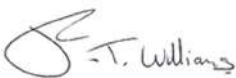


Phase II Site Investigation Report

YMCA London City and North, 184 Tottenham Lane, Crouch End, London N8 8SG

On behalf of Altair Limited

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EXECUTIVE SUMMARY	
PROPOSED DEVELOPMENT	At the time of reporting, June 2026, the proposed development was understood to comprise the redevelopment of the existing building to deliver approximately 170 bedspaces (from 155 bedspaces) and associated infrastructure. These changes will include alterations to the footprint of the building (part of the northern section the dwelling will be removed and part of the western portion will be extended with new foundations) and adding another storey to the existing 5 storey building. No new soft landscaping areas are proposed.
GEOLOGY AND HYDROGEOLOGY	The site was underlain by bedrock deposits of the London Clay Formation (unproductive strata). No areas of Made Ground or Reworked Ground were noted within a 250m radius. The site did not fall within a Groundwater Source Protection Zone. Groundwater was anticipated to be encountered at depth below the London Clay Formation. Some amounts of groundwater however may be present at shallower depths within Made ground, or silty/sandy pockets of the London Clay Formation. It was considered that groundwater was flowing in a north-easterly direction toward the in line with local topography.
VOLUME CHANGE POTENTIAL	Atterberg testing confirmed a medium to high volume potential change within cohesive samples.
FOUNDATION DESIGN	In the location of BH1 and BH2, foundations constructed at 1.70m bgl on cohesive soils of the London Clay Formation can be designed based on a presumed allowable bearing capacity of 100 kN/m². Pile foundation recommendations can be seen in section 6.3
SUB-SURFACE CONCRETE	Made Ground -Sulphate Design Class of DS-2 should be used for sub-surface concrete in contact with the Made Ground. Classification of AC-1s. London Clay Formation -Sulphate Design Class of DS-5 should be used for sub-surface concrete in contact with the London Clay Formation. classification of AC-4.
CONTAMINATION	Exceedances of asbestos, Lead, and Nickel were identified, Zinc was identified at an exceedance to phytotoxicity levels.
REMEDIATION	No risk to future users was identified due to the location of contamination being located within the proposed footprint of the proposed structure, however, it is recommended that further testing is undertaken post-demolition, with particular focus on any proposed soft landscaped areas.

1. INTRODUCTION

1.1. General

Ground and Water Limited were instructed by Altair Limited (the Client) on the 17th March 2026 to conduct a Phase I Desk Study on the site at 184 Tottenham Lane, London, N8 8SG (the Site). The scope of the investigation was detailed within the fee proposal GW-2386, dated the 3rd March 2026.

1.2. Aims of the Investigation

The aim of this report was to supply the client and their designers with information regarding the ground conditions underlying the site to assist them in preparing an appropriate scheme for development.

The investigation was to be undertaken to provide parameters for the design of foundations by means of in-situ and laboratory geotechnical testing undertaken on soil samples recovered from trial holes.

A contamination assessment was to be undertaken following chemical laboratory testing on soil samples recovered from the site to enable recommendations for the safe redevelopment of the site and the protection of site workers, end-users and the public from any potential contamination identified. The assessment comprises a Tier 2 Generic Quantitative Risk Assessment, under Land Contamination Risk Management (LCRM).

This Site Investigation Report must be read in conjunction with the Desk Study Report referenced GWPR7007/DS/April 2026.

The techniques adopted for the investigation were chosen considering the requirements of the client, anticipated ground conditions, and bearing in mind the nature of the site, limitations to site access and other logistical limitations.

1.3. Conditions and Limitations

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

1.4. Technical Glossary

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

2. SITE SETTING

2.1. Site Location

The site comprised a ~2,000m² irregular-shaped plot of land. The site was located along the north-western side of Tottenham Lane, along the north-eastern side of Rosebery Gardens and along the south-western side of Elmfield Avenue. The site was located in the eastern portion of Crouch End, north London.

The national grid reference for the centre of the site was approximately TQ 30297 88692. A site location plan is given within Figure 1.

2.2. Site Description

At the time of the site walkover, 31st March 2026, the site was occupied by the building known as the YMCA Hostel London City and North. It is a four to five storey building in the southern section, parallel to Tottenham Lane, comprises 155 single occupancy bedrooms with communal areas (including meeting rooms, storage areas and a canteen with adjacent kitchen). The northern section comprises three storey fitness centre known as Crouch End Fitness Centre. A courtyard is present in the central north of the site used as carparking and bin storage facilities. The property is accessed via Rosebery Gardens and the site was generally flat and level with no noticeable slope onsite. A very small soft landscaping area was present along the northern boundary.

2.3. Proposed Development

At the time of reporting, June 2026, the proposed development was understood to comprise the redevelopment of the existing building to deliver approximately 170 bedspaces (from 155 bedspaces) and associated infrastructure. These changes will include alterations to the footprint of the building (part of the northern section the dwelling will be removed and part of the western portion will be extended with new foundations) and adding another storey to the existing 5 storey building. No new soft landscaping areas are proposed.

The proposed development fell within Geotechnical Design Category 2 in accordance with Eurocode 7. The proposed development plan can be seen within Figure 2.

2.4. Geology

The British Geological Survey Solid Map revealed that the site was underlain by bedrock deposits of the London Clay Formation. No areas of Made Ground/Reworked Ground or superficial deposits were noted within a 250m radius due to their likely absence.

A BGS borehole (TQ38NW303) located ~270m east of the site revealed a 0.20m capping of Topsoil over Made Ground consisting of sandy gravelly clay and brick to 3.1m bgl followed by a firm to stiff brown fissured slightly silty clay to 8.0m bgl. A stiff fissured grey silty clay with thin lamina structure and small pyrite nodules was then noted for the remainder of the borehole, a depth of 15.00m bgl. No groundwater was noted.

2.5. Hydrogeology and Hydrology

A study of the aquifer maps on the DEFRA website revealed the site was underlain by **Unproductive Strata** comprising bedrock deposits of the London Clay Formation. No superficial deposits were listed due to their likely absence.

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

No surface water features were present within a 250m radius of the site. The nearest surface water feature was a pond in Stationers Park located ~600m southeast.

From analysis of hydrogeological and topographical maps, groundwater was anticipated at depth, below the cohesive, relatively impermeable soils of the London Clay Formation; however, some amounts of perched water may be present within particularly sandy/silty lenses of the London Clay Formation and/or within the shallow surface soils (i.e. Topsoil, Made Ground etc.), especially after periods of prolonged or intense rainfall. It was considered that groundwater was flowing in a north-easterly in line with the local topography.

Examination of the Environment Agency records showed that the site was located within a Flood Zone 1, i.e. an area with a very low probability of flooding.

The Groundsure Datasheets revealed the site was at a negligible risk of flooding from rivers and the sea, groundwater and surface water flooding.

2.6. Radon

A review of the freely available UK Health Security Agency radon database, UK Radon, indicated that the site was located within a 1km grid square, where the maximum radon potential of less than 1% was recorded for above ground structures. Basic radon protection measures are required in areas where more than 3% of houses are at or above the Action Level. The site was in an area where a risk assessment was not required.

2.7. Internet Search (Site Setting)

2.7.1. Available Unexploded Ordnance (UXO) Map Review

A detailed Unexploded Ordnance Risk Assessment carried out by 1st Line Defence on the 13th August 2025 referenced DA22141-00, found there to be a medium risk to the site from German and anti-aircraft UXOs. According to the official home office bombing statistics the borough of Hornsey sustained an overall high density of bombing with 355 items of ordnance within the 2,872acre borough, an average of 123.6 items per 1,000 acres. The report recommended site supervision and downhole support which was carried out during the site works onsite. The full report can be seen in Appendix F.

2.7.2. Historical Landfill Tool Review

A review of the data available on www.groundsure.io/ revealed that no areas of Historical Landfilling were located within 500m of the site.

2.8. Preliminary Risk Assessment

The tabulated Conceptual Site Model developed as part of the Ground and Water Ltd Desk Study (GWPR7007/DS/April 2026) is outlined overleaf. For ease of reference and understanding, the risks have been classified within this risk assessment against four possible levels / categories, summarised in the table below. Any risk deemed to be negligible within the Preliminary Risk Assessment have been excluded from this report.

Risk Categories used in the Tabulated CSM	
Low Risk	Regarding this potential SPR linkage, the site is considered suitable for the proposed end-use and there is not considered to be an unacceptable risk to receptors. However, it is considered that further investigation to confirm this is recommended.
Moderate Risk	Regarding this potential SPR linkage, the site may not be suitable for the proposed end-use in its current condition and there may be an unacceptable risk to receptors. Further investigation is required to confirm this.
High Risk	Regarding this potential SPR linkage, the site is probably or certainly not suitable for proposed end-use and there is likely to be an unacceptable risk to receptors. Contaminants probably or certainly present and urgent action required in the short term.

Tabulated Conceptual Site Model – Pollutant Linkage Summary			(On-Site Sources)
Potential Sources	Potential Absorption Pathways	Potential Receptors	Risk
Made Ground from construction/ demolition activities: - Asbestos, - PAHs, - TPHs, - Sulphates, and - Metals.	- Direct ingestion of soil and soil derived dust - Dermal contact of soil and soil derived dust - Inhalation of dust (indoors and outdoors) with elevated concentration of determinands - Direct ingestion of perched water - Inhalation of volatile vapour (indoors and outdoors)	Human Health - End Users (Site workers/Future site residents and visitors) - Construction workers during development - Site operatives during maintenance works - Neighbours and public	Moderate
	- Direct uptake of perched water - Direct uptake of determinands in the soil	Flora and Fauna Vegetation within soft landscaped areas	Low
Aggressive ground conditions with Made Ground and natural ground, including groundwater: Sulphates	Direct contact with aggressive ground conditions	Building Materials and Services Buried Concrete	High
Aggressive ground conditions with Made Ground and natural ground, including groundwater: PAH/TPH.	Direct contact with aggressive ground conditions	Building Materials and Services Underground services (water pipes)	Low
Asbestos within the existing building.	- Direct contact with building materials - Inhalation of dust (indoors and outdoors) with elevated concentration of determinands during the construction process	Human Health - End Users (Site workers/Future site residents and visitors) - Construction workers during development - Site operatives during maintenance works - Neighbours and public	Moderate
Unexploded Ordnances	- Direct contact with UXO while drilling - Direct contact with UXO during the construction phase	- Drillers and Construction workers during development - Neighbours and public	Moderate
Background levels of lead	Direct ingestion of soil and soil derived dust	End Users (Site workers/Future site residents and visitors)	Moderate

	• Dermal contact of soil and soil derived dust • Inhalation of dust (indoors and outdoors) with elevated concentration of determinands • Direct ingestion of perched water	• Construction workers during development • Site operatives during maintenance works • Neighbours and public	
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3. SITE WORKS

3.1. Scope of Works

Site works were undertaken on 22nd May to 4th June 2026 and comprised the drilling of 2No. Cable Percussion Boreholes (BH1- BH2) to a depth of 20.45 – 40.45m bgl. Standard Penetration Tests were carried out at 1.00m intervals within boreholes, alternating with UT100 samples, from 5.00m the intervals changed to every 1.50m. A combined ground-gas/groundwater monitoring standpipe, with an internal diameter of 50mm, was installed to 10.00m bgl within both boreholes, with a response zone between 1.00 – 10.00m bgl. The installation details can be viewed within the table below.

Combined Ground-gas and Groundwater Monitoring Well Construction					
Trial Hole	Depth of Installation (m bgl)	Thickness of slotted piping with gravel filter pack (m)	Depth of plain piping with bentonite seal (m bgl)	Response Zone (m bgl)	Piping internal diameter (mm)
BH1	10.00	9.00	1.00	1.00 – 10.00	50
BH2	10.00	9.00	1.00	1.00 – 10.00	50

2No. Foundation Exposures (TP2 – TP3) were hand excavated to 1.20m bgl, to expose the foundations of the existing building. A further two foundation exposure trial pits (TP1 and TP4) were attempted but due to service obstructions, the locations-were unable to be progressed.

The location of the trial hole locations can be seen within Figure 3.

Prior to commencing the ground investigation, a walkover survey was carried out to identify the presence of underground services and drainage. Where underground services/drainage were suspected and/or positively identified, the exploratory position was relocated away from these areas.

As a further precautionary measure, the borehole was hand excavated to 1.20m below the local ground level (bgl) and scanned with a Cable Avoidance Tool (CAT scanner) to minimise the risk to services.

Upon completion of the drilling works, the trial holes were backfilled and made good, in relation to the surrounding area.

3.2. Sampling Procedures

Small disturbed samples and environmental samples were recovered from the trial holes at the depths shown on the trial hole records. Soil samples were generally retrieved from each change of strata and/or at specific areas of concern. Samples were also taken at approximately 0.5m intervals during broad homogenous soil horizons.

A selection of samples were despatched to a UKAS accredited laboratory for both geotechnical and chemical testing purposes.

4. ENCOUNTERED GROUND CONDITIONS

4.1. Soil Conditions

The trial holes were logged by a Ground and Water Limited representative, generally in accordance with BS EN 14688 'Geotechnical Investigation and Testing – Identification and Classification of Soil'.

The ground conditions encountered within the trial holes constructed on the site did generally conform to that anticipated from examination of the geology map. A capping of Made Ground was noted to overlie bedrock London Clay Formation.

The succession of conditions and description of soils encountered in the trial holes in descending order is tabulated below.

Summary of Strata Encountered (TP2-TP3 and BH01 – BH02)			
Strata	Top Depth (m bgl)	Base Depth (m bgl)	Thickness (m)
ASPHALT: (BH1-BH2)	GL	0.05	0.05
CONCRETE: (TP2-TP3)	GL	0.20 – 0.30	0.20 – 0.30
MADE GROUND: Brown gravelly SAND. Sand is fine to coarse, gravel is angular, fine to coarse, concrete, brick and mortar (TP2, BH1) .	0.05 - 0.20	0.15 - 0.70	0.10 - 0.50
MADE GROUND: Brown grey sandy GRAVEL to Grey GRAVEL, Gravel is angular, fine to coarse type 1 gravels, boulder sized concrete and fine rounded flint. (TP3, BH1, BH2) .	0.05 - 0.30	0.40 - 1.00	0.35 - 0.70
MADE GROUND: Soft dark grey silty CLAY (BH2)	0.70	1.30	0.60
MADE GROUND: Soft to firm brown sandy gravelly CLAY. Sand is fine, Gravel is angular, fine to coarse brick fragments and some roots. (BH1-BH2)	0.40	0.70 - 0.90	0.30 - 0.50
LONDON CLAY FORMATION: Soft to firm brown CLAY (BH1)	0.90	6.45	5.55
LONDON CLAY FORMATION: Firm to stiff brown CLAY (BH1 – BH2) .	1.30 – 6.45	>20.45 - >40.45	>14.00 >39.15

For details of the composition of the soils encountered at particular points, reference must be made to the individual trial hole logs within Appendix D of this report. A trial hole location plan can also be viewed within Figure 3.

4.2. Foundation Exposures

The hand excavation of 2No. Foundation Exposures (TP2 – TP3) were undertaken around the existing building onsite. The final depth of the foundations were unable to be located due to basement structure and service obstructions. A tabulated summary showing the depth and width of each foundation can be viewed below, as well as the bearing stratum. Diagrams of each foundation exposure can be viewed within Figures 4 and 5.

Summary of Foundations Encountered			
Trial Hole	Depth of Foundation Exposure Pit (m bgl)	Width at the Base of Foundation (mm)	Bearing Stratum
TP2 (External Wall)	0.70	Did not encounter the base of the	Made Ground

		foundations due to the presence of basement.	
TP3 (External Wall)	1.00	Did not encounter the base of the foundations due to the presence of basement.	Made Ground

4.3. Roots Encountered

Roots were noted to a proved depth of 0.90m bgl within BH1. Roots were not encountered within any other borehole or trial pit onsite.

It must be noted that the chance of determining actual depth of root penetration through a narrow diameter borehole is low. Roots may be found to greater depths at other locations on the site, particularly close to trees and/or trees that have been removed both within the site and its close environs.

4.4. Groundwater Conditions

No groundwater strikes were encountered during the intrusive investigation. It should be noted that groundwater strikes may have been obscured by the drilling process.

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. The investigation was undertaken in May - June 2026 when groundwater levels are likely to be approaching their annual minimum (lowest elevation). Exact groundwater levels may only be determined through long term measurements from monitoring wells installed on-site.

4.5. Obstructions

No obstructions were noted in the drilling process within the cable percussion boreholes. TP1 and TP4 were attempted but due to service obstructions, the locations-were unable to be progressed.

5. IN-SITU AND LABORATORY TESTING

5.1. In-situ Strength Testing

Standard Penetration Tests (SPTs) were undertaken as part of the site investigation. The results of the SPT's have not been amended to consider hammer efficiency, rod lengths and overburden pressure in accordance with Eurocode 7. The test results are presented on the borehole logs within Appendix D. An interpretation of the in-situ geotechnical testing results is given in the table below.

Interpretation of In-situ Geotechnical Testing Results					
Strata	SPT "N" Blow Counts	Equivalent Undrained Shear Strength (Cu) (kPa)	Soil Type		Trial Hole/s
			Granular (Density)	Cohesive (Cu)	
Made Ground (Cohesive)	4	20	-	Low	BH2/1.20 – 1.65m bgl
Soft London Clay Formation (Cohesive)	6	30	-	Low	BH1/1.20 – 1.65m bgl
Competent London Clay Formation (Cohesive)	10 - 15	50 - 75	-	Medium	BH1/2.00 – 6.45m bgl BH2/3.00 – 5.45m bgl
	16 - 30	80 - 150	-	High	BH1/7.50 – 18.45m bgl BH2/8.00 – 20.45m bgl
	31 - 50	155 - 250	-	Very High	BH1/19.50 – 40.45m bgl

It must be noted that field measurements of undrained shear strength (Cu) are dependent on a number of variables including disturbance of sample, method of investigation and also the size of specimen or test zone.

5.2. Geotechnical Laboratory Testing

A programme of geotechnical laboratory testing, scheduled by Ground and Water Limited and carried out by an accredited geotechnical testing laboratory was undertaken on samples recovered. Details of the specific tests used in each case are given below.

Standard Methodology for Laboratory Geotechnical Testing		
Test	Standard	Number of Tests
Atterberg Limit Tests	BS1377:2016:Part 2:Clauses 3.2, 4.3 & 5	27
Undrained Triaxial Compression Test	BS1377:2016:Part 7:Clause 8	10
Water Soluble Sulphate and pH Test	BS1377:2018:Part 3:Clause 5	2
BRE Special Digest 1 Tests	BRE Special Digest 1 "Concrete in Aggressive Ground (BRE, 2005).	3

5.2.1. Atterberg Limit Testing

A précis of Atterberg limit testing undertaken can be seen tabulated below. The test results are presented within Appendix E.

Atterberg Limit Tests Results Summary							
Stratum	Moisture Content (%)	Passing 425 μ m sieve (%)	Modified PI (%)	Soil Class	Consistency Index (Ic)	Volume Change Potential	
						BRE	NHBC
London Clay Formation	24.4 – 30.4	100	33-55	CH - CV	Stiff	Medium - High	Medium - High
- NP – Non-plastic - BRE Volume Change Potential refers to BRE Digest 240 (based on Atterberg results) - Soil Classification based on British Soil Classification System. - Consistency Index (Ic) based on BS EN ISO 14688-2:2018.							

5.2.2. Moisture Deficit Assessment

The results of the Atterberg Limit tests were analysed to determine the Liquidity Index of the samples, to give an indication as to whether the samples recovered showed a moisture deficit as well assessing their degree of consolidation. Liquid Limit analyses were undertaken to assess whether there were any potentially significant moisture deficits within the samples tested.

A potential moisture deficit, caused by lithology was noted within BH1 at 1.20m, 4.50m, 19.50m, 24.00m, 25.90m, 38.00m bgl and BH2 at 2.45m, 17.00m, 20.00m bgl.

5.2.3. UT100 Triaxial Testing

A précis of the results of Undrained Triaxial Compression Tests undertaken on 12No UT100 samples recovered from the London Clay Formation can be seen tabulated below.

Summary of Undrained Triaxial Compression Testing Results						
Borehole/ Depth (m bgl)	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Mode of Failure	Shear Strength (kPa)	Classification
London Clay Formation BH1 at 3.00-3.45m (Brown silty CLAY)	31	1.88	1.49	Compound	68	Medium
London Clay Formation BH1 at 10.00-10.45m (Brown silty CLAY)	30	1.91	1.47	Brittle	89	High
London Clay Formation BH1 at 15.00-15.45m (Brown silty CLAY)	27	1.94	1.53	Compound	138	High
London Clay Formation BH1 at 21.00-21.45m (Brown silty CLAY)	27	1.93	1.51	Compound	154	Very High
London Clay Formation BH1 at 25.50-25.95m (Brown silty CLAY)	25.8	1.97	1.56	Brittle	145	High

London Clay Formation BH1 at 34.50-34.95m (Brown silty CLAY)	26	1.95	1.55	Brittle	308	Extremely High
London Clay Formation BH2 at 2.00-2.45m (Brown silty CLAY)	33	1.86	1.40	Plastic	69	Medium
London Clay Formation BH2 at 6.50-6.95m (Brown silty CLAY)	29	1.92	1.49	Compound	114	High
London Clay Formation BH2 at 9.50-9.95m (Brown silty CLAY)	33	1.97	1.48	Compound	110	High
London Clay Formation BH2 at 12.50-12.95m (Brown silty CLAY)	32	2.00	1.52	Compound	142	High
London Clay Formation BH2 at 12.50-12.95m (Brown silty CLAY)	27.8	1.98	1.55	Brittle	120	High
London Clay Formation BH2 at 18.50-18.95m (Brown silty CLAY)	51	1.94	1.28	Compound	172	Very High

6. ENGINEERING CONSIDERATIONS

6.1. Soil Characteristics and Foundation Considerations

A summary of the soil characteristics following the intrusive site investigation and laboratory testing and the relevant foundation considerations has been provided below. The following information from the ground investigation was considered pertinent to the design of foundations.

- Foundations should be taken through any Made Ground and either into, or onto a suitable underlying natural stratum of adequate bearing characteristics.
- Foundations should be designed in accordance with soils of high volume change potential.
- Given the presence of cohesive soils at shallow depth, special foundation precautions may be required to prevent possible future shrinkage/swelling of the soils affecting the integrity of the faces of foundations (underfloor void diameter/compressible material/void formers etc.). A compressible layer must be provided to accommodate potential seasonal movement, based on NHBC guidance.
- The design of each structural element (slab/piles/beams) should be designed in accordance with the appropriate volume change potential of the respective bearing stratum. Special foundation precautions may be required to prevent possible future shrinkage/swelling of the soils affecting the integrity of the faces of foundations and/or structural element (underfloor void diameter/compressible material/void formers etc.). Heave protection measures are also recommended for all structural elements of the design to account for the volume change potential of the respective stratum and heave resulting from any soil removal.
- The loads of proposed foundations should not exceed the allowable bearing capacity of the soils they are founding upon.
- If soft spots are encountered, they should be bypassed.
- Care should be taken not to overdig foundations as this may stress underlying soft spots, should they be present.
- Foundations must not be placed within fresh root penetrated and/or desiccated soils with volume change potential. It is recommended that foundations are taken at least 300mm into non-fresh root penetrated strata if the soils have volume change potential, or into soils of no volume change potential.
- The influence of trees on or surrounding the site will need to be taken into account in final design (NHBC Standards Chapter 4. 2) (tree rings).
- Any water ingress must be prevented from entering foundation trenches and excavations must be kept dry and either concreted or blinded as soon after excavation as possible. If water were allowed to accumulate within the excavation for even a short period of time, an increase in heave occur. The shear strength will also be reduced, resulting in lower bearing capacities, resulting in increased settlements. Instability issues may arise within the foundation trenches, in case of perched water being present.

6.2. Shallow Foundations

Based on the previous section, foundations should bypass any Made Ground-and soft spots, before extending 300mm below the proved depth of root penetration. Foundations would therefore be constructed on competent, moisture stable soils of the London Clay Formation. A tabulated summary showing the minimum foundation depth based on each trial hole can be viewed below.

Summary of Minimum Foundation Depths			
Trial Hole	Minimum Foundation Depth (m bgl)	Founding Geological Formation	Reason
BH1	1.70	Cohesive London Clay Formation	Foundations should bypass Made Ground and extend 300mm below the depth of root penetration (0.90m bgl), before founding on competent soils at a moisture stable depth.
BH2	1.70	Cohesive London Clay Formation	Foundations should bypass Made Ground, before founding on competent soils at a moisture stable depth.

In the location of BH1 and BH2, foundations constructed at 1.70m bgl on cohesive soils of the London Clay Formation can be designed based on a presumed allowable bearing capacity of 100 kN/m².

This is based on trial hole records, the results of in-situ testing, inspection of samples recovered, and referral to BS 8004:2015, Code of Practice for Foundations, and based on a 5m long by 1m wide foundation and a maximum settlement of 25mm. Settlement loading are likely to be low to moderate.

Additional Comments

A number of comments and recommendations has been provided below.

- It is prudent to avoid having a foundation spanning across materials of different consistency, like clay and gravel, in order to avoid potential differential settlements. If unavoidable, foundations must be reinforced to allow for such potential differential movement. It should be noted that differential settlement may also occur between strip and isolated pad foundations.
- Foundation excavations must be carefully bottomed out and any loose soil or soft spots removed prior to the foundation concrete or blinding being placed. Failure to ensure that foundation excavations are suitably bottomed out could result in additional settlements.
- Inspection of foundation excavations, prior to concreting, must be made by a competent and suitably qualified person to check for soft spots and to check for the presence of roots.
- Foundations must not be cast over foundations of former structures and/or other hard spots.
- Given soils of volume change potential were encountered and Made Ground was noted to be deeper than 0.60m bgl, a suspended slab is required.
- Isolated Pad Foundations must be at least 1.5 times the width of the widest pad apart to keep to the anticipated settlements.
- Final designs for the foundations should be carried out by a suitably qualified Engineer based on the findings of this investigation and with reference to the anticipated loadings, serviceability requirements for the structure and the developments proximity to former, present, and proposed trees. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

6.3. Piled Foundation

Given the proposed development of the extension of the 5-storey building (likely high loads), and the softer shallow material, a piled foundation system may be more suitable.

The construction of a piled foundation is a specialist job, and the advice of a reputable contractor, familiar with the type of ground and groundwater conditions encountered on this site, should be sought prior to finalising the foundation design. The actual pile working load will depend on the particular type of pile and method of installation adopted.

The foundation would comprise a piled foundation with reinforced ground beams or a piled slab. In general, for the cumulative pile capacity calculations, shaft friction over desiccated levels should be ignored and piles should not be terminated within desiccated soils where moisture recovery following tree removal could occur.

Indicative/guidance limit loads and settlements for a bored pile have been given within the table below have been based on BH1, as SPT values were slightly lower than BH2, as a conservative measure. An allowance for negative skin friction to occur within the top 3.00m of the soil has been included within the calculations where it could pass through any Made Ground, and soils showing a possible moisture deficit. An adhesion factor of 0.45m has been applied to all natural cohesive units.

The bearing values may be limited by the maximum permissible stress allowable on a concrete pile. To achieve the full bearing value a pile should penetrate the bearing stratum by at least five times the pile diameter.

A Factor of safety of 3.0 has been incorporated in the table below for the limit states.

Bored Pile – Limit Loads and Settlement Parameters						
Depth (m bgl)	Diameter (m)	Limit States (kN)			Settlement	
		Base	Skin	Total	Load (kN)	Total (mm)
10.00	0.30	22.26	76.62	98.88	90	1.30
	0.45	50.10	114.93	165.03	160	1.90
	0.60	89.06	153.24	242.30	235	2.50
12.00	0.30	21.20	105.95	127.15	120	1.60
	0.45	47.71	158.93	206.64	200	2.20
	0.60	84.82	211.91	296.73	290	2.80
15.00	0.30	23.32	151.19	174.51	170	1.80
	0.45	52.48	226.79	279.27	270	2.70
	0.60	93.30	302.39	395.69	390	3.30

The loads above are indicative and the advice of a specialist piling contractor should be sought. The analysis was focused on the geotechnical aspects and the capacity of the soils. The actual pile loads permitted may be further limited for structural reasons (i.e. the concrete strength and the overall structural capacity of the pile, buckling etc). The structural engineer and the piling contractor are to perform the final design.

The bearing values given in the table above are applicable to single piles. Where piles are to be constructed in groups the bearing value of each individual pile should be reduced by a factor of approximately 0.8 and a calculation made to check the factor of safety against block failure.

The piles will need to be designed in accordance with the volume change potential of the soils encountered, depth of desiccation and root penetration. Temporary casing may be required where

the upper portion of the pile passes through the Made Ground, particularly where perched water is encountered, to prevent necking of the concrete.

Piling Groundwater Risk Assessment

Given the geology at the site, piling is the preferred method for foundations. As these may extend into the aquifer beneath the site, the potential for pathways to be present need to be considered.

Review of the Wilson and Mortimer paper *Piled foundations and pathways for ground gas migration in the UK* (ICE publishing – Environmental Geotechnics), indicates that any preferential pathways for ground gases or contaminated water created by piles needs consideration for ground conditions and the nature of the pile utilised.

An important consideration is the nature of the pile, whether it is a displacement or replacement pile. For there to be a preferential pathway for the movement of groundwater, a continuous open annulus is required around the piles installed. An open annulus will not form around piles during installation except for driven H and I piles. Cast in-situ piles are driven or bored and filled with wet concrete. The pressure exerted on the wet concrete will seal up any annulus around the pile, sealing any pathway.

The Environment Agency recommend that CFA piling is undertaken on any site where contamination may be expected.

Based on the above, the use of CFA piles or other cast in-situ piles should be adopted, which will not result in the downward migration of contamination within the groundwater.

6.4. Excavations and Stability

Shallow excavations in the Made Ground are likely to be marginally stable at best. Long, deep excavations, through these strata and into the underlying London Clay Formation are likely to become unstable.

Unsupported earth faces formed during excavation may be liable to collapse without warning and suitable safety precautions should therefore be taken to ensure that such earth faces are adequately supported before excavations are entered by personnel.

6.5. Sub-Surface Concrete Design

Concrete to be placed in contact with soil or groundwater must be designed in accordance with the recommendations of Building Research Establishment Special Digest 1, 2005, *'Concrete in Aggressive Ground'* considering the pH of the soils. For the classification given below, the “mobile” and “brownfield” case was adopted given the geology encountered and the residential use of the site. This assessment was based on the results of laboratory testing summarised within Section 5, specifically relating to sulphates, pH and other water soluble chemicals.

Made Ground

The water-soluble sulphates in the Made Ground were noted to be 76 – 960mg/l, with a pH of 7.5 – 11.9, from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-2 should be used for sub-surface concrete in contact with the Made Ground. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1s.

London Clay Formation

According to Box C6 of BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground', the London Clay Formation fell within a list of UK geological formations known to contain pyrite. It was therefore required to consider the levels of total potential sulphate in the classification process.

The water-soluble sulphates in the London Clay Formation were noted to be 490 - 6100mg/l, with a pH of 7.7 – 9.1, from chemical laboratory testing. The total potential sulphate (3x total sulphur) was 0.681 – 1.719%.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-5 should be used for sub-surface concrete in contact with the London Clay Formation. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-4.

It is prudent to note that pyrite nodules may be present within the London Clay Formation. Pyrite can oxidise to gypsum and this normally only occurs in the upper weathered layer, but excavation allows faster oxidation and water-soluble sulphate values can rapidly increase during construction. Therefore, rising sulphate values should be considered should ferruginous staining/pyrite nodules be encountered within the London Clay Formation.

6.6. Roads and Hardstanding Design

This section provides information relating to the construction of roads and hardstanding, for each strata encountered.

6.6.1. Anticipated CBR Values and Frost Susceptibility

Made Ground

Where roads and hardstanding are to be founded on Made Ground, a CBR value of 1% should be adopted, as a result of the variable nature of Made Ground in terms of consistency, strength and compressibility.

London Clay Formation (cohesive)

Roads and hardstanding constructed on the cohesive London Clay Formation should be designed based on a CBR value of 2.5%. This is based on reference to Table C1 of TRL1132 and average construction conditions. Based on wet conditions a CBR of 2.0% should be adopted, with dry conditions a CBR of 2.5% being applicable.

These clay-based soils (poorly drained) with plasticity indexes generally greater than 20% are likely to be non-frost susceptible.

7. CONTAMINATION RISK ASSESSMENT

7.1. Results of the Preliminary Risk Assessment

The tabulated Conceptual Site Model (CSM) developed by the Ground and Water Desk Study (ref. GWPR7007/DS/April 2026) is reproduced in section 2.8. For the complete information please see the Desk Study report.

No additional source of contamination, pathway or receptor was identified between the desk study and the ground investigation and as such, it was not necessary to modify the CSM.

In the UK, the assessment of risk from contamination follows the source-pathway-receptor (SPR) approach. For a risk to be present there must be a source of contamination, a receptor or receptors, and a pathway for contaminants to migrate or be absorbed. If there is a linkage between any given source and receptor, then a quantitative risk assessment is used to assess the significance or impact of the pollutant linkage.

7.2. Sampling Locations

The synopsis for the trial hole locations and their final depth can be seen tabulated below. A trial hole location plan is provided within Figure 3. The table also indicates whether any locations targeted a source of contamination as well as the proposed end-use. The proposed development can be seen in Figure 2.

Trial Hole Location Synopsis		
Trial Hole/Final Depth	Sampling Strategy	Proposed End-Use
BH1/5.00m	Random	Footprint of Proposed Building
BH2/5.00m	Random	Footprint of Proposed Building
TP2/0.70m	Random	Footprint of Proposed Building
TP3/1.00m	Random	Footprint of Proposed Building

7.3. Soil Risk Assessment

Sampling depths were chosen to reflect the receptor of concern (e.g. human health, controlled waters and vegetation). The remaining samples were scheduled under a random strategy. The receptors relevant to the sampling depths are tabulated below.

Summary of Receptors per Sample Depth	
Depth	Receptors
Shallow Samples (< 0.75m bgl)	- End Users (Site Workers/Residents/Future site visitors) - Construction workers during development - Site operatives during maintenance works - Neighbours and public - Vegetation within soft landscaped areas (shallow rooted) - Buried Concrete - Receiving landfill
Moderate Samples (0.75 – 1.50m bgl)	Buried Concrete
Deep Samples (> 1.50m bgl)	Buried Concrete

Chemical laboratory testing, scheduled by Ground and Water Limited, and carried out by i2 Analytical Limited, was undertaken on six samples of Made Ground. The samples were subjected to a combination of analysis that comprised:

- Asbestos screen;
- Semi-metals and heavy metals incl. Arsenic, Cadmium, Chromium (incl. Hexavalent Chromium), Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc;
- Polycyclic Aromatic Hydrocarbons (PAH's) incl. Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, Benzo(ghi)perylene;
- Speciated TPH including full aliphatic/aromatic split;
- BTEX compounds (Benzene, Toluene, Ethylbenzene, Xylene) and MTBE – used as marker compounds for Volatile Organic Compounds (VOCs);

A breakdown of the number of tests undertaken for each determinand is discussed in further sections. The chemical laboratory results are presented in Appendix C.

7.3.1. Soil Assessment Criteria and Results

At the time of reporting, June 2026, the proposed development was understood to comprise the redevelopment of the existing building to deliver approximately 170 bedspaces (from 155 bedspaces) and associated infrastructure. These changes will include alterations to the footprint of the building (part of the northern section the dwelling will be removed, and part of the western portion will be extended with new foundations) and adding another storey to the existing 5 storey building. No new soft landscaping areas are proposed. Proposed site plans are provided as Figure 2.

Based on the proposed development, the results of the chemical laboratory testing were compared to the Generic Assessment Criteria (GAC) for a '**Residential without homegrown produce**' land-use scenario, as this was considered the most appropriate land-use scenario.

Where a contaminant of concern's GAC varies according to the Soil's Organic Matter (SOM), the SOM recorded for each uncontaminated soil type was used to derive the appropriate GAC for each soil type. A SOM value of 1%, the most conservative value, was utilised.

A summary of the analytical results and the comparison to the determinands adopted screening value are presented in the table below and overleaf.

Soil Contamination Test Results and Screening Values					
Determinand	Number of Samples	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Adopted Screening Value (mg/kg)	Was the adopted screening value exceeded for relevant land-use scenario?
INORGANICS					
Asbestos	6	ND	D	ND	Yes TP2/0.50
Cyanide (total)	6	< 1	< 1	24	No
Phenols	6	< 1	< 1	750	No
METALS					
Arsenic	6	2.3	46	40	Yes (BH2/0.30-0.50)
Boron	6	0.5	4.3	11000	No
Cadmium	6	<0.2	2.5	85	No
Chromium (III)	6	18	53	910	No
Chromium (Hexavalent)	6	<1.8	<1.8	6	No

Copper	6	25	140	7100	No
Lead	6	28	890	310	Yes (BH2/0.30-0.50 and BH1/0.30-0.50)
Mercury	6	<0.3	7.9	1.2	Yes (BH1/0.30-0.50)
Nickel	6	15	43	180	No
Selenium	6	<1.0	1.5	430	No
Vanadium	6	47	92	1200	No
Zinc	6	66	2200	40000	No
TOTAL PETROLEUM HYDROCARBONS (TPHs)					
Aliphatic >C5 - C6	3	< 0.010	< 0.010	42	No
Aliphatic >C6 - C8	3	< 0.010	< 0.010	100	No
Aliphatic >C8 - C10	3	< 0.010	< 0.010	27	No
Aliphatic >C10 - C12	3	< 1.0	< 1.0	130	No
Aliphatic >C12 - C16	3	< 2.0	< 2.0	1100	No
Aliphatic >C16 - C21	3	< 8.0	< 8.0	65000	No
Aliphatic >C21 - C35	3	< 8.0	< 8.0		
Aliphatic >C35 - C40	3	< 10	< 10	65,000	No
Aromatic >C5 - C7	3	< 0.010	< 0.010	370	No
Aromatic >C7 - C8	3	< 0.010	0.075	860	No
Aromatic >C8 - C10	3	< 0.020	0.14	47	No
Aromatic >C10 - C12	3	< 1.0	< 1.0	250	No
Aromatic >C12 - C16	3	< 2.0	< 2.0	1800	No
Aromatic >C16 - C21	3	< 10	< 10	1900	No
Aromatic >C21 - C35	3	< 10	< 10	1900	No
Aromatic >C35 - C40	3	< 10	< 10	1100	No
Benzene	3	< 0.005	< 0.005	0.38	No
Toluene	3	< 0.005	0.076	880	No
Ethylbenzene	3	< 0.005	0.014	83	No
m,p-Xylene	3	< 0.008	0.065	79	No
o-Xylene	3	< 0.005	0.036	88	No
POLYCYCLIC-AROMATIC HYDROCARBONS					
Acenaphthene	6	< 0.05	< 0.05	3000	No
Acenaphthylene	6	< 0.05	< 0.05	2900	No
Anthracene	6	< 0.05	0.13	31000	No
Benzo(a)anthracene	6	0.08	0.98	11	No
Benzo(a)pyrene	6	< 0.05	0.82	3.2	No
Benzo(b)fluoranthene	6	0.09	1.10	3.9	No
Benzo(ghi)perylene	6	< 0.05	0.70	360	No
Benzo(k)fluoranthene	6	< 0.05	0.50	110	No
Chrysene	6	< 0.07	0.83	30	No
Dibenzo(a,h)anthracene	6	< 0.05	0.10	0.31	No
Fluoranthene	6	0.12	1.30	1500	No
Fluorene	6	< 0.05	<0.05	2800	No
Indeno(1,2,3-cd)pyrene	6	< 0.05	0.57	45	No
Naphthalene	6	< 0.05	0.08	2.6	No
Phenanthrene	6	0.06	0.58	1300	No
Pyrene	6	0.13	1.3	3700	No
MARKER FOR VOLATILE ORGANIC COMPOUND					
Methyl tert-butyl ether (MTBE)	3	< 0.005	< 0.005	73	No

The derivation of the Soil Assessment Criteria used within this report can be seen within Appendix D. The soil concentrations were typically compared to the LQM/CIEH Suitable for Use Levels (S4UL) (2014), based upon the assumption of 1% soil organic matter. A screening value for Lead is based on the Category 4 Screening Levels (C4SLs). Where no S4UL or C4SL is available for Cyanide, a SoBRA acute GAC is assigned. Where no S4UL or C4SL is available for MTBE, a CL:AIRE 2010 GAC is assigned. Where exceedances are noted, the trial hole and depth of sample is recorded.

The proposed development includes areas of soft-landscaping, where shallow rooted vegetation may be exposed to aggressive ground conditions. The previous table compares the results of the laboratory analysis to GAC that is protective of Human Health and therefore different GAC is required for vegetation.

Soil Contamination Test Results and Screening Value					
Determinand	Number of Samples	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Adopted Screening Value (mg/kg)	Was the adopted screening value exceeded for relevant land-use scenario?
Copper	6	25	140	100	No
Nickel	6	15	43	60	No
Zinc	6	66	2200	200	Yes (BH2/0.30-0.50)
The derivation of the Soil Assessment Criteria used within this report can be seen within Appendix D. The soil concentrations were compared to BS3882:2015 <i>Specification for Topsoil</i> and based on differing pH. For the purpose of conservatism, the pH of the soils have been assumed to be below 6 within this table. Where exceedances are noted, the trial hole and depth of sample is recorded.					

7.3.2. Soil Assessment

The comparison between the laboratory analysis and the assessment criteria indicates that there is an unacceptable risk to future receptors with respect of human health caused by exceedances of the following determinands: Arsenic (BH2/0.30-0.50), Lead (BH2/0.30-0.50, BH1/0.30-0.50) and Mercury (BH1/0.30-0.50). The remaining determinands were identified at below the adopted screening value and are not considered to represent an unacceptable risk to future receptors. Where an unacceptable risk to future receptors remains, mitigation is required.

Zinc was noted to be elevated (2200mg/kg) above the adopted screening value (200mg/kg)–with respect of phytotoxicity risk to plant health in BH2 at 0.3-0.5m bgl.

Mercury was noted to be elevated (7.0mg/kg) when compared to the elemental mercury S4UL of 1.2 mg/kg. The S4UL provides an alternative assessment criterion for inorganic mercury (mercury compounds most likely with sulphur or oxygen) of 56 mg/kg. The mercury present on-site is likely to be in inorganic form due to no evidence at present for an elemental mercury source. Therefore, the higher assessment criteria of 56 mg/kg for inorganic mercury should be applied to the risk assessment. The value identified within the laboratory analysis therefore falls within the assessment criteria.

Lead was found to be elevated in two locations (340mg/kg BH1 and 890mg/kg BH2) when compared to the adopted screening level of 310 mg/kg.

Arsenic was found to be marginally elevated (40mg/kg BH2) when compared to the adopted screening level of 46 mg/kg.

The higher levels of metals were recorded within shallow Made Ground (BH1 and BH2/0.30-0.50m bgl), these locations were proposed to be within the footprint of the proposed structure. Therefore, a degree of this shallow contaminated Made Ground is expected to be removed from site as part of the foundation excavations. The location of these contaminants will also be situated under the footprint of the proposed structure extensions, resulting in no pathway for potential contaminants to the future residents and visitors.

Construction workers and site operatives will be the primary receptor during the construction phase of the development. Given the contaminate risk in the Made Ground soils, Construction Workers and Site Operatives must be made aware of the potential risk. Groundworkers must maintain a good standard of personal hygiene including the wearing of correct and relevant PPE.

As a result, it is not expected that the tested soils on-site represent an unacceptable risk to future receptors. However, it is recommended that further testing is undertaken post-demolition, with particular focus on any proposed soft landscaped areas within the communal outside area and the former building footprint as these haven't been covered under this investigation.

Asbestos

Asbestos was identified within one sample (TP2/0.50m) as Amosite fibres. Quantification was undertaken on the sample and indicated that asbestos was present at <0.001%.

A quantification risk assessment was carried out for the concentration recorded, in accordance with the guidance within CIRIA 733. The background, considerations taken, and the calculations can be seen in Appendix F. A summary of the results is shown in the table below.

Asbestos Risk Assessment				
Sample	Mesothelioma Accumulated Risk (fibres/ml.year)	Mesothelioma Risk	Lung Cancer Accumulated Risk (fibres/ml.year)	Lung Cancer Risk
TP2/0.50m	0.00202	Between "about 2 (highest arguable 15) and "highest arguable becomes insignificant	0.00144	Insignificant

Based on CIRIA Table 14.1 for Mesothelioma the risk for TP2/0.50m bgl was found to be between 2 per 100,000 people exposed and insignificant. Based on CIRIA Table 14.3 for Lung Cancer, the risk for TP2/0.50m bgl was considered to be insignificant. **The location of the asbestos was located under the proposed footprint of the new building. Therefore, a degree of this shallow contaminated Made Ground is expected to be removed from site as part of the foundation excavations. Due to the lack of pathway to future receptors discussed above, no remediation procedures were considered necessary with respect to asbestos in Made Ground at this stage. However, it is recommended that further testing is undertaken post-demolition, with particular focus on any proposed soft landscaped areas and the former building footprint as these haven't been covered under this investigation.**

Prior to the further testing construction workers and site operatives will be the primary receptor during the construction phase of the development. Given the Asbestos risk in the Made Ground

soils, Construction Workers and Site Operatives must be made aware of the potential asbestos risk. Groundworkers must maintain a good standard of personal hygiene including the wearing of correct and relevant PPE with the asbestos management strategy followed.

Toolbox talks should be given to site personal specifically identifying risks associated with this report. The contractor should also ensure that an adequate risk assessment has been undertaken based on this information.

The site should be securely fenced at all times to prevent unauthorised access. Washing facilities should be provided and eating restricted to mess huts.

Asbestos Management Strategy should be put in place prior to any works taking place, so that any potentially asbestos containing materials are identified and removed from site in a suitable manner to prevent cross-contamination. An Asbestos Survey should be undertaken prior to any alterations/demolition works on the existing building.

7.3.3. Water Supply Pipe Risk Assessment

As part of the proposed development it is expected that new water supply pipes will be installed at the site. Water supply pipes have the potential to be exposed to contaminants in the ground that can lead to unacceptable concentrations within the drinking water. If a risk is identified, specialist pipes that are protective of the drinking water are required.

A pipe selection risk assessment should be submitted to the water supply company as part of the development based on the supplier's assessment criteria. An indication of whether there is likely to be a risk can be seen tabulated below, where the PE pipe thresholds are based on *UKWIR Contaminated Land Assessment Guidance, 2014*.

Pipe Selection Risk Assessment			
Determinand	PE Pipe Threshold (mg/kg)	Laboratory Analysis Range (mg/kg)	Was the Threshold Exceeded?
Total BTEX and MTBE	0.1	< 0.033	No
Phenols	2	< 1	No
TPH EC5 – EC10 (aliphatics and aromatics)	2	< 0.255	No
TPH EC10 – EC16 (aliphatics and aromatics)	10	< 3	No
TPH EC16 – EC40 (aliphatics and aromatics)	500	< 26	No
Naphthalene	5	< 0.08	No

The results indicate that no determinands were above the threshold for the use of a PE pipe at the site.

7.4. Groundwater Risk Assessment

In the UK, the water environment is protected under a number of regulatory regimes, mainly governed by the Environment Agency. The Environment Agency is consulted when there may be a risk to Controlled Waters, or where a pollution incident has occurred historically. The Water Framework Directive is implemented in various guises covering groundwater, surface water and drinking water supply.

The soil samples analysed as part of the risk assessments in section 7.2 have been used to undertake a Controlled Waters risk assessment. The conceptual site model and the determinand concentrations

of the soils are used to indicate whether the concentrations are sufficient to impact the receptor. At this stage, dilution, dispersion and attenuation along the pathway are not considered.

A study of the aquifer maps on the DEFRA website revealed the site was underlain by Unproductive Strata comprising bedrock deposits of the London Clay Formation. Superficial deposits were not designated due to their likely absence

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

No surface water features were present within a 250m radius of the site. The nearest surface water feature was the a pond in Stationers park located ~600m south east of the site

From analysis of hydrogeological and topographical maps, groundwater was anticipated at depth, below the cohesive, relatively impermeable soils of the London Clay Formation; however, some amounts of perched water may be present within particularly sandy/silty lenses of the London Clay Formation and/or within the shallow surface soils (i.e. Topsoil, Made Ground etc.), especially after periods of prolonged or intense rainfall. It was considered that groundwater was flowing in a north-easterly in line with the local topography.

During the site investigation, Made Ground was encountered to 1.30m bgl, overlying firm to stiff clay of the London Clay Formation to the base of the borehole (40.00m bgl). No groundwater strikes were recorded.

The findings of this risk assessment should be agreed with the Environment Agency.

7.5. Ground Gas Risk Assessment

A review of freely available information prior to site works, including historical mapping and landfill registers / Phase I desk study, did not identify any source of ground gas on-site or within influencing distance of the site that warranted investigation through ground gas monitoring. The only source of ground gases was anticipated to be limited Made Ground on-site and therefore classified as 'Low risk', where the pragmatic approach to ground gas risk assessment presented within the CL:AIRE research bulletin RB17 and included within Annex D of BS8485:2015+A1:2019 can be considered.

7.5.1. Pragmatic Approach

The alternative approach to ground gas risk assessment considers the uncertainty from the measurement of ground gas concentrations and flow rates in monitoring wells for low-risk sites and removes the need for monitoring. Low risk sites typically comprise:

- Natural soils with high carbonate content (e.g. chalk);
- Natural soils that can produce gases (e.g. alluvium, peat etc.);
- Made Ground between 1.00m to 5.00m, with low organic content; and
- Areas of flooded mine workings, unless a building is to be within 20m of shaft or adit.

The method considers the gas generation potential of the soils from data that is not subject to external influences, for example atmospheric pressure can change the recorded flow and concentrations of

ground gas during spot monitoring, or a rising groundwater level can displace ground gases in pore spaces. Determination of the characteristic situation is based on the total organic carbon (TOC) of the soils, coupled with any organic-rich material identified within the borehole logs, such as wood gravels. TOC is easily analysed by the laboratory and can also be calculated by the equation outlined below.

$$\text{Total Organic Carbon (TOC)} = 0.58 \times \text{Soil Organic Matter (SOM)} = 1.33 \times \text{Degradable Organic Carbon (DOC)}$$

As part of the ground investigation works, six samples (include WAC) were submitted to the laboratory for analysis, which identified TOC to vary between 0.3 and 1.6% in the Made Ground and 0.4% in the London Clay Formation. The trial hole logs identified the gravels within the Made Ground to comprise; flint, brick, concrete. Made Ground was identified to a maximum depth of 1.30m bgl.

7.5.2. Data Quality

A review was made of the quality of the available data for the site, which can be viewed in the table below. CIRIA Report C665 (2007), BS 8485:2015+A1:2019 and BS 8576:2013 stress the need for risk assessments to be based on good quality data and give guidance as to best practice in this respect.

Review of Data Quality			
Data Type	Current Understanding	UK Practice	Recommendation
Geological and hydro-geological conditions	The CSM identified the site to be located on limited Made Ground (<1.30m), overlying impermeable strata of the London Clay Formation. Groundwater was not encountered during drilling.	CIRIA C665 & C659, Wilson and Card (1999) and BS 8485 recommend that geology and hydrogeology be fully understood.	The geological and hydrogeological model is understood to a standard that will not comprise the findings of the risk assessment. No further action required.
Soil Laboratory Analysis	A dataset of soil analysis from 6No. samples have identified a range of TOC concentrations between 0.3% and 1.6%. London Clay Formation strata had the lowest TOC concentrations.	CL:AIRE RB17 outlines an approach to ground gas risk assessment away from the influences that directly affect ground gas monitoring. It should typically be used on sites with limited sources identified in the CSM and Made Ground with average thickness <3m and maximum thickness <5m. TOC should be < 4%.	The TOC concentrations are below the limit of 4% in order to use the soil derived approach for the risk assessment. No further action required.

7.5.3. Risk Assessment

The intrusive investigation has revealed a maximum thickness of Made Ground of 1.30m overlying London Clay Formation comprising cohesive soils. Site has undergone a previous phase of construction and limited degradable material has been identified. The introduction of oxygen to the Made Ground through redevelopment may lead to an initial increase of ground gas generation as degradable material within the soils present on-site may act as source of ground gas. The soils at the site are considered to be of variable permeability (low to high) in nature and pathways for ground gas migration will be present.

Using the soil derived method, it is considered that a TOC value of <1% within soil is unlikely to pose an unacceptable risk from ground gases and the site can be characterised as Characteristic Situation CS1. Any value between 3 and 6% warrants classification as a Characteristic Situation CS3. Any value over 6% requires investigation through ground gas monitoring. Any site with Made Ground <1.00m bgl will have a limited gas generation potential from the organic carbon present and consideration should be given to this thickness within the risk assessment.

An alternative approach for ground gas risk assessment (CL:AIRE RB17) can be considered utilising measured concentrations from soil parameters that are independent of influencing factors such as atmospheric pressure and groundwater level. Total Organic Carbon (TOC) was tested on 6No. samples with the analytical results ranging between 0.3 and 1.6%. Furthermore, it is considered that a thickness of <1.30m would not generate sufficient ground gas to pose an unacceptable risk.

Based on the soil derived method outlined and the maximum TOC concentration encountered, the soils from site would warrant classification as **Characteristic Situation CS1**. It should be noted that this only represents the assessment from an on-site source.

7.6. Vapour Risk Assessment

The soil chemical laboratory testing did not identify any elevated levels of BTEX compounds or MTBE within the 3No. samples tested. At this stage based on the information received to date the risk posed from on-site sources was considered to be low.

7.7. Updated Conceptual Site Model

Following completion of the Phase 2 Site Investigation, the CSM, inclusive of associated risk, within Section 2.8 of this report was re-evaluated.

For ease of reference and understanding, the risks have been re-assigned within this risk assessment against three possible levels / categories, summarised in the table below.

Risk Categories used in the Tabulated CSM	
Low Risk	Regarding this potential SPR linkage, the site is considered suitable for the proposed end-use and there is not considered to be an unacceptable risk to receptors.
Moderate Risk	Regarding this potential SPR linkage, the site is suitable for the proposed end-use however remediation and/or further investigation is required.
High Risk	Regarding this potential SPR linkage, the site is not suitable for proposed end-use and there is an unacceptable risk to receptors. Urgent action required in the short term.

Tabulated Conceptual Site Model – Pollutant Linkage Summary			(On-Site Sources)
Potential Sources	Potential Absorption Pathways	Potential Receptors	Risk
Made Ground from construction/ demolition activities: - Asbestos, - PAHs, - TPHs, - Sulphates, and - Metals.	- Direct ingestion of soil and soil derived dust - Dermal contact of soil and soil derived dust - Inhalation of dust (indoors and outdoors) with elevated concentration of determinands	Human Health - End Users (Site workers/Future site residents and visitors) - Construction workers during development - Site operatives during maintenance works - Neighbours and public	Moderate Further testing required to confirm.
	- Direct ingestion of perched water - Inhalation of volatile vapour (indoors and outdoors)	Human Health - End Users (Residents/Site workers/Future site visitors) - Construction workers during development - Site operatives during maintenance works - Neighbours and public	Low
	- Direct uptake of perched water - Direct uptake of determinands in the soil	Flora and Fauna Vegetation within soft landscaped areas	Moderate Further testing required to confirm.
Aggressive ground conditions with Made Ground and natural ground, including groundwater: Sulphates	Direct contact with aggressive ground conditions	Building Materials and Services Buried Concrete	High DS-5/AC-5
Aggressive ground conditions with Made Ground and natural ground, including groundwater: PAH/TPH.	Direct contact with aggressive ground conditions	Building Materials and Services Underground services (water pipes)	Low – PE Pipes appropriate
Asbestos within the existing building.	- Direct contact with building materials - Inhalation of dust (indoors and outdoors) with elevated concentration of determinands during the construction process	Human Health - End Users (Site workers/ Future site residents and visitors) - Construction workers during development - Site operatives during maintenance works - Neighbours and public	Moderate – Asbestos survey required prior to any

			alterations/ demo
Unexploded Ordnances	• Direct contact with UXO while drilling • Direct contact with UXO during the construction phase	• Drillers and Construction workers during development • Neighbours and public	Moderate – UXO clearance required prior to any intrusive works
Background levels of lead	• Direct ingestion of soil and soil derived dust • Dermal contact of soil and soil derived dust • Inhalation of dust (indoors and outdoors) with elevated concentration of determinands • Direct ingestion of perched water	• End Users (Site workers/ Future site residents and visitors) • Construction workers during development • Site operatives during maintenance works • Neighbours and public	Moderate Further testing required to confirm.

8. CONTAMINATION RECOMMENDATIONS AND REMEDIATION STRATEGY

Based on the results of the intrusive works, chemical analyses and risk assessments undertaken, the following has been identified that requires further action:

- Exceedances of asbestos, Lead, and Nickel were identified, however, they are located within shallow Made Ground (likely removed during development) and under the proposed building footprint. It is recommended that further testing is undertaken post-demolition, with particular focus on any proposed soft landscaped areas.
- One contaminant (Zinc) has been found at an unacceptable concentration at a phytotoxicity level within BH02 at 0.3-0.5m bgl. It is recommended that in all areas of soft landscaping the top 150mm should comprise suitable topsoil for use as a growing medium.

Asbestos Management Strategy should be put in place prior to any works taking place, so that any potentially asbestos containing materials are identified and removed from site in a suitable manner to prevent cross-contamination. An Asbestos Survey should be undertaken prior to any alterations/demolition works on the existing building.

8.1. Soils

Following the stripping of the site, further soil samples should be taken from the site particularly around proposed soft landscaping areas. These samples should be tested for potential contaminants of metals and asbestos to understand if further contamination is present onsite, particularly around the areas of communal open space.

8.1.1. Water Supply Pipes

The Water Supply pipe risk assessment indicated that the use of PE pipes is appropriate at the site and no further measures are required.

8.2. Groundwater

Despite the presences of asbestos and elevated levels of metals being noted within the soil testing, there is not considered to be a suitable pathway for contamination to migrate to a groundwater aquifer given the site is underlain by Unproductive Strata of the London Clay Formation. No further action is considered necessary in relation to groundwater.

8.3. Ground Gas and Vapours

Based on the ground-gas risk assessment undertaken, the site warrants classification as Characteristic Situation CS1.

Chemical laboratory testing did not identify any elevated levels of BTEX compounds or MTBE within the 3No. samples tested. At this stage based on the information received to date the risk posed from on-site sources was considered to be low.

8.4. Discovery Strategy

There may be areas of contamination that have not been identified during the course of the intrusive investigation (e.g. underground storage tanks). Such occurrences may be discovered during the construction phases for the redevelopment of the site.

Groundworkers should be instructed to report to the Site Manager any evidence for such contamination; this may comprise visual indicators, such as fibrous materials within the soil, discolouration, or odours and emission. Upon discovery advice must be taken from a suitably qualified person and then the Local Authority will need to be informed.

8.5. Imported Material

Any soil which is to be imported onto the site must undergo chemical analysis to prove that it is suitable for the purpose for which it is intended.

The soil must be fit for purpose and must either be supplied with traceable chemical laboratory test certificates or be tested, prior to placing (ideally) and after placing, to ensure that the future receptors (human health and vegetation) cannot come into contact with compounds that could be detrimental to their health. The compounds that are to be tested for are those given in the Generic Assessment Criteria, which can be viewed in Appendix E of this report.

8.6. Waste Disposal

The excavation of foundations and other soils is likely to produce waste which will require classification and then recycling or removal from site.

Under the Landfill (England and Wales) Regulations 2002 (as amended), prior to disposal, all waste must be classified as either: Inert; Non-hazardous; or Hazardous.

The Environment Agency's Hazardous Waste Technical Guidance (WM3) document outlines the methodology for classifying wastes. Once classified the waste can be removed to the appropriately licensed facilities, with some waste requiring pre-treatments prior to disposal.

Following the investigation, 6No. samples were submitted to the analytical laboratory to undergo a suite of testing for contamination testing, as discussed in the previous sections. Sampling depths were chosen to reflect the receptor of concern, human health, and typically comprised a surface or near surface sample and periodically to 1.00m bgl. Any horizon where olfactory or visual evidence of contamination was present was also sampled.

Based on a risk phase analysis of the chemical laboratory test results, in accordance with EC Hazardous Waste Directive and undertaken by Ground and Water Limited, all soil samples of Made Ground encountered on-site were NON-HAZARDOUS with the exception of BH2/0.30m which had a Hazardous classification due to having a high pH of 11.9 and elevated Zinc. The results of the assessment are given within Appendix H.

Soils containing asbestos are considered HAZARDOUS if the level of asbestos in the Made Ground is above the threshold of 0.1% or visual fragments can be observed. As quantification of the asbestos in the sample recovered from TP2/0.20m bgl was <0.001% (less than 0.1%) the Made Ground with asbestos detected in was NON-HAZARDOUS with respect to waste classification.

It is important to note that whilst we consider our in-house assessment tool to be an accurate interpretation of the requirements of WM3, therefore producing an initial classification in accordance with the guidance, this method classifies soils as either non-hazardous or hazardous and landfill operators have their own assessment tools and can often come to different conclusions. As a result, some landfill operators could refuse to take apparently suitable waste. It is recommended that the receiving landfill views the results of this assessment and the chemical laboratory results to determine their own classification.

In addition to the samples described above, 2No. samples were scheduled to undergo Waste Acceptance Criteria (WAC) testing with single batch leachate. The results indicate that 1No. sample of Made Ground conformed to the Inert Waste Classification (BH1/0.30-0.50) and 1No. sample of Made Ground (BH2/0.30 – 0.50) was classified as not-inert waste as a result of high concentrations of antimony.

It should be noted that the receiving landfill may see the presence of Made Ground within the soils to be indicative of a non-hazardous classification despite the presence of the WAC testing certificates indicating that it is inert. Therefore, it should be considered that all Made Ground is classified as Non-hazardous, subject to finalising with the receiving landfill.

Where contaminated soils are to be removed, they should be placed on an impermeable membrane (visqueen or similar) to ensure that no cross-contamination of soils occurs.

8.7. Duty of Care

Groundworkers must maintain a good standard of personal hygiene including the wearing of overalls, boots, gloves and eye protectors and the use of dust masks during periods of dry weather.

To prevent exposure to airborne dust by both the general public and construction personnel the site should be kept damp during dry weather and at other times when dust would be generated as a result of construction activities.

The site should be securely fenced at all times to prevent unauthorised access. Washing facilities should be provided and eating restricted to mess huts.

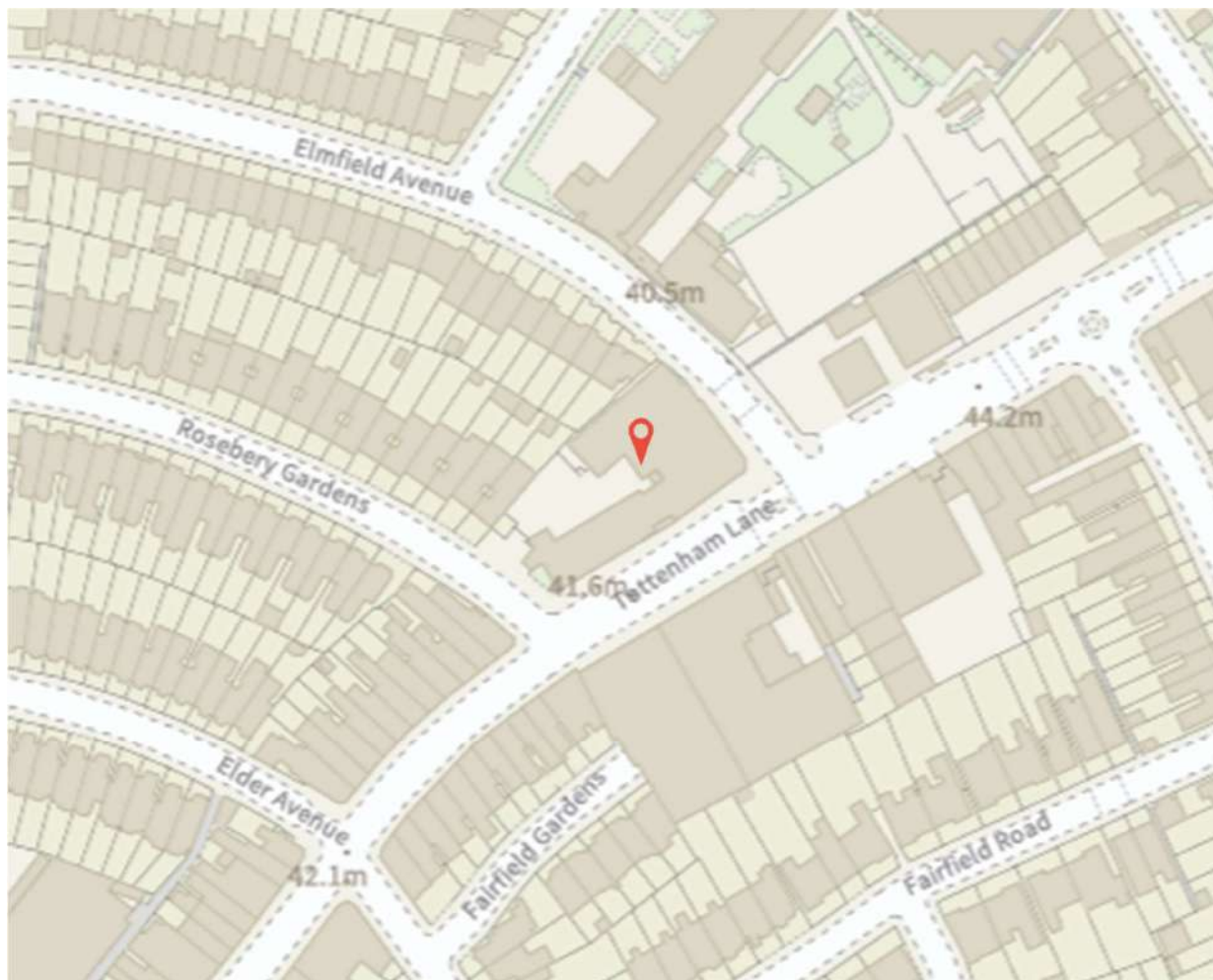
geotechnical and environmental consultants



FIGURES

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk groundandwater.co.uk

Registered Office: Kinton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001



 Site Location

Not to Scale

YMCA London City and North, 184 Tottenham Lane, London, N8 8SG

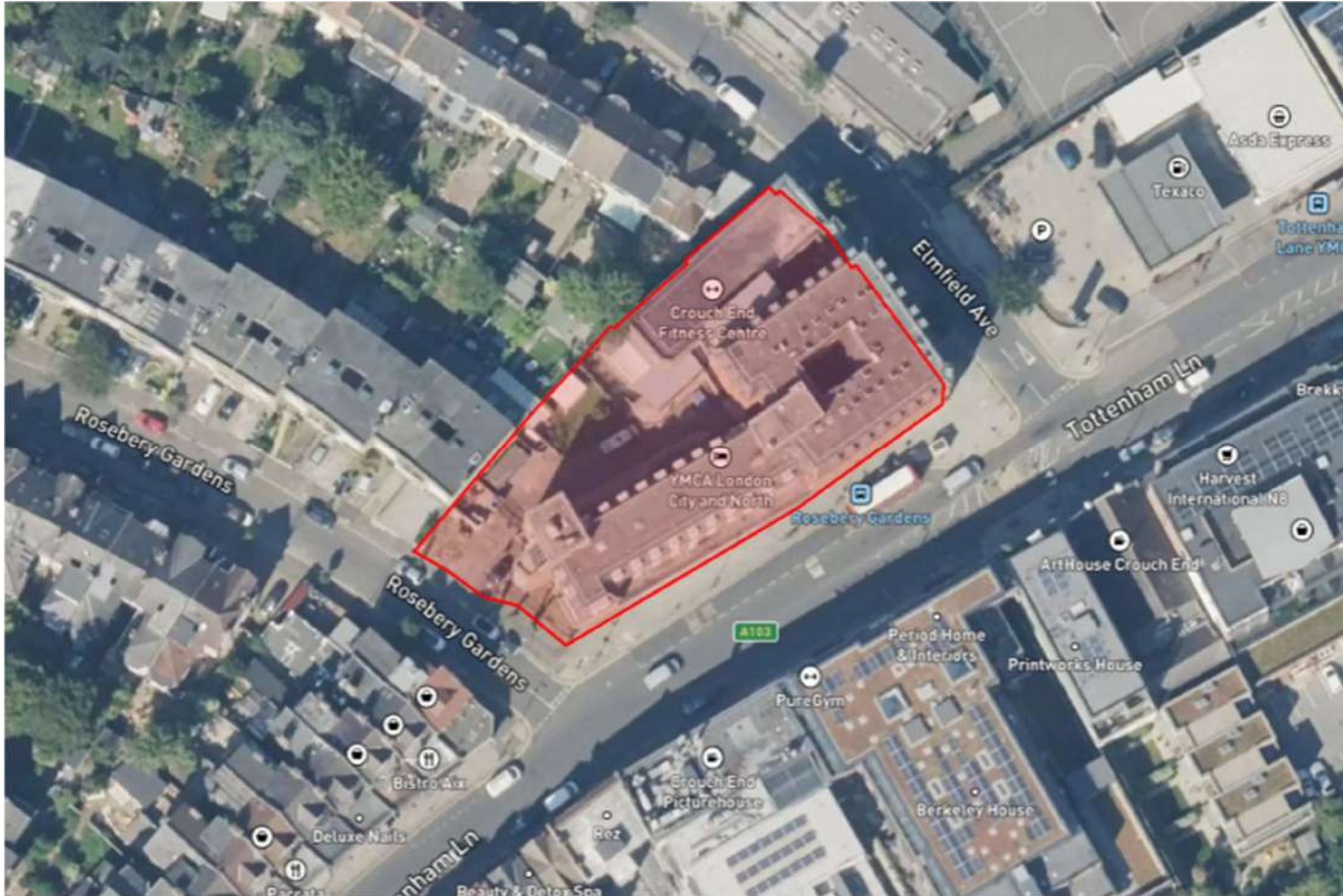
Altair Ltd

June 2026

Figure 1: Site Location Plan

GWPR7007





Site boundary

Not to Scale

YMCA London City and North, 184 Tottenham Lane, London, N8 8SG

Altair Ltd

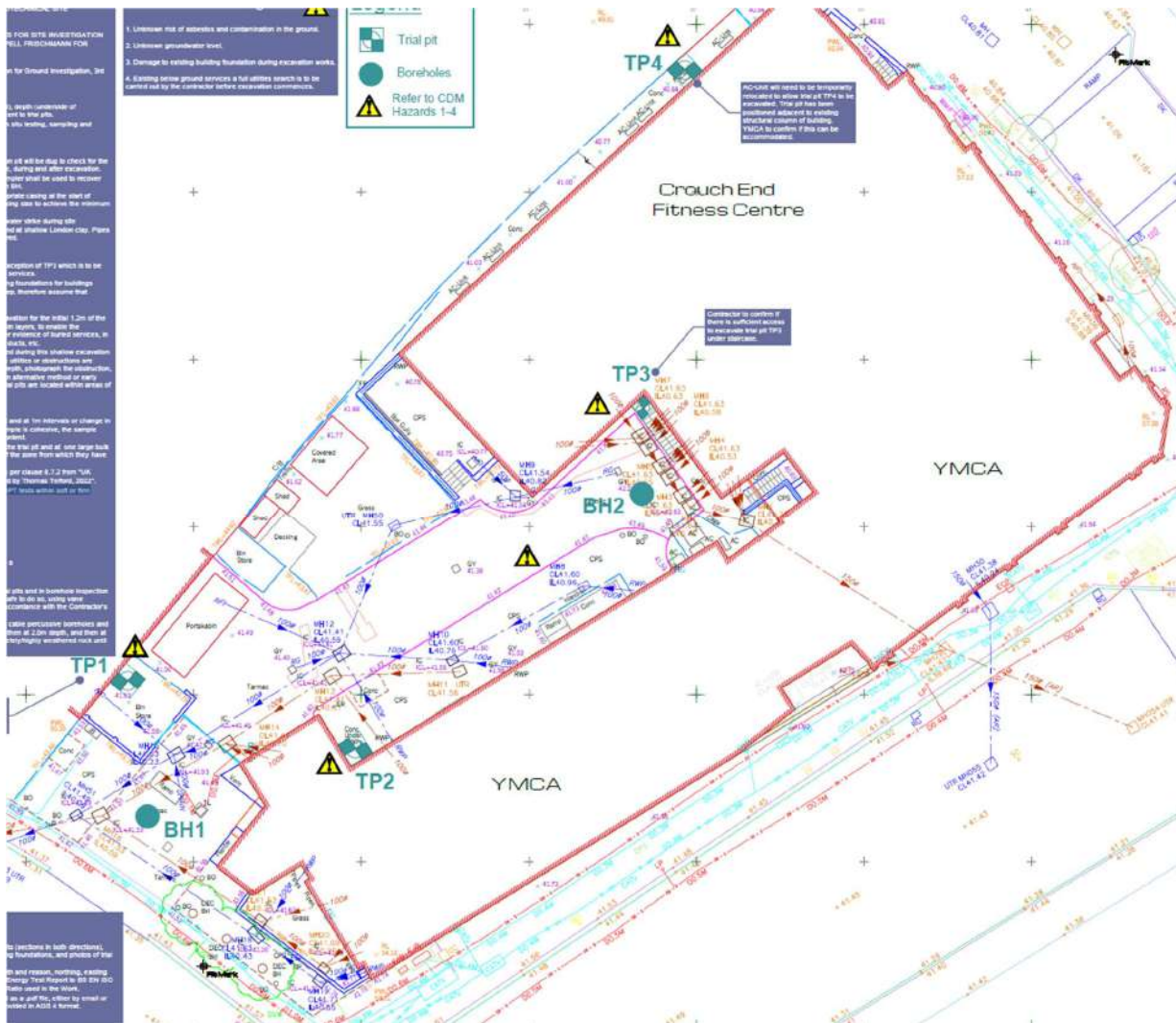
June 2026

Figure 2: Aerial View of the Site

GWPR7007







Not to Scale

YMCA London City and North, 184 Tottenham Lane, London, N8 8SG

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June 2026

Figure 4: Trial Hole Location Plan

GWPR7007



APPENDIX A: Conditions and Limitations

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

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

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

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

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

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

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

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist.

The conclusions and recommendations relate to YMCA London City and North, 184 Tottenham Lane, Crouch End, London N8 8SG.

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

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

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

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

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

APPENDIX B:

Technical Glossary

TECHNICAL GLOSSARY

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

HYDROGEOLOGY:

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

Secondary (A) Aquifers consist of deposits with permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as Minor Aquifers.

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

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

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

FLOOD ZONES:

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

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

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

GROUNDWATER SOURCE PROTECTION ZONES (SPZS):

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

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

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

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

IN-SITU STRENGTH GEOTECHNICAL TESTING:

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

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

APPENDIX C:

Groundsure

Historical Mapping

Site details: YMCA, 184, TOTTENHAM LANE, HORNSEY, LONDON, HARINGEY, N8 8SG
Client ref: GWPR7007
Report ref: GS-56H-6EZ-E61-PVL
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Production date: 20 March 2026

Map name: County Series
Map date: 1864
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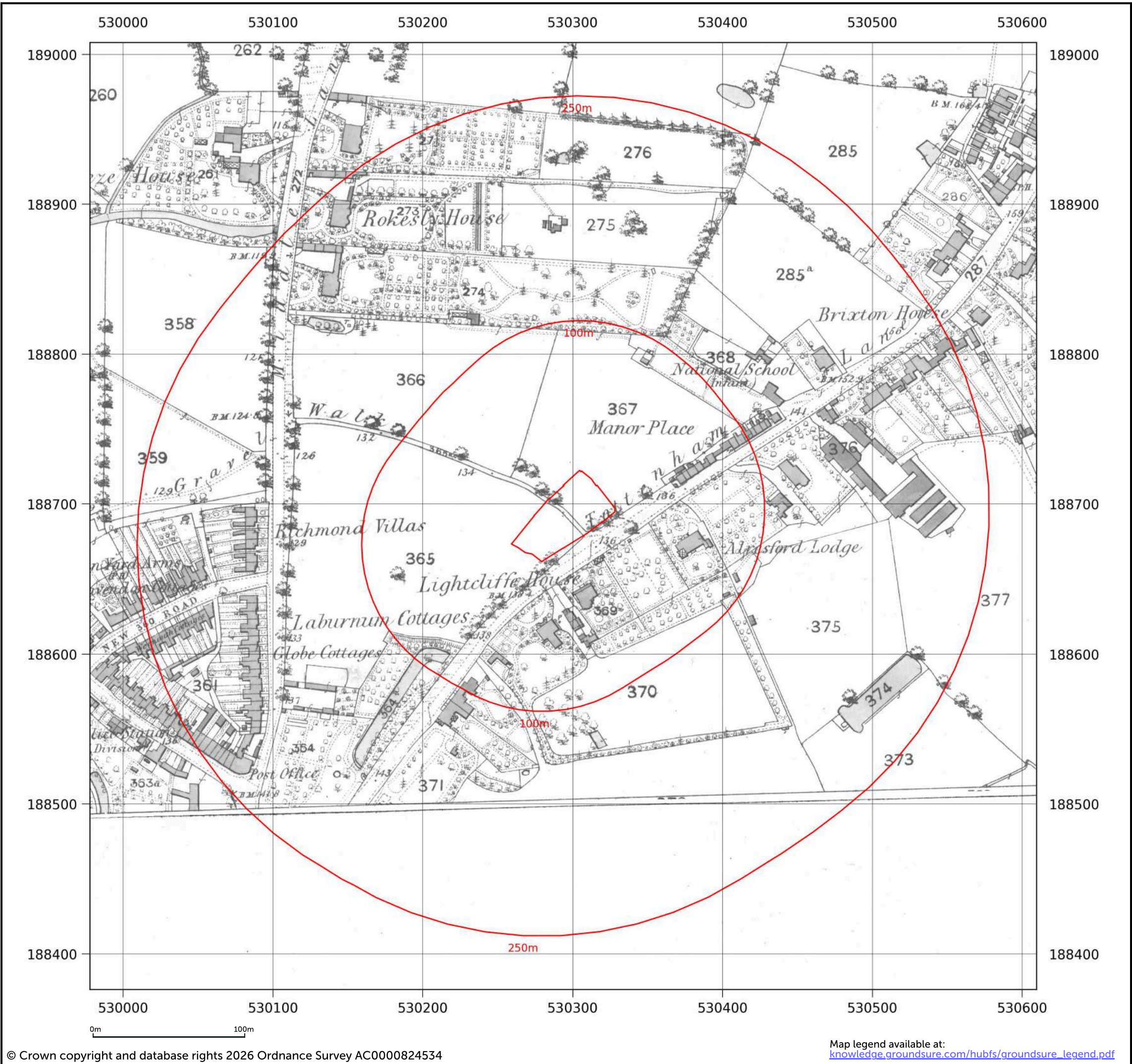
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Revised: 1864

Date: 1864
Surveyed: 1864
Revised: 1864

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Site details:

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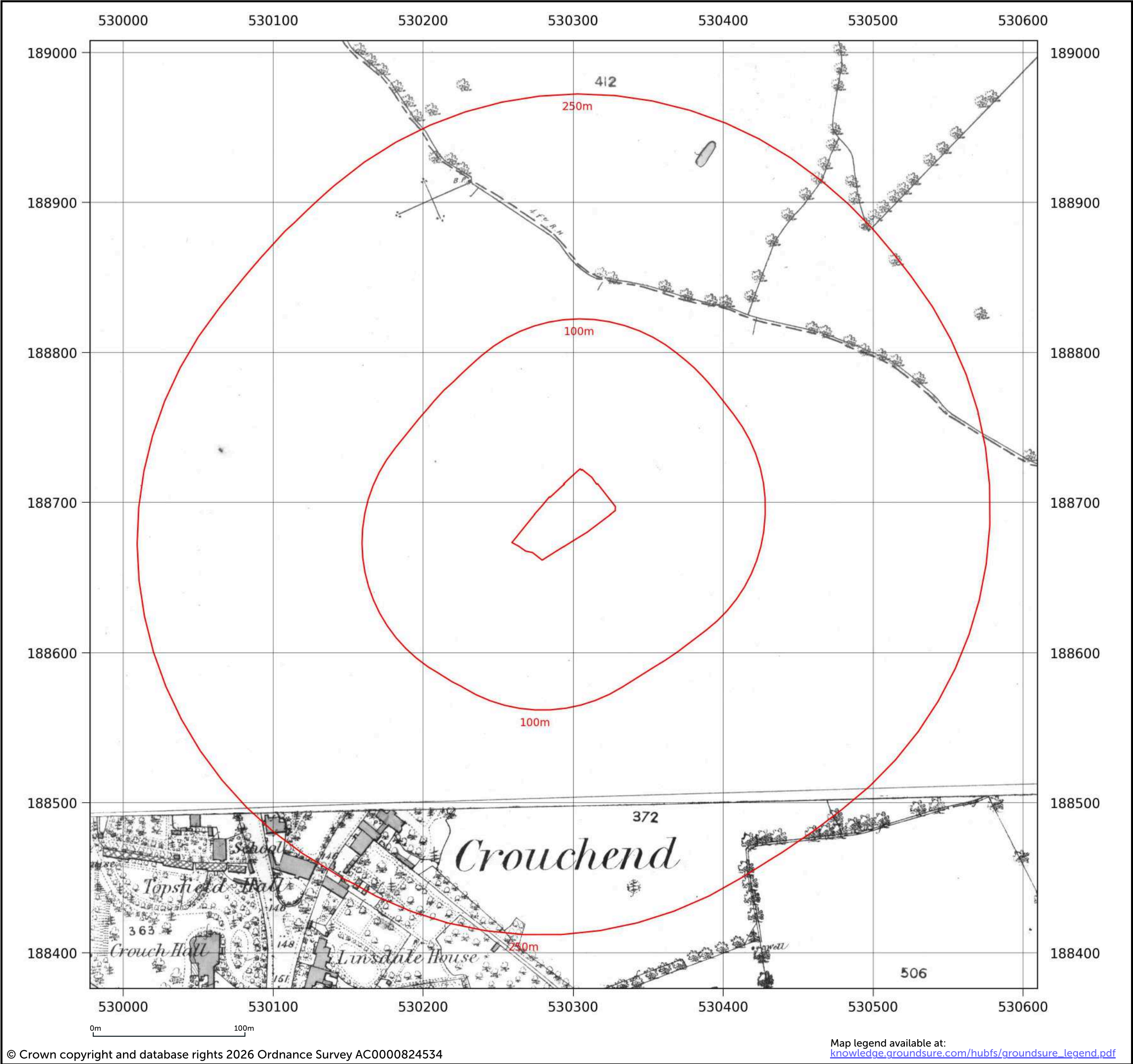
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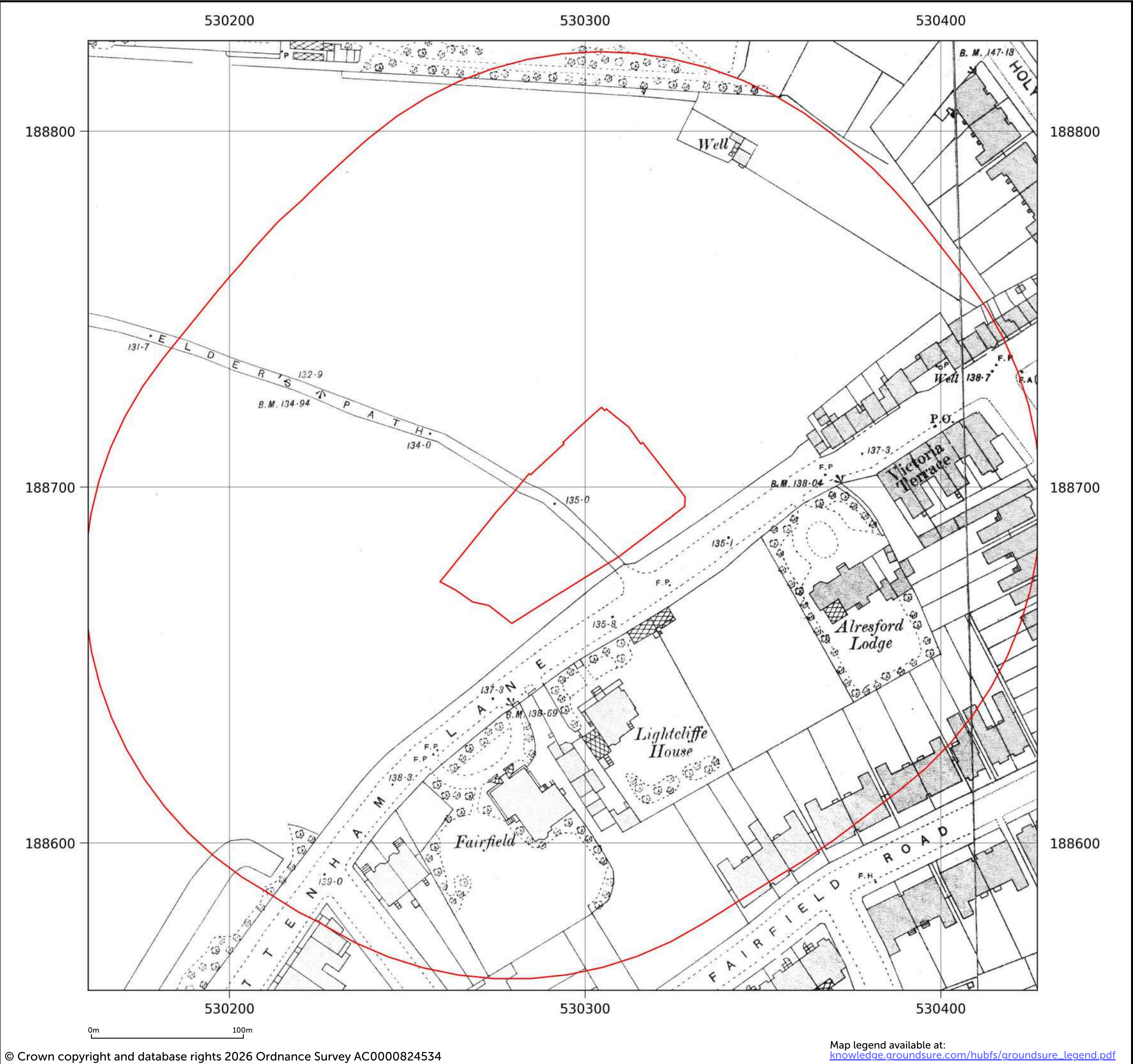
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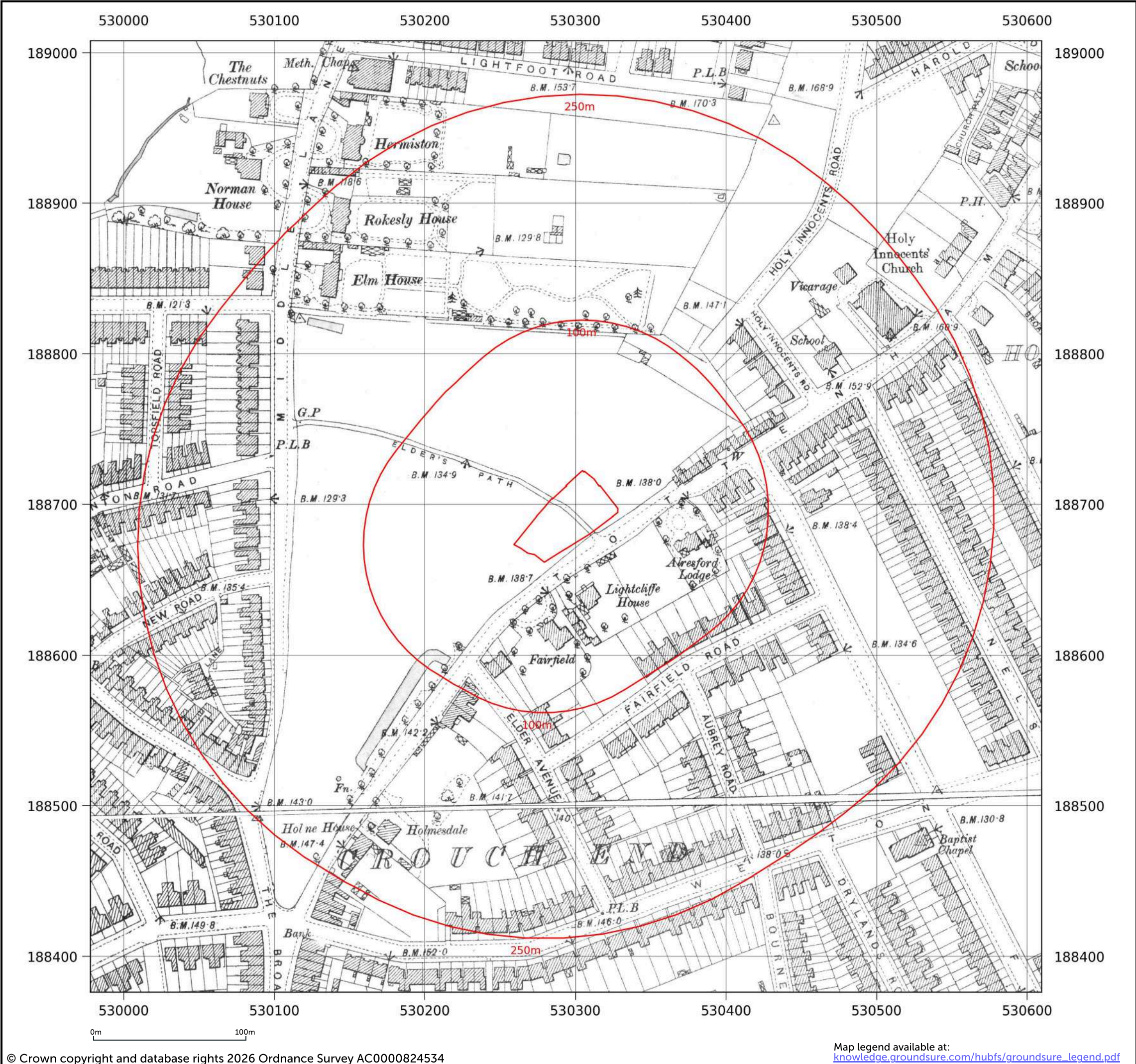
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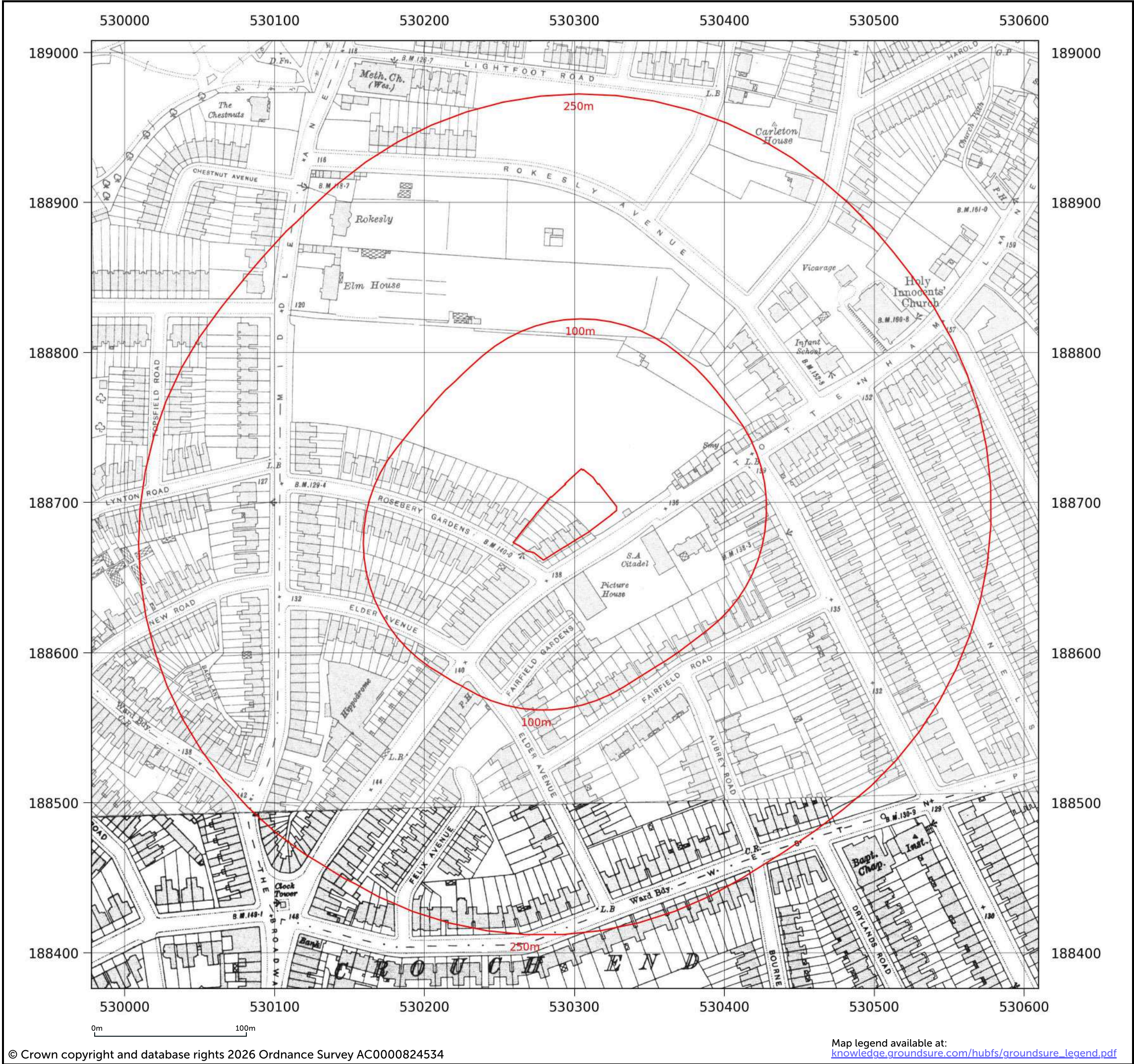
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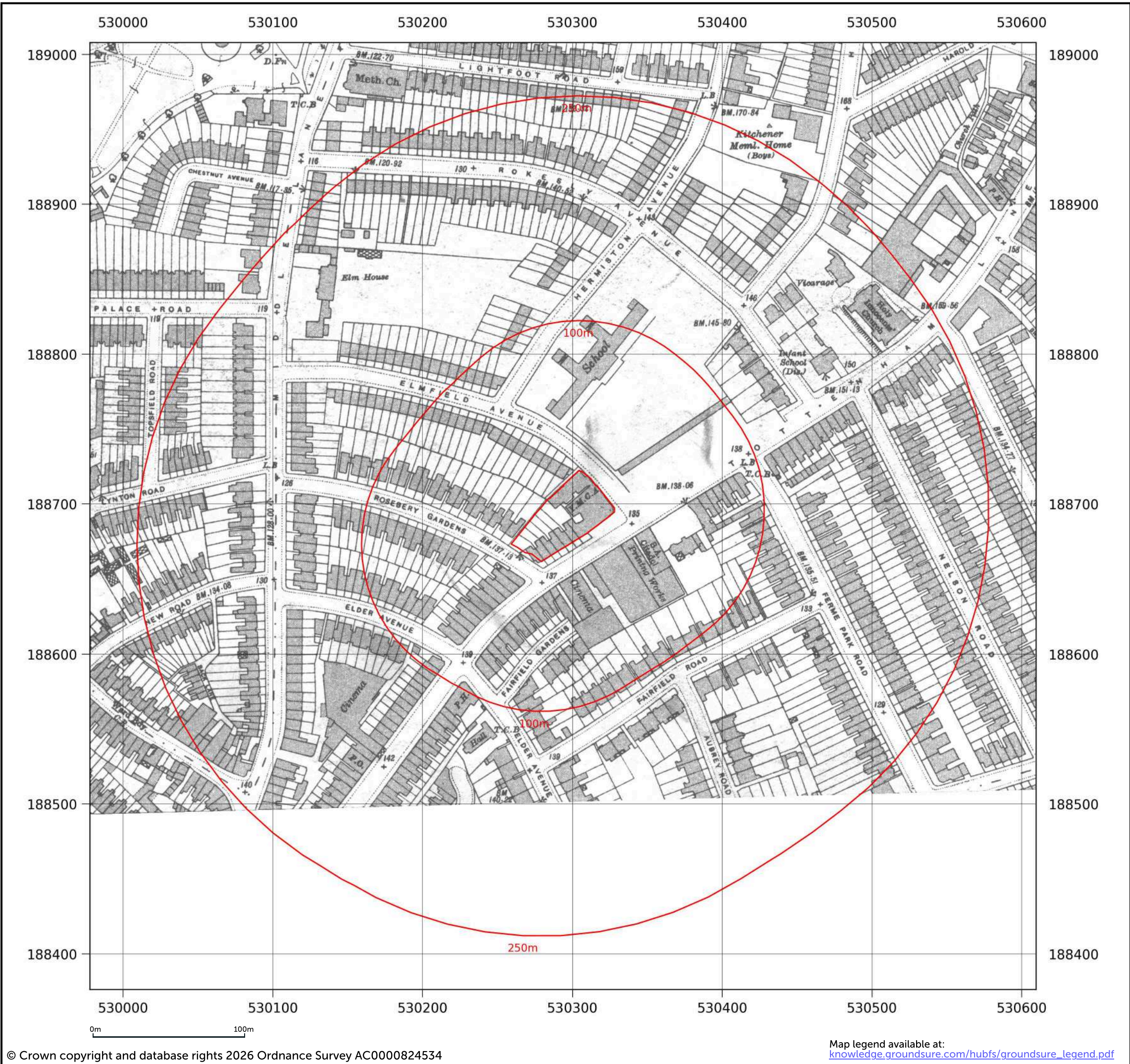
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Revised: 1935

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Levelled: 1954

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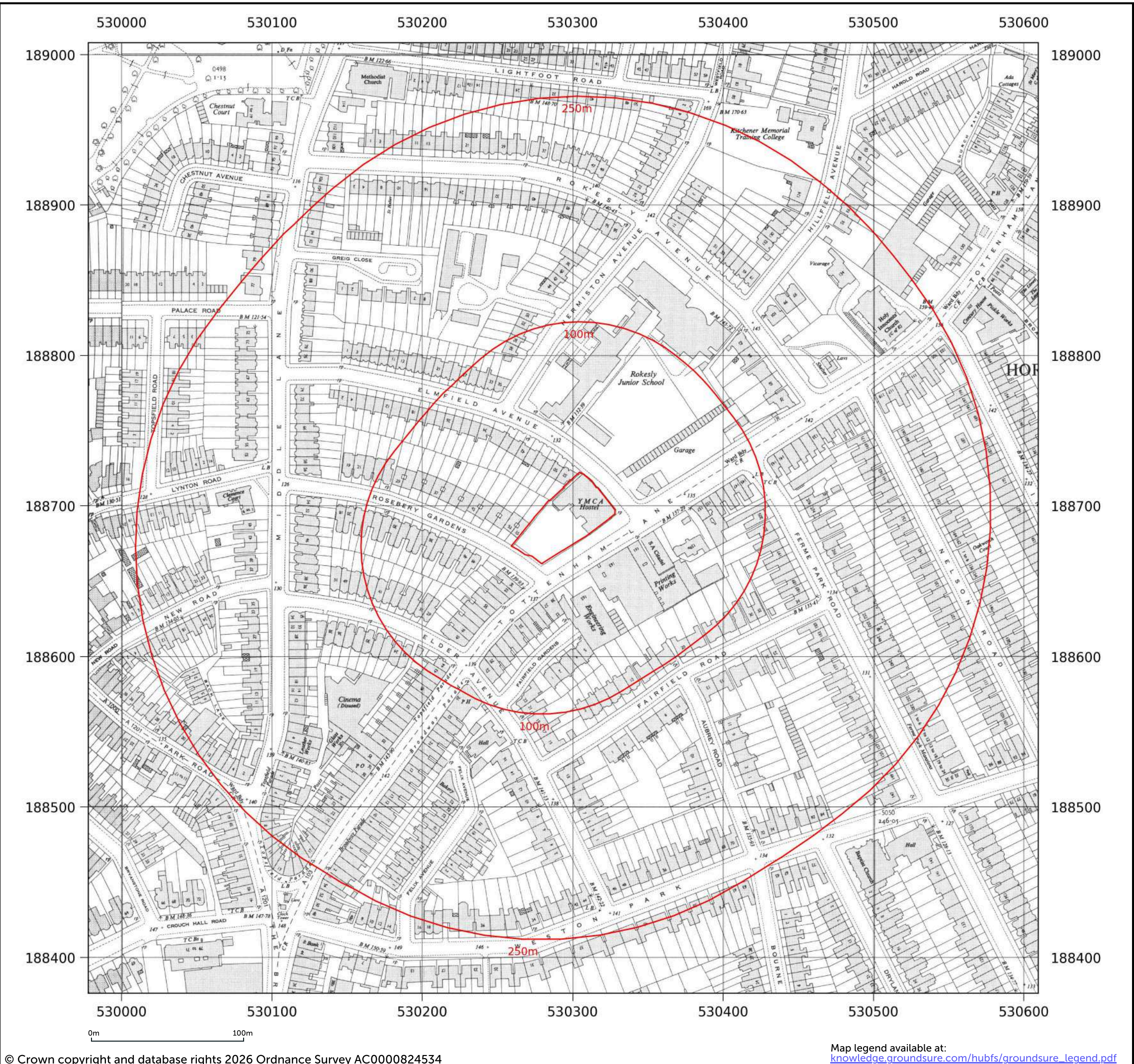
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Printed at:

1:2,000

Date: 1972
Surveyed: 1953
Revised: 1972
Copyright: 1972
Levelled: 1954

Date: 1973

Date: 1973

Date: 1973

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Site details:

YMCA, 184, TOTTENHAM LANE, HORNSEY, LONDON, HARINGEY, N8 8SG

Client ref:

GWPR7007

Report ref:

GS-56H-6EZ-E61-PVL

Grid ref:

530295.01, 188690.77

Production date:

20 March 2026

Map name:

National Grid

Map date:

1973-1978

Scale:

1:1,250

Printed at:

1:2,000

Date: 1973

Date: 1975
Surveyed: 1954
Revised: 1974
Copyright: 1975
Levelled: 1954

Date: 1978

Date: 1978
Surveyed: 1978
Revised: 1978

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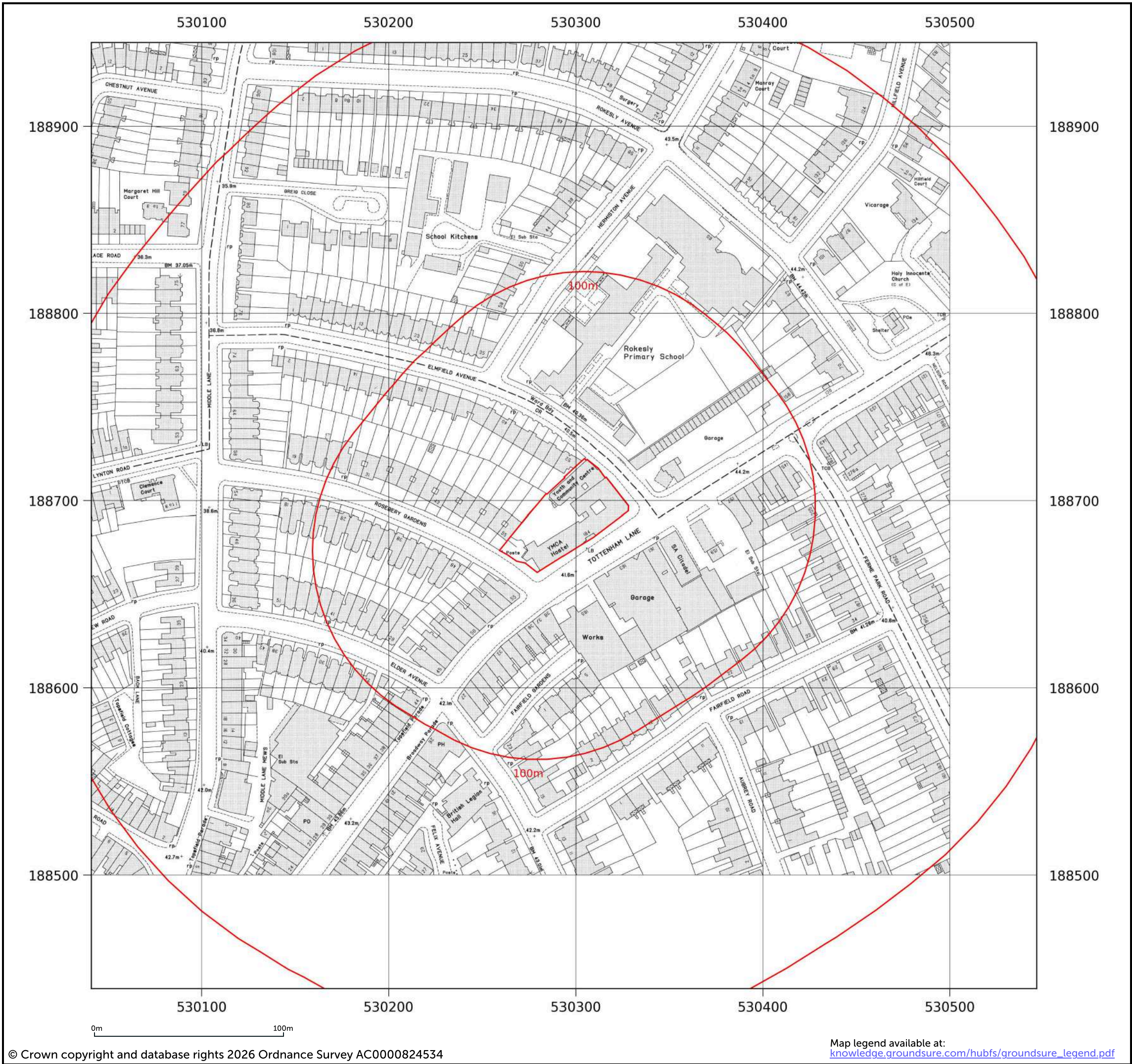
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Client ref: GWPR7007
Report ref: GS-56H-6EZ-E61-PVL
Grid ref: 530295.01, 188690.77
Production date: 20 March 2026

Map name: National Grid
Map date: 1979
Scale: 1:1,250
Printed at: 1:2,000



Date: 1979
Surveyed: 1979
Revised: 1979

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Site details:

YMCA, 184, TOTTENHAM LANE, HORNSEY, LONDON, HARINGEY, N8 8SG

Client ref:

GWPR7007

Report ref:

GS-56H-6EZ-E61-PVL

Grid ref:

530295.01, 188690.77

Production date:

20 March 2026

Map name:

National Grid

Map date:

1991

Scale:

1:1,250

Printed at:

1:2,000

Date: 1991
Copyright: 1991

Date: 1991
Surveyed: 1991
Revised: 1991
Copyright: 1991

Date: 1991
Surveyed: 1991
Revised: 1991
Copyright: 1991

Date: 1991
Surveyed: 1991
Revised: 1991
Copyright: 1991

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Ordnance Survey

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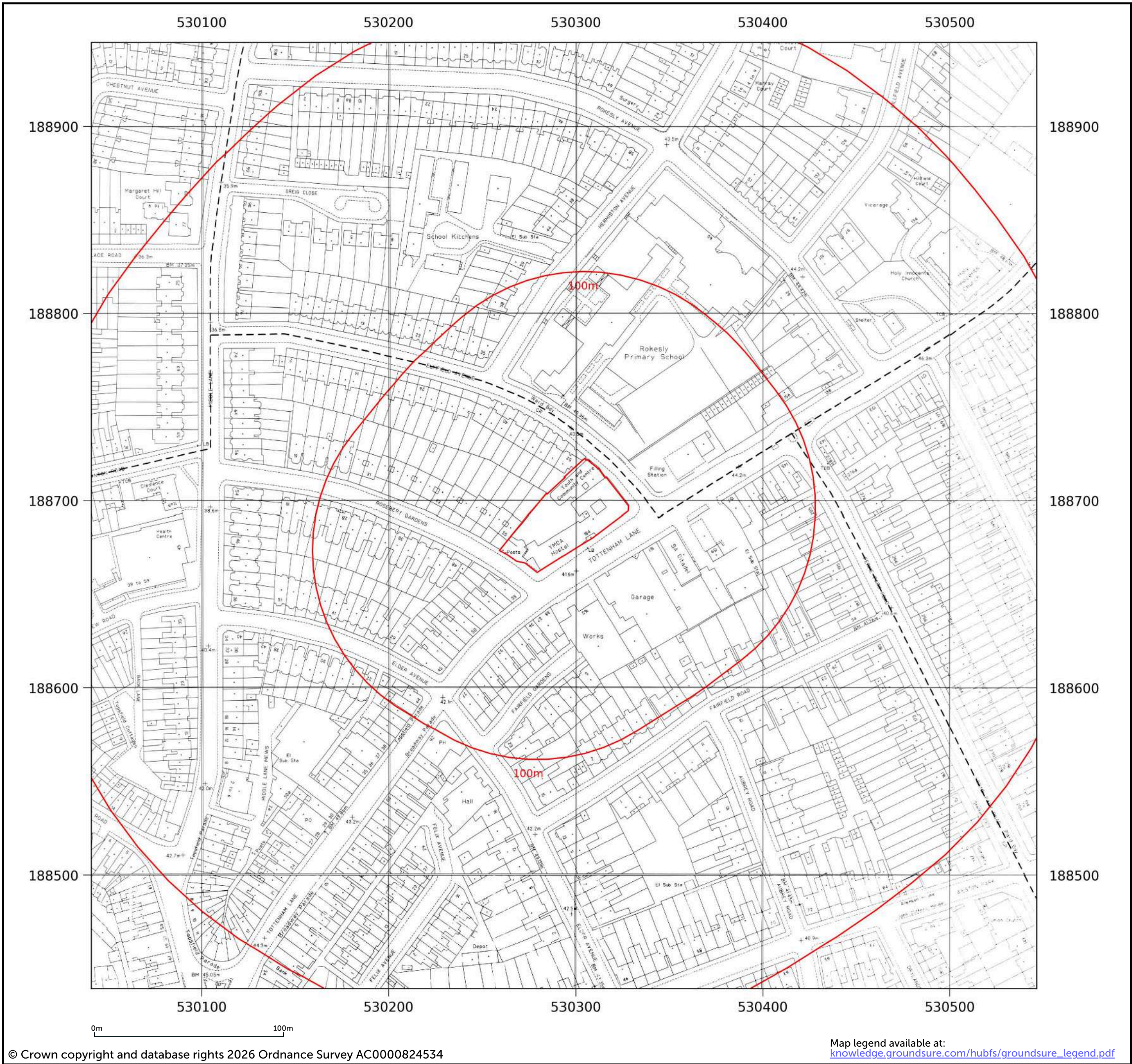
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Client ref: GWPR7007
Report ref: GS-56H-6EZ-E61-PVL
Grid ref: 530295.01, 188690.77
Production date: 20 March 2026

Map name: National Grid
Map date: 1991
Scale: 1:1,250
Printed at: 1:2,000



Date: 1991
Surveyed: 1991
Revised: 1991
Copyright: 1991
Date: 1991
Copyright: 1991
Date: 1991
Copyright: 1991
Date: 1991
Copyright: 1991

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Site details:

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Client ref:

GWPR7007

Report ref:

GS-56H-6EZ-E61-PVL

Grid ref:

530295.01, 188690.77

Production date:

20 March 2026

Map name:

National Grid

Map date:

1992-1995

Scale:

1:1,250

Printed at:

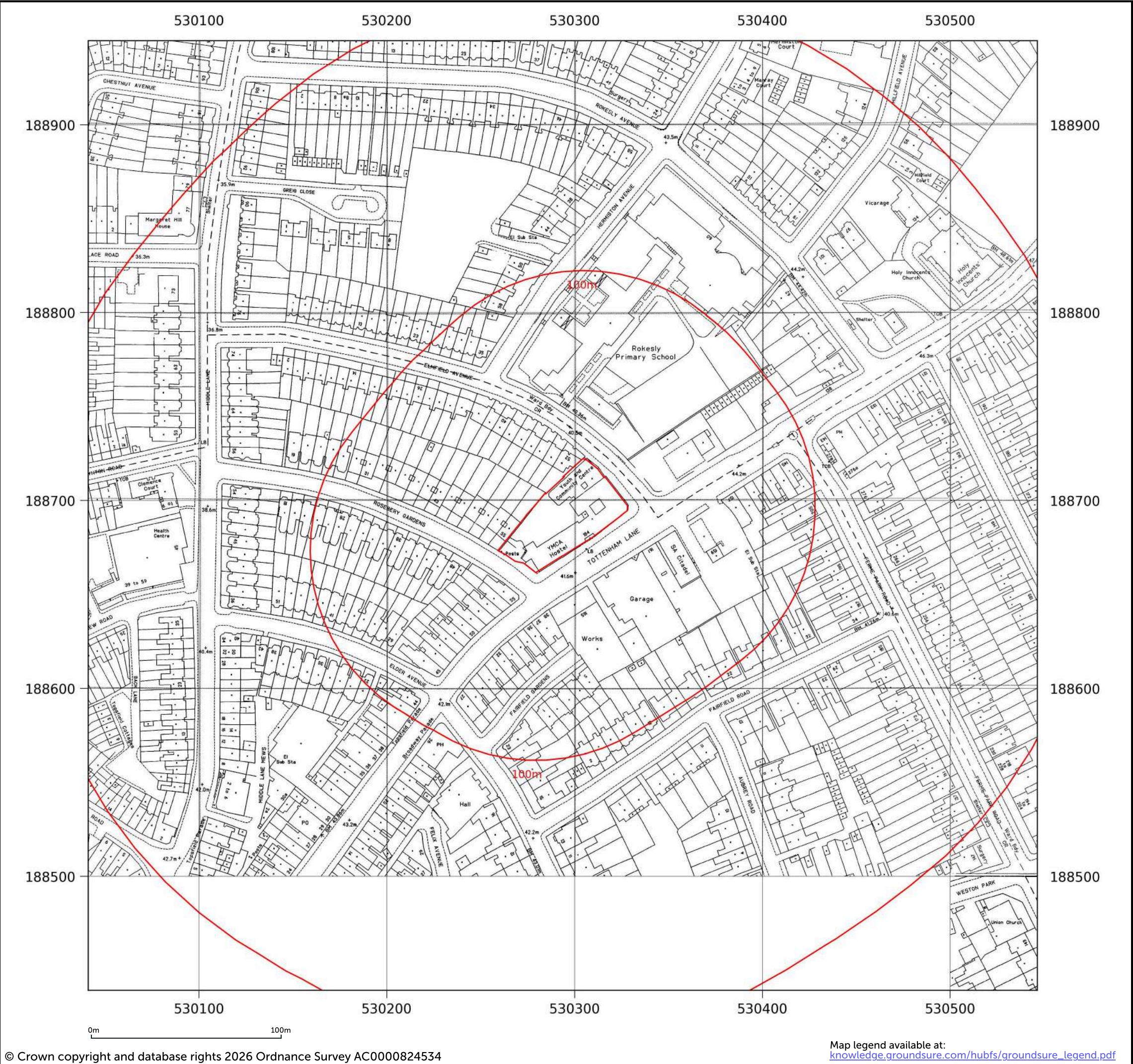
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Date: 1993
Surveyed: 1993
Revised: 1993

Date: 1995
Surveyed: 1995
Revised: 1995

Date: 1992
Copyright: 1992

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Site details:

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Client ref:

GWPR7007

Report ref:

GS-56H-6EZ-E61-PVL

Grid ref:

530295.01, 188690.77

Production date:

20 March 2026

Map name:

National Grid

Map date:

1992-1995

Scale:

1:1,250

Printed at:

1:2,000

Date: 1993
Copyright: 1993

Date: 1995
Copyright: 1995

Date: 1992
Copyright: 1992

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GWPR7007

Report ref:

GS-56H-6EZ-E61-PVL

Grid ref:

530295.01, 188690.77

Production date:

20 March 2026

Map name:

National Grid

Map date:

1995

Scale:

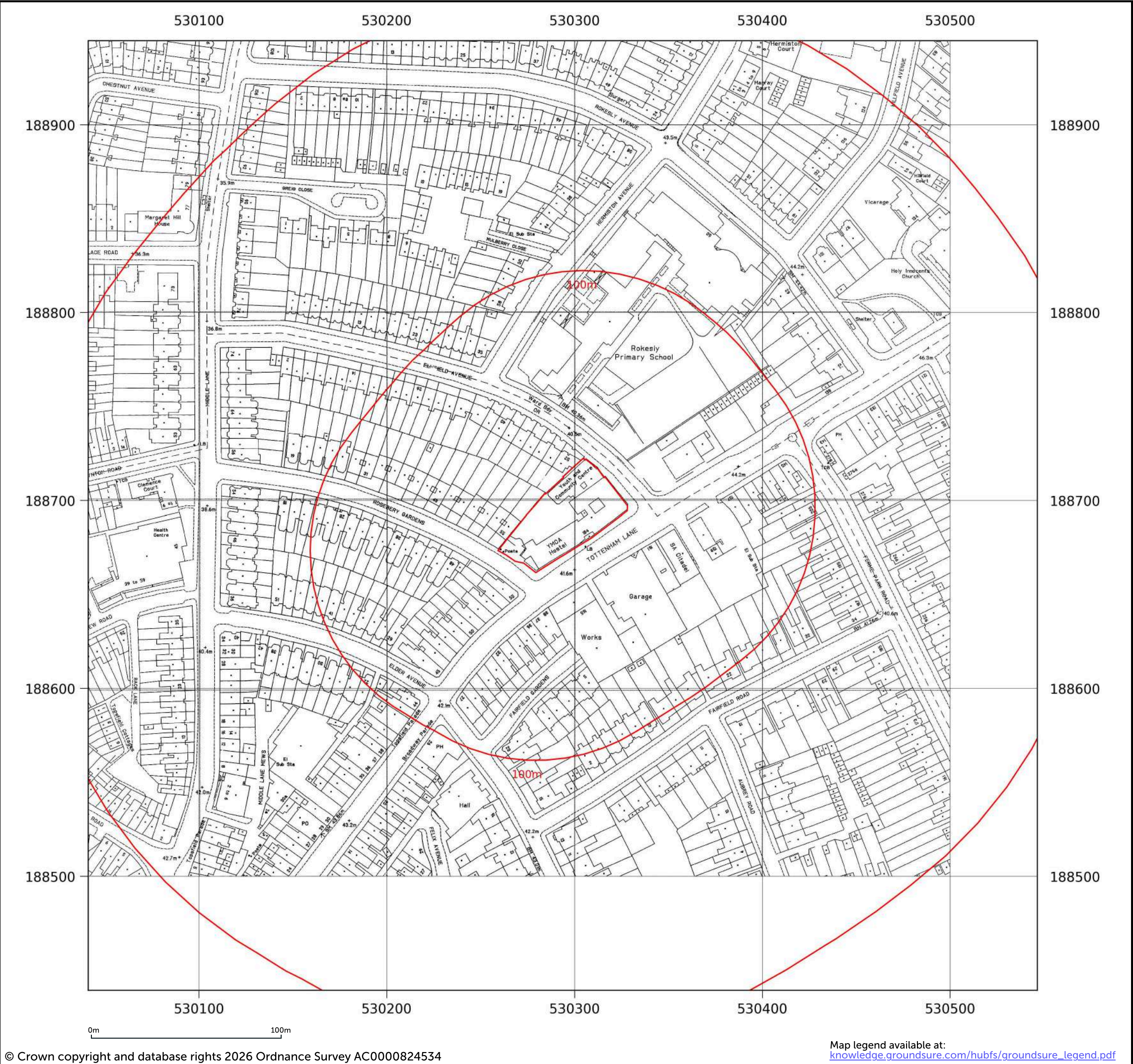
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Printed at:

1:2,000

Date: 1995
Surveyed: 1995
Revised: 1995

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Site details:

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Client ref:

GWPR7007

Report ref:

GS-56H-6EZ-E61-PVL

Grid ref:

530295.01, 188690.77

Production date:

20 March 2026

Map name:

National Grid

Map date:

1995

Scale:

1:1,250

Printed at:

1:2,000

Date: 1995

Copyright: 1995

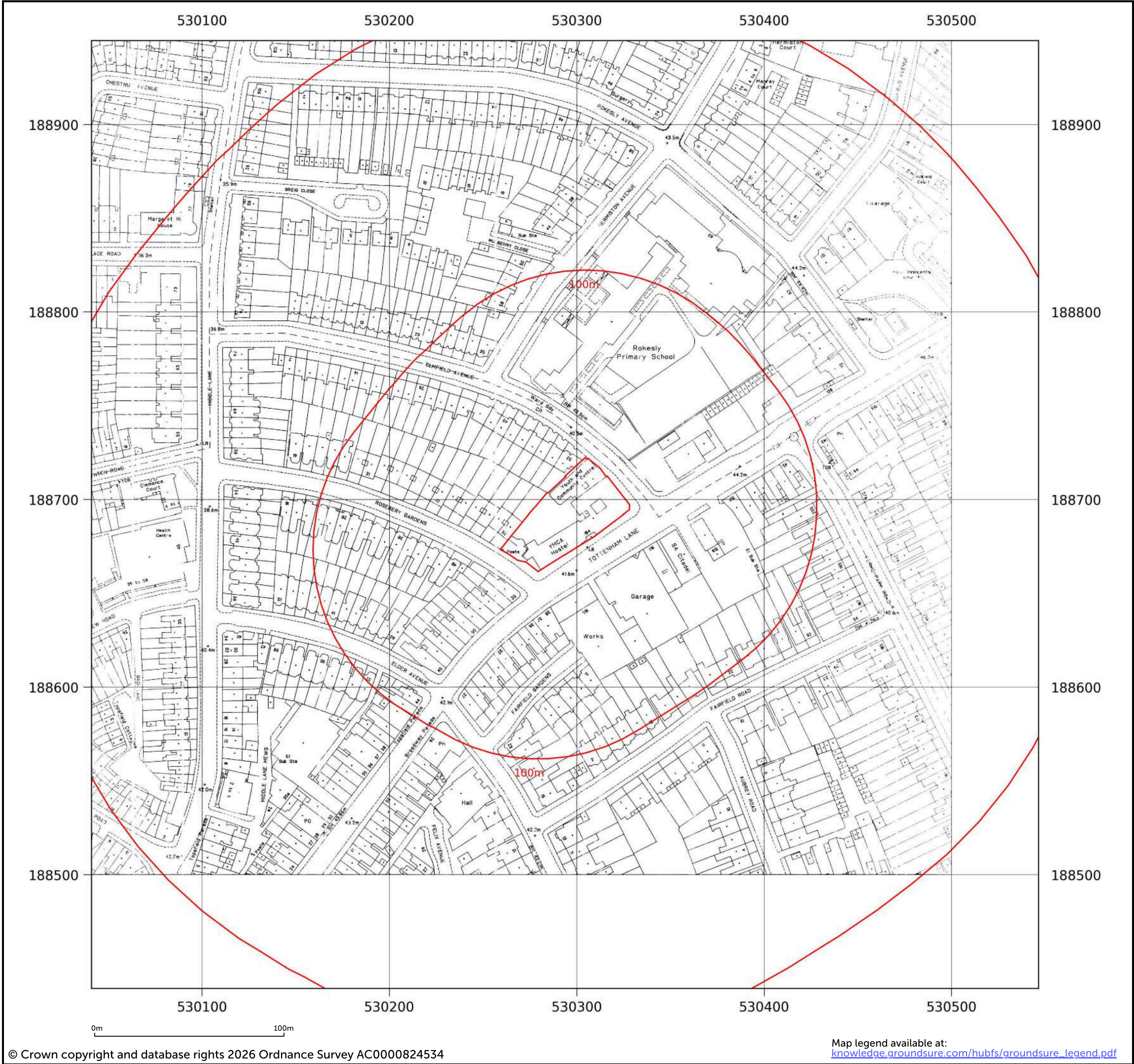
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Client ref: GWPR7007
Report ref: GS-56H-6EZ-E61-PVL
Grid ref: 530295.01, 188690.77
Production date: 20 March 2026

Map name: LandLine
Map date: 2003
Scale: 1:1,250
Printed at: 1:1,250



Date: 2003

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