

SITE INVESTIGATION REPORT

PROPOSED REDEVELOPMENT:

69 CROMWELL AVENUE, LONDON N6 5HS



Client: ANDREAS WEISKAM

**Consulting Engineers: MHA STRUCTURAL DESIGN Ltd
14 – 18 Old Street
London EC1V 9BH**

Report ref: 10769/JM

Date: 21st November 2022

SITE INVESTIGATION REPORT

PROPOSED REDEVELOPMENT:

69 CROMWELL AVENUE, LONDON N6 5HS

DOCUMENT ISSUE STATUS:

Issue	Date	Description	Author	Checked / approved
Rev 0	21 / 11 / 22	First issue	Jonathan Mahoney BSc (Hons), MSc, FGS	John Bartley BSc, MSc, CGeol, FGS

This investigation has been undertaken within the constraints of the client's instruction/contract, together with those set out in the 'General information, limitations and exceptions' section at the end of this report. The SCL 'Standard Terms of Appointment' are also included at the end of this report and these identify the contractual arrangements for the investigation. Conclusions or recommendations made in this report are limited to those which can be reasonably based upon the research and/or intrusive investigation work carried out. Any comments which rely on third-party information which has been provided to us are made in good faith and on the assumption that such information is accurate. SCL have not carried out independent validation of any third-party information.

Soil Consultants Ltd (SCL) has prepared this Report for the Client in accordance with the Terms of Appointment under which our services were performed. With respect to third parties, no other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by us. This Report may not be relied upon by any other party without the prior and express written agreement of SCL.

TABLE OF CONTENTS

1.0	Introduction	1
2.0	Site description	2
3.0	Stage 1 Tier 1 Preliminary Risk Assessment (Desk Study)	3
3.1	Review of historical mapping	3
3.2	Database information	4
3.3	Other information	7
3.4	Unexploded ordnance risk assessment	7
3.5	Walk-over survey	8
3.6	Potential pollution linkages and Initial Conceptual Site Model	8
3.7	Recommendations for intrusive investigation	11
4.0	Exploratory work and laboratory testing	12
4.1	Constraints of investigation	12
4.2	Dynamic sampler boreholes	12
4.3	Existing foundations	12
4.4	Groundwater and gas monitoring	12
4.5	Geotechnical laboratory testing	12
4.6	Chemical and contamination testing	13
5.0	Ground conditions	14
5.1	Made ground	14
5.2	Bagshot Formation	14
5.3	Groundwater	15
5.4	Environmental observations	15
5.5	Review of trial pit ground conditions	15
6.0	Geotechnical assessment	16
6.1	Basement excavation and retaining wall	17
6.2	Spread foundations	17
6.3	Basement slab performance and soil heave	19
6.4	Ground floor slab (rear extension)	19
6.5	Foundation concrete	19
7.0	Stage 1 Tier 2 Environmental assessment	20
7.1	Environmental setting and context	20
7.2	Contamination sources and testing	20
7.3	Ground gas/vapour monitoring	21
7.4	Disposal of excavated soils	21
7.5	Refined Conceptual Site Model	21

General Information, Limitations and Exceptions
Standard Terms of Appointment

APPENDIX A

Fieldwork, in-situ testing and monitoring

-  Foreword
-  Dynamic Sampler borehole records
-  Standard Penetration Test results
-  SPT hammer calibration certificate
-  Groundwater and gas monitoring results

Laboratory testing

-  Index property testing
-  Plasticity chart
-  Particle size distribution tests

Contamination and chemical testing

-  Foreword
-  General soil suite
-  WAC test results
-  Sulphate/pH suite

Plans, drawings & photographs

-  Site photographs
-  Proposed development plans
-  Site Plan
-  Location Plan

APPENDIX B

-  GroundSure historical maps (Ref SCL-9094614)
-  GroundSure Geo+EnviroInsight Report (Ref SCL-9094615)

APPENDIX C

-  Trial pit logs from MHA Basement Impact Assessment (Ref: 22011-MHA-ZZ-ZZ-RP-S-001, dated 26/09/22)

1.0 INTRODUCTION

Consideration is being given to the construction of a new single storey basement beneath part of this existing residential property, together with a rear extension. In connection with the proposed works, Soil Consultants Ltd (SCL) were commissioned by MHA Structural Design Ltd (MHA), on behalf of the client Andreas Weiskam, to carry out a ground investigation to include the following elements:

-  Stage 1 Tier 1 Preliminary Risk Assessment (Desk Study) including initial Conceptual Site Model (CSM)
-  Intrusive investigation to identify the ground sequence and groundwater conditions
-  Geotechnical and geo-environmental sampling and laboratory testing
-  Review of existing trial pit findings
-  Provision of advice on basement construction, foundations and ground floor slabs
-  Provision of a Stage 1 Tier 2 generic quantitative risk assessment and refined Conceptual Site Model (CSM)

This report includes a summary of the findings and conclusions of the Desk Study research and Preliminary Risk Assessment. It then describes the intrusive investigation undertaken, gives a summary of the ground conditions encountered and discusses various foundation options. The Stage 1 Tier 2 generic environmental appraisal is then provided, including a revised CSM.

A Basement Impact Assessment has previously been carried out by MHA Structural Design (Ref: 22011-MHA-ZZ-ZZ-RP-S-001, dated 26th September 2022) and this should be read in conjunction with this report.

2.0 SITE DESCRIPTION

A summary description of the site and its general setting is as follows:

Site location and setting	- Located in London Borough of Haringey - Residential property on east side of Cromwell Avenue - Predominantly residential area - NGR 528915E 187300N
Site dimensions	40m (NW-SE) x 10m (NE-SW)
Site boundaries	- Residential housing to the north (Photo 1) - Residential flats to the east (Photo 2) - Residential housing to the south (Photo 3) - Cromwell Avenue to the west (Photo 4)
Site description	- Existing 3-storey semi-detached house with a single storey rear extension (Photos 5 & 6). At the time of the investigation the interior of the property had been stripped - A small block paved driveway at the front of the house (Photo 5) - A small wooden gate leads to a passageway along the southern boundary forming access to the rear garden - Partial undercroft basement (Photo 7) - An outbuilding/shed is located to the rear of the garden (Photo 8)
Topography and site levels	- Topographical drawing not available at the time of reporting - LIDAR data used to infer ground levels, although heavily vegetated site obscures imagery - Cromwell Avenue lies at about +104.8mOD - The front driveway slopes up from Cromwell Avenue at about +105mOD to +105.5mOD adjacent to the house - The rear garden level is inferred to be about +105.5mOD
Existing vegetation within site and adjacent properties	- Numerous shrubs/vegetation present along the southern boundary - Cypress tree (15m) located along this boundary (Photo 9) along with a yew tree (6m) towards the rear of the garden (Photo 10) - Small cypress (6m) located close to the front door of the property along unknown red berry trees up to 3m high (Photo 11) - Along the pavement of Cromwell Avenue, a number of mature trees are present, thought to be lime and sycamore (Photo 12)

The current site features are shown on the Site Plan and Site Photographs which are included in Appendix A.

3.0 STAGE 1 TIER 1 PRELIMINARY RISK ASSESSMENT (DESK STUDY)

This assessment is generally based upon current UK guidance, primarily the Environment Agency's "Land contamination: risk management" 2020. The scope of the assessment is as follows:

- ✚ A review of historical and current land-use and potential contaminated land risks
- ✚ Development of an outline conceptual model, identifying potential sources, pathways and receptors
- ✚ Development of a strategy for intrusive investigation

3.1 Review of historical mapping

The following summary of the history of the site and surrounding area has been compiled from a series of historical maps (Groundsure Ref: SCL-9094614, 03/10/22) obtained from a commercially available database; these are included in Appendix B.

Historical development of site and surrounding area		
Map date	The site	Significant development / features in surrounding area
✚ 1864 to 1879	✚ The site lies within the grounds of ether Linden House, Farquhar House or Winchester Hall (boundaries of these properties unclear) ✚ Site footprint partially occupied by a large glasshouse	✚ Linden House located immediately S ✚ Extensive grounds of adjacent properties surround the site ✚ Pumps located 75m WSW and 100m N ✚ Ponds located 150m N and NE and 260m SW ✚ Brick field located 170m SE and 350m N ✚ Small Pox hospital 350m S ✚ Highgate Cemetery 500m SW ✚ Great Northern Railway 600m N
✚ 1894 to 1938	✚ Linden House, Farquhar House and Winchester Hall no longer present ✚ The site and buildings now recognisable in present day configuration	✚ Residential housing replaces much of the larger houses in the surrounding area ✚ Cromwell Avenue and Cromwell Place roads built ✚ Brick Fields no longer marked ✚ Covered reservoir present 80m NE ✚ Cromwell House Children's Hospital 90m W ✚ Nurseries located 250m NW ✚ Small Pox hospital now labelled Islington Infirmary on 1920 map

Historical development of site and surrounding area		
Map date	The site	Significant development / features in surrounding area
1951 to 1992	No significant changes apparent	- Nurseries no longer marked - Cromwell House Children's Hospital no longer marked - Garage located 250m NW (from 1970) - Electricity substation 250m NE
1992 to present day	No significant changes apparent	No significant changes apparent

3.2 Database information

The database report includes information of local activities encompassing a range of subjects related to land use, pollution, and geological/hydrological conditions. Our assessment of contaminative uses and other environmental issues relevant to the site and its surroundings is provided below. The full database report (Groundsure Ref: SCL-9094615, 03/10/22) is included as Appendix B and this should be read and understood fully in conjunction with this summary.

Past land use

- Historical industrial land uses (within 250m): nearest is a hospital 45m W. Others include unspecified heap 65m NE (this presumably refers to the covered reservoir), unspecified shaft 102m NE (thought to be associated with a reservoir), unspecified tank 146m SW, cuttings 168m NE, brick field 177m, cuttings 180m N/NE, hospital 217m SE, nursery 217m NW and brick fields 276m NE
- Historical tanks: unspecified tanks 205m SW, 321m SW, 412m S and 446m SE
- Historical energy features: nearest is an electricity substation 194m NE (dated 1991)
- Historical garages: nearest is 252m NW (dated 1986-1991). Others at 291m NE, 297m NW, 310m W and 329m NE

Waste and landfill

- Active and historical landfills: none within 500m
- Historical waste sites: Furnival House 152m NW (recycling centre, new recycling and refuse store/condenser)
- Waste exemptions: none within 250m. Nearest is Highgate Mental Health Centre, 277m S, treating waste exemption. Others at 356m S, Dartmouth Park Hill, treating waste exemption

Current industrial land use

- Recent industrial land uses: nearest is shaft 105m NE. Others within 250m are electricity substation 198m NE and gas governor 247m SE
- Current or recent petrol stations: none within 500m
- Electricity cables: nearest is 85m SW, Finchley – Islington, DC decommissioned cable section
- Licensed pollutant release: none within 250m. Nearest is dry cleaning 321m W
- Radioactive substance authorisations: none within 250m. Nearest is 331m SE, Whittington Hospital

Hydrogeology

- Superficial aquifer: none on site or within 500m
- Bedrock aquifer: Secondary A
- Groundwater vulnerability: High vulnerability on site. Leaching class 'Intermediate'
- Groundwater abstractions: no records within 2000m
- Source Protection Zones: no source protection zones within 500m

Hydrology

- Water Framework Directive (WFD): on site is 'Coastal Catchment', not part of a river WB catchment. Land area part of London Management Catchment draining to the Tidal Thames
- Surface water features/bodies: none within 250m

River and coastal flooding

- Risks of flooding (RoFRaS), historical flooding and flood defences: none identified within 250m
- No Zone 2 or 3 floodplains or flood defences within 50m

Surface water and groundwater flooding

- Surface water flooding: the highest risk on site is negligible. Highest risk within 50m is 1 in 30 year – 0.1m-0.3m
- Groundwater flooding: the highest risk on site (and within 50m) is 'negligible'

Environmental designations

- SSSI: Hampstead Heath Woods 1503m W
- Local Nature Reserves: Parkland Walk 543m N and Queen's Wood 974m N
- Designated Ancient Woodland: Queen's Wood 971m N and Ken Wood 1033m NW

Visual and cultural designations

- ✚ Listed buildings: 29 records within 250m
- ✚ Conservation areas: on site, Highgate, Haringey
- ✚ Registered parks and gardens: Waterlow Park 104m SW

Agricultural and Habitat designations

- ✚ Agricultural land classification: on site, urban
- ✚ Habitat networks: Network Enhancement Zone 2 171m S

Geology

- ✚ Artificial and made ground: nearest is 171m SE 'worked ground (undivided)
- ✚ 'Superficial geology: not recorded on site or within 500m
- ✚ Bedrock geology: Claygate Member on site, high to very low permeability. Bagshot Sand Formation shown to overlie the Claygate 32m NW. Underlying London Clay Formation outcrops 94m S
- ✚ BGS boreholes: six identified within 250m
- ✚ Natural ground subsidence: moderate risk from shrink/swell clays. Very low to negligible risks for all categories where identified. Landslide risk increases to low 3m SE

Mining, ground workings and natural cavities:

- ✚ Surface ground workings: nearest is a reservoir 54m NE (year of mapping 1920). Others include an unspecified heap 65 NE (1958), pond 140m N (1879), cuttings 168m NE (1996), brick field 177m SE (1879)
- ✚ Underground workings: nearest is unspecified shaft 102m NE (1965 to 1995). Others include tunnels greater than 700m away
- ✚ No mining risks identified

Radon

- ✚ Less than 1% of properties affected, Radon protection measures not required

Soil chemistry

BGS estimated urban soil chemistry, extract as follows:

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	15	2.6	208	143	0.6	75	53	20	19
On site	16	2.8	228	157	0.7	76	56	22	20
On site	16	2.8	237	163	0.8	76	63	24	21
3m SW	15	2.6	178	122	0.4	75	42	17	18

Railway infrastructure and projects

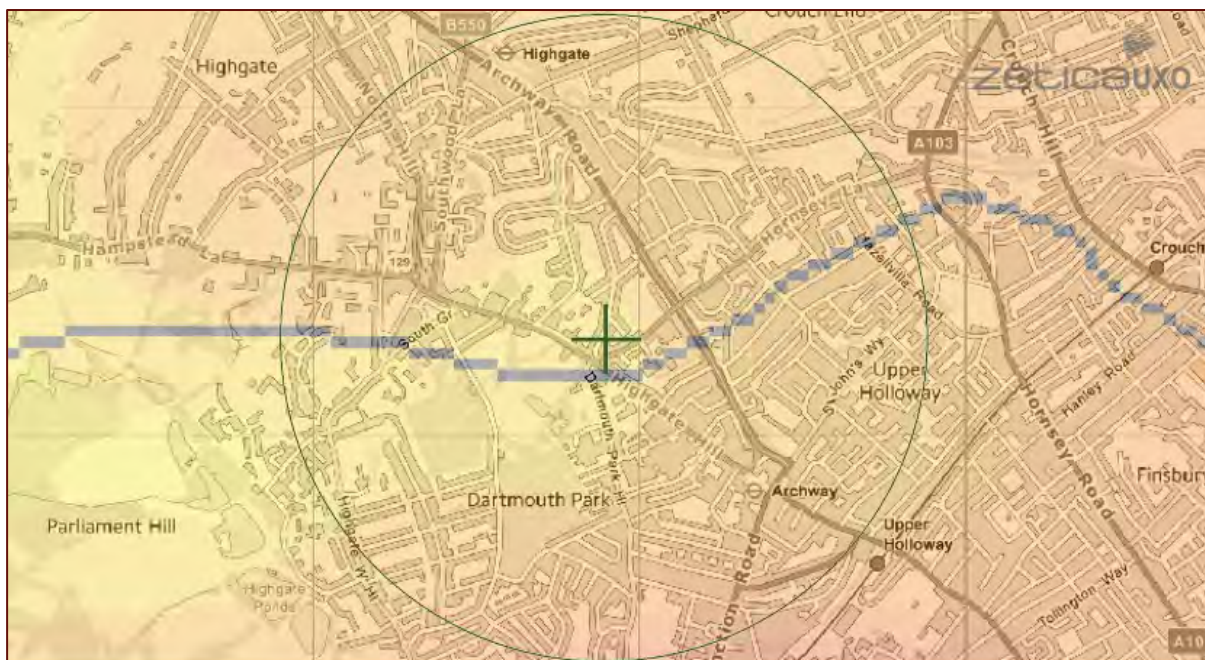
- Underground railways: Northern Line tunnel 208m NE
- Historical railway and tunnel features: none within 250m
- Railways/Crossrail: none within 500m

3.3 Other information

The London Borough of Haringey have been contacted in relation to the site, but at the time of writing no information has been received.

3.4 Unexploded ordnance risk assessment

Zetica UXO risk map indicated low risk:



3.5 Walk-over survey

A site walk-over survey was undertaken on 30th September 2022. A description of the general features of the site and the topography is provided in Section 2.0 above. From inspection of visible and accessible areas, a summary of specific features relevant to the land quality assessment is as follows:

Feature	Commentary
Electricity substations and transformers	✚ Located off-site, approximately 200m to the north-east
Fuel storage tanks	✚ None observed
Fuel interceptors	✚ None observed
General chemical storage/waste	✚ None observed
Invasive species	✚ None observed
Evidence of gas protection	✚ None observed
Surface water contamination	✚ None observed
Waste storage	✚ Some wood stored on site close to the outbuilding/shed (Photos 8 & 10)
ACMs	✚ None observed

3.6 Potential pollution linkages and Initial Conceptual Site Model

The information in the preceding sections has been used to undertake the Preliminary Risk Assessment and to compile the Initial Site Conceptual Model below. The assessment follows a risk-based approach, with the potential risks determined qualitatively using the 'source-pathway-receptor' linkage concept; a risk of harm may only exist where a plausible linkage is present. The assessment has been formulated based on the following table:

		Consequences			
		Severe	Medium	Mild	Minor
Probability	High likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Definitions of the risks are summarised as follows:

-  **Very high:** high probability that severe harm could occur, or there is evidence that it is currently occurring. If realised, the risk could result in substantial liability. Urgent investigation/remediation
-  **High:** harm is likely to occur, realisation is likely to present substantial liability. Urgent investigation required. Remedial works may be required in short-term, will be in long-term
-  **Moderate:** possible that harm could arise, but unlikely to be severe. Investigation normally required to clarify risk and liability. Remedial works may be necessary in long-term
-  **Low:** possible that harm could occur, but this would at worst be mild
-  **Very low:** low possibility of harm, unlikely to be severe

The assessment has been carried out by identifying and evaluating the potential sources of contamination, the potential receptors and the plausible pathways for contamination migration are summarised as follows:

Potential sources of contamination

A summary of potential sources identified by our review of the above information is as follows:

-  **Electricity substation:** the nearest identified substation is approximately 200m from the site and not expected to pose a significant risk to the end-user

It should be noted that any developed, non-greenfield land is likely to contain made ground. This will probably be of uncertain or unknown origin and may contain contaminants that have not been specifically identified.

The assessed risks from these potential sources are summarised in the Initial Conceptual Site Model below.

Potential receptors

In the context of the proposed development, the following potential receptors have been identified:

-  Human health: inhabitants/users of building, construction workers, adjacent site users
-  Controlled waters: Bedrock Secondary 'A' aquifer beneath site. The site is assessed as being of **low environmental sensitivity**
-  Building fabric and services: buried foundations, basement wall, potable water pipes

Plausible pathways

-  Ingestion of soil, dust or water
-  Inhalation of dust, gas or vapours
-  Direct physical contact with contaminated soil/water
-  Vertical and lateral migration of contamination including leaching
-  Chemical attack of building infrastructure, including water supply pipes
-  Migration of ground gas/vapour through permeable soils or open pathways

The Initial Conceptual Site Model and an estimate of the risk associated with each potential linkage is shown in the following table:

Source	Pathway	Receptor	Assessed risk and commentary / justification
On-site: contaminated soil and groundwater	Ingestion, contact, inhalation	End user, construction workers and infrastructure	Low risk: no significant contamination sources identified on site. Pre-2000 buildings and potential made ground giving potential asbestos risk
	Leaching from contaminated soils and migration in groundwater	Aquifer and surface water	Low risk: the bedrock aquifer classifies as Secondary A. There are, however, no abstraction points within 2000m and no source protection zones within 500m. No potential onsite contamination sources were identified and therefore the risk to the aquifer is expected to be low
Off-site: contaminated soil	Lateral migration of contaminants to site in groundwater	End user	Low risk: nearest electricity substations identified but the nearest was 200m from the site but this is not considered to present a risk to end users
On-site and off- site: ground gas and vapours	Lateral and vertical migration of gas/vapour	End-user and buildings	Low risk: The site is not in a radon affected area

The overall risk rating for the site is assessed as being **low**.

3.7 Recommendations for intrusive investigation

The Initial Conceptual Site Model did not identify any potential pollution linkages resulting in the overall assessed risk rating of low. The following programme of intrusive investigation is recommended:

-  Suitable intrusive investigation to confirm the ground sequence, allow soil/water sampling and the installation of monitoring pipes
-  No specific contamination sources were identified by the PRA so the investigation should provide general coverage of the site
-  Soil and groundwater samples should be recovered where relevant and be analysed for a range of general contaminants
-  A programme of groundwater and gas monitoring

The Initial Conceptual Site Model should then be revised to include complete pollution linkages and outline mitigation/remedial measures should be identified, together with any requirements for additional investigation.

4.0 EXPLORATORY WORK AND LABORATORY TESTING

The ground investigation was carried out in October 2022 and is described below.

4.1 Constraints of investigation

The investigation was carried out in general accordance with the site layout provided by MHA Structural Design Ltd (Ref: 326_EX_00, dated Feb 2022). This layout determined the locations of the exploratory points, though they were adjusted slightly taking into account some access restrictions. The existing house occupies the majority of the site and investigation was only possible in external areas.

4.2 Dynamic sampler boreholes

Two dynamic sampler boreholes (WS01 and WS02) were completed using a standard tracked rig under the supervision of an experienced geo-environmental engineer. Rotary auger techniques were employed from a depth of 2.50m in WS01 due to the nature and density of the soils. Representative samples were taken for geotechnical and environmental testing and PID headspace testing was carried out on all environmental samples. In-situ Standard Penetration Testing (SPT) were carried out at appropriate intervals. The hammer Energy Ratio (E_r) for the SPT equipment used was 87%; the relevant test certificate is appended. Monitoring pipes were installed in both boreholes.

4.3 Existing foundations

A series of six internal trial pits had previously been excavated by others within the existing undercroft and at ground floor level. The trial pit details were recorded by MHA and the logs are included as Appendix C. SCL reviewed the ground sequence within the pits (see Section 5.5 below).

4.4 Groundwater and gas monitoring

Groundwater/gas monitoring was carried out on two occasions following completion of the site works on 19th October and 27th October 2022.

4.5 Geotechnical laboratory testing

The following geotechnical laboratory testing was completed:

-  Index properties tests (Atterberg Limits)
-  Particle size distribution tests

4.6 Chemical and contamination testing

Selected soil samples were delivered to a specialist laboratory (DETS Ltd) and the following testing was carried out:

	General soil suite	-	3no samples
	Asbestos screening	-	3no samples
	Waste Acceptance Criteria (WAC)	-	1no sample
	Soluble sulphate/sulphur/pH analyses	-	5no samples

The engineering borehole logs and the laboratory testing results are included in Appendix A.

5.0 GROUND CONDITIONS

Published BGS information indicates that the site is underlain by the Claygate Member which rests upon the London Clay Formation. The Bagshot Formation is shown to overlie the Claygate Member nearby to the north.

The investigation encountered a variable sequence of natural sand and clay beneath a significant thickness of made ground. We have interpreted the natural soils as representing the Bagshot Formation, which extended to the full depth investigated.

Detailed descriptions are presented on the appended exploratory hole records and the overall ground sequence is summarised in the following sections. Note that all depths are relative to existing ground level unless otherwise stated.

5.1 Made ground

Surfacing at the borehole positions comprised block paving with either a bedding sand or concrete sub-base, with an overall thickness between 0.10m and 0.20m.

The underlying made ground was variable, comprising either brown silty clay, grey/black silty sand, orange/brown clayey silt or brown silty clayey sand. A variable content of brick/concrete fragments was present. In WS01, a possible old brick foundation was present between 1.20m and 1.60m.

Standard Penetration Tests (SPT) 'N' values of between 10 and 21 were measured.

5.2 Bagshot Formation

The Bagshot Formation was met at depths of between 1.60m and 1.80m, comprising a yellow/grey or yellow/white silty clayey sand with rare amounts of flint gravel. A thin layer of silty sand with occasional sandstone gravel was observed in WS02 at a depth of 2.30m.

PSD testing (sieve and hydrometer) of these granular soils indicate the sand to be predominantly fine to medium grained, with a highly variable fines (clay and silt) content between 6% and 35% (but generally >20%). SPT N values indicate the sand to be in a medium dense, locally dense state of compaction.

The granular soils extended to the full 5.45m depth in WS02. In WS01, however, a substantial layer of yellow/orange silty sandy clay was met at 3.40m depth extending to the base of the borehole (again 5.45m depth).

Liquid and plastic limit testing on the cohesive soils indicate the clay to be intermediate plasticity (BS scheme) and low to medium volume change potential (NHBC scheme). The clay was assessed as being of firm to stiff consistency and SPT N values indicate a medium to high strength.

5.3 Groundwater

Groundwater was not observed during drilling and both boreholes were dry on completion. Subsequent monitoring did not encounter any groundwater in the installations (maximum depth of 5.00m). Groundwater levels can of course vary seasonally and with prevailing weather conditions.

5.4 Environmental observations

No obvious olfactory or visual signs of soil or groundwater contamination were encountered in the boreholes. PID headspace testing (for VOC concentrations) was undertaken on samples of made ground and natural soils during the borehole exercise and during subsequent monitoring - no elevated levels were noted.

5.5 Review of trial pit ground conditions

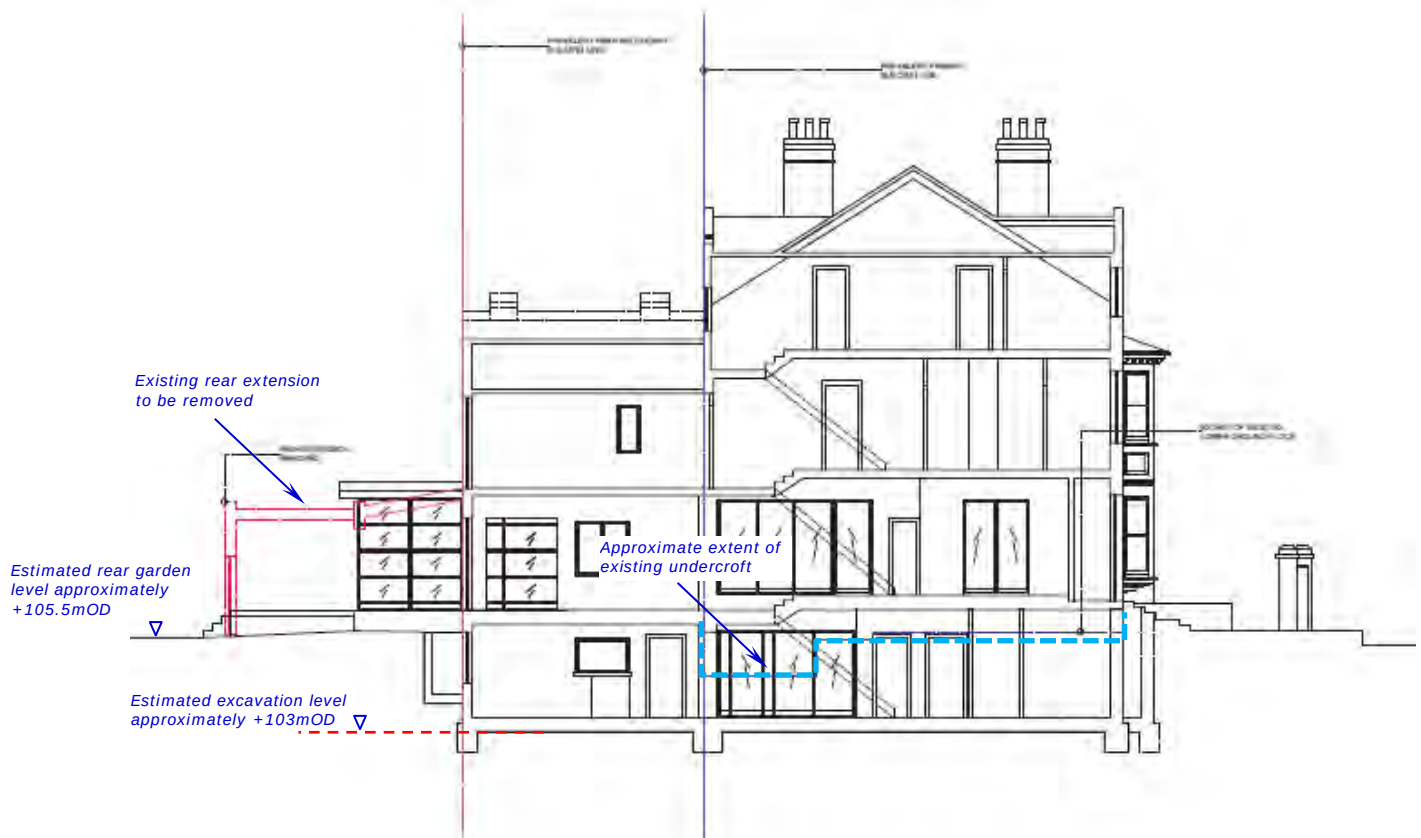
Six internal trial pits were dug by others prior to attendance from SCL. A review of the ground sequence which could be observed in the pits was undertaken as summarised below:

Trial pit	Soil at foundation level	Remarks
TP01	Yellow/grey/orange silty clayey SAND with rare gravel	- Disturbed sample at 1.00m - PSD test undertaken
TP02	Yellow/grey slightly clayey sandy GRAVEL. Gravel is fine to coarse subrounded flint/quartz	Disturbed sample at 1.00m
TP03	Brown/grey silty clayey SAND with rare fine subangular flint gravel	Disturbed sample at 1.50m
TP04	Firm orange slightly sandy CLAY	- Disturbed sample at 1.90m - Liquid/plastic limit test undertaken - Hand vane at 1.90m = 70kPa
TP05	Firm orange/yellow very sandy CLAY	- Disturbed sample at 1.80m - Hand vane at 1.80m = 60kPa
TP06	Yellow/orange slightly clayey SAND	Disturbed sample at 2.00m

6.0 GEOTECHNICAL ASSESSMENT

The proposed works at this site comprise the construction of a single level basement beneath the existing house and extension into the rear garden. Note that the proposed structure is variously described as either a lower ground floor or basement, and for the purposes of this report, we have referred to the construction as a basement.

A schematic section showing the proposals is as follows:



A topographical survey drawing was not available at the time of reporting. Scaling from the above section indicates that the excavation level for the new basement will be about 3.7m below the main internal ground floor level. We have estimated approximate OD levels from LIDAR data and on-site measurement, and these indicate the rear garden level to be about +105.5mOD (as shown above). The excavation level to the underside of the basement slab is inferred to be about +103mOD. It must be noted that these are preliminary estimates and accurate site levels will need to be surveyed at some stage.

The anticipated structural loads have been provided by MHA. They estimate that an equivalent uniformly applied pressure (gross) at basement level imposed by a raft would be approximately 55kN/m², including self-weight. The small rear extension is expected to apply loads of about 13kN/m run.

The investigation has revealed that beneath a significant thickness of made ground (up to 1.80m in the boreholes) the natural Bagshot Formation is present. We expect these natural soils to be capable of

supporting the structural loads at basement level using spread foundations. Current proposals envisage the use of underpinning of the existing structural loads at basement level and the boreholes have indicated that this should be feasible, with the excavation expected to remain dry.

6.1 Basement excavation and retaining wall

The excavation for the proposed basement is expected to encounter significant thicknesses of variable made ground and the Bagshot Formation. Groundwater was not encountered within the 5.45m depth of the boreholes which extended to about 3.5m below excavation level. It should be noted that groundwater levels can undergo significant seasonal variation and continued monitoring of the borehole installations should be carried out.

For the observed soil sequence and groundwater conditions, we consider that the proposed sequential RC underpinning should be feasible, supported by the natural soils at basement level. A robust arrangement of temporary internal bracings/props, including support near the top and base of the wall, will be required to maintain wall stability and assist in controlling ground movements during construction.

Careful selection of the appropriate design parameters will be needed, and the following table of coefficients may be used for the preliminary design of the basement retaining wall:

Stratum	Bulk density (Mg / m ³)	Effective cohesion, c' (kN / m ²)	Effective friction angle, ϕ' (degrees)
Made ground	1.80	0	22
Bagshot Formation (sand)	2.00	0	29
Bagshot Formation (cohesive)	1.90	0	23

Eurocode 7 stipulates that partial material factors must be applied to the best estimates of geotechnical soil properties during the design stage. The design engineer must ensure that the correct comparisons are made between Design Actions and Design Resistances after the application of appropriate partial factors. The determination of appropriate earth pressure coefficients and the pattern of earth pressure distribution should be carried out by the geotechnical designer; these will depend upon the type/geometry of the wall and the overall design approach. We recommend that a specialist contractor is consulted to confirm the most appropriate type of wall and to provide the final wall design.

6.2 Spread foundations

At basement level

The boreholes indicate that the natural Bagshot Formation soils should be expected at basement excavation level (ie about +103mOD). The two boreholes suggest that the soils will comprise medium dense sand, although the sequence is likely to be variable and clay layers may well be encountered. For preliminary

assessment of the feasibility and sizing of foundations placed within the natural soils, we envisage that an allowable bearing resistance of 140kN/m^2 would be appropriate; this would be applicable to moderate sized strip or pad foundations, say up to 2m width. As required by EC7, the design engineer must ensure that the correct comparisons are made between Design Actions and Design Resistances after the application of appropriate partial factors and using the final base geometry. For ULS design the bearing resistance should be determined, using undrained and/or drained analysis as appropriate, to calculate the degree of utilisation of the foundation (limit state GEO). SLS checks should be carried out using appropriate methods in accordance with current practice.

The depths of foundations at basement level are expected to be below the zones of influence of any existing trees and therefore risks due to clay swell/shrinkage should be low. Notwithstanding, we recommend that foundation depths are checked using the NHBC Standard ('Chapter 4.2, Building near trees'), based upon a medium volume change potential for the Bagshot Formation.

The excavations are expected to expose a variable sequence of clayey silty sand or sandy clay. Whilst the groundwater is low, we anticipate that these soils will be highly susceptible to disturbance/softening if exposed to rain or surface run-off. We therefore recommend that a blinding layer is placed when the desired depth is reached, or the foundations cast immediately.

At ground level (rear extension)

For the proposed rear extension, spread foundations at must bypass any made ground and be placed within the competent natural Bagshot Formation. WS02 indicates that an excavation depth of at least 1.80m will be required to bypass the made ground and expose competent natural soils, although it should be noted that deeper pockets of made ground may be present. Whilst WS02 encountered only granular soils in this location, we note the presence of a mature (presumed) cypress tree close to the proposed building line. The boreholes have shown that variable ground conditions can be expected with significant clay layers present within the Bagshot Formation. The cypress tree is a high water demand species, and we therefore recommend that the foundations are designed fully in accordance with the NHBC guidelines, assuming a clay soil of medium volume change potential; safe foundation depths of up to 2.5m may be required closest to the tree. This may be a conservative approach but the risk of shrink/swell effects with cypress trees can be high. The tree species should be confirmed by an experienced arboriculturalist; safe founding depths will be less for moderate or low water demand species.

An alternative approach would be to undertake additional boreholes along the foundation lines and within the footprint of the extension, and if these indicate that no cohesive soils are present (ie only non-shrinkable sand), then deepening of the foundation should not be required.

For preliminary assessment of the feasibility and sizing of these foundations, we envisage that an allowable bearing resistance of 150kN/m^2 would be appropriate. As discussed above, the design engineer must ensure that the correct comparisons are made between Design Actions and Design Resistances after the application of appropriate partial factors and using the final base geometry. For ULS design the bearing resistance should be determined, using undrained and/or drained analysis as appropriate, to calculate the

degree of utilisation of the foundation (limit state GEO). SLS checks should be carried out using appropriate methods in accordance with current practice.

The foundation excavations are expected to encounter variable non-engineered made ground and both granular and cohesive natural soils and provision for lateral support should be made. The excavations must be carefully inspected by an experienced foundation engineer and if root-infested or obviously desiccated clays are present, local deepening should be undertaken. The boreholes have indicated that the excavations should remain dry, but as discussed above, continued monitoring of the borehole installations should be carried out.

6.3 Basement slab performance and soil heave

The basement excavation is estimated to extend to about +103mOD. The existing ground level varies significantly due to the presence of the partial undercroft beneath the house. It is estimated that the maximum removal of soil (where there is no undercroft) will be about 3m, resulting in unloading of about 60kN/m², reducing to about 30kN/m² where the depth of excavated soils is less. Whilst the stress reduction could theoretically result in an element of heave in the cohesive deposits of the Bagshot Formation and underlying Claygate Member, we consider that when taking account of the magnitude of the overall reimposition of stress at basement level, soil heave affects should be minimal.

It will be necessary to consider uplift of the slab due to potential hydrostatic pressures and in this respect the guidelines incorporated in BS8102:2009 should be followed. The slab design will need to take account of potential seasonal fluctuations and/or accidental and flood conditions. We consider that a design water level at 1m depth below current ground level would be suitable for preliminary purposes and this would result in a hydrostatic uplift pressure of about 20kN/m² on the basement slab; this design water level may need to be agreed with the local building control.

6.4 Ground floor slab (rear extension)

The investigation has indicated that up to 1.80m of compressible, non-engineered made ground is present. We do not consider that these soils in their current state will be capable of supporting a ground-bearing slab and recommend that a fully suspended slab, supported by the main foundations, is adopted. Unless additional investigation is undertaken which proves that no cohesive soils are present (see 6.2 above), a suitable void should be incorporated beneath the slab in accordance with NHBC requirements.

6.5 Foundation concrete

Low concentrations of water-soluble sulphates (2:1 water/soil extract) were measured in selected soil samples. Near neutral pH values were also measured with the exception of a sample of the made ground in WS02/0.30m which was analysed as being alkaline. The results fall into Site Design Class DS-1 of Table C2 given in BRE Special Digest 1 (2005). We assess the site as having 'static' groundwater and this would result in an ACEC Site Class of AC-1.

7.0 STAGE 1 TIER 2 ENVIRONMENTAL ASSESSMENT

This appraisal is generally based on the Environment Agency's 'Land contamination: risk management', 2020, adopting current UK practice which uses the Source-Pathway-Receptor methodology to assess contamination risks. For a site to be designated as contaminated a plausible linkage between any identified sources and receptors must be identified, ie whether significant pollution linkages (SPLs) are present. In considering the potential for contamination to cause a significant effect, the extent and nature of the potential source are assessed and pathways/receptors identified; without an SPL there is theoretically no risk to the receptors from contamination. The assessed risks to the various potential receptors are summarised in the tabulated Conceptual Site Model which forms Section 7.5 of this report.

7.1 Environmental setting and context

The site is underlain by the Bagshot Formation which has a Bedrock Aquifer Designation of '**Secondary Aquifer – A**'. There are no abstraction points within 2000m and no source protection zones within 500m. The site is assessed as being of **Low** environmental sensitivity.

7.2 Contamination sources and testing

The Preliminary Risk Assessment is presented in Section 3.6 and this does not identify any significant risks. The testing therefore comprised analysis of three soil samples for a general suite of contaminants. Whilst no specific testing was undertaken based on historical/current site usages, PID headspace testing was carried out on all samples.

The soil test results have been assessed where relevant against the DEFRA Soil Guideline Values (SGV) and Category 4 Screening Levels (C4SLs), together with the LQM/CIEH Suitable 4 Use Level (S4UL) for Human Health Risk Assessment in which Generic Assessment Criteria (GACs) have been derived from the CLEA Model (2nd Edition, 2009). The contamination testing was carried out specifically for the purpose of providing a general guidance evaluation for the proposed development. Reference should be made to the foreword to the appended contamination test results in order to fully understand the context in which this discussion should be viewed.

We have used, where relevant, the trigger levels for **residential development (with home-grown produce)** to assess the results of the contamination testing. Using these criteria the following results are of note:

-  **Lead:** exceedances of lead occurred in all three samples of made ground, when compared to the C4SL threshold level of 200mg/kg; concentrations of between 258mg/kg and 580mg/kg were measured. The desk study has indicated a 'normal' background concentration of approximately 200mg/kg – 240mg/kg (BGS urban soil guidance)

The implications of these results are addressed in the revised Conceptual Site Model below.

Although Asbestos-Containing Materials (ACM) were neither observed on site nor identified in the samples examined, we note that buildings (especially those constructed before 2000) are a potential source of ACM. Furthermore, any made ground, construction or demolition materials on site may also contain ACM. These matters should be addressed in the Pre-construction H&S plan prior to any demolition or earthworks.

7.3 Ground gas/vapour monitoring

No specific gas generating uses/risks were identified by the PRA, but with 'made ground' being identified as a possible source. Gas monitoring was undertaken on two occasions following completion of the boreholes. No elevated levels of methane, carbon dioxide, carbon monoxide or hydrogen sulphide were measured. PID readings in the borehole installations were <1ppm. On the basis of these results, we consider that Characteristic Situation 1 (very low risk) is appropriate (as described in CIRIA C665 "Assessing risks posed by hazardous ground gases to buildings", 2007) and this suggests that no gas protection measures will be required; this should be re-assessed following any further monitoring.

7.4 Disposal of excavated soils

A rigorous hazard assessment of the results was not within the scope of our investigation, but our preliminary conclusion from the contamination and WAC testing is that the made ground and natural soils could classify as 'inert' material for disposal. The elevated lead levels in the made ground may, however, result in a more onerous classification of hazardous waste and early consultations should be made with appropriate waste facilities or regulators to confirm the off-site disposal requirements.

7.5 Refined Conceptual Site Model

Taking into account the above discussion, the assessed risks to potential receptors identified in the PRA are summarised in the refined Conceptual Site Model (CSM) below. This includes recommendations for appropriate mitigation measures to render any SPLs inactive and reduce the risks to receptors to acceptable levels:

Source	Pathway	Receptor	Assessed risk, justification and measures to mitigate the risk to acceptable levels
On site: contaminated soil/water	Ingestion & direct contact	End user	Moderate: ✚ Elevations in lead were observed in samples from the made ground in boreholes WS01 and WS02. Where made ground is removed the risks will be removed but in garden areas the end-user may come into contact with the affected soils. For this end use, the presence of elevated lead may require a Stage 1 Tier 3 Detailed Quantitative Risk Assessment or Stage 2 Options Appraisal, and this will involve additional sampling/testing. Alternatively, it may be possible to agree appropriate remedial measures with the regulatory authority; these could include removal of an agreed thickness of made ground and replacement with certified clean imported topsoil in garden areas, together with provision of a geofabric separator ✚ A careful watching brief should be kept during construction and if obvious or suspected contamination is encountered this should be dealt with prescriptively
	Ingestion, contact & inhalation	Construction workers and third parties	Low: ✚ Elevated lead concentrations were measured in samples of made ground although appropriate PPE and working practices should mitigate any associated risks. Any residual risks to these receptors should be managed through health & safety procedures and CDM regulations
	Leaching from contaminated soils and migration in groundwater	Aquifer and surface water	Very low: ✚ The majority of made ground (ie potential contamination source) will be removed during excavation for the basement. Where made ground remains, the likelihood of infiltration into the Secondary aquifer is deemed to be low, given the low solubility/mobility of lead ✚ Groundwater not observed within the boreholes
	Direct contact with soil/water	Building fabric and infrastructure	✚ The effects of soluble sulphates and alkali/acidic ground are discussed in Section 6.5 of this report ✚ Detailed assessment of soil/groundwater contamination with respect to water supply pipes is outside the scope of this report. The UKWIR publication 'Guidance for the selection of water supply pipes to be used in brownfield sites', 2010 states that if suitable barrier pipe is specified "there is no need to carry out soil sampling and analysis and this may be the most cost-effective solution". The validity of this approach will clearly be dependent upon the scale of the development and the quantity of pipe needed

Source	Pathway	Receptor	Assessed risk, justification and measures to mitigate the risk to acceptable levels
Off site: contaminated soil/water	Lateral migration of contaminants in groundwater	End-user and buildings	Low:  No contamination sources identified within the immediate vicinity of the site
On-site and off-site: ground gas & vapour	Lateral migration through strata, service runs and cracks in buildings	End-user and buildings	Very low:  No potential gas sources were identified by the PRA. Subsequent monitoring has revealed no elevated levels of ground gases. The SPL from ground gas is therefore considered to be inactive and CS1 (CIRIA 665) is deemed to apply, with no gas protection measures required  Less than 1% properties affected by radon, no radon protection measures required

In conclusion, based upon the information reviewed and the results of the investigation, our assessment is that with appropriate mitigation measures, it should be possible to reduce the risks to acceptable levels. The required mitigation measures identified above include characterisation of the elevated lead concentrations, or alternatively removal and replacement of made ground within garden areas.

A careful watching brief should be kept during construction to ensure that any potentially contaminated soil encountered is disposed of in a safe and controlled manner. Site workers should observe normal hygiene precautions when handling soils and if material suspected of being contaminated is identified during construction, this should be set aside under protective cover and further tests undertaken to verify the nature and levels of contamination present. If contamination is present, a full site re-assessment may be required and a contingency should be in place in this regard.

♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦ ♦

GENERAL INFORMATION, LIMITATIONS AND EXCEPTIONS

Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in EN1997-2. Any 'design' recommendations which are provided are for guidance only and are intended to allow the designer to assess the results and implications of our investigation/testing and to permit preliminary design of relevant elements of the proposed scheme.

The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access and space limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique we have adopted a practical technique to obtain indicative soil parameters and any interpretation is based upon our engineering experience and relevant published information.

The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during our investigation. In addition, Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata between the exploratory points, below the maximum depth of the investigation or where site conditions have changed since the exploratory work; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.

Comments made relating to groundwater or ground-gas are based upon observations made during our investigation unless otherwise stated. Groundwater and ground-gas conditions may vary with time from those reported due to factors such as seasonal effects, atmospheric effects and and/or tidal conditions. We recommend that if monitoring installations have been included as part of our investigation, continued monitoring should be carried out to maximise the information gained.

Specific geotechnical features/hazards such as (but not limited to) areas of root-related desiccation and dissolution features in chalk/soluble rock can exist in discrete localised areas - there can be no certainty that any or all of such features/hazards have been located, sampled or identified. Where a risk is identified the designer should provide appropriate contingencies to mitigate the risk through additional exploratory work and/or an engineered solution.

Where a specific risk of ground dissolution features has been identified in our Report (anything above a 'low' risk rating), reference should be made to the local building control to establish whether there are any specific local requirements for foundation design and appropriate allowances should be incorporated into the design. If such a risk assessment was not within the scope of our investigation and where it is deemed that the ground sequence may give rise to such a risk (for example near-surface chalk strata) it is recommended that an appropriate assessment should be undertaken prior to design of foundations.

Where spread foundations are used, we recommend that all excavations are inspected and approved by suitably experienced personnel; appropriate inspection records should be kept. This should also apply to any structures which are in direct contact with the soil where the soil could have a detrimental effect on performance or integrity of the structure.

Ground contamination often exists in small discrete areas - there can be no certainty that any or all such areas have been located, sampled or identified.

The findings and opinions conveyed in this Report may be based on information from a variety of sources such as previous desk studies, investigations or chemical analyses. Soil Consultants Limited cannot and does not provide any guarantee as to the authenticity, accuracy or reliability of such information from third parties; such information has not been independently verified unless stated in our Report. No liability will be accepted for changes to the ground and groundwater conditions which occur post investigation.

Our Report is written in the context of an agreed scope of work between Soil Consultants Ltd and the Client and should not be used in any different context. In light of additional information becoming available, improved practices and changes in legislation, amendment or re-interpretation of the assessment or the Report in part or in whole may be necessary after its original publication.

Unless otherwise stated our investigation does not include an arboricultural survey, asbestos survey, ecological survey or flood risk assessment and these should be deemed to be outside the scope of our investigation.

We will identify tree and plant species if possible, but a suitably qualified arboriculturalist/botanist should be consulted to provide definitive identification.

Where reference to 'topsoil' is made, this should be construed as any turf (if present) plus any obvious organic-rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations.

STANDARD TERMS OF APPOINTMENT OF SOIL CONSULTANTS LTD FOR GEOTECHNICAL SERVICES

- 1 Unless previously withdrawn, our offer remains valid for a period of sixty days from date of offer. If an instruction is given after the sixty days we reserve the right to reasonably adjust any cost associated with the project to reflect any variance on the original offer. In placing an instruction to proceed with exploratory work, whether directly from the Client or Client's representative, the Client is deemed to have accepted our Terms of Appointment.
- 2 Our offer is on the basis that free, unhindered access and working conditions are available and that the investigation can be completed in one visit, if applicable. Delays beyond our control will incur additional charges. If additional works outside our offer are required to facilitate the investigation these will be advised and any costs will be passed on to the Client.
- 3 In our quotation we will provide an estimate of any mobilisation period following an instruction to proceed. This estimate will be accurate at the time of quotation, but it should be noted that the mobilisation period may vary at a later date due to factors such as sub-contractor availability and workload.
- 4 In commissioning this work, the Client has a responsibility for the health, safety and welfare of operatives invited to undertake work on their site. The Client shall indemnify us in respect of any failure to fulfil their obligations in connection with all relevant and current Health and Safety Regulations.
- 5 The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access, space and budgetary limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique, or where a non-compliant technique has been specified, we will adopt practical and appropriate techniques to obtain indicative soil parameters.
- 6 Unless otherwise stated, our Report should be construed as being a Ground Investigation Report (GIR) as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report (GDR) as defined in BS EN1997-2. Any interpretation which is provided is for guidance only and must not be regarded as design or design recommendation.
- 7 Where excavation is required as part of the exploratory work, the Client shall provide drawings or plans showing accurate and complete locations of all underground services and structures. In performing our service, we shall take reasonable precautions to avoid damage to underground services or structures. We will not be responsible for any damage caused to underground services or structures and will not be liable for any claims for damage, expenses arising or losses unless the location of all underground services or structures are accurately shown on drawings and those plans have been provided to us in good time prior to commencement of the exploratory work. Risk to the Client can be further reduced by undertaking a scan of the site using a specialist underground scanning service which would be intended to identify traceable services at shallow depth.
- 8 With some sites, especially those in certain areas of London and other large towns and cities, there may be a risk of unexploded ordnance (UXO) being present. Unless otherwise stated our offer is on the basis that the Client or their representative provides a preliminary UXO risk assessment for the site. It should be noted that if the site is deemed to be in an area of risk then further measures will be required. These would normally comprise either a more detailed risk assessment and/or specialist site attendance by an EOD engineer. These measures can be commissioned either by the Client or Soil Consultants Ltd. If the Client requires, we would be pleased to obtain a preliminary risk assessment at cost+10%.
- 9 The Client will supply a site plan (to a rational scale), an indication of the scope and type of the proposed development and an indication of any relevant structural loading information.
- 10 Should the Client terminate the contract after instruction, we reserve the right to recover costs associated to work carried out between the time of instruction and the point of termination. Cancellation fees, and material costs shall be charged at cost plus 20% (+VAT). Engineer/technician time shall be charged at £95+VAT per hour and principal consultant/director time shall be charged at £125+VAT per hour.

- 11 The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during the investigation. In addition Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata both between the exploratory points and/or below the maximum depth of the investigation; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.
- 12 If and when instructed, an agreed number of contamination tests will be carried out to give an outline assessment of potential contaminants. In some circumstances it may be necessary to recommend further monitoring, contamination testing and assessment and the scope of this work would be agreed with the Client. Notwithstanding this additional scope, local regulatory authorities may have specific requirements which need to be addressed. Unless otherwise agreed or stated our reporting will constitute neither a Quantitative Risk Assessment nor a Remediation Statement or Strategy.
- 13 Our reports are counter-checked by one of our suitably qualified and experienced engineers/geologists.
- 14 Notwithstanding anything to the contrary contained in these terms, our liability under or in connection with these terms whether in contract or in tort, in negligence, for breach of statutory duty or otherwise (other than in respect of personal injury or death) shall not exceed the sum equivalent to ten times our contract fee or £100,000 whichever is less in the aggregate for geotechnical and environmental matters unless otherwise agreed.
- 15 Without prejudice to any other exclusion or limitation of liability, damages, loss, expense or costs our liability for any claim or claims under this agreement be further limited to such sum as it would be just and equitable for us to pay having regard to the extent of our responsibility for the loss or damage giving rise to such claim or claims ("the loss and damage") and on the assumptions that:
 - (a) All other consultants, contractors, sub-contractors, project managers or advisers engaged in connection with the Project have provided contractual undertakings to the Client on terms no less onerous than those set out in the original contracts in respect of the carrying out of their obligations in connection with the Project; and
 - (b) There are no exclusions of or limitations of liability nor joint insurance or co-insurance provisions between the Client and any other party referred to in this clause and any such other party who is responsible to any extent for the loss and damage is contractually liable to the Client for the loss and damage; and
 - (c) All such other consultants, contractors, sub-contractors, project managers or advisers have paid to the Client such proportion of the loss or damage which it would be just and equitable for them to pay having regard to the extent of their responsibility for the loss and damage.
- 16 Further and notwithstanding anything to the contrary contained in this agreement and without prejudice to any provision in this agreement whereby liability is excluded or limited to a lesser amount, our liability under or in connection with this agreement whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any claim shall not exceed the amount, if any, recoverable by us by way of indemnity against the claim in question under professional indemnity insurance taken out by us and in force at the time that the claims or (if earlier) circumstances that may give rise to the claim is or are reported to the insurers in question. The limitation shall not apply if no such amount is recoverable due to us having been in breach of our obligations or the terms of any insurance maintained in accordance therewith or having failed to report any such claim or circumstances to the Insurers in question timeously.
- 17 Whilst our investigation may include asbestos screening/quantification on selected samples, this must not be deemed to constitute a full asbestos survey or be taken as sufficient to definitively identify the presence or quantity of asbestos within or on the ground. We will not accept responsibility if asbestos is encountered during any subsequent construction or development works and in placing a contract with us the Client accepts this condition. Where the fabric of a building is to be disturbed, the Client shall provide an appropriate asbestos survey to us prior

to exploratory work and make adequate provision to allow the implementation of sufficient and appropriate protective/remedial measures for the work to progress safely.

- 18 Where our report refers to 'topsoil', this should be construed as any turf (if present) plus any obvious organic rich/humic layer of soil beneath, which may or may not contain roots/rootlets. Unless otherwise requested, we do not provide a detailed description, undertake sampling/testing for classification purposes or provide a specific classification. The thickness of the 'topsoil' identified on our exploratory hole records is indicative only and should not be used for detailed volume or site strip calculations; if this type of classification is required, this should be identified to us at an early stage and the method of sampling, testing and classification agreed.
- 19 The Client agrees that they shall not bring any claim personally against any director/employee of Soil Consultants Ltd or consultant to us in respect of loss or damage suffered by the Client arising out of this contract.
- 20 Our appointment shall be under simple agreement and our liability under this contract or in tort shall be for a period of six years from date of appointment.
- 21 Our reports are non-assignable and are prepared for the benefit of the Client. No reliance can be assumed by others without written agreement from Soil Consultants Ltd. We will provide a letter of reliance at our discretion and this will be subject to payment of our fee, which will be 10% of contract value, subject to a minimum fee of £1,250 plus VAT. The terms of our letter of reliance are non-negotiable and the beneficiary should be aware that the information shall only apply to the scheme for which the report was originally produced and the original rights and benefits will apply.
- 22 A VAT invoice (at current rate) will be presented in respect of the work undertaken. Payment of our account is to be made within twenty-eight days of issue of our invoice unless otherwise agreed. On no account shall payment be on a 'pay-when-paid' basis. The information contained within our report remains the property of Soil Consultants Ltd and no reliance may be assumed by any party with an interest in the project until payment has been received in full. After one calendar month interest shall be chargeable at 10% above the Bank of England Rate and compensation claimed in accordance with 'Late Payments of Commercial Debts (Interest) Act 1998 and subsequent revisions. If the debt is referred to a debt collection agency then we have the right to recover associated fees under the terms of our contract.

APPENDIX A

Fieldwork, in-situ testing and monitoring

- ✚ Foreword
- ✚ Dynamic Sampler borehole records
- ✚ Standard Penetration Test results
- ✚ SPT hammer calibration certificate
- ✚ Groundwater and gas monitoring results

Laboratory testing

- ✚ Index property testing
- ✚ Plasticity chart
- ✚ Particle size distribution tests

Contamination and chemical testing

- ✚ Foreword
- ✚ General soil suite
- ✚ WAC test results
- ✚ Sulphate/pH suite

Plans, drawings & photographs

- ✚ Site photographs
- ✚ Proposed development plans
- ✚ Site Plan
- ✚ Location Plan

FOREWORD FOR DYNAMIC SAMPLER BOREHOLES (WINDOWLESS) - GUIDANCE NOTES

GENERAL

The borehole records are compiled from the driller's description of the strata encountered, an examination of the samples by our geotechnical engineer and the results of in-situ and laboratory tests. Based on these data, the report presents an opinion on the configuration of strata within the site. However, such reasonable assumptions are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes.

BORING METHODS

The dynamic sampler technique uses 1m long tubes containing a rigid plastic liner. These are driven into the ground by a falling hammer, then withdrawn and the liner removed. The borehole commences using a large diameter tube (usually 100mm) with each succeeding tube reducing usually by 10mm in diameter to assist the extraction of the tube from the ground. Thus, it is theoretically possible to obtain a total continuous sample of the soil for examination or testing. Casing can be utilised as required. The technique allows the ground conditions to be reasonably well established although disturbance of the ground is inevitable, particularly some "softening" of the upper zone of clay immediately beneath a granular soil. The presence of thin layers of different soils within a stratum may not always be detected.

GROUND WATER

The depth at which ground water was struck is entered on the borehole records. However, this observation may not indicate the true water level at that time. Due to the speed of boring and the relatively small diameter of the borehole, natural ground water may be present at a depth higher than the water strike. Moreover, ground water levels are subject to variations caused by changes in the local drainage conditions and by seasonal effects. When a moderate inflow of water does take place, boring is suspended for at least 10 minutes to enable a more accurate short-term water level to be achieved. An estimate of the rate of inflow is also given. This is a relative term and serves only as a guide to the probable flow of water into an excavation.

Further observations of the water level made during the progress of the borehole are shown including end of shift and overnight readings and the depth at which water was sealed off by the borehole casing, if applicable.

SAMPLES

Small disturbed samples can be recovered from the lining tubes for subsequent laboratory testing, including moisture content, index property tests and contamination analyses.

IN-SITU TESTING

Standard Penetration Test (SPT): this test is performed in accordance with the procedure given in BS EN ISO 22476-3:2005. The individual blow count record for each test is given on a separate table. The 'N' value is normally the number of blows to achieve a penetration of 0.3m following a seating distance of 0.15m and is quoted at the mid-depth of the test zone. However if a change of stratum occurs within the test zone then a revised 'N' value can be calculated to assess one layer in particular. In hard strata full penetration may not be obtained. The presence of groundwater and particularly Where groundwater can affect the test and the measured values may not represent the true in-situ density of the soil.

Hand Shear Vane: provides the shear strength of cohesive soils, values reported in kPa

Pocket Penetrometer: provides an estimate of the unconfined compression strength, values reported in kg/cm²

Site & Location: 69 Cromwell Avenue London N6 5HS							Borehole No: WS01	
Client: Andreas Weiskam					Coordinates: 528902E, 187306N		Sheet 1 of 1	
Engineer: MHA Structural Design Ltd					Ground Level: +105.00mOD		Report No: 10769/JM	
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 13/10/22 BH diameter: 110mm reducing with depth				0.10	104.90		MADE GROUND: block paving over yellow gravelly sand (sub-base)	
	D	0.50					MADE GROUND: firm brown silty clay with occasional brick fragments. Live roots observed to 0.90m	
Inspection pit to 1.20m	D	1.00					MADE GROUND: whole bricks (possible foundation)	1
	SPT/S	1.20	N=21	1.20	103.80			
	D	1.40						
				1.60	103.40		Medium dense yellow/grey clayey silty predominantly fine SAND with rare fine subrounded flint gravel	2
	D	1.80						
	SPT/S	2.00	N=15					
Rotary auger used from 2.50m depth	D	2.50					Firm to stiff yellow/orange silty sandy CLAY	3
	D	3.00	N=11					
	SPT/S	3.00						
				3.40	101.60			4
	D	4.00	N=15					
	SPT/S	4.00						
50mm ID monitoring pipe installed to 5.00m	SPT/S	5.00	N=10					5
				5.45	99.55			
							End of hole at 5.45m	
BH complete: 13/10/22 BH depth: 5.45m Water depth: dry								6
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler
Remarks: Ground levels and coordinates inferred from LIDAR data - approximate only								Borehole No: WS01

Site & Location: 69 Cromwell Avenue London N6 5HS							Borehole No: WS02	
Client: Andreas Weiskam					Coordinates: 528919E, 187298N		Sheet 1 of 1	
Engineer: MHA Structural Design Ltd					Ground Level: +105.50mOD		Report No: 10769/JM	
Progress & Observations	Samples & Tests		Field Test Results	Strata		Legend	Strata Descriptions	Backfill / Installation
	Type	Depth (m)		Depth (m)	Level (m)			
BH commenced: 13/10/22 BH diameter: 125mm Inspection pit to 1.20m				0.20	105.30		MADE GROUND: block paving over concrete	
	D	0.30					MADE GROUND: grey/black silty sand with occasional brick/ concrete fragments. Live roots	
				0.60	104.90			
	D	0.80					MADE GROUND: orange/brown slightly clayey silty sand with occasional brick fragments. Live roots	
				0.90	104.60		MADE GROUND: brown silty clayey sand with occasional brick fragments. Live roots observed to 1.50m	
	SPT/S	1.20	N=10					
	D	1.50						
				1.80	103.70		Dense yellow/grey slightly clayey slightly silty gravelly predominantly fine to medium SAND	
	D	1.90						
	SPT/S	2.00	N>50*					
				2.30	103.20		Dense orange/brown/red silty SAND with occasional fine gravel of sandstone	
			2.60	102.90		Medium dense yellow/grey silty fine to coarse SAND		
D	3.00							
SPT/S	3.00	N=18						
			3.30	102.20		Medium dense yellow/grey clayey silty predominantly fine SAND with rare fine subrounded flint gravel		
D	3.50							
			3.80	101.70		Medium dense becoming dense yellow/white silty fine to medium SAND		
D	4.00							
SPT/S	4.00	N=29						
50mm ID monitoring pipe installed to 4.50m								
	SPT/S	5.00	N=32					
BH complete: 13/10/22 BH depth: 5.45m Water depth: dry				5.45	100.05		End of hole at 5.45m	
Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet								Borehole type: Dynamic Sampler
Remarks: Ground levels and coordinates inferred from LIDAR data - approximate only								Borehole No: WS02

Site & Location	69 Cromwell Avenue London N6 5HS	Report No:	10769/JM
--------------------	---	---------------	-----------------

STANDARD PENETRATION TEST SUMMARY

BH ID	Depth (m)	Test type	N value (Note b)	Blow-counts and penetration						Casing depth (m)	Water depth (m)	Remarks
				Seating blows		Test blows						
WS01	1.20	S	N=21	4	4	5	5	5	6		Dry	
WS01	2.00	S	N=15	5	3	3	4	4	4		Dry	
WS01	3.00	S	N=11	3	4	3	3	2	3		Dry	
WS01	4.00	S	N=15	2	3	3	4	4	4		Dry	
WS01	5.00	S	N=10	2	2	2	2	3	3		Dry	
WS02	1.20	S	N=10	2	2	3	3	2	2		Dry	
WS02	2.00	S	(50)	8	9	17	25	8/30mm			Dry	
WS02	3.00	S	N=18	3	3	4	4	5	5		Dry	
WS02	4.00	S	N=29	5	6	7	7	7	8		Dry	
WS02	5.00	S	N=32	6	6	7	8	8	9		Dry	
		</										

- a) Standard Penetration Test : BS EN ISO 22476:2005 Part 3
- b) Where full penetration was not achieved, the total test blow-counts are reported
- c) Hammer Energy Ratio, Er = 87%

SPT hammer energy test report

SPT Hammer Energy Test Report

In accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref: 110RP 113
Test Date: 30/09/2022
Report Date: 30/09/2022
File Name: 110RP 113.spt
Test Operator: NPB

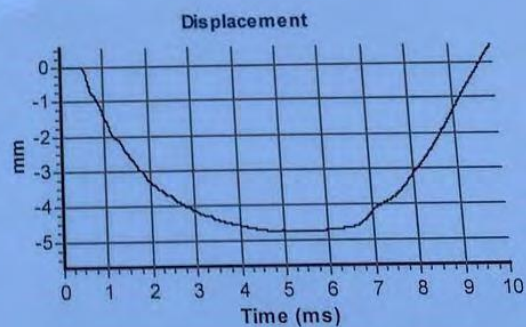
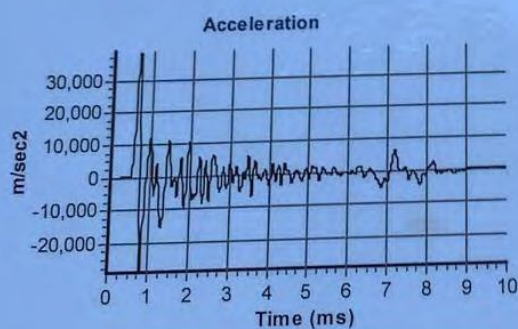
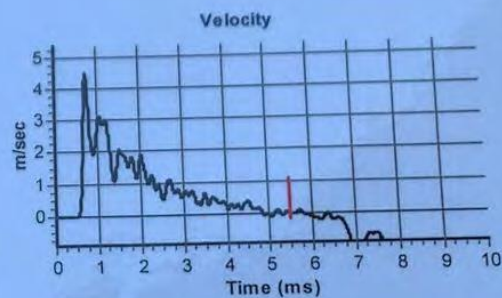
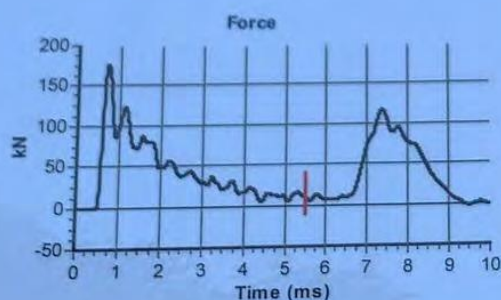
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 64786
Accelerometer No.2: 64789

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 14.7

Comments / Location
CHARLWOODS



Calculations

Area of Rod A (mm^2): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 410

Energy Ratio E_r (%): **87**

Title: Field Operations Manager

The recommended calibration interval is 12 months

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
-----------------	---	-------------------------------

Results of groundwater /gas monitoring

Date:	19/10/2022	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):	Falling 1006	Calibration check details:	See note 2 below
b) At start (mB):		Next calibration date:	Feb 2023
Recorded by:	NB	Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit 2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture 3) CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide	
Surface ground conditions:	Damp		
Weather conditions:	Overcast		
Ambient air temp (°C):	16		

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS01	14:53:54	50	Dry	4.96

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.0	0.1	21.3	0	0	0.0
15	0.0	3.4	19.3	0	0	0.2
30	0.0	3.4	18.4	0	0	0.1
45	0.0	3.5	18.3	0	0	0.1
60	0.0	3.5	18.3	0	0	0.1
75	0.0	3.5	18.3	0	0	0.0
90	0.0	3.5	18.3	0	0	0.1
105	0.0	3.5	18.2	1	0	0.1
120	0.0	3.6	18.2	0	0	0.0
135	0.0	3.6	18.2	0	0	0.0
150	0.0	3.6	18.2	0	0	0.0
165	0.0	3.6	18.2	0	0	0.0
180	0.0	3.6	18.2	0	0	0.0

Max CH ₄ (%)	0.0
Max CO ₂ (%)	3.6
Min O ₂ (%)	18.2
Max CO (ppm)	1
Max H ₂ S (ppm)	0
Max PID (ppm)	0.2

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.1	0.2	0.3	0.09

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
-----------------	---	-------------------------------

Results of groundwater /gas monitoring

Date:	19/10/2022	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):	Falling 1007	Calibration check details:	See note 2 below
b) At start (mB):		Next calibration date:	Feb 2023
Recorded by:	NB	Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit 2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture 3) CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide	
Surface ground conditions:	Dry		
Weather conditions:	Overcast		
Ambient air temp (°C):	16		

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS02	14:46:08	50	Dry	4.48

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.0	0.1	21.3	0	0	0.1
15	0.0	0.1	21.3	0	0	0.3
30	0.0	0.1	21.3	0	0	0.2
45	0.0	0.1	21.3	0	0	0.2
60	0.0	0.1	21.3	0	0	0.2
75	0.0	0.1	21.3	1	0	0.1
90	0.0	0.1	21.3	0	0	0.1
105	0.0	0.1	21.3	1	0	0.1
120	0.0	0.1	21.3	0	0	0.1
135	0.0	0.1	21.3	0	0	0.1
150	0.0	0.1	21.3	0	0	0.1
165	0.0	0.1	21.3	0	0	0.1
180	0.0	0.1	21.3	0	0	0.0

Max CH ₄ (%)	0.0
Max CO ₂ (%)	0.1
Min O ₂ (%)	21.3
Max CO (ppm)	1
Max H ₂ S (ppm)	0
Max PID (ppm)	0.3

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.1	0.2	0.3	0.00

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
-----------------	---	-------------------------------

Results of groundwater /gas monitoring

Date:	27/10/2022	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):	Rising	Calibration check details:	See note 2 below
b) At start (mB):	1002	Next calibration date:	Feb 2023
Recorded by:	NB	Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit 2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture 3) CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide	
Surface ground conditions:	Damp		
Weather conditions:	Sunny		
Ambient air temp (°C):	19		

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS01	14:08:45	50	Dry	4.96

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.0	0.1	21.0	0	0	0.1
15	0.0	0.1	20.9	0	0	0.2
30	0.0	0.1	20.8	1	0	0.2
45	0.0	0.1	20.8	0	0	0.2
60	0.0	0.1	20.8	0	0	0.1
75	0.0	0.1	20.8	0	0	0.1
90	0.0	0.2	20.8	0	0	0.1
105	0.0	0.2	20.8	1	0	0.1
120	0.0	0.2	20.8	0	0	0.1
135	0.0	0.3	20.7	0	0	0.1
150	0.0	0.3	20.7	0	0	0.1
165	0.0	0.4	20.6	0	0	0.0
180	0.0	0.5	20.6	0	0	0.0

Max CH ₄ (%)	0.0
Max CO ₂ (%)	0.5
Min O ₂ (%)	20.6
Max CO (ppm)	1
Max H ₂ S (ppm)	0
Max PID (ppm)	0.2

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.0	0.0	-0.03

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
-----------------	---	-------------------------------

Results of groundwater /gas monitoring

Date:	27/10/2022	Monitoring equipment	
Barometric pressure:		Instrument:	GA5000. No. G505055
a) Trend (24hrs):	Rising	Calibration check details:	See note 2 below
b) At start (mB):	1003	Next calibration date:	Feb 2023
Recorded by:	NB	Notes: 1) Barometric pressure trend and ambient air temperature is recorded from metoffice.gov.uk website on the day of the monitoring visit 2) Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH ₄ , 5% CO ₂ and 6% O ₂ gas mixture 3) CH ₄ = methane; CO ₂ = carbon dioxide; CO = carbon monoxide; O ₂ = oxygen; H ₂ S = hydrogen sulphide	
Surface ground conditions:	Dry		
Weather conditions:	Sunny		
Ambient air temp (°C):	19		

BH ID	Time (24hr)	Pipe dia (mm)	GW depth (mbgl)	Depth to pipe base (mbgl)
WS02	13:54:31	50	Dry	4.48

Time (s)	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	CO (ppm)	H ₂ S (ppm)	PID (ppm)
0	0.0	0.1	21.1	0	0	0.0
15	0.0	1.6	20.2	0	0	0.0
30	0.0	1.7	19.7	0	0	0.0
45	0.0	1.8	19.6	0	0	0.0
60	0.0	1.9	19.5	0	0	0.0
75	0.0	2.0	19.4	0	0	0.0
90	0.0	2.0	19.4	0	0	0.0
105	0.0	2.1	19.3	0	0	0.0
120	0.0	2.2	19.2	0	0	0.0
135	0.0	2.2	19.2	0	0	0.0
150	0.0	2.3	19.2	0	0	0.0
165	0.0	2.3	19.2	0	0	0.0
180	0.0	2.3	19.1	0	0	0.0

Max CH ₄ (%)	0.0
Max CO ₂ (%)	2.3
Min O ₂ (%)	19.1
Max CO (ppm)	0
Max H ₂ S (ppm)	0
Max PID (ppm)	0.0

Flow rate (l/hr)			Relative pressure (mb)
Initial	Mean	Max	
0.0	0.0	0.0	-4.23

Site & Location	69 Cromwell Avenue London N6 5HS	Report No:	10769/JM
-----------------	---	------------	-----------------

SUMMARY OF CLASSIFICATION TEST RESULTS

BH ID	Depth (m)	Type	w (%)	w _L (%)	w _p (%)	Pass 425 (%)	I _p (%)	Mod I _p (%)	I _L (%)	LOI (%)	Description
TP01	1.00	D	17								Yellow/grey/orange very sandy CLAY
TP04	1.90	D	16	46	20	>95	26		-0.17		Orange slightly sandy CLAY
WS01	1.80	D	15								Yellow/grey slightly clayey silty fine to coarse SAND
WS01	4.00	D	20	40	24	>95	16		-0.27		Yellow/orange silty sandy CLAY
WS02	1.90	D	4								Yellow/grey slightly clayey slightly silty fine SAND
WS02	3.50	D	11								Yellow/grey clayey silty fine SAND

Testing in accordance with BS EN ISO 17892 unless specified otherwise

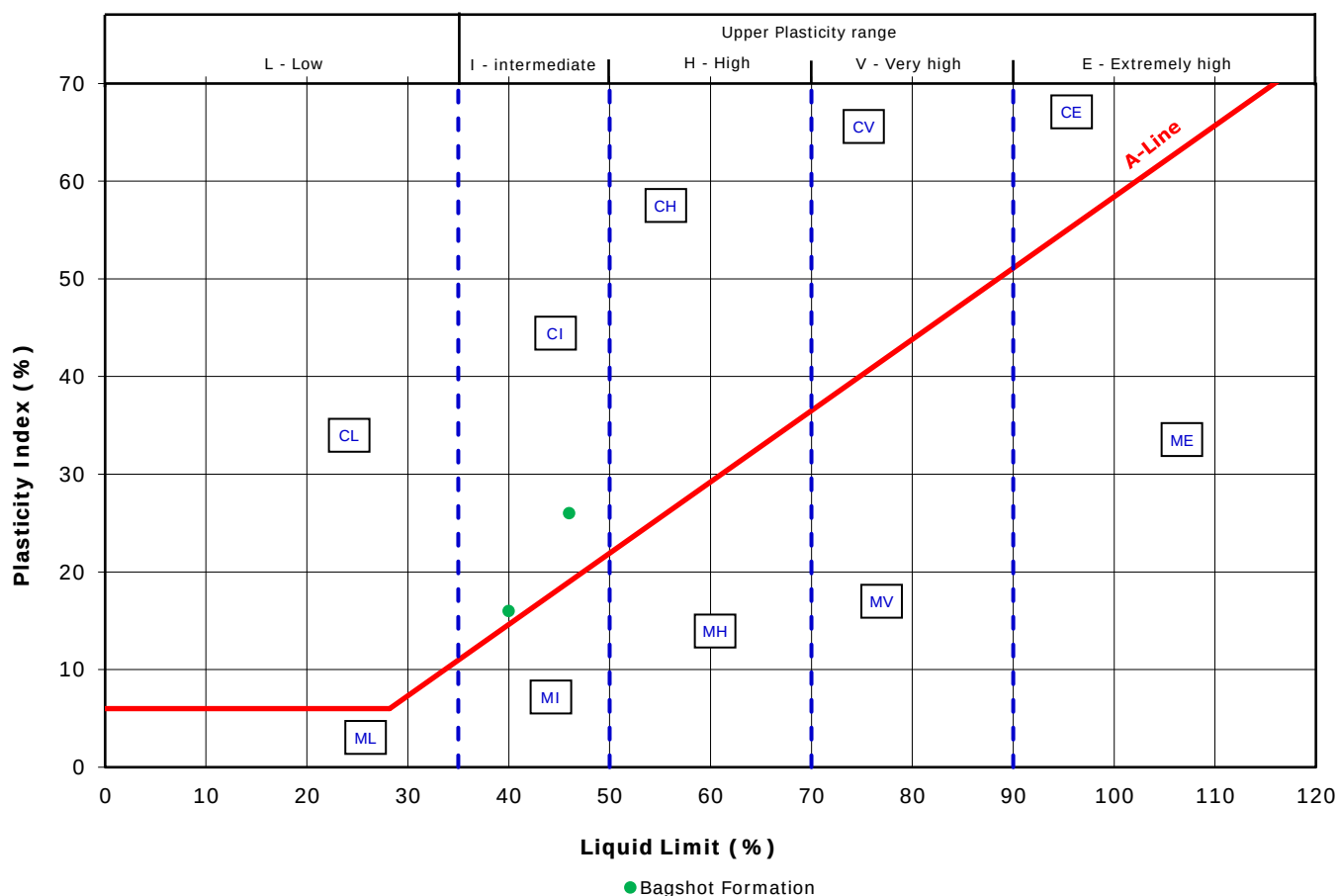
Modified Plasticity Index calculated in accordance with NHBC Standards Chapter 4.2 (reported if %passing 425mm <95%)

Percent passing 425µm: by estimation, by hand* or by sieving**

Date: 25 Oct 22

(Classification Sheet 1 of 1)

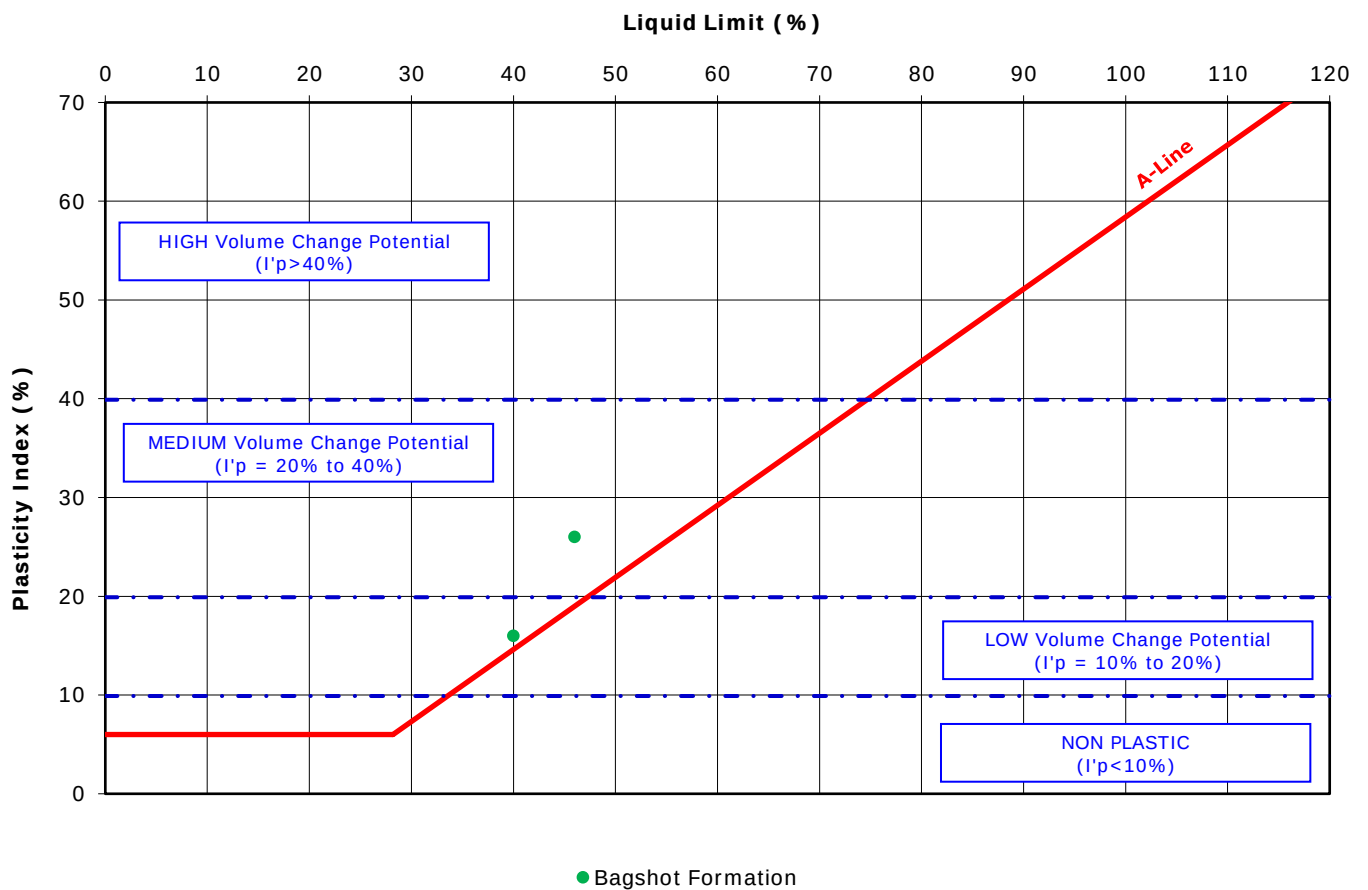
Plasticity Chart



M - SILT [plots below the A-Line]
 C - CLAY [plots above the A-Line]

Classification in accordance with BS5930:2015 "Code of practice for site investigations"

Plasticity Chart



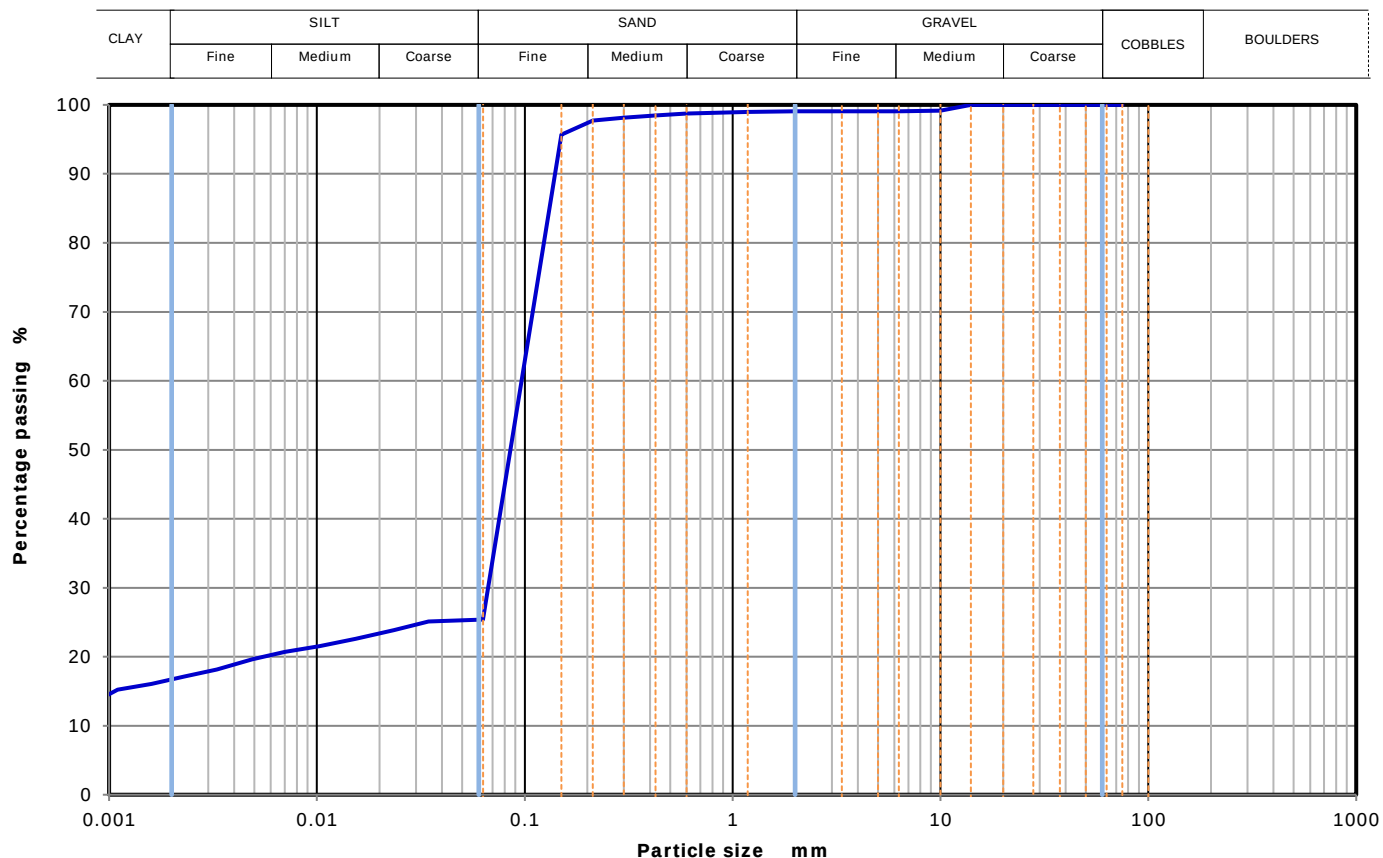
Modified Plasticity Index, I_p:

$$I_p = \frac{I_p \times (\% \text{ passing } 425\text{mm})}{100\%} \quad (\text{where } I_p = \text{Plasticity Index})$$

Classification in accordance with NHBC Standards, Part 4 'Foundations', Chapter 4.2 'Building near trees'

Particle size distribution

Hole ID: TP01	Description: Yellow /grey /orange clayey silty SAND with rare gravel
Depth (m): 1.00	



Sieving	
Size (mm)	% passing
75	100.0
63	100.0
50	100.0
37.5	100.0
28	100.0
20	100.0
14	100.0
10	99.2
6.3	99.1
5	99.1
3.35	99.1
2	99.1
1.18	99.0
0.6	98.7
0.425	98.5
0.3	98.2
0.212	97.7
0.15	95.7
0.063	25.4

Sedimentation	
Size (µm)	% passing
34.4	25.1
23.5	23.9
15.4	22.6
10.3	21.5
7.0	20.7
4.9	19.6
3.3	18.2
2.3	17.1
1.6	16.1
1.1	15.2
0.5	9.75

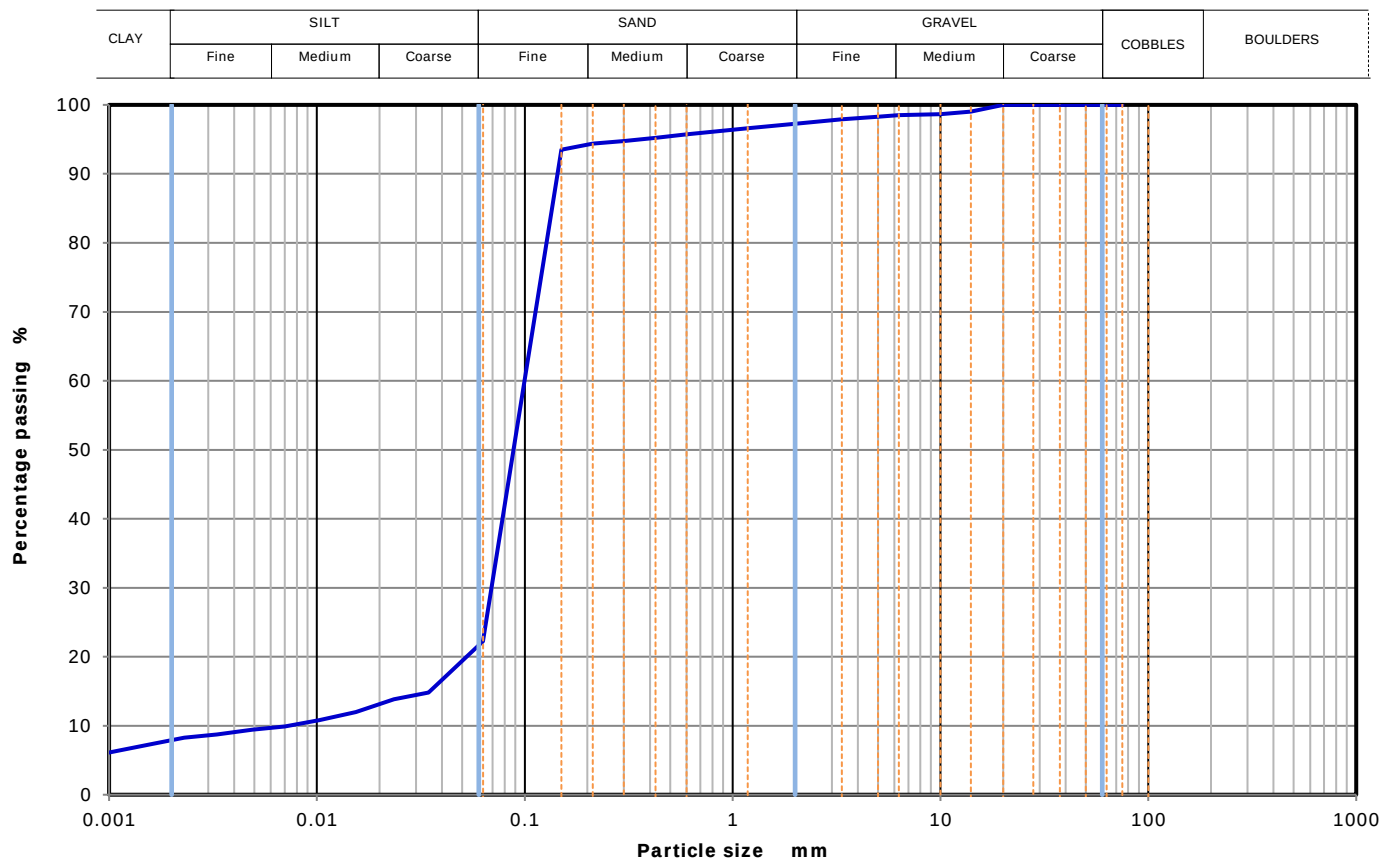
Sample proportions	%
Cobbles	0
Gravel	1
Sand	74
Silt	9
Clay	16

Grading analysis		
D60	mm	0
D30	mm	0
D10	mm	0
Uniformity Coefficient		186
Curvature Coefficient		89

Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
- Hydrometer method	
Reporting date:	31 Oct 22

Site & **69 Cromwell Avenue**Location **London N6 5HS**Report **10769/JM**

No:

Particle size distributionHole ID: **WS01**
Depth (m): **1.80**Description: **Yellow /grey clayey silty SAND with rare gravel**

Sieving	
Size (mm)	% passing
75	100.0
63	100.0
50	100.0
37.5	100.0
28	100.0
20	100.0
14	99.0
10	98.7
6.3	98.5
5	98.3
3.35	97.9
2	97.3
1.18	96.6
0.6	95.7
0.425	95.2
0.3	94.7
0.212	94.4
0.15	93.5
0.063	22.2

Sedimentation	
Size (µm)	% passing
34.4	14.8
23.5	13.9
15.4	12
10.3	10.8
7.0	9.89
4.9	9.42
3.3	8.72
2.3	8.25
1.6	7.32
1.1	6.38
0.5	4.28

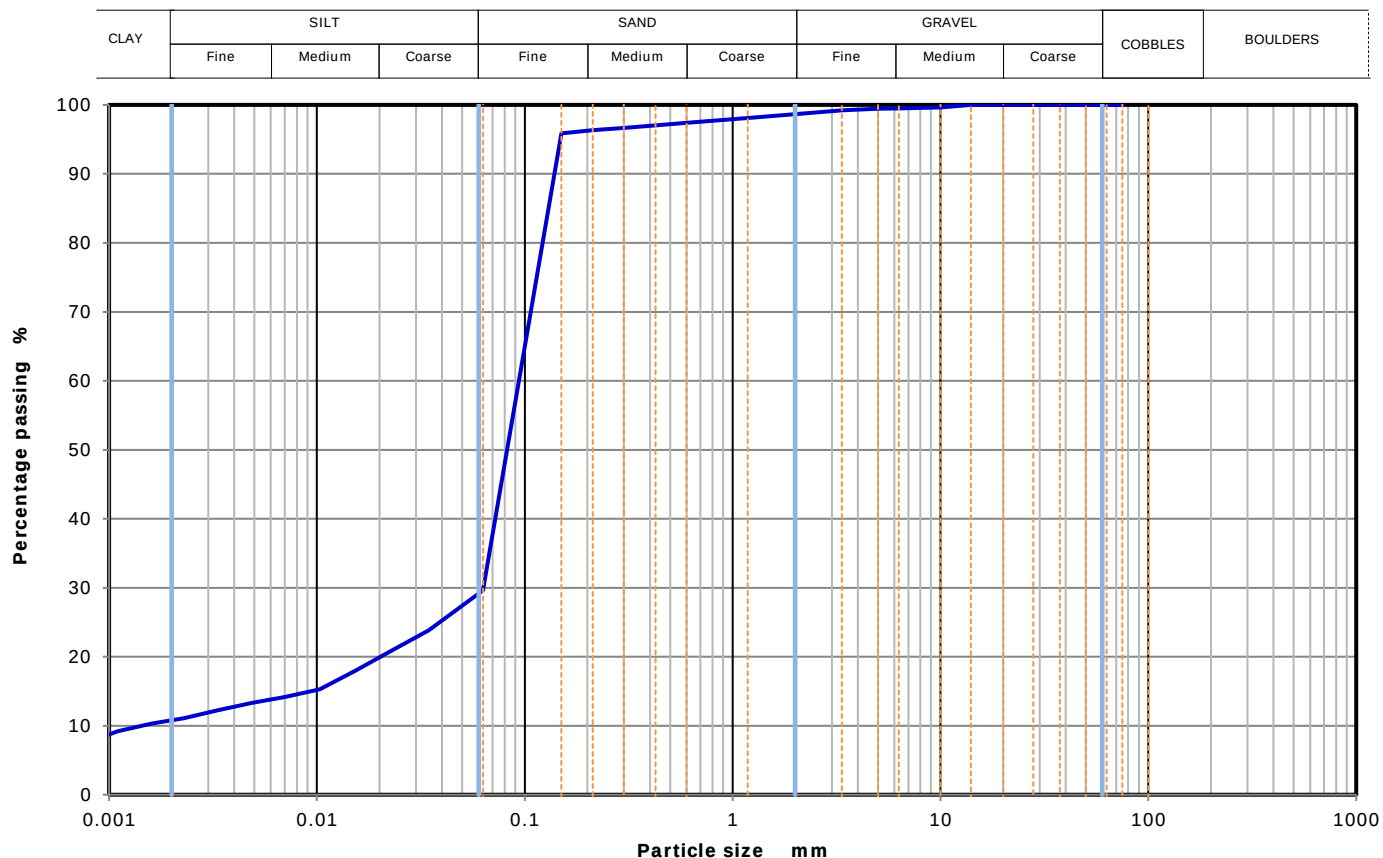
Sample proportions	%
Cobbles	0
Gravel	3
Sand	75
Silt	15
Clay	7

Grading analysis		
D60	mm	0
D30	mm	0
D10	mm	0
Uniformity Coefficient		14
Curvature Coefficient		7

Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
- Hydrometer method	
Reporting date:	31 Oct 22

Particle size distribution

Hole ID: WS01	Description: Yellow /grey clayey silty SAND with rare gravel
Depth (m): 2.50	



Sieving	
Size (mm)	% passing
75	100.0
63	100.0
50	100.0
37.5	100.0
28	100.0
20	100.0
14	100.0
10	99.6
6.3	99.5
5	99.5
3.35	99.2
2	98.7
1.18	98.1
0.6	97.4
0.425	97.0
0.3	96.6
0.212	96.3
0.15	95.9
0.063	29.6

Sedimentation	
Size (µm)	% passing
34.4	23.8
23.5	21.1
15.4	18
10.3	15.3
7.0	14.2
4.9	13.3
3.3	12.2
2.3	11.1
1.6	10.3
1.1	9.19
0.5	5.33

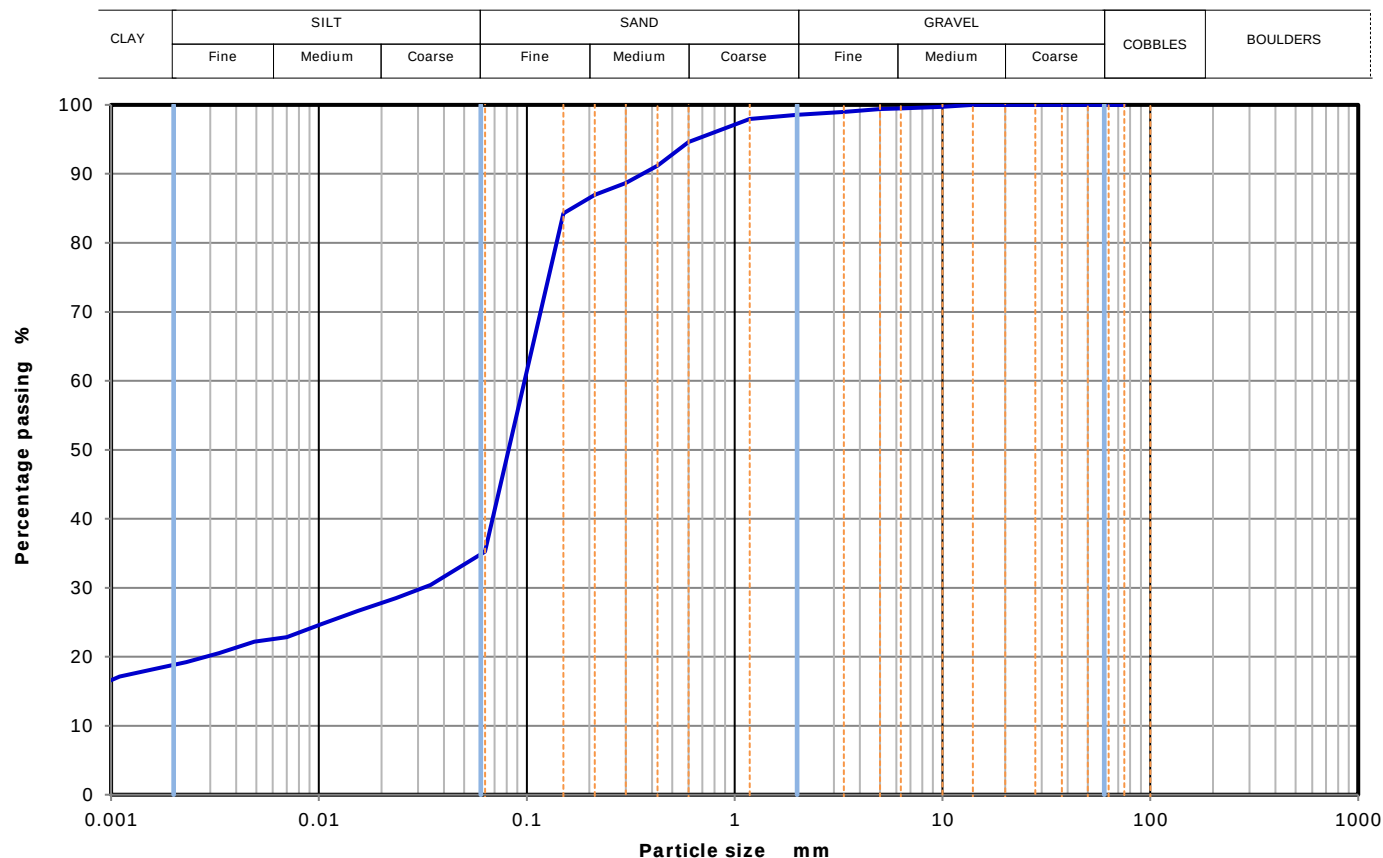
Sample proportions	%
Cobbles	0
Gravel	1
Sand	69
Silt	19
Clay	10

Grading analysis		
D60	mm	0
D30	mm	0
D10	mm	0
Uniformity Coefficient		65
Curvature Coefficient		29

Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
- Hydrometer method	
Reporting date:	31 Oct 22

Site & **69 Cromwell Avenue**Location **London N6 5HS**Report **10769/JM**

No:

Particle size distributionHole ID: **WS02**
Depth (m): **3.50**Description: **Yellow /grey clayey silty SAND with rare gravel**

Sieving	
Size (mm)	% passing
75	100.0
63	100.0
50	100.0
37.5	100.0
28	100.0
20	100.0
14	100.0
10	99.7
6.3	99.5
5	99.4
3.35	99.0
2	98.6
1.18	98.0
0.6	94.6
0.425	91.2
0.3	88.7
0.212	87.0
0.15	84.3
0.063	35.2

Sedimentation	
Size (µm)	% passing
34.4	30.4
23.5	28.5
15.4	26.6
10.3	24.7
7.0	22.8
4.9	22.2
3.3	20.5
2.3	19.2
1.6	18.2
1.1	17.1
0.5	12.7

Sample proportions	%
Cobbles	0
Gravel	1
Sand	63
Silt	17
Clay	18

Grading analysis		
D60	mm	0
D30	mm	0
D10	mm	N/A
Uniformity Coefficient		
Curvature Coefficient		

Test method and date	
Method: BS EN ISO 17892-4:2016	
- Wet sieving method	
- Hydrometer method	
Reporting date:	31 Oct 22

FOREWORD TO CONTAMINATION TESTING AND ASSESSMENT

The following statements are designed to inform and guide the Client and other potential parties intending to rely upon this report, with the express intent of protecting them from misunderstanding as to the extent and thus the potential associated risks that may result from proceeding without further evaluations or guidance.

- 1] Unless otherwise stated in this report, the testing of soils and waters is based on a range of commonly occurring potential contaminants for the specific purpose of providing a general guidance evaluation for the proposed form of development. Thus, the range of potential contaminants is neither exhaustive nor specifically targeted to any previous known uses or influences upon the site.
- 2] The amount and scope of the testing should not be assumed to be exhaustive but has been selected, at this stage, to provide a reasonable, general view of the site ground conditions. In many cases this situation is quite sufficient for the site to be characterised for the purposes of development and related Health and Safety matters for persons involved in or directly affected by the site development works. It must be understood, however, that in certain circumstances aspects or areas of the site may require further investigation and testing in order to fully clarify and characterise contamination issues, both for regulatory compliance and for commercial reasons.
- 3] The scope of the contamination testing must not automatically be regarded as being sufficient to fully formulate a remediation scheme. For such a scheme it may be necessary to consider further testing to verify the effectiveness of the remedial work after the site has been treated. It must be understood that a remediation scheme which brings a site into a sufficient state for the proposed development (“fit for purpose”) under current legislation and published guidance, may result in some contamination being left in-situ. It is possible that forthcoming legislation may result in a site being classified by the Local Authority and assigned a “Degree of Risk” related to previous use or known contamination.
- 4] The scope of the environmental investigation and contamination testing must not be automatically regarded as sufficient to satisfy the requirements in the wider environmental setting. The risks to adjacent properties and to the water environment are assessed by the regulatory authorities and there may be a requirement to carry out further exploration, testing and, possibly monitoring in the short or long term. It is not possible to sensibly predict the nature and extent of such additional requirements as these are the direct result of submissions to and liaison with the regulatory authorities. It is imperative, therefore, that such submissions and contacts are made as soon as possible, especially if there are perceived to be critical features of the site and proposed scheme, in this context.
- 5] New testing criteria have been implemented by the Environment Agency to enable a waste disposal classification to be made. The date of implementation of this Waste Acceptance Criteria [WAC] was July 2005. It is this testing that will be used by the waste regulatory authorities, including waste disposal sites, to designate soils for disposal in landfill sites. In certain circumstances, to satisfy the waste regulations, there may be the necessity to carry out additional testing to clarify and confirm the nature of any contamination that may be present. If commercial requirements are significant then this process may also necessitate further field operations to clarify the extent of certain features. Thus, the waste classification must be obtained from the waste regulation authorities or a licensed waste disposal site and we strongly recommend that this classification is obtained as soon as possible and certainly prior to establishing any costings or procedures for this or related aspects of the scheme.



Jonathan Mahoney
Soil Consultants Ltd
Chiltern House
Earl Howe Road
Holmer Green
High Wycombe
Buckinghamshire
HP15 6QT



Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 22-08637

Site Reference: 69 Cromwell Avenue, London N6 5HS

Project / Job Ref: 10769/JM

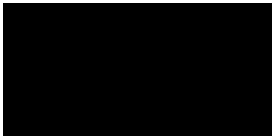
Order No: 10769/JM

Sample Receipt Date: 18/10/2022

Sample Scheduled Date: 18/10/2022

Report Issue Number: 1

Reporting Date: 24/10/2022



Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 22-08637	Date Sampled	13/10/22	13/10/22	13/10/22	13/10/22	13/10/22
Soil Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: 69 Cromwell Avenue, London N6 SHS	TP / BH No	WS1	WS1	WS1	WS2	WS2
Project / Job Ref: 10769/JM	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 10769/JM	Depth (m)	0.50	1.80	4.50	0.30	1.50
Reporting Date: 24/10/2022	DETS Sample No	616792	616793	616794	616795	616796

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			Not Detected
pH	pH Units	N/a	MCERTS	8.1	8.3	8.0	10.6
Electrical Conductivity	uS/cm	< 5	NONE	137			260
Total Cyanide	mg/kg	< 2	NONE	< 2			< 2
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	575	< 200	< 200	1643
Total Sulphate as SO ₄	%	< 0.02	MCERTS	0.06	< 0.02	< 0.02	0.16
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	30	12	22	56
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.03	0.01	0.02	0.06
Total Sulphur	%	< 0.02	NONE	0.03	< 0.02	< 0.02	0.07
Organic Matter (SOM)	%	< 0.1	MCERTS	2			1.3
Arsenic (As)	mg/kg	< 2	MCERTS	13			18
W/S Boron	mg/kg	< 1	NONE	< 1			< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2			0.3
Chromium (Cr)	mg/kg	< 2	MCERTS	16			21
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			< 2
Copper (Cu)	mg/kg	< 4	MCERTS	36			38
Lead (Pb)	mg/kg	< 3	MCERTS	258			580
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1			1.5
Nickel (Ni)	mg/kg	< 3	MCERTS	13			15
Selenium (Se)	mg/kg	< 2	MCERTS	< 3			< 3
Zinc (Zn)	mg/kg	< 3	MCERTS	61			303
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2			< 2
EPH (C10 - C40)	mg/kg	< 6	MCERTS	7			56

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 22-08637	Date Sampled	13/10/22	13/10/22	13/10/22		
Soil Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: 69 Cromwell Avenue, London N6 SHS	TP / BH No	WS2	WS2	WAC COMP		
Project / Job Ref: 10769/JM	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 10769/JM	Depth (m)	1.90	3.50	0.30 - 1.50		
Reporting Date: 24/10/2022	DETS Sample No	616797	616798	616799		

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025				
pH	pH Units	N/a	MCERTS	8.0	5.4		
Electrical Conductivity	uS/cm	< 5	NONE				
Total Cyanide	mg/kg	< 2	NONE				
Total Sulphate as SO ₄	mg/kg	< 200	MCERTS	< 200	276		
Total Sulphate as SO ₄	%	< 0.02	MCERTS	< 0.02	0.03		
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	< 10	64		
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	< 0.01	0.06		
Total Sulphur	%	< 0.02	NONE	< 0.02	< 0.02		
Organic Matter (SOM)	%	< 0.1	MCERTS				
Arsenic (As)	mg/kg	< 2	MCERTS				
W/S Boron	mg/kg	< 1	NONE				
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				
Chromium (Cr)	mg/kg	< 2	MCERTS				
Chromium (hexavalent)	mg/kg	< 2	NONE				
Copper (Cu)	mg/kg	< 4	MCERTS				
Lead (Pb)	mg/kg	< 3	MCERTS				
Mercury (Hg)	mg/kg	< 1	MCERTS				
Nickel (Ni)	mg/kg	< 3	MCERTS				
Selenium (Se)	mg/kg	< 2	MCERTS				
Zinc (Zn)	mg/kg	< 3	MCERTS				
Total Phenols (monohydric)	mg/kg	< 2	NONE				
EPH (C10 - C40)	mg/kg	< 6	MCERTS				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 22-08637	Date Sampled	13/10/22	13/10/22	13/10/22		
Soil Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: 69 Cromwell Avenue, London N6 5HS	TP / BH No	WS1	WS2	WS2		
Project / Job Ref: 10769/JM	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: 10769/JM	Depth (m)	0.50	0.30	1.50		
Reporting Date: 24/10/2022	DETS Sample No	616792	616795	616796		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	0.47	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.13	1.39	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	1.20	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.87	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	0.78	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.91	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.33	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.83	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.61	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.16	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.54	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	8.1	< 1.6		



DETS Ltd
 L, Rose Lane Industrial Estate
 Rose Lane
 Lenham Heath
 Maidstone
 Kent ME17 2JN
 Tel : 01622 850410



Waste Acceptance Criteria Analytical Certificate - BS EN 12457 / 2									
DETS Report No: 22-08637		Date Sampled	13/10/22		Landfill Waste Acceptance Criteria Limits				
Soil Consultants Ltd		Time Sampled	None Supplied						
Site Reference: 69 Cromwell Avenue, London N6 5HS		TP / BH No	WAC COMP						
Project / Job Ref: 10769/JM		Additional Refs	None Supplied						
Order No: 10769/JM		Depth (m)	0.30 - 1.50						
Reporting Date: 24/10/2022		DETS Sample No	616799						
Determinand	Unit	MDL							
TOC ^{MU}	%	< 0.1	1.8						
Loss on Ignition	%	< 0.01	7.20						
BTEX ^{MU}	mg/kg	< 0.05	< 0.05						
Sum of PCBs	mg/kg	< 0.1	< 0.1						
Mineral Oil ^{MU}	mg/kg	< 10	< 10						
Total PAH ^{MU}	mg/kg	< 1.7	11.9						
pH ^{MU}	pH Units	N/a	10.2						
Acid Neutralisation Capacity	mol/kg (+/-)	< 1	< 1						
Eluate Analysis			10:1			Cumulative 10:1	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)		
			mg/l			mg/kg			
Arsenic ^U			0.02			0.2	0.5	2	25
Barium ^U			< 0.02			< 0.2	20	100	300
Cadmium ^U			< 0.0005			< 0.005	0.04	1	5
Chromium ^U			< 0.005			< 0.05	0.5	10	70
Copper ^U			0.01			0.1	2	50	100
Mercury ^U			< 0.0005			< 0.005	0.01	0.2	2
Molybdenum ^U			0.002			0.02	0.5	10	30
Nickel ^U			< 0.007			< 0.07	0.4	10	40
Lead ^U			0.014			0.14	0.5	10	50
Antimony ^U			0.005			0.05	0.06	0.7	5
Selenium ^U			< 0.005			< 0.05	0.1	0.5	7
Zinc ^U			0.008			0.08	4	50	200
Chloride ^U			2.5			25	800	15000	25000
Fluoride ^U			< 0.5			< 5	10	150	500
Sulphate ^U			4.9			49	1000	20000	50000
TDS			39			390	4000	60000	100000
Phenol Index			< 0.01			< 0.1	1	-	-
DOC			17.2			172	500	800	1000
Leach Test Information									
Sample Mass (kg)			0.10						
Dry Matter (%)			89.4						
Moisture (%)			12						
Stage 1									
Volume Eluate L10 (litres)			0.89						

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion
 Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation
 M Denotes MCERTS accredited test
 U Denotes ISO17025 accredited test



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions

DETS Report No: 22-08637	
Soil Consultants Ltd	
Site Reference: 69 Cromwell Avenue, London N6 5HS	
Project / Job Ref: 10769/JM	
Order No: 10769/JM	
Reporting Date: 24/10/2022	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
616792	WS1	None Supplied	0.50	12.3	Brown sandy clay with stones and concrete
616793	WS1	None Supplied	1.80	12.1	Brown sandy clay
616794	WS1	None Supplied	4.50	15.6	Light brown sandy clay
616795	WS2	None Supplied	0.30	7.8	Brown gravelly sand with stones and concrete
616796	WS2	None Supplied	1.50	8.8	Brown sandy clay with stones and brick
616797	WS2	None Supplied	1.90	3.9	Light brown sandy clay with stones
616798	WS2	None Supplied	3.50	7.6	Light brown sandy clay
616799	WAC COMP	None Supplied	0.30 - 1.50	10.6	Brown sandy clay with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

& samples received in inappropriate containers for hydrocarbon analysis



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 22-08637

Soil Consultants Ltd

Site Reference: 69 Cromwell Avenue, London N6 5HS

Project / Job Ref: 10769/JM

Order No: 10769/JM

Reporting Date: 24/10/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Water Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 22-08637

Soil Consultants Ltd

Site Reference: 69 Cromwell Avenue, London N6 5HS

Project / Job Ref: 10769/JM

Order No: 10769/JM

Reporting Date: 24/10/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazine followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Parameter	Matrix Type	Suite Reference	Expanded Uncertainty Measurement	Unit
TOC	Soil	BS EN 12457	12.1	%
Loss on Ignition	Soil	BS EN 12457	20.4	%
BTEX	Soil	BS EN 12457	14.0	%
Sum of PCBs	Soil	BS EN 12457	21.1	%
Mineral Oil	Soil	BS EN 12457	9.0	%
Total PAH	Soil	BS EN 12457	13.9	%
pH	Soil	BS EN 12457	0.248	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18.0	%
Arsenic	Leachate	BS EN 12457	15.9	%
Barium	Leachate	BS EN 12457	14.4	%
Cadmium	Leachate	BS EN 12457	12.6	%
Chromium	Leachate	BS EN 12457	13.4	%
Copper	Leachate	BS EN 12457	13.1	%
Mercury	Leachate	BS EN 12457	16.2	%
Molybdenum	Leachate	BS EN 12457	13.6	%
Nickel	Leachate	BS EN 12457	16.0	%
Lead	Leachate	BS EN 12457	12.4	%
Antimony	Leachate	BS EN 12457	14.6	%
Selenium	Leachate	BS EN 12457	16.5	%
Zinc	Leachate	BS EN 12457	14.5	%
Chloride	Leachate	BS EN 12457	17.0	%
Fluoride	Leachate	BS EN 12457	12.0	%
Sulphate	Leachate	BS EN 12457	25.1	%
TDS	Leachate	BS EN 12457	10.0	%
Phenol Index	Leachate	BS EN 12457	12.9	%
DOC	Leachate	BS EN 12457	10.0	%
Clay Content	Soil	BS 3882: 2015	15.0	%
Silt Content	Soil	BS 3882: 2015	14.0	%
Sand Content	Soil	BS 3882: 2015	13.0	%
Loss on Ignition	Soil	BS 3882: 2015	12.4	%
pH	Soil	BS 3882: 2015	0.248	Units
Carbonate	Soil	BS 3882: 2015	12.0	%
Total Nitrogen	Soil	BS 3882: 2015	12.0	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24.0	%
Potassium (Extractable)	Soil	BS 3882: 2015	20.0	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26.0	%
Zinc	Soil	BS 3882: 2015	14.9	%
Copper	Soil	BS 3882: 2015	16.0	%
Nickel	Soil	BS 3882: 2015	17.7	%
Available Sodium	Soil	BS 3882: 2015	23.0	%
Available Calcium	Soil	BS 3882: 2015	23.0	%
Electrical Conductivity	Soil	BS 3882: 2015	10.0	%

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
Site photographs		

Photo No 1	
Description: View of neighbouring residential properties to the north	
Direction: Looking E Date: 13/10/22	

Photo No 2	
Description: View through vegetation at the rear of the garden to block of flats	
Direction: Looking E Date: 13/10/22	

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
Site photographs		

Photo No 3	
Description: View of neighbouring residential property to the south	
Direction: Looking ESE Date: 13/10/22	

Photo No 4	
Description: View along Cromwell Avenue	
Direction: Looking S Date: 13/10/22	

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
Site photographs		

Photo No 5

Description:

**View of the
front of 69
Cromwell
Avenue**

**Direction:
Looking E**

**Date:
13/10/22**



Photo No 6

Description:

**View from the
rear of the
property**

**Direction:
Looking W**

**Date:
13/10/22**



Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
Site photographs		

Photo No 7

Description:

Interior of the dwelling with an undercroft beneath part of it

**Direction:
Looking E**

**Date:
13/10/22**



Photo No 8

Description:

View of the outbuilding / shed at the rear of the garden

**Direction:
Looking E**

**Date:
13/10/22**



Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
Site photographs		

Photo No 9	
Description: View of mature cypress tree in the rear garden along the southern boundary	
Direction: Looking SW Date: 13/10/22	

Photo No 10	
Description: View of yew tree located towards the rear of the garden	
Direction: Looking E Date: 13/10/22	

Site & Location	69 Cromwell Avenue London N6 5HS	Report No: 10769/JM
Site photographs		

Photo No 11	
Description: View of cypress in neighbouring property and unknown red berry trees	
Direction: Looking NE Date: 13/10/22	

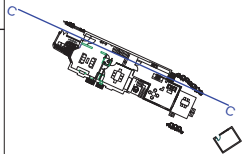
Photo No 12	
Description: View of trees located along Cromwell Avenue	
Direction: Looking N Date: 13/10/22	

Information contained within this drawing is the sole copyright of A12 Architecture Ltd. and is not to be reproduced without express permission. No implied licence exists. This drawing not to be used for land transfer or valuation purposes. Do not scale from this drawing. All dimensions & levels are to be checked on site by the contractor, issued for purposes indicated only. Drawing errors and omissions to be reported to the architect.

Notes

- ☐ Existing
☐ Proposed
☐ Removed

Sections



Edencoast Ltd,
324 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7952 0252
www.edencoast.com

Client

Project
69 Cromwell Avenue, London, N6 5HS

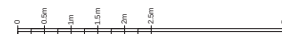
Drawing Title

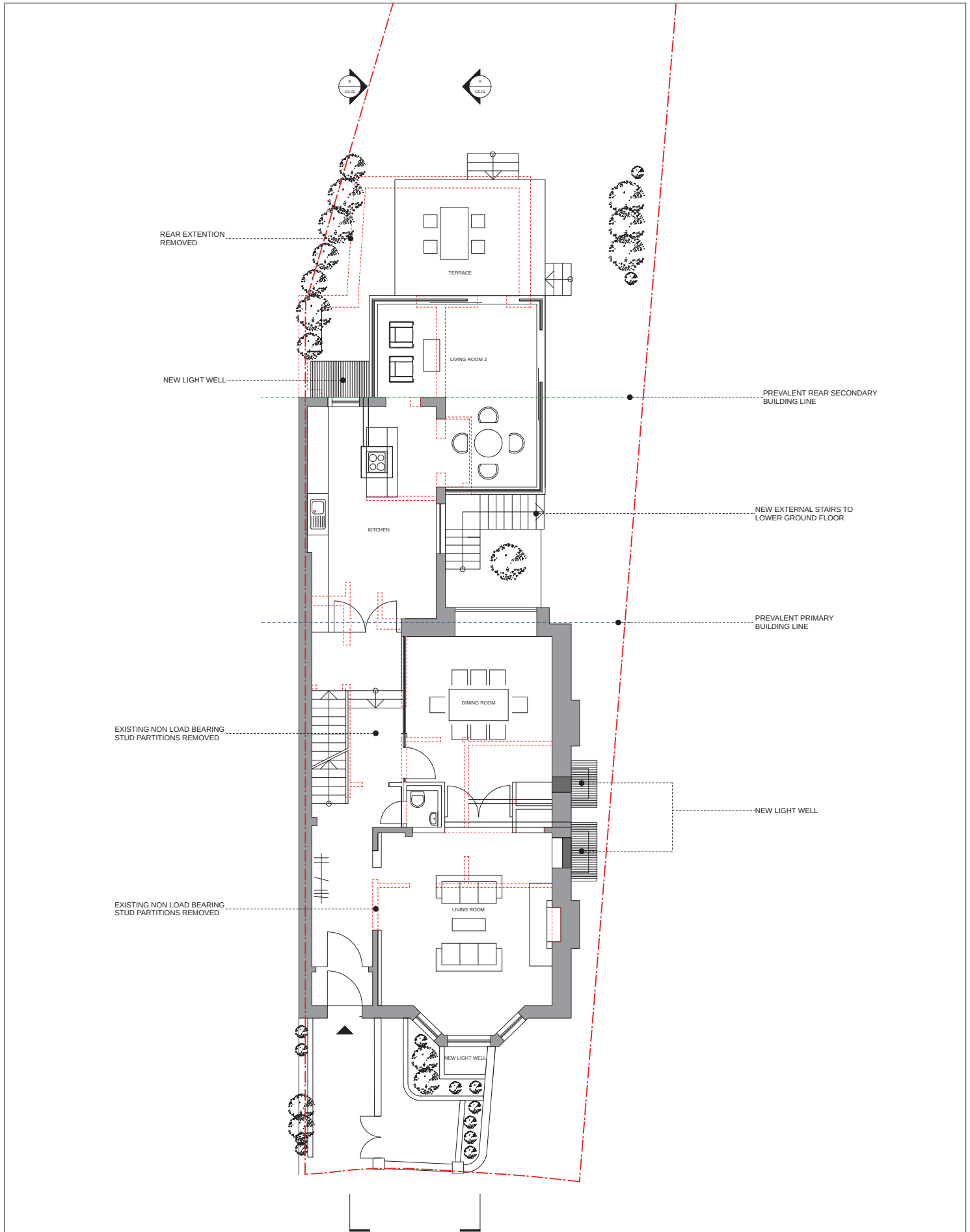
Proposed Section B

Drawn	Checked
Information	PK
1:50@A1, 1:100@A3	JUNE 2022

Drawn No.	Revision
326 GS_02	

B
GS.02
Proposed Section C
1:50@A1, 1:100@A3





Proposed Ground Floor Plan
1:50@A1, 1:100@A3



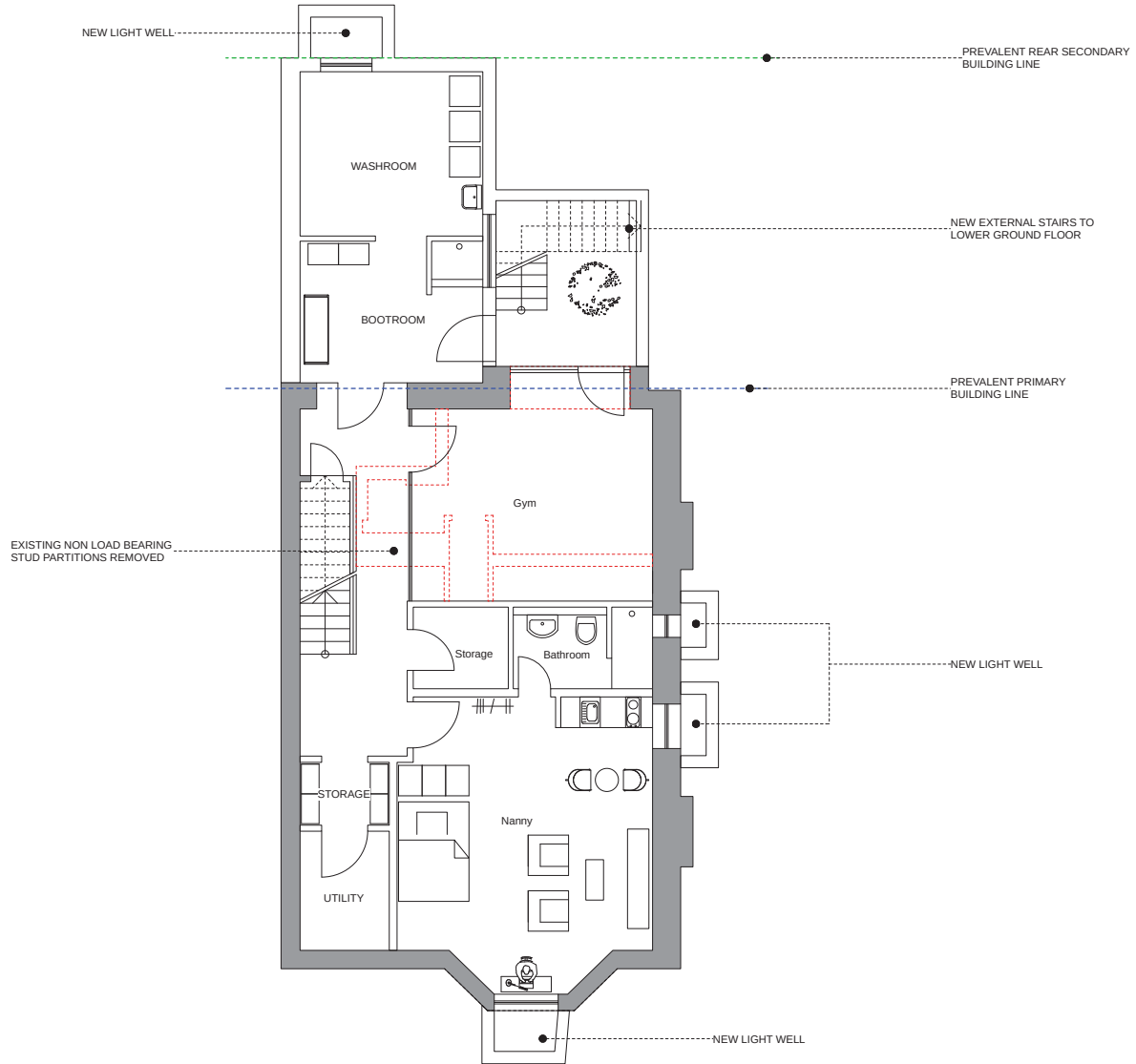
Revisions	
	Existing
	Proposed
	Removed

Revisions	
	Existing
	Proposed
	Removed



Client	
Project	69 Cromwell Avenue, London, N6 5HS
Drawing Title	
Proposed Ground Floor Plan	

 Twenty First Architecture Ltd. 314 Goswell Road, London, EC1V 7AF Tel: +44(0)20 7962 0252 www.21starchitecture.com		
Status	Drawn RK	Checked PK
Scale 1:50@A1, 1:100@A3	Date April 2022	Revision
Dwg. No. 326_GA_00		



Proposed Lower Ground Floor Plan
1:50@A1, 1:100@A3



Revisions

- Existing
- Proposed
- Removed



Client
69 Cromwell Avenue, London, N6 5HS

Project
Proposed Lower Ground Floor Plan

Twenty First Architecture Ltd.
314 Goswell Road,
London,
EC1V 7AF
Tel: +44(0)20 7962 0252
www.21starchitecture.com

Drawn	Checked
PK	PK
1:50@A1, 1:100@A3	FEB 2022
326_GA_-01	Revision

Information contained within this drawing is the sole copyright of 21st Architecture Ltd. and is not to be reproduced without express permission. No implied licence exists. This drawing may not be used for any other purpose. Do not scale from this drawing. All dimensions & levels are to be checked on site by the contractor. Issues for purposes indicated only. Drawing errors and omissions to be reported to the architect.

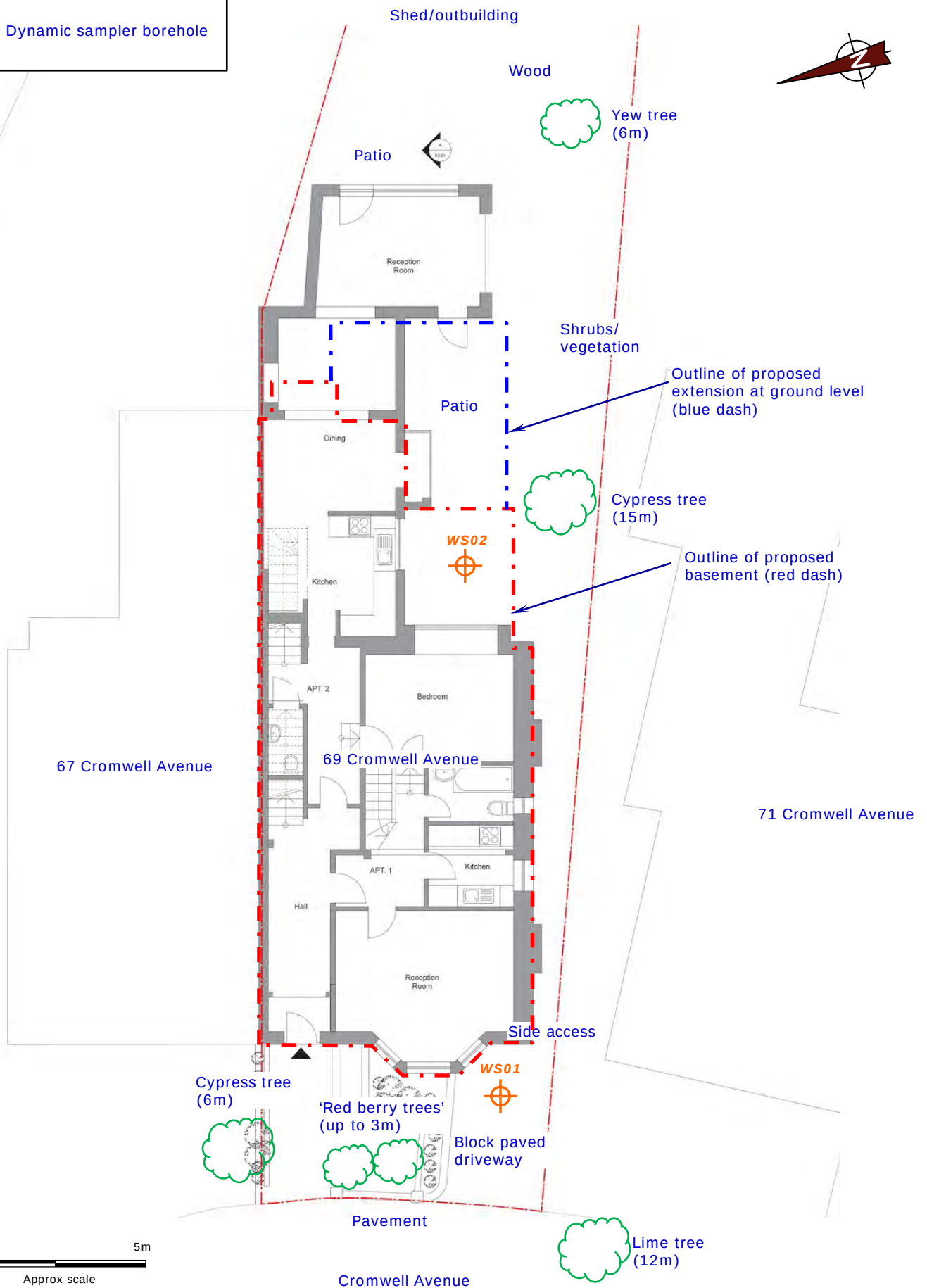
Site Plan

KEY

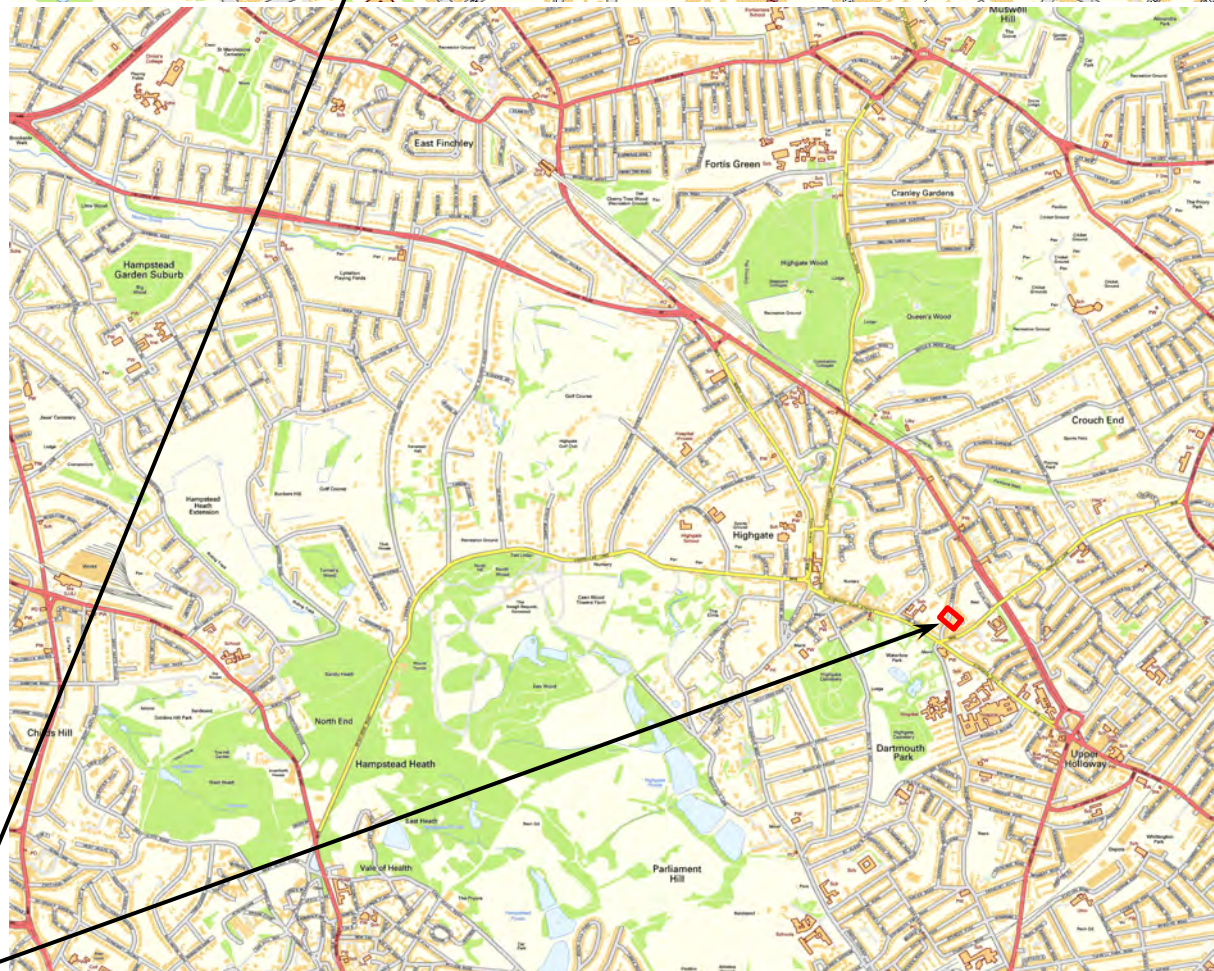
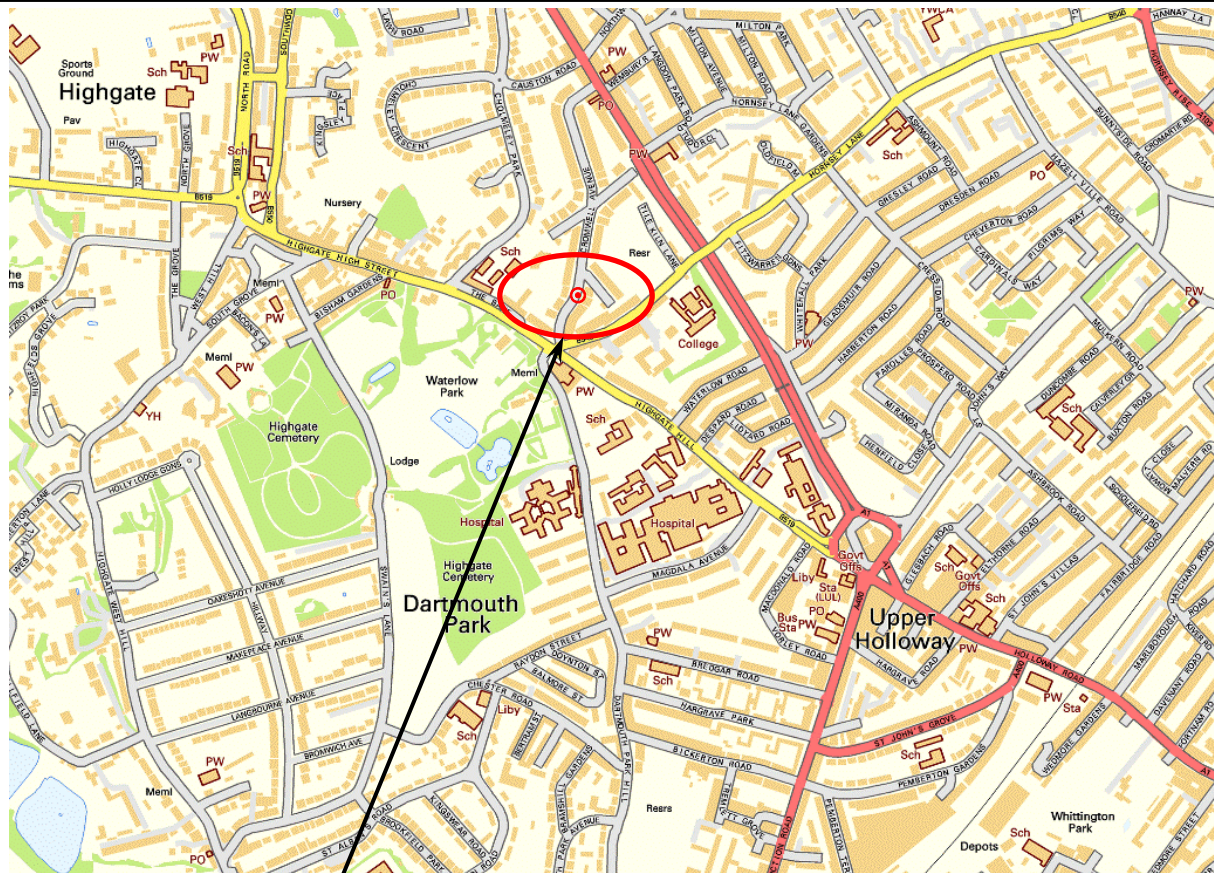


Dynamic sampler borehole

(Fieldwork: October 2022)



Location Plan



SITE LOCATION

(Contains Ordnance Survey data © Crown copyright and database right 2022)

APPENDIX B

-  GroundSure historical maps (Ref SCL-9094614)
-  GroundSure Geo+EnviroInsight Report (Ref SCL-9094615)

Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

Map date: 1864

Scale: 1:2,500

Printed at: 1:2,500



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

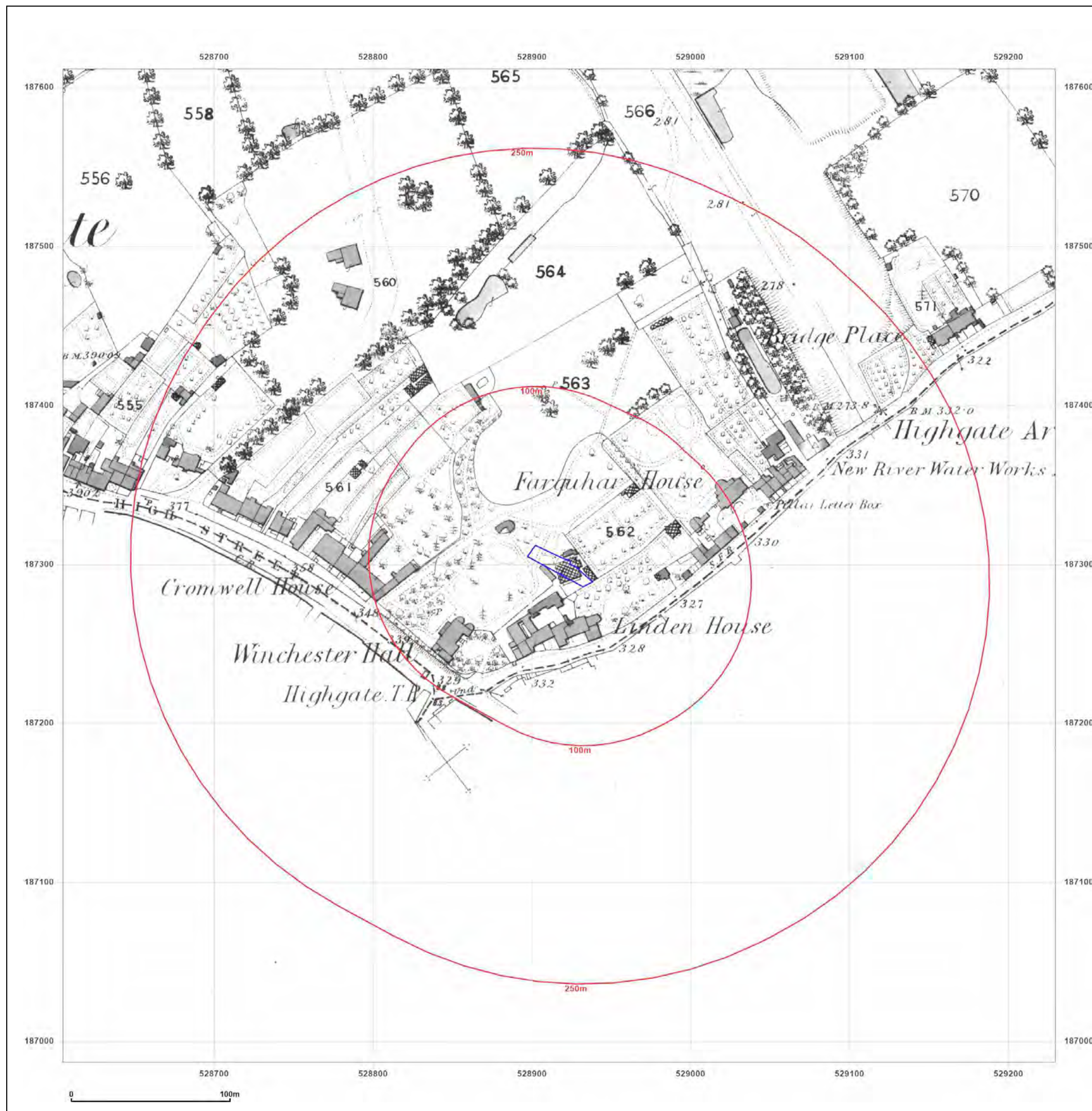


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

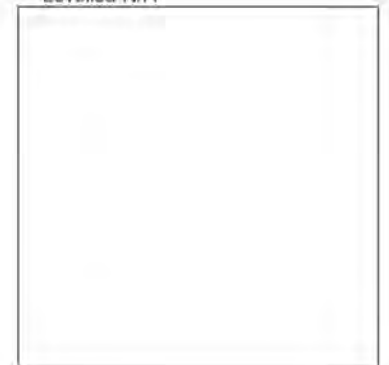
Map date: 1870

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1869
Revised N/A
Edition 1870
Copyright N/A
Levelled N/A

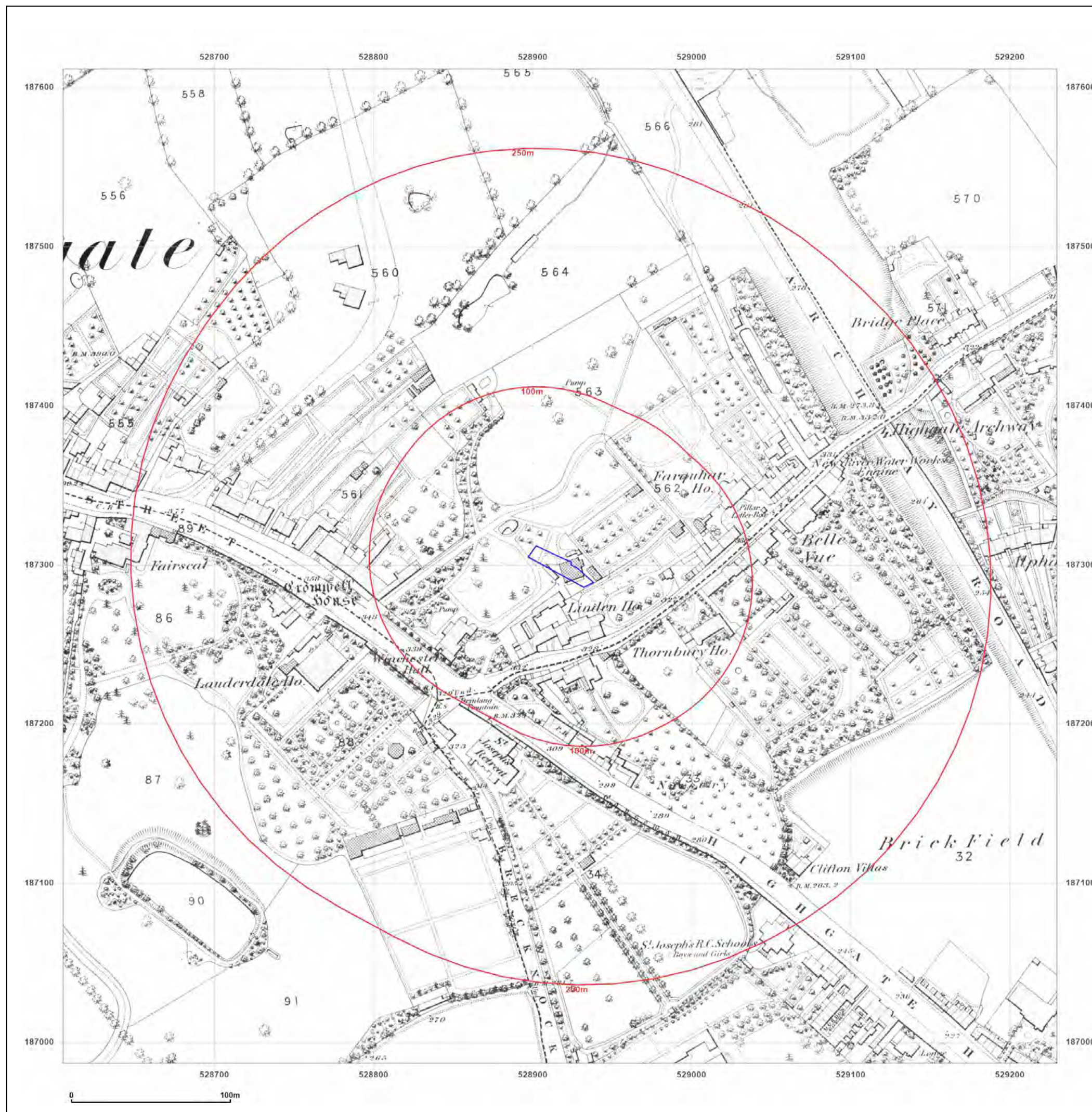


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

Map date: 1873

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1869
Revised 1869
Edition 1873
Copyright N/A
Levelled N/A

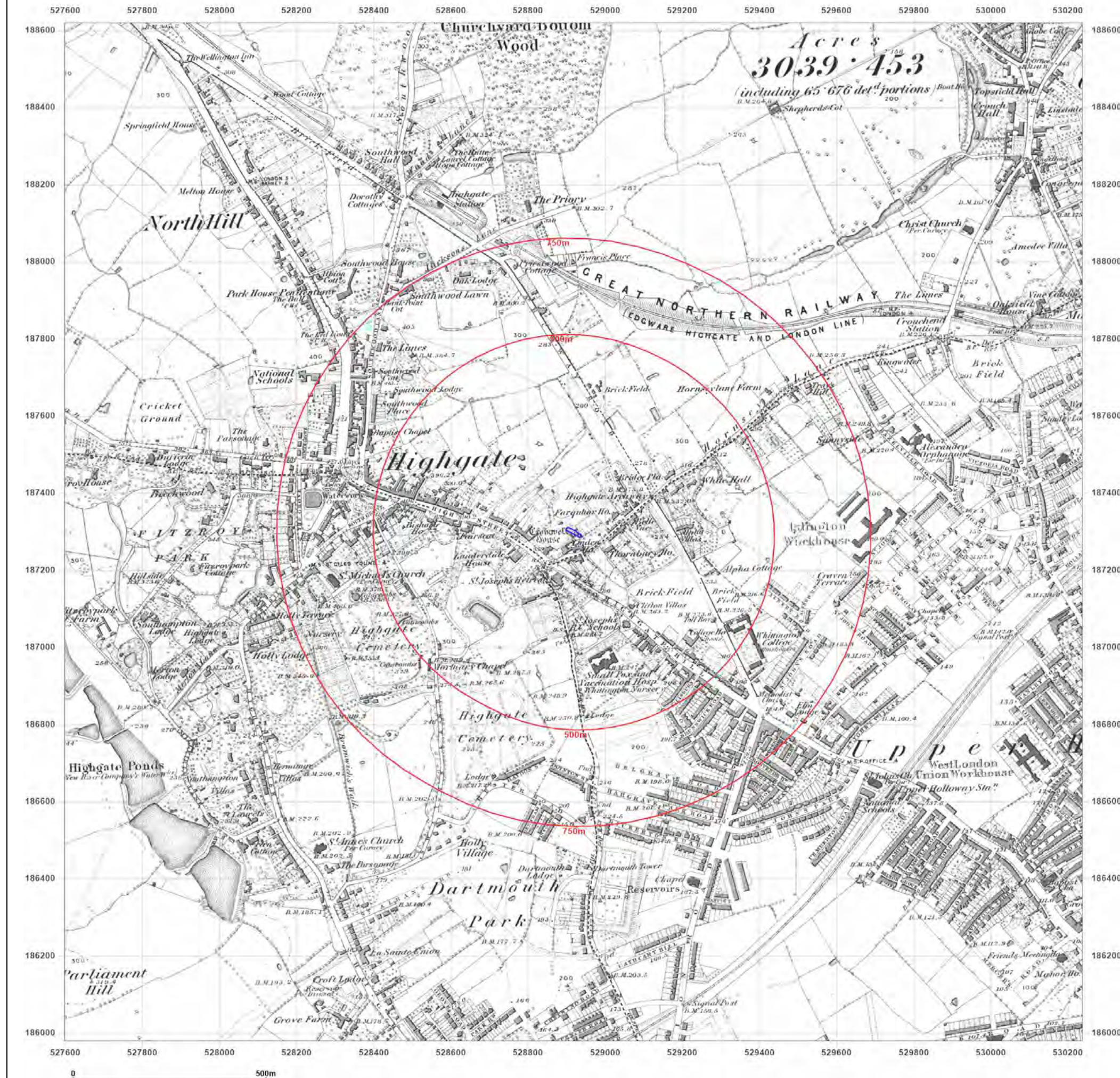


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

Map date: 1879

Scale: 1:10,560

Printed at: 1:10,560



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

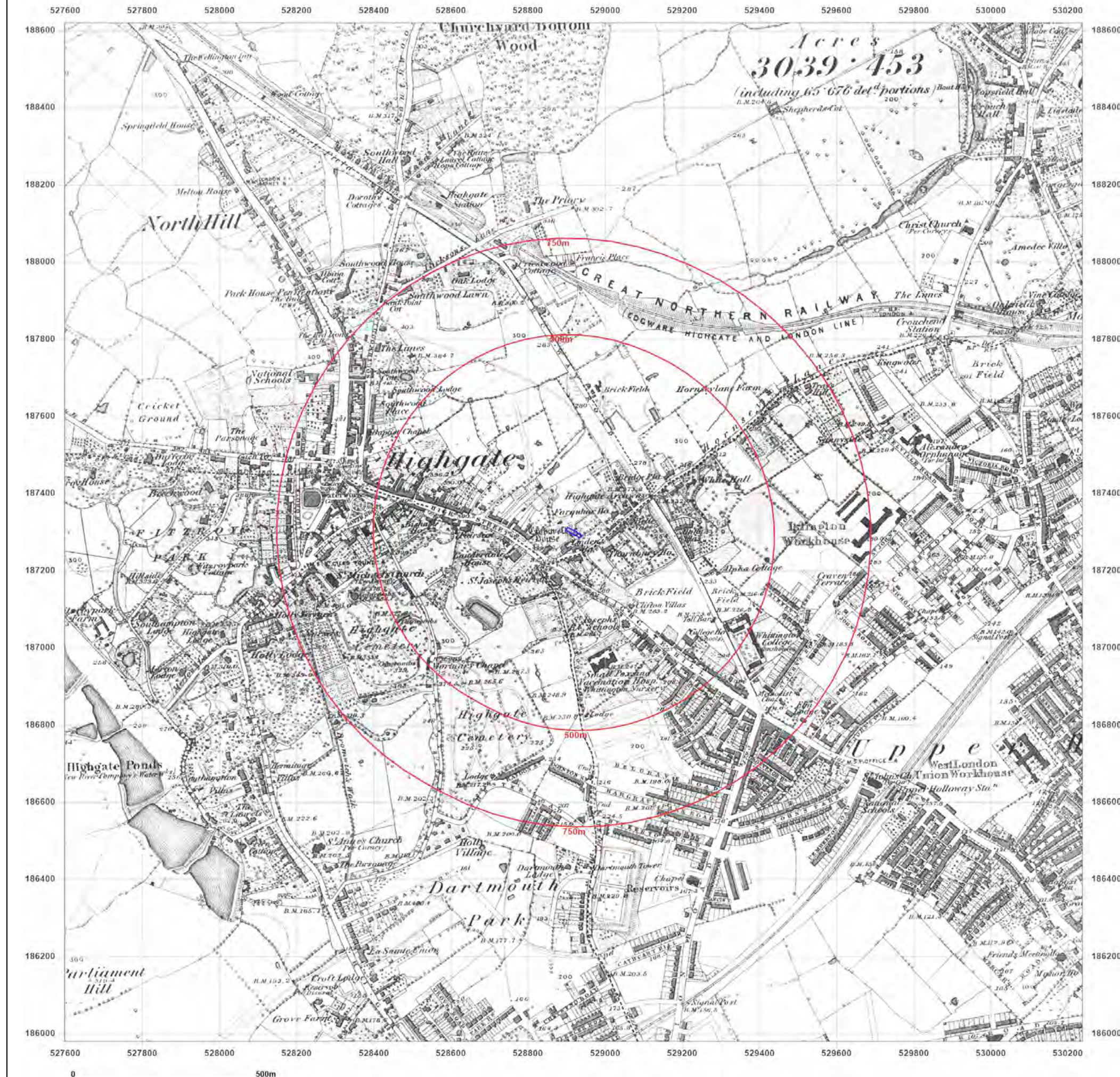


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

Map date: 1894

Scale: 1:10,560

Printed at: 1:10,560



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

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

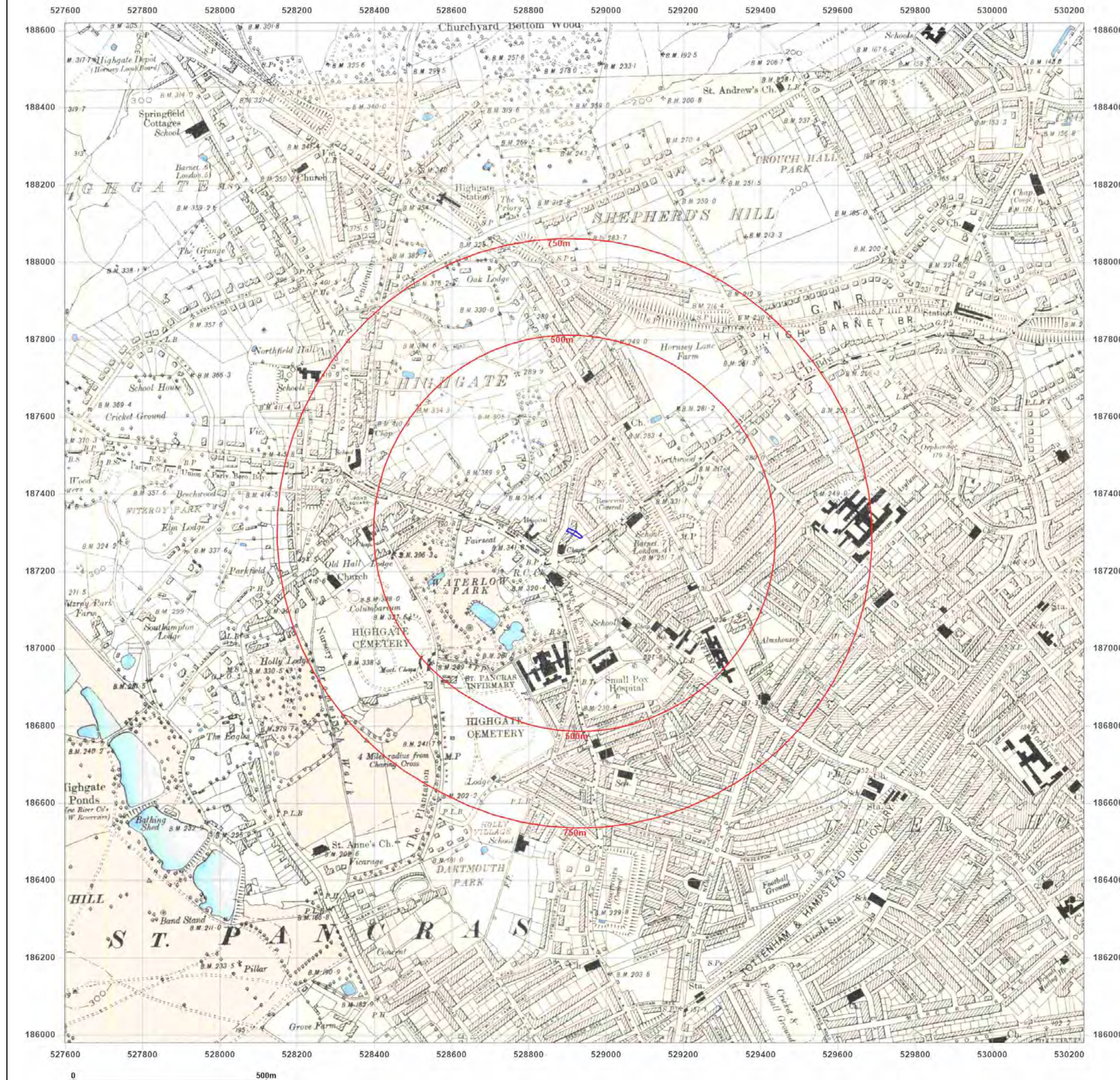


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: 1056 Scale Town Plan

Map date: 1896

Scale: 1:1,056

Printed at: 1:1,056



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

Surveyed 1895
Revised N/A
Edition 1896
Copyright N/A
Levelled N/A

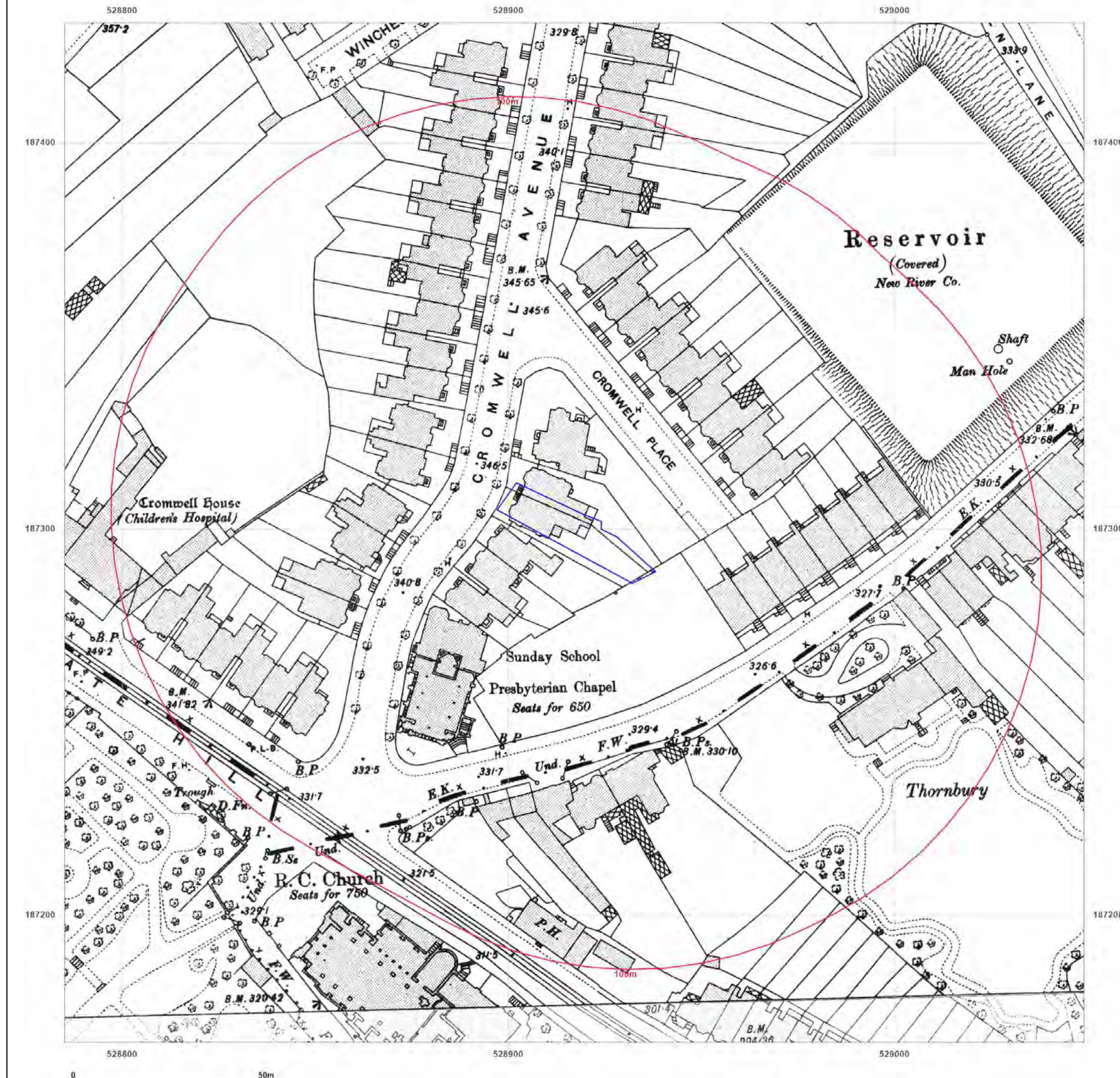


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

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

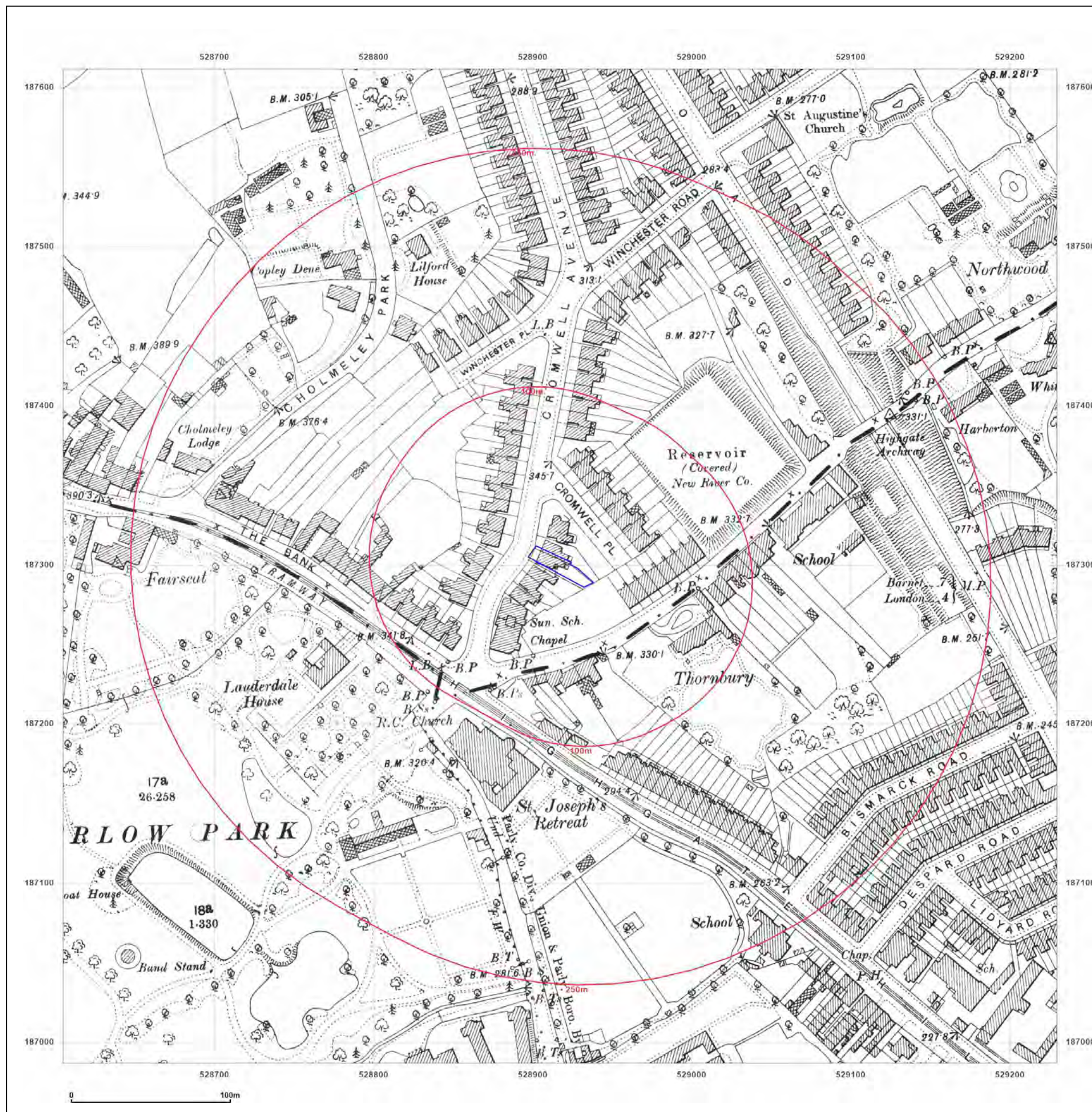


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

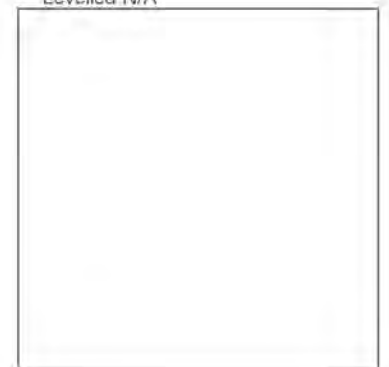
Map date: 1914

Scale: 1:2,500

Printed at: 1:2,500



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

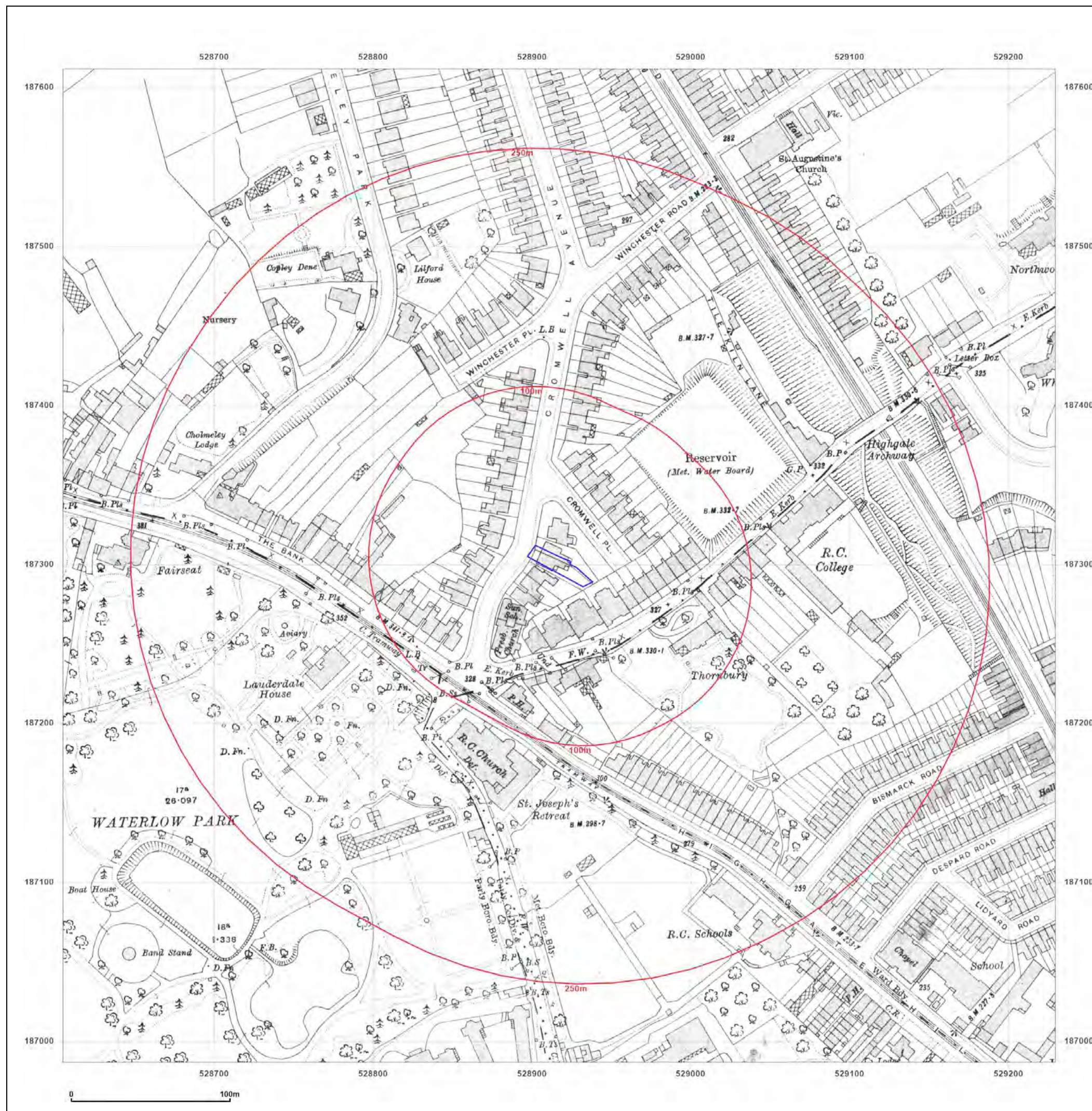


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

Map date: 1920

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1869
Revised 1919
Edition 1920
Copyright N/A
Levelled 1913

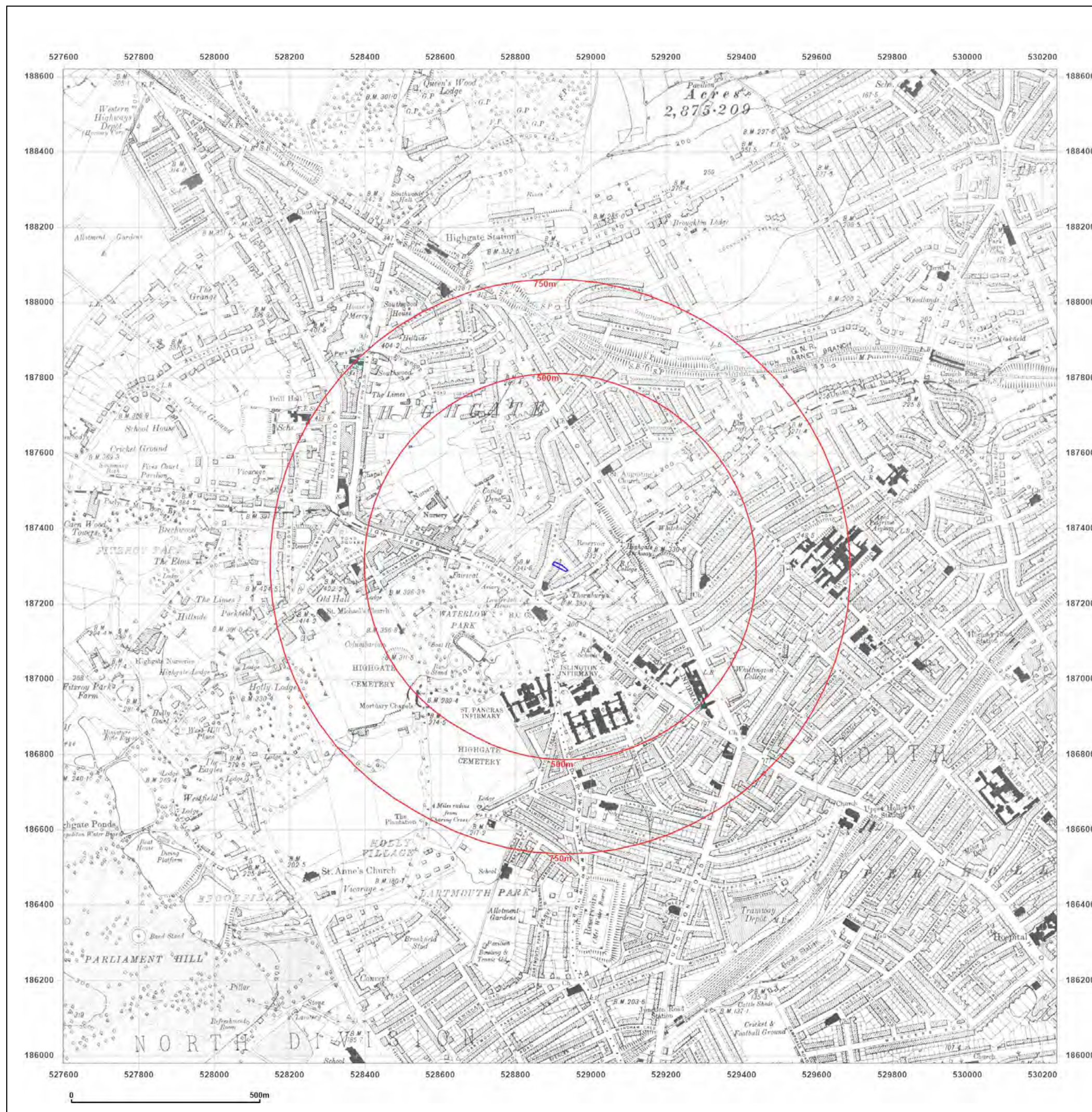


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

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



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1869
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

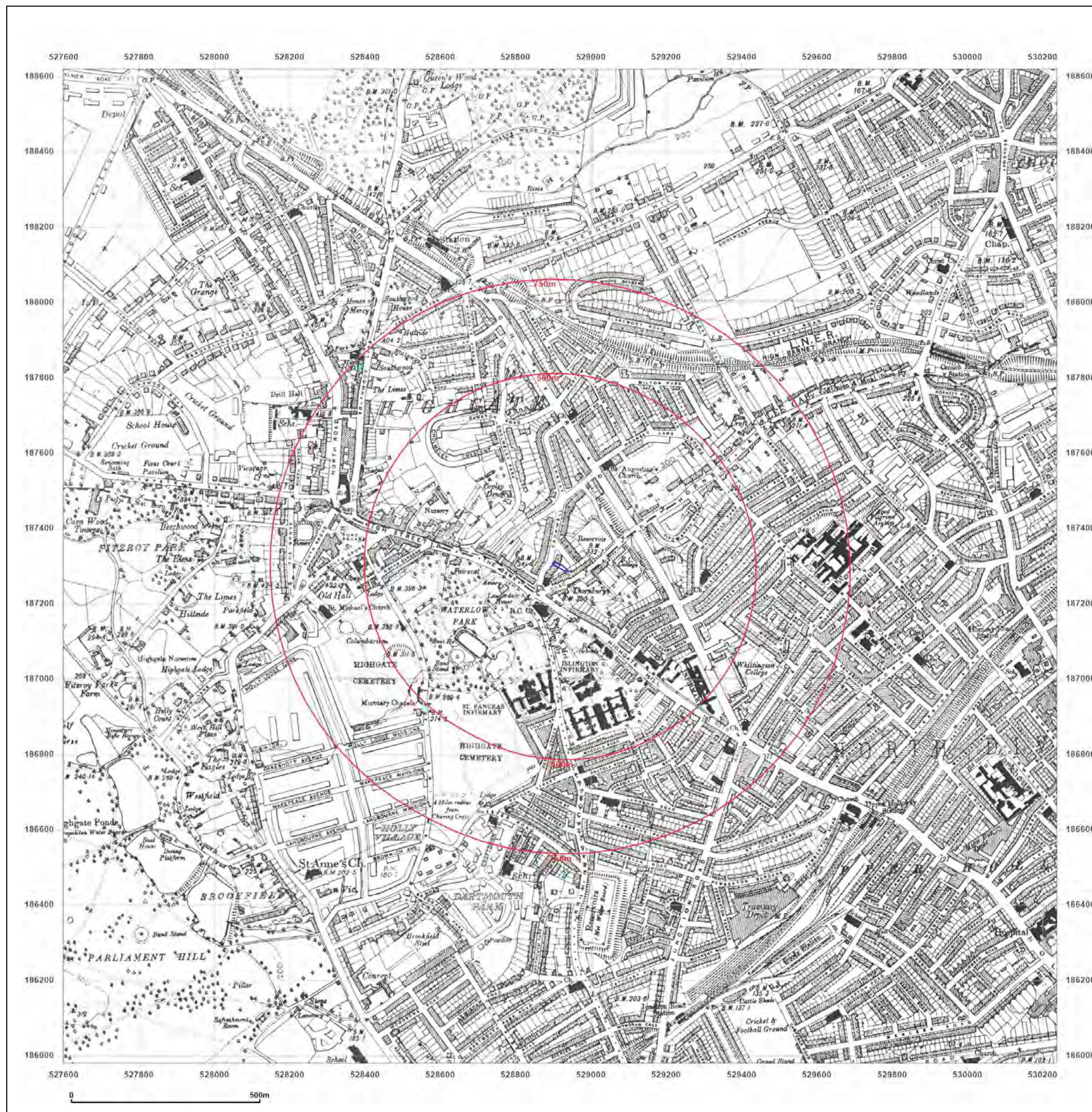


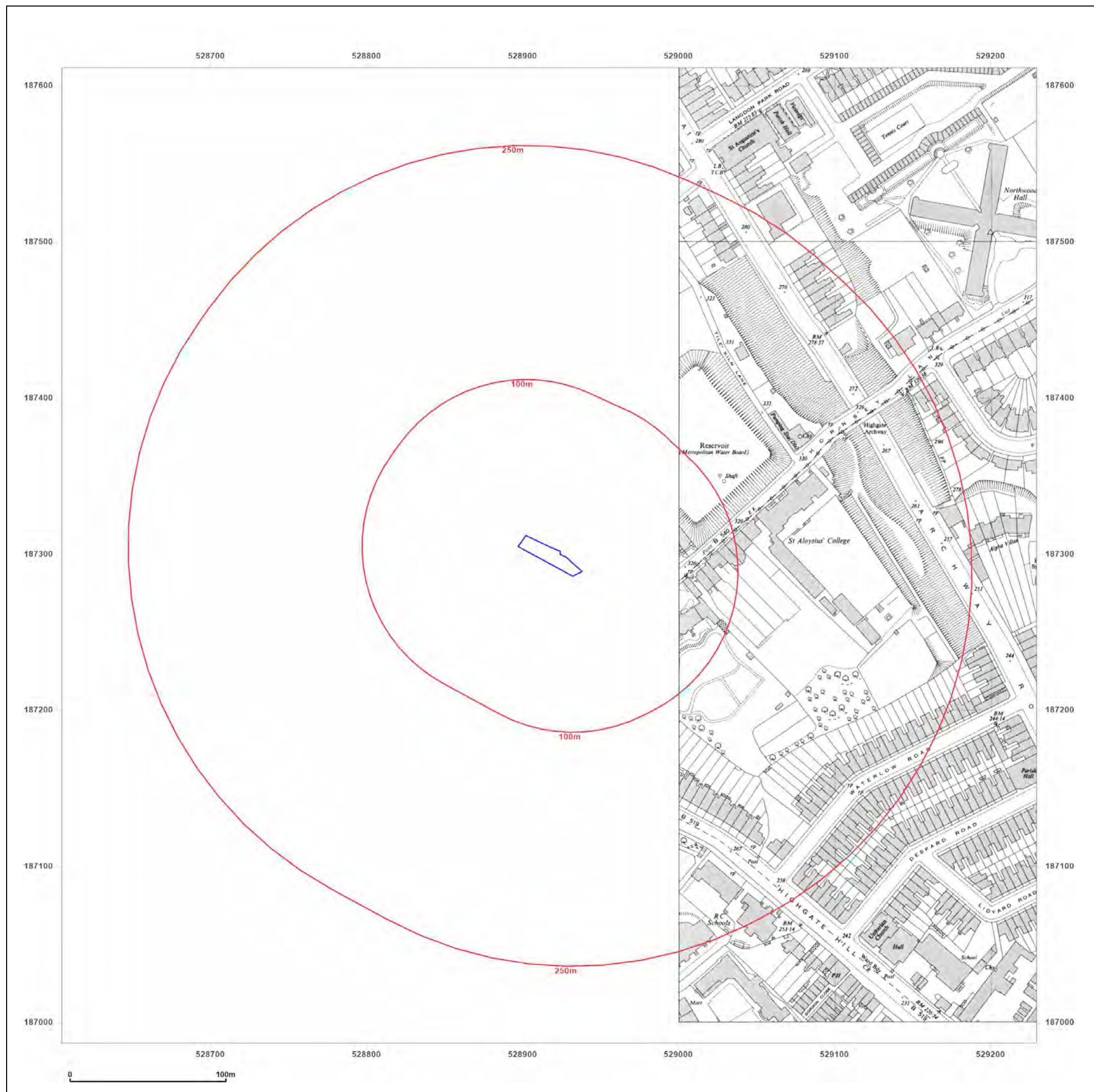
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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





Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

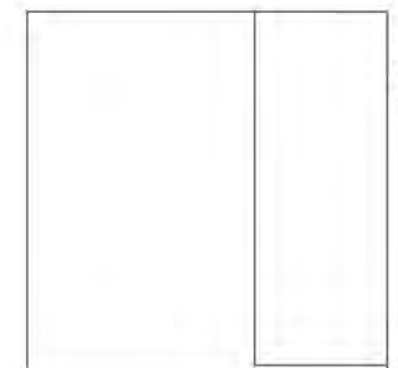
Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1951

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1934



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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

Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: Provisional

Map date: 1951-1952

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed N/A
Revised 1951
Edition N/A
Copyright 1952
Levelled N/A

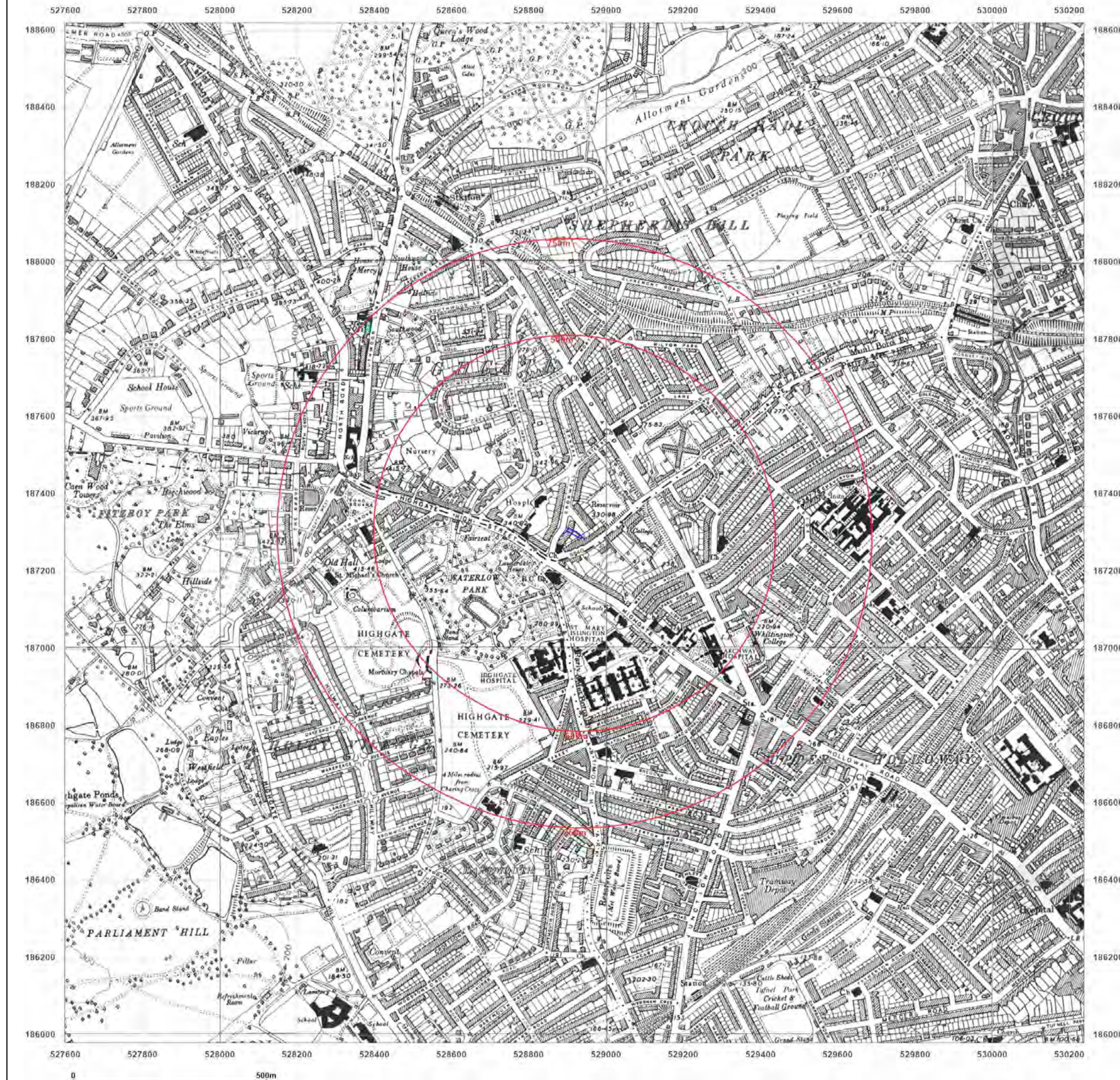


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1951-1952

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 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1934

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

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1934

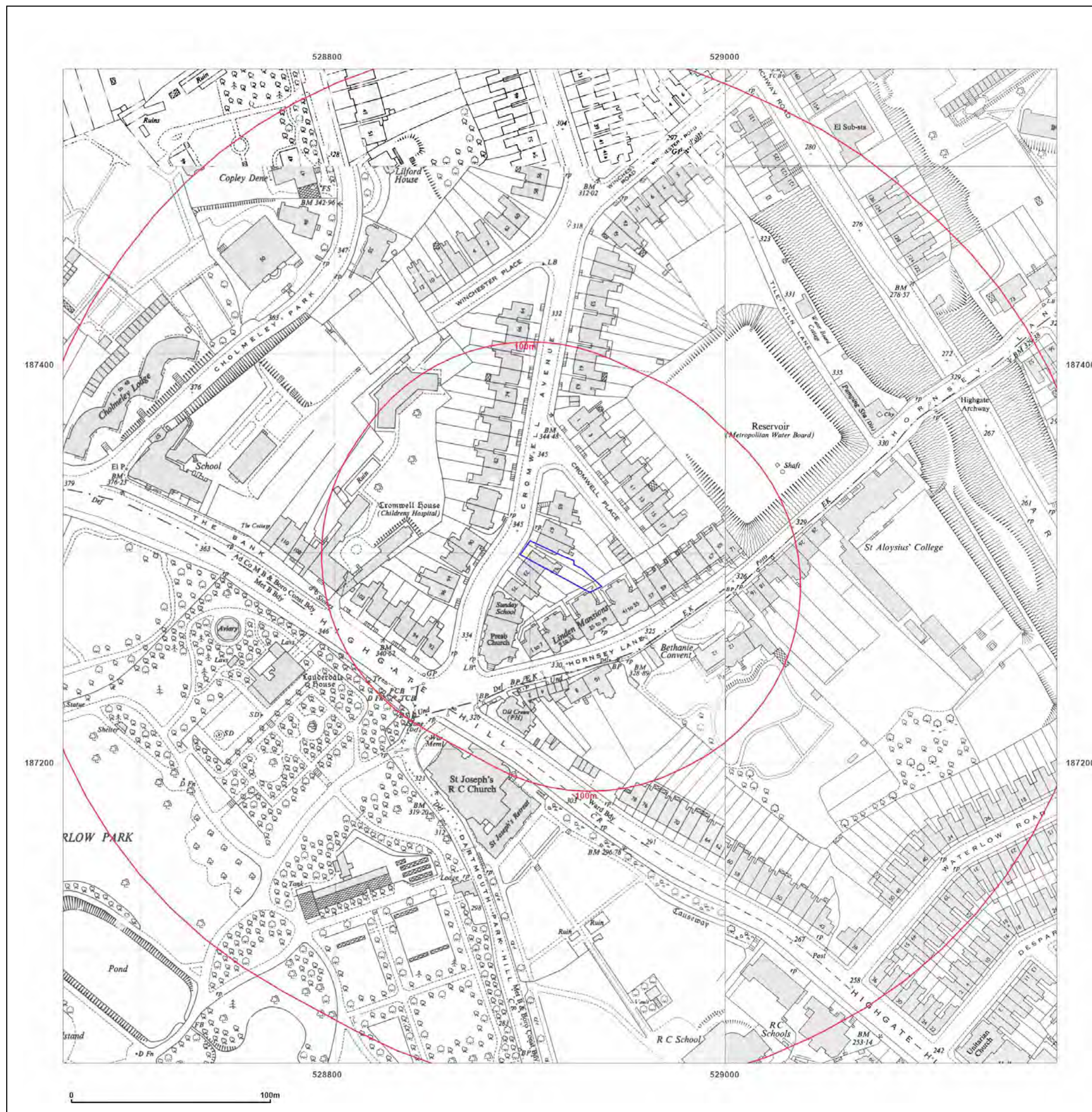


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1951-1952

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1933

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled 1934

Surveyed 1952
Revised 1952
Edition N/A
Copyright N/A
Levelled N/A

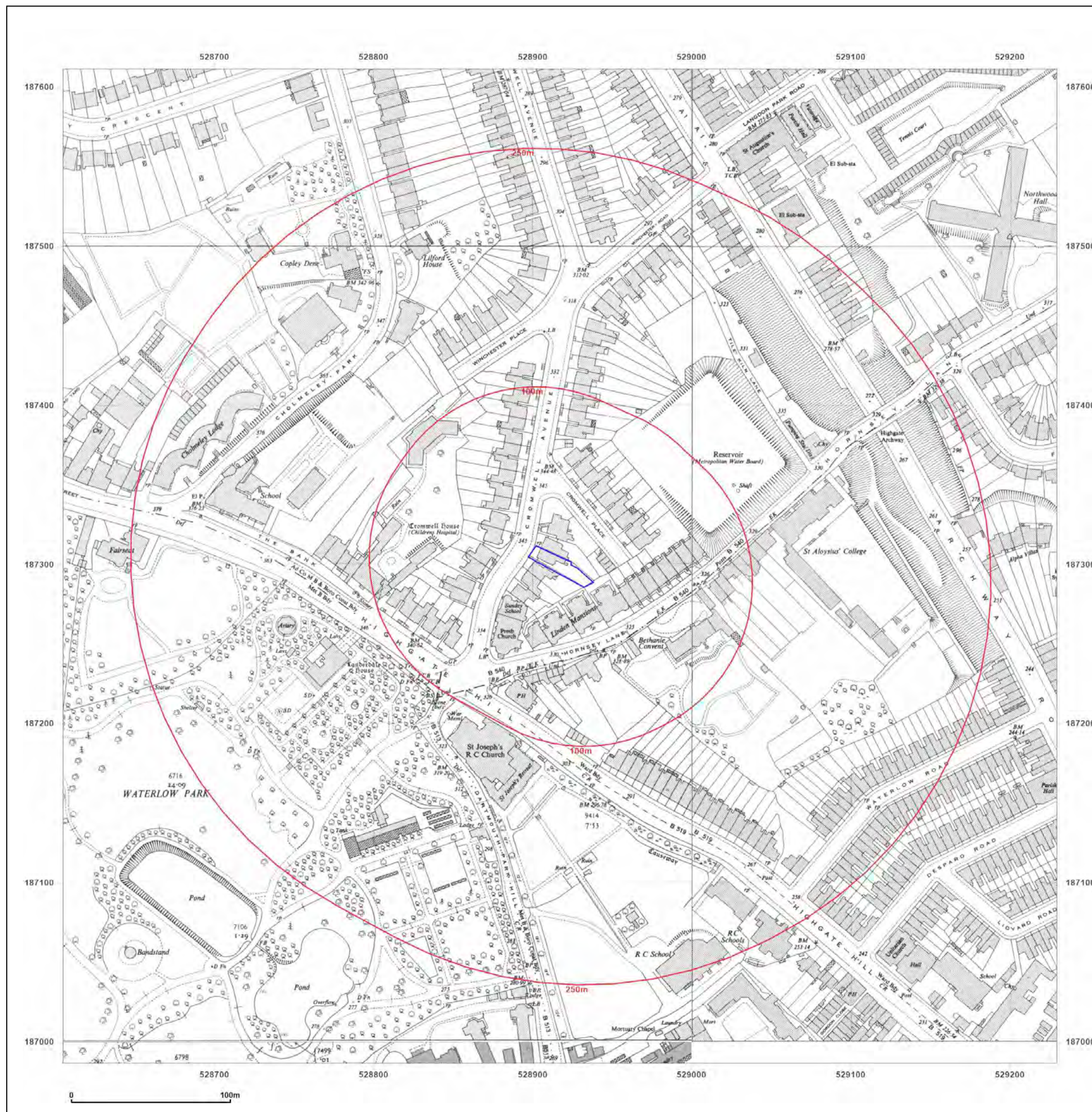


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

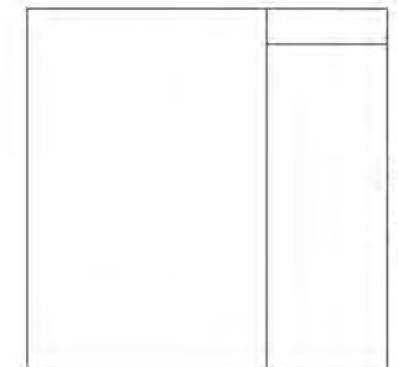
Map date: 1952

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

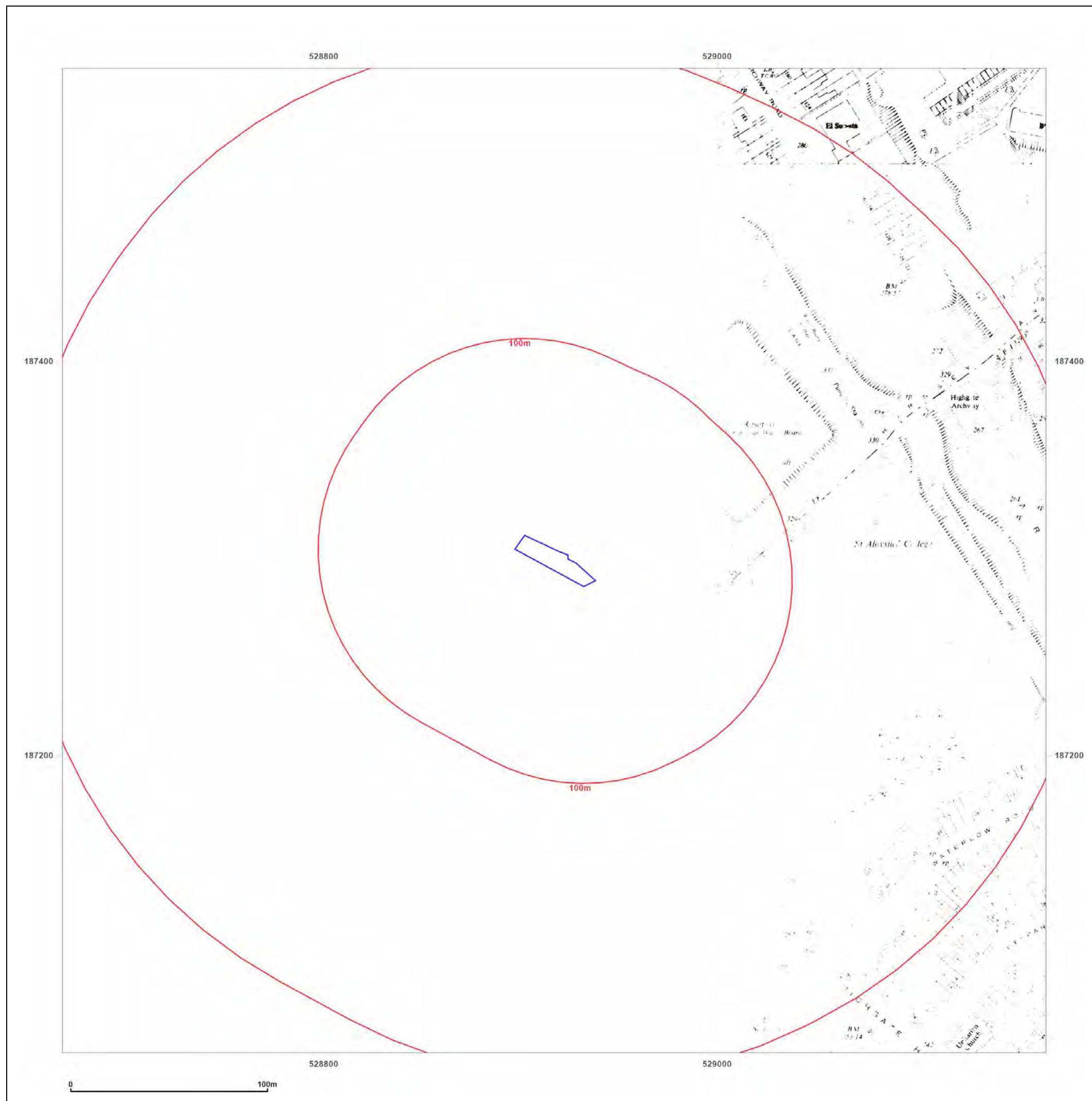


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: Provisional

Map date: 1958-1962

Scale: 1:10,560

Printed at: 1:10,560



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

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

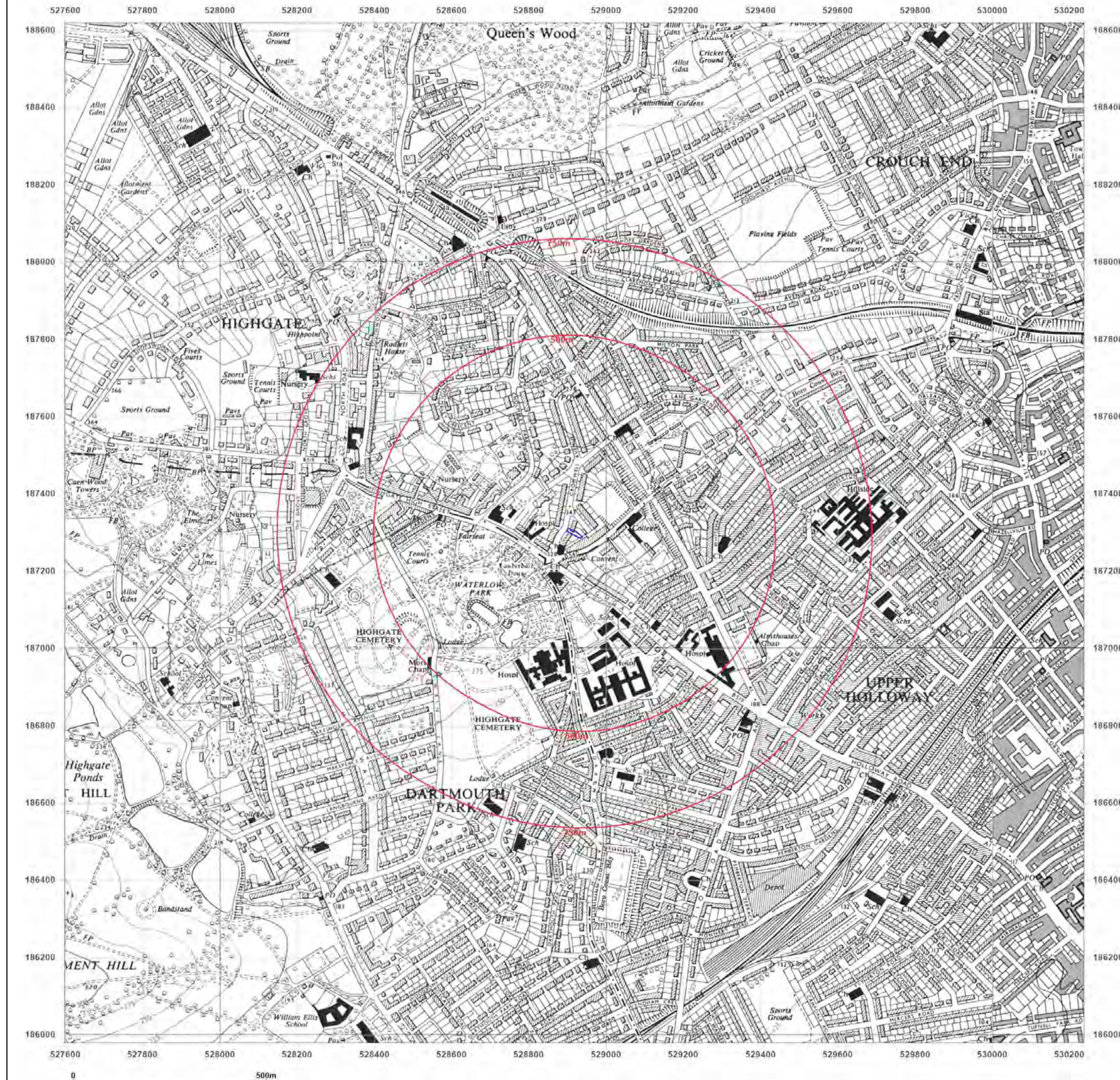


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1962-1967

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1951
Revised 1961
Edition N/A
Copyright 1962
Levelled 1954

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1954

Surveyed 1951
Revised 1966
Edition N/A
Copyright 1967
Levelled 1954

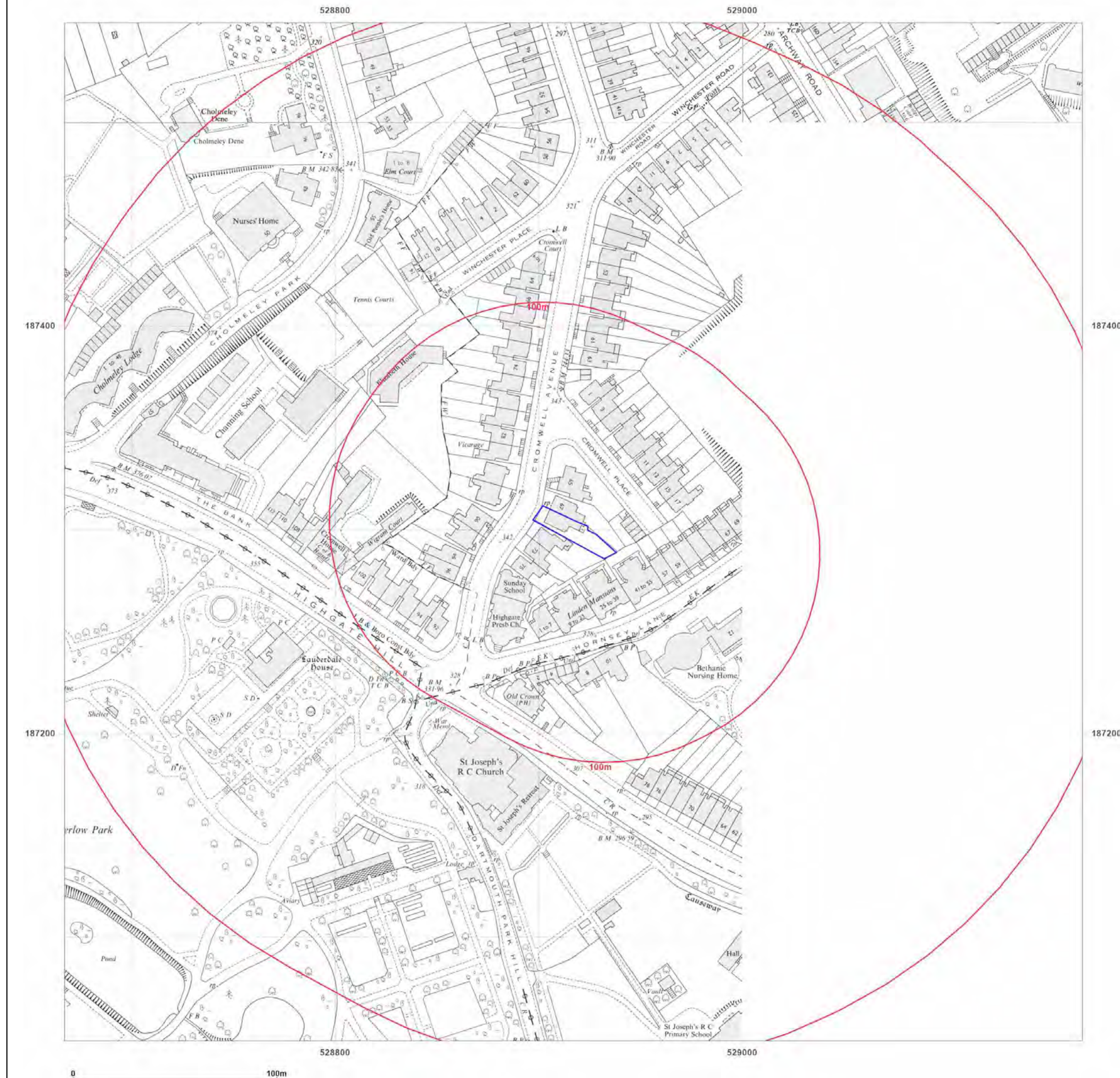


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1970

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1954

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1954

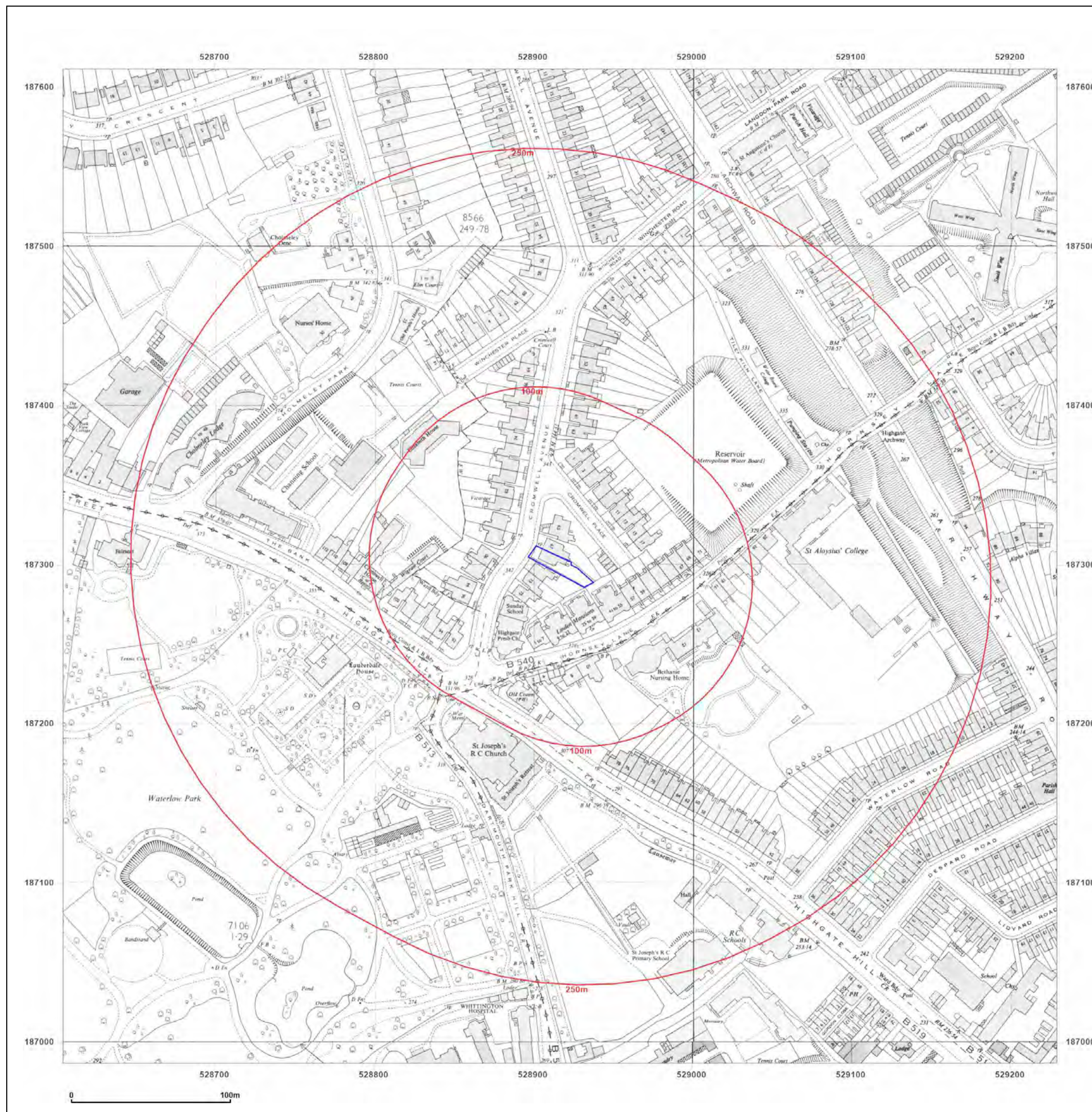


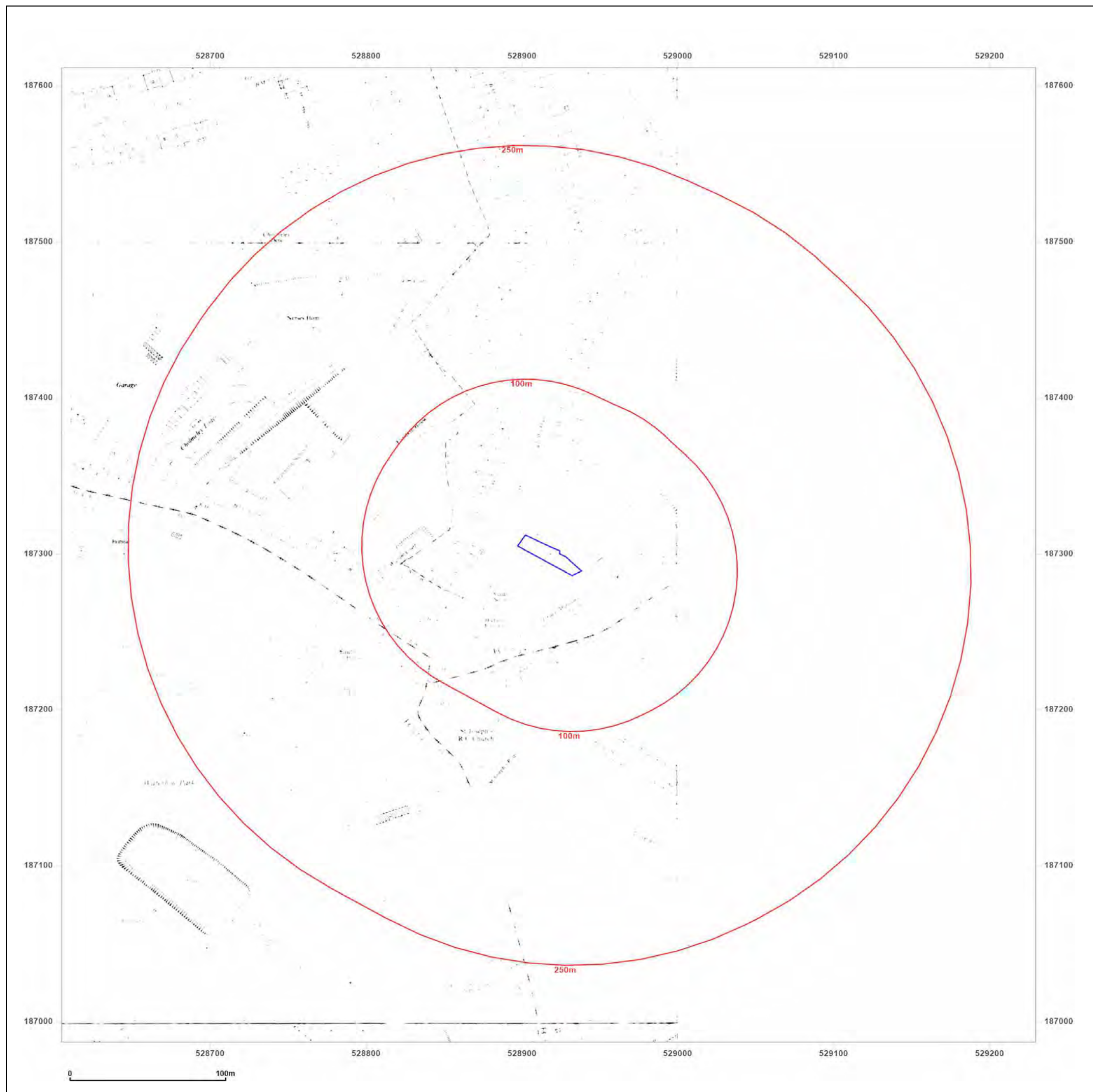
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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





Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

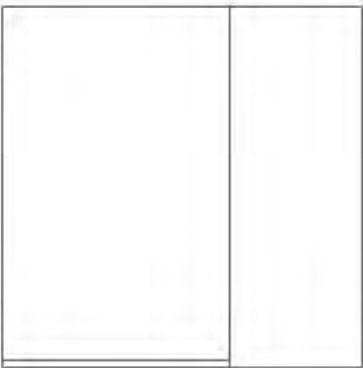
Map date: 1970

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



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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

Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1972-1976

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

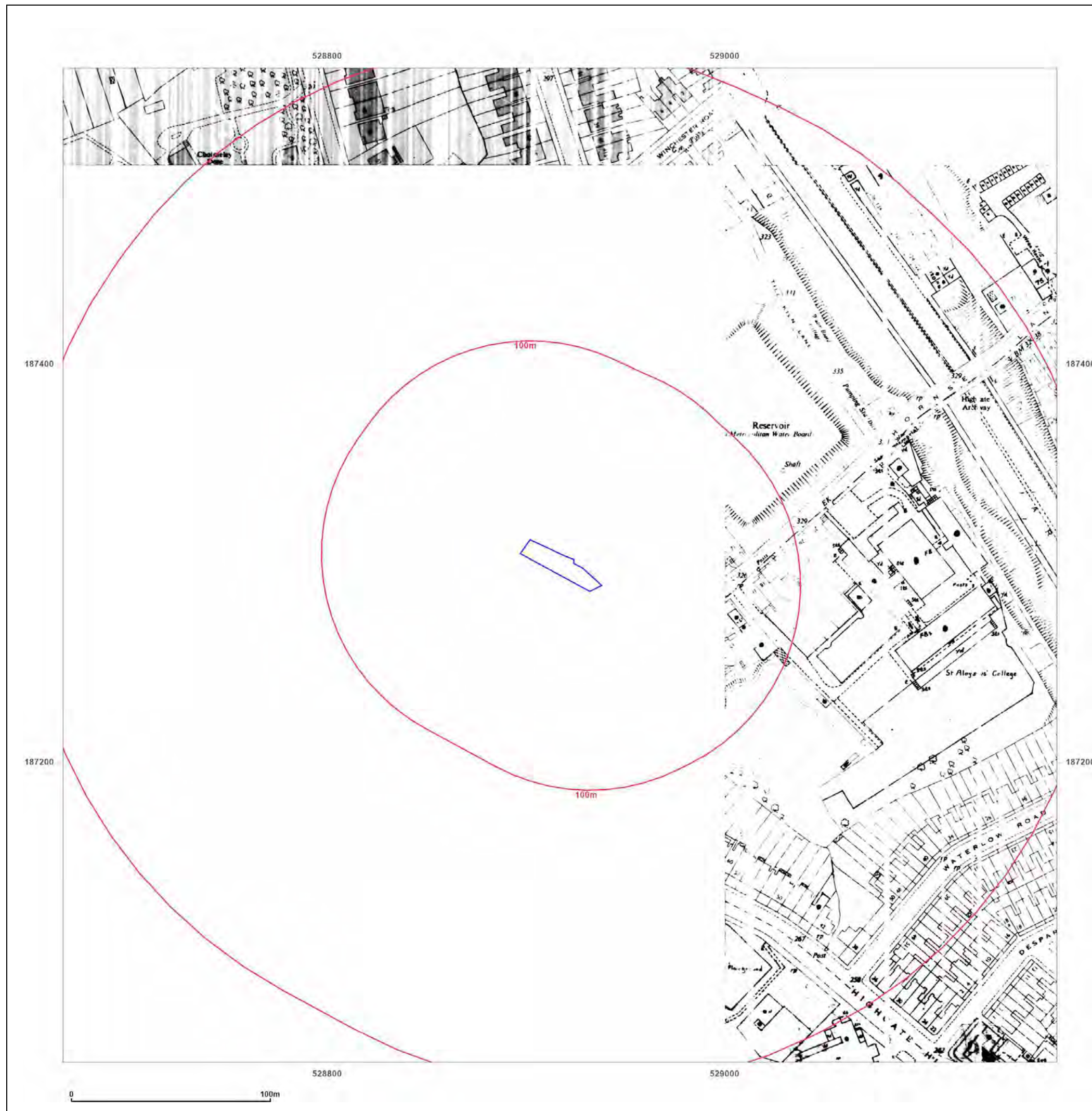


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1973-1978

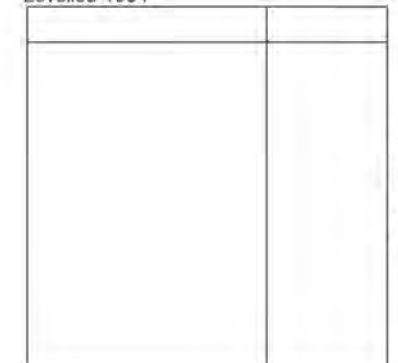
Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1951
Revised 1973
Edition N/A
Copyright 1973
Levelled 1954

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



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



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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

Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1974-1975

Scale: 1:10,000

Printed at: 1:10,000



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

Surveyed 1974
Revised 1975
Edition N/A
Copyright N/A
Levelled N/A

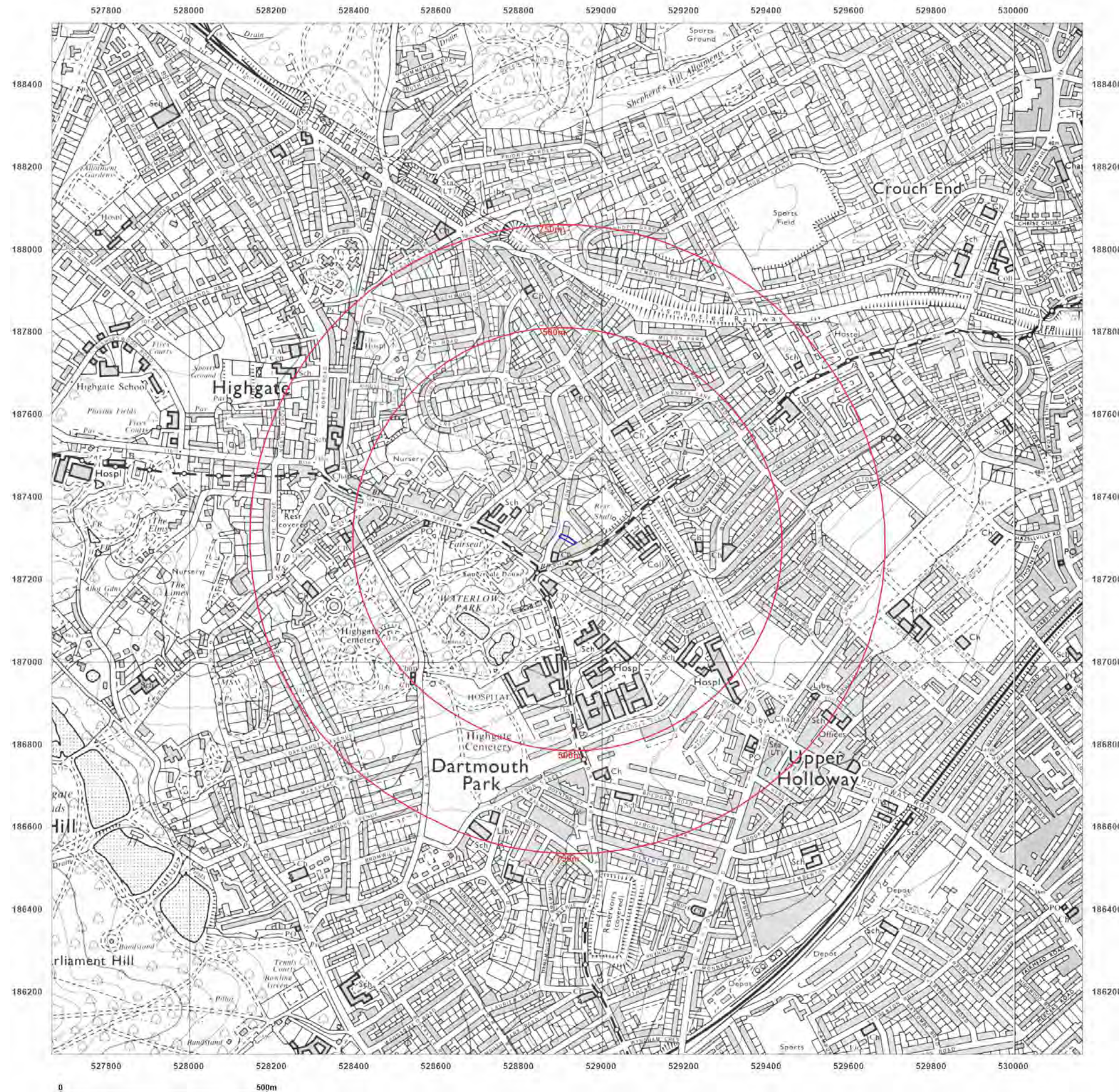


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

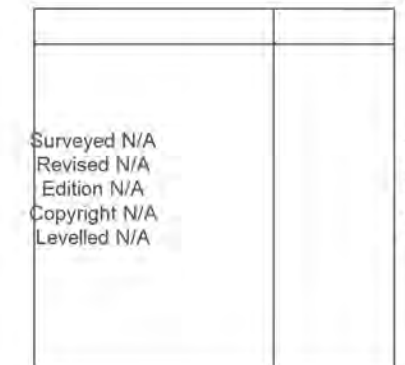
Map date: 1979

Scale: 1:1,250

Printed at: 1:2,000



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



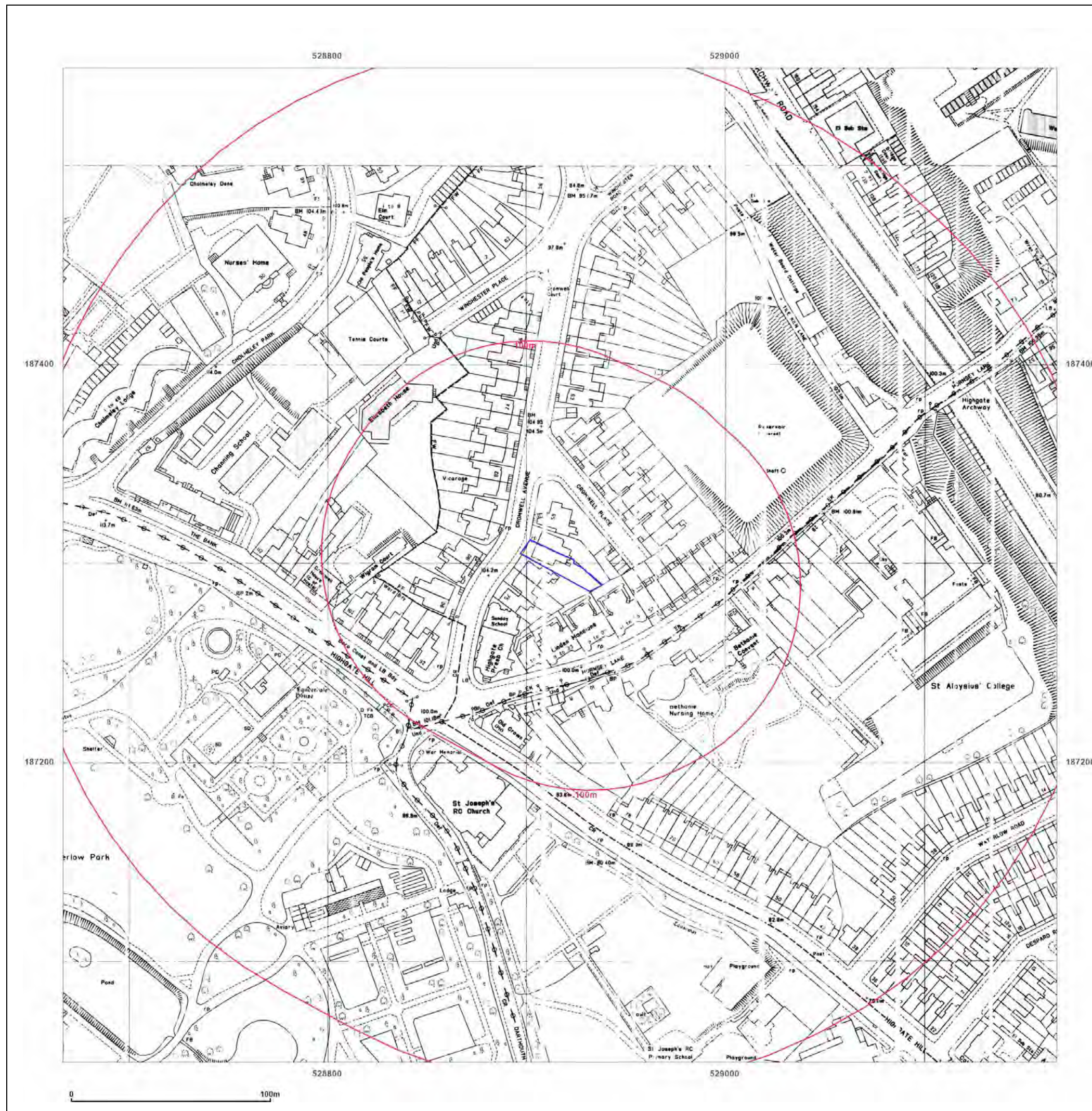
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

Map legend available at:

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000



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

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

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

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

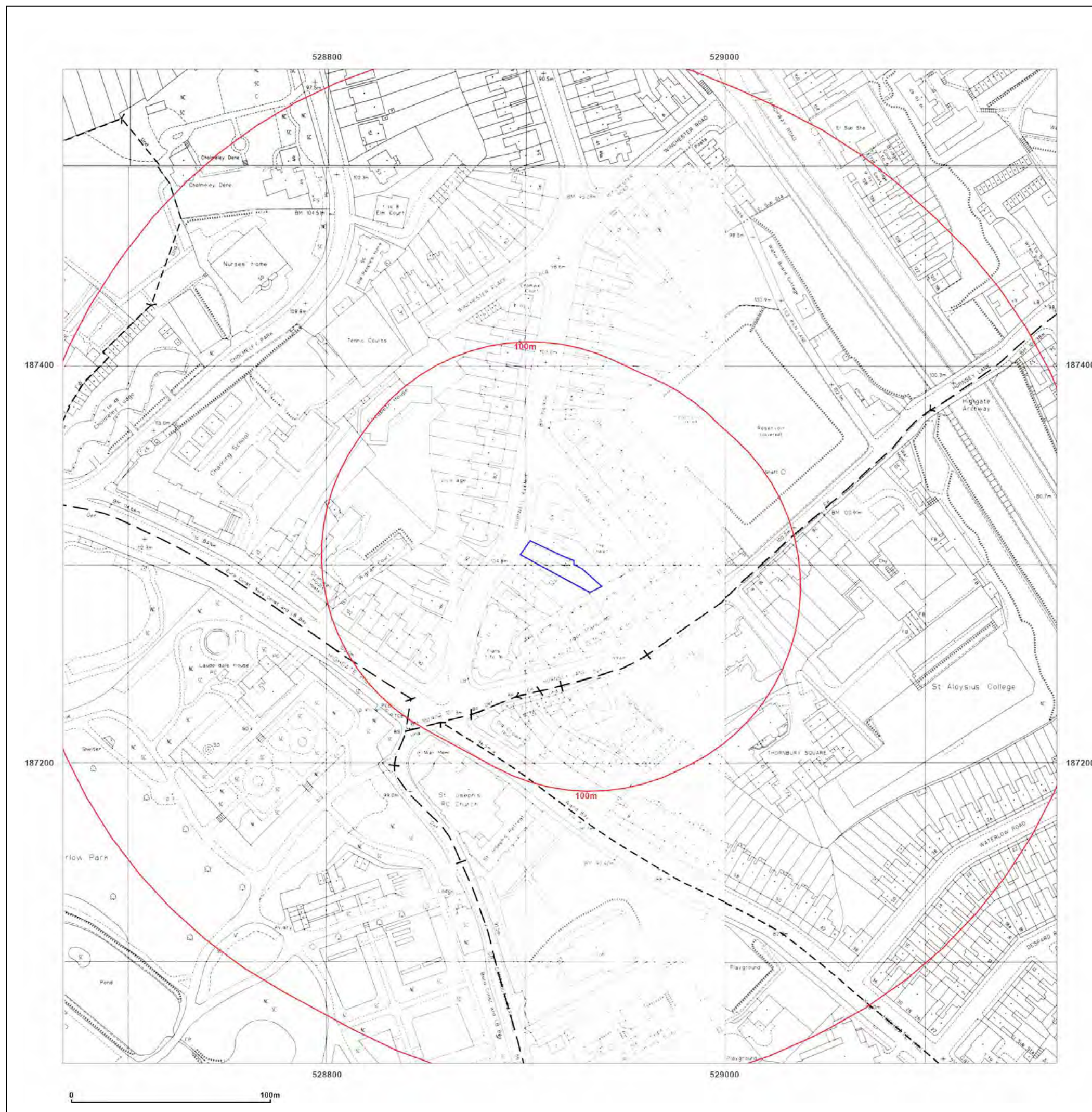


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

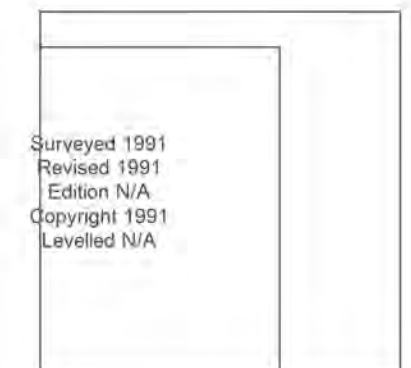
Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1991

Scale: 1:1,250

Printed at: 1:2,000

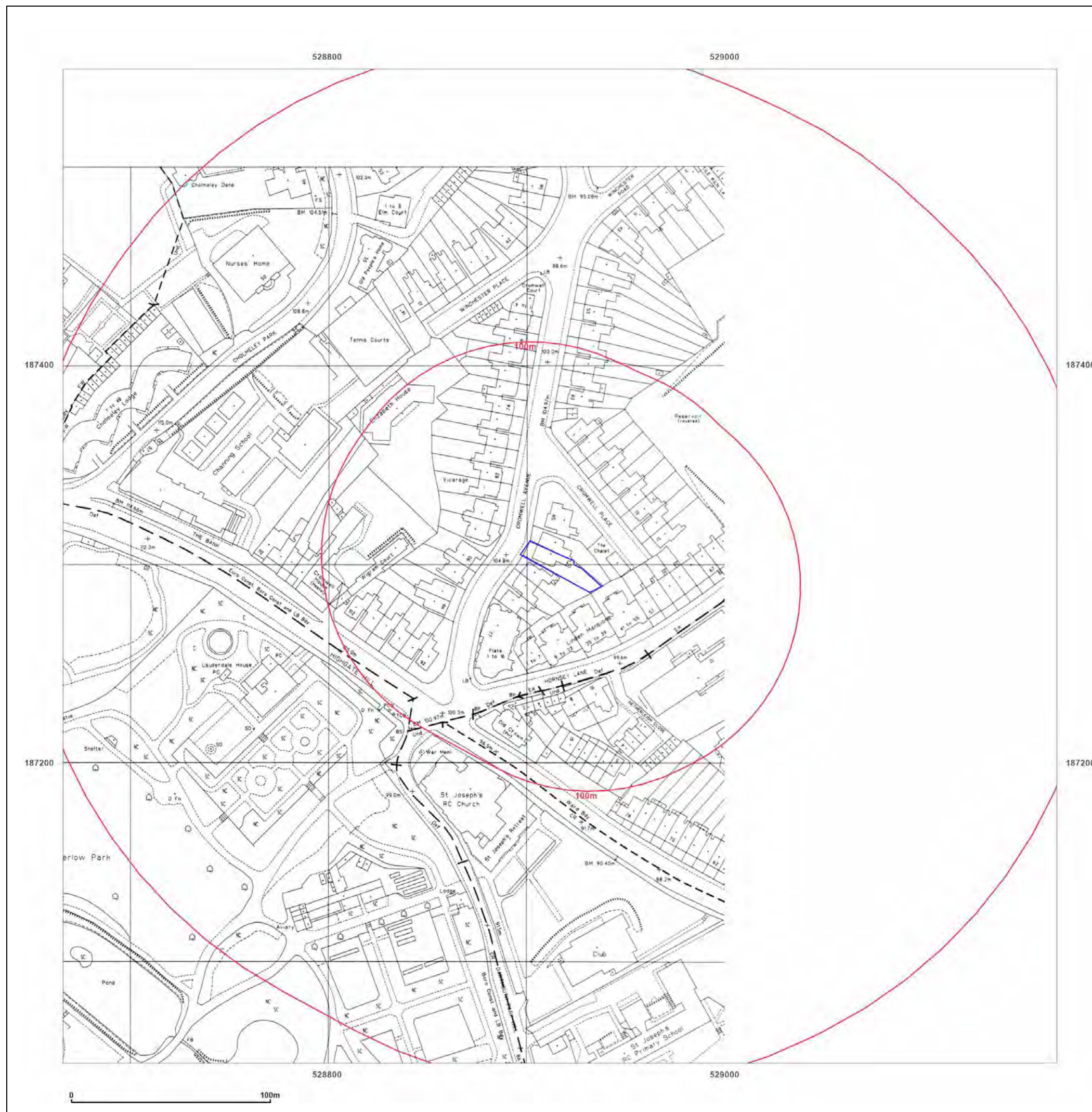


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1986-1991

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 1975
Revised 1986
Edition N/A
Copyright 1986
Levelled 1975

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



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

Map legend available at:

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

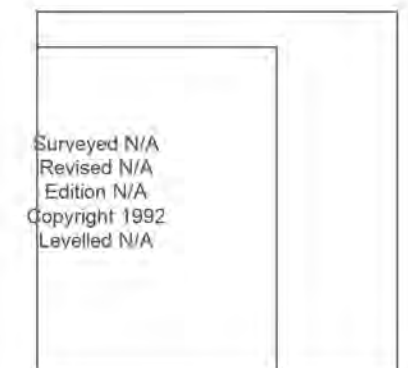
Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



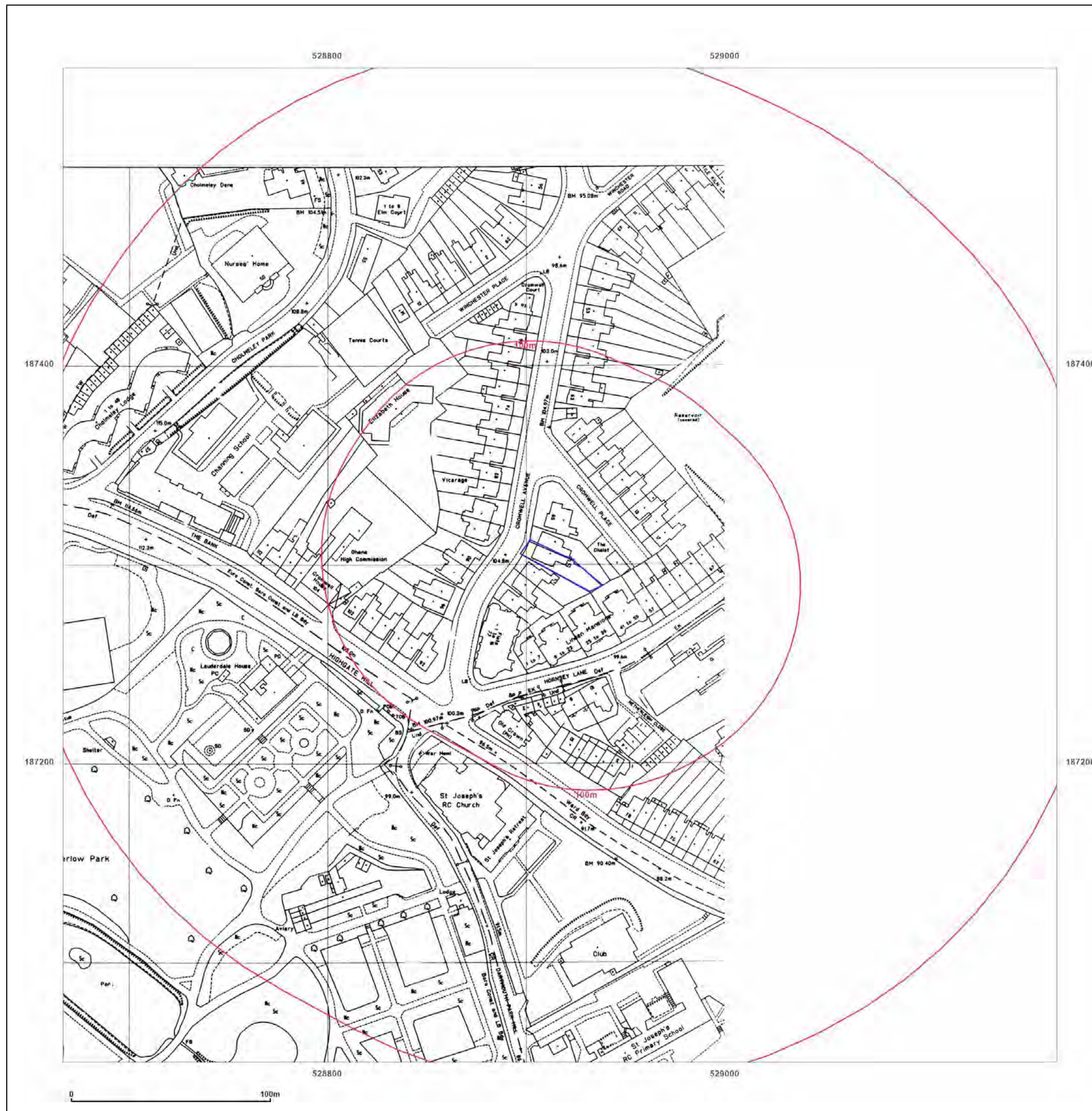
Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

Map legend available at:

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

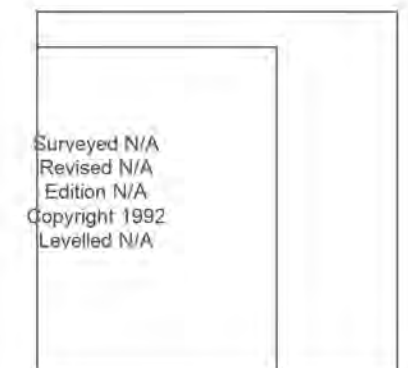
Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000

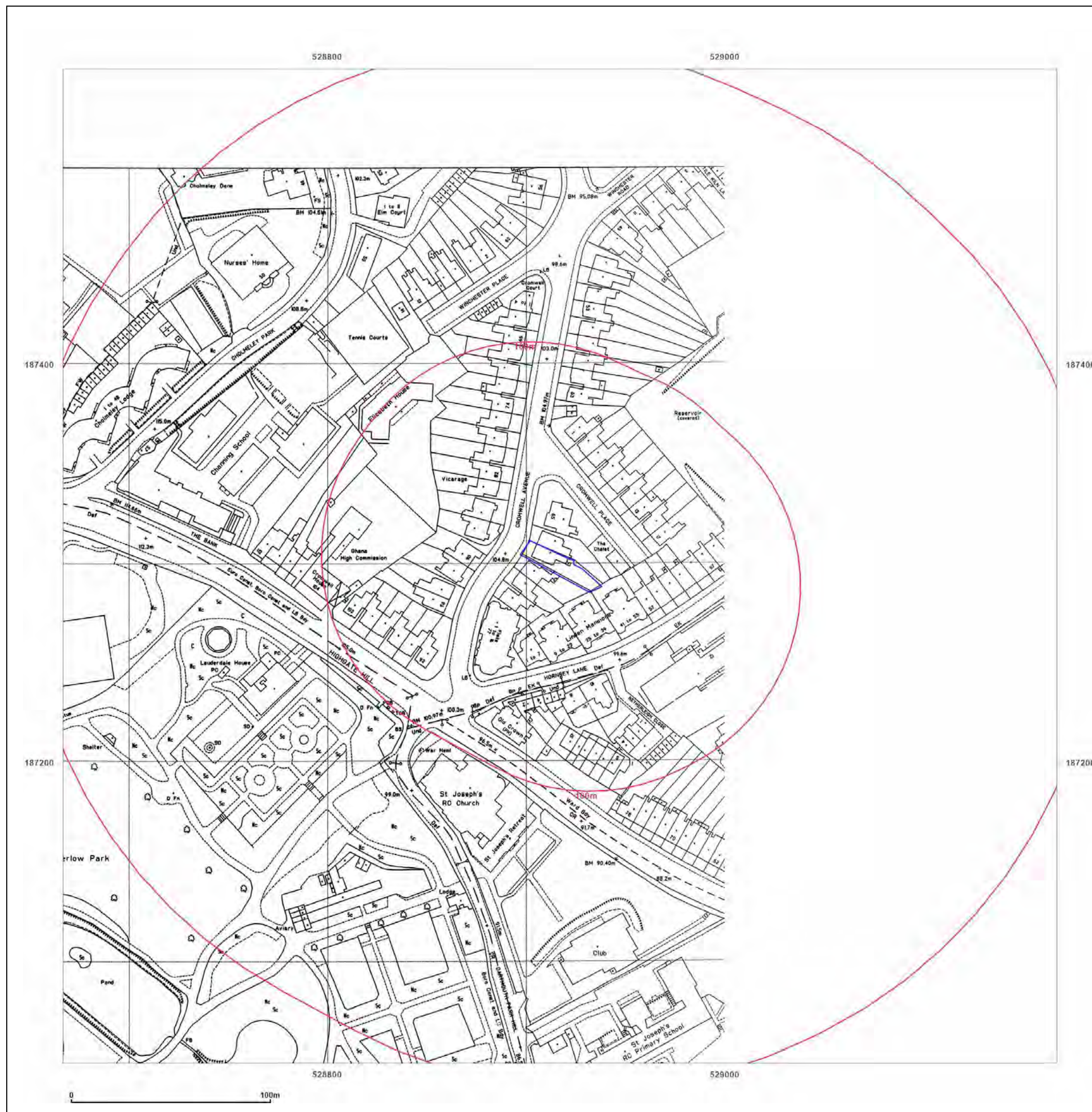


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



Site Details:

69, CROMWELL AVENUE,
HORNSEY, LONDON, N6 5HS

Client Ref: 10769
Report Ref: SCL-9094614
Grid Ref: 528917, 187299

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000

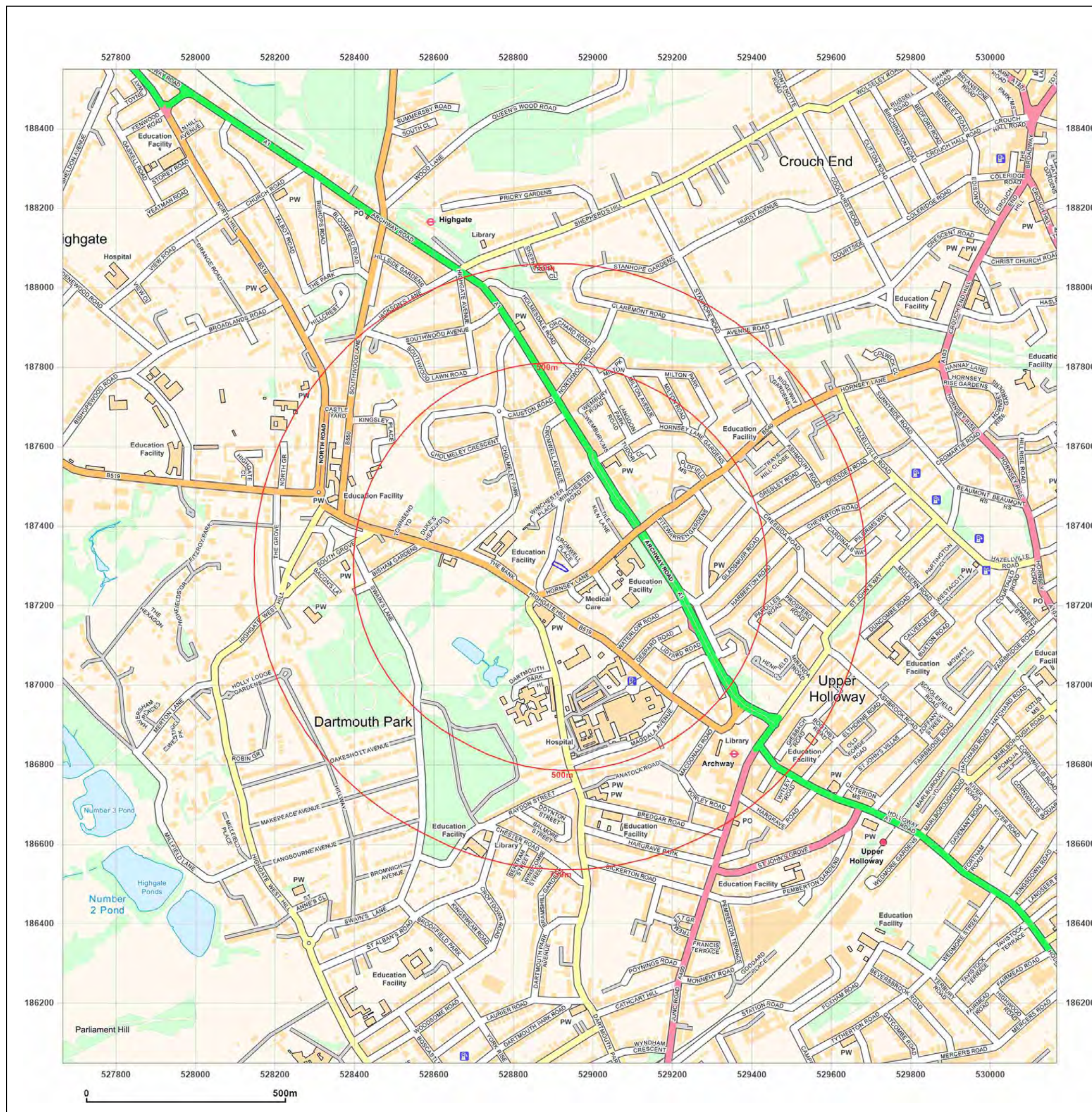


Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 03 October 2022

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



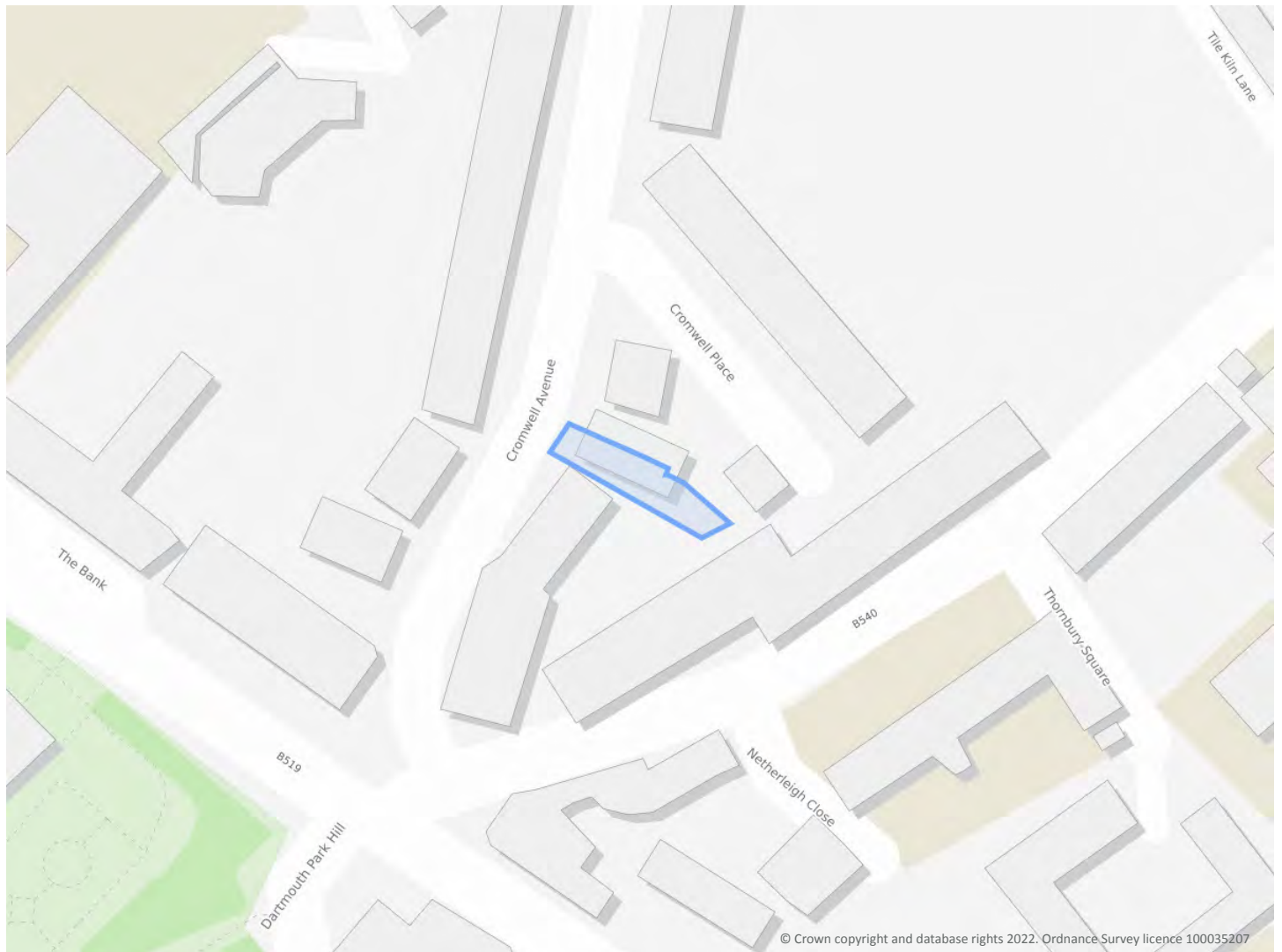
69, CROMWELL AVENUE, HORNSEY, LONDON, N6 5HS

Order Details

Date: 03/10/2022
Your ref: 10769
Our Ref: SCL-9094615

Site Details

Location: 528915 187299
Area: 0.04 ha
Authority: [London Borough of Haringey](#)



Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

p.13 groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	Historical industrial land uses	0	1	19	45	-
17	1.2	Historical tanks	0	0	1	4	-
18	1.3	Historical energy features	0	0	3	17	-
19	1.4	Historical petrol stations	0	0	0	0	-
19	1.5	Historical garages	0	0	0	9	-
20	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
21	2.1	Historical industrial land uses	0	1	27	69	-
25	2.2	Historical tanks	0	0	2	7	-
26	2.3	Historical energy features	0	0	7	40	-
28	2.4	Historical petrol stations	0	0	0	0	-
28	2.5	Historical garages	0	0	0	12	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
29	3.1	Active or recent landfill	0	0	0	0	-
29	3.2	Historical landfill (BGS records)	0	0	0	0	-
30	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
30	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
30	3.5	Historical waste sites	0	0	1	0	-
30	3.6	Licensed waste sites	0	0	0	0	-
31	3.7	Waste exemptions	0	0	0	13	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
33	4.1	Recent industrial land uses	0	0	3	-	-
34	4.2	Current or recent petrol stations	0	0	0	0	-
34	4.3	Electricity cables	0	0	3	4	-
35	4.4	Gas pipelines	0	0	0	0	-
35	4.5	Sites determined as Contaminated Land	0	0	0	0	-



35	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
35	4.7	Regulated explosive sites	0	0	0	0	-
35	4.8	Hazardous substance storage/usage	0	0	0	0	-
36	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
36	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
36	<u>4.11</u>	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	0	3	-
37	<u>4.12</u>	<u>Radioactive Substance Authorisations</u>	0	0	0	10	-
38	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
38	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
39	4.15	Pollutant release to public sewer	0	0	0	0	-
39	4.16	List 1 Dangerous Substances	0	0	0	0	-
39	4.17	List 2 Dangerous Substances	0	0	0	0	-
39	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
39	4.19	Pollution inventory substances	0	0	0	0	-
40	4.20	Pollution inventory waste transfers	0	0	0	0	-
40	<u>4.21</u>	<u>Pollution inventory radioactive waste</u>	0	0	0	1	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
41	5.1	Superficial aquifer	None (within 500m)				
42	<u>5.2</u>	<u>Bedrock aquifer</u>	Identified (within 500m)				
43	<u>5.3</u>	<u>Groundwater vulnerability</u>	Identified (within 50m)				
44	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
44	5.5	Groundwater vulnerability- local information	None (within 0m)				
45	5.6	Groundwater abstractions	0	0	0	0	0
45	5.7	Surface water abstractions	0	0	0	0	0
45	5.8	Potable abstractions	0	0	0	0	0
45	5.9	Source Protection Zones	0	0	0	0	-
46	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
47	6.1	Water Network (OS MasterMap)	0	0	0	-	-

47	6.2	Surface water features	0	0	0	-	-
48	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
48	6.4	WFD Surface water bodies	0	0	0	-	-
48	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
49	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
49	7.2	Historical Flood Events	0	0	0	-	-
49	7.3	Flood Defences	0	0	0	-	-
50	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
50	7.5	Flood Storage Areas	0	0	0	-	-
51	7.6	Flood Zone 2	None (within 50m)				
51	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
52	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
54	9.1	<u>Groundwater flooding</u>	Negligible (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
55	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	2
56	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
56	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
56	10.4	Special Protection Areas (SPA)	0	0	0	0	0
56	10.5	National Nature Reserves (NNR)	0	0	0	0	0
57	10.6	<u>Local Nature Reserves (LNR)</u>	0	0	0	0	3
57	10.7	<u>Designated Ancient Woodland</u>	0	0	0	0	3
57	10.8	Biosphere Reserves	0	0	0	0	0
58	10.9	Forest Parks	0	0	0	0	0
58	10.10	Marine Conservation Zones	0	0	0	0	0
58	10.11	Green Belt	0	0	0	0	0
58	10.12	Proposed Ramsar sites	0	0	0	0	0



58	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
59	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
59	10.15	Nitrate Sensitive Areas	0	0	0	0	0
59	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
60	<u>10.17</u>	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
61	<u>10.18</u>	<u>SSSI Units</u>	0	0	0	0	3
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
63	11.1	World Heritage Sites	0	0	0	-	-
64	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
64	11.3	National Parks	0	0	0	-	-
64	<u>11.4</u>	<u>Listed Buildings</u>	0	0	29	-	-
66	<u>11.5</u>	<u>Conservation Areas</u>	1	2	3	-	-
67	11.6	Scheduled Ancient Monuments	0	0	0	-	-
67	<u>11.7</u>	<u>Registered Parks and Gardens</u>	0	0	1	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
68	<u>12.1</u>	<u>Agricultural Land Classification</u>	Urban (within 250m)				
69	12.2	Open Access Land	0	0	0	-	-
69	12.3	Tree Felling Licences	0	0	0	-	-
69	12.4	Environmental Stewardship Schemes	0	0	0	-	-
69	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
70	<u>13.1</u>	<u>Priority Habitat Inventory</u>	0	0	44	-	-
72	<u>13.2</u>	<u>Habitat Networks</u>	0	0	1	-	-
72	13.3	Open Mosaic Habitat	0	0	0	-	-
73	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
74	<u>14.1</u>	<u>10k Availability</u>	Identified (within 500m)				
75	<u>14.2</u>	<u>Artificial and made ground (10k)</u>	0	0	1	7	-
77	14.3	Superficial geology (10k)	0	0	0	0	-

77	14.4	Landslip (10k)	0	0	0	0	-
78	14.5	<u>Bedrock geology (10k)</u>	1	1	2	0	-
79	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
80	15.1	<u>50k Availability</u>	Identified (within 500m)				
81	15.2	<u>Artificial and made ground (50k)</u>	0	0	1	5	-
82	15.3	Artificial ground permeability (50k)	0	0	-	-	-
83	15.4	Superficial geology (50k)	0	0	0	0	-
83	15.5	Superficial permeability (50k)	None (within 50m)				
83	15.6	Landslip (50k)	0	0	0	0	-
83	15.7	Landslip permeability (50k)	None (within 50m)				
84	15.8	<u>Bedrock geology (50k)</u>	1	1	2	0	-
85	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
85	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
86	16.1	<u>BGS Boreholes</u>	0	0	6	-	-
Page	Section	Natural ground subsidence					
88	17.1	<u>Shrink swell clays</u>	Moderate (within 50m)				
89	17.2	<u>Running sands</u>	Low (within 50m)				
91	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
92	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
93	17.5	<u>Landslides</u>	Low (within 50m)				
95	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
96	18.1	Natural cavities	0	0	0	0	-
97	18.2	BritPits	0	0	0	0	-
97	18.3	<u>Surface ground workings</u>	0	0	21	-	-
98	18.4	<u>Underground workings</u>	0	0	3	0	14
99	18.5	Historical Mineral Planning Areas	0	0	0	0	-



99	18.6	Non-coal mining	0	0	0	0	0
99	18.7	Mining cavities	0	0	0	0	0
99	18.8	JPB mining areas	None (within 0m)				
100	18.9	Coal mining	None (within 0m)				
100	18.10	Brine areas	None (within 0m)				
100	18.11	Gypsum areas	None (within 0m)				
100	18.12	Tin mining	None (within 0m)				
100	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<u>101</u>	<u>19.1</u>	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<u>102</u>	<u>20.1</u>	<u>BGS Estimated Background Soil Chemistry</u>	1	1	-	-	-
<u>102</u>	<u>20.2</u>	<u>BGS Estimated Urban Soil Chemistry</u>	3	1	-	-	-
103	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
<u>104</u>	<u>21.1</u>	<u>Underground railways (London)</u>	0	0	1	-	-
105	21.2	Underground railways (Non-London)	0	0	0	-	-
105	21.3	Railway tunnels	0	0	0	-	-
105	21.4	Historical railway and tunnel features	0	0	0	-	-
105	21.5	Royal Mail tunnels	0	0	0	-	-
105	21.6	Historical railways	0	0	0	-	-
106	21.7	Railways	0	0	0	-	-
106	21.8	Crossrail 1	0	0	0	0	-
106	21.9	Crossrail 2	0	0	0	0	-
106	21.10	HS2	0	0	0	0	-



Recent aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2022. All Rights Reserved.

Capture Date: 14/06/2021

Site Area: 0.04ha



Recent site history - 2019 aerial photograph



Capture Date: 29/06/2019

Site Area: 0.04ha



Recent site history - 2013 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2022. All Rights Reserved.

Capture Date: 20/04/2013

Site Area: 0.04ha



Recent site history - 2008 aerial photograph



Capture Date: 15/04/2008

Site Area: 0.04ha



Recent site history - 1999 aerial photograph

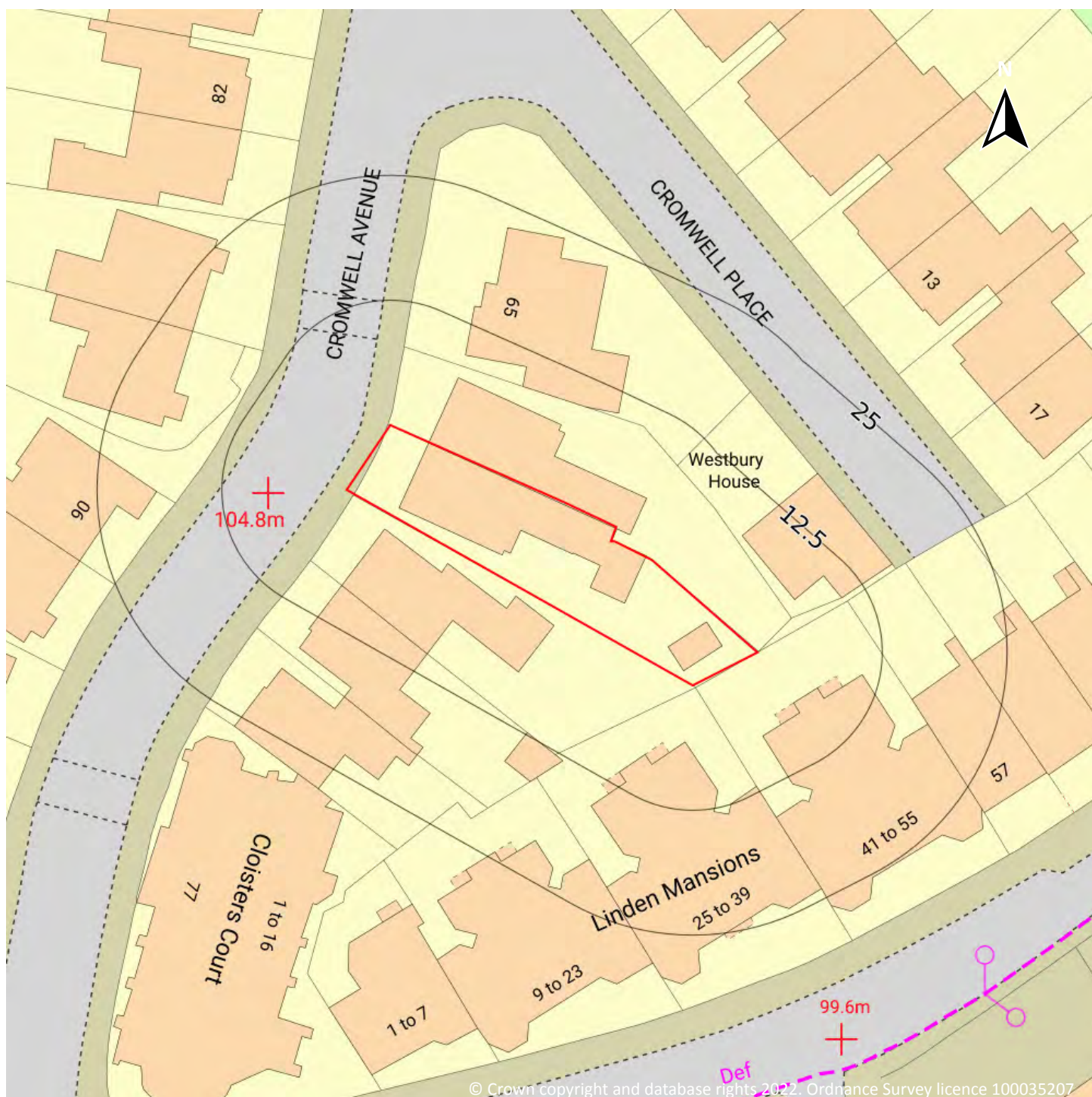


Capture Date: 04/09/1999

Site Area: 0.04ha



OS MasterMap site plan



Site Area: 0.04ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m

65

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	45m W	Hospital	1894	2262814



ID	Location	Land use	Dates present	Group ID
A	51m W	Hospital	1949	2248153
A	51m W	Hospital	1958	2282310
B	65m NE	Unspecified Heap	1958	2136553
B	102m NE	Unspecified Shaft	1965 - 1996	2245324
C	146m SW	Unspecified Tank	1879	2198887
C	146m SW	Unspecified Tank	1869	2218669
D	168m NE	Cuttings	1996	2250851
D	169m NE	Cuttings	1949	2229044
D	174m NE	Cuttings	1949	2173404
D	174m NE	Cuttings	1958	2210052
E	177m SE	Brick Field	1869	2277270
E	177m SE	Brick Field	1879	2288348
D	180m NE	Cuttings	1894	2270394
D	188m E	Cuttings	1958 - 1996	2268116
F	217m SE	Hospital	1996	2248295
3	217m NW	Nursery	1920 - 1938	2210702
F	248m S	Hospital	1949	2196934
F	248m S	Hospital	1958 - 1974	2282449
H	249m S	Infirmary	1938	2229853
H	250m S	Hospital	1949	2184693
H	250m S	Hospital	1958 - 1996	2287628
F	251m S	Infirmary	1920 - 1938	2178439
F	256m S	Small Pox Hospital	1894	2287836
H	259m S	Infirmary	1894 - 1920	2178944
J	276m NE	Brick Field	1879	2240003
J	276m NE	Brick Field	1869	2275407
L	285m SE	Infirmary	1938	2204375
I	289m NW	Nursery	1958	2182972



ID	Location	Land use	Dates present	Group ID
I	289m NW	Nurseries	1965 - 1974	2231172
I	290m NW	Nursery	1920 - 1938	2241516
F	294m S	Small Pox Hospital	1879	2274228
F	294m S	Small Pox Hospital	1869	2287056
M	308m SW	Boat House	1920	2260966
N	319m E	Brick Field	1879	2245477
N	319m E	Brick Field	1869	2273557
M	321m SW	Boat House	1938	2228760
O	343m NW	Nursery	1996	2207223
6	346m W	Unspecified Ground Workings	1949	2133664
P	347m SW	Cemetery	1974 - 1996	2238536
L	355m SE	Hospital	1958 - 1974	2203092
L	355m SE	Hospital	1949	2258907
P	361m SW	Cemetery	1920 - 1949	2193712
P	364m SW	Cemetery	1879 - 1894	2179960
P	364m SW	Cemetery	1869	2225394
P	365m SW	Cemetery	1958 - 1965	2281955
O	368m NW	Nursery	1938	2213484
Q	368m SE	Nursery	1879	2177087
Q	368m SE	Nursery	1869	2272406
O	372m NW	Nursery	1949	2208133
L	376m SE	Infirmary	1894	2294924
O	387m NW	Nursery	1920	2241515
R	424m SW	Cemetery	1894	2235187
R	425m SW	Cemetery	1879	2201583
R	425m SW	Cemetery	1869	2288298
R	425m SW	Cemetery	1920 - 1996	2261094
S	442m SW	Cuttings	1949	2215435



ID	Location	Land use	Dates present	Group ID
S	442m SW	Cuttings	1958	2279778
S	443m SW	Cuttings	1938	2195085
U	445m NW	Unspecified Pit	1869	2183785
U	445m NW	Unspecified Pit	1879	2219173
S	450m SW	Cuttings	1965 - 1996	2197242
V	451m NW	Unspecified Heap	1965 - 1996	2294348
S	452m SW	Cuttings	1920	2264355
V	452m NW	Unspecified Heap	1958	2213649

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

5

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
2	205m SW	Unspecified Tank	1951 - 1952	384614
M	321m SW	Unspecified Tank	1896	364725
F	412m S	Unspecified Tank	1995	389065
F	414m S	Unspecified Tank	1977 - 1991	400514
Q	446m SE	Unspecified Tank	1991 - 1995	386870

This data is sourced from Ordnance Survey / Groundsure.



1.3 Historical energy features

Records within 500m

20

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	194m NE	Electricity Substation	1991	245022
G	237m NE	Electricity Substation	1951 - 1991	265602
G	239m NE	Electricity Substation	1997	270958
K	282m NW	Electricity Substation	1996	245021
G	285m NE	Electricity Substation	1951 - 1991	270608
G	285m NE	Electricity Substation	1997	265174
K	290m NW	Electricity Substation	1973 - 1991	276694
F	301m S	Electricity Substation	1995	245023
F	308m S	Electricity Substation	1977 - 1991	269400
L	317m SE	Electricity Substation	1991	245026
L	357m SE	Electricity Substation	1991	245027
7	362m S	Electricity Substation	1977 - 1991	271462
L	387m SE	Electricity Substation	1991	245028
I	389m W	Electricity Substation	1986 - 1996	277916
Q	439m SE	Electricity Substation	1977 - 1995	271324
T	444m NE	Electricity Substation	1978 - 1991	272313
Q	449m SE	Electricity Substation	1991	269886
Q	449m SE	Electricity Substation	1977 - 1995	270871
T	451m NE	Electricity Substation	1997	277050
L	470m SE	Electricity Substation	1977 - 1995	274062

This data is sourced from Ordnance Survey / Groundsure.



1.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

9

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
I	252m NW	Garage	1986 - 1991	85264
I	253m NW	Garage	-	72995
I	253m NW	Garage	1967	81296
I	253m NW	Garage	1992	76140
4	291m NE	Garages	1951	74161
I	297m W	Garage	1967	78986
I	310m W	Garage	-	72854
I	315m W	Garage	1967	77039
5	329m NE	Garages	1951	74162

This data is sourced from Ordnance Survey / Groundsure.



1.6 Historical military land

Records within 500m

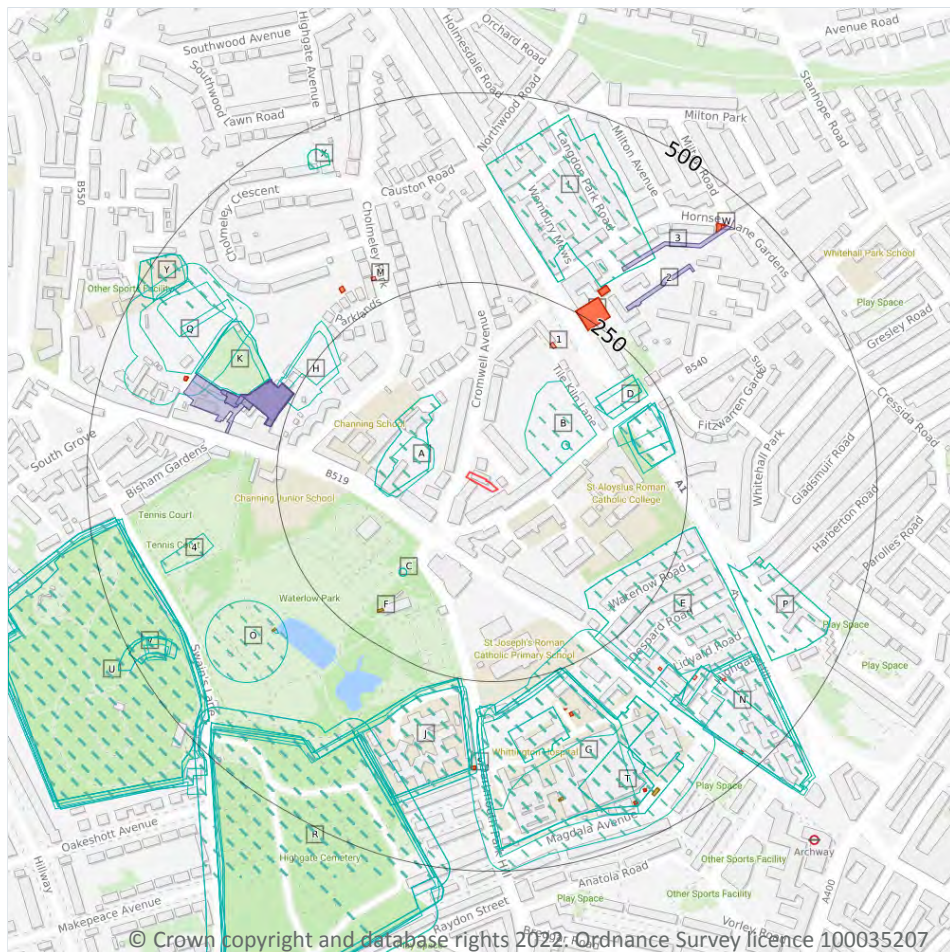
0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m

97

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
A	45m W	Hospital	1894	2262814
A	51m W	Hospital	1949	2248153
A	51m W	Hospital	1958	2282310



ID	Location	Land Use	Date	Group ID
B	65m NE	Unspecified Heap	1958	2136553
B	102m NE	Unspecified Shaft	1965	2245324
B	102m NE	Unspecified Shaft	1974	2245324
B	102m NE	Unspecified Shaft	1996	2245324
C	146m SW	Unspecified Tank	1869	2218669
C	146m SW	Unspecified Tank	1879	2198887
D	168m NE	Cuttings	1996	2250851
D	169m NE	Cuttings	1949	2229044
D	174m NE	Cuttings	1949	2173404
D	174m NE	Cuttings	1958	2210052
E	177m SE	Brick Field	1869	2277270
E	177m SE	Brick Field	1879	2288348
D	180m NE	Cuttings	1894	2270394
D	188m E	Cuttings	1965	2268116
D	188m E	Cuttings	1958	2268116
D	190m E	Cuttings	1974	2268116
D	190m E	Cuttings	1996	2268116
G	217m SE	Hospital	1996	2248295
H	217m NW	Nursery	1920	2210702
H	222m NW	Nursery	1938	2210702
G	248m S	Hospital	1965	2282449
G	248m S	Hospital	1974	2282449
G	248m S	Hospital	1949	2196934
G	248m S	Hospital	1958	2282449
J	249m S	Infirmery	1938	2229853
J	250m S	Hospital	1965	2287628
J	250m S	Hospital	1974	2287628
J	250m S	Hospital	1996	2287628



ID	Location	Land Use	Date	Group ID
J	250m S	Hospital	1949	2184693
J	250m S	Hospital	1958	2287628
G	251m S	Infirmary	1938	2178439
G	256m S	Small Pox Hospital	1894	2287836
G	257m S	Infirmary	1920	2178439
J	259m S	Infirmary	1894	2178944
J	260m S	Infirmary	1920	2178944
L	276m NE	Brick Field	1869	2275407
L	276m NE	Brick Field	1879	2240003
N	285m SE	Infirmary	1938	2204375
K	289m NW	Nurseries	1965	2231172
K	289m NW	Nurseries	1974	2231172
K	289m NW	Nursery	1958	2182972
K	290m NW	Nursery	1938	2241516
K	290m NW	Nursery	1920	2241516
G	294m S	Small Pox Hospital	1869	2287056
G	294m S	Small Pox Hospital	1879	2274228
O	308m SW	Boat House	1920	2260966
P	319m E	Brick Field	1869	2273557
P	319m E	Brick Field	1879	2245477
O	321m SW	Boat House	1938	2228760
Q	343m NW	Nursery	1996	2207223
4	346m W	Unspecified Ground Workings	1949	2133664
R	347m SW	Cemetery	1974	2238536
R	347m SW	Cemetery	1996	2238536
N	355m SE	Hospital	1965	2203092
N	355m SE	Hospital	1974	2203092
N	355m SE	Hospital	1949	2258907



ID	Location	Land Use	Date	Group ID
N	355m SE	Hospital	1958	2203092
R	361m SW	Cemetery	1938	2193712
R	364m SW	Cemetery	1879	2179960
R	364m SW	Cemetery	1869	2225394
R	365m SW	Cemetery	1965	2281955
R	365m SW	Cemetery	1949	2193712
R	365m SW	Cemetery	1958	2281955
R	368m SW	Cemetery	1894	2179960
Q	368m NW	Nursery	1938	2213484
T	368m SE	Nursery	1869	2272406
T	368m SE	Nursery	1879	2177087
Q	372m NW	Nursery	1949	2208133
R	374m SW	Cemetery	1920	2193712
N	376m SE	Infirmary	1894	2294924
Q	387m NW	Nursery	1920	2241515
U	424m SW	Cemetery	1894	2235187
U	425m SW	Cemetery	1879	2201583
U	425m SW	Cemetery	1869	2288298
U	425m SW	Cemetery	1938	2261094
U	427m SW	Cemetery	1965	2261094
U	427m SW	Cemetery	1974	2261094
U	427m SW	Cemetery	1996	2261094
U	427m SW	Cemetery	1949	2261094
U	427m SW	Cemetery	1958	2261094
U	432m SW	Cemetery	1920	2261094
V	442m SW	Cuttings	1949	2215435
V	442m SW	Cuttings	1958	2279778
V	443m SW	Cuttings	1938	2195085



ID	Location	Land Use	Date	Group ID
X	445m NW	Unspecified Pit	1869	2183785
X	445m NW	Unspecified Pit	1879	2219173
V	450m SW	Cuttings	1965	2197242
V	450m SW	Cuttings	1974	2197242
V	450m SW	Cuttings	1996	2197242
Y	451m NW	Unspecified Heap	1965	2294348
Y	451m NW	Unspecified Heap	1974	2294348
Y	451m NW	Unspecified Heap	1996	2294348
V	452m SW	Cuttings	1920	2264355
Y	452m NW	Unspecified Heap	1958	2213649

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

9

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
F	205m SW	Unspecified Tank	1952	384614
F	205m SW	Unspecified Tank	1951	384614
O	321m SW	Unspecified Tank	1896	364725
G	412m S	Unspecified Tank	1995	389065
G	414m S	Unspecified Tank	1991	400514
G	414m S	Unspecified Tank	1983	400514
G	414m S	Unspecified Tank	1977	400514
T	446m SE	Unspecified Tank	1991	386870
T	446m SE	Unspecified Tank	1995	386870

This data is sourced from Ordnance Survey / Groundsure.



2.3 Historical energy features

Records within 500m

47

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
1	194m NE	Electricity Substation	1991	245022
I	237m NE	Electricity Substation	1951	265602
I	239m NE	Electricity Substation	1978	265602
I	239m NE	Electricity Substation	1951	265602
I	239m NE	Electricity Substation	1997	270958
I	239m NE	Electricity Substation	1985	265602
I	239m NE	Electricity Substation	1991	265602
M	282m NW	Electricity Substation	1996	245021
I	285m NE	Electricity Substation	1951	270608
I	285m NE	Electricity Substation	1997	265174
I	286m NE	Electricity Substation	1951	270608
I	286m NE	Electricity Substation	1978	270608
I	286m NE	Electricity Substation	1985	270608
I	286m NE	Electricity Substation	1991	270608
M	290m NW	Electricity Substation	1973	276694
M	290m NW	Electricity Substation	1991	276694
G	301m S	Electricity Substation	1995	245023
G	308m S	Electricity Substation	1983	269400
G	308m S	Electricity Substation	1977	269400
G	308m S	Electricity Substation	1991	269400
N	317m SE	Electricity Substation	1991	245026
N	357m SE	Electricity Substation	1991	245027
S	362m S	Electricity Substation	1977	271462



ID	Location	Land Use	Date	Group ID
S	362m S	Electricity Substation	1983	271462
S	362m S	Electricity Substation	1991	271462
N	387m SE	Electricity Substation	1991	245028
K	389m W	Electricity Substation	1986	277916
K	389m W	Electricity Substation	1986	277916
K	389m W	Electricity Substation	1991	277916
K	390m W	Electricity Substation	1996	277916
K	390m W	Electricity Substation	1992	277916
T	439m SE	Electricity Substation	1983	271324
T	439m SE	Electricity Substation	1977	271324
T	440m SE	Electricity Substation	1991	271324
T	440m SE	Electricity Substation	1995	271324
W	444m NE	Electricity Substation	1978	272313
W	445m NE	Electricity Substation	1985	272313
W	445m NE	Electricity Substation	1991	272313
T	449m SE	Electricity Substation	1983	270871
T	449m SE	Electricity Substation	1977	270871
T	449m SE	Electricity Substation	1991	269886
T	449m SE	Electricity Substation	1995	270871
W	451m NE	Electricity Substation	1997	277050
N	470m SE	Electricity Substation	1991	274062
N	470m SE	Electricity Substation	1983	274062
N	470m SE	Electricity Substation	1977	274062
N	471m SE	Electricity Substation	1995	274062

This data is sourced from Ordnance Survey / Groundsure.



2.4 Historical petrol stations

Records within 500m

0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

12

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

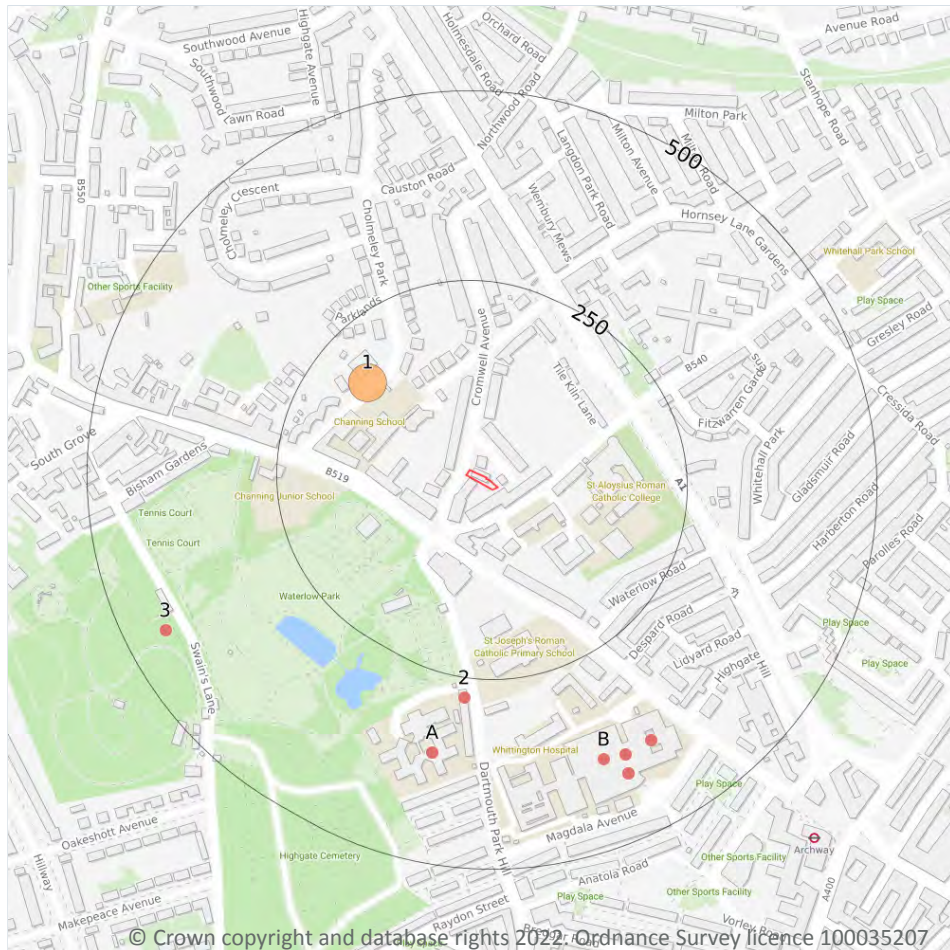
Features are displayed on the Past land use - un-grouped map on **page 21**

ID	Location	Land Use	Date	Group ID
K	252m NW	Garage	1986	85264
K	252m NW	Garage	1991	85264
K	252m NW	Garage	1986	85264
K	253m NW	Garage	-	72995
K	253m NW	Garage	1967	81296
K	253m NW	Garage	1992	76140
K	254m NW	Garage	1967	81296
2	291m NE	Garages	1951	74161
K	297m W	Garage	1967	78986
K	310m W	Garage	-	72854
K	315m W	Garage	1967	77039
3	329m NE	Garages	1951	74162

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Historical waste sites
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m**0**

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m**0**

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m**1**

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 29**

ID	Location	Address	Further Details	Date
1	152m NW	Site Address: Furnival House, 50 Cholmeley Park, London, Central London, N6 5EH	Type of Site: Recycling Facility Planning application reference: HGY/2014/0254 Description: Scheme comprises construction of new recycling and refuse store and condenser housing to the rear of Furnival House adjacent to the rear service entrance and car park access road. Data source: Historic Planning Application Data Type: Point	05/06/2014

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m**0**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.



3.7 Waste exemptions

Records within 500m

13

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 29**

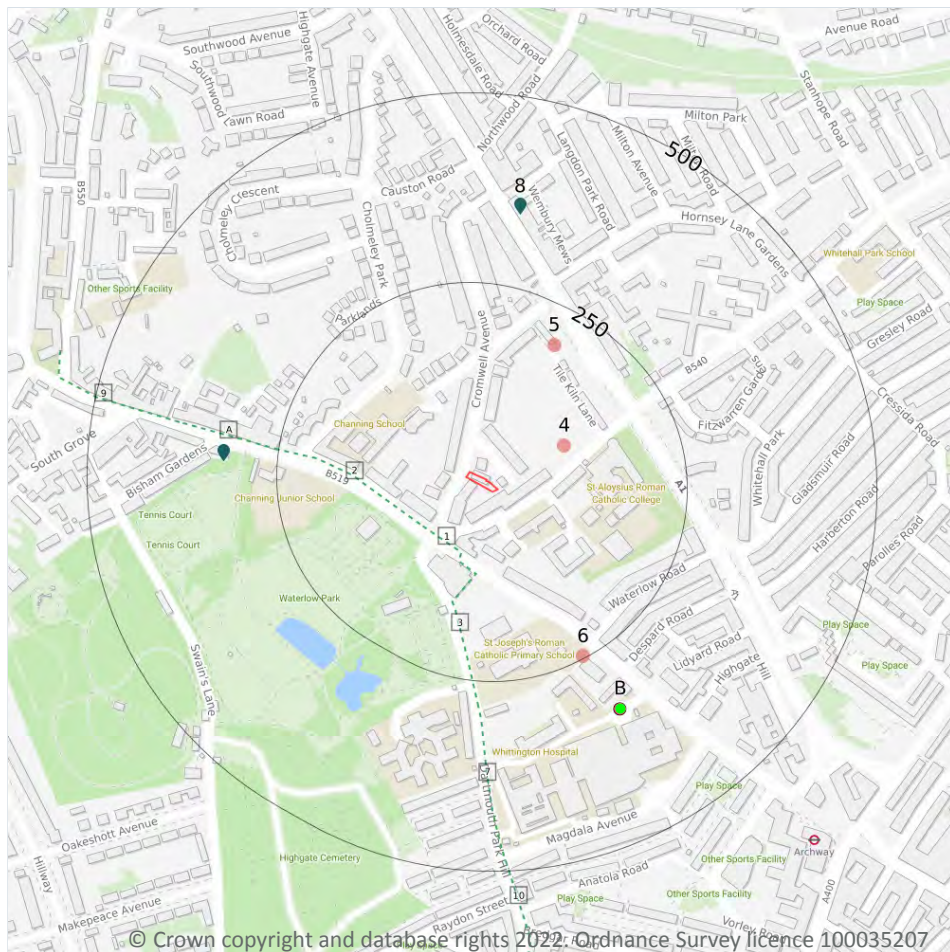
ID	Location	Site	Reference	Category	Sub-Category	Description
2	277m S	Highgate Mental Health Centre Dartmouth Park Hill LONDON N19 5NX	EPR/EE5549ZJ /A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
A	356m S	DARTMOUTH PARK HILL, LONDON, N19 5NX	WEX275101	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	356m S	DARTMOUTH PARK HILL, LONDON, N19 5NX	WEX135761	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	356m S	DARTMOUTH PARK HILL, LONDON, N19 5NX	WEX135736	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	385m S	MAGDALA AVENUE, LONDON, N19 5NF	WEX226122	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	390m SE	Whittington Hospital NHS Trust N19 5NF	EPR/SF0401GV /A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
B	391m SE	Whittington Hospital Magdela Avenue N19 5NF	EPR/YE5448E W/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in secure containers
B	391m SE	Whittington Hospital Magdela Avenue N19 5NF	EPR/YE5448E W/A001	Storing waste exemption	Non-Agricultural Waste Only	Storage of waste in a secure place
B	414m SE	MAGDALA AVENUE, LONDON, N19 5NF	WEX283887	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	414m SE	MAGDALA AVENUE, LONDON, N19 5NF	WEX284931	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	414m SE	MAGDALA AVENUE, LONDON, N19 5NF	WEX145089	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	414m SE	MAGDALA AVENUE, LONDON, N19 5NF	WEX145282	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
3	447m SW	Waterlow Park Centre Dartmouth Park Hill London Camden N19 5JF	EPR/EF0602W P/A001	Using waste exemption	Non-Agricultural Waste Only	Spreading waste on non-agricultural land to confer benefit



This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Electricity cables
- Licensed pollutant release (Part A(2)/B)
- Radioactive Substance Authorisations
- Pollution inventory radioactive waste

4.1 Recent industrial land uses

Records within 250m

3

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 33**

ID	Location	Company	Address	Activity	Category
4	105m NE	Shaft	Greater London, N6	Unspecified Quarries Or Mines	Extractive Industries
5	198m NE	Electricity Sub Station	Greater London, N6	Electrical Features	Infrastructure and Facilities
6	247m SE	Gas Governor	Greater London, N19	Gas Features	Infrastructure and Facilities



This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

7

High voltage underground electricity transmission cables.

Features are displayed on the Current industrial land use map on **page 33**

ID	Location	Cable Set	Cable Route	Details	
1	85m SW	DC DECOMMISSIONED CABLE SECTION 23	FINCHLEY - ISLINGTON	Cable Make: - Cable Type: CBL_UNKNOWN Operating Voltage (kV): 66	Year of installation: Not specified Cable in tunnel? Not specified
2	87m SW	DC DECOMMISSIONED CABLE SECTION 24	FINCHLEY - ISLINGTON	Cable Make: - Cable Type: CBL_UNKNOWN Operating Voltage (kV): 66	Year of installation: Not specified Cable in tunnel? Not specified
3	103m S	DC DECOMMISSIONED CABLE SECTION 22	FINCHLEY - ISLINGTON	Cable Make: - Cable Type: CBL_UNKNOWN Operating Voltage (kV): 66	Year of installation: Not specified Cable in tunnel? Not specified
A	250m W	DC DECOMMISSIONED CABLE SECTION 25	FINCHLEY - ISLINGTON	Cable Make: - Cable Type: CBL_UNKNOWN Operating Voltage (kV): 66	Year of installation: Not specified Cable in tunnel? Not specified
7	283m S	DC DECOMMISSIONED CABLE SECTION 21	FINCHLEY - ISLINGTON	Cable Make: - Cable Type: CBL_UNKNOWN Operating Voltage (kV): 66	Year of installation: Not specified Cable in tunnel? Not specified
9	384m W	DC DECOMMISSIONED CABLE SECTION 26	FINCHLEY - ISLINGTON	Cable Make: - Cable Type: CBL_UNKNOWN Operating Voltage (kV): 66	Year of installation: Not specified Cable in tunnel? Not specified
10	469m S	DC DECOMMISSIONED CABLE SECTION 20	FINCHLEY - ISLINGTON	Cable Make: - Cable Type: CBL_UNKNOWN Operating Voltage (kV): 66	Year of installation: Not specified Cable in tunnel? Not specified

This data is sourced from National Grid.



4.4 Gas pipelines

Records within 500m**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m**0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m**0**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

3

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 33**

ID	Location	Address	Details	
A	321m W	First Choice, 5 Highgate High Street, London, N6 5JR	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
A	321m W	First Choice, 5 Highgate High Street, N6 5JR	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
8	356m N	Archway Dry Cleaners, 194 Archway Road, Highgate, N6 5BB	Process: Dry Cleaning Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

10

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

Features are displayed on the Current industrial land use map on **page 33**

ID	Location	Address	Details	
B	331m SE	Whittington Hospital, Magdala Avenue, Highgate Hill, London, N19 5NF	Operator: Whittington Health NHS Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: BZ9014 Date of approval: 16/05/2007	Effective from: - Last date of update: 01/01/2020 Status: Replaced
B	331m SE	Whittington Hospital, Magdala Avenue, Highgate Hill, London, N19 5NF	Operator: Whittington Health NHS Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: BW7139 Date of approval: 01/12/2003	Effective from: - Last date of update: 01/01/2020 Status: Replaced
B	331m SE	Whittington Hospital, Magdala Avenue, Highgate Hill, London, N19 5NF	Operator: Whittington Health NHS Trust Type: - Permission number: TB3295DJ Date of approval: -	Effective from: 06/11/2014 Last date of update: 01/01/2020 Status: Issued
B	331m SE	Whittington Hospital Nhs Trust, Highgate Hill, London, N19 5NF	Operator: Whittington Hospital Nhs Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD3049 Date of approval: 31/03/1991	Effective from: 31/03/1991 Last date of update: 01/01/2015 Status: Superseded By Variation
B	331m SE	Whittington Hospital Nhs Trust, Highgate Hill, London, N19 5NF	Operator: Whittington Hospital Nhs Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD3049 Date of approval: 18/10/1995	Effective from: 19/10/1995 Last date of update: 01/01/2015 Status: Superseded By Variation
B	331m SE	Whittington Hospital Nhs Trust, Highgate Hill, London, N19 5NF	Operator: Whittington Hospital Nhs Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD3049 Date of approval: 17/06/1997	Effective from: 15/07/1997 Last date of update: 01/01/2015 Status: Superseded By Variation



ID	Location	Address	Details	
B	331m SE	Whittington Hospital Nhs Trust, Highgate Hill, London, N19 5NF	Operator: Whittington Hospital Nhs Trust Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AD3049 Date of approval: 29/06/2001	Effective from: 27/07/2001 Last date of update: 01/01/2015 Status: Superseded By Variation
B	331m SE	Bloomsbury And Islington Ha, At Whittington Hospital, Highgate Hill, London, N19 5NF	Operator: Bloomsbury And Islington Ha Type: Disposal Of Radioactive Waste (was Rsa60 Section 6). Permission number: AF3872 Date of approval: 31/07/1992	Effective from: 31/07/1992 Last date of update: 01/01/2015 Status: Superseded By Variation
B	331m SE	Whittington Hospital Nhs Trust, Highgate Hill, London, N19 5NF	Operator: Whittington Hospital Nhs Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AQ7925 Date of approval: 19/10/1995	Effective from: 20/10/1995 Last date of update: 01/01/2015 Status: Superseded By Variation
B	331m SE	Whittington Hospital Nhs Trust, Highgate Hill, London, N19 5NF	Operator: Whittington Hospital Nhs Trust Type: Keeping And Use Of Radioactive Materials (was Rsa60 Section 1). Permission number: AQ7925 Date of approval: 29/06/2001	Effective from: 29/06/2001 Last date of update: 01/01/2015 Status: Superseded By Variation

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m

0

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.



4.15 Pollutant release to public sewer

Records within 500m**0**

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m**0**

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m**0**

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m**0**

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m**0**

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m**0**

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m**1**

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

Features are displayed on the Current industrial land use map on **page 33**

ID: B, Location: 331m SE, Permit: AD3049
Operator: WHITTINGTON HOSPITAL NHS TRUST
Address: HIGHGATE HILL LONDON N19 5NF
Releases:

Route	Substance	Quantity released
Wastewater	Selenium 75	62MBq -
Wastewater	Technetium 99m	167.4GBq -
Wastewater	Iodine 123	719MBq -
Wastewater	Iodine 131	3.2GBq -
Wastewater	Total Beta/Gamma (Excl Tritium)	171.4GBq -

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.



5 Hydrogeology - Superficial aquifer

5.1 Superficial aquifer

Records within 500m

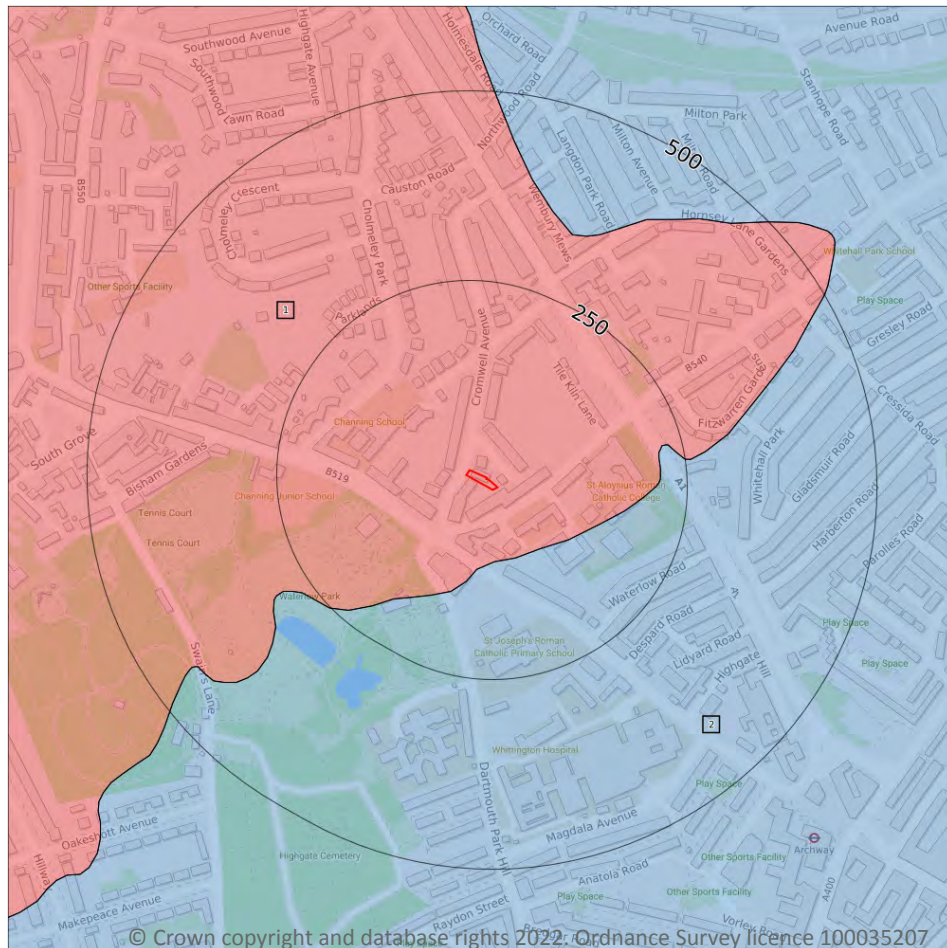
0

Aquifer status of groundwater held within superficial geology.

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

2

Aquifer status of groundwater held within bedrock geology.

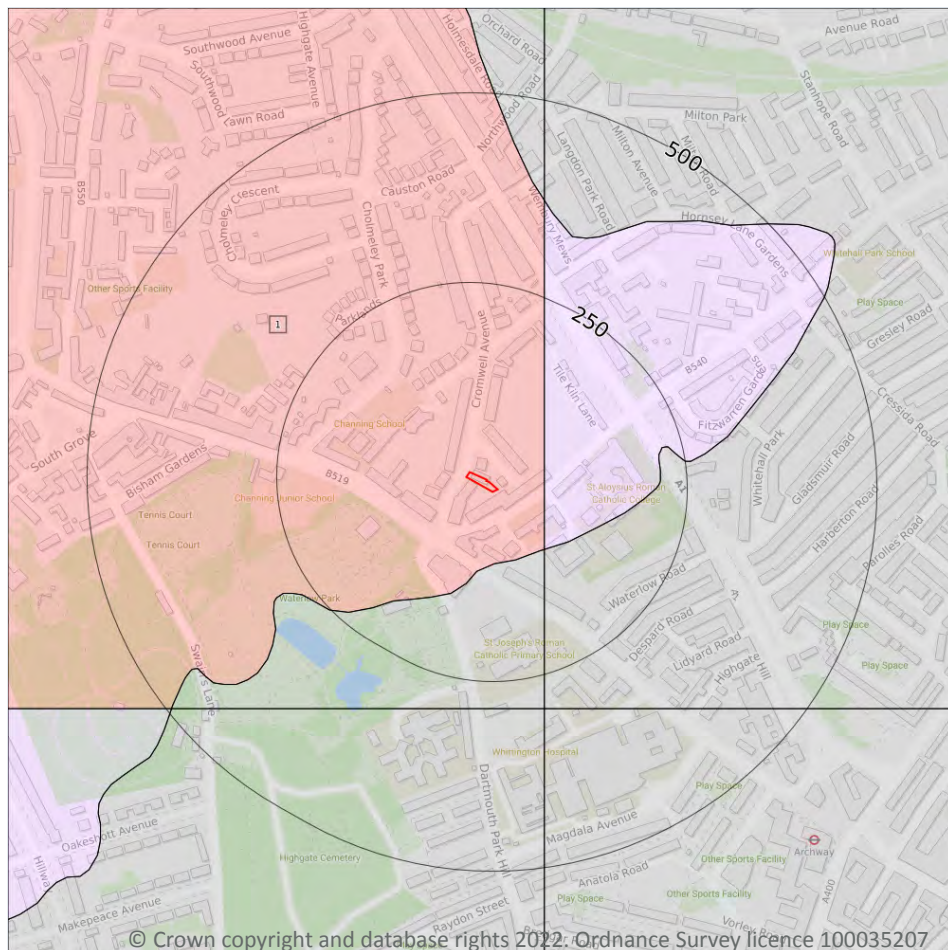
Features are displayed on the Bedrock aquifer map on **page 42**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	94m S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



— Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m

1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 43**



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0
------------------------	----------

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site	0
------------------------	----------

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones

5.6 Groundwater abstractions

Records within 2000m

0

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

0

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m

0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m

0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.



5.10 Source Protection Zones (confined aquifer)

Records within 500m

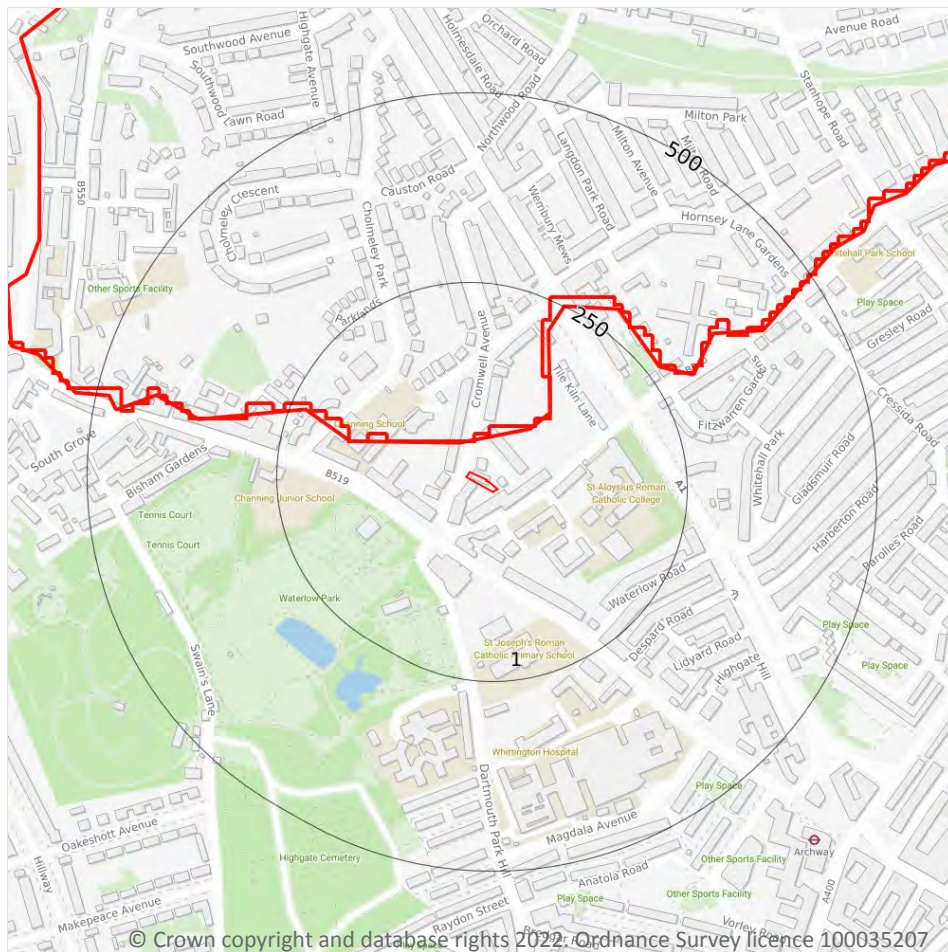
0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

0

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.



This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1
------------------------	----------

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 47**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	Coastal Catchment	Not part of a river WB catchment	128	Land area part of London Management Catchment draining to the Tidal Thames	London

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	0
---------------------------	----------

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	0
------------------------	----------

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m

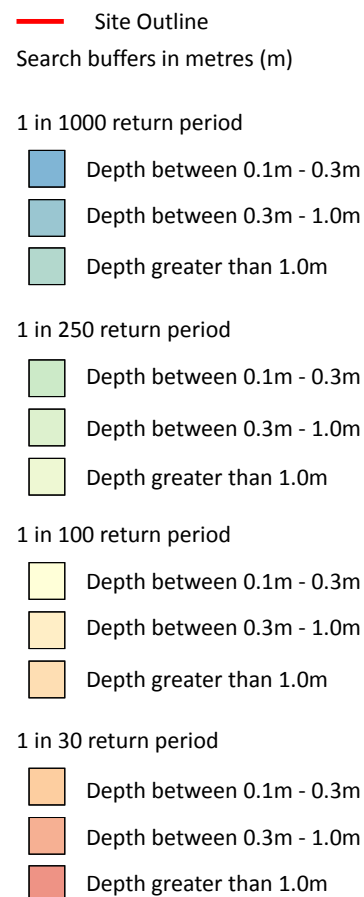
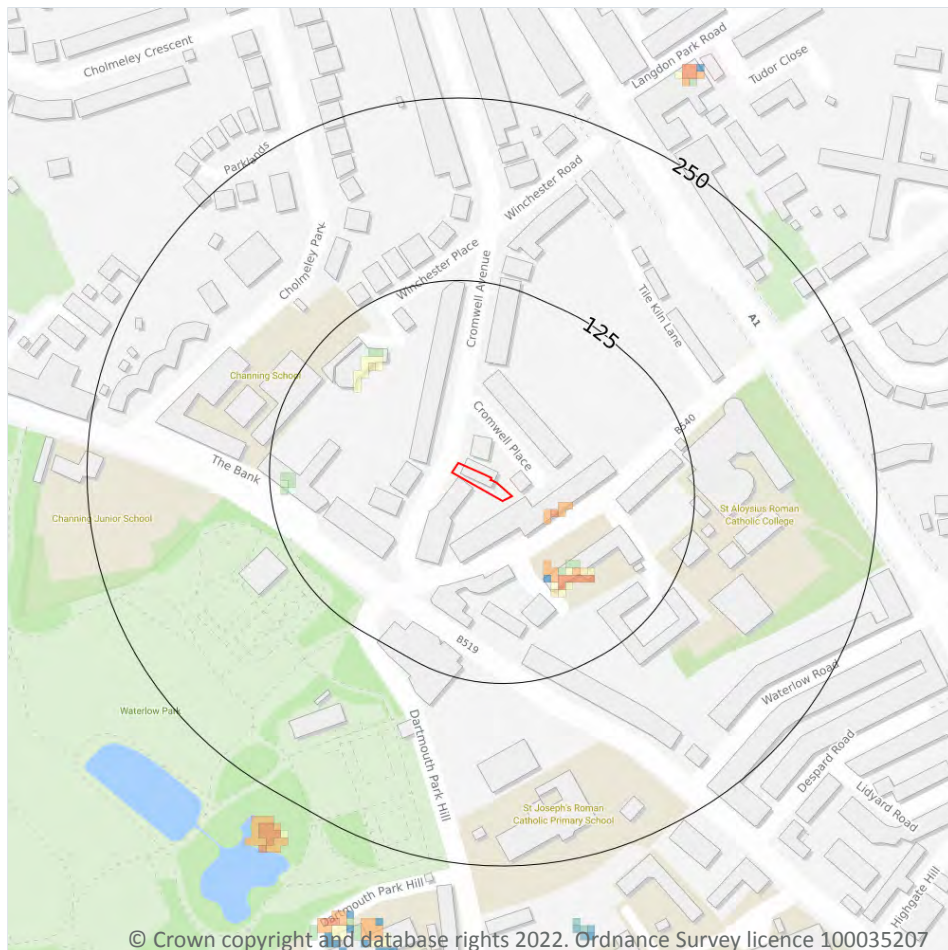
0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

1 in 30 year, 0.3m - 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 52**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.



10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- + Local Nature Reserves (LNR)
- X Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

2

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on **page 55**

ID	Location	Name	Data source
-	1503m W	Hampstead Heath Woods	Natural England



ID	Location	Name	Data source
-	1733m W	Hampstead Heath Woods	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0
-----------------------------	----------

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0
-----------------------------	----------

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0
-----------------------------	----------

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0
-----------------------------	----------

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m

3

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 55**

ID	Location	Name	Data source
1	543m N	Parkland Walk	Natural England
A	971m N	Queen's Wood	Natural England
-	1874m N	Parkland Walk	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

3

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 55**

ID	Location	Name	Woodland Type
A	971m N	Queens Wood	Ancient & Semi-Natural Woodland
2	1033m NW	Queens Wood	Ancient & Semi-Natural Woodland
-	1503m W	Ken Wood	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.



This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

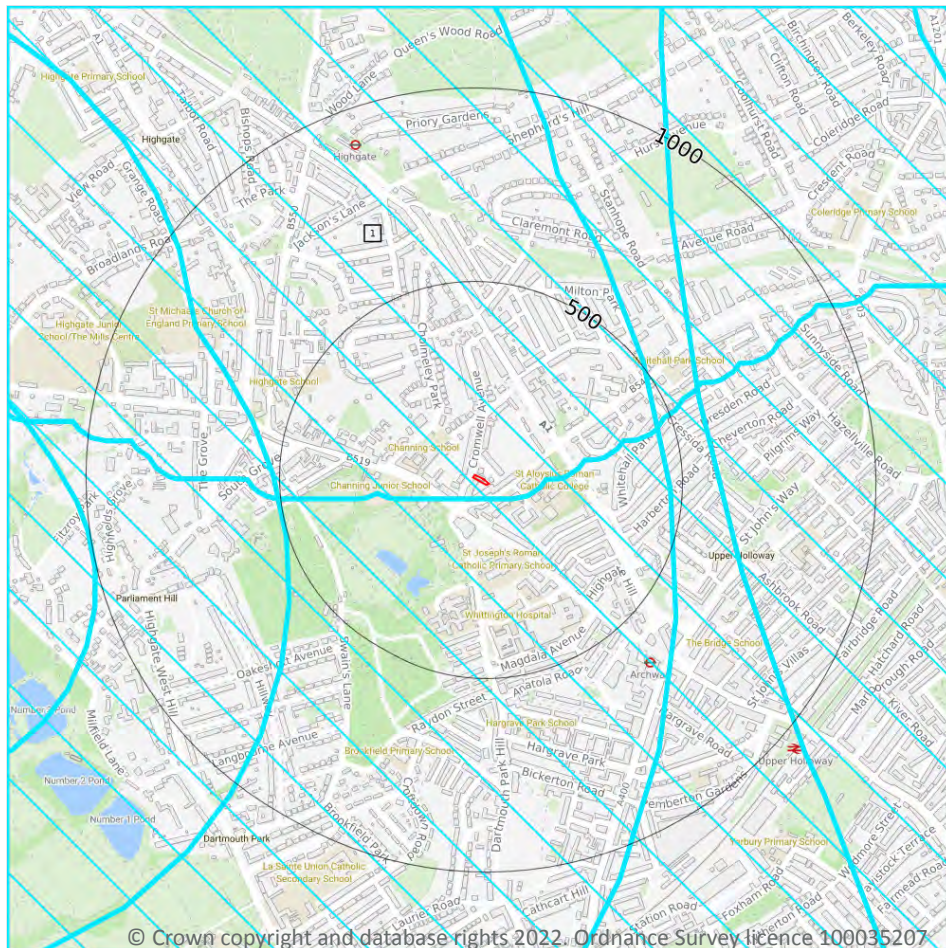
0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.



SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

1

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 60**

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Pipelines, pylons and overhead cables. any transport proposal including road, rail and by water (excluding routine maintenance). airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause air pollution (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20mw energy input. incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	3
-----------------------------	----------

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on **page 60**

ID: -
 Location: 1503m W
 SSSI name: Hampstead Heath Woods
 Unit name: 2
 Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	18/05/2018



ID: -
Location: 1733m W
SSSI name: Hampstead Heath Woods
Unit name: 2
Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland mixed deciduous woodland	Favourable	18/05/2018

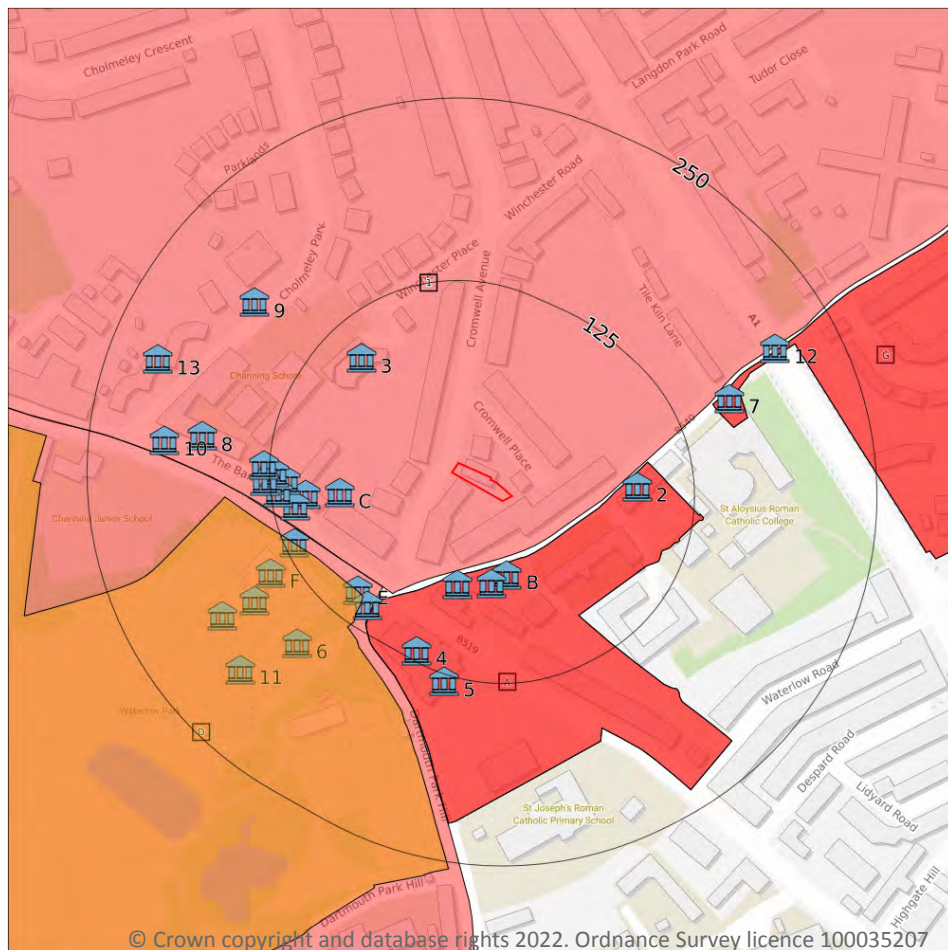
ID: -
Location: 1907m W
SSSI name: Hampstead Heath Woods
Unit name: 1
Broad habitat: Fen, Marsh And Swamp - Lowland
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
Spring/flush fen (lowland)	Favourable	18/05/2018

This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

29

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 63**

ID	Location	Name	Grade	Reference Number	Listed date
B	51m S	10 and 10a, Hornsey Lane, Junction, Islington, London, N6	II	1298041	20/09/1954
B	57m S	Number 8 and Attached Railings, Junction, Islington, London, N6	II	1195639	20/09/1954
B	65m SW	2 and 4, Hornsey Lane, Junction, Islington, London, N6	II	1195638	20/09/1954
C	78m W	Wall To South East of Number 104 (Cromwell House) Grounds, Highgate, Haringey, London, N6	II	1079234	10/05/1974



ID	Location	Name	Grade	Reference Number	Listed date
2	86m E	Number 20 and Attached Railings, Junction, Islington, London, N6	II	1195640	20/09/1954
3	98m NW	Elizabeth House, Highgate, Haringey, London, N6	II	1391376	30/08/2005
C	101m W	Cromwell House, Highgate, Haringey, London, N6	I	1079233	19/03/1951
E	103m SW	K2 Telephone Kiosk North Side of Junction With Dartmouth Park Hill, Highgate, Camden, London, N6	II	1378937	24/12/1986
E	108m SW	Parish Boundary Stone, North Side of Junction With Dartmouth Park Hill, Highgate, Islington, London, N6	II	1378939	14/05/1974
C	110m W	Forecourt Walls To Cromwell House, Highgate, Haringey, London, N6	I	1188817	10/05/1974
C	114m W	Ireton House and 106a, Highgate Hill, Highgate, Haringey, London, N6	II*	1079235	19/03/1951
4	118m SW	Church of St Joseph, Junction, Islington, London, N19	II*	1279729	20/09/1954
C	118m SW	Entrance Gates and Walls To Lauderdale House Adjoining Highgate Hill, Highgate, Camden, London, N6	II	1379129	10/06/1954
C	120m W	Forecourt Walls and Gates To 106 and 108 Highgate Hill, Highgate, Haringey, London, N6	II	1188822	10/05/1974
C	122m W	110, Highgate Hill N19, Highgate, Haringey, London, N6	II	1079236	19/03/1951
C	129m W	Forecourt Walls To 110, Highgate Hill, Highgate, Haringey, London, N6	II	1358830	10/05/1974
C	129m W	The Cottage, Highgate, Haringey, London, N6	II	1188843	10/05/1974
5	130m S	St Josephs Retreat, Junction, Islington, London, N19	II	1207495	20/09/1954
F	142m SW	Lauderdale House, Waterlow Park, Camden, London, N6	II*	1379128	10/06/1954
6	158m SW	Garden Steps To The South of Lauderdale House, Waterlow Park, Camden, London, N6	II	1379130	14/05/1974
F	161m SW	Sundial Approximately Five Metres From South Angle of Lauderdale House, Waterlow Park, Camden, London, N6	II	1379132	11/01/1999
7	163m NE	War Memorial At St Aloysius School, Junction, Islington, London, N6	II	1271513	22/05/2001
8	173m W	Slingley and Westview, Highgate, Haringey, London, N6	II	1294537	10/05/1974
9	178m NW	Furnival House, Highgate, Haringey, London, N6	II	1392904	07/10/2008
F	185m SW	Sundial To The Southwest of Lauderdale House, Waterlow Park, Camden, London, N6	II	1379133	14/05/1974



ID	Location	Name	Grade	Reference Number	Listed date
10	198m W	Retaining Wall Along Highgate Hill Between Street Pavement and Higher Paved Walk Leading To Numbers 104 To 110 (Even) and The Cottage, and Houses Farther West, Highgate, Haringey, London, N6	II	1079237	10/05/1974
11	198m SW	Garden Walls To The Southwest of Lauderdale House, Waterlow Park, Camden, London, N6	II	1379131	10/06/1954
12	207m NE	Archway Bridge, Highgate, Haringey, London, N6	II	1204360	29/09/1972
13	216m W	Cholmeley Lodge, Highgate, Haringey, London, N6	II	1390725	03/09/2003

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m

6

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 63**

ID	Location	Name	District	Date of designation
1	On site	Highgate, Haringey	Haringey	21/12/1967
A	41m S	Highgate Hill and Hornsey Lane, Islington	Islington	13/11/1990
A	41m S	Highgate Hill and Hornsey Lane, Islington	Islington	13/11/1990
D	91m SW	Highgate Village	Camden	01/05/1968
G	151m NE	Whitehall Park, Islington	Islington	18/02/1969
G	151m NE	Whitehall Park, Islington	Islington	18/02/1969

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

1

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

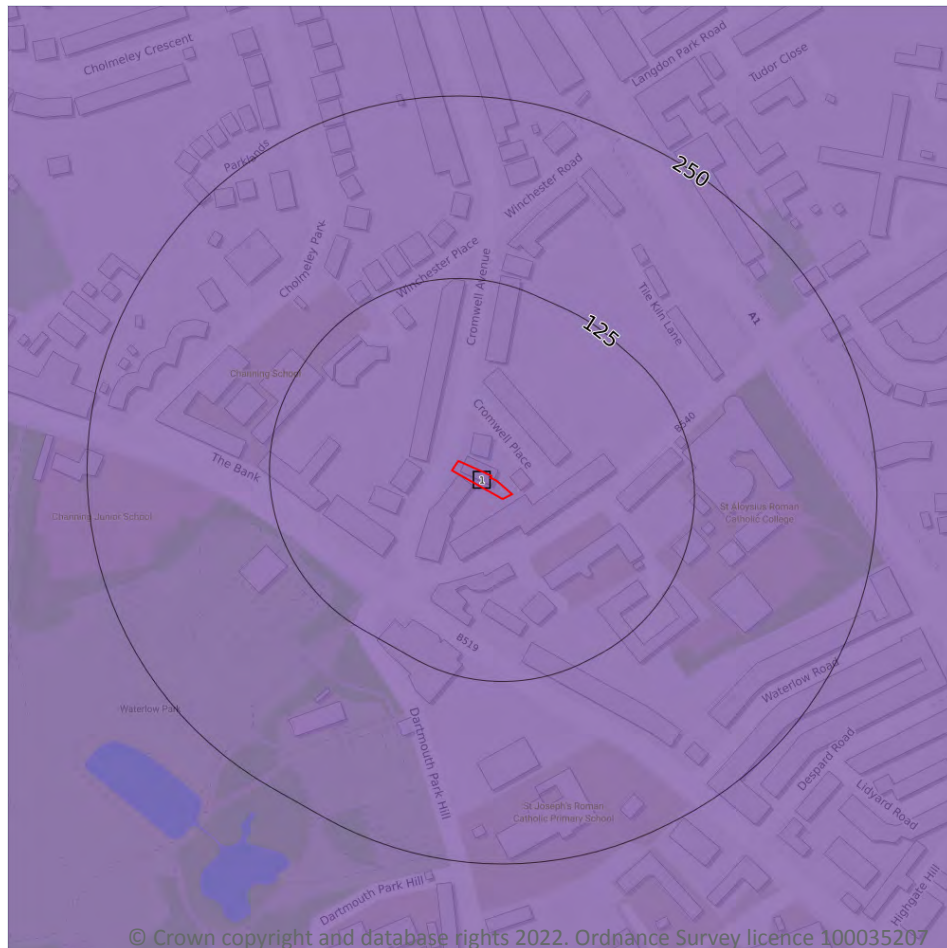
Features are displayed on the Visual and cultural designations map on **page 63**

ID	Location	Name	Grade
D	104m SW	Waterlow Park	II*

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 68**

ID	Location	Classification	Description
1	On site	Urban	-

This data is sourced from Natural England.



12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m

0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

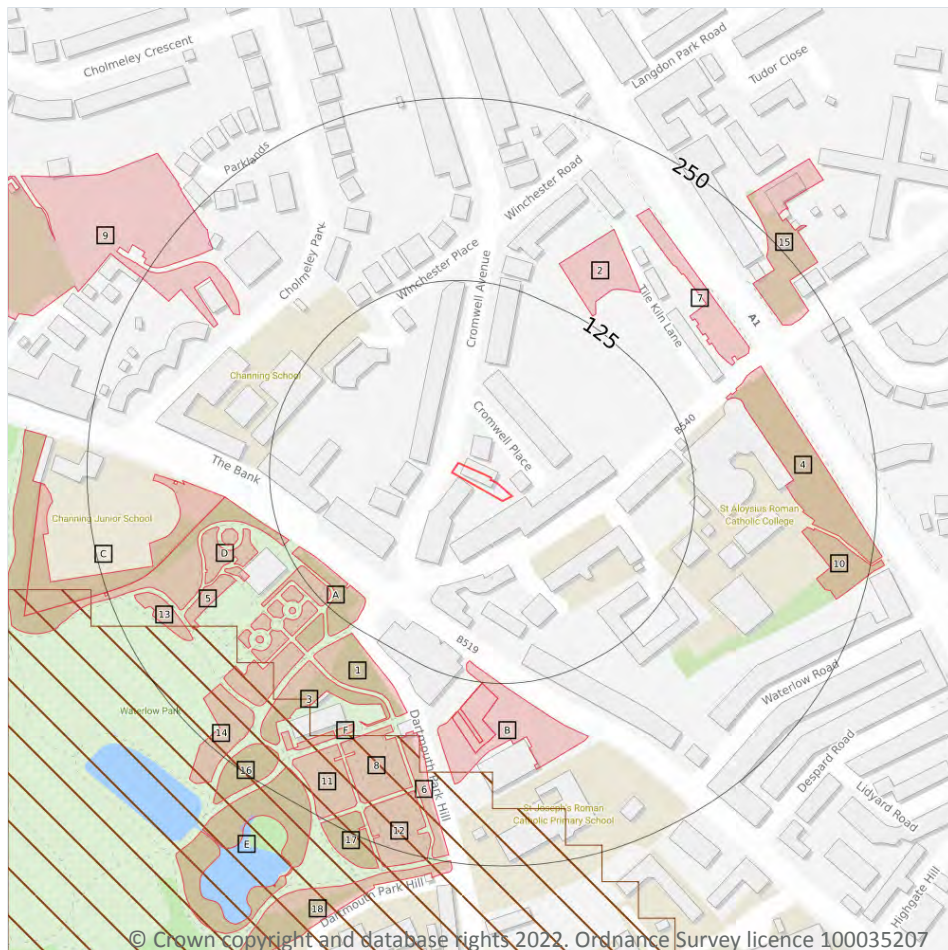
Records within 250m

0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations



13.1 Priority Habitat Inventory

Records within 250m

44

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 70**

ID	Location	Main Habitat	Other habitats
A	104m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	112m S	No main habitat but additional habitats present	Additional: TORCH (INV 50%)
A	116m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	121m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)



ID	Location	Main Habitat	Other habitats
B	126m S	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset
B	126m S	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset
B	129m S	No main habitat but additional habitats present	Additional: TORCH (INV 50%)
1	130m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	131m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	131m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	131m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	132m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	142m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
D	144m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
B	144m S	Traditional orchard	Overruled by Traditional Orchards HAP Inventory dataset
A	147m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
D	153m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
D	156m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
C	156m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	159m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	160m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	160m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	160m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	161m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
5	165m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	169m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	171m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	172m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	172m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	176m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	181m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
F	183m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)



ID	Location	Main Habitat	Other habitats
F	194m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	200m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	201m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
12	208m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
F	210m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
13	211m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
14	213m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
15	219m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
16	226m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
E	231m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
17	235m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
18	249m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

1

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on **page 70**

ID	Location	Type	Habitat
E	171m S	Network Enhancement Zone 2	Not specified

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.



13.4 Limestone Pavement Orders

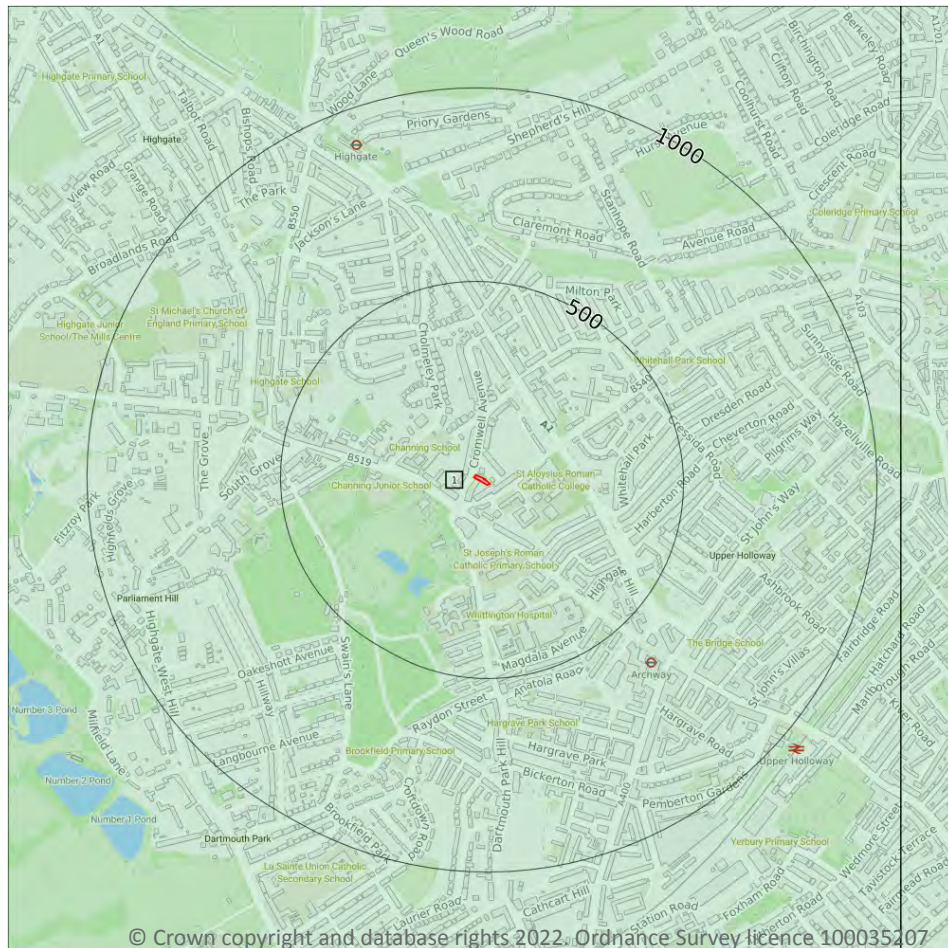
Records within 250m**0**

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

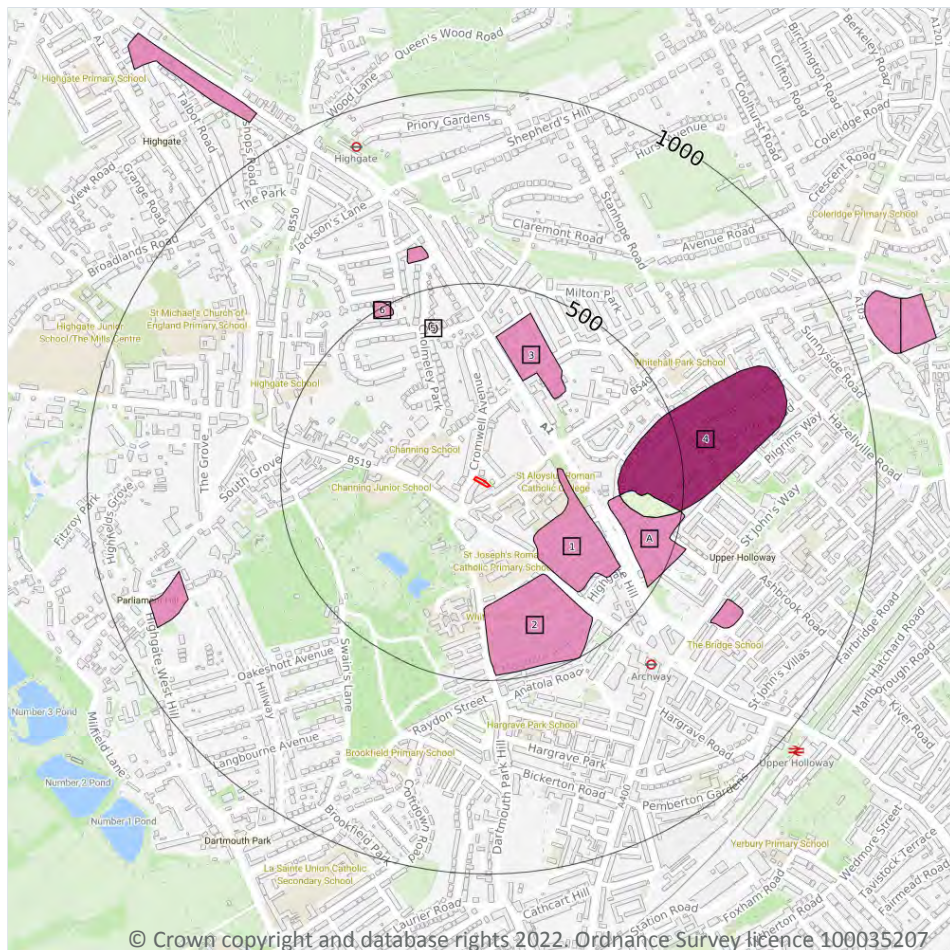
Features are displayed on the Geology 1:10,000 scale - Availability map on **page 74**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	TQ28NE

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



— Site Outline
Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

8

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 75**

ID	Location	LEX Code	Description	Rock description
1	171m SE	WGR-UNKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry
2	265m SE	WGR-UNKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry
3	276m NE	WGR-UNKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry
A	308m E	WGR-UNKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry



ID	Location	LEX Code	Description	Rock description
4	331m E	MGR-UNKNOWN	Made Ground (Undivided)	Unknown/unclassified Entry
A	336m E	WMGR-UNKNOWN	Infilled Ground	Unknown/unclassified Entry
5	386m N	WGR-UNKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry
6	470m NW	WGR-UNKNOWN	Worked Ground (Undivided)	Unknown/unclassified Entry

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m

0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

4

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 78**

ID	Location	LEX Code	Description	Rock age
1	On site	CLGB-SDST	Claygate Member - Sandstone	Eocene Epoch
2	22m NW	BGS-SANDU	Bagshot Formation - Sand	Eocene Epoch
3	107m S	LC-CLAY	London Clay Formation - Clay	Eocene Epoch
4	224m NE	BGS-SANDU	Bagshot Formation - Sand	Eocene Epoch



This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

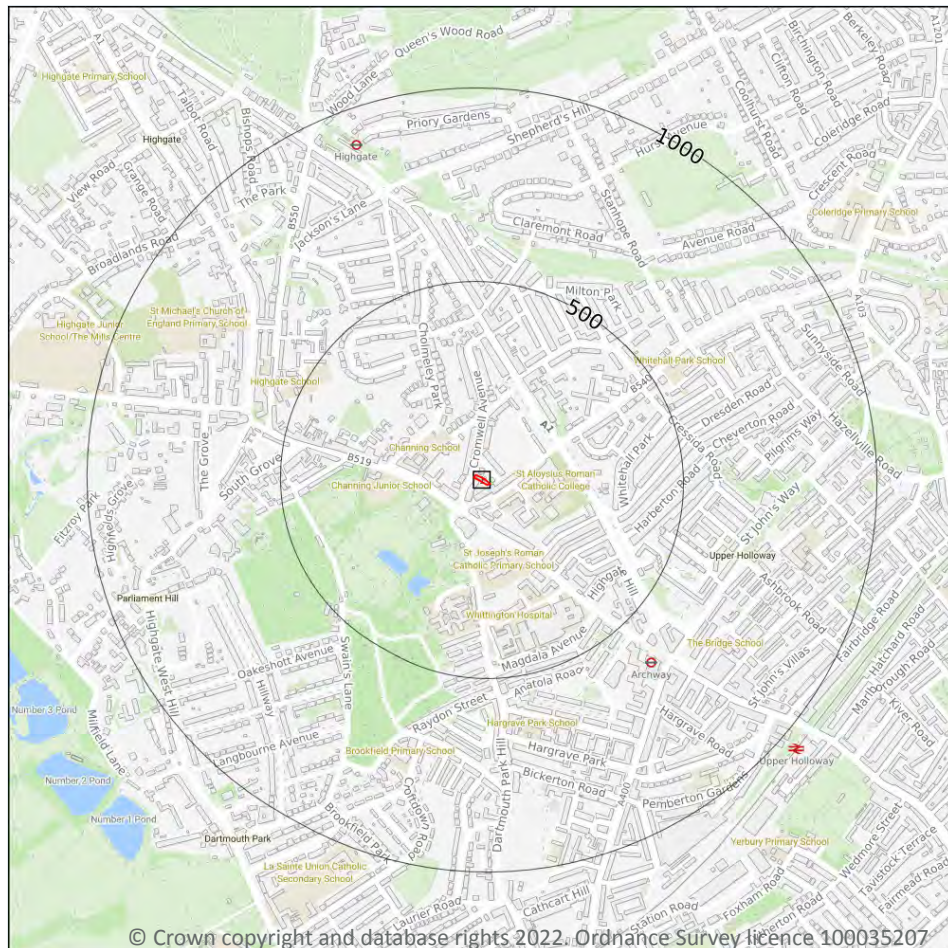
0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline
Search buffers in metres (m)

☐ Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

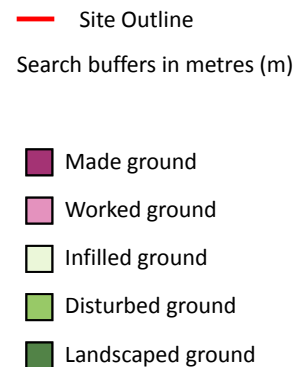
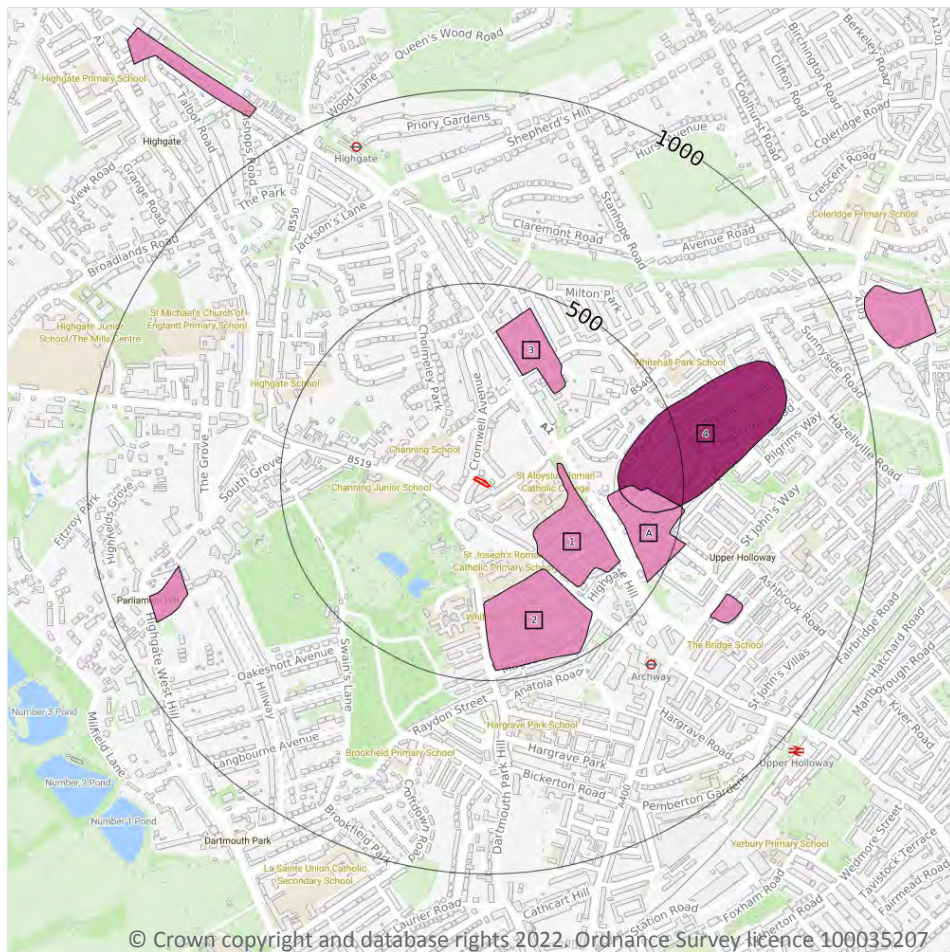
Features are displayed on the Geology 1:50,000 scale - Availability map on **page 80**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW256_north_london_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground



15.2 Artificial and made ground (50k)

Records within 500m

6

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 81**

ID	Location	LEX Code	Description	Rock description
1	161m SE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
2	253m SE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
3	289m NE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
A	305m E	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID



ID	Location	LEX Code	Description	Rock description
4	331m E	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
A	335m E	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial

15.4 Superficial geology (50k)

Records within 500m

0

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m

0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

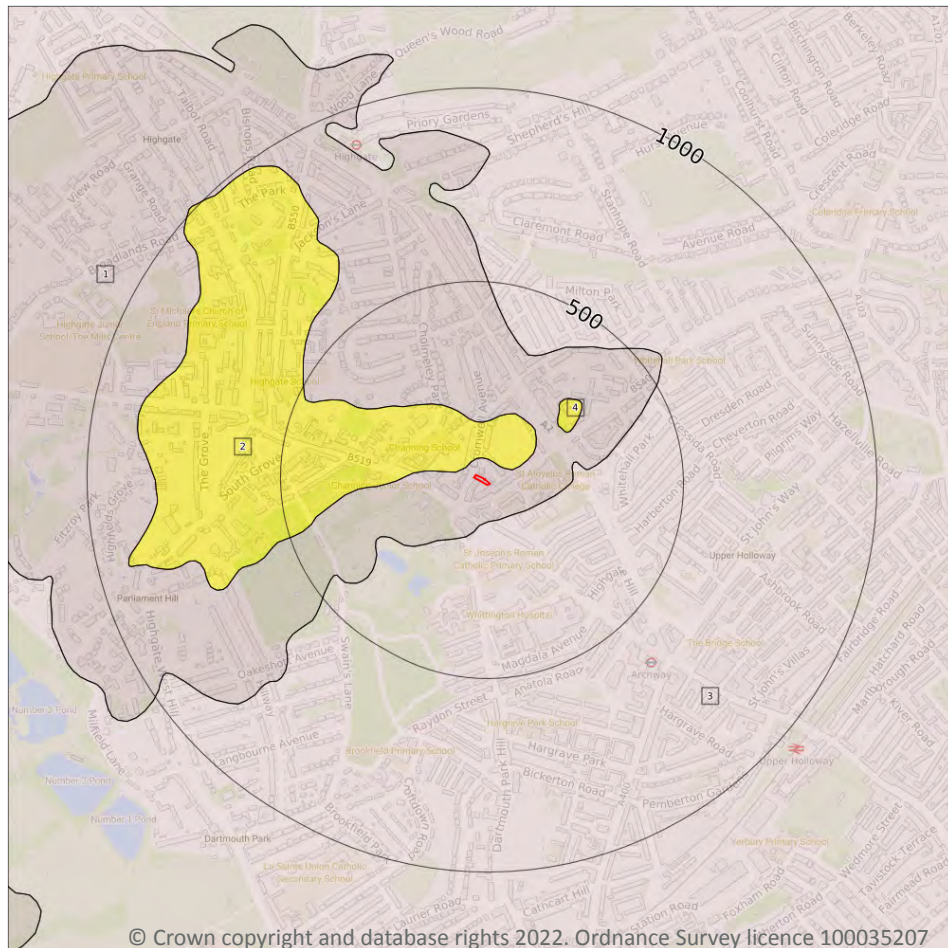
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

..... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

4

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 84**

ID	Location	LEX Code	Description	Rock age
1	On site	CLGB-XCZS	CLAYGATE MEMBER - CLAY, SILT AND SAND	YPRESIAN
2	32m NW	BGS-S	BAGSHOT FORMATION - SAND	YPRESIAN
3	94m S	LC-XCZS	LONDON CLAY FORMATION - CLAY, SILT AND SAND	YPRESIAN
4	232m NE	BGS-S	BAGSHOT FORMATION - SAND	YPRESIAN



This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m

2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Very Low
32m W	Intergranular	High	High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

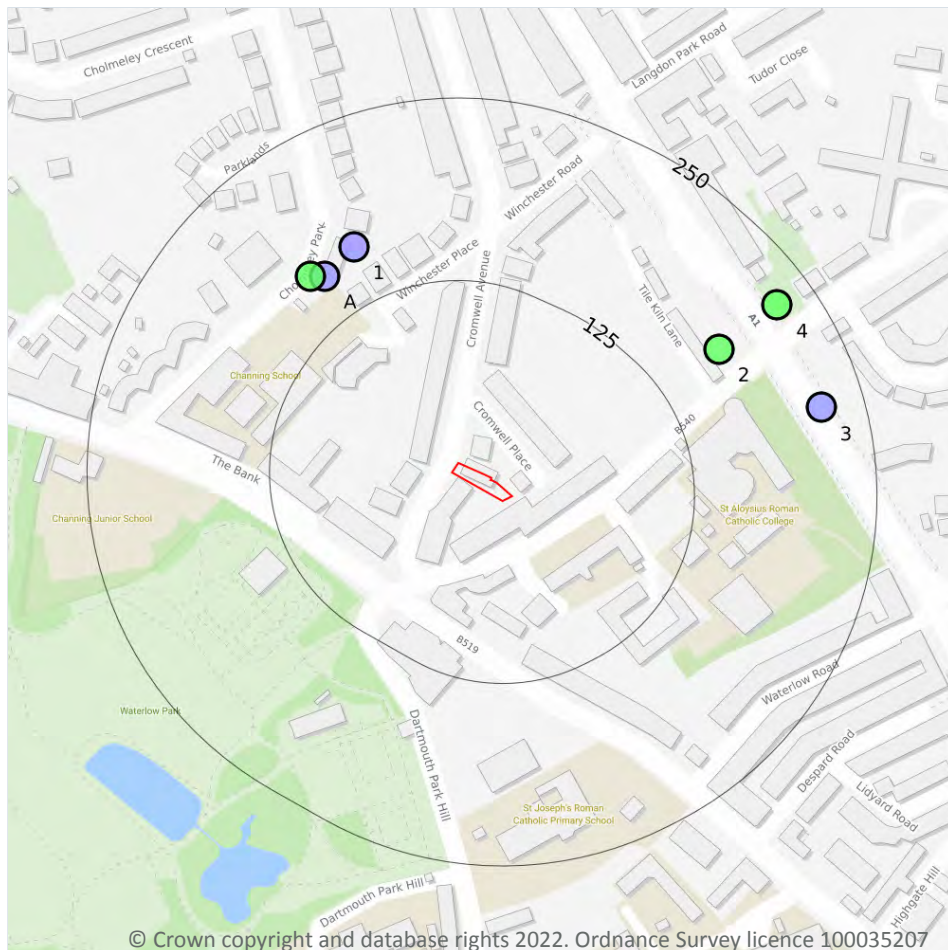
0

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

6

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 86**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	158m NW	528810 187440	CROMWELL LODGE HIGHGATE TP2	1.32	N	590899
A	164m NW	528800 187440	CROMWELL LODGE HIGHGATE 1	15.2	N	590897
1	165m NW	528830 187460	CROMWELL LODGE HIGHGATE TP1	1.8	N	590898

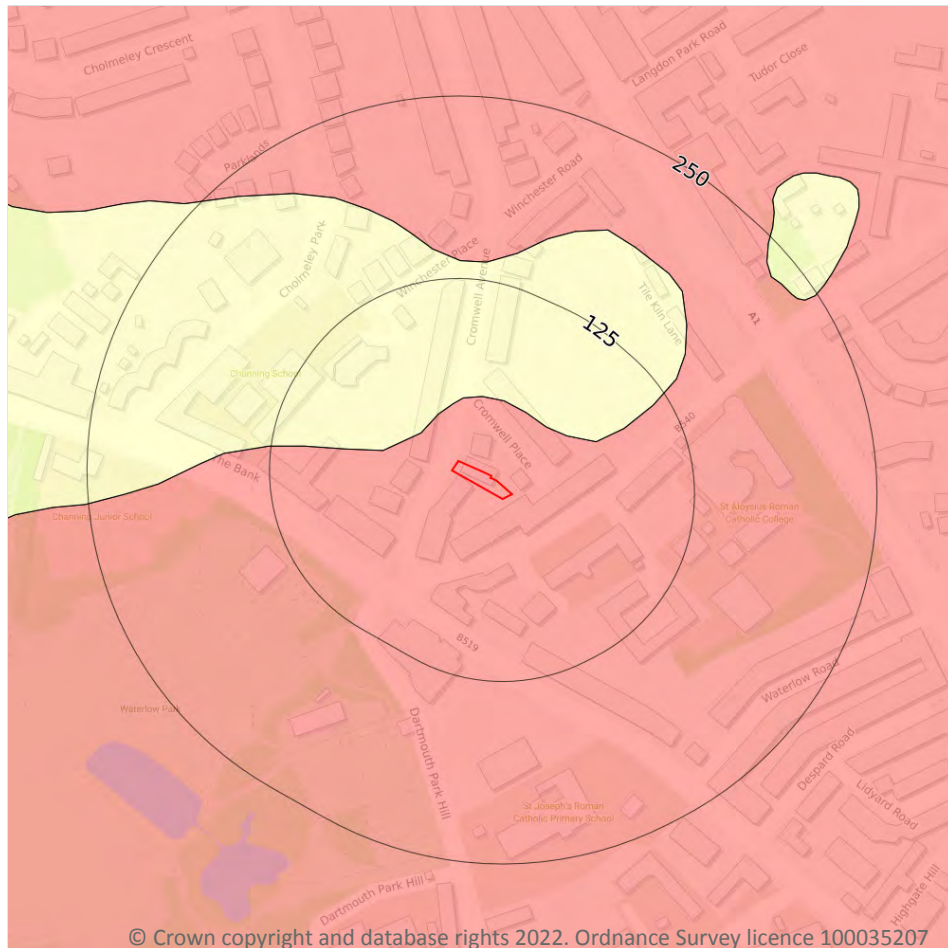


ID	Location	Grid reference	Name	Length	Confidential	Web link
2	174m NE	529080 187390	RESERVOIR HORNSEY LANE N6 WOODGREEN	19.81	N	590595
3	220m E	529150 187350	HORNSEY LANE BORING FOR HAMPSTEAD TUBE	9.14	N	590597
4	224m NE	529120 187420	HORNSEY LANE ADJ TO HIGH GATE ARCHWAY	10.05	N	590596

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.1 Shrink swell clays

Records within 50m

2

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

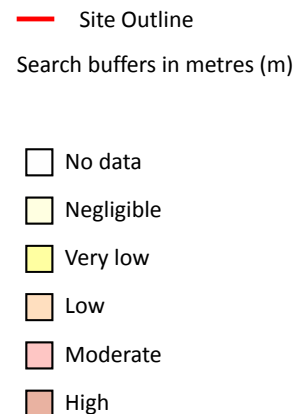
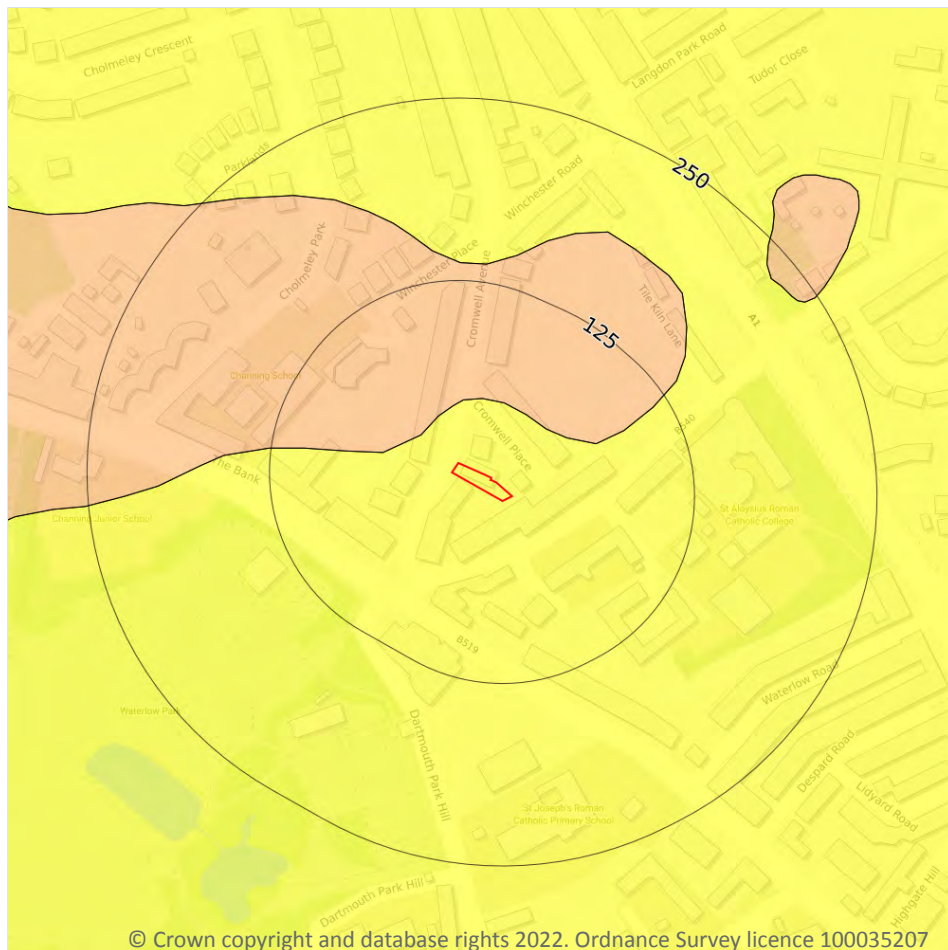
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 88**

Location	Hazard rating	Details
On site	Moderate	Ground conditions predominantly high plasticity.
32m NW	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 89**

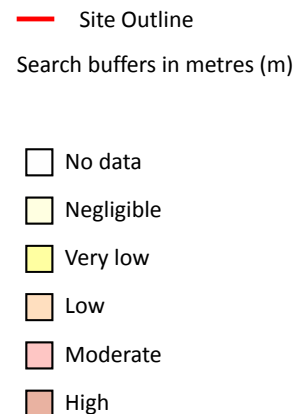
Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

Location	Hazard rating	Details
32m NW	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



17.3 Compressible deposits

Records within 50m

1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 91**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.4 Collapsible deposits

Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

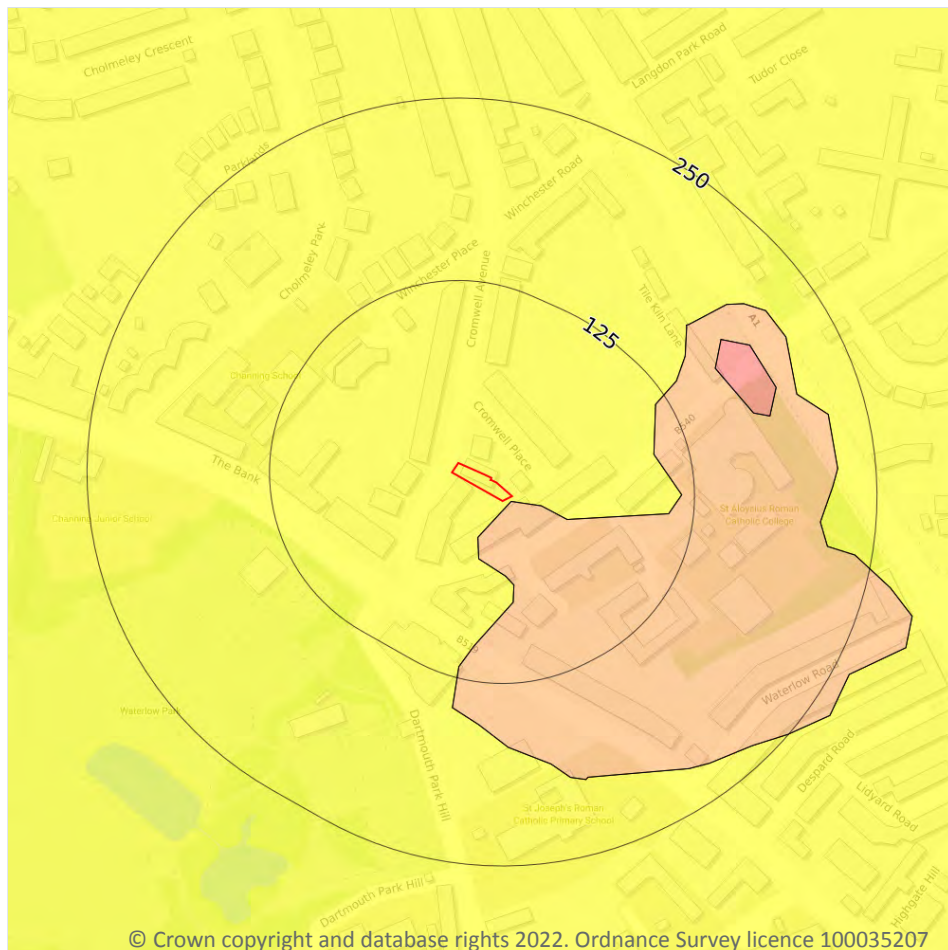
Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 92**

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



— Site Outline
Search buffers in metres (m)

- ☐ No data
- ☐ Negligible
- ☐ Very low
- ☐ Low
- ☐ Moderate
- ☐ High

17.5 Landslides

Records within 50m

2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 93**

Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

Location	Hazard rating	Details
3m SE	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.



© Crown copyright and database rights 2022. Ordnance Survey licence 100035207

 No data
 Negligible
 Very low
 Low
 Moderate
 High

Records within 50m	1
--------------------	---

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 95**

This data is sourced from the British Geological Survey.

© Crown copyright and database rights 2022. Ordnance Survey licence 100035207

-  Site Outline
 - Search buffers in metres (m)
 -  Natural cavities (Area)
 -  Natural cavities (Point)
 -  BritPits
 -  Surface ground workings
 -  Underground workings
 -  Historical Mineral Planning Areas
 -  Mining Cavities

Non Coal Mining

 -  Sporadic underground mining of restricted extent possible
 -  Localised small scale underground mining possible
 -  Small scale mining possible
 -  Underground mining known or likely within or in close proximity
 -  Underground mining known within or in very close proximity

Records within 500m	0
---------------------	---

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m

0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

21

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 96**

ID	Location	Land Use	Year of mapping	Mapping scale
A	54m NE	Reservoir	1920	1:10560
A	65m NE	Unspecified Heap	1958	1:10560
A	70m NE	Reservoir	1949	1:10560
A	71m NE	Reservoir	1938	1:10560
A	74m NE	Covered Reservoir	1894	1:10560
A	75m NE	Reservoir	1965	1:10560
A	75m NE	Reservoir	1974	1:10000
A	75m NE	Reservoir	1996	1:10000
B	140m N	Pond	1879	1:10560
B	140m N	Pond	1869	1:10560
C	168m NE	Cuttings	1996	1:10000
C	169m NE	Cuttings	1949	1:10560
C	174m NE	Cuttings	1949	1:10560
C	174m NE	Cuttings	1958	1:10560
D	177m SE	Brick Field	1879	1:10560
D	177m SE	Brick Field	1869	1:10560
C	180m NE	Cuttings	1894	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
C	188m E	Cuttings	1958	1:10560
C	188m E	Cuttings	1965	1:10560
C	190m E	Cuttings	1974	1:10000
C	190m E	Cuttings	1996	1:10000

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

17

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 96**

ID	Location	Land Use	Year of mapping	Mapping scale
A	102m NE	Unspecified Shaft	1965	1:10560
A	102m NE	Unspecified Shaft	1974	1:10000
A	102m NE	Unspecified Shaft	1995	1:10000
-	730m N	Tunnel	1869	1:10560
-	730m N	Tunnel	1879	1:10560
-	730m N	Tunnel	1879	1:10560
-	735m N	Tunnels	1965	1:10560
-	735m N	Tunnels	1974	1:10000
-	735m N	Tunnels	1995	1:10000
-	735m N	Tunnels	1958	1:10560
-	950m NW	Tunnel	1869	1:10560
-	950m NW	Tunnel	1879	1:10560
-	950m NW	Tunnel	1879	1:10560
-	952m NW	Tunnels	1965	1:10560
-	952m NW	Tunnels	1974	1:10000
-	952m NW	Tunnels	1995	1:10000



ID	Location	Land Use	Year of mapping	Mapping scale
-	952m NW	Tunnels	1958	1:10560

This data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

0

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.



18.9 Coal mining

Records on site	0
-----------------	---

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0
-----------------	---

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0
-----------------	---

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
-----------------	---

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.13 Clay mining

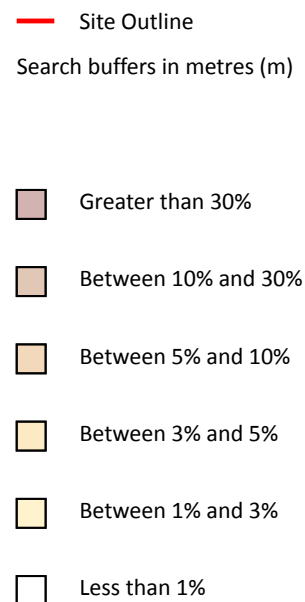
Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).



19 Radon



19.1 Radon

Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 101**

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None**

This data is sourced from the British Geological Survey and Public Health England.



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	No data	No data	No data	No data	No data	No data	No data
32m NW	No data	No data	No data	No data	No data	No data	No data

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

4

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

Location	Arsenic (mg/kg)	Bioaccessible Arsenic (mg/kg)	Lead (mg/kg)	Bioaccessible Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Nickel (mg/kg)	Tin (mg/kg)
On site	15	2.6	208	143	0.6	75	53	20	19
On site	16	2.8	228	157	0.7	76	56	22	20
On site	16	2.8	237	163	0.8	76	63	24	21
3m SW	15	2.6	178	122	0.4	75	42	17	18

This data is sourced from the British Geological Survey.



20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)**
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m

1

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

Features are displayed on the Railway infrastructure and projects map on **page 104**

Location	Line Name	Line Section	Track Type	Depth (m bgl)	Operational hours
208m NE	Northern Line	Northern Line	Tunnel	56.23	Mon-Thu: Early 0512 Late 2358 Fri-Sun: Early 0522

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m**0**

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m**0**

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m**0**

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m**0**

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m**0**

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.



21.7 Railways

Records within 250m**0**

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m**0**

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m**0**

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m**0**

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference>.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



APPENDIX C

- ✚ Trial pit logs from MHA Basement Impact Assessment (Ref: 22011-MHA-ZZ-ZZ-RP-S-001, dated 26/09/22)

Technical drawing of a cross-section of a wall and its foundation. The wall on the left is shown in section, with a total height of 1290. It consists of a base of "Yellow / orange firm clay with some sand content (can be rolled)", followed by a layer of "Lean mix concrete with granular fragements", and a top section of "Bricks". The brickwork has a height of 190, with individual courses of 50, 45, and 50. Below the bricks is a concrete base with a height of 170, divided into sections of 90, 85, and 80. The foundation on the right is shown in plan, with a width of 70. It consists of a base of "Yellow / orange firm clay with some sand content (can be rolled)", followed by a layer of "Made ground", a layer of "Brick", and a top layer of "Concrete slab with DPM".

Architectural drawing showing a section through a wall and floor assembly.

Wall Section (Left):

- Material: Lean mix concrete with granular fragments.
- Height: 175.
- Width: 65, 55, 45.

Floor Assembly Section (Right):

- Concrete slab with DPM: 70.
- Brick: 100.
- Made ground: 70.
- Total height: 240.

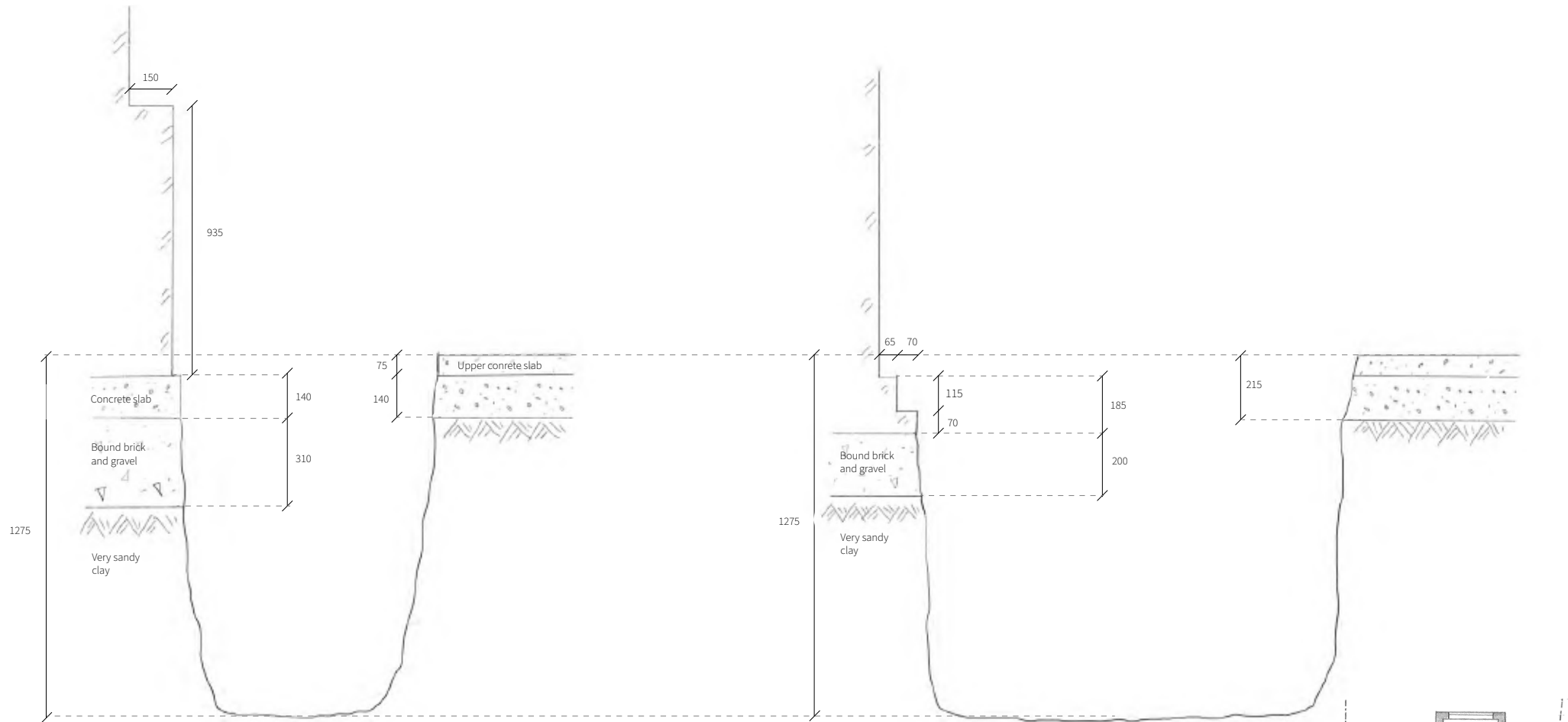
Ground Level: Yellow / orange firm clay with some sand content (can be rolled).

Detail: A small detail of a window or door is shown at the bottom right, labeled T72.

TP1

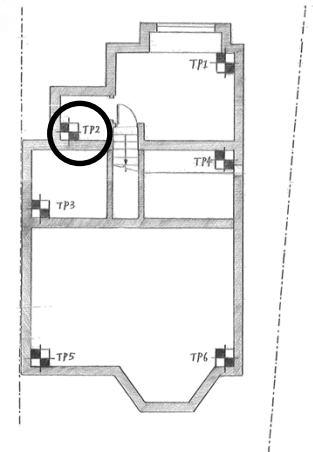


22011 / 69 Cromwell Avenue N6, Trial Pit Logs - 18/08/22



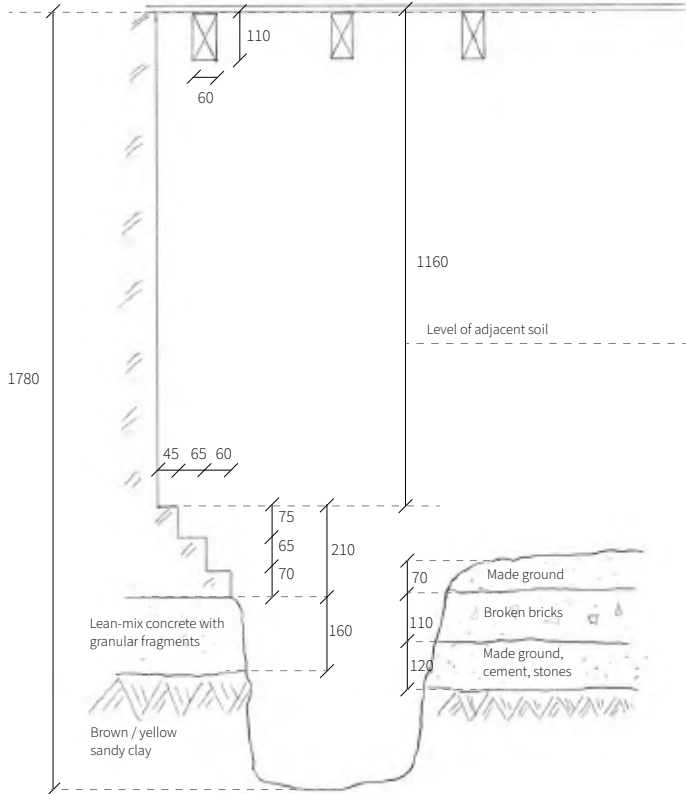
TP2 Section Through Internal Wall Parallel to Party Wall

TP2 Section Through Internal Wall Perpendicular to Party Wall

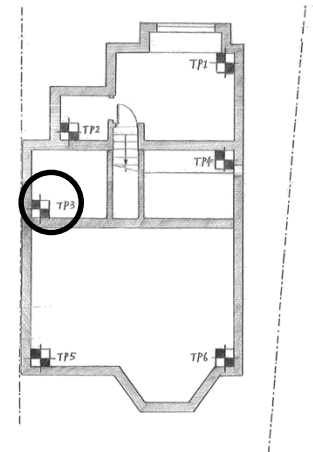




22011 / 69 Cromwell Avenue N6, Trial Pit Logs - 21/09/22



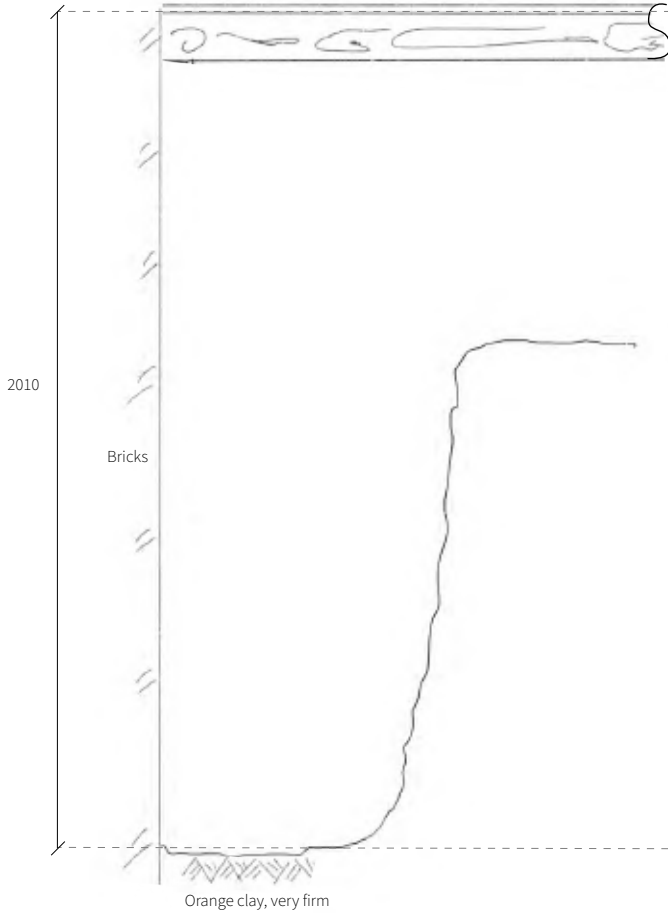
TP3 Section Through Party Wall



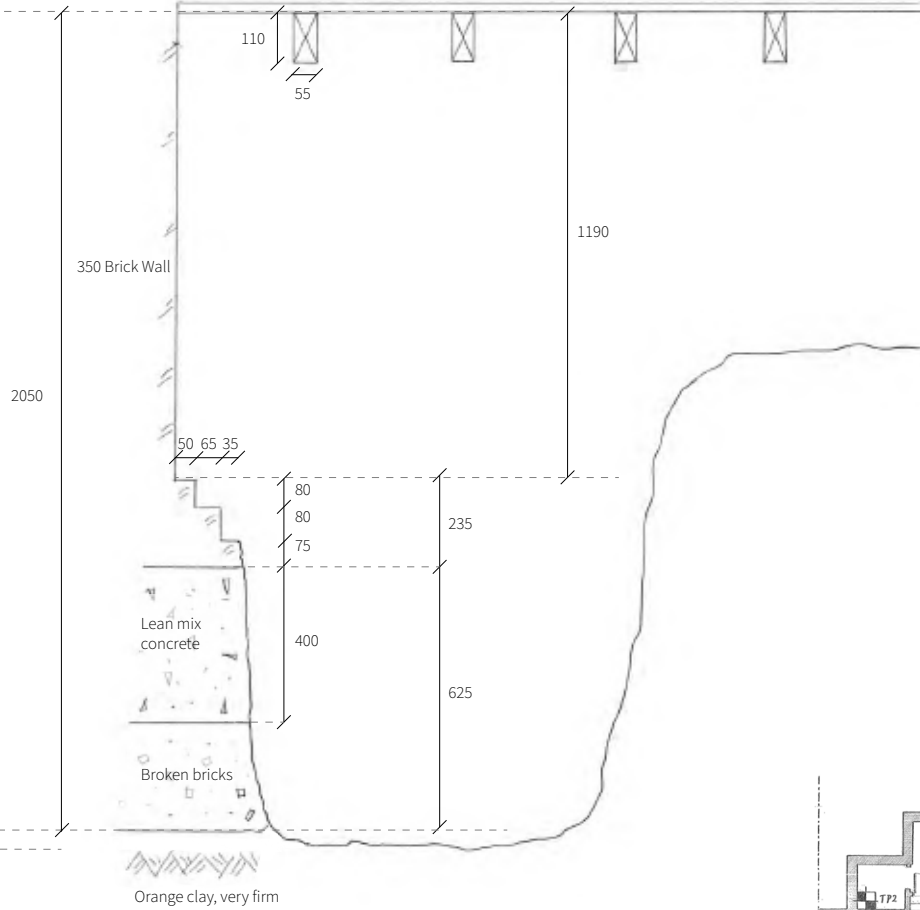
TP3



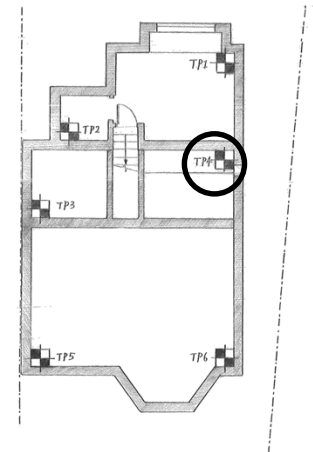
22011 / 69 Cromwell Avenue N6, Trial Pit Logs - 18/08/22



TP4 Section Through Internal Wall

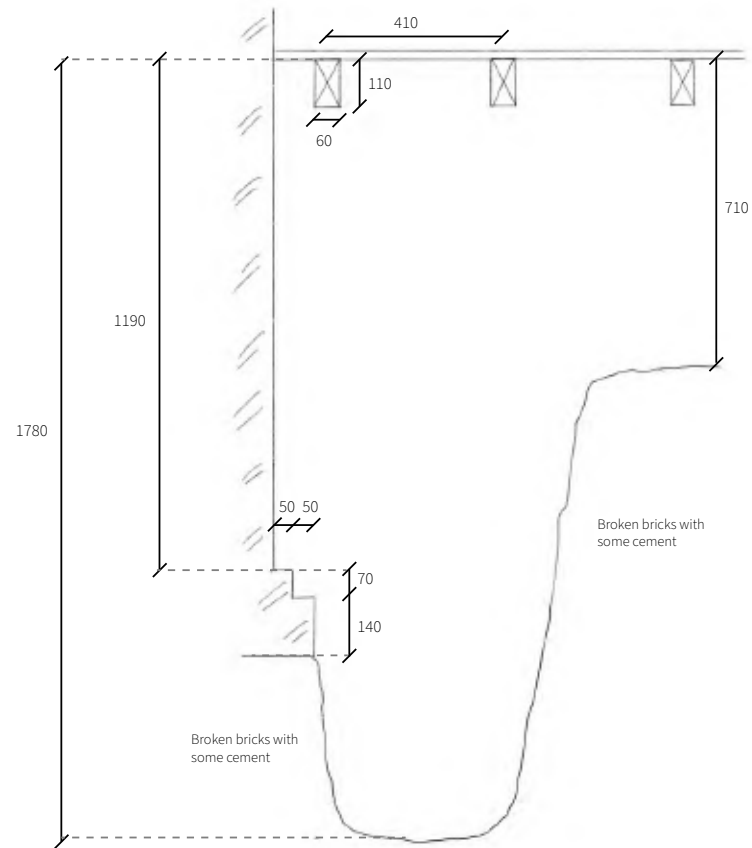


TP4 Section Through Flank Wall

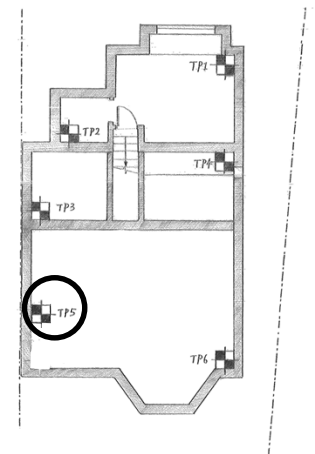


TP4





TP5 Section Through Party Wall



TP5



Architectural cross-section drawing of a wall and foundation. The wall is 1930 units high. The foundation is 580 units deep. The wall is made of bricks with mortar and cement. The foundation is made of yellow/orange sandy clay. The wall is divided into three sections: 415 units wide (top), 380 units wide (middle), and 390 units wide (bottom). The foundation is divided into three sections: 50 units wide (left), 65 units wide (middle), and 130 units wide (right). The wall is labeled "More than a brick thick". The foundation is labeled "Bricks", "Brick with mortar & cement", and "Sandier soil". The wall is labeled "Made ground and broken bricks".

TP6

