

TFL_PSF_9131 SITE INVESTIGATIONS: SMALL SITES INITIATIVE QUEENSBURY CAR PARK, HARROW, HA8 6AT

Geotechnical and Geo-Environmental Desk Study

JANUARY 2020



Queensbury Car Park, Harrow, HA8 6AT

Geotechnical and Geo-Environmental Desk Study

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1 INTRODUCTION

1.1 Terms of Reference

Arcadis Consulting (UK) Limited (Arcadis) has been commissioned by Transport for London (TfL) 'the Client' to undertake a number of technical surveys for a site at Queensbury Car Park, Harrow ('the Site').

TfL is aiming to divest a number of small sites to enable positive regeneration. The objective of this review is to identify potential development constraints due to geotechnical and geo-environmental conditions on Site based on the findings of this desk study.

The objectives of this review are to:

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

The site location is shown in Figure 1 below.

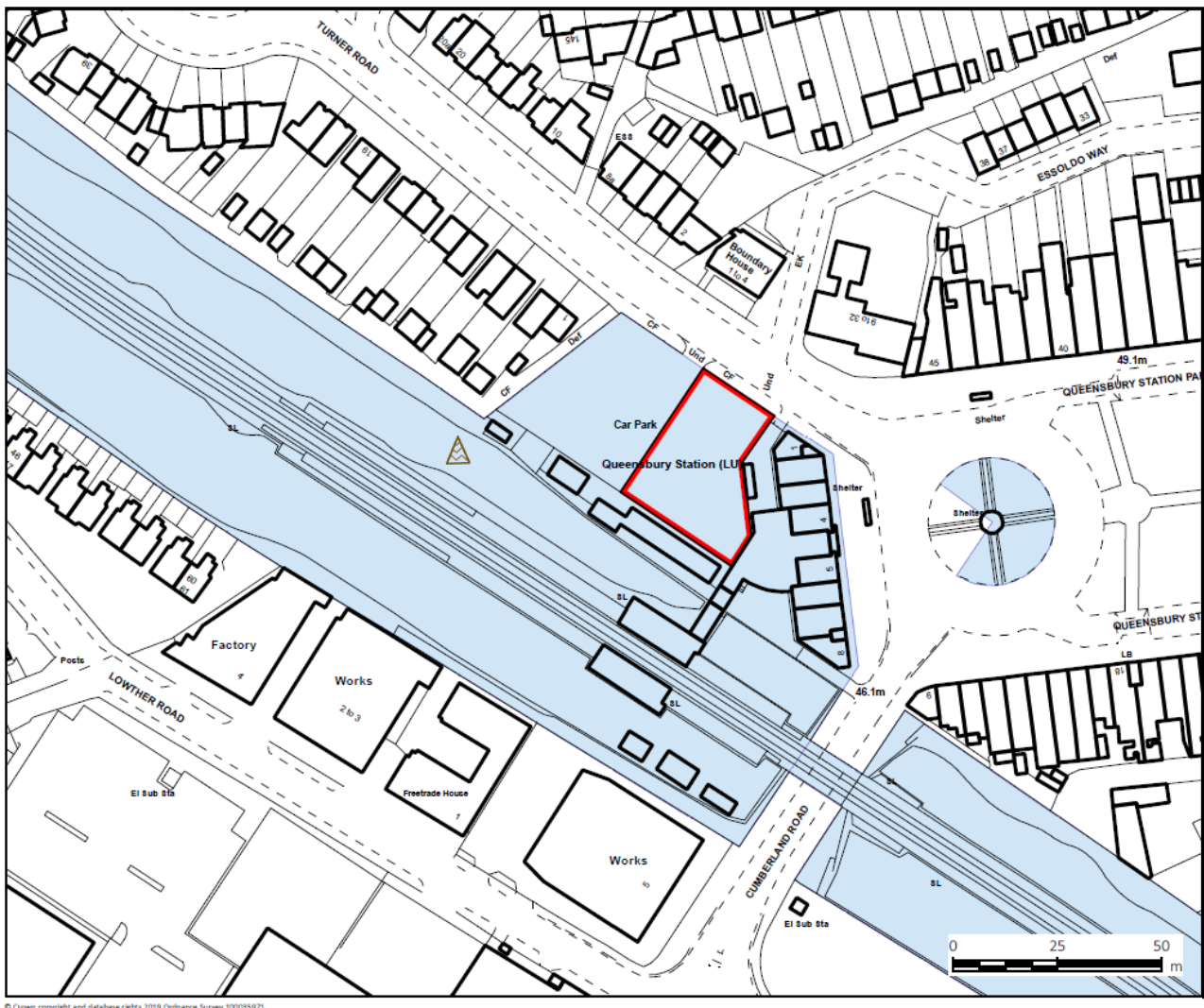


Figure 1: Site Location Plan provided by TfL

1.2 Sources of Information

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

- The on-line British Geological Survey (BGS) Geology of Britain Map Viewer (Ref. 1);
- Historical borehole records available through BGS website (above) (Ref. 1);
- Historical Ordnance Survey maps obtained from Groundsure (included in Appendix A);
- Environmental Information from Groundsure Datasheet (Appendix B);
- Current publicly available aerial images and maps from Google maps (Ref. 2);
- Zetica Regional Unexploded Ordnance Map and Pre- Desk Study Assessment (Appendix C); and
- Unexploded Ordnance data obtained from Bomb Sight National Archives website (Ref. 3).

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	Queensbury Car Park, Harrow, HA8 6AT
National Grid Reference	518822, 189812
Approximate Site Area	The site covers an area of approximately 0.09 hectares
Description of Site	<p>The site occupies the eastern portion of a larger car park and is accessed from Turner Road to the north.</p> <p>The surface of the site is bitumen and the boundary of the site to the east, south and north of the site comprises of steel fence.</p> <p>Large transformers are located off site immediately adjacent to the southern boundary and are likely associated with the railway line located immediately south of the transformers.</p> <p>The surface water onsite migrates to the surface water drains located on the southern boundary of the site.</p>
Underground Services	<p>A storm water drain is located in the southern corner of the site, adjacent to an unknown pit.</p> <p>A small transformer is located at the north eastern corner of the site and is possibly feeding electricity to the lights located in the centre of the site.</p>
Topography	The topography of the site is generally flat at approximately 52 m Above Ordnance Datum (AOD). The regional topography is anticipated to slope in south eastern direction towards Wealdstone Brook.
Surrounding Area	<p>The site lies within an urban setting with residential houses to the north and west and commercial enterprises to the northeast. Commercial enterprises consist of retail stores and restaurants.</p> <p>Queensbury Underground train station is located immediately east of the site and the associated train line located immediately south of the site on an embankment. Further south is a commercial/ industrial estate consisting of mechanics, vehicle servicing, retail stores and petrol station.</p>

2.2 Site History

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

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

Table 2.2 History of Site and Surrounding Area

Date	Historical Development (Site and Surrounding Area)
1865- 1896	<p>The Site is undeveloped land.</p> <p>The surrounding area is mostly undeveloped. By the end of 1890's, a sewage farm is developed to 250m south-south west of the Site.</p>
1920	<p>No significant changes are noted on site.</p> <p>Surrounding area remains majorly underdeveloped. However, the sewage farms to the southwest had been redeveloped with filter beds. Filter beds are also noted to 500m southeast of the Site.</p> <p>Isolations hospitals are identified to approx. 300m northwest and 750m southeast.</p>
1932-1938	<p>No significant changes are noted on site.</p> <p>Site surrounding to the north and the southeast and southwest had been developed extensively with roads and residential buildings.</p> <p>Railway lines with embankments have been developed to the south of the site running in a southeast to northwest orientation from the site approx. 20m at its closest. The Queensbury station is developed to the immediate east of the Site. The Queensbury station parade is marked 100m east.</p> <p>A laundry building is noted to 100m southeast and Carburettor works is noted to 200m southwest.</p> <p>The isolation hospital to the southeast is now marked as a Maternity hospital.</p>
1939-1951	<p>No significant changes are noted on site.</p> <p>The surrounding sites continued development with residential and commercial complex.</p> <p>Engineering works are noted to 200m southwest.</p>
1962-1968	<p>The site is marked as a part of Queensbury station.</p> <p>The area within 250m southeast to southwest is developed with more factories and unspecified work as well as garages associated with it.</p> <p>The engineering works noted to 200m southwest is also now marked as a factory.</p> <p>The sewage farm and filter beds to the southwest are no longer present, seem to be infilled.</p>
1977-1991	<p>The site is now marked as a car park.</p> <p>A factory to 130 southwest is now marked as a superstore.</p> <p>Electric substations are noted to 60m north, 120m northeast, 130m southwest and 150m southeast and 200m southeast.</p> <p>A playing field to 500m northwest is redeveloped to a tennis court.</p>
1995 -2020	<p>No significant changes are noted onsite.</p> <p>Some of the factories/ unspecified works to 250m southeast is no longer marked and a superstore is marked on the location instead.</p> <p>Buildings are developed to the immediate south and southwest of the Site, between the site and the railway lines.</p>

2.2.1 Summary of Site History

The site was undeveloped until it became part of railway from circa 1932-1935, although no associated rail structures were noted on site. The site was shown as developed into a car park from the 1977 map edition.

The majority of the potential off-site sources of contamination mentioned above are not directly up hydraulic gradient (north) from the site, therefore it is considered unlikely that contamination would have migrated beneath the site. The railway line adjacent to the southeast is not considered likely to be a potential source of contamination as it is down gradient from the site, on an embankment and the migration of any potential contamination would be limited by the relatively impermeable geology (see Section 3.1).

The electricity substation to the north and northeast of the site is considered to be a potential source of contamination as located to the upgradient and due to its proximity to the site.

2.3 Unexploded Ordnance

With reference to the Zetica Unexploded Bomb Risk report for the site (Appendix C), the Site is designated as lying within an area denoted as “low” bomb risk. Further reference has been made to the Bomb Sight National Archives (Ref. 3) which indicates that no High Explosive (HE) bomb was dropped within an approximate 250m radius of the Site.

A pre-desk study assessment (PDSA) was obtained from Zetica (Appendix C) which states that during WWII the Site was located in the Municipal Borough of Wembley, which officially recorded 493No. High Explosive Bombs with a regional bombing density of 82.7 bombs per 405 hectares.

The PDSA recommends that a detailed desk study needs to be commissioned to assess, and potentially zone, the UXO hazard level on the Site.

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	Superficial Deposits: No data available on the superficial deposit within 500m of the Site. Solid Geology: London Clay Formation which is designated as Unproductive Strata.
BGS Boreholes (within 100m of the site)	The nearest historic BGS borehole to the site (TQ18NE75, dated 1883) is approximately 124m southwest and is summarised below. Made Ground comprising ash and tarmac is recorded up to a depth of 0.2 meters below ground level (m bgl), followed by 'soft to firm yellow/brown and grey mottled silty clay' to a depth of 1.5 m bgl, followed by 'firm brown mottled silty clay' to a depth of 5.20 m bgl, followed by 'stiff blue/grey fissured clay' to a depth of 10.00 m bgl upon which the borehole was terminated. Groundwater strike was not encountered.
Within a Source Protection Zone	The Site is not located within a groundwater Source Protection Zone.
Licensed Groundwater Abstraction Points	There are no licensed groundwater abstraction points identified within 500m of the Site.
Surface Water Feature	Surface water feature is not identified within 250m of the Site. The nearest surface water feature is Wealdstone brook, adjacent to Queensbury park, located approximately 300m south of the Site.
Likely Groundwater Flow Direction	Based on the published geology, significant groundwater flow within London Clay bedrock is not expected to be present. However, based on the local topography, any shallow ground water, if present, would likely flow towards the southeast.

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 could impact the Site.

Table 3.2. Environmental Data

Data type	Description	Distance (m) and Direction
Radon	The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level).	N/A
Discharge Consent	One active discharge consent recorded within 500m of sewer discharge type with Permit number CANM.0664	16 m northeast
Pollution Incidents	Two minor pollution incidents on the same location were noted within 250m of the Site, of household waste pollutant.	143m southwest

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Data type	Description	Distance (m) and Direction
to controlled waters		
Environmental Permit	Two active Part B permit were recorded within 250m of the Site	148m south
	Permit for unloading petrol into storage at service stations registered to Morrisons Petrol Stations	
	Permit for the process of dry cleaning registered to Morrisons Dry cleaners	227m southeast
Potentially Infilled Land	Infilled land records associated with pond and sewage farms are identified with in 250m of the Site.	136m and 137m southwest
	Ponds	
	Sewage Farm	243m and 244m south 243m, 245m and 248m southwest
	Filter bed	245m and 248m southwest
Landfill sites (current and historical)	No current or historic landfill sites are recorded within 250m of the site.	N/A
Contemporary Trade Directory Entries (Within 250m of the site)	Queensbury underground network stations	5m southwest
	Electric substations	57m north, 88m south, 130m southeast, 154m northeast, and 224m northeast
	Unspecified Works	75m south, 77m southwest, and 191 m southwest
	The following industries noted under vehicle repair, testing and servicing: Equatus Vehicle Services Quickfit Safety Belt Service Parfitt Automotive Pit lane Autos Car paint dealing	90m southwest 104m southwest 138m southeast 149m southwest 179m north
	Factory	101m southwest, 123m southwest, and 157m southwest
Fuel Station Entries	One active fuel station identified with in 250m of the Site, registered to Morrisons and of non-LPG type.	149m south

The majority of the above potential sources of contamination are located to the hydraulic downgradient of the site so it is considered unlikely that they would have impacted the site.

4 PRELIMINARY CONCEPTUAL MODEL

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

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 and off site (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 and off site.

Source	Potential Contaminants
On Site	
Made Ground may have been used to form a level surface for the current car park.	Asbestos, metals, Polycyclic Aromatic Hydrocarbons (PAH), hydrocarbons, ground gas.
Site use as Car park	Petroleum Hydrocarbons from potential fuel spills/leaks.
London Clay bedrock underlying the site	Sulphates (aggressive ground conditions)
Off Site	
Electricity Substation adjacent to the south	Polychlorinated Biphenyls (PCBs) used in transformer oils and hydrocarbons from potential spills/leaks.

4.2 Potential Receptors

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

4.2.1 Human Health

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

Contamination risks to construction workers are not appraised by chronic (long term) exposure human health risk assessments. There are no appropriate published criteria applicable to 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 site users.

4.2.2 Controlled Waters

- The nearest water surface is an unnamed brook located to 300m south of the site, however considering the geology of the site, unlikely for any potential pollutants to reach the water course. Therefore, for the purposes of this report surface waters has not been considered as a potential 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 Table 4.2.

Table 4.2: Potential Contaminative Pathways

Receptor	Pathway
Human health (future site users/ residents, 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, if future Site users were to use the gardens.</p>
Buildings	<p>Direct contact of building services or foundations with contaminants in the soil and Made Ground.</p> <p>Gas and / or vapour accumulation in confined and poorly ventilated spaces.</p>

4.4 Preliminary Qualitative Risk Assessment

Primary sources of on-site contamination are considered to be associated with Made Ground that may be present from the current use of the site as a car park.

Fuel leaks/ spills may have occurred on the site as a result of its use as a car park, however this is expected to be limited due to the full cover of hardstanding across the site.

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

If significant depths of Made Ground are present, and this contains putrescible matter, ground gas / vapours could be generated which could accumulate in confined spaces and pose risk to future site users.

There is the potential for contamination to have migrated beneath from the adjacent electricity substation which was present from the 1977 map edition from leaks/ spills of transformer oils (PCBs) and hydrocarbons. Such contamination (if present) could impact human health and below ground services such as plastic water supply piping, however given the relatively impermeable geology, significant migration of contamination beneath the site is not considered likely to be present.

No sensitive controlled water receptors have been identified.

The underlying London Clay is a source of naturally occurring sulphates which could impact buried concrete and utility services.

The risks will need to be further understood through intrusive investigation into the ground conditions and potential contaminants. If the Site is found to be contaminated, mitigation measures will be required to break the source-pathway-receptor linkages.

5 Waste Management and Potential Development Constraints

5.1 Waste Management

Consideration should be given to the disposal of waste soils/Made Ground which are likely to be generated by the development. Chemical testing of soils/Made Ground is likely to be required to inform a waste classification assessment and determine the potential disposal options. It should be noted that the waste contractor may require testing of the actual material to be 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

Below ground services may be present, associated with the adjacent railway station and railway lines. Vehicular access to the Site is from the northern portion.

A ground investigation is recommended to determine the potential for contamination to be present on the Site and confirm the ground conditions. From experience, the potential for the need to undertake remediation should be relatively limited given the previous use of the site and the anticipated geology (relatively impermeable) which would limit impacts from off-site sources.

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

- Removal of hand standing and black-top covering the site.
- The close proximity to the railway line to the south may have restrictions on the minimum distance that excavations (including exploratory holes, trial pits and foundations) and development can be undertaken. Liaison with London Underground should be undertaken.
- Presence of transformers adjacent to the south boundary may also influence the form of development;
- Excavation and replacement of upper part of Made Ground may be necessary to support foundation solution;
- Asbestos protection measures during disturbance of Made Ground (depending on the findings of the ground investigation);
- Groundwater control measures and treatment of extracted groundwater (depending on the findings of the ground investigation);
- Provision of gas protection measures (depending on the findings of the ground investigation);
- Provision of contaminant resistant water supply pipes (depending on the findings of the ground investigation);
- Provision of garden amenity topsoil/subsoil / clean cover system in garden areas and public open space;
- Potentially further investigation and consultancy advice to support planning obligations;

6 Geotechnical Considerations

Made Ground is anticipated to be present at the site. Based on the published geology and the nearest historical borehole log (approximately 124m southwest) (Ref. 1), the Site is anticipated to be underlain by the London Clay. The anticipated geology of the site should be confirmed through an intrusive investigation.

Potential founding solutions will be dependent on the encountered 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. Services may be present beneath the site which may require removal/ relocating prior to redevelopment.

If made ground cover is thin, and London Clay deposits are competent, conventional shallow foundations may be appropriate for the site. If made ground is thicker, deeper trench fill may be possible although the maximum practical extent of this type of foundation is in the region of 2-2.5m. In areas of deeper Made Ground, or if deeper soft / loose bands are recorded in the natural ground, either piling or ground treatment e.g. vibro-stone columns could provide a suitable foundation solution. The advice of a specialist ground improvement contractor should be sought to verify the suitability of the ground for treatment.

Risks associated with London Clay include high plasticity clay which are subject to volume change (shrinkage/swelling), and sulphate attack on buried concrete and cementitious materials. These soil characteristics should be determined during the investigation / design.

7 Conclusion and Recommendations

The Site is currently a car park associated with Queensbury train station and there is the potential for Made Ground to be present. Contamination from fuel leaks/ spills from the use as a car park is not expected to have significantly impacted the site due to the provision of hardstanding.

There are adjacent electricity substations to the north and northeast which are potential sources of contamination that may have migrated beneath the southern part of the site, however this is considered to be a low risk given the relatively impermeable geology.

Potential receptors are site users, proposed buildings and underground structures / services. No sensitive controlled water receptors were identified.

Potential geo-environmental constraints have been identified that may impact on the future development. Whilst contamination may be present within the underlying soils, mitigation of risks to Site end users may be delivered by the appropriate design of the development itself (i.e. the use of hardstanding to limit the pathway for human exposure) and provision of garden amenity soils, rather than large scale removal of materials, provided finished levels can accommodate these.

7.1 Design Considerations

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

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

Underground services may be present beneath the site associated with the adjacent electricity substation and nearby railway. These will need to be taken into consideration during the proposed development.

8 References

1. British Geological Survey (BGS) [online]. Available at: <https://mapapps.bgs.ac.uk/geologyofbritain/home>. Accessed January 2020.
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3. Bomb Sight National Archives [on-line]. Available at: <http://bombsight.org>. Accessed January 2020.
4. CIRIA C552 (2001) Contaminated land risk assessment. A guide to good practice.
5. Land Contamination: Risk Management, Environment Agency, June 2019 (LCRM)
6. The Construction (Design and Management) Regulations 2015.
7. CIRIA C665 (2007) Assessing risks posed by hazardous ground gases to buildings (revised).

APPENDIX A

Historical Ordnance Survey Maps

Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

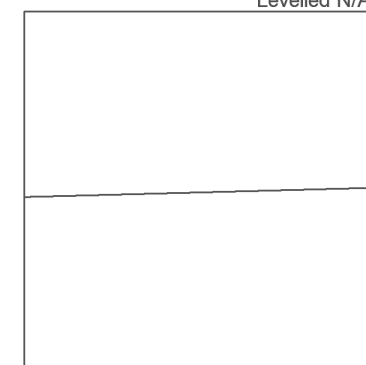
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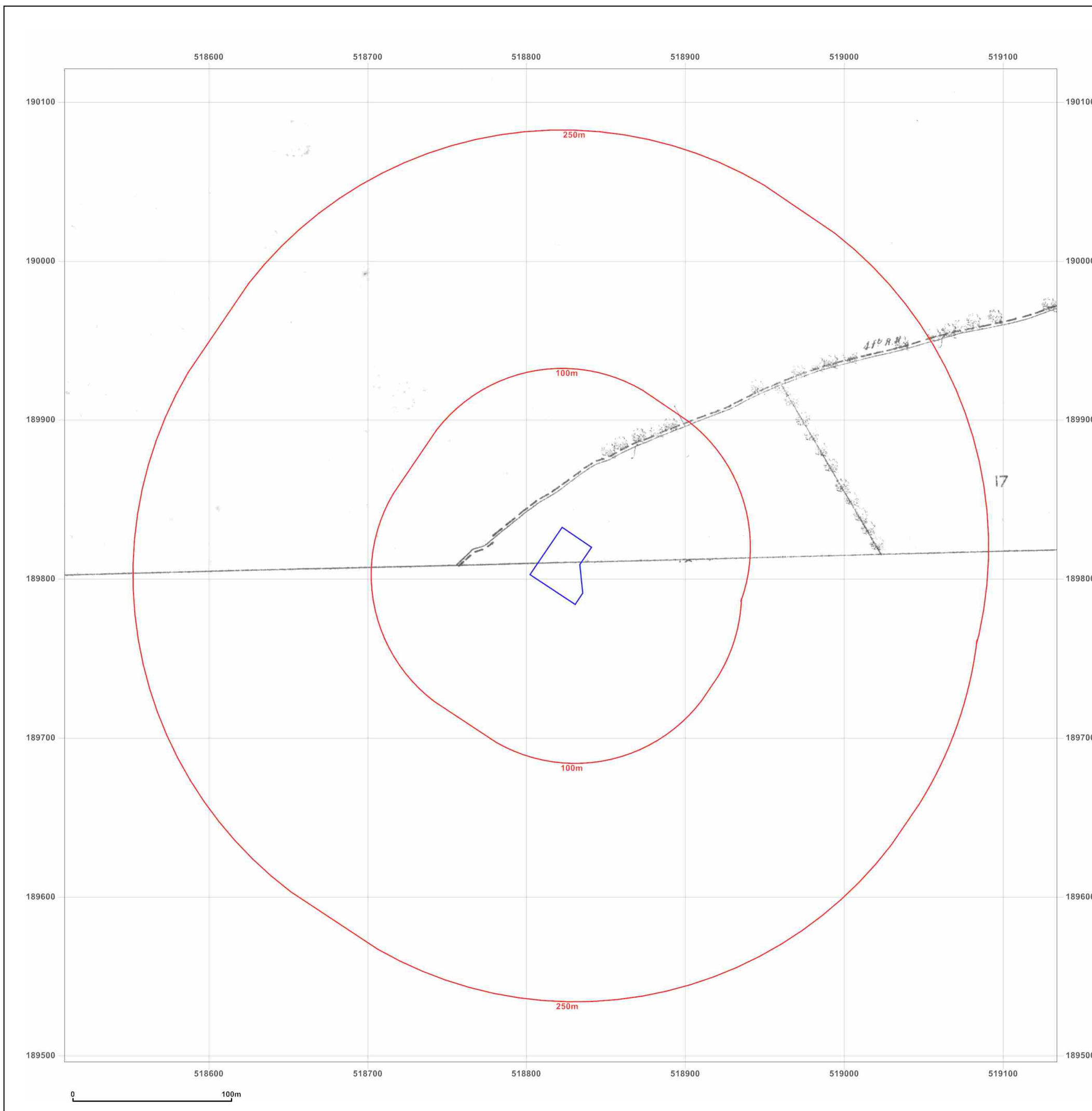


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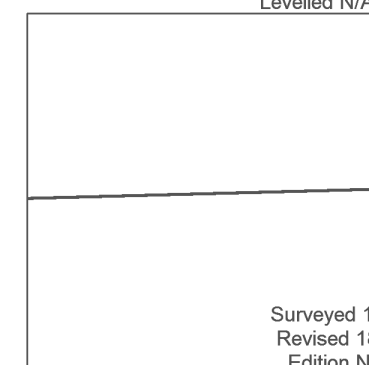
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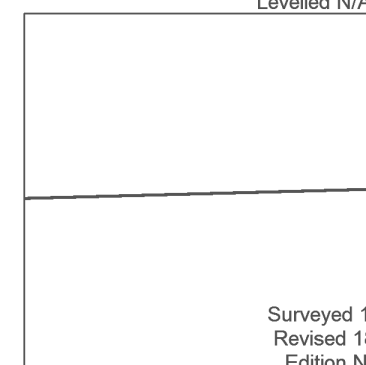
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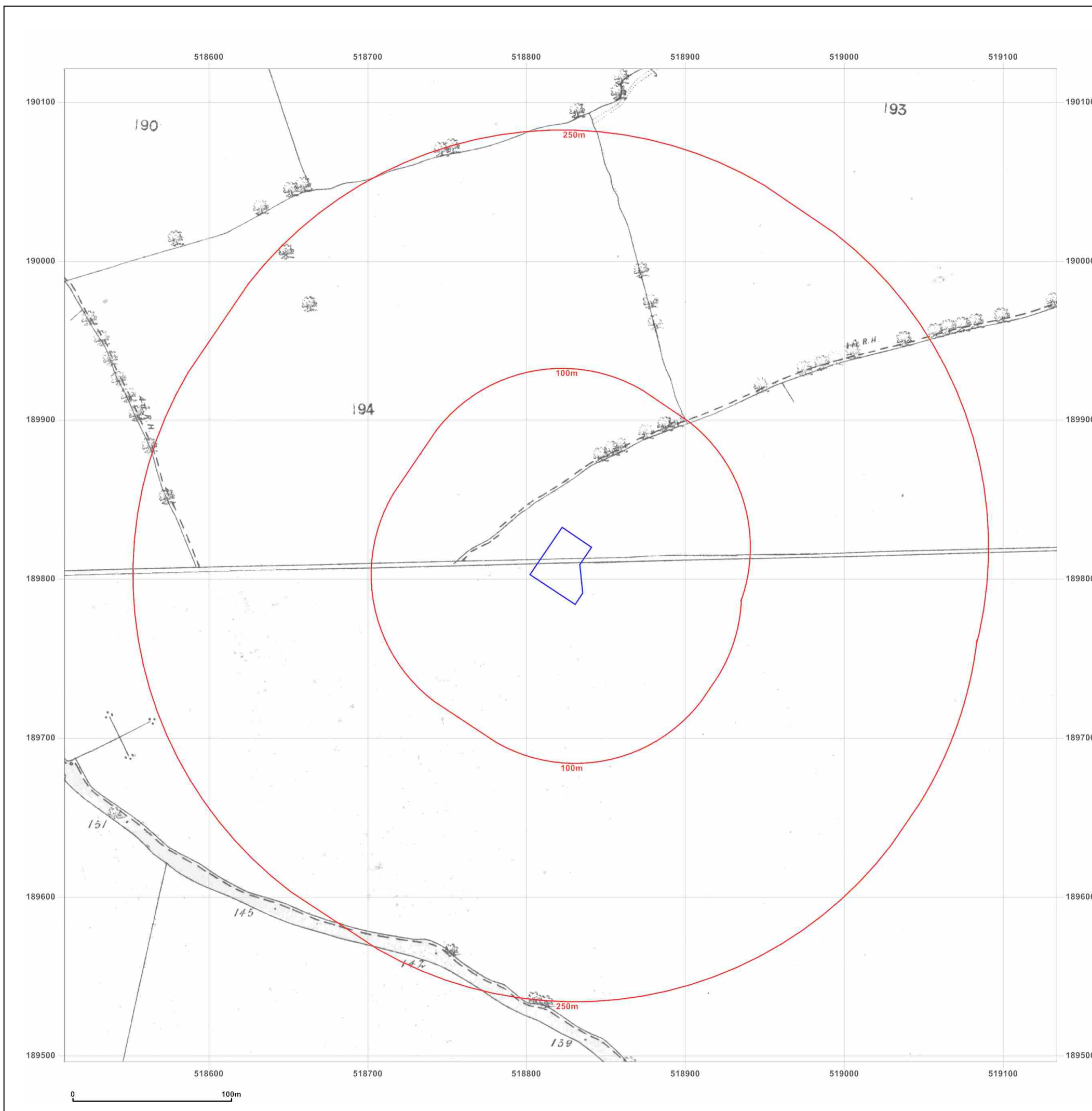


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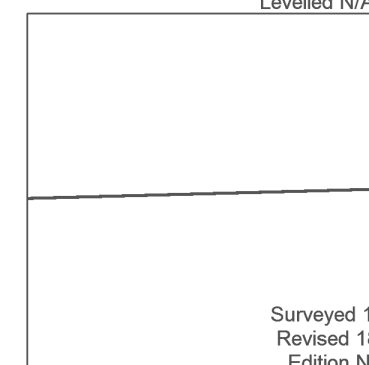
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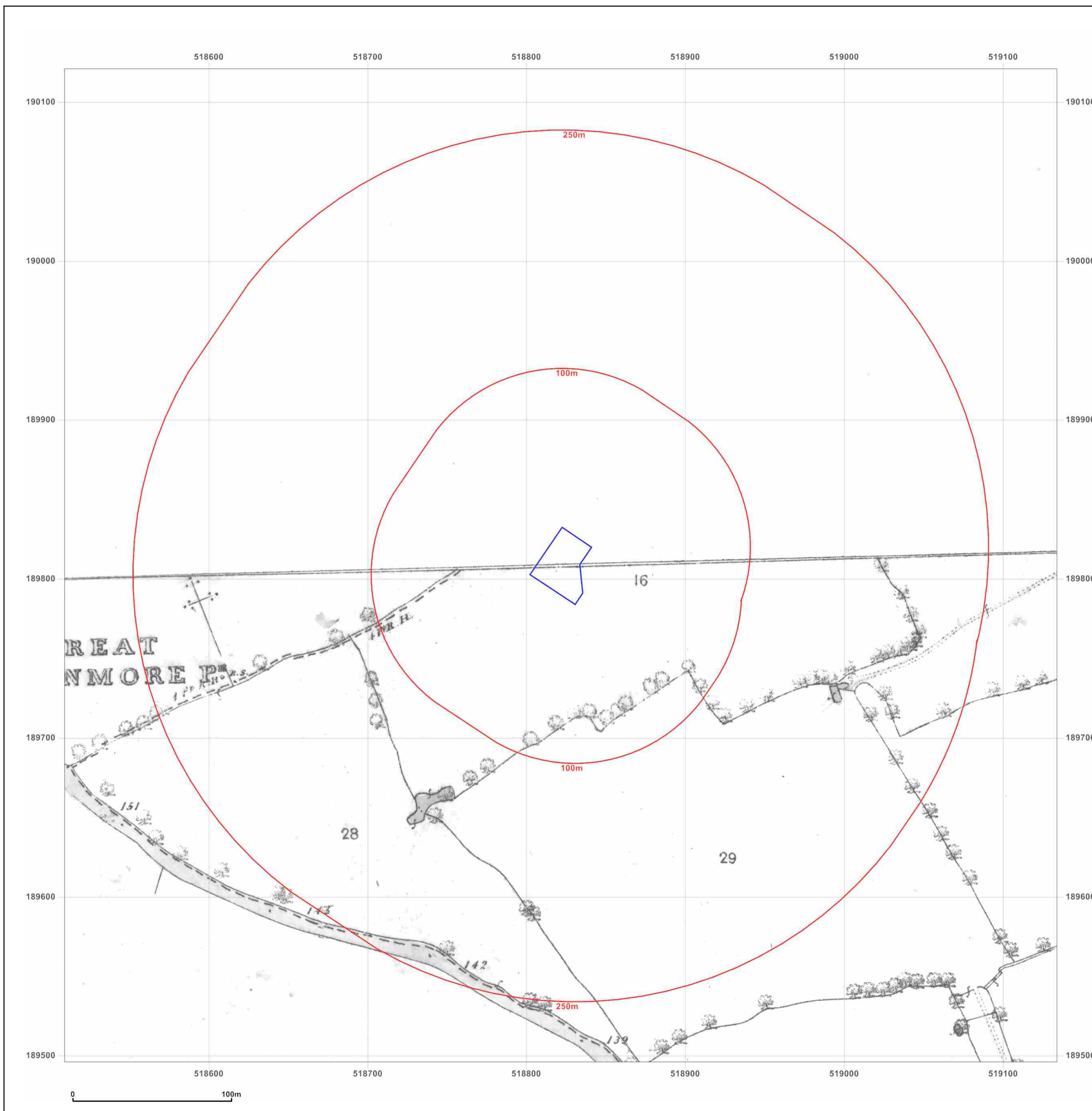


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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

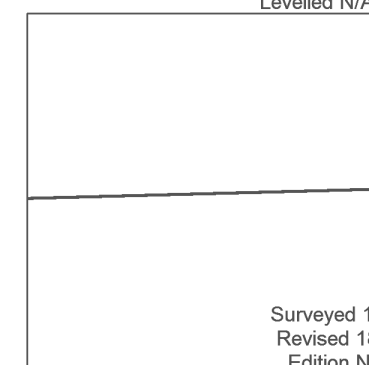
Map date: 1896

Scale: 1:2,500

Printed at: 1:2,500



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



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

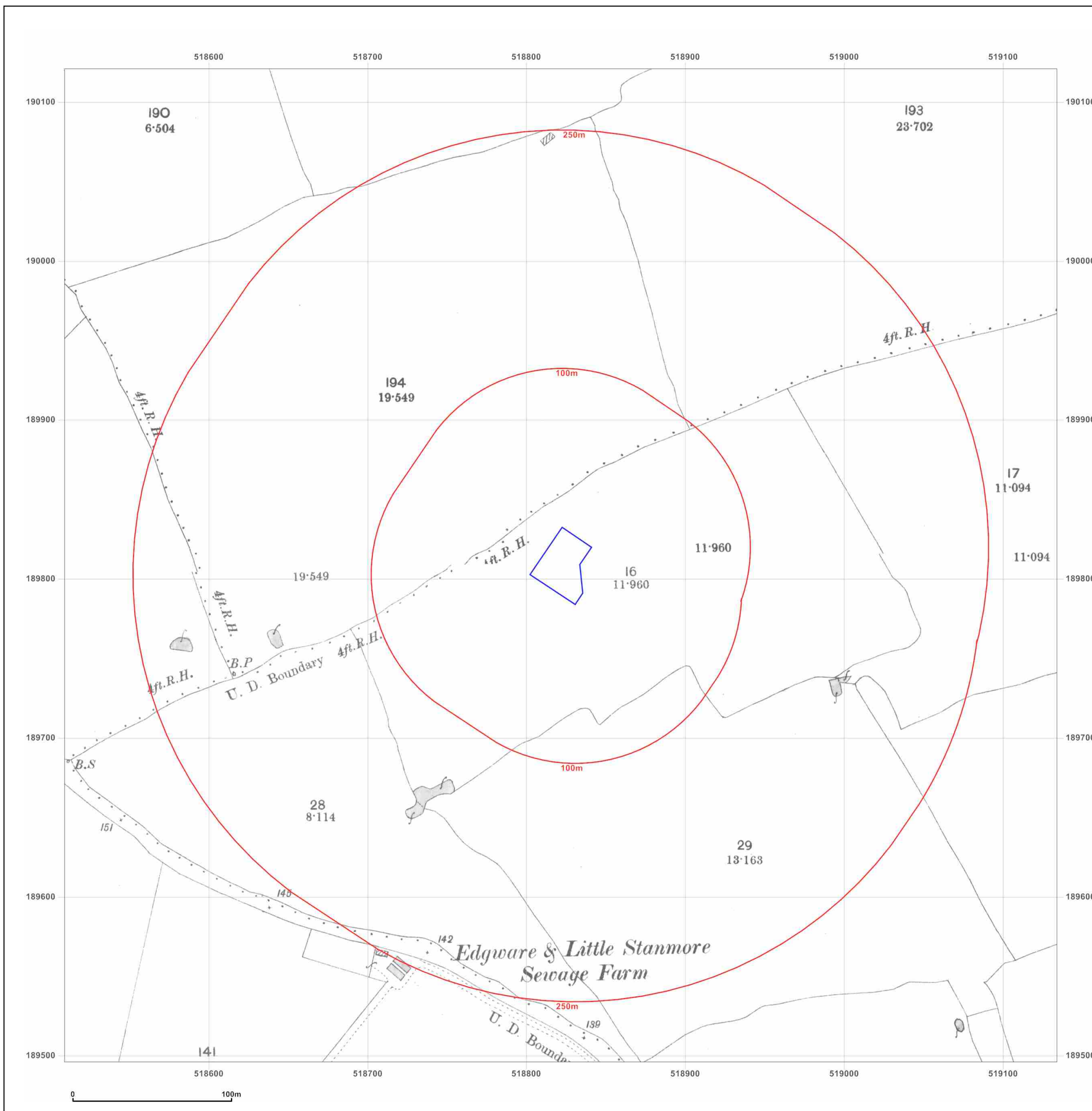


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1914

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1914
Revised 1914
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1914
Revised 1914
Edition N/A
Copyright N/A
Levelled N/A

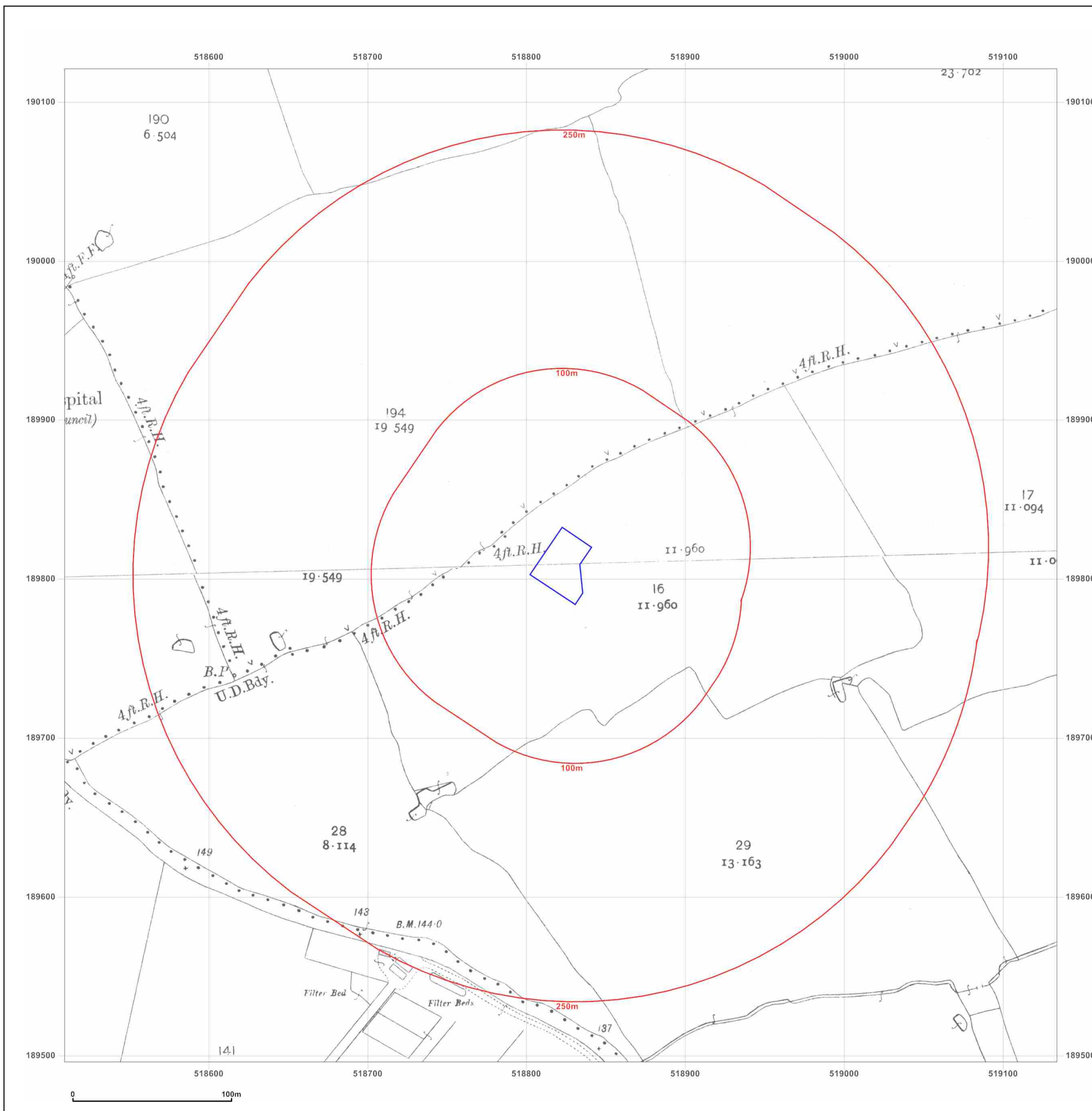


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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

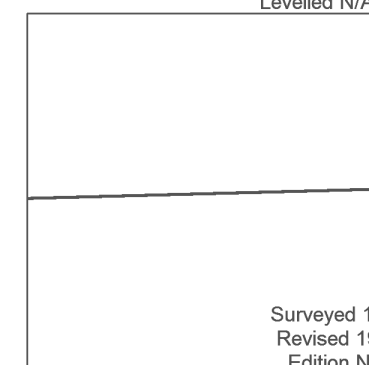
Map date: 1932

Scale: 1:2,500

Printed at: 1:2,500



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



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

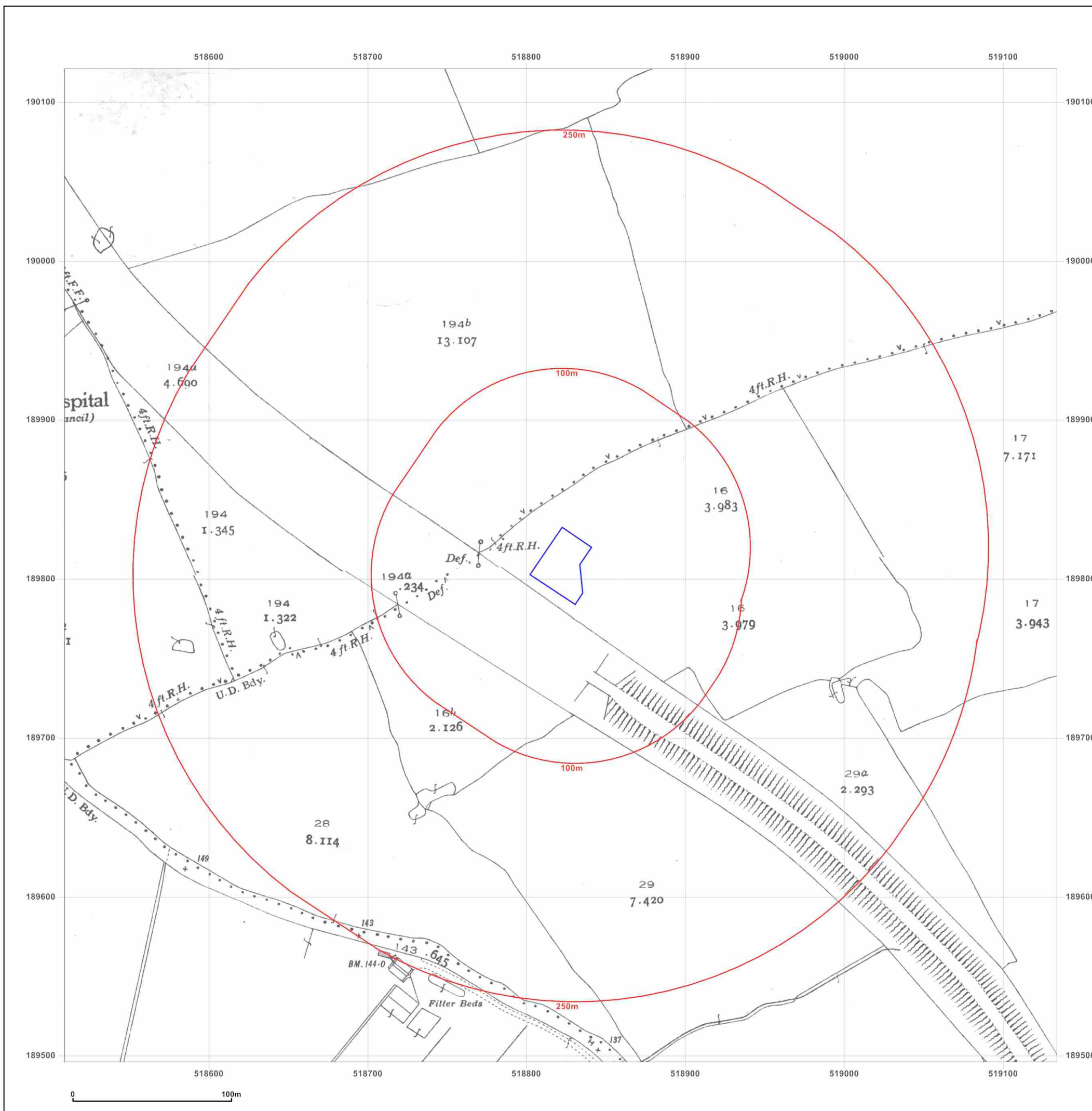


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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

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

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

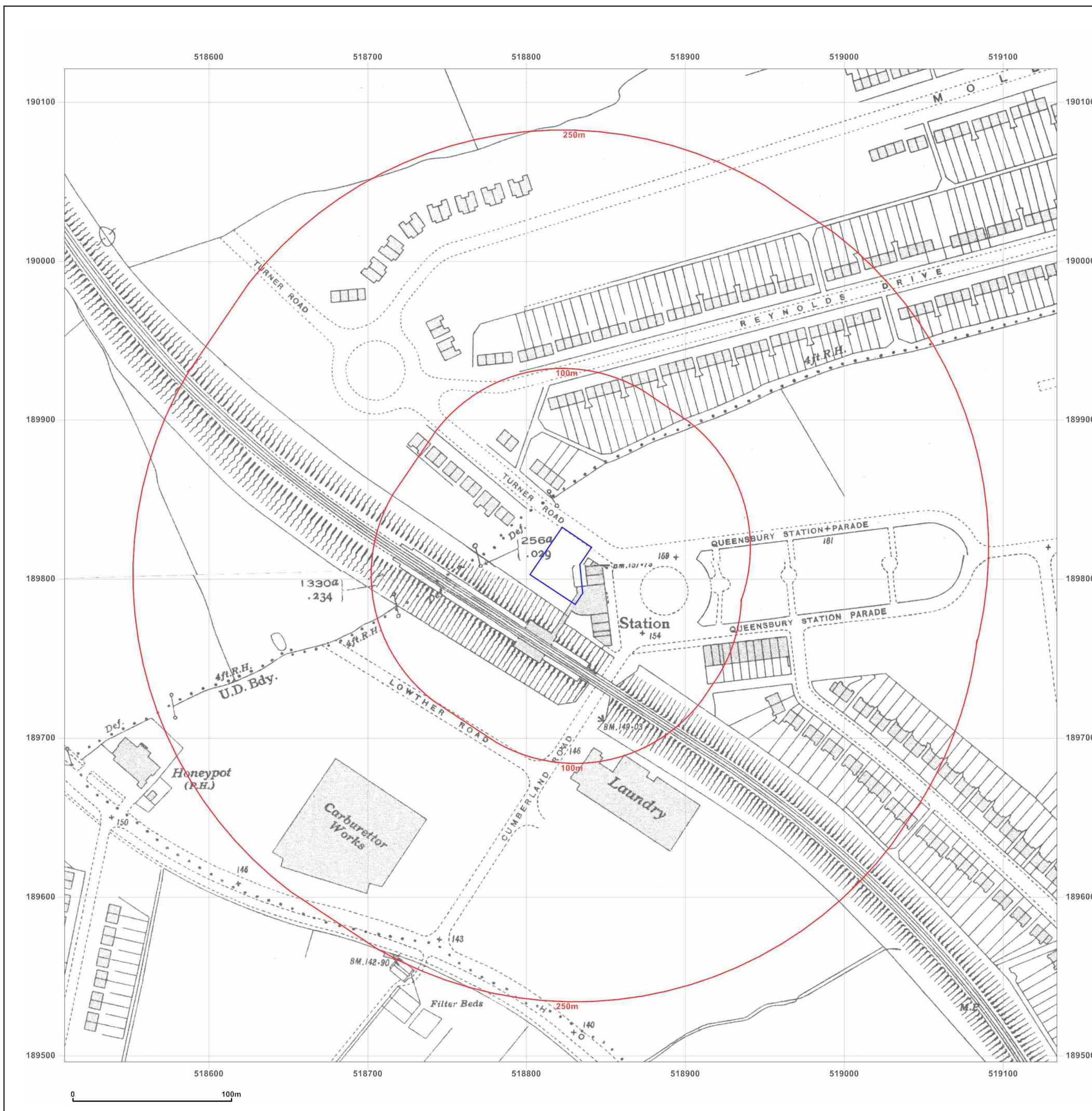


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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1938-1940

Scale: 1:2,500

Printed at: 1:2,500



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

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

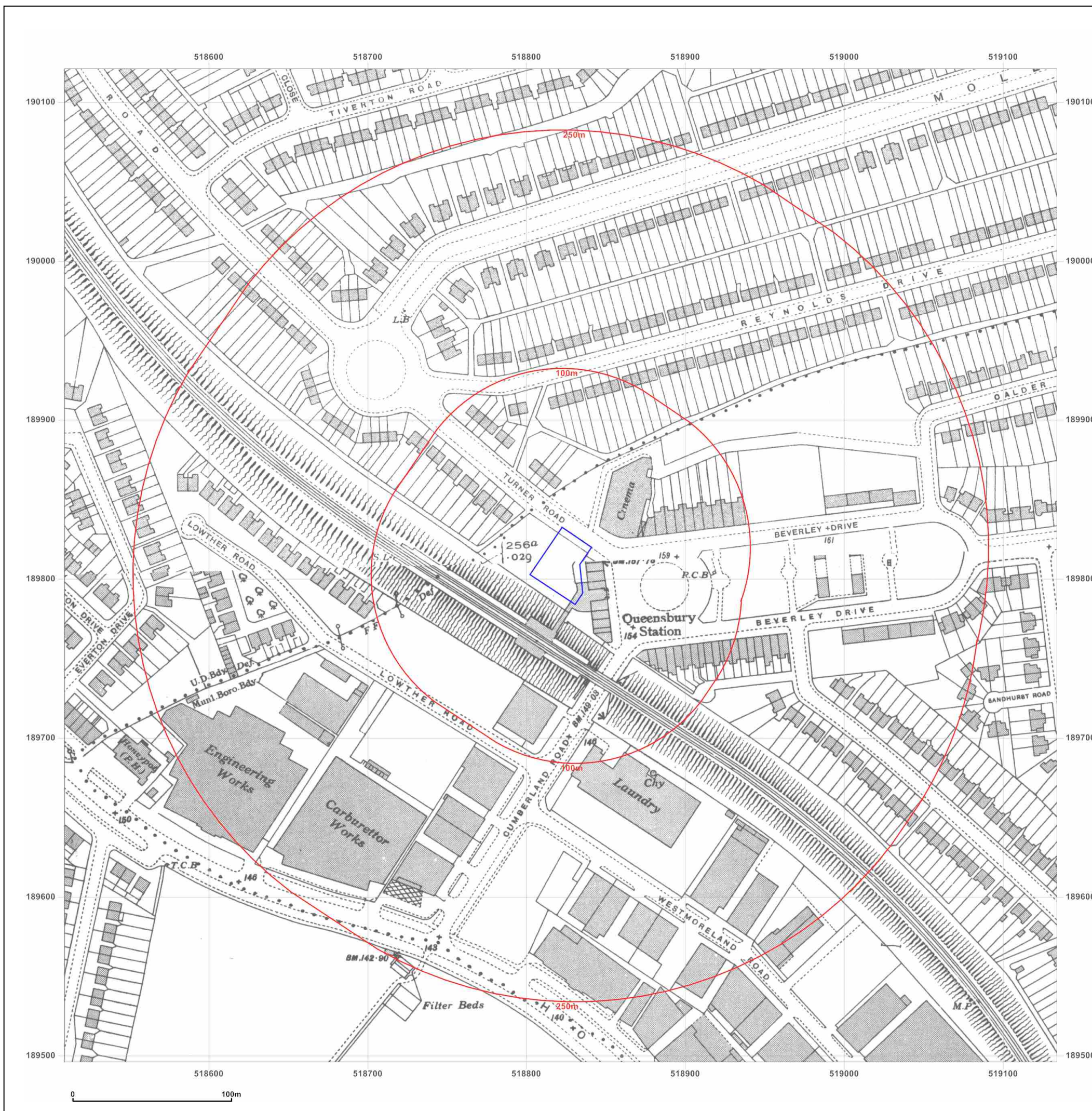


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1958-1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1962
Revised 1962
Edition 1963
Copyright 1963
Levelled 1956

Surveyed 1958
Revised 1958
Edition 1960
Copyright 1960
Levelled 1935

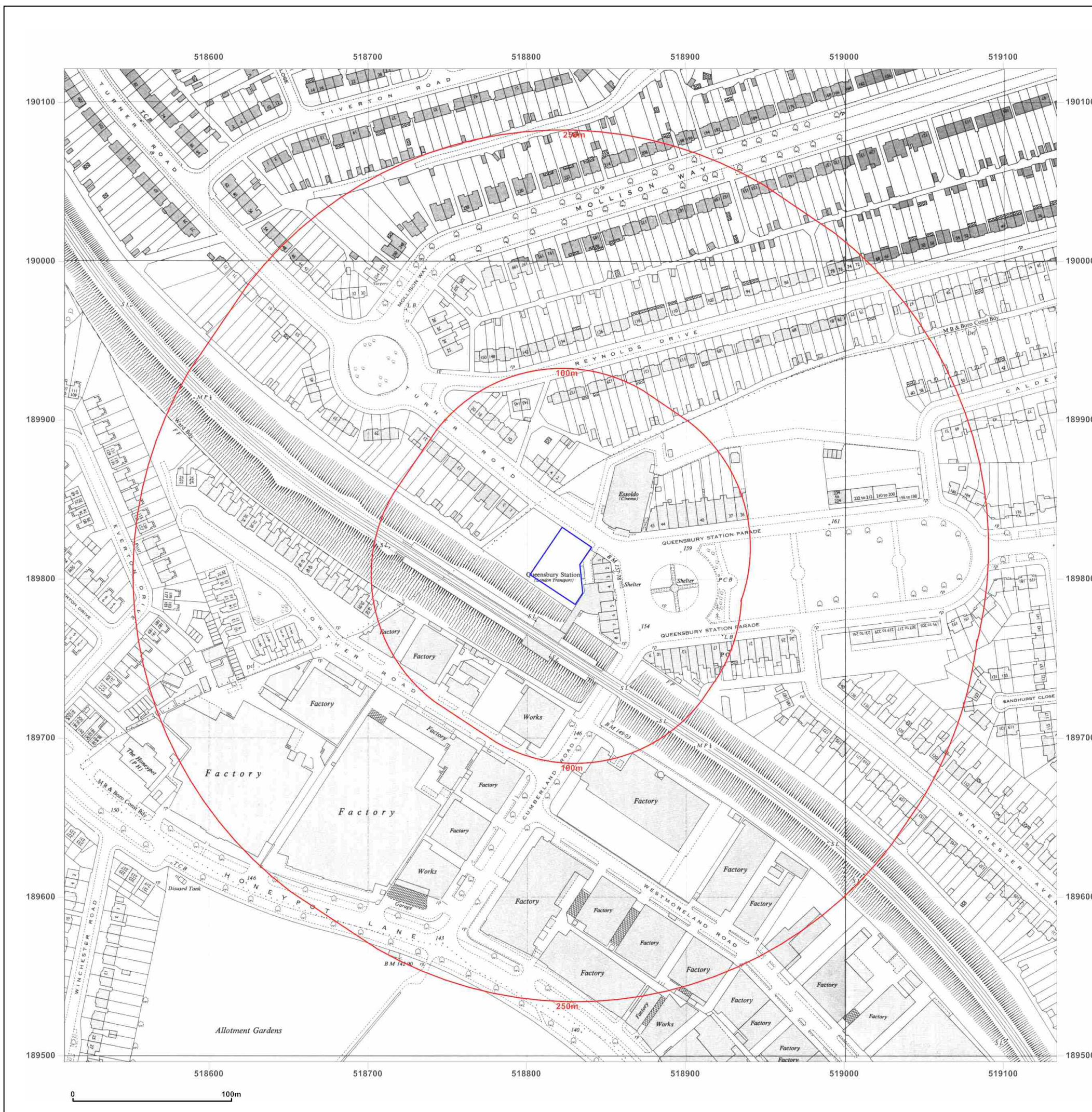


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Production date: 13 January 2020

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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1959-1963

Scale: 1:1,250

Printed at: 1:2,000



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

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1956

Surveyed 1958
Revised 1958
Edition N/A
Copyright 1959
Levelled 1935

Surveyed 1958
Revised 1958
Edition N/A
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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1960-1963

Scale: 1:2,500

Printed at: 1:2,500



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

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

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

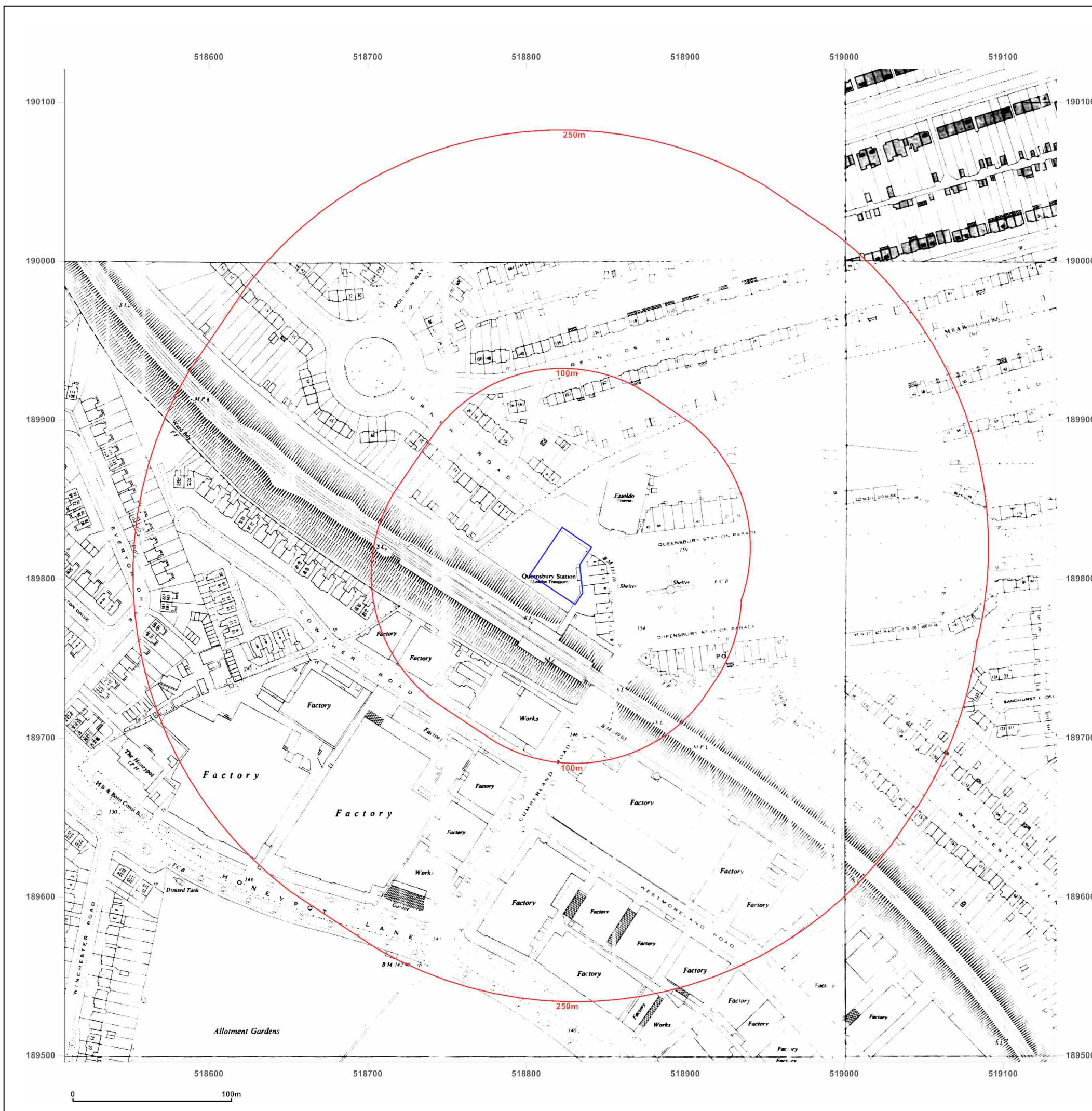


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1973-1977

Scale: 1:1,250

Printed at: 1:2,000



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

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

Surveyed 1958
Revised 1973
Edition N/A
Copyright 1973
Levelled 1956

Surveyed 1958
Revised 1976
Edition N/A
Copyright 1959
Levelled 1935

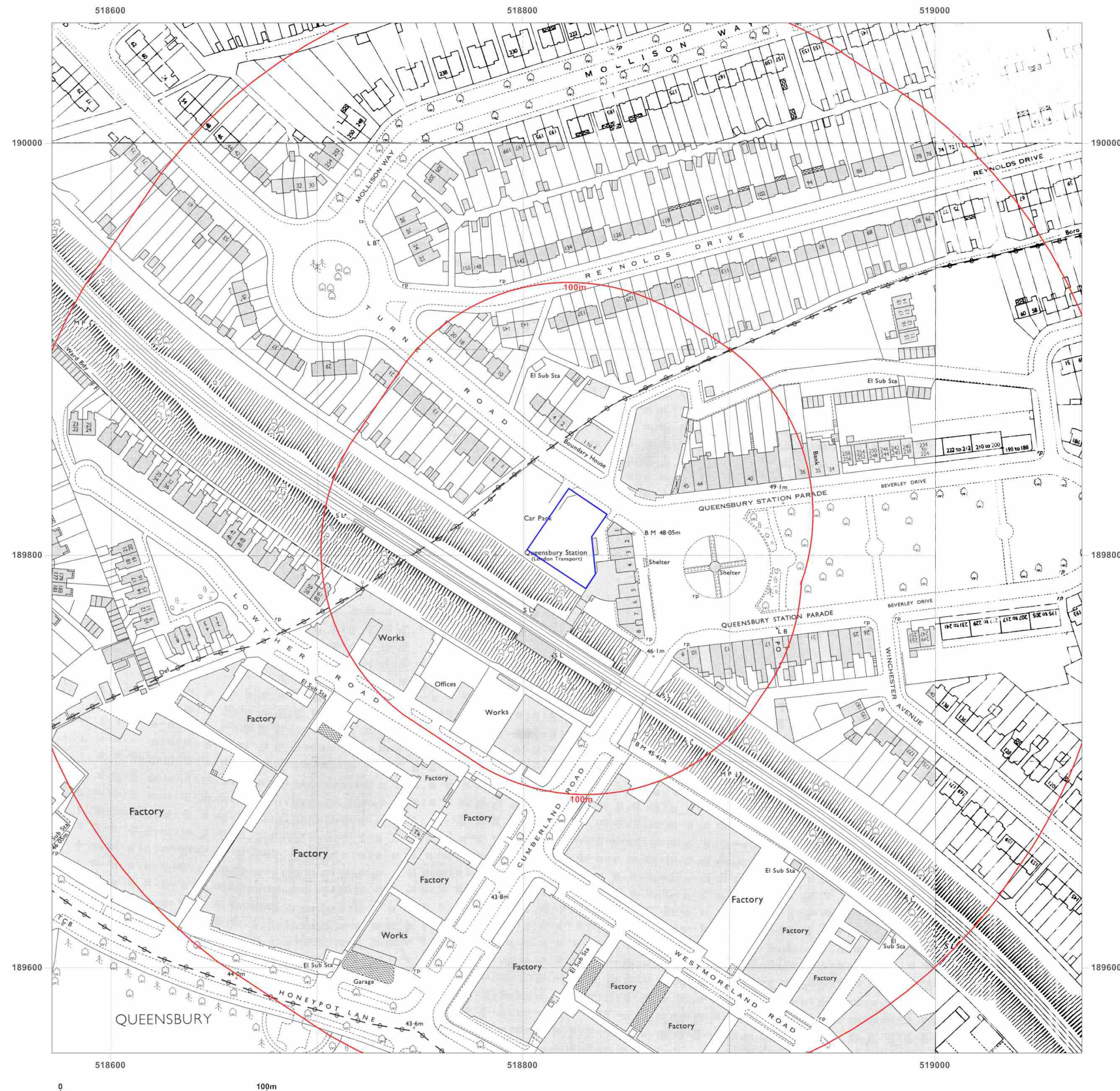


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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1984-1987

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1956
Revised 1987
Edition N/A
Copyright 1987
Levelled 1956

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1985
Levelled 1956

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

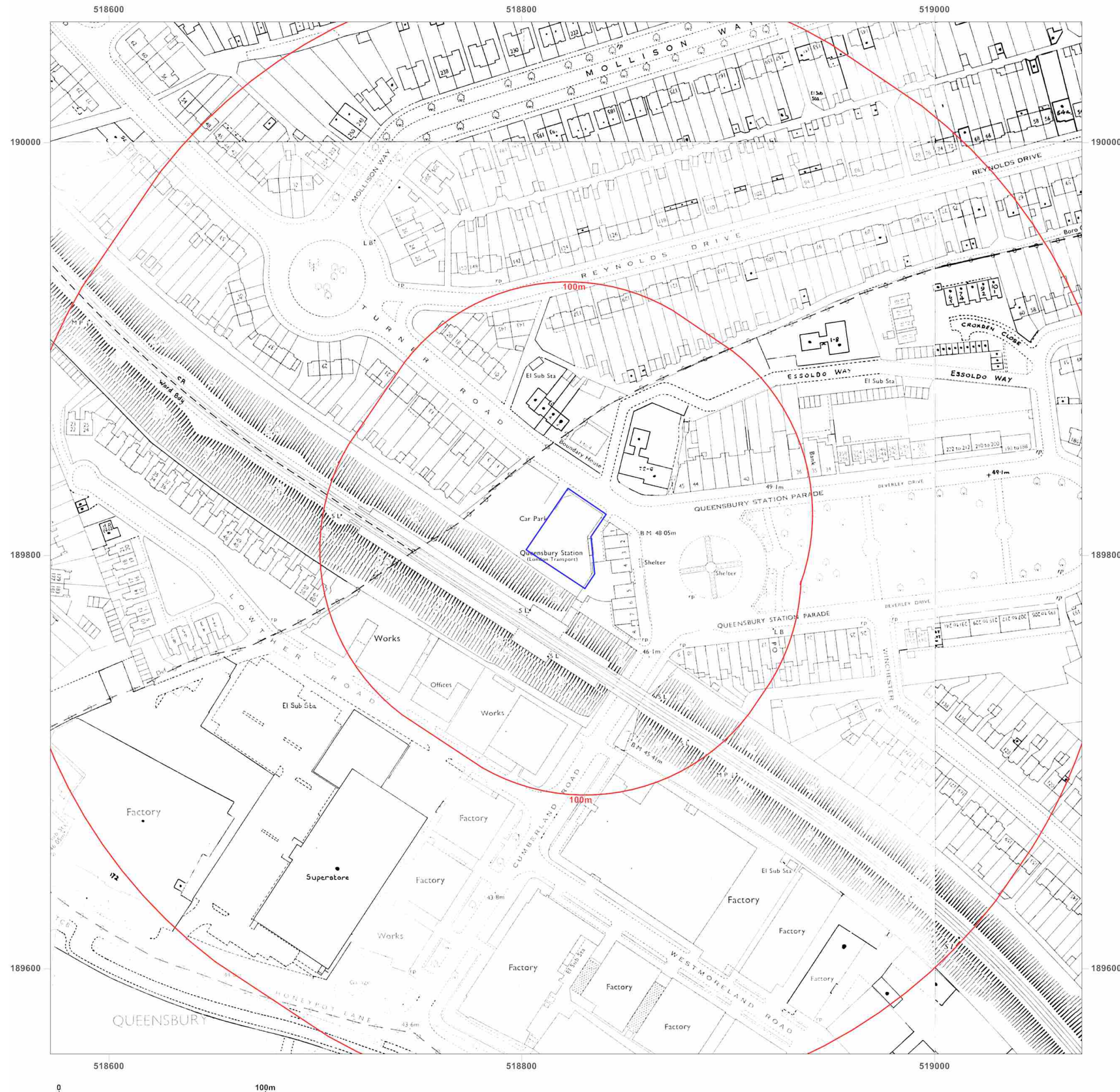


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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

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

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

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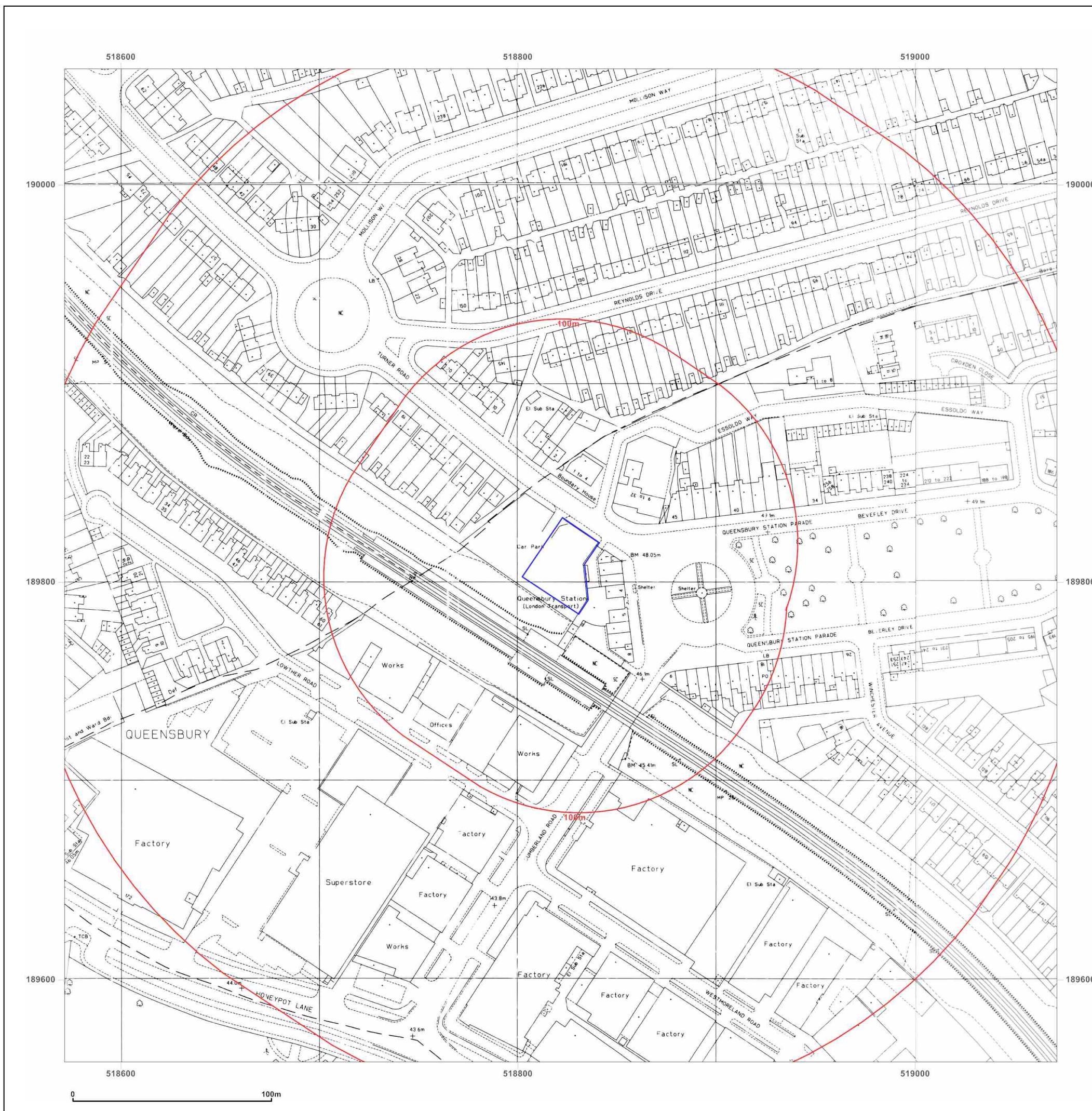


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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

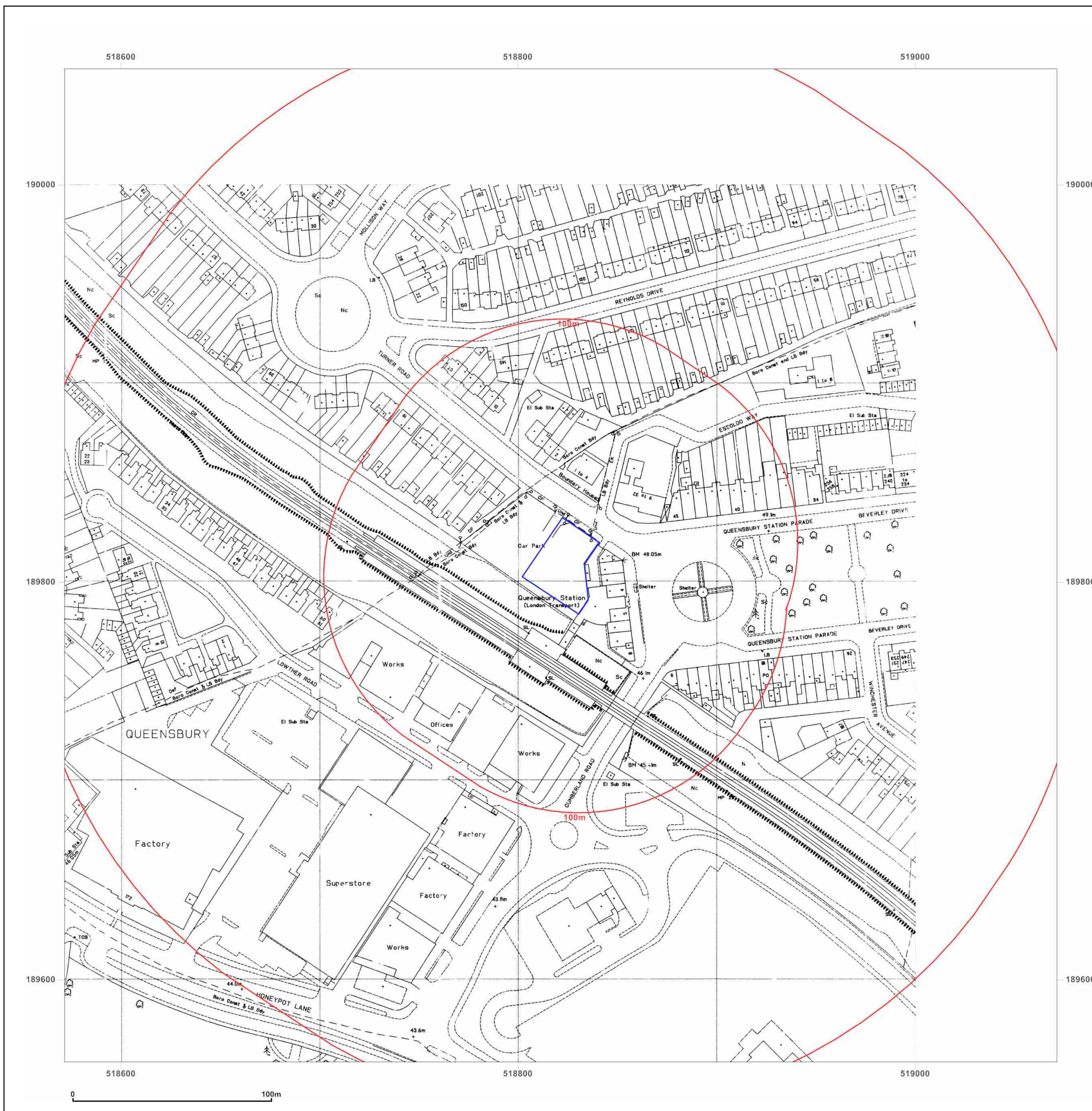


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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

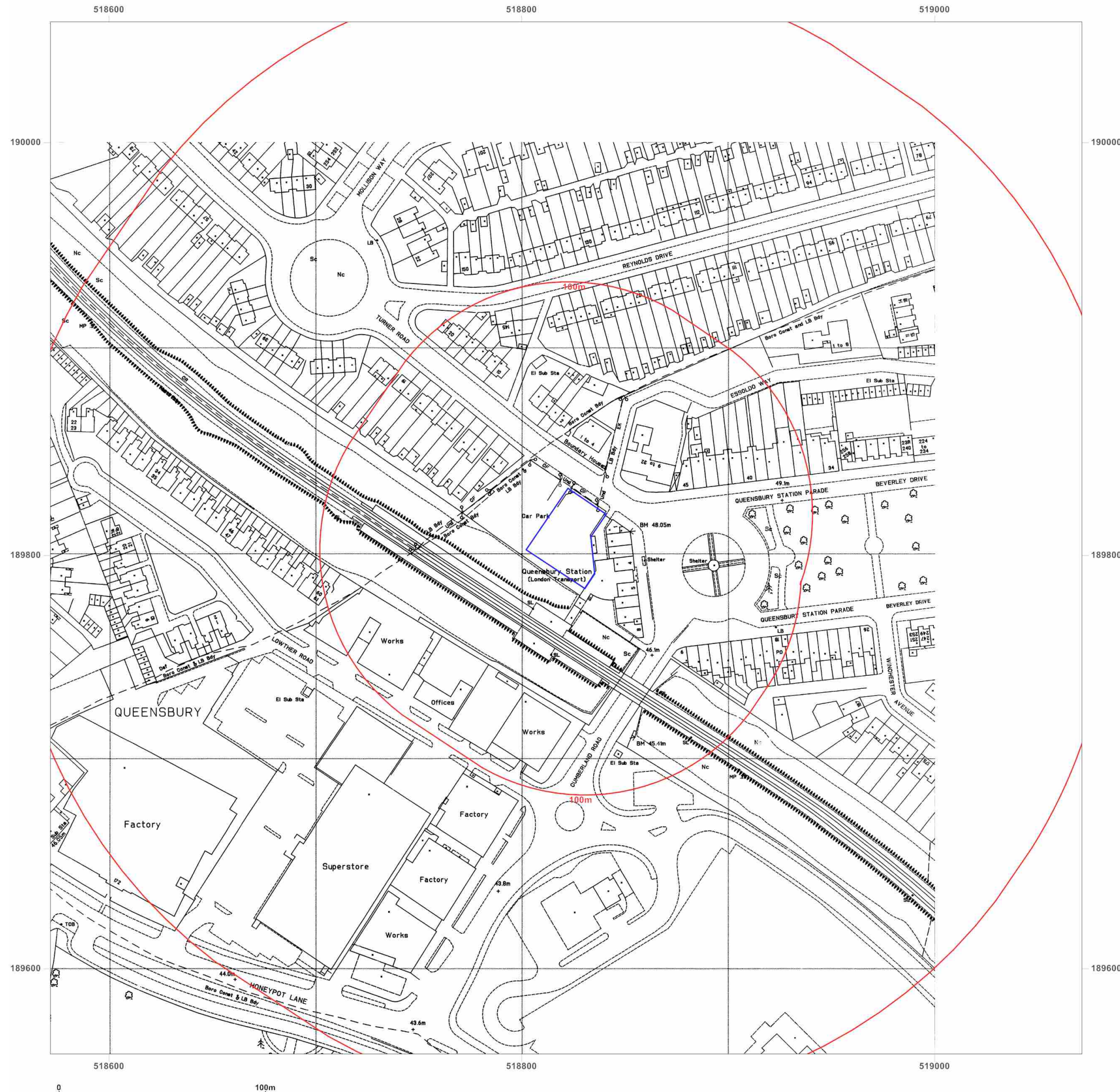


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



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Site Details:

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HA8 6AT

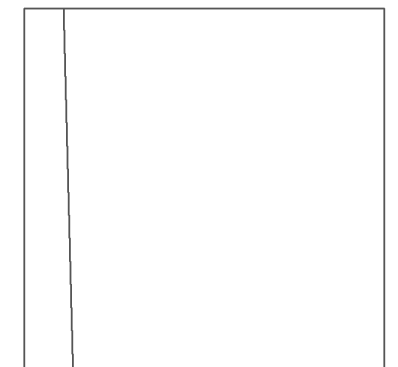
Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1873

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1865
Revised N/A
Edition 1873
Copyright N/A
Levelled N/A

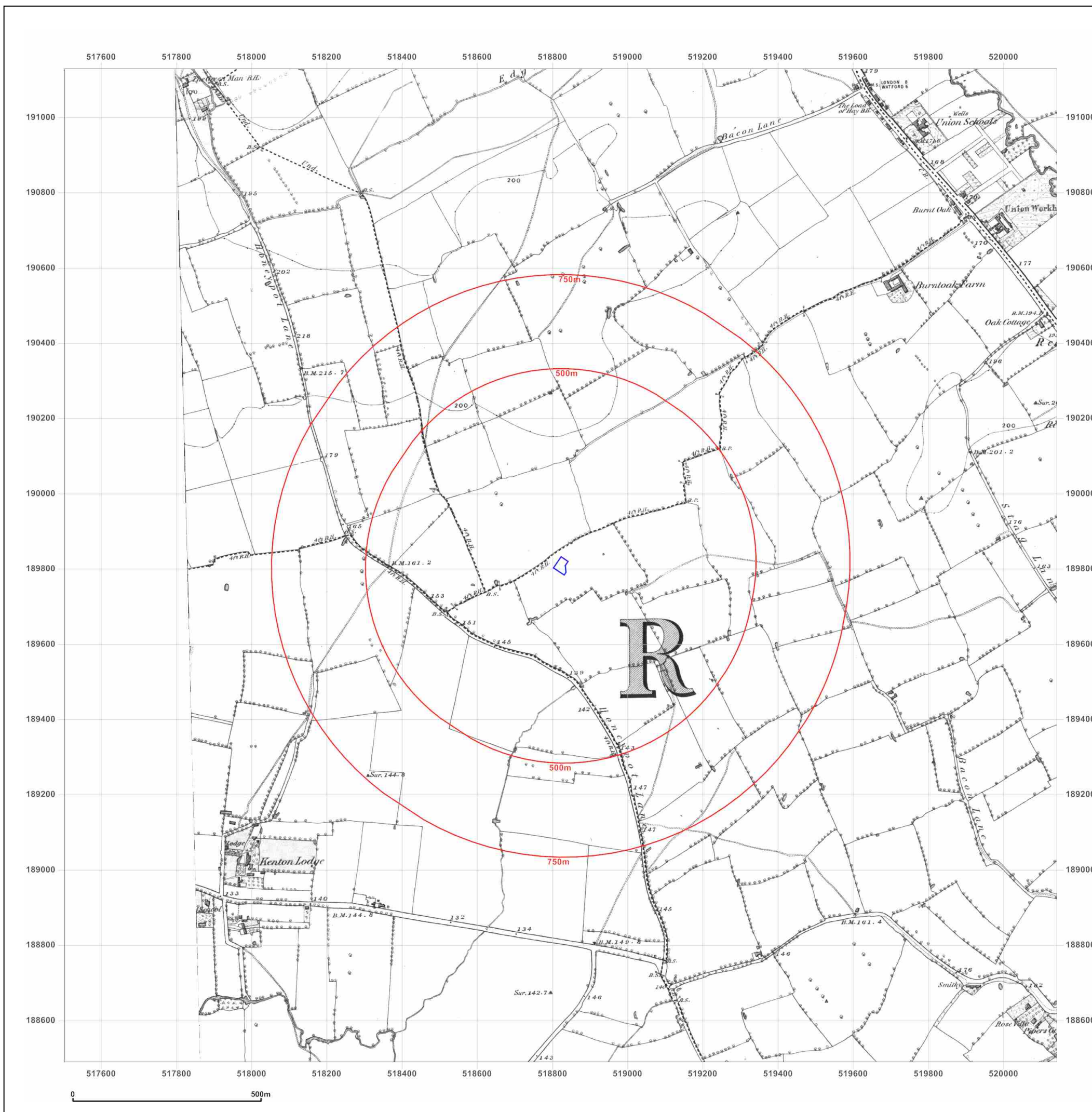


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1895-1897

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1895
Edition 1897
Copyright N/A
Levelled N/A

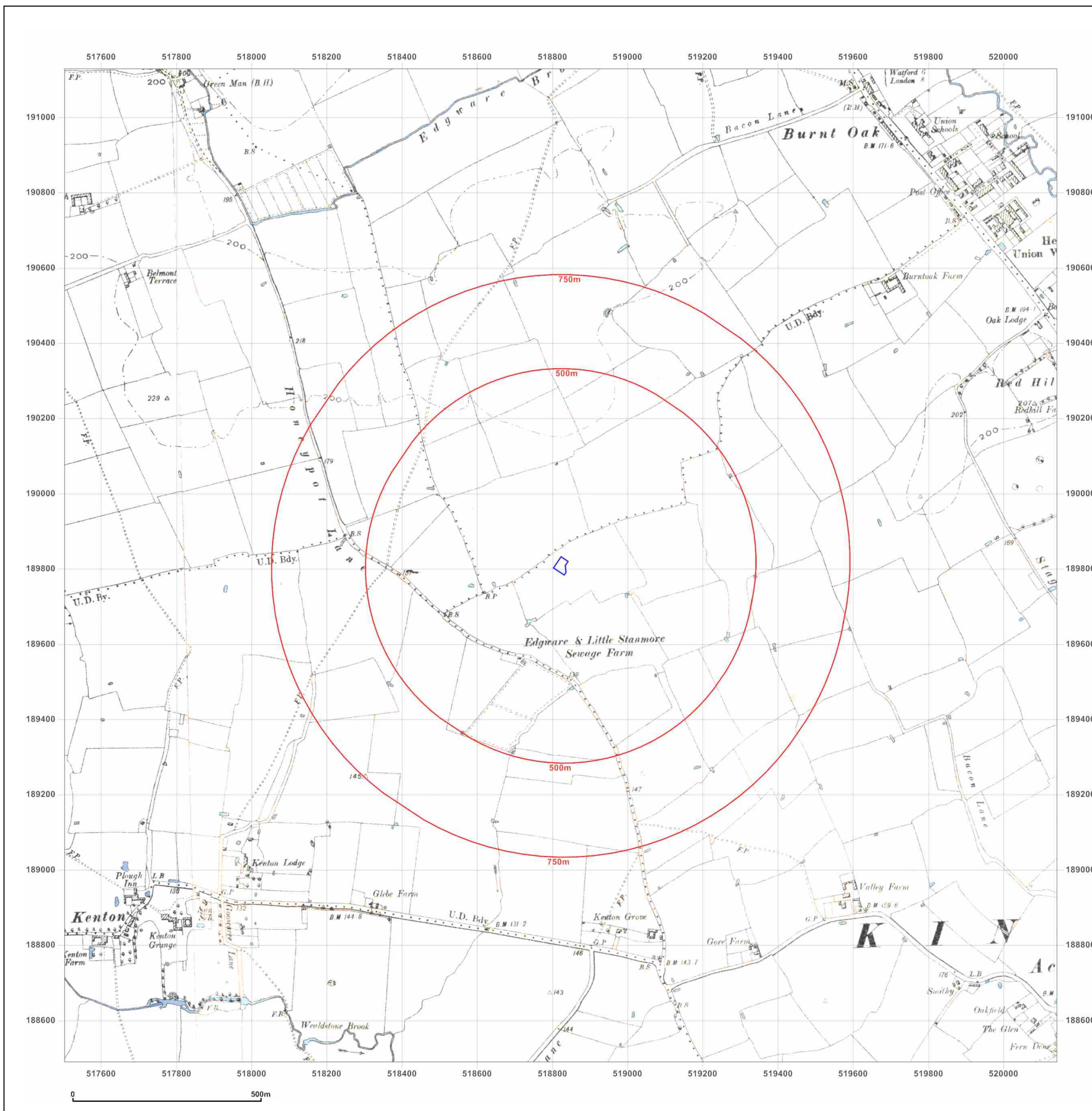


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1895-1897

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1895
Edition 1897
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A

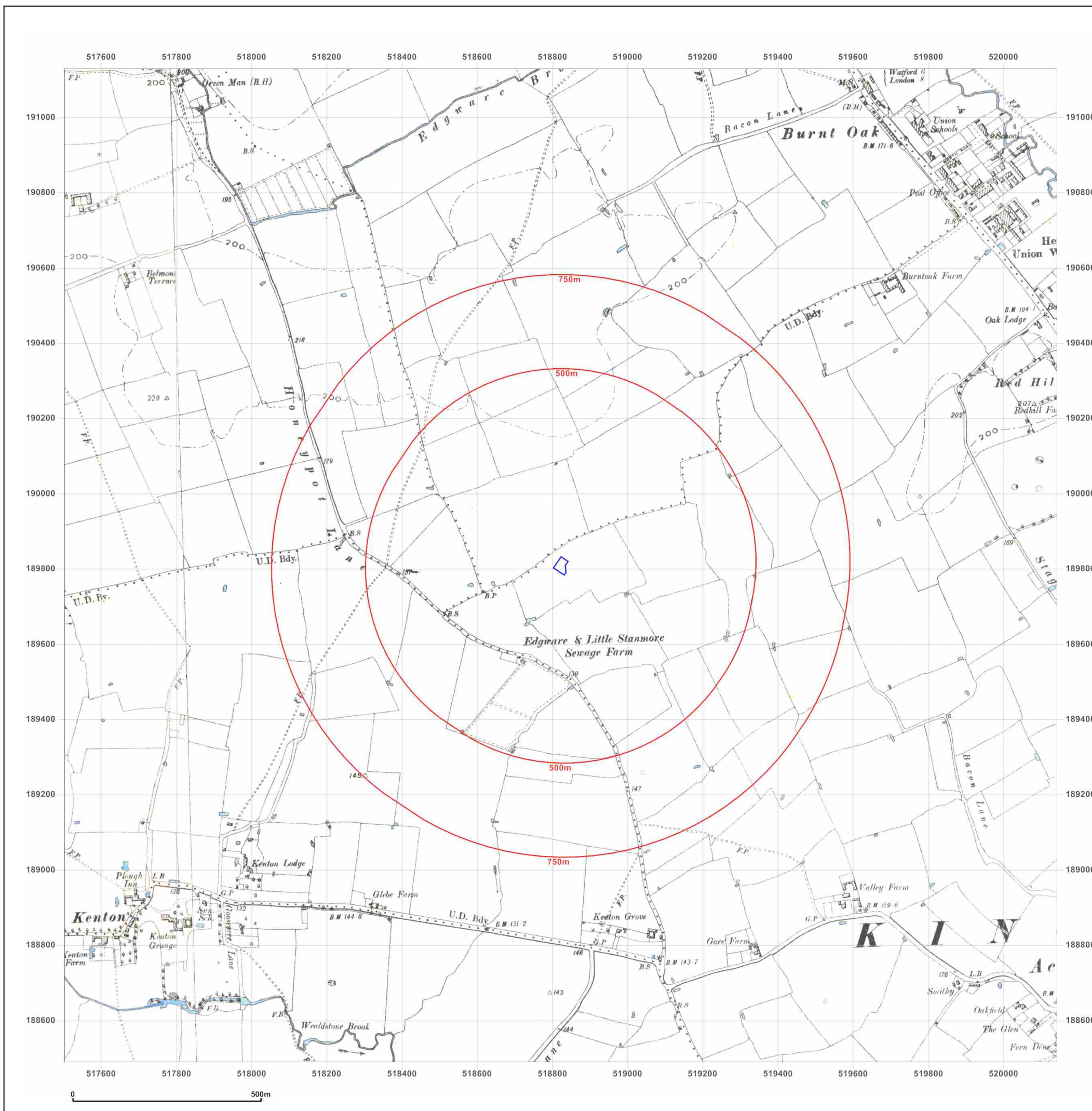


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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1916-1920

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1916
Edition 1916
Copyright N/A
Levelled N/A

Surveyed 1865
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

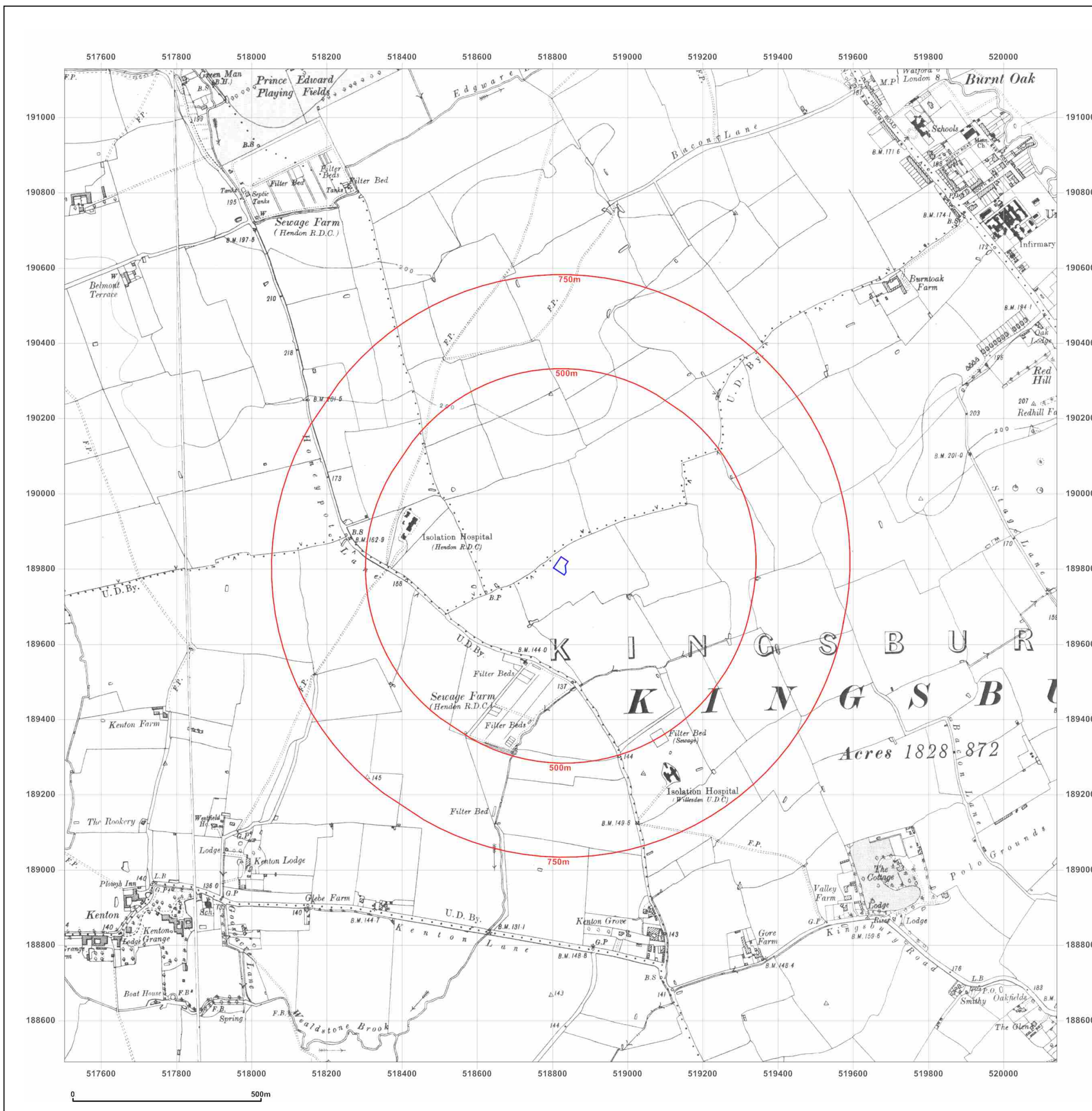


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1936-1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1938
Edition N/A
Copyright N/A
Levelled 1912

Surveyed 1863
Revised 1936
Edition N/A
Copyright N/A
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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1938-1939

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1939
Edition N/A
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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: County Series

Map date: 1939

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1863
Revised 1939
Edition N/A
Copyright N/A
Levelled N/A

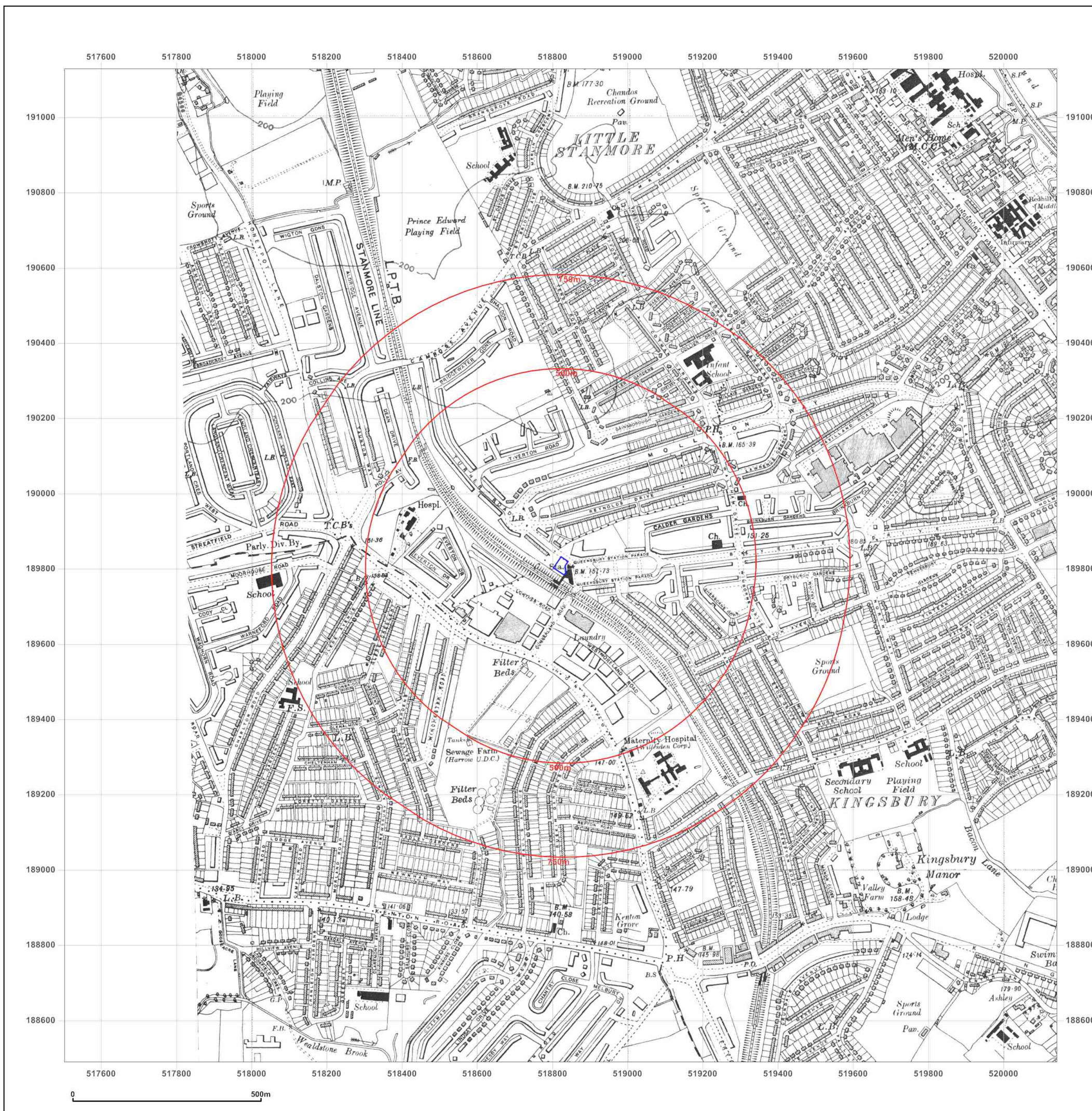


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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: Provisional

Map date: 1951

Scale: 1:10,560

Printed at: 1:10,560



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

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

Surveyed N/A
Revised 1949
Edition N/A
Copyright 1951
Levelled 1935

Surveyed 1940
Revised 1949
Edition N/A
Copyright 1951
Levelled 1935



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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: Provisional

Map date: 1966-1968

Scale: 1:10,560

Printed at: 1:10,560



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

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

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

Surveyed 1966
Revised 1966
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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 1974-1976

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1973
Revised 1975
Edition N/A
Copyright 1975
Levelled N/A

Surveyed 1973
Revised 1975
Edition N/A
Copyright 1976
Levelled N/A

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

Surveyed 1975
Revised 1976
Edition N/A
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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

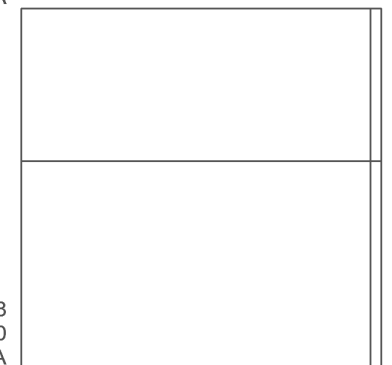
Map date: 1990-1993

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1983
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1988
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1975
Revised 1993
Edition N/A
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Levelled N/A



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Site Details:

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HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001

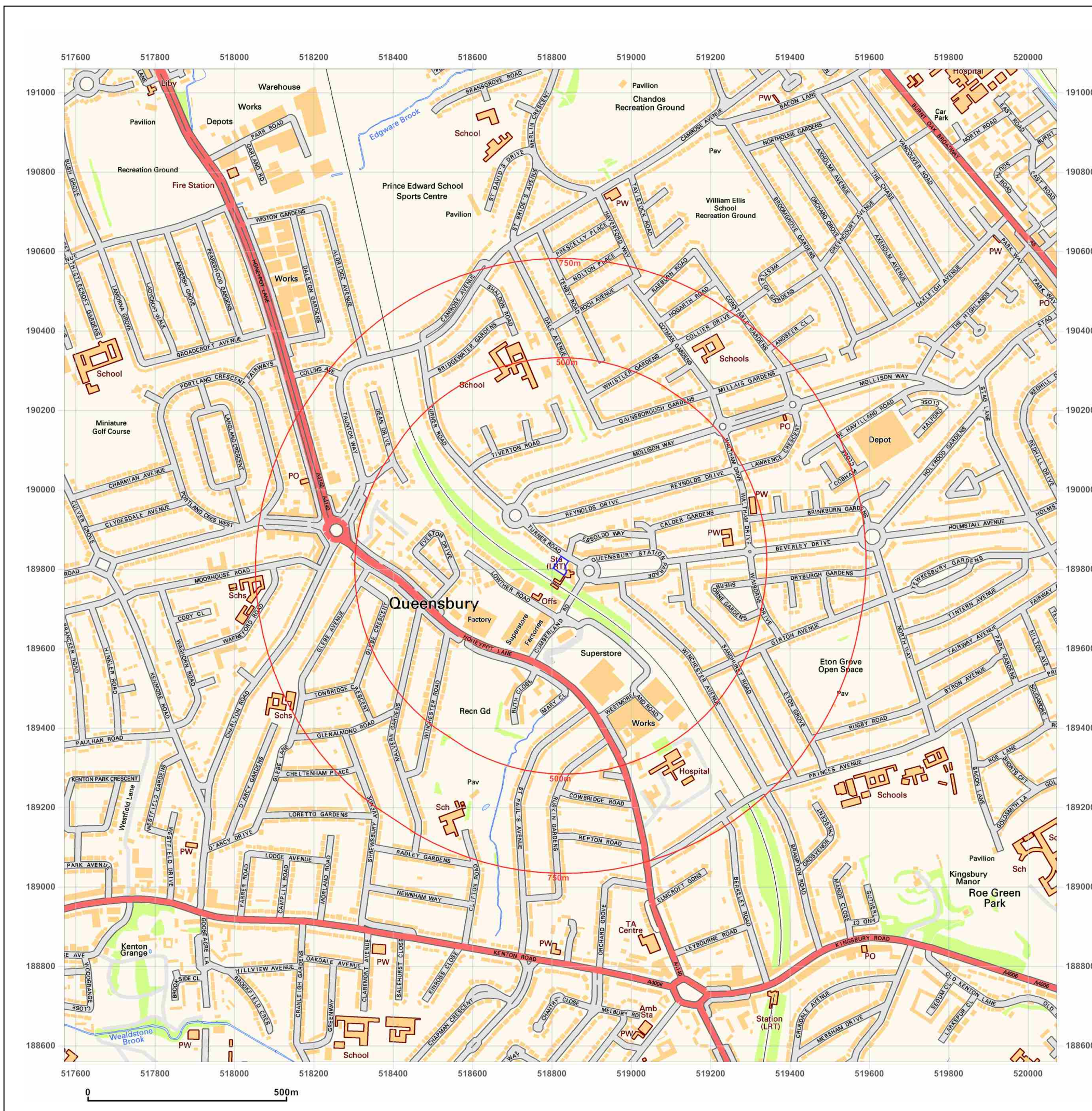


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Site Details:

1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

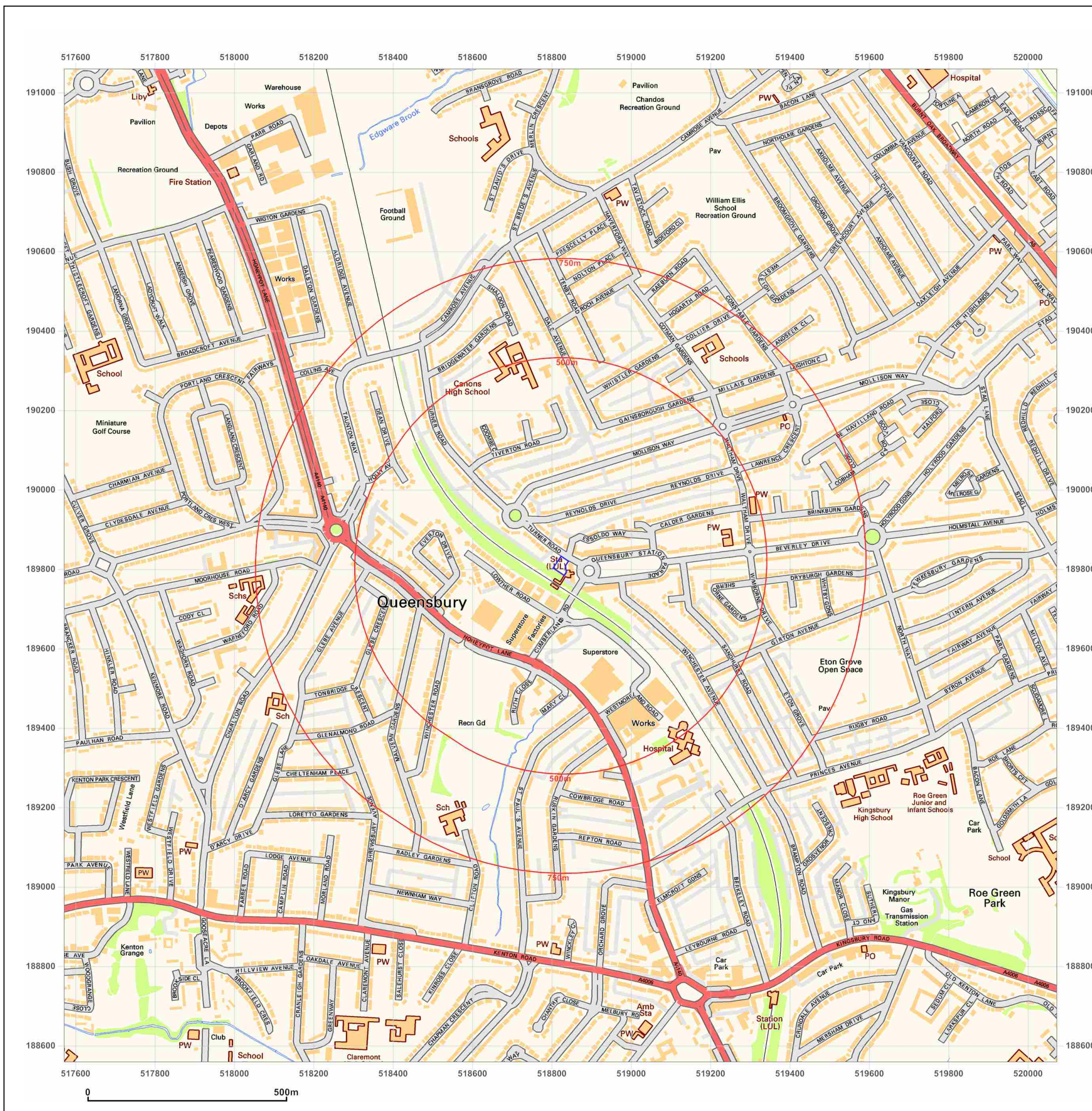


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1, TURNER ROAD, EDGWARE,
HA8 6AT

Client Ref: 14034794
Report Ref: GS-6550059
Grid Ref: 518821, 189808

Map Name: National Grid

Map date: 2020

Scale: 1:10,000

Printed at: 1:10,000



2020

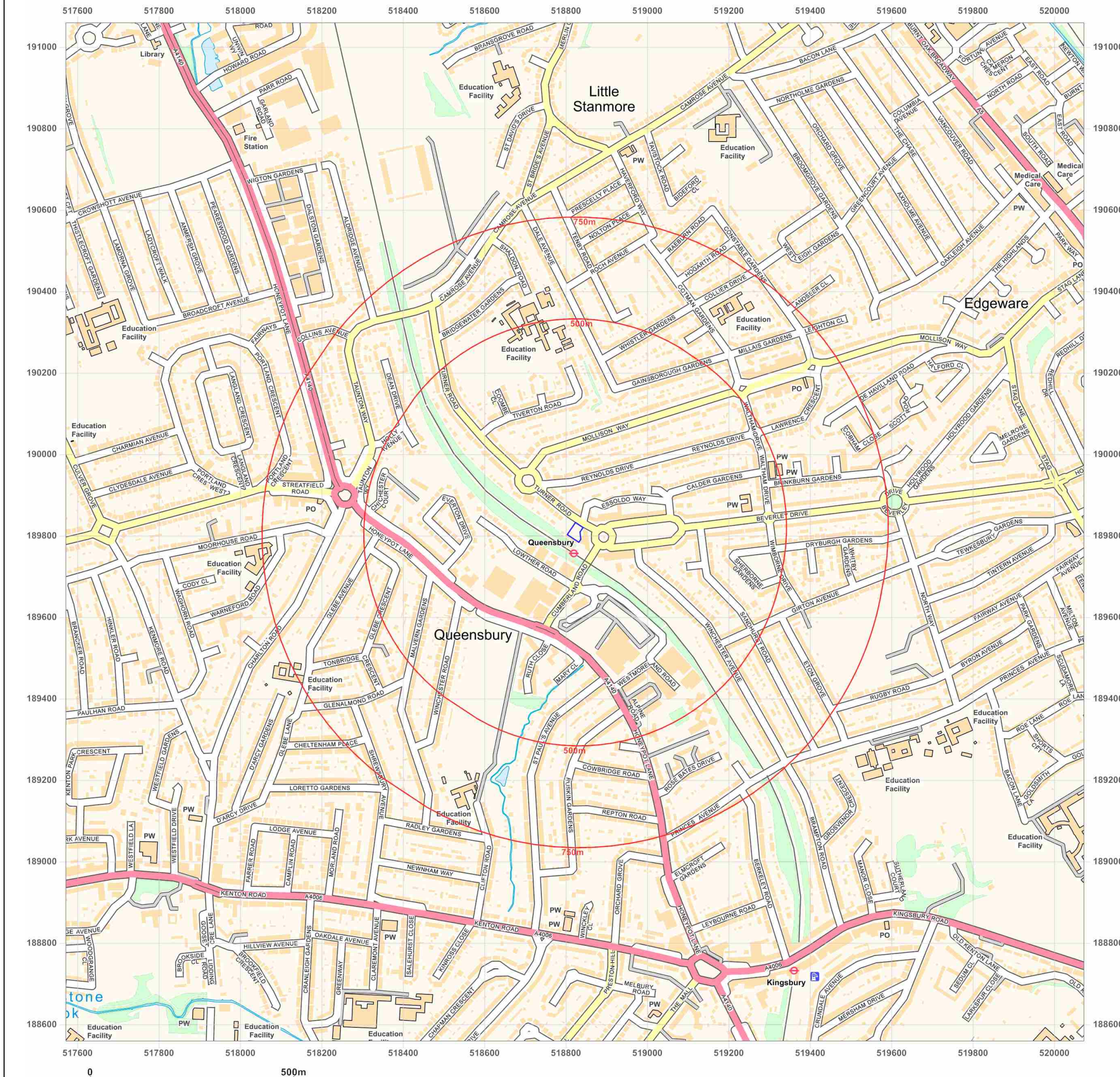


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APPENDIX B

Groundsure Data Sheets and Site Sensitivity Maps



Arcadis Consulting UK Ltd

Arcadis CONSULTING UK LTD, THE PITHAY,
BRISTOL, BS1 2NL

Groundsure
Reference:

GS-6550057

Your Reference: 14034794

Report Date

13 Jan 2020

Report Delivery
Method:

Email - pdf

Enviro Insight

Address: 1, TURNER ROAD, EDGWARE, HA8 6AT

Dear Sir/ Madam,

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

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Yours faithfully,

Managing Director
Groundsure Limited

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Address: 1, TURNER ROAD, EDGWARE, HA8 6AT

Date: 13 Jan 2020

Reference: GS-6550057

Client: Arcadis Consulting UK Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2015

Grid Reference: 518824,189809

Site Size: 0.0984ha

Report Reference: GS-6550057

Client Reference: 14034794

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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	6	1	27	23
1.2 Additional Information – Historical Tank Database	0	0	3	2
1.3 Additional Information – Historical Energy Features Database	0	0	16	14
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	4	0
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	0	0	10	12
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	3	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	1	0	1
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	2	16
2.3.2 National Incidents Recording System, List 1	0	0	0	1
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0
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	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	2

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	1	22	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	2	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	None 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				None 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	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	0	8	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	Identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	Identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	None 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	Not Prone					
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Not Applicable					

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	3
8.8 Records of World Heritage Sites	0	0	0	0	0	0
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	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Moderate
9.1.2 Maximum Landslides hazard rating identified on the study site	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).

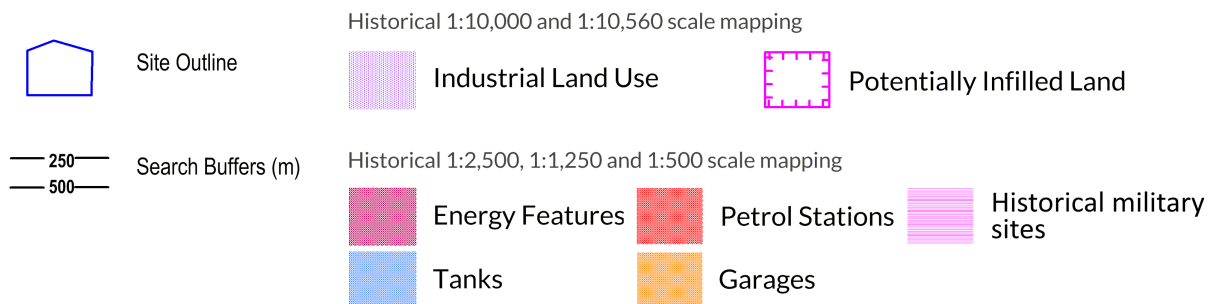
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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: 57

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Railway Station	1949
2A	0	On Site	Railway Station	1990
3A	0	On Site	Railway Station	1974
4A	0	On Site	Railway Station	1967
5A	0	On Site	Railway Station	1939
6A	0	On Site	Railway Station	1936
7	26	SW	Railway Station	1938
8	63	S	Laundry	1939
9C	66	S	Laundry	1938
10	75	S	Unspecified Factories	1967
11B	79	S	Unspecified Factories	1990
12B	79	S	Unspecified Factories	1974
13C	84	S	Laundry	1936
14AC	101	SW	Unspecified Factories	1990
15D	102	SW	Unspecified Factories	1974
16D	105	SW	Unspecified Factories	1967
17D	106	SW	Unspecified Commercial/Industrial	1949
18	129	SW	Unspecified Store	1990
19E	140	S	Unspecified Factories	1990
20E	144	S	Unspecified Commercial/Industrial	1974
21	154	SW	Unspecified Factory	1990
22F	199	SE	Unspecified Commercial/Industrial	1990
23F	199	SE	Unspecified Commercial/Industrial	1974
24G	243	S	Sewage Farm	1895
25H	243	SW	Sewage Farm	1949
26G	244	S	Sewage Farm	1897
27G	244	S	Sewage Farm	1920
28I	245	SW	Filter Beds	1939
29H	245	SW	Sewage Farm	1939
30I	248	SW	Filter Beds	1938
31H	248	SW	Sewage Farm	1938
32J	250	SE	Unspecified Works	1967

33J	250	SE	Unspecified Works	1974
34J	250	SE	Unspecified Works	1990
35I	263	SW	Filter Beds	1949
36AD	271	SW	Filter Beds	1920
37K	319	NW	Isolation Hospital	1920
38K	322	NW	Hospital	1938
39K	324	NW	Hospital	1939
40K	325	NW	Isolation Hospital	1936
41L	355	SE	Unspecified Works	1967
42L	355	SE	Unspecified Works	1974
43L	355	SE	Unspecified Factory	1990
44	384	W	Hospital	1949
45AF	394	SW	Filter Beds	1920
46AG	451	S	Filter Beds	1920
47M	458	SE	Maternity Hospital	1949
48M	459	SE	Maternity Hospital	1939
49M	459	SE	Hospital	1967
50M	459	SE	Corporation Hospital	1936
51M	460	SE	Maternity Hospital	1938
52N	469	N	Unspecified Ground Workings	1974
53N	469	N	Unspecified Ground Workings	1991
54N	469	N	Unspecified Ground Workings	1968
55AH	483	SE	Sewage Filterbed	1920
56O	492	S	Sewage Farm	1936
57O	492	S	Sewage Farm	1936

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:

5

ID	Distance (m)	Direction	Use	Date
58AB	142	SW	Unspecified Tank	1973
59P	250	W	Tanks	1958
60P	250	W	Tanks	1959
61Q	289	SW	Disused Tank	1959
62Q	290	SW	Disused Tank	1958

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:

30

ID	Distance (m)	Direction	Use	Date
63R	58	N	Electricity Substation	1973
64R	59	N	Electricity Substation	1985
65R	60	N	Electricity Substation	1995
66	80	S	Electricity Substation	1995
67S	124	SW	Electricity Substation	1995
68S	126	SW	Electricity Substation	1985
69T	154	NE	Electricity Substation	1985
70T	155	NE	Electricity Substation	1973
71T	155	NE	Electricity Substation	1995
72U	161	SE	Electricity Substation	1985
73U	162	SE	Electricity Substation	1973
74V	176	S	Electricity Substation	1973
75V	176	S	Electricity Substation	1985
76AA	216	SW	Electricity Substation	1973
77	220	NE	Electricity Substation	1987
78	223	SE	Electricity Substation	1973
79W	259	SW	Electricity Substation	1995
80W	260	SW	Electricity Substation	1973
81W	269	SW	Electricity Substation	1985
82	291	N	Electricity Substation	1987
83X	292	SW	Electricity Substation	1995
84X	293	SW	Electricity Substation	1985
85	312	SE	Electricity Substation	1995
86Y	337	SE	Electricity Substation	1973
87Y	339	SE	Electricity Transformer	1973
88L	416	SE	Electricity Transformer	1973
89	455	W	Electricity Substation	1993
90Z	460	E	Electricity Substation	1991
91Z	460	E	Electricity Substation	1986
92	481	S	Electricity Substation	1973

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: 4

ID	Distance (m)	Direction	Use	Date
93AA	202	SW	Garage	1985
94AA	204	SW	Garage	1958
95AA	204	SW	Garage	1959
96AA	204	SW	Garage	1973

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

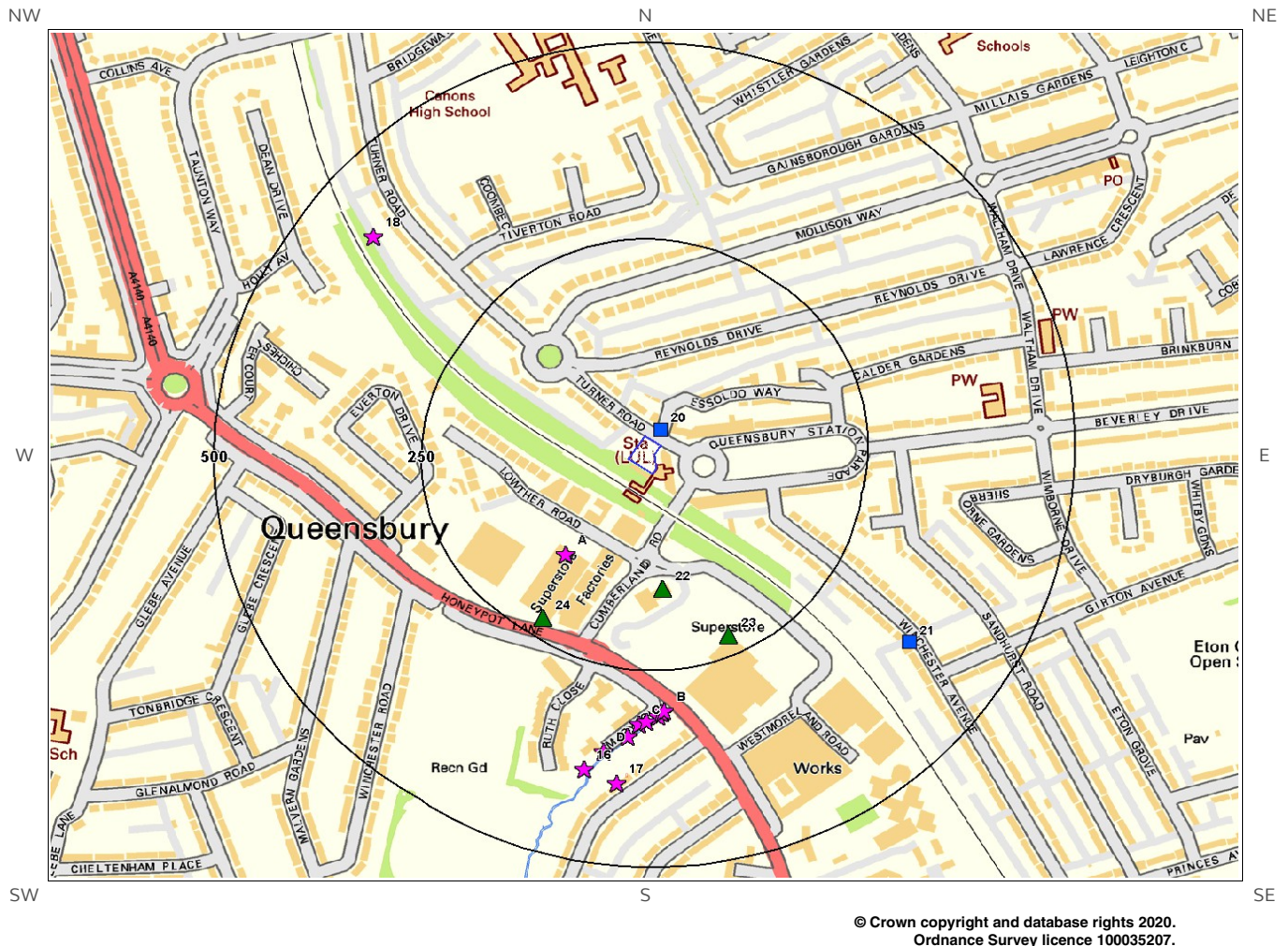
Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 22

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

ID	Distance(m)	Direction	Use	Date
97AB	136	SW	Pond	1895
98AC	137	SW	Ponds	1920
99G	243	S	Sewage Farm	1895
100H	243	SW	Sewage Farm	1949
101G	244	S	Sewage Farm	1897
102G	244	S	Sewage Farm	1920
103H	245	SW	Sewage Farm	1939
104I	245	SW	Filter Beds	1939
105AD	248	SW	Filter Beds	1938

106H	248	SW	Sewage Farm	1938
107I	263	SW	Filter Beds	1949
108AD	271	SW	Filter Beds	1920
109AE	390	N	Pond	1968
110AE	390	N	Pond	1974
111AF	394	SW	Filter Beds	1920
112AG	451	S	Filter Beds	1920
113N	469	N	Unspecified Ground Workings	1968
114N	469	N	Unspecified Ground Workings	1974
115N	469	N	Unspecified Ground Workings	1991
116AH	483	SE	Sewage Filterbed	1920
117O	492	S	Sewage Farm	1936
118O	492	S	Sewage Farm	1936

2. Environmental Permits, Incidents and Registers Map



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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

3

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
22	148	S	518843 189636	Address: Morrisons Petrol Station, Honeypot Lane, Queensbury, NW9 6RN Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
23	227	SE	518922 189576	Address: Morrisons Dry Cleaners, Queensbury Morrisons, Honeypot Lane, London, NW9 6RN Process: Dry Cleaning Status: Current Permit Permit Type: Part B Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
24	227	SW	518698 189599	Address: Safeway, Honeypot Lane, NW9 8SD Process: Petrol Vapour Recovery Status: Historical 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:

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	NGR	Details
20	16	NE	518840 189840	Address: HONEYPOT LANE, WINCHESTER AVENUE, BRENT, LONDON, NW9 9TB Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: CANM.0664 Permit Version: 1 Receiving Water: THE KENTON BROOK Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 27/08/2003 Effective Date: 27-Aug-2003 Revocation Date: -
21	376	SE	519140 189570	Address: Winchester Avenue Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: TEMP.3039 Permit Version: 1 Receiving Water: KENTON BROOK Status: REVOKED - UNSPECIFIED Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 21/08/2003

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:

18

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

ID	Distance (m)	Direction	NGR	Details
1A	143	SW	518725.0 189682.0	Incident Date: 03-Apr-2002 Incident Identification: 68542.0 Pollutant: Specific Waste Materials Pollutant Description: Household Waste Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
2A	143	SW	518725.0 189682.0	Incident Date: 03-Apr-2002 Incident Identification: 68610.0 Pollutant: Specific Waste Materials Pollutant Description: Household Waste Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
3B	302	S	518844.0 189482.0	Incident Date: 12-Feb-2002 Incident Identification: 57936.0 Pollutant: Sewage Materials Pollutant Description: Grey Water Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4B	304	S	518840.0 189480.0	Incident Date: 18-Jul-2002 Incident Identification: 92546.0 Pollutant: Sewage Materials Pollutant Description: Grey Water Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
5B	304	S	518841.0 189480.0	Incident Date: 15-Apr-2002 Incident Identification: 71828.0 Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details	
				Pollutant: Sewage Materials:Organic Chemicals/Products Pollutant Description: Grey Water:Surfactants and Detergents	Air Impact: Category 4 (No Impact)
6B	304	S	518841.0 189480.0	Incident Date: 15-Apr-2002 Incident Identification: 71828.0 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
7B	304	S	518841.0 189480.0	Incident Date: 15-Apr-2002 Incident Identification: 71828.0 Pollutant: Organic Chemicals/Products Pollutant Description: Surfactants and Detergents	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
8B	304	S	518841.0 189480.0	Incident Date: 15-Apr-2002 Incident Identification: 71828.0 Pollutant: Sewage Materials Pollutant Description: Surfactants and Detergents Grey Water	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
9B	304	S	518841.0 189480.0	Incident Date: 15-Apr-2002 Incident Identification: 71828.0 Pollutant: Organic Chemicals/Products:Sewage Materials Pollutant Description: Surfactants and Detergents:Grey Water	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
10B	304	S	518841.0 189480.0	Incident Date: 15-Apr-2002 Incident Identification: 71828.0 Pollutant: Organic Chemicals/Products : Sewage Materials Pollutant Description: Surfactants and Detergents :Grey Water	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
11B	309	S	518837.0 189475.0	Incident Date: 08-Oct-2002 Incident Identification: 113490.0 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
12B	315	S	518823.0 189469.0	Incident Date: 07-Nov-2004 Incident Identification: 276356.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
13C	319	S	518814.0 189465.0	Incident Date: 16-Jun-2003 Incident Identification: 166073.0 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
14C	335	S	518800.0 189450.0	Incident Date: 14-Jan-2002 Incident Identification: 52411.0 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
15D	358	S	518771.0 189431.0	Incident Date: 16-Oct-2017 Incident Identification: 1561806.0 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
16	385	S	518747.0 189408.0	Incident Date: 29-Jul-2002 Incident Identification: 95239.0 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 2 (Significant) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
17	396	S	518787.0 189390.0	Incident Date: 19-Apr-2003 Incident Identification: 152480.0 Pollutant: Inert Materials and Wastes Pollutant Description: Other Inert Material or Waste	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
18	415	NW	518493.0 190086.0	Incident Date: 07-Mar-2003 Incident Identification: 141825.0	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor)

ID	Distance (m)	Direction	NGR	Details
				Pollutant: Specific Waste Materials Pollutant Description: Household Waste Air Impact: Category 4 (No Impact)

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

1

The following NIRS List 1 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
19D	385	S		Incident Date: 22-Mar-2000 Incident Identification: 6986.0 Catchments Name: BRENT Water Description: RIVER STRETCH (FRESHWATER) Water Course: KENTON BROOK Incident Substantiated: N/A Priority Description: Immediate (2 Hours) Waste Description: Not Available Water Impact: Significant Impact Land Impact: No Impact Air Impact: No Impact Action Taken: Not Available

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








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

0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



- | | | | | | |
|---|---------------------------|---|----------------------------|---|---|
|  | Site Outline |  | EA/NRW Active Landfill |  | Historic and Planned Waste Sites |
|  | EA/NRW Historic Landfill |  | EA/NRW Licensed Waste Site |  | Local Authority/Historical Mapping Landfill Records |
|  | BGS / DoE Survey Landfill | | | | |
- 250 — Search Buffers (m)
— 500 —

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:

0

Database searched and no data found.

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:

0

Database searched and no data found.

3.2 Other Waste Sites

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

0

Database searched and no data found.

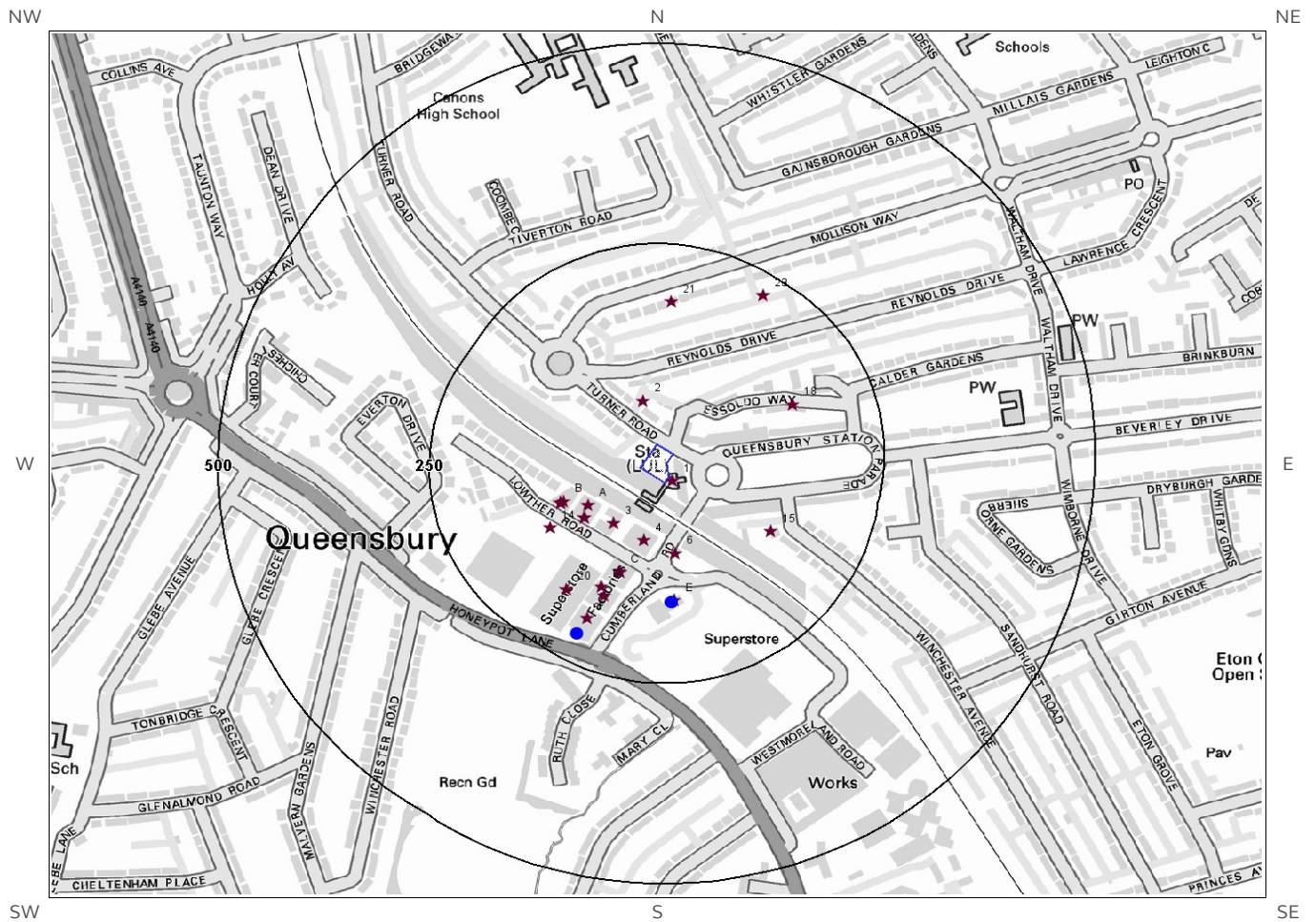
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

2

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

ID	Distance (m)	Direction	NGR	Details
Not shown	1082	NW	517900 190400	<p>Site Address: Star House, 6, Garland Road, Honeyput Lane, Stanmore, Middlesex, HA7 1NR</p> <p>Type: Metal Recycling Site (mixed MRS's)</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: STA006</p> <p>EPR reference: -</p> <p>Operator: Star Refining Limited</p> <p>Waste Management licence No: 80584</p> <p>Annual Tonnage: 0.0</p> <p>Issue Date: 04/03/2003</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Issued</p> <p>Site Name: Star House</p> <p>Correspondence Address: Star House, 6, Garland Road, Honeyput Lane, Stanmore, Middlesex, HA7 1NR</p>
Not shown	1233	NW	518018 190767	<p>Site Address: Star House, 6, Garland Road, Honeyput Lane, Stanmore, Middlesex, HA7 1NR</p> <p>Type: Metal Recycling Site (mixed MRS's)</p> <p>Size: < 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: STA006</p> <p>EPR reference: EA/EPR/ZP3097NA/A001</p> <p>Operator: Star Refining Ltd</p> <p>Waste Management licence No: 80584</p> <p>Annual Tonnage: 90.0</p> <p>Issue Date: 04/03/2003</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: -</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Expired</p> <p>Site Name: Star House</p> <p>Correspondence Address: -</p>

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

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

23

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	5	SE	Queensbury	518838 189787	Queensbury Station Parade, Edgware, Greater London, HA8 5NP	Underground Network Stations	Public Transport, Stations and Infrastructure
2	57	N	Electricity Sub Station	518805 189887	Greater London, HA8	Electrical Features	Infrastructure and Facilities
3	75	SW	Wienerworld	518770 189734	Unit 7 Freetrade House, Lowther Road, Stanmore, Greater London, HA7 1EP	Recording Studios and Record Companies	IT, Advertising, Marketing and Media Services
4	75	S	Works	518806 189713	Greater London, HA7	Unspecified Works Or Factories	Industrial Features
5A	77	SW	Works	518740 189757	Greater London, HA7	Unspecified Works Or Factories	Industrial Features
6	88	S	Electricity Sub Station	518843 189697	Greater London, HA7	Electrical Features	Infrastructure and Facilities
7A	90	SW	Equatus Vehicle Services	518735 189741	Unit 3, Lowther Road, Stanmore, Greater London, HA7 1EP	Vehicle Repair, Testing and Servicing	Repair and Servicing
8A	90	SW	Goldstein Smoked Salmon	518735 189741	Unit 2, Lowther Road, Stanmore, Greater London, HA7 1EP	Fish, Meat and Poultry Products	Foodstuffs
9B	101	SW	Factory	518710 189762	Greater London, HA7	Unspecified Works Or Factories	Industrial Features
10B	104	SW	Quickfit Safety Belt Service	518706 189759	Inertia House, Lowther Road, Stanmore, Greater London, HA7 1EP	Vehicle Components	Industrial Products
11B	104	SW	Reflex Safety Systems	518706 189759	Inertia House, Lowther Road, Stanmore, Greater London, HA7 1EP	Baby, Nursery and Playground Equipment	Consumer Products
12C	122	SW	The Automobile Trimmings Co	518777 189674	19, Cumberland Road, Stanmore, Greater London, HA7 1EL	Ropes, Nets and Cordage	Industrial Products
13C	123	SW	Factory	518778 189673	Greater London, HA7	Unspecified Works Or Factories	Industrial Features
14	130	SW	Electricity Sub Station	518695 189729	Greater London, HA7	Electrical Features	Infrastructure and Facilities
15	138	SE	Parfitt Automotive	518955 189724	187, Winchester Avenue, London, Greater London, NW9 9TB	Vehicle Repair, Testing and Servicing	Repair and Servicing
16E	146	S	Morrisons Petrol	518841 189638	Honeypot Lane, London, Greater London, NW9 6RN	Petrol and Fuel Stations	Road and Rail

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
Station							
17D	149	SW	Pit Lane Autos	518755 189655	20, Cumberland Road, Stanmore, Greater London, HA7 1EL	Vehicle Repair, Testing and Servicing	Repair and Servicing
18	154	NE	Electricity Sub Station	518981 189883	Greater London, HA8	Electrical Features	Infrastructure and Facilities
19D	157	SW	Factory	518759 189644	Greater London, HA7	Unspecified Works Or Factories	Industrial Features
20	174	SW	Hertz Car Hire	518714 189652	Honeypot Lane, Stanmore, Greater London, HA7 1QL	Vehicle Hire and Rental	Hire Services
21	179	N	Car Paint Detailing	518838 190011	187, Mollison Way, Edgware, Greater London, HA8 5QX	Vehicle Repair, Testing and Servicing	Repair and Servicing
22F	191	SW	Works	518739 189616	Greater London, HA7	Unspecified Works Or Factories	Industrial Features
23	224	NE	Electricity Sub Station	518947 190019	Greater London, HA8	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

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

2

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

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
24E	149	S	518838 189635	MORRISONS	Cumberland Road, Queensbury, London, Outer London, NW9 6RN	No	Open
25F	215	SW	518726 189596	OBSOLETE	160, Honeypot Lane, Cumberland Road, Queensbury, London, Outer London, HA7 1JN	Not Applicable	Obsolete

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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

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

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

Database searched and no data found.

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

5.3 Bedrock and Solid Geology

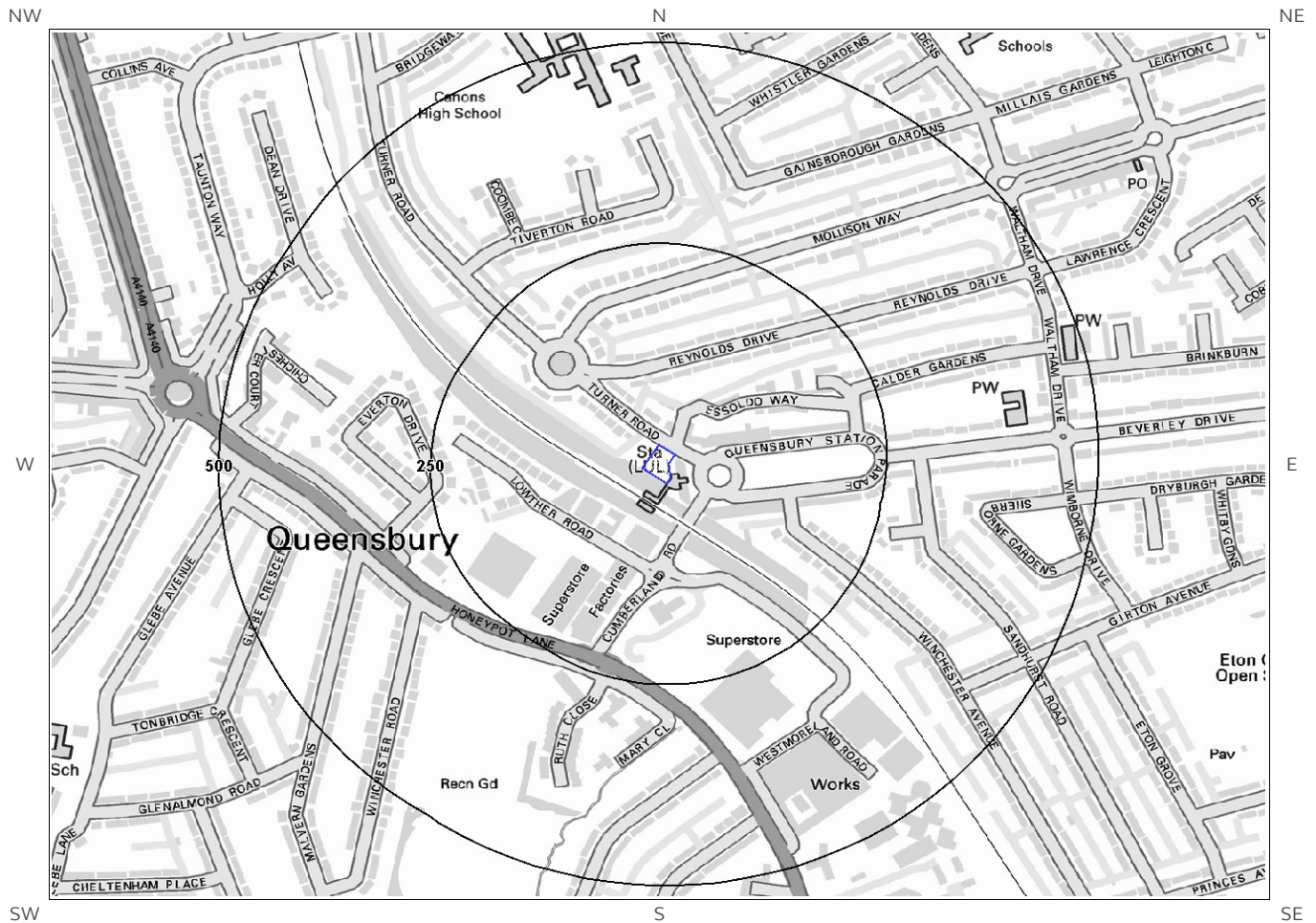
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LC-XCZS	LONDON CLAY FORMATION	CLAY, SILT AND SAND

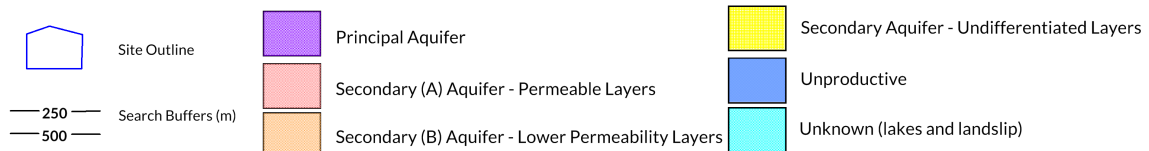
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

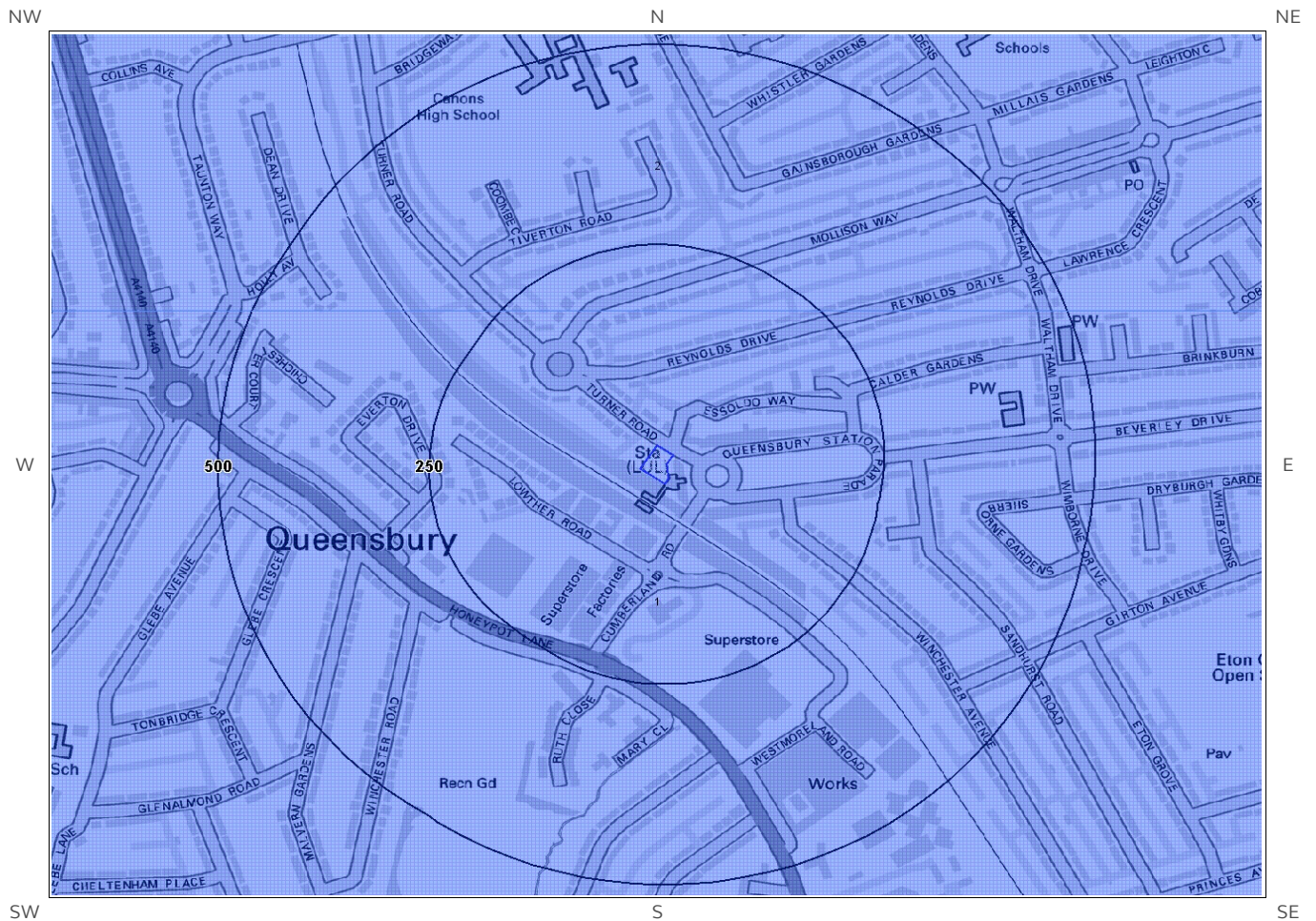
6a. Aquifer Within Superficial Geology



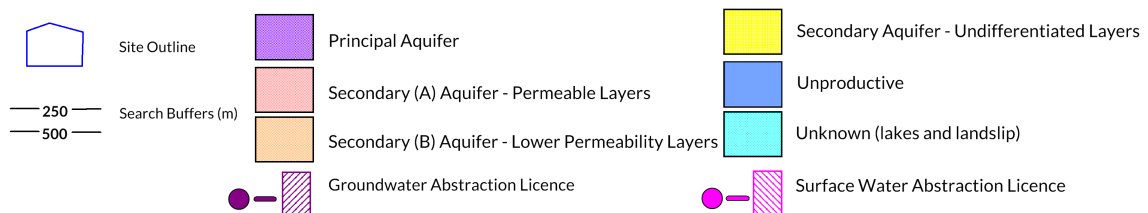
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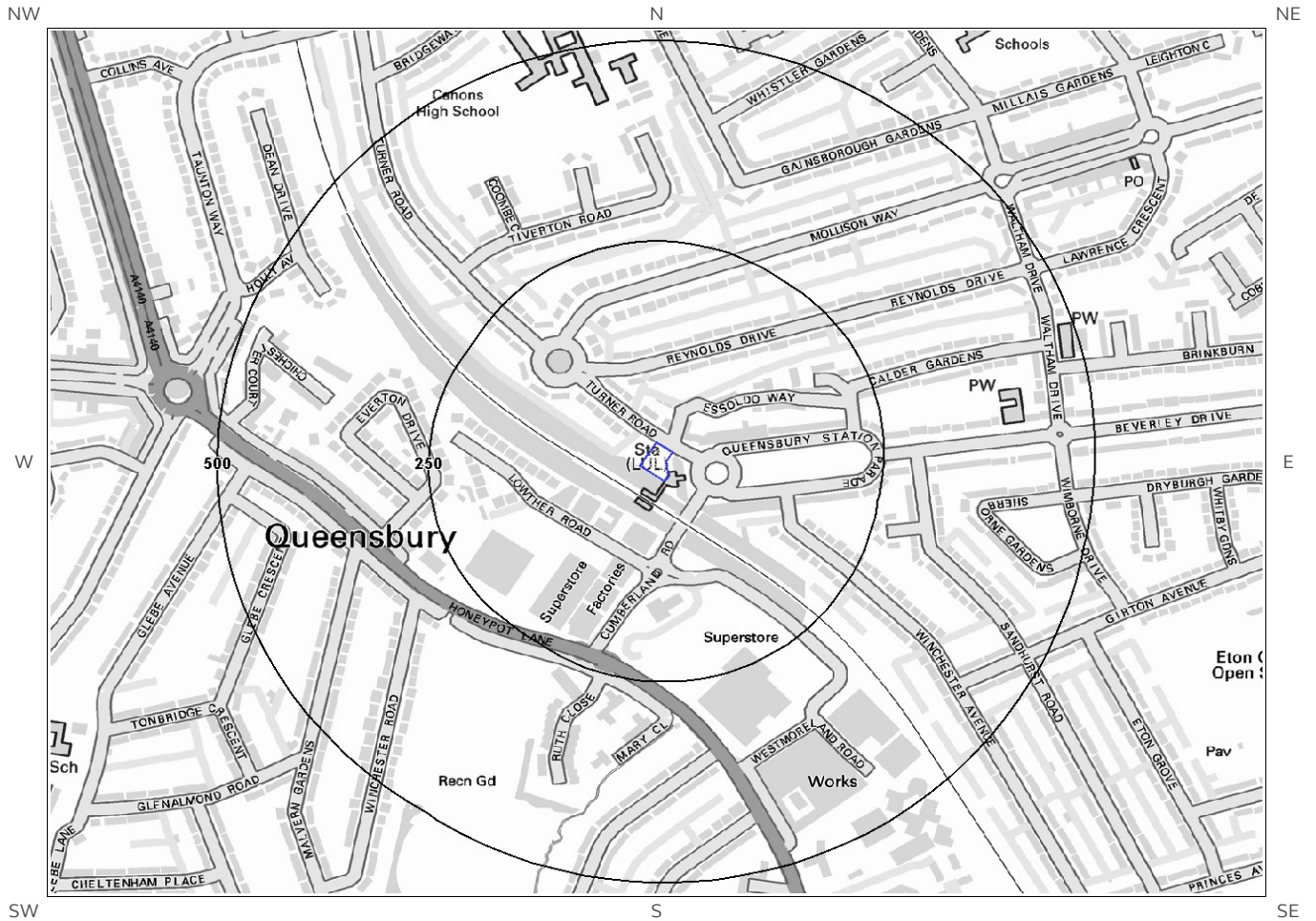
6b. Aquifer Within Bedrock Geology and Abstraction Licences



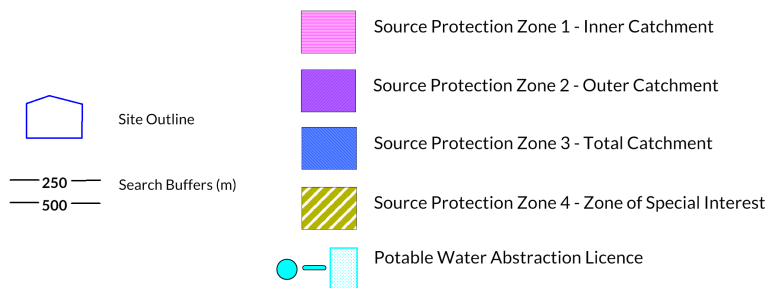
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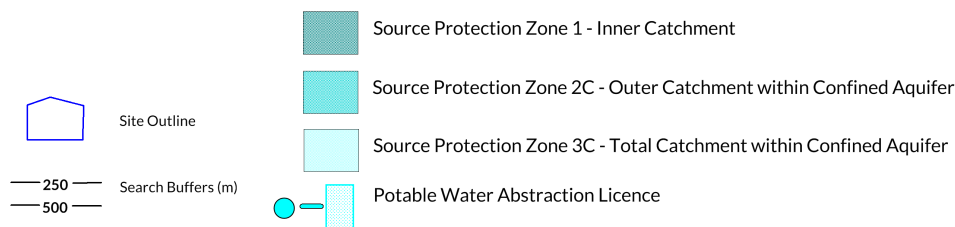
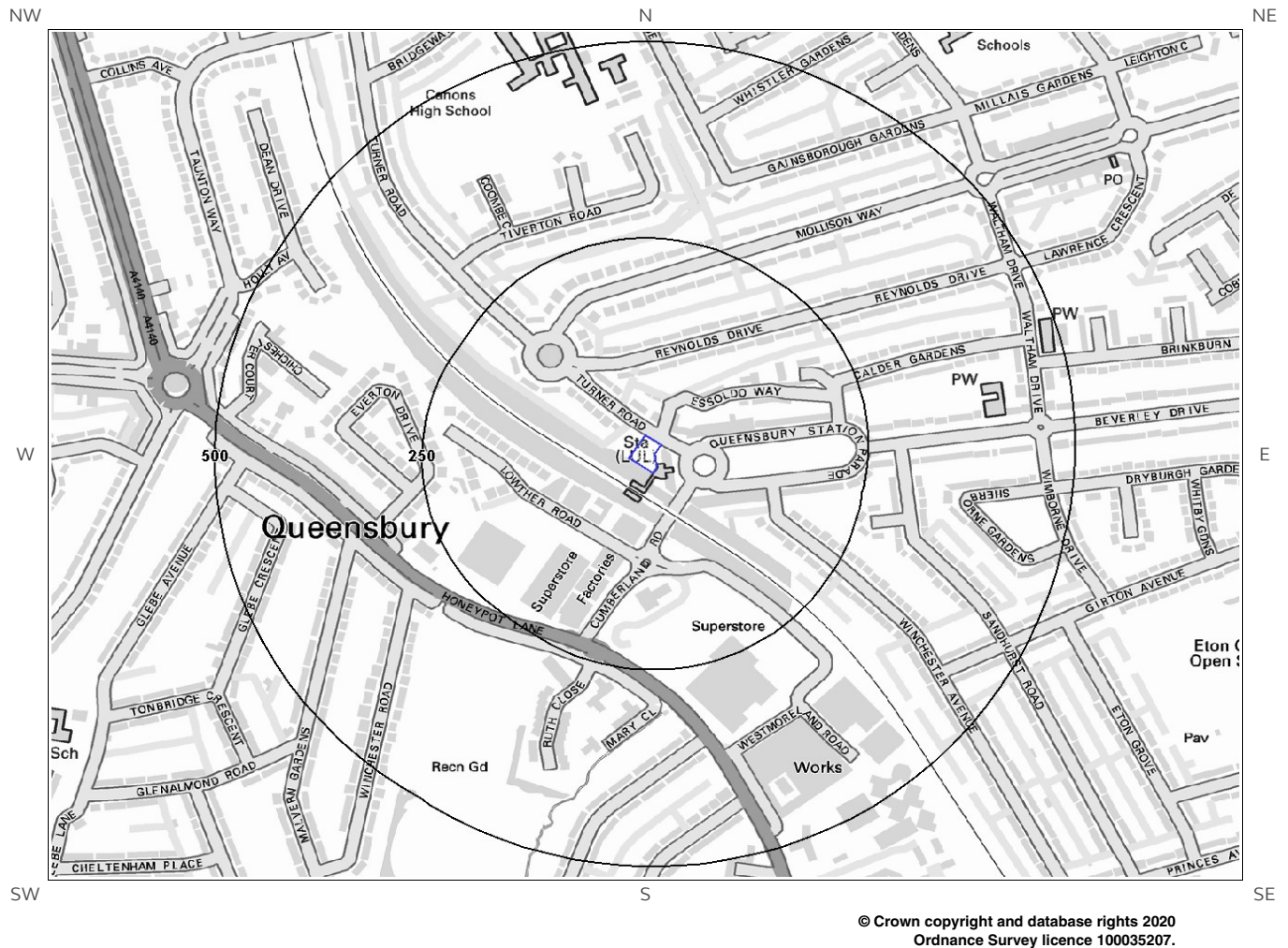
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



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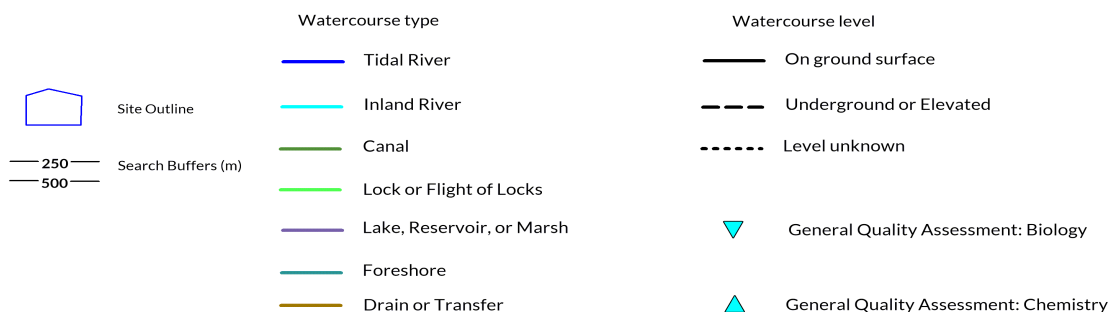
6d. Hydrogeology – Source Protection Zones within confined aquifer



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 No

Database searched and no data found.

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.

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
2	167	N	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 None identified

Database searched and no data found.

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site None identified

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

None identified

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

None identified

Database searched and no data found.

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	291 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	291 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: Not provided Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	303 S	- Alternative Name: -	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): 2.0
Not shown	303 S	- Alternative Name: -	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): 2.0
3	464 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	464 S	- Alternative Name: -	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
4	468 S	- Alternative Name: -	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): 1.9
Not shown	468 S	- Alternative Name: -	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): 1.9

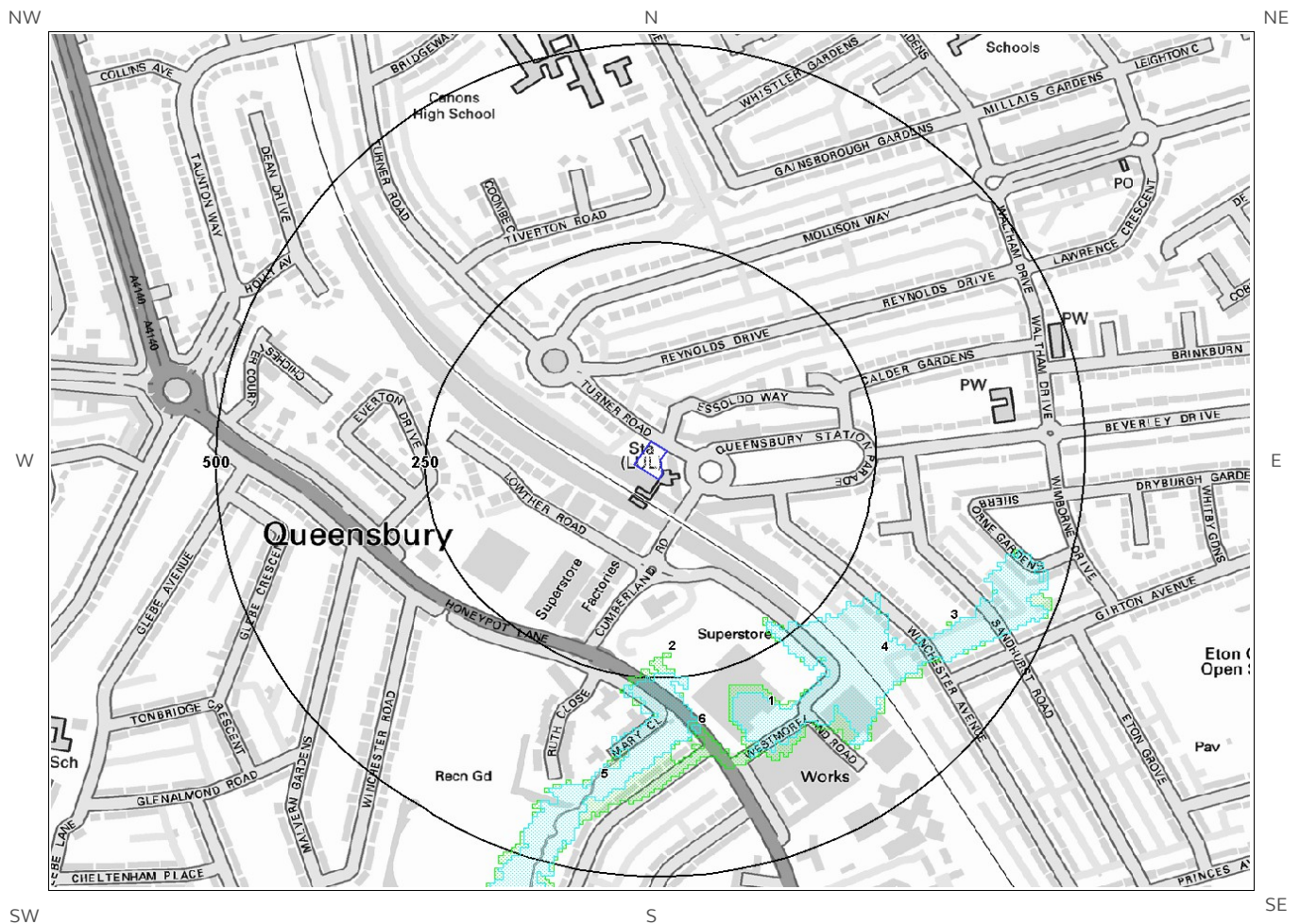
6.11 Surface Water Features

Surface water features within 250m of the study site

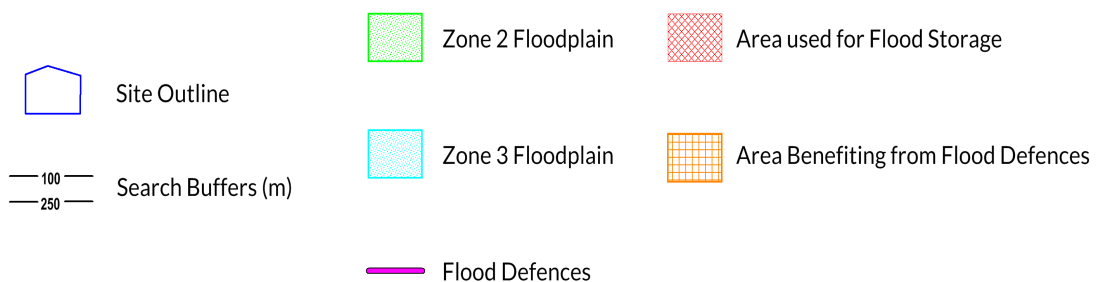
None identified

Database searched and no data found.

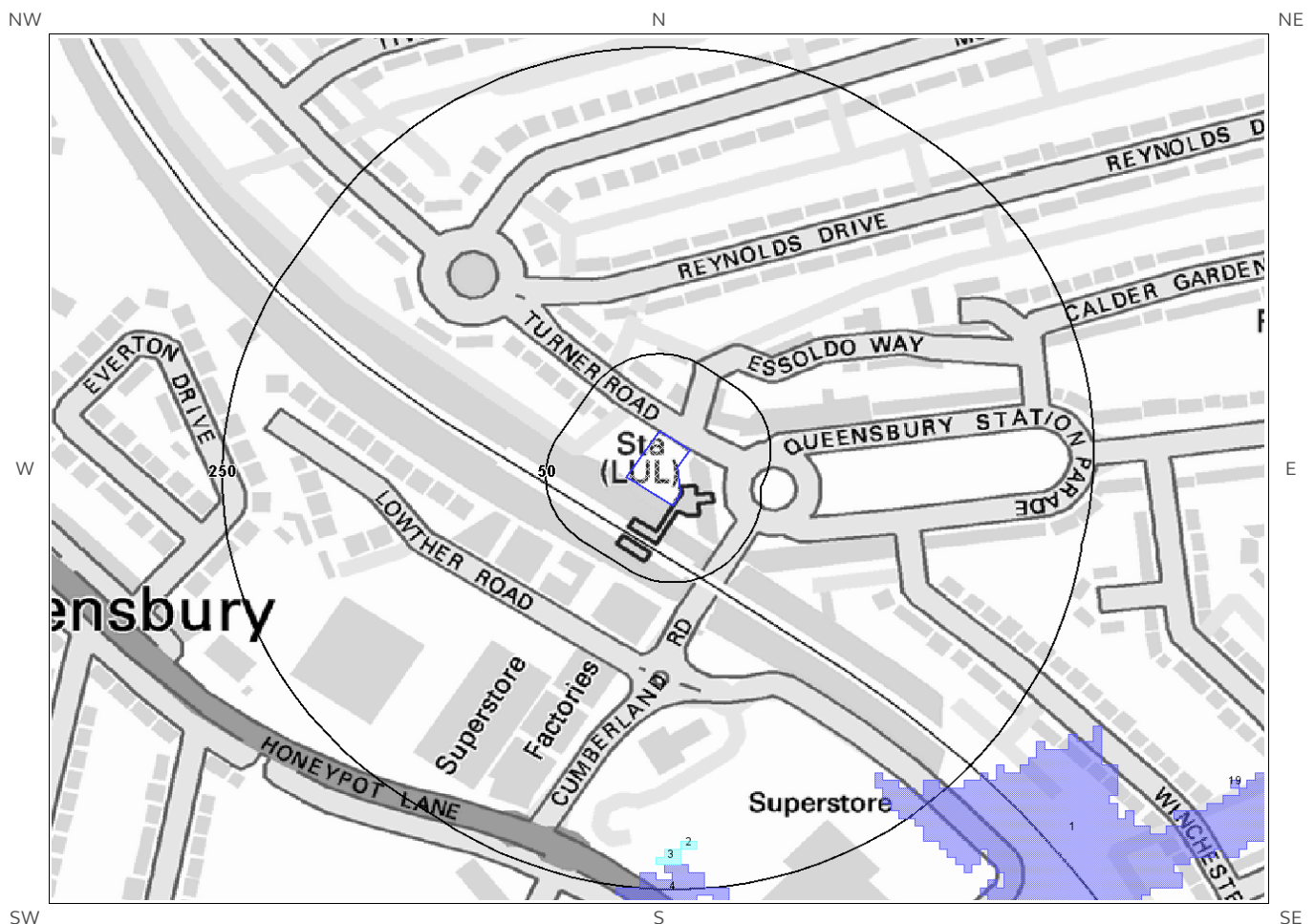
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



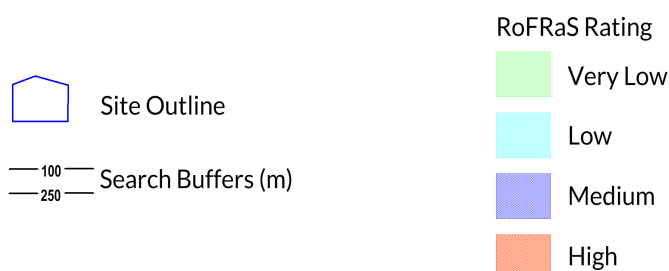
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7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

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

Identified

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

ID	Distance (m)	Direction	Update	Type
1	214	SE	19-Nov-2019	Zone 2 - (Fluvial /Tidal Models)
2	219	S	19-Nov-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	221	SE	19-Nov-2019	Zone 3 - (Fluvial Models)
2	244	S	19-Nov-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 None 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 None identified

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

Not Prone

The area is not considered to be prone to groundwater flooding based on rock type.

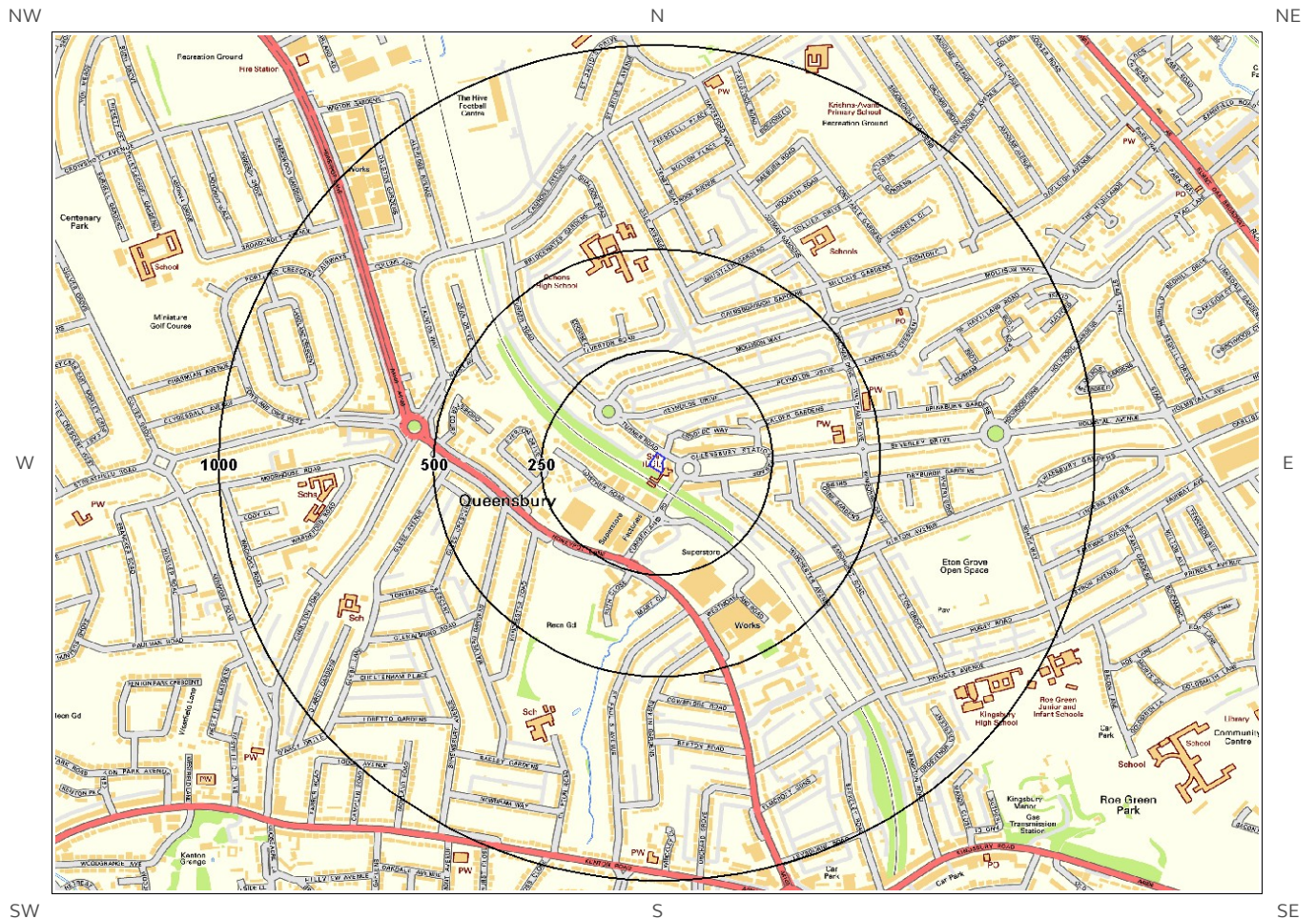
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result Not Applicable

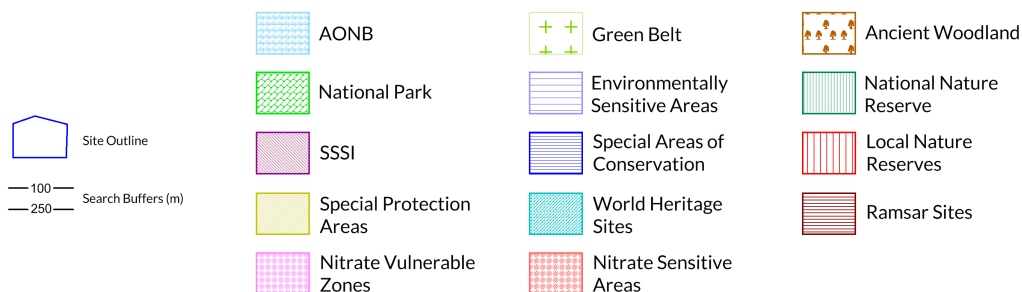
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

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

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

3

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
Not shown	1396	SE	Masons Field	Natural England
Not shown	1580	SE	Fryent Country Park	Natural England
Not shown	1709	S	Fryent Country Park	Natural England

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

0

Database searched and no data found.

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 Moderate

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

Hazard
Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site Low

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

Hazard
Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

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
Telephone: 08444 159 000
info@groundsure.com



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enquiries@bgs.ac.uk



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Tel: 01252 845444



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-jan-2020/>

Arcadis Consulting UK Ltd

Arcadis CONSULTING UK LTD, THE PITHAY,
BRISTOL, BS1 2NL

Groundsure
Reference:

GS-6550058

Your Reference: 14034794

Report Date

13 Jan 2020

Report Delivery
Method:

Email - pdf

Geo Insight

Address: 1, TURNER ROAD, EDGWARE, HA8 6AT

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: 1, TURNER ROAD, EDGWARE, HA8 6AT

Date: 13 Jan 2020

Reference: GS-6550058

Client: Arcadis Consulting UK Ltd



Aerial Photograph Capture date: 20-Apr-2015

Grid Reference: 518824,189809

Site Size: 0.0984ha

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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?*	No
	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?*	No
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	No
	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

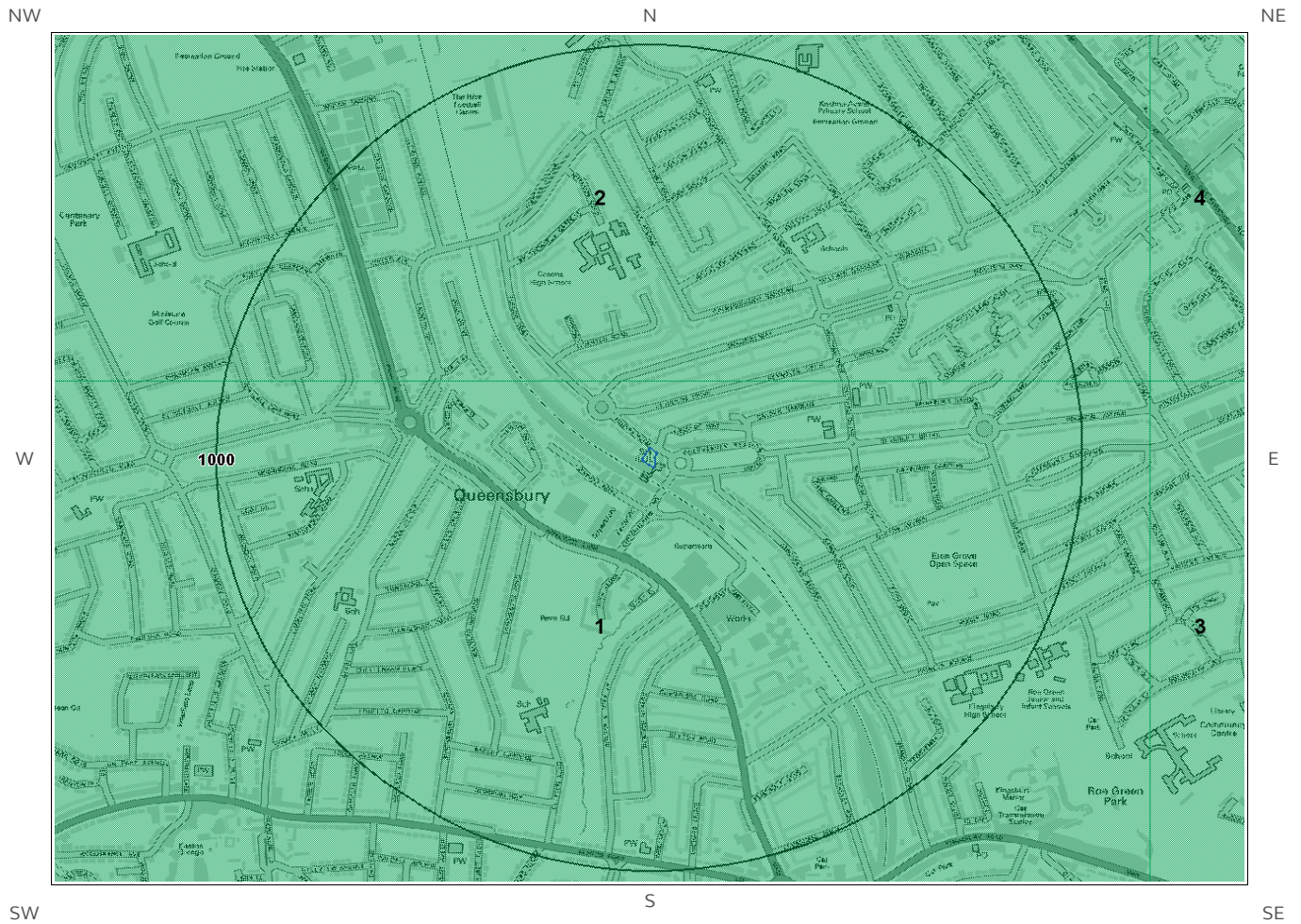
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	10	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	0	0

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

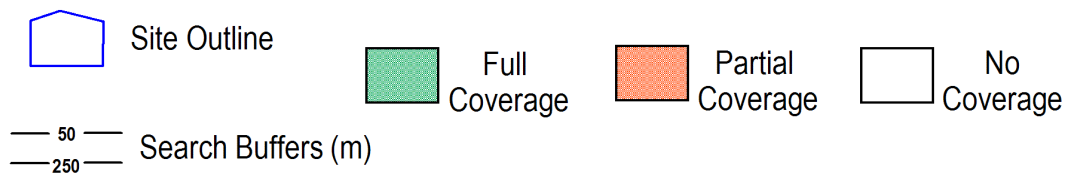
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Moderate				
6.2 Landslides	Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Very Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	0	3		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	1	0	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	1	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	167.0	Some deposits are mapped	Full	Full	No coverage
3	1159.0	Some deposits are mapped	Full	Full	No coverage
4	1173.0	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

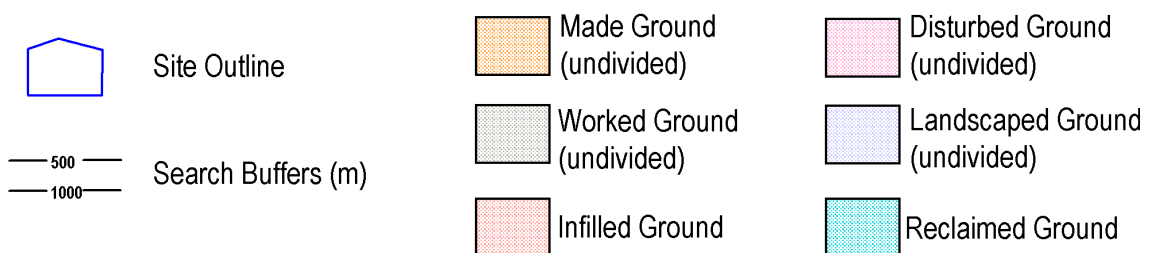
1 Geology (1:10,000 scale).

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

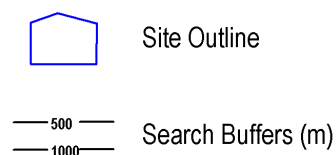
ID	Distance	Direction	LEX Code	Description	Rock Description
1	243.0	S	MGR- UNKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry

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? No

Database searched and no data found.

1.2.2 Landslip

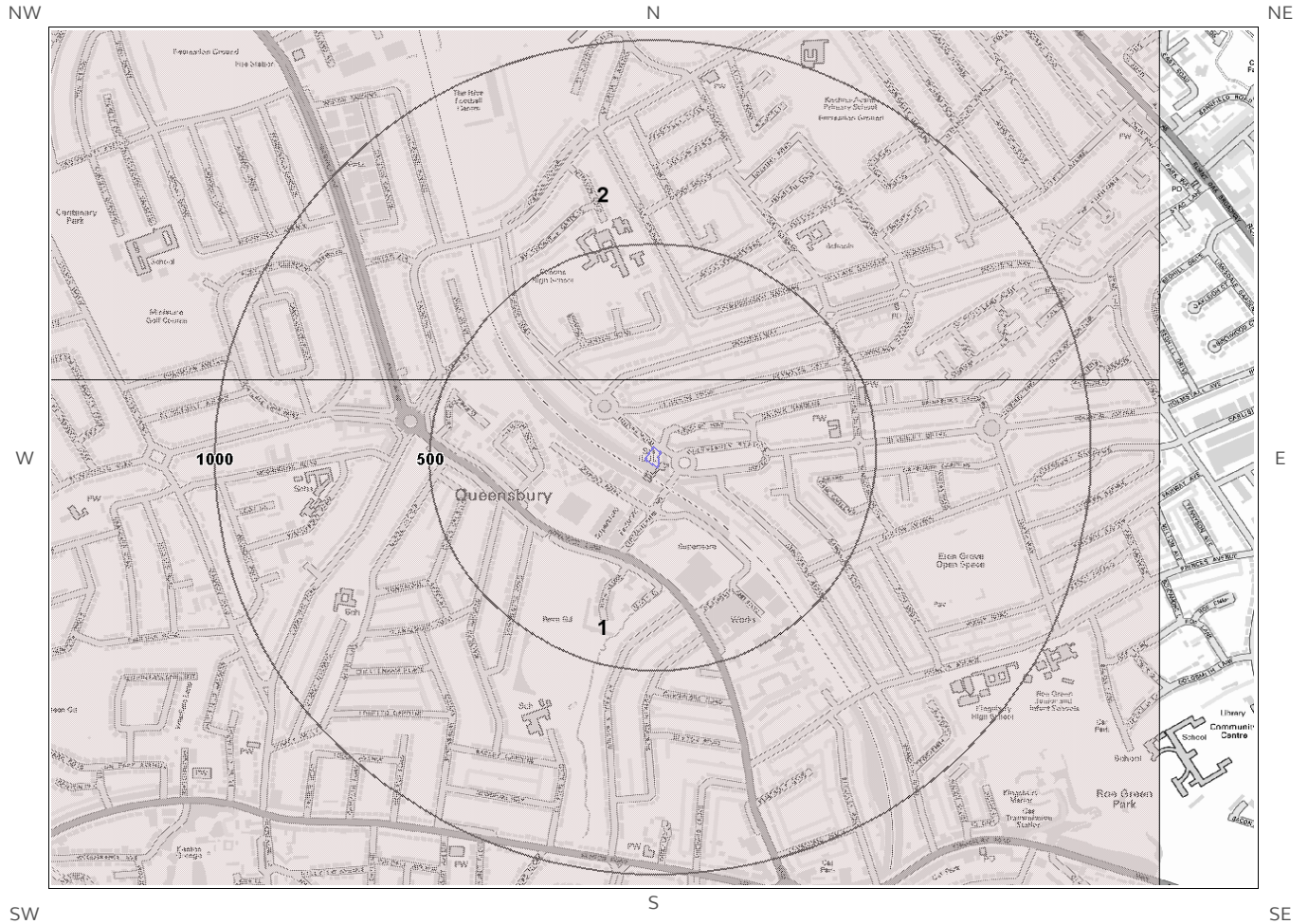
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

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

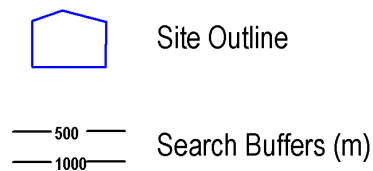
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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
2	167.0	N	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.

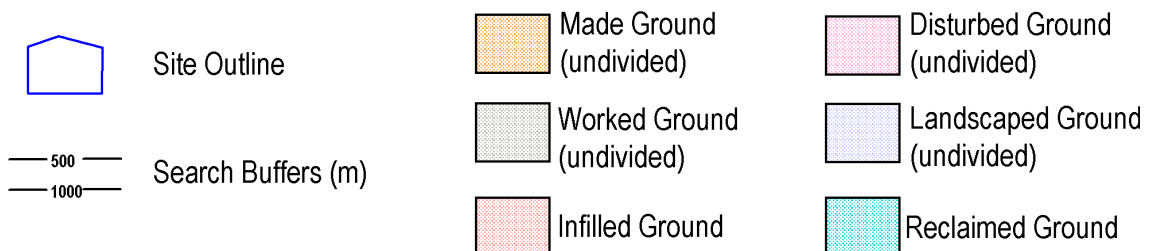
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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: 256

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	256.0	SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	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.

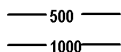
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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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? No

Database searched and no data found.

2.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

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.

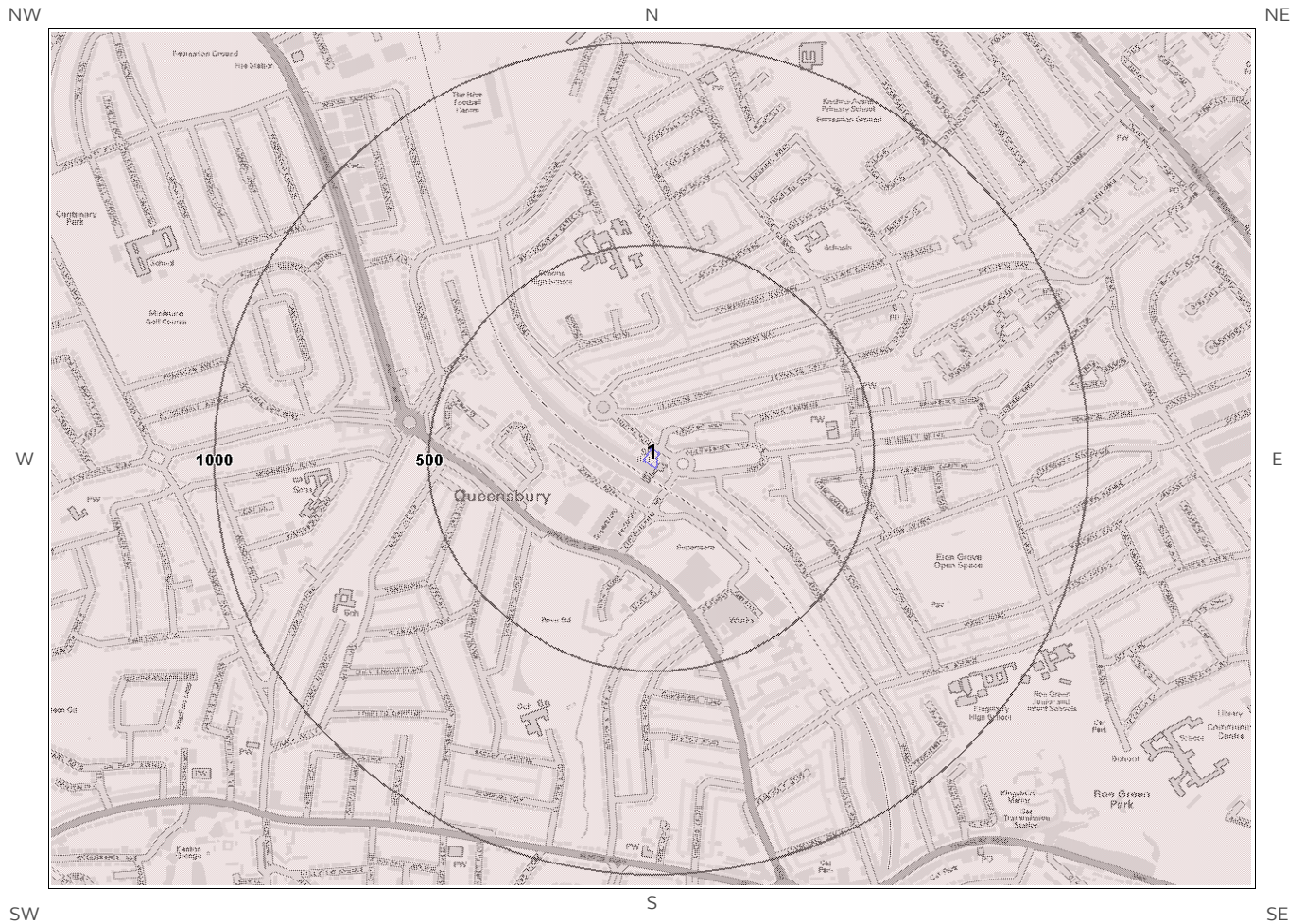
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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.

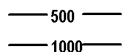
2.3 Bedrock and linear features map (1:50,000 scale)



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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: 256

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-XCZS	LONDON CLAY FORMATION - CLAY, SILT AND SAND	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	Moderate	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

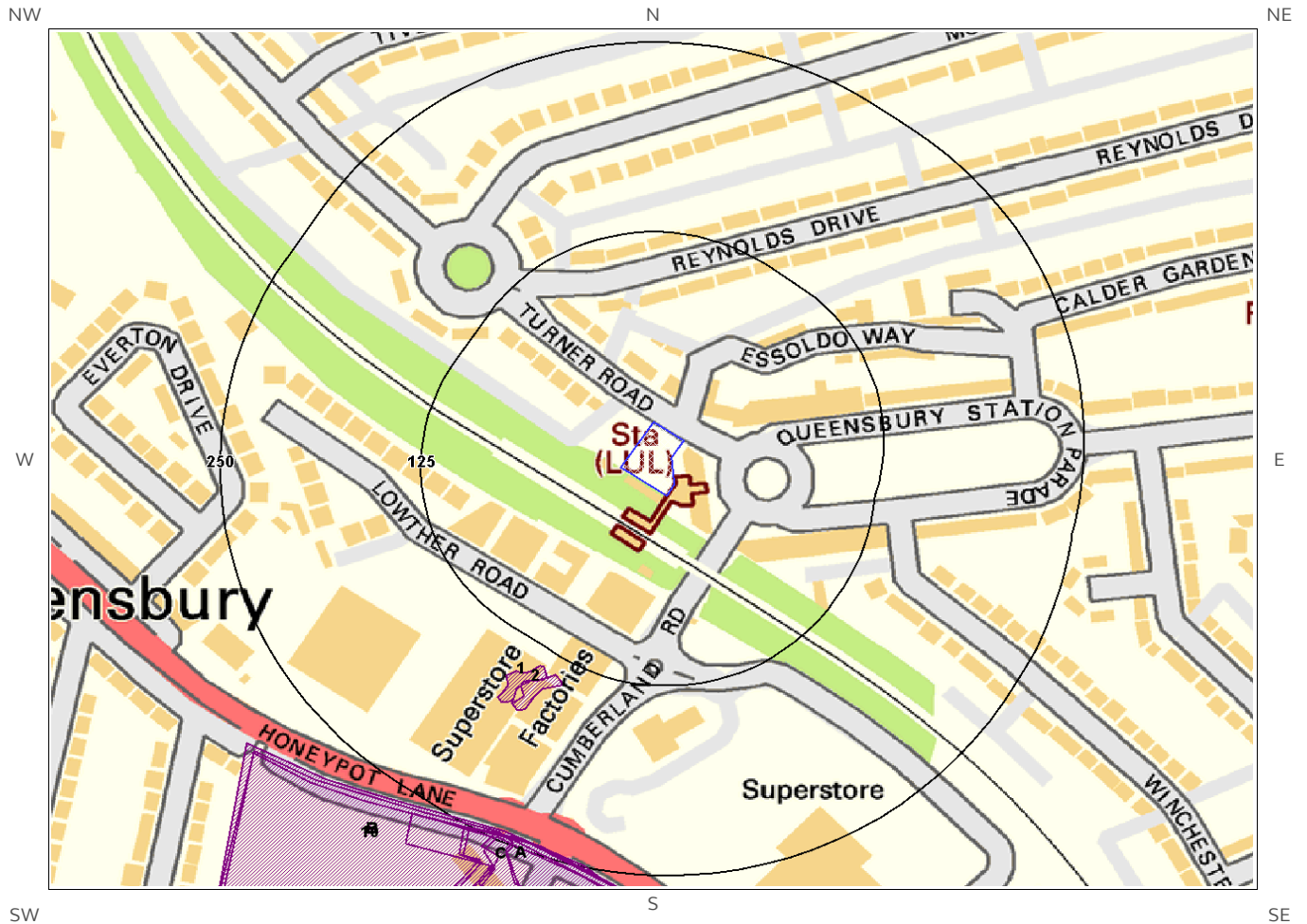
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

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



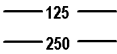


Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

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	136.0	SW	518740 189660	Pond	1895
2	137.0	SW	518750 189654	Ponds	1920
3A	243.0	S	518704 189440	Sewage Farm	1895
4B	243.0	SW	518663 189360	Sewage Farm	1949
5A	244.0	S	518706 189443	Sewage Farm	1897
6A	244.0	S	518713 189444	Sewage Farm	1920
7C	245.0	SW	518731 189536	Filter Beds	1939
8B	245.0	SW	518589 189239	Sewage Farm	1939
9C	248.0	SW	518731 189534	Filter Beds	1938
10	248.0	SW	518666 189349	Sewage Farm	1938

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

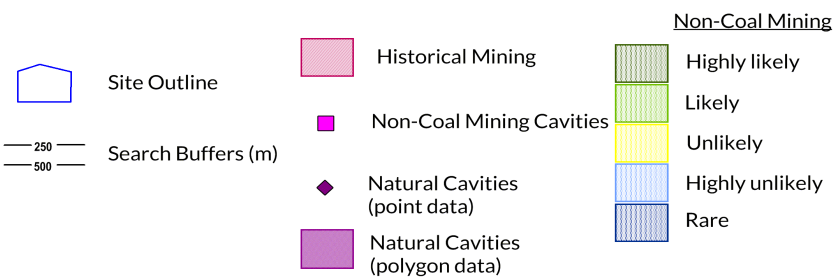
Database searched and no data found.

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.

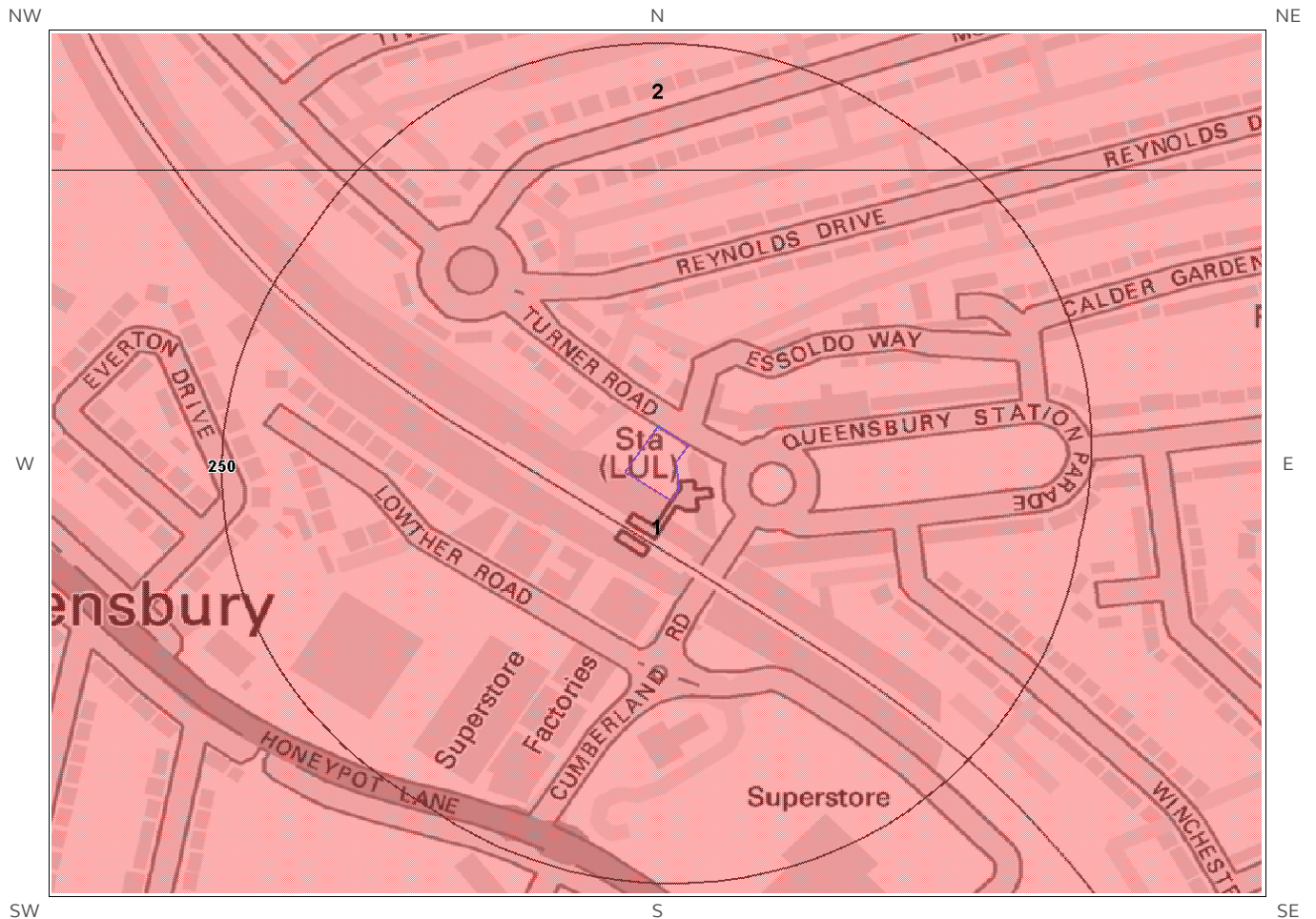
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

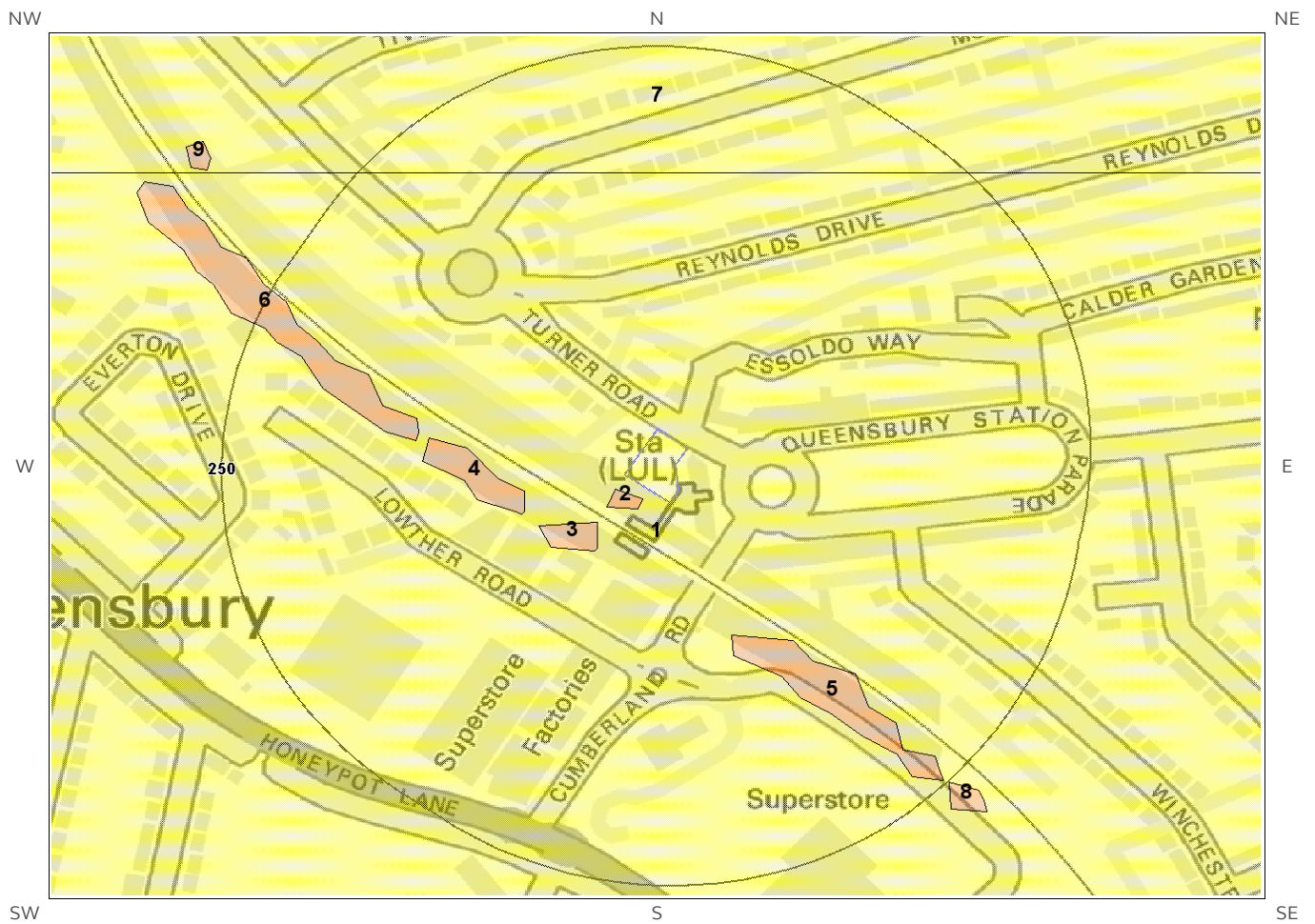


Shrink Swell Clay Legend

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6.2 Landslides map

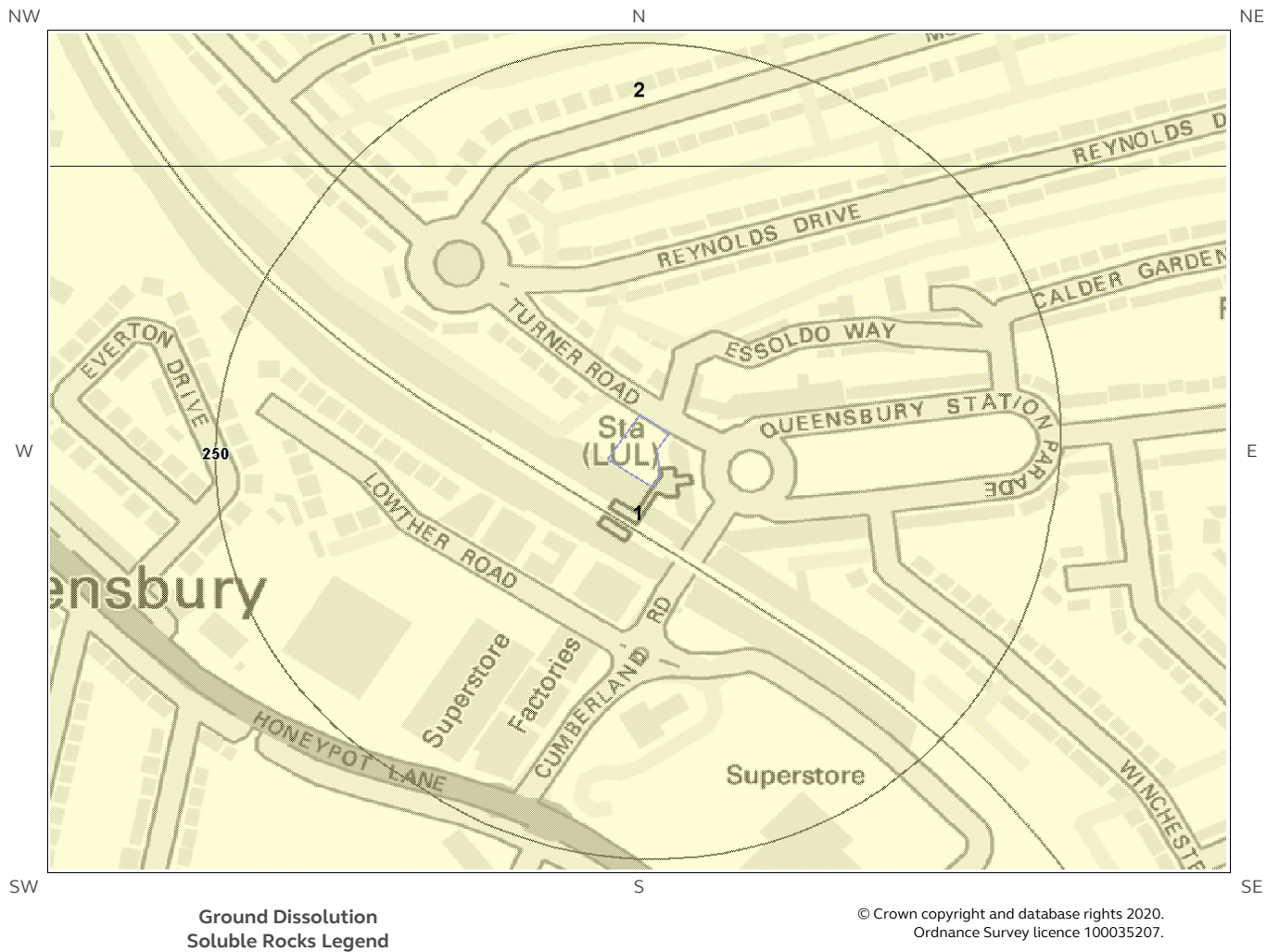


Landslides Legend

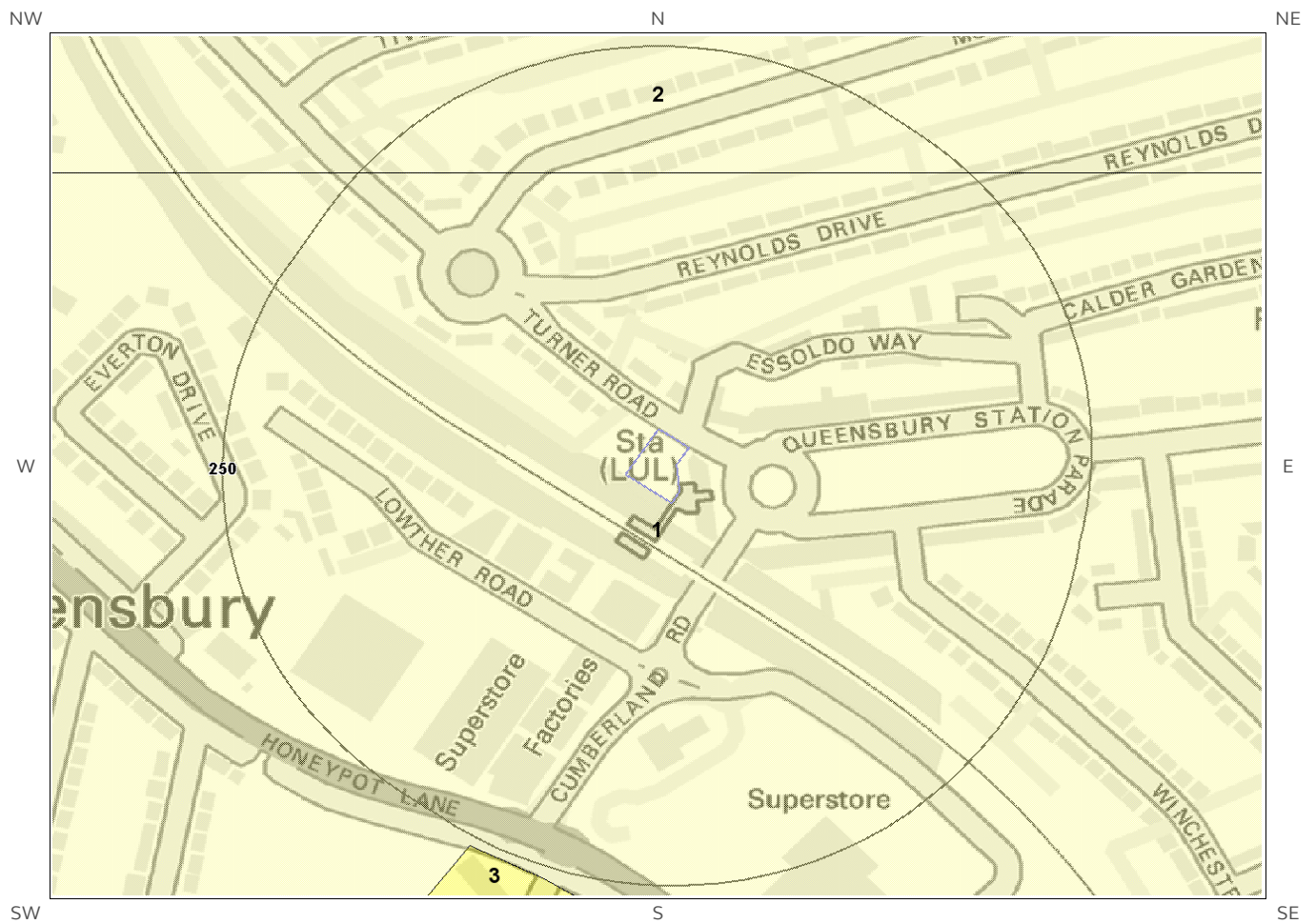
© Crown copyright and database rights 2020.
Ordnance Survey licence 100035207.



6.3 Ground Dissolution of Soluble Rocks map



6.4 Compressible Deposits map

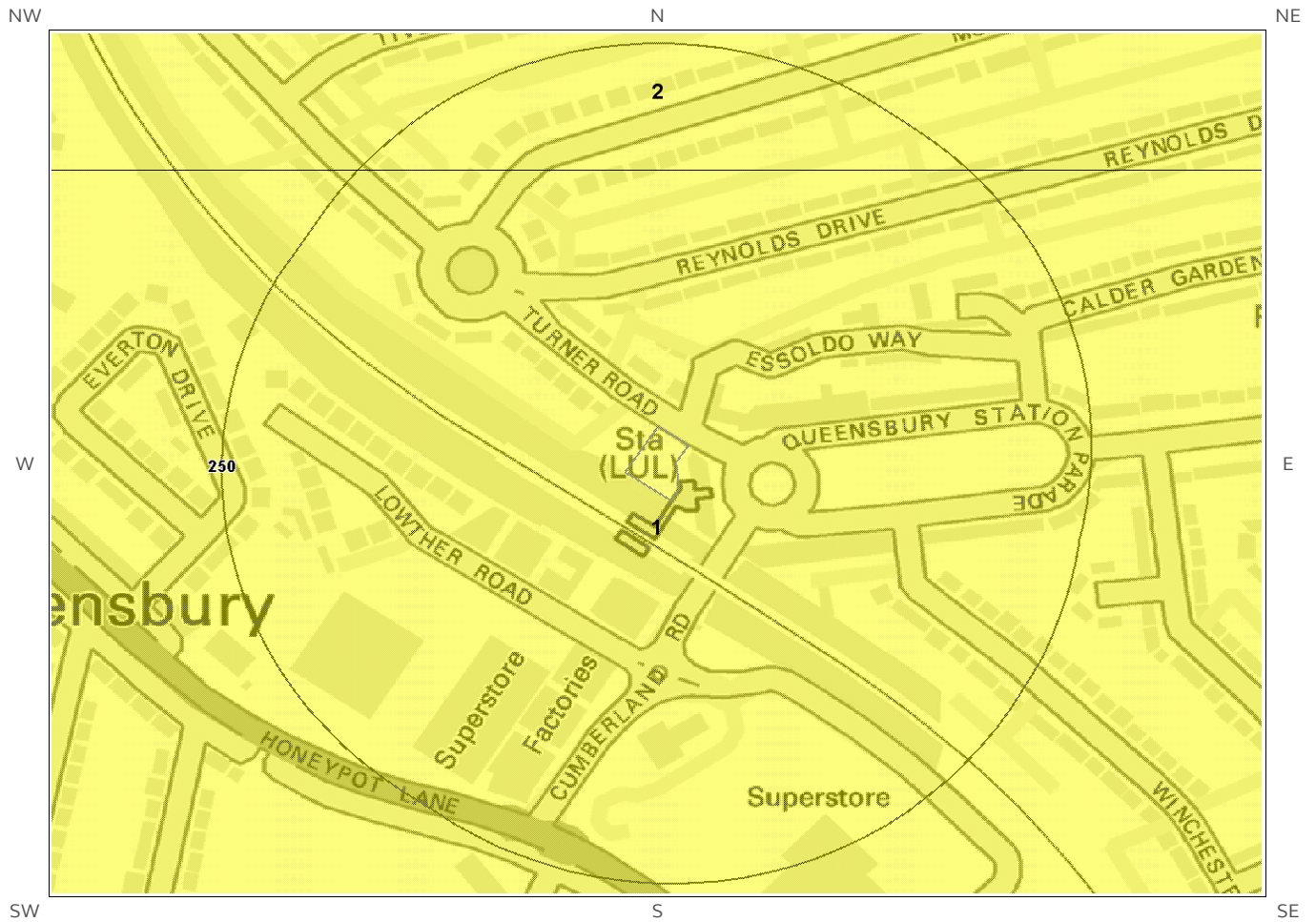


Compressible Deposits Legend

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6.5 Collapsible Deposits map

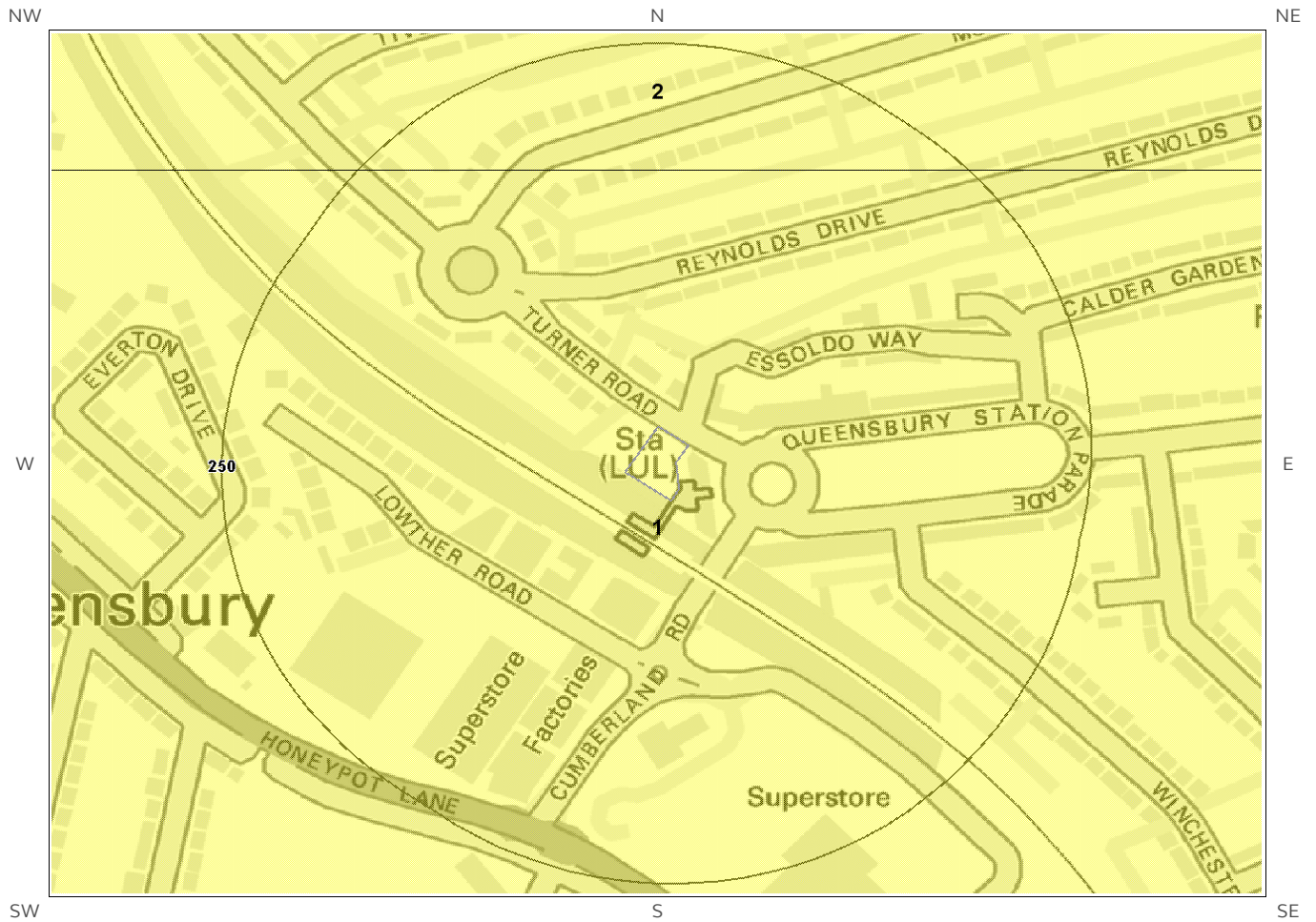


Collapsible Deposits Legend

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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? Moderate

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	Moderate	Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

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.
2	7.0	SW	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

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

ID	Distance (m)	Direction	Hazard Rating	Details
3	36.0	SW	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

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:

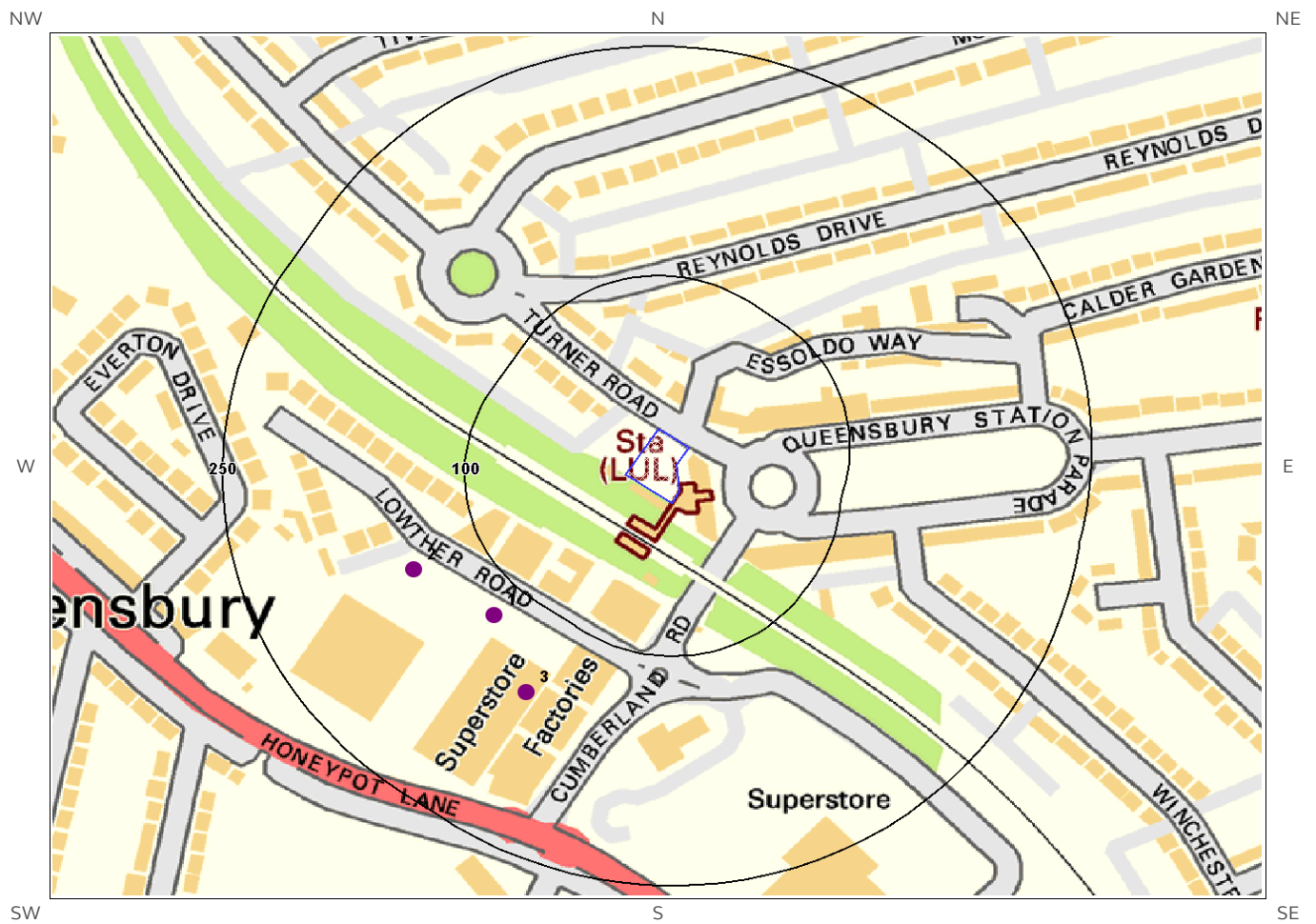
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

6.6 Running Sands

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

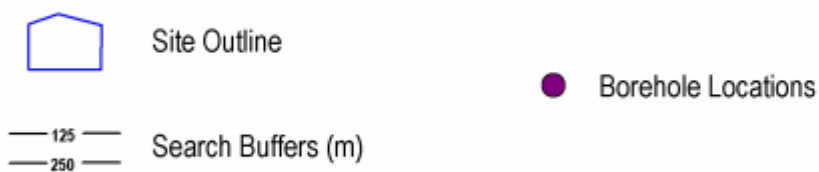
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased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

3

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	124.0	SW	518720 189710	TQ18NE75	10	HONEYPOT LANE STANMORE
2	146.0	SW	518670 189740	TQ18NE74	10	HONEYPOT LANE STANMORE
3	153.0	SW	518740 189660	TQ18NE76	10	HONEYPOT LANE STANMORE

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/581916

#2: scans.bgs.ac.uk/sobi_scans/boreholes/581915

#3: scans.bgs.ac.uk/sobi_scans/boreholes/581917

8 Estimated Background Soil Chemistry

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

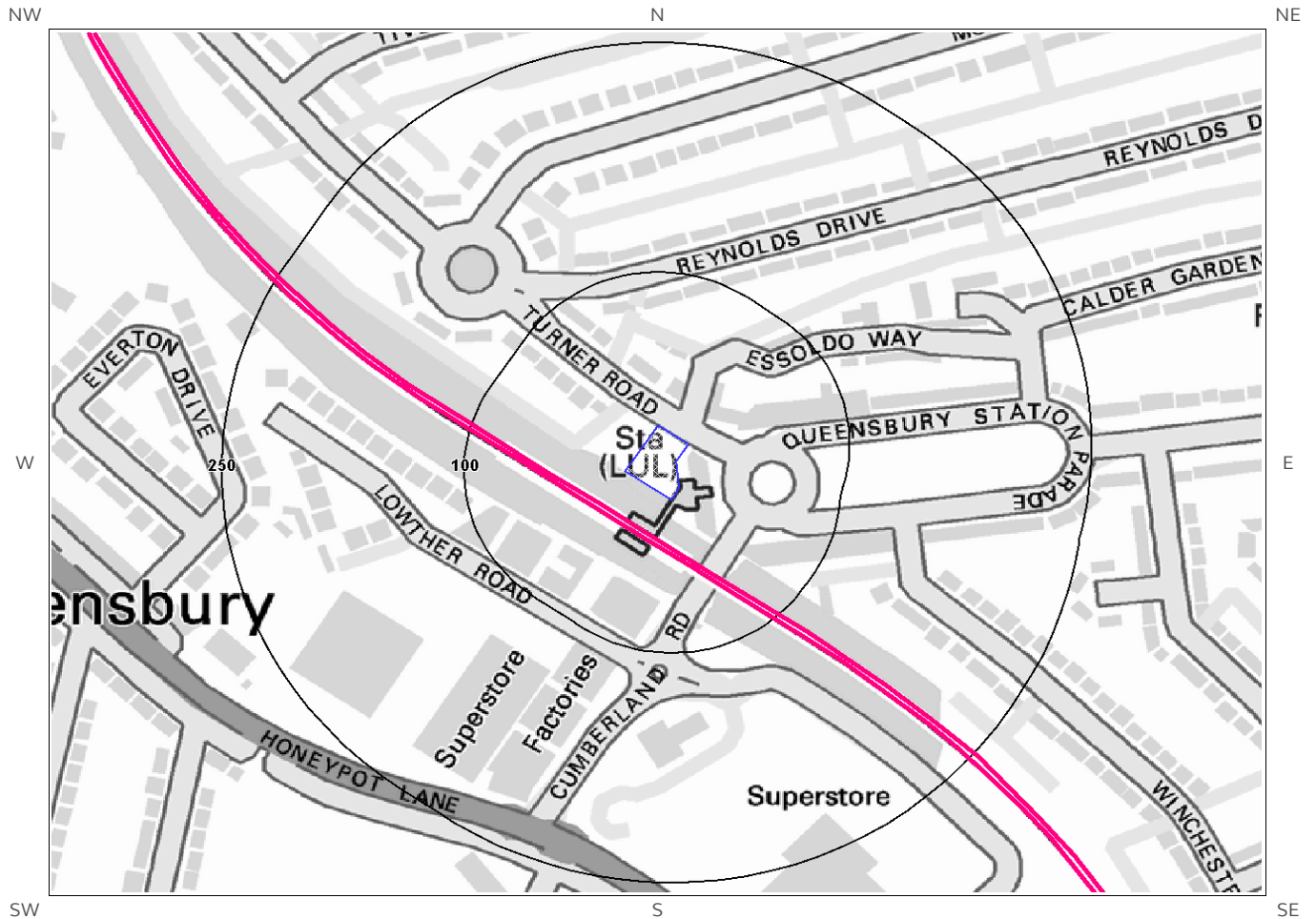
1

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












*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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Ordnance Survey licence 100035207.
© OpenStreetMapContributors

- | | | |
|--|--|---|
|  Site Outline |  Underground or Partially Underground Railway / Subway System |  Railway Track (OpenStreetMap) |
|  Search Buffers (m) |  Railway Tunnel (OS Mapping) |  High Speed 2 |
| |  Abandoned or Dismantled Railway (OpenStreetMap) |  High Speed 2 Revised Proposed Route |
| |  Railway Track (OS Mapping) |  Crossrail 1 |
| | |  Railway and/or Tunnel Feature from Historical Mapping |

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? Yes

Distance (m)	Direction	Detail
27	SW	London Underground - Jubilee Line

The approximate depth value for the nearest London Underground line given in this dataset has been extrapolated from published depths of tube lines at station platforms, and assume a constant gradient between stations. Using this method, topographical variation has resulted in some parts of the line having associated depth values either shallower or deeper than the real-world situation. Depth values are for indication only and should not be relied upon for any calculation or technical purpose and are in no way a substitute for a professional survey.

Line
London Underground Line: Jubilee Line Depth: 0mbgl Track Type: Surface Track

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.

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

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

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BGS Geological Hazards Reports and general geological enquiries



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<https://www.groundsure.com/terms-and-conditions-jan-2020/>

APPENDIX C

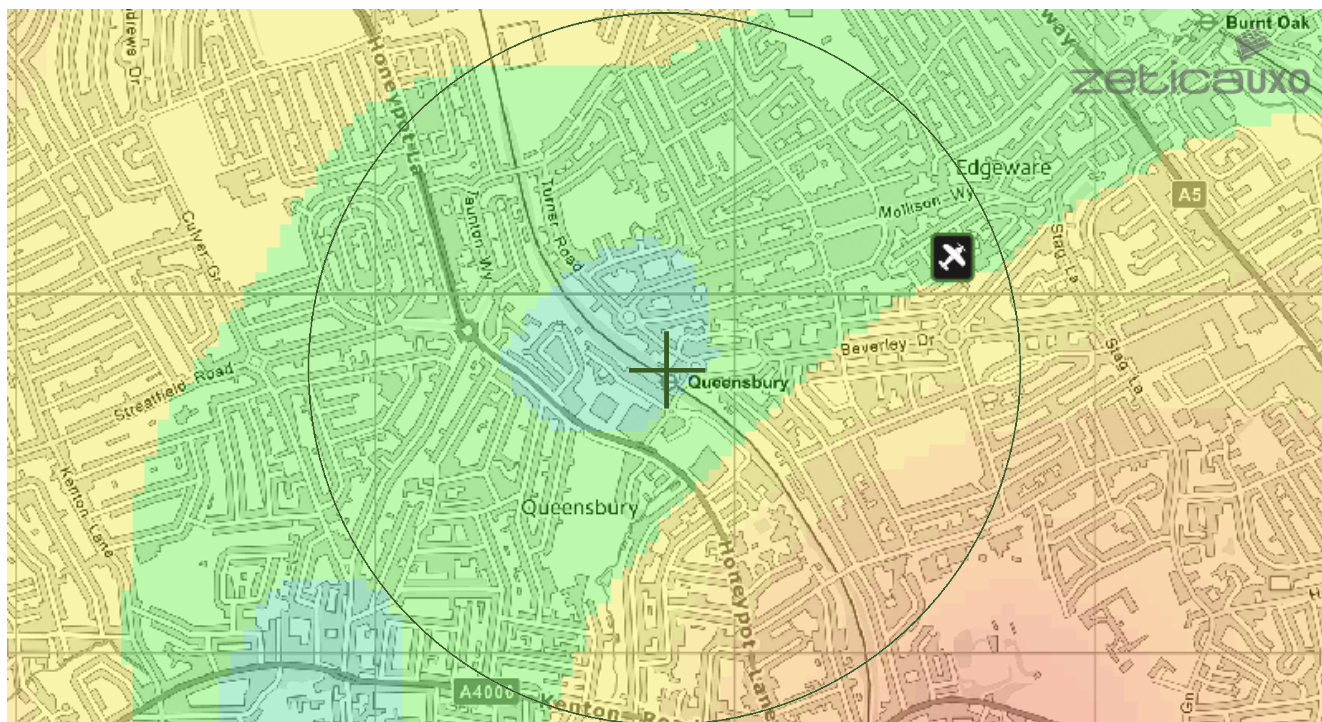
Zetica UXO Map and Pre-Desk Study Assessment

UNEXPLODED BOMB RISK MAP



SITE LOCATION

Map Centre: 518816,189792



LEGEND

London Bomb Risk



military



industry



UXO find



Other



transport



dock



Luftwaffe targets



utilities



abandoned bombs



Bombing decoy

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

Relative UXB risk across London

The relative risk for the London area is established by plotting the recorded bombing densities.

These are represented as counts of high explosive bombs in km2 area. The areas coloured green represent a record of less than 10 bombs per km2.

Compared to other areas of the UK, this still represents a significant density. However, this is much lower than parts of Central London, where the red colouration indicates in excess of 150 bombs falling per km2, representing a very significant bombing density.

What do I do if my site is in a moderate or high density area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites with a moderate or high bombing density.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: +44 (0) 1993 886682
email: uxo@zetica.com
web: www.zeticauxo.com

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Pre-Desk Study Assessment

Site:	Queensbury Car Park, Harrow, London
Client:	Arcadis
Contact:	Alison Pugh
Date:	3 rd January 2020
Pre-WWI Military Activity on or Affecting the Site	None identified.
WWI Military Activity on or Affecting the Site	None identified.
WWI Strategic Targets (within 5km of Site)	<p>The following strategic targets were located in the vicinity of the Site:</p> <ul style="list-style-type: none"> ■ Transport infrastructure and public utilities. ■ Royal Navy Air Station (RNAS) Hendon. ■ Industries important to the war effort including aircraft and engineering works. ■ Anti-Aircraft (AA) guns.
WWI Bombing	None identified on the Site.
Interwar Military Activity on or Affecting the Site	None identified.
WWII Military Activity on or Affecting the Site	None identified.
WWII Strategic Targets (within 5km of Site)	<p>The following strategic targets were located in the vicinity of the Site:</p> <ul style="list-style-type: none"> ■ Transport infrastructure and public utilities. ■ Royal Air Force (RAF) Hendon. ■ Industries important to the war effort, including aircraft and engineering works. ■ AA and anti-invasion defences.
WWII Bombing Decoys (within 5km of Site)	None.
WWII Bombing	<p>During WWII the Site was located in the Municipal Borough (MB) of Wembley, close to the boundary of the Urban District (UD) of Harrow.</p> <p>Wembley MB officially recorded 493No. High Explosive (HE) bombs with a bombing density of 82.7 bombs per 405 hectares (ha).</p> <p>Harrow UD officially recorded 444No. HE bombs with a bombing density of 35.2 bombs per 405 ha.</p> <p>Readily available records have been found to indicate that several HE bombs fell in close proximity to the Site.</p>
Post-WWII Military Activity on or Affecting the Site	None identified.
Recommendation	It is recommended that a detailed desk study is commissioned to assess, and potentially zone, the Unexploded Ordnance (UXO) hazard level on the Site.
<p>This summary is based on a cursory review of readily available records. Caution is advised if you plan to action work based on this summary.</p> <p>It should be noted that where a potentially significant source of UXO hazard has been identified on the Site, the requirement for a detailed desk study and risk assessment has been confirmed and no further research will be undertaken at this stage. It is possible that further in-depth research as part of a detailed UXO desk study and risk assessment may identify other potential sources of UXO hazard on the Site.</p>	

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