

Phase I Desk Study

Abbey Gardens, Abbey Street, Reading RG1 3BA

Mc Grath Group

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Table of Contents

.....	0
Table of Contents.....	i
1. INTRODUCTION.....	1
1.1. General.....	1
1.2. Aims of the Investigation	1
1.3. Conditions and Limitations.....	1
1.4. Technical Glossary.....	1
2. SITE SETTING	2
2.1. Site Location	2
2.2. Site Description	2
2.3. Proposed Development	2
2.4. Geology	2
2.5. Hydrogeology and Hydrology.....	3
2.6. Radon	4
2.7. Internet Search (Site Setting)	4
2.7.1. Available Unexploded Ordnance (UXO) Map Review	4
2.7.2. Historical Landfill Tool Review.....	4
3. HISTORICAL REVIEW.....	5
3.1. Historical Map Review.....	5
3.2. Historical Aerial Photography Review	6
4. ENVIRONMENTAL AND GEOLOGICAL INSIGHT	7
4.1. Groundsure Datasheets	7
5. ONLINE REVIEW AND HISTORICAL INVESTIGATIONS.....	10
5.1. Online Council Planning Database	10
5.2. Internet Search.....	10
6. PRELIMINARY RISK ASSESSMENT	11
6.1. Contaminant Source-Pathway-Receptor Model	11
6.2. Potential On-site Sources of Contaminants	11
6.3. Potential Off-site Sources of Contaminants.....	12
6.4. Potential Receptors.....	13
6.5. Contaminant Absorption Pathways	13
6.6. Tabulated Conceptual Site Model.....	14
7. RECOMMENDATIONS AND PHASE II OBJECTIVES.....	17

7.1.	Asbestos	17
7.2.	Ground-gas and Vapours.....	17
7.3.	Geotechnical Review	17
7.3.1.	Chalk Dissolution Risk Assessment	17
FIGURES.....		1
APPENDIX A: Conditions and Limitations.....		2
APPENDIX B: Technical Glossary		5
APPENDIX C: Site Photographs		6
APPENDIX D: Historical Maps.....		7
APPENDIX E: GroundSure EnviroInsight and GeoInsight Datasheets		8

EXECUTIVE SUMMARY	
PROPOSED DEVELOPMENT	At the time of reporting, July 2025, the proposed development was understood to comprise a permitted development application for the proposed conversion of the lower and upper areas of the 5th and 6th floors from commercial (Class E) to residential use (Use Class C3).
GEOLOGY AND HYDROGEOLOGY	The British Geological Survey Geology Map for the area revealed that the southern part of the site was underlain by alluvium, which was underlain by superficial deposits of the Taplow Gravel Member. No alluvium was shown in the northern half of the site. The bedrock comprised the Seaford and Newhaven Chalk Formation. No areas of Made Ground or Reworked Ground were noted within a 250m radius. A study of the aquifer maps on the DEFRA website revealed the site was underlain by a Secondary (A) Aquifer comprising the superficial Taplow Gravel Member underlain by a Principal Aquifer, comprising bedrock deposits of the Seaford and Newhaven Chalk Formation. Examination of the Environment Agency records showed that the site did not fall within a Groundwater Source Protection Zone (SPZ) as classified in the Policy and Practice for the Protection of Groundwater. The nearest surface water feature was River Kennet, located directly east of the site, and part of it is channelled / culverted below the site. From analysis of hydrogeological and topographical maps the groundwater table was anticipated to be encountered at shallow to moderate depth within the superficial aquifer (TGM). A deeper, specific groundwater table might be present, deep within the chalk.
POTENTIAL SOURCES OF CONTAMINATION	Full details can be seen in sections 6.3 and 6.4 of this report. Onsite - The Desk study has revealed the following potential sources of contamination onsite: • Potential for Made Ground (associated with historical construction/demolition onsite) • ACM • Former Mill Offsite - The Desk study has revealed the following potential sources of contamination within the site's environs: • Potential ground-gas generating features • Garage • Multiple former industrial uses in surrounding area.
RECOMMENDATIONS / PHASE II OBJECTIVES	It is possible that asbestos and asbestos containing materials will be incorporated within the building. An asbestos survey must be undertaken prior to any development works in the building. An asbestos management strategy should be implemented to ensure that any asbestos uncovered during the investigation does not pose a risk to members of the public that use the site. The CSM has identified a low to moderate risk from ground gases and vapours at the site as a result of limited possible deep/putrescible Made Ground on-site and nearby and as a result of industrial uses that may have produced volatile contaminants. Given the lower ground floor level is partially an undercroft car park it is considered likely that anything in this and above this area should be ventilated to IStructE guidance, especially with ramps. This will mitigate any risk of ground-gas and volatiles risk to the proposed building as it will provide 4 points of protection against ground-gas. This would allow for protection measures up to

	and including CS3. However, outside of this boundary the areas may be at risk from ground-gases and vapours. It is considered that the best approach to further investigation given the existing building footprint (i.e all slabs) will stay the same that in-situ continuous ground-gas and vapour monitoring should be undertaken in these locations. This would then provide an idea of if retrospective gas/vapour protection measures will be required.
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1. INTRODUCTION

1.1. General

Ground and Water Limited were instructed by Mc Grath Group on the 25th November 2024 to conduct a Phase I Desk Study on the site at Abbey Gardens, Abbey Street, Reading RG1 3BA. The scope of the investigation was detailed within the e-mail fee proposal, by Francis Williams, dated the 18th June 2024.

1.2. Aims of the Investigation

This Phase 1 Desk Study was undertaken to advise the client on risk factors pertaining to the site with special reference to former and present day potential contaminative uses and their impact on sensitive receptors, these being human health, controlled waters, buildings, building materials and services.

This Phase I Desk Study comprises a Tier 1 Preliminary Risk Assessment, under Land Contamination Risk Management (LCRM), with the intention of discharging planning conditions.

1.3. Conditions and Limitations

This report has been prepared based on the terms, conditions and limitations outlined within Appendix A.

This version of the report relates to the permitted development application for the fifth and sixth floor.

1.4. Technical Glossary

Generic technical terms and their description can be viewed within the glossary provided within Appendix B.

2. SITE SETTING

2.1. Site Location

The site comprised a ~0.16ha irregular-shaped plot of land, orientated in a north to south direction, along the eastern side of Abbey Street. The site was located in central Reading.

The Easting Northing for the centre of the site was approximately 471958, 173456. A site location plan is given within Figure 1.

2.2. Site Description

A Site Walkover was undertaken on the 18th December 2024. A description of the site, as noted during the Site Walkover, is tabulated below. Photographs can be seen in Appendix C.

Site Description Sheet	
Use of site	At the time of the site walkover, the site was occupied by a high rise building, which comprised the Abbey Gardens. The use was offices. A stream/channel was passing below the building. It was open below the building and culverted below the road next to the building.
Site topography	The site was sloping gently towards the south and east. Access paths/roads from the east dipped locally towards the west.
Area topography	The area was gently sloping towards the south and east.
Structures onsite	The site was occupied by a building comprising offices.
Structures off-site	Various buildings of residential and commercial use around the site. Heritage ruins towards the north-east.
Use of surrounding ground	Residential and commercial.
Boundary features	The site was bounded mainly by road from the west and north. Pathways and a river were present towards the east. The main building to be developed was attached to another office building to the south of the same complex.
Site covering	The site was covered by the building and hardstanding areas below the main building at lower levels. A stream was crossing the site.
Contamination sources on-site	None noted.
Contamination sources off-site	None particularly noted.
Vegetation onsite	The actual site to be developed did not seem to contain soft landscaping areas.
Vegetation off-site	Trees were present towards the east / north-east.
Services	Services are expected on site.

2.3. Proposed Development

At the time of reporting, July 2025, the proposed development was understood to comprise a permitted development application for the proposed conversion of the lower and upper areas of the 5th and 6th floors from commercial (Class E) to residential use (Use Class C3). The proposed development plan can be seen within the figures section.

2.4. Geology

The British Geological Survey Geology Map for the area revealed that the southern part of the site was underlain by alluvium, which was underlain by superficial deposits of the Taplow Gravel Member. No alluvium was shown in the northern half of the site. The bedrock comprised the Seaford and

Newhaven Chalk Formation. No areas of Made Ground or Reworked Ground were noted within a 250m radius.

Superficial deposits (Drift) are the youngest geological deposits formed during the most recent period of geological time. They rest on older deposits or rocks referred to as bedrock (Solid), which are the main mass forming the Earth. Bedrock is present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Alluvium

Alluvium is the most recent river or estuarine deposit and generally comprises silty clays usually with an appreciable organic content. Lenses of sand and gravel are also commonly found, as are pockets of peat.

Taplow Gravel Member

The Taplow Gravel Member is largely encountered along the Thames valley and is found at an elevation generally above the current river. The Taplow Gravel Member is generally sand and gravel, locally with lenses of silt, clay and peat, and has an average thickness of 5.00m, up to a maximum of 9.00m.

Undifferentiated Seaford Chalk and Newhaven Chalk Formations

The Undifferentiated Seaford Chalk and Newhaven Chalk Formations is a soft white friable microporous limestone composed of coccolith biomicrites with a varying proportion of larger shell fragments. Flint characterises the Undifferentiated Seaford Chalk and Newhaven Chalk Formations, occurring as nodular courses, tabular beds and linings to fractures. At various levels clay sized material occurs as marl seams and partings. Close to the surface the upper few metres are invariably discoloured brown, due to leaching from the overlying strata. The interface with any overlying stratum is invariably extremely irregular as a result of localised weathering and dissolution. Weathering by frost action may extend to a depth of several metres. Occasional erosional features, such as pipes, swallow holes and solution cavities, usually in-filled with drift deposits; can be found in the chalk deposits. These features sometimes manifest themselves at the surface as shallow circular depressions. Solution features may be reactivated by the concentrated ingress of water from leaking drains or soakaways. Reactivation may lead to surface collapse.

A number of confidential BGS borehole records were present on site. The closest available record was ~140m west of the site. This borehole (SU77SW72) recorded Made Ground to 3.00m bgl, underlain by very dense clayey fine to coarse angular to subrounded sandy GRAVEL to 5.00m bgl. Chalk bedrock was recorded below to the base of the borehole, at 10.00m bgl. This was recovered as structureless however it was noted as potentially structured in-situ, (IV – V).

2.5. Hydrogeology and Hydrology

A study of the aquifer maps on the DEFRA website revealed the site was underlain by a **Secondary (A) Aquifer** comprising the superficial Taplow Gravel Member underlain by a **Principal Aquifer**, comprising bedrock deposits of the Seaford and Newhaven Chalk Formation.

Examination of the Environment Agency records showed that the site **did not** fall within a Groundwater Source Protection Zone (SPZ) as classified in the Policy and Practice for the Protection of Groundwater.

The nearest surface water feature was River Kennet, located directly east of the site, and part of it is channelled / culverted below the site.

From analysis of hydrogeological and topographical maps the groundwater table was anticipated to be encountered at shallow to moderate depth within the superficial aquifer (TGM). A deeper, specific groundwater table might be present, deep within the chalk.

The flood risk maps have shown the site to be within a flood risk zone 3, mainly connected with the part of River Kennel flowing below the building / site.

2.6. Radon

A review of the freely available UK Health Security Agency radon database, UK Radon, indicated that the site was located within a 1km grid square, where the maximum radon potential of 1 – 3% was recorded for above ground structures. Basic radon protection measures are required in areas where more than 3% of houses are at or above the Action Level.

The site was in an area where a risk assessment was not required.

2.7. Internet Search (Site Setting)

2.7.1. Available Unexploded Ordnance (UXO) Map Review

A review of the data available on www.zeticauxo.com/ revealed the site was located within a low -risk area associated with unexploded ordnance (UXO), as indicated by having <15bombs dropped per 1000 acres.

2.7.2. Historical Landfill Tool Review

A review of the data available on www.groundsure.io/ did not reveal an area of Historical Landfilling within a 250m radius.

3. HISTORICAL REVIEW

3.1. Historical Map Review

The object of this search was to report on the history of the site and its environs from available County Series and Ordnance Survey Maps dating from the mid to late 19th Century to the present day and downloaded from Groundsure. In the following sections dealing with individual maps, only features considered to have a potential contaminative impact on the site and usually within a notional 250 metre radius of the site boundaries are discussed. Any distances quoted for features remote from the site have been scaled from the maps and are only approximate. The north point and approximate extent of the site are indicated on each figure. The historical maps referred to are given within Appendix D. The implications of the map search are discussed later within this report.

Environmental Significance of Data from Historical Maps		
Maps Dated Between	Site	Environs
1879 – 1931	The north of the site comprised rear gardens associated with the Abbey Wall properties. This included a separate building in the north-east. The south of the site was occupied by part of the Abbey Saw Mills building with Holly Brook running through the centre of the site through the mill and flowing west to east to the River Kennet.	A goods shed, warehouse and railway sidings were recorded ~200 – >250m north associated with the Great Western Railway trending east to west. A timber yard, wharfs and other industrial uses were recorded from ~50m east extending eastwards, east of the River Kennet. A H.M. Prison was identified from ~65m north-east. A large biscuit factory was also identified ~180m east. Abbey Wharf was recorded directly adjacent to the south of the site. Various other wharves were also recorded from ~100m south and west (north of the River Kennet) and further wharves, works and saw mills (incl. Abbey Corn Mill) south of the River Kennet. The area to the west was predominantly occupied by commercial and residential development. The County Police Station was recorded ~60 – 100m north-west. By 1900, a tramway was identified ~70m south trending east to west.
1931 – 1956	The Abbey Wall properties were replaced with two semi-detached houses, the north of the site was occupied by the gardens of these new properties.	The prison was recorded as disused.
1956 – 1962	A building had been constructed in the north of the site.	The disused prison was redeveloped to a Borstal Institution. An electricity substation was identified ~250m north-east. Another electricity substation was recorded ~170m east. A printing works was recorded ~160m east, a paint works ~240m south-east and a garage ~170m south-west (east and south of the River Kennet). Another garage was recorded ~70m west. A graveyard was identified ~230m north-west.
1962 – 1986	The Abbey Saw Mills was no longer recorded. By 1968, the building in the north was also no longer recorded.	The Abbey Wharf was no longer located adjacent to the south. By 1968, the biscuit factory was no longer identified. The majority of industrial uses appear to have been converted to commercial or residential uses.
1986 – 2024	The site was entirely occupied by a building with the Holly Brook assumed to be culverted beneath the building.	No further significant changes were recorded.

3.2. Historical Aerial Photography Review

The object of this search was to report on the history of the site and its immediate environs from available Aerial Photography dating from the early-21st Century to the present day and downloaded from Google Earth and Groundsure. Any distances quoted for features remote from the site have been scaled from the photography and are only approximate.

At the time of the earliest aerial photography, 2003, the was occupied by the existing building that occupies the entire site boundary. No further changes were noted.

4. ENVIRONMENTAL AND GEOLOGICAL INSIGHT

4.1. Groundsure Datasheets

Groundsure Environmental and Geological Datasheets were obtained for the site. Unless the data indicates a significant risk, only information within a 250m buffer zone has been included. The GroundSure Datasheets are also presented in Appendix E and a summary is given below and overleaf(s).

Environmental Insight	
Source	Nearest Distance from Site/Dated/Type
Past Land Use	
Historical industrial land uses	On site: Sawmill, 1898 – 1938 Off site: Unspecified Wharf, 22m – 119m s 1989 – 1994 Sawmills, 28m se 1913 - 1938 Unspecified factory, 145m n, 1962 Unspecified tank 147m nw, 1973 Unspecified heap, 148m n, 1933 Railway sidings & buildings, 164m n – 242m n, 1897 - 1979 Goods sheds 172-208m n / ne 1913 – 1938 Biscuit factory 179 – 180m n 1933 – 1938 Unspecified factory 182m e, 1973 – 1979 Police Station, 221m nw, 1973
Historical Tank Database	3x Unspecified tank records, 54m w – 112m w, 1968 - 1997 4x unspecified tank or trough 209m n – 212m n & 243m w 1879 Pump and tank, 218m w 1879 Unspecified tank 245m e 1956 – 1957 Gas works were also noted 290m e, however they were considered to be far.
Historical Energy Features Database	Multiple records of electricity substations 87m e – 246m ne Gas works were also noted 290m e, however they were considered to be far.
Historical Garages Database	Garage, 10m sw, 11m sw, 1956 - 1968 Garages 115m sw, 181 – 183m sw, 239m s 1956 - 1968
Waste and Landfill	
Waste exemptions	133m ne: Sorting and de-naturing of controlled drugs 216m ne: Crushing waste fluorescent tubes 236m n: Use of waste in construction
Current Industrial Land Use	
Recent Industrial Land Uses	On site: Abbey Gardens, medical equipment supplies Food and beverage industry machinery, 51m n Oyster Wharf, Moorings and unloading facilities, 100m s Electricity substations, 107m w – 207m w Civil Engineers 141m w TAH Trading Ltd, Special purpose machinery 141m w Wharfs 127 & 143m e, 209m se water Electrical motors and generators, 229m n Tank 242m se
Licensed Discharges to controlled waters	On site: Effluent type: miscellaneous, surface water, status revoked, 1997. Receiving water: Holy Brook 9m w: miscellaneous, surface water, revoked 1991. 25m w: Trade discharges: site drainage, revoked 2017. 37m e: Miscellaneous, River Kennet, revoked 1991.

	68m e: Miscellaneous, River Kennet, revoked 1991. 196m sw – 248m e: Various records for miscellaneous and trade discharges, with the receiving water being River Kennet. All revoked.
Pollution Incidents (EA/NRW)	Pollution incidents 16m e, cat 3 & 4, 2003, minor or low impact 40mw: waste materials, cat 3 & 4, 2002 minor or no impact 136m w: Diesel, 2005, cat 3 & 4, minor or no impact 161m sw, crude sewage, 2003, cat 3 & 4, minor or no impact
Hydrogeology	
Superficial Aquifer	1 record on-site: 1x Secondary A Aquifer.
Bedrock Aquifer	1 record onsite: 1x Principal Aquifer.
Groundwater Vulnerability	1 record onsite: 1x Secondary superficial aquifer – high vulnerability, leaching class: intermediate. 1x Principal bedrock aquifer – high vulnerability, leaching class: high.
Groundwater Vulnerability – Soluble Rock Risk	20% of grid square covered by maximum risk Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.
Hydrology	
Water Network (OS MASTerMap)	Culverted Holy Brook beneath the north of the site (west to east). River Kennet from 19m south-east.
WFD Surface Water Body Catchments	2 records on-site: 1x River Catchment (Holy Brook) on-site, 1x River Catchment (Lower Kennet – Sheffield Bottom to Reading) on-site.
WFD Surface Water Bodies	1 record on-site and 1 within a 250m radius: 1x Holy Brook on-site, 1 x Lower Kennet 23m south-east.
WFD Groundwater Bodies	1 record on-site: 1x Berkshire Downs Chalk on-site.
Visual and Cultural Designations	
Listed Buildings	33 records within a 250m radius.
Conservation Area	Market Place and London Street 140m south-west.
Scheduled Ancient Monuments	5 records within a 250m radius.
Registered Parks and Gardens	The Forbury Garden 85m north (Grade II).
Agricultural Designations	
Agricultural Land Classification	Urban on-site.

Geological Insight	
Source	Nearest Distance from Site/ Type
Superficial Geology (1:10,000 Scale)	2x on-site records: 1x Taplow Gravel Formation in north (Sand and Gravel), 1 x Alluvium in south (Silt).
Bedrock Geology (1:10,000 Scale)	1x on-site record: 1x Lews Nodular, Seaford Formation and Newhaven Chalk Formation (Chalk).
Superficial Geology and Permeability (1:50,000 scale)	2 on-site records: 1x Taplow Gravel Formation in north. Flow Type: Intergranular, Maximum Permeability: Very High, Minimum Permeability: High, 1 x Alluvium in south. Flow Type: Intergranular, Maximum Permeability: High, Minimum Permeability: Very Low.
Bedrock Geology and Permeability (1:50,000 scale)	1 record onsite: 1x Seaford and Newhaven Chalk Formation. Flow Type – Fracture, Maximum Permeability – Very High, Minimum Permeability – Very High.
Boreholes	
BGS recorded boreholes	2 on-site and 36 records within a 250m radius.

Natural Hazard Findings	
Shrink-Swell Clay	Negligible (north) to Very Low (south) hazard onsite.
Running Sands	Very Low (north) to Low (south) hazard onsite.
Compressible Deposits	Negligible (north) to Moderate (south) hazard onsite.
Collapsible Deposits	Negligible (south) to Very Low (north) hazard onsite.
Landslides	Very Low hazard onsite.
Ground Dissolution of Soluble Rocks	Very Low (south) to Low (north) hazard onsite.
Mining, Ground Working and Natural Cavities	
Records of Surface Ground Workings	15x records within a 250m radius: 9 x wharf 22 – 122m south (1933 – 1994), 5 x canal 63 – 94m south/south-east (1933 – 1994), 1 x heap 148m north (1933).
Records of Non-coal Mining	2x records within a 250m radius: 1 x Class A Chalk 72m north-west - Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. 1 x Class B Chalk 89m west - Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
Records of JPB Mining Areas	On Site record: JPB may have information such as mining plans and maps that have occurred within 1km from the property.
Radon	
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, 1 - 3% of properties are above the Action Level.
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.
Estimated Background Soil Chemistry	
Records of BGS estimated background soil chemistry	2x on-site and 5x off-site records within a 250m radius: On-site (x2), 8m north, 17m south-east, 28m east and 39m north-east: Arsenic: 15 - 25mg/kg Lead 100mg/kg (60mg/kg bioaccessible) Cadmium: 1.8mg/kg Chromium: 60 – 90mg/kg Nickel: 15 – 30mg/kg
Railway Infrastructure and Projects	
Records of Historical Railway and Tunnel Features	35x records within a 250m radius: 2 x railway sidings 126 – 127m south (1879), 33 x railway sidings 164 – 238m north/north-east/east (1879 – 1962).

5. ONLINE REVIEW AND HISTORICAL INVESTIGATIONS

5.1. Online Council Planning Database

A review of the Reading Borough Council Planning Database revealed that a number of planning applications had been filed for the Abbey Gardens, predominantly for minor alterations to the building.

5.2. Internet Search

An internet search did not identify any other information pertinent to this report.

6. PRELIMINARY RISK ASSESSMENT

6.1. Contaminant Source-Pathway-Receptor Model

In the UK, the assessment of risk from contamination follows the source-pathway-receptor (SPR) approach. For a risk to be present there must be a source of contamination, a receptor or receptors, and a pathway for contaminants to migrate or be absorbed. If one of these three elements are absent, it is considered that there is no risk of harm. If, however, there is a linkage between any given source and any given receptor, then a risk-based approach is used to assess the significance or impact of the pollutant linkage.

This Phase 1 Desk Study has been used to identify potential on-site and off-site sources of contamination, which are summarised in this section of the report. Additional potential sources of contamination identified within the Desk Study have been discounted based on the absence of a realistic SPR linkage (i.e. the distance from the site or the nature or age of any potential contamination sources).

In line with the requirements of BS 21365:2020, *Soil Quality – Conceptual site models for potentially contaminated sites*, the Conceptual Site Model (CSM) can be described in text, tabulated or presented as a figure. A tabulated CSM is provided in Section 6.6 of this report, where each component is discussed in the following sections.

6.2. Potential On-site Sources of Contaminants

This Desk Study revealed that at the time of the earliest historical mapping (1879) the north of the site comprised rear gardens associated with the Abbey Wall properties. This included a separate building in the north-east. The south of the site was occupied by part of the Abbey Saw Mills building with Holly Brook running through the centre of the site through the mill and flowing west to east to the River Kennet. By 1931, the Abbey Wall properties were replaced with two semi-detached houses, the north of the site was occupied by the gardens of these new properties. By 1956, a building had been constructed in the north of the site. By 1962, the Abbey Saw Mills was no longer recorded. By 1968, the building in the north was also no longer recorded. By 1986, the site was entirely occupied by a building with the Holly Brook assumed to be culverted beneath the building.

The Phase 1 Desk Study revealed the following on-site sources of contamination:

- The site has undergone construction and demolition and as a result various thicknesses of Made Ground resulting from these activities are likely to be encountered.

Contaminants of concern associated with Made Ground deposits include; metals, Petroleum Hydrocarbons (TPHs), Polycyclic aromatic hydrocarbons (PAHs), asbestos, sulphates, and ground gases (if >2.00m MG encountered).

- The south of the site was formerly occupied by part of Abbey Saw Mill.

Determinants associated with general industrial works include metals and semi-metals; asbestos; oil/fuel hydrocarbons, PAHs, solvents and inorganic chemicals (R&D Publication CLR 8, 2002).

As there will be no areas of soft landscaping or breaking ground proposed where the development is only internal alterations to change the use of some of the building a number of pathways/receptors

have been removed from the CSM. This leaves the primary pathway as inhalation of ground-gases or vapours and controlled water concerns from any contaminants that may be in Made Ground beneath the site. It should be noted that where the development will not be breaking ground the site will not be making the controlled water situation worse than it already is. Given the time elapsed since the former use as a mill (>60 years) and location within a former industrial area, it is considered unlikely that the current site would be causing a significant impact to controlled waters. So, at this stage this receptor will be discounted.

6.3. Potential Off-site Sources of Contaminants

The Phase 1 Desk Study revealed the following potential off-site sources of contamination:

Everything situated east and south of the River Kennet is not considered to pose a risk to the site as the River prevents the contamination from migrating to the site and will not be discussed further.

- Garage from 10m south-west/west.

Potential sources of contamination associated with a garage include: lubricant oils; brake fluids (constitute mainly of polymerised glycols and ethers. Waste fluid is generated during repair work on brake systems); solvents (chlorinated hydrocarbons, carbon tetrachloride, paraffin and proprietary degreasing compounds); paints (lead-based paints, zinc-rich epoxy primers, polyurethanes as decorative finishes); gasoline, diesel, paraffin (Department of the Environment Industry Profile, Road vehicle fuelling, service and repair: garages and filling stations 1996).

As there will be no areas of soft landscaping or breaking ground proposed where the development is only internal alterations to change the use of some of the building a number of pathways/receptors have been removed from the CSM. This leaves the primary pathway as inhalation of ground-gases or vapours which is considered to be a moderate risk.

- General industrial works: incl. biscuit factory to NE, Wharves to the south and west, various other mills, works, warehouses and smithy.

Metals and semi-metals; asbestos; oil/fuel hydrocarbons, PAHs, solvents and inorganic chemicals (R&D Publication CLR 8, 2002).

As there will be no areas of soft landscaping or breaking ground proposed where the development is only internal alterations to change the use of some of the building a number of pathways/receptors have been removed from the CSM. This leaves the primary pathway as inhalation of ground-gases or vapours which is considered to be a low to moderate risk.

- Tram/railway sidings and line ~126 – 127m south and 164 - >250m north/north-east/east.

Contaminants associated with railway land include metals such as cadmium, chromium, nickel and lead, Polycyclic Aromatic Hydrocarbons (PAHs) and Total Petroleum Hydrocarbons (TPH).

Given the distance and/or location downstream it is considered unlikely that these contaminants would pose a significant risk to the site.

- Multiple records of electricity substations from 87m east.

High-voltage electricity sub-stations may be a potential source for PCBs. PCB oils and other cable/transformer oils, together with a series of waxes are commonly used in mainly high voltage applications. PCBs are generally toxic; however, newer forms of non-toxic oils and waxes have replaced the use of PCBs. All cable oils are extremely viscous and adhere strongly to soil particles and do not tend to migrate far from the point of leakage or spillage, therefore it was concluded that the potential risk of encountering PCBs on the site was negligible.

6.4. Potential Receptors

At the time of reporting, July 2025, the proposed development was understood to comprise a permitted development application for the proposed conversion of the lower and upper areas of the 5th and 6th floors from commercial (Class E) to residential use (Use Class C3). The proposed development plan can be seen within the figures section.

Based on the proposed development, the potential receptors are presented below and comprise:

Human Health

- End users of the site (Residents/Site Workers/Future site visitors);
- Site workers during internal re-development;
- Site operatives during maintenance works; and
- Neighbours and members of the public.

Building Materials and Services

- Buildings;
- Buried concrete;
- Confined spaces; and
- Underground services (Water Pipes).

Controlled Waters

- Secondary A Aquifer (Taplow Gravel Member) and Principal Aquifer (Chalk),
- Holly Brook culverted beneath the site and River Kennet to the east/south.

As there will be no areas of soft landscaping or breaking ground proposed where the development is only internal alterations to change the use of some of the building a number of receptors have been removed from the CSM.

6.5. Contaminant Absorption Pathways

The potential pathways for contaminant absorption between the identified sources and the identified receptors are as follows:

Human Health:

- Inhalation of volatile vapour (indoors and outdoors);
- Inhalation of ground gases.; and
- Explosion.

Building Materials and Services

- Direct contact;
- Explosion.

Controlled Waters

- Vertical and lateral migration in permeable strata horizons;
- Via anthropogenic pathways (infilled ground and service runs);
- Surface water Runoff.

As there will be no areas of soft landscaping or breaking ground proposed where the development is only internal alterations to change the use of some of the building a number of pathways have been removed from the CSM.

6.6. Tabulated Conceptual Site Model

The tabulated Conceptual Site Model developed as part of this Desk Study is outlined overleaf. For ease of reference and understanding, the risks have been classified within this risk assessment against four possible levels / categories, summarised in the table below. **All negligible uses have been omitted from the CSM for ease as they do not need to be considered further.**

Risk Categories used in the Tabulated CSM	
Negligible	Regarding this potential SPR linkage, the site is considered suitable for the proposed end-use and there is no plausible risk. Therefore, there is no need to further assess this potential source of contamination.
Low Risk	Regarding this potential SPR linkage, the site is considered suitable for the proposed end-use and there is not considered to be an unacceptable risk to receptors. However, it is considered that further investigation to confirm this is recommended.
Moderate Risk	Regarding this potential SPR linkage, the site may not be suitable for the proposed end-use in its current condition and there may be an unacceptable risk to receptors. Further investigation is required to confirm this.
High Risk	Regarding this potential SPR linkage, the site is probably or certainly not suitable for proposed end-use and there is likely to be an unacceptable risk to receptors. Contaminants probably or certainly present and urgent action required in the short term.

Tabulated Conceptual Site Model – Pollutant Linkage Summary			(On-Site Sources)
Potential Sources	Potential Absorption Pathways	Potential Receptors	Risk Classification
Made Ground from construction/ demolition activities: - Naphthalene, - TPHs.	Inhalation of volatile vapour (indoors and outdoors)	Human Health - End Users (Residents/Site workers/Future site visitors) - Site workers during internal re-development - Site operatives during maintenance works - Neighbours and public	Low
Asbestos containing material from demolition of previous structures (above ground): Asbestos.	- Direct ingestion of soil and soil derived dust - Dermal contact of soil and soil derived dust - Inhalation of dust (indoors and outdoors) with elevated concentration of determinand	Human Health - End Users (Residents/Site Workers/Future site visitors) - Construction workers during development - Site operatives during maintenance works	Moderate – Asbestos Survey Required pre-development works.
South of the site formerly occupied by part of Abbey Saw Mill: - Naphthalene, - TPHs, - VOCs, and - SVOCs.	Inhalation of volatile vapour (indoors and outdoors)	Human Health - End Users (Residents/Site workers/Future site visitors) - Site workers during internal re-development - Site operatives during maintenance works - Neighbours and public	Moderate
Ground gases generated by Made Ground (if Made Ground >2m across whole site): - Methane, - Carbon Dioxide, - Hydrogen Sulphide, and - Carbon Monoxide.	- Migration through anthropogenic & natural pathways - Inhalation of Asphyxiating gases - Explosion (methane only)	Human Health - End Users (Residents/Site workers/Future site visitors) - Site workers during internal re-development - Site operatives during maintenance works - Neighbours and public	Moderate
	- Migration through anthropogenic & natural pathways - Explosion (methane only)	Building Materials and Services - Buildings - Confined spaces - Underground services	Low

Tabulated Conceptual Site Model – Pollutant Linkage Summary			(Off-Site Sources)
Potential Sources	Potential Absorption Pathways	Potential Receptors	Risk Classification
Garage from 10m south-west/west: - Naphthalene, - TPHs, - VOCs, - SVOCs.	Inhalation of volatile vapour (indoors and outdoors)	Human Health - End Users (Residents/Site workers/Future site visitors) - Construction workers during development - Site operatives during maintenance works	Moderate
General industrial works: incl. biscuit factory to NE, Wharves to the south and west, various other mills, works, warehouses and smithy: - Naphthalene, - TPHs, - VOCs, - SVOCs.	Inhalation of volatile vapour (indoors and outdoors)	Human Health - End Users (Residents/Site workers/Future site visitors) - Construction workers during development - Site operatives during maintenance works	Moderate
Ground gases generated by Made Ground for various industrial uses in the surrounding area: - Methane, - Carbon Dioxide, - Hydrogen Sulphide, and - Carbon Monoxide.	- Migration through anthropogenic & natural pathways - Inhalation of Asphyxiating gases - Explosion (methane only)	Human Health - End Users (Residents/Site workers/Future site visitors) - Construction workers during development (especially in confined spaces) - Site operatives during maintenance works in confined spaces	Moderate
	- Migration through anthropogenic & natural pathways - Explosion (methane only)	Building Materials and Services - Buildings - Confined spaces - Underground services	Low

7. RECOMMENDATIONS AND PHASE II OBJECTIVES

This section of the report will present recommendations for the further investigation of each plausible pollutant linkage identified by the Conceptual Site Model.

It is recommended that an intrusive ground investigation is undertaken at the site to evaluate the risk that contaminants of concern within the soils and groundwater may affect end-users. This should determine the underlying ground and groundwater conditions and include an assessment of the level of contamination to enable the quantification of the ground-related risks associated with the proposed redevelopment.

Consideration should be given to the testing of soil samples recovered from exploratory holes for chemical laboratory testing. The testing should be for a broad range of contaminants in accordance with DEFRA / CLEA methodologies and include the contaminants of concern identified within the Conceptual Site Model.

7.1. Asbestos

It is possible that asbestos and asbestos containing materials will be incorporated within the building. An asbestos survey must be undertaken prior to any development works in the building. An asbestos management strategy should be implemented to ensure that any asbestos uncovered during the investigation does not pose a risk to members of the public that use the site.

7.2. Ground-gas and Vapours

The CSM has identified a low to moderate risk from ground gases and vapours at the site as a result of limited possible deep/putrescible Made Ground on-site and nearby and as a result of industrial uses that may have produced volatile contaminants. Given the lower ground floor level is partially an undercroft car park it is considered likely that anything in this and above this area should be ventilated to IStructE guidance, especially with ramps. This will mitigate any risk of ground-gas and volatiles risk to the proposed building as it will provide 4 points of protection against ground-gas. This would allow for protection measures up to and including CS3. However, outside of this boundary the areas may be at risk from ground-gases and vapours. It is considered that the best approach to further investigation given the existing building footprint (i.e all slabs) will stay the same that in-situ continuous ground-gas and vapour monitoring should be undertaken in these locations. This would then provide an idea of if retrospective gas/vapour protection measures will be required.

7.3. Geotechnical Review

As the building will not be changing structurally the only geotechnical risk assessment we will include is relating to chalk dissolution. Should any plans in future to construct new foundations etc further geotechnical risk assessment will be required. During the site investigation no visible cracks/concerns were raised with regard to the stability of the current building.

7.3.1. Chalk Dissolution Risk Assessment

The presence of dissolution features on-site can prove problematic, as they often provide inconsistency within the underlying geology. Often formed during glacial and periglacial conditions, the depth and width of these features can vary substantially, often providing inconsistency in geological strength data.

If a dissolution feature is suspected, a geotechnical engineer and structural engineer should be contacted for suitable engineering designs, based on further works identifying and classifying the area the feature occupies.

The Groundsure Geosight datasheets, presented Appendix D of this report, revealed the following information which may be pertinent to this risk assessment.

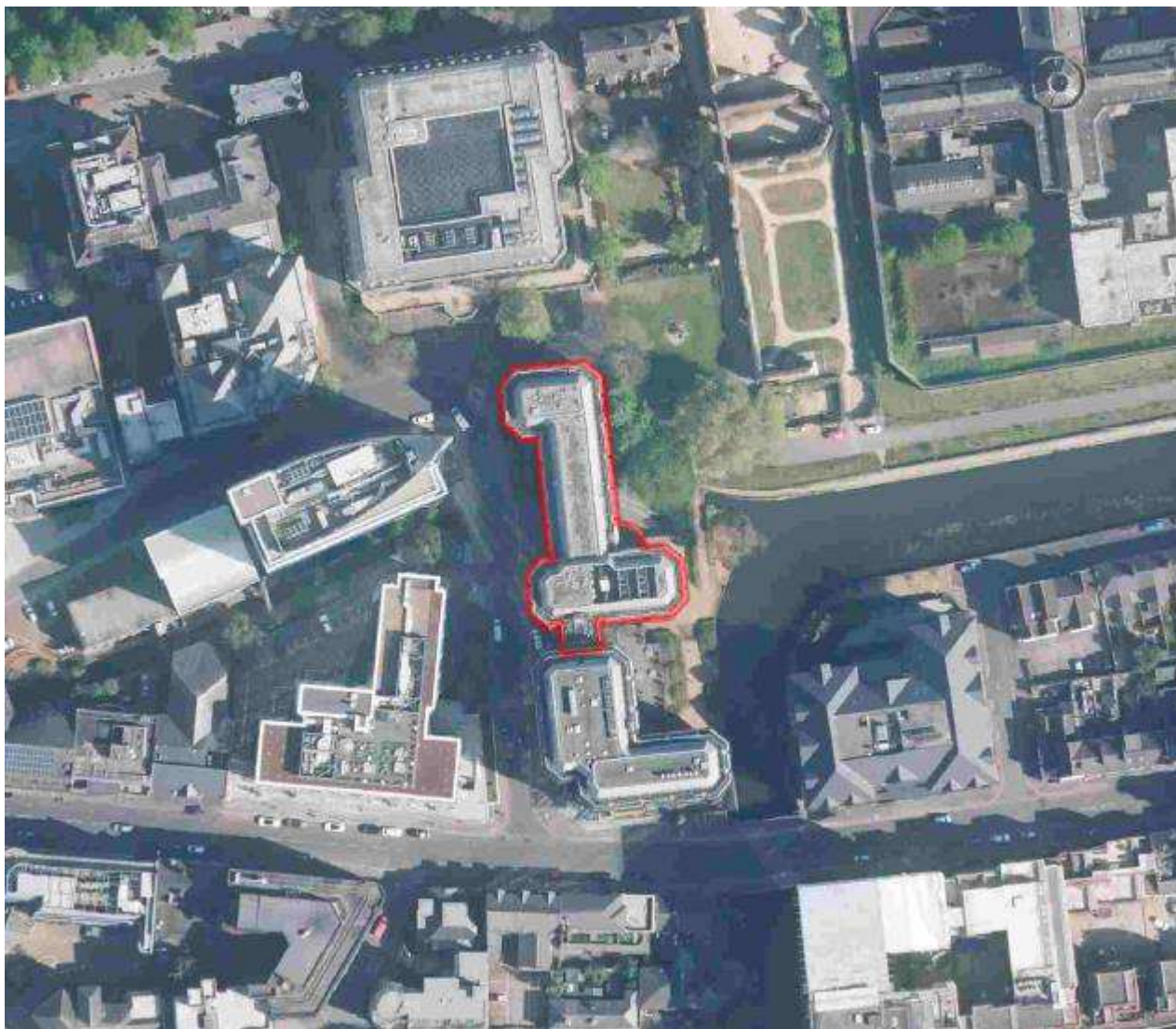
- Groundwater vulnerability – soluble rock risk:
 - 20% of grid square: Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.
- Ground Dissolution of Soluble Rocks – The site was classified as a Very Low to Low risk of ground dissolution of soluble rocks.
 - Low Risk in north was described as *“Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not to be considered except in exceptional circumstances”*.
 - Very Low risk in south was described as *“Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.”*
- Closest Historical Mining area was Class A identified 72m north-west. A Class A area was described as *“Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level, where they need not be considered”*. However, this is generally a precautionary statement attributed to all areas associated with chalk within the ground profile. Therefore, this does not identify any underground chalk features at the site location.
- 3No. Natural cavity, solution pipes were identified 397 – 464m west relating to Taplow Gravel over Chalk.
- 11No. chalk mining cavities 398m south-east, 532m south, 580m south-west, 691m south, 724m south, 765 - 812m south, 895m south-west, 928m south, 939m south-west and 956m south.
- 15No. records of surface ground workings were noted within 250m radius. The records related to wharves 22 – 49m south, 71m south-east, 87m south and 119 – 122m south, canal 63 – 94m south/south-east and a heap 148m north.
- No records of Britpits, Underground workings, Mining Cavities or JPB Mining Areas were noted within a 500m radius of the site.
- The Edmonds Procedure (Edmonds, C.N., 2001. Predicting natural cavities in chalk. Geological Society, London, Engineering Geology Special Publications, 18(1), pp.29-38.); highlighted a moderately low subsidence hazard classification.

The historical mapping review undertaken in section 3.1 of this report confirmed the findings of the groundsure datasheets discussed above.

The site was within a location where lidar data did not reveal any significant depressions.

This risk assessment indicates that there is a low to moderate risk from the dissolution of soluble rocks at the site. However, given the location of the site is within a very developed area of Reading (historically and present) it is considered unlikely that any chalk dissolution features would be present beneath the site.

FIGURES



 Site boundary

Abbey Gardens, Abbey Street, Reading RG1 3BA

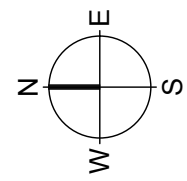
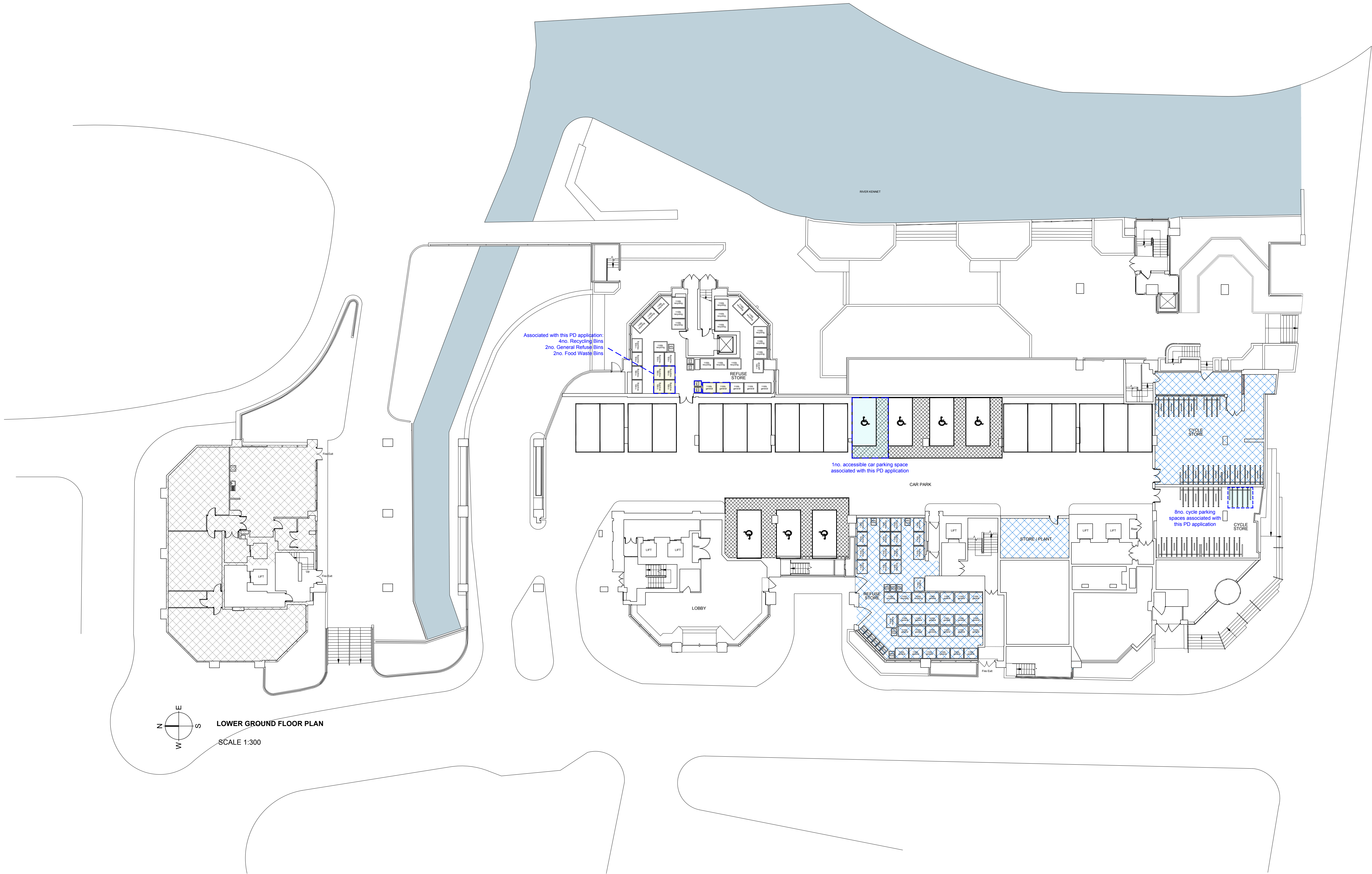
Mr and Mrs Ridges

July 2025

Figure 1 – Site Location Plan

GWPR6366



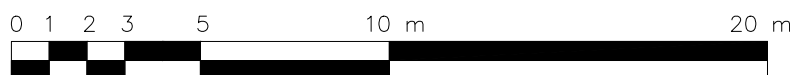
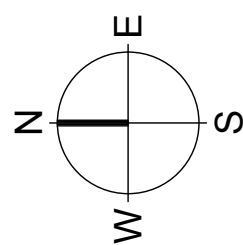


LOWER GROUND FLOOR PLAN

SCALE 1:300

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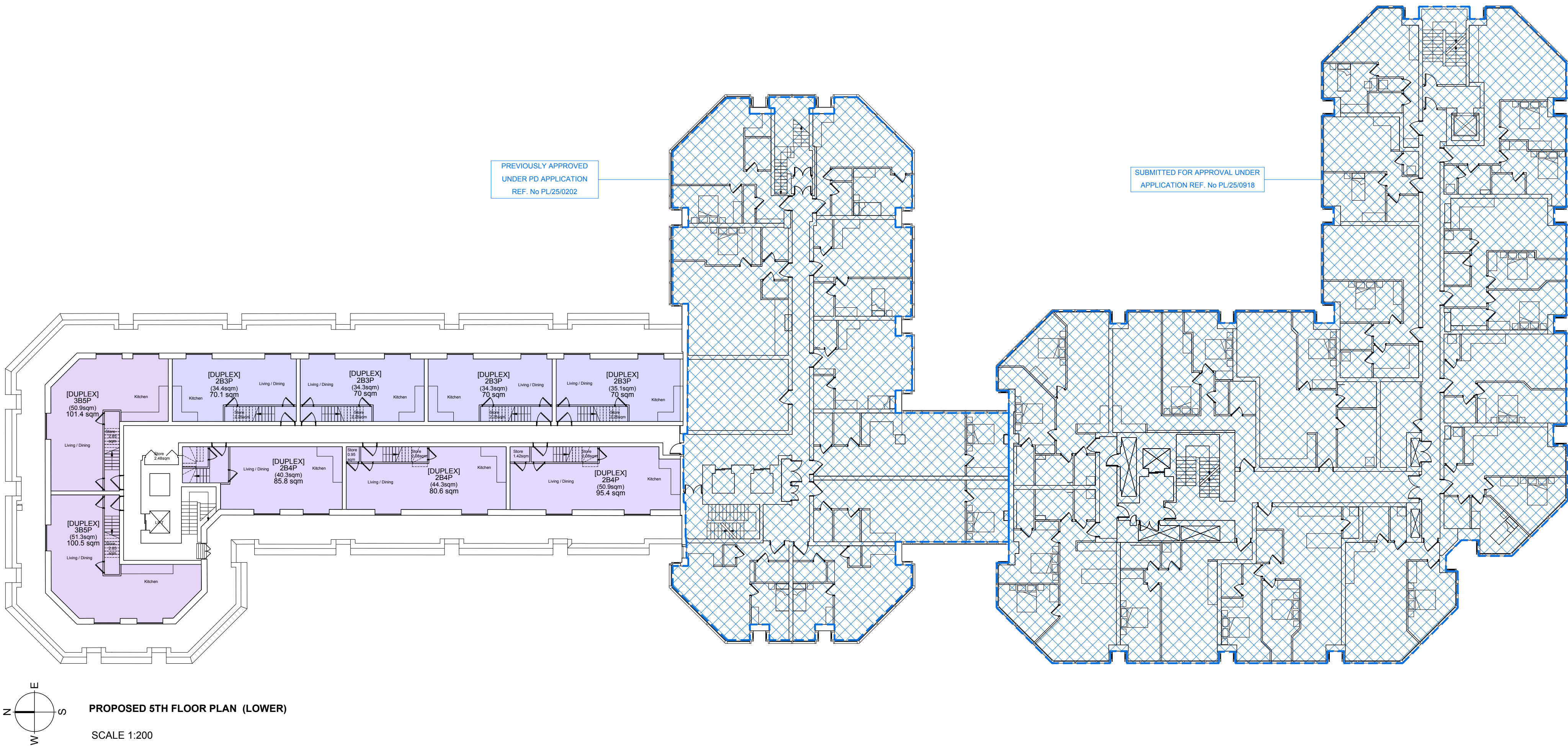


1B2P	CIRCULATION
2B3P	CYCLE STORE
2B4P	SERVICING / BACK OF HOUSE
3B5P	OUTSIDE SCOPE OF THIS APPLICATION

	PARKING ASSOCIATED WITH THE APPLICATION
	PREVIOUSLY APPROVED/ SUBMITTED FOR APPROVAL

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Revision:	Description:	Date:
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Project: 24-013 Abbey Gardens
Drawing: Proposed Lower Ground Floor Plan
Date: 24.10.2024 drawn by: YY check: CC
Scale: 1:200@A1 drwg no.: 309 rev. no.: P.01
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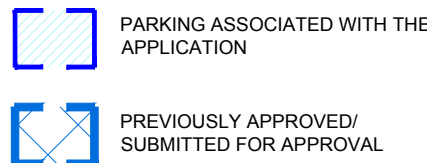
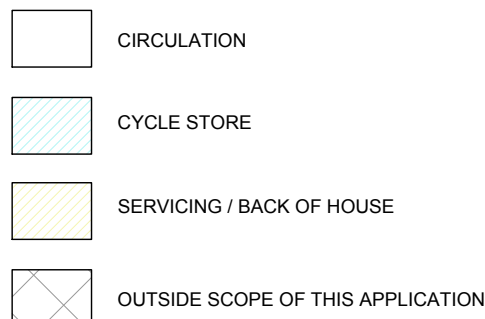
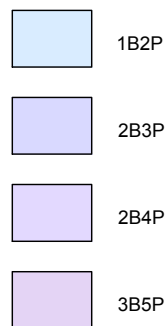
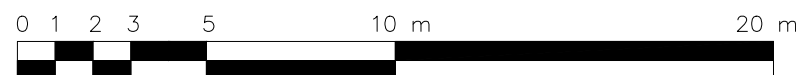
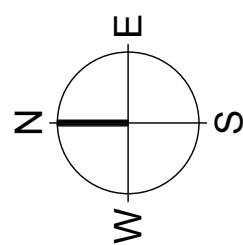
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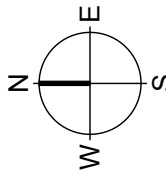
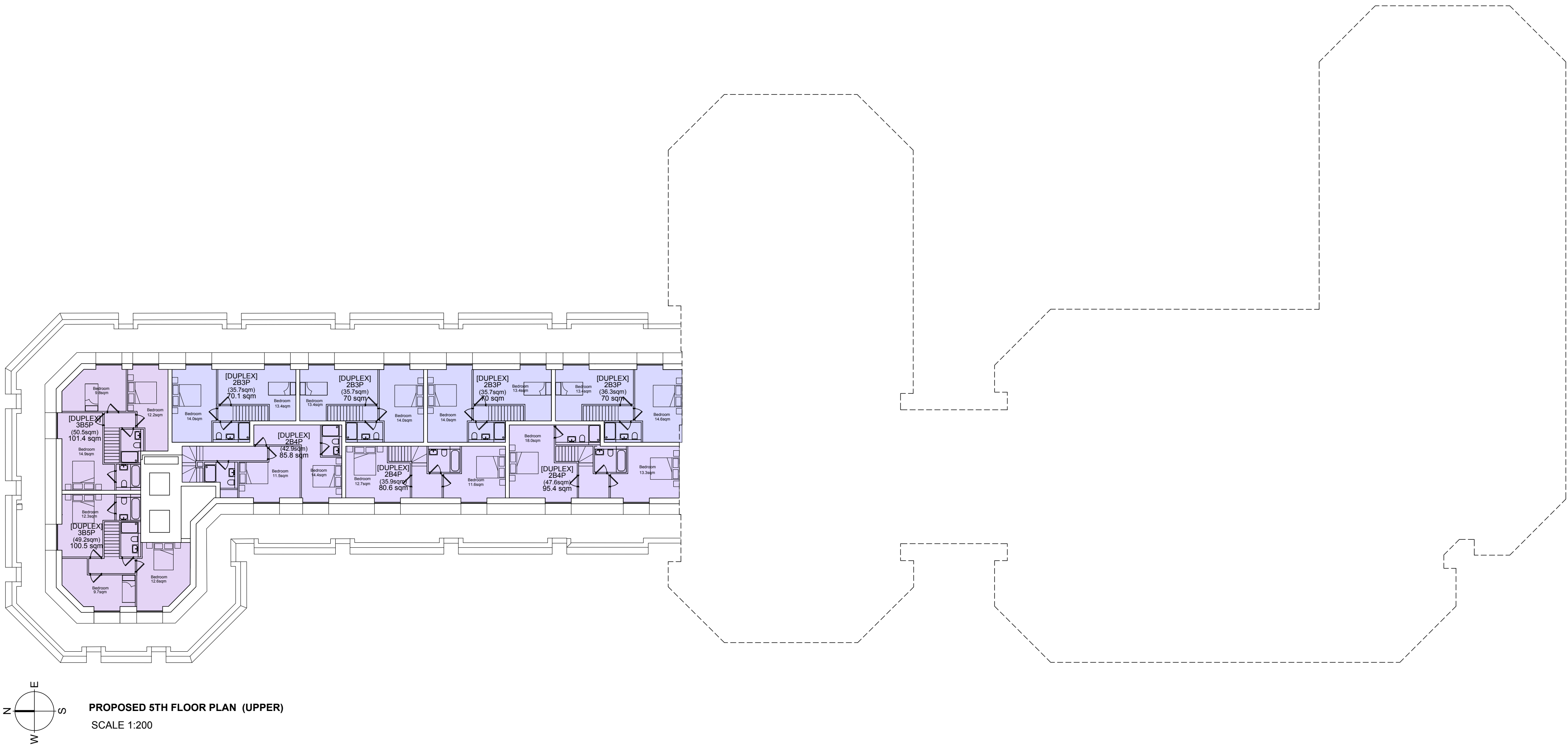
Project: 24-013 Abbey Gardens

Drawing: Proposed 5th Floor Plan (lower)

Date: 24.10.2024 drawn by: YY check: CC

Scale: 1:200@A1 drwg no.: 315(a) rev. no.: P.01

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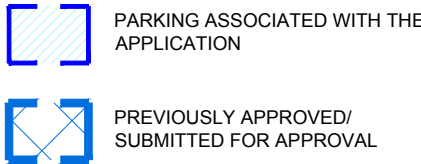
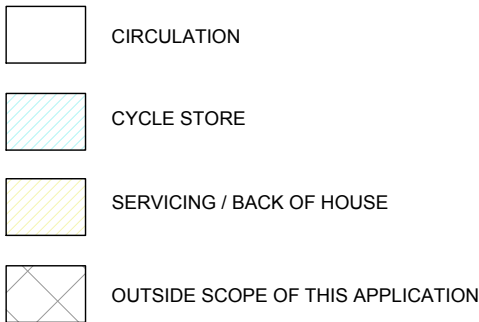
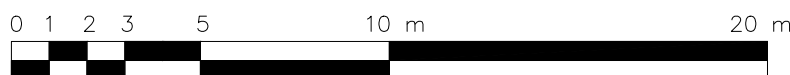
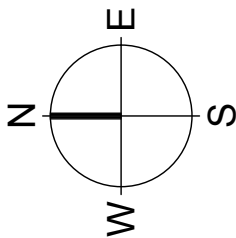
PROPOSED 5TH FLOOR PLAN (UPPER)
SCALE 1:200

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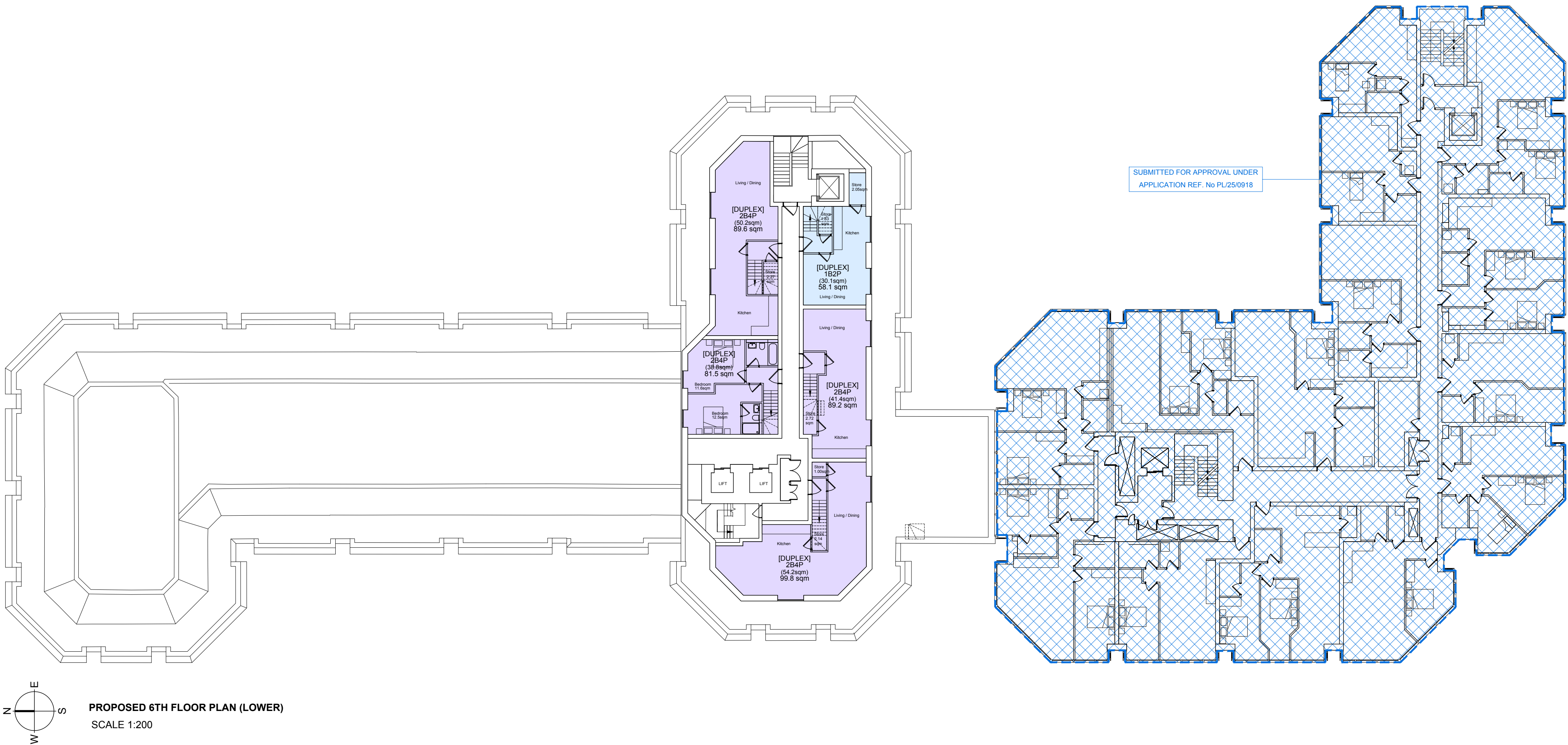


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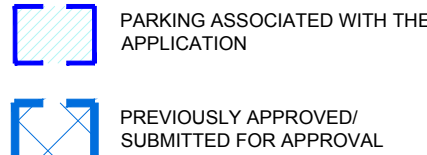
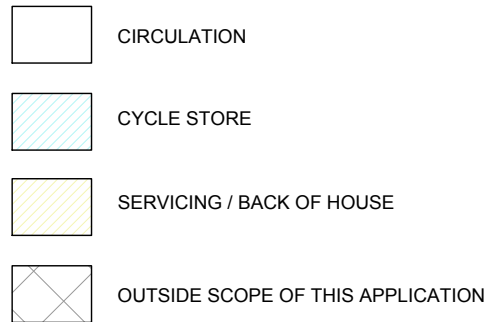
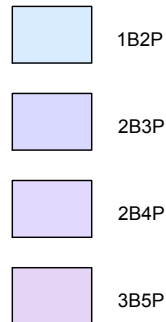
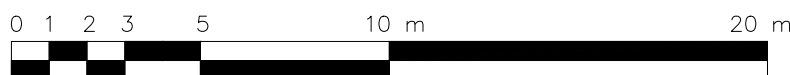
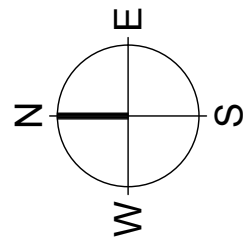
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PROPOSED 6TH FLOOR PLAN (LOWER)
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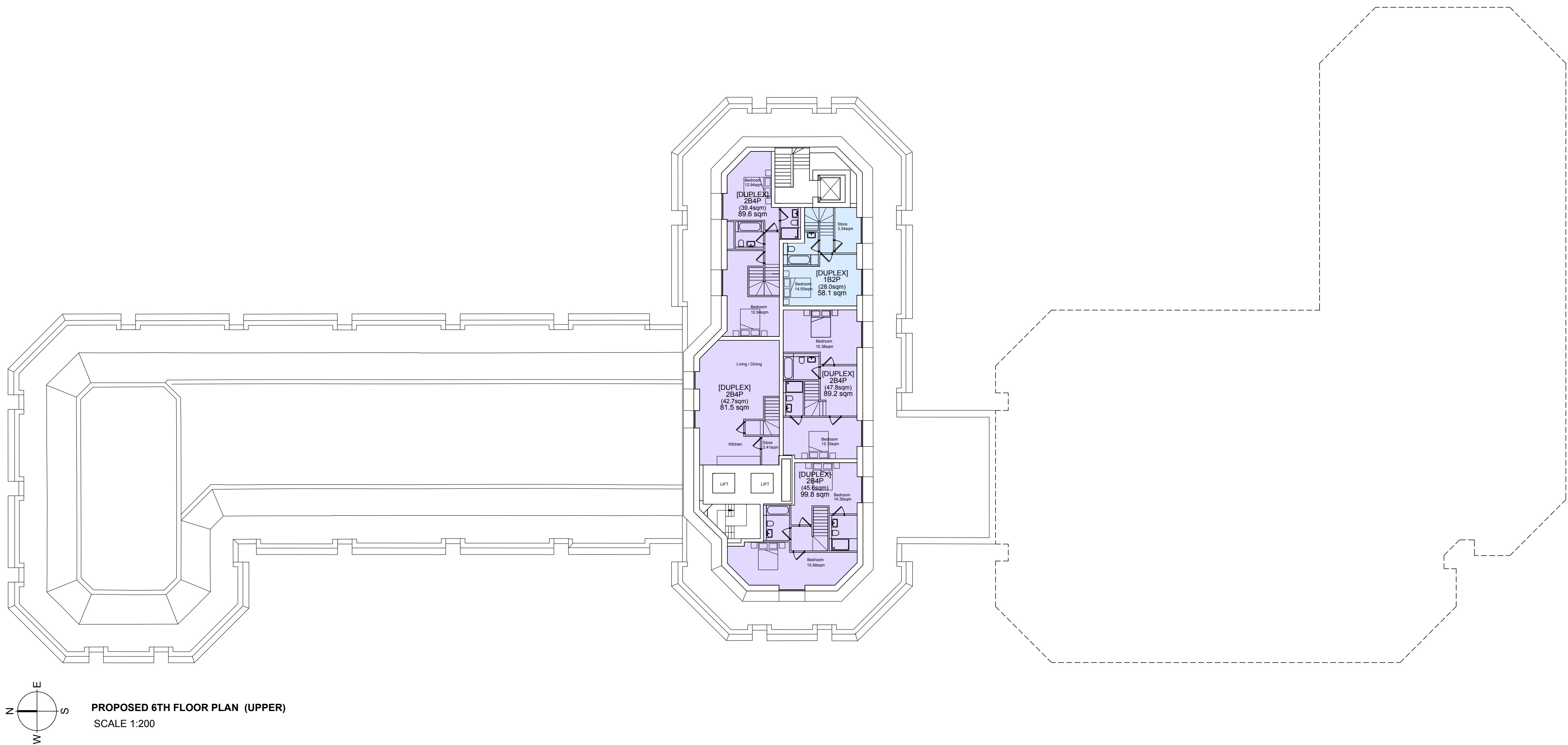
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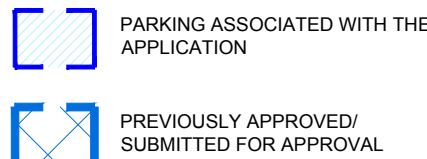
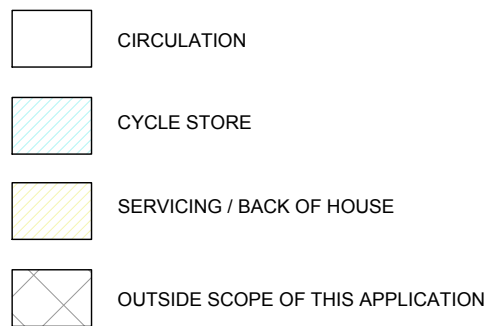
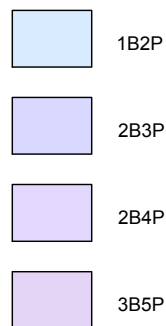
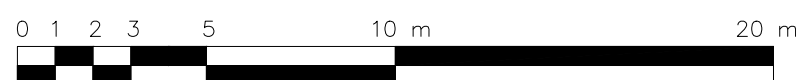
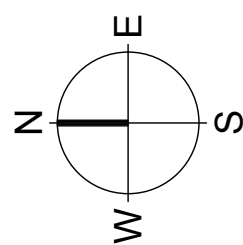
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APPENDIX A: Conditions and Limitations

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The report has been prepared on the basis of information, data and materials which were available at the time of writing. Accordingly, any conclusions, opinions or judgements made in the report should not be regarded as definitive or relied upon to the exclusion of other information, opinions and judgements.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief; as such these do not necessarily address all aspects of ground behaviour at the site. No liability is accepted for any reliance placed on it by others unless specifically agreed in writing.

Any decisions made by you, or by any organisation, agency or person who has read, received or been provided with information contained in the report ("you" or "the Recipient") are decisions of the Recipient and we will not make, or be deemed to make, any decisions on behalf of any Recipient. We will not be liable for the consequences of any such decisions.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

Any Recipient must take into account any other factors apart from the Report of which they and their experts and advisers are or should be aware. The information, data, conclusions, opinions and judgements set out in the report may relate to certain contexts and may not be suitable in other contexts. It is your responsibility to ensure that you do not use the information we provide in the wrong context.

This report is based on readily available geological records, the recorded physical investigation, the strata observed in the works, together with the results of completed site and laboratory tests. Whilst skill and care has been taken to interpret these conditions likely between or below investigation points, the possibility of other characteristics not revealed cannot be discounted, for which no liability can be accepted. The impact of our assessment on other aspects of the development required evaluation by other involved parties.

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground

conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist.

The conclusions and recommendations relate to Abbey Gardens, Abbey Street, Reading RG1 3BA.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sampler borehole implies the specific technique used to produce a trial hole.

The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot-by-plot basis prior to the construction of foundations. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

Ownership of copyright of all printed material including reports, laboratory test results, trial pit and borehole log sheets, including drillers log sheets, remain with Ground and Water Limited. Licence is for the sole use of the client and may not be assigned, transferred or given to a third party.

Only our client may rely on this report and should this report or any information contained in it be provided to any third party we accept no responsibility to the third party for the contents of this report save to the extent expressly outlined by us in writing in a reliance letter addressed from us to the third party.

Recipients are not permitted to publish this report outside of their organisation without our express written consent.

APPENDIX B:

Technical Glossary

TECHNICAL GLOSSARY

The list of possible definitions within the report may be seen below. Please note that some definitions may not be relevant to this report.

HYDROGEOLOGY:

A **Principal Aquifer** is a layer of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary (A) Aquifers consist of deposits with 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.

Secondary (B) Aquifers consist of deposits with predominantly lower permeability layers with may stoke and yield limited amounts of groundwater due to localised features such as fissures, think permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Aquifers (Undifferentiated) are assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both a minor aquifer and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata are rock layers with low permeability that have negligible significance for water supply or river base flow. These were formerly classified as non-aquifers.

FLOOD ZONES:

Environment Agency Flood Zone 2, defined as; land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.

Environment Agency Flood Zone 3 shows the extent of a river flood with a 1 in 100 (1%0 or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year.

Environment Agency Flood Zone 3 area that benefits from flood defences, defined as; land and property in this flood zone would have a high probability of flooding without the local flood defences. These protect the area against a river flood with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

GROUNDWATER SOURCE PROTECTION ZONES (SPZS):

Inner Zone (SPZ1): This zone is 50 day travel time of pollutant to source with a 50 metres default minimum radius.

Outer Zone (SPZ2): This zone is 400 day travel time of pollutant to source. This has a 250 or 500 metres minimum radius around the source depending on the amount of water taken.

Total Catchment (SPZ3): This is the area around a supply source within which all the groundwater ends up at the abstraction point. This is the point from where the water is taken. This could extend some distance from the source point.

Zone of Special Interest (SPZ4): This zone is where local conditions require additional protection.

IN-SITU STRENGTH GEOTECHNICAL TESTING:

Windowless Sample and/or Cable Percussion and/or Rotary Boreholes provide samples of the ground for assessment but they do not give any engineering data. The standard penetration test (SPT) is an in-situ dynamic penetration test designed to provide information on the geotechnical engineering properties of soil. The test uses a thick-walled sample tube, with an outside diameter of 50mm and an inside diameter of 35mm, and a length of around 650mm. This is driven into the ground at the bottom of a borehole by blows from a slide hammer with a weight of 63.5kg falling through a distance of 760mm. The sample tube is driven 150mm into the ground and then the number of blows needed for the tube to penetrate each 75mm up to a depth of 450mm is recorded. The sum of the number of blows is termed the "standard penetration resistance" or the "N-value".

Dynamic Probing involves the driving of a metal cone into the ground via a series of steel rods. These rods are driven from the surface by a hammer system that lifts and drops a 63.5kg (SHDP) hammer onto the top of the rods through a set height, thus ensuring a consistent energy input. The number of hammer blows that are required to drive the cone down by each 100mm increment are recorded. These blow counts then provide a comparative assessment from which correlations have been published, based on dynamic energy, which permits engineering parameters to be generated. (The Dynamic Probe 'Super Heavy' (SHDP) Tests were conducted in accordance with BS 1377; 1990; Part 9, Clause 3.2).

APPENDIX C: Site Photographs

Photograph 1.



View of the western face of the building.

Photograph 2.



View of the eastern side of the site, towards the south.

Photograph 3.



View of the eastern side of building, with the stream/channel passing below.

Photograph 4.



View of the central-eastern side of the site. Access road dips and matches lower level.

Abbey Gardens, Abbey Street, Reading RG1 3BA

Mr and Mrs Ridges

**December
2024**

Site Walkover Photographs

GWPR6366



APPENDIX D:

Historical Maps

Site Details:

Abbey Gardens, Abbey Street,
Reading, RG1 3BA

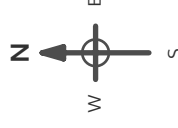
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Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1879

Scale: 1:2,500

Printed at: 1:2,500



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



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Production date: 04 December 2024

Map legend available at:

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Site Details:

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Reading, RG1 3BA

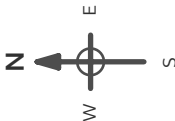
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Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: County Series Town Plan

Map date: 1879

Scale: 1:500

Printed at: 1:1,000



Surveyed 1879
Revised N/A
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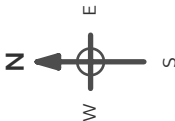
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Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1900

Scale: 1:2,500

Printed at: 1:2,500



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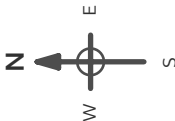
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Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1912

Scale: 1:2,500

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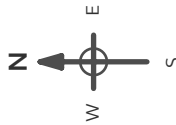
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Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1931

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1931
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

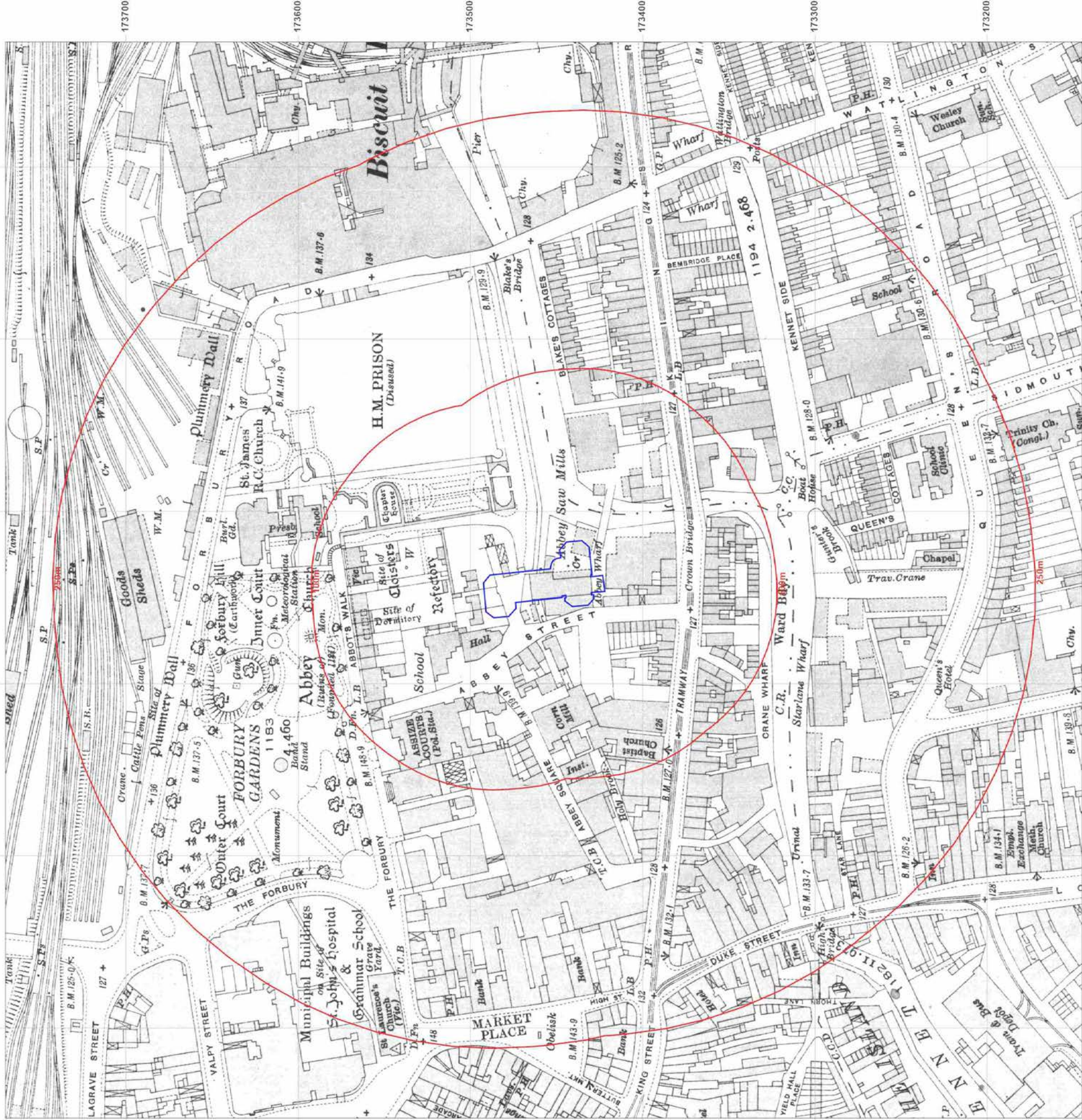


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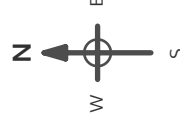
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Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1956

Scale: 1:1.250

Printed at: 1:2,000



Surveyed 1956
Revised 1956
Edition N/A
Copyright N/A
Levelled 1951

Surveyed 1956	Surveyed 1956
Revised 1956	Revised 1956
Edition N/A	Edition N/A
Copyright N/A	Copyright N/A
Levelled 1951	Levelled 1951



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Client Ref: GWPR6366
Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1957

Scale: 1:1,250

Printed at: 1:2,000



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

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Revised N/A
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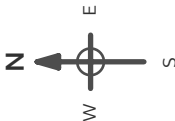
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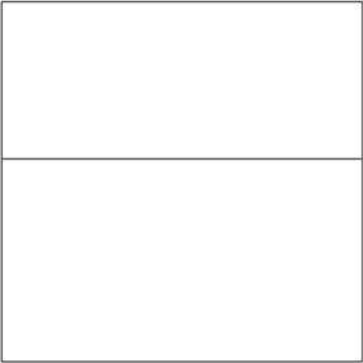
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Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1957
Revised 1957
Edition 1958
Copyright N/A
Levelled 1951

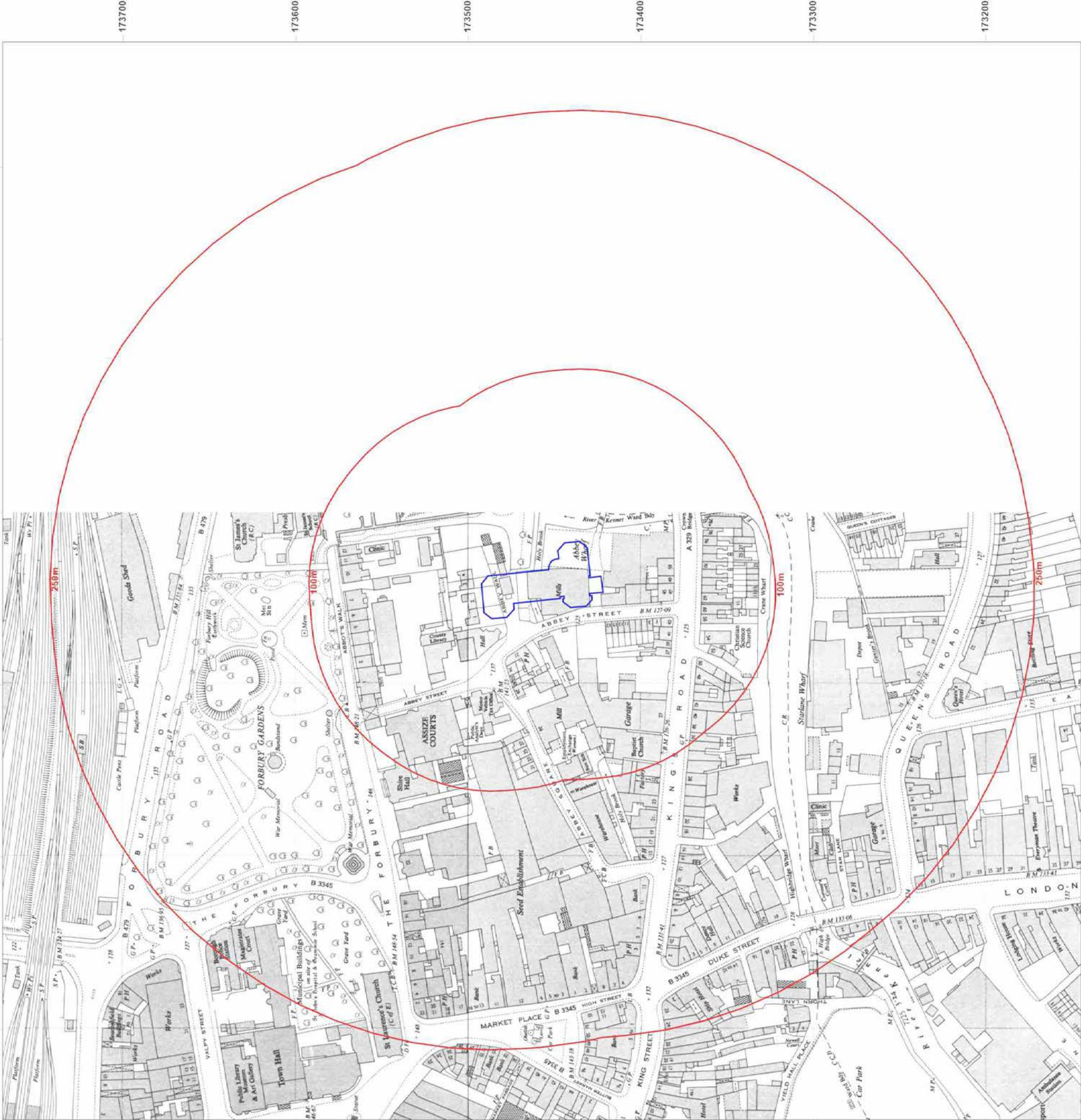


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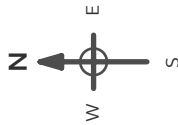
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Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1957-1961

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1958
Revised 1958
Edition 1961
Copyright 1961
Levelled 1951

Surveyed 1956
Revised 1956
Edition 1957
Copyright N/A
Levelled 1951



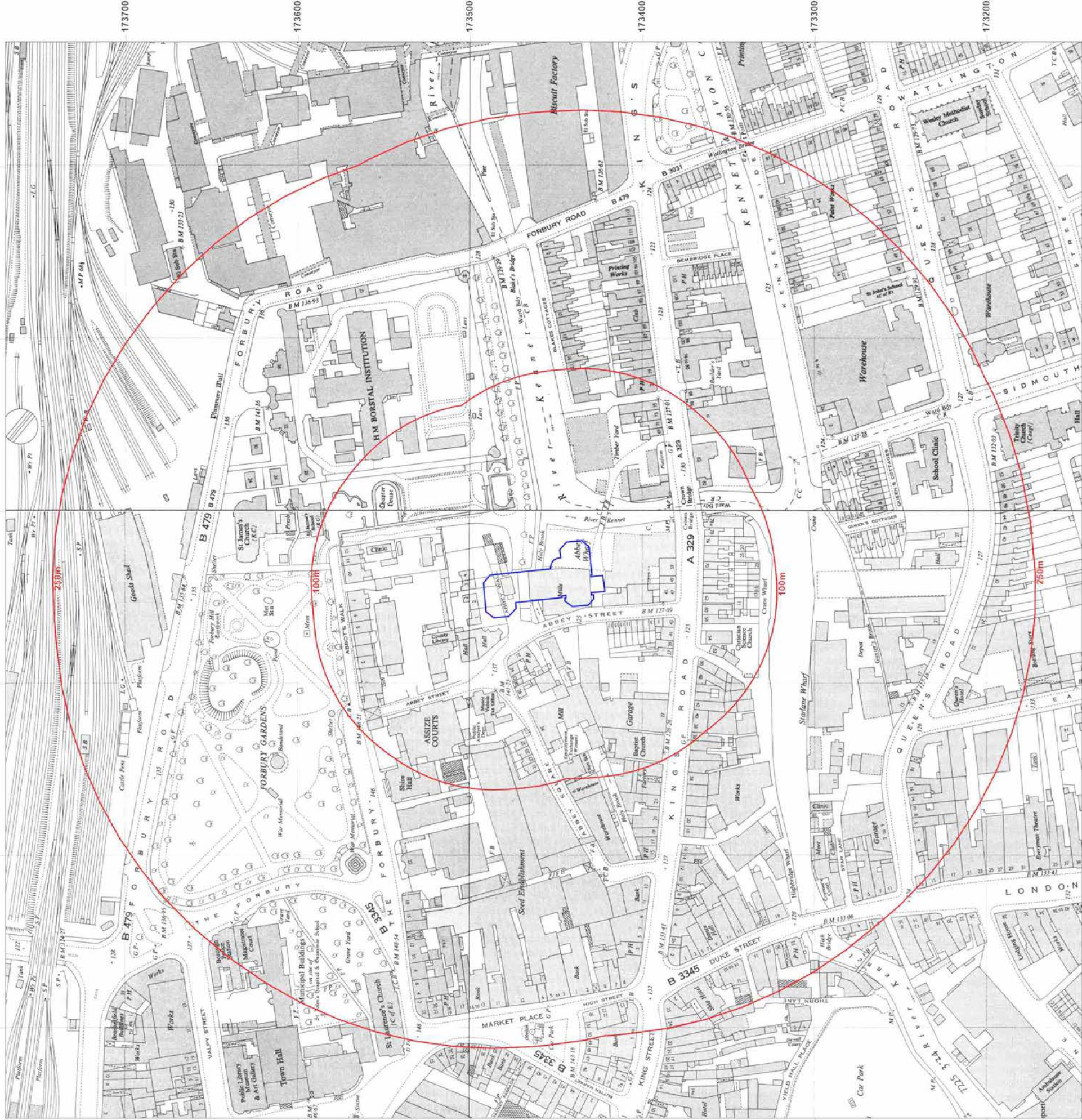
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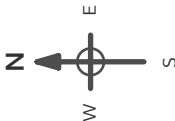
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Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1962

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1956
Revised 1961
Edition N/A
Copyright 1962
Levelled 1951



Surveyed 1956
Revised 1961
Edition N/A
Copyright 1962
Levelled 1951



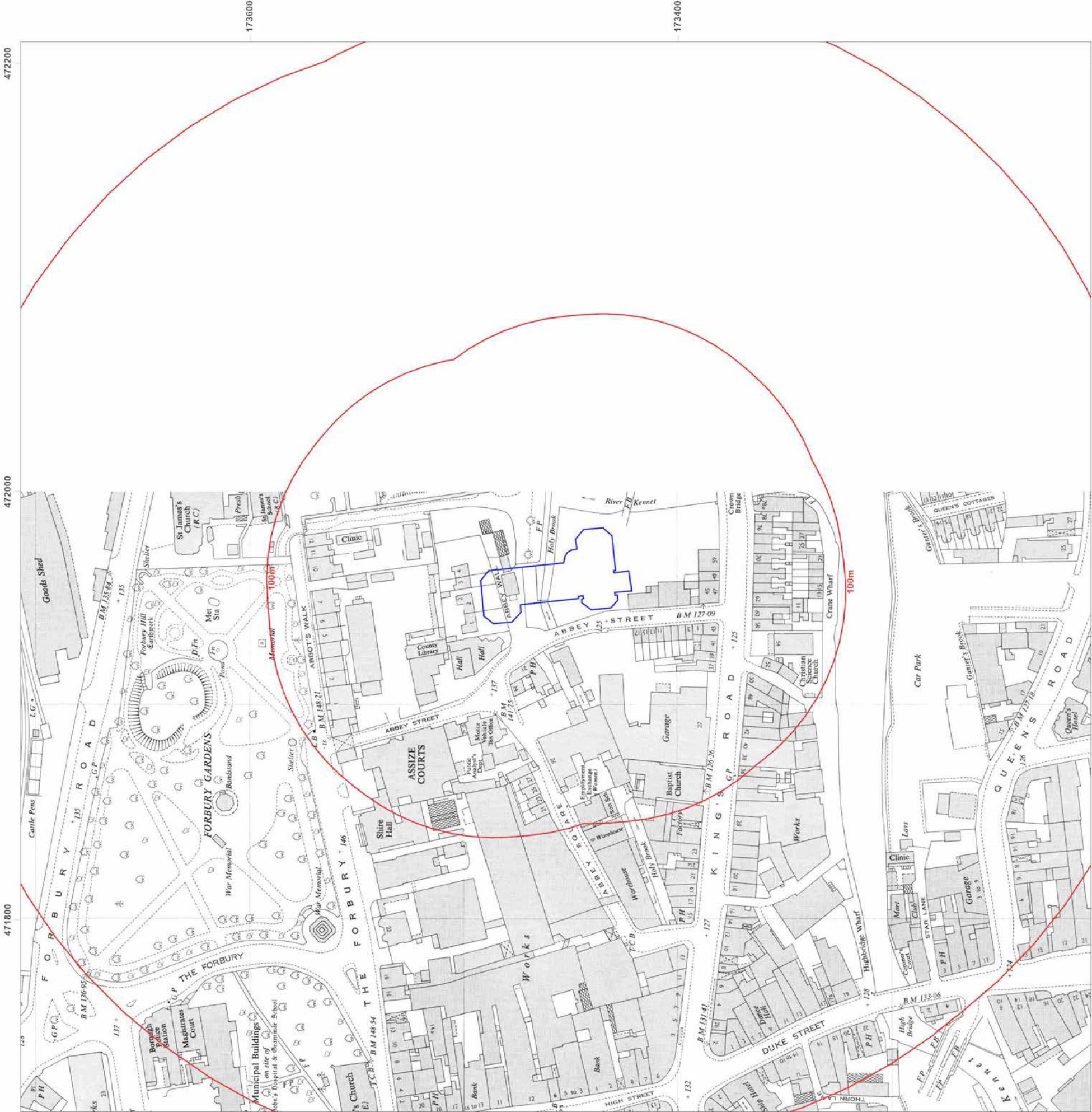
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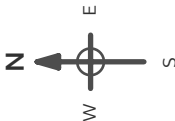
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Map Name: National Grid

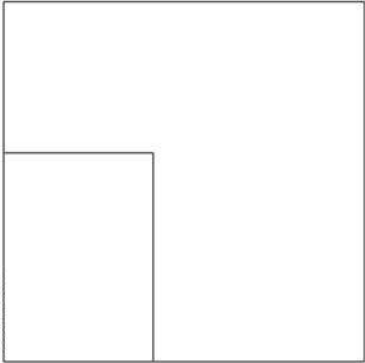
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Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1956
Revised 1970
Edition N/A
Copyright 1971
Levelled 1951



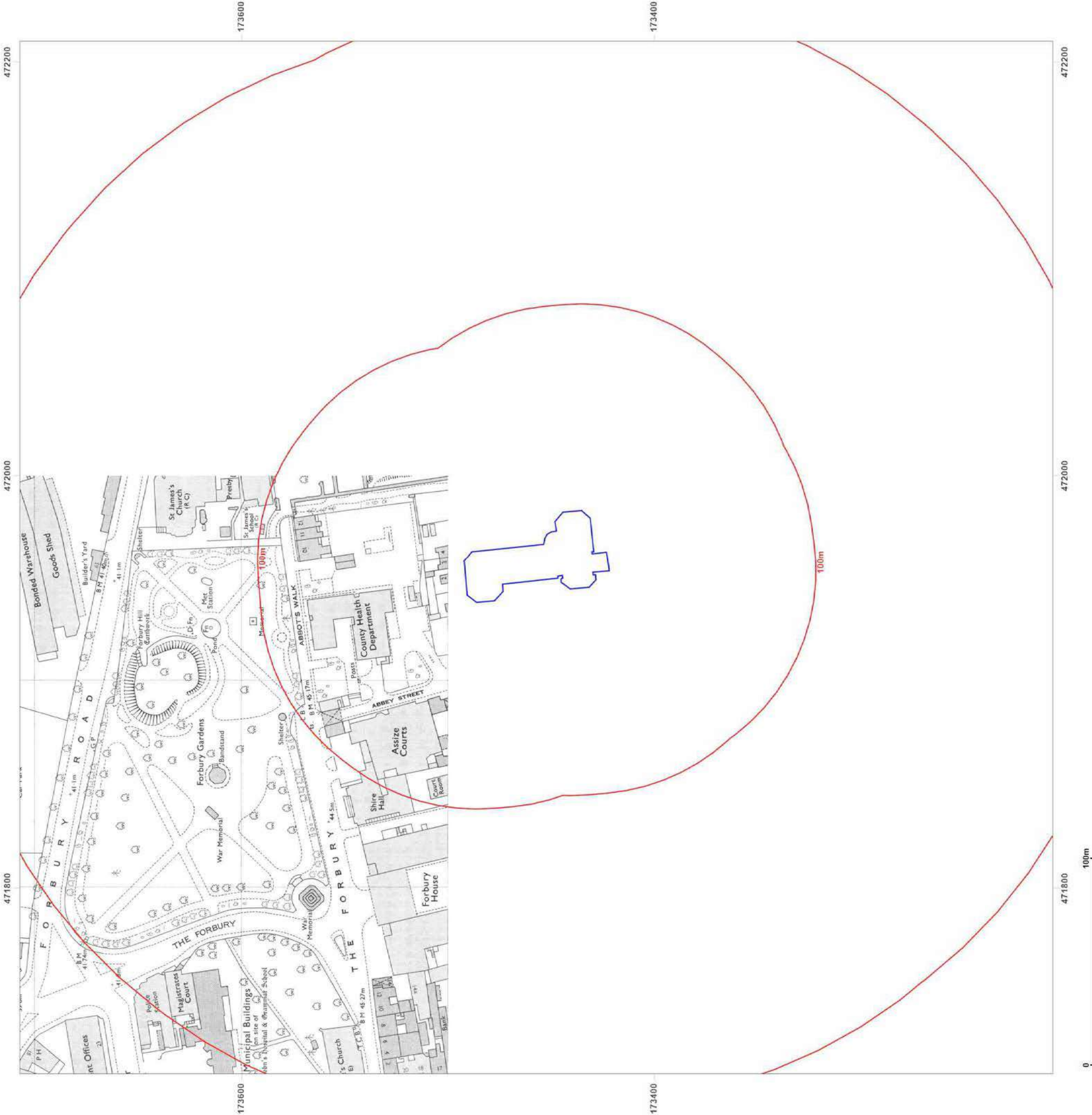
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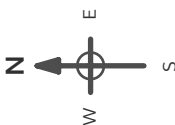
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Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1968-1973

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1956
Revised 1970
Edition N/A
Copyright 1971
Levelled N/A

Surveyed 1956
Revised 1972
Edition N/A
Copyright 1973
Levelled 1951

Surveyed 1956
Revised 1967
Edition N/A
Copyright 1968
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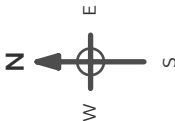
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Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1979

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1979
Levelled 1973



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1979
Levelled 1973



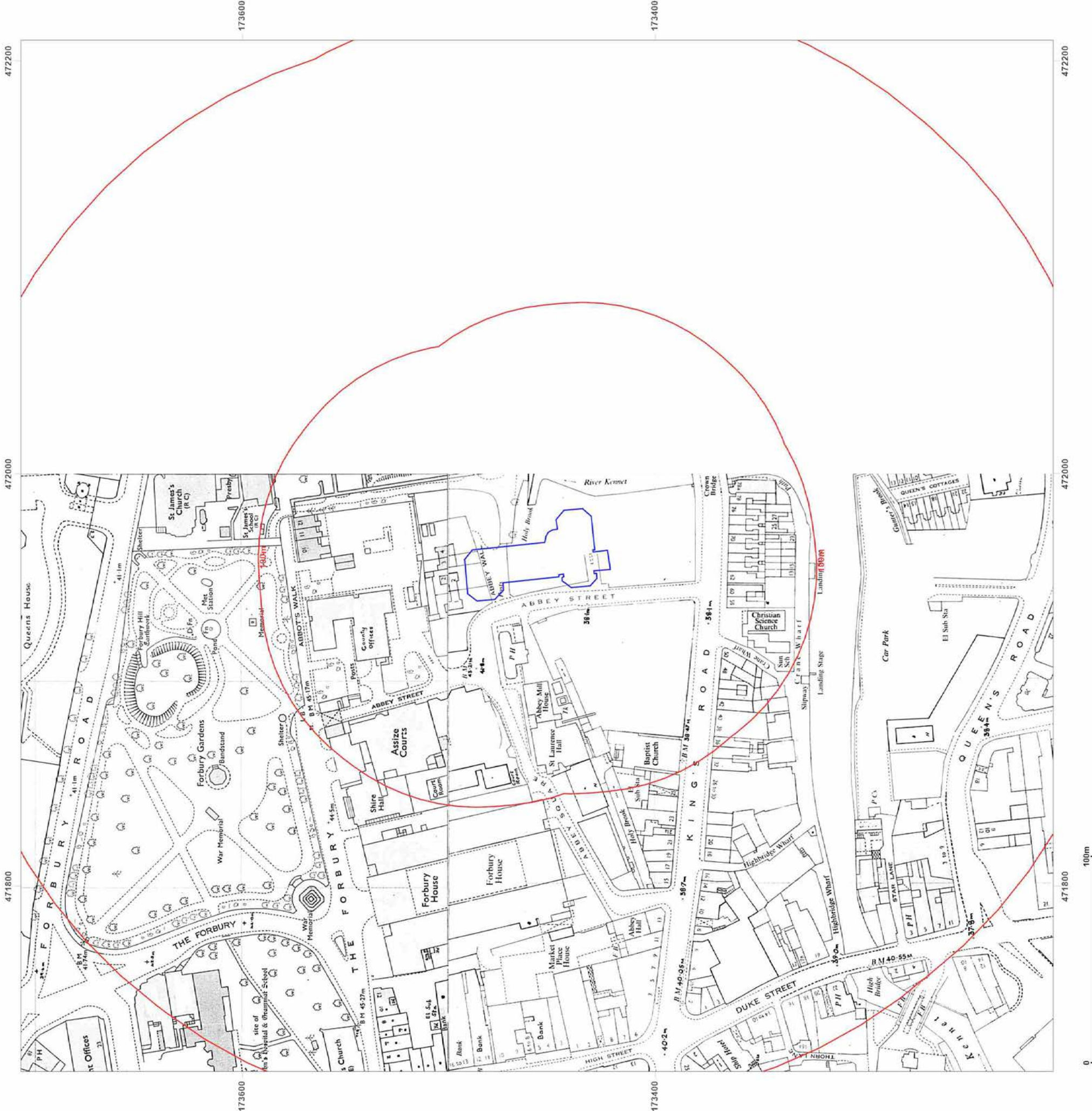
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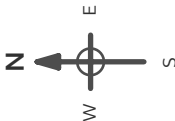
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Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1986-1989

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1956
Revised 1984
Edition N/A
Copyright 1986
Levelled 1973

Surveyed 1973
Revised 1988
Edition N/A
Copyright 1988
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Surveyed 1958
Revised 1987
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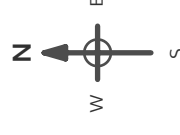
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Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1988-1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1973
Revised 1984
Edition N/A
Copyright 1988
Levelled 1973

Surveyed 1973
Revised 1990
Edition N/A
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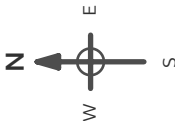
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Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: National Grid

Map date: 1988-1993

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1958
Revised 1984
Edition N/A
Copyright 1988
Levelled 1973

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

Surveyed N/A
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Surveyed 1993
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Copyright 1993
Levelled N/A



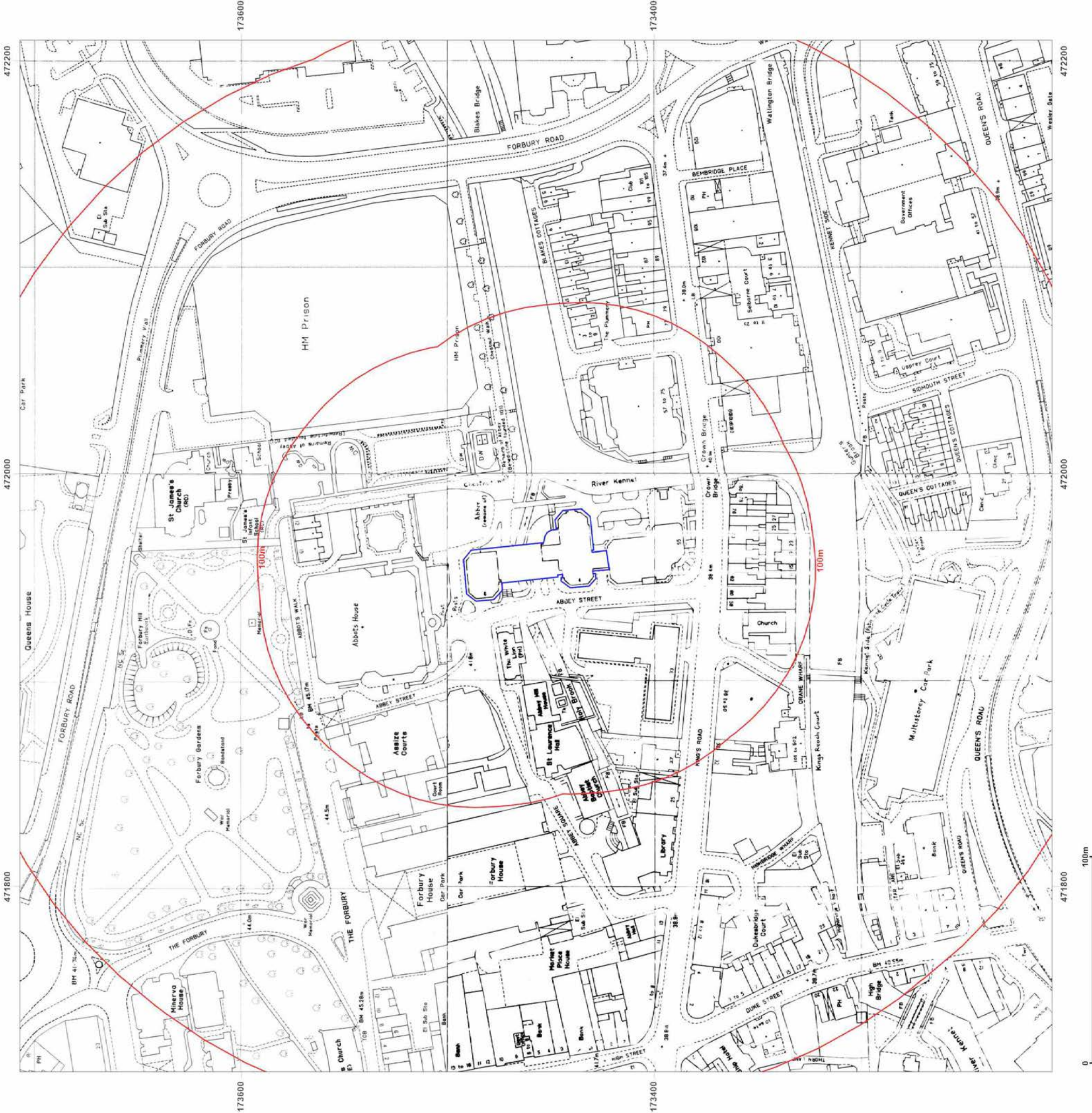
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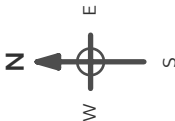
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Map Name: National Grid

Map date: 1991-1993

Scale: 1:1,250

Printed at: 1:2,000



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



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

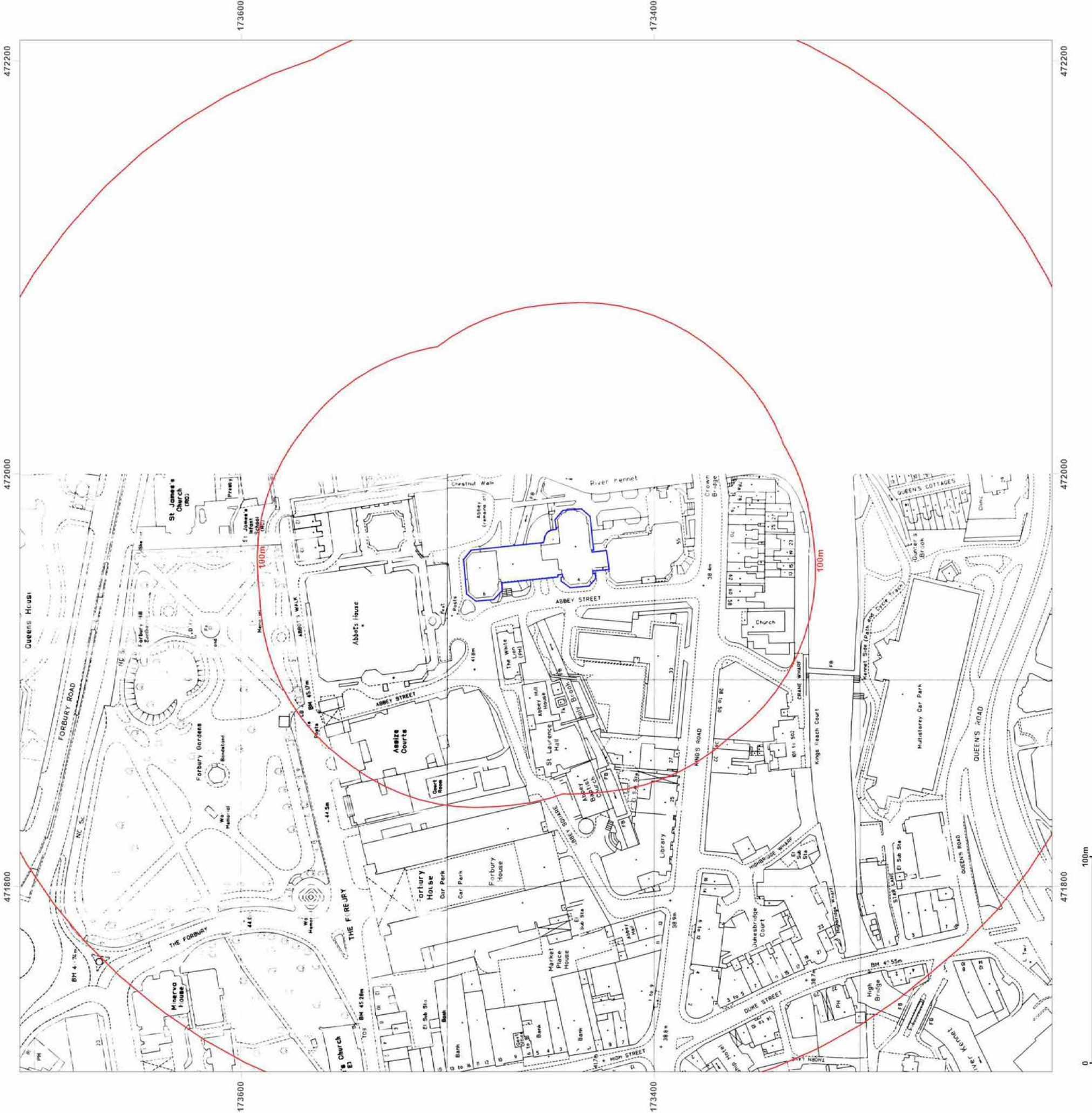


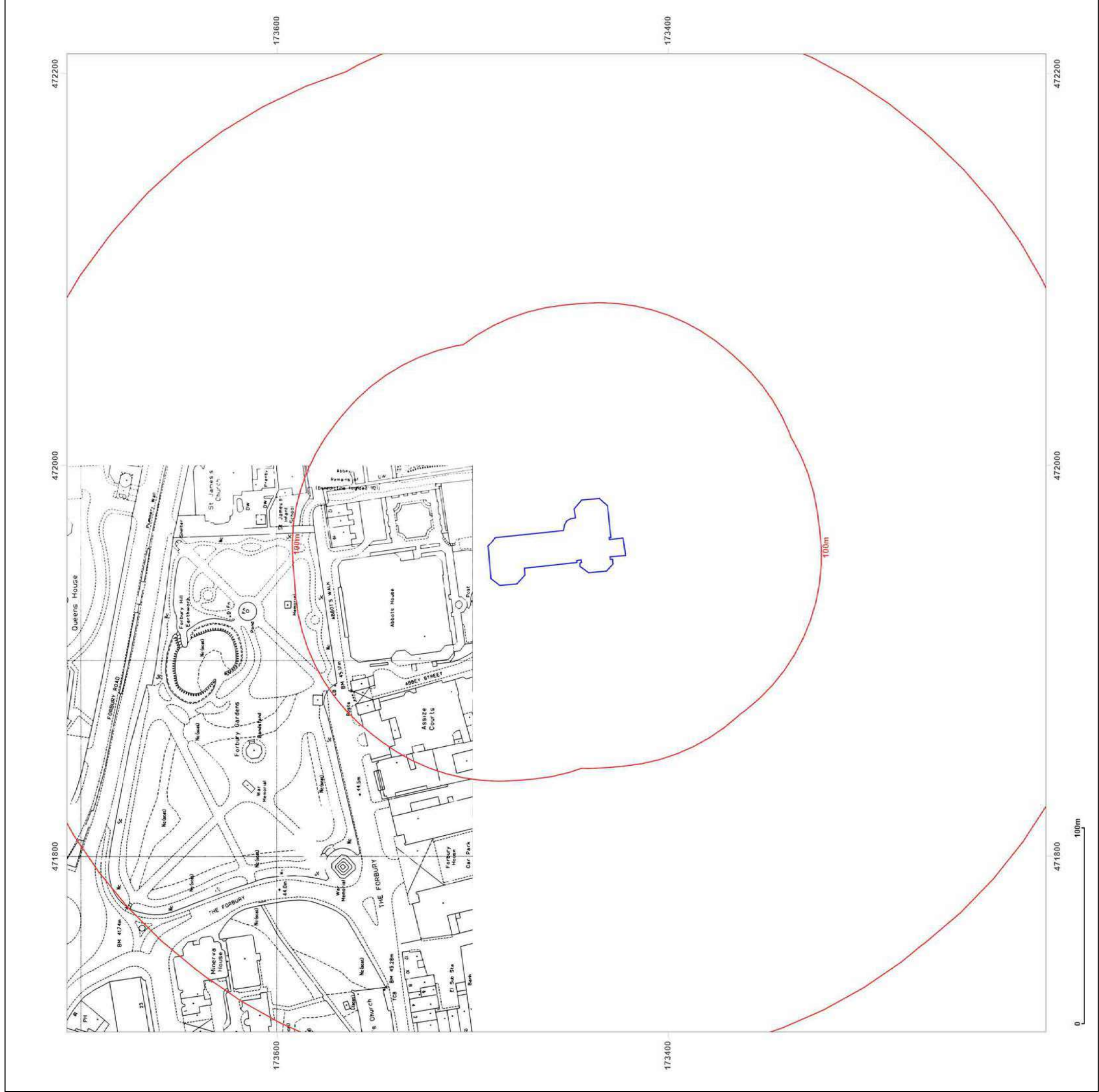
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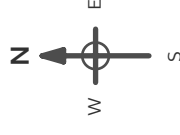




Abbey Gardens, Abbey Street,
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Map Name: National Grid

Printed at: 1:2,000



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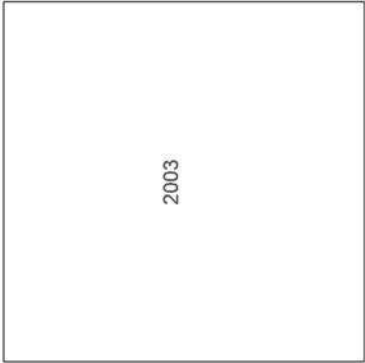
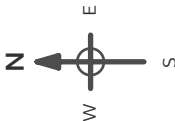
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Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



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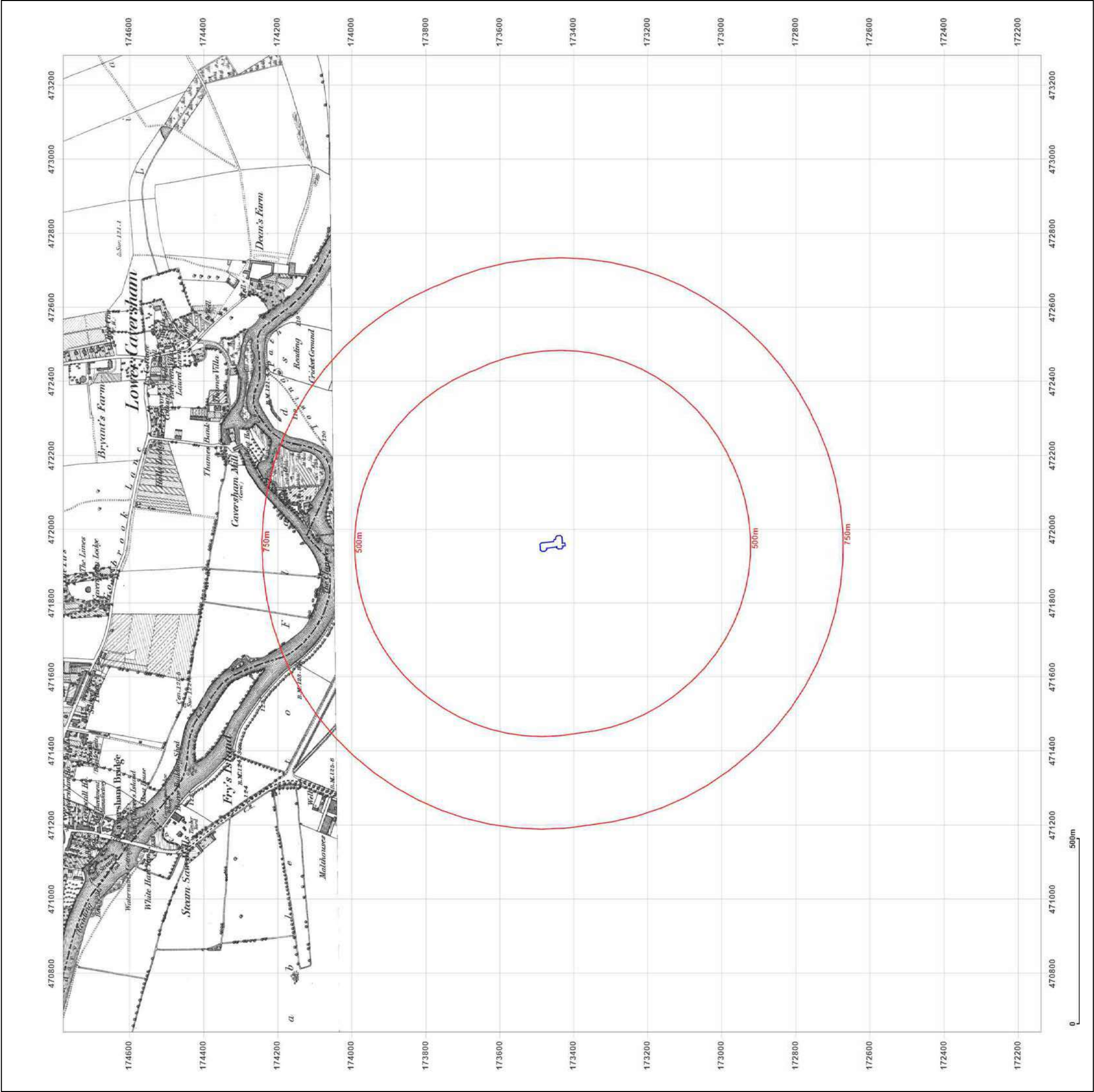
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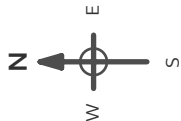
Client Ref: GWPR6366
Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: County Series

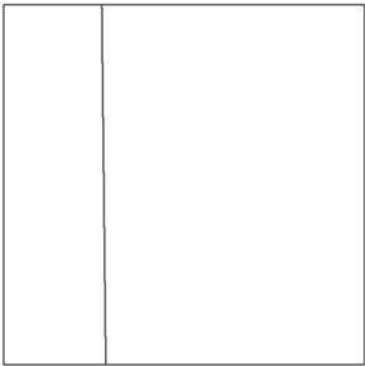
Map date: 1878

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1878
Revised 1878
Edition N/A
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Site Details:

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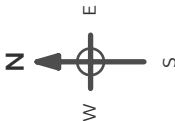
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Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1897-1898

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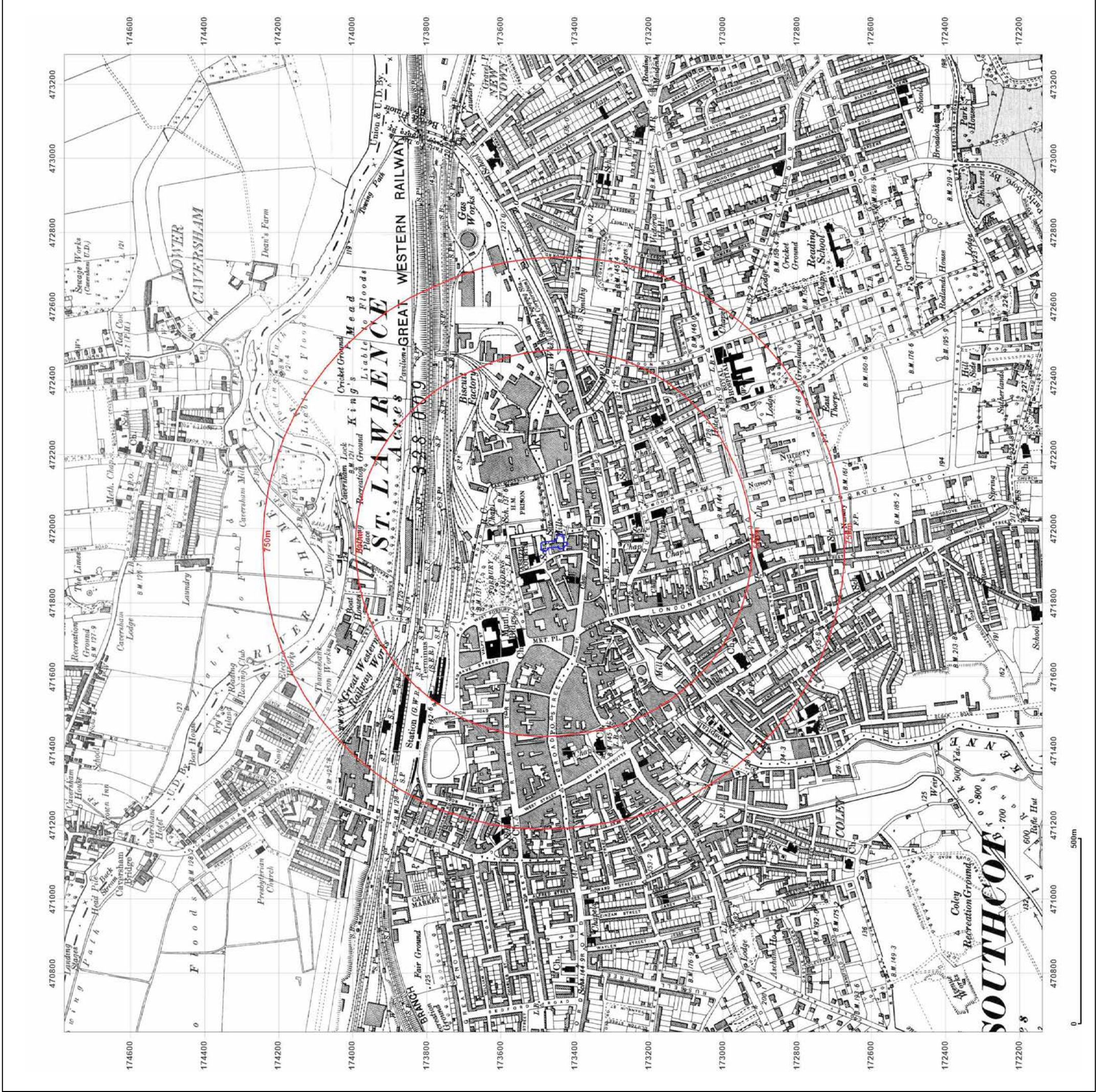
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Client Ref: GWPR6366
Report Ref: GS-Z12-RKD-A76-ETZ
Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1898-1900

Scale: 1:10,560

Printed at: 1:10,560



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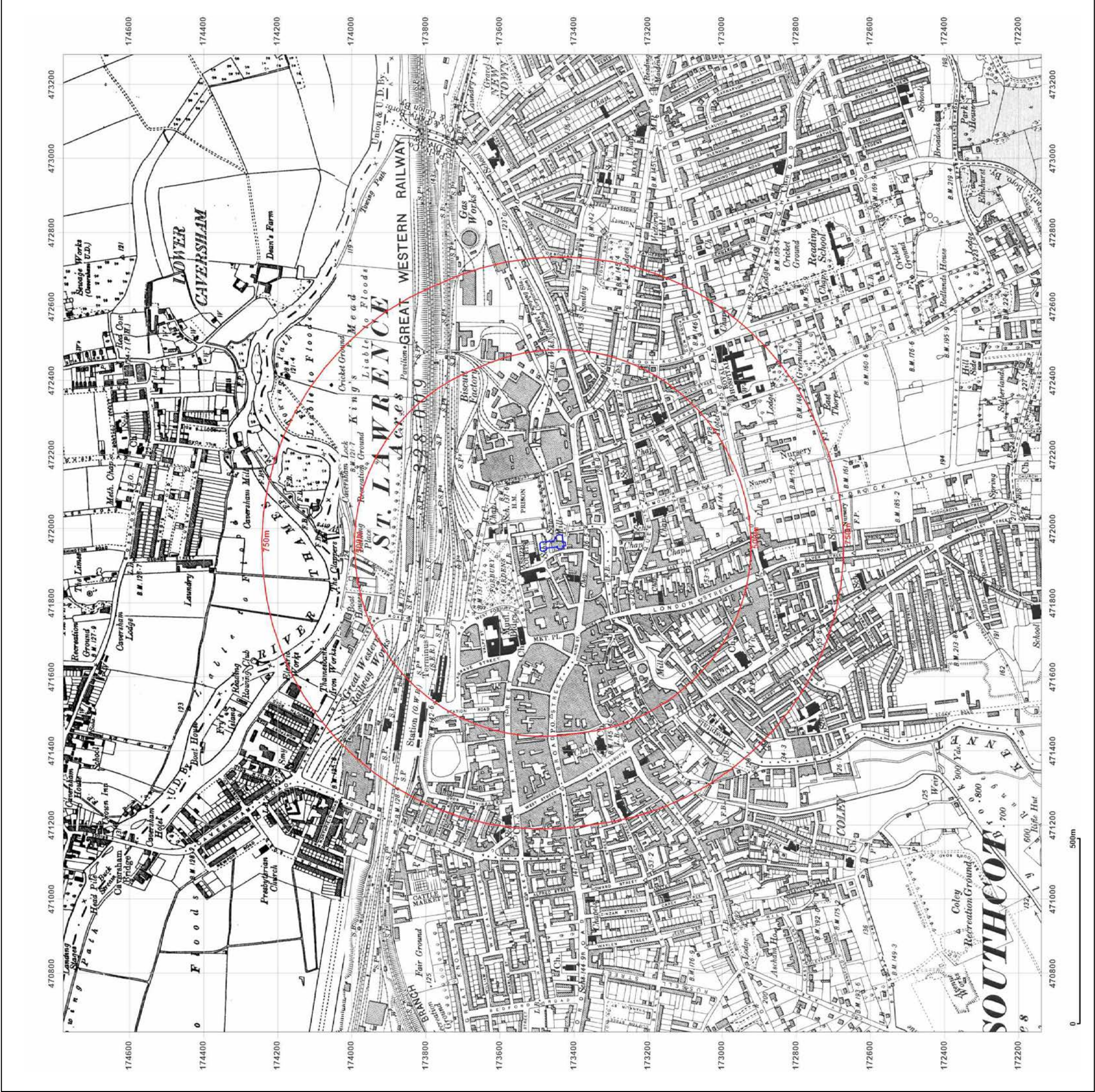


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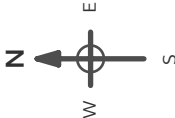
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Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1900

Scale: 1:10,560

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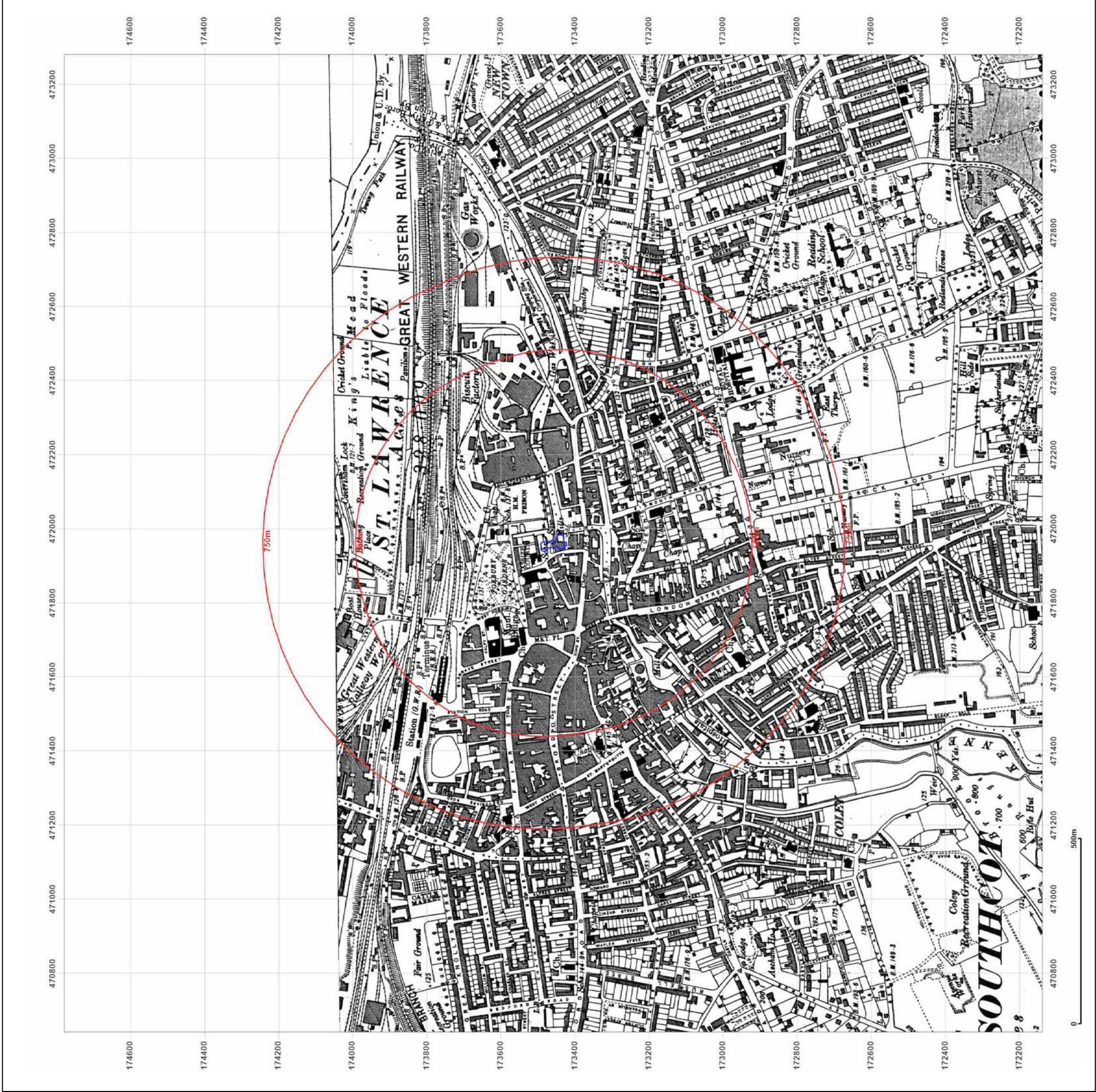


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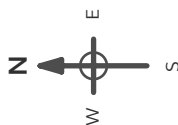
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Grid Ref: 471960, 173457

Map Name: County Series

Map date: 1910-1913

Scale: 1:10,560

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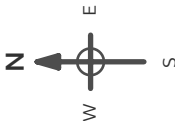
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Map Name: County Series

Map date: 1914

Scale: 1:10,560

Printed at: 1:10,560



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