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LOWER ALDERTON HALL LANE, LOUGHTON, IG10 3HA
Phase 1 Contaminated Land Assessment – Volume 1 of 3

LOWER ALDERTON HALL LANE, LOUGHTON, IG10 3HA

Phase 1 Contaminated Land Assessment

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Phase 1 Contaminated Land Assessment

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LOWER ALDERTON HALL LANE, LOUGHTON, IG10 3HA
Phase 1 Contaminated Land Assessment

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Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By

1.0 INTRODUCTION

Brief

1.1 Create Consulting Engineers Ltd was instructed by ECD Architects, on behalf of Epping Forest District Council, to undertake a Phase 1 Contaminated Land Assessment for the parcel of land off Lower Alderton Hall Lane in Loughton, IG10 3HA (the 'Site').

Project Context

1.2 The Site is owned by Epping Forest District Council and is currently occupied by a series of garages for local residents.

1.3 Planning approval was granted for the demolition of the existing garages and erection of 2No. affordable residential units with rear garden areas, vehicle access, landscaping and 13No. car parking spaces on 4 March 2016 (Ref: EPF/2620/15).

1.4 The proposed layout of the development (ground floor) is provided in Figure 1.1 below.

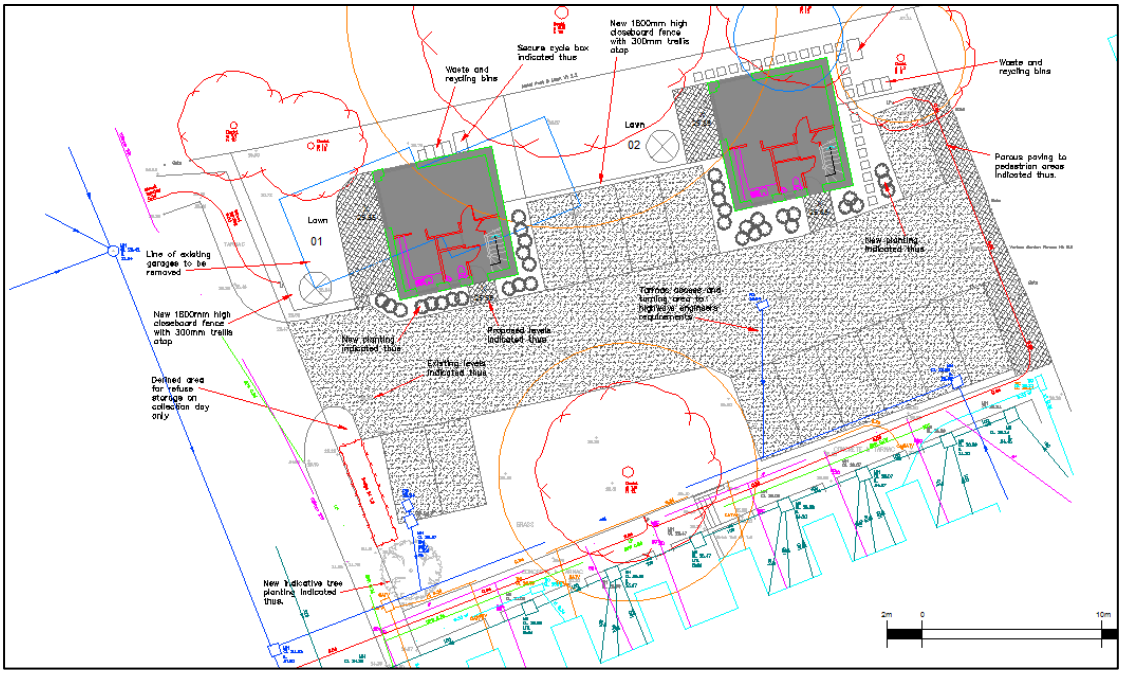


Figure 1.1: Proposed Development Plan

1.5 The development was granted subject to a number of pre-commencement conditions, including:

> *"Condition 3: No development shall take place until a Phase 1 Land Contamination investigation has been carried out. A protocol for the investigation shall be submitted to and approved by the Local Planning Authority before commencement of the Phase 1 investigation. The completed Phase 1 report shall*

be submitted to and approved in writing by the Local Planning Authority prior to commencement of any necessary Phase 2 investigation. The report shall assess potential risks to present and proposed humans, property including buildings, crops, livestock, pets, woodland and service lines and pipe, adjoining land, groundwater and surface waters, ecological systems, archaeological; sites and ancient monuments and the investigation must be conducted in accordance with DEFRA and the Environment Agency's "Model Procedures for the Management of Land Contamination, CLR 11", or any subsequent version or additional regulatory guidance."

Objective

1.6 To undertake a Phase 1 Contaminated Land Assessment comprising a desk study review of existing information relating to the site and surrounding area and conduct a site walkover survey, in accordance with Epping Forest District Council's submission checklist (see Appendix A) and best practice and guidance such as that set out in Environment Agency's Model Procedures for the Management of Land Contamination, CLR 11 2004 (Ref. I) to enable discharge of pre-commencement condition No. 3 (detailed above).

Scope of Work

1.7 The scope of works for this study comprises a review of the following information sources:

- British Geological Survey online mapping data;
- Environment Agency online mapping data;
- Available historical Ordnance Survey mapping (Appendix C);
- Groundsure Enviro Insight report (Appendix D);
- Web searches related to the site and surrounding area; and
- Google Earth imagery.

1.8 A Conceptual Site Model (CSM) will then be developed based on the findings of the screening assessment and potential risks in the context of the proposed acquisition and / or development undertaken using the source-pathway-receptor approach.

1.9 A site walkover was undertaken to assess the site condition and surrounding land uses and a photographic record is provided in Appendix B.

2.0 SOURCES OF INFORMATION

2.1 The information contained in this report is based on a review of already available information pertinent to the Site.

Records Review

2.2 Key reports, drawings and accessed websites pertinent to this assessment are detailed in Table 2.1 below.

Document/Website	Author/Publisher	Date
Flood Maps, Groundwater Mapping, Landfill Sites, Pollution Incidents, Reservoir Flood Map – www.environment-agency.gov.uk	Environment Agency (EA)	Accessed December 2018
BGS Geology of Britain Viewer - https://mapapps.bgs.ac.uk/geologyofbritain	British Geological Survey	Accessed December 2018
BGS Geoindex – Geology and borehole records - www.bgs.ac.uk/geoindex	British Geological Survey	Accessed December 2018
Enviro Insight Report Ref: GS-5675282	Groundsure Ltd	6 December 2018
Historical Ordnance Survey Maps (Ref: GS-5675283)	Groundsure Ltd	6 December 2018
Express Preliminary UXO Risk Assessment Ref: EP7782-00	1St Line Defence	3 December 2018
Google Maps	Google	Accessed December 2018

Table 2.1: Key Information Sources

Site Visit

2.3 A site walkover was undertaken on 31 October 2018.

3.0 SITE LOCATION AND DESCRIPTION

Site Location

3.1 The Site comprises a rectangular parcel of land located to the east of Lower Alderton Hall Lane, approximately 400m southeast of Waltham Abbey centre. The Site is located at approximate National Grid Reference 543331E, 195707N

3.2 The Site location is shown in Figure 3.1 below.

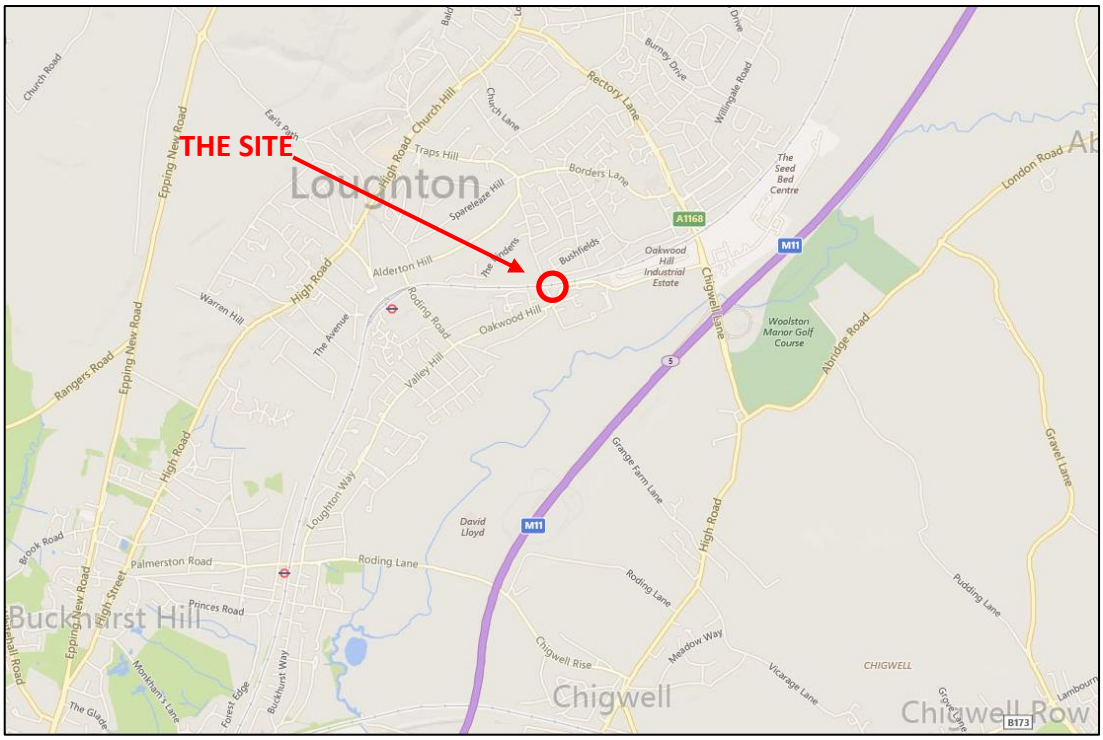


Figure 3.1: Site Location Plan

Site Description

3.3 The Site covers an area of approximately 0.09ha (Source: Groundsure reports) and is situated in a residential area.

3.4 A walkover survey of the Site and its surroundings was undertaken on 31st October 2018 and a description of the survey findings is provided below and a photographic record is provided in Appendix B.

3.5 The Site comprises an area of macadam hardstanding with access from Lower Alderton Hall Lane (to the west) and 6No. individual garages in one row occupying the northwest corner (Photo 1, Appendix B) and additional car parking (concrete hardstanding) occupying the southwest corner of the Site (Photo 2, Appendix B).

3.6 To the rear of the garages and along the northern boundary to the Site is a grassed verge area with trees beyond bordering the Site (see Photos 3, 4 and 5). To the rear of the garage units, there is some evidence of fly-tipping in the form of rubbish bags (see Photo 3, Appendix B). Along the southern boundary there is another grassed verge area (see Photo 6, Appendix B).

3.7 The layout of the Site is illustrated in Figure 3.2 below.

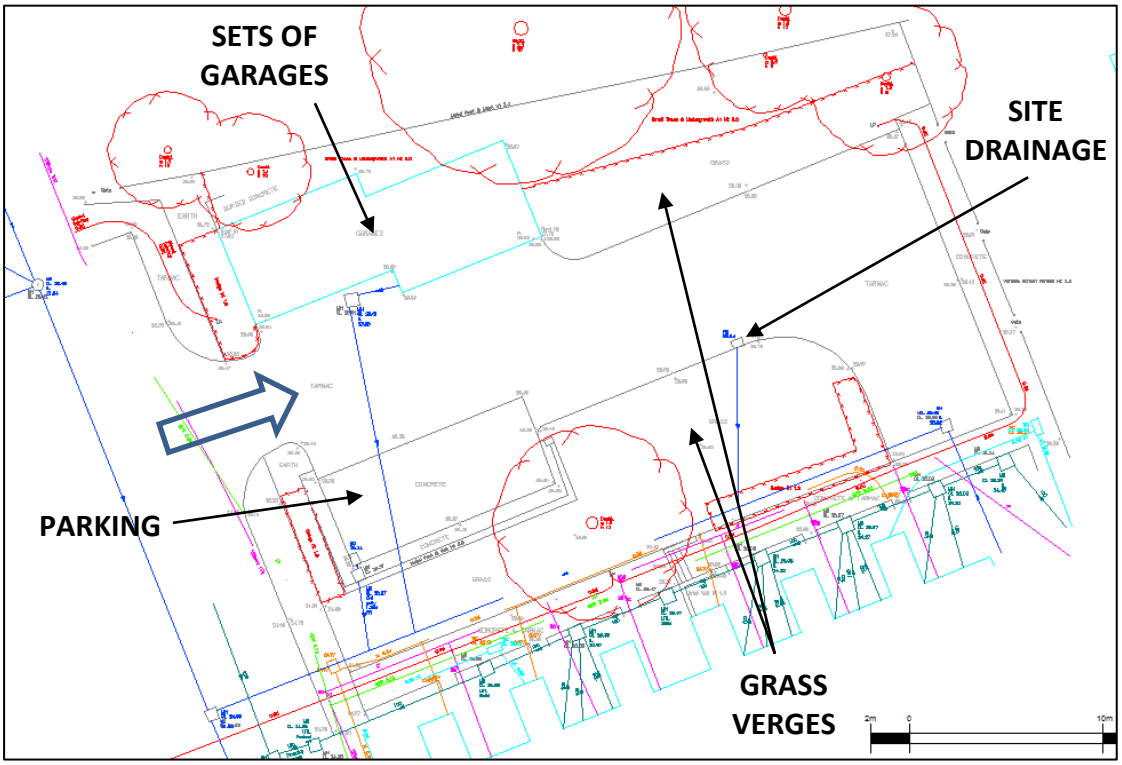


Figure 3.2: Site Layout Plan

3.8 The garages are of brick construction with flat rooves and soffits and metal up and over doors. The garages appeared to be in reasonable condition although no access to the garages was possible during the walkover survey.

3.9 The macadam hardstanding across the Site was generally observed to be in good condition and a road drain was observed adjacent to the southern grassed verge area.

Surrounding Area

3.10 The Site is located within a residential area, bounded to the east and south directly by residential properties (Photos 2 and 5, Appendix B), to the west by Lower Alderton HaLl Lane with residential properties beyond (Photo 6, Appendix B) and to the north by the embankment for the railway line (Photo 1, Appendix B).

3.11 An overview of the surrounding area is provided in Figure 3.3 overleaf.

Figure 3.3: Surrounding Land Use Plan

4.0 ENVIRONMENTAL SETTING

Geology

4.1 According to the BGS 1:50,000 Digital Map of Great Britain, the Site is directly underlain by the London Clay Formation.

4.2 There are a number of BGS borehole records to the west and southwest of the Site which confirm this area is underlain by the London Clay Formation.

4.3 The Groundsure Enviro Insight report (Appendix D) provides data on coal and non-coal mining areas and potential ground stability hazards for the UK that may affect the site. The mining and potential ground stability hazards identified in the Groundsure report are summarised in Table 4.1 below.

Details	On-site	Risk
Coal Mining Affected Area	No	No Hazard
Non-Coal Mining Affected Area	No	No Hazard
Brine affected Areas	No	No Hazard
Potential for Collapsible Ground Stability Hazards	Yes	Very Low
Potential for Compressible Ground Stability Hazards	No	Negligible
Potential for Ground Dissolution Stability Hazards	No	Negligible
Potential for Landslide Ground Stability Hazards	Yes	Very Low
Potential for Running Sand Ground Stability Hazards	No	Negligible
Potential for Shrinking or Swelling Clay Ground Stability Hazards	Yes	Moderate

Table 4.1: Mining and Potential Ground Stability Hazards

Hydrogeology

4.4 The London Clay Formation is classified as Unproductive, with low permeability that have negligible significance for water supply or river base flow.

4.5 According to the Environment Agency, the Site is not located within a designated groundwater source protection zone with no active groundwater abstractions within 1km of the Site.

Hydrology

4.6 There are no water features on the Site and according to the Groundsure Enviro Insight Report, the closest water feature is an inland river located approximately 250m to the southeast of the Site.

4.7 There are no current surface water abstraction licences within 1km of the Site.

Radon

4.8 The Site is in a lower probability radon area as less than 1% of properties are above the action level. No radon protective measures are necessary in the construction of new dwellings or extensions.

Ecology

4.9 According to data from the Groundsure report, there are no Sites of Special Scientific Interest (SSSI), Nature Reserves, Special Areas of Conservation (SAC), Special Protection Areas (SPA), Areas if Natural Outstanding Beauty (AONB) or any other environmental designations within 250m of the Site.

Sensitivity

4.10 The sensitivity of each of the identified receptors is rated depending upon the environmental setting of the Site, the likelihood for pollutant linkages to be present and potential consequence of those potential pollutant linkages. The assessment approach adopted is based on guidance set out in the *Guidance for the Safe Development of Housing on Land Affected by Contamination R&D 66* document (Ref: IX).

4.11 The Site sensitivity with regards to groundwater within the London Clay Formation directly underlying the site is designated as **L2 (Very Low),** described as underlain by an *unproductive aquifer.*

4.12 The Site sensitivity to surface water is designated as **M1 (Moderate)**, described as *'within catchment of and relatively close to watercourse.''*

5.0 SITE HISTORY

Ordnance Survey Mapping

5.1 The Site history has been assessed by reviewing available historical ordnance survey mapping and Google Earth images. The historical plans which have been reviewed comprised only readily available records and may be limited; however, the information available to date indicates that additional searches are unlikely to add to our understanding of the Site.

5.2 The historical development of the Site is summarised in Table 5.1 below and historical ordnance survey mapping is included in Appendix C.

Dates	Site Use	Surrounding Land Use
1872 (1:2,500 and 1:10,560)	The Site is shown to form part of an agricultural field.	The railway line with embankment forms the northern boundary of the Site, with an underpass adjacent to the northwest corner of the Site and a footpath running north-south past the Site. Alderton Hall Farm is 500m to northwest and River Roding is 300m to southeast.
1896 (1:2,500) and 1895 (1:10,560)	No changes evident.	Loughton Sewage Farm is shown 600m to the southwest. No other significant changes evident.
1915 (1:10,560)	No changes evident.	Residential dwelling shown 500m to the northwest, along Alderton Hill
1920 (1:2,500)	No changes evident.	Further residential development 300m to the northwest and southeast. No other significant changes evident.
1938 (1:10,560)	No changes evident.	No significant changes evident.
1940 (1:2,500)	No changes evident.	No significant changes evident.
1953 (1:10,560)	No changes evident.	The sewage works to the southwest shows sludge beds and is now 550m to southwest. No other significant changes evident.
1960 (1:10,560) and 1965 (1:1,250)	The Site is occupied by detached residential dwellings with gardens.	The sites immediately to the south and east are occupied by similar detached residential dwellings. Further residential development is also shown to the north beyond the railway line and west beyond Lower Alderton Hall Lane. Sewage works to southwest now show as disused.
1967-69 (1:2,500 and 1:10,560)	No changes evident	No significant changes evident.

Dates	Site Use	Surrounding Land Use
1973 (1:2,500 and 1:10,000)	The Site is occupied by 6No. garages in the northwest corner and the remainder hardstanding and soft landscaping in current layout.	The sites to the south, east and west have been redeveloped with a series of terraced properties now present to the east and south and further properties and garage units to the west beyond Lower Alderton Hall Lane.
1992 (1:2,500)	No changes evident.	No significant changes evident.
Google Earth Image 1999	No changes evident.	No significant changes evident.
2002 (1:10,000)	No changes evident.	No significant changes evident.
2014 (1:10,000)	No changes evident.	No significant changes evident.
2018 Google Earth Image	No changes evident.	No significant changes evident.

Table 5.1: Historical Site Uses

Unexploded Ordnance

5.3 Given the location of the Site and its proximity to London, it is likely that this area will have been affected by bomb damage during World War 2.

5.4 A Preliminary UXO Risk Assessment was completed by 1st Line Defence (Ref: EP7782-00) on 3rd December 2018. This provides a qualitative screening to assess the potential of encountering unexploded ordnance (UXO) at the Site in accordance with CIRIA C681: Unexploded Ordnance, a Guide for the Construction Industry.

5.5 The assessment concluded that on the basis the site is located within an area of moderate to high density bombing, combined with the fact that post-raid inspections are unlikely to have taken place, the risk of UXO could not be discounted and a further more detailed assessment would be required.

6.0 REVIEW OF AVAILABLE ENVIRONMENTAL INFORMATION

Publicly Available Information

6.1 Information on potentially significant environmental issues and controls at the Site and surrounding area may be held on public records by regulatory authorities. This information is sourced directly from the regulatory authorities and from the Groundsure database.

6.2 A copy of the Groundsure Enviro Insight report is provided in Appendix D and a summary is provided in Table 6.1 below.

Public Record	On site or off site	Features
Landfill & Waste Sites (Environment Agency, Local Authority & British Geological Survey)	On site	There are no recorded licensed or known historical or current landfill sites or registered waste sites located on the Site.
	Off site	There are no recorded historical or active landfill sites or waste treatment, transfer or disposal sites within 1km of the Site.
Industrial Site Uses (Historical Ordnance Survey Mapping)	On site	There are no current or historical industrial land uses identified on the Site.
	Off site	There are several current industrial sites located within 250m of the Site: • Electricity substations 99m to south, 120m to southeast, 179m to east, 183m to northeast, 209m to south and 217m to north; and • Vehicle repair, testing and service operation 146m to northeast. There are limited potentially contaminative historical industrial site uses located within 250m of the Site, comprising: • Railway line adjacent to the north and associated cuttings 151m to the west; and • Electricity substations 9m to south, 112m to southeast, 168m to east, 183m to northeast, 204m to south and 214m to north.
Environmental Permits, Incidents and Registers (Environment Agency)	On site	There are no records of any permits, incidents or registers relating to the Site.
	Off site	There is 1No. records of any permits, incidents or registers within 250m of the Site, which is a National Incident Recording System in 1999, 213m to east in the River Roding (Significant Water Impact).

Table 6.1: Publicly Available Information

Local Planning Authority

6.3 The Contaminated land Officer mace the following comments in relations to the planning application (9 November 2015):

> *"Due to the presence of demolition waste containing asbestos from the London County Council 1946 asbestos clad Arcon Mark V Emergency Factory Made temporary houses formerly located on site (4-96 Alderton Hall Lane & 3-5 Monksgrove Crescent) and use as domestic garages since construction by the GLC in 1966 (CHI/0302/66), there is the potential for contaminants to be present on site."*

7.0 QUALITATIVE RISK ASSESSMENT

7.1 In accordance with guidance outlined by the Environment Agency's Model Procedures for the Management of Land Contamination, CLR11 (2004), a qualitative risk assessment has formulated for the site. A Preliminary Conceptual Model has been developed using potential source-pathway-receptor linkages using a combination of the likelihood of a pollution event to occur, taking account of the presence of a hazard (or source) and integrity of a pathway, versus the consequence of a pollution occurrence, which is essentially a measure of the severity of a hazard to an identified receptor (such as future sensitive end-users).

7.2 The presence of contamination (as a potential hazard) does not necessary mean that there is a risk. It is the exposure pathway and the quantity of contamination that reaches the receptor which may determine the effect on a receptor.

7.3 The risk classification for both likelihood and consequence is based on methodology presented in Contaminated Land Risk Assessment, A Guide to Good Practice (CIRIA C552, 2001) and has been developed from procedures outlined in the EA's CLR11 Model Procedures. The DETR, with the EA and Institute of Environment & Health, has also published guidance on risk assessment (Guidelines for Environmental Risk Assessment and Management). The guidance states that the designation of risk is based upon a consideration of both:

- The magnitude of the potential consequence (severity) of risk occurring which takes into account both potential severity of the hazard and sensitivity of the receptor; and
- The likelihood of an event occurring (probability) which takes into account both the presence of the hazard and receptor and the integrity of the pathway.

7.4 The magnitude of consequence (severity) and likelihood (probability) is defined in the CIRIA guidance, together with examples. The two classifications are then compared to obtain an estimation of risk for each pollution linkage, ranging from "very high risk" to "very low risk". A description of the risks and likely actions are as follows:

Very High Risk: There is a high probability that severe harm could arise to a designated receptor from an identified hazard, or, there is evidence that severe harm to a designated receptor is currently happening.

If this risk is realised, it is likely to result in significant environmental and financial liability to current and/ or future site owners/ occupiers. Urgent investigation (if not already undertaken) and remediation is likely to be required.

High Risk: Harm is likely to arise to a designated receptor from an identified hazard.

If risk is realised, it is likely to present a sizeable environmental and financial liability to current and/ or future site owners/ occupiers. Urgent investigation is required and remediation work may be necessary in the short term and likely over the longer term.

Moderate Risk: It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely the harm would be relatively mild.

Investigation is normally required to clarify the risk and determine the potential environmental liability. Some remedial works may be required over the longer term.

Low Risk: It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.

Limited investigation may be recommended to clarify the risk, dependant on the sensitivity of the receptor and view point of those of interest. Any remedial works are likely to be fairly limited.

Very Low Risk: There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is likely to be mild or minor.

7.5 The benefit of estimating the risk in this way is that it can be revised after each investigation phase as the conceptual model and corresponding pollution linkages are refined.

7.6 The risk assessment is based on the proposed residential end use with private gardens and soft landscaped areas. The results of this risk assessment are presented in Table 7.1 overleaf. Should the development proposal change, the risk assessment should be revised accordingly.

Source	Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk	Possible Mitigation Measures	Residual Risk
Potential poor quality made ground beneath the Site associated with original site development for asbestos-clad temporary housing in 1940's (LPA comments) and subsequent redevelopment in 1960s/70s for use as garages	Asbestos-containing soils (ACSs), metals and hydrocarbons	Direct exposure, inhalation or ingestion of contaminated soils, dust or vapours during construction or in garden areas / soft landscaped areas	Future Site Residents	Moderate	Moderate	Moderate	Potential exposure to contamination in garden areas. Site investigation to confirm presence of contamination and associated risks. Remediation or mitigation measures will need to be implemented to mitigate risk, if warranted.	Low
			Construction Workers	Low / Moderate	Low / Moderate	Low / Moderate	Use of standard Personal Protective Equipment would readily mitigate any risks.	Low
		Vertical migration via leaching / lateral migration down hydraulic gradient	Controlled waters (surface water and groundwater)	Low	Low	Low	Limited migration as protected by overlying hardstanding with controlled drainage and underlying unproductive aquifer. No action considered necessary.	Low
		Permeation of water supply pipes by organic contaminants present in the underlying ground.	Water supply pipes (future residents)	Low	Low	Low	No action necessary.	Low
	Ground gases (methane and carbon dioxide)	Inhalation of harmful (asphyxiant) ground gases or accumulation of explosive gases	Future Site Residents	Low / Moderate	Low / Moderate	Low / Moderate	Site investigation and ground gas monitoring required to assess presence of ground gas and potential exposure risk, with gas protection measures incorporated if required.	Low
			Construction Workers	Very Low	Very Low	Very Low	No action necessary.	Very Low
Adjacent railway line / embankment	Hydrocarbons, asbestos, metals	Lateral migration of pollutants and inhalation or ingestion of vapours accumulating in houses	Future Site Residents	Low	Low	Low	Limited potential for lateral migration given underlying impermeable ground conditions. No action necessary.	Low
Potential for asbestos-containing materials (ACMs) in garage building curtilage	Asbestos	Exposure to asbestos fibres from ACMs present in building curtilage in event of refurbishment / re-use	Future Site Residents	Very Low	Very Low	Very Low	All ACMs in building would be removed prior to development.	Very Low
		Exposure to asbestos fibres from ACMs present in building curtilage in event of demolition or refurbishment	Construction Workers	Moderate	Moderate / High	Moderate / High	Pre-Demolition Asbestos Survey would be required to assess presence and condition of any ACMs to determine risk. Recommendations of surveyor, or removal of any ACMs in poor condition required to mitigate risk.	Low

Table 7.1: Qualitative Risk Assessment

8.0 CONCLUSIONS & RECOMMENDATIONS

Conclusions

8.1 It is proposed to demolish the existing garages and construct two residential units with private gardens, car parking, vehicle access, landscaping and 13No. car parking spaces.

8.2 The environmental sensitivity of the site has been assessed as very low with respect to groundwater on the basis of the underlying unproductive aquifer and moderate with respect to surface water given the presence of a local water course.

8.3 Based on the findings of this contaminated land risk assessment, a number of potential pollutant linkages were identified (see Table 7.1 above). These potential contamination sources are associated with:

- Potential pollutants or ground gas present within poor quality made ground associated with site development in 1940s for temporary asbestos-clad housing and subsequent redevelopment in 1960s/70s for current site use;
- Potential pollutants arising from adjacent railway line / embankment to the north; and
- Potential presence of asbestos containing materials (ACMs) within the garage structures.

8.4 The potential for contamination (or ground gas) to be present within the proposed development area is considered to be **low to moderate** to **moderate** risk to future site residents. This is associated with poor quality made ground potentially used as fill during development of asbestos-clad temporary housing in 1940s (LPA comments) and the subsequent redevelopment of the Site in the 1960s/70s for current site use. The potential for direct exposure to future site residents would be limited to private gardens and any soft landscaped areas. The generation of ground gas from the made ground, if present, could enter the buildings and pose a risk to future site residents. The risk posed to water service pipes has been assessed as **low**.

8.5 The potential risk posed by contaminants from adjacent railway line / embankment to the north is considered to be **low**.

8.6 Any exposure risk to construction workers associated with contamination within poor quality made ground materials during groundworks is considered to be **low to moderate** although can be readily mitigated using standard personal protective equipment. Any potential, risks posed by ground gas is considered to be **low** on the basis of minimal below ground works.

8.7 The risk posed to controlled waters (groundwater and surface water) from on-site contamination is considered to be **low** on the basis that the Site is largely covered with

hardstanding and controlled drainage along with the underlying ground conditions (unproductive aquifer) and proximity of the nearest local water course.

8.8 The potential presence of asbestos containing materials (ACMs) in the existing garage structure fabric poses a potential **moderate/high** risk to construction workers.

8.9 A detailed risk assessment is required to confirm the risk posed by Unexploded Ordnance (UXO) on the Site.

Recommendations

8.10 In order to further assess the potential exposure risk posed by on-site contamination sources identified to Construction Workers and future Site Residents, a site investigation would need to be undertaken to confirm the condition of the underlying made ground in particular in the rear garden and soft landscaped areas.

8.11 A Sampling and Analysis Plan (SAP) has been prepared for the site investigation required to further assess the potential on-site and off-site sources of contamination and this is provided in Appendix E.

8.12 If unacceptable exposure risk is confirmed, mitigation measures may need to be incorporated in the form of providing a clean cover system for rear garden and soft landscaped areas and / or the provision of ground gas protection for the buildings.

8.13 A pre-demolition asbestos survey would be required to identify and assess the condition of any ACMs present and provide recommendations for removal prior to demolition.

9.0 CONSTRAINTS AND LIMITATIONS

9.1 The copyright of this report is vested in Create Consulting Engineers Ltd and the Client, Epping Forest District Council. The Client, or his appointed representatives, may copy the report for purposes in connection with the development described herein. It shall not be copied by any other party or used for any other purposes without the written consent of Create Consulting Engineers Ltd or the Client.

9.2 Create Consulting Engineers Ltd accepts no responsibility whatsoever to other parties to whom this report, or any part thereof, is made known. Any such other parties rely upon the report at their own risk.

9.3 Create Consulting Engineers Ltd has endeavoured to assess all information provided to them during this appraisal. Should additional information become available which may affect the opinions expressed in this report, Create Consulting reserves the right to review this information and, if warranted, to modify the opinions presented in the report accordingly.

9.4 The report summarises information from a number of external sources and is unable to offer any guarantees or warranties for the completeness or accuracy of information relied upon. Information from third parties has not been verified by Create Consulting Engineers Ltd unless otherwise stated in this report.

9.5 It should be noted that the risks which are identified in this report are perceived risks based on the available information at the time of writing and that the actual risks associated can only be assessed following a physical investigation of the site.

9.6 The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

10.0 REFERENCES

I. DEFRA / Environment Agency, Model Procedures for the Management of Land Contamination, CLR11, September 2004.

II. DEFRA, Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance, April 2012

III. NHBC and Environment Agency. Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66: 2008 Volume 1.

IV. Public Health England UK interactive maps: http://www.ukradon.org/information/ukmaps

V. British Geological Survey website.

VI. Information from Environment Agency Website: www.environment-agency.gov.uk

VII. Department of the Environment, Transport and the Regions, Environment Agency and Institute of Environmental Health. Guidelines for Environmental Risk Assessment and Management. HMSO July 2000.

VIII. Construction Industry Research and Information Association (CIRIA). Contaminated Land Risk Assessment. A Guide to Good Practice. CIRIA C552 2001.

IX. Guidance for the Safe Development of Housing on Land Affected by Contamination R&D 66 document, 2008.

APPENDICES

APPENDIX A

EPPING FOREST DISTRICT COUNCIL CONTAMINATED LAND PHASE 1 REPORT SUBMISSION CHECKLIST

Epping Forest District Council Contaminated Land Phase I Report Submission Checklist

F) Phase 1 Reports

Phase 1 Preliminary Risk Assessment reports must include sufficiently detailed basic information, desk study source information and site reconnaissance information to enable all relevant potentially contaminating sources, pathways and receptors to be identified, to enable an accurate detailed preliminary conceptual model to be produced. This conceptual model will then be refined if required through the Phase 2. The phase I must be completed in accordance with CLR11 and other appropriate guidance.

F1) Basic Site Information

The following basic site information must be included in the report, please complete the below and submit with your phase I investigation report. Reports not submitted with this form or filled incorrectly may be rejected.

Required Information / Included Document	Submitted and satisfactory
1. F1 Name, address and location including grid reference	Yes
2. F1 Site ownership and occupation details	Yes
3. F1 Size of site (hectares)	Yes
4. F1 Broad description of location	Yes
5. F1 Recent OS map of the site and surrounding area (Include colour maps and diagrams where possible).	Yes – Figure 3.2
6. F1 Recent aerial photograph of the site and surrounding area	Yes – Figure 3.3
7. F1 Existing detailed Site Plan (Include colour maps and diagrams where possible).	Yes – Figure 3.2
8. F1 Proposed detailed Site Plan (Include colour maps and diagrams where possible).	Yes – Figure 1.1

9. F1 Copy of the Planning consent and a copy of the approved site plan showing the curtilage of the site to be assessed	Provided with submission
10. F1 Copies of other relevant planning details and plans (eg proposed site layout plans, landscape vegetation scheme, tree survey, site levels, archaeological survey, asbestos survey, design & access statement).	None applicable
11. F1 Plans and details of existing and proposed underground services (where offsite ground gas sources are identified plans showing services running between the 2 sites will also be required).	Yes
12. F2 Basic screening information eg historic maps, aerial photographs, plans, previous investigations – full list available on Council website or upon request. (Include colour maps and diagrams where possible).	Yes
13. Where additional information is available on former uses of a site, the relevant body must be contacted and the information screened and included in the appendices of the report eg : Petrol filling stations (The Petroleum Inspectorate at Essex County Council) Electricity Sub Stations (UK Power Networks) Railway Land (Transport for London Archives and London Transport Museum) Military Airfields (Commercially available Airfield Plans also showing Dispersed sites; Hendon Royal Air Force Museum, internet history sites etc)	N/A
14. F3 Site reconnaissance – recent walk over survey with labelled photos showing direction and outlook.	Yes – Appendix B
15. F4 Outline Conceptual Model with identified pollutant linkages and exposure pathways and recommendations	Yes – Section 7 / Table 7.1
Completed by	Colin Buchanan
Date	12 December 2018
Representing / Company	Create Consulting Engineers td

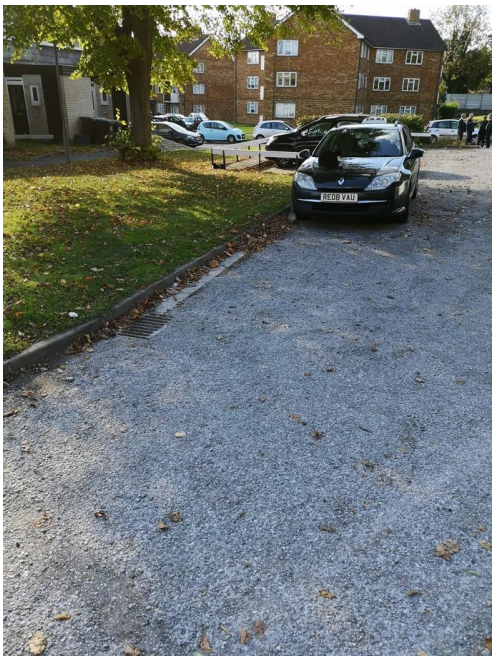
APPENDIX B

SITE PHOTOGRAPHS

Create Consulting Engineers Limited,
109-112 Temple Chambers, 3-7 Temple Avenue, London EC4Y 0HP
Tel: 0207 822 2300
Email: www.createconsultingengineers.co.uk

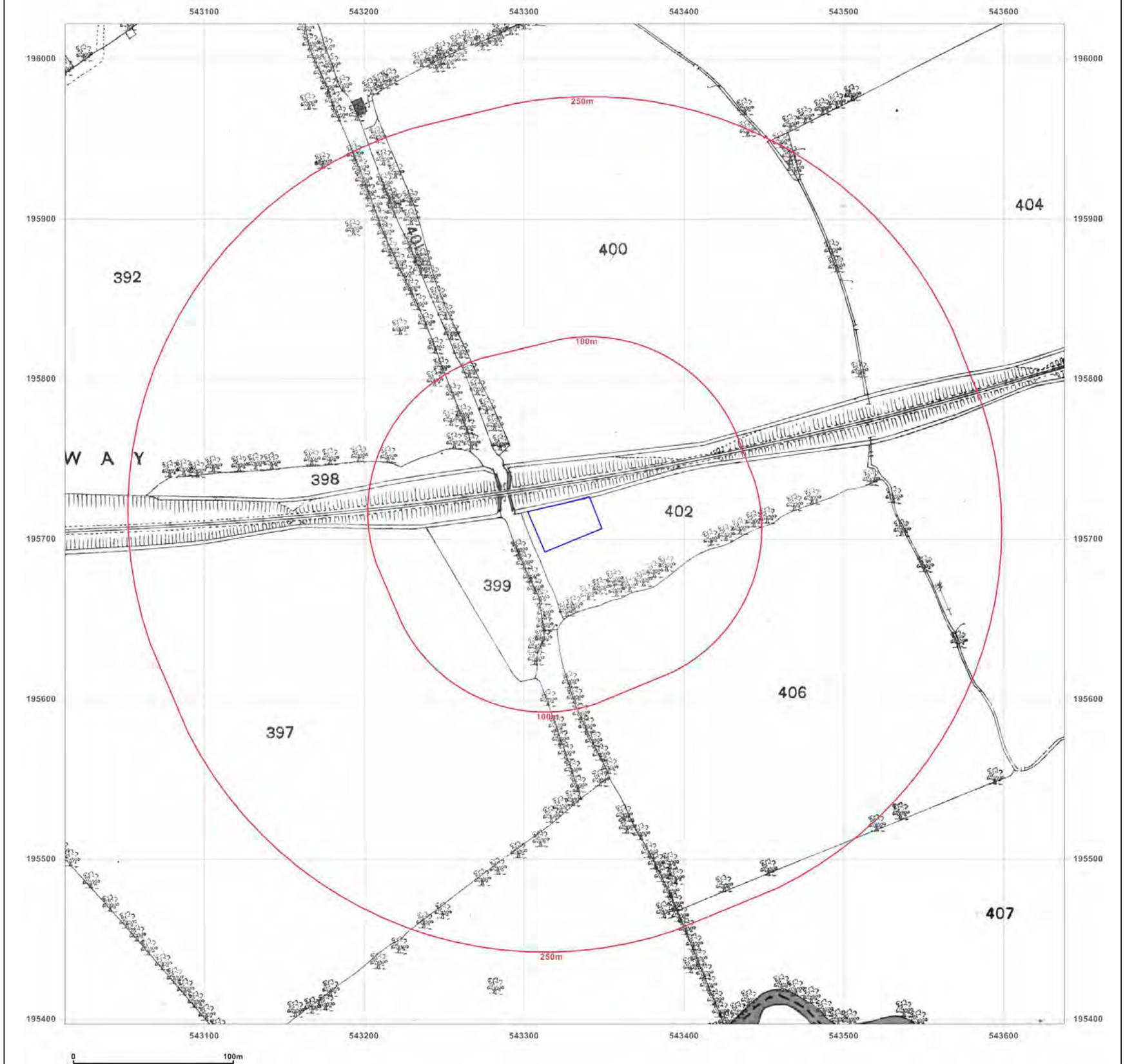
Photo 1: Two sets of garages occupying the north-western area of the Site (looking northeast from site entrance) with railway embankment beyond	**Photo 2: Car parking area occupying south-western area of Site (looking southeast) with residential properties to east and south**
	
Photo 3: Fly tipped waste and foliage behind the garages along the northern site boundary (looking east)	**Photo 4: The soft landscaped area occupying the northwest area of the Site (looking north)**
	

Create Consulting Engineers Limited,
109-112 Temple Chambers, 3-7 Temple Avenue, London EC4Y 0HP
Tel: 0207 822 2300
Email: www.createconsultingengineers.co.uk

Photo 5: The northeast corner of the Site (looking east) with pedestrian access to residential dwelling to the east	Photo 6: Macadam hardstanding across centre of Site (looking southeast) with grassed bank along southern boundary of site and residential dwellings beyond
	

APPENDIX C

HISTORICAL ORDNANCE SURVEY MAPS



Groundsure INSIGHTS

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: County Series

Map date: **1872**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1872
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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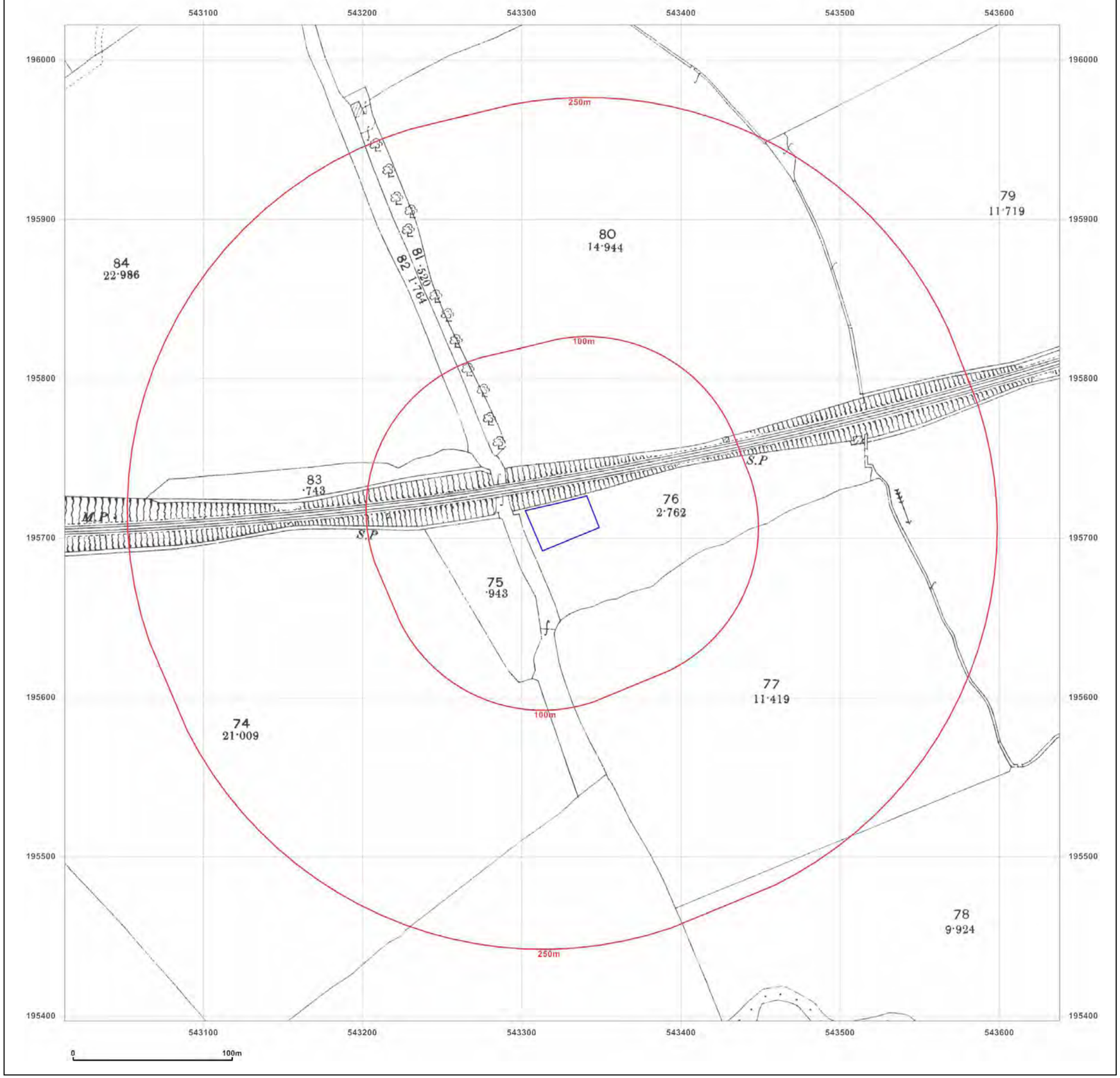

Groundsure INSIGHTS

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: County Series

Map date: **1896**

Scale: 1:2,500

Printed at: 1:2,500

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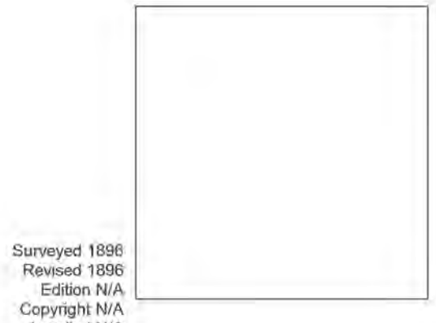

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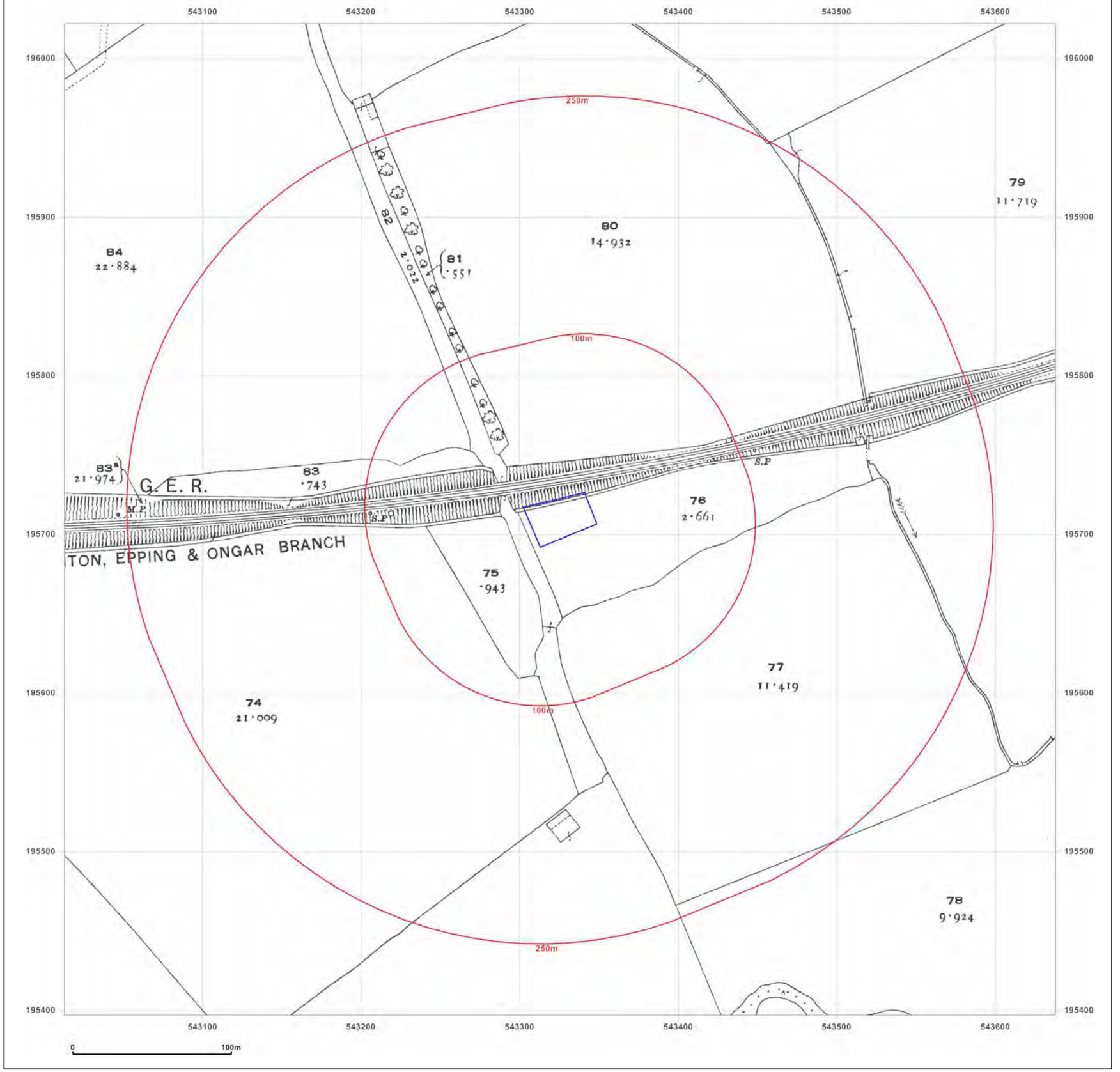

Groundsure INSIGHTS

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: County Series

Map date: **1920**

Scale: 1:2,500

Printed at: 1:2,500

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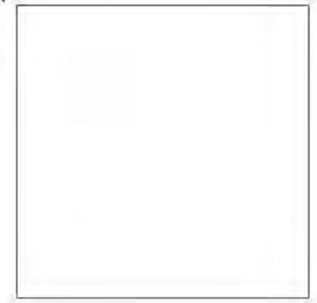
Surveyed 1920
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A



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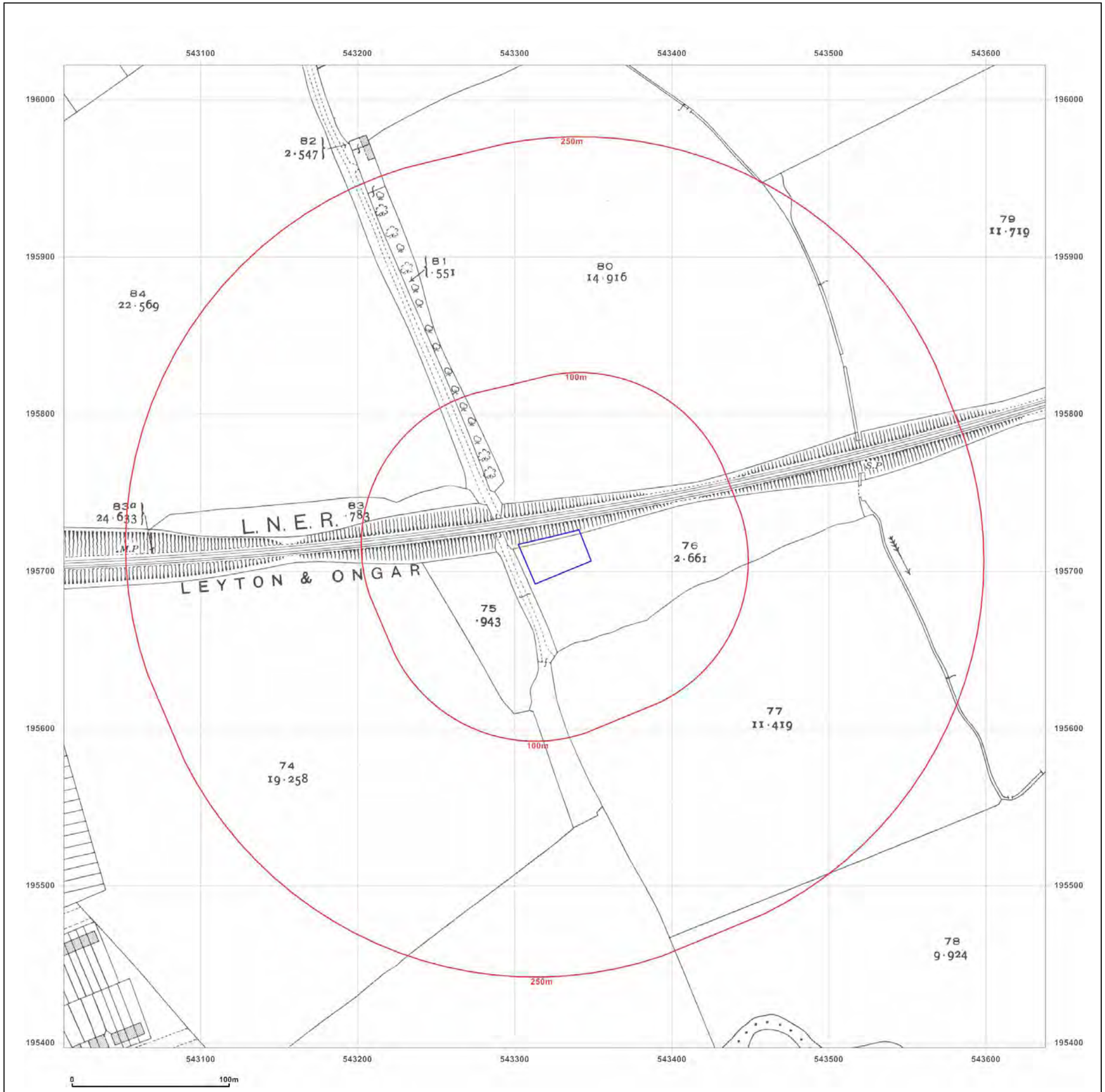

Groundsure INSIGHTS

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: County Series

Map date: **1940**

Scale: 1:2,500

Printed at: 1:2,500

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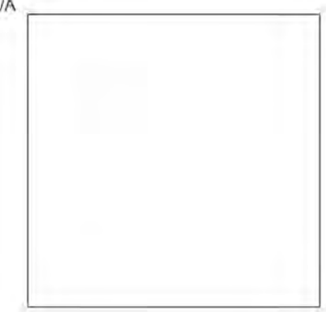
Surveyed 1940
Revised 1940
Edition N/A
Copyright N/A
Levelled N/A



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Groundsure INSIGHTS

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: National Grid

Map date: **1965**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1964 Revised 1964 Edition N/A Copyright 1965 Levelled 1960	Surveyed 1964 Revised 1964 Edition N/A Copyright 1965 Levelled 1960

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Production date: 06 December 2018

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Groundsure INSIGHTS

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: National Grid

Map date: **1966-1967**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1967
Revised 1967
Edition N/A
Copyright 1968
Levelled 1960

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

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Production date: 06 December 2018

Map legend available at:
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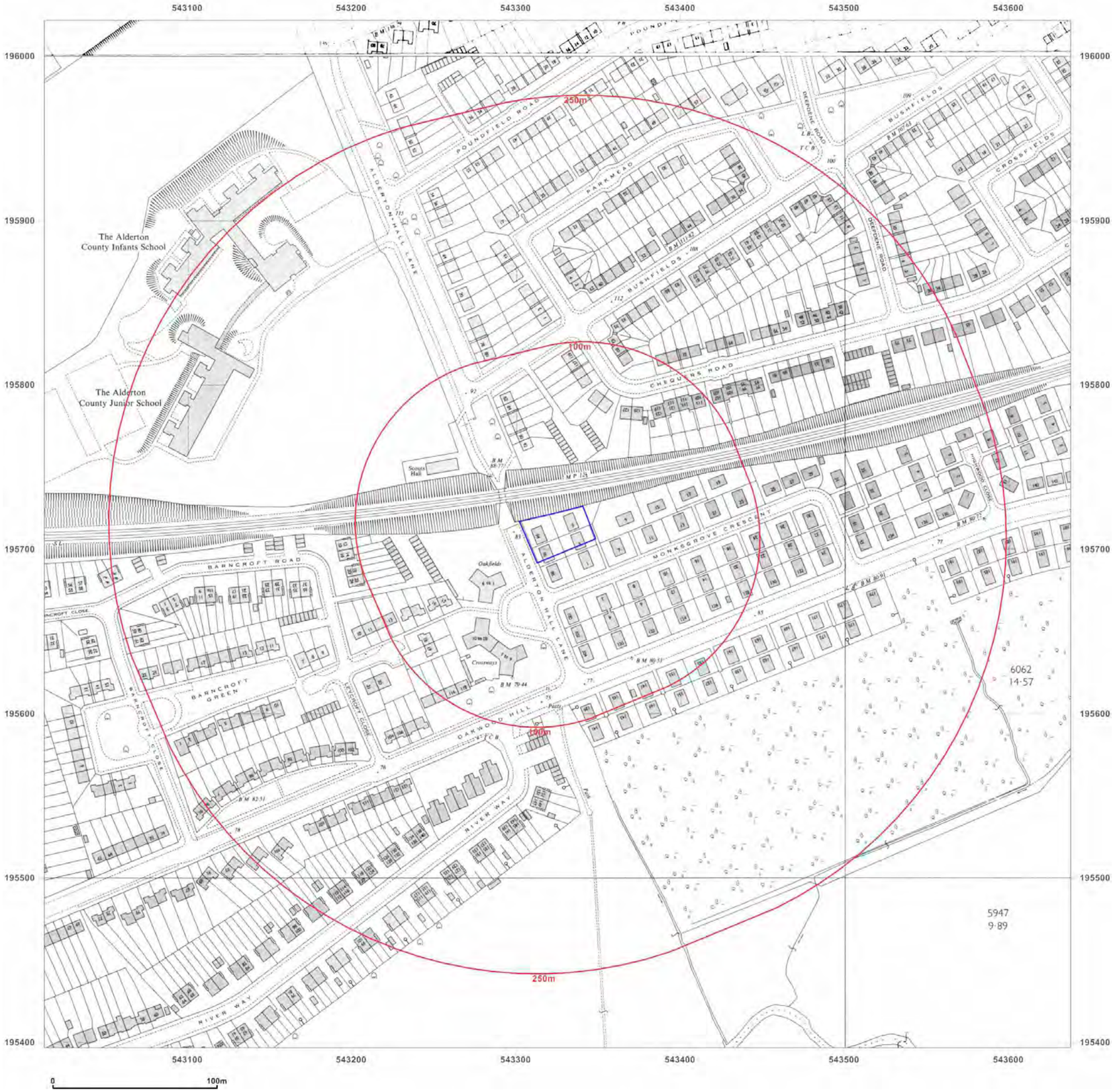

Groundsure INSIGHTS

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: National Grid

Map date: **1964-1968**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1964
Revised 1964
Edition 1966
Copyright 1966
Levelled 1960

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Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: National Grid

Map date: **1973-1976**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1964 Revised 1973 Edition N/A Copyright 1973 Levelled 1960	Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A
	Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A

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Production date: 06 December 2018

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Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: National Grid

Map date: **1978-1981**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1981
Levelled 1960

Surveyed 1964
Revised 1977
Edition N/A
Copyright 1978
Levelled 1960

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LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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

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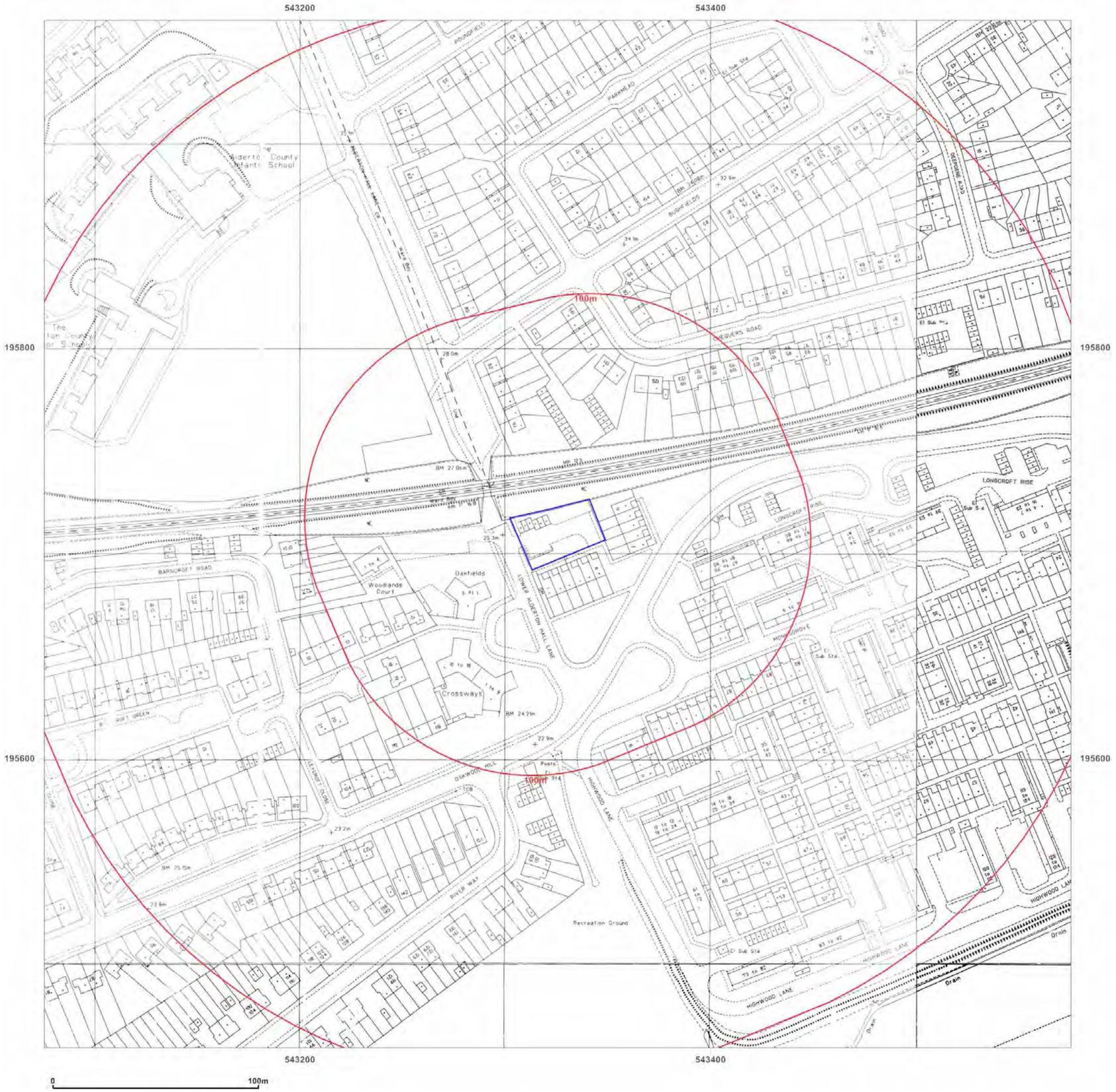

Site Details:

LOWER ALDERTON HALL LANE,
LOUGHTON, IG10 3HA

Client Ref: P18-1619
Report Ref: GS-5675283
Grid Ref: 543325, 195709

Map Name: National Grid

Map date: **1992-1995**

Scale: 1:1,250

Printed at: 1:2,000

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

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