





#### Site Details:

FORMER MASTER BREWER  
SITEFREEZELAND  
WAYUXBRIDGE, UB10 9QE

Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: Provisional

Map date: 1959

Scale: 1:10,560

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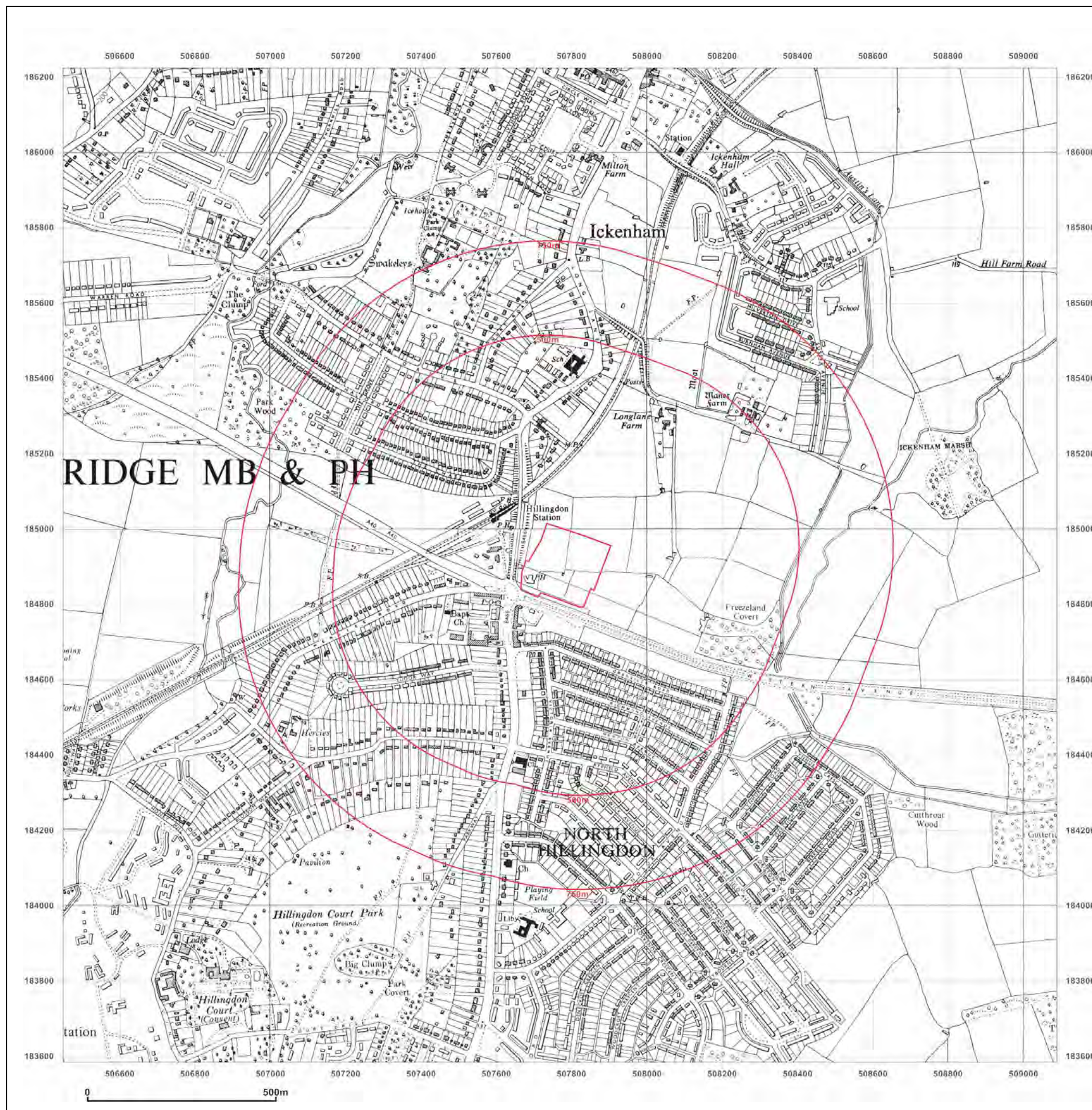


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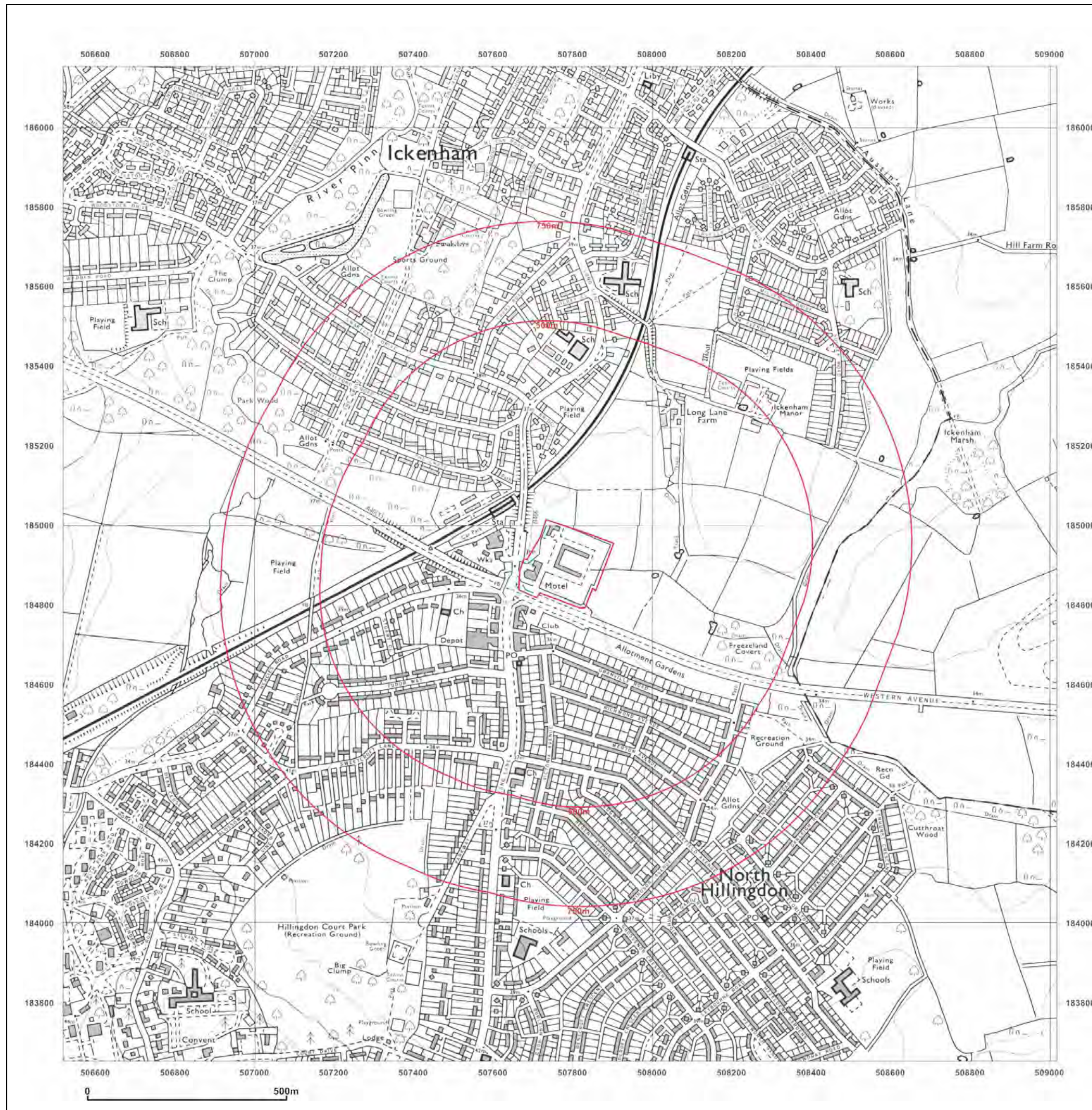


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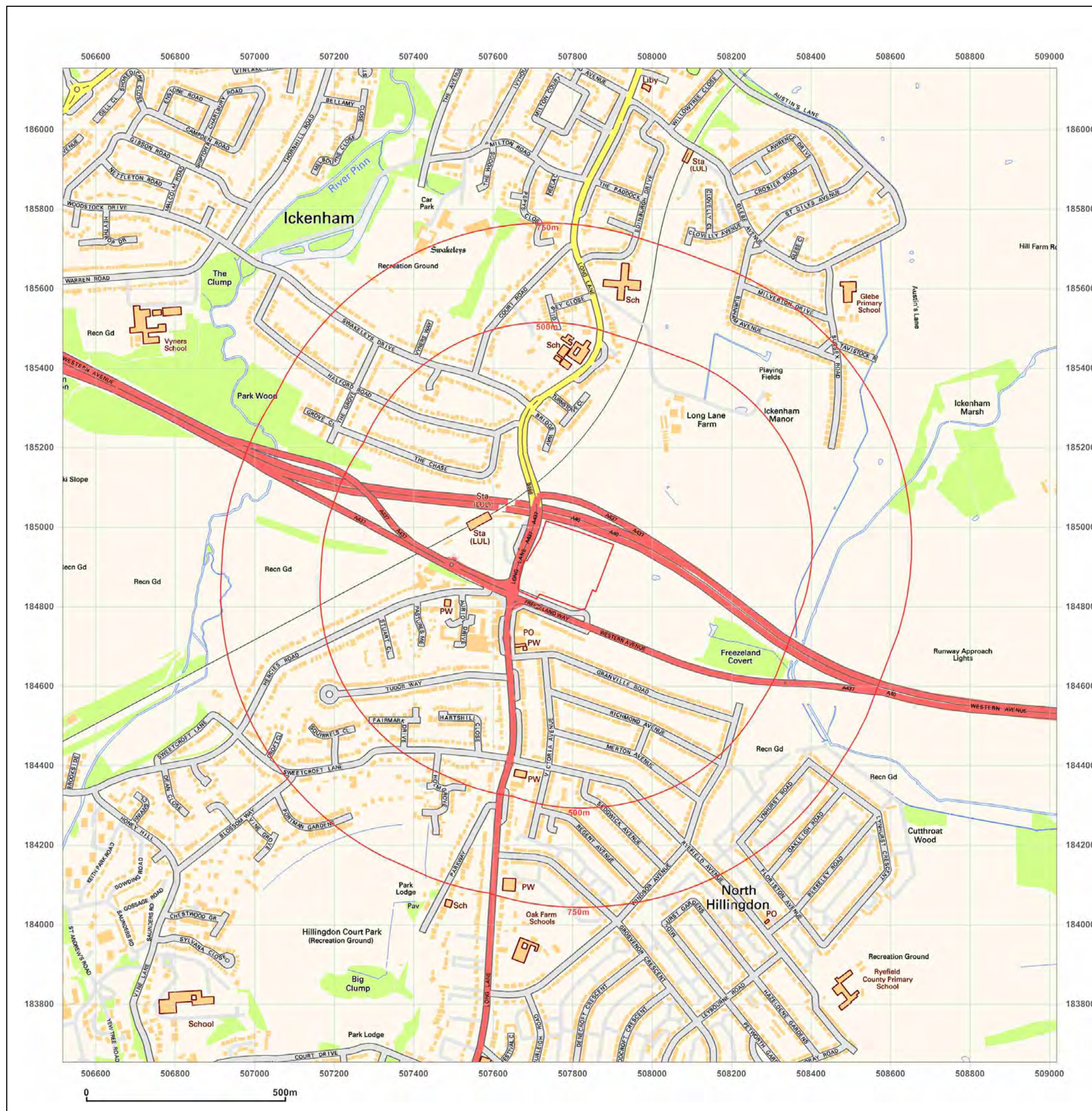


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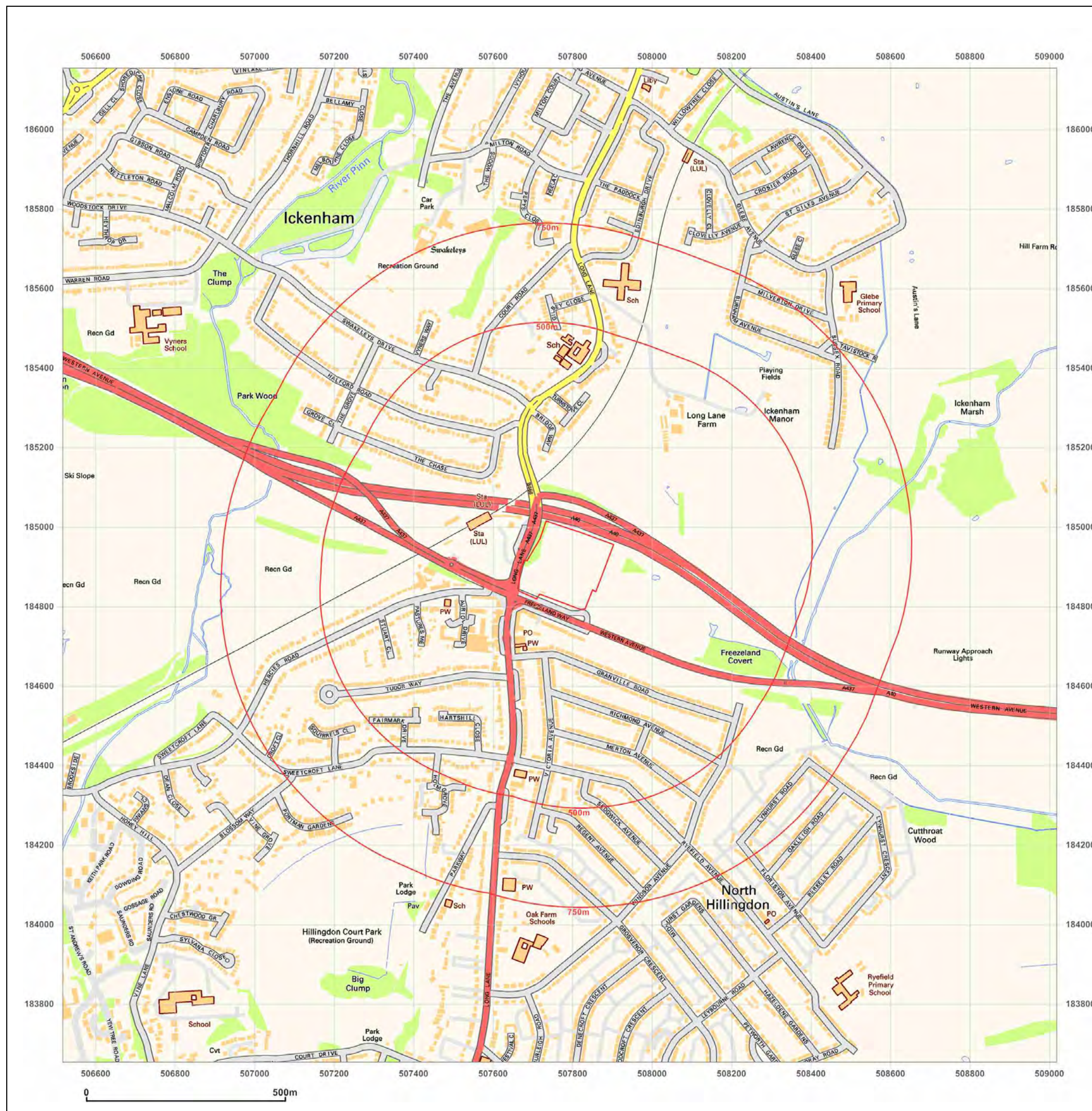


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**Grid Ref:** 507768, 184904

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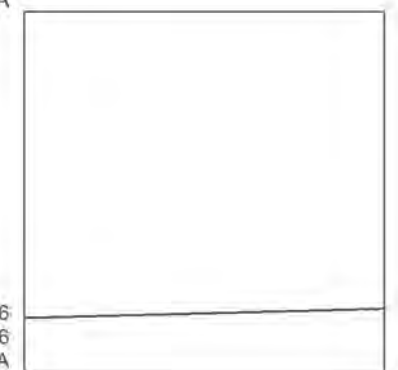
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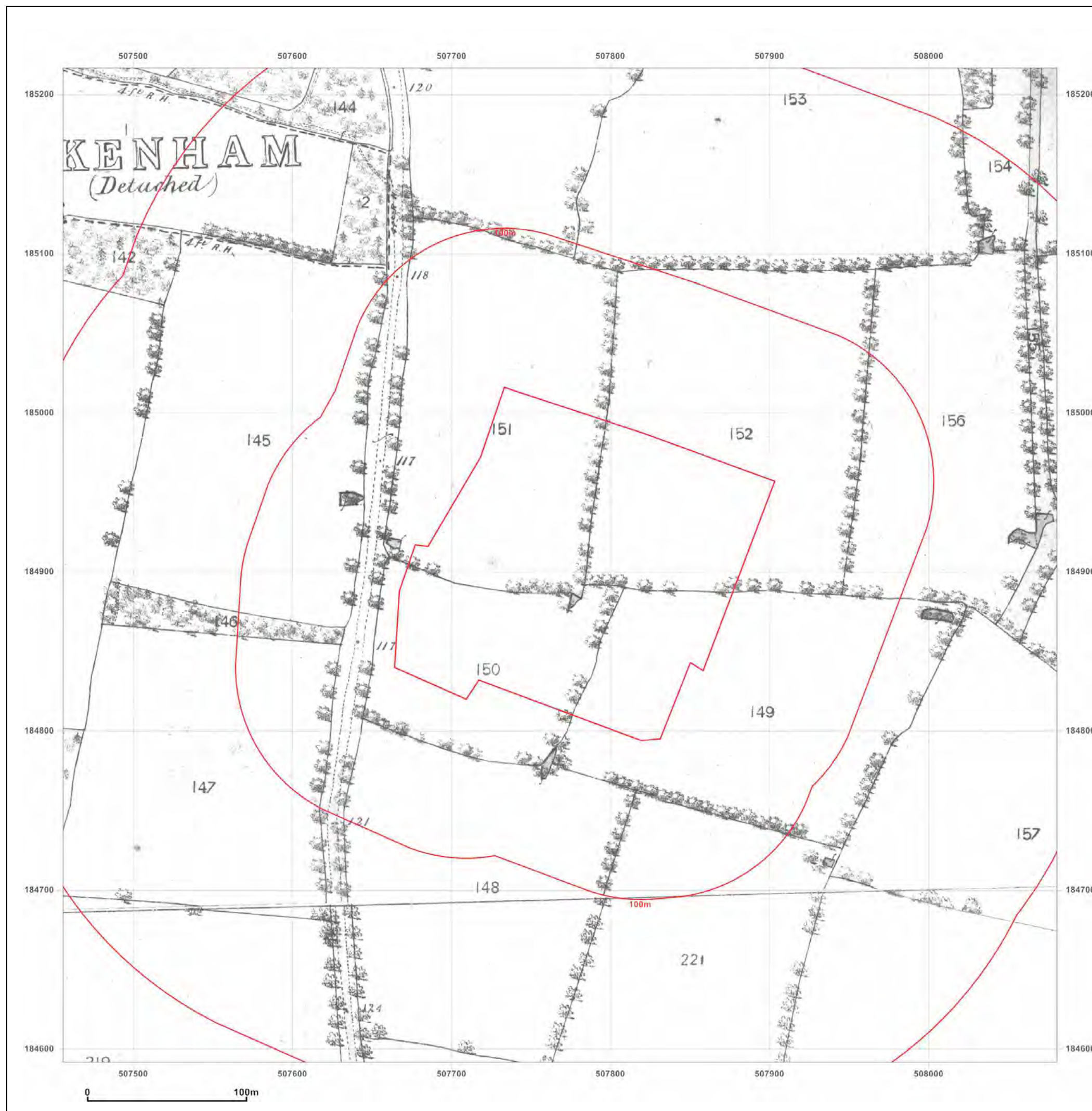


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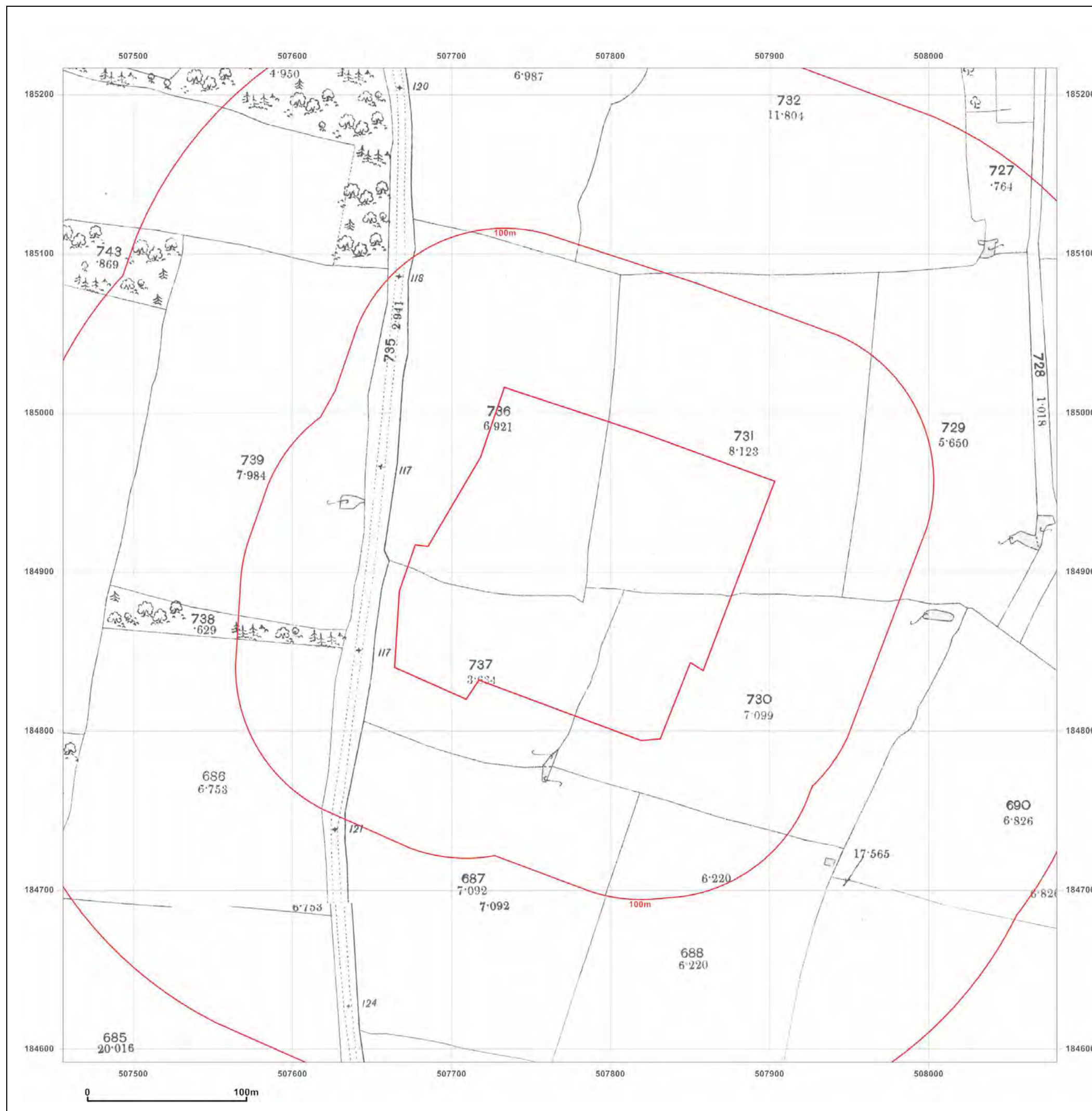


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**Grid Ref:** 507768, 184904

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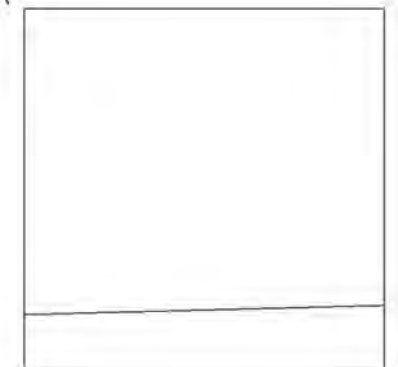
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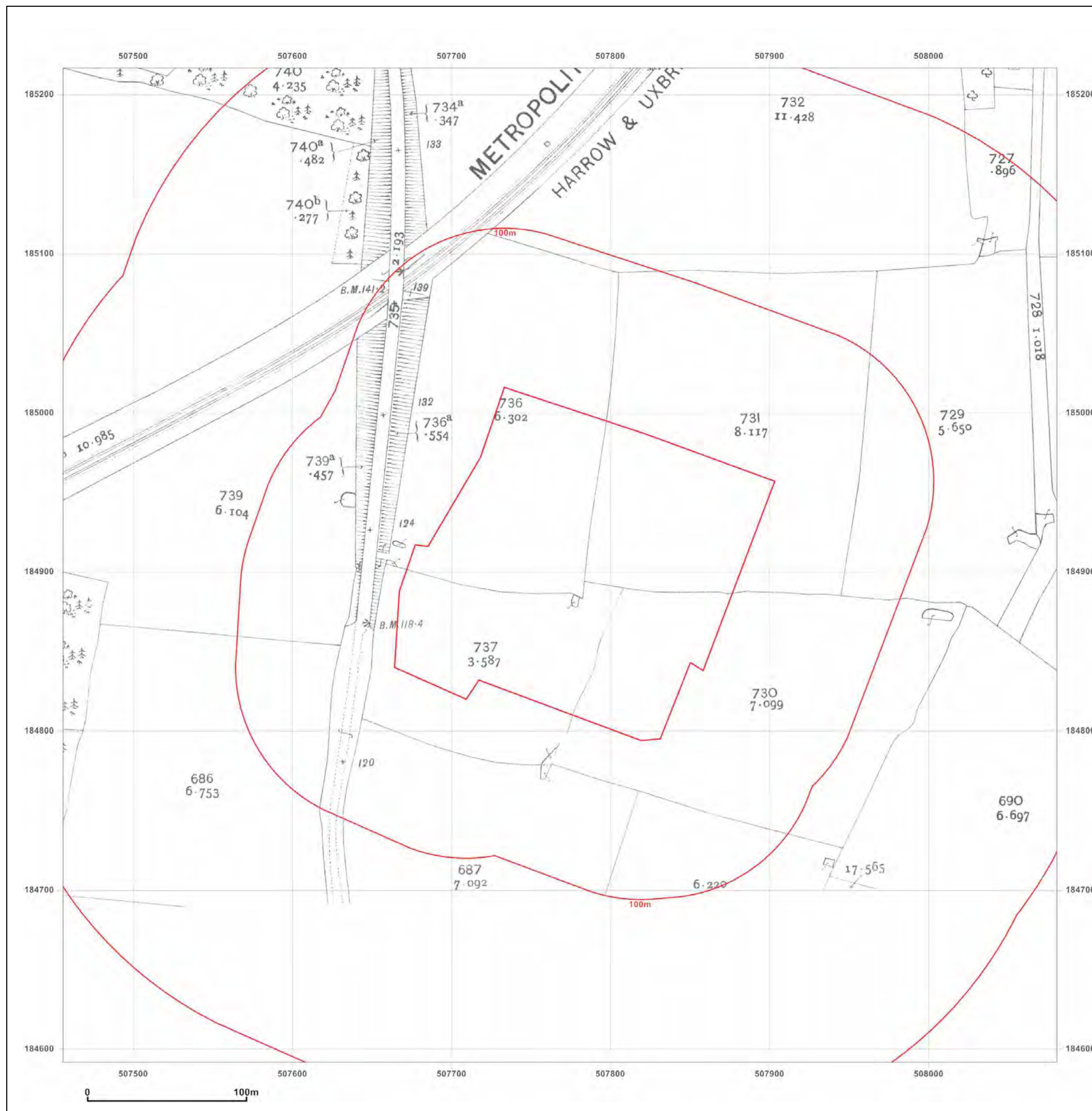


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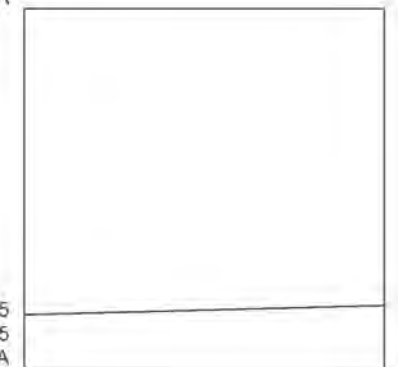
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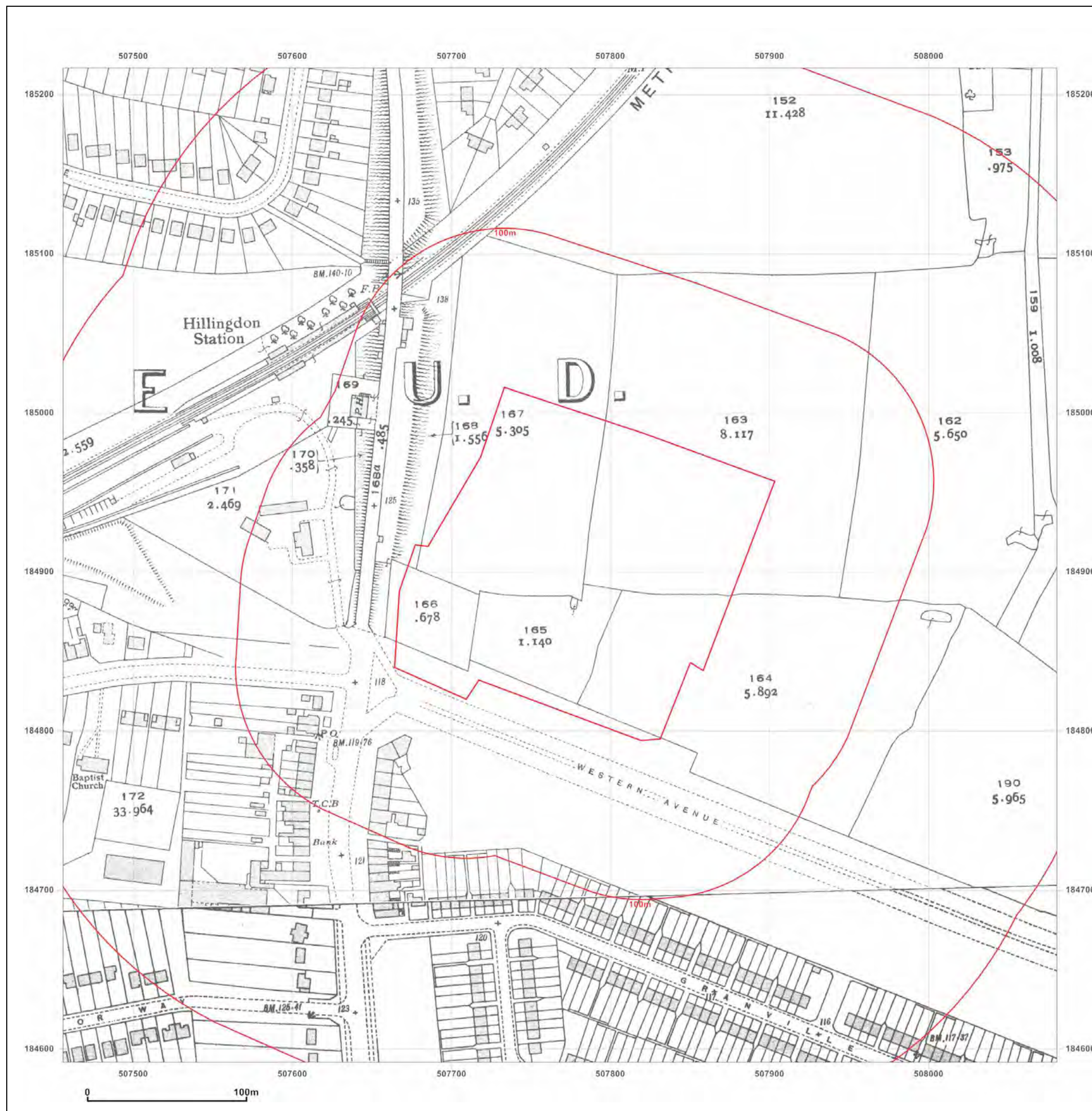


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Map date: 1961-1962

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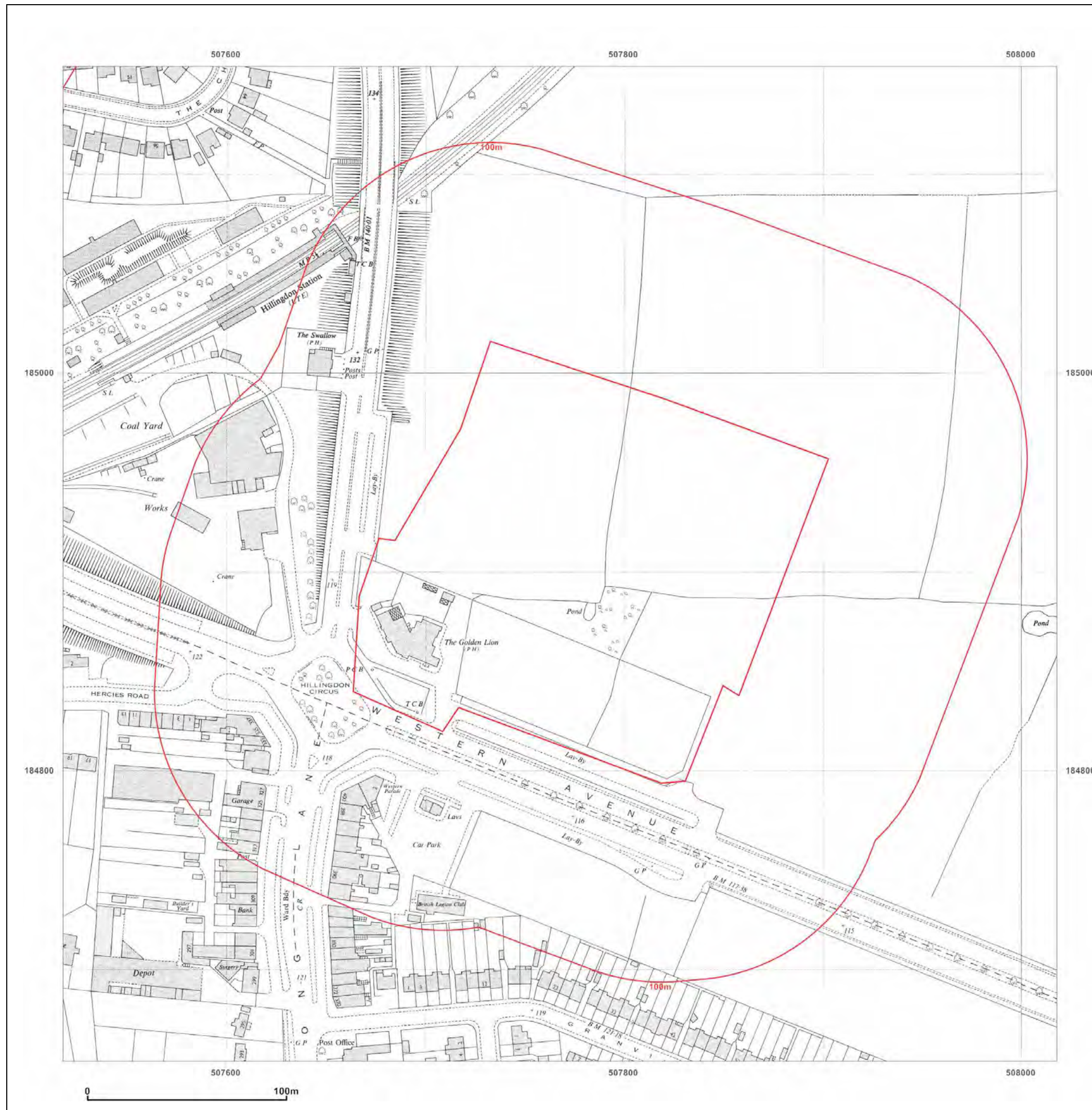


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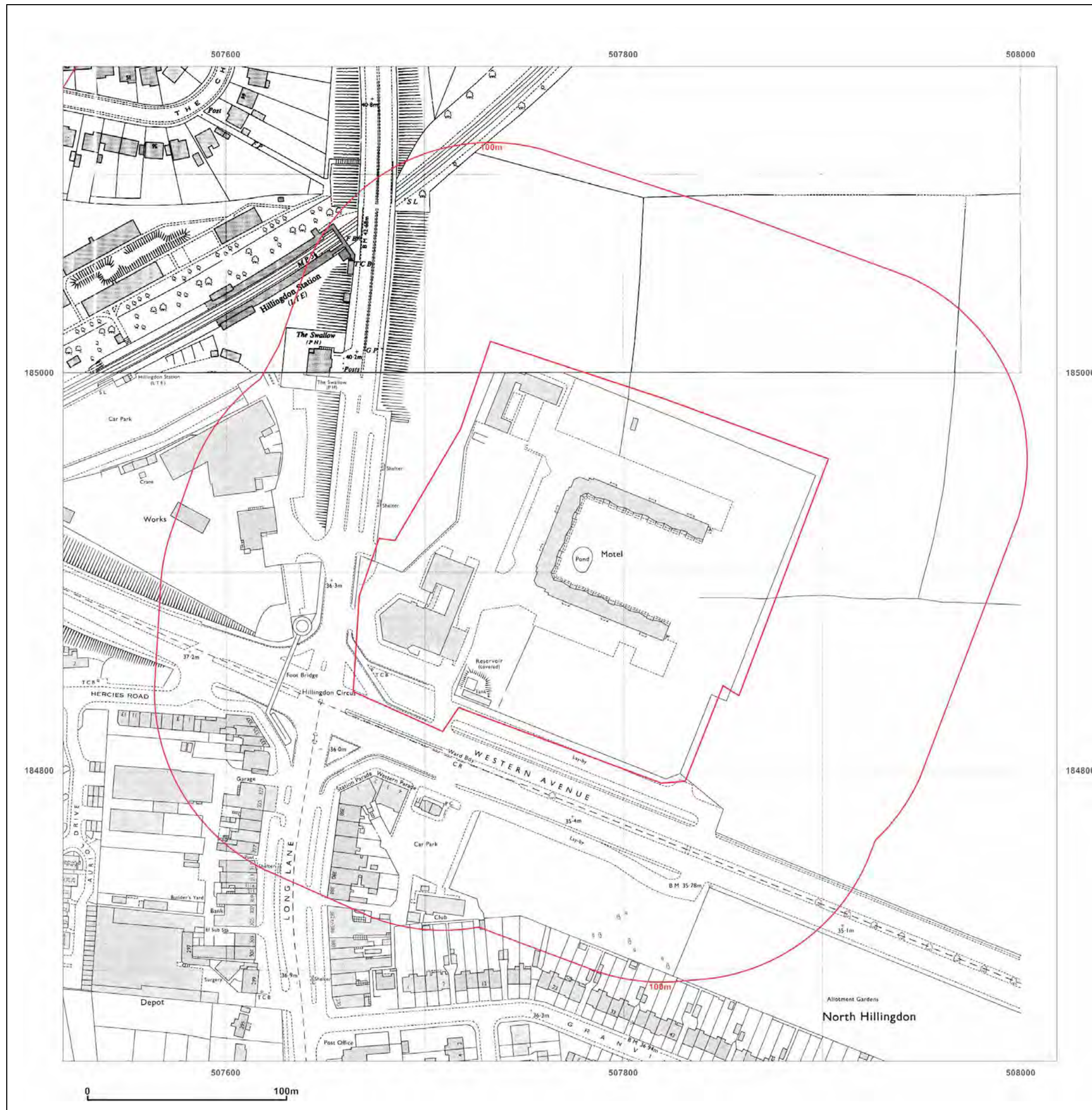


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**Former Master Brewer Site, Hillingdon  
Delta-Simons Project No. 14-0724.02**



Photograph 1 – View of the north of the Site from the Long Lane bridge over the A40.



Photograph 2 – View of the south of the Site from Freezeland Way.









**Combined Phase I/II Environmental Assessment,  
Former Master Brewer, Hillingdon.  
For Spen Hill Developments Ltd.  
Delta-Simons Project No. 14-0724.01\_E  
Issued: June 2015**



**EXECUTIVE SUMMARY**  
**COMBINED PHASE I/II ENVIRONMENTAL ASSESSMENT**  
**FORMER MASTER BREWER, HILLINGDON**  
**DELTA-SIMONS PROJECT NO: 14-0724.01\_E**

<b>Current Site Status</b>	<p>The approximate centre of the Site lies on NGR 507773, 184840. The Site is located within a predominantly commercial/residential area approximately 150 m east of Hillingdon tube station. The Site at the time of the investigation was accessed by Freezeland Way, along the southern boundary of the Site.</p> <p>The Site is now vacant, following the demolition of a motel, which formerly comprised a main accommodation building, a reception building, and a staff accommodation building, with surrounding hardstanding and landscaping. The former motel area is now overgrown with vegetation and with piles of demolition rubble present on-Site.</p> <p>Beyond the motel Site to the north is the A40, and to the west is Long Lane, beyond which is a tube station.</p> <p>The Site is bounded to the south by Freezeland Way, beyond which is predominantly residential and commercial properties. To the east of the Site is undeveloped open land.</p> <p>The Site is located approximately 2.3 km north-east of the centre of Uxbridge, to the north of Freezeland Way. The Site is situated in a mixed commercial and residential setting.</p>
<b>Purpose</b>	<p>The purpose of completing the Environmental Assessment is to provide information on the quality of the soil and groundwater beneath the Site in the context of contaminated land and provide information on the ground gas regime beneath the Site. In addition, this assessment will ascertain whether there are pollutant linkages between any identified sources and any identified receptors.</p>
<b>Environmental Setting</b>	<p>From British Geological Survey (BGS) online data, it is understood that the Site is directly underlain by the London Clay Formation, underlain by the Woolwich and Reading Beds of the Lambeth Group, followed by the Seaford Chalk and Newhaven Chalk Formation.</p> <p>The London Clay Formation is classified as Unproductive Strata, the Lambeth Group is classified as a Secondary A Aquifer, and the Seaford Chalk and Newhaven Chalk Formation are classified as Principal Aquifers. The nearest surface water to the Site is an unnamed pond, located approximately 320 m to the east, which feeds into the Yeading Brook, with the “west arm”.</p>
<b>Site Investigation</b>	<p>This Assessment was carried out in conjunction with a geotechnical investigation and included the drilling of ten cable percussion boreholes (CP01 to CP09A), and 15 trial pits (TP01 to TP015). Soil samples were collected from the boreholes and trial pits and submitted for a range of organic and inorganic parameters. Nine cable percussion boreholes were installed as 50 mm groundwater and ground gas monitoring wells. Groundwater samples were collected from a selection of the monitoring wells and submitted to an appropriately accredited laboratory and ground gas monitoring was carried out on six occasions.</p>
<b>Ground and Groundwater Conditions</b>	<p>Ground conditions either comprised of Made Ground consisting of tarmac/concrete over sandy gravelly clays to depths between 0.3 m and 0.9 m below ground level (bgl), or Made Ground comprising crushed grass overlying gravelly clay to depths of between 0.3 m bgl and 0.6 m bgl. These all overlay possible Weathered London Clay comprising predominantly firm to stiff, occasionally silty clay to 3.5 m bgl, overlying firm to stiff, multi-coloured clays of the Woolwich and Reading Beds, proven to a maximum depth of 20.0 m bgl.</p> <p>Resting groundwater levels recorded during the return monitoring visits were between 0.90 m and 2.36 m bgl.</p>
<b>Risk Assessment Findings and Conclusions</b>	<p>Based on the information obtained to date the following information can be concluded:</p> <ul style="list-style-type: none"> <li>△ Elevated concentrations of contaminants have not been identified in soil and groundwater collected from across the Site;</li> </ul>



	<ul style="list-style-type: none"> <li>Δ Elevated concentrations of sulphur have been identified in groundwater, likely to be associated with the pyritic ground conditions; and</li> <li>Δ The Site is classified as Characterisation Situation 1, as such ground gas protection measures would not be required.</li> </ul>
<b>Recommendations and Development Abnormals</b>	<p>On the basis of the environmental assessment findings the following additional recommendations and development abnormals are considered appropriate:</p> <ul style="list-style-type: none"> <li>Δ Additional, unidentified localised areas of contamination may exist at the Site and an appropriate 'hotspot' protocol should be in place for groundworkers to act upon should such contamination be identified during the construction process;</li> <li>Δ Groundworkers who are required to perform sub-surface work at the Site should be made aware of the known contaminants in soil and groundwater and the possibility of encountering additional localised low levels of contamination. Therefore, good standards of personal hygiene should be observed and appropriate levels of PPE utilised where necessary;</li> <li>Δ Suitable dust suppression techniques will need to be implemented by groundworkers during construction and demolition works;</li> <li>Δ Confirmation should be sought from the Local Water Authority as to whether they will require upgraded pipework to be installed for new service installations;</li> <li>Δ It is recommended that a minimum 600 mm of certified suitable for use top soil and subsoil overlying should be incorporated into all new landscaped areas; and</li> <li>Δ Elevated costs above standard inert rates should be anticipated for disposal of engineering arisings from the Made Ground to include landfill tax, currently at a rate of £82.60/tonne. Additional waste classification testing (including WAC testing) is likely to be required to facilitate off-Site disposal of ground materials.</li> </ul>
<p><b>This Environmental Assessment Executive Summary is intended as a summary of the Assessment of the Site based on information received by Delta-Simons at the time of production.</b></p>	



## TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.1 Authorisation.....	1
1.2 Context & Purpose.....	1
1.3 Scope of Works .....	2
1.4 Limitations .....	2
2.0 SITE STATUS AND ENVIRONMENTAL SETTING .....	4
2.1 Summary of Site Description and Site Setting.....	4
2.2 Initial Conceptual Site Model.....	6
3.0 SITE INVESTIGATION.....	8
3.1 Limitations to Intrusive Investigation .....	8
3.2 Intrusive Investigation Methodology .....	8
3.2.1 Cable Percussion Boreholes .....	8
3.3 Soil Sampling.....	8
3.4 Groundwater Measurement and Sampling.....	9
3.5 Laboratory Testing.....	9
3.5.1 Soil Analysis .....	9
3.5.2 Groundwater Analysis.....	11
3.6 Ground Gas Monitoring.....	11
4.0 GROUND AND GROUNDWATER CONDITIONS .....	12
4.1 Ground Conditions.....	12
4.2 Groundwater Depth Data .....	12
5.0 SITE INVESTIGATION RESULTS.....	14
5.1 Introduction.....	14
5.2 Guidance for Analytical Results: Assessment Criteria.....	14
5.2.1 Human Health Soil Screening Values.....	14
5.2.2 Groundwater Assessment .....	15
5.3 Soil Analytical Results.....	15
5.4 Groundwater Analytical Results .....	17
5.5 Ground Gas Monitoring.....	18
5.6 Waste Classification.....	19
5.6.1 Regulatory Guidance .....	19
5.6.2 Analytical Review.....	21
6.0 ASSESSMENT OF RISK AND CONCEPTUAL MODEL.....	22
6.1 Risk Assessment .....	22
6.2 Identified Sources of Contamination .....	22
7.0 CONCLUSIONS AND RECOMMENDATIONS .....	25
7.1 Conclusions .....	25
7.2 Recommendations and Development Abnormals .....	26
8.0 LIMITATIONS TO ENVIRONMENTAL ASSESSMENTS .....	27



## **Tables**

Table 1	Summary of Site Description and Site Setting
Table 2	Preliminary Conceptual Site Model
Table 3	Soil Sample Analyses
Table 4	Groundwater Sample Analyses
Table 5	Summary of Observed Ground Conditions
Table 6	Summary of Groundwater Depths
Table 7	Soil Sample Analysis Summary (mg/kg)
Table 8	Groundwater Sample Analysis Summary (µg/l)
Table 9	Summary of Ground Gas Monitoring Data
Table 10	Updated Conceptual Site Model

## **Figures**

Figure 1	Site Location Map
Figure 2	Current Site Layout Plan and Approximate Intrusive Location Plan
Figure 3	Proposed Site Development Plan
Figure 4	Cross Sections
Figure 5	Interpolated Groundwater Contour Plot

## **Appendices**

Appendix I	Historical Maps
Appendix II	Groundsure® Report
Appendix III	Cable Percussion and Trial Pit Logs
Appendix IV	Monitoring Record Sheets
Appendix V	Soil Screening Values – Residential End Use.
Appendix VI	Analytical Results – Soils
Appendix VII	Analytical Results – Groundwater
Appendix VIII	HWOL Analysis Results



**COMBINED PHASE I/II ENVIRONMENTAL ASSESSMENT  
FORMER MASTER BREWER, HILLINGDON  
FOR SPEN HILL DEVELOPMENTS LTD  
DELTA-SIMONS PROJECT NO. 14-0724.01\_E**

**1.0 INTRODUCTION**

**1.1 Authorisation**

Delta-Simons Environmental Consultants Limited (Delta-Simons) was instructed by Spen Hill Developments Ltd. (the 'Client') to undertake a Combined Phase I/II Environmental Assessment at land located at the Former Master Brewer site, Hillingdon, UB10 9NX (hereafter referred to as the "Site").

**1.2 Context & Purpose**

It is understood that two Planning Applications have been submitted to London Borough of Hillingdon Council (Planning Application No. 4266/APP/2014/518 and 4266/APP/2014/519) for the redevelopment of the Site, including mixed use development, comprising the erection of a foodstore (3,543 sq.m) with associated ancillary uses, and the erection of 125 residential units, respectively. The Planning Applications at the time of writing are undecided and awaiting a final decision.

As such, the purpose of completing the Environmental Assessment is to provide information on the quality of the soil and groundwater beneath the Site in the context of contaminated land and provide information on the ground gas regime beneath the Site. In addition, this assessment will ascertain whether there are pollutant linkages between any identified sources and any identified receptors in order to support the discharge of any Planning Conditions relating to contaminated land.

This Report has been produced in accordance with the current relevant guidance and best practice as set out within British Standard BS10175, Contaminated Land Report 11 and the National Planning Policy Framework (NPPF).

This Report satisfies 'BREEAM New Construction 2011: LE01 – Site Selection: Criterion 2' by detailing the results of site-investigation works; identifying the degree and sources of contamination; assessing risks to human and environmental health; and providing recommendations for remediation.



### **1.3 Scope of Works**

The Environmental Assessment was completed in conjunction with a geotechnical assessment by Delta-Simons from 25<sup>th</sup> March 2015 to 14<sup>th</sup> April 2015, and comprised the following items:

- Δ Review desktop information pertaining to the Site, including an Envirocheck Report, historical mapping, and information provided by the Client;
- Δ A Site reconnaissance at the time of the investigation, prior to any intrusive works, to confirm the intrusive locations and ascertain potential sources of contamination;
- Δ Service avoidance exercise on proposed intrusive locations;
- Δ Drilling of ten cable percussion boreholes (CP01 to CP09A) to a maximum depth of 20.00 m below ground level (bgl);
- Δ Installation of nine 50 mm internal diameter groundwater monitoring wells;
- Δ Excavation of 15 trial pits TP01 to TP015 to a maximum depth of 3.1 m bgl;
- Δ Supervision of all works by a Delta-Simons Geo-environmental Engineer. All boreholes were logged to BS5930:1999 +A2:2010, Code of Practice for Site Investigations;
- Δ Collection of soil samples from all intrusive locations for subsequent environmental laboratory testing;
- Δ Collection of groundwater samples from a selection of the installed boreholes on one occasion for subsequent environmental testing; and
- Δ Six rounds of ground gas and groundwater level monitoring.

### **1.4 Limitations**

This Assessment has been produced in accordance with the principles of BS10175:2011, and in accordance with CLR 11. Although reference may be made to archaeological and ecological issues, or the potential presence of asbestos containing materials (ACMs) and invasive weeds, this Assessment does not constitute an archaeological or ecological assessment, nor does it constitute an asbestos inspection or invasive weeds survey.

This document provides an assessment of the potential and actual contamination of the ground below the Site based upon the available information and in the context of the scope of works undertaken during this investigation. It does not provide a flood risk assessment or geotechnical appraisal and, as such, any comments relating to such matters are for information only.



During the preparation of this Assessment, Delta-Simons reviewed and evaluated information provided by the Client, Groundsure, Chemtest Ltd and others. Delta-Simons' conclusions, opinions and recommendations are based upon this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

In addition to the above, limitations related specifically to the intrusive investigation arose during the course of the works. These are discussed in detail within Section 3.1 of this Report.



## **2.0 SITE STATUS AND ENVIRONMENTAL SETTING**

### **2.1 Summary of Site Description and Site Setting**

**Table 1 – Summary of Site Description and Site Setting**

<b>National Grid Reference (NGR)</b>	The Site approximate centre of the Site lies on NGR 507773, 184840.
<b>General Site Location</b>	The Site is located approximately 2.3 km north-east of the centre of Uxbridge, to the north of Freezeland Way. The Site is situated in a mixed commercial and residential setting. A Site Location Map is provided as Figure 1.
<b>Site Description</b>	<p>The Site is now vacant, following the demolition of a motel, which formerly comprised a main accommodation building, a reception building, and a staff accommodation building, with surrounding hardstanding and landscaping. The former motel area is now overgrown with vegetation and with piles of demolition rubble present on-Site. A Site Layout Plan is provided in Figure 2.</p> <p>Beyond the motel Site to the north is the A40, and to the west is Long Lane, beyond which is a tube station.</p> <p>The Site is bounded to the south by Freezeland Way, beyond which is predominantly residential and commercial properties. To the east of the Site is undeveloped open land.</p>
<b>Proposed Development</b>	From the Collado Collins Architects Site Development Master Plan (Drawing No. PO-302 Rev. A) it is understood that proposals for the Site comprise a mixed use development, including a food store, and 125 residential units across six blocks. Limited landscaping areas are located around the Site. A proposed development layout is presented as Figure 3.
<b>Environmental Setting</b>	From British Geological Survey (BGS) online data, it is understood that the Site is directly underlain by the London Clay Formation, underlain by the Woolwich and Reading Beds of the Lambeth Group, followed by the Seaford Chalk and Newhaven Chalk Formation.
<b>Geology:</b>	The actual ground conditions identified from the current investigation are summarised in Section 4.0.
<b>Hydrogeology:</b>	<p>The Site is within an area classified as Unproductive Strata with respect to the London Clay Formation. The Woolwich and Reading Beds are classified as a Secondary A Aquifer and the Seaford Chalk and Newhaven Chalk Formation is classified as a Principal Aquifer.</p> <p>From information provided within the Groundsure® Report, there is one groundwater abstraction within 1 km of the Site relating to make-up or top-up water, located approximately 960 m north-west of the Site.</p>
<b>Hydrology:</b>	<p>The nearest surface water to the Site is an unnamed pond, located approximately 320 m to the east, which feeds into the Yeading Brook, with the “west arm”.</p> <p>The next closest surface water features are the Yeading Brook “west arm”, located approximately 530 m to the east, and the River Pinn, located approximately 720 m to the west.</p>



	From information provided within the Groundsure® Report, it is understood that there are no water abstraction points from surface or stream within 1 km of the Site.
<b>Sensitive Land Uses</b>	Information provided within the Envirocheck® Report indicates that the Site is located within a Surface Water Nitrate Vulnerable Zone.
<b>Radon</b>	The Site lies within an area where less than 1% of homes are above the National Radiological Protection Board (NRPB) recommended “action level” for radon. BRE211 (2007) indicates that no radon protective measures are necessary in the construction of new dwellings or extensions at the Site.
<b>Coal</b>	The Site is not located within an area considered to be at risk from shallow coal mine workings.
<b>Site History</b>	The historical development of the Site has been assessed through a review of available historical Ordnance Survey maps dating from 1868 to 2014. A summary of the key historical Site uses and developments in the surrounding area is presented below and a copy of the historical maps is included as Appendix I.
<b>Site:</b>	<p>The earliest available map of 1866 shows the whole Site to be undeveloped, and remains undeveloped until circa 1975 when a motel is built across the Site.</p> <p>By circa 1979, a small covered reservoir and tank are shown adjacent to the southern boundary of the Site.</p> <p>The Site remained unchanged until the demolition of the motel circa 2010. It is unclear whether the covered reservoir remains present after this.</p>
<b>Surrounding Area</b>	<p>The Site is shown to be in an agricultural setting from the earliest available maps until circa 1935. Key historical developments and potential sources of contamination in the close vicinity (250 m) of the Site include:</p> <ul style="list-style-type: none"> <li>Δ A railway is present, approximately 170 m north-west, from circa 1896 until;</li> <li>Δ Railway sidings are present, approximately 150 m north-west from circa 1935 until 1979;</li> <li>Δ A coal yard is present, approximately 150 m north-west, associated with the railway sidings, from circa 1962 until 1979;</li> <li>Δ A works is present, approximately 75 m west of the Site, from circa 1962 until circa 2002;</li> <li>Δ A garage is present, located approximately 100 m to the south-west, from circa 1962 until present day;</li> <li>Δ A builders yard is present, located approximately 150 m south-west, from circa 1962 until 1992;</li> <li>Δ A depot is present from circa 1962 until present day, located approximately 200 m to the south-west; and</li> <li>Δ A warehouse is present from circa 1962 until 1979, located approximately 200 m to the south-west, adjacent to the depot.</li> </ul>
<b>Groundsure® Report:</b>	<p>The Groundsure® Report provides a database of environmental information held by various statutory bodies including the EA, Local Authority (LA), Health &amp; Safety Executive (HSE), Health Protection Agency (HPA) and the Coal Authority. A copy of the Envirocheck Report, provided by the Client, dated November 2014 is included as Appendix II.</p> <p>A summary of the pertinent issues identified at the Site and the immediate surrounding area is summarised below:</p>



	<p><u>Waste Activities</u></p> <p>Δ <i>Historical Landfill Sites:</i> One record is located approximately 370 m east (ref. HIL062 DL413) relating to a historical landfill site, for inert materials. The license was issued in 1992 and surrendered in 1994. Given the distance from the Site the risk from these records to the Site is considered low.</p> <p><u>Industrial Land Use</u></p> <p>Δ <i>Discharge Consents:</i> There are two permitted discharge consents located 75 m south-west of the Site, both of which relate to sewage discharges – pumping. One consent was revoked in 2010 and the other has no revocation date. These are considered to represent off-Site sources of contamination;</p> <p>Δ <i>Part A(2) and Part B Activities and Enforcements:</i> One record is listed relating to a dry cleaners, located approximately 90 m south-west of the Site. This record is considered to represent a potential risk of contamination to the Site, however, the risk is considered low; and</p> <p>Δ <i>Current Land Use:</i> One entry relates to a tank (generic) on-Site, assumed to be associated with the covered reservoir in the south-west of the Site. A number of active entries are located in close proximity to the Site include: car sales, construction plant, electricity sub-stations and printing related machinery. Given these records are all listed within 250 m of the Site they are considered to represent potential off-Site sources of contamination, however, the risk is considered low.</p>
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## **2.2 Initial Conceptual Site Model**

Based on the findings of the desktop review, an Initial CSM has been developed and is presented overleaf.



**Table 2 - Conceptual Site Model**

Source	Pathway	Receptor	Risk	Justification and Further Action/Mitigation Required
Any contaminants in soils and/or shallow groundwater beneath the Site associated with the Sites use as a motel (potential contamination may include heating fuels)	Direct contact/ingestion and inhalation of dust and vapours	Site users/visitors	<b>Low to Moderate Risk</b>	No significant sources of contamination are considered to be associated with the current or historical land use of the Site. In addition, the Site is covered hardstanding, therefore, breaking the majority of PPLs associated with any potential contaminants in the ground. An intrusive investigation is required to determine whether any contamination is present within soils and groundwater beneath the Site
	Direct contact/ingestion and inhalation of dust and vapours	Construction/ maintenance groundworkers	<b>Low to Moderate Risk</b>	As with any developed Site, there is the potential for construction/maintenance groundworkers to become exposed to any localised contaminated soils or shallow groundwater during any intrusive groundworks undertaken at the Site. Safe working practices should be implemented and appropriate personal protective equipment (PPE) should be used to mitigate any potential risk from contact with soils and shallow/perched groundwater.
	Leaching and migration through any shallow groundwater present beneath the Site	Controlled Waters	<b>Low Risk</b>	The current and historical land uses of the Site are not considered a significant potential source of contamination. The Site is underlain by Unproductive Strata, successively underlain by a Secondary A Aquifer, the Site is not located within a groundwater SPZ and no sensitive water abstractions or surface water features are located within the vicinity of the Site. An intrusive investigation is required to determine whether any contamination is present within groundwater beneath the Site.
	Direct contact and permeation	Service conduits	<b>Low Risk</b>	Hydrocarbons, especially aromatics and chlorinated solvents, are known to permeate plastic pipes, especially when encountered in high concentrations. However, it is considered unlikely that significant hydrocarbon contamination is present in the soils at the Site. An intrusive investigation is required to determine whether any contamination is present within soils and groundwater beneath the Site.
Ground gases from the Made Ground and/or natural deposits beneath the Site	Vertical and lateral migration and accumulation of gas in enclosed spaces and sub-floor voids	Site users & the building	<b>Low Risk</b>	Given the development history of the Site, it is considered that a significant depth of Made Ground is unlikely and the underlying soils and bedrock are not considered to be a potential source of ground gas. Given the current use of the Site, the risk to Site users is considered to be low. An intrusive investigation is required to further assess the risk from hazardous ground gases and characterise the ground gas regime at the Site.
Contaminated groundwater from potential off-Site sources	Lateral migration via any shallow groundwater beneath the Site and volatilisation	Site users	<b>Low Risk</b>	Potential and current off-Site sources of contamination are considered to be limited. In addition, given the Site is situated in a predominantly built-up area with large amounts of hardstanding, resulting in restricted infiltration of rainwater and limited leaching of contaminants, if present, the risk from any significant off-Site sources is considered to be low. An intrusive investigation is required to determine whether any contamination is present within groundwater beneath the Site.



### **3.0 SITE INVESTIGATION**

#### **3.1 Limitations to Intrusive Investigation**

With the exception of on-Site traffic and below ground services, no significant limitations were encountered. Whilst services were present, they did not present a significant limitation and good Site coverage was obtained. However, CP09 was terminated at 0.5 m bgl due to a concrete obstruction assumed to be associated with the drainage system beneath the Site.

#### **3.2 Intrusive Investigation Methodology**

##### **3.2.1 Cable Percussion Boreholes**

Ten boreholes (CP01 – CP09A) were advanced at the Site between the 30<sup>th</sup> of March and 14<sup>th</sup> April 2015 using cable percussion techniques, to a maximum depth of 20.00 m bgl. All of the boreholes were installed as 50 mm internal diameter monitoring wells to facilitate groundwater and ground gas monitoring. The construction of the monitoring wells is detailed on the individual logs, which are included as Appendix III. The locations of the boreholes are shown on Figure 2.

##### **3.2.2 Trial Pits**

Fifteen trial pits (TP01 – TP015) were advanced between the 25<sup>th</sup> and 26<sup>th</sup> March 2015 to a maximum depth of 3.1 m bgl. The individual logs are included as Appendix III and the trial pit locations are shown on Figure 2.

#### **3.3 Soil Sampling**

Soil samples were collected from the borehole and trial pit arisings for the purpose of environmental analysis, and were selected on the basis of field observations, including any discolouration or odour of the soil, and to provide general coverage of the Site.

The samples were collected by Delta-Simons' on-Site scientist and immediately packed into pre-cleaned amber glass jars supplied by the laboratory. A new pair of disposable nitrile gloves was worn for each sample collection to prevent cross contamination between samples. The jars were packed into a cool box and transported, by courier, to a UKAS and MCERTS accredited laboratory for chemical analysis.



### **3.4 Groundwater Measurement and Sampling**

Measurements of the depth to groundwater across the Site were recorded six times between the 13<sup>th</sup> April and 21<sup>st</sup> May 2015, using an electronic dip meter. The monitoring sheets are included as Appendix IV.

Groundwater from within a selection of the monitoring wells was sampled on the 13<sup>th</sup> April 2015. All groundwater samples were collected using disposable bailers, disposable nitrile gloves and new string for each monitoring well to prevent cross contamination. The well was purged of three well volumes of water before sampling in order to remove standing groundwater and obtain representative samples of groundwater from the surrounding formation.

The samples were collected into pre-cleaned amber glass jars supplied by the laboratory and placed in a cool box before being dispatched to the laboratory by courier.

### **3.5 Laboratory Testing**

The laboratory testing is summarised in the following sections.

#### **3.5.1 Soil Analysis**

The location, depth and suite of analyses selected for each environmental soil sample is presented in Table 3 overleaf.



**Table 3 – Soil Sample Analyses**

Location	Depth (m bgl)	Strata	Notes	sTPH	10 Heavy Metals	sPAH	Asbestos Screen	Total Cyanide	pH
TP03	0.25	MG			✓	✓	✓	✓	✓
TP07	1.00	CLAY			✓	✓	✓	✓	✓
TP08	0.20	MG			✓	✓	✓	✓	✓
TP10	0.20	MG			✓	✓	✓	✓	✓
TP11	1.10	PWLC			✓	✓	✓	✓	✓
TP12	0.20	MG			✓	✓	✓	✓	✓
TP13	0.50	PWLC			✓	✓	✓	✓	✓
TP15	0.85	PWLC	Slight organic odour		✓	✓	✓	✓	✓
CP01	0.50	MG		✓	✓	✓	✓	✓	✓
CP02	0.50	PMG		✓	✓	✓	✓	✓	✓
CP03	0.30	MG			✓	✓	✓	✓	✓
CP04	0.25	MG			✓	✓	✓	✓	✓
CP04	0.50	PWLC			✓	✓	✓	✓	✓
CP05	0.40	MG		✓	✓	✓	✓	✓	✓
CP06	0.50	MG	Slight H-C odour	✓	✓	✓	✓	✓	✓
CP06	1.00	PWLC		✓	✓	✓	✓	✓	
CP07	0.20	MG		✓	✓	✓	✓	✓	✓
CP08	0.50	PWLC			✓	✓	✓	✓	✓
CP09(A)	0.30	MG		✓	✓	✓	✓	✓	✓
<b>Total</b>				<b>7</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>



### 3.5.2 Groundwater Analysis

The suite of analyses selected for each environmental groundwater sample is presented in Table 4.

**Table 4 – Groundwater Sample Analyses**

Sample Location	Date	Notes	10 Heavy Metals	pH	sTPH	sPAH	Soluble Sulphate
CP01	13 <sup>th</sup> April 2015		✓	✓	✓	✓	✓
CP02			✓	✓	✓	✓	✓
CP04			✓	✓	✓	✓	✓
CP05			✓	✓	✓	✓	✓
CP06			✓	✓	✓	✓	✓
CP07			✓	✓	✓	✓	✓
CP08			✓	✓	✓	✓	✓
CP09			✓	✓	✓	✓	✓
TOTAL			8	8	8	8	8

### 3.6 Ground Gas Monitoring

Notes: MG = Made Ground  
H-C = Hydrocarbon  
Metals = Arsenic, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, zinc  
sTPH = Total and Speciated Total Petroleum Hydrocarbons (CWG Aliphatic/Aromatic split)  
sPAH = Speciated Polyaromatic hydrocarbons

Measurements of methane, carbon dioxide and oxygen concentrations and borehole flow rates were taken in all monitoring wells on six occasions between 13<sup>th</sup> April and 21<sup>st</sup> May 2015. The ground gas concentrations, gas flow rates and atmospheric pressure were recorded using an infrared gas analyser (Geotechnical Instruments, GA5000 model). The ground gas monitoring results are included as Appendix IV.



## **4.0 GROUND AND GROUNDWATER CONDITIONS**

### **4.1 Ground Conditions**

A summary of the observed ground conditions at the Site are provided in Table 5.

**Table 5 – Summary of Observed Ground Conditions**

<b>Strata</b>	<b>Description of Strata</b>	<b>Depth Range of Strata Base (m bgl)</b>
<b>Made Ground</b>	Tarmac or concrete overlying brown, very sandy, fine to coarse, sub-rounded to rub-angular brick, limestone and concrete GRAVEL.	<i>0.30 m bgl in TP13 and 0.90 m bgl in CP02</i>
<b>Made Ground - Topsoil</b>	Grass overlying brown, slightly sandy, slightly gravelly CLAY.	<i>0.30 m bgl in multiple locations – 0.60 m bgl in TP03</i>
<b>Possible Weathered London Clay</b>	Brown mottled orange, occasionally gravelly CLAY.	<i>1.70 m bgl in TP07 – 3.50 m bgl in CP03</i>
<b>Upper Mottled Beds – Woolwich and Reading Beds</b>	Brown mottled orange, pink, grey and green friable, thinly laminated CLAY. Becoming less friable with depth.	<i>9.50 m bgl in CP02 – 16.2 m bgl in CP01</i>
<b>Laminated Beds – Woolwich and Reading Beds</b>	Brown mottled grey friable, bedded, thinly laminated silty CLAY. Brown, slightly clayey fine to medium SAND.	<i>Proven to a maximum depth of 20.00 in six locations.</i>

No significant evidence of contamination was encountered during the intrusive works. However, slight visual and olfactory evidence of contamination was observed within one soil sample collected from CP06.

### **4.2 Groundwater Depth Data**

Resting groundwater levels recorded during the return monitoring visits were between 0.90 m bgl and 2.36 m bgl.

A summary of the maximum and minimum groundwater depths measured in each of the boreholes from the monitoring events between the 13<sup>th</sup> February and 21<sup>st</sup> May 2015 are summarised in Table 6.



**Table 6 – Summary of Groundwater Depths (m bgl)**

BH ID	Minimum Depth to Groundwater	Maximum Depths to Groundwater	Ground Level (m AOD)	Groundwater Elevation (m AOD) from Ground Level.	
				Max.	Min.
CP01	1.64	1.88	34.572	32.692	32.932
CP02	1.07	1.28	34.562	33.262	33.492
CP03	0.32	1.27	34.571	33.301	34.571
CP04	0.79	1.05	34.410	33.360	33.620
CP05	1.53	1.91	34.592	32.672	33.062
CP06	1.34	1.54	34.508	32.938	33.198
CP07	2.05	2.19	34.979	32.709	32.929
CP08	1.23	1.55	34.522	32.972	33.292

Based on the measured groundwater levels from the surface and the measured surface elevation (m AOD) at each location, the groundwater elevation (m AOD) has been inferred. An interpolated groundwater contour plot is presented as Figure 5. It is indicated that groundwater is likely to flow in a north-westerly direction.



## **5.0 SITE INVESTIGATION RESULTS**

### **5.1 Introduction**

The soil and groundwater analysis results from the Delta-Simons Site Investigation have been assessed against the current assessment criteria in the context of a predominantly residential end-use.

### **5.2 Guidance for Analytical Results: Assessment Criteria**

A risk assessment approach has been used for the assessment of the results. This process is defined as a tiered assessment considering the 'pollutant linkages' on the basis of a 'source-pathway-receptor' relationship. Analytical results have been assessed against screening criteria considered protective of Human Health and/or controlled waters in the context of the proposed redevelopment of the Site and the environmental setting of the Site.

#### **5.2.1 Human Health Soil Screening Values**

In the absence of a regulatory set of screening values derived using the Contaminated Land Exposure Assessment (CLEA) Framework, Delta-Simons will refer to the following:

- △ The Soil Guidance Values (SGVs) published by the EA;
- △ Category 4 Screening Levels (C4SLs) published by Defra;
- △ Suitable for Use Levels for Human Health Risk Assessment (S4ULs) published by Land Quality Management (LQM)/Chartered Institute of Environmental Health (CIEH);
- △ The guidance values produced by the Environmental Industries Commission (EIC), the Association of Geotechnical and Geo-Environmental Specialists (AGS) and Contaminated Land: Application in Real Environments (CL:AIRE) in December 2009; and
- △ In house Generic Screening Values (HH-GSVs) derived by Delta-Simons and other non UK values where considered relevant.

Delta-Simons Adopted Human Health Generic Assessment Criteria for a residential end use without plant uptake are presented in Appendix V.



### **5.2.2 Groundwater Assessment**

The Coastal and Estuarine Environmental Quality Standards (CEQS), the UK Drinking Water Quality Standards (DWQS) or Surface Waters Regulations 1996 have been used as initial conservative screening values to assess whether groundwater contamination requires further assessment or discussion in terms of both the risks to controlled waters and Human Health. The chosen guidance values relate to the sensitivity of the Site setting.

In terms of risk to Human Health, where groundwater contaminant concentrations (for volatile organic compounds and lighter fraction hydrocarbon bandings) exceed the above stringent water quality standards, the concentrations can be compared to HH-GSVs that have been derived by Delta-Simons for groundwater using the Risk Based Corrective Action (RBCA) Toolkit for Chemical Releases (adapted where necessary to be in line with the CLEA methodology). The HH-GSVs are based upon the indoor inhalation pathway as it is considered unlikely that there will be direct contact with or direct consumption of groundwater at the Site. This is considered to be conservative for this Site given the proposed development.

In terms of the risks to controlled waters, groundwater contaminant concentrations that exceed the above stringent water quality standards need to be considered in the context of the Site's environmental setting as to whether further qualitative or quantitative assessment is required.

### **5.3 Soil Analytical Results**

A summary of the soil analytical results compared to a residential end-use is provided in Table 7 and copies of the soil analysis results are included as Appendix VI.



**Table 7 –Soil Sample Analysis Summary (mg/kg unless stated otherwise)**

Parameter	Maximum Concentration	Screening Value (Source)	Samples Which Exceed Screening Value/ Elevated Results	
			Location (Depth m bgl) = Concentration	Area of Site
Heavy Metals				
Arsenic	33	40 LQM	-	-
Boron	3.4	11,000 LQM	-	-
Cadmium	0.64	85LQM	-	-
Chromium (Total)	89	910 LQM	-	-
Copper	52	7,100 LQM	-	-
Lead	870	310 C4SL	CP01 (0.50) = 580	South
			CP02 (0.50) = 540	South
			CP03 (0.30) = 870	South-east
Mercury	0.45	8.4 DS-GAC		
Nickel	76	180 LQM	-	-
Selenium	1.5	430 LQM	-	-
Zinc	260	40,000 LQM	-	-
Petroleum Hydrocarbons (Only concentrations identified above laboratory detections limits included within table)				
Aliphatic TPH C21-C35	170	65,000 (8.48) LQM	-	-
Aliphatic TPH C35-C44	7.3	65,000 (8.48) LQM	-	-
Aromatic TPH C12-C16	8.7	1,800LQM	-	-
Aromatic TPH C16-C21	35	1,900 LQM	-	-
Aromatic TPH C21-C35	15	1,900 LQM	-	-
PAH, including PAH compounds within the SVOC suite				
Acenaphthene	0.31	3,000 (57) LQM	-	-
Acenaphthylene	0.19	2,900 (86.1) LQM	-	-
Anthracene	0.52	31,000 (1.17) LQM	-	-
Benzo[a]anthracene	0.74	11 LQM	-	-
Benzo[a]pyrene	1.20	3.2 LQM		
Benzo[b]fluoranthene	1.30	3.9 LQM	-	-
Benzo[ghi]perylene	0.79	360 LQM	-	-
Benzo[k]fluoranthene	0.74	110 LQM	-	-
Chrysene	1.90	30 LQM	-	-
Dibenzo[ah]anthracene	0.30	0.31 LQM	-	-
Fluoranthene	2.70	1,500 LQM	-	-
Fluorene	0.53	2,800 (30.9) LQM	-	-
Indeno[1,2,3-cd]pyrene	1.00	45 LQM	-	-
Naphthalene	1.60	2.3 LQM	-	-
Phenanthrene	2.60	1,300 (36) LQM	-	-
Pyrene	2.60	3,700 LQM	-	-
Others				
pH	6.00 - 11.60	N/a	pH range slightly alkaline.	
Total Cyanide	<0.50	20 DIV	-	-
Asbestos	No asbestos fibres were detected in soil samples collected for analysis.			

Note: N/a = Generic screening value not available  
**Shaded** = Concentrations exceed screening criteria or are considered significantly elevated  
 SGV = DEFRA/EA Soil Guideline Value  
 LQM = LQM/CIEH Generic Assessment Criteria  
 C4SL = Category 4 Screening Levels  
 EIC = EIC Generic Assessment Criteria  
*Italics* = Direct screening values not available – surrogate screening values used as follows with justification:  
 Δ TPH– compared to LQM/CIEH value for Aliphatic C8-C10 hydrocarbons – lowest sTPH  
 Δ Tert-Butylbenzene – compared to benzene

As can be seen from Table 7, significantly elevated concentrations of contaminants have not been identified across the Site.

Elevated concentrations of lead have been identified in shallow Made Ground samples in three locations in the south and south-east of the Site. No elevated concentrations of lead have been identified in any natural strata, nor across the Site, therefore, any contamination is localised and is not considered to represent a significant risk to the Site.

The risk associated with the detectable concentrations of contaminants in soils to the identified receptors is further discussed in Section 6.2.

#### 5.4 Groundwater Analytical Results

A total of eight groundwater samples were collected from the newly installed monitoring wells during one monitoring event. A summary of the groundwater analytical results is presented in Table 8 and copies of the groundwater analytical results are included in Appendix VII.

**Table 8 –Groundwater Sample Analysis Summary (µg/l unless stated otherwise)**

Parameter	Maximum Concentration	Screening Value <sup>(Source)</sup>	Samples Which Exceed Screening Value/ Elevated Results	
			Location (Concentration)	Area of Site
Heavy Metals				
Arsenic	4.5	50 <sup>EQS</sup>	-	-
Boron	690	2000 <sup>EQS</sup>	-	-
Cadmium	<0.08	5 <sup>EQS</sup>	-	-
Chromium (Total)	7.8	20 <sup>EQS</sup>	-	-
Copper	6.3	10 <sup>EQS</sup>	-	-
Lead	<1.0	10 <sup>EQS</sup>	-	-
Mercury	0.57	1 <sup>EQS</sup>	-	-
Nickel	6.5	150 <sup>EQS</sup>	-	-
Selenium	20	10 <sup>DW</sup>	CP05 (20)	Centre
Zinc	25	125 <sup>EQS</sup>	-	-
Speciated Petroleum Hydrocarbons				
All Below Level of Detection				
PAH				
All Below Level of Detection				
Others				
pH	8.1 - 8.3	6 – 9 <sup>EQS</sup>	-	-
Sulphate	1200	400 <sup>EQS</sup>	CP01 (480)	South-west
			CP02 (1200)	South
			CP04 (450)	East
			CP05 (650)	Centre
			CP09 (690)	South-west

Note:

- Shaded = Concentrations exceed screening criteria or are considered significantly elevated
- EQS = Freshwater Environmental Quality Standard
- DW = UK Drinking Water Quality Standards
- DIV = Dutch intervention value for solubility in groundwater
- # = No guidance value available, as such the Dutch indicative levels for solvents has been used as a surrogate.
- SWR = Surface Water Regulations 2001

As shown in Table 8, significantly elevated concentrations of target contaminants have not been identified above their respective guidance values. A marginally elevated concentration of selenium has been identified in a groundwater sample collected from



CP05 in the centre of the Site. This is not attributable to any onsite source, as such is considered typical of the wider groundwater quality in the vicinity of the Site and will not be considered further.

Elevated concentrations of sulphate were identified in six of the eight groundwater sampling locations. This is considered to be naturally occurring due to the high concentrations of sulphate within the weathered London Clay and Woolwich and Reading Beds across the Site, and representative of groundwater quality across the wider area. Furthermore, these exceedances are not considered to be a risk to human health; elevated sulphate concentrations are considered further in the geotechnical report.

The groundwater results are discussed further within the Risk Assessment in Section 6.2 of this Report.

## 5.5 Ground Gas Monitoring

A collated summary of the results from the ground gas monitoring exercise is presented in Table 9. A complete set of ground gas monitoring results is presented in Appendix IV.

**Table 9 – Summary of Ground Gas Monitoring Data**

Monitoring Location	No of Monitoring Events	Methane (%v/v)	Carbon Dioxide (%v/v)	Flow Rate (l/hr)	GSV/CS
		Max	Max	Max	
CP01	6	<0.1	0.3	<0.1	0.0009/ CS1
CP02		<0.1	<0.1	<0.1	
CP03		<0.1	<0.1	<0.1	
CP04		<0.1	<0.1	120.0	
CP05		<0.1	0.1	<0.1	
CP06		<0.1	<0.1	<0.1	
CP07		<0.1	0.9	<0.1	
CP08		<0.1	<0.1	<0.1	
CP09(A)		<0.1	0.3	<0.1	
Date	Conditions During Monitoring Round				
	Atmospheric Pressure (mb)		Weather Conditions		
13/04/15	1026		Overcast and warm		
22/04/15	1028		Sunny, warm		
29/04/15	1006		Cloudy		
07/05/15	1009		Sunny		
12/05/15	1013		Sunny		
18/05/15	997		Cloudy and raining		

Note: GSV = Gas Screening Value  
CS = Characteristic Situation (Range: 1 = Very low risk to 6 = Very high risk)

The results of the gas monitoring indicate that concentrations of carbon dioxide and methane are present above instrument detection limits, with a maximum concentration of 0.9 % v/v identified from CP07 on two occasions (13<sup>th</sup> and 21<sup>st</sup> April). Low or no gas flow rates have been identified at the Site, with a maximum flow of <0.1 l/hr identified in all boreholes. A flow rate of 120.0 l/hr was recorded on the first monitoring event (13<sup>th</sup> April), however, this is considered to be due to rising groundwater, following the installation of the borehole the previous day. This anomaly was not recorded on any subsequent visit, therefore, will not be considered further.

From the gas results obtained, a GSV of 0.0009 l/hr can be determined for the Site, which would put the Site within a Characterisation Situation 1 (CS1). This presents a very low risk rating from ground gas to current and future Site users and buildings. As such ground gas protection measures would not be required for the proposed development.

The ground gas monitoring results are considered further within Section 6.2 of this Report

## **5.6 Waste Classification**

### **5.6.1 Regulatory Guidance**

The Waste Framework Directive (2008/98/EC) (WFD) sets out what waste is and how it should be managed. The WFD considers some wastes to be hazardous which is based upon one or more of the fifteen specified properties listed in Annex III to the WFD and the application of this is determined by the List of Wastes Decision (2000/532/EC) (LoWD). This LoWD provides:

- △ A list of wastes (often still called the European Waste Catalogue);
- △ Rules for using the list; and
- △ Criteria used to assess if a waste on the list is hazardous.

The WFD and LoWD use the classification of product chemicals as the basis for the assessment of hazardous waste and are implemented in England, Northern Ireland, Scotland and Wales using different domestic regulations. There are two chemical directives that apply to hazardous waste assessment: the Dangerous Substances Directive (67/548/EC) DSD and the Dangerous Preparations Directive (1999/45/EC)



(DPD) which are implemented in the UK by the Chemical (Hazard Information and Packaging for Supply) Regulations (CHIP). These are being replaced in stages by the Classification, Labelling and Packaging of Substances and Mixtures Regulation (CLP).

The key guidance document in relation to hazardous waste is: Technical Guidance WM3, Hazardous Waste: Interpretation of the definition and classification of hazardous waste (1st edition 2015). This document provides a common technical basis for applying the definition and classification of hazardous waste in the UK and with respect to oil related wastes supersedes and replaces SEPA's SWAN 04 guidance.

Hazardous waste classification presents certain challenges within the context of contaminated soils because classification relies upon the detailed knowledge of toxicological properties of specific substances as described in the Health and Safety Executive (HSE) document 'Approved Classification and Labelling Guide' (6th Edition) which refers to Table 3.2 Part 3 of Annex VI to the CLP Regulation Supply List' which defines a substance's specific properties. These are required to be displayed on product supply labels, Transport Emergency (TREM) cards and Material Safety Data Sheets (MSDS). Therefore, to completely profile waste soils the advanced categorisation of specific substances would be required. However, this level of testing is not practicable and, for example, typical laboratory testing only provides cation concentrations for heavy metals rather than concentrations of specific heavy metal compounds. Therefore, a conservative approach is usually adopted utilising a suitable worst-case surrogate substance from Table 3.2 Part 3 of Annex VI to the CLP Regulation Supply List as a benchmark against the hazardous waste property threshold.

HazWasteOnline (HAZWOL) is a web-based tool for classifying hazardous waste. The software follows the latest EA guidance and European regulations and maintains a conservative approach for surrogate compounds (although it can be adapted to reflect additional knowledge/data). The HAZWOL tool will classify sample results as either hazardous or non-hazardous based upon the concentrations of contaminations present and the threshold levels for various hazardous properties.

Since the Landfill Directive was implemented into UK law, landfill sites have been divided into those accepting inert, non-hazardous and hazardous waste. Landfills may only accept waste of the same classification as the landfill, although some non-

hazardous landfills with specially prepared engineered cells, can accept certain types of hazardous waste such as Stable Non-reactive Hazardous Waste (SNRHW).

Waste Acceptance Criteria (WAC) are used to determine the acceptance of waste at landfills they do not provide waste classification. There are specific WAC tests for inert and hazardous landfills. Materials classified as hazardous must meet the hazardous WAC before they are accepted in a hazardous landfill. If materials classified as non-hazardous meet the inert WAC they may be accepted in an inert landfill, if not, they may be accepted at a non-hazardous landfill. There are currently no non-hazardous WAC.

Landfill facilities may also have their own individual permit restrictions dictating the waste acceptable at their premises. These permit restrictions are often only available following direct consultation with the landfill facility.

#### **5.6.2 Analytical Review**

Analytical data from Made Ground soil samples collected from intrusive locations have been entered into the HWOL spreadsheets (a copy of which is included as Appendix VIII). All Made Ground soil samples submitted for preliminary waste classification using the HWOL programme were classified as Non-Hazardous. All natural soils would be classified as inert.



## **6.0 ASSESSMENT OF RISK AND CONCEPTUAL MODEL**

### **6.1 Risk Assessment**

The risk assessment procedure which identifies sources, pathways, receptors and pollutant linkages is, therefore, recognised as an appropriate approach to determining the extent and significance of contamination either within the context of Part 2A of the Environmental Protection Act 1990 (when assessing current Site status or when considering the acquisition of an existing development), or as part of the planning process (for the redevelopment of an existing Site, or when considering the acquisition of a Site for redevelopment purposes). In either context the 'suitable for use' approach is adopted in assessing the risks. As such, the source-pathway-receptor assessment defines a conceptual model for the Site under consideration.

### **6.2 Identified Sources of Contamination**

An updated CSM is presented overleaf and has been formulated taking into account all of the available data from the Delta-Simons intrusive investigation suitable for a Site with a proposed commercial end-use.

**Table 10 - Updated Conceptual Site Model**

	Pathway	Receptor	Matrix Assessment	Justification / Additional Assessment
Identified concentrations of heavy metals within shallow Made Ground/ Topsoil.  Previously unidentified hotspots of contamination.	Direct contact/ ingestion and inhalation of dust	Future Site users (occupiers and visitors)	<b>Low to Moderate Risk</b>	Elevated contaminant concentrations have been identified across the Site area which pose a risk to end users of the development. The majority of the redevelopment will consist of hardstand surfacing, however, in areas of soft landscaping, such as townhouse gardens, a clean layer of imported topsoil will be required to break the pollutant linkage.
		Groundworkers during redevelopment and any future sub-surface works	<b>Low Risk</b>	Groundworkers and sub-surface maintenance workers should be made aware of the possibility of encountering contaminated soils through toolbox talks. Safe working procedures should be implemented, good standards of personal hygiene should be observed and appropriate levels of PPE provided and utilised.
	Windblown contaminated dust	Off-Site receptors	<b>Low Risk</b>	The soils at the Site are not significantly contaminated and there are limited sensitive off-Site receptors. However, in accordance with general good practice, the groundworks contractor will need to implement dust suppression techniques at the Site to limit the potential for the generation of dust.
	Leaching and migration through groundwater present beneath the Site	Controlled waters - Secondary A and deeper Principle Aquifer.	<b>Low Risk</b>	No significantly elevated concentrations of contaminants in groundwater were identified at the Site. Furthermore, the significant thickness of cohesive clay soils are considered protective of the underlying aquifers.
	Direct infiltration in water supply pipes.	Drinking water supply pipes	<b>Low Risk</b>	Hydrocarbons, especially aromatics and chlorinated solvents, are known to permeate plastic pipes. Assessment of the risk to water pipes for any new supply will have to be undertaken as a requirement of the statutory undertakers who should be provided with a copy of this Site investigation Report and provide recommendations for upgrading of potable water supply pipes, if considered necessary.
Asbestos containing materials.	Groundworkers and construction workers during redevelopment and future sub-surface maintenance and occupiers of adjacent properties during redevelopment	Inhalation of asbestos fibres	<b>Low Risk</b>	Asbestos fibres have not been identified within the soil samples collected from the Site.  Groundworkers should be made aware of the possibility of encountering potential Asbestos Containing Materials (ACM) within the Made Ground across the Site and an appropriate protocol should be in place. Safe working procedures should be implemented, including damping down of excavations and stockpiles in line with general dust generation mitigation and appropriate levels of PPE provided and utilised. This recommendation should be captured in Site health and safety documentation and in maintenance plans.



Potentially hazardous ground gas	Vertical & lateral migration and accumulation of gas in enclosed spaces and sub-floor voids	Construction / maintenance workers and Site users / visitors	<b>Low Risk</b>	No elevated concentrations of hazardous ground gases have been identified beneath the Site, therefore, no ground gas protection measures will be required.
Potentially unidentified 'hotspots' of contamination, which may be present in areas of the Site that have not been directly investigated	All receptors	All pathways	<b>Low Risk</b>	As with all redevelopment works, a 'hotspot' protocol should be in place for groundworkers to act upon during any future redevelopment of the Site.

## **7.0 CONCLUSIONS AND RECOMMENDATIONS**

### **7.1 Conclusions**

From the desk-top review of the Site and surrounding area, potential on-Site and off-Site sources of contamination were identified. The Site was undeveloped until circa 1975 when a motel is built in the west and north-west of the Site. By circa 1979, a reservoir has been constructed in the west of the Site. The motel was demolished by circa 2010 and represents the present day layout of the Site. Potential sources of off-Site contamination include: a railway, railway sidings, a works and a garage.

This Assessment was carried out in conjunction with a geotechnical investigation and included the drilling of 10 cable percussion boreholes (CP01 to CP09A), and 15 trial pits (TP01 to TP015). Soil samples were collected from the boreholes and trial pits and submitted for a range of organic and inorganic parameters. Nine cable percussion boreholes were installed as 50 mm groundwater and ground gas monitoring wells. Groundwater samples were collected from a selection of the monitoring wells and submitted to an appropriately accredited laboratory and ground gas monitoring was carried out on six occasions.

Ground conditions either comprised of Made Ground consisting of tarmac or concrete over sandy gravel to depths between 0.30 m and 0.90 m below ground level (bgl), or Made Ground comprising grass overlying gravelly clay to a depth of 0.3 m bgl to 0.6 m bgl. These overlay predominantly slightly gravelly clay/ silt to generally 3.0 m bgl (possible Weathered London Clay) overlying multi-coloured clay (Upper Mottled Beds – Woolwich and Reading Beds) to approximately 15.00 m bgl. This is underlain by silty clay and clayey sand (Laminated Beds – Woolwich and Reading Beds). The Seaford Chalk and Newhaven Chalk Formation were not identified as part of this investigation.

Resting groundwater levels recorded during the return monitoring visits were between 0.32 m and 2.36 m bgl.

Based on the information obtained to date the following information can be concluded:

- Δ Elevated concentrations of contaminants have not been identified in soil and groundwater collected from across the Site;



- Δ Elevated concentrations of sulphur have been identified in groundwater, likely to be associated with the pyritic ground conditions; and
- Δ The Site is classified as Characterisation Situation 1, as such ground gas protection measures would not be required.

## **7.2 Recommendations and Development Abnormals**

The following additional recommendations and development abnormals are considered appropriate based on a commercial redevelopment of the Site:

- Δ Additional, unidentified localised areas of contamination may exist at the Site and an appropriate 'hotspot' protocol should be in place for groundworkers to act upon should such contamination be identified during the construction process;
- Δ Groundworkers who are required to perform sub-surface work at the Site should be made aware of the known contaminants in soil and groundwater and the possibility of encountering additional localised low levels of contamination. Therefore, good standards of personal hygiene should be observed and appropriate levels of PPE utilised where necessary;
- Δ Suitable dust suppression techniques will need to be implemented by groundworkers during construction and demolition works;
- Δ Confirmation should be sought from the Local Water Authority as to whether they will require upgraded pipework to be installed for new service installations;
- Δ It is recommended that a minimum 600 mm of certified suitable for use top soil and subsoil overlying should be incorporated into all new landscaped areas;
- Δ Elevated costs above standard inert rates (non-hazardous) should be anticipated for disposal of engineering arisings from the Made Ground to include landfill tax, currently at a rate of £82.60/tonne. Additional waste classification testing (including WAC testing) is likely to be required to facilitate off-Site disposal of Made Ground materials.

## **8.0 LIMITATIONS TO ENVIRONMENTAL ASSESSMENTS**

The recommendations contained in this Report represent Delta-Simons' professional opinions, based upon the information referred to in Section 1.0 of this Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client, Groundsure and others. Delta-Simons' conclusions, opinions and recommendations have been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed as defined in Section 1.1 of this Report. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.



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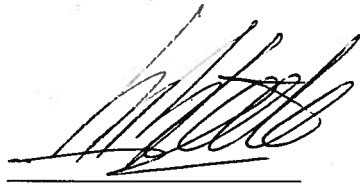
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**Graduate Geo-Environmental Engineer**

12/06/15

Date

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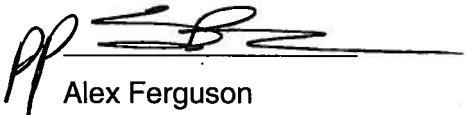
Simon Steele

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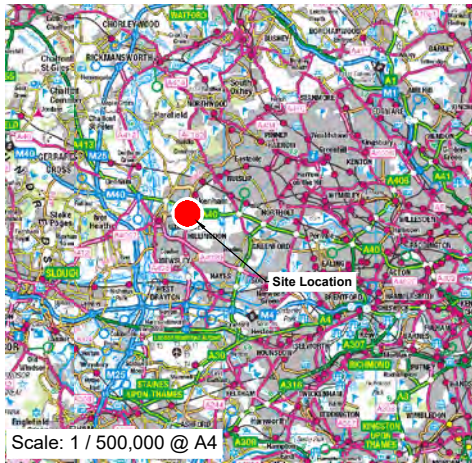
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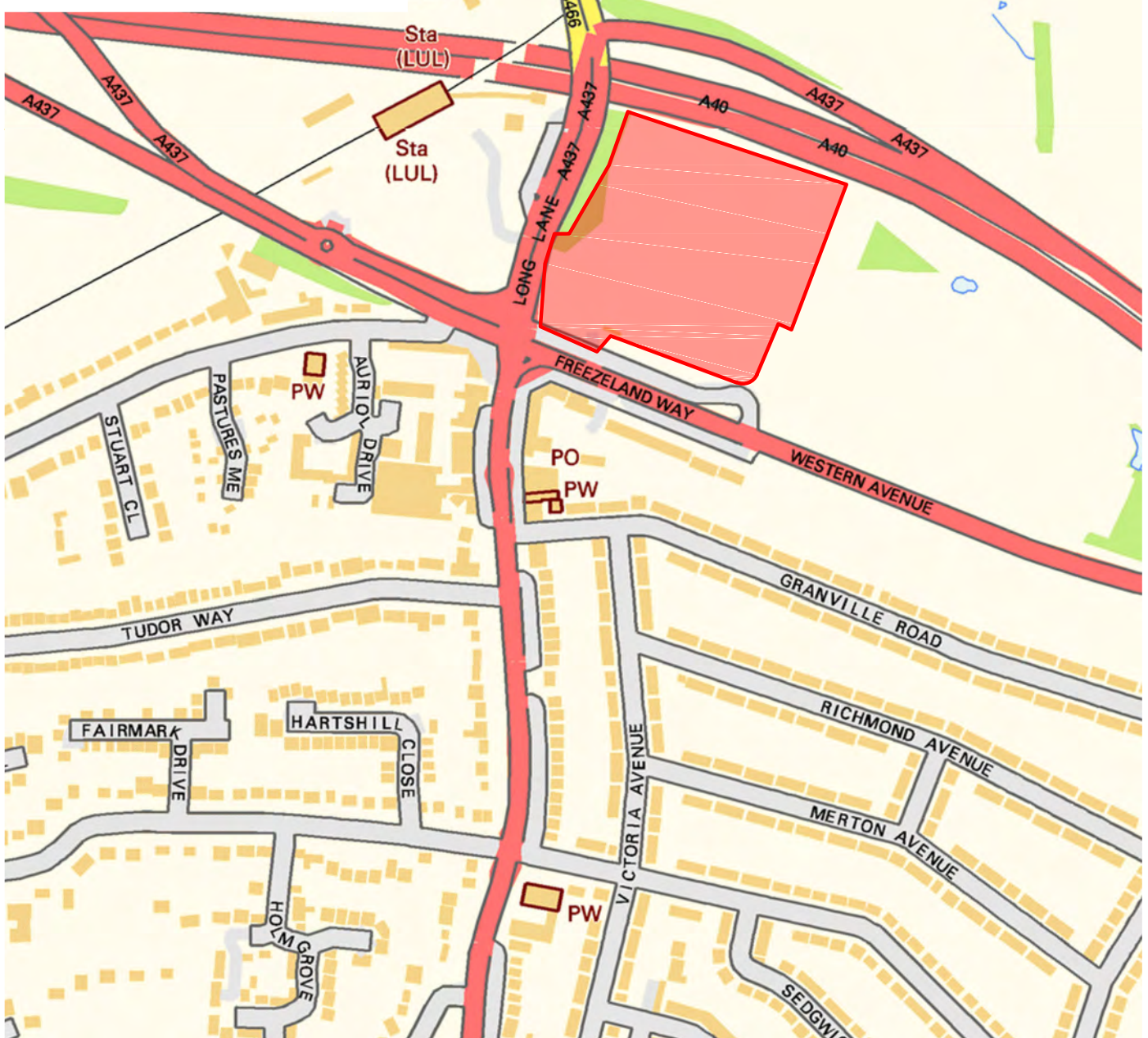






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 Site Boundary



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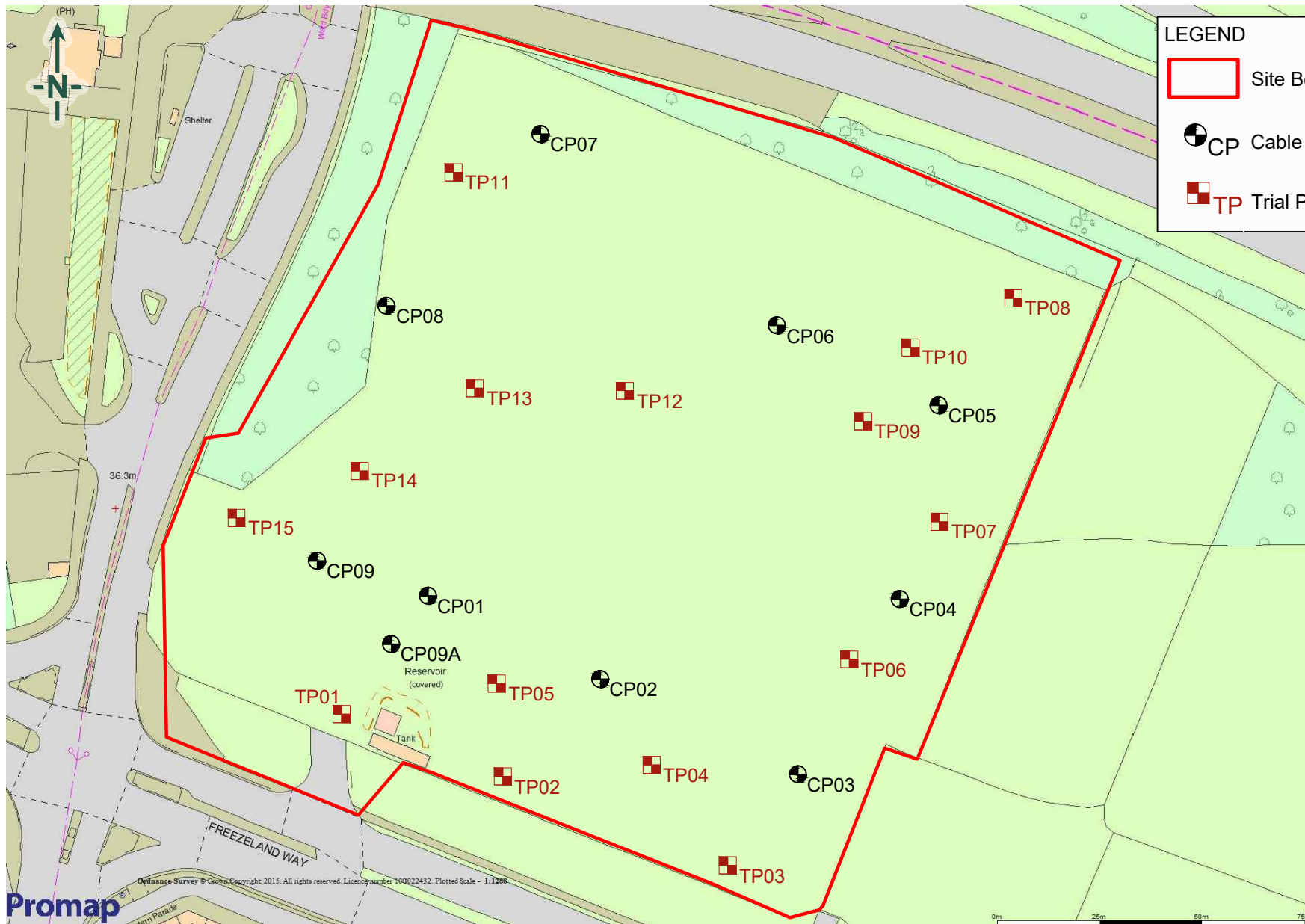


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Master Brewer  
Hillingdon

DRAWN BY:  
DP  
CHECKED BY:  
CB  
DATE:  
16 April 2015

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PROJECT NO:  
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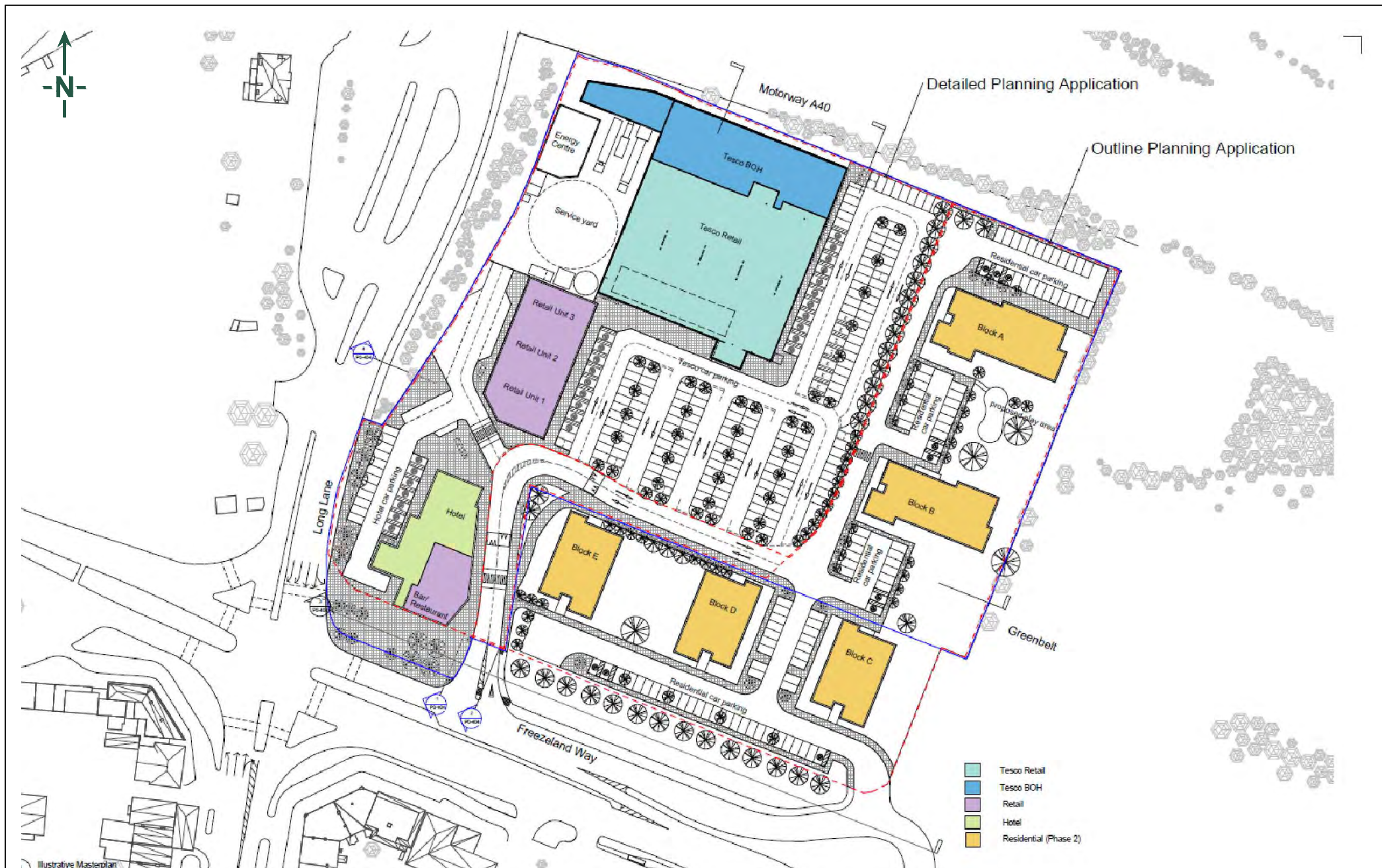
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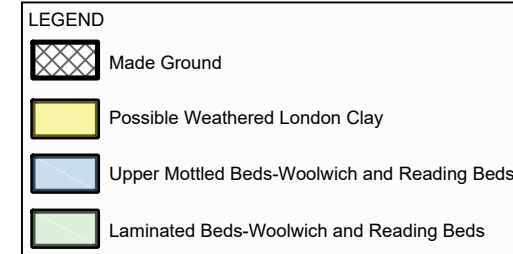
CP Cable Percussion Borehole

TP Trial Pit

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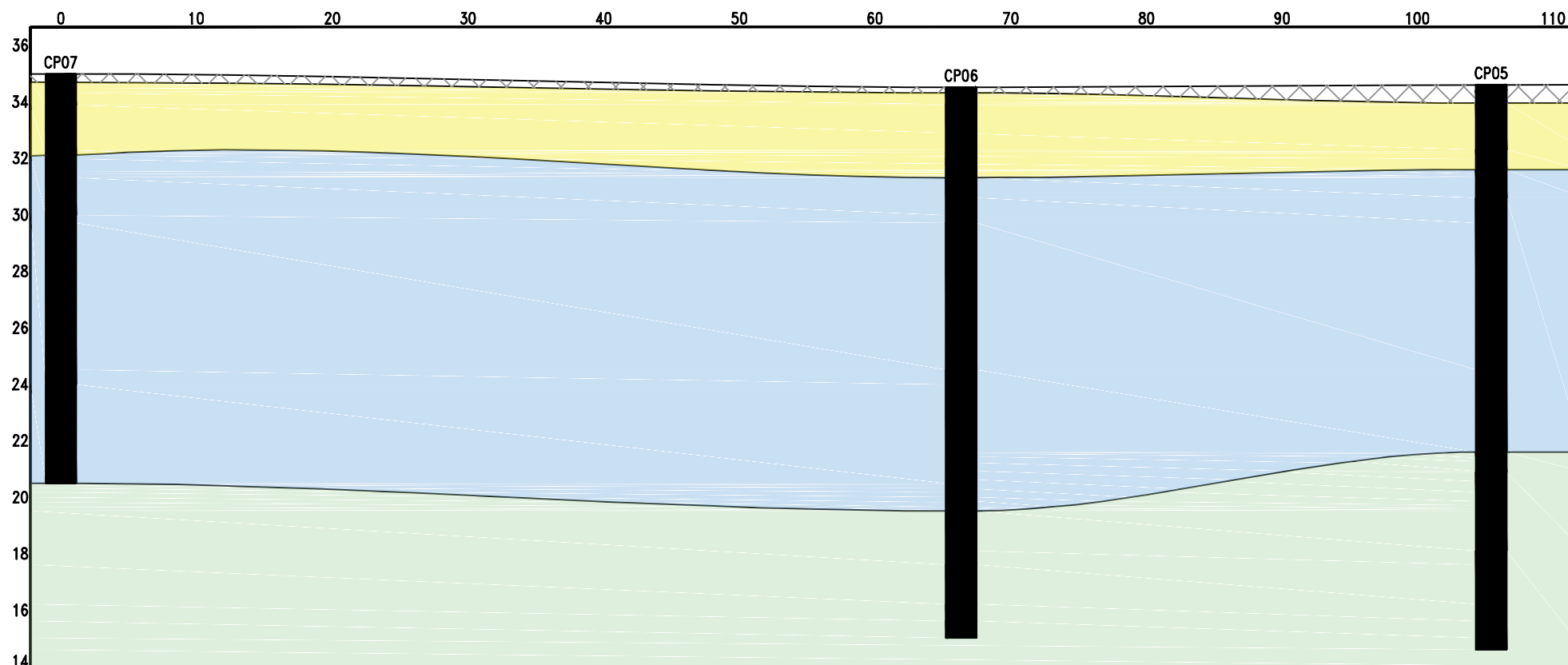






**A West**

**East A1**



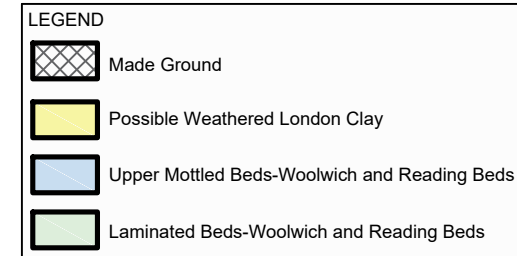
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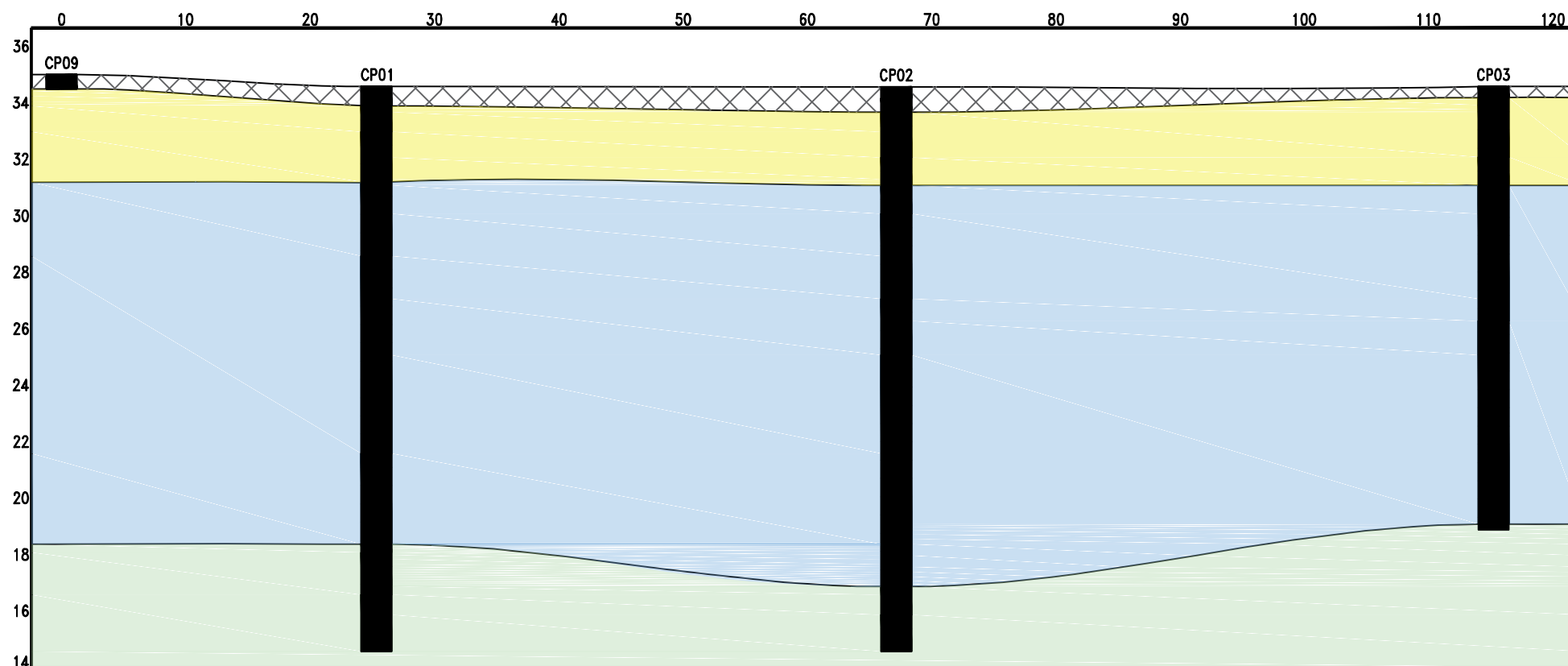
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**B West**

**East B1**

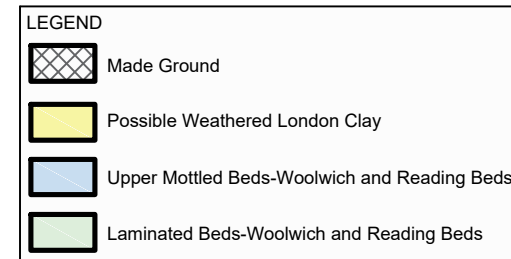


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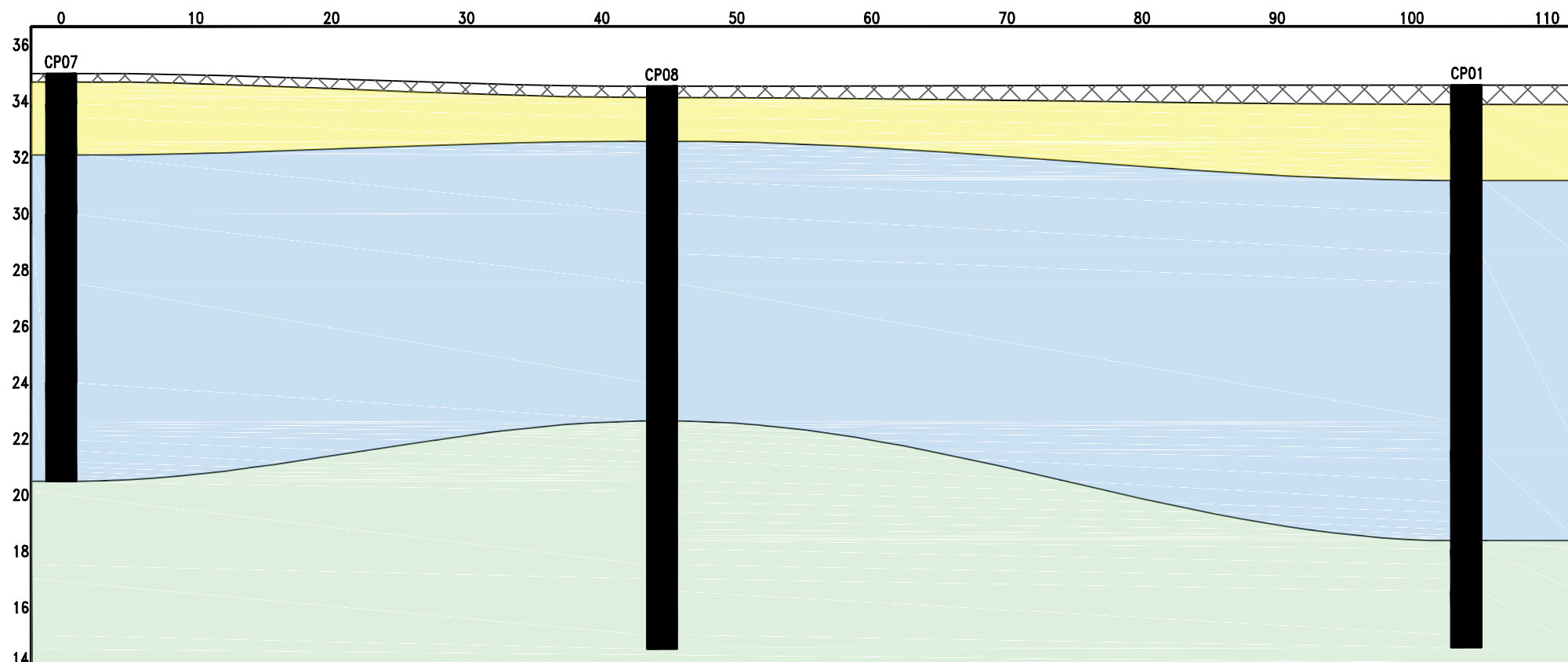
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C North

South C1



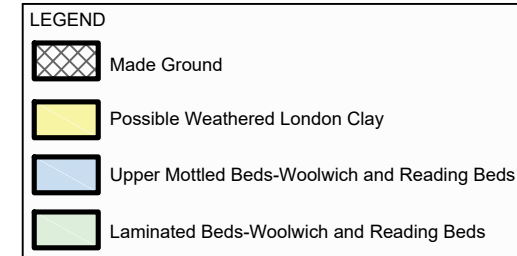
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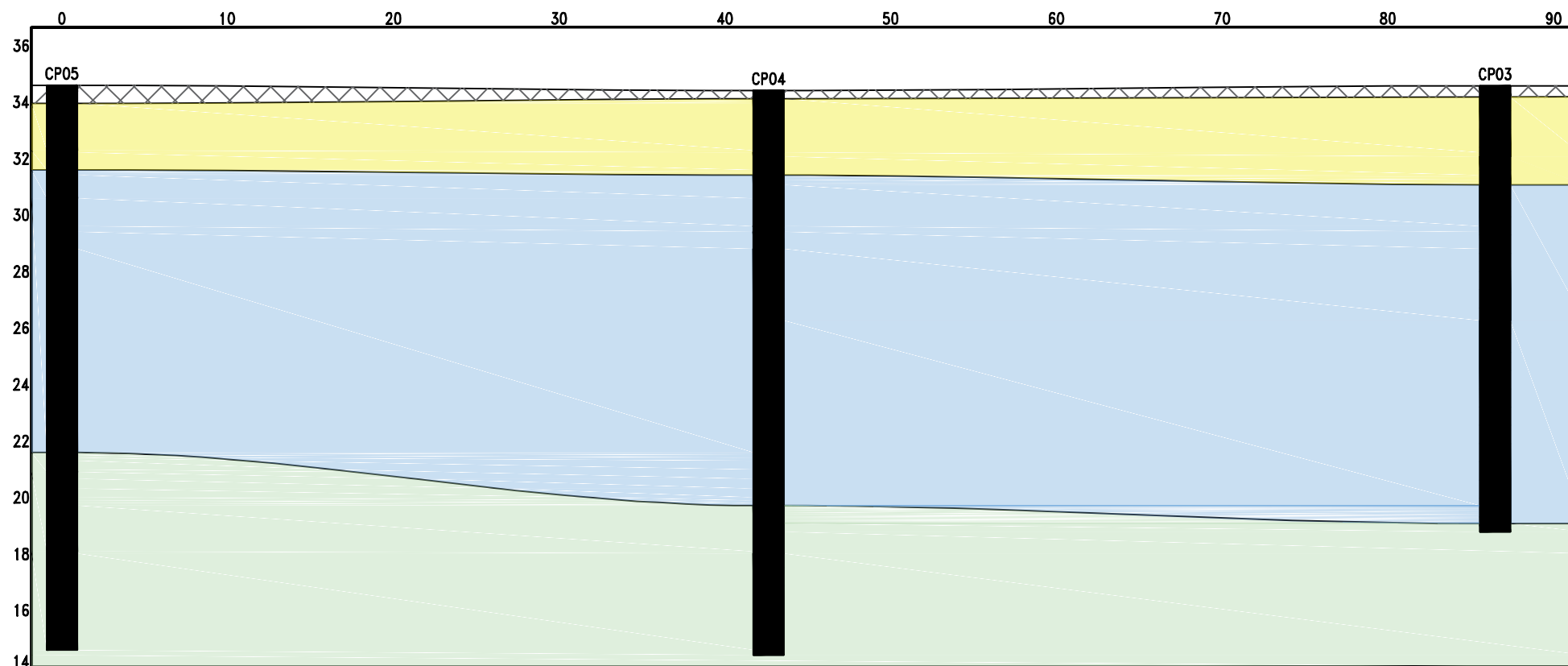
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**South D1**

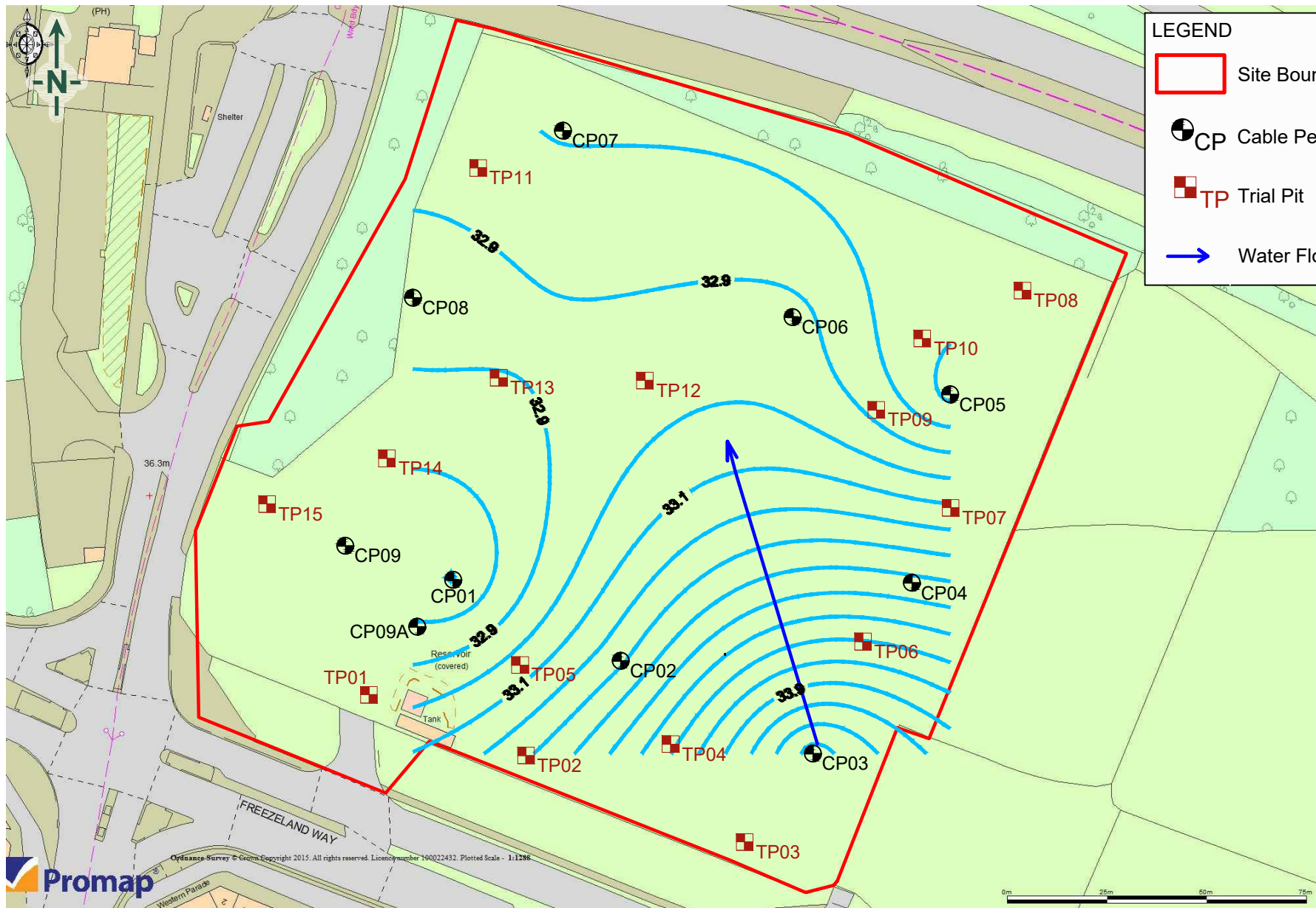


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**LEGEND**

- Site Boundary
- CP Cable Percussion Borehole
- TP Trial Pit
- Water Flow Direction

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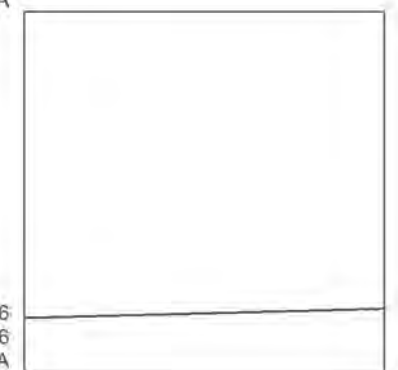
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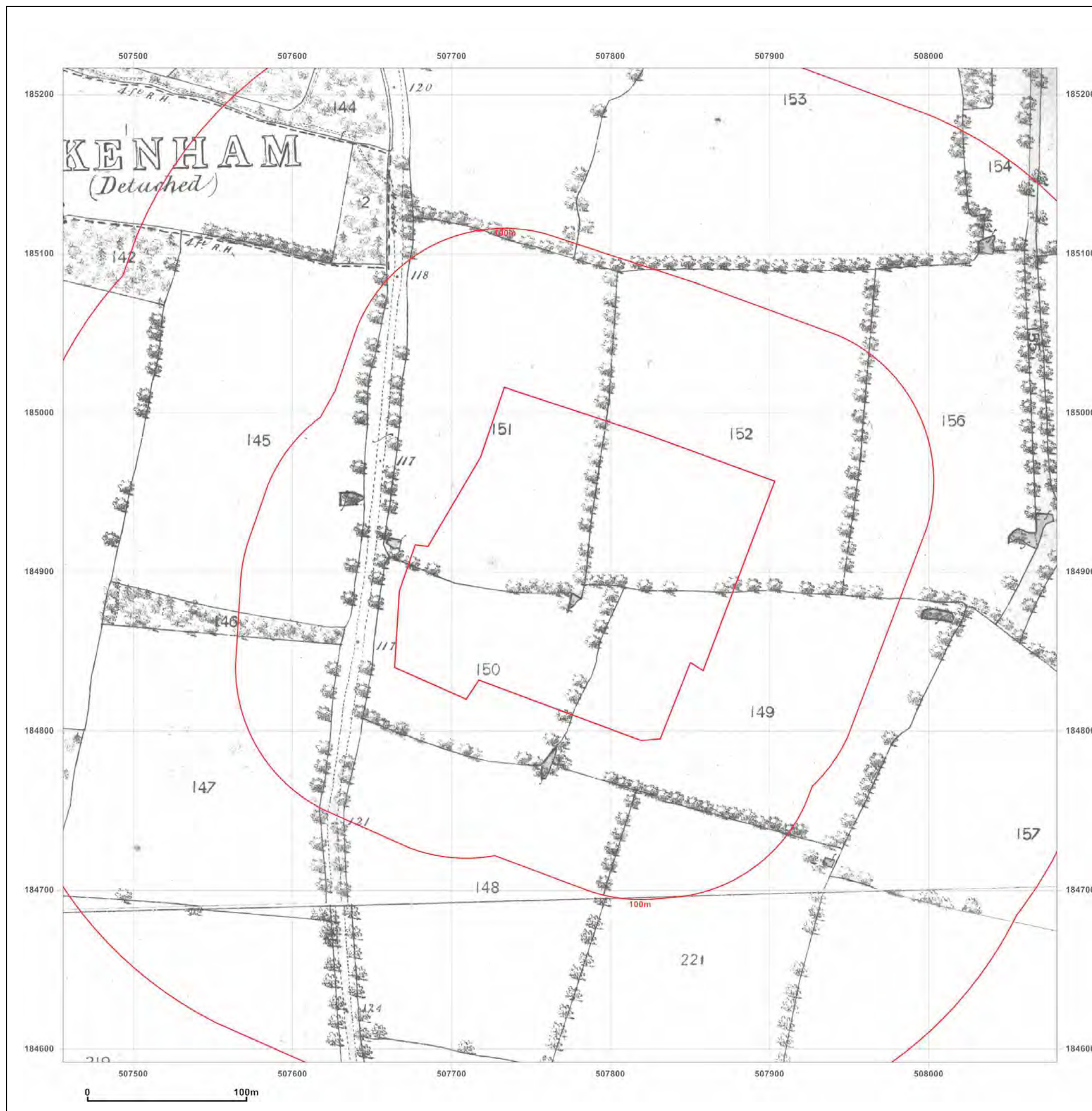


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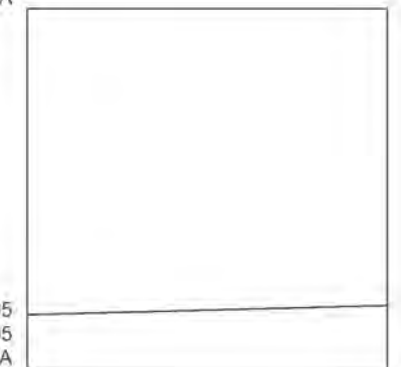
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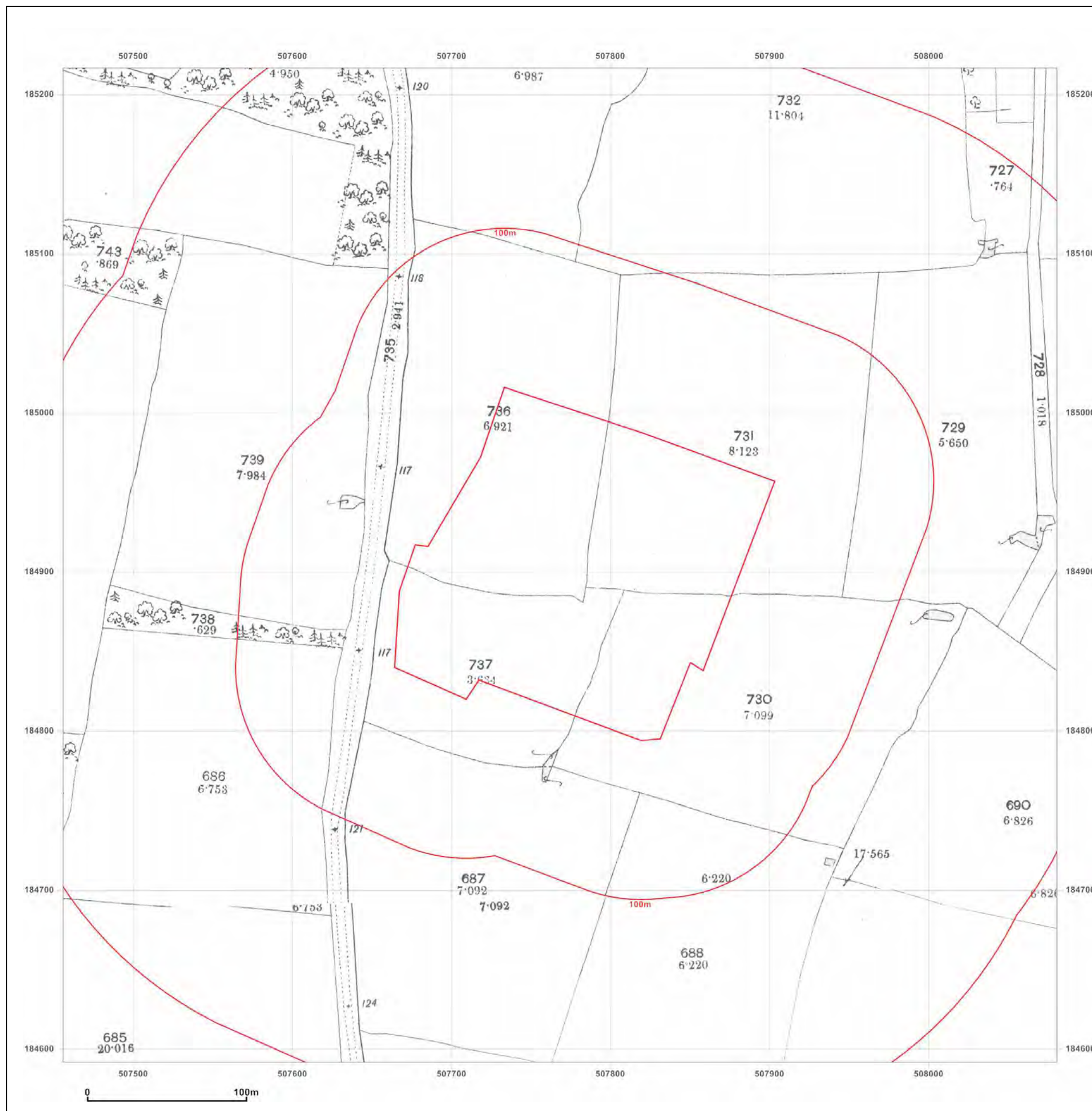


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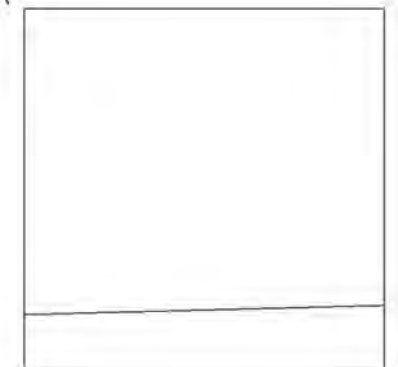
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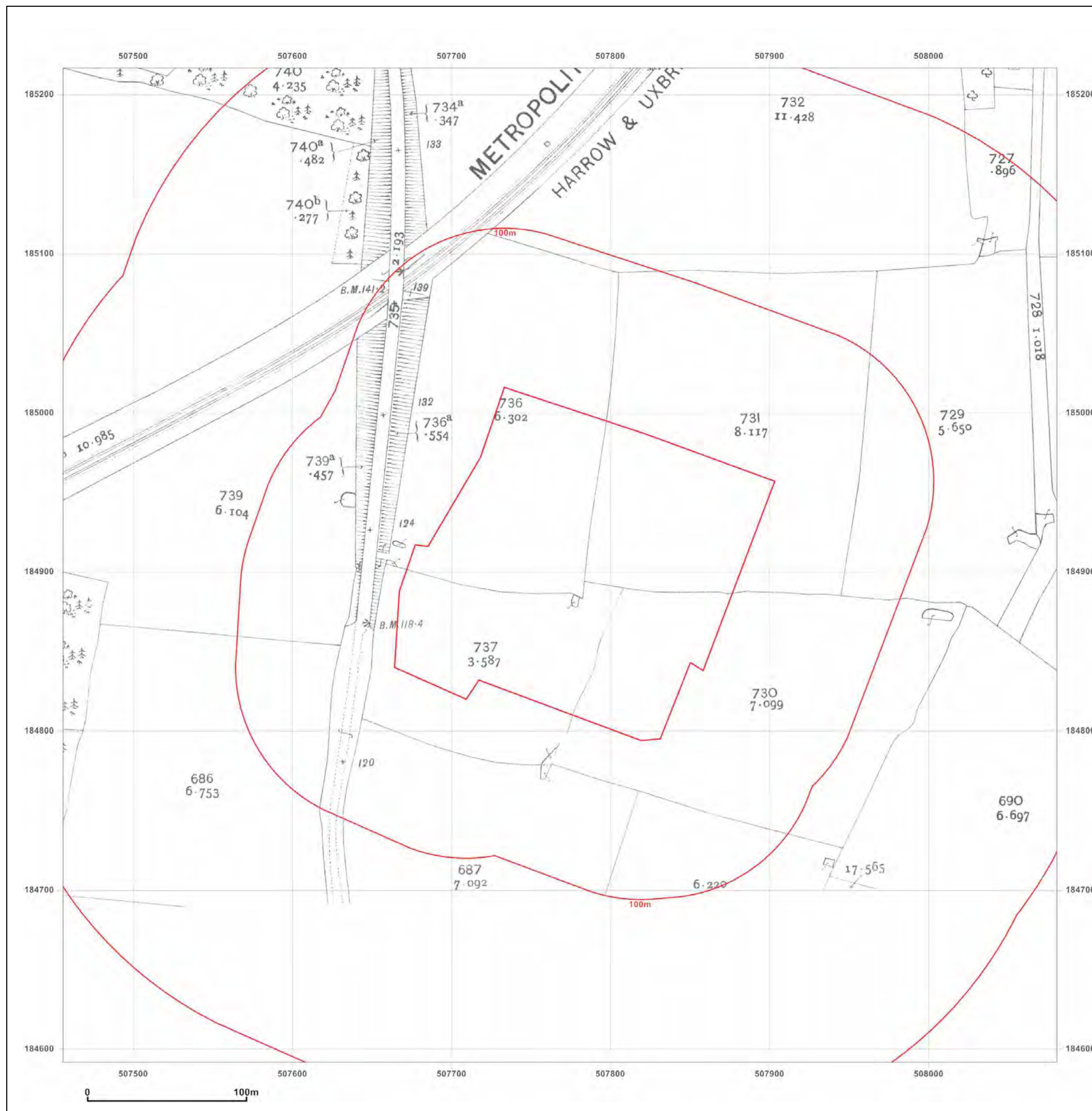


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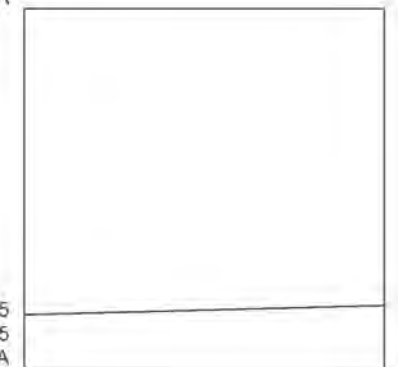
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Revised 1935  
Edition N/A  
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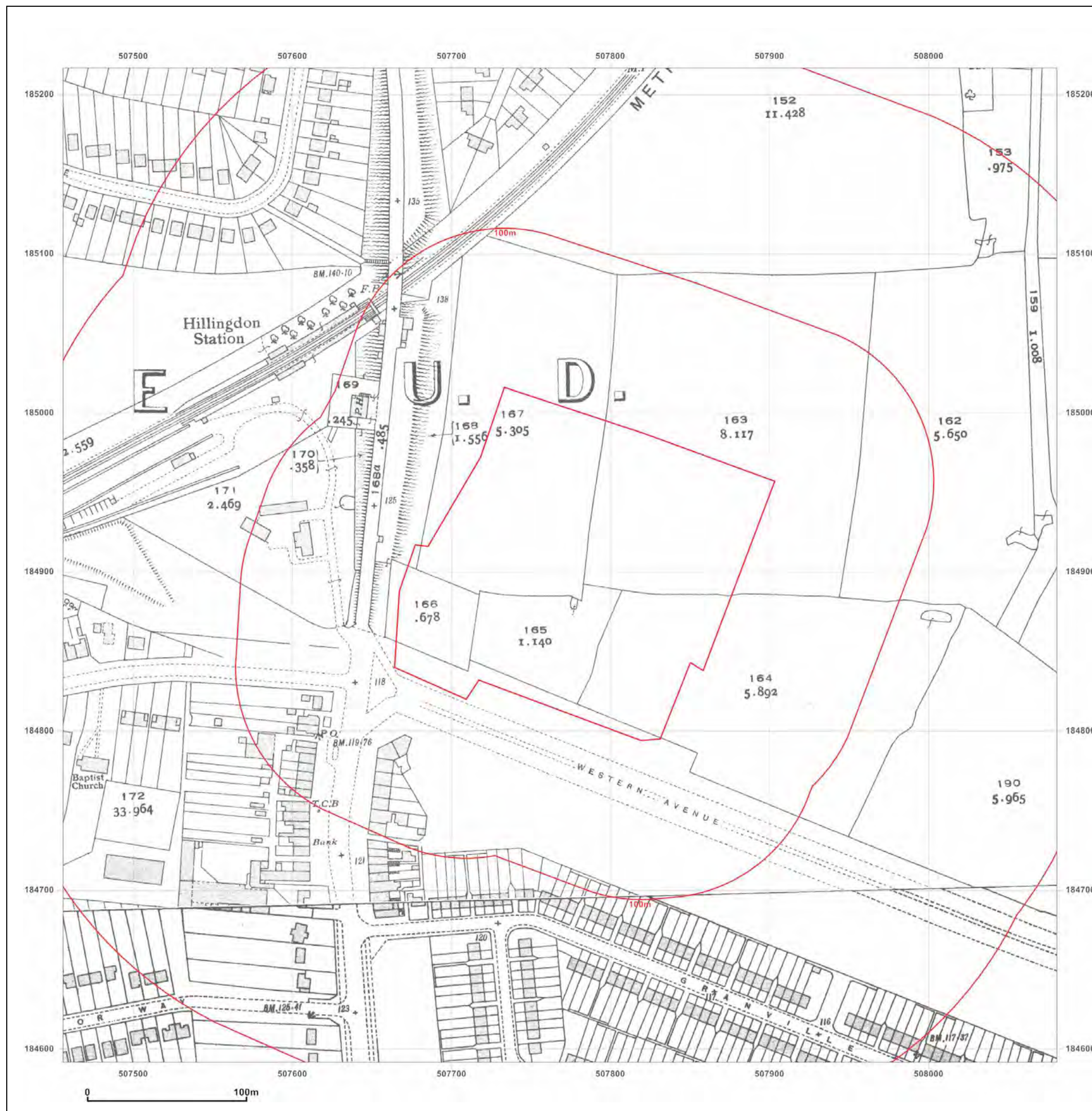


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1961-1962

Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1961  
Revised 1961  
Edition N/A  
Copyright 1962  
Levelled 1957

Surveyed 1960  
Revised 1960  
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Levelled 1957

Surveyed 1962  
Revised 1962  
Edition N/A  
Copyright 1962  
Levelled 1957

Surveyed 1960  
Revised 1960  
Edition N/A  
Copyright 1961  
Levelled 1957

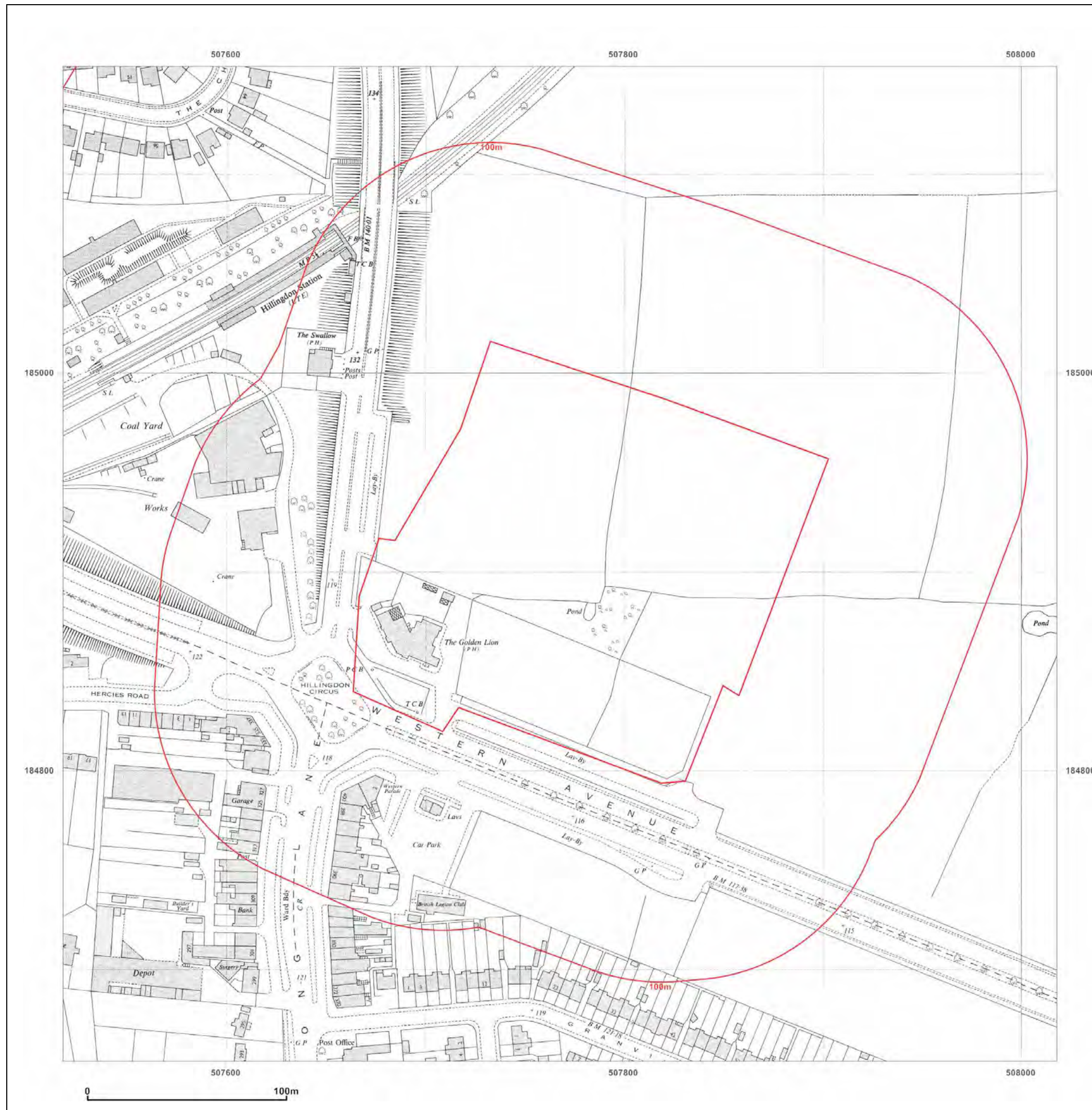


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1960-1962

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1961  
Revised 1961  
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Revised 1960  
Edition 1962  
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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1977-1980

Scale: 1:1,250

Printed at: 1:2,000



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

Surveyed 1962  
Revised 1979  
Edition N/A  
Copyright 1980  
Levelled 1957

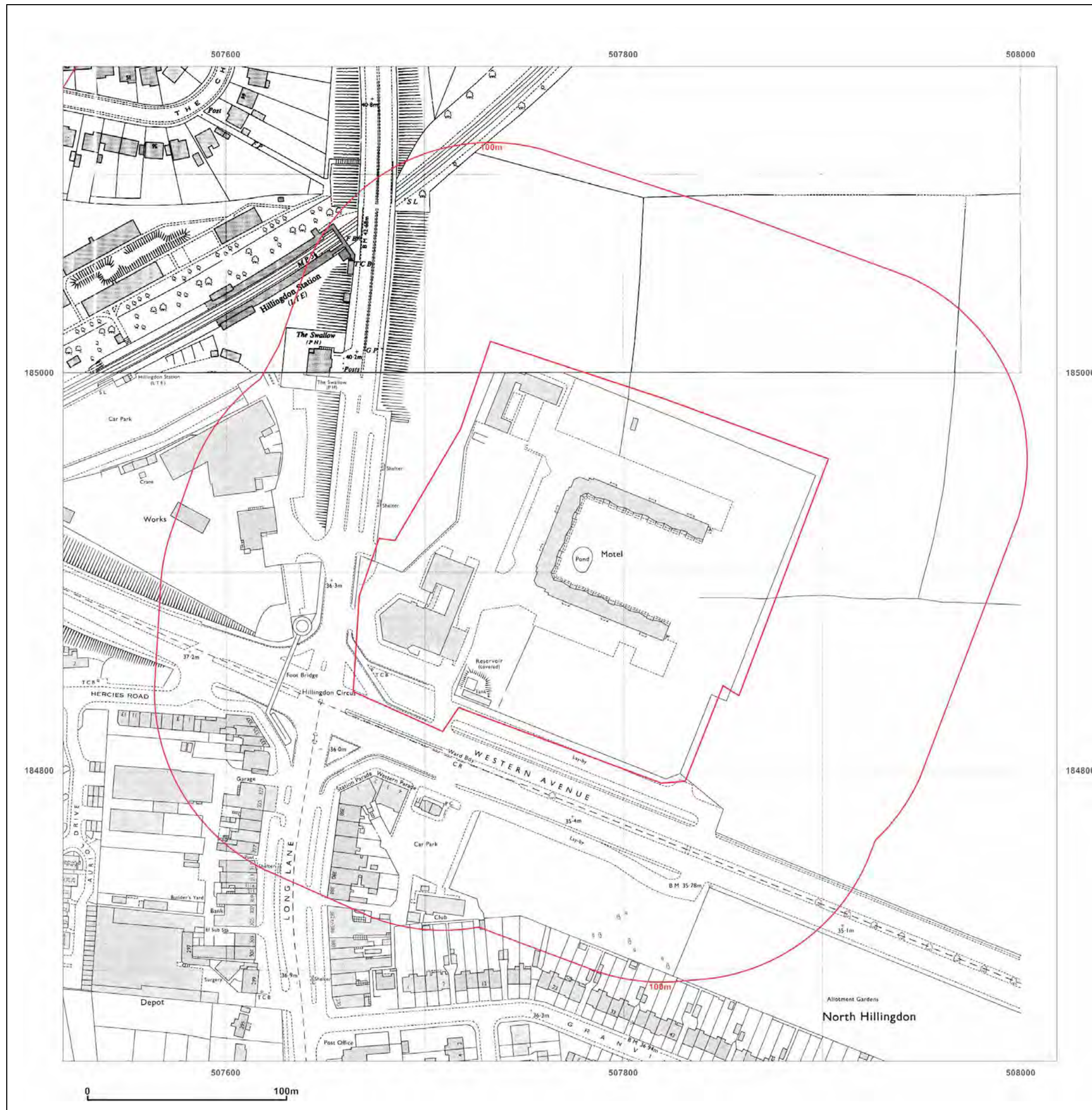


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**Client Ref:** 14-0724.01  
**Report Ref:** GS-1745867  
**Grid Ref:** 507768, 184904

**Map Name:** National Grid

**Map date:** 1992

**Scale:** 1:1,250

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



Surveyed N/A  
Revised N/A  
Edition N/A  
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Revised N/A  
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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1994

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A  
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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1864-1868

Scale: 1:10,560

Printed at: 1:10,560



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

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

Surveyed 1864  
Revised 1866  
Edition N/A  
Copyright N/A  
Levelled N/A

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

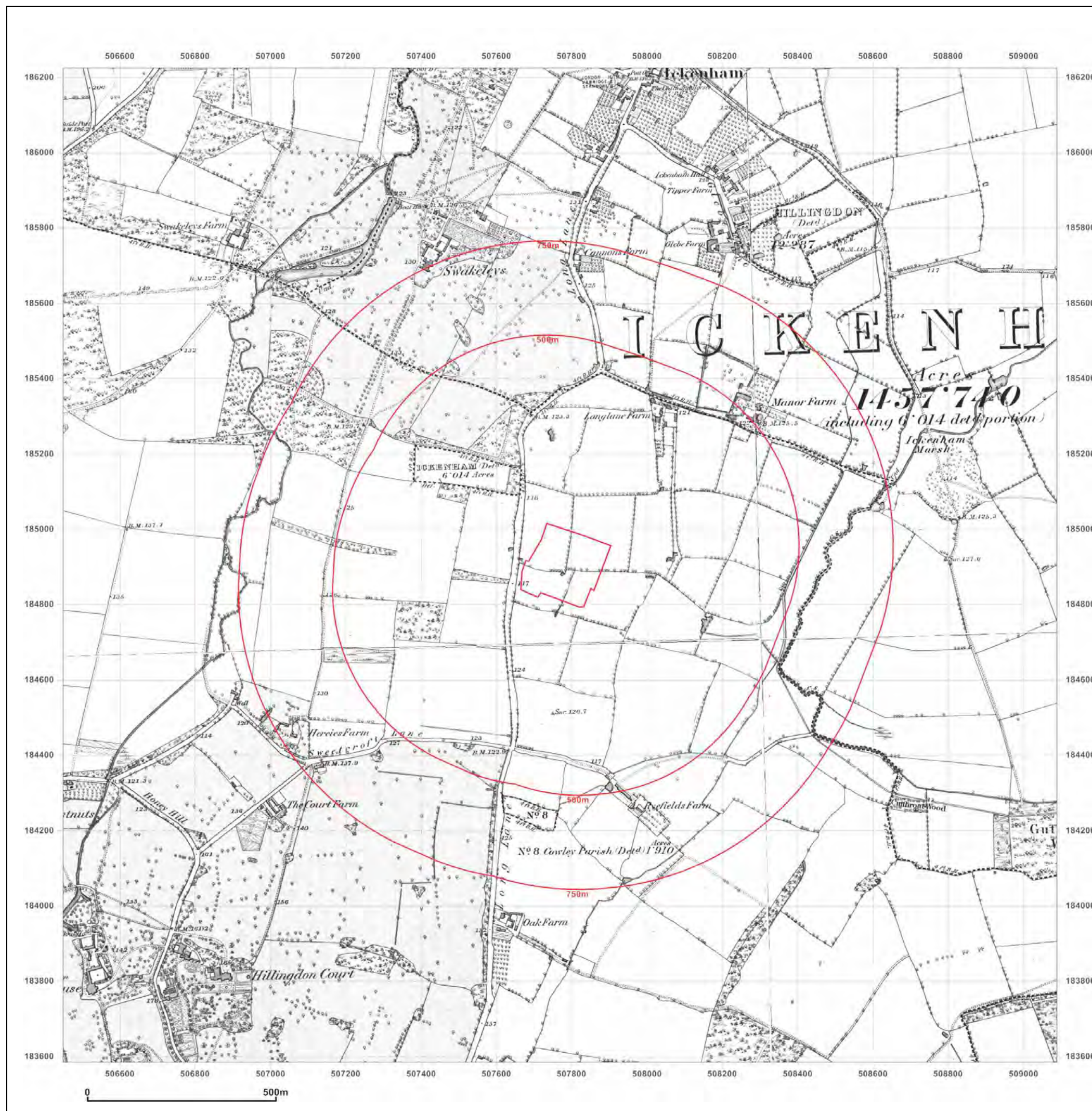


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1882

Scale: 1:10,560

Printed at: 1:10,560



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

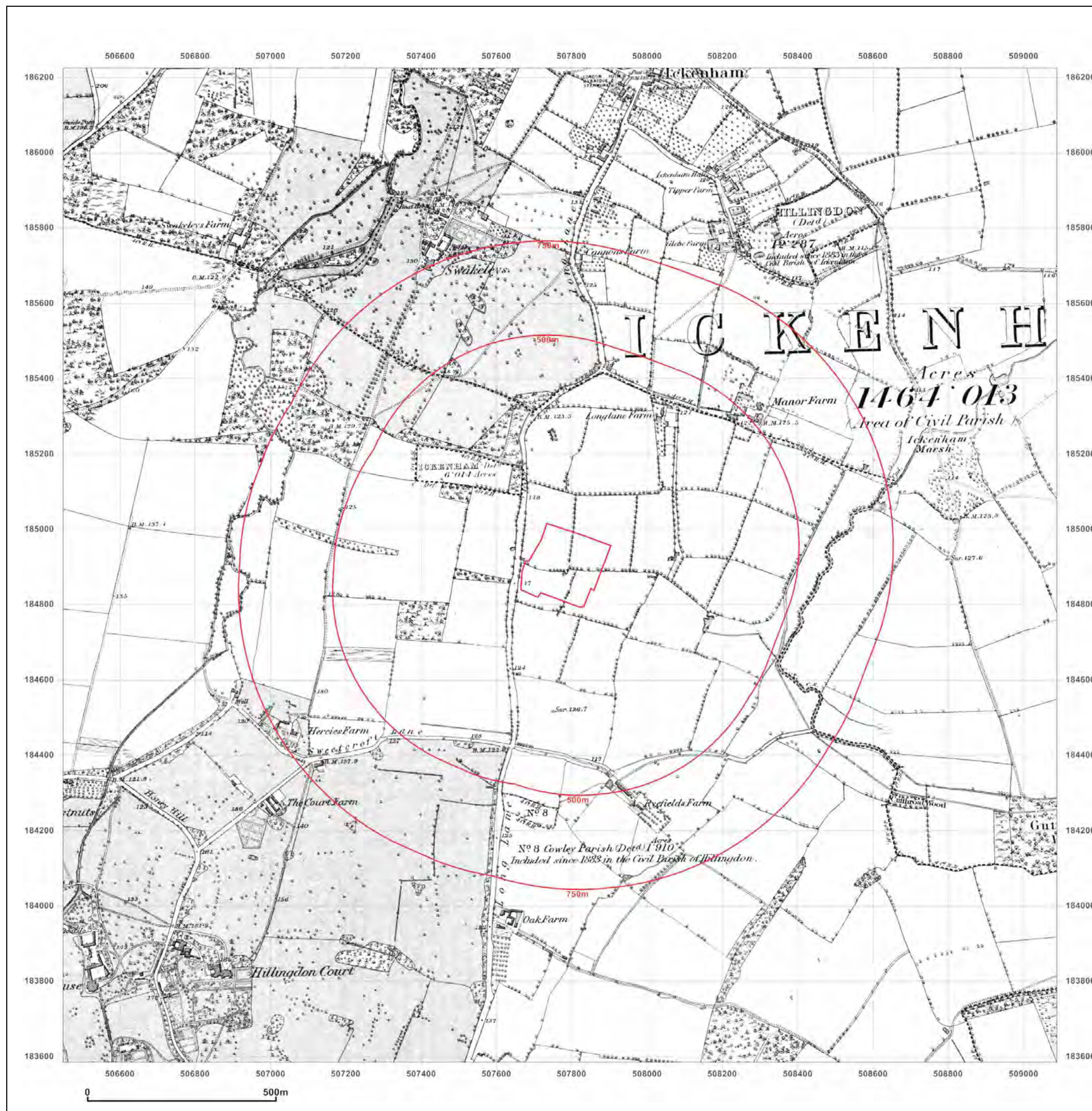


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1894-1897

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1875  
Revised 1895  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1864  
Revised 1894  
Edition N/A  
Copyright N/A  
Levelled N/A

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

Surveyed 1864  
Revised 1894  
Edition N/A  
Copyright N/A  
Levelled N/A

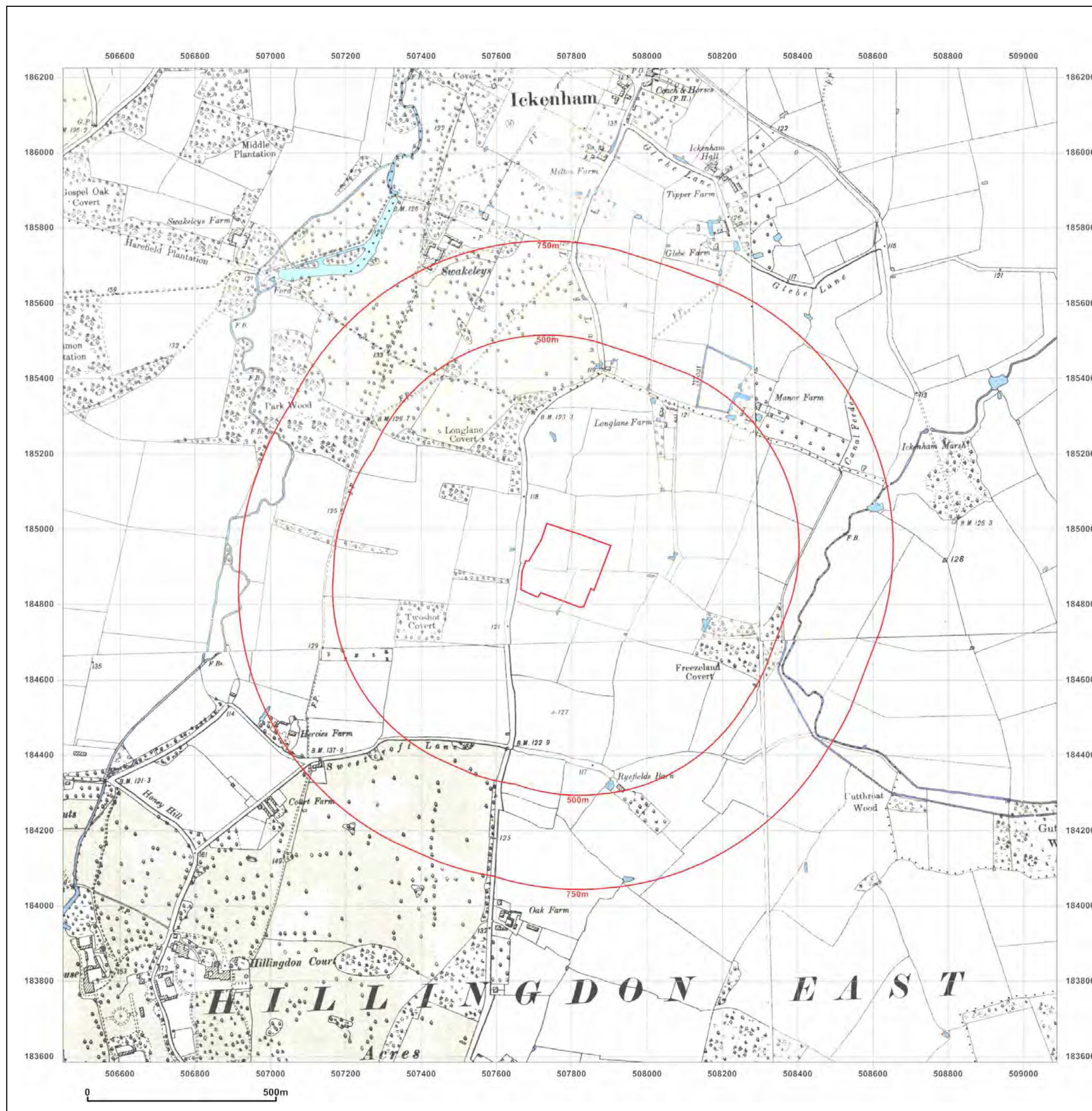


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1897-1900

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1875  
Revised 1897  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1875  
Revised 1900  
Edition N/A  
Copyright N/A  
Levelled N/A

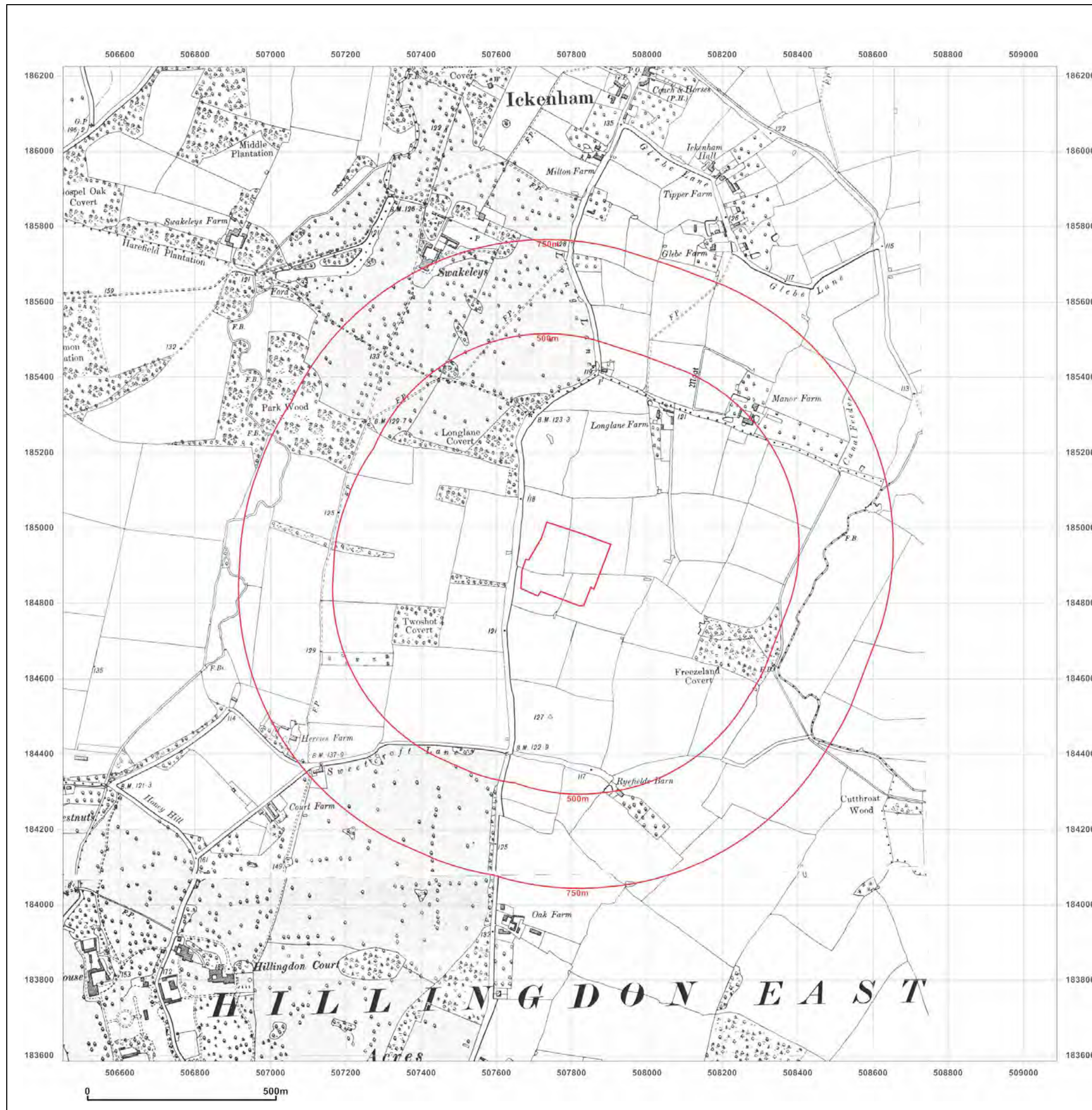


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1912-1913

Scale: 1:10,560

Printed at: 1:10,560



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

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

Surveyed 1864  
Revised 1913  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1864  
Revised 1913  
Edition N/A  
Copyright N/A  
Levelled N/A

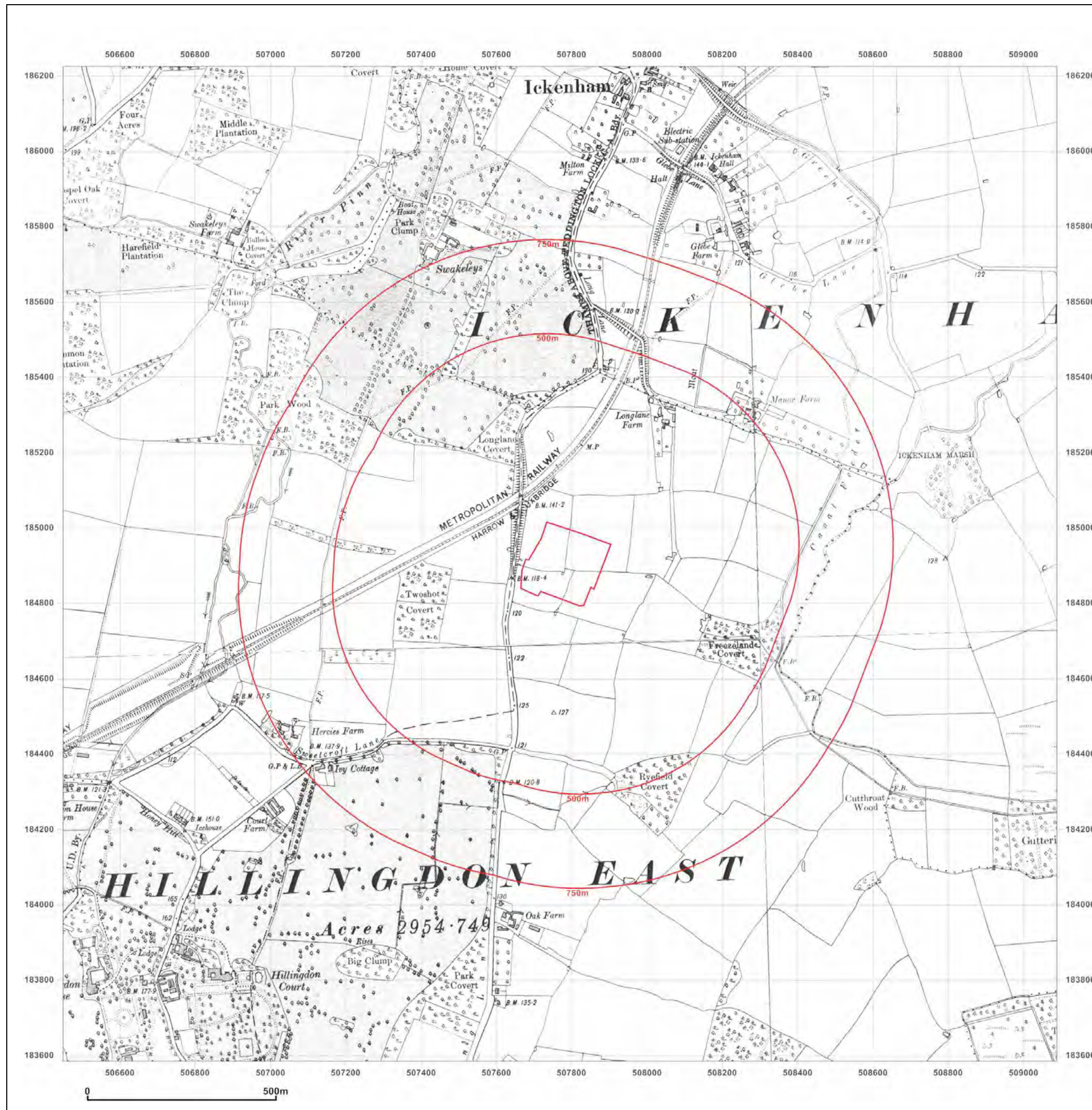


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WAYUXBRIDGE, UB10 9QE

Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1932

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1875  
Revised 1932  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1874  
Revised 1932  
Edition N/A  
Copyright N/A  
Levelled N/A

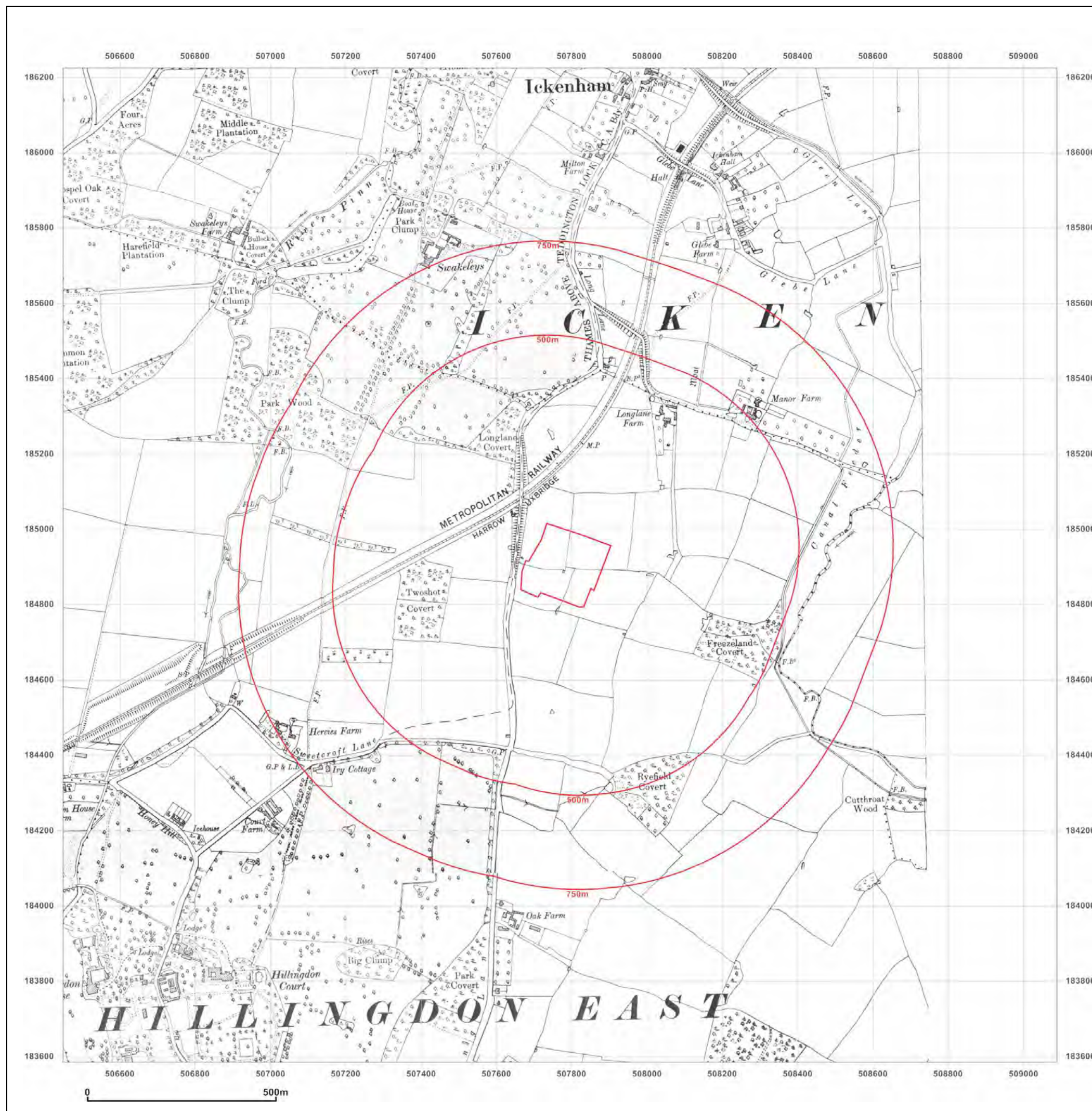


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WAYUXBRIDGE, UB10 9QE

Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1935

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864  
Revised 1935  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1864  
Revised 1935  
Edition N/A  
Copyright N/A  
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Surveyed 1864  
Revised 1935  
Edition N/A  
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Surveyed 1864  
Revised 1935  
Edition N/A  
Copyright N/A  
Levelled N/A

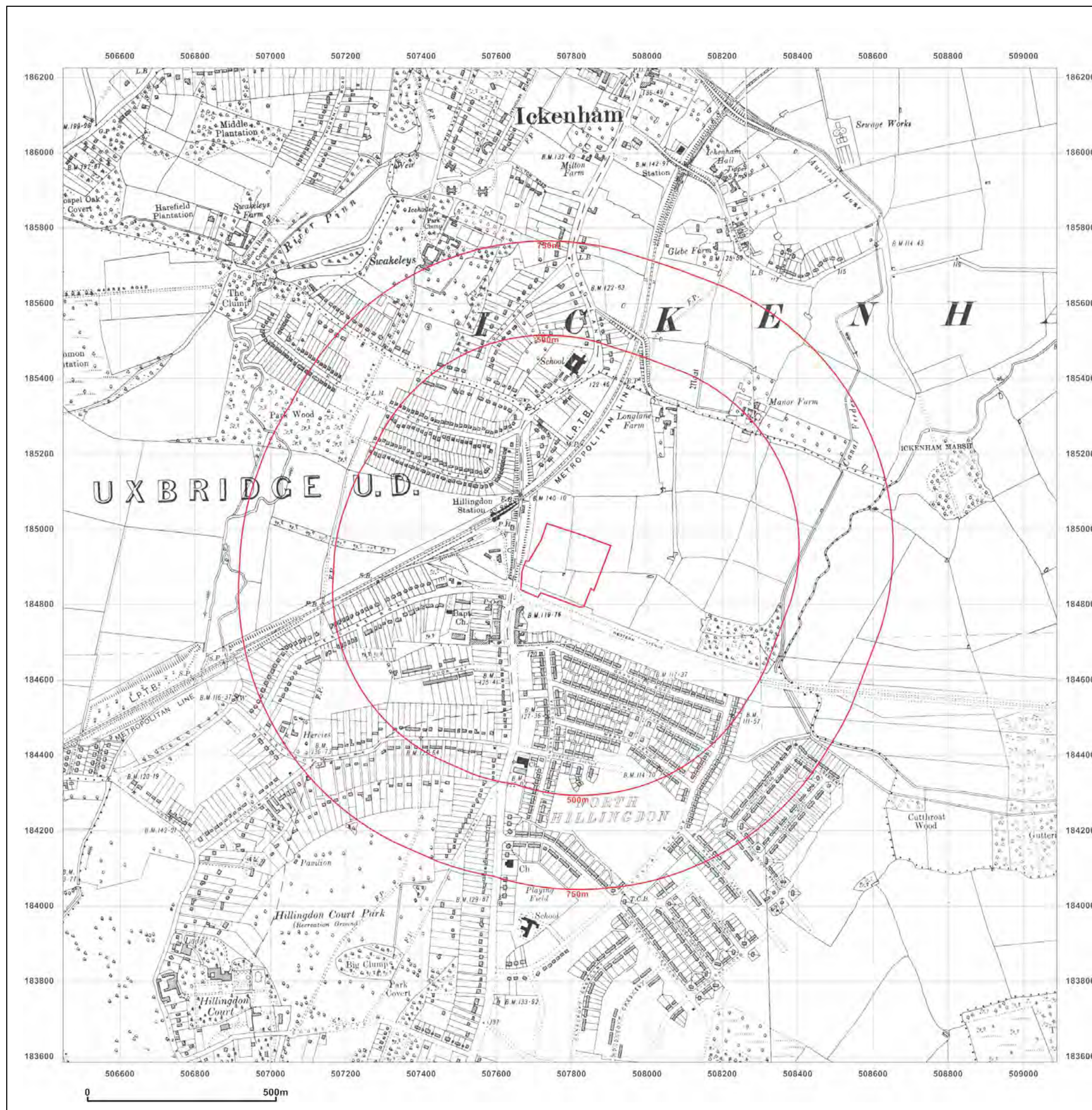


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1864  
Revised 1935  
Edition N/A  
Copyright N/A  
Levelled N/A

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

Surveyed 1864  
Revised 1938  
Edition 1938  
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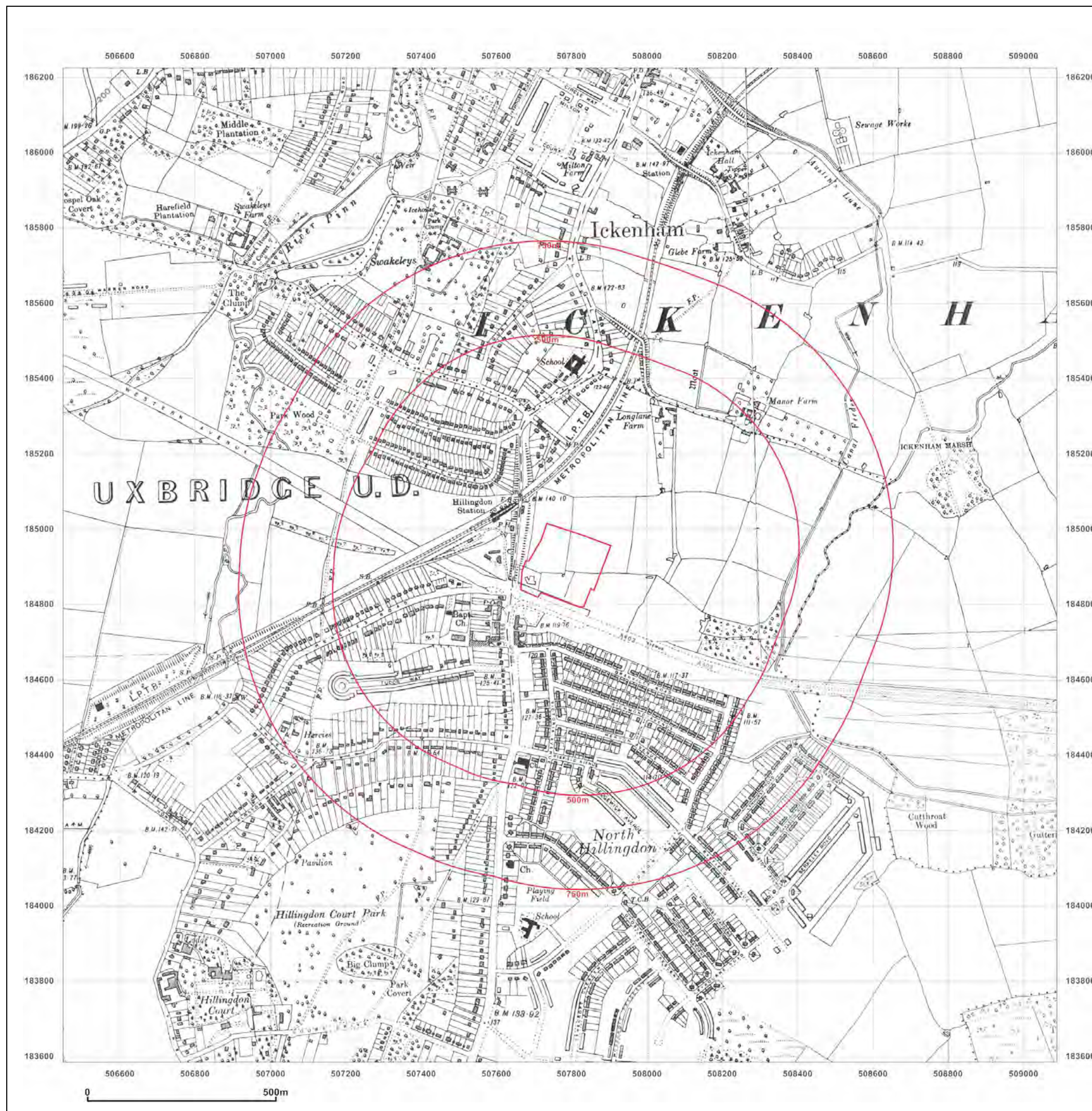


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: Provisional

Map date: 1959

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1955  
Revised 1955  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1955  
Revised 1955  
Edition N/A  
Copyright N/A  
Levelled N/A

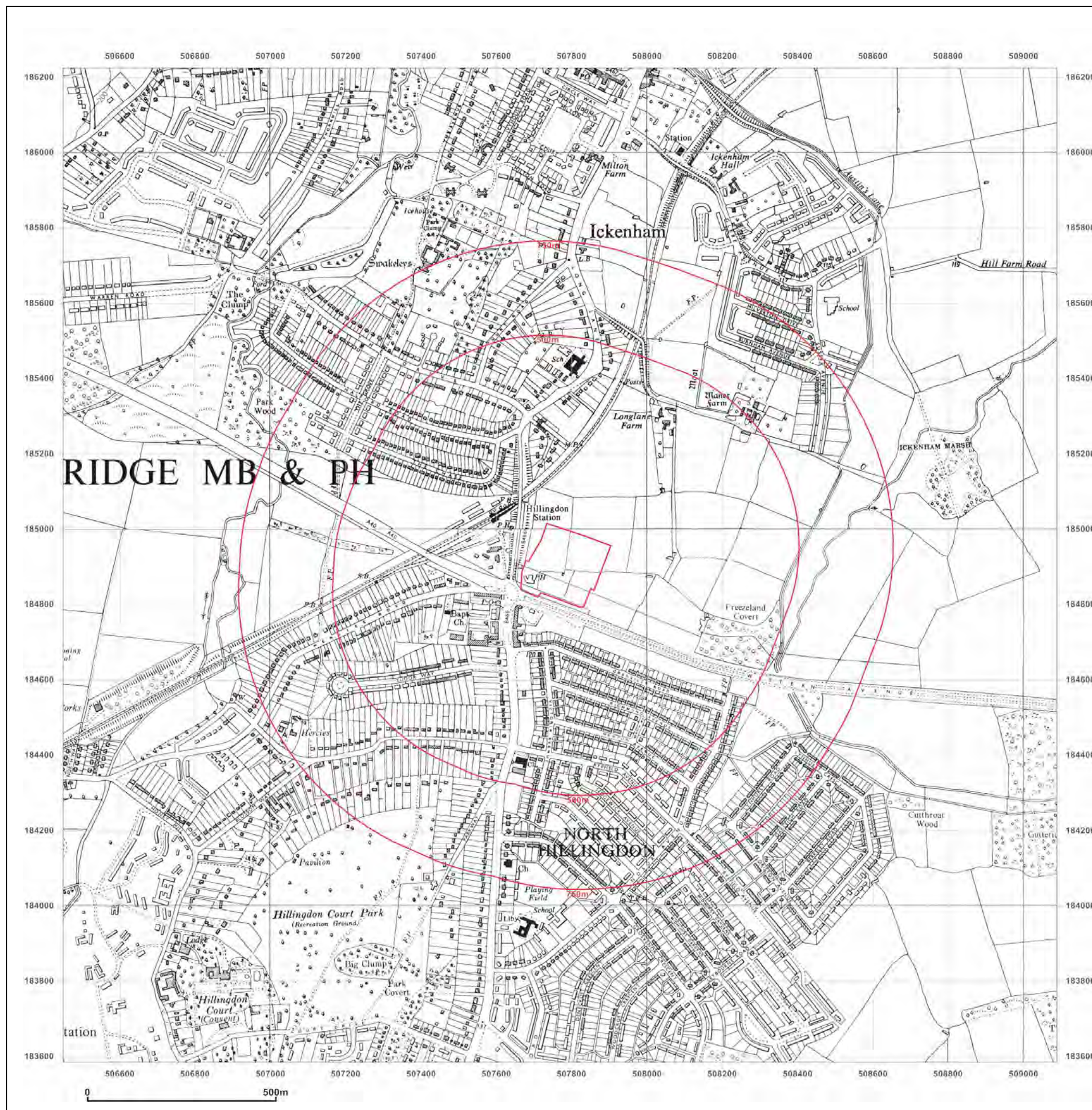


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1987-1989

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1985  
Revised 1987  
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Surveyed 1988  
Revised 1989  
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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

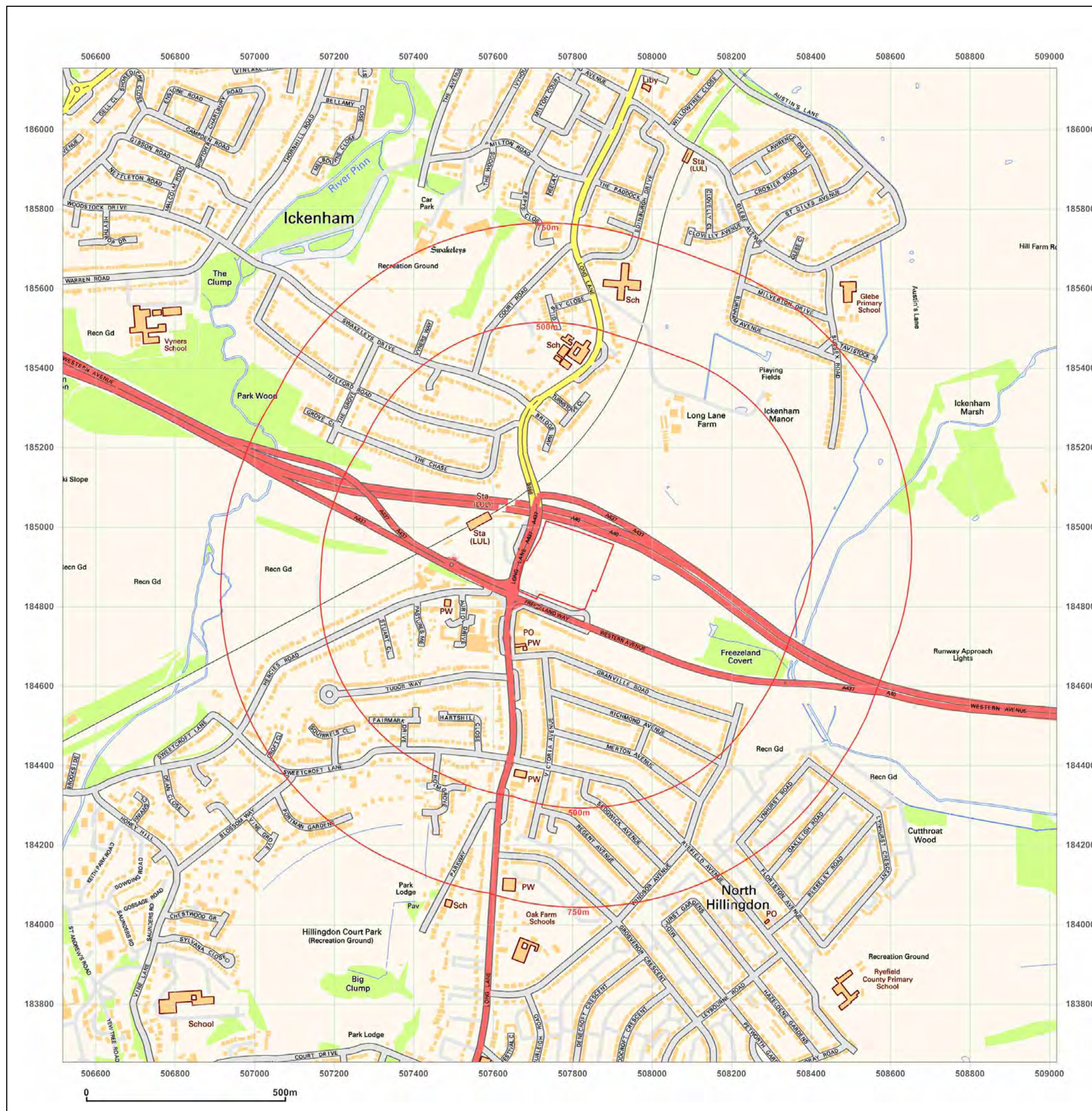


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000

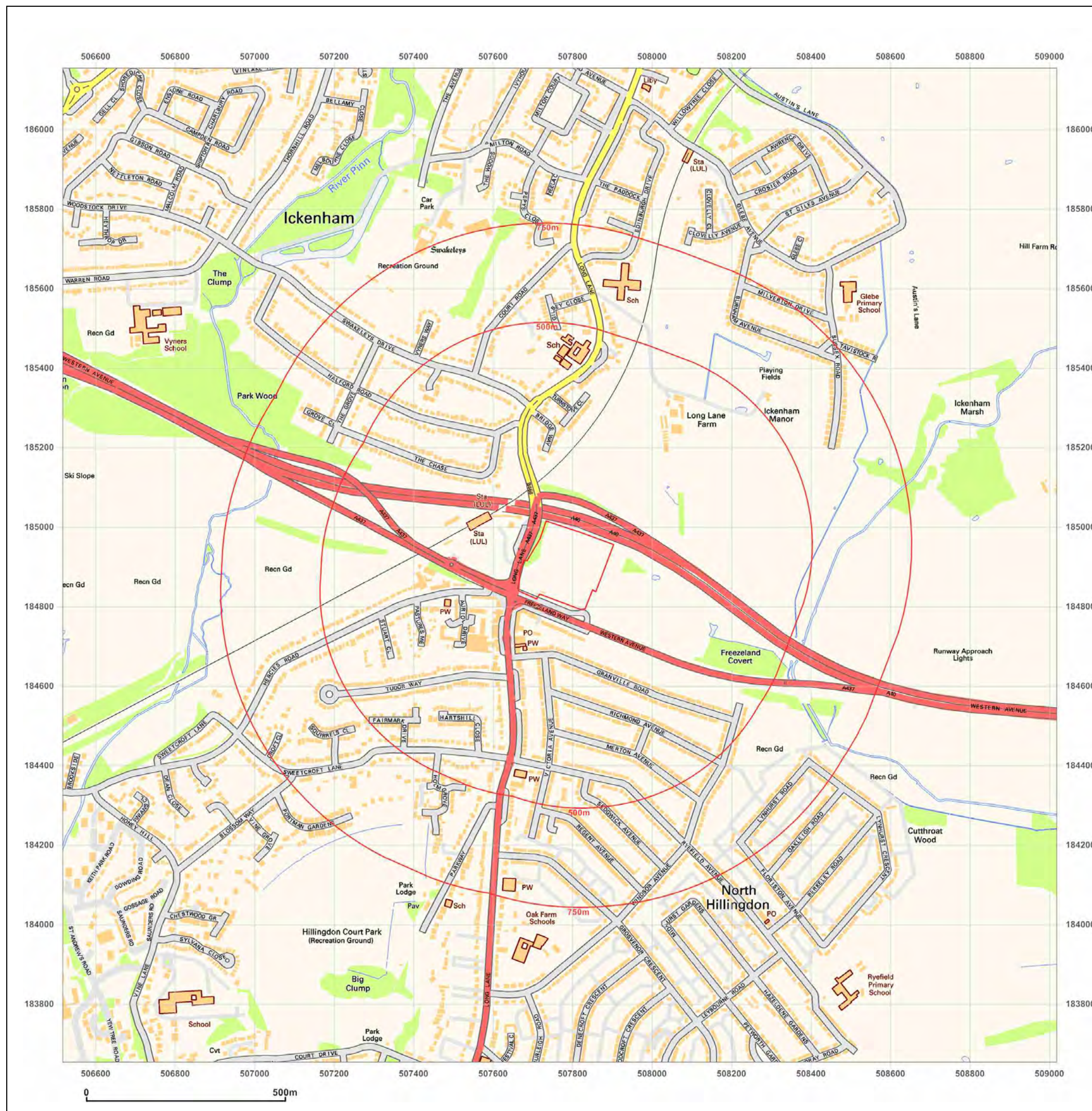


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GroundSure Reference: GS-1745868

Your Reference: 14-0724.01

Report Date 3 Nov 2014

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Date: 3 Nov 2014  
Reference: GS-1745868  
Client: Delta-Simons

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2013  
Grid Reference: 507768,184904  
Site Size: 3.38ha



# Contents Page

Contents Page .....	3
Overview of Findings.....	5
Using this report.....	9
1. Environmental Permits, Incidents and Registers Map.....	10
1. Environmental Permits, Incidents and Registers.....	11
1.1 Industrial Sites Holding Licences and/or Authorisations.....	11
1.1.1 Records of historic IPC Authorisations within 500m of the study site:.....	11
1.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:.....	11
1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:.....	11
1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:.....	11
1.1.5 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:.....	11
1.1.6 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:.....	12
1.1.7 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: .....	12
1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations:.....	12
1.1.9 Records of Licensed Discharge Consents within 500m of the study site:.....	12
1.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:.....	13
1.2 Dangerous or Hazardous Sites.....	13
1.3 Environment Agency Recorded Pollution Incidents.....	13
1.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:.....	13
1.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:.....	13
1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990.....	13
2. Landfill and Other Waste Sites Map.....	14
2. Landfill and Other Waste Sites.....	15
2.1 Landfill Sites.....	15
2.1.1 Records from Environment Agency landfill data within 1000m of the study site: .....	15
2.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site: .....	15
2.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:.....	15
2.1.4 Records of Local Authority landfill sites within 1500m of the study site:.....	15
2.2 Other Waste Sites.....	16
2.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site: .....	16
2.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site: .....	16
3. Current Land Use Map.....	17
3. Current Land Uses.....	18
3.1 Current Industrial Data.....	18
3.2 Petrol and Fuel Sites.....	18
3.3 Underground High Pressure Oil and Gas Pipelines.....	19
4. Geology.....	20
4.1 Artificial Ground and Made Ground.....	20
4.2 Superficial Ground and Drift Geology .....	20
4.3 Bedrock and Solid Geology .....	20
5. Hydrogeology and Hydrology.....	21
5a. Aquifer Within Superficial Geology.....	21
5b. Aquifer Within Bedrock Geology and Abstraction Licenses.....	22
5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses.....	23
5d. Hydrology Source Protection Zones within confined aquifer.....	24
5 e. Hydrology – Detailed River Network and River Quality.....	25
5. Hydrogeology and Hydrology.....	26
5.1 Aquifer within Superficial Deposits.....	26
5.2 Aquifer within Bedrock Deposits.....	26



5.3 Groundwater Abstraction Licences.....	27
5.4 Surface Water Abstraction Licences.....	27
5.5 Potable Water Abstraction Licences.....	27
5.6 Source Protection Zones.....	27
5.7 Source Protection Zones within Confined Aquifer.....	28
5.8 Groundwater Vulnerability and Soil Leaching Potential.....	28
5.9 River Quality.....	28
5.9.1 Biological Quality.....	28
5.9.2 Chemical Quality.....	28
5.10 Detailed River Network.....	29
5.11 Surface Water Features .....	29
6. Environment Agency Flood Map for planning (from rivers and the sea).....	30
6. Flooding.....	31
6.1 Zone 2 Flooding.....	31
6.2 Zone 3 Flooding.....	31
6.3 Flood Defences.....	31
6.4 Areas benefiting from Flood Defences.....	31
6.5 Areas benefiting from Flood Storage.....	31
6.6 Groundwater Flooding Susceptibility Areas.....	32
6.6.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site?.....	32
6.6.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?.....	32
6.7 Groundwater Flooding Confidence Areas.....	32
7. Designated Environmentally Sensitive Sites Map.....	33
7. Designated Environmentally Sensitive Sites.....	34
7.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:.....	34
7.2 Records of National Nature Reserves (NNR) within 2000m of the study site:.....	34
7.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:.....	34
7.4 Records of Special Protection Areas (SPA) within 2000m of the study site:.....	34
7.5 Records of Ramsar sites within 2000m of the study site:.....	34
7.6 Records of Ancient Woodland within 2000m of the study site: .....	35
7.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:.....	35
7.8 Records of World Heritage Sites within 2000m of the study site:.....	35
7.9 Records of Environmentally Sensitive Areas within 2000m of the study site: .....	35
7.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: .....	35
7.11 Records of National Parks (NP) within 2000m of the study site: .....	35
7.12 Records of Nitrate Sensitive Areas within 2000m of the study site:.....	36
7.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:.....	36
8. Natural Hazards Findings.....	37
8.1 Detailed BGS GeoSure Data.....	37
8.1.1 Shrink Swell.....	37
8.1.2 Landslides.....	37
8.1.3 Soluble Rocks.....	38
8.1.4 Compressible Ground.....	38
8.1.5 Collapsible Rocks.....	38
8.1.6 Running Sand.....	39
9. Mining.....	40
9.1 Coal Mining.....	40
9.2 Shallow Mining.....	40
9.3 Brine Affected Areas .....	40
Contact Details.....	41
Standard Terms and Conditions.....	42



# Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Environmental Permits, Incidents and Registers		On-site	0-50m	51-250	251-500		
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations							
1.1.1	Records of historic IPC Authorisations	0	0	0	0		
1.1.2	Records of Part A(1) and IPPC Authorised Activities	0	0	0	0		
1.1.3	Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0		
1.1.4	Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0		
1.1.5	Records of List 1 Dangerous Substances Inventory sites	0	0	0	0		
1.1.6	Records of List 2 Dangerous Substances Inventory sites	0	0	0	0		
1.1.7	Records of Part A(2) and Part B Activities and Enforcements	0	0	1	0		
1.1.8	Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0		
1.1.9	Records of Licensed Discharge Consents	0	0	2	0		
1.1.10	Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0		
1.2	Records of COMAH and NIHHS sites	0	0	0	0		
1.3 Environment Agency Recorded Pollution Incidents							
1.3.1	National Incidents Recording System, List 2	0	0	0	0		
1.3.2	National Incidents Recording System, List 1	0	0	0	0		
1.4	Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0		
Section 2: Landfill and Other Waste Sites		On-site	0-50m	51-250	251-500	501-1000	1000-5000
2.1 Landfill Sites							
2.1.1	Environment Agency Registered Landfill Sites	0	0	0	0	0	Not searched
2.1.2	Environment Agency Historic Landfill Sites	0	0	0	1	0	0
2.1.3	BGS/DoE Landfill Site Survey	0	0	0	0	0	0
2.1.4	GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	0
2.2 Landfill and Other Waste Sites Findings							
2.2.1	Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
2.2.2	Environment Agency Licensed Waste Sites	0	0	0	0	0	0



Section 3: Current Land Use	On-site	0-50m	51-250	251-500
3.1 Current Industrial Sites Data	1	0	12	Not searched
3.2 Records of Petrol and Fuel Sites	0	0	0	0
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0

Section 4: Geology	
4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	Yes
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	None
4.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 5: Hydrogeology and Hydrology	0-500m					
5.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	No					
5.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
5.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	1	0
5.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
5.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
5.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
5.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
5.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	0	0	0	0	Not searched	Not searched
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
5.9 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
5.10 Detailed River Network entries within 500m of the site	0	0	0	2	Not searched	Not searched
5.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched



## Section 6: Flooding

6.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	Yes
6.2 Are there any Environment Agency Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Moderate

## Section 7: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
7.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
7.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.5 Records of Ramsar sites	0	0	0	0	0	0
7.6 Records of Ancient Woodlands	0	0	0	0	0	1
7.7 Records of Local Nature Reserves (LNR)	0	0	0	0	1	0
7.8 Records of World Heritage Sites	0	0	0	0	0	0
7.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
7.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.11 Records of National Parks	0	0	0	0	0	0
7.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.13 Records of Nitrate Vulnerable Zones	0	0	0	1	0	0



## Section 8: Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?	Low
8.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Low
8.1.2 What is the maximum Landslides hazard rating identified on the study site?	Moderate
8.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
8.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Very Low
8.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
8.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Very Low

## Section 9: Mining

9.1 Are there any coal mining areas within 75m of the study site?	No
9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site?	Low
9.3 Are there any brine affected areas within 75m of the study site?	No



# Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between GroundSure and the Client. The document contains the following sections:

## 1. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

## 2. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

## 3. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure underground oil and gas pipelines.

## 4. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

## 5. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

## 6. Flooding

Provides information on surface water flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

## 7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

## 8. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence.

## 9. Mining

Provides information on areas of coal and shallow mining.

## 10. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, GroundSure provide a free Technical Helpline (08444 159000) for further information and guidance.

### Note: Maps

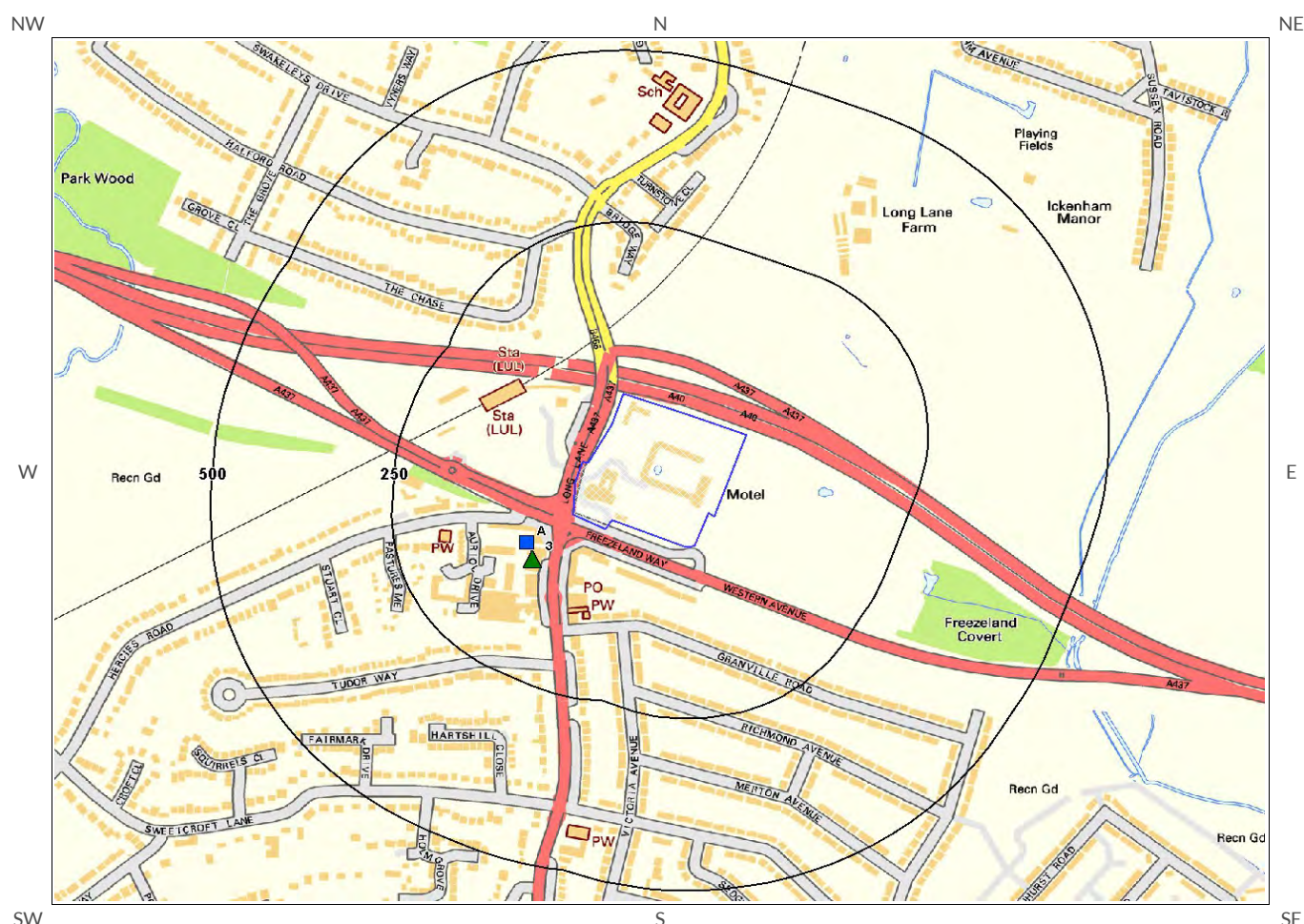
Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

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

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



# 1. Environmental Permits, Incidents and Registers Map



Environmental Permits,  
Incidents and Registers Legend

Mapping  
sourced from  
**Ordnance Survey**

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Ordnance Survey license 100035207.

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





# 1. Environmental Permits, Incidents and Registers

## 1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

### 1.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

---

### 1.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

---

### 1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

---

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

0

Database searched and no data found.

---

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

0

Database searched and no data found.

---



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

0

Database searched and no data found.

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

1

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

ID	Distance	Direction	NGR	Details
3	88.0	SW	507607 184773	Address: First Choice Dry Cleaners, 321 Long Lane, Hillingdon, Middlesex, UB10 9JU Process: Dry Cleaning Processs - PG 6/46 (11) Status: Current Permit Permit Type: Part B Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

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

0

Database searched and no data found.

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

2

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

ID	Distance	Direction	NGR	Details
1A	75.0	SW	507600 184800	Address: Western Avenue, Hillingdon, Western Avenue, Hillingdon Effluent Type: Sewage Discharges - Pumping Station - Water Company Permit Number: TEMP.2215 Permit Version: 1 Receiving Water: Pinn Status: Temporary Consents (water Act 1989, Section 113) Issue date: 2/11/1989 Effective Date: 2/11/1989 Revocation Date: 2/9/2010
2A	75.0	SW	507600 184800	Address: Western Avenue, Hillingdon, Western Avenue, Hillingdon Effluent Type: Sewage Discharges - Pumping Station - Water Company Permit Number: TEMP.2215 Permit Version: 2 Receiving Water: Pinn Status: Varied Under Epr 2010 Issue date: 3/9/2010 Effective Date: 3/9/2010 Revocation Date: -



1.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

---

## 1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

---

## 1.3 Environment Agency Recorded Pollution Incidents

1.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

0

Database searched and no data found.

---

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

0

Database searched and no data found.

---

## 1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

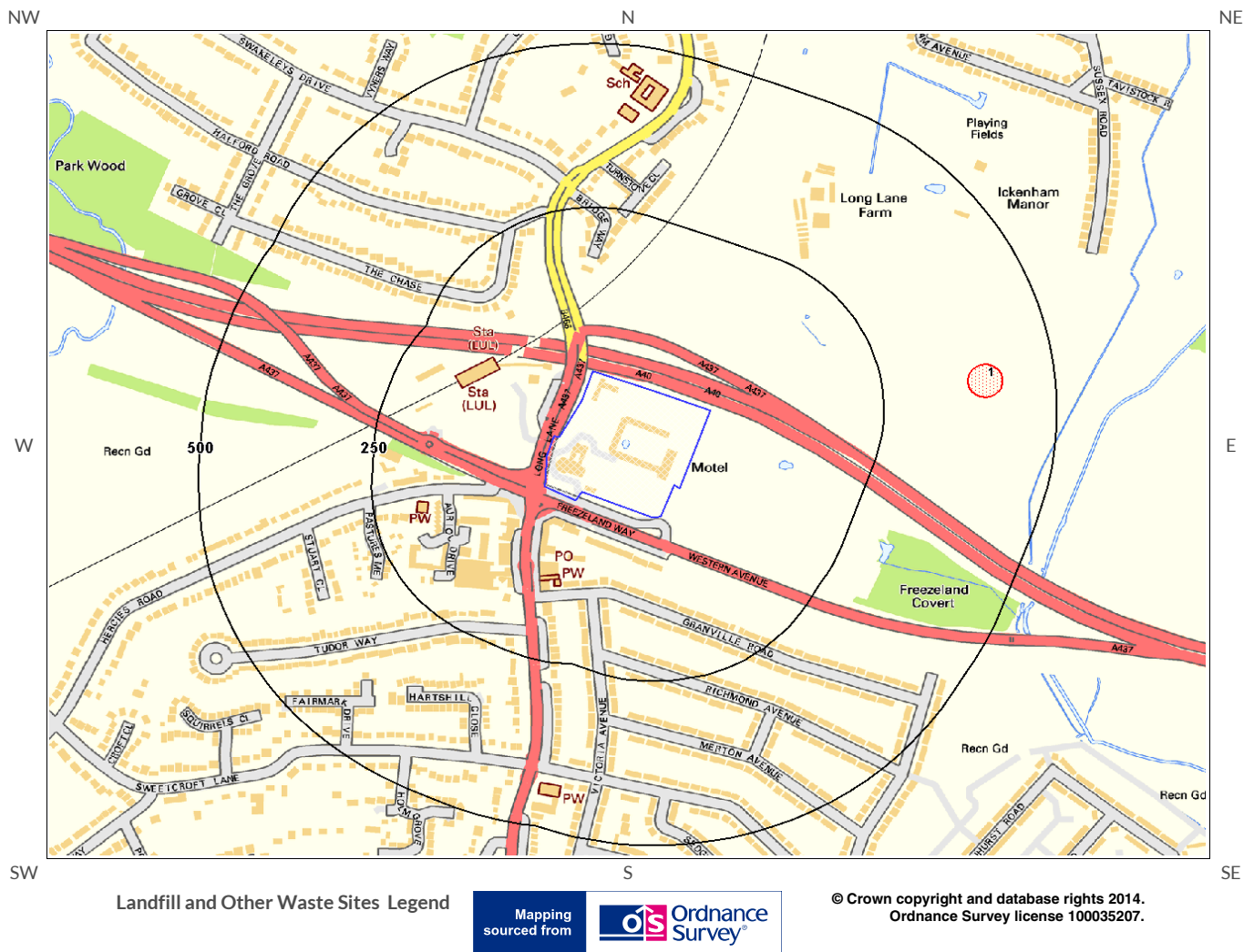
How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?

0

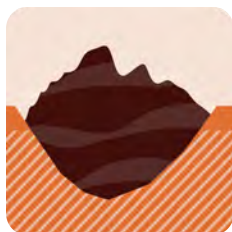
Database searched and no data found.

---

## 2. Landfill and Other Waste Sites Map







## 2. Landfill and Other Waste Sites

### 2.1 Landfill Sites

#### 2.1.1 Records from Environment Agency landfill data within 1000m of the study site:

0

Database searched and no data found.

#### 2.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site:

1

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
1	374.0	E	508200 185000	Site Address: Lay-by Western Avenue Long Lane Farm, Hillingdon Waste Licence: Yes Site Reference: HIL062 DL413 Waste Type: Inert, Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 18-Nov-1992 Licence Surrendered: 14-Sep-1994 Licence Hold Address: - Operator: -

#### 2.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

#### 2.1.4 Records of Local Authority landfill sites within 1500m of the study site:

0

Database searched and no data found.

## 2.2 Other Waste Sites

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

0

Database searched and no data found.

---

2.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

---