

LONDON BOROUGH OF HOUNSLOW SMALL SITES SMALL BUILDERS PROGRAMME

GARAGE BLOCK AT GARTH COURT, CHISWICK, W4 4QL

Geotechnical and Geo-Environmental Desk Study

APRIL 2019



Garage Block at Garth Court, Chiswick, W4 4QL

Geotechnical and Geo-Environmental Desk Study

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1 INTRODUCTION

1.1 Terms of Reference

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by London Borough of Hounslow (LBH) 'the Client' to undertake a number of technical surveys for a garage block at Garth Court, Chiswick, London ('the Site').

London Borough of Hounslow is aiming to divest a number of small sites, no fixed development plans are currently available for the Site. However, for the purpose of this assessment a residential end-use has been utilised. The objectives of this review are to:

- Review geo-environmental information regarding the Site and its surrounding area;
- Provide outline information on potential geo-environmental and geotechnical constraints which may impact on the land value or redevelopment potential for the site.

The site location is shown in Figure 1 below.

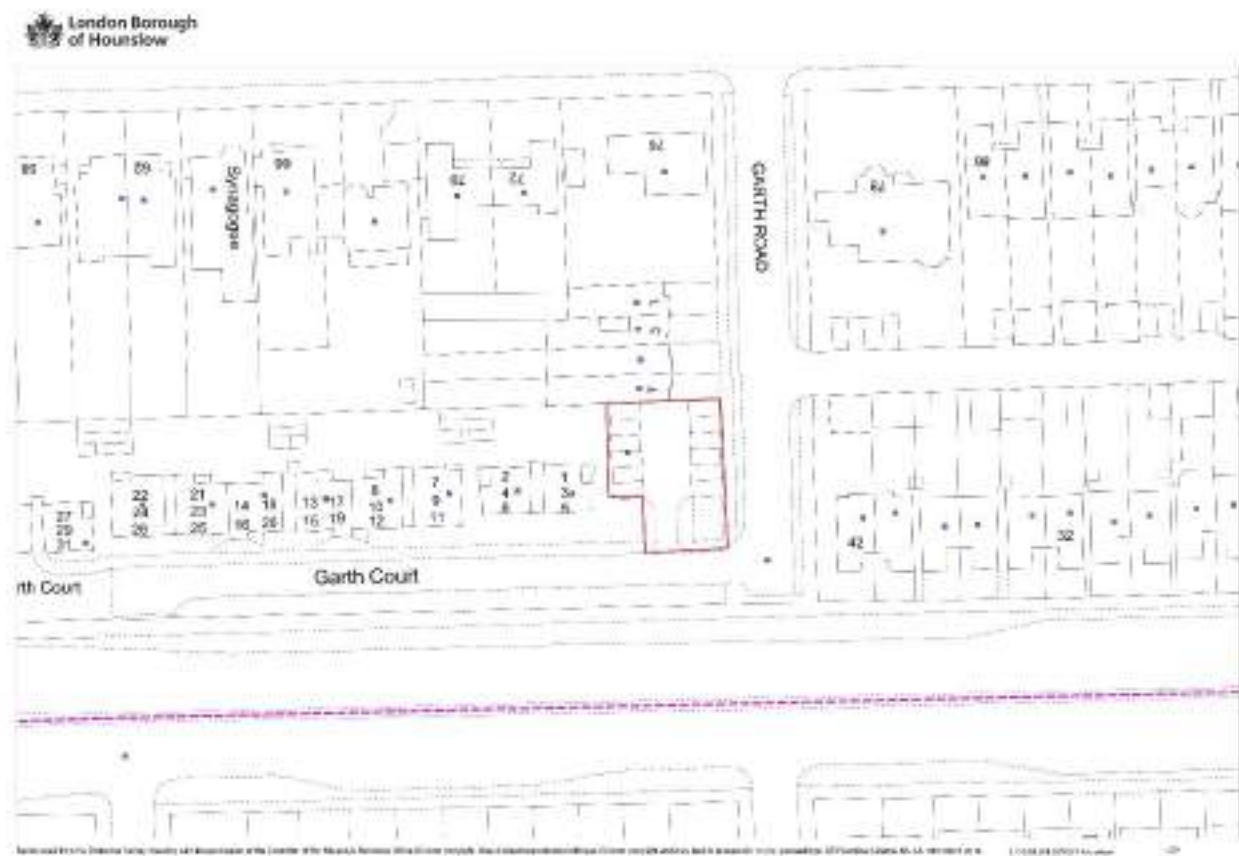


Figure 1: Site Location Plan provided by LBH

1.2 Sources of Information

As part of this desk study report various sources of information have been used and are detailed below:

- The on-line British Geological Survey (BGS) Geology of Britain Map Viewer (Ref. 1);
- Historical borehole records available through BGS website (above) (Ref.1);
- Historical Ordnance Survey maps obtained from Groundsure (included in Appendix A);
- Environmental Information from Groundsure (Appendix B);
- Current publicly available aerial images and maps from Google maps (Ref. 2);
- Zetica Regional Unexploded Ordnance (UXO) Map & Pre-Desk Study Assessment report (contained within the Arcadis UXO Assessment report for this site, 10030793-ARC-17-XX-RP-YY-00018-01-UXO Report, Appendix A), and
- Department for Environment, Food and Rural Affairs “Magic” website (Ref.8)

1.3 Limitations and Expectations

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This report has been compiled from a number of sources, which Arcadis believes to be trustworthy. However, Arcadis is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time. Consequently, there is a potential for further information to become available, which may change this report's conclusion and for which Arcadis cannot be responsible.

2 SITE SETTING AND HISTORY

2.1 Site Location

Table 2.1: Details relating to Site Location

Site Location / Address	Garth Court, Chiswick, London W4 4QH
National Grid Reference	520589,177989
Approximate Site Area	The site is roughly rectangular in shape and covers an area of approximately 0.0373 hectares
Description of Site	<p>The site consists of twelve parking garages arranged in two blocks of six separated by an asphalt area of hardstanding and a grassy verge with a mature tree located at the corner of Garth Court and Garth Road. Vehicle and pedestrian access is possible from Garth Court to the south of Site.</p> <p>The garage buildings incorporate wall-mounted lights and roof gutters which drain onto the hardstanding which sloped gently to a circular grate drain in the centre. The asphalt hardstanding was observed to be in generally good condition with a few shallow cracks and areas of ponded water. The trees close to the eastern boundary of site were observed to have widespread shallow roots which had caused cracking and uplifting of the pavement along the eastern site border but no damage to the building infrastructure was observed.</p> <p>Manhole covers within 5m of the site indicate the possible presence of underground services in the area, however no manhole covers were observed on the site.</p> <p>Site photographs are included in Appendix C.</p>
Topography	The Topography of the site is generally flat at approximately 10 m Above Ordnance Datum (AOD). The immediately surrounding area is also generally flat.
Surrounding Area	The Site lies within a residential area with apartment buildings or housing with gardens in all directions. Chiswick House and Gardens historical estate lie 270m to the southeast. The A4 is present to the south of the site.

2.2 Site History

A review of the available historical Ordnance Survey maps (Appendix A) has been undertaken to assess the historical development of the Site and surrounding areas.

It is not the intention of this report to provide a full history, but to identify those past uses on and within the vicinity of the Site that could have resulted in contamination of the soils and/or waters. Significant changes to the land use of the Site and surrounding areas are summarised in Table 2.2 below.

Table 2.2 History of Site and Surrounding Area

Date	Historical Development (Site and Surrounding Area)
1867 - 1873	<p>The site is used for agriculture and planted with trees.</p> <p>An orchard/agricultural land surrounds the site to all sides. The nearest surface water feature is a canal approximately 200m south of Site.</p>
1873 - 1896	The site continues to be used as agricultural land (an orchard).

	The footpath approximately 50m north of site is replaced by a road (Barrowgate Road) and additional roads are created running along the eastern border of the Site and within 50m to the south. Parts of the surrounding area to the north and west are developed into residential housing. The un-named canal is sectioned off to create Duke's Lake approximately 200m south of Site
1896 - 1915	Unspecified buildings are indicated in the north part of Site. The road to the south is developed as Ellesmere Road and residential housing is constructed in the surrounding area to the south and east. Duke's Lake is no longer present and may have been infilled.
1915 - 1950	An access road is marked crossing through the southern part of Site leading to buildings located to the west. Residential housing with gardens surrounds the site on all sides. Ellesmere Road is expanded to include a central reservation.
1915 - 2002	A paper staining works is indicated approximately 450m to the northeast
1948 - 2014	Office buildings including a telephone exchange are indicated along Turnham Green within 400m north
1962 - Present	The buildings on site and adjacent residential dwellings immediately west of the site, have been demolished and re-developed into Garth Court – the flats remain to the present day.
1965 - Present	The Site is redeveloped into current configuration of parking garages associated with the adjacent apartment complex of Garth Court.
1974 - 2014	A fire station is located approximately 400m to the northwest of Site.

2.2.1 Summary of Site History

The site was initially undeveloped agricultural land, which was later developed as unspecified buildings (likely to be residential) between 1896 and 1915 which were later cleared circa 1962 and redeveloped into the current configuration as garages associated with the adjacent Garth Court complex. As a result, there is potential for Made Ground to be present on site. Furthermore, potential spillages/leaks of hydrocarbons could have occurred given the site's current usage as parking garages.

No significant off-site land uses were identified within 250m of the site. Owing to the relative distance of the potentially infilled ground, this has been discounted as a viable source of offsite contamination.

2.3 Unexploded Ordnance

An Unexploded Ordnance assessment has been undertaken for the Site, the findings of which are detailed in the Arcadis Report 10030793-ARC-17-XX-RP-YY-0018-01-UXO Report.

The Preliminary Desk Study Assessment (PDSA) from Zetica referenced within the Arcadis Report, recommends that a detailed desk study needs to be commissioned to assess, and potentially zone, the UXO hazard level on the Site. The detailed desk study provides an in-depth review of a site's history with respect to UXO, and each hazard zone will detail the potential type/depth of UXO which could be encountered. This will ultimately help inform proposed construction techniques and for the selection of appropriate mitigation measures during intrusive works.

3 PHYSICAL AND ENVIRONMENTAL SETTING

3.1 Published Geology, Hydrogeology and Hydrology

With reference to the sources of information detailed in section 1.2, the following information has been obtained.

Table 3.1 Information Regarding Geology, Hydrogeology and Hydrology

Geology / Aquifer Status	<p>Made Ground deposits may also be present at the Site, considering the previous development at the site</p> <p>Superficial Deposits: Kempton Park Gravel Member - Sand and Gravel which is designated as a Secondary A aquifer</p> <p>Solid Geology: London Clay Formation - Clay and Silt which is designated as Unproductive Strata.</p>
BGS Boreholes (within 250m of the site)	<p>Two recorded within 250m of the site boundary. The closest borehole (TQ27NW604) is located approximately 110m north and is summarised below.</p> <p>The borehole record indicates Kempton Park Gravel member (originally identified as drift) to a depth of 5.8m bgl (19ft), underlain by London Clay to 55m (181ft) followed by Woolwich and Reading beds and Thanet Sand Formation to 80m (261.5ft). The Upper Chalk aquifer was encountered underlying these beds with an initial water strike at 97m (317ft) and artesian groundwater conditions causing water to overflow the borehole to a height of 6m (20ft) above ground level.</p>
Within a Source Protection Zone	None recorded within 500m of the site boundary.
Licensed Groundwater Abstraction Points	None recorded within 500m of the site boundary.
Surface Water Feature	No surface water features are recorded within 250m of the site, however a lake is recorded 270m south of the site.
Likely Groundwater Flow Direction	<p>Significant groundwater flow within the London Clay bedrock is not expected to be present. The Kempton Park Gravel Member is designated as a Secondary A Aquifer – Permeable Layers, and is likely to contain groundwater at shallow depths within granular material (sands and gravels).</p> <p>Based on the local topography, groundwater flow within the Kempton Park Gravel Member is expected to flow towards the south towards the River Thames and is expected to be flowing at a slow rate.</p>

3.2 Environmental Public Registers

Public register information from the Groundsure Report (Appendix B) for the Site and the surrounding area (within 250m radius) has been summarised in Table 3.2 below.

It is not the purpose of this section to provide a comprehensive account of the environmental data but only to detail those factors that are or could impact the Site.

It should be stated that the following were not recorded within 250m of the site boundary;

- Discharge Consents;
- Landfill sites (current and historical); and
- Local Authority Pollution Prevention and Controls.

Table 3.2. Environmental Data

Data type	Description	Distance (m) and Direction
Radon	The site is in a lower probability radon area as less than 1% of properties are above the Action Level.	N/A
Pollution Incident to controlled waters	One incident is recorded within 250m of the site; Relating to a diesel spillage in 2002, which was classified as a Category 4 incident, with no impact to water, land or air	224m E
Potentially Infilled Land	Five areas of potentially infilled land are recorded within 250m of the site, dating from 1866. These are related to the infilling of the Canal and Duke's lake.	191 – 208m S
Contemporary Trade Directory	Electricity substations	220m NW 227m E
	Gardening services	127m SW
Fuel Station Entries	Two obsolete petrol filling stations are recorded within 500m of the site.	414m NW 480m NW

The site has been previously developed, with former buildings being demolished, therefore Made Ground is anticipated to be present which could contain contaminants.

The above Contemporary Trade Directory Directory/Fuel Station Entries are a significant distance from the site, so it is considered unlikely that they would have impacted the Site. The infilling of the canal and lake to the south of the site, may be a potential source of hazardous ground gases if any viable pathways are present.

4 PRELIMINARY CONCEPTUAL MODEL

Geo-environmental assessments are required in accordance with current regulatory guidance (CIRIA C552 - Ref. 4 and CLR11 – Ref. 5) to consider the significance of potential contamination in terms of plausible source-pathway-receptor pollutant linkages. As part of this process, it is necessary to develop a conceptual model of these potential pollutant linkages by identifying the potential contamination sources, sensitive receptors and any potential exposure pathways. A risk assessment is then undertaken to determine the likelihood that these potential pollutant linkages are complete.

4.1 Potential Contaminant Sources

Based on the information obtained from the historical and environmental research, the following potential sources of contamination have been identified on site and within the surrounding area (Table 4.1).

It should be noted that it is considered unlikely that all these substances would be present at significant concentrations within the site.

Table 4.1: Potential sources of contamination on site

Source	Potential Contaminants
On Site	
Made Ground is likely to be present on the site from previous development and demolition.	Asbestos, metals, Polycyclic Aromatic Hydrocarbons (PAH), hydrocarbons, ground gas
Parking/Garages	Hydrocarbons, lubricants and solvents from potential spills/leaks from vehicle maintenance activities.
London Clay	Sulphates

4.2 Potential Receptors

The proposed form of the development is currently unknown, however for the purpose of this assessment a residential end-use is assumed. As a precautionary approach the potential receptors detailed below take into consideration the proposed future land use as residential properties with private gardens and landscaped areas. It is considered possible that any potential contamination within the soils may be disturbed during the construction phase, or during gardening or landscaping undertaken by any future site users.

4.2.1 Human Health

- Future site users (residents, visitors, maintenance workers and contractors)

Contamination risks to construction workers are not appraised by chronic (long term) exposure human health risk assessments. There are no appropriate published criteria applicable to the assessment of potential risks to construction workers. The potential risks should be addressed by a site-specific construction workers risk assessment and implementation of appropriate health and safety measures, to adequately mitigate any potential risks. All works should be conducted in accordance with the CDM regulations 2015 (Ref. 6) or any other relevant guidance. Construction workers are not considered further as human health receptors.

4.2.2 Controlled Waters

- Secondary A Aquifer within superficial deposits.

4.2.3 Buildings

- Underground/ structures/services (water pipes, concrete, foundations).
- Proposed buildings.

4.3 Potential Pathways

Potential pathways are the routes that link the receptor to the contamination. The potential pathways for this site are summarised in the table below.

Table 4.2: Potential Contaminative Pathways

Receptor	Description
Human health (future site users/residentials, visitors, maintenance workers and contractors)	Accidental ingestion of contaminants within soil, water and dust. Inhalation of dust, vapours and ground gases Dermal contact with contaminants within soil, water and dust. Ingestion of contaminated vegetables and soil attached to vegetables.
Controlled Waters (Secondary Undifferentiated Aquifer)	Leaching of potential contaminants in soil or Made Ground into groundwater. Vertical migration of soluble contaminants through the unsaturated zone into groundwater beneath the site.
Buildings	Direct contact of building services or foundations with contaminants in the soil and Made Ground. Gas and / or vapour accumulation in confined and poorly ventilated spaces. Sulphate attack on buried concrete (direct contact).

4.4 Preliminary Qualitative Risk Assessment

Primary sources of on-site contamination are considered to be associated with the demolition of former residential buildings on site, and potential spills and leakages from the site's usage as parking garages.

The degree of risk will need to be assessed prior to redevelopment, as such ground investigation and assessment is recommended. From experience, the potential for the need to undertake remediation should be limited given that the Site has not previously been extensively used for industrial or commercial use. However, thus the need for remediation, cannot be ruled out. If the Site is found to be contaminated, mitigation measures will be required to break the source-pathway-receptor linkages.

The following potential environmental conditions have been identified that will warrant further consideration and/or implementation:

- Asbestos protection measures during disturbance of Made Ground (depending on the findings of the ground investigation);
- Provision of gas protection measures (depending on the findings of the ground investigation);
- Provision of contaminant resistant water supply pipes (depending on the findings of the ground investigation);
- Provision of clean cover system and a suitable growing medium in garden areas and public open space;
- Potentially further investigation and consultancy advice to support planning obligations.

5 Waste Management and Potential Development Constraints

5.1 Waste Management

Consideration should be given to the disposal of waste soils/Made Ground which are likely to be generated by the development. Chemical testing of soils/Made Ground is likely to be required to inform a waste classification assessment and determine the potential disposal options. It should be noted that the waste contractor may require testing of the actual material to be disposed of prior to acceptance, and there is no obligation on a landfill operator to accept the waste.

Soils suspected of being contaminated should be segregated from soils which appear to be 'clean' and should not be used elsewhere on the site as fill or landscaping unless they can be proven to be fit for purpose.

Imported topsoil for gardens and landscaped areas should be clean, fit for purpose and validated as necessary.

5.2 Potential Development Constraints

The existing hardstanding and paved pathway may need to be removed or broken out and the garage buildings may need to be demolished – Asbestos may be present given their age and an asbestos survey should be considered prior to any demolition works.

6 Geotechnical Considerations

6.1 General Comments

Ground conditions anticipated at the site are likely to consist of Made Ground as the site has previously been developed prior to its current configuration. In the nearby historical borehole log (Ref. 1) (approximately 110m north), the Kempton Park Gravel member is encountered at shallow depths to 5.8m bgl (19ft), underlain by London Clay to 55m (181ft).

The National Ground Subsidence rating (provided by Groundsure) is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS). The GeoSure data is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale. The maximum hazard rating of natural subsidence within the study site boundary is classified as "Very Low".

Based upon the information provided and reviewed as part of this report the following potential geotechnical constraints should be considered.

- **Made Ground** - The nature and thickness of the Made Ground (if present) is unknown. The likely engineering performance of the Made Ground is not known.
- **Ground Gas** - Future development may need to be designed to mitigate against soils borne ground gas.
- **Shrinkable Clays** – Consideration will need to be given to the presence of existing trees that are removed, retained or the planting of future trees when considering the depths of the foundations. In addition, the risks associated with the London Clay include high plasticity clay which are subject to shrinkage and swelling, sulphate attack and should be considered during the investigation / design.
- **Underground Structures** - Below ground structures and services associated with previous structures may be present and will require removal prior to redevelopment. Ground disturbance caused by the removal of historical structures may increase the thickness of Made Ground already present beneath the Site locally.
- **Shallow Groundwater** - Should shallow groundwater be present dewatering measures and excavation support would be required (depending on the findings of the ground investigation). This may also have implication upon the foundation design.
- **Contamination** – Potential contamination may require mitigation for future development, site users and controlled waters.
- **Sulphates** – Buried concrete may need to be designed to mitigate against natural adverse chemical conditions – especially given the presence of the underlying London Clay.
- **Underground Services** - Provision of contaminant resistant water supply pipes maybe required (depending on the findings of the ground investigation).
- **Excavations / Support** - The consequences of trench stability can vary, but usually pose a problem to the Contractor either by collapse into an already excavated trench or by the removal of support to plant, equipment or materials located adjacent to the excavation. The need to ensure stability and limit ground movements is of prime importance where excavations are adjacent to structures, roads, and public utilities or where man entry is envisaged. The suitability of the Contractor's proposals for ground support will be particularly important in such areas.

It is anticipated that excavations within the Made Ground and superficial deposits should be achievable using a suitable size of conventional excavation plant. Excavations within these materials are unlikely to remain stable even in the short term and close lateral support will be required at all times or the sides of the excavation battered back to a safe angle above groundwater seepages.

The potential impacts of instability in excavations should be considered where adjacent buildings are present, and future works need to ensure that ground movements and vibrations do not affect existing structures.

6.2 Foundations

At this stage no intrusive ground investigation has been completed. Potential founding solutions will be dependent on the thickness of Made Ground and the geotechnical properties of the natural deposits. Made Ground is generally considered unsuitable for foundations due to its variable composition and its potential for high total and differential settlement.

At this stage it is envisaged that the Kempton Park Gravel Member comprising sands and gravels should be suitable for shallow foundations for light weight structures but will need to be confirmed via an appropriate ground investigation. Deeper trench fill may be possible although the maximum practical extent of this type of foundation is in the region of 2-2.5 m.

In areas of deeper Made Ground, or where deeper soft compressible material is present (the depth of which would need to be determined) deeper foundation options or ground improvement methods maybe required e.g. vibro-stone columns should provide a suitable foundation solution. The advice of a specialist ground improvement contractor should be sought to verify the suitability of the ground for treatment.

7 Conclusions and Recommendations

7.1 Design Considerations

The site is currently used as a car parking area and vehicle garages for the nearby residential buildings. An intrusive site investigation has not been undertaken at this stage. The site was previously developed with buildings (likely to have been housing) from circa 1896 which was demolished by circa 1962 and rebuilt circa 1965, therefore Made Ground is anticipated to be present. Furthermore, potential spillages/leaks of hydrocarbons could have occurred given the site's current usage as parking garages.

Without mitigation, future site users may be at risk from contaminants that may have been present on Site. Exposure could occur in gardens or soft landscaped areas, especially if soils are disturbed by activities such as digging / gardening.

Contamination could be mobilised or disturbed by the works. Rainfall derived leaching could be exacerbated causing contamination of the underlying Secondary A Aquifer. This risk is especially prevalent if intrusive construction methods or piling create a preferential pathway for contaminants in the Made Ground to enter the underlying aquifer.

Made Ground is likely to be present on the Site from former development and demolition of buildings. If significant depths of Made Ground are present, and this contains putrescible matter, ground gas / vapours could be generated which could accumulate in confined spaces and pose risk to future site users.

Potential receptors are considered to be future Site users, proposed buildings and underground structures / services and groundwater beneath the Site (Secondary A Aquifer identified within the underlying Kempton Park Gravel Member). Potential geo-environmental constraints have been identified that may impact on the future development. Whilst contamination may be present within the underlying soils, mitigation of risks to Site end users may be delivered by the appropriate design of the development itself (i.e. the use of hardstanding to limit the pathway for human exposure) or a clean cover system within soft-standing areas rather than large scale removal of materials.

Potential risks to human health, controlled waters and the built environment have been identified. It is recommended that an intrusive site investigation should be undertaken prior to redevelopment to quantify these risks. This should include for chemical testing of soils, groundwater monitoring (if present) and gas monitoring in accordance with the recommendations in CIRIA C665 (Ref. 7) and CLR 11 (Ref. 5).

7.2 Construction Considerations

During construction, a watching brief should be undertaken to identify the presence of any unforeseen contamination. If contamination is encountered, all works should cease until the advice of a suitably qualified professional can be sought.

Construction / demolition workers should use appropriate PPE and follow the site-specific contractors risk assessment which should include risks to human health from potential contamination. Due to the historic phases of development and demolition consideration should be given to the potential presence of asbestos within the Made Ground.

Good site management practices should be adopted during the construction phase such as covering stockpiles to minimise surface runoff/dust creation.

A foundation works risk assessment may be required to assess the risk to the underlying Secondary A Aquifer if foundations or piling which penetrate the base of the Made Ground are proposed and contamination is encountered.

According to the Arcadis Unexploded Ordnance assessment which has been undertaken for the Site, the report recommends that a detailed desk study needs to be commissioned to assess, and potentially zone, the UXO hazard level on the Site.

8 References

1. British Geological Survey (BGS) [online]. <https://mapapps.bgs.ac.uk/geologyofbritain/home.html> Accessed March 2019.
2. Google maps [online]. Available at <https://www.google.co.uk/maps>. Accessed March 2019.
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4. CIRIA C552 (2001) Contaminated land risk assessment. A guide to good practice.
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7. CIRIA C665 (2007) Assessing risks posed by hazardous ground gases to buildings (revised);
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9. Unexploded Ordnance Survey (Arcadis Ref: 10030793-ARC-17-XX-RP-YY-0001-01)

APPENDIX A

Historical Ordnance Survey Maps

Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1840

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1840
Revised 1840
Edition N/A
Copyright N/A
Levelled N/A

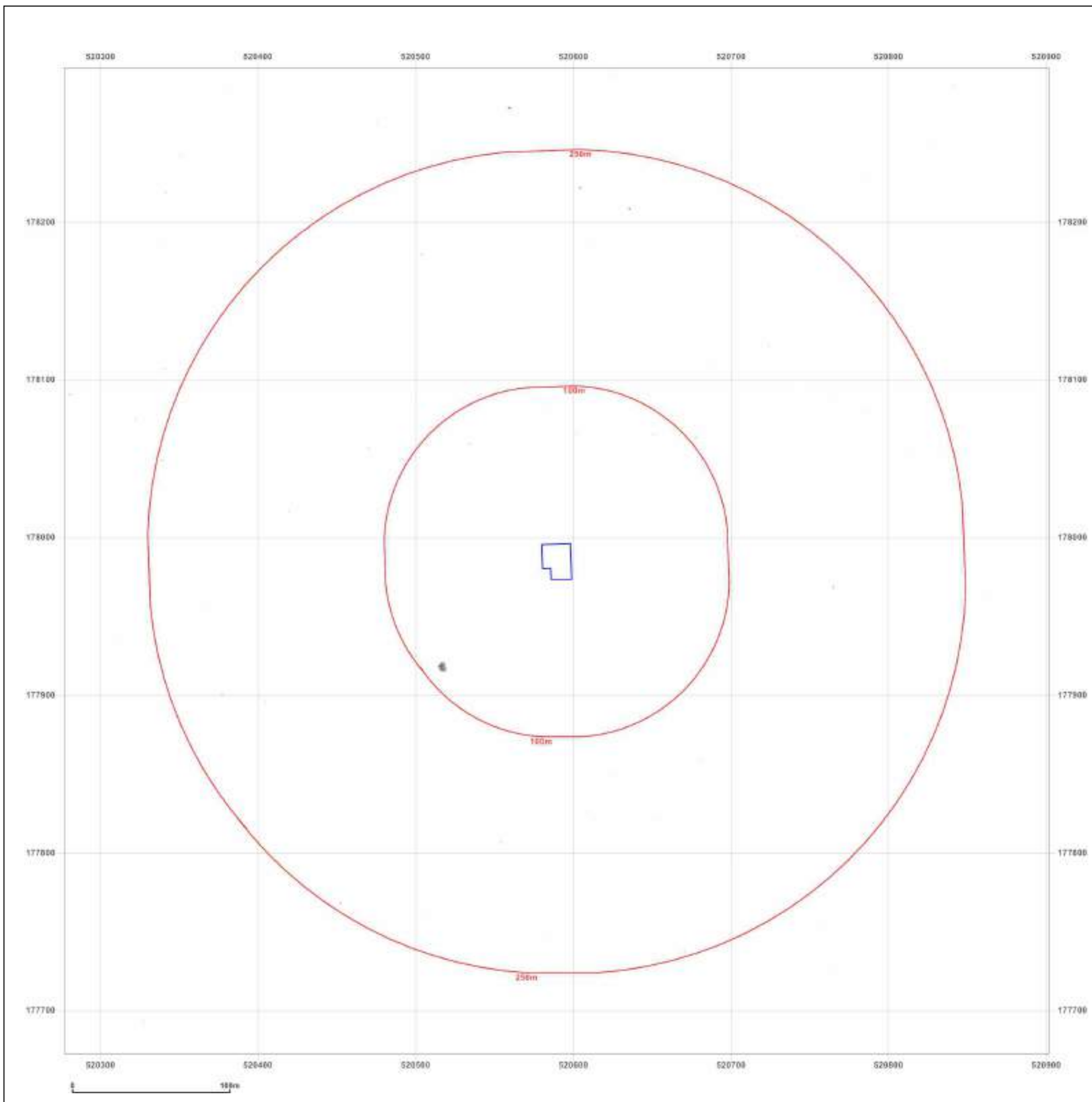


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Map legend available at:
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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1867-1868

Scale: 1:2,500

Printed at: 1:2,500

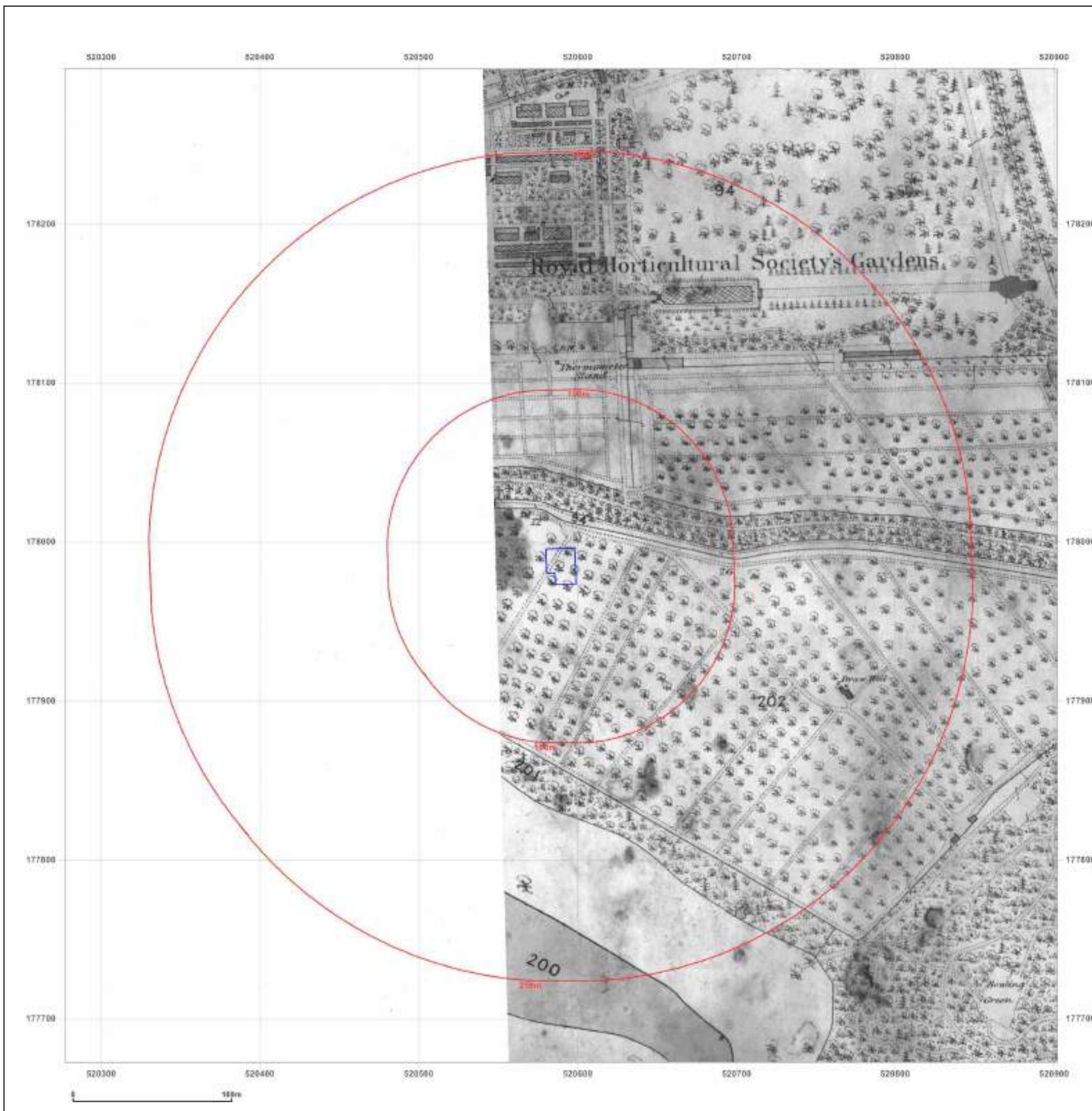


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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1868

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1868
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

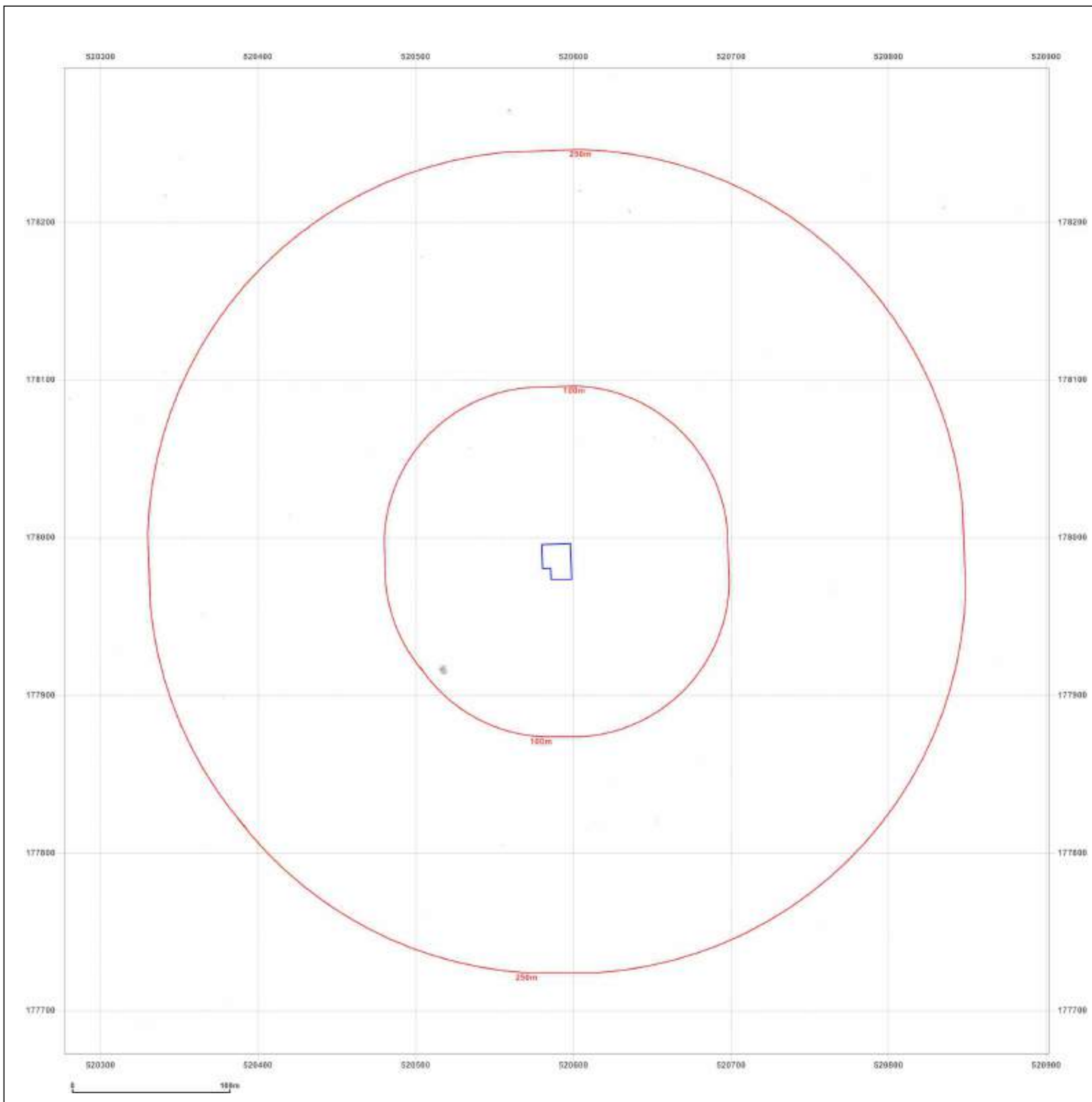


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Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1867-1871

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1867
Revised 1867
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1867
Revised N/A
Edition 1871
Copyright N/A
Levelled N/A

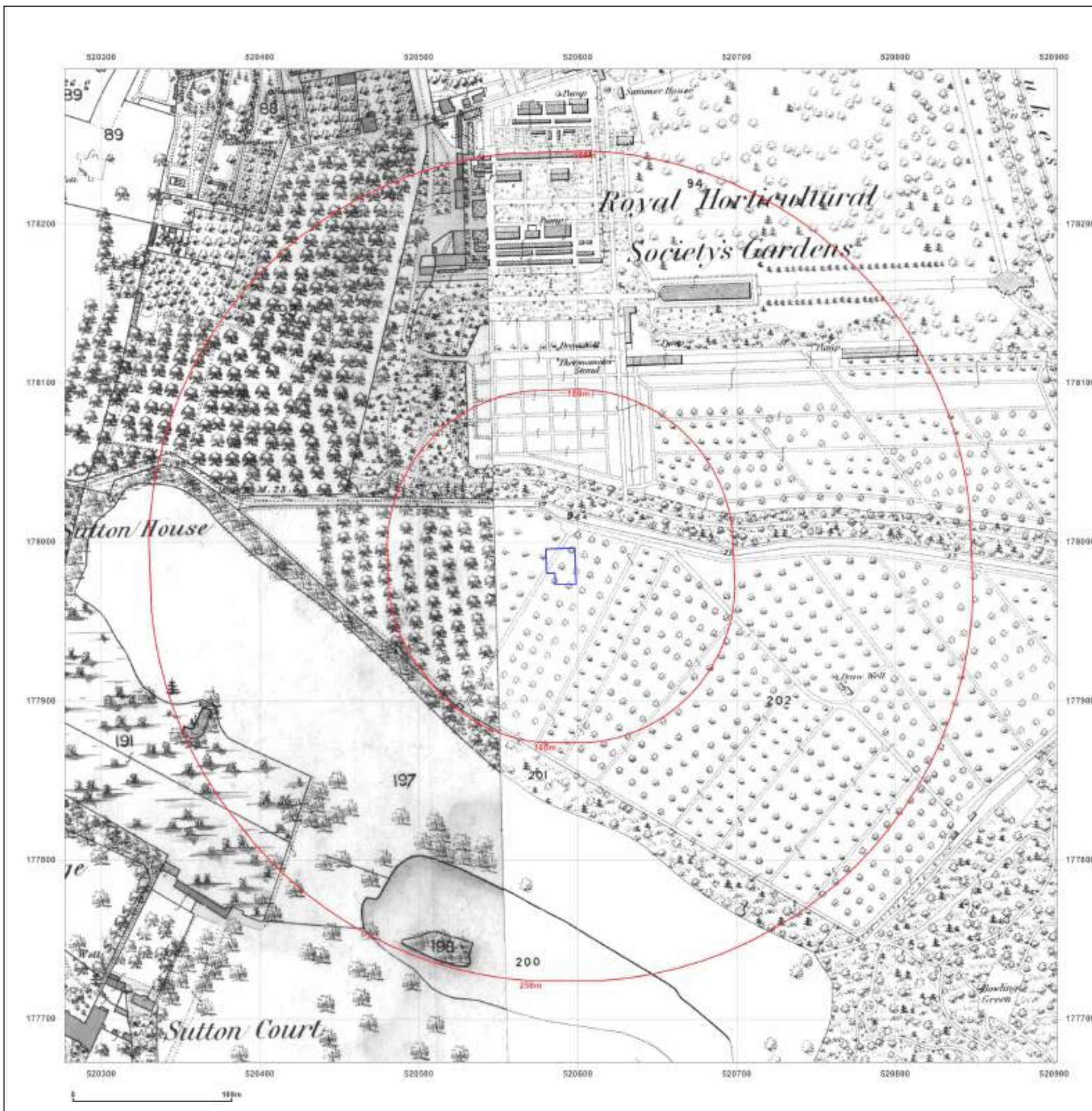


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www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: 1056 Scale Town Plan

Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



Surveyed 1893
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A

Surveyed 1891
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A



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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1896-1897

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1893
Revised 1896
Edition 1897
Copyright N/A
Levelled N/A

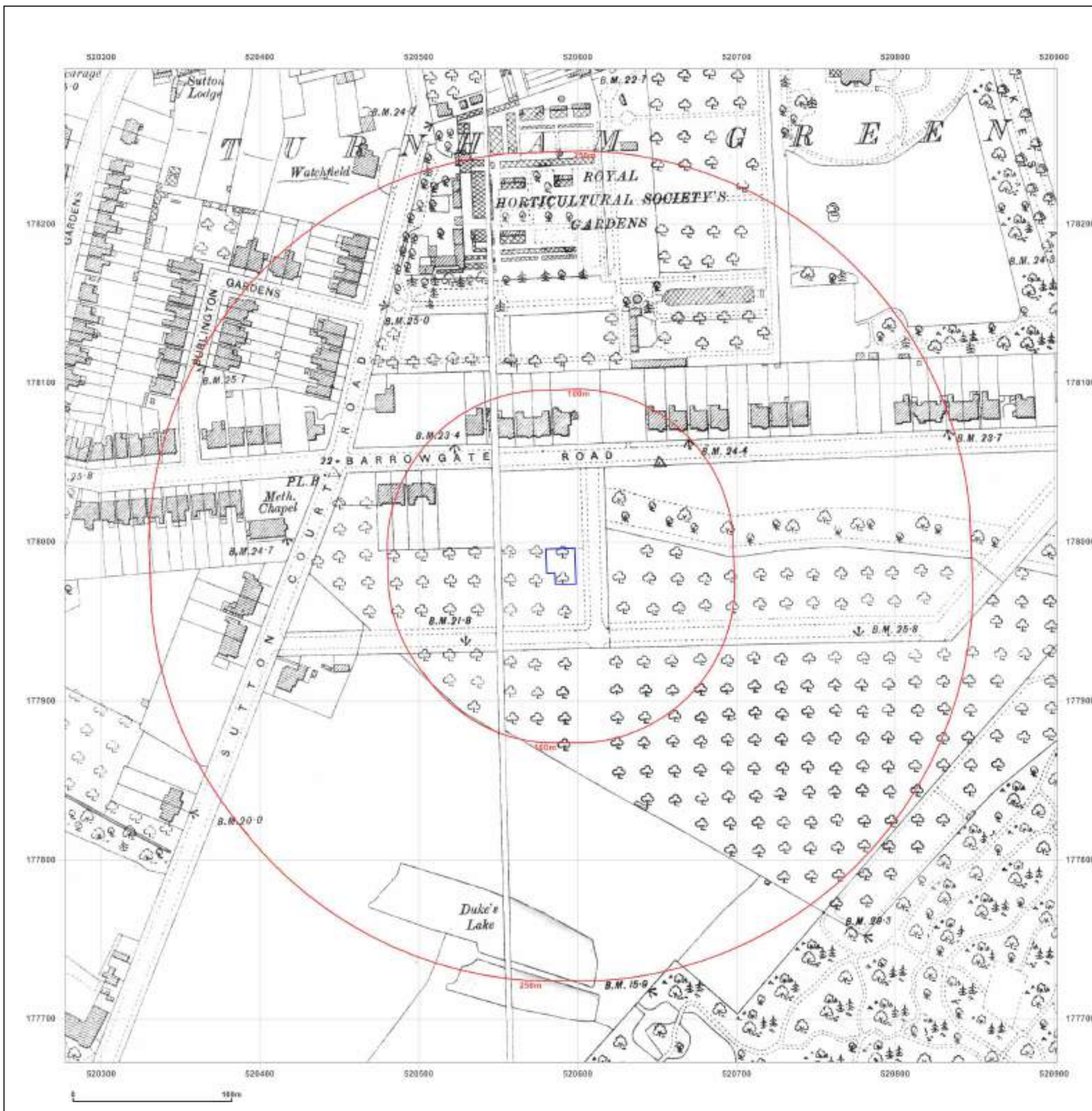


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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1913

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1913
Revised 1913
Edition N/A
Copyright N/A
Levelled N/A

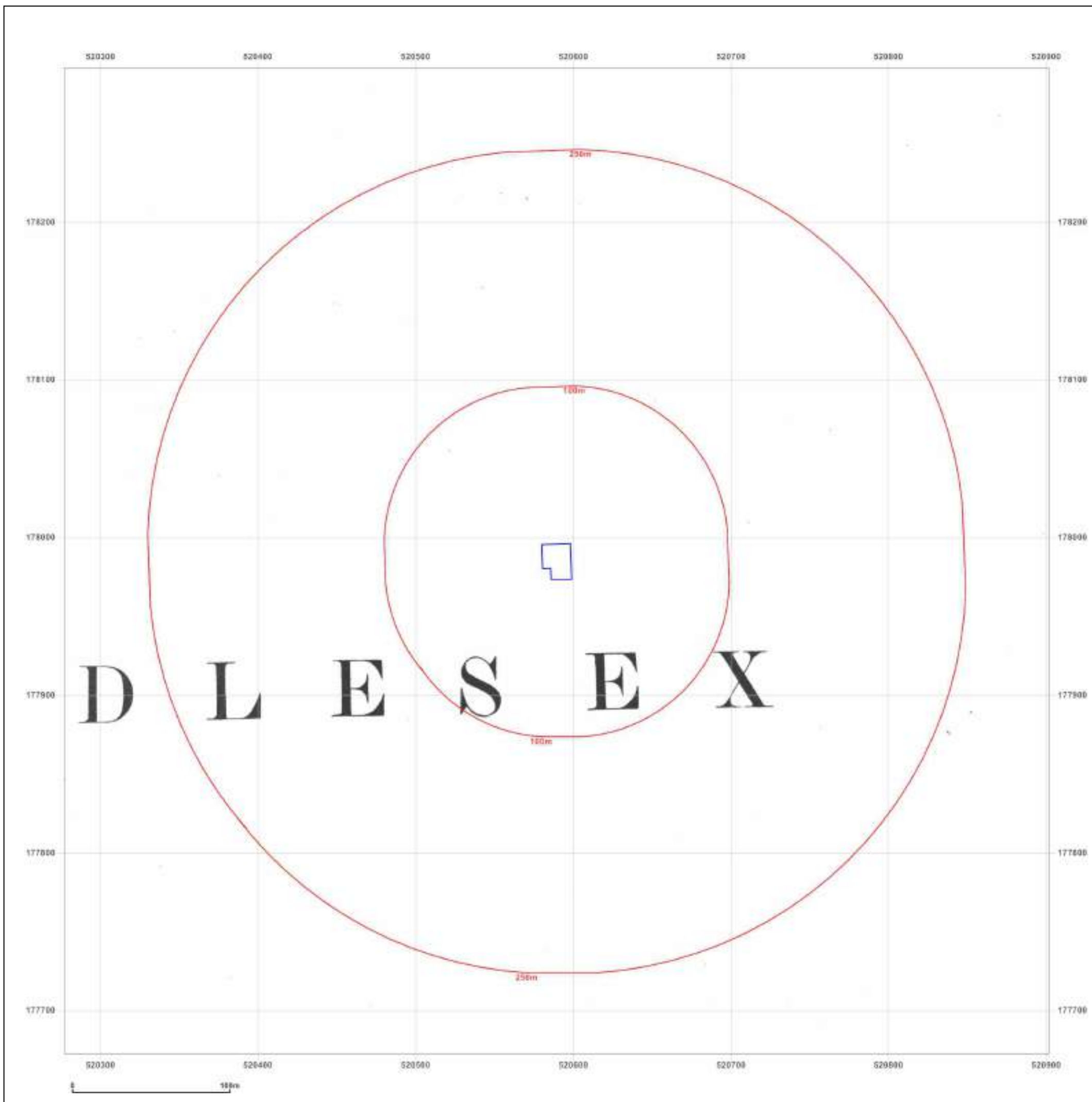


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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1915

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1915
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Surveyed 1915
Revised 1915
Edition N/A
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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1933

Scale: 1:2,500

Printed at: 1:2,500



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

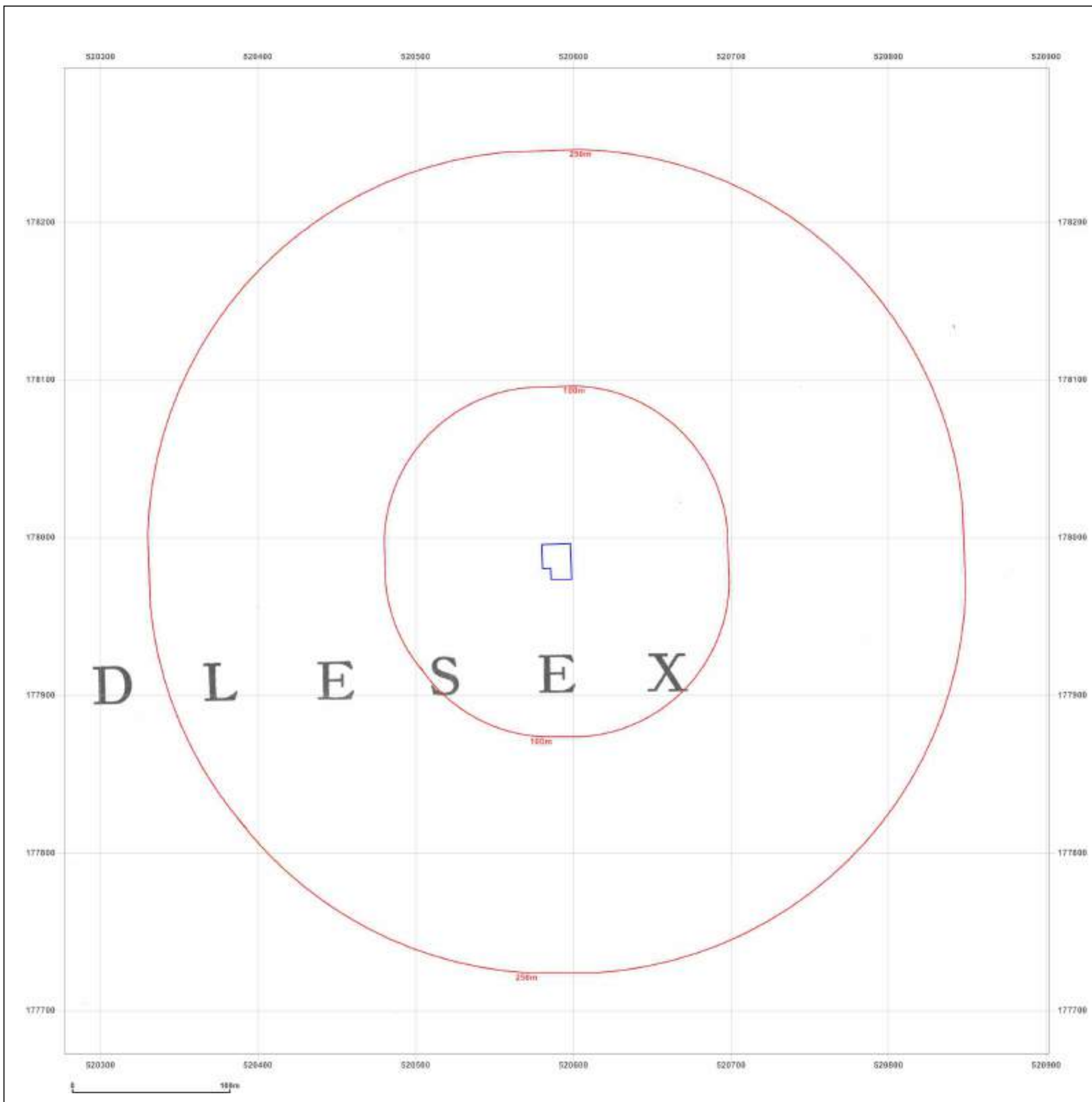


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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1935

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1935
Revised 1935
Edition N/A
Copyright N/A
Levelled N/A

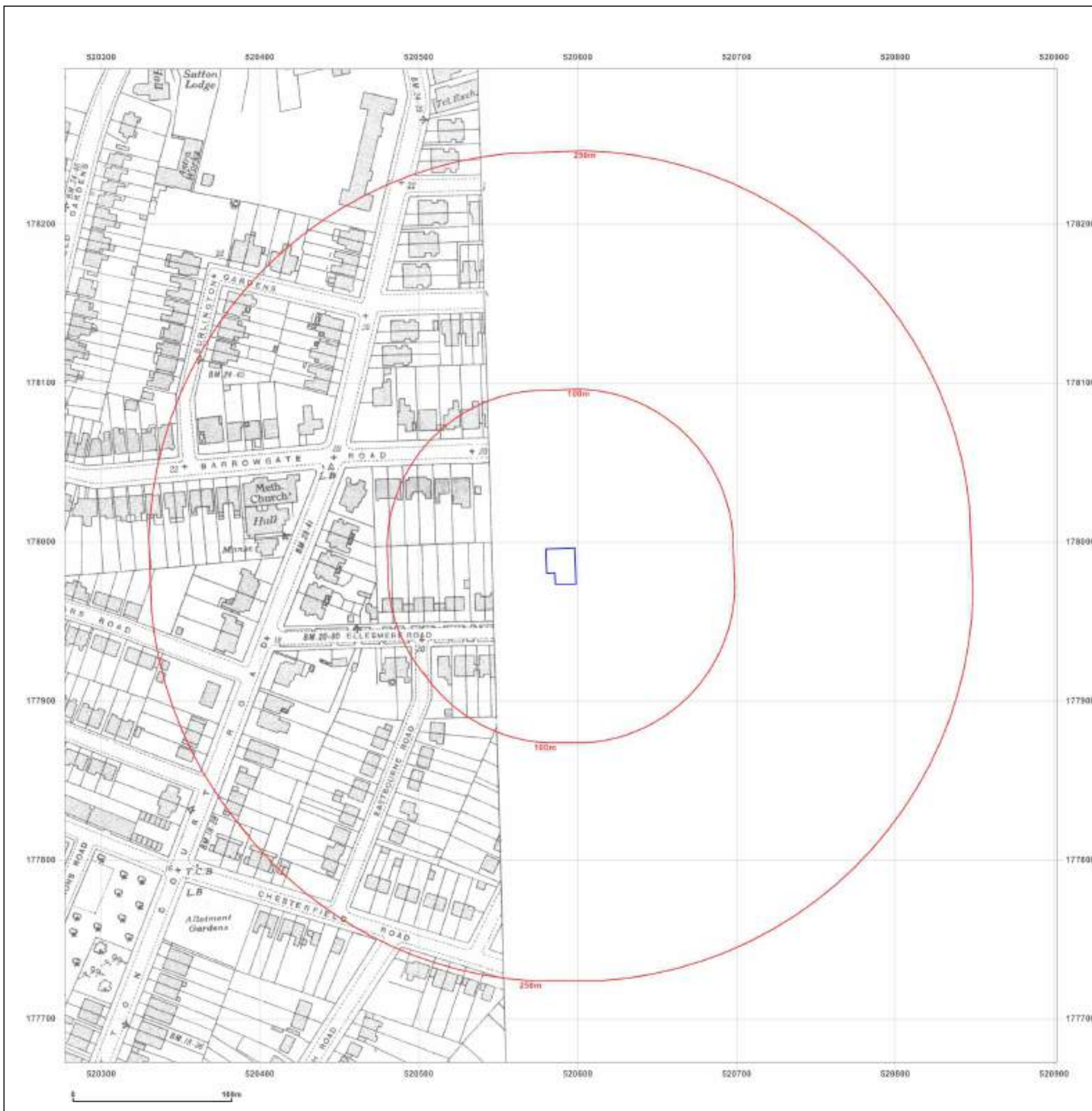


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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1940

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1940
Revised 1940
Edition N/A
Copyright N/A
Levelled N/A

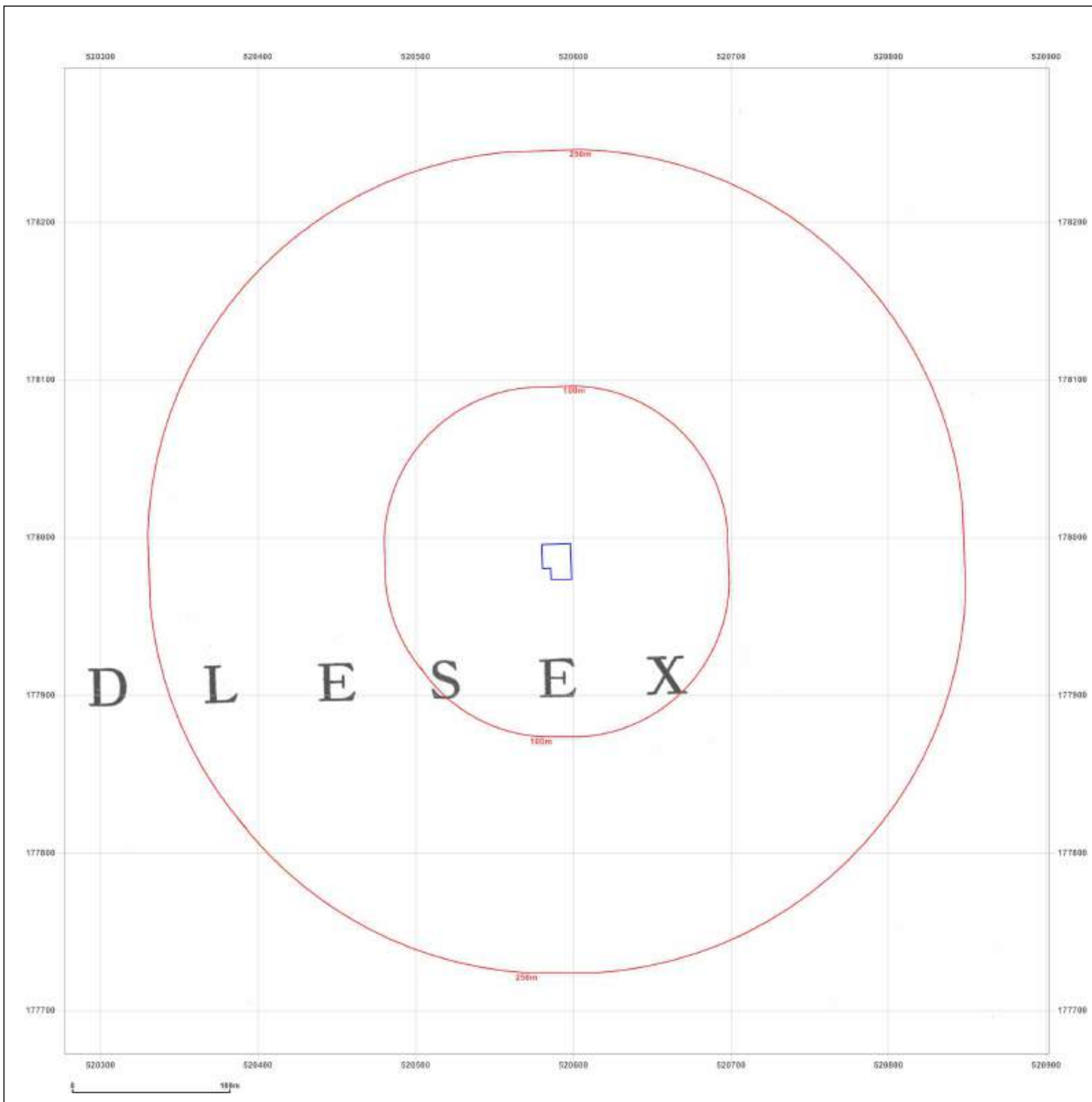


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

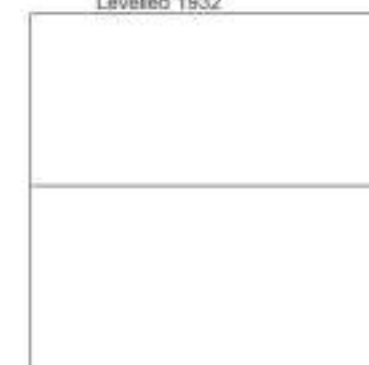
Map date: 1950

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1950
Revised 1950
Edition N/A
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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1950-1951

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled 1932

Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled 1932

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1932

Surveyed 1951
Revised 1951
Edition N/A
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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1950-1951

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1950
Revised 1950
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Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A



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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1951-1954

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 N/A
Revised 1950
Edition 1951
Copyright N/A
Levelled 1932

Surveyed 1951
Revised 1954
Edition N/A
Copyright N/A
Levelled 1932



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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

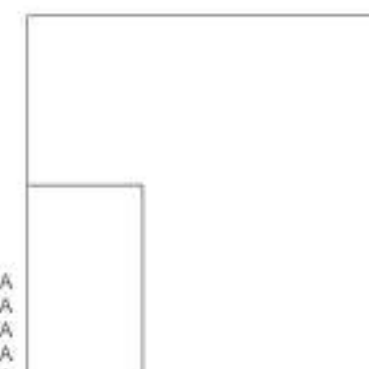
Map date: 1955

Scale: 1:1,250

Printed at: 1:2,000



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

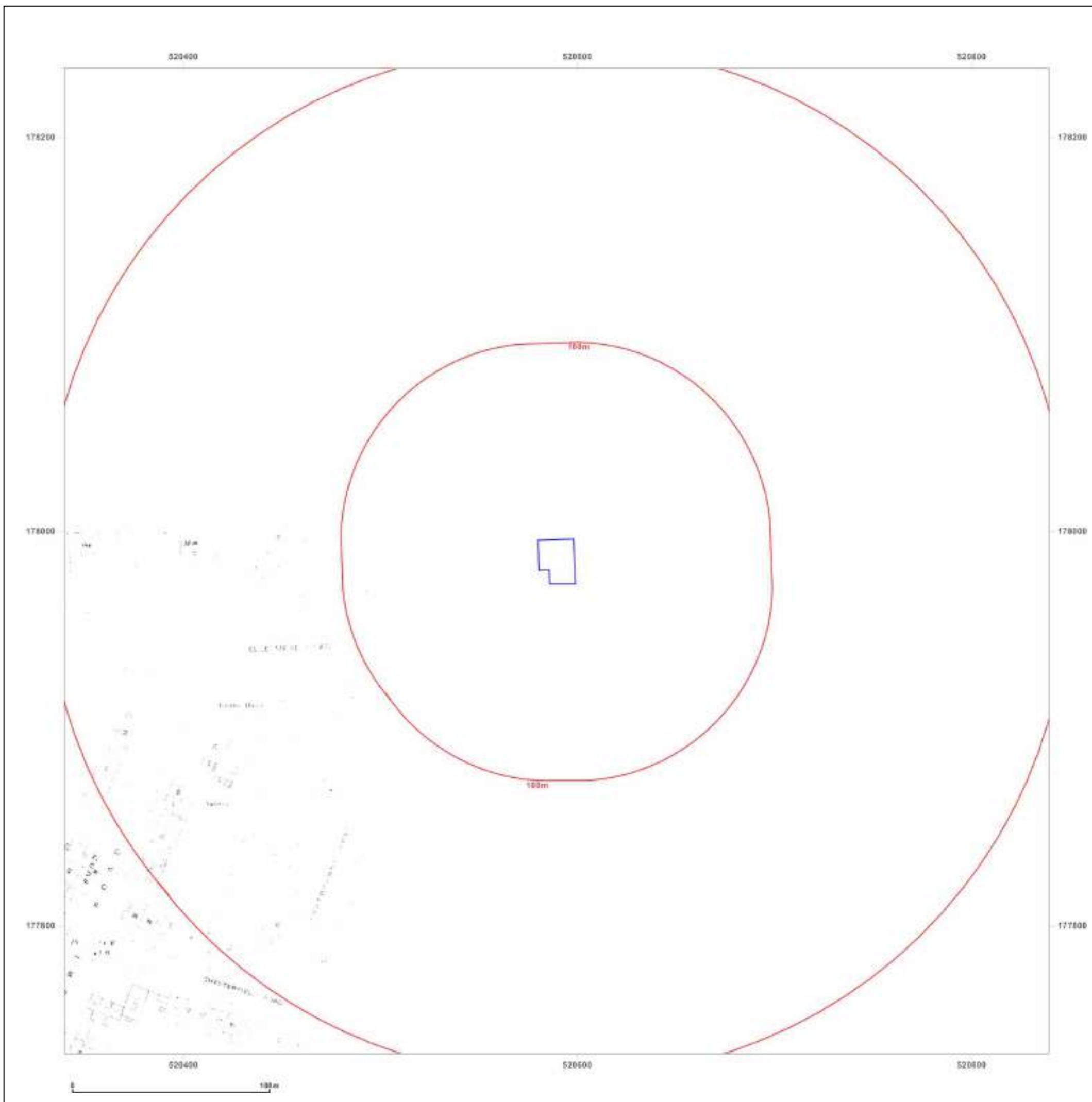


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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1965

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1965
Revised 1965
Edition N/A
Copyright 1967
Levelled 1954



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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1962-1966

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1957

Surveyed 1951
Revised 1964
Edition N/A
Copyright 1965
Levelled 1954

Surveyed 1951
Revised 1965
Edition N/A
Copyright 1966
Levelled 1954



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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1967

Scale: 1:2,500

Printed at: 1:2,500



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

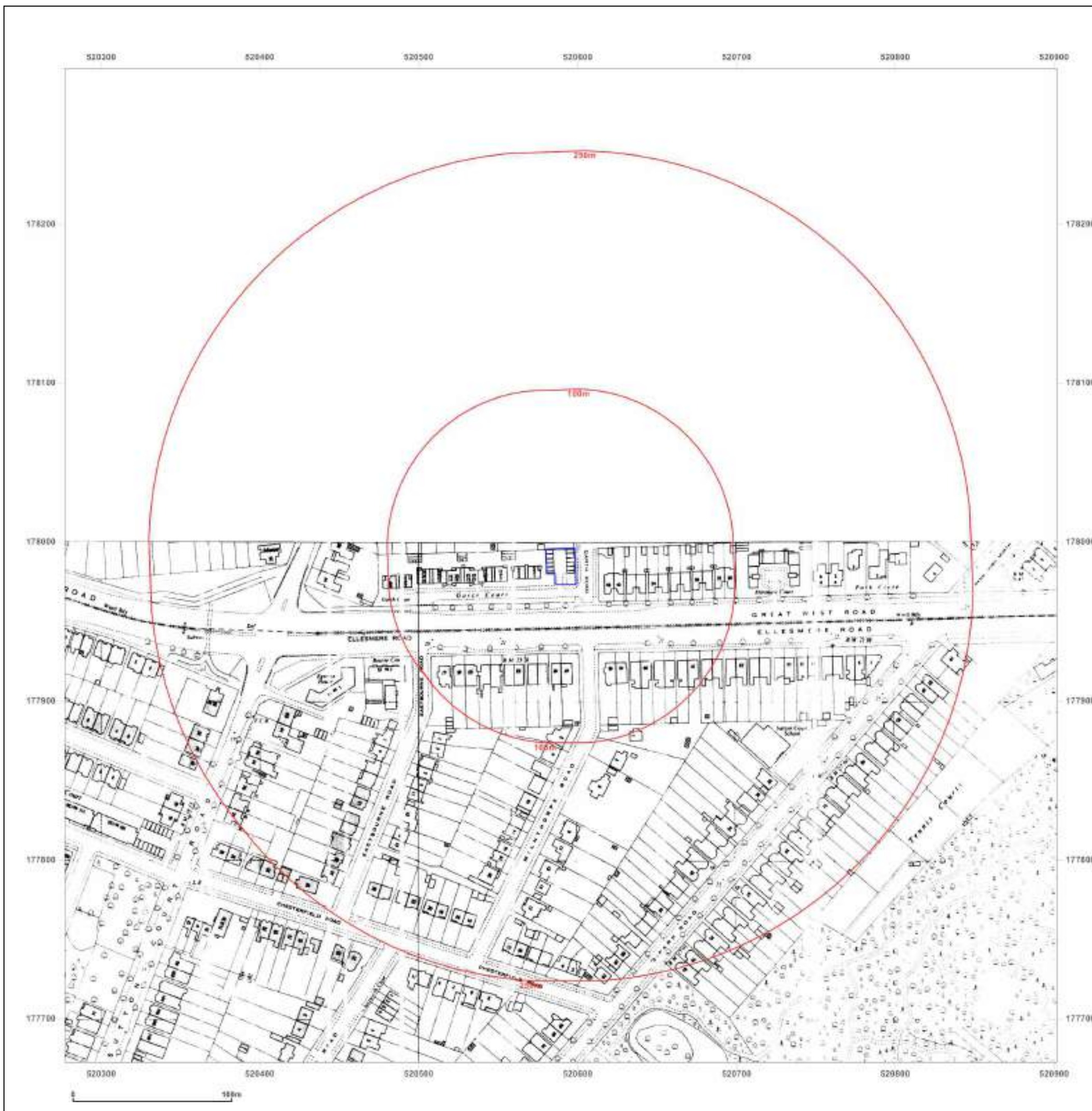


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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1971-1974

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1974
Levelled N/A

Surveyed 1950
Revised 1970
Edition N/A
Copyright 1971
Levelled 1954

Surveyed N/A
Revised N/A
Edition N/A
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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

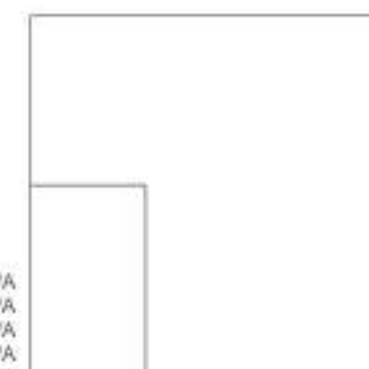
Map date: 1975

Scale: 1:1,250

Printed at: 1:2,000



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

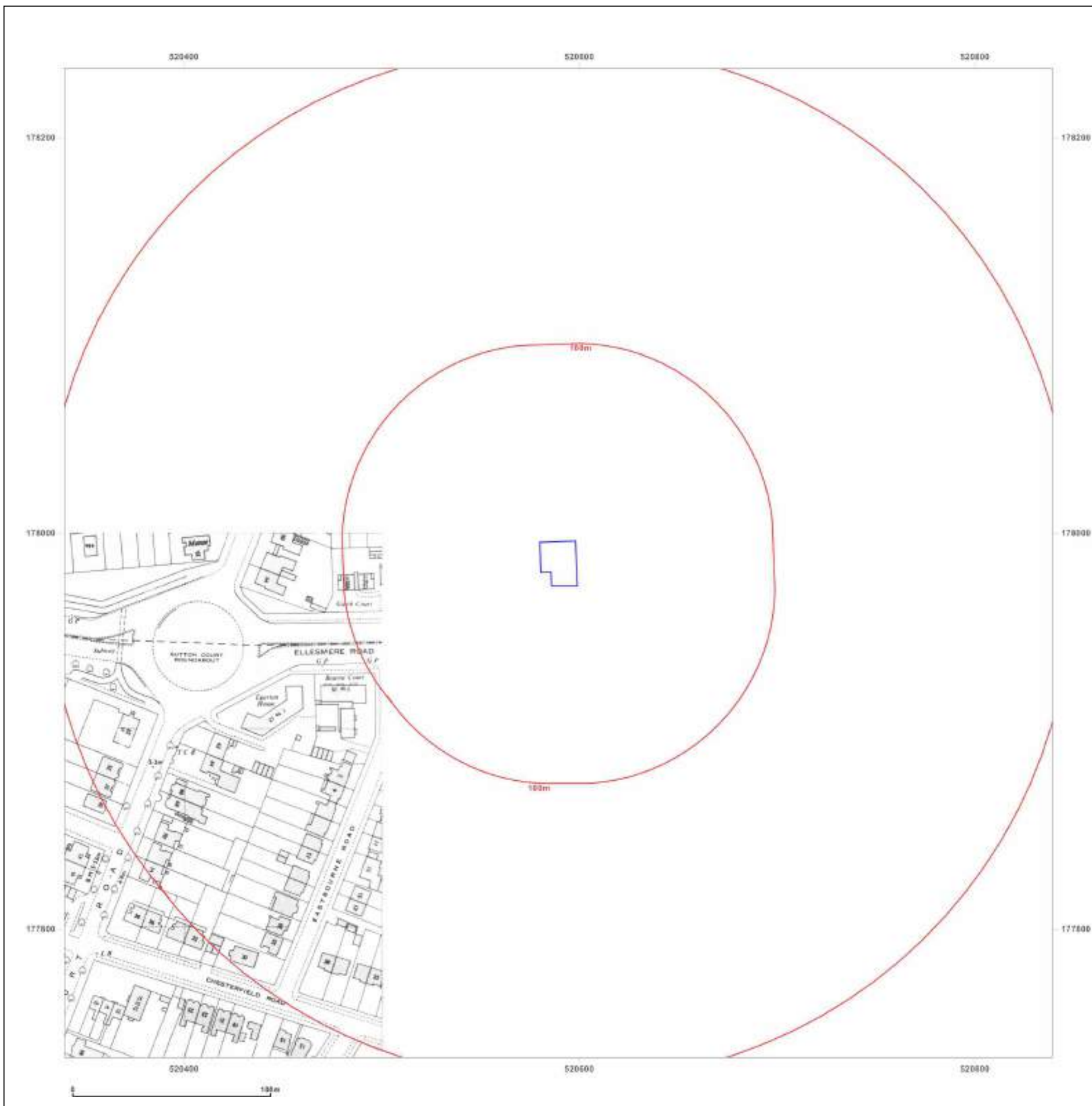


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

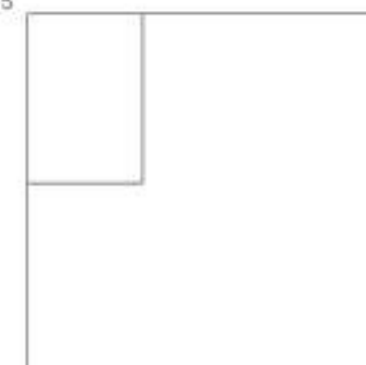
Map date: 1983

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1975
Revised 1983
Edition N/A
Copyright 1983
Levelled 1975

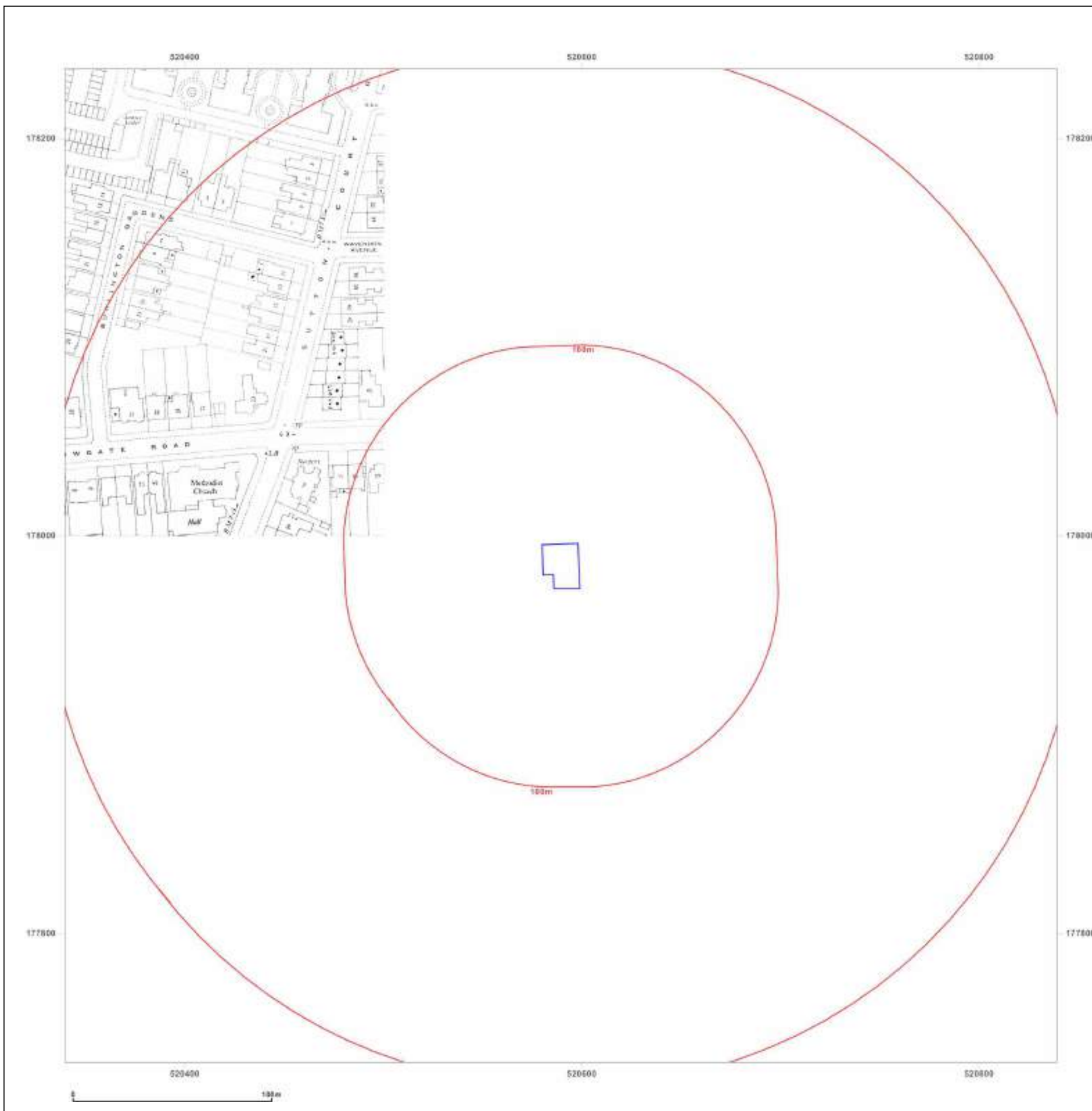


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled N/A

Surveyed N/A
Revised N/A
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Revised N/A
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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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

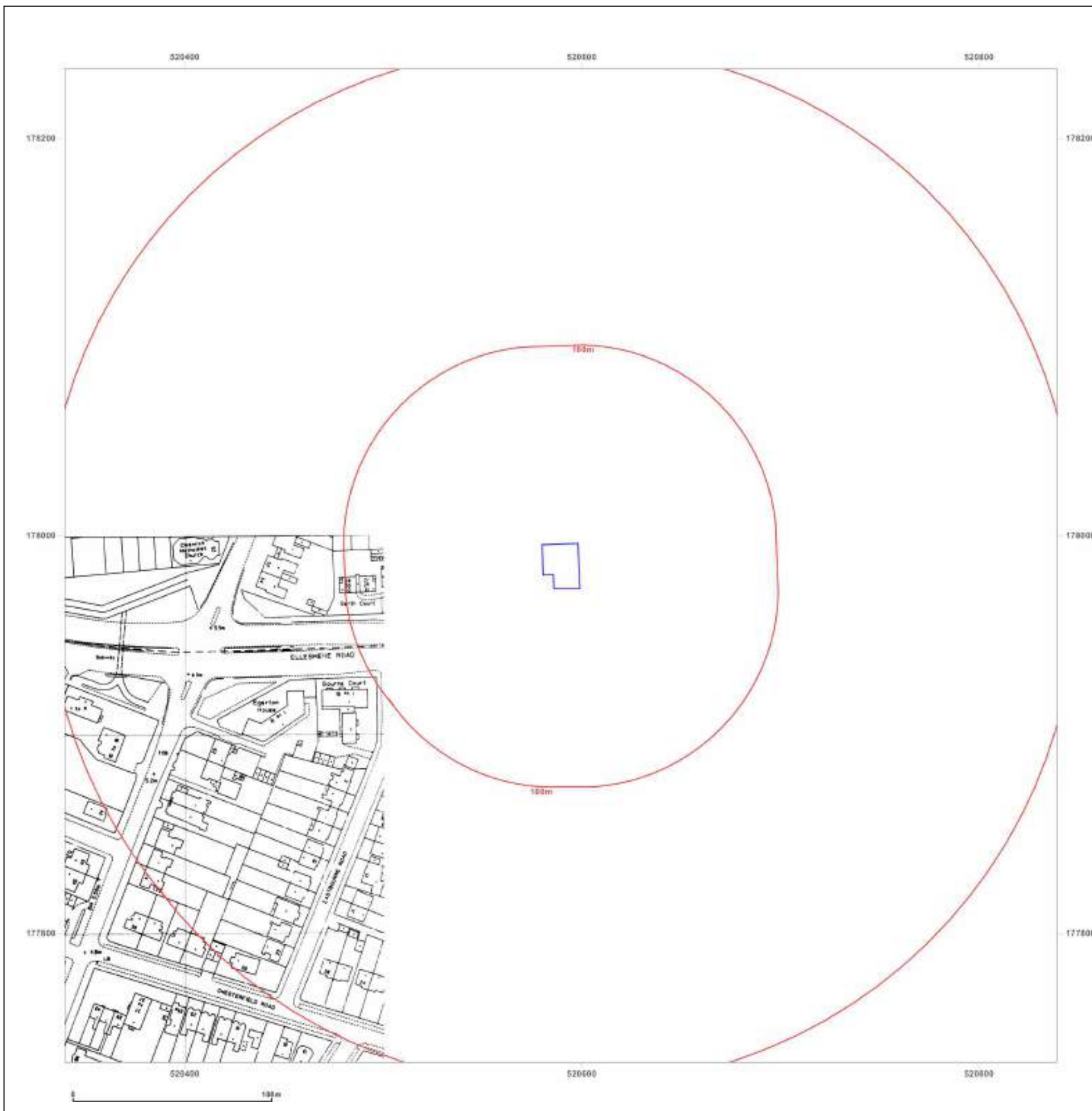


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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

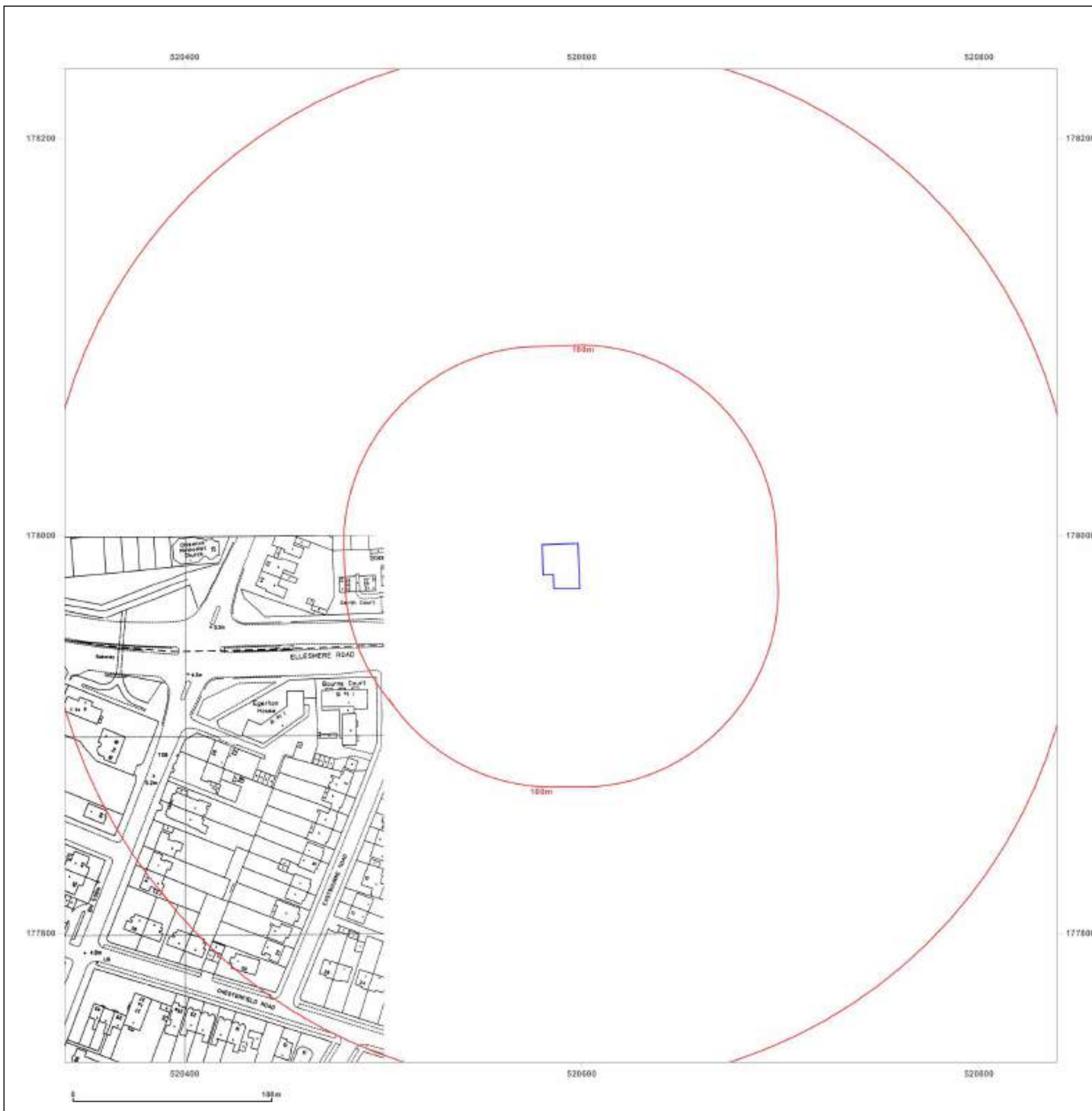


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1866

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

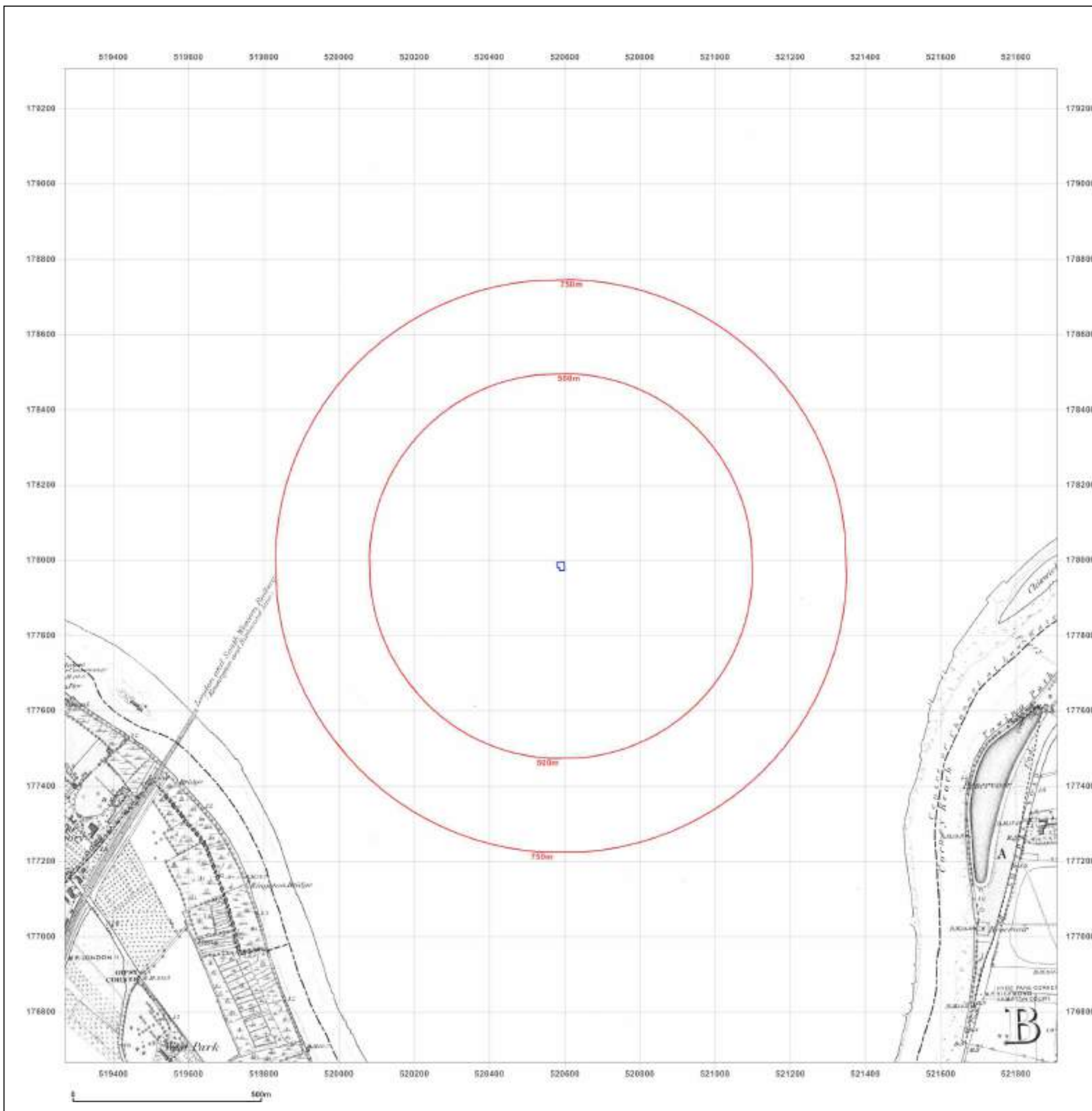


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

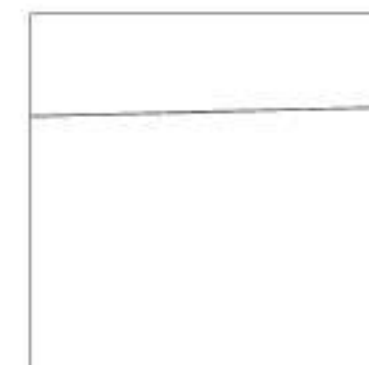
Map date: 1873-1874

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1868
Revised 1874
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1868
Revised 1873
Edition N/A
Copyright N/A
Levelled N/A

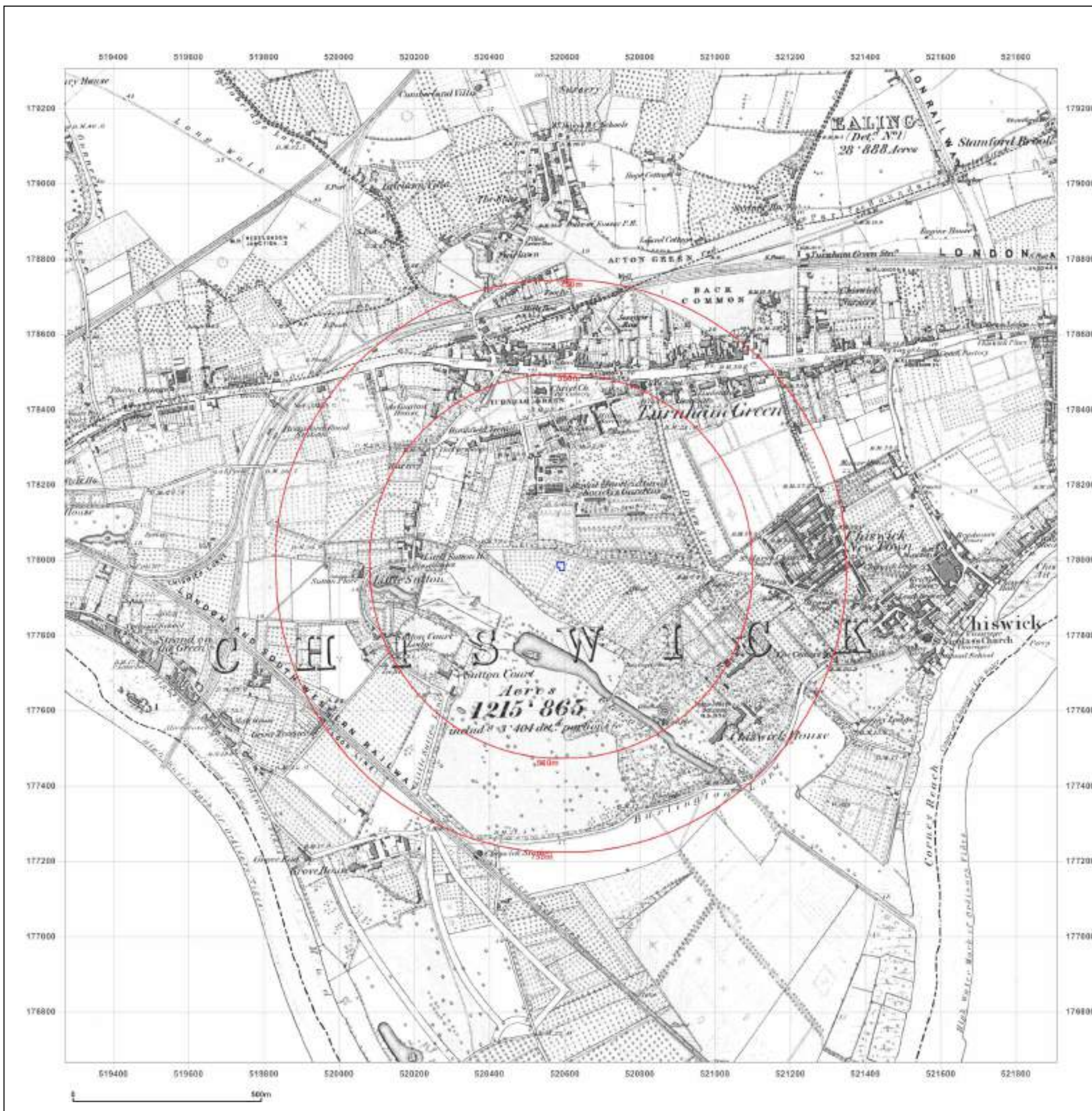


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1893-1894

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

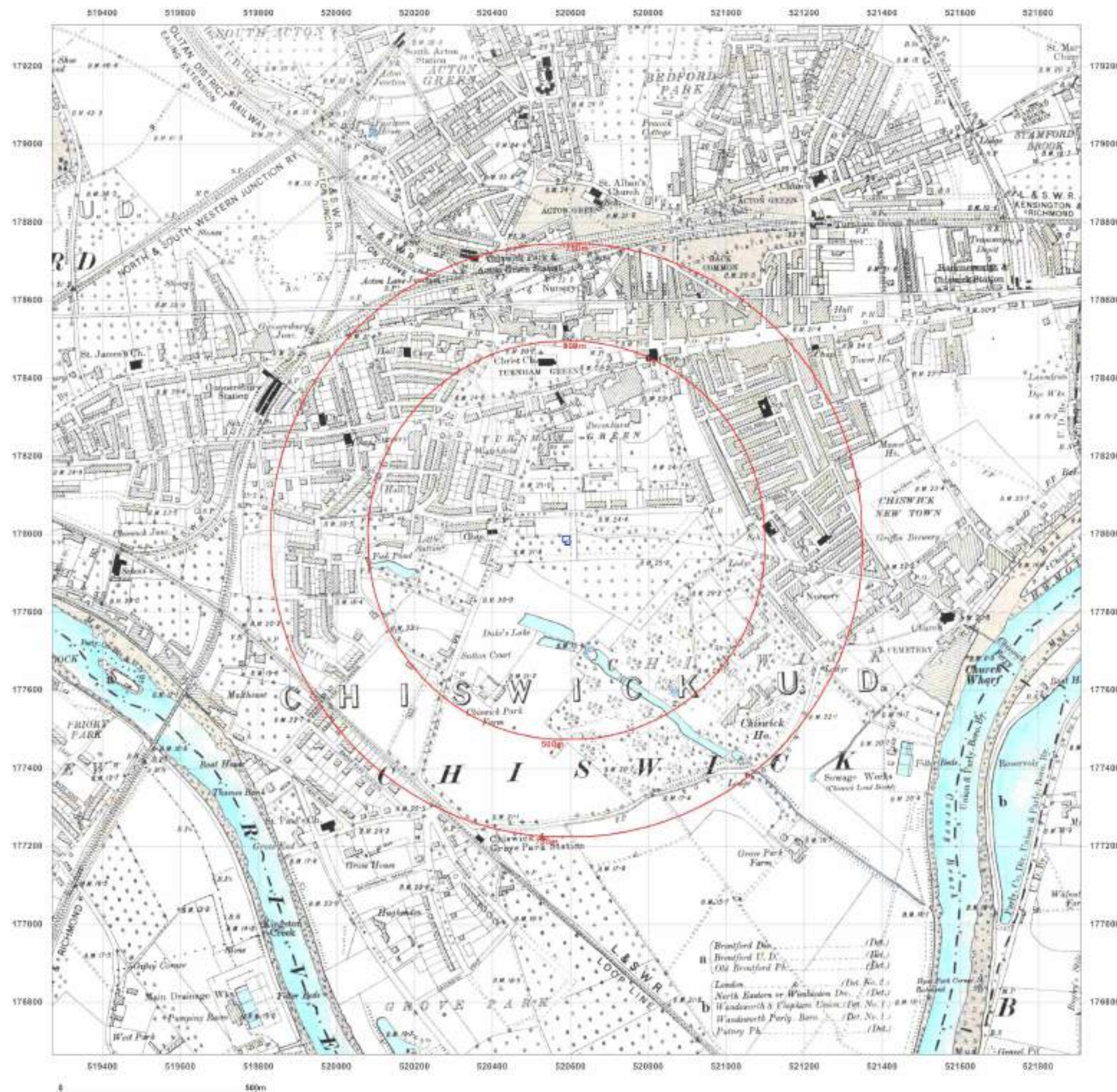


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1894

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1886
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

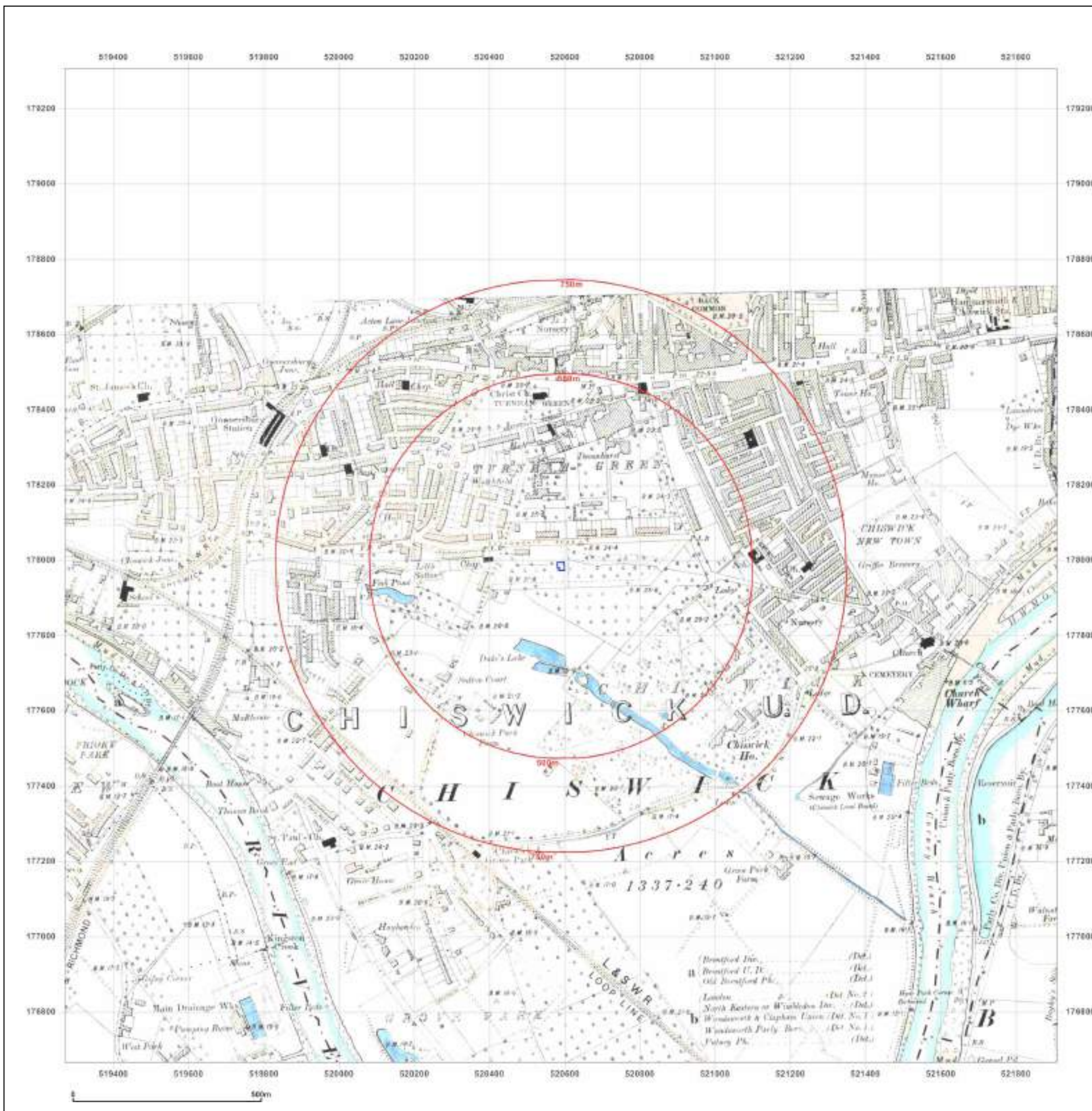


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1894

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1868
Revised 1894
Edition N/A
Copyright N/A
Levelled N/A

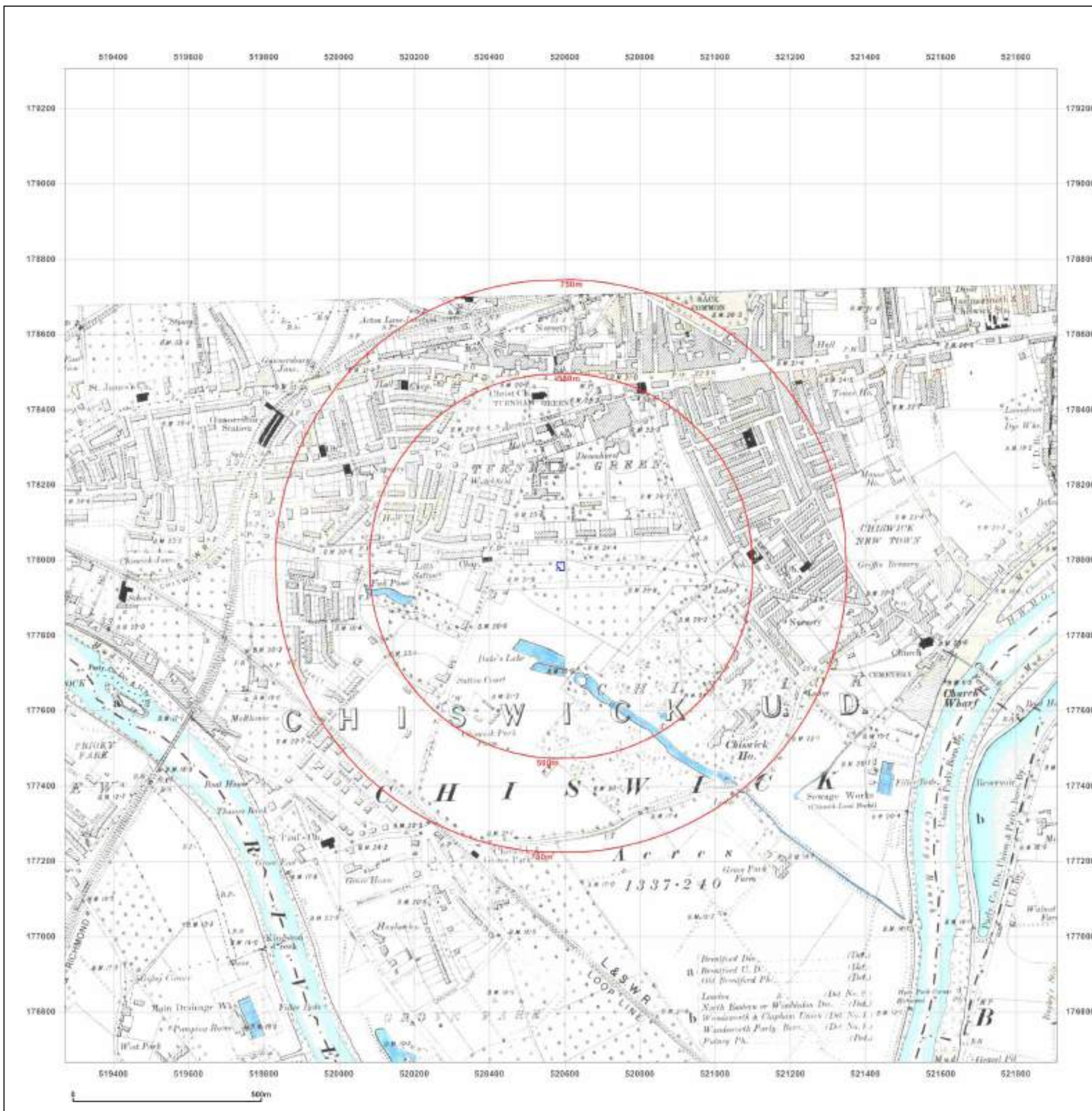


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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1896

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1893
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A



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Site Details:

GARTH COURT, LONDON, W4
4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

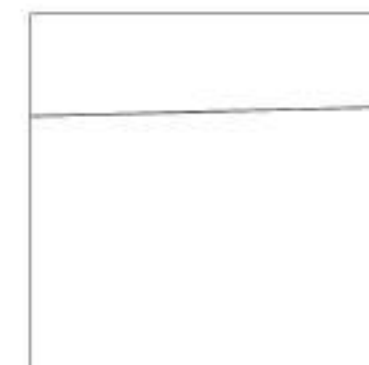
Map date: 1920

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1887
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

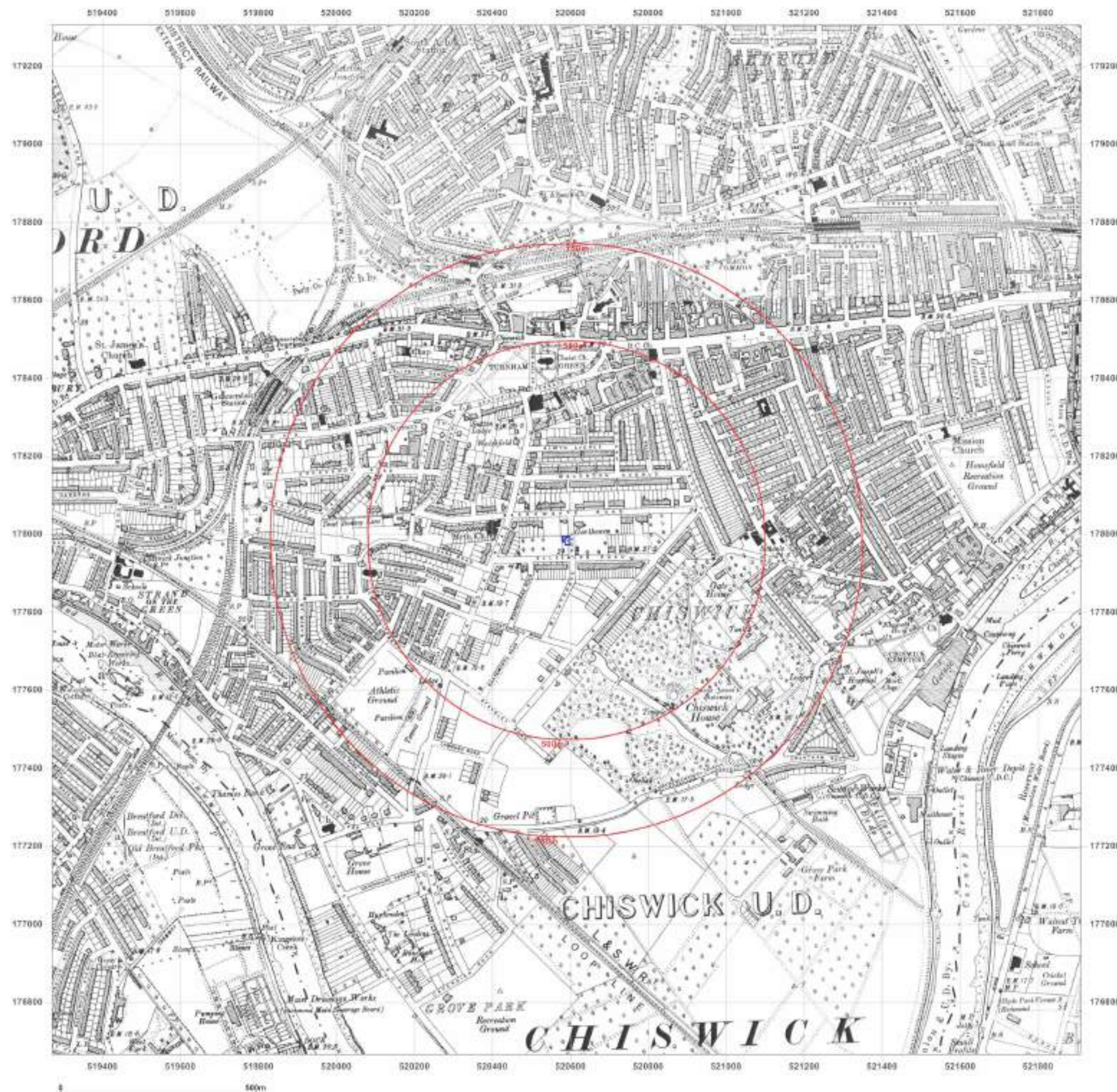


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Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: County Series

Map date: 1933

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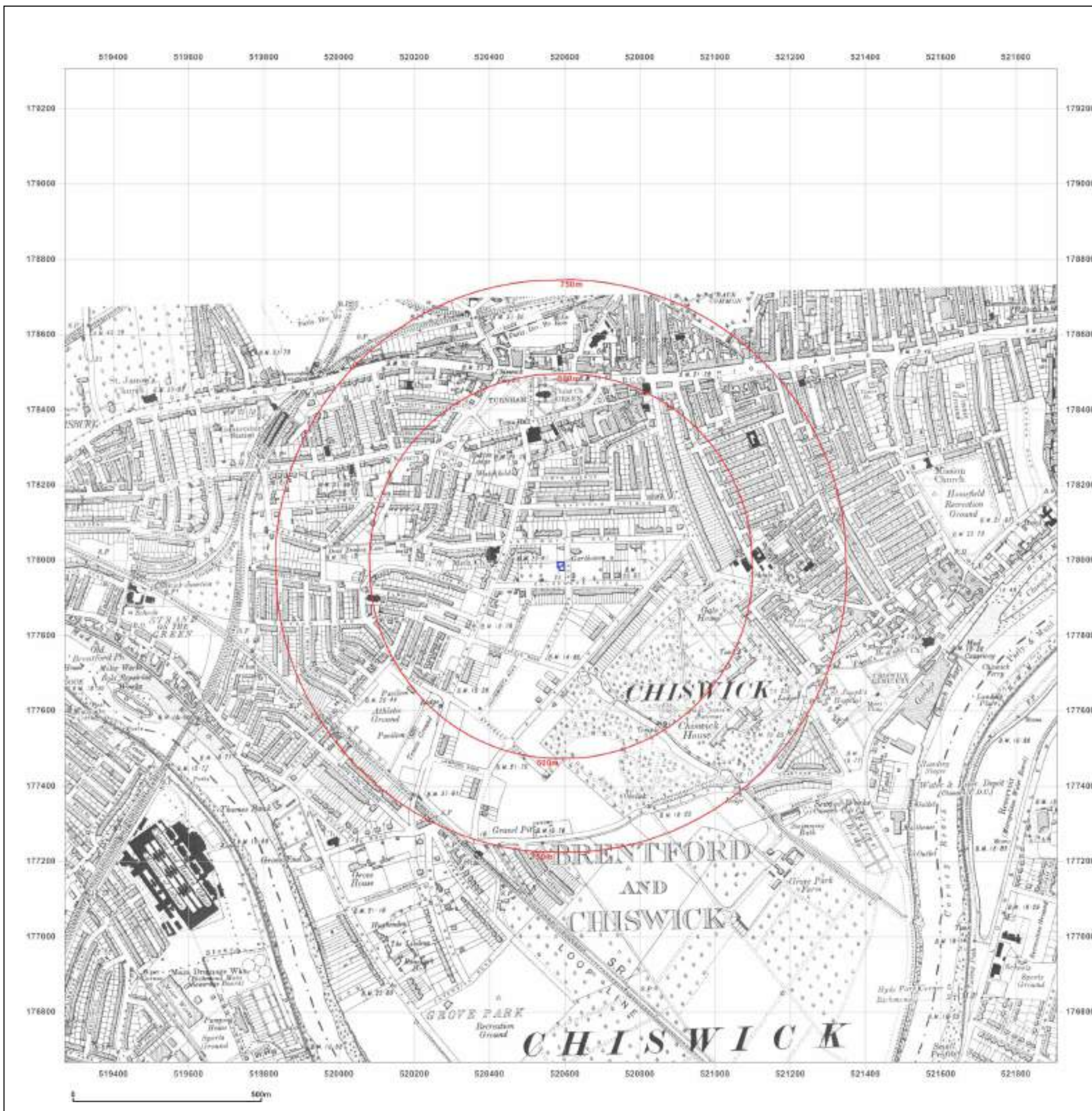


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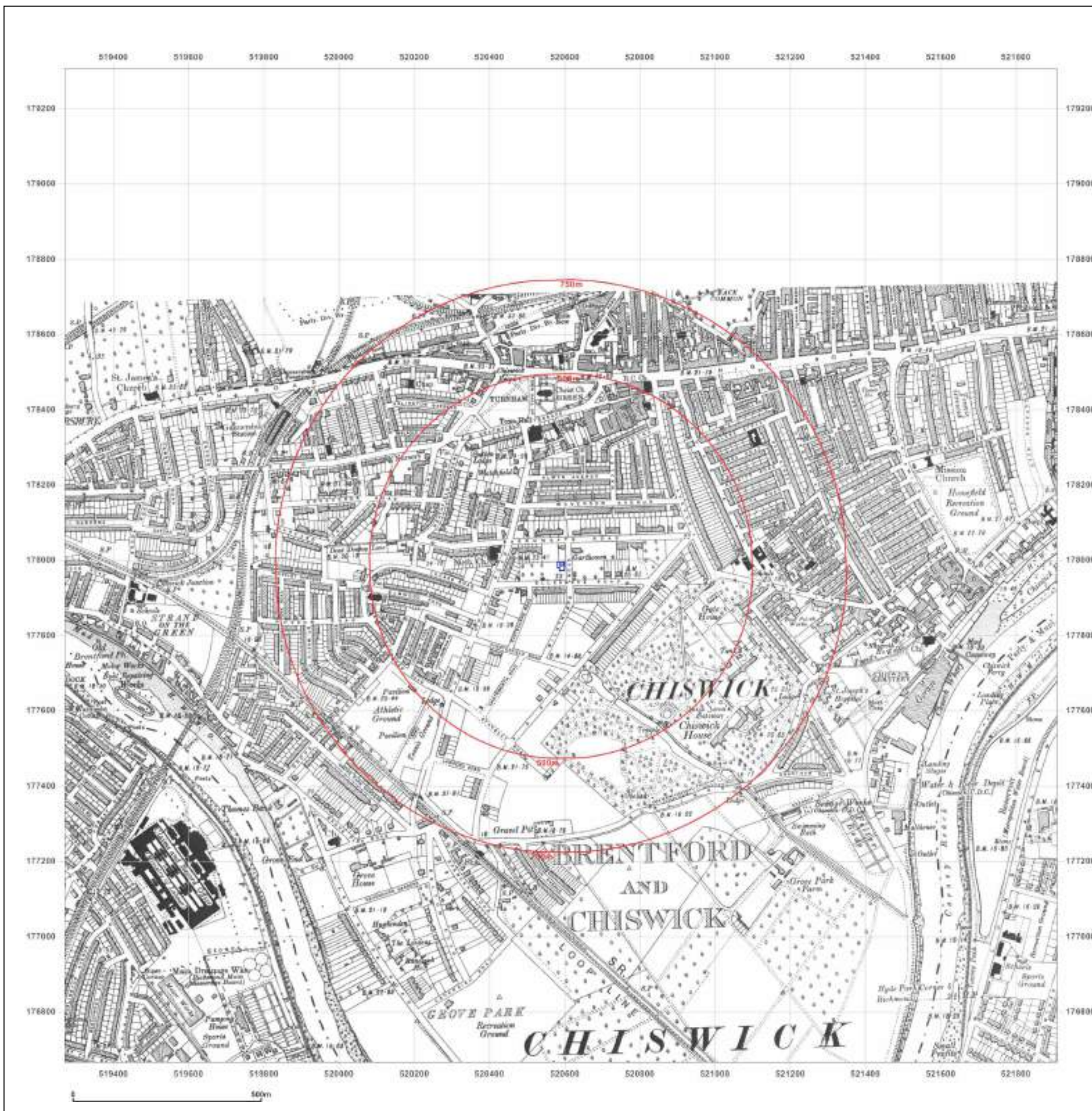


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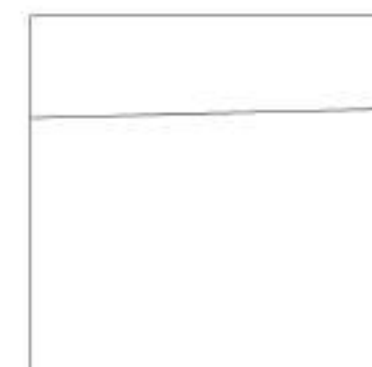
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Map Name: County Series

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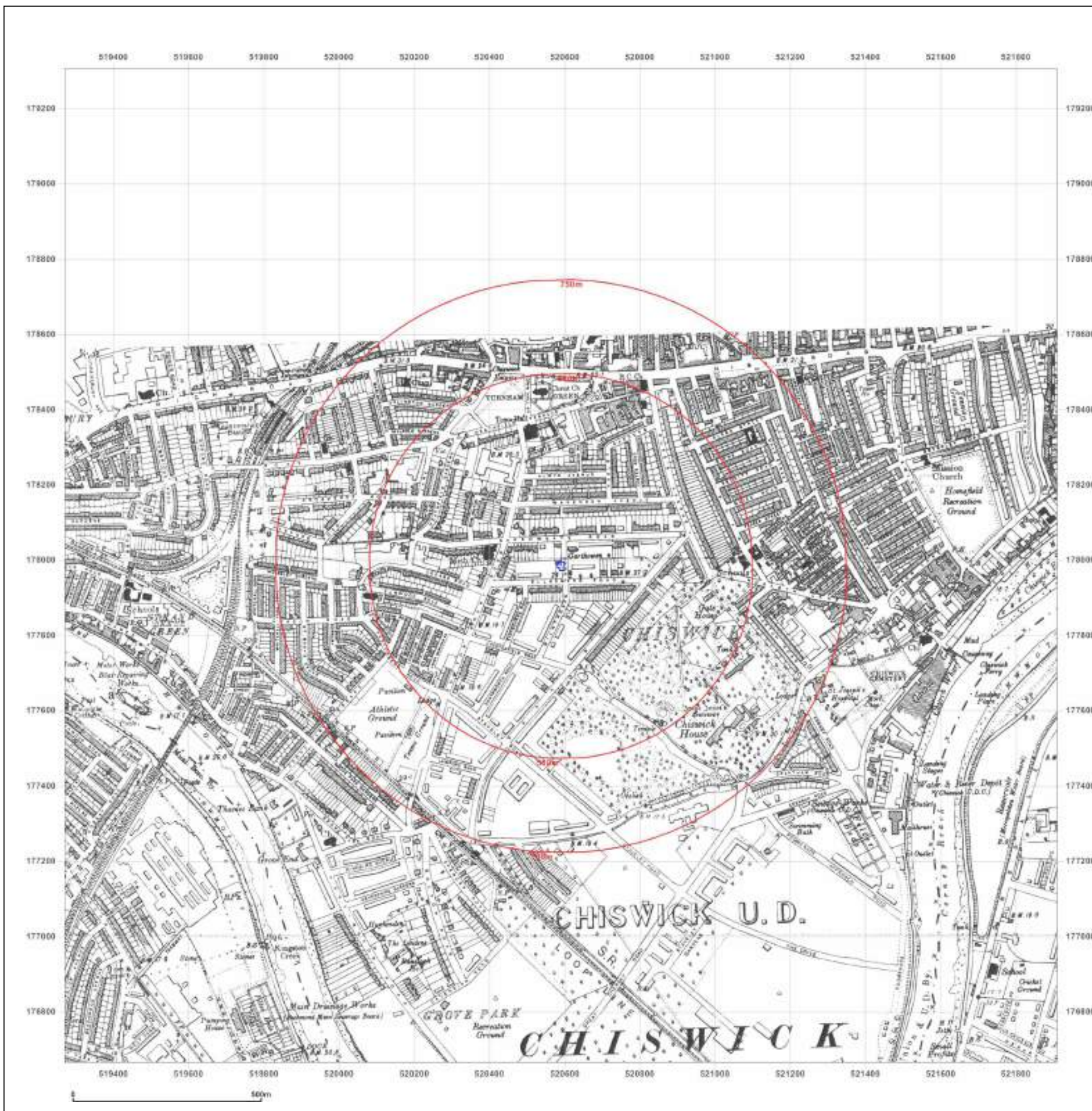


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Client Ref: 14023929
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Grid Ref: 520589, 177985

Map Name: Provisional

Map date: 1947-1948

Scale: 1:10,560

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Levelled 1934

Surveyed 1940
Revised 1947
Edition N/A
Copyright N/A
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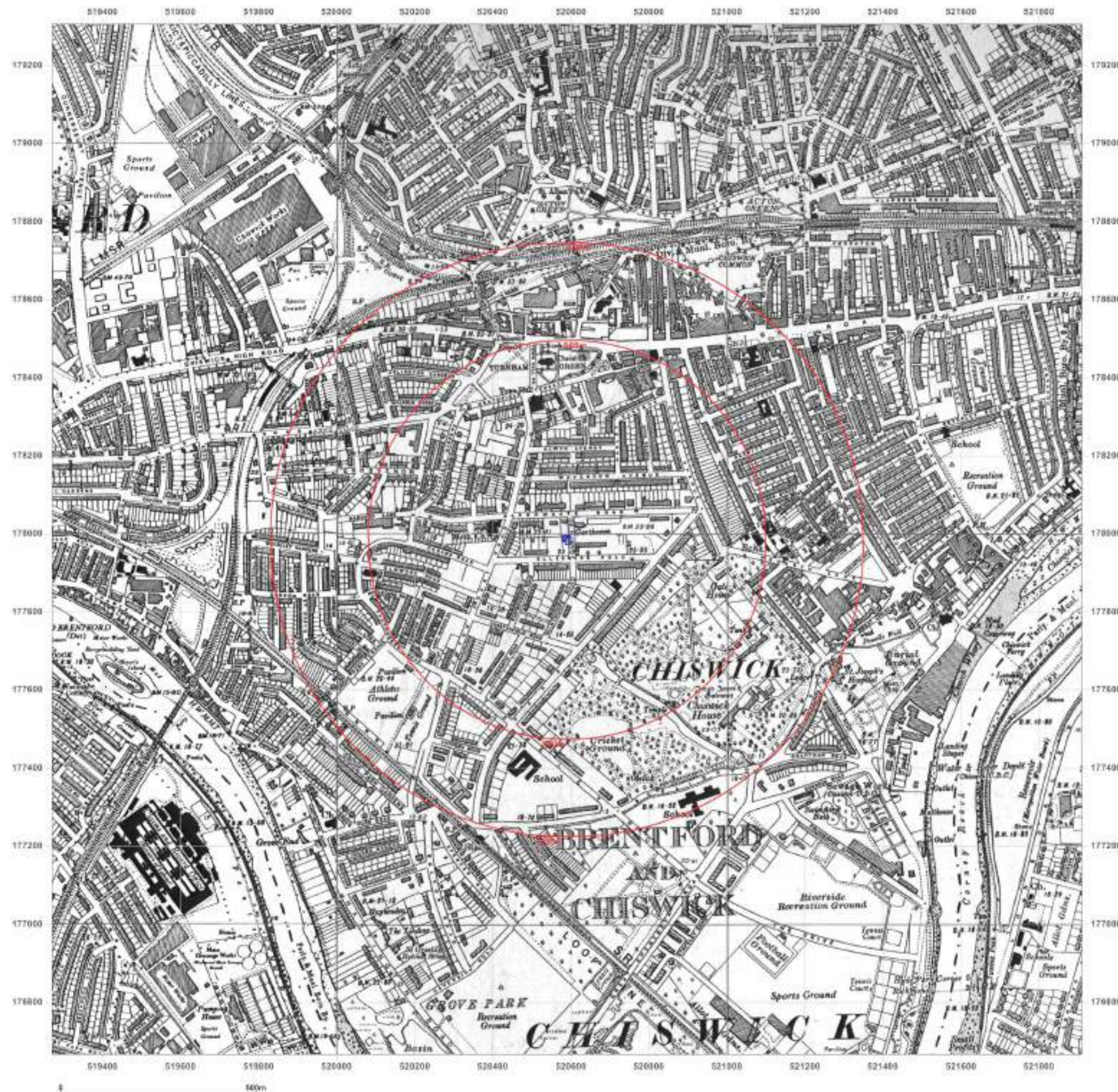


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Client Ref: 14023929
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Grid Ref: 520589, 177985

Map Name: Provisional

Map date: 1948

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Printed at: 1:10,560



Surveyed N/A
Revised 1948
Edition N/A
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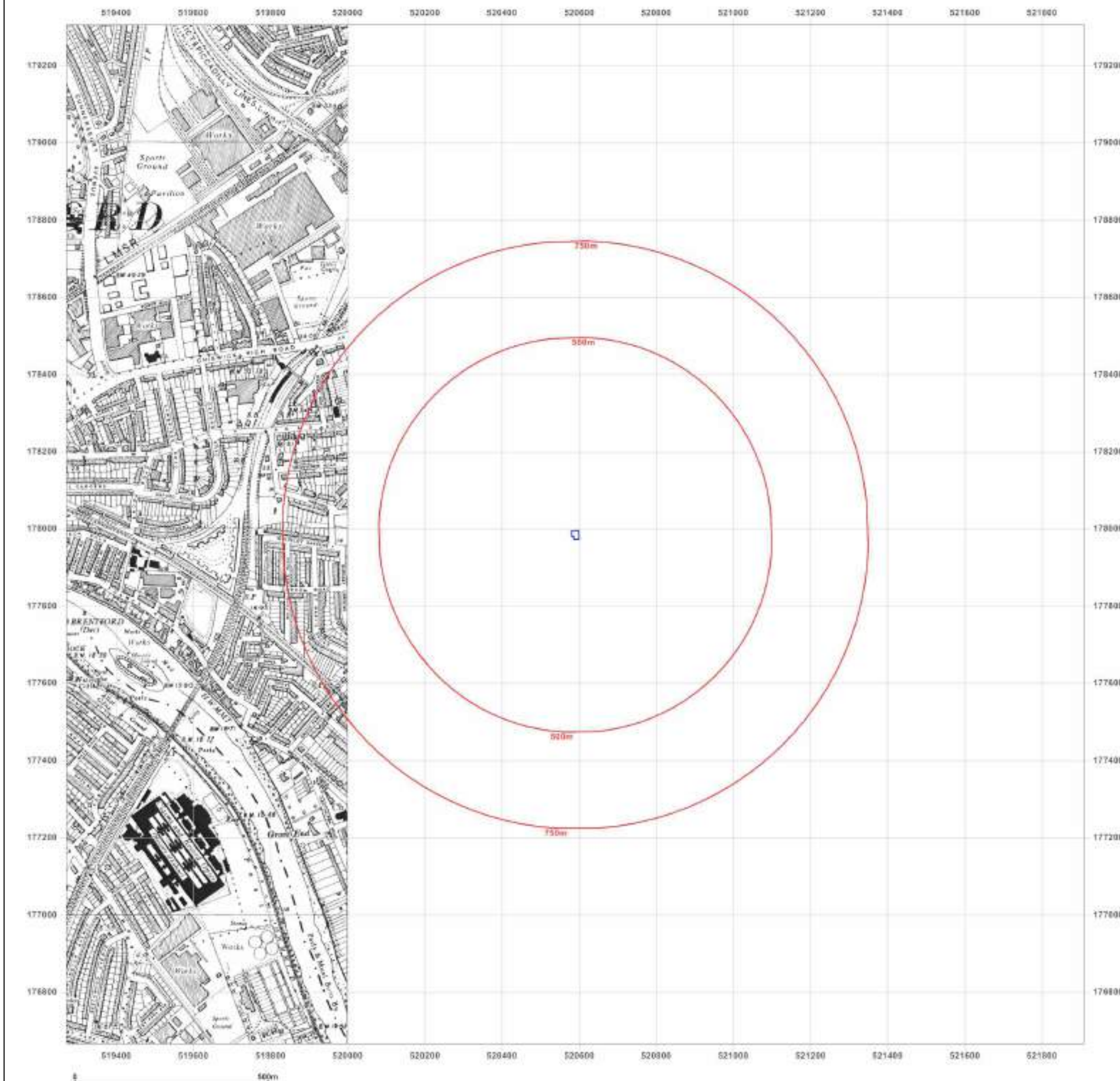


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Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: Provisional

Map date: 1958-1961

Scale: 1:10,560

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Surveyed 1940
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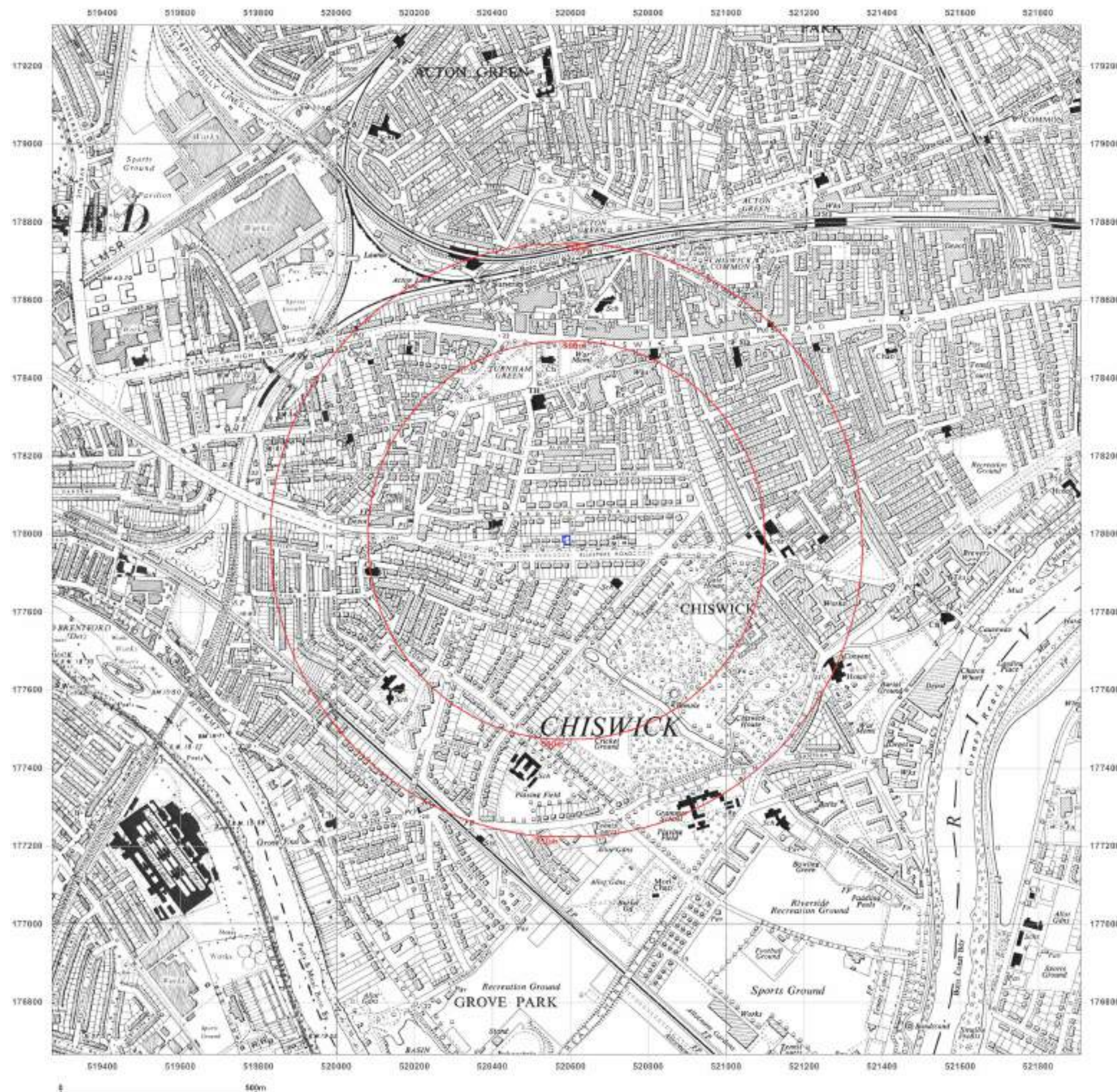


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Grid Ref: 520589, 177985

Map Name: Provisional

Map date: 1962-1966

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Surveyed 1958
Revised 1962
Edition 1958
Copyright 1958
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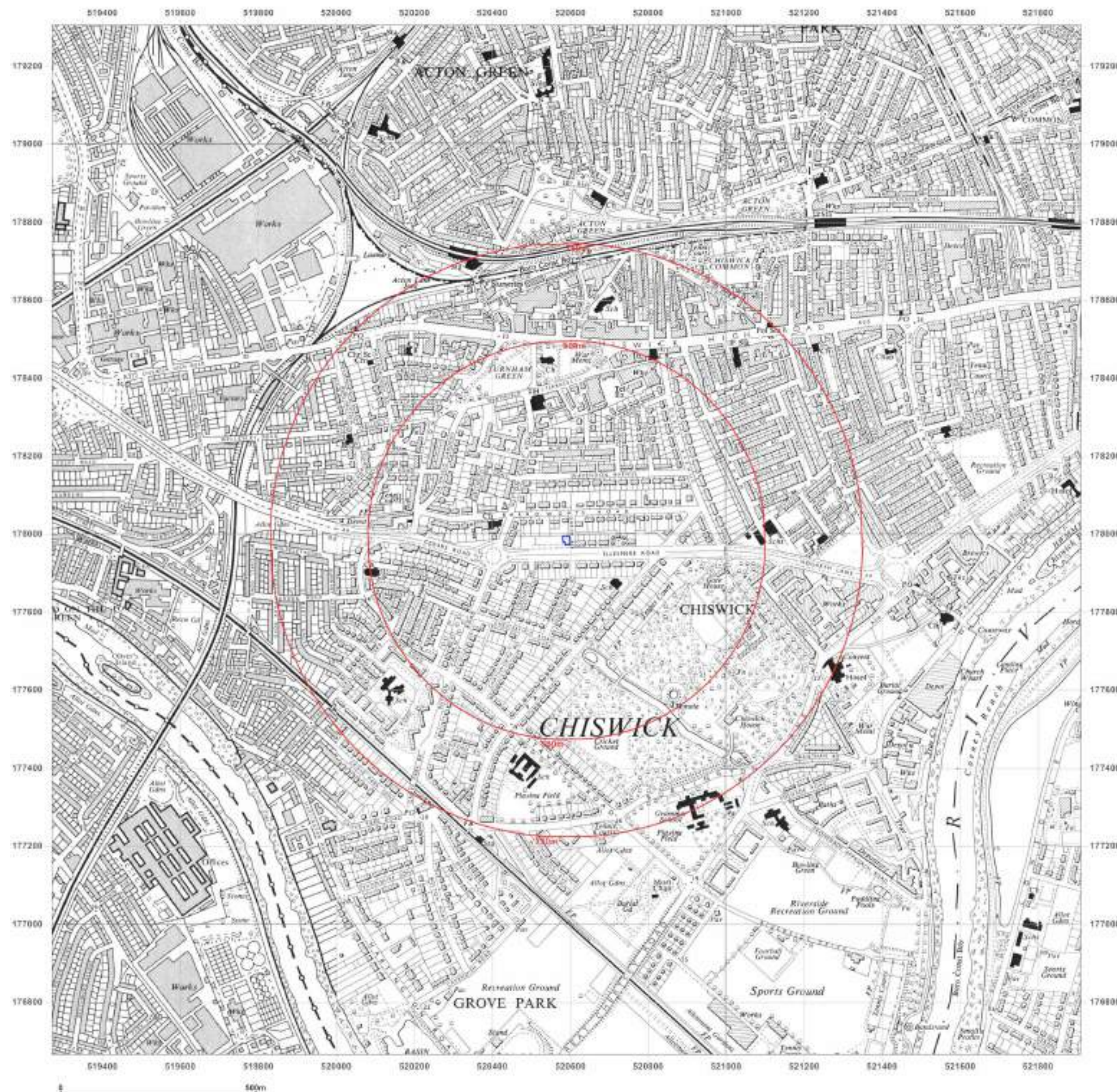


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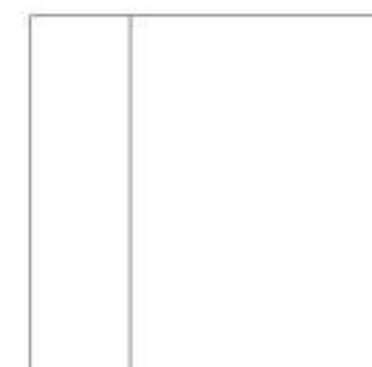
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Grid Ref: 520589, 177985

Map Name: Provisional

Map date: 1967

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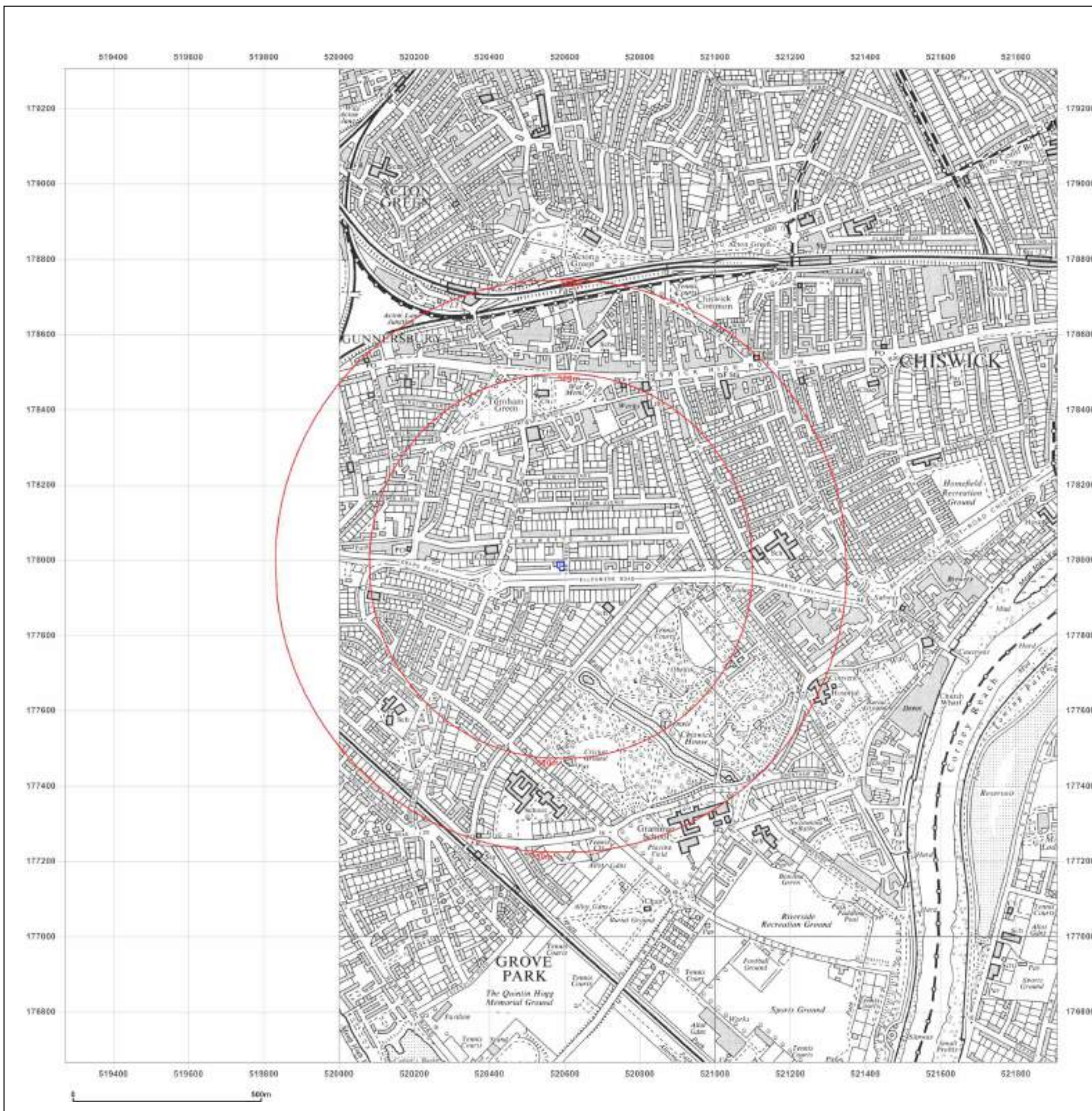


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Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1974

Scale: 1:10,000

Printed at: 1:10,000



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Revised 1974
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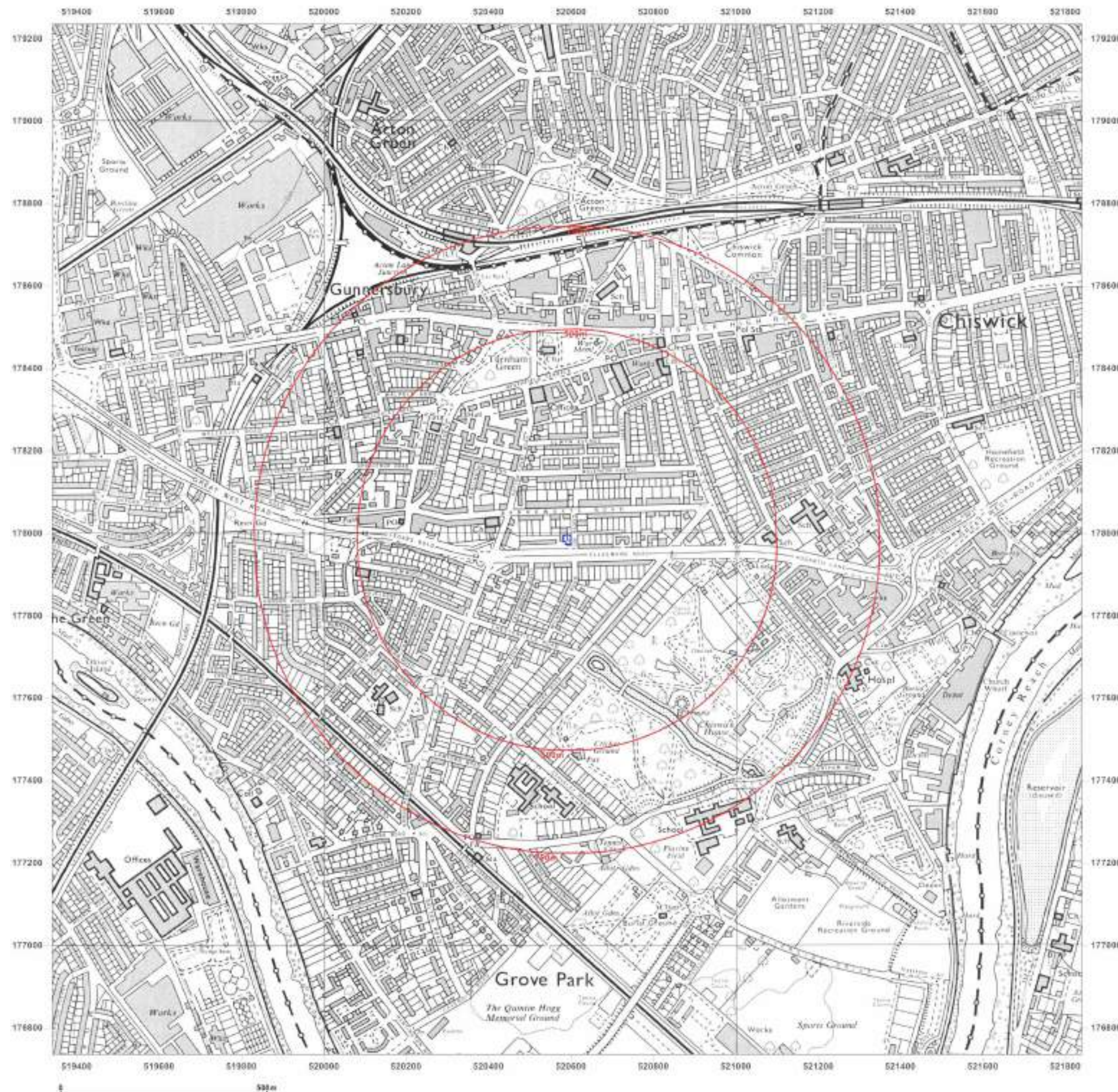


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Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 1987

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1982
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Revised 1987
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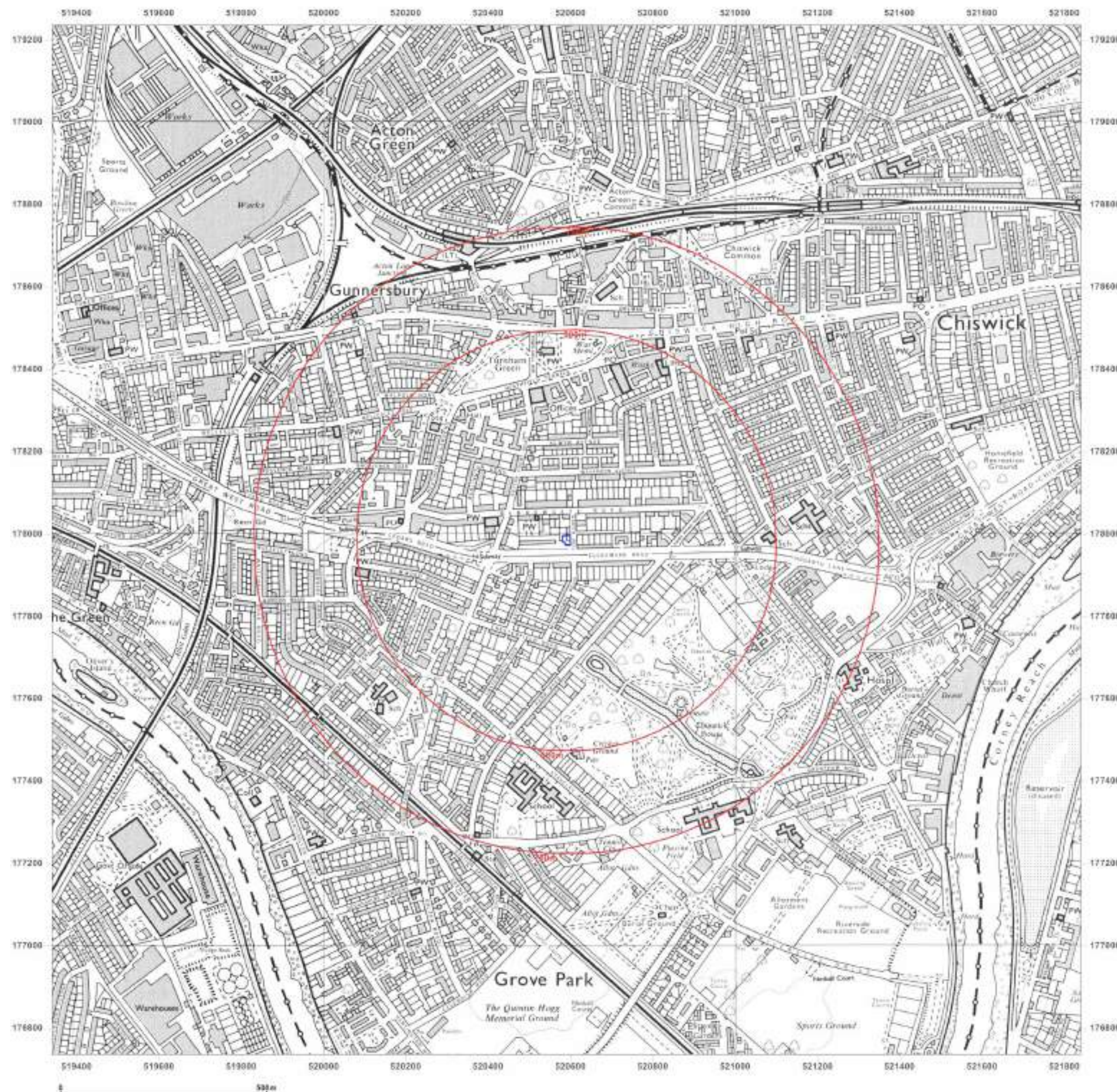


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Site Details:

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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



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4QH

Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

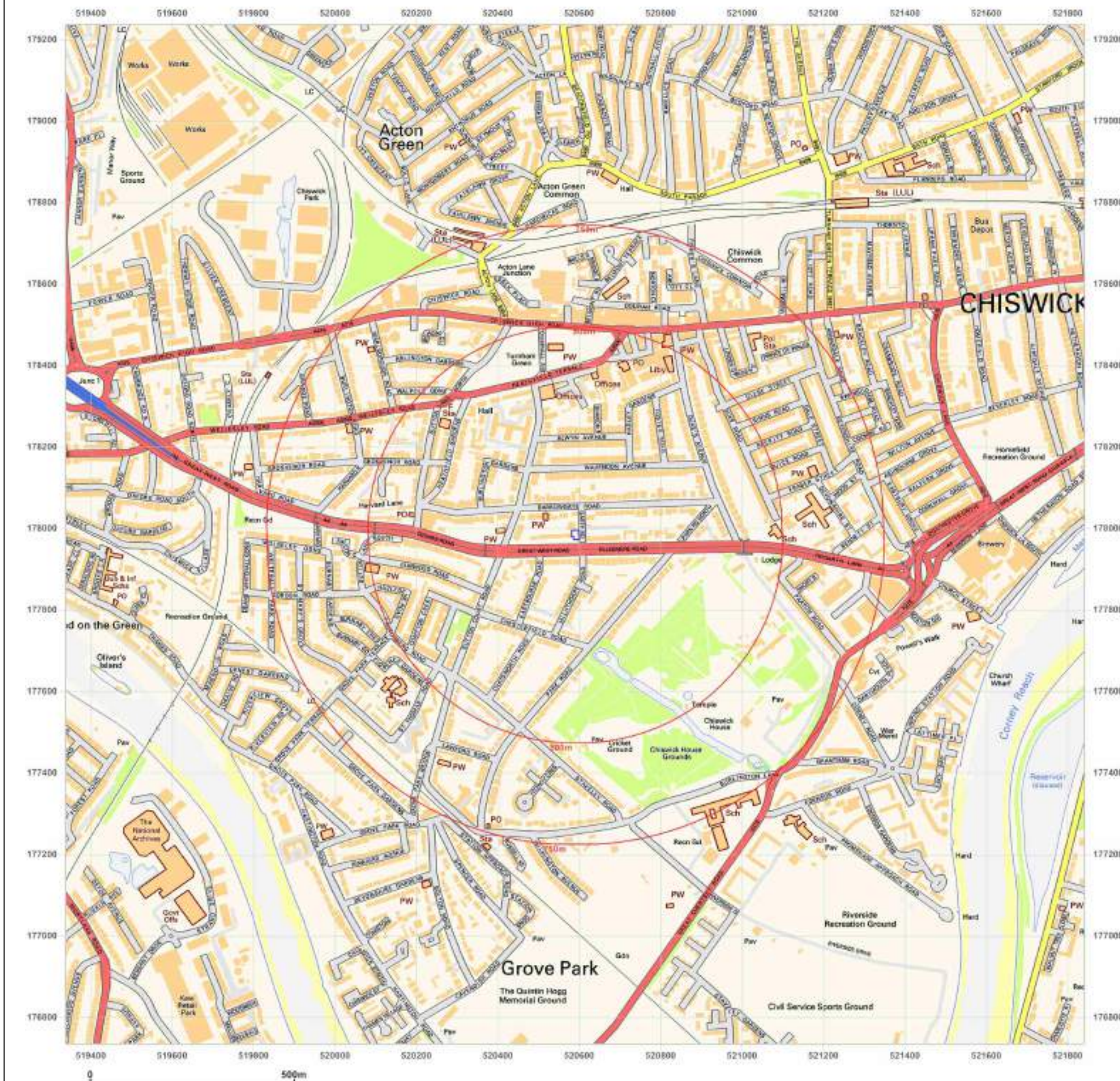


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Client Ref: 14023929
Report Ref: GS-5910840
Grid Ref: 520589, 177985

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000

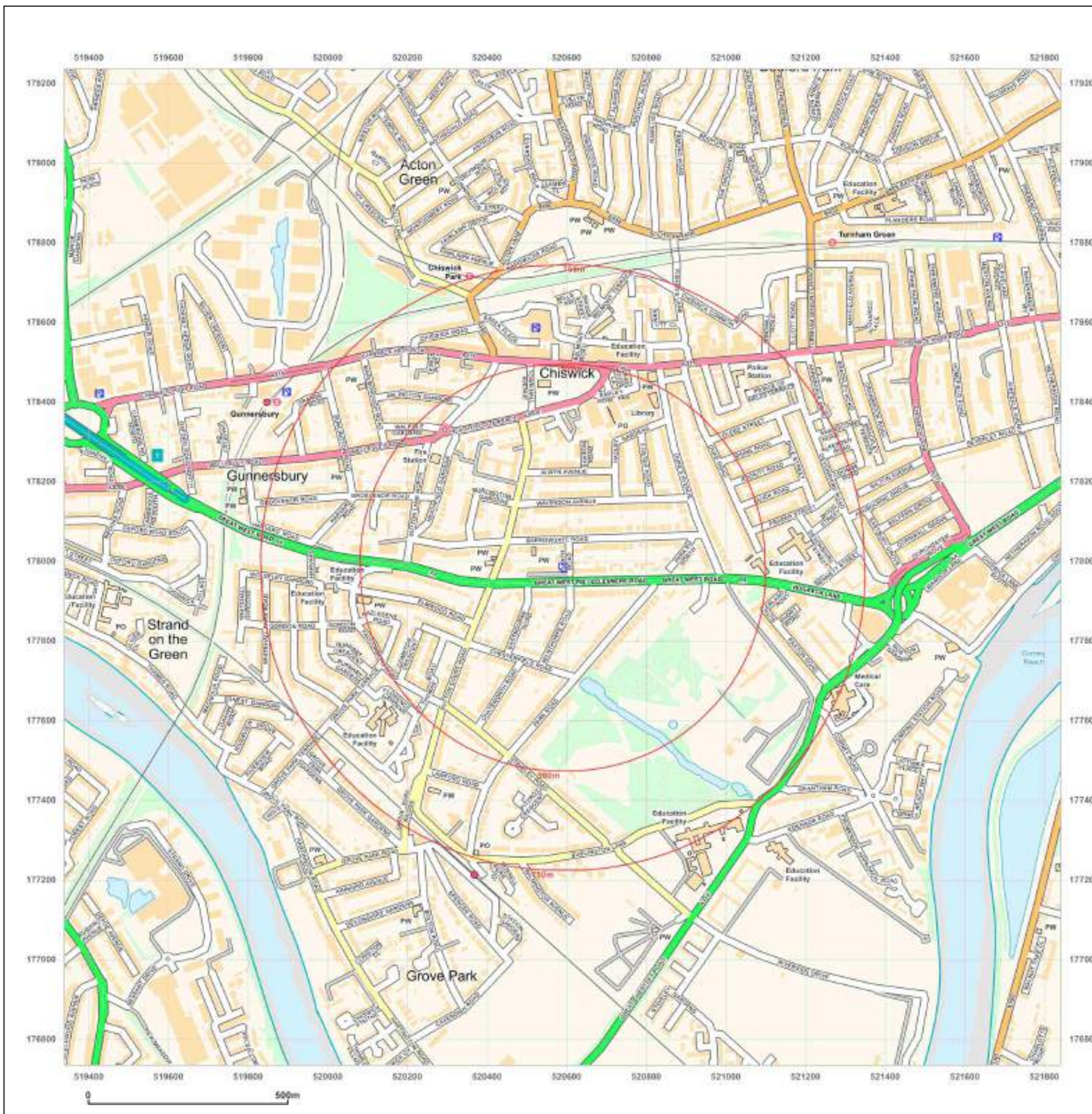


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APPENDIX B

Groundsure Data Sheets and Site Sensitivity Maps



Arcadis Consulting UK Ltd
PO Box, 307,
MANCHESTER, M60 3NT

Groundsure Reference: GS-5910838

Your Reference: 14023929

Report Date 28 Mar 2019

Report Delivery Method: Email - pdf

Enviro Insight

Address: GARTH COURT, LONDON, W4 4QH

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If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

Managing Director
Groundsure Limited

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Groundsure Enviroinsight

Address: GARTH COURT, LONDON, W4 4QH

Date: 28 Mar 2019

Reference: GS-5910838

Client: Arcadis Consulting UK Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2015

Grid Reference: 520589,177989

Site Size: 0.0373ha

Report Reference: GS-5910838

Client Reference: 14023929

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Overview of Findings

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Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	0	32
1.2 Additional Information – Historical Tank Database	0	1	0	5
1.3 Additional Information – Historical Energy Features Database	0	1	1	14
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	14
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	5	22
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	1	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	2	6
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	1	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	2

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	3	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	2
4.3 National Grid Underground Electricity Cables	0	3	6	12
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified					
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	17
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	0	2	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	Identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	Identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential below Surface					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Moderate					

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	1	3
8.8 Records of World Heritage Sites	0	0	0	0	0	2
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards	
9.1 Maximum risk of natural ground subsidence	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Negligible
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining	
10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

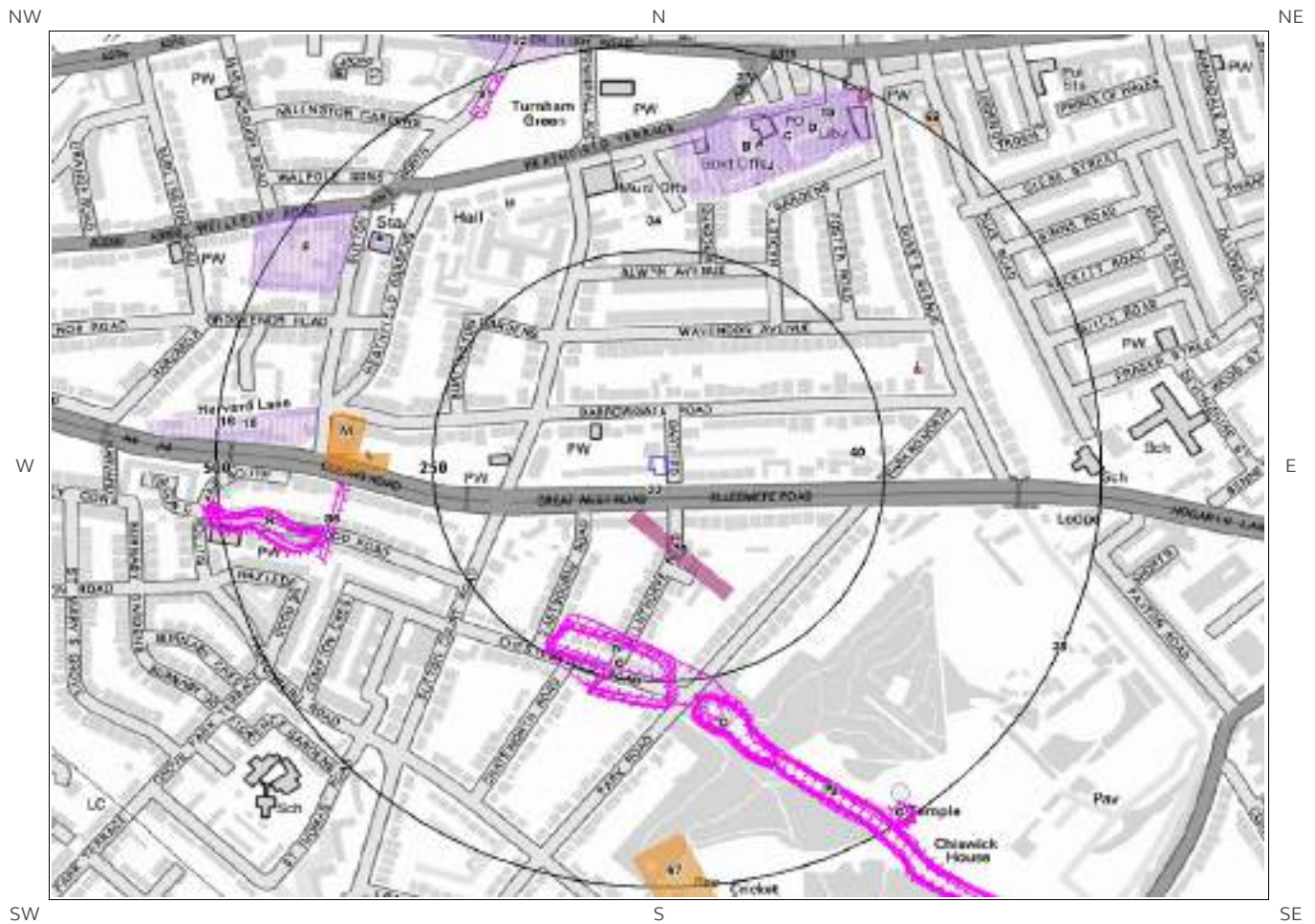
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

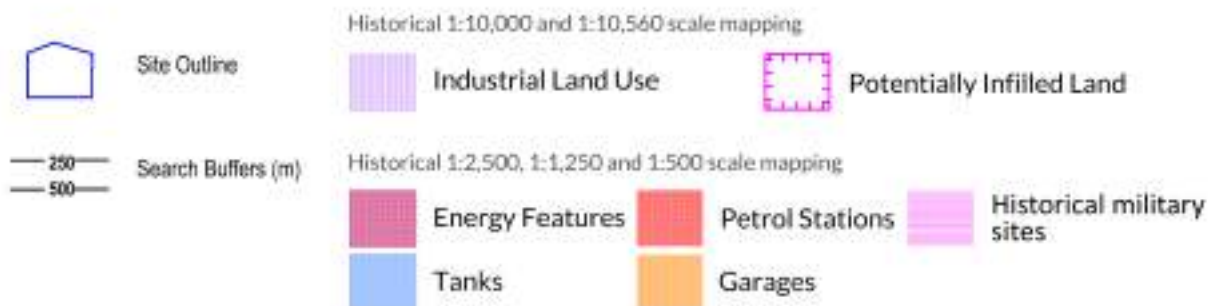
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 32

ID	Distance [m]	Direction	Use	Date
1A	308	N	Paper Staining Works	1920
2C	323	N	Paper Staining Works	1933
3B	324	N	Telephone Exchange	1962
4A	325	N	Paper Staining Works	1938
5B	325	N	Telecomm Exchange	1958
6C	332	N	Paper Staining Works	1910
7C	332	N	Paper Staining Works	1933
8A	348	N	Barracks	1866
9J	364	N	Magazine	1866
10D	377	NE	Paper Staining Works	1947
11D	382	NE	Unspecified Works	1967
12D	382	NE	Unspecified Works	1987
13D	382	NE	Unspecified Works	1974
14D	382	NE	Unspecified Works	1962
15	385	W	Unspecified Depot	1962
16	386	W	Unspecified Depot	1958
17E	393	NW	Fire Station	1974
18E	393	NW	Fire Station	1987
19	413	N	Unspecified Works	1958
20F	414	NW	Nursery	1933
21F	414	NW	Nursery	1920
22F	415	NW	Nursery	1898
23F	416	NW	Nursery	1866
24F	416	NW	Nursery	1911
25F	418	NW	Nursery	1894
26F	418	NW	Nursery	1910
27F	418	NW	Nursery	1933
28G	481	SE	Unspecified Heap	1898
29G	482	SE	Unspecified Heap	1893
30G	487	SE	Unspecified Heap	1933
31G	488	SE	Unspecified Heap	1920
32	495	N	Smithy	1866

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary:

6

ID	Distance (m)	Direction	Use	Date
33	19	S	Tanks	1916
34	279	N	Unspecified Tank	1896
35H	341	NW	Unspecified Tank	1962
36H	343	NW	Unspecified Tank	1962
37	460	N	Unspecified Tank	1915
38	497	SE	Unspecified Tank	1915

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary:

16

ID	Distance (m)	Direction	Use	Date
39	44	SW	Electricity Supply Station	1916
40	219	E	Electricity Substation	1991
41I	303	E	Electricity Substation	1996
42I	303	E	Electricity Substation	1991
43I	303	E	Electricity Substation	1971
44I	304	E	Electricity Substation	1991
45J	345	N	Electricity Substation	1971
46E	412	NW	Electricity Substation	1983
47E	412	NW	Electricity Substation	1991
48K	483	NE	Electricity Substation	1971
49K	483	NE	Electricity Substation	1996
50K	483	NE	Electricity Substation	1991
51K	484	NE	Electricity Substation	1991
52K	492	NE	Electricity Substation	1950
53K	492	NE	Electricity Substation	1950
54K	492	NE	Electricity Substation	1950

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps

provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 14

ID	Distance (m)	Direction	Use	Date
55L	300	W	Garage	1991
56L	300	W	Garage	1991
57L	300	W	Garage	1975
58L	300	W	Garage	1992
59L	301	W	Garage	1965
60L	301	W	Garage	1965
61L	301	W	Garage	1951
62M	330	W	Garage	1962
63M	331	W	Garage	1983
64M	331	W	Garage	1991
65M	331	W	Garage	1950
66M	343	W	Garage	1916
67	435	S	Car Depot	1991
68	499	NE	Garage	

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary:

0

Database searched and no data found.

1.7 Potentially Infilled Land

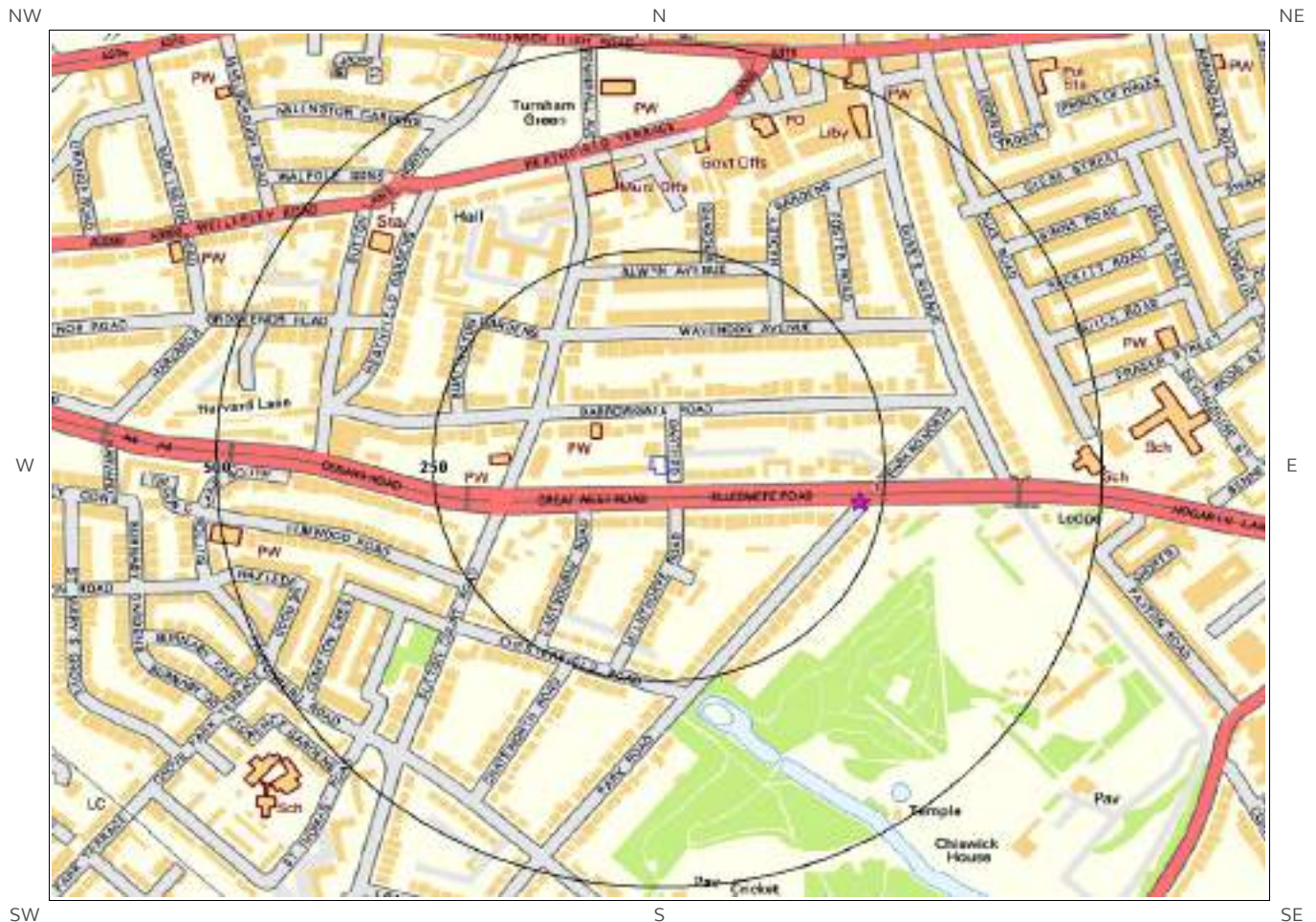
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site:

27

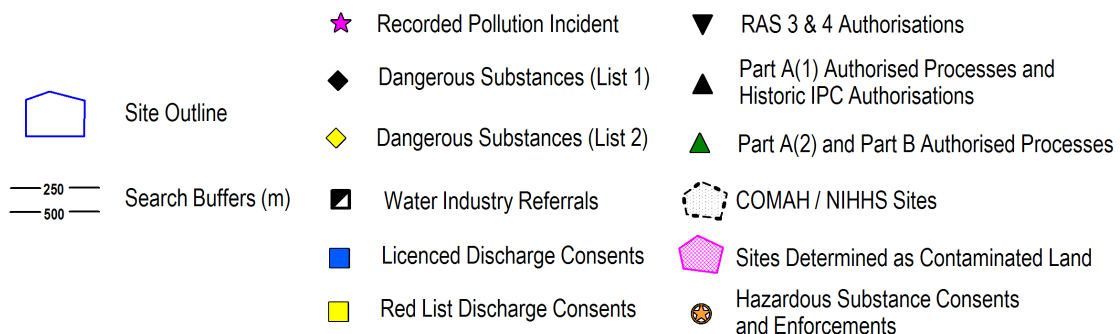
The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
69Q	191	S	Canal	1866
70N	199	S	Lake	1893
71N	204	S	Water Body	1911
72O	206	S	Water Body	1898
73O	208	S	Lake	1894
74P	269	S	Ponds	1933
75P	269	S	Ponds	1898
76P	269	S	Ponds	1938
77P	269	S	Ponds	1920
78	271	S	Ponds	1958
79P	273	S	Ponds	1962
80P	274	S	Ponds	1987
81P	274	S	Ponds	1967
82P	274	S	Ponds	1974
83Q	275	S	Ponds	1947
84Q	276	S	Pond	1911
85	353	W	Pond	1866
86R	383	W	Pond	1866
87R	384	W	Fish Pond	1893
88R	389	W	Fish Pond	1911
89R	390	W	Fish Pond	1898
90R	394	W	Fish Pond	1894
91	455	NW	Pond	1866
92G	481	SE	Unspecified Heap	1898
93G	482	SE	Unspecified Heap	1893
94G	487	SE	Unspecified Heap	1933
95G	488	SE	Unspecified Heap	1920

2. Environmental Permits, Incidents and Registers Map



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2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

0

Database searched and no data found.

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	224	E	520820.0 177941.0	Incident Date: 18-Jun-2002 Incident Identification: 85636.0 Pollutant: Oils and Fuel Pollutant Description: Diesel Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

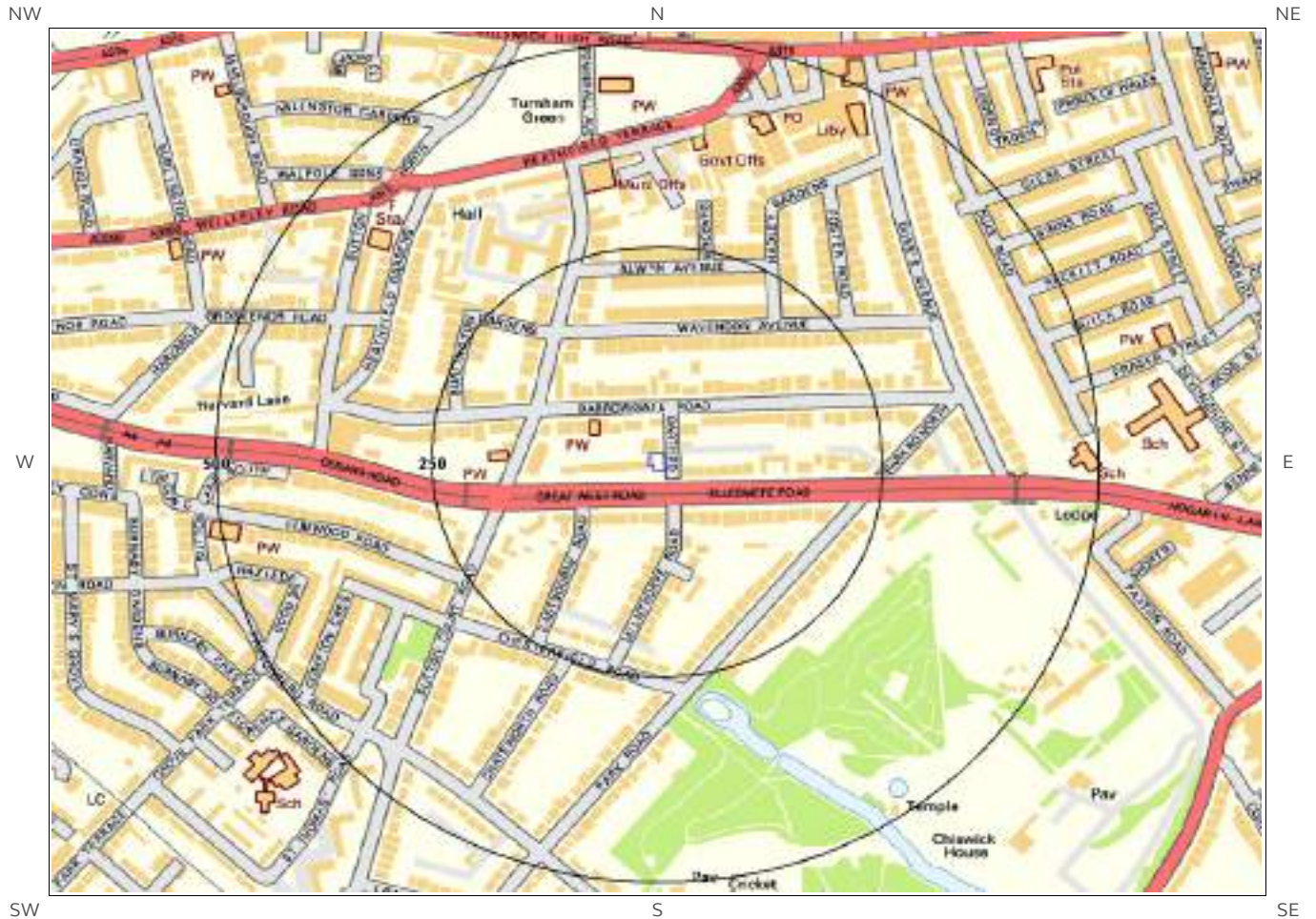
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site

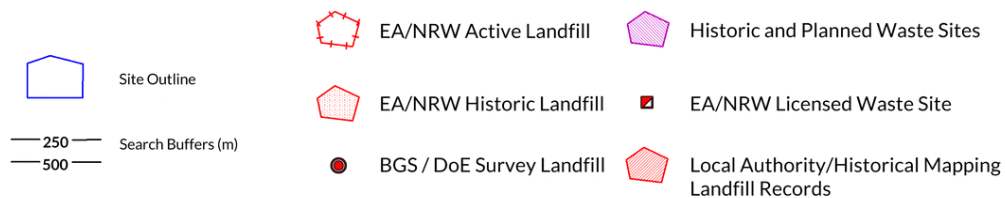
0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

8

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	554	S		Site Address: Staveley Road, Grove Park, Chiswick, Hounslow, London Waste Licence: - Site Reference: 8HO062 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1913 Last Recorded: 31-Dec-1951
Not shown	862	SE		Site Address: Corney Road, Chiswick, London W4 Waste Licence: - Site Reference: 8HO081 Waste Type: Inert, Industrial, Special Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1946 Last Recorded: 31-Dec-1949
Not shown	1132	S		Site Address: Dukes Meadow, Great Chertsey Road, London Waste Licence: - Site Reference: 8HO040 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Ham River Grit Licence Holder: London Borough of Hounslow First Recorded: 31-Dec-1945 Last Recorded: 31-Dec-1950
Not shown	1197	S		Site Address: Cubitts Basin, Grove Park, Chiswick, Hounslow, London Waste Licence: - Site Reference: 8HO046 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -
Not shown	1233	S		Site Address: Hartington Road Sports Ground, Hartington Road Licence Issue: Licence Surrendered:

ID	Distance (m)	Direction	NGR	Details	
				Waste Licence: - Site Reference: 8HO041 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Holder Address: - Operator: Ham River Grit Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1935
Not shown	1335	W		Site Address: Texas DIY, Ibis lane, Hartington Road Waste Licence: - Site Reference: 8HO064 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1935
Not shown	1353	S		Site Address: Hartington Road Sports Ground, Hartington Road Waste Licence: - Site Reference: 8HO041 Waste Type: Inert, Industrial Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Ham River Grit Licence Holder: - First Recorded: - Last Recorded: 31-Dec-1934
Not shown	1412	S		Site Address: Ibis Rowing Club, Grove Park, Chiswick, Hounslow, London Waste Licence: - Site Reference: 8HO063 Waste Type: - Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

1

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
Not shown	937	SE	521479 177512	Corney Road, Chiswick	London Borough Of Hounslow	Polygon

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

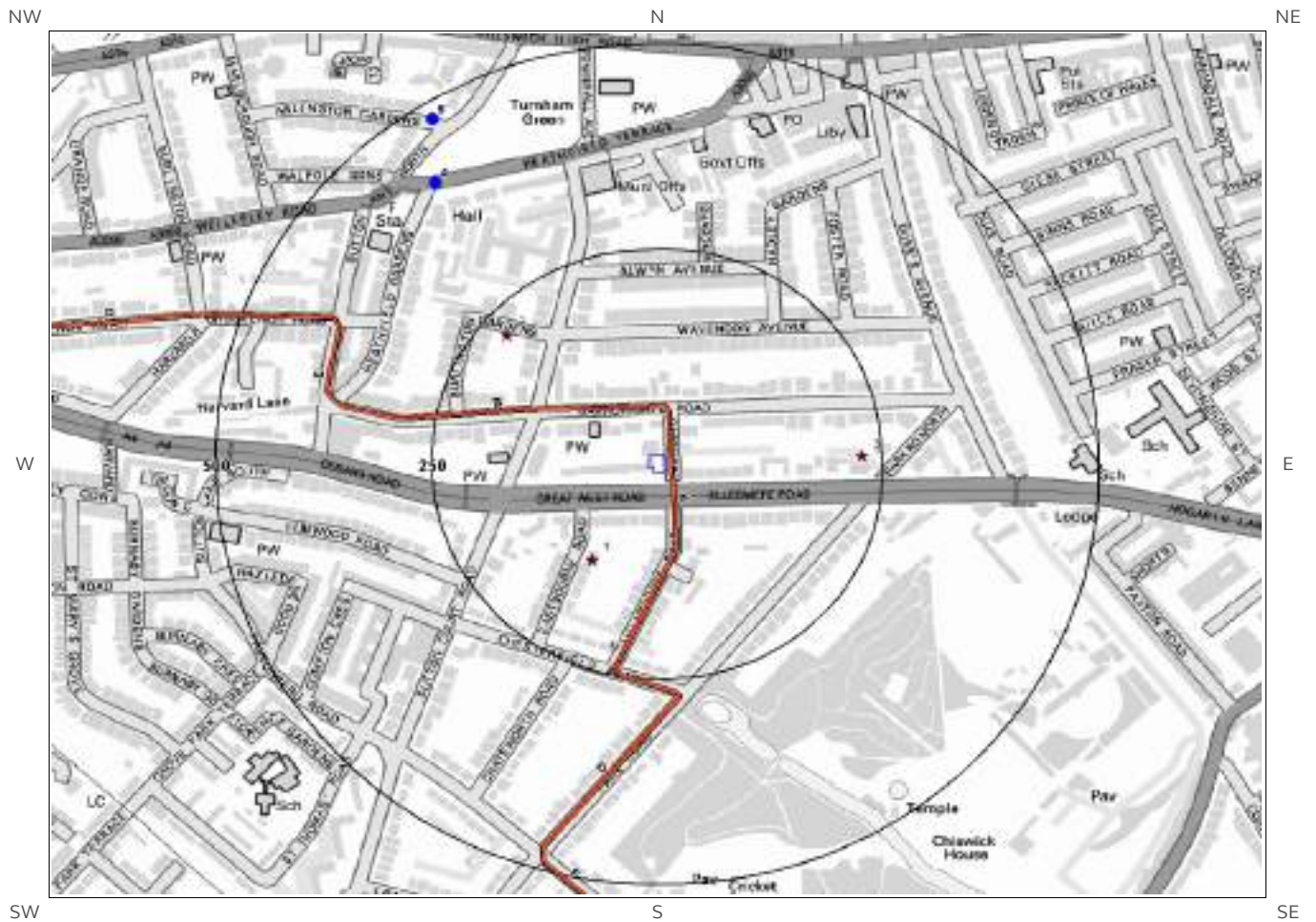
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

2

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	1435	NW	519842 179227	<p>Site Address: Ealing LB Council, Acton Waste & Recycling Centre, Stirling Road, Acton, London, W3 8DJ</p> <p>Type: Household, Commercial & Industrial Waste T Stn</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: EAL002</p> <p>EPR reference: -</p> <p>Operator: Ealing London Borough Council</p> <p>Waste Management licence No: 80030</p> <p>Annual Tonnage: 0.0</p> <p>Issue Date: 15/11/1994</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Issued</p> <p>Site Name: Acton Waste & Recycling Centre</p> <p>Correspondence Address: Ealing London Borough Council, Perceval House, 14-16, Uxbridge Road, Ealing, London, W5 2HL</p>
Not shown	1464	NW	519830 179253	<p>Site Address: Ealing London Borough Council, Acton Waste & Recycling Centre, Stirling Road, Acton, London, W3 8DJ</p> <p>Type: Household Waste Amenity Site</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: EAL002</p> <p>EPR reference: EA/EPR/EP3996NZ/A001</p> <p>Operator: Ealing London Borough Council</p> <p>Waste Management licence No: 80030</p> <p>Annual Tonnage: 15330.0</p> <p>Issue Date: 15/11/1994</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Issued</p> <p>Site Name: Acton Waste & Recycling Centre</p> <p>Correspondence Address: -</p>

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site:

3

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	127	SW	London Gardens	520514 177869	3, Eastbourne Road, London, Greater London, W4 3EB	Agricultural Contractors	Contract Services
2	220	NW	Electricity Sub Station	520416 178143	Greater London, W4	Electrical Features	Infrastructure and Facilities
3	227	E	Electricity Sub Station	520825 177995	Greater London, W4	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site:

2

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
4	414	NW	520332 178328	OBSOLETE	361-365, Chiswick High Road, Marlborough Road, Chiswick, London, Outer London, W4 4HS	Not Applicable	Obsolete
5	480	NW	520329 178405	OBSOLETE	512-518, Chiswick High Road, Chiswick, London, Outer London, W4 5RG	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site:

21

The following Underground Electricity Transmission Cable records are represented as linear features on the Current Land Use map:

ID	Distance (m)	Direction	Details	
6A	6	E	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
7A	6	E	Cable Set: SOUTH (BICC) CABLE SECT 50 Cable Route: WIMBLEDON - WILLESSEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
8A	7	E	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
9B	62	N	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
10B	63	N	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
11B	63	N	Cable Set: SOUTH (BICC) CABLE SECT 51 Cable Route: WIMBLEDON - WILLESSEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
12C	123	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
13C	125	S	Cable Set: SOUTH (BICC) CABLE SECT 49 Cable Route: WIMBLEDON - WILLESSEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
14C	126	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
15D	278	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
16D	279	S	Cable Set: SOUTH (BICC) CABLE SECT 48 Cable Route: WIMBLEDON - WILLESSEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N

ID	Distance (m)	Direction	Details	
17E	280	W	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
18D	282	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
19E	283	W	Cable Set: SOUTH (BICC) CABLE SECT 52 Cable Route: WIMBLEDON - WILLESSEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
20E	285	W	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
21F	457	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
22F	459	S	Cable Set: SOUTH (BICC) CABLE SECT 47 Cable Route: WIMBLEDON - WILLESSEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
23F	461	S	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
24G	462	W	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -
25G	466	W	Cable Set: SOUTH (BICC) CABLE SECT 53 Cable Route: WIMBLEDON - WILLESSEN Cable Make: BICC 275KV OIL	Cable Type: A/C Operating Voltage (kV): 275 Year of installation: 1967 Cable in tunnel: N
26G	468	W	Cable Set: - Cable Route: - Cable Make: -	Cable Type: PILOT Operating Voltage (kV): - Year of installation: - Cable in tunnel: -

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL

5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-XCZ	LONDON CLAY FORMATION	CLAY AND SILT

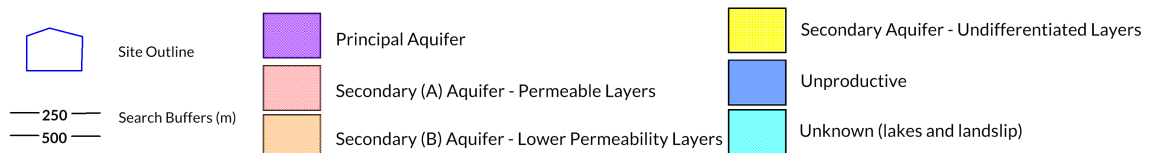
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

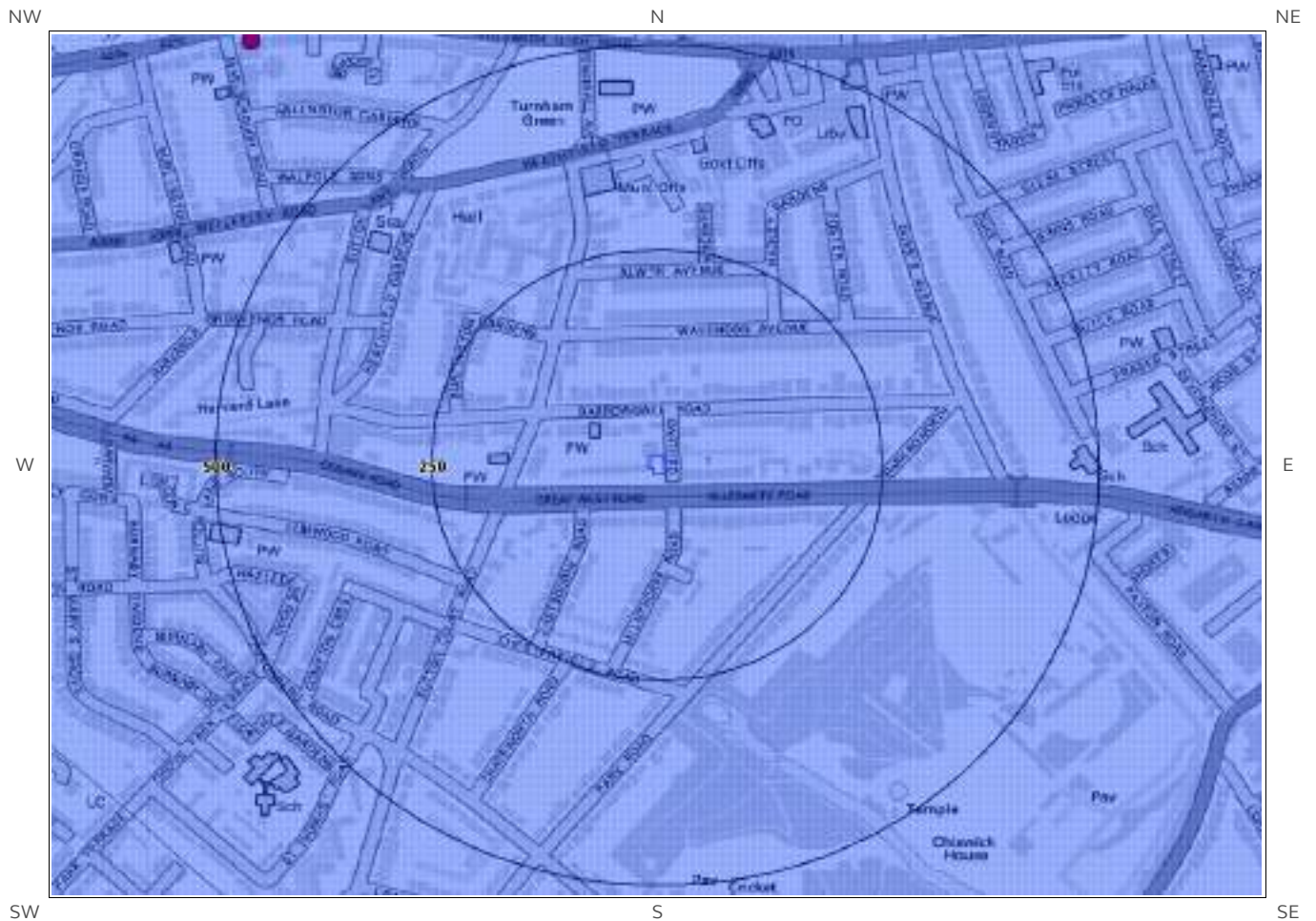
6a. Aquifer Within Superficial Geology



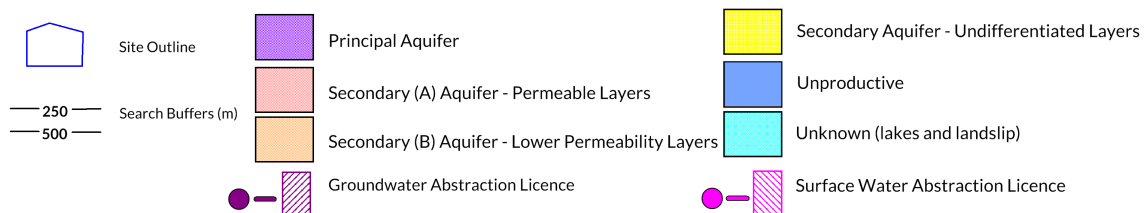
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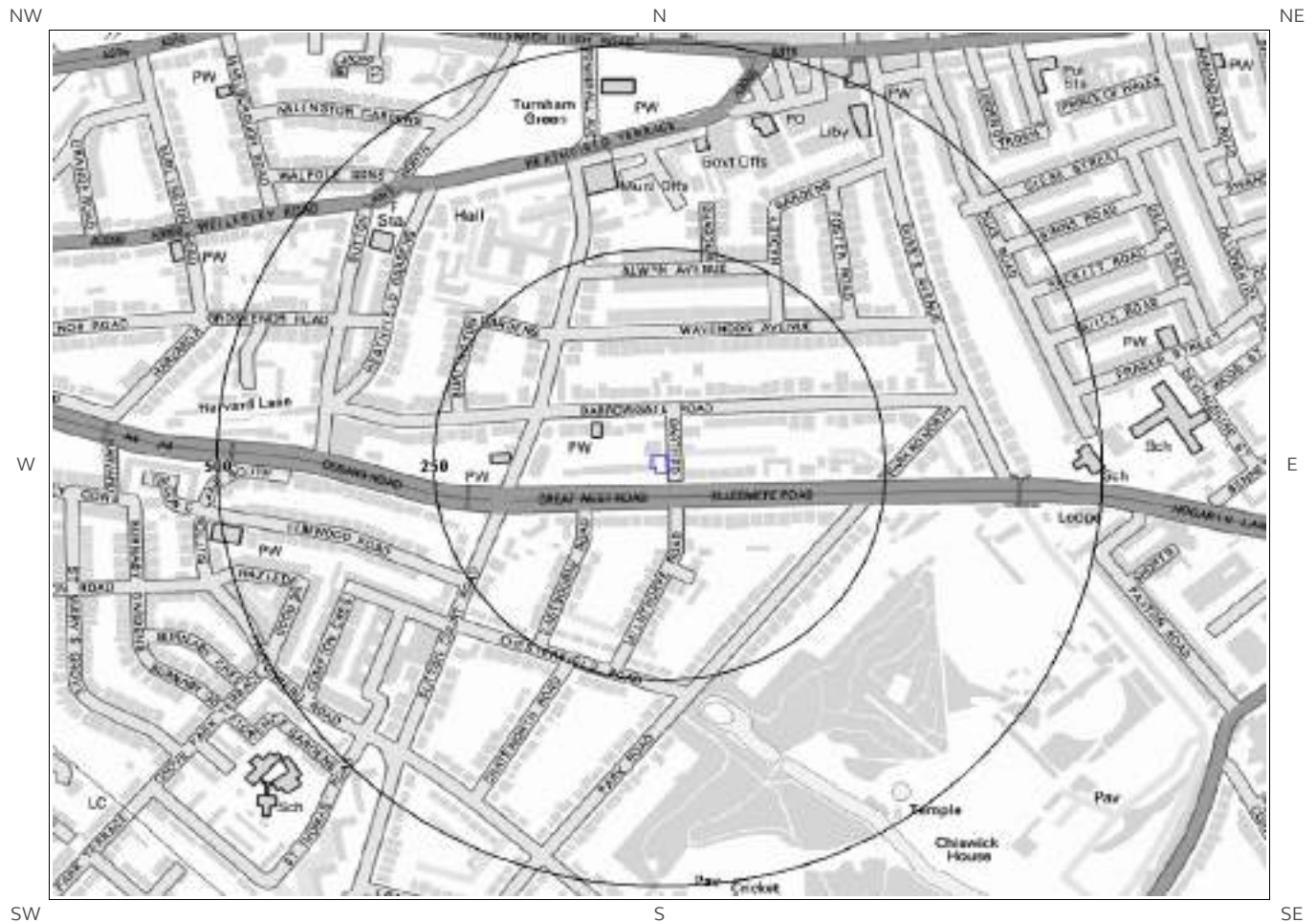
6b. Aquifer Within Bedrock Geology and Abstraction Licences



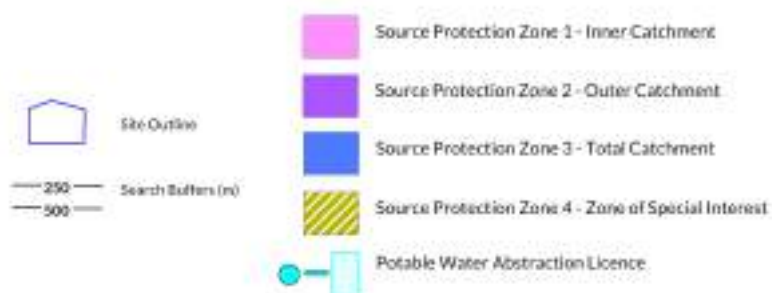
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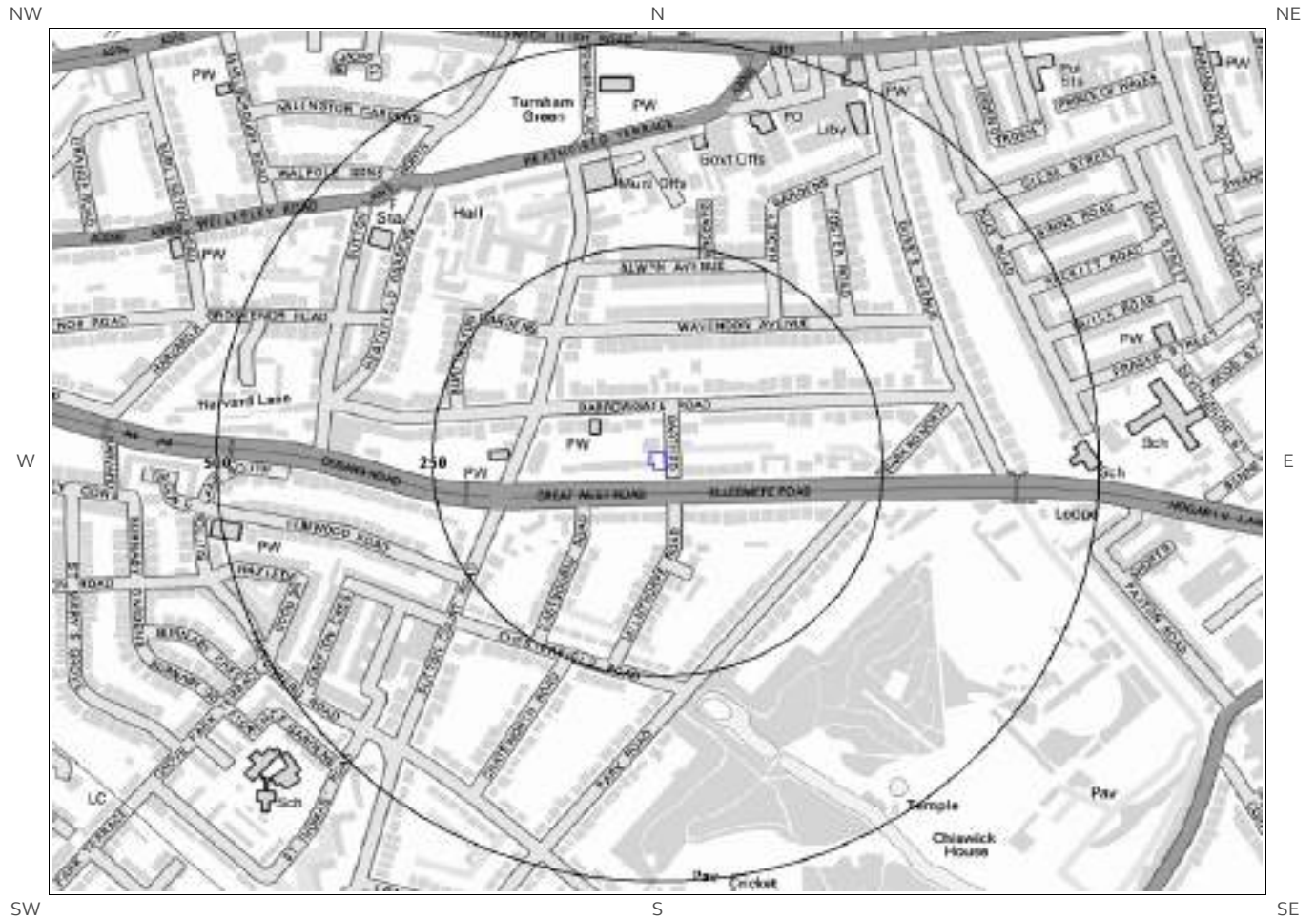
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



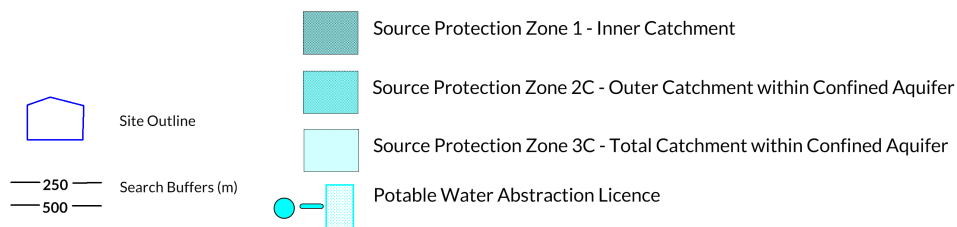
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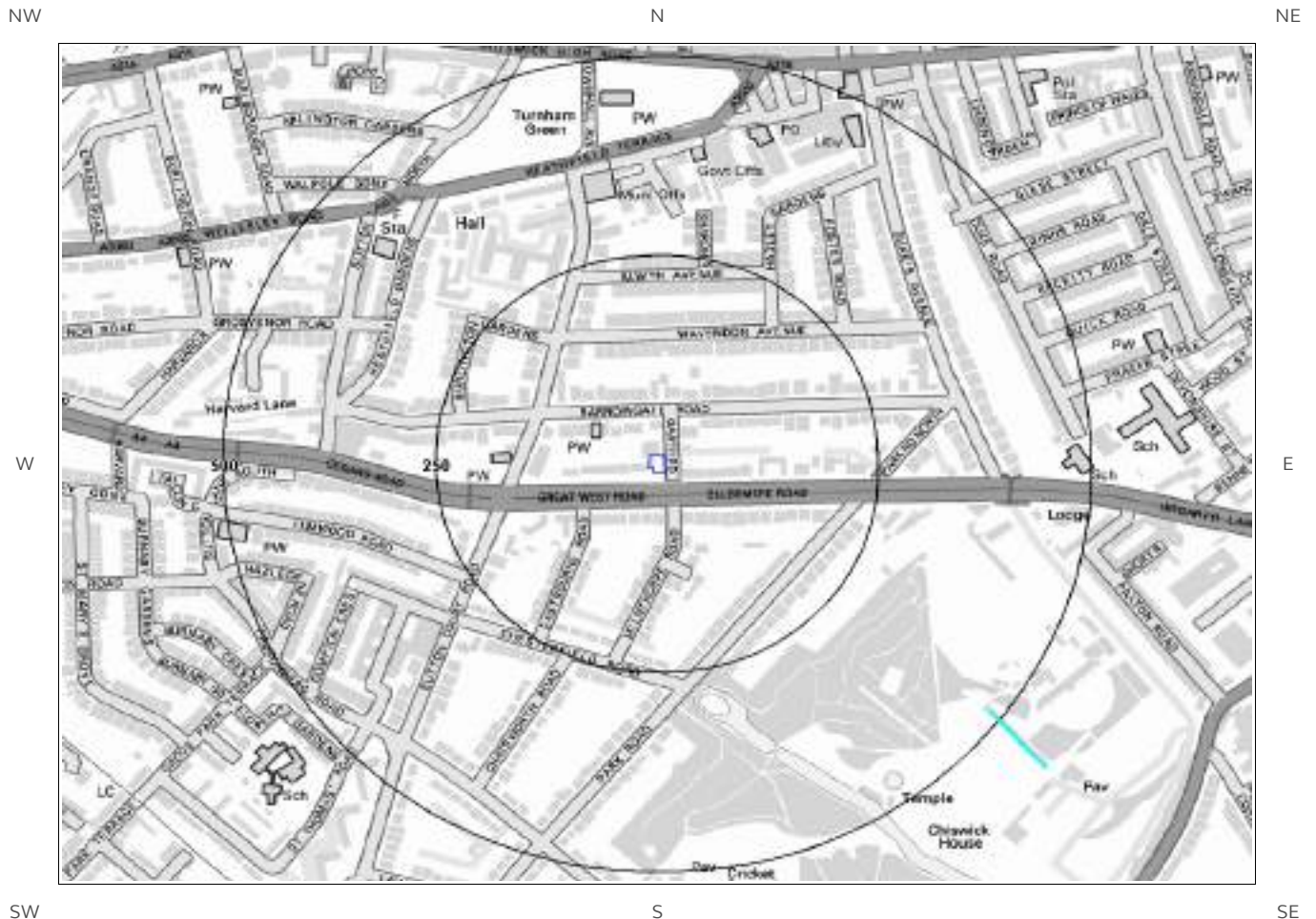
6d. Hydrogeology – Source Protection Zones within confined aquifer



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6e. Hydrology – Watercourse Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
3A	682	NW	520120 178500	Status: Historical Licence No: 28/39/39/0200 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: POINT 'A' AT CHISWICK SERVICE STATION, CHISWICK, LONDON W4. Data Type: Point Name: TOTALFINAELF UK LTD Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 28/03/2002 Expiry Date: 31/01/2005 Issue No: 1 Version Start Date: 28/03/2002 Version End Date:
4A	682	NW	520120 178500	Status: Historical Licence No: 28/39/39/0216 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: CHISWICK SERVICE STATION, CHISWICK, LONDON W4-POINT 'A'. Data Type: Point Name: TOTAL UK LIMITED Annual Volume (m³): 6935 Max Daily Volume (m³): 19 Original Application No: - Original Start Date: 10/03/2005 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 10/03/2005 Version End Date:
Not shown	1004	E	521600 177900	Status: Historical Licence No: 28/39/39/0137 Details: Non-Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: WELL AT GRIFFIN BREWERY, CHISWICK, LONDON W4 Data Type: Point Name: FULLER SMITH & TURNER LTD Annual Volume (m³): 81828 Max Daily Volume (m³): 327.3 Original Application No: - Original Start Date: 14/09/1970 Expiry Date: - Issue No: 100 Version Start Date: 14/09/1970 Version End Date:
Not shown	1099	NW	519831 178800	Status: Active Licence No: TH/039/0039/030 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHISWICK HIGH ROAD, LONDON Data Type: Point Name: CHISWICK PARK ESTATE MANAGEMENT LIMITED Annual Volume (m³): 19540 Max Daily Volume (m³): 588.2 Original Application No: - Original Start Date: 22/05/2010 Expiry Date: 31/03/2019 Issue No: 2 Version Start Date: 05/09/2014 Version End Date:
Not shown	1099	NW	519831 178800	Status: Active Licence No: TH/039/0039/030 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHISWICK HIGH ROAD, LONDON Data Type: Point Name: CHISWICK PARK ESTATE MANAGEMENT LIMITED Annual Volume (m³): 19540 Max Daily Volume (m³): 588.2 Original Application No: - Original Start Date: 22/05/2010 Expiry Date: 31/03/2019 Issue No: 2 Version Start Date: 05/09/2014 Version End Date:
Not shown	1100	NW	519830 178800	Status: Historical Licence No: 28/39/39/0197 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHISWICK HIGH ROAD, LONDON Data Type: Point Name: CHISWICK PARK ESTATE MANAGEMENT LTD Annual Volume (m³): 19540 Max Daily Volume (m³): 294.1 Original Application No: - Original Start Date: 11/10/2000 Expiry Date: 31/12/2009 Issue No: 5 Version Start Date: 02/07/2007 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1100	NW	519830 178800	<p>Status: Historical Licence No: 28/39/39/0197 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHISWICK HIGH ROAD, LONDON Data Type: Point Name: CHISWICK PARK ESTATE MANAGEMENT LTD</p> <p>Annual Volume (m³): 19540 Max Daily Volume (m³): 294.1 Original Application No: - Original Start Date: 11/10/2000 Expiry Date: 31/12/2009 Issue No: 5 Version Start Date: 02/07/2007 Version End Date:</p>
Not shown	1315	SW	519480 177260	<p>Status: Active Licence No: TH/039/0035/002 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: WELL 1 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice</p> <p>Annual Volume (m³): 10000 Max Daily Volume (m³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:</p>
Not shown	1315	SW	519480 177260	<p>Status: Active Licence No: TH/039/0035/002 Details: Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: WELL 1 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice</p> <p>Annual Volume (m³): 10000 Max Daily Volume (m³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:</p>
Not shown	1329	SW	519490 177220	<p>Status: Active Licence No: TH/039/0035/002 Details: Evaporative Cooling Direct Source: THAMES GROUNDWATER Point: WELL 2 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice</p> <p>Annual Volume (m³): 10000 Max Daily Volume (m³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:</p>
Not shown	1329	SW	519490 177220	<p>Status: Active Licence No: TH/039/0035/002 Details: Make-Up Or Top Up Water Direct Source: THAMES GROUNDWATER Point: WELL 2 AT THE NATIONAL ARCHIVES, KEW, RICHMOND, SURREY Data Type: Point Name: The Secretary of State for Justice</p> <p>Annual Volume (m³): 10000 Max Daily Volume (m³): 30 Original Application No: - Original Start Date: 23/06/2014 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 23/06/2014 Version End Date:</p>
Not shown	1656	S	520500 176320	<p>Status: Active Licence No: 28/39/39/0180 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: DUKES MEADOW GOLF CLUB, LONDON - BOREHOLE Data Type: Point Name: D & D LEISURE SPORTS LTD</p> <p>Annual Volume (m³): 8000 Max Daily Volume (m³): 55 Original Application No: - Original Start Date: 04/09/1997 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date:</p>
Not shown	1684	S	521200 176400	<p>Status: Historical Licence No: 28/39/39/0174 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: DUKES MEADOW, CHISWICK - BOREHOLE Data Type: Point Name: RIVERSIDE RACQUETS CLUB LTD</p> <p>Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 08/12/1993 Expiry Date: - Issue No: 100 Version Start Date: 08/12/1993 Version End Date:</p>

ID	Distance (m)	Direction	NGR	Details	
Not shown	1939	W	518665 177680	Status: Historical Licence No: TH/039/0035/001 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: KEW GARDENS, RICHMOND - BOREHOLE (1) Data Type: Point Name: THE BOARD OF TRUSTEES OF THE ROYAL BOTANIC GARDENS, KEW	Annual Volume (m³): 124300 Max Daily Volume (m³): 380 Original Application No: - Original Start Date: 26/05/2009 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 10/07/2014 Version End Date:
Not shown	1939	W	518665 177680	Status: Active Licence No: TH/039/0035/001/R01 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: KEW GARDENS, RICHMOND - BOREHOLE (1) Data Type: Point Name: THE BOARD OF TRUSTEES OF THE ROYAL BOTANIC GARDENS, KEW	Annual Volume (m³): 124300 Max Daily Volume (m³): 380 Original Application No: - Original Start Date: 19/05/2016 Expiry Date: 31/03/2022 Issue No: 1 Version Start Date: 19/05/2016 Version End Date:
Not shown	1956	W	518649 177670	Status: Historical Licence No: TH/039/0035/001 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: KEW GARDENS, RICHMOND - BOREHOLE (2) Data Type: Point Name: THE BOARD OF TRUSTEES OF THE ROYAL BOTANIC GARDENS, KEW	Annual Volume (m³): 124300 Max Daily Volume (m³): 380 Original Application No: - Original Start Date: 26/05/2009 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 10/07/2014 Version End Date:
Not shown	1956	W	518649 177670	Status: Active Licence No: TH/039/0035/001/R01 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: KEW GARDENS, RICHMOND - BOREHOLE (2) Data Type: Point Name: THE BOARD OF TRUSTEES OF THE ROYAL BOTANIC GARDENS, KEW	Annual Volume (m³): 124300 Max Daily Volume (m³): 380 Original Application No: - Original Start Date: 19/05/2016 Expiry Date: 31/03/2022 Issue No: 1 Version Start Date: 19/05/2016 Version End Date:
Not shown	1962	W	518643 177669	Status: Active Licence No: TH/039/0035/001/R01 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: KEW GARDENS, RICHMOND - BOREHOLE (3) Data Type: Point Name: THE BOARD OF TRUSTEES OF THE ROYAL BOTANIC GARDENS, KEW	Annual Volume (m³): 124300 Max Daily Volume (m³): 380 Original Application No: - Original Start Date: 19/05/2016 Expiry Date: 31/03/2022 Issue No: 1 Version Start Date: 19/05/2016 Version End Date:
Not shown	1962	W	518643 177669	Status: Historical Licence No: TH/039/0035/001 Details: Heat Pump Direct Source: THAMES GROUNDWATER Point: KEW GARDENS, RICHMOND - BOREHOLE (3) Data Type: Point Name: THE BOARD OF TRUSTEES OF THE ROYAL BOTANIC GARDENS, KEW	Annual Volume (m³): 124300 Max Daily Volume (m³): 380 Original Application No: - Original Start Date: 26/05/2009 Expiry Date: 31/03/2016 Issue No: 1 Version Start Date: 10/07/2014 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site

None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site

Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	484 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	484 SE	-	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

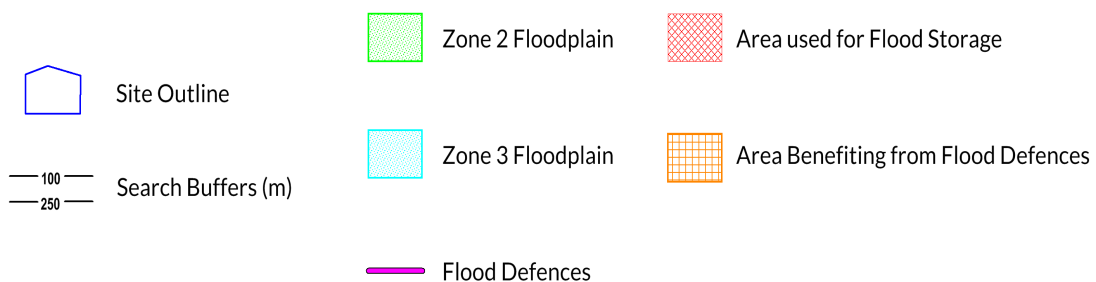
Surface water features within 250m of the study site None identified

Database searched and no data found.

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



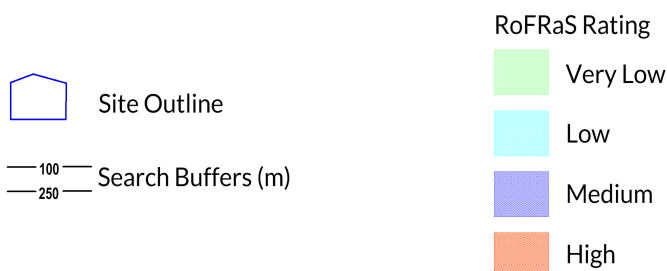
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m

Identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

ID	Distance (m)	Direction	Update	Type
1	0	On Site	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
2	70	W	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)
3	127	S	21-Feb-2019	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m

Identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

ID	Distance (m)	Direction	Update	Type
1	6	NW	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)
2	70	W	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)
3	133	SW	21-Feb-2019	Zone 3 - (Fluvial /Tidal Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite

Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	Very Low

7.4 Flood Defences

Flood Defences within 250m of the study site

None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site

Identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site

Identified

Clearwater Flooding or Superficial Deposits Flooding

Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential below Surface

Where potential for groundwater flooding of property situated below ground level is indicated, this means that given the geological conditions there may be a groundwater flooding hazard to basements and other below surface infrastructure. Unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area you need take no further action in relation to groundwater flooding hazard. If there are records of previous incidences of groundwater flooding, then is recommended that other information e.g. rainfall history, property type, and land drainage information in addition to previous records of flooding be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

7.8 Groundwater Flooding Confidence Areas

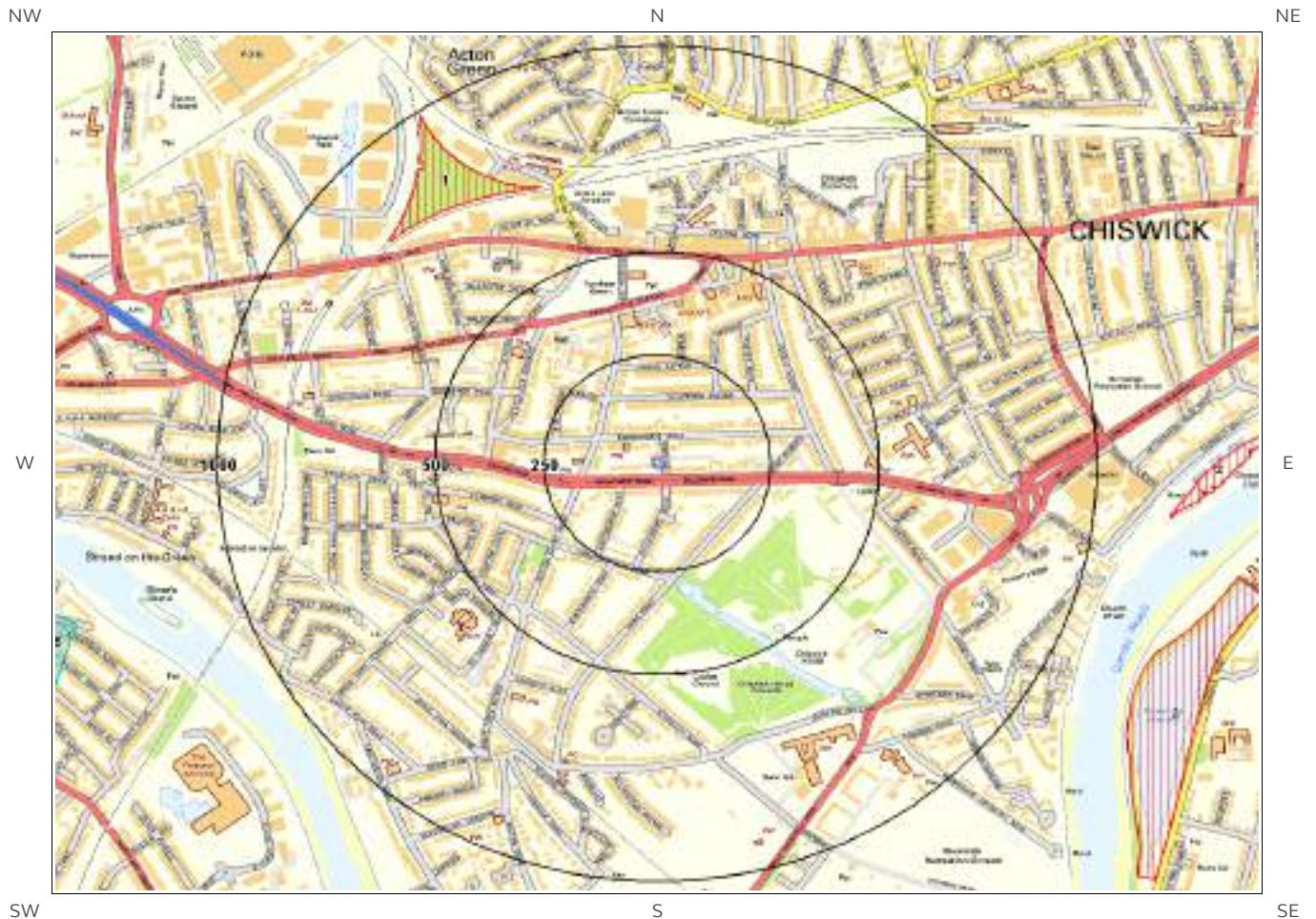
British Geological Survey confidence rating in this result

Moderate

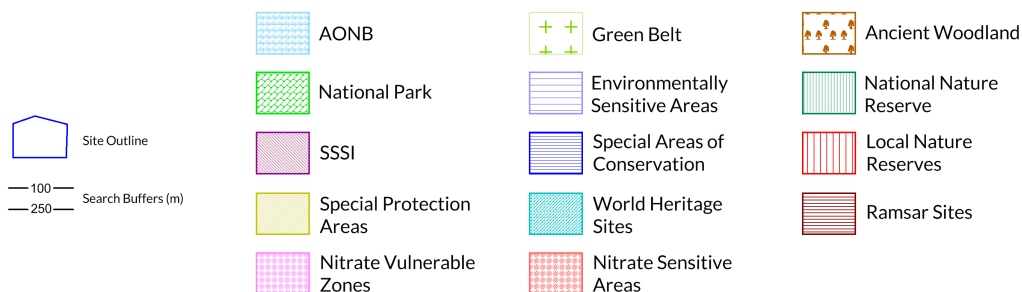
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site
Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

4

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1	706	N	Gunnersbury Triangle	Natural England
2	1177	E	Chiswick Eyot	Natural England
3	1210	SE	Leg of Mutton Reservoir	Natural England
Not shown	1708	S	Duke's Hollow	Natural England

8.8 Records of World Heritage Sites within 2000m of the study site:

2

The following World Heritage Site records provided by English Heritage and Cadw are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	World Heritage Site Name	Data Source
5	1380	W	Royal Botanic Gardens, Kew Buffer Zone	Historic England
Not shown	1626	W	Royal Botanic Gardens, Kew	Historic England

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **Groundsure Geo Insight**, available from our **website**. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell** hazard rating identified on the study site Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site

Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site

None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

None identified

Database searched and no data found.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

Contact Details

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info@groundsure.com

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BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

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<https://www.groundsure.com/terms-and-conditions-feb11-2019>

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PO Box, 307,
MANCHESTER, M60 3NT

Groundsure Reference: GS-5910839

Your Reference: 14023929

Report Date 28 Mar 2019

Report Delivery Method: Email - pdf

Geo Insight

Address: GARTH COURT, LONDON, W4 4QH

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Address: GARTH COURT, LONDON, W4 4QH

Date: 28 Mar 2019

Reference: GS-5910839

Client: Arcadis Consulting UK Ltd



Aerial Photograph Capture date: 20-Apr-2015

Grid Reference: 520589,177989

Site Size: 0.0373ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale

1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslide within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale

2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslide within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.

2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?

Yes

2.3.3 Are there any records of linear features within 500m of the study site boundary?

No

Section 3: Radon

3. Radon

3.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	5	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	2

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

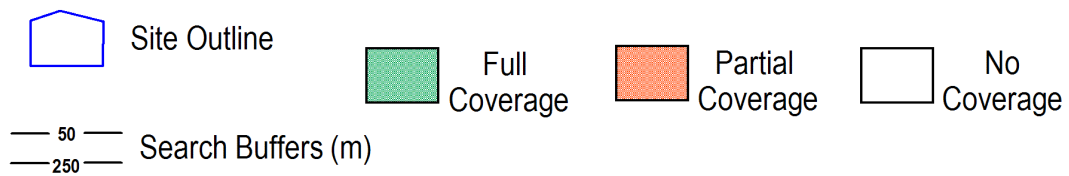
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Negligible				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Very Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	0	2		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	1	1	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	1	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

1:10,000 Scale Availability



1_10,000 Availability Legend

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Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	No coverage
2	580.0	Some deposits are mapped	Full	Full	No coverage

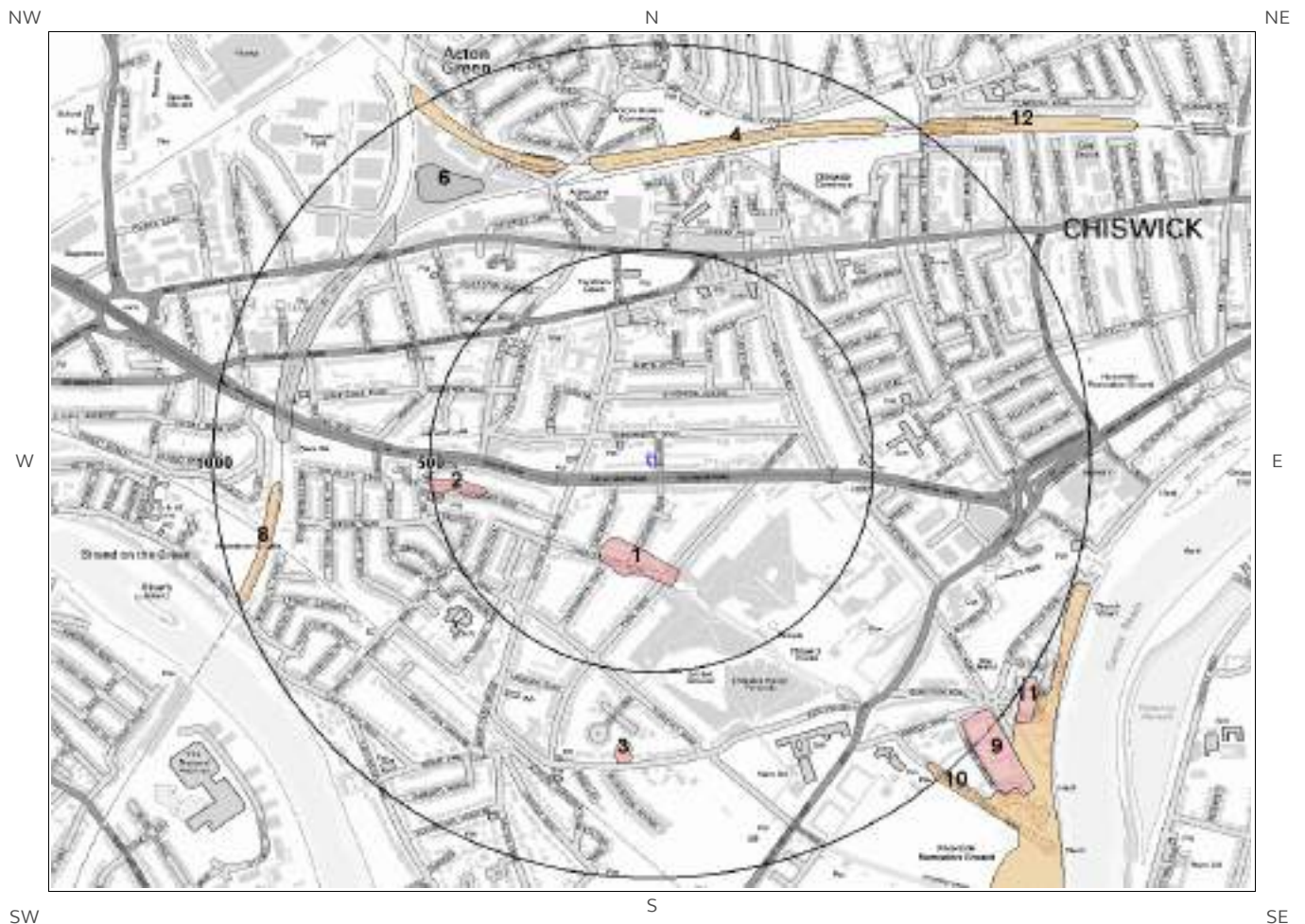
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage




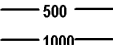




1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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	Site Outline		Made Ground (undivided)		Disturbed Ground (undivided)
	Search Buffers (m)		Worked Ground (undivided)		Landscaped Ground (undivided)
			Infilled Ground		Reclaimed Ground

1. Geology 1:10,000 scale

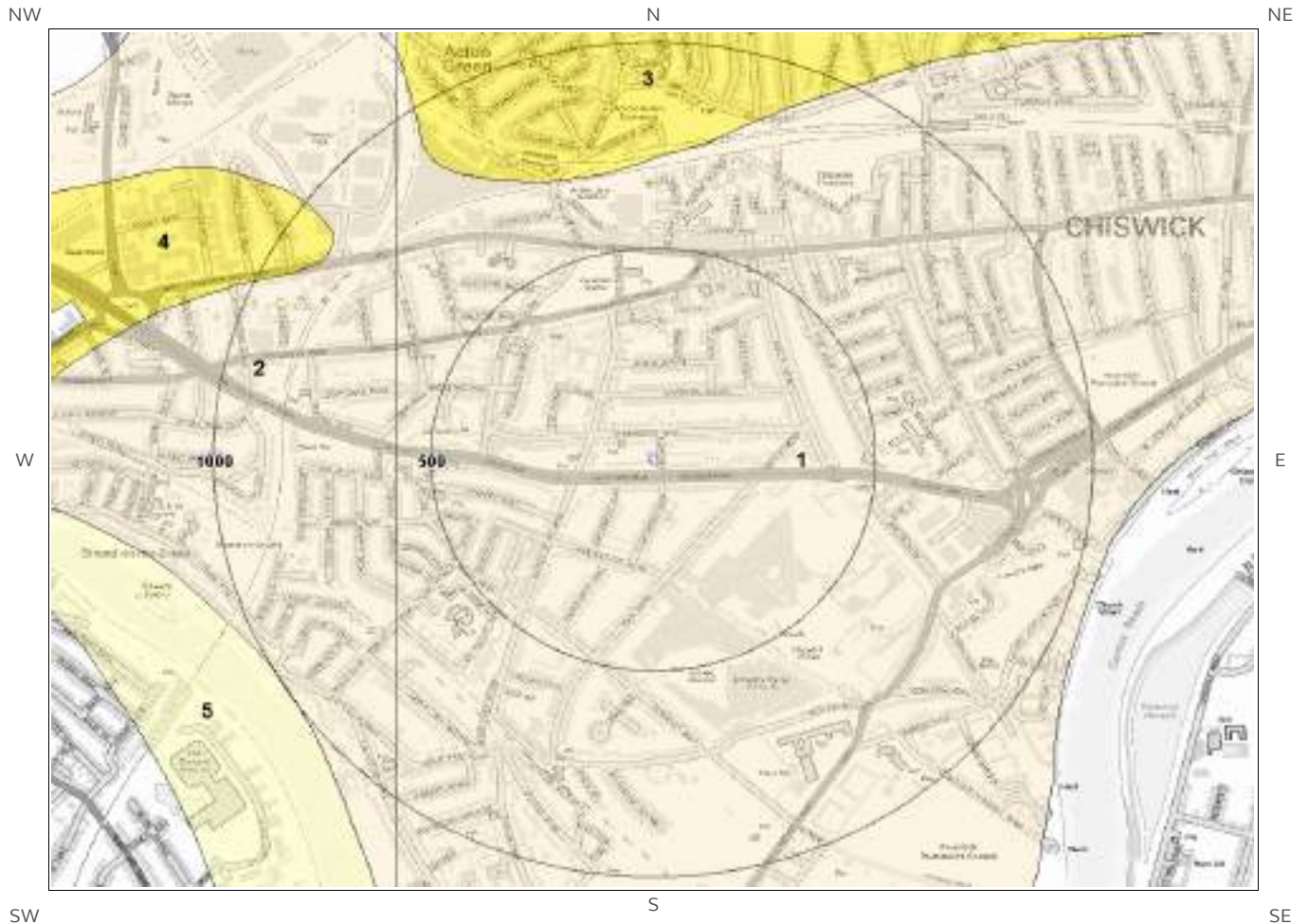
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

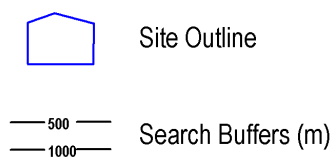
ID	Distance	Direction	LEX Code	Description	Rock Description
1	191.0	S	WMGR- UNKNOWN	Infilled Ground	Unknown/unclassified Entry
2	379.0	W	WMGR- UNKNOWN	Infilled Ground	Unknown/unclassified Entry

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

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1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel

1.2.2 Landslip

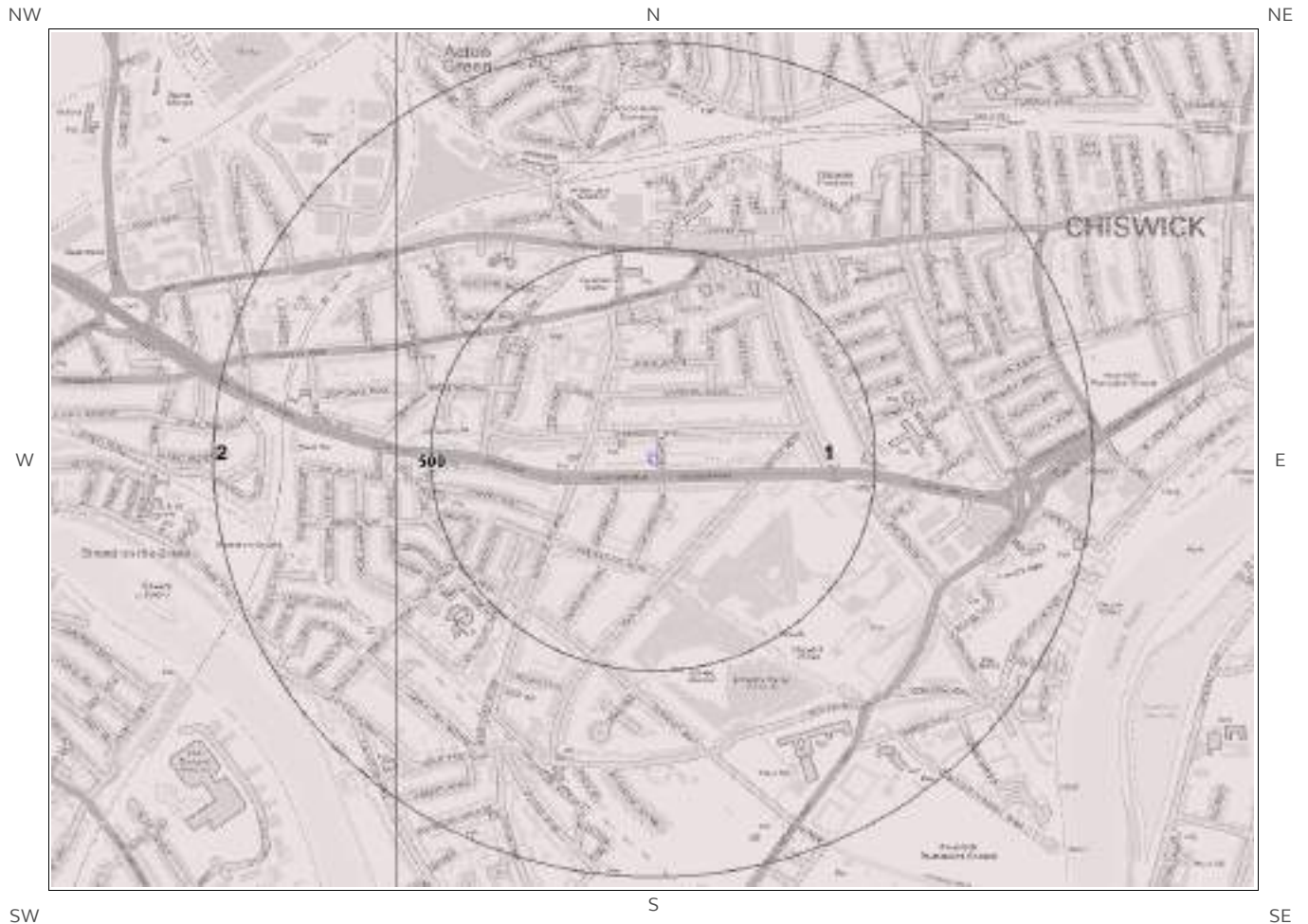
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

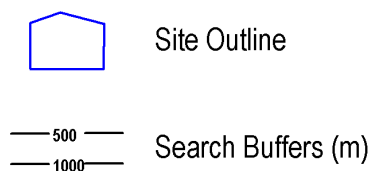
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

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1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LC-CLAY	London Clay Formation - Clay	Eocene Epoch

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

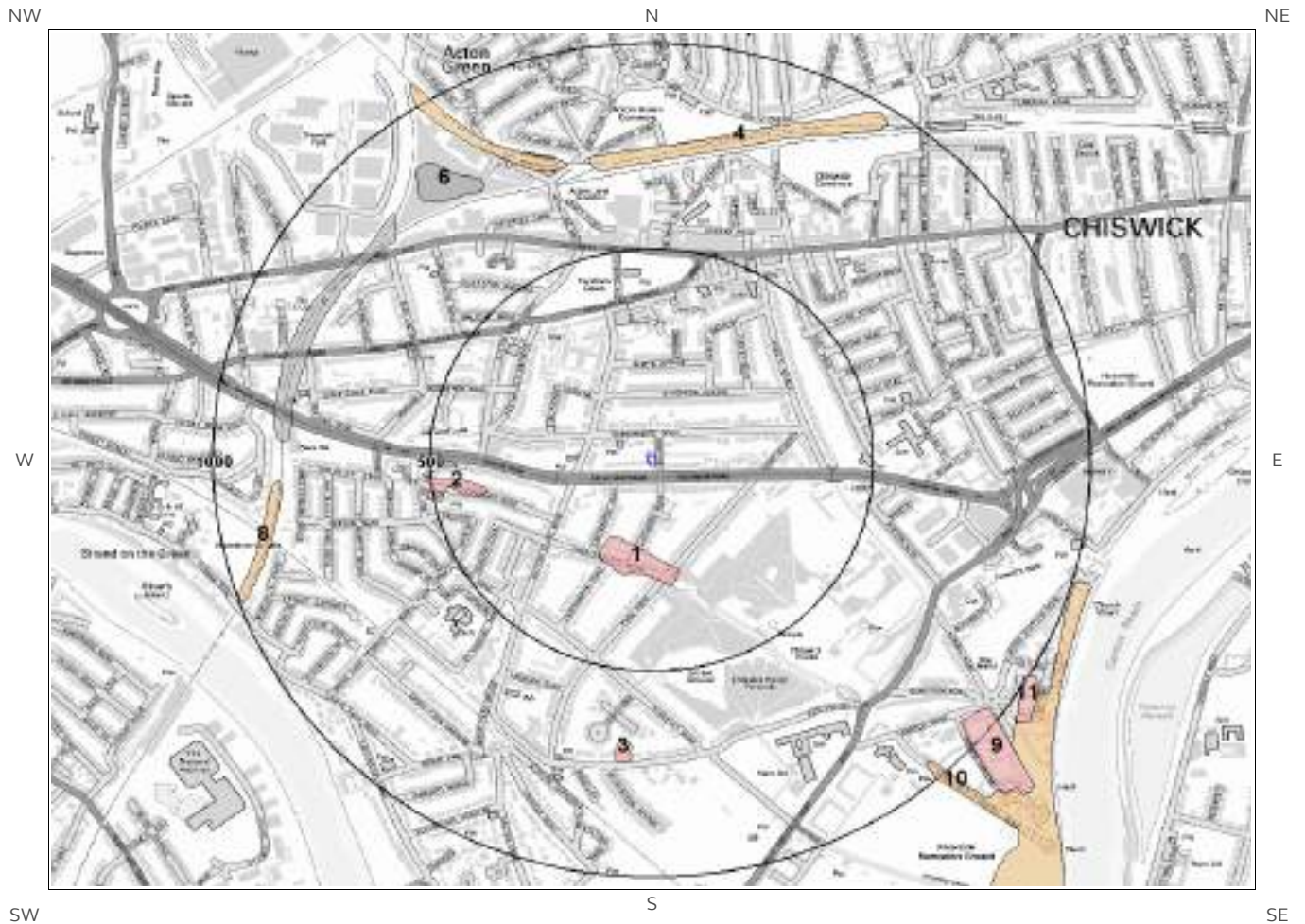
Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

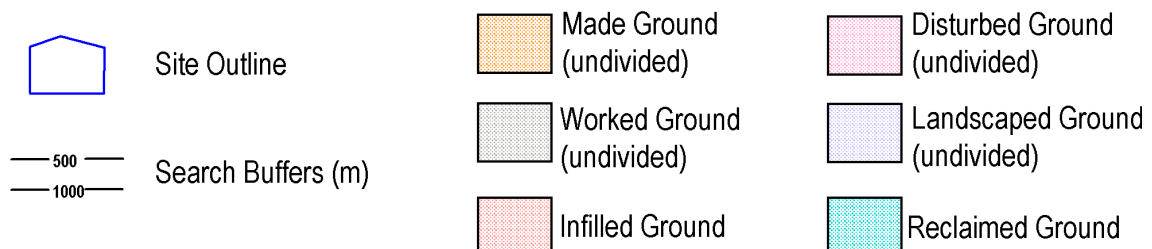
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



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2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

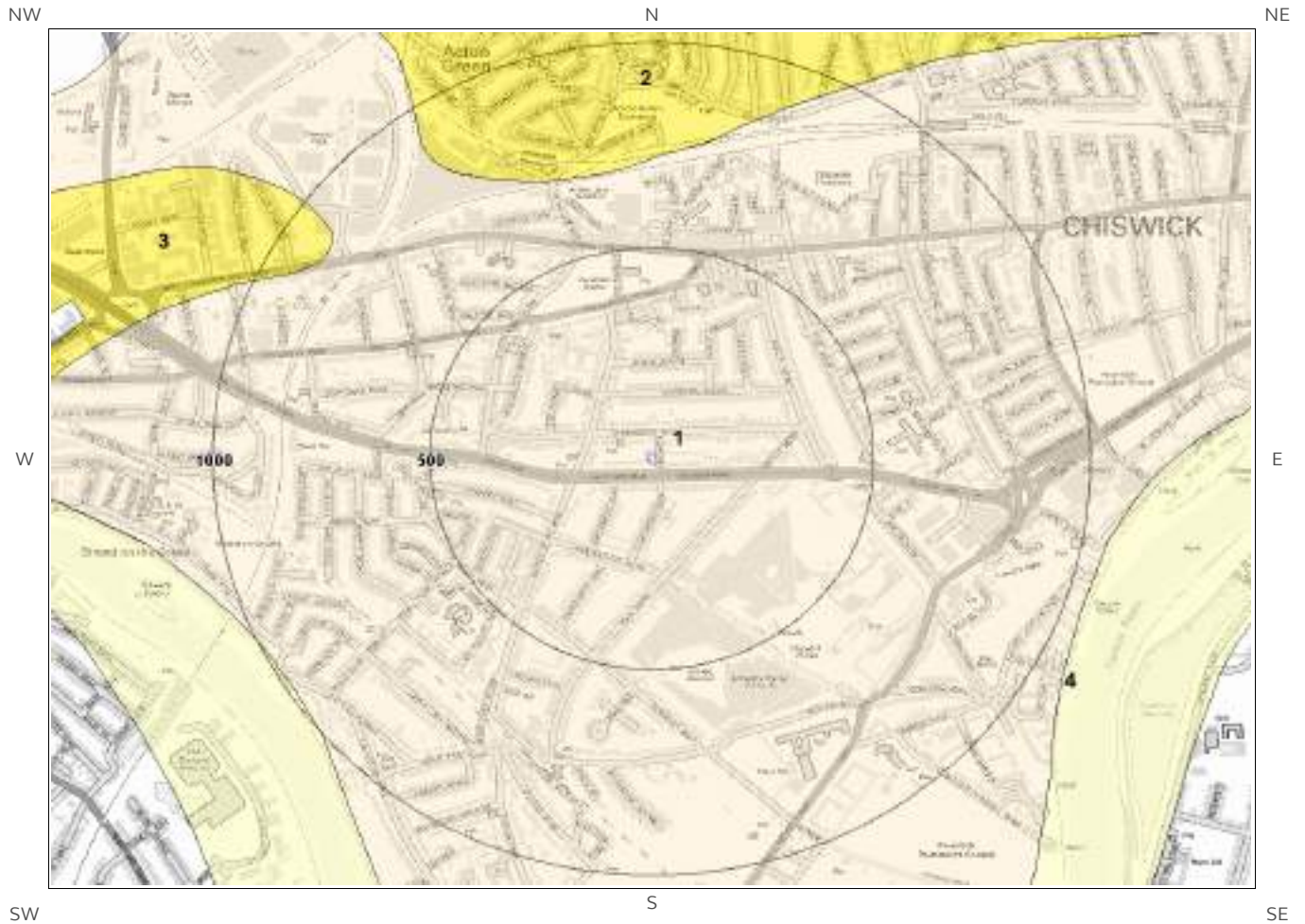
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	191.0	S	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
2	379.0	W	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

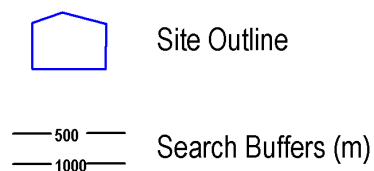
Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	Very High	High

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

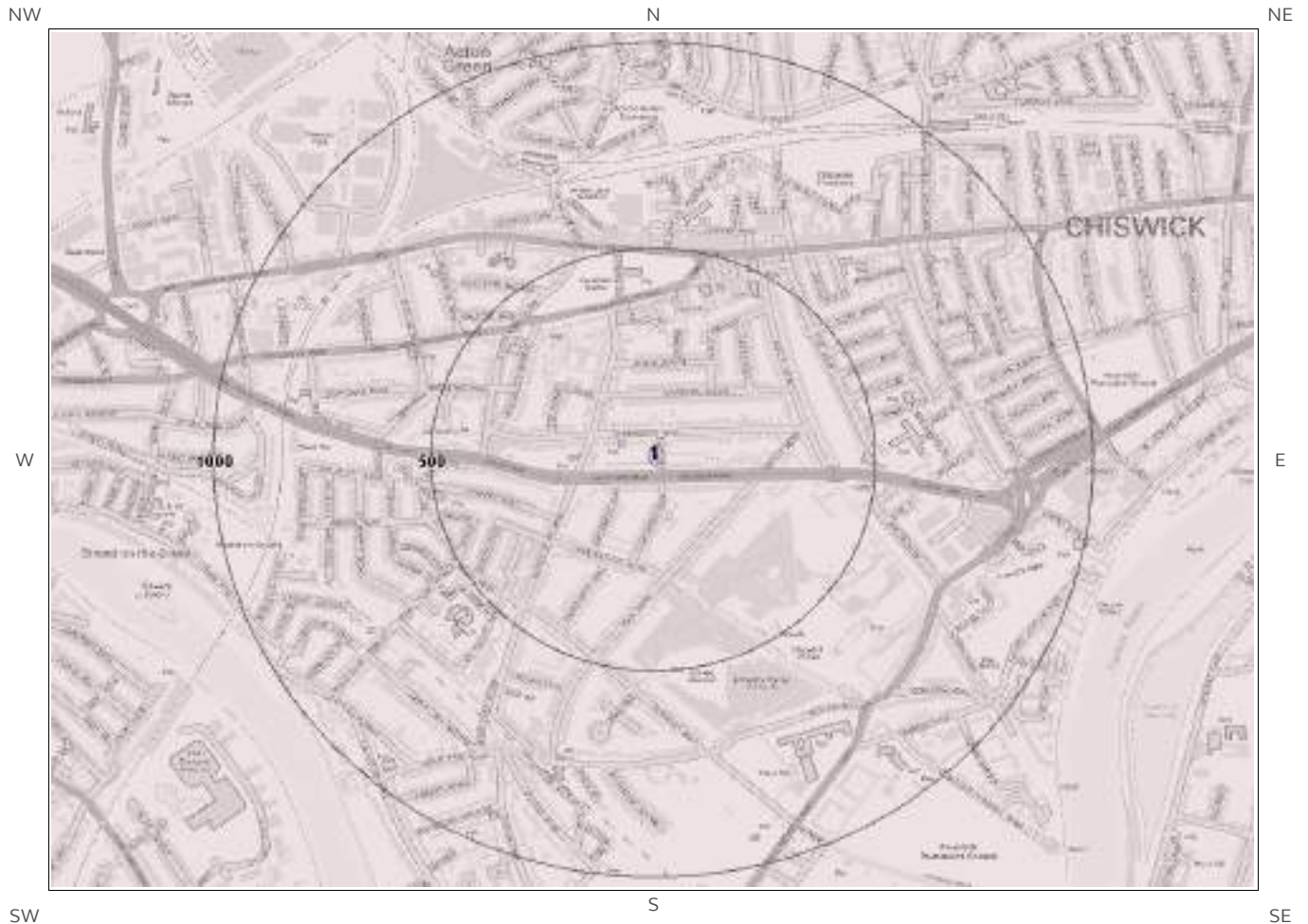
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

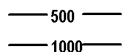
2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline



Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 270

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	LC-XCZ	LONDON CLAY FORMATION - CLAY AND SILT	YPRESIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Low	Very Low

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

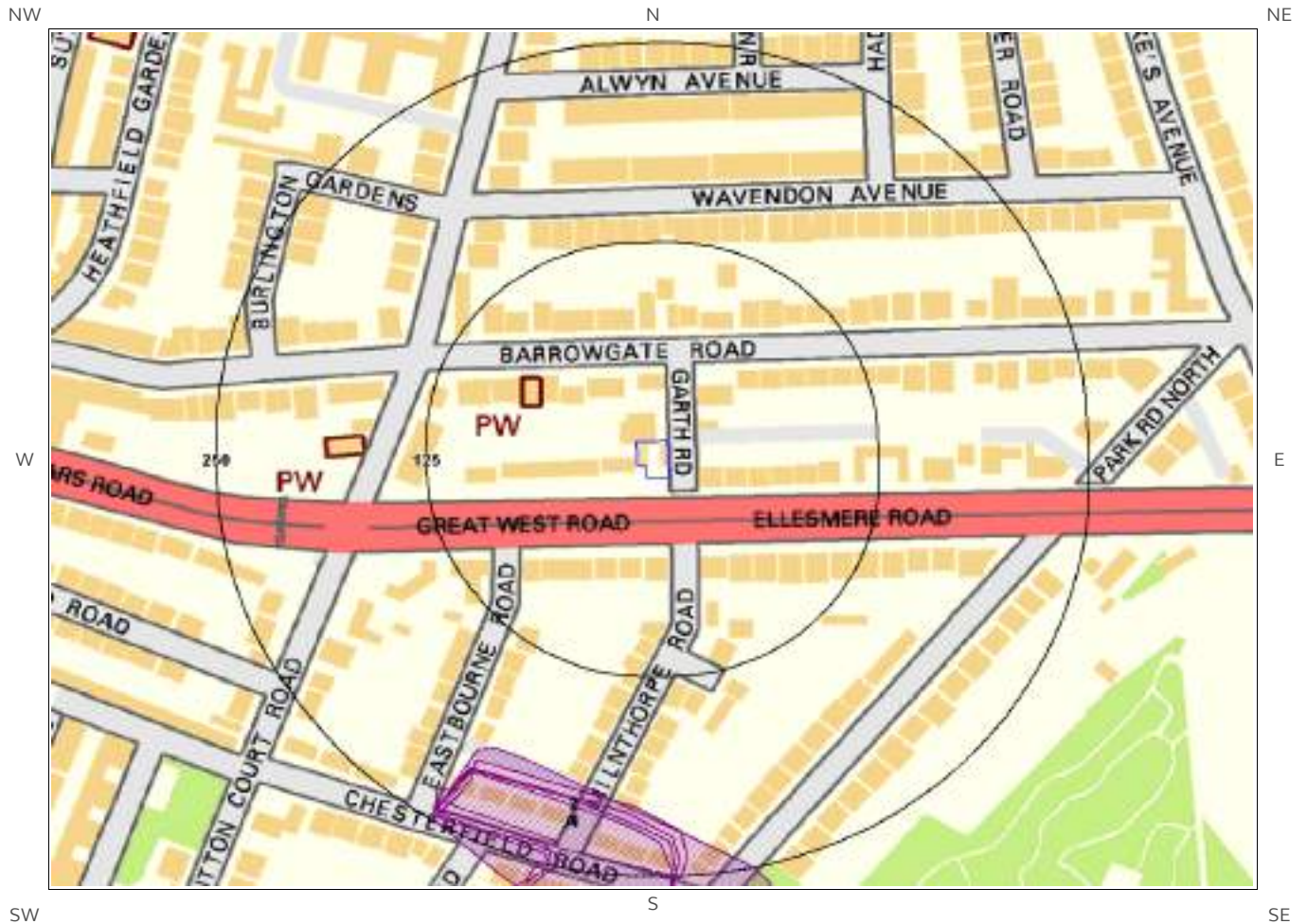
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection



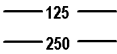


Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

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- | | | | |
|---|--------------------|---|----------------------------------|
|  | Site Outline |  | Historic Surface Ground Workings |
|  | Search Buffers (m) |  | Historic Underground Workings |
| | |  | Current Ground Workings |

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	191.0	S	520732 177617	Canal	1873
2	199.0	S	520537 177749	Lake	1893
3A	204.0	S	520533 177756	Water Body	1911
4A	206.0	S	520533 177741	Water Body	1898
5A	208.0	S	520528 177740	Lake	1894

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

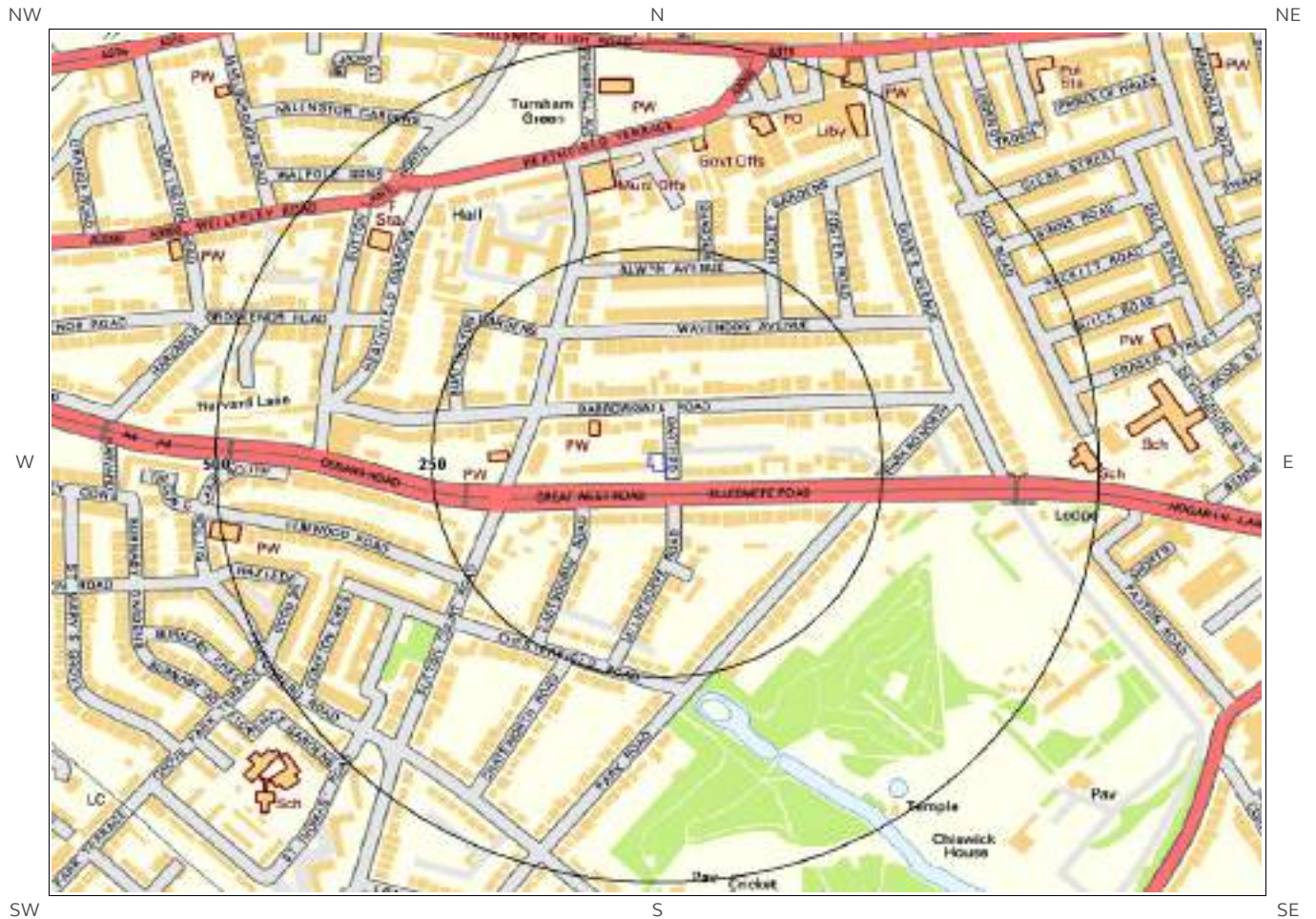
Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	692.0	S	520544 177283	Sand & Gravel	Burlington Lane Gravel Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

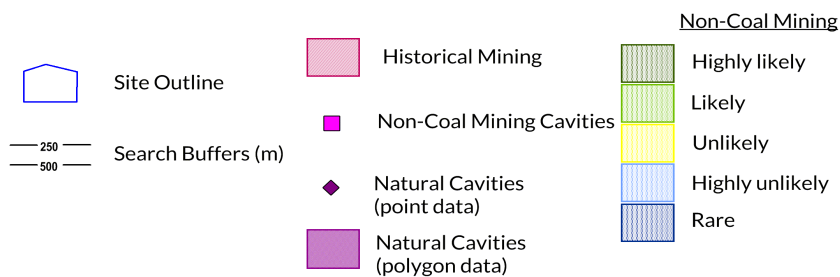
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	814.0	NW	520099 178653	Sand & Gravel	Acton Curve Ballast Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



**Mining, Extraction and
Natural Cavities Legend**

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5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

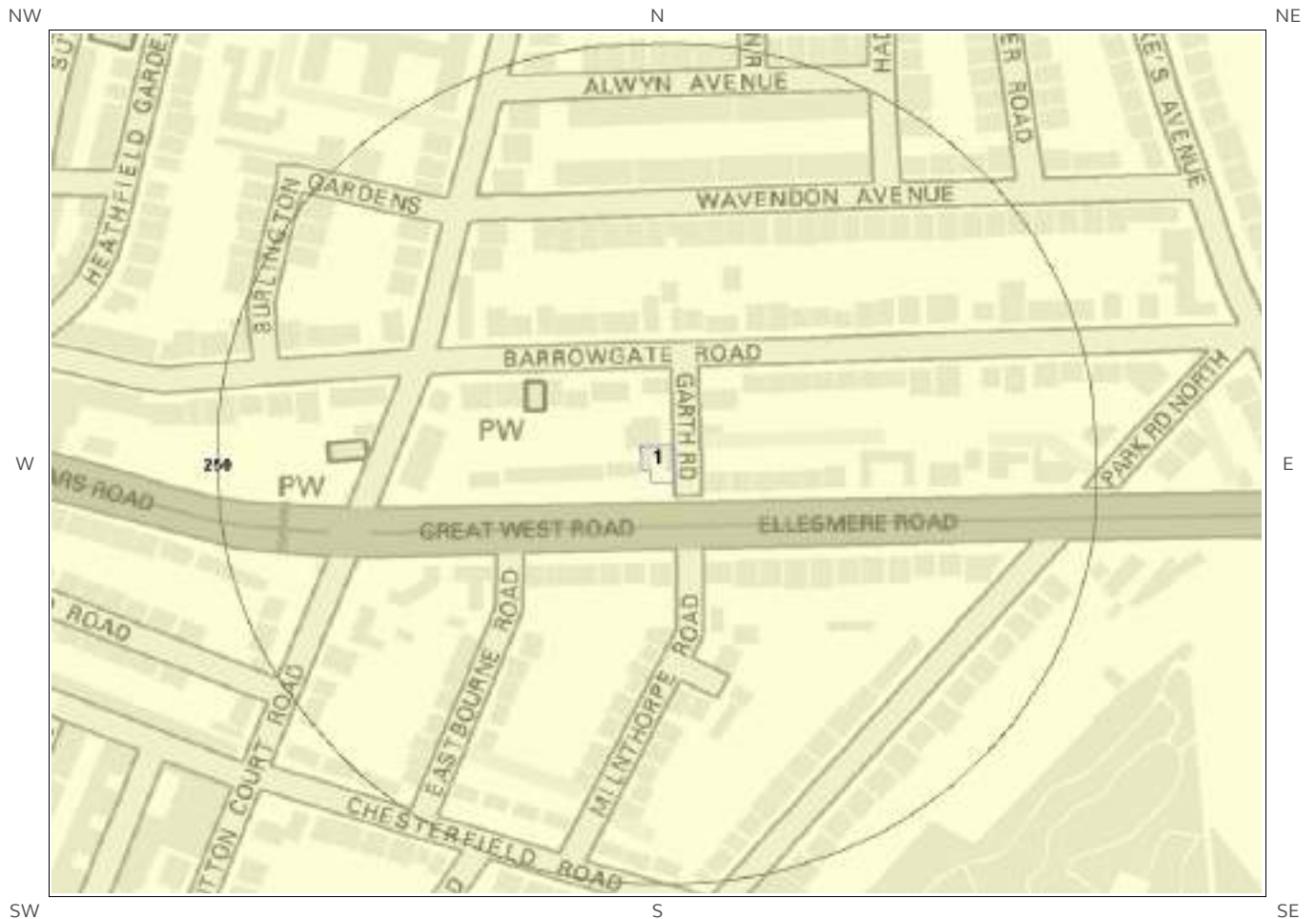
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

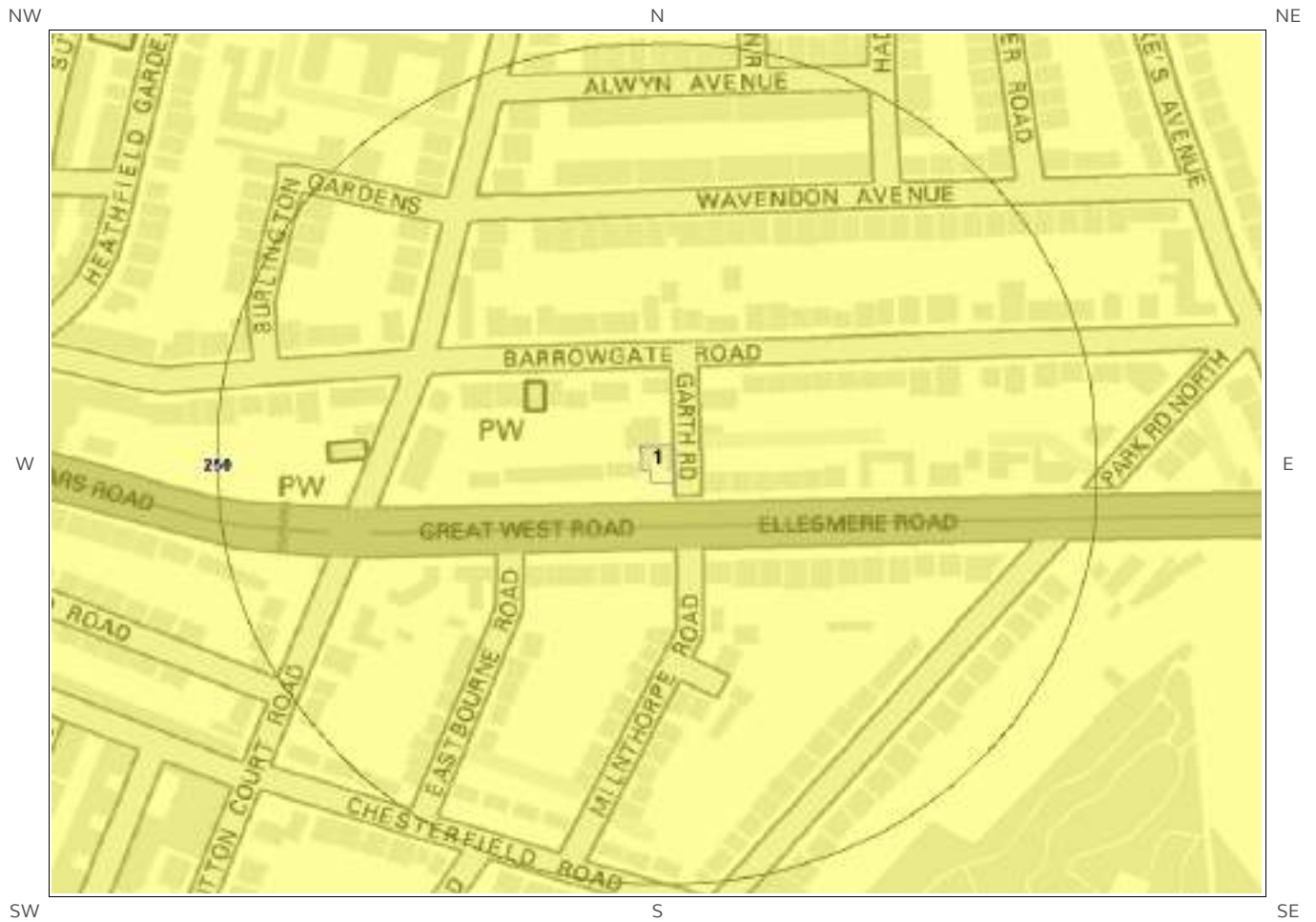


Shrink Swell Clay Legend

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6.2 Landslides map



Landslides Legend

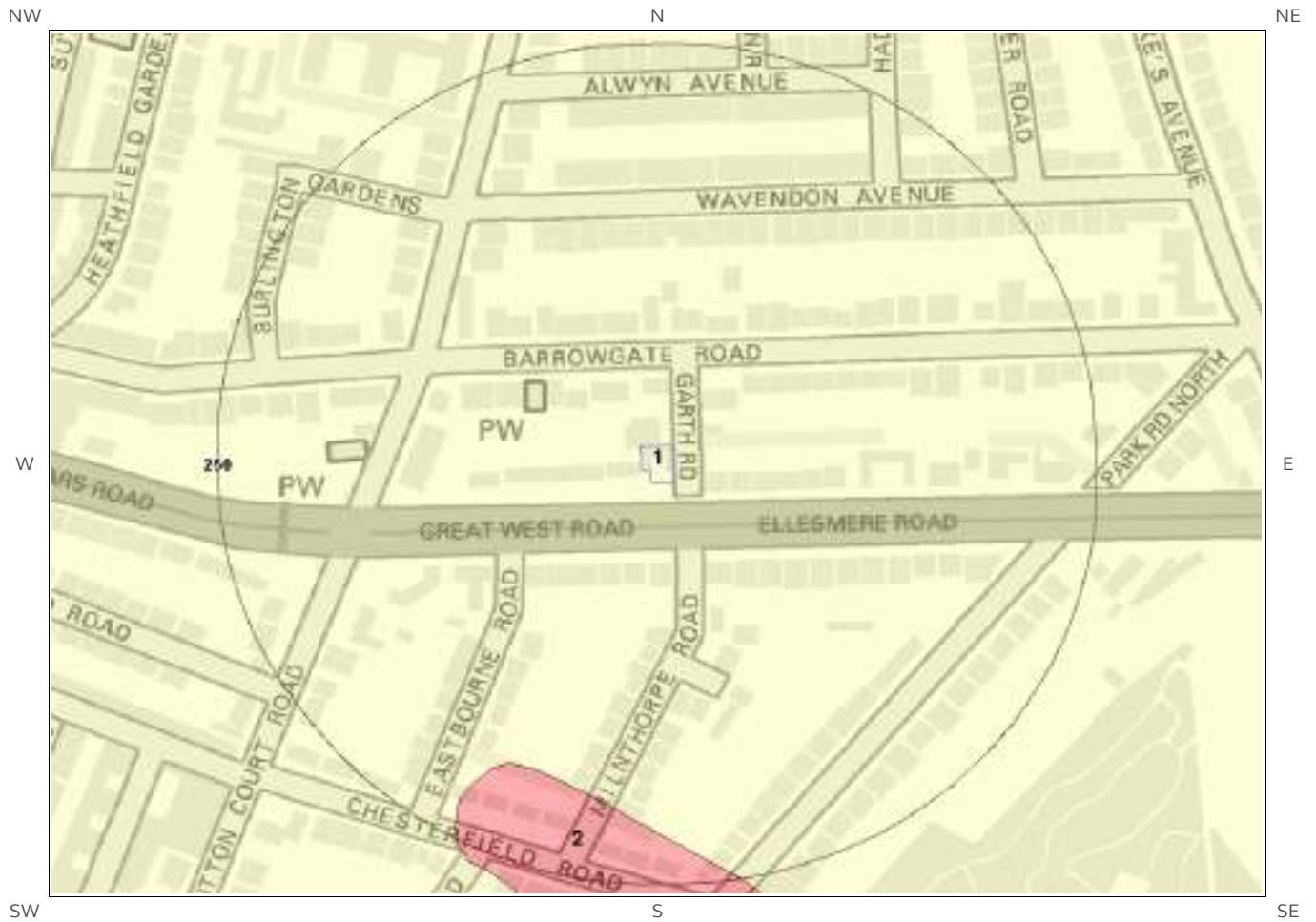
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6.3 Ground Dissolution of Soluble Rocks map



6.4 Compressible Deposits map

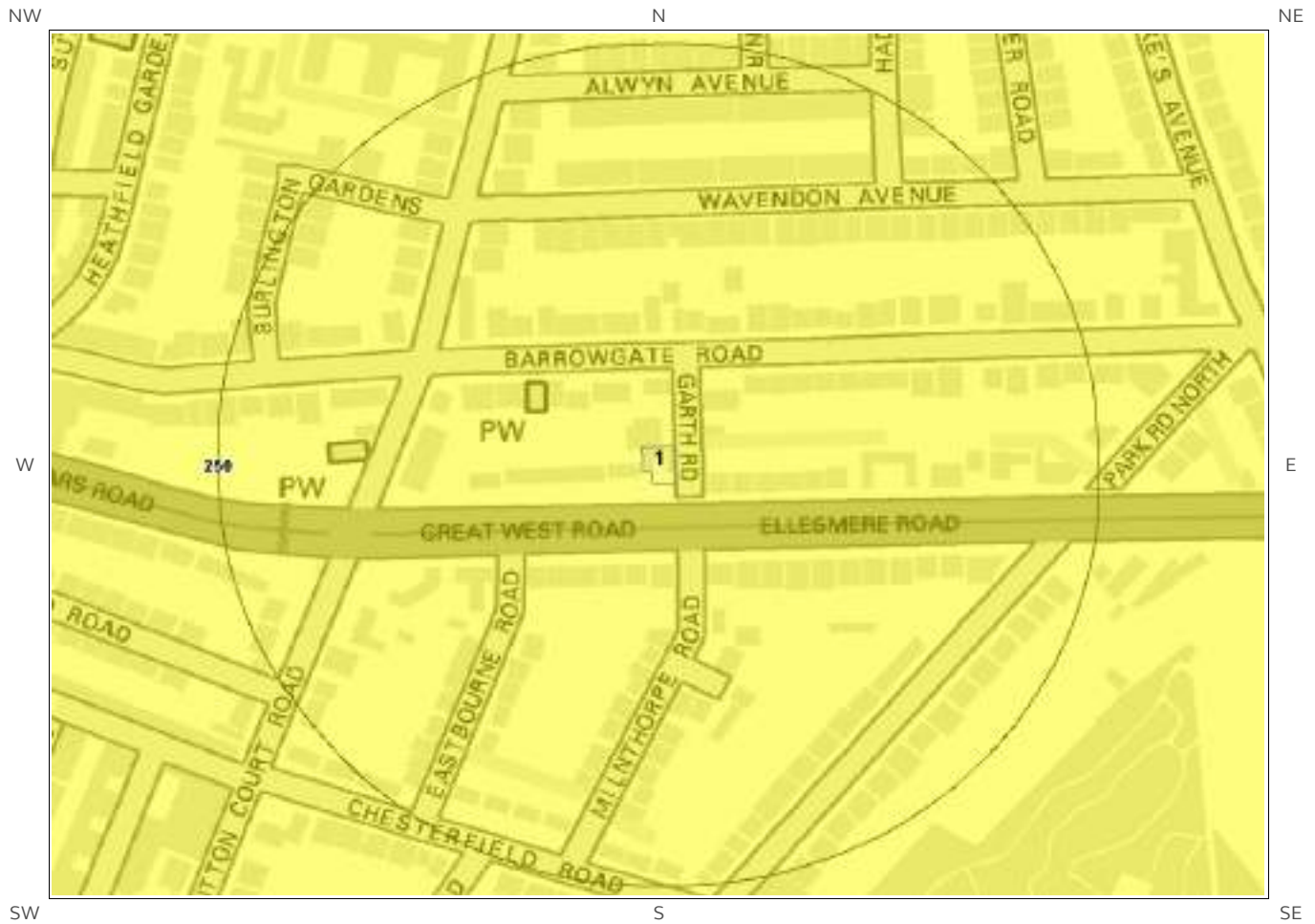


Compressible Deposits Legend

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6.5 Collapsible Deposits map

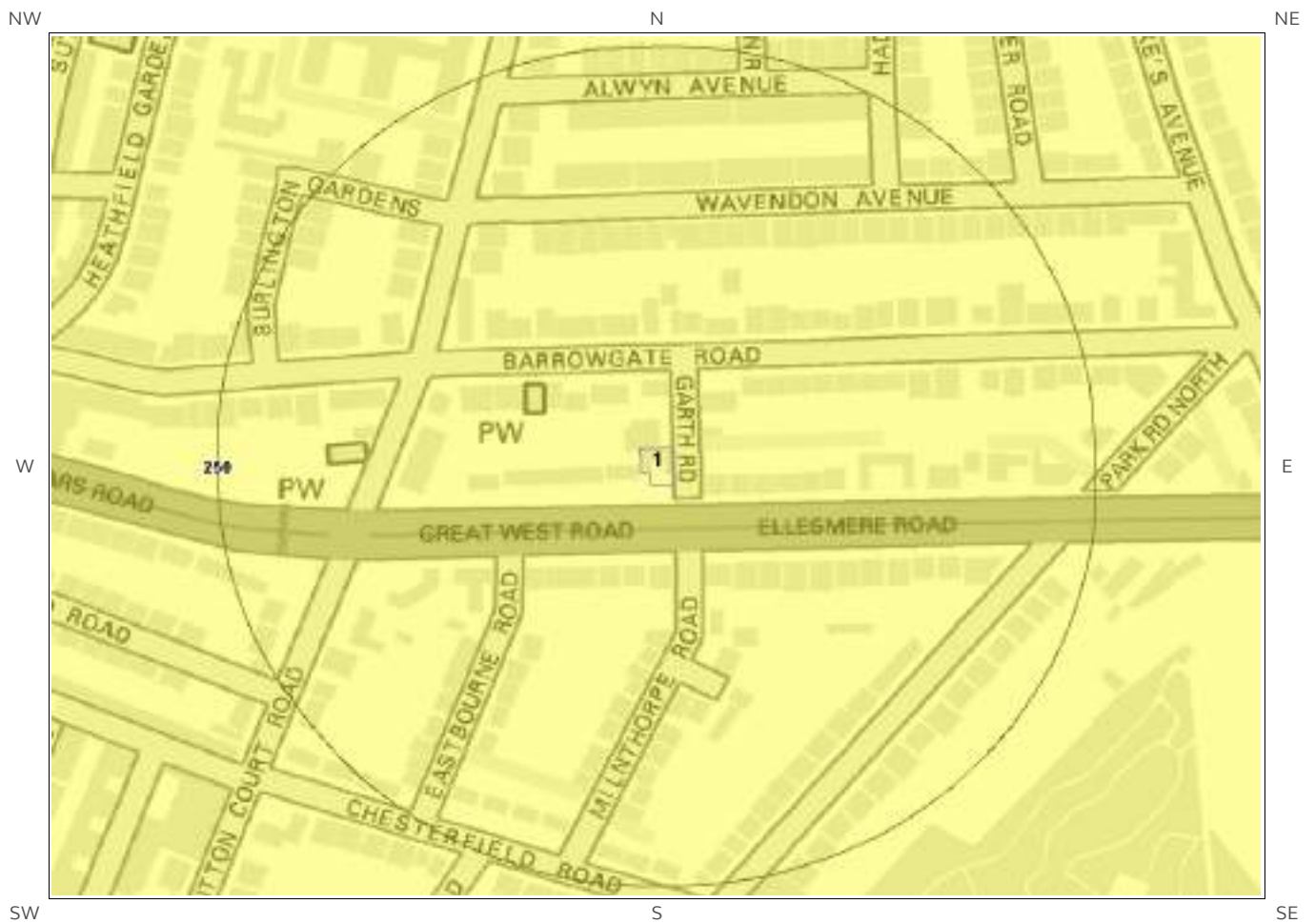


Collapsible Deposits Legend

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6.6 Running Sand map



Running Sand Legend

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6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site** boundary? Very Low

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This includes an automatically generated 50m buffer zone around the site

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

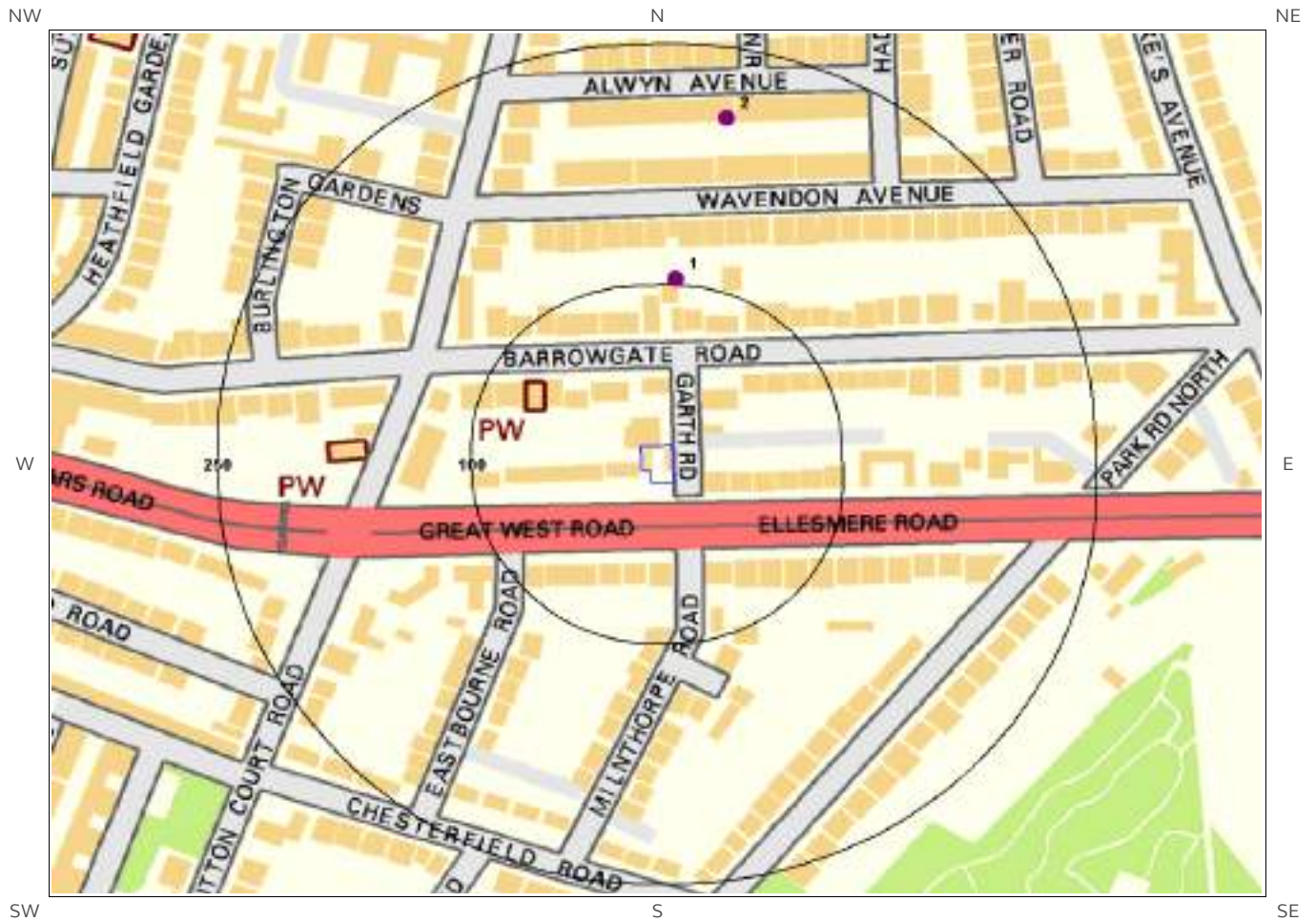
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

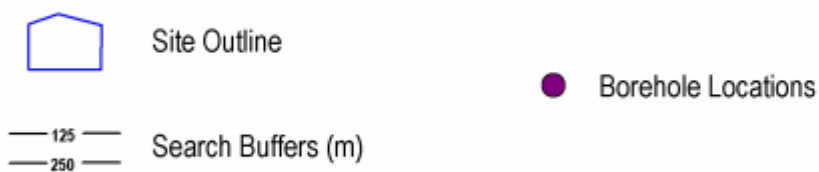
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map



Borehole Records Legend

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7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:

2

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	104.0	N	520600 178100	TQ27NW604	100.27	ROYAL AVENUE, CHISWICK
2	206.0	N	520630 178200	TQ27NW16	100.28	ROYAL HORTICULTURAL GARDENS CHISWICK

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/587199

#2: scans.bgs.ac.uk/sobi_scans/boreholes/586589

8 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

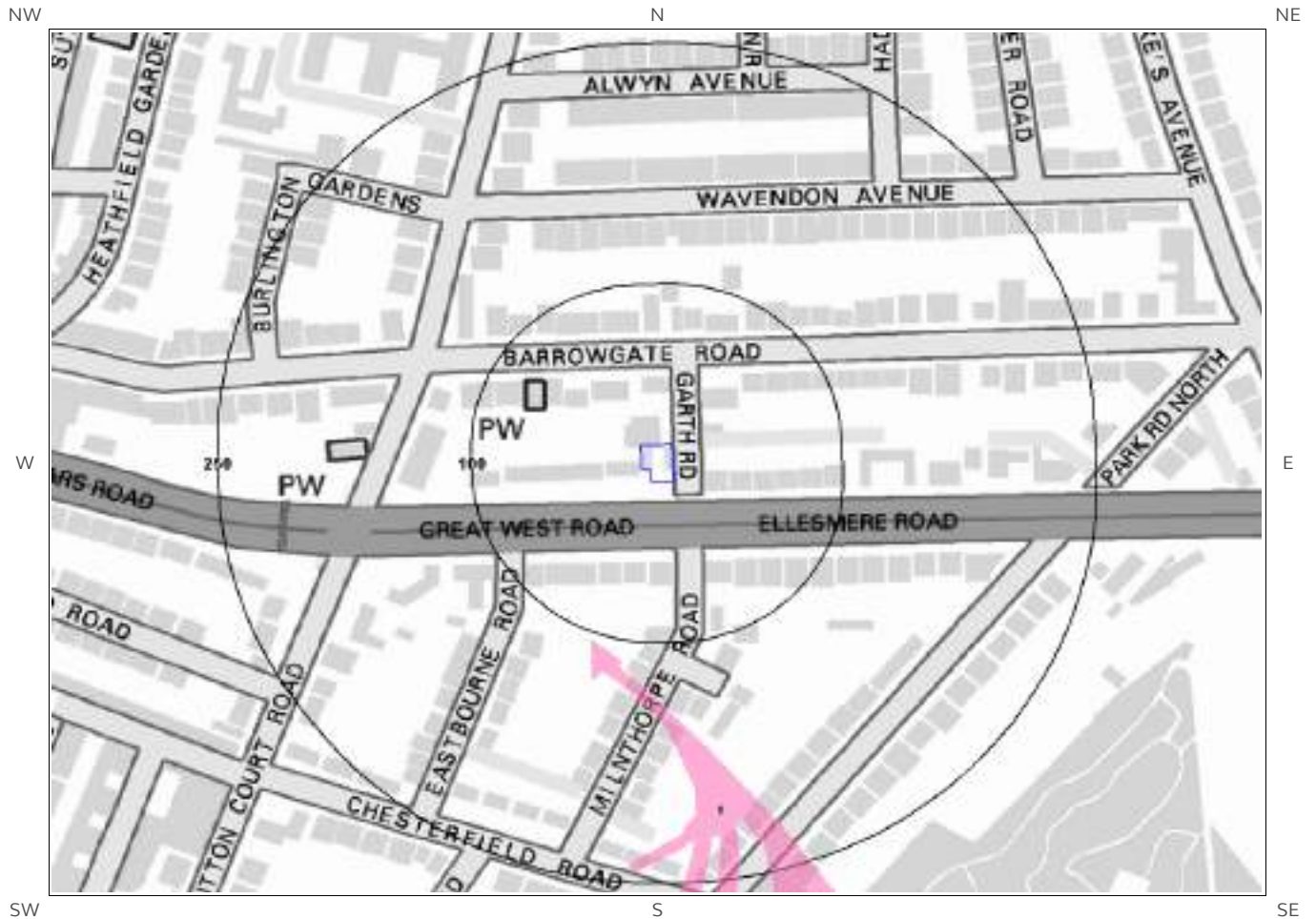
2

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	London	No data	No data	No data	No data	No data
4.0	N	London	No data	No data	No data	No data	No data

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

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9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1	105	S	539792 184686	Railway Sidings	1916

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? Yes

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

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info@groundsure.com



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NATURAL ENVIRONMENT RESEARCH COUNCIL

BGS Geological Hazards Reports and general geological enquiries

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The Coal
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Public Health England

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<https://www.gov.uk/government/organisations/public-health-england>
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Standard Terms and Conditions

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<https://www.groundsure.com/terms-and-conditions-feb11-2019>

APPENDIX C

Site Photographs

CLIENT:	London Borough of Hounslow	DATE:	03/04/2019	 ARCADIS		Design & Consultancy for natural and built assets
REFERENCE:	10030793	SITE NAME:	Garth Court	10 th Floor Three Piccadilly Place Manchester M1 3BN	T: 0161 245 8700 F: 0161 245 8701	
Plate 1 – View of the site entrance, from south. Towards northeast.						
Plate 2 – View of the household waste disposal area. Towards northwest.						

CLIENT:	London Borough of Hounslow	DATE:	03/04/2019	 ARCADIS		Design & Consultancy for natural and built assets
REFERENCE:	10030793	SITE NAME:	Garth Court	10 th Floor Three Piccadilly Place Manchester M1 3BN	T: 0161 245 8700 F: 0161 245 8701	
<p>Plate 3 – View of the hardstanding and garages showing general conditions and drainage. Towards northwest.</p>						
<p>Plate 4 – View of the eastern wall of site and adjacent offsite pavement with root cracks. Towards southwest.</p>						

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