



CHRISTIE EXTENSION, THE CHRISTIE, WILMSLOW ROAD
MANCHESTER

PHASE I SITE APPRAISAL (DESK STUDY)
FOR
THE CHRISTIE NHS FOUNDATION TRUST C/O
ALAN JOHNSTON PARTNERSHIP LTD

Project Ref:
P10197

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Prepared for:
The Christie NHS Foundation Trust c/o
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This report has been prepared in accordance with GRM's Accredited Quality Procedures.

If you have any queries regarding this report please contact the project manager in the first instance.

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Issue	Description of Revision		Signature
REV A (December 2022)	Updated information from client		<i>S. Singh</i>
Rev B (January 2023)	Amended UXO report included in appendices		<i>C. Mortimer</i>



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1 INTRODUCTION

1.1 PREAMBLE

GRM Development Solutions Limited (GRM) has been appointed by Alan Johnston Partnership (Client's Agent) on behalf of The Christie NHS Foundation Trust (Client) to undertake a Phase I Site Appraisal (desk study). The desk study and site inspection form Phase I of the assessment and allow the geotechnical and geo-environmental setting of the site to be determined and the identification of areas of particular concern that require targeted investigation.

This site appraisal is intended to provide information that will assist decision making by identifying potential ground engineering and contamination issues.

GRM Standard Limitations of Reporting are provided in Appendix A of this report.

It is understood the site is to be developed with a three-storey extension to the existing Critical Care Unit (CCU) located within the northern area. The proposed extension will contain a new stair / lift core that will connect to the existing CCU.

1.2 OBJECTIVES OF THE SITE APPRAISAL

The principal aims of the Phase I Site Appraisal (desk study) are as follows:

- a) Obtain information, from easily accessible sources, about the soil and groundwater conditions within the area of the site.
- b) Determine the possible ground related geotechnical and contamination hazards within the site boundaries that may affect the proposed development.
- c) Provide preliminary development recommendations.
- d) Provide advice on further works required for the cost-effective reduction of risks to the development and procedures likely to satisfy regulators.

Whilst every effort has been made to pre-empt the likely requirements of the Local Authority and the Environment Agency, they are likely to have specific requirements that will need to be discussed and addressed at a later date.

2 PHASE I DESK STUDY AND SITE OBSERVATIONS

2.1 INFORMATION SOURCES

In addition to the general sources of information listed in Appendix A (i) the Client has supplied the following information that has been used in the assessment of the site:

- Site Location Plan which details the application boundary (red line) and client ownership boundary (blue line), presented in Appendix B.
- Utilities Plans of the site and surrounding area.
- Proposed Development Layout.

Two previous reports relating to the redevelopment of the Paterson Building located to the east of the site, have been reviewed and relevant information has been used in the assessment.

- Desk study report titled “Geotechnical and Geoenvironmental desk study” for Interserve Construction Limited, prepared by ARUP, ref: 263083-00, dated August 2018.
- Factual report titled “Ground Investigation Report” for Interserve Construction Limited, prepared by CC Geotechnical Ltd (CCG) commissioned by ARUP, ref: CCG-C-18-10614, dated April 2019.

2.2 SITE DESCRIPTION

2.2.1 Geographical Setting

The site is located within the southern area of the Christie NHS Foundation Trust hospital complex and is approximately 5.5km south of Manchester City Centre. The National Grid Reference (NGR) for the approximate centre of the site is SJ 848 924. A Site Location and Boundary Plan is presented in Appendix C.

The northern and western boundaries are formed by the existing hospital complex, the eastern boundary by the Paterson Building and the southern boundary by Oak Road.

The topography of the site and local surrounding area is generally flat at an approximate elevation of 35m AOD (based on the previous Desk Study of the adjacent Paterson Building). There is a concrete ramp leading into the CCU that is approximately 42cm high, 2m wide and 10m in length. The topography of the regional area dips gently down towards the west.

2.2.2 Site Inspection Observations

The Site Features Plan/General Site Photographs presented in Appendix D illustrate the salient observations made during a site inspection on 6th December 2022.

The southern area of the site is within a site compound for Integrated Health Project (IHP) associated with the ongoing development works in other areas within the Christie hospital complex. The northern area is formed by the current CCU and an access road leading through an underpass of the building. The site covers an area of approximately 0.13 hectares.

The central site area contains a ramp access for theatre deliveries to the existing CCU, a turnstile pedestrians' access for the site compound and a secure material storage facility. The facility is used to store plastic crates, signposts and trolleys. The southern site area is currently occupied with multi-storey site cabins for IHP. There are stairs for access to the site cabins located immediately west of the storage facility. There is also a bin store to the east of the turnstile. The remaining site area to the west of the stairs in the central site area is currently unused but is blocked off to the west by wooden fences associated with the IHP compound.

The site is covered with concrete hardstanding. There are potentially live buried services present below the site based on the provided Utilities Plan. The plan records drainage, electric and water and potential unidentified services within and nearby the site.

There are no trees present on site. The nearest trees to the site are semi-mature located approximately 15m south, east and west of the site. There is an ongoing redevelopment project of the Paterson Building located east of the site. It is understood that the previous building was demolished prior to the construction of a new hospital building which is currently taking place. There is also an electricity substation adjacent to a building enclosing a transformer located 40m south east of the site. Given their distances, they are unlikely to impact the proposed development area.

Significant Features identified during site inspection:
Existing site compound (including stairs and material storage facility), restricted access and nearby buildings – constraint for surveys / ground investigation.
Existing services and buildings – general hazard for proposed development.
Nearby trees (>15m from site) – significant deepening of foundations due to tree influence is not expected.

2.3 HISTORICAL DEVELOPMENT OF THE SITE

A review of the available historical Ordnance Survey (OS) maps gives an insight into the development of the site and can highlight potential hazards. Extracts of the maps reviewed are provided in Appendix E.

The summary below identifies the significant features identified on the historical mapping data considered likely to have the potential to affect the site.

Date from and to	Identified On-site Hazard	Identified Off-site Hazard
1849	The site is developed with Oak House Farm, and its main building is present across the site.	The surrounding area is used as access to Oak House including other unlabelled buildings in the area. Two ponds are present approximately 80m and 170m south west of the site associated with Oak House and a large pond 80m east.
1881	The farm is no longer present, and the site is developed with a residential building.	The nearby buildings are no longer present and replaced with residential buildings. The ponds to the south west are no longer noted. The large pond located east is labelled as fish pond.
1892	No significant changes.	The fish pond is no longer recorded and is replaced by a road.
1934	No significant changes.	The Christie Hospital complex is recorded 100m to the north west.
1957	No significant changes.	The hospital building has slightly expanded.
1974-1975	The residential building is no longer noted, and the site now forms part of an undeveloped area within the Christie Hospital complex.	The hospital complex has expanded southwards, with a new extension to the buildings noted 40m north and 20m east of the site within the area of the previous Paterson Building. An electricity substation is noted 40m south east.
1988-1992	No significant changes.	A building, likely for the transformer, is developed adjacent to the substation.
2002	No significant changes.	The Paterson Building has slightly expanded to the east.

2010	The hospital has expanded further, and the building is now located within the northern site area as the new CCU. The ramped access within the central area is constructed for the newly extended hospital building.	The southern section of the previous Paterson Building has extended to the west and now joins with the rest of the hospital.
2020 (aerial imagery)	IHP compound, cabins and storage facility, are recorded across the southern area.	The Paterson Building is no longer present and is being redeveloped.

Historic information has been reviewed from the ARUP desk study report for the redevelopment of Paterson Building. Relevant information has been extracted regarding the previous and proposed redevelopment of the Paterson Building and summarised below:

- The previous Paterson Building was constructed in phases since 1966. It underwent a four-storey extension in 1974 and a single storey extension to the east in the early 1990s.
- There was a one storey basement underlying most of the ground floor footprint of the previous Paterson Building.
- The Critical Care Unit (CCU) was opened in December 2006 and was structurally independent of the Paterson Building.
- The previous Paterson Building was founded on a mixture of pad and strip footings, with the southern end of the building, which extended over the original basement, founded on piles.
- The building is currently being redeveloped likely due to the fire damage sustained in April 2017.
- It is understood that the new Paterson Building will be a medium-rise research building with a single-storey basement extending to around 4m below ground level (bgl).
- The proposed new basement was anticipated to be larger than the previous basement and likely extending to bedrock.

Significant Features identified on OS Maps:

Previous buildings onsite and adjacent hospital complex (constructed pre-2000s) – potential for made ground, deepened foundations / source of ground gas and soil contamination including asbestos.

Redevelopment of Paterson Building adjacent to the site – potential sources of soil contamination.

Potential backfilled ponds offsite – potential source of ground gas but given age of backfill, unlikely to be a significant risk. CCU Hospital Building proposed to be extended (constructed post-2000s) – asbestos unlikely to be present within buildings.
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2.4 UNEXPLODED ORDNANCE

GRM have obtained a Preliminary UXO Desk Study for this site. The report has summarised that pre and post-WWII OS mapping recorded residential structures within and immediately adjacent to the site boundary that remained mostly unchanged. In addition, the County Borough of Manchester sustained an overall low density of bombing. Two local bomb plot maps for Manchester do not record any bomb strike on or within the direct surroundings, with the closest recorded strike approximately 200m to the north west.

Therefore, the preliminary assessment recommended that no further action is required. A copy of the preliminary UXO report is presented in Appendix F.

Significant Features UXO risk: No further action required.
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2.5 ANTICIPATED GEOLOGY

The BGS Geological Sheet for this area shows the site to be underlain by:

- Superficial Till deposits comprising diamicton.
- Solid geology of Chester Pebble Beds Formation of the Sherwood Sandstone Group is present below the site. Wilmslow Sandstone Formation is indicated to subcrop circa 95m north east of the site.
- The solid geology is indicated to be dipping down at a shallow angle (nearest direction indicated at 3°) towards the south south west.
- The site is not indicated to be affected by faulting.

There are no available nearby BGS boreholes. However, the previous desk study by ARUP suggests there have been numerous desk studies and ground investigations for Christie Hospital. The most recent ground investigation was for the redevelopment of Paterson Building undertaken by CCG on behalf of ARUP, which has been used to inform the likely ground conditions below the site.

Their investigation suggests the site to the east was underlain by made ground of 0.3m to 2.2m thickness comprising topsoil or subbase over typically brown gravelly sand or sandy gravel with concrete, brick and sandstone. Made ground was recorded to be underlain by medium dense gravelly sand or sandy clay with sandstone gravels which could potentially be the superficial Till. Below this, weathered sandstone bedrock was encountered from depths of between 2.2m and 3.5m bgl. The sandstone was typically

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recorded as very weak reddish brown, fine to medium grained thickly laminated sandstone which became less weathered with depth.

The investigation by CCG around the basement revealed the presence of limited made ground containing inert demolition rubble. In addition, the ARUP Desk Study report suggests the proposed new basement is anticipated to be larger than the previous basement and to extend to the bedrock, requiring the removal of the made ground. As such, there is no significant risk of ground gas from the adjacent redevelopment given that infilling of the previous basement was unlikely to be required.

Based on the site history and previous investigation of the adjacent area, made ground can be expected due to the demolition of former buildings.

Significant Features identified from geological data:
Cohesive strata – deepened foundations.
Potential for variable strata – geotechnical hazard for foundations.
Made ground – potential source of soil contamination / ground gas and geotechnical hazard.
Potential for shallow bedrock (circa 2m depth) – excavation constraint.

2.6 HYDROGEOLOGICAL INFORMATION

Detailed records of the groundwater level from the nearby BGS borehole record are not available. From the recent CCG Ground Investigation groundwater was only encountered at c.4m bgl during monitoring in Spring 2019.

The Environment Agency has classified the underlying superficial strata (Till) as a Secondary Undifferentiated Aquifer and the underlying bedrock (onsite Chester Pebble Beds) as a Principal Aquifer.

The site is not recorded to be within a Source Protection Zone. There are no recorded groundwater abstraction licences within 500m of the site.

Limited detailed information regarding the depths to groundwater is available; however, the groundwater level is likely to be subject to seasonal variations. Information available at this stage suggests potentially deep groundwater table in the Chester Pebble Beds and a flow direction to the south west following the regional topographic dip.

A potential risk to the underlying Principal and Secondary Undifferentiated Aquifers cannot be discounted at this stage given that a potential source of contamination is identified (made ground associated with previous development of the hospital). However, it is considered that the migration pathway would be restricted given that the site is currently and proposed to be predominantly covered with hardstanding and below the footprint of the extension.

Significant Features identified from hydrogeological data:

Principal / Secondary Undifferentiated Aquifers – potential receptor for site derived contamination (restricted migration pathway due to hardstanding).
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Groundwater anticipated around 4m bgl - dewatering for deep excavations may be required / potential flooding risk.

2.7 HYDROLOGICAL INFORMATION

There are no surface water features within 250m of the site. In addition, there are no surface water abstraction licences or recorded surface water pollution incidents within 500m of the site.

Significant Features identified from hydrological data:
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None identified.

2.8 FLOOD RISK

The flood risk maps suggest there is no risk from river flooding. The site is not recorded to be within 250m of an indicative fluvial floodplain associated with a Zone 2 and Zone 3 flood risk zone. The site is indicated to be at a negligible risk from surface water flooding. However, there is a 1 in 100 - year chance of surface water flooding occurring within 50m of the site.

The site is indicated to be at a moderate risk of groundwater flooding. A Phase II ground investigation would provide information on the local groundwater regime so that the risk can be assessed by the project's infrastructure engineer. Any risk associated with the groundwater regime should be catered for within the development infrastructure design.

Significant Flood Risk Features identified:
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Groundwater flood risk – to be confirmed with ground investigation and assessed by infrastructure engineer.
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2.9 MINING

2.9.1 Coal

The site is not within an area recorded to require a Coal Authority mining report, and shallow coal is not recorded beneath the site. Therefore, the risk from coal mining is considered to be negligible.

2.9.2 Brine

The site is not within the area defined by the Brine Compensation Board and the geology is not suitable for such extraction.

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2.9.3 Gypsum

The site is not within an area where gypsum extraction is recorded to have occurred and the geology is not suitable for such workings.

2.9.4 Oil And Gas

GRM have conducted an on-line search, which has shown that the Oil and Gas Authority does not record the site to be within an on-shore licence area or Hydrocarbon Field. Any future prospecting activities will require consideration of the surrounding areas current hospital end use, which is likely to make exploration socially and commercially unacceptable.

Significant Mining Risks:
None identified.

2.10 QUARRYING

There is no evidence of any non-coal mineral extraction having taken place within the site area. There are nearby backfilled ponds that are recorded as potential non-coal mining activities, but these are very limited in extent and were backfilled by the 1880s.

Significant Quarrying Risks:
None identified.

2.11 MINERAL RESOURCE PROTECTION

Whilst GRM can comment on the geological considerations regarding Mineral Resources, a legal expert should be commissioned concerning Mineral and Manorial Rights.

The BGS Mineral Resources Map for Greater Manchester indicates there are no resources below the site. However, the Glaciofluvial Deposits, located circa 95m south west of the site are indicated to be a potential resource of sands and gravels. However, the previous ground investigation report of the adjacent site did not record any sands and gravels associated with these deposits.

Furthermore, the BGS onshore maps also suggest the site does not lie within areas that can potentially be exploited for resources. The Greater Manchester Mineral Safeguarding Map, extracted from the Joint Minerals Plan dated April 2013, indicates the site is not located within or close by any mineral safeguarding areas. Any future opencast activities will require consideration of the site's location and current proposed end use, which is likely to make removal socially and commercially unacceptable.

Overall, it is considered that the site is not underlain by significant and easily exploitable reserves of mineral resources. In addition to a very small development footprint, the existing hospital buildings would have already sterilised any mineral resource present below the site. As such, a detailed Mineral Risk Assessment is unlikely to be required.

Mineral Risk Assessment:

Further assessment unlikely required – to be confirmed following intrusive ground investigation.

2.12 ENVIRONMENTAL INFORMATION

An Environmental Report has been acquired for the site. The full report is presented in Appendix G. A summary of the relevant information not included elsewhere in this report is presented below:

- Historic motor garages, dating back to 1957, were identified approximately 20m and 80m south of the site. The garage located 70m south is still active, however given their distances, they are unlikely to be significant risks.
- There are two recorded waste exemptions noted near the site. One is located 140m north east of the site for storing waste in a secure place and the other is located 148m north west of the site for sorting controlled drugs for disposal. Both are likely to be associated with Christie Hospital and appropriately controlled. Therefore, they are not considered to be significant risks.

Based on the above, no significant environmental hazards, that are considered likely to pose a potential risk to the site, have been identified from the available information.

Significant Features identified from Environmental data:

None identified.

2.13 ARCHAEOLOGY

Archaeological information has not been sought as part of this desk study. However, the Applicant has engaged with GMAAS prior to the submission of this planning application who advised that it is most unlikely that the proposed extension to the Christie Hospital will have any impact on archaeological remains. This area has been subject to archaeological studies previously, and these have confirmed that there is a negligible potential for archaeological remains to survive intact.

Archaeological Hazards:

None identified.

2.14 INVASIVE PLANT SPECIES/ECOLOGY

GRM is not a specialist in this topic and has not conducted such a survey; however, we will endeavour to report easily recognisable issues such as Japanese Knotweed, Giant Hogweed, badger sets etc, when seen on site. No such issues were observed during the walkover undertaken by GRM.

An Ecology Statement is submitted in support of the planning application, which included a site walkover, and details that the proposals are confined to an area of hardstanding adjacent to existing built form. The adjacent buildings which would adjoin the extension were found to have no bat roost potential, and no value for any other protected or priority fauna. For this reason, it is determined that the 'site' has no ecological value, and the proposals would not have any adverse impact on protected or priority fauna.

Invasive Plant Species/Ecological Hazards:
None identified.

2.15 RADON ASSESSMENT

The Health and Safety Executive (HSE) requires that if radon concentrations in air exceed 300 Bqm⁻³ in the workplace then mitigation measures may be required to reduce levels. The level of 300 Bqm⁻³ in the workplace is considered to be analogous to the level of 200 Bqm⁻³ in the home, due to the reduced exposure time in the former.

Based on the report 'Radon in Homes in England: 2016 Data Report' (Ref: PHE-CRCE-032) published by Public Health England (PHE), the average radon concentration in dwellings in the rural and metropolitan county of Greater Manchester is 25 Bqm⁻³, with the highest value recorded at 740 Bqm⁻³. Of the 760 dwellings tested, six recorded radon levels in excess of 200 Bqm⁻³. The recently updated radon potential map also suggests the site is within an area where the potential for homes to exceed the action level of 200 Bqm⁻³ is less than 1%.

Therefore, it is considered that radon protective measures are not required for the proposed extension to the hospital building.

Radon Hazard:
None identified.

2.16 SUMMARY OF POTENTIAL GEOTECHNICAL/GENERAL HAZARDS

Potential geotechnical/general hazards have been identified in earlier sections and are summarised below.

Potential Hazard	Potential Consequence	Action
Existing site compound and restricted access	Ground investigation / survey constraint	Inform relevant parties for removing materials / fences for access
Live services	Danger to personnel	Inform relevant parties for disconnection / diversion
Previous buildings and potential for made ground	Deepened foundations/buried structures	Ground investigation
Variable strata	Deepened foundations	Ground investigation
Shrinkable clay	Deepened foundations	Ground investigation / plasticity testing
Shallow bedrock (c.2m depth)	Excavation constraint	Ground Investigation
Groundwater anticipated around 4m bgl	Excavation hazard	Dewatering may be required for deep excavations
Site within moderate groundwater flood risk	Flood risk	Ground Investigation / consideration during design

Potential sources, pathways and receptors are summarised in the Phase I Conceptual Model in Section 3, which is based on current relevant guidance, the principles of which are set out in Appendix A (iii).

2.17 CONTAMINANTS OF CONCERN

In addition to the general contaminants listed in Appendix A (ii), the following site specific contaminants have been identified:

- Asbestos associated with previous building and adjacent hospital complex (constructed pre-2000s).

3 PHASE I CONCEPTUAL SITE MODEL

HUMAN HEALTH			
Source	Pathway	Receptor	Level of Risk
Potentially contaminated made ground associated with previous development.	Indoor and outdoor inhalation of soil dust, the ingestion of, and dermal contact with, contaminated soil and soil dust (assuming limited pathway due to proposed hardstanding).	End users.	Low.
		Construction and Maintenance Workers.	
Made ground.	Inhalation of ground gas.	End users.	Very low.
Asbestos associated with potential made ground.	Inhalation of asbestos fibres.	Construction and Maintenance Workers.	Low.

CONTROLLED WATERS			
Potentially contaminated made ground associated with previous development.	Leaching of contaminants and vertical migration to the groundwater (assuming limited pathway due to proposed hardstanding).	Principal Aquifer (Chester Pebble Beds Formation). Secondary Undifferentiated Aquifer (Till).	Low.

4 CONTAMINATION / REMEDIATION RECOMMENDATIONS

It is envisaged, based on the proposed development outline, that the majority of the site will be covered with hardstanding and the proposed extension, limiting the contamination risk to human health and controlled waters. Therefore, the overall risk to human health and controlled waters is considered to be low. The risk from ground gases is considered to be very low for the proposed development.

Prior to development a ground investigation will be required, the scope of which is outlined in Section 6. At this stage, based on the desk study information available, it is considered unlikely that remedial measures will be required.

5 PRELIMINARY GEOTECHNICAL ASSESSMENT

It should be noted that the following comments and recommendations are based on the findings of this desk study which may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). Prior to development a ground investigation will be required to confirm the initial recommendations outlined below, the scope of which is outlined in Section 6. However, at this stage based on the desk based information available it is considered:

- The ground conditions are likely to comprise made ground overlying sand and/or clay strata. Sandstone is expected to be present at depth of c. 2.0m.
- At this stage, given that deep made ground may be present and due to the potential risk of undermining current structures by open excavations and time factors / level of disruptions involved with excavating traditional or pad foundations, together with three storey building loads and in order to minimise differential settlement between the extension and the existing structure, Continuous Flight Auger (CFA) piles should be allowed for to mitigate the risk of vibration to nearby structures.
- Due to the use of piles and anticipated made ground, a suitable reinforced floor slab should be used.
- Overly aggressive ground conditions are not expected, and standard concrete should be suitable.
- Given the site constraints, it is anticipated that the existing drainage system will be reused.
- Given the generally flat topography of the site, slope stability issues are not anticipated. The use of piles will prevent loading of any adjacent basement structures.
- Groundwater is anticipated to be present around 4.0m depth. Should excavations be required at such depths, dewatering should be allowed for.
- Should excavation beyond 2m depth be required then breaking out of rock will potentially be necessary.

- Given the anticipated shallow geology, CBR values of between <2% and 5% are considered likely.

6 FURTHER INVESTIGATION

A Phase II ground investigation is recommended to determine more accurately the effect of the identified hazards on the development. Initially, this should include:

- A ground investigation designed to BS10175:2011 and BS5930:2015 and comprising window sampling will be required to confirm existing ground conditions and collect samples for analysis. Deep cable percussion and rotary cored boreholes are required for pile design.
- Chemical analysis of soils followed by risk assessment so that the risk to human health and controlled waters can be determined.
- Based on the Phase I Conceptual Model (Section 3) the ground gas risk has been assessed as very low. A ground gas investigation designed to current guidance will be required to determine the ground gas regime beneath the site and allow any necessary mitigation measures to be recommended. At this stage allowance for four weekly visits over one month should be made to assess potential liabilities.
- Geotechnical soils testing of the founding strata to assess its character and suitable grades of buried concrete.

Following your review of this document, a copy of it should be submitted to the Planning Department of the Local Authority for comment and approval prior to any ground investigation works being undertaken, as this is often a condition of planning.

7 CONCLUSIONS

This Phase I Site Appraisal has shown the site is suitable for the proposed development, assuming compliance with all the recommendations contained within this report.



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GENERAL APPRAISAL COMMENTS

i INFORMATION SOURCES

Where available the following sources have been used for the identification and assessment of potential ground hazards:

- Relevant British Standards
- British Geological Survey (BGS) Geology Map Scale 1:10,000 for local area
- British Geological Survey (BGS) Geology Map Scale 1:50,000/1:63,320
- BGS Memoir
- BGS Borehole Records
- BGS online viewer: <http://www.bgs.ac.uk/data/mapViewers/home.html>
- Environment Agency Groundwater Vulnerability Maps
- Historical Ordnance Survey (OS) Maps
- Environmental Data Report
- Environment Agency Website: <http://www.environment-agency.gov.uk/>
- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR, 2010.
- Coal Authority Records / Coal Mining Report
- DEFRA/Environment Agency Contaminated Land publications and DoE Industry Profiles
- BRE Guide BR211 (2015), 'Radon: Guidance on protective measures for new buildings'
- HPA-RPD-033 (2007), 'Indicative Atlas of Radon in England and Wales'
- PHE-CRCE-032 (PHE, 2017), Radon in Homes in England: 2016 Data Report
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- BS8485:2015, 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'
- Other technical references used throughout this document are detailed in the text.

ii CONTAMINANTS OF CONCERN

The DoE Industry Profiles are normally used to assess likely contaminants from past land use and potential nearby industrial sources. For land uses where no profile is available, likely contaminants of concern are selected by GRM based on past experience of similar sites, a general screening suite of contaminants covered by CLEA and common contaminants from the Industry Profiles.

- | | | |
|------------|-------------------|--|
| · Arsenic | · Copper | · Water soluble sulphate |
| · Cadmium | · Nickel | · PAH (polycyclic aromatic hydrocarbons) |
| · Chromium | · Zinc | |
| · Lead | · Phenols | |
| · Mercury | · cyanide (total) | |
| · Selenium | · pH | |

Asbestos and PCBs are listed in the vast majority of profiles. PCBs are listed as the profiles expect electricity substations and switch boxes on all industrial sites. There is the potential for asbestos containing material to be mixed up with made ground, following any demolition works.

iii CONCEPTUAL MODEL METHODOLOGY

The consideration of contamination is based upon the principles of risk assessment, using the 'source-pathway-receptor' model in order to establish the presence, or potential presence, of a pollutant linkage.

To create a risk, contamination must have the potential to cause harm to susceptible targets or receptors such as humans, the water environment or the built environment. The potential for harm to occur requires three conditions to be satisfied to form a pollutant linkage:

- The presence of substances that may cause harm (SOURCE).
- The presence of a target which may be harmed (RECEPTOR).
- The existence of a plausible migration route between the source and the receptor (PATHWAY).

In the absence of a plausible pollutant linkage there is no risk. Where a potential linkage is identified in order for it not to pose a risk to the identified receptor it must be broken.

iv INTRUSIVE INVESTIGATION SAMPLING METHODOLOGY

The ground investigation (including fieldwork, sampling, monitoring and laboratory analyses) has been designed to identify and assess potential ground related problems and to allow cost effective solutions to be advised. It has been planned on the basis of the desk study, site inspection and the proposed development layout (where available). All fieldwork and soil descriptions were carried out in general accordance with relevant British Standards.

The exploratory holes have been positioned and advanced to depths to determine the general ground/groundwater/gas conditions below the site. A general grid pattern has been adopted, where possible, to provide sufficient information based on the current proposed layout scheme. Some holes have been targeted at particular hazards identified in the Phase I assessment. The resultant exploratory hole density is considered to be commensurate with the complexity of the site conditions and detail of information required for this phase of the investigation.

v GROUND GAS RISK ASSESSMENT METHODOLOGY

Gas monitoring programmes undertaken by GRM are designed to broadly comply with the recommendations outlined in CIRIA Report C665 'Assessing risks posed by hazardous ground gas to buildings' (2007) and BS8576 'Guidance on Investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs) (2013).

To assess the risks posed by ground gases such as radon, carbon dioxide and methane, the relevant current guidance has been used. For radon the site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings (BR211: 2015)'. For methane and carbon dioxide the primary guidance document used to determine if protection measures are required is *BS8485:2015 Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings*. This uses hazardous gas flow rates (Q_{hg}), which are gas concentrations multiplied by borehole flow rates, to derive a Gas Flow Rate (GSV) for the site. The gas regime is then determined based on the GSV and other limiting factors such as gas concentrations.

Where flow is not recorded during the monitoring a default flow rate of 0.1l/hr will be used in the assessment to produce a positive result.

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

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Guidance contained in the Environment Agency's CLEA Reports has been used to assess the risks posed to human health.

For residential developments that include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land with plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered including the consumption of home-grown vegetables.

For residential developments that do not include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land without plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered except the consumption of home-grown vegetables. For commercial/industrial developments the default Tier 1 Assessment Criteria (TAC) for 'commercial/industrial' are used, i.e. a female with a start age class of sixteen and an end age class of eighteen. All pathways are considered except the consumption of home-grown vegetables.

The TAC used by GRM include Category 4 Screening Levels (C4SLs) published by DEFRA, values calculated by GRM using the CLEA v1.071 risk assessment, and values and Suitable for Use Levels (S4UL) developed by LQM/CIEH. The TAC used in the assessment are selected based on the lowest site specific SOM values returned as part of the chemical analysis.

Where soil chemical analysis results are found to exceed the TAC, Site-Specific Risk Assessments may be undertaken using the CLEA v1.071 risk assessment software using the age classes and pathways described above.

vii **RISK TO SITE WORKERS – GENERAL COMMENTS**

The risks to site workers are similar to those posed to site end users, although likely to be less severe due to the site workers' shorter exposure to the identified contamination. However, site workers (particularly groundworkers) are more likely to come into direct contact with contaminated soils due to the nature of their work. On this basis ground and construction workers should be provided with basic Personal Protective Equipment based on the site's general health and safety risk assessment, but including as a minimum safety footwear, gloves and overalls.

A site specific risk assessment should be carried out for all hazards identified within the ground investigation in accordance with current health and safety legislation. This assessment should identify any measures required to further reduce risks i.e. providing further Personal Protective Equipment, welfare facilities and if necessary preventing access to certain areas.

Demolition and dismantling of existing structures on the site must be carried out to a safe and acceptable standard, in accordance with current UK guidance and best practice. Whilst not ground related, asbestos and hazardous substances surveys should be conducted prior to any demolition.

Any unusual colours, odours and suspicious ground should be reported immediately to site management and then GRM.

Whilst this appraisal has considered the long-term effects of contamination, GRM can also help during the formulation of Health and Safety documentation, if required.

viii **CONTROLLED WATERS RISK ASSESSMENT METHODOLOGY**

Where the desk study and fieldwork do not reveal a potential source of contamination no leachate or groundwater testing will be performed. Where a potential source is identified the testing will comprise leachate testing on the material considered most likely to pose a risk, groundwater testing will be undertaken if water is present at shallow depth.

The UK Drinking Water Standards (UKDWS) or Environmental Quality Standards (EQS) are usually adopted for comparison with the leachate/groundwater test results. When the most sensitive receptor is considered to be the aquifer (groundwater) UKDWS will be adopted as the Initial Tier 1 screening values. Where the most sensitive receptor is a surface water feature the EQS values will be used as Initial Tier 1 Screening values.

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ix CONSTRUCTION MATERIALS RISK ASSESSMENT METHODOLOGY

The 'screening levels' adopted for the assessment of risk to construction materials are taken from the following documents:

- UK Water Industry Research (UKWIR) Contamination thresholds for sub-surface water pipes, for the protection of buried pipes.
- Building Research Establishment (BRE) Special Digest SD1 (2005), 'Concrete in Aggressive Ground', for the protection of buried concrete.

x WASTE DISPOSAL, SITE WASTE MANAGEMENT PLANS AND MATERIAL MANAGEMENT PLANS

Under current Waste Management Regulations, waste soil materials produced from the site will require characterisation to enable it to be disposed of correctly.

The chemical analysis results included in this report should be provided to the relevant landfill operators to establish the characterisation of the waste, confirm its suitability for landfill disposal and provide estimated costings. If material is classified as hazardous, then the site will need to be registered with the Environment Agency prior to the movement of the waste. Depending on the receiving landfill's current permit, further chemical analysis, incorporating Waste Acceptance Criteria (WAC) leachate analysis, may be required.

All materials removed from the site will be classified as 'waste' and therefore must be removed by a suitably licensed carrier of waste. This applies whether or not the waste is contaminated. All waste removed to landfill will attract Landfill Tax.

The developer/builder is likely to be classed as the waste producer and therefore, has a duty of care to ensure that all waste is disposed of appropriately. This includes ensuring the waste carrier is licensed and disposes of the waste to a suitably licensed landfill site. They are also required to keep a paper trail from 'cradle to grave' including copies of the waste disposal tickets.

Efficient materials management on site is recommended as it can lead to significant cost savings when compared to the traditional side casting or single stockpile of arisings. GRM can assist in the production of Material Management Plans under the CL:AIRE Definition of Waste: Code of Practice. The DoWCoP enables:

- The direct transfer and re-use of clean naturally occurring soil materials between sites, and
- The re-use of both contaminated and uncontaminated materials on their site of origin and between sites within defined Cluster projects.

GRM can also undertake the role of Qualified Person and submit the DoW CoP project Declaration.

Likewise making the site as volume neutral as possible will reduce the costs of development. Whilst not a statutory requirement, Site Waste Management Plans allow better waste management practices, help to reduce the amount of waste produced and identify best environmental disposal options. Implementing a Site Waste Management Plan (SWMP) can reduce costs (increasing business profits) and maximise resource efficiency.

xi GEOTECHNICAL ASSESSMENT GENERAL COMMENTS

Where finished floor levels of proposed structures have not been provided by the Client, then for the purposes of initial assessment, GRM will assume that finished levels will not vary appreciably from the existing ground levels. If the depths of any underground engineering works (i.e. sewers, pumping stations

etc.) are unknown they will not be taken in to account in the assessment and it will be assumed that any such works will not compromise foundation or ground stability.

Should the development proposals or finished levels be different from these assumptions then the comments/recommendations in the Geotechnical Assessment may require revising.

It should be noted that the results of window sampling and/or cable percussive boreholes may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). GRM consider that that prior to development trial pitting should be undertaken to confirm the recommendations in the Geotechnical Assessment.

xii GEOTECHNICAL ASSESSMENT – ENGINEERING GROUND TREATMENT

Near surface soils have the potential to be disturbed by weathering and site traffic. Precautions should always be taken to avoid this, as excessive disturbance may leads to more onerous floor slab designs, road cap thickness and increased amounts of off-site disposal etc.

Near surface soils may need treatment or reinforcing to allow safe movement of construction plant and labour. An assessment by the contractor should be undertaken once the type of machinery/plant needed to complete the development is known.

xiii GEOTECHNICAL ASSESSMENT – EXCAVATIONS

Excavation instability (over-break) can result in damage to existing services or structures (e.g. foundations, roads or boundary walls/fences) both on and off-site, as well as increased foundation concrete costs. In order to minimise this, all excavations deeper than 1.2m deep (or any excavation within 1.5m of any existing structure or service) should be supported. Full support should be provided to the full depth of all near vertically sided excavations in made ground, soft and very soft clays and granular soils. A reduction to intermediate support should be acceptable within firm and stiffer natural clays.

Wherever possible, man entry into excavations should be prevented; however, where this is not possible, entry to, and time spent in, excavations should be kept to a minimum.

The build program should be tailored to reflect the impact that deep excavations through potentially unstable strata can have on adjacent properties, so that they are not undermined.

All excavations on site should be in accordance with HSE guidelines and stability should be practically maintained at all times. Reference should be made to HSE construction information sheet No. 8 (Revision 1) 'Safety in Excavations'.

Care should be taken to ensure that falls from excavation faces do not adversely affect the integrity of foundation concrete.

If contaminated water enters excavations it should be removed and transported to an appropriate treatment facility by a suitably licensed carrier before construction begins.

xiv GEOTECHNICAL ASSESSMENT – SUBSTRUCTURES

Where practicable, existing buried construction should be fully removed; however, if this is not practicable all new foundations should be carried down to fully penetrate it and it should be broken well away from all new structures.

There may be existing structures and/or infrastructure in close proximity to the proposed development. New build foundations may be constructed next to pavements with existing underground services beneath them, or excavations may be required near existing footings associated with adjacent properties. These potential hazards need to be taken into consideration when designing foundations and the groundworker needs to be made aware of their potential impact during the redevelopment works. Foundations close to existing underground services or buildings may require alternative foundation techniques (such as piling) to protect the integrity of these structures.

The contractor for the works should carry them out in such a fashion so as to not cause excessive overbreak, concrete usage or undermine existing buildings/roads/ services that are to be retained.

xv **GEOTECHNICAL ASSESSMENT – SOAKAWAYS**

Soakaway testing in trial pits by GRM is broadly carried out in accordance with BRE DG 365 (2016). The testing comprises the excavation of a test pit to a suitable depth, and the placement of water into the pit. The level of water present is then monitored over time. For borehole installations, the permeability testing (falling head/rising head) is undertaken in accordance with BS5930.

If it is decided to proceed with the use of soakaway drainage, then the following general points should be noted:

- Soakaways should not be placed so that water can be discharged through potentially contaminated made ground.
- The Environment Agency may require soakaways to be sealed systems such that only roof run off falls to soakaway.
- Interceptors are likely to be required for soakaways for highway drainage. The adopting authority for the highways should be consulted at the earliest opportunity regarding the use of soakaways for highways drainage.
- Consideration of site levels and slopes should be taken into account during the design.
- The construction of all soakaways should be in accordance with the current building regulations.
- Soakaways should not be placed within 5m of a proposed building.
- Placement of soakaways needs to be considered so as to avoid ponding of water down slope.
- The base of a soakaway should not be below the highest recorded water level.
- The Environment Agency prefer 1m of dry soil to be present between the base of a soakaway and the water table to provide attenuation for contamination.

xvi **GEOTECHNICAL ASSESSMENT – FOUNDATIONS**

If soft or hard spots are encountered during foundation excavation then they should be replaced with suitably compacted material or the footings deepened to suitable strata, to avoid differential settlement.

If strata of differing bearing character (e.g. sand and clay) are encountered at foundation levels within the excavations for a single plot then the excavation depths should be altered as appropriate to ensure the foundations rest on a single stratum, or strata that will not induce differential settlement. Where this is impractical then GRM should be contacted to assess a reinforced concrete detail or an alternative foundation solution (e.g. piles or vibro-replacement).

NOTES ON LIMITATIONS

General

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

GRM Development Solutions Limited accepts no responsibility or liability for:

- a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and
- b) the consequences of this document being used by any third party with whom an agreement has not been executed.

Phase I Environmental Audits/ Desk Studies

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, GRM Development Solutions Limited reserves the right to review such information and as considered necessary and appropriate to modify the opinions accordingly. It should be noted that any risks identified in a Phase 1 report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits (Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, and controlled waters.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as provisional only and must, in any event, be confirmed by a commercial adviser.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. Whilst exploratory testing is intended to gain an accurate representation of the site, the very nature of sampling and testing is such that it cannot ensure that all localised conditions are detected.

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Phase II Geo-environmental Investigations (Combined Geotechnical and Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environment risks together with engineering and development implications. If costs have been included in relation to site development a commercial adviser must confirm these.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site for each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time the site work was conducted. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects. The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.



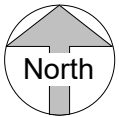
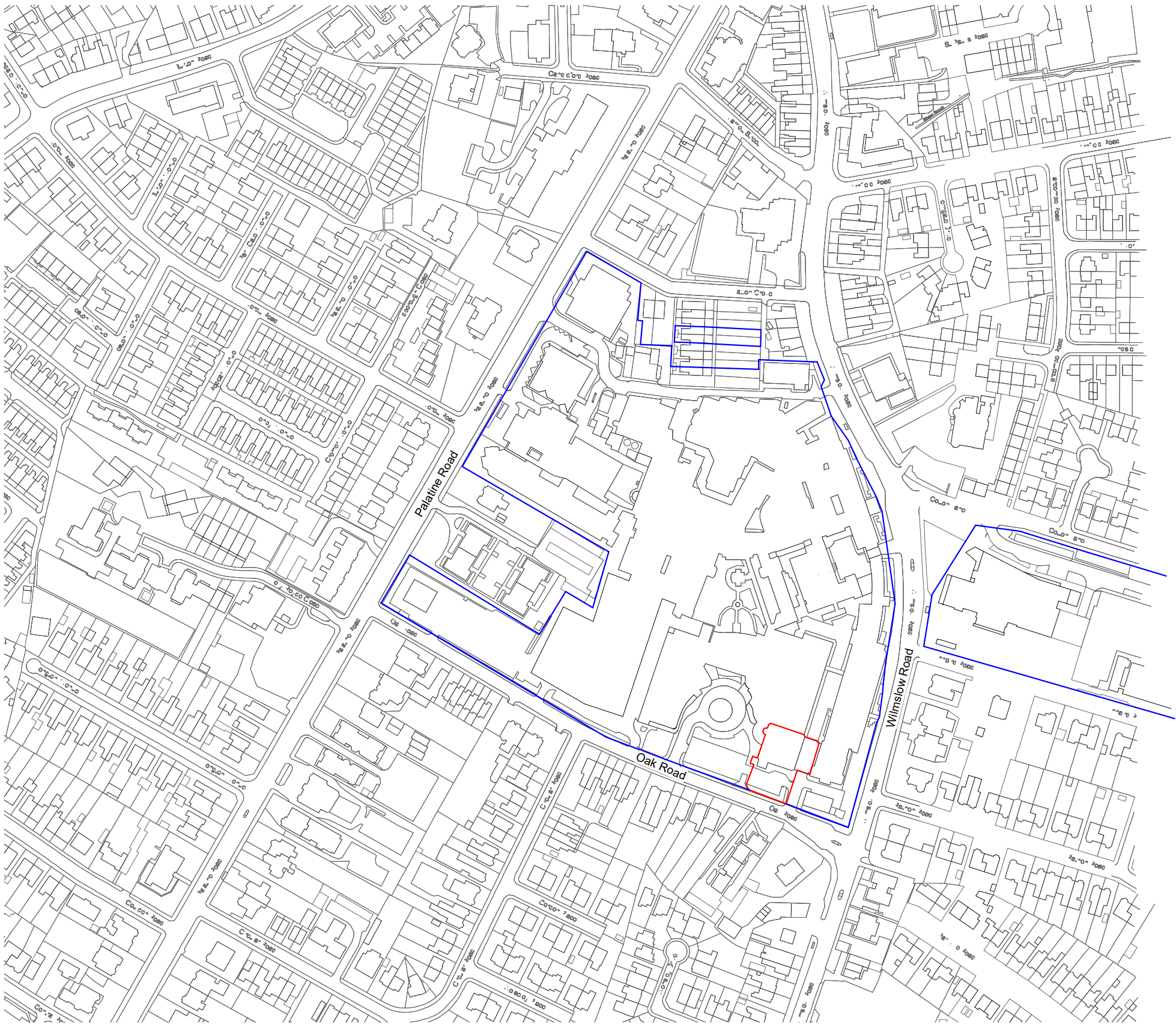
The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.



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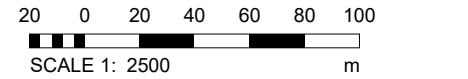
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NOTES:

- Application Boundary (Approx. 1266m²)
- Site Boundary / Client Ownership

P03	BW	Red line updated to suit Land Registry Plans	13/12/22
P02	CLS	Red line boundary updated to include upper floors	07/12/22
P01	MJC	First Issue	04/11/22
Rev	By	Description	Date



The Cruck Barn, Duxbury Park, Chorley, Lancashire. PR7 4AT
t: 01257 260070 f: 01257 260071

Client Name:
The Christie NHS Foundation Trust

Site Name:
The Christie, Wilmslow Road, Manchester

Project Name:
TIF Wards

Drawing Title:
Site Location Plan

Project No: 8283-002	Sheet Size: A3	Scale: 1 : 2500	
Drawn by: SK	Checked by: CLS	Approved by: NW	Revision: P03

Suitability: Issued for Planning	Status: S4
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Drawing Number:
Project Code / Orig / Vol / Level / Type / Disc / System-Number
CHRCCW-GDA-V4-S1-DR-A-9901

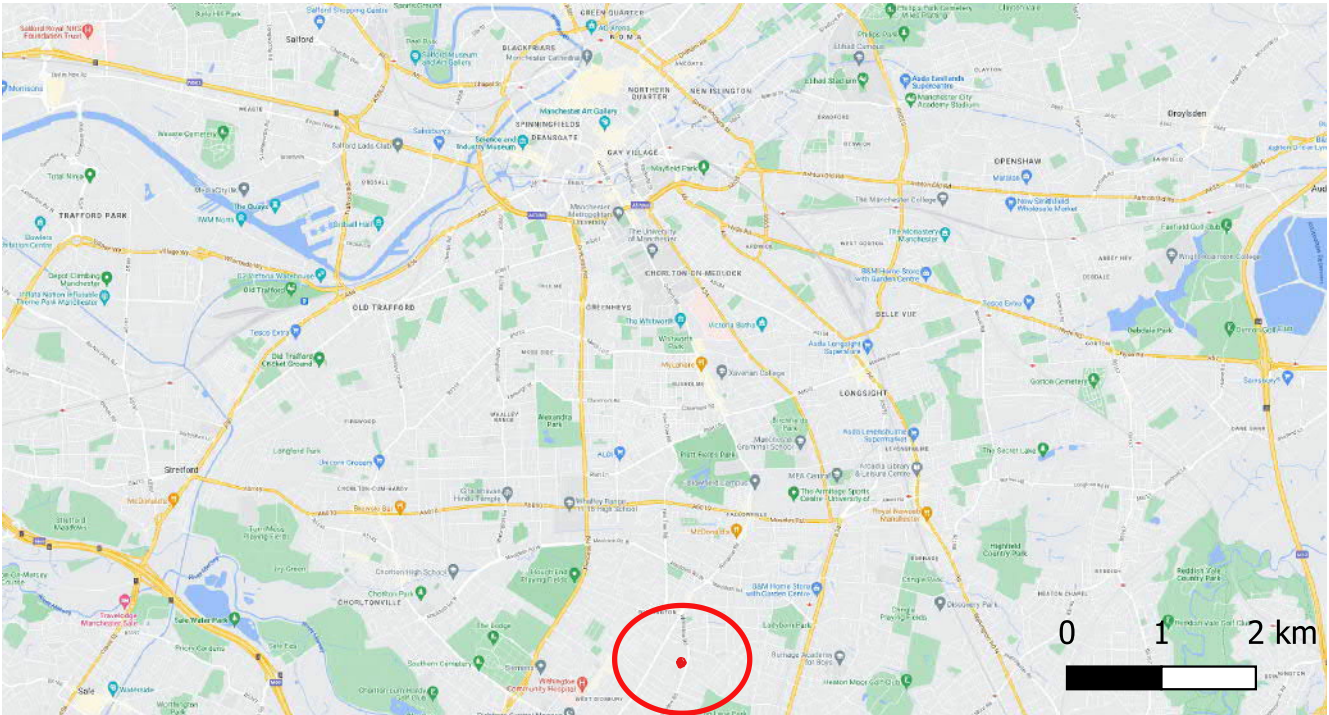
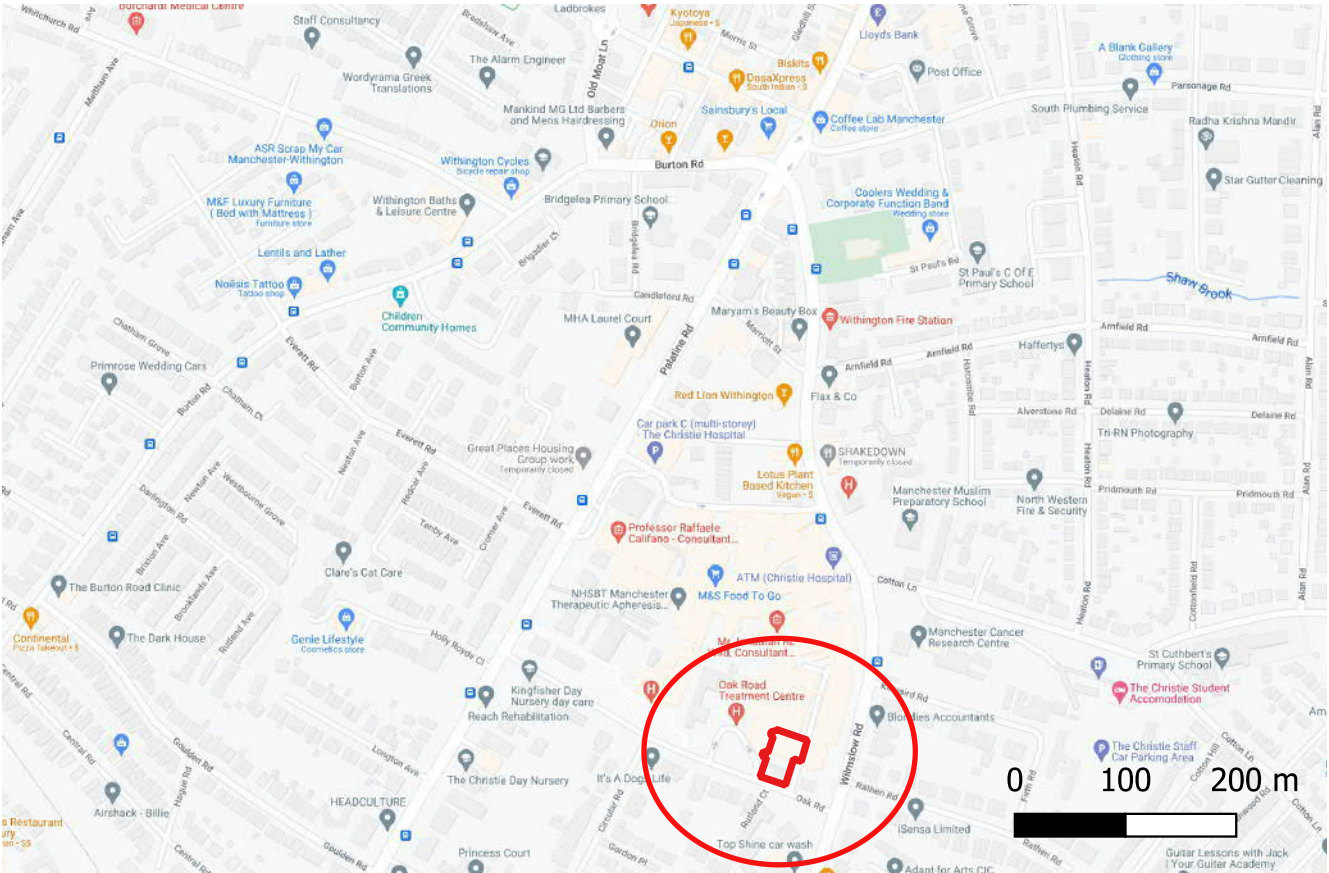
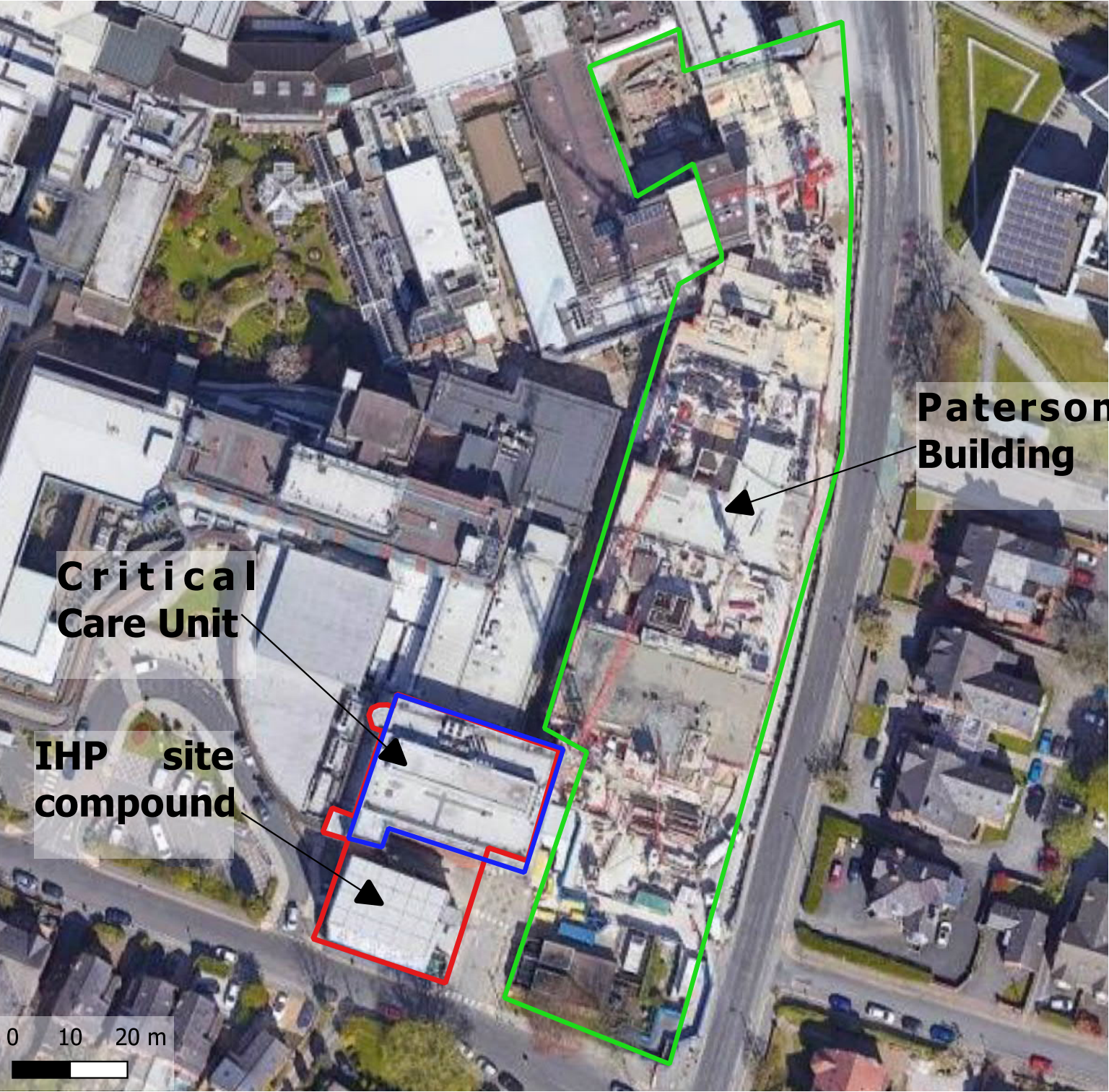


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- Legend
- Site Boundary
 - Hospital Buildings
 - Critical Care Unit
 - Paterson Building



NOTES:

CLIENT:	THE CHRISTIE NHS FOUNDATION TRUST C/O AJP
PROJECT:	CHRISTIE EXTENSION, THE CHRISTIE, WILMSLOW ROAD, MANCHESTER
TITLE:	SITE LOCATION AND BOUNDARY PLAN

PROJECT No:	P10197	DATE:	DEC 2022	DESIGN/DRAWN:	SS
DRAWING NUMBER:	01	ISSUE:	FINAL		
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Legend

- Site Boundary
- Site features
 - Concrete Ramp
 - Turnstile access
 - Material Storage Facility
 - Bin storage area
 - Stairs for site cabins
 - Wooden barriers around site cabins
 - Nearby trees



NOTES:

CLIENT:	THE CHRISTIE NHS FOUNDATION TRUST C/O AJP
PROJECT:	CHRISTIE EXTENSION, THE CHRISTIE, WILMSLOW ROAD, MANCHESTER
TITLE:	SITE FEATURES PLAN

PROJECT No:	P10197	DATE:	DEC 2022	DESIGN/DRAWN:	SS
DRAWING NUMBER:		02		ISSUE:	FINAL
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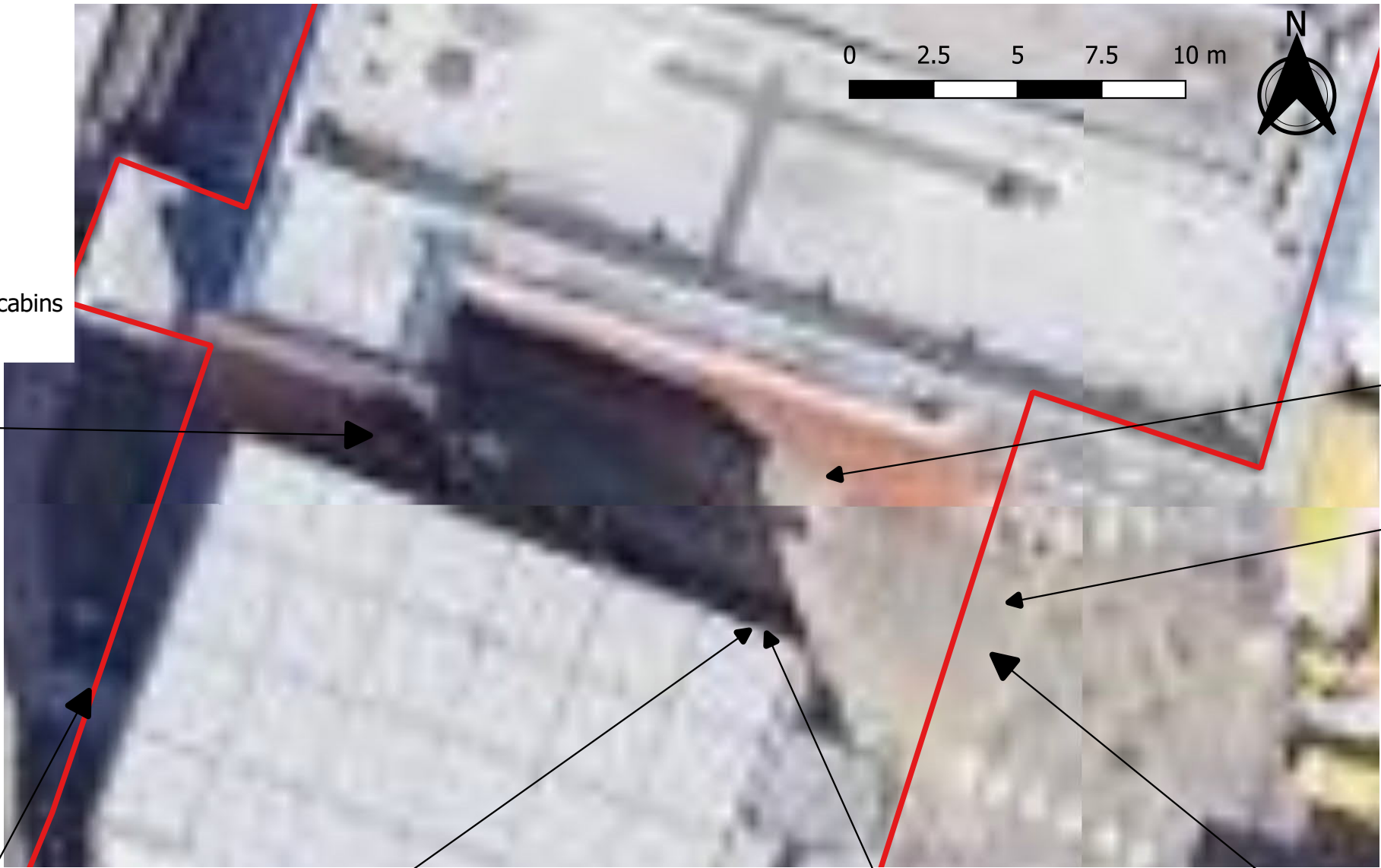
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Legend

- Site Boundary
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 - Turnstile access
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 - Bin storage area
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 - Wooden barriers around site cabins
 - Nearby trees



View to the west - wooden fence.



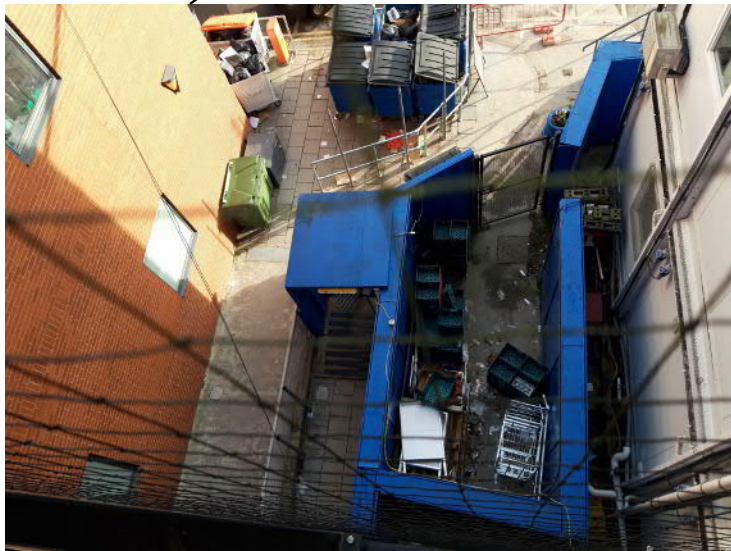
View to the east - concrete ramp for deliveries to CCU



View to the east - bin storage area



View to the east - IHP site cabins



View from above facing east - secure storage facility



View towards west - gated storage facility



View to the west - bin storage area

NOTES:

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PROJECT:	CHRISTIE EXTENSION, THE CHRISTIE, WILMSLOW ROAD, MANCHESTER
TITLE:	GENERAL SITE PHOTOGRAPHS

PROJECT No:	P10197	DATE:	DEC 2022	DESIGN/DRAWN:	SS
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Site Details:

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Road, Manchester, M20 4BX

Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1881

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
Edition 1881
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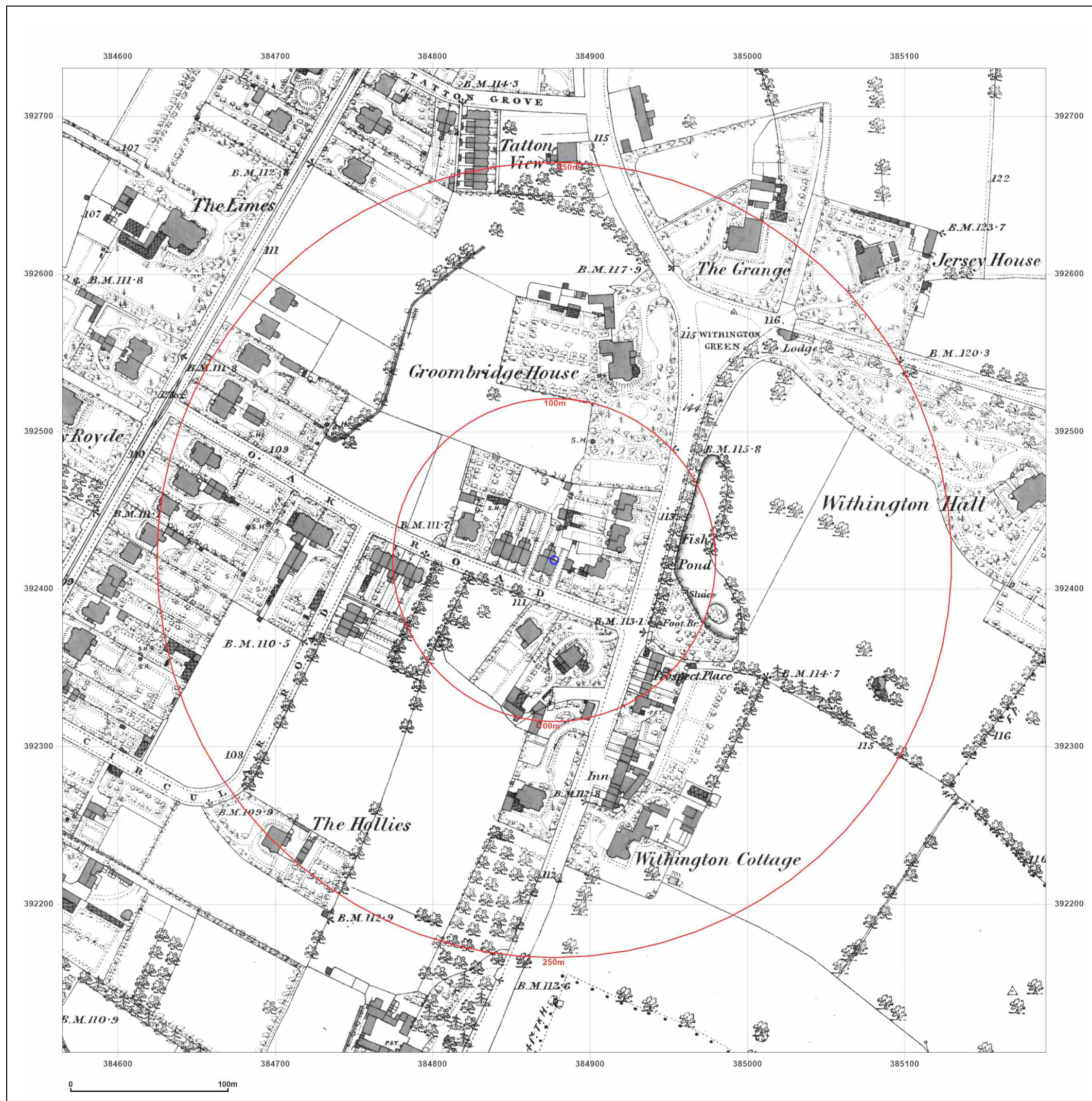


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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
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Map Name: County Series

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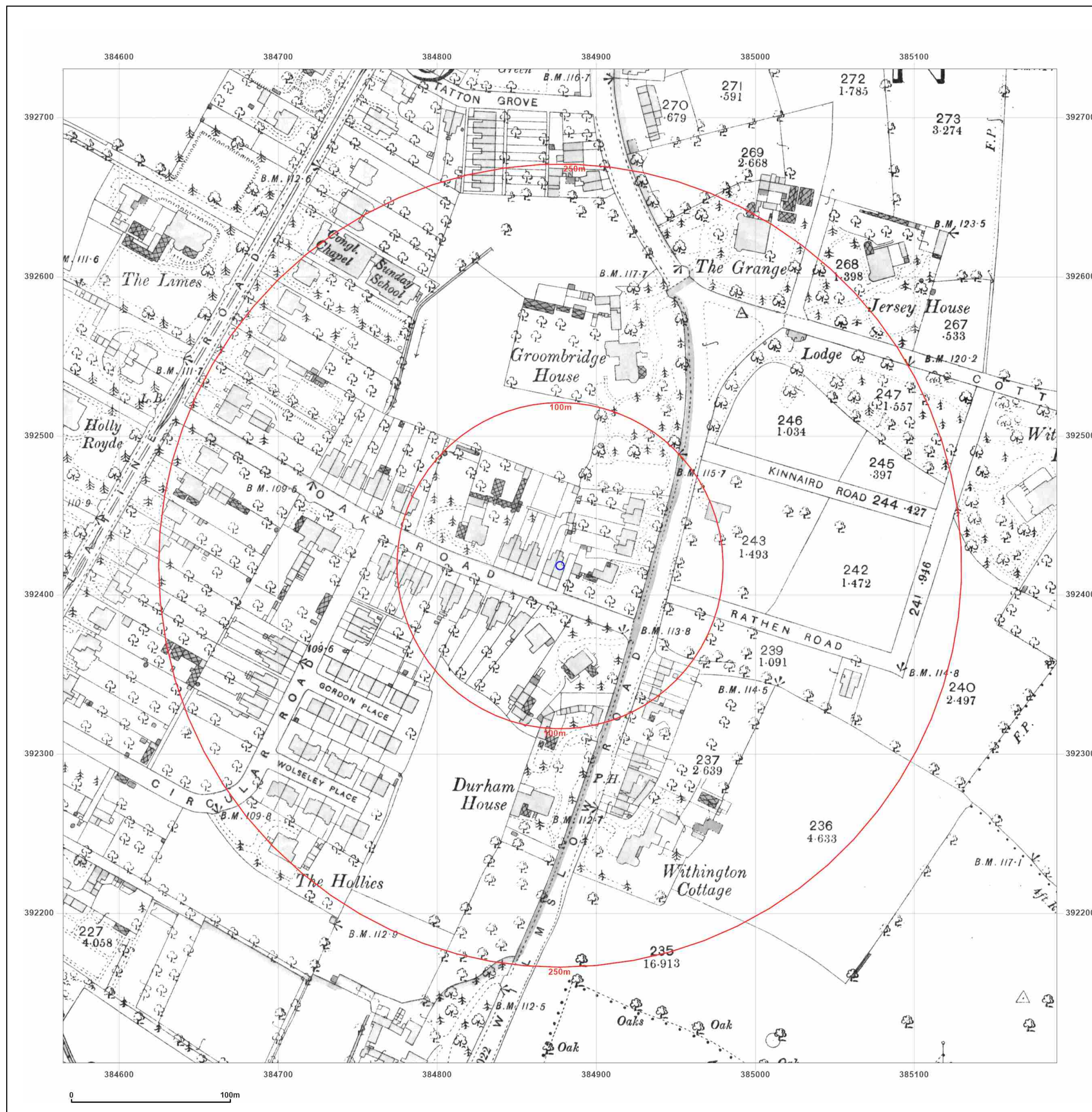


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Report Ref: EMS-829515_1066393
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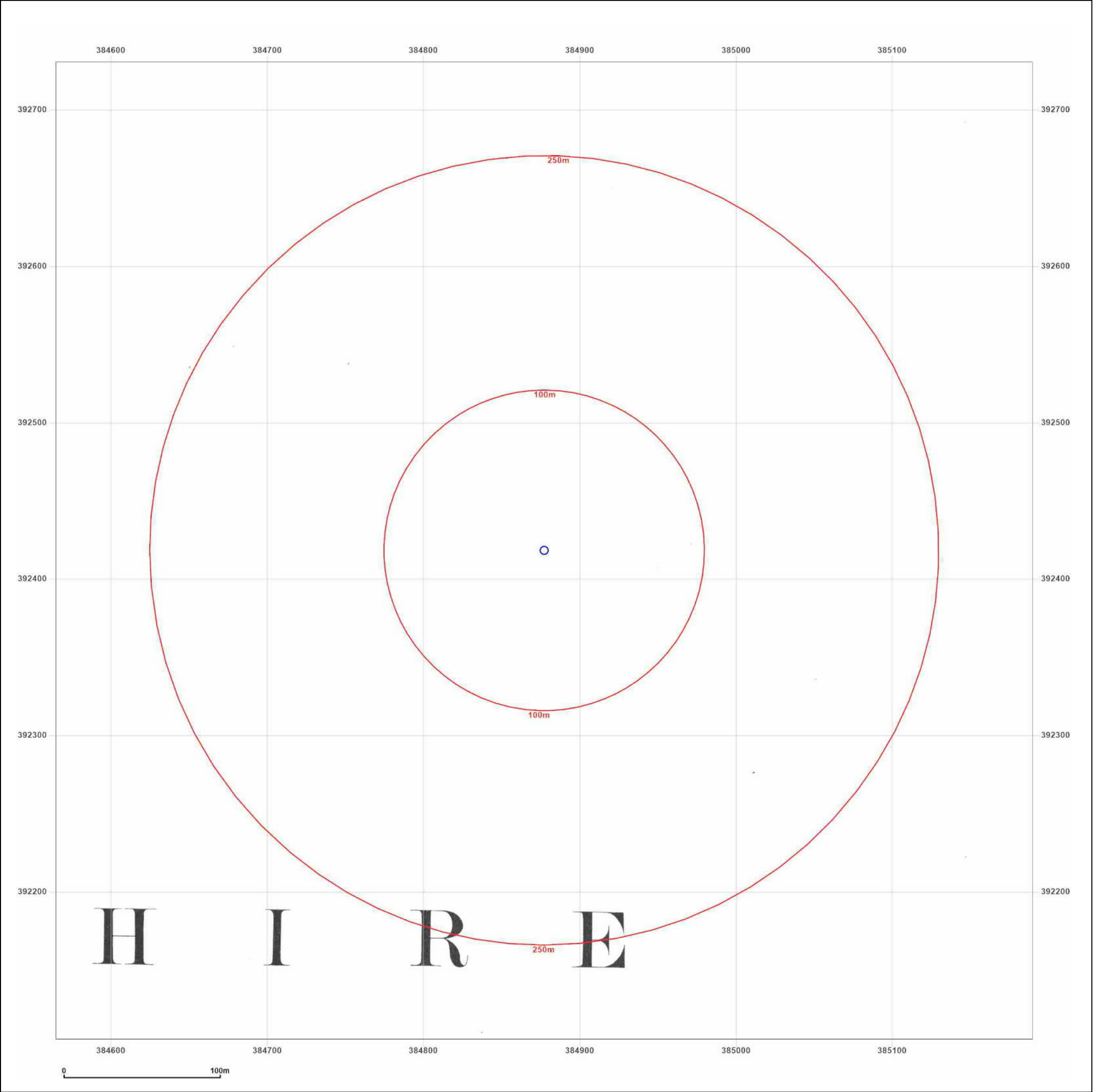


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Grid Ref: 384877, 392418

Map Name: County Series

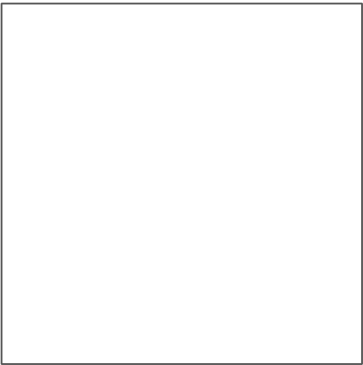
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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

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

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Production date: 06 December 2022
Map legend available at:
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Site Details:

Christie Hospital, Wilmslow Road, Manchester, M20 4BX

Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1934

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1873
Revised 1934
Edition N/A
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Site Details:
Christie Hospital, Wilmslow Road, Manchester, M20 4BX

Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid
Map date: 1957
Scale: 1:1,250
Printed at: 1:2,000

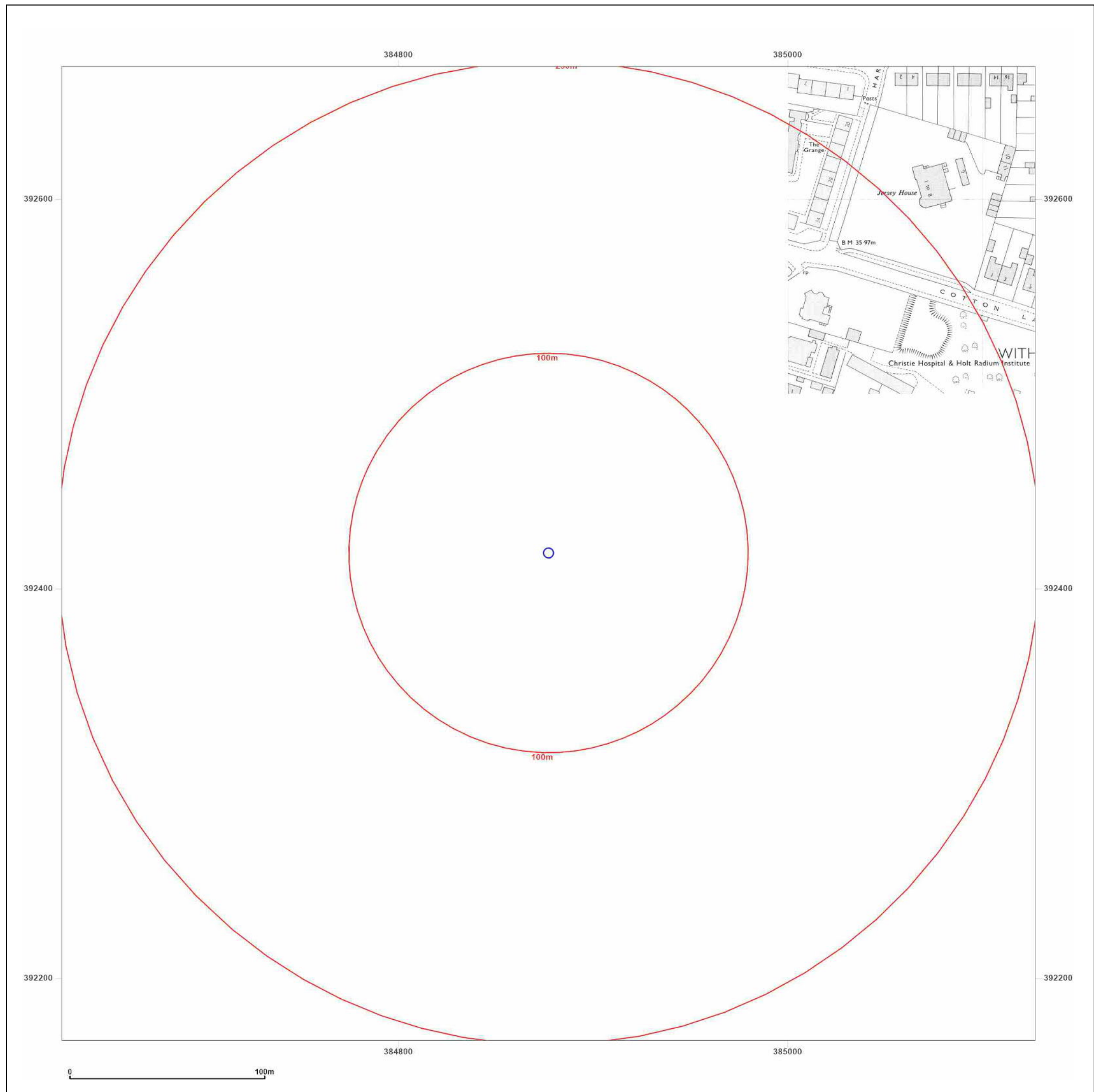
Surveyed 1957 Revised 1957 Edition N/A Copyright 1957 Levelled 1927	Surveyed 1957 Revised 1957 Edition N/A Copyright 1957 Levelled 1948
Surveyed 1957 Revised 1957 Edition N/A Copyright 1957 Levelled 1927	Surveyed 1957 Revised 1957 Edition N/A Copyright 1957 Levelled 1949

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Site Details:

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Road, Manchester, M20 4BX

Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

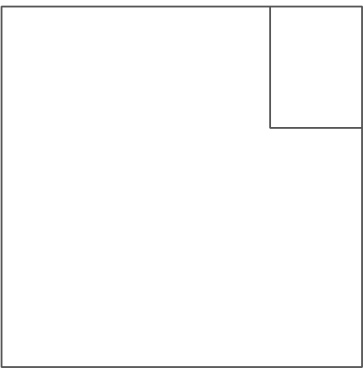
Map date: 1958

Scale: 1:1,250

Printed at: 1:2,000



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Site Details:
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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid
Map date: 1958-1959
Scale: 1:2,500
Printed at: 1:2,500



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Edition N/A
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Surveyed 1957
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Edition N/A
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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

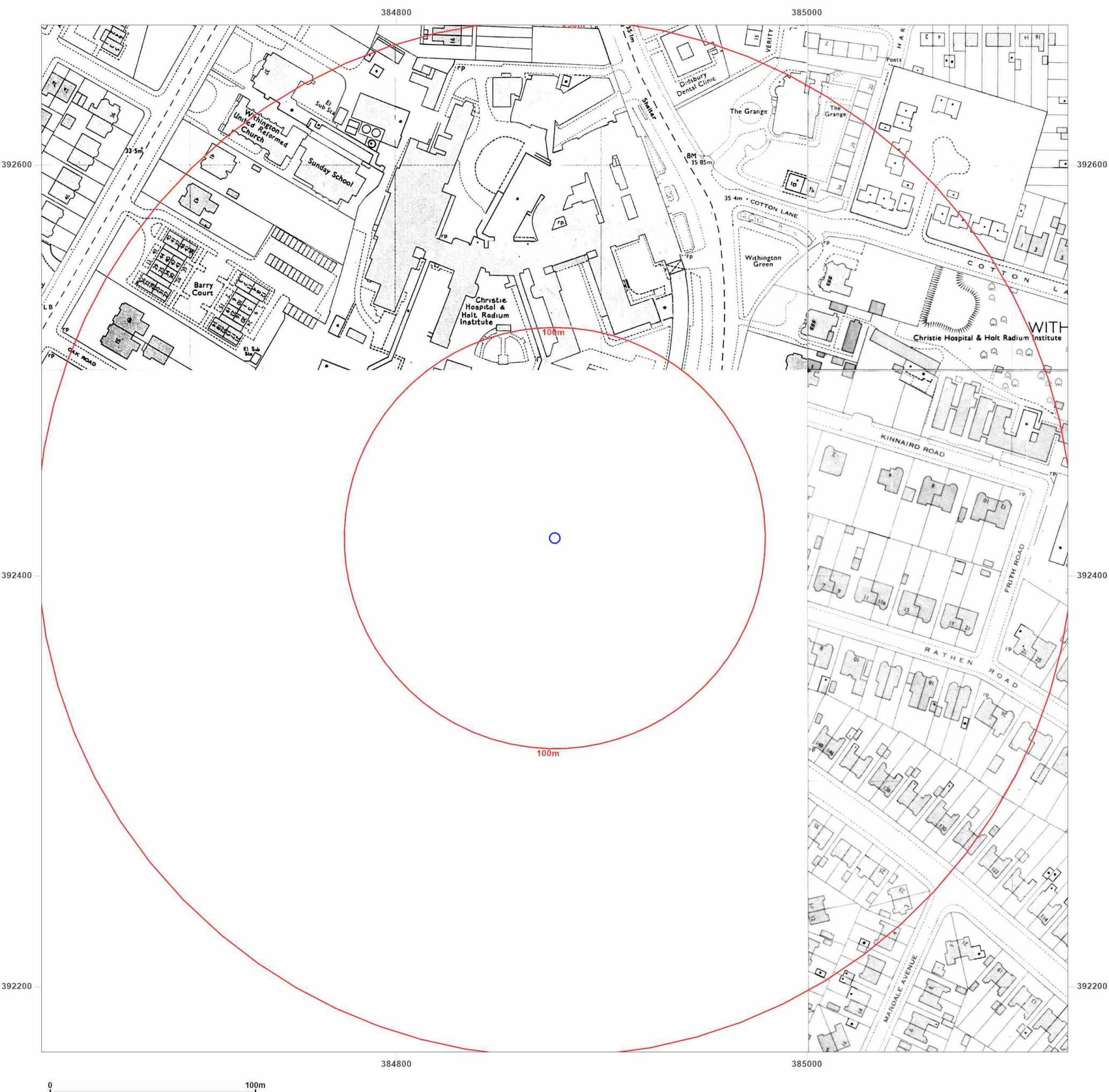
Map Name: National Grid
Map date: 1974-1975
Scale: 1:1,250
Printed at: 1:2,000



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Surveyed 1957 Revised 1973 Edition N/A Copyright 1974 Levelled 1958	Surveyed 1957 Revised 1974 Edition N/A Copyright 1975 Levelled 1958

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid
Map date: 1982-1984
Scale: 1:1,250
Printed at: 1:2,000

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Surveyed 1958 Revised 1984 Edition N/A Copyright 1984 Levelled 1958	Surveyed 1958 Revised 1982 Edition N/A Copyright 1982 Levelled 1958
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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

Map date: 1988-1992

Scale: 1:1,250

Printed at: 1:2,000



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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1988
Levelled 1958

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

Surveyed 1992
Revised 1992
Edition N/A
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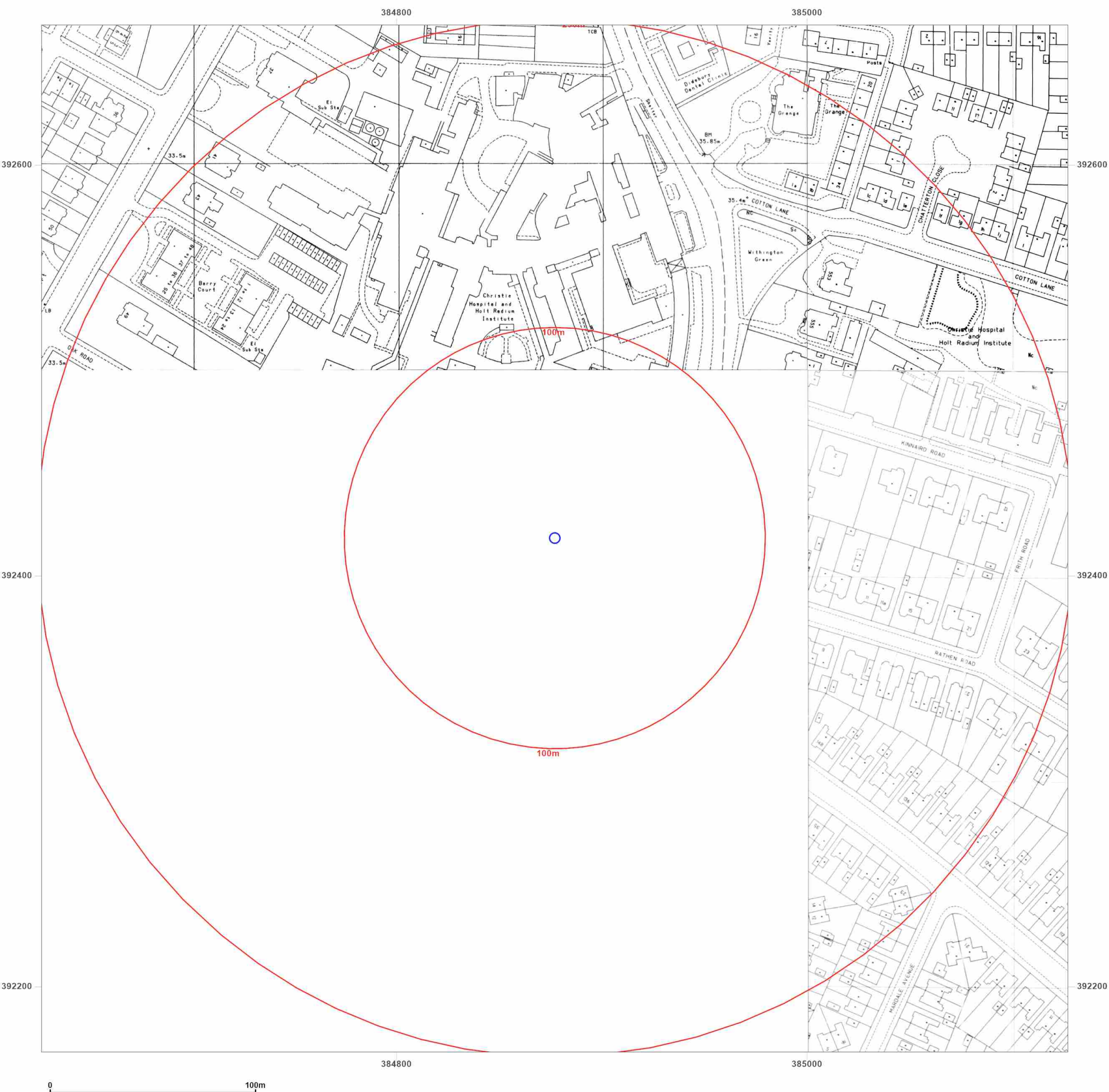
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Site Details:
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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid
Map date: 1992
Scale: 1:1,250
Printed at: 1:2,000



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



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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

Map date: 1992-1993

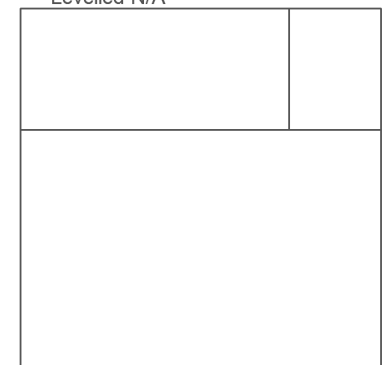
Scale: 1:1,250

Printed at: 1:2,000



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Revised 1992
Edition N/A
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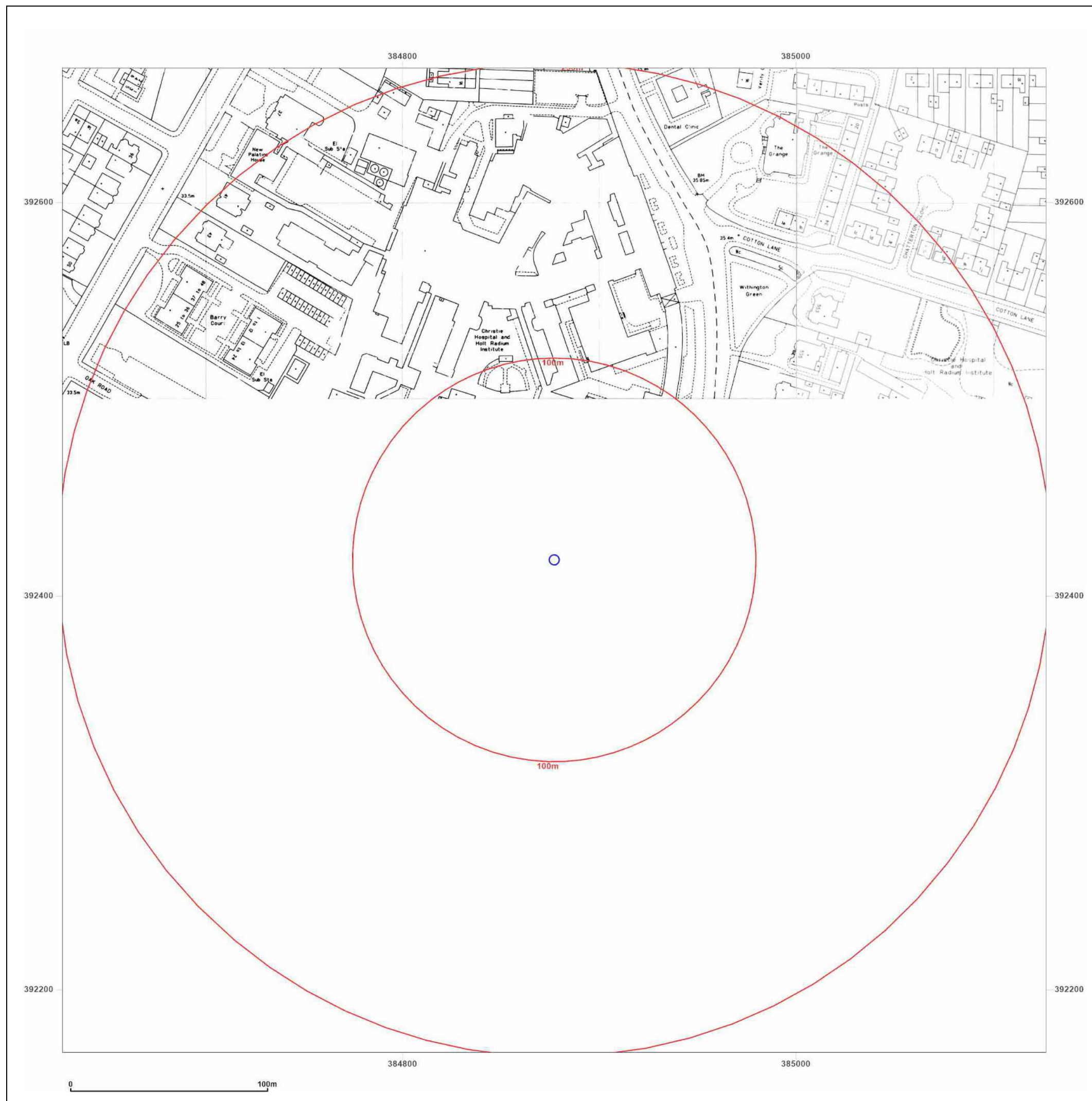


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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

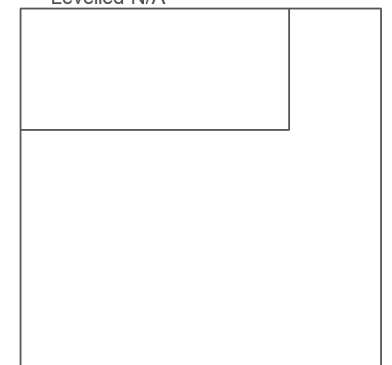
Map date: 1993

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1993
Revised 1993
Edition N/A
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Levelled N/A



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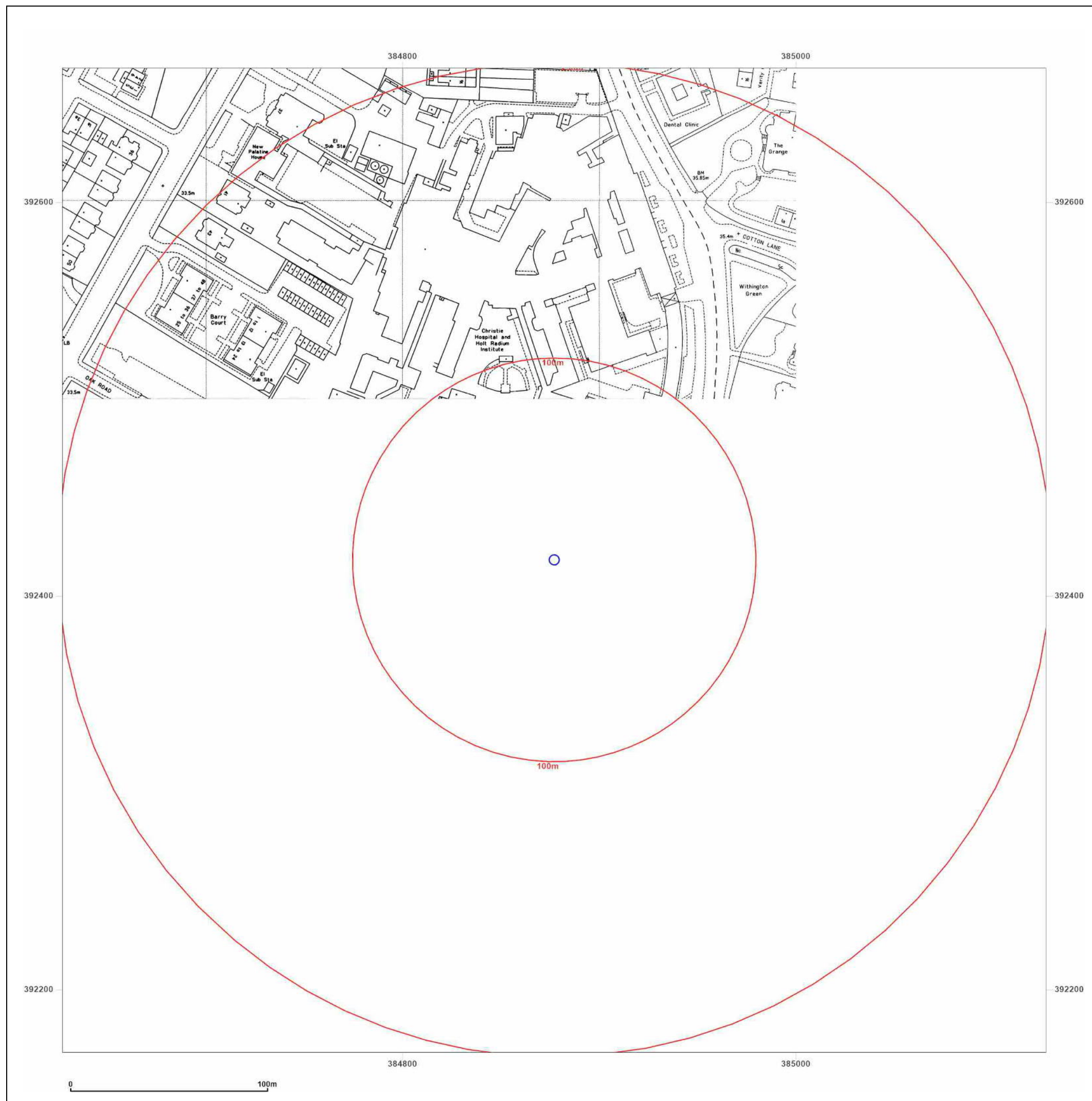


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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1849

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1845
Revised 1849
Edition 1849
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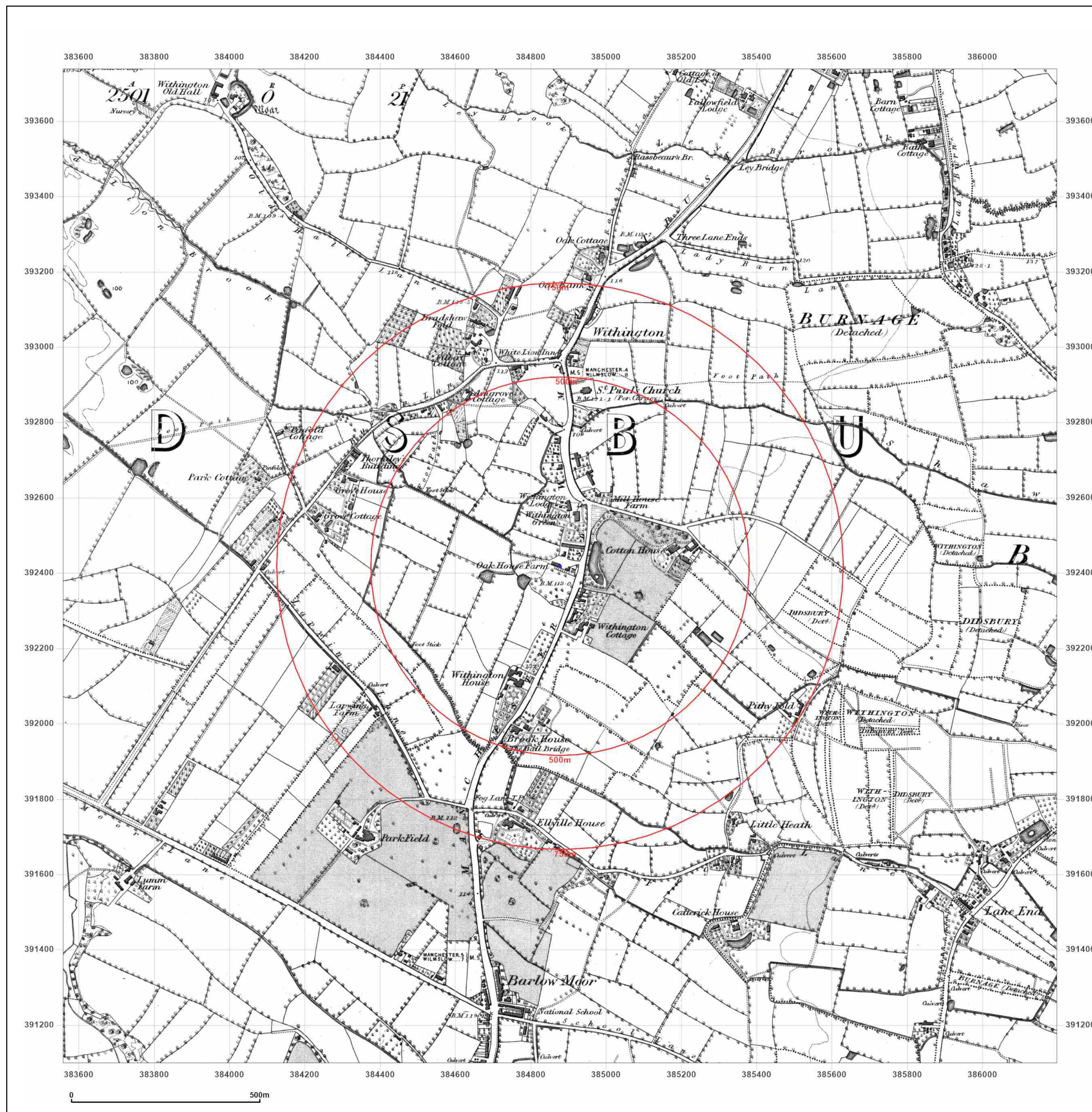


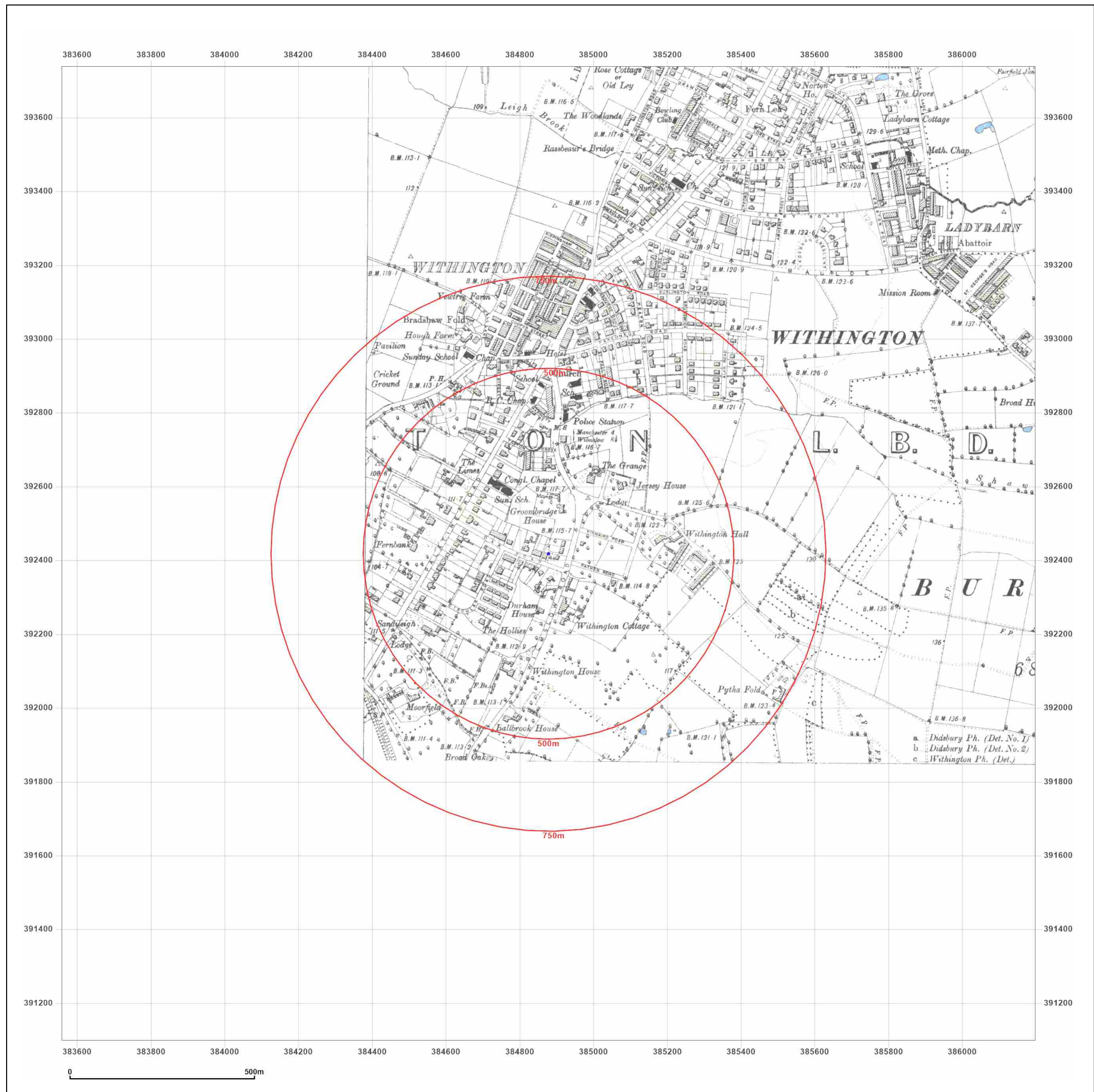
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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

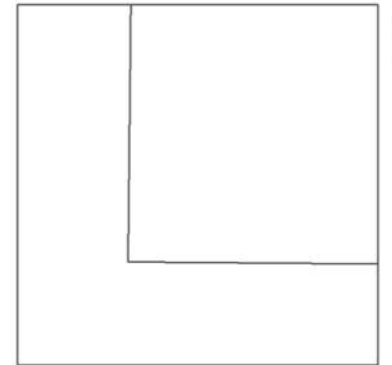
Map date: 1892

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1892
Revised 1892
Edition 1892
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Levelled N/A



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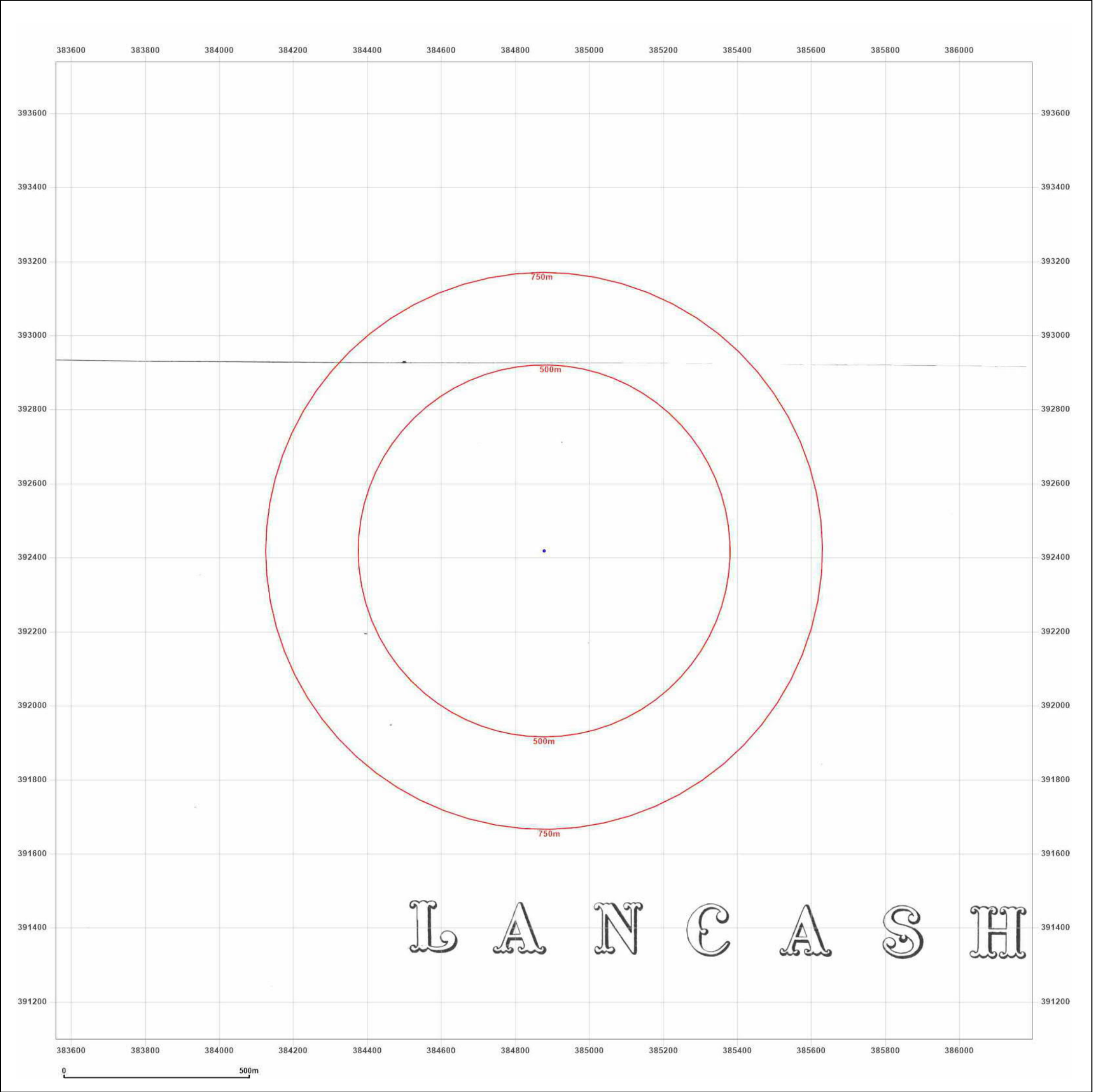


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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1897

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1872
Revised 1897
Edition 1897
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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1905

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1892
Revised 1905
Edition 1905
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Surveyed 1892
Revised 1905
Edition 1905
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Surveyed 1844
Revised 1905
Edition 1905
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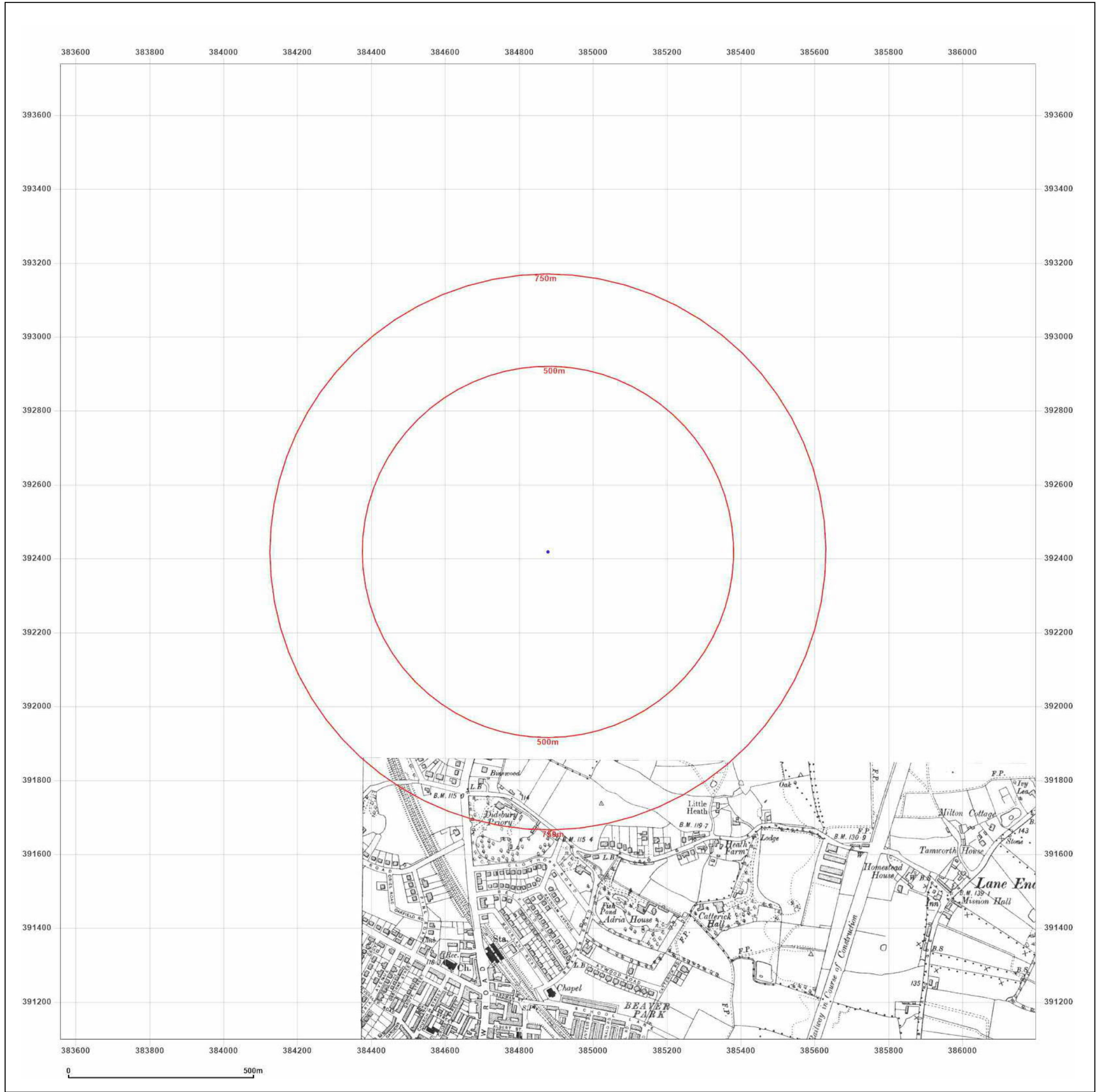


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Site Details:

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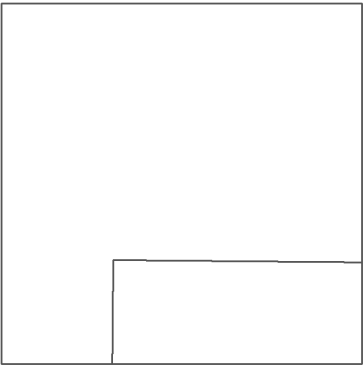
Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1911

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1904
Edition 1911
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Site Details:

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Road, Manchester, M20 4BX

Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1911

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1872
Revised 1908
Edition 1911
Copyright N/A
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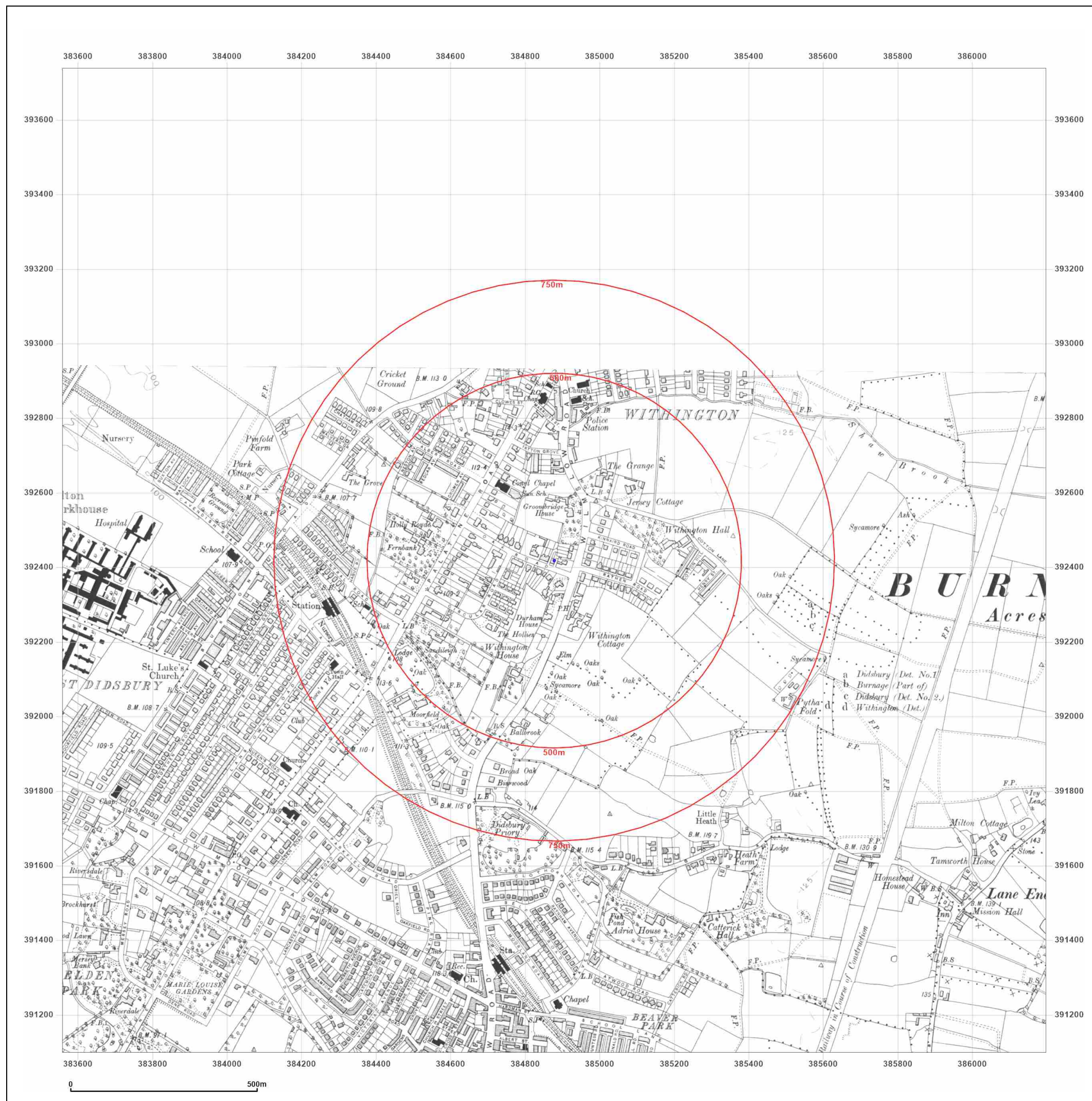


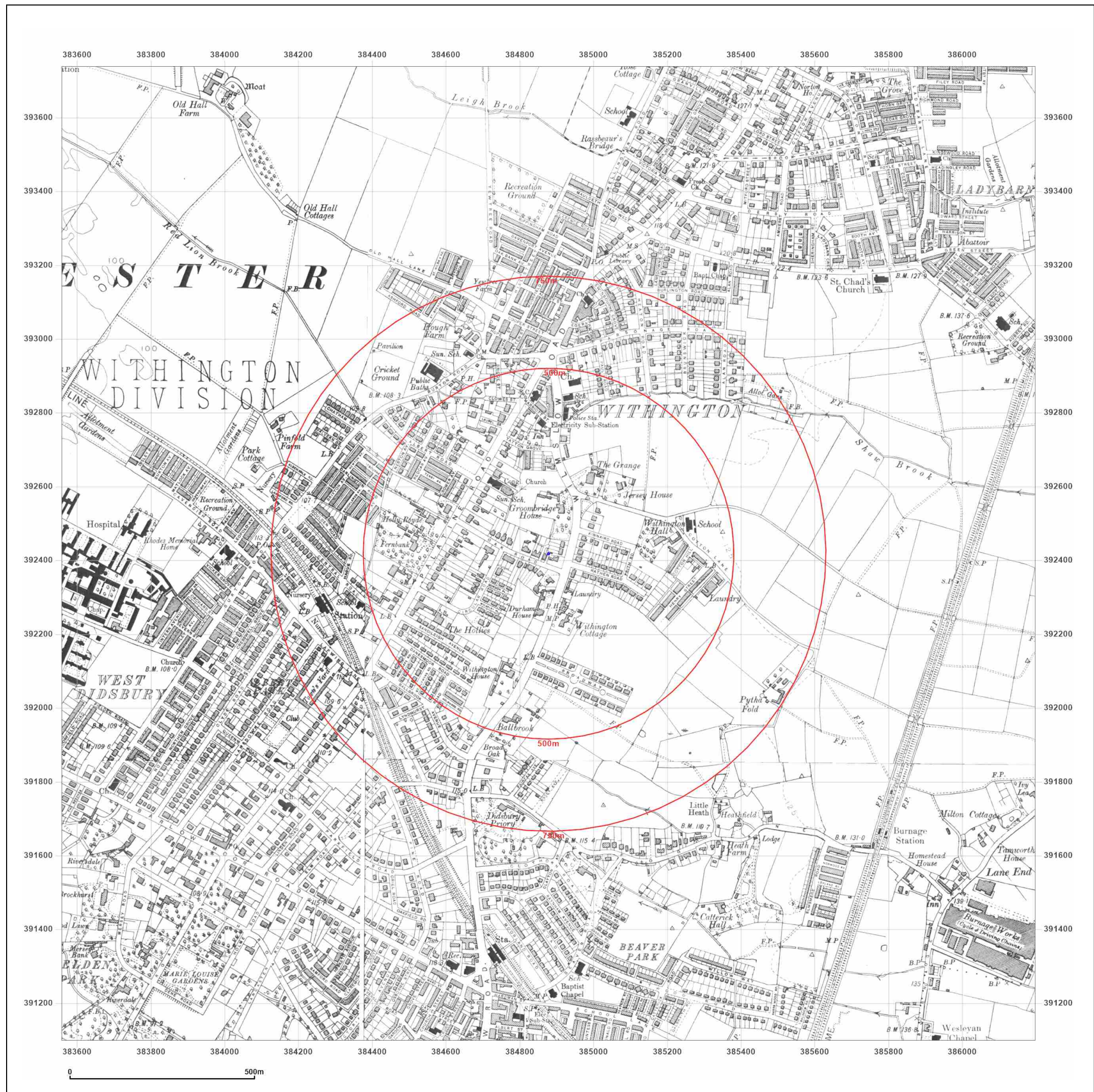
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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

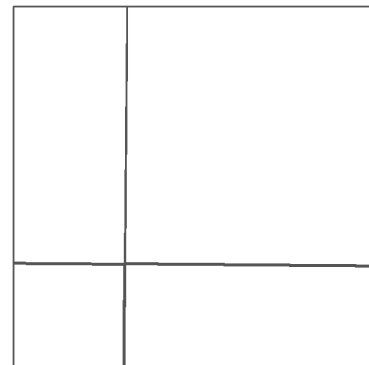
Map date: 1923

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1916
Edition 1923
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Levelled 1915



Surveyed 1844
Revised 1916
Edition 1923
Copyright N/A
Levelled 1915

Surveyed 1844
Revised 1916
Edition 1923
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Levelled 1915

Surveyed 1844
Revised 1916
Edition 1923
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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1923

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
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Edition 1923
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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1934-1938

Scale: 1:10,560

Printed at: 1:10,560

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

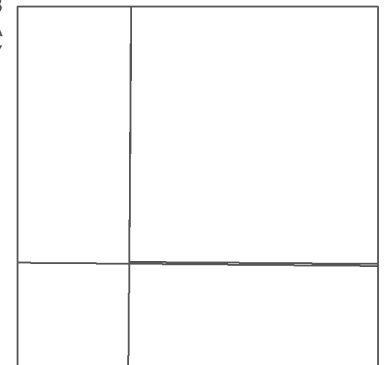
Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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Edition 1938
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Revised 1938
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Surveyed 1872
Revised 1938
Edition 1938
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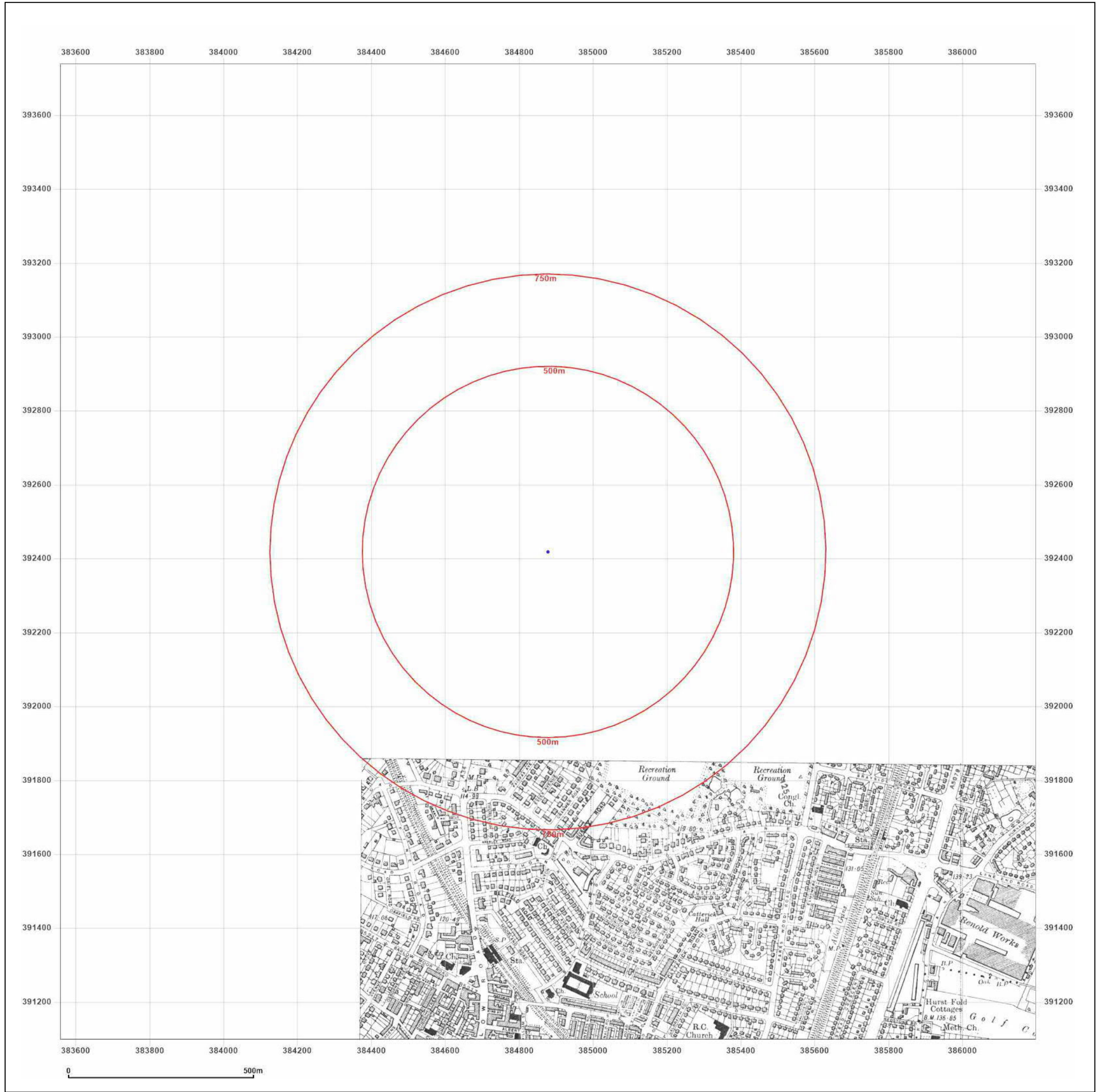


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Site Details:

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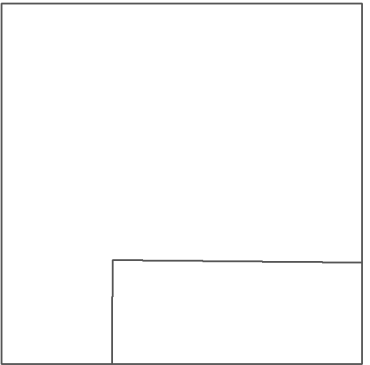
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Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1844
Revised 1934
Edition 1938
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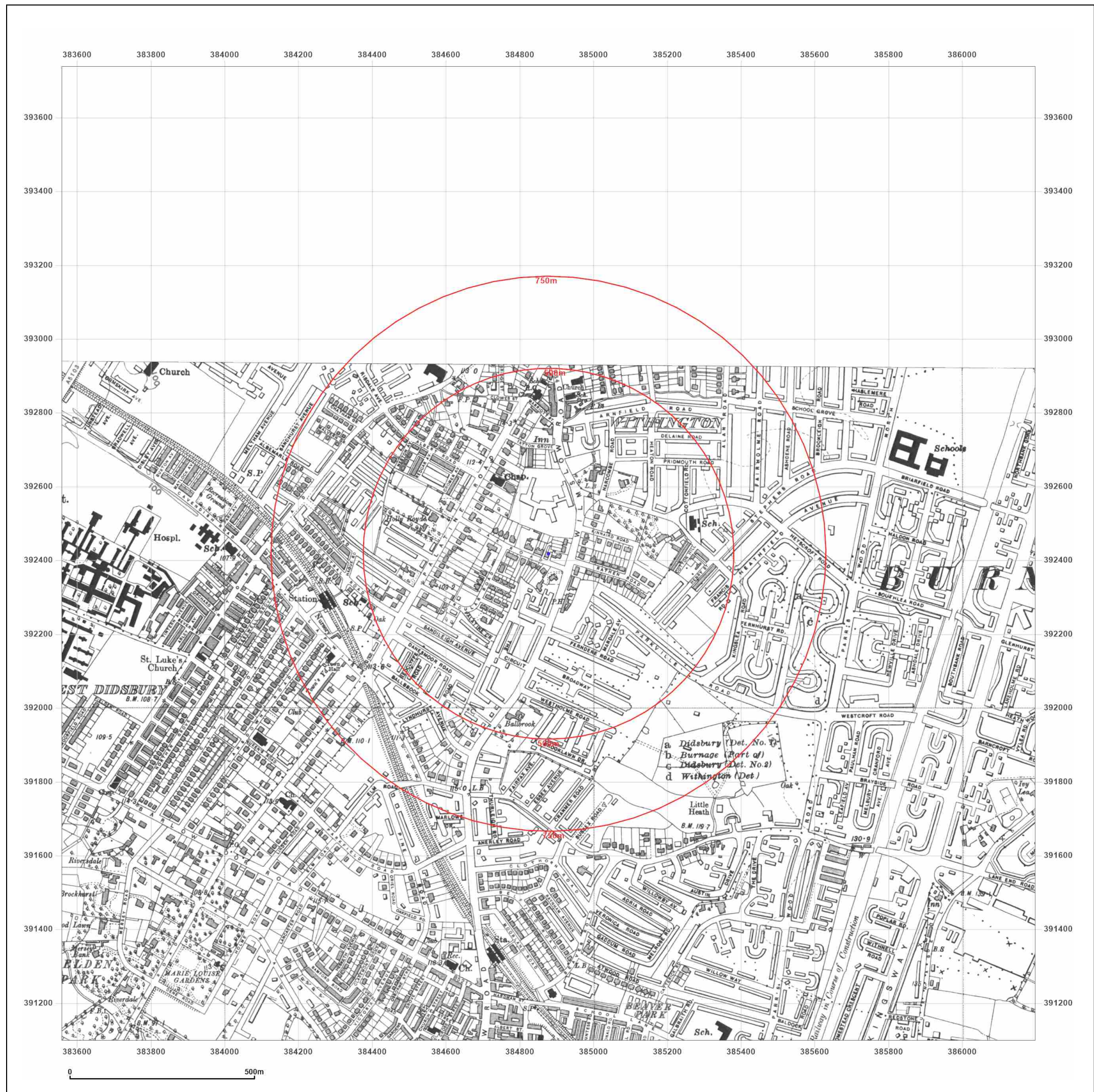


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Site Details:

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Road, Manchester, M20 4BX

Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1872
Revised 1938
Edition 1938
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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

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



Surveyed N/A Revised 1955 Edition N/A Copyright 1955 Levelled N/A	Surveyed N/A Revised 1955 Edition N/A Copyright 1955 Levelled N/A
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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: Provisional
Map date: 1965-1966
Scale: 1:10,560
Printed at: 1:10,560

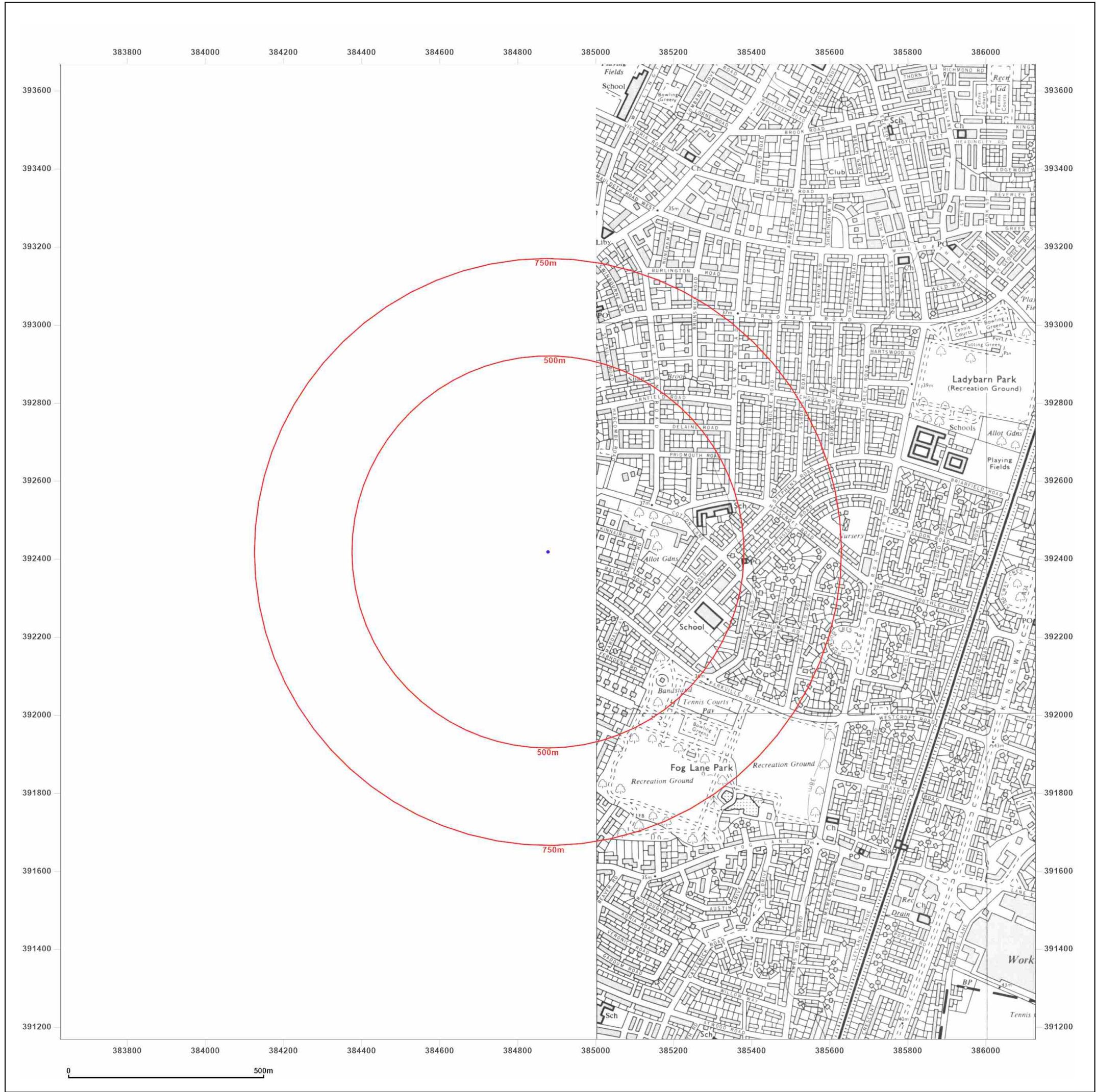
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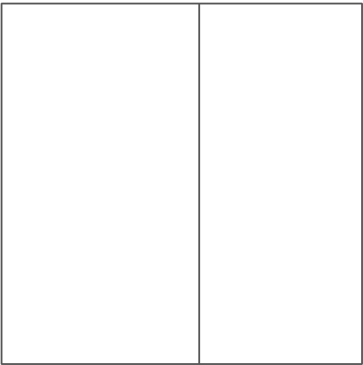
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Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

Map date: 1976

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
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Edition N/A
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Site Details:

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Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

Map date: 1981-1983

Scale: 1:10,000

Printed at: 1:10,000



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Revised 1983
Edition N/A
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Site Details:

Christie Hospital, Wilmslow
Road, Manchester, M20 4BX

Client Ref: EMS_829515_1026107
Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

Map date: 1988-1989

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1985
Revised 1988
Edition N/A
Copyright 1988
Levelled 1981

Surveyed 1986
Revised 1989
Edition N/A
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Site Details:

Christie Hospital, Wilmslow Road,
Manchester, M20 4BX

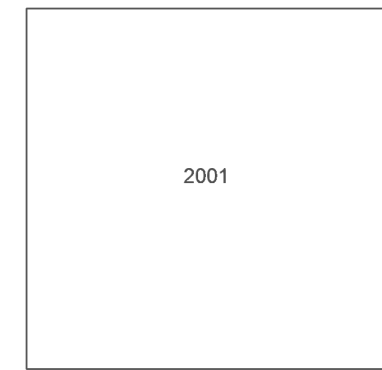
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Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

Christie Hospital, Wilmslow Road,
Manchester, M20 4BX

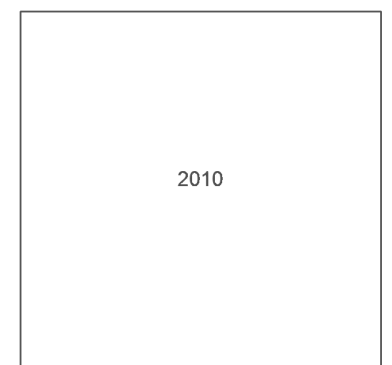
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Report Ref: EMS-829515_1066393
Grid Ref: 384877, 392418

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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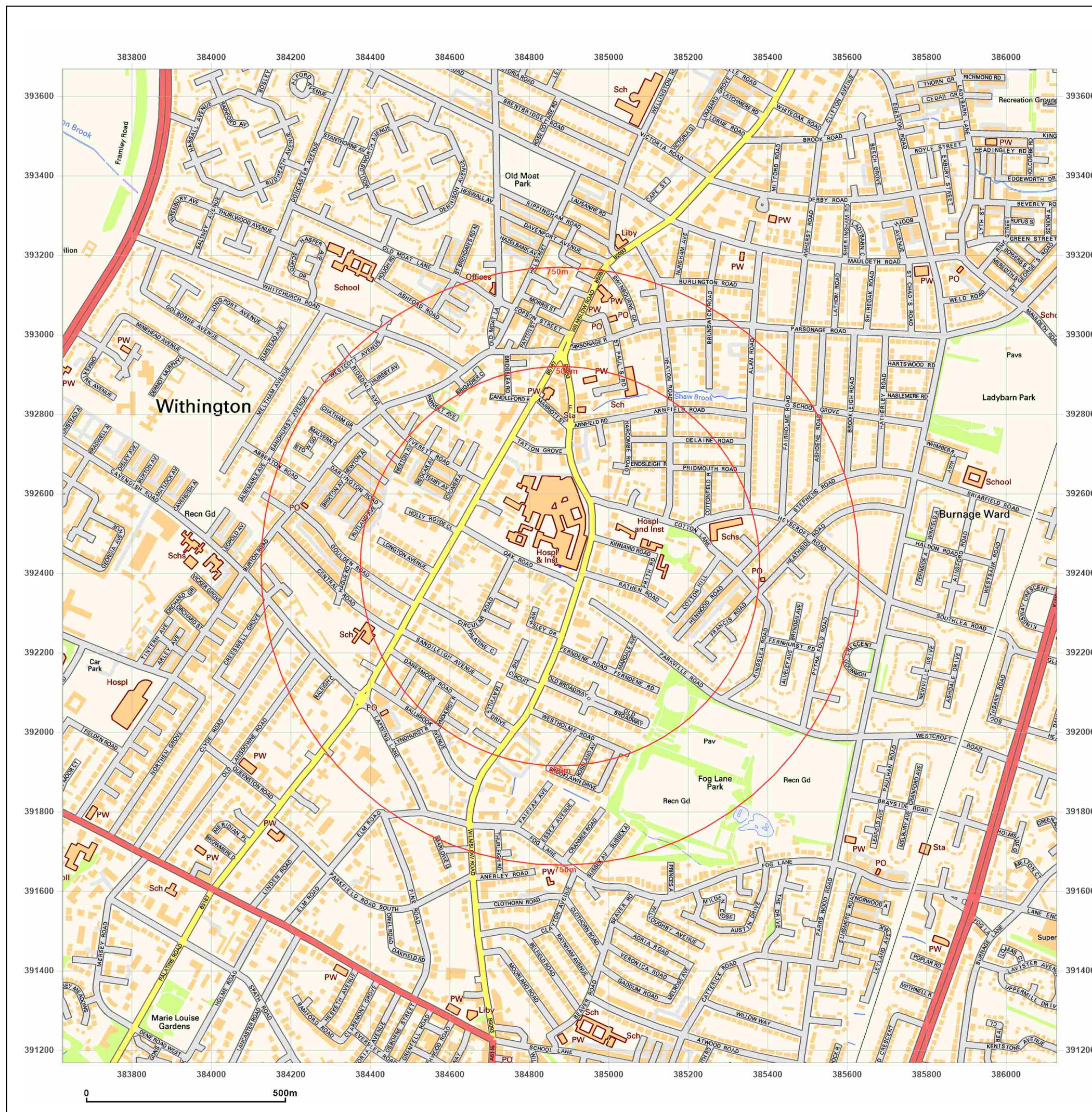


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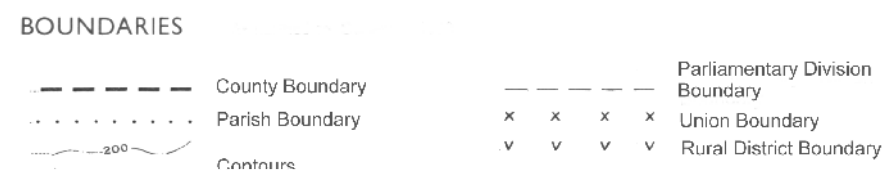
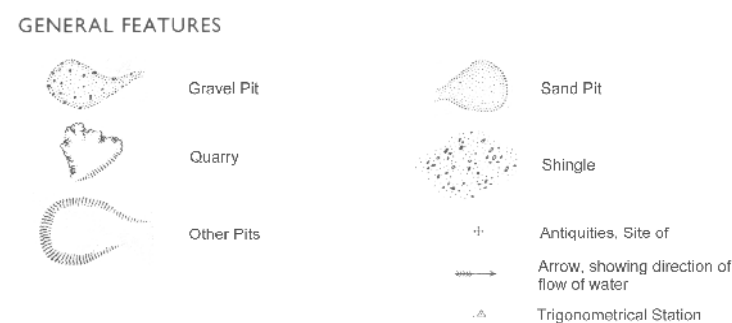
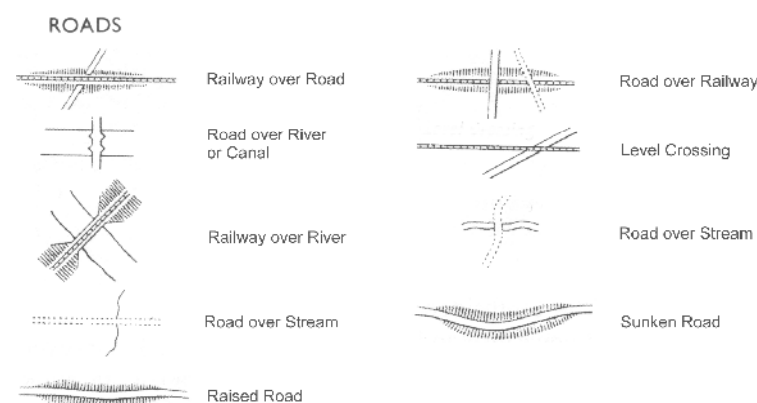
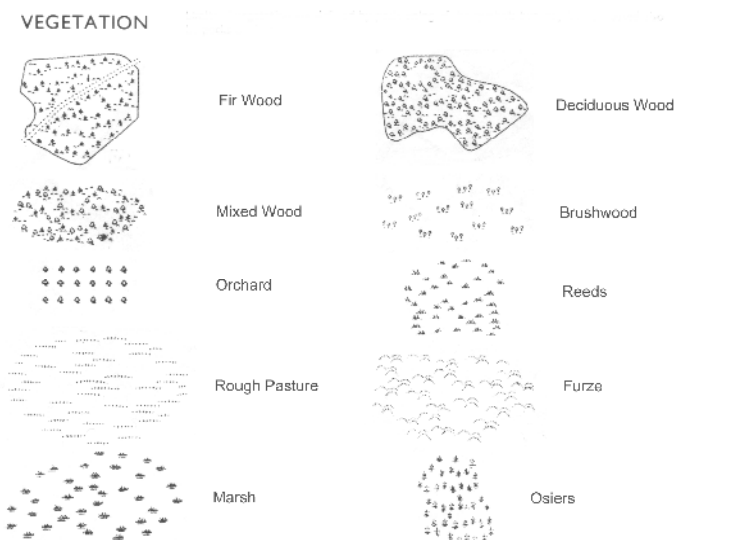
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Production date: 06 December 2022

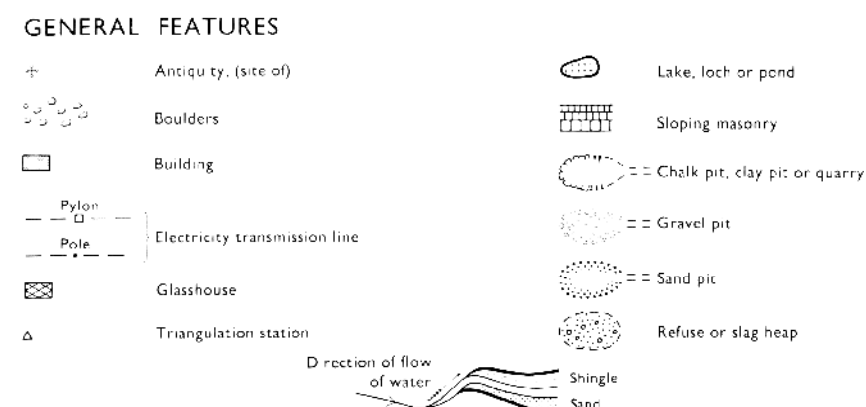
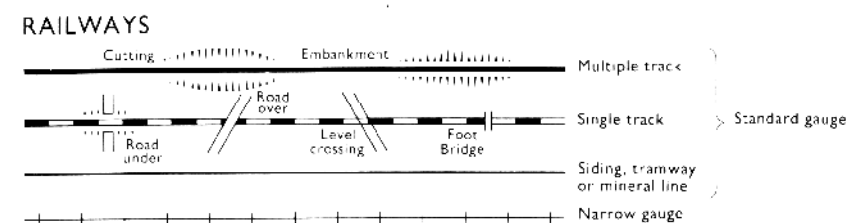
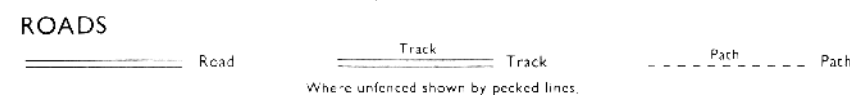
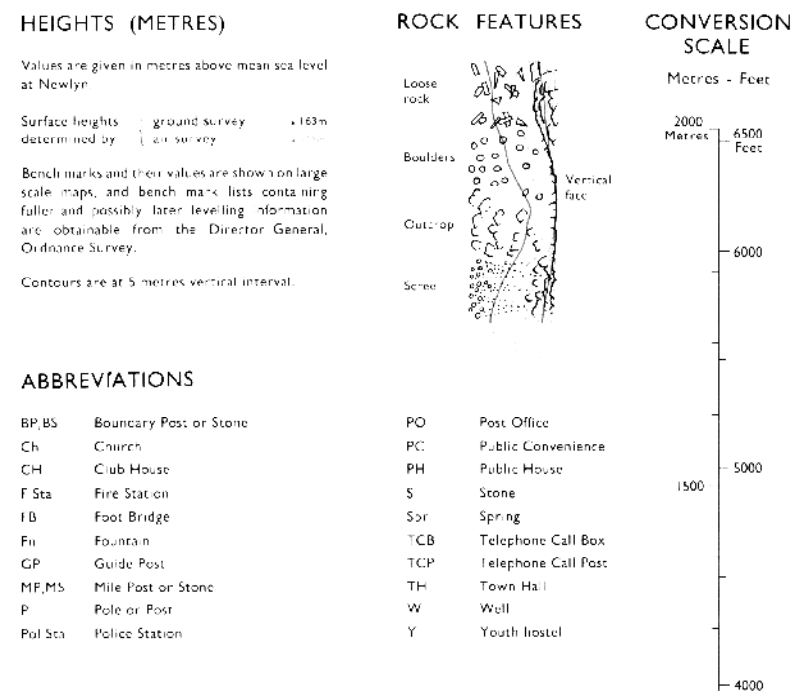
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County Series 1:10,560 scale



National Grid 1:10,000 scale



Historical Map Pack Legend

County Series & National Grid

1:10,560 scale

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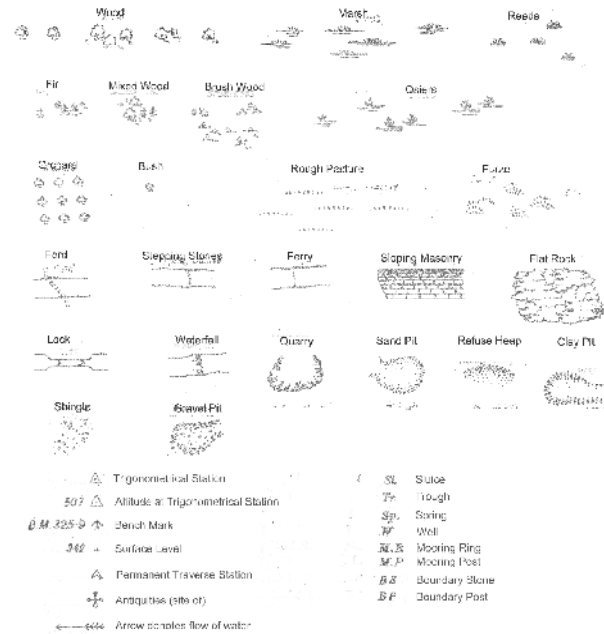
Technical Helpline

Tel 08444159000

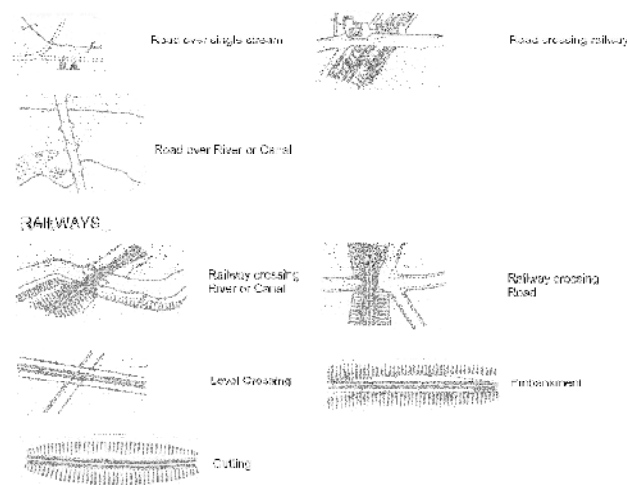
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County Series 1:2,500 scale

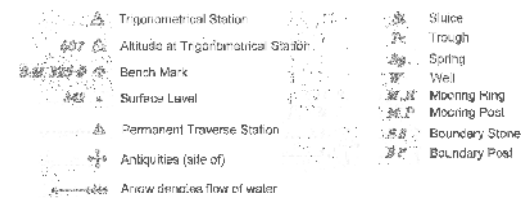
GENERAL FEATURES



ROADS

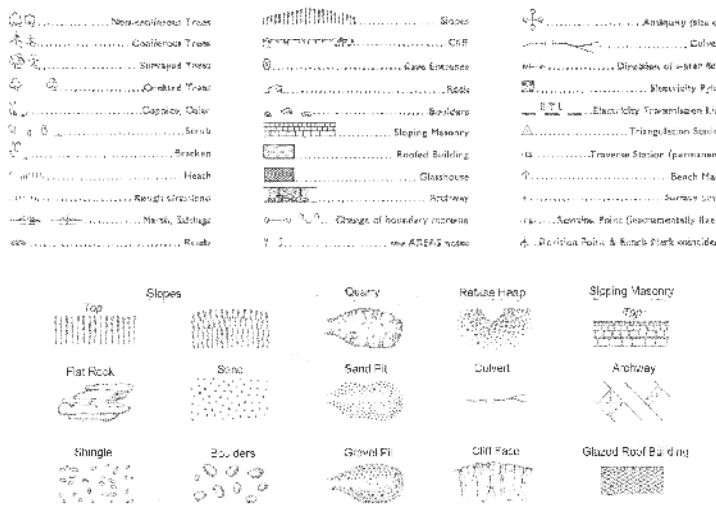


ABBREVIATIONS

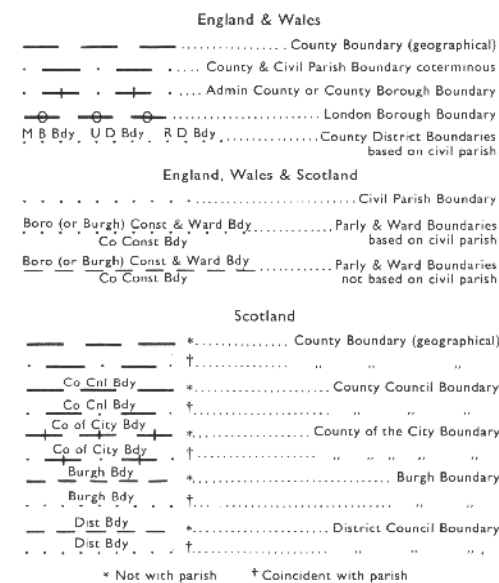


National Grid 1:2,500 / 1:1,250 scale

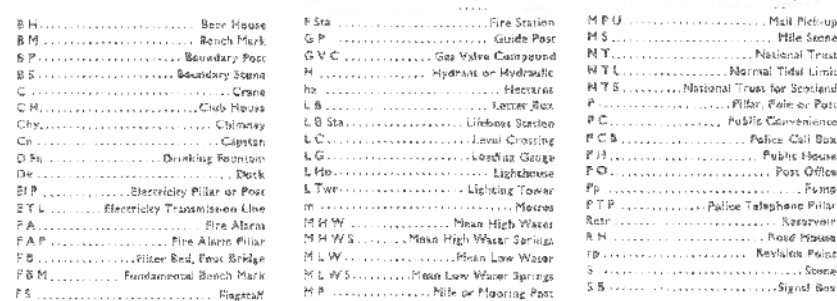
GENERAL FEATURES



BOUNDARIES



ABBREVIATIONS



Historical Map Pack Legend

County Series

1:1,250 scale



County Series & National Grid

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A P P E N D I X F

Land Appraisal | Environmental | Geotechnical | Design | Mining | Inspections

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www.grm-uk.com | info@grm-uk.com | 01283 551249 Company No. 3099018 (England), VAT Reg. No. 658 1005 48



Preliminary UXO Risk Assessment

www.1stlinedefence.co.uk

Client	GRM Development Solutions Limited
Project	Christie Hospital, Manchester
Site Address	Christie Hospital, Manchester, M20 4BX
Report Reference	PA8933a-01
Date	16/12/22
Originator	MT

Assessment Objective

This preliminary risk assessment is a qualitative screening exercise to assess the likely potential of encountering unexploded ordnance (UXO) at the Christie Hospital, Manchester site. The assessment involves the consideration of the basic factors that affect the potential for UXO to be present at a site as outlined in Stage One of the UXO risk management process.

Background

This assessment uses the sources of information available in-house to 1st Line Defence Ltd to enable the placement of a development site in context with events that may have led to the presence of German air-delivered or Allied military UXO. The report will identify any immediate necessity for risk mitigation or additional research in the form of a Detailed UXO Risk Assessment. It makes use of 1st Line Defence's extensive historical archives, library and unique geo-databases, as well as internet resources, and is researched and compiled by UXO specialists and graduate researchers.

The assessment directly follows CIRIA C681 guidelines "Unexploded Ordnance, a Guide for the Construction Industry". The document will therefore assess the following factors:

- Basic Site Data
- Previous Military Use
- Indicators of potential aerial delivered UXO threat
- Consideration of any Mitigating Factors
- Extent of Proposed Intrusive Works
- Any requirement for Further Work

It should be noted that the vast majority of construction sites in the UK will have a low or negligible risk of encountering UXO and should be able to be screened out at this preliminary stage. The report is meant as a common sense 'first step' in the UXO risk management process. The content of the report and conclusions drawn are based on basic, preliminary research using the information available to 1st Line Defence at the time this report was produced. It should be noted that the only way to entirely negate risk from UXO to a project would be to support the works proposed with appropriate UXO risk mitigation measures. It is rarely possible to state that there is absolutely 'no' risk from UXO to a project.





Risk Assessment Considerations	
Site location and description/current use	The site is located in Withington, Manchester. It is currently occupied by hardstanding ground, one building and part of a second. It is bordered to the north by the Oak Road Treatment Centre, to the east by construction works, to the south by Oak Road, and to the west by hardstanding ground and the Oak Road Treatment Centre. The site is approximately centred on the OS grid reference: SJ 84879 92422. 
Are there any indicators of current/historical military activity on/close to the site?	No information could be found in-house to indicate that the site location has any former or current association with any military features. No features such as WWII defensive positions, encampments or firing ranges are recorded to have been located at the site. In addition, no information on ordnance being stored, produced, or disposed of within the proposed site boundary could be found. The closest recorded Heavy Anti-Aircraft (HAA) battery was situated approximately 2km to the north-west of the site near Hough End Playing Fields. The conditions in which unexploded anti-aircraft ordnance may have fallen unrecorded within the proposed site are generally analogous to that of German aerial delivered ordnance - see below for further information.
What was the pre- and post-WWII history of the site?	Pre-war OS mapping dated 1934 shows the site to comprise four residential properties, two unmarked structures, residential gardens and open ground. Open ground and residential gardens border the site to the north, residential properties to the east and west and Oak Road to the south. Post-war OS mapping dated 1958 shows the site to have remained mostly unchanged from pre-war mapping, with the only change being the removal of one of the unmarked structures. The site's direct surroundings have also remained relatively unchanged from 1935 mapping.
Was the area subject to bombing during WWII?	During WWII the site was situated in the County Borough of Manchester, which sustained an overall low density of bombing, with an average of 27.1 items recorded per 1,000 acres according to official Home Office bombing statistics. This amounted to 712 high explosive (HE) bombs, 18 parachute mines, seven oil bombs, and one V-1 flying bomb, totalling 738 incidents over an area of 27,255 acres. Two local bomb plot maps for Manchester do not record any bomb strikes on the site or its direct surroundings. The closest bomb strike is recorded approximately 180m to the north-west of the site.
Is there any evidence of bomb damage on/close to the site?	It has not been possible at this preliminary stage of research to confidently ascertain whether the site had been damaged or not. However, low resolution imagery from May 1948 appears to show the buildings on site to be intact.
To what degree would the site have been subject to access?	The residential nature of the site, as well as its urban location, increases the likelihood that the site would have been subject to regular access and monitoring throughout





	WWII. Evidence of UXO is more likely to have been noticed and recorded within frequently accessed areas.
To what degree has the site been developed post-WWII?	The site appears to have undergone significant post-war redevelopment since 1959. The residential properties on, and bordering, the site have been replaced by multi-story buildings associated with the Oak Road Treatment Centre.
What is the nature and extent of the intrusive works proposed?	Information provided by the client indicates that the proposed works involve drilling of window sample boreholes.

Summary and Conclusions

During WWII the site was situated in the County Borough of Manchester, which sustained an overall low density of bombing, with an average of 27.1 items recorded per 1,000 acres according to official Home Office bombing statistics. This amounted to 712 high explosive (HE) bombs, 18 parachute mines, seven oil bombs, and one V-1 flying bomb, totalling 738 incidents over an area of 27,255 acres.

Two local bomb plot maps for Manchester do not record any bomb strikes on the site or its direct surroundings. The closest bomb strike is recorded approximately 180m to the north-west of the site.

The residential nature of the site increases the likelihood that the site would have been subject to regular access and monitoring throughout WWII. Evidence of UXO is more likely to have been noticed and recorded within frequently accessed areas.

Recommendations

Given the findings of this preliminary report, the risk from UXO is not considered to be higher than the 'background risk' of finding UXO in this borough. Whilst it would be possible to conduct a Detailed UXO Risk Assessment for this site, it is not anticipated that any further findings would significantly alter the risk of encountering unexploded ordnance within the site. It is therefore recommended that **no further action** is taken.

If the client has any anecdotal or empirical evidence of UXO risk on site, please contact 1st Line Defence.





It should be noted that although the risk from unexploded ordnance on this site has been assessed as low/minimal, this does not mean there is 'no' risk of encountering UXO. This preliminary report has been undertaken with due diligence, and all reasonable care has been taken to access and analyse relevant historical information. By necessity, when dealing with historical evidence, and when making assessments of UXO risk, various assumptions have to be made which we have discussed and justified within this report. Our reports take a common-sense and practical approach to the assessment of UXO risk, and we strive to be reasonable and pragmatic in our conclusions. As referenced, it would be possible to undertake further research into this site, but based on the evidence to hand, this is not deemed strictly necessary, and no reasonably justifiable requirement for proactive on-site mitigation has been identified.

It should however be stressed that if any suspect items are encountered during the proposed works, 1st Line Defence should be contacted for advice/assistance, and to re-assess the risk as necessary. Furthermore, we would recommend that ground personnel are always made aware of the potential for encountering UXO, what to look out for and what to do in the unlikely event that a suspect item is encountered, and that a UXO Risk Management Plan is put together for the proposed works. We would be happy to provide a template and guidance for this – contact us on 01992 245020. Should the scope of works change or additional works be proposed, 1st Line Defence should be contacted to re-evaluate the risk.





A P P E N D I X G

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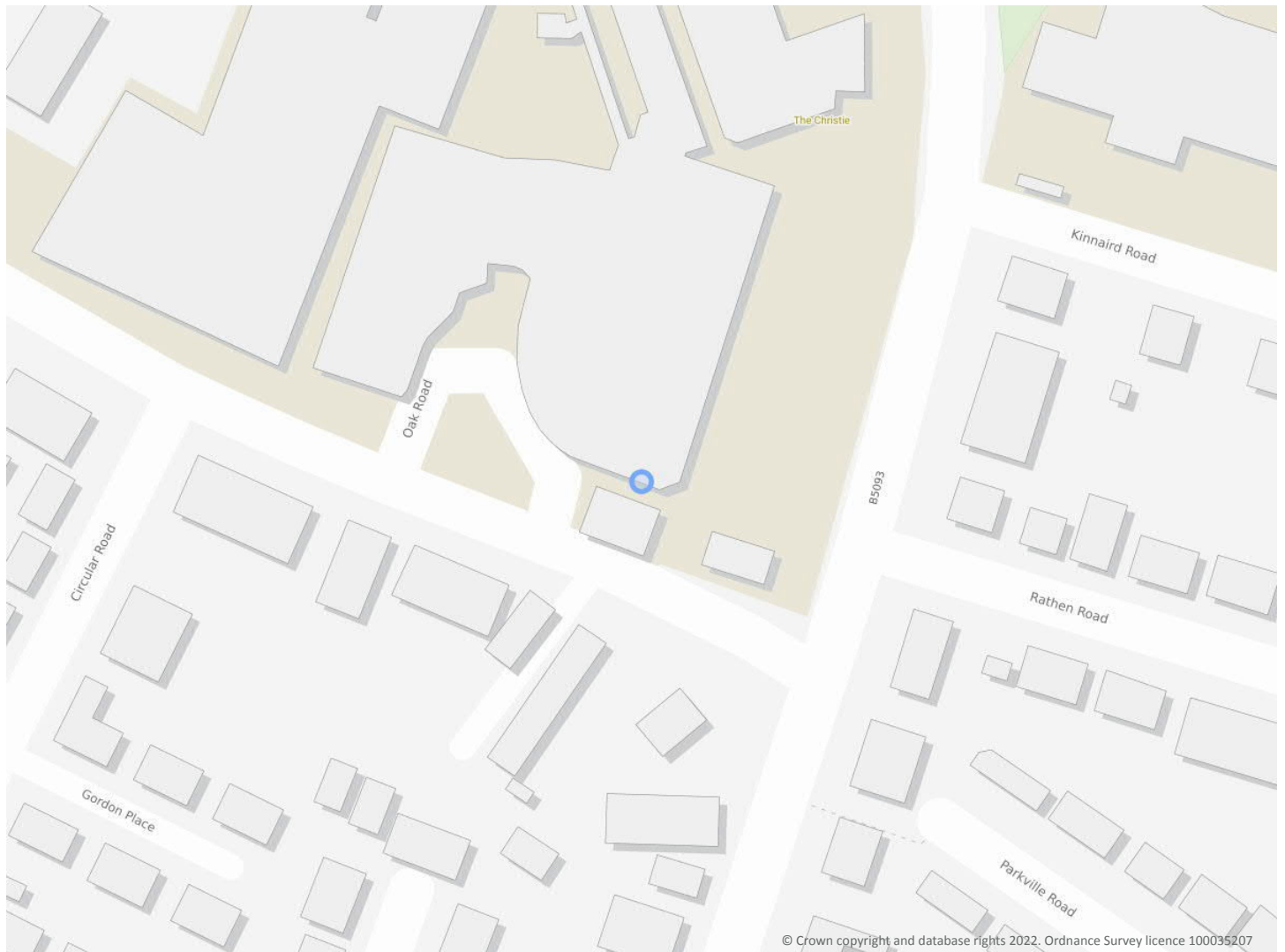
Christie Hospital, Wilmslow Road, Manchester, M20 4BX

Order Details

Date: 06/12/2022
Your ref: EMS_829515_1026107
Our Ref: EMS-829515_1066394

Site Details

Location: 384877 392418
Area: 0.0 ha
Authority: [Manchester City Council](#)



Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.12 groundsure.com/insightuserguide

Contact us with any questions at:

info@groundsure.com

08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	0	3	5	12	-
14	1.2	Historical tanks	0	0	3	2	-
15	1.3	Historical energy features	0	2	3	6	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	Historical garages	0	1	1	4	-
16	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
17	2.1	Historical industrial land uses	0	6	7	14	-
19	2.2	Historical tanks	0	0	7	2	-
19	2.3	Historical energy features	0	2	9	12	-
20	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	1	1	7	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	0	-
22	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
23	3.7	Waste exemptions	0	0	6	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
25	4.1	Recent industrial land uses	0	1	9	-	-
26	4.2	Current or recent petrol stations	0	0	1	0	-
26	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-



27	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
27	4.7	Regulated explosive sites	0	0	0	0	-
27	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
28	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
28	4.12	<u>Radioactive Substance Authorisations</u>	0	0	21	0	-
31	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
31	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
31	4.15	Pollutant release to public sewer	0	0	0	0	-
31	4.16	List 1 Dangerous Substances	0	0	0	0	-
32	4.17	List 2 Dangerous Substances	0	0	0	0	-
32	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
32	4.19	Pollution inventory substances	0	0	0	0	-
32	4.20	Pollution inventory waste transfers	0	0	0	0	-
32	4.21	<u>Pollution inventory radioactive waste</u>	0	0	2	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
34	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
36	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
38	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
39	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
39	5.5	Groundwater vulnerability- local information	None (within 0m)				
40	5.6	<u>Groundwater abstractions</u>	0	0	0	0	1
41	5.7	Surface water abstractions	0	0	0	0	0
41	5.8	Potable abstractions	0	0	0	0	0
41	5.9	Source Protection Zones	0	0	0	0	-
42	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
43	6.1	Water Network (OS MasterMap)	0	0	0	-	-

43	6.2	Surface water features	0	0	0	-	-
44	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
44	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
45	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
46	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
46	7.2	Historical Flood Events	0	0	0	-	-
46	7.3	Flood Defences	0	0	0	-	-
47	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
47	7.5	Flood Storage Areas	0	0	0	-	-
48	7.6	Flood Zone 2	None (within 50m)				
48	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
49	8.1	<u>Surface water flooding</u>	1 in 100 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
51	9.1	<u>Groundwater flooding</u>	Moderate-High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
52	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
53	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
53	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
53	10.4	Special Protection Areas (SPA)	0	0	0	0	0
53	10.5	National Nature Reserves (NNR)	0	0	0	0	0
54	10.6	<u>Local Nature Reserves (LNR)</u>	0	0	0	0	1
54	10.7	Designated Ancient Woodland	0	0	0	0	0
54	10.8	Biosphere Reserves	0	0	0	0	0
54	10.9	Forest Parks	0	0	0	0	0
55	10.10	Marine Conservation Zones	0	0	0	0	0
55	10.11	<u>Green Belt</u>	0	0	0	0	1
55	10.12	Proposed Ramsar sites	0	0	0	0	0



55	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
56	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
56	10.15	Nitrate Sensitive Areas	0	0	0	0	0
56	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
57	10.17	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
58	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
59	11.1	World Heritage Sites	0	0	0	-	-
60	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
60	11.3	National Parks	0	0	0	-	-
60	11.4	Listed Buildings	0	0	0	-	-
60	11.5	<u>Conservation Areas</u>	0	0	2	-	-
61	11.6	Scheduled Ancient Monuments	0	0	0	-	-
61	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
62	12.1	<u>Agricultural Land Classification</u>	Urban (within 250m)				
63	12.2	Open Access Land	0	0	0	-	-
63	12.3	Tree Felling Licences	0	0	0	-	-
63	12.4	Environmental Stewardship Schemes	0	0	0	-	-
63	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
64	13.1	Priority Habitat Inventory	0	0	0	-	-
64	13.2	Habitat Networks	0	0	0	-	-
64	13.3	Open Mosaic Habitat	0	0	0	-	-
64	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
65	14.1	<u>10k Availability</u>	Identified (within 500m)				
66	14.2	Artificial and made ground (10k)	0	0	0	0	-
67	14.3	<u>Superficial geology (10k)</u>	1	0	2	1	-

68	14.4	Landslip (10k)	0	0	0	0	-
69	14.5	<u>Bedrock geology (10k)</u>	1	0	3	2	-
70	14.6	<u>Bedrock faults and other linear features (10k)</u>	0	0	2	1	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
71	15.1	<u>50k Availability</u>	Identified (within 500m)				
72	15.2	Artificial and made ground (50k)	0	0	0	0	-
72	15.3	Artificial ground permeability (50k)	0	0	-	-	-
73	15.4	<u>Superficial geology (50k)</u>	1	0	1	0	-
74	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
74	15.6	Landslip (50k)	0	0	0	0	-
74	15.7	Landslip permeability (50k)	None (within 50m)				
75	15.8	<u>Bedrock geology (50k)</u>	1	0	2	0	-
76	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
76	15.10	<u>Bedrock faults and other linear features (50k)</u>	0	0	2	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
77	16.1	<u>BGS Boreholes</u>	0	0	33	-	-
Page	Section	Natural ground subsidence					
80	17.1	<u>Shrink swell clays</u>	Very low (within 50m)				
81	17.2	<u>Running sands</u>	Very low (within 50m)				
82	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
83	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
84	17.5	<u>Landslides</u>	Very low (within 50m)				
85	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
86	18.1	Natural cavities	0	0	0	0	-
87	18.2	BritPits	0	0	0	0	-
87	18.3	<u>Surface ground workings</u>	0	0	3	-	-
87	18.4	Underground workings	0	0	0	0	0
87	18.5	Historical Mineral Planning Areas	0	0	0	0	-



88	18.6	Non-coal mining	0	0	0	0	0
88	18.7	Mining cavities	0	0	0	0	0
88	18.8	<u>JPB mining areas</u>	Identified (within 0m)				
88	18.9	Coal mining	None (within 0m)				
89	18.10	Brine areas	None (within 0m)				
89	18.11	Gypsum areas	None (within 0m)				
89	18.12	Tin mining	None (within 0m)				
89	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
90	19.1	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
91	20.1	<u>BGS Estimated Background Soil Chemistry</u>	1	0	-	-	-
91	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
91	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
92	21.1	Underground railways (London)	0	0	0	-	-
92	21.2	Underground railways (Non-London)	0	0	0	-	-
93	21.3	Railway tunnels	0	0	0	-	-
93	21.4	Historical railway and tunnel features	0	0	0	-	-
93	21.5	Royal Mail tunnels	0	0	0	-	-
93	21.6	Historical railways	0	0	0	-	-
93	21.7	Railways	0	0	0	-	-
94	21.8	Crossrail 1	0	0	0	0	-
94	21.9	Crossrail 2	0	0	0	0	-
94	21.10	<u>HS2</u>	0	0	1	0	-

Recent aerial photograph

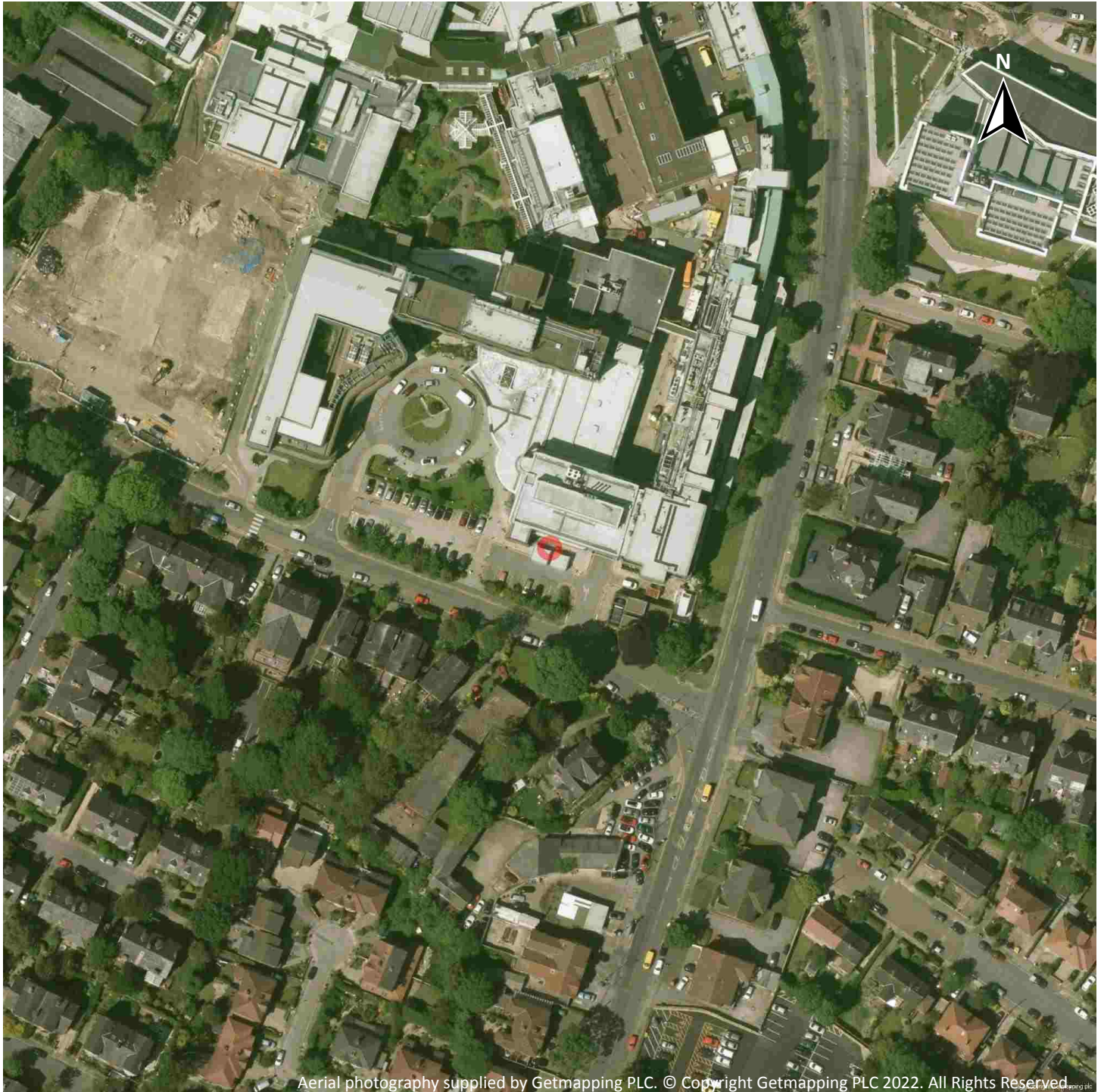


Capture Date: 22/04/2019

Site Area: 0.0ha



Recent site history - 2015 aerial photograph



Capture Date: 11/06/2015

Site Area: 0.0ha



Recent site history - 2009 aerial photograph



Capture Date: 02/06/2009

Site Area: 0.0ha



Recent site history - 2000 aerial photograph

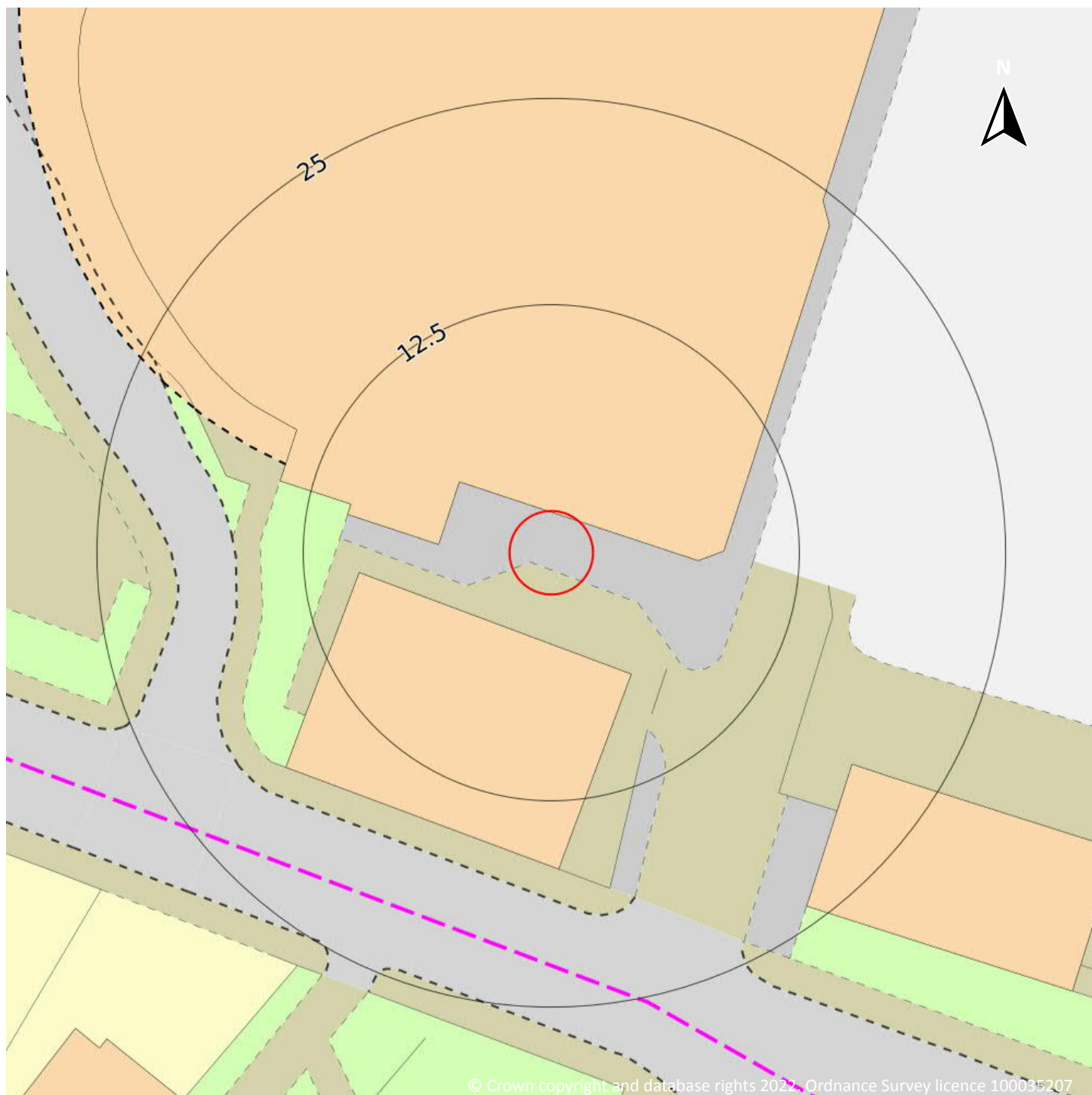


Capture Date: 27/06/2000

Site Area: 0.0ha



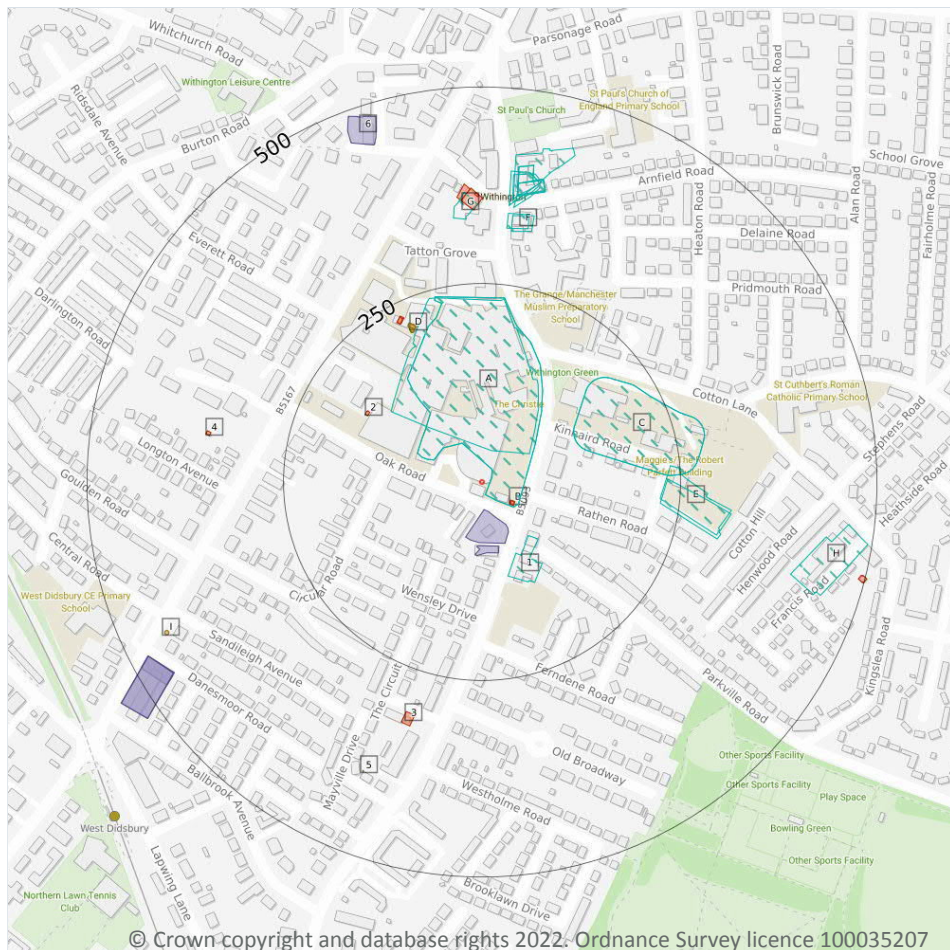
OS MasterMap site plan



Site Area: 0.0ha



1 Past land use



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

1.1 Historical industrial land uses

Records within 500m

20

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 13**

ID	Location	Land use	Dates present	Group ID
A	7m E	Hospital	1988	915943



ID	Location	Land use	Dates present	Group ID
A	7m E	Hospital	1978	937402
A	39m N	Hospital	1934 - 1966	866582
1	88m SE	Laundry	1916 - 1923	918549
C	128m NE	Hospital	1983	885335
C	128m NE	Hospital	1989	953034
E	225m E	Nursery	1955	956141
E	226m E	Nursery	1934 - 1938	979927
F	318m N	Electricity Substation	1923	837775
F	322m N	Police Station	1905	832604
G	332m N	Electricity Substation	1916	837776
F	349m N	Police Station	1923	963531
F	351m N	Police Station	1916	853406
F	356m N	Police Station	1892	893832
F	360m N	Police Station	1911	967729
F	364m N	Fire Station	1988	952196
F	364m N	Police Station	1966	985287
F	366m N	Police Station	1978	850586
F	380m N	Fire Station	1966 - 1978	897537
H	407m E	Laundry	1916 - 1923	867993

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

5

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

Features are displayed on the Past land use map on **page 13**



ID	Location	Land use	Dates present	Group ID
D	207m NW	Tanks	1984 - 1992	145189
D	207m NW	Unspecified Tank	1993 - 1997	128640
D	211m NW	Tanks	1974 - 1997	125503
5	394m S	Unspecified Tank	1893	116920
I	439m SW	Unspecified Tank	1934	116922

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

11

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

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
B	40m SE	Electricity Substation	1996	62382
B	42m SE	Electricity Transformer	1974	63787
2	166m NW	Electricity Substation	1984 - 1997	75794
D	223m NW	Electricity Substation	1974 - 1997	84021
D	224m NW	Electricity Substation	1984 - 1992	82514
3	305m S	Electricity Substation	1974 - 1996	74177
G	344m N	Electricity Substation	1984 - 1997	70891
4	348m W	Electricity Substation	1974 - 1996	75311
G	356m N	Electricity Transformers	1984	63458
G	361m N	Electricity Substation	1974	74354
H	492m E	Electricity Substation	1982 - 1992	67764

This data is sourced from Ordnance Survey / Groundsure.



1.4 Historical petrol stations

Records within 500m**0**

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m**6**

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

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
B	33m S	Garage	1957	20354
B	79m S	Garage	1957	20355
6	448m N	Garage	1974 - 1984	24704
I	458m SW	Garage	1957	24256
I	459m SW	Garage	1973	23360
I	459m SW	Garage	1986	25119

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

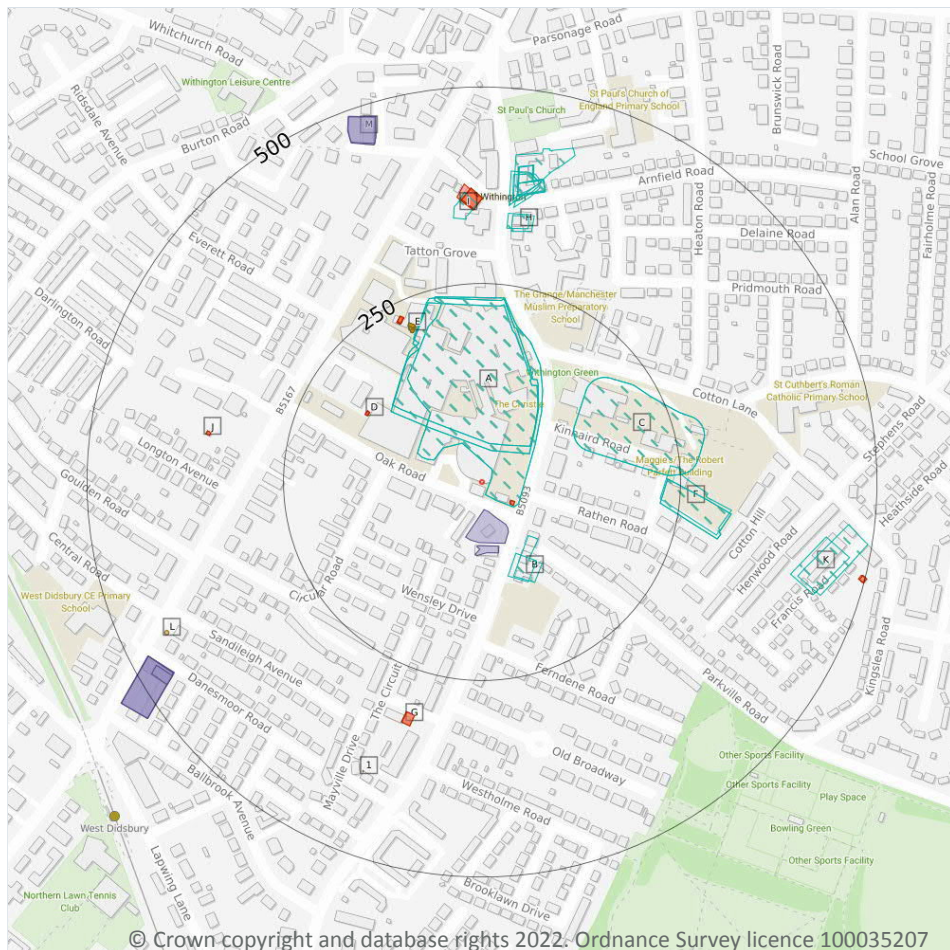
Records within 500m**0**

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

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



2 Past land use - un-grouped



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

2.1 Historical industrial land uses

Records within 500m

27

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 17**

ID	Location	Land Use	Date	Group ID
A	7m E	Hospital	1978	937402
A	7m E	Hospital	1988	915943
A	39m N	Hospital	1938	866582



ID	Location	Land Use	Date	Group ID
A	39m N	Hospital	1934	866582
A	47m N	Hospital	1955	866582
A	47m N	Hospital	1966	866582
B	88m SE	Laundry	1923	918549
B	98m SE	Laundry	1916	918549
C	128m NE	Hospital	1983	885335
C	128m NE	Hospital	1989	953034
F	225m E	Nursery	1955	956141
F	226m E	Nursery	1938	979927
F	226m E	Nursery	1934	979927
H	318m N	Electricity Substation	1923	837775
H	322m N	Police Station	1905	832604
I	332m N	Electricity Substation	1916	837776
H	349m N	Police Station	1923	963531
H	351m N	Police Station	1916	853406
H	356m N	Police Station	1892	893832
H	360m N	Police Station	1911	967729
H	364m N	Police Station	1966	985287
H	364m N	Fire Station	1988	952196
H	366m N	Police Station	1978	850586
H	380m N	Fire Station	1966	897537
H	380m N	Fire Station	1978	897537
K	407m E	Laundry	1916	867993
K	417m E	Laundry	1923	867993

This data is sourced from Ordnance Survey / Groundsure.



2.2 Historical tanks

Records within 500m

9

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 17**

ID	Location	Land Use	Date	Group ID
E	207m NW	Tanks	1984	145189
E	207m NW	Tanks	1992	145189
E	207m NW	Unspecified Tank	1993	128640
E	207m NW	Unspecified Tank	1997	128640
E	211m NW	Tanks	1974	125503
E	212m NW	Tanks	1993	125503
E	212m NW	Tanks	1997	125503
1	394m S	Unspecified Tank	1893	116920
L	439m SW	Unspecified Tank	1934	116922

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

23

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 17**

ID	Location	Land Use	Date	Group ID
B	40m SE	Electricity Substation	1996	62382
B	42m SE	Electricity Transformer	1974	63787
D	166m NW	Electricity Substation	1993	75794
D	166m NW	Electricity Substation	1997	75794
D	166m NW	Electricity Substation	1984	75794



ID	Location	Land Use	Date	Group ID
D	166m NW	Electricity Substation	1992	75794
E	223m NW	Electricity Substation	1974	84021
E	224m NW	Electricity Substation	1984	82514
E	224m NW	Electricity Substation	1992	82514
E	224m NW	Electricity Substation	1993	84021
E	224m NW	Electricity Substation	1997	84021
G	305m S	Electricity Substation	1996	74177
G	305m S	Electricity Substation	1974	74177
I	344m N	Electricity Substation	1984	70891
I	344m N	Electricity Substation	1992	70891
I	346m N	Electricity Substation	1993	70891
I	346m N	Electricity Substation	1997	70891
J	348m W	Electricity Substation	1974	75311
J	348m W	Electricity Substation	1996	75311
I	356m N	Electricity Transformers	1984	63458
I	361m N	Electricity Substation	1974	74354
K	492m E	Electricity Substation	1982	67764
K	494m E	Electricity Substation	1992	67764

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

9

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'.

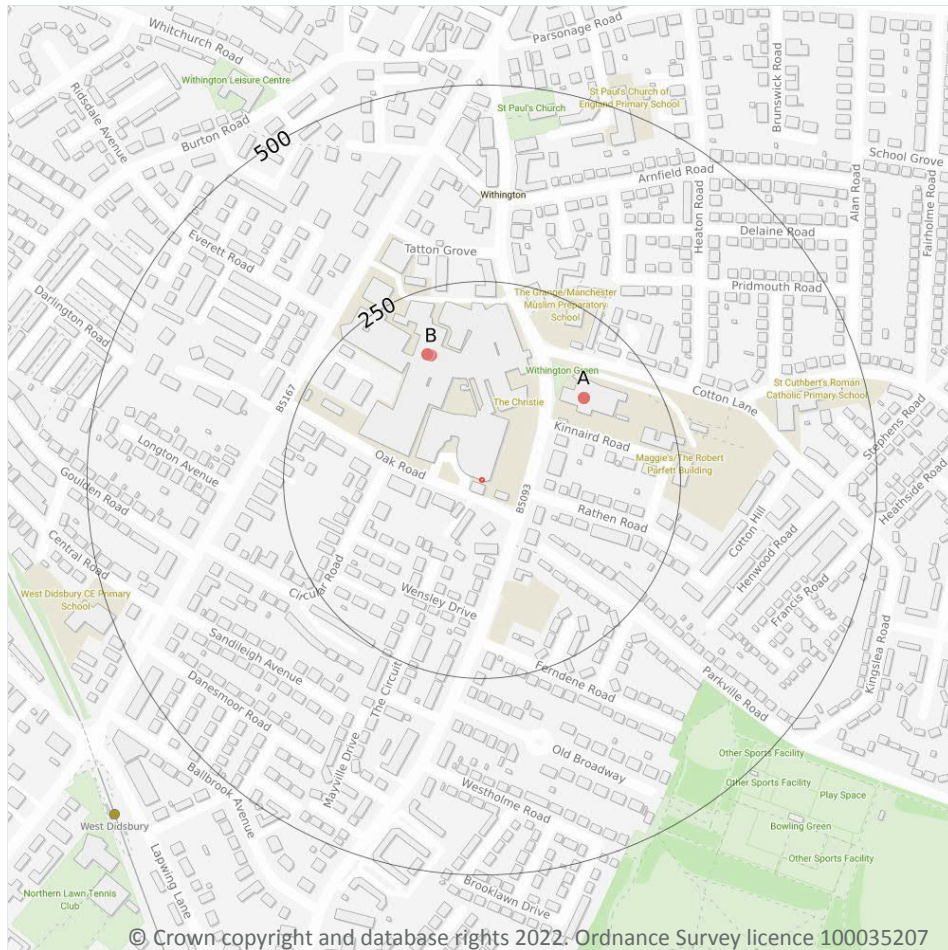
Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
B	33m S	Garage	1957	20354
B	79m S	Garage	1957	20355
M	448m N	Garage	1974	24704
M	449m N	Garage	1984	24704
L	458m SW	Garage	1957	24256
L	459m SW	Garage	1973	23360
L	459m SW	Garage	1986	25119
L	459m SW	Garage	1986	25119
L	462m SW	Garage	1957	24256

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



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

3.1 Active or recent landfill

Records within 500m

0

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

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

3.2 Historical landfill (BGS records)

Records within 500m

0

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

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m**0**

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m**0**

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

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

3.5 Historical waste sites

Records within 500m**0**

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

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

3.6 Licensed waste sites

Records within 500m**0**

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

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

3.7 Waste exemptions

Records within 500m**6**

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 22**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	163m NE	555, WILMSLOW ROAD, MANCHESTER, M20 4GJ	WEX197684	Using waste exemption	Not on a farm	Use of waste in construction



ID	Location	Site	Reference	Category	Sub-Category	Description
A	163m NE	555, WILMSLOW ROAD, MANCHESTER, M20 4GJ	WEX197684	Storing waste exemption	Not on a farm	Storage of waste in a secure place
B	168m N	The Christie Private Care Pharmacy Dept, Wilmslow Road, Manchester, M20 4BX	WEX166515	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	169m NW	Christie Hospital NHS Trust Wilmslow Road Manchester Lancs M20 4BX	EPR/DF0931EC /A001	Treating waste exemption	Non- Agricultural Waste Only	Crushing waste fluorescent tubes
B	172m NW	550, WILMSLOW ROAD, MANCHESTER, M20 4BX	WEX076137	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	172m NW	HCA International - The Christie Clinic, Pharmacy Department, 3rd Floor Oak Road Treatment Centre, Manchester, M20 4BX	WEX012986	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.



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- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
 - Current or recent petrol stations
 - Radioactive Substance Authorisations
 - Pollution inventory radioactive waste

25

ID	Location	Company	Address	Activity	Category
A	99m S	Top Shine Car Wash	Didsbury Car Wash, 570-572, Wilmslow Road, Manchester, Greater Manchester, M20 3DB	Vehicle Cleaning Services	Personal, Consumer and Other Services
B	172m NW	The Christie Clinic	550, Wilmslow Road, Manchester, Greater Manchester, M20 4BX	Hospitals	Health Practitioners and Establishments
3	176m NW	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities
4	211m SW	The Manchester Deck Co Ltd	12, Wolseley Place, Manchester, Greater Manchester, M20 3LR	Garden Goods	Consumer Products
5	220m N	Gas Governor Station	Greater Manchester, M20	Gas Features	Infrastructure and Facilities
6	235m W	Electricity Sub Station	Greater Manchester, M20	Electrical Features	Infrastructure and Facilities
B	236m NW	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

1

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Company	Address	LPG	Status
2	149m S	OBSOLETE	568, Wilmslow Road, Withington, Manchester, Greater Manchester, M20 3DB	Not Applicable	Obsolete

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

0

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.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

21

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

Features are displayed on the Current industrial land use map on **page 25**

ID	Location	Address	Details	
B	163m NW	University Of Manchester, Christie Hospital,wilmslow Road, Manchester, M20 4BX	Operator: University Of Manchester Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BZ5701 Date of approval: 03/10/2005	Effective from: 03/10/2005 Last date of update: 06/01/2006 Status: Effective
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital,wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AB1479 Date of approval: 10/11/1998	Effective from: 10/11/1998 Last date of update: 01/01/2015 Status: Superseded By Variation

ID	Location	Address	Details	
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital,wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AB1479 Date of approval: 27/04/2004	Effective from: 27/04/2004 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital,wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AB1479 Date of approval: 03/02/2006	Effective from: 03/02/2006 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital,wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AB1479 Date of approval: 31/05/2007	Effective from: 31/05/2007 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital,wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AB1479 Date of approval: 14/07/2008	Effective from: 14/07/2008 Last date of update: 01/01/2015 Status: Revoked/cancelled
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 31/03/1991	Effective from: 31/03/1991 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 20/06/1994	Effective from: 20/07/1994 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 10/11/1998	Effective from: 07/12/1998 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 17/08/2000	Effective from: 13/09/2000 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 01/12/2003	Effective from: 01/01/2004 Last date of update: 01/01/2015 Status: Superseded By Variation



ID	Location	Address	Details	
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 07/04/2005	Effective from: 04/05/2005 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 03/02/2006	Effective from: 03/03/2006 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 31/05/2007	Effective from: 28/07/2007 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Nhs Foundation Trust, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: Christie Nhs Foundation Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AB9607 Date of approval: 15/07/2008	Effective from: 15/07/2008 Last date of update: 01/01/2015 Status: Revoked/cancelled
B	163m NW	University Of Manchester, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: University Of Manchester Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BV6099 Date of approval: 08/09/2003	Effective from: 08/09/2003 Last date of update: 01/01/2015 Status: Revoked/cancelled
B	163m NW	University Of Manchester, Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: University Of Manchester Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BZ5710 Date of approval: 15/09/2005	Effective from: 03/10/2005 Last date of update: 01/01/2015 Status: Superseded By Variation
B	163m NW	Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: The University of Manchester Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BZ5698 Date of approval: 03/10/2005	Effective from: - Last date of update: 01/01/2020 Status: Replaced
B	163m NW	Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: The University of Manchester Type: - Permission number: AB3598DE Date of approval: -	Effective from: 27/02/2019 Last date of update: 01/01/2020 Status: Issued
B	163m NW	Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: The University of Manchester Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: CD6748 Date of approval: 02/06/2009	Effective from: - Last date of update: 01/01/2020 Status: Replaced



ID	Location	Address	Details	
B	163m NW	Christie Hospital, Wilmslow Road, Manchester, M20 4BX	Operator: The Christie NHS Foundation Trust Type: - Permission number: GP3593SX Date of approval: -	Effective from: 13/07/2018 Last date of update: 01/01/2020 Status: Issued

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

4.13 Licensed Discharges to controlled waters

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

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

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

4.14 Pollutant release to surface waters (Red List)

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

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

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

4.15 Pollutant release to public sewer

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

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

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

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

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

4.17 List 2 Dangerous Substances

Records within 500m**0**

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m**0**

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

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

4.19 Pollution inventory substances

Records within 500m**0**

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

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

4.20 Pollution inventory waste transfers

Records within 500m**0**

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

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

4.21 Pollution inventory radioactive waste

Records within 500m**2**

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.

Features are displayed on the Current industrial land use map on **page 25**



ID: B, Location: 163m NW, Permit: AB9607
 Operator: CHRISTIE NHS FOUNDATION TRUST
 Address: CHRISTIE HOSPITAL WILMSLOW ROAD MANCHESTER M20 4BX
 Releases:

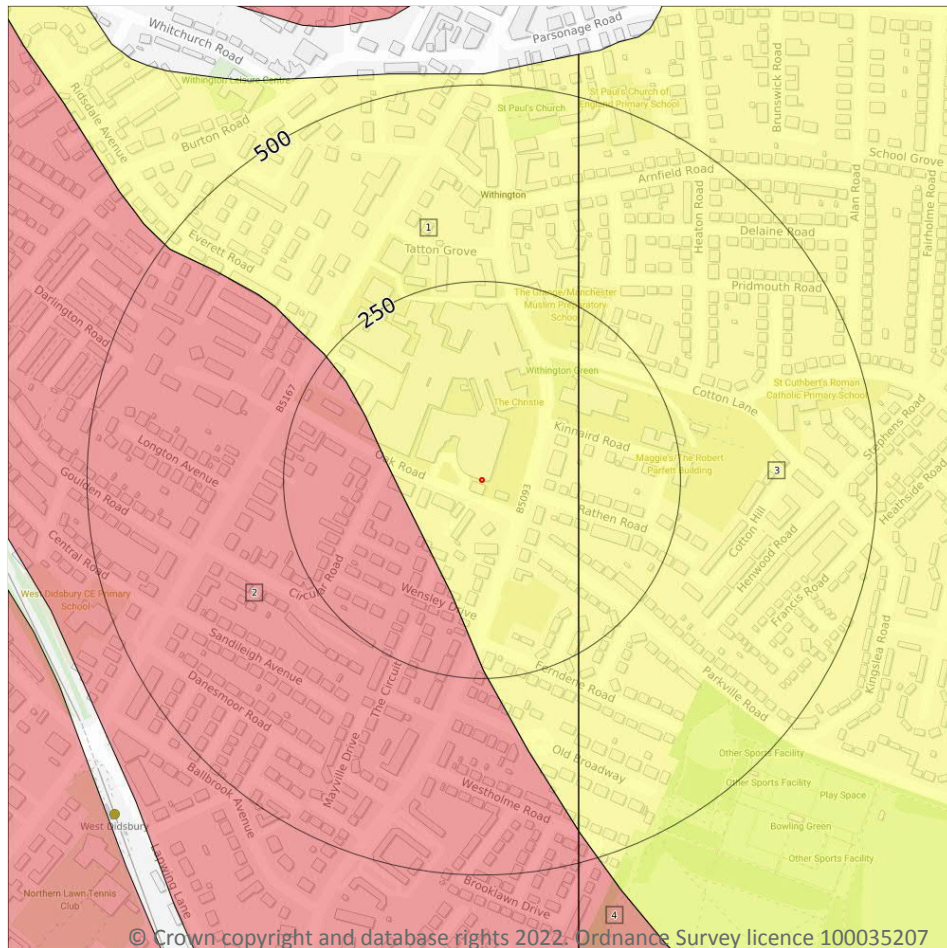
Route	Substance	Quantity released
Air	Tritium	- -
Wastewater	Yttrium 90	2.2GBq -
Wastewater	Technetium 99m	238GBq -
Wastewater	Indium 111	180MBq -
Wastewater	Iodine 123	4.9GBq -
Wastewater	Other Beta/Gamma	20GBq -
Air	Argon 41	- -
Wastewater	Iodine 131	500GBq -
Wastewater	Total Alpha	603MBq -
Wastewater	Total Beta/Gamma (Excl Tritium)	1491GBq -
Wastewater	Fluorine 18	104GBq -
Wastewater	Lutetium-177	623GBq -
Wastewater	Radium-223	603MBq -

ID: B, Location: 195m NW, Permit: BX8513
 Operator: UNIVERSITY OF MANCHESTER
 Address: WOLFSON MOLECULAR IMAGING CENTRE CHRISTIE HOSPITAL CAMPUS WITHINGTON
 MANCHESTER M20 4BX
 Releases:

Route	Substance	Quantity released
Wastewater	Other Beta/Gamma	0.15GBq -
Wastewater	Total Beta/Gamma (Excl Tritium)	0.25GBq -
Air	Fluorine 18	- -
Wastewater	Fluorine 18	- -

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

5 Hydrogeology - Superficial aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

4

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 34**

ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	97m SW	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

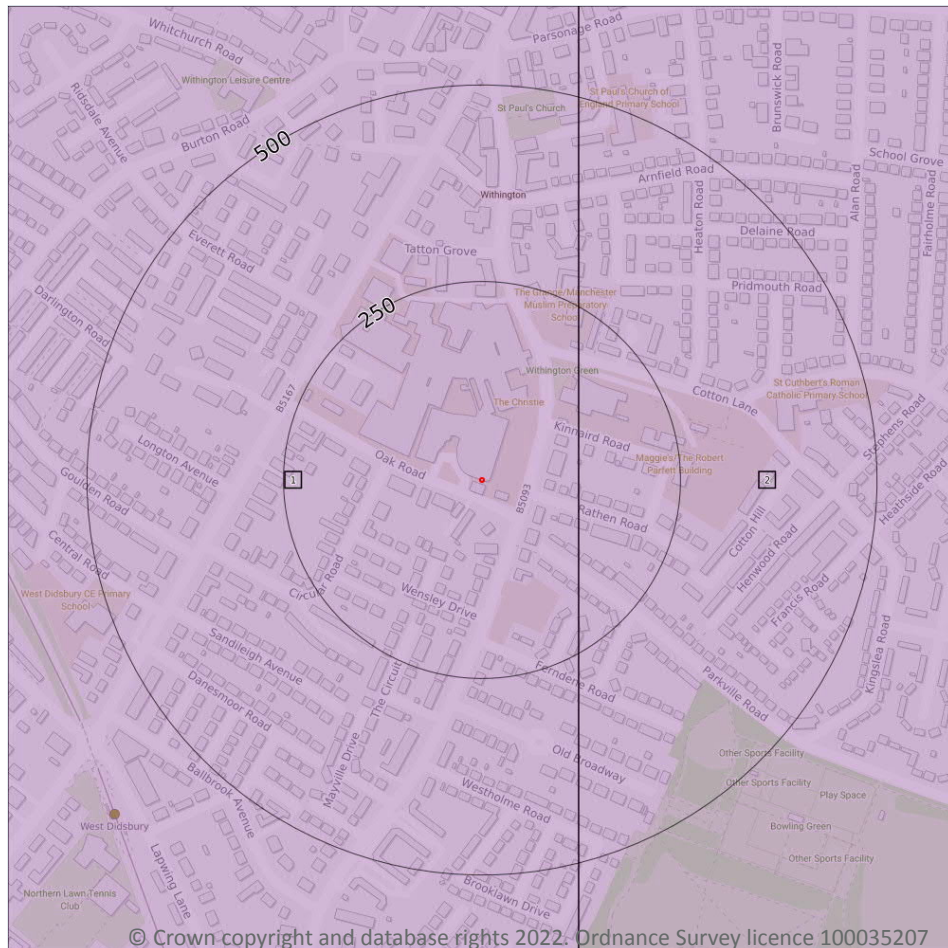


ID	Location	Designation	Description
3	120m E	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	460m S	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

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



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

2

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 36**

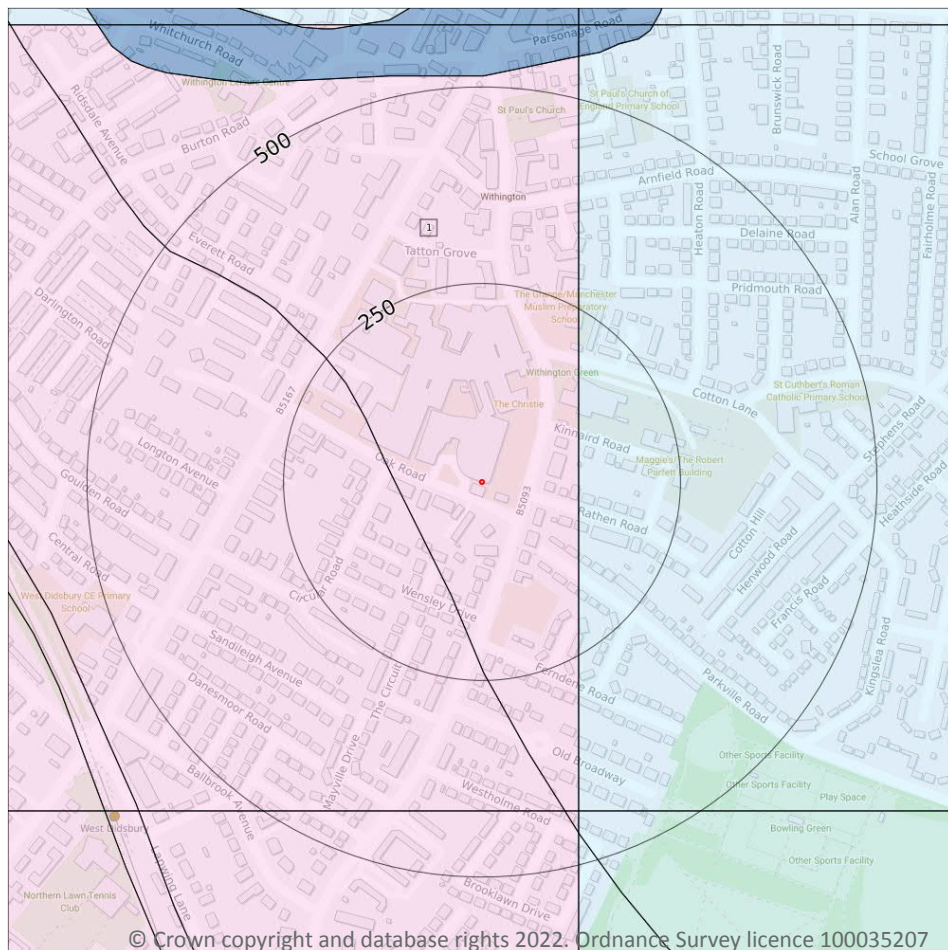
ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	120m E	Principal	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



— Site Outline

Search buffers in metres (m)

Superficial vulnerability

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

Bedrock vulnerability

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

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m

1

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 38**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Principal Flow mechanism: Mixed

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site

0

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

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

5.5 Groundwater vulnerability- local information

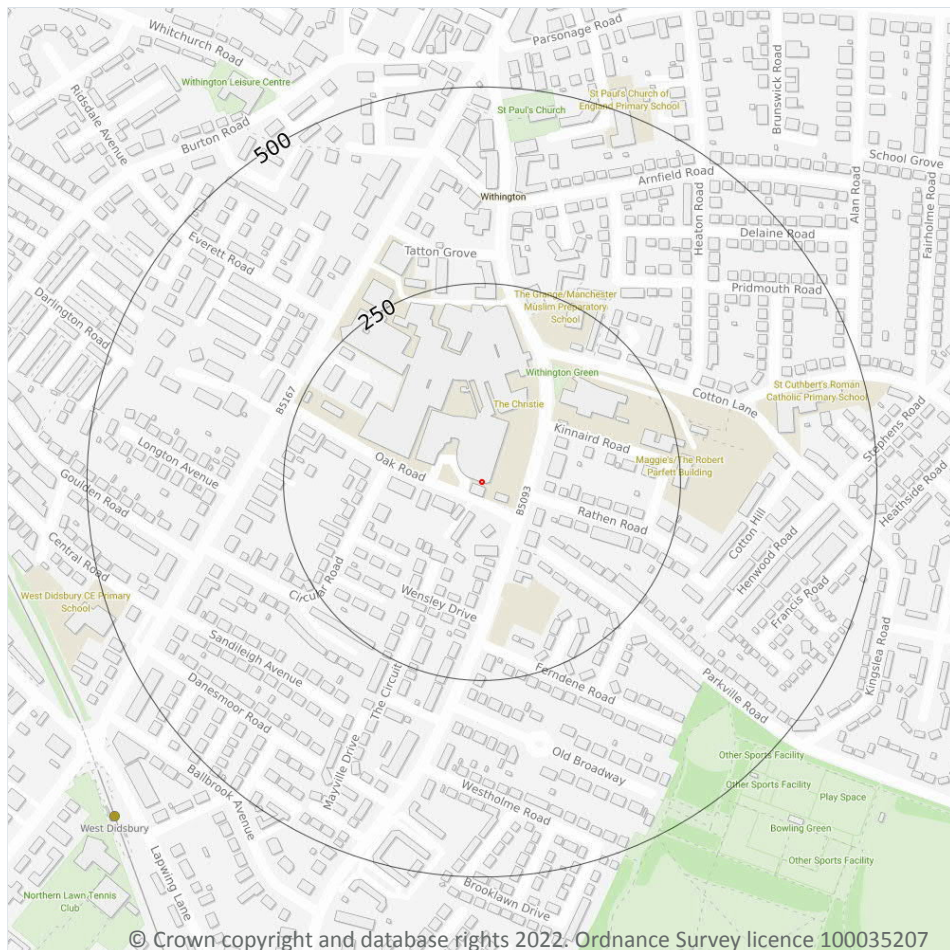
Records on site

0

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

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

Abstractions and Source Protection Zones



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

5.6 Groundwater abstractions

Records within 2000m

1

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 40**

ID	Location	Details	
-	1885m E	Status: Historical Licence No: 2569013021 Details: Laundry Use Direct Source: Ground Water - North West Region Point: BURNAGE LANE, LEVENSHULME, MANCHESTER Data Type: Point Name: OCS GROUP UK LTD T/A CANNON Easting: 386720 Northing: 392830	Annual Volume (m ³): 91000 Max Daily Volume (m ³): 350 Original Application No: - Original Start Date: 19/03/2004 Expiry Date: 31/03/2014 Issue No: 2 Version Start Date: 17/01/2008 Version End Date: -

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

5.7 Surface water abstractions

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

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.

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

5.8 Potable abstractions

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

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

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

5.9 Source Protection Zones

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

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m

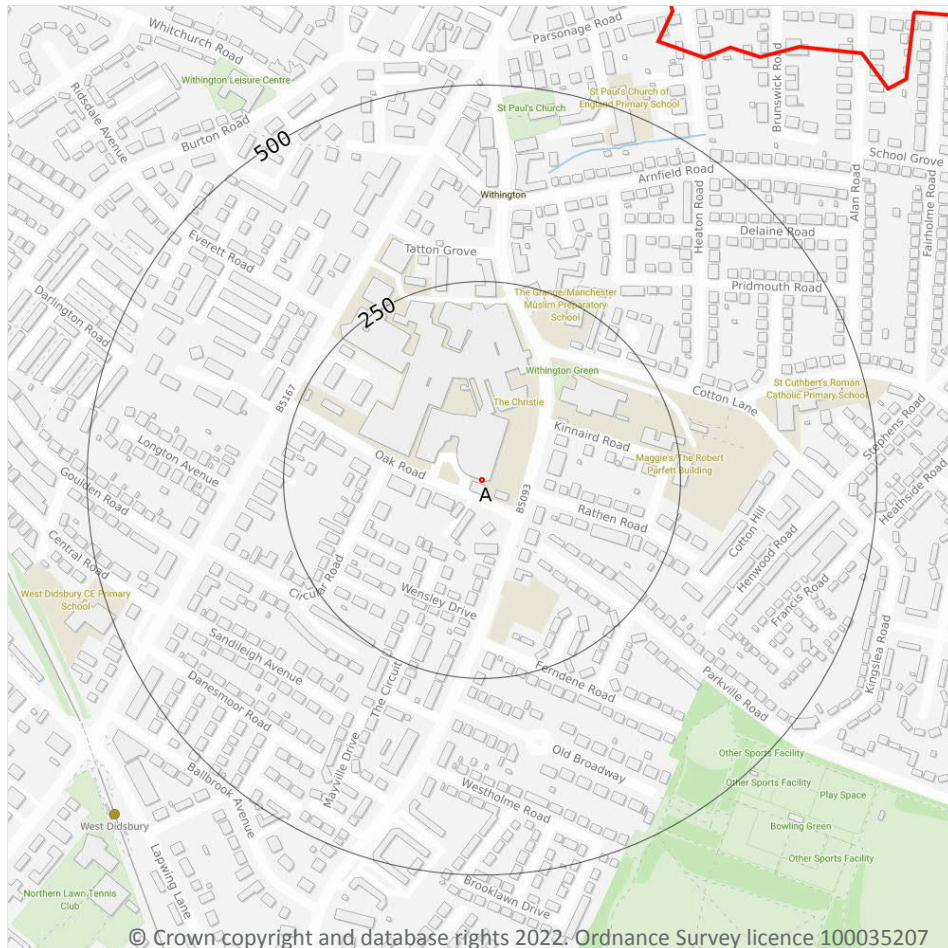
0

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

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



6 Hydrology



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

6.1 Water Network (OS MasterMap)

Records within 250m

0

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

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

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

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site

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 43**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	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 43**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1562m NW	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 43**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	<u>GB41201G101100</u>	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

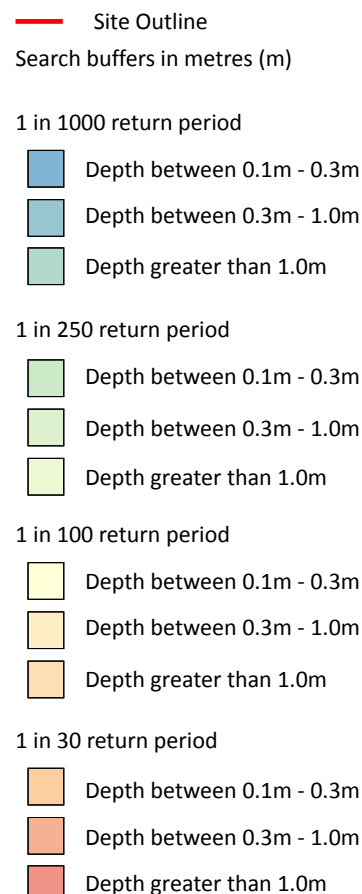
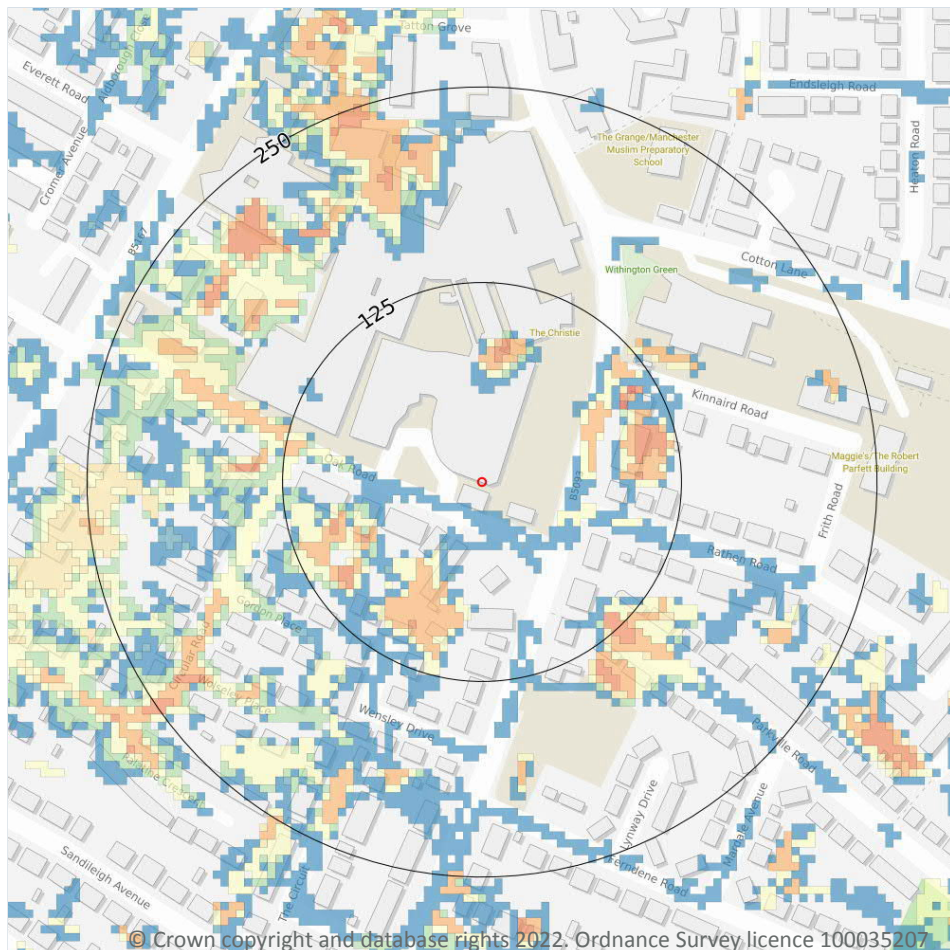
0

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



8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

1 in 100 year, 0.1m - 0.3m

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

Features are displayed on the Surface water flooding map on **page 49**

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.

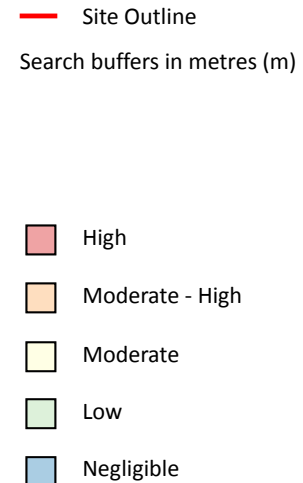
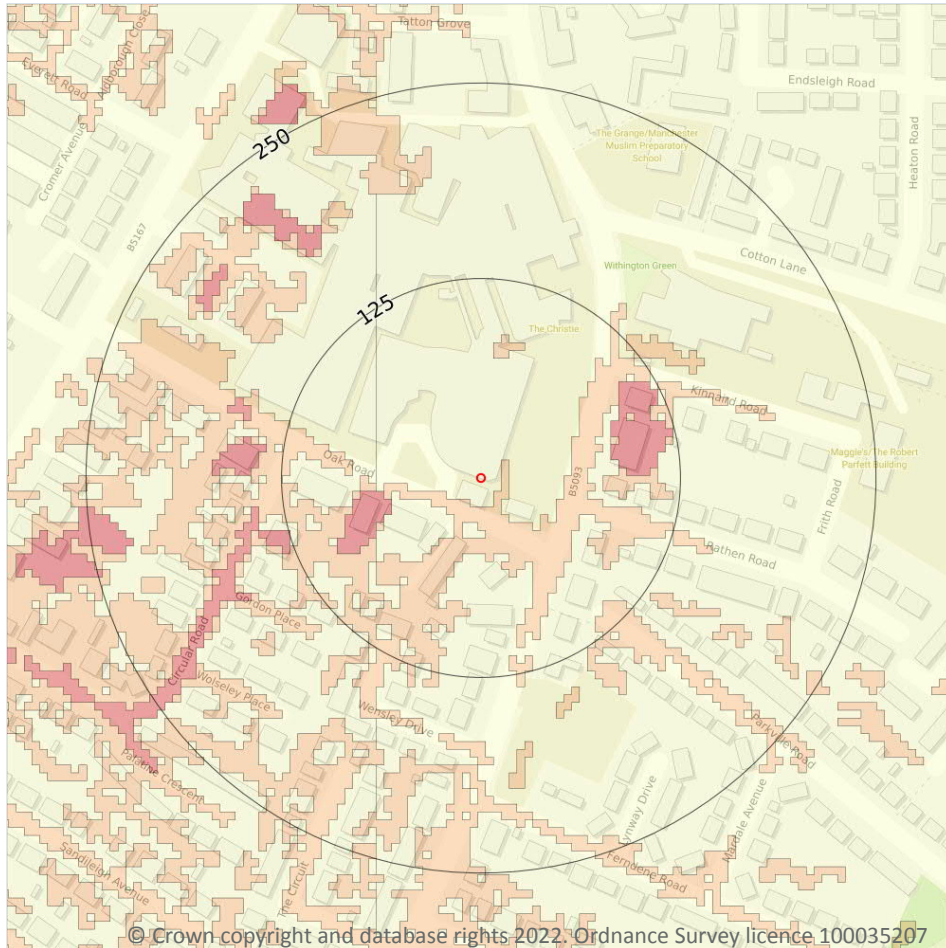
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Moderate

Highest risk within 50m

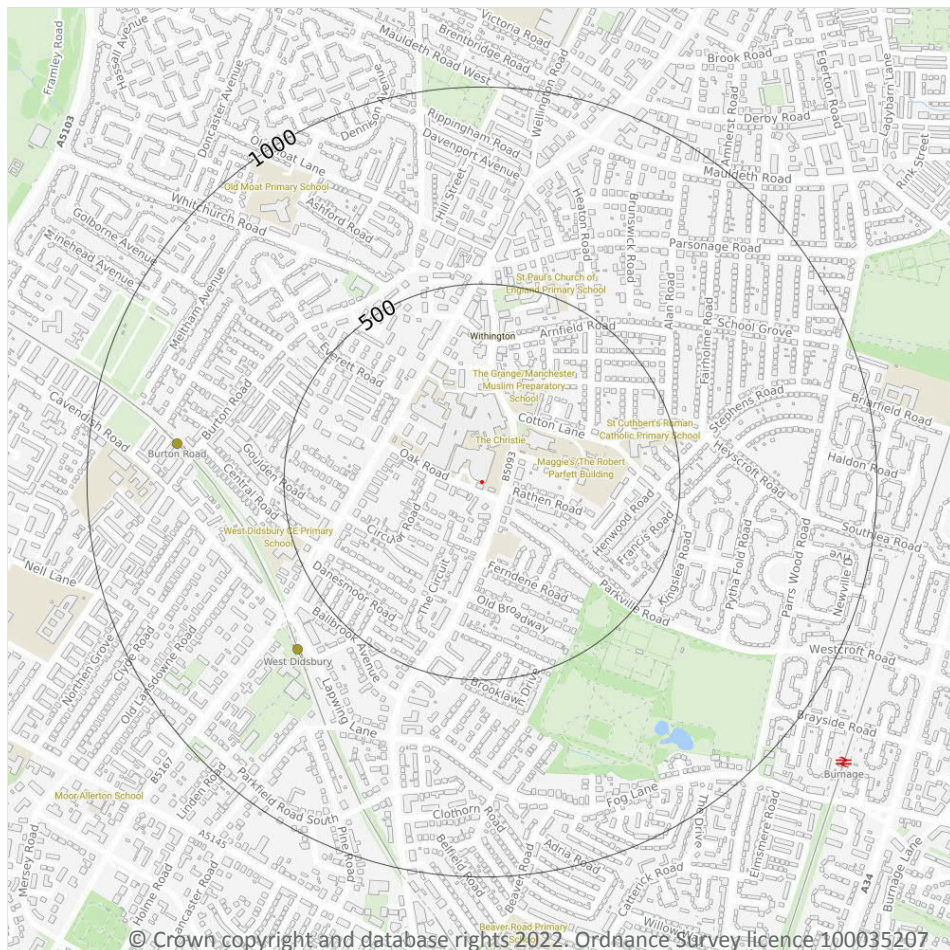
Moderate-High

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 51**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- + Local Nature Reserves (LNR)
- Green Belt

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**1**

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 52**

ID	Location	Name	Data source
-	1842m SE	Heaton Mersey Common	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m**0**

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.

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

1

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

Features are displayed on the Environmental designations map on **page 52**

ID	Location	Name	Local Authority name
-	1484m SW	Merseyside and Greater Manchester	Manchester

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

10.12 Proposed Ramsar sites

Records within 2000m

0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m**0**

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m**0**

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

This data is sourced from Natural England.

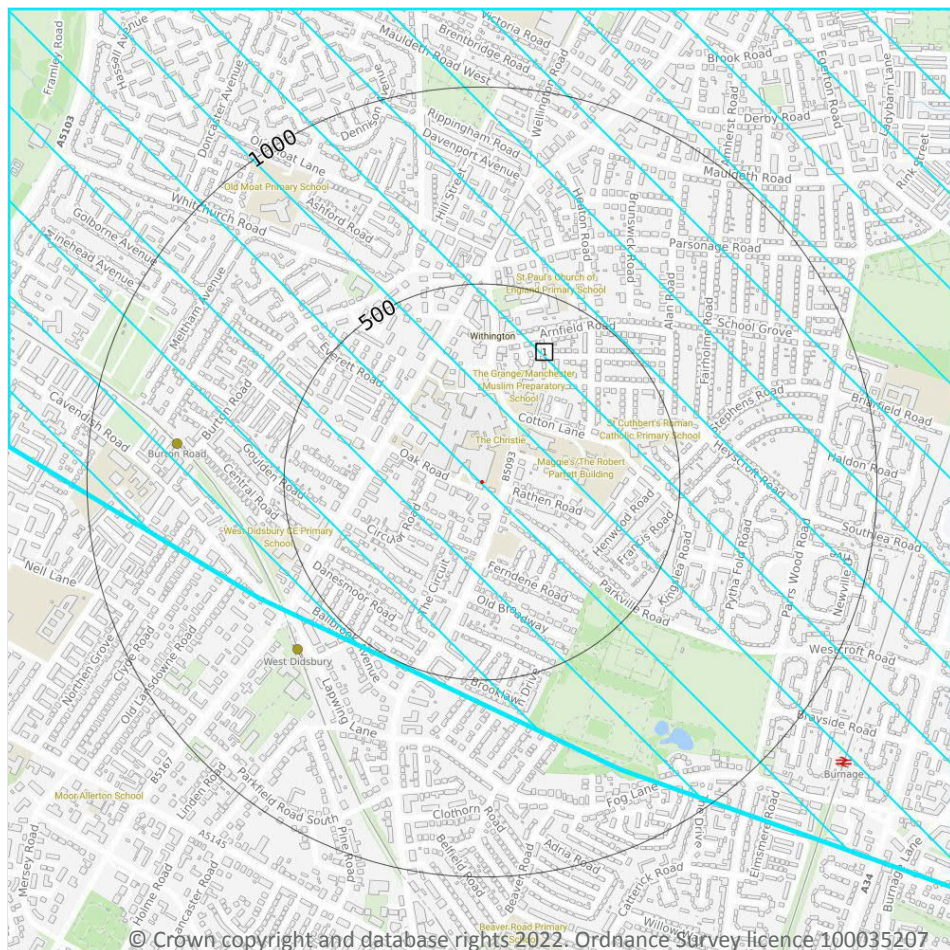
10.16 Nitrate Vulnerable Zones

Records within 2000m**0**

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

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

SSSI Impact Zones and Units



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

10.17 SSSI Impact Risk Zones

Records on site

1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 57**

ID	Location	Type of developments requiring consultation
1	On site	Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes >50mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

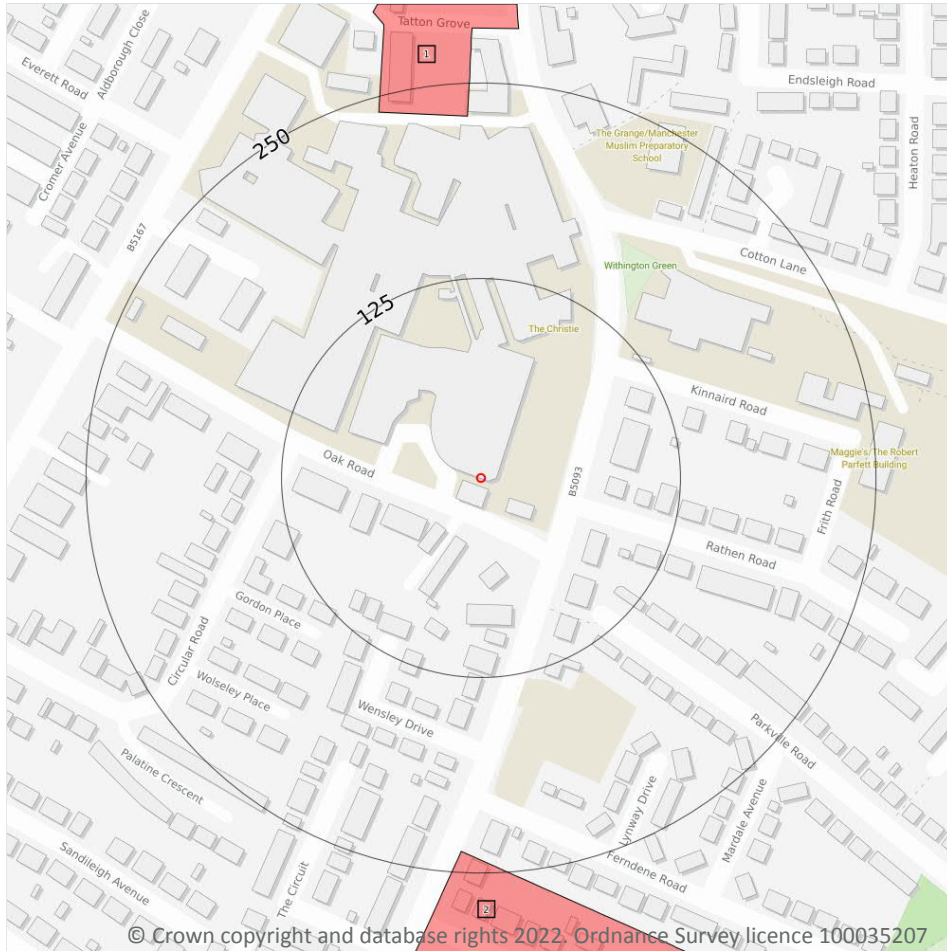
0

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**0**

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

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

11.5 Conservation Areas

Records within 250m**2**

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.



Features are displayed on the Visual and cultural designations map on **page 59**

ID	Location	Name	District	Date of designation
1	229m N	Withington	Manchester	01/07/1983
2	237m S	Old Broadway, Withington	Manchester	01/01/1991

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

11.6 Scheduled Ancient Monuments

Records within 250m

0

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

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

11.7 Registered Parks and Gardens

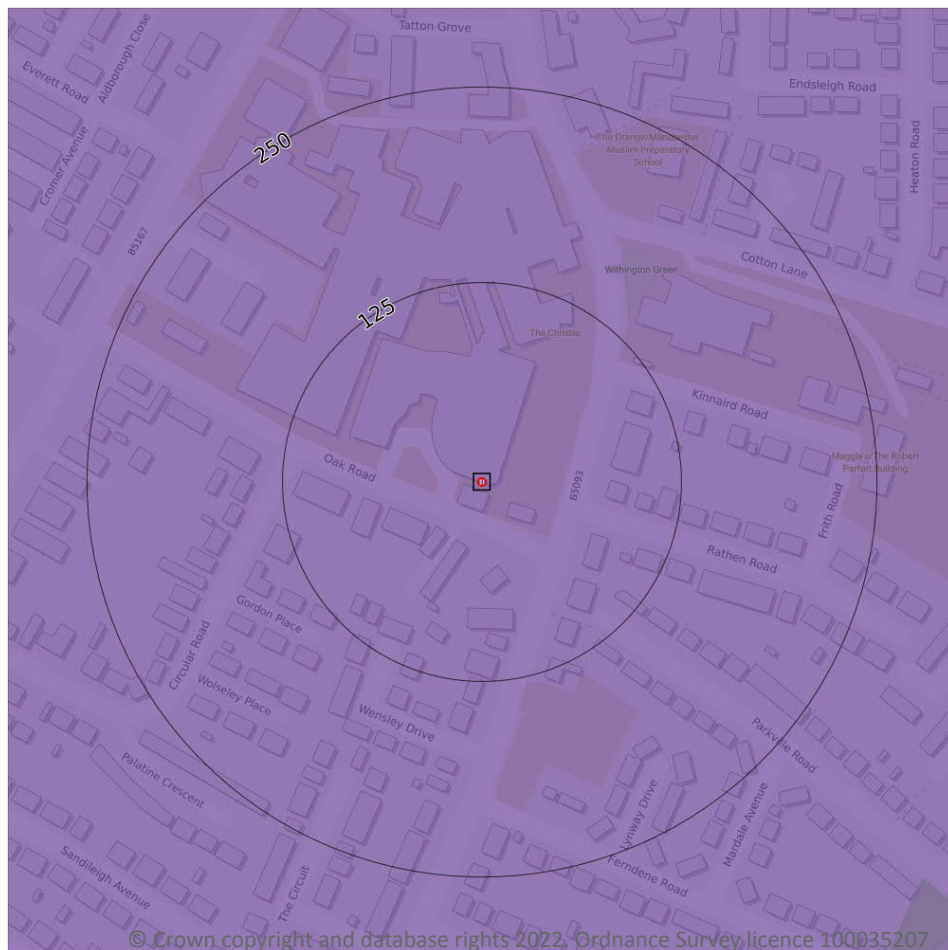
Records within 250m

0

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

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

12 Agricultural designations



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

12.1 Agricultural Land Classification

Records within 250m

1

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

Features are displayed on the Agricultural designations map on **page 62**

ID	Location	Classification	Description
1	On site	Urban	-

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

13.1 Priority Habitat Inventory

Records within 250m

0

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

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

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

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

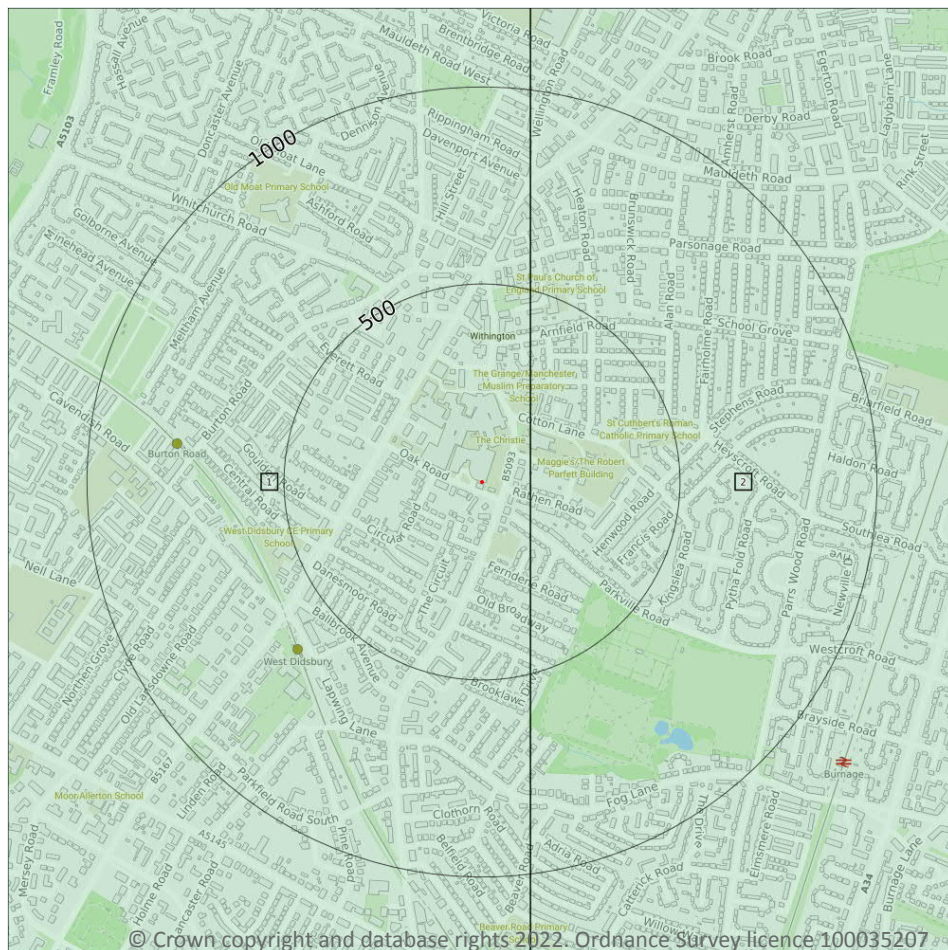
0

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

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

2

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 65**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	SJ89SW
2	120m E	Full	Full	Full	No coverage	SJ89SE

This data is sourced from the British Geological Survey.



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

14.2 Artificial and made ground (10k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m

4

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 67**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	96m W	GFSDDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel
3	120m E	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton



ID	Location	LEX Code	Description	Rock description
4	460m S	GFSDD-XSV	Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

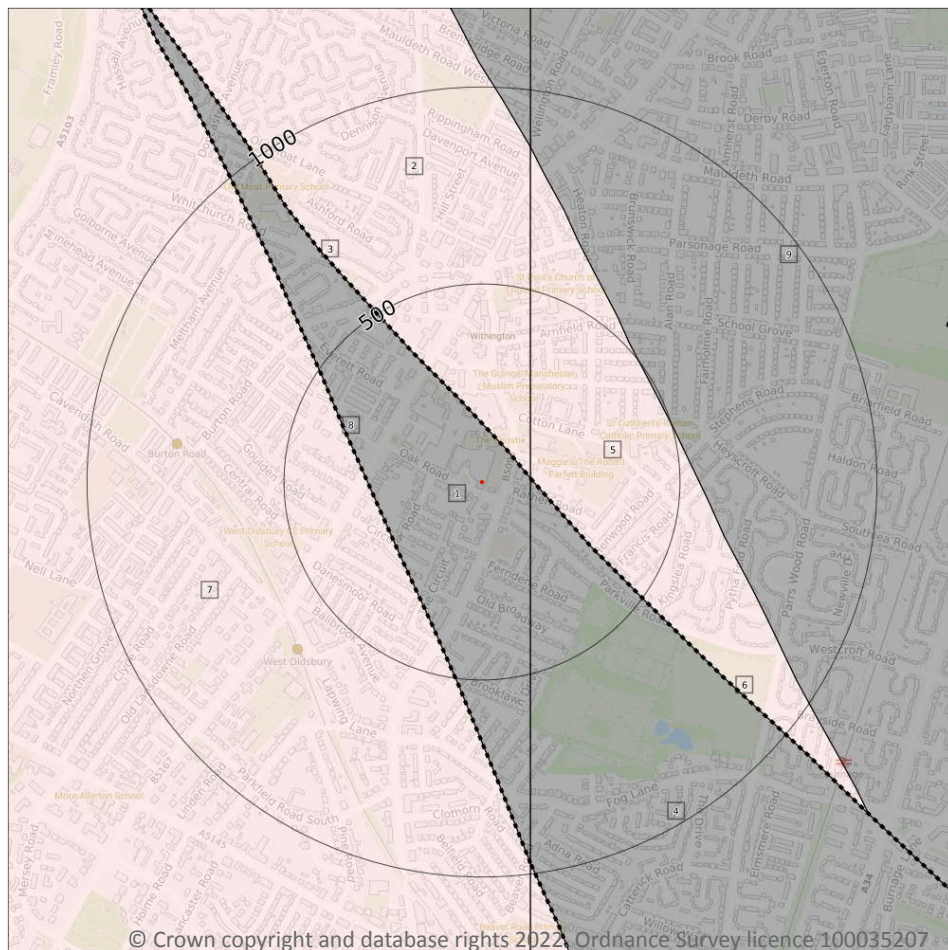
0

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

6

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 69**

ID	Location	LEX Code	Description	Rock age
1	On site	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
2	98m NE	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch
4	120m E	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch
5	121m E	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch

ID	Location	LEX Code	Description	Rock age
7	263m SW	WLSF-SDST	Wilmslow Sandstone Formation - Sandstone	Early Triassic Epoch
9	492m NE	CPB-SDST	Chester Pebble Beds Formation - Sandstone	Early Triassic Epoch

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

3

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.

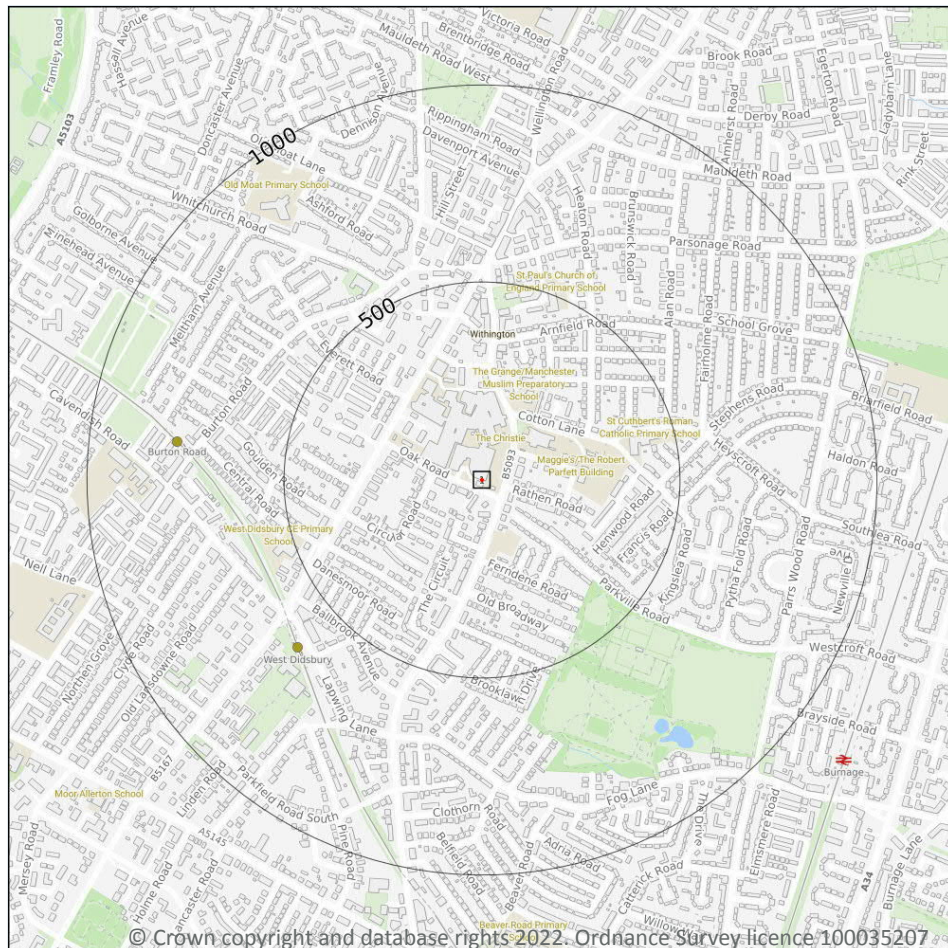
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 69**

ID	Location	Category	Description
3	98m NE	FAULT	Normal fault, inferred; crossmarks on downthrow side
6	121m E	FAULT	Normal fault, inferred; crossmarks on downthrow side
8	263m SW	FAULT	Normal fault, inferred; crossmarks on downthrow side

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline

Search buffers in metres (m)

□ Geological map tile

15.1 50k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 71**

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

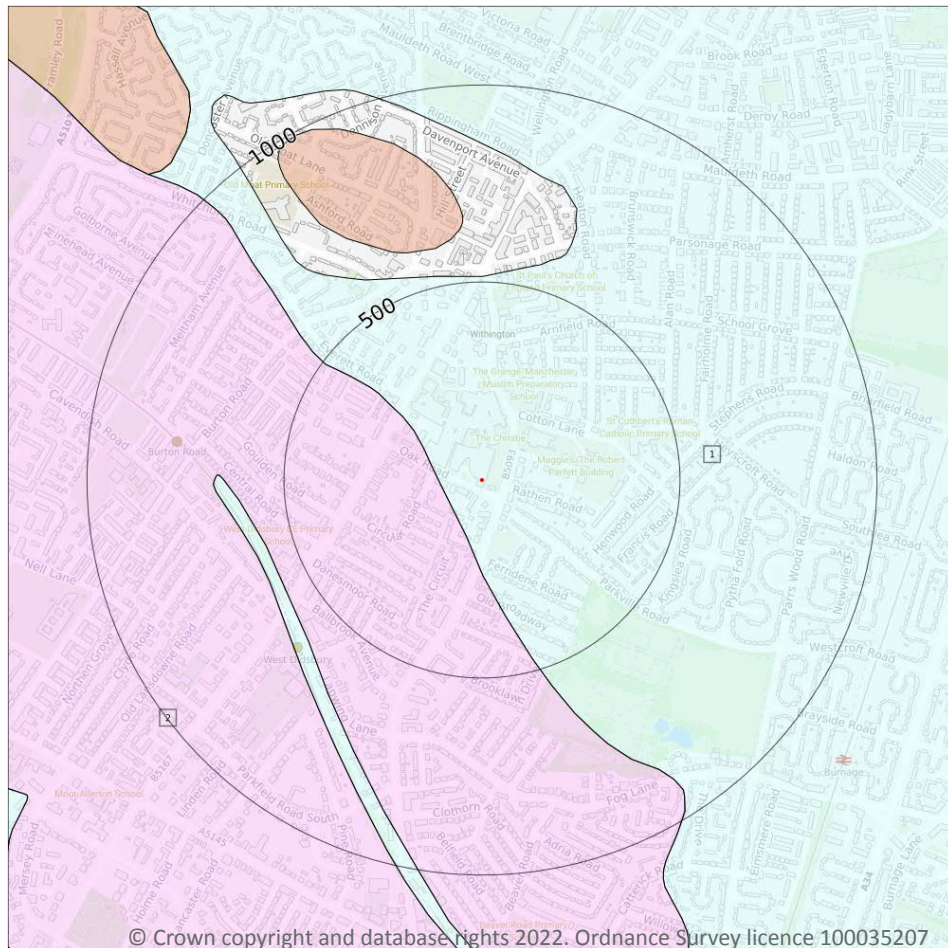
0

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

2

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 73**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
2	97m SW	GFSDD-XSV	GLACIOFLUVIAL SHEET DEPOSITS, DEVENSIAN	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	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

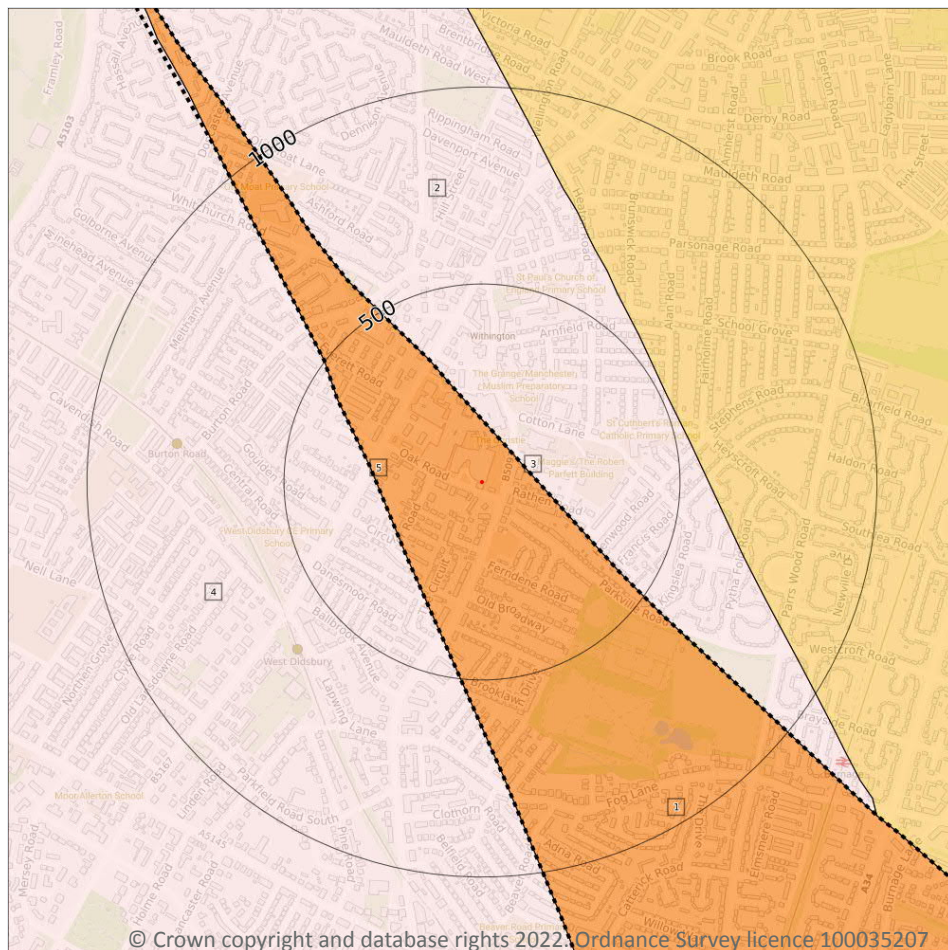
Records within 50m

0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

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

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

15.8 Bedrock geology (50k)

Records within 500m

3

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 75**

ID	Location	LEX Code	Description	Rock age
1	On site	CHES-PESST	CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)	OLENEKIAN
2	104m NE	WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE	-
4	246m W	WLSF-SDST	WILMSLOW SANDSTONE FORMATION - SANDSTONE	-

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	Mixed	High	Moderate

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

2

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 75**

ID	Location	Category	Description
3	104m NE	FAULT	Fault, inferred
5	246m 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

33

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 77**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	123m NE	384973 392499	Manchester Cancer Research Centre BH02	-	Y	N/A
A	136m NE	384984 392507	Manchester Cancer Research Centre CBR03	-	Y	N/A
B	142m NE	385003 392490	Manchester Cancer Research Centre WS02	-	Y	N/A



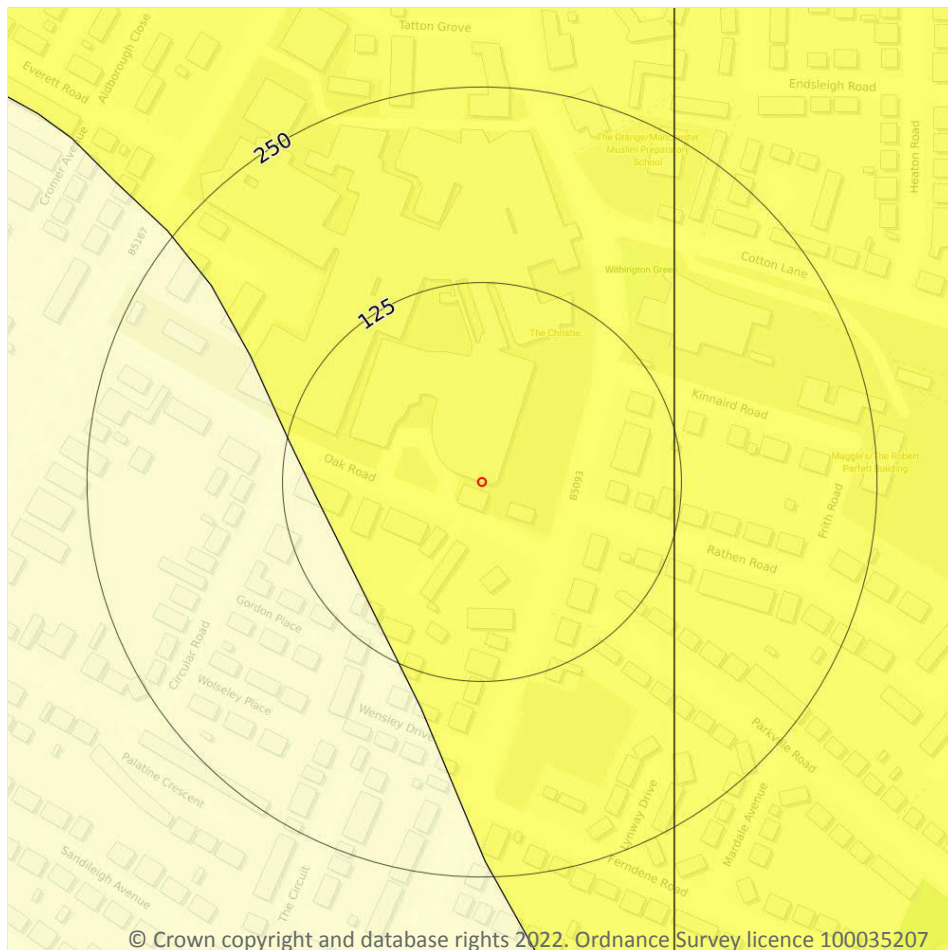
ID	Location	Grid reference	Name	Length	Confidential	Web link
B	149m NE	385013 392486	Manchester Cancer Research Centre CBR05	-	Y	N/A
A	150m NE	384982 392529	Manchester Cancer Research Centre SA03	-	Y	N/A
A	151m NE	384982 392531	Manchester Cancer Research Centre WS01	-	Y	N/A
B	159m NE	385015 392503	Manchester Cancer Research Centre BH04	-	Y	N/A
B	166m E	385034 392479	Manchester Cancer Research Centre CBR07	-	Y	N/A
A	170m NE	384996 392543	Manchester Cancer Research Centre BH03	-	Y	N/A
B	172m E	385042 392476	Manchester Cancer Research Centre SA02	-	Y	N/A
B	175m E	385045 392476	Manchester Cancer Research Centre WS04	-	Y	N/A
B	177m NE	385038 392498	Manchester Cancer Research Centre BH05	-	Y	N/A
B	178m E	385048 392475	Manchester Cancer Research Centre SA02A	-	Y	N/A
B	178m NE	385040 392497	Manchester Cancer Research Centre BH05A	-	Y	N/A
B	179m E	385050 392474	Manchester Cancer Research Centre CBR09	-	Y	N/A
C	182m NE	384969 392578	MSCP Christie Hospital GI TPH	-	Y	N/A
C	182m NE	384966 392580	MSCP Christie Hospital GI TPG	-	Y	N/A
A	182m NE	384998 392558	MSCP Christie Hospital GI TPA	-	Y	N/A
C	182m NE	384967 392580	MSCP Christie Hospital GI TPF	-	Y	N/A
B	187m NE	385044 392508	Manchester Cancer Research Centre WS05	-	Y	N/A
A	189m NE	384994 392570	MSCP Christie Hospital GI TPE	-	Y	N/A
A	195m NE	385008 392566	MSCP Christie Hospital GI TPD	-	Y	N/A
A	196m NE	385031 392544	Manchester Cancer Research Centre CBR04	-	Y	N/A
A	196m NE	385008 392568	MSCP Christie Hospital GI TPC	-	Y	N/A
A	197m NE	385009 392568	MSCP Christie Hospital GI TPB	-	Y	N/A
A	201m NE	385040 392540	Manchester Cancer Research Centre BH06	-	Y	N/A
A	203m NE	385025 392561	Manchester Cancer Research Centre WS03	-	Y	N/A
A	204m NE	385025 392562	MSCP Christie Hospital GI TP1	-	Y	N/A
A	216m NE	385049 392554	MSCP Christie Hospital GI TP2	-	Y	N/A
A	216m NE	385049 392554	Manchester Cancer Research Centre CBR06	-	Y	N/A
D	232m NE	385078 392540	Manchester Cancer Research Centre CBR08	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
D	233m NE	385079 392539	MSCP Christie Hospital GI TP3	-	Y	N/A
1	247m NE	385104 392522	MSCP Christie Hospital GI TP4	-	Y	N/A

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



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

17.1 Shrink swell clays

Records within 50m

1

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

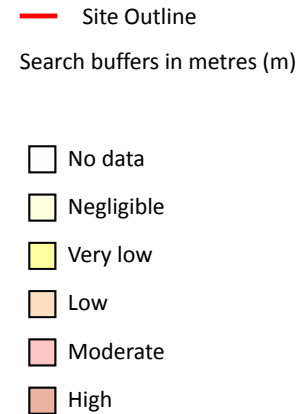
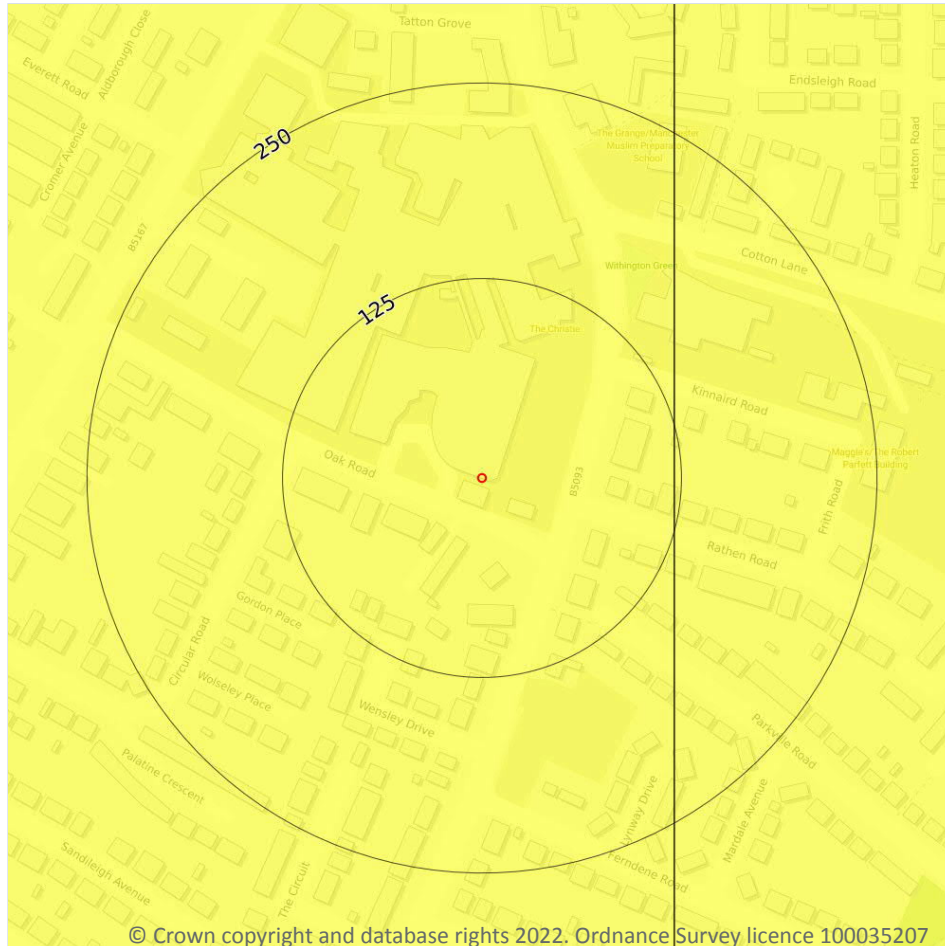
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 80**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

1

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

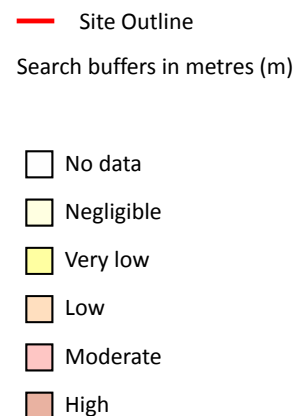
Features are displayed on the Natural ground subsidence - Running sands map on **page 81**

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



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.

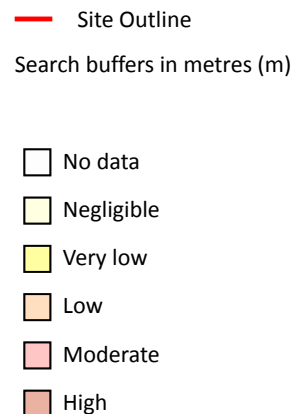
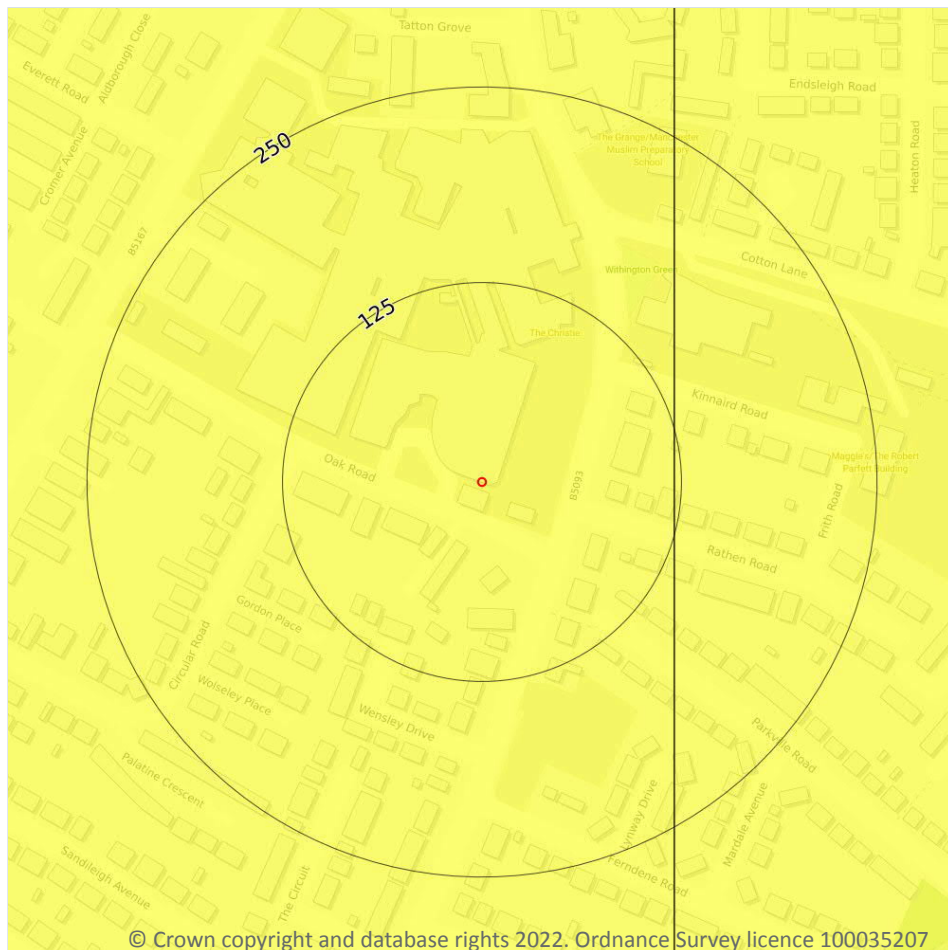
Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 82**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m

1

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

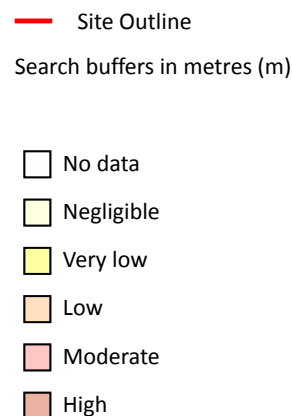
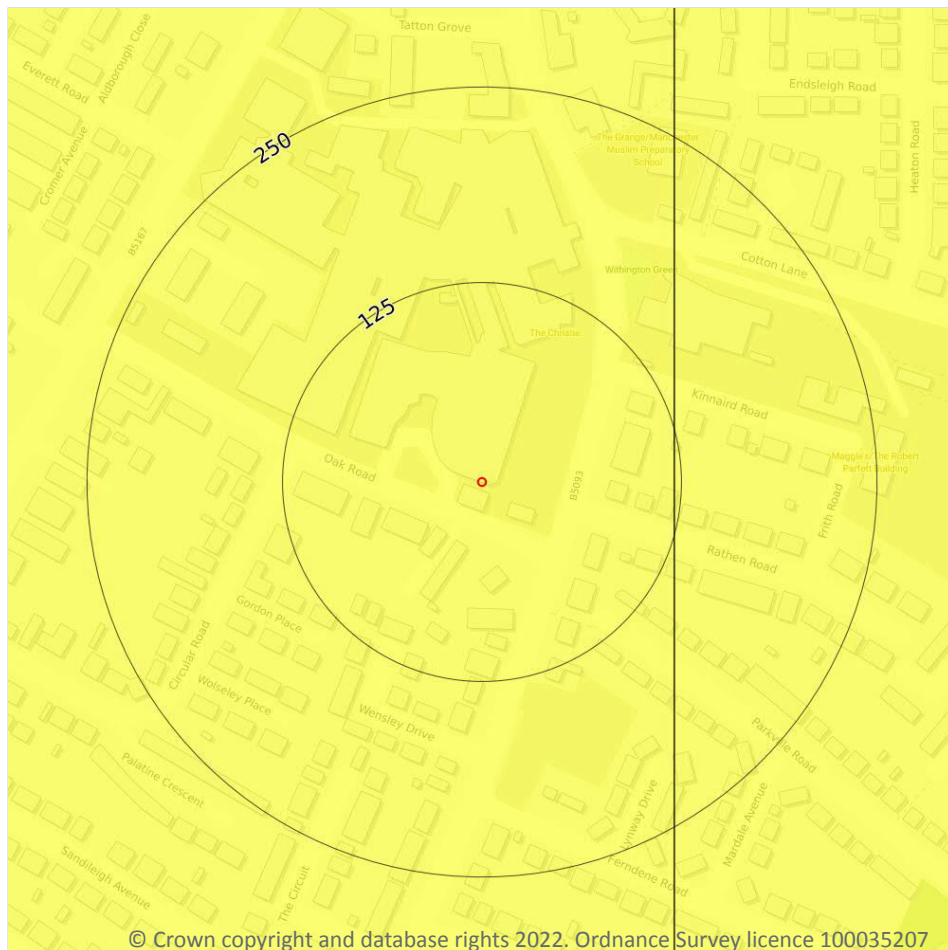
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 83**

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



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.

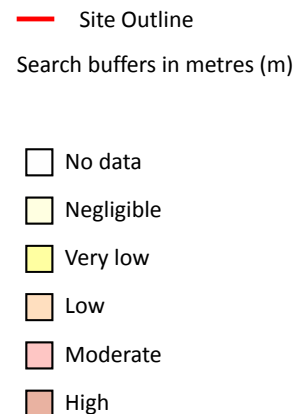
Features are displayed on the Natural ground subsidence - Landslides map on **page 84**

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

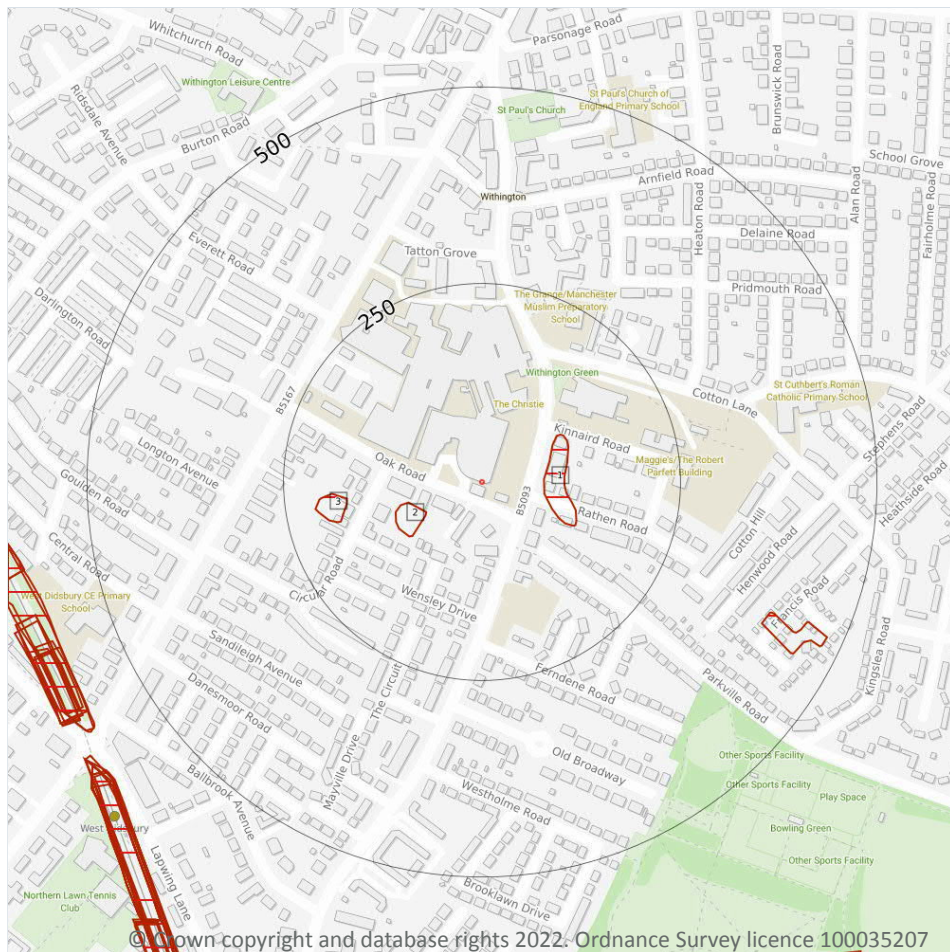
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 85**

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

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



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

18.1 Natural cavities

Records within 500m

0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m**0**

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

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m**3**

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 86**

ID	Location	Land Use	Year of mapping	Mapping scale
1	76m E	Water Body	1851	1:10560
2	78m SW	Pond	1851	1:10560
3	171m W	Pond	1851	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m**0**

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

This data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m**0**

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

This data is sourced from the British Geological Survey.



18.6 Non-coal mining

Records within 1000m

0

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

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

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

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site

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.

18.9 Coal mining

Records on site

0

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

This data is sourced from the Coal Authority.



18.10 Brine areas

Records on site	0
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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.

18.11 Gypsum areas

Records on site	0
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Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

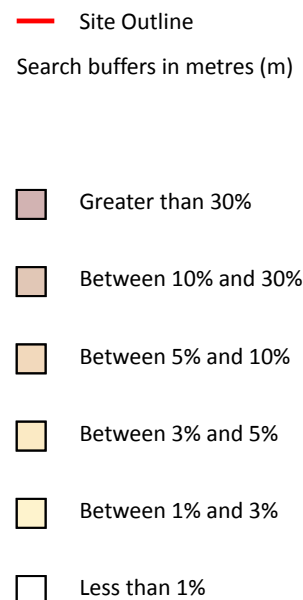
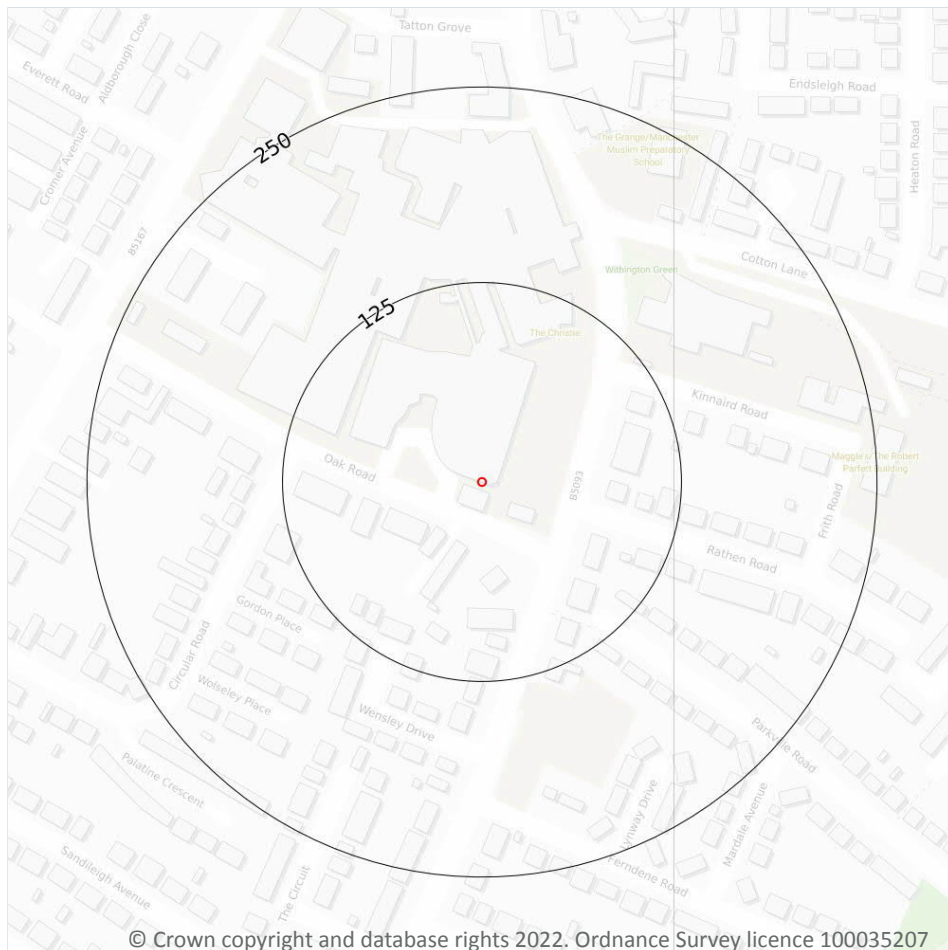
18.13 Clay mining

Records on site	0
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Generalised areas that may be affected by kaolin and ball clay extraction.

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

19 Radon



19.1 Radon

Records on site

1

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

Features are displayed on the Radon map on **page 90**

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

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



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

1

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 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.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

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

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m

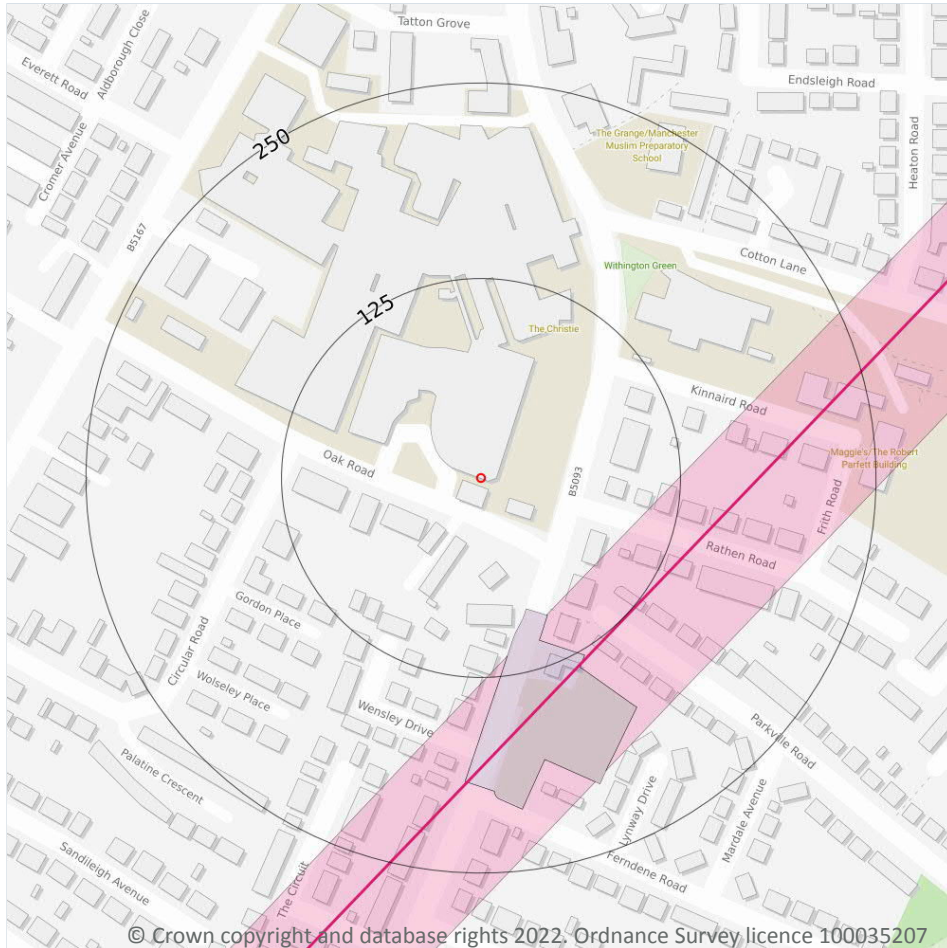
0

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

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)**
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m

0

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



This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

0

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

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m

0

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

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

0

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

This data is sourced from Ordnance Survey and OpenStreetMap.



21.8 Crossrail 1

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m

1

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.

Features are displayed on the Railway infrastructure and projects map on **page 92**

Location	Track Type	Speed (mph)	Speed (km/h)	Status
126m SE	Tunnel	143mph	230kph	Current preferred consultation route

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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Ground Gas Assessments | Material Management Plans
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Remediation Strategies & Validation | Due Diligence Audits

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Value Engineering

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We also work with key partners to deliver a range of other support services and surveys including topographical, ecology, tree, archaeological, flood risk, and utilities.

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