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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>	
<b>Geology:</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 actual ground conditions identified from the current investigation are summarised in Section 4.0.</p>
<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.

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## **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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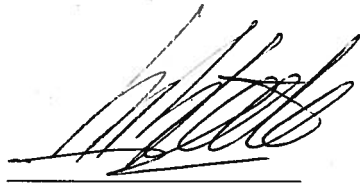
Cerys Baldwin

**Graduate Geo-Environmental Engineer**

12/06/15

Date

This Report was reviewed by:



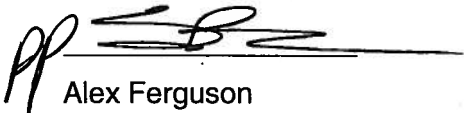
Simon Steele

**Project Manager**

12/6/15

Date

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pp 

Alex Ferguson

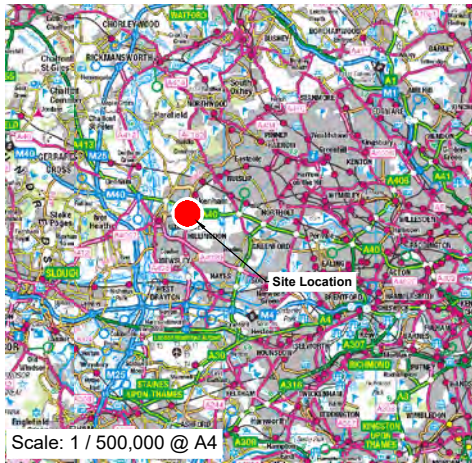
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12/6/15

Date

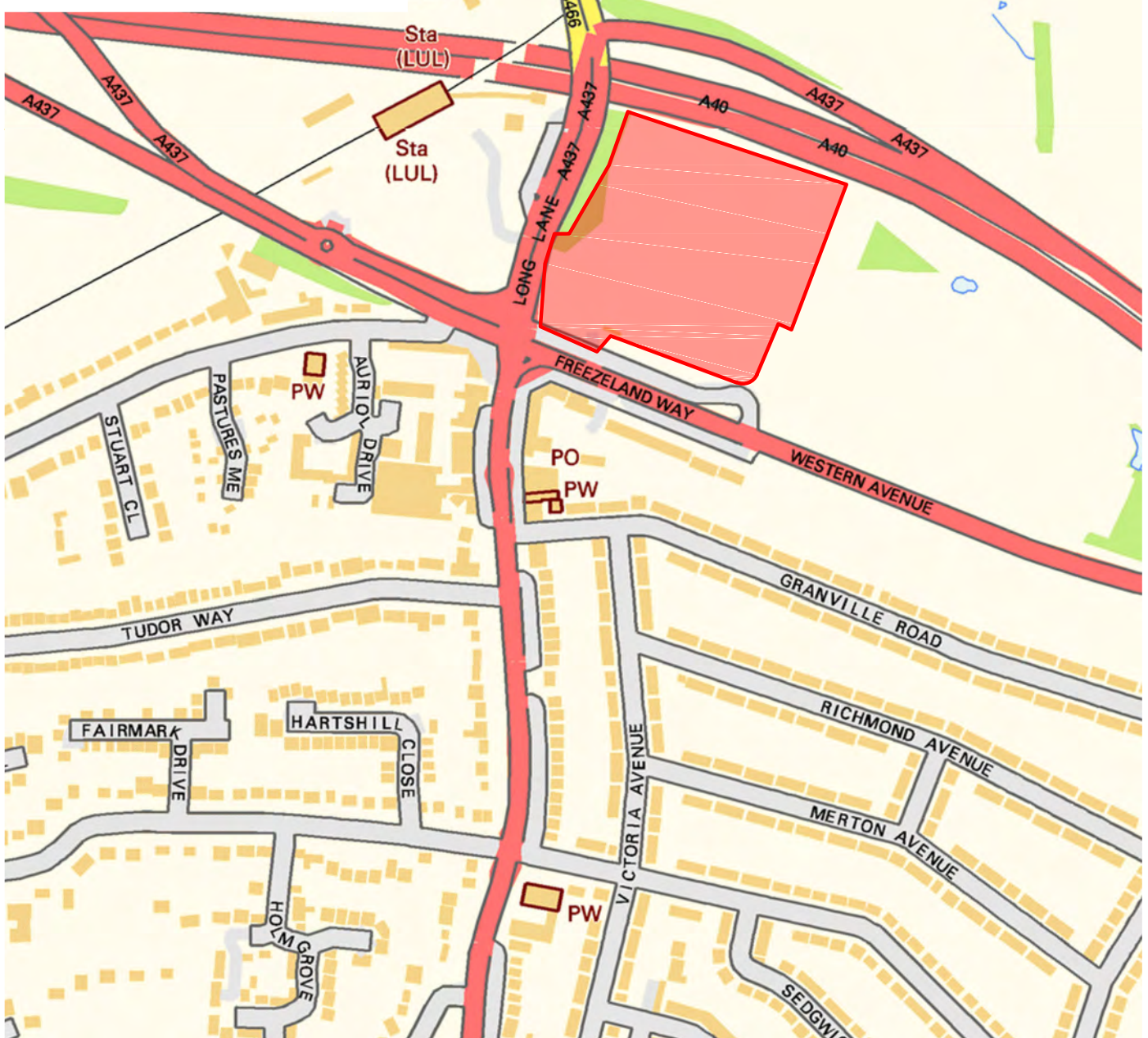






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Site Boundary



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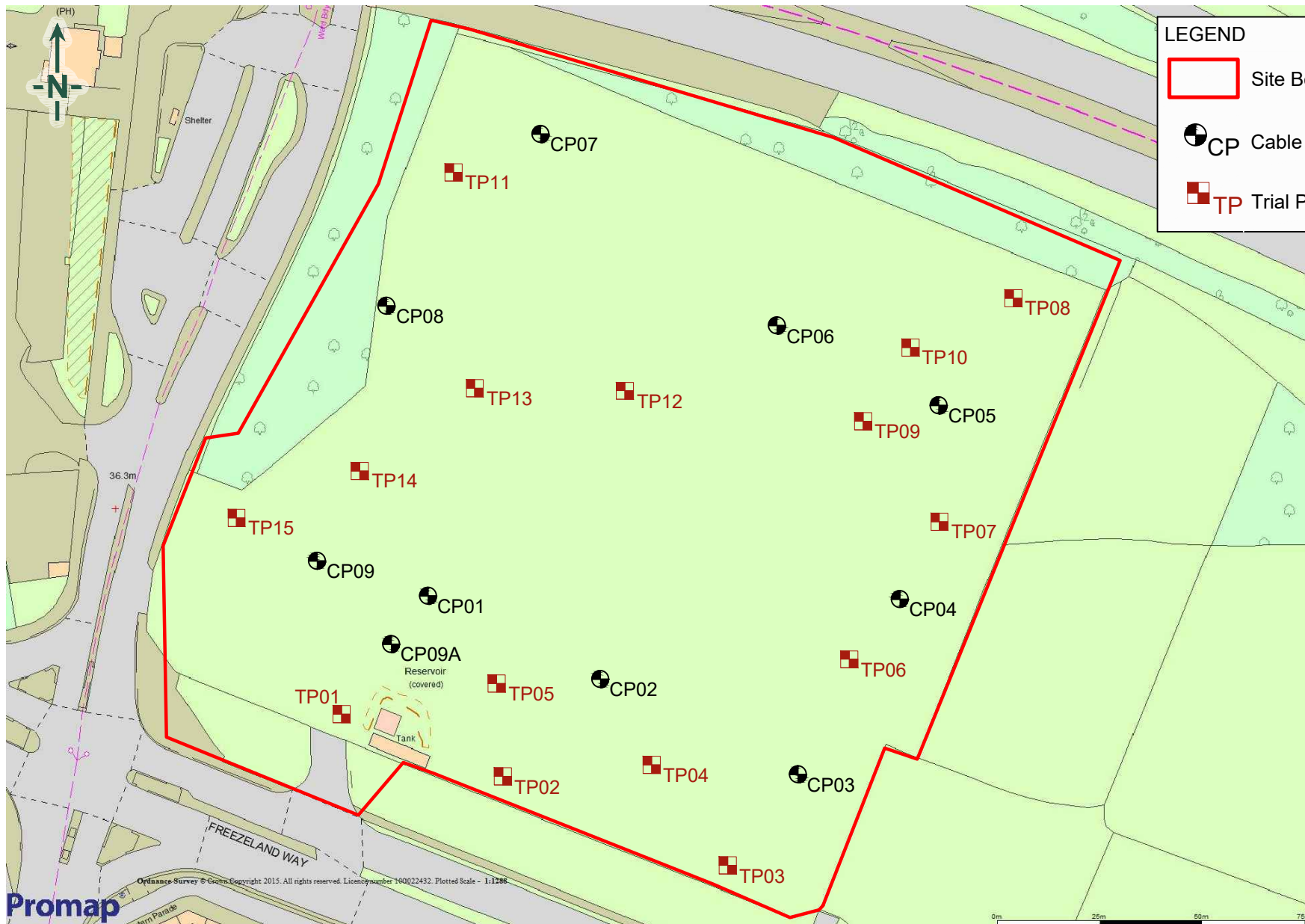


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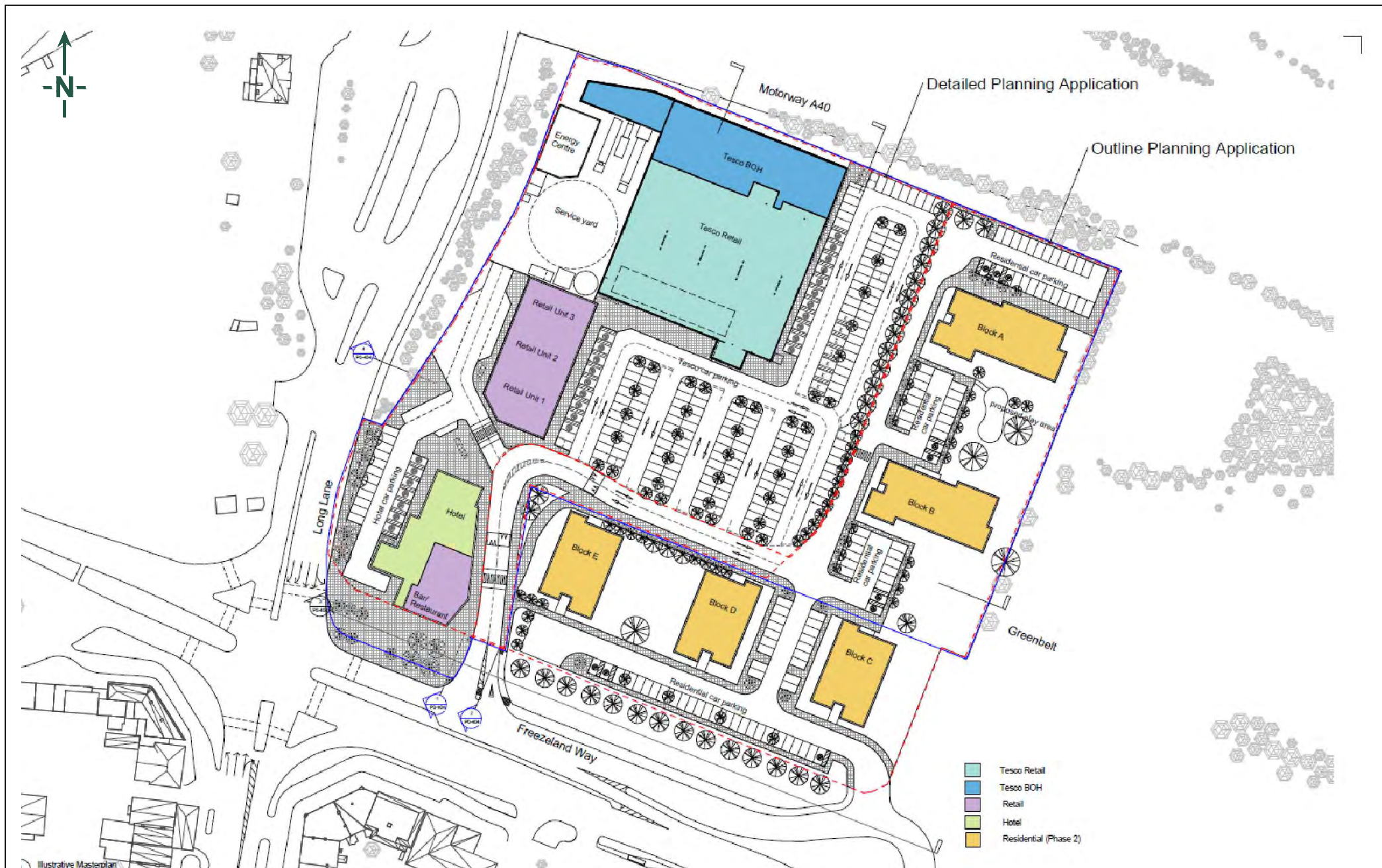
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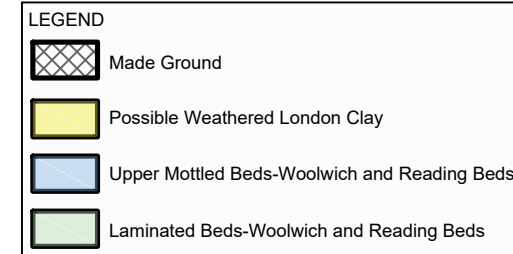
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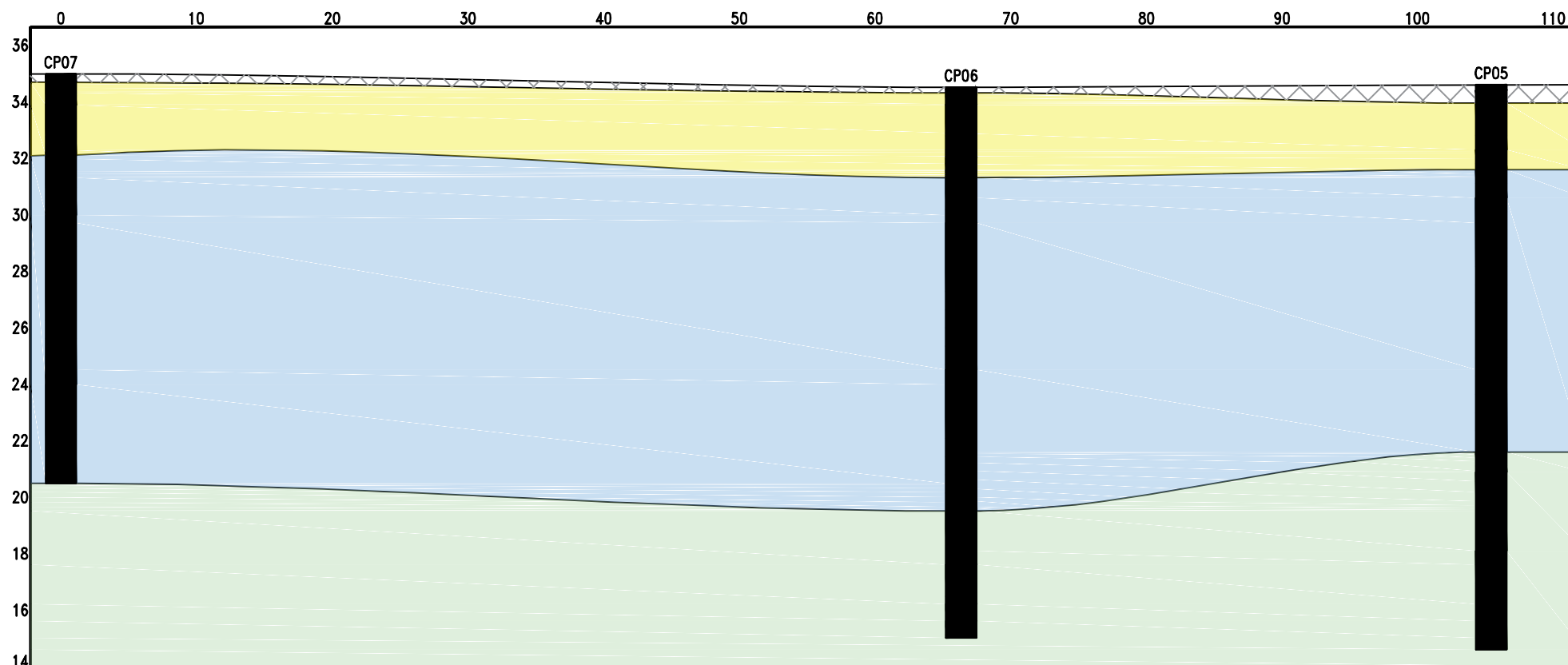
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**A West**

**East A1**



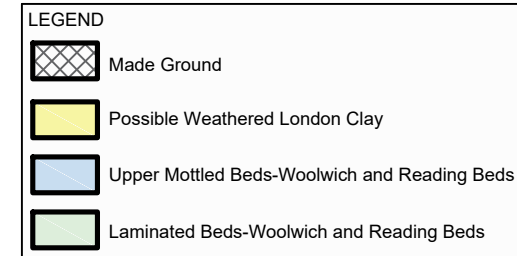
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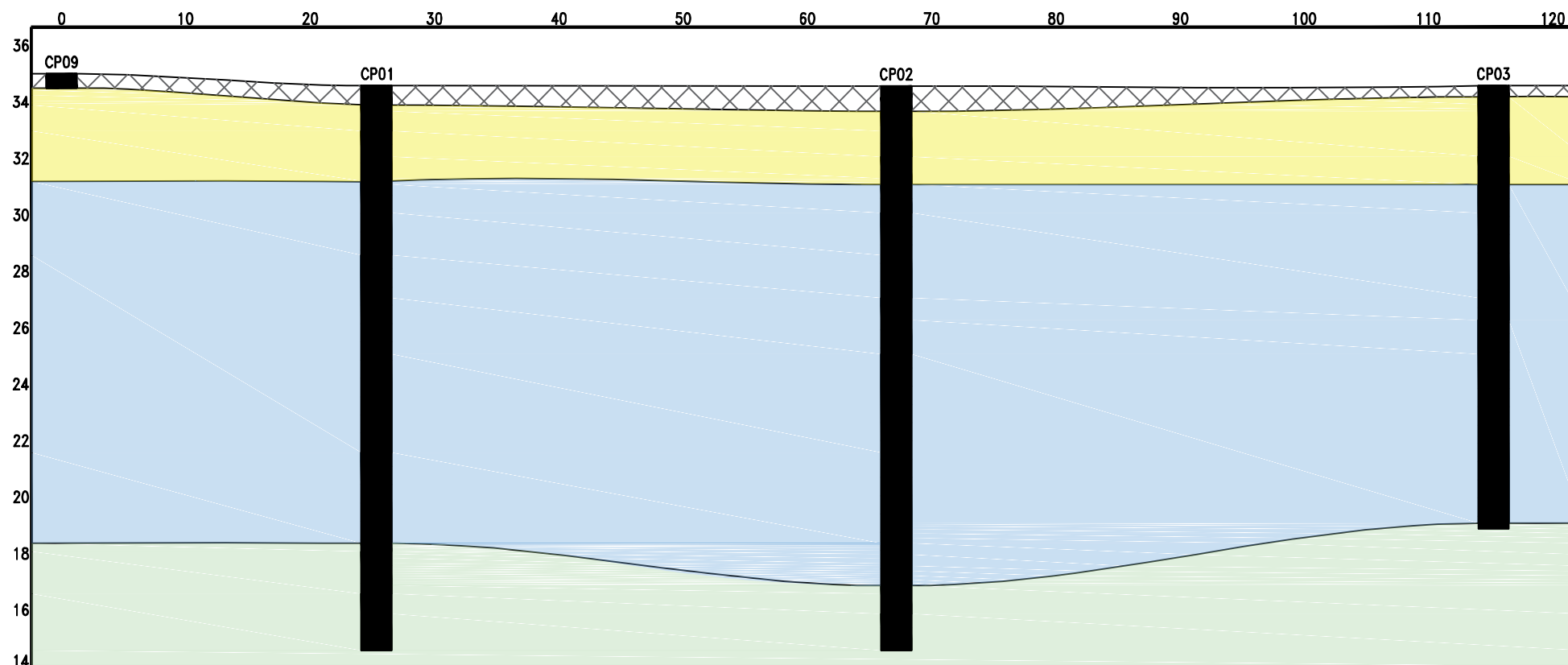
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**East B1**

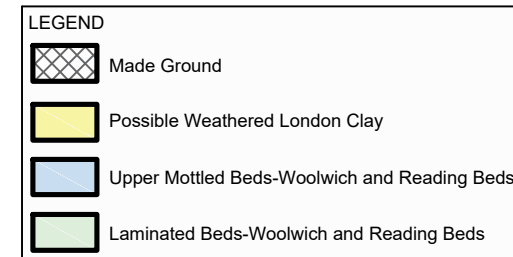


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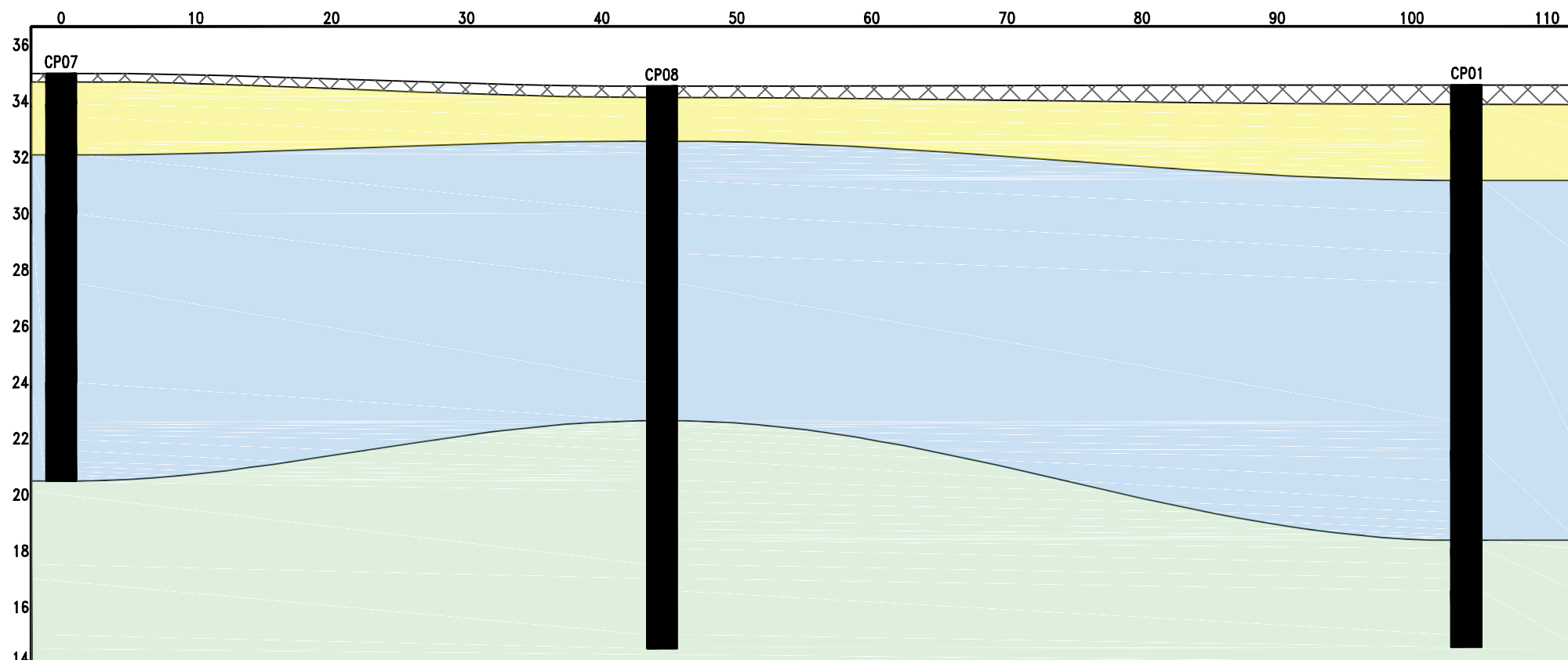
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C North

South C1

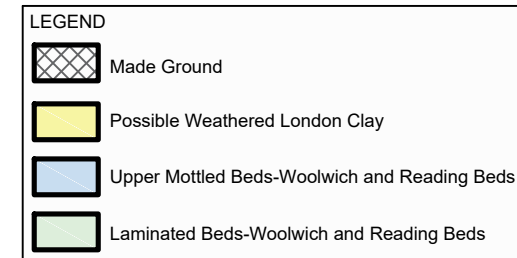


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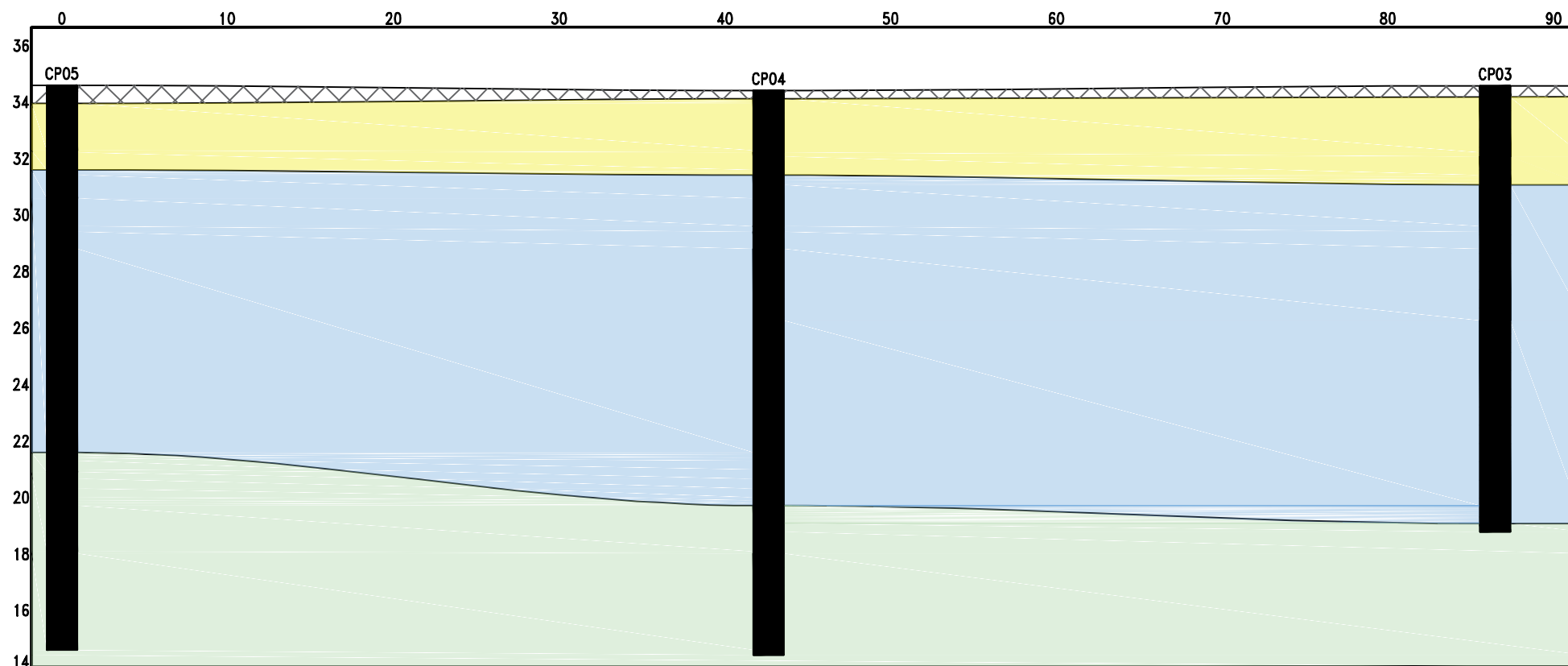
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**D North**

**South D1**

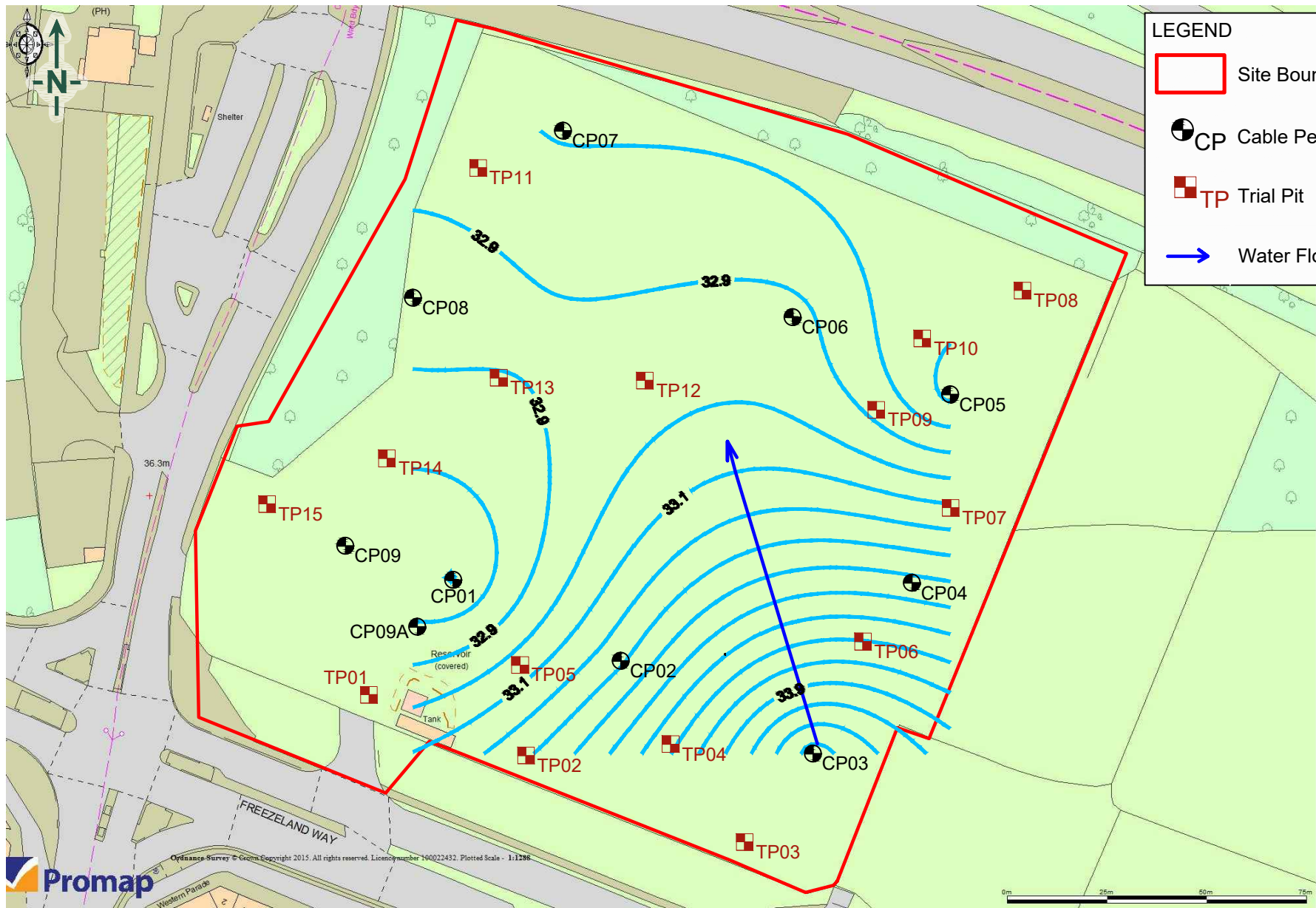


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**LEGEND**

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

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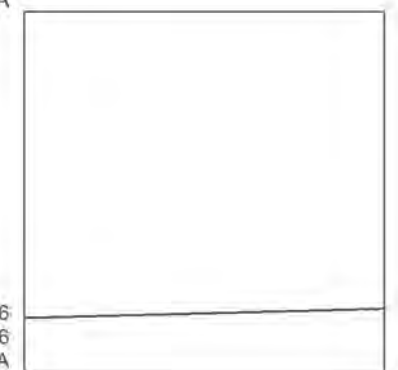
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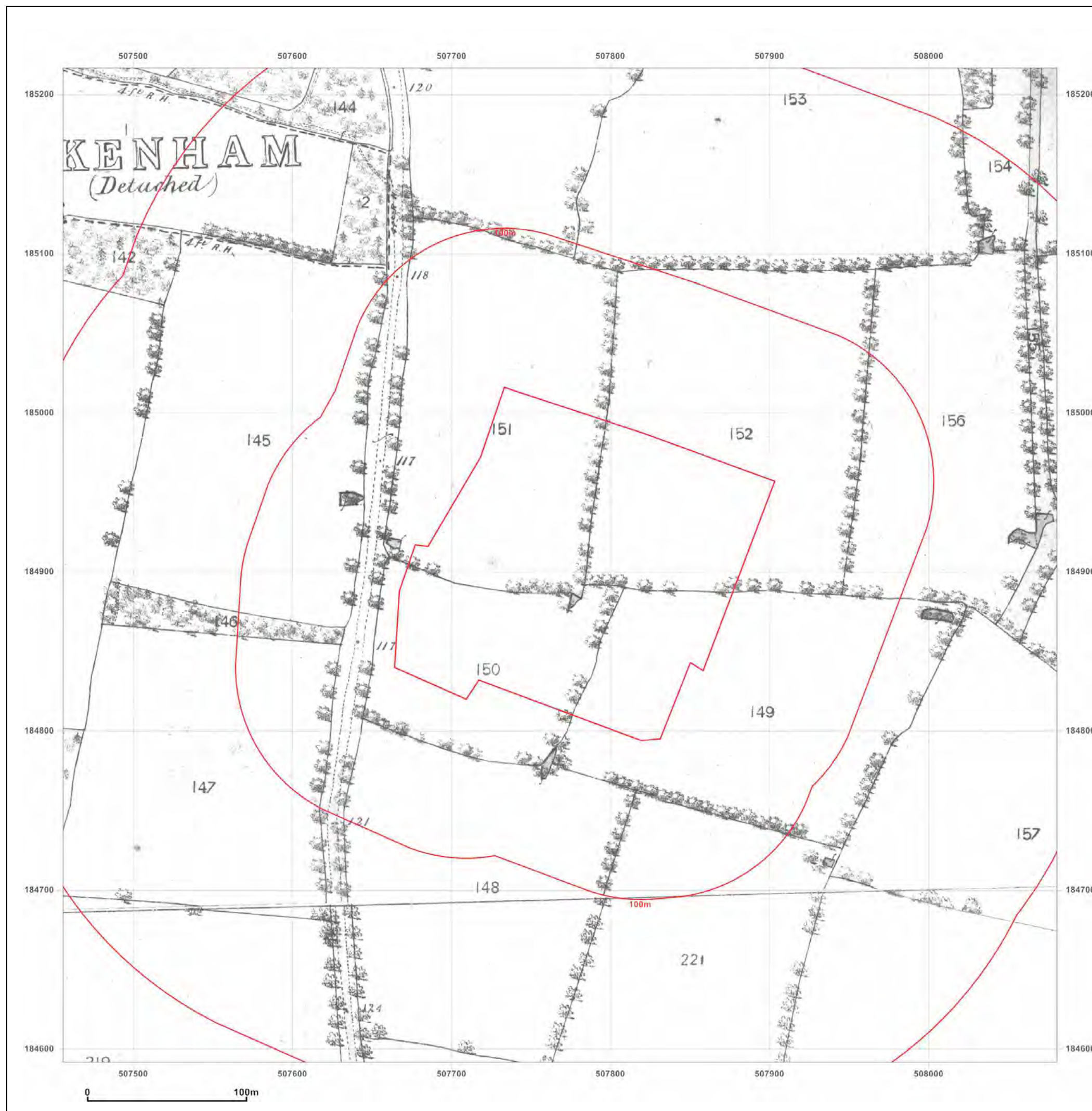


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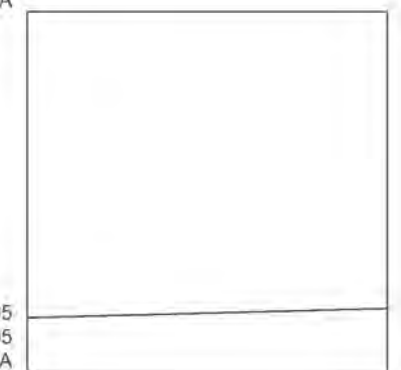
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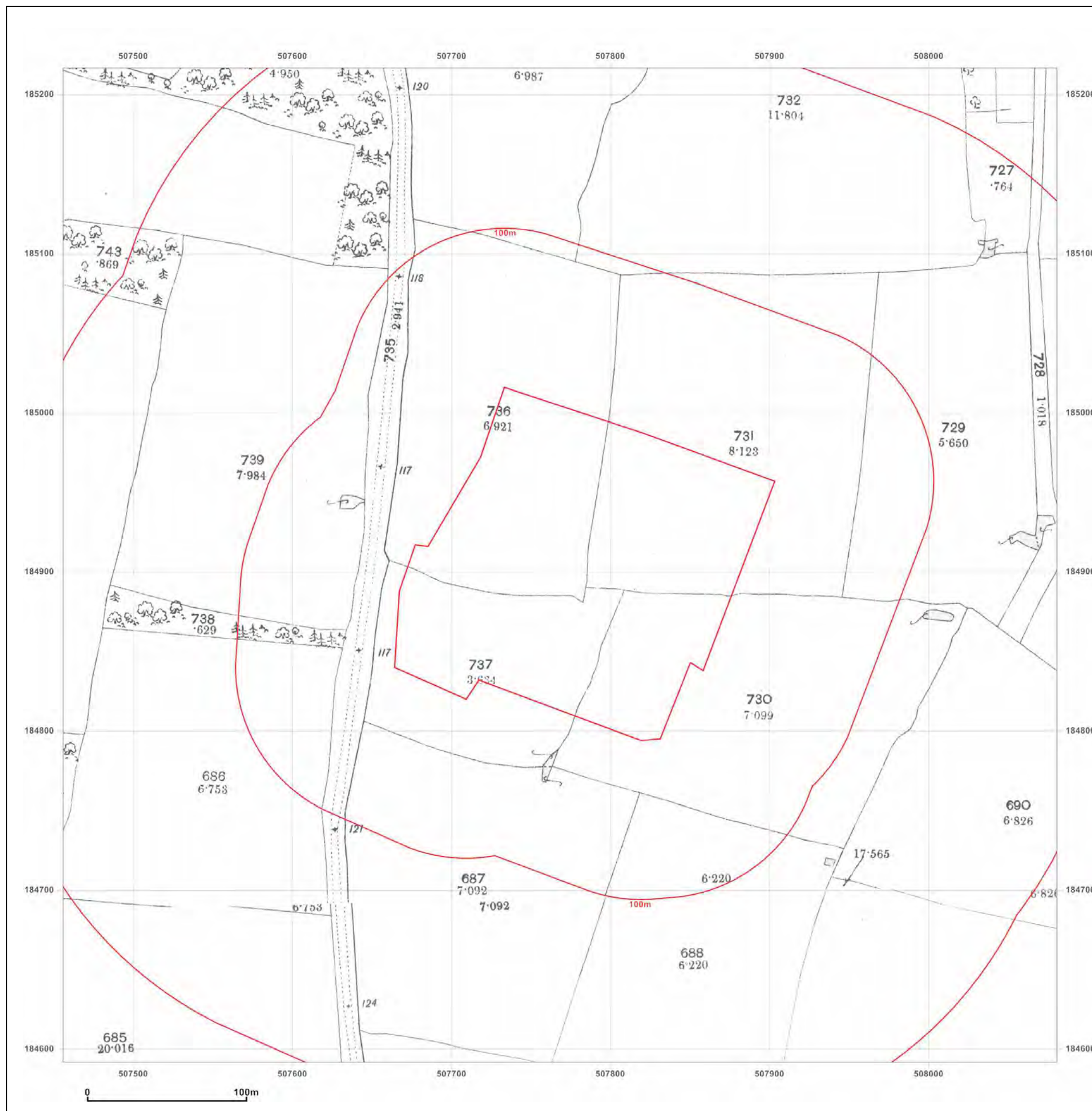


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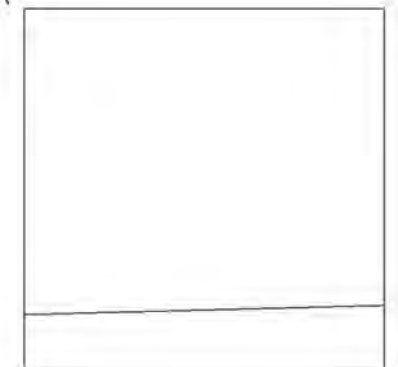
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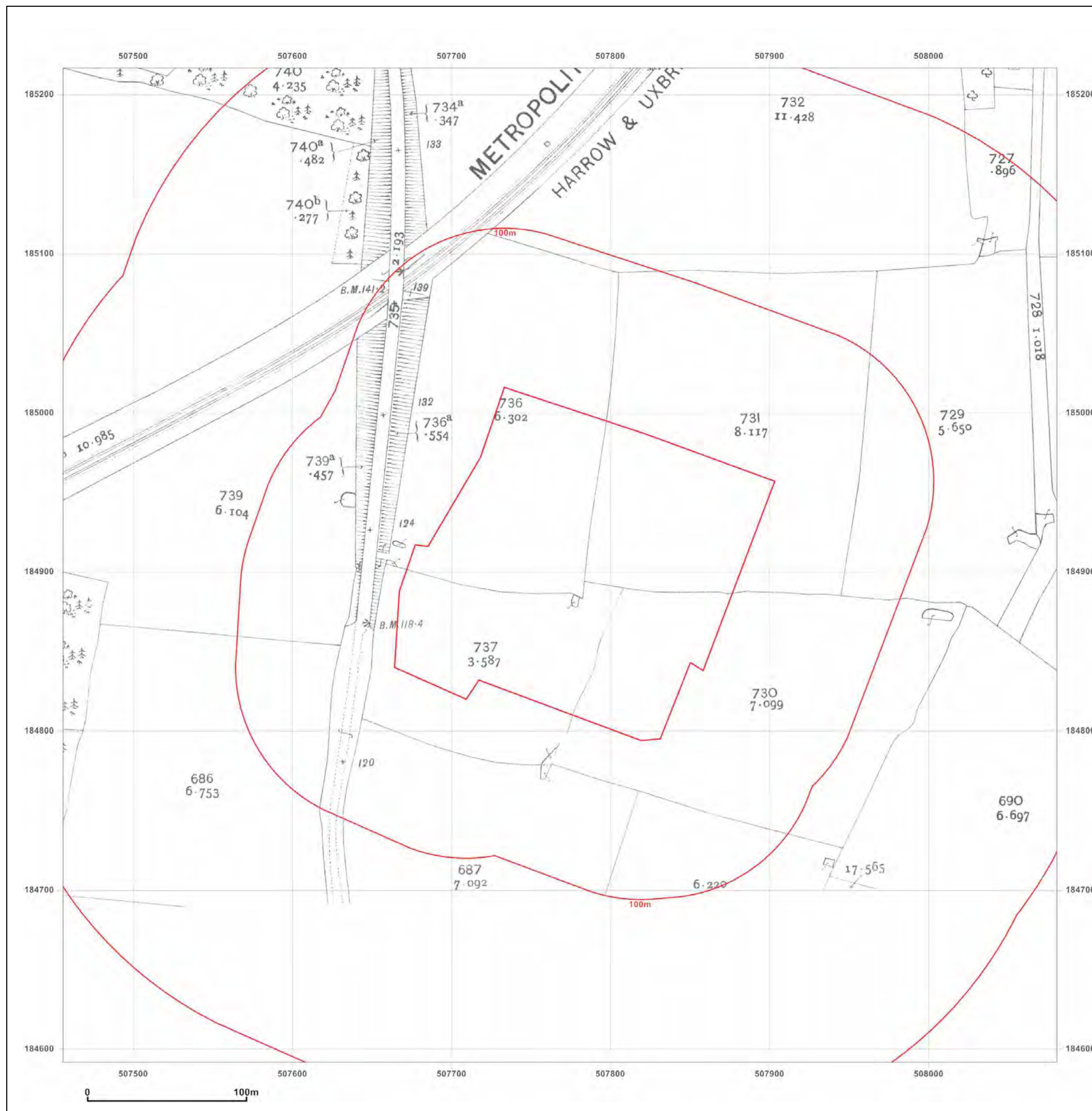


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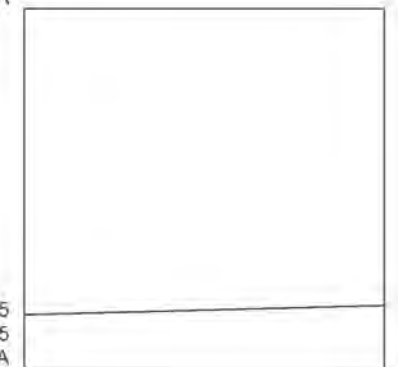
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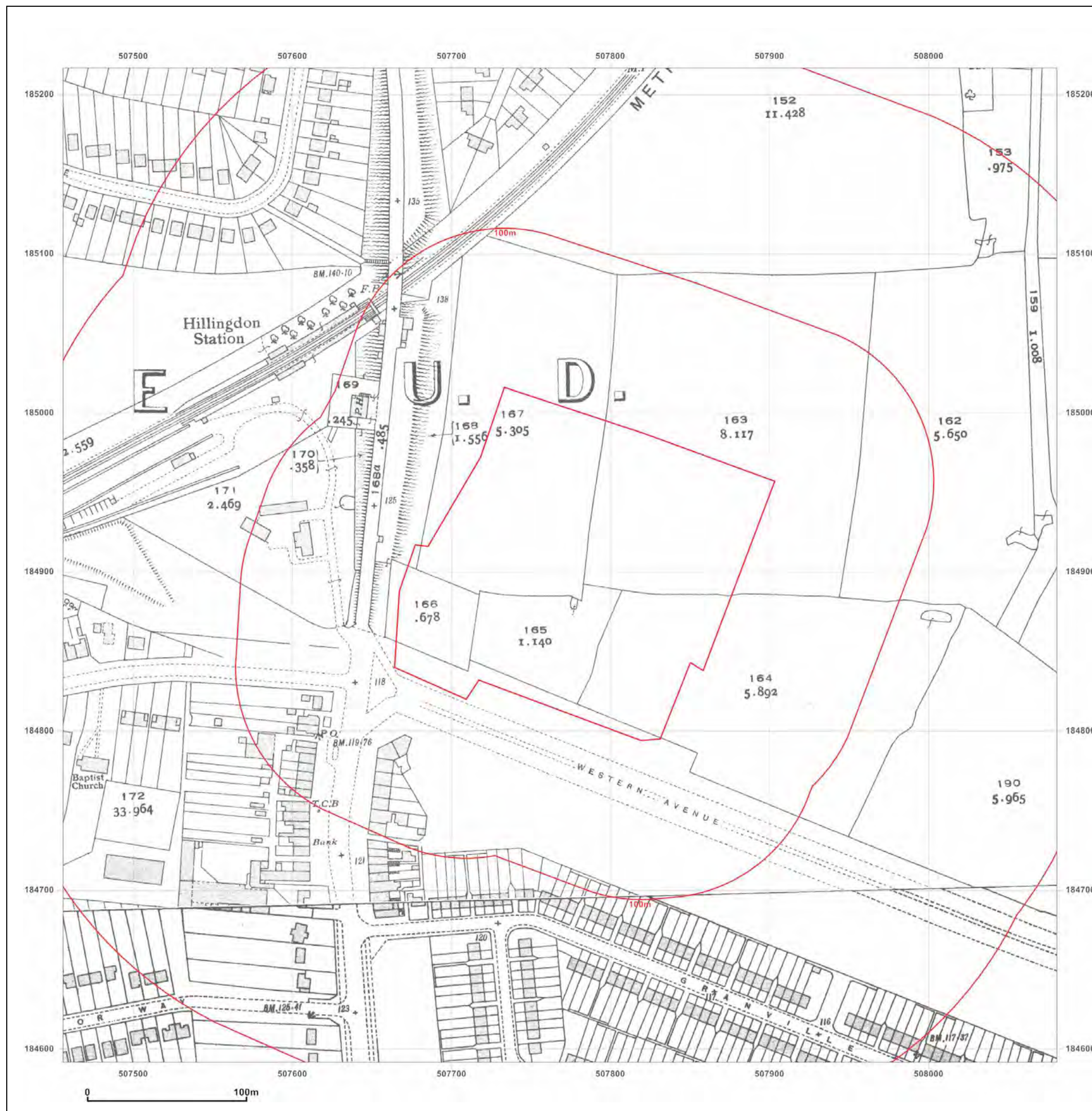


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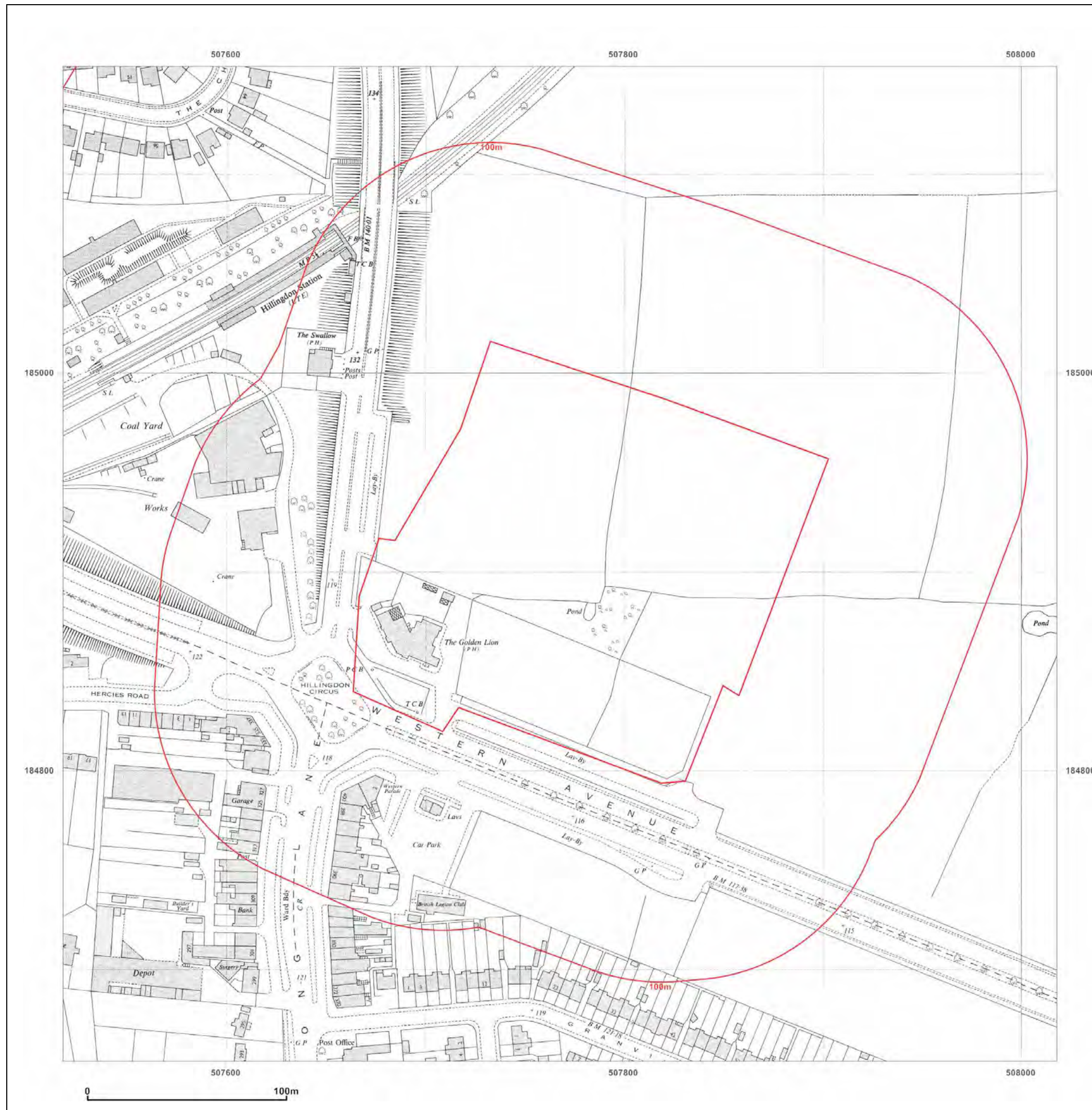


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**Client Ref:** 14-0724.01  
**Report Ref:** GS-1745867  
**Grid Ref:** 507768, 184904

**Map Name:** National Grid

**Map date:** 1960-1962

**Scale:** 1:2,500

**Printed at:** 1:2,500



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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



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Edition N/A  
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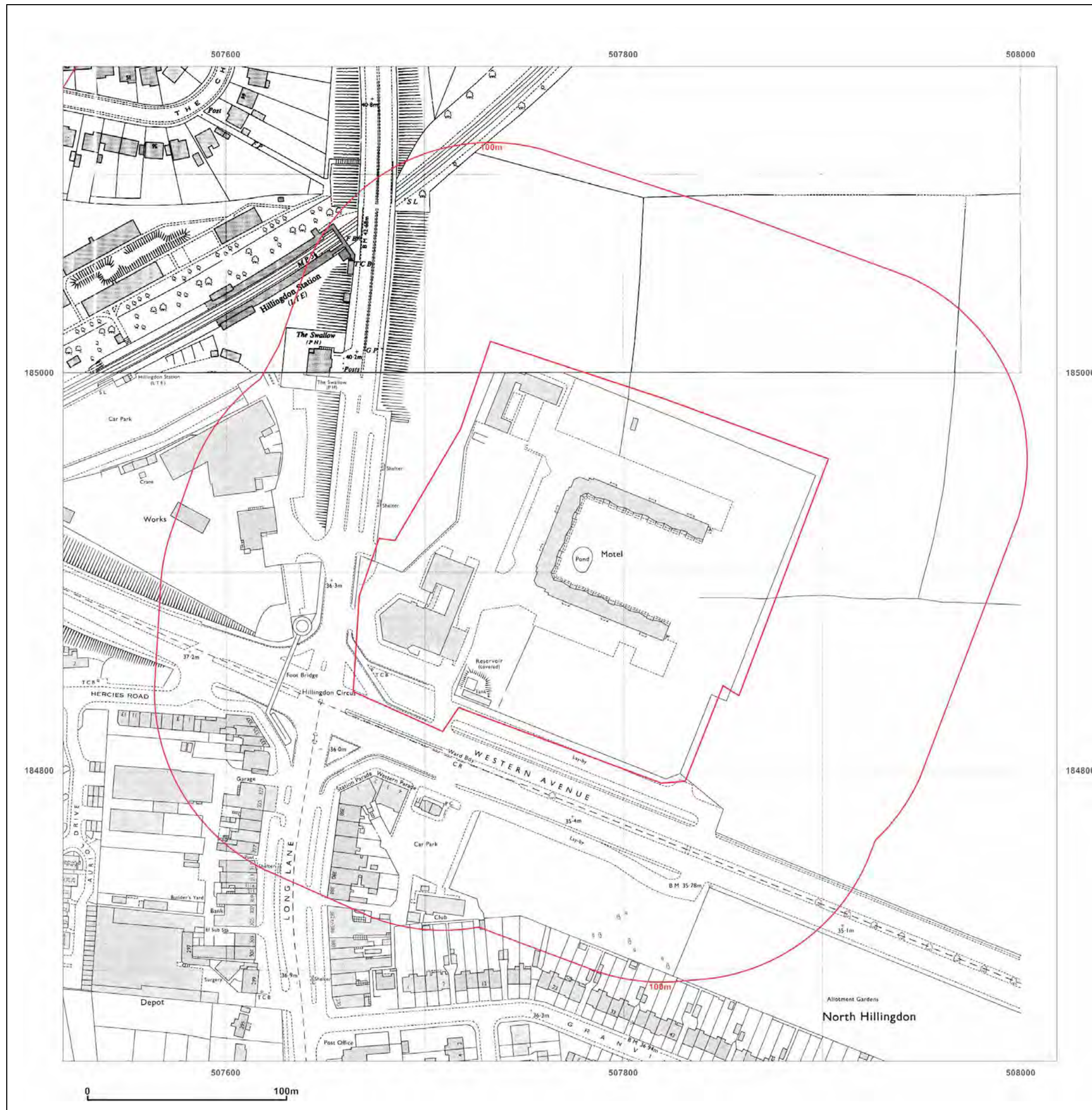


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**Report Ref:** GS-1745867  
**Grid Ref:** 507768, 184904

**Map Name:** National Grid

**Map date:** 1992

**Scale:** 1:1,250

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



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Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1994

Scale: 1:1,250

Printed at: 1:2,000



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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  
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Surveyed 1864  
Revised 1864  
Edition N/A  
Copyright N/A  
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Revised 1866  
Edition N/A  
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Revised 1865  
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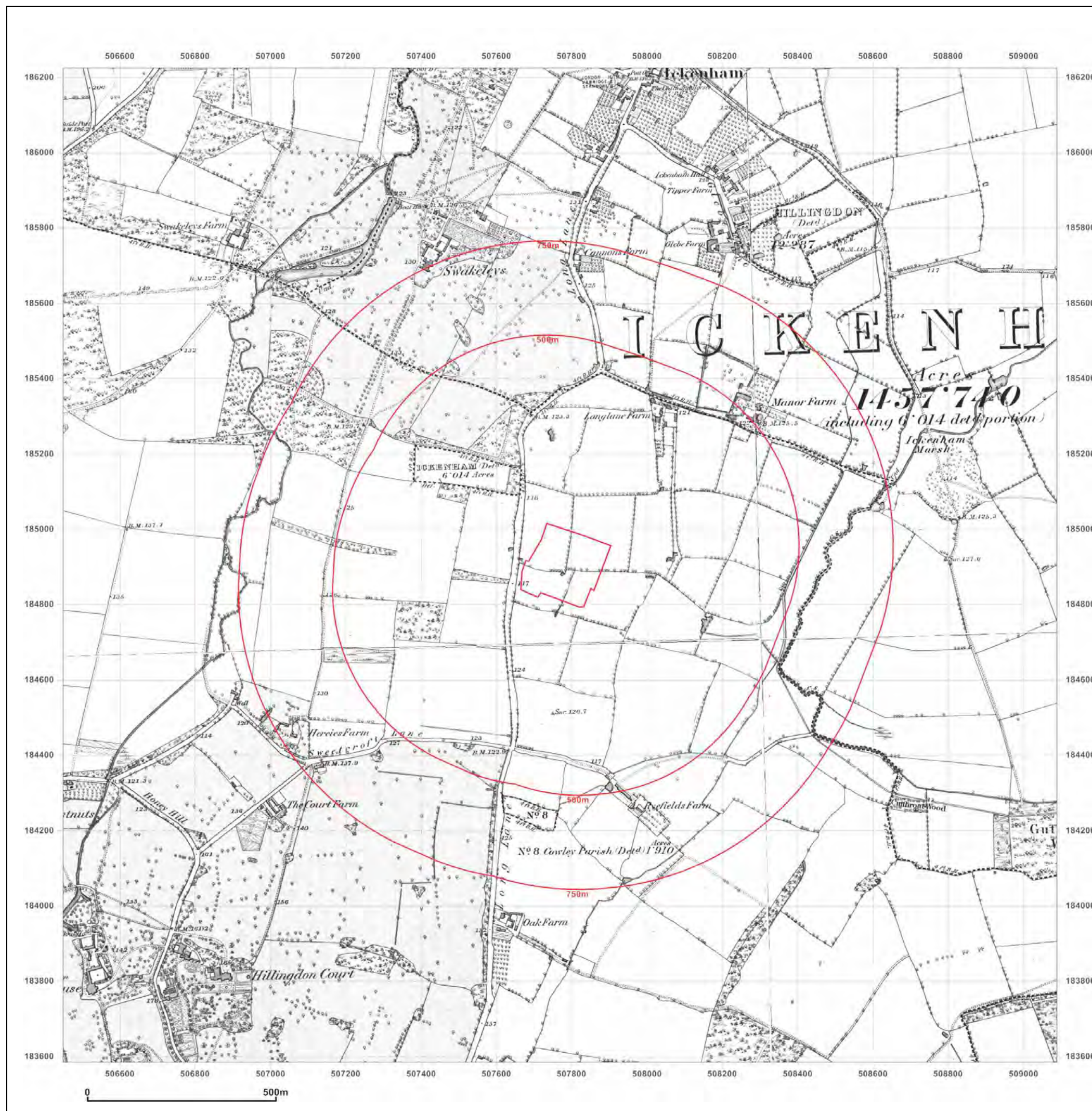


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**Client Ref:** 14-0724.01  
**Report Ref:** GS-1745867  
**Grid Ref:** 507768, 184904

**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  
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Surveyed 1864  
Revised 1894  
Edition N/A  
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Surveyed 1864  
Revised 1895  
Edition N/A  
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Surveyed 1864  
Revised 1894  
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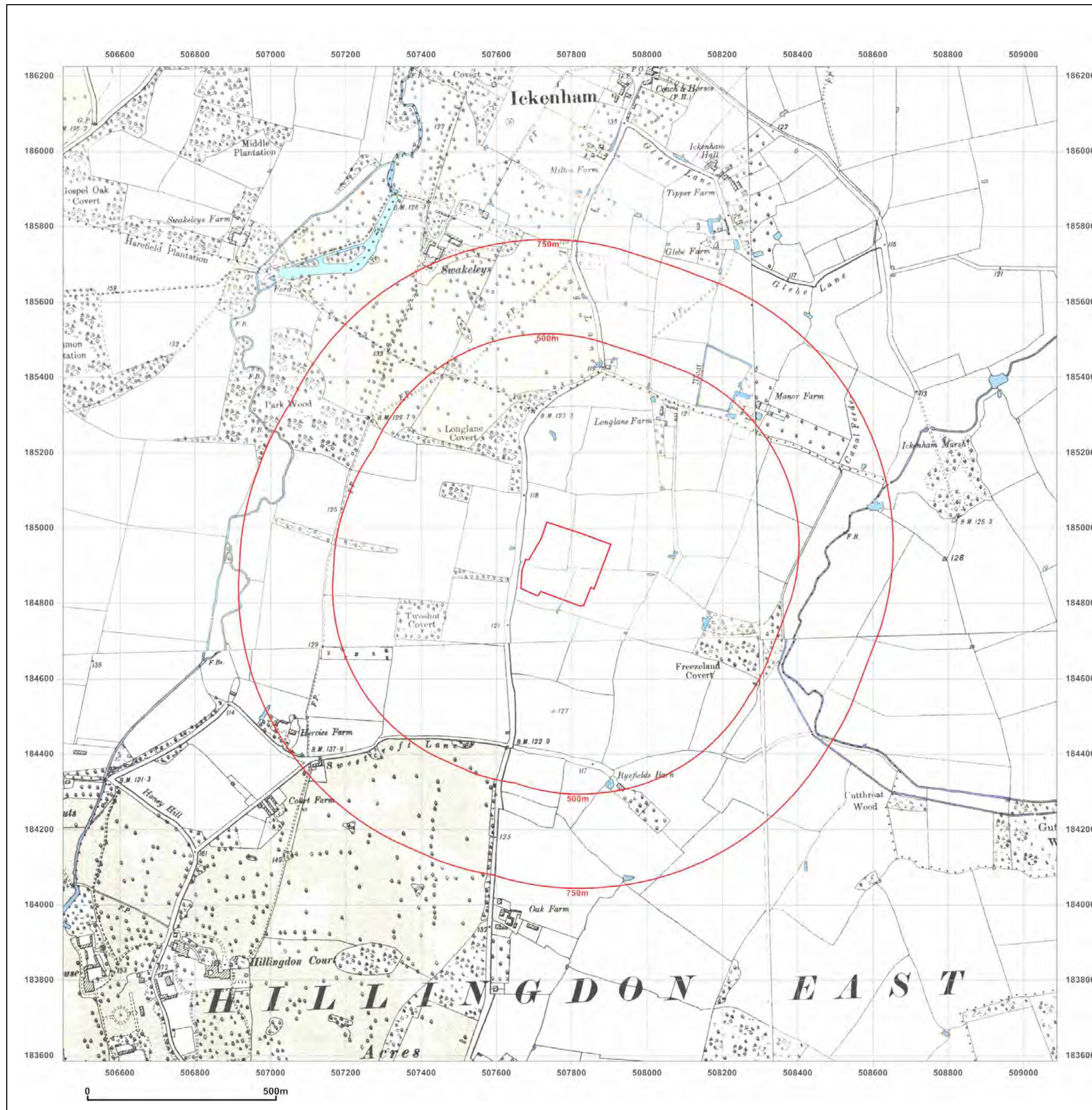


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

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  
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Revised 1912  
Edition N/A  
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Revised 1913  
Edition N/A  
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Revised 1913  
Edition N/A  
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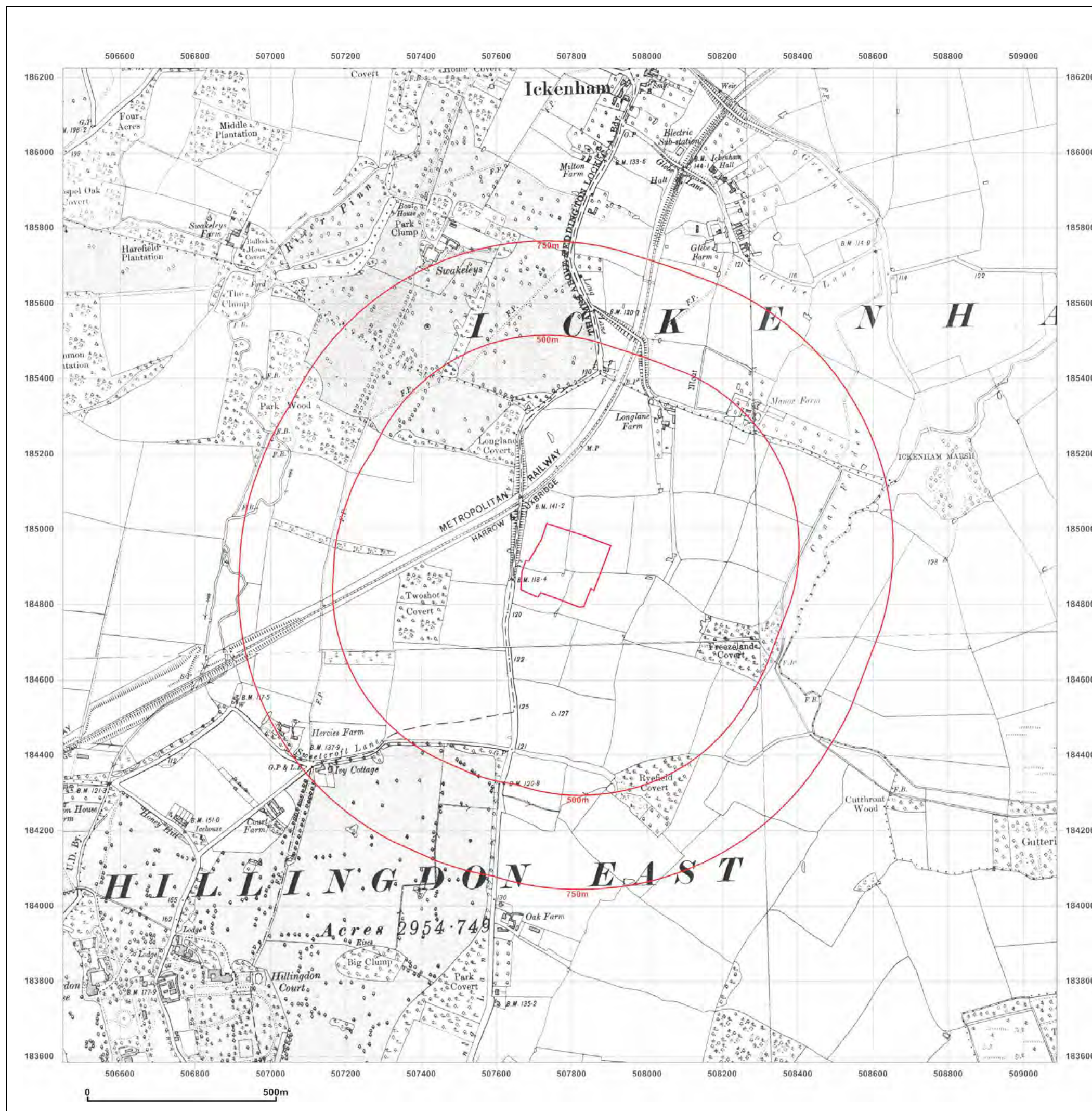


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1932

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1875  
Revised 1932  
Edition N/A  
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Surveyed 1874  
Revised 1932  
Edition N/A  
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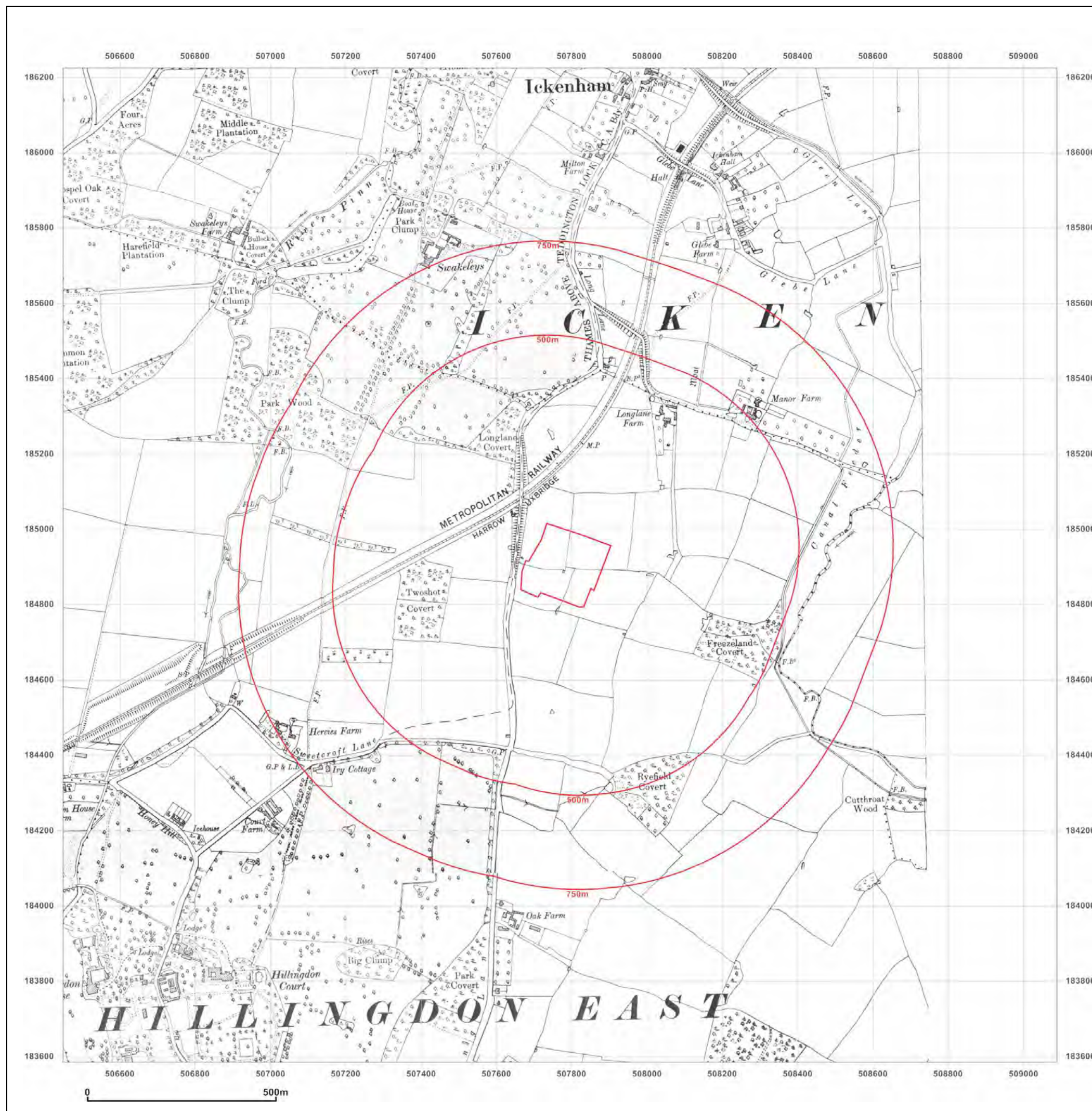


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1935

Scale: 1:10,560

Printed at: 1:10,560



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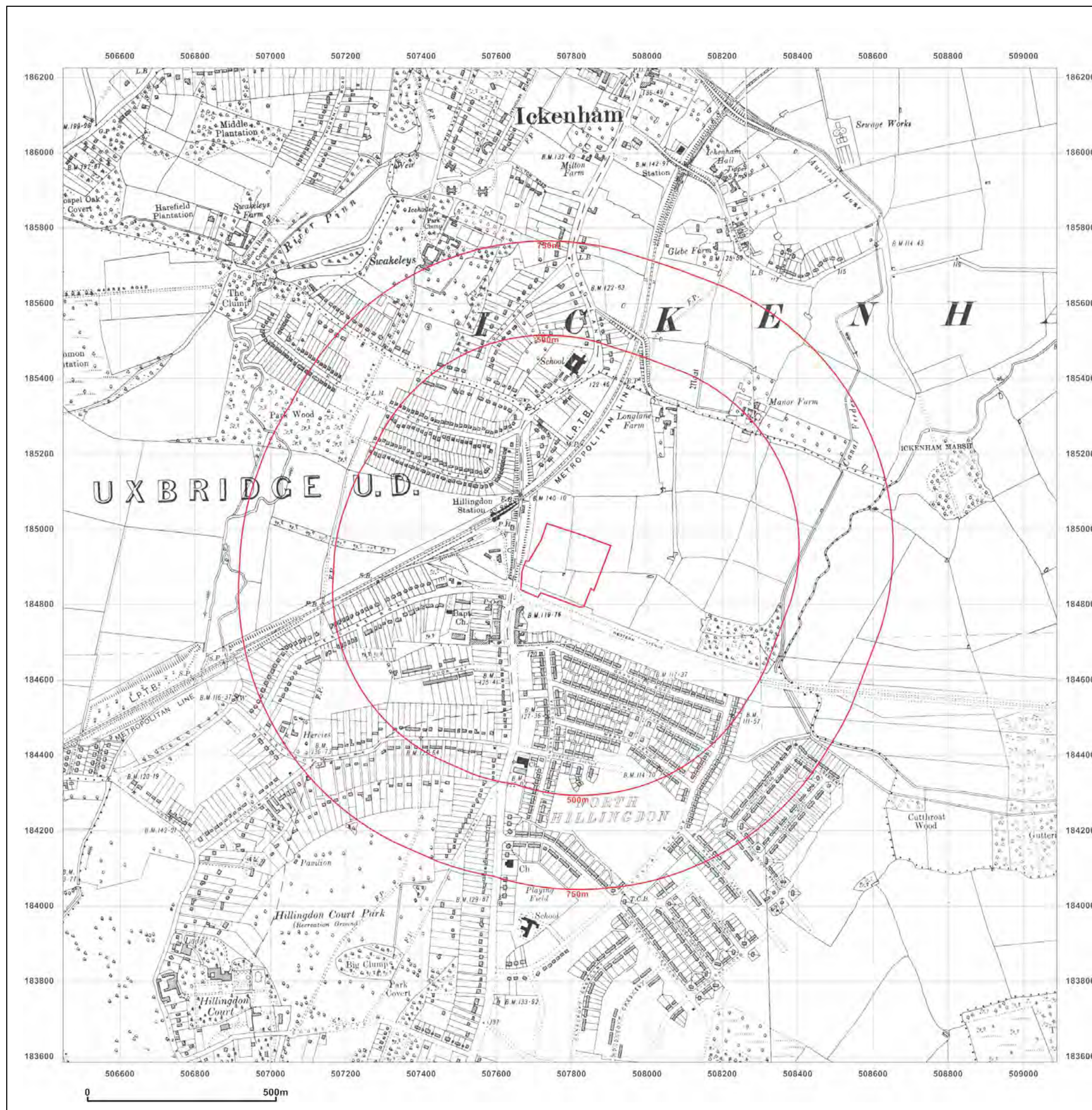


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Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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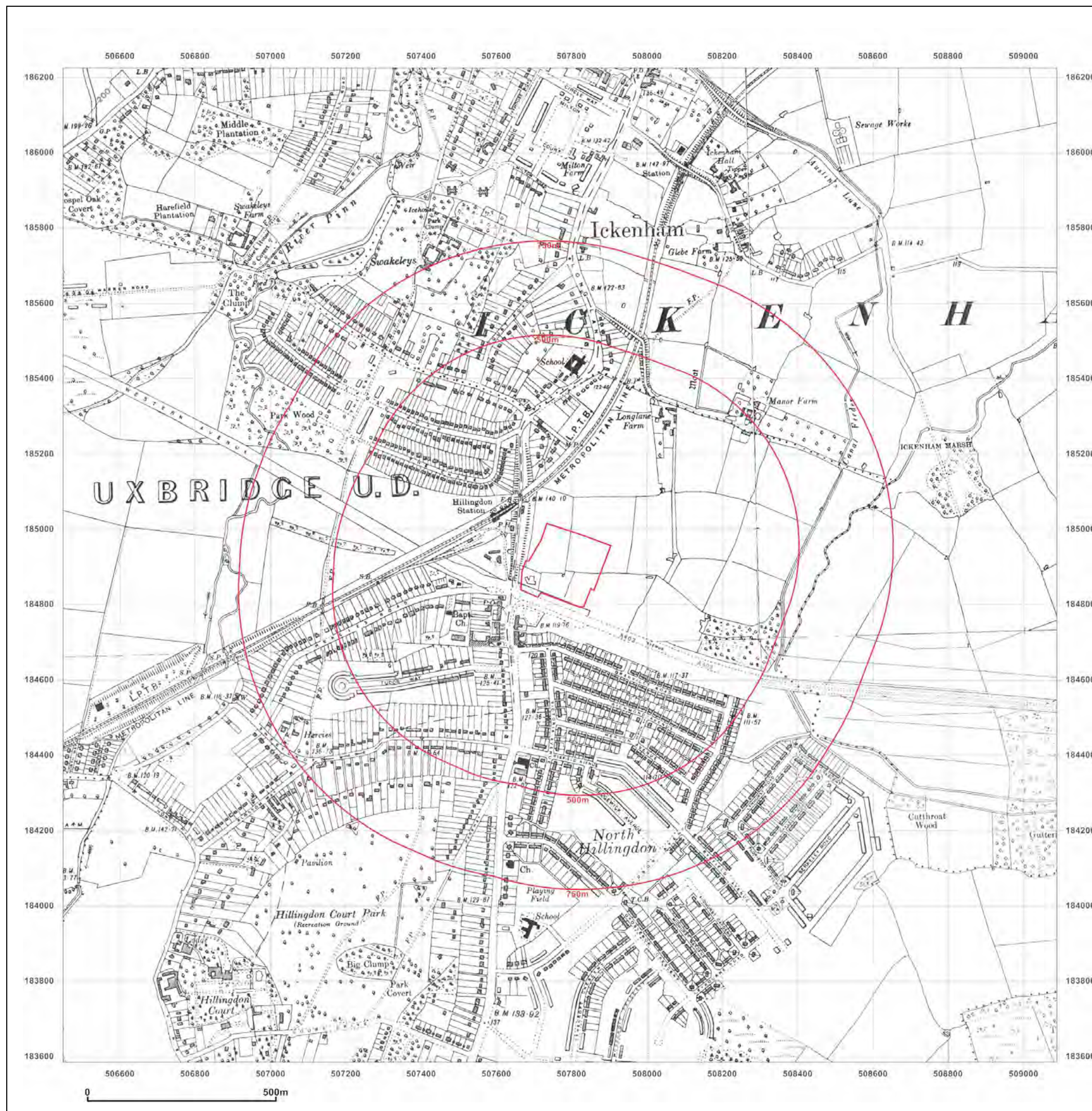


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: Provisional

Map date: 1959

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1955  
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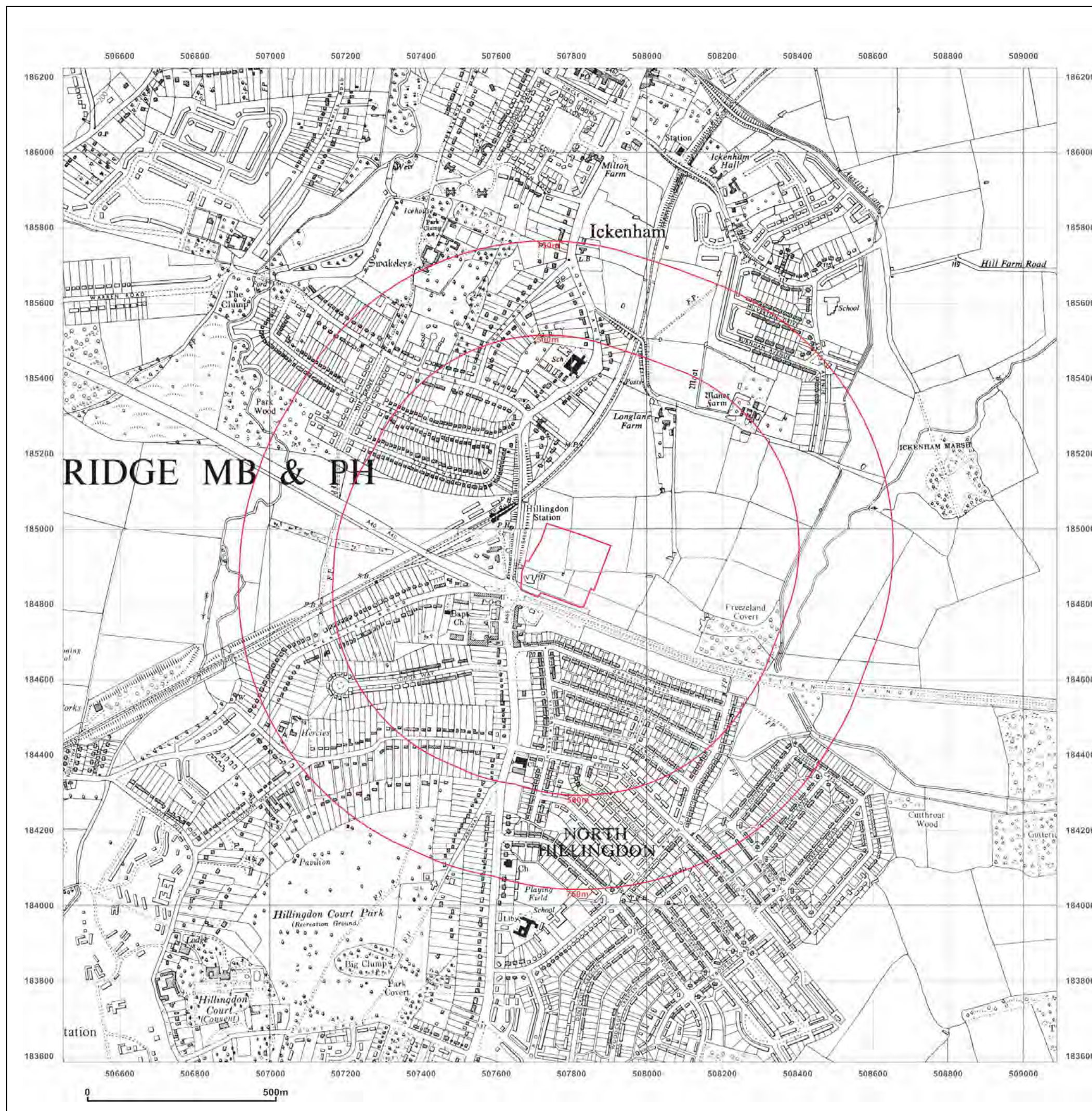


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1973-1975

Scale: 1:10,000

Printed at: 1:10,000



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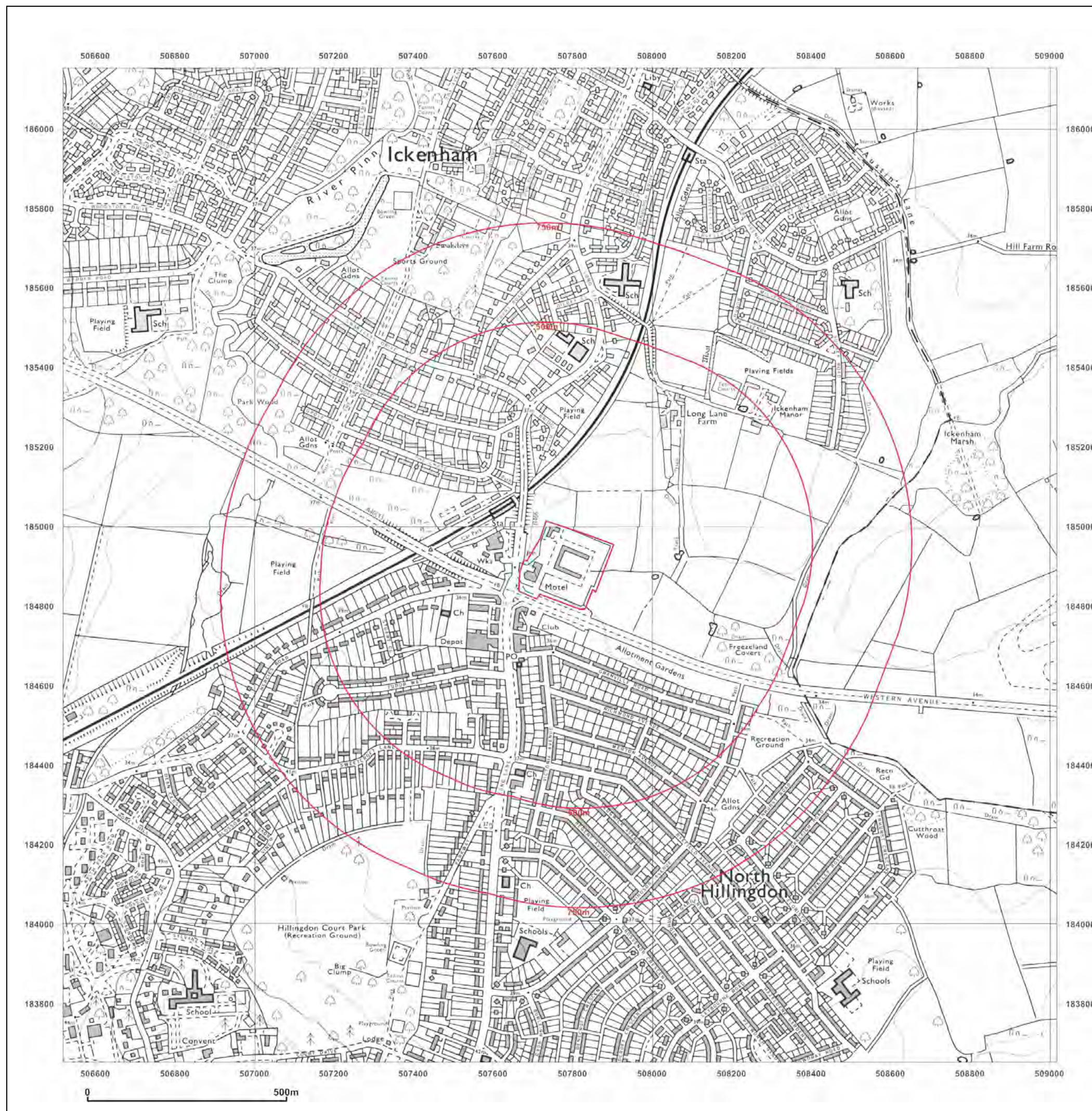


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Client Ref: 14-0724.01  
Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 1987-1989

Scale: 1:10,000

Printed at: 1:10,000



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Surveyed 1988  
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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

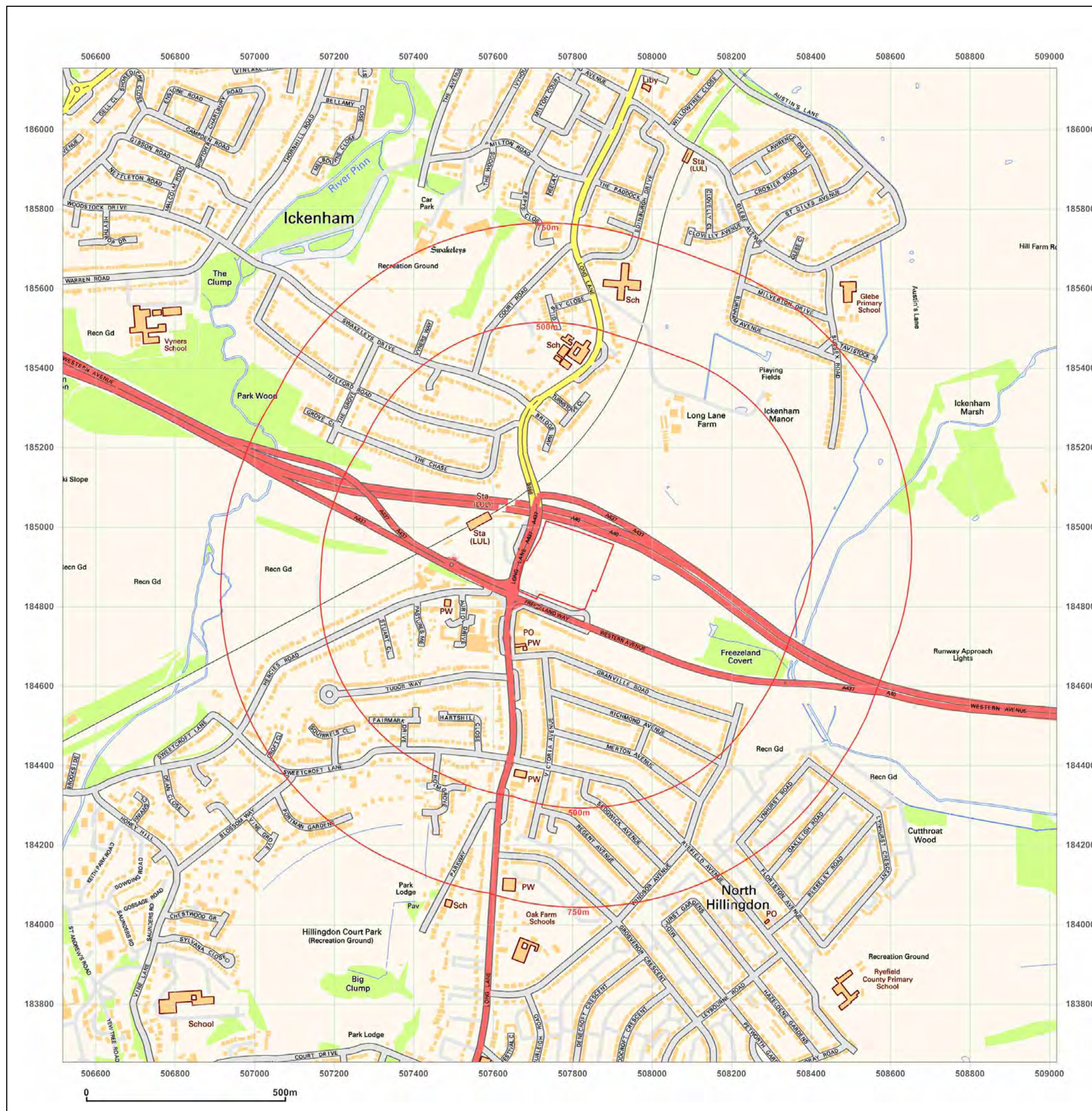


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Report Ref: GS-1745867  
Grid Ref: 507768, 184904

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000

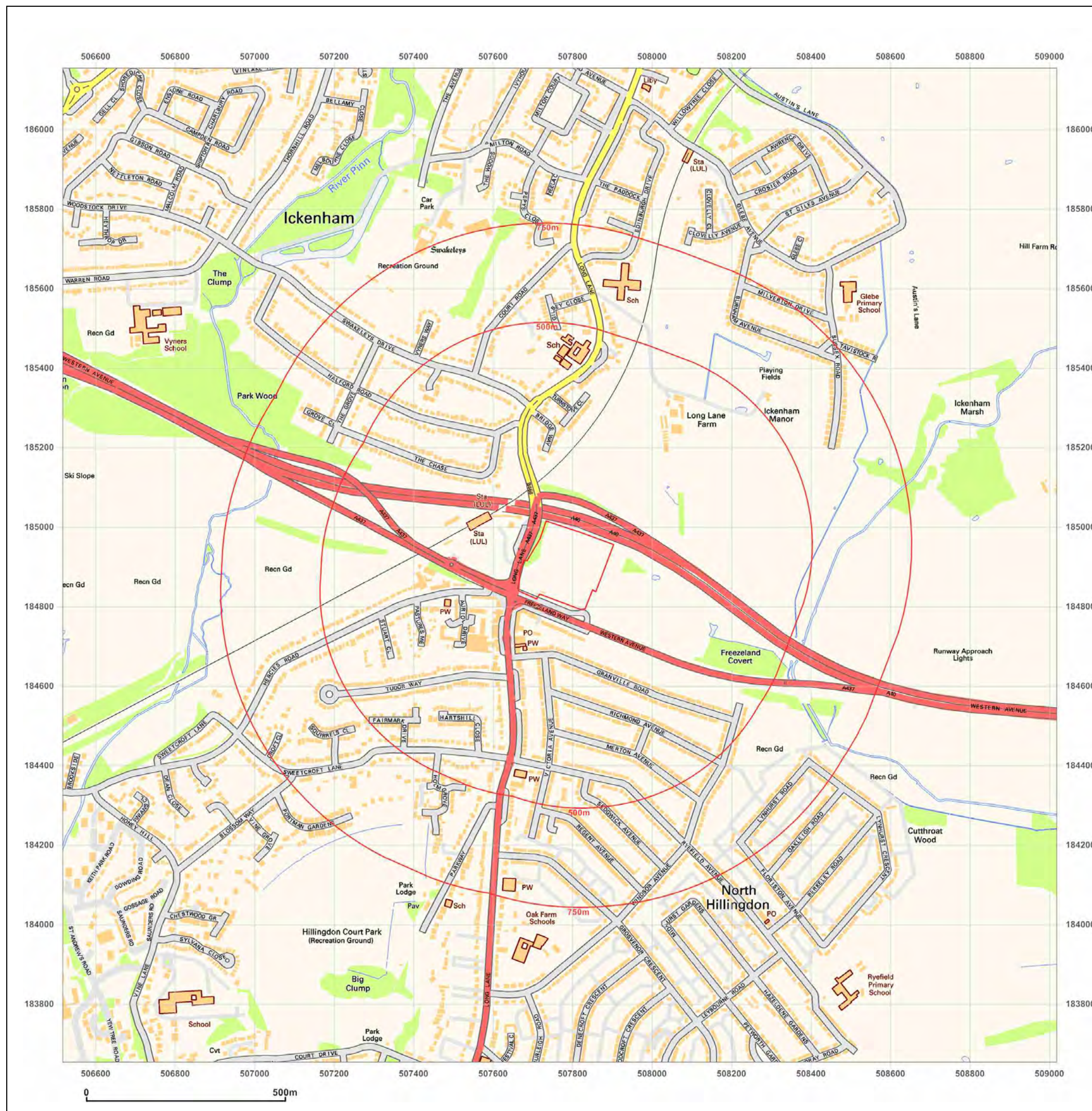


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Delta-Simons  
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GroundSure Reference: GS-1745868

Your Reference: 14-0724.01

Report Date 3 Nov 2014

Report Delivery Method: Email - pdf

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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.

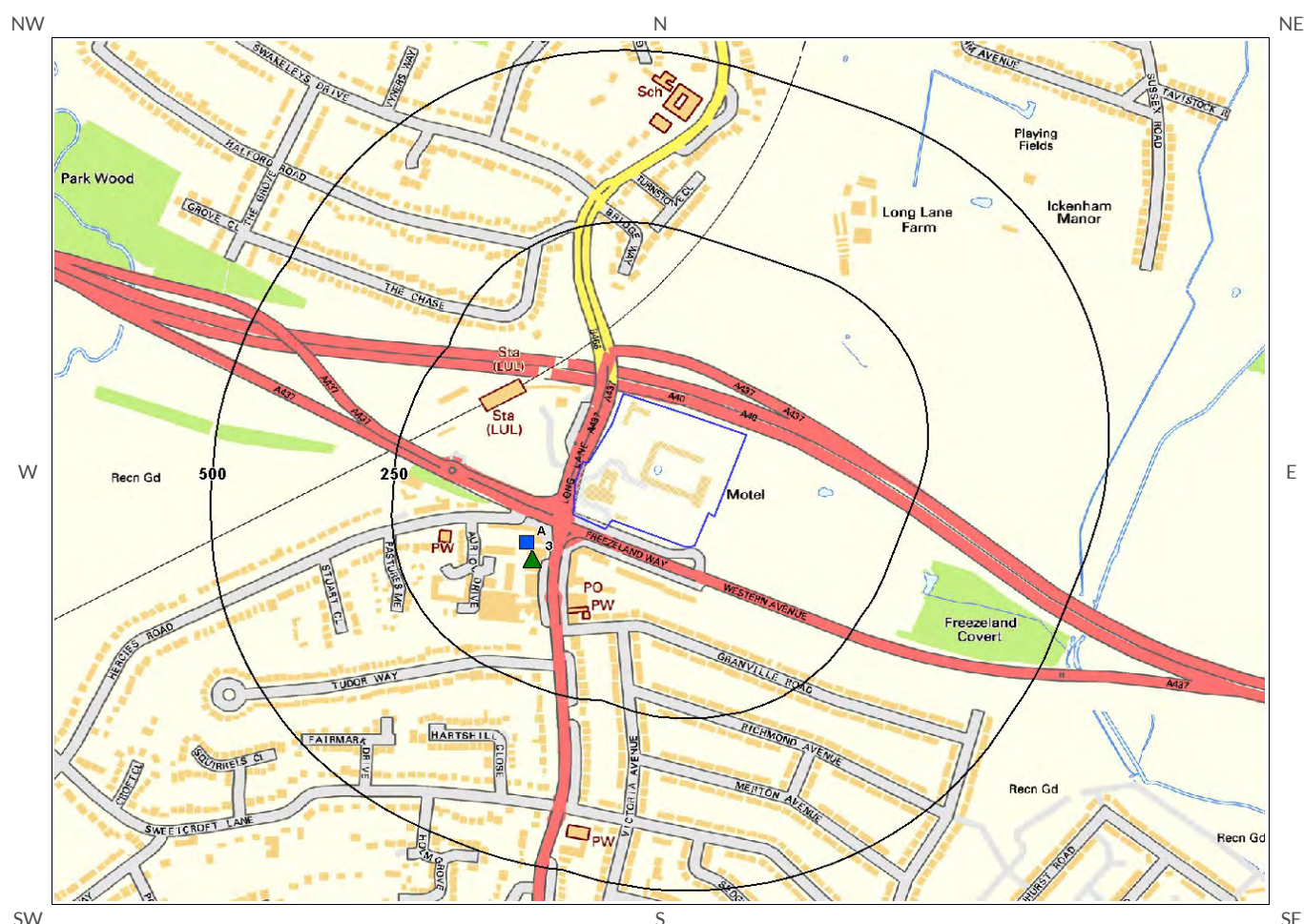
### Note: Maps

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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- |   |  |  |
|---|--|--|
|  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?

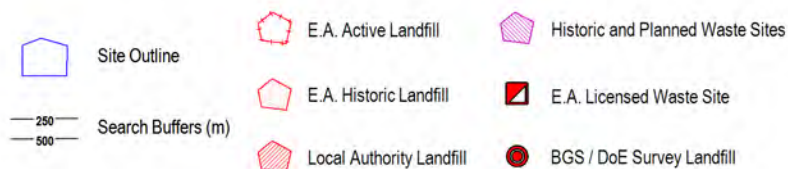
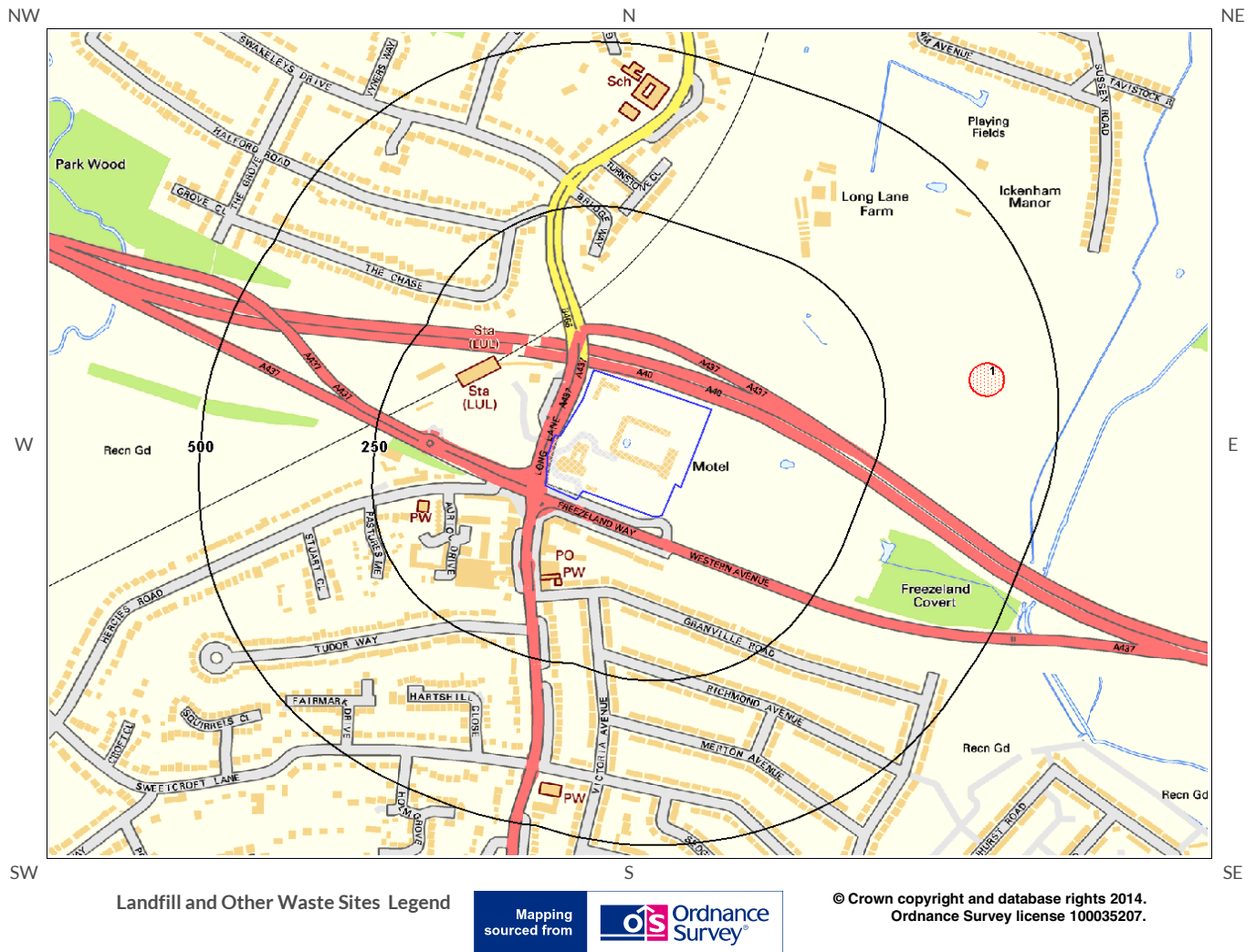
0

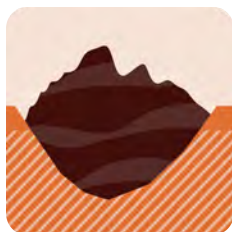
Database searched and no data found.

---



## 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.

---

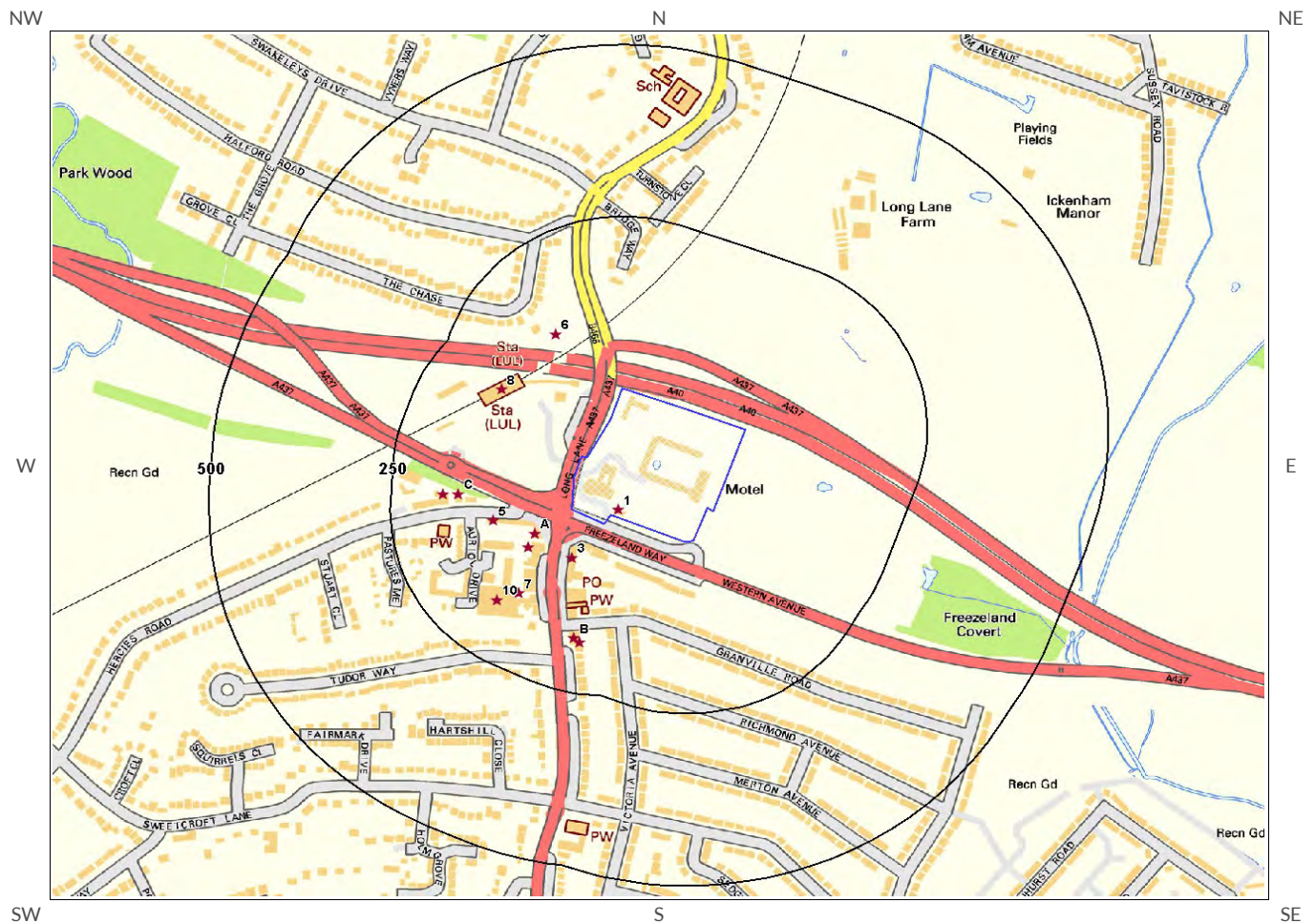
2.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

---

# 3. Current Land Use Map



Current Land Use Legend



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## 3. Current Land Uses

### 3.1 Current Industrial Data

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

13

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0.0	On Site	Tank	507728 184840	UB10	Tanks (Generic)	Industrial Features
2A	63.0	SW	S M C Cars	507612 184805	331, Long Lane, Hillingdon, Uxbridge, UB10 9JU	New Vehicles	Motoring
3	63.0	SW	J G Regan Ltd	507663 184770	396a, Long Lane, Hillingdon, Uxbridge, UB10 9PG	Printing Related Machinery	Industrial Products
4A	81.0	SW	S M C	507603 184785	325-327, Long Lane, Hillingdon, Uxbridge, UB10 9JU	New Vehicles	Motoring
5	110.0	W	I J Plant Co Ltd	507554 184824	11, Hercies Road, Uxbridge, UB10 9LS	Construction Plant	Construction Services
6	121.0	NW	Electricity Sub Station	507641 185095	UB10	Electrical Features	Infrastructure and Facilities
7	141.0	SW	Electricity Sub Station	507591 184719	UB10	Electrical Features	Infrastructure and Facilities
8	148.0	NW	Hillingdon	507566 185015	Hillingdon Station, Long Lane, Hillingdon, Uxbridge, UB10 9NR	Underground Network Stations	Public Transport, Stations and Infrastructure
9C	158.0	W	Electricity Sub Station	507507 184863	UB10	Electrical Features	Infrastructure and Facilities
10	167.0	SW	Depot	507560 184709	UB10	Container and Storage	Transport, Storage and Delivery
11B	172.0	S	Advance Security UK Ltd	507666 184653	Chevron House 346, Long Lane, Hillingdon, Uxbridge, UB10 9PF	Electronic Equipment	Industrial Products
12B	176.0	S	Electricity Sub Station	507674 184648	UB10	Electrical Features	Infrastructure and Facilities
13C	179.0	W	Y H T Ltd	507485 184862	4, Hercies Road, Uxbridge, UB10 9NA	Plate Makers, Print Finishers and Type Setters	IT, Advertising, Marketing and Media Services

### 3.2 Petrol and Fuel Sites

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

0

Database searched and no data found.

### 3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site:

0

Database searched and no data found.

---





## 4. Geology

### 4.1 Artificial Ground and Made Ground

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

Lex Code	Description	Rock Type
WGR-OPEN	WORKED GROUND (UNDIVIDED)	VOID
MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

### 4.2 Superficial Ground and Drift Geology

Database searched and no data found.

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

### 4.3 Bedrock and Solid Geology

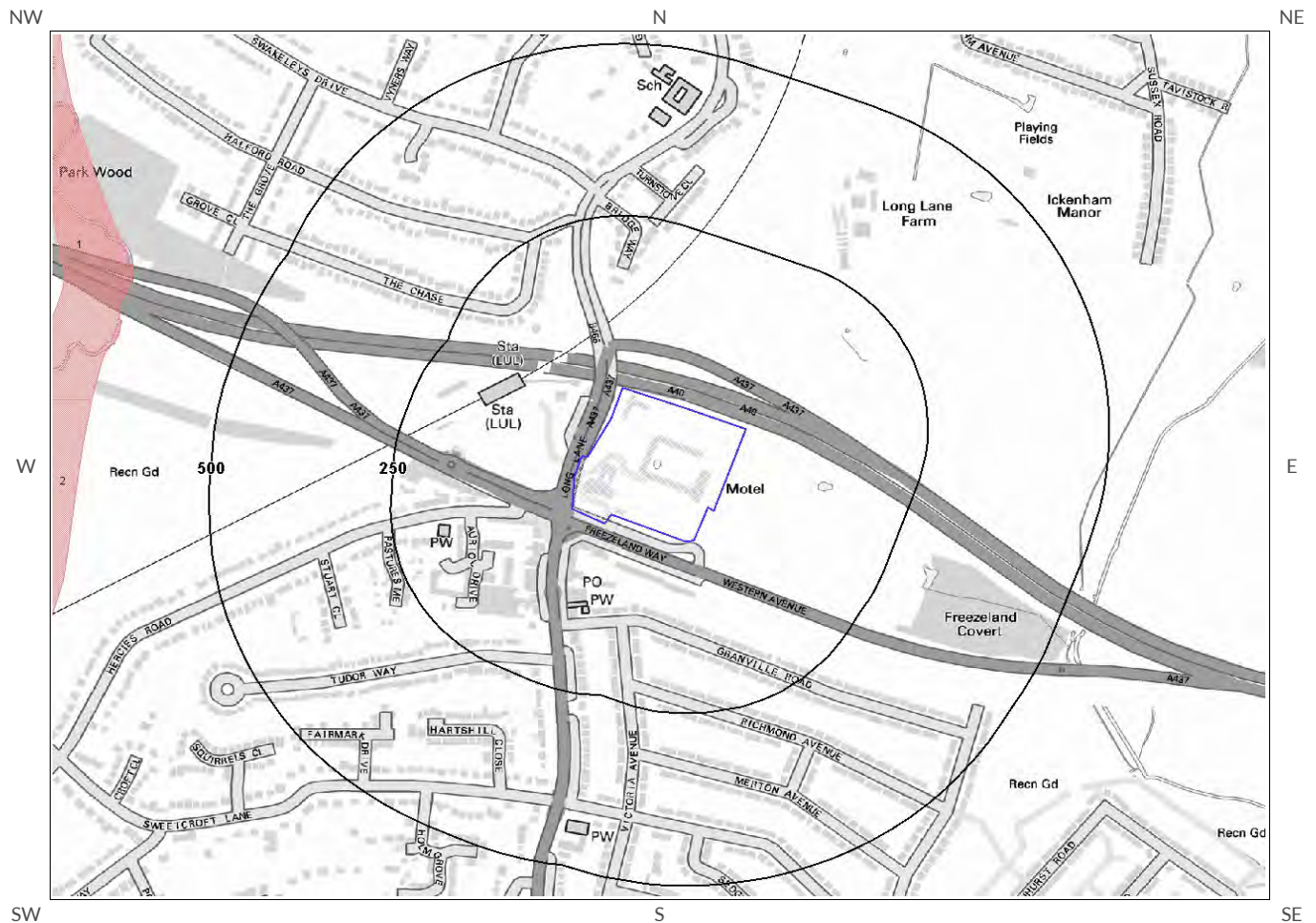
The database has been searched on site, including a 50m buffer.

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

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

# 5. Hydrogeology and Hydrology

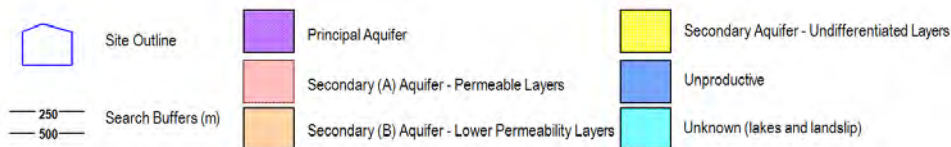
## 5a. Aquifer Within Superficial Geology

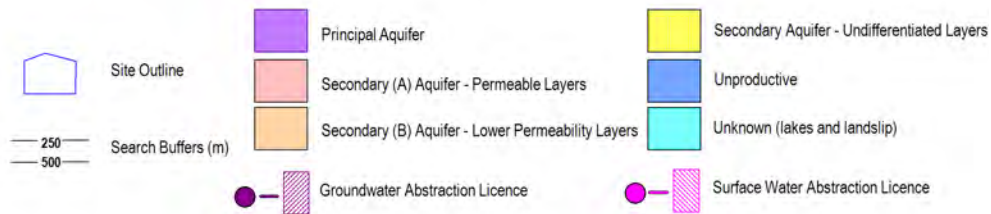


Aquifer Within Superficial Geology



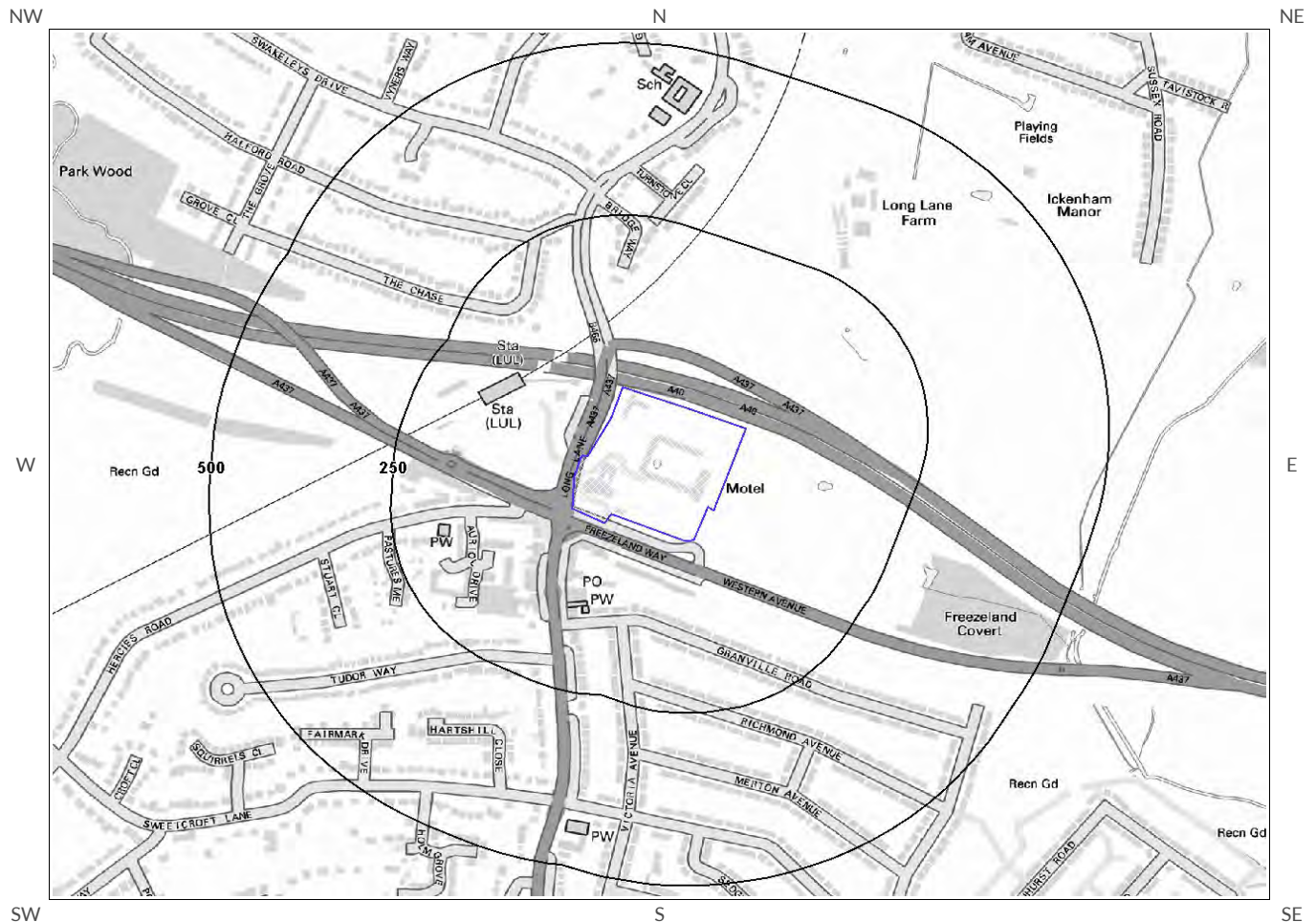
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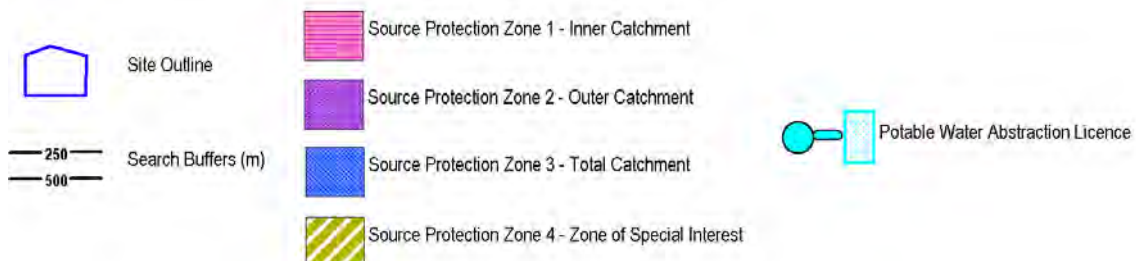
# 5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



Map Legend Source Protection Zones and Potable Water Abstraction Licenses

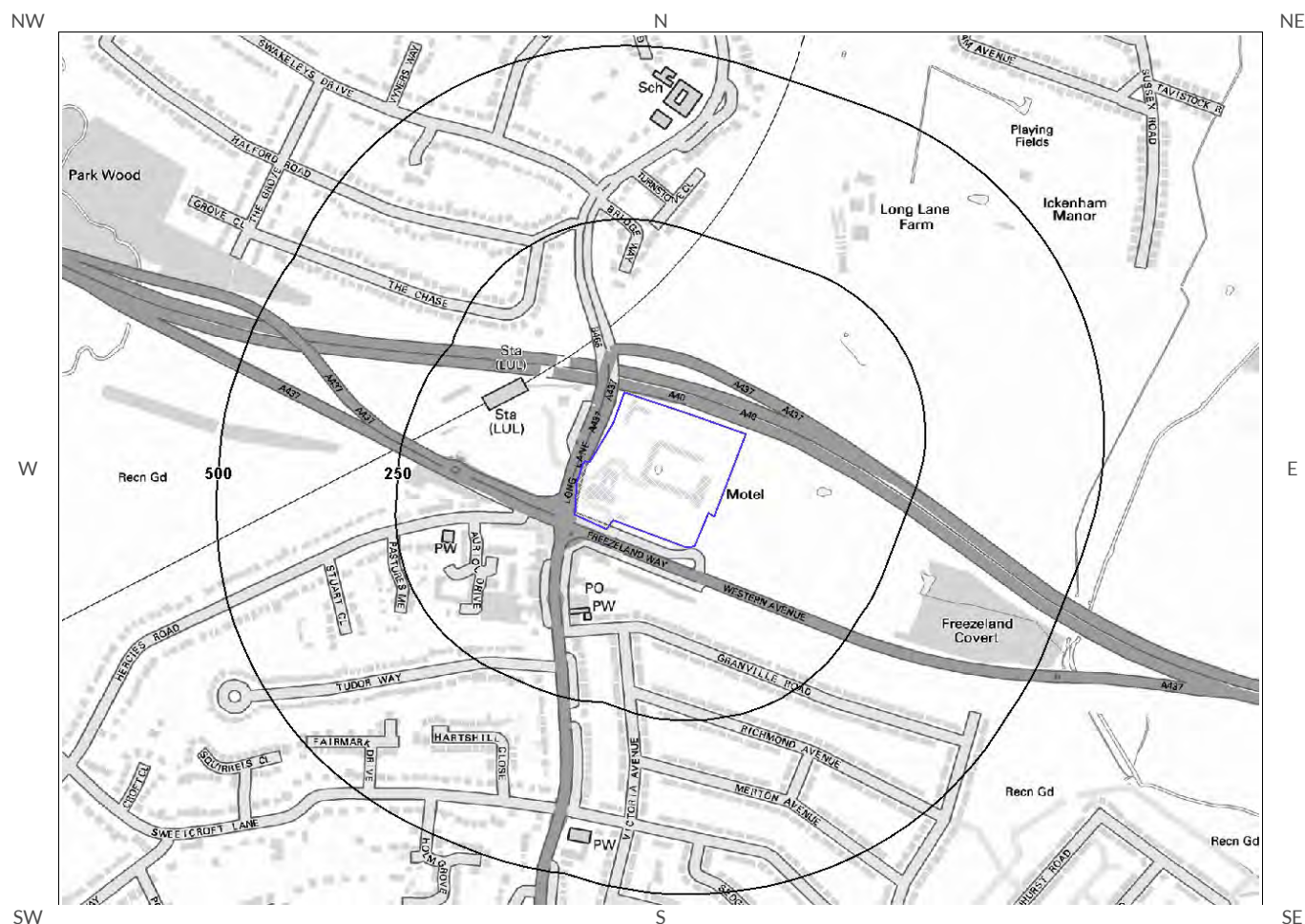


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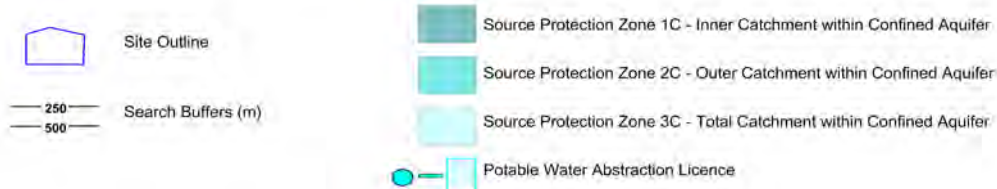
# 5d. Hydrology Source Protection Zones within confined aquifer



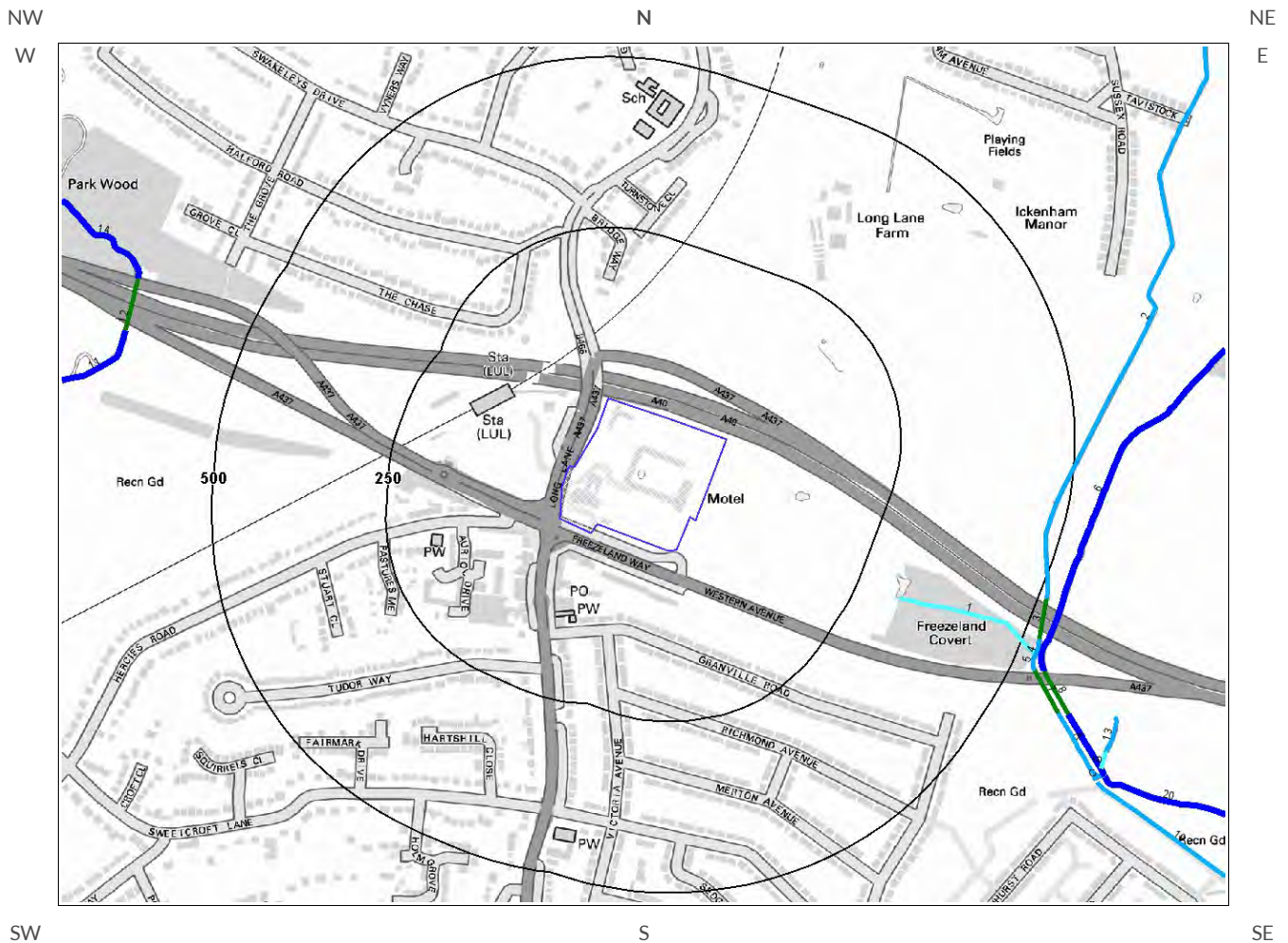
Hydrology Source Protection Zones



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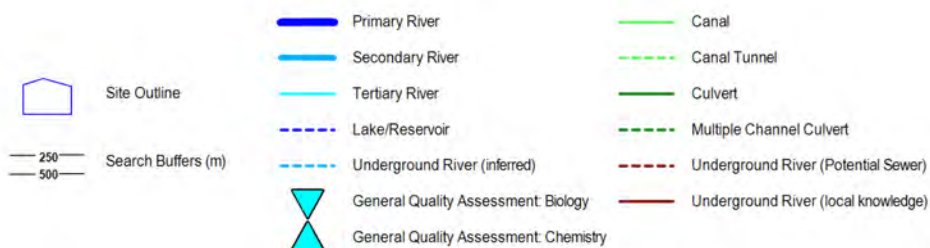
# 5 e. Hydrology – Detailed River Network and River Quality



Hydrology – Detailed River Network and River Quality



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# 5. Hydrogeology and Hydrology

## 5.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? No

Database searched and no data found.

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

## 5.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? Yes

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	Designation	Description
2	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
3	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow



### 5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?

Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	NGR	Details
Not shown	962.0	NW	507310 185880	Licence No: 28/39/28/0577 Details: Make-Up or Top Up Water Direct Source: Thames Groundwater Point: Swakeleys Lake, Ickenham- Borehole Data Type: Point Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: WRA/N/1196 Original Start Date: 2/4/2003 Expiry Date: 31/3/2014 Issue No: 1 Version Start Date: 2/4/2003 Version End Date:

### 5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site?

No

Database searched and no data found.

### 5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site?

No

Database searched and no data found.

### 5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

No

Database searched and no data found.

## 5.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

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

Database searched and no data found.

---

## 5.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency information on groundwater vulnerability and soil leaching potential within 500m of the study site?

No

Database searched and no data found.

---

## 5.9 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site?

No

### 5.9.1 Biological Quality:

Database searched and no data found.

---

### 5.9.2 Chemical Quality:

Database searched and no data found.

---



## 5.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site?

Yes

The following Detailed River Network records are represented on the Hydrology Map (5e):

ID	Distance (m)	Direction	Details
1	315.0	E	<div> <div> River Name: -  Welsh River Name: -  Alternative Name: - </div> <div> River Type: Tertiary River  Main River Status: Currently Undefined </div> </div>
2	478.0	E	<div> <div> River Name: Drain  Welsh River Name: -  Alternative Name: - </div> <div> River Type: Secondary River  Main River Status: Currently Undefined </div> </div>

## 5.11 Surface Water Features

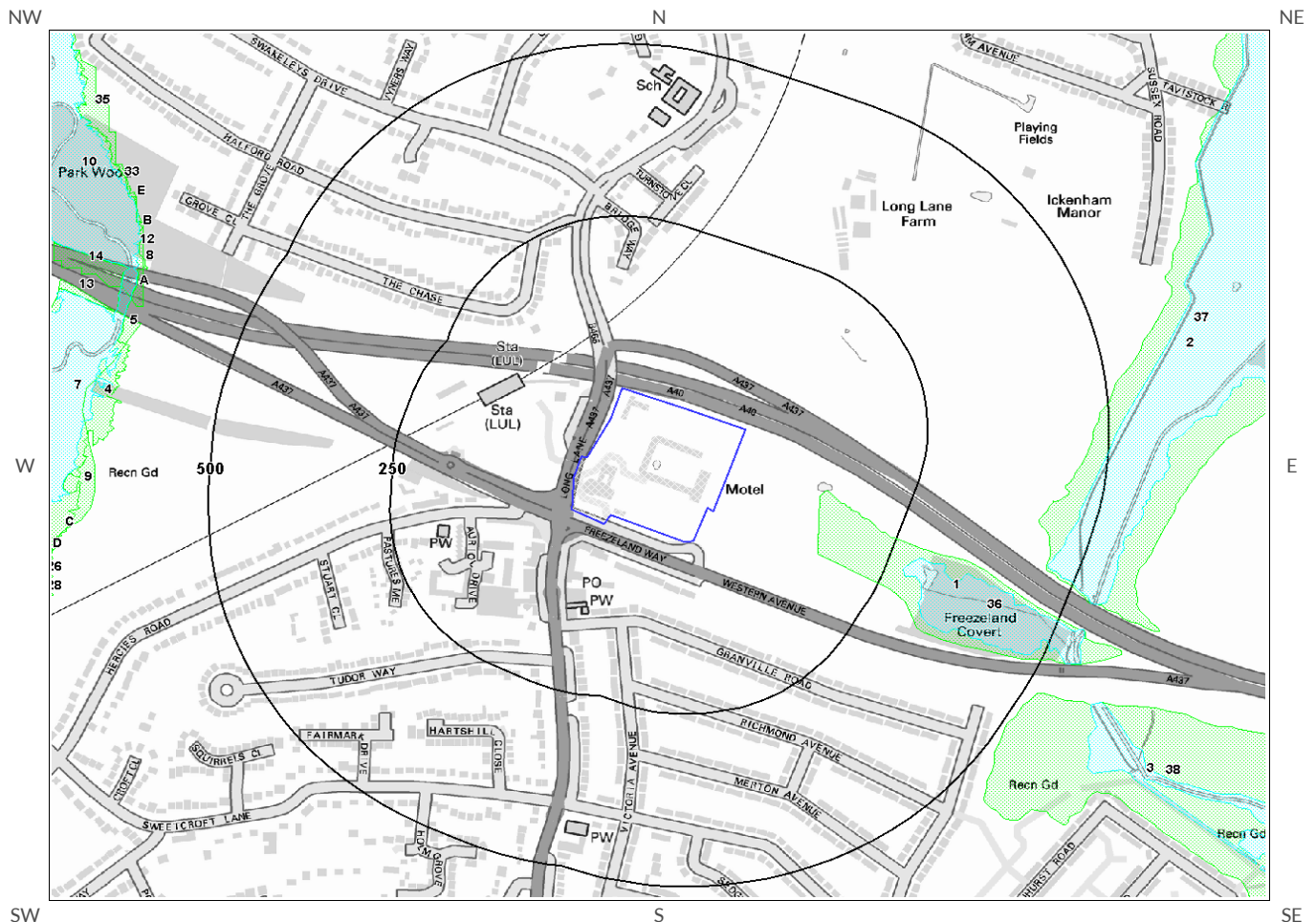
Are there any surface water features within 250m of the study site?

Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
188.0	NE

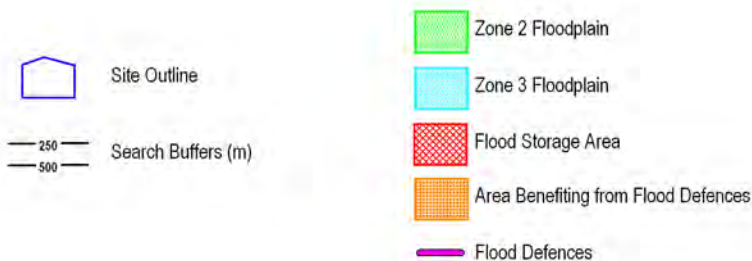
# 6. Environment Agency Flood Map for planning (from rivers and the sea)



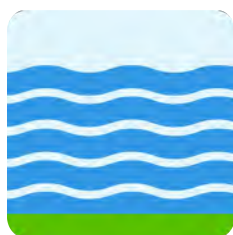
Environment Agency Flood Map for planning (from rivers and the sea)



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## 6. Flooding

### 6.1 Zone 2 Flooding

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

Is the site within 250m of an Environment Agency Zone 2 floodplain? Yes

The following floodplain records are represented as green shading on the Flood Map:

ID	Distance (m)	Direction	Update	Type
1	129.0	E	10-Sep-2014	Zone 2 - (Fluvial Models )

### 6.2 Zone 3 Flooding

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 1 – Environment Agency Flood Map for Planning.

Is the site within 250m of an Environment Agency Zone 3 floodplain? No

Database searched and no data found.

### 6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

### 6.4 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

### 6.5 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

## 6.6 Groundwater Flooding Susceptibility Areas

6.6.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site?

Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding?

Superficial Deposits Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

---

6.6.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

---

## 6.7 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result?

Moderate

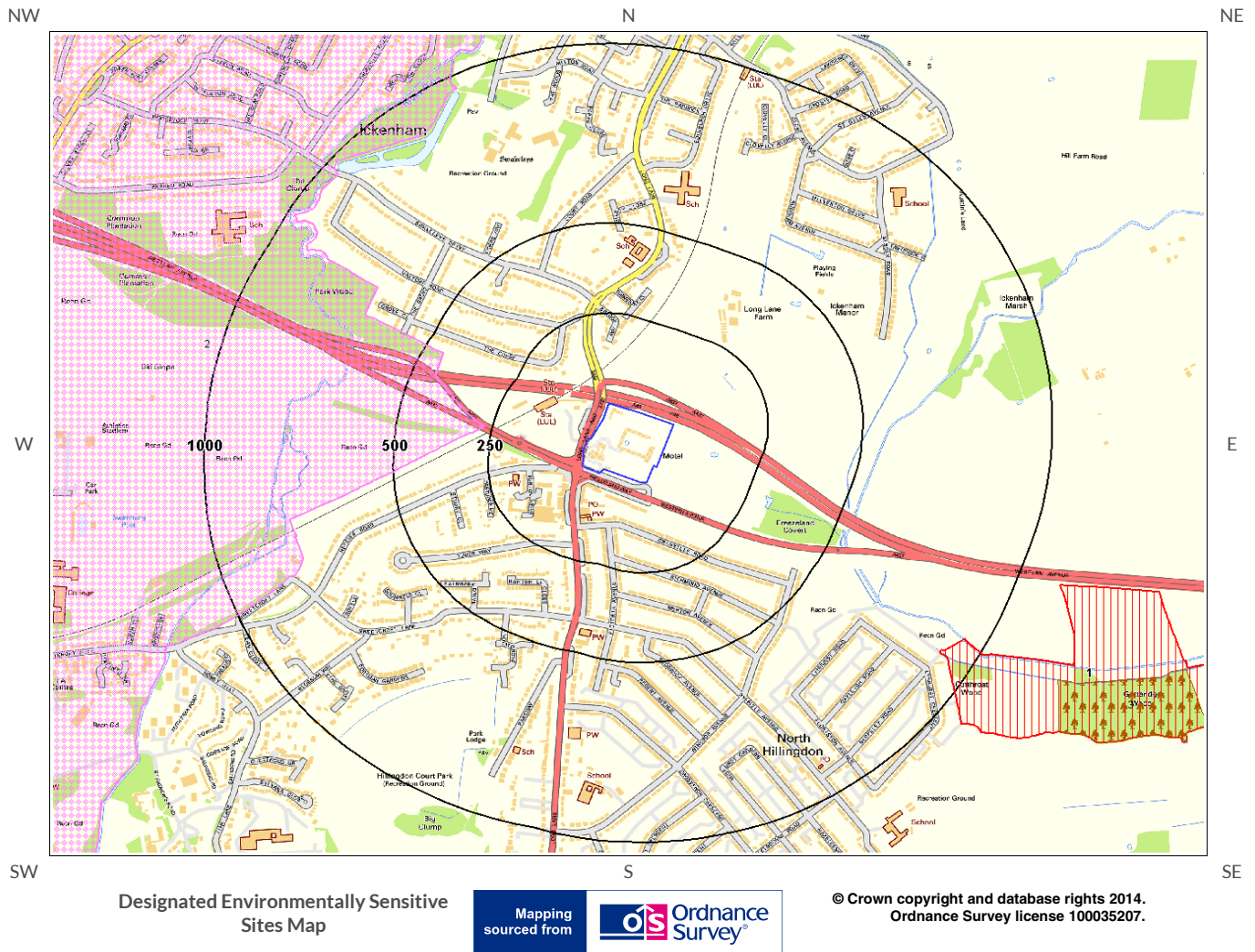
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

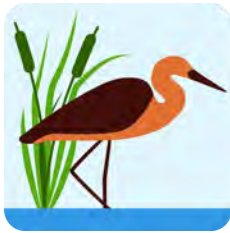
The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a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

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# 7. Designated Environmentally Sensitive Sites Map





# 7. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

---

7.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 0

Database searched and no data found.

---

7.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 0

Database searched and no data found.

---

7.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 0

Database searched and no data found.

---

7.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 0

Database searched and no data found.

---

7.5 Records of Ramsar sites within 2000m of the study site: 0

Database searched and no data found.

---



## 7.6 Records of Ancient Woodland within 2000m of the study site:

1

The following Ancient Woodland records are supplied by English Nature/Scottish Natural Heritage/Natural Resources Wales and are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
3	1212.0	SE	GUTTERIDGE WOOD	Ancient and Semi-Natural Woodland

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

1

The following Local Nature Reserve (LNR) records provided by Natural England/Natural Resources Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1	906.0	SE	Yeading Woods	Natural England

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

0

Database searched and no data found.

## 7.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

## 7.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

## 7.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

## 7.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

## 7.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

1

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
2	270.0	W	NVZ Area	DEFRA





# 8. Natural Hazards Findings

## 8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **GroundSure GeoInsight**, available from [our website](#). The following information has been found:

### 8.1.1 Shrink Swell

What is the maximum Shrink-Swell\*\* hazard rating identified on the study site?

Low

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

#### Hazard

Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

### 8.1.2 Landslides

What is the maximum Landslide\* hazard rating identified on the study site?

Moderate

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

#### Hazard

Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build – consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

\* This indicates an automatically generated 50m buffer and site.

### 8.1.3 Soluble Rocks

What is the maximum Soluble Rocks\* hazard rating identified on the study site?

Negligible

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

---

#### Hazard

---

Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

---

### 8.1.4 Compressible Ground

What is the maximum Compressible Ground\* hazard rating identified on the study site?

Very Low

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

---

#### Hazard

---

Very low potential for compressible deposits to be present. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

---

### 8.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks\* hazard rating identified on the study site?

Very Low

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

---

#### Hazard

---

Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

---



## 8.1.6 Running Sand

What is the maximum Running Sand\*\* hazard rating identified on the study site?

Very Low

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

---

### Hazard

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Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

---



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\* This indicates an automatically generated 50m buffer and site.



## 9. Mining

### 9.1 Coal Mining

Are there any coal mining areas within 75m of the study site?

No

Database searched and no data found.

---

### 9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site\*?

Low

\*Please note this data is searched with a 150m buffer.

---

### 9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site?

No

Guidance: No Guidance Required.

---



# Contact Details

GroundSure Helpline  
 Telephone: 08444 159 000  
 info@groundsurre.com



## British Geological Survey Enquiries

Kingsley Dunham Centre  
 Keyworth, Nottingham NG12 5GG  
 Tel: 0115 936 3143.  
 Fax: 0115 936 3276.  
 Email: [enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk)  
 Web: [www.bgs.ac.uk](http://www.bgs.ac.uk)

BGS Geological Hazards Reports and general geological enquiries



## Environment Agency

National Customer Contact Centre, PO Box 544  
 Rotherham, S60 1BY  
 Tel: 08708 506 506  
 Web: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)  
 Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)



## Public Health England

Public information access office  
 Public Health England, Wellington House  
 133-155 Waterloo Road, London, SE1 8UG  
<https://www.gov.uk/government/organisations/public-health-england>  
 Email: [enquiries@phe.gov.uk](mailto:enquiries@phe.gov.uk)  
 Main switchboard: 020 7654 8000



## The Coal Authority

200 Lichfield Lane  
 Mansfield  
 Notts NG18 4RG  
 Tel: 0345 7626 848  
 DX 716176 Mansfield 5  
[www.coal.gov.uk](http://www.coal.gov.uk)



## Ordnance Survey

Adanac Drive, Southampton  
 SO16 0AS  
 Tel: 08456 050505



## Local Authority

Authority: Hillingdon London Borough Council  
 Phone: 01895 250111  
 Web: [www.hillingdon.gov.uk](http://www.hillingdon.gov.uk)  
 Address: Civic Centre, High Street, Uxbridge, Middlesex, UB8 1UW

## Gemapping PLC

Virginia Villas, High Street, Hartley Witney,  
 Hampshire RG27 8NW  
 Tel: 01252 845444



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, English Nature who retain the Copyright and Intellectual Property Rights for the data. PointX © Database Right/Copyright, Thomson Directories Limited © Copyright Link Interchange Network Limited © Database Right/Copyright and Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028].  
 This report has been prepared in accordance with the GroundSure Ltd standard Terms and Conditions of business for work of this nature.

## Standard Terms and Conditions

### 1 Definitions

In these terms and conditions unless the context otherwise requires:

**“Beneficiary”** means the person or entity for whose benefit the Client has obtained the Services.

**“Client”** means the party or parties entering into a Contract with GroundSure.

**“Commercial”** means any building or property which is not Residential.

**“Confidential Information”** means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than

(i) information which the Client can prove was rightfully in its possession prior to disclosure by GroundSure and

(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).

**“Support Services”** means Support Services provided by GroundSure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

**“Contract”** means the contract between GroundSure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.

**“Third Party Data Provider”** means any third party providing Third Party Content to GroundSure.

**“Data Reports”** means reports comprising factual data with no accompanying interpretation.

**“Fees”** has the meaning set out in clause 5.1.

**“GroundSure”** means GroundSure Limited, a company registered in England and Wales under number 03421028.

**“GroundSure Materials”** means all materials prepared by GroundSure and provided as part of the Services, including but not limited to Third Party Content, Data Reports, Mapping, and Risk Screening Reports.

**“Intellectual Property”** means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.

**“Mapping”** means a map, map data or a combination of historical maps of various ages, time periods and scales.

**“Order”** means an electronic, written or other order form submitted by the Client requesting Services from GroundSure in respect of a specified Site.

**“Ordnance Survey”** means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 0AS, UK.

**“Order Website”** means the online platform through which Orders may be placed by the Client and accepted by GroundSure.

**“Report”** means a Risk Screening Report or Data Report for Commercial or Residential property.

**“Residential”** means any building or property used as or intended to be used as a single dwelling.

**“Risk Screening Report”** means a risk screening report comprising factual data with an accompanying interpretation by GroundSure.

**“Services”** means any Report, Mapping and/or Support Services which GroundSure has agreed to provide by accepting an Order pursuant to clause 2.6.

**“Site”** means the area of land in respect of which the Client has requested GroundSure to provide the Services.

**“Third Party Content”** means data, database information or other information which is provided to GroundSure by a Third Party Data Provider.

**“User Guide”** means the user guide, as amended from time to time, available upon request from GroundSure and on the website ([www.GroundSure.com](http://www.GroundSure.com)) and forming part of this Contract.

### 2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 GroundSure agrees to provide the Services in accordance with the Contract.

2.2 GroundSure shall exercise reasonable skill and care in the provision of the Services.

2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

2.4 The Client acknowledges that terms and conditions appearing on a Client's order form, printed stationery or other communication, or any terms or conditions

implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.

2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. In addition you acknowledge and agree that GroundSure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.

2.6 GroundSure's quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by GroundSure. GroundSure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by GroundSure. GroundSure's acceptance of an Order shall be binding only when made in writing and signed by GroundSure's authorised representative or when accepted through the Order Website.

### 3 The Client's obligations

3.1 The Client shall comply with the terms of this Contract and

(i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and

(ii) be liable to GroundSure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.

3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary's needs.

3.3 The Client shall supply to GroundSure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as GroundSure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.

3.4 Where the Client's approval or decision is required to enable GroundSure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt the performance of the Services.

3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend the GroundSure Materials, or use the GroundSure Materials in a manner for which they were not intended. The Client may make the GroundSure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that GroundSure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.

### 4 Reliance

4.1 The Client acknowledges that the Services provided by GroundSure consist of the presentation and analysis of Third Party Content and other content and that information obtained from a Third Party Data Provider cannot be guaranteed or warranted by GroundSure to be reliable.

4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents;

- (i) the Beneficiary,
- (ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),
- (iv) the first purchaser or first tenant of the Site, and
- (v) the professional advisers and lenders of the first purchaser or tenant of the Site.

4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by GroundSure. Any party considering such Reports and Services does so at their own risk.

### 5 Fees and Disbursements

5.1 GroundSure shall charge and the Client shall pay fees at the rate and frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by GroundSure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together “Fees”).



5.2 The Client shall pay all outstanding Fees to GroundSure in full without deduction, counterclaim or set off within 30 days of the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client ("Payment Date"). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.

5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of GroundSure's management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

## 6 Intellectual Property and Confidentiality

### 6.1 Subject to

(i) full payment of all relevant Fees and

(ii) compliance with this Contract, the Client is granted (and is permitted to sub-licence to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the GroundSure Materials.

6.2 All Intellectual Property in the GroundSure Materials are and shall remain owned by GroundSure or GroundSure's licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.

6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client shall, and shall procure that any recipients of the GroundSure Materials shall:

(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);

(iv) not combine the Services with or incorporate such Services into any other information data or service;

(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);

(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and

(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey's OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey,

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the GroundSure Materials in order to advise the Beneficiary in a professional capacity. However, GroundSure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.

6.6 The Client shall procure that any person to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

## 7.Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of GroundSure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of:

(i) any breach of contract, including any deliberate breach of the Contract by GroundSure or its employees, agents or subcontractors;

(ii) any use made of the Reports, Services, Materials or any part of them; and

(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death

or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.

7.4 GroundSure shall not be liable for

- (i) loss of profits;
- (ii) loss of business;
- (iii) depletion of goodwill and/or similar losses;
- (iv) loss of anticipated savings;
- (v) loss of goods;
- (vi) loss of contract;
- (vii) loss of use;
- (viii) loss or corruption of data or information;
- (ix) business interruption;
- (x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;

(xi) loss or damage that arise as a result of the use of all or part of the GroundSure Materials in breach of the Contract;

(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;

(xiii) loss or damage to a computer, software, modem, telephone or other property; and

(xiv) loss or damage caused by a delay or loss of use of GroundSure's internet ordering service.

7.5 GroundSure's total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.

7.6 GroundSure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of GroundSure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.3) in respect of all claims which the Beneficiary may bring against GroundSure in relation to the Services or other matters arising pursuant to the Contract.

## 8 GroundSure's right to suspend or terminate

8.1 If GroundSure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, GroundSure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure shall be entitled to terminate the Contract immediately on written notice in the event that:

(i) the Client fails to pay any sum due to GroundSure within 30 days of the Payment Date; or

(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or

(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or

(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

## 9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.

9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:

(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon GroundSure's acceptance of the Order; and

- (ii) the Reports and/or Mapping provided under this Contract are
  - (a) supplied to the Client's specification(s) and in any event
  - (b) by their nature cannot be returned.

## 10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination of the Contract:

(i) GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficiary in

GroundSure's possession or control; and

(ii) the Client shall pay to GroundSure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination or suspension of the Contract.

## 11 Anti-Bribery

11.1 The Client warrants that it shall:

(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;

(ii) comply with such of GroundSure's anti-bribery and anti-corruption policies as are notified to the Client from time to time; and

(iii) promptly report to GroundSure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.

11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

## 12 General

12.1 The Mapping contained in the Services is protected by Crown copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.

12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through GroundSure.

12.3 GroundSure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of GroundSure.

12.4 No failure on the part of GroundSure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.

12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

12.6 The Secretary of State for Business, Innovation and Skills ("BIS") or BIS' successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vi) and clause 6.4(vii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

12.7 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:

- (i) the Client or Beneficiary's failure to provide facilities, access or information;
- (ii) fire, storm, flood, tempest or epidemic;
- (iii) Acts of God or the public enemy;
- (iv) riot, civil commotion or war;
- (v) strikes, labour disputes or industrial action;
- (vi) acts or regulations of any governmental or other agency;
- (vii) suspension or delay of services at public registries by Third Party Data Providers;
- (viii) changes in law; or
- (ix) any other reason beyond GroundSure's reasonable control.

In the event that GroundSure is prevented from performing the Services (or any part thereof) in accordance with this clause 12.6 for a period of not less than 30 days then GroundSure shall be entitled to terminate this Contract immediately on written notice to the Client.

12.8 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day) and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English

law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

12.13 GroundSure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at GroundSure who will respond in a timely manner.

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information and shall not, and shall procure that each Beneficiary shall not (i) disclose any Confidential Information to any third party other than in accordance with the terms of this Contract; and (ii) use Confidential Information for a purpose other than the exercise of its rights and obligations under this Contract. Subject to clause 6.6, nothing shall prevent the Client or any Beneficiary from disclosing Confidential Information to the extent required by law. © GroundSure Limited June 2013



Delta-Simons  
UNIT 3 DELTA SIMONS LTD, HENLEY WAY,  
LINCOLN, LN6 3QR

GroundSure Reference: GS-1745869

Your Reference: 14-0724.01

Report Date 3 Nov 2014

Report Delivery Method: Email - pdf

## GroundSure Geoinsight

Address: FORMER MASTER BREWER SITE FREEZELAND WAY UXBRIDGE, UB10 9QE

Dear Sir/ Madam,

Thank you for placing your order with GroundSure. Please find enclosed the **GroundSure GeoInsight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above GroundSure reference number.

Yours faithfully,



Managing Director  
Groundsure Limited

Enc.  
GroundSure GeoInsight



# GroundSure GeoInsight

Address:

FORMER MASTER BREWER SITE FREEZELAND WAY UXBRIDGE,  
UB10 9QE

Date:

3 Nov 2014

Reference:

GS-1745869

Client:

Delta-Simons

NW

N

NE



SW

S

SE

Aerial Photograph Capture date: 20-Apr-2013

Grid Reference: 507768,184904

Site Size: 3.38ha



# Contents Page

Overview of Findings.....	5
1 Geology.....	8
1.1 Artificial Ground Map.....	8
1 Geology.....	9
1.1 Artificial Ground.....	9
1.1.1 Artificial/ Made Ground.....	9
1.1.2 Permeability of Artificial Ground.....	9
1.2 Superficial Deposits and Landslips Map.....	10
1.2 Superficial Deposits and Landslips.....	11
1.2.1 Superficial Deposits/ Drift Geology.....	11
1.2.2 Permeability of Superficial Ground.....	11
1.2.3 Landslip.....	11
1.2.4 Landslip Permeability.....	11
1.3 Bedrock and Faults Map.....	12
1.3 Bedrock, Solid Geology & Faults.....	13
1.3.1 Bedrock/ Solid Geology.....	13
1.3.2 Permeability of Bedrock Ground.....	13
1.3.3 Faults.....	13
1.4 Radon Data.....	14
1.4.1 Radon Affected Areas.....	14
1.4.2 Radon Protection.....	14
2 Ground Workings Map.....	15
2 Ground Workings.....	16
2.1 Historical Surface Ground Working Features derived from Historical Mapping.....	16
2.2 Historical Underground Working Features derived from Historical Mapping.....	16
2.3 Current Ground Workings.....	16
3 Mining, Extraction & Natural Cavities Map.....	17
3 Mining, Extraction & Natural Cavities.....	18
3.1 Historical Mining.....	18
3.2 Coal Mining.....	18
3.3 Johnson Poole and Bloomer.....	18
3.4 Non-Coal Mining.....	18
3.5 Non-Coal Mining Cavities.....	19
3.6 Natural Cavities.....	19
3.7 Brine Extraction.....	19
3.8 Gypsum Extraction.....	19
3.9 Tin Mining.....	19
3.10 Clay Mining.....	20
4 Natural Ground Subsidence.....	21
4.1 Shrink-Swell Clay Map.....	21
4.2 Landslides Map.....	22
4.3 Ground Dissolution Soluble Rocks Map.....	23
4.4 Compressible Deposits Map.....	24
4.5 Collapsible Deposits Map.....	25
4.6 Running Sand Map.....	26
4 Natural Ground Subsidence.....	27
4.1 Shrink-Swell Clays.....	27
4.2 Landslides.....	27
4.3 Ground Dissolution of Soluble Rocks.....	28
4.4 Compressible Deposits.....	28
4.5 Collapsible Deposits.....	29
4.6 Running Sands.....	29
5 Borehole Records Map.....	30
5 Borehole Records.....	31

6 Estimated Background Soil Chemistry.....	32
7 Railways and Tunnels Map.....	33
7 Railways and Tunnels.....	34
7.1 Tunnels .....	34
7.2 Historical Railway and Tunnel Features .....	35
7.3 Historical Railways.....	35
7.4 Active Railways.....	36
7.5 Railway Projects.....	36



# Overview of Findings

The GroundSure GeoInsight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow Mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and GroundSure's unique database including historical surface ground and underground workings.

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

## Section 1:Geology

1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	Yes
	1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	Yes
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?	No
	1.2.2 Are there any records relating to permeability of superficial geology within the study site boundary?	No
	1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	1.2.4 Are there any records relating to permeability of landslips within the study site boundary?	No
1.3 Bedrock, Solid Geology & Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records relating to permeability of bedrock within the study site boundary?	Yes
	1.3.3 Are there any records of faults within 500m of the study site boundary?	No
1.4 Radon data	1.4.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level
	1.4.2 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary

Section 2:Ground Workings	On-site	0-50m	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	2	Not Searched	Not Searched
2.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
2.3 Current Ground Workings	0	0	0	0	0
Section 3:Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining	0	0	0	0	0

Section 3: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.2 Coal Mining	0	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	0	0	0	0	4
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0

Section 4: Natural Ground Subsidence	On-site
4.1 Shrink Swell Clay	Low
4.2 Landslides	Moderate
4.3 Ground Dissolution of Soluble Rocks	Negligible
4.4 Compressible Deposits	Very Low
4.5 Collapsible Deposits	Very Low
4.6 Running Sand	Very Low

Section 5: Borehole Records	On-site	0-50m	51-250
5 BGS Recorded Boreholes	0	2	6

Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250
6 Records of Background Soil Chemistry	2	0	2

Section 7: Railways and Tunnels	On-site	0-50m	51-250	251-500
7.1 Tunnels	0	0	2	Not Searched
7.2 Historical Railway and Tunnel Features	0	0	10	Not Searched
7.3 Historical Railways	0	0	0	Not Searched
7.4 Active Railways	0	0	0	Not Searched

Section 7:Railways and Tunnels	On-site	0-50m	51-250	251-500
7.5 Railway Projects	0	0	0	0



# 1 Geology

## 1.1 Artificial Ground Map

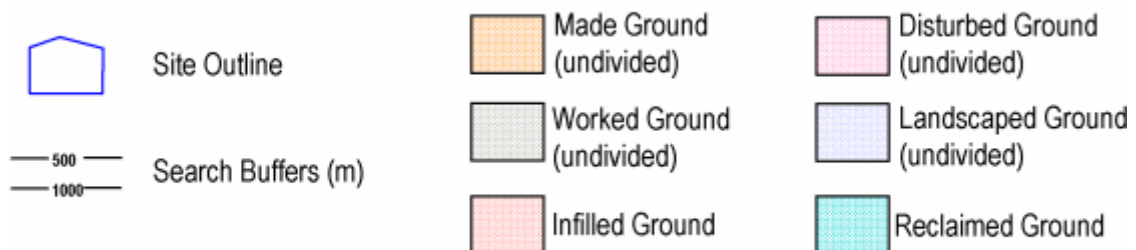


Artificial Ground Legend

Mapping  
sourced from



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# 1 Geology

## 1.1 Artificial Ground

### 1.1.1 Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:255

Are there any records of Artificial/Made Ground within 500m of the study site boundary? Yes

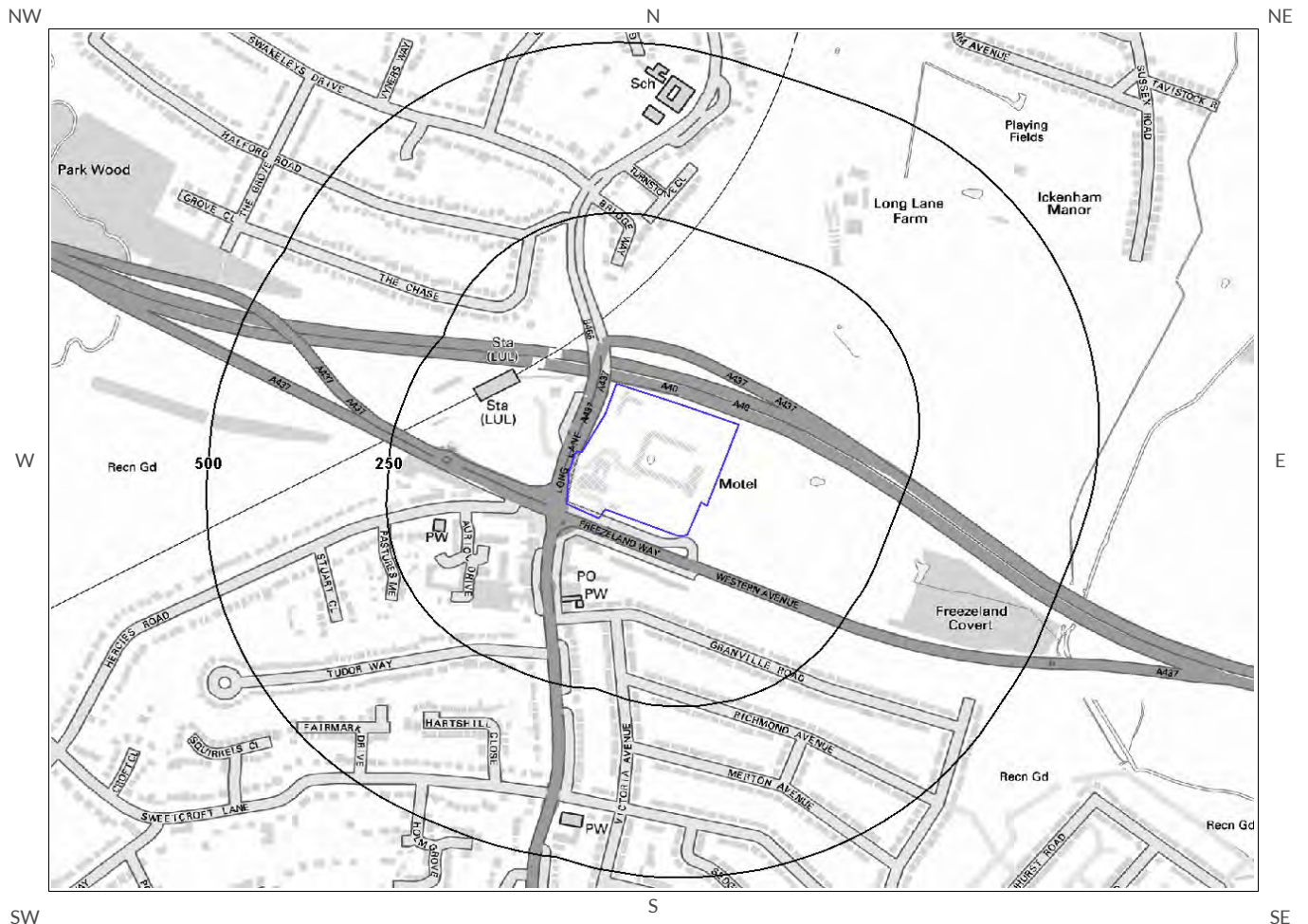
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	WGR-OPEN	WORKED GROUND (UNDIVIDED)	VOID
2	0.0	On Site	MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	59.0	W	MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
4	78.0	SE	MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
5	119.0	NW	WGR-OPEN	WORKED GROUND (UNDIVIDED)	VOID
6	258.0	W	MGR-MGRD	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

### 1.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Intergranular	Very High	Very Low
32.0	W	Intergranular	Very High	Very Low

# 1.2 Superficial Deposits and Landslips Map



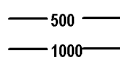
Superficial Deposits and Landslips  
Legend



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Site Outline



Search Buffers (m)



## 1.2 Superficial Deposits and Landslips

### 1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? No

Database searched and no data found.

---

### 1.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

---

### 1.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

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

---

### 1.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site\*\* boundary? No

Database searched and no data found.

---

---

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

# 1.3 Bedrock and Faults Map



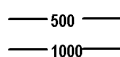
Bedrock and Faults Legend



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Site Outline



Search Buffers (m)

# 1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:255

## 1.3.1 Bedrock/ Solid Geology

Records of Bedrock/ Solid Geology within 500m of the study site boundary:

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LC-CLSS	London Clay Formation - Clay, Silt And Sand	Eocene

## 1.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site\* boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Moderate	Very Low
0.0	On Site	Mixed	Moderate	Very Low

## 1.3.3 Faults

Are there any records of Faults within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

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

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



# 1.4 Radon Data

## 1.4.1 Radon Affected Areas

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

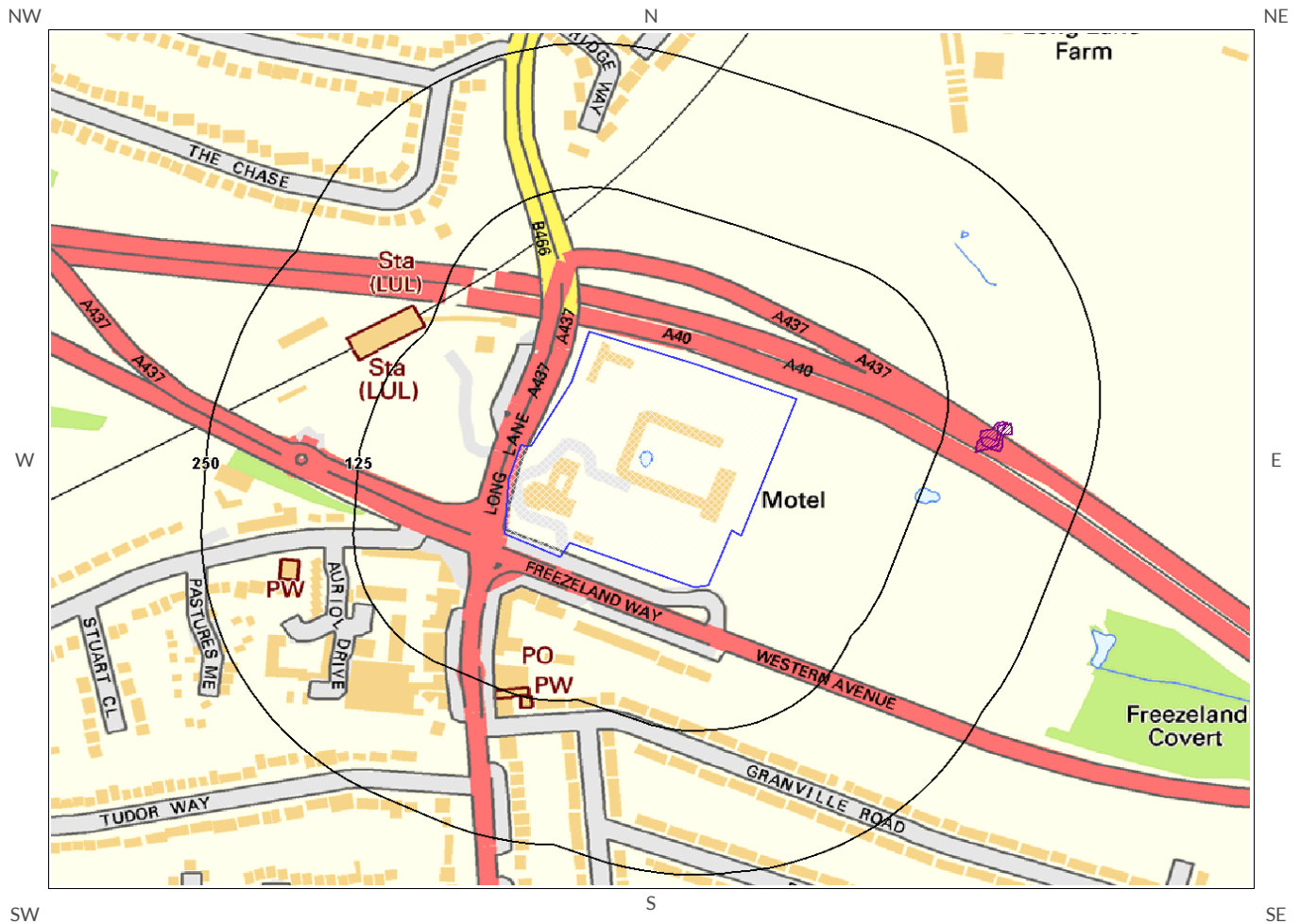
---

## 1.4.2 Radon Protection

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

---





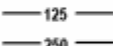
# 2 Ground Workings Map



Ground Workings Legend



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-  Site Outline
-  Historic Surface Ground Workings
-  Historic Underground Workings
-  Current Ground Workings
-  Search Buffers (m)



## 2 Ground Workings

### 2.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on GroundSure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping.

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

The following Historical Surface Ground Working Features are provided by GroundSure:

ID	Distance (m)	Direction	NGR	Use	Date
1A	154.0	E	508059 184923	Pond	1865
2A	155.0	E	508066 184926	Pond	1970

### 2.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the GroundSure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

### 2.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? No

Database searched and no data found.







# 3 Mining, Extraction & Natural Cavities

## 3.1 Historical Mining

This dataset is derived from GroundSure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

## 3.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

## 3.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

---

## 3.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	532.0	W	Not available	Chalk	Occasional minor mining may have occurred but of restricted extent.
2	559.0	W	Not available	Chalk	Occasional minor mining may have occurred but of restricted extent.
3	632.0	W	Not available	Chalk	Rare and localised small scale mining may have occurred.
4	755.0	W	Not available	Chalk	Rare and localised small scale mining may have occurred.

---

### 3.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

---

### 3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

---

### 3.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

---

### 3.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

---

### 3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level.

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---