Specialists in Ground Engineering & Energy

Phase 1 & Preliminary Phase 2 Geoenvironmental Assessment for Proposed Premier Inn Annex Extension Premier Inn West Didsbury, Christie Fields Business Park, Derwent Ave, Manchester M21 7QS,



Client

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Specialists in Ground Engineering & Energy

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EXECUTIVE SUMMARY

Site Location	Premier Inn Christie Fields Business Park, Derwent Ave, Manchester M21 7QS, located approximately 6.4 Kilometres south of Manchester City Centre. Access is gained from Christie Way to the west of the site.
Grid Reference	E382959 N392116
Site Area	Approximately 0.72hectares.
Current Site Use	The site currently comprises a Premier Inn and a restaurant with associated car parking and landscaping. Surface cover comprises a mix of tarmacadam car parking and grass and soil landscaping. Shrubs and trees with metal fencing the surround the site boundary. Site topography is generally level.
Development Proposals	It is understood that the existing restaurant is to be demolished and constructing a 4-storey premier in extension with associated car parking and limited landscaping areas.
Geology Mapping & BGS Boreholes	The Groundsure Report and BGS Mapping does not show the presence of Made Ground on site however, the previous investigation undertaken by NX in 2015 identified shallow Made Ground beneath the previous extension area. Superficial deposits on site area comprises Glaciofluvial deposits (sand and gravel). Surrounding the area Glaciofluvial Deposits extend beyond the site to the north, east west and south, the previous investigation undertaken in 2015 by NX Consulting confirms this. Devensian till deposits (diamictom) are indicated approximately 375m southeast of the site and Alluvium deposits (Clay, Silt, Sand And Gravel) are indicated approximately 399m south east. The solid geology on site and surrounding the site comprises Wilmslow Sandstone Formation (Sandstone). Bedrock was not encountered during the previous investigation. Fault located 152m west of the site running approximately north to south.
Mining & Brine Subsidence	No coal mining recorded within 1000m of the site. A coal authority search is not required. No JPB Mining areas recorded within 1000m of the site.
Hydrology	No surface water features within 250m of the site. The nearest being River Mersey 409m south east.
Hydrogeology	Superficial deposits is classified as a Secondary A aquifer. The bedrock is classified as a Principle Aquifer.

	The site is not within 500m of a currently defined groundwater source protection zone. There are no groundwater, surface water or potable water abstraction licences within 1000m of the site.
Site History	On-Site The earliest available mapping shows the site to comprise agricultural land until 2010 when the current site configuration is shown. no visual or olfactory evidence of hydrocarbon/solvent contamination was reported during the previous extension construction. Off-Site Burial grounds 20m north. Significant residential and commercial development surrounding the site.
Utility Locations	Underground services impact the site and the design team should familiarise themselves with their presence and implications on the development.
Landfill Sites, Radon & Ground Gases	The Groundsure Report identifies no active or historcal landfill sites within 500m of the site. There are no active Licensed Waste Management Facilities, Registered Waste Treatment or Disposal Sites within 250m of the site.. The property is not in a Radon Affected Area, as <1% of properties are above the Action Level.
Unexploded Ordnance	The regional unexploded bomb risk map from Zetica indicates that the site is in an area at Low risk from possible Unexploded Ordnance (UXO) resulting from the Second World War. (Zetica, 2020).
Ground Conditions & Geotechnical Assessment	Ground conditions encountered across the site comprise Made Ground to a maximum depth of 1.60mbgl. Underlying the Made Ground was medium dense silty slightly gravelly Sand between depths of 0.90m to 5.45mbgl . Firm becoming stiff brown sandy Clay was encountered within WS2.1 to WS4.1 between depths of 4.70mbgl to 5.45mbgl and band of medium dense wet Sand and Gravel between depths of 3.50mbgl to 4.75mbgl. Groundwater was recorded within sand and gravel bands in WS2.1 and WS3.1 at 3.70mbgl and 4.65mbgl respectively. It is likely that a post-development foundation system cannot fully be confirmed until final building levels are established. If conventional strip, trenchfill/pad foundations are to be considered we recommend supplementary window sampling works are carried out post demolition. This is to address the likelihood of ground disturbance to depths circa 2m associated with the removal of existing foundations and floor slab/services. We consider that consideration should be given to the use of vibro treatment or piled foundations for the building and floor slab. If the strip/trenchfill foundations are to be carried out, the following will need to be considered:

	• The made ground may be deeper than anticipated due to deeper areas of Made Ground and disturbance during demolition works. • Sand deposits (particularly where wet) are unlikely to stable during the excavation, and temporary support may be required. • Risk of running sand or softening due to localised ground water ingress. Dewatering control measure shall be allowed for. All excavations and any basement construction should be conducted in line with CIRIA Report 97 – Trenching Practice and BRE 440 Foundations, Basements and External Works 2002. Suspended floor slabs are recommended due to the depth of made ground and variability of strata encountered including sand deposits. Adequate support and reinforcement should be adopted to reduce slab deflections in line with structural standards. Where possible all soils should be retained on site to reduce disposal costs. During periods of inclement weather, surface water management controls will be required. Concrete should be of minimum Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1s.
Conceptual Model	Human Health Risk Soil sampling of Made Ground deposits has recorded contaminant concentrations below Tier 1 values for commercial end use (end use determined by sensitivity of proposed end users). Soil concentrations are not considered to pose an unacceptable risk to human health. Asbestos was not detected within the tested soil samples. Remedial measures are only undertaken where unacceptable risk exists to human health or the environment. For a potential risk to be present there must be a viable pollutant linkage whereby a contamination source may impact upon a receptor. Any areas of proposed landscaping and public open space will require imported subsoil/topsoil materials which will require chemical validation to demonstrate that they are suitable for a commercial end use and taken to depths sufficient to provide a sufficient cover system for all proposed materials used which are capable to support root growth. Water Supply Although deemed unlikely, specialist protection measures may be required in relation to any new water supply pipework. A UKWIR risk assessment is recommended. Additional testing is required once the line of any new pipework is established to confirm whether specialist measures are required.

Waste Management

All operations may be subject to regulation using a 'Materials Management Plan' (MMP) to be created in accordance with Version 2 of the CL:AIRE Definition of Waste – Industry Code of Practice. The MMP should be created with due consideration to all proposed remediation and enabling works operations prescribed within this document and should be undertaken by a Qualified Person and a signed declaration submitted to the EA prior to re-use of materials on the site.

Any soils to be exported from site should be allocated an appropriate waste code, following the steps within WM3.

Soil testing of Made Ground and drift deposits are likely to predominantly be classified as NON-HAZARDOUS WASTE. It Is likely that topsoil will be kept for retention for reuse within the development for any landscaping areas, owing to its suitability. This should be confirmed by the appointed waste management contractor or incorporated into a Materials Management Plan (MMP) in accordance with DoW CoP following submission of all available test results carried out at the site to date. Any removal of waste should be confirmed by the appointed waste management contractor following submission of all available test results carried out at the site to date.

Controlled Water Receptors

A low risk to Controlled Waters receptors was identified at the site within the NX Consulting Desk Study report. Leachate testing has recorded slight exceedances of benzo[b/k]fluoranthene, benzo[g,h,i]perylene & indeno(1,2,3-cd]pyrene within the Made Ground; at concentrations slightly exceeding the respective EQS screening values.

The exceedances highlighted above are considered to be marginal due to the limited concentrations within the soils and distance to nearest controlled water receptor. Given the low potential for rainwater ingress and groundwater movement the potential for vertical and lateral leaching and infiltration is deemed to be very low. Development proposals comprising predominantly hardstanding impermeable surfaces reducing infiltration the risks to controlled water receptors post construction is deemed to be low.

If contamination is found during construction works the associated risks should be reassessed.

The risks to controlled water receptors are deemed to be low post construction.

Ground Gas Protection

The results indicate that no special gas protection measures are required for the development on site. However, we recommend that the local authority are approached to confirm that further gas monitoring visits are not required; to confirm the sites 'low' source generating potential' and low gas risk based on the results obtained to date.

	Planning This report should be issued to the regulatory authorities to prevent delays in the project. A remediation strategy and validation report may be required prior to discharge of any outlying planning conditions.

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1.0 INTRODUCTION

1.1 Instruction

NX Consulting Limited have been commissioned by Whitbread Plc (The Client) to complete a Phase 1 Geoenvironmental Desk Study & Phase 2 Ground Investigation report for their proposed Premier Inn extension, just off Christie Way, Christie Fields Business Pk, Derwent Ave, Manchester M21 7QS.

It is understood that the existing restaurant is to be demolished and redeveloped with a new Premier Inn 4-storey extension with associated car parking and limited landscaping areas.

1.2 Previous Assessments

Previous assessments has been conducted on site ; which should be read in conjunction with this study; comprise the following:

- NX Consulting Limited Phase 1 Geoenvironmental Desk Study and Preliminary Phase 2 Assessment at proposed Premier Inn extension, Barlow Moor Road, Didsbury, Manchester, M21 7QS. (Ref: NX237/R1) dated April 2015.
- NX Consulting Limited Remediation Strategy Proposed Premier Inn extension, Barlow Moor Road, Didsbury, Manchester, M21 7Q. (Ref: NX237/R1) dated March 2016
- NX Consulting Limited Verification Report for Premier Inn Hotel Extension, Derwent Avenue, West Didsbury, Manchester, M21 7QS. (Ref: NX237/R1) dated July 2016

<u>NX237 Proposed Premier Inn extension, proposed Premier Inn extension, Barlow Moor Road, Didsbury, Manchester, M21 7QS – Desk Study:</u>

The Groundsure Report and BGS Mapping does not show the presence of Made Ground.

Superficial deposits on site and in the immediate surrounding areas comprises Glaciofluvial sheet deposits (sand and gravel).

The solid geology on site the site comprises Wilmslow Sandstone Formation (Sandstone). The surrounding area consists of Wilmslow Sandstone Formation-Sandstone and Helsby Sandstone Formation - Sandstone.

One fault located 125m west of the site.

The report states that Superficial deposits beneath the site are classified as Superficial deposits is classified as a Secondary A aquifer. The bedrock is classified as a Principle Aquifer.

Soil sampling of Made Ground and drift deposits has recorded contaminant concentrations below Tier 1 values for a commercial end use with plant uptake. Soil concentrations were not considered to pose an unacceptable risk to human health.

A low risk to Controlled Waters receptors was identified at the site within the NX Consulting Desk Study report requiring a site investigation with groundwater sampling to determine the presence of otherwise of source-receptor pathways.

3 no ground gas monitoring was carried out between 5th and 26st March 2015 and no specific gas protection measures are considered necessary.

NX237 Proposed Premier Inn extension, Barlow Moor Road, Didsbury, Manchester, M21 7QS - Site Investigation:

In 2015, NX Carried out a Phase 1 and Phase 2 intrusive investigation for a proposed extension for a Premier Inn. The works compromised of the formation 5no window sampler boreholes were undertaken across the site to a maximum depth of 5.45mbgl. 1no hand excavated trial pits (HP1) were formed to confirm the dimensions of existing foundations.

Ground conditions comprised a cover of tarmacadam and grass/topsoil surfacing over made ground. The made ground comprised sand with occasional brick and cement gravel at depths ranging from 0.35mbgl to 1.2m within landscaped areas. Beneath the tarmacadam car parking compact MOT Type 1 sub base limestone gravel was recorded between 0.10mbgl and 0.45mbgl.

The made ground was not penetrated within WS5 at 1.20mbgl due to time constraints.

Natural soils were encountered comprising medium dense fine to coarse sand with some coarse gravels of mixed lithology was recorded from 0.70mbgl to depths of between 3.50m and 4.90mbgl. Underlying the glacial sands firm or stiffer brown glacial boulder.

SPT 'N' values within the natural granular deposits at 1.00mbgl to 1.45mbgl, ranged from 11 to 19 indicating that they are medium dense.

SPT N values were in the range 8-18 indicating firm clay.

Bedrock was not encountered during the investigation.

1.3 Objectives & Scope of Work

Guidance set out in LCRM [1], GPLC1-3[2] and the National Planning Policy Framework (NPPF)[3] states that a Preliminary Risk Assessment with a site reconnaissance is required as a minimum to ascertain if there is a potential contamination risk. If contamination is a potential, then site investigation works are carried out to establish a viable pollutant linkage to assess the potential risks to human health and controlled water receptors.

1 EA (2020). "Land contamination risk management (LCRM).
2 EA (2016). "Guiding Principles for Land Contamination." GPLC1-3.
3 DCL (2021). "National Planning Policy Framework." Department of Communities and Local Government.

The objectives of the NX Consulting preliminary Geoenvironmental site assessment was as follows:

- To undertake a Phase I Desk Study for the site;
- To provide further information on ground conditions to facilitate design of site infra-structure for the proposed new buildings, landscaping and hardstanding;
- To investigate potential infrastructure of former buildings;

- To provide further information on ground conditions to facilitate design of site infra-structure for the proposed new buildings, landscaping and hardstanding;

- To conduct chemical analysis on collected soil and groundwater samples of Made Ground and natural soils and provide a semi-quantitative assessment of potential risks from contaminants to human health and/or controlled waters, comprising a further Refined Conceptual Model; and,

- Provide preliminary recommendations regarding any outline remedial measures necessary to mitigate any risks to human health or controlled waters resulting from contamination on the site; or recommendations for any further work.

The overall scope of the site investigation work included the following:

- 4no. window sample boreholes with associated in-situ testing to depths of 5.45mbgl.

1.4 Report Layout

- Section 2 of this report provides a summary of Phase 1 information from the previous NX237 Phase 1 & Preliminary Phase 2 Geoenvironmental Assessment for , including site description, history, published geology and environmental setting and details of the preliminary risk assessment and site investigation design.

- Section 3, 4, 5, & 6 details the intrusive investigation carried out to validate the foundation recommendations, geotechnical conditions identified by the investigation and makes recommendations in respect of foundations, pavement construction and soakaway drainage.

- Section 7 presents the records of the chemical analyses undertaken and gives the results of the qualitative risk assessment carried out using the results of the chemical analyses and taking account of the proposed end use of the site.

- Section 8 provides outlying remedial measures arising from this investigation.

1.5 Limitations

The accuracy of the data supplied by third parties should be considered in the context of any known site conditions for which NX Consulting Limited cannot be held liable.

The comments made in this report are based on the data available at the time of its completion. Any unusual or conflicting evidence discovered during any future site works must be presented to NX Consulting as soon as possible so that any implications may be considered.
This report is provided for the benefit only of the party to whom it is addressed. NX Consulting does not extend responsibility to any third party for the whole or any part

of the contents. NX Consulting owes no duty of care in relation to this report to any third party. The investigation and reportage have been undertaken with all reasonable skill, care and due diligence. NX Consulting disclaims any responsibility to the client or others in respect of any matter(s) outside this agreed scope of the above works.

In addition to the above it should be noted that when investigating or developing land, sub-surface conditions might vary both spatially and over time.

Whilst this investigation and subsequent interpretation has been undertaken to reasonably characterise current sub-surface conditions at the site within the scope of works and agreed budget, the absence of certain ground, contamination or groundwater conditions at the individual locations is not a guarantee that these conditions do not exist elsewhere on the site.

Additional information, changes in legislation or revised practices may necessitate re-interpretation of part or all of this report.

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2.0 PHASE 1 ASSESSMENT SUMMARY

2.1 Site Location & Setting

Table 2.1 – Site location and Setting	
Site Location	Premier Inn Christie Fields Business Parkk, Derwent Ave, Manchester M21 7QS, located approximately 6.4 Kilometres south of Manchester City Centre. Access is gained from Christie Way to the west of the site.
Grid Reference	382959, N392116
Site Area	0.72ha
Site Description	The site currently comprises a Premier Inn and restaurant with associated car parking and landscaping. Site topography is generally level. Surface cover comprises a mix of tarmacadam car parking and grass and soil landscaping.

2.2 Geology, Hydrology and Hydrogeology

Table 2.2 – Summary of Geology Hydrology and Hydrogeology	
Made Ground	Made Ground is not recorded to be present on site or within the immediate surrounding area within the Groundsure report. However, the previous investigation undertaken in 2015 confirms relatively deep Made Ground.
Drift Geology	BGS Sheet and the Groundsure report indicates superficial deposits on site area comprises Glaciofluvial deposits (sand and gravel). Surrounding the area Glaciofluvial Deposits extend beyond the site to the north, east west and south, the previous investigation undertaken in 2015 by NX Consulting confirms this. Devensian till deposits (diamicton) are indicated approximately 375m south east of the site and Alluvium deposits (Clay, Silt, Sand And Gravel) are indicated approximately 399m south east.

Table 2.2 – Summary of Geology Hydrology and Hydrogeology	
Solid Geology	The solid geology on site and surrounding the site comprises Wilmslow Sandstone Formation (Sandstone). Helsby Sandstone Formation (Sandstone is indicated to be 152m west of the site. Bedrock was not encountered during the previous investigation. Fault located 125m west of the site running approximately north to south.
Hydrology	No surface water features within 250m of the site. The nearest being River Mersey 409m south east.
Hydrogeology	Superficial deposits is classified as a Secondary A aquifer. The bedrock is classified as a Principle Aquifer.
Shrink Swell Clays	Negligible risk
Landslides	Very low risk
Ground Dissolution of soluble Rocks	Negligible risk
Compressible deposits	Negligible risk
Collapsible Deposits	Very low risk
Running Sands	low risk

2.3 Mining Extraction, Brine Mining and Natural Cavities

Table 2.3 – Mining and Mineral Extraction	
Coal Mining	No coal mining recorded within 1000m of the site. A coal authority search is not required.
Johnson Poole and Bloomer	The Groundsure report indicates that Johnson Poole & Bloomer (JPB) mining areas are recorded within 1000m of the site.
Other mining	None identified.
Historic Surface Ground Workings	None identified.

2.4 Site History

Table 2.4 – Site History

Map Date	On Site Potentially Contaminative Past Uses	Surrounding Area Potentially Contaminative Past Uses
Pre 1881 – pre 1905	Agricultural land	The surrounding area general comprises of agricultural land. • Unnamed road immediately north of the site. • New Barns farm approximately 30m north east. • River Mersey approximately 409m south west.
1905	No significant change	• Oak hotel approximately 15m north west. • Manchester Southern Cemetery approximately 20m north. • Significant development from 50 south east of the site including residential properties, church and farm. • Workhouse, burial ground and hospital approximately 500m north east.
1916	Site now labelled as Christies Playing Fields	• Significant residential properties with associated roads immediately east, south and west of the site.
1938	No significant change.	• Further residential development extending further east, west and south of the site.
2010	Site shown in current configuration	No significant change.

2.5 Environmental Information

Table 2.5 – Environmental Information

Environmental permits, incidents and registers	Petroleum filling station 492m southeast. No other significant records within 500m of the site.
Landfill Sites and Other Waste Disposal Facilities	There are no active or historical landfill sites 500m of the site.

Potentially contaminative land uses	Unspecified tank onsite. Electric substation onsite. Historical substation 130m south west. Petroleum filling station 492m southeast. Further information can be viewed within the GroundSure report.
Ecological Setting	No significant SSSI, Conserved wetland, Special Protection Areas sites within 1000m.
Radon	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

2.6 UXO Risk

The regional unexploded bomb risk map from Zetica indicates that the site is in an area at Low risk from possible Unexploded Ordnance (UXO) resulting from the Second World War. (Zetica, 2020).

3.0 PRELIMINARY CONCEPTUAL MODEL

Section 6.3 of the CIRIA Report "Contaminated Land Risk Assessment: A Guide to Good Practice" (CIRIA Report C552) describes in detail the concepts underlying the risk-based approach to assessing potentially contaminated land, introduce the roles of key legislation and describe the qualitative methodology adopted for evaluating and characterising risk.

Current best practice in the UK promotes a risk-based approach to dealing with both soil and groundwater contamination. The principal aim of the approach is to ensure protection of human health and the environment in a thorough, transparent and cost-effective manner.

Fundamental to the risk-based approach is the concept that for 'Contaminated Land' to be designated, as a consequence of historic activities, a pathway for contamination must be shown to exist between a source of contamination and a receptor. The combined presence of a source, pathway and a receptor is described as a 'pollutant linkage'.

The concepts associated with a contaminant source, pathway and receptor are defined in DETR Circular 02/2000 'Contaminated Land Environmental Protection Act 1990: Part II A'. A source of contamination may be considered as a 'substance which is in, on or under land that has the potential to cause harm or to cause pollution of controlled waters'. A receptor can be considered as either 'a living organism, a group of living organisms, an ecological system or a piece of property which is being, or could be harmed, by a contaminant or controlled waters which are being, or could be, polluted by a contaminant'. A pathway may be considered as one or more routes by, or through, which a receptor is being, or could be, exposed to or affected by a contaminant. Typical pathways may include migration in groundwater, surface water run-off or infiltration, inhalation, dermal contact and ingestion.

The risks posed by an identified pollutant linkage can often be mitigated by removing the source of contamination, treating the source of contamination, blocking the relevant pathway(s) or by protecting the receptor.

PRINCIPLES OF RISK EVALUATION

The risk evaluation methodology presented below is qualitative in nature, and is therefore a subjective method. It is based upon guidance presented in CIRIA publication referenced C552, 'Contaminated land risk assessment ~ A guide to good practice', 2001 and involves the classification of the following:

The magnitude of the potential consequence (severity) of risk occurring (Table C 1).

The magnitude of the probability (likelihood) of the risk occurring (Table C 2).

These are then considered in conjunction to give a risk matrix (Table C 3).

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined by the Environmental Protection Act 1990, Part II A. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ('significant harm' as defined in DETR, 2000). Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem. (Note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Concentrations of a contaminant from site exceed the generic, or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in the *Draft Circular on Contaminated Land,* DETR, 2000). Damage to sensitive buildings/structures/ services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

Table C 1: Classification of Consequence

Classification	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

Table C 2: Classification of Probability

		Consequence			
		Severe	*Medium*	*Mild*	*Minor*
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table C3: Comparison of Consequence Against Probability

Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Table C 4: Description of the classified risks and likely action required

Table 1.0. Phase 1 Conceptual Site Model (CSM) and Preliminary Risk Assessment (Proposed Commercial End Use)

SOURCE -PATHWAY -RECEPTOR LINKAGE				QUALITATIVE RISK ASSESSMENT		
Potential Contaminant Source	**Location**	**Receptors**	**Pathways to Receptors**	**Associated Hazard (Potential Severity)**	**Likelihood of Occurrence**	**Risk***
Potential contaminants may be present within Made Ground beneath the site and associated with former garages and depot: - Heavy metals, sulphates, and PAHs. - Hydrocarbons - Asbestos Containing Material (ACM) from former buildings,	Possibly within sub surface strata & Groundwater.	Ground water (Secondary A Aquifer & Principal bedrock Aquifer)	Vertical percolation to groundwater	Groundwater (Severe – pollution of sensitive water resource)	Unlikely. Majority hardstanding & building cover will restrict infiltration and percolation. Low likelihood of significant contaminant sources being present given existing development on site and results of testing from the 2015 investigation. No contamination was recorded during previous investigation	**Low**
		Surface Water (River Mersey 409m SE)	Lateral percolation & Surface Run-off to surface water	Groundwater (Medium – pollution of sensitive water resource)	Low likelihood, no significant pathway to limited sensitive surface water features identified in close proximity to site.	**Low**
	Possibly within existing structures	End user of site.	Direct contact, Ingestion, Inhalation (Dust and Vapours)	Human Health (Severe).	Unlikely. Low likelihood of significant contaminant sources being present given existing development on site. Hardstanding & building cover will restrict migration pathways.	**Low**
		Site workers, demolition staff, construction staff,	Direct contact, Ingestion, Inhalation (Dust and Vapours)	Human Health (Minor – providing suitable PPE equipment is worn)	If conditions assessed and correct PPE, dust suppression, and other health and safety measures are applied then the likelihood can be reduced to low likelihood.	**Low (If PPE equipment worn and potential asbestos suppressed)**

** Risk refers to the potential risk that the Source, Pathway, Receptor linkage is complete and is used to determine if any further investigation/measures are required. It does not indicate immediate emergency risk to any individual or feature present on the site unless specifically noted.*

Table and Summary of Potential Risks, Sheet 2

SOURCE -PATHWAY -RECEPTOR LINKAGE				QUALITATIVE RISK ASSESSMENT		
Contaminant	**Location**	**Receptors**	**Pathways to Receptors**	**Associated Hazard (Potential Severity)**	**Likelihood of Occurrence**	**Risk***
- Hazardous Ground Gas associated with potential Made Ground/infilled ground. - Radon gas.	Possibly within strata beneath the site/surrounding area	End user of site	Migration through strata and accumulation under buildings of explosive and asphyxiating gases.	Human Health (Severe)	Unlikely No recorded landfills within 250m of the site boundary. Burial ground present near the site. Made Ground on and near to the site. Limited gas monitoring (4no) recommended prior to future development.	**Low/Moderate**
		Buildings & Infrastructure	Migration through strata and accumulation under buildings of explosive and asphyxiating gases.	Buildings & Infrastructure (Severe)	Unlikely No recorded landfills within 250m of the site boundary. Burial ground present near the site. Made Ground on and near to the site. Limited gas monitoring (4no) recommended prior to future development.	**Low/Moderate**

***** *Risk refers to the potential risk that the Source, Pathway, Receptor linkage is complete and is used to determine if any further investigation/measures are required. It does not indicate immediate emergency risk to any individual or feature present on the site unless specifically noted.*

3.1 Site Investigation Design

Historical mapping shows the Premier Inn site to have comprised agricultural land and later playing fields until the current development of the site as a hotel and restaurant.

Given the relatively recent construction of the current hotel restaurant (post 2010), significant contaminated land issues are considered low, the previous investigation undertaken by NX Consulting in 2015 confirmed no sources of contamination.

As such, the overall risk rating of the site is considered to be low.

However, it is possible that potentially contaminated soils exist on site.

Geological mapping indicates that the site is likely to be underlain by Superficial Glaciofluvial sheet deposits, of Sand and gravel over bedrock deposits of the Wilmslow Sandstone Group.

The site lies within an EA defined Secondary A Aquifer with soils of high leaching potential. There are no source protection zones within 500m of the site boundary. The nearest surface water features are located 409m southeast of the site.

The GroundSure report indicates that the site is not included on the list of sites designated as contaminated land under Part 2A of the Environment Protection Act 1990.

The general risk of significant contamination being present within soil and groundwater beneath the site is considered to be low.

Given the developmental history of the site and surrounding area, the risk from hazardous ground gas is considered to be low. We recommend a minimum of 4no gas monitoring visits in line with CIRIA 665 guidelines for a low source generating potential.

Given that the proposed development will comprise a commercial end use, the site can be considered be a low risk development in terms of potential risk to human health and a low to moderate risk to controlled waters.

<u>Geotechnical Considerations</u>

It is understood from the structural engineer that the existing building foundations are formed on conventional foundations comprising a combination of strips and raft slab. Hand excavated trial pit carried out revealed that the existing foundations to the hotel building comprises concrete strip footings set below 0.60m below existing ground level.

The preliminary and refined conceptual model is presented in Appended H.

4.0 FIELDWORKS

4.1 General

The NX fieldworks were undertaken between the 04th April 2025.

A plan showing all the exploratory hole locations is presented in Appendix A. All locations were checked for services against available service plans, scanned with a cable avoidance tool (CAT), and hand dug trial pits formed to a depth of 1.20 metres below ground level (m bgl) prior to the intrusive investigation.

4.2 Window Sampler Boreholes

The scope included 4no. window sample locations, WS1.1 through to WS4.1 to a depth of 5.45m bgl.

Gas monitoring was carried out beneath the proposed extension on 4no occasions. Response zones being formed within the made ground deposits and Glaciofluvial deposits.

General screening was also conducted on a number of soil samples and tested for a general suite including the following: heavy metals and inorganic contaminants, cyanide, asbestos, Sulphur and sulphate. No visual or olfactory evidence of solvent of hydrocarbon contamination was recorded during fieldworks and as a result analysis of these compounds was not deemed necessary.

Waste Acceptance Testing was carried out to enable materials to be classified prior to disposal to landfill; if deemed necessary by the appointed contractor.

Selected samples were also tested for speciated PAH analyses.

Standard Penetration Tests (SPTs) were undertaken at 1m intervals within the window sample boreholes.

Groundwater and gas monitoring wells were placed in 2no. of the boreholes (WS1.1 and WS3.1) on completion. Table 4.2.1 below provides boreholes installations placed, depths and response zones of strata types.

Table 4.2.1 – Borehole Installation Details

Borehole & Installation Depth (mbgl)	Response Zone (mbgl)	Strata Type
WS1.1 – 3.00	0.50 to 3.00	Made Ground/Sand
WS3.1 – 3.00	0.50 to 3.00	Made Ground/Sand

Detailed window sampler log sheets are included in Appendix C.

4.3 Sample Collection and Analysis

Environmental sample collection was carried out in accordance with BS EN ISO 22475-1:2006. All soil and groundwater samples were collected using either clean stainless steel utensils or clean disposable gloves and placed directly into clean containers provided by the laboratory. Samples obtained during the investigation were subjected to a range of geochemical testing at appropriate UKAS accredited laboratories. Testing was carried out in accordance with the procedures outlined in BS EN ISO14688-1:2002, 14688-2:2004, and 14689-1:2003.

5.0 GROUND CONDITIONS

5.1 Ground Conditions

A summary of ground conditions and respective water strikes, from the window sampler boreholes are provided within the Table 5.1.1.

	Made Ground	Glaciofluvial Deposits (Sand)	Glaciofluvial Deposits (Sand and Gravel)	Glaciofluvial Deposits (Clay)	Groundwater Strike(s)
WS1.1	0.00-1.60m	1.60-5.45	-	-	-
WS2.1	0.00-1.60m	1.60-3.50	3.50-4.70	4.70-5.45	3.70
WS3.1	0.00-0.90	0.90-4.65	4.65-4.75	4.75-5.45	4.65
WS4.1	0.00-1.50	1.50-4.70	-	4.70-5.45	3.30

Table 5.1.1. Ground Conditions Summary
M – Denotes metres below ground level

Topsoil

Natural topsoil was not encountered within any of the exploratory holes across the site.

Made Ground

For purposes of identification, we have attempted to classify the Made Ground, with a few exceptions, into the following three distinct soil types;

- Tarmacadam, or Tarmac over Lean mix concrete recovered as grey brown sandy angular gravel. - surface cover.
- Block paving over sand blind and lean mix concrete recovered as light grey brown fine to coarse very sandy gravel - Sub-base
- Grass over fine to coarse slightly organic rooty sand with some fine to medium gravel of coal, sandstone, brick and glass.
- Compact light grey brown fine to coarse very sandy gravel - sub-base
- Pipe bedding. Recovered as brown fine to coarse angular to rounded gravel of mixed lithology.

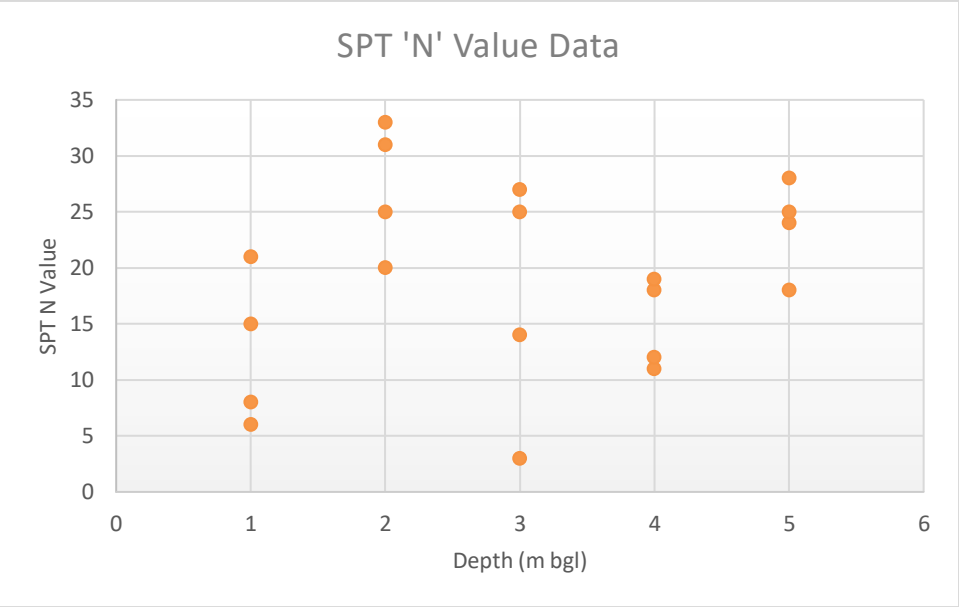
Made Ground was logged to a maximum depth of 1.60m bgl (WS1.1 and WS2.1), and across all boreholes (WS1.1 to WS4.1).

Drift Deposits

Underlying the Made Ground, loose to dense grey brown and dark brown silty Sand with some fine to coarse sub angular to rounded gravel of mixed lithology was found to be interbedded with medium dense to dense (with the exception of WS4.1 at 3.00m) orange brown fine to coarse Sand and fine to coarse subrounded gravel of mixed lithology and some coal veins. Firm becoming firm to stiff brown sandy CLAY was recorded to underly these deposits.

Uncorrected SPT 'N' values within the drift deposits were in the range 3-33, with an average 'N' of 18.38 and generally increased with depth, as the line of best fit displays within Graph 5.1.1 below. The standard deviation for the data is 8.87. The results indicate generally loose to dense sand/sand and gravel deposits and stiff to very stiff underlying clay.

Graph 5.1.1 – SPT N Value Data within Drift Deposits.



Solid Geology

Solid geology was NOT identified during the investigation.

5.2 Groundwater

Groundwater strikes were recorded within sand and gravel bands in WS2.1 to WS4.1 between depths of 3.30mbgl to 4.65mbgl. Subsequent groundwater level monitoring within WS1.1 recorded groundwater present between 2.59m to 2.77mbgl and no groundwater was recorded within WS3.1.

The depths of recorded groundwater strikes are depicted in Table 5.2.1 above.

5.3 Underground Service Plans

Underground services may impact the site and the engineer should familiarise themselves with their presence and implications on the development.

5.4 Below ground obstructions

None encountered.

5.5 Contamination Observations

No visual and olfactory evidence of contamination was recorded during the investigation.

6.0 GEOTECHNICAL TESTING

6.1 Laboratory Analysis

Laboratory testing was undertaken in accordance with BS 1377 (1990) "Methods of Test for Soils for Civil Engineering Purposes". The results are presented in Appendix D and are summarised below.

BS Test Number	Description
Part 2:3	Moisture Content
Part 2:5	Plasticity index
Part 2:9	Particle Size Distribution
Part 3:5,9	pH and Sulphate

Particle size distribution

7no. sample were selected for the determination of particle size distribution The resultant grading curves have been included in Appendix D.

Sulphate and pH

4no. samples of Glaciofluvial deposits: were analysed for pH and soluble sulphate:

Property	Range
Sulphate Aqueous Extract as SO4 (g/l)	<0.010-0.012
Sulphate as SO4 (mg/kg)	<100-103
pH	8.0-8.7

Based on the above results, a characteristic sulphate value of 0.012g/l has been adopted (highest value). A characteristic pH value of 8.0% has been adopted (lowest value).

Moisture Content

2no. samples of Glaciofluvial deposits were analysed for natural moisture. The results of testing are summarised below:

Property	Range
Moisture Content	14.5 - 14.8

Plasticity Index

2no. samples of Glaciofluvial deposits were analysed for plasticity index and hence shrinkage/swelling potential. The results of testing are summarised below:

Property	Range
Plasticity index (Glaciofluvial deposits)	13 – 26%
*Amended Plasticity index (Glaciofluvial deposits)	12.48 - 24.7%

**Amended for percentage of particles passing a 425mm sieve*

The results demonstrate clays are of medium to high plasticity with a corresponding low to medium volume change potential based on amended plasticity (medium volume change potential should be used for design purposes).

7.0 GEOTECHNICAL ASSESSMENT

7.1 General

It is understood that the proposed development is to construct a 4-storey extension to the west of the existing Premier Inn hotel.

No building loads or finished site/building levels have been provided to NX Consulting at the time of drafting this document.

Ground conditions encountered across the site (during the NX investigation) comprise Made Ground to a maximum depth of 1.60mbgl. Underlying the Made Ground was medium dense silty slightly gravelly Sand between depths of 0.90m to 5.45mbgl . Firm becoming stiff brown sandy Clay was encountered within WS2.1 to WS4.1 between depths of 4.70mbgl to 5.45mbgl and band of medium dense wet Sand and Gravel between depths of 3.50mbgl to 4.75mbgl.

Groundwater was recorded within sand and gravel bands in WS2.1 and WS3.1 at 3.70mbgl and 4.65mbgl respectively. The SPT 'N' value of 3 recorded in WS3 at 3.00m bgl has been discounted as the driller claims the hole is likely to resulted in running sand deposits due it not being cased and left for a while.

It is likely that a post-development foundation system cannot fully be confirmed until final building levels are established. Given the likely building loads, risks highlighted above relating to ground disturbance during demolition works, variability/density of the Glaciofluvial deposits/shallow groundwater and depths of made ground, it may be prudent to consider vibro treatment or piled foundations.

7.2 Foundations

Traditional Strip/Trenchfill Footing

The Made Ground deposits are considered unsuitable as an adequate founding stratum due to the possible risks of unacceptable total and differential settlements occurring. If conventional strip, trenchfill/pad foundations are to be considered we recommend supplementary window sampling works are carried out post demolition. This is to address the likelihood of ground disturbance to depths circa 2m associated with the removal of existing foundations and floor slab/services.

Foundations placed below the made ground and onto the medium dense to dense sand/sand and gravel deposits at depths ranging from 0.90m bgl to 1.60m bgl are likely to yield net allowable bearing capacities in the order of 80kN/m2 to 250 kN/m2 for 1m wide strip foundations.

If the strip/trenchfill foundations are to be carried out, the following will need to be considered:

- The made ground may be deeper than anticipated due to deeper areas of Made Ground and disturbance during demolition works.
- Shallow groundwater within granular deposits.

- Sand deposits (particularly where wet) are unlikely to stable during the excavation, and temporary support may be required.
- Risk of running sand or softening due to localised ground water ingress. Dewatering control measure should be allowed for. If heavier loads dictate the use of a piled foundations, it is recommended that cable tool drilling is utilized to enable pile design.

Piles

Soil properties are presented in Table 7.2.1 & 7.2.2 are recommended for 'preliminary' pile based on log description, and in-situ testing results, as well as published geotechnical data of soil. If piles are to be adopted, deeper cable tool percussion drilling is recommended to enable pile design.

Table 7.2.1 – Soil Properties adopted in the Preliminary Pile Design

Stratum	Soil Properties	Remark
Made Ground/ Fill	Bulk Density = 18 kN/m^3	Contribution of shaft resistance being ignored.
Glacial clay	Bulk Density = 18 kN/m^3 Angle of shearing resistance = 26°	
Gravely sand	Bulk Density = 18 kN/m^3 Angle of shearing resistance = 34°	Based on medium dense granular materials with recorded average SPT N = 15.
Bedrock	Not proven	

Table 7.2.2 – Fluvioglacial Sand & Gravel

Parameter	Typical data range	Recommended Design
Moisture Content (%)	-	-
Plasticity Index (%)	-	-
Bulk Density (Mg/m_3)	-	2.0
SPT N-value	3 to 33	8 to 18
Net Allowable Bearing Capacity kN/m_2 (Foundation 600mm to 1m width)	33 to 300	50 for 600mm strips 100kn/m2 for 1m strips (subject to further site investigation post demolition.
Undrained Shear Strength (kN/m_2)	-	-
Effective Cohesion (kN/m_2	-	0
Angle of Friction (phi')	-	36
Coefficient of compressibility (m_2/MN)	-	-
Infiltration Rate (m/sec)	5 x 10^{-6}	5 x 10^{-6} (within upper 2m of strata)
ACEC	DS-1	DS-1

If adopted, piled foundation options would need to consider the effects of noise and vibration on nearby structures and the presence of below ground obstructions recorded during this assessment.

The advice of specialist piling contractors should be sought on the suitability and load carrying capacity of their proprietary system for the use at the site and their attention brought to the nature and composition of the Made Ground, below ground services and Glaciofluvial deposits.

Following treatment, in-situ load tests should be carried out on the compacted ground to verify performance and foundation and slab design.

Due to the proximity of nearby trees deepening of foundations and void formers may be required to satisfy requirements in line with Chapter 4.2 of the NHBC building standards.

If piles are to be adopted deeper cable percussion boreholes should be undertaken to confirm the ground condition, to facilitate their design. Depths in the order of 20.00m bgl being most suitable for the proposed buildings.

Vibro Treatment

As an alternative to the use of a piled foundation; it is considered that the superficial deposits may respond to ground improvement techniques such as vibro stone columns. The advice of specialist vibro compaction contractors should be sought on the suitability and load carrying capacity of their proprietary system for the use at the site.

It is normal for the specialist contractor to give assurances on the subsequent engineering performance of the treated ground. Notwithstanding the above it is considered that following thorough treatment by vibro compaction allowable bearing capacities in the order of 100 to 150kN/m2 to allow for reinforced concrete spread foundations and 30 to 45kN/m2 for the floor slab.

It is strongly recommended that, prior to the adoption of this proposal, vibro contractors are provided with a copy of this report and attend site to form trial pits, to confirm the suitability of their proprietary systems on site. It is important to note however, that the success of vibro compaction on this site would depend achieving proposed loading scenarios for the floorslabs. Any unsuitable materials may be required to be removed and replaced within more suitable granular fill.

Following treatment, in-situ load tests should be carried out on the compacted ground to verify performance and foundation and slab design.

Retaining Walls

Low level retaining walls founded onto natural strata at 1m depth, are likely to be achieved on strip and pad foundations on net allowable bearing capacities of 60kN/m2 to 80Kn/m2 respectively. The height and available space for any walls will determine the most suitable wall type that could be used.

Suitable checks would need to be made for overturning, sliding, bearing capacity and global stability.

Floor Slabs

Suspended floor slabs are recommended due to the depth of made ground and variability of strata encountered including sand deposits. Adequate support and reinforcement should be adopted to reduce slab deflections in line with structural standards.

7.3 Earthworks, Excavations and Groundwater

All projects involving earthworks come under the requirements of the Construction (Design and Management) Regulations 2007 (CDM). The creation and maintenance of a project risk register is seen as good practice and is a requirement under CDM. All risks identified by those involved in the design of earthworks should be filed into the project risk register. Where a project includes geotechnical design, a geotechnical risk register should be developed to support and enhance the project risk register.

Site preparation prior to upfilling should include removal of all vegetation, topsoil and any uncontrolled filling/Made Ground. Earthworks materials should be classified in accordance with Table 6/1 of Department of Transports Specification for Highways Works (Series 600 SHW); summarised below.

Table 7.3.1 – Classes of Earthworks Materials Permitted for Incorporation into the Works

Use	Permitted Class(es)
General fill – granular (and granular improvement layer, where required)	1A, 1B, 1C
General fill – cohesive	2A, 2B
Fill to landscape areas	4
Topsoil	5A, 5B
Embankment Starter Layer	6A, 6B,6C
Capping	6F1,6F2,6F3
Fill to reinforced earthworks	6I/J
Backfill to structures	6N, 6P [6NI, 6PI]

Any embankments and site slopes should be constructed utilizing Class1A, 1B, 1C granular fill as specified within (Series 600 SHW). The starter layer for embankment construction should comprise Class 6A, 6B, 6C granular fill. Unacceptable material, Class U2 shall be as defined in Clause 601.3 Series 600 SHW.

Excavations & Earthworks

Excavations into the Made Ground are likely to be achievable with conventional plant.

The stability of foundation excavations are likely to be variable and collapse and spalling of the granular strata (running sand conditions particularly where groundwater is present) and reworked Made Ground materials should be anticipated. All excavations should be conducted in line with CIRIA Report 97 – Trenching Practice and BRE 440 Foundations, Basements and External Works 2002.

Trenchboxes or similar may be required to support drainage and deep foundation excavations locally. Where trenchfill foundations are to be used, support and dewatering would be required in any case to maintain the necessary integrity of the concrete.

Any replaced 'site won' or imported materials will again need to be compacted in a controlled manner in line with the Department of Transport, Specification for Highway Works. However, the clay and sand/sand and gravel encountered beneath the site is not

likely to be suitable for re-use as structural fill in its current form due to being too wet. Additionally, these materials would not be suitable to form capping or sub-base.

Excavations are likely to be feasible using conventional plant.

Where possible all soils should be retained on site to reduce disposal costs.

Pavement Construction

If the CBR is less than 2.5%, foundation improvement work shall be undertaken in accordance with IAN 73/06. An initial design CBR value of 2% is recommended for the areas of firm to very stiff reworked Glacial Till and natural deposits. Within areas of existing car parking a CBR value of up to 15% is likely to be achievable on existing sub base stone.

Once any cut and fill volume has been carried out, and where/if access roads are to be adopted, design CBR values should be confirmed by carrying out in-situ plate load tests.

If the works are carried out during periods of inclement wet weather, soft ground should be anticipated and imported stone or ground improvement may be required for temporary enabling works.

Groundwater & Surface Water Management

Groundwater was recorded within sand and gravel bands in WS2.1 and WS3.1 at 3.70mbgl and 4.65mbgl respectively.

A localised shallow perched and potential groundwater is likely to be present within made ground and drift deposits. Ground water shall be control in accordance with CIRIA report 113 "Control of Ground Water to Temporary Works.

It is considered likely that the excavations will remain dry but shallow excavations (<1.75m) should be able to be de-watered by a screened sump pump techniques dependant on seasonal variations. However, where granular deposits are present then 'specialist dewatering measures' may be required and should be anticipated. It is recommended that groundwater levels are monitored prior to and during the construction work to enable any dewatering requirements to be identified in advance. During periods of inclement weather the surface soils are likely to become very soft and difficult to traffic for site plant and vehicles.

Arrangements should be made to prevent ponding on the surface and in any excavation, the Contractor should ensure that ground levels are of sufficient gradient to enable the collection of surface water run-off in sumps or grips.

Any potentially contaminated water shall not be allowed to migrate into other areas until the results of the analysis are available and, if required, a suitable means of water treatment has been agreed. Pumping from over excavated sumps may be required to maintain satisfactory working conditions."

Concrete Classification

The results from the chemical laboratory sulphate and pH analysis for the site indicate that a worst-case Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1.

8.0 GEOCHEMICAL GROUND AND GROUNDWATER ASSESSMENT

8.1 Introduction

The preliminary conceptual site model identified that, the potential for the existence of contamination beneath the site was low to moderate.

To date, a total of 5no samples of Made Ground, superficial strata have been tested for a number of general screening tests including pH and metals, cyanide, phenols, sulphide, sulphur, asbestos, speciated PAH and TPH, BTEX, were undertaken during the intrusive investigation to confirm the site's anticipated risk status to human health receptors from soil contamination as determined within the NX Consulting Desk Study for the site.

6no samples of Made Ground were analysed for asbestos screening.

2no samples of Made Ground and natural deposits were sampled for Waste Assessment Classification (WAC).

2no leachate samples were analysed for general screening for similar compounds as above.

The following contamination assessment sub-sections will discuss the identified risks associated with individual contaminant groups based on contamination testing results, undertaken on samples from the intrusive investigation.

8.2 Rationale

In May of 2008, Contaminated Land: Application in Real Environments (CLAIRE) in conjunction with the Chartered Institute of Environmental Health (CIEH), with support from the Soil and Groundwater Technology Association (SAGTA), released a document entitled 'Guidance on Comparing Soil Contamination Data with a Critical Concentration' [7].

The document provides advice on the use of statistical techniques in the assessment of soil contamination data. It forms part of a package of improved UK guidance highlighted in the Defra discussion paper 'Assessing risks from land contamination – a proportionate approach. Soil Guideline Values: the Way Forward (CLAN 06/2006). The overall aim is to increase understanding of the role statistics can play in quantifying the uncertainty attached to estimates of the mean concentration of contaminants thereby creating a more informed basis for regulatory decision-making.

The guidance presents a structured approach that can be followed when employing statistical techniques for data assessment.

In April 2012 revised Statutory Guidance stated that:

"New technical tools and advice may be developed and used to help regulators and others conform to this Guidance."

"Tools might be developed to help assessors apply the Category 1-4 Screening Levels (C4SLs) approach in relation to specific substances or situations. For example, this might include the development of generic screening levels to help assessors decide when land might be assumed to be in Category 4."

C4SLs are intended as generic screening values to help show when land is within Category 4. They describe a level of risk that whilst above 'minimal' is still 'low', providing a 'higher simple test' for deciding that land is suitable for use and definitely not contaminated.

Current Soil Guideline Values / Generic Assessment Criteria can now be replaced with more pragmatic (but still strongly precautionary) Category 4 Screening Levels and provide a higher simpler test for deciding that land is suitable for use and definitely not contaminated

C4SL's retained and used the CLEA framework, modified according to considerations of the underlying assumptions and science, within the context of Defra's policy background.

8.3 Soil Guideline Values

The Environment Agency's position on CLEA guidance is as follows:

"The CLEA guidance is non-statutory. It does not purport to interpret the policies or procedures of the Environment Agency and shall not operate as a statutory license, waiver, consent or approval from the Environment Agency"[9].

"The CLEA guidance describes the soil concentrations above which, in the opinion of the Environment Agency, there may be concern that warrants further investigation and risk evaluation for both threshold and non-threshold substances. These levels are a guide to help assessors estimate risk. It does not provide a definitive test for telling when risks are significant"[9].

The soil guideline value (SGV) is derived by estimating the concentration of a substance in soil, which will result in an amount of the contaminant entering the human body that is equal to the relevant Health Criteria Value(s).Revised guidance and software has been published for calculation of generic assessment criteria, which will lead to the publication of SGVs based on the new approach. New TOX and SGV reports for priority substances are due to be published after March 2009. The 'old' ten SGV reports will be replaced.

The Environment Agency and DEFRA have produced two new reports - "Human health toxicological assessment of contaminants in soil" and "Updated technical background to the CLEA model". This has led to the withdrawal of CLR7-10, which no longer reflects the current approach and formed the basis of the existing SGVs, as a result all the existing SGV reports have been withdrawn.

The publication of new substance specific TOX reports will lead to the withdrawal of the existing reports. Practitioners are expected to produce their own generic assessment criteria using the CLEA software and handbook.

8.4 LQM/CIEH Suitable 4 Use Levels (S4UL)

The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and has transparently-derived and cautious 'trigger' values above which further assessment of the risks or remedial action may be needed. They replace the second edition of the LQM/CIEH General Assessment Criteria (GAC) published in 2009.

In this instance initial potential risk to human health will be determined by comparison of appropriate chemical analysis to the values specified in the current LQM/CIEH Suitable 4 Use Levels'. With respect to lead the current Category 4 Screening Level will be used.

8.5 Site Soils

8.5.1 NX Consulting Investigation

The chemistry analysis results, presented in Appendix F, have been compared against the Tier 1 criteria for a *commercial end use* to reflect the development proposals of the extension of the Premier Inn.

A conservative approach has been given for the Tier 1 criteria regarding the proposed end use, given the sensitivity and age of the proposed end users.

Exposure pathways are restricted to the following from deep and shallow site soils:

- Ingestion of soil,
- Ingestion of site derived dust,
- Dermal contact with soil,
- Dermal contact with site derived dust,
- Inhalation of fugitive soil dust,
- Inhalation of fugitive site derived dust,
- Inhalation of vapours outside
- Inhalation of vapours inside

For risk assessment purposes the most conservative soil organic matter value of 1% has been used.

Made Ground & Natural Soils

Table 8.5.1 displays the contaminants for which Tier 1 thresholds have been exceeded:

Table 8.5.1 – Summary of Tier 1 Exceedances

Summary of Tier 1 Exceedances					
Solid Contamination Results					
DETERMINAND	**No. of Samples**	**Range**	**Average**	**GAC**	**No of Exceedences**
Inorganics, Carbon and Asbestos					
Asbestos Quantification (%)	6	No asbestos detected		-	-
pH	7	8.0 – 8.7	8.34	-	-
Total Sulphate	5	<100 – 1010	329.4	-	-
Total Cyanide	5	<0.1 – 0.8	0.3	527	-
Sulphide	5	<10 - 16	11.2	-	-
Total Organic Carbon (%)	5	<0.5 – 6.2	2.08	-	-
Metals and Semi-Metals					
Arsenic	5	0.8 – 12	5.02	37	0
Cadmium	5	<0.1 – 0.5	0.2	11	0
Chromium III	5	3.2 - 21	9.18	910	0
Copper	5	4.8 – 87	26.5	2400	0
Lead	5	3.1 – 380	100.8	450	0

Mercury (Inorganic)	5	<0.05 – 0.29	0.11	40	0
Nickel	5	2.2-19	11.06	180	0
Selenium	5	<0.5	<0.5	250	0
Zinc	5	12 – 160	57	3700	0
Boron	5	<0.2	<0.2	290	0
Speciated Petroleum Hydrocarbons (TPH-CWG)					
TPH-CWG - Aliphatic >EC5 - EC6	3	< 0.01	< 0.01	42	0
TPH-CWG - Aliphatic >EC6 - EC8	3	< 0.01	< 0.01	100	0
TPH-CWG - Aliphatic >EC8 - EC10	3	< 0.01	< 0.01	27	0
TPH-CWG - Aliphatic >EC10 - EC12	3	<1.50	<1.50	130	0
TPH-CWG - Aliphatic >EC12 - EC16	3	< 1.2	< 1.2	1100	0
TPH-CWG - Aliphatic >EC16 - EC21	3	< 1.5	< 1.5	65000	0
TPH-CWG - Aliphatic >EC21 - EC35	3	< 3.4	< 3.4	65000	0
TPH-CWG - Aliphatic (EC5 - EC35)	3	<10.0	<10.0	-	-
TPH-CWG - Aromatic >EC5 - EC7	3	< 0.01	< 0.01	70	0
TPH-CWG - Aromatic >EC7 - EC8	3	< 0.01	< 0.01	130	0
TPH-CWG - Aromatic >EC8 - EC10	3	< 0.01	< 0.01	34	0
TPH-CWG - Aromatic >EC10 - EC12	3	< 0.9	< 0.9	74	0
TPH-CWG - Aromatic >EC12 - EC16	3	< 0.5	<0.5	140	0
TPH-CWG - Aromatic >EC16 - EC21	3	0.73 – 0.78	0.75	260	0
TPH-CWG - Aromatic >EC21 - EC35	3	<1.4	<1.4	1100	0
TPH-CWG - Aromatic (EC5 - EC35)	3	<10.0	<10	-	-
TPH-CWG – Aliphatic/Aromatic > EC10 – EC44	3	<10	<10	-	-
Polynuclear Aromatic Hydrocarbons (PAHs)					
Naphthalene	5	< 0.03-0.05	0.034	2.3	0

Acenaphthylene	5	< 0.03-0.03	0.03	170	0
Acenaphthene	5	< 0.03 - 0.14	0.07	210	0
Fluorene	5	< 0.03-0.11	0.05	170	0
Phenanthrene	5	<0.03-1.2	0.46	95	0
Anthracene	5	< 0.03-0.26	0.118	2400	0
Fluoranthene	5	< 0.03 – 2.1	0.04	280	0
Pyrene	5	< 0.03 – 2.0	0.798	620	0
Benzo(a)anthracene	5	< 0.03-0.96	0.392	7.2	0
Chrysene	5	< 0.03-0.89	0.366	15	0
Benzo(b)fluoranthene	5	< 0.03 – 1.0	0.414	2.6	0
Benzo(k)fluoranthene	5	< 0.03-0.42	0.166	77	0
Benzo(a)pyrene	5	< 0.03-0.81	0.34	2.2	0
Indeno(1,2,3-cd)pyrene	5	< 0.03-0.40	0.17	27	0
Dibenz(a,h)anthracene	5	< 0.03-0.1	0.06	0.24	0
Benzo(ghi)perylene	5	< 0.03-0.41	0.18	320	0
Total PAH (Sum of USEPA 16)	5	< 0.10 – 11	7.4	-	0

Table 8.5.1 above shows that there were no Tier 1 exceedances for the soils analysed to date, beneath the proposed development for Made Ground soils.

No asbestos has been detected.

8.5.3 Phytotoxicity

Phytotoxicity Guidance on the effects of metal contamination on plant growth is provided within the Ministry of Agriculture, Fisheries and Food (MAFF) Code of Good Agricultural Practice for the Protection of Soil.

Thresholds have not been exceeded within all samples analysed within the Made Ground or natural soils with respect to the end use of the site.

8.5.4 Controlled Waters

A low risk to Controlled Waters receptors was identified at the site within the NX Consulting Desk Study report requiring a site investigation with groundwater sampling to determine the presence of otherwise of source-receptor pathways.

Leachate Analysis

Groundwater sampling was limited due to the absence of groundwater encountered across the site. NX carried out 2no. leachate tests from soil samples from 2no. locations around the proposed annex development. The findings are summarised in Table 8.5.2.

Table 8.5.2 – Leachate Analysis Summary

DETERMINAND	UNITS	EQS	DWS	No	Max C	No of Exceedences	LOC. OF EX.
INORGANICS							
Arsenic	µg/l	50	10	2	0.52	**0**	
Cadmium	µg/l	5	5	2	<0.03	**0**	
Chromium	µg/l	2	50	2	1.1	**0**	
Copper	µg/l	5	2000	2	1.4	**0**	
Lead	µg/l	4	10	2	1.1	**0**	
Mercury	µg/l	1	1	2	<0.01	**0**	
Nickel	µg/l	8	20	2	<0.5	**0**	
Selenium	µg/l	-	10	2	0.28	**0**	
Zinc	µg/l	30	5000	2	9.3	**0**	
pH	-	6-9	-	2	7.6	**0**	
ORGANICS							
Naphthalene	µg/l	10	-	2	<0.05	**0**	
Acenaphthylene	µg/l				0.01		
Acenaphthene	µg/l				<0.01		
Fluorene	µg/l				0.01		
Phenanthrene	µg/l				0.08		
Anthracene	µg/l				0.01		
Fluoranthene	µg/l				0.10		
Pyrene	µg/l				0.11		
Benzo(a)anthracene	µg/l				0.06		
Chrysene	µg/l				0.05		
Benzo(a)pyrene	µg/l	0.05	0.01	2	0.08	**0**	

benzo[b/k]fluoranthene	µg/l	0.03	-	2	0.14	**2**	WS1.1 at 1.00m WS3.1 at 0.50m
benzo[g,h,i]perylene & indeno(1,2,3-cd]pyrene	µg/l	0.02	-	2	0.11	**2**	WS1.1 at 1.00m WS3.1 at 0.50m

*Notes: The WHO Guideline Values for petroleum products in drinking water have been applied in the absence of a current UK specific TPH water quality standard. However, for the aromatic TPH bandings of C6-C7, C7-C8 and C8-C10 the more conservative UK specific EQS for benzene, toluene and ethylbenzene have been selected as the Tier 1 screening criteria.

8.5.5 Discussion and Recommendations

Soils

Soil sampling of Made Ground has recorded contaminant concentrations below Tier 1 values for commercial end use and no asbestos was detected. No visual or olfactory evidence of hydrocarbon or solvent contamination was encountered during the NX Consulting investigation and chemical analysis of the soils proved organic contaminants to be absent beneath the site the previous investigation in 2015 also detected no exceedances.

Remedial measures are only undertaken where unacceptable risk exists to human health or the environment. For a potential risk to be present there must be a viable pollutant linkage whereby a contamination source may impact upon a receptor.

Recorded soil concentrations are not considered to pose an unacceptable risk to controlled waters.

Site workers involved in excavations for foundations, roads, sewers etc during the construction works may come into direct contact with the soils containing slightly elevated concentrations of inorganic and organic contaminants and asbestos (from the sub base). We would therefore recommend that simple precautionary measures be adopted during the construction phase i.e. good personal hygiene, provision of suitable welfare facilities and basic personnel protective equipment.

Any areas of proposed landscaping will require imported subsoil/topsoil materials which will require chemical validation to demonstrate that they are suitable for a commercial end use and taken to depths sufficient to provide a sufficient cover system for all proposed materials used which are capable to support root growth.

All Asbestos Containing Material (ACM) identified during the site enabling works must be dealt with in strict accordance with the Control of Asbestos Regulations (CAR) 2012, UK Waste Management Legislation and the Environmental Protection Act 1994.

As a contingency measure and to protect construction workers and future end users from any asbestos contamination, we recommend that the following protective measures are adopted during the proposed ground preparatory works:

- All site personnel should be provided with PPE when excavations and demolition works are taking place.
- A water bowser or other dust suppression equipment shall be provided in order to dampen exposed surfaces; during the movement of plant and removal of arisings.

Should off-site disposal be required, then additional asbestos quantification and waste classification testing should be undertaken to ensure that it is classified correctly and disposed at a suitably licenced facility.

All ACM impacted soils must be managed so as to ensure no airborne fibre release during construction or placement of impacted material in such a manner to ensure no future exposure risk.

Materials imported to site are required to be suitable for the intended commercial end use.

All operations may be subject to regulation using a 'Materials Management Plan' (MMP) to be created in accordance with Version 2 of the CL:AIRE Definition of Waste – Industry Code of Practice. The MMP should be created with due consideration to all proposed remediation and enabling works operations prescribed within this document and should be undertaken by a Qualified Person and a signed declaration submitted to the EA prior to re-use of materials on the site.

Topsoil should be in line with BS 3882: 2015 'Specification for topsoil' within the clean cover system.

Soil concentrations are not considered to pose an unacceptable risk to controlled waters.

Risks to Controlled Water Receptors

The superficial deposits are classified a Secondary A aquifer and with the underlying bedrock is recorded as a Principle aquifer

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

No visual or olfactory evidence of contamination within the Made Ground was observed during soil sampling. Due to an absence of groundwater encountered across the majority of the site, limited leachate testing was undertaken.

This testing (highlighted above) has recorded slight exceedances of benzo[b/k]fluoranthene, benzo[g,h,i]perylene & indeno(1,2,3-cd]pyrene values within the Made Ground; at concentrations exceeding the respective EQS screening values.

The exceedances highlighted above are considered to be marginal due to the limited concentrations within the soils across the site and distance to nearest controlled water receptor. Given the low potential for rainwater ingress and groundwater movement the potential for vertical and lateral leaching and infiltration is deemed to be very low. Development proposals comprising predominantly hardstanding impermeable surfaces reducing infiltration the risks to controlled water receptors post construction is deemed to be low.

If contamination is found during construction works the associated risks should be reassessed.

It is considered that risks to controlled waters will be low, from potentially unrecorded hydrocarbon contamination, upon completion of the development works.

If contamination is found during additional sampling, the associated risks should be reassessed in line with the Environment Agency's Hydrogeological Risk Assessment Methodology.

During enabling works, any recorded free phase hydrocarbon contamination in soils and groundwater should be removed during a process of remediation. The above verification works should form part of a remediation strategy agreed with the local authority and Environment Agency.

8.5.6 Waste Classification

Any soils to be exported from site should be allocated an appropriate waste code, following the steps within WM3.

The results appended to this document indicate that the samples tested are likely to be classified as NON-HAZARDOUS WASTE. This should be confirmed by the appointed waste management contractor following submission of all available test results carried out at the site to date.

If during future redevelopment works, any excavated materials are to be discarded and removed from this site as a waste to landfill, these materials will need to be classified using HazWasteOnline software in accordance TM with the 'Guidance on the Classification and Assessment of Waste (1 Edition 2015) – Technical Guidance WM3, Version 1.1 June 2018'.

Where excavated materials need discarding to accommodate new foundations additional analysis and screening may be required once each specific waste stream has been identified and the volume of material to be disposed of has been calculated, since the amount of screening required, including any pre-disposal WAC screening, will be dependent upon the final volume of material to be disposed of.

It is the responsibility of those generating the waste (i.e. the site), to ensure that the waste is handled and disposed of appropriately. Waste carriers transporting, and sites accepting, this material should have a corresponding code within their permits.

Waste acceptance criteria (WAC) testing results indicate that sampled Made Ground soils will be suitable for an non-hazardous landfills.

In order to prevent excessive costs and reduce the environmental impact of the development it is recommended that removal of wastes from the site, including waste soils, is kept to a minimum. It is however, envisaged that arisings will be created during the works; in particular within service excavations and site reprofiling.

To evaluate the various on-site soils for potential offsite disposal, soils are classified in accordance with the Hazardous Waste Directive (HWD) that enables the provision of a European Waste Catalogue (EWC) Code for use during offsite disposal and a Hazardous or Non-Hazardous Classification. Non-Hazardous material is suitable for disposal in a Non-Hazardous landfill; however, disposal to an Inert Landfill requires further Waste Acceptance Criteria (WAC) testing in accordance with BS EN 12457–3. Material classed as Hazardous also requires WAC testing to assign a suitable hazardous classification.

The Landfill Regulations require that all Hazardous and Non-Hazardous solid waste must be treated prior to offsite disposal to landfill. You can define 'treatment' by using the following 'three-point test'. All three criteria must be satisfied for all of the waste to qualify as being treated:

1. It must be a physical, thermal, chemical or biological process including sorting.
2. It must change the characteristics of the waste.
3. It must do so in order to:

a. Reduce its volume; or
b. Reduce its hazardous nature; or
c. Facilitate its handling; or
d. Enhance recovery.

It should be noted that a site investigation is unable to identify all below ground conditions at a site and therefore, it should be noted that if during construction works soils that require offsite disposal are identified as being different to what has been preliminarily tested in this report, additional testing will be required prior to disposal or recovery at a licensed offsite facility.

It is also recommended that prior to offsite disposal or recovery of any waste soils; the receiving landfill facility should be sent copies of all relevant chemical analysis and written confirmation of acceptance of soils provided.

All producers of waste have a duty of care to ensure that any waste they produce is handled safely and within the law. They must check that anyone they pass waste on to is authorised to take it. This includes the authorised site earmarked to handle the waste and any haulier (licensed waste carrier) used to transport the waste between the sites.

All waste holders must act to keep waste safe against:

1. Corrosion or wear of waste containers;
2. Accidental spilling or leaking or inadvertent leaching from waste unprotected from rainfall;
3. Accident or weather breaking open contained waste and allowing it to escape;
4. Waste blowing away or falling while stored or transported;
5. Scavenging of waste by vandals, thieves, children, trespassers or animals.

Holders should protect waste against the above risks while it is in their possession and they should also protect it for its future handling requirements. Waste should reach not only its next holder but a licensed facility or other appropriate destination without escape. It is recommended that the container used to transport the waste is suitable not only to prevent solid and liquid residues escaping, but also any potentially dangerous vapours or odours associated with the waste.

Segregation of different categories of waste where they are produced may be necessary to prevent the mixing of incompatible wastes. Segregation may assist the disposal of waste to specialist outlets. Where segregation is practiced on sites, the waste holder should ensure that his employees and anyone else handling waste there are aware of the locations and uses of each segregated waste container.

Waste handed over to another person should be in some sort of container, which might include a skip. The only reasonable exception would be loose material loaded into a vehicle and then covered sufficiently to prevent escape before being moved. Waste containers should suit the material put in them.

A waste transfer note (WTN) is a document which must accompany any transfer of waste between different holders. The purpose of a WTN is to allow other people who handle your waste to know what they are dealing with so that they can manage it safely and properly.

A WTN must be created for each load of waste that leaves the site.

The WTN must contain enough information about the waste to enable anyone coming into contact with it to handle it safely, and either dispose of it or allow it to be recovered within the law. If insufficient information is given on the WTN the responsible party may liable to be prosecuted.

Records of all waste transferred or received must keep for at least two years.

8.6 Ground Gases

8.6.1 Asphyxiant, Noxious or Explosive Gases

Risk Assessment & Methodology

CIRIA Report 665 "Assessing Risks Posed by Hazardous Ground Gases to Buildings" presents current best practice on the assessment of ground gases for commercial and residential buildings (with the exception of low rise traditional housing). The report presents a risk-based approach based on gas screening levels which depend on both the concentration and emission rate of gas from the ground. Gas screening levels are calculated as follows:

***Gas screening value* (*l*/*hr*) = *gas concentration* (%) *X measured borehole flow rate* (*l*/*h*) /100**

Gas screening values should be calculated on a borehole basis in the first instance. Consideration of worst case i.e. highest flow and highest concentrations should only be considered if the CSM warrants it.

The monitoring boreholes were installed with ground gas monitoring wells, with response zones set within the Made Ground and Glacial Till deposits. Exploratory hole records showing monitoring well constructions and locations of monitoring wells are presented in Appendix C.

The assessment of potential ground gas generation is based on the observations of trends and patterns of change in ground gas concentration, by the direct measurement of ground gas from the monitoring wells. During each visit the measurement of methane, carbon dioxide, oxygen, hydrogen sulphide, carbon monoxide, gas flow, groundwater level and barometric pressure were recorded.

Potential Sources

The Given the developmental history of the site and surrounding area, the preliminary risk assessment established that the risk from hazardous ground gas was considered to be low.

Made Ground recorded within exploratory boreholes are not considered sufficiently organic to generate significant volumes of gas likely to impact the proposed extension.

A summary of the soil gas monitoring results is presented in Table 8.5.1 below and copies of the log sheets presented in Appendix G.

Potential pathways

The potential pathways into the building are:

1. Horizontal and vertical migration through the ground into the building via cracks in the floor slab or around services.

Receptors

The receptors considered in this assessment are the users of the building and the building. The proposed development will compromise of an extension to the existing Premier Inn hotel. The extension will host rooms of multiple occupancy small to medium size rooms with passive ventilation of rooms and other internal spaces throughout ground floor areas Type C Building under BS8485:2015. The buildings are a medium to high sensitivity receptor.

Ground Gas Monitoring

Suitability of Data

At times during the monitoring visits, the response zones in boreholes were not flooded and water ranged from 2.59m to 2.77mbgl within WS1.1 and no groundwater was recorded within WS3.1.

4No.rounds of monitoring have been undertaken to date with a barometric pressure of between 1013-1021mb. 4no. visits were carried out to attain gas readings.

A summary of the soil gas monitoring results is presented in Table 8.6.1 below and copies of the log sheets presented in Appendix G.

Table 8.6.1 – Summary of Gas Monitoring Results (NXC)

NX Consulting Borehole Reference	Max CO2 (%v/v)	Max Flow (l/hr)	Max GSV (l/hr)	Max CH4 (%v/v)	Max GSV (l/hr)
WS1.1	0.7	0.1	<0.01	0.2	<0.01
WS3.1	3.0	0.0	<0.01	0.1	<0.01

In line with CIRIA 665 Guidance on Methane and Carbon Dioxide, the site is to be developed for commercial end use and the ground gas investigation has identified a maximum carbon dioxide concentration of 3.0% with 0.1 maximum flow rate recorded to date. The maximum-recorded concentration for methane was 0.2%. In addition, hydrogen sulphide concentrations of 0.0 ppm were recorded.

The results indicate that no special gas protection measures are required for the development on site. However, we recommend that the local authority are approached to confirm that further gas monitoring visits are not required; to confirm the sites 'low' source generating potential' and low gas risk based on the results obtained to date.

8.6.2 Radon & Hydrocarbons

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. Therefore, no radon protective measures are necessary.

No hydrocarbon/solvent contamination was recorded during the site investigation works and no specific protection measures are deemed necessary to reduce potential volatilisation via indoor air migration pathways to adversely impact site occupiers

9.0 PRE-REMEDIATION CONSTRAINTS AND OUTLINE REMEDIATION STRATEGY

9.1 Invasive Plants

The presence of Japanese Knotweed and/or other invasive plants was not apparent during the fieldwork, however, advice should be sought from a suitably qualified ecologist should any suspicious plant growth be encountered.

9.2 Services

Underground services may impact the site and the engineer should familiarise themselves with their presence and implications on the development.

9.3 Hardstanding & Surface Cover

Surface Tarmacadam car parking and grass landscaping is largely present across the site.

Photographs presented in Appendix A shows the nature of surface cover in the area of the proposed extension.

9.4 Land Condition and Outline Remediation

9.4.1 Foundations and Ground Stability

Anticipated Ground Condition

Ground conditions encountered across the proposed development area comprise Made Ground to a maximum depth of 1.60mbgl. Underlying the Made Ground was medium dense siltyy slightly gravelly Sand between depths of 0.90m to 5.45mbgl . Firm becoming stiff brown sandy Clay was encountered within WS2.1 to WS4.1 between depths of 4.70mbgl to 5.45mbgl and band of medium dense wet Sand and Gravel between depths of 3.50mbgl to 4.75mbgl.

Groundwater was recorded within sand and gravel bands in WS2.1 and WS3.1 at 3.70mbgl and 4.65mbgl respectively.

Foundations

It is likely that a post-development foundation system cannot fully be confirmed until final building levels are established. Given the likely building loads, risks highlighted above relating to ground disturbance during demolition works, variability/density of the Glaciofluvial deposits/shallow groundwater and depths of made ground, it may be prudent to consider vibro treatment or piled foundations.

If the strip/trenchfill foundations are to be carried out, the following will need to be considered:

- The made ground may be deeper than anticipated due to deeper areas of Made Ground and disturbance during demolition works.
- Shallow groundwater within granular deposits.
- Sand deposits (particularly where wet) are unlikely to stable during the excavation, and temporary support may be required.
- Risk of running sand or softening due to localised ground water ingress. Dewatering control measure should be allowed for.

If heavier loads dictate the use of a piled foundations, it is recommended that cable tool drilling is utilized to enable pile design.

All excavations and any basement construction should be conducted in line with CIRIA Report 97 – Trenching Practice and BRE 440 Foundations, Basements and External Works 2002.

Suspended floor slabs are recommended due to the depth of made ground and variability of strata encountered including sand deposits. Adequate support and reinforcement should be adopted to reduce slab deflections in line with structural standards.

Although not recorded within the majority of boreholes, relic infrastructure may remain insitu associated with former demolished buildings at the site. The boreholes may require removal and treatment as part of construction works.

Where possible all soils should be retained on site to reduce disposal costs.

During periods of inclement weather, surface water management controls will be required.

Concrete Design

Concrete should be of minimum Design Sulphate Class of DS-1 and an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1s.

9.4.2 Contamination

The environmental chemistry results together with the findings of the intrusive investigation are consistent with the site's historical uses and present a low risk to human health receptors post construction and no specific protection measures are envisaged.

Imported subsoil/topsoil materials will require chemical validation to demonstrate that they are suitable for a commercial end use and taken to depths sufficient to provide a sufficient cover system for all proposed materials used which are capable to support root growth.

The risks presented to controlled water receptors are deemed to be low.

A potable water supply risk assessment is required to establish the nature of water supply pipework for the proposed development.

The results indicate that no special gas protection measures are required for the development on site. However, we recommend that the local authority are approached to confirm that further gas monitoring visits are not required; to confirm the sites 'low' source generating potential' and low gas risk based on the results obtained to date.

Soil Disposal

Any replaced 'site won' or imported materials will again need to be compacted in a controlled manner in line with the Department of Transport, Specification for Highway Works. Any soils to be exported from site should be allocated an appropriate waste code, following the steps within WM3.

The results appended to this document indicate that the samples tested are likely to be classified as NON-HAZARDOUS WASTE. This should be confirmed by the appointed waste management contractor following submission of all available test results carried out at the site to date.

If during future redevelopment works, any excavated materials are to be discarded and removed from this site as a waste to landfill, these materials will need to be classified using

HazWasteOnline software in accordance TM with the 'Guidance on the Classification and Assessment of Waste (1 Edition 2015) – Technical Guidance WM3, Version 1.1 June 2018'.

Planning

This report should be issued to the regulatory authorities to prevent delays in the project. A remediation strategy and validation report may be required prior to discharge of any outlying planning conditions.

APPENDICES

Appendix A – Drawings & Site Photographs

Appendix B – Groundsure Reports

Appendix C – Historical Mapping

Appendix D - Exploratory Hole Logs

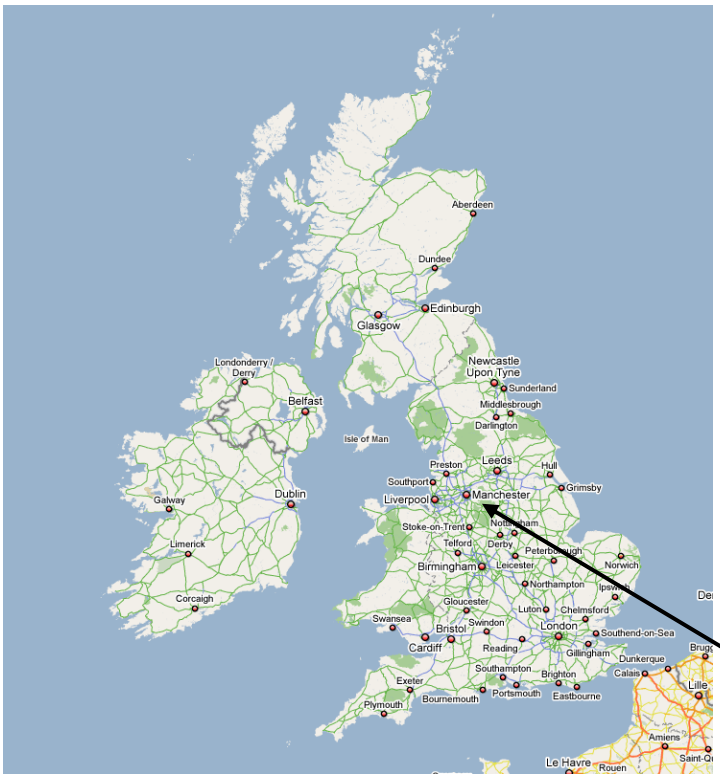
Appendix E – Geotechnical Laboratory Test Results

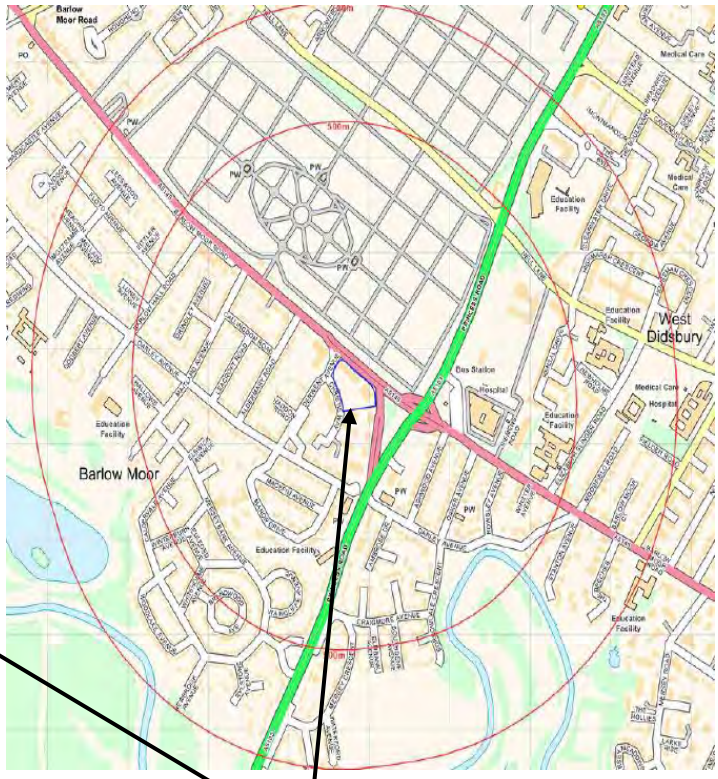
Appendix F – Chemical Test Results

Appendix G – Conceptual Models & Risk Assessments

Appendix H - Gas Monitoring Results

Appendix A – Drawings & Site Photographs







SITE LOCATION

Next Generation Engineering Consultancy Services

Tel: 0161 904 0187
E-mail: admin@nxconsulting.org.uk
Web: www.nxconsulting.org.uk

Ref: NX601 Figure 1

Project:

Premier Inn Hotel Extension, Christie Fields Business Park, Derwent Ave, Manchester M21 7QS,

Title:

Site Location Plan



EXISTING SITE PLAN
SCALE 1:500

PHD	DRAWN	22/3/24	
DRAWN	REVISION	DATE	VER

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ARCHITECTS & DESIGNERS

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PROJECT
PREMIER INN EXTENSION
MANCHESTER WEST DIDSBURY

TITLE
EXISTING SITE PLAN

SCALE
1:500 @ A3

JOB No	DRAWING No	REV
PI1077	AP1	



PHD DRAWN	DRAWN REVISION	22/3/24 DATE	VER

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PROJECT
PREMIER INN EXTENSION
MANCHESTER WEST DIDSBURY

TITLE
PROPOSED SITE PLAN

SCALE
1:500 @ A3

JOB No.	DRAWING No.	REV.
P11077	AP3	



N

Station Information:

Station	Easting (m)	Northing (m)	Level (m)
S1	382982.807	392087.603	31.547
S2	382945.268	392084.965	31.684
S3	382916.381	392145.405	31.619
S4	382920.315	392160.137	31.718
S5	382931.200	392172.964	31.629
S6	382994.924	392124.110	31.796
S7	383012.372	392100.721	31.638
S8	382999.713	392083.140	31.893

OS Note:

Some services may have been omitted due to parked vehicles.

Surveyed Buildings

This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigation Satellite Systems (GNSS) and the O.S. Active Network (OS Net).

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.

The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.

Please refer to Survey Station Table to enable establishment of the on-site grid and datum.

Legend:

Buildings; Wall; Kerb line; Line marking; Drop kerb; Centre line; Top of bank; Fence types; Overhead Cable; Concrete edge; Tarmac edge; Grass verge; Canopy/Overhang; Verge; Bottom of bank; Station and Name; 100.000 Station Level; Tree / Bush / Sapling; Area of Undergrowth; Woodland; Ridge Level; Eaves Level; Flat Roof Level; Gate; Interwoven; Iron Railings; Wire Mesh; Post & Rail; Post & Wire; Chain Link; Wooden Panels; Close Boarded; Steel Palisade

CVR Cover (generic); IC Inspection chamber; Pipe Invert; Gy Gully; Bg Back gully; Dp Down pipe; Pipe Pipe above ground; MH Manhole; WL Water level; Fl Flood light; Lp Lamp post; Tp Telegraph post; Ep Electricity post; Tl Traffic light; Bol Box stop; Sv Stop valve; St Stop tap; Er Earth rod; Wm Water meter; Gas Gas valve; Av Air valve; ICU Unidentified inspection; Wm Wash out; Ro Rodding eye; Bb Belisha beacon; CTel Cable tv; Mp Marker post; Gmp Gas marker post; So Soffit; Fh Fire hydrant; DrDuct Drainage duct; Bo Bollard; Ill Illuminated bollard; Bin Rubbish bin; Vp Vent pipe; Gd Ground light; Lbox Letter box; Stmp Tree Stump; Site Site; IFL Internal floor level; THL Threshold level; Sp Sign post; Tri Trialhole; BH Borehole; Elec Electric; BT British Telecom; Ctrol box Control box; Tactile Tactile; BP Brick paved; CPS Concrete paving slabs; CVR Cover; Rwall Retaining wall; TWL Top of Wall Level; TCL Tree canopy level; G Girth; MS Multi girth; IC Inspection chamber; CL Cover level; IL Invert level; U/TR Unable to raise

Rev.	Date	Description	Drawn	Q. Ref.

greenhatch group

- Topographical Surveys
- Site Engineering
- Utility / CCTV Surveys
- Measured Building Surveys
- 3D Laser Scanning
- Revit & BIM Models

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Newcastle: 24 Riverside Studios, Amethyst Road, Newcastle Bus. Park, Newcastle-U-Tyne, NE4 7YL, t. (01912) 736391
London: 27, Cornwall Terrace Mews, Regents Park, London, NW1 5LL, t. (02072) 241806

CLIENT

Allison Pike Partnership Ltd

PROJECT

Premier Inn Manchester West Didsbury M21 7QS

TITLE

Topographical Survey

SCALE	DATE
A1@ 1: 200	23/04/24
DRAWN: TS	QUALITY REF
Level datum: See note	
Grid orientation: See note	
Job number: 50542	
Drawing No.: 50542_T	Rev.: 0

Comments

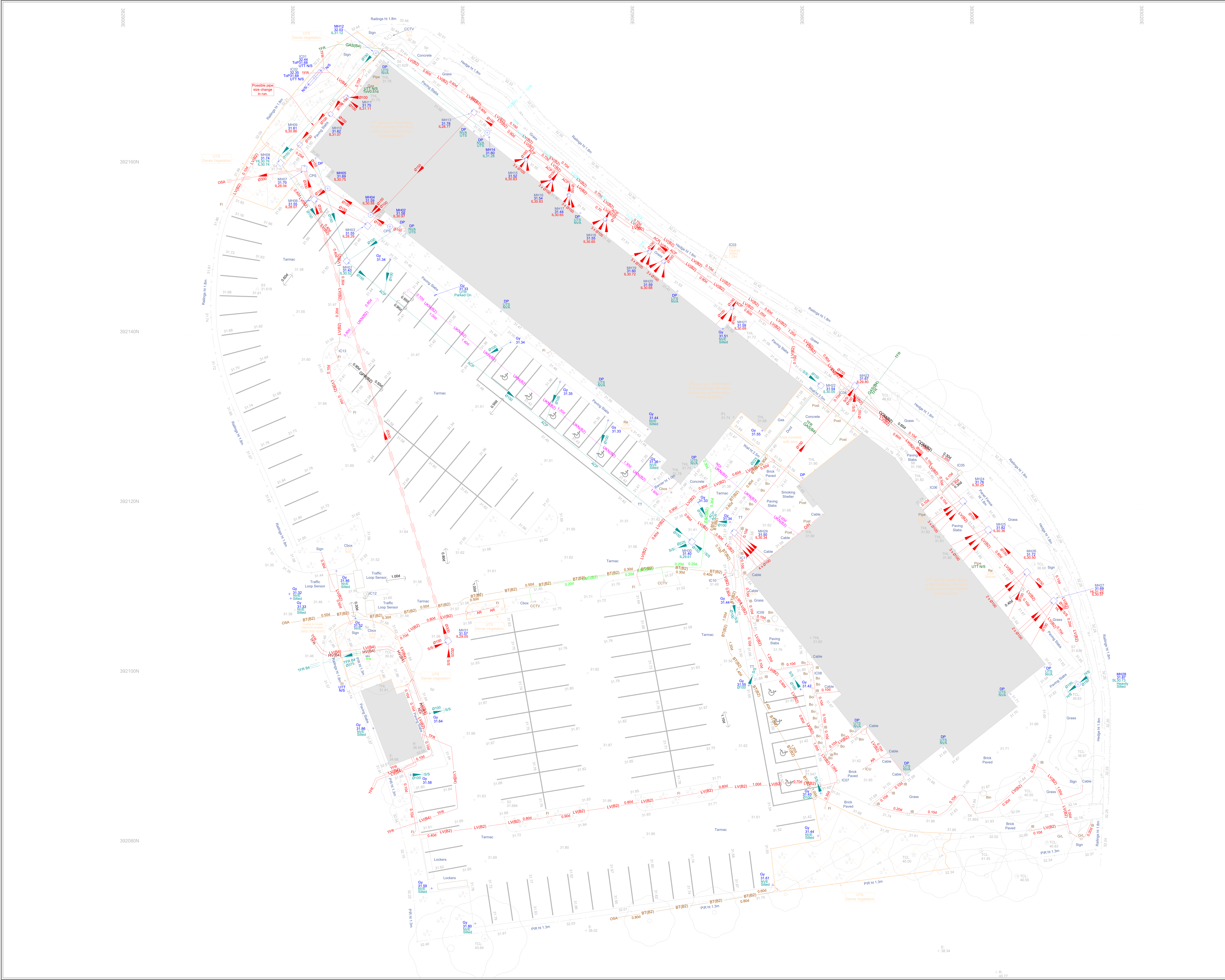
This plan should only be used for its original purpose. Greenhatch Group accepts no responsibility for this plan if supplied to any party other than the original client.

All dimensions should be checked on site prior to design and construction.

Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.

Notes:

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NOTES;

In all cases please call the BT Dial before you dig service to mark their own plant before any site works commence
0800 917 3993
Always consult utility plans

1. *Drainage Information provided has been determined without man entry into the chambers. Whilst every effort has been made to correctly identify the duty/pipes/chamber detail, it is recommended that this information should be checked in areas that are critical to the future proposal/development.*
2. *All sewer runs are presumed to be straight line connections between chambers unless proven otherwise by the use of a sonde or CCTV survey.*
3. *All desktop information should be treated as historical as the buried assets present might have changed since the drawing/record was last updated.*
4. *The drainage on site was silted/in a poor condition. We would recommend that a CCTV & jetting survey be undertaken if further clarity on the drainage detail is required.*
5. *We have overlaid the statutory records onto the plan where services shown have not been located on site. These are shown in the B4 layer and annotated as 'TFR'.*
6. *Parked cars at time of survey.*
7. *Unable to locate the gas and water feeds to the buildings on site.*

UTILITY LINETYPES

Linetype	Code	Linetype	Code
Air Line	AIR	Electric Low Voltage	LV
British Telecom	BT	Electric High Voltage	HV
British Telecom Overhead	O/H	Electric - Unknown Voltage	E
CCTV / Cable Television		Electric Overhead	O/H
Communication Cable	COM	Fibre Optic	FO
Drainage - Combined Water	Ø150	Fuel Line	FL
Drainage - Foul Water	Ø150	Gas Line	GAS
Drainage - Storm Water	Ø150	Gauge Line	GL
Drainage - Unknown Water	Ø150	GPR Line	GPR
Drainage - Trade Effluent Water	Ø150	Heating Pipes	HTG
Drainage - Combined Water - Assumed/TFR	Ø150	Offset Fills	OF
Drainage - Foul Water - Assumed/TFR	Ø150	Oil Pipe	OIL
Drainage - Storm Water - Assumed/TFR	Ø150	Rising Main	>>
Drainage - Unknown Water - Assumed/TFR	Ø150	Telecom	TEL
Drainage - Trade Effluent Water - Assumed/TFR	Ø150	Traffic Light Signals	TL
Drainage - Approximate Pipe Size/Extents		Trench Scar	
Earth Cable		Unknown	UKN
Empty Duct	ED	Vapour Recovery	VR
Electric & Comms	E&C	Vent Line	VP
		Water	WTR

UTILITY SURVEY INFORMATION

Item	Code	Item	Code
Contracted Survey Area		Assumed Route	AR
Depth to Top of Service (m)	0.40d	Assumed Connection	ACP
End of Trace / Record	EOT	Sound Connection	S/C
Head of Run	HoR	Sonde Stopped	S/S
Weak Signal	WS	No Visible Access	NVA
Taken From Records	TFR	No Visible Exit	NVE
Off Survey Area	OSA	No Visible Pipes	NVP
Back Drop	BD	No Visible Services	NVS
Silt Level	SL	No Depth Indicated	NDI
Flow Level	FL	Base Level	BL
Above Ground	A/G	High Level	HL
Unable to Locate	UTL	Top of Pipe / Top of Valve	ToP / ToV
Unable to Survey	UTS	Landing Level	LL
Unable to Raise (cover)	UTR	Rubble Level	RL
Unable to Trace	UTT	No Signal	N/S
Unable to Survey		Heavily Silted	H/S
Approximate Chamber Extents		Approximate Location (ApL)	
		GPR Anomaly	GPR
		Multiple Services Route	

PAS 128 : 2022 LEVEL B SURVEY

QUALITY LEVEL	CRITERIA USED IN THE DETERMINATION OF QUALITY LEVEL	LOCATION ACCURACY
QL-B4	A UTILITY SEGMENT WHICH IS SUSPECTED TO EXIST (EITHER ON QL-D OR QL-C) BUT HAS NOT BEEN DETECTED AND THEREFORE SHOWN AS AN ASSUMED ROUTE. **(NO DETECTION POSSIBLE)**	**UNDEFINED**
QL-B3/B3P	HORIZONTAL LOCATION ONLY OF THE UTILITY DETECTED BY ONE OF THE GEOPHYSICAL TECHNIQUES USED. **(EML OR GPR DETECTION WITH LIMITED CONFIDENCE IN DEPTH)**	**+/- 500mm HORIZONTAL LOCATE UNDEFINED VERTICAL LOCATE**
QL-B2/B2P	HORIZONTAL & VERTICAL LOCATION OF THE UTILITY DETECTED BY ONE OF THE GEOPHYSICAL TECHNIQUES. **(EML OR GPR DETECTION WITH CONFIDENCE IN DEPTH)**	**+/- 250mm HORIZONTAL LOCATE +/- 40% VERTICAL LOCATE**
QL-B1/B1P	POSITION AND DEPTH OF THE UTILITY DETECTED BY MULTIPLE GEOPHYSICAL TECHNIQUES. **(EML + GPR DETECTION)**	**+/- 150mm HORIZONTAL LOCATE +/- 15% VERTICAL LOCATE**

DISCLAIMER

Whilst every effort has been taken in the preparation of this drawing, the original land marks/apparatus configuration may have been altered since the survey/drawing was produced. The user shall make further enquiries and investigations to satisfy himself as to the accuracy of this drawing and position of the apparatus. The exact positions of the apparatus should be verified by the use of suitable detection devices and safe digging practices in accordance with HSG47, further advice on the location of apparatus should be recommended by the owner. No representation is made by Greenhatch Group, its agents or servants as to the accuracy, completeness, and sufficiency or otherwise of this drawing and the position of the apparatus.

All apparatus shall be treated as live unless proved otherwise by the owner. It is the users responsibility to ensure that the information on the location of apparatus is provided to all persons (either direct labour or contractors) working in proximity to the apparatus.

Rev	Date	Description	Drawn	Q. Ref

greenhatch group

Topographical Surveys · Site Engineering · Utility / CCTV Surveys · Measured Building Surveys · 3D Laser Scanning · Revit & BIM Models

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t. (01727) 854481	t. (01912) 736391	t. (02072) 241806

CLIENT
Allison Pike Partnership Ltd

PROJECT
Premier Inn Manchester West Didsbury M21 7QS

TITLE
Utility Survey

SCALE	DATE
A1@ 1: 200	09.05.24
DRAWN	**QUALITY REF**
JAM/JWS	GH20879

Level datum	See note
Grid orientation	See note
Job number	50542

Drawing No.	Rev.
50542_T_UG	0

Comments
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Notes:

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UTILITY LINETYPES

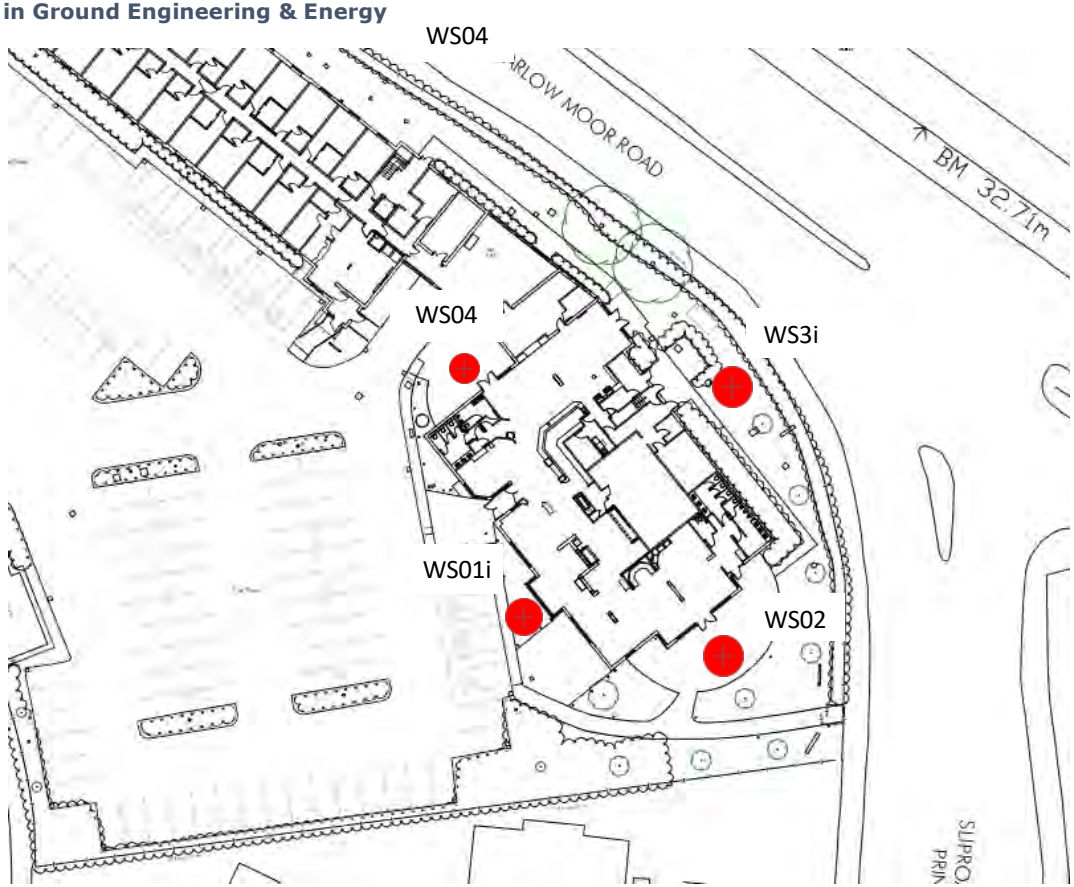
Air Line	AIR
British Telecom	BT
British Telecom Overhead	O/H
CCTV / Cable Television	TV
Communication Cable	COM
Drainage - Combined Water	Ø150
Drainage - Foul Water	Ø150
Drainage - Storm Water	Ø150
Drainage - Unknown Water	Ø150
Drainage - Trade Effluent Water	Ø150
Drainage - Combined Water - Assumed/TFR	Ø150
Drainage - Foul Water - Assumed/TFR	Ø150
Drainage - Storm Water - Assumed/TFR	Ø150
Drainage - Unknown Water - Assumed/TFR	Ø150
Drainage - Trade Effluent Water - Assumed/TFR	Ø150
Drainage - Approximate Pipe Size/Extents	
Earth Cable	ETH
Empty Duct	ED
Electric & Comms	E&C
Electric Low Voltage	LV
Electric High Voltage	HV
Electric - Unknown Voltage	E
Electric Overhead	O/H
Fibre Optic	FO
Fuel Line	FL
Gas Line	GAS
Gauge Line	GL
GPR Line	GPR
Heating Pipes	HTG
Offset Fills	OF
Oil Pipe	OIL
Rising Main	>>
Telecom	TEL
Traffic Light Signals	TL
Trench Scar	
Unknown	UKN
Vapour Recovery	VR
Vent Line	VP
Water	WTR

UTILITY SURVEY INFORMATION

Contracted Survey Area	
Depth to Top of Service (m)	0.40d
End of Trace / Record	EOT
Head of Run	HoR
Weak Signal	WS
Taken From Records	TFR
Off Survey Area	OSA
Back Drop	BD
Silt Level	SL
Flow Level	FL
Above Ground	A/G
Unable to Locate	UTL
Unable to Survey	UTS
Unable to Raise (cover)	UTR
Unable to Trace	UTT
Unable to Survey	
Approximate Chamber Extents	
Assumed Route	AR
Assumed Connection	ACP
Sound Connection	S/C
Sonde Stopped	S/S
No Visible Access	NVA
No Visible Exit	NVE
No Visible Pipes	NVP
No Visible Services	NVS
No Depth Indicated	NDI
Base Level	BL
High Level	HL
Top of Pipe / Top of Valve	ToP / ToV
Landing Level	LL
Rubble Level	RL
No Signal	N/S
Heavily Silted	H/S
Approximate Location (ApL)	
GPR Anomaly	
Multiple Services Route	

Note: WS locations occupy positions for approximately 1 hour.

Specialists in Ground Engineering & Energy



Key	
+	NX Consulting Window Sampler Boreholes (WS) to maximum depths of 2.45 to 5.45mbgl.
i	Denotes NX groundwater/ gas installation

Ref: NX601 Figure 1

Project:

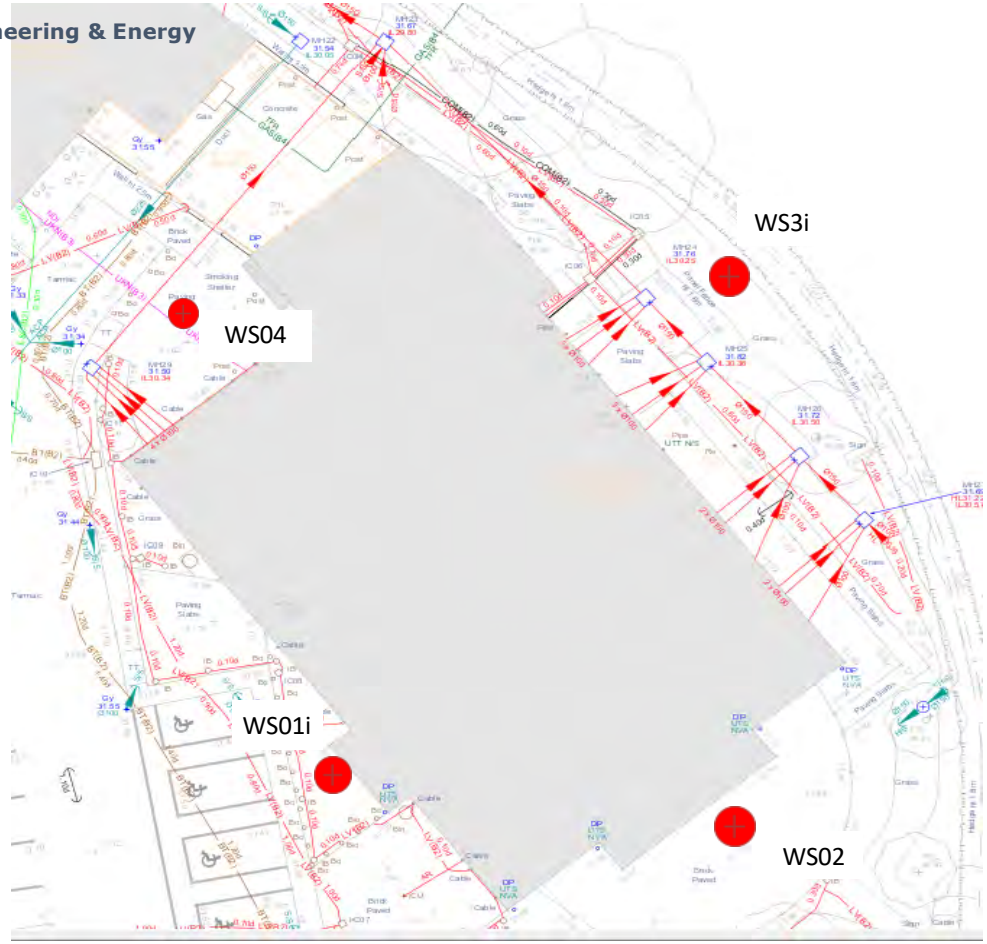
Premier Inn Extension, West Didsbury Derwent Road

Title:

Exploratory Hole Location Plan

Note: WS locations occupy positions for approximately 1 hour.

Specialists in Ground Engineering & Energy



Key	
	NX Consulting Window Sampler Boreholes (WS) to maximum depths of 2.45 to 5.45mbgl.
i	Denotes NX groundwater/ gas installation

Ref: NX601 Figure 1

Project:

Premier Inn Extension, West Didsbury Derwent Road

Title:

Exploratory Hole Location Plan



Plate 1 – Existing Premier Inn Hotel & Brewers Fayre looking Towards Area of Annex Extension



Plate 2 – Eastern Boundary and Area of Annex



Plate 3 – Existing Brewers Fayre to be Demolished Looking Westerly along Northern Boundary



Plate 4 – Existing Brewers Fayre Looking North



Plate 1 – Window Sampler borehole (WS01) 1.0m bgl to 5.00m below ground level (bgl)



Plate 2 – WS02, 1.00m bgl and 5.45m bgl.



Plate 3 – WS03, 1.0m bgl to 5.00m bgl



Plate 4 - WS04, 1.00m bgl and 3.00m bgl.



Plate 5 – WS02, GL to 0.60m bgl Pavement.



Plate 6 – WS02 GL to 1.00m bgl. Hand pit arisings

Appendix B **– Groundsure**

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Order Details

Date: 02/04/2025

Your ref: NX601

Our Ref: GS-FXL-5FU-GOC-FN8

Site Details

Location: 382959 392116

Area: 0.72 ha

Authority: Manchester City Council ↗



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Summary of findings p. 2 >

Aerial image p. 9 >

OS MasterMap site plan p.14 >

Insight User Guide ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	11	1	24	-
17 >	1.2 >	Historical tanks >	1	1	0	4	-
18 >	1.3 >	Historical energy features >	0	0	1	12	-
18	1.4	Historical petrol stations	0	0	0	0	-
19 >	1.5 >	Historical garages >	0	0	0	5	-
19	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
20 >	2.1 >	Historical industrial land uses >	0	13	1	30	-
22 >	2.2 >	Historical tanks >	1	1	0	5	-
23 >	2.3 >	Historical energy features >	0	0	4	20	-
24	2.4	Historical petrol stations	0	0	0	0	-
24 >	2.5 >	Historical garages >	0	0	0	6	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
25	3.1	Active or recent landfill	0	0	0	0	-
25	3.2	Historical landfill (BGS records)	0	0	0	0	-
26	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
26	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
26	3.5	Historical waste sites	0	0	0	0	-
26	3.6	Licensed waste sites	0	0	0	0	-
26 >	3.7 >	Waste exemptions >	0	0	1	13	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
29 >	4.1 >	Recent industrial land uses >	1	1	6	-	-
30 >	4.2 >	Current or recent petrol stations >	0	0	0	2	-
30	4.3	Electricity cables	0	0	0	0	-
31	4.4	Gas pipelines	0	0	0	0	-
31	4.5	Sites determined as Contaminated Land	0	0	0	0	-

31	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
31	4.7	Regulated explosive sites	0	0	0	0	-
31	4.8	Hazardous substance storage/usage	0	0	0	0	-
32	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
32	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
32 >	**4.11 >**	**Licensed pollutant release (Part A(2)/B) >**	0	0	0	1	-
32	4.12	Radioactive Substance Authorisations	0	0	0	0	-
33 >	**4.13 >**	**Licensed Discharges to controlled waters >**	0	0	0	5	-
34	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
34	4.15	Pollutant release to public sewer	0	0	0	0	-
34	4.16	List 1 Dangerous Substances	0	0	0	0	-
34	4.17	List 2 Dangerous Substances	0	0	0	0	-
34	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
35	4.19	Pollution inventory substances	0	0	0	0	-
35	4.20	Pollution inventory waste transfers	0	0	0	0	-
35	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
36 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
38 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
39 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
40	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
40	5.5	Groundwater vulnerability- local information	None (within 0m)				
41 >	**5.6 >**	**Groundwater abstractions >**	0	0	0	0	4
43 >	**5.7 >**	**Surface water abstractions >**	0	0	0	0	2
43	5.8	Potable abstractions	0	0	0	0	0
44	5.9	Source Protection Zones	0	0	0	0	-
44	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m
45	6.1	Water Network (OS MasterMap)	0	0	0	-	-

45	6.2	Surface water features	0	0	0	-	-
46 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
46 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
47 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
48	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
48	7.2	Historical Flood Events	0	0	0	-	-
48	7.3	Flood Defences	0	0	0	-	-
49	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
49	7.5	Flood Storage Areas	0	0	0	-	-
50	7.6	Flood Zone 2	None (within 50m)				
50	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
51 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
53 >	9.1 >	Groundwater flooding >	Moderate (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
54	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
55	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
55	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
55	10.4	Special Protection Areas (SPA)	0	0	0	0	0
55	10.5	National Nature Reserves (NNR)	0	0	0	0	0
56 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	1	2
56 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	2
56	10.8	Biosphere Reserves	0	0	0	0	0
57	10.9	Forest Parks	0	0	0	0	0
57	10.10	Marine Conservation Zones	0	0	0	0	0
57 >	10.11 >	Green Belt >	0	0	0	1	1
57	10.12	Proposed Ramsar sites	0	0	0	0	0

58	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
58	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
58	10.15	Nitrate Sensitive Areas	0	0	0	0	0
58	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
59	10.17	SSSI Impact Risk Zones	0	-	-	-	-
59	10.18	SSSI Units	0	0	0	0	0
Page	Section	**Visual and cultural designations** >	On site	0-50m	50-250m	250-500m	500-2000m
60	11.1	World Heritage Sites	0	0	0	-	-
61	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
61	11.3	National Parks	0	0	0	-	-
61 >	**11.4** >	**Listed Buildings** >	0	0	3	-	-
62	11.5	Conservation Areas	0	0	0	-	-
62	11.6	Scheduled Ancient Monuments	0	0	0	-	-
62 >	**11.7** >	**Registered Parks and Gardens** >	0	1	0	-	-
Page	Section	**Agricultural designations** >	On site	0-50m	50-250m	250-500m	500-2000m
63 >	**12.1** >	**Agricultural Land Classification** >	Urban (within 250m)				
64	12.2	Open Access Land	0	0	0	-	-
64	12.3	Tree Felling Licences	0	0	0	-	-
64	12.4	Environmental Stewardship Schemes	0	0	0	-	-
64	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	**Habitat designations** >	On site	0-50m	50-250m	250-500m	500-2000m
65 >	**13.1** >	**Priority Habitat Inventory** >	0	0	10	-	-
66	13.2	Habitat Networks	0	0	0	-	-
66	13.3	Open Mosaic Habitat	0	0	0	-	-
66	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	**Geology 1:10,000 scale** >	On site	0-50m	50-250m	250-500m	500-2000m
67 >	**14.1** >	**10k Availability** >	Identified (within 500m)				
68 >	**14.2** >	**Artificial and made ground (10k)** >	0	0	0	2	-
69 >	**14.3** >	**Superficial geology (10k)** >	1	0	0	2	-

70	14.4	Landslip (10k)	0	0	0	0	-
71 >	14.5 >	Bedrock geology (10k) >	1	0	1	0	-
72 >	14.6 >	Bedrock faults and other linear features (10k) >	0	0	1	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
73 >	15.1 >	50k Availability >	Identified (within 500m)				
74	15.2	Artificial and made ground (50k)	0	0	0	0	-
74	15.3	Artificial ground permeability (50k)	0	0	-	-	-
75 >	15.4 >	Superficial geology (50k) >	1	0	0	2	-
76 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
76	15.6	Landslip (50k)	0	0	0	0	-
76	15.7	Landslip permeability (50k)	None (within 50m)				
77 >	15.8 >	Bedrock geology (50k) >	1	0	1	0	-
78 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
78 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	1	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
79 >	16.1 >	BGS Boreholes >	10	4	7	-	-
Page	Section	Natural ground subsidence >					
81 >	17.1 >	Shrink swell clays >	Negligible (within 50m)				
82 >	17.2 >	Running sands >	Very low (within 50m)				
83 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
84 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
85 >	17.5 >	Landslides >	Very low (within 50m)				
86 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
88	18.1	BritPits	0	0	0	0	-
89 >	18.2 >	Surface ground workings >	0	13	1	-	-
89	18.3	Underground workings	0	0	0	0	0
90	18.4	Underground mining extents	0	0	0	0	-
90	18.5	Historical Mineral Planning Areas	0	0	0	0	-

90	18.6	Non-coal mining	0	0	0	0	0
90 >	18.7 >	JPB mining areas >	Identified (within 0m)				
91	18.8	The Coal Authority non-coal mining	0	0	0	0	-
91	18.9	Researched mining	0	0	0	0	-
91	18.10	Mining record office plans	0	0	0	0	-
91	18.11	BGS mine plans	0	0	0	0	-
92	18.12	Coal mining	None (within 0m)				
92	18.13	Brine areas	None (within 0m)				
92	18.14	Gypsum areas	None (within 0m)				
92	18.15	Tin mining	None (within 0m)				
92	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
93	19.1	Natural cavities	0	0	0	0	-
93	19.2	Mining cavities	0	0	0	0	0
93	19.3	Reported recent incidents	0	0	0	0	-
93	19.4	Historical incidents	0	0	0	0	-
Page	Section	Radon >					
95 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
97 >	21.1 >	BGS Estimated Background Soil Chemistry >	2	0	-	-	-
97	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
97	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
98	22.1	Underground railways (London)	0	0	0	-	-
98	22.2	Underground railways (Non-London)	0	0	0	-	-
98	22.3	Railway tunnels	0	0	0	-	-
98	22.4	Historical railway and tunnel features	0	0	0	-	-
98	22.5	Royal Mail tunnels	0	0	0	-	-
99	22.6	Historical railways	0	0	0	-	-

99	22.7	Railways	0	0	0	-	-
99	22.8	Crossrail 2	0	0	0	0	-
99	22.9	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 07/04/2023

Site Area: 0.72ha

Recent site history - 2019 aerial photograph



Capture Date: 22/04/2019

Site Area: 0.72ha

Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.72ha

Recent site history - 2009 aerial photograph



Capture Date: 02/06/2009

Site Area: 0.72ha

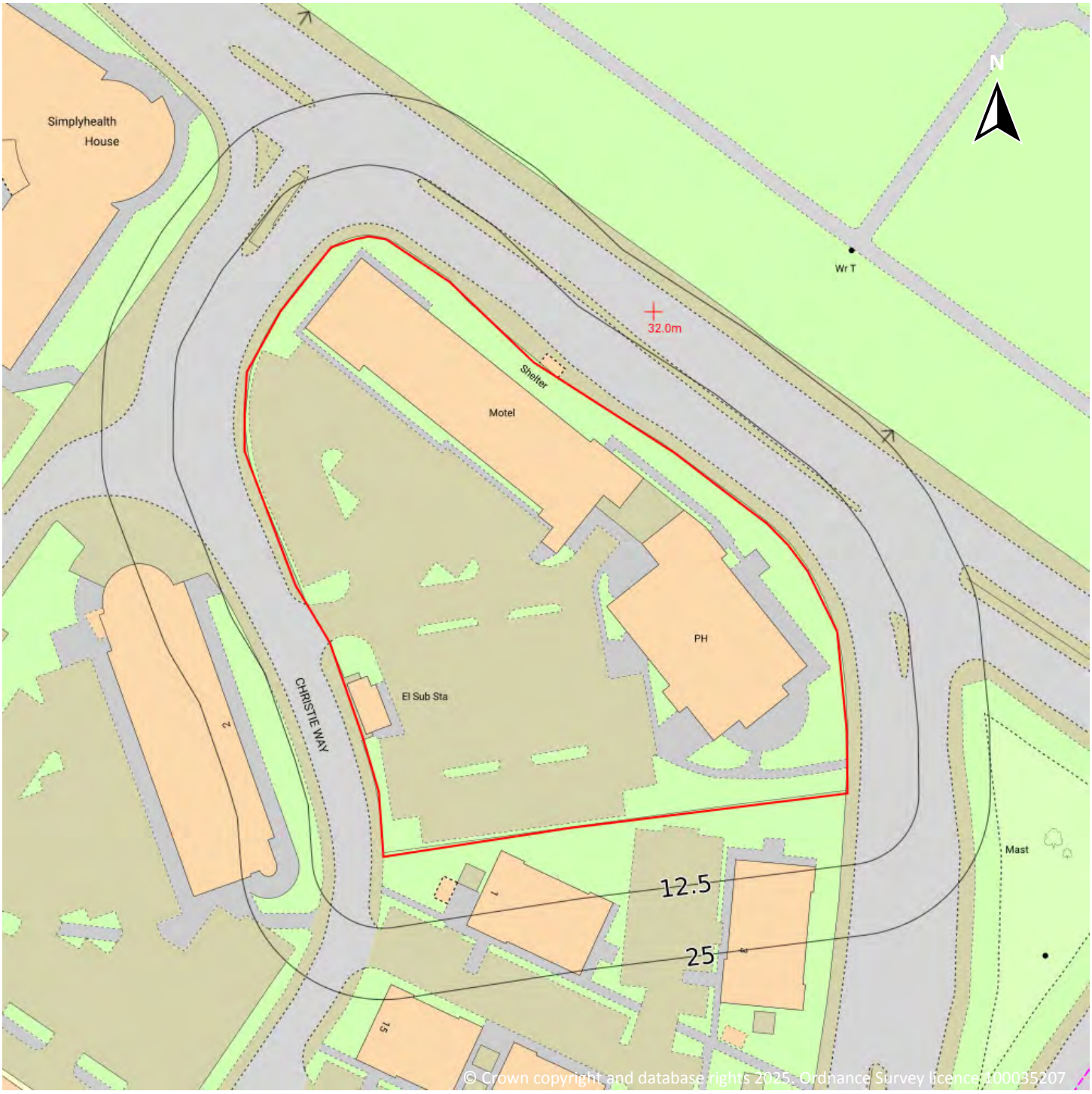
Recent site history - 2000 aerial photograph



Capture Date: 27/06/2000

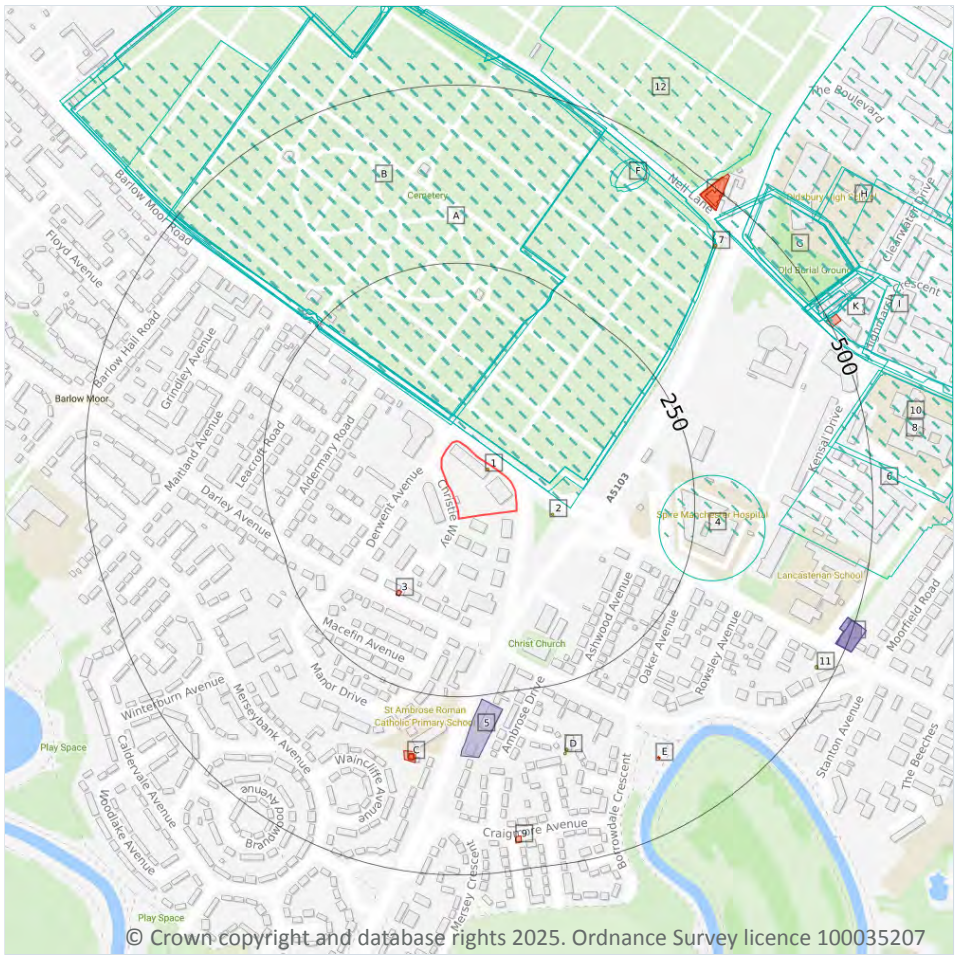
Site Area: 0.72ha

OS MasterMap site plan



Site Area: 0.72ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	36

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
A	16m N	Cemetery	1934	942004

ID	Location	Land use	Dates present	Group ID
A	16m N	Cemetery	1938	929222
A	24m NW	Cemetery	1916 - 1923	1001298
A	26m N	Cemetery	1981	900754
A	26m N	Cemetery	1988	932394
A	26m N	Cemetery	1966	1009497
A	26m N	Cemetery	1955	867226
A	31m NW	Cemetery	1905 - 1908	993813
B	34m NW	Cemetery	1892	892445
A	36m N	Cemetery	1938	995749
B	37m N	Cemetery	1911	918767
4	201m E	Bus Station	1988	856989
6	369m E	Unspecified Workhouse	1916 - 1923	1001275
F	416m NE	Unspecified Pit	1916 - 1923	930721
F	419m NE	Unspecified Pit	1938	911847
8	443m E	Unspecified Workhouse	1905	910318
10	454m E	Unspecified Workhouse	1911	976573
G	461m NE	Burial Ground	1916	864584
G	464m NE	Cemetery	1892	812000
G	464m NE	Burial Ground	1905 - 1911	896008
G	464m NE	Burial Ground	1923	959779
G	469m NE	Burial Ground	1938	981410
H	470m NE	Hospital	1955 - 1981	918004
H	470m NE	Hospital	1988	943856
I	475m NE	Hospital	1938	896098
G	475m NE	Old Burial Ground	1966	810408
12	475m NE	Cemetery	1955	811999
I	477m NE	Hospital	1934	895161
K	478m NE	Fever Hospital	1916	936040

ID	Location	Land use	Dates present	Group ID
K	479m NE	Fever Hospital	1905 - 1911	899371
K	479m NE	Fever Hospital	1923	952453
K	479m NE	Hospital	1892	1003155
K	492m NE	Mortuary	1905	892602
K	492m NE	Mortuary	1892	999230
K	497m NE	Mortuary	1923	940590
K	497m NE	Fever Hospital	1938	916635

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**6**

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
1	**On site**	**Unspecified Tank**	**1933**	**118941**
2	49m E	Unspecified Tank	1933	118942
D	340m S	Unspecified Tank	1881	123853
D	346m S	Unspecified Tank	1922 - 1935	132154
7	435m NE	Unspecified Tank	1933	118936
11	472m SE	Unspecified Tank	1935	121818

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	13

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
3	130m SW	Electricity Substation	1982 - 1992	86669
C	333m S	Electricity Substation	1982	88852
C	336m S	Electricity Substation	1957	80273
C	336m S	Electricity Substation	1986 - 1992	86764
C	336m S	Electricity Substation	1955	92946
E	398m SE	Electricity Substation	1992	76107
E	399m SE	Electricity Substation	1983	77030
9	453m S	Gas Governor	1983 - 1992	75120
J	475m NE	Electricity Substation	1982	69430
J	476m NE	Electricity Substation	1992	70408
J	476m NE	Electricity Substation	1955 - 1956	69656
J	480m NE	Electricity Substation	1975	72484
K	495m NE	Electricity Substation	1955 - 1991	71689

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	5

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
5	255m S	Garage	1955 - 1957	24205
L	482m E	Garage	1992	25963
L	483m E	Garage	1983	26819
L	487m SE	Garage	1955	30205
L	487m SE	Garage	1956	29922

This data is sourced from Ordnance Survey / Groundsure.

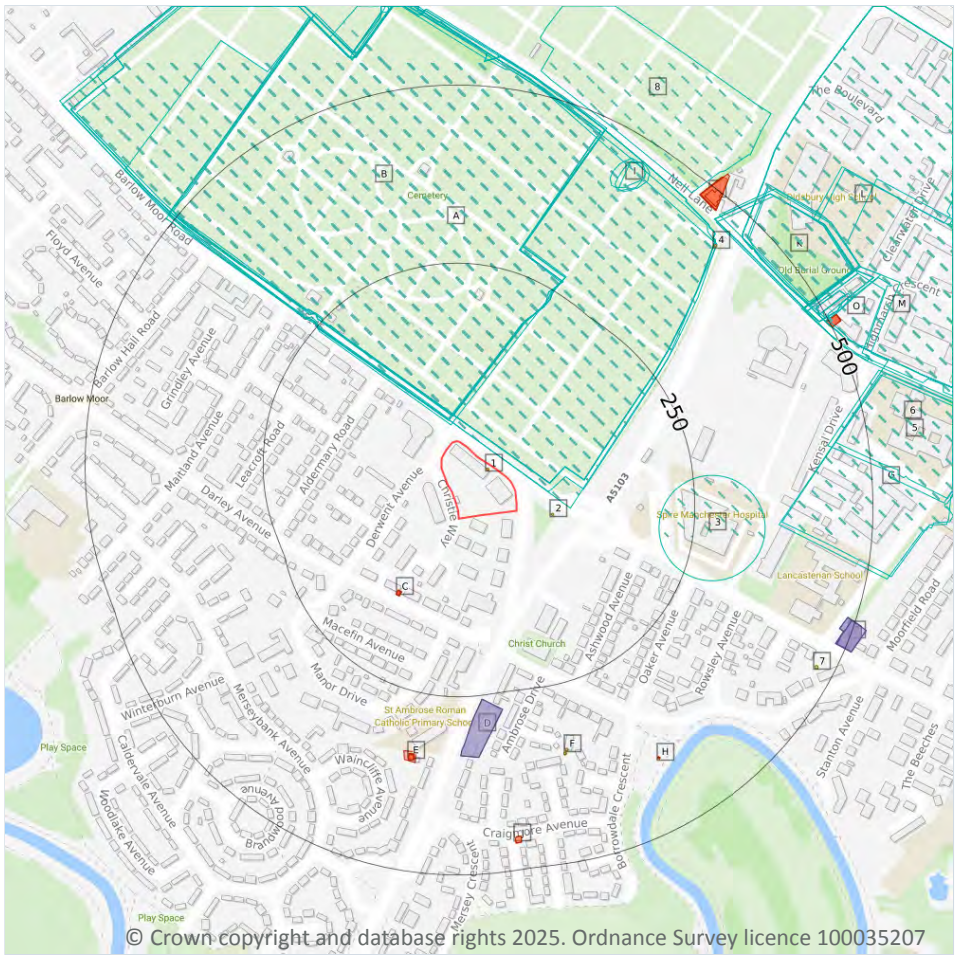
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



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2.1 Historical industrial land uses

Records within 500m	44

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

Features are displayed on the Past land use - un-grouped map on **page 20 >**

ID	Location	Land Use	Date	Group ID
A	16m N	Cemetery	1934	942004
A	16m N	Cemetery	1938	929222
A	24m NW	Cemetery	1916	1001298

ID	Location	Land Use	Date	Group ID
A	26m N	Cemetery	1981	900754
A	26m N	Cemetery	1966	1009497
A	26m N	Cemetery	1988	932394
A	26m N	Cemetery	1955	867226
A	31m NW	Cemetery	1923	1001298
A	31m NW	Cemetery	1905	993813
B	34m NW	Cemetery	1892	892445
A	36m N	Cemetery	1938	995749
B	37m N	Cemetery	1911	918767
A	38m N	Cemetery	1908	993813
3	201m E	Bus Station	1988	856989
G	369m E	Unspecified Workhouse	1916	1001275
G	373m E	Unspecified Workhouse	1923	1001275
I	416m NE	Unspecified Pit	1916	930721
I	419m NE	Unspecified Pit	1938	911847
I	419m NE	Unspecified Pit	1923	930721
5	443m E	Unspecified Workhouse	1905	910318
6	454m E	Unspecified Workhouse	1911	976573
K	461m NE	Burial Ground	1916	864584
K	464m NE	Burial Ground	1923	959779
K	464m NE	Burial Ground	1905	896008
K	464m NE	Cemetery	1892	812000
K	469m NE	Burial Ground	1938	981410
L	470m NE	Hospital	1955	918004
L	470m NE	Hospital	1981	918004
L	470m NE	Hospital	1966	918004
L	470m NE	Hospital	1988	943856
K	472m NE	Burial Ground	1911	896008

ID	Location	Land Use	Date	Group ID
M	475m NE	Hospital	1938	896098
K	475m NE	Old Burial Ground	1966	810408
8	475m NE	Cemetery	1955	811999
M	477m NE	Hospital	1934	895161
O	478m NE	Fever Hospital	1916	936040
O	479m NE	Fever Hospital	1905	899371
O	479m NE	Hospital	1892	1003155
O	479m NE	Fever Hospital	1923	952453
O	489m NE	Fever Hospital	1911	899371
O	492m NE	Mortuary	1905	892602
O	492m NE	Mortuary	1892	999230
O	497m NE	Mortuary	1923	940590
O	497m NE	Fever Hospital	1938	916635

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m **7**

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

Features are displayed on the Past land use - un-grouped map on **page 20 >**

ID	Location	Land Use	Date	Group ID
1	**On site**	**Unspecified Tank**	**1933**	**118941**
2	49m E	Unspecified Tank	1933	118942
F	340m S	Unspecified Tank	1881	123853
F	346m S	Unspecified Tank	1922	132154
F	346m S	Unspecified Tank	1935	132154
4	435m NE	Unspecified Tank	1933	118936
7	472m SE	Unspecified Tank	1935	121818

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	24

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

Features are displayed on the Past land use - un-grouped map on **page 20 >**

ID	Location	Land Use	Date	Group ID
C	130m SW	Electricity Substation	1986	86669
C	130m SW	Electricity Substation	1992	86669
C	130m SW	Electricity Substation	1992	86669
C	131m SW	Electricity Substation	1982	86669
E	333m S	Electricity Substation	1982	88852
E	336m S	Electricity Substation	1957	80273
E	336m S	Electricity Substation	1986	86764
E	336m S	Electricity Substation	1955	92946
E	338m S	Electricity Substation	1992	86764
E	338m S	Electricity Substation	1992	86764
H	398m SE	Electricity Substation	1992	76107
H	399m SE	Electricity Substation	1983	77030
J	453m S	Gas Governor	1992	75120
J	454m S	Gas Governor	1983	75120
N	475m NE	Electricity Substation	1982	69430
N	476m NE	Electricity Substation	1992	70408
N	476m NE	Electricity Substation	1955	69656
N	476m NE	Electricity Substation	1956	69656
N	480m NE	Electricity Substation	1975	72484
O	495m NE	Electricity Substation	1956	71689
O	495m NE	Electricity Substation	1955	71689

ID	Location	Land Use	Date	Group ID
O	496m NE	Electricity Substation	1980	71689
O	496m NE	Electricity Substation	1982	71689
O	496m NE	Electricity Substation	1991	71689

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	**0**

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

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	**6**

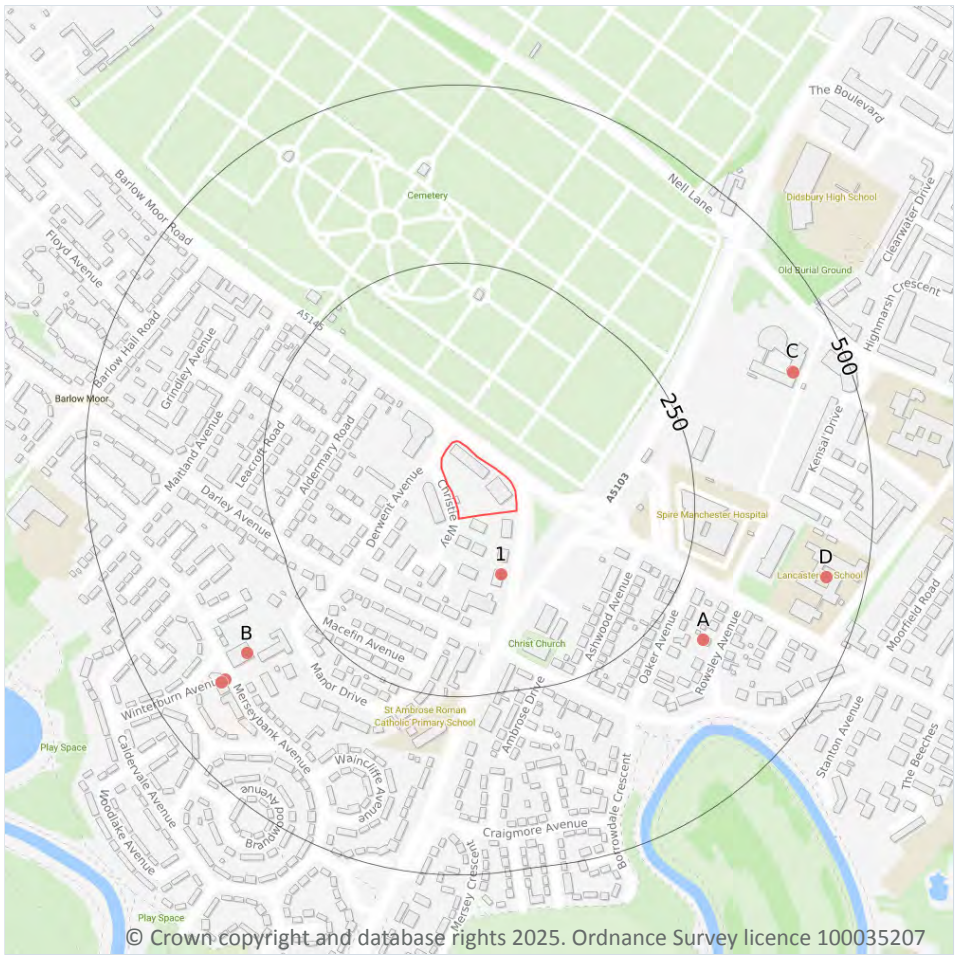
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 20 >**

ID	Location	Land Use	Date	Group ID
D	255m S	Garage	1955	24205
D	255m S	Garage	1957	24205
P	482m E	Garage	1992	25963
P	483m E	Garage	1983	26819
P	487m SE	Garage	1955	30205
P	487m SE	Garage	1956	29922

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

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

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

3.5 Historical waste sites

Records within 500m	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

3.7 Waste exemptions

Records within 500m	14

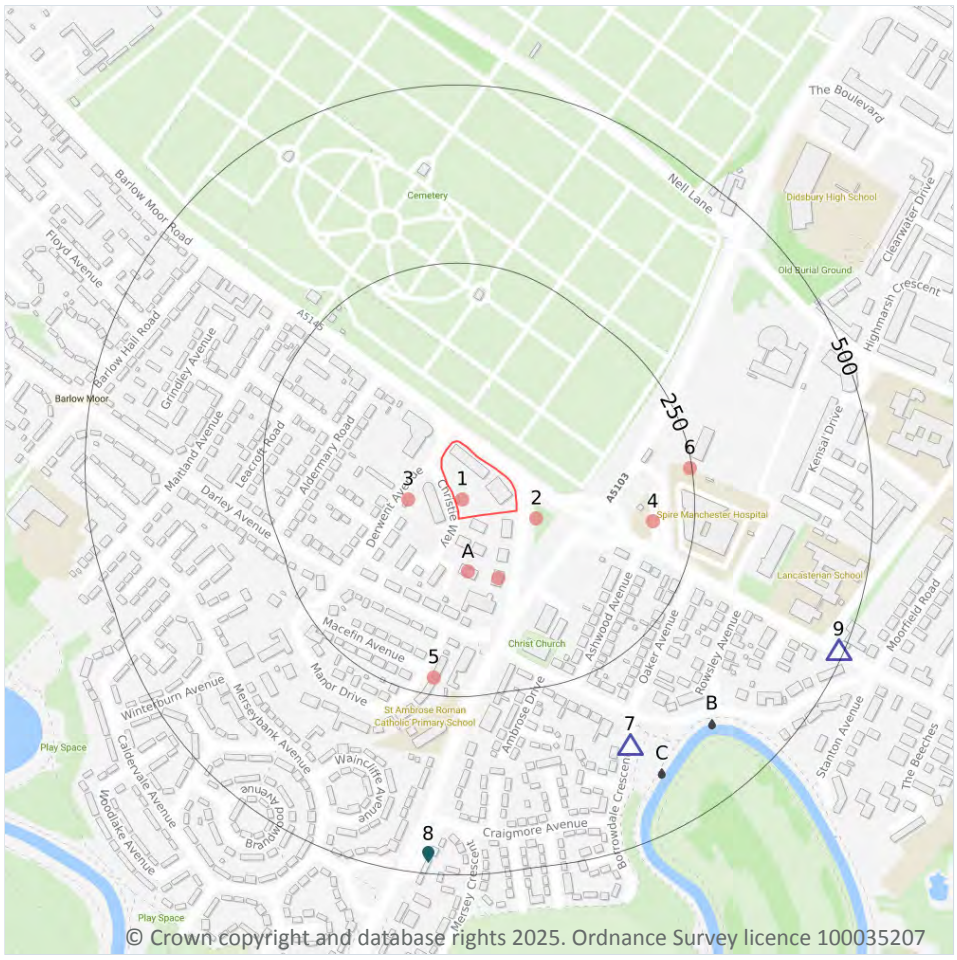
Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 25 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	86m S	Christie Fields Centre Joshua House Christie Fields Office Park M21 7qy	EPR/JE5943NF/A001	Using waste exemption	Non-agricultural waste only	Use of waste in the construction of entertainment or educational installations etc
A	319m SE	8 Rowsley Avenue Manchester M20 2xd	EPR/PF0804GL/A001	Treating waste exemption	Non-agricultural waste only	Sorting mixed waste
A	319m SE	8 Rowsley Avenue Manchester M20 2xd	EPR/PF0804GL/A001	Treating waste exemption	Non-agricultural waste only	Recovery of scrap metal
B	353m SW	-	WEX360646	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	398m SW	-	WEX399175	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	405m SW	30, Mersey Bank Avenue, Manchester, M21 7nn	WEX382459	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	405m SW	30, Mersey Bank Avenue, Manchester, M21 7nn	WEX252969	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	423m E	Sir William Siemens House Princess Road Manchester M20 2ur	EPR/QF0835JC/A001	Storing waste exemption	Both agricultural and non-agricultural waste	Storage of waste in a secure place
C	423m E	Sir William Siemens House Princess Road Manchester M20 2ur	EPR/QF0835JC/A001	Treating waste exemption	Both agricultural and non-agricultural waste	Aerobic composting and associated prior treatment
C	423m E	Sir William Siemens House Princess Road Manchester M20 2ur	EPR/QF0835JC/A001	Using waste exemption	Both agricultural and non-agricultural waste	Spreading waste on non-agricultural land to confer benefit
C	423m E	Sir William Siemens House, Princess Road, Manchester, M20 2ur	WEX029219	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
C	423m E	Sir William Siemens House, Princess Road, Manchester, M20 2ur	WEX029219	Using waste exemption	Not on a farm	Spreading waste on non-agricultural land to confer benefit
D	444m E	Buccleuch Lodge, Withington Community Hospital, Elizabeth Slinger Rd, Manchester, M20 2xa	WEX271278	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
D	445m E	-	WEX412695	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

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

4 Current industrial land use



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4.1 Recent industrial land uses

Records within 250m	8

Current potentially contaminative industrial sites.

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

ID	Location	Company	Address	Activity	Category
1	**On site**	**Electricity Sub Station**	**Greater Manchester, M21**	**Electrical Features**	**Infrastructure and Facilities**
2	30m SE	Mast (Telecommunication)	Greater Manchester, M21	Telecommunications Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
3	59m W	Electricity Sub Station	Greater Manchester, M21	Electrical Features	Infrastructure and Facilities
A	76m S	Nationwide Vehicle Contracts	9, Christie Way, Manchester, Greater Manchester, M21 7QY	Vehicle Hire and Rental	Hire Services
A	91m S	Number Plates Online	7, Christie Way, Manchester, Greater Manchester, M21 7QY	Vehicle Components	Industrial Products
4	192m E	Bus Station	Greater Manchester, M20	Bus and Coach Stations, Depots and Companies	Public Transport, Stations and Infrastructure
5	226m S	Magic Moments	45, Manor Drive, Manchester, Greater Manchester, M21 7QG	Baking and Confectionery	Foodstuffs
6	247m E	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m **2**

Open, closed, under development and obsolete petrol stations.

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

ID	Location	Company	Address	LPG	Status
7	364m SE	OBSOLETE	Princess Parkway, West Didsbury, Manchester, Greater Manchester, M20 2LT	Not Applicable	Obsolete
9	492m SE	GULF	156, Barlow Moor Road, West Didsbury, Manchester, Greater Manchester, M20 2GE	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m **0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

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

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

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

Records within 500m	1

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

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

ID	Location	Address	Details	
8	473m S	Parkway Service Station, Princess Parkway, West Didsbury, M20 1HD	Process: Unloading of Petrol into Storage at Service Stations Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	5

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

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

ID	Location	Address	Details	
B	405m SE	BARLOWMOORROAD,ROWSLEY AVENUECSO281C9,DIDSBURY,GREATERMANCHESTER,M202XF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0244 Permit Version: 2 Receiving Water: RIVER MERSEY	Status: CONSENT CURRENTLY UNDER APPEAL Issue date: 16/02/2005 Effective Date: 31/03/2007 Revocation Date: 24/03/2010
B	405m SE	BARLOWMOORROAD,ROWSLEY AVENUECSO281C9,DIDSBURY,GREATERMANCHESTER,M202XF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0244 Permit Version: 1 Receiving Water: RIVER MERSEY	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 01/01/1995 Effective Date: 01/01/1995 Revocation Date: 30/03/2007
C	421m SE	BARLOWMOORROAD,ROWSLEY AVENUECSO281C9,DIDSBURY,GREATERMANCHESTER,M202XF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0244 Permit Version: 3 Receiving Water: RIVER MERSEY	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 25/03/2010 Effective Date: 25/03/2010 Revocation Date: 30/09/2011
C	421m SE	BARLOWMOORROAD,ROWSLEY AVENUECSO281C9,DIDSBURY,GREATERMANCHESTER,M202XF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0244 Permit Version: 4 Receiving Water: RIVER MERSEY	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 25/03/2010 Effective Date: 01/10/2011 Revocation Date: 19/08/2018
C	421m SE	BARLOWMOORROAD,ROWSLEY AVENUECSO281C9,DIDSBURY,GREATERMANCHESTER,M202XF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01MAN0244 Permit Version: 5 Receiving Water: RIVER MERSEY	Status: VARIED UNDER EPR 2010 Issue date: 20/08/2018 Effective Date: 20/08/2018 Revocation Date: -

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	0

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

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

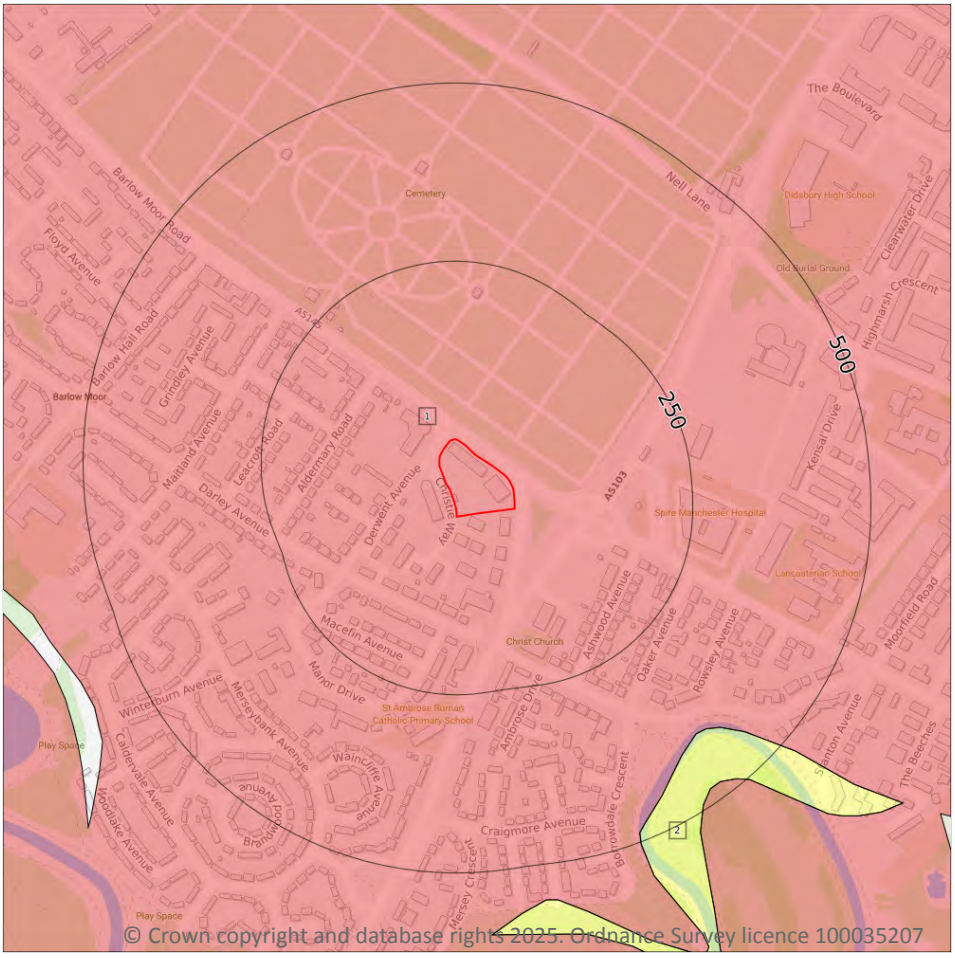
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



5.1 Superficial aquifer

Records within 500m	2

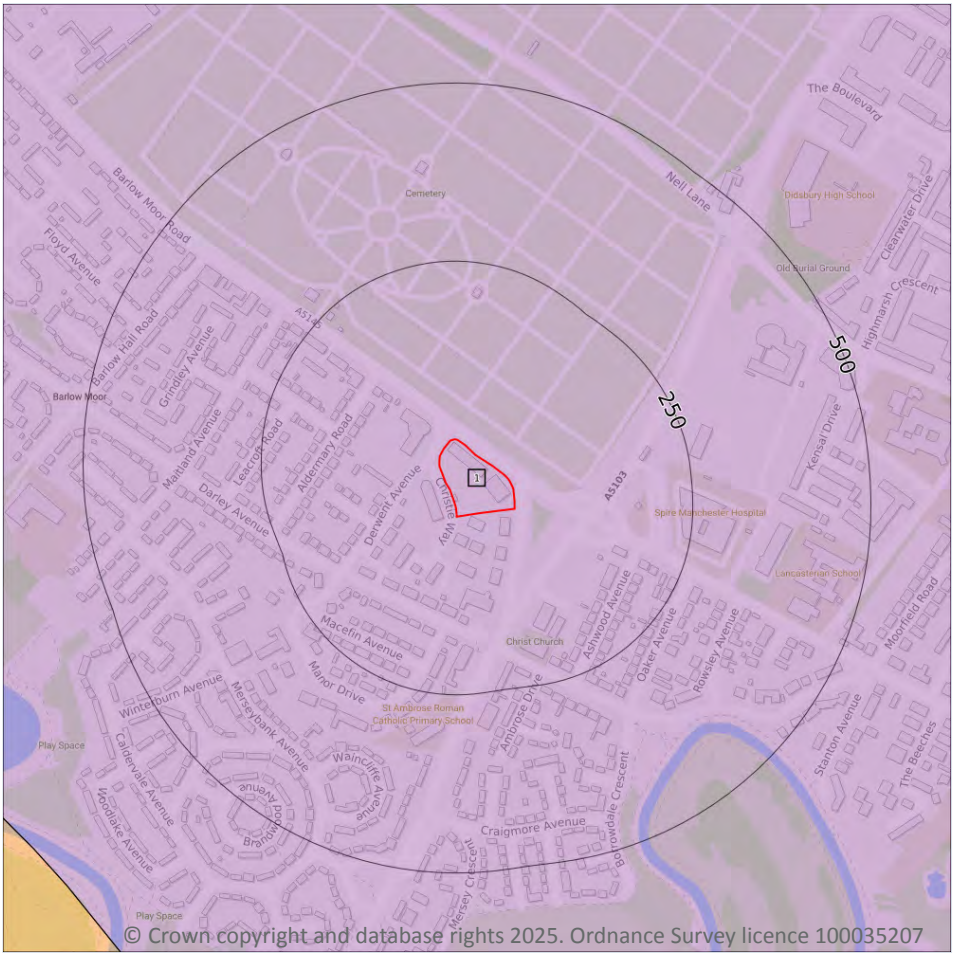
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 36 >**

ID	Location	Designation	Description
1	**On site**	**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**
2	406m SE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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

Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m	1

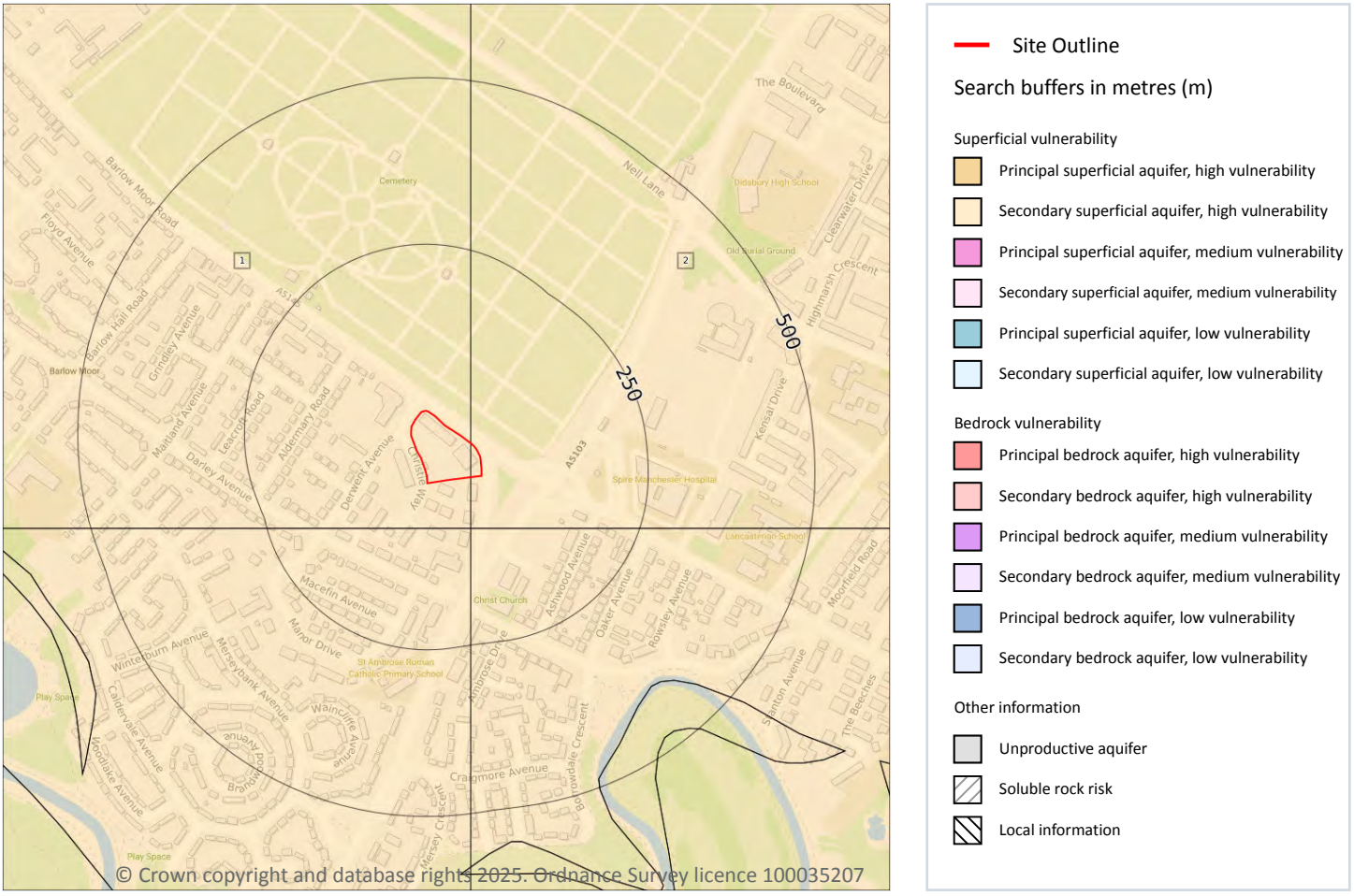
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 38 >**

ID	Location	Designation	Description
1	**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**

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

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m	2

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

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

Features are displayed on the Groundwater vulnerability map on **page 39 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Mixed
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Intergranular

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

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

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

5.5 Groundwater vulnerability- local information

Records on site	0

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

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

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	4

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 41 >**

ID	Location	Details	
-	682m W	Status: Active Licence No: 2569015015 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT CHORLTON-CUM-HARDY GOLF CLUB Data Type: Point Name: CHORLTON CUM HARDY GOLF CO LTD Easting: 382230 Northing: 392100	Annual Volume (m^3): 8500 Max Daily Volume (m^3): 70 Original Application No: 7427 Original Start Date: 04/09/1998 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2019 Version End Date: -
-	1860m SE	Status: Active Licence No: 2569015006 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIDSBURY GOLF CLUB NORTHENDEN WYTHENSHAWE Data Type: Point Name: DIDSBURY GOLF CLUB LTD Easting: 383950 Northing: 390470	Annual Volume (m^3): 9092 Max Daily Volume (m^3): 68.19 Original Application No: 1053 Original Start Date: 22/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
-	1860m SE	Status: Historical Licence No: 2569015006 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: "BOREHOLE AT DIDSBURY GOLF CLUB, NORTHENDEN, WYTHENSHAWE," Data Type: Point Name: DIDSBURY GOLF CLUB LTD Easting: 383950 Northing: 390470	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/12/1992 Version End Date: -
-	1860m SE	Status: Historical Licence No: 2569015006 Details: Spray Irrigation - Direct Direct Source: Ground Water - North West Region Point: BOREHOLE AT DIDSBURY GOLF CLUB, NORTHENDEN, WYTHENSHAWE Data Type: Point Name: DIDSBURY GOLF CLUB LTD Easting: 383950 Northing: 390470	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 22/02/1966 Expiry Date: - Issue No: 100 Version Start Date: 24/12/1992 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	2

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 41 >**

ID	Location	Details	
-	1086m S	Status: Historical Licence No: 2569015016 Details: Dust suppression Direct Source: Surface, Non-Tidal - North West Region Point: RIVER MERSEY AT TRAFFORD, MANCHESTER Data Type: Point Name: AMEC / ALFRED MCALPINE JV Easting: 382650 Northing: 391020	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/11/2003 Expiry Date: 31/12/2006 Issue No: 1 Version Start Date: 28/11/2003 Version End Date: -
-	1086m S	Status: Historical Licence No: 2569015016 Details: General Washing/Process Washing Direct Source: Surface, Non-Tidal - North West Region Point: RIVER MERSEY AT TRAFFORD, MANCHESTER Data Type: Point Name: AMEC / ALFRED MCALPINE JV Easting: 382650 Northing: 391020	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 28/11/2003 Expiry Date: 31/12/2006 Issue No: 1 Version Start Date: 28/11/2003 Version End Date: -

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology



6.1 Water Network (OS MasterMap)

Records within 250m	0

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

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	0

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

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1

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

Features are displayed on the Hydrology map on **page 45 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Chorlton Brook (Princess Parkway to Mersey)**	**GB112069061040**	**Bollin Dean Mersey Upper**	**Mersey Upper**

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

6.4 WFD Surface water bodies

Records identified	1

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

Features are displayed on the Hydrology map on **page 45 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1256m N	River	Chorlton Brook (Princess Parkway to Mersey)	GB112069061040 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	1

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

Features are displayed on the Hydrology map on **page 45 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	**On site**	**Manchester and East Cheshire Permo-Triassic Sandstone Aquifers**	**GB41201G101100** ↗	**Poor**	**Poor**	**Poor**	**2019**

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

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

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

7.2 Historical Flood Events

Records within 250m	0

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

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

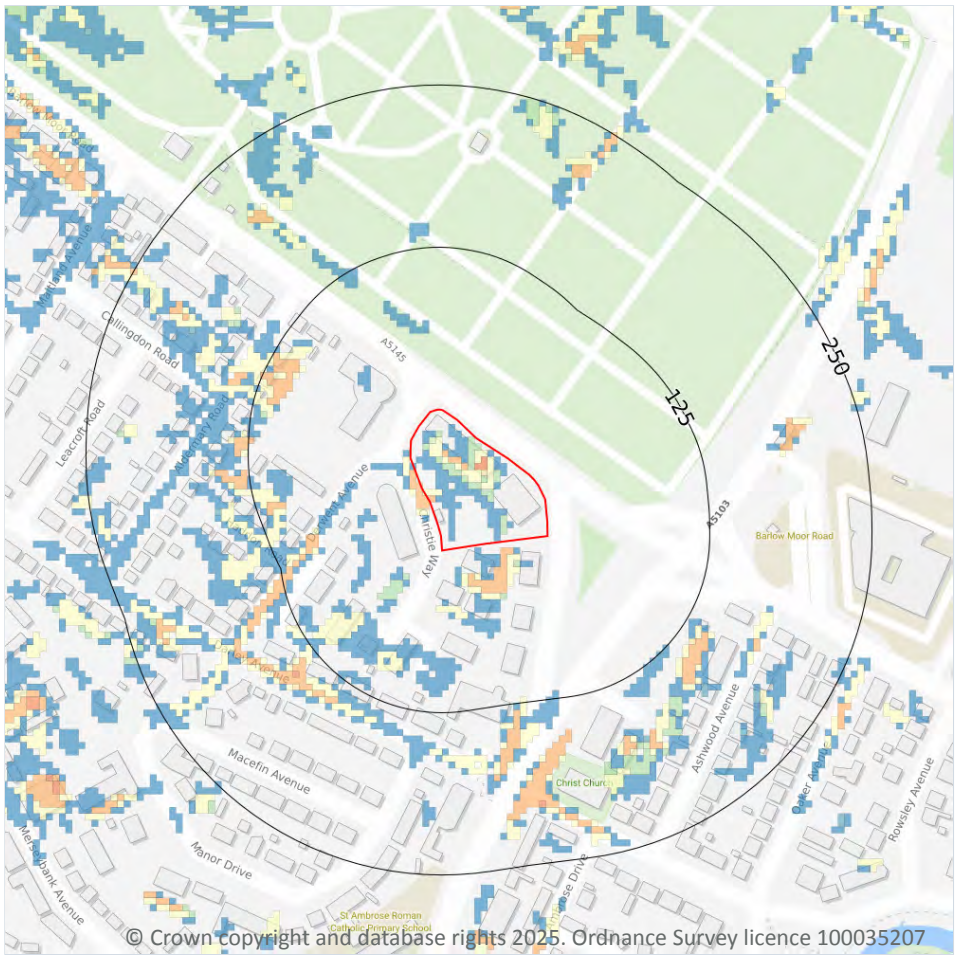
7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding



Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 51 >**

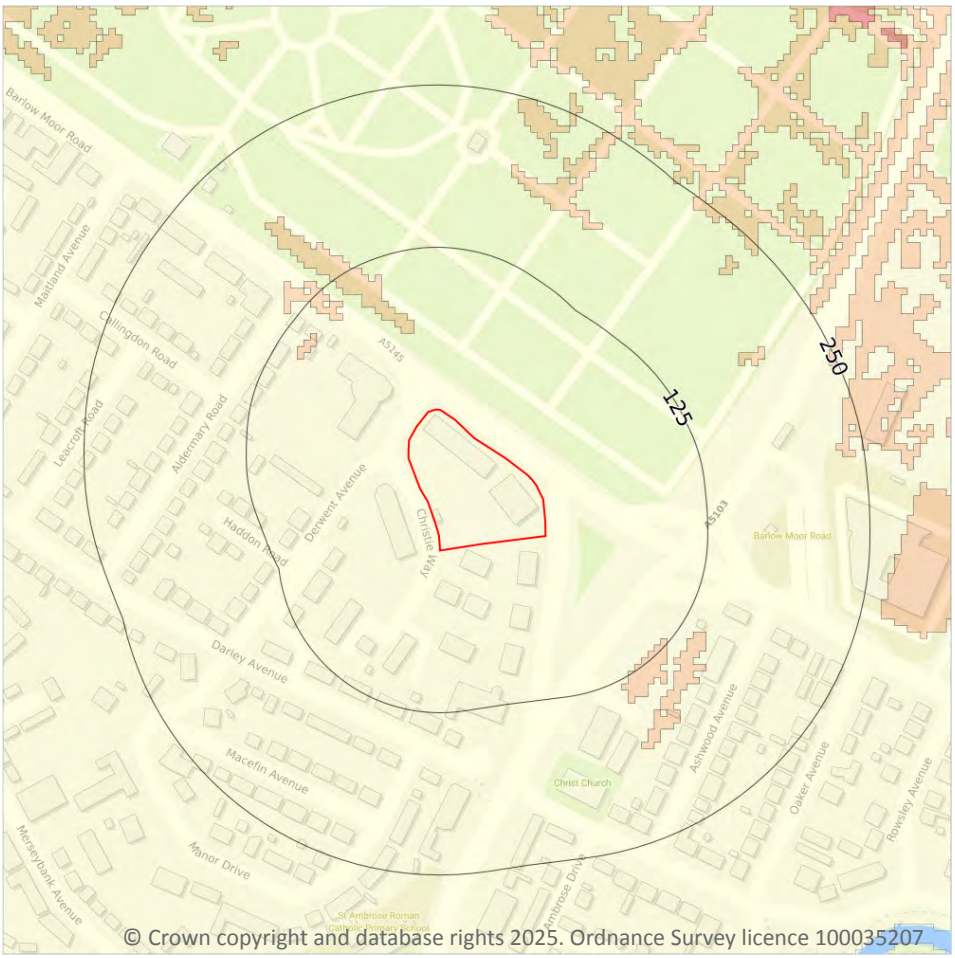
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

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

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

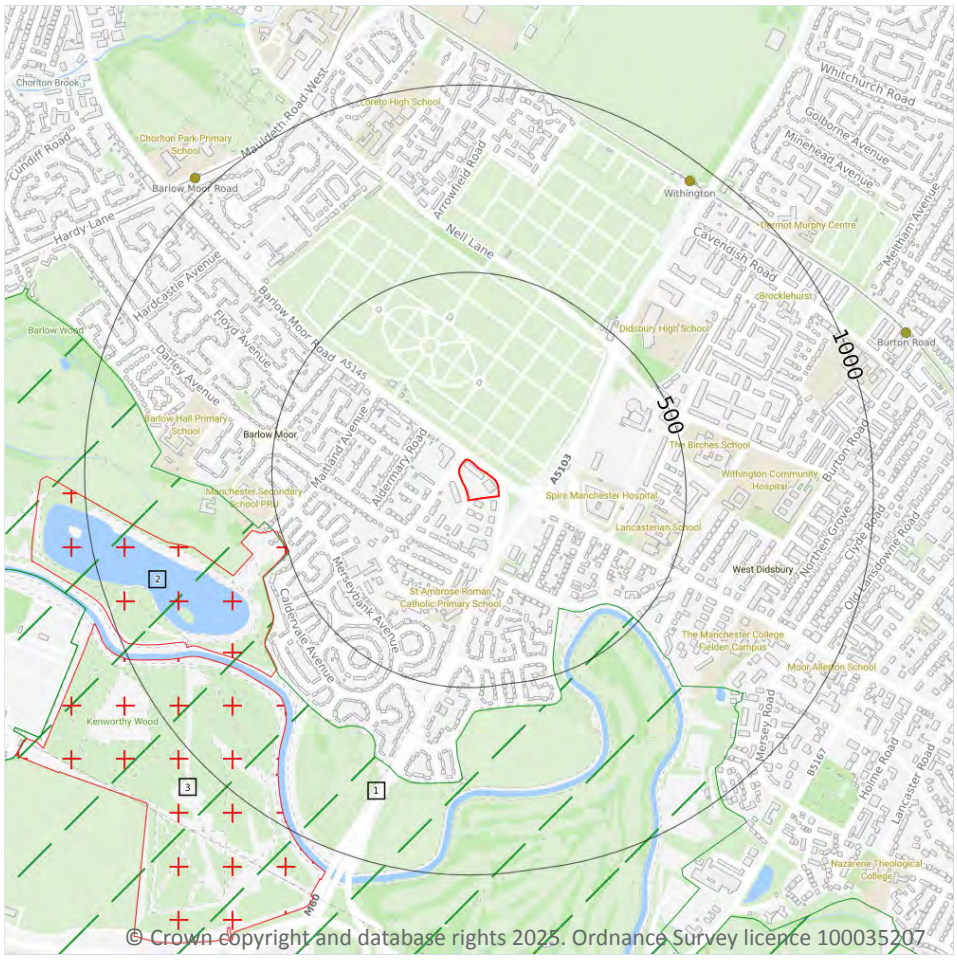
Highest risk on site	**Moderate**
Highest risk within 50m	**Moderate**

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

Features are displayed on the Groundwater flooding map on **page 53 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	3

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

Features are displayed on the Environmental designations map on **page 54 >**

ID	Location	Name	Data source
2	498m W	Chorlton Water Park	Natural England
3	726m SW	Kenworthy Woods	Natural England
-	1994m NW	Chorlton Ees & Ivy Green	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	2

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

Features are displayed on the Environmental designations map on **page 54 >**

ID	Location	Name	Woodland Type
-	1345m N	Hough End Clough	Ancient & Semi-Natural Woodland
-	1471m N	Hough End Clough	Ancient & Semi-Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	2

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

Features are displayed on the Environmental designations map on **page 54 >**

ID	Location	Name	Local Authority name
1	339m SE	Merseyside and Greater Manchester Green Belt	Manchester
4	1060m W	Merseyside and Greater Manchester Green Belt	Trafford

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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

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

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site	0

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

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

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

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

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	3

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

Features are displayed on the Visual and cultural designations map on **page 60 >**

ID	Location	Name	Grade	Reference Number	Listed date
2	197m S	Christ Church	II	1247379	17/09/1992
3	210m N	Roman Catholic Chapel In Manchester Southern Cemetery	II	1207899	06/06/1994
4	242m NW	Entrance Lodge To Manchester Southern Cemetery	II	1283073	06/06/1994

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

11.7 Registered Parks and Gardens

Records within 250m	1

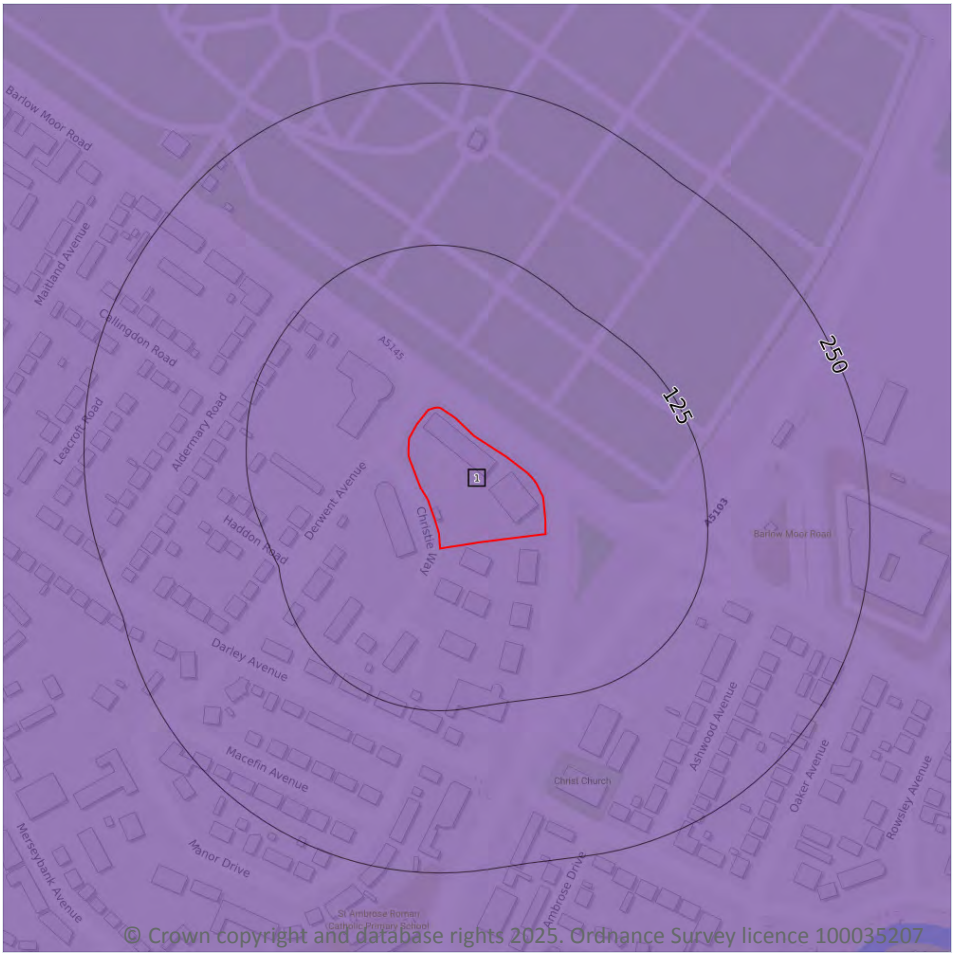
Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the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

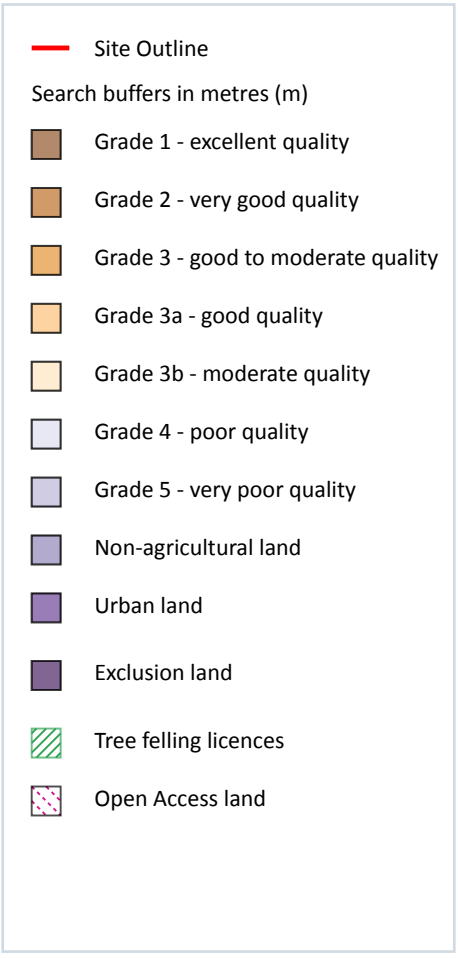
Features are displayed on the Visual and cultural designations map on **page 60 >**

ID	Location	Name	Grade
1	24m N	Manchester Southern Cemetery	II

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

12 Agricultural designations





12.1 Agricultural Land Classification

Records within 250m	1

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

Features are displayed on the Agricultural designations map on **page 63 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	**Non-agricultural/no quality assigned**

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks
Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	10

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

Features are displayed on the Habitat designations map on **page 65 >**

ID	Location	Main Habitat	Other habitats
1	183m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	192m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	205m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	219m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
4	225m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	225m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
5	226m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	239m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	241m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	242m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

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

This data is sourced from Natural England.

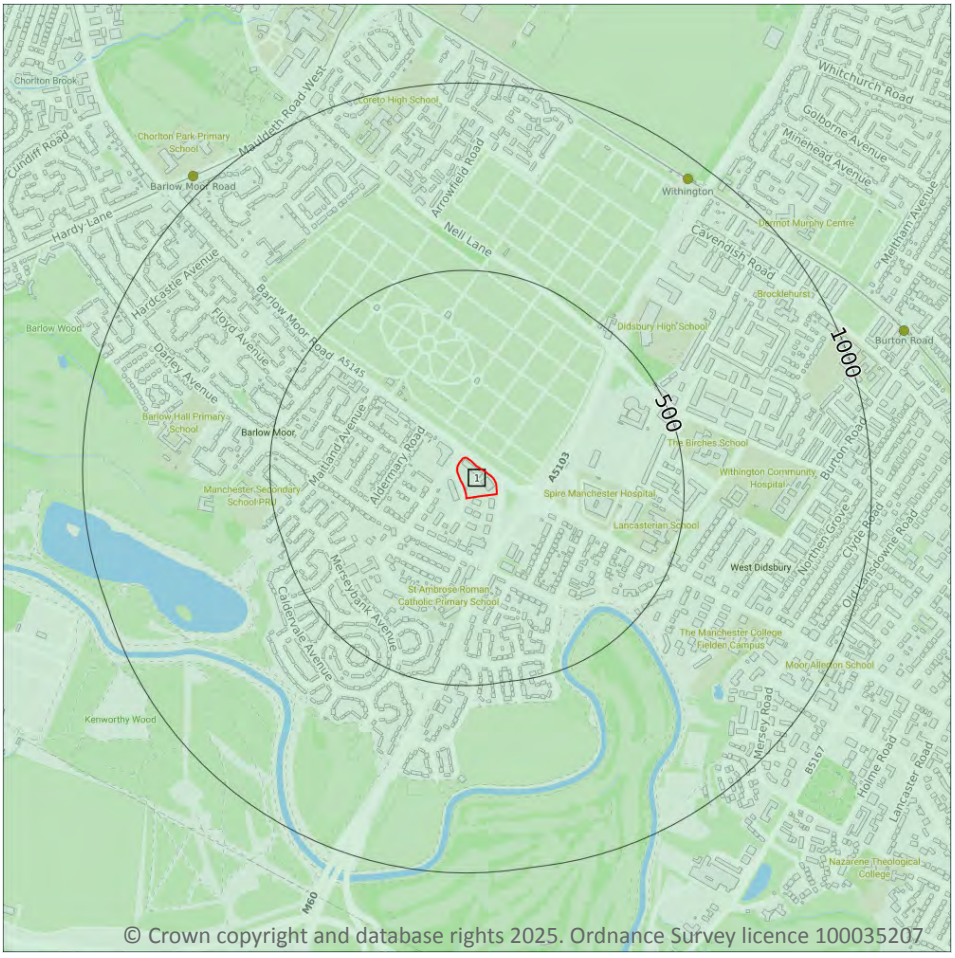
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



14.1 10k Availability

Records within 500m	1

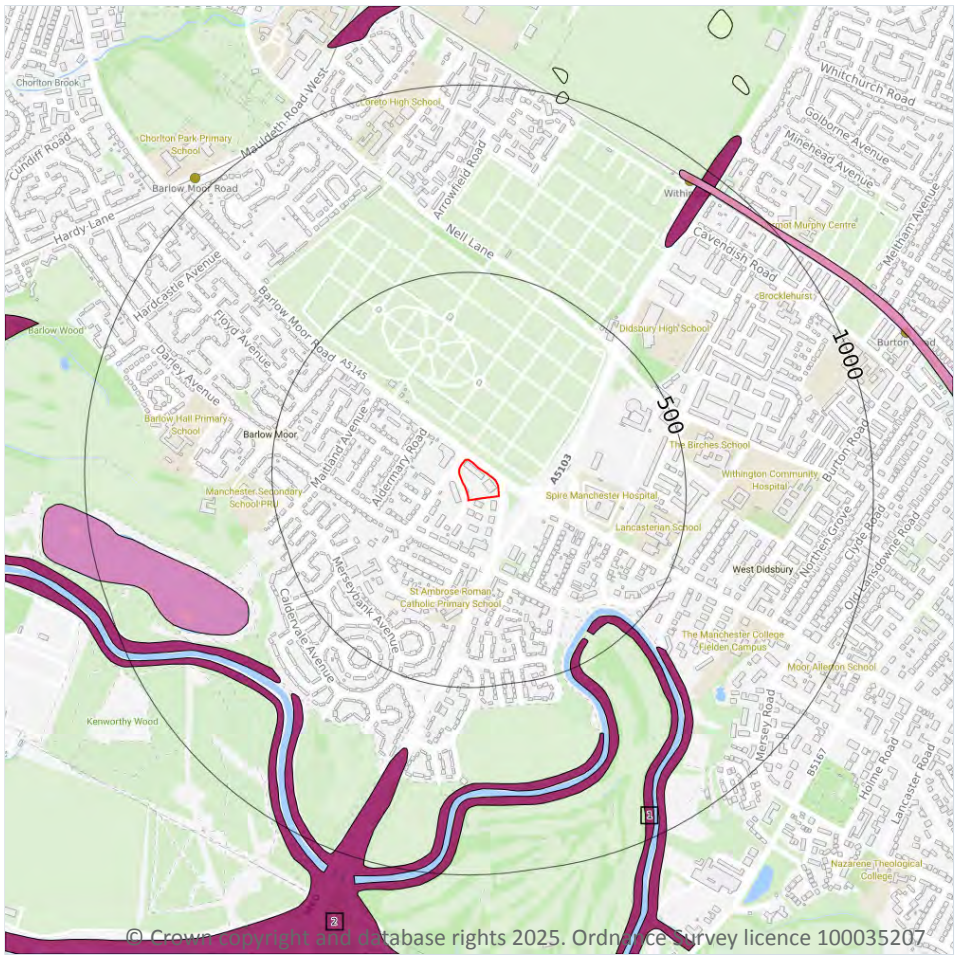
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 67 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SJ89SW**

This data is sourced from the British Geological Survey.

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



14.2 Artificial and made ground (10k)

Records within 500m	2

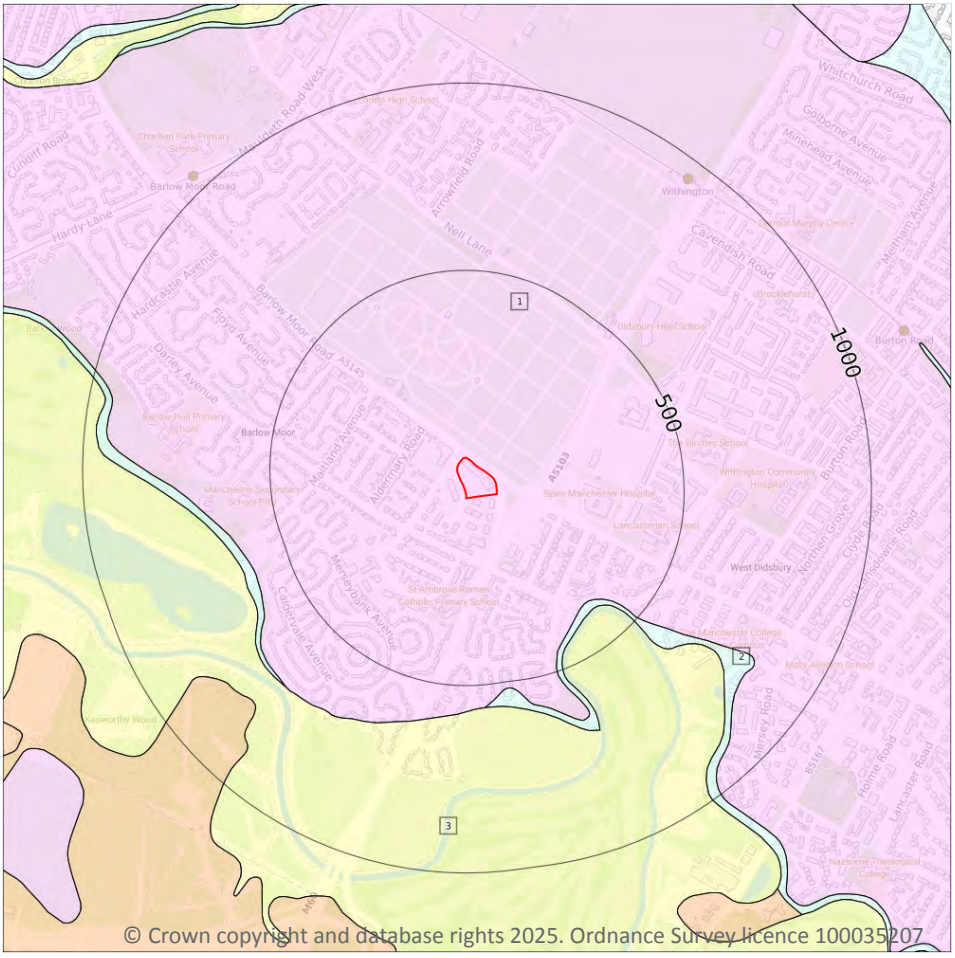
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 68 >**

ID	Location	LEX Code	Description	Rock description
1	419m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	442m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m **3**

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 69 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel**	**Sand And Gravel**
2	375m SE	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
3	399m SE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

This data is sourced from the British Geological Survey.

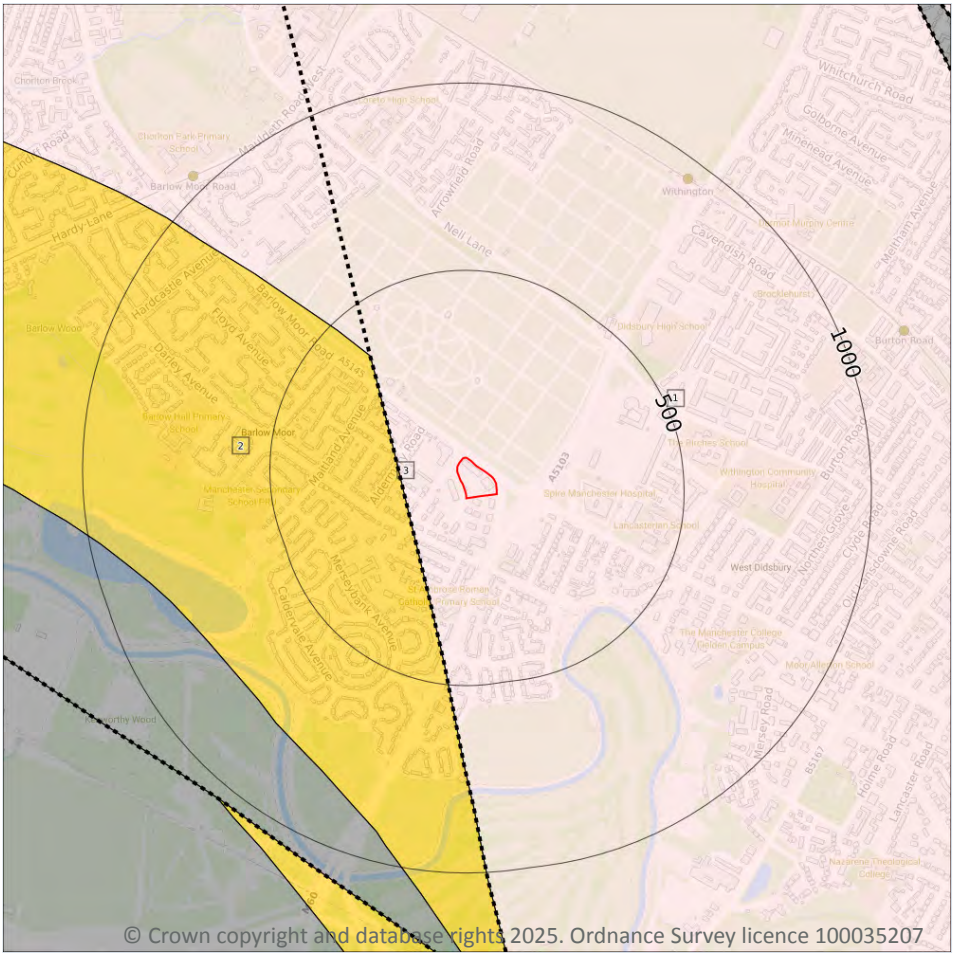
14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m **2**

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 71 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**WLSF-SDST**	**Wilmslow Sandstone Formation - Sandstone**	**Early Triassic Epoch**
2	152m W	HEY-SDST	Helsby Sandstone Formation - Sandstone	Anisian Age - Early Triassic Epoch

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	1

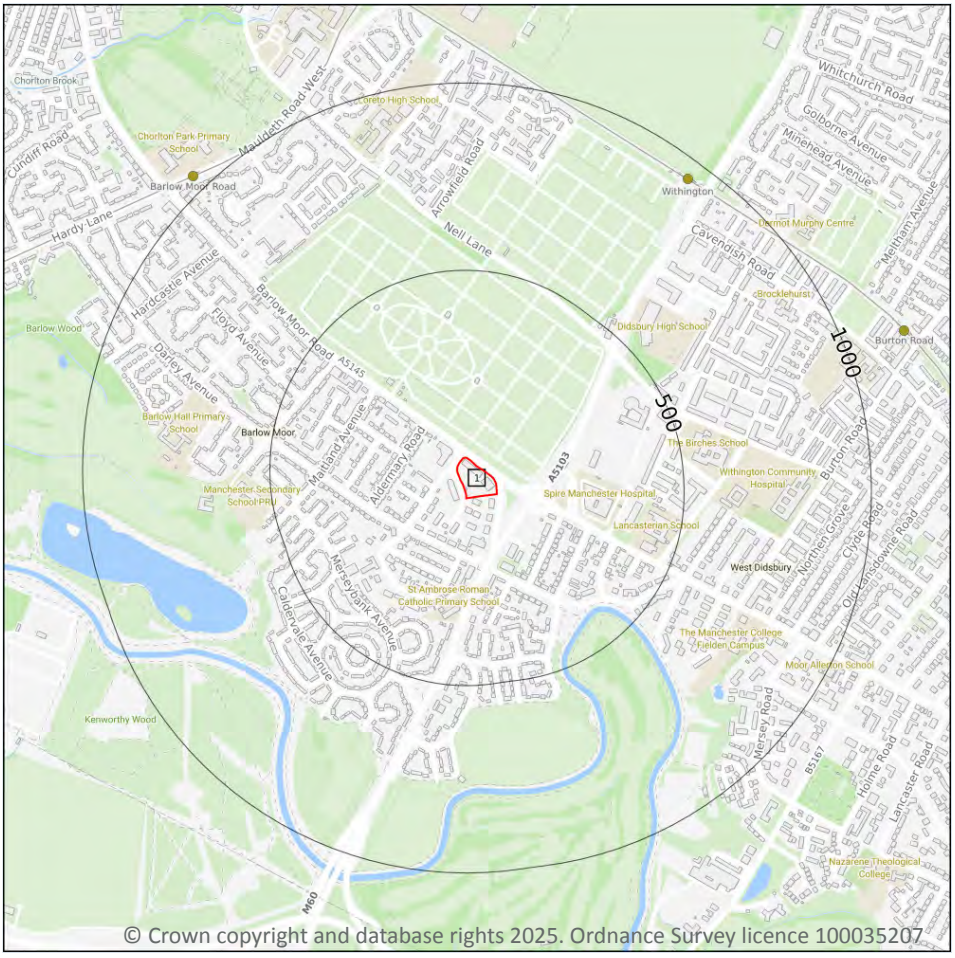
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 71 >**

ID	Location	Category	Description
3	152m W	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



15.1 50k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 73 >**

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

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

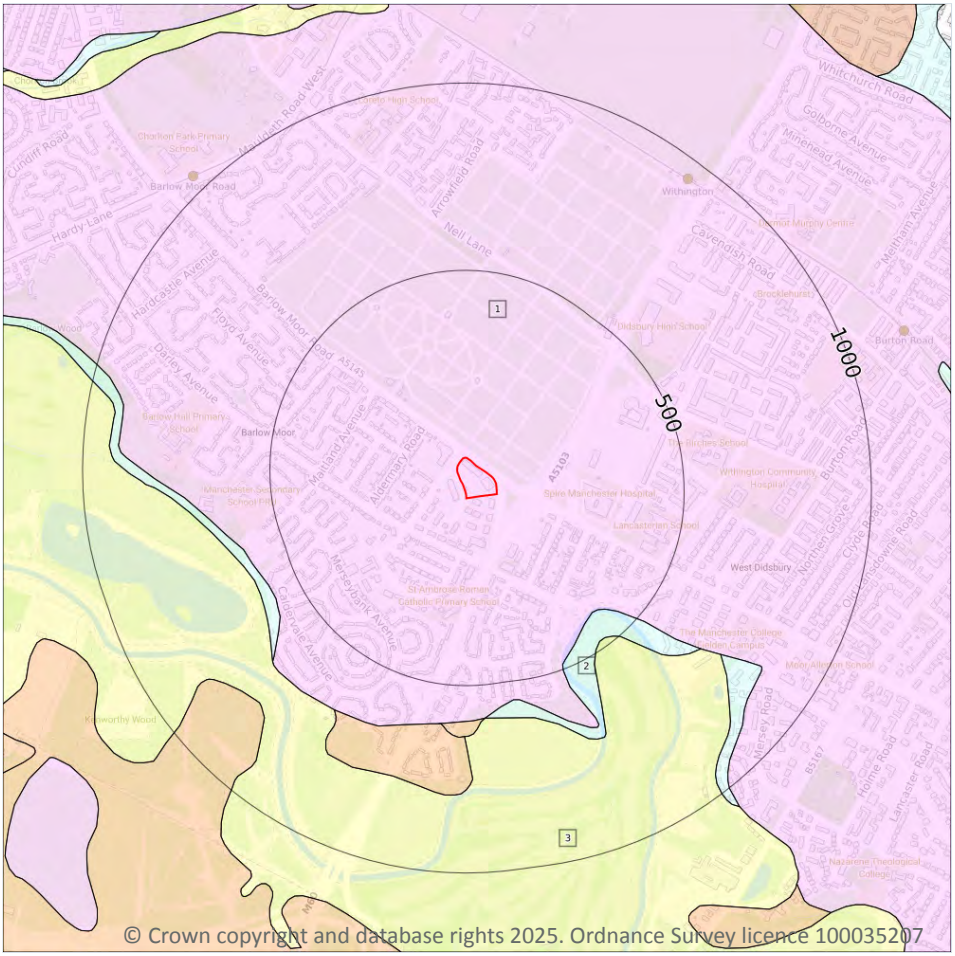
15.3 Artificial ground permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m **3**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 75 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**GFSDD-XSV**	**GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN**	**SAND AND GRAVEL**
2	406m SE	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
3	479m SE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**Very High**	**High**

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

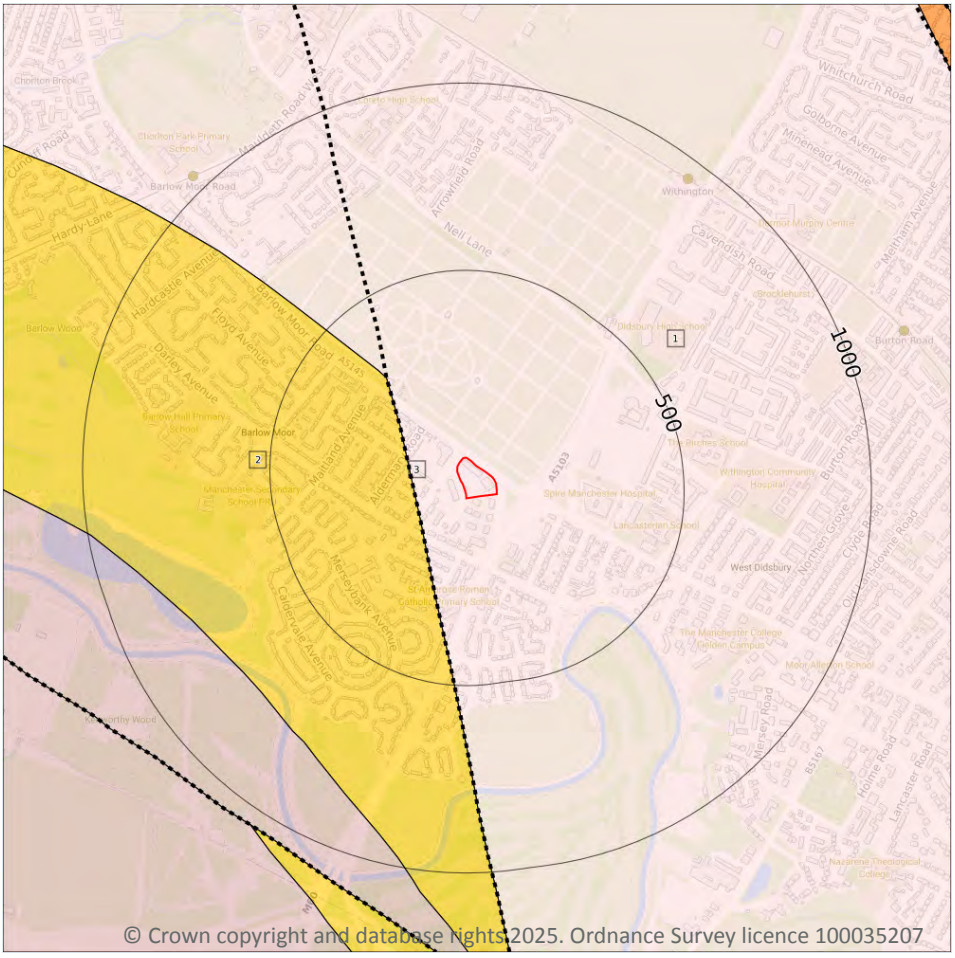
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **2**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 77 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**WLSF-SDST**	**WILMSLOW SANDSTONE FORMATION - SANDSTONE**	**-**
2	123m W	HEY-PESST	HELSBY SANDSTONE FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	ANISIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Intergranular**	**High**	**High**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	1

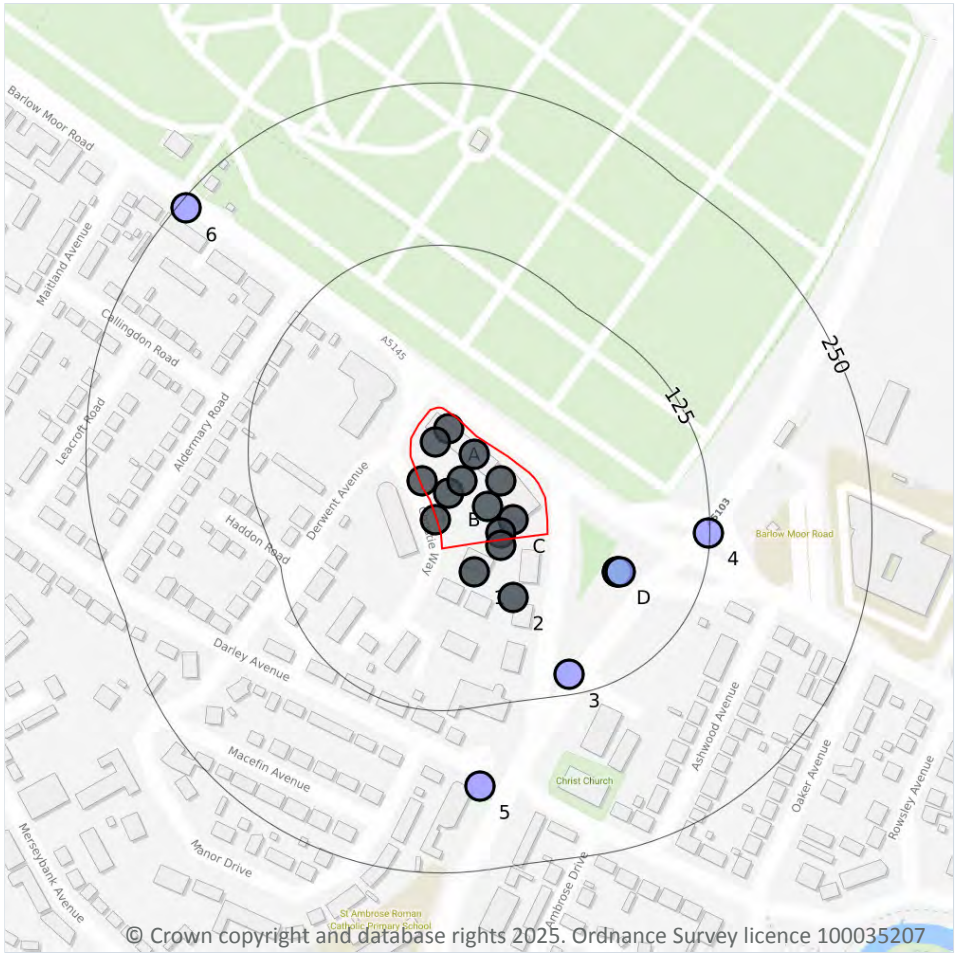
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 77 >**

ID	Location	Category	Description
3	123m W	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

Confidential

0 - 10m

10 - 30m

30m+

Unknown

16.1 BGS Boreholes

Records within 250m	21

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

Features are displayed on the Boreholes map on **page 79 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	On site	382940 392160	CHRISTIE FIELDS MANCHESTER 1	-	Y	N/A
A	On site	382930 392150	CHRISTIE FIELDS MANCHESTER TP1	-	Y	N/A
B	On site	382940 392110	CHRISTIE FIELDS MANCHESTER 2	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	**On site**	**382920 392120**	**CHRISTIE FIELDS MANCHESTER TP2**	**-**	**Y**	**N/A**
B	**On site**	**382960 392140**	**CHRISTIE FIELDS MANCHESTER TP3**	**-**	**Y**	**N/A**
B	**On site**	**382950 392120**	**CHRISTIE FIELDS MANCHESTER TP5**	**-**	**Y**	**N/A**
C	**On site**	**382990 392090**	**CHRISTIE FIELDS MANCHESTER 3**	**-**	**Y**	**N/A**
C	**On site**	**382980 392120**	**CHRISTIE FIELDS MANCHESTER TP4**	**-**	**Y**	**N/A**
C	**On site**	**382970 392100**	**CHRISTIE FIELDS MANCHESTER TP7**	**-**	**Y**	**N/A**
C	**On site**	**382980 392080**	**CHRISTIE FIELDS MANCHESTER TP8**	**-**	**Y**	**N/A**
B	1m SW	382930 392090	CHRISTIE FIELDS MANCHESTER TP6	-	Y	N/A
C	4m SE	382980 392070	CHRISTIE FIELDS MANCHESTER 4	-	Y	N/A
1	21m S	382960 392050	CHRISTIE FIELDS MANCHESTER 5	-	Y	N/A
2	45m S	382990 392030	CHRISTIE FIELDS MANCHESTER 6	-	Y	N/A
D	61m SE	383070 392050	BARLOW MOOR ROAD WEST DIDSBURY 6	9.0	N	865577 ↗
D	61m SE	383070 392050	BARLOW MOOR ROAD WEST DIDSBURY 6A	12.0	N	865578 ↗
D	63m SE	383072 392050	CHRIST CHURCH AVENUE, NOW PRINCESS ROAD. NO.1	9.45	N	864888 ↗
3	109m SE	383033 391971	CHRIST CHURCH AVENUE, NOW PRINCESS ROAD. NO.2	9.14	N	864889 ↗
4	124m E	383140 392080	BARLOW MOOR ROAD WEST DIDSBURY 1A	5.48	N	865576 ↗
5	185m S	382964 391885	CHRIST CHURCH AVENUE, NOW PRINCESS ROAD. NO.3	9.14	N	864890 ↗
6	244m NW	382738 392330	BARLOW MOOR ROAD. NO.52	9.45	N	864884 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	1

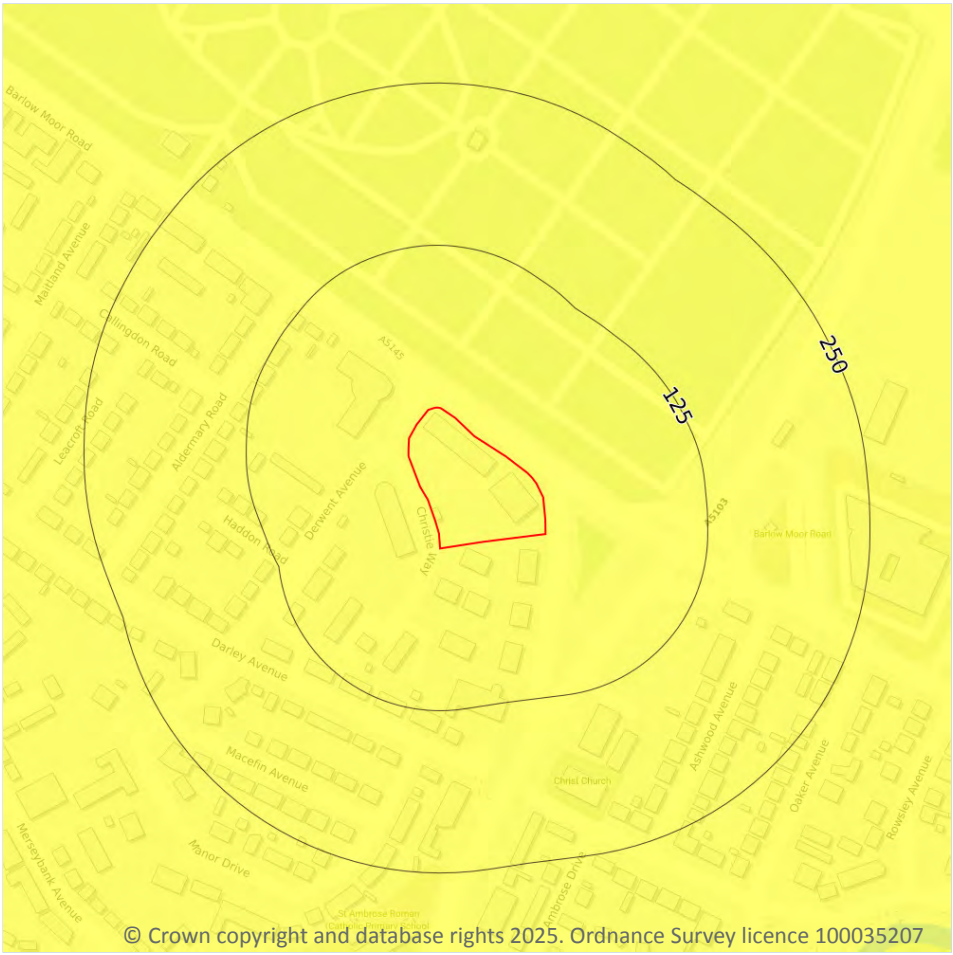
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 81 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	1

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

Features are displayed on the Natural ground subsidence - Running sands map on **page 82 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

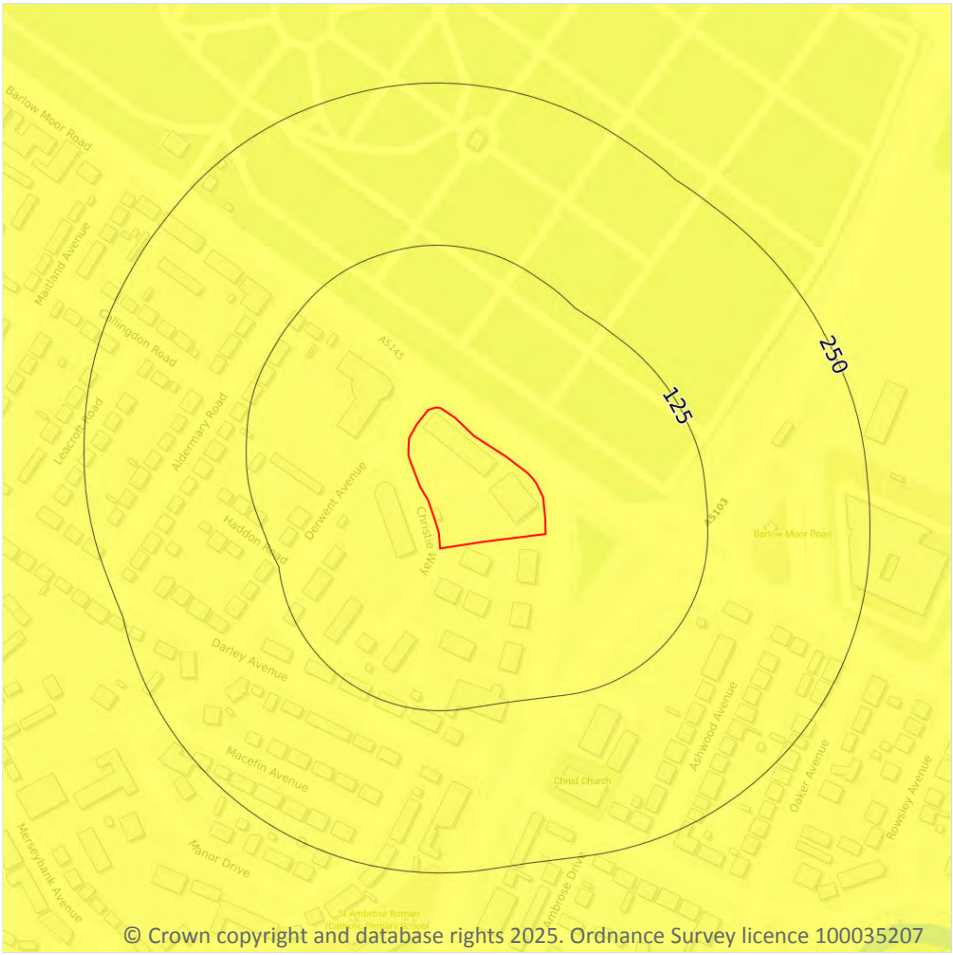
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 83 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

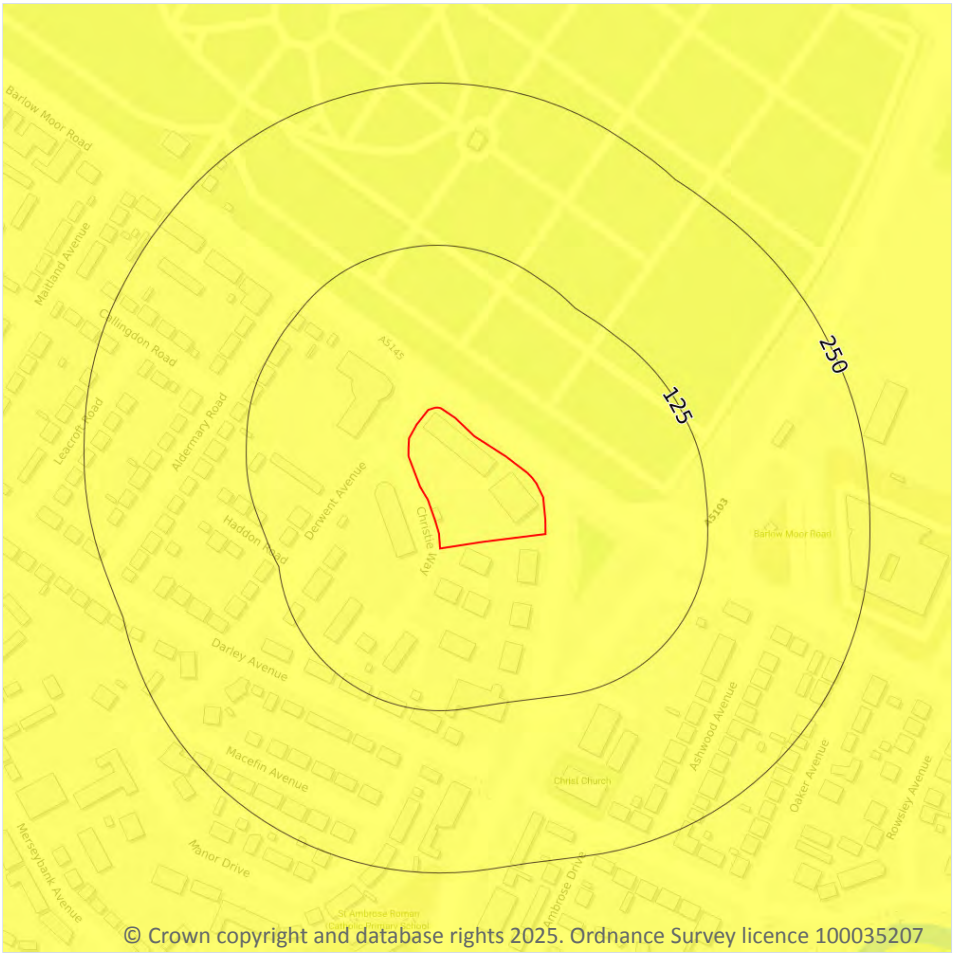
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 84 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	1

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

Features are displayed on the Natural ground subsidence - Landslides map on **page 85 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



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Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

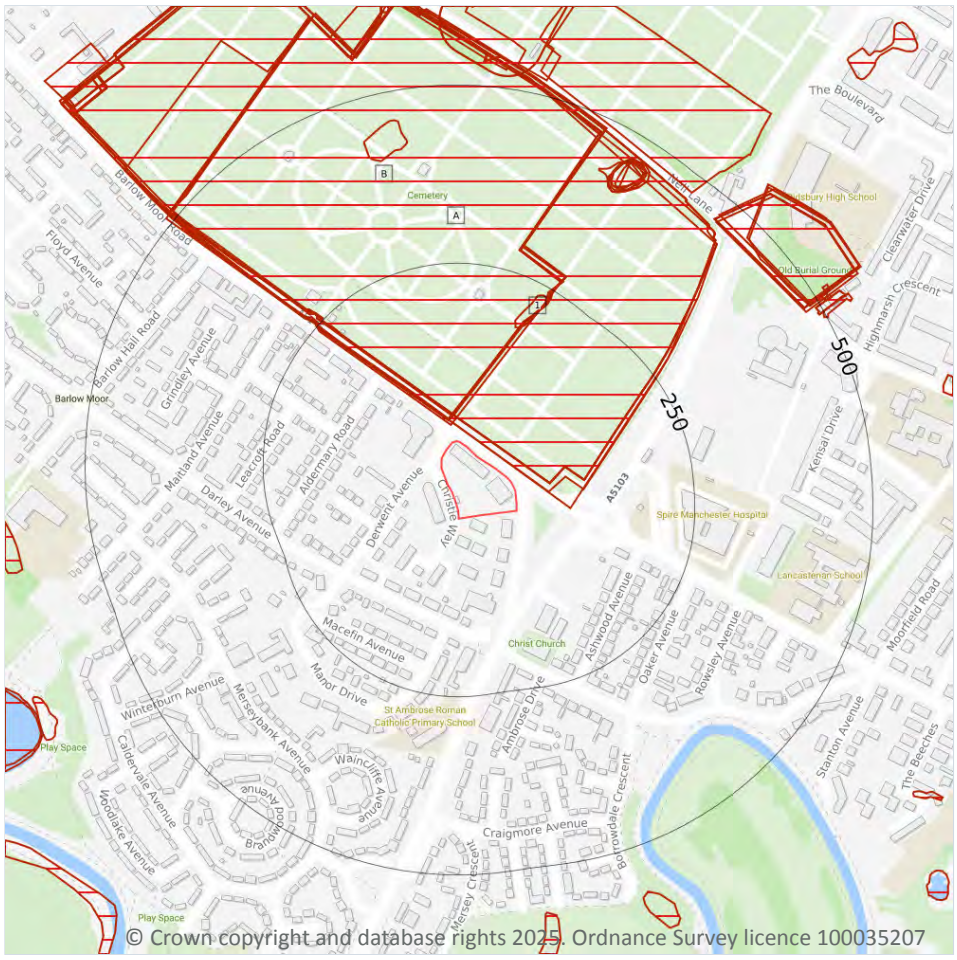
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 86 >**

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

This data is sourced from the British Geological Survey.

18 Mining and ground workings



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18.1 BritPits

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	14

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

Features are displayed on the Mining and ground workings map on **page 88 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	16m N	Cemetery	1934	1:10560
A	16m N	Cemetery	1938	1:10560
A	24m NW	Cemetery	1916	1:10560
A	26m N	Cemetery	1966	1:10560
A	26m N	Cemetery	1988	1:10000
A	26m N	Cemetery	1981	1:10000
A	26m N	Cemetery	1955	1:10560
A	31m NW	Cemetery	1923	1:10560
A	31m NW	Cemetery	1905	1:10560
B	34m NW	Cemetery	1892	1:10560
A	36m N	Cemetery	1938	1:10560
B	37m N	Cemetery	1911	1:10560
A	38m N	Cemetery	1908	1:10560
1	179m N	Pond	1849	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

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

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	0

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

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	1

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

Location	Details
On site	**Whilst outside of an area where The Coal Authority have information on coal mining activities, Johnson Poole & Bloomer (JPB) may have information such as mining plans and maps held within their archive that have occurred within 1km of this property. Please note, the plans held by JPB may also relate to non-mining records. Further details and a quote for services (if appropriate) can be obtained by emailing this report to enquiries.gs@jpb.co.uk ↗.**

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

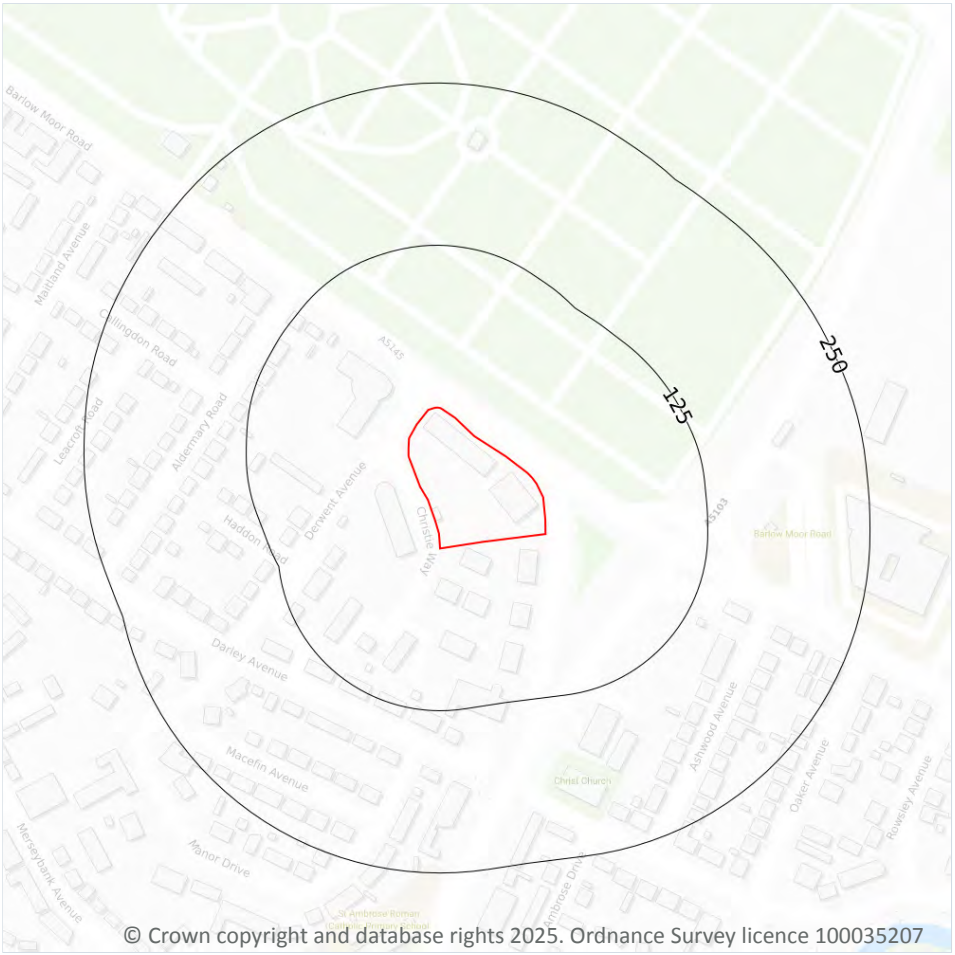
Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

20 Radon



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Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 95 >**

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

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	2

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

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

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	0

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

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

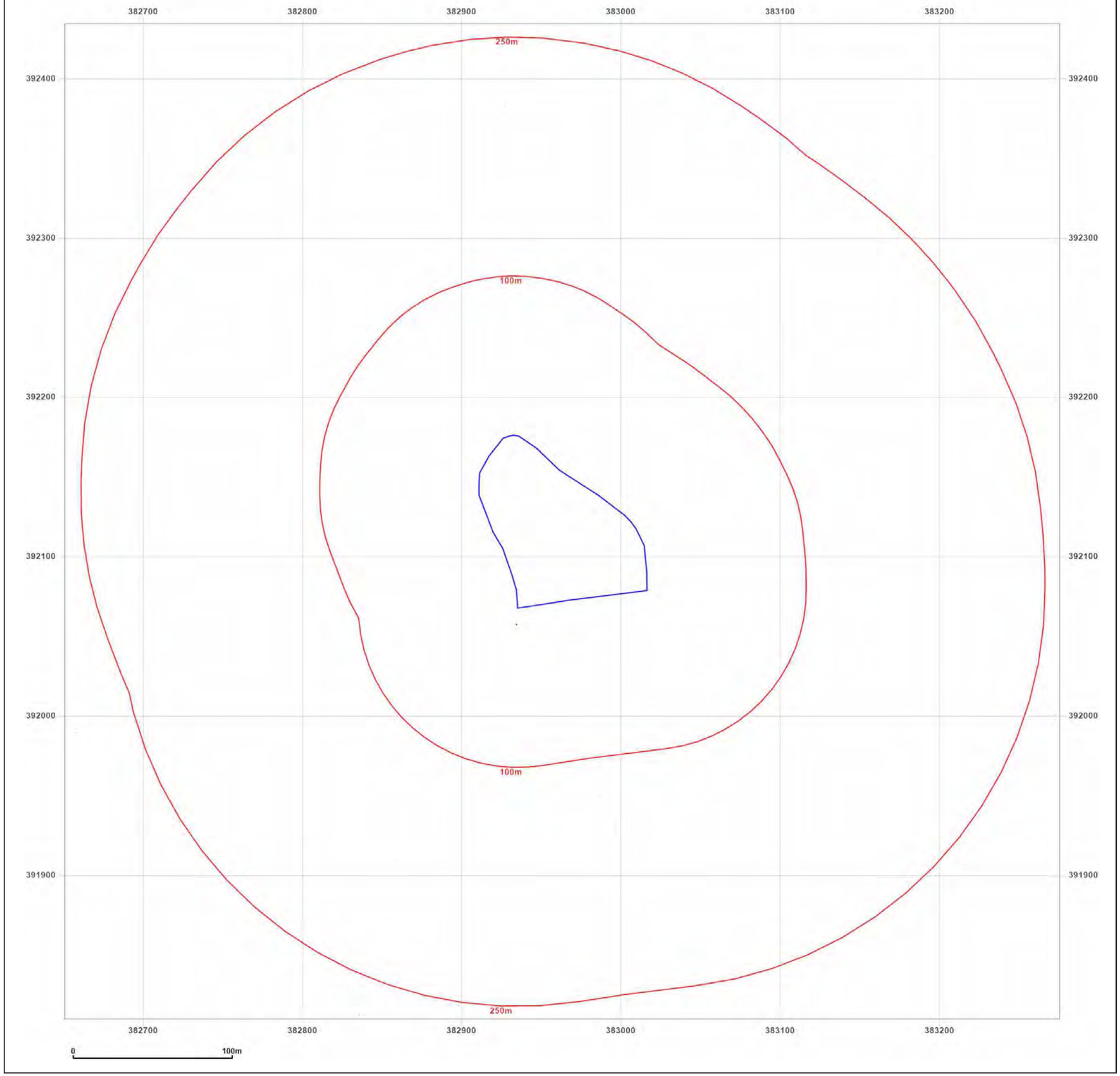
Data providers

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

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Appendix C – **Historical Mapping**



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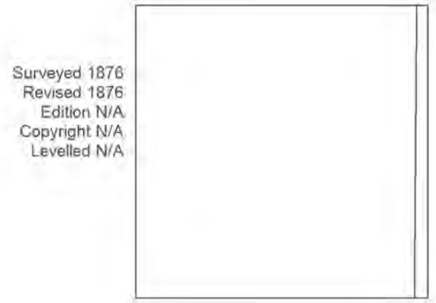
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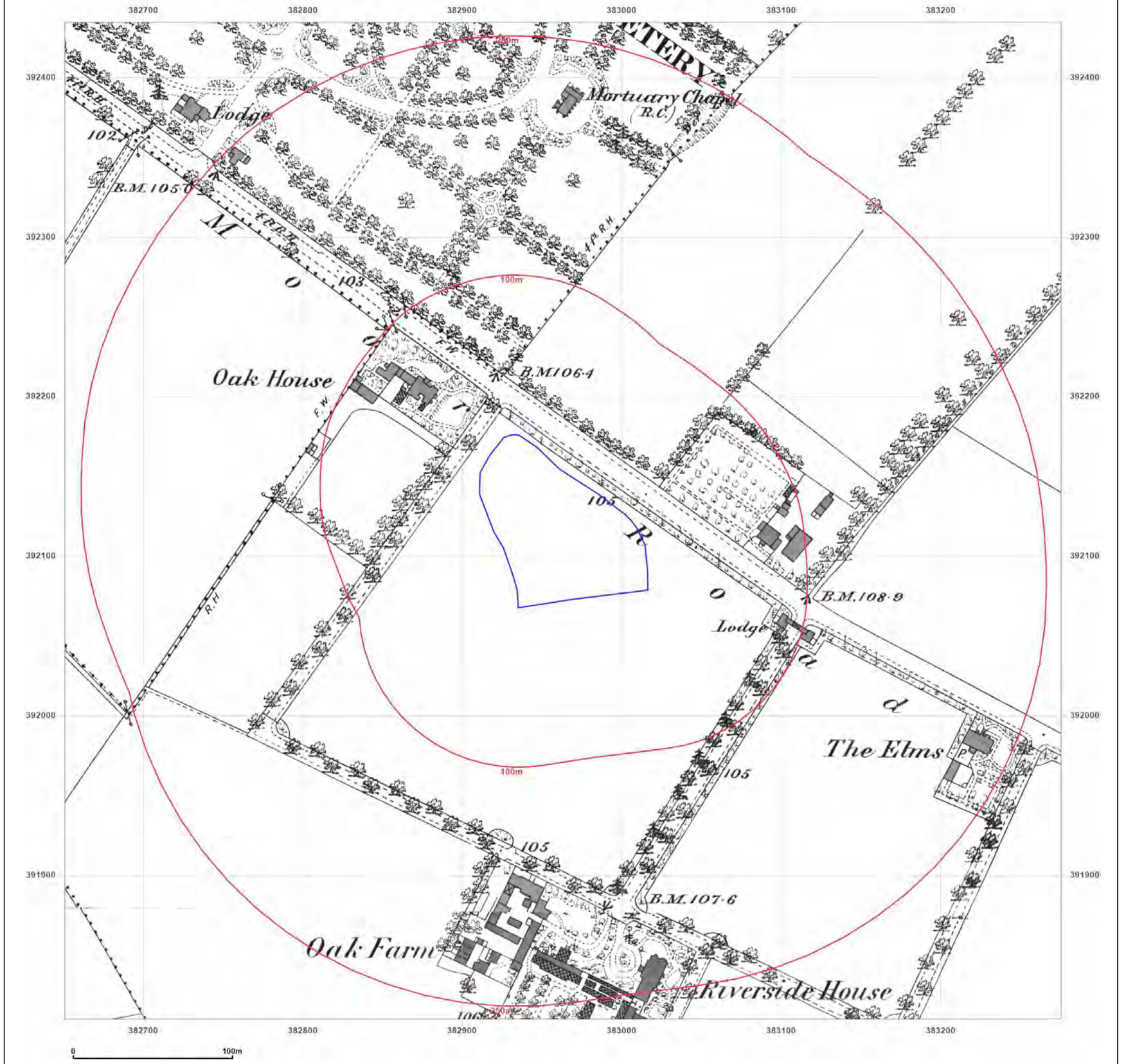
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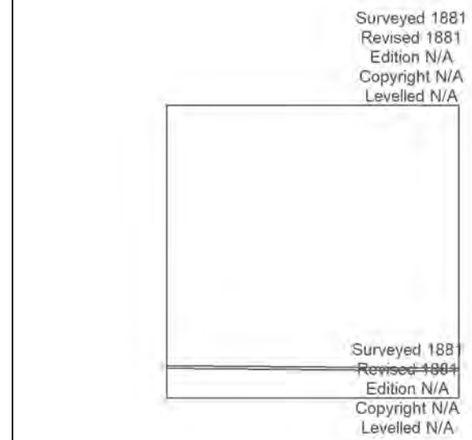
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Printed at: 1:2,500

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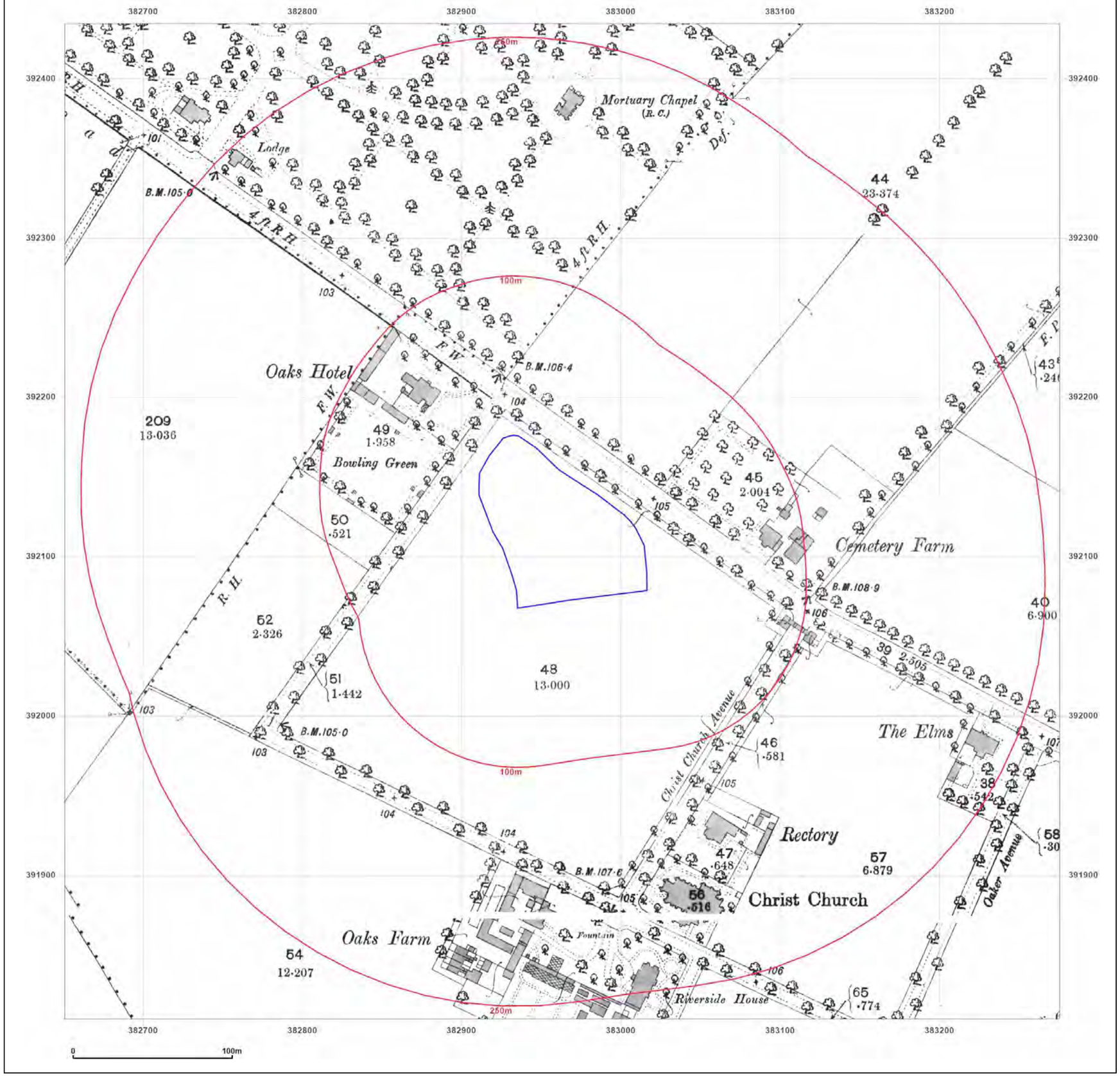
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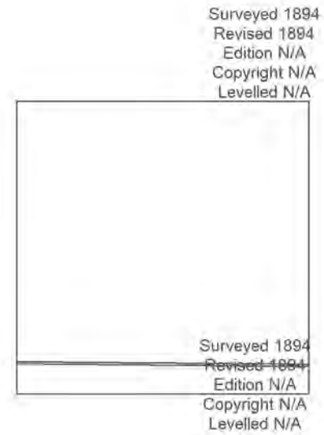
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Scale: 1:2,500
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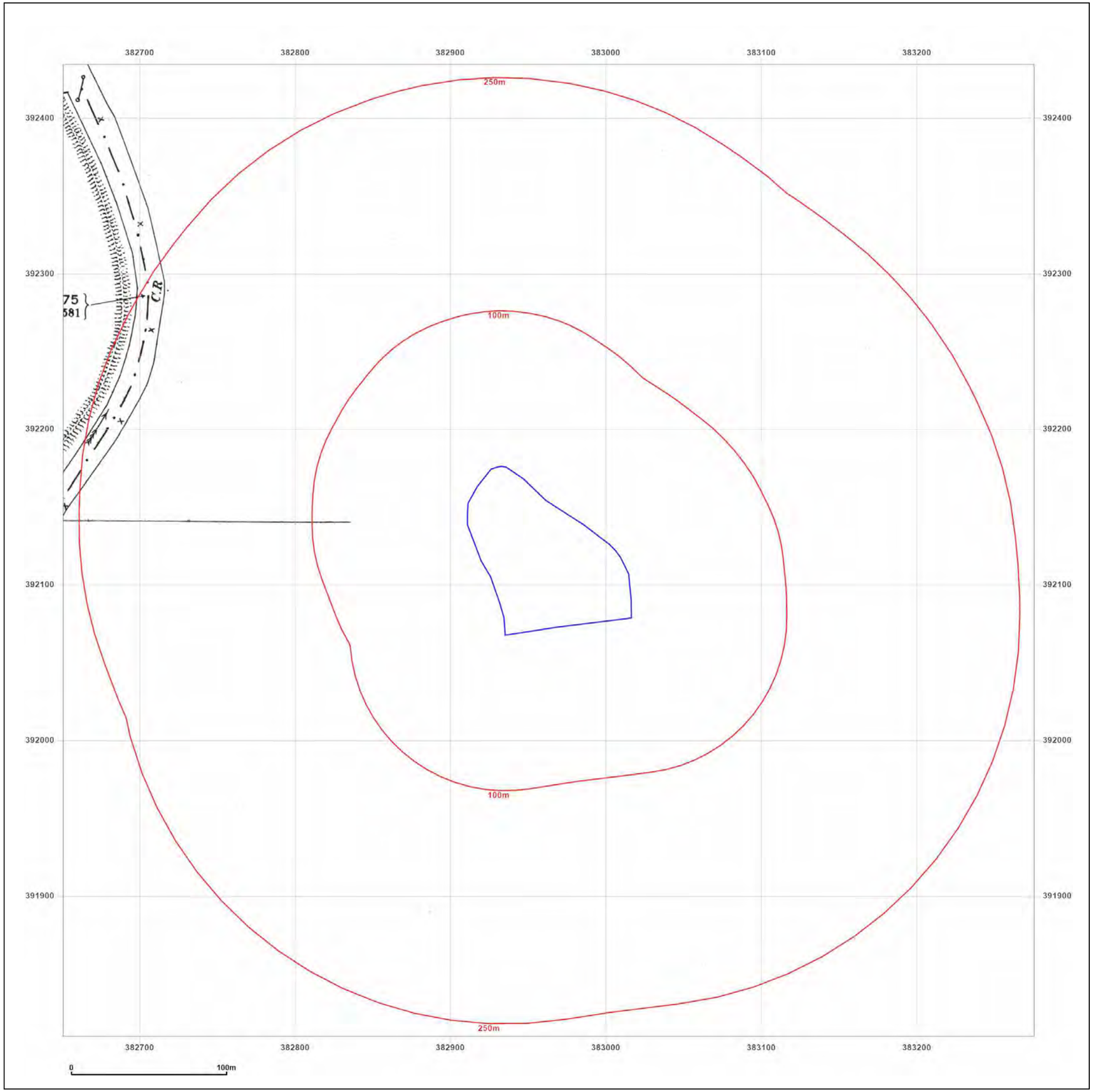
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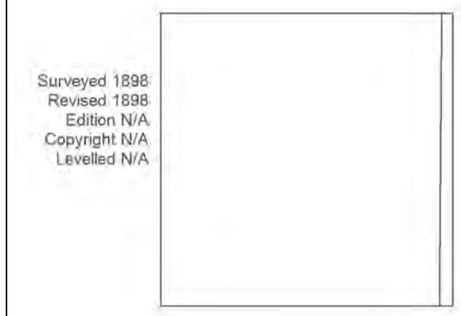
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Map Name: County Series
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Scale: 1:2,500
Printed at: 1:2,500

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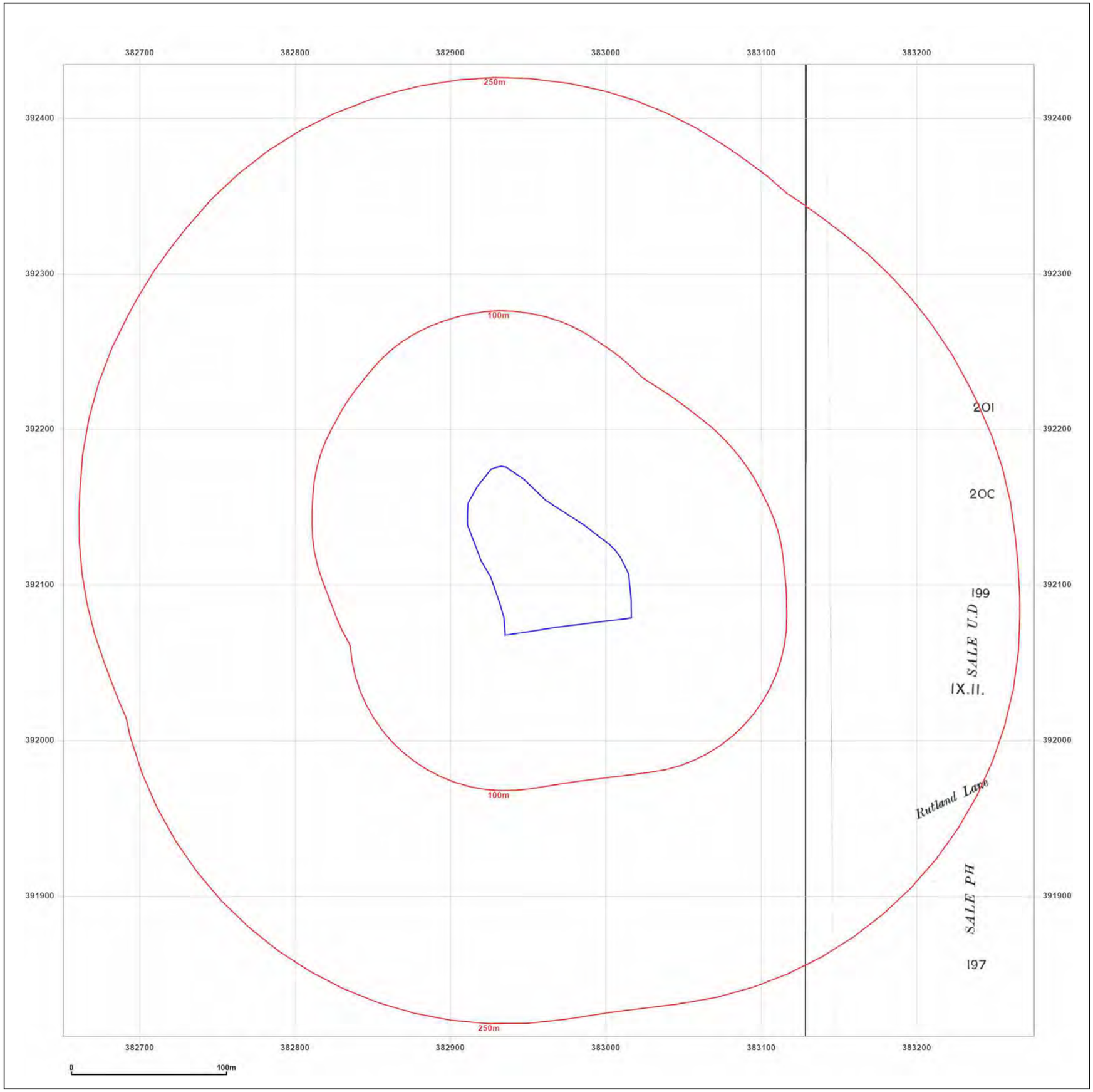
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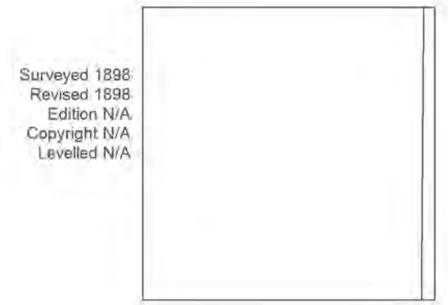
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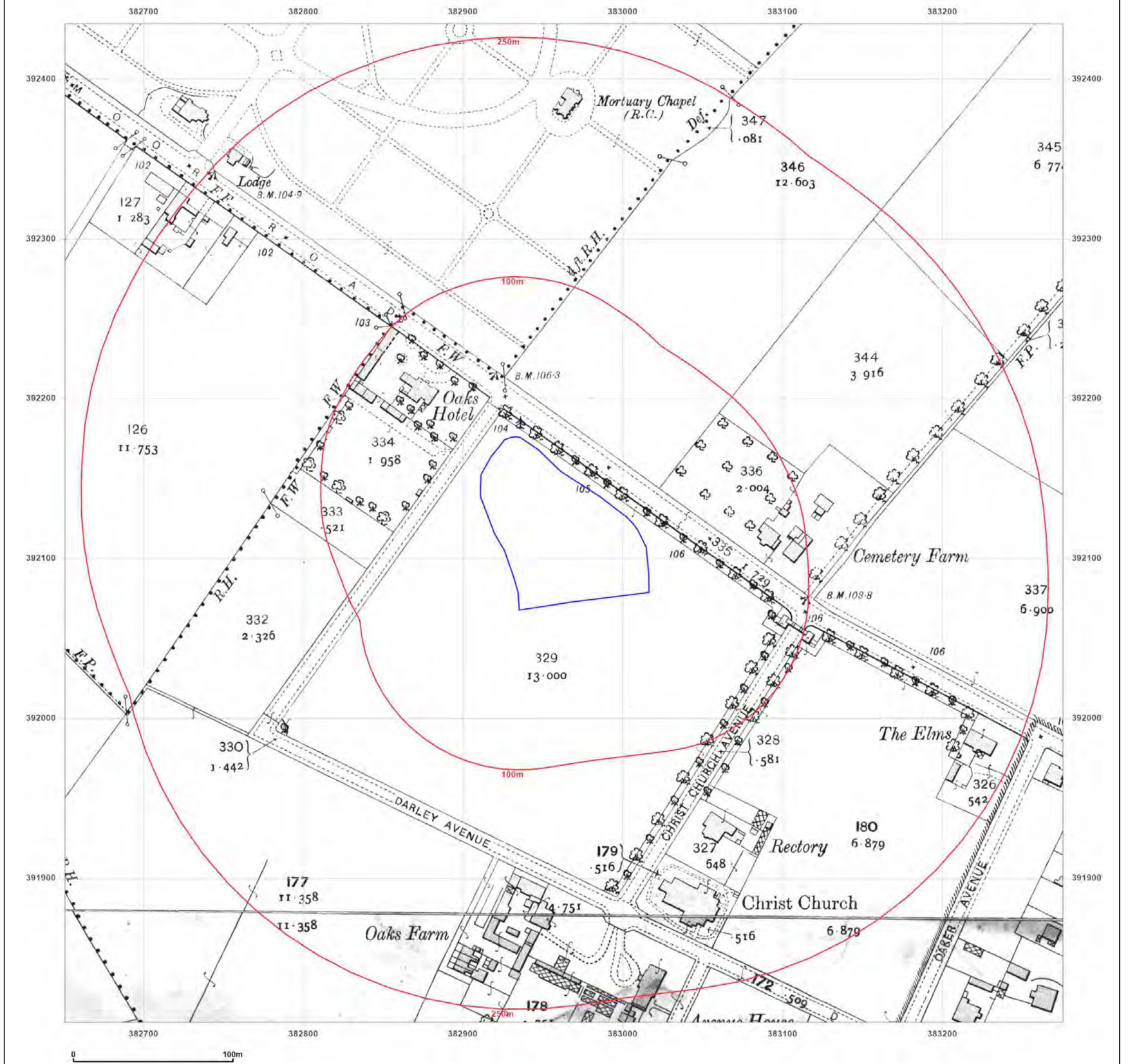
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Grid Ref: 382963, 392122

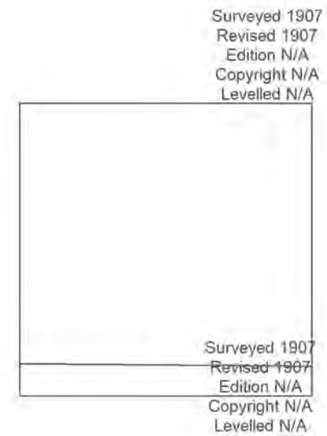
Map Name: County Series

Map date: **1907**

Scale: 1:2,500

Printed at: 1:2,500

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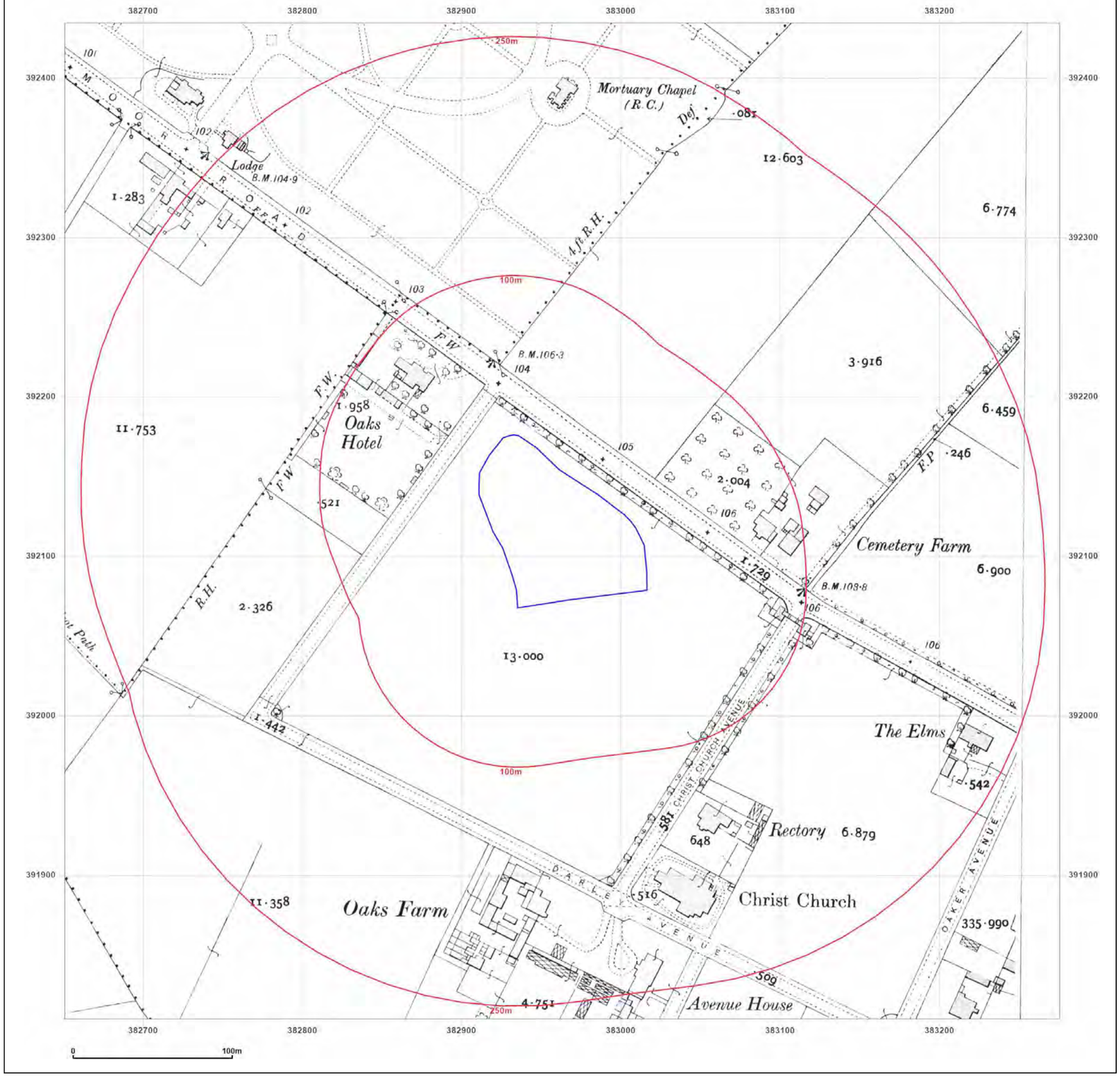
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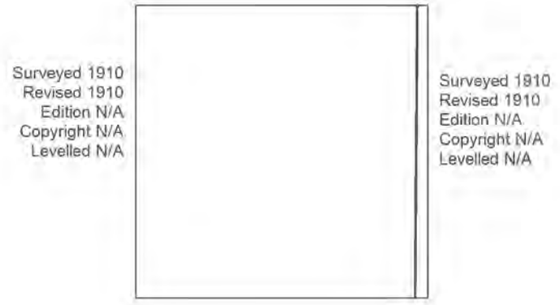
Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series
Map date: **1910**
Scale: 1:2,500
Printed at: 1:2,500

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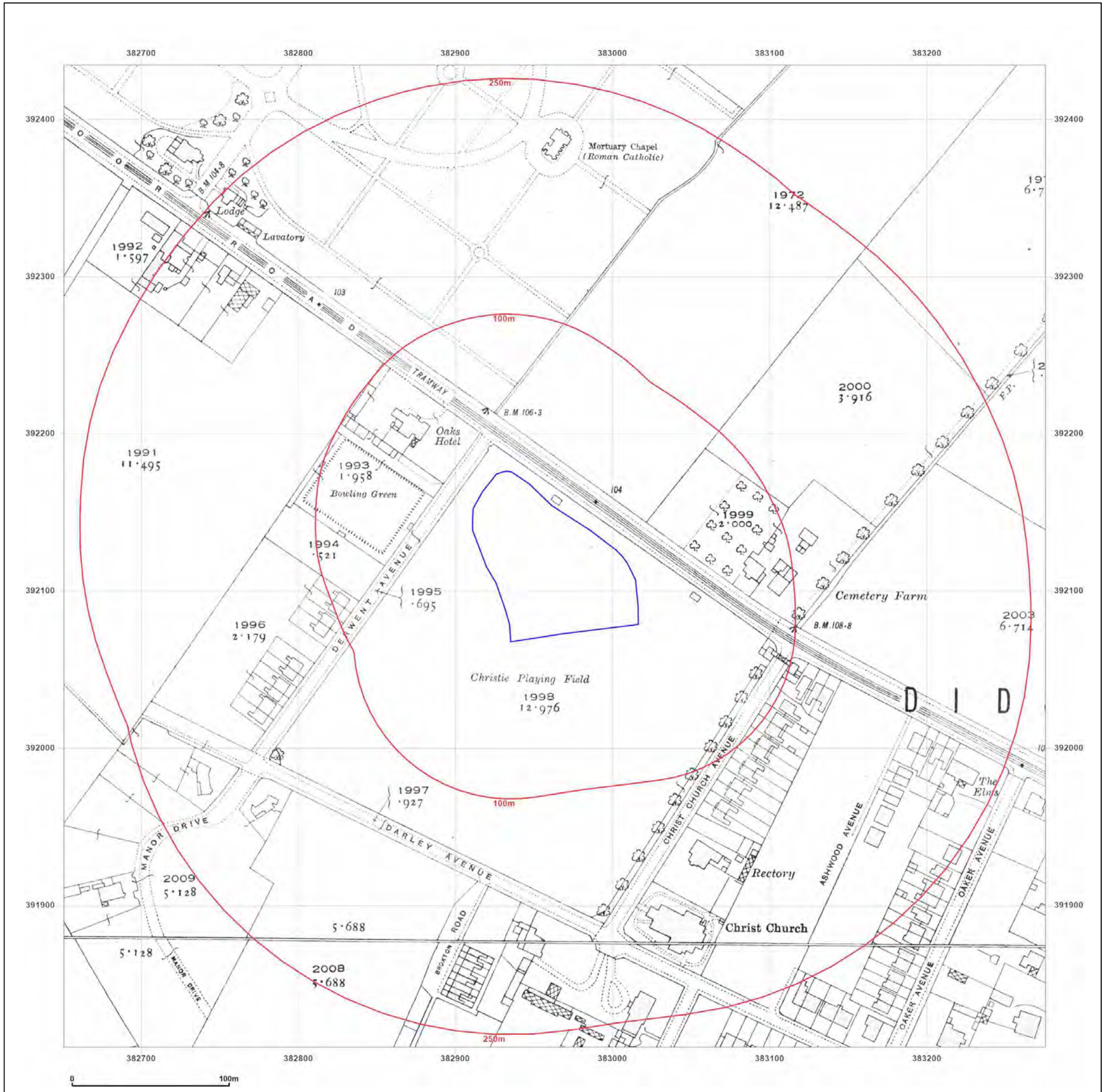
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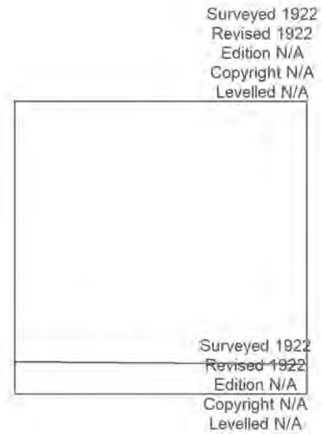
Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series
Map date: **1922**
Scale: 1:2,500
Printed at: 1:2,500

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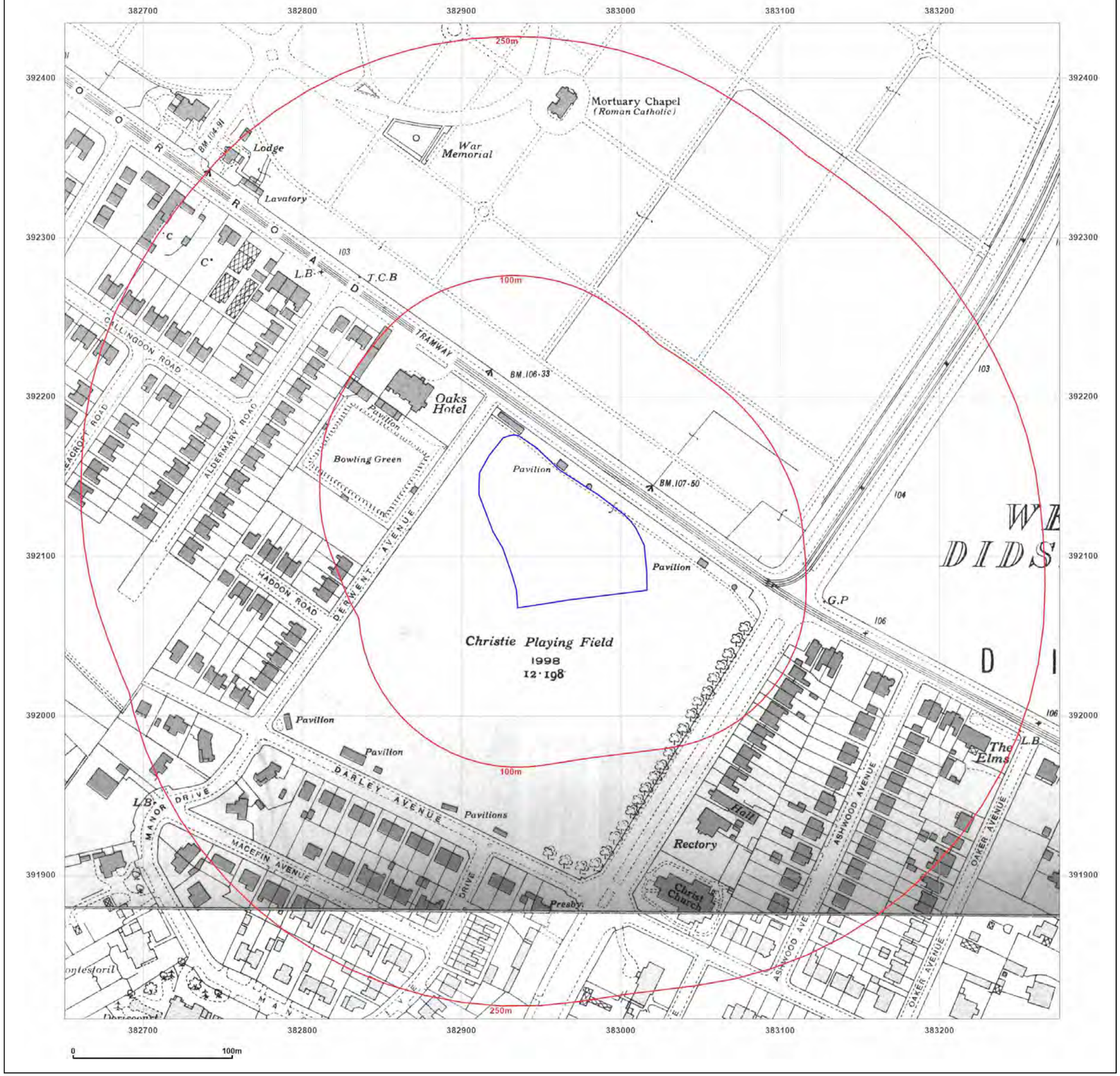
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Client Ref: NX601
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Grid Ref: 382963, 392122

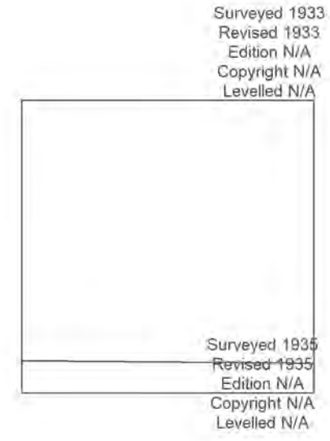
Map Name: County Series

Map date: **1933-1935**

Scale: 1:2,500

Printed at: 1:2,500

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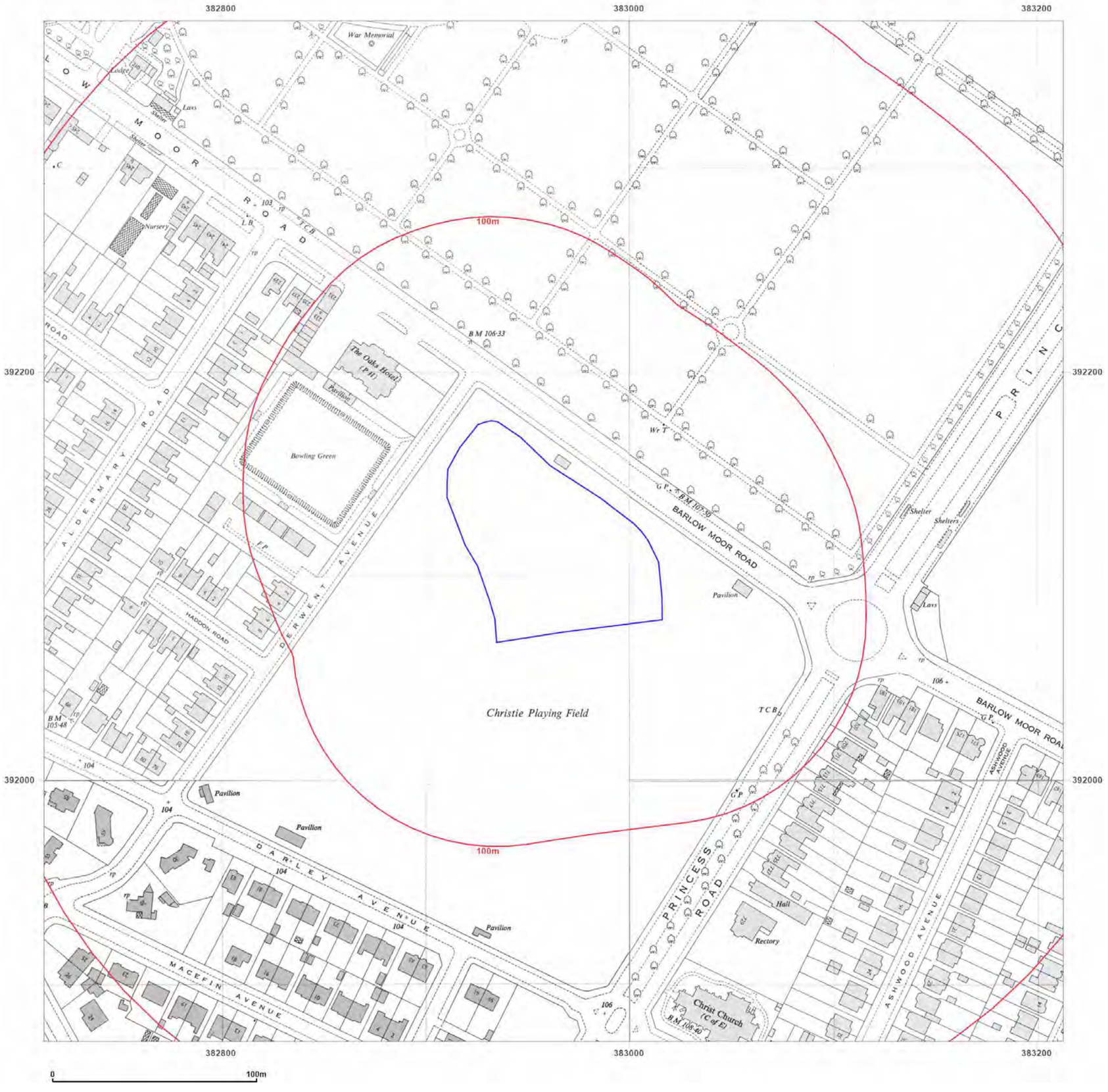
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Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

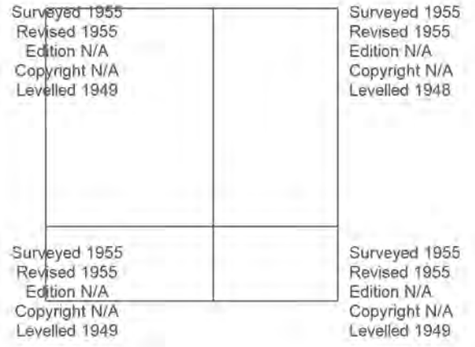
Map Name: National Grid

Map date: **1955**

Scale: 1:1,250

Printed at: 1:2,000

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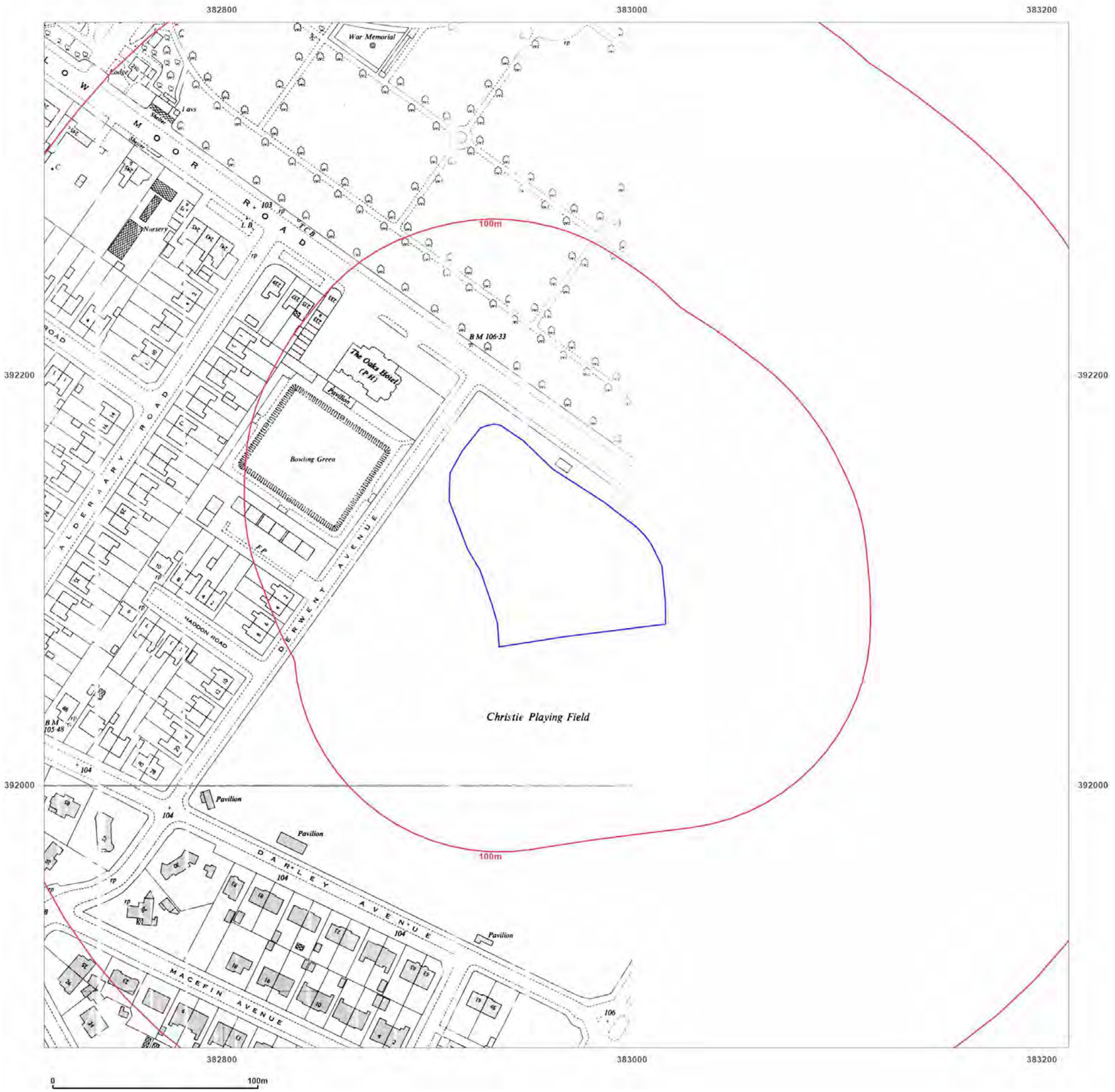
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Grid Ref: 382963, 392122

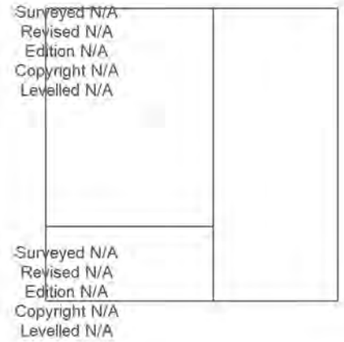
Map Name: National Grid

Map date: **1956**

Scale: 1:1,250

Printed at: 1:2,000

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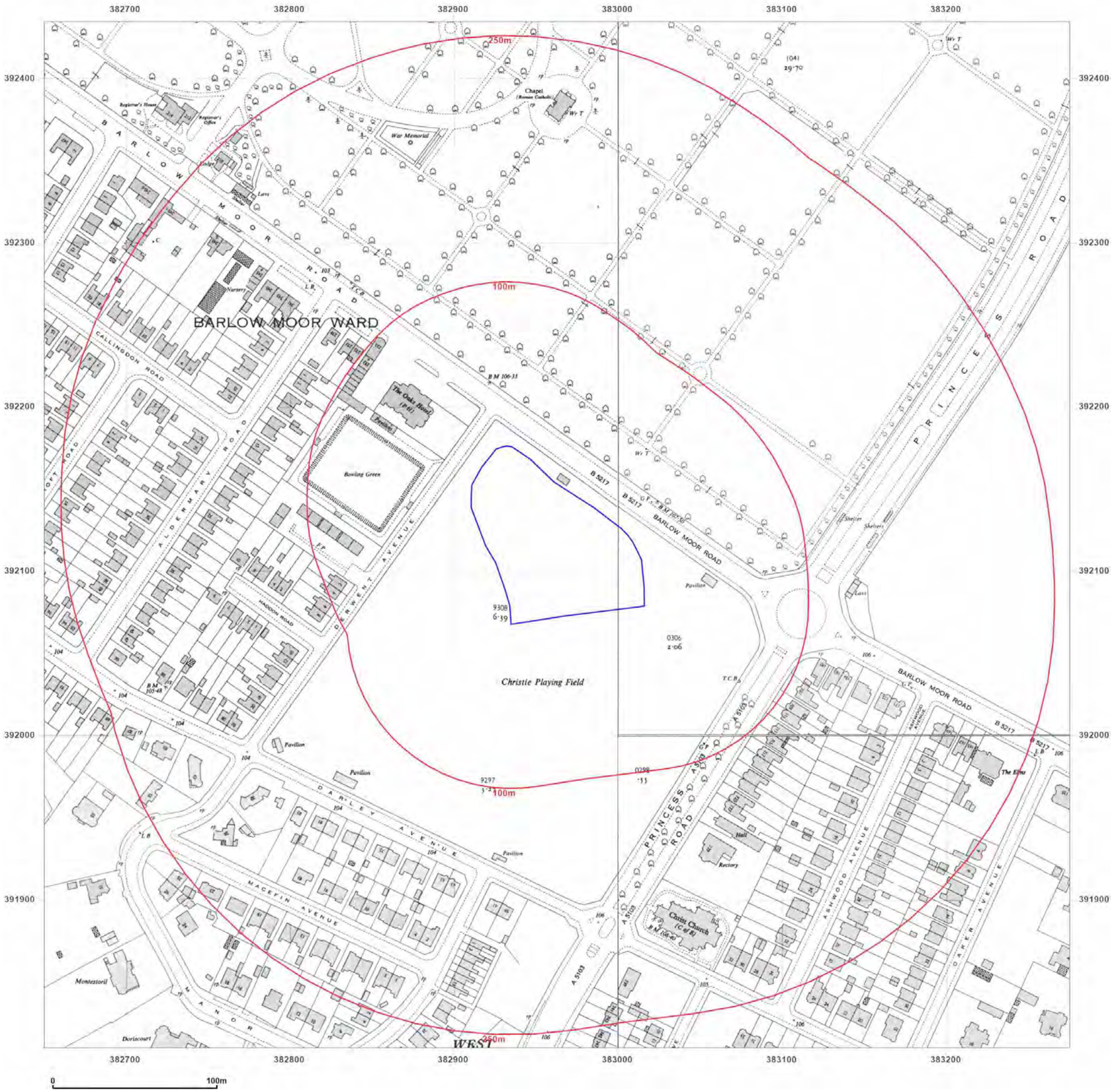
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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid

Map date: **1956-1957**

Scale: 1:2,500

Printed at: 1:2,500

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Revised 1955
Edition 1956
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Levelled 1949

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Revised 1955
Edition 1956
Copyright N/A
Levelled 1948

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Revised 1955
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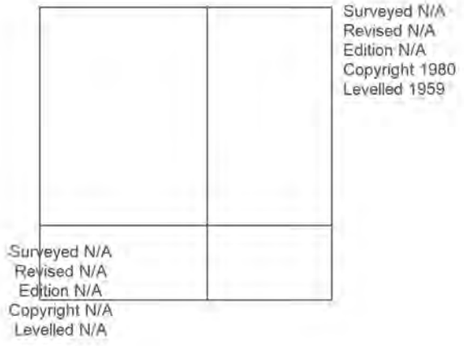
Site Details:

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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid
Map date: **1975-1980**
Scale: 1:1,250
Printed at: 1:2,000

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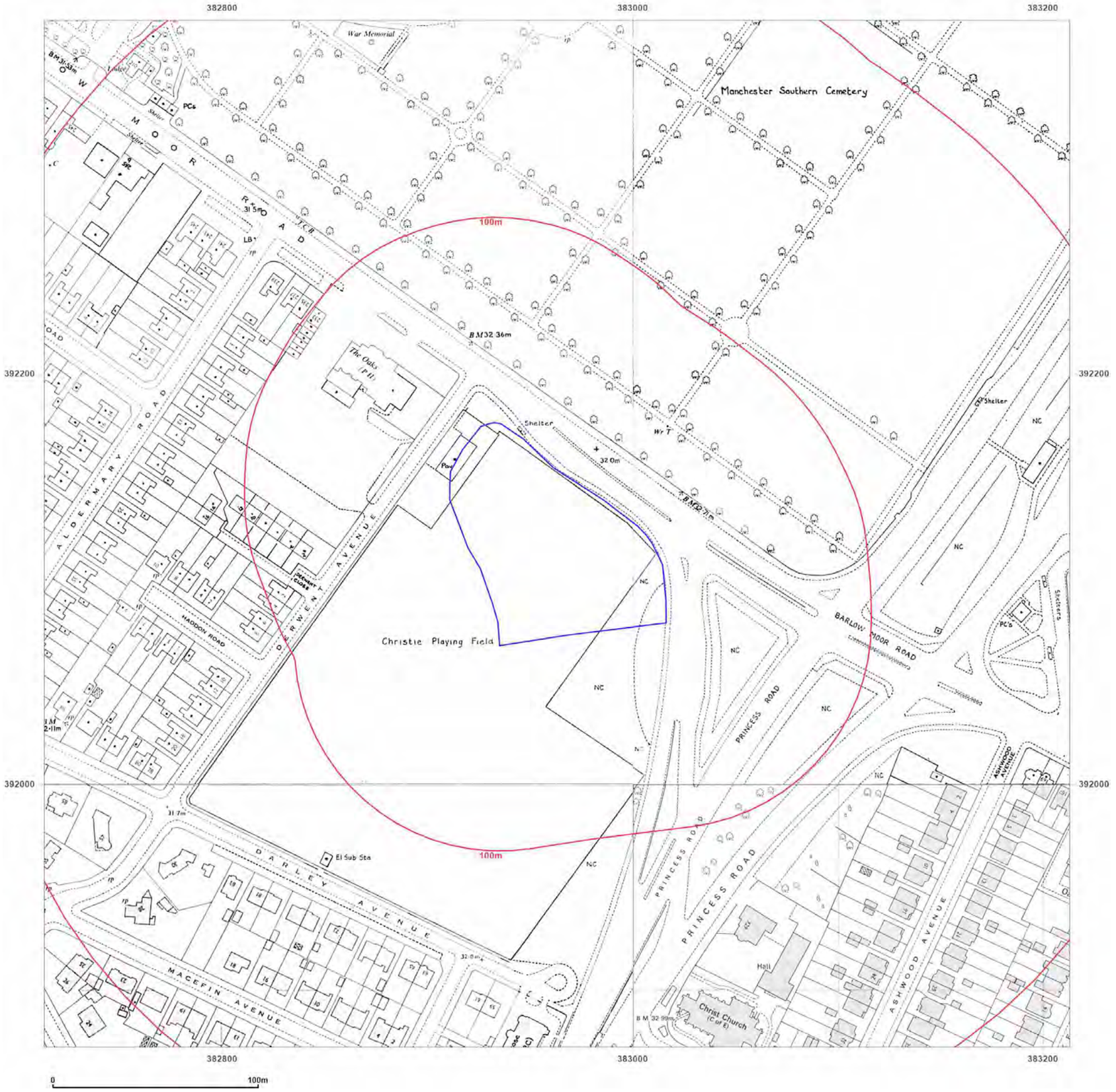
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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid

Map date: **1982-1983**

Scale: 1:1,250

Printed at: 1:2,000

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Grid Ref: 382963, 392122

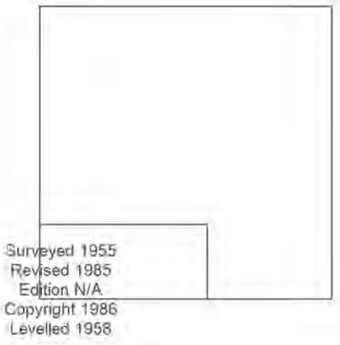
Map Name: National Grid

Map date: **1986**

Scale: 1:1,250

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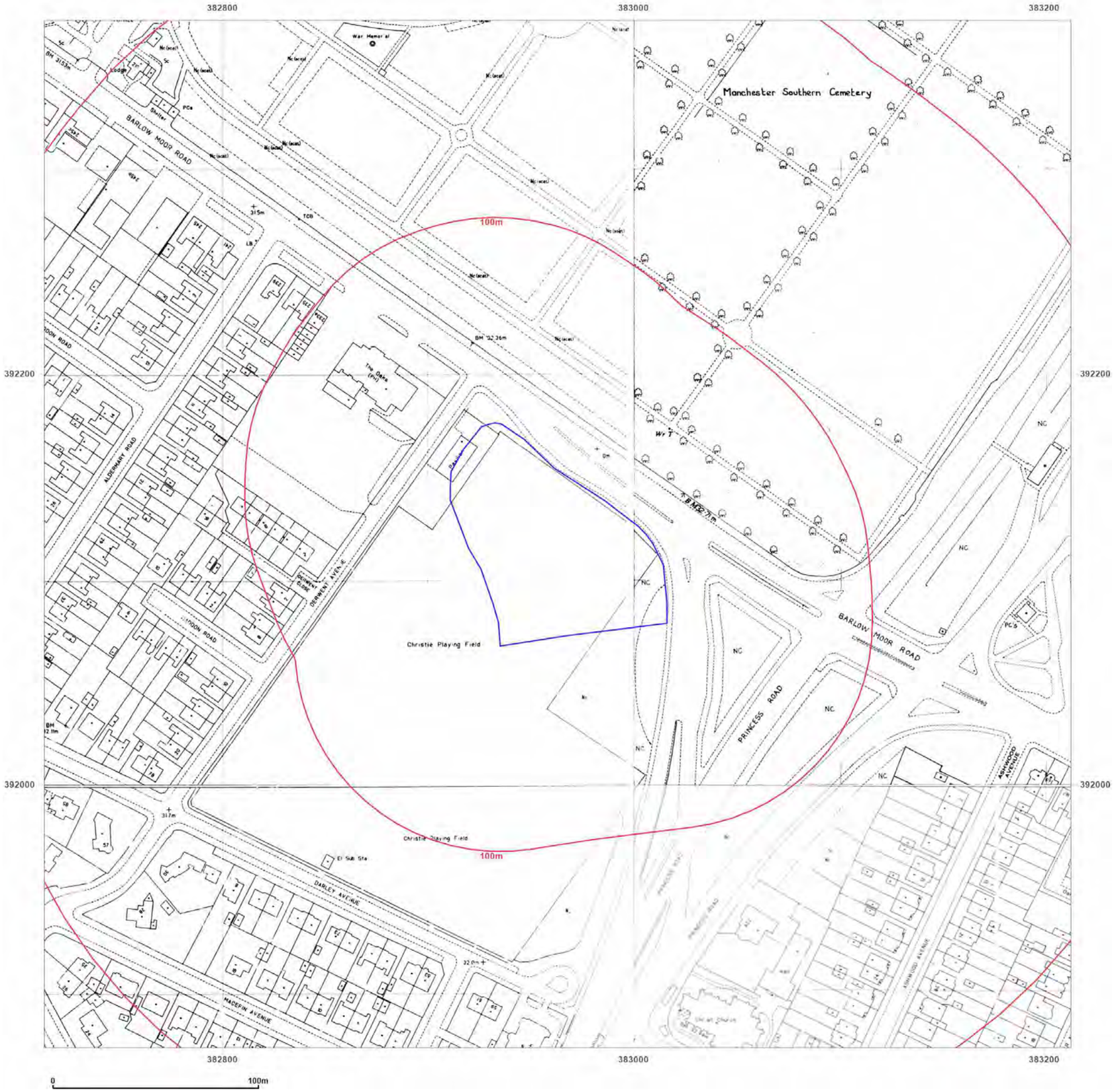
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Grid Ref: 382963, 392122

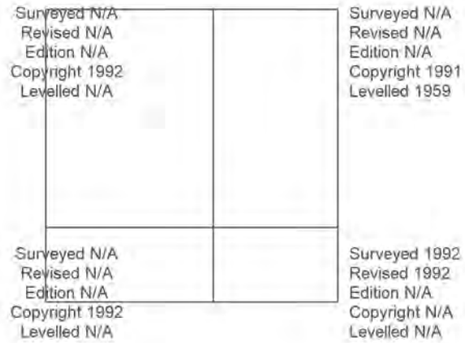
Map Name: National Grid

Map date: **1991-1992**

Scale: 1:1,250

Printed at: 1:2,000

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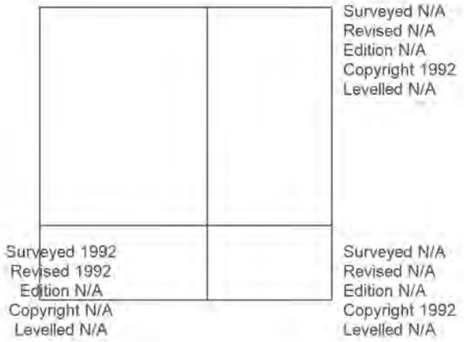
Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

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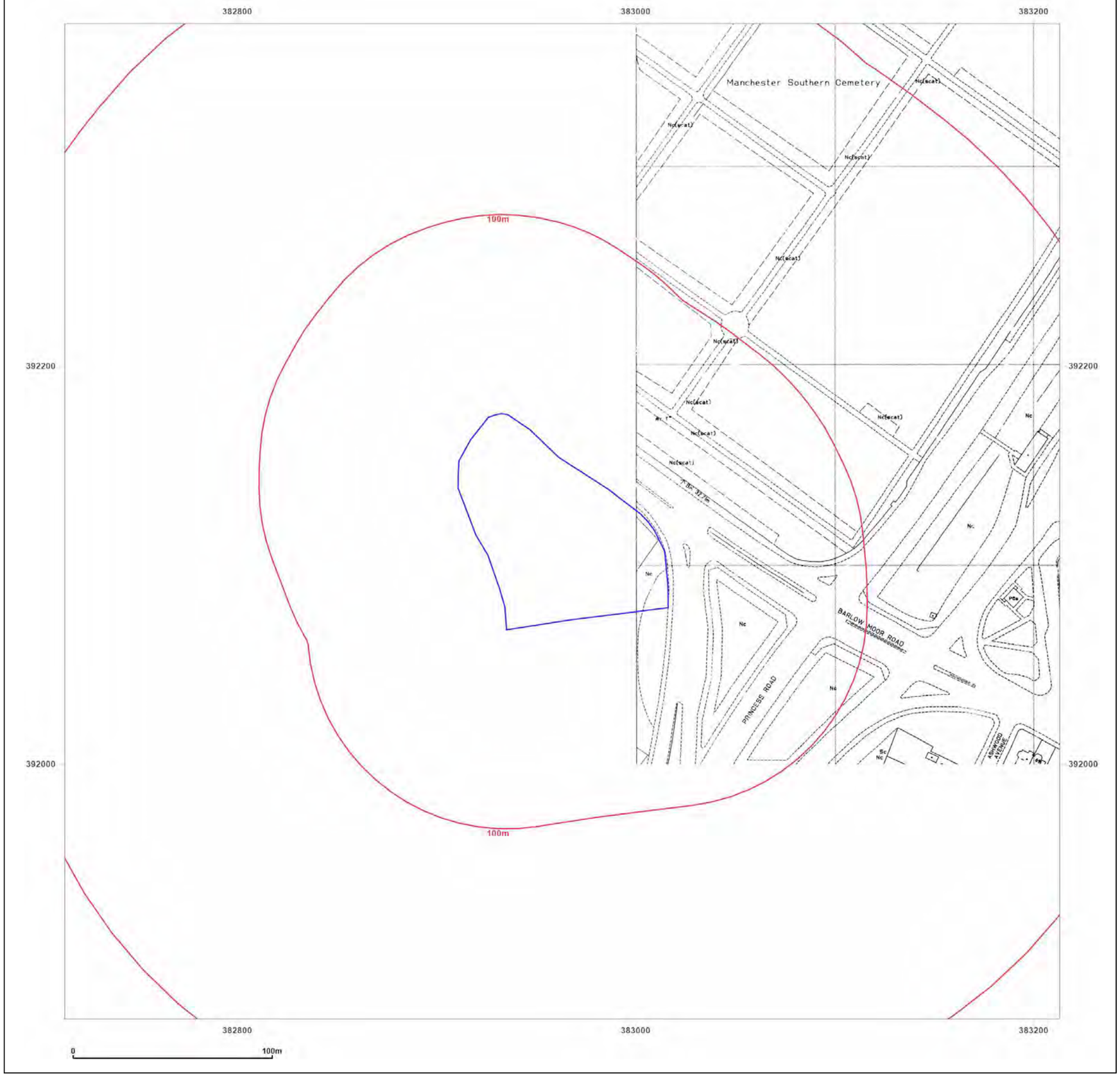
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Grid Ref: 382963, 392122

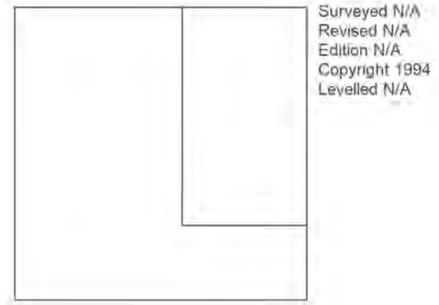
Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

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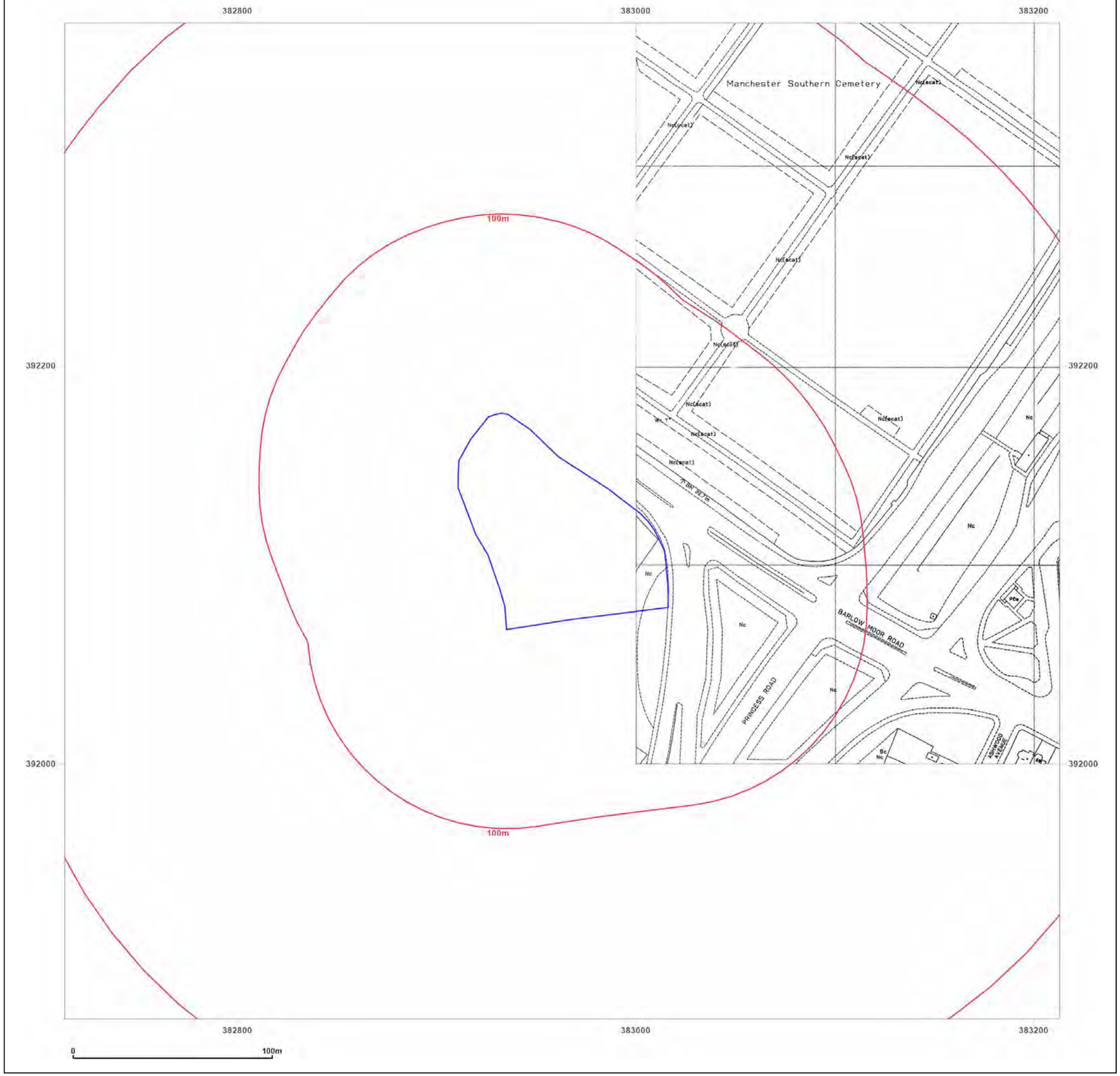
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Grid Ref: 382963, 392122

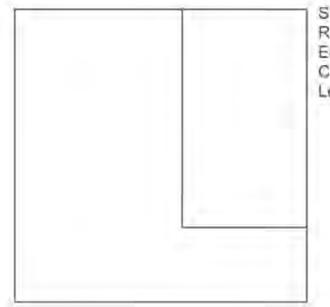
Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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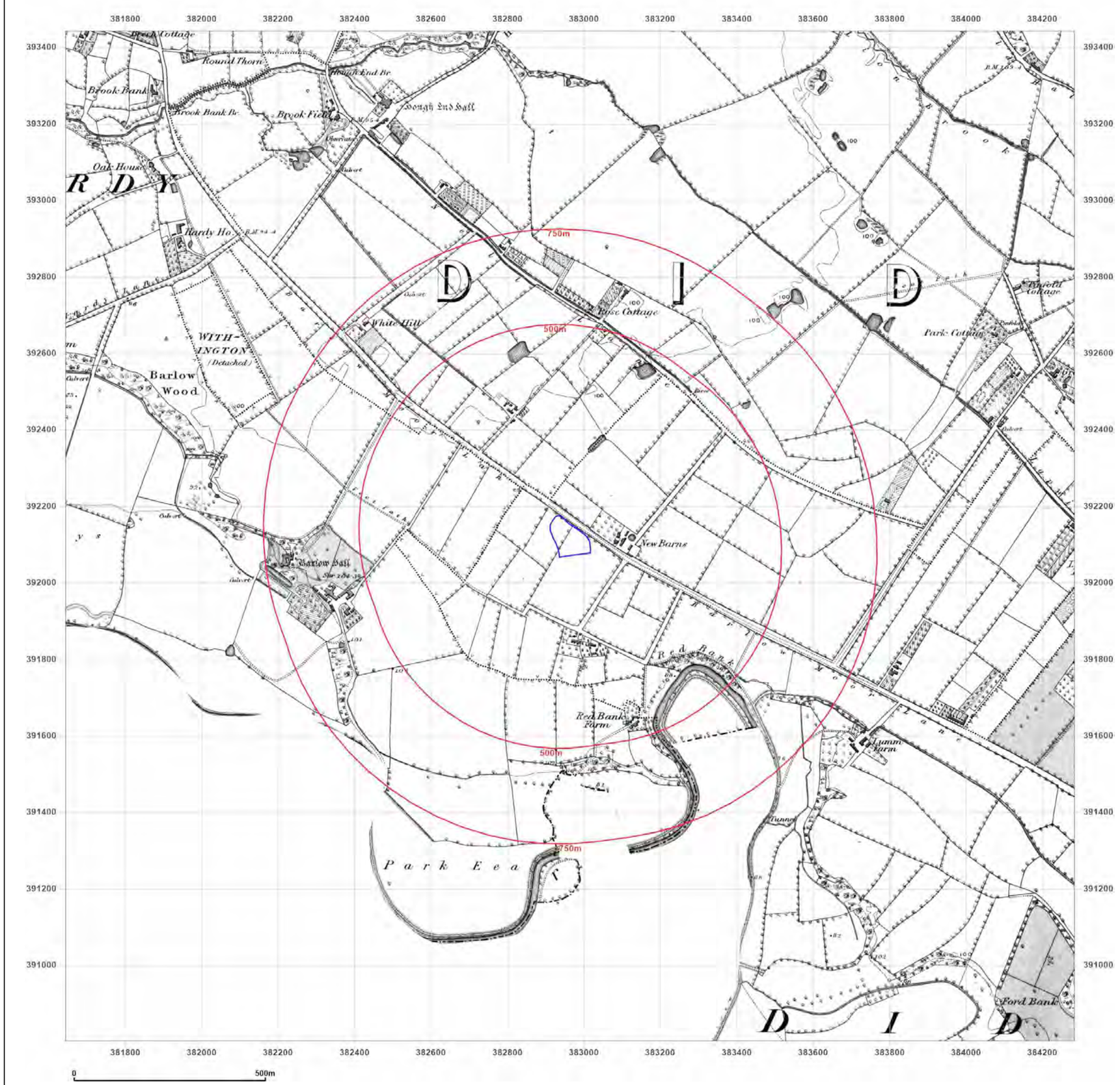
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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

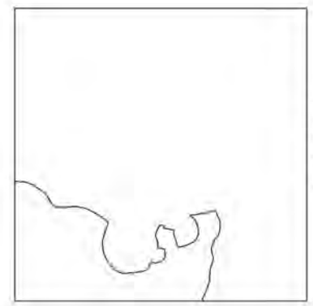
Map Name: County Series

Map date: **1849**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1845
Revised 1849
Edition 1848
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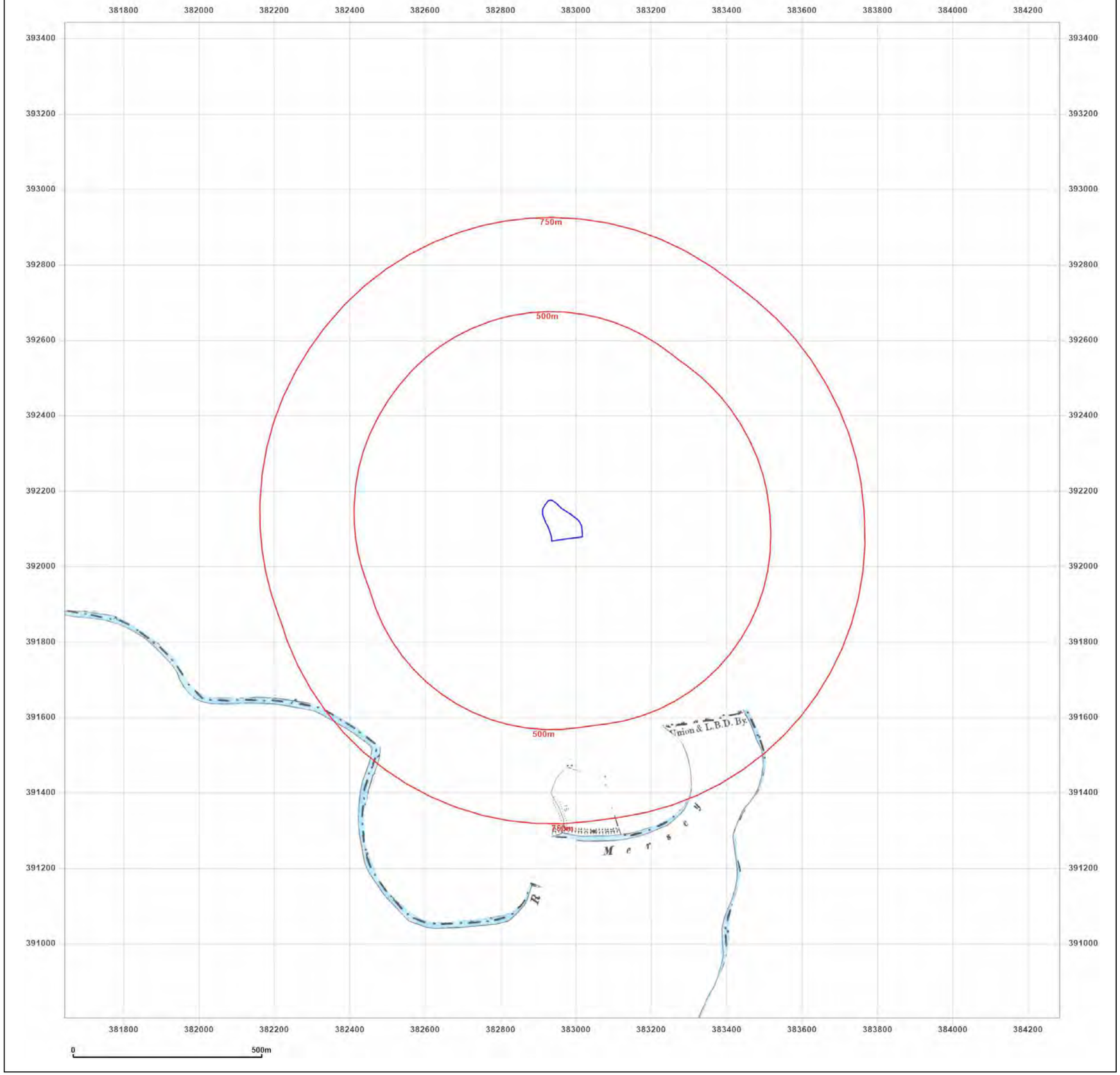
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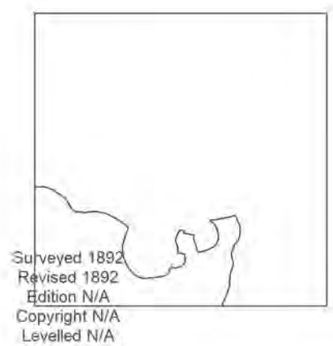
Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series
Map date: **1892**
Scale: 1:10,560
Printed at: 1:10,560

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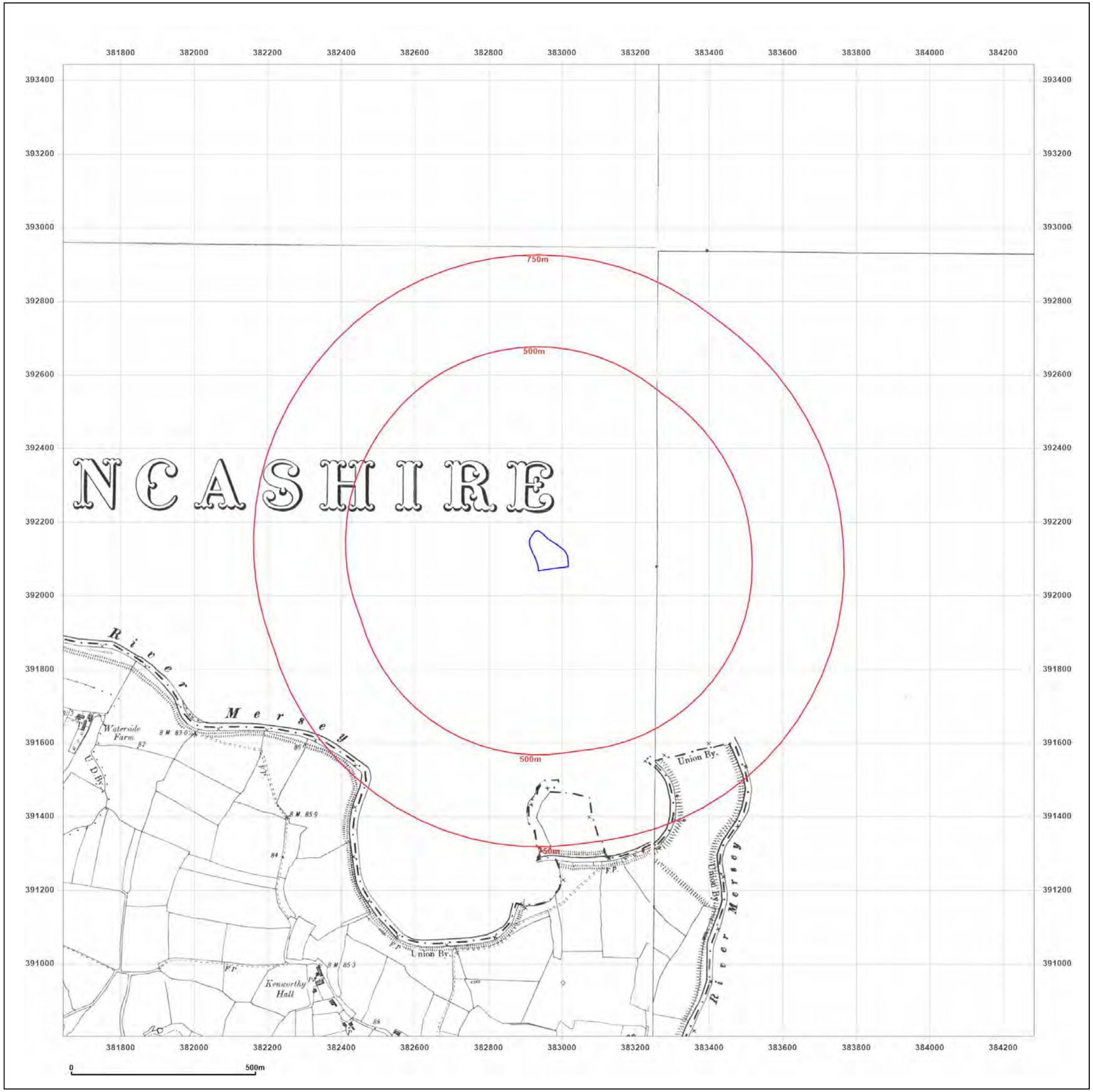
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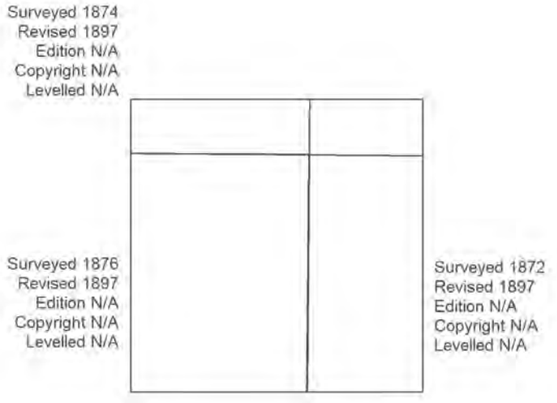
Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series
Map date: **1897**
Scale: 1:10,560
Printed at: 1:10,560

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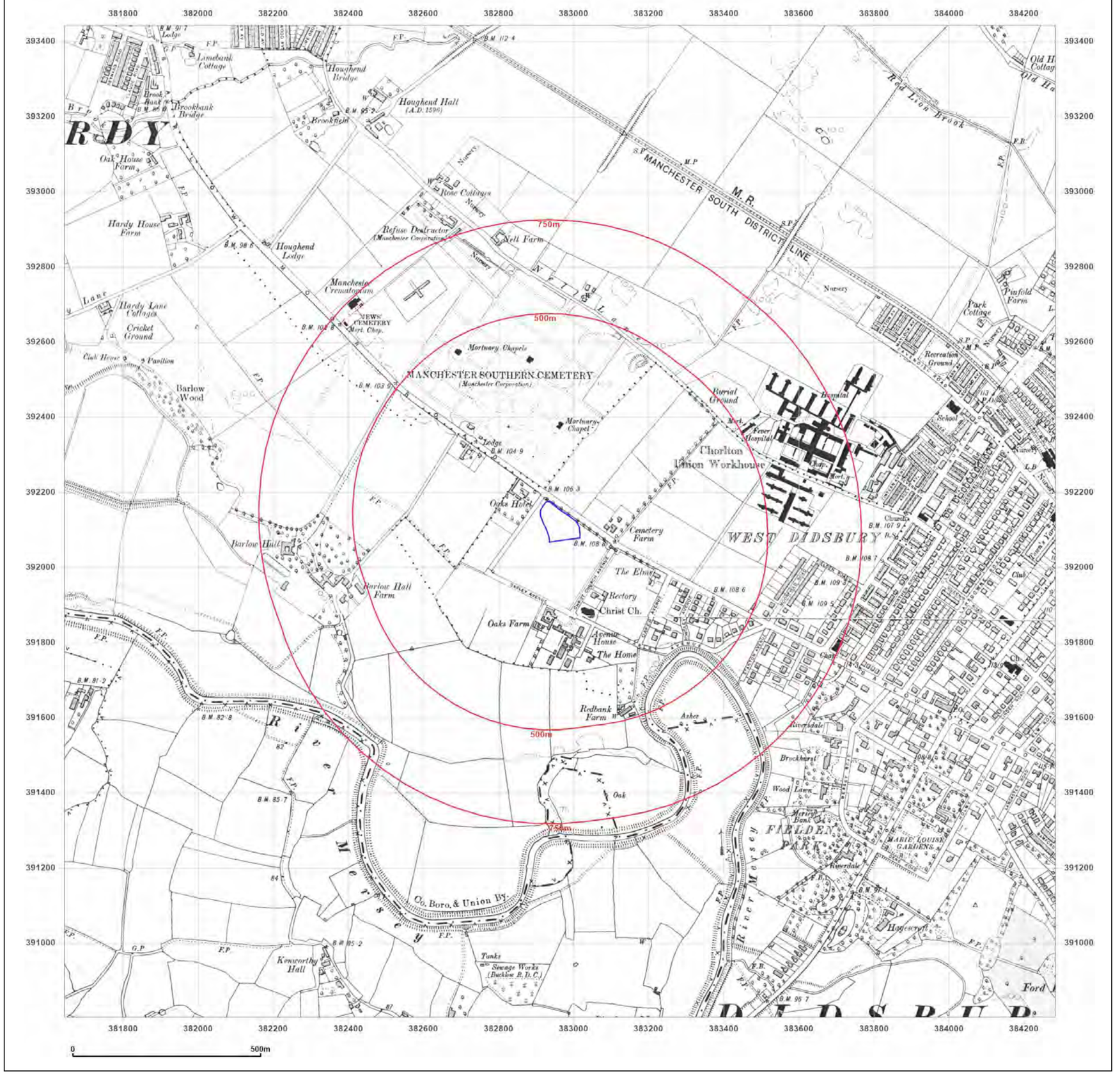
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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

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Edition N/A
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Copyright N/A
Levelled N/A

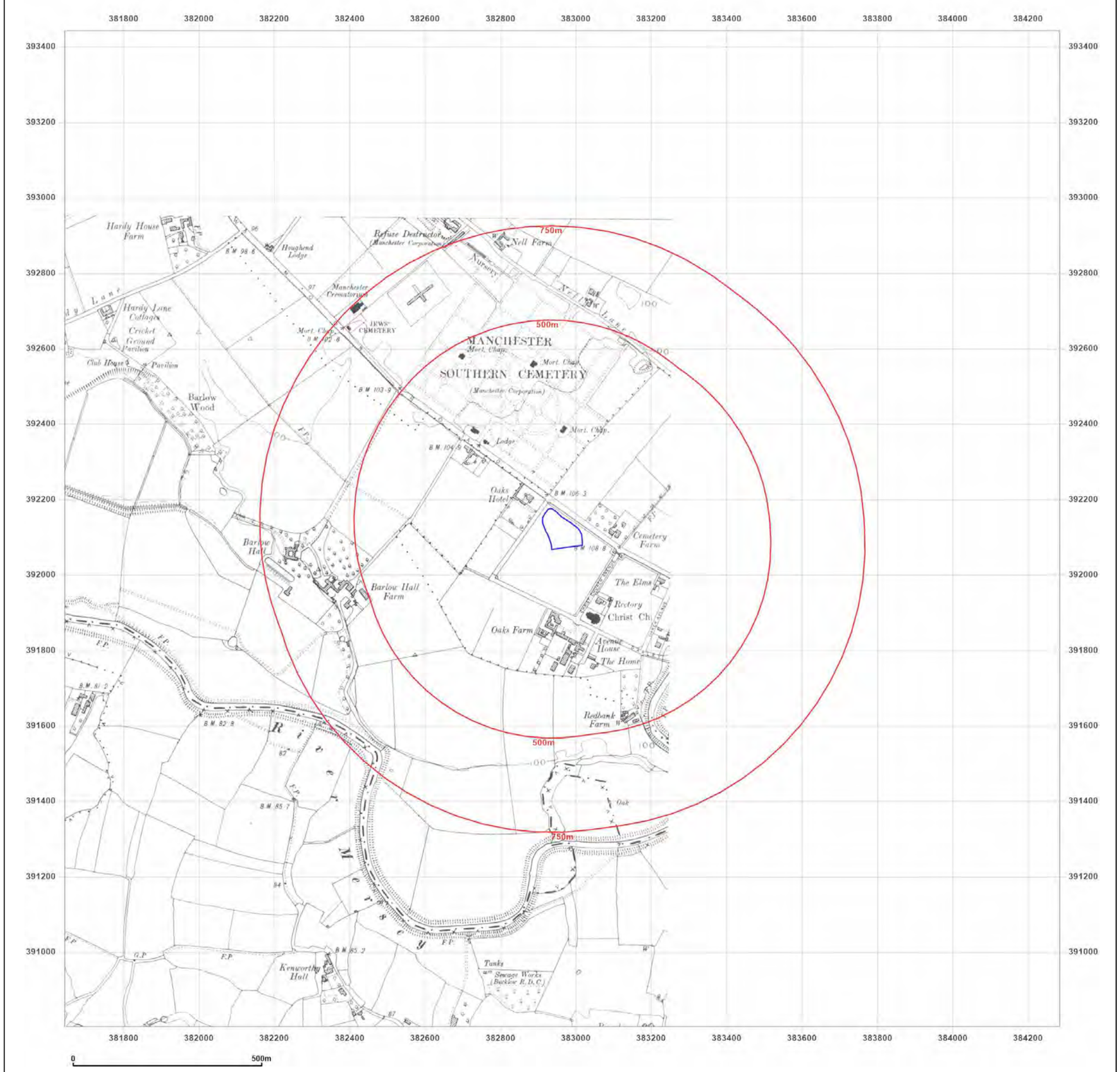
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Groundsure INSIGHTS

Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

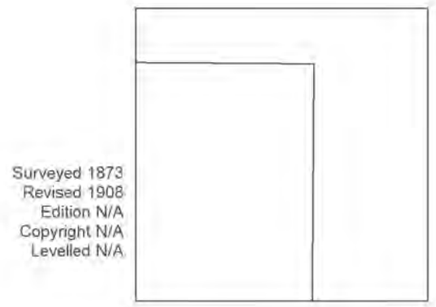
Map Name: County Series

Map date: **1908**

Scale: 1:10,560

Printed at: 1:10,560

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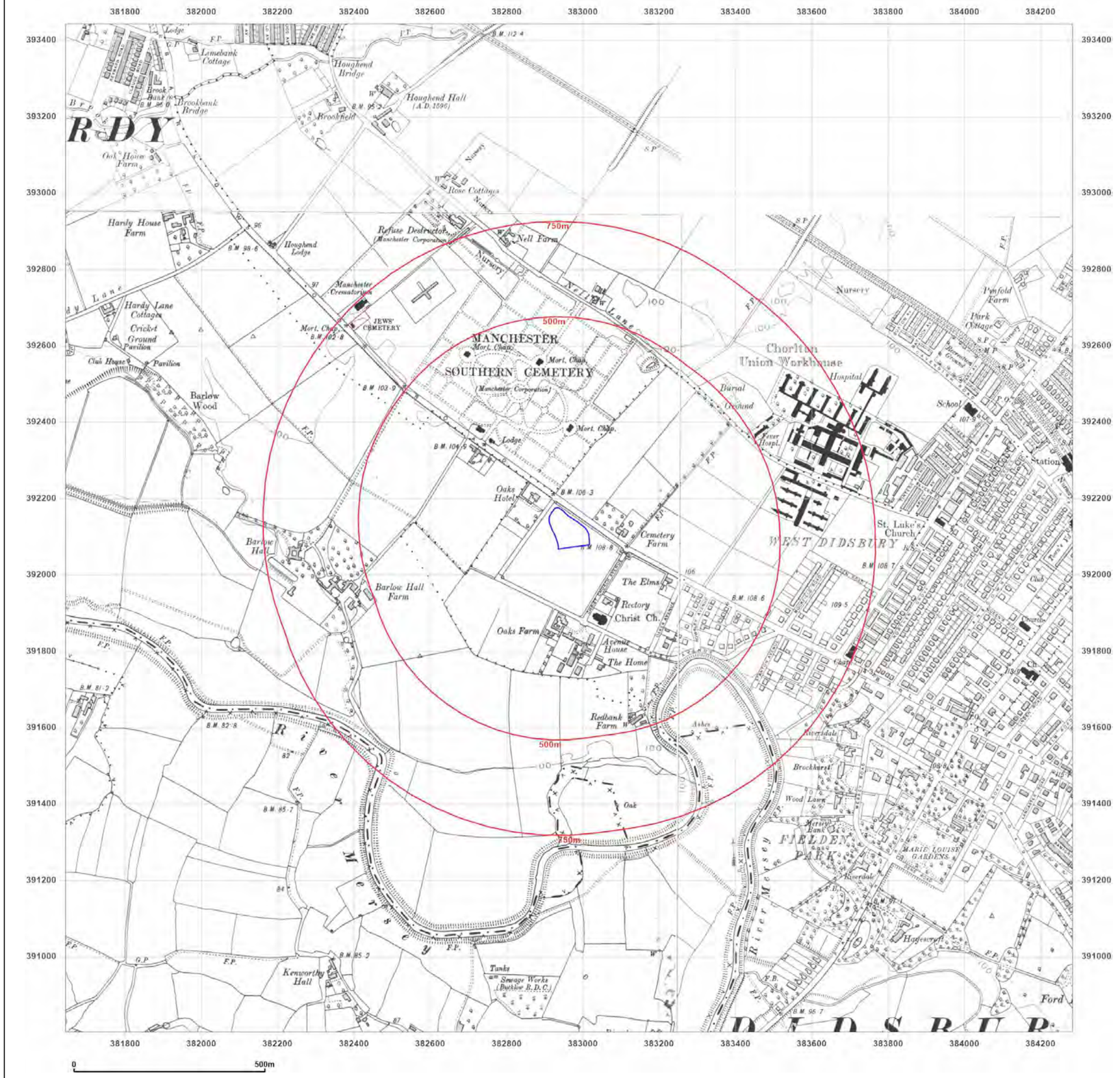
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Groundsure INSIGHTS

Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

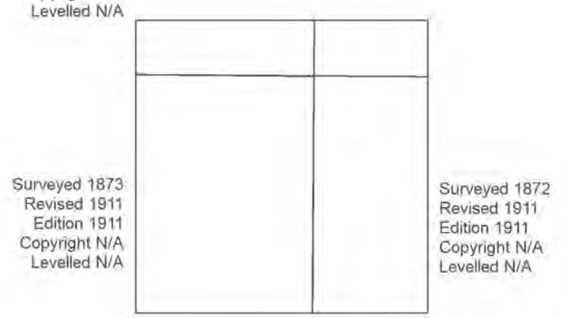
Map Name: County Series

Map date: **1911**

Scale: 1:10,560

Printed at: 1:10,560

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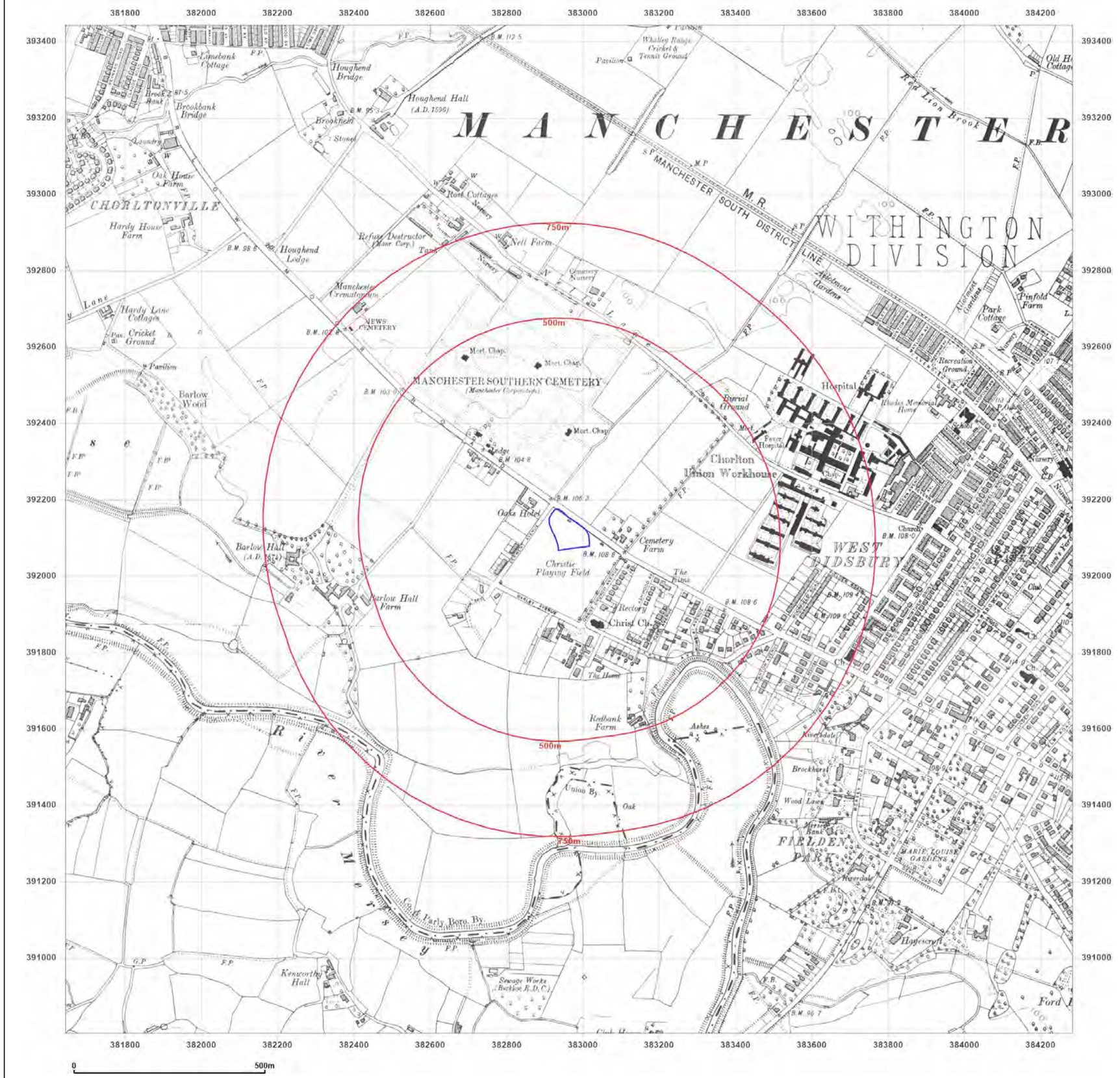
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Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series

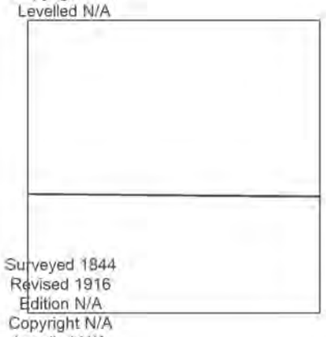
Map date: **1916**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1844
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A

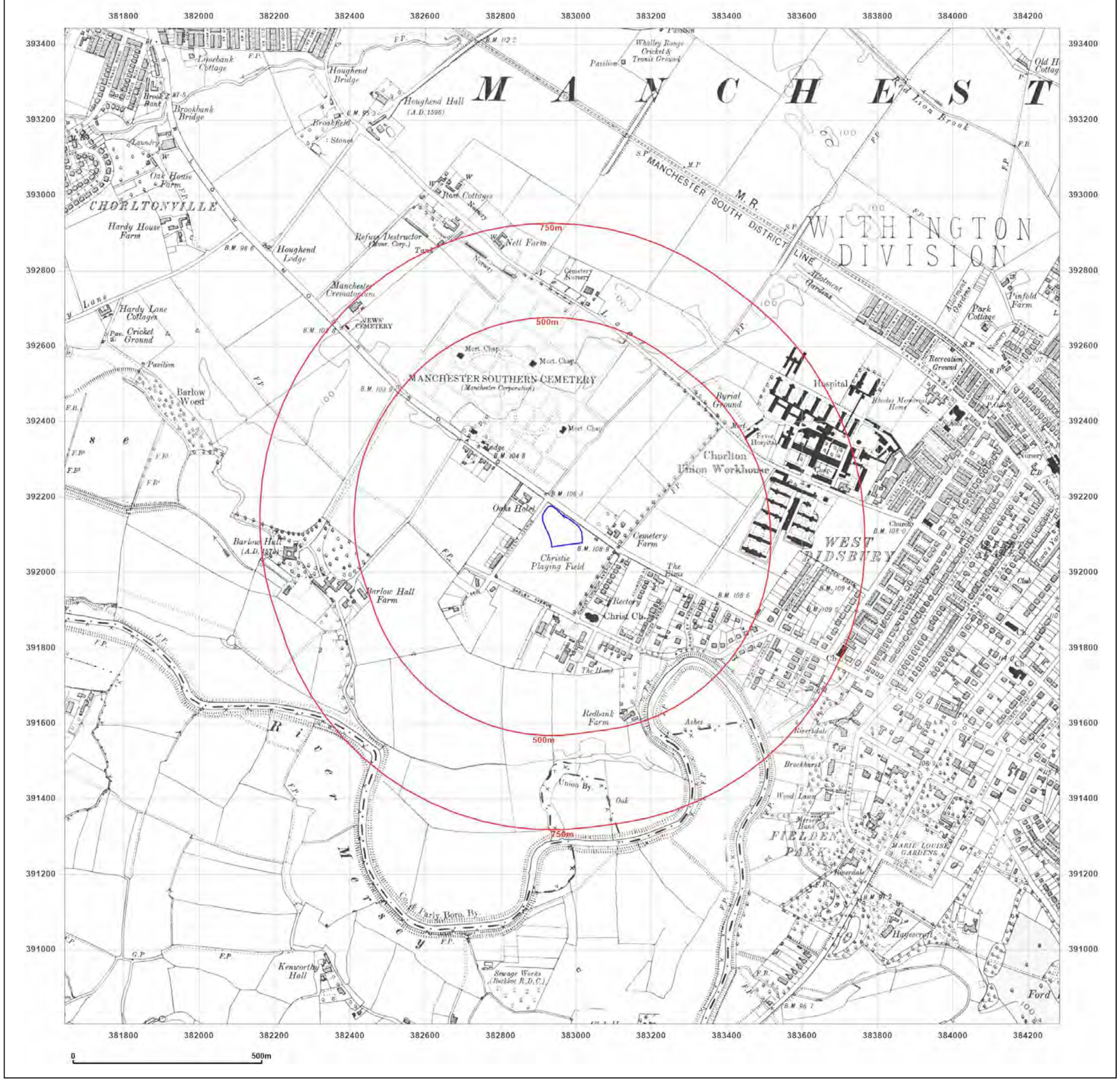
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Groundsure INSIGHTS

Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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Groundsure INSIGHTS

Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series

Map date: **1934-1938**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1844
Revised 1934
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1844
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

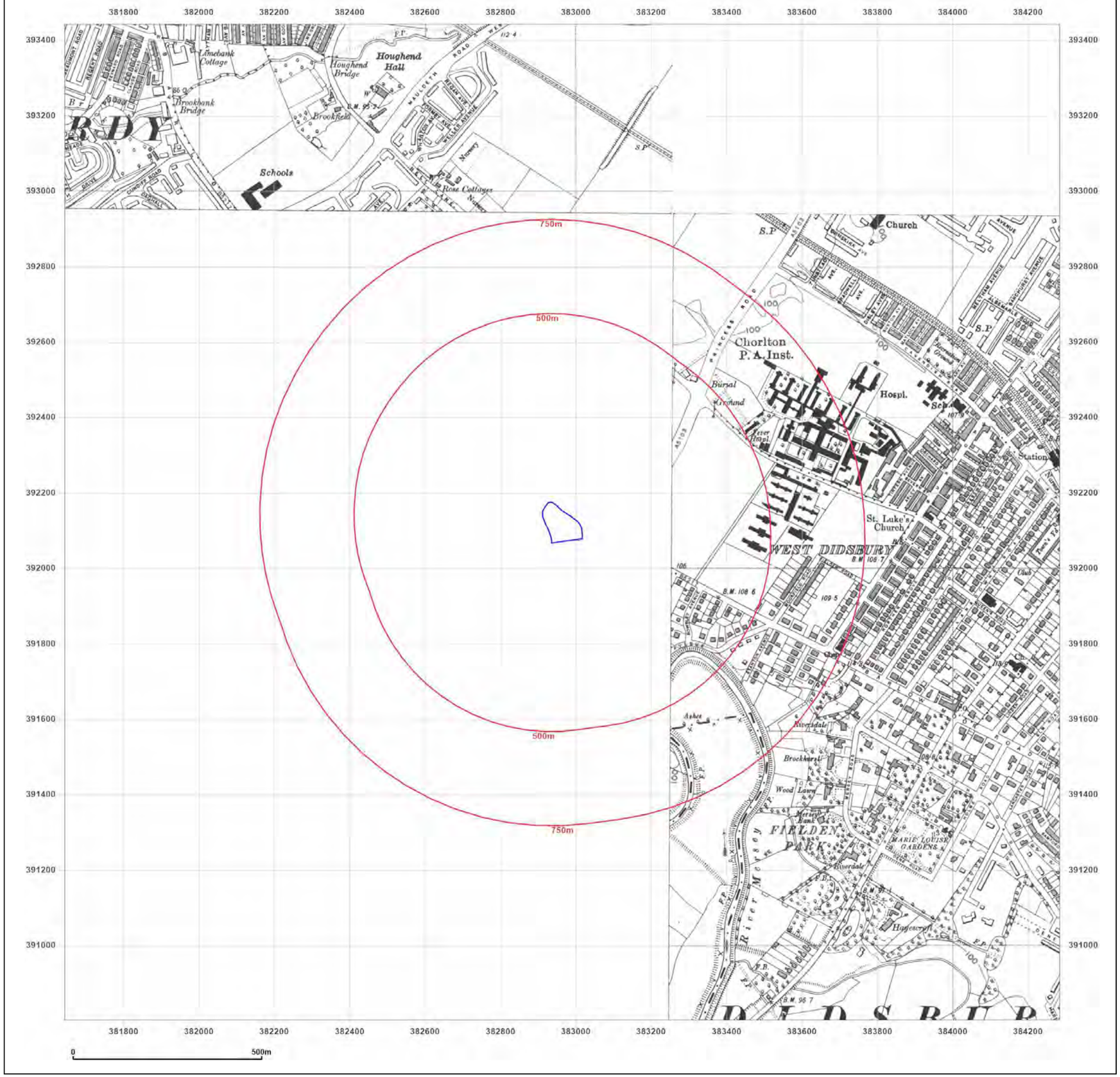
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Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series

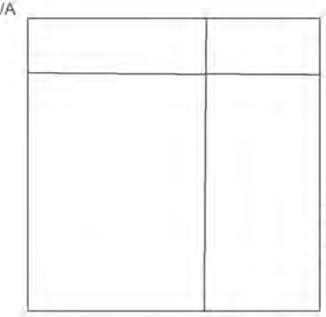
Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1873
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1872
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

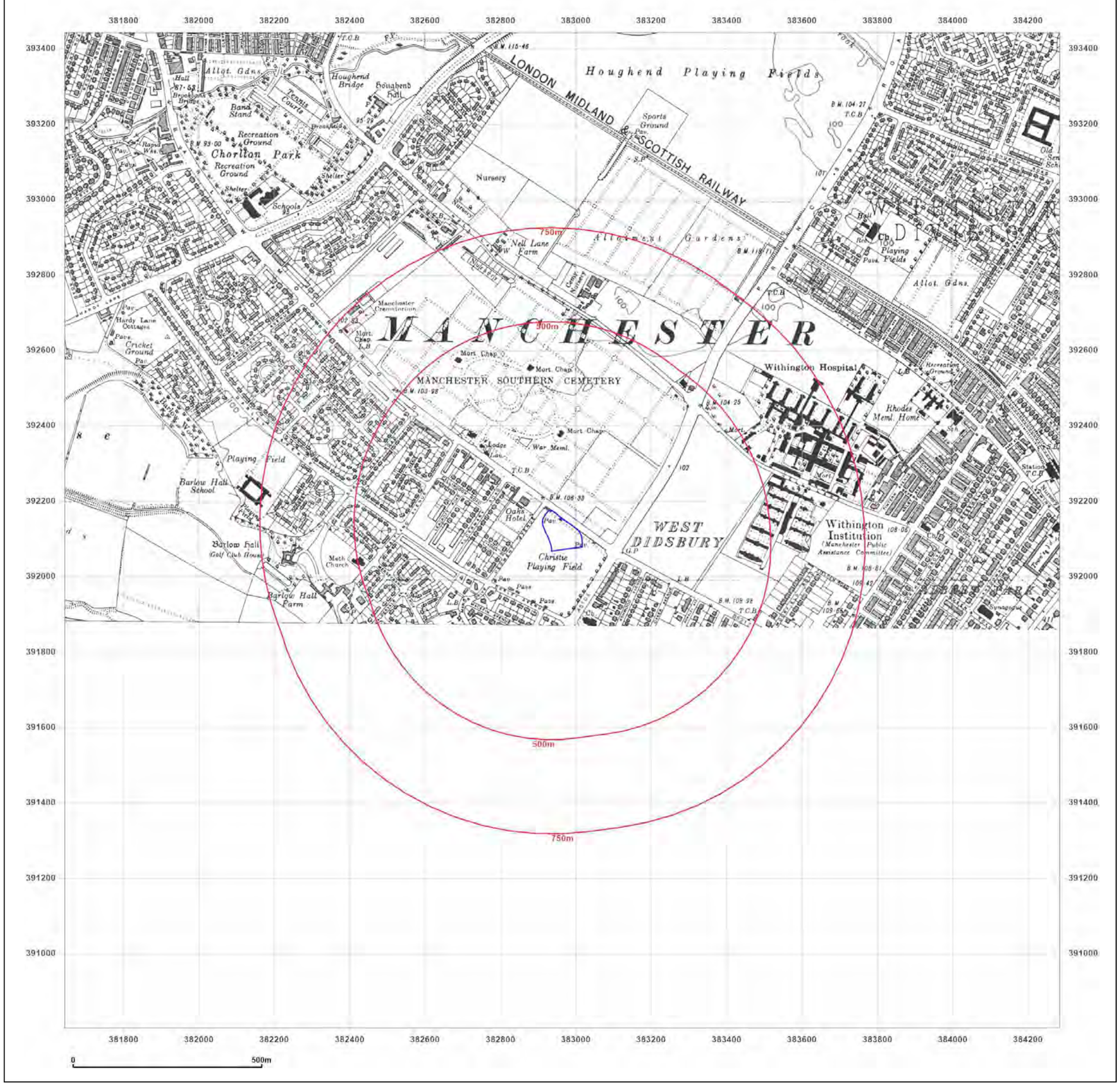
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Groundsure INSIGHTS

Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: County Series

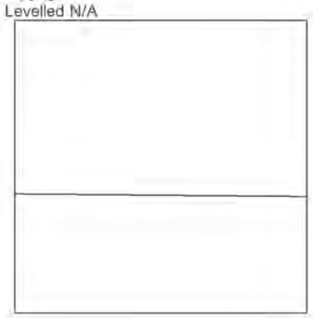
Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1844
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A



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Groundsure INSIGHTS

Site Details:

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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

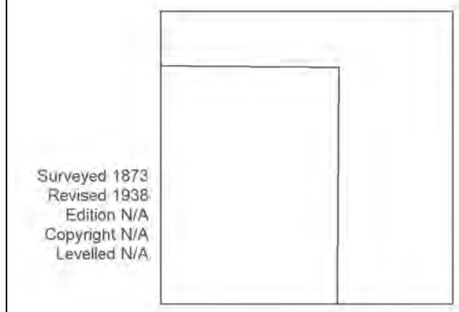
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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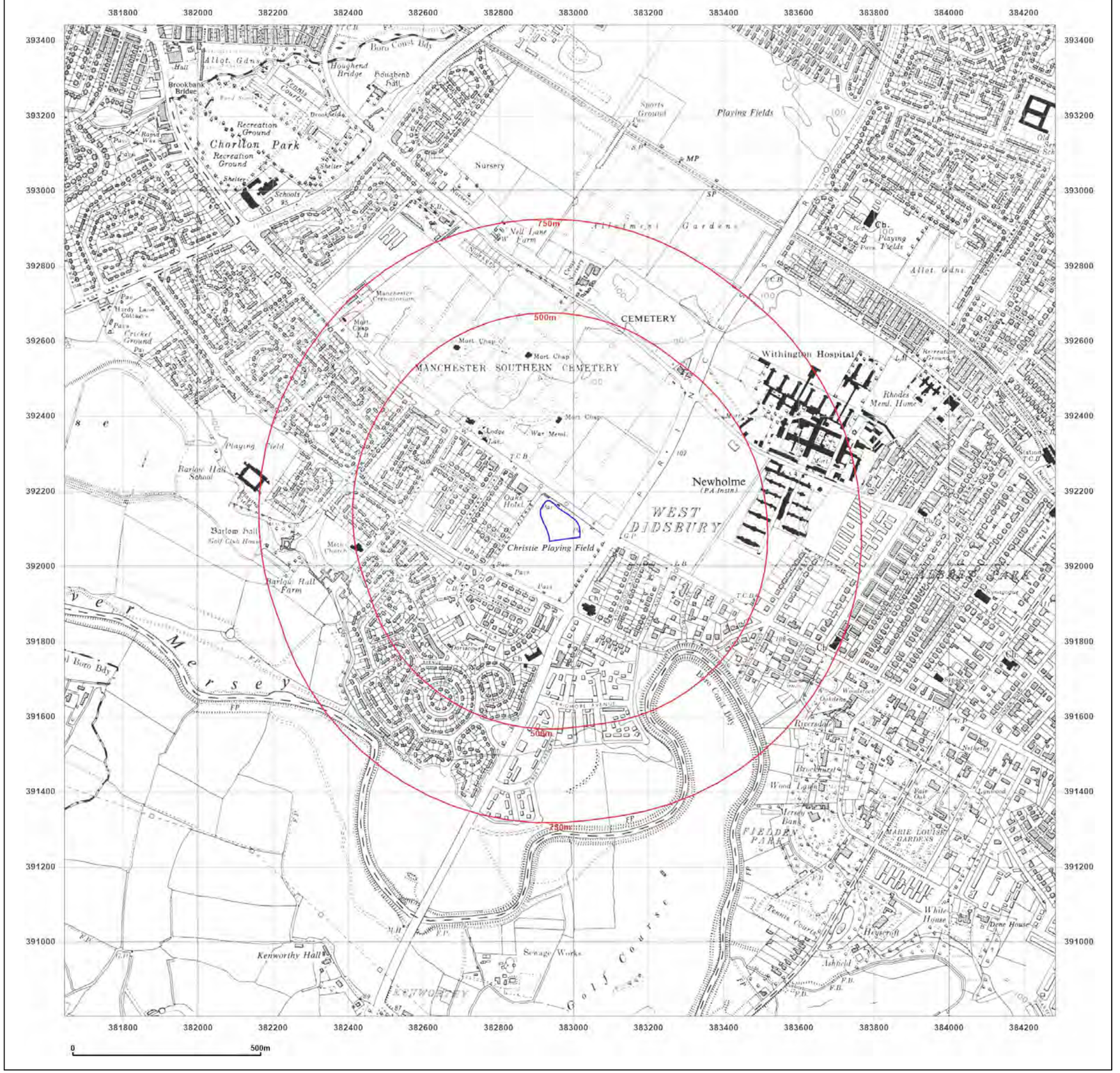
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Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: Provisional
Map date: **1955**
Scale: 1:10,560
Printed at: 1:10,560

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Surveyed N/A
Revised 1955
Edition 1955
Copyright N/A
Levelled N/A

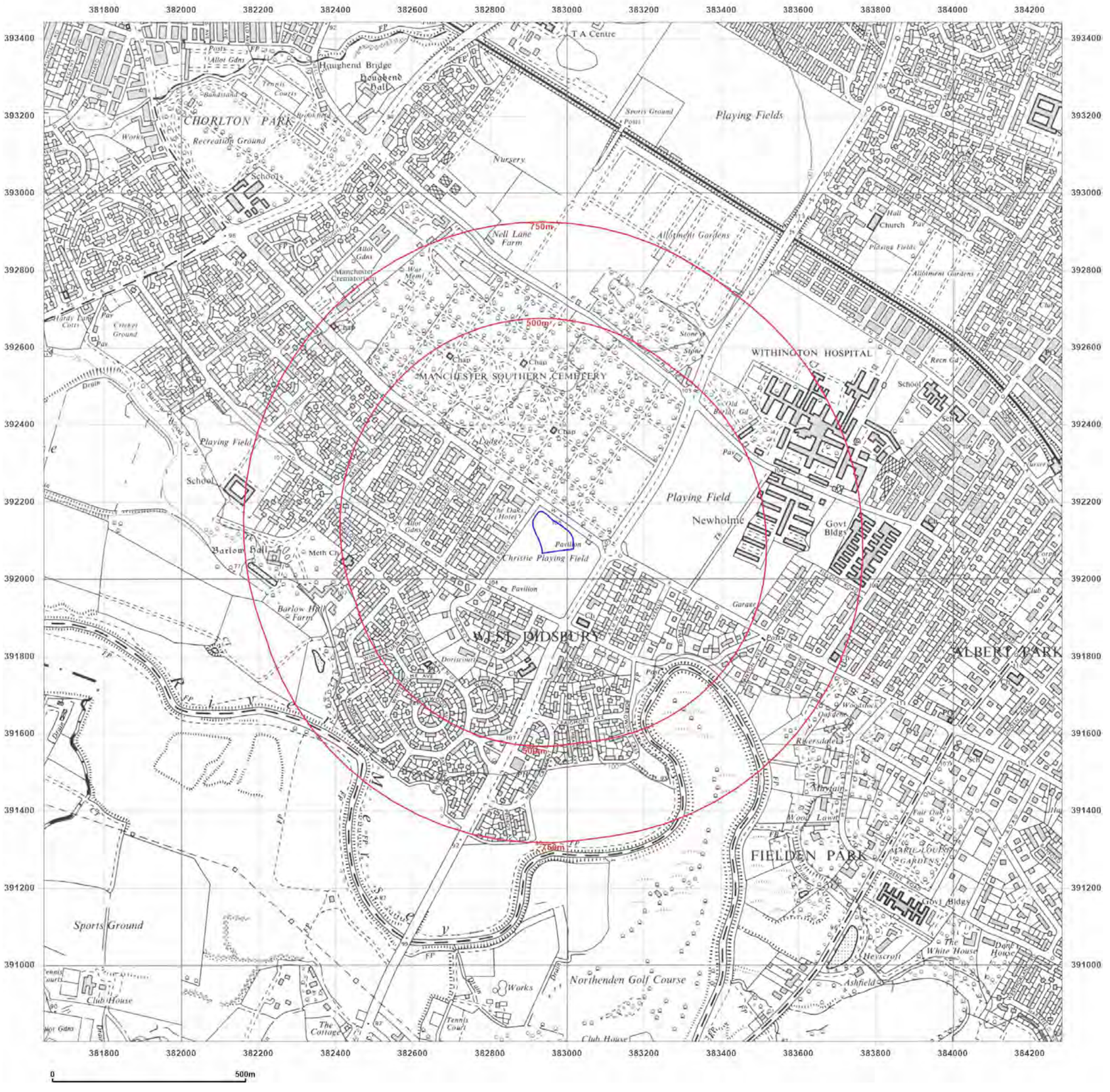
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Site Details:

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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: Provisional

Map date: **1966**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1966
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A

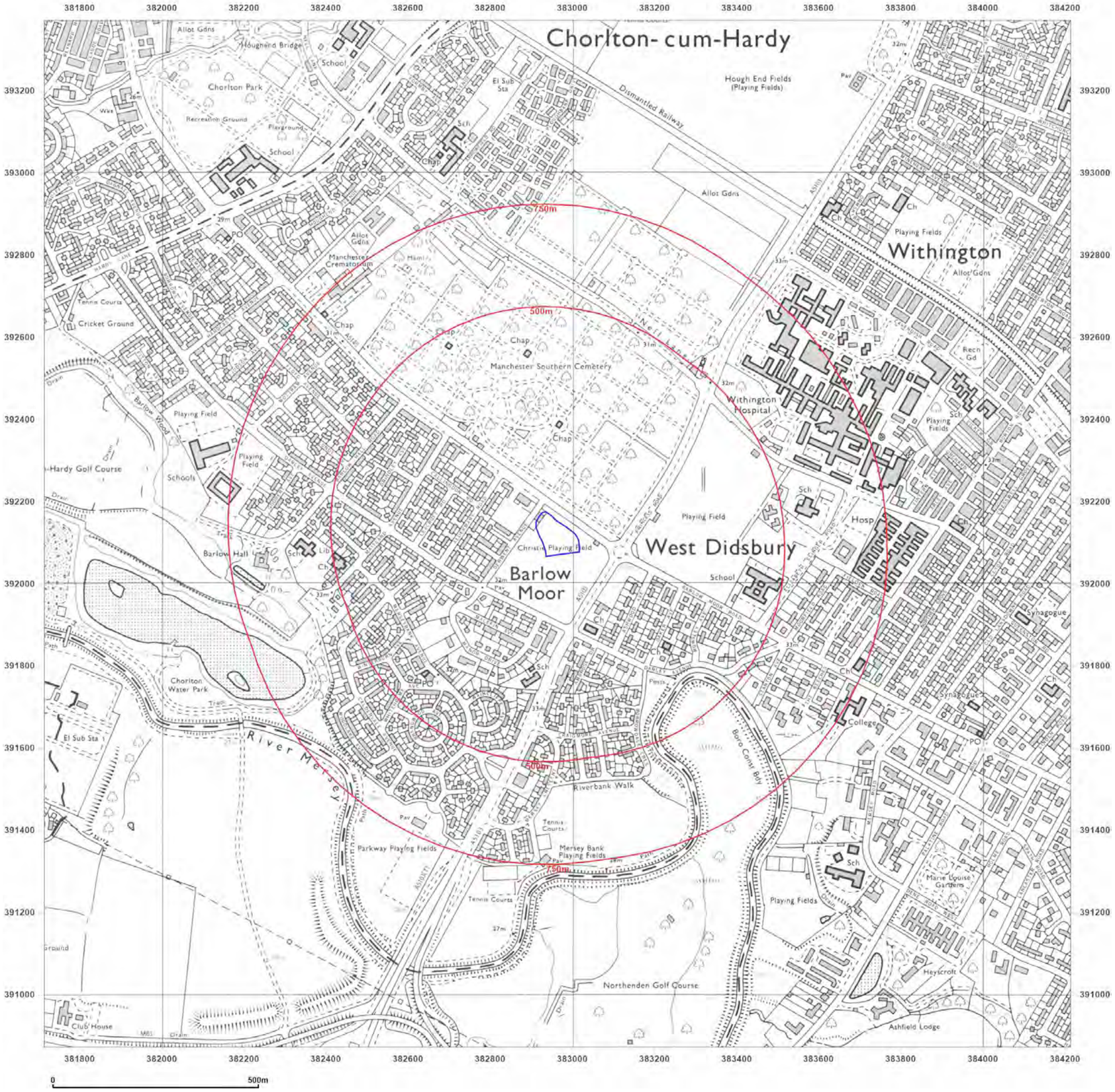
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Site Details:

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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid

Map date: **1981**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1977
Revised 1981
Edition N/A
Copyright 1981
Levelled 1975

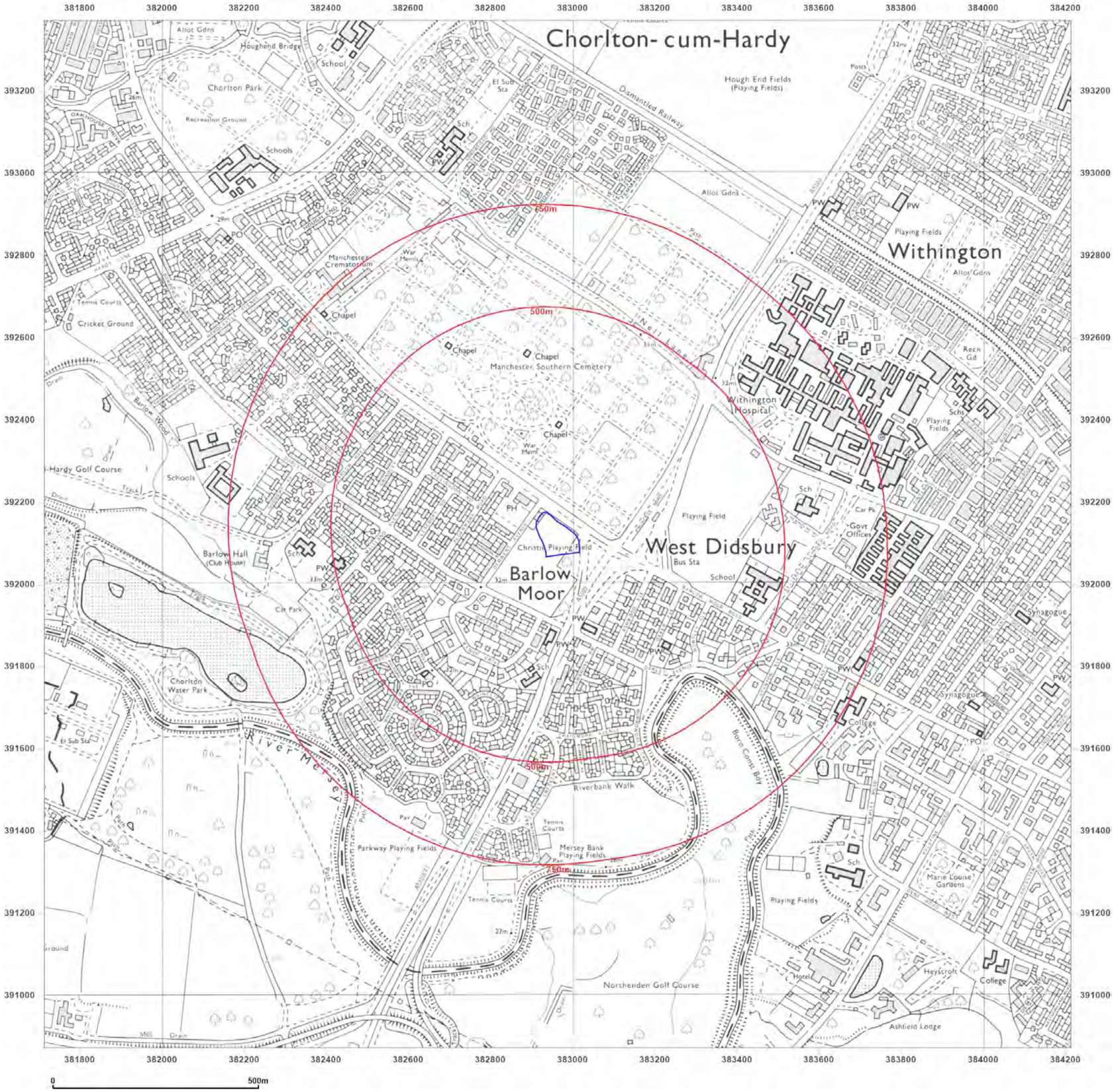
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Site Details:

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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid

Map date: **1988**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1985
Revised 1988
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid
Map date: **2001**
Scale: 1:10,000
Printed at: 1:10,000

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Site Details:

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Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid
Map date: **2010**
Scale: 1:10,000
Printed at: 1:10,000

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2010

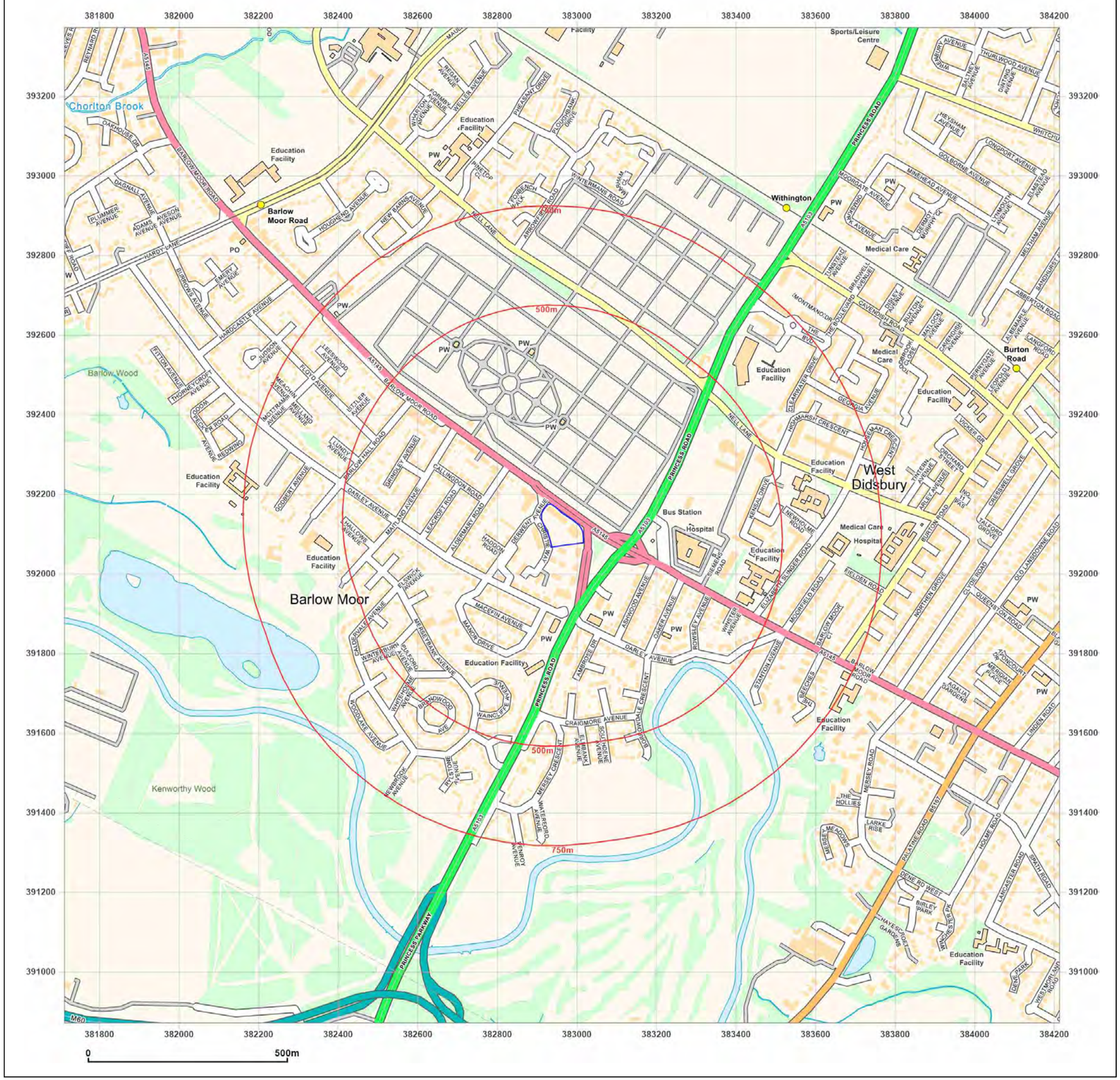
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Groundsure INSIGHTS

Site Details:

PREMIER INN, DERWENT AVENUE, MANCHESTER, M21 7QS

Client Ref: NX601
Report Ref: GS-MLN-8S4-BUK-XIP
Grid Ref: 382963, 392122

Map Name: National Grid

Map date: **2025**

Scale: 1:10,000

Printed at: 1:10,000

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Appendix D - Exploratory Hole Logs

NX Consulting

WINDOW SAMPLER BOREHOLE LOG

Project				BOREHOLE No
West Didsbury Premier Inn				WS1.1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
NX601	04-04-25			
Contractor				Sheet
Lot Geotechnics				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	ES					(0.40) 0.40	MADE GROUND: Grass over fine to coarse slightly organic rooty sand with some fine to medium gravel of coal, sandstone, brick and glass (Topsoil).		
						0.50	MADE GROUND: Lean mix concrete. Recovered as grey brown sandy angular gravel.		
1.00	ES D B					(0.90)	GLACIOFLUVIAL DEPOSITS: Dark brown silty SAND.		
1.00		N8				1.40			
						1.60	MADE GROUND; Pipe beddring. Recovered as red brown fine to coarse angul to rounded gravel of mixed lithology.		
2.00	SPT						GLACIOFLUVIAL DEPOSITS: Medium dense grey brown fine to coarse silty SAND with some fine to coarse sub rounded gravel of mixed lithology.		
2.00		N31							
3.00	SPT								
3.00		N27				(3.85)			
4.00	SPT								
4.00		N19							
4.70	BULK								
4.80	D								
5.00	SPT								
5.00		N18				5.45			
							Borehole Ended.		

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

No visual or olfactory evidence of contamination recorded. Groundwater at 4.20m at end of drilling.

All dimensions in metres Scale 1:46.875	Client Whitbread Plc	Method/ Plant Used Archway Tracked Dart	Logged By MN

AGS3 UK WS NX237 WEST DIDSBURY PIX.GPJ AGS 3_1.GDT 7/5/25

NX Consulting

WINDOW SAMPLER BOREHOLE LOG

Project				BOREHOLE No
West Didsbury Premier Inn				WS2.1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
NX601	04-04-25			
Contractor				Sheet
Lot Geotechnics				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
						0.08	MADE GROUND: Brick paving		
						(0.53)	MADE GROUND: Compact light grey brown fine to coarse very sandy GRAVEL of limestone (MOT TYPE SUB-BASE)		
						0.60			
0.70	ES						GLACIOFLUVIAL DEPOSITS: Medium dense grey brown fine to coarse silty SAND with some fine to coarse sub rounded gravel of mixed lithology.		
1.00	ES D B					(0.80)			
1.00		N15				1.40			
						1.60	MADE GROUND; Pipe beddring. Recovered as red brown fine to coarse angul to rounded gravel of mixed lithology.		
							GLACIO FLUVIAL DEPOSITS: Medium dense dark brown fine to coarse SAND with some fine to coarse subrounded to rounded gravel of mixed lithology		
2.00	SPT D								
2.00		N33				(1.90)			
3.00	S B								
3.00		N14				3.50			
			▽ 1.1				GLACIO FLUVIAL DEPOSITS: Medium dense orange brown fine to coarse SAND and GRAVEL. Gravel is fine to coarse sub rounded gravel of mixed lithology. Some coal veins.		
4.00	SPT D					(1.20)			
4.00		N12				4.70			
							GLACIO FLUVIAL DEPOSITS: Firm becoming firm to stiff brown sandy CLAY.		
5.00	SPT D					(0.75)			
5.00		N25				5.45			
							Borehole Ended.		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	No visual or olfactory evidence of contamination recorded. Groundwater at 3.7m at end of drilling.

All dimensions in metres Scale 1:46.875	Client Whitbread Plc	Method/ Plant Used Archway Tracked Dart	Logged By MN

AGS3 UK WS NX237 WEST DIDSBURY PIX.GPJ AGS 3_1.GDT 7/5/25

NX Consulting

WINDOW SAMPLER BOREHOLE LOG

Project				BOREHOLE No
West Didsbury Premier Inn				WS3.1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
NX601	04-04-25			
Contractor				Sheet
Lot Geotechnics				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.50	ES					(0.90) 0.90	MADE GROUND: Grass over fine to coarse slightly organic rooty slightly organic sand with some fine to medium gravel of coal, sandstone, brick, glass clinker (Topsoil).		
1.00 1.00 1.10	SPT ES B	N21				(0.60) 1.50	GLACIOFLUVIAL DEPOSITS: Medium dense grey brown fine to coarse silty SAND with some fine to coarse sub rounded gravel of mixed lithology.		
2.00 2.00	SPT	N20				(3.15)	GLACIOFLUVIAL DEPOSITS: Medium dense grey brown fine to coarse silty SAND with some fine to coarse sub rounded gravel of mixed lithology.		
3.00 3.00	SPT	N25							
4.00 4.00	SPT	N11							
			▽			4.65			
						4.75	GLACIO FLUVIAL DEPOSITS: Medium dense orange brown fine to coarse SAND and GRAVEL. Gravel is fine to coarse sub rounded gravel of mixed lithology.		
4.80	D						4.65 ...becoming wet		
5.00 5.00	SPT	N24				(0.70) 5.45	GLACIO FLUVIAL DEPOSITS: Soft becoming firm to stiff brown CLAY.		
							Borehole Ended.		

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

No visual or olfactory evidence of contamination recorded. Groundwater at 4.65m at end of drilling.

All dimensions in metres Scale 1:46.875	Client Whitbread Plc	Method/ Plant Used Archway Tracked Dart	Logged By MN

AGS3 UK WS NX237 WEST DIDSBURY PIX.GPJ AGS 3_1.GDT 7/5/25

NX Consulting

WINDOW SAMPLER BOREHOLE LOG

Project				BOREHOLE No
West Didsbury Premier Inn				WS4.1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
NX601	04-04-25			
Contractor				Sheet
Lot Geotechnics				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
						0.15	MADE GROUND: Block paving over sand blind and lean mix concrete.		
						0.35	Recovered as light grey brown fine to coarse very sandy GRAVEL (SUB-BASE)		
							MADE GROUND: Compact light grey brown fine to coarse very sandy GRAVEL (SUB-BASE)		
0.80	ES					(1.15)	MADE GROUND: Grey brown fine to coarse silty SAND with some fine to coarse sub rounded gravel of mixed lithology.		
1.00	SPT								
1.00		N6				1.50			
1.50	BULK						GLACIOFLUVIAL DEPOSITS: Medium dense grey brown fine to coarse silty SAND with some fine to coarse sub rounded gravel of mixed lithology.		
2.00	SPT								
2.00		N25							
3.00	SPT					(3.20)			
3.00		N3							
4.00	SPT								
4.00		N18							
						4.70			
							GLACIO FLUVIAL DEPOSITS: Firm becoming firm to stiff brown sandy CLAY.		
5.00	SPT					(0.75)			
5.00		N28				5.45			
							Borehole Ended.		

Boring Progress and Water Observations					
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt

Chiselling			Water Added	
From	To	Hours	From	To

GENERAL REMARKS

No visual or olfactory evidence of contamination recorded. Groundwater at 3.30m at end of drilling.

All dimensions in metres Scale 1:46.875	Client Whitbread Plc	Method/ Plant Used Archway Tracked Dart	Logged By MN

AGS3 UK WS NX237 WEST DIDSBURY PIX.GPJ AGS 3_1.GDT 7/5/25

Appendix E – Geotechnical Laboratory Test Results

GFQ-008-74
Issue 02 - Nov 23

Summary of Classification Test Results

Project No.
J307969

Project Name
West Didsbury Premier Inn Extension (PIX)

Hole No.	Sample				Soil Description	Density		*w*	Passing 425µm	LL	If 1 Point Test			PL	PI	Particle density	Remarks
	Ref	Top	Base	Type		bulk	dry				Pen 1	Pen 2	CF				
						Mg/m^3		%	%	%				%	%	Mg/m^3	
WS01		4.80		D	Brown slightly sandy CLAY			14.5	95-w	44-4pt-i				18	26		
WS03		4.80		D	Brown slightly sandy slightly gravelly CLAY			14.8	96-hp	27-4pt-i				14	13		

Key

Density tests:
Linear measurement unless :
wd - water displacement
wi - immersion in water

w - water content

Atterberg:
4pt cone unless :
cas - Casagrande method
1pt - single point test
CF - Correlation Factor
Liquid limit test: i - increasing moisture content, d - decreasing moisture content
Atterberg sample prep: n - Natural, HP - Hand Picked, w - Washed

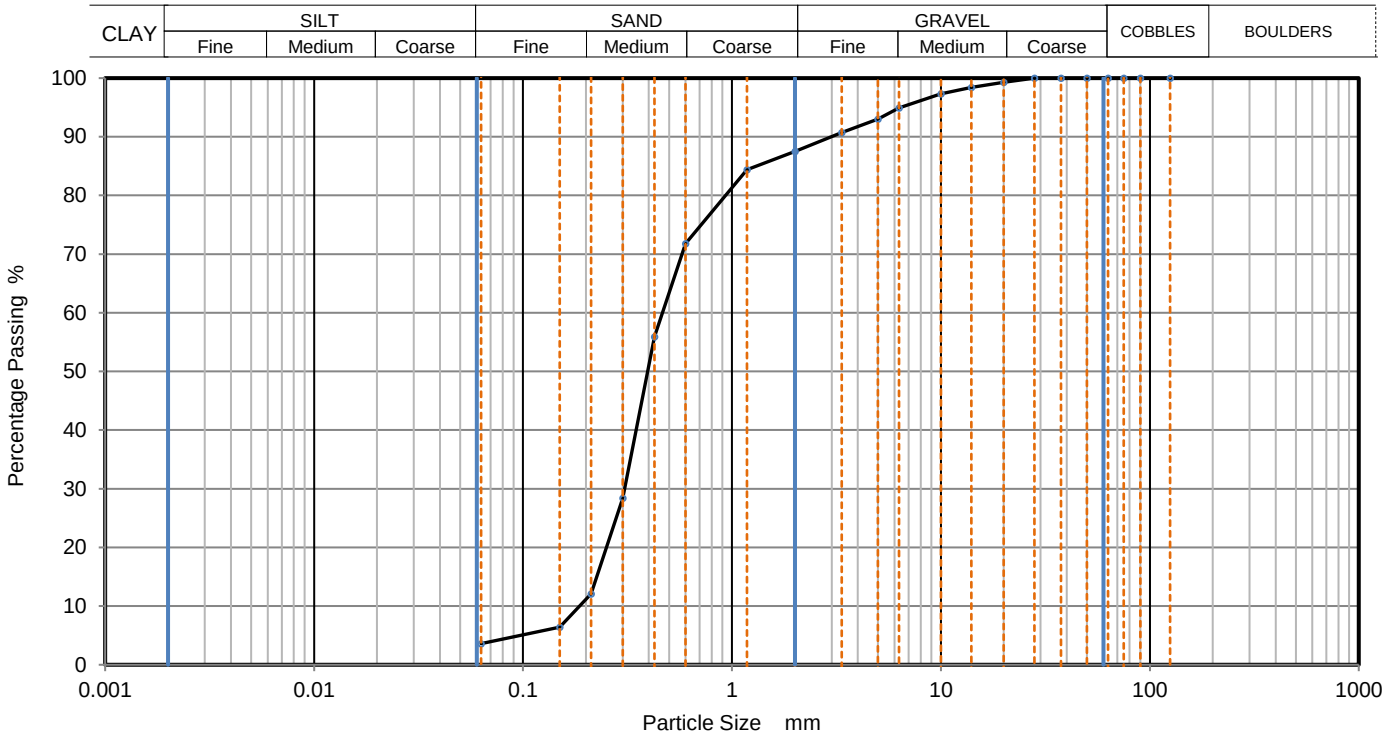
Particle density:
sp - fluid pycnometer

Test Standards:
Bulk Density Tests - BS EN ISO 17892-2:2014
Water Content - BS EN ISO 17892-1:2014+A1:2022
Liquid & Plastic Limits - BS EN ISO 17892-12:2018+A2:2022
Particle Density - BS EN ISO 17892-3:2015

Date Printed:
30/04/2025

ISO INDX

GFQ-008-77 Issue 02 - Nov 23	**Determination of Particle Size Distribution (ISO 17892-4:2016)**			Job Ref	**J307969**
				Borehole/Pit No.	WS01
Project Name	West Didsbury Premier Inn Extension (PIX)			Sample No.	
Soil Description	Brown slightly gravelly SAND			Depth, m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample			KeyLAB ID	TTLP2025041110



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	98		
10	97		
6.3	95		
5	93		
3.35	91		
2	88		
1.18	84		
0.6	72		
0.425	56		
0.3	28		
0.212	12		
0.15	6		
0.063	4		

Dry Mass of sample, g: 2255

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	84
Fines <0.063mm	4

Grading Analysis		
D100	mm	28
D60	mm	0.464
D30	mm	0.306
D10	mm	0.186
Uniformity Coefficient		2.5
Curvature Coefficient		1.1
Pretreatment Method (If Applicable)		

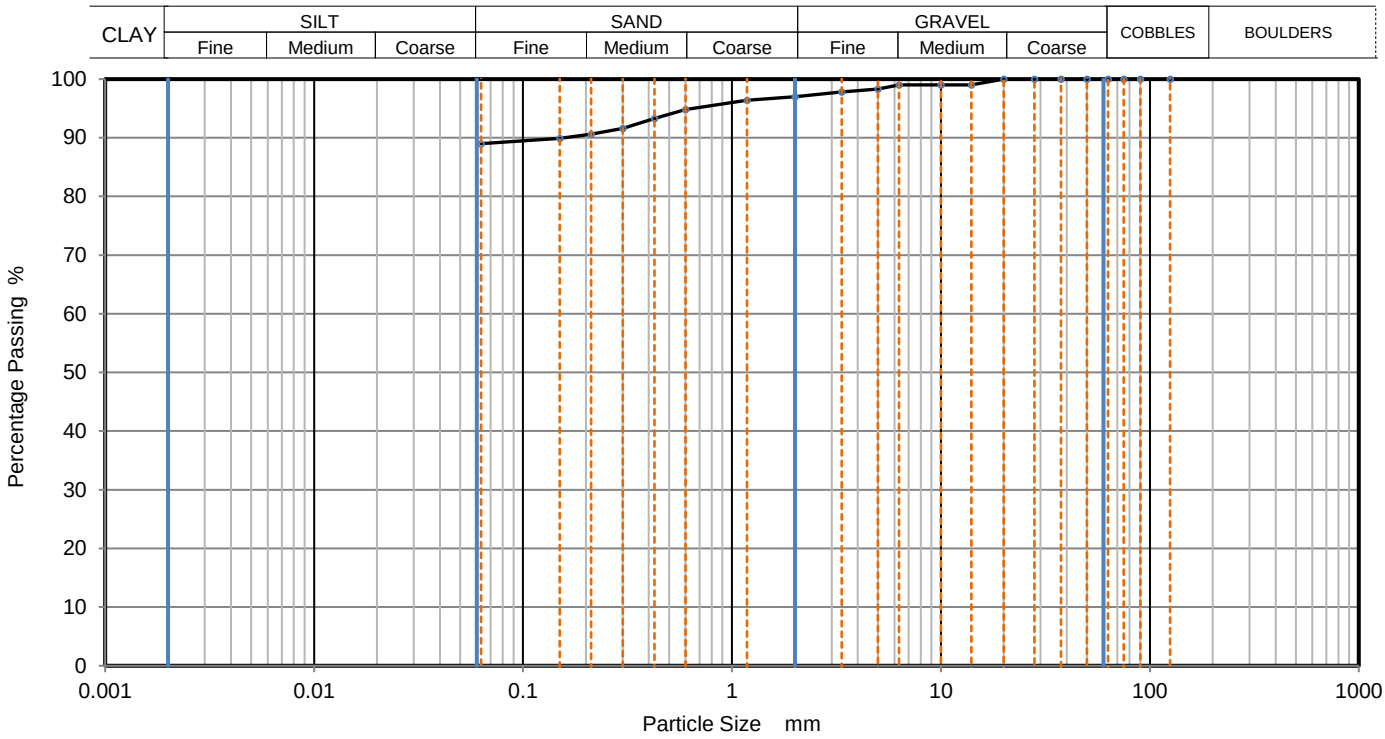
Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Date Printed: 30/04/2025

ISO PSD

GFQ-008-77 Issue 02 - Nov 23	**Determination of Particle Size Distribution (ISO 17892-4:2016)**			Job Ref	**J307969**
				Borehole/Pit No.	WS01
Project Name	West Didsbury Premier Inn Extension (PIX)			Sample No.	
Soil Description	Brown slightly sandy slightly gravelly CLAY			Depth, m	4.70
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample			KeyLAB ID	TTLP2025041111



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	99		
10	99		
6.3	99		
5	98		
3.35	98		
2	97		
1.18	96		
0.6	95		
0.425	93		
0.3	92		
0.212	91		
0.15	90		
0.063	89		

Dry Mass of sample, g: 923

Sample Proportions	% dry mass
Very coarse	0
Gravel	3
Sand	8
Fines <0.063mm	89

Grading Analysis		
D100	mm	20
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		
Pretreatment Method (If Applicable)		

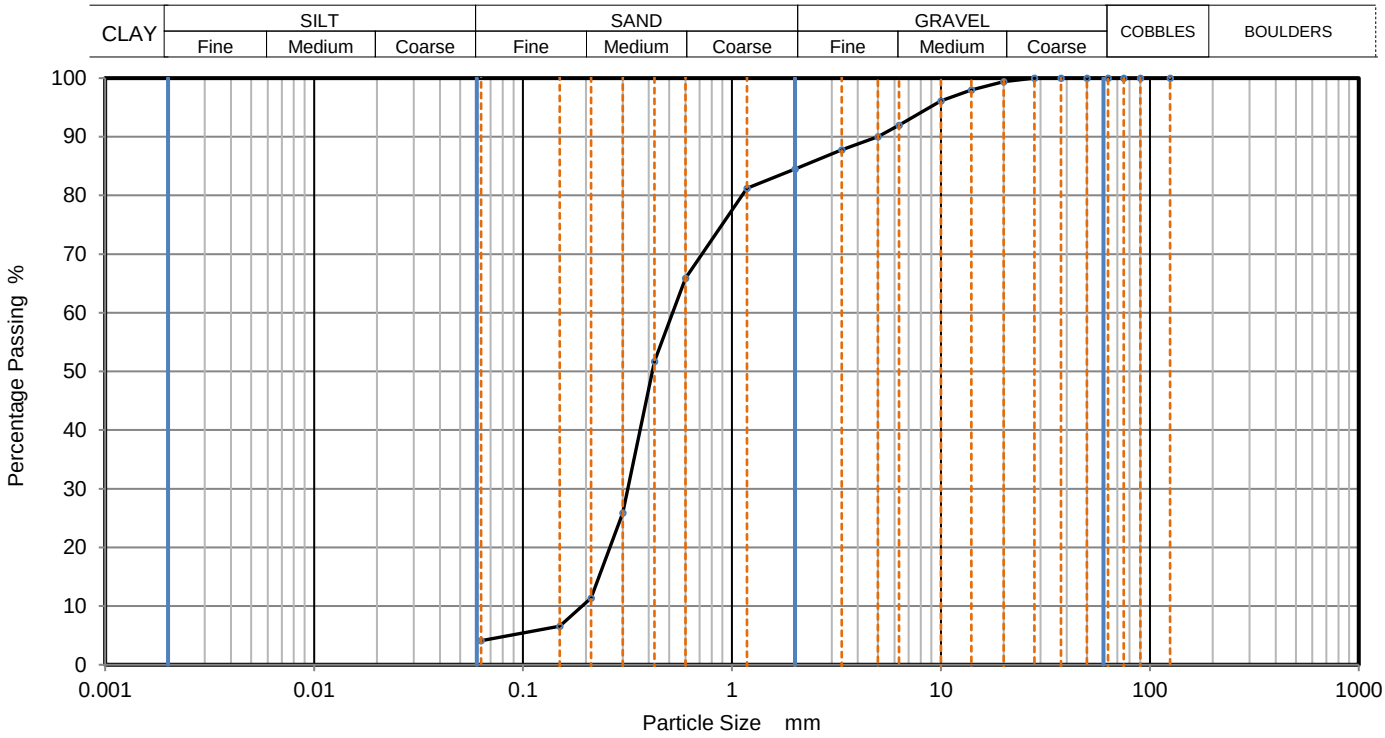
Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Date Printed: 30/04/2025

ISO PSD

GFQ-008-77 Issue 02 - Nov 23	**Determination of Particle Size Distribution (ISO 17892-4:2016)**			Job Ref	**J307969**
				Borehole/Pit No.	WS02
Project Name	West Didsbury Premier Inn Extension (PIX)			Sample No.	
Soil Description	Brown slightly gravelly SAND			Depth, m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample			KeyLAB ID	TTLP202504118



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	98		
10	96		
6.3	92		
5	90		
3.35	88		
2	85		
1.18	81		
0.6	66		
0.425	52		
0.3	26		
0.212	11		
0.15	7		
0.063	4		

Dry Mass of sample, g	2421

Sample Proportions	% dry mass
Very coarse	0
Gravel	16
Sand	80
Fines <0.063mm	4

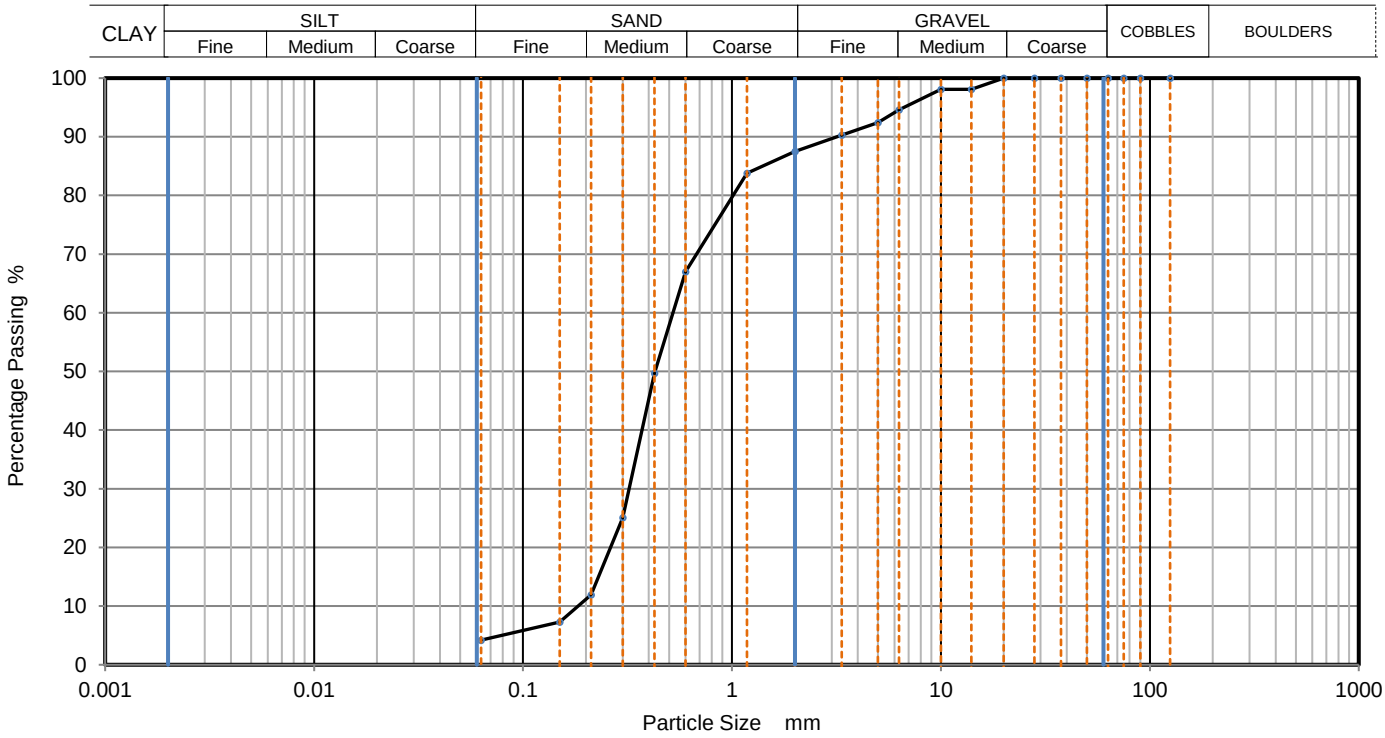
Grading Analysis		
D100	mm	28
D60	mm	0.52
D30	mm	0.317
D10	mm	0.192
Uniformity Coefficient		2.7
Curvature Coefficient		1
Pretreatment Method (If Applicable)		

Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Date Printed: 30/04/2025		**ISO PSD**

GFQ-008-77 Issue 02 - Nov 23	**Determination of Particle Size Distribution (ISO 17892-4:2016)**			Job Ref	**J307969**
				Borehole/Pit No.	WS02
Project Name	West Didsbury Premier Inn Extension (PIX)			Sample No.	
Soil Description	Brown slightly gravelly SAND			Depth, m	3.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample			KeyLAB ID	TTLP202504119



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	98		
6.3	95		
5	92		
3.35	90		
2	88		
1.18	84		
0.6	67		
0.425	50		
0.3	25		
0.212	12		
0.15	7		
0.063	4		

Dry Mass of sample, g	3859

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	83
Fines <0.063mm	4

Grading Analysis		
D100	mm	20
D60	mm	0.522
D30	mm	0.322
D10	mm	0.184
Uniformity Coefficient		2.8
Curvature Coefficient		1.1
Pretreatment Method (If Applicable)		

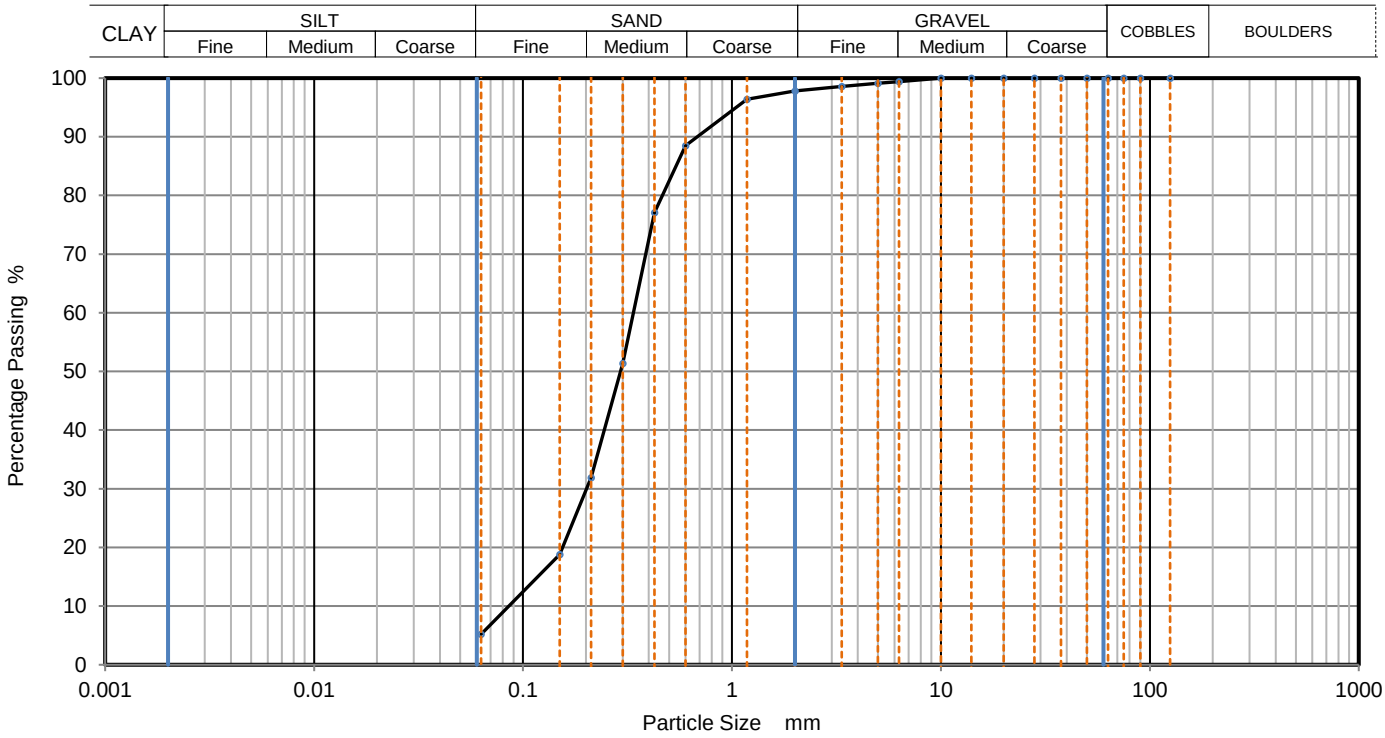
Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Date Printed: 30/04/2025

ISO PSD

GFQ-008-77 Issue 02 - Nov 23	**Determination of Particle Size Distribution (ISO 17892-4:2016)**			Job Ref	**J307969**
				Borehole/Pit No.	WS03
Project Name	West Didsbury Premier Inn Extension (PIX)			Sample No.	
Soil Description	Brown slightly gravelly SAND			Depth, m	1.00
Specimen Reference		Specimen Depth	m	Sample Type	B
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample			KeyLAB ID	TTLP202504116



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	99		
2	98		
1.18	96		
0.6	89		
0.425	77		
0.3	51		
0.212	32		
0.15	19		
0.063	5		

Dry Mass of sample, g	2668

Sample Proportions	% dry mass
Very coarse	0
Gravel	2
Sand	93
Fines <0.063mm	5

Grading Analysis		
D100	mm	10
D60	mm	0.337
D30	mm	0.202
D10	mm	0.0858
Uniformity Coefficient		3.9
Curvature Coefficient		1.4
Pretreatment Method (If Applicable)		

Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Date Printed:		**ISO PSD**
30/04/2025		

Appendix F – Chemical Test Results

Certificate of Analysis

Certificate Number	25-08129	*Issued:*	29-Apr-25

Client NX Consulting Ltd
Station House
Stamford New Road
Altricham
WA14 1EP

Our Reference	25-08129
Client Reference ~	NX601
Order No ~	NX601
Contract Title ~	West Didsbury Pix
Description	7 Soil samples, 4 Leachate prepared by DETS samples.
Date Received	11-Apr-25
Date Started	11-Apr-25
Date Completed	29-Apr-25
Test Procedures	Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By [redacted]

Reyhan Irfan
Operations Manager

2139

Summary of Chemical Analysis
Soil Samples

Our Ref 25-08129
Client Ref ~ NX601
Contract Title ~ West Didsbury Pix

				Lab No	2493515	2493516	2493517	2493518	2493519	2493520	2493521
				Sample ID ~	WS1	WS1	WS2	WS2	WS3	WS3	WS4
				Depth ~	0.10	1.00	0.70	1.00	0.50	1.10	0.80
				Other ID ~							
				Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date ~	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025
				Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**								
Preparation											
Moisture Content	DETSC 1004	0.1	%			8.9				4.6
Metals											
Arsenic	DETSC 2301#	0.2	mg/kg	12	1.8		0.8	9.2	1.3	
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	< 0.2	< 0.2		< 0.2	< 0.2	< 0.2	
Cadmium	DETSC 2301#	0.1	mg/kg	0.5	< 0.1		0.1	0.2	< 0.1	
Chromium	DETSC 2301#	0.15	mg/kg	21	5.9		4.8	11	3.2	
Copper	DETSC 2301#	0.2	mg/kg	87	5.8		4.8	30	5.0	
Lead	DETSC 2301#	0.3	mg/kg	380	43		3.1	66	8.3	
Mercury	DETSC 2325#	0.05	mg/kg	0.29	< 0.05		< 0.05	0.09	< 0.05	
Nickel	DETSC 2301#	1	mg/kg	19	9.0		8.1	17	2.2	
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5		< 0.5	< 0.5	< 0.5	
Zinc	DETSC 2301#	1	mg/kg	160	26		17	70	12	
Inorganics											
pH	DETSC 2008#		pH	8.3	8.5	8.2	8.7	8.1	8.0	8.6
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.8	0.2		< 0.1	0.2	0.2	
Total Organic Carbon	DETSC 2084#	0.5	%	6.2	< 0.5		< 0.5	2.7	< 0.5	
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l		< 10	12			< 10	< 10
Sulphide	DETSC 2024*	10	mg/kg	16	< 10		< 10	< 10	10	
Sulphate as SO4, Total	DETSC 2321#	100	mg/kg	1010	103		< 100	334	< 100	
Petroleum Hydrocarbons											
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Aliphatic >EC10-EC12	DETSC 3521#	1.5	mg/kg		< 1.50		< 1.50	< 1.50		
Aliphatic >EC12-EC16	DETSC 3521#	1.2	mg/kg		< 1.20		< 1.20	< 1.20		
Aliphatic >EC16-EC21	DETSC 3521#	1.5	mg/kg		< 1.50		< 1.50	< 1.50		
Aliphatic >EC21-EC35	DETSC 3521#	3.4	mg/kg		< 3.40		< 3.40	< 3.40		
Aliphatic C5-C35	DETSC 3521*	10	mg/kg		< 10.00		< 10.00	< 10.00		
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Aromatic >EC10-EC12	DETSC 3521#	0.9	mg/kg		< 0.90		< 0.90	< 0.90		
Aromatic >EC12-EC16	DETSC 3521#	0.5	mg/kg		< 0.50		< 0.50	< 0.50		
Aromatic >EC16-EC21	DETSC 3521#	0.6	mg/kg		0.78		0.74	7.73		
Aromatic >EC21-EC35	DETSC 3521#	1.4	mg/kg		< 1.40		1.59	13.27		
Aromatic C5-C35	DETSC 3521*	10	mg/kg		< 10.00		< 10.00	21.00		
TPH Ali/Aro Total C5-C35	DETSC 3521*	10	mg/kg		< 10.00		< 10.00	21.00		
Benzene	DETSC 3321#	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Ethylbenzene	DETSC 3321#	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Toluene	DETSC 3321#	0.01	mg/kg		< 0.01		< 0.01	< 0.01		
Xylene	DETSC 3321#	0.01	mg/kg		< 0.01		< 0.01	< 0.01		

Summary of Chemical Analysis
Soil Samples

Our Ref 25-08129
Client Ref ~ NX601
Contract Title ~ West Didsbury Pix

			Lab No	2493515	2493516	2493517	2493518	2493519	2493520	2493521
			Sample ID ~	WS1	WS1	WS2	WS2	WS3	WS3	WS4
			Depth ~	0.10	1.00	0.70	1.00	0.50	1.10	0.80
			Other ID ~							
			Sample Type ~	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date ~	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025	04/04/2025
			Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
PAHs										
Naphthalene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03		< 0.03	< 0.03	< 0.03	
Acenaphthylene	DETSC 3303#	0.03	mg/kg	0.03	< 0.03		< 0.03	< 0.03	< 0.03	
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.14	< 0.03		< 0.03	0.12	< 0.03	
Fluorene	DETSC 3303	0.03	mg/kg	0.11	< 0.03		< 0.03	0.07	< 0.03	
Phenanthrene	DETSC 3303#	0.03	mg/kg	1.2	< 0.03		< 0.03	0.99	< 0.03	
Anthracene	DETSC 3303	0.03	mg/kg	0.26	< 0.03		< 0.03	0.24	< 0.03	
Fluoranthene	DETSC 3303#	0.03	mg/kg	2.1	< 0.03		< 0.03	2.2	< 0.03	
Pyrene	DETSC 3303#	0.03	mg/kg	2.0	< 0.03		< 0.03	1.9	< 0.03	
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.91	< 0.03		< 0.03	0.96	< 0.03	
Chrysene	DETSC 3303	0.03	mg/kg	0.85	< 0.03		< 0.03	0.89	< 0.03	
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.98	< 0.03		< 0.03	1.0	< 0.03	
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.32	< 0.03		< 0.03	0.42	< 0.03	
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.78	< 0.03		< 0.03	0.81	< 0.03	
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.35	< 0.03		< 0.03	0.40	< 0.03	
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.10	< 0.03		< 0.03	0.10	< 0.03	
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.38	< 0.03		< 0.03	0.41	< 0.03	
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	11	< 0.10		< 0.10	11	< 0.10	
Phenols										
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.9	< 0.3		< 0.3	< 0.3	< 0.3	

Summary of Chemical Analysis
Leachate Samples

Our Ref 25-08129
Client Ref ~ NX601
Contract Title ~ West Didsbury Pix

			Lab No	2493522	2493523
			Sample ID ~	WS1	WS3
			Depth ~	1.00	0.50
			Other ID ~		
			Sample Type ~	LEACHATE	LEACHATE
			Sampling Date ~	04/04/2025	04/04/2025
			Sampling Time ~	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Preparation					
BS EN 12457 10:1	DETSC 1009*			Y	Y
Metals					
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.48	0.52
Boron, Dissolved	DETSC 2306*	12	ug/l	< 12.0	< 12.0
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.1	0.31
Copper, Dissolved	DETSC 2306	0.4	ug/l	1.4	1.2
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.74	1.1
Mercury, Dissolved	DETSC 2306	0.01	ug/l	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	< 0.5	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	0.28	< 0.25
Zinc, Dissolved	DETSC 2306	1.3	ug/l	< 1.3	9.3
Inorganics					
pH	DETSC 2008		pH	7.6	7.7
Cyanide, Total	DETSC 2130	40	ug/l	< 40	< 40
Dissolved Organic Carbon	DETSC 2085	2	mg/l	30	6.2
Sulphate as SO4	DETSC 2055	0.1	mg/l	1.7	1.1
Sulphide	DETSC 2208	10	ug/l	14	15
PAHs					
Naphthalene	DETSC 3304	0.05	ug/l	< 0.05	< 0.05
Acenaphthylene	DETSC 3304	0.01	ug/l	0.01	< 0.01
Acenaphthene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Fluorene	DETSC 3304	0.01	ug/l	0.01	< 0.01
Phenanthrene	DETSC 3304	0.01	ug/l	0.08	0.04
Anthracene	DETSC 3304	0.01	ug/l	0.01	0.01
Fluoranthene	DETSC 3304	0.01	ug/l	0.09	0.10
Pyrene	DETSC 3304	0.01	ug/l	0.08	0.11
Benzo(a)anthracene	DETSC 3304	0.01	ug/l	0.04	0.06
Chrysene	DETSC 3304	0.01	ug/l	0.03	0.05
Benzo(b)fluoranthene	DETSC 3304	0.01	ug/l	0.06	0.14
Benzo(k)fluoranthene	DETSC 3304	0.01	ug/l	0.03	0.07
Benzo(a)pyrene	DETSC 3304	0.01	ug/l	0.04	0.08
Indeno(1,2,3-c,d)pyrene	DETSC 3304	0.01	ug/l	0.04	0.10
Dibenzo(a,h)anthracene	DETSC 3304	0.01	ug/l	< 0.01	< 0.01
Benzo(g,h,i)perylene	DETSC 3304	0.01	ug/l	0.04	0.11
PAH Total	DETSC 3304	0.2	ug/l	0.56	0.87
Phenols					
Phenol - Monohydric	DETSC 2130	0.1	mg/l	< 0.1	< 0.1

WASTE ACCEPTANCE CRITERIA TESTING
v20.25.02.03

Our Ref 25-08129
Client Ref NX601
Contract Title West Didsbury Pix
Sample Id WS2 0.70

Sample Numbers 2493517 2493524
Date Analysed 24/04/2025

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	1.9	3	5	6
DETSC 2003# Loss On Ignition	%	3.1	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3521* Mineral Oil >C10-C40 + Clean Up	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	2.8	100	n/a	n/a
DETSC 2008# pH	pH Units	8.2	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	3.3	0.03	0.5	2	25
DETSC 2306 Barium as Ba	34	0.3	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.93	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	3.3	0.03	2	50	100
DETSC 2306 Mercury as Hg	0.011	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.85	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	2.5	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.77	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	0.49	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	20	0.2	4	50	200
DETSC 2055 Chloride as Cl	600	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	600	6	10	150	500
DETSC 2055 Sulphate as SO4	1600	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	61000	610	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	11000	110	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	8.3
DETSC 2009 Conductivity uS/cm	86.6
* Temperature*	18.0

Mass of Sample Kg	0.099
Mass of dry Sample Kg	0.090

Stage 1

Volume of Leachant L2	0.891
Volume of Eluate VE1	0.85

Disclaimer: *The WAC limit values are provided for guidance only. Normec DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.07

WASTE ACCEPTANCE CRITERIA TESTING
v20.25.02.03

Our Ref 25-08129
Client Ref NX601
Contract Title West Didsbury Pix
Sample Id WS4 0.80

Sample Numbers 2493521 2493525
Date Analysed 24/04/2025

Test Results On Waste

Determinand and Method Reference	Units	Result	WAC Limit Values: Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	< 0.5	3	5	6
DETSC 2003# Loss On Ignition	%	0.78	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3521* Mineral Oil >C10-C40 + Clean Up	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.6	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	< 1.0	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate

Determinand and Method Reference	Conc in Eluate ug/l 10:1	Amount Leached mg/kg LS10	WAC Limit Values (Limit values for LS10 Leachate): Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	2.5	0.03	0.5	2	25
DETSC 2306 Barium as Ba	30	0.3	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.91	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	1.8	< 0.02	2	50	100
DETSC 2306 Mercury as Hg	< 0.010	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	< 1.1	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	0.7	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	1.2	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	0.45	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	< 0.25	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	26	0.26	4	50	200
DETSC 2055 Chloride as Cl	410	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	< 100	< 0.1	10	150	500
DETSC 2055 Sulphate as SO4	870	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	26000	260	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	16000	160	500	800	1000

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive Hazardous Waste

Additional Information

DETSC 2008 pH	8.0
DETSC 2009 Conductivity uS/cm	36.6
* Temperature*	18.0

Mass of Sample Kg	0.094
Mass of dry Sample Kg	0.090

Stage 1

Volume of Leachant L2	0.896
Volume of Eluate VE1	0.84

Disclaimer: *The WAC limit values are provided for guidance only. Normec DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.*

V.2.07

Summary of Asbestos Analysis
Soil Samples

Our Ref 25-08129
Client Ref ~ NX601
Contract Title ~ West Didsbury Pix

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2493515	WS1 0.10	SOIL	NAD	none	Pierce Booth
2493516	WS1 1.00	SOIL	NAD	none	Pierce Booth
2493517	WS2 0.70	SOIL	NAD	none	Pierce Booth
2493518	WS2 1.00	SOIL	NAD	none	Pierce Booth
2493519	WS3 0.50	SOIL	NAD	none	Pierce Booth
2493520	WS3 1.10	SOIL	NAD	none	Pierce Booth

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref
Client Ref ~ NX601
Contract ~ West Didsbury Pix

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	time exceeded for tests	Incorrect container for tests	Headspace in container for tests
	WS1 0.10 SOIL	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L			Y
	WS1 1.00 SOIL	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L			BTEX /C5-10
	WS2 0.70 SOIL	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L x2			BTEX /C5-10
	WS2 1.00 SOIL	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L			BTEX /C5-10
	WS3 0.50 SOIL	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L			BTEX /C5-10
	WS3 1.10 SOIL	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L			Y
	WS4 0.80 SOIL	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L x2			BTEX /C5-10
	WS1 1.00 LEACHATE	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L			Y
	WS3 0.50 LEACHATE	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L			Y
	WS2 0.70 LEACHATE	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L x2			Y
	WS4 0.80 LEACHATE	04/04/25	GJ 250ml, GJ 60ml ((Headspace)), PT 1L x2			Y

Lab No	Sample ID	Comments
	WS2 0.70 LEACH	

Key: G-Glass P-Plastic J-Jar T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:
~ Sample details are provided by the client and can affect the validity of the results
***** -not accredited.
# -MCERTS (accreditation only applies if report carries the MCERTS logo).

Information in Support of the Analytical Results

Our Ref 25-08129
Client Ref ~ NX601
Contract ~ West Didsbury Pix

$ -subcontracted.
n/s -not supplied.
I/S -insufficient sample.
U/S -unsuitable sample.
t/f -to follow.
nd -not detected.

End of Report

PRINCIPLES OF RISK ASSESSMENT

MONITORING AND ASSESSMENT CRITERIA

C 1.0 GENERAL

C 1.1 The purpose of this appendix is to describe in detail the concepts underlying the risk-based approach to assessing potentially contaminated land, introduce the roles of key legislation and describe the qualitative methodology adopted for evaluating and characterising risk.

C 1.2 Current best practice in the UK promotes a risk-based approach to dealing with both soil and groundwater contamination. The principal aim of the approach is to ensure protection of human health and the environment in a thorough, transparent and cost-effective manner.

C 1.3 Fundamental to the risk-based approach is the concept that for 'Contaminated Land' to be designated, as a consequence of historic activities, a pathway for contamination must be shown to exist between a source of contamination and a receptor. The combined presence of a source, pathway and a receptor is described as a 'pollutant linkage'.

C 1.4 The concepts associated with a contaminant source, pathway and receptor are defined in DETR Circular 02/2000 'Contaminated Land Environmental Protection Act 1990: Part II A'. A *source* of contamination may be considered as a 'substance which is in, on or under land that has the potential to cause harm or to cause pollution of controlled waters'. A *receptor* can be considered as either 'a living organism, a group of living organisms, an ecological system or a piece of property which is being, or could be harmed, by a contaminant or controlled waters which are being, or could be, polluted by a contaminant'. A *pathway* may be considered as one or more routes by, or through, which a receptor is being, or could be, exposed to or affected by a contaminant. Typical pathways may include migration in groundwater, surface water run-off or infiltration, inhalation, dermal contact and ingestion.

C 1.5 The risks posed by an identified pollutant linkage can often be mitigated by removing the source of contamination, treating the source of contamination, blocking the relevant pathway(s) or by protecting the receptor.

C 2.0 PRINCIPLES OF RISK EVALUATION

C 2.1 The risk evaluation methodology presented below is qualitative in nature, and is therefore a subjective method. It is based upon guidance presented in CIRIA publication referenced C552, 'Contaminated land risk assessment ~ A guide to good practice', 2001 and involves the classification of the following.

C 2.2 The magnitude of the potential consequence (severity) of risk occurring (Table C 1).

C 2.3 The magnitude of the probability (likelihood) of the risk occurring (Table C 2).

C 2.4 These are then considered in conjunction to give a risk matrix (Table C 3)

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined by the Environmental Protection Act 1990, Part II A. Short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem (note the definitions of ecological systems within the Draft Circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to Human Health ('significant harm' as defined in DETR, 2000). Pollution of sensitive water resources (note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem. (Note: the definitions of ecological systems within Draft Circular on Contaminated Land, DETR, 2000).	Concentrations of a contaminant from site exceed the generic, or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in the *Draft Circular on Contaminated Land,* DETR, 2000). Damage to sensitive buildings/structures/ services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor	Harm although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

Table C 1: Classification of Consequence

Classification	Definition
High likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

Table C 2: Classification of Probability

		Consequence			
		Severe	*Medium*	*Mild*	*Minor*
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	Likely	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate/Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate/Low Risk	Low Risk	Very Low Risk	Very Low Risk

Table C 3: Comparison of Consequence Against Probability

Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
Moderate Risk	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

Table C 4: Description of the classified risks and likely action required

Conceptual Site Model (CSM) and Refined Risk Assessment
Table 2.0 (Phase 2)

Table and Summary of Potential Risks, Sheet 1

SOURCE -PATHWAY -RECEPTOR LINKAGE				QUALITATIVE RISK ASSESSMENT		
Contaminant	**Location**	**Receptors**	**Pathways to Receptors**	**Associated Hazard (Potential Severity)**	**Likelihood of Occurrence**	**Risk***
Potential contaminants may be present within Made Ground beneath the site and associated with former garages and depot: - Heavy metals, sulphates, and PAHs. - Hydrocarbons - Asbestos Containing Material (ACM) from former buildings,	Possibly within sub surface strata & Groundwater.	Ground water (Secondary A Aquifer & Principal bedrock Aquifer)	Vertical percolation to groundwater	Groundwater (Severe – pollution of sensitive water resource)	Unlikely. Majority hardstanding & building cover will restrict infiltration and percolation. Low likelihood of concentrations recorded. No SPZ within 500m. Relatively impervious clay deposits exist below made ground preventing lateral and vertical migration pathways.	**Low Post Construction**
		Surface Water (River Mersey 409m SE)	Lateral percolation & Surface Run-off to surface water	Groundwater (Medium – pollution of sensitive water resource)	Low likelihood. No obvious sources of contaminants and low elevated leachate concentrations recorded. Site groundwater unlikely to be in hydraulic continuity with nearby brooks and relatively impervious clay deposits exist below made ground preventing lateral and vertical migration pathways	**Low Post Construction**
	Possibly within existing structures	End user of site.	Direct contact, Ingestion, Inhalation (Dust and Vapours)	Human Health (Severe).	Unlikely, no elevated concentrations recorded. No specialist protection measures required. Import clean subsoil/ topsoil in line with current guidelines.	**Low Post Construction**
		Site workers, demolition staff, construction staff,	Direct contact, Ingestion, Inhalation (Dust and Vapours)	Human Health (Minor – providing suitable PPE equipment is worn)	Unlikely, based on recorded soil concentrations. If conditions assessed and correct PPE, dust suppression, and other health and safety measures are applied then the risks are likely to be low.	**Low Post Construction**

** Where risk is evaluated as **moderate** or greater) either; a) remedial action is recommended to address this residual risk (Section 8.0 in the main body of the report) or, b) further investigation is recommended to better inform the risk classification and/or to enable a more detailed, quantitative risk assessment to be undertaken.*

Table and Summary of Potential Risks, Sheet 2

SOURCE -PATHWAY -RECEPTOR LINKAGE				QUALITATIVE RISK ASSESSMENT		
Contaminant	**Location**	**Receptors**	**Pathways to Receptors**	**Associated Hazard (Potential Severity)**	**Likelihood of Occurrence**	**Risk***
Off site contaminants from surrounding land use.	Possibly within Made-Ground surrounding site.	End user of site (Staff and patrons)	Direct contact, Ingestion, Inhalation (Dust and Vapours)	Human Health (Medium)	Low likelihood. No significant potentially mobile contaminants recorded.	**Low**
		Construction workers if applicable	Direct contact, Ingestion, Inhalation (Dust and Vapours)	Human Health (Minor – Providing suitable PPE equipment is worn)	Low likelihood. No significant potentially mobile contaminants recorded.	**Low**
Hazardous Ground Gas associated with potential site made ground.	Possibly within strata beneath the site.	End user of site (Staff and patrons)	Migration through strata and accumulation under buildings of explosive and asphyxiating gases.	Human Health (Severe)	No nearby recorded landfills. Unlikely, based upon 4no gas monitoring visits. Concentrations recorded indicate that no specialist protection measures are required.	**Low**
		Buildings & Infrastructure	Coal & Gypsum mining beneath the site causing surface ground instability causing building subsidence	Buildings & Infrastructure (Medium)	Unlikely. Not within a Mining Remediation Authority reporting area.	**Low**

** Where risk is evaluated as **moderate** or greater) either; a) remedial action is recommended to address this residual risk (Section 8.0 in the main body of the report) or, b) further investigation is recommended to better inform the risk classification and/or to enable a more detailed, quantitative risk assessment to be undertaken.*

Appendix H - Gas Monitoring Results

Specialists in Ground Engineering & Energy

Job No:	NX601
Date:	07.05.2025
Engineer:	MN

Site:	West Didsbury PIX
Client:	Whitbread Plc
Equipment:	GA5000

***Groundwater bailed before monitoring**

WS01	**Flow Rate (l/h)**	**Pressure Differential**	**Gas Concentration**										**Water**		**Start**		**Finish**	
			Peak					**Steady**										
			CH_4 %	**CO_2 %**	**O_2 %**	**LEL %**	**H2S/ CO (ppm)**	**CH_4 %**	**CO_2 %**	**O_2 %**	**LEL %**	**H2S/ CO (ppm)**	**Depth to Water**	**Depth to Base**		**Barometric Pressure**		**Barometric Pressure**
04.04.2025	0.0	0.00	0.2	0.6	19.2	4.0	0/0	0.2	0.6	19.2	4.0	0/0	2.61	3.06		1020		1020
11.04.2025	0.1	0.01	0.1	0.7	19.5	2.0	0/0	0.1	0.7	19.5	2.0	0/0	2.59	3.04		1021		1021
23.04.2025	0.1	0.01	0.0	0.5	19.4	0.0	0/0	0.0	0.5	19.4	0.0	0/0	2.59	3.04		1013		1013
30.04.2025	0.0	0.00	0.1	0.1	18.0	2.0	0/0	0.1	0.1	18.0	2.0	0/0	2.77	3.04		1018		1018

WS03	**Flow Rate (l/h)**	**Pressure Differential**	**Gas Concentration**										**Water**		**Start**		**Finish**	
			Peak					**Steady**										
			CH_4 %	**CO_2 %**	**O_2 %**	**LEL %**	**H2S/ CO (ppm)**	**CH_4 %**	**CO_2 %**	**O_2 %**	**LEL %**	**H2S/ CO (ppm)**	**Depth to Water**	**Depth to Base**		**Barometric Pressure**		**Barometric Pressure**
04.04.2025	0.0	0.09	0.1	2.2	17.7	1.0	0.0	0.1	2.2	17.7	2.0	0/0	Dry	3.07		1020		1020
11.04.2025	0.0	0.01	0.0	3.0	17.7	0.0	0/0	0.0	3.0	17.7	0.0	0/0	Dry	3.07		1021		1021
23.04.2025	0.0	0.01	0.0	2.6	18.5	0.0	0/0	0.0	2.6	18.5	0.0	0/0	Dry	3.06		1013		1013
30.04.2025	**Could not monitor due to ants nest blocking installation**															1018		1018

	Flow Rate (l/h)	**Pressure Differential**	**Gas Concentration**										**Water**		**Start**		**Finish**	
			Peak					**Steady**										
			CH_4 %	**CO_2 %**	**O_2 %**	**LEL %**	**H2S/ CO (ppm)**	**CH_4 %**	**CO_2 %**	**O_2 %**	**LEL %**	**H2S/ CO (ppm)**	**Depth to Water**	**Depth to Base**		**Barometric Pressure**		**Barometric Pressure**

CH_4	Above the **1.0%** v/v guideline value in Waste Management Paper no 27 (WMP27).	**CO_2**	Above the **1.5%** v/v guideline value given in WMP27.

Date	**Weather**	**Pressure Trend**	**Ground Conditions**
04.04.2025	**Sunny and mild**	**High and falling**	**Dry**
11.04.2025	**Sunny and mild**	**High and steady**	**Dry**
23.04.2025	**Overcast**	**High and falling**	**Dry**
30.04.2025	**Sunny and mild**	**High & Steady**	**Dry**