.

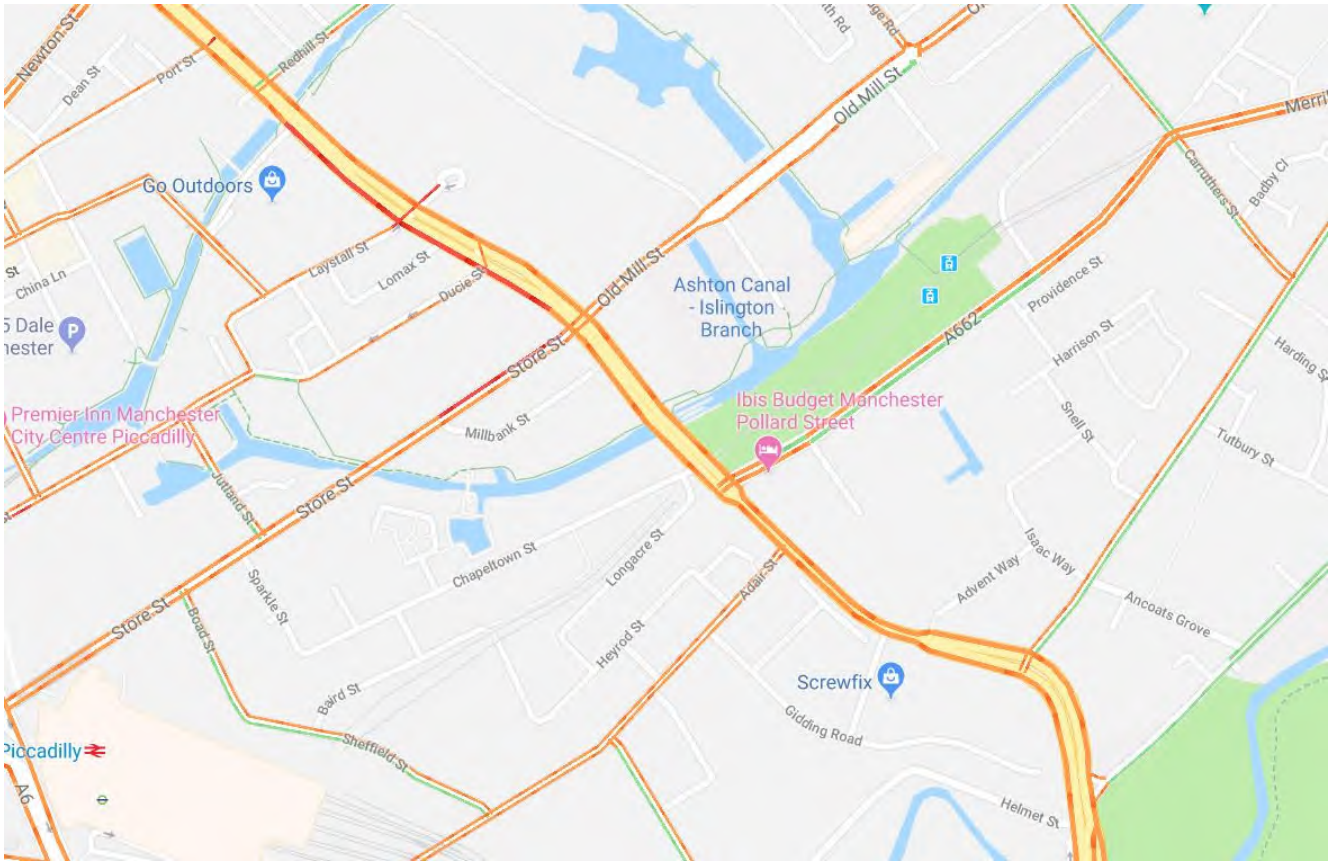


Figure 3 - Example of Google congestion information for a typical Monday at 5pm

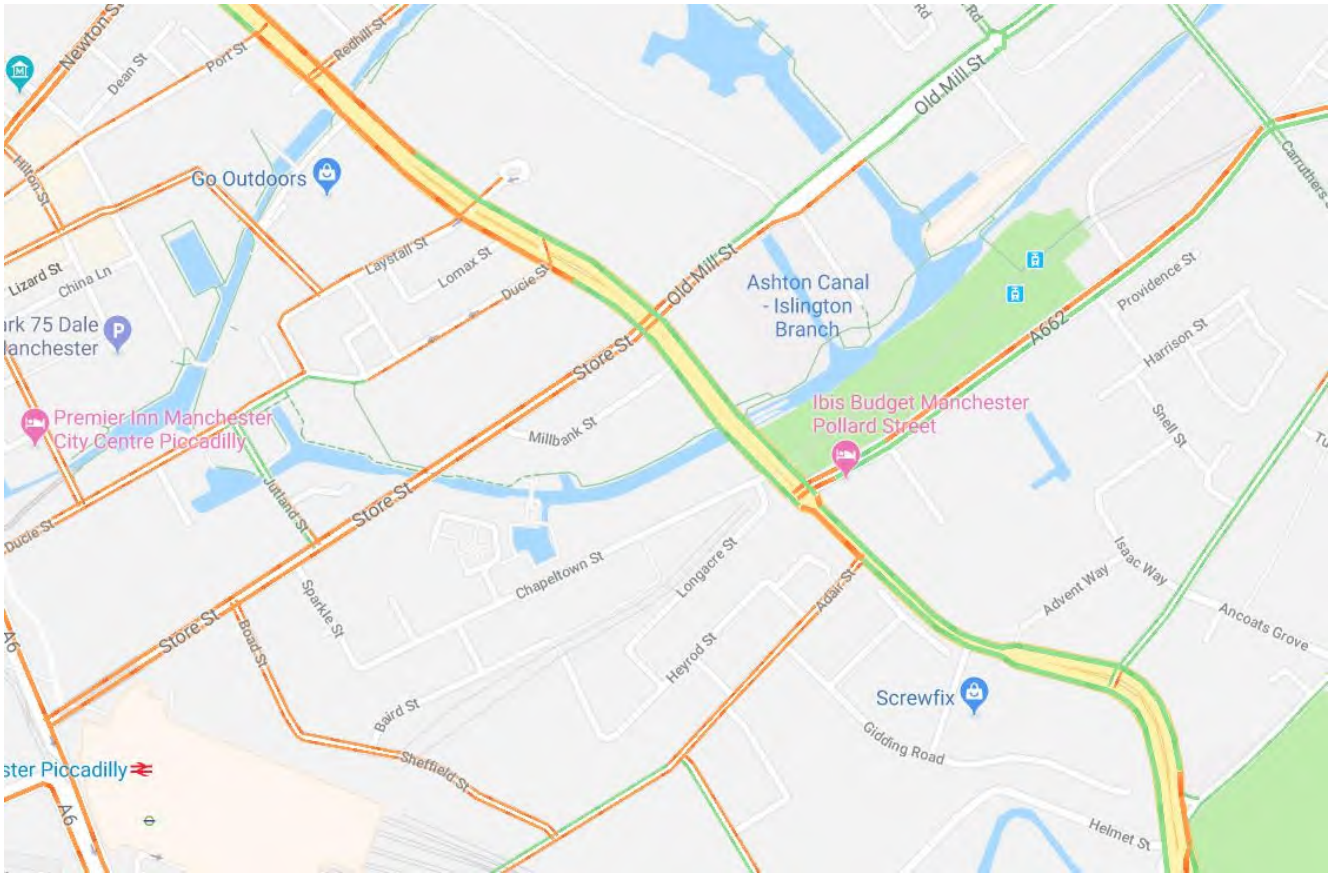


Figure 4 - Example of Google congestion information for a typical Monday at 12pm

4.1.6 Receptors

For this assessment the NAQOs for NO_2, PM_{10} and $PM_{2.5}$ are given in Table 6. They apply at all locations where members of the public might be regularly exposed, building facades of residential properties, schools, hospitals, care homes etc. The receptors that meet these criteria are shown in Figure 5 and listed in Table 7.

Table 7 - List of receptors considered in model

	Coordinates		
R#	X	Y	Z
R1 (DT)	385161	398288	3
R2	385309	398097	1.5
R2b	385309	398097	5.5
R2c	385309	398097	9.5
R2d	385309	398097	13.5
R2e	385309	398097	17.5
R2f	385309	398097	21.5
R3	385326	398082	1.5
R3b	385326	398082	5.5
R3c	385326	398082	9.5
R3d	385326	398082	13.5
R3e	385326	398082	17.5
R3f	385326	398082	21.5

R4	385443	398003	1.5
R5	385222	398192	1.5
R6	385207	398215	1.5
R7	385281	398124	5.5

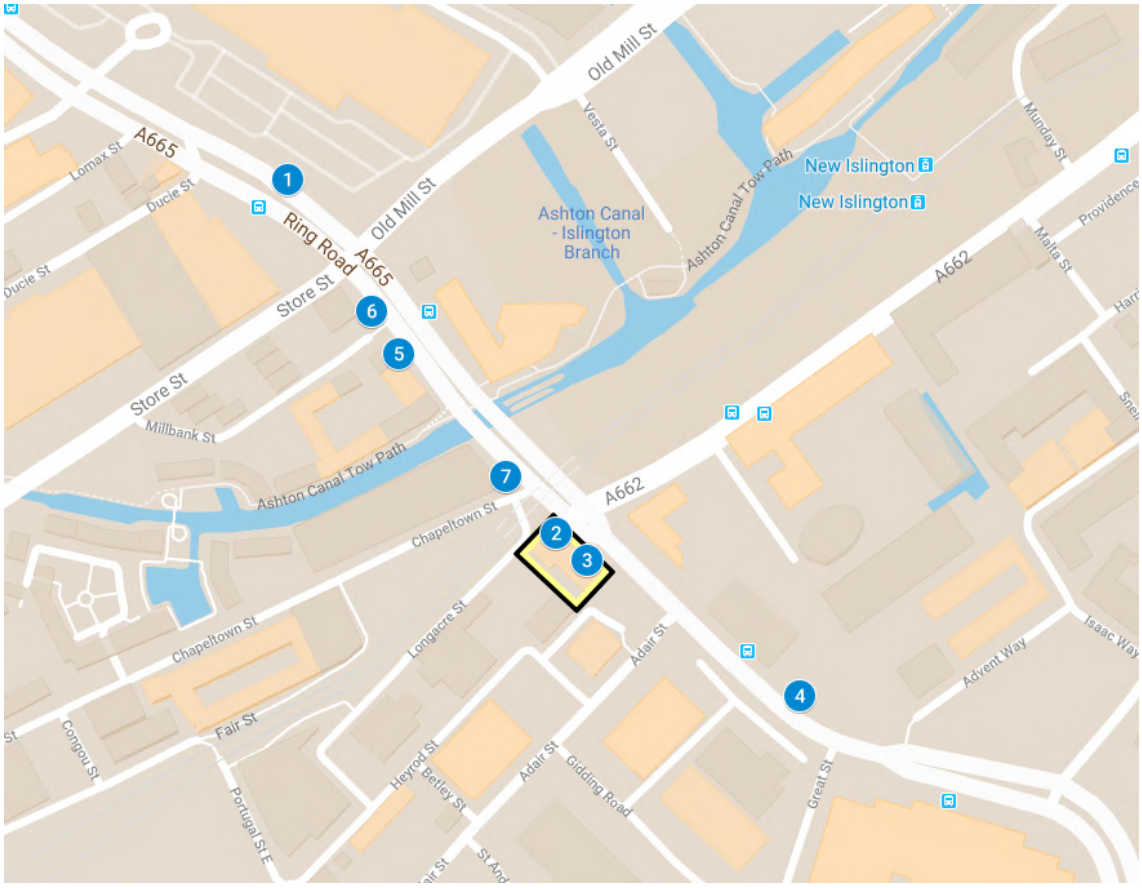


Figure 5 - Receptors assessed in model

4.1.7 Ecological receptors

The area surrounding the site was assessed for the designations listed below, using 'Nature on the map', an online tool managed by Natural England[22].

- Special Protection Areas (SPAs)
- Special Areas of Conservation (SACs)
- Ramsar sites (protected wetlands)
- Sites of Special Scientific Interest (SSSIs)
- Local nature sites (ancient woods, local wildlife sites and national and local nature reserves)

[22] Magic, "Natural England Geographic Information about the Natural Environment," accessed July 27, 2017, http://www.natureonthemap.naturalengland.org.uk/.

No ecological receptors were identified within 350 m of the development site or any roads that lead to and from it.

4.1.8 Points source emissions

The IAQM/EPUK guidance criteria require a detailed modelling assessment if the CHP/boiler plant exceeds 5mg/second of NOx. There are no planned boilers associated with this development, the entire site will be run using electricity from the national grid.

4.1.9 NOx to NO_2 conversion

Conversion of NOx to NO_2 (or vice versa) has been undertaken twice during this assessment. Firstly, NO_2 concentrations taken from local diffusion tubes were converted to NOx concentrations for comparison against modelling locations for model verification purposes. Secondly modelled NOx at nearby residential receptors have been converted to NO_2 for assessment against applicable NAQO. Both conversions have been undertaken using version 7.1 of the NOx to NO_2 conversion spreadsheet which is available on the Defra Website[23].

4.1.10 Weather Data

Hourly sequential surface observation meteorological data for the year 2018 from Manchester Airport met station has been used within this assessment. A surface roughness value of 0.1 m has been used for the meteorological site and represents an area of low crops and occasional obstacles. The value chosen for the dispersion site is 1 m as the land use of the 1 km area preceding the receptors in the direction of the prevailing wind has mixed characteristic of industrial activity and high-rise buildings. A wind rose for the year 2018 is presented in appendix E.

4.1.11 Assessment standards

The long-term annual average for NO_2, PM_{10} and $PM_{2.5}$ will be compared against their applicable National Air Quality Objectives (Table 6).

In the area surrounding the development it is not expected that annual average concentrations will exceed 60µg/m^3. As a rule of thumb this is the threshold for when exceedances of the hourly NO_2 objective may occur[24][25]. Therefore, only annual average concentrations of NO_2 will be assessed.

The correlation between the annual and short-term standard is less well defined for PM_{10} than it is for NO_2. The 24-hour PM_{10} NAQO mandates that a 24-hour average of 50g/m^3 is not exceeded more than 35 times per year. The Proposed Development is within an AQMA for the 24-hour PM_{10} NAQO. However, a maximum of 7, 24-hour PM_{10} recorded measurements greater then 50ug/m^3 per year in the last 5 years, have been recorded. It is unlikely that the residents of the proposed development would be exposed to breaches of the 24-hour PM_{10} NAQO. Therefore, no further assessment relating to the 24-hour PM_{10} NAQO has been undertaken.

[23] https://laqm.defra.gov.uk/documents/NOx-NO2-Calculator-v3.2.xls

[24] AEA Technology, "Analysis of the Relationship between Annual Mean Nitrogen Dioxide Concentration and Exceedances of the 1-Hour Mean AQS Objective," May 23, 2008, https://laqm.defra.gov.uk/documents/NO2relationship_report.pdf.

[25] Duncan Laxen and Ben Marner, "Analysis of the Relationship Between 1-Hour and Annual Mean Nitrogen Dioxide at UK Roadside and Kerbside Monitoring Sites," July 2003, https://uk-air.defra.gov.uk/assets/documents/reports/cat06/1hr_NO2_rpt_Final_b.pdf.

4.1.12 Limitations to Model

A number of factors are unable to be considered in the ADMS Roads and ADMS 5.2 simulation

- Stops and starts of vehicles are not included, traffic flow is assumed to be at a continuous speed.
- As the traffic data was provided as AADTs and the same weekly profile used for the hourly and daily variation, it is not possible to model the monthly variations in flows.

4.1.13 Construction Phase

There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed on accordance with the methodology outlined within the Institute of Air Quality Management (IAQM) document 'Guidance on the Assessment of Dust from Demolition and Construction V1.1'.

Activities on the proposed construction site have been divided up into four types to reflect their different potential impacts. These are demolition, earthworks, construction and possible track out from vehicles.

The potential for dust emissions was assessed for each activity that is likely to take place and considered three separate dust effects: annoyance due to dust soiling, harm to ecological receptors and the risk of health effects due to a significant increase in exposure to PM_{10}.

The risk impact at each receptor is estimated for the four main construction activities through a series of screening steps.

5. MODEL RESULTS

5.1 Model Verification

One diffusion tube was used to verify this model. The tube is located north of the development on the A665; the most recent years of data can be seen in Table 3. The modelled and monitored verification results are given in Table 8.

Table 8 - 2017 Modelled and monitored diffusion tube site results

R#	Receptor	Modelled NOx µg/m³	Monitored NOx µg/m³	Modelled NO_2 µg/m³	Monitored NO_2 µg/m³	Correction Factor
R1 (DT)	71 (Roadside)	46.60	46.60	19.03	25.50	1.34
					Overall	1.34

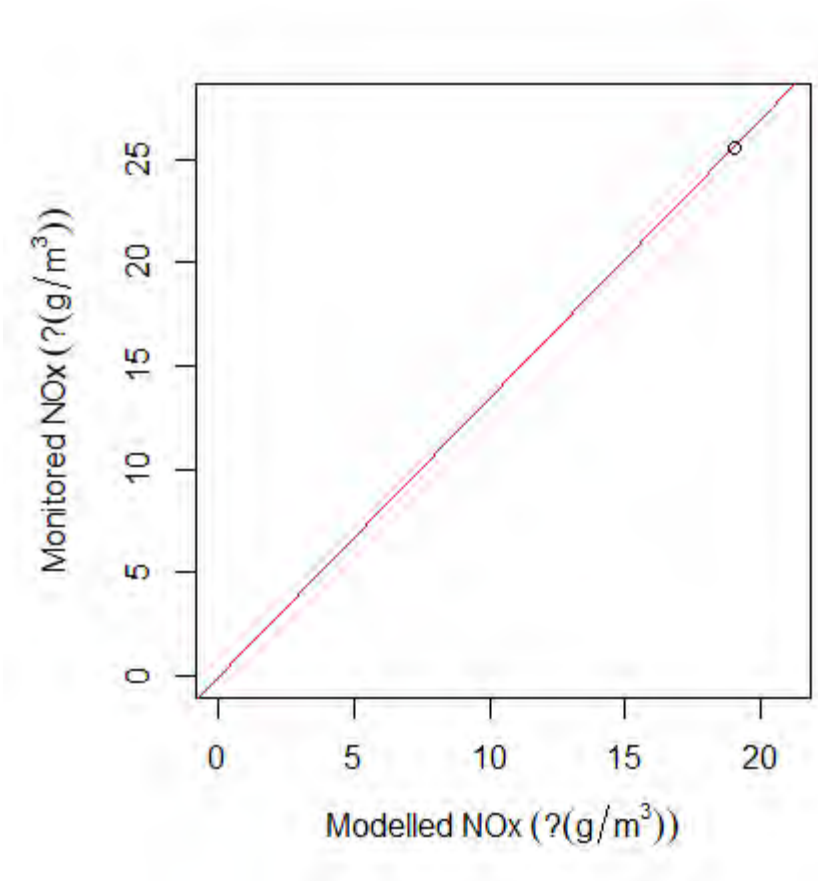


Figure 6 – Regression graph showing correction factor

5.2 Operational

In order to assess the impact of the development following modelled scenarios have been considered:

Model #	EFT Year	Description
Model A	2018	2018 Verification
Model B	2020	2020 Baseline without construction traffic
Model C	2020	2020 with construction traffic
Model D	2018	Proposed mixed (2022)
Model E	2022	Proposed mixed (2022)

5.2.1 NO_2 Concentrations

The main air pollutant of concern in the area is NO_2. Using future 2022 emission factors, the NO_2 concentrations are predicted to reduce compared to the 2015 baseline, due to improvements in the vehicle fleet. However, this reduction is not guaranteed to happen and concentrations could increase if improvements are not met. That is why a sensitivity test is undertaken to look at the difference that the emissions factors for the varying years makes on the levels of pollutants. The concentrations of NO_2 from road traffic (including background NO_2) at each receptor for all modelled scenarios are outlined in Table 9.

Table 9 – NO_2 concentration at all receptors and models

Receptor	Model A	Model B	Model C	Model D	Model E
R1 (DT)	46.60	45.34	45.48	47.21	43.72
R2	43.04	42.14	42.29	43.50	41.03
R2b	39.78	39.24	39.32	40.41	38.82
R2c	37.23	36.97	37.01	37.40	36.69
R2d	36.08	35.96	35.97	36.16	35.81
R2e	35.58	35.51	35.52	35.62	35.44
R2f	35.33	35.30	35.30	35.36	35.25
R3	44.41	43.36	43.55	44.95	42.08
R3b	40.29	39.69	39.79	41.09	39.31
R3c	37.28	37.02	37.06	37.45	36.73
R3d	36.05	35.93	35.95	36.12	35.79
R3e	35.54	35.48	35.49	35.59	35.41
R3f	35.31	35.27	35.28	35.33	35.24
R4	50.14	48.63	48.76	n/a	n/a
R5	42.42	41.62	41.70	n/a	n/a
R6	41.11	40.42	40.51	n/a	n/a
R7	43.74	42.79	42.91	n/a	n/a

The results of the traffic assessment predict a small increase in NO_2 concentrations at nearby residential receptors as a result of construction traffic. Ground floor receptors at all sites will exceed the Annual Average NAQO in all scenarios. If emissions from the UK vehicle fleet do not improve as expected there is predicted to be exceedances of the NO_2 NAQO on some first-floor flats.

5.2.2 *Particulate Matter (PM_{10} and $PM_{2.5}$)*

While the main air pollutant of concern in the area is NO_2, the concentrations of annual PM_{10} and $PM_{2.5}$ at each receptor for all modelled scenarios are outlined in Appendix B and C. There are predicted to be no exceedances of the annual PM_{10} and $PM_{2.5}$ NAQOs.

6. IMPACTS

6.1 Operational

In order to assess an element of significance of increases in pollutant concentrations at each receptor as a result of construction traffic, the IAQM/EPUK impact descriptor methodology table has been used (Table 10). This methodology is explained in further detail in the IAQM guide "planning for Air Quality"[26].

Table 10 - Impact assessment criteria as defined in the IAQM, planning for Air Quality guidance

Long term average concentration at receptor in assessment year	% Change in concentration relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76 - 94% of AQAL	Negligible	Slight	Moderate	Moderate
95 - 102% of AQAL	Slight	Moderate	Moderate	Substantial
103 - 109% of AQAL	Moderate[1]	Moderate	Substantial	Substantial

[1] In accordance with IAQM planning guidance any change less than 0.5% will be considered as Negligible

As the operational development will not generate any additional road traffic or release any emissions from energy generation, no impact assessment has been undertaken with regards to the operation of the proposed development. However, the construction of the development could generate traffic up to 10% of the current HGV baseline. While this impact is only temporary it exceeds the IAQM/EPUK threshold of 25 HGV AADT and the impact has been assessed at each receptor, excluding the diffusion tube site, in Table 12.

Table 11 – Detailing scenario comparison for IAQM impact assessment.

Scenario #	Model #	EFT Year	Description		Model #	EFT Year	Description
1	Model B	2020	2020 Baseline	vs	Model C	2020	2020 baseline with construction traffic

[26] IAQM, "Land-Use Planning & Development Control: Planning for Air Quality."

Table 12 - Results colour coded using the IAQM/EPUK impact assessment methodology

	Scenario1		
Receptor	NO_2	PM_{10}	$PM_{2.5}$
R2	Negligible	Negligible	Negligible
R2b	Negligible	Negligible	Negligible
R2c	Negligible	Negligible	Negligible
R2d	Negligible	Negligible	Negligible
R2e	Negligible	Negligible	Negligible
R2f	Negligible	Negligible	Negligible
R3	Negligible	Negligible	Negligible
R3b	Negligible	Negligible	Negligible
R3c	Negligible	Negligible	Negligible
R3d	Negligible	Negligible	Negligible
R3e	Negligible	Negligible	Negligible
R3f	Negligible	Negligible	Negligible
R4	Negligible	Negligible	Negligible
R5	Negligible	Negligible	Negligible
R6	Negligible	Negligible	Negligible
R7	Negligible	Negligible	Negligible

The Impact assessment indicates that if the proposed development was commissioned the impact on surrounding receptors from construction traffic would be a negligible when compared to the predicted 2020 baseline levels.

6.2 Construction

Emissions of dust to air can occur during the preparation of the land and during construction. To assess these impacts and keep a check on dust (<75µm) and Particulate Matter PM_{10} (<10µm) releases, an assessment has been carried out in accordance with IAQM Guidance[27].

Step 1 of the guidance requires the site to be screened for existing human receptors within 350m of the site boundary or 50m of a route used by construction vehicles up to 500m from the site entrance. The chosen receptors have been grouped to reduce repetition, i.e. a housing estate will be considered as one large receptor and designated as per the closest houses (see Figure 7). It has been assumed that construction traffic will be routed along the A665 (see Figure 7).

The main stages of the works are earthworks, construction, demolition and disturbance caused by dust and dirt emissions from construction vehicles arriving and leaving the site (Trackout).

Risks are determined in terms of Low, Medium and High. A matrix, which considers the distance of a source, its sensitivity and the magnitude of the works, is used to determine the impact of the construction.

[27] IAQM, "Guidance on the Assessment of Dust from Demolition and Construction" (Institute of Air Quality Management (IAQM)), February 2014), http://www.iaqm.co.uk/text/guidance/construction-dust-2014.pdf.

Table 13 - Construction site magnitudes

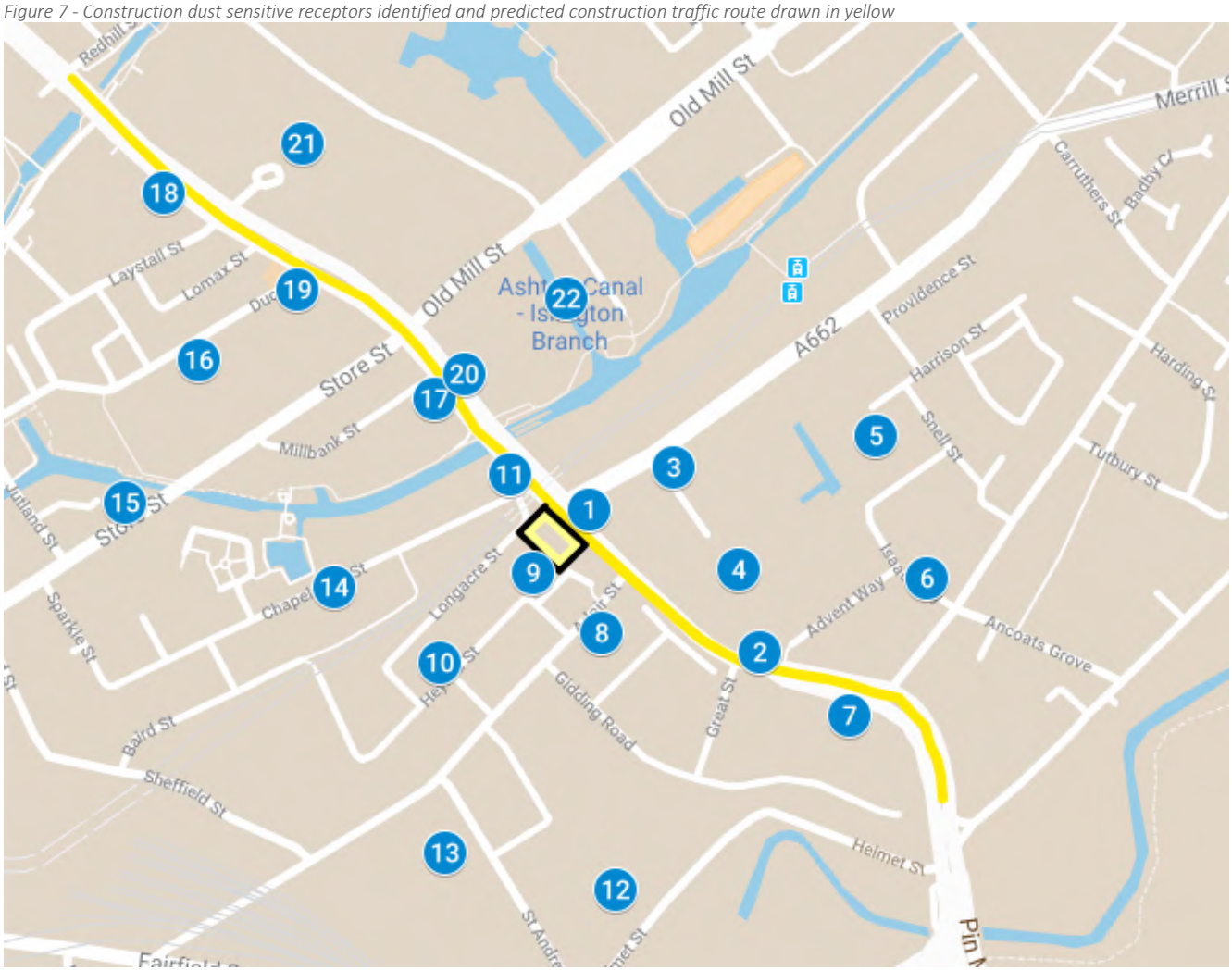
Site Area (m^2)
<2,500
Previous Building Volume (m^3)
<20,000
New Building Volume (m^3)
>100,000
HGV Vehicle Movements per day
>50
Unpaved road length (m)
<50
Annual Mean PM_{10} Concentration ($\mu g/m^3$)
<24

Currently the site is occupied by a commercial/industrial unit, the demolition phase has been classed as small as it is anticipated that the current building volume for demolition will be less than 20,000m^2.

Earthworks for the site will be considered small as the site area needed for foundation preparation for the building is above 2,500m^2. The construction phase is classed as large, due to the multi-storey buildings having a total volume of greater than 100,000m^3.

Building site dust mainly consists of Particulate Matter less than 10 microns (PM_{10}). Despite the proximity to the building site, the Annual mean PM_{10} concentration (20 $\mu g/m^3$ background) is low.

Figure 7 - Construction dust sensitive receptors identified and predicted construction traffic route drawn in yellow



6.3 Impacts

Using the methodology laid out in the IAQM guidance, the estimated impact from dust soiling and potential health impacts can be established for the main sensitive receptors identified.

These effects are coupled with the dust emission magnitude from the IAQM guidance which gives an overall risk factor for each activity. The results of this assessment are given in Table 14.

Receptor CR11 has the potential to experience a High impact from construction dust during the construction phase only. With CR9 and CR11 predicted to have Medium impact during construction and demolition phases respectively. CR2, CR11 and CR17 are predicted to have a Medium impact during the trackout phase.

All other receptors are likely to experience a Low/Negligible impact from construction dust and Low/Negligible impact for human health effects from PM_{10}.

Providing the mitigation guidelines detailed in the appendix, are implemented, it should be possible to fully mitigate these impacts.

Table 14 - Construction impacts at identified receptors

Construction impacts												
Receptor #	Receptor Description	Sensitivity of Area			Dust				Human Health			
		Dust	Human Health	Ecological	D	E	C	T	D	E	C	T
CR1	Hotel	Low	Low	n/a			1	1			1	1
CR2	Residential	Low	Low	n/a			1				1	1
CR3	Commercial	Low	Low	n/a			1	1			1	1
CR4	Residential	Low	Low	n/a			1	1			1	1
CR5	Residential	Low	Low	n/a			1	1			1	1
CR6	Residential	Low	Low	n/a			1	1			1	1
CR7	Commercial	Low	Low	n/a			1	1			1	1
CR8	Commercial	Low	Low	n/a			1	1			1	1
CR9	Commercial	Medium	Low	n/a	1	1		1			1	1
CR10	Commercial	Low	Low	n/a			1	1			1	1
CR11	Residential	High	Low	n/a		1	3				1	1
CR12	Commercial	Low	Low	n/a			1	1			1	1
CR13	Commercial	Low	Low	n/a			1	1			1	1
CR14	Residential	Low	Low	n/a			1	1			1	1
CR15	Residential	Low	Low	n/a			1	1			1	1
CR16	Commercial	Low	Low	n/a			1	1			1	1
CR17	Residential	Low	Low	n/a			1				1	1
CR18	Commercial	Low	Low	n/a			1	1			1	1
CR19	Residential	Low	Low	n/a			1	1			1	1
CR20	Residential	Low	Low	n/a			1	1			1	1
CR21	Commercial	Low	Low	n/a			1	1			1	1
CR22	Residential	Low	Low				1	1			1	1

High
Medium
Low
Negligible

D = Demolition E = Earthworks C = Construction T = Trackout

7. MITIGATION MEASURES

7.1 Operational

The proposed development will not add to existing exceedances of the NAQO beyond the construction phase. However, it is located in an area where exceedances exist and are expected to increase due to natural increases in traffic. Reductions in air pollution will therefore be necessary and a non-exhaustive list of measures that can help to reduce the traffic impact of the development is given below:

- A detailed travel plan to encourage the use of sustainable transport methods such as walking, cycling and the use of public transport.
- Provision of good walking and cycling routes to and from the development that integrate with existing routes.
- Bicycle parking facilities.
- Improved public transport in the area as well as schemes to provide users of the site with discounted or fully subsidised travel.

The following comments are applicable for ground and first floor flats where a window opens onto the A665, at this location it is predicted that the NO_2 concentration will exceed the annual NO_2 objective.

- Windows on the A665, Great Ancoats side of the building should be fixed.
- Mechanical ventilation should be included for those units, with the inlet located at roof level.
- A high specification of air tightness on the windows and doors should be incorporated on the affected floors so when they are closed the rooms will be ventilated by clean air from the mechanical system.
- Provide residents with a guidance pack containing air quality information and advice on protection against pollutant concentrations.

7.2 Construction

It is estimated that, unmitigated, dust from construction site activities at nearby residential receptors could have a up to a High impact. However, guidance from the IAQM[28], where implemented has been proven to be effective at mitigating impacts from large scale operations.

As such it is recommended that measures outlined in this guidance are incorporated into a Dust Management Plan (DMP) and submitted to MCC for approval. These measures are given in the appendix.

[28] IAQM.

8. CONCLUSION

This report has assessed the concentrations of NO_2, PM_{10} and $PM_{2.5}$ at the proposed development site as well as the impact of construction traffic on local air quality.

8.1 Operational Impacts

Concentrations were modelled for nearby residential receptors, at varying heights, for both the proposed development site and at other sensitive receptors along the A665, to determine the concentrations of pollutants NO_2, PM_{10} and $PM_{2.5}$.

Temporary impacts from construction traffic movements associated with the development were considered within this assessment. The assessment indicates that the pollutant concentrations associated with construction traffic will increase concentrations at nearby receptors. The assessment indicates that if the proposed development was commissioned, the impact on the surrounding receptors would be a Negligible when compared to the future 2020 baseline.

Ground and first floor NO_2 concentrations on the A665 side of the development are predicted to exceed the annual NO_2 NAQO, it is recommended roadside windows be fixed with mechanical ventilation installed along with appropriate mitigation measures such as those suggested in section 7.1.

8.2 Construction Phase Impacts

Receptor CR11 has the potential to experience a High impact from construction dust during the construction phase only. With CR9 and CR11 predicted to have Medium impact during construction and demolition phases respectively. CR2, CR11 and CR17 are predicted to have a Medium impact during the trackout phase.

All other receptors are likely to experience a Low/Negligible impact from construction dust and Low/Negligible impact for human health effects from PM_{10}.

It should be possible to mitigate these impacts provided the guidance recommended by the IAQM and provided in the appendix of this report, is followed. It is recommended a construction dust management plan is devised based on this guidance and submitted to GMCA for approval.

Appendix A - Construction Dust Mitigation

In order to mitigate the worst-case dust impacts the following mitigation measures are highly recommended by the IAQM[29].

Highly Recommended

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high-risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary which are at least as high as any stockpiles on site.

[29] IAQM.

- Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Avoid bonfires and burning of waste materials.
- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.

- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Desirable

- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Appendix B - PM_{10} results (Traffic impacts)

Table 15 – Full PM_{10} modelling results

R#	PM_{10}				
	A	B	C	D	E
	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
R1 (DT)	23.11	23.10	23.13	23.23	23.10
R2	22.08	22.07	22.08	22.15	22.06
R2b	21.63	21.62	21.63	21.72	21.66
R2c	21.30	21.29	21.30	21.32	21.30
R2d	21.15	21.15	21.15	21.16	21.15
R2e	21.08	21.08	21.08	21.09	21.08
R2f	21.05	21.05	21.05	21.05	21.05
R3	22.16	22.15	22.16	22.24	22.14
R3b	21.66	21.65	21.66	21.77	21.71
R3c	21.30	21.30	21.30	21.33	21.30
R3d	21.15	21.15	21.15	21.16	21.15
R3e	21.08	21.08	21.08	21.09	21.08
R3f	21.05	21.05	21.05	21.05	21.05
R4	24.15	24.15	24.18	n/a	n/a
R5	22.40	22.40	22.41	n/a	n/a
R6	21.95	21.94	21.95	n/a	n/a
R7	22.50	22.50	22.51	n/a	n/a

Appendix C – $PM_{2.5}$ results (Traffic impacts)

Table 16 – Full $PM_{2.5}$ modelling results

R#	$PM_{2.5}$				
	A	B	C	D	E
	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
R1 (DT)	12.25	12.22	12.23	12.32	12.19
R2	11.66	11.64	11.64	11.70	11.62
R2b	11.38	11.37	11.37	11.44	11.39
R2c	11.18	11.17	11.18	11.20	11.17
R2d	11.09	11.09	11.09	11.10	11.09
R2e	11.05	11.05	11.05	11.06	11.05
R2f	11.03	11.03	11.03	11.03	11.03
R3	11.72	11.69	11.70	11.77	11.67
R3b	11.41	11.39	11.40	11.47	11.41
R3c	11.18	11.18	11.18	11.20	11.18
R3d	11.09	11.09	11.09	11.10	11.09
R3e	11.05	11.05	11.05	11.05	11.05
R3f	11.03	11.03	11.03	11.03	11.03
R4	12.85	12.81	12.83	n/a	n/a
R5	11.83	11.81	11.81	n/a	n/a
R6	11.57	11.55	11.56	n/a	n/a
R7	11.89	11.87	11.88	n/a	n/a

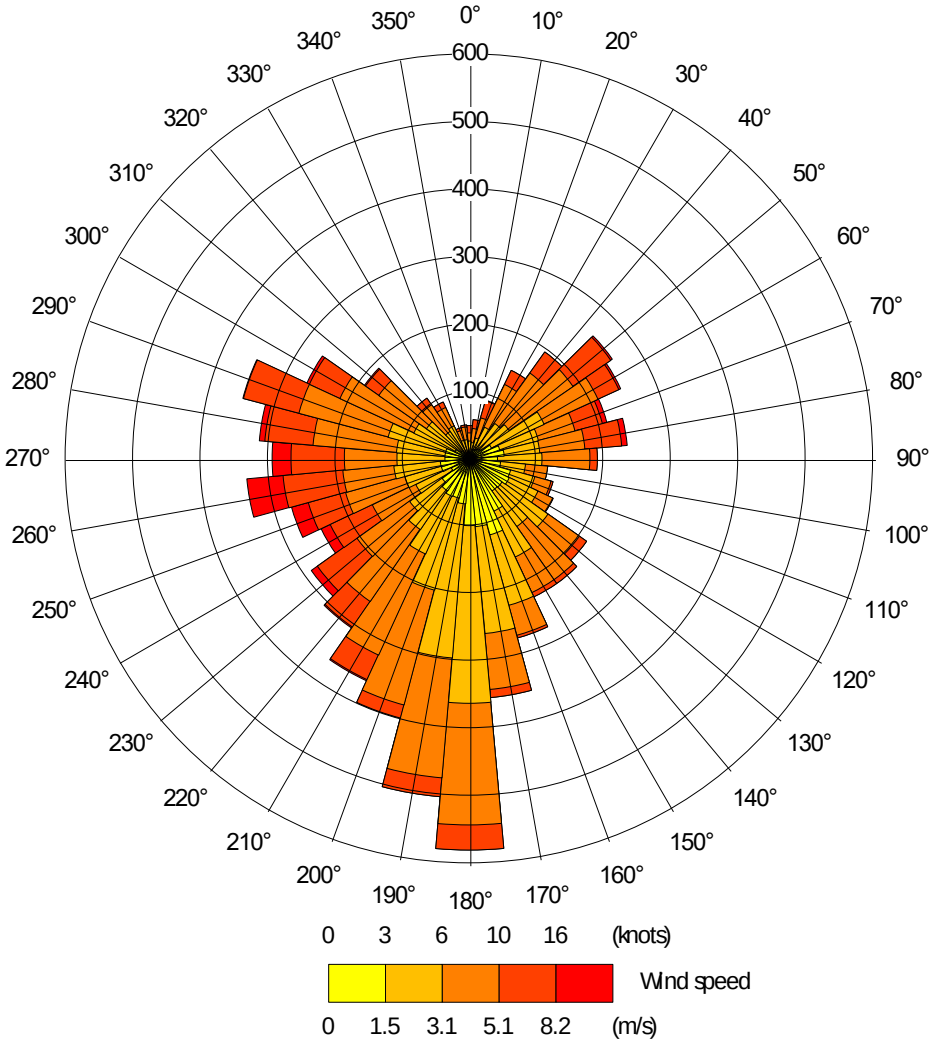
Appendix D - Percentage increase from construction baseline to construction of development

Table 17 – Percentage difference in modelling results for Impact assessment, scenario 1.

Receptor	NO_2	PM_{10}	$PM_{2.5}$
R1 (DT)	0.35	0.06	0.07
R2	0.37	0.03	0.04
R2b	0.20	0.02	0.02
R2c	0.10	0.01	0.01
R2d	0.02	0.00	0.01
R2e	0.03	0.00	0.00
R2f	0.00	0.00	0.00
R3	0.47	0.03	0.04
R3b	0.25	0.02	0.02
R3c	0.10	0.01	0.01
R3d	0.05	0.00	0.00
R3e	0.03	0.00	0.00
R3f	0.02	0.00	0.00
R4	0.32	0.08	0.09
R5	0.20	0.04	0.05
R6	0.22	0.03	0.03
R7	0.30	0.04	0.05

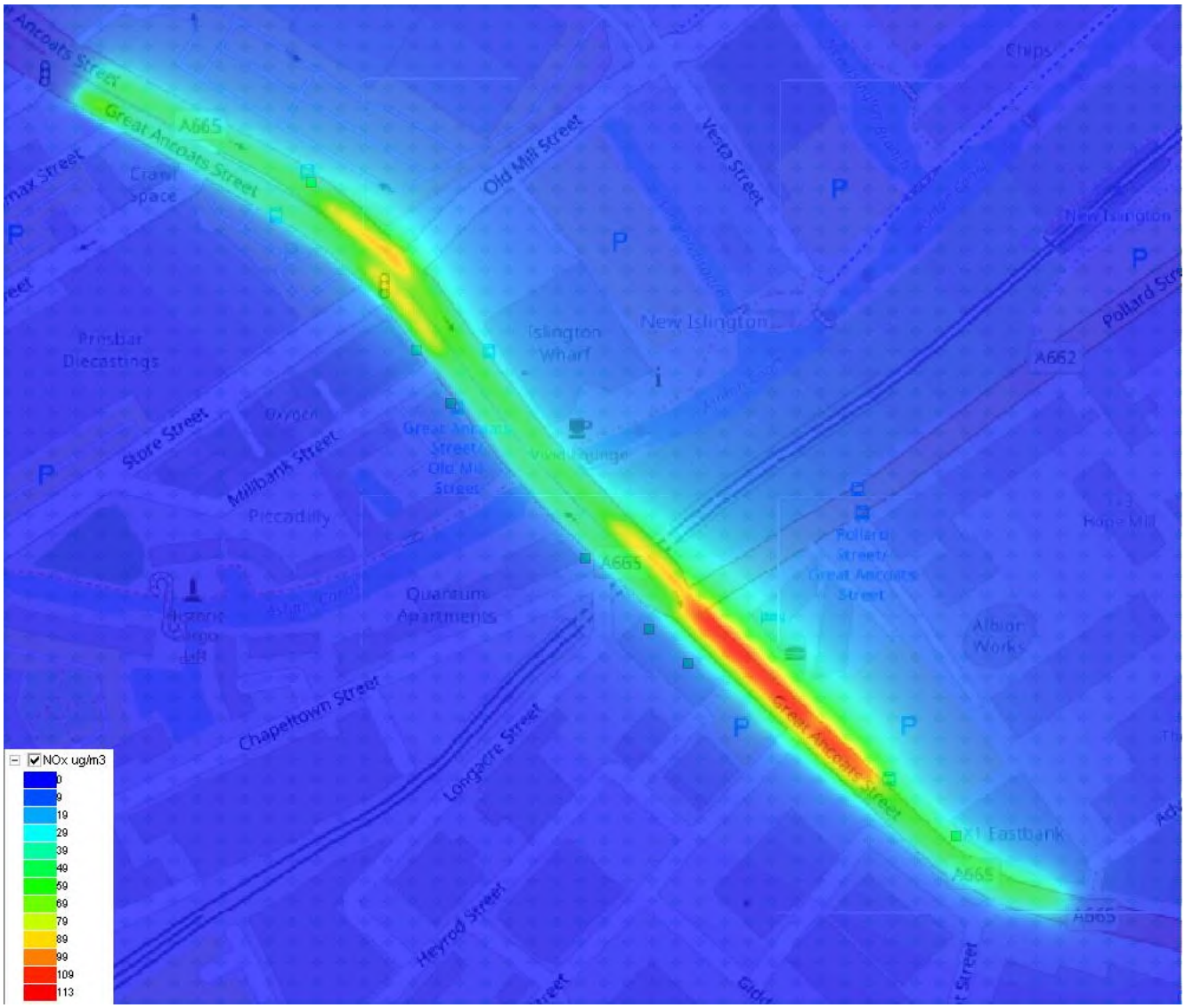
Appendix E – Windrose for Manchester Airport 2018

Figure 8 – Windrose for 2018 weather data from Manchester Airport



Appendix F – Dispersion modelling plots

Figure 9 – NO_2 annual average modelling plot from the road traffic emissions for model A



Appendix G– Construction assessment working

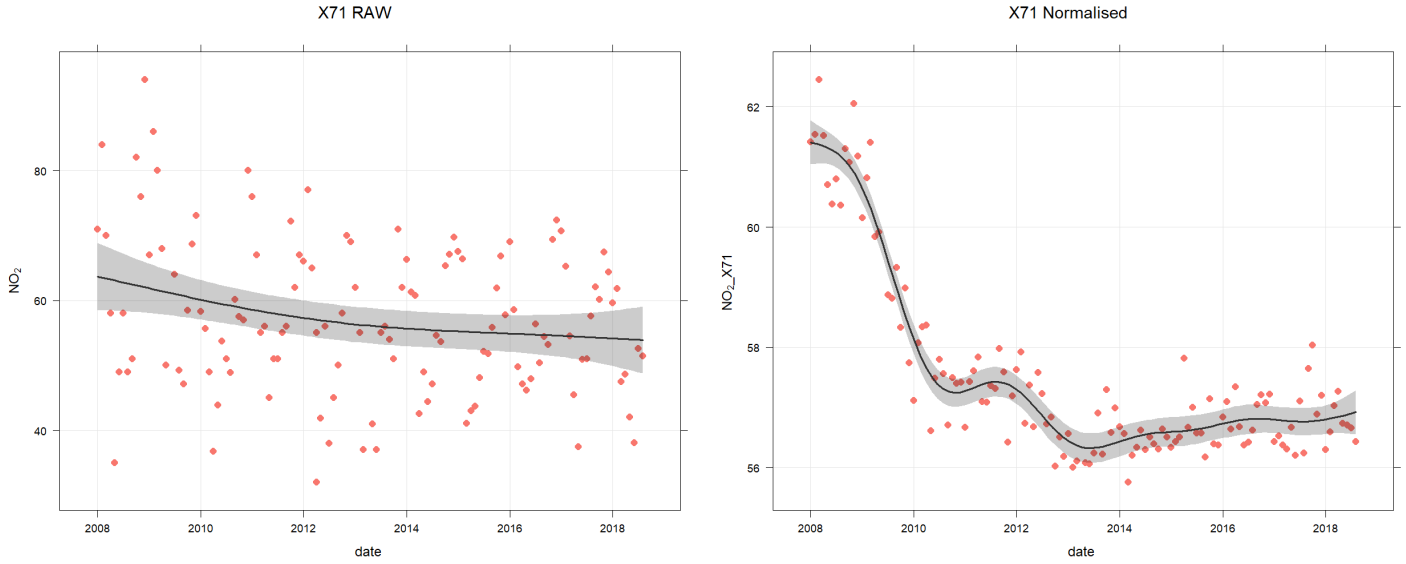
Table 18 – Construction assessment working

R#	Receptor Name	Effect	Sensitivity of site*	Distance from Source	Distance from Trackout	Number of People at Receptors
CR1	Hotel	Dust	Medium	<50	<20	>100
		Human Health	Medium	<50	<20	>100
		Ecological	High	<50	<200	>100
CR2	Residential	Dust	High	<200	<20	>100
		Human Health	High	<200	<20	>100
		Ecological	n/a	<20	<20	>100
CR3	commercial	Dust	Medium	<200	<100	1-10
		Human Health	Medium	<200	<100	1-10
		Ecological	n/a	<100	<50	>100
CR4	Residential	Dust	High	<200	<100	>100
		Human Health	High	<200	<100	>100
		Ecological	n/a	<20	<20	>100
CR5	Residential	Dust	High	<350	<200	>100
		Human Health	High	<350	<200	>100
		Ecological	n/a	<200	<200	>100
CR6	Residential	Dust	High	<350	<100	>100
		Human Health	High	<350	<100	>100
		Ecological	n/a	<350	<200	>100
CR7	commercial	Dust	Medium	<350	<20	10-100
		Human Health	Medium	<350	<20	10-100
		Ecological	n/a	<200	<20	10-100
CR8	commercial	Dust	Medium	<100	<50	10-100
		Human Health	Medium	<100	<50	10-100
		Ecological	n/a	<100	<20	10-100
CR9	commercial	Dust	Medium	<20	<50	1-10
		Human Health	Medium	<20	<50	1-10
		Ecological	n/a	<100	<100	>100
CR10	commercial	Dust	Medium	<200	<200	10-100
		Human Health	Medium	<200	<200	10-100
		Ecological	n/a	<200	>350	>100

R#	Receptor Name	Effect	Sensitivity of site*	Distance from Source	Distance from Trackout	Number of People at Receptors
CR11	Residential	Dust	High	<50	<20	>100
		Human Health	High	<50	<20	>100
		Ecological	n/a	<350	>350	>100
CR12	Commercial	Dust	Medium	<350	>350	10-100
		Human Health	Medium	<350	>350	10-100
		Ecological	n/a	<350	>350	>100
CR13	Commercial	Dust	Medium	<350	>350	10-100
		Human Health	Medium	<350	>350	10-100
		Ecological	n/a	<350	>350	>100
CR14	Residential	Dust	High	<200	<200	>100
		Human Health	High	<200	<200	>100
		Ecological	n/a	<350	<100	>100
CR15	Residential	Dust	High	<350	<350	>100
		Human Health	High	<350	<350	>100
		Ecological	High	<350	<350	>100
CR16	Commercial	Dust	Medium	<350	<200	10-100
		Human Health	Medium	<350	<200	10-100
		Ecological	High	<350	<350	>100
CR17	Residential	Dust	High	<200	<20	10-100
		Human Health	High	<200	<20	10-100
		Ecological	High	<350	<350	>100
CR18	commercial	Dust	Medium	<350	<20	10-100
		Human Health	Medium	<350	<20	10-100
		Ecological	High	<350	<350	>100
CR19	Residential	Dust	High	<200	<20	1-10
		Human Health	High	<200	<20	1-10
		Ecological	High	<350	<350	>100
CR20	Residential	Dust	High	<200	<100	>100
		Human Health	High	<200	<100	>100
		Ecological	High	<350	<350	>100
CR21	Commercial	Dust	Medium	<350	<100	10-100
		Human Health	Medium	<350	<100	10-100
		Ecological	High	<350	<350	>100
CR22	Residential	Dust	High	<200	<200	>100
		Human Health	High	<200	<200	>100
		Ecological	n/a	<20	<20	1-10

Appendix H– Diffusion tube plots

Figure 10 – Uncorrected monthly diffusion tube results for monitoring site X71 (left) plotted with Meteorologically normalised results (right)



Appendix 13.1: Legislative Framework, Policy and Guidance Documents

Policy Context

National Planning Policy Framework[13.3]

1.1 Published in February 2019, The National Planning Policy Framework (NPPF) defines the Government's planning policies for England and sets out how these should be applied.

1.2 Reference to noise is made in Section 15: Conserving and enhancing the natural environment.

1.3 Paragraph 170 States:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[…]

(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basing management plans."

1.4 Paragraph 180 States:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason;…"

1.5 Paragraph 182 States:

"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

Noise Policy Statement for England [13.4]

1.6 The NPPF refers to the Noise Policy Statement for England (NPSE), with regards to defining 'adverse impacts'. Noise impacts are categorised by the NPSE as follows:

- "NOEL – No Observed Effect Level – This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- LOAEL – Lowest Observed Adverse Effect Level – This is the level above which adverse effects on health and quality of life can be detected
- SOAEL – Significant Observed Adverse Effect Level – This is the level above which significant adverse effects on health and quality of life occur"

1.7 The NPSE sets out three aims as follows:

(i) Avoid significant adverse effects on health and quality of life i.e. for effects above the SOAEL;

(ii) Where effects are between the LOAEL and SOAEL, all reasonable steps must be taken to mitigate and minimise adverse effects; and,

(iii) Where possible, contribute to improvement of health and quality of life.

1.8 While the NPSE states that adverse effects should be avoided, mitigated and minimised, as appropriate, this does not mean that such adverse effects cannot occur.

1.9 Furthermore, the aims of NPSE should be interpreted with respect to the wider UK principles that underpin sustainable development, including mutually dependant economic, social and environmental factors.

Planning Practice Guidance [13.8]

1.10 Planning Practice Guidance – Noise (PPG) provides guidance on how planning policies should be applied, with regards to adverse noise effects. It provides detail on the interaction between the effect levels outlined in NPSE, human perception, likely outcomes and actions to be taken as a result.

1.11 Economic and social benefits of the activity causing any noise effects must be taken in to account when making decisions, while recognising that it is undesirable for such noise exposure to be caused. At the highest extreme, when adverse effects are unacceptable, adverse effects should be prevented from occurring, regardless of any otehr associated benefits.

1.12 Table 10.1 summarises the noise exposure hierarchy refers to the Noise Policy Statement for England (NPSE), with regards to defining 'adverse impacts. Noise impacts are categorised by the NPSE as follows:

Perception	Examples of Outcomes	Increasing Effect Action Level

No Observed Effect Level			
Not Present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect No specific measures required	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

1.13 PPG summarises the approach to be taken when assessing noise and accepts that noise can override other planning concerns, but states:

"Neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separate from the economic, social and other environmental dimensions of Proposed Development".

1.14 The first aim of the NPSE is to avoid significant adverse effects on health and quality of life. Published in February 2019, the National Planning Policy Framework (NPPF) defines the Government's planning policies for England and sets out how these should be applied.

1.15 Reference to noise is made in Section 15: Conserving and enhancing the natural environment.

Local Policy

Manchester's Local Development Framework – Core Strategy[13.5]

1.16 Policy DM 1 of the Core Strategy relates to Development Management, which outlines specific issues which require consideration with regards to proposed development. The following relates to potential effects associated with noise and vibration:

- *Effects of amenity, including privacy, light, noise, vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise.*

Manchester Unitary Development Plan – Extant Policies[13.6]

1.17 Policy DC 26 of the Manchester Unitary Development Plan relates specifically to Development and Noise. The following sections of DC 26 relate to the Proposed Development:

"DC26.1 The Council intends to use the development control process to reduce the impact of noise on people living and working in, or visiting, the City. In giving effect to this intention, the Council will consider both:

a. the effect of new development proposals which are likely to be generators of noise; and

b. the implications of new development being exposed to existing noise sources which are effectively outside planning control.

DC26.2 New noise-sensitive developments (including large-scale changes of use of existing land or buildings), such as housing, schools, hospitals or similar activities, will be permitted subject to their not being in locations which would expose them to high noise levels from existing uses or operations, unless the effects of the noise can realistically be reduced. In giving effect to this policy, the Council will take account both of noise exposure at the time of receiving a planning application and of any increase that may reasonably be expected in the foreseeable future.

DC26.3 Developments likely to result in unacceptably high levels of noises will not be permitted:
a. in residential areas;

b. near schools, hospitals, nursing homes and similar institutions;

c. near open land used frequently for recreational purposes.

DC26.4 Where the Council believes that an existing noise source might result in an adverse impact upon a proposed new development, or where a new proposal might generate potentially unacceptable levels of noise, it will in either case require the applicant to provide an assessment of the likely impact and of the measures he proposes to deal satisfactorily with it. Such measures might include the following:

a. engineering solutions, including reduction of noise at source, improving sound insulation of sensitive buildings or screening by purpose-built barriers;

b. layout solutions, including consideration of the distance between the source of the noise and the buildings or land affected by it; and screening by natural barriers or other buildings or non-critical rooms within a building; and

c. administrative steps, including limiting the operating times of the noise source, restricting activities allowed on the site or specifying an acceptable noise limit. Any or all of these factors will be considered appropriate for inclusion in conditions on any planning permission.

DC26.5 The Council will control noise levels by requiring, where necessary, high levels of noise insulation in new development as well as noise barriers where this is appropriate.

DC26.6 Exceptions to the general policy will be considered on their merits. The Council accept, as an example, that the occasional use of outdoor facilities such as sports stadia for concerts can be acceptable in certain circumstances. Any such proposal will be considered in the light of consultation with local residents and others, and the practicability of appropriate conditions on any approval."

National Guidance

Guidance on Assessment of Noise from Construction and Demolition

1.18 The demolition and construction phase of the Proposed Development has the potential to generate noise.

1.19 Guidance on the prediction and assessment of construction and demolition noise is given in British Standard 5228 -1:2009 + A1:2014[13.9] (BS5228-1), and BRE Controlling Particles, vapour and noise pollution from construction sites[13.11].

1.20 Construction noise can have intrusive effects on surrounding neighbourhoods, which can be varied and complex depending on the nature the site works. Generally, construction and demolition activities are characterised by noise sources that change location and vary in level over the duration of operations.

1.21 The duration of site operations is also an important consideration as higher noise levels may be acceptable if it is identified to occur for a limited time period.

1.22 The Control of Pollution Act[13.1], 1974 (COPA) gives the Local Authority the means to enforce specific requirements or restrictions on construction works, without the need for any prior warning or consultation, under Section 60. This can include specific times of operation, maximum permitted noise levels and the types of plant which should be used.

1.23 However, it is generally preferable for the chosen contractor to obtain prior consent under Section 61 of COPA. Section 61, enables the site contractor to submit and agree a suitable methodology with the Local Authority, prior to commencing with construction or demolition, in order to address any associated noise or other concerns.

1.24 In addition, BS5228-1 provides recommended significance criteria for assessing potential significant effects associated with the construction and demolition phase of large projects.

Guidance on Assessment of Vibration from Construction and Demolition

1.25 Work involving heavy plant on open sites has the potential to generate vibration that can propagate beyond the boundary of the site. In situations where particularly heavy plant, vibrating compaction equipment or piling rigs are being used within close proximity to the site boundary, nearby properties may experience groundborne vibration.

1.26 Guidance on the assessment of vibration from open sites is given in BS 5228-2:2009 + A1:2014[13.10] (BS5228-2). BS5228-2 indicates that vibration can have disturbing effects on the surrounding neighbourhood; especially where particularly sensitive operations may be taking place. The significance of vibration levels adjacent to a site is also dependent upon the nature of the source.

1.27 BS5228-2 indicates that the threshold of perception is generally accepted to be between a Peak Particle Velocity (PPV) of 0.14mms^{-1} and 0.3mms^{-1}. In an urban setting it is unlikely that vibration levels of this order would be noticeable. However, BS5228-2 also indicates that vibration of 1.0mms^{-1} in residential environments is likely to result in complaint, but can be tolerated if prior warning and an explanation has been given to residents. Furthermore, exposure to vibration levels of 10 mms^{-1} is likely to be intolerable for more than a brief period.

1.28 The Highways Agency Research Report No. 53 "Ground Vibration caused by Civil Engineering Works" 1986 suggests that, when vibration levels from an unusual source exceed the human threshold of perception, complaints may occur. The onset of complaints due to continuous vibration is probable when the PPV exceeds 3 mms^{-1}.

1.29 BS6472-1 suggests that adverse comments or complaints, resulting from continuous vibration, are rare in residential context where vibration levels are below 0.8 mms^{-1}. Continuous vibration is defined as "vibration which continues uninterrupted for either a daytime period of 16 hours or a night-time period of 8 hours". Proposed demolition and construction works at the Site is unlikely to cause continuous vibration as defined in BS6472-1.

1.30 BS5228-2 suggests that the onset of cosmetic damage is 15mm/sec (15 mms^{-1} at 4 Hz increasing to 20 mms^{-1} at 15 Hz for residential or light commercial type buildings). In addition to COPA, BS5228-1 provides guidance on significance criteria for assessing the likely significant noise effects associated with the construction phase of large projects.

Guidance on Assessment of Road Traffic Noise

1.31 Professional Practice Guidance: Planning and Noise[13.14] (ProPG) provides guidance for new residential developments exposed to noise from the surrounding transport network. It provides a recommended approach for engineers to allow effective of noise, within the planning system in England.

1.32 Calculation procedures for predicting road traffic noise levels are set out in Department of Transport – Calculation of Road Traffic Noise[13.17] (CRTN), which was prepared to enable entitlement under the Noise Insulation Regulations 1975 to be determined. However, CRTN states that the guidance within is equally appropriate for the calculation of traffic noise for land use planning purposes.

1.33 British Standard 8233:2014[13.13] (BS8233) recommends the following guideline noise levels, based the World Health Organisation (WHO) Guidelines for Community Noise[13.7]:

- 35dB $L_{Aeq, 16hour}$ should be achieved during the daytime, within living rooms and bedrooms;
- 30dB $L_{Aeq, 8hour}$ should be achieved during the night-time, in bedrooms;
- 45dB L_{AFmax} should be achieved during the night-time, in bedrooms;
- 50dB $L_{Aeq, 16hour}$ is desirable within outdoor living areas, such as gardens and patios; and,
- 55dB $L_{Aeq, 16hour}$ is the upper guideline value for outdoor living areas, which would be acceptable in noisier environments.

1.34 In addition, for internal noise levels BS8233 states;

"Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved."

1.35 Furthermore, with regard to external noise, BS8233 states;

"However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

Guidance on Assessment of Industrial and Commercial Noise

1.36 BS4142 provides guidance on rating and assessing the significance of industrial and/or commercial sound, including:

- Sound from industrial and manufacturing processes;
- Sound from fixed installations which comprise mechanical and electrical plant and equipment;
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and,
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and/or commercial site.

1.37 BS4142 is applicable to the following levels, at outdoor locations:

- Rating levels for sources of sound of an industrial and/or commercial nature; and
- Ambient, background and residual sound levels, for the purposes of:

(i) Investigating complaints;

(ii) Assessing sound from proposed, new, modified or additional source(s) of sound of an industrial and/or commercial nature; and

(iii) Assessing sound at proposed new dwellings or premises used for residential purposes.

1.38 BS4142 refers to noise levels from any industrial/commercial sources as the 'specific level'. The presence of acoustic features within the specific noise level will result in acoustic feature correction(s) i.e. penalty. The specific noise level along with any applicable correction is referred to as the 'rating level'.

1.39 BS4142 assesses the significance of impacts by comparing the rating level to the 'background level' i.e. the typical L_{A90} noise level, while taking in to account the context in which the specific noise occurs.

1.40 In addition, BS4142 identifies that the absolute level of sound, the character, and the residual sound and the sensitivity of receptor should all be taken into consideration

1.41 The greater the increase between the rating level over the background noise level, the greater the magnitude of the impact. The assessment criteria given by BS4142 are as follows:

- A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

1.42 During the daytime, BS4142 requires that noise levels are assessed over 1-hour periods, and during the night-time, noise levels are required to be assessed over 15-minute periods.

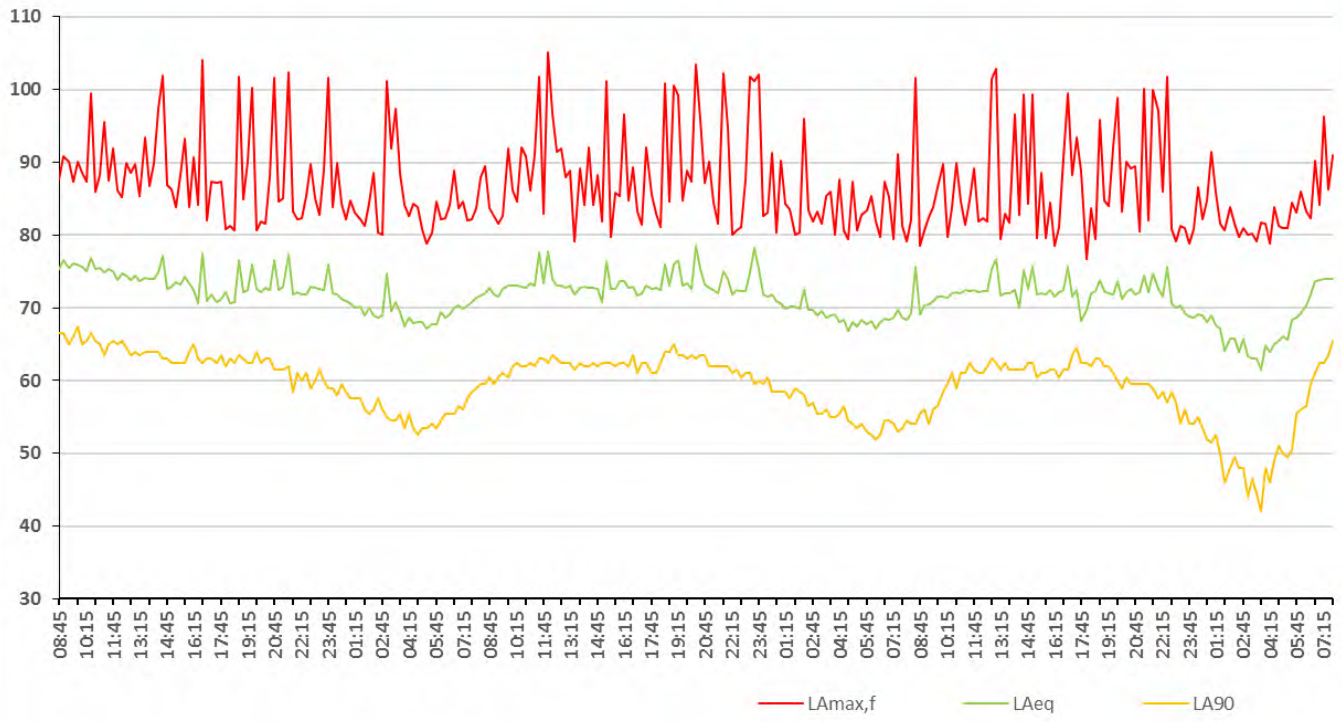
1.43 The initial assessment of impact should then be modified due to context. BS4142 states that all pertinent factors should be taken into consideration, including:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

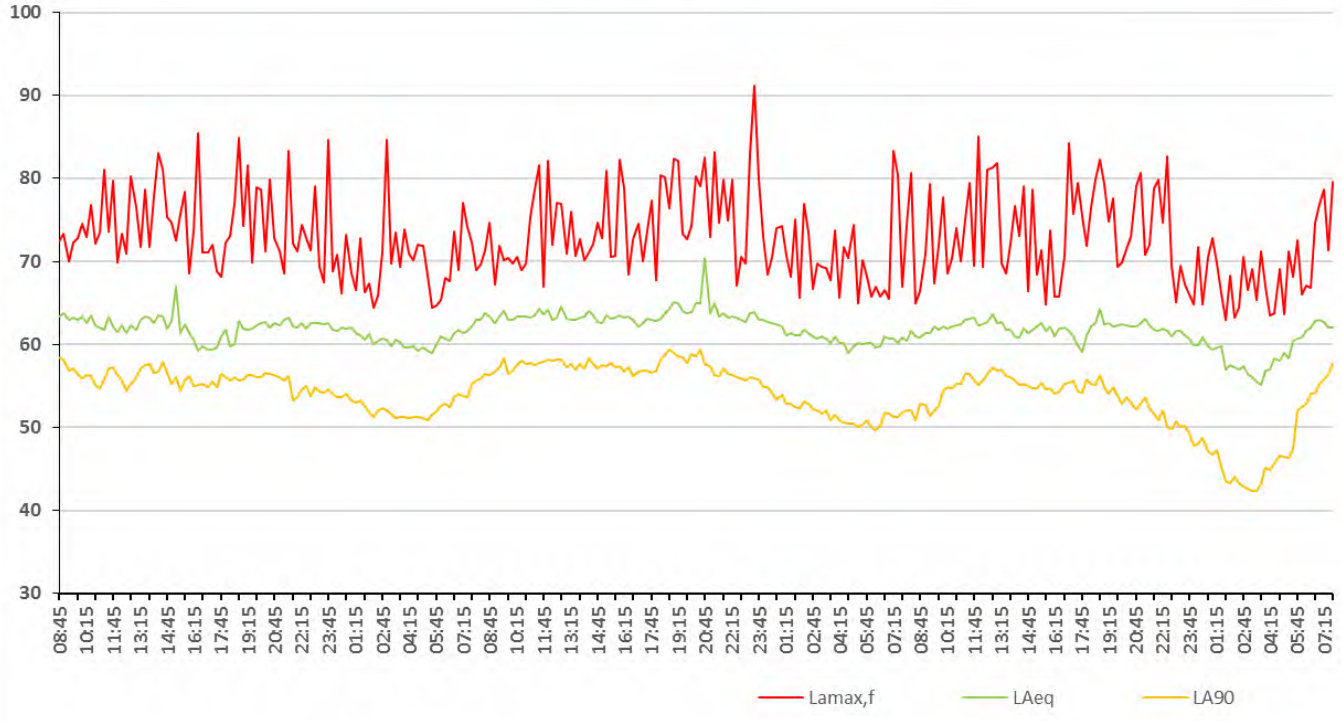
1.44 Work involving heavy plant on open sites has the potential to generate vibration that can propagate beyond the boundary of the site. In situations where particularly heavy plant, vibrating compaction equipment or piling rigs are being used within close proximity to the site boundary, nearby properties may experience groundborne vibration.

Appendix 13.2: Noise Monitoring Results

Monitoring Location 1



Monitoring Location 2



Appendix 13.3: Construction Noise Predictions

In Principle Piling Noise Sources

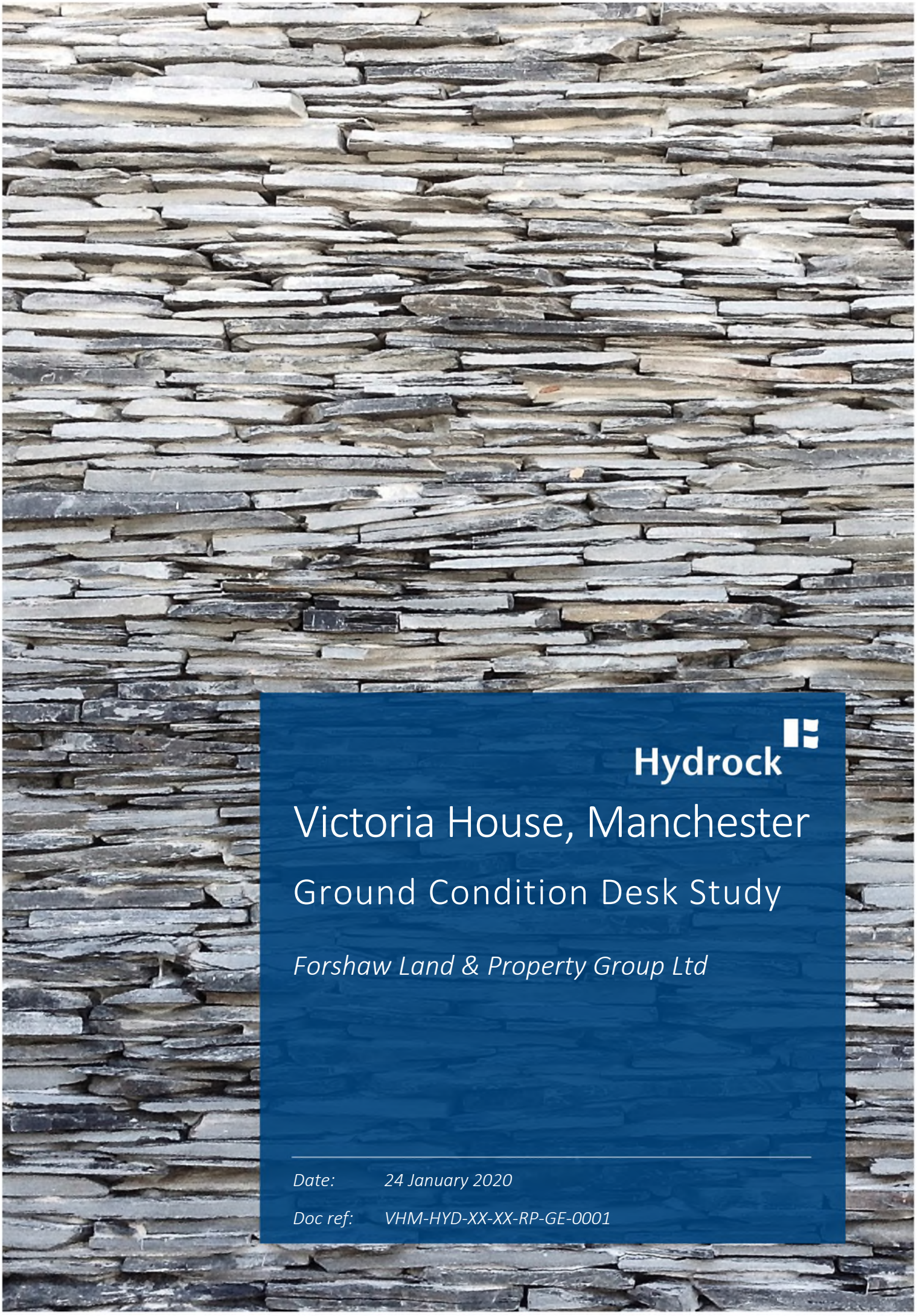
Machine	BS5228 Ref. Page	Sound Power Level L_w	Quantity	Source Height	% On time	On time correction	Adusted Sound power level. L_w
Tracked Excavator Working	76	104	2	2	40	-4.0	100.0
Tracked Excavator Idle	63	91	2	2	40	-4.0	87.0
Wheeled Loader	79	107	2	1.5	60	-2.2	104.8
CFA Piling Rig	80	108	2	2.5	70	-1.5	106.5
Concrete Pump	75	103	2	0.5	30	-5.2	97.8
Cement Mixer Truck (Working)	75	103	2	2	30	-5.2	97.8
Cement Mixer truck (Idling)	71	99	2	2	30	-5.2	93.8
Generator	66	94	2	1.5	100	0.0	94.0
Mechanical Road Sweeper	76	104	1	1.5	25	-6.0	98.0
Deliver/Waste Removal Lorry	80	108	10	1.5	20	-7.0	101.0

In Principle General Demolition and Construction Noise Sources

Machine	BS5228 Ref. Page	Sound Power Level L_w	Quantity	Source Height	% On time	On time correction	Adusted Sound power level. L_w
Tracked Excavator Working	76	104	1	2	40	-4.0	100.0
Tracked Excavator Idle	63	91	1	2	40	-4.0	87.0
Wheeled Loader	79	107	1	1.5	60	-2.2	104.8
Tower Crane	76	104	1	28	50	-3.0	101.0
Truck Mounted Concrete Pump and Boom Arm	80	108	1	2.5	25	-6.0	102.0
Telescopic Handler	70	98	4	1.5	40	-4.0	94.0
Core Drill	85	113	2	5	5	-13.0	100.0
Angel Grinder	80	108	4	5	5	-13.0	95.0
Generator	66	94	1	1.5	100	0.0	94.0
Mechanical Road Sweeper	76	104	1	1.5	25	-6.0	98.0
Deliver/Waste Removal Lorry	80	108	10	1.5	20	-7.0	101.0

Comparison of Recommended Threshold Values and Predicted Noise Levels

Machine	Baseline Ambient Daytime Noise Level dB $L_{Aeq,T}$	BS 5228 Threshold Category	BS 5228 Threshold Level	Predicted Noise Level at Receptor	Difference	Effect Level
Piling						
ESR1 Islington Warf	77	C	75	43	-32	**none**
ESR2 2-6 Chapeltown Street	61	A	65	49	-16	**none**
ESR3 GBM Group	61	A	65	48	-17	**none**
ESR4 Armstrong Office Furniture	61	A	65	28	-37	**none**
ESR5 Ibis Hotel	77	C	75	62	-13	**none**
General Demolition and Construction						
ESR1 Islington Warf	77	C	75	43	-32	**none**
ESR2 2-6 Chapeltown Street	61	A	65	49	-16	**none**
ESR3 GBM Group	61	A	65	48	-17	**none**
ESR4 Armstrong Office Furniture	61	A	65	28	-37	**none**
ESR5 Ibis Hotel	77	C	75	62	-13	**none**



Hydrock

Victoria House, Manchester

Ground Condition Desk Study

Forshaw Land & Property Group Ltd

Date: *24 January 2020*

Doc ref: *VHM-HYD-XX-XX-RP-GE-0001*

DOCUMENT CONTROL SHEET

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Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above named client for their sole and specific use. Any third parties who use the information contained herein do so at their own risk.

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EXECUTIVE SUMMARY

SITE INFORMATION AND SETTING	
Client	Forshaw Land & Property Group Ltd.
Site name and location	Victoria House, Great Ancoats Street, Manchester, M4 7DB. At the junction of Great Ancoats Street (A665) and Longacre Street
Proposed development	The proposed development is to comprise of a 25-storey residential development with internal amenity space, basement housing plant and associated access, landscaping and car parking.
PHASE 1 (DESK STUDY AND SITE RECONNIASANCE)	
Ground Model	The site is currently a flat, rectangular shaped parcel of land approximately 0.13ha. Currently occupied by one commercial structure comprising of two storey and three storey buildings and associated car parking, which is bordered by fencing. The three-storey building potentially contains asbestos containing materials due to its age. The A665 is adjacent to the east of the site, and the Metrolink underpass is beneath this, approximately 10m north. Immediately adjacent off site to the west there is a smaller building with car parking. To the north of the site is the Ashton Canal. The surrounding area consists of mixed industrial and residential developments. The River Medlock is located 280m southeast of the site flowing from east to southwest. Review of historical Ordnance Survey data indicates: • Until 1891 the site was a Timber Yard surrounded by Iron Works and Cotton Mills which later became warehouses. The tramway was constructed immediately adjacent to the site. • In the 1930s buildings on site are cleared and labelled as ruins. The surrounding residential properties also appear to have been demolished. • In 1968, the site was reconfigured to just one large warehouse known as Victoria House which replaced the ruin structures. • Most of the former mills and works have been replaced by industrial estates and retail parks that are currently present. In 2014 Piccadilly Village was constructed 120m west of the site, comprising of John Smeaton Court and William Jessop Court. The Preliminary UXO Risk Assessment screening exercise has indicated further assessment is required. A Detailed Specialist UXO risk assessment in accordance with CIRIA Report C681 should be undertaken. The geology at the site consists of Glacial Till which overlies Chester Sandstone Formation. Localised Made Ground has been recorded 173m south east of the site, possibly associated with the Piccadilly Trading Estate and 291m to the east of the site where warehouses and industrial estates previously existed. The superficial deposits comprise a Secondary Undifferentiated Aquifer and the Chester Sandstone Formation is classed as a Principal Aquifer. The site is not within a groundwater Source Protection Zone (SPZ) and there are no groundwater abstractions within 1km of the site. Ashton Canal is located 65m north from the site with an associated lock. The River Medlock is located 279m southeast of the site and flows in a southwest to northeast.
ASSESSMENT AND CONCLUSIONS	
Preliminary Geotechnical Hazards	The following plausible geotechnical risks are identified. • Variable Made Ground - settlement or differential settlement of foundations, floor slabs, roads and infrastructure elements. • Low strength, compressible ground – risk of shear failure and excessive settlement of foundations, roads and infrastructure elements. • Attack of buried concrete by aggressive ground conditions – the development site may contain Made Ground and potentially sulfate bearing soils.

<table>
<tr><td></td><td>

Potential for obstructions and the risk of instability of excavations with the impact on construction staff, vehicles and plant operators.
Potential for unforeseen ground conditions and the risks associated with limited data.

</td></tr>
<tr><td>Preliminary Geo-environmental Conclusions</td><td>
Based on historical land uses and its current operational use, the overall risk from land contamination at the site is considered to be low for the current development, and low (with some specific moderate risks) identified for a redeveloped site, but would need to be confirmed by appropriate intrusive investigation, testing and assessment of the results of the investigation.
It is considered that it is unlikely that the site would be classified as Contaminated Land under Part 2A of the EPA 1990.
The possible pollutant linkages on an un-remediated site determined by desk study and walk-over are summarised below for risk levels of moderate or greater.
<table>
<tr><th>Source(s)</th><th>◄ potential Impact on ►</th><th>Receptor(s)</th></tr>
<tr><td>Metals, metalloids, PAH, petroleum hydrocarbons and asbestos in Made Ground below the site.</td><td rowspan="2">Site users
Neighbours
Groundwater
Buildings</td></tr>
<tr><td>Hydrocarbon fuels, lubricants, chlorinated solvents and PCBs from the operation of the former engineering works in close proximity to the site.</td></tr>
<tr><td>Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site.</td><td>Site users
Neighbours
Buildings</td></tr>
<tr><td>Hydrocarbon vapours from potential VOC and petroleum hydrocarbon spillages/leaks from on site vehicles.</td><td>Site users</td></tr>
<tr><td>Building on site built before 2000, therefore there is potential for asbestos to be present.</td><td>Site users
Neighbours
Buildings</td></tr>
<tr><td>Electricity sub-station associated with potentially elevated concentrations of PCBs and oils from transformers.</td><td>Site users</td></tr>
<tr><td>Elevated concentrations of metals, metalloids, inorganic compounds, asbestos and PCBs from former Iron Works and Foundry within 100m.</td><td>Site users
Neighbours</td></tr>
</table>
</td></tr>
<tr><td colspan="2">FUTURE CONSIDERATIONS</td></tr>
<tr><td>Further work</td><td>
In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, an appropriate intrusive investigation will need to be undertaken. This investigation will need to:

determine the depth and distribution of Made Ground and natural strata across the site;
determine the soil strength/density profile beneath the site;
determine the depth/level of groundwater beneath the site;
determine the ground gas concentrations beneath the site;
determine CBRs to assist with pavement design;
assess trench stability, over break potential and ‘diggability’;
allow sampling for chemical and geotechnical laboratory testing;
obtain information in terms of Aggressive Chemical Environment for Concrete Class (ACEC Class).

Following investigation, assessment will be required to:

update the Ground Model;
update the Geotechnical Risk Register;

</td></tr>
</table>

	• provide Geotechnical Design recommendations; • update the Conceptual Site Model (CSM), including identification of plausible pollution linkages; • undertake generic quantitative risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime; • discuss potential environmental liabilities associated with land contamination (soil, water and gas); and • provide outline mitigation recommendations to ensure the site is 'suitable for use'.

This Executive Summary forms part of Hydrock Consultants Limited report number VHM-HYD-XX-XX-RP-GE-0001 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In September 2018, Hydrock Consultants Limited (Hydrock) was commissioned by Forshaw Land & Property Group Ltd to undertake a desk study at Victoria House, Great Ancoats Street, Manchester, M4 7DB.

The site is currently a flat, rectangular shaped parcel of land currently occupied by a commercial structure at the junction of Great Ancoats Street (A665) and Longacre Street in a predominantly industrial area. In the eastern section of the site, there is one large building which is adjacent to the A665, in the west of the site there is an access road and parking spaces. Immediately adjacent the western boundary of the site there is an independent, smaller building also with car parking. To the north of the site is the Ashton Canal, where a lock is present and a strip of grassland to the north east of the site which is associated with the canal overflow.

The surrounding area consists of mixed industrial and residential developments with Manchester Piccadilly Station present approximately 300m to the south west of the site. The majority of the surrounding land is occupied by large building units. Car parking is present to the south and east of the site, whereby sporadic trees surround the buildings. The River Medlock is located 280m southeast of the site flowing from east to south. There is an underpass 10m north of the site, associated with the Ashton-Under-Lyne Metrolink line. The construction of the development needs to consider the affects loading may have on the underpass.

Hydrock understands that the proposed development is to comprise of a 25-storey residential development with internal amenity space, basement housing plant and associated access, landscaping and car parking. This development is part of the MS2 Manchester Piccadilly Strategic Regeneration Framework (2014).

A proposed site plan (Simpson Haugh Drawing 10122-A-B5D9-G100-P-00-003), is presented in Appendix A

This report has been prepared in accordance with Hydrock's proposal referenced C-09823-E-01, dated 26th June 2018 and the Client's instructions to proceed dated 20th September 2018.

1.2 Objectives

The study has been commissioned to support the planning application for a 25 storey residential development.

The objective of the Phase 1 Desk Study is to formulate a Preliminary Ground Model of the site and an Initial Conceptual Model to identify key geo-environmental and geotechnical risks to the proposed development.

1.3 Scope

The scope of the Phase 1 Desk Study comprises:

- a field reconnaissance (walkover) to determine the nature of the site and its surroundings including current and former land uses, topography, geology and hydrology;
- acquisition and review of:

- historical Ordnance Survey maps, to identify former potentially contaminative uses at the site and immediately surrounding it, and an assessment of the associated contamination risks;
- a third-party environmental database search to identify flooding warning areas, local landfills, pollution incidents, abstractions, environmental permits etc. which may have had the potential to have environmental impact on the site;
- topographical, geological and hydrogeological maps;
- British Geological Survey (BGS) archive records;
- regional UXO risk maps;
- a Coal Authority 'Consultants Mining Report'.
- a site-specific specialist Preliminary UXO Desk Top Study

- the Coal Authority's Interactive Viewer;
  - development of a preliminary Conceptual Site Model (CSM), including identification of potential pollution linkages;
  - a qualitative assessment of any risks identified; and
  - identification of plausible geotechnical hazards.

1.4 Available information

The following have been provided to Hydrock by Forshaw Land & Property Group Ltd for use in the preparation of this report:

- Simpson Haugh, October 2018, Concept Proposal drawings (Ref: 10122-SHP-RP-CP43-R02)

It is assumed that Client has commissioned or obtained assignment of the above documents and Hydrock has full reliance on them.

1.5 Regulatory context and guidance

The geo-environmental section of this report is written in broad agreement with BS 10175:2011+ A2:2017, the CLR 11 Model Procedures (Environment Agency 2004) and the AGS (2006) Good Practice Guidelines for Site Investigations. The methods used follow a risk-based approach, with the first stage being a Phase 1 desk study and field reconnaissance (this report), with the potential geo-environmental risk assessed qualitatively in future report(s) using the 'source-pathway-receptor contaminant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990).

The geotechnical section of this report is undertaken in general accordance with BS EN 1997 (EC7). This report forms the Preliminary Sources Study Report (PSSR) as defined by DMRB HD22/08.

Where relevant the NHBC Standards (2018), have also been applied.

Remaining uncertainties and recommendations for further work are listed in Section 5 and Section 6.

Reference to the technical details of the approach and the methodologies adopted are provided in Appendix G.

2. PHASE 1 STUDY (DESK STUDY AND FIELD RECONNAISSANCE)

2.1 Data

A number of desk study sources have been used to assemble the following information. These are presented in Appendix D and include:

- Third party environmental database search (Groundsure) report, reference (HYD-5465766);
- Historical Ordnance Survey mapping;
- BGS Archive Records;
- Zetica UXO Risk Maps (https://zeticauxo.com/downloads-and-resources/risk-maps/);
- Specialist UXO Desk Top Study, (Reference: EP7333-00);
- A Coal Authority Consultants Coal Mining Report, reference 51001955338001, dated 8th October 2018.
- Coal Authority's Interactive Viewer (http://mapapps2.bgs.ac.uk/coalauthority/home.html);

2.2 Site referencing

The site is referenced in Table 2.1 and the location is indicated in Figure 2.1 and Figure 2.2.

Table 2.1: Site referencing information

Item	Brief Description
Site name	Victoria House
Site address	Victoria House, Great Ancoats Street, Manchester, M4 7DB
Site location and grid reference	The site is located at the junction of Great Ancoats Street (A665) and Longacre Street. The National Grid Reference of the approximate centre of the site is 385311, 398077.



Figure 2.1: Site location



Figure 2.2: Extract from Bing Ordnance Survey Map

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A site location plan (Hydrock Drawing VHM-HYD-XX-ZZ-DR-GE-0001) is presented in Appendix A.

2.3 Site description and field reconnaissance survey

A field reconnaissance survey was undertaken on 1st October 2018 to visually assess potential geotechnical hazards, contaminant sources and receptors. The weather during the field reconnaissance survey was overcast.

A basic site description is presented in Table 2.2 and selected photographs are presented in Figure 2.3 to Figure 2.6. Additional photographs are presented in Appendix B.

Table 2.2: Site description

Item	Brief Description
Site access	Via the rear entrance, situated in the car park on the south eastern section of the site along Epworth Street. Due to security reasons, access into the existing building was not possible.
Site area	The site is rectangular in shape and has an area of approximately 0.13 ha.
Elevation, topography and any geomorphic features	The site is generally flat, with the north boundary sloping slightly down to the north and the south of the site sloping gently down to the south. The site is at approximately the same elevation as the surrounding streets.
Present land use	The structure on site is currently occupied by the Safe Deposit Centre Manchester. The site is bordered by fencing on the north, east and southern boundaries of the site which is approximately 3m high. The western boundary of the site is occupied by the wall of the adjacent building. The site currently comprises two car parks separated by security fencing to the west of the site. Within the northern car park, a portacabin was present which is presumably used for storage. The structure off site to the east comprises a two-storey building in the north and a three-storey building on the southern boundary. These are predominantly steel frames with brick cladding. The three- storey building is noticeably older, therefore it may contain asbestos containing material (ACM). There are footpaths along the north, east and southern boundaries of the site.
Vegetation	A mature tree is present, approximately 2-3m from the wall of the structure on the southern boundary of the site. Due to the proximity of this tree to the site there is a potential for shrink or swell, associated with moisture uptake of the tree. There is no other significant vegetation as the site is covered by hardstanding.
General site sensitivity	The site is within an urban setting, with some residential housing to the north of the site along the canal, and industrial structures towards the south. The nature of the current use of the site is of high security and with restricted access.
Site boundaries and surrounding land	The surrounding area is mixed residential and industrial. The site is bounded by security fencing along the north, east and southern boundaries of the site. Adjacent to the east is the A665 Great Ancoats Street, and to the west is a warehouse. The site is bounded by three streets immediately along the north, east and south of the site. The Ashton Canal is located 70m north of the site. The underpass beneath the A665 is approximately 10m north of the site, associated with the Ashton-Under-Lyne Metrolink.

A site features plan (Hydrock Drawing VHM-HYD-XX-ZZ-DR-GE-0002) is presented in Appendix A.



Figure 2.3: Current two and three storey buildings and access.



Figure 2.4: Two car parks separated by security fencing.



Figure 2.5: mature tree, adjacent to the site. A665 to the east.

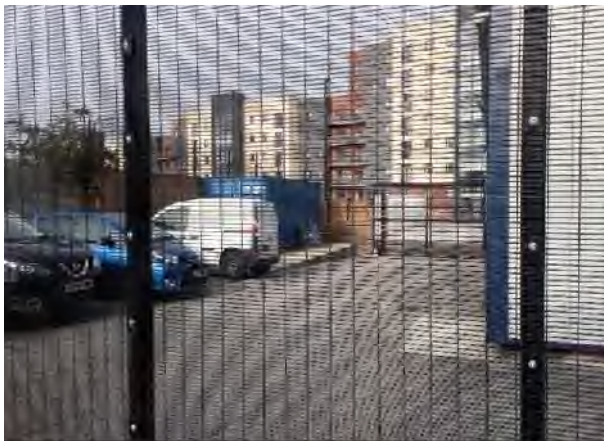


Figure 2.6: Car park in the north through fencing.

2.4 Site history

A study of historical Ordnance Survey maps (Appendix C) has been undertaken to identify any former land uses at the site and surrounding areas which may have geotechnical or geo-environmental implications for the proposed development. The key findings are summarised in Table 2.3.

Table 2.3: Site history review

Reference	Key Features on Site	Key Features off Site
1848 (1:10,560) 1851 (1:1,056)	On site is a Timber Yard consisting of four separate buildings, which extend off site. The site is bound by three roads to the north, east and south.	The site is surrounded by industrial buildings. Opposite is Caledon Mill (Cotton) and Pollard Street Mill (Cotton) both with boiler and gas houses 80m west from site. There are iron works 90m north west. The Ashton Canal is present 70m north of the site, with a Lock. River Medlock located approximately 280m south east from the site, flowing in a south westerly direction from the east.

Reference	Key Features on Site	Key Features off Site
		Fire engine station 110m north from the site, along Pollard Street.
1891 (1:500) 1893 (1:2,500) 1894 (1:10,560)	The site is no longer a Timber Yard but the chimney remains on site. The site has been reconfigured so buildings along the boundaries, not in the centre of the site. Smaller additional buildings to the eastern section of the site.	An overflow is present on the south side of the Ashton Canal, 80m north of the site. Pollard Street Mill replaced by Corporation Yard and Caledon Mill replaced by a Grain Store. Buildings constructed 15m south from the site adjacent to the chapel. Ancoats Goods Station 70m south of the site. Ancoats Hospital approximately 260m to the north east of the site, adjacent to Ashton Canal. Printing Works around 300m south east of the site. 1km to the south east from the site there is a Coal and Mineral depot.
1906 (1:20,560) 1908 (1:2,500)	No significant change.	Tramway along Great Ancoats Street which is adjacent to the site. To the south west, the London Road Station is 400m from the site. The disused foundry 220m to the north west of the site is replaced by a clothing factory and an iron and steel warehouse. 200m north east of the site there is a chemical works and a cotton waste mill 250m.
1922, 1932 (1:2,500) 1923 (1:10,560)	No significant change.	No significant change.
1934, 1938 (1:10,560) 1948 (1:1,250)	Site reconfigured as buildings in the north and east of the site are cleared, and two buildings labelled as ruins (Section 2.5)	Buildings 10m to the south west of the site have been cleared. Buildings not mapped on streets 140m to the south west and to the south east 120m. Properties 50m to the south west, replaced by Sheet Metal Works. Limekiln Lane Works 550m east from the site, adjacent to the River Medlock.
1953, 1955, 1964 (1:1,250) 1956 (1:10,560)	North east and south west of the site no longer mapped, as well as a parcel of buildings 10m to the south west of the site.	No significant change.
1968, 1981 (1:2,500) 1972,1981 (1:10,000)	Site reconfigured in the east, as one large building to replace the ruins on site.	No building where the Grain Warehouse was previously present, east of the site. Site surrounded by warehouses along the south and west boundaries. London Road Station renamed Piccadilly Station. Removal of Ancoats Goods Station, leaving the depot 50m south of the site. Few works and mills remain, most left as commercial buildings.

Reference	Key Features on Site	Key Features off Site
1985 (1:10,000) 1988, 1991 (1:1,250)	Site divided into two buildings with the Warehouse on the west of the site and Victoria House on the east	An industrial estate is present 400m north east of the site, this replaces mills that previously occupied this land. Piccadilly Trading Estate replaces Ancoats Goods Station 50m south east of the site.
1992, 1994 (1:1,250) 2002, 2010 (1:10,000)	Site reconfigured to its current layout.	Piccadilly Village constructed 120m west of the site, comprising John Smeaton Court and William Jessop Court. Industrial park and retail park replace mills or works south east 300m and west 250m from site.

2.5 Unexploded ordnance (UXO)

A preliminary UXO Risk Assessment has been undertaken for the site to assess the potential of encountering unexploded ordnance at the Victoria House site, for the purposes of ground investigation and is presented in Table 2.4

The Preliminary UXO Risk Assessment screening exercise indicated that further and more detailed assessment is required. A detailed UXO risk assessment in accordance with CIRIA Report C681 should be undertaken. It is recommended that appropriate UXO Risk Mitigation Measures are provided for intrusive works proposed.

Table 2.4: Preliminary UXO screening (for the purposes of ground investigation)

Data	Comment	Further Assessment Required
Site History	There is no indication of former military use from the desk study. However, a risk has been identified associated with a Heavy Anti-Aircraft which potentially is unexploded.	No
Post War Development	The 1950-51 OS mapping and low-resolution post-war aerial photography indicates that structures on site were cleared and one structure labelled 'ruin'. Residential structures bordering the south and west of the site also were cleared. Despite this, Manchester bomb mapping does not record any bombing to have affected the site or surrounding area.	Yes
Geology Type	The ground conditions comprise of glacial till, overlying Chester Formation Sandstone. It is unlikely UXO would remain undetected.	No
Surface Cover during WWI	The surface cover during WWII comprised a significant proportion concrete and buildings. It is unlikely UXO would remain undetected.	No
Indicator of Aerial Delivered UXO	Screening against the regional bomb risk map (Manchester) Appendix D indicates the site to be in an area where the bomb risk is moderate.	Yes

2.6 Geology

The general geology of the site area is shown on the British Geological Survey (BGS) 1:50,000 geological map of Manchester (Sheet 85) and is summarised in Table 2.5. Extracts from the map are shown in Figure 2.7 and Figure 2.8.

Table 2.5: Geology

Ref. for Figures	Location	Stratigraphic Name	Description
Superficial Deposits (Figure 2.7)			
1	On site	Till, Devensian	Clays deposited in a local environment previously dominated by ice age conditions.
Solid Geology (Figure 2.8)			
1	On site.	Chester Formation - Sandstone	The gravel is composed of well-rounded pebbles, cobbles and boulders in a coarse to fine granulestone and silty sandstone complex. The formation comprises conglomerates and reddish brown, cross-bedded, pebbly sandstones with subordinate beds of red-brown mudstone.

The Ardwick Fault, trending approximately north west to south east, located 324m to the south west of the site.

Made Ground has been recorded 173m south east of the site. This possibly could be associated with the Piccadilly Trading Estate which previously existed where Enterprise Park currently is situated, to the west of Greats Ancoats Street. 291m to the east of the site, there is Made Ground where warehouses and industrial estates previously existed.

There is evidence of historical ground workings which have been recorded 15m to the north east of the site, associated with the Ashton Canal in 1923. The most recent ground workings on the canal were in 1991, which took place 49m north west of the site.



Figure 2.7: Superficial deposits.

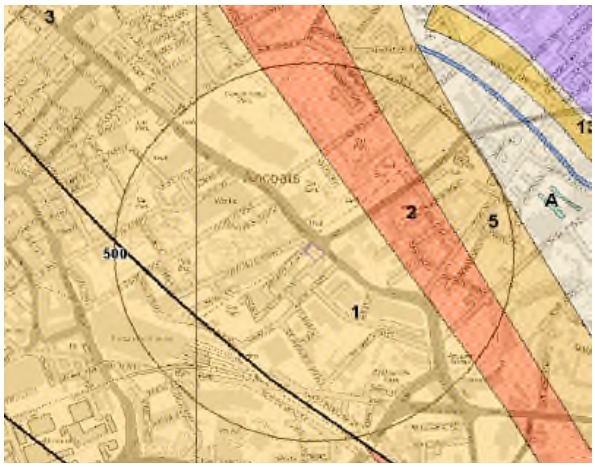


Figure 2.8: Solid geology.

A review of available BGS online boreholes found one borehole reference SJ89NE34, located 40m south east of the site at Manchester Corp. Great Ancoats Street (NGR 385349, 398027), drilled to a depth of 21.34m and recorded:

- Filling between ground level and 1.98m below ground level (bgl).

- Dark brown clay between 1.98m bgl and 2.74m bgl.
- Boulder clay from 2.74m down to a depth of 7.77m bgl.
- Mixture of clay and sand, reddish between 7.77m bgl and 9.45m.
- Sandy with a few stones between 9.45m bgl to a depth of 11.2m bgl.
- Hard boulder clay between 11.2m bgl and 12.12m bgl.
- Mixed clay and sand from 12.12m bgl down to 17.83m bgl.
- Red sandstone bedrock encountered at 17.83m down to 21.34m bgl.

2.7 Groundwater system

2.7.1 Aquifer designations

Based on the inferred geological sequence presented in Section 2.6 and the Environment Agency's interactive aquifer designation map, the aquifer system presented in Table 2.6 applies. Additional information on the hydraulic characteristics of the geological units has been abstracted from Allen et al (1997) and Jones et al (2000).

Table 2.6: Aquifer system

Stratum	Aquifer Designation	Hydraulic Characteristics
Glacial Till	Secondary Undifferentiated Aquifer	Not possible to attribute either category A or B rock type. Layers previously designated as both minor and non-aquifer due to variable characteristics of rock type.
Chester Formation	Principal Aquifer	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/ river base flow on a strategic scale.

2.7.2 Groundwater abstraction

There are no active licensed groundwater abstractions within 1000m of the site.

There are two historic licensed groundwater abstractions within 1000m of the site. They are listed in Table 2.7.

Table 2.7: Groundwater abstractions

Location Relative to Site	Purpose of Abstraction
514m to the south.	Industrial for general cooling.
971m to the west.	Industrial for non-evaporative cooling.

2.7.3 Groundwater source protection zones and groundwater vulnerability

The site is not within a groundwater Source Protection Zone (SPZ).

2.7.4 Groundwater quality

The groundwater body beneath the site (Manchester and East Cheshire Permo-Triassic Sandstone Aquifers) is currently (2016 Cycle 2) classified under the Water Framework Directive as 'poor'.

The water body is currently poor status due to chemical saline intrusion, from the Environment Agency classification. The objective is for chemical dependent surface water body status to be 'good' by 2015, with no reason provided.

2.7.5 Groundwater levels, recharge, and flow

The BGS online historical boreholes provide no information on groundwater levels recorded near the site. However, borehole SJ89NE1893, associated with the Ashton Canal Corridor 58m north east of the site recorded a seepage at 1.50m.

2.8 Surface Water System

2.8.1 Hydrology and drainage

The surface water features in the vicinity of the site are listed in Table 2.8 and, where appropriate, are marked on the Site Features Plan (Hydrock Drawing VHM-HYD-XX-ZZ-DR-GE-0002) in Appendix A.

Table 2.8: Surface water features

Feature	Location Relative to Site
Ashton Canal	To the north, 65m from the site with associated Lock.
Islington Branch Canal	120m north east from the site.
River Medlock	Located south east from the site for 279m flowing in a south westerly direction from the east.

2.8.2 Surface water abstractions and discharges

There are no active licensed surface water abstractions within 1km of the site.

There is one active licensed surface water discharges within 1km of the site which was along Fairfield Street due to sewage discharges from a storm overflow. This discharge was received by the River Medlock in April 2018.

2.8.3 Surface water quality

Reference to the Environment Agency website shows the site is located within the catchment of the Roch Irk Medlock, with the specific river water body being the Medlock (Lumb Brook to Irwell). The current (2016 cycle 2) overall status under the Water Framework Directive is 'moderate'.

The water body is currently 'moderate' status due to the ecological classification from sewage discharge which has deteriorated phosphate levels, fish, invertebrates, macrophytes and phytobenthos. Another reason for not achieving 'good' status is urbanisation and transport producing barriers and ecological discontinuity for fish, as well as ammonia in the waterbody. The objective is for the waterbody to remain 'moderate' by 2015 due to unfavourable balance of costs and benefits, in addition to no known technical solution available.

2.8.4 Surface water flooding

The GroundSure report indicates the proposed development is in an area classed as Flood Zone 1 with a low probability (less than 1 in 1000) of flooding from rivers or the sea.

There is groundwater flooding potential at the surface associated with clearwater flooding of unconfined aquifers and superficial deposits flooding of unproductive aquifers. The potential for surface flooding indicated means that given the geological conditions in the area, groundwater flooding hazard should be considered in all land-use planning decisions.

No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regard to drainage and flooding.

2.9 Mining or mineral extraction

2.9.1 Coal mining

The Coal Authority's Interactive Viewer indicates that the site is in a coal mining reporting area. The closest mine entry is approximately 750m south east of the site.

Geological mapping shows there are four coal seams to the north east of the site. The closest coal seam is Openshaw Coal which is followed by, Charlotte Coal, Bradford Threequarters Coal and Bradford Four Foot Coal. However, these coal seams are located approximately 1300m away from site.

A Coal Authority Mining Report, Ref. 51001955338001, dated 8th October 2018, has been obtained for the site.

The main findings of the report, which is included in Appendix D, are summarised below:

- The property is in a surface area that could be affected by underground mining from three seams. The Bradford Four Feet seam of coal at 358m to 425m depth, which was last worked in 1900. The Crombouke coal seam at a depth of 1068m last worked in 1932 and 1947. The Roger seam of coal at 1096m to 1106m depth last worked in 1961. These seams all dip in a south west direction.
- The property is not in an area that could be affected by shallow workings.
- There are no coal mine entries within, or within 100m of, the boundary of the property.
- No notices have been given, under Section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.
- The Coal Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining.
- The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50m, since 31st October 1994.
- The Coal Authority has no records of a mine gas emission requiring action.

The coal seams beneath the site are likely to have sufficient covering of rock to not pose a risk to development. However, the presence of unrecorded workings cannot be discounted.

2.10 Natural ground instability

The Natural Ground Subsidence Report indicates that the hazard rating for shrink-swell clays, landslides, dissolution, compressible deposits, collapsible deposits and running sands range from negligible to very

low, therefore no remedial actions are likely to be required to avoid constraints imposed by ground stability.

There is no evidence that cavities have been, or are present, on the site.

The records from the Peter Brett Associates indicate that there are no mining cavities within 1km of the site.

There are no natural cavities present on site or in surrounding areas, therefore there is not a risk of subsidence.

2.11 Waste management

There are no current waste management sites recorded within 250m of the site.

A historical landfill site was recorded approximately 400m to the south east of the site. The Site Reference for the site is RD/LIC/440/86/F046. This accepted inert and industrial waste, however it was last recorded in 1987.

There are historical waste records indicating that a Scrap Yard was present 100m north of the site in 1980 and a Scrap Metal Yard was present 155m to the north west dated in 1967.

2.12 Regulatory consultation

Information in the GroundSure Report (Appendix D), relating to various regulatory controls has been reviewed, with a summary presented below in Table 2.9.

From the Environmental Permits, Incidents and Registers there are no records of IPC Authorisations within 500m of the site. There are also no potentially harmful Red List discharge consents or Dangerous Substance Inventory Sites.

Table 2.9: Regulatory information within 500m of the site

Regulatory Data	Distance from Site	Details	Potential Risk	Comment
Discharge Consents	167m north west of the site	September 1993, final treated effluent discharged to Shooters Brook	No	Due to distance from the site and historic discharges.
	221m to the north east	Miscellaneous discharge of surface water into the Ashton Canal, revoked in 1991.		
	296m west of the site	The River Medlock received sewage discharges in June 1995 due to a sewer storm overflow.		
Pollution Incidents	170m to the north east.	March 2002, waste oils, Category 3 minor water impact	No	Due to classification of incidents.
	214m north east.	July 2002, inert materials and wastes associated with construction and demolition materials. Category 3 minor land impact.		

Regulatory Data	Distance from Site	Details	Potential Risk	Comment
Industrial Sites	On site.	Transport, storage and delivery.	Yes	Due to distance from the site and potential contaminants
	73m to the east	Electricity Sub Station		
Registered radioactive substances	N/A	No entries on registered radioactive substances were recorded within 500m of the site.	No	-
Notification of installations handling hazardous substances	N/A	No entries on notification of installations handling hazardous substances were recorded within 500m of the site.	No	-

2.13 Natural soil chemistry

Information contained within the environmental data report (Appendix D) gives indicative natural concentration values (estimated) for the natural soils at the site for a selection of Contaminants of Potential Concern (CoPC). These have been reproduced in Table 2.10.

Table 2.10: Natural soil chemistry

Element	Arsenic	Cadmium	Chromium	Lead	Nickel
Concentration (mg/kg)	15-25	<1.8	60 – 90	100-200	30-45

2.14 Radon

The radon risk reported by the Radon Atlas on-line viewer indicates that the maximum radon potential in some parts of the 1km grid square of the site is 1-3% of properties. However, the radon risk reported in the environmental data report indicates that the site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. A precautionary approach is recommended subject to further research. Consideration should be given to fitting basic protection measures.

2.15 Suitability of previous data

Hydrock have not been provided with any previous site investigation reports for the site.

3. PRELIMINARY CONCEPTUAL MODEL

3.1 Ground model

The preliminary ground model is presented in Section 2 which forms the understanding of the ground conditions that inform the preliminary geotechnical hazard assessment (Section 3.2) and the preliminary geo-environmental exposure model (Section 3.3).

3.2 Geotechnical hazard identification

The preliminary geotechnical hazard identification has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and HD 22/08.

The following section sets out the identified geotechnical hazards and the development elements potentially affected (see Table E.1 in Appendix E for further detail).

3.2.1 Plausible geotechnical hazards

Plausible geotechnical hazards identified at the site are:

- Uncontrolled Made Ground (variable strength and compressibility).
- Soft / loose compressible ground (low strength and high settlement potential).
- Variable lateral and vertical changes in ground conditions.
- Attack of buried concrete by aggressive ground conditions.
- Obstructions.
- Existing below ground structures to remain (on or off-site tunnels, foundations, basements, and adjacent sub-structures).
- High groundwater.
- Changing groundwater conditions.
- Possible cambered ground with gullies possibly present.
- Stability issues associated with the Metrolink underpass.

3.2.2 Potential development elements affected

Development elements affected by potential geotechnical Hazards are:

- Buildings – foundations.
- Buildings – floor Slabs
- Roads and pavements.
- Services.
- Construction staff, vehicles and plant operators.
- Concrete below ground.
- Basement.

Health and safety risks to site Contractors and maintenance workers have not been assessed during these works and will need to be considered separately during design.

The above plausible geotechnical hazards and development elements affected will need to be carried forward for investigation and assessment.

3.3 Geo-environmental exposure model

The preliminary exposure model is based on information presented in Section 2 and is used for geo-environmental hazard identification and establishing potential contaminant linkages based on the contaminant-pathway-receptor approach.

A pollutant linkage requires all the elements (S-P-R) to be present. If only one or two are present, there is no linkage and further assessment is not required.

3.3.1 Potential contaminants

For the purpose of this assessment the potential contaminants have been separated according to whether they are likely to have originated from on-site or off-site sources.

Potential on-site sources of contamination

S 1. Metals, metalloids, PAH, petroleum hydrocarbons and asbestos in Made Ground below the site.

S 2. Hydrocarbon fuels, lubricant and chlorinated solvents from the operation of the former timber yard on the site (metals, hydrocarbons, solvents, degreasers, etc.).

S 3. Ground gases (carbon dioxide and methane) from organic materials in the Made Ground.

S 4. Hydrocarbon vapours from potential VOC and petroleum hydrocarbon spillages/leaks from vehicles on site.

S 5. Naturally occurring elevated concentrations of metals within soils.

S 6. Buildings (asbestos).

Potential off-site sources of contamination

S 7. Former Iron Works and Foundry within 100m of the site, has potential to produce contaminants including elevated concentrations of metals, metalloids, inorganic compounds, asbestos and PCBs. Contamination also potentially transferred into water drainage systems, or the canal in close proximity to industrial activities.

S 8. Potentially elevated concentrations of PCBs and oils from transformers associated with the proximity of the electricity sub-station.

S 9. Ground gases associated with potentially infilled land surrounding the canal and railway sidings which are located within 100m of the site.

3.3.2 Potential pathways

The following potential pathways have been identified.

P 1. Humans: ingestion, skin contact, inhalation of dust and outdoor air.

P 2. Buildings: direct contact with substances deleterious to building materials.

P 3. Buildings: methane ingress via permeable soils and/or construction gaps.

P 4. Buildings: VOC and petroleum hydrocarbon vapour ingress via permeable soils and/or construction gaps.

P 5. Underlying groundwater: migration of contaminant via leachate dispersion through the permeable lithologies in the Glacial Till.

P 6. Underlying groundwater: migration of contaminant into the Chester Formation Aquifer.

P 7. Surface water: overland flow.

P 8. Surface water: drainage discharge.

P 9. Surface water: base flow from groundwater

3.3.3 Potential receptors

The following potential receptors in relation to the proposed land use have been identified.

R 1. Humans (neighbours, site end users).

R 2. Development end use (buildings, utilities and landscaping).

R 3. Groundwater: Secondary Undifferentiated aquifer status of the Glacial Till and the Principal Aquifer

R 4. Surface water: on-site drainage.

An assessment of the Source-Pathway-Receptor linkages has been undertaken and is presented in Appendix F (Table F.2) and the conclusions of the assessment are discussed in Section 4.

Health and safety risks to site Contractors and maintenance workers have not been assessed during these works and will need to be considered separately.

4. DESK STUDY CONCLUSIONS

4.1 Geotechnical conclusions

From a geotechnical perspective few risks have been identified that would significantly constrain the proposed development. An appropriate ground investigation carried out in accordance with BS 5930:2015 will be required to identify and mitigate geotechnical risks and enable the detailed design of the proposed development.

The following plausible geotechnical risks are identified.

- Variable Made Ground - settlement or differential settlement of foundations, floor slabs, roads and infrastructure elements.
- Low strength, compressible ground – risk of shear failure and excessive settlement of foundations, roads and infrastructure elements.
- Attack of buried concrete by aggressive ground conditions – the development site may contain Made Ground and potentially sulfate bearing soils.
- Potential for obstructions and the risk of instability of excavations with the impact on construction staff, vehicles and plant operators.
- Stability of Metrolink underpass, very close to the site.
- Potential for unforeseen ground conditions and the risks associated with limited data.

  These plausible risks require further investigation and assessment (see Section 6).

4.2 Geo-environmental conclusions

The site is located in an urban environment where various industrial activities haven taken place over time. It is likely that a significant thickness of Made Ground is present across the site associated with previous development. Due to these factors elevated levels of contamination may be present in shallow soil and groundwater beneath the site. A ground investigation in accordance with BS 10175:2011+A2:2017 should be undertaken to determine whether elevated levels of contamination are present in soils and groundwater beneath the site. Should elevated levels of contamination be identified it will be necessary for a remediation strategy to be developed and implement to ensure the site is suitable for use.

Based on historical and current land uses and in accordance with the processes set out in Appendix G:

- It is considered that it is unlikely that the site in its current state would be classified as Contaminated Land under Part 2A of the EPA 1990.
- The overall risk from land contamination at the site is considered to be low for the current development, as it is covered by hard standing or buildings limiting the possibility of contact with the soils, as well as the risk of significant rainwater infiltration leading to leaching.
- The overall risk for a redeveloped site is assessed to be low, with some specific potentially moderate risks, but this would need to be confirmed by appropriate intrusive investigation, testing and assessment of the results of the investigation.

The possible pollutant linkages (for risk levels of moderate or greater) on an unremediated redeveloped site, as determined by the desk study and walk-over, are summarised in Table 4.1:

Table 4.1: Possible Pollutant Linkages (for Risk Levels of Moderate or Greater)

Source(s)	◄ potential Impact on ►	Receptor(s)
Metals, metalloids, PAH, petroleum hydrocarbons and asbestos in Made Ground below the site.		Site users Neighbours Groundwater
Hydrocarbon fuels, lubricants, chlorinated solvents and PCBs from the former engineering works, iron works and electricity sub-station in close proximity to the site		Site users Neighbours Buildings
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site.		Site Users Buildings
Hydrocarbon vapours from potential VOC and petroleum hydrocarbon spillages/leaks from on site vehicles.		Site Users
Building on site built before 2000, therefore there is potential for asbestos to be present.		Site users Neighbours Buildings
Electricity sub-station associated with potentially elevated concentrations of PCBs and oils from transformers.		Site users
Elevated concentrations of metals, metalloids, inorganic compounds, asbestos and PCBs from former Iron Works and Foundry within 100m.		Site users Neighbours

These possible pollutant linkages require further investigation and assessment (see Section 6).

5. UNCERTAINTIES AND LIMITATIONS

5.1 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of Forshaw Land & Property Group Ltd. (the Client), by email dated 20th September 2018 under the terms of appointment for Hydrock. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared and provided.

This report details the findings of work carried out in October 2018. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed.

Information provided by third parties has been used in good faith and is taken at face value. However, Hydrock cannot guarantee its accuracy or completeness.

Where the existing report(s) prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock. Should this not be the case Hydrock should be informed immediately as additional work may be required. Hydrock is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or recent activities.

The work has been carried out in general accordance with recognised best practice. The various methodologies used are referenced in Appendix G.

Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance.

The Preliminary UXO Risk Assessment screening exercise has indicated further assessment is required. A Detailed Specialist UXO risk assessment in accordance with CIRIA Report C681 should be undertaken. It is recommended that appropriate UXO Risk Mitigation Measures are provided for intrusive works proposed. Further assessment should be undertaken with regards to other higher risk activities e.g. construction.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential hazards and specialist advice should be sought.

Whilst the preliminary risk assessment process has identified potential risks to construction workers, consideration of occupational health and safety issues is beyond the scope of this report.

Any site boundary line depicted on plans does not imply legal ownership of land.

6. RECOMMENDATIONS FOR FURTHER WORK

6.1 Geotechnical Ground Investigation Objectives

In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, an appropriate intrusive investigation will need to be undertaken. This investigation will need to:

- determine the depth and distribution of Made Ground and natural strata across the site;
- determine the soil strength/density profile beneath the site;
- determine the depth/level of groundwater beneath the site;
- determine the ground gas concentrations beneath the site;
- determine CBRs to assist with pavement design;
- assess trench stability, over break potential and 'diggability';
- allow sampling for chemical and geotechnical laboratory testing;
- obtain information in terms of Aggressive Chemical Environment for Concrete Class (ACEC Class).

Following investigation, assessment will be required to:

- update the Ground Model;
- update the Geotechnical Risk Register;
- provide Geotechnical Design recommendations;
- update the Conceptual Site Model (CSM), including identification of plausible pollution linkages;
- undertake generic quantitative risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime;
- discuss potential environmental liabilities associated with land contamination (soil, water and gas); and
- provide outline mitigation recommendations to ensure the site is 'suitable for use'.

6.2 Ground Investigation Scope of Work

Based on the current data, site investigation is proposed to comprise:

- the excavation of ten trial pits to allow collection of samples for geotechnical and chemical analysis, to assess trench stability, over break potential and 'diggability' and allow soil infiltration rate testing to be undertaken;
- One days dynamic sampling (approximately 5 holes) to allow collection of samples for geotechnical and chemical analysis of shallow soils, and allow *in situ* testing (SPTs) to be undertaken to determine the strength of the clay and assess density of the sands and gravel, and allow the installation of gas and groundwater monitoring wells;
- Four cable percussive boreholes to allow collection of samples for geotechnical and chemical analysis of deeper soils, and allow *In situ* testing (SPTs) to be undertaken to determine the strength of the clay and assess density of the sands and gravel, and allow the installation of gas and groundwater monitoring wells;

- One days TRL Dynamic Cone Penetration tests (approximately 8 locations) to determine CBRs for pavement design;
- gas and groundwater monitoring installations to allow gas concentrations and groundwater levels to be monitored;
- Six rounds of gas concentration and groundwater level monitoring;
- geotechnical testing of soils; and
- contamination analyses of soil and groundwater.

Access to the site will be restricted not only by the existing buildings and infrastructure, but by the fact that it is still occupied. Therefore, a phased investigation will be required.

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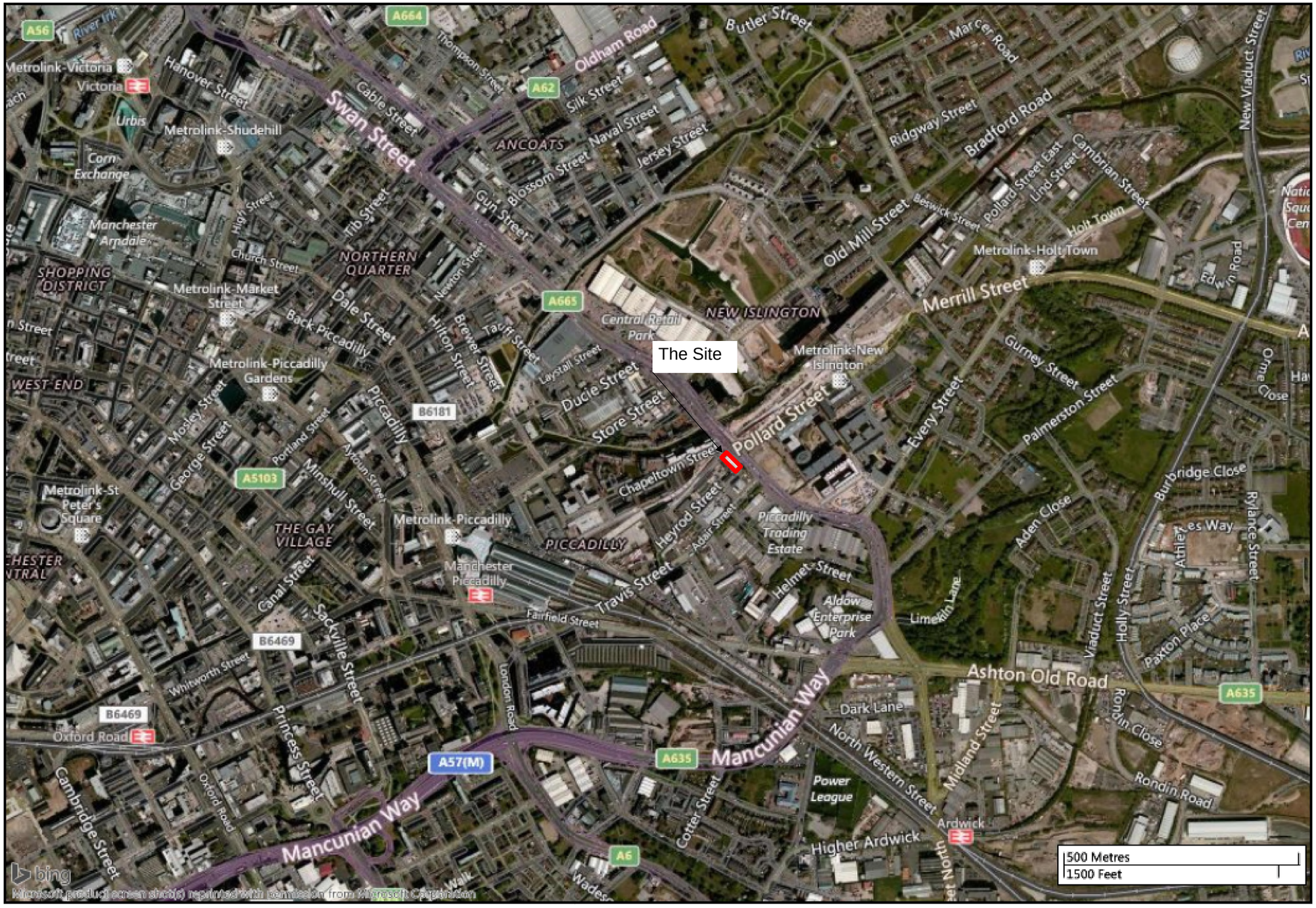
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Appendix A

Drawings





Rev	Date	Description	By	Ckd

Architect :

Hydrock

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4 Lakeside
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stoke@hydrock.com
www.hydrock.com

Client :

FORSHAW GROUP LTD

Project Title:

VICTORIA HOUSE

Drawing Title:

Site Location Plan

Reference:

VHM-HYD-XX-ZZ-DR-GE-0001

Hydrock Job No:

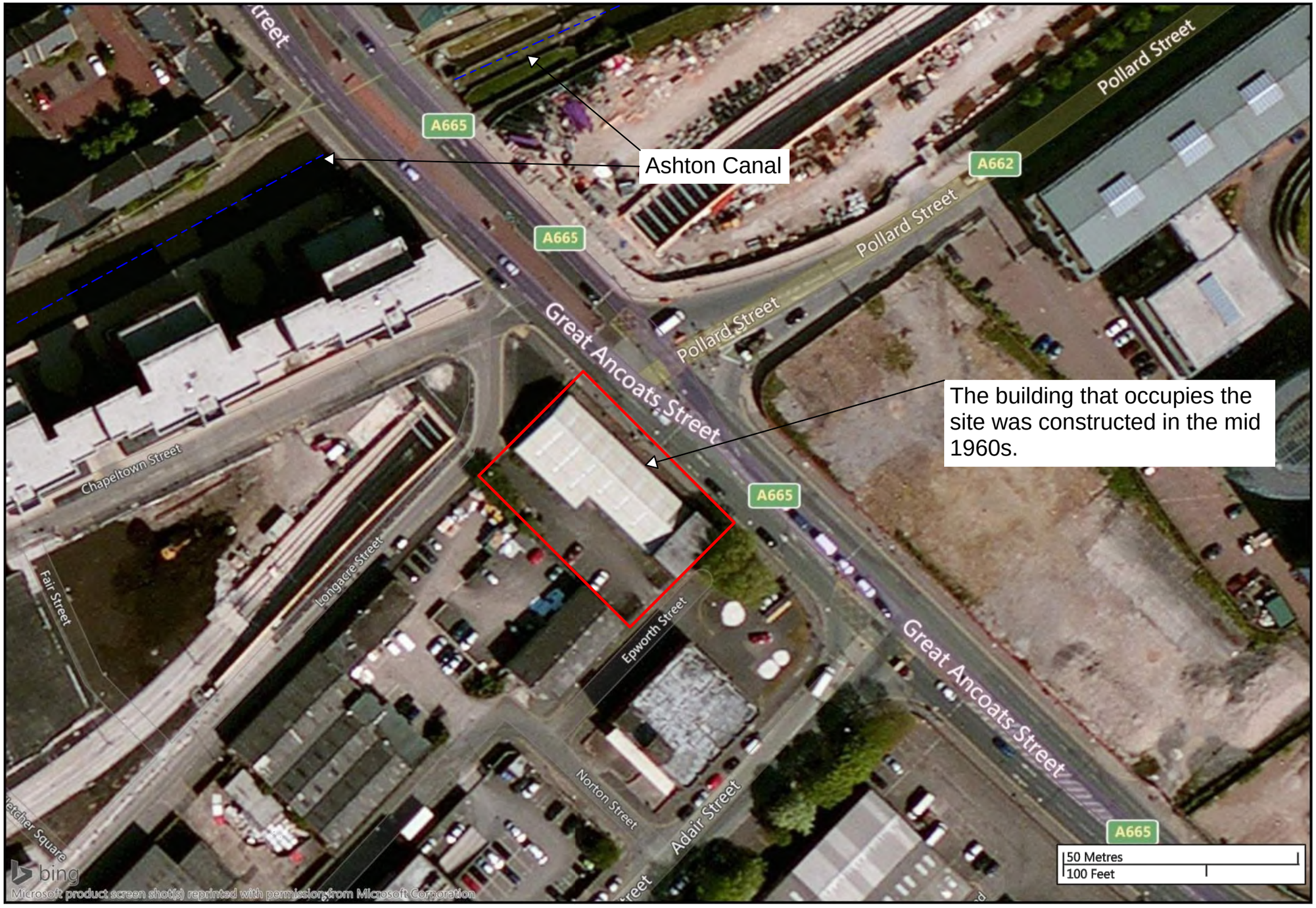
C-09823-C

Drawn	Checked	Scale @ A3	Date	Issue Date
LB	PH	As Shown	27/09/18	05/11/18

Revision: P1

Status: S2

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Key

- Site Boundary
- Ashton Canal

Rev	Date	Description	By	Ckd

Architect :

Hydrock
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4 Lakeside
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stoke@hydrock.com
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Client :

FORSHAW GROUP LTD

Project Title:

VICTORIA HOUSE

Drawing Title:

Site Features Plan

Reference:

VHM-HYD-XX-ZZ-DR-GE-0002

Hydrock Job No:

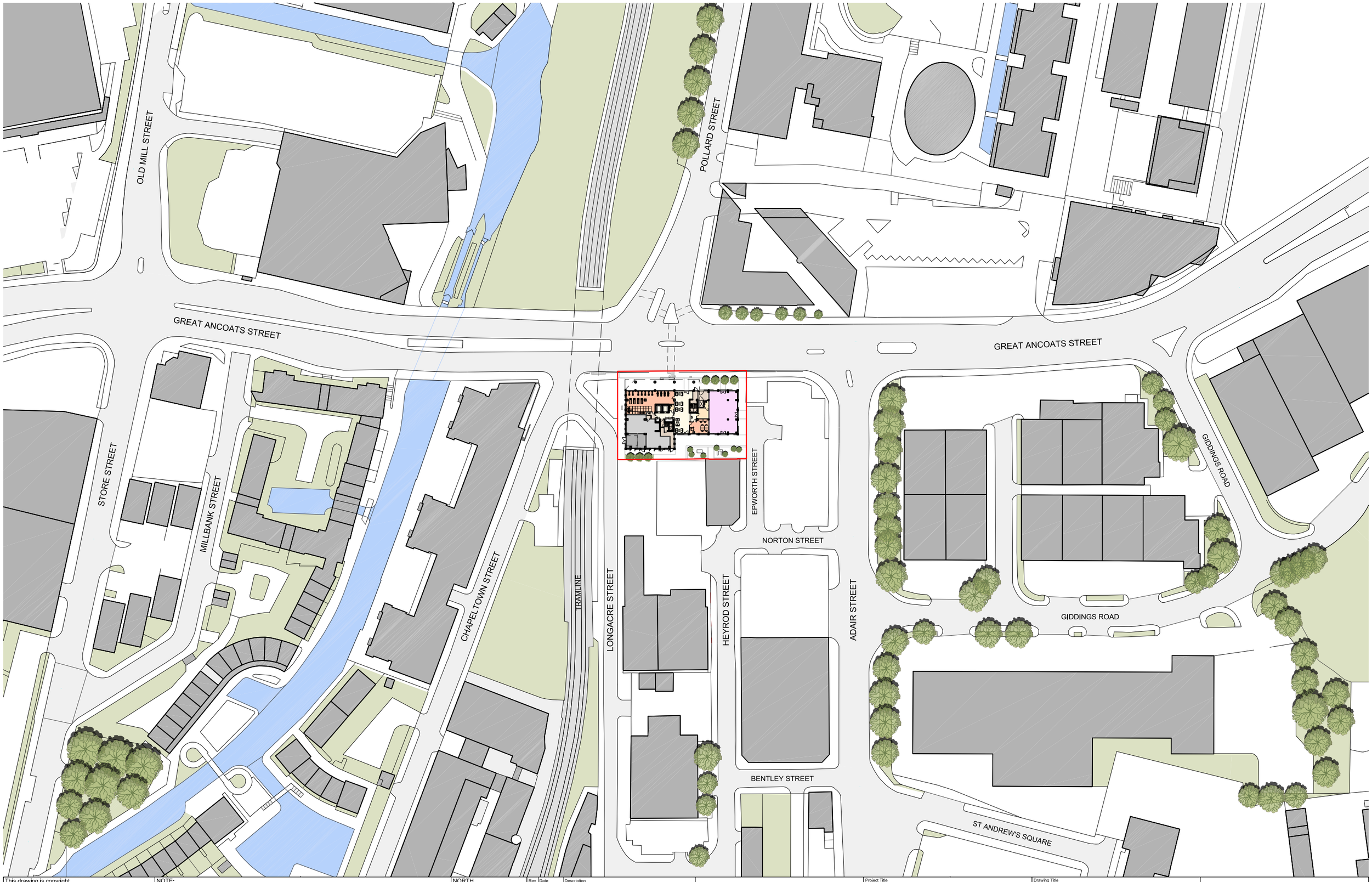
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JPS	DH	As Shown	09/10/18	11/10/18

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This drawing is copyright
Do not scale off dimensions.
All dimensions to be checked on site by contractor.
Contractor to report any dimensional discrepancies, errors or omissions prior to commencing on site.

NOTE:

0 5 10 15 20 30 40 50m

NORTH

Rev	Date	Description
00	XX-XX-XX	First Issue

DRAFT

Project Title
VICTORIA HOUSE

Drawing Title
PROPOSED SITE PLAN

Job No
10122

Scale
1:1250 @ A3

Date
JAN 2020

Status
FOR PLANNING

Drawing No
10122-A-B5D9-G100-P-00-003

Revision
00

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Appendix B

Field Reconnaissance Photographs

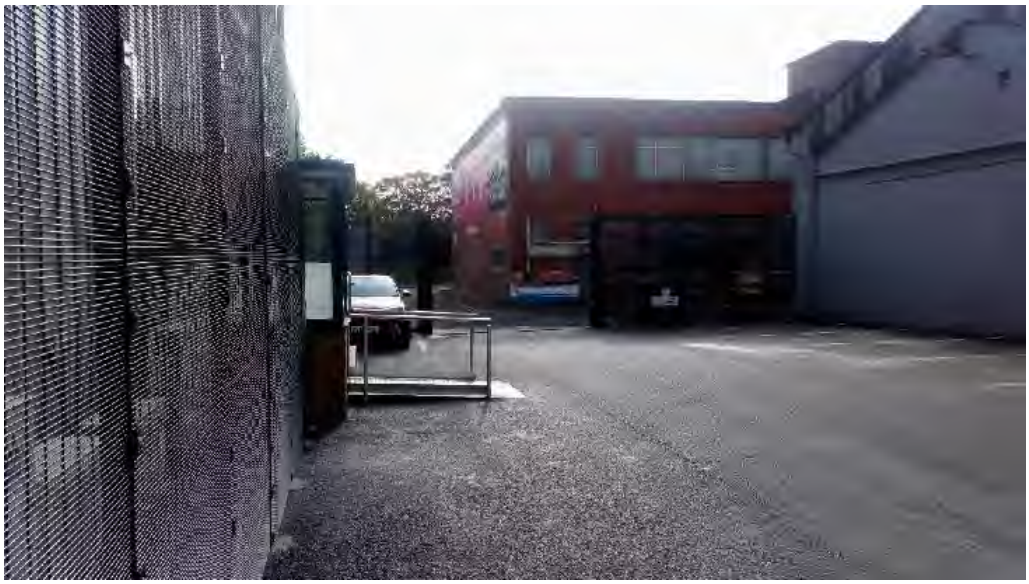
Desk Study Photograph 1	
Date: 01/10/18	
Direction Photograph Taken: Looking north from the southern boundary.	
Description: Car park in the south with the existing building in the east.	

Desk Study Photograph 2	
Date: 01/10/18	
Direction Photograph Taken: looking east from the west of the site.	
Description: Existing three storey and two storey building.	

Desk Study Photograph 3	
Date: 01/10/18	
Direction Photograph Taken: Looking north from the centre of the site.	
Description: Security fence through the centre, looking onto the north car park where a portacabin is present.	

Desk Study Photograph 4	
Date: 01/10/18	
Direction Photograph Taken: Looking east from the centre of the site.	
Description: Air conditioning units associated with the existed building.	

Desk Study Photograph 5	
Date: 01/10/18	
Direction Photograph Taken: Looking south east from the centre of the site.	
Description: Entrance to the existing building.	

Desk Study Photograph 6	
Date: 01/10/18	
Direction Photograph Taken: From the east of the site looking south west.	
Description: The south car park and the opposite building to the site.	

Desk Study Photograph 7	
Date: 01/10/18	
Direction Photograph Taken: Outside the southern boundary, looking north east.	
Description: Entrance onto site through gate in fence.	

Desk Study Photograph 8	
Date: 01/10/18	
Direction Photograph Taken: Looking west from outside the southern boundary.	
Description: Surrounding buildings to the south and west.	

Desk Study Photograph 9	
Date: 01/10/18	
Direction Photograph Taken: Looking north west from the south east.	
Description: Proximity of mature tree to the south of the site.	

Desk Study Photograph 10	
Date: 01/10/18	
Direction Photograph Taken: Looking north west from the south east.	
Description: The view of Victoria house from the footpath and the A665 to the east of the site.	

Desk Study Photograph 11	
Date: 01/10/18	
Direction Photograph Taken: Looking south west from the north east.	
Description: Exterior of the northern boundary of the site.	

Desk Study Photograph 12	
Date: 01/10/18	
Direction Photograph Taken: Looking south from the north.	
Description: Northern entrance and high security nature of the current site.	

Appendix C

Historical Ordnance Survey Maps



Groundsure INSIGHTS

Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET,
MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: 1056 Scale Town Plan

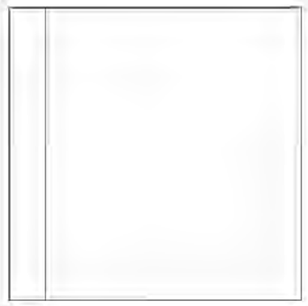
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Printed at: 1:1,056

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Surveyed 1849
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Edition 1851
Copyright N/A
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Surveyed 1849
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Edition 1851
Copyright N/A
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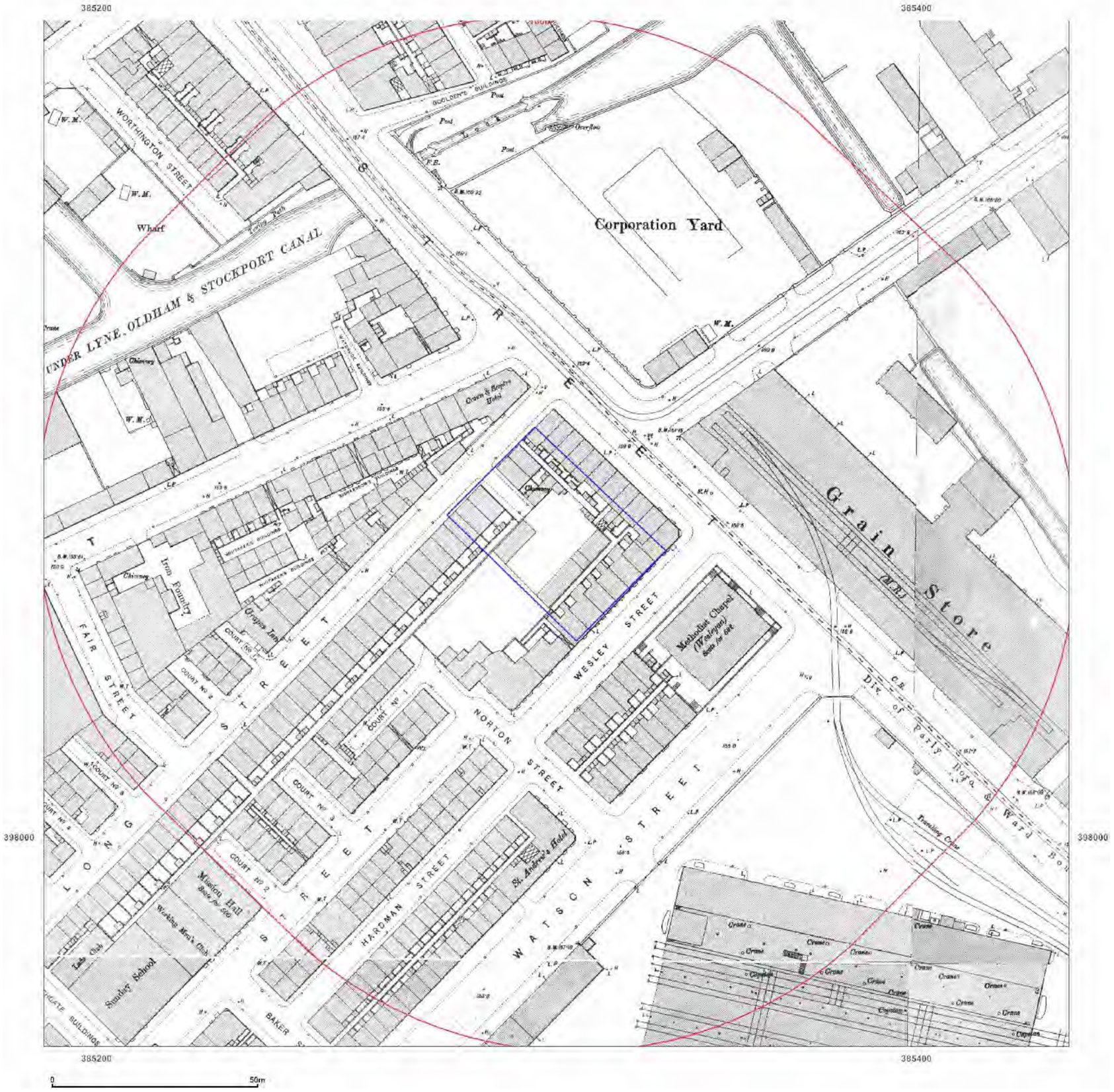
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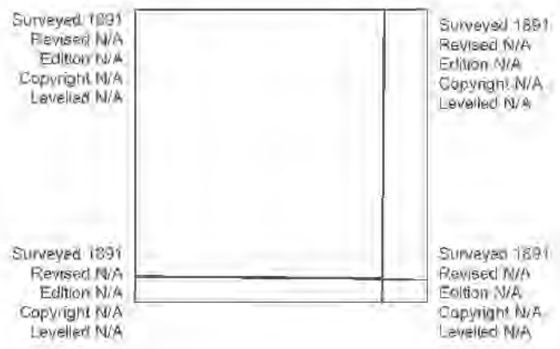
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Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

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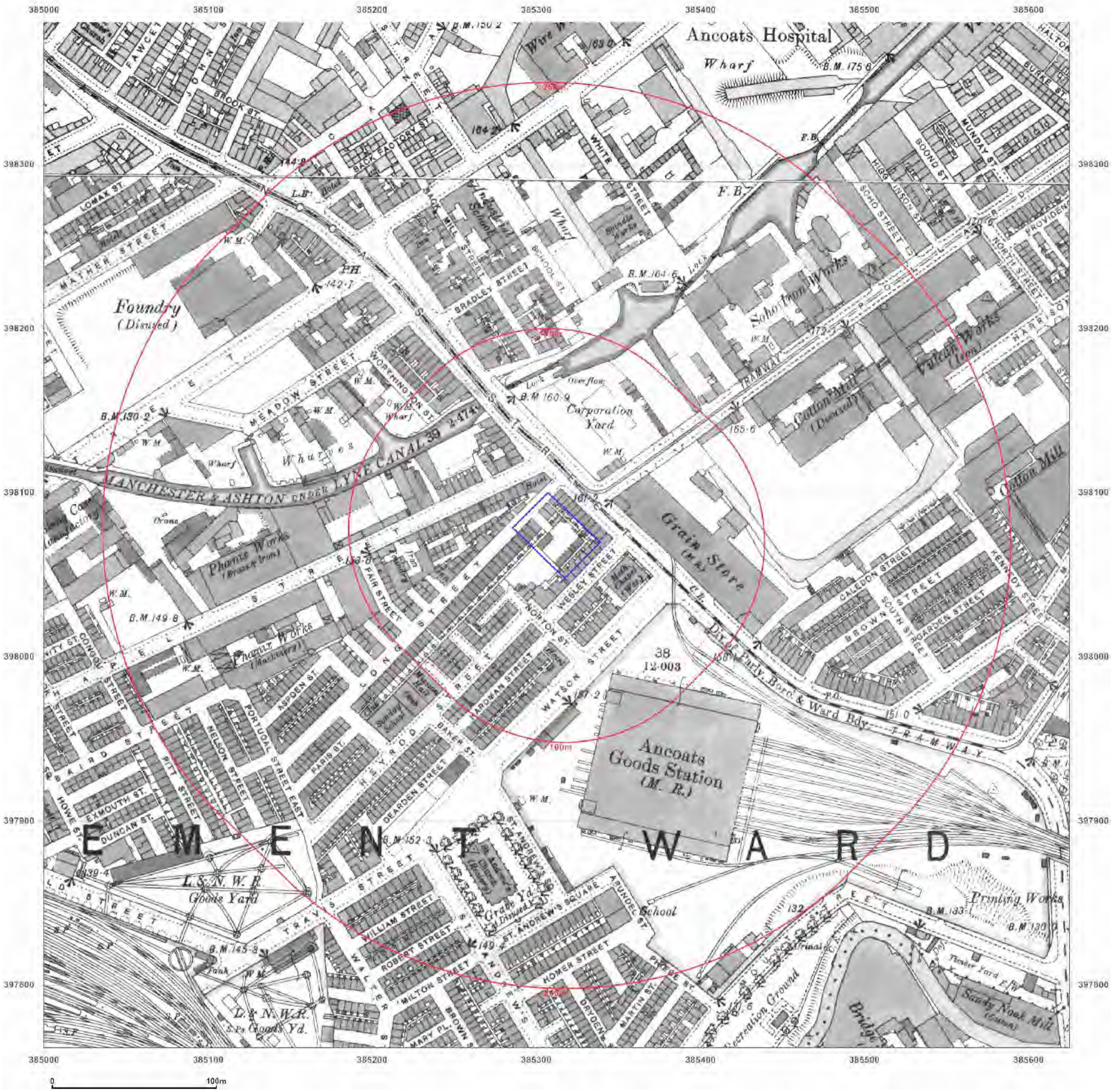
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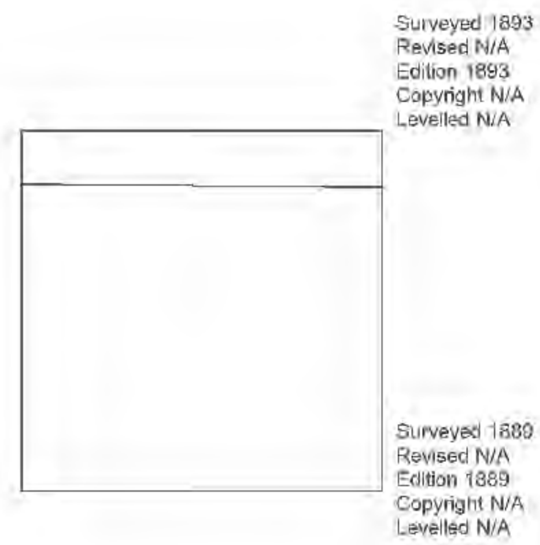
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Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

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Report Ref: HYD-5465768
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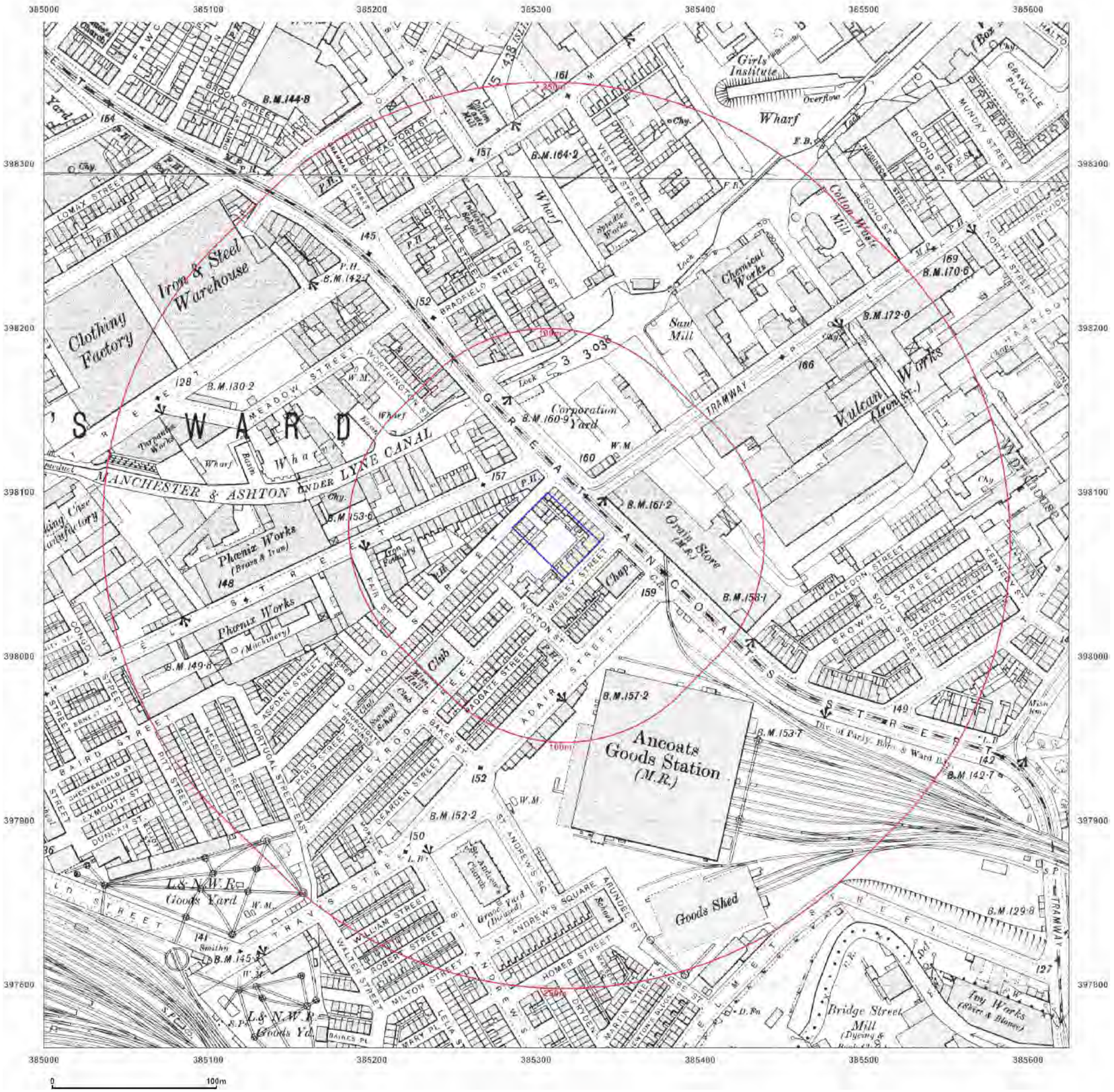
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: County Series

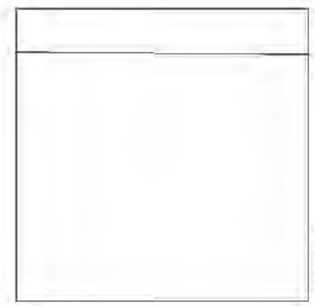
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Revised 1905
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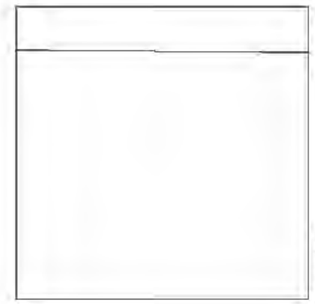
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Report Ref: HYD-5465768
Grid Ref: 385312, 398074

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Revised 1916
Edition 1922
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Levelled 1915



Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915

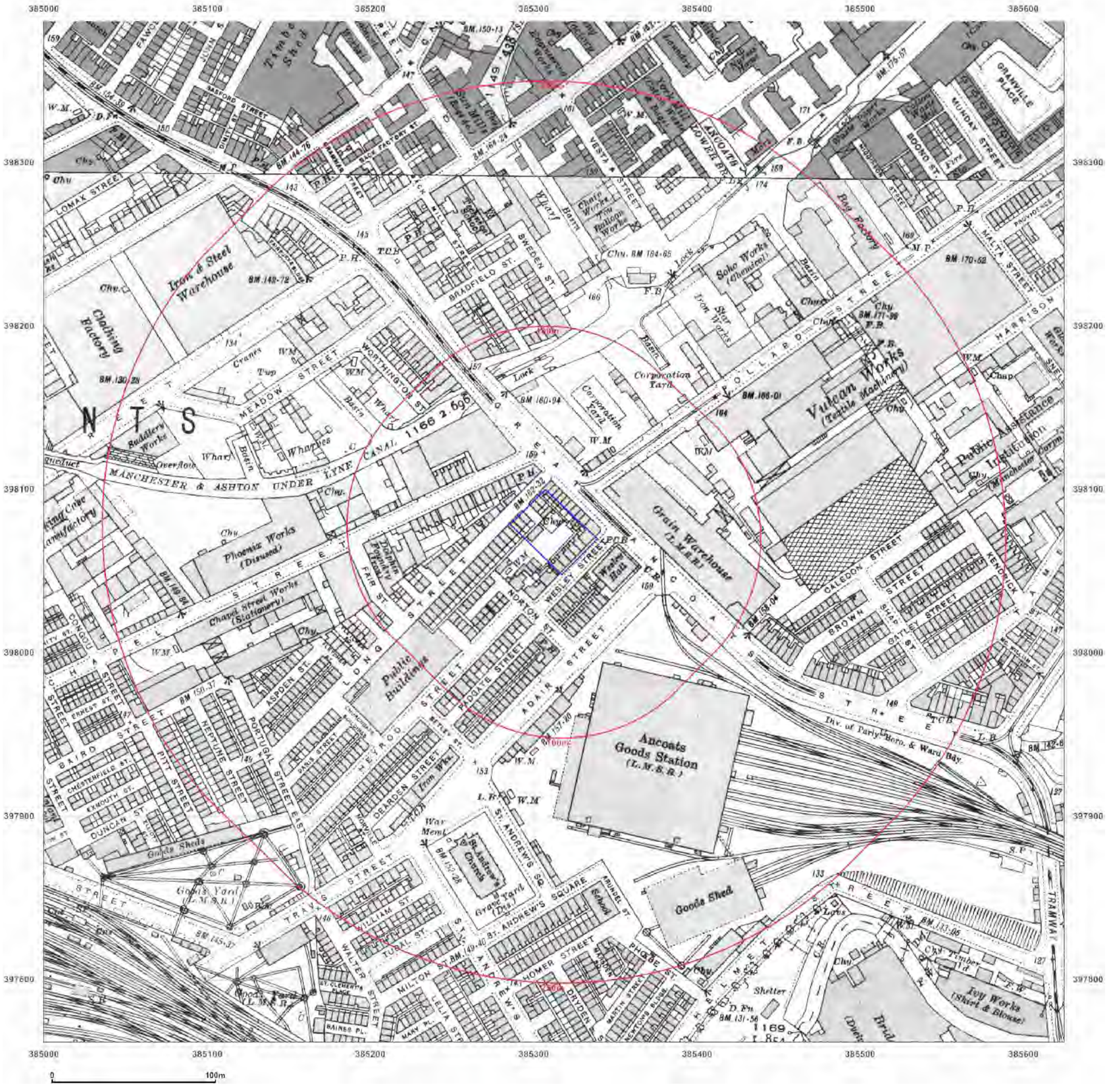
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Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

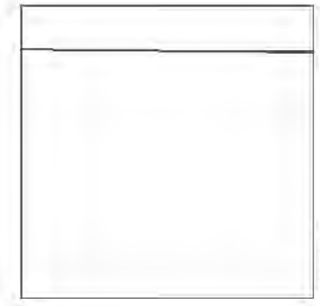
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Revised 1931
Edition N/A
Copyright N/A
Levelled 1927

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

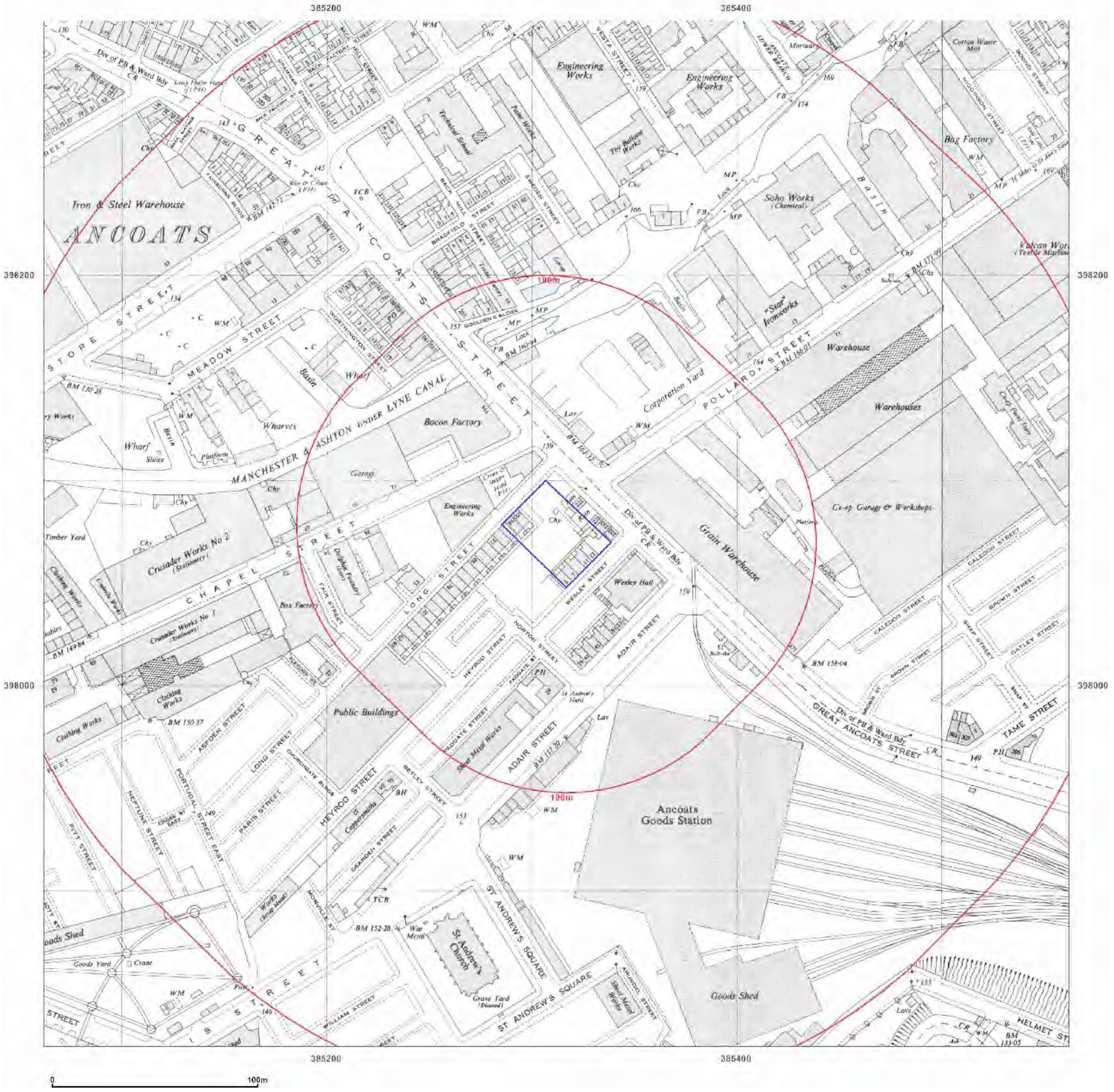
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Groundsure INSIGHTS

Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET,
MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid
Map date: **1948**
Scale: 1:1,250
Printed at: 1:2,000

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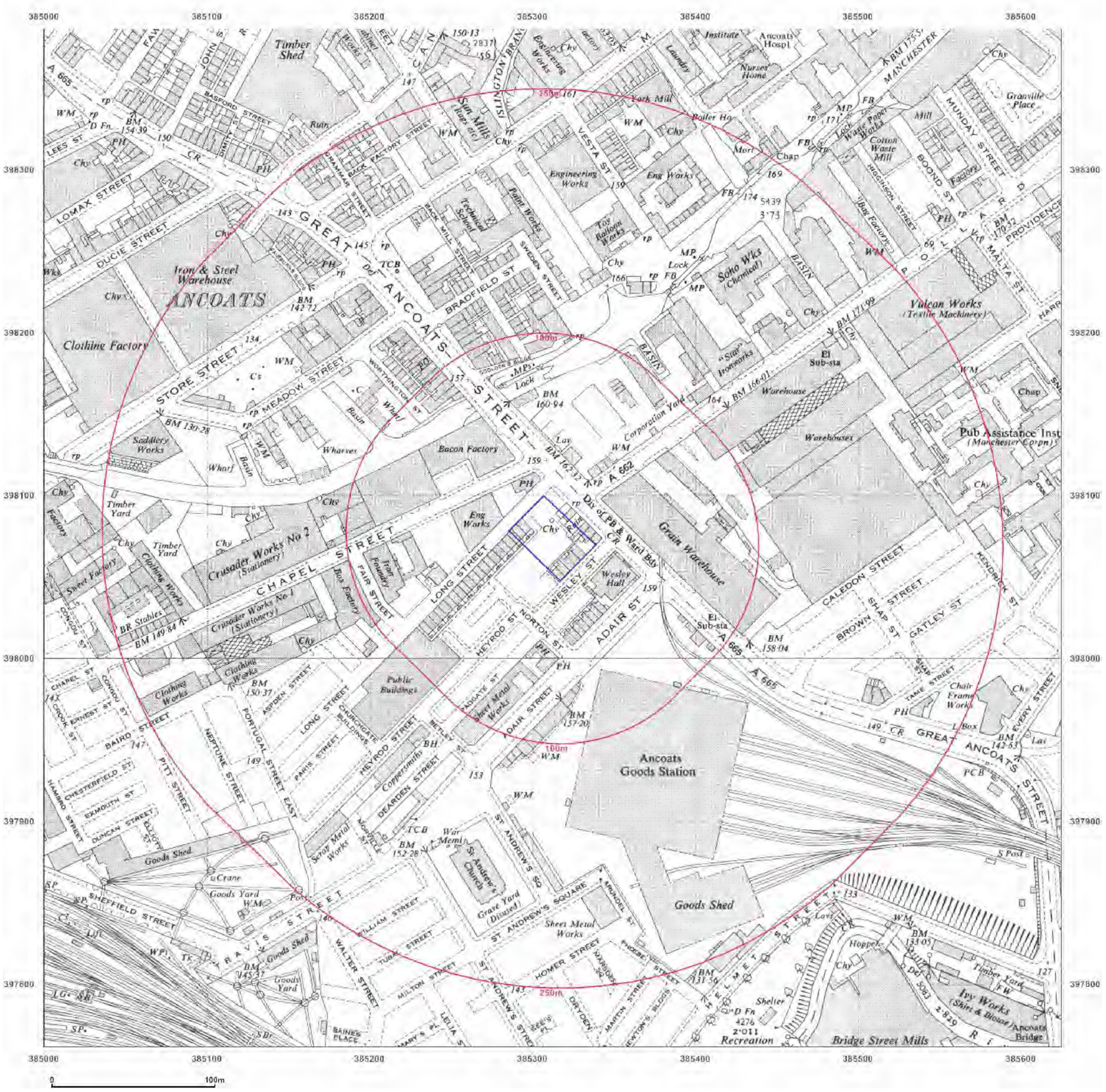
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Groundsure INSIGHTS

Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

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Map date: **1948-1953**

Scale: 1:2,500

Printed at: 1:2,500

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Revised 1948
Edition N/A
Copyright 1954
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1949
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1950
Levelled 1929

Surveyed 1948
Revised 1948
Edition N/A
Copyright 1949
Levelled 1929

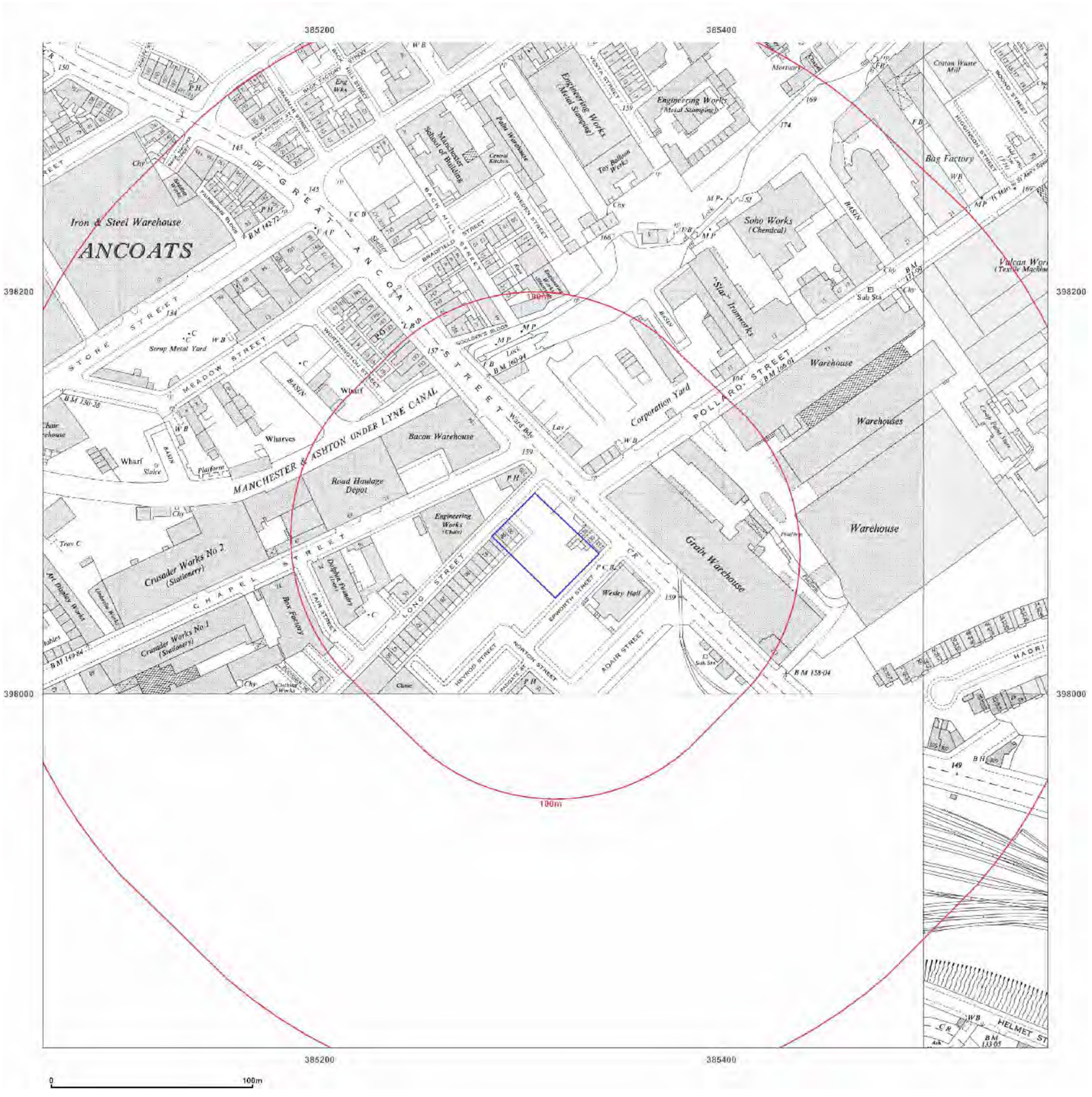
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Groundsure INSIGHTS

Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

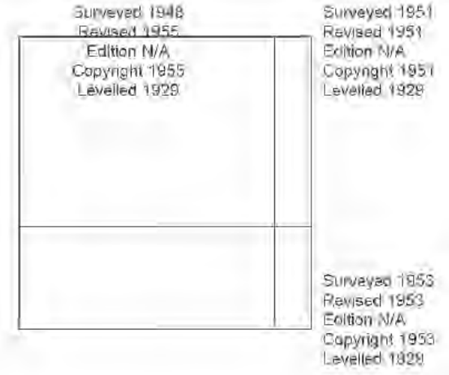
Map Name: National Grid

Map date: **1951-1955**

Scale: 1:1,250

Printed at: 1:2,000

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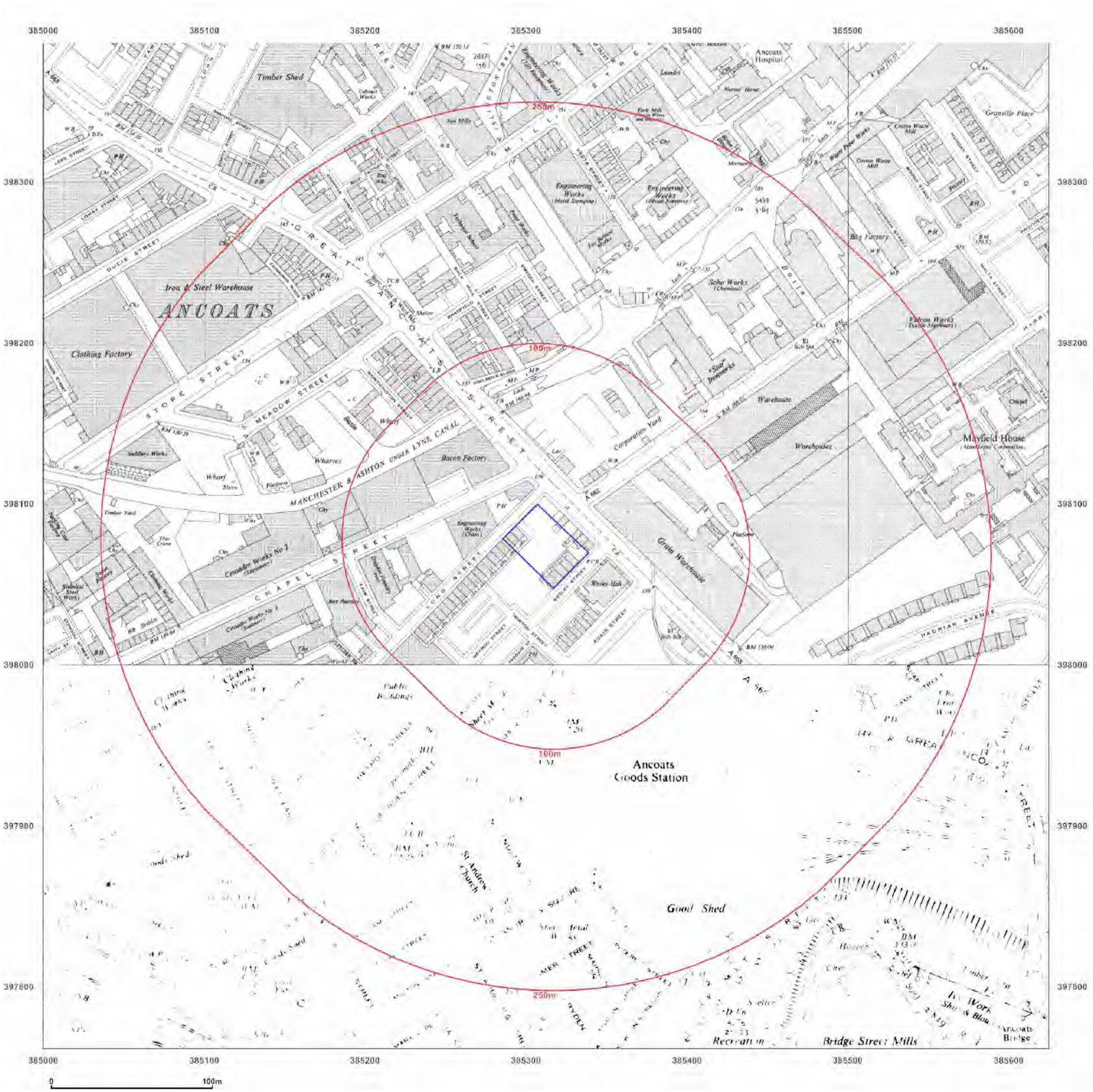
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Groundsure INSIGHTS

Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET,
MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

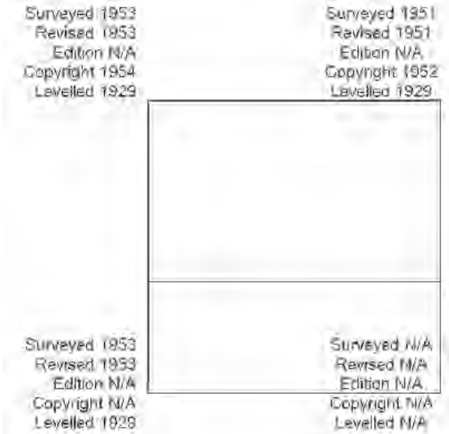
Map Name: National Grid

Map date: **1950-1955**

Scale: 1:2,500

Printed at: 1:2,500

N
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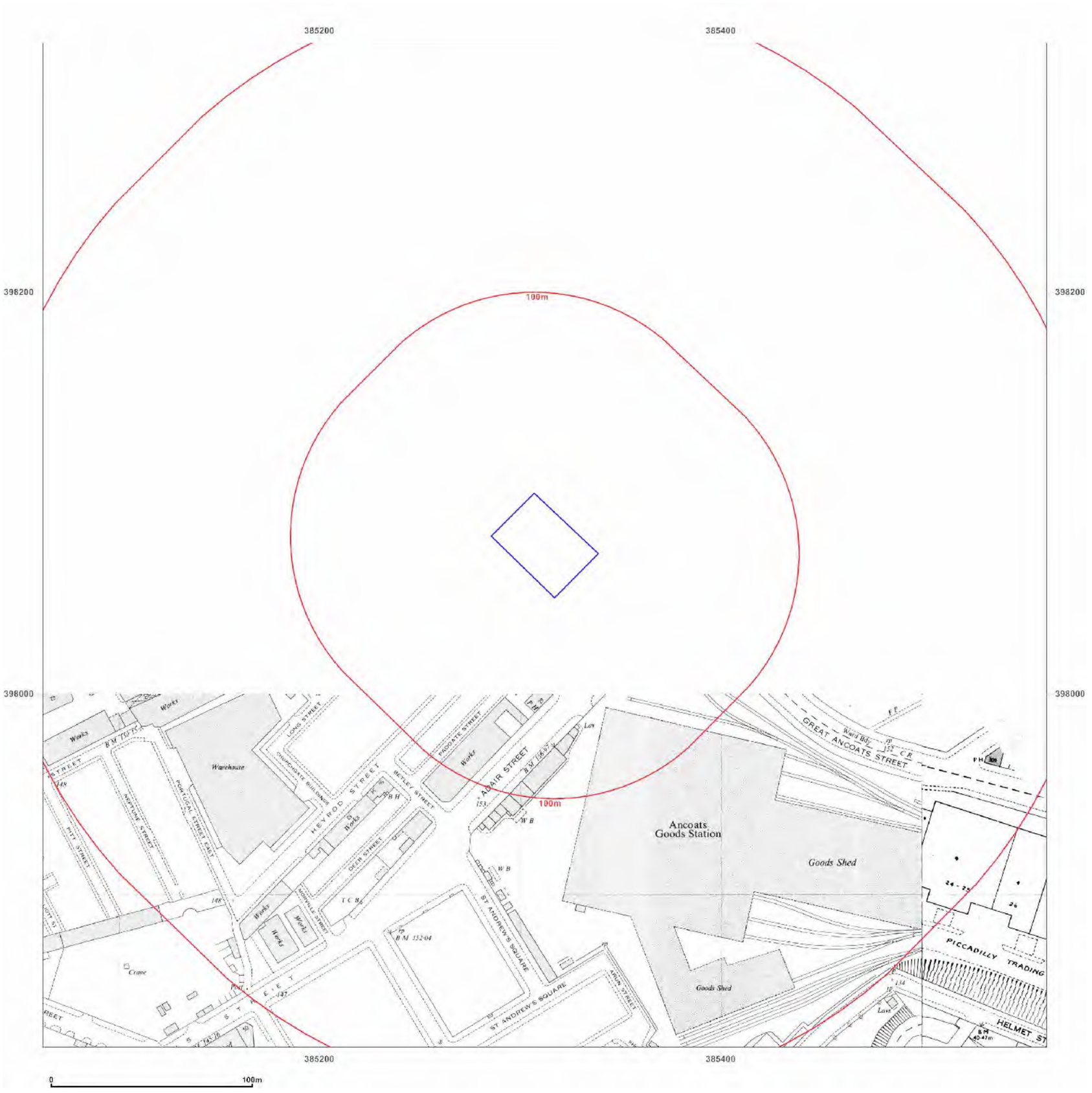
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Groundsure INSIGHTS

Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET,
MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

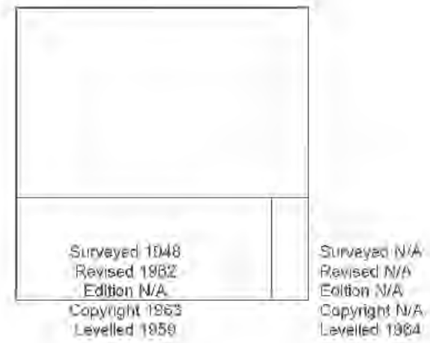
Map Name: National Grid

Map date: **1963-1964**

Scale: 1:1,250

Printed at: 1:2,000

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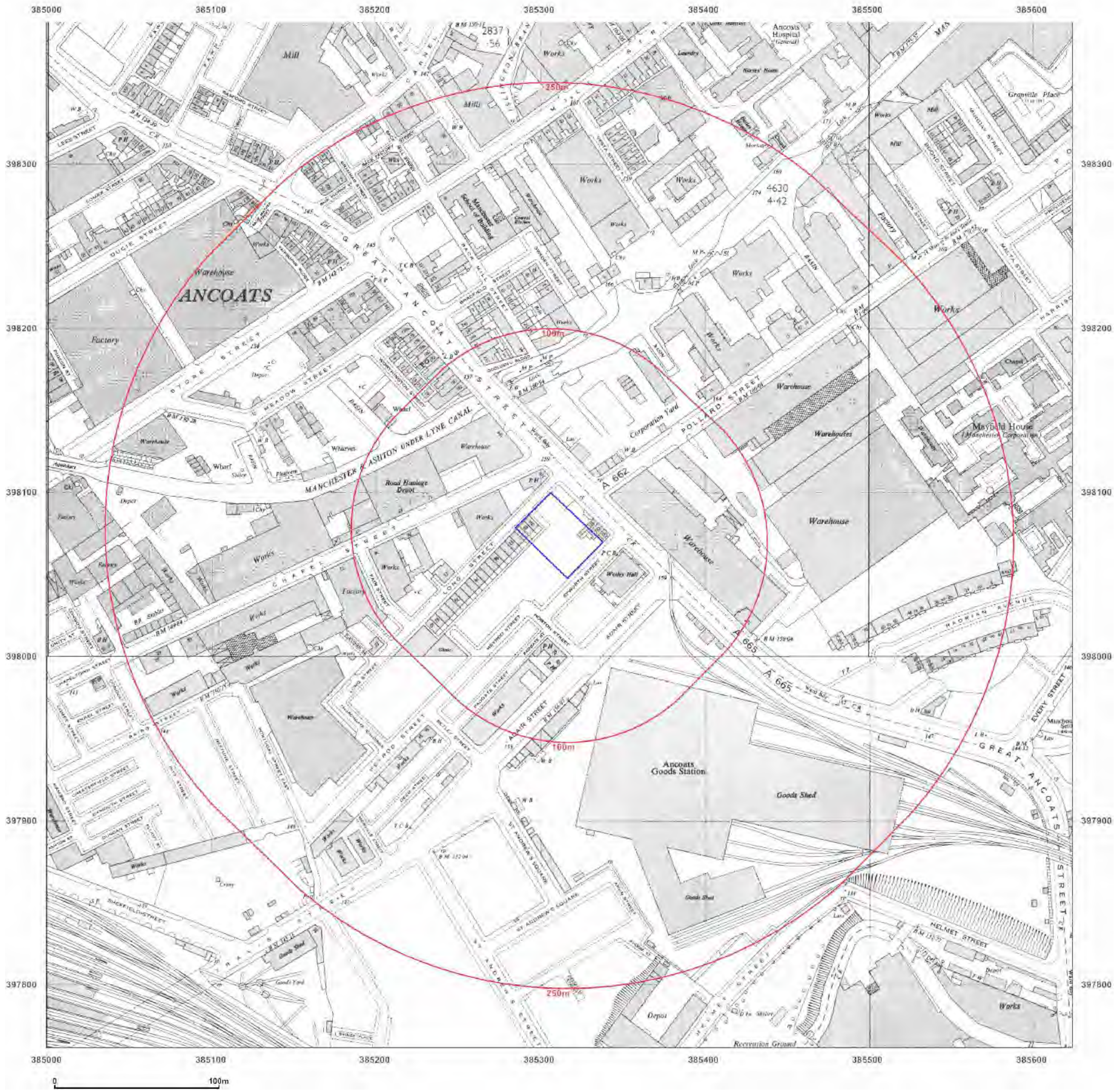
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Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1965**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised 1964
Edition N/A
Copyright 1965
Levelled 1959

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1965
Levelled 1959

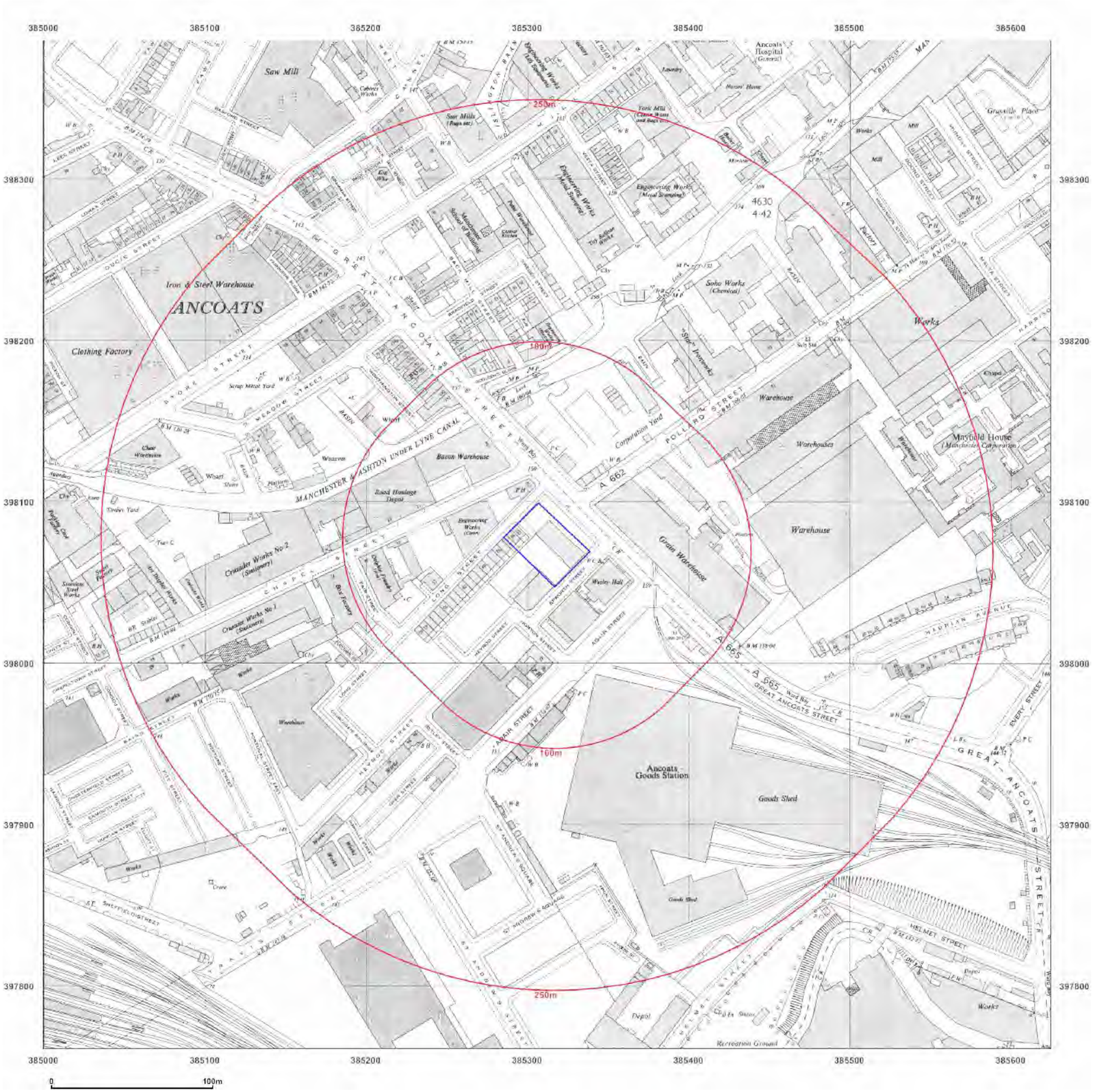
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1967-1968**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1967
Revised 1967
Edition N/A
Copyright 1969
Levelled 1964

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1964

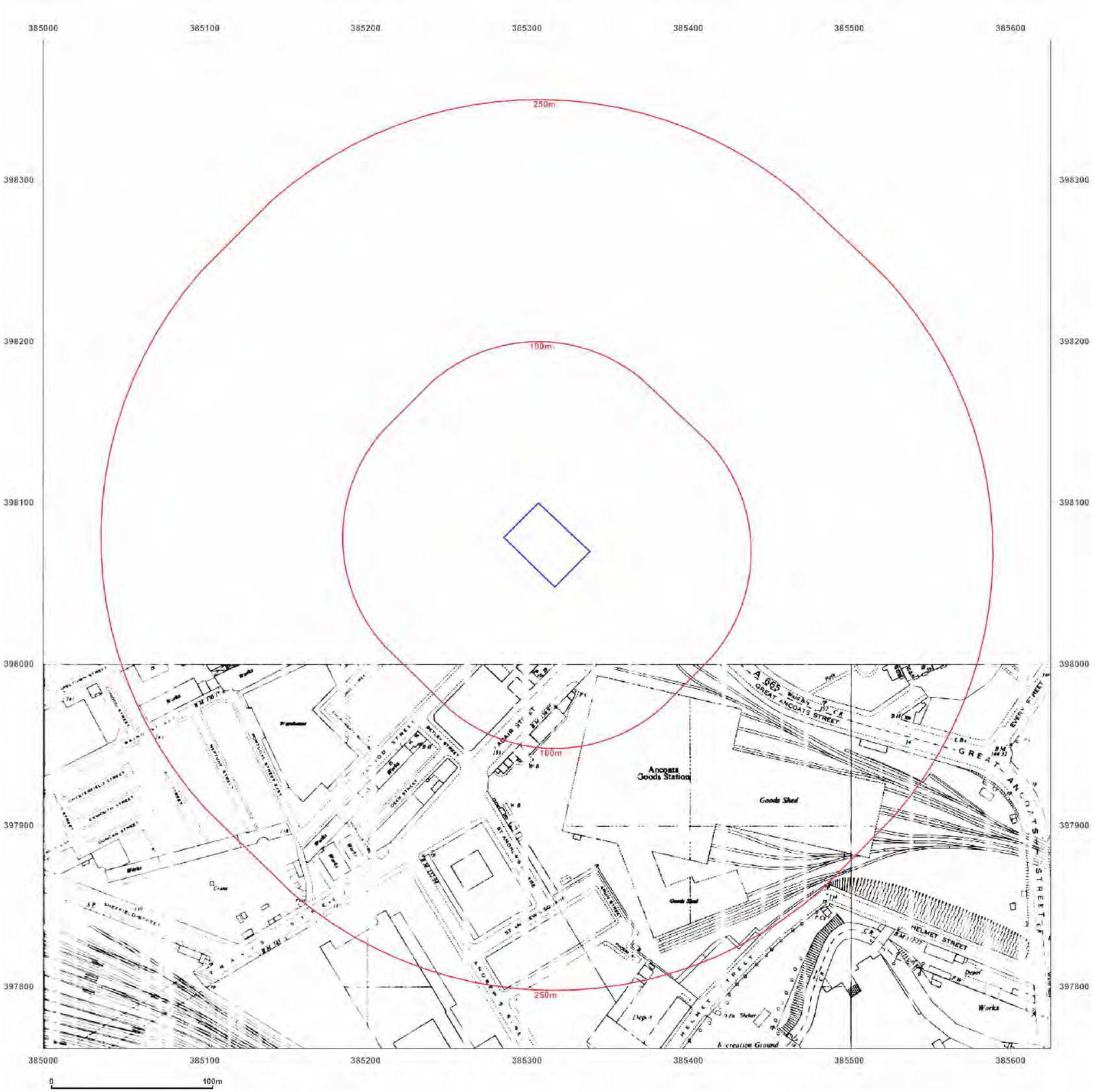
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Site Details:

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MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1969-1970**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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

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

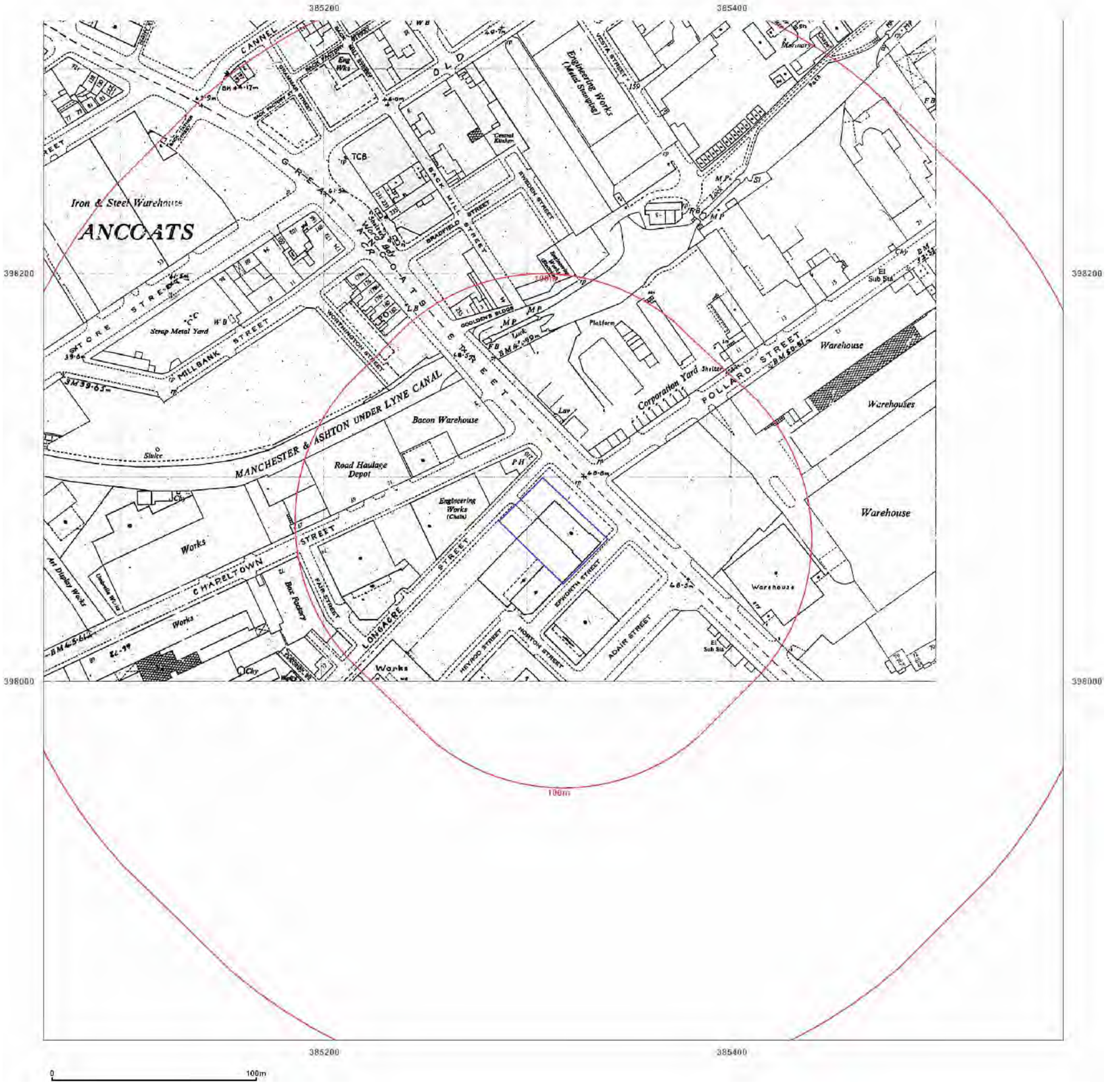
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Site Details:

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MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1978**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1978
Levelled 1954

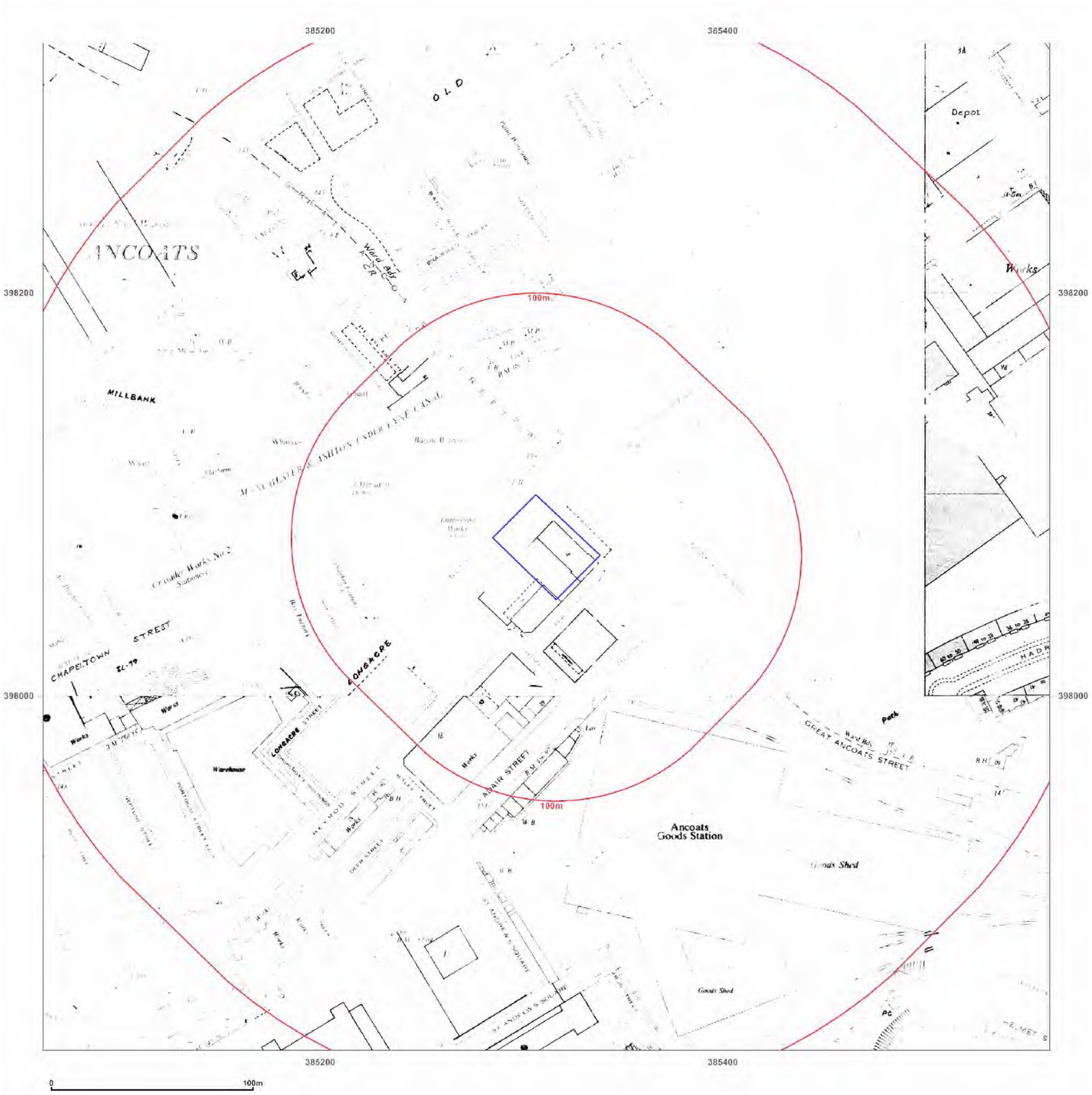
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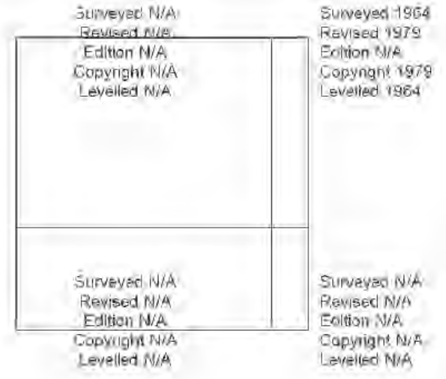
Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET,
MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid
Map date: **1974-1979**
Scale: 1:1,250
Printed at: 1:2,000

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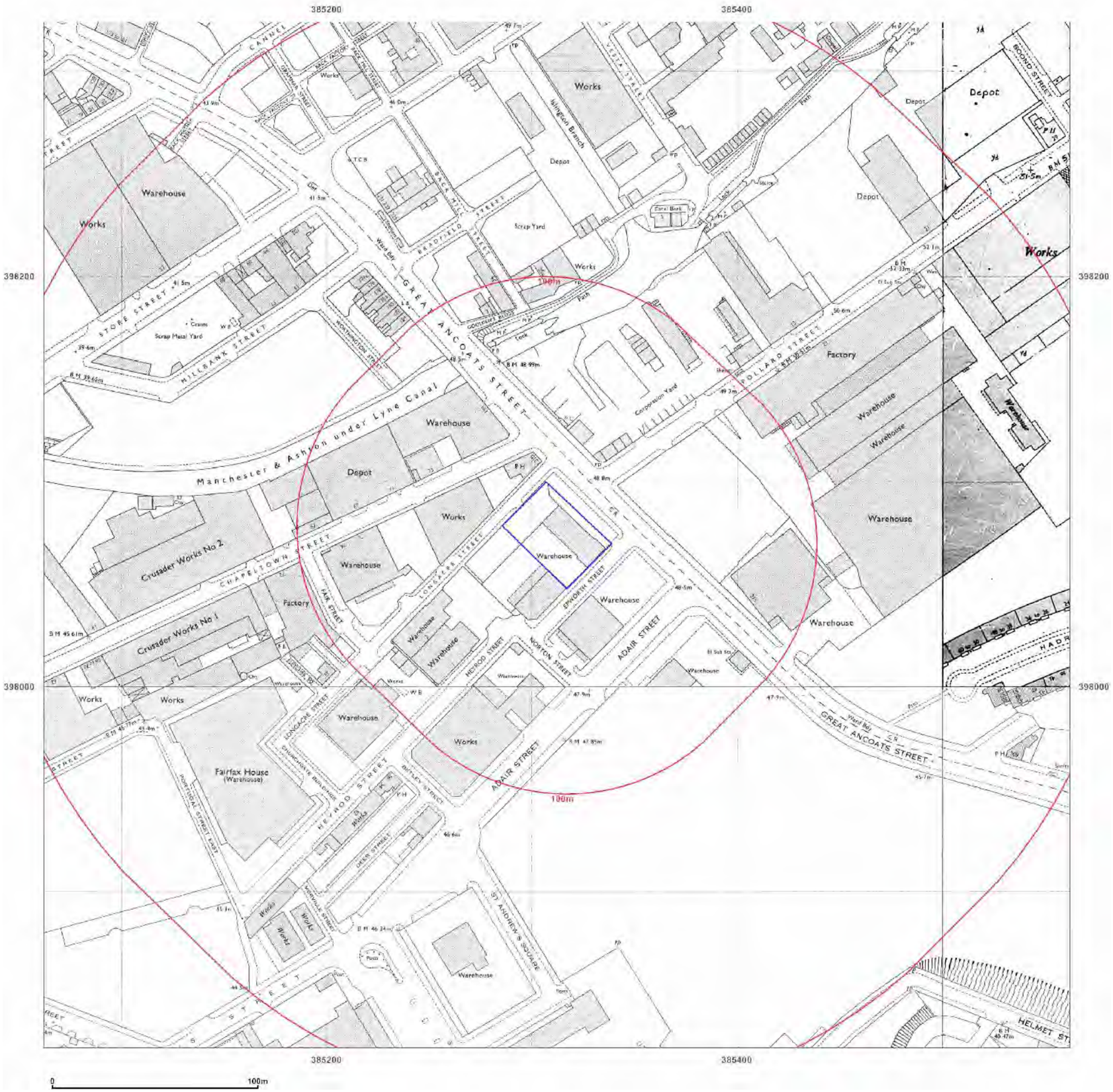
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

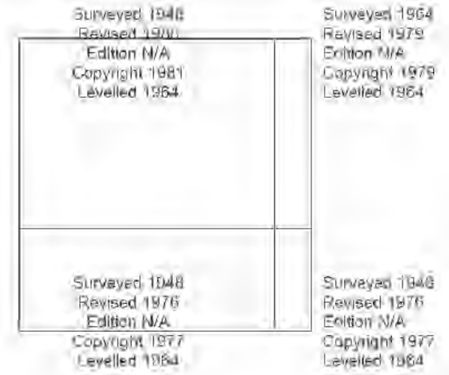
Map Name: National Grid

Map date: **1977-1981**

Scale: 1:1,250

Printed at: 1:2,000

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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1985-1988**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1964 Revised 1988 Edition N/A Copyright 1988 Levelled 1964	Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A
Surveyed 1964 Revised 1985 Edition N/A Copyright 1985 Levelled 1964	Surveyed 1964 Revised 1986 Edition N/A Copyright 1986 Levelled 1964

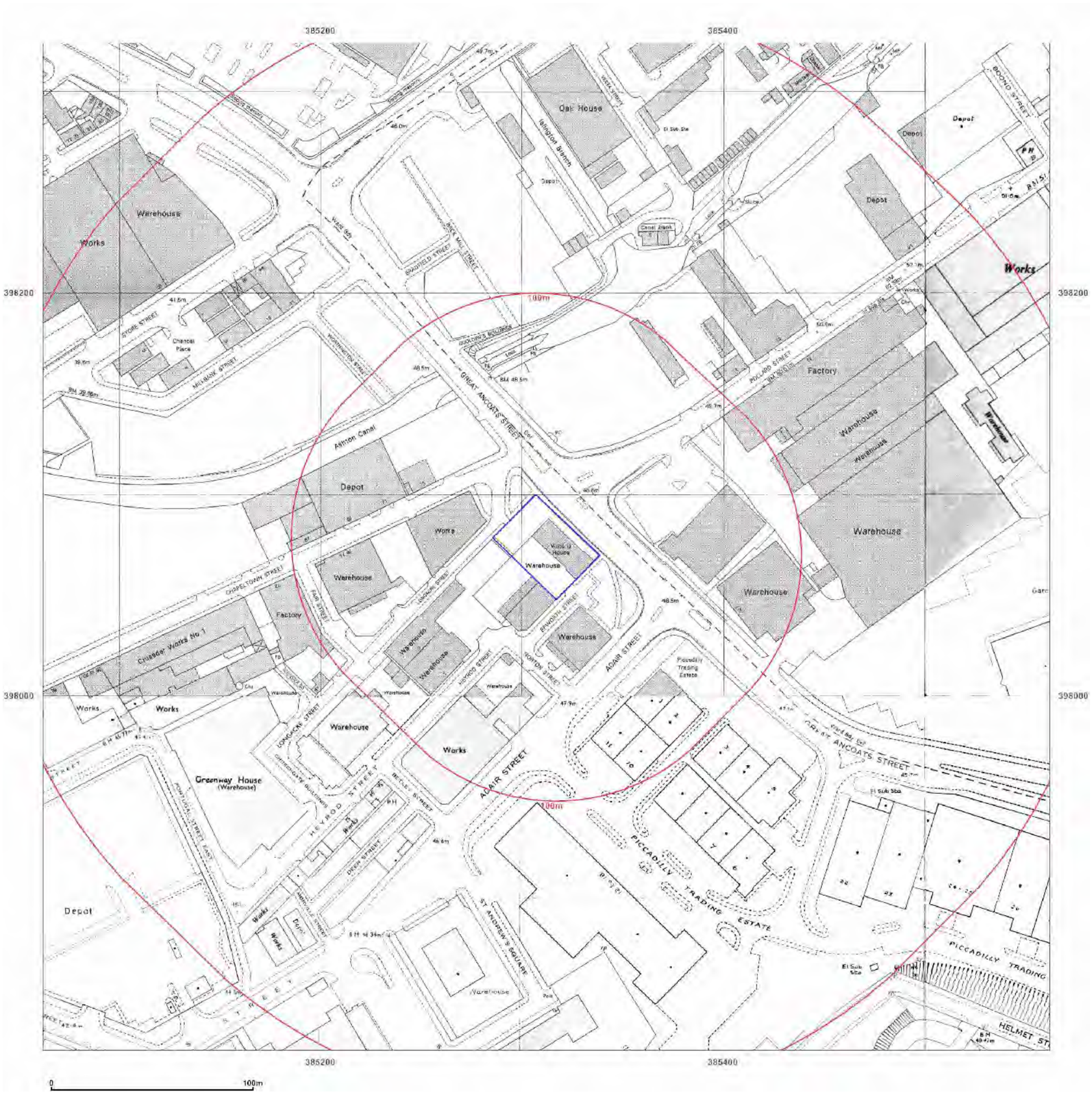
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1987-1991**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed 1948 Revised 1989 Edition N/A Copyright 1989 Levelled N/A	Surveyed 1964 Revised 1989 Edition N/A Copyright 1989 Levelled 1964
Surveyed 1964 Revised 1991 Edition N/A Copyright 1991 Levelled 1984	Surveyed 1964 Revised 1987 Edition N/A Copyright 1987 Levelled 1964

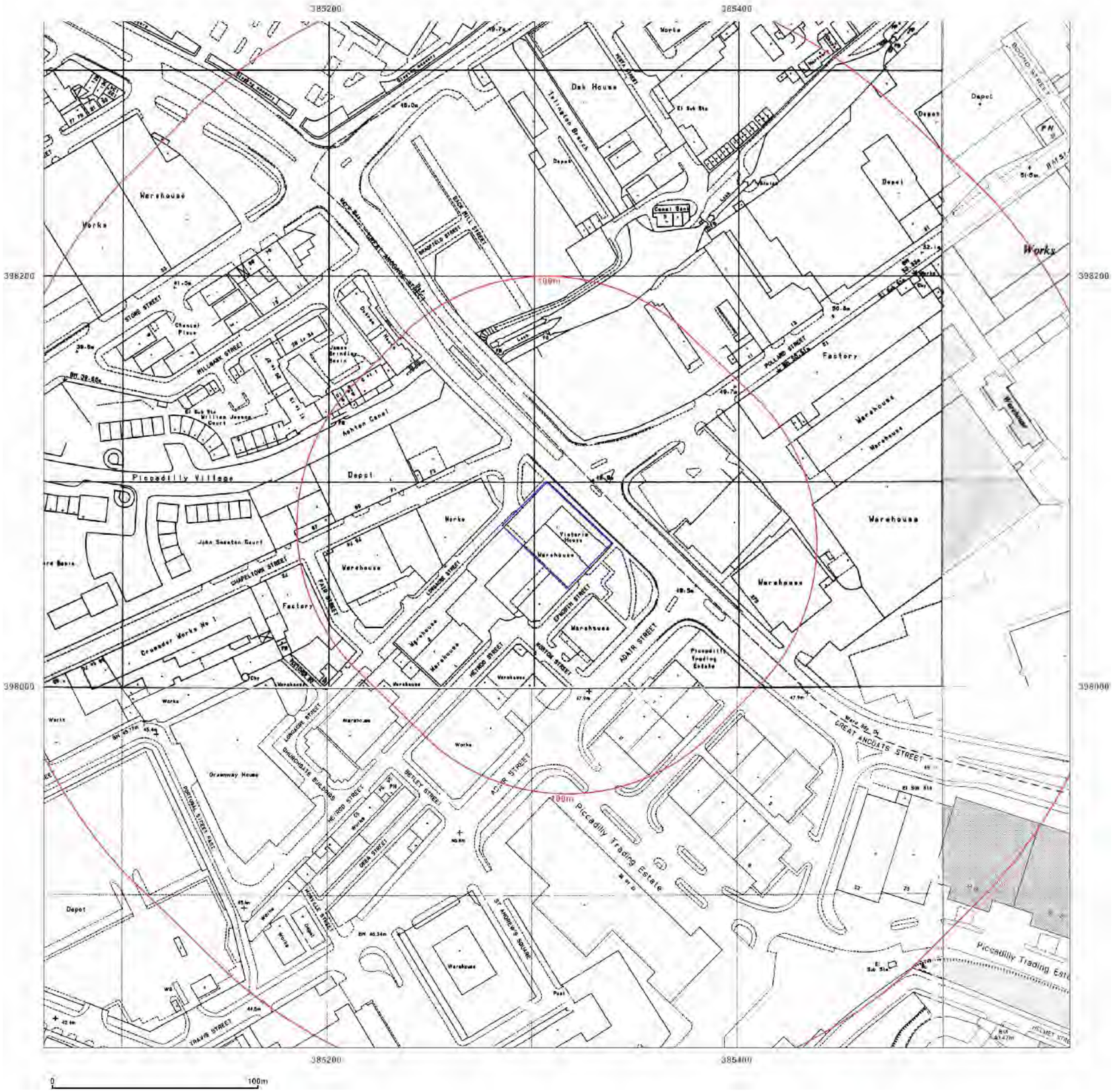
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1988-1992**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1948 Revised 1980 Edition N/A Copyright 1991 Levelled N/A	Surveyed 1964 Revised 1990 Edition N/A Copyright 1990 Levelled 1964
Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A	Surveyed 1948 Revised 1988 Edition N/A Copyright 1989 Levelled N/A

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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

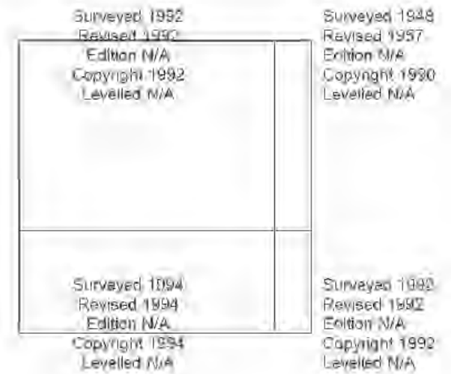
Map Name: National Grid

Map date: **1990-1994**

Scale: 1:1,250

Printed at: 1:2,000

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Site Details:

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MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid
Map date: **1991-1994**
Scale: 1:1,250
Printed at: 1:2,000

N
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Surveyed 1948
Revised 1991
Edition N/A
Copyright 1992
Levelled N/A

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

Surveyed 1994
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

Surveyed 1994
Revised 1994
Edition N/A
Copyright 1994
Levelled N/A

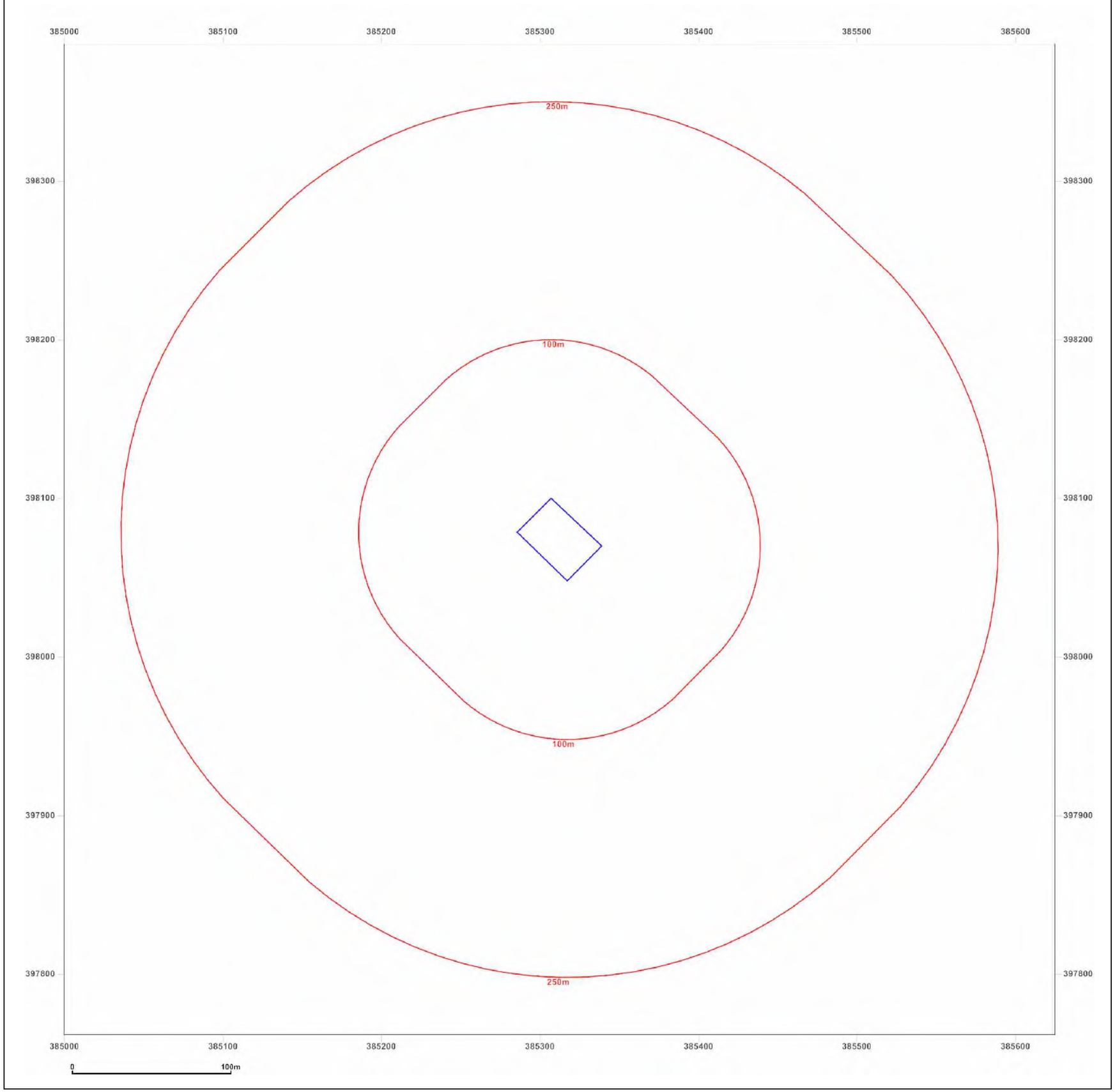
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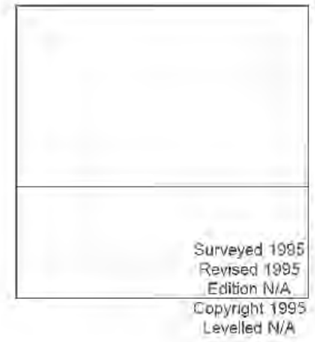
Site Details:

VICTORIA HOUSE, GREAT ANCOATS STREET,
MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid
Map date: **1995**
Scale: 1:2,500
Printed at: 1:2,500

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W E
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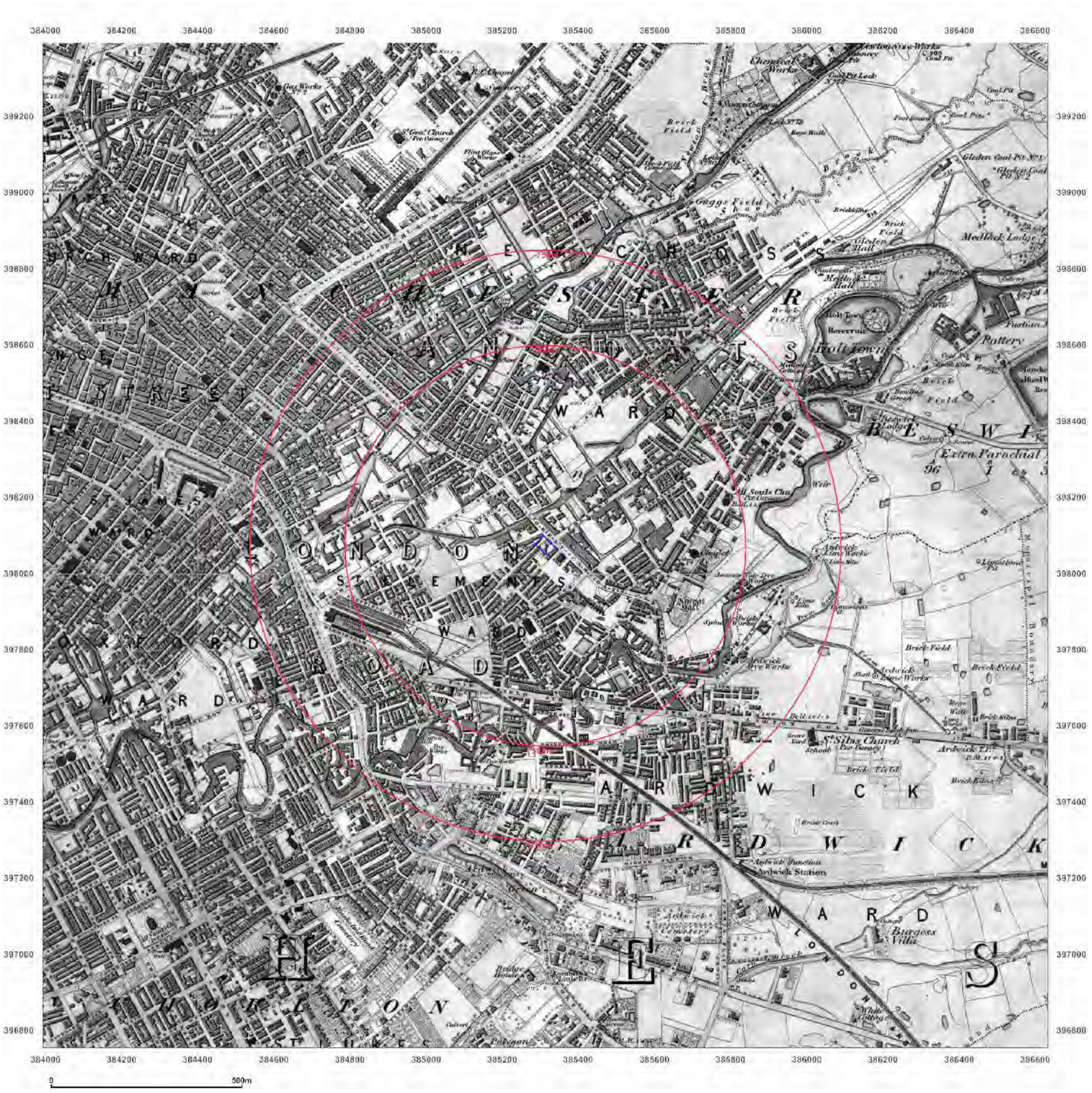
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: County Series
Map date: **1848**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
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Surveyed 1845
Revised N/A
Edition 1848
Copyright N/A
Levelled N/A

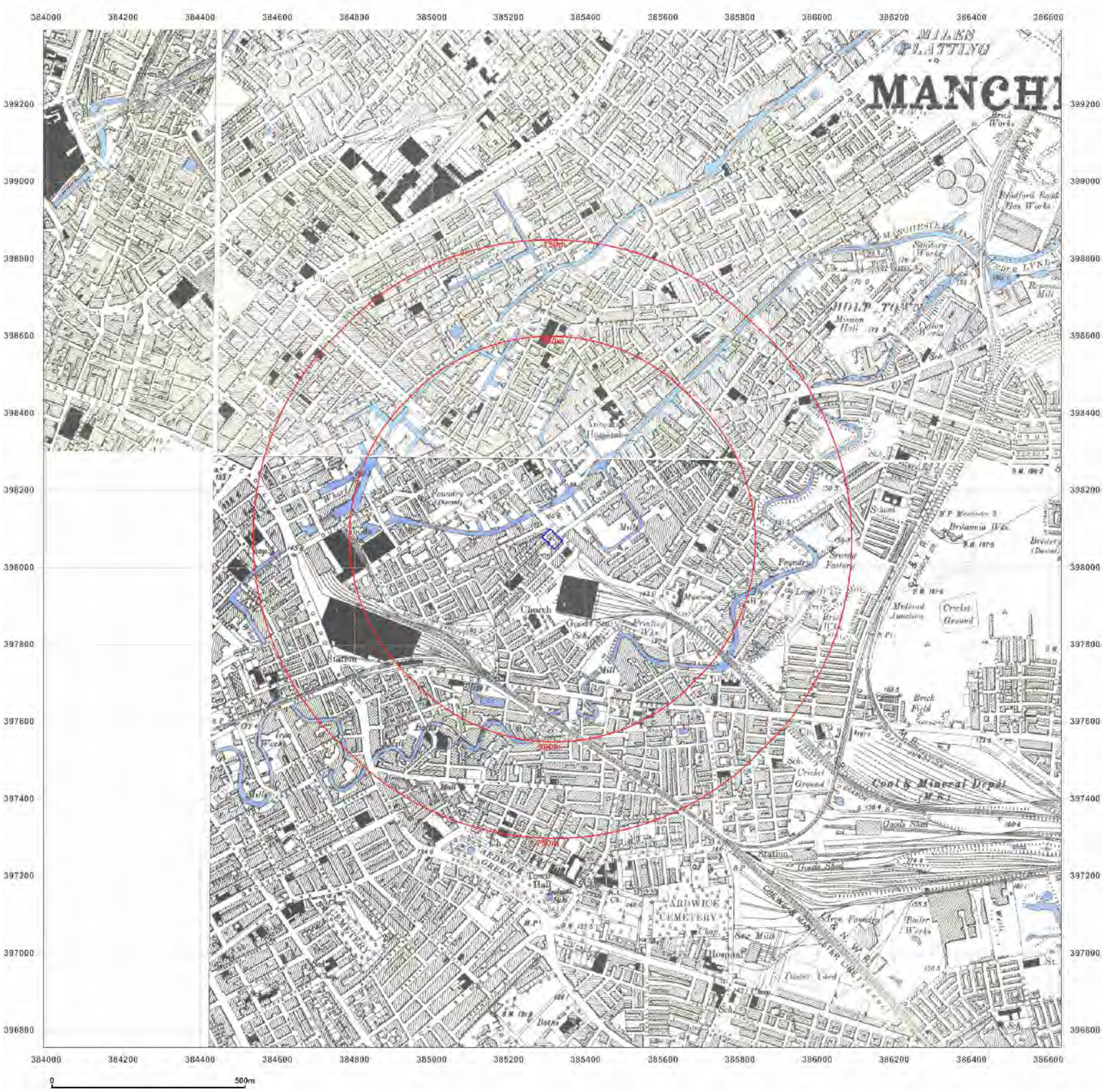
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Groundsure INSIGHTS

Site Details:

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MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

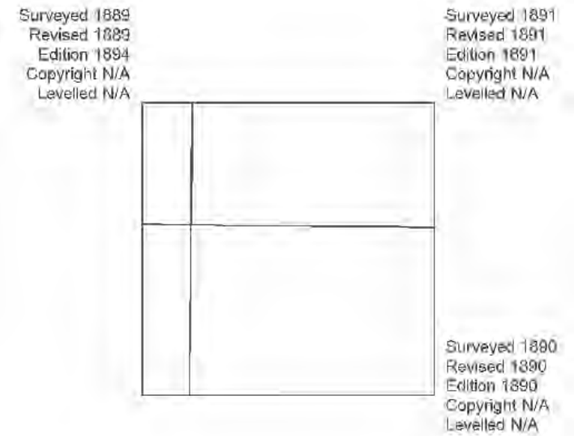
Map Name: County Series

Map date: **1890-1894**

Scale: 1:10,560

Printed at: 1:10,560

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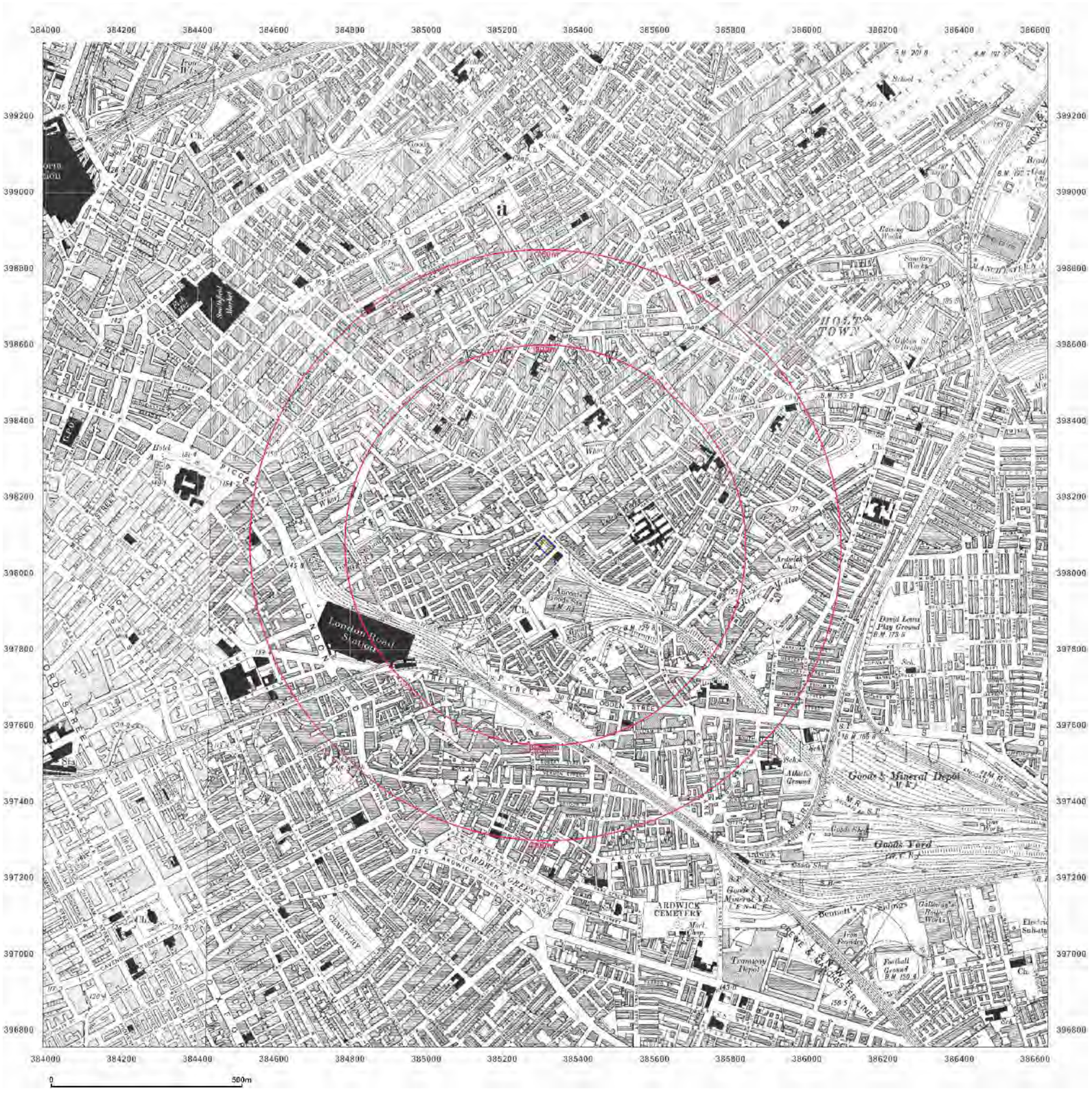


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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: County Series

Map date: **1905-1906**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1906
Edition 1906
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1906
Edition 1906
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

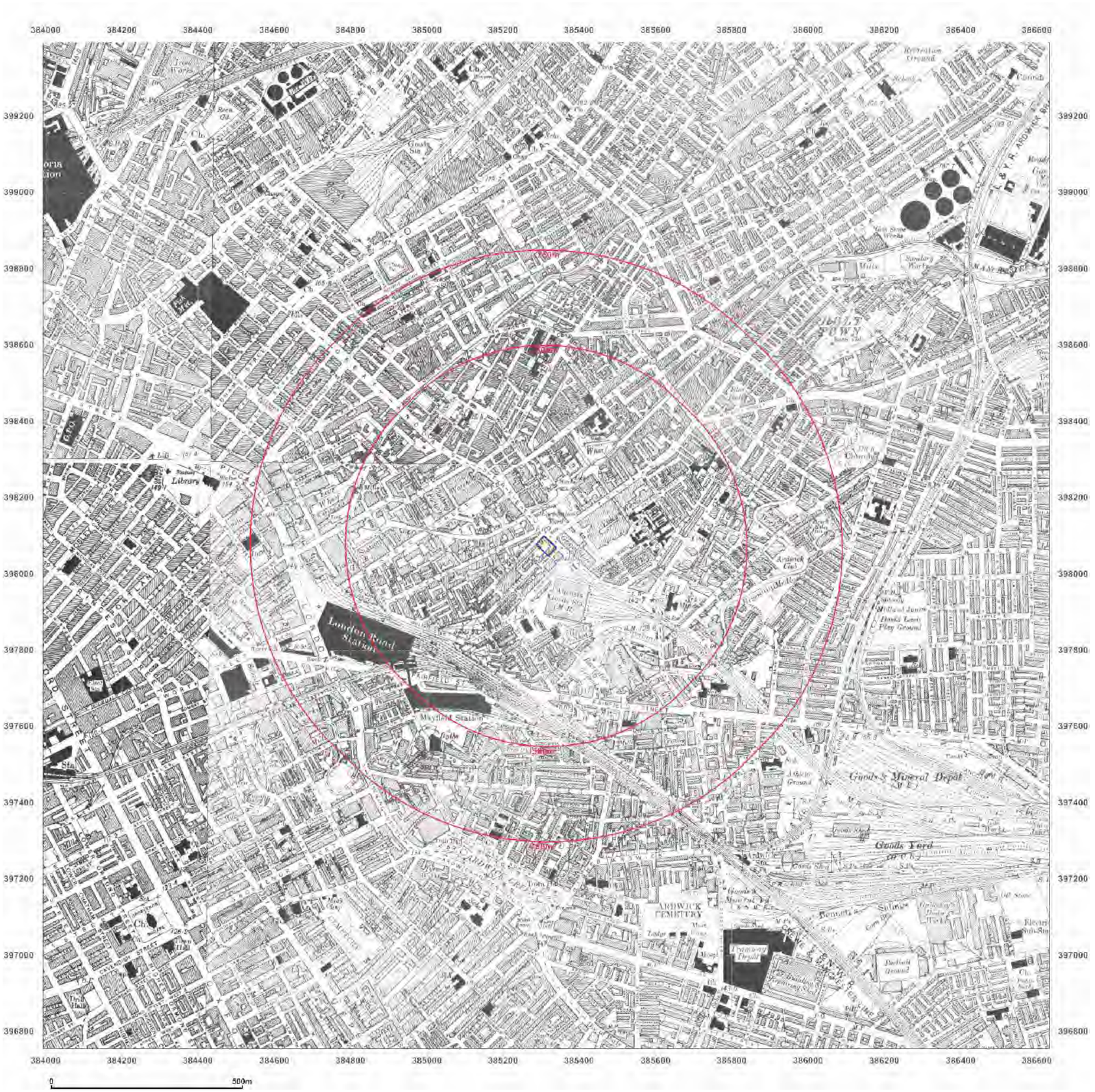
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

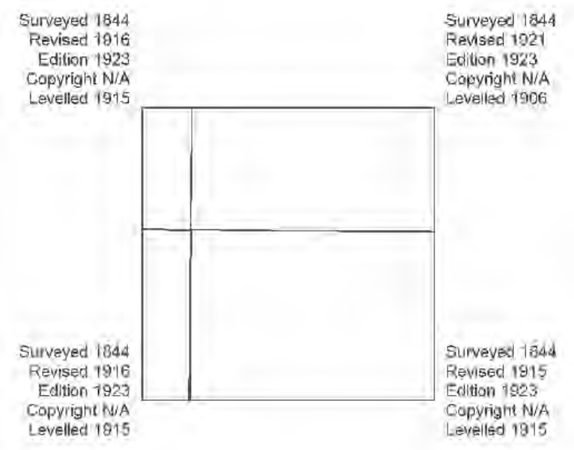
Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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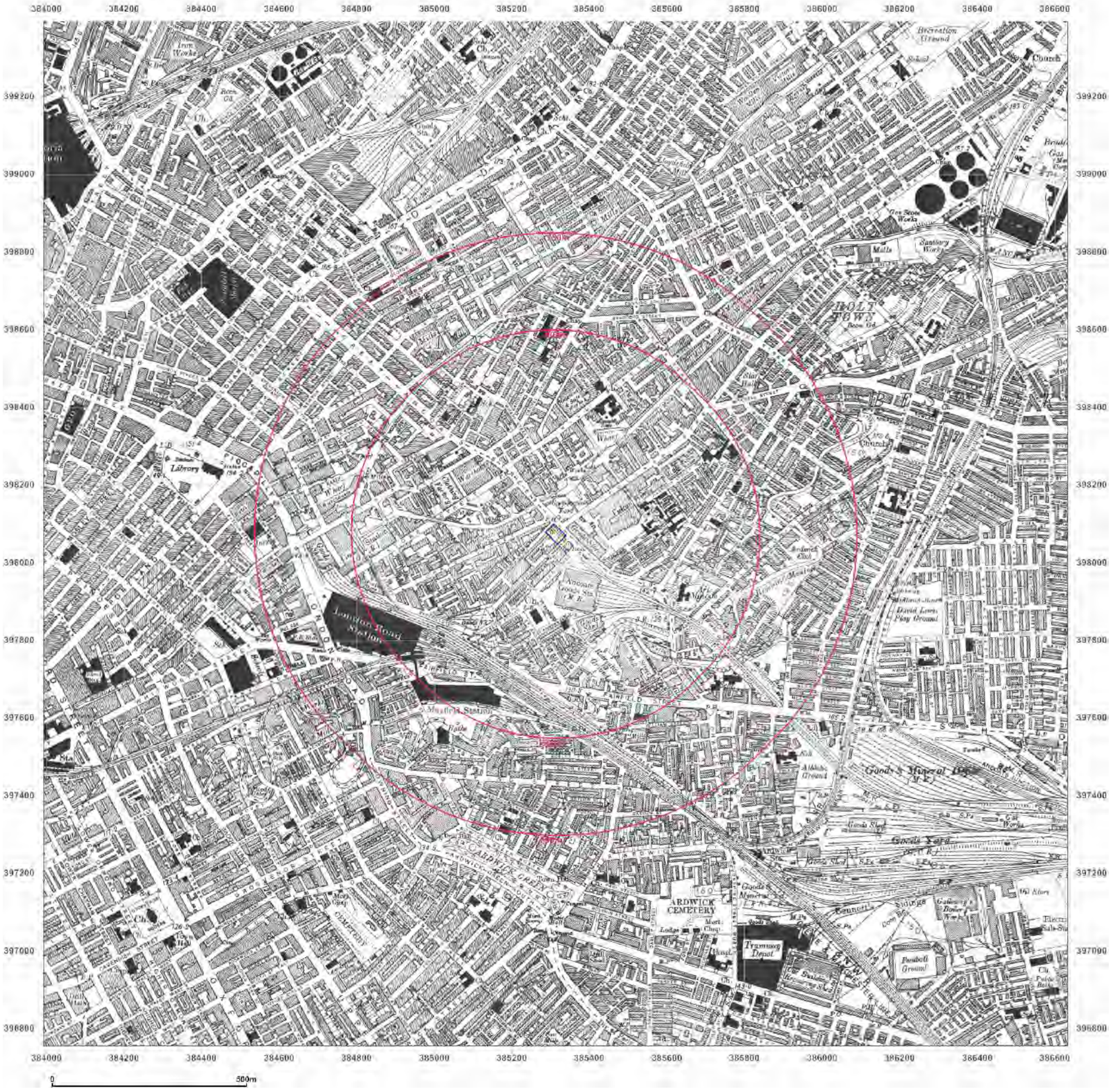
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915

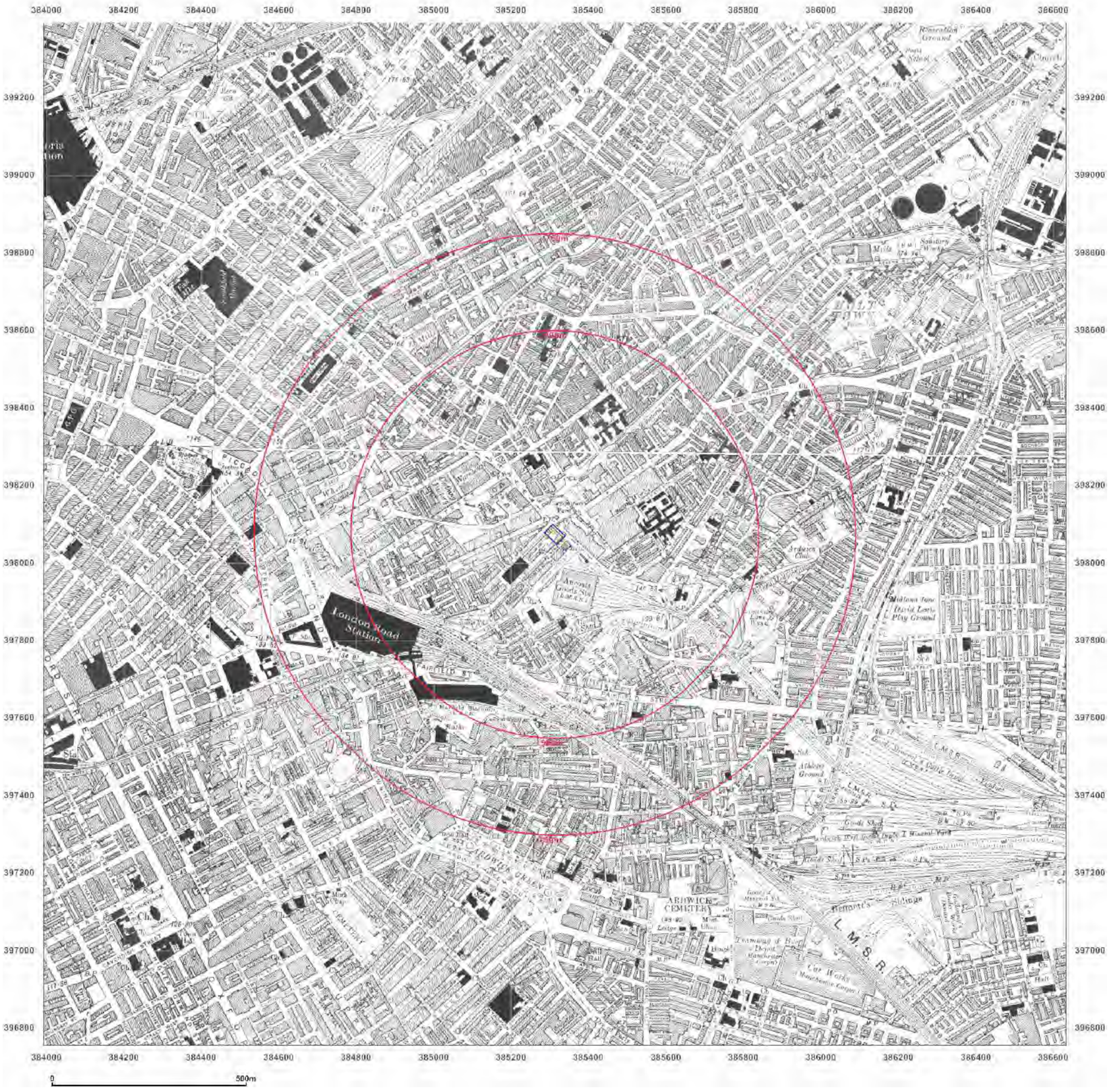
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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

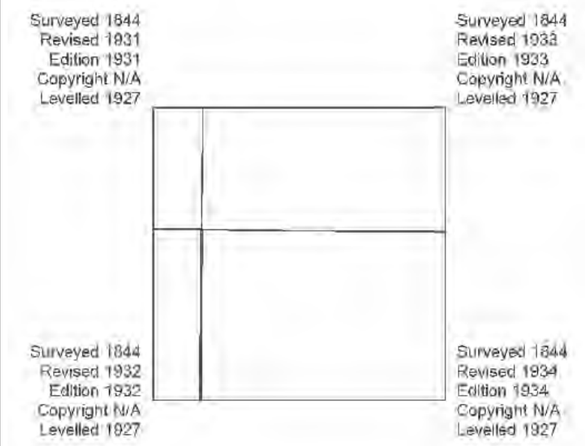
Map Name: County Series

Map date: **1931-1934**

Scale: 1:10,560

Printed at: 1:10,560

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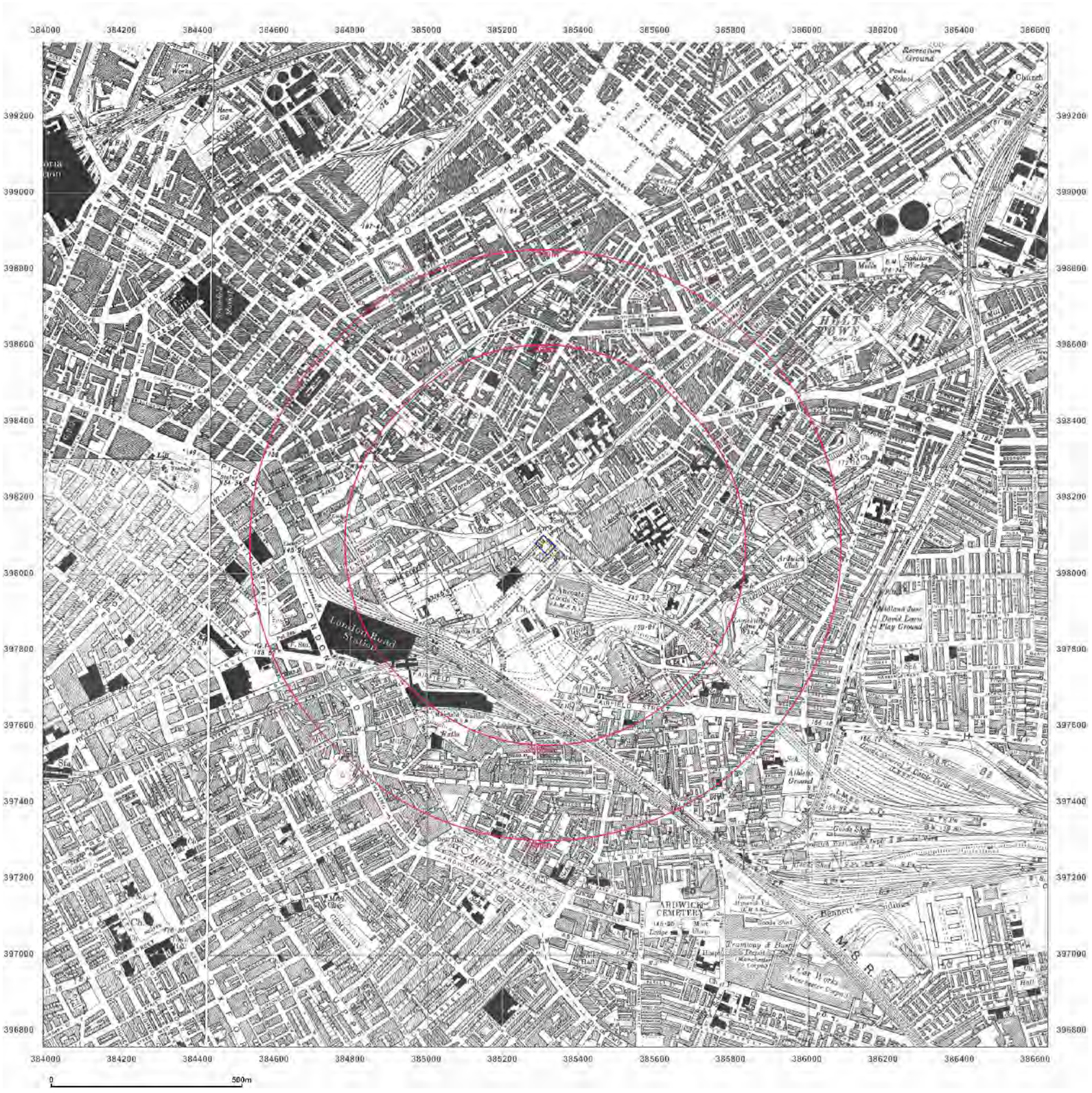
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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

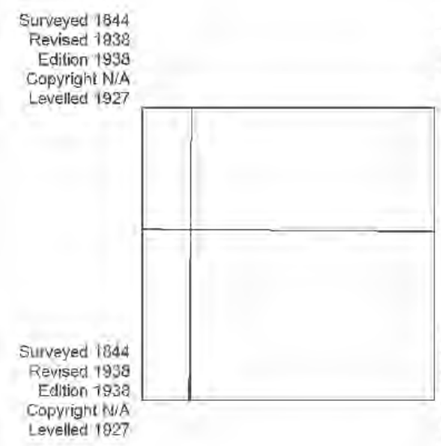
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: Provisional

Map date: **1956**

Scale: 1:10,560

Printed at: 1:10,560

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Revised 1956
Edition N/A
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Levelled N/A

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Edition N/A
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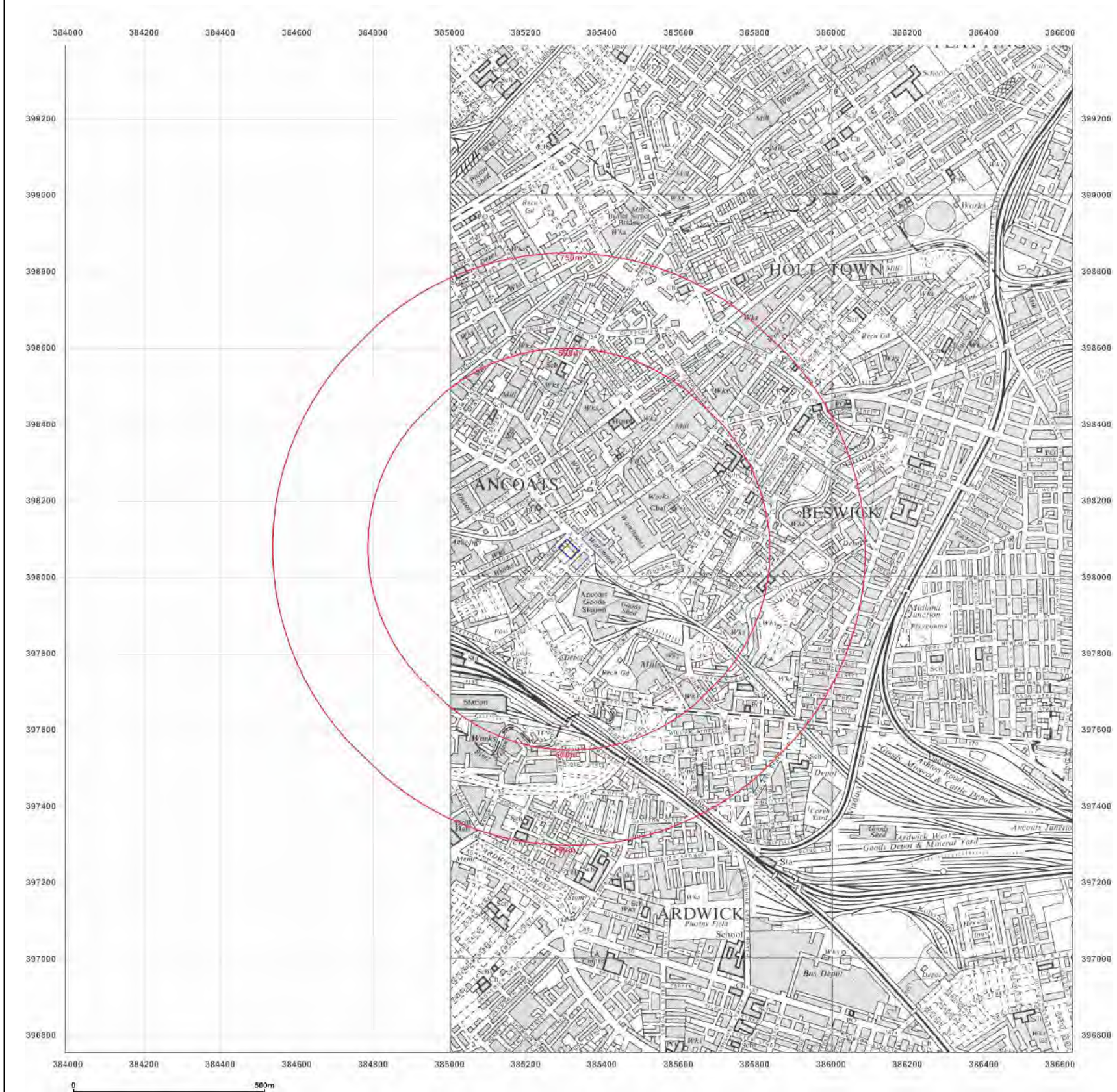
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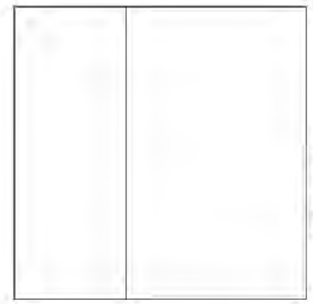
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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: Provisional
Map date: **1968**
Scale: 1:10,560
Printed at: 1:10,560

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

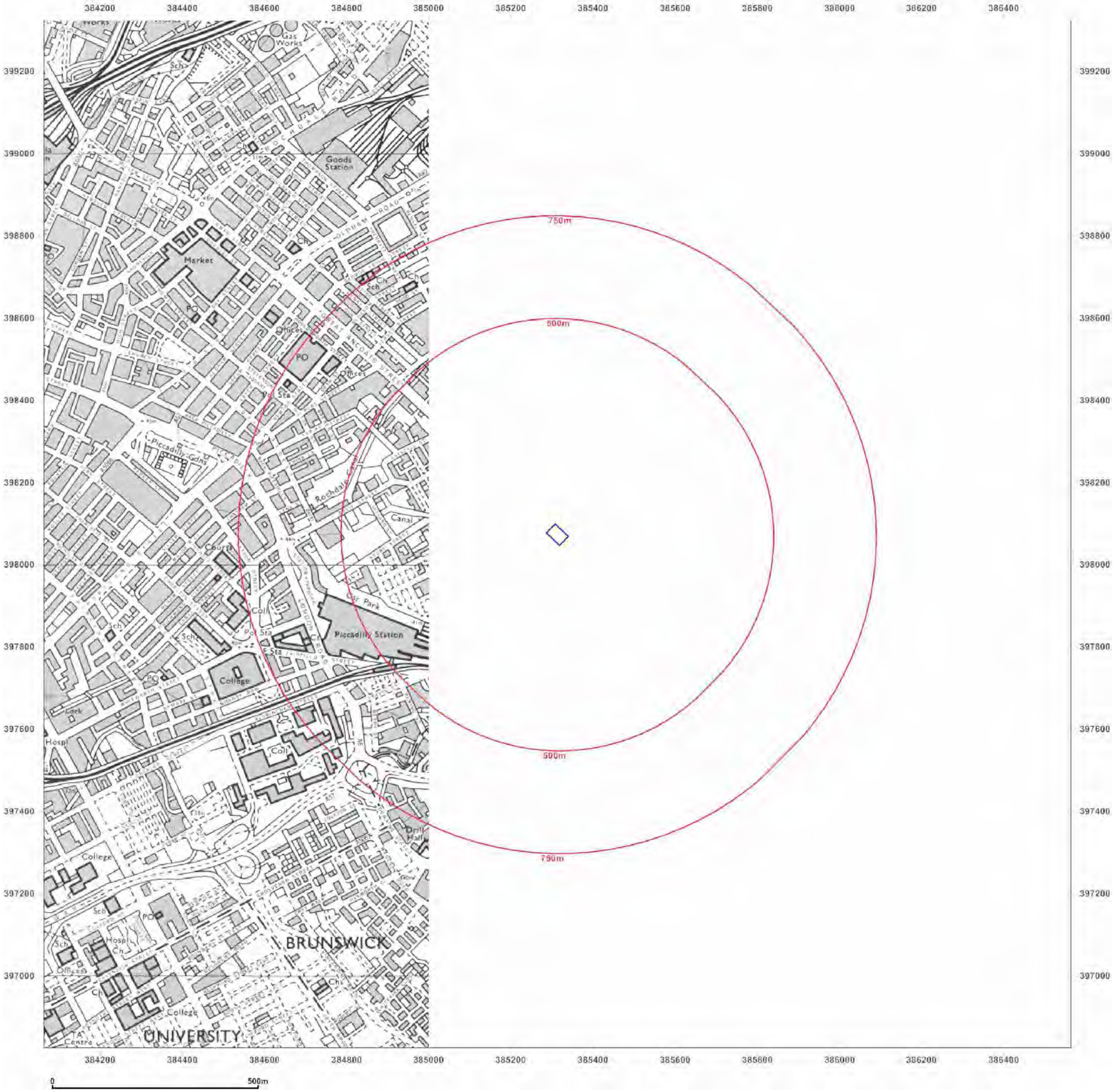
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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

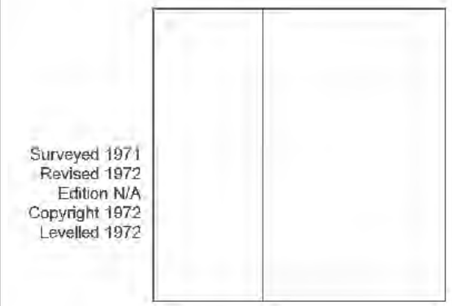
Map Name: National Grid

Map date: **1972**

Scale: 1:10,000

Printed at: 1:10,000

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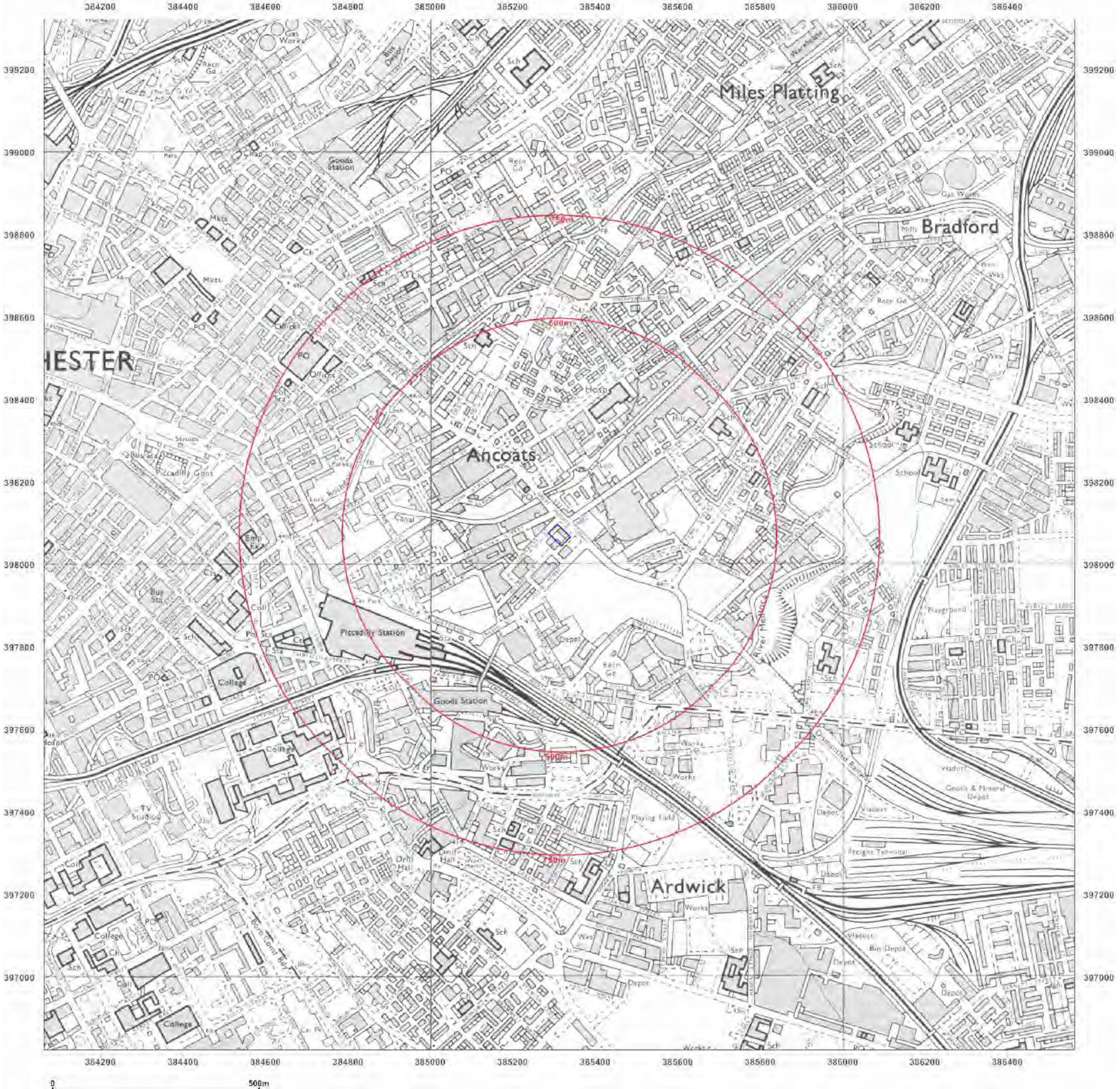
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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

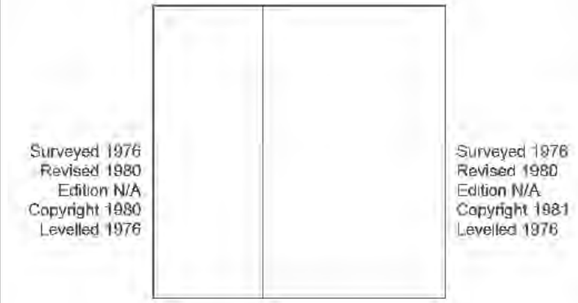
Map Name: National Grid

Map date: **1980-1981**

Scale: 1:10,000

Printed at: 1:10,000

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1985**

Scale: 1:10,000

Printed at: 1:10,000

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Revised 1985
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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **1988-1991**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1986
Revised 1988
Edition N/A
Copyright 1988
Levelled 1981

Surveyed 1985
Revised 1991
Edition N/A
Copyright 1991
Levelled 1981

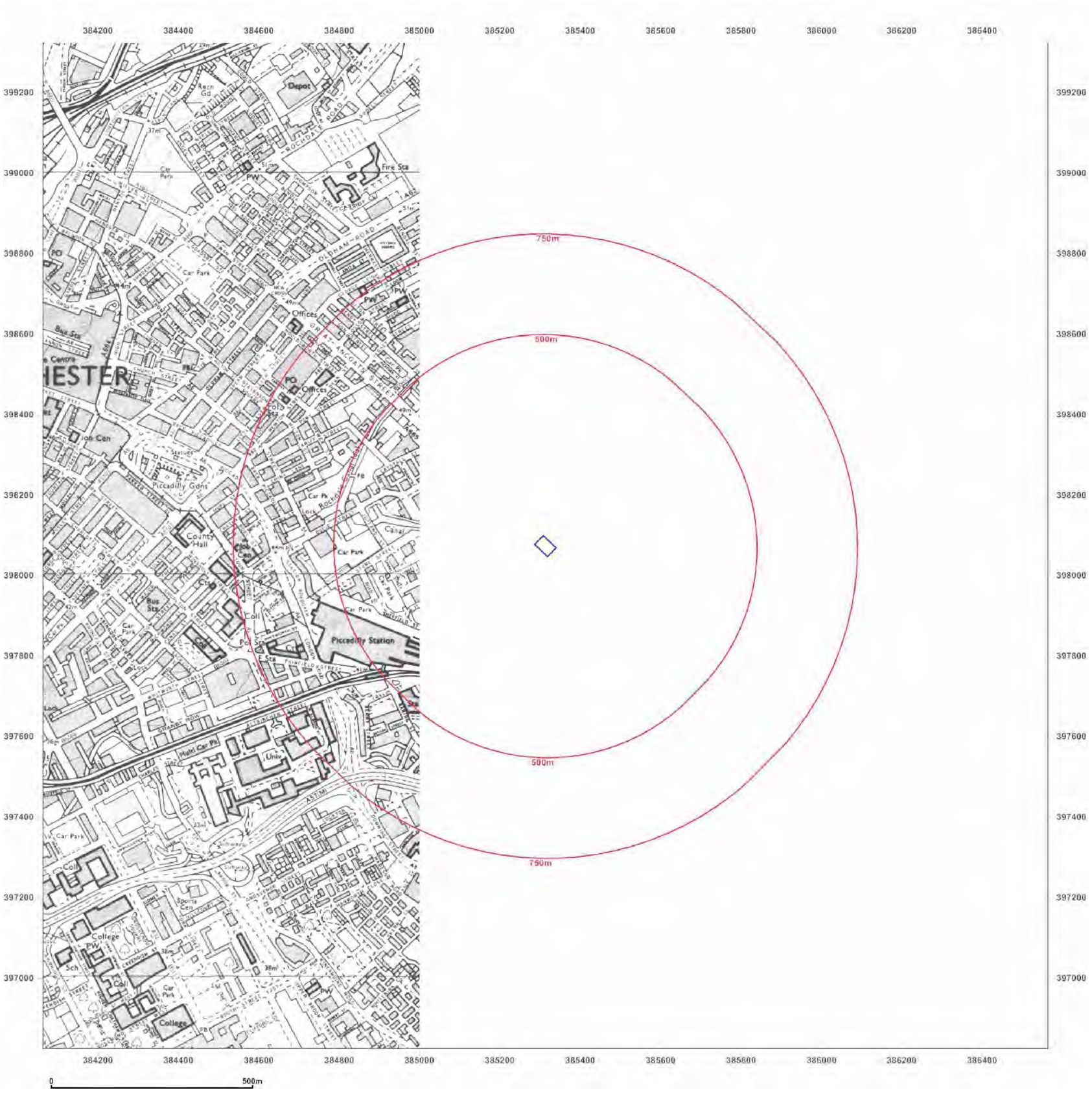
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MANCHESTER, M4 7DB

Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

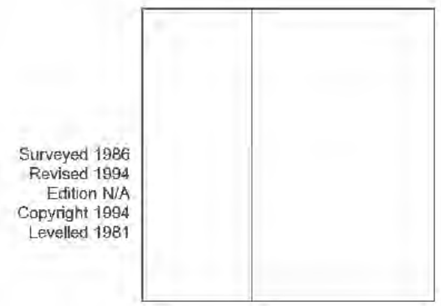
Map date: **1994**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1986
Revised 1994
Edition N/A
Copyright 1994
Levelled 1981



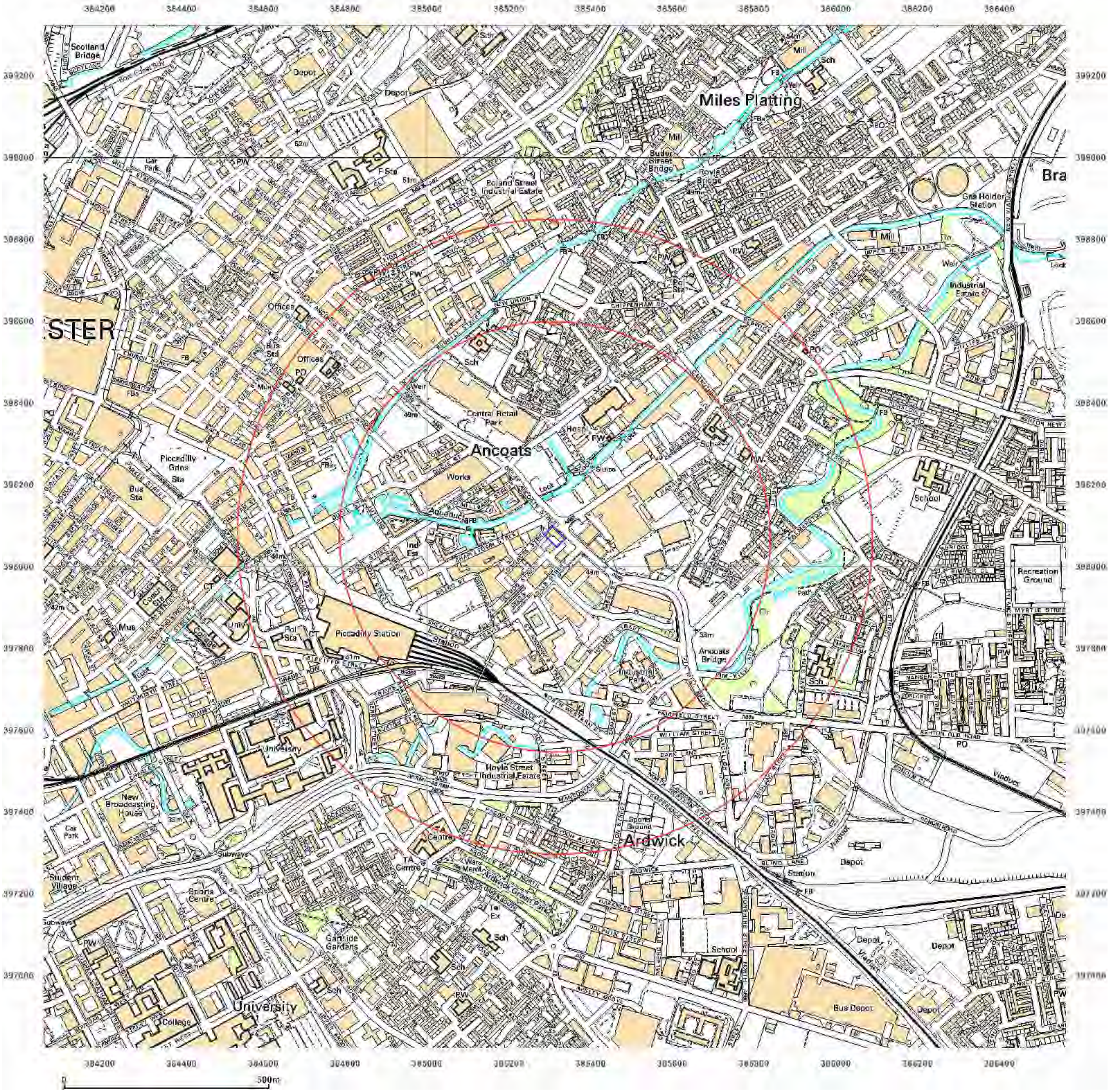
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

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2002

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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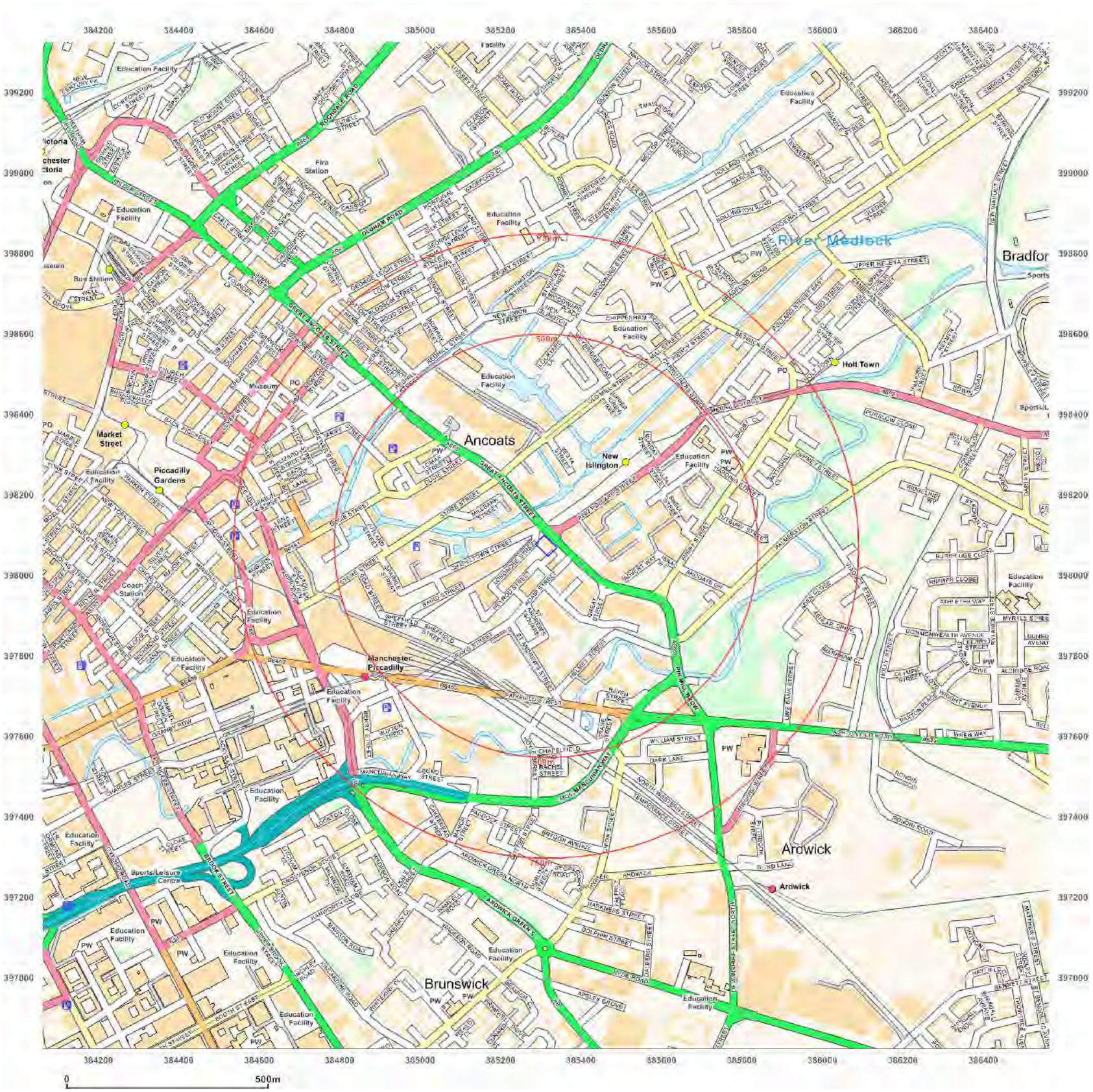
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Site Details:

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Client Ref: POP024143
Report Ref: HYD-5465768
Grid Ref: 385312, 398074

Map Name: National Grid
Map date: **2014**
Scale: 1:10,000
Printed at: 1:10,000

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Appendix D

Desk Study Research Information

Groundsure Enviro Insight

Database Report

Hydrock Consultants Ltd

4 Lakeside, Festival Way,
Stoke-on-Trent, ST1 5RY

Groundsure Reference:	HYD-5465766
Your Reference:	POP024143
Report Date	20 Sep 2018
Report Delivery Method:	Email - pdf

Enviro Insight

Address: VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 01752 347 515 quoting the above report reference number.

Yours faithfully,

Hydrock

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB**
Date:	**20 Sep 2018**
Reference:	**HYD-5465766**
Client:	**Hydrock Consultants Ltd**

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Aerial Photograph Capture date:	11-Jun-2015
Grid Reference:	385311,398077
Site Size:	0.13ha

Report Reference: HYD-5465766
Client Reference: POP024143

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Overview of Findings

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Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	20	88	216
1.2 Additional Information – Historical Tank Database	0	0	23	92
1.3 Additional Information – Historical Energy Features Database	0	0	34	34
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	1	11	57
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	2	24	47

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	2	1
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	3	11
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	3	18
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	1	0	3
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	7	13	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	1	9	25

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	1	2	39	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	1
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	4	27
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	9
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	#250GWV #	#500GWV #	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	Yes	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	26	34	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	Identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Limited potential
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Low

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	1	2
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	Identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

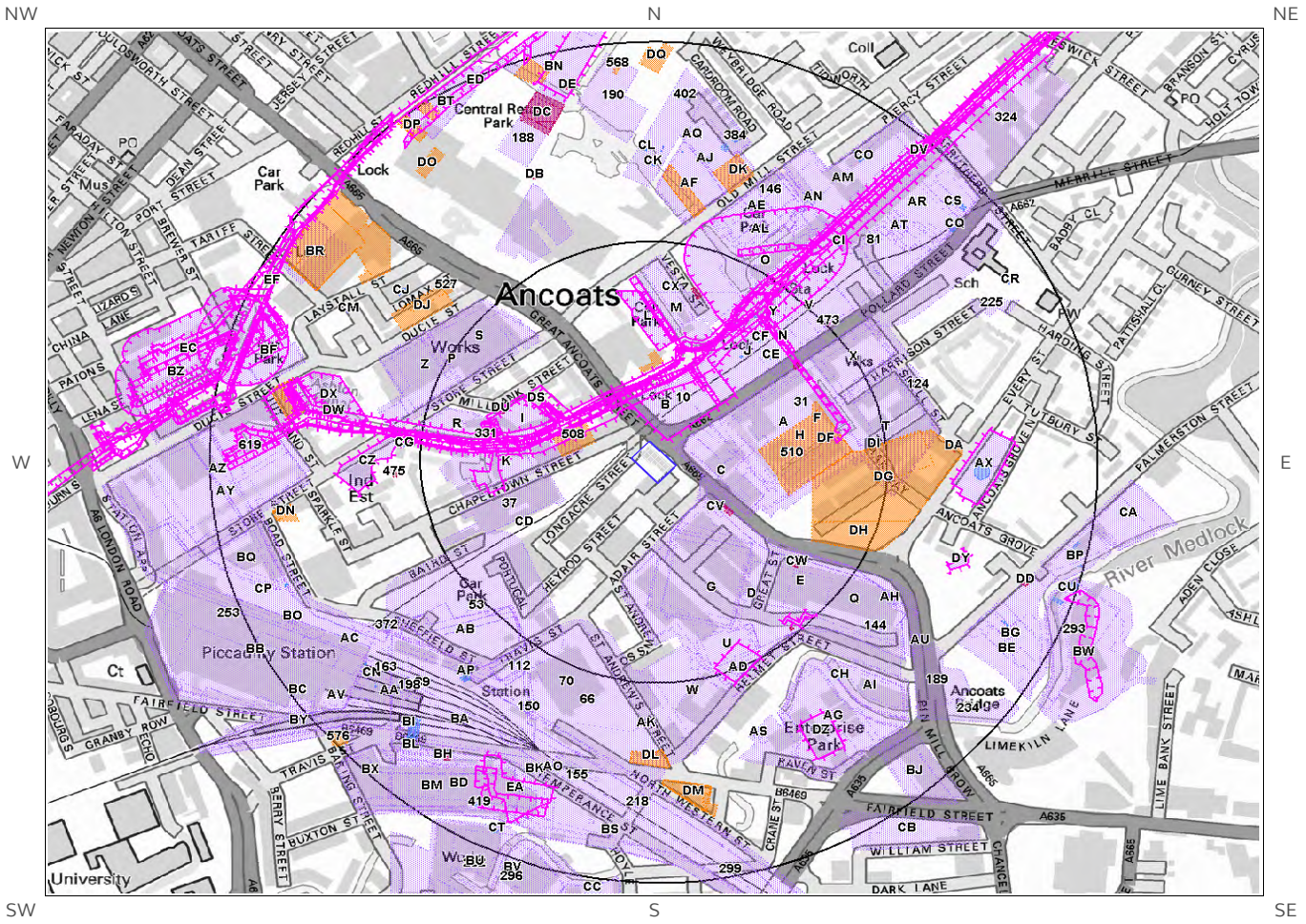
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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Historical 1:10,000 and 1:10,560 scale mapping

Site Outline

Industrial Land Use

Potentially Infilled Land

250
500
Search Buffers (m)

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 324

ID	Distance [m]	Direction	Use	Date
1A	13	NE	Vulcan Works	1915
2A	13	NE	Vulcan Works	1938
3A	13	NE	Vulcan Works	1934
4C	13	NE	Grain Store	1915
5B	14	NE	Corporation Yard	1938
6B	14	NE	Corporation Yard	1915
7B	14	NE	Corporation Yard	1934
8C	14	NE	Grain Store	1923
9C	14	NE	Grain Store	1905
10	15	NE	Corporation Yard	1923
11F	24	NE	Unspecified Commercial/Industrial	1956
12C	25	NE	Unspecified Warehouse	1968
13D	32	E	Railway Sidings	1923
14D	32	E	Railway Sidings	1934
15D	32	E	Railway Sidings	1915
16D	32	E	Railway Sidings	1905
17D	32	E	Railway Sidings	1938
18E	35	E	Railway Sidings	1968
19D	50	SE	Goods Station	1956
20E	50	SE	Railway Sidings	1956
21K	57	W	Unspecified Works	1923
22CV	60	SE	Railway Building	1938
23D	60	SE	Railway Sidings	1890
24G	62	S	Goods Station	1968
25F	63	NE	Vulcan Works	1923
26G	64	S	Goods Station	1915
27G	64	S	Goods Station	1934
28G	64	S	Goods Station	1938
29G	65	S	Goods Station	1923
30G	65	S	Goods Station	1905
31	65	NE	Vulcan Works	1905
32A	73	NE	Unspecified Mills	1890
33H	74	E	Unspecified Warehouse	1991

34H	74	E	Unspecified Warehouse	1985
35G	74	S	Goods Station	1890
36A	92	NE	Unspecified Warehouse	1968
37	94	SW	Unspecified Works	1968
38I	98	NW	Unspecified Wharves	1923
39I	103	NW	Unspecified Wharves	1915
40I	103	NW	Unspecified Wharves	1938
41I	103	NW	Unspecified Wharves	1934
42J	113	NE	Unspecified Works	1923
43L	114	N	Unspecified Wharf	1915
44J	115	NE	Unspecified Works	1915
45K	117	W	Unspecified Works	1968
46M	121	N	Unspecified Works	1923
47L	129	N	Unspecified Wharf	1923
48M	142	N	Unspecified Works	1915
49E	147	SE	Goods Shed	1968
50CX	150	N	Unspecified Works	1968
51N	161	NE	Unspecified Depot	1991
52N	161	NE	Unspecified Depot	1985
53	166	SW	Unspecified Depot	1991
54R	168	W	Unspecified Workshop	1923
55O	173	NE	Unspecified Wharf	1921
56O	173	NE	Unspecified Wharf	1906
57P	180	NW	Unspecified Disused Foundry	1890
58P	180	NW	Clothing Foundry	1905
59S	186	NW	Unspecified Warehouse	1923
60Q	187	SE	Unspecified Commercial/Industrial	1985
61Q	187	SE	Unspecified Commercial/Industrial	1991
62R	187	W	Unspecified Works	1915
63S	192	NW	Unspecified Warehouse	1934
64S	192	NW	Unspecified Warehouse	1938
65S	192	NW	Unspecified Warehouse	1915
66	192	SW	Unspecified Depot	1985
67T	193	E	Unspecified Workhouse	1915
68T	194	E	Unspecified Workhouse	1923
69X	196	NE	Unspecified Works	1968
70	197	SW	Goods Yard	1968
71V	197	NE	Unspecified Mill	1923
72U	200	SE	Goods Shed	1905
73U	200	SE	Goods Shed	1923
74U	200	S	Goods Shed	1915
75U	200	S	Goods Shed	1934
76U	200	S	Goods Shed	1938
77V	201	NE	Unspecified Mill	1915

78W	205	S	Unspecified Depot	1985
79W	205	S	Unspecified Depot	1991
80AL	210	NE	Hospital	1956
81	212	NE	Unspecified Mill	1978
82Y	214	NE	Unspecified Tank	1923
83X	216	NE	Unspecified Works	1985
84X	216	NE	Unspecified Works	1991
85Y	216	NE	Unspecified Tank	1915
86Z	225	NW	Unspecified Factory	1968
87CY	226	SE	Unspecified Ground Workings	1851
88Z	227	NW	Clothing Factory	1923
89	231	SW	Railway Sidings	1923
90AB	231	SW	Goods Yard	1923
91Z	232	NW	Clothing Factory	1938
92Z	232	NW	Clothing Factory	1934
93Z	232	NW	Clothing Factory	1915
94AA	234	SW	Railway Sidings	1934
95AA	234	SW	Railway Sidings	1938
96AB	234	SW	Goods Yard	1938
97AB	234	SW	Goods Yard	1934
98AN	234	NE	Unspecified Works	1968
99AA	235	SW	Railway Sidings	1915
100AB	235	SW	Goods Yard	1915
101W	236	S	Unspecified Depot	1978
102W	236	S	Unspecified Depot	1968
103AC	236	SW	Railway Sidings	1905
104AC	236	SW	Railway Sidings	1890
105AD	243	SE	Railway Building	1938
106AD	243	SE	Railway Building	1934
107AD	243	SE	Railway Building	1915
108AD	246	SE	Railway Building	1923
109O	255	NE	Unspecified Wharf	1923
110AE	263	N	Hospital	1978
111	263	NW	Unspecified Mill	1968
112	267	SW	Smithy	1923
113AE	267	NE	Hospital	1985
114AE	267	NE	Hospital	1991
115AE	270	N	Hospital	1923
116AF	273	N	Bedstead and Safe Works	1923
117AJ	275	N	Unspecified Commercial/Industrial	1933
118CZ	278	W	Unspecified Ground Workings	1851
119AF	279	N	Bedstead and Safe Works	1921
120AT	283	NE	Unspecified Mills	1938
121AG	283	SE	Unspecified Mills	1956

122AM	284	NE	Machine Works	1923
123AG	285	SE	Unspecified Mill	1923
124	287	NE	Unspecified Works	1923
125AE	290	NE	Hospital	1921
126AG	292	SE	Unspecified Mill	1934
127AG	292	SE	Unspecified Mill	1915
128AG	292	SE	Unspecified Mills	1938
129DZ	292	SE	Unspecified Mill	1890
130AG	294	SE	Unspecified Mill	1968
131AH	295	SE	Railway Building	1934
132AH	295	SE	Railway Building	1915
133AH	295	SE	Railway Building	1938
134AI	295	SE	Unspecified Commercial/Industrial	1934
135AI	295	SE	Unspecified Works	1915
136AJ	296	N	Unspecified Works	1968
137AH	298	SE	Railway Building	1923
138AI	299	SE	Unspecified Works	1923
139AK	300	S	Chimney	1985
140AK	300	S	Chimney	1991
141AL	300	NE	Unspecified Tank	1923
142AI	302	SE	Printing Works	1890
143AM	302	NE	Machine Works	1921
144	305	SE	Railway Building	1923
145AN	307	NE	Hospital	1891
146	312	NE	Hospital	1968
147AO	313	SW	Railway Sidings	1968
148BK	315	SW	Railway Sidings	1956
149DX	316	W	Unspecified Wharf	1923
150	317	SW	Railway Building	1923
151AQ	319	N	Glass Works	1923
152AI	319	SE	Unspecified Works	1968
153AO	320	SW	Railway Sidings	1985
154AO	320	SW	Railway Sidings	1978
155	320	SW	Railway Sidings	1991
156AP	324	SW	Smithy	1915
157AP	325	SW	Railway Building	1923
158AM	326	NE	Unspecified Commercial/Industrial	1933
159AQ	327	N	Glass Works	1921
160AX	327	E	Grave Yard	1851
161AR	330	NE	Unspecified Mills	1956
162AR	330	NE	Unspecified Mills	1968
163	330	SW	Railway Sidings	1851
164AR	331	NE	Industrial Estate	1991
165AR	331	NE	Industrial Estate	1985

166AS	332	S	Unspecified Tank	1938
167AS	332	S	Unspecified Tank	1915
168AS	332	S	Unspecified Tank	1934
169AT	333	NE	Unspecified Mills	1923
170AT	333	NE	Unspecified Mills	1933
171AT	333	NE	Unspecified Mills	1921
172AS	338	S	Unspecified Tank	1923
173DY	345	E	Unspecified Ground Workings	1923
174AU	347	SE	Unspecified Works	1915
175AU	347	SE	Unspecified Works	1923
176CP	358	SW	Railway Sidings	1956
177AO	359	S	Railway Buildings	1923
178AV	360	SW	Railway Sidings	1971
179AV	360	SW	Railway Sidings	1988
180AV	360	SW	Railway Sidings	1978
181AV	360	SW	Railway Sidings	1994
182AV	360	SW	Railway Sidings	1985
183AW	361	W	Unspecified Wharf	1915
184AW	361	W	Unspecified Wharf	1934
185AW	361	W	Unspecified Wharf	1938
186AX	370	E	Unspecified Tank	1985
187AX	370	E	Unspecified Tank	1991
188	372	NW	Unspecified Mill	1968
189	373	SE	Unspecified Factory	1923
190	374	N	Unspecified Works	1968
191AA	375	SW	Railway Station	1978
192AA	375	SW	Railway Station	1968
193BA	378	SW	Railway Building	1923
194AZ	380	W	Unspecified Commercial/Industrial	1956
195AY	382	W	Goods Station	1923
196AY	382	W	Goods Station	1905
197AY	382	W	Goods Station	1890
198	383	SW	Railway Building	1956
199AZ	386	W	Goods Station	1938
200AY	386	W	Goods Station	1915
201AY	386	W	Goods Station	1934
202BA	388	SW	Railway Building	1978
203BA	388	SW	Railway Building	1968
204BB	389	SW	Railway Station	1956
205BB	389	SW	Railway Station	1978
206BB	389	SW	Railway Station	1988
207BB	389	SW	Railway Station	1994
208BB	389	SW	Railway Station	1985
209BB	389	SW	Railway Station	1971

210AA	392	SW	Railway Buildings	1923
211BC	394	SW	Railway Stations	1915
212BC	394	SW	Railway Stations	1934
213BC	394	SW	Railway Stations	1938
214BD	396	SW	Goods Station	1978
215BD	398	SW	Goods Station	1991
216BD	398	SW	Goods Station	1985
217BD	398	SW	Railway Station	1968
218	399	S	Railway Building	1923
219BE	399	SE	Rubber Works	1915
220BE	399	SE	Rubber Works	1938
221BB	401	SW	Railway Station	1890
222BB	401	SW	Railway Station	1923
223BB	401	SW	Railway Station	1905
224BG	402	SE	Rubber Works	1934
225	402	NE	Railway Building	1890
226BH	404	SW	Police Station	1851
227BN	405	N	Unspecified Works	1968
228BF	406	W	Unspecified Mills	1923
229BF	406	W	Unspecified Mills	1915
230CN	407	SW	Railway Building	1923
231BG	407	SE	Unspecified Works	1968
232BM	408	SW	Railway Station	1923
233BI	412	SW	Railway Building	1956
234	413	SE	Unspecified Factory	1915
235BH	414	SW	Railway Building	1938
236BH	414	SW	Railway Building	1934
237BG	416	SE	Rubber Works	1923
238BI	418	SW	Railway Building	1923
239BH	418	SW	Railway Building	1915
240BI	420	SW	Railway Building	1938
241BI	420	SW	Railway Building	1915
242BI	420	SW	Railway Building	1934
243BJ	425	SE	Pin Mill	1938
244BJ	425	SE	Pin Mill	1915
245BJ	425	SE	Pin Mill	1934
246BR	425	NW	Sawmills	1923
247BL	426	SW	Railway Building	1956
248BK	427	S	Railway Building	1923
249BF	428	W	Unspecified Wharf	1923
250BJ	430	SE	Unspecified Works	1968
251BL	430	SW	Railway Building	1968
252BJ	431	SE	Pin Mill	1923
253	435	SW	Railway Station	1851
254BF	435	W	Unspecified Wharf	1934
255BF	435	W	Unspecified Wharf	1938

256BS	438	S	Railway Building	1923
257BM	440	SW	Railway Station	1956
258BN	441	N	Coal Wharf	1851
259BL	441	SW	Railway Building	1978
260BO	443	SW	Railway Building	1923
261BO	443	SW	Railway Building	1915
262BO	443	SW	Railway Building	1905
263BP	446	E	Dye Works	1890
264BQ	447	W	Grain Store	1923
265BO	447	SW	Railway Building	1934
266BO	447	SW	Railway Building	1938
267BP	448	E	Dye Works	1851
268BQ	450	W	Railway Building	1938
269BQ	450	W	Grain Store	1915
270BR	450	NW	Sawmill	1938
271BR	450	NW	Sawmill	1933
272BR	450	NW	Sawmill	1921
273BT	456	NW	Sawmill	1923
274BS	457	S	Railway Building	1923
275BT	457	NW	Sawmill	1933
276BT	457	NW	Sawmill	1921
277BT	457	NW	Sawmill	1938
278BF	460	W	Unspecified Wharf	1915
279BU	462	S	Unspecified Works	1968
280BX	464	SW	Railway Station	1956
281EC	464	W	Unspecified Wharf	1956
282	465	SW	Unspecified Commercial/Industrial	1956
283CB	466	SE	Brewery	1915
284BU	467	SW	Unspecified Works	1978
285ED	468	NW	Disused Canal	1991
286BW	470	E	Unspecified Works	1938
287BT	470	NW	Unspecified Mill	1968
288BV	471	S	Unspecified Works	1985
289BV	471	S	Unspecified Works	1991
290BW	474	E	Dye Works	1915
291BX	475	SW	Railway Station	1988
292BX	475	SW	Railway Station	1994
293	476	E	Dye Works	1923
294BW	476	SE	Lime Kiln Works	1934
295BV	480	S	Unspecified Works	1915
296	483	S	Unspecified Works	1923
297CU	483	E	Lime Kiln	1938
298BW	484	E	Unspecified Works	1968
299	487	S	Railway Building	1923
300BW	489	E	Refuse Heap	1938

301BY	489	SW	Railway Building	1985
302BY	489	SW	Railway Building	1978
303BY	489	SW	Railway Building	1971
304BY	489	SW	Railway Building	1988
305BY	489	SW	Railway Building	1994
306BZ	490	W	Unspecified Wharf	1923
307BZ	490	W	Unspecified Wharf	1905
308BZ	490	W	Unspecified Wharf	1890
309	490	W	Unspecified Warehouse	1923
310CA	491	E	Unspecified Foundry	1938
311CA	491	E	Unspecified Foundry	1934
312CA	491	E	Unspecified Foundry	1915
313BZ	492	W	Unspecified Wharf	1915
314BZ	494	W	Unspecified Wharf	1934
315CB	494	SE	Brewery	1938
316CB	494	SE	Brewery	1934
317CC	494	S	Brewery	1915
318CC	495	S	Brewery	1923
319BZ	496	W	Unspecified Warehouses	1938
320BZ	496	W	Unspecified Warehouses	1915
321BZ	496	W	Unspecified Warehouses	1934
322CA	498	E	Unspecified Foundry	1923
323CA	498	E	Unspecified Foundry	1890
324	499	NE	Unspecified Commercial/Industrial	1923

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 115

ID	Distance (m)	Direction	Use	Date
325J	150	NE	Unspecified Tank	1889
326CD	150	SW	Unspecified Tank	1889
327CD	152	SW	Unspecified Tank	1908
328CE	173	NE	Unspecified Tank	1932
329CE	173	NE	Unspecified Tank	1922
330CE	173	NE	Unspecified Tank	1908
331	174	W	Unspecified Tank	1891
332CF	180	NE	Unspecified Tank	1908
333CF	180	NE	Unspecified Tank	1922
334N	182	NE	Unspecified Tank	1967

335N	182	NE	Unspecified Tank	1948
336N	182	NE	Unspecified Tank	1965
337N	182	NE	Unspecified Tank	1967
338N	182	NE	Unspecified Tank	1951
339N	183	NE	Unspecified Tank	1955
340N	183	NE	Unspecified Tank	1948
341Y	197	NE	Tanks	1922
342Y	197	NE	Tanks	1932
343Y	197	NE	Tanks	1908
344Y	198	NE	Tanks	1908
345Y	215	NE	Unspecified Tank	1908
346Y	215	NE	Unspecified Tank	1922
347DI	234	E	Unspecified Tank	1889
348CG	269	W	Unspecified Tank	1889
349CG	269	W	Unspecified Tank	1889
350CG	272	W	Unspecified Tank	1908
351AP	321	SW	Unspecified Tank	1948
352AP	322	SW	Unspecified Tank	1948
353CH	324	SE	Unspecified Tank	1908
354CH	327	SE	Unspecified Tank	1889
355AP	329	SW	Unspecified Tank	1889
356AP	331	SW	Unspecified Tank	1891
357CI	332	NE	Unspecified Tank	1922
358CI	332	NE	Unspecified Tank	1908
359CJ	340	NW	Unspecified Tank	1891
360CJ	341	NW	Unspecified Tank	1891
361CK	345	N	Tanks	1891
362AX	353	E	Unspecified Tank	1985
363AX	353	E	Unspecified Tank	1990
364AX	353	E	Unspecified Tank	1990
365AX	353	E	Unspecified Tank	1989
366AX	353	E	Unspecified Tank	1957
367AX	353	E	Unspecified Tank	1951
368AX	353	E	Unspecified Tank	1948
369AX	354	E	Unspecified Tank	1948
370AX	354	E	Unspecified Tank	1951
371AJ	356	N	Unspecified Tank	1893
372	358	SW	Unspecified Tank	1889
373CK	362	N	Unspecified Tank	1891
374AJ	363	N	Tanks	1891
375CL	364	N	Unspecified Tank	1891
376CL	367	N	Unspecified Tank	1891
377AJ	374	N	Unspecified Tank	1893
378CM	381	NW	Unspecified Tank	1960
379CM	381	NW	Unspecified Tank	1965
380CM	381	NW	Unspecified Tank	1953

381CM	381	NW	Unspecified Tank	1953
382CM	381	NW	Unspecified Tank	1953
383CM	381	NW	Unspecified Tank	1967
384	388	N	Unspecified Tank	1893
385CN	405	SW	Unspecified Tank	1955
386CN	405	SW	Unspecified Tank	1955
387CN	405	SW	Unspecified Tank	1950
388CN	406	SW	Unspecified Tank	1948
389CN	406	SW	Unspecified Tank	1952
390BI	408	SW	Unspecified Tank	1948
391BI	409	SW	Unspecified Tank	1948
392CN	415	SW	Unspecified Tank	1955
393BI	415	SW	Unspecified Tank	1889
394BI	415	SW	Unspecified Tank	1889
395CN	415	SW	Unspecified Tank	1950
396CN	415	SW	Unspecified Tank	1952
397CN	415	SW	Unspecified Tank	1948
398BI	417	SW	Unspecified Tank	1891
399BI	418	SW	Unspecified Tank	1932
400BI	418	SW	Unspecified Tank	1908
401BI	418	SW	Unspecified Tank	1922
402	429	N	Unspecified Tank	1893
403CO	430	NE	Tanks	1948
404CO	430	NE	Tanks	1951
405CO	430	NE	Tanks	1948
406CO	430	NE	Tanks	1951
407BG	433	SE	Unspecified Tank	1922
408CP	437	W	Unspecified Tank	1950
409CP	437	W	Unspecified Tank	1955
410CP	438	W	Unspecified Tank	1965
411CP	438	W	Unspecified Tank	1965
412CP	438	W	Unspecified Tank	1948
413CP	438	W	Unspecified Tank	1952
414CP	438	W	Unspecified Tank	1964
415CQ	438	NE	Unspecified Tank	1948
416CQ	438	NE	Unspecified Tank	1948
417CO	445	NE	Tanks	1951
418CO	445	NE	Tanks	1948
419	452	SW	Tanks	1891
420CR	455	NE	Unspecified Tank	1908
421CR	455	NE	Unspecified Tank	1922
422CR	455	NE	Unspecified Tank	1931
423CS	462	NE	Unspecified Tank	1891
424CS	466	NE	Unspecified Tank	1951
425CS	466	NE	Unspecified Tank	1948
426CS	466	NE	Unspecified Tank	1951

427CS	467	NE	Unspecified Tank	1948
428CT	474	SW	Unspecified Tank	1889
429CT	474	SW	Unspecified Tank	1889
430CU	475	E	Unspecified Tank	1908
431BP	481	E	Tanks	1908
432BP	481	E	Tanks	1922
433CU	483	E	Tanks	1922
434BP	487	E	Unspecified Tank	1889
435BC	487	SW	Unspecified Tank	1891
436BC	490	SW	Unspecified Tank	1891
437BP	493	E	Unspecified Tank	1922
438BC	496	SW	Unspecified Tank	1891
439BC	499	SW	Unspecified Tank	1891

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 68

ID	Distance (m)	Direction	Use	Date
440CV	73	SE	Electricity Substation	1978
441CV	73	SE	Electricity Substation	1967
442CV	73	SE	Electricity Substation	1951
443CV	73	SE	Electricity Substation	1967
444CV	73	SE	Electricity Substation	1948
445CV	74	SE	Electricity Substation	1948
446CV	74	SE	Electricity Substation	1955
447CV	81	SE	Electricity Substation	1981
448I	160	W	Electricity Substation	1991
449I	160	W	Electricity Substation	1992
450DU	162	W	Electricity Substation	1997
451CW	185	SE	Electricity Substation	1985
452CW	185	SE	Electricity Substation	1991
453CW	185	SE	Electricity Substation	1994
454CE	185	NE	Electricity Substation	1997
455CE	185	NE	Electricity Substation	1988
456CE	185	NE	Electricity Substation	1978
457CE	185	NE	Electricity Substation	1991
458CE	185	NE	Electricity Substation	1992
459CE	186	NE	Electricity Substation	1951
460CE	186	NE	Electricity Substation	1948
461CE	186	NE	Electricity Substation	1948

462CE	186	NE	Electricity Substation	1981
463CE	186	NE	Electricity Substation	1989
464CE	186	NE	Electricity Substation	1955
465CX	188	N	Electricity Substation	1988
466CX	188	N	Electricity Substation	1991
467CX	188	N	Electricity Substation	1992
468CX	188	N	Electricity Substation	1989
469CX	188	N	Electricity Substation	1997
470CY	238	SE	Electricity Substation	1994
471CY	240	SE	Electricity Substation	1985
472CY	240	SE	Electricity Substation	1991
473	250	NE	Electricity Substation	1997
474CZ	278	W	Electricity Substation	1992
475	278	W	Electricity Substation	1997
476DA	328	E	Electricity Substation	1990
477DA	328	E	Electricity Substation	1990
478DA	328	E	Electricity Substation	1989
479DA	328	E	Electricity Substation	1991
480DA	329	E	Electricity Substation	1994
481DA	329	E	Electricity Substation	1997
482DB	355	NW	Electricity Substation	1989
483DB	355	NW	Electricity Substation	1991
484DB	355	NW	Electricity Substation	1992
485DB	355	NW	Electricity Substation	1988
486DB	355	N	Electricity Substation	1997
487DC	402	N	Hydraulic Power Station	1922
488DC	402	N	Hydraulic Power Station	1931
489DC	402	N	Hydraulic Power Station	1908
490DC	408	N	Hydraulic Power Station	1948
491DC	408	N	Hydraulic Power Station	1951
492DC	408	N	Hydraulic Power Station	1948
493DC	408	N	Hydraulic Power Station	1955
494DC	416	N	Corporation Hydraulic Power Station	1948
495DC	416	N	Corporation Hydraulic Power Station	1951
496BH	420	SW	Electricity Substation	1985
497BH	420	SW	Electricity Substation	1991
498BH	422	SW	Electricity Substation	1977
499BH	422	SW	Electricity Substation	1994
500DD	435	E	Electricity Substation	1948
501DD	435	E	Electricity Substation	1948
502DD	435	E	Electricity Substation	1953
503DE	450	N	Electricity Substation	1987
504DE	451	N	Electricity Substation	1994
505DE	451	N	Electricity Substation	1983

506DE	451	N	Electricity Substation	1991
507DE	451	N	Electricity Substation	1978

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 69

ID	Distance (m)	Direction	Use	Date
508	47	NW	Garage	1948
509	87	N	Garage	1948
510	99	E	Co-operation Garage and Workshops	1948
511DF	161	E	Garage and Workshops	1951
512DF	161	E	Co-op Garage and Workshops	1948
513DG	162	E	Garage	1989
514DG	162	E	Garage	1990
515DG	162	E	Garage	1994
516DG	162	E	Garage	1997
517DH	176	SE	Garage	1994
518DH	176	SE	Garage	1996
519DI	223	E	Garage	1991
520AF	286	N	Corporation Cleansing Department Garage	1948
521AF	286	N	Corporation Cleansing Department Garage	1955
522AF	286	N	Garage	1967
523AF	286	N	Garage	1965
524AF	286	N	Corporation Cleansing Department Garage	1948
525DJ	286	NW	Garage	1991
526DJ	286	NW	Garage	1992
527	298	NW	Garage	1948

528DJ	303	NW	Garage	1997
529DK	324	N	Electric Engineering Works	1891
530DK	326	N	Electric Engineering Works	1891
531DL	332	S	Garage	1977
532DL	332	S	Garage	1963
533DL	333	S	Garage	1985
534DL	333	S	Garage	1991
535DL	333	S	Garage	1965
536DL	333	S	Garage	1968
537DL	333	S	Garage	1965
538BR	370	NW	Garage	1996
539BR	370	NW	Garage	1990
540DM	371	S	Garage	1977
541DM	371	S	Garage	1991
542DM	371	S	Garage	1985
543DM	371	S	Garage	1994
544DM	373	S	Garage	1968
545DM	376	S	Garage	1963
546DM	377	S	Garage	1965
547DM	377	S	Garage	1965
548AW	392	W	Garage	1953
549AW	392	W	Garage	1953
550AW	392	W	Garage	1953
551AW	392	W	Garage	1965
552AW	392	W	Garage	1967
553AW	393	W	Garage	1971
554DN	402	W	Garage	1971
555AW	405	W	Garage	1960
556AW	405	W	Garage	1971
557DN	405	W	Garage	1971
558BR	415	NW	Garage	1971
559BR	415	NW	Garage	1971
560DN	416	W	Garage	1953
561DN	416	W	Garage	1965
562DN	416	W	Garage	1967
563DN	416	W	Garage	1953
564DN	416	W	Garage	1953
565DN	416	W	Garage	1960
566DO	423	NW	Garage	1948
567DO	430	NW	Garage	1948
568	461	N	Garage	1951
569DQ	461	N	Garage	1965
570DP	463	NW	Automobile Engineering Works	1967
571DP	463	NW	Automobile Engineering	1951

			Works	
572DP	463	NW	Automobile Engineering Works	1955
573BN	465	N	Garage	1951
574BT	477	NW	Garage	1951
575DQ	478	N	Garage	1963
576	483	SW	Garage	1948

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 73

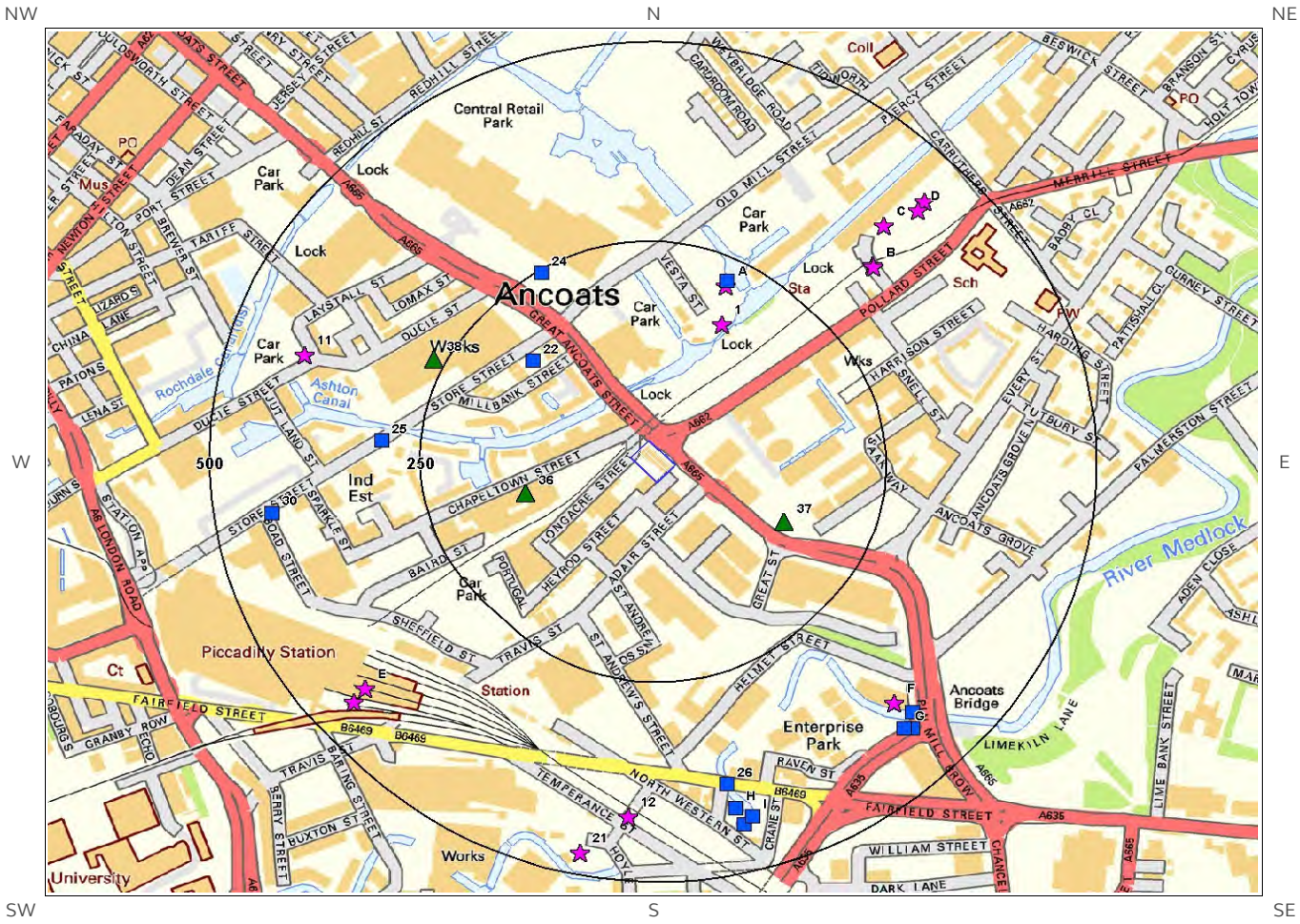
The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
577	15	NE	Canal	1923
578	49	NW	Canal	1991
579DR	59	NW	Canal	1956
580DR	59	NW	Canal	1968
581DS	65	N	Water Body	1890
582DS	65	N	Canal	1938
583DS	65	N	Canal	1934
584DS	65	N	Canal	1915
585	65	NW	Water Body	1905
586DT	66	NW	Canal	1985
587DT	66	NW	Canal	1978
588DU	98	NW	Unspecified Wharves	1923
589DU	103	NW	Unspecified Wharves	1938
590DU	103	NW	Unspecified Wharves	1934
591DU	103	NW	Unspecified Wharves	1915
592L	114	N	Unspecified Wharf	1915
593L	129	N	Unspecified Wharf	1923
594O	173	NE	Unspecified Wharf	1921
595O	173	NE	Unspecified Wharf	1906
596AD	220	SE	Pond	1851

597DV	222	NE	Canal	1891
598DV	222	NE	Canal	1933
599DV	222	NE	Canal	1938
600DV	222	NE	Canal	1921
601DV	222	NE	Canal	1906
602CY	226	SE	Unspecified Ground Workings	1851
603O	255	NE	Unspecified Wharf	1923
604CZ	278	W	Unspecified Ground Workings	1851
605DW	286	W	Canal	1985
606DW	286	W	Canal	1994
607DW	286	W	Canal	1971
608DW	286	W	Canal	1988
609DW	286	W	Canal	1978
610DX	316	W	Unspecified Wharf	1923
611AX	327	E	Grave Yard	1851
612DY	345	E	Unspecified Ground Workings	1923
613DZ	346	SE	Pond	1851
614AW	361	W	Unspecified Wharf	1934
615AW	361	W	Unspecified Wharf	1915
616AW	361	W	Unspecified Wharf	1938
617EA	389	SW	Ponds	1851
618EA	405	SW	Ponds	1890
619	417	W	Pond	1905
620BF	428	W	Unspecified Wharf	1923
621BF	435	W	Unspecified Wharf	1934
622BF	435	W	Unspecified Wharf	1938
623EB	435	W	Water Body	1905
624EB	440	W	Canal	1890
625BN	441	N	Coal Wharf	1851
626EC	444	W	Canal	1938
627BZ	444	W	Canal	1934
628BZ	444	W	Canal	1915
629BF	460	W	Unspecified Wharf	1915
630EC	464	W	Unspecified Wharf	1956
631ED	468	NW	Disused Canal	1991
632	474	W	Canal	1956
633EE	476	NW	Canal	1923
634EE	476	NW	Canal	1891
635EE	476	NW	Canal	1933
636EE	476	NW	Canal	1921
637EE	476	NW	Canal	1938
638EE	476	NW	Canal	1906
639EF	477	W	Canal	1971
640EF	477	W	Canal	1988

641EF	477	W	Canal	1978
642EF	477	W	Canal	1985
643EF	477	W	Canal	1994
644BW	489	E	Refuse Heap	1938
645BZ	490	W	Unspecified Wharf	1923
646BZ	490	W	Unspecified Wharf	1890
647BZ	490	W	Unspecified Wharf	1905
648BZ	492	W	Unspecified Wharf	1915
649BZ	494	W	Unspecified Wharf	1934

2. Environmental Permits, Incidents and Registers Map



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- Site Outline
- Search Buffers (m) 250 500
- Recorded Pollution Incident
- Dangerous Substances (List 1)
- Dangerous Substances (List 2)
- Water Industry Referrals
- Licenced Discharge Consents
- Red List Discharge Consents
- RAS 3 & 4 Authorisations
- Part A(1) Authorised Processes and Historic IPC Authorisations
- Part A(2) and Part B Authorised Processes
- COMAH / NIHHS Sites
- Sites Determined as Contaminated Land
- Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

3

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
36	133	W	385161 398032	Address: Central Taxi Spares Ltd, Chapletown Street, Ancoats, M1 2NN Process: Waste Oil Burner <0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
37	148	SE	385467 397997	Address: Advent Manchester, 309 Great Ancoats Street, Manchester M4 7DF 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
38	264	NW	385051 398200	Address: Presbar Diecastings Ltd, Store Street, Piccadilly Village, Ancoats, Manchester, M1 2WD Process: Non-ferrous Metal Foundry Processes Status: Current Permit Permit Type: Part B	Enforcement: 2 Enforcement Notified Date of Enforcement: 12/09/2013, 09/01/2014 Comment: Statutory noise nuisance

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

14

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
22	167	NW	385170 398200	Address: GREAT ANCOATS STREET, SSO, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 01MAN0023 Permit Version: 1	Receiving Water: SHOOTERS BROOK Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 15-Sep-1993 Revocation Date: 15/09/1993
23A	221	NE	385400 398300	Address: SOHO WORKS SITE SWO, POLLARD STREET, ANCOATS, GREATER MANCHESTER Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: 016991041 Permit Version: 1	Receiving Water: MANCHESTER & ASHTON CANAL Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 30-Sep-1985 Revocation Date: 01/07/1991

ID	Distance (m)	Direction	NGR	Details	
24	245	NW	385180 398310	Address: GREAT ANCOATS STREET, SSO, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: 01MAN0024 Permit Version: 1	Receiving Water: SHOOTERS BROOK Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 15-Sep-1993 Revocation Date: 15/09/1993
25	296	W	384990 398100	Address: STORE STREET, ANCOATS, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982994 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: Effective Date: 23-Jun-1995 Revocation Date:
26	387	S	385400 397670	Address: RAVEN STREET, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0198 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 01-Jan-1995 Revocation Date: 31/03/1998
27F	418	SE	385620 397760	Address: GREAT ANCOATS ST, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0257 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: Effective Date: 01-Jan-1995 Revocation Date: 13/06/1999
28H	418	S	385410 397640	Address: FAIRFIELD ST/CRANE ST, ARDWICK, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982727 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: CONSENT REVOKED - DISCHARGE CEASED (WRA 91, SCHED 10 & 6) Issue date: Effective Date: 28-Nov-1994 Revocation Date: 31/03/1998
29G	425	SE	385610 397740	Address: BLACKETT STREET, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0194 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 01-Jan-1995 Revocation Date: 18/07/1995
30	431	W	384860 398010	Address: STORE STREET, ANCOATS, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0371 Permit Version: 1	Receiving Water: - Status: SURRENDERED UNDER EPR 2010 Issue date: Effective Date: 01-Jan-1995 Revocation Date: 05/12/2014
31G	432	SE	385620 397740	Address: PIN MILL BROW, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0193 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: Effective Date: 01-Jan-1995 Revocation Date: 17/08/1999
32H	433	S	385430 397630	Address: FAIRFIELD STREET CSO, FAIRFIELD STREET, ., MANCUNIAN WAY, MANCHESTER, M12 6EJ Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982730	Receiving Water: RIVER MEDLOCK Status: VARIED UNDER EPR 2010 Issue date: 19/03/2018 Effective Date: 01-Apr-2018 Revocation Date:

ID	Distance (m)	Direction	NGR	Details	
				Permit Version: 2	
33I	433	S	385430 397630	Address: FAIRFIELD STREET CSO, FAIRFIELD STREET, ., MANCUNIAN WAY, MANCHESTER, M12 6EJ Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 016982730 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: Effective Date: 30-Sep-1994 Revocation Date: 31/03/2018
34I	433	S	385430 397630	Address: FAIRFIELD STREET CSO, FAIRFIELD STREET, ., MANCUNIAN WAY, MANCHESTER, M12 6EJ Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0309 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: Effective Date: 01-Jan-1995 Revocation Date: 01/01/1995
35I	440	S	385420 397620	Address: MANCUNIAN WAY, MANCHESTER, GREATER MANCHESTER Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0192 Permit Version: 1	Receiving Water: RIVER MEDLOCK Status: REVOKED - UNSPECIFIED Issue date: Effective Date: 01-Jan-1995 Revocation Date: 18/07/1995

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

21

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	170	NE	385393 398246	Incident Date: 11-Mar-2002 Incident Identification: 63079 Pollutant: Oils and Fuel Pollutant Description: Mixed/Waste Oils	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2A	214	NE	385397 398294	Incident Date: 22-Jul-2002 Incident Identification: 93360 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
3A	214	NE	385397 398294	Incident Date: 22-Jul-2002 Incident Identification: 93360 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
4B	341	NE	385573 398318	Incident Date: 14-Jul-2003 Incident Identification: 173497 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
5B	341	NE	385571 398320	Incident Date: 10-Oct-2002 Incident Identification: 114010 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
6B	342	NE	385572 398320	Incident Date: 29-May-2003 Incident Identification: 161551 Pollutant: Inert Materials and Wastes:Oils and Fuel Pollutant Description: Other Inert Material or Waste:Mixed/Waste Oils	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7C	387	NE	385585 398370	Incident Date: 30-May-2002 Incident Identification: 82011 Pollutant: Inert Materials and Wastes:Specific Waste Materials Pollutant Description: Construction and Demolition Materials and Wastes:Commercial Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
8C	387	NE	385585 398370	Incident Date: 30-May-2002 Incident Identification: 82011 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
9C	387	NE	385585 398370	Incident Date: 30-May-2002 Incident Identification: 82011 Pollutant: Specific Waste Materials Pollutant Description: Commercial Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
10F	393	SE	385597 397772	Incident Date: 16-Aug-2015 Incident Identification: 1365039 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details	
11	408	W	384898 398208	Incident Date: 22-Feb-2003 Incident Identification: 138638 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
12	420	S	385282 397629	Incident Date: 30-May-2001 Incident Identification: 7029 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
13E	428	SW	384970 397790	Incident Date: 30-May-2001 Incident Identification: 6998 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
14D	428	NE	385625 398389	Incident Date: 28-Aug-2001 Incident Identification: 27218 Pollutant: Specific Waste Materials Pollutant Description: Commercial Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
15D	442	NE	385633 398400	Incident Date: 12-Aug-2001 Incident Identification: 23613 Pollutant: Specific Waste Materials Pollutant Description: Tyres	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
16D	442	NE	385633 398400	Incident Date: 12-Aug-2001 Incident Identification: 23613 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Food and Drink	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
17D	442	NE	385633 398400	Incident Date: 12-Aug-2001 Incident Identification: 23613 Pollutant: Specific Waste Materials Pollutant Description: Commercial Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
18D	442	NE	385633 398400	Incident Date: 12-Aug-2001 Incident Identification: 23613 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
19D	442	NE	385633 398400	Incident Date: 12-Aug-2001 Incident Identification: 23613 Pollutant: General Biodegradable Materials and Wastes:Specific Waste Materials:Specific Waste Materials:Specific Waste Materials Pollutant Description: Food and Drink:Commercial Waste:Household Waste:Tyres	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
20E	449	SW	384956 397773	Incident Date: 08-Mar-2001 Incident Identification: 96 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
21	473	S	385224 397584	Incident Date: 31-Jul-2001 Incident Identification: 20628 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

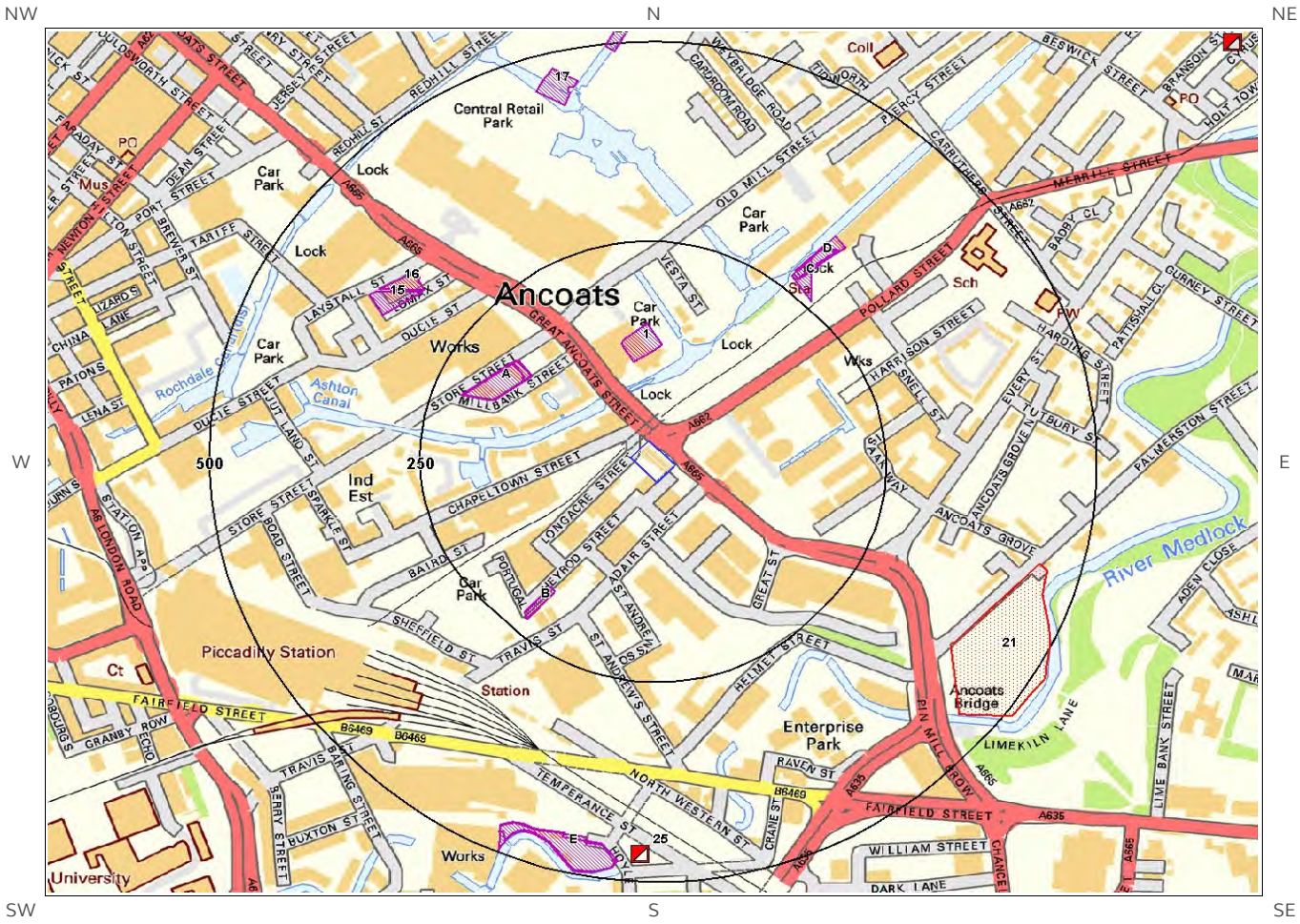
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

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3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

4

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
21	396	SE		Site Address: Palmerston Street Landfill, Great Ancoats Street, River Medlock, Ardwick, Manchester, Greater Manchester Waste Licence: Yes Site Reference: RD/LIC/440/86, F046 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 20-Aug-1986 Licence Surrendered: 21-Jul-1988 Licence Holder Address: Clarence House, Mellor Road, Cheadle Hulme, Stockport Operator: - Licence Holder: Peter Birse Limited First Recorded: 01-Sep-1986 Last Recorded: 31-Dec-1987
Not shown	1170	NE		Site Address: Bradford Road - Cambrian Street Depot, Greater Manchester Waste Licence: Yes Site Reference: F044, RD/LIC/381/84 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 10-Oct-1985 Licence Surrendered: 09-Mar-1993 Licence Holder Address: - Operator: - Licence Holder: Regional Surveyore (North West Gas) First Recorded: 31-Dec-1985 Last Recorded: 31-Dec-1990
Not shown	1259	NE		Site Address: New Viaduct Street, Greater Manchester Waste Licence: - Site Reference: F045 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1340	NE		Site Address: Bradford Road Works, Bradeley Hall Road, Haslington, Crewe, Cheshire Waste Licence: Yes Site Reference: RD/LIC/180/79, GDO F058, 0381 Waste Type: Inert, Industrial, Special Environmental Permitting Regulations	Licence Issue: 07-Dec-1979 Licence Surrendered: 14-Dec-1983 Licence Holder Address: Welman House, Altrincham, Cheshire Operator: - Licence Holder: North West Gas First Recorded: 07-Dec-1979 Last Recorded: 01-Dec-1983

ID	Distance (m)	Direction	NGR	Details
				(Waste) Reference: -

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

20

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details		
1	101	N	385298 398223	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1980	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
2A	155	NW	385127 398176	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1967	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
3A	156	NW	385125 398176	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1978	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
4A	159	NW	385126 398176	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1955	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
5A	159	NW	385122 398174	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1980	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
6B	181	SW	385177 397897	Type of Site: Scrap Metal Works Site Address: N/A	Planning Application Reference: N/A Date: 1948	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
7B	182	SW	385177	Type of Site: Scrap	Planning Application Reference:	Further Details: N/A

ID	Distance (m)	Direction	NGR	Details		
			397897	Metal Works Site Address: N/A	N/A Date: 1948	Data Source: Historic Mapping Data Type: Polygon
8C	259	NE	385488 398302	Type of Site: Waste Paper Works Site Address: N/A	Planning Application Reference: N/A Date: 1955	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
9C	259	NE	385488 398302	Type of Site: Waste Paper Works Site Address: N/A	Planning Application Reference: N/A Date: 1948	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
10D	269	NE	385510 398329	Type of Site: Waste Paper Works Site Address: N/A	Planning Application Reference: N/A Date: 1931	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
11D	274	NE	385505 398323	Type of Site: Waste Paper Works Site Address: N/A	Planning Application Reference: N/A Date: 1951	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
12D	274	NE	385505 398323	Type of Site: Waste Paper Works Site Address: N/A	Planning Application Reference: N/A Date: 1948	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
13D	290	NE	385513 398328	Type of Site: Waste Paper Works Site Address: N/A	Planning Application Reference: N/A Date: 1948	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
14D	290	NE	385513 398328	Type of Site: Waste Paper Works Site Address: N/A	Planning Application Reference: N/A Date: 1951	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
15	323	NW	385007 398272	Type of Site: Waste Paper Mills Site Address: N/A	Planning Application Reference: N/A Date: 1932	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
16	323	NW	385014 398300	Type of Site: Waste Paper Mills Site Address: N/A	Planning Application Reference: N/A Date: 1931	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
17	433	N	385197 398543	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1967	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
18E	451	S	385198 397591	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1994	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
19E	451	S	385199 397592	Type of Site: Scrap Yard Site Address: N/A	Planning Application Reference: N/A Date: 1991	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon
20	490	N	385273 398615	Type of Site: Scrap Metal Yard Site Address: N/A	Planning Application Reference: N/A Date: 1967	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
25	465	S	385296 397583	Site Address: Hoyle Street, Hoyle Trading Estate, Manchester, M12 6JL Type: Inert & excavation Waste TS + treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: CIT060 EPR reference: EA/EPR/CB3905MR/A001 Operator: City Excavations Ltd Waste Management licence No: 402399 Annual Tonnage: 75000.0	Issue Date: 01/06/2015 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: City Excavations Aggregate Yard Correspondence Address: -
Not shown	538	S	385300 397510	Site Address: Temperance Street, Ardwick, Manchester, M12 6HS Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: PML001 EPR reference: EA/EPR/AP3992CN/A001 Operator: Pye Metals Ltd Waste Management licence No: 53583 Annual Tonnage: 1733.33	Issue Date: 11/10/1996 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Pye Metals Ltd Correspondence Address: -
Not shown	548	S	385235 397506	Site Address: Hoyle Trading Estate, Hoyle Street, Manchester, M12 6HL Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DEL043 EPR reference: EA/EPR/CB3601KL/A001 Operator: E Delaney Demolition Ltd Waste Management licence No: 402157 Annual Tonnage: 74999.0	Issue Date: 26/02/2015 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Aggregate Recycling Yard Correspondence Address: -
Not shown	560	S	385200 397500	Site Address: 2, Hoyle Street, Ardwick, Manchester, M12 6HG Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ADO001 EPR reference: EA/EPR/AP3092CD/A001 Operator: Donnelly Mr. A. Waste Management licence No: 53582 Annual Tonnage: 310.0	Issue Date: 11/10/1996 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Suspended Site Name: Ardwick Auto Spares Correspondence Address: -
29F	847	NE	386000 398600	Site Address: - Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ME001 EPR reference: EA/EPR/VP3098CU/T002 Operator: Murray Mills Conservation Ltd Waste Management licence No: 50069 Annual Tonnage: 24999.0	Issue Date: 16/05/2001 Effective Date: 07/10/2004 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Lumns Lane, Clifton Junction, Swinton Correspondence Address: -
30F	847	NE	386000 398600	Site Address: - Type: Household, Commercial & Industrial Waste T Stn	Issue Date: 16/05/2001 Effective Date: 07/10/2004 Modified: -

ID	Distance (m)	Direction	NGR	Details	
				Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ME001 EPR reference: - Operator: Murray Mills Conservation Ltd Waste Management licence No: 50069 Annual Tonnage: 0.0	Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Lumns Lane, Clifton Junction, Swinton Correspondence Address: Central House, 299, Grimshaw Lane, Middleton, Manchester, M40 2AT
Not shown	915	NW	384771 398842	Site Address: - Type: ELV Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KER003 EPR reference: EA/EPR/TP3494CL/S002 Operator: Brendan J Kershaw & Winston Brown Waste Management licence No: 50328 Annual Tonnage: 0.0	Issue Date: 10/08/2004 Effective Date: - Modified: - Surrendered Date: 06/07/2010 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: French Parts Uk Correspondence Address: -
Not shown	975	SE	386052 397406	Site Address: Operational Depot, Hooper Street, Manchester, Lancs, M12 6LA Type: Inert & Excavation WTS with treatment Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MAN114 EPR reference: EA/EPR/DB3839DD/A001 Operator: Manchester City Council Waste Management licence No: 103692 Annual Tonnage: 249999.0	Issue Date: 15/12/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Hooper Street Depot Correspondence Address: -
Not shown	977	SE	386160 397540	Site Address: Units 15, Rondin Close, Ardwick, Manchester, M12 6BF Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCG002 EPR reference: EA/EPR/RP3098CB/A001 Operator: P Mc Guinness & Co Ltd Waste Management licence No: 50105 Annual Tonnage: 4999.0	Issue Date: 09/08/2002 Effective Date: - Modified: 21/12/2004 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: P Mc Guinness & Co Transfer Station Correspondence Address: -
Not shown	980	NE	386084 398706	Site Address: Union Mill, 1, Cambrian Street, Ancoats, Manchester, M40 7EG Type: ELV Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: HUR001 EPR reference: EA/EPR/VP3594CG/A001 Operator: Hurstfield Paul Waste Management licence No: 50405 Annual Tonnage: 1040.0	Issue Date: 07/06/2005 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Suspended Site Name: Olympia Motor Services Correspondence Address: -
Not shown	1033	SE	386200 397500	Site Address: Unit 12, Rondin Road, Ardwick, Manchester, M12 6BF Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BIR071 EPR reference: EA/EPR/CP3097LW/V002 Operator: Birch Skip Hire Ltd Waste Management licence No: 53760 Annual Tonnage: 6250.0	Issue Date: 16/12/1993 Effective Date: 01/05/2008 Modified: 15/10/2008 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Revoked Site Name: Birch Skip Hire Correspondence Address: -
Not shown	1033	SE	386200 397500	Site Address: Unit 12, Rondin Road, Ardwick, Manchester, M12 6BF Type: Household, Commercial & Industrial	Issue Date: 16/12/1993 Effective Date: 01/05/2008 Modified: -

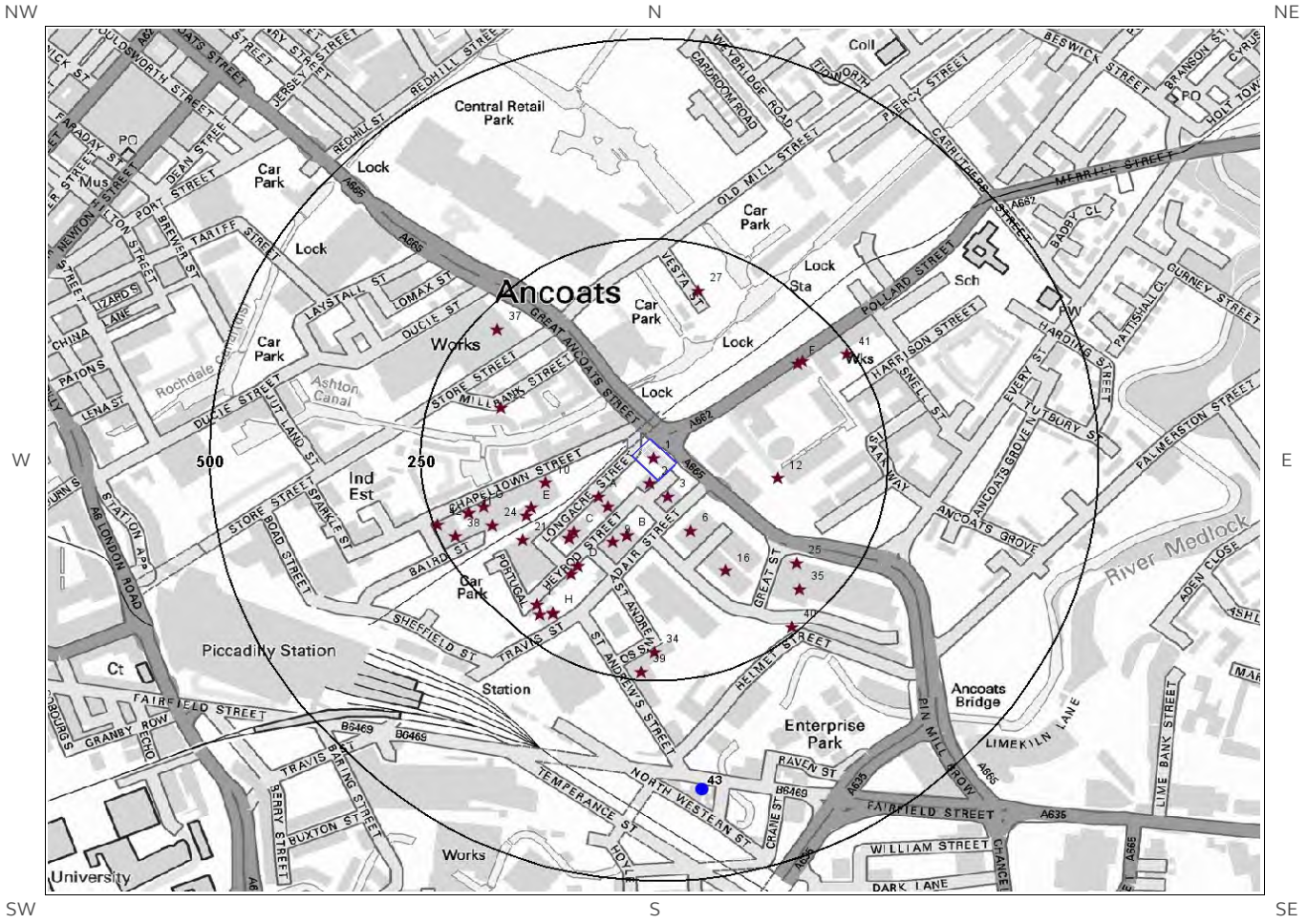
ID	Distance (m)	Direction	NGR	Details	
				Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BIR071 EPR reference: - Operator: Birch Skip Hire Ltd. Waste Management licence No: 53760 Annual Tonnage: 6250.0	Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Birch Skip Hire Correspondence Address: Unit 12, Rondin Close, Off Ashton Old Road, Manchester, M12 6LL
Not shown	1033	SE	386200 397500	Site Address: Unit 12, Rondin Road, Ardwick, Manchester, M12 6BF Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BIR071 EPR reference: EA/EPR/CP3097LW/V002 Operator: Birch Skip Hire Ltd. Waste Management licence No: 53760 Annual Tonnage: 6250.0	Issue Date: 16/12/1993 Effective Date: 01/05/2008 Modified: 15/10/2008 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Revoked Site Name: Birch Skip Hire Correspondence Address: -
Not shown	1033	SE	386200 397500	Site Address: - Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ACA001 EPR reference: - Operator: Cash Anthony Waste Management licence No: 53760 Annual Tonnage: 6250.0	Issue Date: 16/12/1993 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Birch Plant & Waste Services Ltd Correspondence Address: -
Not shown	1080	NE	386155 398777	Site Address: - Type: Household, Commercial & Industrial Waste T Stn Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: WAR001 EPR reference: - Operator: Warrender David Waste Management licence No: 50069 Annual Tonnage: 0.0	Issue Date: 16/05/2001 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Upper Helena Street Correspondence Address: Bradley Hall Farm, Rhodes Green, Middleton, Manchester, M24 4SL
Not shown	1080	NE	386155 398777	Site Address: - Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WAR001 EPR reference: - Operator: Warrender David Waste Management licence No: 50069 Annual Tonnage: 0.0	Issue Date: 16/05/2001 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Upper Helena Street Correspondence Address: Bradley Hall Farm, Rhodes Green, Middleton, Manchester, M24 4SL
Not shown	1082	SE	386046 397248	Site Address: West Goods Yard, Rondin Road, Ardwick, Manchester, M12 6JT Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BIR103 EPR reference: EA/EPR/PP3291EE/V002 Operator: Birch Skip Hire Ltd Waste Management licence No: 102091 Annual Tonnage: 49999.0	Issue Date: 07/04/2011 Effective Date: - Modified: 02/12/2013 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Revoked Site Name: Birch Skip Hire Correspondence Address: -
Not shown	1091	SE	386200 397400	Site Address: Rondin House, Rondin Road, Ardwick, Manchester, M12 6BF Type: Household, Commercial & Industrial	Issue Date: 21/12/2004 Effective Date: - Modified: -

ID	Distance (m)	Direction	NGR	Details	
				Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCG003 EPR reference: - Operator: P Mc Guinness & Company Ltd Waste Management licence No: 50363 Annual Tonnage: 0.0	Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: P Mc Guinness & Co Ltd Correspondence Address: Pearl Environmental, 13, Middleton Road, Reddish, Stockport, SK5 6SG
Not shown	1099	NE	386236 398704	Site Address: Holt Town Ind Est, Holt Town, Manchester, M40 7FQ Type: Special Waste Transfer Station Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MPC001 EPR reference: EA/EPR/JP3892CY/S002 Operator: Mc Guinness & Co Ltd Waste Management licence No: 53629 Annual Tonnage: 50000.0	Issue Date: 03/11/1995 Effective Date: - Modified: - Surrendered Date: 26/06/2002 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: P Mc Guiness & Co Ltd Correspondence Address: -
Not shown	1113	NE	386180 398798	Site Address: - Type: Metal Recycling Site (mixed MRS's) Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: DRS001 EPR reference: EA/EPR/MP3992CS/S002 Operator: Race Dennis Waste Management licence No: 53429 Annual Tonnage: 5000.0	Issue Date: 18/11/1999 Effective Date: - Modified: - Surrendered Date: 14/06/2004 Expiry Date: - Cancelled Date: - Status: Surrendered Site Name: D Race & Sons Correspondence Address: -
Not shown	1141	SE	386237 397366	Site Address: 22, Rondin Road, Ardwick, Manchester, M12 6BF Type: 75kte Metal Recycling Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: OES001 EPR reference: EA/EPR/MB3832AC/A001 Operator: One51 E S Metals (North) Limited Waste Management licence No: 104965 Annual Tonnage: 74999.0	Issue Date: 08/10/2013 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Howarth Metals Correspondence Address: -
Not shown	1141	SE	386237 397366	Site Address: 22, Rondin Road, Ardwick, Manchester, M12 6BF Type: 75kte Metal Recycling Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM002 EPR reference: EA/EPR/EB3803ME/T001 Operator: Sims Group U K Limited Waste Management licence No: 104965 Annual Tonnage: 74999.0	Issue Date: 08/10/2013 Effective Date: 23/01/2017 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Sims Group U K Limited Correspondence Address: -
Not shown	1141	SE	386237 397366	Site Address: 22, Rondin Road, Ardwick, Manchester, M12 6BF Type: 75kte Metal Recycling Site Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: SIM002 EPR reference: EA/EPR/EB3803ME/T001 Operator: Sims Group U K Ltd Waste Management licence No: 104965 Annual Tonnage: 74999.0	Issue Date: 08/10/2013 Effective Date: 23/01/2017 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Sims Group U K Limited Correspondence Address: -
Not shown	1157	SE	386370 397545	Site Address: Ashton Old Road Recycling Depot, Ashton Old Road, Manchester, M11 2XX Type: Treatment of waste to produce soil <75,000 tpy Size: < 25000 tonnes Environmental Permitting Regulations	Issue Date: 11/05/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

ID	Distance (m)	Direction	NGR	Details	
				(Waste) Licence Number: WMA012 EPR reference: EA/EPR/GB3930AM/A001 Operator: W Maher & Sons Ltd Waste Management licence No: 104212 Annual Tonnage: 74999.0	Site Name: Ashton Old Road Recycling Depot Correspondence Address: -
Not shown	1216	SE	386314 397344	Site Address: Rondin House, Rondin Road, Ardwick, Manchester, M12 6BF Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: MCG003 EPR reference: EA/EPR/CP3294CX/V004 Operator: P Mc Guinness & Co Ltd Waste Management licence No: 50363 Annual Tonnage: 74999.0	Issue Date: 21/12/2004 Effective Date: - Modified: 24/08/2012 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: P Mc Guinness & Co Ltd Correspondence Address: -
Not shown	1448	SE	386652 397459	Site Address: 8, Tuley Street, Gorton, Manchester, Lancs, M11 2DY Type: Vehicle Depollution Facility <5000 tps Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ANY032 EPR reference: EA/EPR/AB3133RU/A001 Operator: Anyaeriuba Emmanuel Waste Management licence No: 102972 Annual Tonnage: 4999.0	Issue Date: 27/07/2011 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Breakers Yard, 8 Tuley Street Correspondence Address: -
Not shown	1456	NW	384650 399400	Site Address: Warford Street, Collyhurst, Manchester, M4 4JJ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FPL001 EPR reference: EA/EPR/DP3098CF/A001 Operator: Farlam Properties Ltd Waste Management licence No: 50118 Annual Tonnage: 24999.0	Issue Date: 27/08/2002 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Expired Site Name: Farlam Properties Ltd Correspondence Address: -
Not shown	1456	NW	384650 399400	Site Address: Warford Street, Collyhurst, Manchester, M4 4DD Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FAR008 EPR reference: - Operator: Farlam Waste Management Ltd Waste Management licence No: 50461 Annual Tonnage: 0.0	Issue Date: 20/02/2007 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Farlam Waste Management Ltd Correspondence Address: Warford Street, Off Dantzic Street, Collyhurst, Manchester, M4 4DD
Not shown	1456	NW	384650 399400	Site Address: Land/premises At, Warford Street, Collyhurst, Manchester, M4 4DD Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: FAR008 EPR reference: EA/EPR/YP3594CH/V002 Operator: Farlam Waste Management Ltd Waste Management licence No: 50461 Annual Tonnage: 74999.0	Issue Date: 20/02/2007 Effective Date: - Modified: 12/11/2010 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Farlam Waste Management Ltd Correspondence Address: -
Not shown	1468	SW	383998 397374	Site Address: Little Ireland Phase B, Great Marlborough Street, Manchester, M1 5NN Type: Mobile Plant Size: < 25000 tonnes	Issue Date: 17/06/2002 Effective Date: - Modified: - Surrendered Date: -

ID	Distance (m)	Direction	NGR	Details	
				Environmental Permitting Regulations (Waste) Licence Number: TER003 EPR reference: - Operator: Terra Vac (uk) Ltd Waste Management licence No: 50191 Annual Tonnage: 0.0	Expiry Date: - Cancelled Date: - Status: Issued Site Name: Terra Vac (uk) Ltd Correspondence Address: Unit 7a, Whitwood Enterprise Park, Castleford, WF10 5PX
Not shown	1483	NW	384690 399449	Site Address: Dulwich Street, Collyhurst, Manchester, M4 4JJ Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JR001 EPR reference: - Operator: J Ryan & Co Ltd Waste Management licence No: 50084 Annual Tonnage: 0.0	Issue Date: 15/03/2002 Effective Date: - Modified: 26/07/2004 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: J Ryan & Co Ltd Correspondence Address: Brian Cook, Pearl Environmental Services, 13, Middleton Road, Reddish, Stockport, Cheshire, SK5 6SG
Not shown	1483	NW	384690 399449	Site Address: Land/premises At, Dulwich Street, Collyhurst, Manchester, M4 4JJ Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JRC001 EPR reference: EA/EPR/WP3898CJ/T003 Operator: Ryan John Waste Management licence No: 50084 Annual Tonnage: 75000.0	Issue Date: 15/03/2002 Effective Date: 04/07/2007 Modified: 26/07/2004 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: J Ryan Correspondence Address: -
Not shown	1483	NW	384690 399449	Site Address: Dulwich Street, Collyhurst, Manchester, M4 4JJ Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JR001 EPR reference: - Operator: J Ryan & Co Ltd Waste Management licence No: 50084 Annual Tonnage: 0.0	Issue Date: 15/03/2002 Effective Date: - Modified: 26/07/2004 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: J Ryan & Co Ltd Correspondence Address: Pearl Environmental Services, 13, Middleton Road, Reddish, Stockport, Cheshire, SK5 6SG
Not shown	1483	NW	384690 399449	Site Address: Dulwich Street, Collyhurst, Manchester, M4 4JJ Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JR001 EPR reference: - Operator: J Ryan & Co Ltd Waste Management licence No: 50084 Annual Tonnage: 0.0	Issue Date: 15/03/2002 Effective Date: - Modified: 26/07/2004 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: J Ryan & Co Ltd Correspondence Address: Pearl Environmental Services, 13, Middleton Road, Reddish, Stockport, Cheshire, SK5 6SG
Not shown	1493	SE	386658 397372	Site Address: Iwaste Ltd, Gorton Road, Gorton, Manchester, M11 2DZ Type: Vehicle Depollution Facility <5000 tps Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: IWA002 EPR reference: EA/EPR/KB3238RL/A001 Operator: Iwaste Ltd Waste Management licence No: 104595 Annual Tonnage: 4999.0	Issue Date: 25/10/2012 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Iwaste Ltd Correspondence Address: -

4. Current Land Use Map



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Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 42

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	The Safe Deposit Centre Manchester	385311 398077	Victoria House, Great Ancoats Street, Manchester, M4 7DB	Container and Storage	Transport, Storage and Delivery
2	10	SW	Warehouse	385306 398045	M1	Container and Storage	Transport, Storage and Delivery
3	22	SE	Warehouse	385328 398029	M1	Container and Storage	Transport, Storage and Delivery
4A	63	SW	Warehouse	385246 398029	M1	Container and Storage	Transport, Storage and Delivery
5A	65	SW	Warehouse	385257 398016	M1	Container and Storage	Transport, Storage and Delivery
6	73	SE	Acrolift	385354 397986	11, Piccadilly Trading Estate, Manchester, M1 2NP	Access Equipment	Industrial Products
7B	77	SW	P A Metals	385279 397980	7, Adair Street, Manchester, M1 2NQ	Scrap Metal Merchants	Recycling Services
8B	77	SW	Armstrongs Office Furniture	385279 397980	1, Adair Street, Manchester, M1 2NQ	Office and Shop Equipment	Industrial Products
9	93	SW	Works	385263 397972	M1	Unspecified Works Or Factories	Industrial Features
10	107	W	Factory	385183 398046	M1	Unspecified Works Or Factories	Industrial Features
11C	115	SW	Warehouse	385217 397985	M1	Container and Storage	Transport, Storage and Delivery
12	121	E	Electricity Sub Station	385458 398052	M1	Electrical Features	Infrastructure and Facilities
13C	124	SW	Dalkeith Auto's	385211 397977	7, Heyrod Street, Manchester, M1 2WW	Vehicle Repair, Testing and Servicing	Repair and Servicing
14C	124	SW	Manchester Van Hire	385211 397977	7, Heyrod Street, Manchester, M1 2WW	Vehicle Repair, Testing and Servicing	Repair and Servicing
15E	135	SW	Warehouse	385166 398015	M1	Container and Storage	Transport, Storage and Delivery
16	137	SE	Cloudwater Brew Co Ltd	385396 397936	7-8, Piccadilly Trading Estate, Manchester, M1 2NP	Alcoholic Drinks	Foodstuffs
17D	143	SW	Gorman Shorrock & Davies Ltd	385220 397942	52, Heyrod Street, Manchester, M1 2WW	Published Goods	Industrial Products

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
18D	143	SW	K M Print Design Ltd	385220 397942	52, Heyrod Street, Manchester, M1 2WW	Published Goods	Industrial Products
19E	145	SW	Chimney	385160 398005	M1	Chimneys	Industrial Features
20D	156	SW	Works	385213 397932	M1	Unspecified Works Or Factories	Industrial Features
21	166	SW	Worldwide Confectionery Ltd	385156 397974	1, Portugal Street East, Manchester, M1 2WX	Tobacco Products	Consumer Products
22	167	W	Electricity Sub Station	385130 398140	M1	Electrical Features	Infrastructure and Facilities
23G	186	W	Crusader Works No 1	385110 398016	M1	Unspecified Works Or Factories	Industrial Features
24	186	SW	Works	385120 397993	M1	Unspecified Works Or Factories	Industrial Features
25	189	SE	Electricity Sub Station	385481 397946	M1	Electrical Features	Infrastructure and Facilities
26F	190	NE	Electricity Sub Station	385482 398195	M4	Electrical Features	Infrastructure and Facilities
27	195	N	Electricity Sub Station	385364 398286	M4	Electrical Features	Infrastructure and Facilities
28F	196	NE	Chimney	385487 398198	M4	Chimneys	Industrial Features
29H	206	SW	Manchester Van Hire	385192 397884	Manchester Van Hire, Travis Street, Manchester, M1 2NG	Vehicle Hire and Rental	Hire Services
30G	206	W	Abbey Knitwear Ltd	385091 398008	66-72, Chapeltown Street, Manchester, M1 2WH	Textiles, Fabrics, Silk and Machinery	Industrial Products
31	206	W	Imperial Knitwear Ltd	385091 398008	66-72, Chapeltown Street, Manchester, M1 2WH	Textiles, Fabrics, Silk and Machinery	Industrial Products
32H	207	SW	Depot	385192 397883	M1	Container and Storage	Transport, Storage and Delivery
33I	211	SW	Works	385173 397894	M1	Unspecified Works Or Factories	Industrial Features
34	214	S	Amato Food Products Ltd	385312 397834	St. Andrews Square, Manchester, M1 2NS	Catering and Non Specific Food Products	Foodstuffs
35	214	SE	Supply UK Ltd	385484 397912	23, Piccadilly Trading Estate, Manchester, M1 2NP	Construction and Tool Hire	Hire Services
36I	219	SW	Works	385176 397881	M1	Unspecified Works Or Factories	Industrial Features
37	225	NW	Warehouse	385126 398238	M4	Container and Storage	Transport, Storage and Delivery
38	231	SW	Garsdale Knitwear Ltd	385076 397979	64, Chapeltown Street, Manchester, M1 2WQ	Clothing, Components and Accessories	Consumer Products
39	239	S	Depot	385296 397810	M1	Container and Storage	Transport, Storage and Delivery
40	241	SE	Electricity Sub Station	385475 397866	M1	Electrical Features	Infrastructure and Facilities
41	243	NE	Vulcan Works	385540 398207	M4	Unspecified Works Or Factories	Industrial Features
42	246	W	Unique Knitwear Ltd	385054 397994	62, Chapeltown Street, Manchester, M1 2WQ	Textiles, Fabrics, Silk and Machinery	Industrial Products

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 1

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
43	389	S	385368 397662	UNBRANDED	100, Fairfield Street, Manchester, Greater Manchester, M1 2WR	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON

5.3 Bedrock and Solid Geology

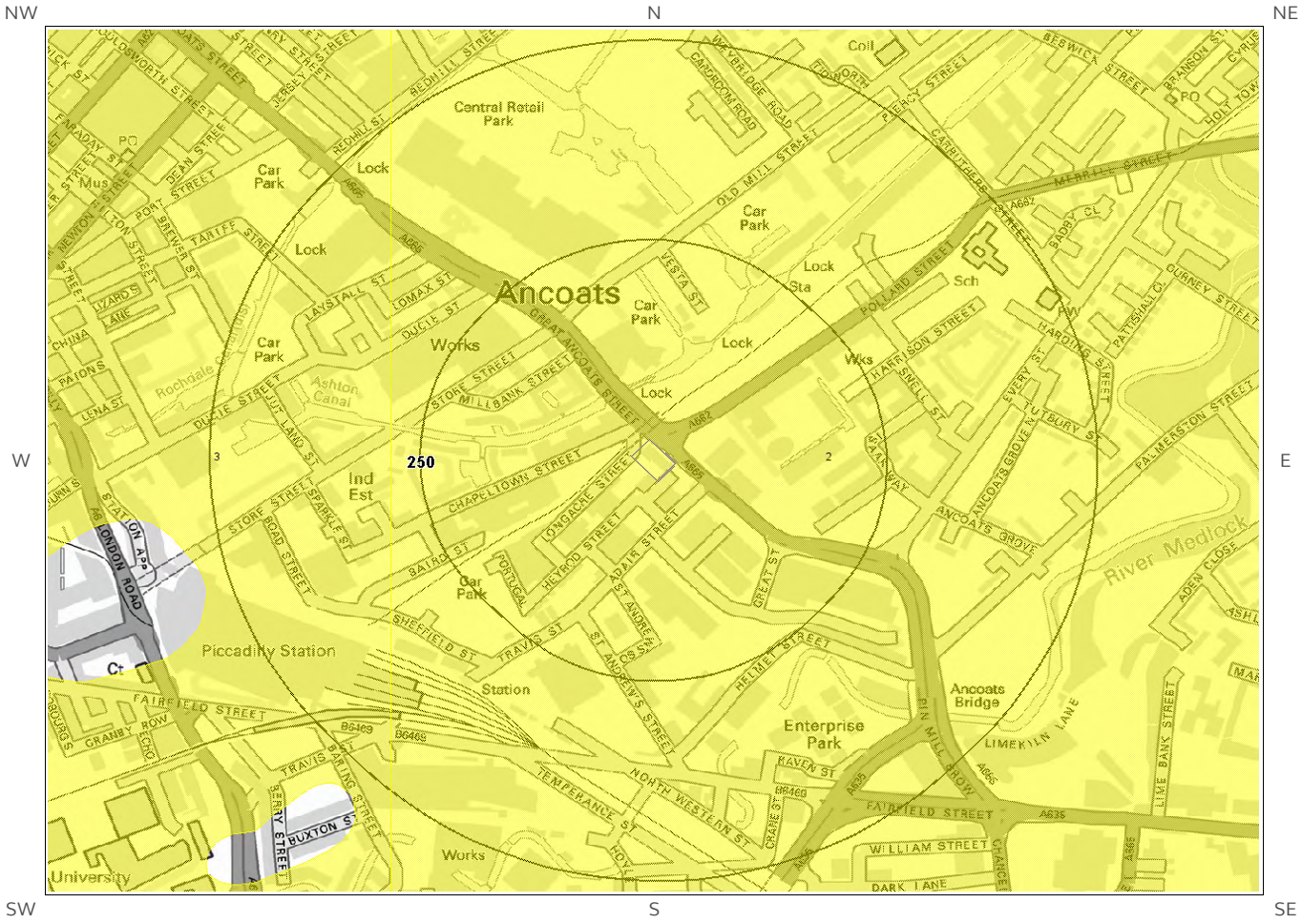
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
CHES-SDST	CHESTER FORMATION	SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

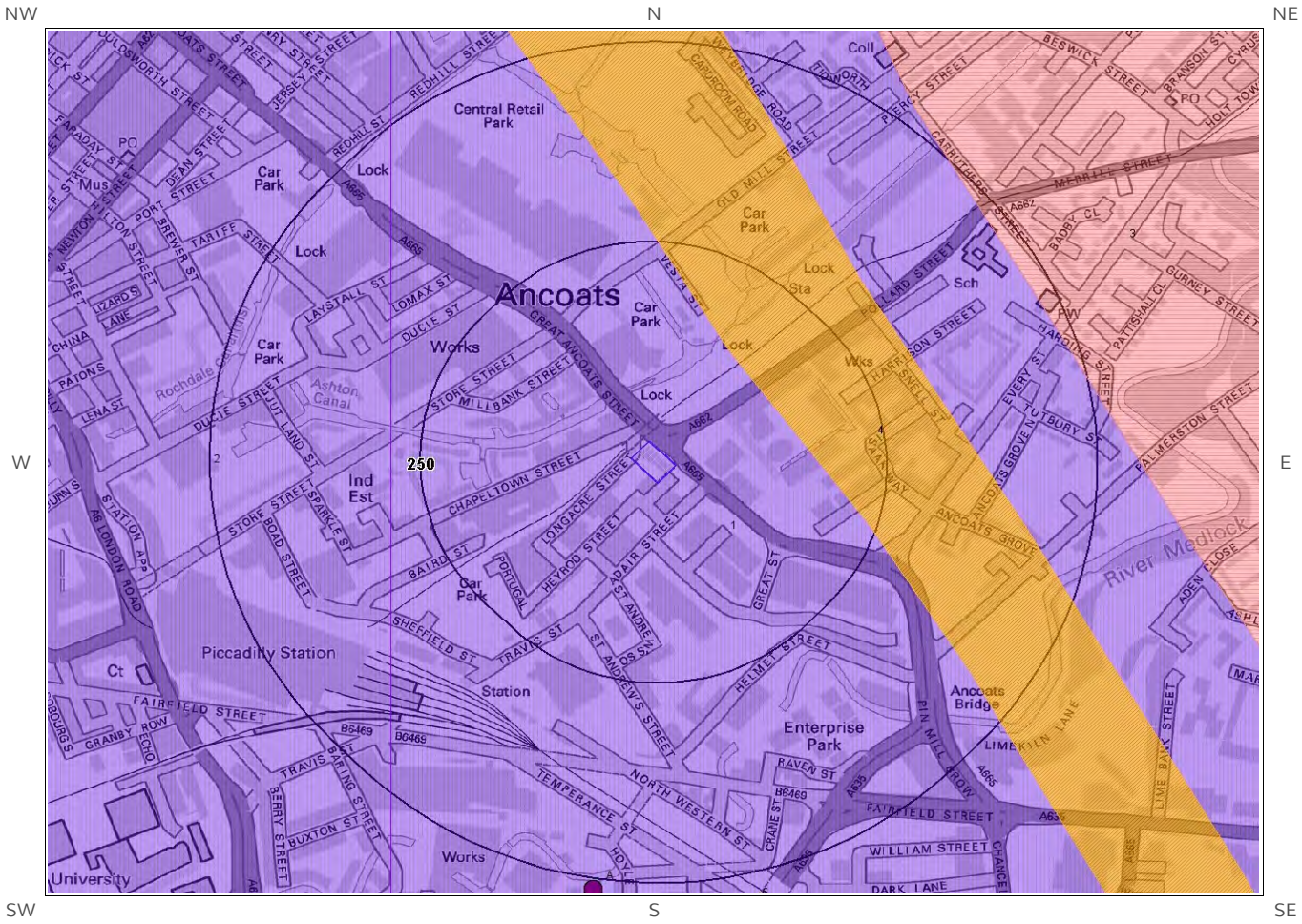
6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



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6b. Aquifer Within Bedrock Geology and Abstraction Licences



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Site Outline

250
500
Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

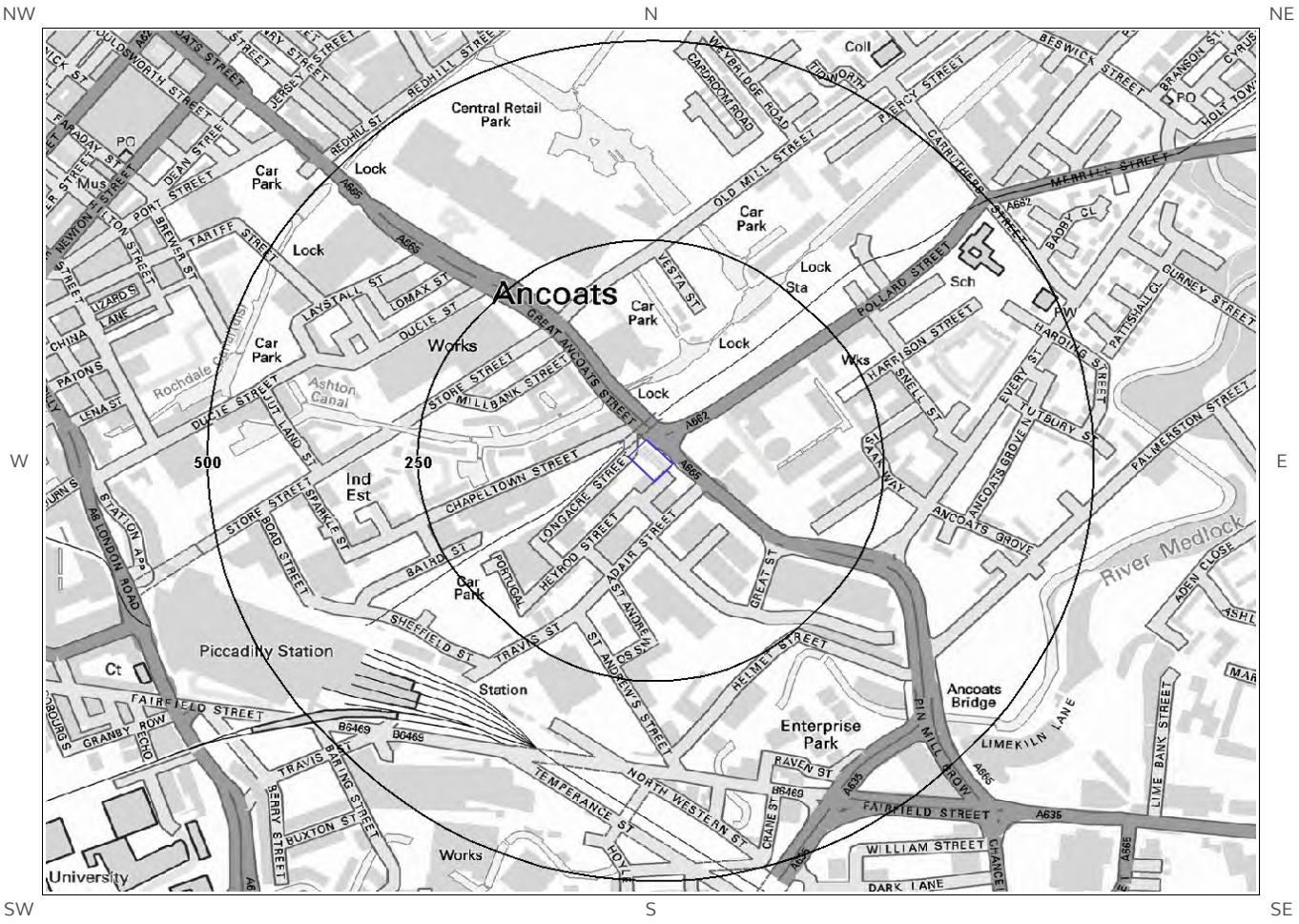
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

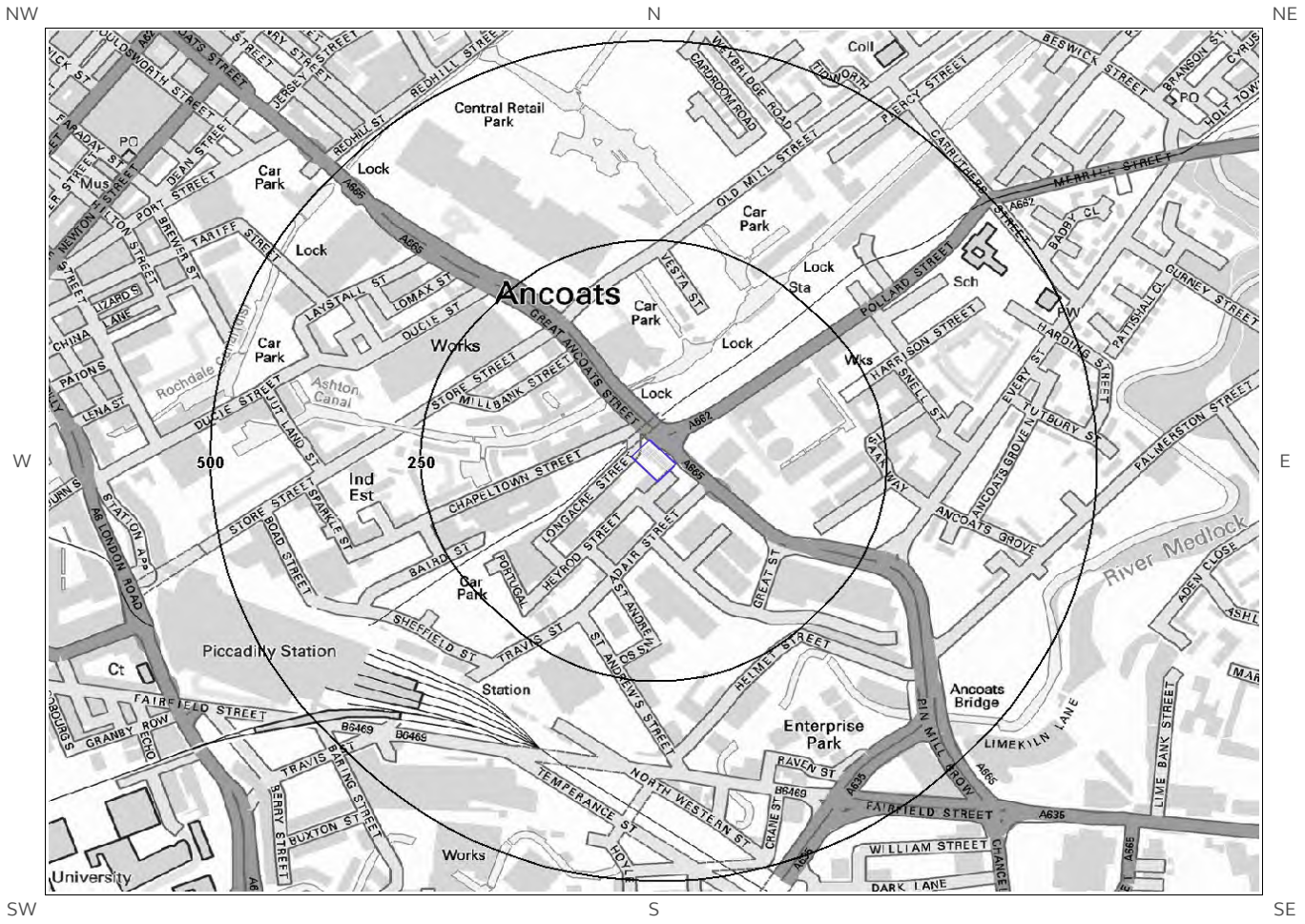
Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



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6d. Hydrogeology – Source Protection Zones within confined aquifer



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Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Potable Water Abstraction Licence

Site Outline

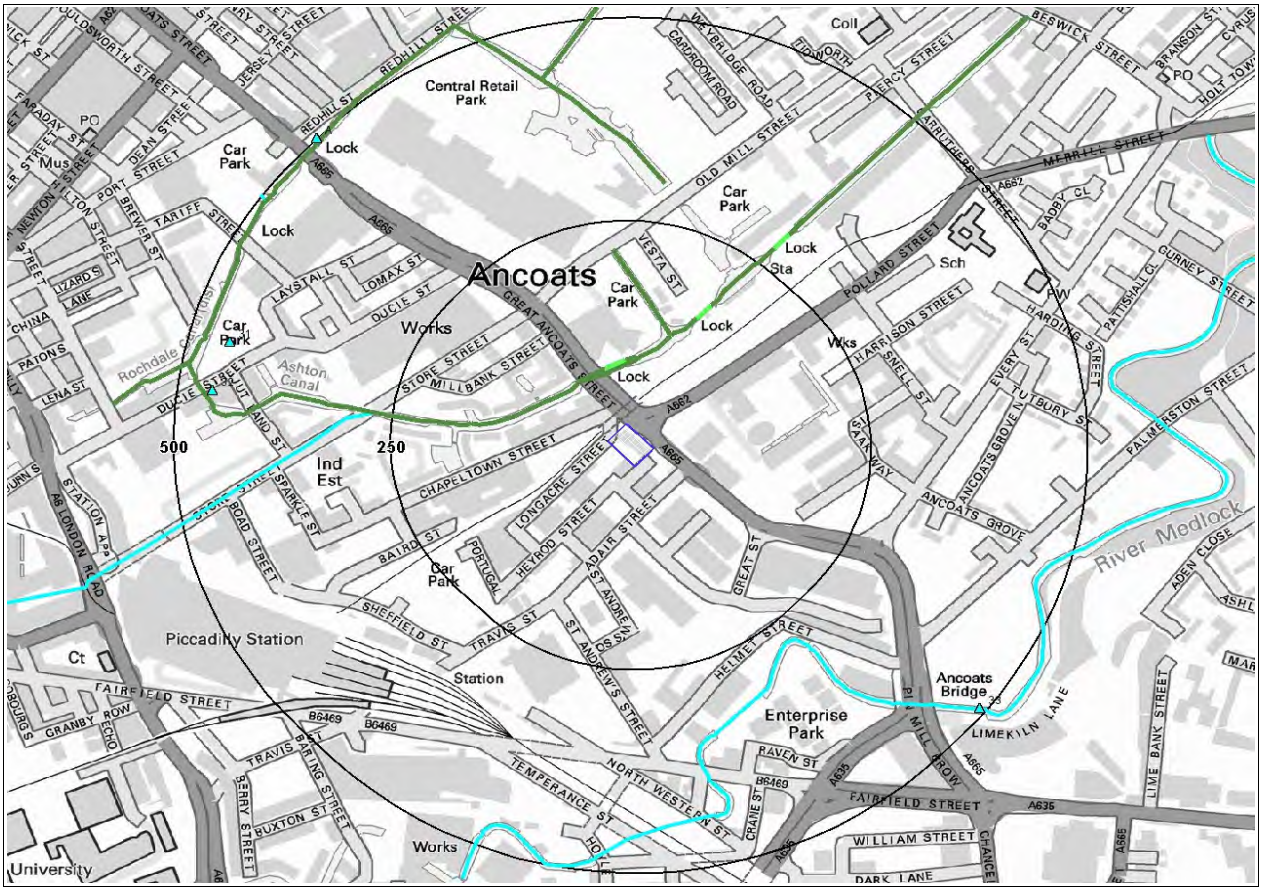
250
500
Search Buffers (m)

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



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Site Outline

250 Search Buffers (m)
500

Tidal River
Inland River
Underground or Elevated Tidal River
Underground or Elevated Inland River
Foreshore
General Quality Assessment: Chemistry

Canal
Underground or Elevated Canal
Lock or Flight of Locks
Lake, Reservoir, or Marsh
Drain or Transfer
General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
2	0	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
3	285	W	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

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
4	137	NE	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeablehorizons and weathering. These are generally the water-bearing parts of the former non-aquifers
2	285	W	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
3	476	NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
7A	514	S	385240 397540	Status: Historical Licence No: 2569006001 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT PREMISES, BROADIE ST, ARDWICK, MANCHESTER" Data Type: Point Name: MOSELEY RUBBER CO LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 08/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 08/02/1966 Version End Date:
8A	514	S	385240 397540	Status: Historical Licence No: 2569006001 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT PREMISES, BROADIE ST, ARDWICK, MANCHESTER Data Type: Point Name: MOSELEY RUBBER CO LTD	Annual Volume (m^3): 331858 Max Daily Volume (m^3): 909.2 Original Application No: - Original Start Date: 08/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 08/02/1966 Version End Date:
Not shown	971	W	384378 397733	Status: Historical Licence No: NW0690006001 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: BOREHOLES AT ORIGIN DEVELOPMENTS, MANCHESTER Data Type: Point Name: West Contracting	Annual Volume (m^3): 139128 Max Daily Volume (m^3): 1010 Original Application No: - Original Start Date: 19/01/2009 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 19/01/2009 Version End Date:
Not shown	971	W	384378 397733	Status: Historical Licence No: NW/069/0006/001 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: BOREHOLES AT ORIGIN DEVELOPMENTS, MANCHESTER Data Type: Point Name: West Contracting	Annual Volume (m^3): 139128 Max Daily Volume (m^3): 1010 Original Application No: - Original Start Date: 19/01/2009 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 19/01/2009 Version End Date:
Not shown	1188	W	384100 398000	Status: Historical Licence No: 2569007069 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT GEORGE ST, MANCHESTER" Data Type: Point Name: BRITISH TELECOM	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 100 Version Start Date: 27/01/1971 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1188	W	384100 398000	Status: Historical Licence No: 2569007069 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT GEORGE ST, MANCHESTER Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC	Annual Volume (m^3): 1100 Max Daily Volume (m^3): 860 Original Application No: - Original Start Date: 01/04/1984 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2007 Version End Date:
Not shown	1335	S	385729 396778	Status: Historical Licence No: NW/069/0004/005 Details: Heat Pump Direct Source: Ground Water - North West Region Point: AREA OF ABSTRACTION - LOWER CARBONIFEROUS LIMESTONE Data Type: Poly4 Name: G T Energy UK Limited	Annual Volume (m^3): 2.04984e+006 Max Daily Volume (m^3): 8640 Original Application No: - Original Start Date: 17/01/2013 Expiry Date: 16/01/2037 Issue No: 2 Version Start Date: 11/06/2013 Version End Date:
Not shown	1482	SW	384180 397091	Status: Active Licence No: NW/069/0006/003 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE 1 AT LOWER CHATHAM STREET Data Type: Point Name: Manchester Metropolitan University	Annual Volume (m^3): 283240 Max Daily Volume (m^3): 1532 Original Application No: - Original Start Date: 04/04/2014 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date:
Not shown	1482	SW	384180 397091	Status: Active Licence No: NW/069/0006/003 Details: Heat Pump Direct Source: Ground Water - North West Region Point: BOREHOLE 1 AT LOWER CHATHAM STREET Data Type: Point Name: Manchester Metropolitan University	Annual Volume (m^3): 283240 Max Daily Volume (m^3): 1532 Original Application No: - Original Start Date: 04/04/2014 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 04/04/2014 Version End Date:
Not shown	1703	W	383700 398700	Status: Historical Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIAL HOUSE, CHAPEL ST, SALFORD Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 101 Version Start Date: 01/04/1984 Version End Date:
Not shown	1703	W	383700 398700	Status: Historical Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: "BOREHOLE AT DIAL HOUSE, CHAPEL ST, SALFORD" Data Type: Point Name: BRITISH TELECOM	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 100 Version Start Date: 27/01/1971 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1703	W	383700 398700	Status: Active Licence No: 2569007070 Details: General Cooling (Existing Licences Only) (High Loss) Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIAL HOUSE CHAPEL STREET SALFORD Data Type: Point Name: BRITISH TELECOMMUNICATIONS PLC	Annual Volume (m^3): 45 Max Daily Volume (m^3): 30 Original Application No: - Original Start Date: 27/01/1971 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2007 Version End Date:
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date:
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date:
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date:
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 09/08/2000 Version End Date:
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: Process water Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: Process Water Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: 01/01/2004 Version End Date:
Not shown	1964	W	383335 398310	Status: Historical Licence No: 2569007089 Details: Non-Evaporative Cooling Direct Source: Ground Water - North West Region Point: 2 BOREHOLES AT GARTSIDE STREET MANCHESTER Data Type: Line Name: HER MAJESTY'S COURT SERVICE	Annual Volume (m^3): 200000 Max Daily Volume (m^3): 1179 Original Application No: - Original Start Date: 26/01/2005 Expiry Date: 31/03/2011 Issue No: 2 Version Start Date: 10/07/2008 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — Identified

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 2) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1839	NW	383820 399190	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 2 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 3 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1850	NW	383830 399220	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 3) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: Ground Water - North West Region Point: BOREHOLE NUMBER 1 AT PREMISES STRANGEWAYS MANCHESTER Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): 500000 Max Daily Volume (m^3): 2500 Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1853	NW	383850 399250	Status: Historical Licence No: 2569004023 Details: "Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services" Direct Source: Ground Water - North West Region Point: "BOREHOLE (NO 1) AT PREMISES, STRANGEWAYS, MANCHESTER" Data Type: Point Name: INTERBREW UK LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 18/02/1966 Expiry Date: - Issue No: 102 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site — None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site — Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

					Chemical Quality Grade				
ID	Distance (m)	Direction	NGR	River Quality Grade	2005	2006	2007	2008	2009
31	452	W	384850 398200	River Name: Rochdale Canal Reach: Empress Processing To Ashton Canal End/Start of Stretch: End of Stretch NGR	A	A	A	A	A
32	459	W	384830 398140	River Name: Rochdale Canal Reach: Ashton Canal To Knott Mill End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A
33	493	SE	385714 397750	River Name: Medlock Reach: Lords Bk. To Irwell End/Start of Stretch: Sample Point NGR	B	B	B	C	C
34A	500	NW	384950 398450	River Name: Rochdale Canal Reach: Empress Processing To Ashton Canal End/Start of Stretch: Start of Stretch NGR	A	A	A	A	A
35A	500	NW	384950 398450	River Name: Rochdale Canal Reach: Qsl At Summit To Empress Processing End/Start of Stretch: End of Stretch NGR	A	A	A	A	A

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	65 N	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.3
20	65 N	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.3
2	72 NW	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.5
3	72 N	Ashton Canal	Lock or flight of locks. An enclosure in a canal or navigable river with gates and sluices at either end.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
21	72 NW	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.5
22	72 N	Ashton Canal	Lock or flight of locks. An enclosure in a canal or navigable river with gates and sluices at either end.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.1
4	74 NW	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.9
23	74 NW	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.9
5	79 N	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
24	79 N	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
6	81 N	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
25	81 N	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
7	120 NE	Islington Branch	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.5
8	120 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.6
26	120 NE	Islington Branch	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.5
27	120 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.6
9	152 NE	Ashton Canal	Lock or flight of locks. An enclosure in a canal or navigable river with gates and sluices at either end.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
28	152 NE	Ashton Canal	Lock or flight of locks. An enclosure in a canal or navigable river with gates and sluices at either end.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
10	159 W	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.4
29	159 W	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 9.4
11	175 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
12	175	-	Canal. A manmade watercourse for inland	Catchment Area: Mersey Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	NE		navigation.	Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
30	175 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.9
31	175 NE	-	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 3.1
13	176 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.0
32	176 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.0
14	271 W	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.0
15	271 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
33	271 W	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.0
34	271 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
16	275 NE	Ashton Canal	Lock or flight of locks. An enclosure in a canal or navigable river with gates and sluices at either end.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
35	275 NE	Ashton Canal	Lock or flight of locks. An enclosure in a canal or navigable river with gates and sluices at either end.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 2.0
17	279 SE	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.5
36	279 SE	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions)

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				Average Width in Watercourse Section (m): 8.5
18	295 SE	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
37	295 SE	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
19	299 N	-	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.7
20	299 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.3
Not shown	299 N	-	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.7
39	299 NE	Ashton Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.3
21	301 SE	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.1
40	301 SE	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 10.1
22	304 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
41	304 W	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
23	435 N	-	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 13.4
24	435 N	-	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
Not shown	435 N	-	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 13.4
Not shown	435 N	-	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 11.5
25	438 S	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	438 S	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
26	467 S	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.7
Not shown	467 S	River Medlock	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.7
27	478 W	Rochdale Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.4
Not shown	478 W	Rochdale Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.4
28	490 NW	Rochdale Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.2
Not shown	490 NW	Rochdale Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 8.2
29	492 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.0
Not shown	492 NW	-	Inland river not influenced by normal tidal action.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.0
30	493	Rochdale Canal	Canal. A manmade watercourse for inland	Catchment Area: Mersey Relationship to Ground Level: On ground surface

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
	W		navigation.	Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.7
Not shown	493 W	Rochdale Canal	Canal. A manmade watercourse for inland navigation.	Catchment Area: Mersey Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 12.7

6.11 Surface Water Features

Surface water features within 250m of the study site Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
66	NW
70	N
107	NW
135	N
172	E
196	NE

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)

NW N NE

W E

SW S SE



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Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

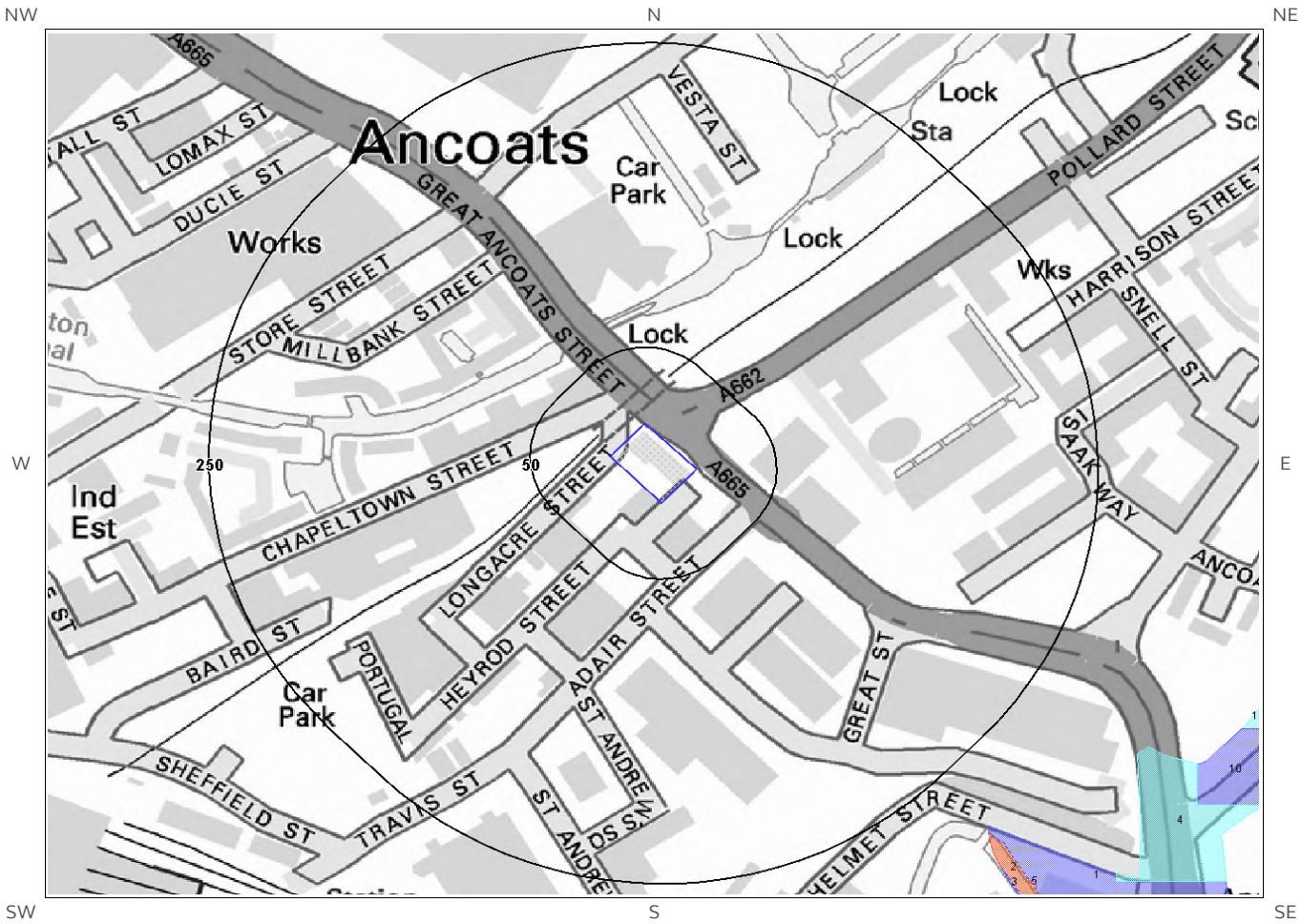
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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Site Outline

100 / 250 Search Buffers (m)

RoFRaS Rating

- Very Low
- Low
- Medium
- High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	240	S	29-May-2018	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — None identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite — Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site	None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site	None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site	Identified
Clearwater Flooding or Superficial Deposits Flooding	Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result	Low

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

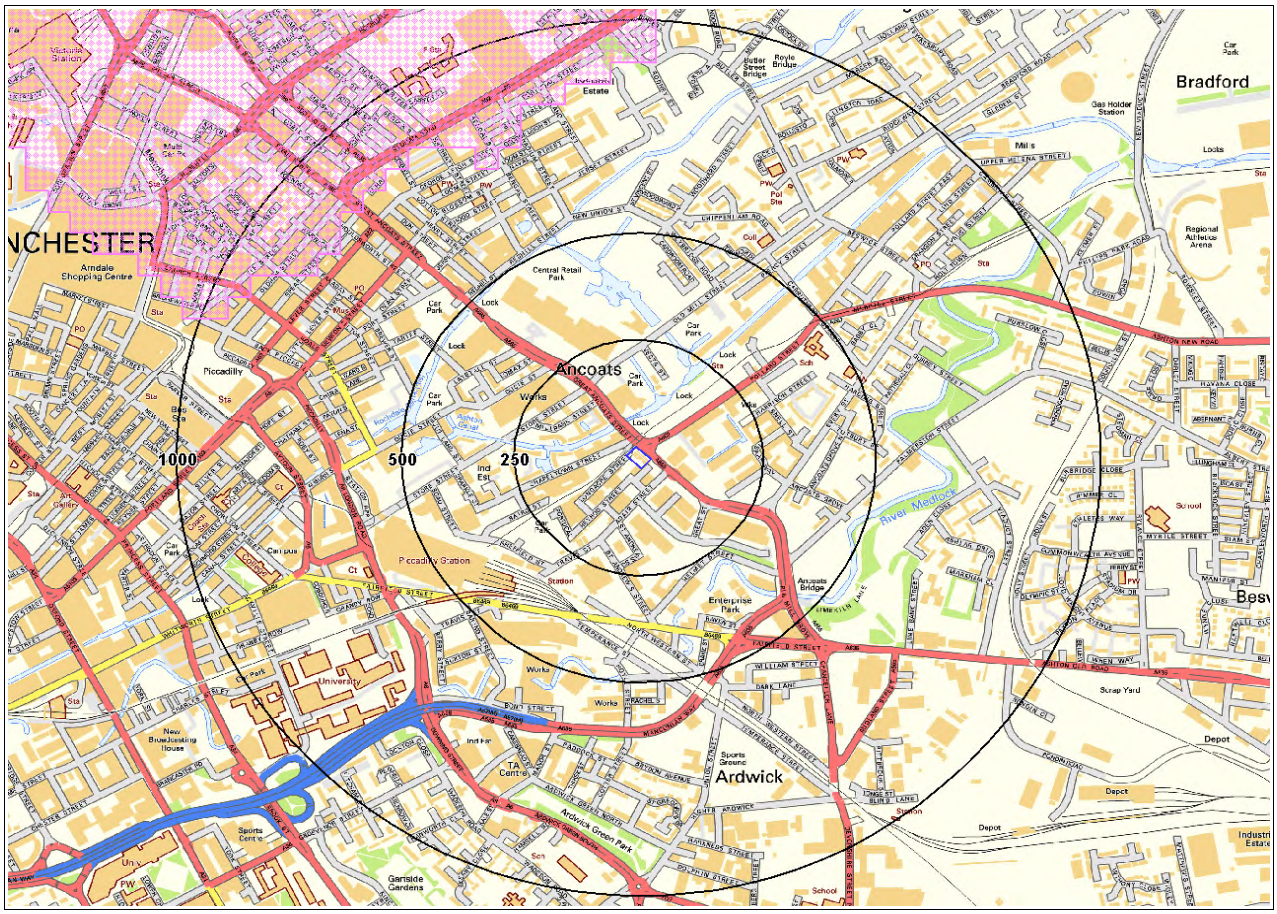
The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map

NW N NE

W E

SW S SE



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Site Outline

100 250 Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site	Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

3

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
1	719	NW	Existing	DEFRA
Not shown	1673	NW	Existing	DEFRA
Not shown	1900	N	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — Identified

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site — None identified
Guidance: No Guidance Required.

Contact Details

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marcushaes@hydrock.com

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Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
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SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Manchester City Council
Phone: 0161 234 5000
Web: http://www.manchester.gov.uk/
Address: Town Hall, Albert Square, Manchester, M60 2LA

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https://www.groundsure.com/terms-and-conditions-may25-2018

Groundsure Geo Insight

Database Report

Hydrock Consultants Ltd

4 Lakeside, Festival Way,
Stoke-on-Trent, ST1 5RY

Report Reference: HYD-5465767

Your Reference: POP024143

Report Date 20 Sep 2018

Report Delivery Method: Email - pdf

Geo Insight

Address: VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 01752 347 515 quoting the above report reference number.

Yours faithfully,

Hydrock

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER, M4 7DB**
Date:	**20 Sep 2018**
Reference:	**HYD-5465767**
Client:	**Hydrock Consultants Ltd**

NW N NE

W E



SW S SE

Aerial Photograph Capture date:	11-Jun-2015
Grid Reference:	385311,398077
Site Size:	0.13ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	Yes

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	Yes

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	2	20	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	8

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	1	1	0	2	4
5.4 Non-Coal Mining*	0	0	0	0	2
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Very Low
6.2 Landslides	Very Low
6.3 Ground Dissolution of Soluble Rocks	Negligible
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Very Low

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	0	11	51

Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	1	1	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	0	Not Searched
9.2 Historical Railway and Tunnel Features	0	22	44	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	12	2	Not Searched
9.5 Railway Projects	0	0	0	4

1:10,000 Scale Availability



1_10,000 Availability Legend

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Site Outline

Full Coverage

Partial Coverage

No Coverage

50
250
Search Buffers (m)

Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
2	285.0	Some deposits are mapped	Full	Full	No coverage
N3	1900.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N4	1925.0	Some deposits are mapped	Full	Full	Some deposits are mapped

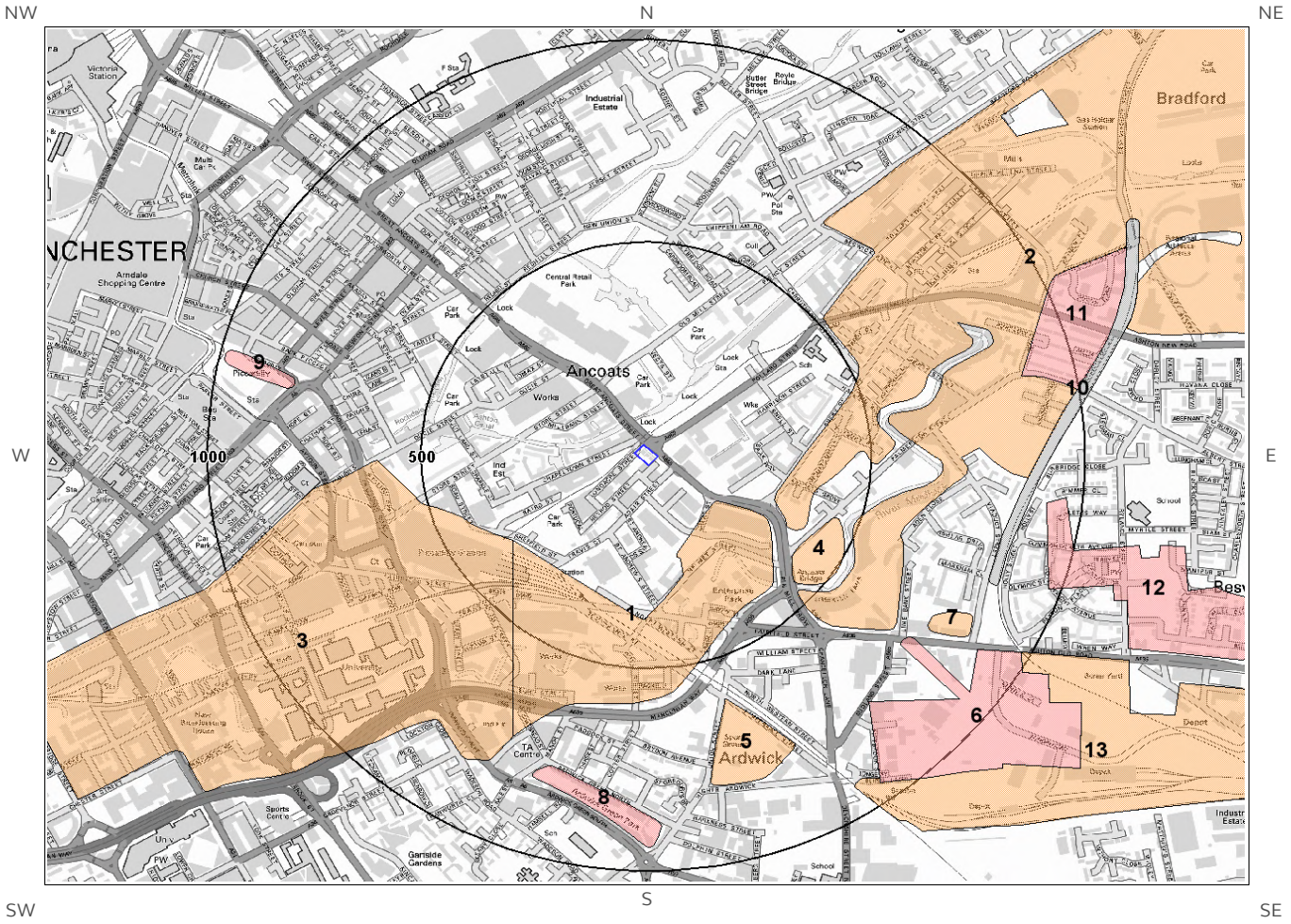
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

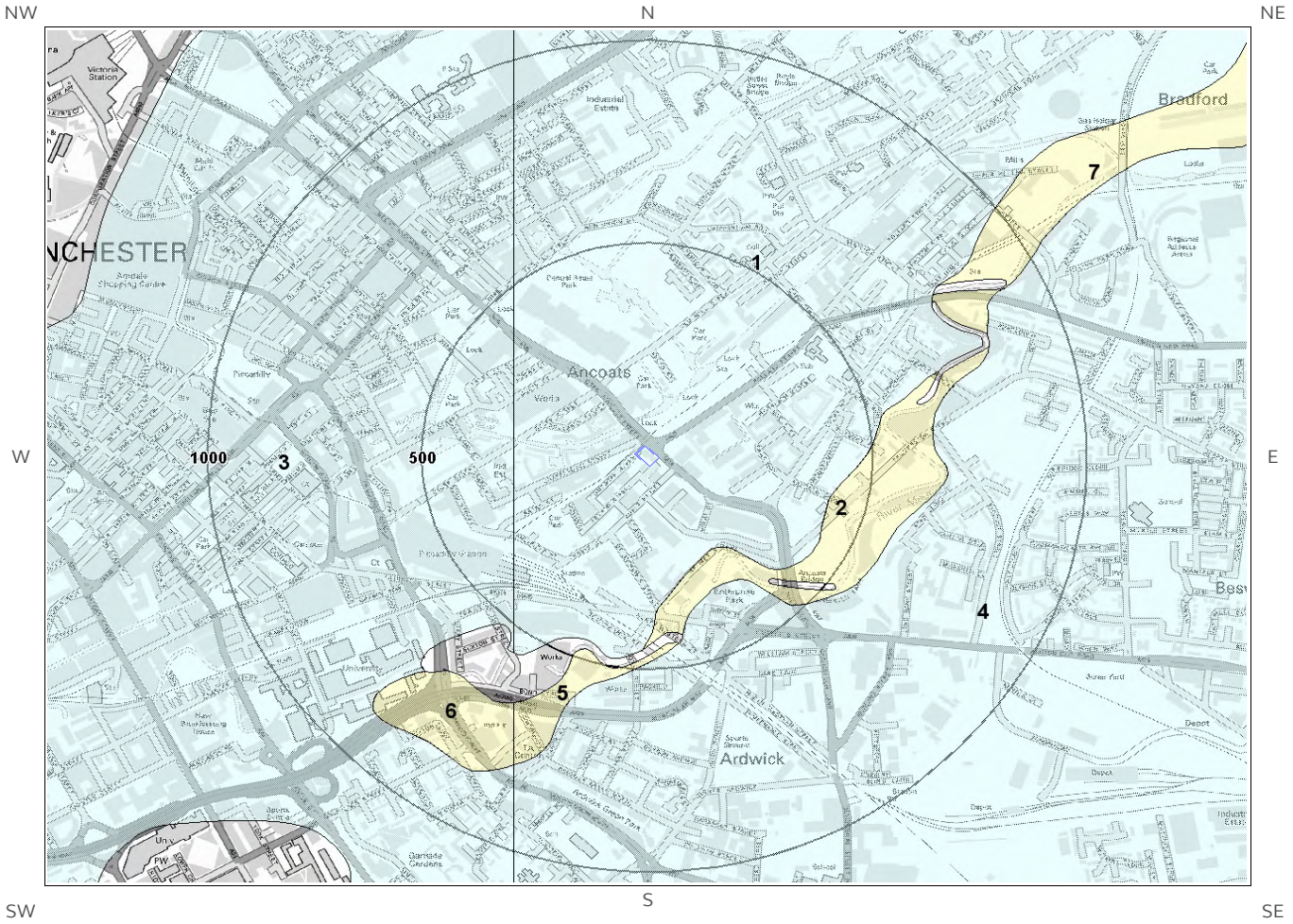
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	173.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	291.0	E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	357.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	396.0	SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

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Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	249.0	SE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
3	285.0	W	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
4	335.0	SE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
5	437.0	S	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

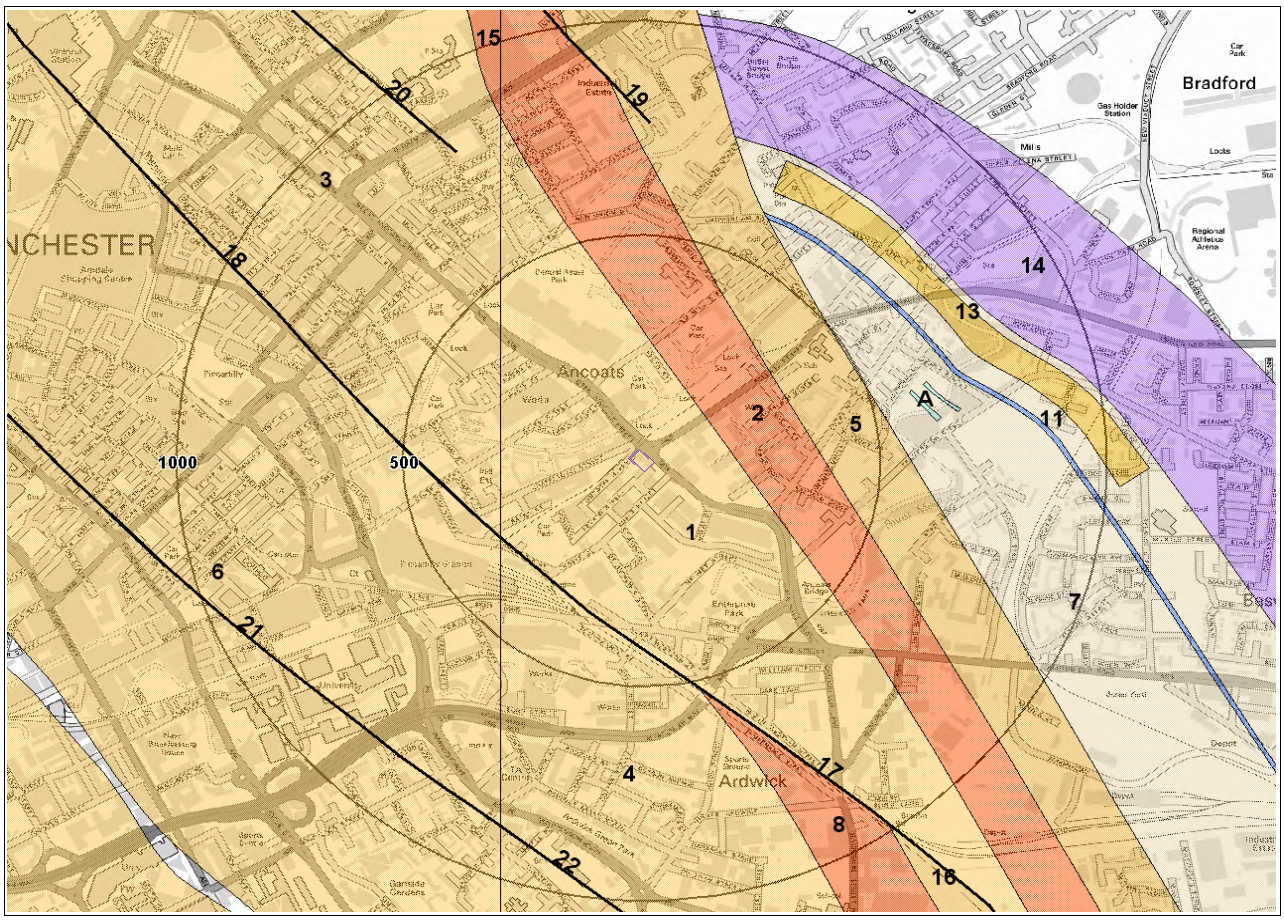
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)

NW N NE

W E

SW S SE



Bedrock and linear features Legend

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Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
2	154.0	NE	MM-MDST	Manchester Marls Formation - Mudstone	Late Permian Epoch [Obsolete name]
3	285.0	W	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
4	324.0	SW	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
5	327.0	NE	CS-SDST	Collyhurst Sandstone Formation - Sandstone	Cisuralian Epoch
6	339.0	SW	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
7	494.0	NE	HA-MDSS	Halesowen Formation - Mudstone, Siltstone And Sandstone	Westphalian D Sub-age

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? Yes

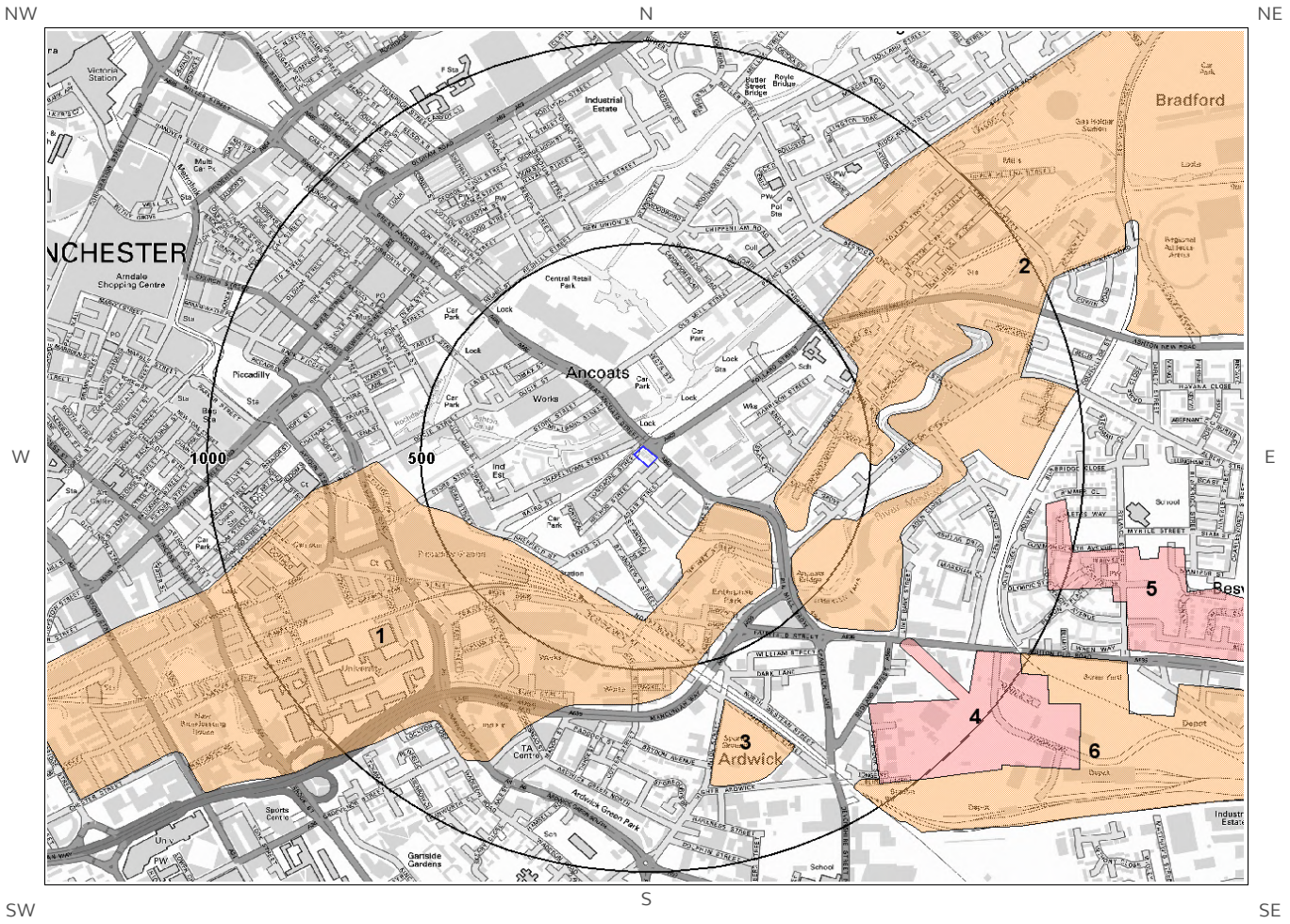
ID	Distance (m)	Direction	Category Description	Feature Description
17	324.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side
18	339.0	SW	FAULT	Normal fault, inferred; crossmarks on downthrow side

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 085

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

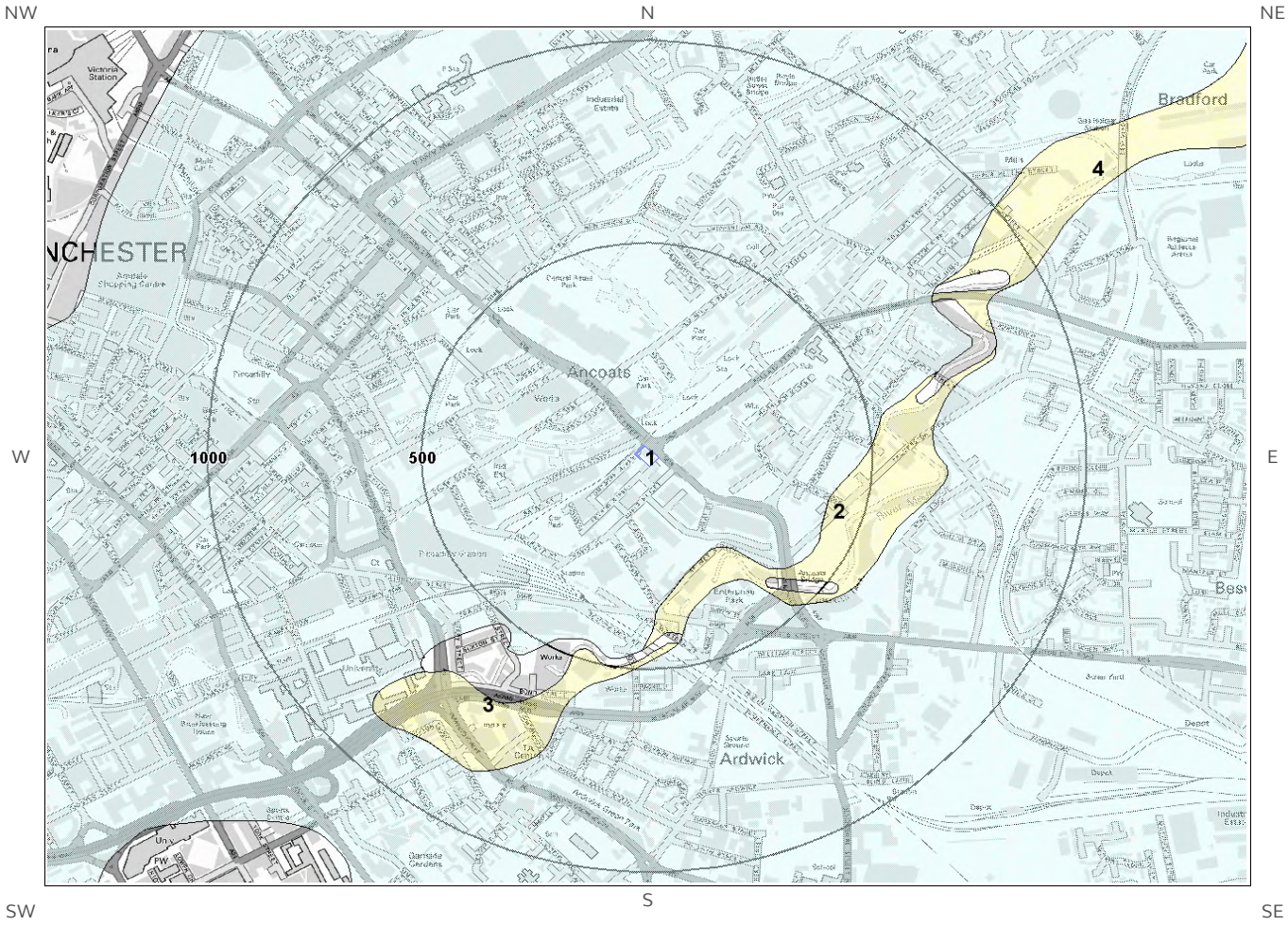
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	173.0	SE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	291.0	E	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
2	249.0	SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	437.0	S	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

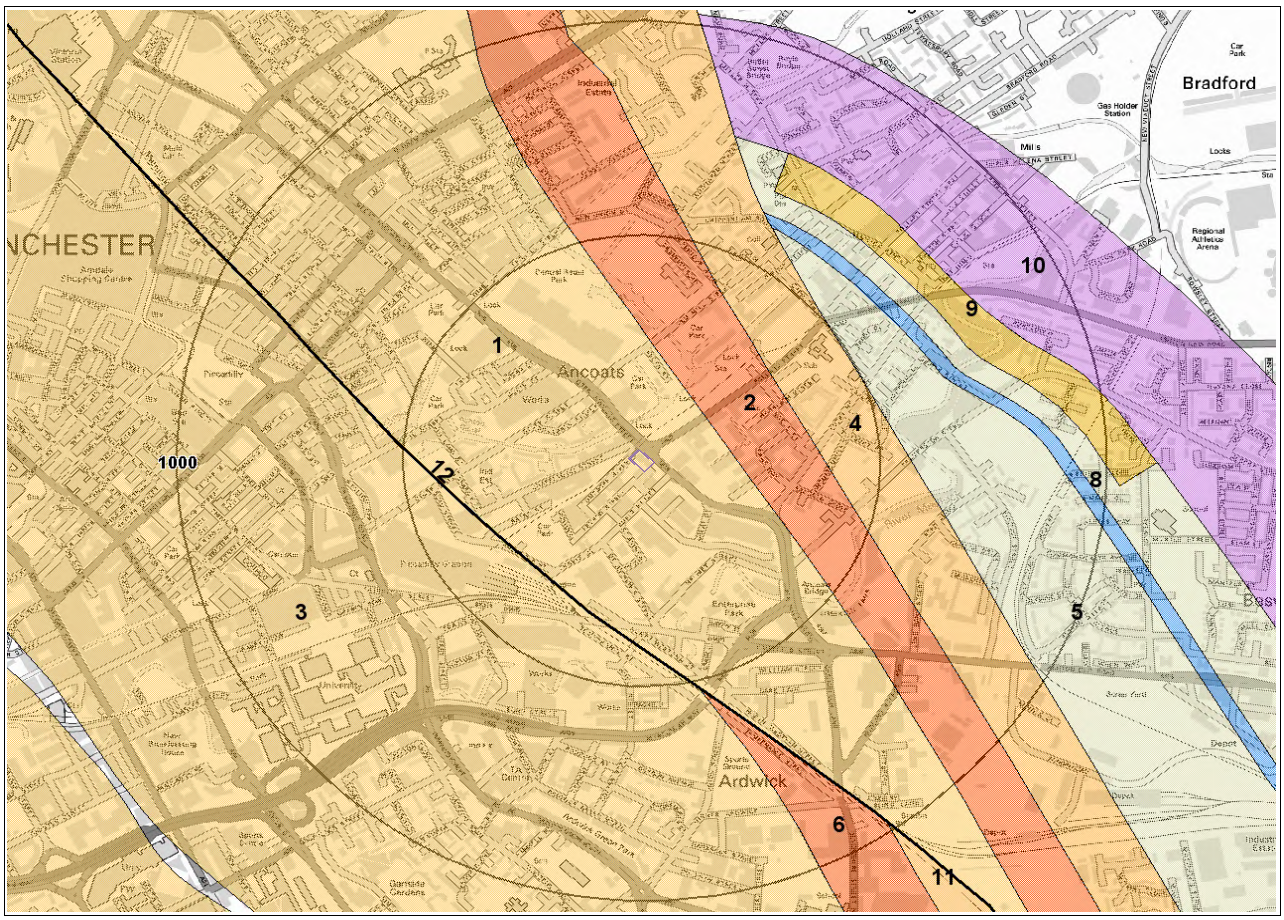
Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)

NW N NE

W E

SW S SE



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Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 085

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	CHES-SDST	CHESTER FORMATION - SANDSTONE	OLENEKIAN
2	154.0	NE	MM-MDST	MANCHESTER MARLS FORMATION - MUDSTONE	-
3	324.0	SW	CHES-SDST	CHESTER FORMATION - SANDSTONE	OLENEKIAN
4	327.0	NE	CS-SDST	COLLYHURST SANDSTONE FORMATION - SANDSTONE	-
5	494.0	NE	HA-MDSS	HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Moderate

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? Yes

ID	Distance	Direction	Category Description	Feature Description
12	324.0	SW	FAULT	Fault, inferred

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

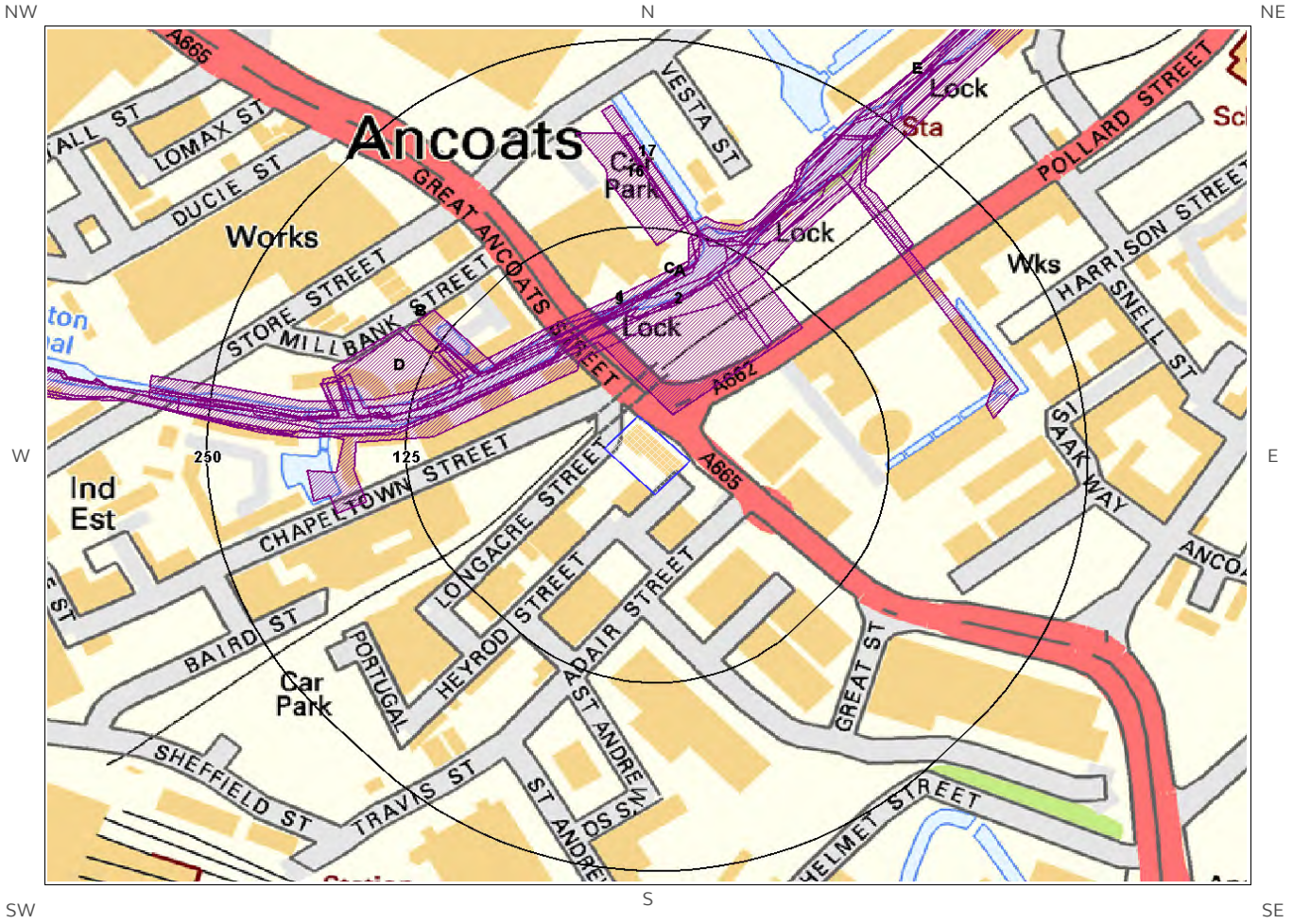
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

---

4 Ground Workings map



Ground Workings Legend

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Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	15.0	NE	385547 398380	Canal	1923
2	49.0	NW	385460 398281	Canal	1991
3A	59.0	NW	388869 396935	Canal	1968
4A	59.0	NW	388869 396935	Canal	1956
5B	65.0	N	385322 398180	Water Body	1890
6B	65.0	N	385322 398180	Canal	1915
7B	65.0	N	385322 398180	Canal	1934
8B	65.0	N	385322 398180	Canal	1938
9	65.0	NW	385335 398187	Water Body	1905
10C	66.0	NW	385441 398289	Canal	1978
11C	66.0	NW	385441 398289	Canal	1985
12D	98.0	NW	385157 398126	Unspecified Wharves	1923
13D	103.0	NW	385154 398129	Unspecified Wharves	1915
14D	103.0	NW	385154 398129	Unspecified Wharves	1938
15D	103.0	NW	385154 398129	Unspecified Wharves	1934
16	114.0	N	385304 398251	Unspecified Wharf	1915
17	129.0	N	385311 398267	Unspecified Wharf	1923
18E	222.0	NE	385734 398565	Canal	1921
19E	222.0	NE	385734 398565	Canal	1906
20E	222.0	NE	385734 398565	Canal	1938
21E	222.0	NE	385734 398565	Canal	1933

ID	Distance (m)	Direction	NGR	Use	Date
22E	222.0	NE	385734 398565	Canal	1891

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	681.0	E	386020 398065	Limestone	Ardwick Lime Works Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	721.0	E	386050 397950	Limestone	Ardwick Lime Works Pit	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	756.0	E	386070 397880	Clay & Shale	Alderman Street Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	862.0	NE	385949 398679	Clay & Shale	Holt Town Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	874.0	E	386170 397800	Limestone	Ardwick Lime Works Pits	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	937.0	E	386250 397850	Clay & Shale	Beswick Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	975.0	SE	386130 397500	Clay & Shale	Ardwick Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	996.0	E	386280 397745	Clay & Shale	Beswick Brick Field	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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Site Outline

Search Buffers (m) — 250 — 500

Historical Mining

Non-Coal Mining Cavities

Natural Cavities (point data)

Natural Cavities (polygon data)

Non-Coal Mining

- Highly likely
- Likely
- Unlikely
- Highly unlikely
- Rare

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? Yes

The following information provided by JPB is not represented on mapping: In addition to being located inside an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) have information such as mining plans and maps held within their archive of mining activities that have occurred within 1km of this property which may supplement this information. Further details and a quote for services can be obtained by emailing this report to enquiries.gs@jpb.co.uk.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	561.0	E	Ardwick	Limestone - Ardwick	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
2	707.0	N	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

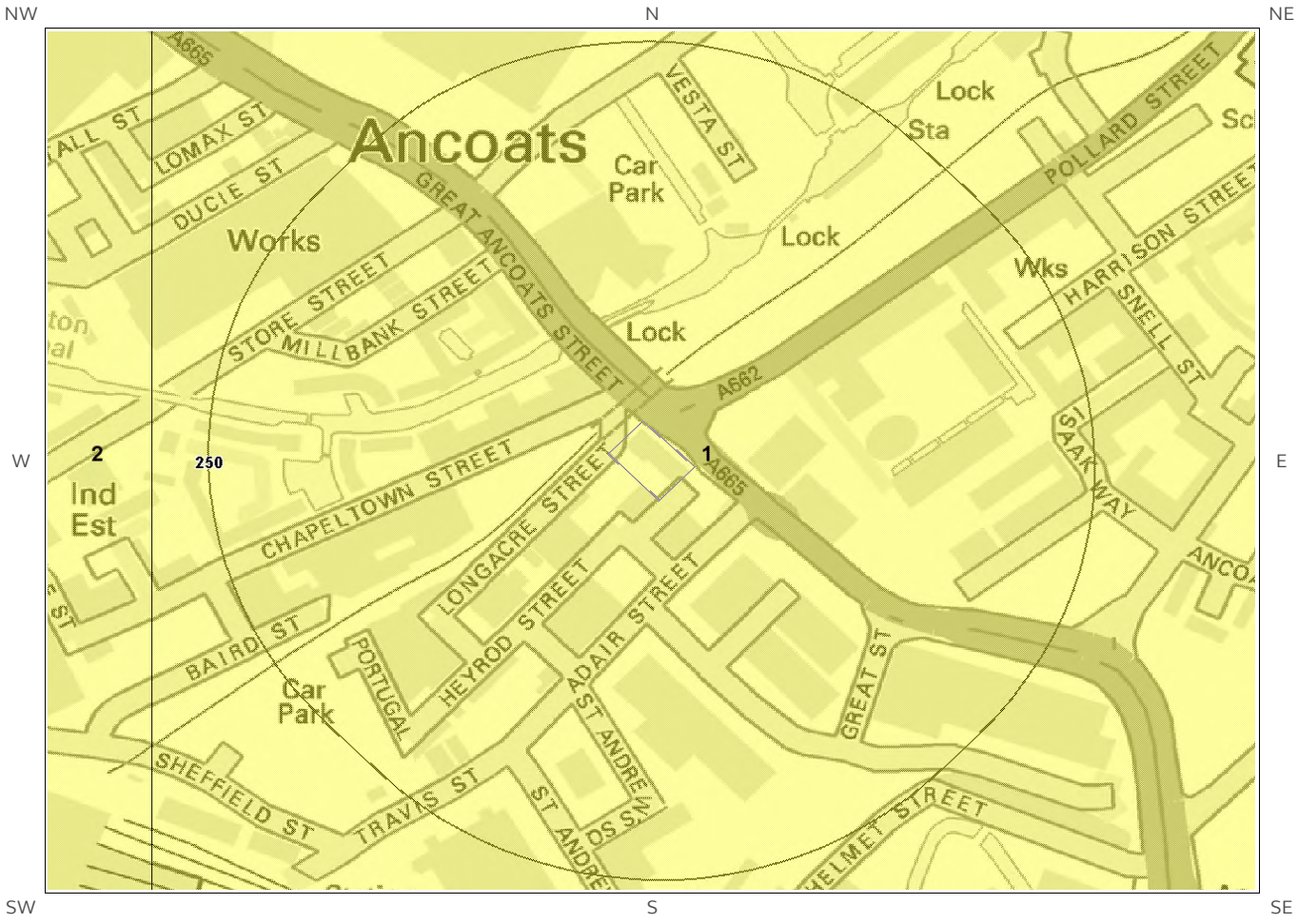
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

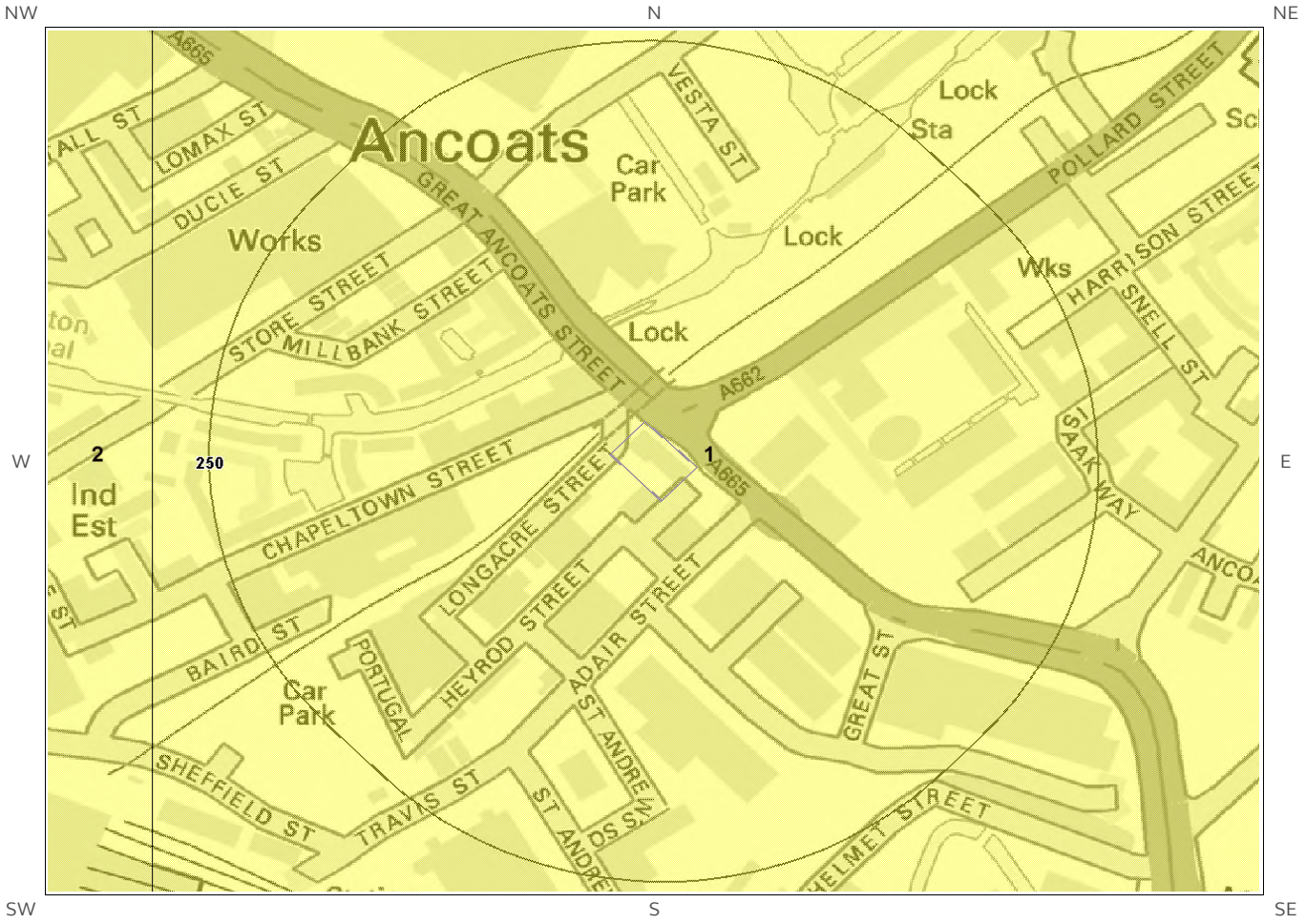


Shrink Swell Clay Legend

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6.2 Landslides map

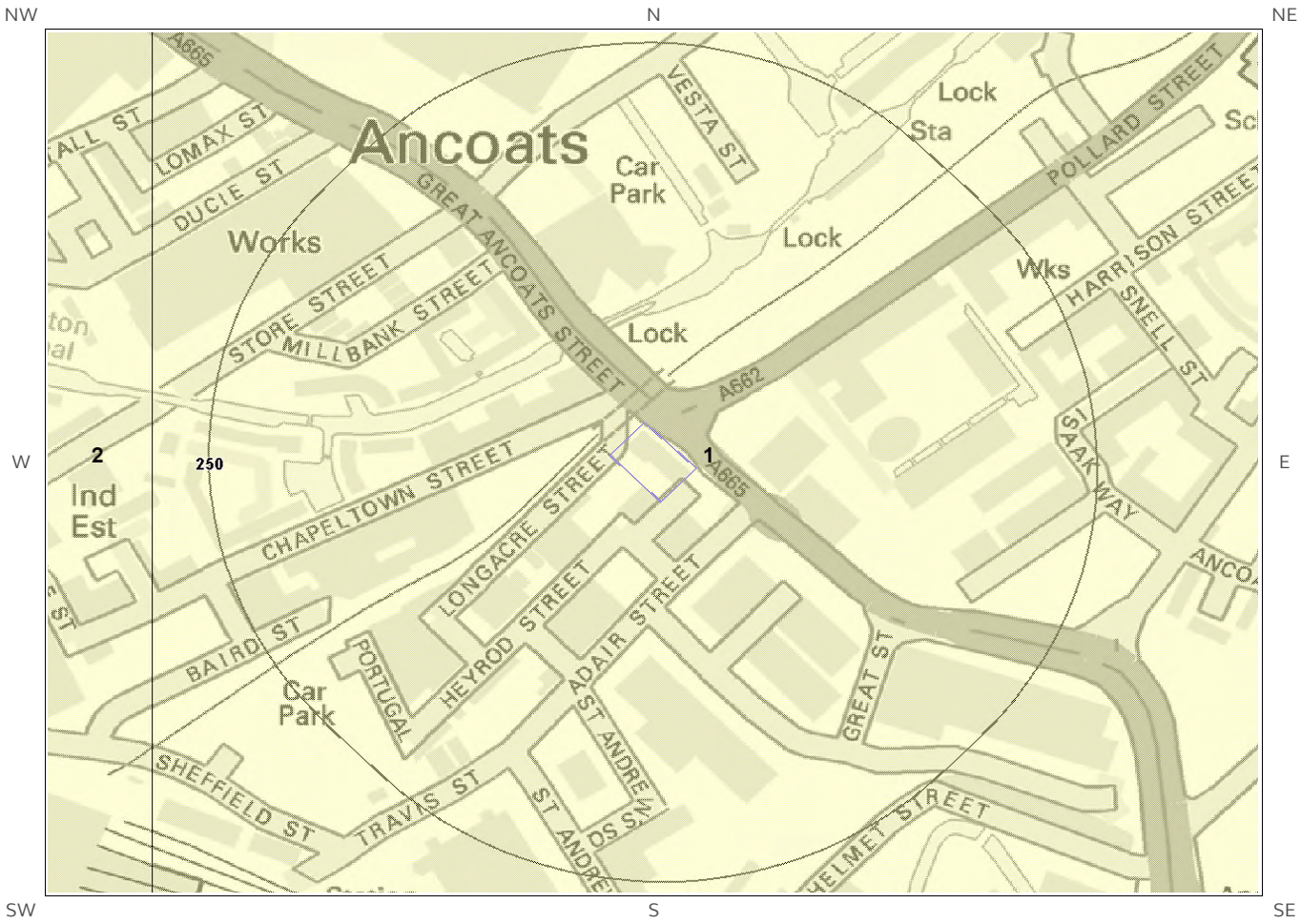


Landslides Legend

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6.3 Ground Dissolution of Soluble Rocks map

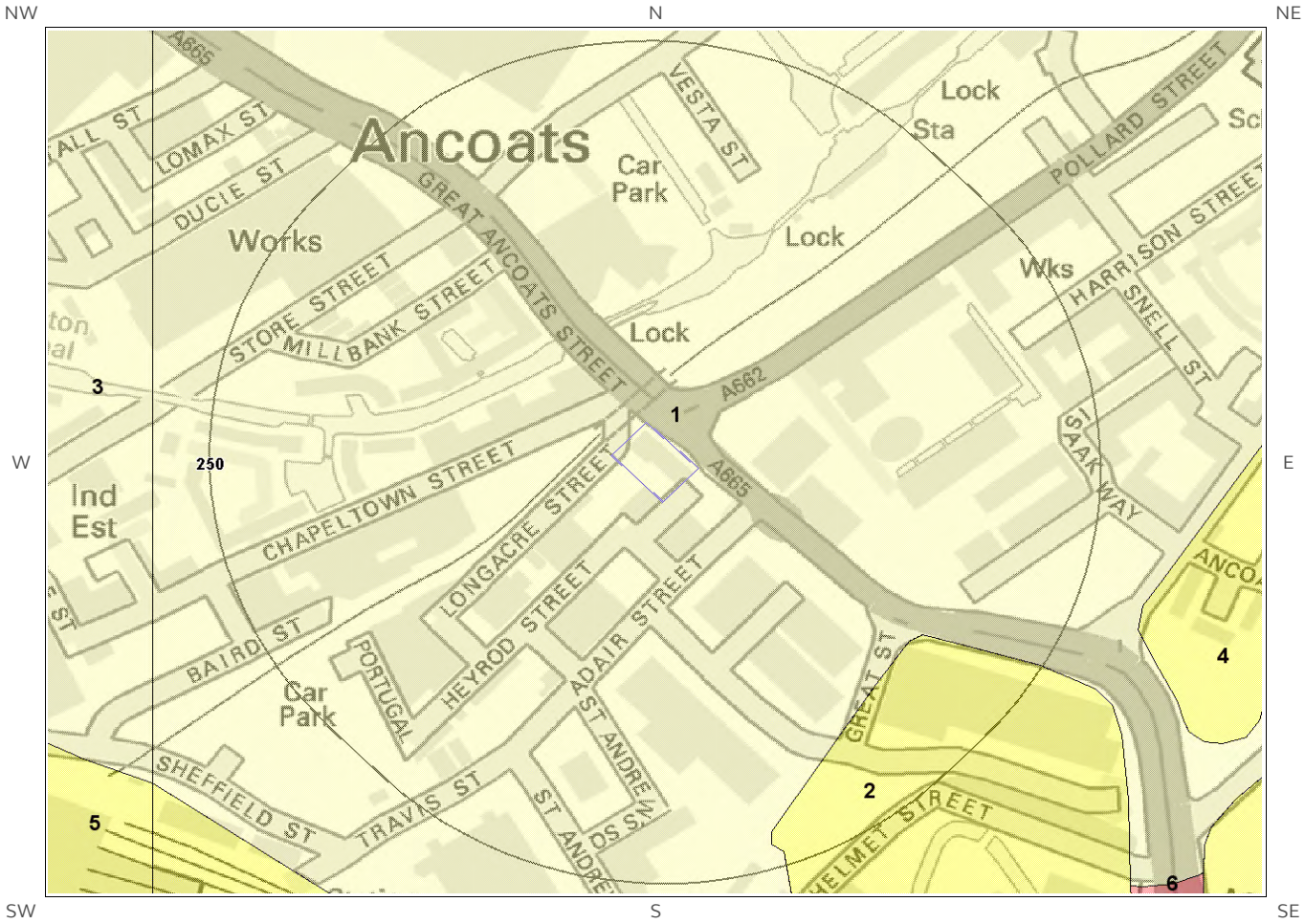


Ground Dissolution Soluble Rocks Legend

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6.4 Compressible Deposits map



Compressible Deposits Legend

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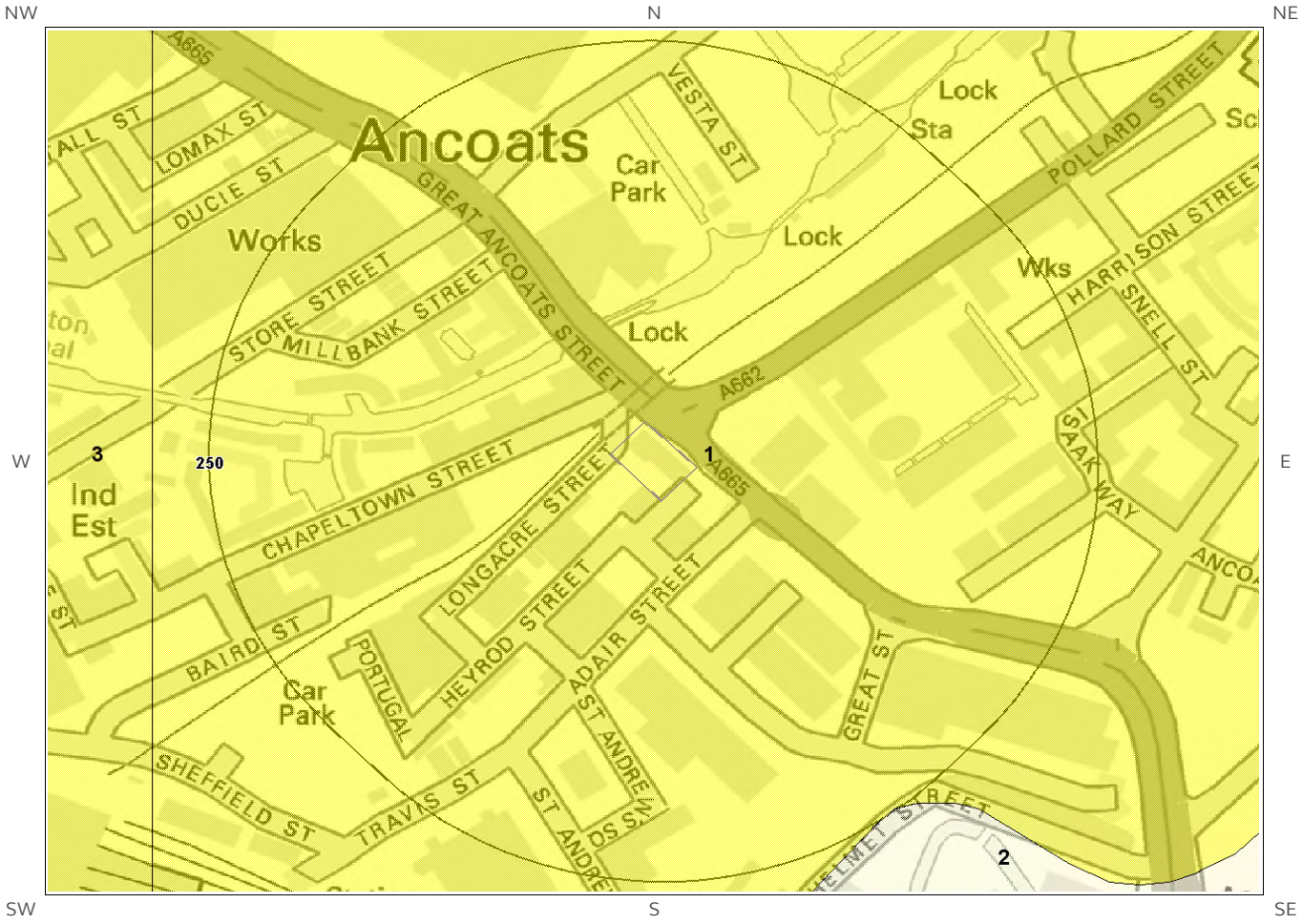
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.5 Collapsible Deposits map

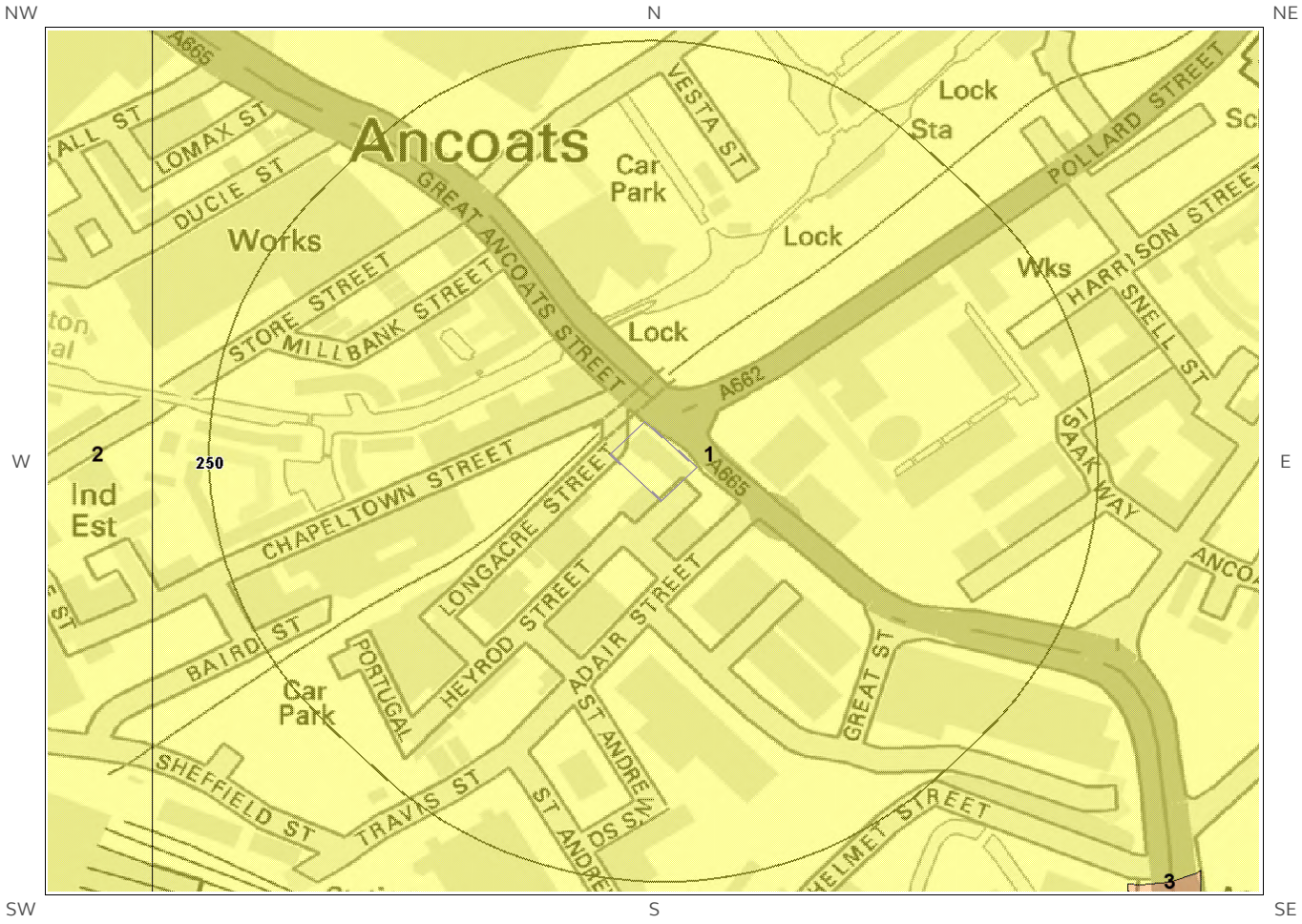


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Very Low

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This includes an automatically generated 50m buffer zone around the site

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

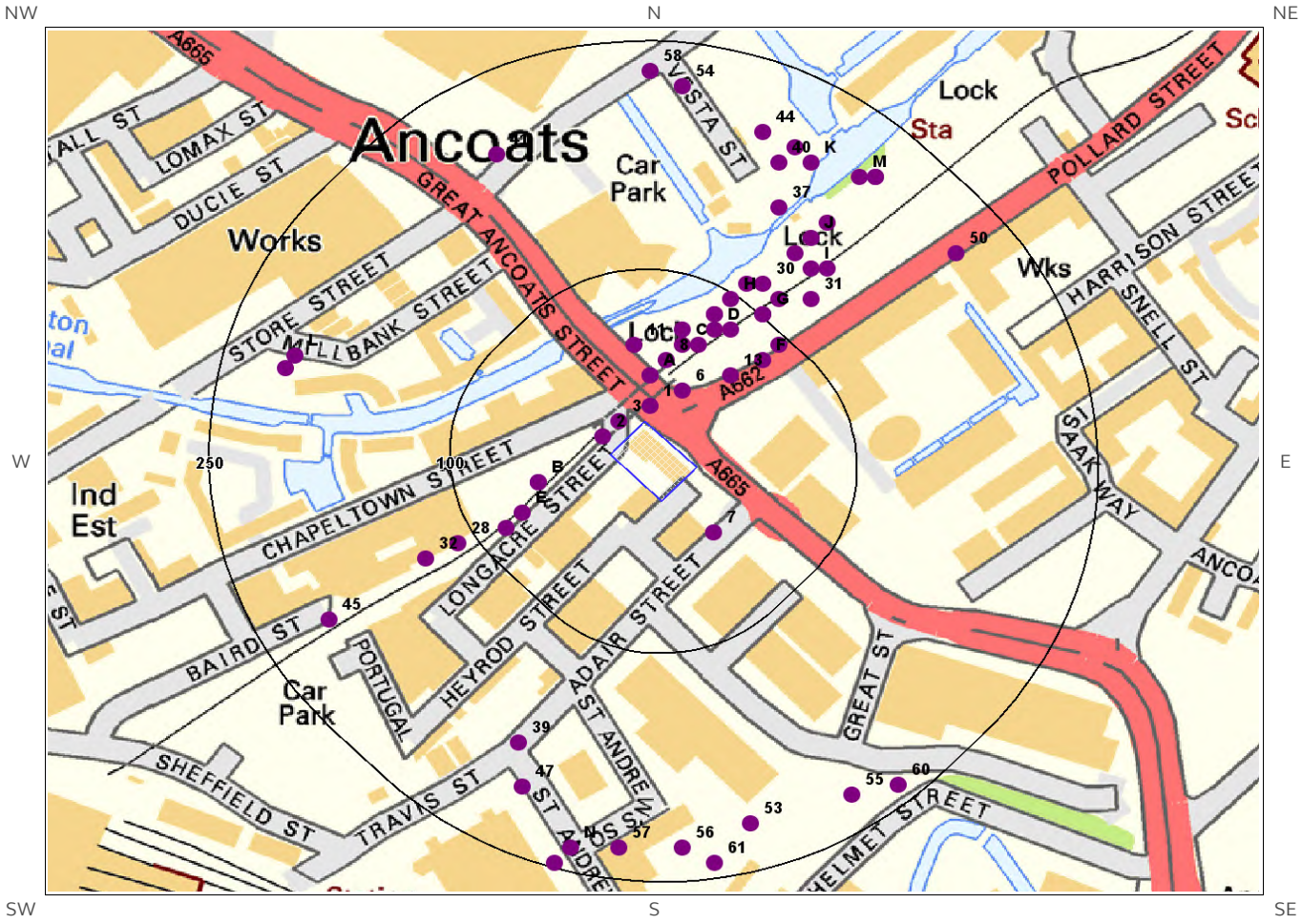
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map



Borehole Records Legend

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Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 62

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	10.0	N	385310 398110	SJ89NE2010	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB5
2	12.0	NW	385280 398090	SJ89NE2008	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB4
3	12.0	NW	385290 398100	SJ89NE2009	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB4A
4A	30.0	N	385310 398130	SJ89NE1889	2.0	ASHTON CANAL CORRIDOR TP 2
5A	30.0	N	385310 398130	SJ89NE1959	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B3
6	30.0	NE	385330 398120	SJ89NE1890	2.0	ASHTON CANAL CORRIDOR TP 3
7	38.0	SE	385349 398027	SJ89NE34	21.0	MANCHESTER CORP. GREAT ANCOATS STREET
8	42.0	N	385320 398140	SJ89NE2011	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB6
9B	49.0	W	385240 398060	SJ89NE1958	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B2
10B	49.0	W	385240 398060	SJ89NE2007	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB3
11	50.0	N	385300 398150	SJ89NE1888	3.0	ASHTON CANAL CORRIDOR TP 1
12C	55.0	NE	385330 398150	SJ89NE1960	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B4

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
13	58.0	NE	385360 398130	SJ89NE1893	2.0	ASHTON CANAL CORRIDOR TP 6
14C	60.0	NE	385340 398150	SJ89NE1892	3.0	ASHTON CANAL CORRIDOR TP 5
15C	64.0	N	385330 398160	SJ89NE1891	2.0	ASHTON CANAL CORRIDOR TP 4
16E	68.0	SW	385230 398040	SJ89NE1957	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B1
17D	74.0	NE	385350 398160	SJ89NE2012	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB7
18F	79.0	NE	385380 398140	SJ89NE1896	2.0	ASHTON CANAL CORRIDOR TP 9
19D	80.0	NE	385360 398160	SJ89NE1895	2.0	ASHTON CANAL CORRIDOR TP 8
20E	82.0	SW	385220 398030	SJ89NE2006	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB2
21D	82.0	NE	385350 398170	SJ89NE1961	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B5
22D	82.0	NE	385350 398170	SJ89NE1894	2.0	ASHTON CANAL CORRIDOR TP 7
23F	93.0	NE	385390 398150	SJ89NE1899	2.0	ASHTON CANAL CORRIDOR TP 12
24H	96.0	NE	385360 398180	SJ89NE1962	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B6
25G	101.0	NE	385380 398170	SJ89NE1900	2.0	ASHTON CANAL CORRIDOR TP 13
26G	101.0	NE	385380 398170	SJ89NE1898	2.0	ASHTON CANAL CORRIDOR TP 11
27H	110.0	NE	385370 398190	SJ89NE1897	2.0	ASHTON CANAL CORRIDOR TP 10
28	112.0	SW	385190 398020	SJ89NE2005	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB1
29G	115.0	NE	385390 398180	SJ89NE1901	2.0	ASHTON CANAL CORRIDOR TP 14
30	116.0	NE	385380 398190	SJ89NE2013	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB8
31	129.0	NE	385410 398180	SJ89NE1904	3.0	ASHTON CANAL CORRIDOR TP 17

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
32	134.0	SW	385170 398010	SJ89NE1956	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TPA 4
33I	144.0	NE	385410 398200	SJ89NE1902	3.0	ASHTON CANAL CORRIDOR TP 15
34I	144.0	NE	385400 398210	SJ89NE1963	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B7
35I	150.0	NE	385420 398200	SJ89NE1903	3.0	ASHTON CANAL CORRIDOR TP 16
36J	158.0	NE	385410 398220	SJ89NE2014	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB9
37	163.0	NE	385390 398240	SJ89NE697	8.0	INNER RING ROAD SECTION 2 PHASE 1 MANCHESTER 6
38J	172.0	NE	385420 398230	SJ89NE1964	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B8
39	182.0	SW	385228 397889	SJ89NE33	24.0	MANCHESTER CORP. ST. ANDREW'S STREET
40	189.0	NE	385390 398270	SJ89NE2360	3.0	ANCOATS HOSPITAL SITE ANCOATS MANCHESTER TP1
41	198.0	NW	385214 398275	SJ89NE87	9.0	MANCHESTER CORP. MILL STREET
42K	199.0	NE	385410 398270	SJ89NE696	8.0	INNER RING ROAD SECTION 2 PHASE 1 MANCHESTER 5
43K	203.0	NE	385400 398280	SJ89NE2362	4.0	ANCOATS HOSPITAL SITE ANCOATS MANCHESTER TP3
44	204.0	N	385380 398290	SJ89NE2361	3.0	ANCOATS HOSPITAL SITE ANCOATS MANCHESTER TP2
45	206.0	SW	385110 397970	SJ89NE2004	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHA2
46L	207.0	W	385089 398143	SJ89NE257	-1.0	PICCADILLY VILLAGE MANCHESTER 100
47	207.0	SW	385230 397860	SJ89NE588	-1.0	MANCHESTER PARCELS OFFICE 11
48M	208.0	NE	385440 398260	SJ89NE2015	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM BHB10
49L	210.0	W	385083 398135	SJ89NE258	-1.0	PICCADILLY VILLAGE MANCHESTER 101
50	214.0	NE	385500 398210	SJ89NE695	8.0	INNER RING ROAD SECTION 2 PHASE 1 MANCHESTER 4

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
51M	215.0	NE	385450 398260	SJ89NE1966	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP C1
52M	215.0	NE	385450 398260	SJ89NE1965	-1.0	MANCHESTER METRO PHASE 3 EXTENSION TO COMMONWEALTH WEALTH GAMES STADIUM TP B9
53	219.0	S	385372 397836	SJ89NE2540	-1.0	PICCADILLY TRADING ESTATE 2
54	221.0	N	385330 398320	SJ89NE698	34.0	INNER RING ROAD SECTION 2 PHASE 1 MANCHESTER 7/7A
55	226.0	SE	385435 397855	SJ89NE2542	-1.0	PICCADILLY TRADING ESTATE 4
56	228.0	S	385330 397820	SJ89NE583	6.0	MANCHESTER PARCELS OFFICE 6
57	230.0	S	385290 397820	SJ89NE927	6.0	MANCHESTER PARCELS OFFICE
58	230.0	N	385310 398330	SJ89NE699	21.0	INNER RING ROAD SECTION 2 PHASE 1 MANCHESTER 8
59N	235.0	S	385260 397820	SJ89NE580	9.0	MANCHESTER PARCELS OFFICE 3
60	238.0	SE	385464 397861	SJ89NE2541	-1.0	PICCADILLY TRADING ESTATE 3
61	240.0	S	385350 397810	SJ89NE926	6.0	MANCHESTER PARCELS OFFICE
62N	247.0	S	385250 397810	SJ89NE924	9.0	MANCHESTER PARCELS OFFICE

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#4A: scans.bgs.ac.uk/sobi_scans/boreholes/15629934
#6: scans.bgs.ac.uk/sobi_scans/boreholes/15629935
#7: scans.bgs.ac.uk/sobi_scans/boreholes/936435
#11: scans.bgs.ac.uk/sobi_scans/boreholes/15629933
#13: scans.bgs.ac.uk/sobi_scans/boreholes/15629938
#14C: scans.bgs.ac.uk/sobi_scans/boreholes/15629937
#15C: scans.bgs.ac.uk/sobi_scans/boreholes/15629936
#18F: scans.bgs.ac.uk/sobi_scans/boreholes/15629941
#19D: scans.bgs.ac.uk/sobi_scans/boreholes/15629940
#22D: scans.bgs.ac.uk/sobi_scans/boreholes/15629939
#23F: scans.bgs.ac.uk/sobi_scans/boreholes/15629944
#25G: scans.bgs.ac.uk/sobi_scans/boreholes/15629945
#26G: scans.bgs.ac.uk/sobi_scans/boreholes/15629943
#27H: scans.bgs.ac.uk/sobi_scans/boreholes/15629942
#29G: scans.bgs.ac.uk/sobi_scans/boreholes/15629946
#31: scans.bgs.ac.uk/sobi_scans/boreholes/15629949
#33I: scans.bgs.ac.uk/sobi_scans/boreholes/15629947
#35I: scans.bgs.ac.uk/sobi_scans/boreholes/15629948
#37: scans.bgs.ac.uk/sobi_scans/boreholes/937114
#39: scans.bgs.ac.uk/sobi_scans/boreholes/936434
#40: scans.bgs.ac.uk/sobi_scans/boreholes/17722632
#41: scans.bgs.ac.uk/sobi_scans/boreholes/936488
#42K: scans.bgs.ac.uk/sobi_scans/boreholes/937113
#43K: scans.bgs.ac.uk/sobi_scans/boreholes/17722636
#44: scans.bgs.ac.uk/sobi_scans/boreholes/17722635
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#54: scans.bgs.ac.uk/sobi_scans/boreholes/937115
#56: scans.bgs.ac.uk/sobi_scans/boreholes/937000
#57: scans.bgs.ac.uk/sobi_scans/boreholes/937344
#58: scans.bgs.ac.uk/sobi_scans/boreholes/937116
#59N: scans.bgs.ac.uk/sobi_scans/boreholes/936997
#61: scans.bgs.ac.uk/sobi_scans/boreholes/937343
#62N: scans.bgs.ac.uk/sobi_scans/boreholes/937341

8 Estimated Background Soil Chemistry

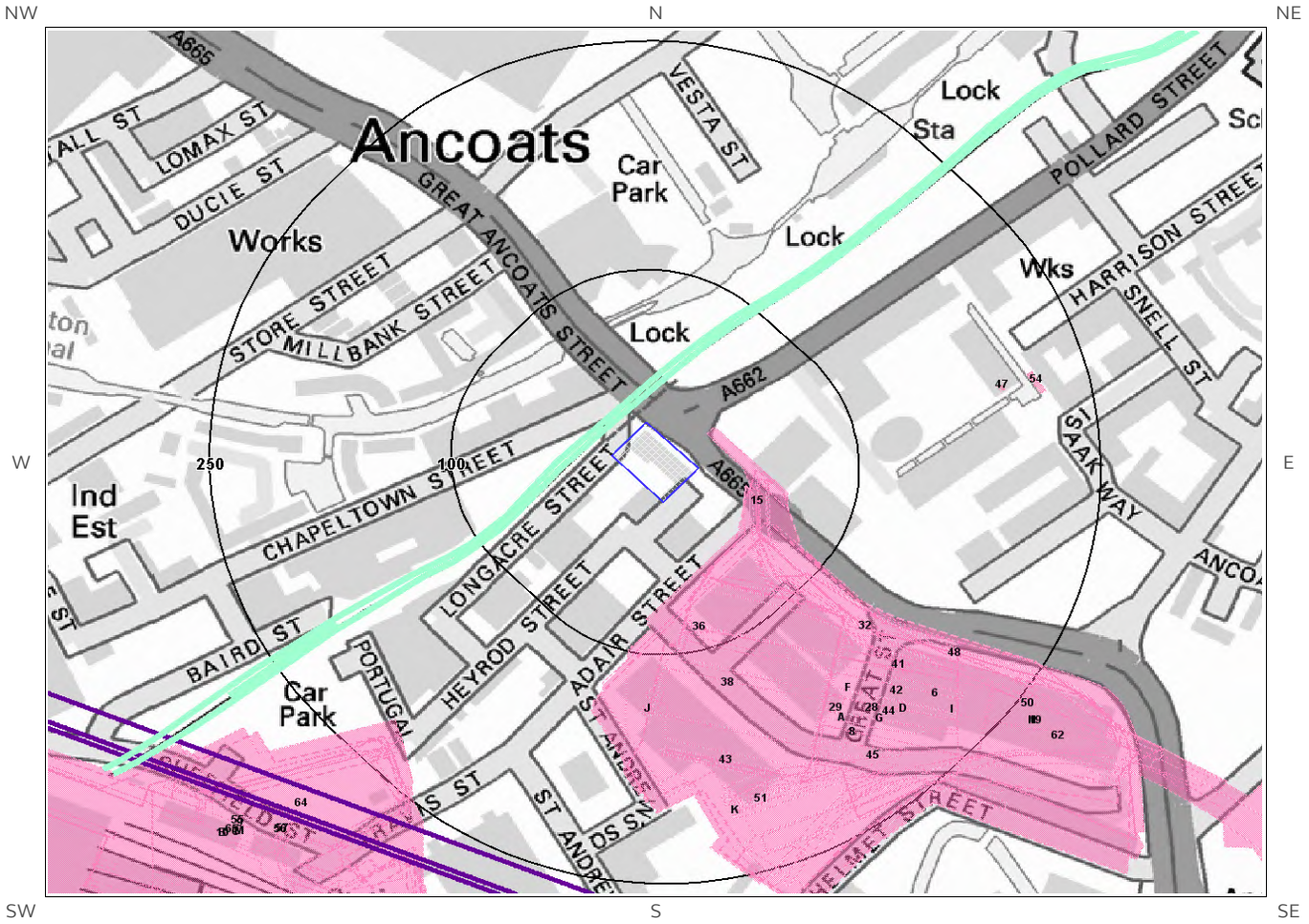
Records of background estimated soil chemistry within 250m of the study site boundary: 2

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	100 - 200 mg/kg
48.0	S	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	100 - 200 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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- Site Outline
- Search Buffers (m) — 250 / 500
- Underground or Partially Underground Railway / Subway System
- Railway Tunnel (OS Mapping)
- Abandoned or Dismantled Railway (OpenStreetMap)
- Railway Track (OS Mapping)
- Railway Track (OpenStreetMap)
- High Speed 2
- High Speed 2 Revised Proposed Route
- Crossrail 1
- Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
15	20	NE	385375 398041	Railway Sidings	1891
1A	32	E	385439 397907	Railway Sidings	1915
2A	32	E	385439 397907	Railway Sidings	1905
3A	32	E	385439 397907	Railway Sidings	1934
4A	32	E	385439 397907	Railway Sidings	1938
5A	32	E	385439 397907	Railway Sidings	1923

ID	Distance (m)	Direction	NGR	Details	Date
16D	34	E	385459 397953	Railway Sidings	1922
17D	34	E	385459 397953	Railway Sidings	1932
18D	34	E	385459 397953	Railway Sidings	1908
6	35	E	385515 397902	Railway Sidings	1968
19E	37	E	385379 398032	Railway Sidings	1955
20E	37	E	385379 398032	Railway Sidings	1948
21F	38	E	n/a	Railways	1893
22F	38	E	n/a	Railways	1922
23E	38	E	385380 398031	Railway Sidings	1965
24E	38	E	385380 398031	Railway Sidings	1948
25E	38	E	385380 398031	Railway Sidings	1967
26E	38	E	385380 398031	Railway Sidings	1951
27E	38	E	385380 398031	Railway Sidings	1967
28	40	E	385457 397926	Railway Sidings	1889
29	47	SE	n/a	Railway	1893
7I	50	SE	385515 397902	Railway Sidings	1956
30G	55	SE	n/a	Railway	1932
31G	55	SE	n/a	Railway	1916
8	60	SE	385439 397907	Railway Sidings	1890
32	60	SE	385449 397966	Railway Sidings	1963
33H	60	SE	385552 397909	Railway Sidings	1965
34H	60	SE	385552 397909	Railway Sidings	1965
35H	60	SE	385552 397909	Railway Sidings	1968
36	81	S	385343 397965	Railway Sidings	1891
37I	82	SE	385491 397905	Railway Sidings	1948
38	86	S	385349 397928	Railway Sidings	1891
39J	135	S	385307 397911	Railway Sidings	1922
40J	135	S	385307 397911	Railway Sidings	1908
41	144	SE	385463 397940	Railway Sidings	1948
42	155	SE	385461 397923	Railway Sidings	1948
43	161	S	385355 397877	Railway Sidings	1891

ID	Distance (m)	Direction	NGR	Details	Date
44	164	SE	385459 397910	Railway Sidings	1948
45	173	SE	385471 397880	Railway Sidings	1948
46	177	SE	385439 397860	Railway Sidings	1963
47	194	E	385527 398123	Railway Sidings	1889
48	197	SE	385497 397947	Railway Sidings	1948
49	201	SE	385564 397909	Railway Sidings	1948
50	202	SE	385555 397917	Railway Sidings	1953
51	203	S	385377 397852	Railway Sidings	1891
52K	206	S	385362 397844	Railway Sidings	1922
53K	206	S	385362 397844	Railway Sidings	1908
54	213	E	385549 398127	Railway Sidings	1889
55	218	SW	n/a	Railway	1889
56	224	SW	385105 397792	Railway Sidings	1948
57	224	SW	385250 397697	Railway Sidings	1948
58L	229	S	385373 397811	Railway Sidings	1932
59L	229	S	385373 397811	Railway Sidings	1922
60L	229	S	385373 397811	Railway Sidings	1908
61M	230	SW	384842 397903	Railway Sidings	1889
9	231	SW	385121 397744	Railway Sidings	1923
62	232	SE	385577 397894	Railway Sidings	1960
63M	233	SW	384842 397903	Railway Sidings	1932
10	234	SW	385072 397799	Railway Sidings	1934
11B	234	SW	385072 397799	Railway Sidings	1938
64	234	SW	385080 397831	Railway Sidings	1891
65	234	SW	384842 397903	Railway Sidings	1922
66M	234	SW	384842 397903	Railway Sidings	1908
12B	235	SW	385072 397799	Railway Sidings	1915
13C	236	SW	384834 397906	Railway Sidings	1905
14C	236	SW	384834 397906	Railway Sidings	1890

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Name	Type
14	NW	Not given	Tram
14	NW	Not given	Tram
15	NW	Not given	Tram
15	NW	Not given	Tram
18	NW	Not given	Tram
18	NW	Not given	Tram
20	NW	Not given	Tram
20	NW	Not given	Tram
38	NE	Not given	Tram
38	NE	Not given	Tram
40	N	Not given	Tram
40	N	Not given	Tram
203	SW	Not given	Tram
203	SW	Not given	Tram

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project?	Yes
Is the study site within 500m of the route of the Crossrail 1 rail project?	No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a ***Groundsure HS2 and Crossrail 1 Report****.*

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

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www.coal.gov.uk

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https://www.gov.uk/government/organisations/public-health-england
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Main switchboard: 020 7654 8000

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Specialist UXO Desk Top Study

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Express Preliminary UXO Risk Assessment

Client	Hydrock
Project	Victoria House, Manchester
Site Address	Victoria House, Manchester, Great Ancoats St, Manchester, M4 7DB
Report Reference	EP7333-00
Date	26/09/18
Originator	JM

Assessment Objective

This preliminary risk assessment is a qualitative screening exercise to assess the likely potential of encountering unexploded ordnance (UXO) at the Victoria House, Manchester site. The assessment involves the consideration of the basic factors that affect the potential for UXO to be present at a site as outlined in Stage One of the UXO risk management process.

Background

This assessment uses the sources of information available in-house to 1st Line Defence Ltd to enable the placement of a development site in context with events that may have led to the presence of German air-delivered or Allied military UXO. The report will identify any immediate necessity for risk mitigation or additional research in the form of a Detailed UXO Risk Assessment. It makes use of 1st Line Defence's extensive historical archives, library and unique geo-databases, as well as internet resources, and is researched and compiled by UXO specialists and graduate researchers.

The assessment directly follows CIRIA C681 guidelines "Unexploded Ordnance, a Guide for the Construction Industry". The document will therefore assess the following factors:

- Basic Site Data
- Previous Military Use
- Indicators of potential aerial delivered UXO threat
- Consideration of any Mitigating Factors
- Extent of Proposed Intrusive Works
- Any requirement for Further Work

It should be noted that the vast majority of construction sites in the UK will have a low or negligible risk of encountering UXO and should be able to be screened out at this preliminary stage. The report is meant as a common sense 'first step' in the UXO risk management process. The content of the report and conclusions drawn are based on basic, preliminary research using the information available to 1st Line Defence at the time this report was produced. It should be noted that the only way to entirely negate risk from UXO to a project would be to support the works proposed with appropriate UXO risk mitigation measures. It is rarely possible to state that there is absolutely 'no' risk from UXO to a project.

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Risk Assessment Considerations	
Site location and description/current use	The site is located in the city of Manchester within the county of Greater Manchester. It is a rectangular shaped parcel of land currently occupied by a commercial structure and adjoining car park. It is bordered to the north by Great Ancoats Street, a commercial structure south, Epworth street and a commercial structure east, and Longcare Street west. The site is approximately centred on the OS grid reference: **SJ 8531798082**. 
Are there any indicators of current/historical military activity on/close to the site?	In house records do not indicate that the site had any former military use. No features such as WWII defensive positions, encampments or firing ranges are recorded to have been located at or in the immediate vicinity of the site. In addition no information of ordnance being stored, produced, or disposed of within the site boundary could be found. Although the closest Heavy Anti-Aircraft (HAA) battery was situated approximately 2.3km north-west of the site, the range of a fired projectile can be up to 15km. The conditions in which unexploded anti-aircraft ordnance may have fallen undetected is analogous to that of aerial delivered German bombs.
What was the pre- and post-WWII history of the site?	Pre-WWII the site was occupied by multiple residential structures according to 1922 OS mapping. It was bordered to the north by Great Ancoat Street, residential structures south, Wesley Street and a structure labelled 'Wesley Hall' east, and Longcare Street and residential structures west. Post-WWII many of the structures occupying the site have been cleared and one has been labelled 'ruin' according to 1950 – 51 OS mapping. The residential structures bordering to the south have been cleared. The residential structures west have been either cleared or replaced by a structure labelled 'Eng Works'. A set of residential structures which bordered south-east have also been cleared.
Was the area subject to bombing during WWII?	During WWII the site was located in the County Borough of Manchester. According to Home Office (HO) statistics, this area sustained a low bomb density of 27 items per 1,000 acres. This consisted of 712 high explosive (HE) bombs, 18 parachute mines, 7 oil bombs, and 1 V-1 flying bomb. Available bomb mapping for Manchester does not record any bombing to have affected the site or the surrounding area.
Is there any evidence of bomb damage on/close to the site?	Available bomb damage mapping for Manchester does not record any damage to the site. It also does not record any damage to the structures bordering the site. Despite this, low-resolution aerial imagery shows that the majority of the structures on site were cleared by the post-war period.

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To what degree would the site have been subject to access?	It is considered likely that the site would have been subject to regular access at the beginning of the war. This is due to the amount of residential properties on site and the urban location. According to post-war OS mapping, many of the properties were cleared and one was badly damaged. It is thus not likely that the site would have been frequently accessed throughout the war.
To what degree has the site been developed post-WWII?	All the residential properties which occupied the site have now been cleared and replaced by a commercial structure.
What is the nature and extent of the intrusive works proposed?	The nature and extent of works proposed was not available at the time of writing.

Summary and Conclusions

During WWII the site was located in the County Borough of Manchester. According to HO statistics this area sustained a low density of bombing with 27 items dropped per 1,000 acres.

Manchester bomb and damage mapping does not record bombing or damage to have affected the site during the war, Despite this, post-war OS mapping and low-resolution post-war aerial photography show that many of the structures within the site and the vicinity of the site were cleared. Within OS mapping, one structure is labelled as 'ruin'. It is not known at this preliminary stage if this clearance and ruin were caused by bombing.

Recommendations

In accordance with CIRIA guidelines, it is recommended that a Detailed UXO Risk Assessment should be undertaken to confidently account for the conditions of the site during WWII. Further investigation would involve the analysis of data such as high-resolution aerial photography and any relevant written records. It would also outline any work-specific UXO risk mitigation measures.

Prior to or in lieu of a Detailed Assessment, it is recommended that appropriate UXO Risk Mitigation Measures are provided for intrusive works proposed.

If the client has any anecdotal or empirical evidence of UXO risk on site, please contact 1st Line Defence.

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Coal Authority ‘Consultants Coal Mining Report’

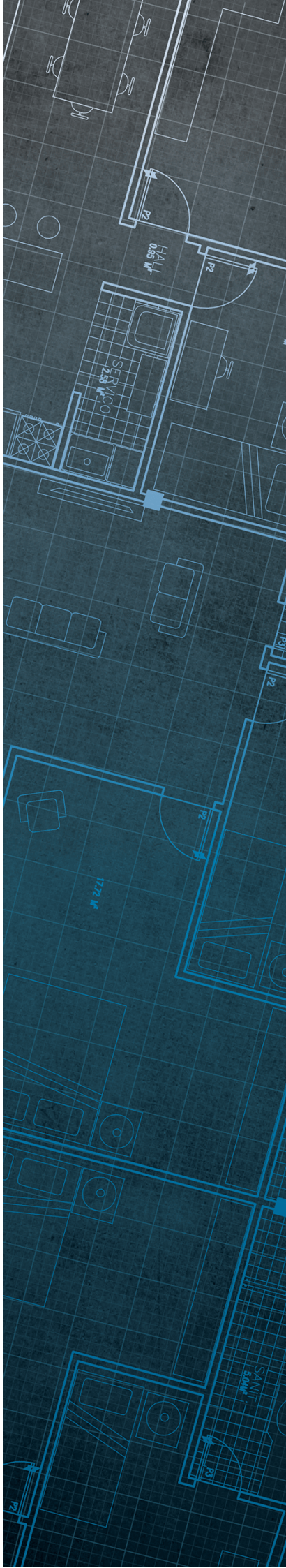
The Coal Authority

Consultants

Coal Mining Report

Victoria House, Great Ancoats
Street, Manchester
Greater Manchester
M4 7DB

Date of enquiry:	**8 October 2018**
Date enquiry received:	**8 October 2018**
Issue date:	**8 October 2018**
Our reference:	**51001955338001**
Your reference:	**HYD-5509568**



Consultants

Coal Mining Report

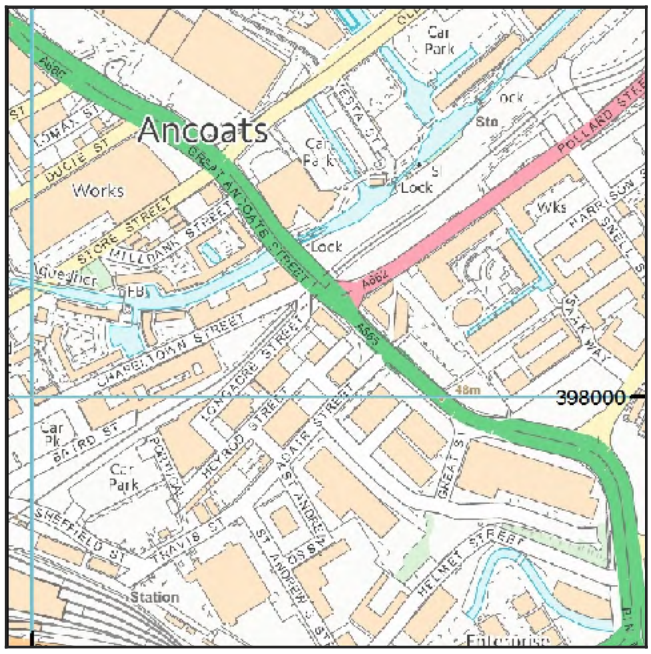
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

GROUNDSURE LIMITED

Enquiry address

Victoria House, Great Ancoats Street, Manchester
Greater Manchester
M4 7DB



Approximate position of property

Map data

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/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	BRADFORD FOUR FEET	Coal	35D3	358	North-East	12.0	South-West	120	1900
unnamed	BRADFORD FOUR FEET	Coal	35CT	425	North-East	18.4	South-West	120	1900
unnamed	CROMBOUKE	Coal	359E	1062	East	16.5	South-West	120	1932
unnamed	CROMBOUKE	Coal	359K	1063	East	13.3	South-West	120	1947
unnamed	ROGER	Coal	35B0	1096	North-East	19.0	South-West	180	1961
unnamed	ROGER	Coal	35B3	1106	East	15.9	South-West	180	1958

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

2636	NW1167	2655

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

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

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Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

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

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

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

Development advice

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

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

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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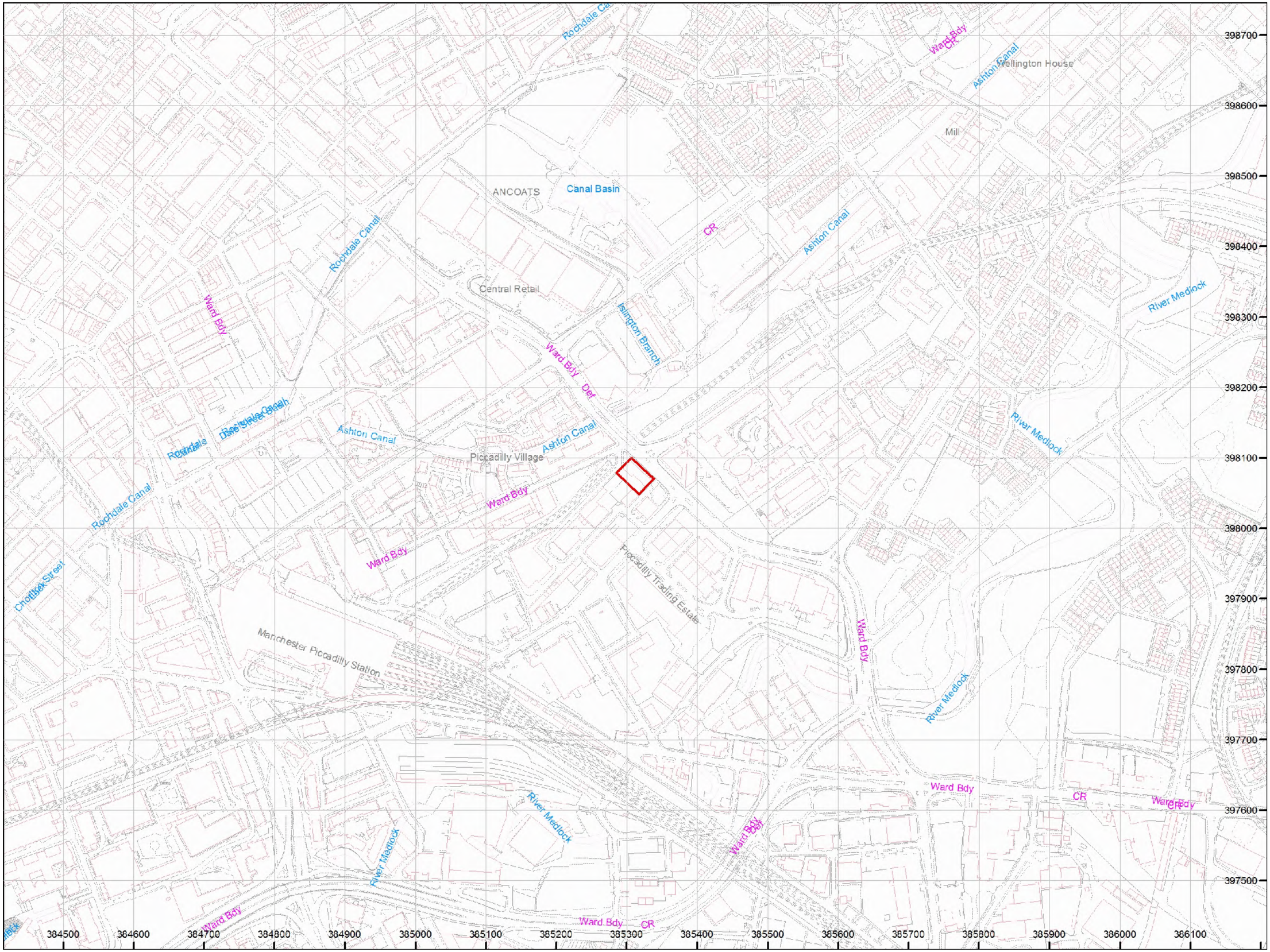
Summary of findings

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Map data

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown



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Appendix E

Preliminary Geotechnical Risk Register

Geotechnical Hazard Identification – Desk Study Stage

Potential geotechnical hazards have been assessed in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and HD 22/08. The following pages set out the identified geotechnical risks and hazards which are associated with the proposed development and establish the approach which is to be taken to manage the risks including the geotechnical input and analysis.

Table E.1 is a preliminary assessment of possible geotechnical hazards at the site at Desk Study stage. This information is used to assist with site investigation design.

Table E.1: Possible geotechnical hazards

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Uncontrolled Made Ground (variable strength and compressibility).	Potential Made Ground across the site.	✓	-
Soft / loose compressible ground (low strength and high settlement potential).	To be confirmed.	✓	-
Shrink swell of the clay fraction of soils under the influence of vegetation.	Glacial till across the site and mature tree present adjacent to the site.	✓	-
Variable lateral and vertical changes in ground conditions.	To be confirmed by site investigation.	✓	-
Elevated sulphates present in the soils.	Sulphate testing to be undertaken in the Glacial Till.	✓	-
Adverse chemical ground conditions, (e.g. expansive slag).	Not affected.	-	✓
Obstructions.	The existing buildings and fencing on site could pose obstructions.	✓	-
Existing below ground structures to remain (on or off site tunnels, foundations, basements, and adjacent sub-structures).	Possibility of unknown structures beneath the site.	✓	-
High groundwater.	Not affected.	-	✓
Changing groundwater conditions.	Not affected.	-	✓
Risk from erosion.	Not affected.	-	✓
Risk from flooding.	Not affected.	-	✓
Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of side walls.	Not affected.	-	✓
Slope stability issues – general slopes.	Not affected.	-	✓
Slope stability issues – retaining walls.	Not affected.	-	✓
Earthworks – settlement (due to placement of fill on soft / loose ground).	Not affected.	-	✓
Earthworks – poor bearing capacity of new fill.	Not affected.	-	✓

Hazard	Comment	Hazard status based on desk study	
		Could be present and / or affect site (i.e. Plausible)	Unlikely to be present and/or affect site
Earthworks – unsuitability of site won material to be reused as fill.	Not affected.	-	✓
Solution features in Chalk.	Not affected.	-	✓
Cavities in the Superficial Deposits due to solution features.	Not affected.	-	✓
Dissolution (associated with “wet rock head”).	Not affected.	-	✓
Brine extraction.	Not affected.	-	✓
Mining.	Not affected.	-	✓
Cambered ground with gulls possibly present.	Not affected.	-	✓
Relict Slip Surfaces.	Not affected.	-	✓
Solifluction.	Not affected.	-	✓
Problematic soils (silts and rewetting etc.).	Not affected.	-	✓

Appendix F

Plausible Source-Pathway-Receptor Contaminant Linkages

Summary of Potential Contaminant Linkages

Table F.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in CLR 11 and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland et al 2001) but with the addition of a 'no linkage' category (See Table F.1). More details are given in the relevant Hydrock methodology, referenced in Appendix G, including descriptions of typical examples of probability and consequences.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table F.1: Consequence versus probability assessment.

		Consequence			
Probability		Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table F.2: Exposure model – preliminary risk assessment of source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Elevated concentrations of metals and polycyclic aromatic hydrocarbons from general Made Ground across the site associated with current and previous buildings.	Ingestion, inhalation or direct contact.	Site users.	Unikely	Medium	Low	The area of the proposed development has previously been occupied by a Timber Yard, and currently there is a commercial structure present on site, therefore it is likely that Made Ground is present. The nature and extent of any contamination will need to be determined through intrusive ground investigation and laboratory soil contamination testing
	Inhalation of fugitive dust.	Neighbours.	Unlikely	Medium	Low	
	Leaching through unsaturated zone.	Groundwater aquifers in superficials and bedrocks.	Unlikely	Medium	Very Low	The previous and current use of the site comprises hardstanding, and the proposed development does not involve soft landscaping therefore leaching into aquifers is not likely. Geological mapping indicates the site to be underlain by Glacial Till which will act as an impermeable barrier for any mobile contamination from reaching the bedrock. Risks to controlled water are therefore considered to be very low. The groundwater quality will need to be determined through laboratory water contamination testing
	Surface run-off.	Aquatic ecosystems. Surface water and possible abstractors.	Unlikely	Medium	Very Low	There are no surface water features on site, therefore the risk to controlled waters is considered to be very low. The Ashton Canal 65m north from the site is the closest water receptor.
	Base flow from contaminated groundwater.					
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground below the site.	Migration, build up and asphyxiation.	Site users.	Unlikely	Severe	Moderate	Potential for Made Ground to be present below the site due to its current and former site uses therefore associated ground gas is a potential risk. The degree of ground gas generation if any, will need to be determined by appropriate gas monitoring and risk assessment.
		Neighbours.		Medium	Low	

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Asbestos fibres from insulation or asbestos-containing materials in the buildings.	Fugitive dust.	Site users.	Likely	Severe	High	Asbestos may be present in existing buildings particularly in the older building in the south east corner of the site, and in Made Ground. Careful removal will be required from buildings during demolition. However, removal under controlled conditions should limit release of fibres to the air and the ground.
		Neighbours.	Unlikely	Severe	Low	
Radon	Inhalation.	Site users.	No Linkage			BR211 indicates the site is in a low radon area and no radon protection is required.

Appendix G

Hydrock Methodologies

This report has utilised Hydrock Desk Study Template V12.1.

This appendix provides additional background information on certain approaches and methods used by Hydrock Consultants Limited in the preparation of this report.

The following Hydrock Methodologies apply to this report. These are not included, but are available on request by quoting the methodology reference, revision and date.

Reference	Name	Revision	Date
001	Desk Study	001	30/07/2018

Forshaw Land & Property Group Ltd

VICTORIA HOUSE, GREAT ANCOATS STREET

FLOOD RISK ASSESSMENT



70048738-RPT-001
NOVEMBER 2018

CONFIDENTIAL

Forshaw Land & Property Group Ltd

VICTORIA HOUSE, GREAT ANCOATS STREET

FLOOD RISK ASSESSMENT

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70048738

OUR REF. NO. 70048738-RPT-001

DATE: NOVEMBER 2018

WSP

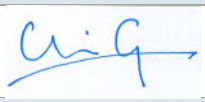
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1 INTRODUCTION

APPOINTMENT AND BRIEF

1.1.1. WSP is appointed by Forshaw Land & Property Group Ltd to undertake a Flood Risk Assessment and drainage strategy for the proposed development at Victoria House, Great Ancoats Street in Manchester. A site location plan is included in Appendix A.

STUDY OBJECTIVE

1.2.1. The objective of the study is to demonstrate that flood risk can be safely managed over the lifetime of the proposed development, and outline how surface water from the site will be managed. In doing so, this report will provide the following:

- An assessment of flood risk from all sources;
- Identification of any mitigation measures required to manage flood risk;
- Identify surface and foul water discharge points;
- Identify surface and foul water peak flows; and
- Identify proposed surface water storage volumes.

1.2.2. This report is also prepared in support of the Water Environment Chapter within the application's Environmental Statement.

PROPOSED DEVELOPMENT

1.3.1. Construction of a new residential tower comprising of 1 x ground , 23 levels plus a roof level with full height parapet (Total 25 storeys). A total of 177 apartments will be provided on site.

1.3.2. The proposed development is described as follows:

- 23 Storeys of residential dwellings (177 apartments in total), plus a roof level with full height parapet (making the total property height 25 storeys)
- A ground floor comprising 2 commercial units;
- Associated and ancillary development comprising a residential garden, resident's gym and cycle storage.

1.3.3. It is intended that Full Planning Permission will be sought for the proposed development.

1.3.4. A copy of the development proposal plans is included in Appendix B.

LIMITATIONS

1.4.1. This report is based on the interpretation and assessment of data provided by third parties.

1.4.2. Whilst every care has been taken to ensure this information is accurate and up-to-date, WSP cannot guarantee the accuracy of third party data.

1.4.3. The findings of this report may change if the data is amended or updated after consultation.

2 EXISTING SITE

SITE LOCATION

2.1.1. The site is located on Great Ancoats Street within the New Islington area of central Manchester, approximately 0.5 miles east of Manchester Piccadilly railway station.

2.1.2. The postcode for the site is M4 7DB, approximate OS coordinates are 385309, 398092.

SITE DESCRIPTION

2.2.1. Table 1 describes the general site characteristics.

Table 1 - Site Characteristics

Characteristic		Description
Area		Approximately 0.13ha
Existing Usage		The site is currently occupied by Victoria House in which The Safe Deposit Centre is accommodated. A gated service yard is located to the south of the development.
Boundaries	North	Great Ancoats Street
	East	Road verge and Epworth Street
	South	Existing commercial industrial buildings/service yard
	West	Longacre Street
Topography		The proposed development site lies at an elevation of between 48.8mAOD (meters above ordnance datum) which falls from east to west away from the site frontage to Great Ancoats Street. There is an observable fall of approximately 0.5m across the proposed development site.
Existing Access		To service yard at rear of site via Longacre Street.

EXISTING WATERCOURSES

2.3.1. The proposed development site is located approximately 80 m south west of the Ashton Canal (see site location plan in Appendix A).

2.3.2. There are no other watercourses located near proposed development site.

EXISTING PUBLIC DRAINAGE

2.4.1. The extent of public sewerage infrastructure near the site was established from a review of the United Utilities public sewer records, including in Appendix C.

2.4.2. The proposed development site and immediately surrounding area is served by a combined system which conveys both surface and foul water. This system was most likely of Victorian construction, and sewerage of this type is synonymous with city centre areas within the United Kingdom.

2.4.3. The system consists of a 450mm pipe located within the Great Ancoats Street to the front of the proposed development site. This sewer line then turns 45 degrees south east and runs down Longacre Street where it becomes a 600mm pipe and then a 750mm x 520mm brick culvert.

2.4.4. The network then continues in a westerly direction through a series of pipes and culverts to Bond Street, where the network extends beyond the extent of the sewer record mapping.

GEOLOGY

2.5.1. A review of the British Geological Survey maps indicates the proposed development site is underlain by the Chester Sandstone Formation. This was formed approximately 247 to 250 million years ago in the Triassic Period, and represents how the local area was previously dominated by fluvial depositional environments.

FLOOD DEFENCES

2.6.1. A review of the Environment Agency flood mapping indicates there are no flood defences located within the vicinity of the proposed development site.

3 FLOOD RISK ASSESSMENT

FLUVIAL

3.1.1. The fluvial flood risk has been assessed based on a review of the Ordnance Survey mapping indicating the presence of any watercourse close to the site, and the Environment Agency flood mapping which designates the site in terms of flood risk.

3.1.2. A review of the OS mapping indicates that there are no watercourses within proximity to the site, the closest being Ashton Canal located 80 m to the east. The water levels in Ashton Canal are controlled by a series of sluices and locks, whereby an increase in water levels will cause the lock to spill over into the next and so forth until the canal eventually merges with the River Medlock/Bridgewater Canal downstream to the west. As such, the Environment fluvial flood mapping indicates the site to be located within flood zone 1, meaning a low level of risk.

3.1.3. In response to the assessment above, the risk of fluvial flooding to the site is low.

SURFACE WATER

3.2.1. The Environment Agency flood mapping for surface water (https://flood-warning-information.service.gov.uk/long-term-flood-risk/map) indicates a small area of surface water flooding to the front of the development along Great Ancoats Street. This area coincides with the lower topography associated with the junction of Longacre Street.

3.2.2. Despite this area of risk adjacent to the development, the local topographic levels would not facilitate the flow of surface water onto the site and as such this small area of flooding is not considered to present a risk to the development or the associated access and egress.

3.2.3. The risk of flooding from surface water is therefore considered to be low, but should also consider the residual risk of sewer surcharge preventing surface water being removed from impermeable surfaces.

SEWER FLOODING

3.3.1. The Manchester City Council Level 2 Strategic Flood Risk Assessment (2011) identifies that the site is located within the Conurbation Core critical drainage area.

3.3.2. The locality is served by a public sewer system which removes surface water from impermeable surfaces from both within and external to the site. No information has been provided relating to the capacity of the system, however United Utilities were able to confirm that there are no local records of DG5 incidents.

3.3.3. Notwithstanding the above, there is a risk that a rainfall event could occur which is of an intensity in excess to what local drainage was designed for. Due to the unknown capacity status of the public sewerage, mitigation will be included to ensure this risk is managed.

GROUNDWATER FLOODING

3.4.1. A review of the available information did not identify any areas that showed evidence of groundwater flooding, or areas that were located at a topographic level that could be susceptible to groundwater flooding (i.e. not areas locally located at a lower topography).

3.4.2. The presence of a basement level however does increase the risk of groundwater flooding, as the proposed Finished Floor Level is set at -3.000m and as such is in constant contact with the surrounding ground. Whilst borehole and associated groundwater level data was not available, there are no historic reports of groundwater flooding or evidence of high groundwater.

3.4.3. As such, based on this assessment and the absence of any historic occurrences, the risk of flooding from groundwater sources is considered to be low.

FLOODING FROM ARTIFICIAL SOURCES

3.5.1. A review of the OS mapping does not indicate the presence of any artificial sources such as canals, reservoirs that could cause a risk of flooding to the site. Whilst Ashton Canal is located to the east of the site, the risk from this source has been considered under fluvial flooding.

3.5.2. In the absence of any potential source, the risk of flooding from artificial sources is low.

MITIGATION OF FLOOD RISK

3.6.1. The design of the proposed development will include a number of aspects that will inherently lead to surface water flood risk being reduced when compared to the baseline situation. These are described briefly as follows:

- Design and installation of a new fit-for-purpose drainage system with capacity to safely remove surface water from storms up to and including the 1 in 100-year event, plus a 40% allowance for climate change (described in more detail in Chapter 4 of this report);
- Gradients of external areas, where possible, will be designed to fall away from buildings, so that any overland flow resulting from extreme events would be channelled away from the entrances; and
- Where operational requirements/site formation demand ground levels to fall towards buildings, suitable drainage will be provided to intercept surface water runoff.

4 SURFACE WATER MANAGEMENT

DISPOSAL OF SURFACE WATER

4.1.1. The method for removal of surface water from the site has been selected in the order of preference outlined in Building Regulations Part H. The hierarchy is as follows:

- Infiltration to the ground;
- Discharge to a watercourse; and
- Connection to a sewer.

4.1.2. Each of the above will be considered to establish the most suitable method(s) of disposal.

INFILTRATION TO THE GROUND

4.1.3. The available information relating to the infiltration capacity of the underlying grounds is limited to the information obtained from the desktop study; no intrusive testing has been undertaken. The current site is formed from entirely impermeable surfaces, and with respect to surface water there is no interaction between street level and the underlying ground.

4.1.4. At this stage, due to the lack of supporting information it is not considered feasible to dispose of surface water via infiltration. This could be explored fully at the detailed design stage.

DISCHARGE TO A WATERCOURSE

4.1.5. The only watercourse in proximity to the site is Ashton Canal located 80m to the west. Discharge to Ashton Canal would require the crossing of third-party land currently in use, which would necessitate a sewer requisition from United Utilities and discharge consent from the Canal & River Trust.

4.1.6. With the built-up nature of the surrounding area, the corresponding public highway network already being congested with below ground utilities and the significant amount of traffic management / disruption required, the cost of requisitioning a new public sewer connection to the canal will be disproportionately expensive for the scale of development being proposed. It is therefore deemed that it is not considered viable to discharge the development's surface water run-off to a nearby watercourse or waterbody.

DISCHARGE TO A SEWER

4.1.7. In the absence of a preferable method of disposal, it is proposed to discharge surface water, via a new point of connection, to the combined sewer network surrounding the site.

4.1.8. This new point of connection to the public combined sewer network would form part of new separate foul and surface water drainage networks within the site, in accordance with United Utility policy for new developments.

PROPOSED DISCHARGE RATES AND STORAGE

4.2.1. In accordance with Manchester City Council's policy for critical drainage areas, the post development surface water discharge rate will be restricted to 50% of the existing run-off rate.

4.2.2. Using the IH124 method for calculating run-off for a brownfield site (i.e. a discharge rate of 140 l/sec/ha) the existing run-off rate is estimated at **18.2 l/sec**.

4.2.3. This would result in an allowable discharge rate of **9.1 l/sec**.

4.2.4. In order to restrict the post development discharge rate, surface water run-off will need to be attenuated within the proposed development site.

4.2.5. Using Micro Drainage's Source Control function, the resulting attenuation storage volume was calculation for the worst case 1 in 100 year storm event, plus, in accordance with Environment Agency policy for this type of development, a 40% allowance for climate change.

4.2.6. This calculation estimated a required attenuation storage volume of **32.5m^3**.

4.2.7. A copy of the Micro Drainage calculations is included in Appendix D.

4.2.8. Given the size of the site, scale of the development and availability of public open space; the scope for inclusion of SuDS is limited. The specific inclusion of measures should be considered fully at the detailed design stage.

5 FOUL WATER STRATEGY

PROPOSED DISCHARGE RATE

5.1.1. The foul water loadings from each aspect of the development have been calculated based on the British Water Code of Practice Flows and Loads 4: - Sizing Criteria, Treatment Capacity for Sewage Treatment Systems and Sewers for Adoption 8th Edition. The anticipated flows from each aspect of the development are outlined in Table 2 below.

Table 2 – Proposed Foul Discharge Rates

Development Aspect	**Expected Flow (Daily Average) l/sec**
*Residential Apartments (160 Units)	7.4
**Commercial use (0.03 ha)	0.018
Total	c.7.5
*Based on 4000 l/dwelling /day **Based on 0.6 l/s/ha of developable land	

5.1.2. A United Utilities consultation response has not specified a limiting rate for foul water but will be agreed during the formal connection application procedure. It is proposed to discharge at an average daily rate of 7.5 l/s.

PROPOSED FOUL DRAINAGE

5.2.1. The foul drainage will be formed from a newly constructed system with 1no. point of connection to the public network.

5.2.2. The exact configuration of the foul drainage network and associated connection points will be determined at the detailed design stage and will be subject to site and building layout and final foul water loadings.

6 SUMMARY

6.1.1. The existing Victoria House site is to be redeveloped to multi-use, 25 storey development incorporating 2 commercial units, 177 dwellings and ancillary development comprising a residential garden and cycle storage.

6.1.2. To support the full planning application of the development a Flood Risk Assessment and drainage strategy have been undertaken with the objective of a) assessing flood risk and identifying any required mitigation measures and b) establishing a strategy for managing surface and foul water from the development.

6.1.3. A review of the Environment Agency flood risk mapping indicates the site is at low risk of fluvial and surface water flooding. There is however a risk of sewer flooding from the public sewer network which could cause surcharge and flooding to the site or prevent surface water from the development discharging. The highest risk would be to the basement level, and to manage this risk a number of mitigation measures should be included with the development. Despite the low risk designation, good site design practices should be employed to ensure the risk from of flooding from surface water is managed.

6.1.4. Surface water for the site will be managed under a similar arrangement to the existing system, whereby surface water is collected and discharged to the public sewer network. This is proposed based on there being no preferable or viable method of disposal i.e. infiltration to ground or discharge to a watercourse.

6.1.5. In line with Manchester City Council's requirements for new development sites within critical drainage areas, and the standing requirements of United Utilities, runoff will be managed at a controlled rate equivalent to half of the existing discharge rate.

6.1.6. Given the size of the site, scale of the development and availability of public open space; the scope for inclusion of SuDS is limited. The specific inclusion of measures should be considered fully at the detailed design stage.

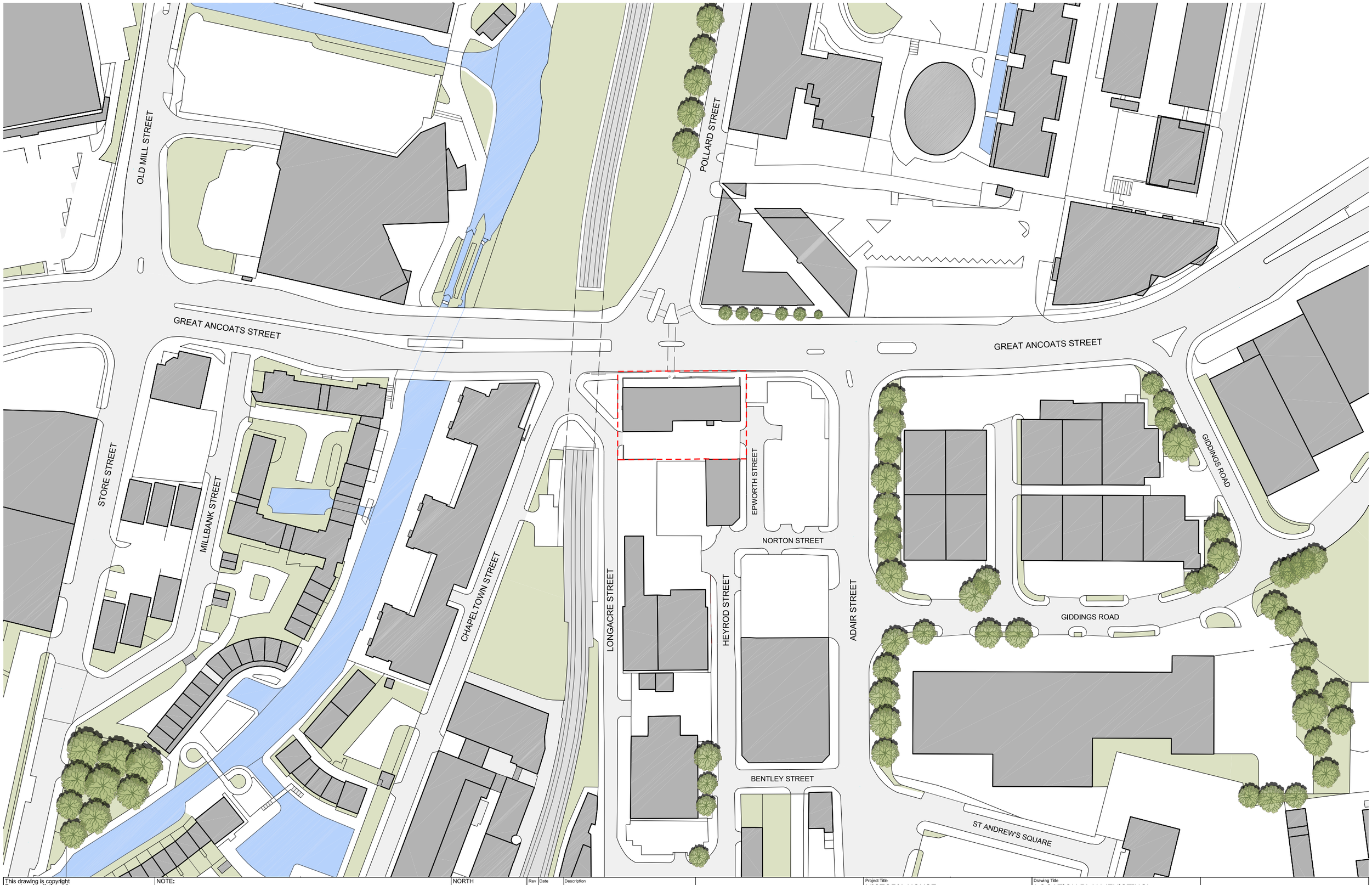
6.1.7. The provision of foul water drainage will see a proposed average daily discharge rate of 7.5 l/s which will discharge to the public network via a separate sewer from that of the surface water (i.e. there will be a surface water and foul water connection made to the public network).

6.1.8. Based on the assessment above and subject to inclusion of the mitigation measures identified, it is anticipated that flood risk and surface water from the development can be managed in a safe and sustainable manner.

Appendix A

SITE LOCATION PLAN

CONFIDENTIAL



This drawing is copyright
Do not scale off dimensions.
All dimensions to be checked on site by contractor.
Contractor to report any dimensional discrepancies, errors or omissions prior to commencing on site.

NOTE:

0 5 10 15 20 30 40 50m

NORTH

Rev	Date	Description
00	XX-XX-XX	First Issue

DRAFT

Project Title: VICTORIA HOUSE

Drawing Title: LOCATION PLAN (EXISTING)

Job No: 10122

Scale: 1:1250 @ A3

Date: JAN 2020

Status: FOR PLANNING

Drawing No: 10122-A-B5D9-G100-XP-00-003

Revision: 00

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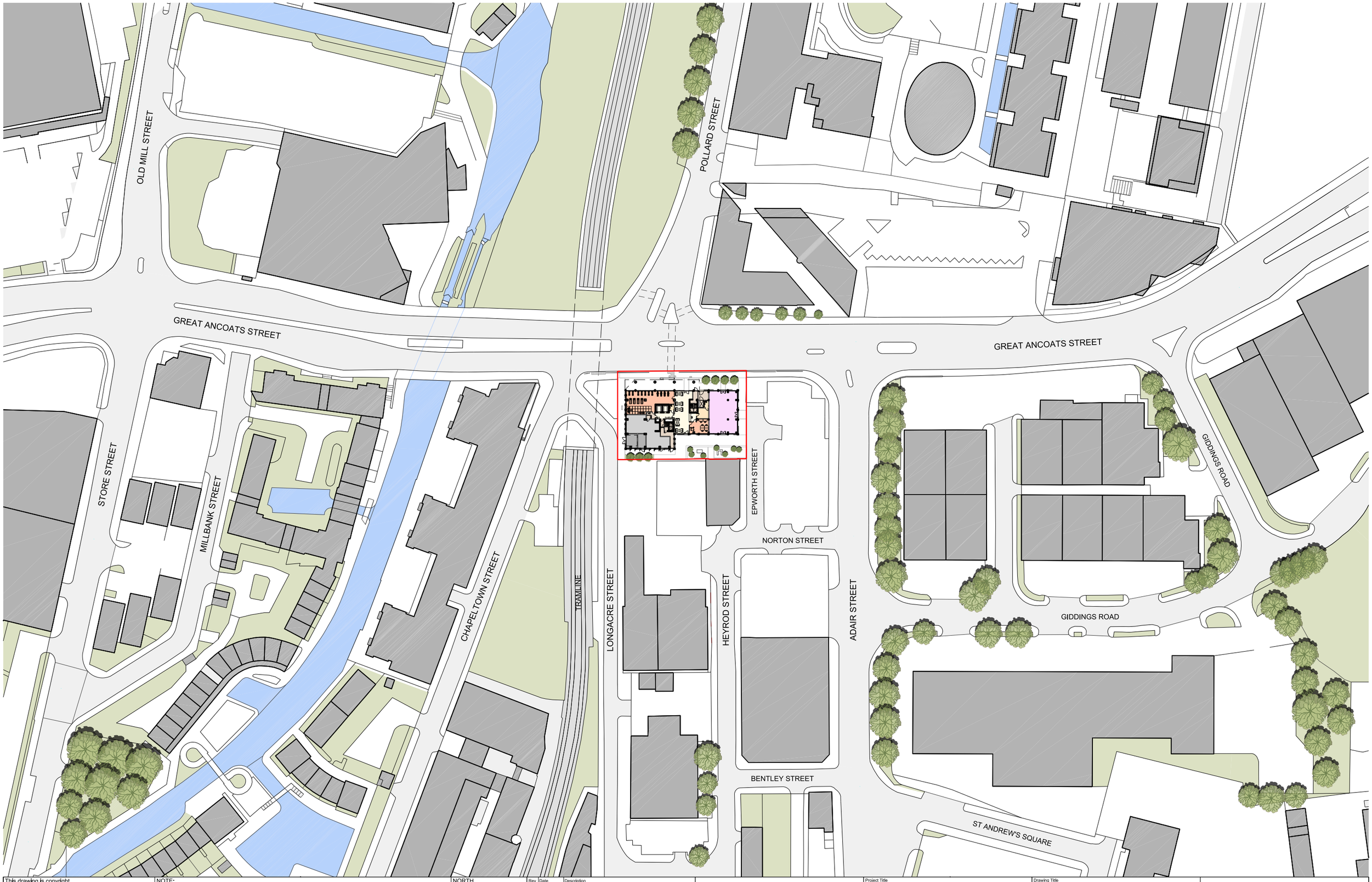
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Appendix B

DEVELOPMENT PROPOSALS

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Contractor to report any dimensional discrepancies, errors or omissions prior to commencing on site.

NOTE:

0 5 10 15 20 30 40 50m

NORTH

Rev	Date	Description
00	XX-XX-XX	First Issue

DRAFT

Project Title
VICTORIA HOUSE

Drawing Title
PROPOSED SITE PLAN

Job No
10122

Scale
1:1250 @ A3

Date
JAN 2020

Status
FOR PLANNING

Drawing No
10122-A-B5D9-G100-P-00-003

Revision
00

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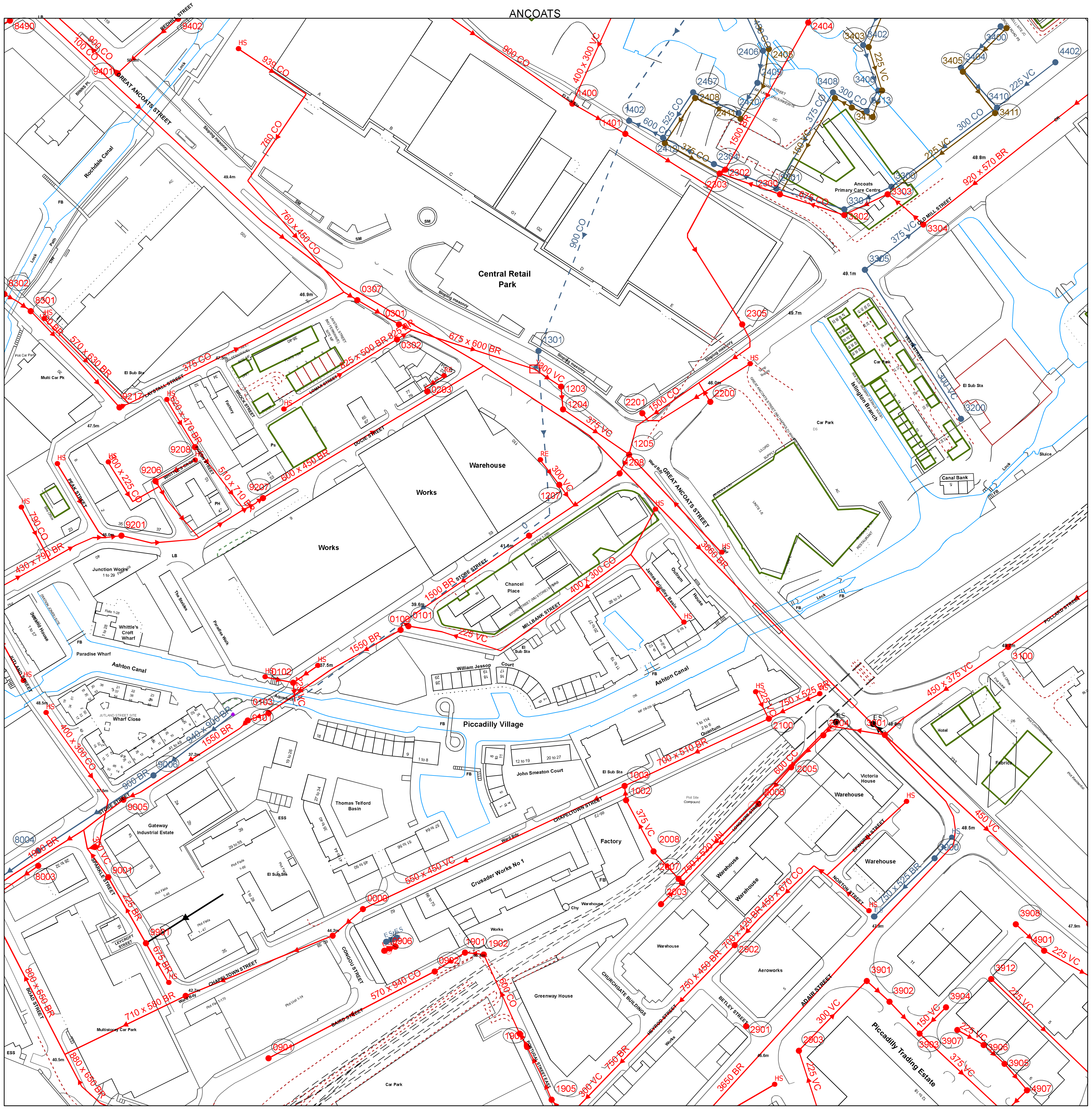
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Appendix C

UNITED UTILITIES SEWER RECORDS

CONFIDENTIAL



Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Matl	Length	Grad
7903	38.9	CO							
7905	38.95	SW	31.17	1330	1430	EG	BR	44.42	
8901	38.41	SW							
9901	42.06	CO							
9902	42.3	CO	36.35	710	580	EG	BR	71.11	
7001	46.21	CO							
7205	45.73	CO	44.04	375		CI	CO	41.59	416
7206	46.77	CO							
7290	47.22	CO	43.84	300		CI	CO	37.81	158
7292	47.35	CO							
7301	47.3	CO	45.5	850	600	EG	BR	18.76	171
7305		CO							
7306	47.19	CO							
7309		CO							
7390	48.46	CO							
7391	48.03	CO							
7392	47.97	CO							
7402	48.83	CO	44.58	300		CI	CO	23.32	
7403	48.97	CO	45.08	600		CI	CO	81.47	94
8001	38.05	CO	33.64	375		CI	VC	3.61	
8003	37.66	CO	33.09	300		CI	VC	15.81	
8004	37.76	SW	32.63	900		CI	BR	38.01	
8102	46.67	CO	44.12	150		CI	VC	5	
8103	46.8	CO	45.55	150		CI	VC	2.83	
8301	48.37	CO	41.16	300		CI	BR	34.66	
8302	48.56	CO							
8308		CO							
8390	47.88	CO							
8490	49.89	CO	46.7	300		CI	CO	22.36	59
8491	49.45	CO							
9001	39.49	CO	34.98	300		CI	VC	28.8	
9002	38.03	CO	33.32	225		CI	VC	4.12	
9005	37.34	CO							
9006	37.22	SW	33.22	900		CI	BR	72.95	130
9101	36.79	CO							
9201	45.67	CO	41.97	680	510	EG	BR	39.58	
9206		CO							
9207	45.26	CO							
9208	46.97	CO							
9217		CO	0	375		CI	CO	5.39	
9401	50.56	CO	45.66	900		CI	CO	4.24	
9402	50.14	CO	46.35	300		CI	VC	21.26	106
0901		CO							
0902	45.18	CO	0	570	940	EG	CO	99.3	
0903		CO							
0906		CO							
1901	45.22	CO	39.58	600		CI	CO	18.87	270
1902	45.39	CO	39.76	600		CI	CO	10.05	77
1903	45.32	CO							
1904	45.31	CO							
1905	45.1	CO							
2901	46.08	CO							
2902	46.18	CO							
2903	47.37	CO							
3901	47.21	CO							
3902	47.28	CO							
3903	47.46	CO							
3904	47.55	CO	46.65	150		CI	VC	19.8	132
3905	47.88	CO	46.31	225		CI	VC	18.44	230
3906	47.88	CO	46.35	225		CI	VC	14.87	496
3907	47.85	CO	46.44	225		CI	VC	16.12	230
3908	47.67	CO	46.23	225		CI	VC	20.52	
3912	48.04	CO	46.55	225		CI	VC	77.79	116
4901	47.78	CO							
4902	47.48	CO							
4903	47.22	CO							
4906	47.08	CO	45.18	225		CI	VC	8.54	19
4907	47.89	CO							
4908	47.68	CO							
5904	44.82	CO	0	1450		CI	CO	51.22	
0000	44.45	CO	37.64	550	450	EG	VC	21.26	
0100	39.21	CO	33.83	1550		CI	BR	42.54	
0101	39.24	CO	35.25	225		CI	VC	3.61	
0102	37.18	CO	33.72	225		CI	VC	10.05	
0103	36.75	CO	33.87	1550		CI	BR	11.7	10
0203		CO							
0301	45.79	CO	0	675	600	EG	BR	7.62	
0302	45.94	CO							
0307	46.64	CO	39.59	675	600	EG	BR	25.46	
1002		CO		375		CI	VC	7.59	
1003		CO	44.59	700	510	HO	BR	33.78	10
1203	43.84	CO							
1204	43.57	CO	36	375		CI	VC	42.44	44
1205	44.33	CO	35.03	1500		CI	CO	11.18	4
1207	42.92	CO	36.89	300		CI	VC	13.6	
1208	44.2	CO	32.45	1500		CI	CO	58.26	
1209	42.01	CO	34.42	1500		CI	BR	85.39	145
1301		SW		900		CI	CO	87.22	
1400	47	CO	38.81	900		CI	CO	32.25	47
1401	45.7	CO							
1402	45.86	SW							
2000	46.48	CO							
2003	46.26	CO	41.44	375		CI	VC	15.76	113
2004	48.66	CO							
2005		CO							
2006	46.42	CO							
2007	46.42	CO							
2008		CO							
2100	47.68	CO							
2200	46.17	CO	0	1500		CI	CO	11.66	
2201	45.79	CO							
2300	45.69	CO							
2301	45.69	SW	42.25	375		CI	CO	35.47	136
2302	45.17	CO							
2303	45.2	CO							
2304	45.13	SW							
2305	47.1	CO							
2404	45.87	CO	37.7	1500		CI	BR	89.55	108
2405	45.62	FO	41.61	375		CI	CO	41.03	152
2406	45.6	SW							
2407	44.94	SW							
2408	44.84	FO							
2409	45.12	SW							
2410	44.94	SW							
2411	44.9	FO							
2412	45.09	SW							
2413	45.1	FO	40.88	375		CI	CO	33.12	8
3000	48.21	SW	44.32	750	525	RE	BR	44.55	
3001	49.08	CO							
3100	49.59	CO	43.5	450	375	EG	VC	80.44	
3200	49.57	SW	46.77	300		CI	VC	94.03	102
3300	47.44	SW							
3301	46.82	SW							
3302		CO							
3303	47.33	CO							
3304	48.71	CO	45.68	870	680	AR	BR	12.04	602
3305	48.88	SW	45.8	650	420	HO	BR	20	667
3400	48.27	SW	45.69	300		CI	CO	30.41	92
3401	48.25	FO	45.13	225		CI	VC	32.53	77
3402	46.41	SW	43.73	300		CI	VC	12.65	19
3403	46.43	FO	43.09	225		CI	VC	24.04	16
3404	47.95	SW							
3405	47.91	FO							
3406	46.42	SW	42.39	300		CI	CO	12.53	
3407	48.44	FO							
3408	46.85	SW							
3409	46.86	FO	0	150		CI	VC	58.67	
3410	47.46	SW							
3411	47.44	FO							
3412	46.65	FO							
3413	46.57	SW							
3414		FO							
4402	47.94	SW	46.06	225		CI	VC	39.2	48
4403	49.58	CO							
4404	49.79	CO	48.68	225		CI	VC	25.24	22
5200	51.24	CO	46.1	300		CI	VC	49.65	146
5201	51.57	CO	48.28	300		CI	VC	29.41	
5203	51.54	CO	48.31	300		CI	VC	40.22	4022
5401	50.36	CO	47.57	600	460	EG	BR	15	
5402	50.4	CO	47.62	420	440	RE	BR	19.42	

Refno	Cover	Func	Invert	Size.x	Size.y	Shape	Matl	Length	Grad
7901		SW							
7906		CO	0	1875		CI	BR	5.1	
9903		CO	0	675		CI	BR	24.19	
9905		CO	0	880	650	EG	BR	32.69	
9906		CO							
7204		CO	0	450		CI	CO	37.59	
7302		CO	0	380	300	UN	VC	3.61	0
7303		CO							
7307		CO	0	850		CI	VC	4.1	
7401		CO	0	600		CI	CO	37.8	
7407		CO							
8008		CO							
8101		CO	0	400	300	UN	CO	83.11	
8104		CO	0	430	790	RE	BR	10.3	
8108		CO	0	430		CI	CO	45.65	
8109		CO							
8201		CO	0	450	225	UN	CO	47.19	
8202		CO	0	790		CI	CO	31.76	
8304		CO							
8306		CO	0	300		CI	CO	11.31	
8307		CO	0	570	630	RE	BR	63.64	
8405		CO	0	300		CI	VC	32.04	
8407		CO							
9010		SW							
9011		CO							
9202		CO	0	300	225	UN	CO	40.82	
9205		CO	0	939		CI	CO	23.71	
9209		CO							
9216		CO	0	620	470	UN	BR	29.15	
9222		CO							
9223		CO							
9290		CO							
9301		CO	0	760	450	UN	CO	77.99	
9302		CO							
9405		CO	0	939		CI	CO	43.27	
9406		CO							
1906		CO	0	300		CI	VC	43.89	
1907		CO	0	750		CI	BR	8.49	
1908		CO	40.36	600		CI	CO	3.61	45
1909		CO	40.56	380	350	EG	CO	15.65	142
2905		CO	0	700	420	FT	BR	19.1	
2906		CO	0	760	610	UN	CO	341.38	
0104		CO	0	225		CI	VC	15.81	
0105		CO	0	225		CI	VC	15.3	
0107		CO							
0201		CO	0	825	500	EG	BR	70.49	
0204		CO		150		CI	VC	13.51	
0306		CO	0	3660		CI	BR	527.76	
0401		CO							
1001		CO							
1102		CO	0	225		CI	VC	50.82	
1215		SW		0				167.41	
2002		CO							
2101		CO	0	225		CI	VC	15.65	
2102		CO	0	750	525	EG	BR	14.32	
2103		CO	0	600		CI	CO	71.45	
2104		CO	0	300	225	EG	CO	45.61	
2105		CO							
2202		CO	0	400	300	EG	CO	113.1	
2205		CO	0	675	500	HO	CO	67.6	
2418		SW							
3007		SW	0	750	525	RE	BR	14.21	
3008		CO							
3009		CO	0	675		CI	CO	29.07	
3010		CO	0	675	450	EG	CO	57.31	
3306		SW							
3307		CO							
3415		SW							
4101		CO	0	450	375	EG	VC	88.23	
4408		CO							
5101		CO	0	300		CI	VC	59.64	
5301		CO	0	475	375	EG	CO	71.28	
5302		CO	0	800	490	EG	BR	93.82	
5405		CO	0	420		CI	BR	37.44	
5406		CO							
7907		CO							
8903		CO	0	800	650	EG	BR	90.95	
8904		CO	0	1900		CI	BR	77.42	
7090		CO							
7104		CO	0	300		CI	VC	48.88	
7203		CO	0	450		CI	CO	30.41	
7308		CO	0	630	470	EG	CO	8.94	
7310		CO							
7404		CO	0	400	300	EG	VC	21.95	
7405		CO	0	630	470	RE	VC	31.38	
7406		CO							
8002		CO							
8005		SW	0	900		CI	BR	30.23	
8006		CO	0	1900		CI	BR	17.2	
8007		CO							
8090		CO							
8105		CO							
8106		CO							
8107		CO							
8111		CO							
9007		CO							
9090		CO							
9091		CO							
9190		CO							
9210		CO	0	680	480	EG	BR	3.61	
9211		CO							
9212		CO							
9213		CO							
9214		CO	0	300	225	UN	CO	26.25	
9215		CO	0	300	225	UN	CO	8.06	
9218		CO							
9219		CO							
9221		CO							
9291		CO							
9403		CO	0	900		CI	CO	27.59	
0108		CO							
0303		CO							
0304		CO							
1101		CO							
1202		SW							
1211		CO							
1213		CO							
2001		CO							
2206		CO							
2310		CO							
4405		CO							
4406		CO							
5204		CO							
7201		CO							
9008		CO							
5001		CO							
5002		CO							
5003		CO							
5004		CO							
5005		CO							
5006		CO							
5007		CO							
5008		CO							
5009		CO							
7202		CO	43.3	600		CI	CO	32.19	95
9102		SW	33.72	940	900	EG	BR	26.58	111
1201		CO	38.94	300		CI	VC	16.71	6
3101	48.66	CO							

WASTE WATER SYMBOLOGY

Foul / Surface / Combined / Overflow

- Manhole
- Manhole, Side Entry
- MainSewer, Public
- MainSewer, Private
- MainSewer, S104
- Rising Main, Public
- Rising Main, Private
- Rising Main, S104
- Highway Drain, Private

Foul / Surface / Combined

- WW Site Termination
- Air Valve
- Cascade
- Non Return Valve
- Extent of Survey
- Flow Meter
- Gulley
- Hatch Box
- Head of System
- Hydrobrake / Vortex
- Inlet
- Inspection Chamber
- Bifurcation
- Catchpit
- Contaminated Surface Water
- WW Pumping Station
- Sludge Pumping Station
- Sewer Overflow
- T Junction/Saddle
- LampHole
- OilInterceptor
- PenStock
- Pump
- RoddingEye
- Soakaway
- Summit
- Valve
- Valve Chamber
- Washout Chamber
- DropShaft
- WW Treatment Works
- Septic Tank
- Vent Column
- Network Storage Tank
- Orifice Plate
- Vortex Chamber
- Penstock Chamber
- Blind Manhole

- Sludge Main, Public
- Sludge Main, Private
- Sludge Main, S104

ABANDONED PIPE

- MainSewer
- Rising Main
- Highway Drain
- Sludge Main

Foul / Surface / Combined / Overflow

- Screen Chamber
- Discharge Point
- Outfall

- Control Kiosk
- Unspecified

LEGEND

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	TR	Trapezoidal
EG	Egg	AR	Arch
OV	Oval	BA	Barrel
FT	Flat Top	HO	HorseShoe
RE	Rectangular	UN	Unspecified
SQ	Square		

SEWER MATERIAL

AC	Asbestos Cement	DI	Ductile Iron
BR	Brick	PVC	Polyvinyl Chloride
PE	Polyethylene	CI	Cast Iron
RP	Reinforced Plastic Matrix	SI	Spun Iron
CO	Concrete	ST	Steel
CSB	Concrete Segment Bolted	VC	Vitrified Clay
CSU	Concrete Segment Unbolted	PP	Polypropylene
CC	Concrete Box Culverted	PF	Pitch Fibre
PSC	Plastic/Steel Composite	MAC	Masonry, Coursed
GRC	Glass Reinforced Concrete	MAR	Masonry, Random
GRP	Glass Reinforced Plastic	U	Unspecified

The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available.
The actual positions may be different from those shown on
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Scale: 1: 1250 Date: 31/03/2015

288 Nodes

Sheet 1 of 1

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SEWER RECORDS

OS Sheet No:

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Scale: 1: 1250 Date: 31/03/2015

Appendix D

MICRO DRAINAGE CALCULATIONS

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	99.681	0.681	9.0	22.1	O K
30 min Summer	99.828	0.828	9.0	26.9	Flood Risk
60 min Summer	99.871	0.871	9.0	28.3	Flood Risk
120 min Summer	99.814	0.814	9.0	26.5	Flood Risk
180 min Summer	99.716	0.716	9.0	23.3	Flood Risk
240 min Summer	99.588	0.588	9.0	19.1	O K
360 min Summer	99.383	0.383	9.0	12.5	O K
480 min Summer	99.257	0.257	9.0	8.4	O K
600 min Summer	99.187	0.187	8.7	6.1	O K
720 min Summer	99.152	0.152	8.3	4.9	O K
960 min Summer	99.126	0.126	6.8	4.1	O K
1440 min Summer	99.100	0.100	5.0	3.3	O K
2160 min Summer	99.082	0.082	3.7	2.7	O K
2880 min Summer	99.072	0.072	3.0	2.3	O K
4320 min Summer	99.060	0.060	2.1	2.0	O K
5760 min Summer	99.053	0.053	1.7	1.7	O K
7200 min Summer	99.048	0.048	1.4	1.6	O K
8640 min Summer	99.045	0.045	1.2	1.4	O K
10080 min Summer	99.042	0.042	1.1	1.4	O K
15 min Winter	99.779	0.779	9.0	25.3	Flood Risk
30 min Winter	99.950	0.950	9.0	30.9	Flood Risk
60 min Winter	99.995	0.995	9.0	32.3	Flood Risk
120 min Winter	99.893	0.893	9.0	29.0	Flood Risk
180 min Winter	99.735	0.735	9.0	23.9	Flood Risk
240 min Winter	99.528	0.528	9.0	17.2	O K
360 min Winter	99.257	0.257	9.0	8.4	O K
480 min Winter	99.154	0.154	8.4	5.0	O K
600 min Winter	99.131	0.131	7.1	4.3	O K
720 min Winter	99.117	0.117	6.2	3.8	O K
960 min Winter	99.100	0.100	5.0	3.2	O K
1440 min Winter	99.082	0.082	3.6	2.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	118.613	0.0	28.9	18
30 min Summer	79.413	0.0	38.7	30
60 min Summer	50.812	0.0	49.5	48
120 min Summer	31.468	0.0	61.3	82
180 min Summer	23.466	0.0	68.6	116
240 min Summer	18.940	0.0	73.8	148
360 min Summer	13.882	0.0	81.2	206
480 min Summer	11.143	0.0	86.9	260
600 min Summer	9.389	0.0	91.5	316
720 min Summer	8.158	0.0	95.4	372
960 min Summer	6.531	0.0	101.9	492
1440 min Summer	4.764	0.0	111.5	734
2160 min Summer	3.468	0.0	121.7	1084
2880 min Summer	2.766	0.0	129.4	1452
4320 min Summer	2.007	0.0	140.9	2200
5760 min Summer	1.596	0.0	149.4	2936
7200 min Summer	1.336	0.0	156.3	3592
8640 min Summer	1.154	0.0	162.0	4376
10080 min Summer	1.020	0.0	167.0	5104
15 min Winter	118.613	0.0	32.4	19
30 min Winter	79.413	0.0	43.3	31
60 min Winter	50.812	0.0	55.5	50
120 min Winter	31.468	0.0	68.7	88
180 min Winter	23.466	0.0	76.9	126
240 min Winter	18.940	0.0	82.7	156
360 min Winter	13.882	0.0	90.9	208
480 min Winter	11.143	0.0	97.3	252
600 min Winter	9.389	0.0	102.5	312
720 min Winter	8.158	0.0	106.9	370
960 min Winter	6.531	0.0	114.1	490
1440 min Winter	4.764	0.0	124.8	736

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Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
2160 min Winter	99.068	0.068	2.7	2.2	O K
2880 min Winter	99.060	0.060	2.1	2.0	O K
4320 min Winter	99.050	0.050	1.5	1.6	O K
5760 min Winter	99.045	0.045	1.2	1.4	O K
7200 min Winter	99.041	0.041	1.0	1.3	O K
8640 min Winter	99.038	0.038	0.9	1.2	O K
10080 min Winter	99.035	0.035	0.8	1.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
2160 min Winter	3.468	0.0	136.3	1100
2880 min Winter	2.766	0.0	144.9	1448
4320 min Winter	2.007	0.0	157.8	2152
5760 min Winter	1.596	0.0	167.3	2912
7200 min Winter	1.336	0.0	175.0	3616
8640 min Winter	1.154	0.0	181.5	4384
10080 min Winter	1.020	0.0	187.1	4960

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Rainfall Details

Rainfall Model	FSR	Ratio R	0.360	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Shortest Storm (mins)	15
Region	England and Wales	Winter Storms	Yes	Longest Storm (mins)	10080
M5-60 (mm)	18.000	Cv (Summer)	0.750	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.130

Time From:	(mins) To:	Area (ha)	Time From:	(mins) To:	Area (ha)
0	4	0.070	4	8	0.060

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Model Details

Storage is Online Cover Level (m) 100.000

Tank or Pond Structure

Invert Level (m) 99.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	32.5	1.000	32.5

Hydro-Brake Optimum® Outflow Control

Unit Reference	MD-SHE-0139-9100-1000-9100	Diameter (mm)	139
Design Head (m)	1.000	Invert Level (m)	99.000
Design Flow (l/s)	9.1	Minimum Outlet Pipe Diameter (mm)	225
Flush-Flo™	Calculated	Suggested Manhole Diameter (mm)	1200
Objective	Minimise upstream storage		

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	9.0	Kick-Flo®	0.670	7.5
Flush-Flo™	0.302	9.0	Mean Flow over Head Range	-	7.8

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	5.0	0.800	8.1	2.000	12.5	4.000	17.4	7.000	22.8
0.200	8.8	1.000	9.0	2.200	13.1	4.500	18.5	7.500	23.6
0.300	9.0	1.200	9.9	2.400	13.7	5.000	19.4	8.000	24.3
0.400	8.9	1.400	10.6	2.600	14.2	5.500	20.3	8.500	25.0
0.500	8.7	1.600	11.3	3.000	15.2	6.000	21.2	9.000	25.7
0.600	8.2	1.800	11.9	3.500	16.4	6.500	22.0	9.500	26.4

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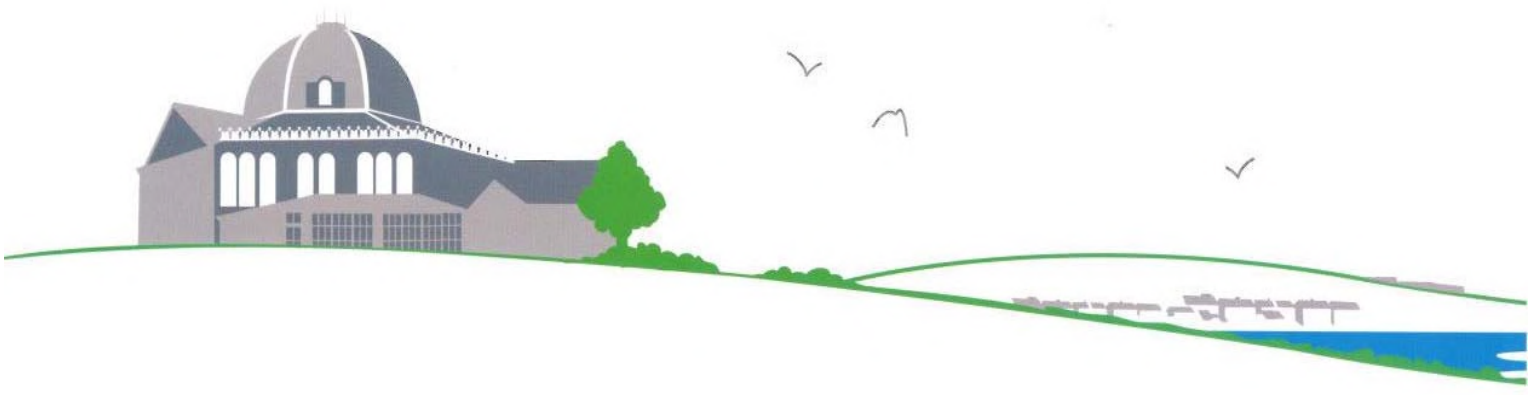
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CONSULTANT ECOLOGISTS

FORSHAW LAND AND PROPERTY GROUP LTD

VICTORIA HOUSE, GREAT ANCOATS STREET, MANCHESTER

EXTENDED PHASE 1 HABITAT SURVEY AND INSPECTION OF BUILDING FOR BATS



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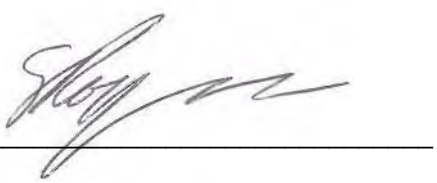
EXTENDED PHASE 1 HABITAT SURVEY AND INSPECTION OF BUILDING FOR BATS

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November 2018

This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: 

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1 Extended Phase 1 Habitat Survey

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1 View of Victoria House from within the hardstanding area to the south of the building 8

Overlapping wooden fascia boards on northern aspect with some crevices present..... 9

APPENDIX

1 Phase 1 Plant Species List

1. INTRODUCTION

1.1 Penny Anderson Associates Ltd (PAA) was commissioned by Forshaw Land and Property Group Ltd to carry out an Extended Phase 1 Habitat survey and bat inspection of a building located at Victoria House, Great Ancoats Street, Manchester (hereafter referred to as the 'Site').

1.2 The purpose of the survey was to support a full planning application for the redevelopment of Victoria House to a residential tower (the 'Project').

1.3 This report describes the methods and results of an Extended Phase 1 Habitat survey carried out in July 2018 which included desk study consultation with the Greater Manchester Ecology Unit (GMEU). A detailed assessment of the potential for Victoria House to support roosting bats was also undertaken.

Legislative and Policy Context

1.4 The text below provides a brief summary of the legislation in relation to the species or species group in England and Wales. The original Acts, Regulations and any amendments should be referred to for the precise wording.

1.5 A range of international and national legislation has been established in the UK to protect important nature conservation sites and priority species. At the international level, European Union (EU) Directives require individual member states to implement their conservation provisions nationally for the benefit of Europe as a whole. These Directives have been transposed into UK law by the Conservation of Habitats and Species Regulations 2017; further details can be obtained from the Joint Nature Conservation Committee (JNCC) web site at www.jncc.defra.gov.uk.

1.6 Other international conventions include: the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979), which requires the maintenance of populations of wild flora and fauna, giving particular protection to endangered and vulnerable species; and the Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979), which requires the protection of migratory species throughout their entire range. The above conventions are implemented in England and Wales via the Wildlife and Countryside Act (WCA) (1981) (as amended) and Countryside and Rights of Way (CRoW) Act 2000. This legislation also protects important habitats and sites such as Sites of Special Scientific Interest (SSSI).

1.7 At the national level, the UK Post-2010 Biodiversity Framework published in 2012 is the Government's response to the Convention on Biological Diversity (2010). It describes the UK's biological resources, commits a detailed plan for the protection of these resources within the UK's devolved framework across England, Wales, Scotland and Northern Ireland. The document identifies future priorities for nature conservation and adopts a more strategic approach, including ecosystem services and sustainability alongside biodiversity. Despite administrative changes following devolution, there is still an underlying objective of protecting and enhancing a range of priority species and habitats, often still based on the objectives and classifications of the original UK Biodiversity Action Plan. Biodiversity 2020 is England's national biodiversity strategy. Building on the Natural Environment White Paper published in 2011, this provides a means of delivering the international and EU commitments to biodiversity. Under Biodiversity 2020, Priority Species and Habitats referred to are those of 'Principal Importance' for the conservation of biodiversity in England listed on Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006.

1.8 Finally, the National Planning Policy Framework (NPPF), updated in 2018, provides guidance for local authorities on the content of the Local Plans and is a material consideration in determining planning applications. Briefly, with an overall focus on sustainable development, the NPPF states that developments should aim to engender positive outcomes for habitats and biodiversity, with a particular focus on the maintenance and creation of ecological networks. Furthermore, the NPPF also states that any planning proposals for which significant negative impacts on biodiversity cannot be avoided, mitigated or compensated should be refused. The NPPF states that the planning system should contribute to and enhance the natural environment through a range of actions, including:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils;
- recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services; and
- minimising impacts on biodiversity and providing net gains for biodiversity including establishing coherent ecological networks that are more resilient to current and future pressures.

1.9 To protect and enhance biodiversity and geodiversity, plans should:

- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

1.10 Relevant Local Plan policies are set out in the Manchester's Local Development Framework: Core Strategy Development Plan Document (2012)[1]. These are:

- Policy EN9 *'Green Infrastructure'* which expects new development to maintain existing green infrastructure in terms of its quantity, quality and multiple function; and
- Policy EN15 *'Biodiversity and Geological Conservation'* which seeks to maintain or enhance sites of biological and geological value throughout the city. Developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity on or adjacent to the Site and contribute to existing or potential ecological linkages.

[1] *Manchester City Council (2012) Manchester's Local Development Framework: Core Strategy Development Plan Document Adopted 11th July 2012 (accessed via www.secure.manchester.gov.uk).*

2. METHODS

Desk Study

2.1 A request for details of protected and notable species and locally designated sites within 1km of the centre of the Site was made to GMEU in July 2018. The Multi-Agency Information for the Countryside (MAGIC) website was consulted for details of statutory designated sites and Priority Habitats within a 1km search area from the centre of the Site.

2.2 It is important to note that the desk study results provide an indication of the species present in and around the Site, and do not confirm current presence or absence of any particular species. Protected species are often under-recorded in county wildlife databases.

Extended Phase 1 Habitat Survey

2.3 An Extended Phase 1 habitat survey was undertaken by Senior Ecologist Hazel Robson MCIEEM[2] on 2nd July 2018.

2.4 The survey was carried out in accordance with the methodology in the *Handbook for Phase 1 Habitat Survey* (JNCC 2010). This entailed mapping, describing and collating plant species lists for habitats within the Site boundary. The broad habitat types were mapped, with each habitat type coded according to the standard JNCC Phase 1 habitat survey procedure.

2.5 Each plant species was assigned abundance codes within each habitat. This was done using the 'DAFOR' scale (where: d = dominant; a = abundant; f = frequent; o = occasional; r = rare), which provides an indication of the relative abundance of each plant species present within a particular habitat. The text largely uses common names according to Stace (2010). Common names and scientific names are provided in the species list (Appendix 1) but only common names are referred to in the text.

2.6 The survey was 'extended' (IEA 1995) to include notes on fauna and habitats which could potentially support protected and notable species. The presence of, or potential for, protected and notable species was noted on the field map and in the written target notes during the survey.

Bat Building Inspection

2.7 Victoria House was subject to a detailed inspection to assess potential to support roosting bats. This element of the survey was carried out by Senior Ecologist Hazel Robson MCIEEM (Natural England Bat Survey Class 2 Licence 2015-10504-CLS-CLS) on 2nd July 2018 following standard methodologies. This entailed using high-powered torches and binoculars, making detailed notes, taking photographs and following survey guidance (Collins 2016).

2.8 During the inspection, the exterior of the building was walked around and examined for any signs (such as staining or droppings on surfaces including walls and window ledges) or features

[2] *Member of the Chartered Institute of Ecology and Environmental Management*

suitable for roosting bats. Features of interest would include gaps around door frames, beneath felt/lead flashing, at the wall plates and eaves of pitched roofs, and any crevices beneath fascia boards, barge boards, within soffits or created by missing mortar within the brickwork.

2.9 The internal inspections involved systematically examining all accessible parts of the building with the potential to support roosting bats, and searching for any evidence of such use (e.g. bat droppings, staining on crevices by fur oils or urine, feeding remains, as well as the bats themselves). Areas of particular interest included any loft voids present in the building.

2.10 The bat inspection assigned an overall roost potential category, based on its suitability for supporting roosting bats and any evidence found, using criteria in Table 1 adapted from the *Bat Mitigation Guidelines* (Mitchell-Jones 2004) and *Bat Surveys Good Practice Guidelines* (Collins 2016).

2.11 During the survey any evidence of the building being used by nesting birds (e.g. old nest material) was also looked for.

Table 1 Building Assessment Criteria

Roost Potential Category	Category Description	Indicator
Confirmed Roost	Building with evidence of current use by bats i.e. confirmed roost.	• Sighting/hearing of bats (including emergence). • Presence of fresh droppings/staining.
	Building with evidence of recent use by bats.	• Small numbers of old droppings/old staining, smoothing and lack of cobwebs, feeding remains. • Roosts identified by personal communication from reliable source (e.g. property owner).
High	Building has high potential to support bat roost(s).	• Buildings of early or pre 20th century origin with numerous access points for bats e.g. gaps under eaves, loose lead flashing and/or roof tiles. • Agricultural buildings of traditional, stone or timber construction and/or with exposed large wooden beams (>200mm thick) and mortise joints, cracks and holes. • Large and complicated roof voids, with unobstructed flying spaces. • Roof warmed by the sun, especially south facing roofs, free of strong draughts. • Undisturbed roof spaces. • Weatherboarding and/or hanging tiles with gaps. • Buildings in proximity to each other providing a variety of roosting opportunities. • Within 200m of good foraging habitat, particularly trees, parkland, woodland or waterbodies. • Well connected to wider landscape through presence of continuous linear features such as hedgerows, watercourses, farm-tracks etc.
Medium	Building has moderate potential	• Buildings with some of the above features but are considered to be less suitable on account of their age, location and

Roost Potential Category	Category Description	Indicator
	to support bat roost(s)	disturbance levels.
Low	Building has low potential to support bat roost(s)	• Modern well maintained buildings with few or no access points for bats. • Small cluttered roof space. • Buildings comprised predominantly of prefabricated steel and sheet materials. • Roof sections with a dense cover of cobwebs and no sections of clean ridge board. • High levels of regular disturbance • Buildings with exposed roosting features which are open to the elements. • Location with few or no mature trees, parkland, woodland or water features and isolated due to a lack of commuting routes.
None	Building has no potential to supports bat roost(s)	• Buildings with no features that could be utilised by bats for roosting.

Limitations

2.12 The survey was undertaken at the optimum time of year for this type of survey under suitable weather conditions.

2.13 A small loft void above the offices at the eastern end of the building could not be accessed for internal inspection due to a lack of a suitable support to lean a ladder against. However, the loft hatch appeared well-sealed and likely to be of elevated temperature and loft-dwelling bat species were considered very unlikely to be present (see results section for further details). The lack of access to this loft space was therefore not considered to be a significant constraint to the survey.

3. RESULTS

Desk Study

Statutory Protected Sites

3.1 The results of the desk study confirm that there are no statutory sites within the 1km search area.

Non-Statutory Protected Sites

Sites of Biological Interest

3.2 There are two locally designated sites referred to as Sites of Biological Importance (SBIs) in Greater Manchester within the search area. These are:

- Rochdale Canal Stotts's Lane - Ducie Street Basin located approximately 50m north of the site; and
- Ashton Canal (West) located approximately 100m north of the site.

3.3 Neither of the SBIs has habitat connectivity with the Site and it is considered that they would not be affected, directly or indirectly, by the Project.

Priority Habitats

3.4 The only Priority Habitat located within the 1km search area comprises the River Medlock and its associated wooded corridor, located approximately 250m south-east of the site, and too distant from the Site to be affected by the Project.

Protected and Notable Species

Badgers

3.5 A single record of badger (*Meles meles*) was returned by GMEU. This was located approximately 800m to the east of the Site.

Bats

3.6 A number of records of bat roosts and other signs of bats were returned by GMEU. These comprised roosts for common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (P. *pygmaeus*), pipistrelle (*Pipistrellus* sp.) and brown long-eared bat (*Plecotus auritus*). The nearest record of a roost was for brown long-eared bat located approximately 100m south-west of the site.

Birds

3.7 A number of Priority bird species records were returned by GMEU within the search area. These included lapwing (*Vanellus vanellus*), song thrush (*Turdus philomelos*), house sparrow (*Passer domesticus*) and dunnock (*Prunella modularis*). The nearest record to the Site is for lapwing located approximately 150m to the north adjacent to Ashton Canal (West) SBI.

3.8 In addition, there are records for Schedule 1 bird species, the nearest to the Site being little ringed plover (*Charadrius dubius*) recorded approximately 150m north of the Site adjacent to Ashton Canal (West) SBI. Other Schedule 1 species within the search area, but at distances >250m from the site, are black redstart (*Phoenicurus ochruros*), kingfisher (*Alcedo atthis*) and pergrine (*Falco peregrinus*).

3.9 The black redstart records are located approximately 250m north and 750m west of the Site within the Black Redstart Priority Area which covers much of central Manchester, as identified by GMEU. The Site itself falls just outside of the Black Redstart Priority Area.

Plant Species

3.10 Botanical records within the search area returned by GMEU comprise the Priority plant species grass-wrack pondweed (*Potamogeton compressus*) located approximately 150m north within the Ashton Canal (West) SBI and floating water plantain *(Luronium natans*) which is listed in Annex II of the Habitats Directive, also associated with Ashton Canal (West) SBI some 500m to the north west of the site.

Phase 1 Habitat Survey

3.11 Figure 1 presents the habitat map. Botanical species lists for the habitats encountered are presented in Appendix 1.

3.12 The Site comprised hardstanding and a single building (Plate 1). The only vegetation within the Site comprised a narrow, sparsely vegetated strip with a small number of ephemeral/short perennial species located along the toe of the western aspect of the single building.



Plate 1: View of Victoria House from within the hardstanding area to the south of the building

3.13 The botanical species recorded along the toe of the building were all common and widespread species typically of disturbed ground in urban locations and included common ragwort, broad-leaved willowherb, creeping bent, wall lettuce and groundsel.

Bat Inspection

3.14 Victoria House comprised two parts - a single-storey metal clad, pitched roof unit towards the western end of the building, and a three-storey brick structure with flat roof used as offices at the eastern end of the building (see Plate 1 above).

3.15 The office space at the western end of the building is occupied with a small roof void over the central section only and a hatch in a meeting room leading into this (unable to access due to lack of suitable support to lean a ladder against). The roof void was well-sealed and likely to be of elevated temperature due to its small size and proximity to occupied offices. It was considered likely to be of metal truss construction, given the style and age of the building.

3.16 There was a small soffit box at the eaves of the building and a rough, wooden unpainted fascia board with four overlapping boards on the northern aspect (see Plate 2). Otherwise, the roof structure was well-sealed at the eaves other than small gaps at the gable end of the metal clad part of the structure.

3.17 All external pointing in the brickwork was intact and there were no crevices within the walls.

3.18 It was noted that there was a lack of suitable foraging habitat in the vicinity, and the presence of street lighting adjacent to the building, coupled with security lighting around the building itself. These features were judged to make the building unfavourable for roosting bats.



Plate 2: Overlapping wooden fascia boards on northern aspect with some crevices present

Other Protected Species

3.19 No evidence of other protected species, including nesting birds, was found during the Extended Phase 1 habitat survey. The Site was considered highly unsuitable for protected and notable species due to a lack of semi-natural vegetation within and adjacent to the site. Opportunities for nesting birds associated with the building were limited due to a lack of suitable access points and perching or nesting locations.

Evaluation

3.20 The desk study identified two locally designated SBIs and Priority Habitat associated with the River Medlock within the search area, but these were considered too distant from the Site to be likely to be affected by the Project.

3.21 The Extended Phase 1 habitat survey highlighted no features of nature conservation interest. The plant species list associated with a narrow, sparsely vegetated strip of ground along the northern edge of the building was much reduced, with all plant species recorded being common and typical of disturbed ground associated with sites dominated by hardstanding and buildings.

3.22 The survey identified negligible potential for roosting bats to be present within the single building on the Site and no evidence of roosting was found during the building inspection.

Habitats within and adjacent to the Site were considered to be of low value to foraging and commuting bats.

3.23 No active or disused birds' nests were observed and the Site and building were considered to offer very limited perching or nesting opportunities for birds. The Site falls outside of the Black Redstart Priority Area as identified by GMEU (2009).

4. RECOMMENDATIONS

Bats

4.1 No further survey or mitigation measures are required in relation to bats and their roosts.

4.2 It would be considered good practice to repeat the building inspection for bats if building demolition has not commenced after two years from the date of this survey. This is because derelict buildings can become more suitable for bats over time and some species of bat are quick to make use of new roosting opportunities.

Other Species

4.3 No further surveys or mitigation measures are considered necessary in relation to other protected or notable species.

Ecological Enhancements

4.4 The Site is currently of low ecological value and the Project presents an opportunity to increase biodiversity. Potential enhancement measures which could be considered comprise:

- Use of native or wildlife friendly tree, shrub and herbaceous species in any landscape planting, for example, inclusion of species which provide nectar for invertebrates or berries to provide a food source for birds;
- Inclusion of green or brown roof or green walls to increase the range of opportunities for establishment of plants or other substrates, e.g. gravel garden, to provide foraging and nesting opportunities for bird and invertebrate species;
- Inclusion of a range of bird boxes to accommodate typical urban bird species including common starling (Sturnus vulgaris), house sparrow (*Passer domesticus*) and common swift (*Apus apus*); and
- Inclusion of integrated or external bat roost feature such as bat slates, tiles and bricks or bat boxes to increase opportunities for roosting bats, coupled with a suitable lighting strategy to avoid unnecessary lighting of roost features.

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6. ABBREVIATIONS

CRoW	Countryside and Rights of Way
EU	European Union
GMEU	Greater Manchester Ecology Unit
JNCC	Joint Nature Conservation Committee
NERC	National Environment and Rural Communities
NPPF	National Planning Policy Framework
PAA	Penny Anderson Associates Ltd
SBI	Site of Biological Importance
SSSI	Sites of Special Scientific Interest
WCA	Wildlife and Countryside Act

FIGURE

385280000 385290000 385300000 385310000 385320000 385330000 385340000

398100000 398090000 398080000 398070000 398060000 398050000



Legend

Boundary

Habitat

- Ephemeral/short perennial
- Building
- Hardstanding

N

British National Grid
Projection: Transverse Mercator
False Easting: 400000.000000
False Northing: -100000.000000
Central Meridian: -2.000000
Scale Factor: 0.999601
Latitude Of Origin: 49.000000

ISO A3

Metres

0 5 10

forshaw.

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Project Name: Victoria House

Discipline: Ecology

Title:

Extended Phase 1 Habitat Survey

Scale		Drawing No.	Figure 1
Drawn By: MDM	Originator: SRg	Date: 23/10/2018	
PAA Ref: G:\FORS01_Victoria_House\Maps\		Revision: 1.0	

FORS01_Phase1_MDM_231018.mxd

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APPENDIX 1

Plant Species List

Appendix 1 Plant Species List

Common Name	Scientific Name	DAFOR
Broad-leaved willowherb	*Epilobium montanum*	F
Common bent	*Agrostis capillaris*	O
Common mouse-ear	*Cerastium fontanum*	F
Common ragwort	*Senecio jacobaea*	O
Creeping bent	*Agrostis stolonifera*	O
Dandelion	*Taraxacum officinale* agg.	R
Great willowherb	*Epilobium hirsutum*	R
Groundsel	*Senecio vulgaris*	R
Ragwort species	*Senecio* sp.	O
Wall barley	*Hordeum murinum*	R
Wall lettuce	*Mycelis muralis*	R

KEY

D - Dominant
A - Abundant
F - Frequent
O - Occasional
R - Rare

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PAGERPOWER
Urban & Renewables

Television Impact Assessment and Baseline Survey

Victoria House, Great Ancoats Street

Forshaw Land & Property Group Ltd

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ADMINISTRATION PAGE

Job Reference:	9410A
Date:	November, 2018
Author:	Danny Scrivener Kai Frolic (Update with baseline survey results)
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Email:	danny@pagerpower.com kai@pagerpower.com

Reviewer:	Mike Watson
Date:	November, 2018
Telephone:	01787 319 001
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Issue	Date	Detail of Changes
1	November, 2018	Initial issue
2	December, 2018	Second issue – following baseline survey
3	January, 2020	Update following design update – completed by Danny Scrivener

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EXECUTIVE SUMMARY

Overview

Pager Power has been commissioned to investigate the potential effect of a proposed building development upon television services in the surrounding area. The Proposed Development is located at Victoria House, Great Ancoats Street, Manchester. The proposal will be taller than the existing buildings immediately surrounding it and therefore it has the potential to interact with wireless terrestrial and satellite television signals and cause interference.

The assessment has been undertaken based on guidance produced by Ofcom. The baseline survey was undertaken on 6 December 2018.

Project Update

The original baseline survey was completed in December 2018 along with the desk-based report. This update has been undertaken to incorporate changes to the Proposed Development's design (see Section 2). The results of the desk-based element remain applicable however no change to the baseline conditions has been captured since December 2018.

Findings

The results of the analysis for terrestrial television transmissions are as follows:

- The Proposed Development is within the coverage area for the Winter Hill television transmitter which is the main transmitter serving the area – this was confirmed during the baseline survey;
- Any interference would be due to shadowing effects i.e. the weakening of the transmitted signal due to the physical presence of the Proposed Development;
- Considering the desk-based modelling results, any interference effects would be most likely within approximately 1,000m of the Proposed Development;
- In reality, small/moderate losses may be tolerable to the current terrestrial television signal without affecting the quality of the reception in the area;
- The baseline survey confirmed that coverage quality in the surrounding area is generally good/moderate and that small losses would potentially be imperceptible in practice.

The results of the analysis for satellite television transmissions are as follows:

- The shadow zones for satellite television services extend approximately 200m north-northwest of the proposed development. This is based on a maximum development height of 77.76m above ground level (agl);
- Satellite dishes were not observed within the majority of the satellite shadow zone at the time of the baseline survey. It is possible that some residential locations within the shadow zone could have a satellite dish, although in practice these may be quite elevated in order to receive a better signal.

- Being located within the shadow zone for satellite television services does not guarantee significant effects will occur, however any complaints would be expected to originate from residents located within the modelled shadow zones and more likely from those closest the Proposed Development.

Recommendations

Reported interference should be investigated by means of a post-construction reception measurement. The modelling can then be compared alongside the baseline survey results to determine whether the interference is attributable to the Proposed Development.

Mitigation

Technical mitigation solutions have been identified and could be implemented in the event that a significant interference occurs. These are outlined in Section 9 of this report.

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ABOUT PAGER POWER

Pager Power is a dedicated consultancy company based in Suffolk, UK. The company has undertaken projects in 47 countries within Europe, Africa, America, Asia and Australasia.

The company comprises a team of experts to provide technical expertise and guidance on a range of planning issues for large and small developments.

Pager Power was established in 1997. Initially the company focus was on modelling the impact of wind turbines on radar systems. Over the years, the company has expanded into numerous fields including:

- Renewable energy projects;
- Building developments;
- Aviation and telecommunication systems.

Pager Power prides itself on providing comprehensive, understandable and accurate assessments of complex issues in line with national and international standards. This is underpinned by its custom software, longstanding relationships with stakeholders and active role in conferences and research efforts around the world.

Pager Power's assessments withstand legal scrutiny and the company can provide support for a project at any stage.

1 BACKGROUND

1.1 Introduction

Pager Power has been commissioned to investigate the potential effect of a proposed building development upon television services in the surrounding area. The Proposed Development is located at Victoria House, Great Ancoats Street, Manchester. The assessment has been undertaken based on guidance produced by Ofcom.

The aim of this study is to determine the effect of the Proposed Development upon terrestrial television reception in key interference areas. The report has determined the effects by identifying the relevant transmitters and modelling the diffraction on and reflection on zones. Diffraction loss calculations have also been undertaken for terrestrial television signals. The effect upon satellite television signals has also been considered. A baseline reception survey was undertaken on 6 December 2018.

1.2 Description of the Proposed Development

The Proposed Development comprises the demolition of Victoria House to provide new high quality residential accommodation for the private rented sector market, with a commercial unit at ground floor level.

A 25-storey residential tower (Use Class C3) comprising 177 apartments (15,160sqm) (Use Class C3) and a ground floor commercial unit (161sqm) (Use Class A1, A2, A3 and D1) are proposed.

The bedroom accommodation will be supported by a number of high quality shared amenity spaces, including a gym, co-working space, and a residential garden.

The Proposed Development includes the provision of plant, servicing, recycling and refuse bin storage, and cycle storage (177 spaces).

1.3 Assessment Requirement

The Proposed Development will introduce a new tall structure into the urban environment which could interact with wireless television signals and cause interference in the surrounding area. This report presents results of interference modelling to determine whether the Proposed Development may cause interference to terrestrial television signals. Presentation of the shadow zones for satellite television signals is also provided.

2 PROPOSED DEVELOPMENT DETAILS

2.1 Proposed Development Boundary

The red line boundary for the Proposed Development is shown in Figure 1[1] below.



Figure 1 *Proposed Development redline boundary*

[1] Aerial image copyright © google 2018.

2.2 Proposed Development Ground Floor Plan

The Proposed Development ground floor plan is shown in Figure 2[2] below (not aligned north).

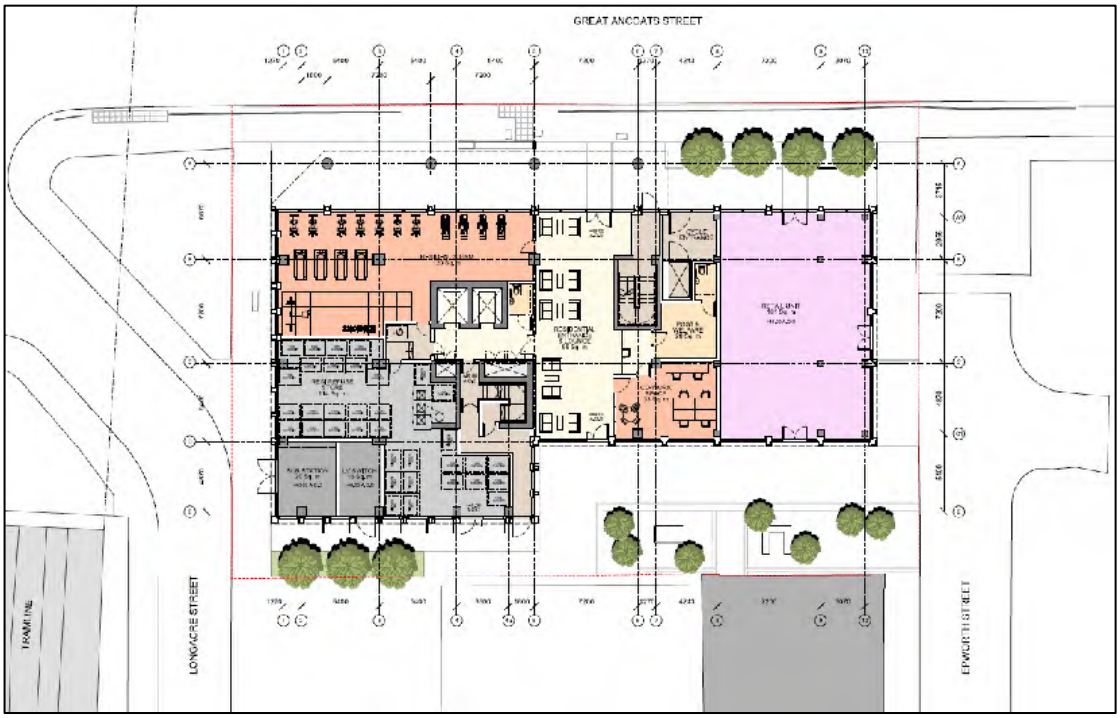


Figure 2 *Proposed Development site plan*

2.3 Proposed Development Elevation

The Proposed Development will have a maximum altitude of 126.76m Above Ordnance Datum (AOD). The Proposed Development will have a maximum height of approximately 77.76m above ground level (agl).

[2] Source: Turley (edited).

3 TERRESTRIAL TELEVISION TRANSMITTER DETAILS

3.1 Relevant Transmitter

A comprehensive search of transmitter and coverage maps has revealed that the Winter Hill transmitter is the main terrestrial television transmitter serving the area around the Proposed Development. This was confirmed during the baseline survey.

Digital television services are broadcast via Ultra High Frequency (UHF) signals; no analogue television signals are broadcast. The transmitter information is presented below[3].

3.2 Winter Hill Main Transmitter

Winter Hill is one of the UK's main television transmitters located approximately 24.3km northwest of the development (published coordinates SD66051446). The main digital services provided are shown in Table 1 below[4].

	Public (PSB)			Commercial (COM)		
Service	BBC A	Digital 3&4	BBC B	SDN	Arqiva A	Arqiva B
Channel	50	59	54-	58	49	55
Power	100 kilo-Watts (kW)					

Table 1 *Winter Hill main transmissions*

Additional Winter Hill transmissions are shown in Table 2 below[5].

	Local Multiplexes			
Service	COM 7	COM8	LM/LL/LPR	GIM
Channel	31	37	56	57
Power	25.7 kW	22.6kW	2 kW	1 kW

Table 2 *Winter Hill additional transmissions*

[3] Source: Ofcom.
[4] Correct at the time of the survey.
[5] As above.

3.3 Terrestrial Television Transmitter Location

Figure 3 below shows the relative location of the transmitter and the Proposed Development.

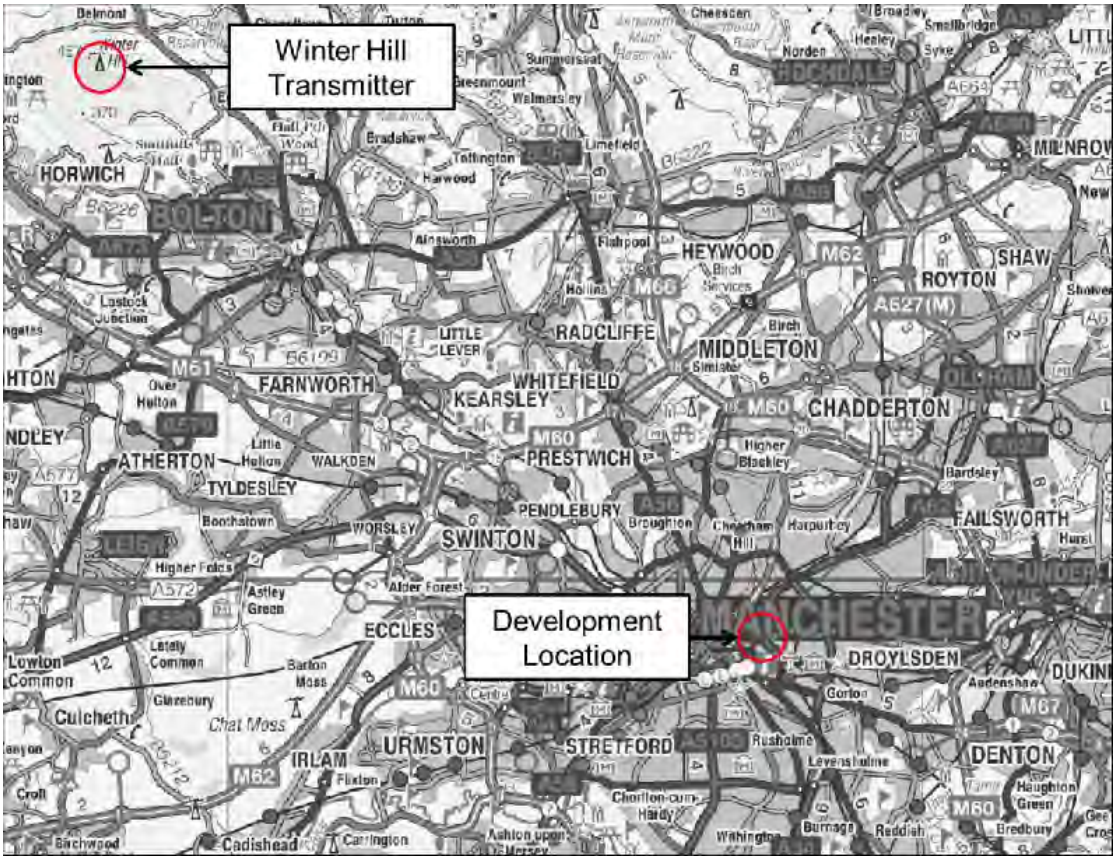


Figure 3 *Television transmitter and Proposed Development location*

4 INTERFERENCE MECHANISMS – TERRESTRIAL TELEVISION

4.1 Technical Overview

Terrestrial television services are provided by means of electromagnetic waves in the Ultra High Frequency (UHF) range which propagate from land-based transmitters to receiving aerials. The quality of the image and sound on a television set is dependent on both the strength of the signal received directly from the transmitter (carrier signal) and the strength of any interference signals from other sources. To achieve good quality reception an aerial must receive a strong carrier signal but weak interference signals.

4.2 Interference mechanisms

There are two ways that buildings can cause interference to television reception, these are described below.

4.2.1 Obstruction of the Signal

This is caused by the building physically blocking the transmitted signal, reducing the strength of the carrier signal in the shadow of the building. In the case of Winter Hill transmissions, this would affect residences to the southeast of the Proposed Development. The following is true for television signals:

- The highest losses (greatest interference) will be located immediately behind the Proposed Development relative to the transmitter i.e. in the shadow zone;
- Losses near the edge of the shadow zone will be less significant due to diffraction effects (bending of the signal).

Ofcom has produced a document[6] offering guidance on this issue. Relevant extracts from the documents are presented below.

"In general, there will be three 'zones' behind the structure:

Zone A - close behind the structure (typically a few tens of metres) there may be a large reduction in signal level with a possible complete loss of reception

Zone B - further away (typically a few hundred metres) the signal reduction is less severe and the shadow will be smaller as diffraction effects partially fill in the shadow. Depending on the size of the structure, some locations could still lose reception completely

Zone C - some distance away (1-5km) the shadow will effectively have disappeared."

[6] Source: Ofcom (2009): Tall Structures and their impact on broadcast and other wireless services.

The zones mentioned are illustrated in Figure 4[7] below, taken from Section 3.2 of the Ofcom guidance regarding the effect of buildings on broadcast signals.

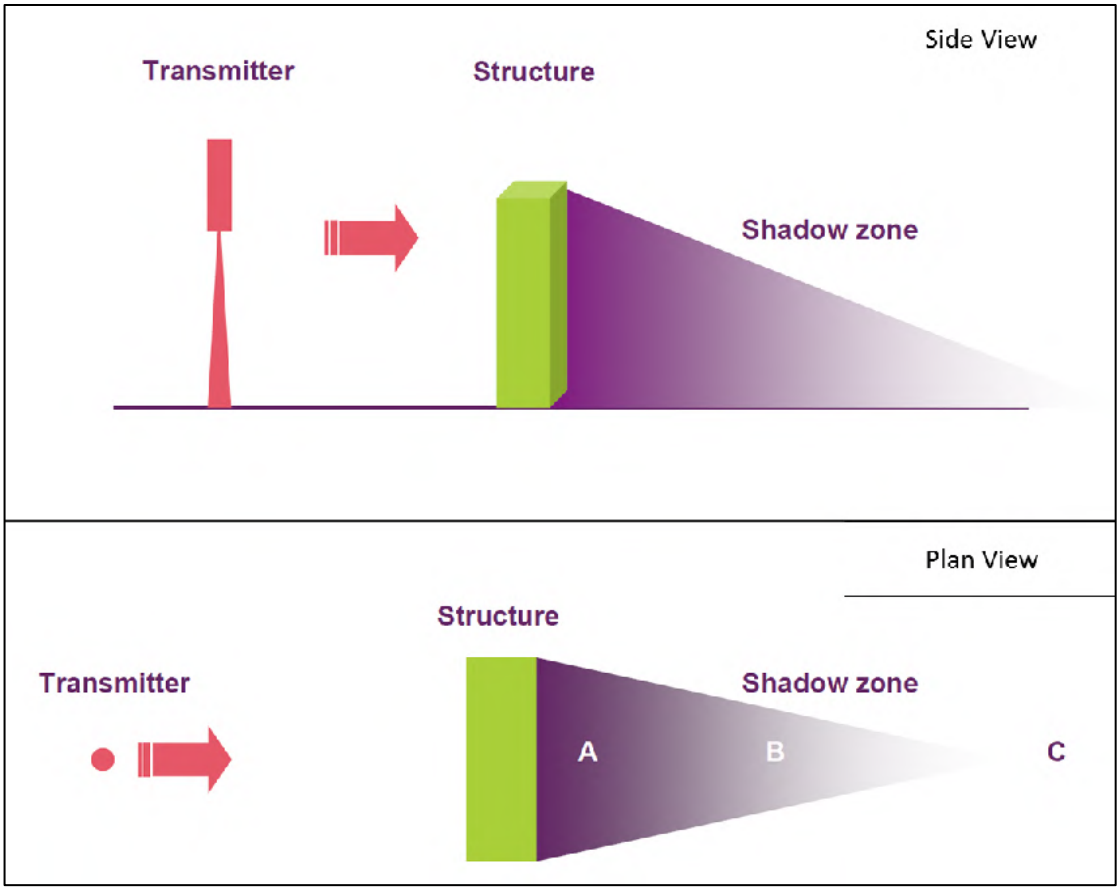


Figure 4 *Diffraction loss zones*

[7] Source: Ofcom (2009): Tall Structures and their impact on broadcast and other wireless services.

4.2.2 Reflection of the Signal

For large developments with straight edges, the transmitted signal can be reflected by the building itself. This causes an effect known as 'multipath interference' whereby the signal is received twice by an aerial at different times. The direct signal arrives first because it has a shorter distance to travel.

Figure 5[8] below (taken from Section 3.3 of the Ofcom guidance referenced above) illustrates this effect.

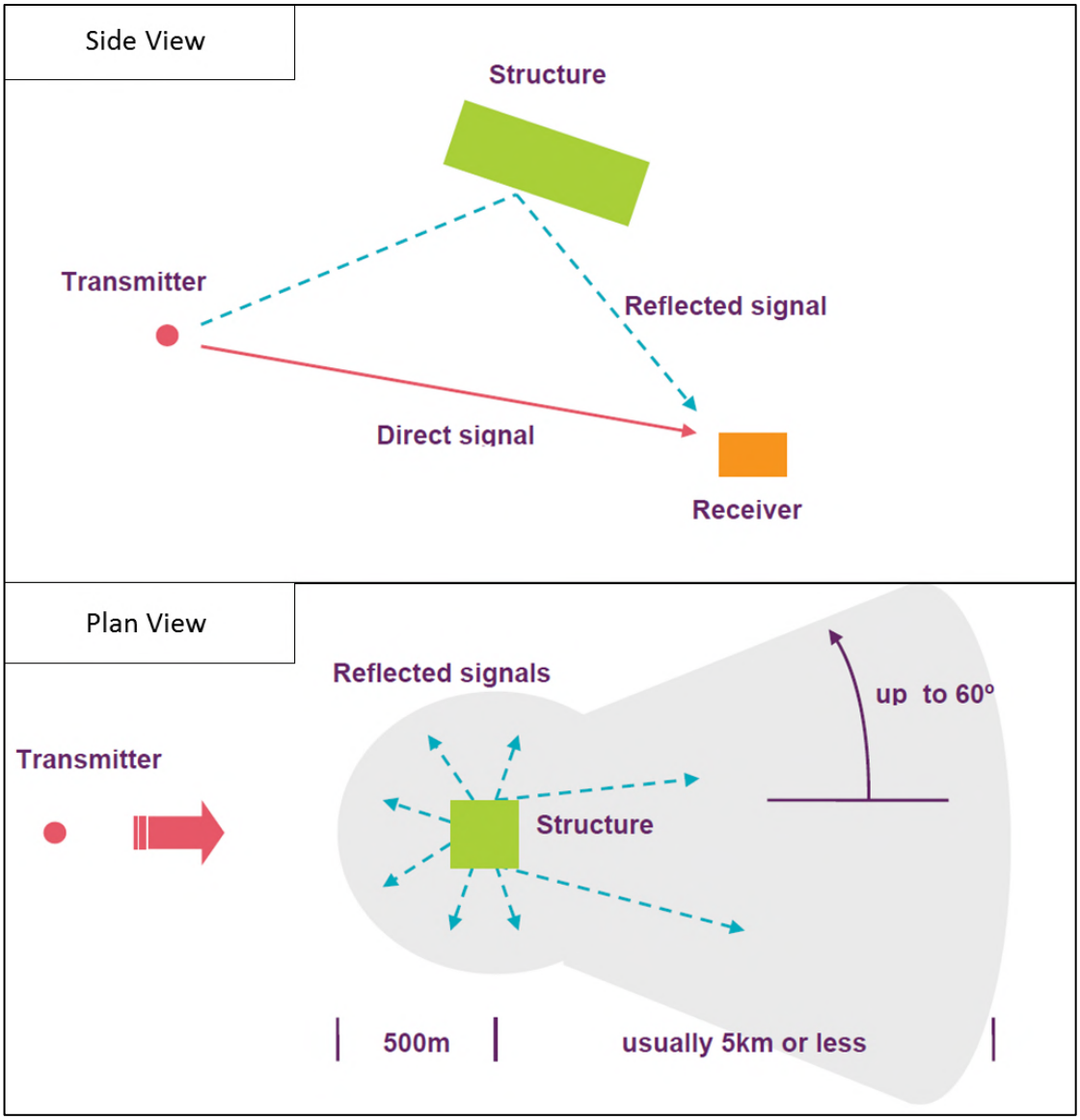


Figure 5 *Reflection zones*

[8] Source: Ofcom (2009): Tall Structures and their impact on broadcast and other wireless services.

In practice, it is considered highly unlikely that reflections will have an effect for receivers in front of the Proposed Development or on either side when viewed from the location of the transmitter. For digital transmissions in particular, it is unlikely that issues will occur if the angle between the direct signal and the reflected signal is more than 30 degrees[9] .

The reflection zone has been constructed in accordance with the Ofcom approach, however the angle considered is 30 degrees rather than 60 degrees. This is in order to represent a more realistic scenario for digital transmissions.

Reflection issues are most likely to cause a noticeable effect if:

- The direct signal from transmitter to receiver is weak (e.g. obstructed by terrain or buildings);
- The reflected signal from the Proposed Development is strong (e.g. clear radio line of sight from the transmitter to the Proposed Development, and the Proposed Development to the receiver).

The worst-case scenario is for both of the above conditions to be satisfied. The best-case scenario is for neither of the above conditions to be satisfied.

[9] This is known to be the angle that Arqiva considers when safeguarding its Television Re-Broadcast Links with regard to reflections from wind turbines – whilst wind turbines cause issues that are different to buildings this particular issue is similar for the two.

5 INTERFERENCE MECHANISMS – SATELLITE TELEVISION

5.1 Overview

The principle of shadowing discussed in the previous section is applicable to satellite transmissions as well as terrestrial ones. Naturally, signals from a satellite tend to come from a much steeper angle than those from a terrestrial transmitter, however receivers that are located in close proximity to an obstruction could still be affected. The Ofcom guidance states that:

'Satellite TV reception is not generally affected by new structures unless the development blocks the 'line-of-sight' between a dish antenna and the satellite in the sky. While terrestrial TV aerials are generally mounted to receive signals in line with the horizon, and are therefore liable to be blocked by taller structures, satellite signals are received from a much higher elevation. This means that disruption to satellite reception is usually limited only to cases where a tall building is erected very close to an existing building.

Figure 6[10] below illustrates an example of a receptor that is in the shadow zone for a terrestrial transmitter but outside the shadow zone for a satellite.

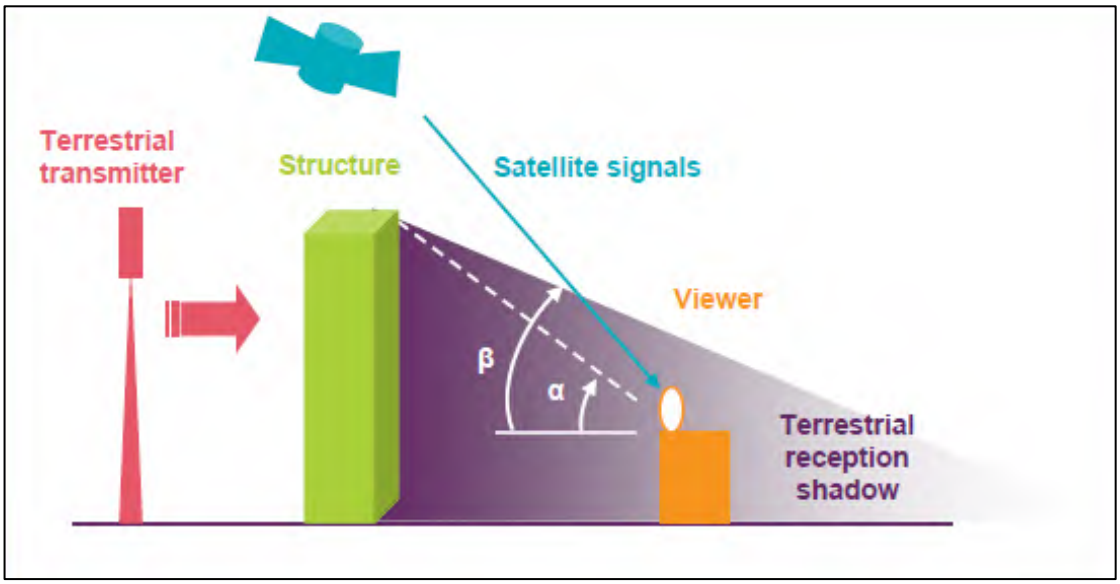


Figure 6 *Satellite reception not affected by a new structure*

The dimensions of the shadow zone for a satellite are dependent on:

- The relative height of the satellite dish and the obstruction;
- The vertical angle from the satellite dish to the satellite itself – in Manchester this is about 25 degrees.

[10] Source: Ofcom (2009): Tall Structures and their impact on broadcast and other wireless services.

6 TECHNICAL ASSESSMENT – TERRESTRIAL TELEVISION

6.1 Potential Interference Areas – Terrestrial Television

Figure 7 below shows the potential interference areas associated with the Proposed Development.

These have been defined based on the geometry of the potential interference zones as set out in the previous section. Both zones extend to a distance of 5km beyond the Proposed Development location in accordance with the Ofcom guidance.

In the case of the shadow zone, this has been modelled as having straight sides in order to be conservative. In actuality due to diffraction effects the zone would have a more triangular shape as shown in Figure 4 in the previous section.

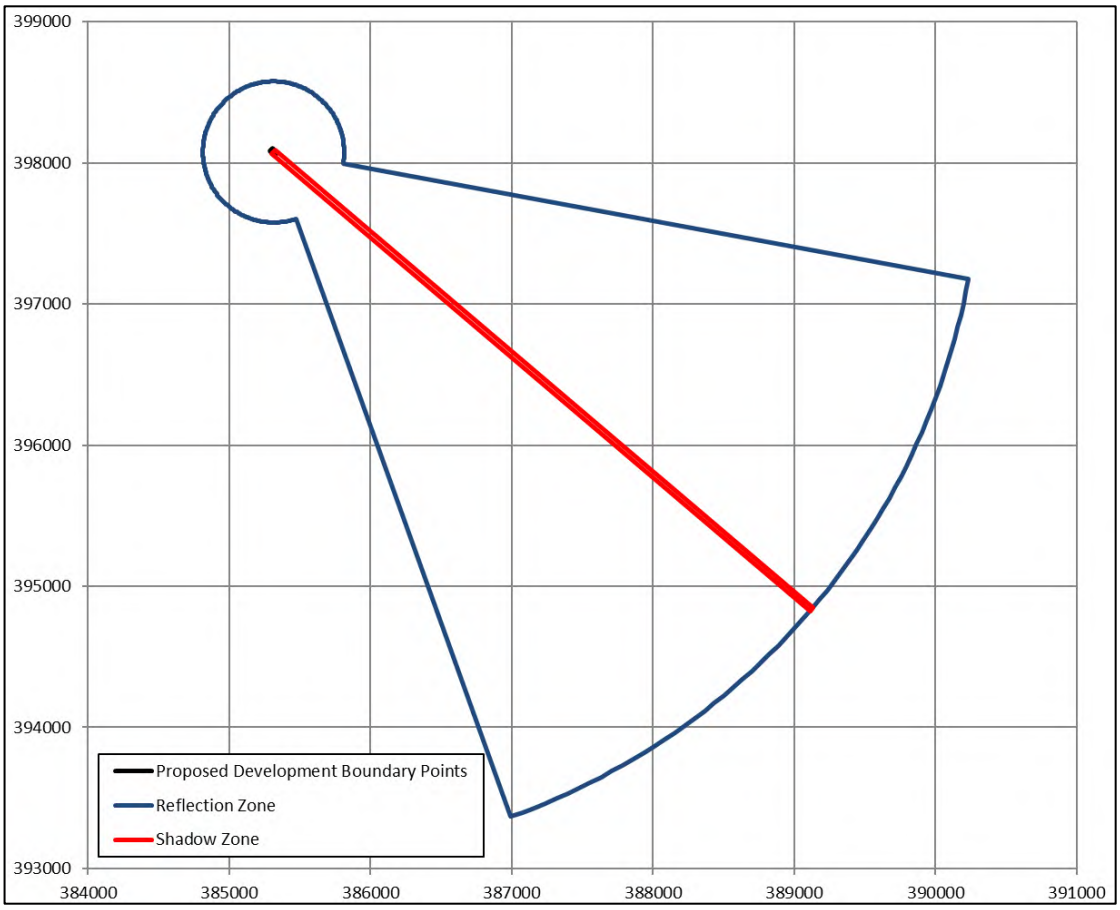


Figure 7 *Television diffraction and reflection Interference areas*

Figure 8[11] below shows the interference zones overlaid onto an aerial image of the area.



Figure 8 *Interference zones – aerial image*

6.2 Potential Diffraction Issues – Terrestrial Television

Due to the Proposed Developments width, the shadow zone is relatively narrow. It can be seen that the shadow zone passes over mostly urban areas becoming more low-level residential towards the end of the shadow zone. Areas closest to the Proposed Development are at the highest risk of experiencing television interference.

[11] Source: © google 2018.

6.3 Diffraction Calculations – Terrestrial Television

The level of attenuation at a receptor location will, in practice, vary based on many factors including:

- Receiving aerial height above ground level;
- Location of the receiving aerial relative to the Proposed Development;
- Existing obstructions between the receiving aerial and the transmitter.

Diffraction loss calculations[12] have been undertaken at particular distances beyond the Proposed Development. The calculation is designed to determine the signal losses due to the presence of the obstruction. The calculation considers relative ground heights, the Proposed Development's dimensions and a terrestrial television aerial located at 10m above ground level at each calculation location. Table 3 below shows the results.

Location Distance	Diffraction loss at 10m above ground (considering Proposed Development only) – dB
0.05km	21.6 dB
0.1 km	18.6 dB
0.2 km	15.7 dB
0.5 km	12.3 dB
1 km	9.8 dB
1.5 km	8.4 dB
2 km	6.4 dB
3 km	0.6 dB
4 km	-2.7 dB
4.97km[13]	-5.6 dB

Table 3 *Reference diffraction calculations*

The signal losses in practice will almost certainly be lower than those presented in Table 3 above however the results do show that the most significant signal power losses are within 1km of the Proposed Development. The losses then drop off at much smaller increments beyond this. The likelihood of more significant effects within 1km is in agreement with the conclusions as presented within the Television Interference scoping chapter.

Figure 9 on the following page shows the calculation sheet for a point 50m behind the Proposed Development relative to the Winter Hill transmitter.

[12] Based on a modified Bullington method as recommended within ITU-P526-13.
[13] 5km beyond centre of Proposed Development red line boundary.

Diffraction Loss Calculation					
Location	0.05				
Frequency (GHz)	0.508528				
Wavelength (m)	0.58953				
			1	2	3
Distance from Antenna 1 to blocking point (m)			25324	25324	25324
Distance from Antenna 2 to blocking point (m)			50	50	50
Height of blocking point (m)			64.4	15	15
	v		16.8019	3.911081	3.911081
	J dB		37.38369	24.68735	24.68735
	jv (Loss Factor)		73.99197	17.15408	17.15408
Shielding Loss	Jmin(v)		17.7141		
	Jav(v)		21.56188		

Figure 9 *Diffraction loss calculation at 50m from the Proposed Development*

All calculation sheets can be provided upon request.

6.4 Potential Reflection Issues – Terrestrial Television

Reflection effects are most likely if the transmitter does not have direct radio line of sight to the receiving aerial.

Based on bare-earth terrain, the Winter Hill transmitter has coverage below ten metres for the populated areas within the reflection zone. This means that any receivers that have a low signal strength are likely to be affected by existing obstructions. For interference to occur due to reflections, the following criteria would need to be met:

- The receiving aerial would not be already obstructed by a building or other existing obstacle;
- The reflected signal path via the Proposed Development would have to be relatively unobstructed;
- The angle between the reflected signal via the Proposed Development and the direct signal would have to be small.

In practice it is unlikely that all of the above criteria would be met. Effects due to reflections are considered unlikely.

6.5 Potential Diffraction Issues – Satellite Television

Shadow zones have been modelled for five satellite locations, based on the longitude of the main ASTRA satellites.

These zones have been constructed based on a maximum development height of 73m above ground level and an assumed dish height of 3 metres above ground level.

In order to be conservative, the shadow zone has considered the entire Proposed Development Site. It should be noted that the tallest part of the Proposed Development will not encompass the whole area, therefore the shadow zones may in practice not extend as far as the model shows.

Figure 10 on the following page shows the individual shadow zones for the five satellite positions.



Figure 10 *Satellite television interference zones*

Figure 11[14] below shows the combined satellite shadow zone overlaid onto aerial imagery.

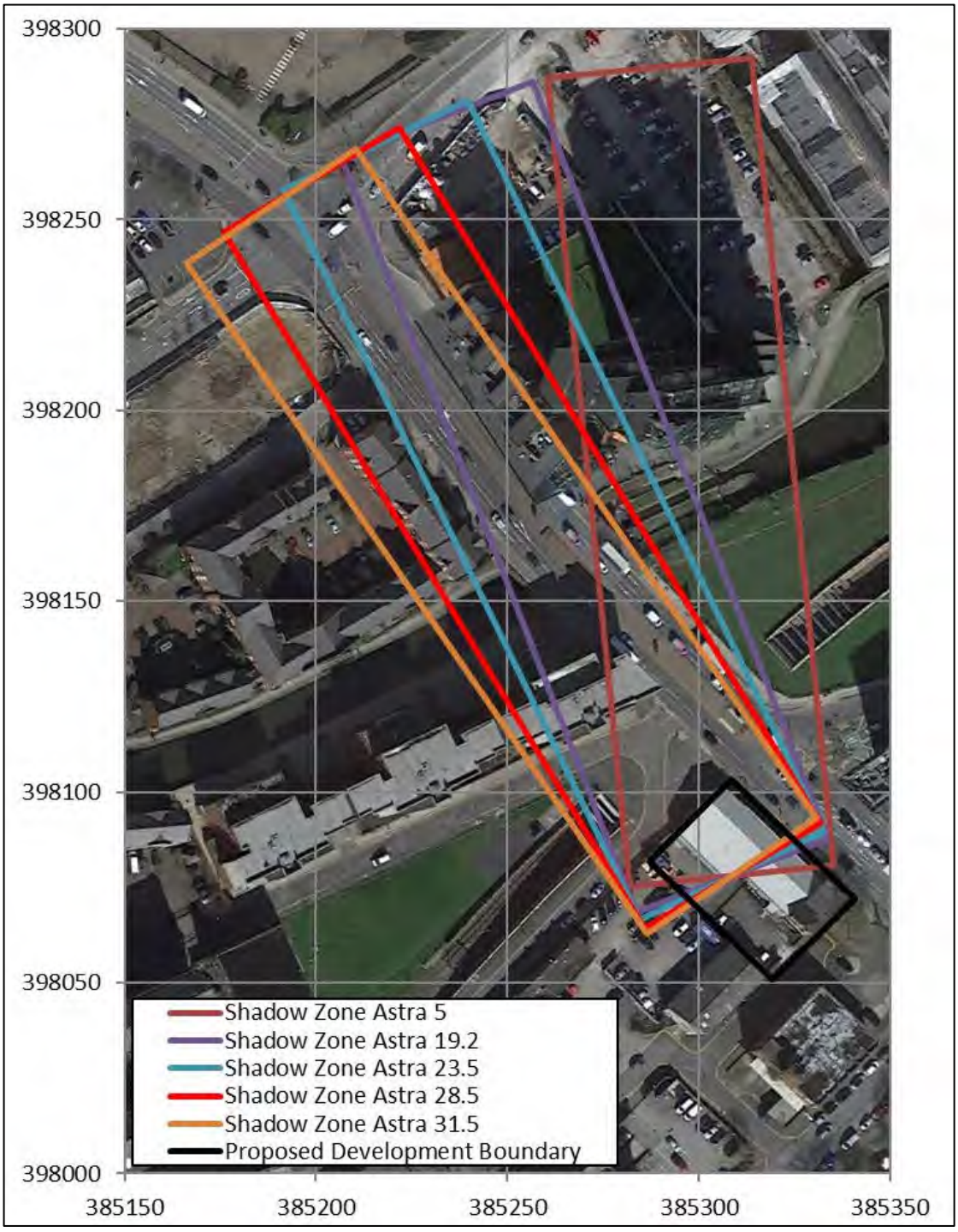


Figure 11 *Satellite television interference zones – aerial image*

[14] Aerial image copyright © google 2018.

6.6 Results Discussion

Any effect upon terrestrial television signals would be most likely within 1km of the Proposed Development based on the results of the diffraction loss calculations only. These calculations consider a worst-case scenario. In reality, small/moderate losses to the current signals may be tolerable without affecting the quality of the terrestrial television reception in the area.

The shadow zones produced for satellite television reception present a worst-case scenario. Whilst the satellite shadow zones do extend over locations where satellite services may be received, the receiving equipment will likely be located at high elevations where shadowing effects are less likely. Similarly to terrestrial television, small/moderate losses to the current signals may be tolerable without affecting the quality of the satellite television reception in the shadow zones. If an impact was reported for satellite television services, the complaints would be expected to originate from residents located within the modelled shadow zones and more likely from those closest the Proposed Development.

Interference to either terrestrial or satellite services can be investigated and mitigated. This is discussed further in Section 9.

7 CUMULATIVE EFFECTS

7.1 Overview

The Proposed Development will be constructed in an urbanised area where many buildings already exist, are under construction or have planning permission. Therefore, considering the interference mechanisms for television interference, individual and cumulative effects may be possible. The following section discusses the potential for significant cumulative effects.

7.2 Cumulative Discussion

Figure 12[15] on the following page shows the cumulative schemes considered within this section.

[15] Source: Turley (edited).

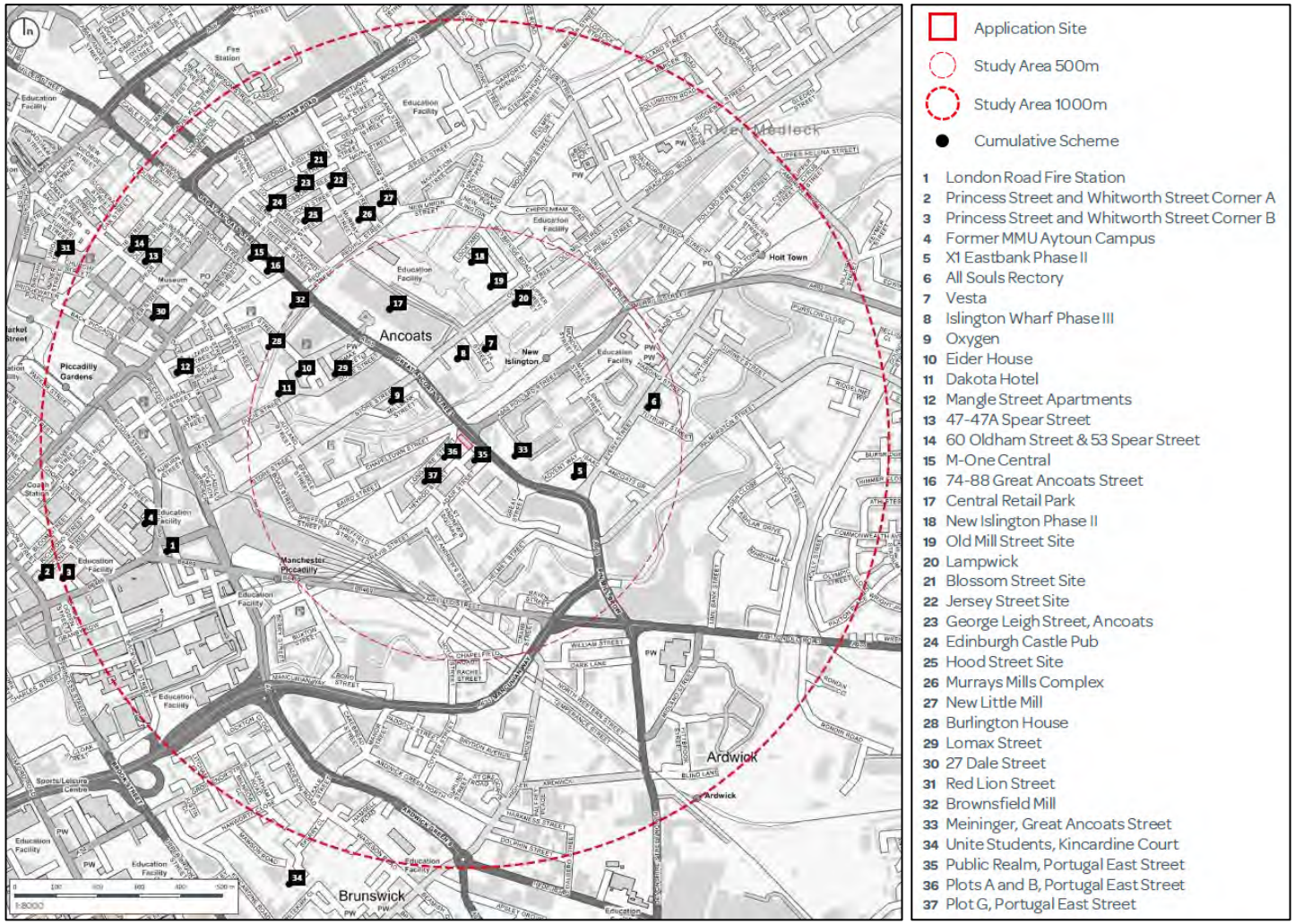


Figure 12 *Cumulative considerations – additional developments*

In principle, a number of developments presented in Figure 12 above could result in a cumulative effect (specifically developments 9, 15, 16, 29, 32, 33 and 36) due to their location relative to the Winter Hill transmitter[16]. However, this is unlikely in practice. The reason for this is that a cumulative effect would require an overlap in potential interference zones for multiple developments. Due to the restricted zone where effects are predicted – i.e. within 1 km of the Proposed Development within a narrow shadow zone – cumulative effects are considered unlikely.

The interference zones for satellite television reception are also very restricted and are defined by the shadow of the building relative to the satellites themselves. Cumulative effects are highly unlikely because:

- Interference areas from separate building developments are unlikely to overlap;
- Any effects would be readily apparent and require prompt mitigation. A scenario in which small effects from multiple interference sources would contribute to a noticeable effect is unlikely in practice.

The cumulative effect of existing development is inherently captured within the baseline reception survey which will be completed before the Proposed Development begins construction.

7.3 Cumulative Effect Conclusions

If interference to television signals does occur due to the Proposed Development, the interference would only be observable after construction of the Proposed Development has begun. Interference would have to be investigated and found to be attributable to the Proposed Development. If interference occurs once any effect of the Proposed Development is mitigated, any further effects due to subsequent buildings will be the responsibility of the developers of those buildings. Therefore inter-relationship effects are inherently covered within the scheduled baseline reception survey and any mitigation implemented as a result of the Proposed Development in isolation.

[16] Based on geometry only. The size of the proposed developments is not known, and it is therefore considered a worst-case.

8 TERRESTRIAL TELEVISION BASELINE SURVEY

8.1 Overview

The purpose of a baseline survey is to establish current television signal strength and quality in the area. The baseline survey serves three purposes:

1. It confirms which transmitter is serving most homes in the areas surveyed;
2. It provides an indicator regarding the likelihood of interference. If current signals are of good quality, minor degradation is less likely to have a noticeable effect; and
3. It allows a 'before and after' comparison to be made in the event that a complaint is received.

A baseline television reception survey was undertaken for the proposed development on 6 December 2018.

Survey measurements were taken using Pager Power's custom survey vehicle with a wideband UHF aerial extended to a height of 10 metres above ground level. This was connected to television analyser to record the signal strength and stability.

The strength of the recorded signals is categorised in accordance within Table 4 below.

Average Signal Strength (dB)	Subjective Signal Strength Definition
<35	Low
35-45	Moderate
45-55	Good
55+	Very Good

Table 4 *Television signal strength categories*

8.2 Survey Locations (Reception Measurements)

Figure 13 below shows the survey locations as circular icons in the context of the modelled interference zones. Survey locations were chosen pre-survey (within the shadow zone and within 1 km of the Proposed Development) however safe and available access influenced the specific position on the day. The locations below show the actual survey locations.

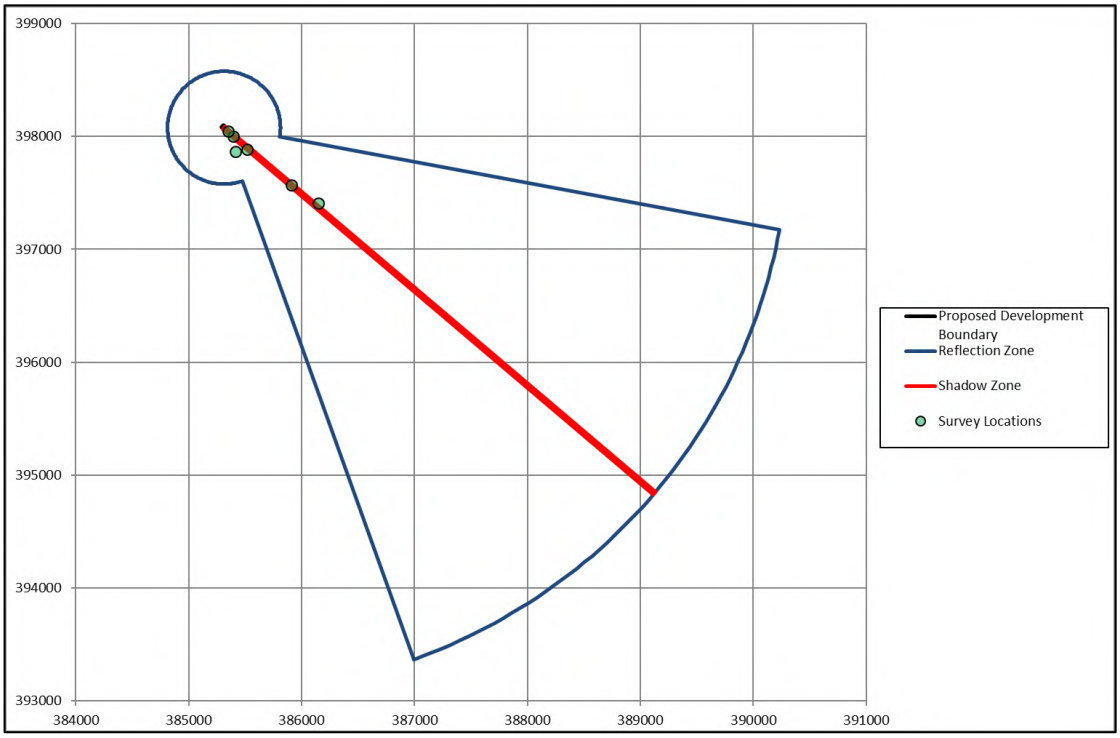


Figure 13 *Survey locations*

Survey location 1 was the furthest from the Proposed Development and location 6 was the nearest. The locations are shown in Figure 14[17] on the following page.

[17] Copyright ©2018 Google.



Figure 14 *Survey locations (aerial image)*

8.3 Survey Results

An overview of the survey results is presented in Table 5 below whilst the full survey results are shown in Appendix A. Survey photographs are shown in Appendix B.

Location	Average Measured Signal Strength (dB)	Remarks	High Level Conclusion
1	Main TV MUX: 56 (Very Good) Local TV MUX: 48 (Good)	No external aerials or satellite dishes were visible from the survey location. Nine of ten multiplexes displayed good picture and audio quality, with signal fluctuations of less than 1 dB and no signs of interference. One local multiplex did not decode at this location.	It is unlikely that significant losses would be experienced at this distance from the development (approximately 1 km). Impacts are not predicted.
2	Main TV MUX: 48 (Good) Local TV MUX: 42 (Moderate)	No external aerials or satellite dishes were visible from the survey location. Nine of ten multiplexes displayed good picture and audio quality, with signal fluctuations of less than 1 dB and no signs of interference. One local multiplex did not decode at this location.	It is possible that small losses would be experienced at this distance from the development (approximately 0.7 km). Based on the current signal quality, noticeable interference is not predicted in practice.
3	Main TV MUX: 55 (Very Good) Local TV MUX: 47 (Moderate)	No external aerials or satellite dishes were visible from the survey location. All multiplexes displayed good picture and audio quality, with signal fluctuations of less than 1 dB and no signs of interference.	It is possible that losses would be experienced at this distance from the development (approximately 0.3 km). It is possible that effects would not be noticeable in practice, however some degradation of signal quality cannot be ruled out.

Location	Average Measured Signal Strength (dB)	Remarks	High Level Conclusion
4	Main TV MUX: 63 (Very Good) Local TV MUX: 56 (Very Good)	Safe access was not available at the planned location. One elevated external aerial directed towards Winter Hill was observed at a large distance. All multiplexes displayed good picture and audio quality, with signal fluctuations of less than 1 dB and no signs of interference.	It is possible that losses would be experienced at this distance from the development (approximately 0.3 km). It is possible that effects would not be noticeable in practice, however some degradation of signal quality cannot be ruled out.
5	Main TV MUX: 50 (Good) Local TV MUX: 44 (Moderate)	No external aerials or satellite dishes were visible from the survey location. All multiplexes displayed good picture and audio quality, with signal fluctuations of less than 1 dB and no signs of interference.	Losses are likely for receivers in the shadow zone at this distance from the development (< 0.1 km). The immediate area is industrial, and the nearest residential receiving aerials are typically elevated. Effects may not be noticeable in practice but are considered possible.
6	Main TV MUX: 52 (Good) Local TV MUX: 45 (Good)	Elevated external aerials directed towards Winter Hill were observed. All multiplexes displayed good picture and audio quality, with signal fluctuations of less than 1 dB and no signs of interference.	Losses are likely for receivers in the shadow zone at this distance from the development (< 0.1 km). The immediate area is industrial, and the nearest residential receiving aerials are typically elevated. Effects may not be noticeable in practice but are considered possible.

Table 5 *Baseline survey results*

8.4 Satellite Receivers

The residential areas within the shadow zone were surveyed in order to identify receivers. The survey was predominantly focussed on the areas straddling the A665 road since this passes through the centre of the modelled shadow zone.

Photographs were taken during the survey (see Appendix B). The locations from which photographs were taken for the satellite receiver survey are shown in Figure 15[18] below.



Figure 15 *Photograph locations – satellite receivers*

In general, satellite receivers were not observed in the area. It is possible that receivers were located at locations that were not readily visible from the survey route – potentially being significantly elevated.

It is possible that some satellite receivers would be located within the shadow zone, this is unlikely to affect a large number of receptors.

[18] Aerial image copyright © google 2018.

9 MITIGATION

9.1 Mitigation Requirement

If an adverse effect on television services occurs and is attributable to the Proposed Development, mitigation will be required.

9.2 Mitigation Options

The most effective form of mitigation is dependent on the specific effect. Common options are shown below.

Mitigation options for terrestrial television may include:

- Replacement of receiving aerial with a more directional or higher gain aerial;
- Repositioning the receiving aerial so that the received signal is stronger;
- Directing the receiving aerial to an alternative transmitter that covers the area and retuning the television accordingly;
- Upgrading antenna cabling and connections;
- Installation of signal amplifiers;
- Development of a bespoke local solution using a receiving aerial some distance from the dwelling;
- Replacing terrestrial reception equipment with satellite reception equipment or cable;
- Provision of television services via the internet.

Mitigation options for satellite television may include:

- Increase the height of the receiving dish.
- Provision of cable television.
- Provision of a bespoke receiving solution e.g. a system to receive and re-distribute the satellite television signal;
- Provision of television services via the internet.

9.3 Recommended Options

9.3.1 Terrestrial television interference

If interference were to occur for a small number of dwellings it is likely that installation of satellite dish would be the most suitable option.

If effects are experienced for dwellings with poor quality or low receiving aerials, the best option may be to upgrade and/or elevate the existing aerial.

It is also possible that the television services could be supplied by an alternate transmitter in the surrounding area.

9.3.2 Satellite television interference

If adverse effects are experienced by residents in the shadow zone for satellite television, the most appropriate mitigation option is likely to be either:

- Provision of a replacement service via terrestrial or cable television.
- Provision of a bespoke reception system that re-distributes the satellite signal. This could involve a cable-based network connected to a receiving dish. Other options may include setting up a local network via radio or wi-fi.

9.4 Recommended Process

It is recommended to investigate any reports of interference in order to determine whether these are attributable to the Proposed Development. If this is found to be the case, mitigation can be applied.

There is no reason to install pre-emptive mitigation.

10 CONCLUSIONS

10.1 Findings

The results of the analysis for terrestrial television transmissions are as follows:

- The Proposed Development is within the coverage area for the Winter Hill television transmitter which is the main transmitter serving the area;
- Any interference would be due to shadowing effects i.e. the weakening of the transmitted signal due to the physical presence of the Proposed Development;
- Considering the desk-based modelling results, any interference effects would be most likely within approximately 1,000m of the Proposed Development;
- In reality, small/moderate losses may be tolerable to the current terrestrial television signal without affecting the quality of the reception in the area.
- The baseline survey confirmed that coverage quality in the surrounding area is generally good/moderate and that small losses would potentially be imperceptible in practice.

The results of the analysis for satellite television transmissions are as follows:

- The shadow zones for satellite television services extend approximately 200m north-northwest of the proposed development. This is based on a maximum development height of 77.76m agl;
- The shadow zones extend over residential developments. Where satellite dishes were observed[19], the dishes were located at higher elevations than modelled within the shadow calculations. Therefore, the shadow zones are considered conservative;
- Being located within the shadow zone for satellite television services does not guarantee significant effects will occur, however any complaints would be expected to originate from residents located within the modelled shadow zones and more likely from those closest the Proposed Development.

10.2 Recommendations

Any reported television interference should be investigated by means of a post-construction reception measurement. The modelling can then be compared alongside the baseline survey results to determine whether the effect is attributable to the Proposed Development.

[19] Considering street view imagery.

APPENDIX A – DETAILED RECEPTION SURVEY RESULTS

Location 1 (GPS Coordinates: SJ 86148 97411)						
Channel	**Service**	**Signal Strength (dBμV)**	**Typical Fluctuation (dBμV)**	**BER**	**Picture**	**Audio**
31	COM7	53	0.2	0%	Fine	Fine
37	COM8	63	0.2	1e-7	Fine	Fine
49	Arqiva A	58	0.3	7e-7	Fine	Fine
50	BBC A	60	0.3	1e-7	Fine	Fine
54-	BBC B	57	0.2	0%	Fine	Fine
55	Arqiva B	50	0.2	0%	Fine	Fine
56	LM/LL/LPR	42	0.2	1e-7	Fine	Fine
57	GIM	31	0.4	N/A	DND[20]	DND
58	SDN	56	0.2	2e-7	Fine	Fine
59	Digital 3&4	55	0.2	1e-7	Fine	Fine

Notes: No external aerials or satellite dishes were visible from the survey location.

[20] Did not decode

Location 2 (GPS Coordinates: SJ 85908 97567)						
Channel	Service	Signal Strength (dBμV)	Typical Fluctuation (dBμV)	BER	Picture	Audio
31	COM7	51	0.2	0%	Fine	Fine
37	COM8	58	0.2	1e-7	Fine	Fine
49	Arqiva A	49	0.3	1e-7	Fine	Fine
50	BBC A	50	0.2	1e-7	Fine	Fine
54-	BBC B	53	0.5	0%	Fine	Fine
55	Arqiva B	43	0.4	0%	Fine	Fine
56	LM/LL/LPR	37	0.3	1e-7	Fine	Fine
57	GIM	29	0.3	N/A	DND	DND
58	SDN	45	0.3	7e-8	Fine	Fine
59	Digital 3&4	48	0.2	1e-7	Fine	Fine

Notes: No external aerials or satellite dishes were visible from the survey location.

Location 3 (GPS Coordinates: SJ 85515 97888)						
Channel	Service	Signal Strength (dBμV)	Typical Fluctuation (dBμV)	BER	Picture	Audio
31	COM7	56	0.2	0%	Fine	Fine
37	COM8	59	0.2	1e-7	Fine	Fine
49	Arqiva A	59	0.4	1e-7	Fine	Fine
50	BBC A	58	0.2	1e-7	Fine	Fine
54-	BBC B	57	0.2	0%	Fine	Fine
55	Arqiva B	51	0.3	0%	Fine	Fine
56	LM/LL/LPR	44	0.2	1e-7	Fine	Fine
57	GIM	33	0.2	3e-5	Fine	Fine
58	SDN	53	0.2	1e-7	Fine	Fine
59	Digital 3&4	49	0.2	1e-7	Fine	Fine

Notes: No external aerials or satellite dishes were visible from the survey location.

Location 4 (GPS Coordinates: SJ 85413 97863)						
Channel	Service	Signal Strength (dBμV)	Typical Fluctuation (dBμV)	BER	Picture	Audio
31	COM7	59	0.2	0%	Fine	Fine
37	COM8	68	0.2	1e-7	Fine	Fine
49	Arqiva A	68	0.2	1e-7	Fine	Fine
50	BBC A	68	0.3	1e-7	Fine	Fine
54-	BBC B	64	0.2	0%	Fine	Fine
55	Arqiva B	57	0.1	0%	Fine	Fine
56	LM/LL/LPR	51	0.2	1e-7	Fine	Fine
57	GIM	42	0.2	1e-7	Fine	Fine
58	SDN	62	0.1	1e-7	Fine	Fine
59	Digital 3&4	60	0.2	1e-7	Fine	Fine

Notes: Safe access was not available at the planned location. One elevated external aerial directed towards Winter Hill was observed at a large distance.

Location 5 (GPS Coordinates: SJ 85394 98003)						
Channel	Service	Signal Strength (dBμV)	Typical Fluctuation (dBμV)	BER	Picture	Audio
31	COM7	46	0.2	0%	Fine	Fine
37	COM8	55	0.3	1e-7	Fine	Fine
49	Arqiva A	52	0.3	1e-7	Fine	Fine
50	BBC A	54	0.2	1e-7	Fine	Fine
54-	BBC B	52	0.2	0%	Fine	Fine
55	Arqiva B	48	0.2	0%	Fine	Fine
56	LM/LL/LPR	41	0.1	1e-7	Fine	Fine
57	GIM	33	0.2	7e-5	Fine	Fine
58	SDN	47	0.3	1e-7	Fine	Fine
59	Digital 3&4	46	0.2	1e-7	Fine	Fine

Notes: No external aerials or satellite dishes were visible from the survey location.

Location 6 (GPS Coordinates: SJ 85348 98045)						
Channel	Service	Signal Strength (dBμV)	Typical Fluctuation (dBμV)	BER	Picture	Audio
31	COM7	51	0.2	0%	Fine	Fine
37	COM8	58	0.5	5e-8	Fine	Fine
49	Arqiva A	50	0.3	9e-8	Fine	Fine
50	BBC A	54	0.8	1e-7	Fine	Fine
54-	BBC B	56	0.3	0%	Fine	Fine
55	Arqiva B	51	0.4	0%	Fine	Fine
56	LM/LL/LPR	39	0.5	9e-8	Fine	Fine
57	GIM	34	0.3	8e-5	Fine	Fine
58	SDN	48	0.4	7e-8	Fine	Fine
59	Digital 3&4	53	0.4	1e-7	Fine	Fine

Notes: Elevated external aerials directed towards Winter Hill were observed.

APPENDIX B – SURVEY PHOTOGRAPHS

Reception Survey Location 1



Reception Survey Location 2



Reception Survey Location 3



Reception Survey Location 4



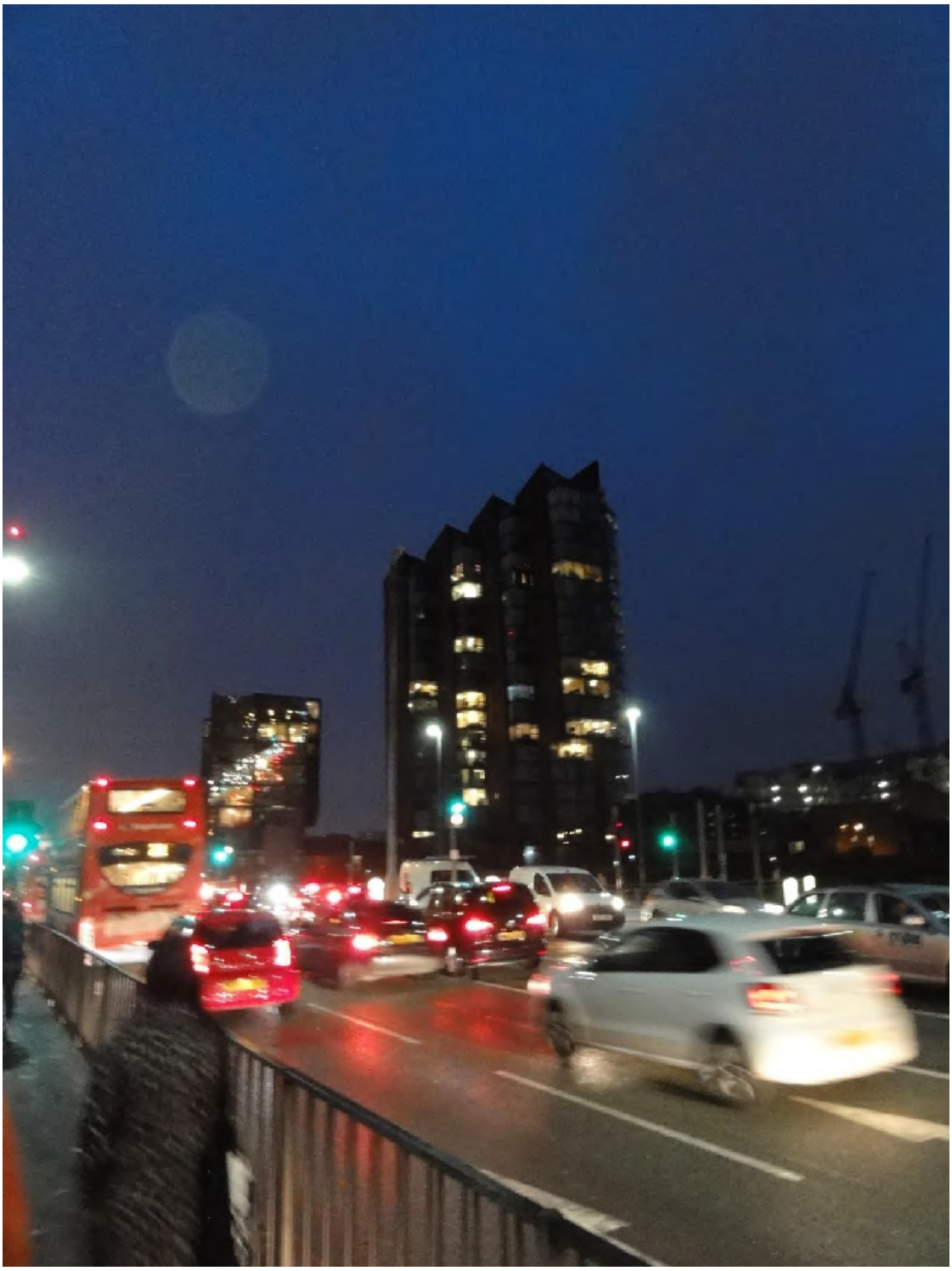
Reception Survey Location 5



Reception Survey Location 6



Satellite Survey Location 1



Satellite Survey Location 2



Satellite Survey Location 3



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gia
CHARTERED SURVEYORS

ES VOL 4: APPENDIX 18.1

Victoria House, Manchester

04 February 2020

GIA No: **0924**

Working in partnership with:

wirthresearch
COMPLETE PERFORMANCE ENGINEERING

Foreword

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CFD METHODOLOGY

The CFD was performed using Ansys Fluent.

Meshed using a hybrid mesh of hexahedral, tetrahedral and prismatic elements:

On site building edge length: 0.05m - 0.3m

Surrounding context edge length: 0.3m - 1m

The total mesh size was between 157 and 197 million cells. Mesh detail is shown in Figure 18.1.1.

Buildings within 500m of the site were included.

The domain was 3420mx1800m, with a blockage ratio of 0.9%

Run using the industry standard Realisable k-epsilon turbulence model with non-equilibrium wall functions.

The simulations were steady state and isothermal.

A combination of 2nd and 3rd order discretisation schemes was used.

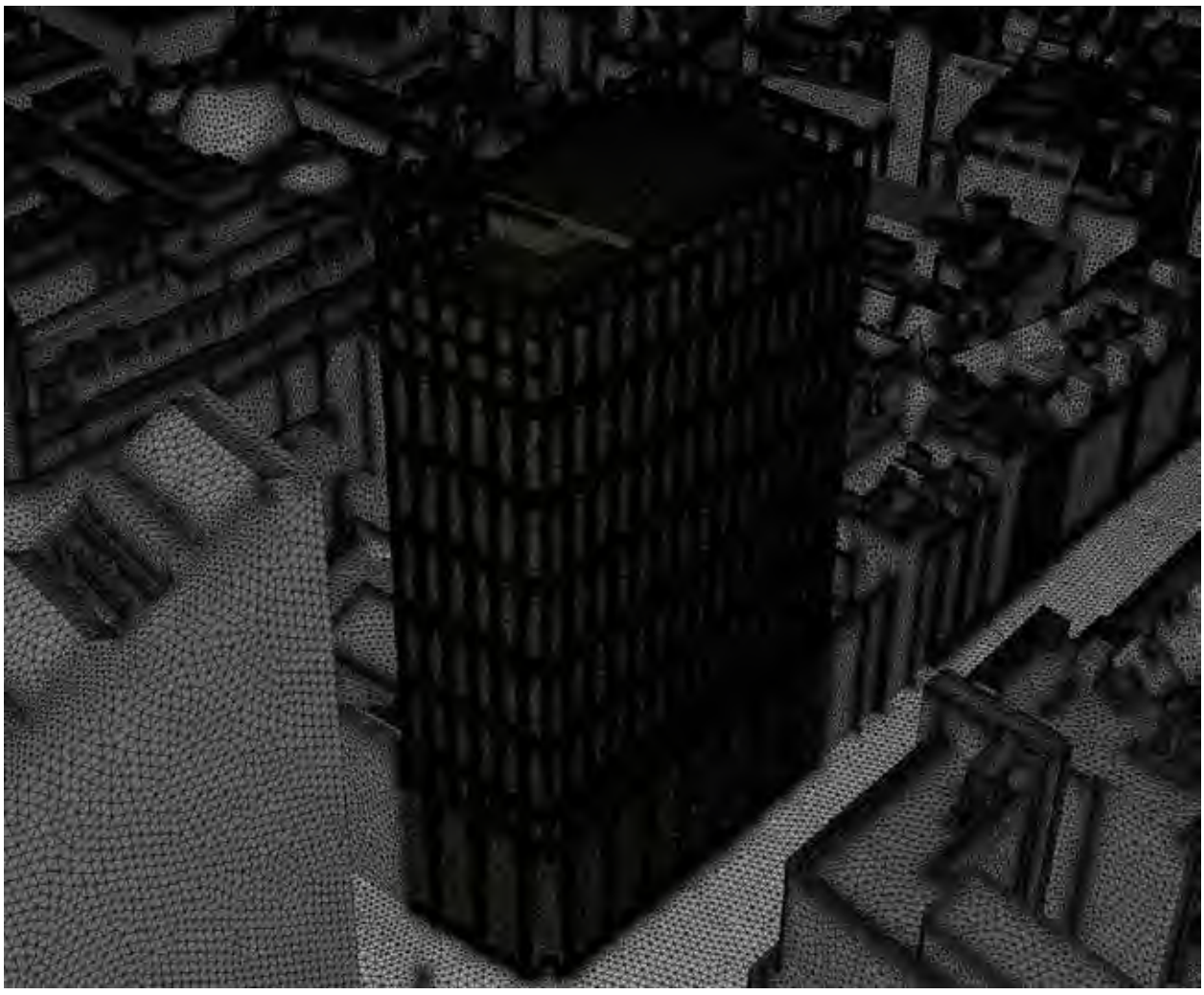


Figure 18.1.1 - Mesh Detail on Site Buildings

Convergence was measured as the residuals of the continuity, x-velocity, y-velocity, z-velocity, k and epsilon equations all falling by at least 2 orders of magnitude, and by measured static pressure on the site buildings varying by less than 1% over the final 100 iterations.

The wind speed is corrected into a "gust-equivalent" mean. Which is calculated using a proprietary method which uses the Turbulent Kinetic Energy (TKE) field and the velocity field from the CFD to estimate the gust velocity across the domain.

The use of TKE has been questioned due to the known limitations of RANS in predicting absolute TKE values, but for the purposes of generating GEM only the additional TKE generated by the flow structures within the domain is relevant.

There is published literature which demonstrates that discrepancies between mean velocities from CFD and GEM from wind tunnels are only marked when concerned with the gustiness associated with flow accelerations around the corners of buildings.

As can be seen on the left of Figure 18.1.2, the TKE field generated shows a clear increase in TKE in the region of corner accelerations.

The WR method has been correlated against wind tunnel data. The studies used for this are confidential, but an anonymised section is shown to the right of Figure A2 to demonstrate the benefits from changing from mean velocity to GEM.

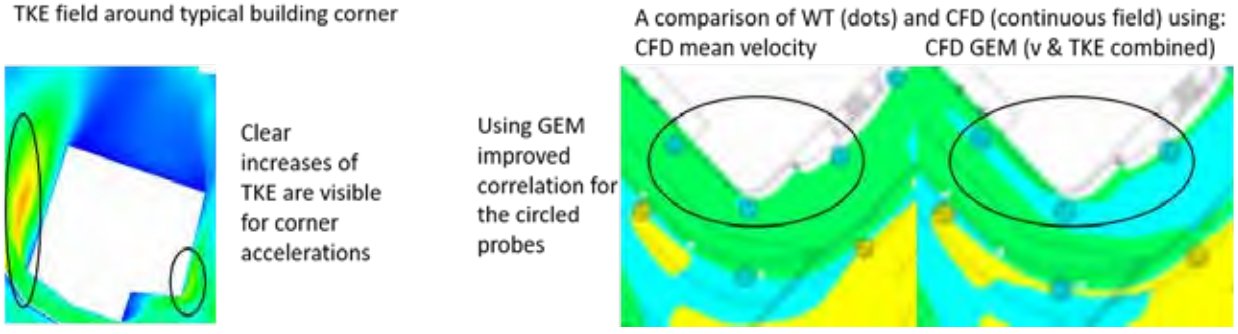


Figure 18.1.2 - TKE and GEM using WR method

WIND CLIMATE METHODOLOGY

The simulations were performed form 24 wind directions, spaced such that no single direction contributed more than 10% of the annual winds.

The directions simulated were 0°, 30°, 60°, 70°, 80°, 90°, 120°, 150°, 170°, 180°, 190°, 200°, 210°, 220°, 230°, 240°, 250°, 260°, 270°, 280°, 290°, 300°, 310°, 330°.

30 years of wind data was obtained for Manchester airport, seasonal wind roses for this data are shown in Figure 18.1.3.

Target wind profiles for the site, from each wind direction, were generated using sectoral analysis of the terrain surrounding the site and the local weather station (Manchester airport), with ESDU 2010 Item01008 'Computer program for wind speeds and turbulent properties: flat or hilly sites in terrain with roughness changes'. The target wind profiles, compared to the wind speeds measured from the CFD model are shown in Figure 18.1.4.

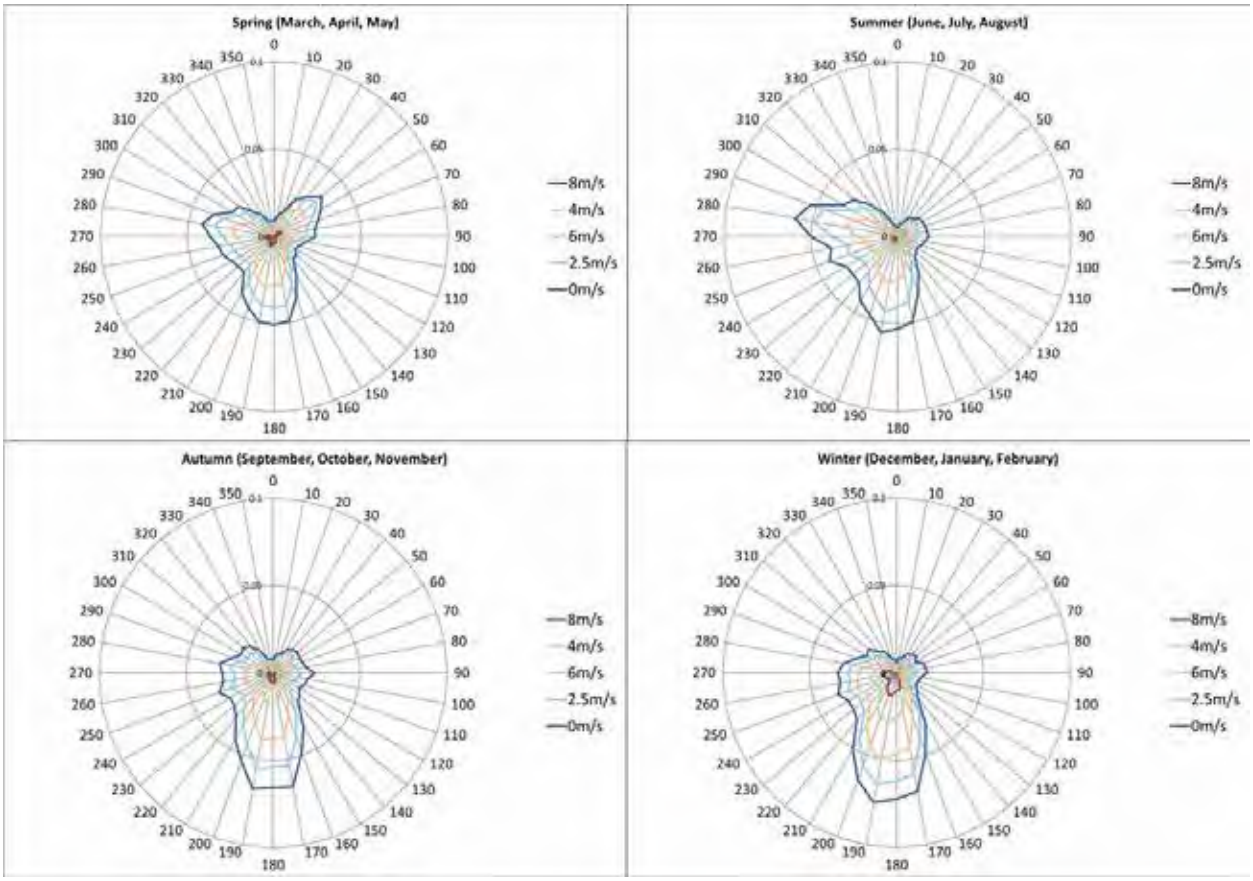


Figure 18.1.3 - Seasonal Wind Roses for Manchester Airport

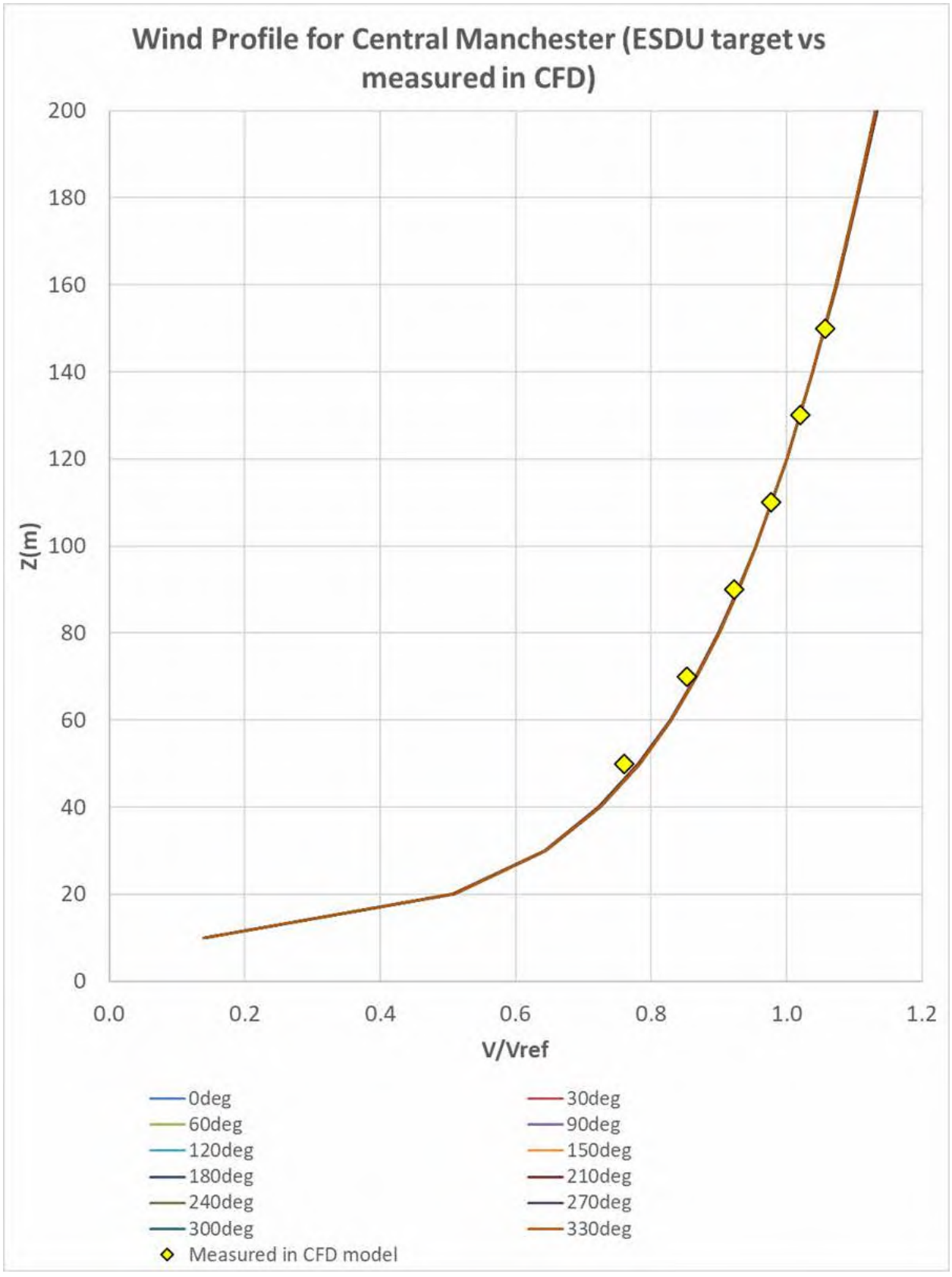


Figure 18.1.4 - Wind Profile for Broadway

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