

# **LONDON BOROUGH OF HOUNSLOW SMALL SITES SMALL BUILDERS PROGRAMME**

**HARTLAND ROAD (SITE A),  
ISLEWORTH, TW7 6RH**

**Geotechnical and Geo-Environmental Desk Study**

SEPTEMBER 2019

A large, solid orange geometric shape, resembling a stylized triangle or a section of a larger triangle, is positioned in the bottom right corner of the page. It is composed of two overlapping triangles, creating a subtle internal line. A thin horizontal line extends from the left edge of the page, passing behind the orange shape.

# HARTLAND ROAD (SITE A), ISLEWORTH, TW7 6RH

## Hartland Road (SITE A), ISLEWORTH, TW7 6RH

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Report No	10030793-ARC-XX-XX-RP-YY-0129-01-Geo Report	
Date	SEPTEMBER 2019	

## VERSION CONTROL

Version	Date	Author	Changes
01	September 2019	RS	First Issue

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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 desk-based survey for Site A-Garages at the junction of Hartland Road and Silverhall Street, TW7 6RH ('the Site').

LBH is aiming to divest a number of small sites to enable positive regeneration. It is believed the proposed end use for the site will be for residential purposes. However, no proposed development plans are available for the site at the time of writing.

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; and
- Identify potential development constraints due to geotechnical and geo-environmental conditions on Site.

The Site location is shown in Figure 1 below.

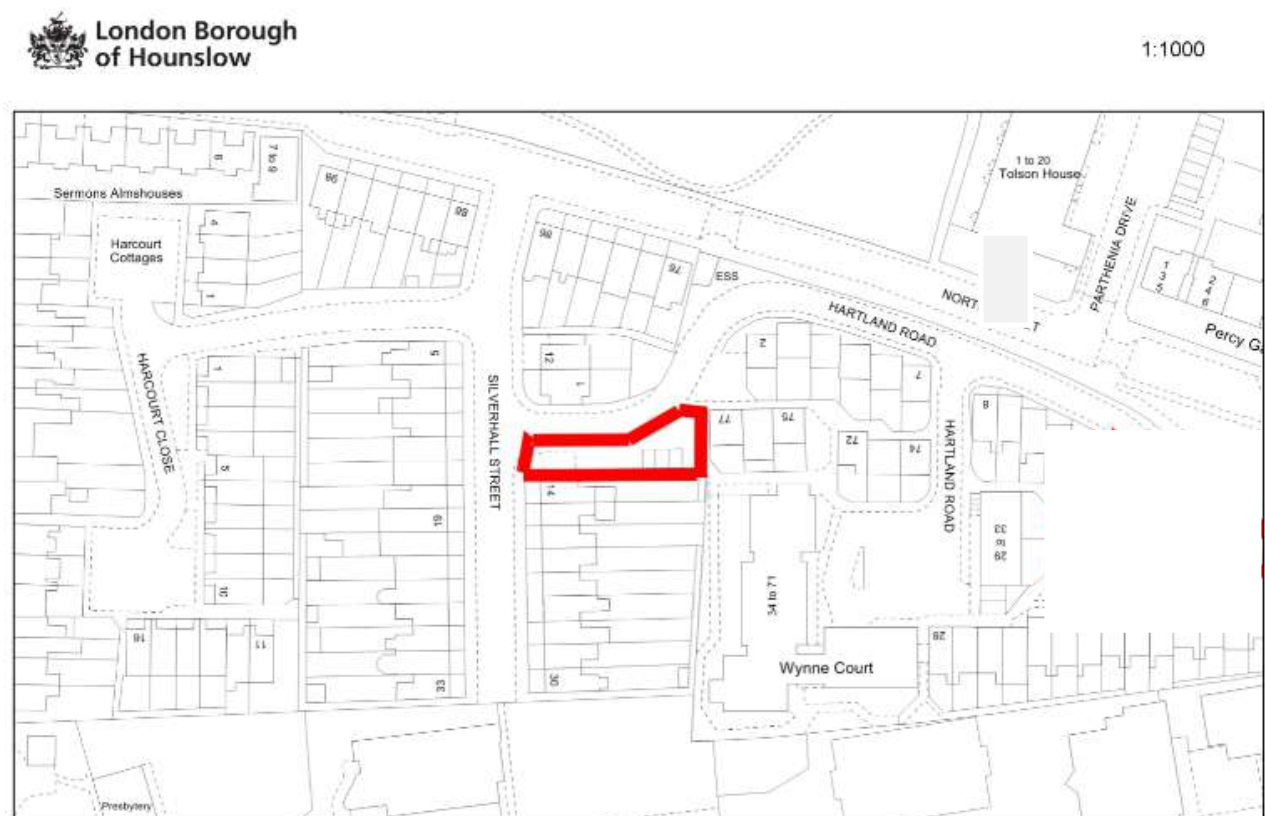


Figure 1: Site Location Plan provided by LBH

## 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 Insight (included in Appendix A);
- Environmental Information from Groundsure Insight (included in Appendix B);
- Publicly available satellite imagery via Google Earth (note that Google Earth imagery is not necessarily recent and therefore does not reflect current site conditions) (Ref. 2);
- Unexploded Ordnance (UXO) Survey report for this site (10030793-ARC-XX-XX-RP-YY-0154-01-UXO Report, Arcadis, Sept 2019); and
- Department for Environment, Food and Rural Affairs “Magic” website (Ref.7).

## 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	Site A- Hartland Road, Isleworth, TW7 6RH
National Grid Reference	516334, 175904
Approximate Site Area	The Site covers an area of approximately 0.0239 Ha (hectares).
Description of Site	<p>The site is accessed from Hartland Road and currently comprises car parking and 3no vehicle parking garages. The site lies at the junction of Silverhall Street and Hartland Road.</p> <p>The southern site boundary comprises a brick wall with residential properties and gardens beyond.</p> <p>The garages are adjoined in the east of the site and face north towards Hartland Road. The garages appear to be relatively new build. Construction materials are unknown. The site is covered by tarmac hardstanding which is in relatively good condition. A small curbed landscape area comprising grass and a mature tree is present within the west. A small grate drain is present on the site and the roof gutters from the garage buildings appear to drain directly underground. Street lighting is present. No obvious sign of surface contamination was noted.</p> <p>Site photographs taken during the walkover are included in Appendix C.</p>
Topography	The topography of the Site is generally flat at approximately 9m Above Ordnance Datum (AOD). It appears to slope gently down to the north. The immediate surrounding area is generally flat, with the regional topography sloping very gently down towards the River Thames to the east.
Surrounding Area	The site is immediately surrounded by residential development, with schools to the south and a large park beyond North Road to the north. The area becomes more industrial approximately 300m southwest with warehouse units and a large water treatment works. The Duke of Northumberland River is located approximately 86m north eventually converging with the River Thames which lies approximately 208m to the east and is oriented on a north-south tangent.

### 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 introduced sources of contamination to 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)
1865 - 1896	<p>Circa 1865, the site appears to be mostly undeveloped lands and gardens.</p> <p>Circa 1896, a road feature appears to occupy the eastern site boundary.</p> <p>The surrounding land use (1865) comprises grassland with woodland further afield.</p> <p>A Flour Mill is located approximately 250m east and River Thames 350m east.</p> <p>Circa 1894, a Coal Yard is located approximately 200m northeast (until circa 1896 marked on the Hartland Site B Groundsure data) as well as several Breweries (130m south and 300m southwest). A Smithy is marked approximately 150m south of the site, and a fire station is present approximately 150m southwest.</p>
1912- 1935	<p>By 1912, residential buildings occupied the site.</p> <p>Circa 1915, A Smithy is noted 150m south of the site and is no longer shown circa 1935.</p> <p>A Laundry noted approximately 230m southwest circa 1935.</p>
1959 - 1966	<p>The large scale 1:2500 map dated 1959, indicates the original terraced residential properties have been demolished (since 1935) and the site forms part of the garden to another residential property. There appears to be a discrepancy between the large and small scale maps as to the date of redevelopment. Unspecified works are present circa 70m west.</p> <p>Allotment gardens are noted 150m east of site circa 1959 with a warehouse nearby.</p> <p>Several works buildings, warehouses and builders' yards all located circa 200m east and south east of the site. Furthermore, another works building is shown 200m southwest.</p> <p>A garage is noted approximately 150m south and the previous fire station is no longer shown.</p>
1970 - 1978	<p>The large scale maps indicate Hartland Road and the current site layout was constructed sometime between 1970 and 1977. (This is again at variance with the 1:10,000 and 1:10,560 maps).</p> <p>Circa 1970, an electrical transformer and car park is shown 130m southeast. Previously shown allotment gardens are no longer present.</p> <p>Electricity substation marked approximately 140m southeast.</p>
1987-1995	<p>No significant changes are noted on site.</p> <p>Circa 1987, several number of electricity substations marked within the residential development area, approximately 80m west, 120m south, 250m east, 250m northeast. The previously electrical substation (140m southeast) and laundry (250m southwest) from the site are no longer shown.</p> <p>Circa 1994, many of the industrial warehouses and depots (300m east and south east) have been redeveloped into commercial properties and a car park.</p>
2010-2019	<p>No significant changes onsite.</p> <p>The surrounding areas contain a mix of residential, commercial and industrial developments with no significant changes.</p>

### 2.2.1 Summary of Site History

The site appears to be undeveloped land comprising gardens/open space in 1865 until sometime between the 1890s and 1912 when terraced housing was constructed on site. The houses were demolished by 1959 and the site comprised part of a garden to adjacent residential. Hartland Road and the carp parking and garages were constructed some time between 1970 and 1975. The site layout has remained unchanged since this time.

The surrounding land use has seen residential and industrial development surrounding the site. The below list are those land uses which are potential sources of contamination based on the nature of the land use and its proximity and direction from site;

- Unspecified Works 70m west of site.

All other potential sources of contamination identified are either too far to have a significant impact on the site or are in an area whereby any associated pollutants would be transported away from site based on the anticipated groundwater flow direction to the east. These features have not been considered further.

## 2.3 Unexploded Ordnance

With reference to the Zetica unexploded bomb risk map (Ref 8) the site lies within an area of 'Moderate' bomb risk.

An Unexploded Ordnance (UXO) assessment has been undertaken for the Site, the findings of which are detailed in 10030793-ARC-XX-XX-RP-YY-0154-01-UXO Report, September 2019.

The Preliminary Desk Study Assessment (PDSA) from Zetica 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>Superficial Deposits: Langley Silt Member described as clay and silt which is designated as Unproductive Strata.</p> <p>Kempton Park Gravel Member comprising sand and gravel is mapped 25m southeast of the site and is designated as a Principal Aquifer.</p> <p>Solid Geology: London Clay Formation, described as clay and silt, which is designated as Unproductive Strata.</p> <p>Made Ground is also anticipated onsite associated with the historical onsite development.</p>
BGS Boreholes (within 250m of the Site)	<p>There are 11 historic boreholes recorded within approximately 100m of the site. The nearest of which is 47m west of the site denoted as TQ17NE401 dated 1892 summarised below:</p> <ul style="list-style-type: none"> <li>• Topsoil with rootlets (Ground Level - 0.40m bgl)</li> <li>• Firm brown fine sandy silt becoming clayey at depth (0.40m bgl to 2.30m bgl)</li> <li>• Light brown sand with little gravel becoming yellow brown sand with some gravel (2.30m bgl to 2.50m bgl)</li> <li>• No Groundwater encountered</li> </ul>
Within a Source Protection Zone	Not recorded within 500m of the Site boundary.
Licensed Groundwater Abstraction Points	There are no recorded groundwater abstraction points within 1km of the Site boundary.
Surface Water Feature	The Duke of Northumberland's River lies approximately 83m to the north of Site and flows into the River Thames which lies approximately 208m to the northeast.
Likely Groundwater Flow Direction	Based on the published geology significant groundwater flow within Langley Silt Member and London Clay bedrock is not expected to be present. However, based on the local topography, any shallow groundwater would likely flow east towards the River Thames. Perched groundwater may also be present within or at the base of the Made Ground.

#### 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 and are present within 250m of the site boundary.

The following were not recorded within 250m of the site boundary;

- Discharge Consents;
- Landfill sites (current and historical),
- Local Authority Pollution Prevention and Controls,
- Mining Features; and
- Fuel Station Entries
- Tunnels

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.  No Radon protection measures are considered necessary for new dwellings.	N/A
Ground Workings	Two historical recorded both related to Pond dated 1865 and 1894.	140m northeast
Pollution Incident to controlled waters	Three recorded within the 250m surrounding site, nearest related to pollutant type oils and fuels of Category 3 (minor)	90m northeast
Potentially Infilled Land	Two recorded within 250m surrounding of site and both related to pond dated 1865 and 1894.	140m northeast 211m northeast
Part A (2) and Part B activities Environment permit	Concord Cleaners- Dry Cleaning type B permit	196m south
Current Industrial Land Uses	Electricity Substation	30m north 133m south 139m west 160m north 169m north
	Priceless Autos-Motoring	166m north west
	Isleworth Tyres-Vehicle parts and accessories	190m north west
	Vehicle Repair, Testing and Servicing	193m south 205m west 223m west

Data type	Description	Distance (m) and Direction
	Industrial Products and Features	228m northwest 230m northwest 233m southeast
Flooding information	<p>There was no risk of flooding identified on site.</p> <p>A River and Coastal Zone 2 Flooding site is located 82m north associated with the River Thames.</p> <p>Superficial deposits flooding has also been identified within 50m of the boundary of the site</p> <p>Potential below Surface Flooding and Superficial Deposits Flooding has been identified within 50m of site boundary</p>	82m north
Designated environmentally sensitive sites	Royal Botanic Gardens, Kew Buffer Zone	256m east

### 3.2.1 Summary

Of the above features identified in Table 3.2 above, the following are considered to be potential sources of contamination which require further consideration;

- Electricity Substation 30m north
- Garage 193m south
- Infilled pond 140m northeast

All other features identified are considered either too far away from site or are located down gradient of the site. These features have not been considered further.



## 4 PRELIMINARY CONCEPTUAL MODEL

Geo-environmental assessments are required in accordance with current regulatory guidance (CIRIA C552 - Ref. 3 and LC:RM – Ref. 4) 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
<b>On Site</b>	
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 use	Hydrocarbons, lubricants and solvents from potential spills/leaks from vehicle maintenance activities and asbestos.
London Clay	Sulphates
<b>Off Site</b>	
Made Ground is likely to be present from previous development and demolition.	Metals, Polycyclic Aromatic Hydrocarbons (PAH), hydrocarbons, ground gas
Electricity substation 30m north	Polychlorinated Biphenyls (PCBs) and hydrocarbons from potential spills/ leaks.
Garage 193m south	Hydrocarbons, lubricants and solvents from potential spills/leaks from vehicle maintenance activities.
Potentially Infilled Land 140m northeast	metals, Polycyclic Aromatic Hydrocarbons (PAH), hydrocarbons, ground gas

### 4.2 Potential Receptors (Residential End Use)

At the time of writing the proposed end use is proposed to be residential, however no design plans have been provided to date. As a precautionary approach the potential human health receptors detailed below take into consideration the most conservative end use as residential properties with private gardens and landscaped areas. It is considered possible that 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

Ground conditions are likely to be variable with Kempton Park Gravels located in proximity (25m southeast). Therefore, as a worst-case scenario groundwater has been considered as potential receptor based on the presence of the Kempton Park Gravels. The River Thames is located 208m northeast of the site and given the distance is not considered a plausible receptor.

### 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/residential, visitors, maintenance workers and contractors)	<p>Accidental ingestion of contaminants within soil, water and dust.</p> <p>Inhalation of dust, vapours and ground gases</p> <p>Dermal contact with contaminants within soil, water and dust.</p> <p>Ingestion of contaminated vegetables and soil attached to vegetables.</p>
Controlled Waters (Principal Aquifer in Kempton Park Gravels Superficial deposits)	<p>Leaching of potential contaminants in soil or Made Ground into groundwater.</p> <p>Vertical migration of contaminants through the unsaturated zone into groundwater beneath the Site.</p>
Buildings and structures including water supply pipes	<p>Direct contact of building services or foundations with contaminants in the soil and Made Ground leading to derogation of concrete or tainting of water supply.</p> <p>Migration of ground gases into buildings and accumulation of gasses in confined and poorly ventilated spaces leading to explosive gasses or vapour.</p>

## 4.4 Preliminary Qualitative Risk Assessment

Potential sources of contamination, are considered present on site and pathways and receptors will be introduced during redevelopment and as such potential pollutant linkages exist. The main potential sources of contamination identified within this report are Made Ground from previous developments and electricity

substation (30m north) of site. Above and below ground services are likely to be present beneath the site as indicated by the presence of manhole cover on site and in the immediate surrounding area. It is likely that some of the concrete paving, tarmacadam hardstanding and existing buildings may need to be demolished. A mature tree is present in the curbed vegetated area within the site which will require consideration. Ground investigation and assessment is recommended.

## **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 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 disposal 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**

Manhole covers on the site indicate the presence of below ground utilities beneath the site. The existing tarmac hardstanding may need to be removed or broken out and the existing garage buildings may need to be demolished. Construction materials are unknown and may contain asbestos. A large mature tree is present in the curbed vegetated area which will require consideration.

## 6 Geotechnical Considerations

### 6.1 General Comments

Historical borehole data (located 47m west of the site boundary) has identified likely ground conditions to comprise;

- Topsoil with rootlets (Ground Level - 0.40m bgl)
- Firm brown fine sandy silt becoming clayey at depth (0.40m bgl to 2.30m bgl)
- Light brown sand with little gravel becoming yellow brown sand with some gravel (2.30m bgl to 2.50m bgl)
- No groundwater was encountered.

Based on this and anticipated underlying superficial and bedrock deposits, as well as the rest of the information 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 soil borne ground gas from Made Ground.
- **Variable Ground Conditions** – The presence of Made Ground and Superficial Deposits and their heterogeneous nature is likely to produce variable conditions across the site depending on their thickness and composition.
- **Shrinkable Clays** – The plasticity of the Made Ground, Langley Silt Member and the depth of the London Clay Formation is not known and therefore consideration will need to be given to the presence of the existing tree if removed, retained or if further planting is anticipated in the future when considering the depths of the foundations, as a large mature tree is present in the west of the site.
- **Underground Structures** - Removal of former foundations, services and concrete obstructions (if present) from historical on-site development.
- **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.
- **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.

- **Instability of nearby structures** - Consideration will need to be given to the potential impacts of instability of excavations adjacent to existing buildings/structures. Ground movement and vibrations may affect existing structures and may require mitigation.

## 6.2 Foundations

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.

In the absence of site specific ground investigation it is envisaged that the Langley Silt Member described as clay and silt is a borderline type material which may or may not be suitable for shallow foundations for light weight structures. This will depend on the depth of the deposit and its strength and density which will need to be confirmed via an appropriate ground investigation.

In areas of deeper Made Ground, or where deeper soft, loose and compressible material is present (the depth of which would need to be determined) deeper foundation options or ground improvement methods maybe required.

## 7 Conclusions and Recommendations

### 7.1 Design Considerations

The Site is currently used as a car parking and garages. An intrusive site investigation has not been undertaken. The Site was previously a terraced housing, garden and redeveloped to its current layout in the early 1970s.

Potential sources of contamination have been identified, as shown in table 4.1 and potential pollutant linkages exist. Therefore, an appropriate ground investigation is recommended to determine ground conditions for foundation design and the chemical regime to assess the degree of risk to end users and controlled waters. This should include for chemical testing of soils, groundwater monitoring (if present) and gas monitoring in accordance with the recommendations in CIRIA C665 (Ref. 6) and LC:RM (Ref. 4) and consideration of shrinkage and swelling, compressible ground stability and sulphate attack to below ground concrete.

### 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 including soil borne gas. Due to the historic phases of development, demolition and redevelopment consideration should be given to the potential presence of asbestos within the Made Ground, soil contamination and the potential for impacted groundwaters.

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 Principal Aquifer if foundations or piling which penetrate the base of the Made Ground are proposed.

According to the Arcadis Unexploded Ordnance assessment 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 September 2019.
2. Google maps [online]. Available at <https://www.google.co.uk/maps>. Accessed September 2019.
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4. Land contamination: risk management (LC:RM), Environment Agency, June 2019
5. The Construction (Design and Management) Regulations 2015.
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7. Department for Environment, Food and Rural Affairs "Magic" website. Available at (<http://magic.defra.gov.uk/MagicMap.aspx>) Accessed September 2019
8. Report number 10030793-ARC-XX-XX-RP-YY-0154-01-UXO Report, Accessed September 2019.



## **APPENDIX A**

### **Historical Ordnance Survey Maps**



#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1865

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1865  
Revised 1865  
Edition N/A  
Copyright N/A  
Levelled N/A



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Production date: 09 September 2019

Map legend available at:  
[www.groundsure.com/sites/default/files/groundsure\\_legend.pdf](http://www.groundsure.com/sites/default/files/groundsure_legend.pdf)





#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: 1056 Scale Town Plan

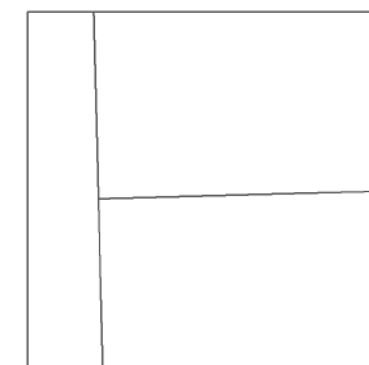
Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



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



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

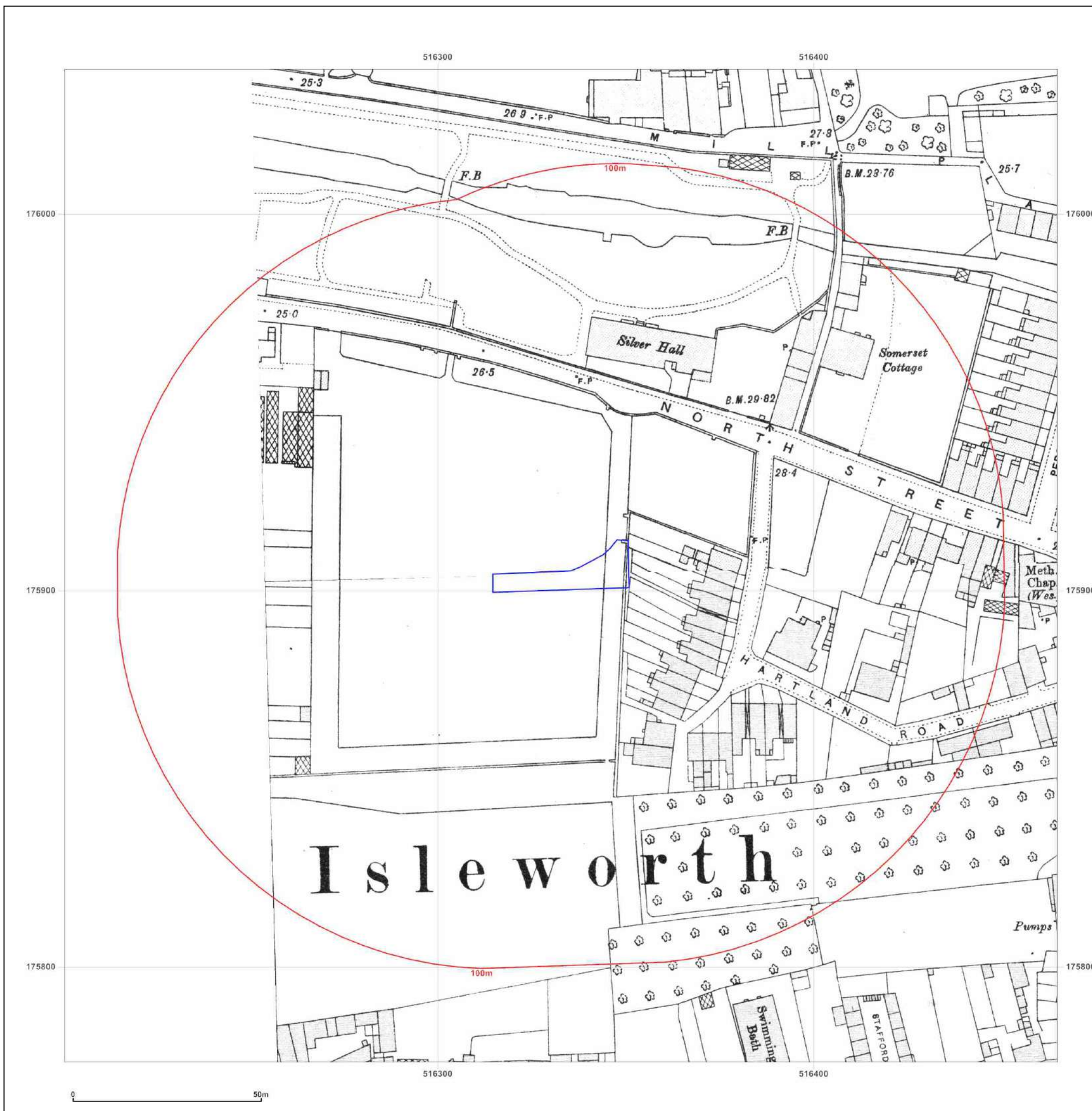


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1896

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1896  
Revised 1896  
Edition N/A  
Copyright N/A  
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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**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

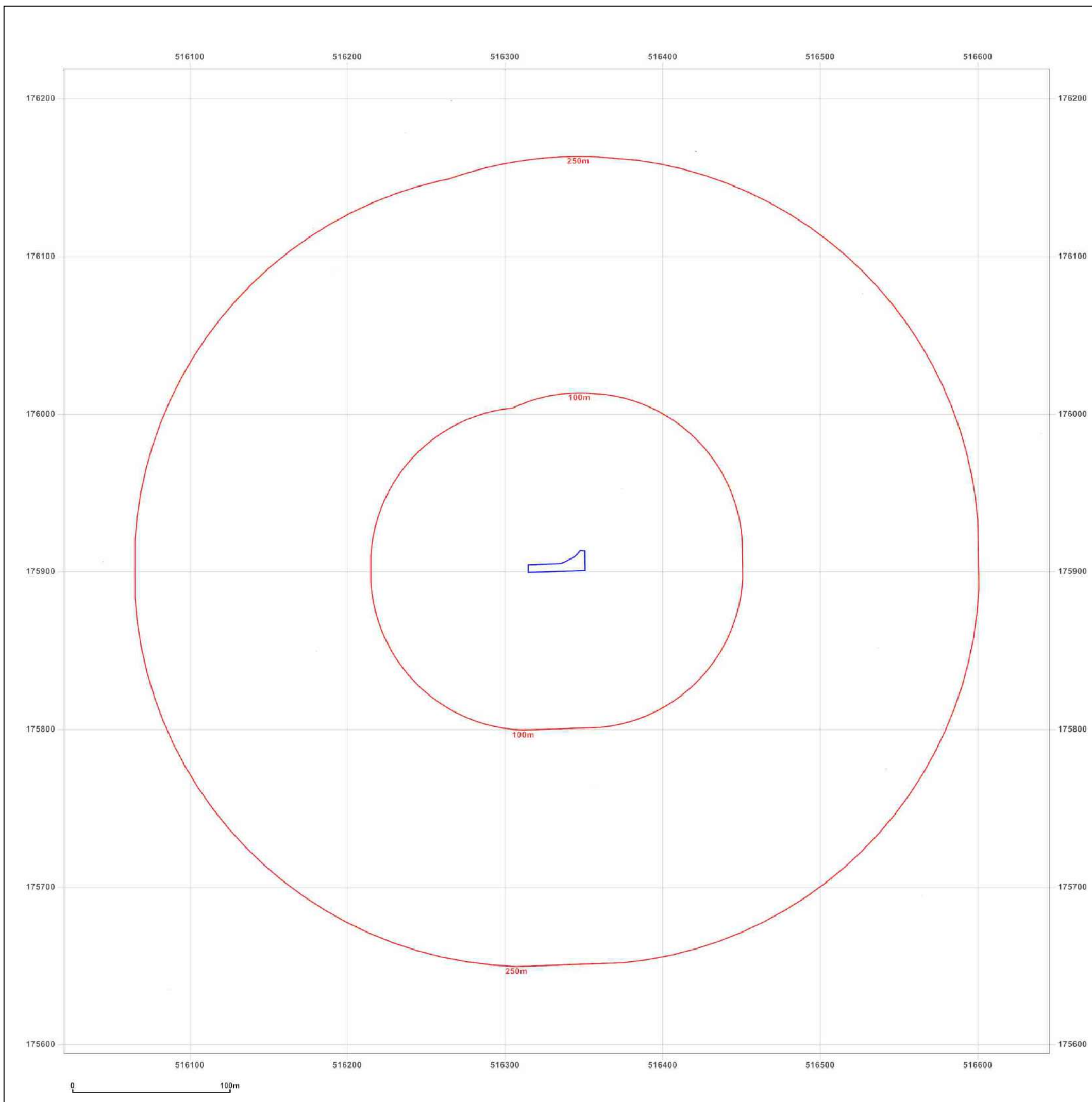


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1915

Scale: 1:2,500

Printed at: 1:2,500



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

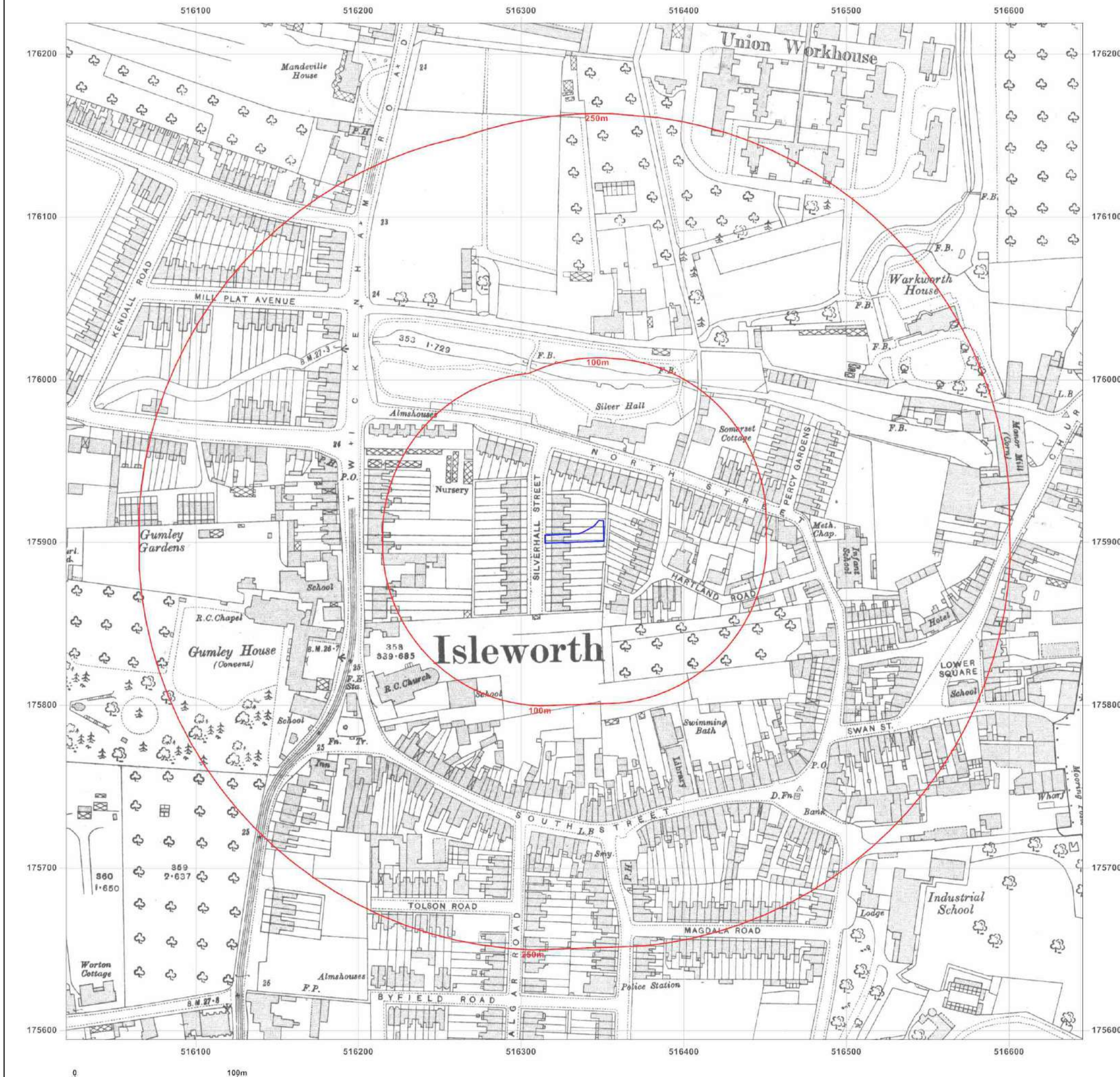


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

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

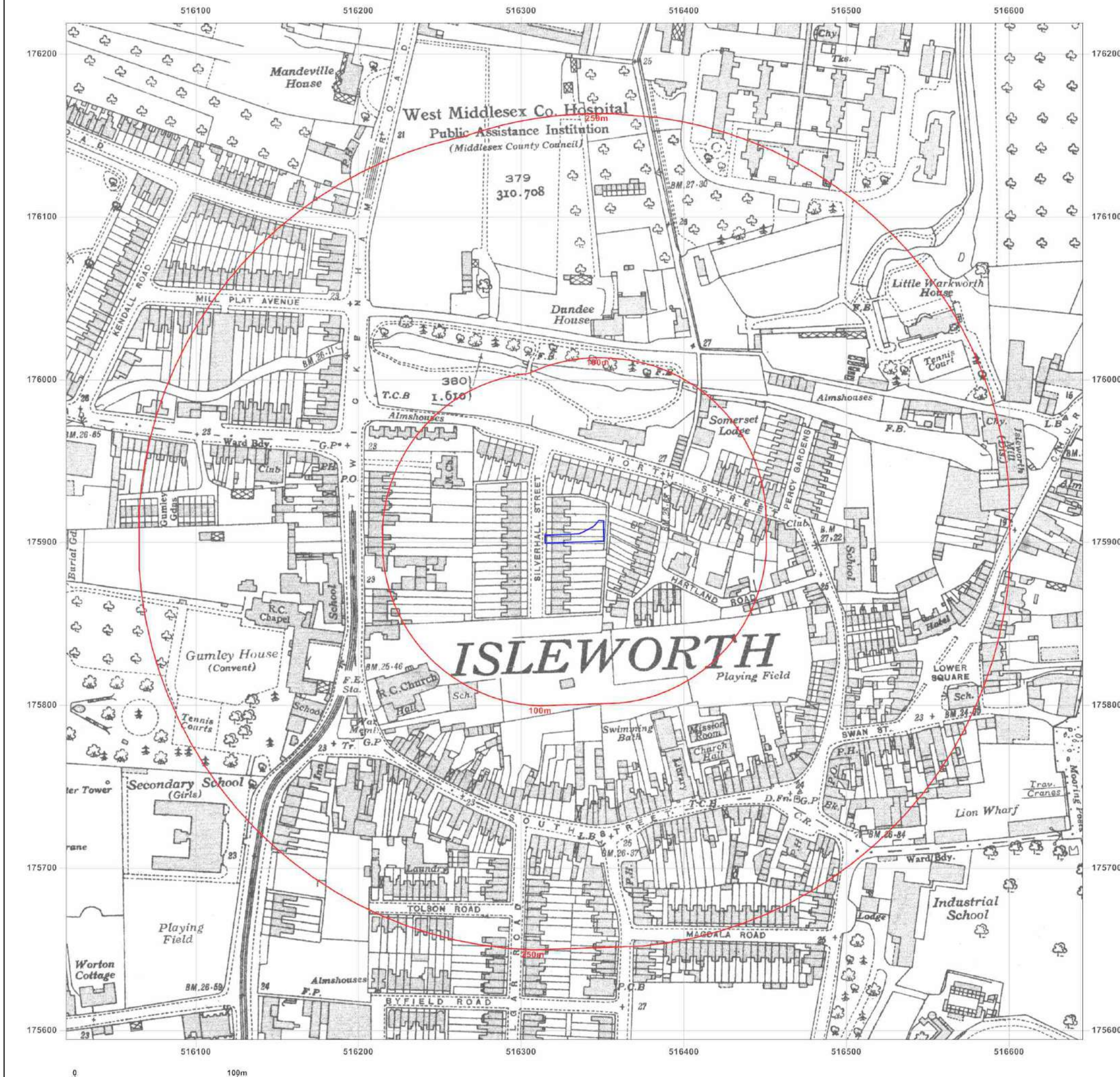


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959  
Revised 1959  
Edition 1961  
Copyright 1961  
Levelled 1957

Surveyed 1959  
Revised 1959  
Edition 1960  
Copyright 1960  
Levelled 1957

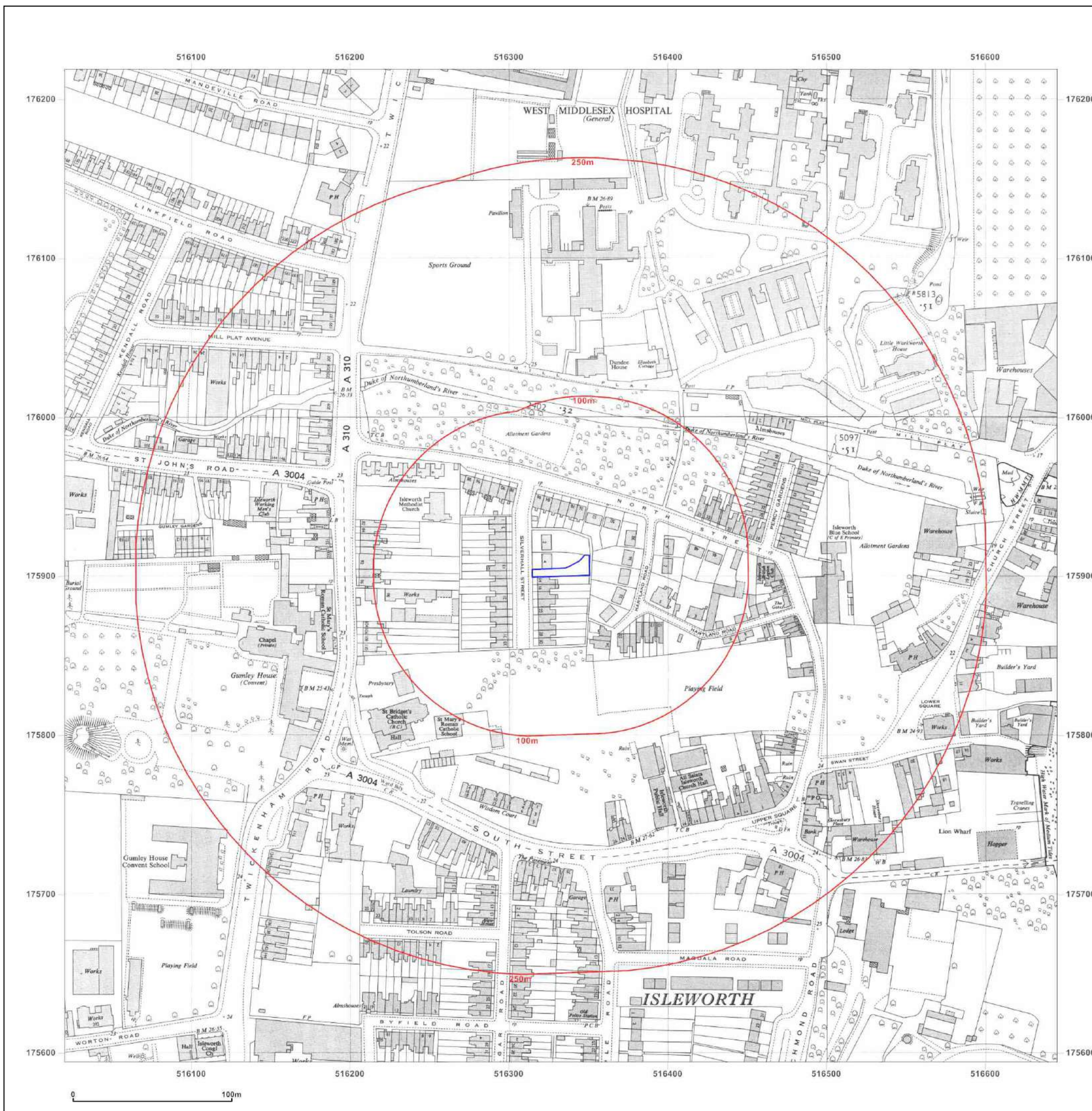


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959  
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Edition 1961  
Copyright 1961  
Levelled 1957

Surveyed 1959  
Revised 1959  
Edition 1960  
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Levelled 1957

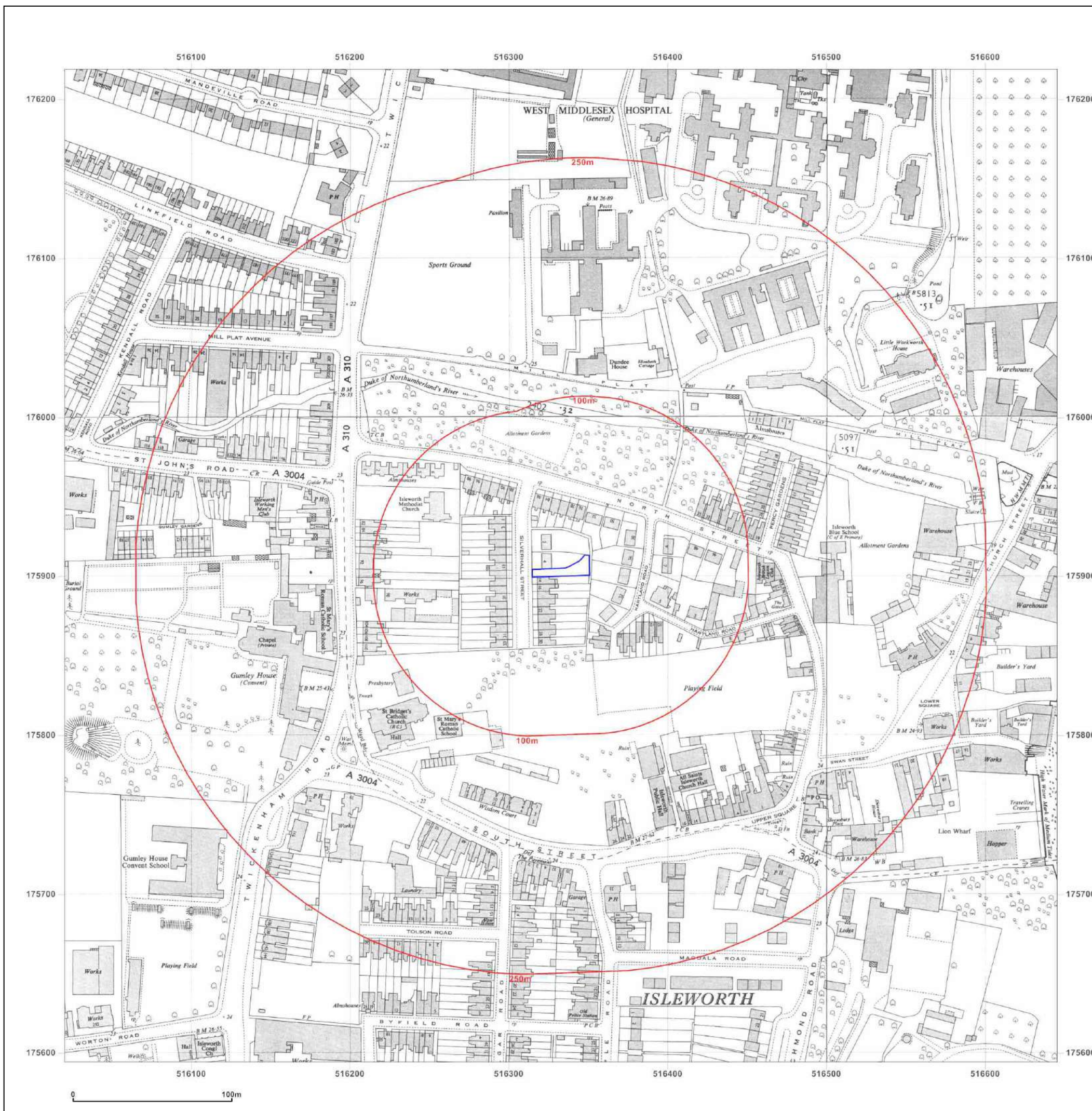


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: National Grid

Map date: 1960

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1959  
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Edition N/A  
Copyright 1960  
Levelled 1957

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Revised 1959  
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Copyright 1960  
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Surveyed 1959  
Revised 1959  
Edition N/A  
Copyright 1960  
Levelled 1957

Surveyed 1959  
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Edition N/A  
Copyright 1960  
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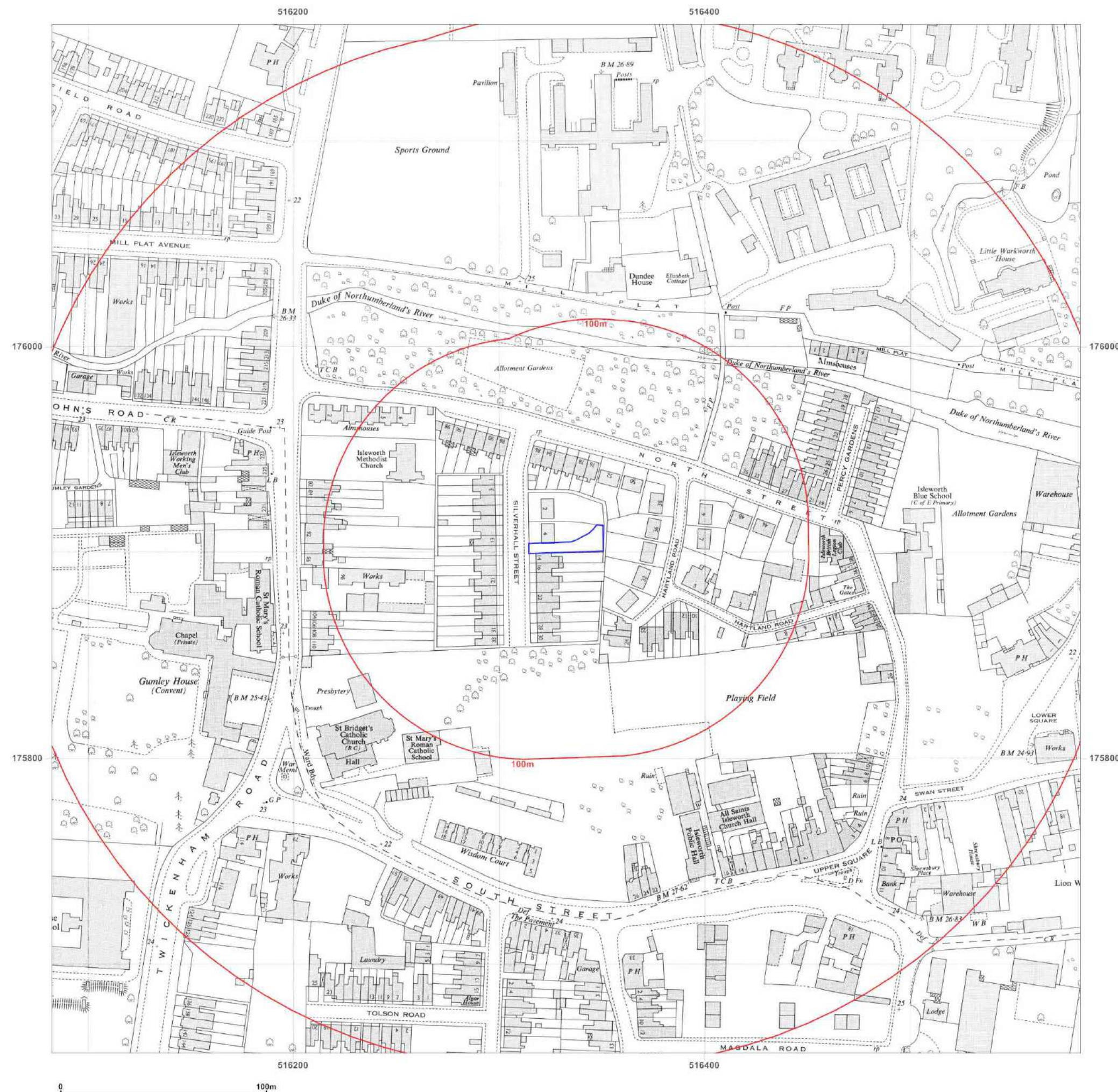


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**Site Details:**

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1960

**Scale:** 1:1,250

**Printed at:** 1:2,000



Surveyed 1959  
Revised 1959  
Edition N/A  
Copyright 1960  
Levelled 1957

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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1961

**Scale:** 1:2,500

**Printed at:** 1:2,500



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

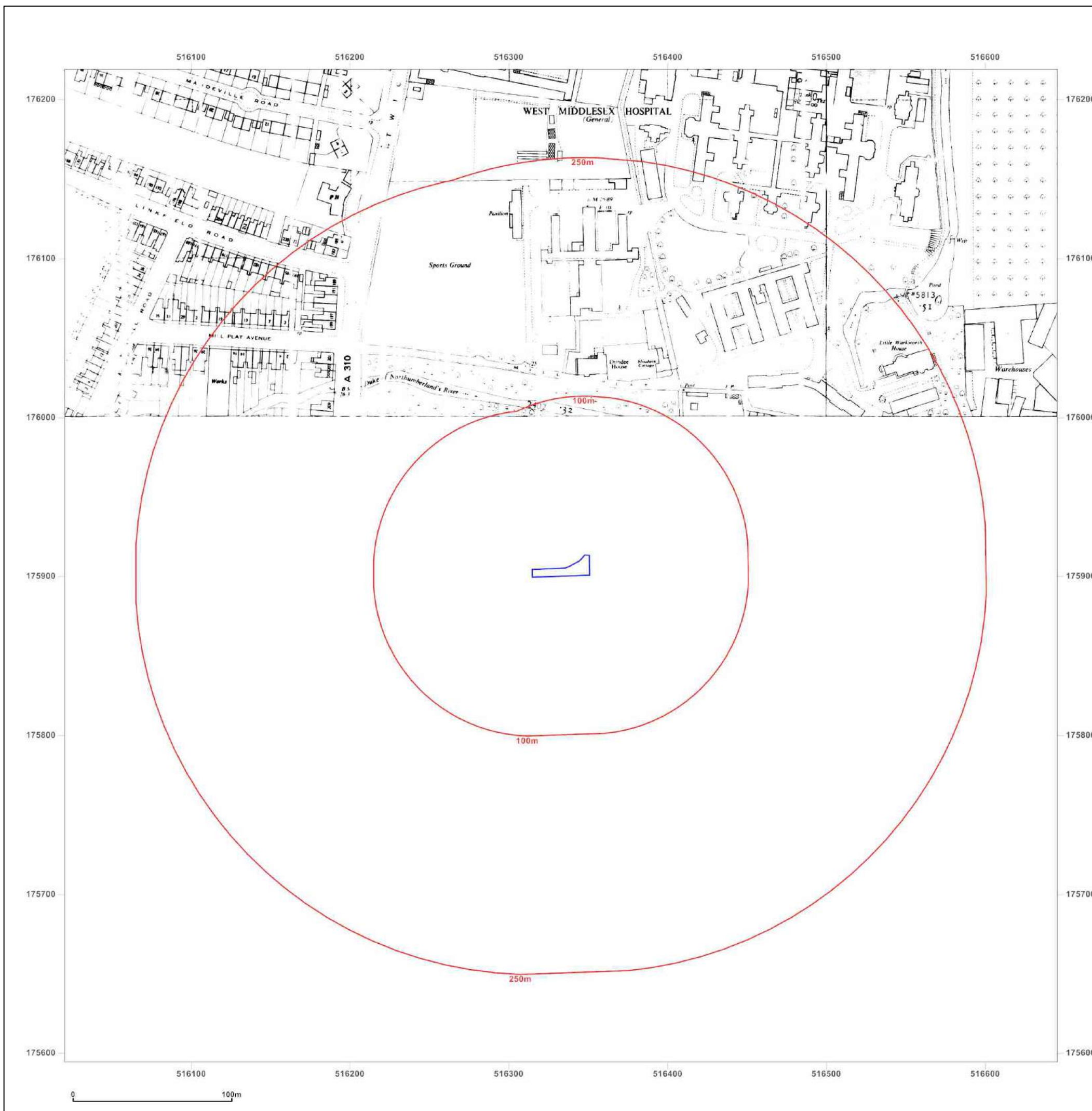


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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1961

**Scale:** 1:2,500

**Printed at:** 1:2,500



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

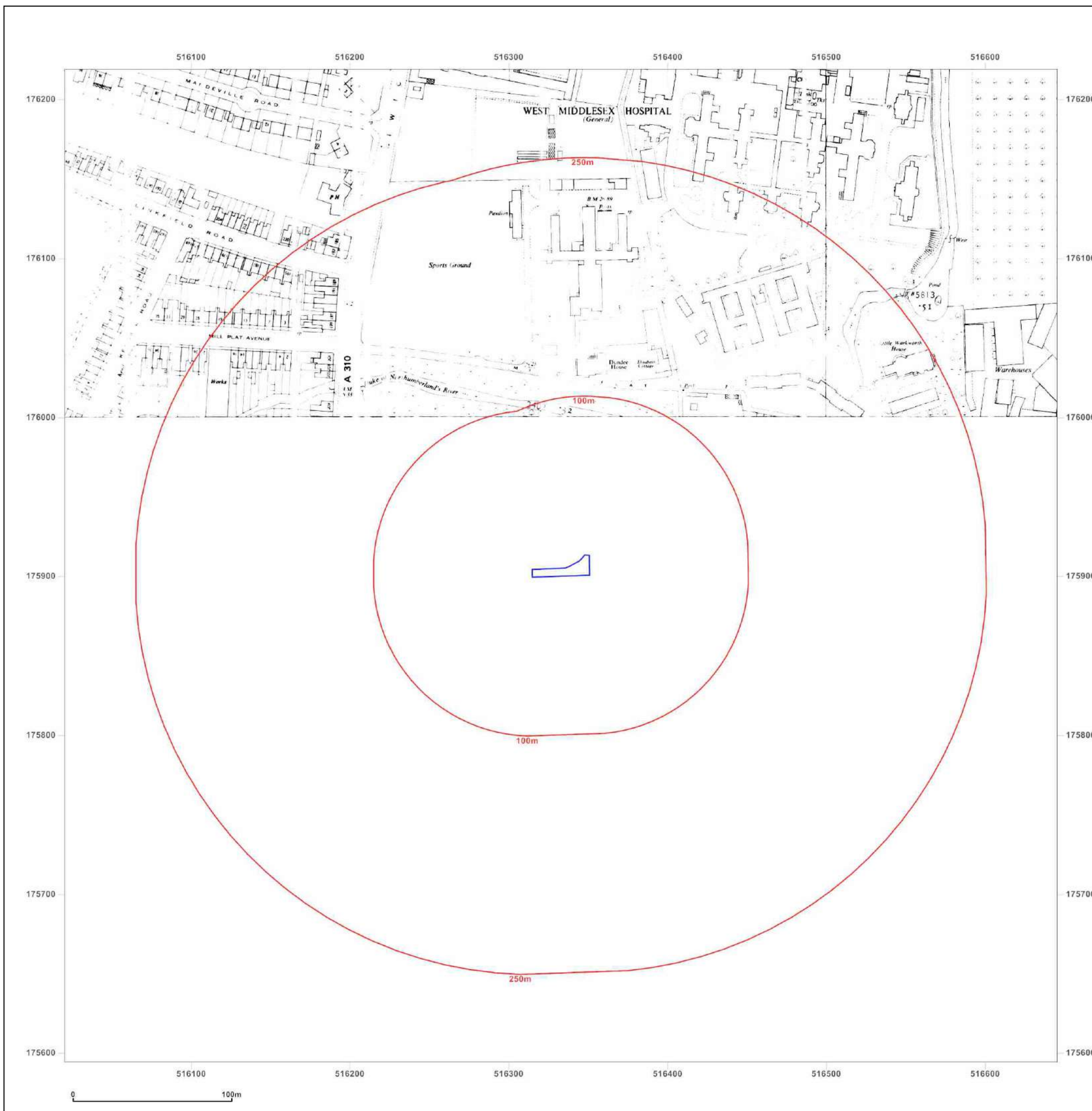


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: National Grid

Map date: 1970-1975

Scale: 1:1,250

Printed at: 1:2,000



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

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Edition N/A  
Copyright 1975  
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Surveyed 1959  
Revised 1970  
Edition N/A  
Copyright 1970  
Levelled 1957

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

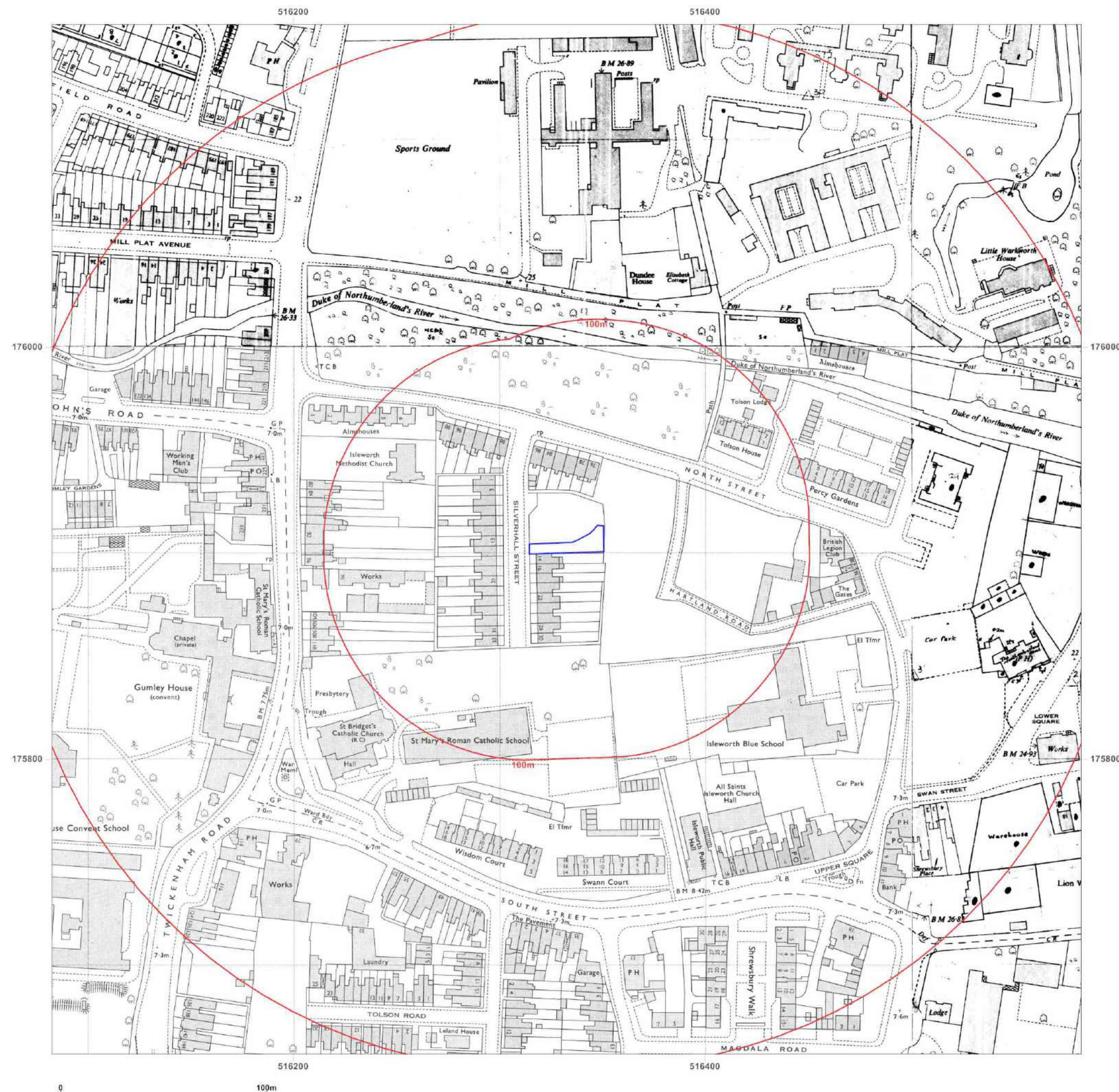


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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1977

**Scale:** 1:1,250

**Printed at:** 1:2,000



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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1974-1978

**Scale:** 1:1,250

**Printed at:** 1:2,000



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

Surveyed N/A  
 Revised N/A  
 Edition N/A  
 Copyright 1978  
 Levelled N/A

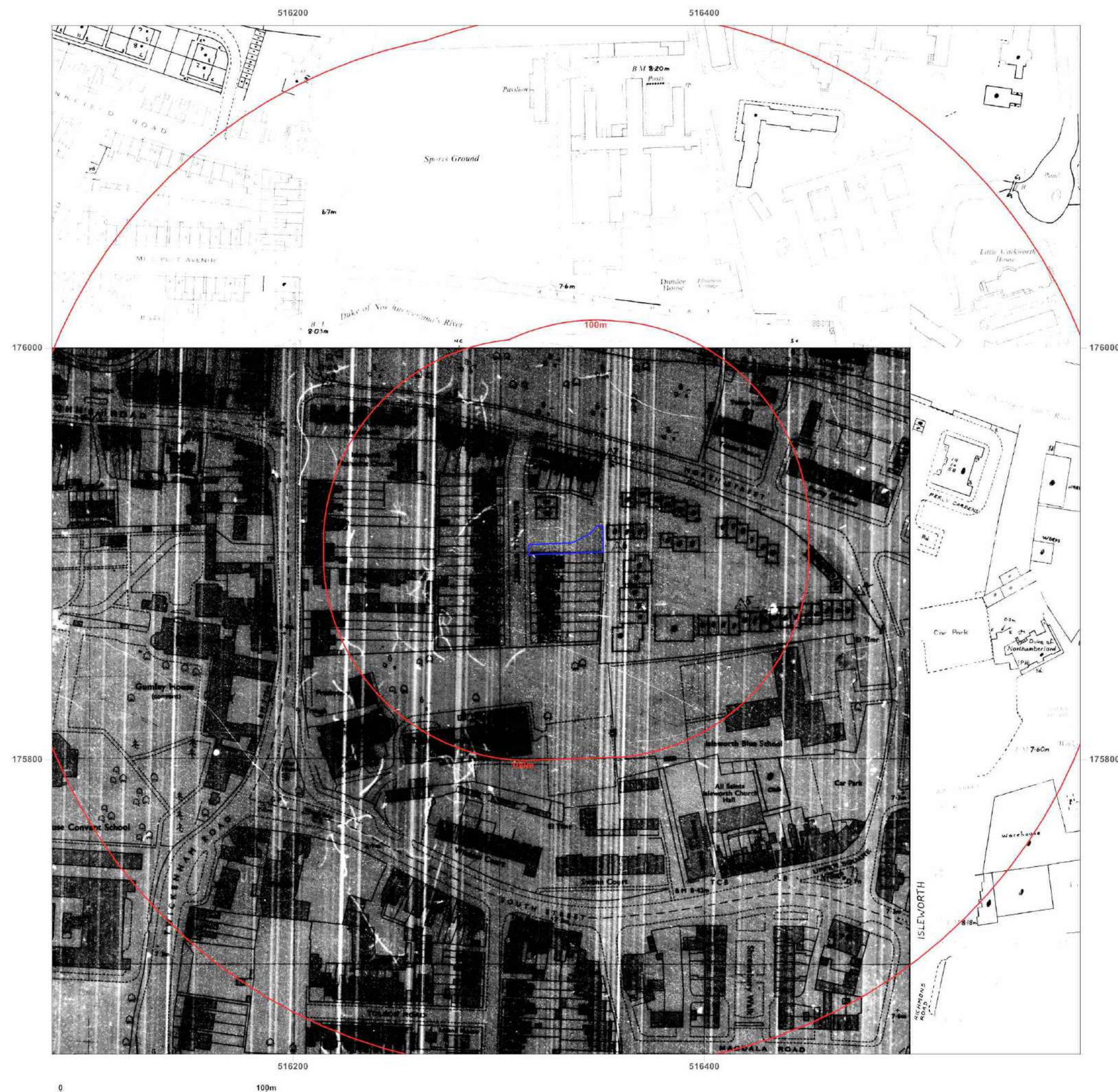


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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1987-1991

**Scale:** 1:1,250

**Printed at:** 1:2,000



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

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 Revised N/A  
 Edition N/A  
 Copyright 1987  
 Levelled 1957

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

Surveyed N/A  
 Revised N/A  
 Edition N/A  
 Copyright 1987  
 Levelled 1957

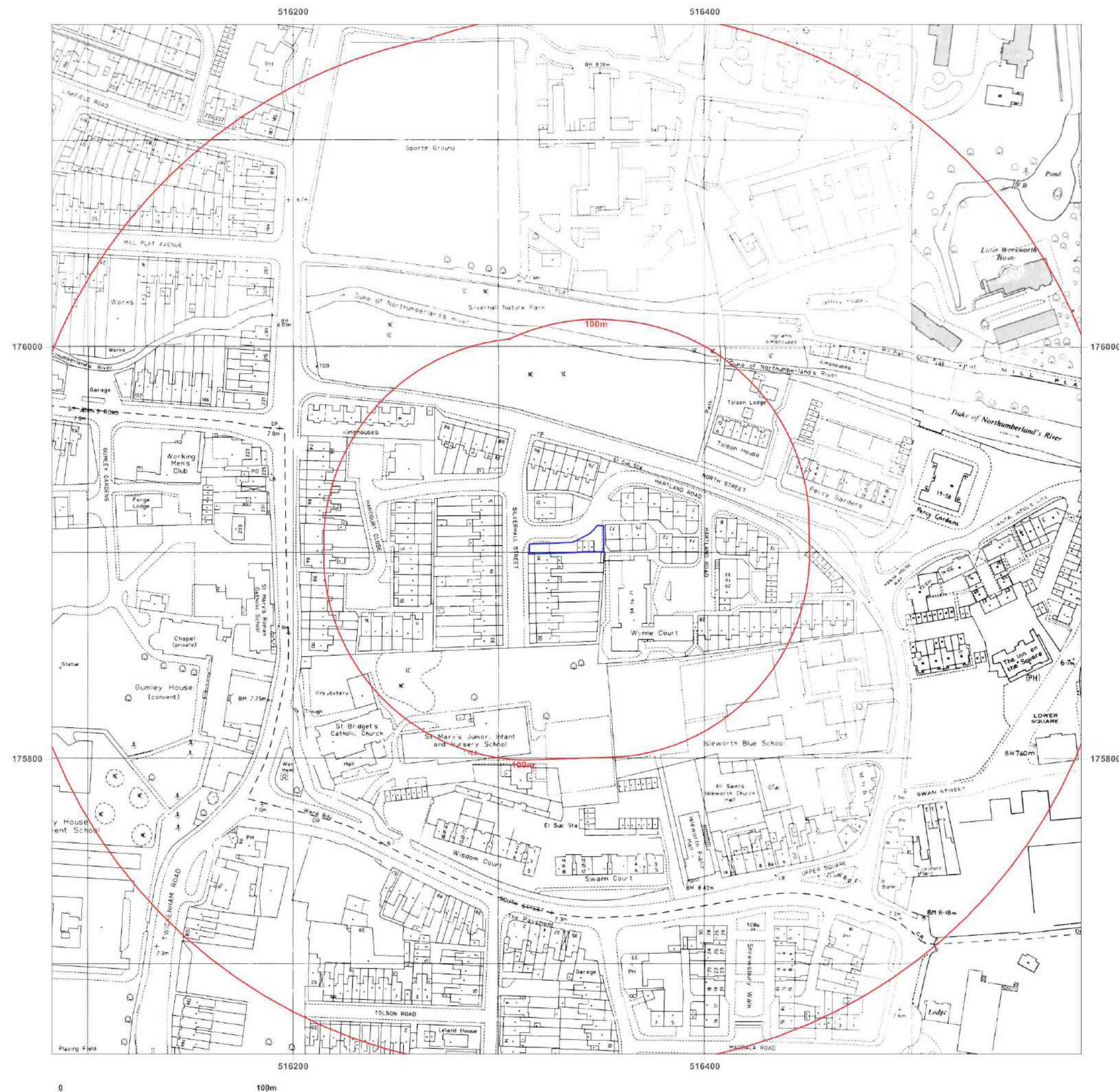


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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1989-1994

**Scale:** 1:1,250

**Printed at:** 1:2,000



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

Surveyed N/A  
 Revised N/A  
 Edition N/A  
 Copyright 1991  
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Surveyed N/A  
 Revised N/A  
 Edition N/A  
 Copyright 1994  
 Levelled N/A

Surveyed 1959  
 Revised 1989  
 Edition N/A  
 Copyright 1989  
 Levelled N/A

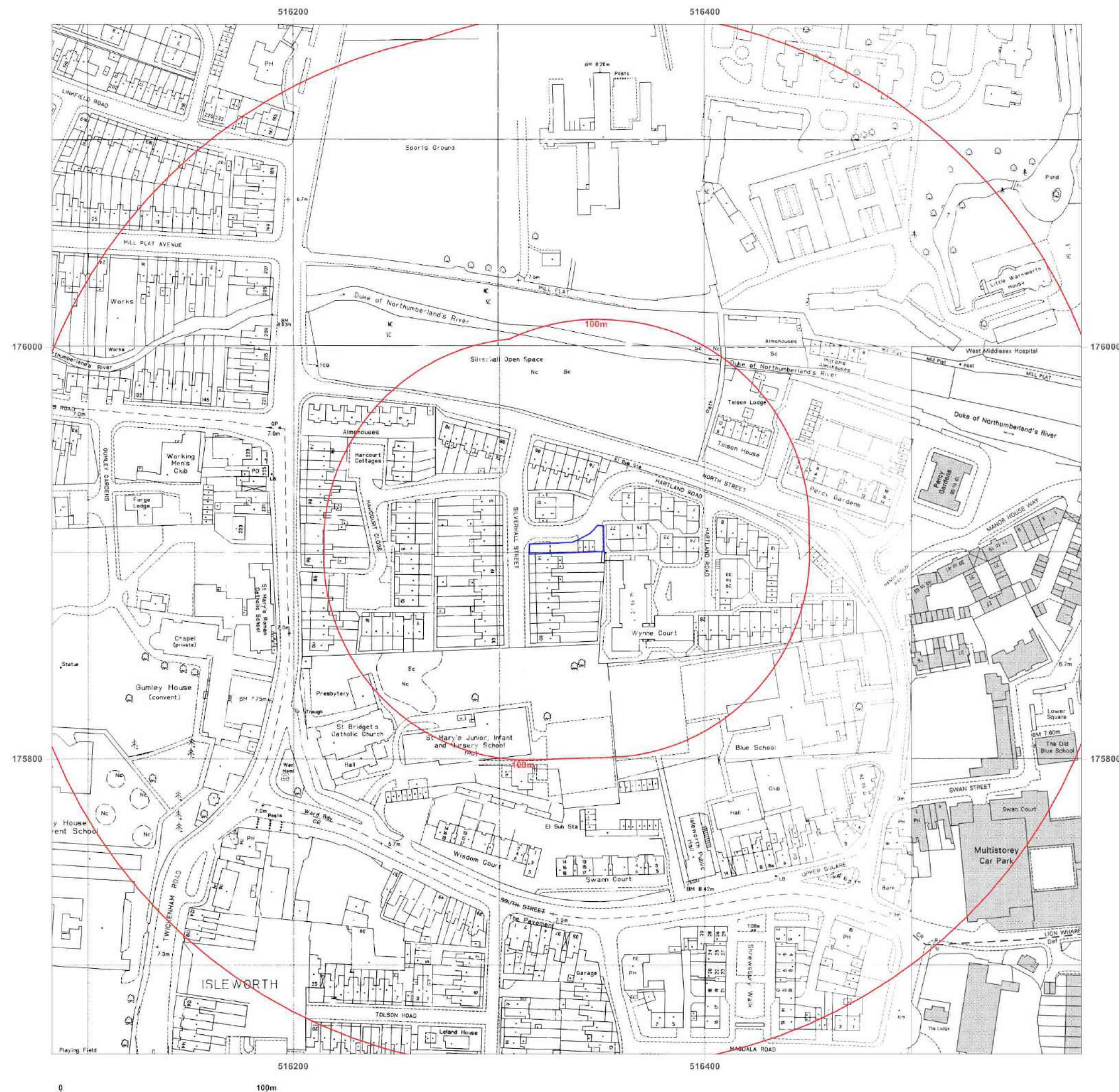


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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1991-1994

**Scale:** 1:1,250

**Printed at:** 1:2,000



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 Levelled N/A

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

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

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

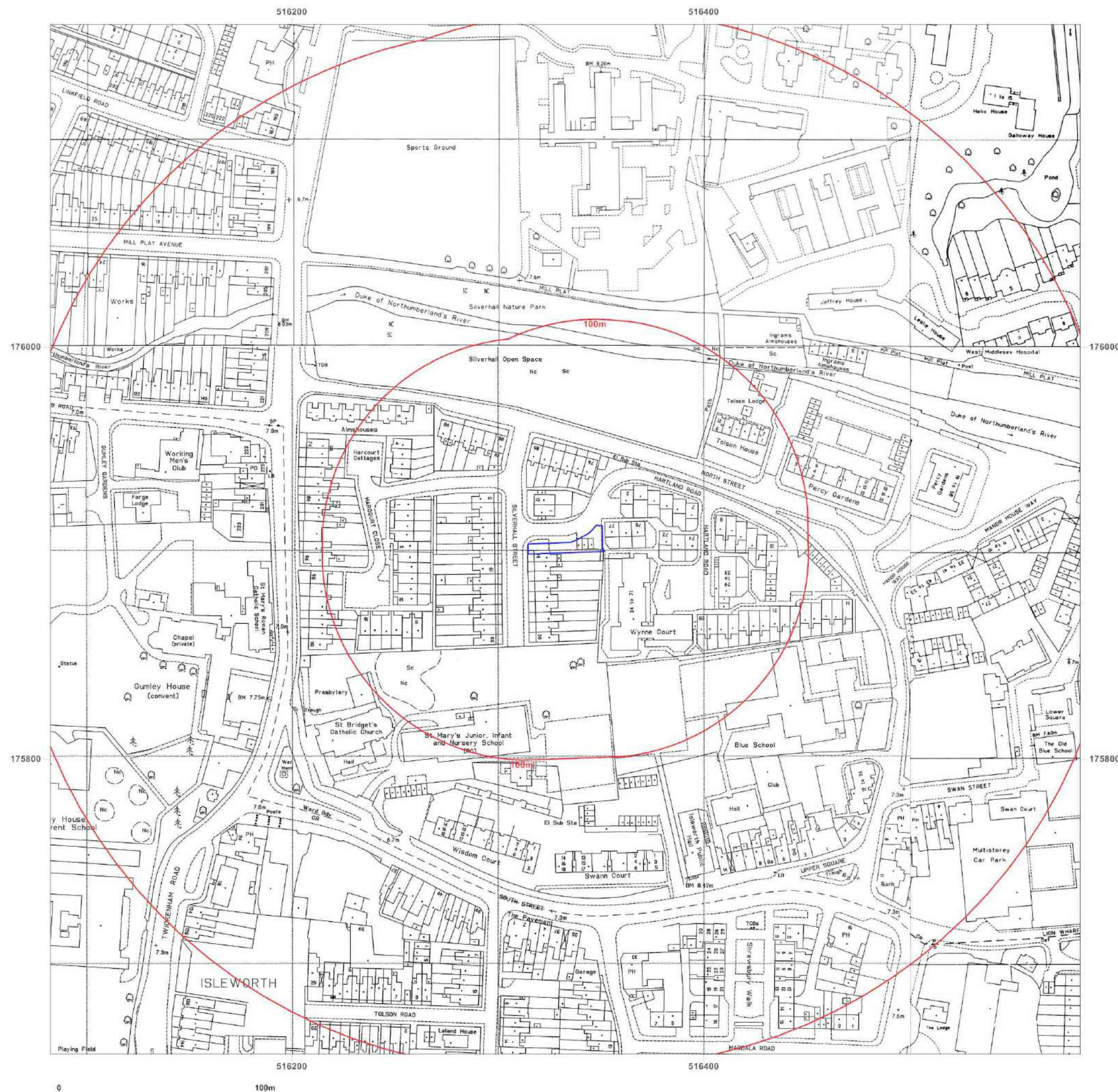


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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1993-1995

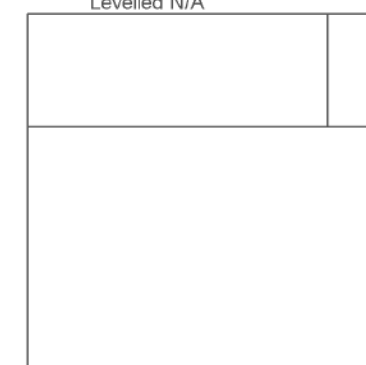
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**Printed at:** 1:2,000



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 Edition N/A  
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 Revised 1993  
 Edition N/A  
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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

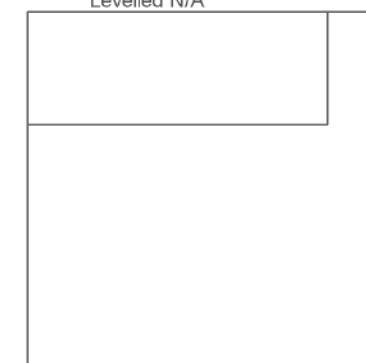
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**Scale:** 1:1,250

**Printed at:** 1:2,000



Surveyed 1995  
 Revised 1995  
 Edition N/A  
 Copyright 1995  
 Levelled N/A

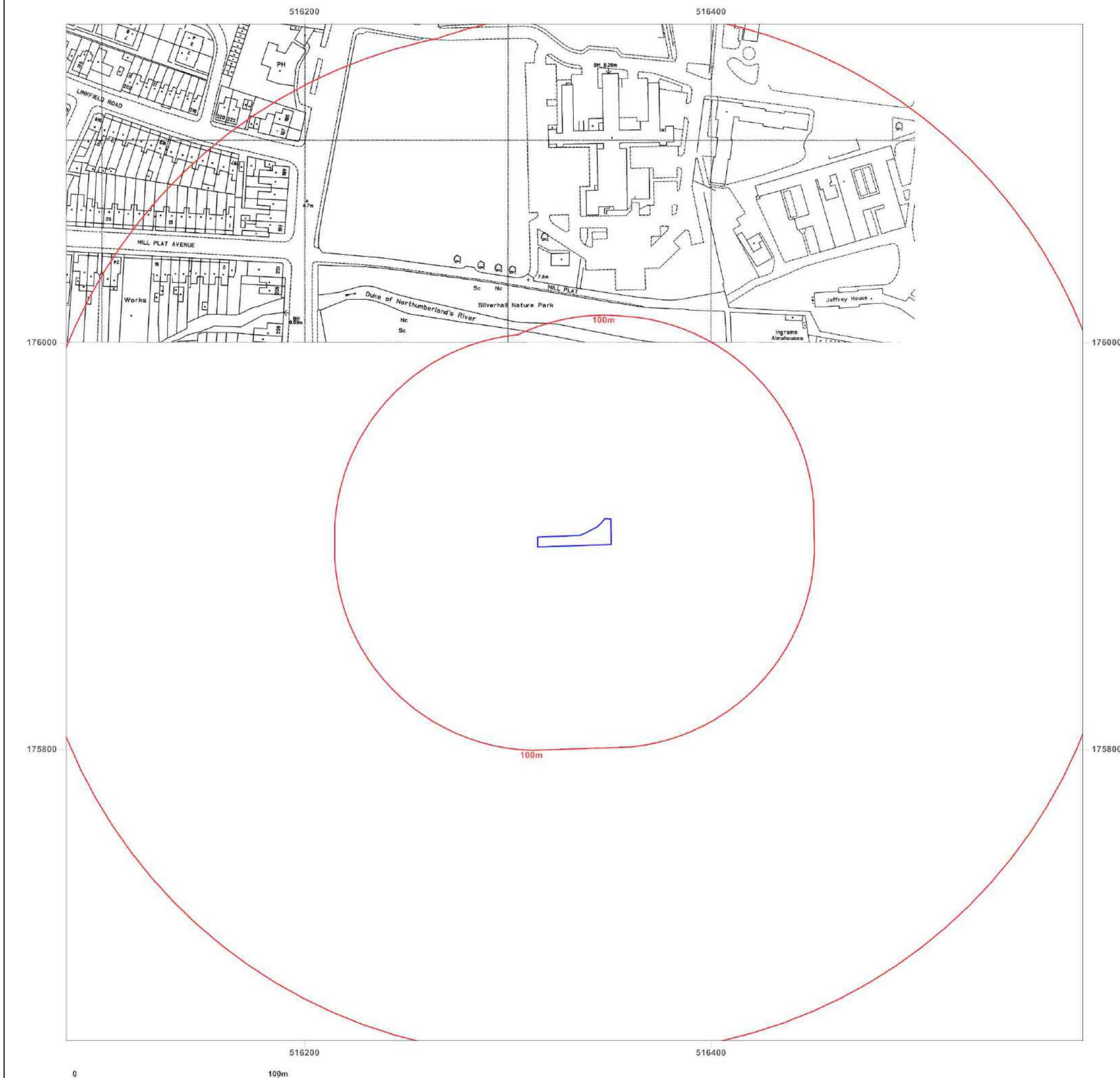


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#### Site Details:

516334, 175904

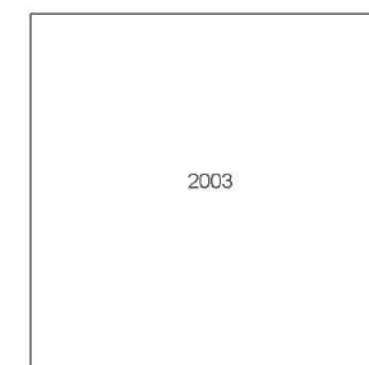
**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

**Printed at:** 1:1,250



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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1865

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1865  
Revised 1865  
Edition N/A  
Copyright N/A  
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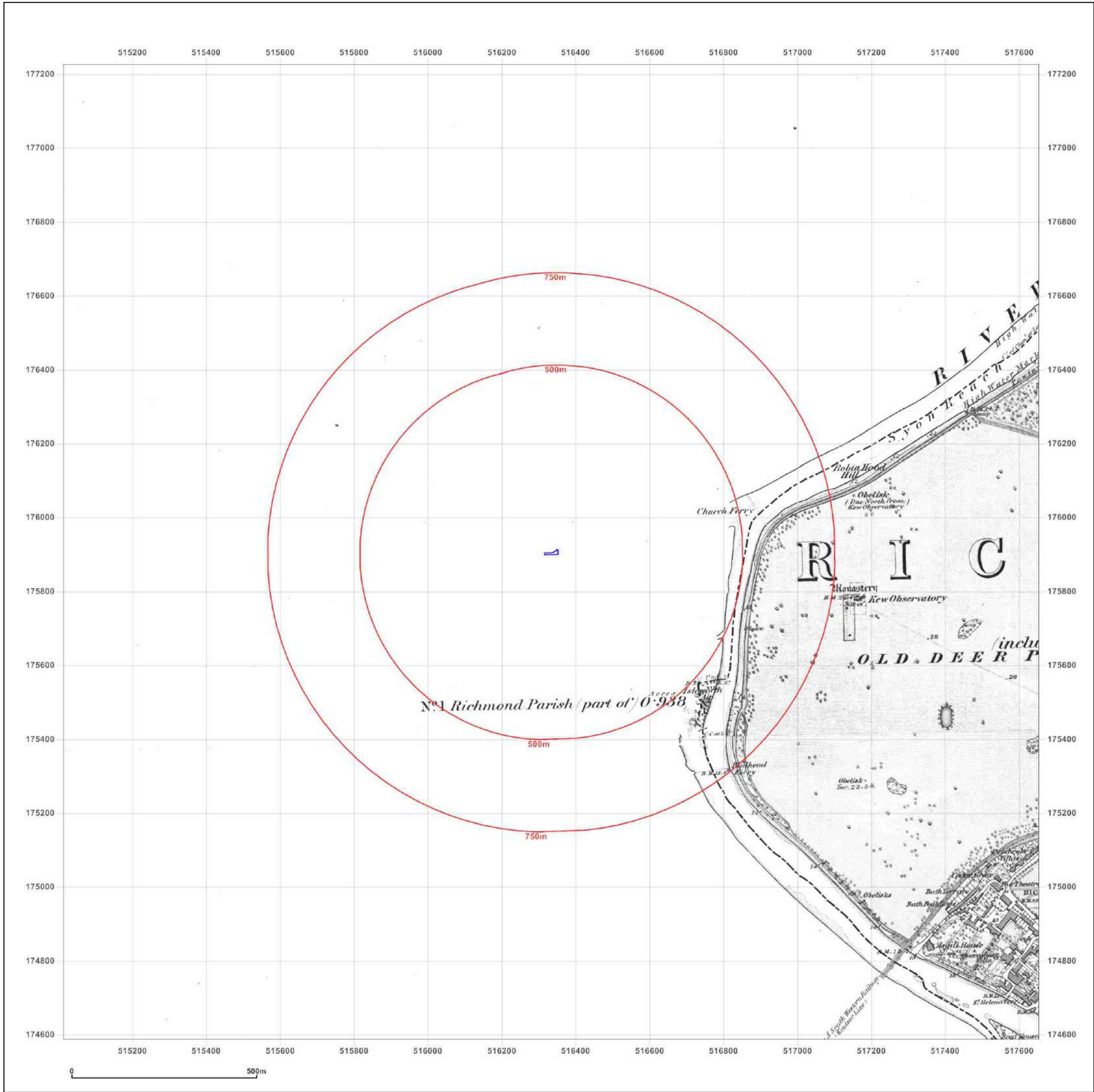
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**Site Details:**

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** County Series  
**Map date:** 1867-1868  
**Scale:** 1:10,560  
**Printed at:** 1:10,560

**Map Legend:**

Surveyed 1867  
Revised 1867  
Edition N/A  
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Surveyed 1868  
Revised 1868  
Edition N/A  
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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1894

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1894  
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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1894

Scale: 1:10,560

Printed at: 1:10,560



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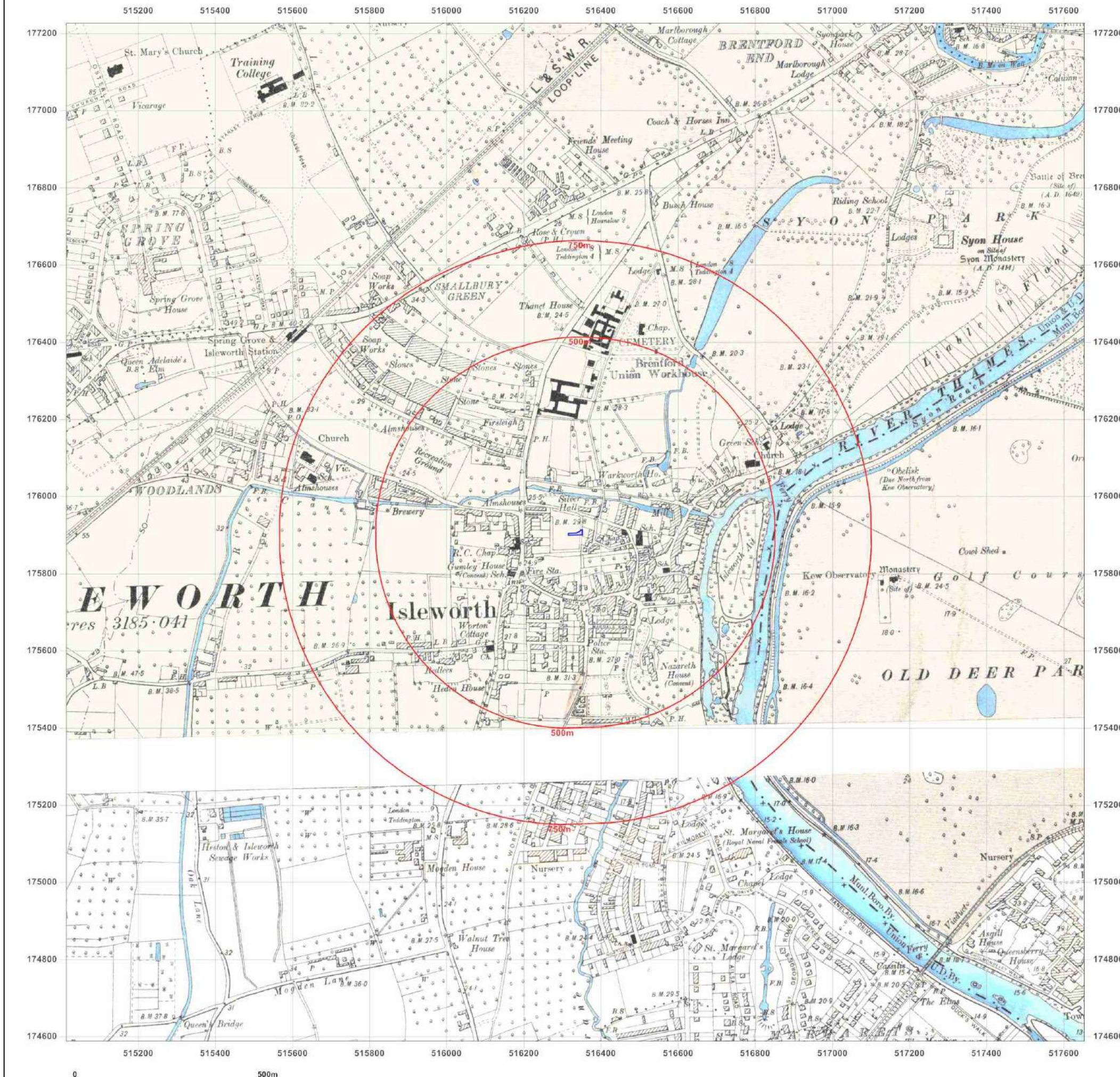


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1896

Scale: 1:10,560

Printed at: 1:10,560



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#### Site Details:

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Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1894-1898

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866  
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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1912

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866  
Revised 1912  
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Surveyed 1866  
Revised 1912  
Edition N/A  
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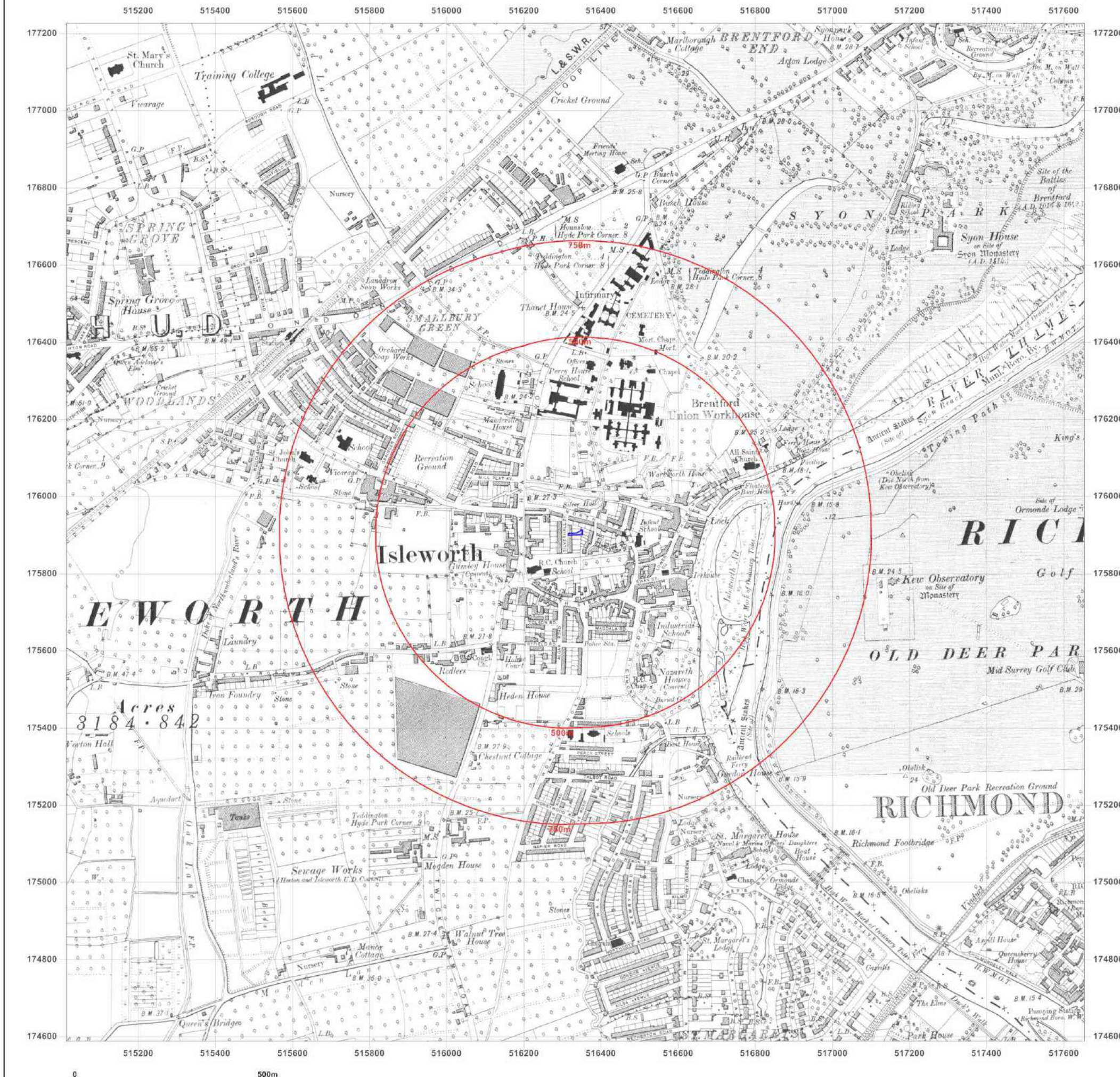


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#### Site Details:

516334, 175904

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**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** County Series

**Map date:** 1912

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1863  
 Revised 1912  
 Edition N/A  
 Copyright N/A  
 Levelled N/A

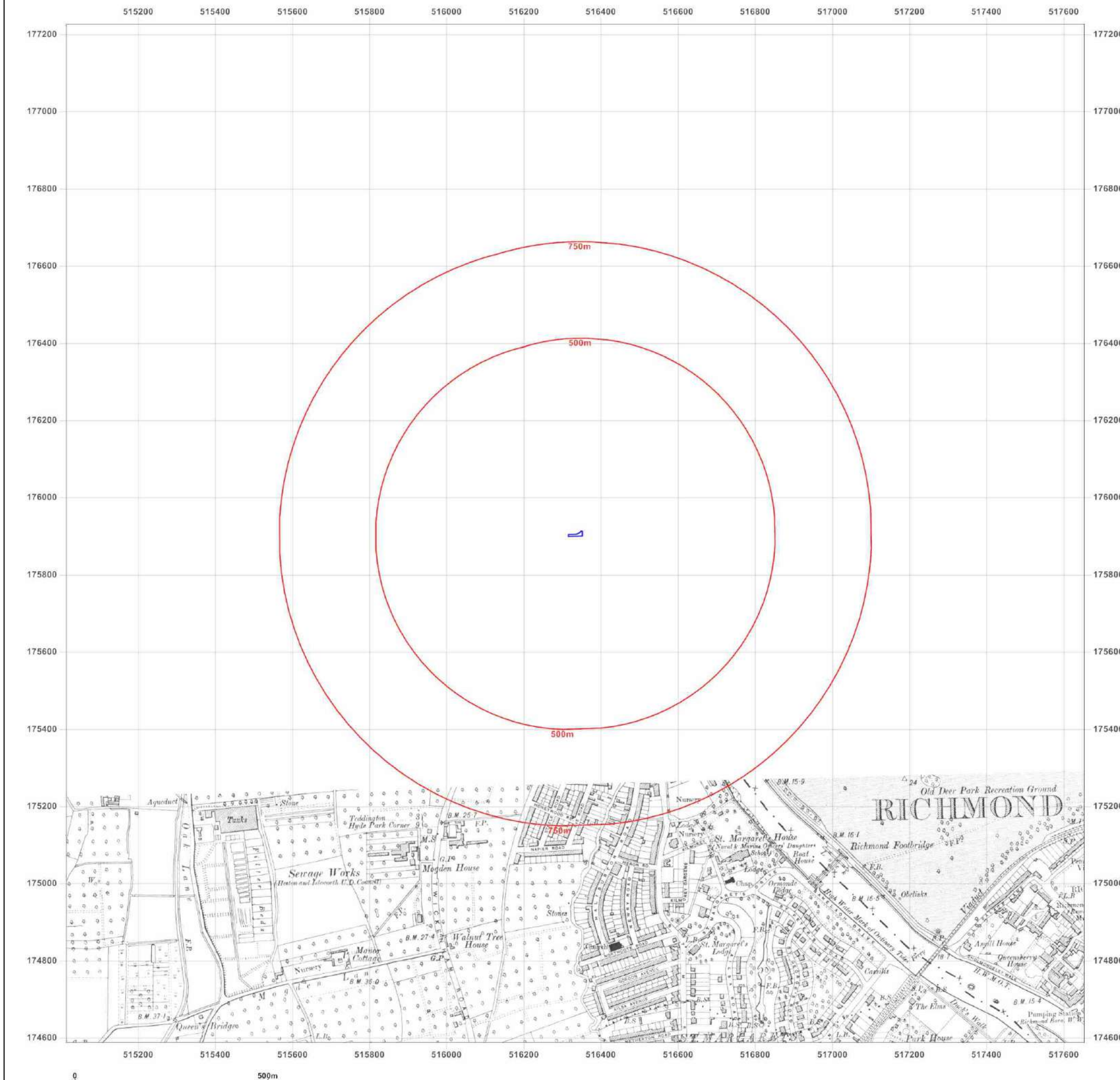


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#### Site Details:

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Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1912

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866  
Revised 1912  
Edition N/A  
Copyright N/A  
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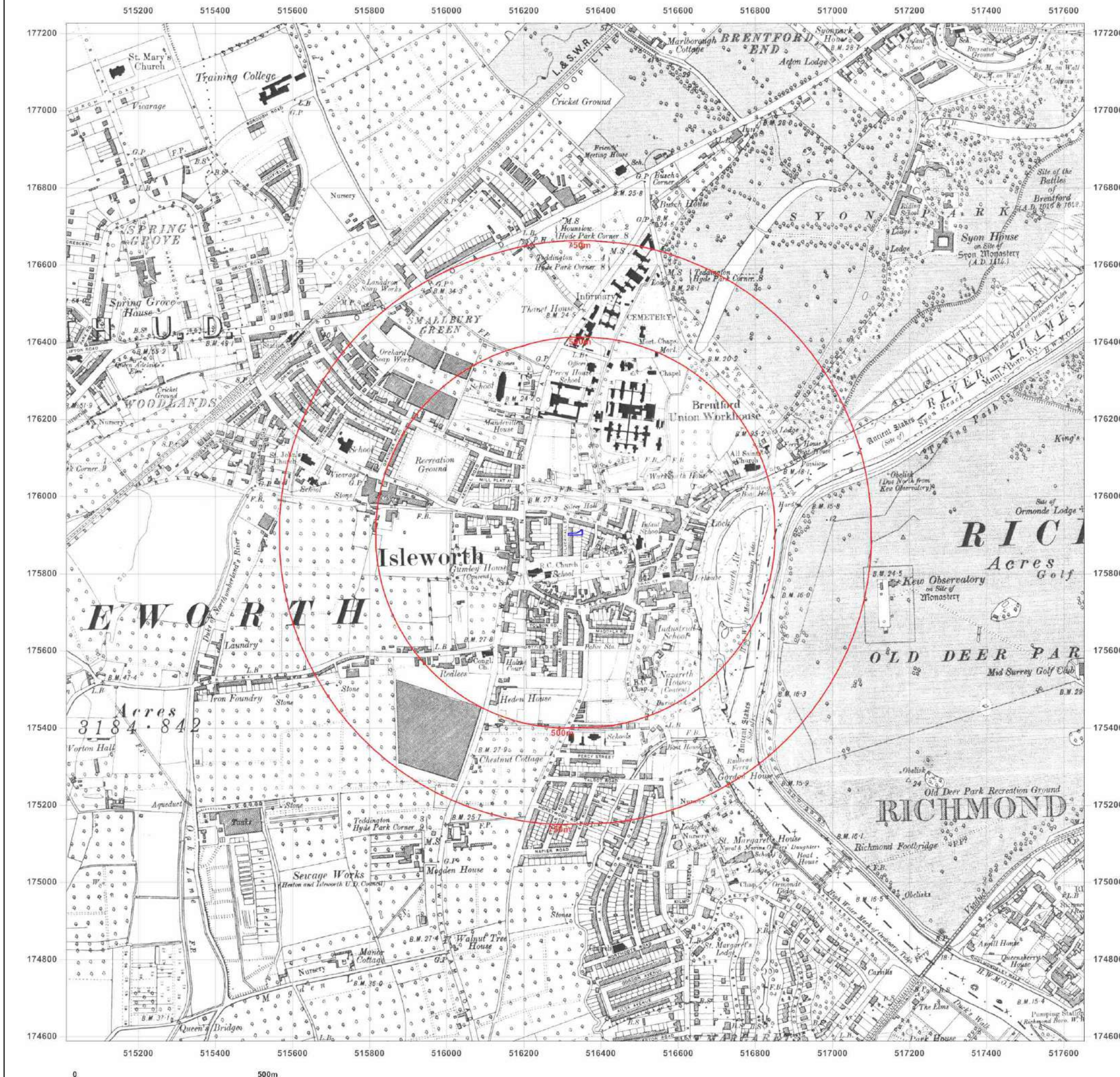


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**Site Details:**

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** County Series

**Map date:** 1920

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1866  
Revised 1911  
Edition 1920  
Copyright N/A  
Levelled 1911

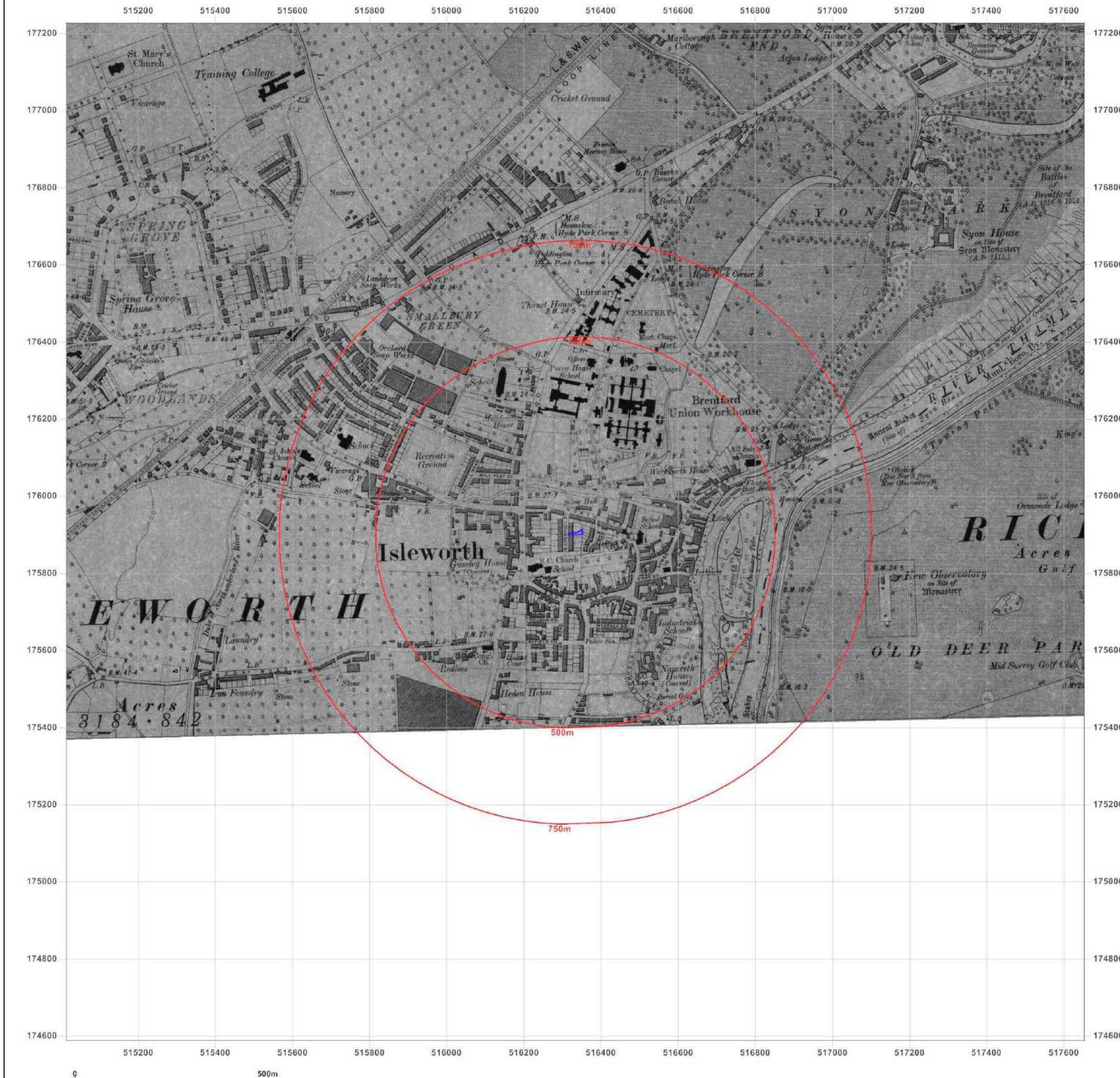


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1933

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866  
Revised 1933  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1866  
Revised 1933  
Edition N/A  
Copyright N/A  
Levelled N/A



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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** County Series

**Map date:** 1935

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1866  
 Revised 1935  
 Edition N/A  
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 Levelled N/A

Surveyed 1863  
 Revised 1935  
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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866  
Revised 1938  
Edition N/A  
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Levelled N/A

Surveyed 1866  
Revised 1938  
Edition N/A  
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Levelled 1933



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#### Site Details:

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**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** County Series

**Map date:** 1938

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1866  
 Revised 1938  
 Edition N/A  
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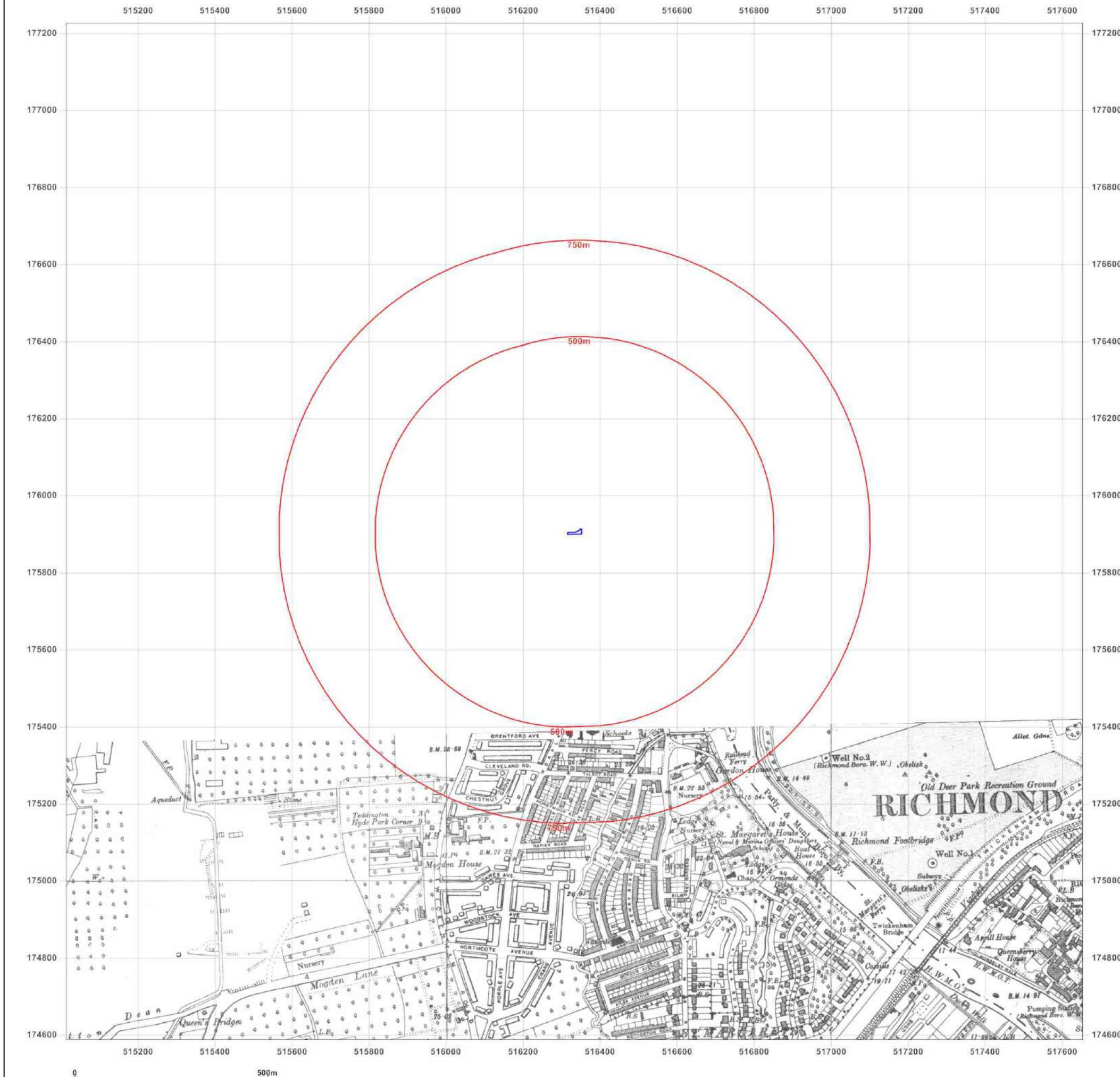


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#### Site Details:

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**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** County Series

**Map date:** 1938

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1863  
 Revised 1938  
 Edition N/A  
 Copyright N/A  
 Levelled N/A

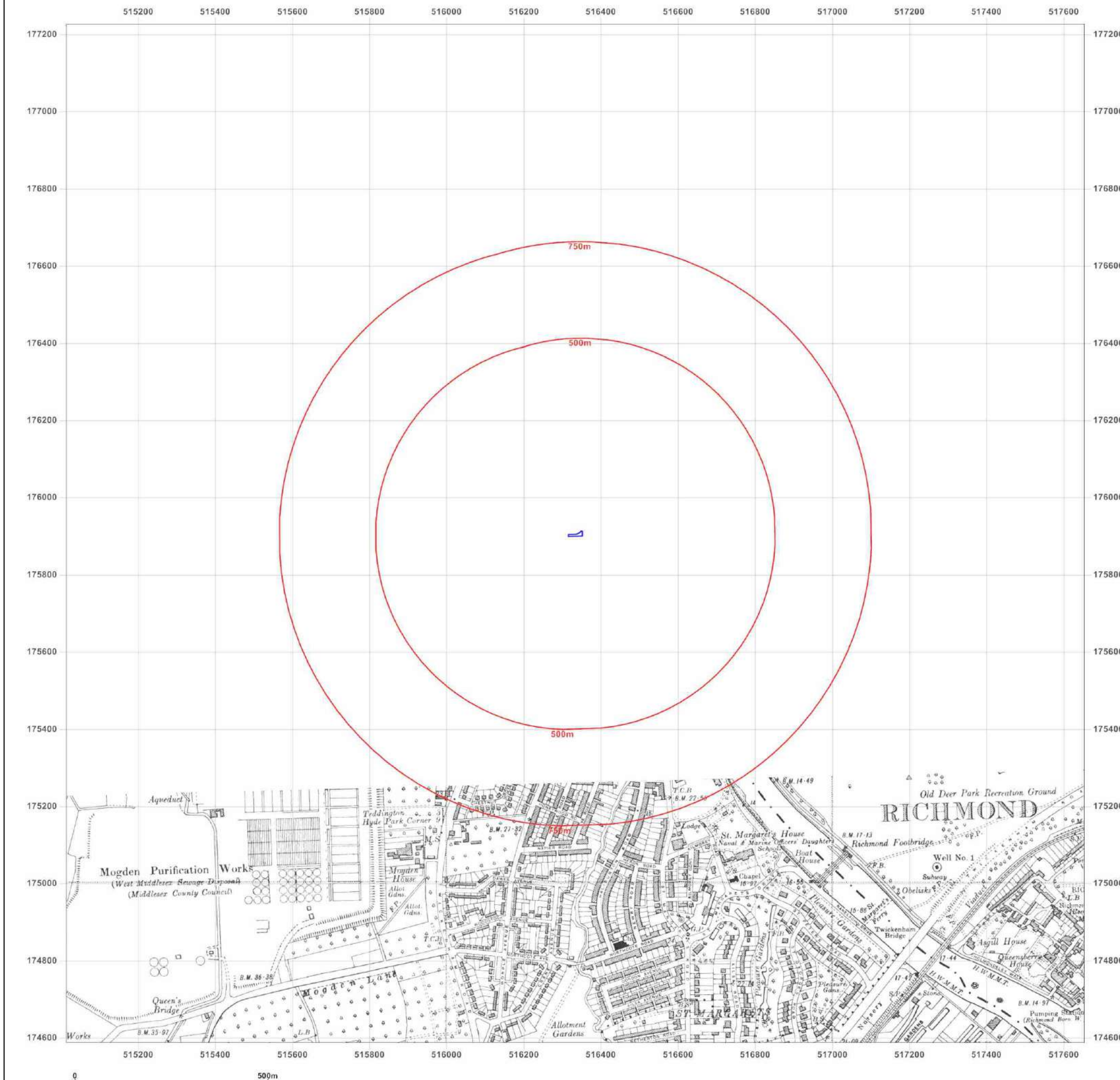


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#### Site Details:

516334, 175904

Client Ref: 14029954  
Report Ref: GS-6295979  
Grid Ref: 516333, 175907

Map Name: Provisional

Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1940  
Revised 1948  
Edition N/A  
Copyright N/A  
Levelled 1934

Surveyed 1940  
Revised 1948  
Edition N/A  
Copyright N/A  
Levelled N/A

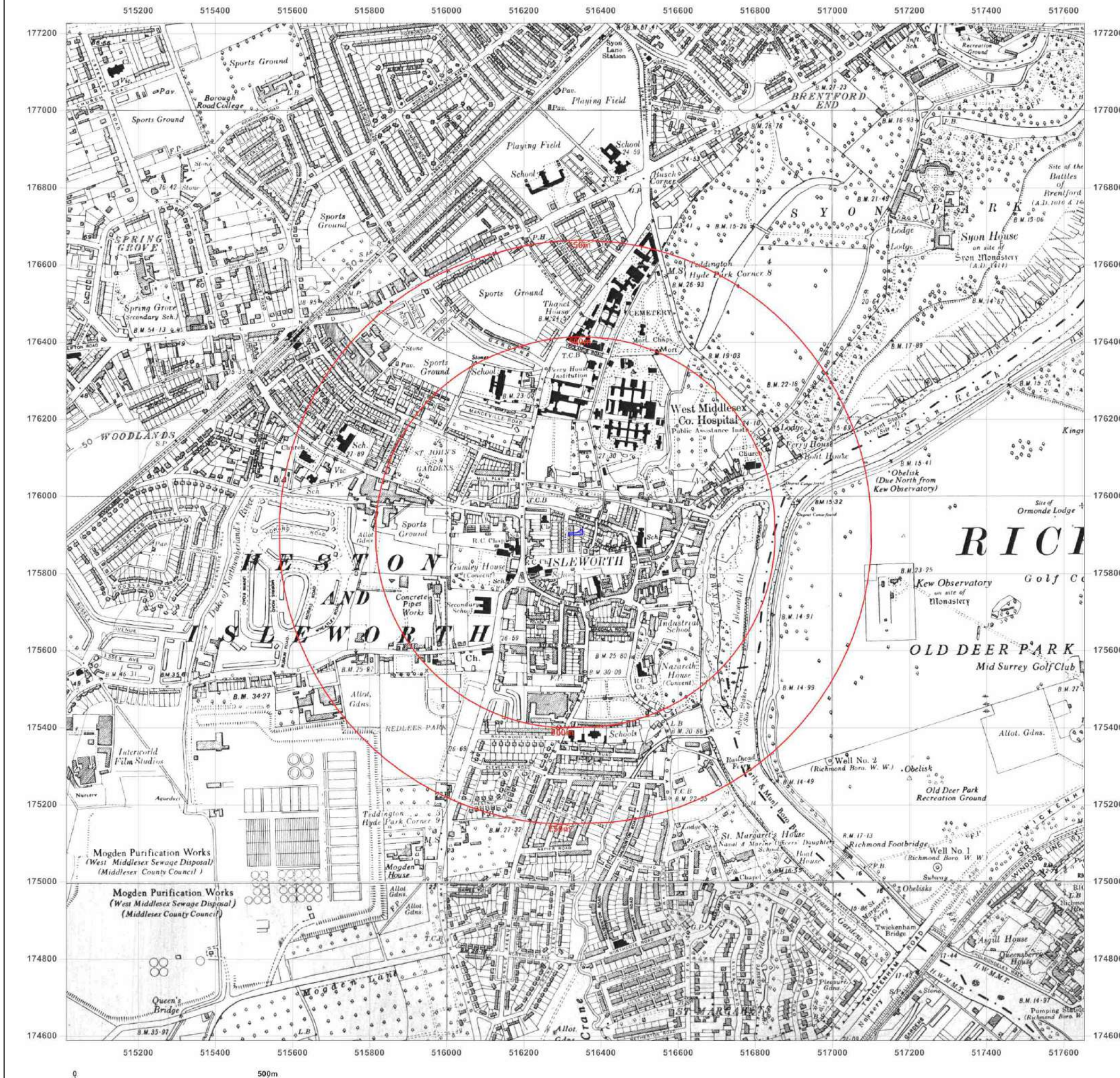


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**Map Name:** Provisional

**Map date:** 1948

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed N/A  
Revised 1948  
Edition N/A  
Copyright N/A  
Levelled 1934



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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** Provisional

**Map date:** 1961

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1940  
 Revised 1961  
 Edition N/A  
 Copyright N/A  
 Levelled N/A

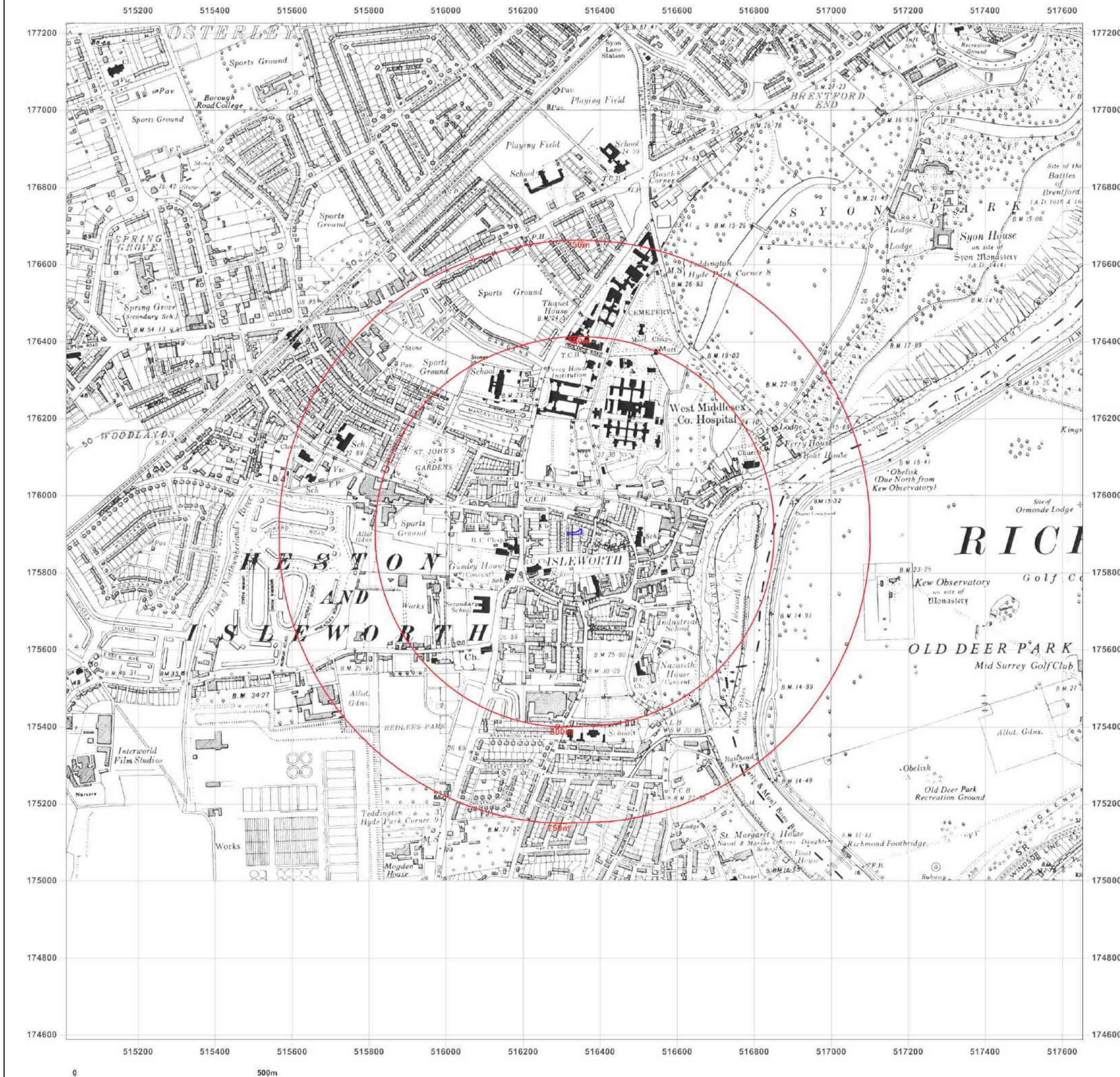


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#### Site Details:

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**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** Provisional

**Map date:** 1966

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1966  
 Revised 1966  
 Edition N/A  
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 Revised 1966  
 Edition N/A  
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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1973-1974

**Scale:** 1:10,000

**Printed at:** 1:10,000



Surveyed 1973  
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Surveyed 1973  
 Revised 1973  
 Edition N/A  
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#### Site Details:

516334, 175904

**Client Ref:** 14029954  
**Report Ref:** GS-6295979  
**Grid Ref:** 516333, 175907

**Map Name:** National Grid

**Map date:** 1987-1991

**Scale:** 1:10,000

**Printed at:** 1:10,000



Surveyed 1982  
 Revised 1987  
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Surveyed 1988  
 Revised 1991  
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#### Site Details:

516334, 175904

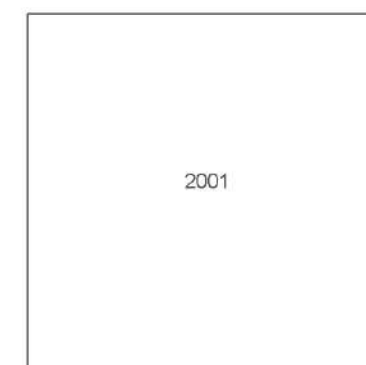
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Grid Ref: 516333, 175907

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

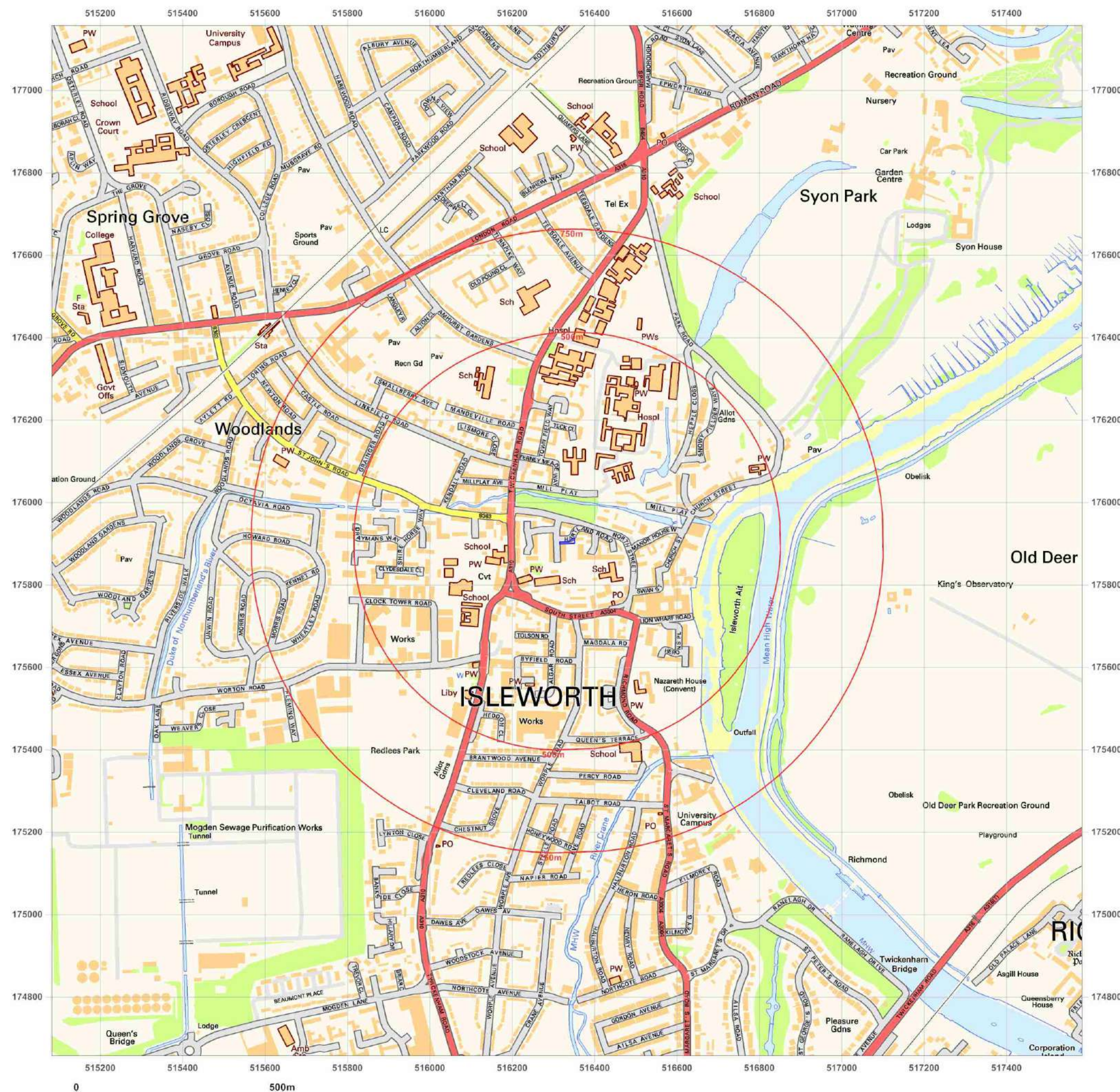


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#### Site Details:

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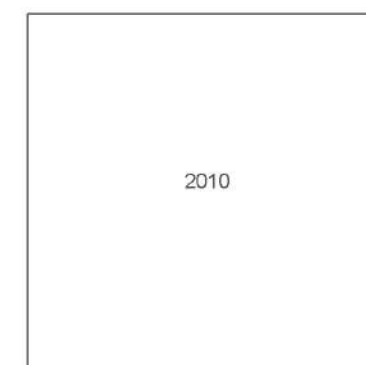
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Map Name: National Grid

Map date: 2010

Scale: 1:10,000

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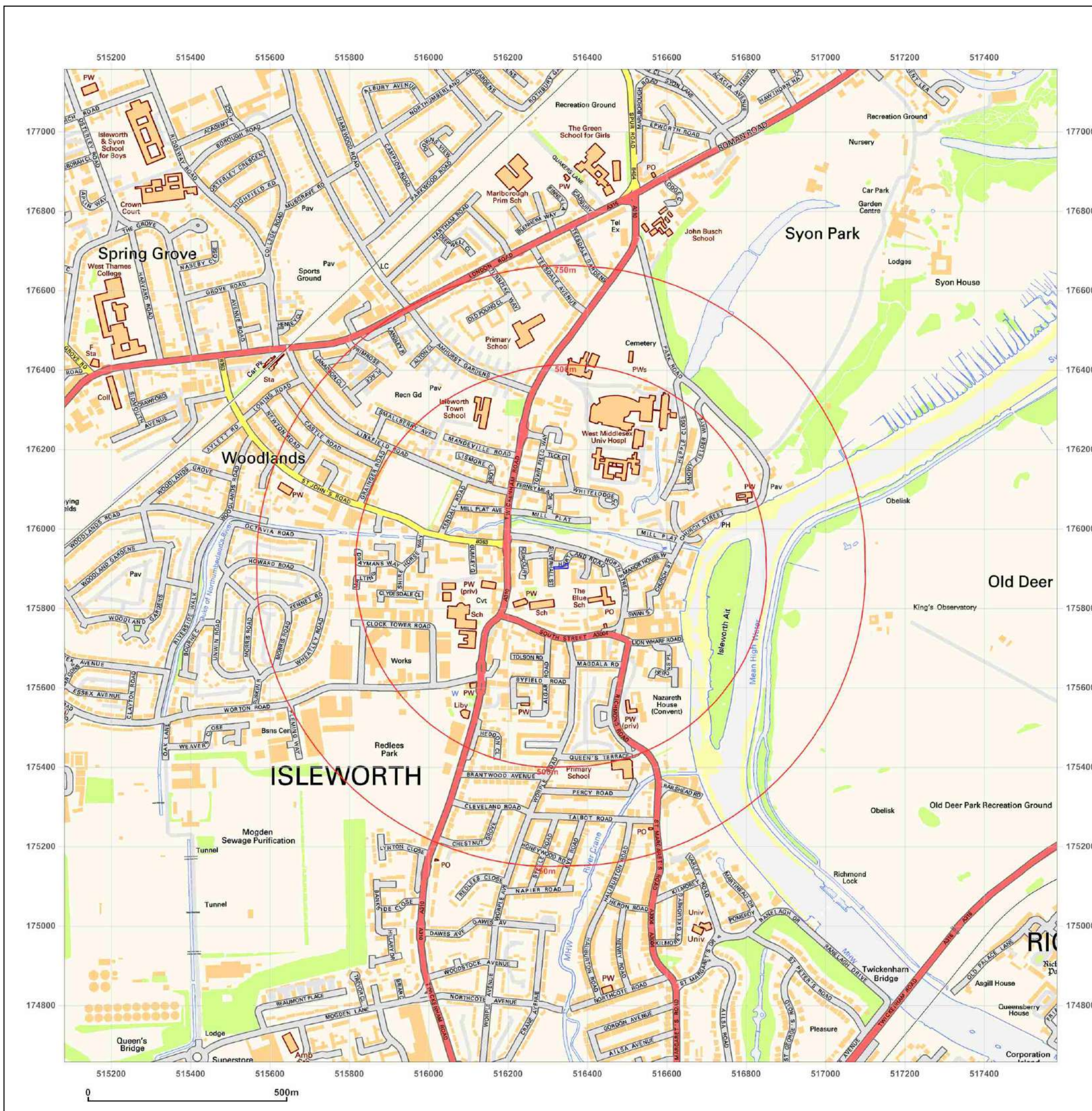


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#### Site Details:

516334, 175904

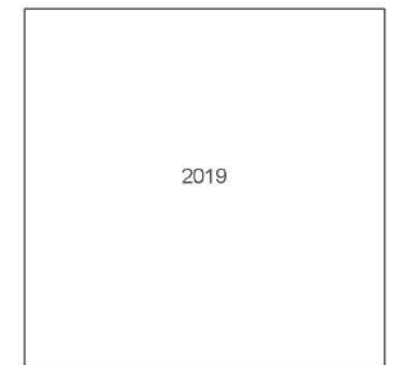
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**Map Name:** National Grid

**Map date:** 2019

**Scale:** 1:10,000

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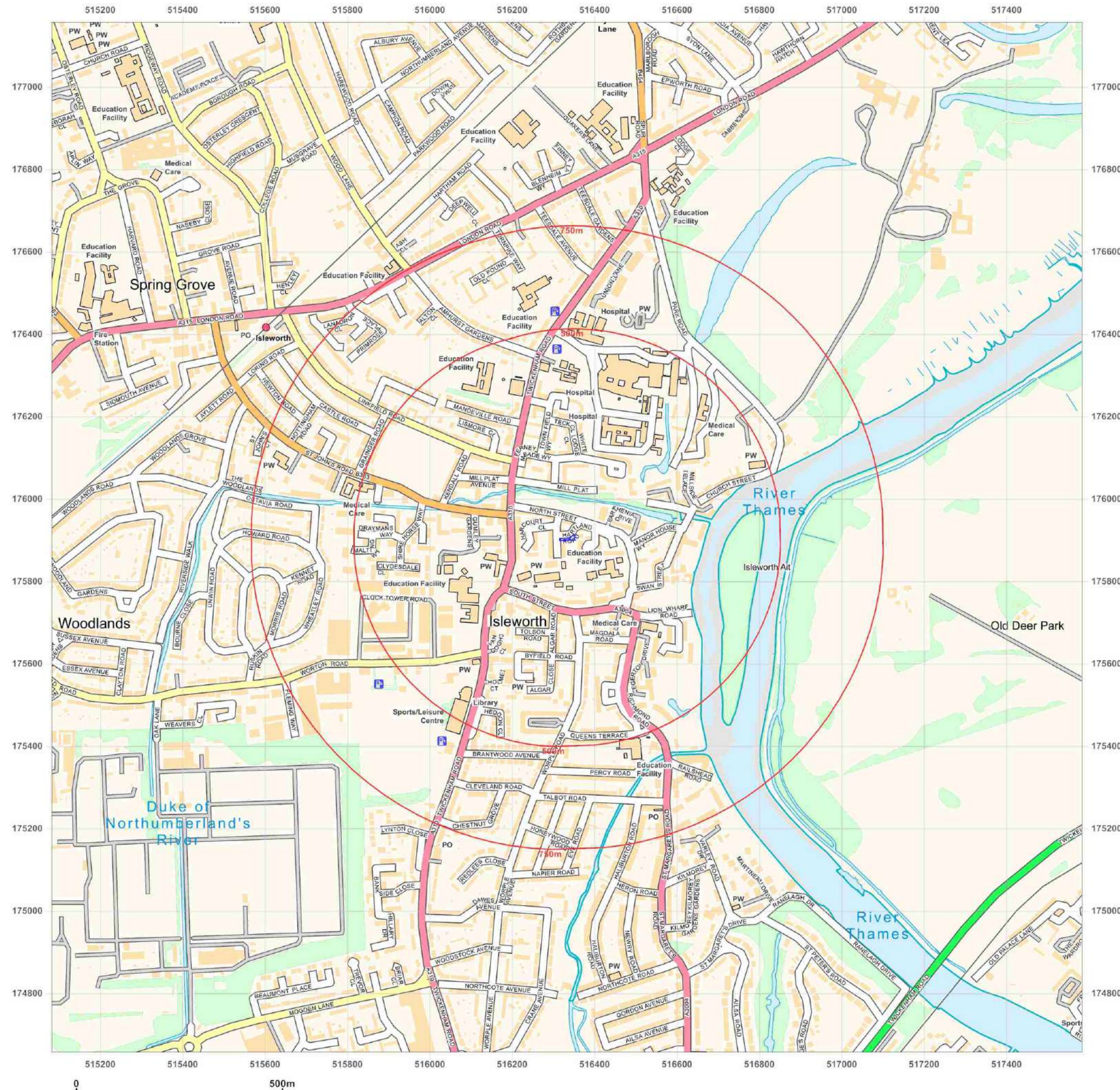


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## **APPENDIX B**

### **Groundsure Data Sheets and Site Sensitivity Maps**





Arcadis Consulting UK Ltd  
Rydon House, PYNES HILL,  
EXETER, EX2 5AZ

Groundsure Reference: GS-6295977

Your Reference: 14029954

Report Date 9 Sep 2019

Report Delivery Method: Email - pdf

## Enviro Insight

Address: 516334, 175904,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro 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 Enviroinsight



Address: 516334, 175904,  
Date: 9 Sep 2019  
Reference: GS-6295977  
Client: Arcadis Consulting UK Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2015  
Grid Reference: 516334,175904  
Site Size: 0.0239ha

Report Reference: GS-6295977  
Client Reference: 14029954



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# Overview of Findings

For further details on each dataset, please refer to each individual section in the main 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: 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	28	91
1.2 Additional Information – Historical Tank Database	0	0	0	26
1.3 Additional Information – Historical Energy Features Database	0	1	5	51
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	12	11
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	2	34
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	1
2.1.3 Records of Red List Discharge Consents	0	0	0	1
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	3
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	1	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	2
2.1.8 Records of Licensed Discharge Consents	0	0	0	8
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	4	18
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	1	0	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	0	1
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	1

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	1	13	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
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	0	14
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	7
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	2	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	2	14	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	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	1	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	1	0	0
8.8 Records of World Heritage Sites	0	0	0	1	0	1
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	Very Low
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

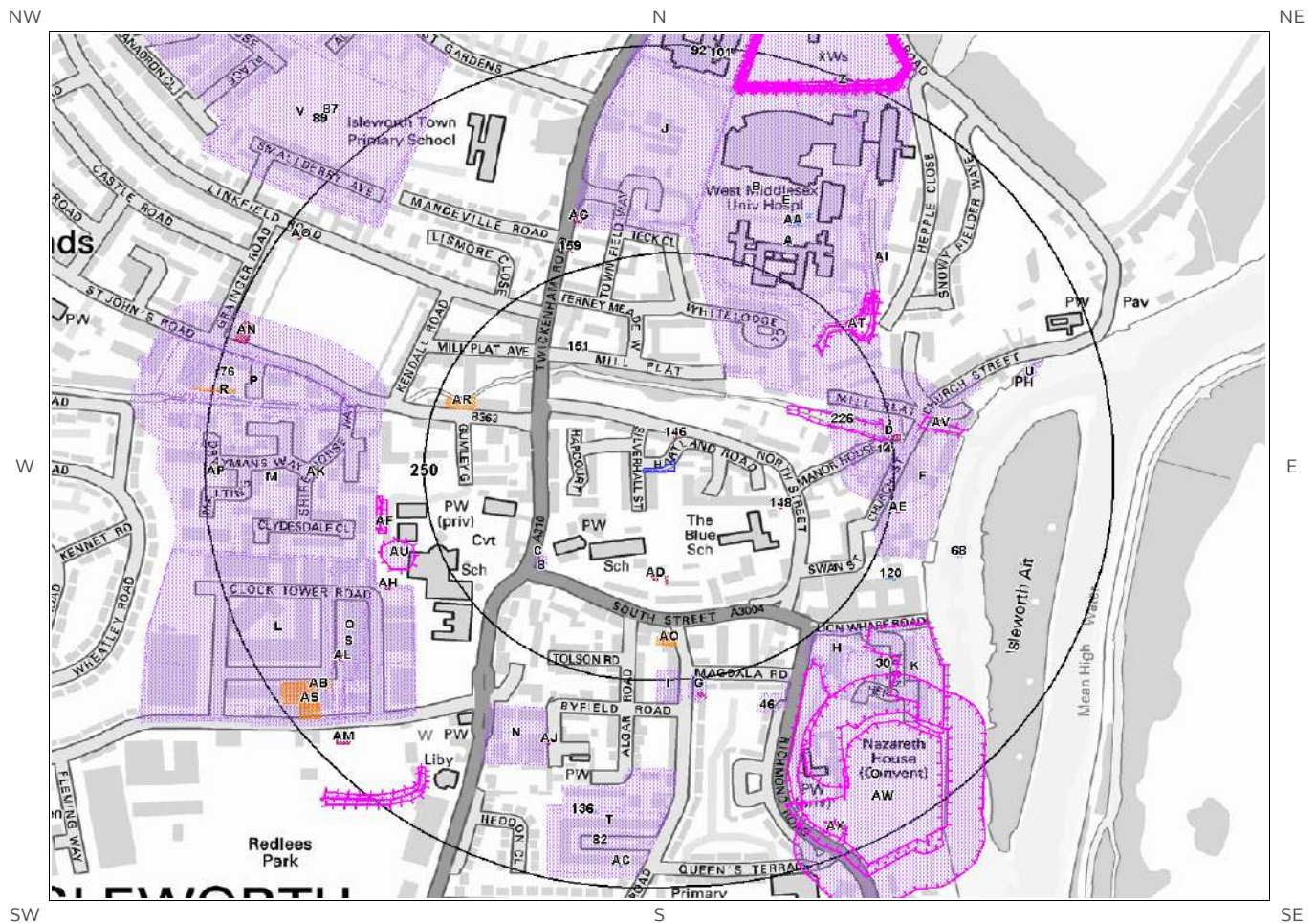
Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes 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".

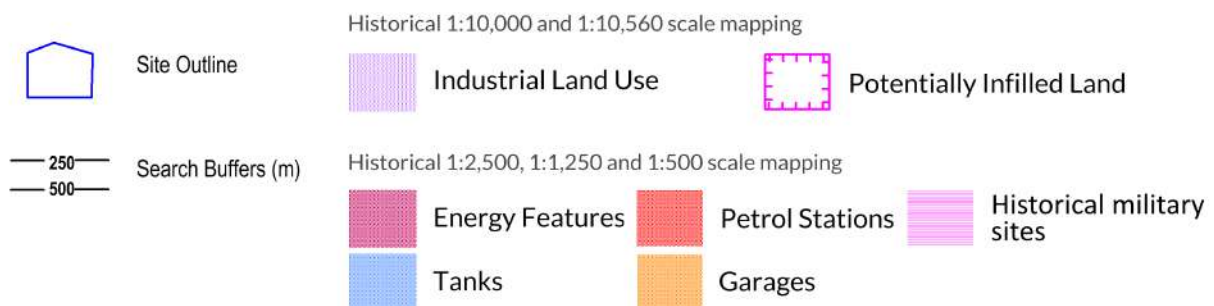
All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.



# 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: 119

ID	Distance [m]	Direction	Use	Date
1A	116	NE	Hospital	1948
2A	116	NE	Hospital	1948
3B	122	NE	Hospital	1987
4B	122	NE	Hospital	1974
5C	149	SW	Fire Station	1894
6C	149	SW	Fire Station	1894
7C	152	SW	Fire Station	1898
8	157	SW	Fire Station	1896
9E	179	N	Hospital	1935
10D	180	E	Flour Mill	1865
11D	183	E	Unspecified Mill	1894
12D	186	E	Unspecified Mill	1898
13D	190	E	Unspecified Mill	1894
14	204	E	Unspecified Mill	1896
15E	204	NE	Unspecified Workhouse	1912
16E	204	NE	Hospital	1938
17E	207	NE	Union Workhouse	1913
18E	209	NE	Unspecified Workhouse	1933
19E	211	N	Unspecified Workhouse	1912
20E	216	N	Hospital	1966
21E	216	N	Hospital	1961
22F	235	E	Unspecified Commercial/Industrial	1987
23F	235	E	Unspecified Commercial/Industrial	1974
24F	235	E	Unspecified Commercial/Industrial	1966
25I	238	S	Police Station	1894
26G	247	S	Police Station	1898
27G	248	S	Police Station	1894
28G	249	S	Police Station	1912
29H	251	SE	Industrial School	1935
30	251	SE	Industrial School	1933
31H	253	SE	Industrial School	1961
32H	253	SE	Industrial School	1912



33H	253	SE	Industrial School	1938
34H	254	SE	Industrial School	1948
35H	254	SE	Industrial School	1948
36G	254	S	Police Station	1896
37I	259	S	Police Station	1933
38J	269	N	Unspecified Workhouse	1896
39	274	SE	Police Station	1913
40J	276	N	Unspecified Workhouse	1894
41AU	277	W	Unspecified Heap	1966
42O	278	SE	Burial Ground	1933
43J	284	N	Unspecified Warehouse	1894
44K	292	SE	Unspecified Wharf	1974
45K	292	SE	Unspecified Wharf	1966
46	296	S	Police Station	1912
47L	296	SW	Concrete Pipes Works	1935
48L	296	SW	Concrete Pipes Works	1938
49L	299	SW	Unspecified Works	1974
50L	299	SW	Unspecified Works	1987
51L	299	SW	Unspecified Works	1966
52L	299	SW	Unspecified Works	1961
53L	301	SW	Works	1948
54L	301	SW	Concrete Pipes Works	1948
55M	302	W	Brewery	1987
56M	302	W	Brewery	1974
57P	304	W	Brewery	1865
58N	305	S	Unspecified Works	1974
59N	307	S	Unspecified Works	1966
60O	323	SE	Burial Ground	1912
61P	329	W	Brewery	1896
62P	329	W	Brewery	1894
63Q	332	W	Railway Sidings	1935
64Q	333	W	Railway Sidings	1938
65P	334	W	Brewery	1933
66P	335	W	Brewery	1898
67P	335	W	Brewery	1913
68	335	E	Ice House	1913
69R	336	W	Unspecified Commercial/Industrial	1961
70P	337	W	Brewery	1894
71Q	337	W	Railway Sidings	1961
72R	337	W	Brewery	1912
73S	341	W	Railway Sidings	1948
74S	341	W	Railway Sidings	1948
75M	341	W	Brewery	1966
76	354	W	Brewery	1966
77T	356	S	Unspecified Works	1987



78T	364	S	Unspecified Works	1974
79T	364	S	Unspecified Works	1966
80AW	379	SE	Burial Ground	1912
81U	409	E	Boat House	1912
82	409	S	Unspecified Commercial/Industrial	1961
83U	410	E	Boat House	1912
84U	415	E	Boat House	1913
85V	417	NW	Soap Works	1894
86U	418	E	Boat House	1933
87	420	NW	Soap Works	1912
88V	425	NW	Soap Works	1912
89	427	NW	Unspecified Commercial/Industrial	1913
90W	433	SW	Unspecified Ground Workings	1898
91W	439	SW	Unspecified Ground Workings	1896
92	449	N	Union Workhouse	1898
93Y	450	N	Infirmery	1912
94X	450	N	Cemetery	1912
95X	451	N	Cemetery	1896
96X	452	N	Cemetery	1961
97X	452	N	Cemetery	1987
98X	452	N	Cemetery	1974
99X	452	N	Cemetery	1966
100X	453	N	Cemetery	1898
101	453	N	Unspecified Workhouse	1865
102X	453	N	Cemetery	1894
103X	453	N	Cemetery	1948
104X	453	N	Cemetery	1948
105X	454	N	Cemetery	1938
106X	454	N	Cemetery	1912
107Y	456	N	Infirmery	1912
108AX	456	SE	Burial Ground	1913
109X	456	N	Cemetery	1933
110X	456	N	Cemetery	1894
111X	458	N	Cemetery	1935
112X	461	N	Cemetery	1913
113Y	462	N	Infirmery	1933
114Y	462	N	Infirmery	1913
115Z	484	NE	Mortuary	1912
116Z	488	NE	Mortuary	1948
117Z	488	NE	Mortuary	1948
118Z	493	NE	Mortuary	1935
119Z	496	N	Mortuary	1913



## 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:

26

ID	Distance (m)	Direction	Use	Date
120	270	SE	Tanks	1865
121AA	311	NE	Tanks	1935
122AA	314	NE	Unspecified Tank	1960
123AA	314	NE	Tanks	1959
124AA	315	NE	Unspecified Tank	1959
125AA	315	NE	Unspecified Tank	1959
126AA	315	NE	Unspecified Tank	1960
127AA	315	NE	Tanks	1959
128AA	316	NE	Tanks	1960
129AA	316	NE	Tanks	1959
130AA	316	NE	Unspecified Tank	1959
131AA	320	NE	Tanks	1959
132AA	320	NE	Tanks	1960
133AA	320	NE	Tanks	1959
134AA	329	NE	Unspecified Tank	1993
135T	412	S	Unspecified Tank	1935
136	414	S	Unspecified Tank	1935
137AB	450	SW	Unspecified Tank	1986
138AB	450	SW	Unspecified Tank	1986
139AB	451	SW	Unspecified Tank	1997
140AB	451	SW	Unspecified Tank	1995
141AC	470	S	Unspecified Tank	1960
142AC	470	S	Unspecified Tank	1959
143AC	470	S	Unspecified Tank	1959
144AC	470	S	Unspecified Tank	1994
145P	472	W	Unspecified Tank	1935

## 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:

57

ID	Distance (m)	Direction	Use	Date
----	--------------	-----------	-----	------



146	27	N	Electricity Substation	1994
147AD	120	S	Electricity Transformer	1970
148	125	E	Electricity Transformer	1970
149AD	126	S	Electricity Substation	1994
150AD	126	S	Electricity Substation	1997
151	157	NW	Electricity Substation	1997
152D	252	E	Electricity Substation	1989
153D	252	E	Electricity Substation	1991
154AE	255	E	Electricity Substation	1989
155AE	255	E	Electricity Substation	1991
156G	267	S	Electricity Substation	1970
157G	272	S	Electricity Substation	1997
158G	272	S	Electricity Substation	1994
159	273	N	Electricity Substation	1997
160AF	300	W	Electricity Substation	1994
161AF	300	W	Electricity Substation	1997
162AG	302	N	Electricity Substation	1995
163AG	302	N	Electricity Substation	1996
164AG	303	N	Electricity Substation	1991
165AG	304	N	Electricity Substation	1991
166AH	319	SW	Electricity Transformer	1970
167AH	319	SW	Electricity Substation	1994
168AH	319	SW	Electricity Substation	1997
169AI	334	NE	Electricity Substation	1987
170AI	334	NE	Electricity Substation	1993
171AI	334	NE	Electricity Substation	1970
172AJ	338	S	Electricity Transformer	1994
173AJ	339	S	Electricity Substation	1997
174AJ	339	S	Electricity Substation	1997
175AK	372	W	Electricity Substation	1995
176AK	372	W	Electricity Substation	1986
177S	407	SW	Electricity Substation	1986
178S	407	SW	Electricity Substation	1977
179S	407	SW	Electricity Substation	1997
180AL	408	SW	Electricity Substation	1995
181AL	408	SW	Electricity Substation	1977
182AM	461	SW	Electricity Substation	1986
183AM	461	SW	Electricity Substation	1986
184AM	461	SW	Electricity Substation	1997
185AM	461	SW	Electricity Substation	1995
186AM	461	SW	Electricity Substation	1981
187AN	475	W	Electricity Substation	1972
188AN	476	W	Electricity Substation	1991
189AN	477	W	Electricity Substation	1997
190AN	477	W	Electricity Substation	1981
191AN	477	W	Electricity Substation	1972



192AN	477	W	Electricity Substation	1991
193AN	477	W	Electricity Substation	1997
194AO	479	NW	Electricity Substation	1997
195AO	479	NW	Electricity Substation	1995
196AO	480	NW	Electricity Substation	
197AO	480	NW	Electricity Substation	
198AO	480	NW	Electricity Substation	
199AO	480	NW	Electricity Substation	
200AO	480	NW	Electricity Substation	
201AP	486	W	Electricity Substation	
202AP	486	W	Electricity Substation	

#### 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: 23

ID	Distance (m)	Direction	Use	Date
203AQ	193	S	Garage	1960
204AQ	193	S	Garage	1960
205AQ	193	S	Garage	1970
206AQ	193	S	Garage	1959
207AQ	193	S	Garage	1959
208AQ	193	S	Garage	1994
209AQ	193	S	Garage	1997
210AR	205	W	Garage	1970
211AR	223	W	Garage	1960
212AR	223	W	Garage	1960
213AR	224	W	Garage	1959
214AR	224	W	Garage	1959
215AB	436	SW	Garage	1977
216AB	450	SW	Garage	1986
217AB	450	SW	Garage	1986



218AS	450	SW	Garage	1995
219AS	450	SW	Garage	1997
220AS	463	SW	Garage	1962
221AS	464	SW	Garage	1962
222AS	464	SW	Garage	1962
223R	474	W	Garage	1986
224R	474	W	Garage	1986
225R	475	W	Garage	1977

## 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: 36

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

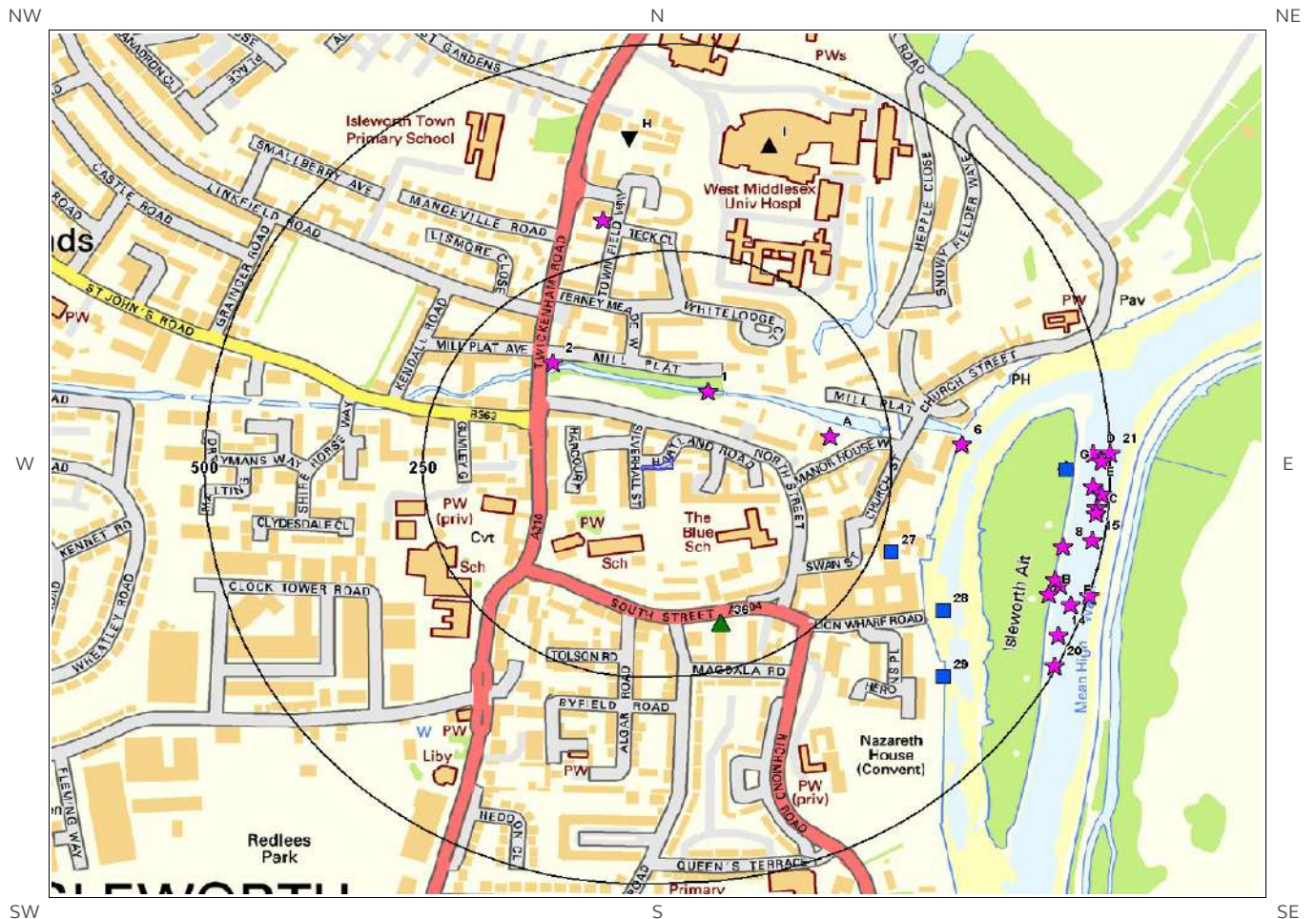
ID	Distance(m)	Direction	Use	Date
226	140	NE	Pond	1865
227AT	211	NE	Pond	1894
228AT	255	NE	Pond	1894
229AT	255	NE	Pond	1933
230AT	256	NE	Pond	1974
231AT	256	NE	Pond	1987
232AU	277	W	Unspecified Heap	1966
233O	278	SE	Burial Ground	1933
234AV	282	E	Pond	1933
235AV	282	E	Pond	1894
236K	292	SE	Unspecified Wharf	1974
237K	292	SE	Unspecified Wharf	1966
238AF	294	W	Pond	1894
239AF	299	W	Pond	1894
240AF	299	W	Pond	1933
241AW	323	SE	Burial Ground	1912
242AW	379	SE	Burial Ground	1912
243W	433	SW	Unspecified Ground Workings	1898
















244W	439	SW	Unspecified Ground Workings	1896
245X	450	N	Cemetery	1912
246X	451	N	Cemetery	1896
247X	452	N	Cemetery	1987
248X	452	N	Cemetery	1966
249X	452	N	Cemetery	1974
250X	452	N	Cemetery	1961
251X	453	N	Cemetery	1898
252X	453	N	Cemetery	1894
253X	453	N	Cemetery	1948
254X	453	N	Cemetery	1948
255X	454	N	Cemetery	1938
256X	454	N	Cemetery	1912
257AX	456	SE	Burial Ground	1913
258X	456	N	Cemetery	1933
259X	456	N	Cemetery	1894
260X	458	N	Cemetery	1935
261X	461	N	Cemetery	1913



## 2. Environmental Permits, Incidents and Registers Map



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- |   |   |  |
|---|---|--|
|  Site Outline                  |  Recorded Pollution Incident                   |  RAS 3 & 4 Authorisations                                       |
|  Dangerous Substances (List 1) |  Dangerous Substances (List 2)                 |  Part A(1) Authorised Processes and Historic IPC Authorisations |
|  Water Industry Referrals      |  Licenced Discharge Consents                   |  Part A(2) and Part B Authorised Processes                      |
|  Red List Discharge Consents   |  COMAH / NIHHS Sites                           |  Sites Determined as Contaminated Land                          |
|   |  Hazardous Substance Consents and Enforcements |  |



## 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:

1

The following Part A(1) and IPPC Authorised Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
39I	392	N	516460 176290	Operator: CHELSEA AND WESTMINSTER HOSPITAL NHS FOUNDATION TRUST Installation Name: WEST MIDDLESEX UNIVERSITY HOSPITAL Process: NEW MEDIUM COMBUSTION PLANT Permit Number: CP3532QV Original Permit Number: CP3532QV EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 2019-08-01 Status: DETERMINATION

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

1

The following Red List Discharge Consent records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
26G	449	E	516800 175900	Address: THAMES WATER UTILITIES LIMITED., MOGDEN STW, ISLEWORTH, MIDDX, MOGDEN STW, ISLEWORTH, MIDDX Permit Number: CNTD.0085 Permit Version: 3 Status: VARIED BY APPLICATION - Discharge Type: Sewage Disposal Works - water company Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Catchment: - Approval Date: 01-Aug-2001



ID	Distance (m)	Direction	NGR	Details
(WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995)				

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

3

The following List 1 Dangerous Substance Inventory Site records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
23G	449	E	516800 175900	Name: Watkins Cloud Ltd Hillingdon Middx Status: Not Active Receiving Water: - Authorised Substances: -
24G	449	E	516800 175900	Name: Watkins Cloud Ltd Hillingdon Middx Status: Not Active Receiving Water: Thames Estuary Authorised Substances: Mercury (other), Cadmium
25G	449	E	516800 175900	Name: Watkins Cloud Ltd Hillingdon Middx Status: Not Active Receiving Water: - Authorised Substances: -

#### 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:

1

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
36	196	S	516405 175713	Address: Concord Cleaners, 29 Shrewsbury Walk, Isleworth, TW7 7DE Process: Dry Cleaning Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified



### 2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

2

The following RAS Licence (3 or 4) records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
40H	389	N	516300 176300	Ashford And St Peter's Hospitals Nhs Trust, West Middlesex University Hospital, twickenham Road, Isleworth, Middlesex, TW7 6AF	Ashford And St Peter's Hospitals Nhs Trust	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	AB1428	Date of Approval: 14/2/1992 Effective from: 14/2/1992 Last date of update: 2015-01-01	Superseded By Variation
41H	389	N	516300 176300	Ashford And St Peter's Hospitals Nhs Trust, West Middlesex University Hospital, twickenham Road, Isleworth, Middlesex, TW7 6AF	Ashford And St Peter's Hospitals Nhs Trust	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	BM6948	Date of Approval: 18/4/2002 Effective from: 18/4/2002 Last date of update: 2015-01-01	Revoked/cancelled

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

8

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
27	269	E	516600 175800	Address: TOLSON'S COURT, OLD ISLEWORTH, MIDDLESEX, TOLSON'S COURT, OLD ISLEWORTH, MIDDLESEX Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.1449 Permit Version: 1 Receiving Water: TIDAL THAMES Status: REVOKED - UNSPECIFIED Issue date: 27/01/1987 Effective Date: 27-Jan-1987 Revocation Date: 15/12/1993
28	353	SE	516660 175730	Address: LION WHARF, OLD ISLEWORTH, MIDDLESEX, LION WHARF, OLD ISLEWORTH, MIDDLESEX Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.1443 Permit Version: 1 Receiving Water: TIDAL RIVER THAMES Status: REVOKED - UNSPECIFIED Issue date: 17/02/1987 Effective Date: 17-Feb-1987 Revocation Date: 02/06/1993
29	398	SE	516660 175650	Address: NAZARETH HOUSE, OLD ISLEWORTH, MIDDLESEX, NAZARETH HOUSE, OLD ISLEWORTH, MIDDLESEX Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: CTWC.1457 Permit Version: 1 Receiving Water: RIVER THAMES Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 17/02/1987 Effective Date: 17-Feb-1987 Revocation Date: 01/10/1996
30G	449	E	516800 175900	Address: MOGDEN WWTW, MOGDEN LANE, ISLEWORTH Receiving Water: RIVER THAMES Status: REVOKED - UNSPECIFIED



ID	Distance (m)	Direction	NGR	Details	
				Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CSAD.1778 Permit Version: 1	Issue date: 05/10/1989 Effective Date: 05-Oct-1989 Revocation Date: 15/12/1989
31G	449	E	516800 175900	Address: MOGDEN WWTW, MOGDEN LANE, ISLEWORTH Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: CNTD.0085 Permit Version: 3	Receiving Water: RIVER THAMES Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 01/08/2001 Effective Date: 01-Aug-2001 Revocation Date: 30/03/2005
32G	449	E	516800 175900	Address: MOGDEN WWTW, MOGDEN LANE, ISLEWORTH Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CSSA.0363 Permit Version: 1	Receiving Water: THAMES Status: REVOKED - UNSPECIFIED Issue date: 22/03/1978 Effective Date: 31-Jan-1985 Revocation Date: 15/12/1989
33G	449	E	516800 175900	Address: MOGDEN WWTW, MOGDEN LANE, ISLEWORTH Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: CNTD.0085 Permit Version: 2	Receiving Water: RIVER THAMES Status: VARIED BY APPLICATION - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 15/12/1989 Effective Date: 01-Apr-1992 Revocation Date: 31/07/2001
34G	449	E	516800 175900	Address: MOGDEN WWTW, MOGDEN LANE, ISLEWORTH Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: CNTD.0085 Permit Version: 1	Receiving Water: RIVER THAMES Status: BY DIRECT. OF SEC OF STATE, (WATER ACT 1989 SCHED 26 & 25(4)(5)) Issue date: 15/12/1989 Effective Date: 15-Dec-1989 Revocation Date: 31/03/1992

#### 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:

22

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	90	NE	516390.0 175994.0	Incident Date: 28-Jul-2003 Incident Identification: 177165.0 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	161	NW	516212.0 176029.0	Incident Date: 07-May-2003 Incident Identification: 156615.0 Pollutant: Oils and Fuel Pollutant Description: Mixed/Waste Oils Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3A	181	E	516530.0 175940.0	Incident Date: 10-Jul-2002 Incident Identification: 90518.0 Pollutant: Other Pollutant Pollutant Description: Other Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4A	181	E	516530.0 175940.0	Incident Date: 10-Jul-2002 Incident Identification: 90518.0 Pollutant: Other Pollutant Pollutant Description: Other Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5	298	N	516270.0 176201.0	Incident Date: 26-Oct-2002 Incident Identification: 116842.0 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	330	E	516680.0 175930.0	Incident Date: 23-Jun-2003 Incident Identification: 168109.0 Pollutant: Oils and Fuel Pollutant Description: Other Oil or Fuel Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7B	455	E	516780.0 175750.0	Incident Date: 06-Jul-2002 Incident Identification: 89644.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
8	455	E	516796.0 175807.0	Incident Date: 07-Jul-2009 Incident Identification: 696005.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage Water Impact: Category 1 (Major) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
9B	456	E	516787.0 175767.0	Incident Date: 04-Jun-2005 Incident Identification: 317681.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
10B	464	E	516793.0 175760.0	Incident Date: 03-Jul-2002 Incident Identification: 88954.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)



ID	Distance (m)	Direction	NGR	Details	
11D	480	E	516830.0 175920.0	Incident Date: 02-Aug-2001 Incident Identification: 21544.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
12E	480	E	516830.0 175880.0	Incident Date: 23-Jan-2002 Incident Identification: 54150.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
13F	482	E	516804.0 175737.0	Incident Date: 09-Sep-2005 Incident Identification: 345223.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
14	483	SE	516790.0 175700.0	Incident Date: 04-Jul-2002 Incident Identification: 89168.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
15	486	E	516829.0 175815.0	Incident Date: 19-Oct-2005 Incident Identification: 354709.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
16C	486	E	516834.0 175847.0	Incident Date: 06-Sep-2003 Incident Identification: 188058.0 Pollutant: Sewage Materials Pollutant Description: Final Effluent	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
17C	487	E	516835.0 175854.0	Incident Date: 29-Jun-2005 Incident Identification: 325060.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 1 (Major) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
18D	489	E	516840.0 175910.0	Incident Date: 26-Jan-2002 Incident Identification: 54631.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
19E	490	E	516840.0 175870.0	Incident Date: 05-Aug-2001 Incident Identification: 21988.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
20	496	SE	516786.0 175663.0	Incident Date: 25-Jun-2005 Incident Identification: 324165.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
21	500	E	516850.0 175920.0	Incident Date: 24-Feb-2002 Incident Identification: 60243.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
22F	500	E	516826.0 175747.0	Incident Date: 03-Jul-2009 Incident Identification: 694307.0 Pollutant: Sewage Materials Pollutant Description: Storm Sewage	Water Impact: Category 1 (Major) 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

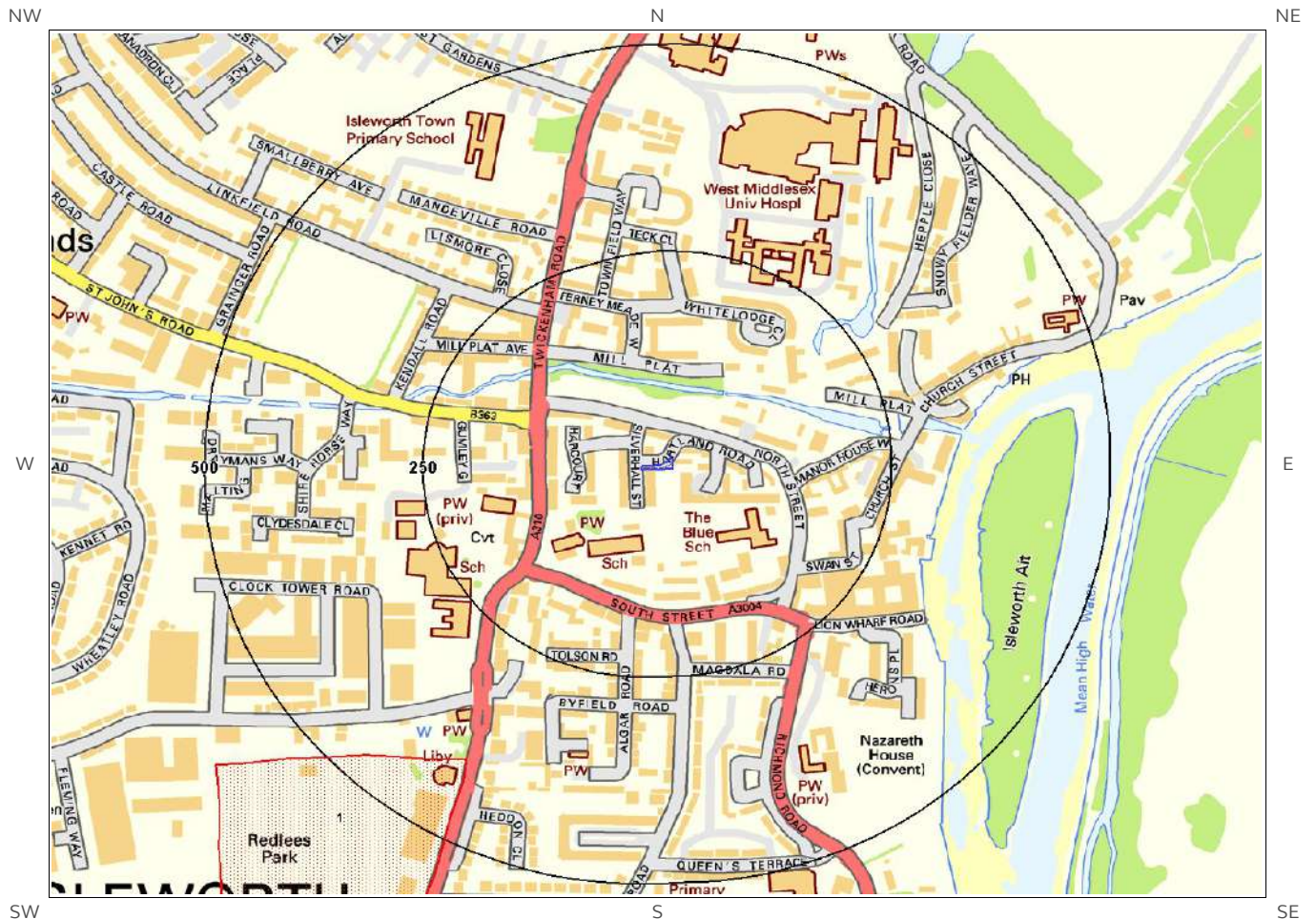
Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

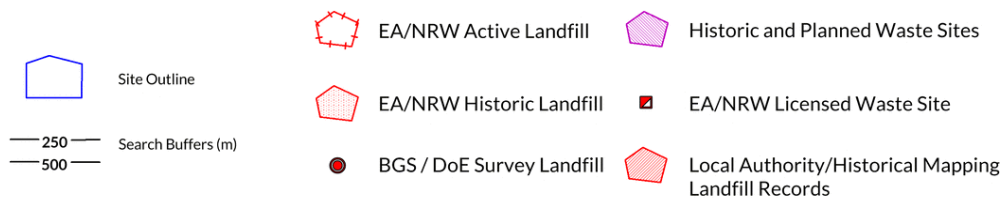
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# 3. Landfill and Other Waste Sites Map



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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:

7

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
1	403	SW		Site Address: Redlees Park, Isleworth, Hounslow, London Waste Licence: - Site Reference: 8HO036 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Greenhams sand and Gravel Licence Holder: - First Recorded: 31-Dec-1912 Last Recorded: 31-Dec-1946
Not shown	1012	W		Site Address: London Road Sports Ground, London Road Waste Licence: - Site Reference: 8HO035, HOU036 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Greenhams sand and Gravel Licence Holder: - First Recorded: 31-Dec-1934 Last Recorded: 31-Dec-1951
Not shown	1112	S		Site Address: Crane Avenue Allotments, St. Maragrets, Isleworth, Hounslow, London Waste Licence: - Site Reference: 8HO085 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: 31-Dec-1949 Last Recorded: 31-Dec-1961
Not shown	1118	SW		Site Address: Mogden Sewage Works, Lampton Road, Mogden Waste Licence: - Site Reference: 8HO059, HOUX12 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: Ham River Construction Limited First Recorded: 31-Dec-1930 Last Recorded: 31-Dec-1935
Not	1137	S		Site Address: Ivybridge, Isleworth, Licence Issue:



ID	Distance (m)	Direction	NGR	Details
shown				<p>Hounslow, London  Waste Licence: -  Site Reference: 8HO037, HOU038  Waste Type: Inert, Industrial  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Surrendered:  Licence Holder Address: -  Operator: Willments Limited  Licence Holder: Willmont Brothers  First Recorded: 31-Dec-1955  Last Recorded: 31-Dec-1966</p>
Not shown	1404	W		<p>Site Address: Bridge Road, Woodlands, Hounslow, London  Waste Licence: -  Site Reference: 8HO068  Waste Type: Inert  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue:  Licence Surrendered:  Licence Holder Address: -  Operator: -  Licence Holder: -  First Recorded: 31-Dec-1946  Last Recorded: 31-Dec-1946</p>
Not shown	1475	S		<p>Site Address: Twickenham Trading Estate, St. Maragrets, Isleworth, Hounslow, London  Waste Licence: -  Site Reference: 8HO038  Waste Type: Inert  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue:  Licence Surrendered:  Licence Holder Address: -  Operator: Willments Limited  Licence Holder: -  First Recorded: 31-Dec-1946  Last Recorded: 31-Dec-1963</p>

### 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	1015	W	515057 176049	Thornbury Park	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:

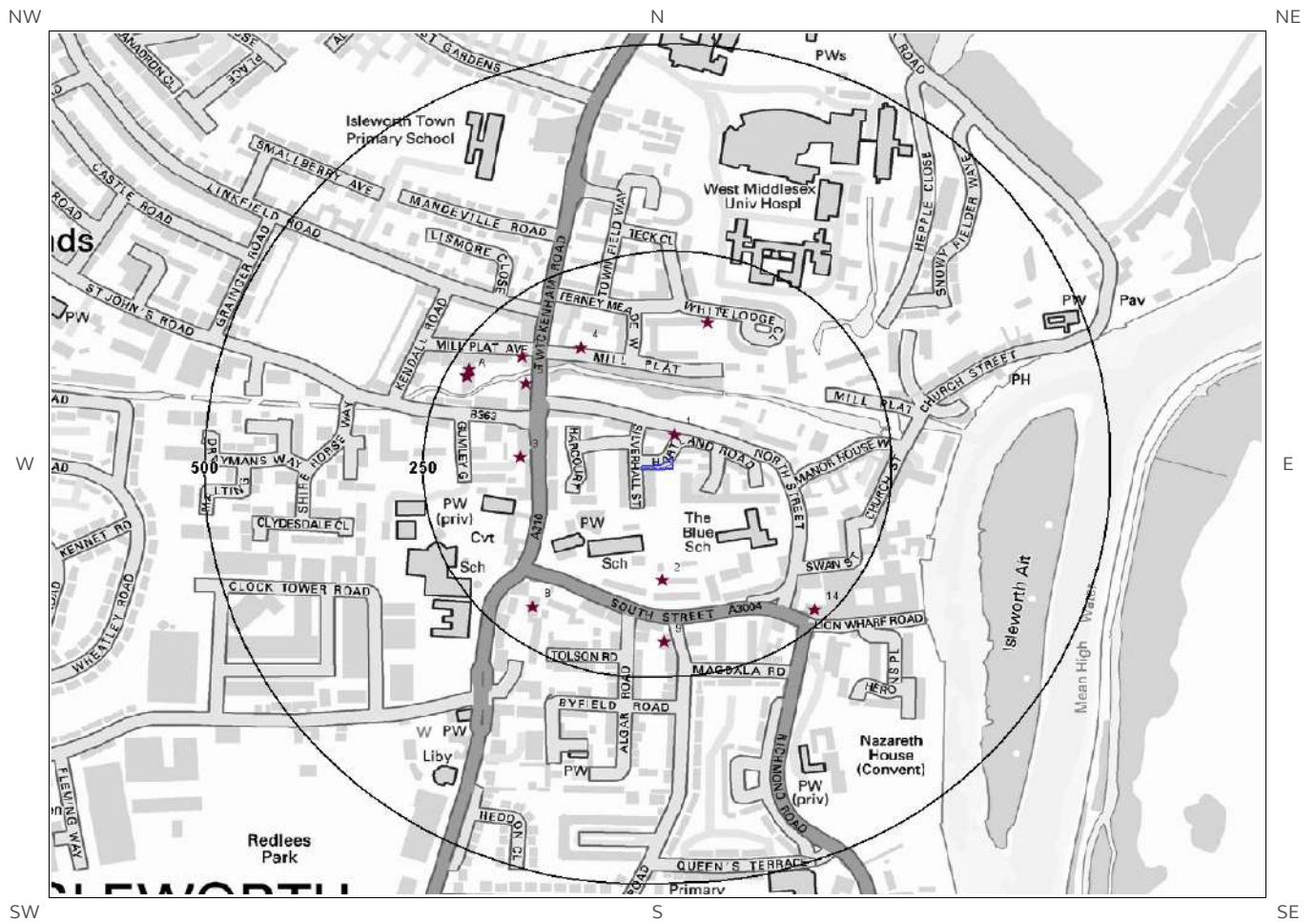
1

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	1237	SW	515401 175066	Site Address: Land / Premises At, Mogden Lane, Isleworth, Middlesex, TW7 7LP Type: Sewage sludge treatment Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: TWU014 EPR reference: EA/EPR/CP3999LE/A001 Operator: Thames Water Utilities Ltd Waste Management licence No: 100679 Annual Tonnage: 74999.0	Issue Date: 15/01/2009 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Mogden Sewage Treatment Works Correspondence Address: -



## 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:

14

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	30	N	Electricity Sub Station	516352 175943	Greater London, TW7	Electrical Features	Infrastructure and Facilities
2	133	S	Electricity Sub Station	516338 175767	Greater London, TW7	Electrical Features	Infrastructure and Facilities
3	139	W	Electricity Sub Station	516176 175916	Greater London, TW7	Electrical Features	Infrastructure and Facilities
4	160	NW	Electricity Sub Station	516245 176048	Greater London, TW7	Electrical Features	Infrastructure and Facilities
5	166	NW	Priceless Autos	516181 176004	207-209, Twickenham Road, Isleworth, Greater London, TW7 6AA	Secondhand Vehicles	Motoring
6	169	N	Electricity Sub Station	516390 176078	Greater London, TW7	Electrical Features	Infrastructure and Facilities
7	190	NW	Isleworth Tyres	516177 176036	201, Twickenham Road, Isleworth, Greater London, TW7 6AA	Vehicle Parts and Accessories	Motoring
8	206	SW	Foundry Cars	516189 175735	79, South Street, Isleworth, Greater London, TW7 7AA	Vehicle Repair, Testing and Servicing	Repair and Servicing
9	207	S	Jubilee Service Centre	516340 175693	South Street, Isleworth, Greater London, TW7 7AL	Vehicle Repair, Testing and Servicing	Repair and Servicing
10A	228	NW	Yorke Pest Control Ltd	516114 176013	18, Mill Plat Avenue, Isleworth, Greater London, TW7 6RD	Pesticides	Industrial Products
11A	228	NW	Vector Signs Ltd	516114 176013	18-20, Mill Plat Avenue, Isleworth, Greater London, TW7 6RD	Signs	Industrial Products
12A	229	NW	Rapid Rubbish Clearance	516114 176014	18-20, Mill Plat Avenue, Isleworth, Greater London, TW7 6RD	Waste Collection, Processing and Disposal Equipment	Industrial Products
13A	230	NW	Works	516117 176022	Greater London, TW7	Unspecified Works Or Factories	Industrial Features
14	233	SE	B J Wood & Son	516512 175732	Lion Wharf Road, Isleworth, Greater London, TW7 7BW	Marine Equipment Including Boats and Ships	Industrial Products



## 4.2 Petrol and Fuel Sites

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

0

Database searched and no data found.

---

## 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:

0

Database searched and no data found.

---

## 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
LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT
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.

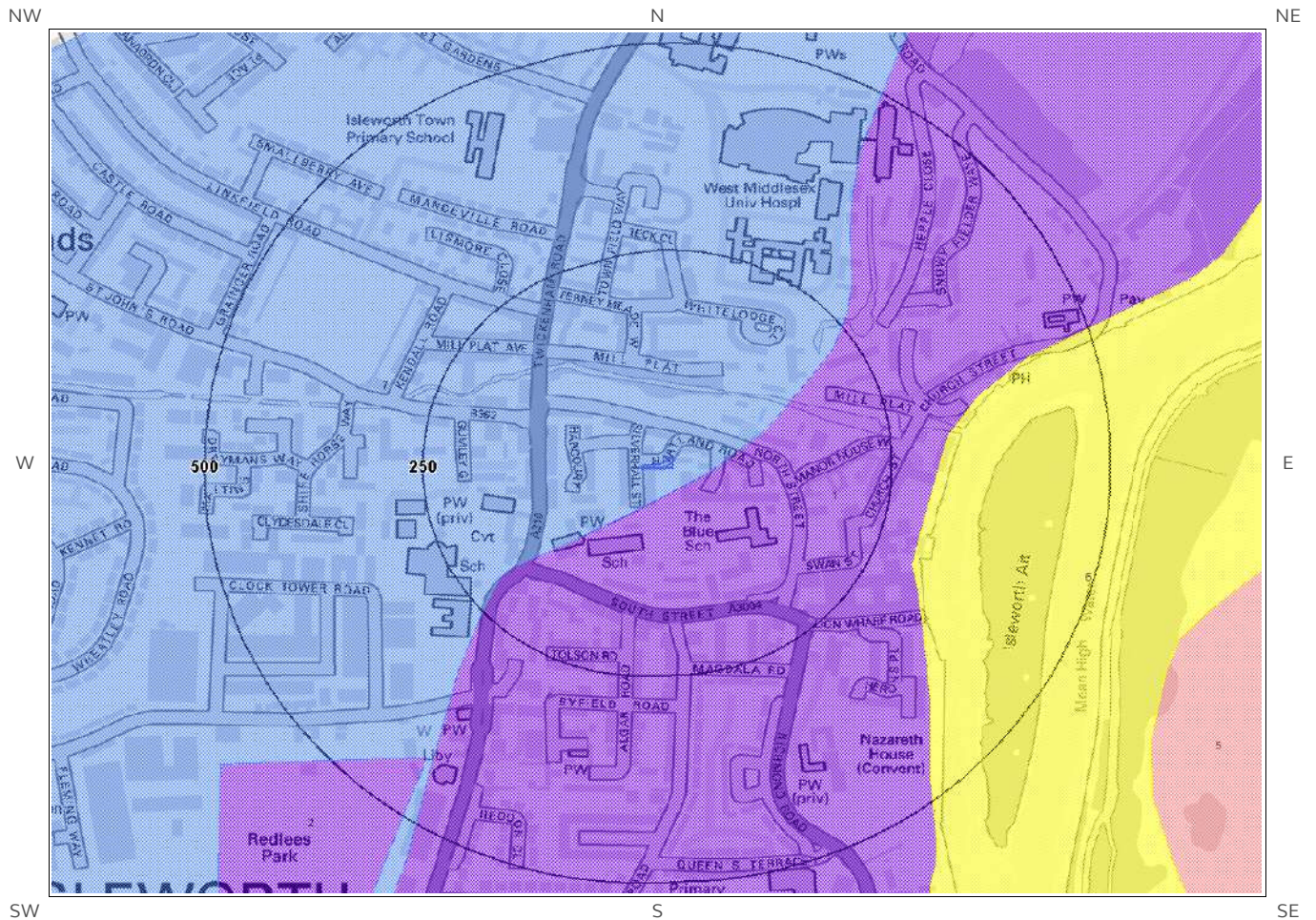
Lex Code	Description	Rock Type
LC-XCZ	LONDON CLAY FORMATION	CLAY AND SILT

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

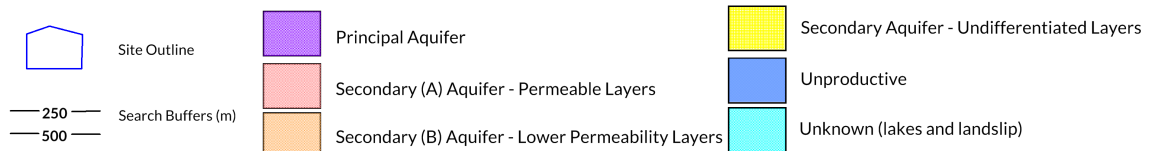


# 6 Hydrogeology and Hydrology

## 6a. Aquifer Within Superficial Geology

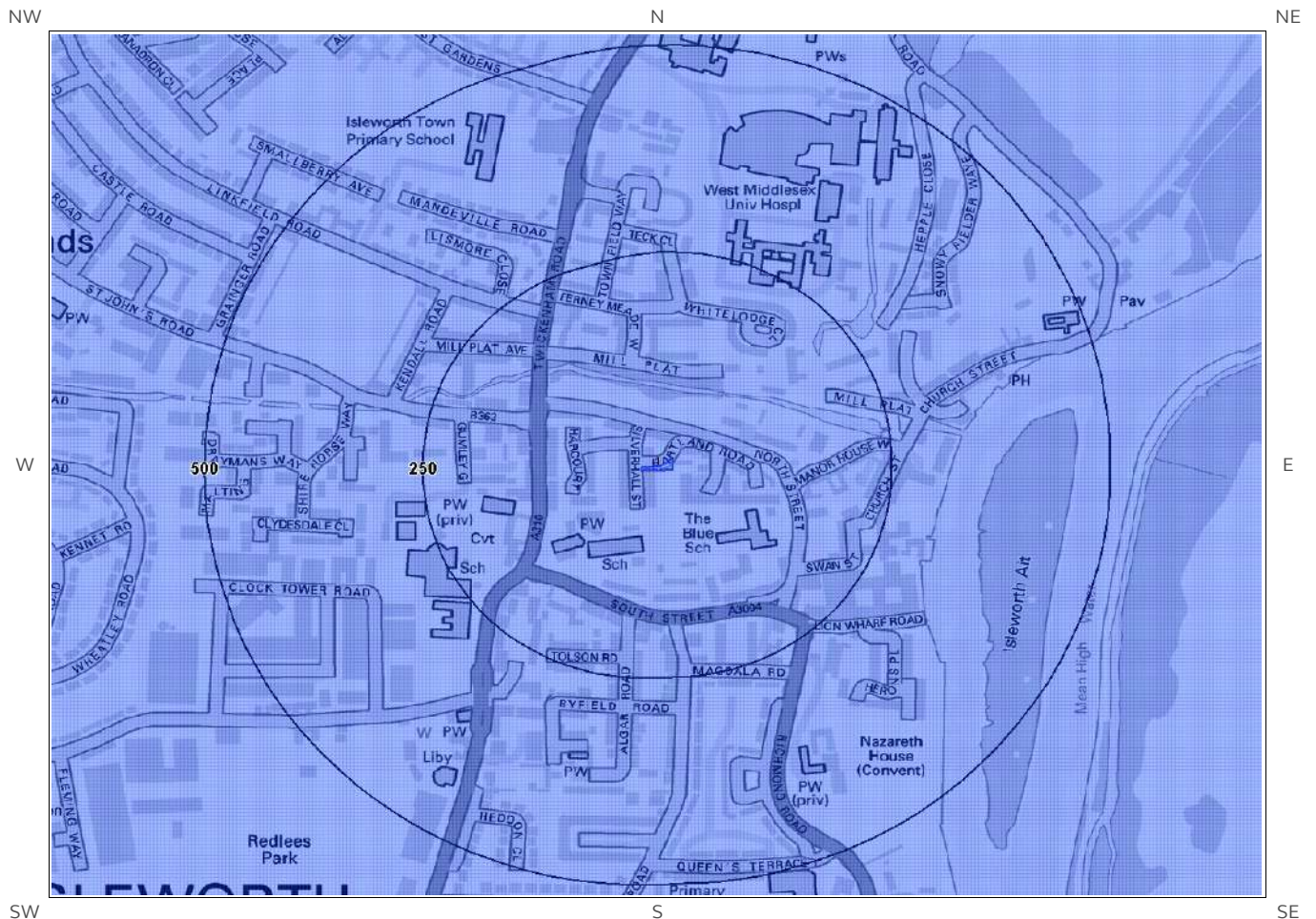


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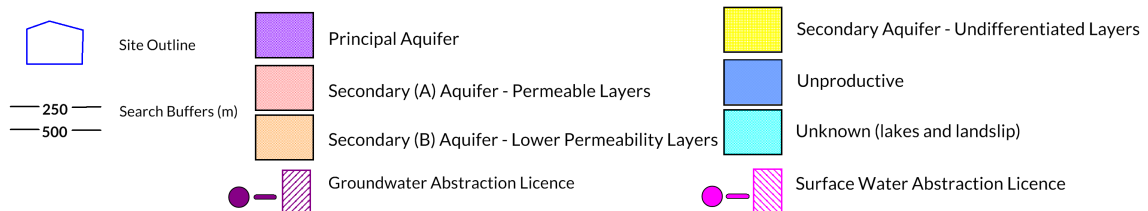




# 6b. Aquifer Within Bedrock Geology and Abstraction Licences

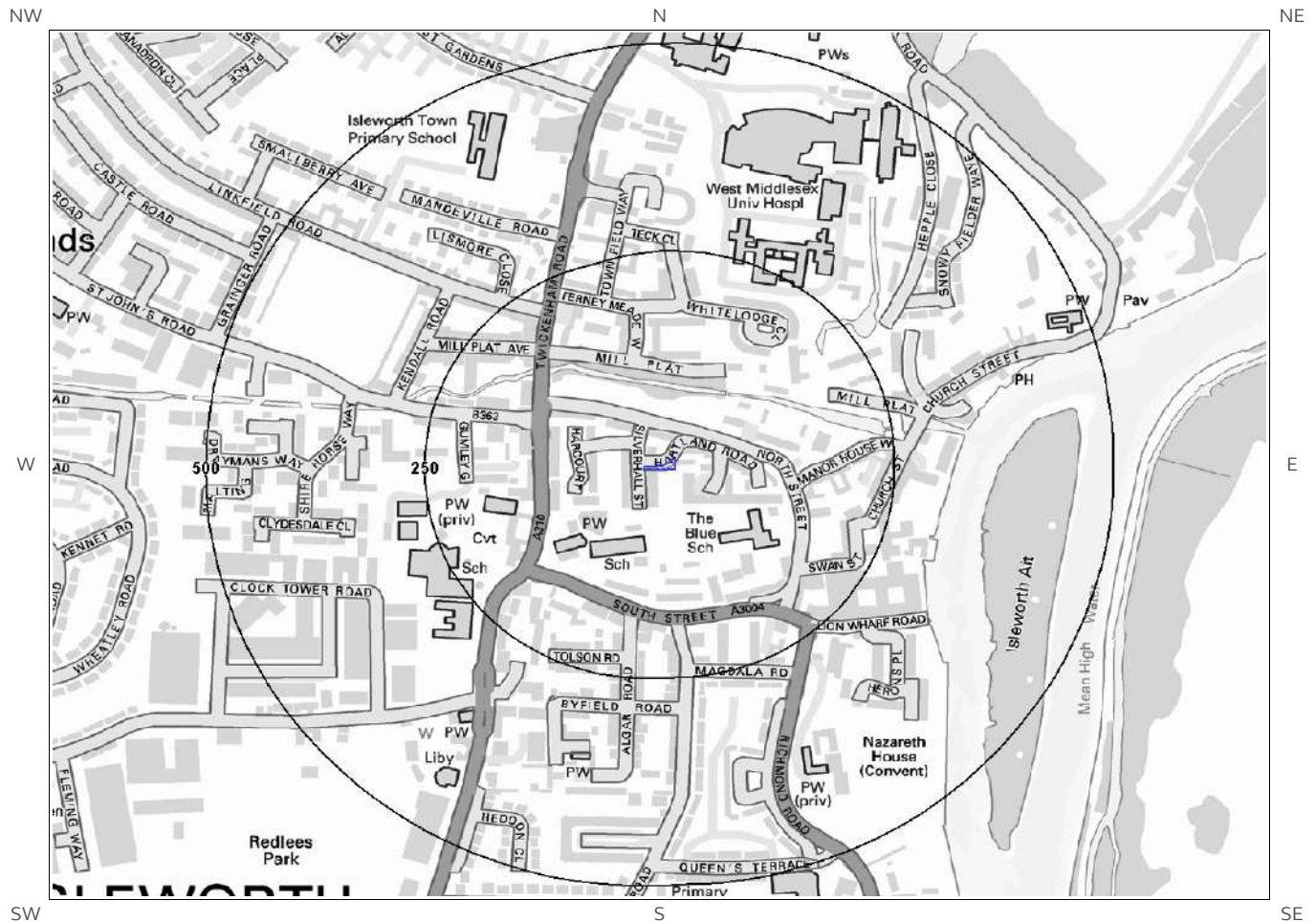


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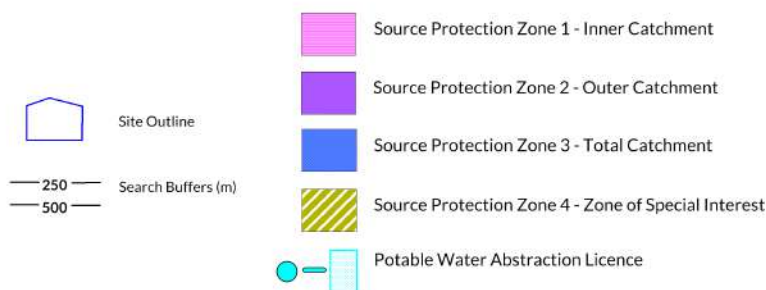




# 6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences

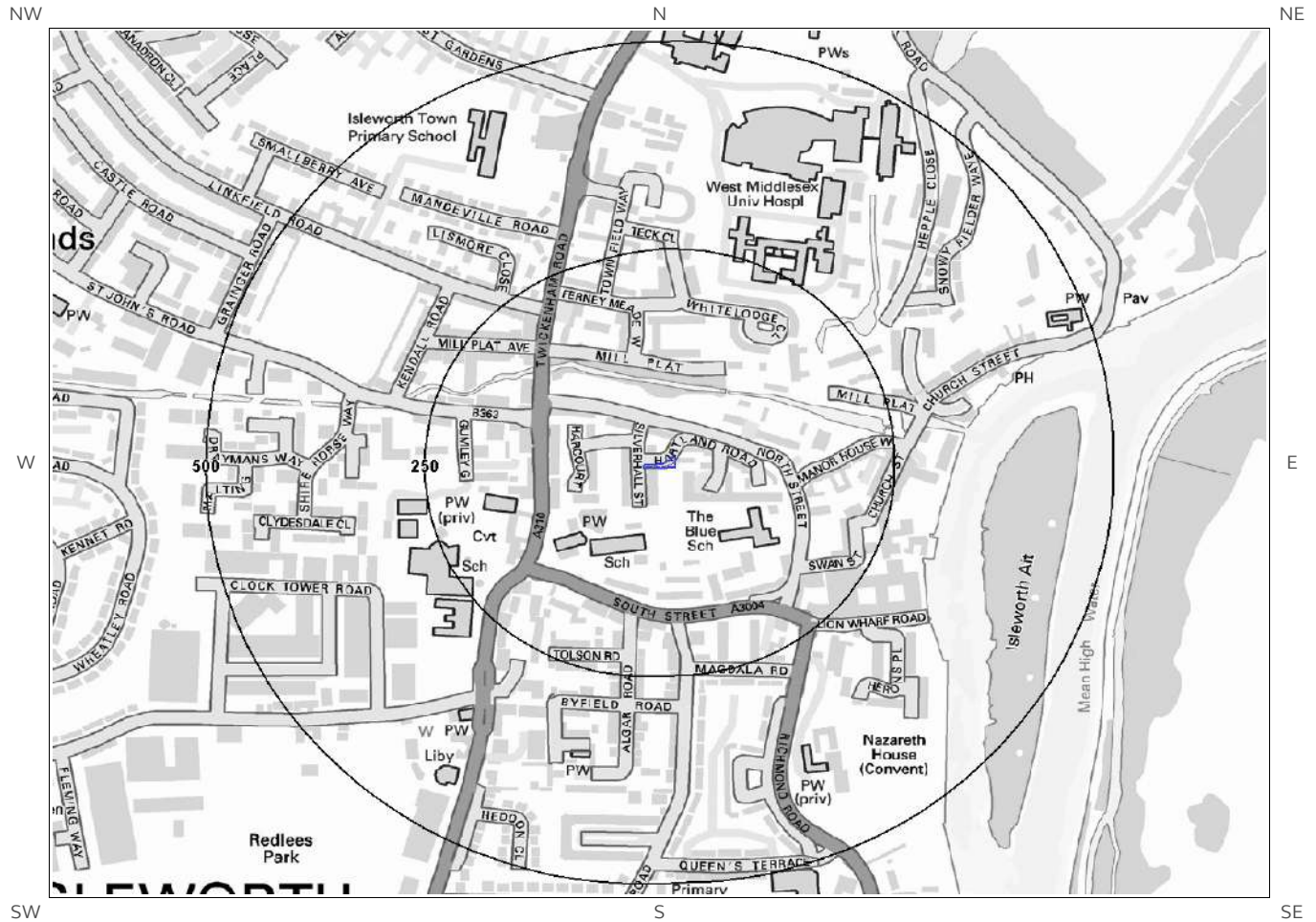


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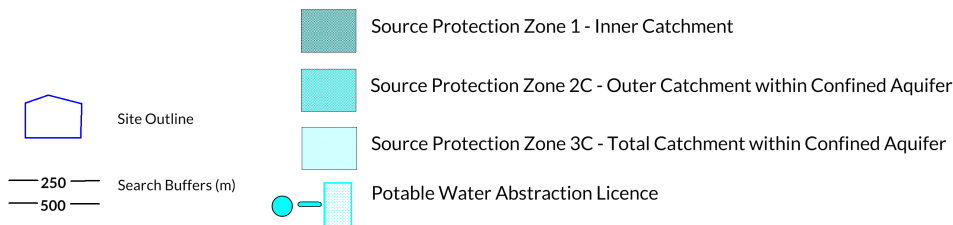




# 6d. Hydrogeology – Source Protection Zones within confined aquifer

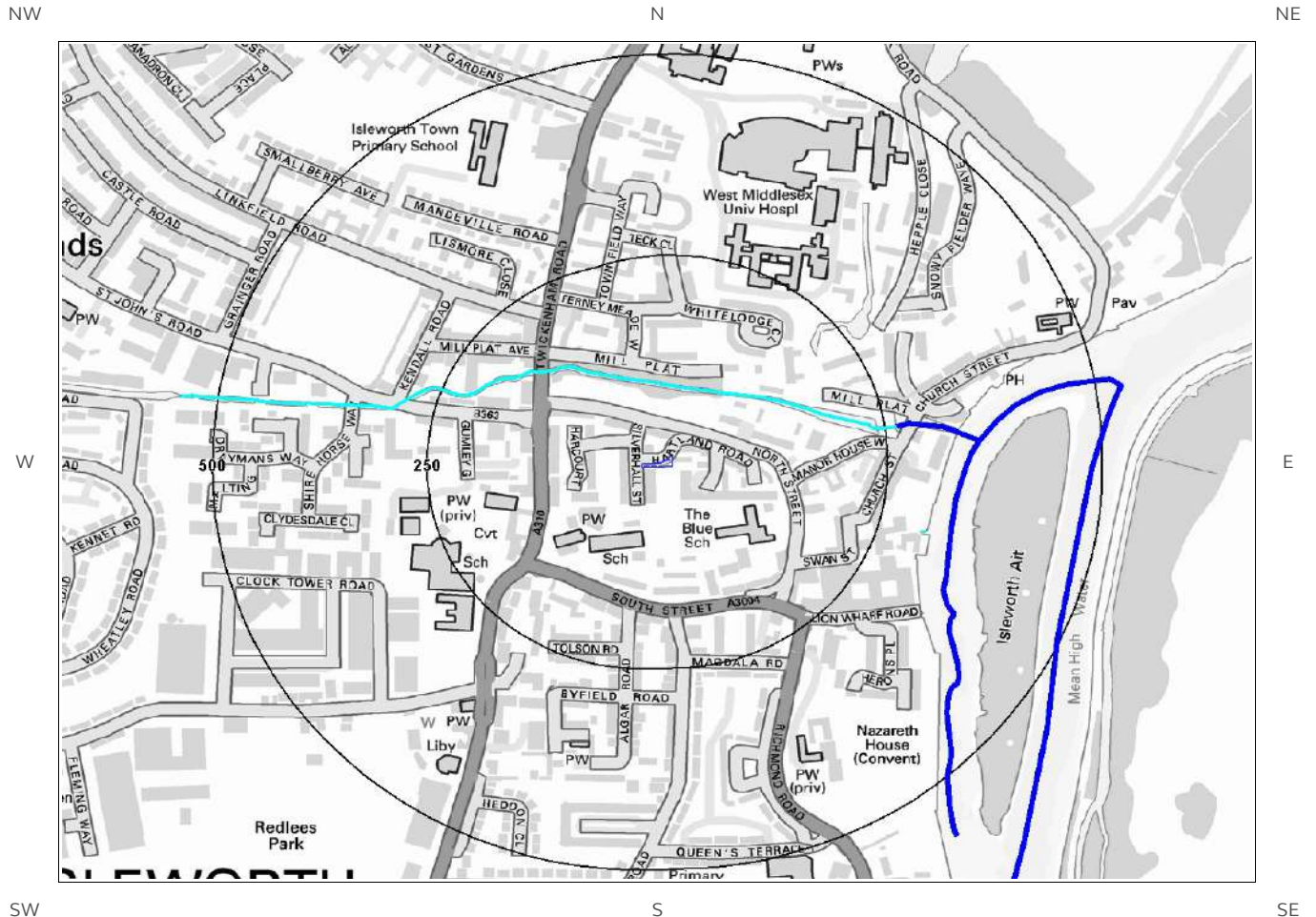


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# 6e. Hydrology – Watercourse Network and River Quality



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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
7	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
1	25	SE	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
6	293	E	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	426	SW	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

## 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
Not shown	1087	NE	517100 176700	Status: Active Licence No: 28/39/37/0005 Details: Horticultural Watering Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'B' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate Annual Volume (m³): 9,092 Max Daily Volume (m³): 218 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/09/2010 Version End Date:
Not shown	1087	NE	517100 176700	Status: Active Licence No: 28/39/37/0005 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'B' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate Annual Volume (m³): 9,092 Max Daily Volume (m³): 218 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/09/2010 Version End Date:
Not shown	1117	E	517450 175700	Status: Active Licence No: 28/39/35/0006 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE B GRAVEL AT ROYAL MID SURREY GOLF CLUB, RICHMOND Data Type: Point Name: ROYAL MID SURREY GOLF CLUB Annual Volume (m³): 43,000 Max Daily Volume (m³): 480 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/03/1996 Version End Date:
Not shown	1117	E	517460 175750	Status: Historical Licence No: 28/39/35/0006 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: GRAVEL AT ROYAL MID SURREY GOLF CLUB, RICHMOND Data Type: Line Name: ROYAL MID SURREY GOLF CLUB Annual Volume (m³): 43,000 Max Daily Volume (m³): 480 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/03/1996 Version End Date:
Not shown	1119	E	517460 175750	Status: Active Licence No: 28/39/35/0006 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE A GRAVEL AT ROYAL MID SURREY GOLF CLUB, RICHMOND Data Type: Point Name: ROYAL MID SURREY GOLF CLUB Annual Volume (m³): 43,000 Max Daily Volume (m³): 480 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/03/1996 Version End Date:
Not shown	1266	NE	517000 177000	Status: Active Licence No: 28/39/37/0005 Details: Horticultural Watering Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'A' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate Annual Volume (m³): 9,092 Max Daily Volume (m³): 218 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/09/2010 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1266	NE	517000 177000	Status: Active Licence No: 28/39/37/0005 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE 'A' AT SYON PARK, BRENTFORD Data Type: Point Name: Trustees Of Syon Park Estate	Annual Volume (m³): 9,092 Max Daily Volume (m³): 218 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/09/2010 Version End Date:
Not shown	1376	S	516800 174600	Status: Historical Licence No: 28/39/34/0006 Details: Lake & Pond Throughflow Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT ST. MARGARET'S LAKE, TWICKENHAM Data Type: Point Name: ST MARGARETS RES GROUNDS	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 08/10/1982 Version End Date:
Not shown	1471	E	517800 175650	Status: Active Licence No: 28/39/35/0009 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: GRAVEL AT RICHMOND ATHLETICS GROUND, KEW FOOT ROAD, RICHMOND Data Type: Point Name: RICHMOND ATHLETICS ASSOC LTD	Annual Volume (m³): 15,911 Max Daily Volume (m³): 75 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 01/04/2008 Version End Date:
Not shown	1585	W	514740 176090	Status: Historical Licence No: 28/39/37/0008 Details: Pollution Remediation Direct Source: THAMES GROUNDWATER Point: POINT 'A' AT BROADWAY SERVICE STATION, HOUNSLOW, MIDDLESEX Data Type: Point Name: TOTALFINAELF UK LTD	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 28/03/2002 Version End Date:
Not shown	1898	SE	517490 174383	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT B Data Type: Point Name: Kier Construction Limited	Annual Volume (m³): 18,144 Max Daily Volume (m³): 432 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 23/04/2018 Version End Date:
Not shown	1900	SE	517448 174350	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT A Data Type: Point Name: Kier Construction Limited	Annual Volume (m³): 18,144 Max Daily Volume (m³): 432 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 23/04/2018 Version End Date:
Not shown	1945	SE	517521 174347	Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT C Data Type: Point Name: Kier Construction Limited	Annual Volume (m³): 18,144 Max Daily Volume (m³): 432 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 23/04/2018 Version End Date:



ID	Distance (m)	Direction	NGR	Details
Not shown	1953	SE	517480 174308	<p>Status: Historical Licence No: TH/039/0034/003 Details: Transfer Between Sources (Post Water Act 2003) Direct Source: THAMES GROUNDWATER Point: RIVER GRAVELS AT TWICKENHAM - POINT D Data Type: Point Name: Kier Construction Limited</p> <p>Annual Volume (m³): 18,144 Max Daily Volume (m³): 432 Original Application No: - Original Start Date: Expiry Date: Issue No: Version Start Date: 23/04/2018 Version End Date:</p>

## 6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

Identified

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1378	SW	515410 174860	<p>Status: Historical Licence No: 28/39/37/0007 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: D.OF NORTHUMBERLAND- MOGDEN SEWAGE TREATMENT WRKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD</p> <p>Annual Volume (m³): 1,752,000 Max Daily Volume (m³): 7,200 Application No: - Original Start Date: 17/08/1999 Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 01/01/2007 Version End Date:</p>
Not shown	1378	SW	515410 174860	<p>Status: Historical Licence No: 28/39/37/0007 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: D.OF NORTHUMBERLAND- MOGDEN SEWAGE TREATMENT WRKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD</p> <p>Annual Volume (m³): 1,752,000 Max Daily Volume (m³): 7,200 Application No: - Original Start Date: 17/08/1999 Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 17/08/1999 Version End Date:</p>
Not shown	1378	SW	515410 174860	<p>Status: Historical Licence No: 28/39/37/0007 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: MOGDEN SEWAGE TREATMENT WORKS, ISLEWORTH Data Type: Point Name: THAMES WATER UTILITIES LTD</p> <p>Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: - Expiry Date: 31/08/2009 Issue No: 1 Version Start Date: 17/08/1999 Version End Date:</p>
Not shown	1382	SW	515406 174858	<p>Status: Historical Licence No: TH/039/0037/001 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: THAMES WATER UTILITIES LTD</p> <p>Annual Volume (m³): 1,752,000 Max Daily Volume (m³): 7,200 Application No: - Original Start Date: 12/08/2009 Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 12/08/2009 Version End Date:</p>
Not shown	1382	SW	515406 174858	<p>Status: Historical Licence No: TH/039/0037/001 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER -</p> <p>Annual Volume (m³): 1,752,000 Max Daily Volume (m³): 7,200 Application No: - Original Start Date: 12/08/2009</p>

ID	Distance (m)	Direction	NGR	Details
				NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: THAMES WATER UTILITIES LTD Expiry Date: 31/03/2013 Issue No: 1 Version Start Date: 12/08/2009 Version End Date:
Not shown	1382	SW	515406 174858	Status: Active Licence No: TH/039/0037/004 Details: General Use Relating To Secondary Category (Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: DUKE OF NORTHUMBERLAND RIVER - MOGDEN SEWAGE TREATMENT WORKS Data Type: Point Name: Thames Water Utilities Ltd Annual Volume (m³): 1,752,000 Max Daily Volume (m³): 7,200 Application No: - Original Start Date: 01/04/2013 Expiry Date: 31/03/2025 Issue No: 1 Version Start Date: 01/04/2013 Version End Date:
Not shown	1960	N	516880 177800	Status: Active Licence No: 28/39/36/0074 Details: Non-Evaporative Cooling Direct Source: THAMES SURFACE WATER - NON TIDAL Point: 980 GREAT WESTERN ROAD, BRENTFORD- RIVER BRENT Data Type: Point Name: Canal and River Trust Annual Volume (m³): 876,000 Max Daily Volume (m³): 2,400 Application No: - Original Start Date: 03/09/2007 Expiry Date: 31/03/2025 Issue No: 2 Version Start Date: 17/12/2007 Version End Date:

## 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	Major 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.
357	E	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
493	E	Minor Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.

## 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	86 N	Duke of Northumberland's River	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): 6.3
10	86 N	Duke of Northumberland's River	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): 6.3
2	252 E	Duke of Northumberland's River	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
11	252 E	Duke of Northumberland's River	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Underground Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
3	263 E	Duke of Northumberland's River	Tidal river or stream.	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
12	263 E	Duke of Northumberland's River	Tidal river or stream.	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
4	301 E	-	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
13	301 E	-	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)



ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
				conditions) Average Width in Watercourse Section (m): Not Provided
5	302 E	-	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
14	302 E	-	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	332 E	River Thames	Tidal river or stream.	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
15	332 E	River Thames	Tidal river or stream.	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
7	358 E	River Thames	Tidal river or stream.	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	358 E	River Thames	Tidal river or stream.	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
8	479 E	River Thames	Tidal river or stream.	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	479 E	River Thames	Tidal river or stream.	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

Identified

The following surface water records are not represented on mapping:

Distance (m)	Direction
83	N
97	NE
167	NW
208	NE

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

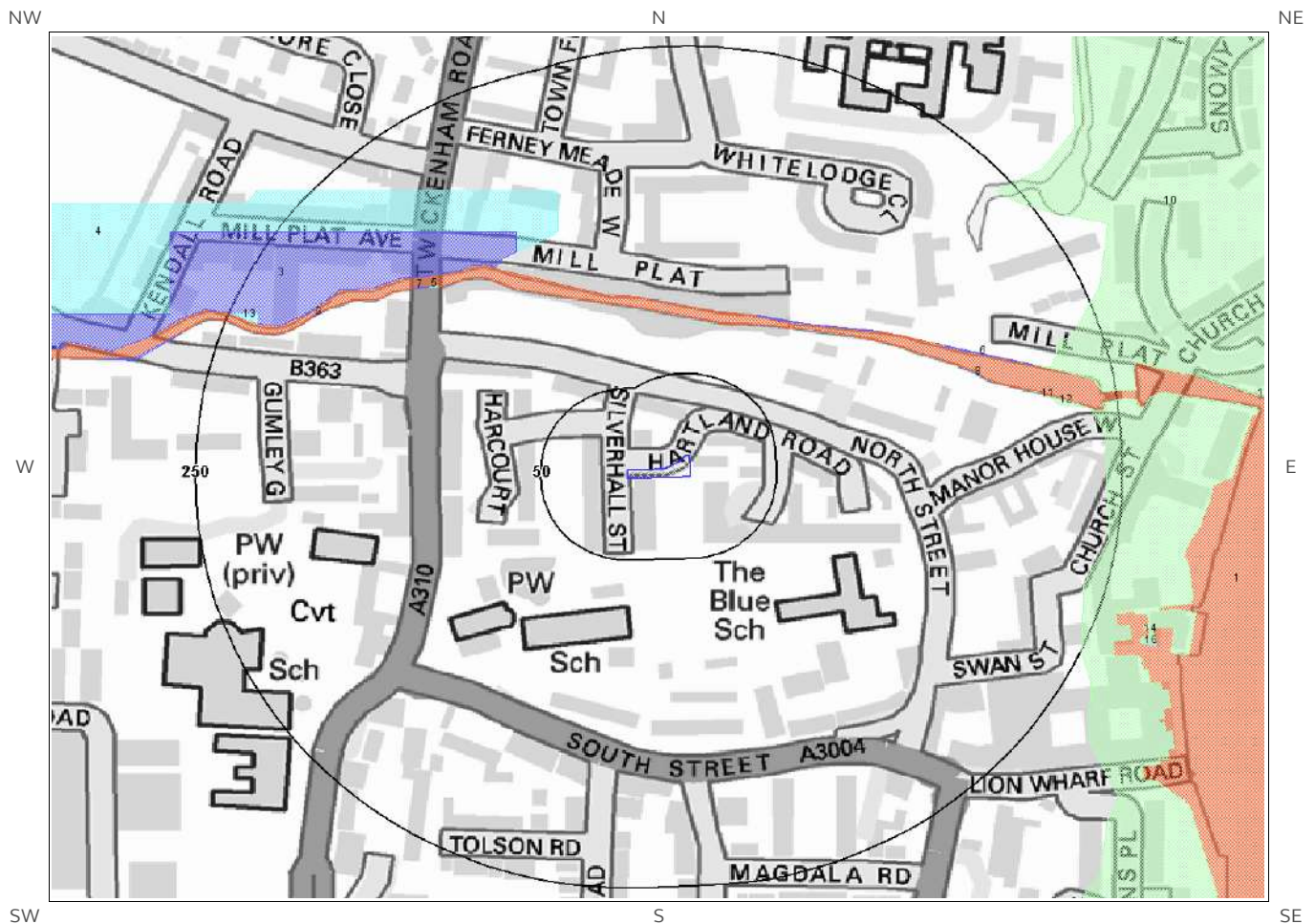


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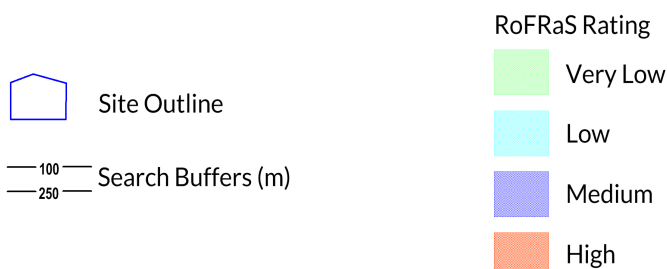




# 7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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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	82	N	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
2	230	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
3P	232	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
4	233	E	20-Jun-2019	Zone 2 - (Fluvial /Tidal Models)
5R	240	NE	20-Jun-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	82	N	20-Jun-2019	Zone 3 - (Fluvial Models)
2	167	NW	20-Jun-2019	Zone 3 - (Fluvial Models)
3P	238	E	20-Jun-2019	Zone 3 - (Fluvial Models)
4	240	E	20-Jun-2019	Zone 3 - (Fluvial 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.

---

### 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

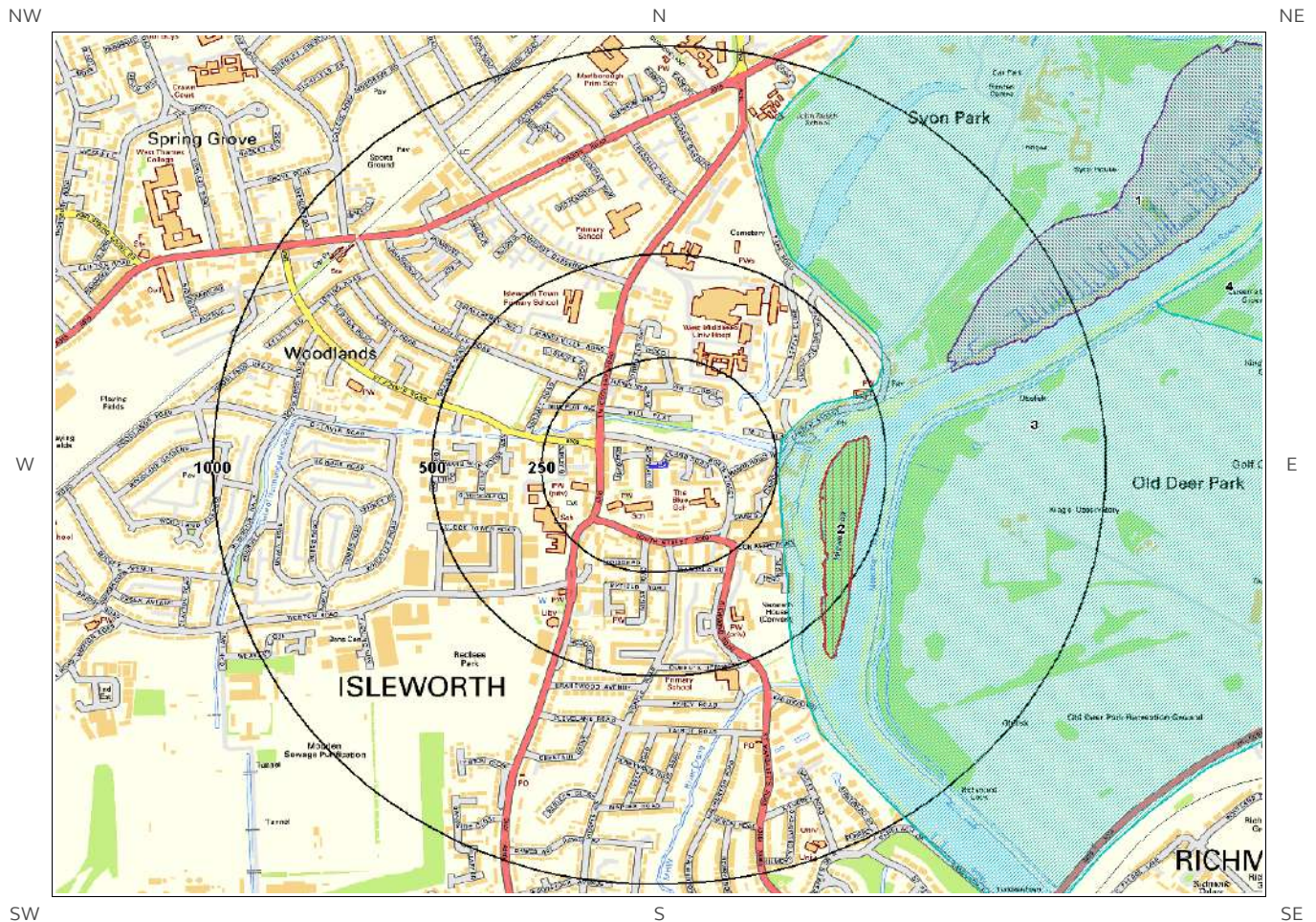
Moderate

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.

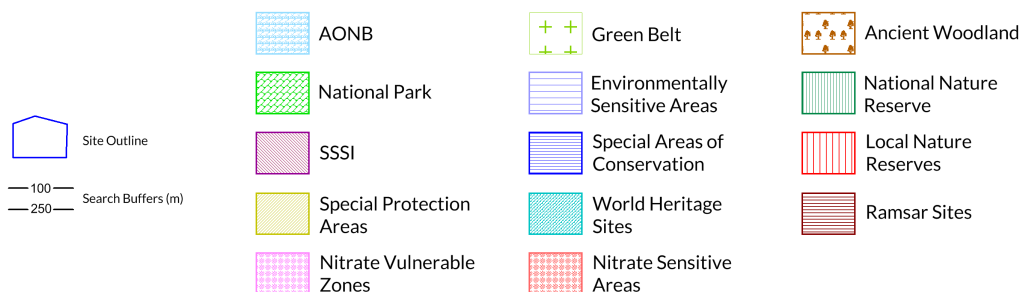
The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a 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:

1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
1	684	E	Syon Park	Natural England

## 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:

1

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
2	354	E	Isleworth Ait	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
3	256	E	Royal Botanic Gardens, Kew Buffer Zone	Historic England
4	1181	E	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 Very Low

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

Hazard
Ground conditions predominantly low plasticity. 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 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

**Groundsure Helpline**  
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info@groundsure.com

**British Geological Survey Enquiries**

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Keyworth, Nottingham NG12 5GG  
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Web: [www.bgs.ac.uk](http://www.bgs.ac.uk)

BGS Geological Hazards Reports and general geological enquiries:  
[enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk)

**Environment Agency**

National Customer Contact Centre, PO Box 544  
Rotherham, S60 1BY  
Tel: 03708 506 506

Web: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

**Public Health England**

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133-155 Waterloo Road, London, SE1 8UG  
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**Ordnance Survey**

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Phone: 020 8583 2000

Web: <http://www.hounslow.gov.uk/>

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Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England/Natural Resources Wales who retain the Copyright and Intellectual Property Rights for the data.

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

Arcadis Consulting UK Ltd  
Rydon House, PYNES HILL,  
EXETER, EX2 5AZ

Groundsure Reference: GS-6295978

Your Reference: 14029954

Report Date 9 Sep 2019

Report Delivery Method: Email - pdf

## Geo Insight

Address: 516334, 175904,

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: 516334, 175904,  
Date: 9 Sep 2019  
Reference: GS-6295978  
Client: Arcadis Consulting UK Ltd

NW N NE

W E



SW S SE

Aerial Photograph Capture date: 20-Apr-2015  
Grid Reference: 516334,175904  
Site Size: 0.0239ha

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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	2	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	0

## 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 Cornwall and Devon Metalliferous 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	Very Low				
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	1	37		
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	0	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	

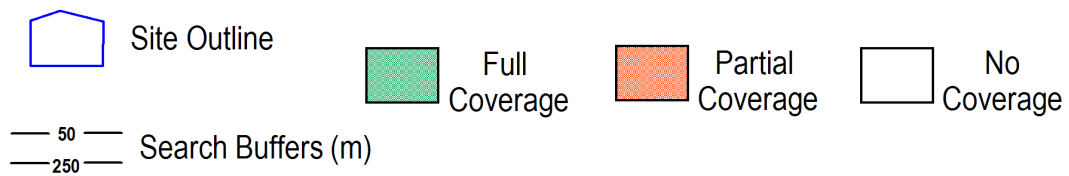


# 1:10,000 Scale Availability



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	900.0	Some deposits are mapped	Full	Full	Some deposits are mapped
3	1315.0	Some deposits are mapped	Full	Full	No coverage
4	1593.0	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.

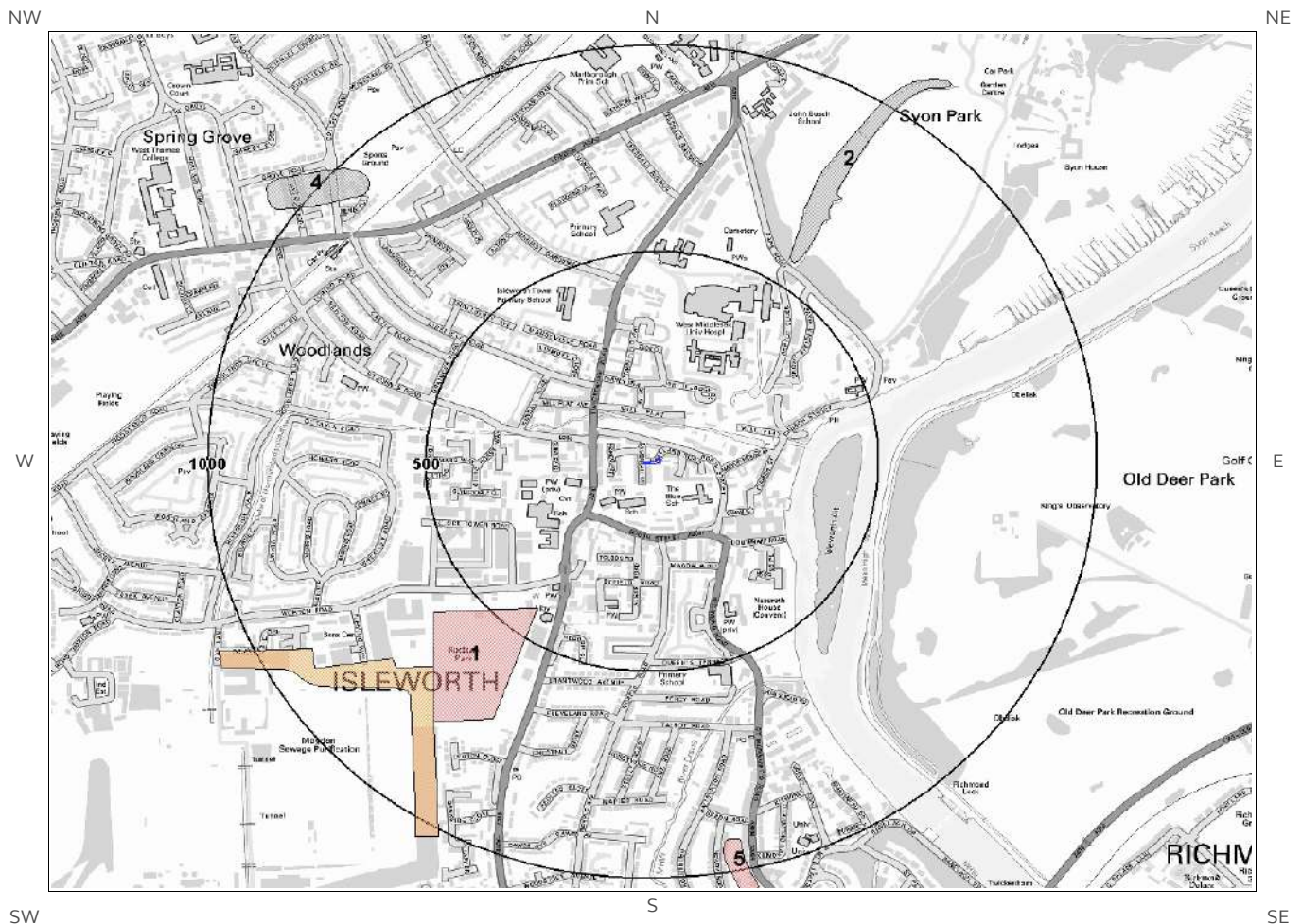
The definitions of coverage are as follows:

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



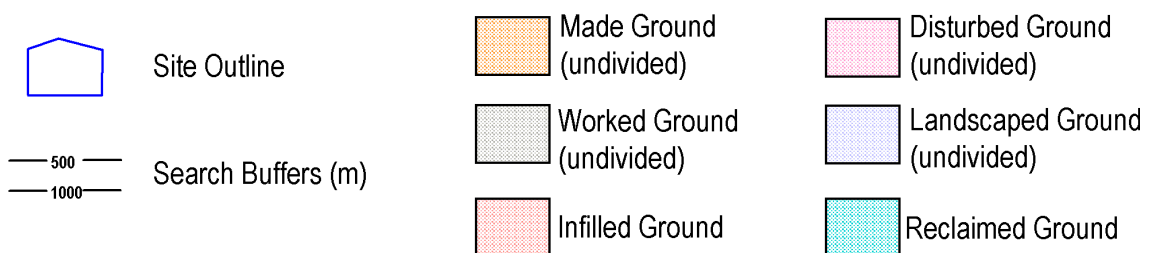
# 1 Geology (1:10,000 scale).

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



Artificial Ground Legend

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# 1. Geology 1:10,000 scale

## 1.1 Artificial Ground

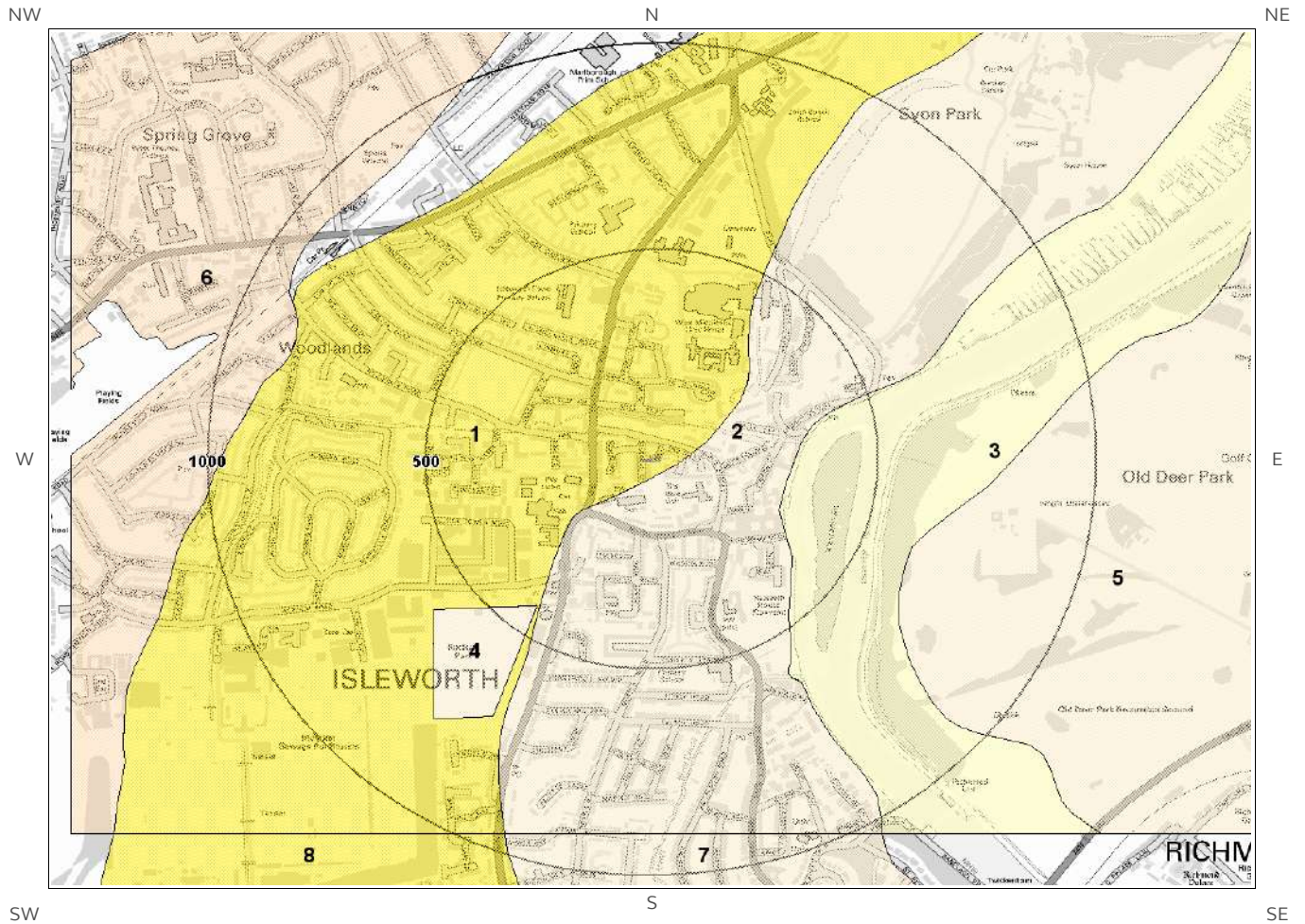
The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

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	426.0	SW	WMGR- UNKNOWN	Infilled Ground	Unknown/unclassified Entry

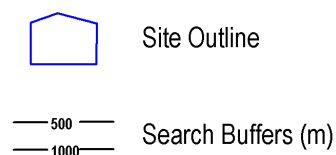


# 1.2 Superficial Deposits and Landslips map (1:10,000 scale)



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	LASI-Z	Langley Silt Member - Silt (unlithified Deposits Coding Scheme)	Silt
2	25.0	SE	KPGR-XSV	Kempton Park Gravel Formation - Sand And Gravel	Sand And Gravel
3	294.0	E	ALV-Z	Alluvium - Silt (unlithified Deposits Coding Scheme)	Silt
4	426.0	SW	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

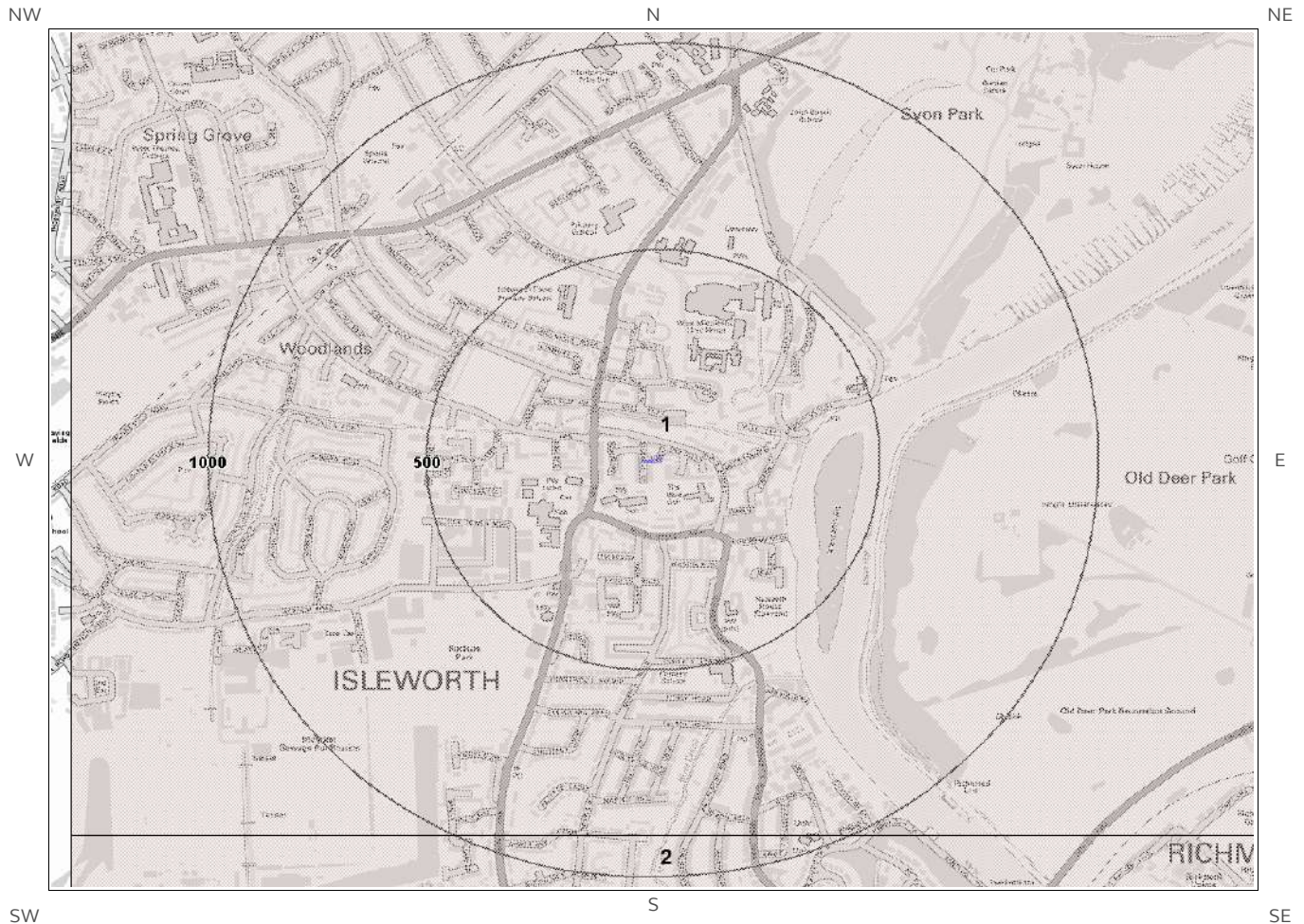
Database searched and no data found.

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.

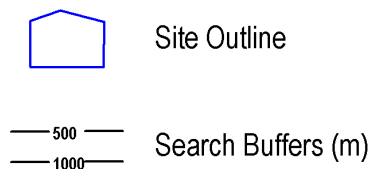


# 1.3 Bedrock and linear features map (1:10,000 scale)



**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.

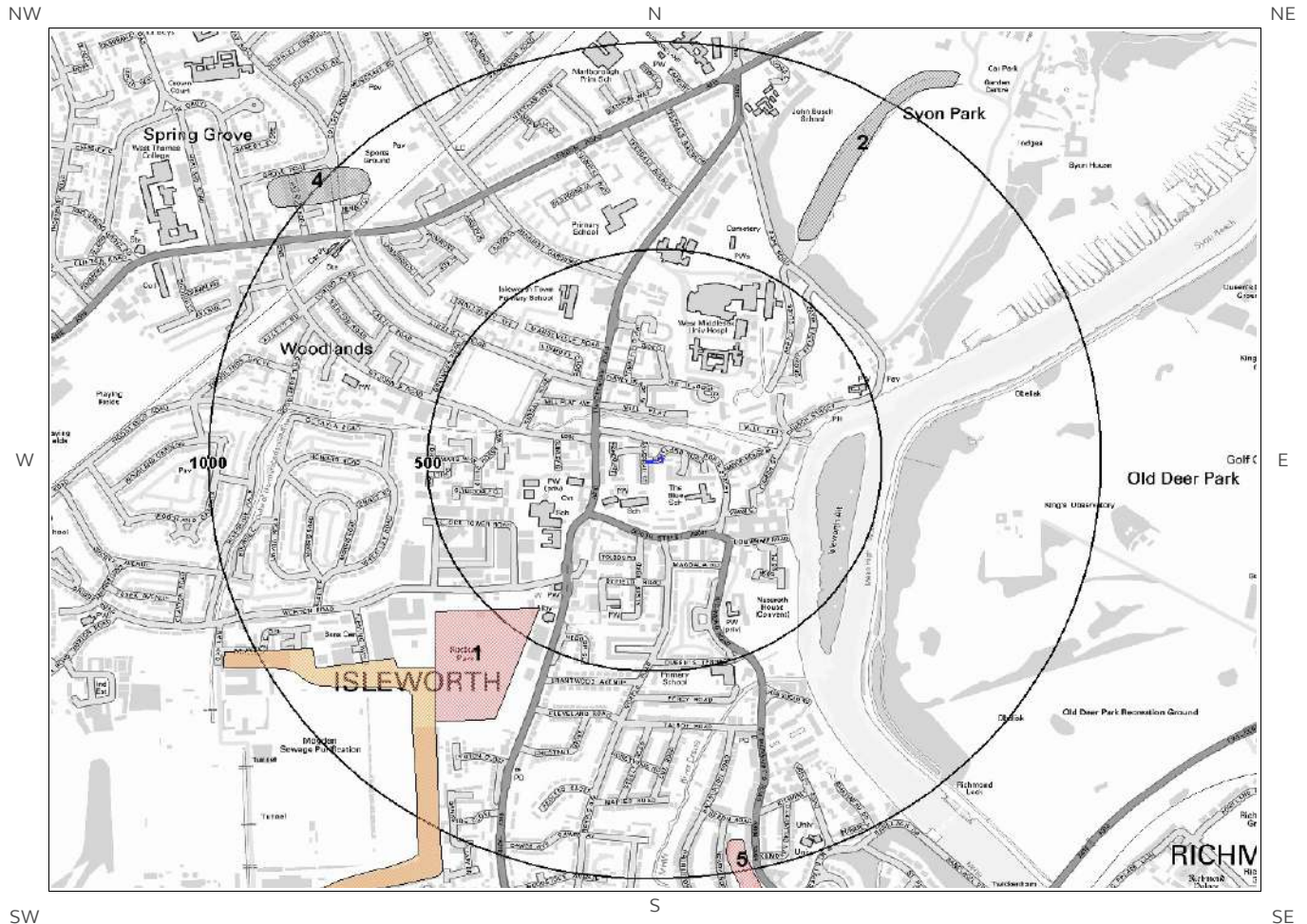
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

---

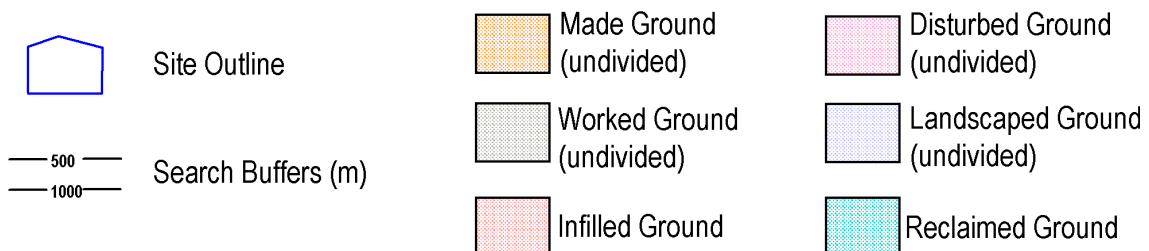


# 2 Geology 1:50,000 Scale

## 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	426.0	SW	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT

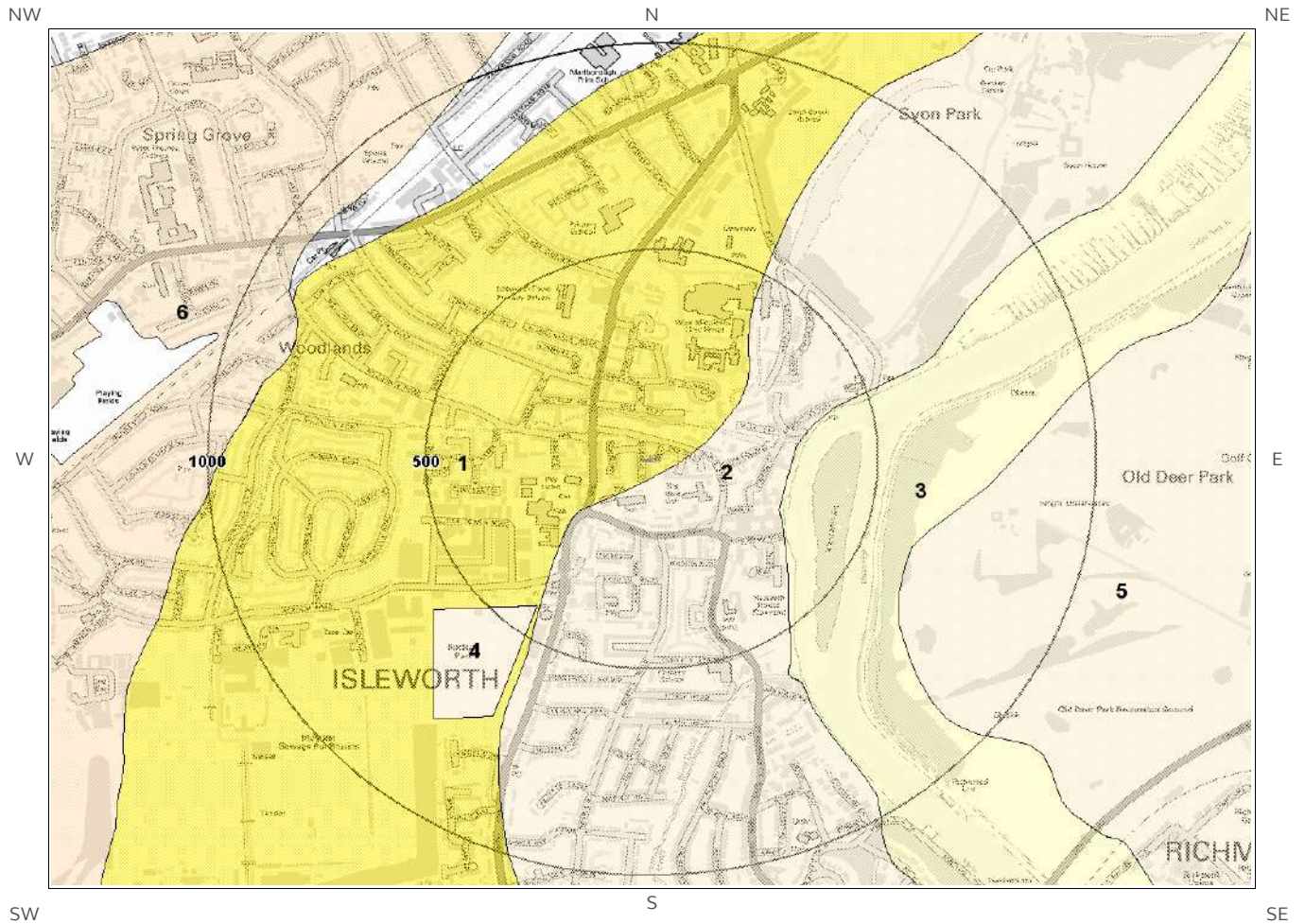
#### 2.1.2 Permeability of Artificial Ground

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

Database searched and no data found.



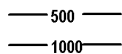
## 2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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Site Outline



Search Buffers (m)

## 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	LASI-XCZ	LANGLEY SILT MEMBER	CLAY AND SILT
2	25.0	SE	KPGR-XSV	KEMPTON PARK GRAVEL MEMBER	SAND AND GRAVEL
3	293.0	E	ALV-XCZSP	ALLUVIUM	CLAY, SILT, SAND AND PEAT
4	426.0	SW	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	Mixed	Low	Very Low
25.0	SE	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.

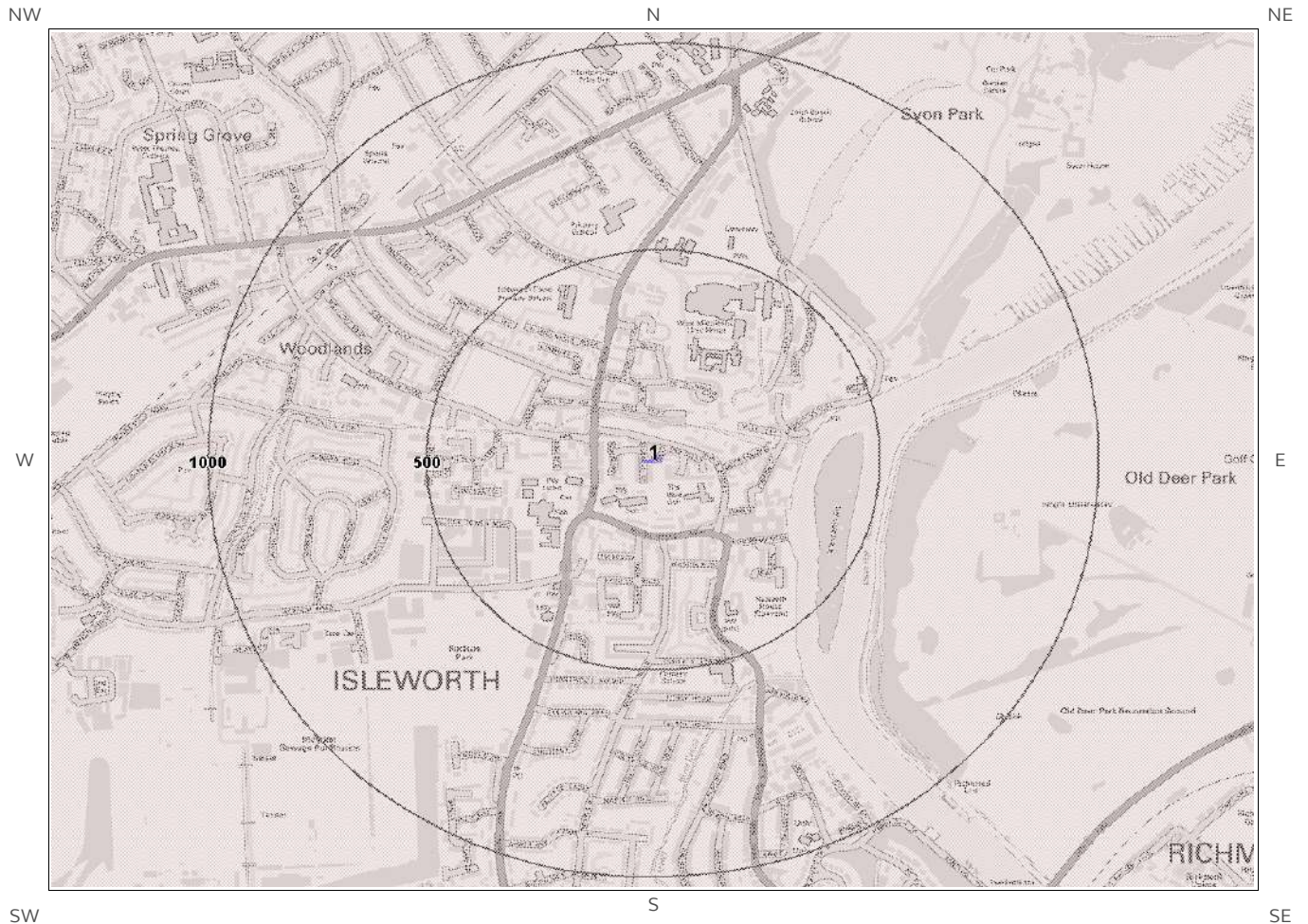
### 2.2.4 Landslip Permeability

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

Database searched and no data found.



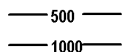
## 2.3 Bedrock and linear features map (1:50,000 scale)



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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.

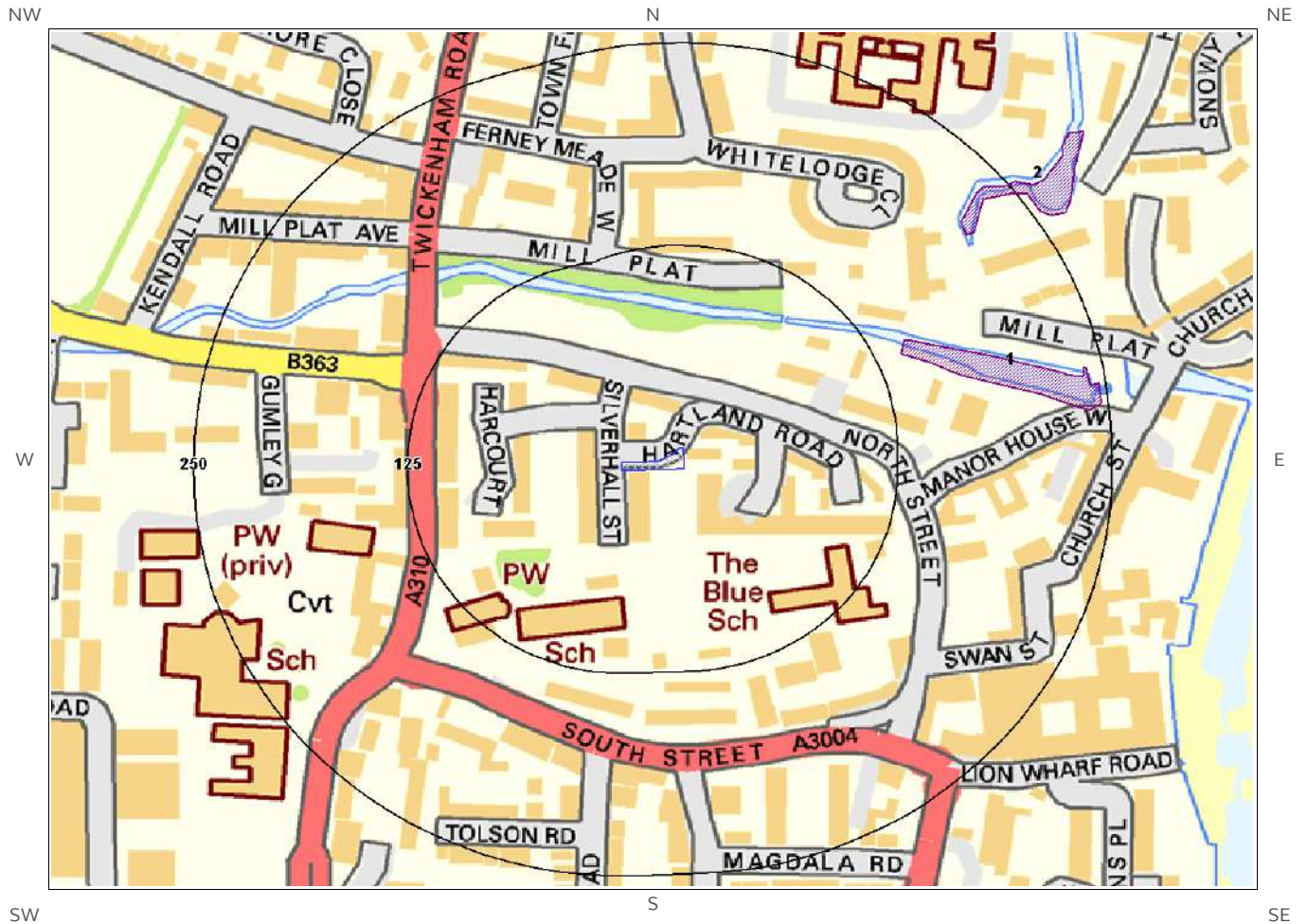
The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, 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



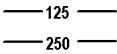


Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?      No radon protective measures are necessary.

# 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	140.0	NE	516536 175959	Pond	1865
2	211.0	NE	516568 176082	Pond	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.

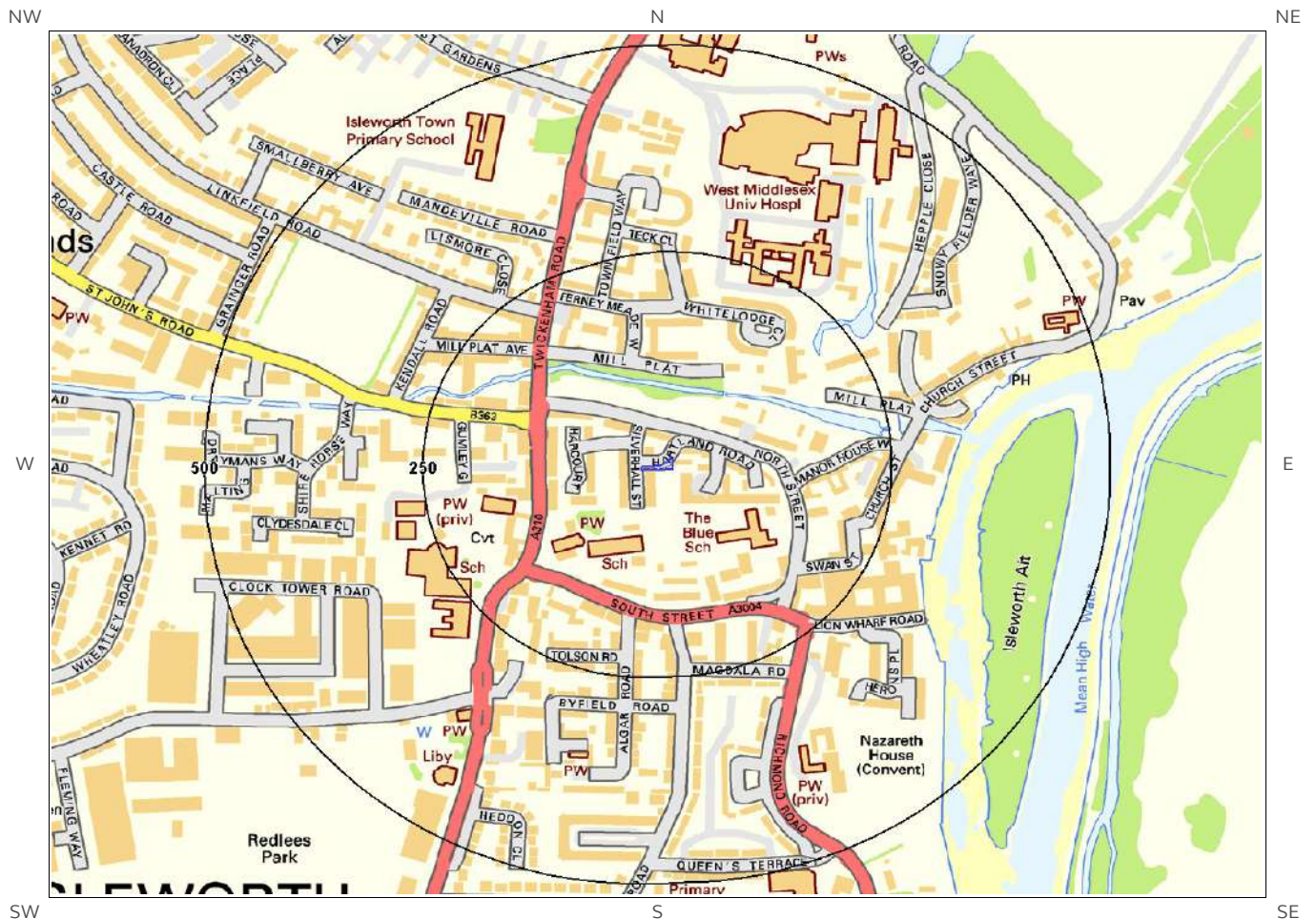
## 4.3 Current Ground Workings

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? No

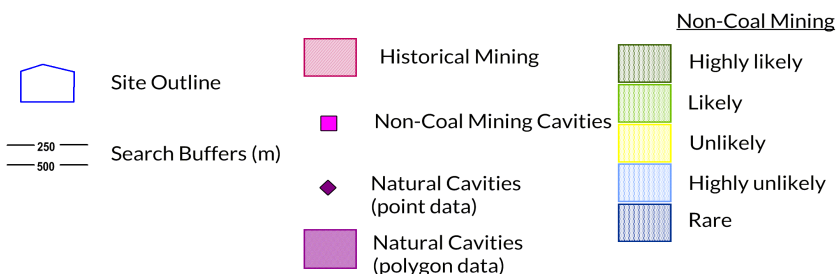
Database searched and no data found.

# 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 Cornwall and Devon Metalliferous Mining

This dataset provides information on metalliferous mining areas in Cornwall/Devon and is derived from records held by Mining Searches UK.

Are there any Cornwall and Devon Metalliferous 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?

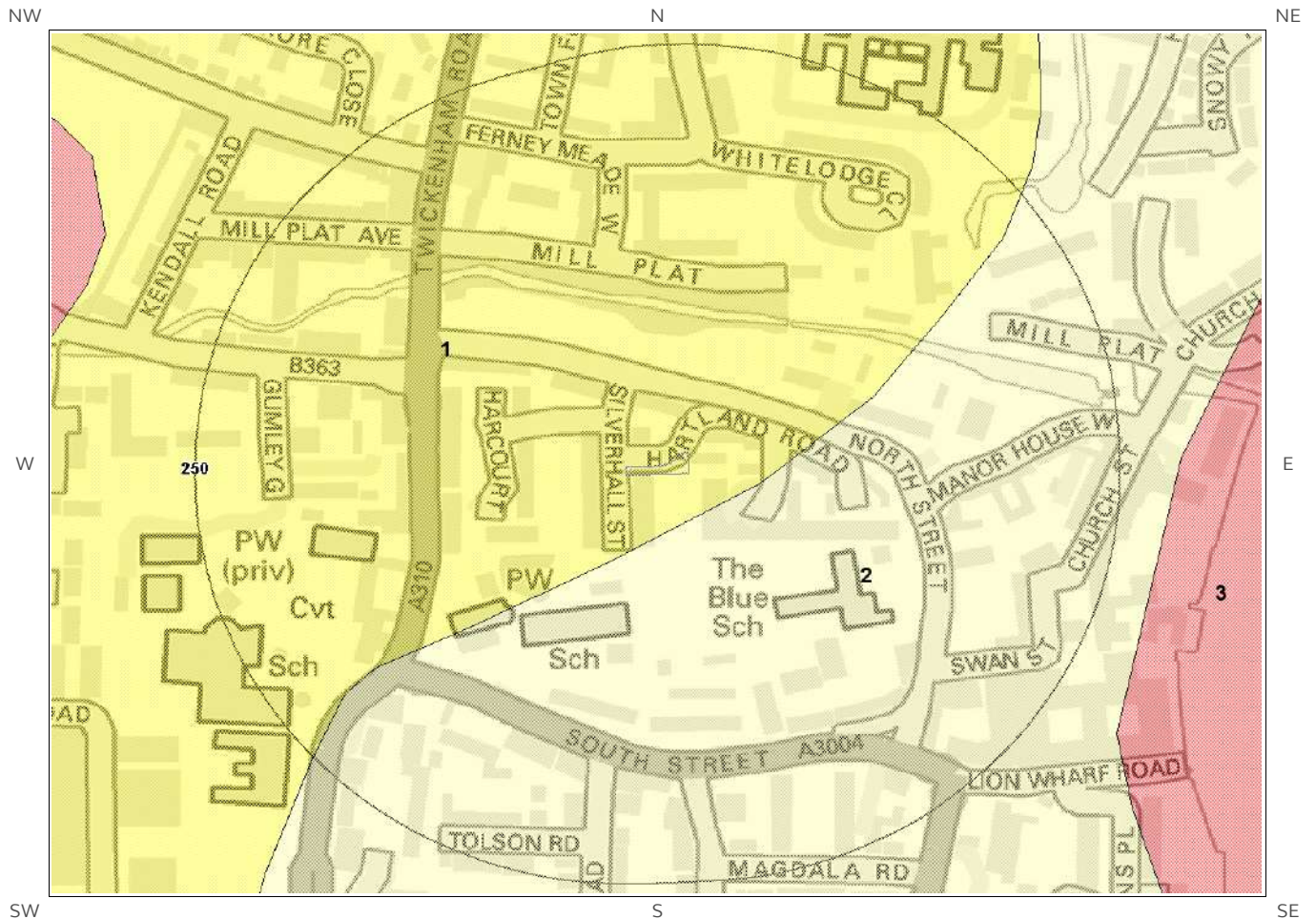
No

Database searched and no data found.

---

# 6 Natural Ground Subsidence

## 6.1 Shrink-Swell Clay map



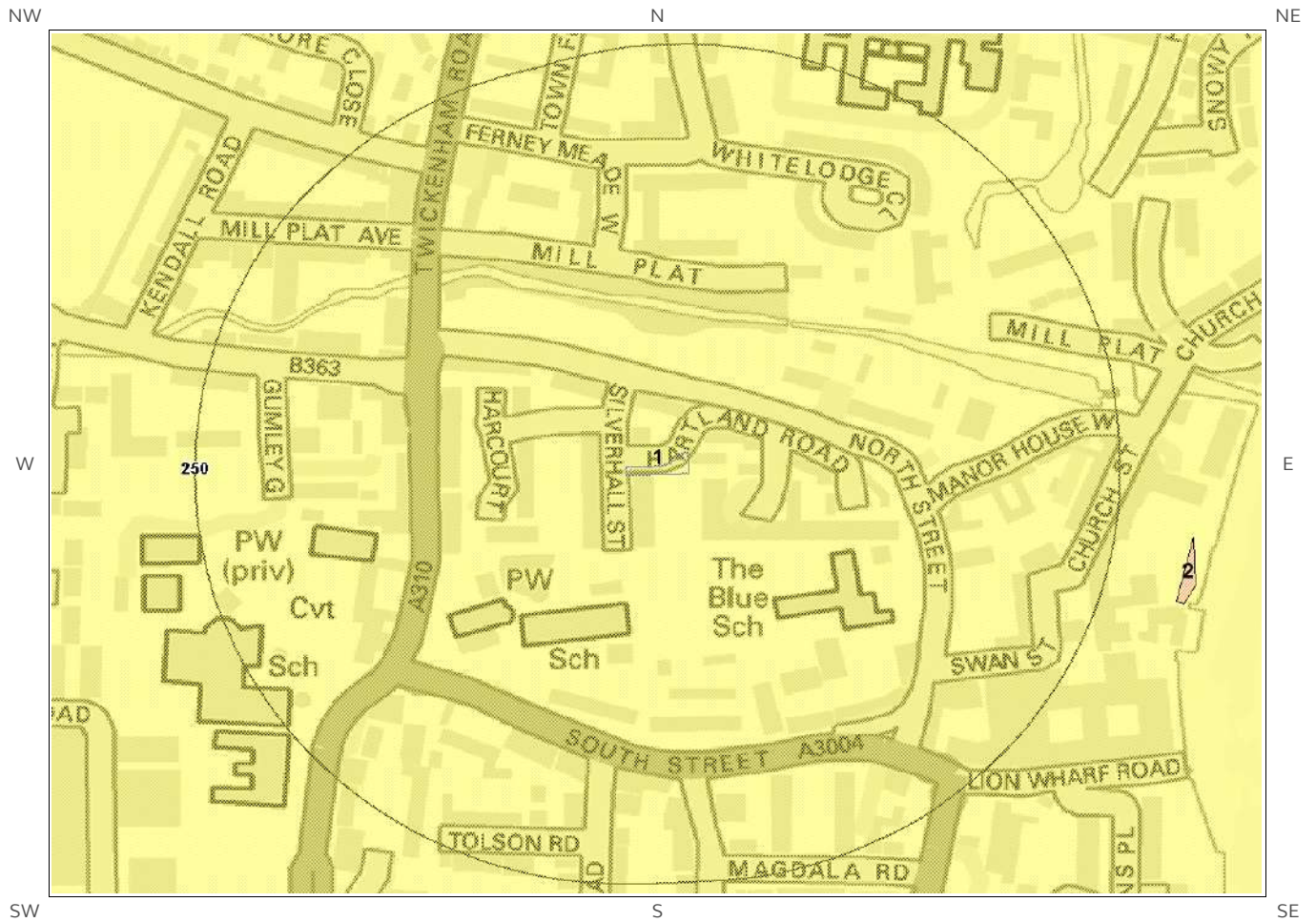
Shrink Swell Clay Legend

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## 6.2 Landslides map

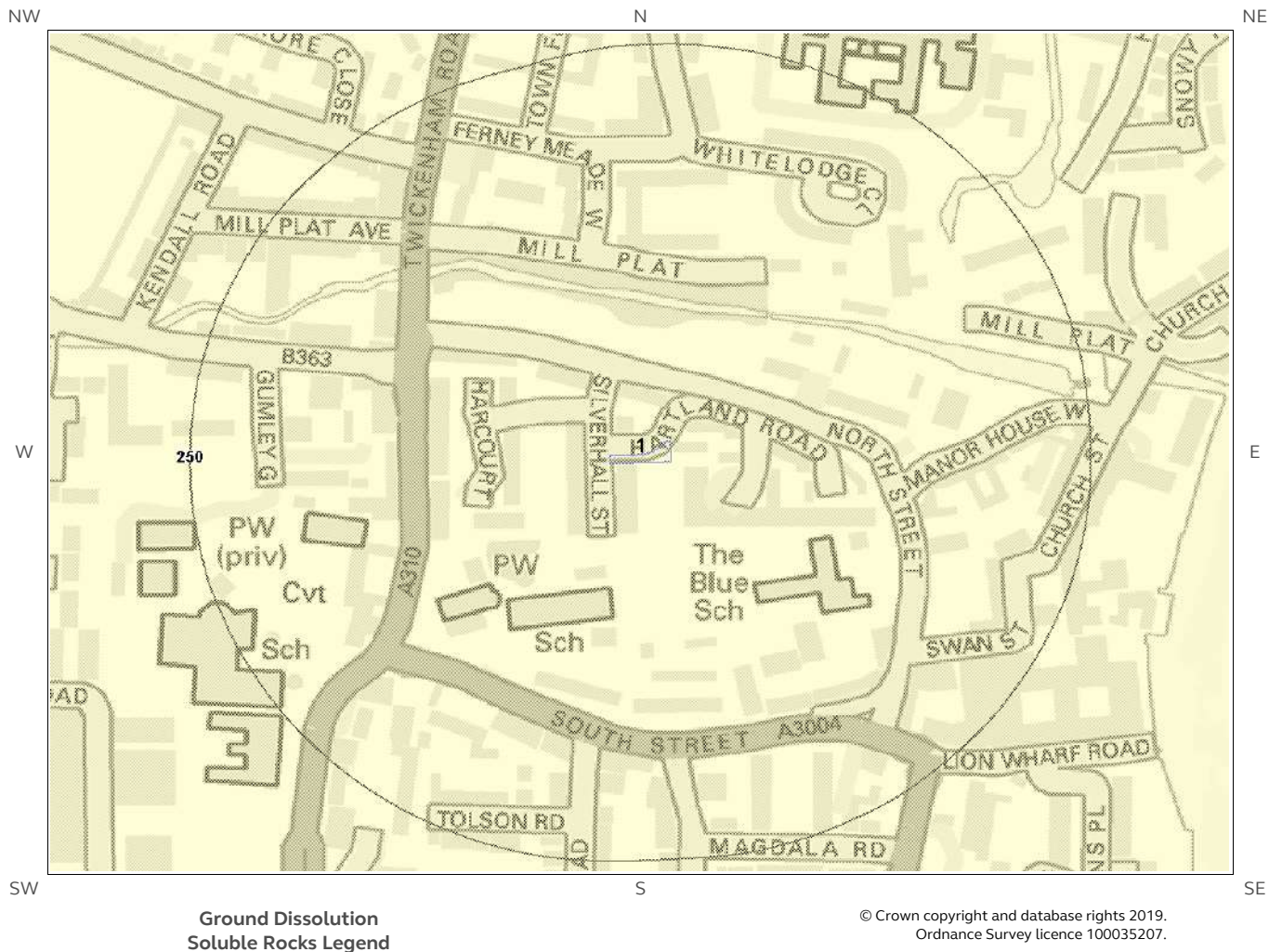


Landslides Legend

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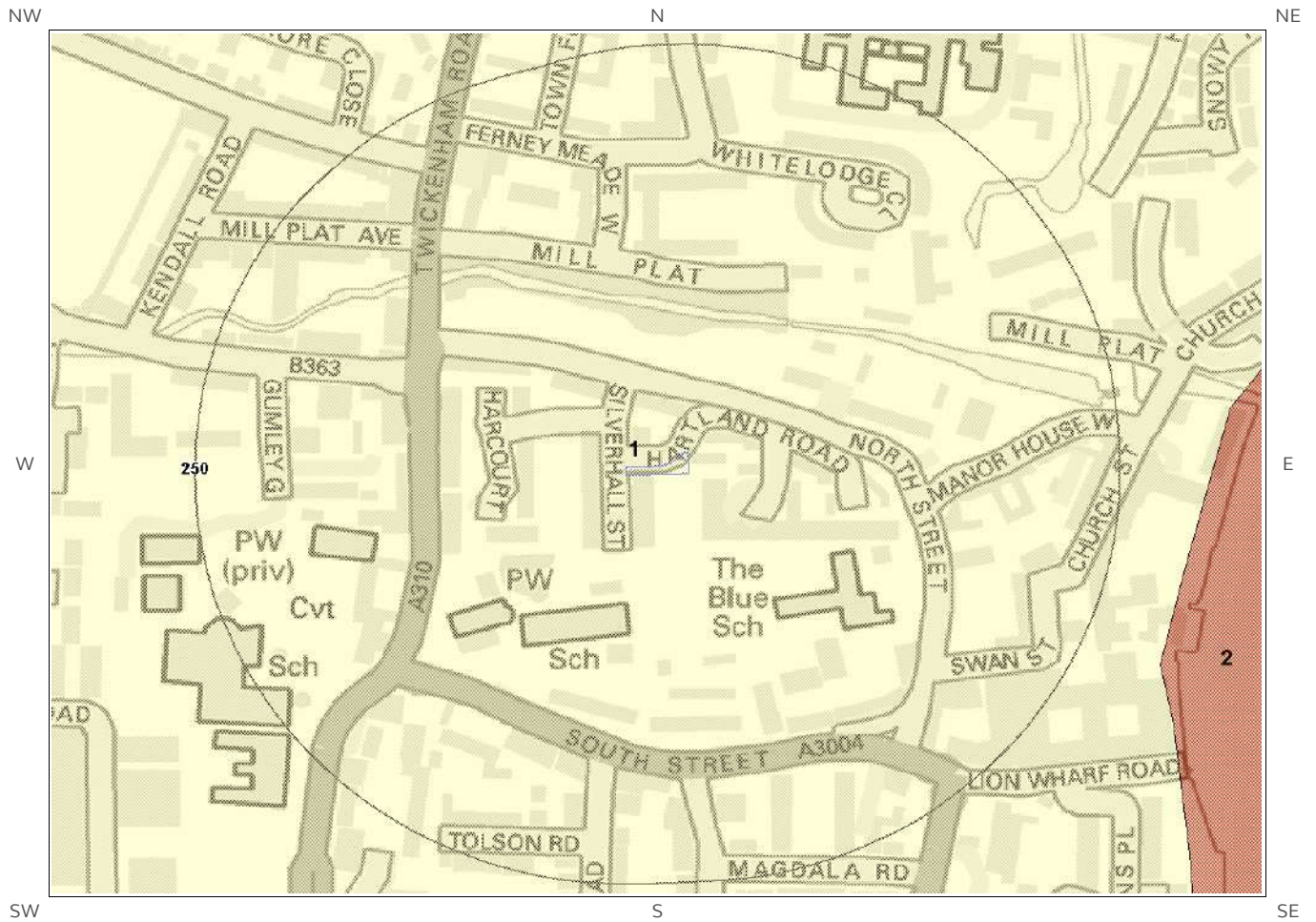


## 6.3 Ground Dissolution of Soluble Rocks map





## 6.4 Compressible Deposits map



Compressible Deposits Legend

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## 6.5 Collapsible Deposits map



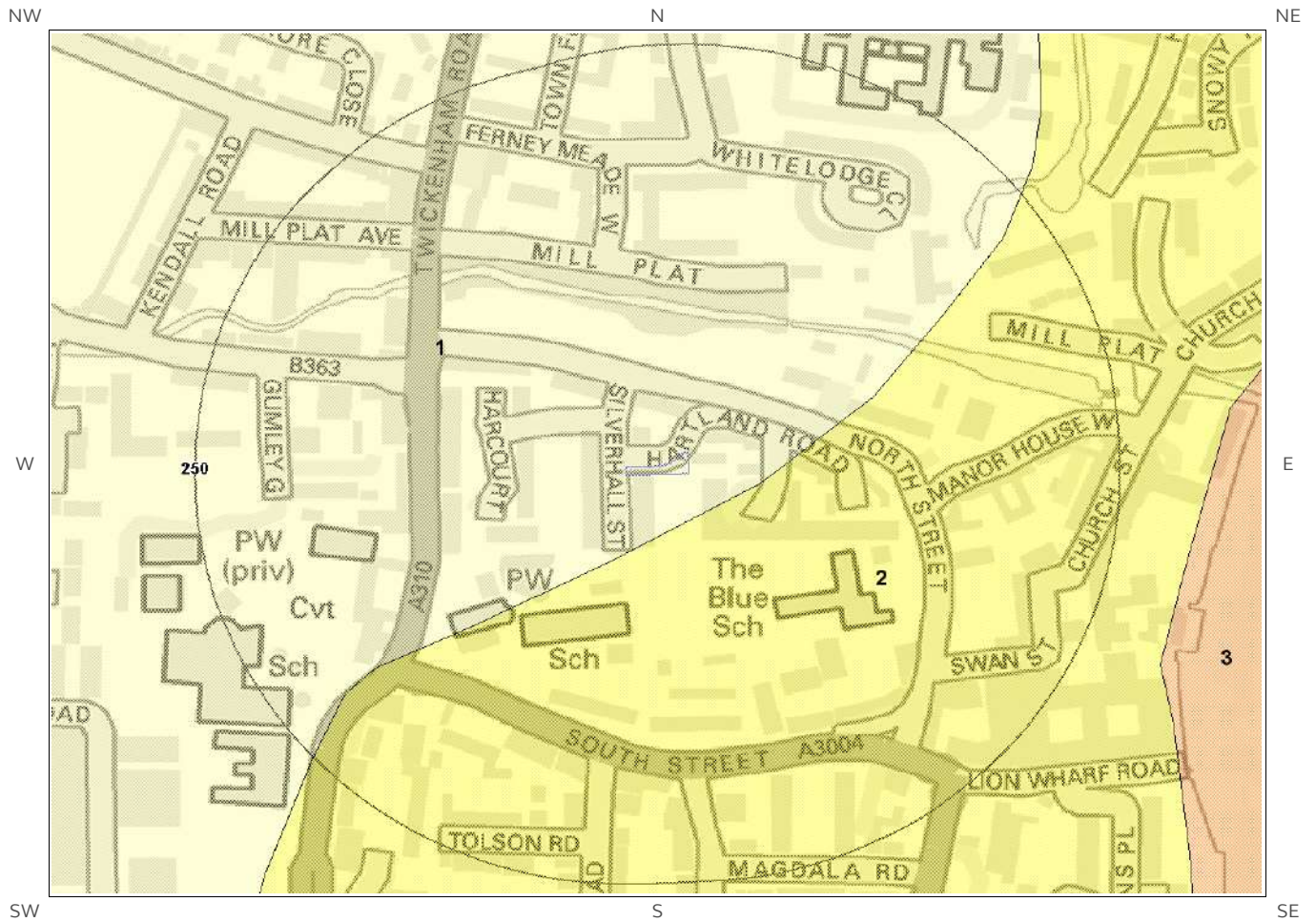
Collapsible Deposits Legend

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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	Very Low	Ground conditions predominantly low plasticity. 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 due to potential problems with shrink-swell clays.
2	25.0	SE	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.

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



## 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.

## 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:

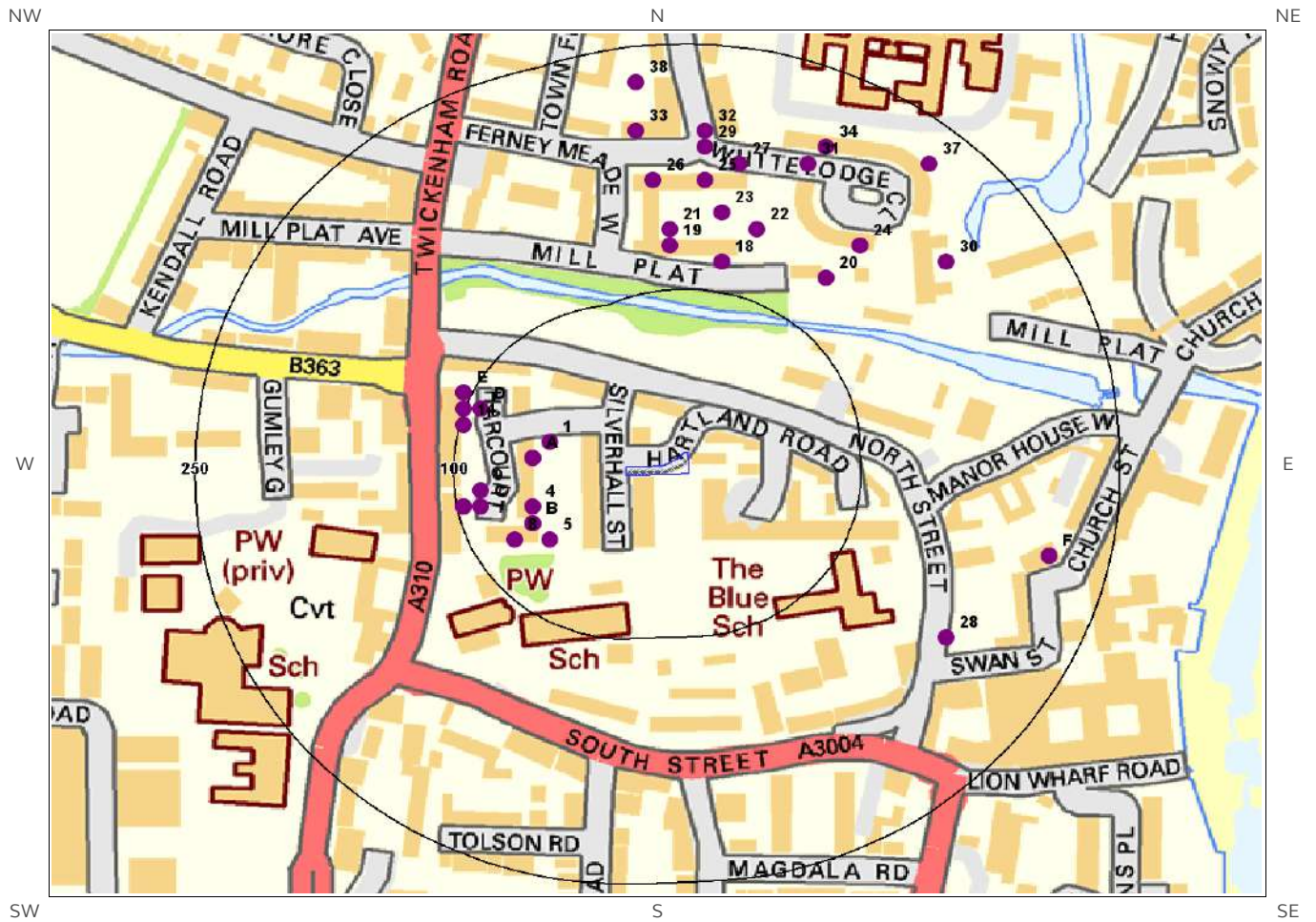
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

## 6.6 Running Sands

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

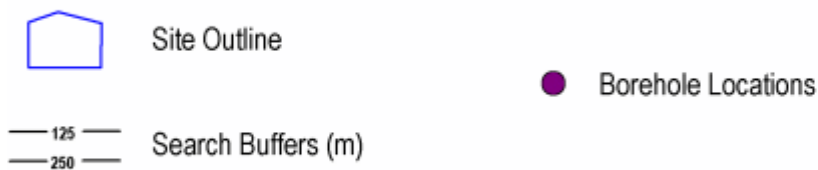
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	25.0	SE	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:

38

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	47.0	W	516270 175920	TQ17NE401	2.5	NORTH STREET HOUNSLOW TP 14
2A	55.0	W	516260 175910	TQ17NE392	10.2	NORTH STREET HOUNSLOW 4
3A	55.0	W	516260 175910	TQ17NE391	3.45	NORTH STREET HOUNSLOW 3
4	58.0	W	516260 175880	TQ17NE400	2.6	NORTH STREET HOUNSLOW TP 13
5	60.0	SW	516270 175860	TQ17NE405	3.2	NORTH STREET HOUNSLOW TP 18
6B	62.0	SW	516260 175870	TQ17NE394	10	NORTH STREET HOUNSLOW 6
7B	62.0	SW	516260 175870	TQ17NE393	3	NORTH STREET HOUNSLOW 5
8	76.0	SW	516250 175860	TQ17NE399	2.65	NORTH STREET HOUNSLOW TP 12
9	85.0	W	516230 175890	TQ17NE404	2.6	NORTH STREET HOUNSLOW TP 17
10C	87.0	W	516230 175880	TQ17NE398	3.3	NORTH STREET HOUNSLOW TP 11
11D	92.0	NW	516230 175940	TQ17NE402	2.9	NORTH STREET HOUNSLOW TP 15
12C	97.0	W	516220 175880	TQ17NE395	3	NORTH STREET HOUNSLOW 7
13C	97.0	W	516220 175880	TQ17NE396	10.3	NORTH STREET HOUNSLOW 8
14	98.0	W	516220 175930	TQ17NE397	1.2	NORTH STREET HOUNSLOW TP 10
15D	101.0	W	516220 175940	TQ17NE390	15.3	NORTH STREET HOUNSLOW 2
16E	105.0	NW	516220 175950	TQ17NE389	6.4	NORTH STREET HOUNSLOW 1
17E	105.0	NW	516220 175950	TQ17NE403	2.6	NORTH STREET HOUNSLOW TP 16
18	118.0	N	516370 176030	TQ17NE326	2.7	WEST MIDDLESEX HOSPITAL TP18
19	127.0	N	516340 176040	TQ17NE318	2.7	WEST MIDDLESEX HOSPITAL TP10
20	133.0	NE	516430 176020	TQ17NE313	2.5	WEST MIDDLESEX HOSPITAL TP5
21	137.0	N	516340 176050	TQ17NE324	2.7	WEST MIDDLESEX HOSPITAL TP16
22	142.0	N	516390 176050	TQ17NE314	0.6	WEST MIDDLESEX HOSPITAL TP6

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23	148.0	N	516370 176060	TQ17NE325	2.7	WEST MIDDLESEX HOSPITAL TP17
24	161.0	NE	516450 176040	TQ17NE312	2.7	WEST MIDDLESEX HOSPITAL TP4
25	167.0	N	516360 176080	TQ17NE316	1.8	WEST MIDDLESEX HOSPITAL TP8
26	167.0	N	516330 176080	TQ17NE323	1.8	WEST MIDDLESEX HOSPITAL TP15
27	179.0	N	516380 176090	TQ17NE321	2.7	WEST MIDDLESEX HOSPITAL TP13
28	180.0	SE	516500 175800	TQ17NE30	3.96	THE SQUARE ISLEWORTH
29	187.0	N	516360 176100	TQ17NE322	2.7	WEST MIDDLESEX HOSPITAL TP14
30	190.0	NE	516500 176030	TQ17NE309	2.4	WEST MIDDLESEX HOSPITAL TP1
31	190.0	N	516420 176090	TQ17NE315	2.7	WEST MIDDLESEX HOSPITAL TP7
32	197.0	N	516360 176110	TQ17NE320	2.01	WEST MIDDLESEX HOSPITAL TP12
33	198.0	N	516320 176110	TQ17NE319	2.6	WEST MIDDLESEX HOSPITAL TP11
34	203.0	NE	516430 176100	TQ17NE311	3	WEST MIDDLESEX HOSPITAL TP3
35F	215.0	E	516560 175850	TQ17NE168	13	NORTHUMBERLAND HOUSE 2
36F	215.0	E	516560 175850	TQ17NE167	15	NORTHUMBERLAND HSE ISLEWORTH
37	225.0	NE	516490 176090	TQ17NE310	2.8	WEST MIDDLESEX HOSPITAL TP2
38	228.0	N	516320 176140	TQ17NE317	2.6	WEST MIDDLESEX HOSPITAL TP9



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/17116531](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116531)  
#2A: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116515](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116515)  
#3A: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116513](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116513)  
#4: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116530](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116530)  
#5: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116536](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116536)  
#6B: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116518](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116518)  
#7B: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116517](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116517)  
#8: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116529](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116529)  
#9: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116534](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116534)  
#10C: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116528](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116528)  
#11D: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116532](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116532)  
#12C: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116521](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116521)  
#13C: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116523](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116523)  
#14: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116525](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116525)  
#15D: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116512](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116512)  
#16E: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116510](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116510)  
#17E: [scans.bgs.ac.uk/sobi\\_scans/boreholes/17116533](https://scans.bgs.ac.uk/sobi_scans/boreholes/17116533)  
#18: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580971](https://scans.bgs.ac.uk/sobi_scans/boreholes/580971)  
#19: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580963](https://scans.bgs.ac.uk/sobi_scans/boreholes/580963)  
#20: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580958](https://scans.bgs.ac.uk/sobi_scans/boreholes/580958)  
#21: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580969](https://scans.bgs.ac.uk/sobi_scans/boreholes/580969)  
#22: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580959](https://scans.bgs.ac.uk/sobi_scans/boreholes/580959)  
#23: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580970](https://scans.bgs.ac.uk/sobi_scans/boreholes/580970)  
#24: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580957](https://scans.bgs.ac.uk/sobi_scans/boreholes/580957)  
#25: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580961](https://scans.bgs.ac.uk/sobi_scans/boreholes/580961)  
#26: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580968](https://scans.bgs.ac.uk/sobi_scans/boreholes/580968)  
#27: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580966](https://scans.bgs.ac.uk/sobi_scans/boreholes/580966)  
#28: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580637](https://scans.bgs.ac.uk/sobi_scans/boreholes/580637)  
#29: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580967](https://scans.bgs.ac.uk/sobi_scans/boreholes/580967)  
#30: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580954](https://scans.bgs.ac.uk/sobi_scans/boreholes/580954)  
#31: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580960](https://scans.bgs.ac.uk/sobi_scans/boreholes/580960)  
#32: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580965](https://scans.bgs.ac.uk/sobi_scans/boreholes/580965)  
#33: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580964](https://scans.bgs.ac.uk/sobi_scans/boreholes/580964)  
#34: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580956](https://scans.bgs.ac.uk/sobi_scans/boreholes/580956)  
#35F: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580813](https://scans.bgs.ac.uk/sobi_scans/boreholes/580813)  
#36F: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580812](https://scans.bgs.ac.uk/sobi_scans/boreholes/580812)  
#37: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580955](https://scans.bgs.ac.uk/sobi_scans/boreholes/580955)  
#38: [scans.bgs.ac.uk/sobi\\_scans/boreholes/580962](https://scans.bgs.ac.uk/sobi_scans/boreholes/580962)

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## 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.

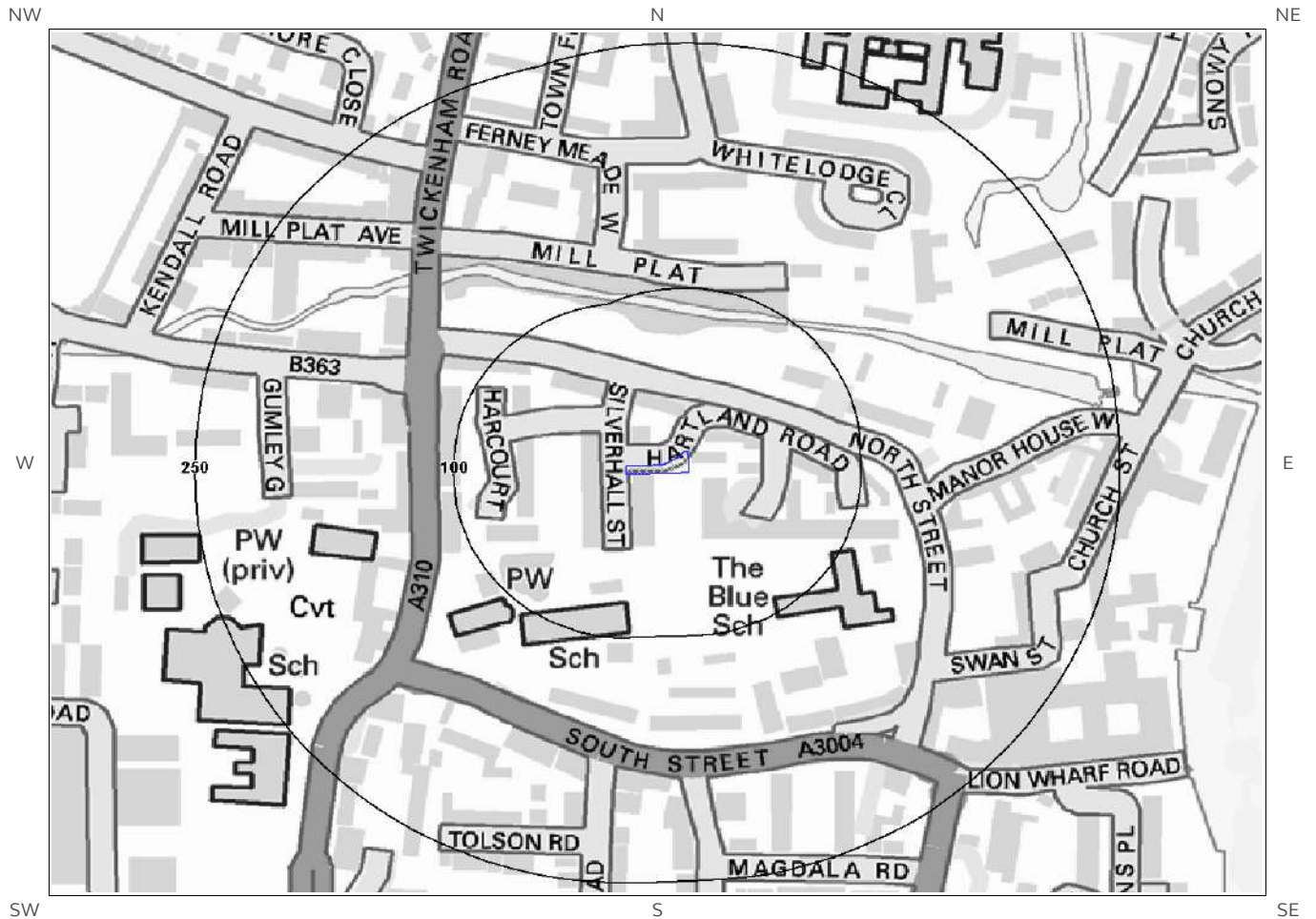
Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	London	No data	No data	No data	No data	No data
25.0	SE	London	No data	No data	No data	No data	No data

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

---

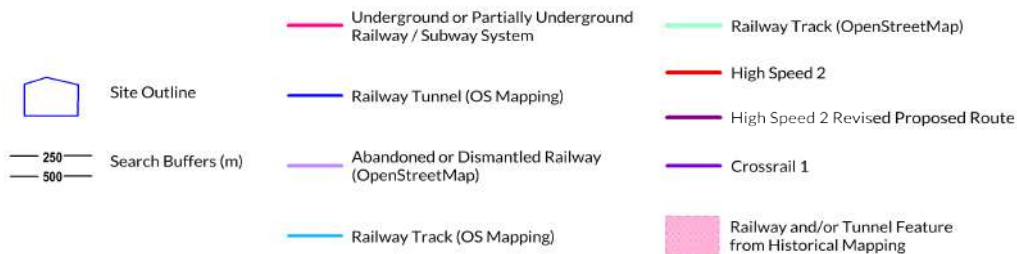


# 9 Railways and Tunnels map



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? No

Database searched and no data found.

*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? No

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.*

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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.

# Contact Details

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BGS Geological Hazards Reports and general geological enquiries

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[www.coal.gov.uk](http://www.coal.gov.uk)



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<https://www.gov.uk/government/organisations/public-health-england>  
Email: [enquiries@phe.gov.uk](mailto:enquiries@phe.gov.uk)  
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This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.




# Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:  
<https://www.groundsure.com/terms-and-conditions-feb11-2019>




## **APPENDIX C**

### **Site Photographs**

<b>CLIENT:</b>	London Borough of Hounslow	<b>DATE:</b>	11/09/2019	 <b>ARCADIS</b>		Design & Consultancy for natural and built assets
<b>REFERENCE:</b>	10030793	<b>SITE NAME:</b>	Hartland Road (Site A)	2 Glass Wharf, Temple Quay, Bristol, BS2 0FR	T: 0161 245 8700 F: 0161 245 8701	
Plate 1 – View of three garages to the east of the site						
Plate 2 – On site Car parking area						



<b>CLIENT:</b>	London Borough of Hounslow	<b>DATE:</b>	11/09/2019	 <b>ARCADIS</b>	Design & Consultancy for natural and built assets
<b>REFERENCE:</b>	10030793	<b>SITE NAME:</b>	Hartland Road (Site A)		

2 Glass Wharf,  
Temple Quay,  
Bristol, BS2 0FR

T: 0161 245 8700  
F: 0161 245 8701

Plate 3 – View of the  
 drain pipe and drainage  
 cover near the western  
 garage



<b>CLIENT:</b>	London Borough of Hounslow	<b>DATE:</b>	11/09/2019	 <b>ARCADIS</b>		Design & Consultancy for natural and built assets
<b>REFERENCE:</b>	10030793	<b>SITE NAME:</b>	Hartland Road (Site A)	2 Glass Wharf, Temple Quay, Bristol, BS2 0FR		T: 0161 245 8700 F: 0161 245 8701
Plate 4 – Signage indicating car parking zone for residents at Hartland Road						



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