Phase I Geoenvironmental Site Assessment

Site: Russell Road, Manchester
Reference: 17-031-R1-2
Date: July 24



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QUALITY ASSURANCE

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R1-2	Update to proposed development plan	HM	EF	AS	17/07/24

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EXECUTIVE SUMMARY

Site Address	Land north of Russell Road, Whalley Range, Manchester, M16 8AT
Grid Reference	E 382621 N395179
Site Area	0.95 Ha
Proposed Development	Rowlinson Construction Ltd intends to construct a 5-storey apartment block and, a 4-storey shared ownership apartment block with associated car parking and utility infrastructure.
Current Site Use	The subject site is a rectangular shaped parcel of land to the north of Rusell Road, Manchester and is currently disused land. Hardstand is present site-wide with concrete foundations present where former buildings were located. The main entrance to the site is off Carlton Road, there are further entrances off Whalley Road and Russell Road however these are currently blocked. Semi-mature and mature trees are present around the boundaries of the site with sporadic trees through the centre of the site.
Site History	A review of the relevant Ordnance Survey maps shows that the Site originally consisted of agricultural land with Whalley Road forming the north western boundary of the site. Circa 1889 a building has been marked in the north of the site with associated gardens across the rest of the site. Smaller buildings are present in the north and east. By 1922 the smaller building in the east has changed configuration. Circa 1932 the original building has been extended towards the east as well as the addition of a separate building in the east connected by a walkway. A chapel has been marked adjoining the original building. Circa 1949 the site was marked as St Joseph's Hospital with one large building covering the majority of the site with a courtyard in the centre of the building. By 1980 the building has been split into two and has been marked as a private hospital. A substation has been marked on the northern boundary of the site. Circa 1986 only one building remains however circa 1991 the building is extended. Google Earth imagery from 2003 shows a large building covering the majority of the site with associated hardstand across the rest of the site. Semi-mature and mature trees are present around the site boundary. By 2020 the building has been demolished with hardstand cover across the site. The site remains the same until the present day.

ENVIRONMENTAL SETTING

Geology	Drift Geology	Glaciofluvial Sheet Deposits – SAND and GRAVEL
	Bedrock Geology	Wilmslow Sandstone Formation - SANDSTONE
	Faults	No faults have been recorded within proximity to the site.
Geomorphology	The site is relatively flat and has little topographical variance this is likely due to historical development and the need for a level development platform, it is likely that significant depths of Made Ground will be present.	
Hydrogeology	A Secondary A Aquifer has been recorded on site in the drift geology with a Principal Aquifer in the bedrock geology.	
	No groundwater abstractions have been identified within 1 km of the site.	
Hydrology	There are no surface water features within 250m of the site.	
	The site is located within Flood Zone 1 – no risk of flooding.	
Utility Locations	A GPR survey of the site has identified electric and drainage channels. Evidence of redundant service can also be seen.	
Landfill Sites and Waste Sites	No landfill sites (current or historic) are located within 250m of the Site.	
Radon	Radon Class 1 – less than 1% of homes are estimated to be at or above the Action Level. No radon protection measures are required.	
Unexploded Ordnance	Moderate risk UXO area. A preliminary desk study assessment was carried out by Zetica in March 2024, this concluded that there were no pre-WWI military activity or WWI military activity on the site. It also identified that there was no WWII military activity identified on the site, however there were numerous WWII Strategic Targets within 5km of the site. Records indicate that several High Explosive (HE) bombs fell in close to the site. The PDSA concluded that a detailed desk-study is undertaken to assess and zone the UXO level on site.	
PFAS	No potential current or historical sources of PFAS have been identified on-site. No further risk assessment is required.	
Hazardous Installations	No hazardous installations that could potentially prejudice the proposed construction of highly sensitive residential dwellings have been identified within influencing distance of the subject site.	

PRELIMINARY CONTAMINATED LAND ASSESSMENT

Human Health	No significant site-wide sources of contamination have been identified within searches completed in this phase of work. Made Ground is likely to be present across the site due to historic development. Anthropogenic material, heavy metals, PAH and asbestos may be present within these Made Ground deposits. Where impacted soils are present these may pose a risk to construction workers who may be exposed during earthworks. Should impact be identified then workers will need to utilise appropriate PPE.
Controlled Waters	The site is underlain likely high permeability granular deposits of SAND that will facilitate the migration of contaminants towards the underlying principal aquifer. In the absence of any likely significant sources, the overall risk is considered to be low. This will be confirmed by an intrusive ground investigation .
Ground Gas	Made Ground may contain organic alluvial materials and produce hazardous ground gases. Given the site is anticipated to be underlain by high permeability drift strata, preferential pathways from localised sources are considered likely. However, the site is not likely to produce ground gases is significant volumes but this will need to be confirmed via monitoring.

PRELIMINARY GEOTECHNICAL ASSESSMENT

Initial Geotechnical Assessment	Given the developed nature of the site, it is likely there will be Made Ground fill deposits, obstructions and possible basements across the site. Former development features including relict foundations will require grubbing out before the proposed redevelopment.
Brine Workings	The site is not located within an area affected by brine workings.
Civil and Structural	Made Ground deposits require investigation to understand the full depth and geotechnical properties to understand the possibility for re-use and re-engineering for the proposed development. Given the entire site is underlain by granular deposits soakaway drainage is likely to be feasible, however further assessment is required in line with BRE365.
Abnormal Foundations	Abnormal foundations may be required in areas of soft clay and where deeper Made Ground is present. Deeper foundations may also be needed in areas of tree influence. Structural loads may also necessitate a piled foundation if poor and/or variable ground conditions are encountered.

RECOMMENDATIONS

Further detailed intrusive ground investigation will be required to confirm the findings of the initial Conceptual Site Model and provide data for foundation and highways design so that a value-engineered development solution can be determined.

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17-013-R1-001 - Site Location Plan
17-013-R1-002 - Proposed Development Plan
17-013-R1-003 - Historical Features Plan
17-013-R1-004 - Site Features Plan

1. INTRODUCTION

1.1. BACKGROUND

Rowlinson Construction (the client) commissioned E3P to undertake a Phase I Geoenvironmental Site Assessment at Russell Road, Whalley Range, Manchester.

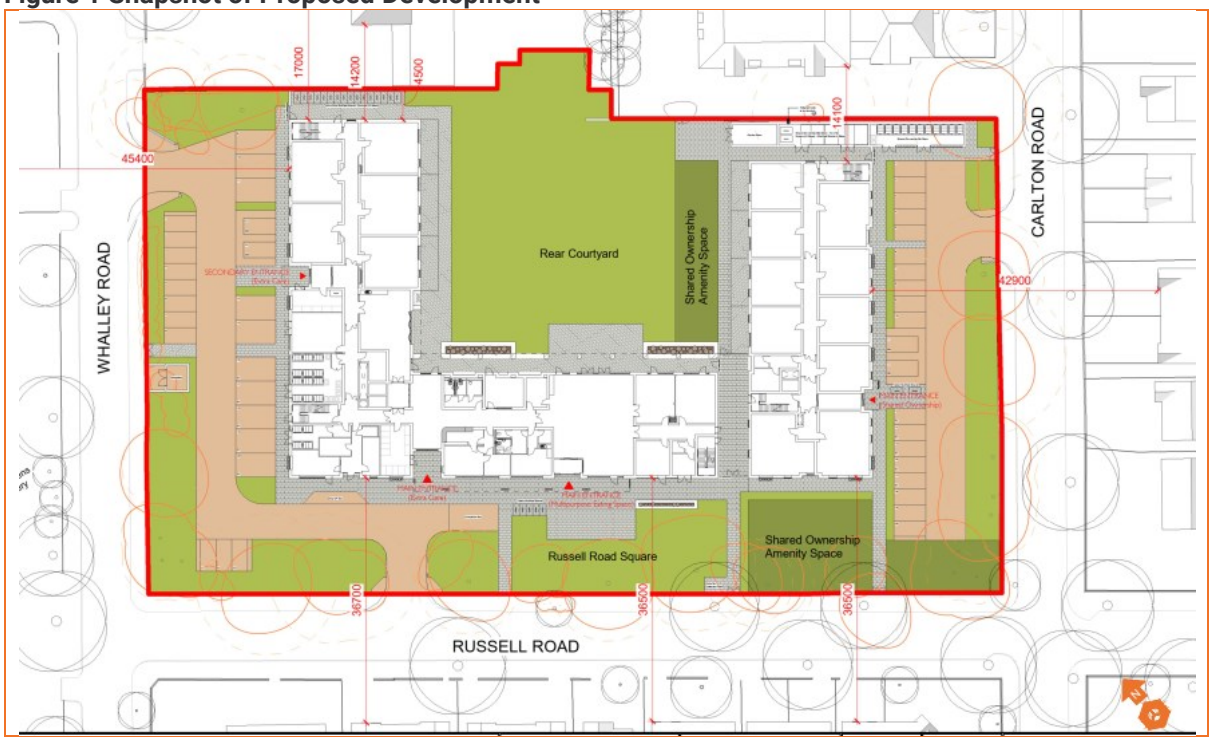
This report is required to determine potential contaminated land and geotechnical liabilities for the proposed site redevelopment.

1.2. PROPOSED DEVELOPMENT

Rowlinson Construction Ltd intends to construct a 5-storey apartment block and, a 4-storey shared ownership apartment block with associated car parking and utility infrastructure. Drawing 17-013-002 (APPENDIX IV) identifies the proposed development layout.

A snapshot of the proposed development layout is indicated in Figure 1.

Figure 1 Snapshot of Proposed Development



1.3. OBJECTIVES AND SCOPE

The objectives of the geoenvironmental investigation are as follows:

- Review historical plans, geology, hydrogeology, site sensitivity, floodplain issues, mining records and any local authority information available to complete a desk study in line with Environment Agency (EA) document Land Contamination: Risk Management (LCRM) (updated June 2023).
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site concerning the site's future use and in relation to off-site receptors.
- Assess the desk study information and, where possible, provide preliminary recommendations concerning foundations, pavement construction, general geotechnical issues, floor slabs and coal mining related issues.
- Provide recommendations regarding future works required.

1.4. SOURCES OF INFORMATION

Background information was sought from the following sources:

- Groundsure Enviro+Geo Insight Search Reference GS-J1-GJKJ3P-CLY;
- Historical mapping dated 1848 to 2020. A selection of historical maps is reproduced in APPENDIX VI;
- Online planning records held by Manchester City Council;
- Consultations with representatives of Manchester City Council;
- Consultations with representatives of the Coal Authority;
- Consultations with representatives of the Brine Board;
- Magic Map Groundwater Vulnerability Map;
- Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007);
- British Geological Survey Map;
- Groundsure IO database;
- https://zeticauxo.com/downloads-and-resources/risk-maps/;
- https://flood-map-for-planning.service.gov.uk
- Search results | Catchment Data Explorer | Catchment Data Explorer

1.5. LIMITATIONS

The limitations of this report are presented in APPENDIX I.

1.6. RISK CLASSIFICATION

The description of risk classification and the likely action required as set out in CIRIA C552 are included in APPENDIX III.

1.7. CONFIDENTIALITY

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

2. SITE SETTING

2.1. SITE DETAILS

Table 1 Site Details

Site Address	Land north of Russell Road, Manchester, M16 8AR.
National Grid Reference	E 382624, N 395179.
Site Area	0.95 Ha.

The Glossary presented in APPENDIX II defines all acronyms used within this report.

A site location map is presented in APPENDIX IV as Drawing 17-013-001.

2.2. CURRENT SITE USE

A site walkover was completed by an E3P representative on 18 March 2024, with the full details included in Table 2.

Table 2 Site Description

FEATURE	DESCRIPTION	PHOTOGRAPHIC EVIDENCE
Occupancy/Use	The subject site is a rectangular shaped parcel of land to the north of Rusell Road, Manchester and is currently disused land. Hardstand is present site-wide with concrete foundations present where former buildings were located. Self-seeded vegetation is also present across the site. The main entrance to the site is off Carlton Road, there is a secondary entrance off Whalley Road. Semi-mature and mature trees are present around the boundaries of the site with sporadic trees through the centre of the site.	
Structures	No structures are present. Foundations are present across the site where former buildings were located.	
Retaining Structures	None identified.	

FEATURE	DESCRIPTION	PHOTOGRAPHIC EVIDENCE
Access	The main access is off Carlton Road where a large double gate is located for vehicular and pedestrian access. A site entrance is also present off Whalley Road to the west, however this is currently blocked off. A further two more former site entrances are present off Russell Road to the south and are also currently blocked off.	
Slope	The site is relatively flat with little topographical variance.	

FEATURE	DESCRIPTION	PHOTOGRAPHIC EVIDENCE
Vegetation/Ecology	Self-seeded vegetation is present across the site. Semi-mature and mature trees are present around the boundary of the site as well as sporadic trees in the centre. A habitat survey will be required to support the planning application.	
Hazardous Material Storage	No above-ground storage tanks (ASTs) or underground storage tanks (USTs) were observed during the preliminary site walkover.	
Asbestos-Containing Material (ACM)	No evidence of ACM was noted during the site walkover.	

FEATURE	DESCRIPTION	PHOTOGRAPHIC EVIDENCE
Polychlorinated Biphenyls (PCBs)	A substation is present on the northern boundary of the site.	
Waste Storage	No hazardous materials storage was observed during the site walkover.	
Drainage	A GPR survey of the site has identified electric and drainage connections across the site. Evidence of disconnected services was present across the site. All manhole covers had been removed and replaced with wooden covers.	

2.3. SURROUNDING AREA

The immediate surrounding area land uses are summarised in Table 3.

Table 3 Surrounding Land Uses

DIRECTION	LAND USE
North	Residential units.
East	Residential units.
South	Residential units.
West	Residential units and Our Ladys Primary School.

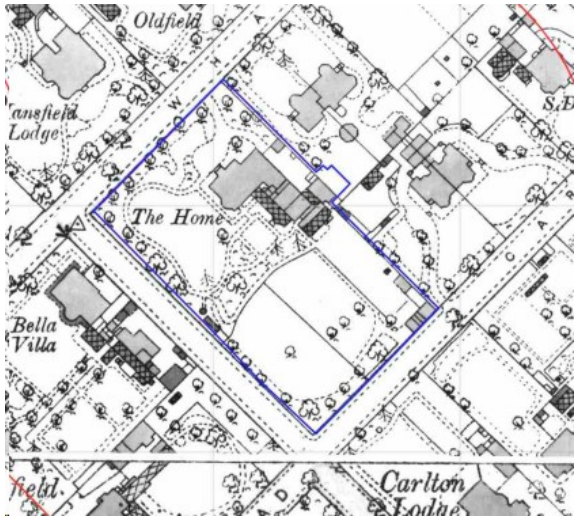
3. SITE HISTORY

3.1. ON-SITE HISTORICAL DEVELOPMENT

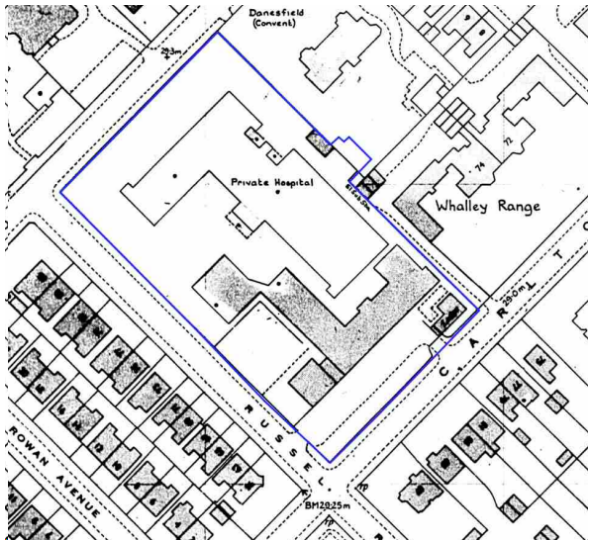
A review of historical mapping and historical aerial imagery pertinent to the site is summarised in Table 4. In addition, historical site features are presented in Drawing No 17-013-003 in APPENDIX IV.

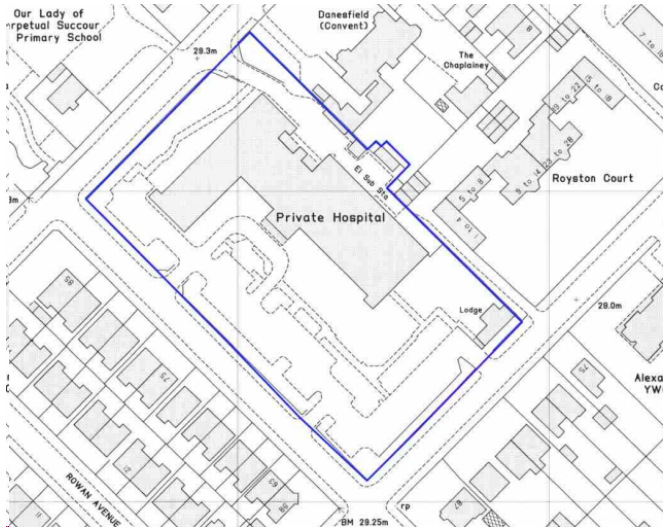
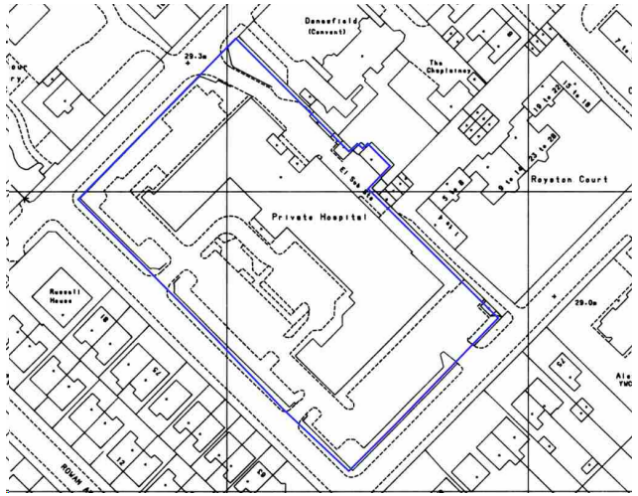
Table 4 Historical Development

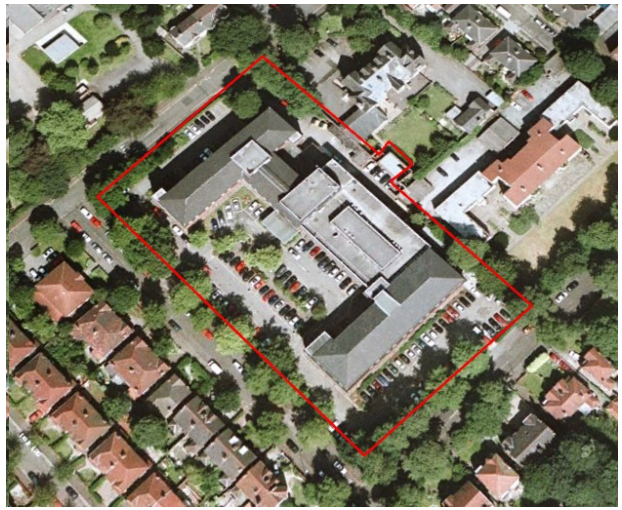
MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1848 **1:10,560**	The site is marked as agricultural land with sporadic trees on the north western boundary of the site. Whalley Street forms the north western boundary of the site.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1889 **1:2,500**	A building has been marked in the north labelled 'The Home'. Smaller buildings are marked in the north and east. The rest of the site is marked as associated gardens with trees and tracks across the area. A driveway and entrance to the building are marked in the north.	
1907 **1:2,500**	The trees and tracks are no longer marked. The remaining boundaries are still present in the southeast.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1922 **1:2,500**	The boundary walls in the southeast of the site have changed configuration. The smaller structures in the eastern corner are no longer marked.	
1932 **1:2,500**	The original building has been extended towards the east. A separate building in the east is connected to the original building by a walkway. A chapel has been marked adjoining the original building. Trees are marked across the site. An additional entrance has been marked on the eastern boundary.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1949 **1:1,250**	The site has been marked as 'St Joseph's Hospital' with one large building covering the majority of the site. A courtyard is present in the centre of the building. The trees are no longer marked.	
1980 **1:1,250**	The building has been split into two and has now been marked as 'Private Hospital'. The entrance in the north is no longer marked with the main entrance on the eastern boundary. An electrical substation is marked on the north eastern boundary.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1986 **1:1,250**	One main building remains marked. A series of paths are marked across the rest of the site. A smaller building in the eastern corner is marked as the lodge.	
1991 **1:1,250**	The building has been extended. The lodge is no longer marked in the east.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
2003 **Google Earth Image**	Google Earth Imagery from 2003 shows a large building which covers the majority of the site. Hardstand car parking is available around the boundaries and in the centre. Semi-mature trees are present around the boundaries and in the centre.	
2020 **Google Earth Image**	In 2020 the building was demolished. Hardstand cover is site-wide, with trees around the boundaries of the site. The site remains the same until the present day.	

3.2. SUMMARY OF ON-SITE HISTORICAL DEVELOPMENT

The following summary points have been highlighted after a detailed review of the historical mapping series.

3.2.1. POTENTIAL HISTORICAL CONTAMINATION ISSUES

- Former Hospital – Heavy metals, Non-volatile Polyaromatic Hydrocarbons (PAH), Total Petroleum Hydrocarbons (TPH), Volatile Organic Compounds (VOCs).
- Made Ground (associated with historic development) – heavy metals, Asbestos Containing Material (ACM), PAH, TPH, and volatile compounds.

3.2.2. POTENTIAL HISTORICAL GEOTECHNICAL ISSUES

- Potential for deep and variable Made Ground in area of former buildings.
- Due to the age and type of building there may have been basements historically, in addition to relict foundations.

3.3. OFF-SITE HISTORICAL DEVELOPMENT

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 250 m radius of the Site is summarised in Table 5.

Table 5 Surrounding Historical Development

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Pond Then: no longer marked	200 m	Pre 1848–Pre 1905 Pre 1905–Present	South
Allotment Gardens Then: no longer recorded	20 m	Pre 1932–Pre 1980 Pre 1980–Present	West

3.4. PLANNING HISTORY

E3P has reviewed online planning records held by Manchester City Council, and no environmentally pertinent information has been obtained for the site.

3.5. ANECDOTAL INFORMATION

A web-based search of the subject site has recovered the following photographs in Table 6, courtesy of Historic England.

Table 6 Summary of Anecdotal Information

PLATE 1 – Historic England Aerial Photo Explorer (1945)



3.6. PREVIOUS REPORTS

E3P are not aware of any previous reports for this site.

4. ENVIRONMENTAL SETTING

4.1. GEOLOGY

The British Geological Survey (BGS) map (Sheet 85) for the Site (1:50,000, Solid and Drift editions) and online records indicate the area is underlain by the geological sequence presented in Table 7.

Table 7 Summary of Underlying Geology

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Drift	Glaciofluvial Sheet Deposits	SAND and GRAVEL	Secondary A
Solid	Wilmslow Sandstone Formation	SANDSTONE	Principal

E3P has reviewed the BGS database, which identified a borehole in close proximity, from which to compare the published geology above.

The borehole logs are summarised in Table 8 below.

Table 8 Summary of BGS Borehole Records

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
280m W (Ref: SJ89NW1698)	4.87 m	0.00 – 1.40 m	SAND 1.40 – 4.20 m CLAY 4.20 – 4.87 m	Not encountered
285m W (Ref: SJ89NW1697)	4.57 m	0.00 – 1.20 m	GRAVEL 1.20 – 3.65 m CLAY 3.65 – 4.57 m	Not encountered

No faults have been recorded within proximity of the site.

4.2. HYDROGEOLOGY

The Groundsure report indicates that the site is not located within a groundwater source protection zone.

Furthermore, there are no groundwater/potable abstractions within 1 km.

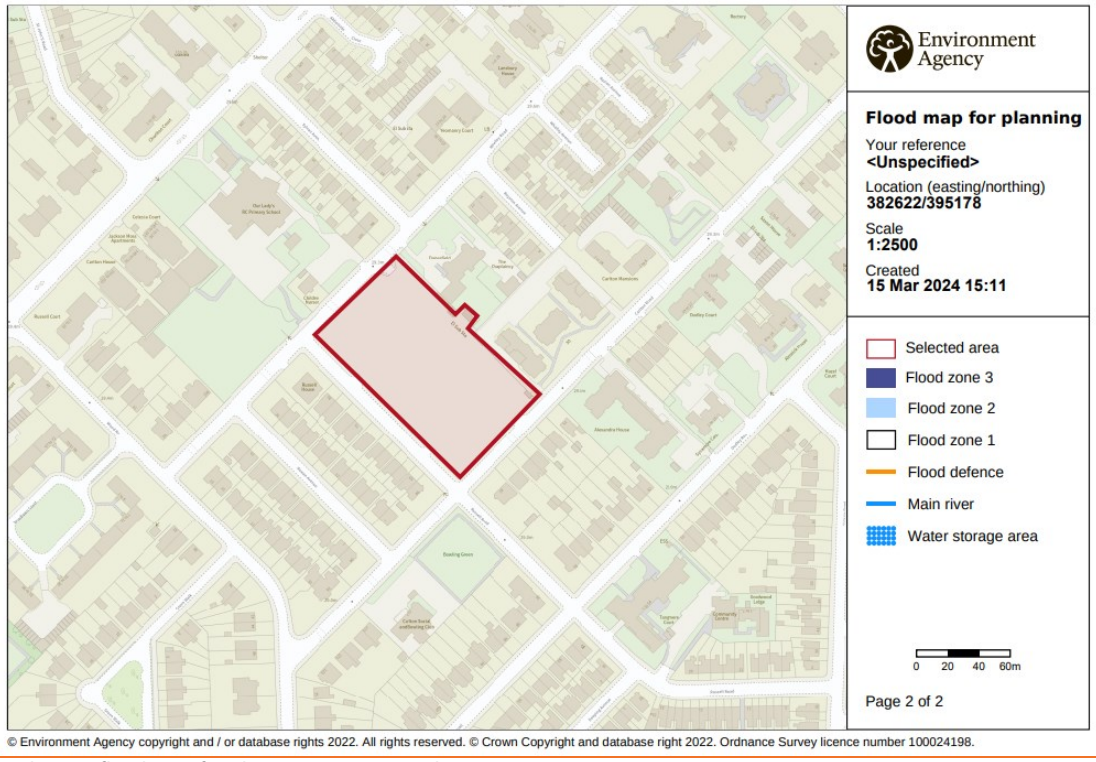
4.3. HYDROLOGY

There are no surface water features within 250 m.

The site is located within a currently defined “Flood Risk Zone 1”, defined as land assessed as having less than 1 in 1,000 annual probability of river or sea flooding (< 0.1%) and, as such, is considered to be unaffected by river flooding.

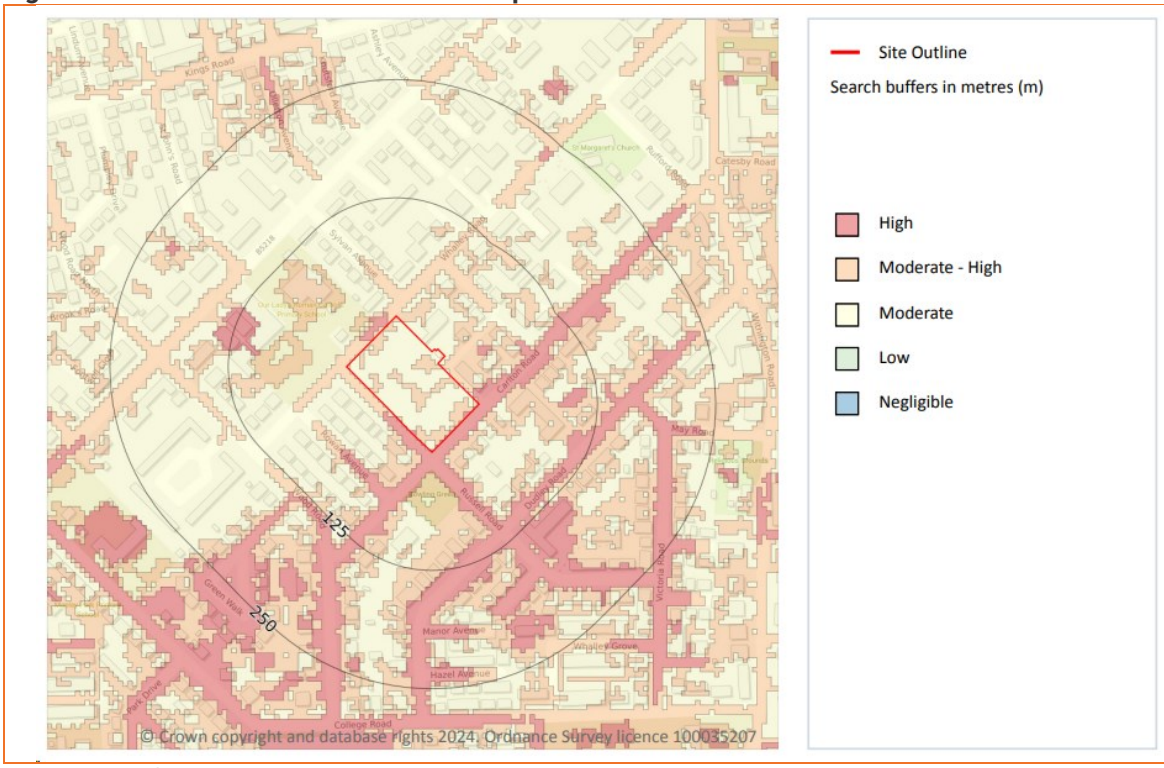
In addition, the Groundsure report states that the site is an area of low to moderate potential for groundwater flooding at the Site. The Environment Agency (EA) surface water flood risk map and Groundsure groundwater flood risk map for the site is presented in Figure 2 and Figure 3 overleaf.

Figure 2 EA Flood Risk Map – Surface Water



Source - https://flood-map-for-planning.service.gov.uk/

Figure 3 Groundsure Flood Risk Map - Groundwater



Source – Groundsure mapping

4.4. RADON RISK POTENTIAL

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

4.5. LANDFILL SITES

No historic or active landfills have been recorded within 250 m.

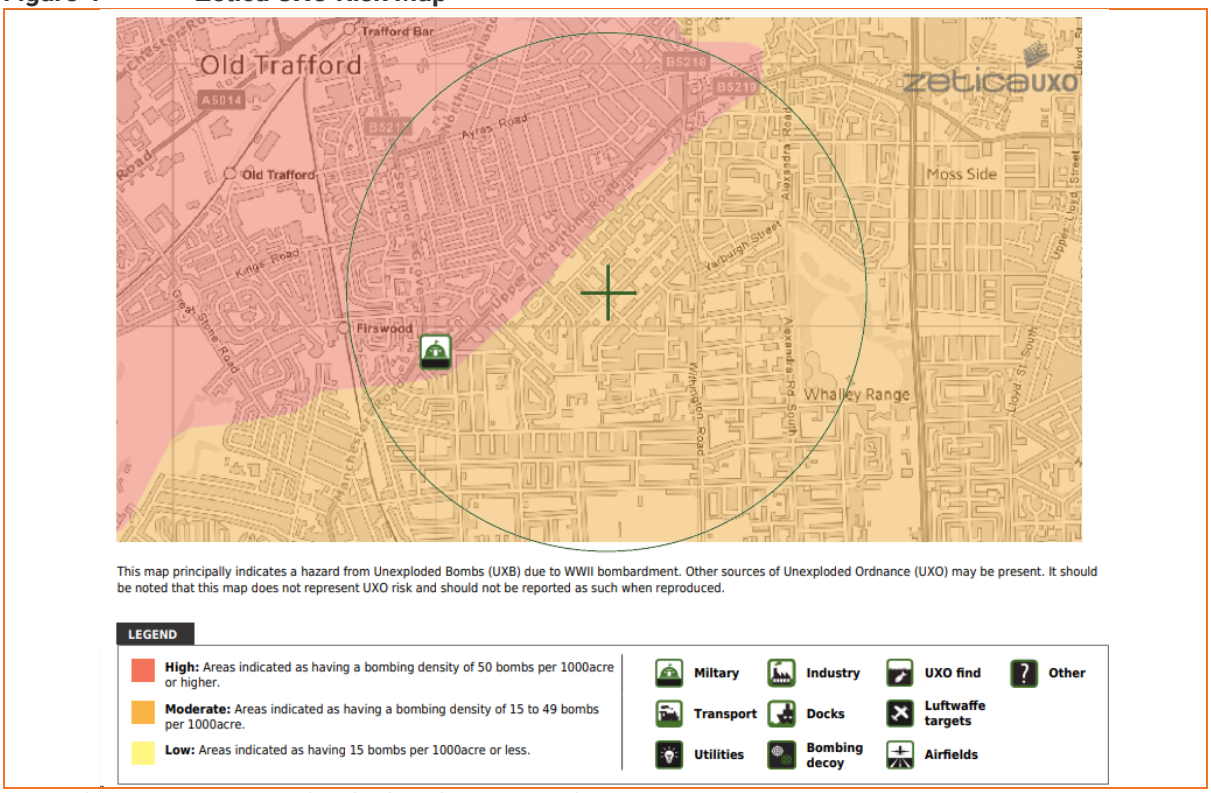
4.6. WASTE MANAGEMENT LICENSES AND ENVIRONMENTAL PERMITS

No Waste Management Licenses or Environmental Permits have been identified in the environmental database for the site and surrounding area.

4.7. UNEXPLODED ORDNANCE

The regional unexploded bomb risk map from Zetica (2014) indicates that the Site is in an area of Manchester at moderate risk from possible unexploded ordnance (UXO) resulting from the Second World War. The Zeticia UXO Risk Map is presented in Figure 4.

Figure 4 Zetica UXO Risk Map



Source - https://zeticauxo.com/downloads-and-resources/risk-maps/

A preliminary desk study assessment was carried out by Zetica in March 2024, this concluded that there were no pre-WWI military activity or WWI military activity on the site. It also identified that there was no WWII military activity identified on the site, however there were numerous WWII Strategic Targets within 5km of the site. Records indicate that several High Explosive (HE) bombs fell in close to the site.

4.8. INDUSTRIAL LAND USES

The site is located within a predominantly industrial area; therefore several industrial land uses have been identified within a 250m radius of the site, summarised in Table 9.

Table 9 Industrial Land Uses

INDUSTRIAL LAND USE	DISTANCE	DIRECTION	STATUS
Electrical Substation	Site	–	Active
Electrical Substation	86 m	North	Active
Electrical Substation	126 m	Southeast	Active
Kevin Foy Production	153 m	East	Active
Electrical Substation	174 m	East	Active
Electrical Substation	177 m	Southwest	Active

4.9. SITE SENSITIVITY ASSESSMENT

The site is assessed to be located within a "Moderate" sensitivity setting, as discussed in Table 10.

Table 10 Site Sensitivity Assessment

SENSITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	None identified.	Low
Distance to the Closest Groundwater Abstraction Point	None were identified within 1 km.	Low
Aquifer Classification in Superficial Drift Deposits	Secondary A.	Moderate
Aquifer Classification in Bedrock	Principal. However in the absence of any potable groundwater abstraction, the overall risk is reduced.	Moderate
Is the Site Underlain by Low-Permeability Drift to Depths in Excess of 10 m?	BGS records Glaciofluvial sheet deposits however the depths are unknown.	Moderate
Is the Site Located Within 50 m of a Surface Watercourse?	None recorded.	Low
Sensitive Land Uses	The site is located within an SSSI Impact Risk Zone however a consultation is not required. The site is located in the Whalley Range Conservation Area.	Low
Sensitive Ecological Receptors	None identified.	Low
OVERALL SITE ENVIRONMENTAL SENSITIVITY		**Moderate**

4.10. REGULATORY DATABASE

The information summarised in Table 11 has been obtained from a commercially available environmental database. The summary table only includes records from within 250 m of the subject site and is not otherwise detailed in the report.

Table 11 Summary of Environmental Data

RECORD	ENTRIES WITHIN 250 M	DETAILS
Contaminated Land Register Entries and Notices	0	None identified.
Authorised Industrial Processes (IPC/IPPC/LAPPC)	1	201 m SE – TD Barnes, Wate oil Burner (Part B Permit).
Fuel Stations Entries	0	None identified.
Licensed Radioactive Substances	1	49 m N, Bupa Hospital – disposal of radioactive waste.
Enforcements, Prohibitions or Prosecutions	0	None identified.
Discharge Consents	2	199 m W sewage discharge to Ousel Brook. 201 m w sewage discharge to River Mersey.
Pollution Incidents	0	None identified.
Consents Issued Under the Planning (Hazardous Substances) Act 1990	0	None identified.
Control of Major Accident Hazard (COMAH) Sites	0	None identified.

5. PRELIMINARY GEOTECHNICAL ASSESSMENT

5.1. GEOTECHNICAL DATA

Geotechnical data presented within a commercially available environmental database is summarised in Table 12.

Table 12 Summary of Geotechnical Data

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

5.2. ARTIFICIAL LANDFORM AND GEOMORPHOLOGY

Based on the initial geological assessment, a review of available topographic data and pertinent mapping, E3P has undertaken a preliminary geomorphological evaluation of the landform.

The site is relatively flat and has little topographical variance this is likely due to historical development and the need for a level development platform, it is likely that significant depths of Made Ground will be present.

5.3. GROUND CAVITIES AND SINK HOLES

Information within the Groundsure Report states the site is within an area of no hazard to very low hazard from rock solubility.

5.4. PRELIMINARY GEOTECHNICAL ASSESSMENT

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

- Given the developed nature of the site, it is likely that there will be potential deep and variable Made Ground fill deposits across the site.
- Obstructions are likely to be preset within the Made Ground including relict foundations, possible basements associated with the older structures, the house and hospital, which will require grubbing out before construction of the proposed development.
- Earthworks are likely to be required to prepare the site for redevelopment.

6. INITIAL CONCEPTUAL SITE MODEL

Under EA LCRM (updated June 2023) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), and BS EN ISO 21365:2021 (Soil Quality – Conceptual models for potentially contaminated sites), E3P has developed a Tier 1 risk assessment comprising an initial conceptual site model (CSM) to identify potential contamination sources, migration pathways and receptors within the study area. An initial screening of the on and potential off-site sources of contamination has been undertaken in Table 13, with the more detailed initial CSM included overleaf as Table 14.

Table 13 Initial Contaminant Source Screening

SOURCE	SOIL	GROUNDWATER	GROUND GAS
ON-SITE			
Made Ground	Heavy metals, PAH, TPH, VOC, ACM	Heavy metals, PAH, TPH, VOC	Methane, Carbon Dioxide
Former Hospital	Heavy metals, PAH, TPH, VOC	Heavy metals, PAH, TPH, VOC	N/A
Former Buildings	ACM	N/A	N/A
OFF-SITE			
Historical Allotment Gardens	Heavy metals, pesticides, TPHs, PAHs – limited due to distance	N/A	N/A

After reviewing all environmentally pertinent information and the potential contaminant sources, the following initial conceptual site model has been developed for the site.

Table 14 Initial Conceptual Model

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	LEVEL OF RISK	JUSTIFICATION
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
HUMAN HEALTH						
Made Ground Heavy metals, Non-volatile PAH	Accidental ingestion and/or dermal contact with contaminated soil and/or leachate. **PL1/PL2** Inhalation of contaminated dust. **PL3**	Human Health – construction workers	Likely	Medium	Moderate/Low	No significant sources of contamination has been identified. Made Ground may contain contamination which site personnel have a greater chance of coming into contact with impacted soils. Particularly during excavation and soil recovery works. Site works should be carried out with suitable PPE and intrusive investigation will be required to confirm the findings of the initial CSM.
		Human Health – end users	Likely	Medium	Moderate/Low	
Made Ground VOCs, hydrocarbons, volatile PAHs	Inhalation of vapours. **PL4** Migration through permeable strata and preferential pathways.	Human Health – end users Human Health – Off-site receptors	Low likelihood	Low	Low	No significant source of hydrocarbons or volatile compounds have been identified during the desk study. Intrusive investigation and assessment will be required to determine the level of mitigation measures and/or remediation.
Made Ground Asbestos (Asbestos containing materials (ACM) and loose fibres)	Inhalation (of fibres). Construction works disturbing bound material and releasing fibres. **PL3**	Human Health – construction workers, end land users, and users of adjacent sites	Likely	Medium	Moderate/Low	Due to historical development Made Ground may contain ACM and loose fibres. Intrusive investigation will be required to determine the presence of ACMs and develop appropriate mitigation measures.

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	LEVEL OF RISK	JUSTIFICATION
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
Made Ground Sulphate from potential ash within the Made Ground.	Sulphate attack on concrete. **PL6**	Building concrete	Low likelihood	Low	Low	Due to the likely presence of Made Ground, the potential for sulphate in ash deposits is high which may impact the proposed building concrete. Intrusive investigation will be required to assess the concrete classification.
Made Ground Organic contaminants such as hydrocarbons, solvents	Ingestion of tainted water supply. **PL7**	Human Health – End Users Water pipeline	Low likelihood	Low	Low	Unlikely probability as significant contamination is not anticipated at pipeline depth across the site (0.75–1.35 m). Intrusive investigation is required to confirm the conceptual site model.
Made Ground Phytotoxic contaminants	Direct contact (plant uptake). **PL8**	Flora	Low likelihood	Low	Low	Made Ground across the site may contain phytotoxic contamination which may be taken up by flora in soft landscaping/gardens. Intrusive investigation is required.
CONTROLLED WATERS						
Groundwater Leaching of Mobile phase contaminants from Made Ground	Contact with contaminated groundwater. **PL2**	Human Health – site personnel	Unlikely	Medium	Moderate/Low	No significant sources of mobile phase contamination has been identified on site. Made Ground has leaching potential depending on the nature of contamination present. An underlying secondary A superficial and principal bedrock aquifer are at higher risk due to the underlying permeable SAND drift deposits. Intrusive investigation and groundwater sampling are required.
	Contaminants leached from the Made Ground and off-site sources may be mobilised to greater distances through advective flow. **PL5**	Human Health – end users	Unlikely	Medium	Moderate/Low	

CONTAMINANT RISK			LIKELIHOOD	SEVERITY	LEVEL OF RISK	JUSTIFICATION
SOURCES	**MIGRATION PATHWAYS**	**RECEPTORS**				
GROUND GAS						
Ground gases (methane and carbon dioxide – Made Ground)	Inhalation of ground gas. **PL4** Accumulation of ground gas in confined spaces (asphyxiation or explosion)	Human Health – site personnel	Low likelihood	Low	Low	Made Ground deposits may generate hazardous ground gases which may migrate through permeable strata to enter proposed buildings. Intrusive investigation and ground gas monitoring are recommended to determine the requirement of any mitigation measures within the proposed development.
		Human Health – end users	Low likelihood	Low	Very low	
		Infrastructure and services	Low likelihood	Low	Very low	
Radon	Inhalation of ground gas. **PL4** Accumulation of ground gas in confined spaces (carcinogenic)	Human Health – site personnel	Unlikely	Low	Very low	Radon mapping has identified the site is within an area at low risk from radon. Radon mitigation measures will not be required.
		Human Health – end users	Unlikely	Low	Very low	

Main exposure pathways:
PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation; PL5 = Vertical / Lateral Migration; PL6 = Corrosion of concrete; PL7=Tainting of water supply; PL8 = Uptake by plants.

Level of Risk
Very Low
Low
Low/Moderate
Moderate
Moderate/High
High

END OF REPORT

APPENDIX I
LIMITATIONS

GENERAL

1. This report and any associated works (together comprising the "Services") were compiled and carried out by E3P for the client (as present in Section 1) under the E3P “Terms of Business” or with those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

2. Unless explicitly agreed otherwise, in writing, this report has been prepared under E3P Standard Terms and Business as included within our proposal to the Client.

3. Project-specific appointment documents may be agreed upon at our discretion and a charge may be levied for both the time to review and finalise appointment documents and also for associated changes to the appointment terms. E3P reserves the right to amend the fee should any changes to the appointment terms create an increased risk to E3P.

4. The report needs to be considered in light of the proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEOENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

5. Coverage: This section covers reports with the following titles or combination of titles: Phase 1; Desktop Study; Geoenvironmental Assessment; Development Appraisal; Preliminary Environmental Risk Assessment; Constraints Report; Due Diligence Report; Geotechnical Development Review; Environmental Statement; Environmental Chapter; Baseline Environmental Assessment; Project Scope Summary Report (PSSR), Program Environmental Impact Report (PEIR), Geotechnical Development Risk Register; Agricultural Land Assessment; Mineral Safeguarding Assessment; Desk Top Coal Mining Risk Assessment; Hydrogeological Appraisal; Construction Environmental Management Plan; and Site Water Management Plan.

6. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the Client), together with (where appropriate) a brief walkover inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. E3P cannot be held responsible for any disclosures that are provided post-production of our report and will not automatically update our report.

7. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for 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, E3P reserves the right to review such information and, if warranted, to modify the opinions accordingly.

8. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.

9. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys completed by suitably qualified and experienced specialists in these fields.

10. E3P does not warrant work/data undertaken/provided by others.

INTRUSIVE INVESTIGATION REPORTS

11. Coverage: The following report titles (or combination) may cover this category of work: Geoenvironmental Site Investigation; Geotechnical Assessment; GIR (Ground Investigation Reports); Preliminary Environmental And Geotechnical Risk Assessment; Preliminary Summary; Coal Mining Risk Assessment, Ground Gas Addendum; and Geotechnical Risk Register.

12. The investigation has been undertaken to provide information concerning either:

    I. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or

    II. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.

13. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

14. Unless otherwise specified in the scope of works, any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for setting out and should be considered indicative only.

15. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.

16. For geotechnical investigations, the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.

17. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.

18. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, 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.

19. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, E3P has used reasonable skill and care to extrapolate conditions between these points based on assumptions to develop our interpretation and conclusions.

20. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation and at the time of the investigation.

21. Conditions can change between investigation points both spatially and over time and these interpretations should therefore be considered indicative. The assessment of extreme weather events and their impact on ground conditions is not within the scope of E3P's work.

22. The risk assessment and opinions provided are based on 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. Specific assumptions associated with the risk assessment process have been outlined within the body or associated appendix of the report.

23. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.

24. Where soil contamination concentrations recorded as part of this investigation are used for commentary on the potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed and the waste classification and any subsequent disposal option agreed upon with licenced subcontractors and/or the relevant regulators.

25. The results of the asbestos testing are factually reported and interpretation is given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and/or trace loose asbestos fibres within the soil matrix at the site.

26. If costs have been included in relation to additional site works, and/or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

27. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.

28. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIATION AND ENABLING WORK STRATEGY REPORTS

29. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected based on the specific development and land use scenario proposed by the Client and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.

30. The outputs of the Detailed Quantitative Risk Assessments are based upon the manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.

31. Before adoption on-site, assessment criteria will need to be discussed and agreed upon with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatoy Authority engagement are not within the control of E3P. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

32. E3P does not accept liability for any subcontract work that has not been completed in strict accordance with an approved E3P Remediation and Enabling Works Strategy.

GEOTECHNICAL DESIGN REPORT (GDR)

33. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS AND BUILD PHASE MITIGATION)

34. These reports are factual and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of earthworks or remedial works.

35. The data is presented and will be compared with assessment criteria.

APPENDIX II
GLOSSARY

TERMS

ACM	Asbestos-containing material	**MMP**	Materials management plan
ADS	Acoustic design statement	**ND**	Not detected
AST	Above-ground storage tank	**NDP**	Nuclear density probe
BGS	British Geological Survey	**NMP**	Noise management plan
BSI	British Standards Institute	**NPSE**	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	**NR**	Not recorded
CA	Coal Authority	**PAH**	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	**PCB**	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	**PI**	Plasticity index
CIRIA	Construction Industry Research Association	**PID**	Photo ionisation detector
CLEA	Contaminated land exposure assessment	**POS**	Public open space
CML	Council of Mortgage Lenders	**PPE**	Personnel protective equipment
CoC	Contaminants of concern	**ProPG**	Professional practice guidance
CSM	Conceptual site model	**QA**	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	**SGV**	Soil guideline value
DWS	Drinking water standard	**SPH**	Separate-phase hydrocarbon
EA	Environment Agency	**SPT**	Standard penetration test
EQS	Environmental quality standard	**SVOC**	Semi-volatile organic compound
FFL	Finished floor level	**TPH**	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	**TPH CWG**	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	**UKWIR**	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	**UST**	Underground storage tank

HCV	Health criteria value	**VCC**	Vibro-concrete column
ICSM	Initial conceptual site model	**VOC**	Volatile organic compound
LEL	Lower explosive limit	**VRSC**	Vibro-replacement stone columns
LMRL	Lower method reporting limit	**VSC**	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	**WHO**	World Health Organisation
MCV	Moisture condition value	**WRAP**	Waste and Resources Action Programme
MIBK	Methyl isobutyl ketone	**WTE**	Water table elevation
m	Metres	**ppm**	Parts per million
km	Kilometres	**mg/m^3**	Milligram per metre cubed
% v/v	Percent volume in air	**m bgl**	Metres below ground level
mb	Millibars (atmospheric pressure)	**m bcl**	Metre below cover level
l/hr	Litres per hour	**mAOD**	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	**kN/m^2**	Kilonewtons per metre squared
ppb	Parts per billion	**µm**	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	**SSRT**	Site Specific Remediation Target
PSD	Particle Size Distribution	**DD**	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	**Mc**	Moisture Content
ρ	Bulk Density	**GPR**	Ground Penetrating Radar
NDP	Nuclear Density Probe	**FFL**	Finished Floor Level
LEL	Lower Explosive Limit	**UKWIR**	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	**LOD**	Limit of Detection
PFAS	Per- and Poly-Fluorinated Substances	**PFOA**	Perfluorooctanoic Acid

APPENDIX III
RISK CLASSIFICATION

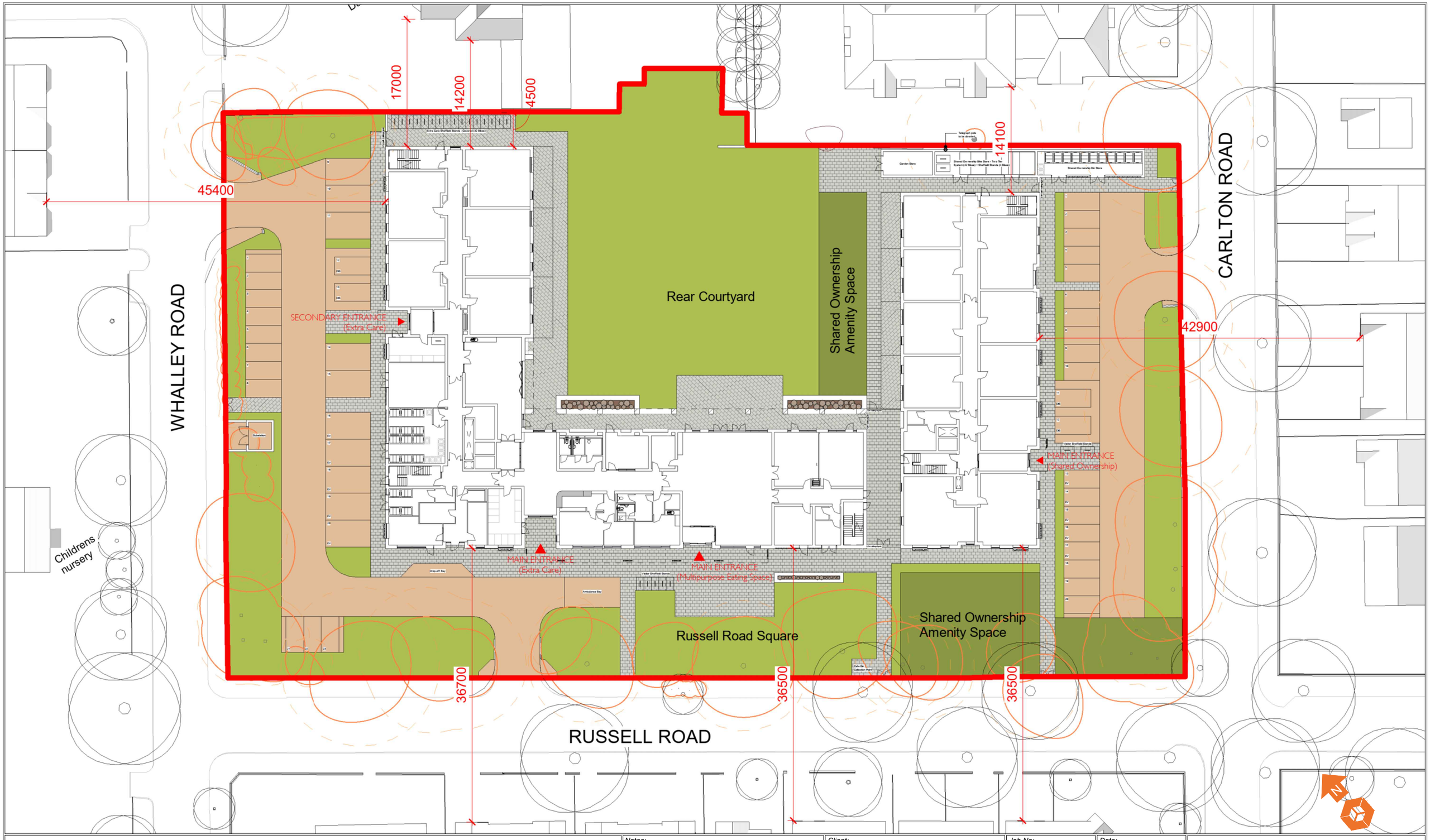
RISK CLASSIFICATION

RISK	DEFINITION
Low	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property.
Low Moderate	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of future redevelopment of the Site.
Moderate	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or undertake further environmental improvements. Redevelopment of the Site will likely require further site investigation.
Moderate High	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment, including intrusive ground investigations.
High	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine the level of risk and associated liability.

APPENDIX IV
DRAWINGS

DRAWING 17-013-001 – SITE LOCATION PLAN





P1	REVB	17.07.2024	CB	EF	EF
P1	REVA	04.04.2024	EB	EF	EF
Phase	Issue	Date	Drawn	Checked	PM

Notes:

Client: Rowlinson

Job No: 17-013

Date: 17.07.2024

Drawing No: 002

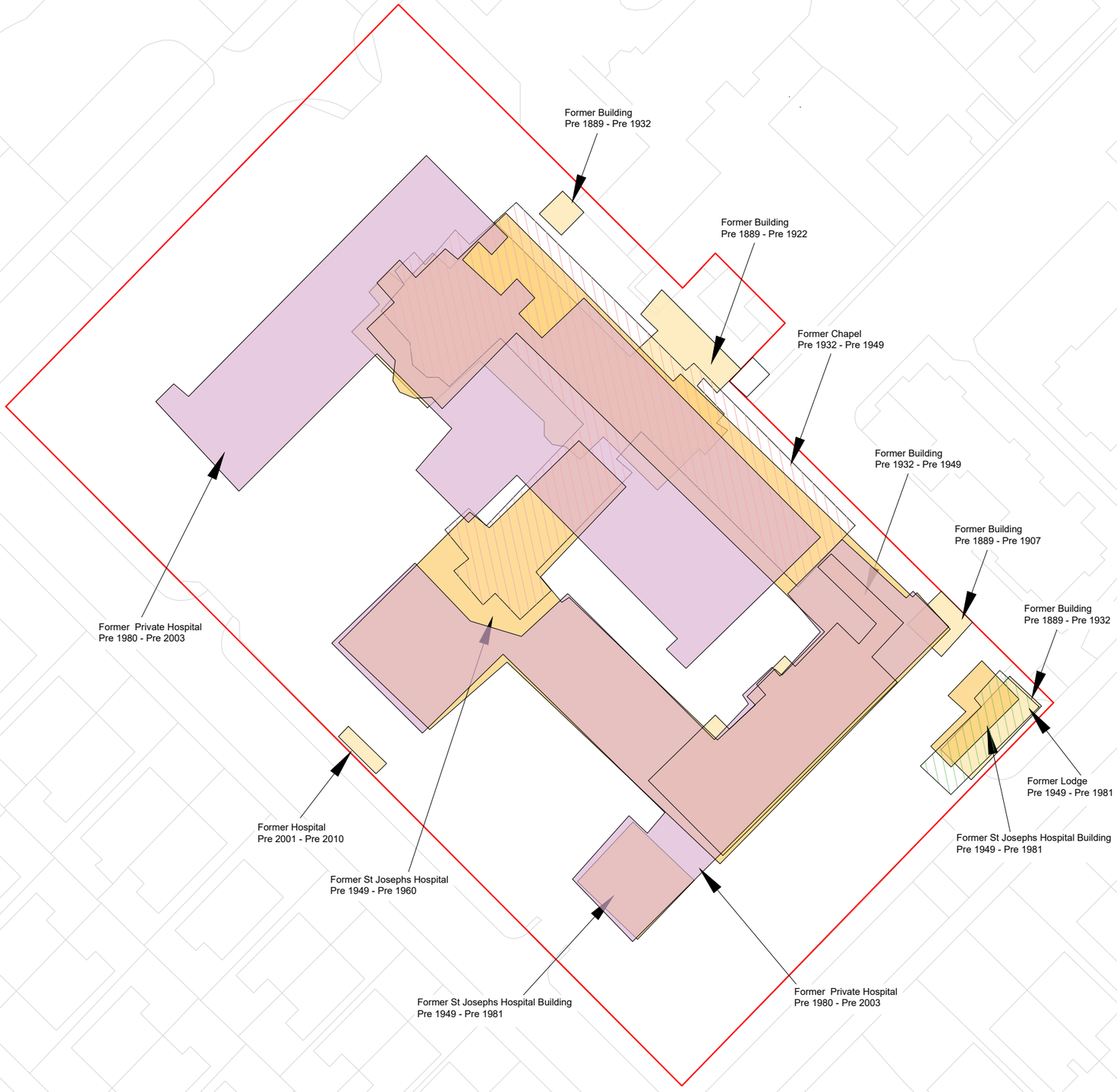
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Job Title: Russell Road Extra Care Housing

Drawing Title: Proposed Development Plan

e3p
Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Historical Features

- Former Chapel
- Former Building
- Former St Josephs Hospital
- Former Private Hospital
- Former Lodge

Notes:

Client: Rowlinson

Job No: 17-013

Date: 21.03.2024

Drawing No: 003

Scale: NTS @ A3

P1	REVA	21.03.2024	OW	HM	EF
Phase	Issue	Date	Drawn	Checked	PM

Job Title: Russell Road Extra Care Housing

Drawing Title: Historical Features Plan

Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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Site Features

- Substation
- Access Points (Blocked)
- Main Entrance
- Hardstanding
- Trees/Vegetation

Notes:

P1	REVA	21.03.2024	OW	HM	EF
Phase	Issue	Date	Drawn	Checked	PM

Client: Rowlinson

Job No: 17-013

Date: 21.03.2024

Drawing No: 004

Scale: NTS @ A3

Job Title: Russell Road Extra Care Housing

Drawing Title: Site Features Plan

e3p
Environmental Engineering Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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APPENDIX V
PHOTOGRAPHS

PLATE 1 LOOKING EAST ACROSS THE SITE



PLATE 2 SOUTH OF THE SITE



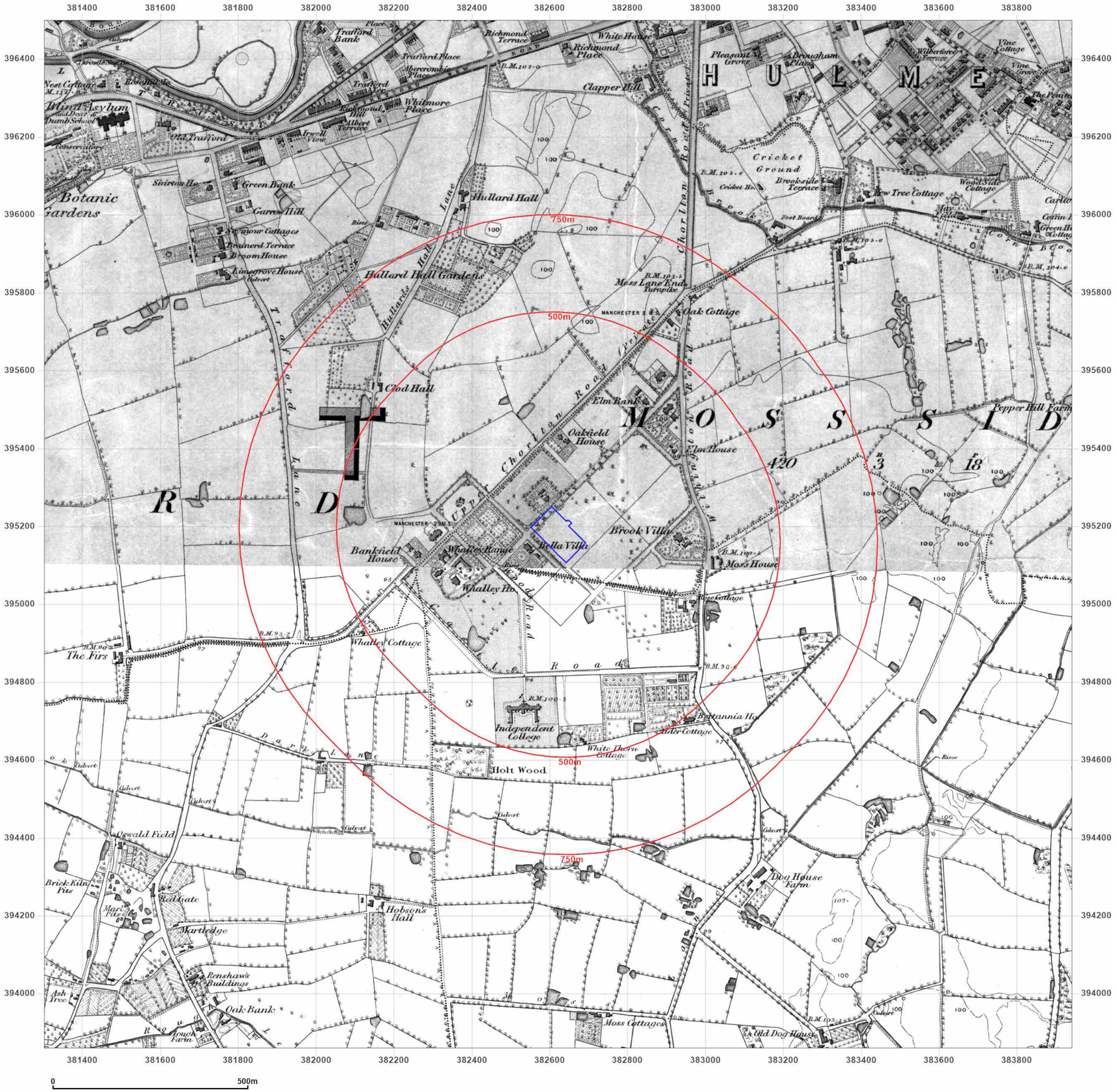
PLATE 3 BLOCKED ENTRANCE ON THE WESTERN BOUNDARY



PLATE 4 LOOKING NORTH ACROSS THE SITE



APPENDIX VI
HISTORICAL MAPS



Groundsure INSIGHTS

Site Details:

1, WHALLEY AVENUE,
WHALLEY RANGE,
MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

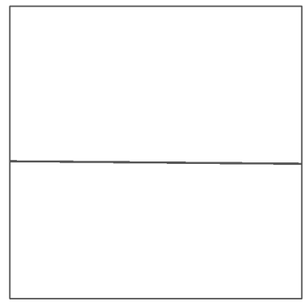
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Printed at: 1:10,560

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Revised N/A
Edition 1848
Copyright N/A
Levelled N/A



Surveyed 1845
Revised 1849
Edition 1849
Copyright N/A
Levelled N/A

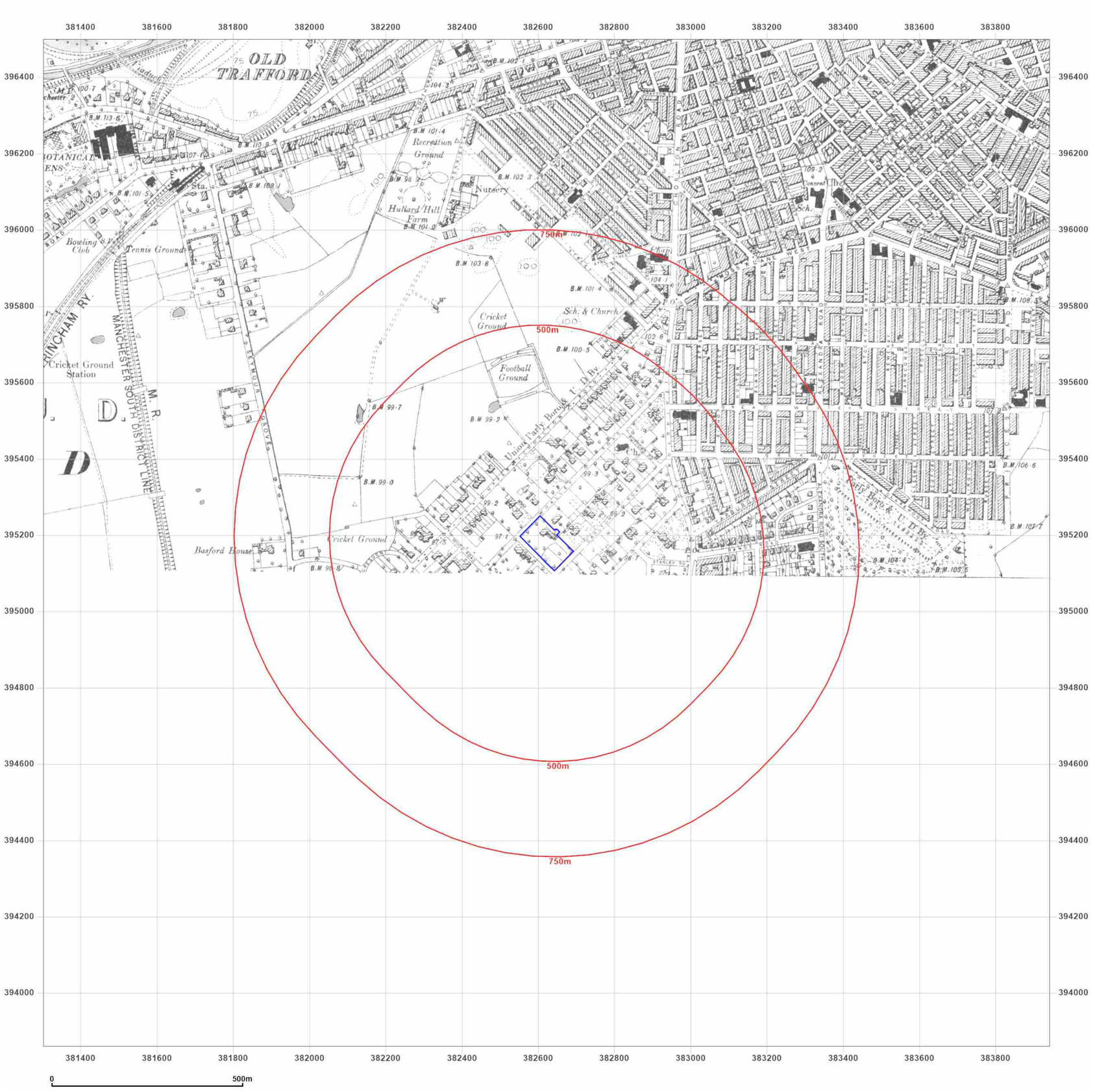
Powered by OS

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

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Production date: 13 March 2024

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



Groundsure INSIGHTS

Site Details:

1, WHALLEY AVENUE,
WHALLEY RANGE,
MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

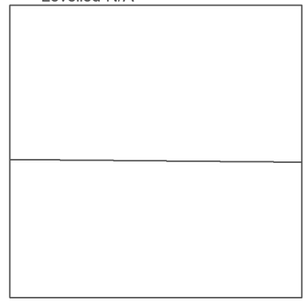
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Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1894
Revised 1896
Edition 1896
Copyright N/A
Levelled N/A



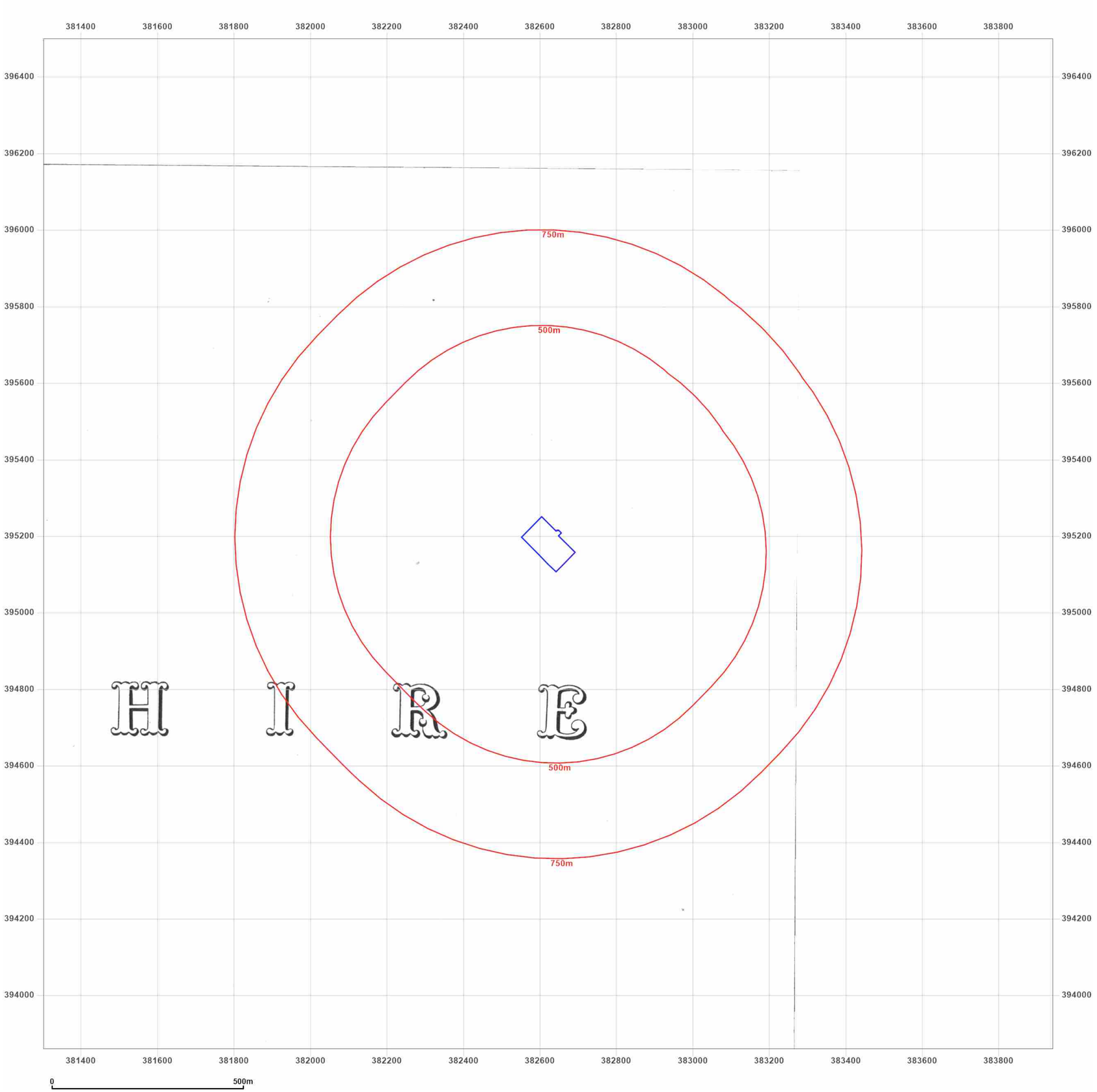
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Production date: 13 March 2024

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



Groundsure INSIGHTS

Site Details:

1, WHALLEY AVENUE,
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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

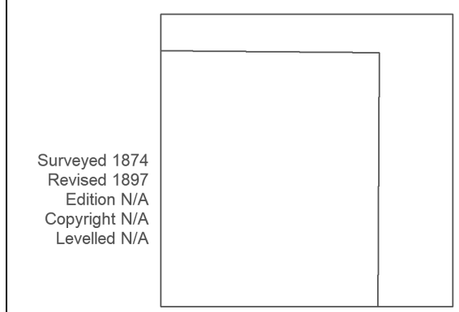
Map Name: County Series

Map date: **1897**

Scale: 1:10,560

Printed at: 1:10,560

N
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Groundsure INSIGHTS

Site Details:

1, WHALLEY AVENUE,
WHALLEY RANGE,
MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

Surveyed 1892
Revised 1905
Edition 1905
Copyright N/A
Levelled N/A

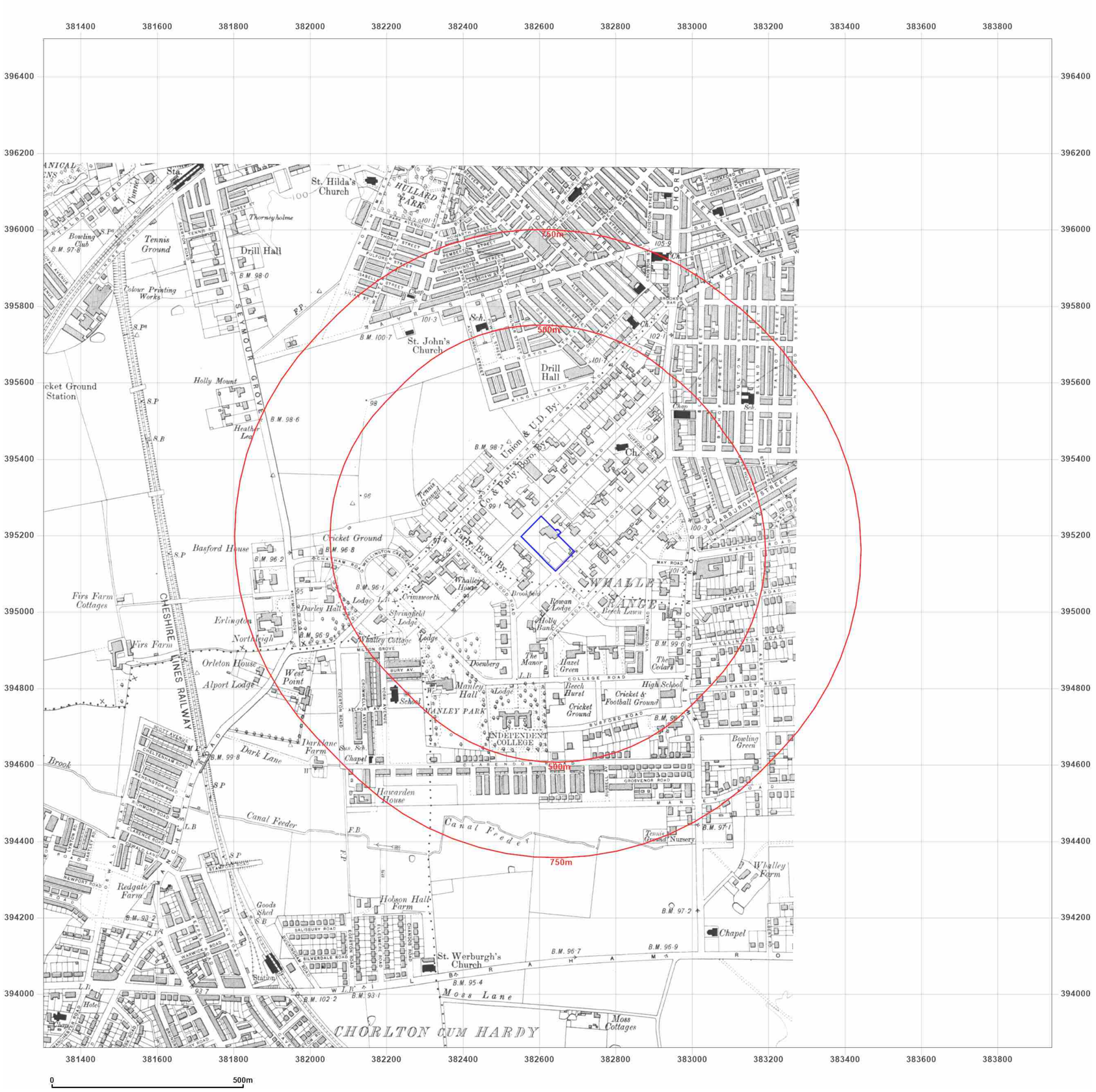
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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

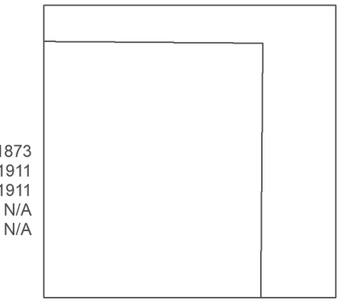
Map Name: County Series

Map date: **1911**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1873
Revised 1911
Edition 1911
Copyright N/A
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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1844
Revised 1916
Edition 1923
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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

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

Surveyed 1844
Revised 1916
Edition 1923
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Site Details:

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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

Map date: **1932-1934**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1932
Edition 1932
Copyright N/A
Levelled 1927

Surveyed 1844
Revised 1934
Edition 1934
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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

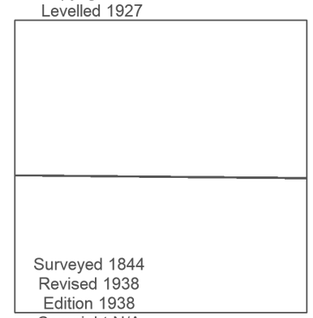
Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1844
Revised 1938
Edition 1938
Copyright N/A
Levelled 1927



Surveyed 1844
Revised 1938
Edition 1938
Copyright N/A
Levelled 1927

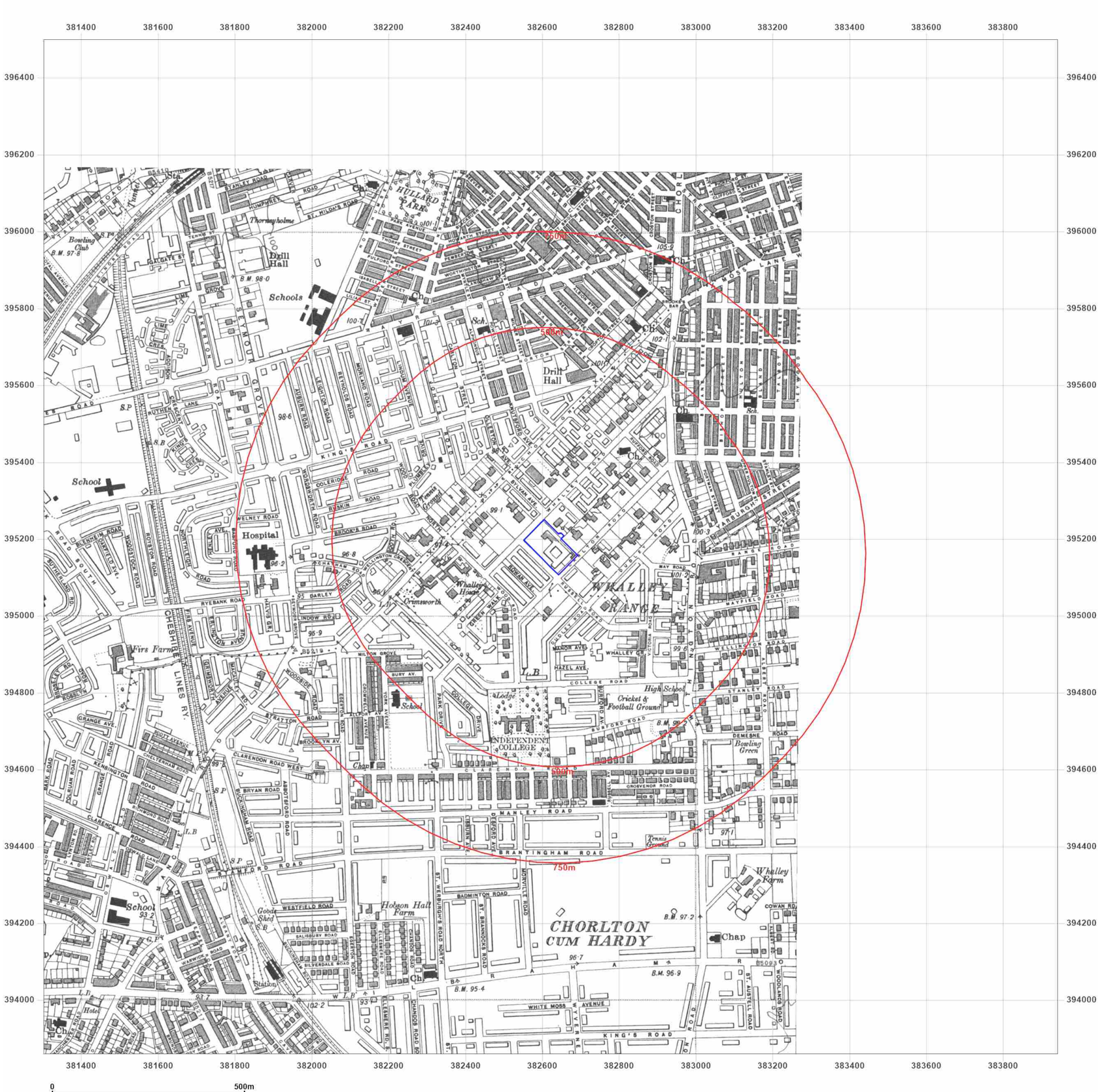
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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

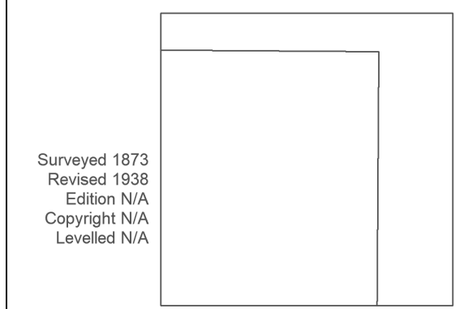
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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

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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: Provisional

Map date: **1955-1956**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1956
Revised 1956
Edition N/A
Copyright 1956
Levelled N/A

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

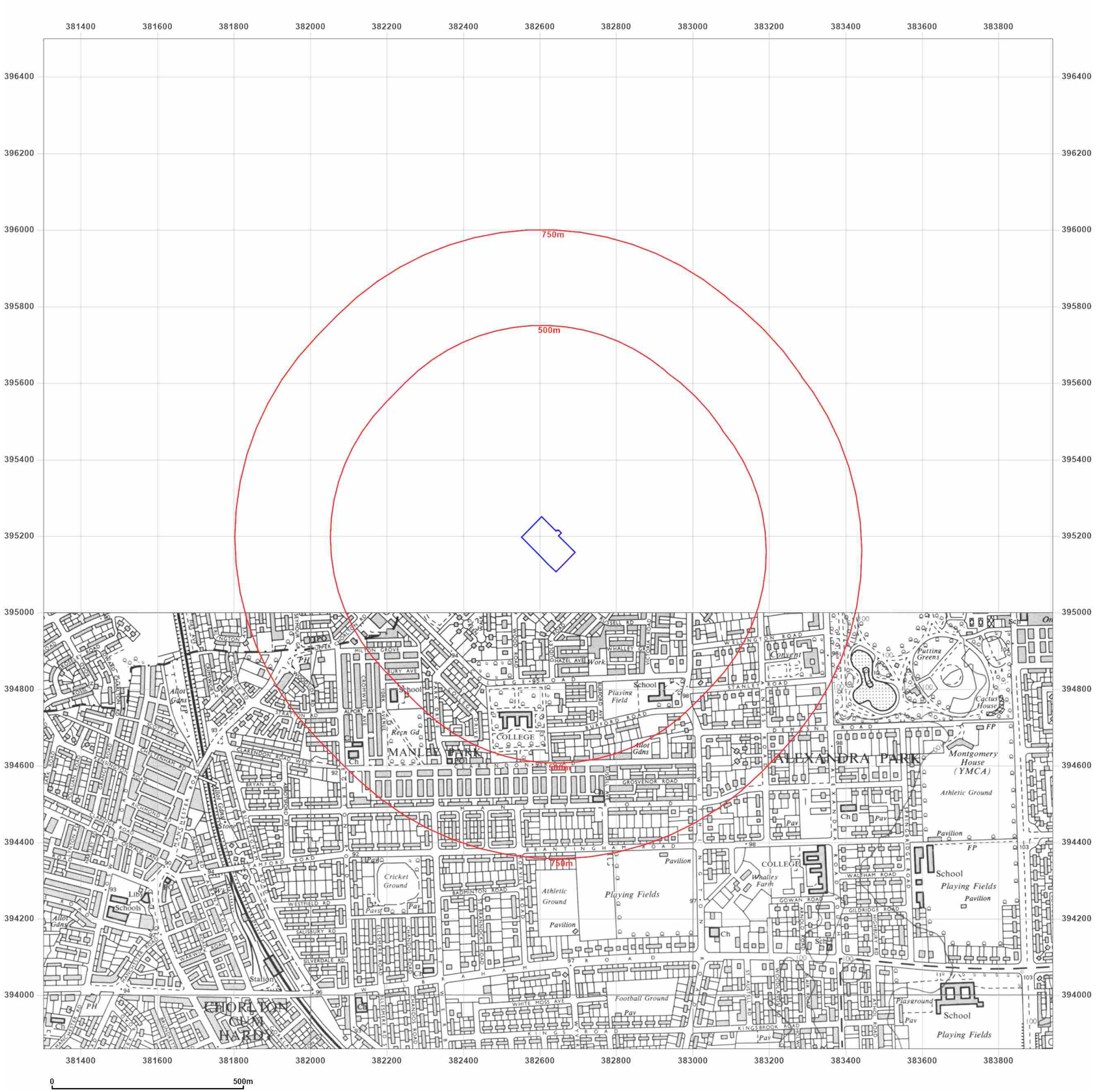
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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: Provisional

Map date: **1966**

Scale: 1:10,560

Printed at: 1:10,560

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

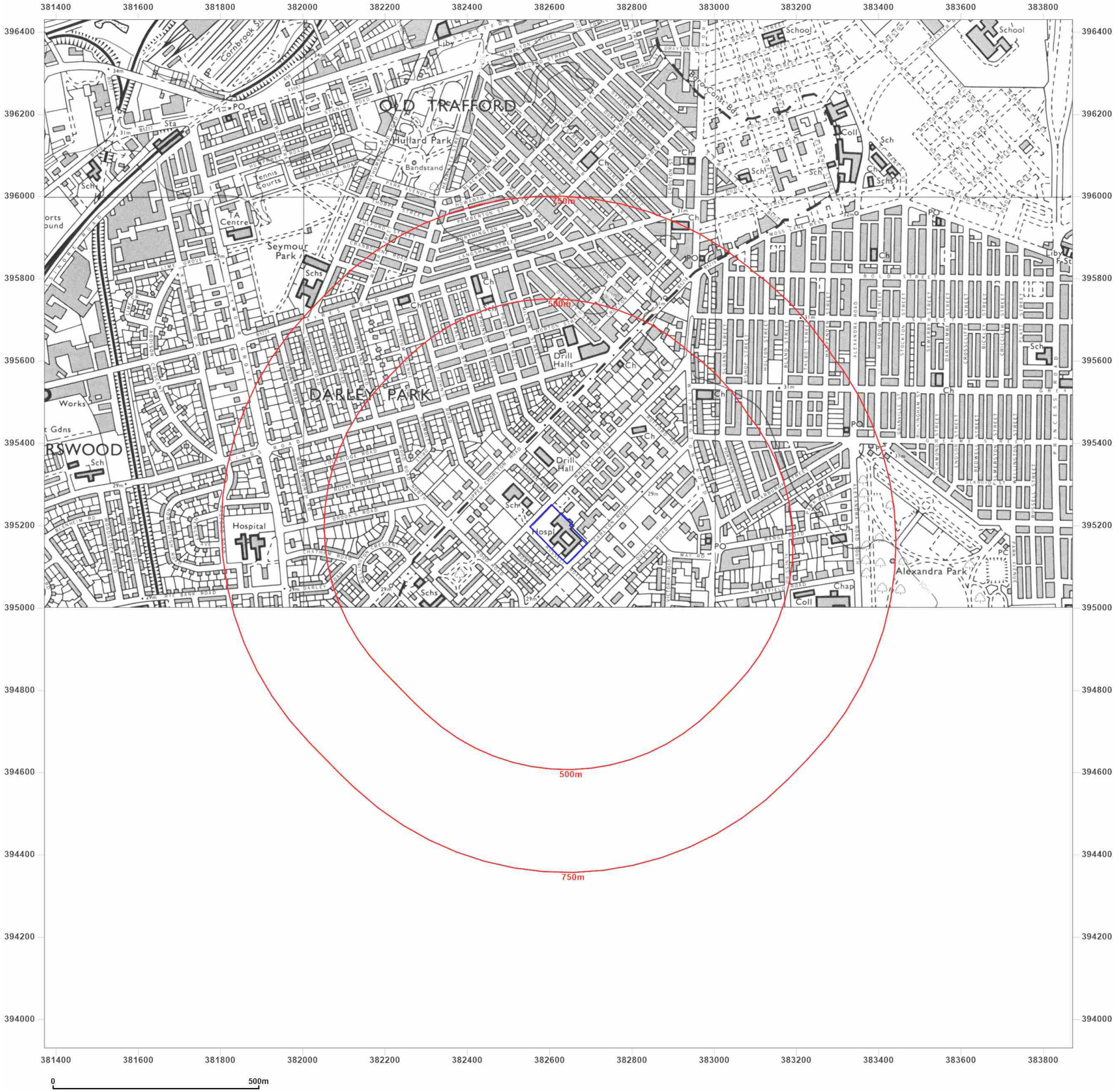
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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1972**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1971
Revised 1972
Edition N/A
Copyright 1972
Levelled 1972

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1980-1981**

Scale: 1:10,000

Printed at: 1:10,000

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

Surveyed 1977
Revised 1981
Edition N/A
Copyright 1981
Levelled 1976

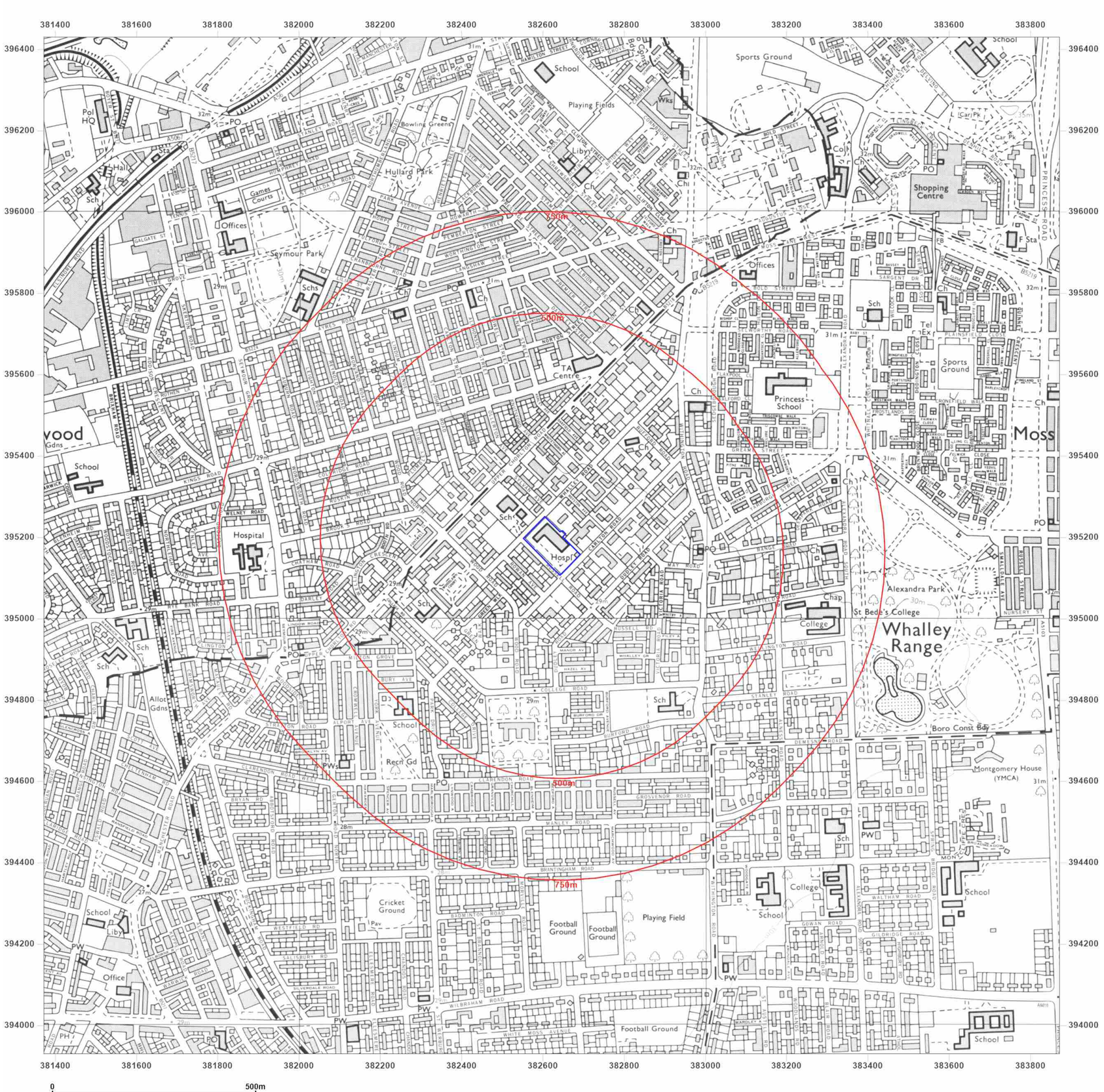
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1985-1988**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1983
Revised 1985
Edition N/A
Copyright 1985
Levelled 1981

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

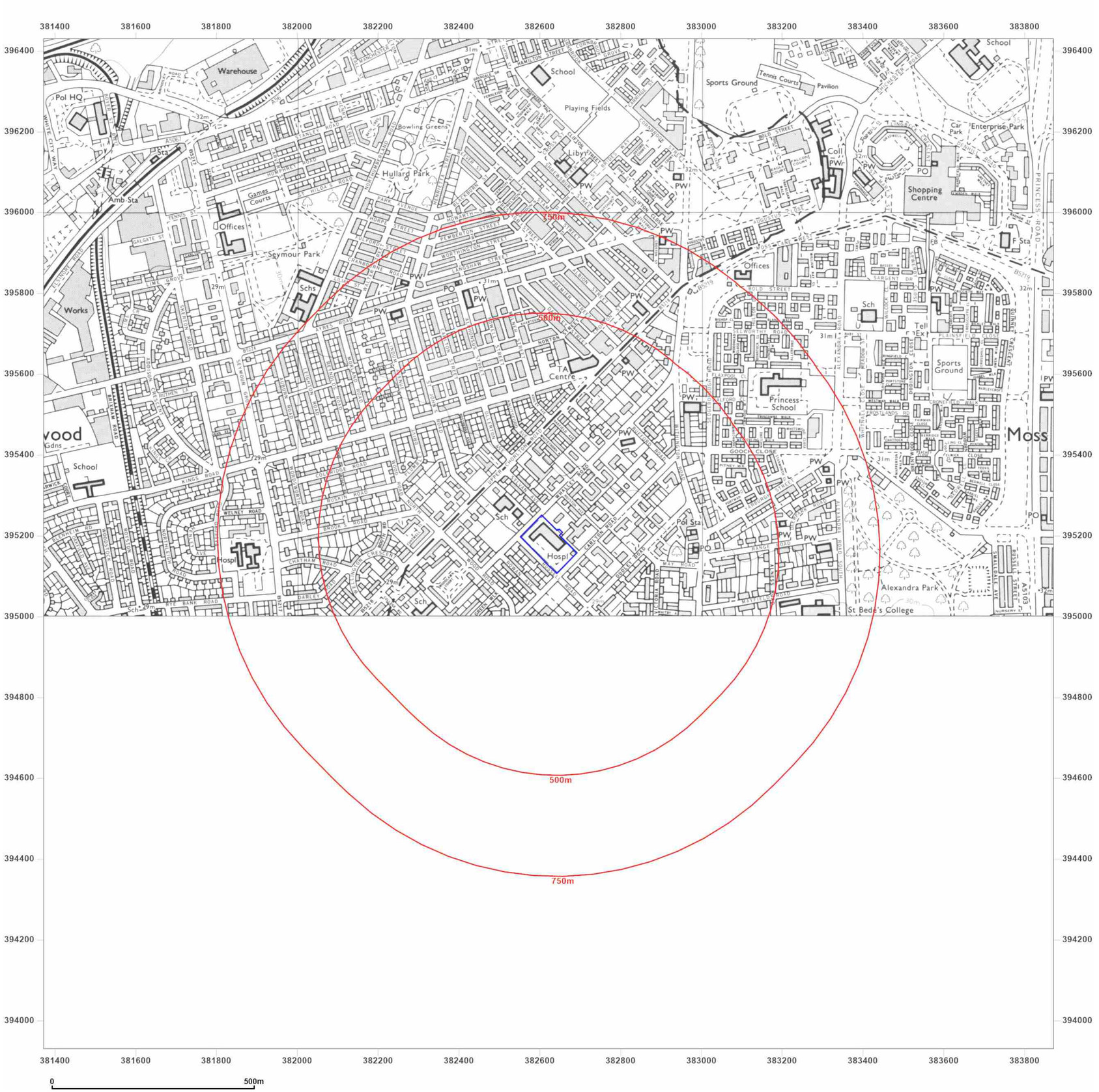
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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1988**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1986
Revised 1988
Edition N/A
Copyright 1988
Levelled 1981

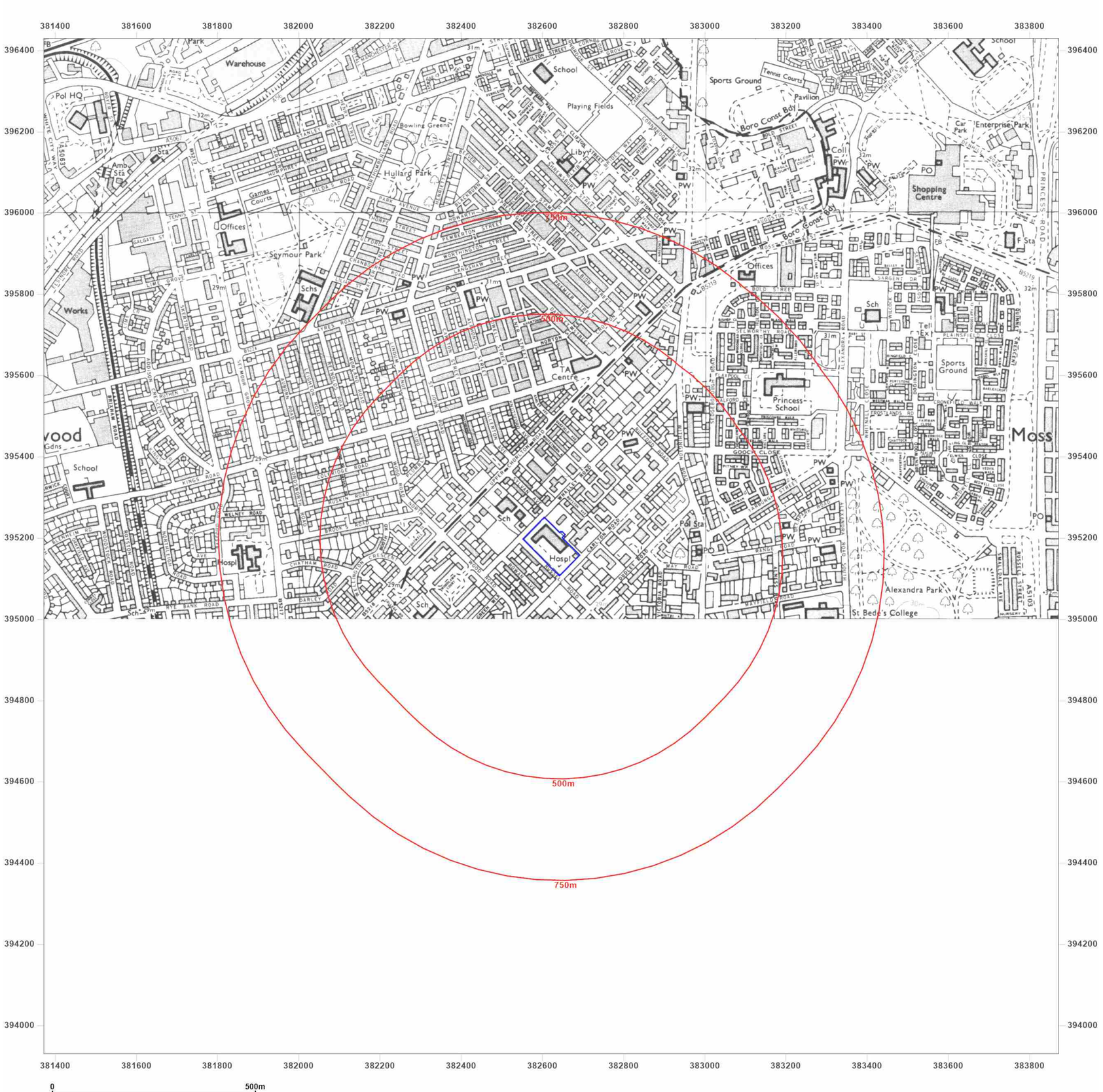
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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1994**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1986
Revised 1994
Edition N/A
Copyright 1994
Levelled 1981

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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
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2001

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

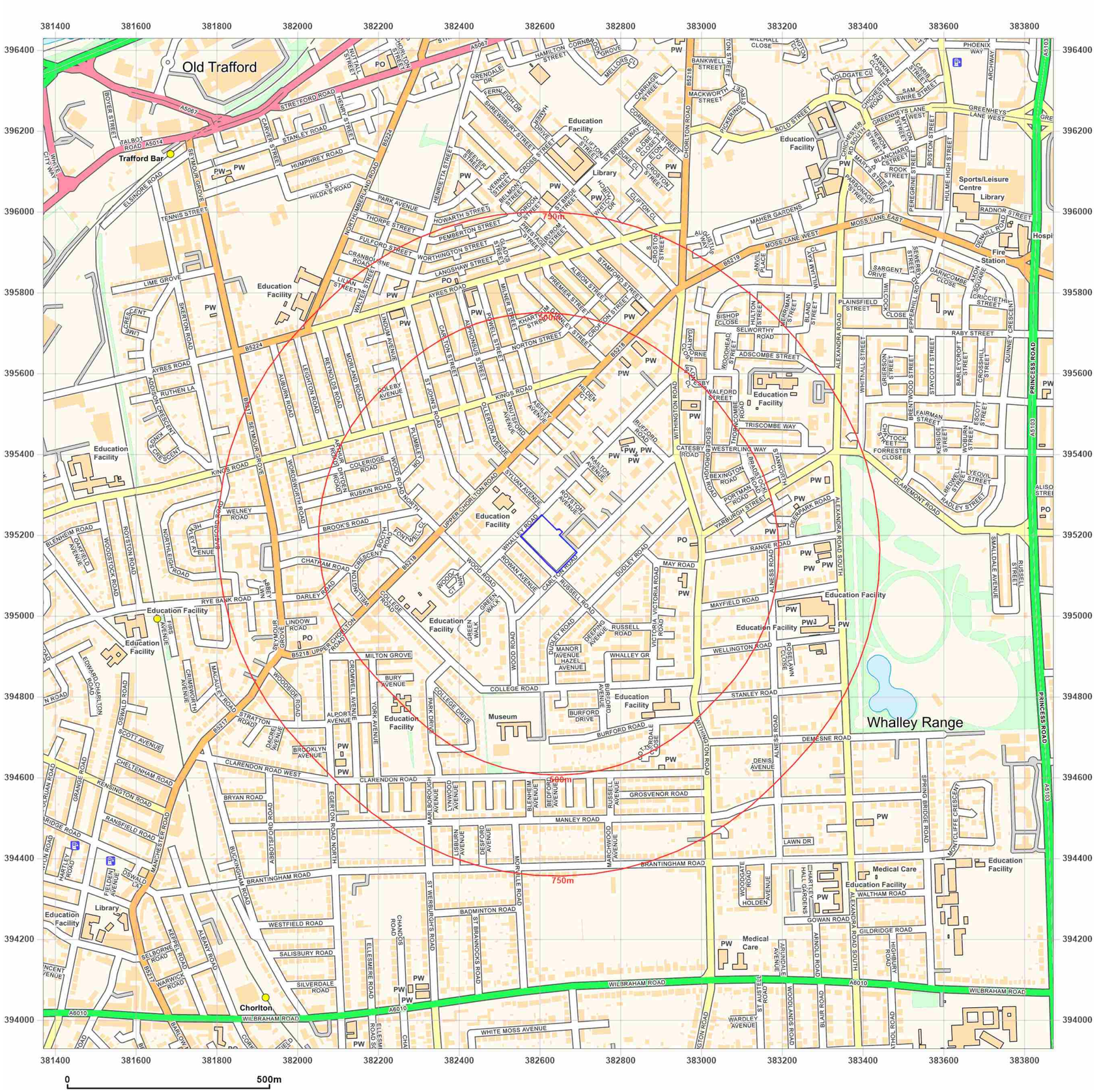
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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **2024**

Scale: 1:10,000

Printed at: 1:10,000

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2024

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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

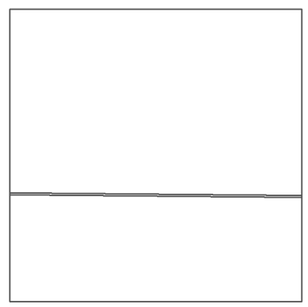
Map date: **1881**

Scale: 1:2,500

Printed at: 1:2,500

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



Surveyed 1881
Revised N/A
Edition 1881
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Site Details:

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

Map date: **1889-1894**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1889
Revised N/A
Edition 1889
Copyright N/A
Levelled N/A

Surveyed 1894
Revised N/A
Edition 1894
Copyright N/A
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

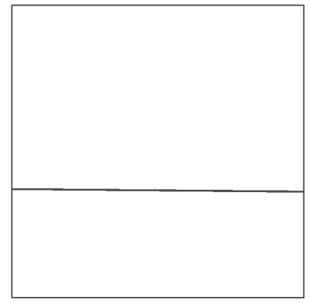
Map date: **1907-1908**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1891
Revised 1905
Edition 1908
Copyright N/A
Levelled N/A



Surveyed 1891
Revised 1905
Edition 1907
Copyright N/A
Levelled N/A

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

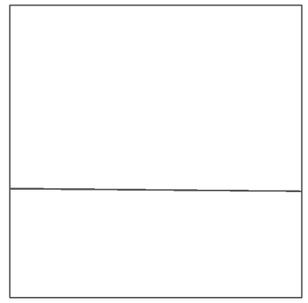
Map date: **1922**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915



Surveyed 1922
Revised 1916
Edition 1922
Copyright N/A
Levelled 1915

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MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: County Series

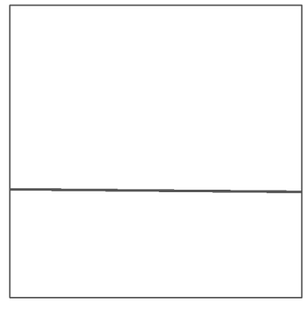
Map date: **1932-1933**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1873
Revised 1932
Edition N/A
Copyright N/A
Levelled 1927



Surveyed 1873
Revised 1933
Edition N/A
Copyright N/A
Levelled 1927

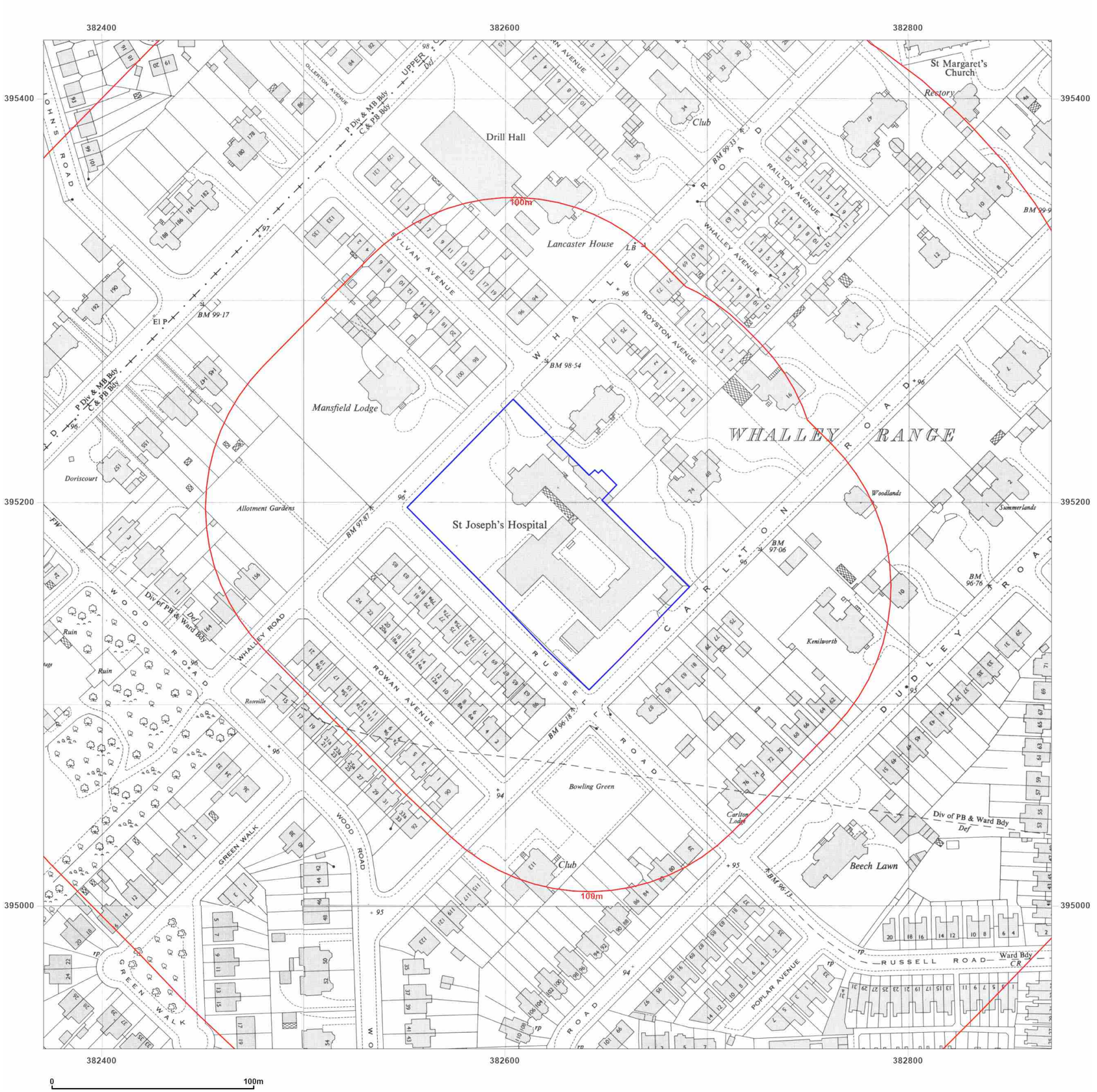
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Site Details:

1, WHALLEY AVENUE,
WHALLEY RANGE,
MANCHESTER, M16 8AT

Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1949-1950**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1949 Revised 1949 Edition N/A Copyright N/A Levelled N/A		Surveyed 1949 Revised 1949 Edition N/A Copyright N/A Levelled 1927
Surveyed 1950 Revised 1950 Edition N/A Copyright N/A Levelled 1927		Surveyed 1950 Revised 1950 Edition N/A Copyright N/A Levelled 1927

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Site Details:

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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1949-1950**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1950
Revised 1950
Edition N/A
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1951-1956**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1956
Revised 1956
Edition 1964
Copyright 1964
Levelled 1958

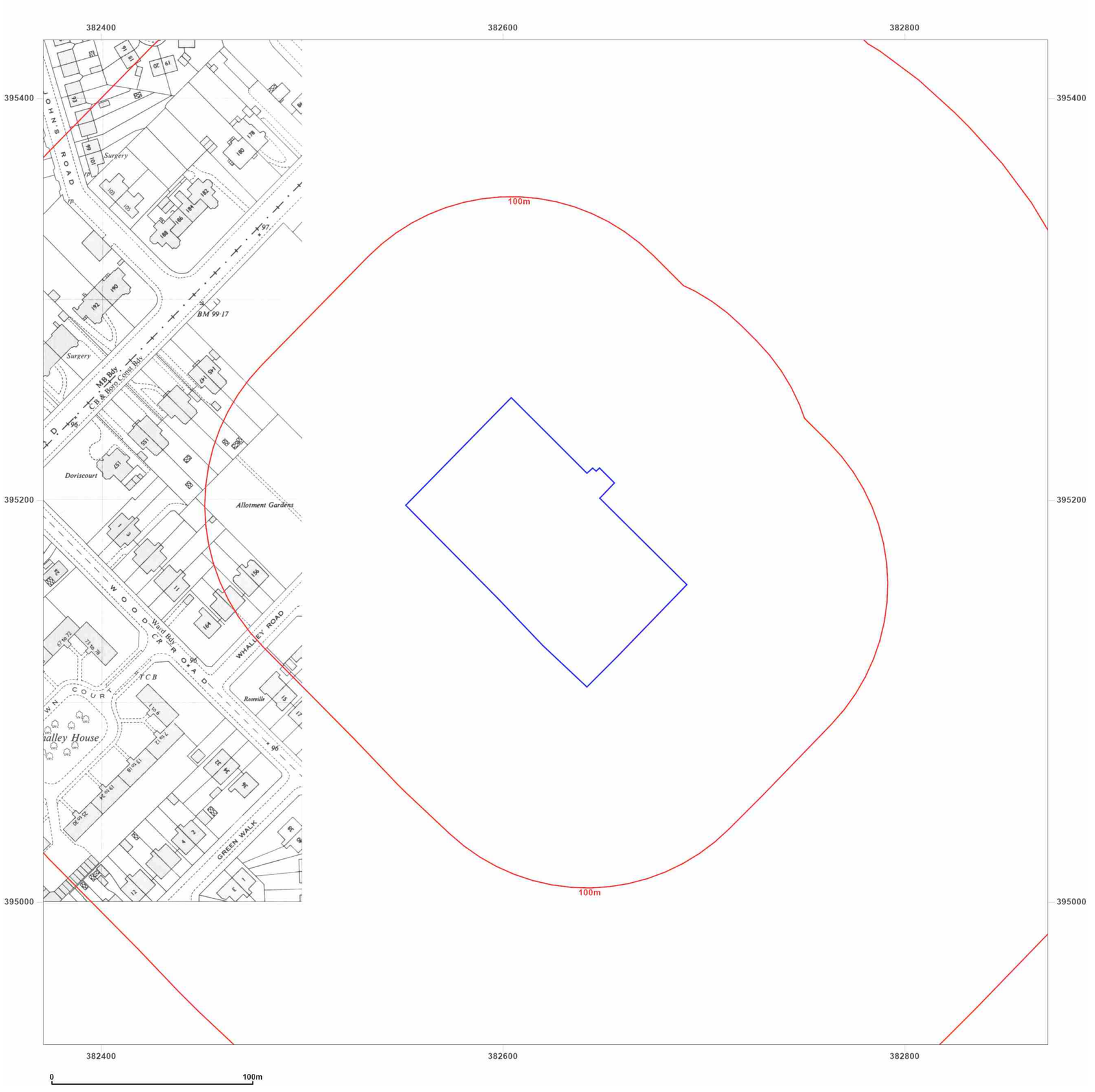
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1959**

Scale: 1:1,250

Printed at: 1:2,000

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Revised N/A
Edition N/A
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1959-1960**

Scale: 1:1,250

Printed at: 1:2,000

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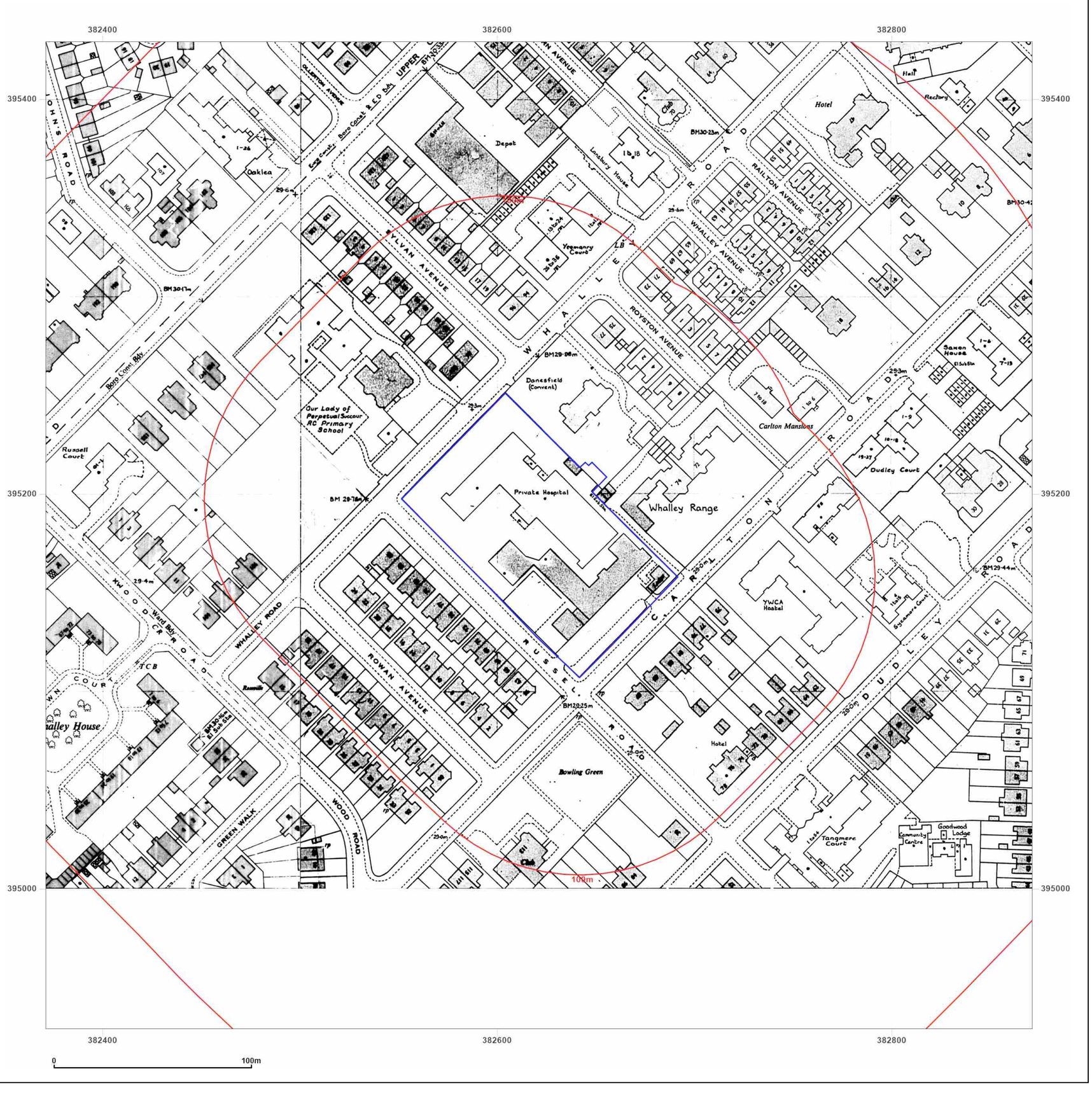
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1980-1981**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A	Surveyed N/A
Revised N/A	Revised N/A
Edition N/A	Edition N/A
Copyright N/A	Copyright 1981
Levelled N/A	Levelled 1968

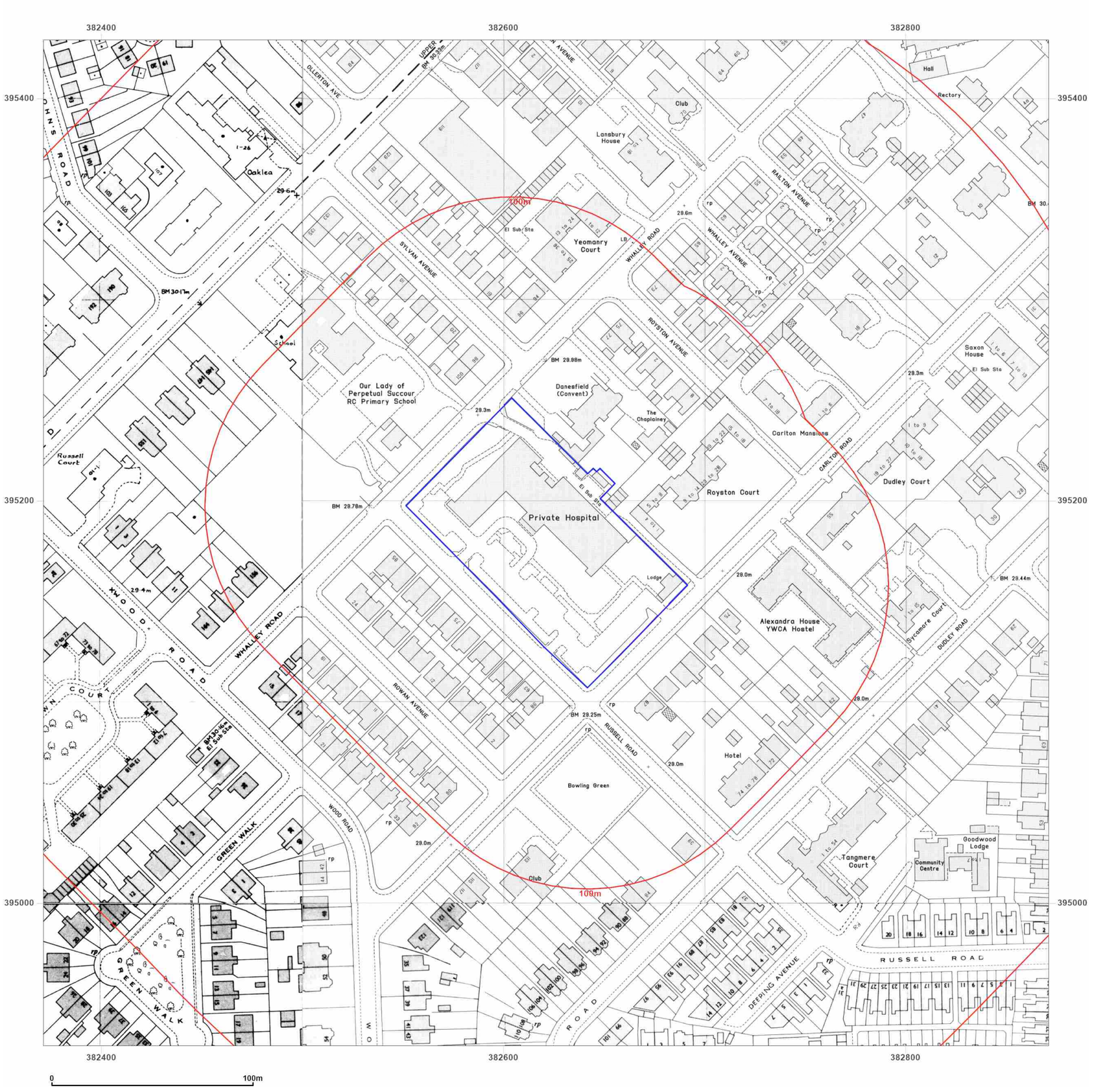
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1986-1989**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1958 Revised 1989 Edition N/A Copyright 1989 Levelled 1958		Surveyed 1949 Revised 1986 Edition N/A Copyright 1987 Levelled 1958
Surveyed 1958 Revised 1989 Edition N/A Copyright 1989 Levelled 1958		Surveyed N/A Revised N/A Edition N/A Copyright 1986 Levelled 1958

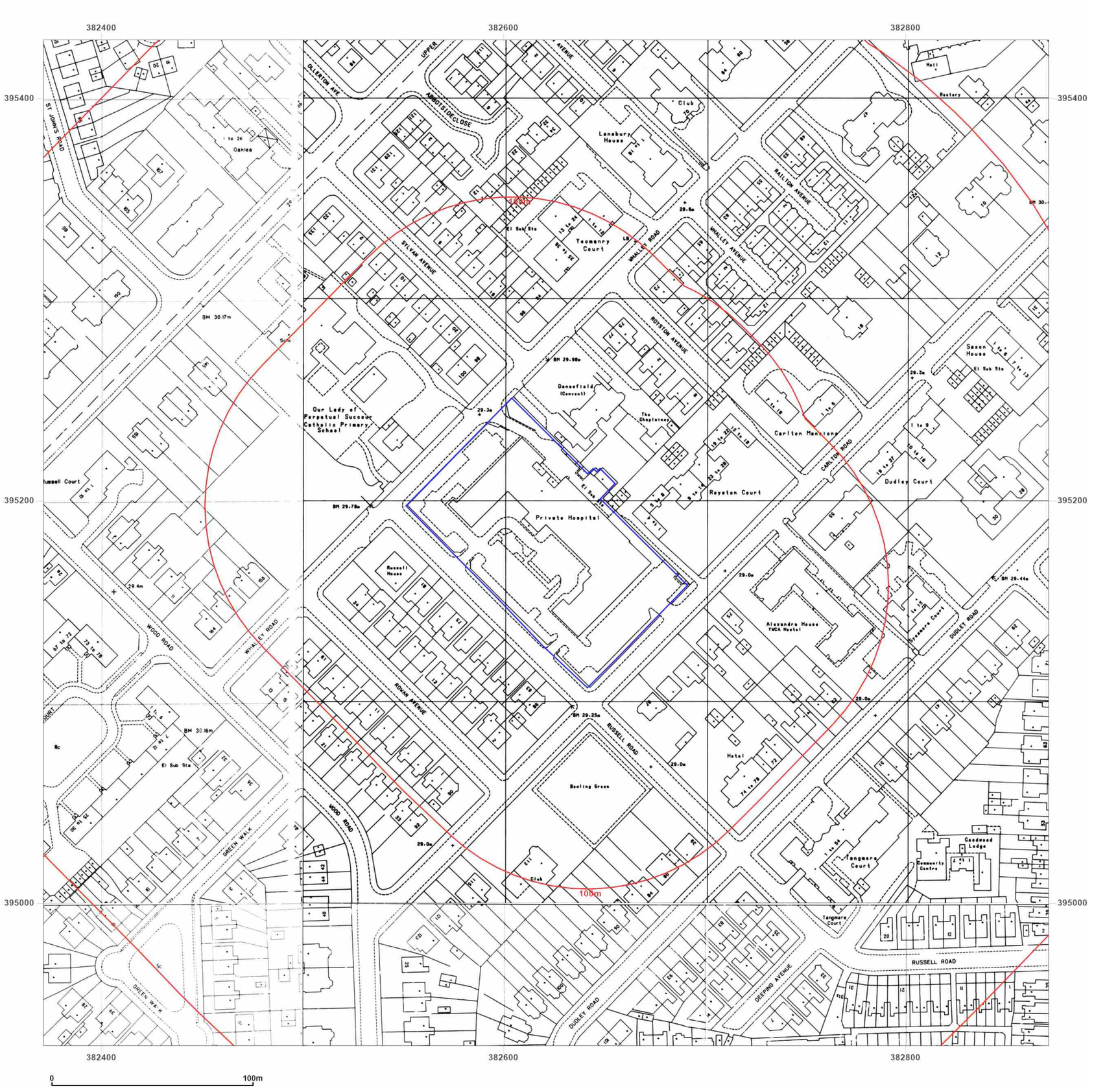
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1991-1992**

Scale: 1:1,250

Printed at: 1:2,000

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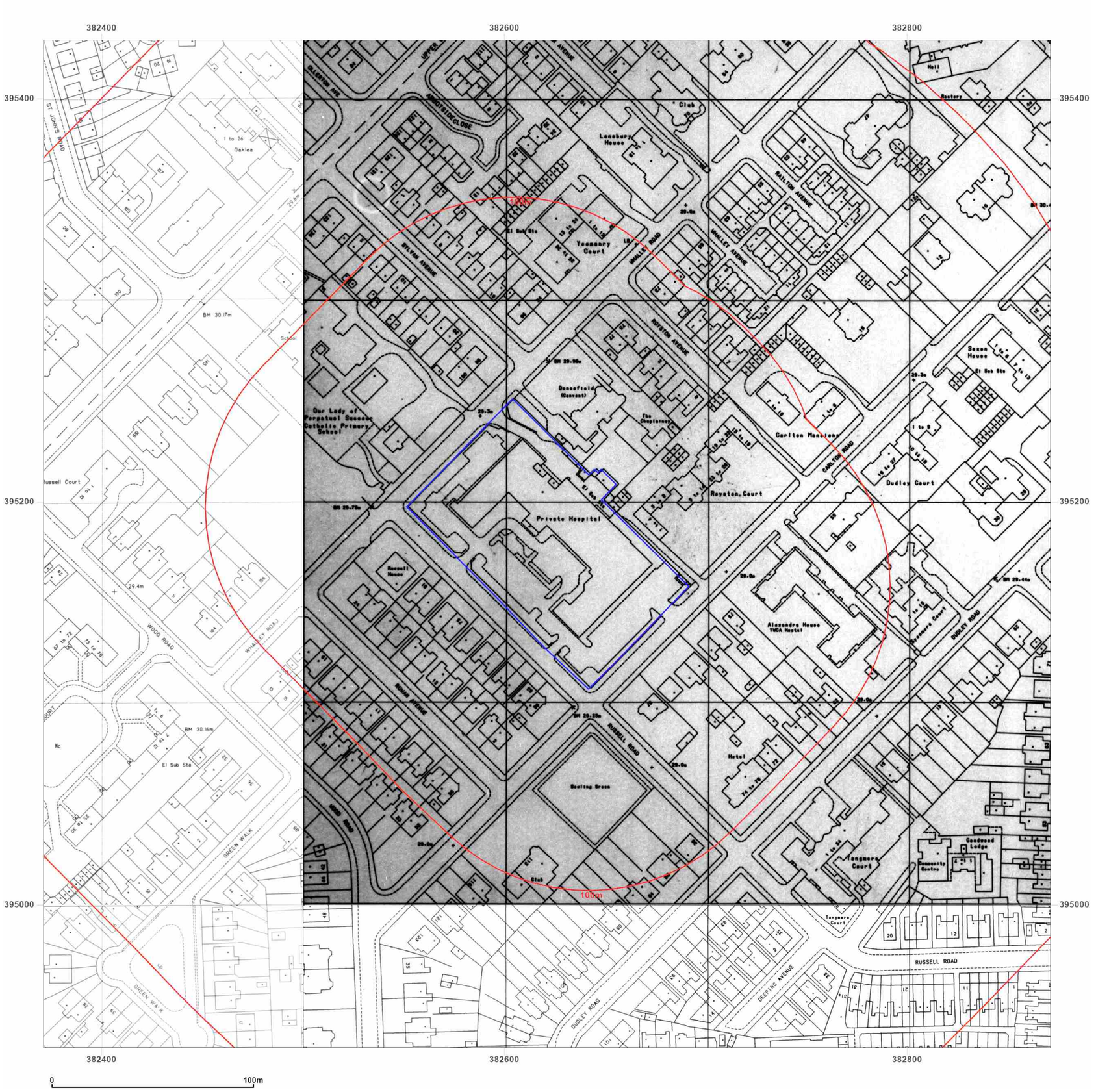
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1991-1992**

Scale: 1:1,250

Printed at: 1:2,000

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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000

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Edition N/A
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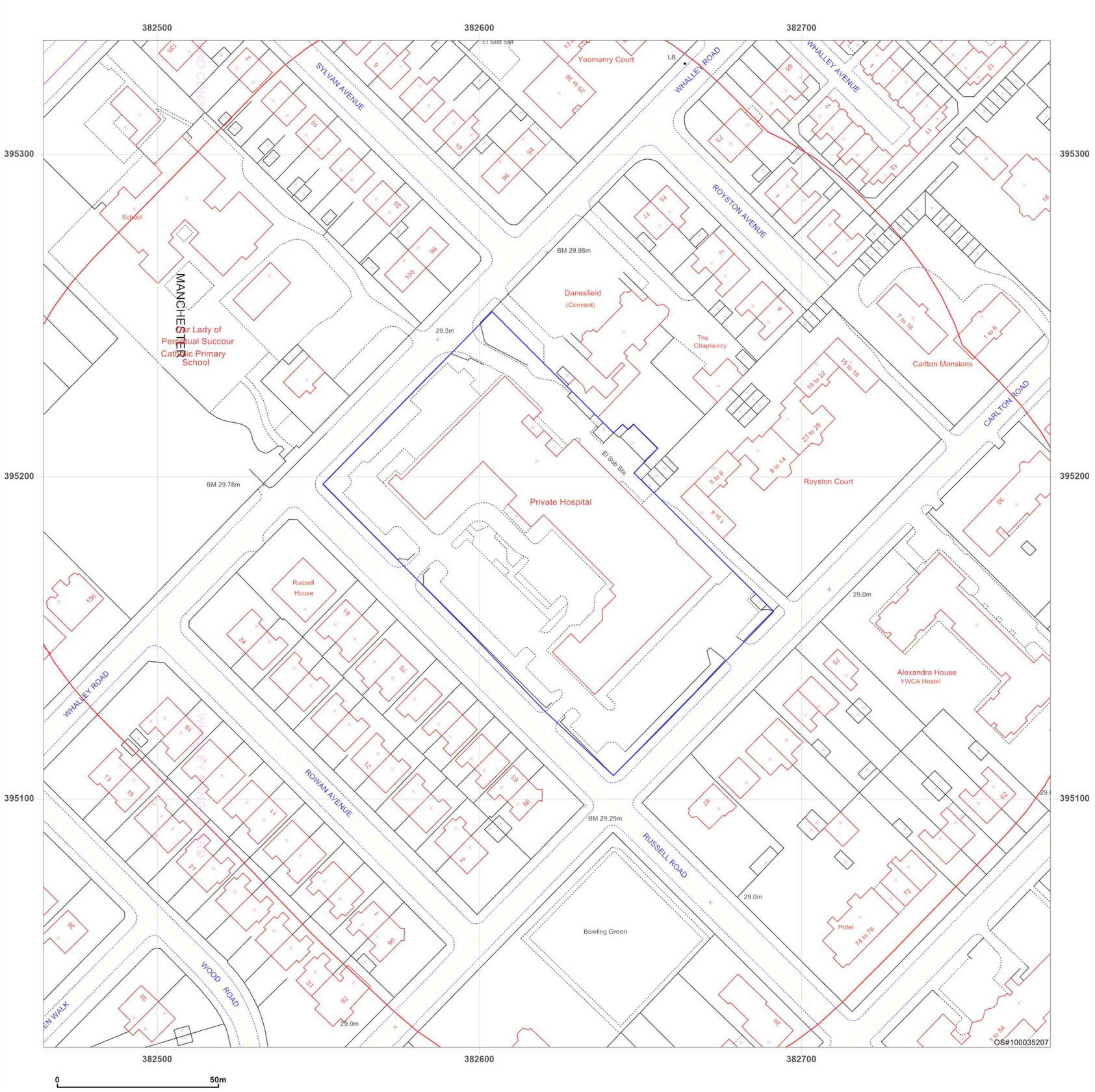
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Client Ref: 17-013 - 007697 - HM
Report Ref: GS-RQM-S3C-23M-FXM
Grid Ref: 382621, 395179

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

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