

RIDGE

PROPERTY & CONSTRUCTION CONSULTANTS



DESK TOP STUDY

QUEENSMEAD SCHOOL, RUISLIP

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Prepared for

Queensmead School

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1. INTRODUCTION

1.1. Introduction

Ridge and Partners LLP (Ridge) was commissioned by Queensmead School to undertake a Desk Top Study in relation to the development of a two storey block at Queensmead School, Queens Walk, South Ruislip, HA4 0LS (hereafter referred to as “the site”). A site location plan is included as Figure 1.

A Ground Condition Assessment Report has been issued under separate cover.

Ridge were briefed to use the development information provided to obtain an environmental database search relating to the site, and carry out a walkover survey to assess and report on the findings with respect to potential ground contamination and potential associated future liabilities in accordance with the Preliminary Risk Assessment procedure outlined in the Model Procedures for the Management of Land Contamination (CLR 11), published by the Environment Agency.

This report is prepared in line with the agreed brief and is subject to the report conditions shown in Appendix 1.

1.1.1. Proposals

Current development plans indicate the erection of a two storey block, together with associated infrastructure. We also note the plans to include the demolition of the existing school (Block B). Further details are provided in Figure 2.

1.2. Legal Context

Part IIA of the Environmental Protection Act 1990 (inserted by Section 57 of the Environment Act 1995) provides a regime for the control of specific threats to health or the environment from land contamination. In accordance with the Act and the statutory guidance document ‘The Contaminated Land (England) Regulations 2000’, the definition of contaminated land is intended to embody the concept of risk assessment. Within the meaning of the Act, land is only “contaminated land” where it appears to the Regulatory Authority, by reason of substances within or under the land, that:

- “Significant harm is being caused, or there is a significant possibility of such harm being caused; or
- Pollution of controlled waters is being, or is likely to be, caused.”

Inherent in this definition is the requirement for contamination risk assessment to be undertaken on a site specific basis, as the potential for harm is determined by the Site's end use and its specific environmental setting. The guidance defines "risk" as the combination of:

- The probability, or frequency, of occurrence of a defined hazard (for example, exposure of a property to a substance with the potential to cause harm); and
- The magnitude (including the seriousness) of the consequences.

While Part IIA of the Environmental Protection Act provides a risk-based approach to the identification and remediation of land where contamination poses an unacceptable risk to human health or the environment, the regime does not take into account future uses. New developments are therefore controlled by the planning regime, with reference to the National Planning Policy Framework (NPPF), rather than directly by Part IIA of the Environmental Protection Act.

The NPPF is based on the principal that the site should be suitable for its new use, taking account of ground conditions, including from natural hazards or former activities and states that "Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner". The NPPF also links the planning and Part IIA regimes by stating that "after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990". Key components of the Part IIA regime, such as the definition of Contaminated Land and the associated risk-based assessment approach, are therefore considered to also be applicable to the planning regime.

1.3. Methodology

This report has been prepared in accordance with published Environment Agency guidance ('Model Procedures for the Management of Land Contamination – Contaminated Land Report (CLR) 11'). CLR 11 provides the technical framework for structured decision making about land contamination and builds on previous work carried out under the Contaminated Land Research Programme (of the former Department of the Environment). CLR 11 has adopted and refined the well recognised methodology and terminology that has been used in contaminated land risk assessment for a number of years.

1.3.1. Pollutant Linkage Concept

In the context of land contamination, there are three essential elements to any risk:

- **A contaminant source** – a substance that is in, on or under the land and has the potential to cause harm or to cause pollution of controlled waters.

- A **receptor** – in general terms, something that could be adversely affected by a contaminant, such as people, an ecological system, property, or a water body.
- A **pathway** – a route or means by which a receptor can be exposed to, or affected by, a contaminant.

Each of these elements can exist independently, but they create a risk only where they are linked together, so that a particular contaminant affects a particular receptor through a particular pathway. This kind of linked combination of contaminant–pathway–receptor is described as a pollutant linkage.

1.3.2. Conceptual Model

An important thread throughout the overall process of risk assessment is the need to formulate and develop a conceptual model for the Site, which supports the identification and assessment of pollutant linkages. A conceptual model represents the characteristics of the Site in diagrammatic or written form that shows the possible relationships between contaminants, pathways and receptors (pollutant linkages).

1.3.3. Risk Assessment

CLR 11 advocates a phased approach to risk assessment comprising the following in order, as necessary:

Preliminary Risk Assessment – a desk study consisting of a review of documentary, anecdotal and site walk over evidence.

Generic Quantitative Risk Assessment (QGRA) - comparison of contaminant concentrations obtained from site investigation with generic assessment criteria.

Detailed Quantitative Risk Assessment (DQRA) - comparison of contaminant concentrations obtained from site investigation with site-specific assessment criteria.

This document constitutes a Preliminary Risk Assessment.

1.4. Proposed End Use

Development proposals indicate the development of a two-storey educational block.

For the purposes of this report and risk assessment, the 'public open space near residential housing' (POS_{resi}) and 'public park' (POS_{park}) land use settings will be applied. The POS_{resi} setting, which is more conservative, assumes that some tracking of soil into internal areas may occur.

A change in the site use from that currently proposed may result in the need for re-assessment of risk criteria and the conclusions and recommendations resulting from the risk assessment could therefore significantly change.

1.5. Report Scope and Limitation

This report is based upon a review of readily available historical and current information, a site walkover survey, geological and hydrogeological maps and information from an environmental database search. The assessment is based on the proposed use outlined in Section 1.4. The outcomes of this assessment could change if the end uses change.

The information contained in this report is intended for the use of Queensmead School. Ridge can take no responsibility for the use of this information by any other party or for uses other than that described in this report.

2. SITE CONDITIONS

A Geo-Environmental Engineer from Ridge completed a Walkover Survey of the site on 22nd August 2018, details of which are provided below.

The site measures approximately 9.20ha and is utilised as a co-educational Secondary School with Academy Status within the London Borough of Hillingdon.

2.1. Site Location and Description

Table 2.1: Site Details

Site Address	Queensmead School, Queens Walk, South Ruislip HA4 0LS
National Grid Reference	511763, 185541
Site Area	Approximately 500 x 300m
Development Area	Approximately 45 x 20m, centred on 511729, 185498
Site Occupier	Queensmead School
Site Access	Gated access from Queens Walk to the east
Site Boundaries	North – residential land use beyond fencing
	East – metal palisade fencing with residential beyond
	South – hedging/ fencing and public car parks beyond Victoria Road
	West – hedging/ fencing and commercial beyond
Ground Cover	Approximately 60% soft landscaping, with 40% hardstanding or build footprint
Site Topography and Elevation	Approximately 35mAOD and relatively flat across the site

The site is accessed directly from Queens Walk to the east and is an operational 11-18 co-educational academy.

The majority of buildings are situated in the southern portion of the site with car parks to the immediate north and south. School playing fields make-up a large portion of the north and west areas of the site.

The specific development area is centred on 511729, 185498 positioned in the centre of the cluster of school buildings. Currently the development area is utilised as classrooms, science laboratories and other educational areas. The block is heated by mains gas which enters the area from the west. The development area is surrounded by grass on the east, south and west sides.

A maintenance shed is situated abutting the block to the south elevation. Although full access was not possible, the shed was noted to contain simple maintenance machinery such as lawnmowers, trolleys and trimmers. It is likely that limited volumes of fuels and greasers are stored. The shed was constructed over a significant concrete slab.

2.2. Surroundings

The site is situated within a predominantly residential and light commercial area. Queens Walk provides access to a number of residential properties to the north and east whilst connecting to Victoria Road in the south, providing access to the wider highway network. To the north of the site is Field End Infant School.

Photographs relating to the observations made during the walkover are included within Appendix 4.

2.3. Potential Sources of Contamination – Walkover Survey

Contaminant sources considered to present a potential risk to the site are detailed in the table below.

Table 2.2: Potential Sources following Walkover Survey

Potential Sources of Contamination Considered a Risk to the Site		
Feature	Distance, Direction	Approx. dates present
Potential Made Ground associated with historical make-up and construction in the vicinity of the development area.	On site	Pre 1960 – present

2.3.1. Potential Sources not considered further

Uses associated with the maintenance shed have not been considered any further due to the small-scale use of oils and fuels, and significant concrete floor slab noted. There is not considered to be a plausible source-pathway-receptor pollutant linkage.

3. SITE HISTORY AND HISTORICAL CONTAMINATIVE SOURCES

3.1. Review of Historical Maps

Ordnance Survey Maps provided within a Groundsure Report package have been obtained to provide details of the history of the site and surrounding areas. A chronological description of the maps is shown in the table below. The descriptions focus on features which are considered to be relevant to the proposed development within 100m of the site boundary. Note, potential contaminative sources and features more than 100m from the site have been discussed only where they are considered to be significant. Copies of the maps are included as Appendix 2.

The development site/ development area is defined as the specific area proposed for redevelopment, whereas the site is defined as the school boundaries.

Table 3.1: Historical Map Details

Mapping Date (Scale)	Observations	
	On-Site	Off-Site
1864-1868 (1:10,560)	The specific development area comprises a field boundary east-west. The site, defined as the present day school boundaries, comprises agricultural fields assumed to be part of Bourne Farm.	Farm buildings associated with Bourne Farm are located approximately 175m northwest from the site boundary.
1881 (1:10,560)	No significant changes.	No significant changes.
1894-1897 (1:10,560)	Some tree clearance across the site as a whole.	Trees associated with Bourne Farm have been cleared.
1912 (1:10,560)	No significant changes.	Northholt Junction Station is located 240m from the site. Railway lines associated with the Great Central Railway are situated 60m south at its closest point. The development area is situated approximately 170m from the railway lines.
1935 (1:10,560)	No significant changes.	Residential properties have been constructed north of the site, and west and south of the railway lines. A Sports Pavilion is located approximately 220m north of the site.

Mapping Date (Scale)	Observations	
	On-Site	Off-Site
1938 (1:10,560)	No significant changes on site.	Victoria Road has been constructed adjacent to the southern site boundary. Further residential developments to the north of the site.
1960 (1:10,560)	Five buildings (inclusive of the present day building within the development area) are situated on site, with a driveway from Queens Road to the east. The site is labelled 'School'.	Residential properties are situated along the length of the northern site boundary. Further residential development to the east. Commercial/ light industrial units are situated approximately 50m south of the site boundary, and 70m south of the development area.
1966 (1:10,560)	A second access is noted connecting Victoria Road (south) to the centre of the site.	A works is located 200m east of the site boundary.
1973-1974 (1:10,000)	Significant development on the site inclusive of construction and landscaping. Tennis courts are noted in the south-western corner.	No significant developments noted surrounding the site.
1990-1994 (1:10,000)	Further development on site inclusive of a Sports Centre situated 10m west of the development area.	Warehouses are noted 135m south of the development area.
2002 (1:10,000)	Further development on site associated with the school inclusive of unspecified buildings.	No significant developments.
2010 (1:10,000)	School building 10m east of the development area has been extended to the north.	No significant developments.

3.1.1. Potential Sources of Contamination – Historical Map Review

Contaminant sources considered to present a potential risk to the site are detailed in the table below.

Table 3.2: Potential Sources following Historical Map Review

Potential Sources of Contamination Considered a Risk to the Site		
Feature	Distance, Direction	Approx. dates present
Made Ground associated with development of the School site.	Within development area/ adjacent	Pre 1960 – present
Made Ground associated with construction of Victoria Road.	40m south of the development area.	Constructed 1938
Activities and processes associated with commercial/ industrial developments.	70m south of the development area.	Constructed pre-1960
Potential Sources Not Considered Further		
Feature	Justification	
Bourne Farm and associated activities (175m).	Significant distance from the development site and low contamination potential.	
Northolt Junction Station (240m).	Significant distance from site.	
Railway lines associated with the Great Central Railway.	Significant distance from the development site (170m).	
Works 200m east	Significant distance from the site.	
Warehouses 135m south		

4. PHYSICAL SETTING

4.1. Geology and Hydrogeology

The following observations are taken from the British Geological Survey (BGS) Geology of Britain Viewer (2018) and the Geo Insight Groundsure Report (Appendix 3).

The BGS Geology of Britain Viewer (2018) indicates that the site is directly underlain by Bedrock Geology of the London Clay Formation. There are no records of Superficial Deposits directly below the site.

The table below identifies the expected composition of the published strata and associated aquifer classification.

Table 4.1: Geology and Hydrogeology

Bedrock Geology	
Unit Name	London Clay Formation
Geology Description	Comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty Clay, clayey Silt and sometimes Silt, with some layers of sandy Clay. It also includes a few thin beds of shells and fine sand partings or pockets of Sand.
Aquifer Classification	Unproductive
Aquifer Description	Rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

4.1.1. Historical Borehole Records

A historical borehole drilled on site, approximately 60m east of the development area (TQ18NW1/A) identified light brown Clay and dark brown Clay to 2.4m depth. Blue Clay and blue sandy Clay was observed from 2.4m to 6.1m. Groundwater was not identified.

4.1.2. Artificial Ground

There are no records of artificial ground within 500m of the site boundary.

4.1.3. Landslips

There are no records of landslips within 500m of the study site boundary.

4.1.4. Radon

The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No Radon Protective Measures are considered necessary for new properties or extensions.

4.1.5. Ground Workings

There are two records of historical ground workings (ponds) within 250m of the site boundary, although these are noted to be ~350m from the specific development area.

4.1.6. Mining, Extraction and Natural Cavities

There is one record for Chalk mining 320m north of the site. There are no further records.

4.1.7. Natural Ground Subsidence

The BGS has provided the following information as summarised in the table below.

Table 4.2: Ground Subsidence Records

Process	Risk Level
Shrink Swell Clay	Low
Landslides	Very Low
Collapsible Deposits	Very Low
Running Sands	Negligible
Compressible Deposits	Negligible
Ground Dissolution of Soluble Rocks	Negligible

4.2. Railways and Tunnels

There is a record for London Underground railway lines 160m south-west, which relates to the above surface Central Line.

Railway sidings are recorded 95m and 115m south.

4.3. Hydrology

4.3.1. Surface Water Features

The nearest surface water feature is Yeading Brook situated 80m south-west from the development area, and 40m south-west of the site boundary.

4.3.2. Flooding

The site has been identified as being situated within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain. Environment Agency/Natural Resources Wales 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.

The site is not located within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain.

The Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating for the site has been identified as being Low. The RoFRaS data for the site indicates the property is in an area with a Low (greater than 1 in 1000 but less than 1 in 100) chance of flooding in any given year. Data to 50m is reported in the table below.

Table 4.3: Flooding Data

ID	Distance (m)	Direction	RoFRaS Flood Risk
1	0.0	On Site	Low
2	12.0	S	Medium
3	19.0	SE	High

4.4. Controlled Waters

4.4.1. Abstraction Licenses

There are no groundwater or surface water abstraction licenses within 1km of the site boundary.

4.4.2. Source Protection Zones

There are no Source Protection Zones (SPZ) within 500m of the site.

4.4.3. Groundwater Vulnerability and Soil Leaching Potential

The site is not classified due to the unproductivity of the underlying geological unit (London Clay).

4.5. Designated Environmentally Sensitive Sites

There are no SSSI, NNR, SAC, SPA, Ramsar sites, Ancient Woodland, World Heritage Sites, Environmentally Sensitive Areas, ANOB, National Parks, Nitrate Sensitive Areas or Nitrate Vulnerable Zones within 2km of the site.

Islip Manor Local Natures Reserve (LNR) is located 690m south. There are no further features within 1km.

5. ENVIRONMENTAL RECORDS REVIEW

The following information has been obtained from public archive via the data supplier Groundsure or by direct application. The full Enviro Insight Groundsure Report is included as Appendix 3. The subsequent review focusses on records within 500m of the outlined development site, or those which are considered relevant to the proposed development. Ridge have not included data from Groundsure's own review of historical maps.

5.1. Groundsure Record Search

The following observations are taken from the British Geological Survey (BGS) Geology of Britain Viewer (2018) and the Enviro Insight Report (Appendix 3).

5.1.1. Historical Tank Database

There are records of historical tanks within 200m of the site.

5.1.2. Historical Petrol and Fuel Sites

There are no records within 500m of the site.

5.1.3. Historical Garages

There is one record within 100m – a garage located 75m east of the site boundary, and 235m east of the development area, identified from the 1960 mapping.

5.1.4. Industrial Sites Holding Licenses/ Authorisations

There are no records within 500m of the study site.

5.1.5. Dangerous or Hazardous Sites

According to the database there are no records within 500m of the study site boundary.

5.1.6. Pollution Incidents

A significant (water) incident occurred on site in September 2001 relating to inert material/ waste. There was no impact to land or air. Based on the coordinates provided this incident occurred approximately 140m west of the development area.

5.1.7. Landfill and other Waste Sites

There are no records of active landfill sites within 1km of the site.

There are two records of Other Waste Sites within 300m, the closest of which is for a Solid Waste Transfer Station 170m south-east (Hillingdon Waste Transfer Station). The second record is also for a Solid Waste Transfer Station, located 275, south-east, possibly also in relation to the Hillingdon site.

5.1.8. Current Industrial Data

There are 7no. records within 100m of the site, the most pertinent of which are summarised below.

The closest record relates to an on site electrical substation. The substation is located adjacent to the site's eastern boundary, and is noted to be more than 150m from the development area.

A Sainsbury's fuel station is situated 25m south of the site boundary, and ~230m south-west of the development area.

A warehouse for container storage is located 70m south of the site boundary.

5.2. Potential Sources of Contamination – Records Review

No potential sources of contamination have been identified following a Records Review. Justification is provided in the table below.

Table 5.1: Justifications

Potential Sources Not Considered Further	
Feature	Justification
Historical garage 235m east of the development area.	Significant distance from the development site.
Pollution incident 140m west of the development area.	
Waste Transfer Station 170-275m south-east.	Relatively low contamination potential and distance from the site.
On site electrical substation, 150m from the development area.	Significant distance from the development area.
Fuel station 230m from development area.	
Warehouse – container storage – 70m south of site boundary.	Low contamination potential.

6. CONCEPTUAL SITE MODEL

6.1. Sources

It should be noted that additional sources of contamination may become apparent during any future investigation and development of the site.

The conceptual model, based on information obtained as part of the preliminary risk assessment, identified the following potential contaminant sources:

6.1.1. Development Area – Historical and Current

1. Potential Made Ground associated with original development of the proposed development area and immediate vicinity pre-1960s to present. Contaminants of concern (CoC) include commonly identified contaminants such as asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (TPHs). Furthermore, based on the potential for Made Ground, there is a possible ground gas risk.

6.1.2. Off Development Area – Historical and Current

2. Potential Made Ground associated with construction of Victoria Road 40m south of the development area, circa 1938. CoC include commonly identified contaminants such as asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (TPHs). There is not considered to be a viable ground gas risk.
3. Commercial/ industrial uses 70m south of development area. CoC include commonly identified contaminants such as asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (TPHs).

6.2. Pathways

The key environmental pathways and exposure routes by which potentially toxic substances can reach the identified potential receptors are considered to be:

6.2.1. Direct

- Inhalation of contaminated dust
- Ingestion
- Dermal contact
- Inhalation of ground gases

6.2.2. Indirect

- Vertical and lateral migration of organic and inorganic compounds through underlying geology associated with off site land uses.
- Vertical and lateral migration of ground gas leading to accumulation in enclosed spaces and possible inhalation.

6.3. Receptors

Receptors that may be affected by the potential contamination are considered to be:

6.3.1. Human

- Site Users (pupils, teachers and maintenance staff)
- Construction Workers (during proposed development)

6.3.2. Environmental

There are not considered to be any viable environmental receptors. Groundwater underlying the site is designated unproductive, and the nearest surface water feature is 80m from the site.

7. RISK ASSESSMENT

7.1. Risk Assessment Procedure

By considering the sources, pathways and receptors (pollutant linkages), an assessment of the human health/ environmental risks is made with reference to the significance and degree of the risk. This assessment is based on consideration of whether the contamination source can reach a receptor and hence whether it is of major or minor significance.

The risk assessment has been undertaken with reference to BS 10175:2011+A1:2013 and CIRIA Document C552: Contaminated Land Risk assessment 'A Guide to Good Practice'. The risk assessment has been carried out by assessing the severity of the potential consequence, taking into account both the potential magnitude of the hazard and the sensitivity of the target, based on the categories given below.

Table 7.1: Sensitivity of Receptor

Category	Examples
High	Residential with gardens/Groundwater Source Protection Zone
Medium	Residential without gardens/Principal (Major) Aquifer/sensitive watercourse
Low	Commercial and industrial use/Secondary (Minor) Aquifer
Very Low	Construction and maintenance workers/non-sensitive watercourse

Table 7.2: Magnitude of Impact

Category	Examples
Gross Impact	Heavily contaminated gasworks or industrial site, hazardous waste landfill
Moderate Impact	Major leaks and spills from fuel infrastructure (e.g. petrol stations), domestic waste landfills
Slight Impact	Minor leaks and spills from fuel infrastructure, 'inert' waste landfills

Table 7.3: Level of severity of potential hazard

Magnitude of impact	Sensitivity of receptor			
	High	Medium	Low	Very Low
Gross Impact	Severe	Medium	Mild	Minor
Moderate Impact	Medium	Mild	Minor	Minor
Slight Impact	Mild	Minor	Minor	Minor

The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given below.

Table 7.4: Probability of risk definition

Category	Examples
High likelihood	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor.
Likely	Pollutant linkage may be present, and it is probable that the risk will occur over the long term.
Low likelihood	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so.
Unlikely	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable.

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix in order to give a level of risk for each potential hazard.

Table 7.5: Level of risk for potential hazard definition

Probability of risk	Sensitivity of receptor			
	Severe	Medium	Mild	Minor
High likelihood	Very High	High	Moderate	Low/Moderate
Likely	High	Moderate	Low/Moderate	Low
Low likelihood	Moderate	Low/Moderate	Low	Very Low
Unlikely	Low/Moderate	Low	Very Low	Very Low

The assessment is discussed below in terms of plausible pollutant linkages. A complete assessment of the pollutant linkages is presented in Table 7.6.

A description of these risk classifications and likely action required are given in CIRIA 552 as:

Very high risk – High probability that severe harm could arise to a designated receptor from an identified hazard OR there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in substantial liability. Urgent investigation and remediation are likely to be required.

High risk – Harm is likely to arise to a designated receptor from an identified hazard. This risk, if realised, is likely to result in substantial liability. Urgent investigation is required, and remedial works may be necessary in the short term and are likely over the long term.

Moderate risk – It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation is normally required to clarify risks and to determine potential liability. Some remedial works may be required in the long term.

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

Very low risk – It is a low possibility that harm could arise to a designated receptor. In the event of such harm being realised it is not likely to be severe.

7.2. Pollutant Linkage Assessment

Table 7.6: Pollutant Linkage Assessment

Source	Pathway	Receptor	Severity	Likelihood	Risk Level
1	Direct contact, ingestion and inhalation of impacted soils/groundwater	Site Users (pupils, teachers and maintenance staff)	Minor	Low Likelihood	Very Low
		Construction Workers (during development)	Minor	Likely	Low
	Vertical and lateral migration of ground gas leading to accumulation in confined spaces and inhalation	Site Users (pupils, teachers and maintenance staff)	Minor	Low Likelihood	Very Low
		Construction Workers (during development)	Minor	Low Likelihood	Very Low
2	Direct contact, ingestion and inhalation of impacted soils/groundwater	Site Users (pupils, teachers and maintenance staff)	Minor	Unlikely	Very Low
		Construction Workers (during development)	Minor	Unlikely	Very Low
3	Direct contact, ingestion and inhalation of impacted soils/groundwater	Site Users (pupils, teachers and maintenance staff)	Minor	Unlikely	Very Low
		Construction Workers (during development)	Minor	Unlikely	Very Low

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Potential Sources of Contamination

The following potential sources of contamination were identified:

1. Potential Made Ground associated with original development of the proposed development area and immediate vicinity pre-1960s to present. Contaminants of concern (CoC) include commonly identified contaminants such as asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (TPHs). Furthermore, based on the potential for Made Ground, there is a possible Ground Gas risk.
2. Potential Made Ground associated with construction of Victoria Road 40m south of the development area, circa 1938. CoC include commonly identified contaminants such as asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (TPHs). Furthermore, based on the potential for Made Ground, there is a possible Ground Gas risk.
3. Commercial/ industrial uses 70m south of development area pre-1960. CoC include commonly identified contaminants such as asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs) and petroleum hydrocarbons (TPHs).

It should be noted that additional sources of contamination may become apparent during any future investigation or development of the site.

8.1.1. Contaminants in Soil

This study has identified potential for contaminants within Made Ground and shallow natural soils. Although it is assumed that the development will include limited areas of soft landscaping, it is acknowledged that the majority of the development comprises areas of build footprint, hardstanding, roadways and pavements. Hardstanding and buildings will act as a barrier between soil contamination in the soil and human site end users.

There is the possibility of end-user interaction with areas of soft landscaping and subsequent tracking of soils indoors.

Due to the nature of site preparation and groundworks, there is the potential for construction workers to come into contact with exposed shallow soils during development, thereby creating a viable pathway.

8.1.2. Ground Gas

Due to the unknown composition of Made Ground fill materials on site, there is some potential for ground gas producing soils.

The potential for ground gas is dependent on the degree of degradable organic content within Made Ground and shallow natural soils.

8.2. Preliminary Risk Rating

The risk of impact to receptors from identified potential sources is considered to be **Low**. Based on this upper risk level, it is recommended that a contaminant screen is conducted during the proposed Geotechnical Ground Investigation, as opposed to a full intrusive Contamination Risk Assessment (Phase 2).

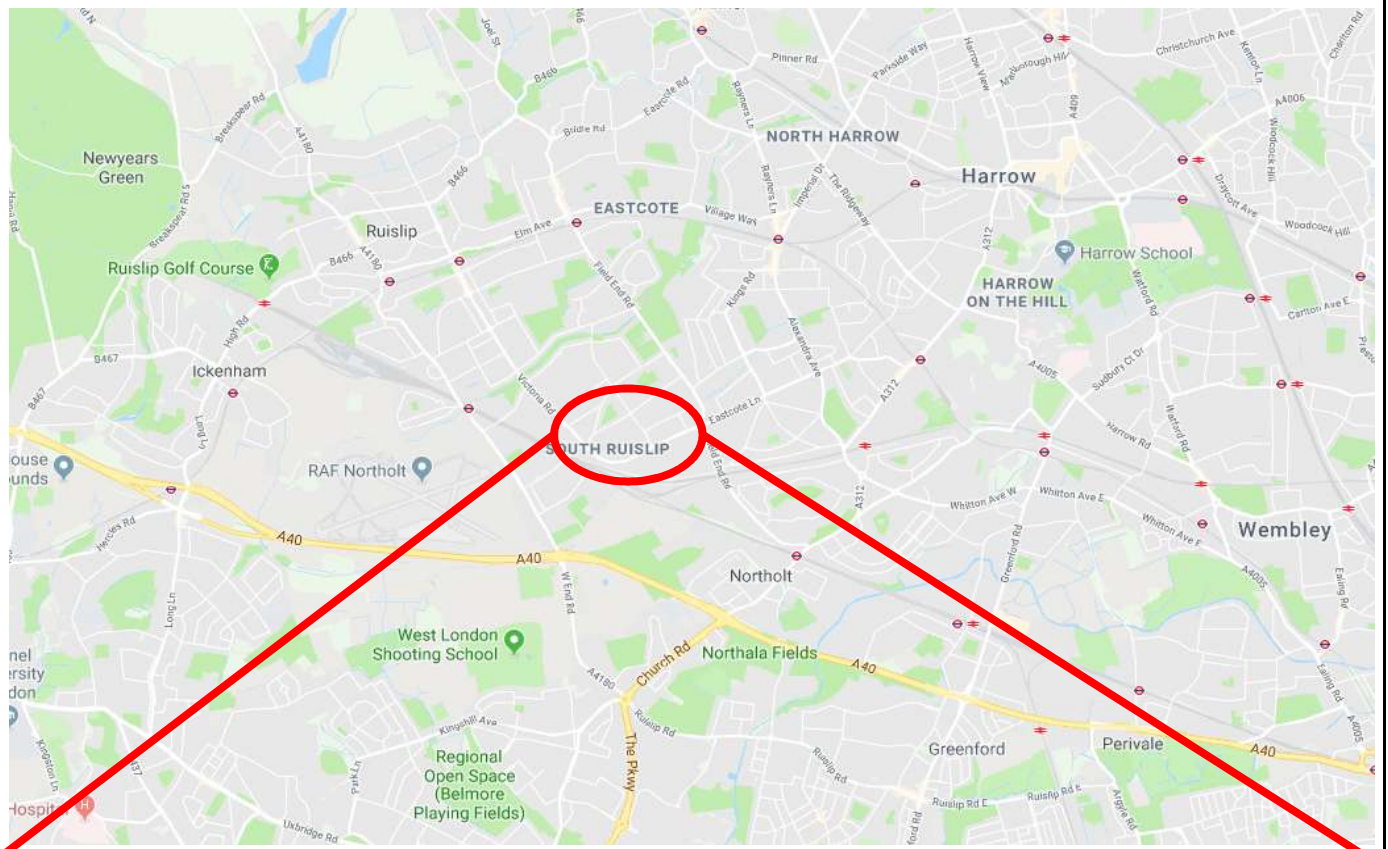
8.3. Further Works

A Geotechnical Ground Investigation has been commissioned by the client in order to assist with design solutions for the proposed development.

As part of the Ground Investigation, a contaminant screen of Made Ground and shallow natural soils should be conducted. Screening will involve physical and chemical characterisation of soils within the development area specifically.

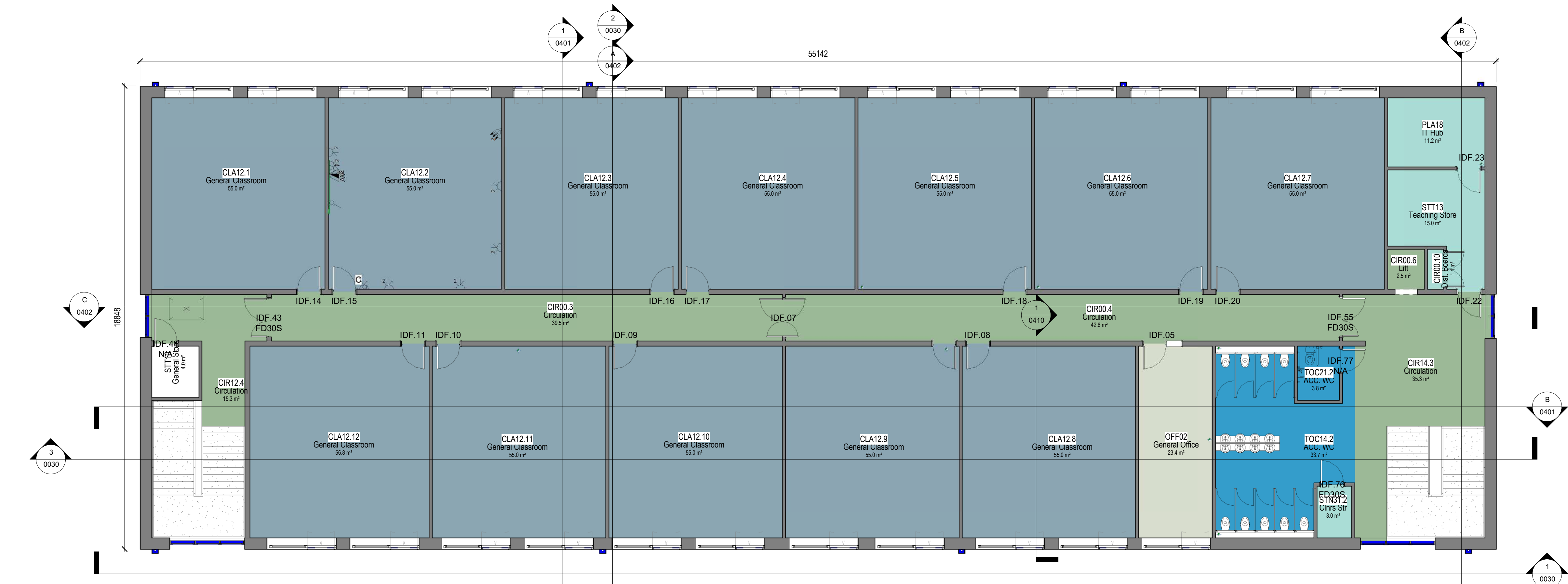
The requirement for characterisation of the ground gas will be dependent on observations made during site works and subsequent laboratory analysis.

FIGURE 1 – LOCATION PLAN

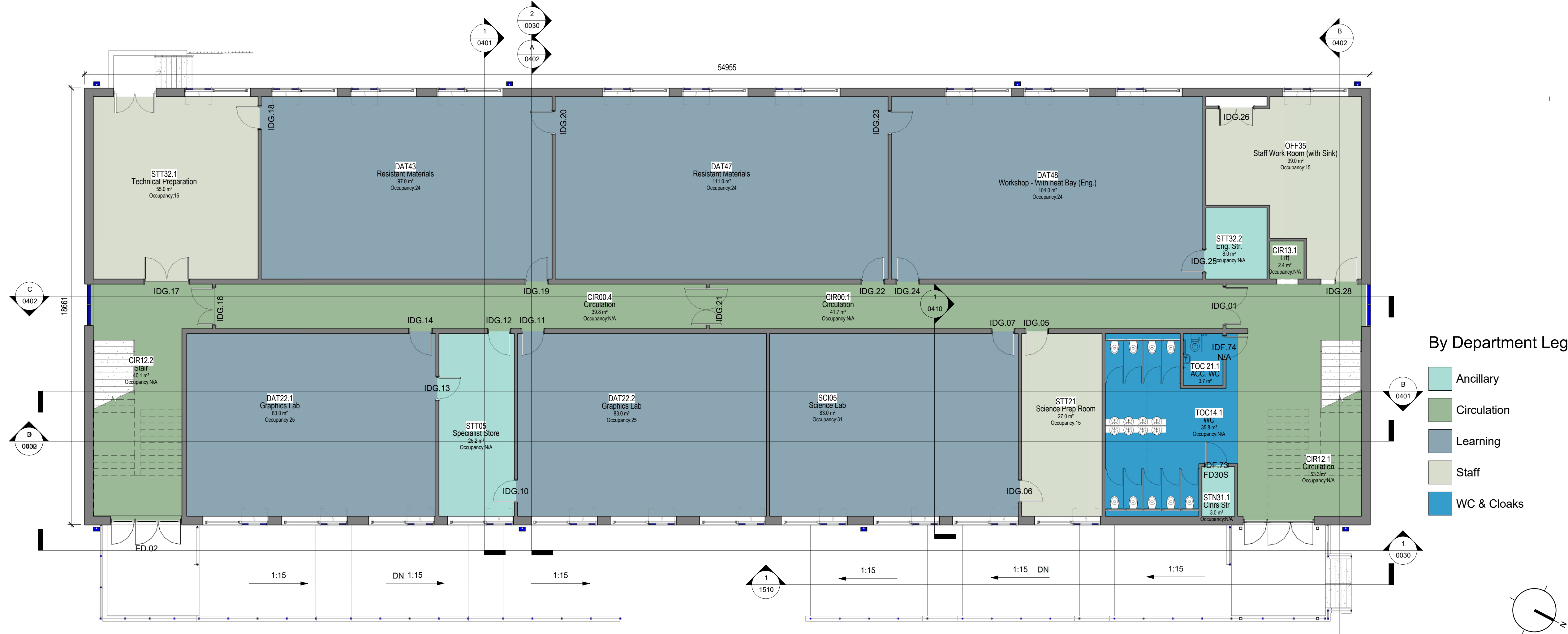


REF	DATE	REVISION	DRAWN	CHECKED				
SURVEY PRODUCED UNDER ORDNANCE SURVEY CROWN COPYRIGHT 2011. ALL RIGHTS RESERVED LICENCE NUMBER 1000023183								
PROJECT			DRAWING					
QUEENSMEAD SCHOOL			5000407-01					
RIDGE PARTNERSHIP HOUSE TEL: 01962 834400 MOORSIDE ROAD FAX: 01993 815001 WINCHESTER HAMPSHIRE, SO23 7RX www.ridge.co.uk Also at Reading, Bristol, London & Leicester			CLIENT	SCALE	DATE		DRAWN BY	CHECKED BY
			Queensmead School	NTS	19/09/2018		PB	RJH
			TITLE					
SITE LOCATION PLAN								
REV								

FIGURE 2 – PROPOSED DEVELOPMENT PLANS



General Arrangement - First Floor
1 : 100



General Arrangement - Ground Floor
1 : 100



LUNGFISH

Lungfish Architects
2nd Floor, City Gate West
Tollhouse Hill
Nottingham
NG1 5AT
Tel: 0115 7841223
Fax: 0115 9583232
e-mail: hello@lungfish-architects.co.uk
Web: www.lungfish-architects.co.uk

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NOTES

- Do not scale from this drawing.
- All measurements are in millimetres unless stated otherwise.
- This drawing is to be read in conjunction with the contract documentation, specification and all relevant Architectural, Electrical, Mechanical, Landscape and Structural drawings.
- Any discrepancies between documents to be reported to the architectural team for review and clarification, prior to works commencing on site.
- All coordinates and dimensions to be checked and confirmed on site, prior to works commencing.
- Lungfish drawings are provided as design intent. The detail shown is demonstrative of principle; all components, fixings and seals etc are to be provided and installed to the satisfaction of each relevant manufacturer's recommendations to maintain thermal, air and fire resistances where applicable.

The information on this drawing is subject to the final co-ordination of structure/sub-structure, M&E

..... Indicates extent of existing building that will be demolished

Name	Area
Ground Floor GIA	962.2 m ²
First Floor GIA	962.2 m ²
Plant GIA	56.5 m ²
Total GIA	1981.0 m ²

Rev	Description	Date	Dm.	Chk.
P05	Stage 3 Issue	21.02.2020	KR	NW
P04	Layout updated to accommodate Services zone	10.01.2020	NW	CRT
P03	Updated Layout Issue for Comment	09.01.2020	NW	CRT
P02	Issued for Pre-application advice	19.12.19	NW	CRT
P01	Issued for CEM 01	29.11.19	NW	CRT

CLIENT

CONTRACTOR

Morgan Sindall
1st floor, 1 Falcon Gate Shire Park
Welwyn Garden City
AL7 1TW

PROJECT

Queensmead Academy
Queens Walk
South Ruislip, Middlesex
HA4 0LS

TITLE

Proposed General Arrangement
Floor Plans

DRAWN BY:	NW	DATE:	29/11/19
CHECKED BY:	YN	SCALE:	1 : 100 @ A1

STATUS

For Costing

PRJ - ORIGIN - ZONE - LEVEL - TYPE - ROLE - NUMBER	STATU	REV
53X009 - LFA - 01 - ZZ - DR - A - 0200	D2	P05

APPENDIX 1 – REPORT CONDITIONS

This report is produced solely for the benefit of **Queensmead School** and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the Site.

This report is based on a visual Site inspection, study of readily accessible referenced historical records, information supplied by those parties noted in the text and preliminary discussions with local and Statutory Authorities. Some of the opinions are based on unconfirmed data and information and are presented in good faith without exhaustive clarification. Where ground contamination is suspected but no physical Site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to detailed activities related to the Site. Where test results undertaken by others have been made available these can only be regarded as a limited sample. The possibility of the presence of contaminants, not revealed by this research cannot be discounted.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categoric assurances that they will be accepted by Authorities or Funds etc. without question, as such bodies may have unpublished, often more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to Ridge and Partners LLP. In time improved practices or amended legislation may necessitate a re-assessment.

The report is necessarily limited to those aspects of land contamination specifically reported on and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents that may occur. The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous use and abuse of the Site and adjacent Sites. The report concentrates on the Site as defined in the report and provides an opinion on surrounding Sites. If migrating pollution or contamination (past or present) exists this can only practically be better assessed following extensive on and off Site intrusive investigations and monitoring.

APPENDIX 2 – HISTORICAL MAPS

Site Details:

QUEENSMEAD SCHOOL,
VICTORIA ROAD, RUISLIP, HA4
0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1864-1868

Scale: 1:10,560

Printed at: 1:10,560



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

Surveyed 1865
Revised 1865
Edition 1868
Copyright N/A
Levelled N/A

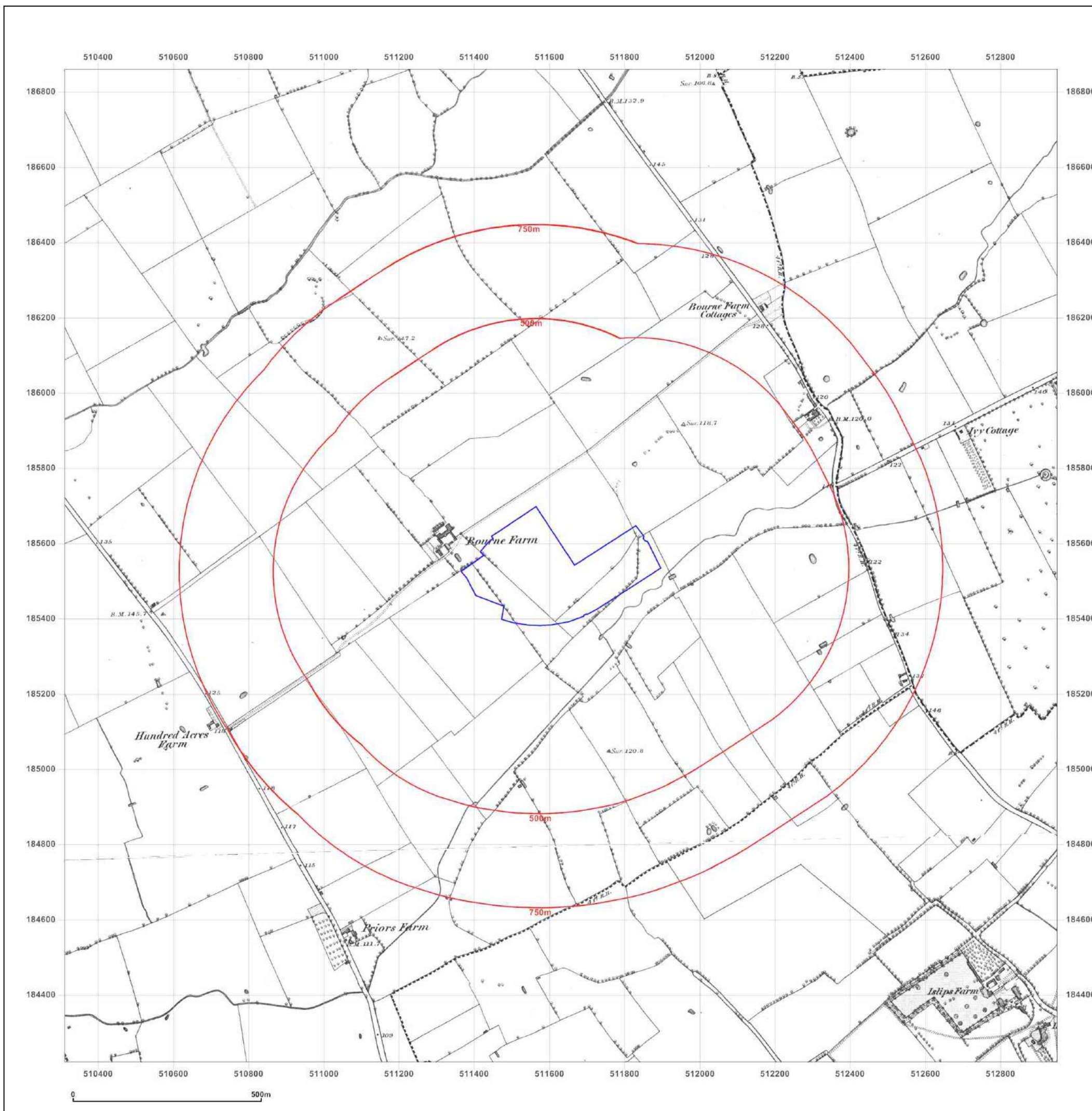


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Site Details:

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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1881

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1875
Revised N/A
Edition 1881
Copyright N/A
Levelled N/A

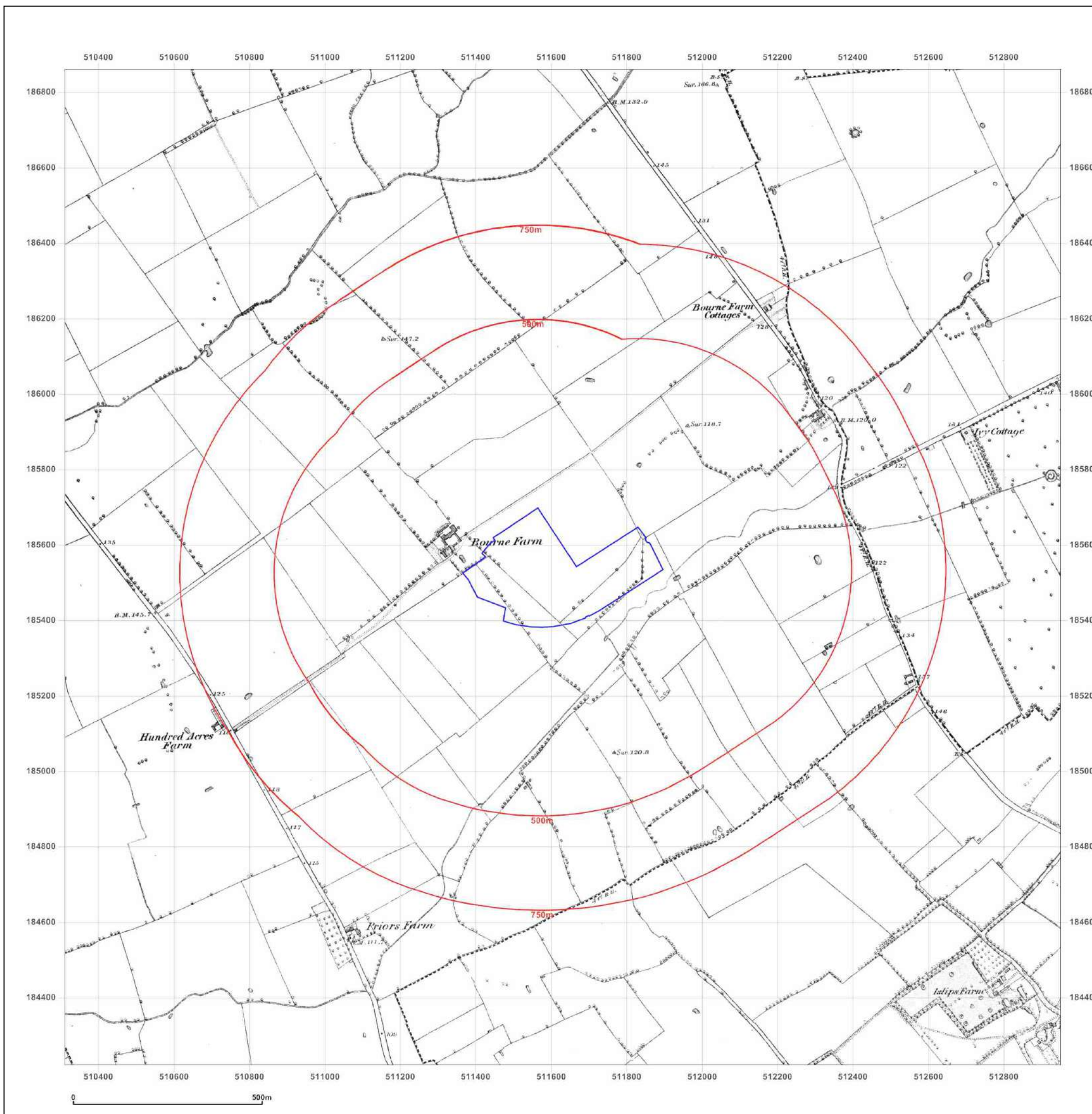


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Site Details:

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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1894-1897

Scale: 1:10,560

Printed at: 1:10,560



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

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

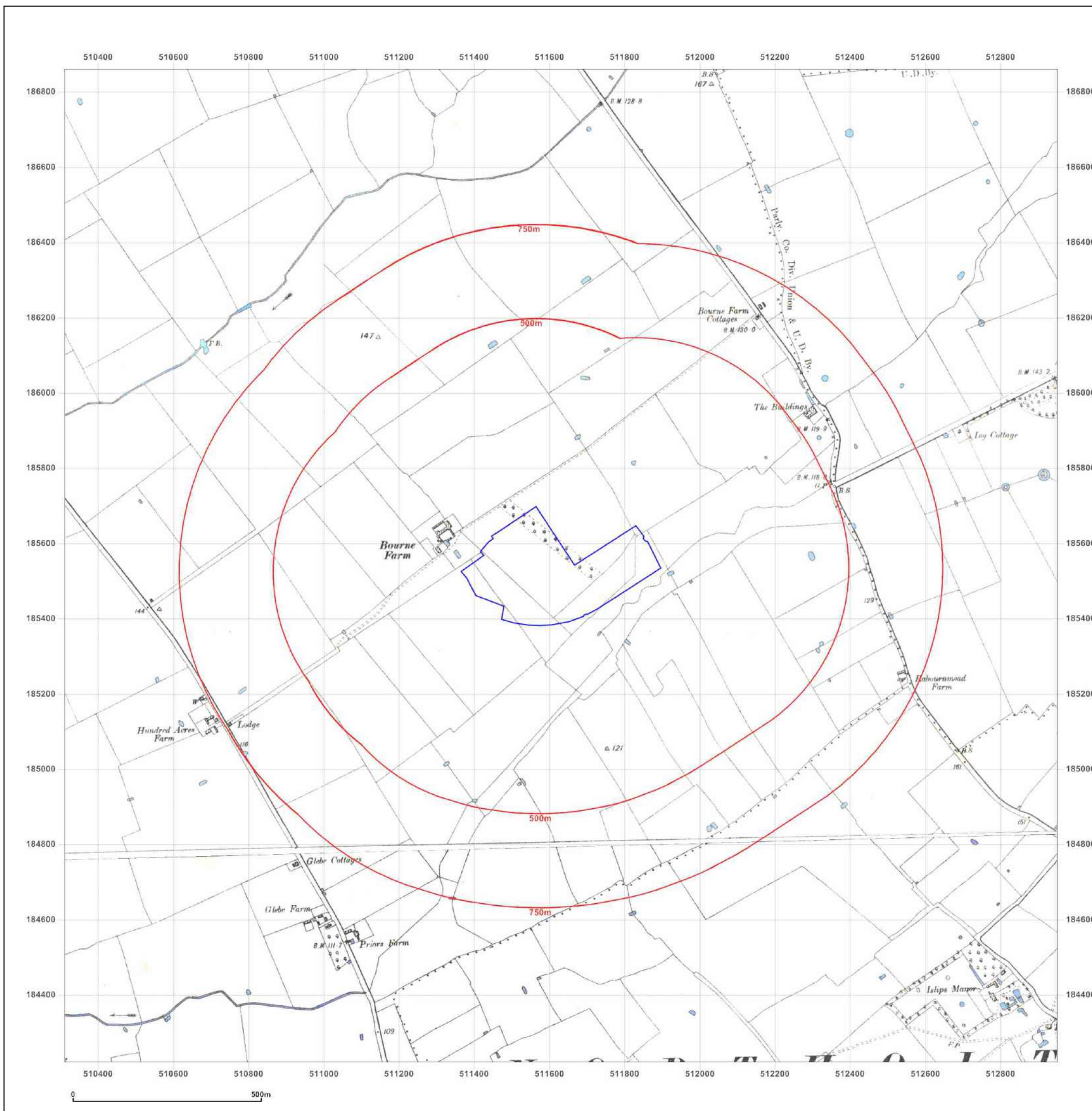


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Site Details:

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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1894-1897

Scale: 1:10,560

Printed at: 1:10,560



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

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

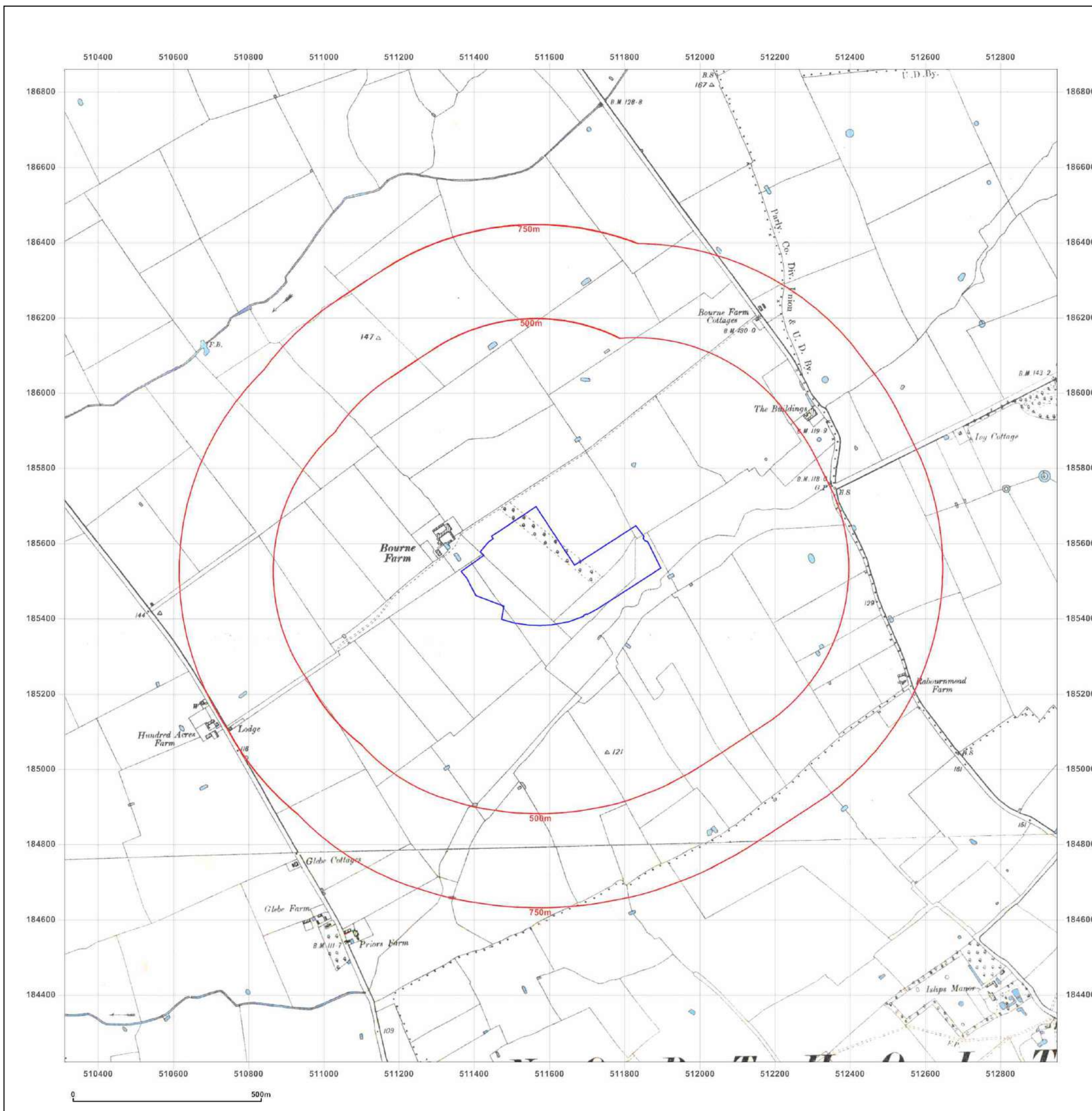


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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1912

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1912
Edition N/A
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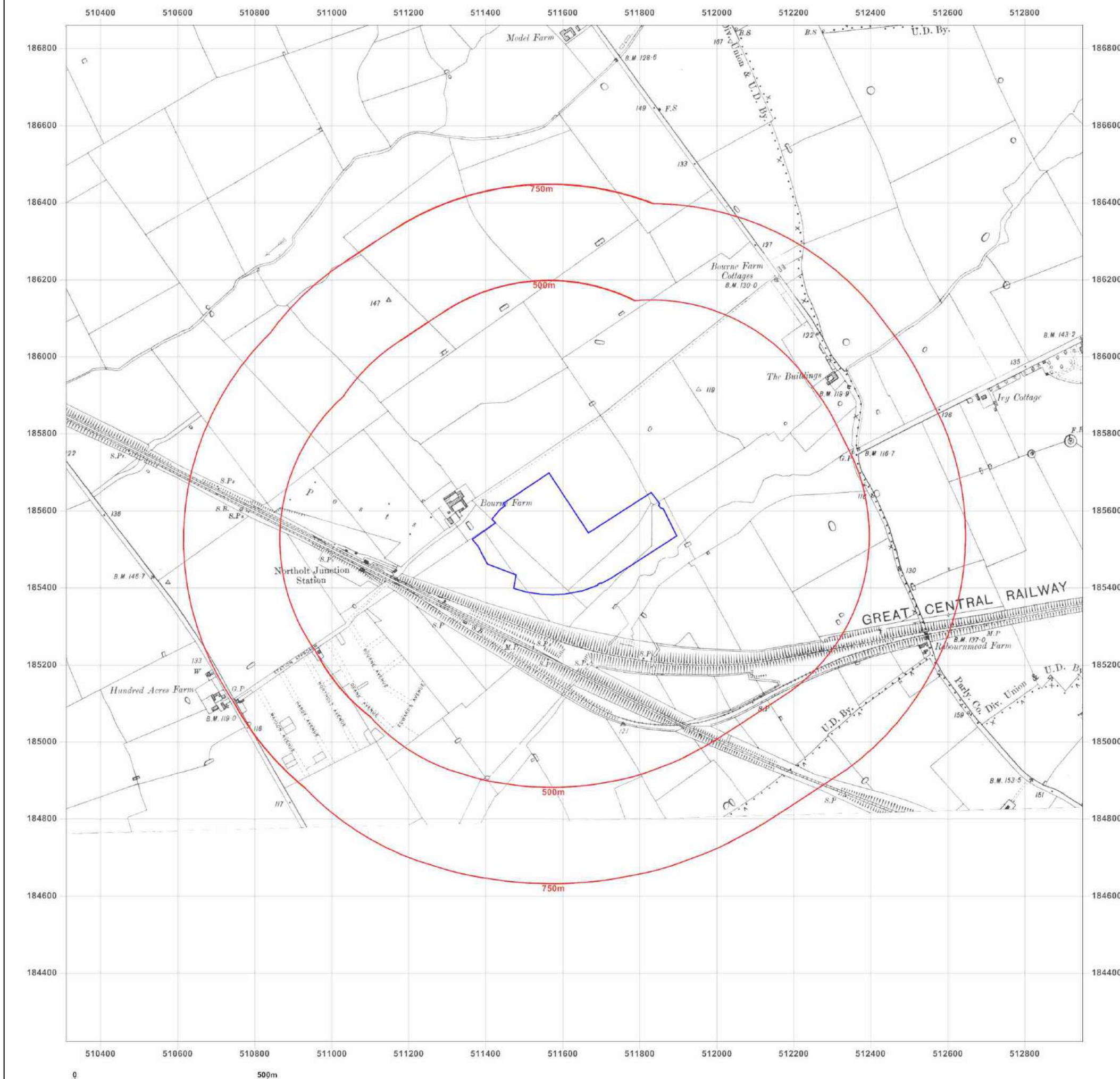


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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1912-1913

Scale: 1:10,560

Printed at: 1:10,560



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

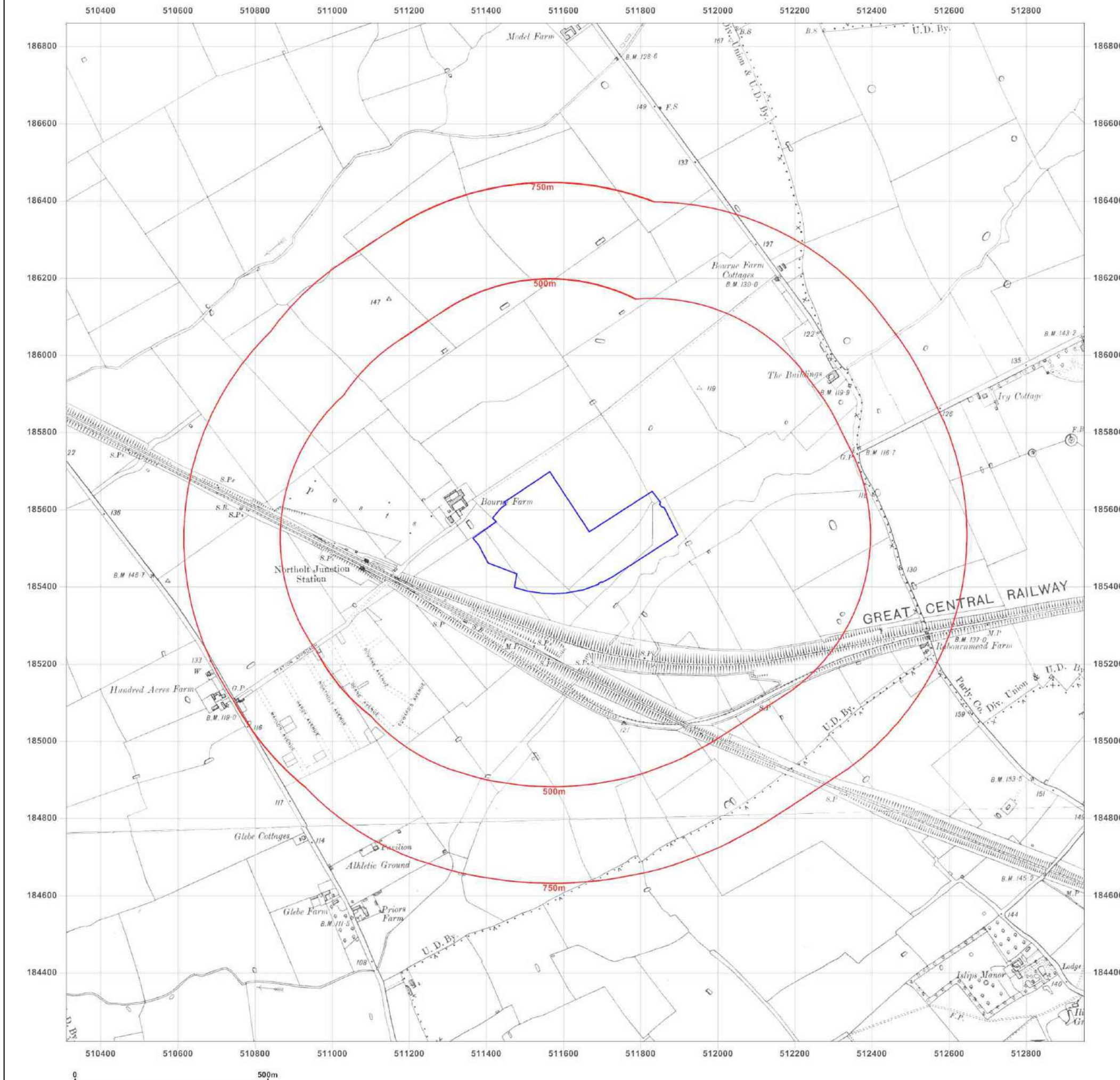


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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1920

Scale: 1:10,560

Printed at: 1:10,560



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Edition 1920
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Surveyed 1865
Revised 1913
Edition 1920
Copyright N/A
Levelled 1912

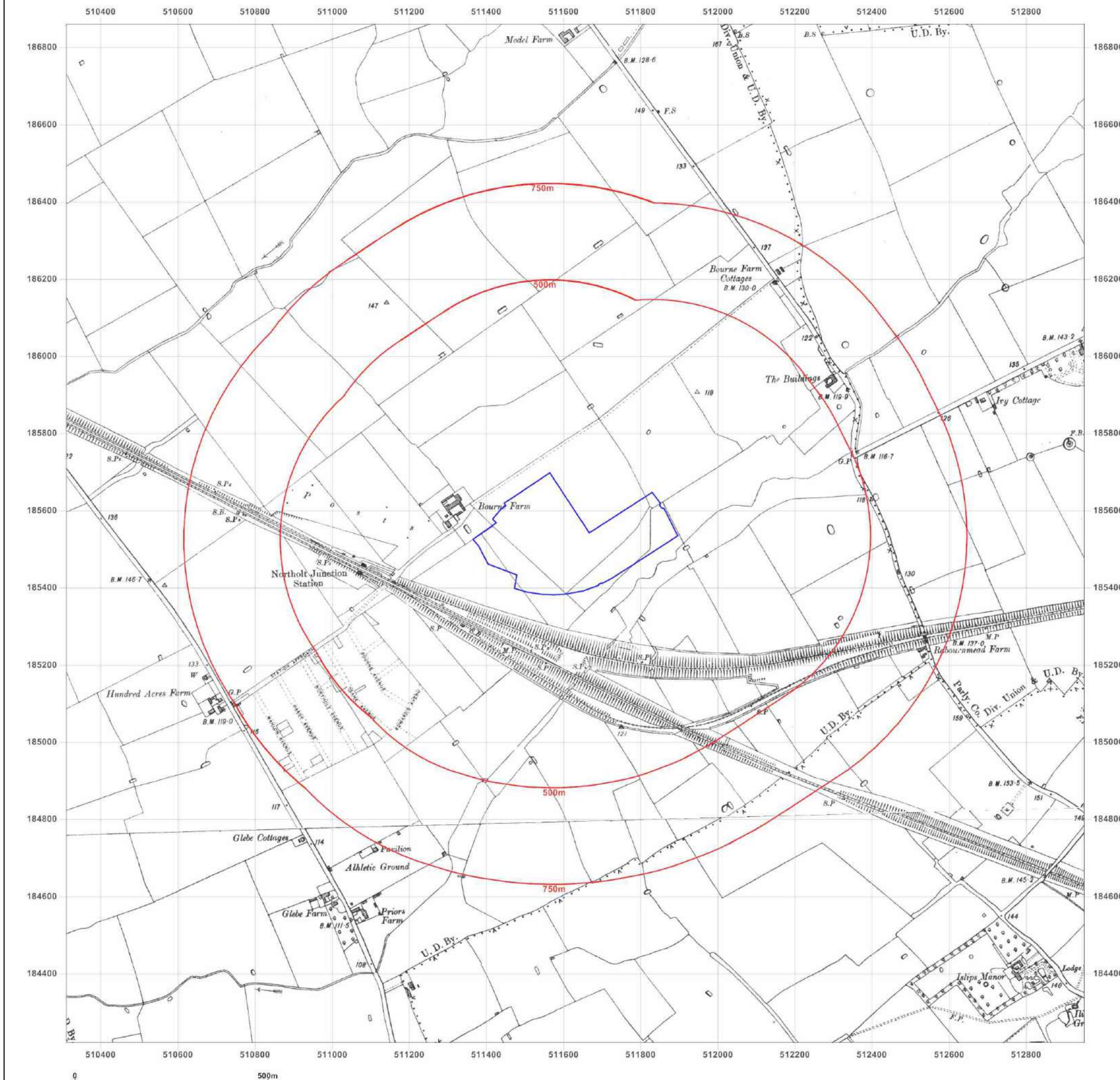


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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1935

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1935
Edition N/A
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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1864
Revised 1938
Edition 1938
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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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

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

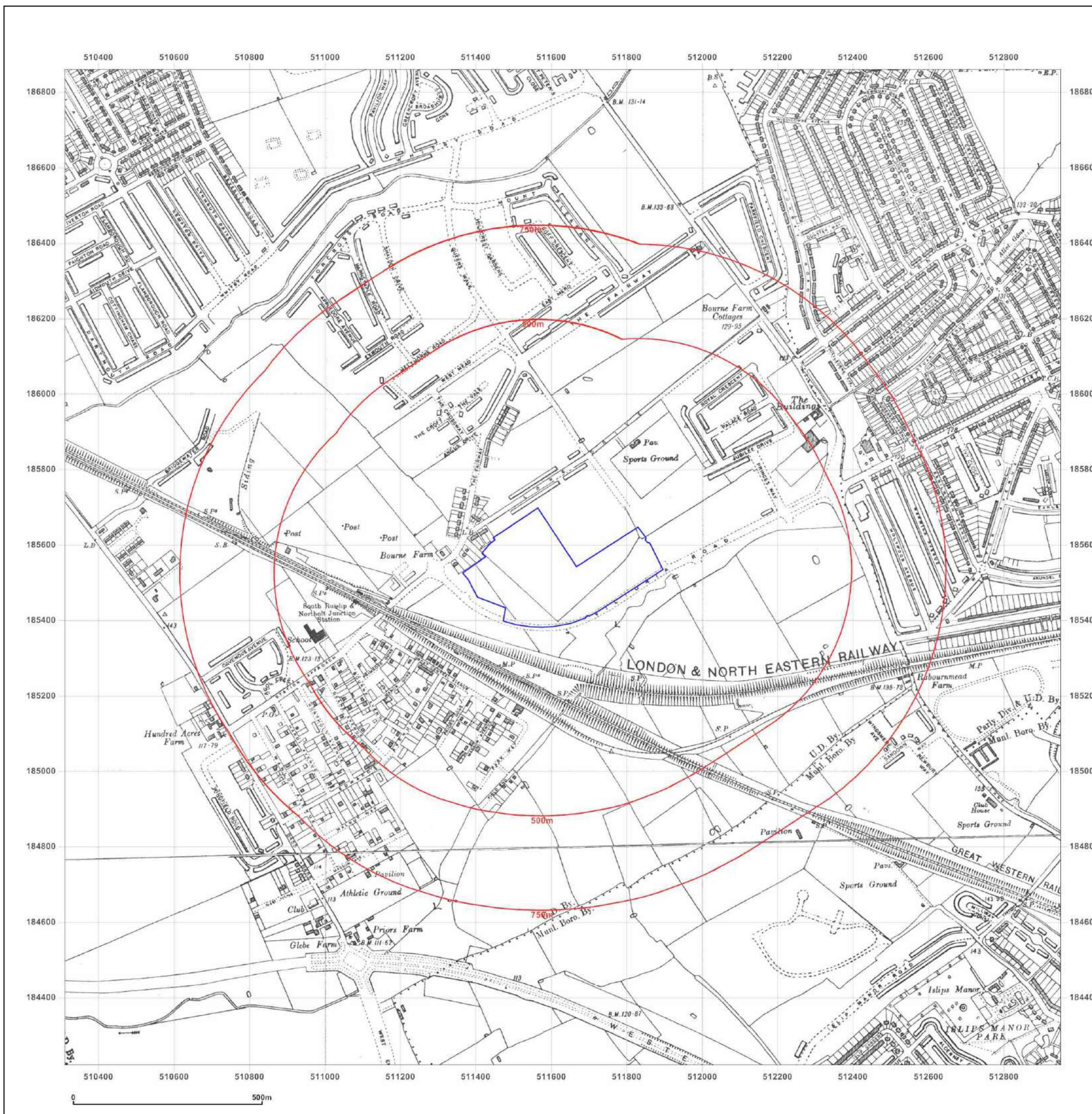


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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: Provisional

Map date: 1960

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed N/A
Revised 1959
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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: Provisional

Map date: 1966

Scale: 1:10,560

Printed at: 1:10,560



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Surveyed 1966
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A

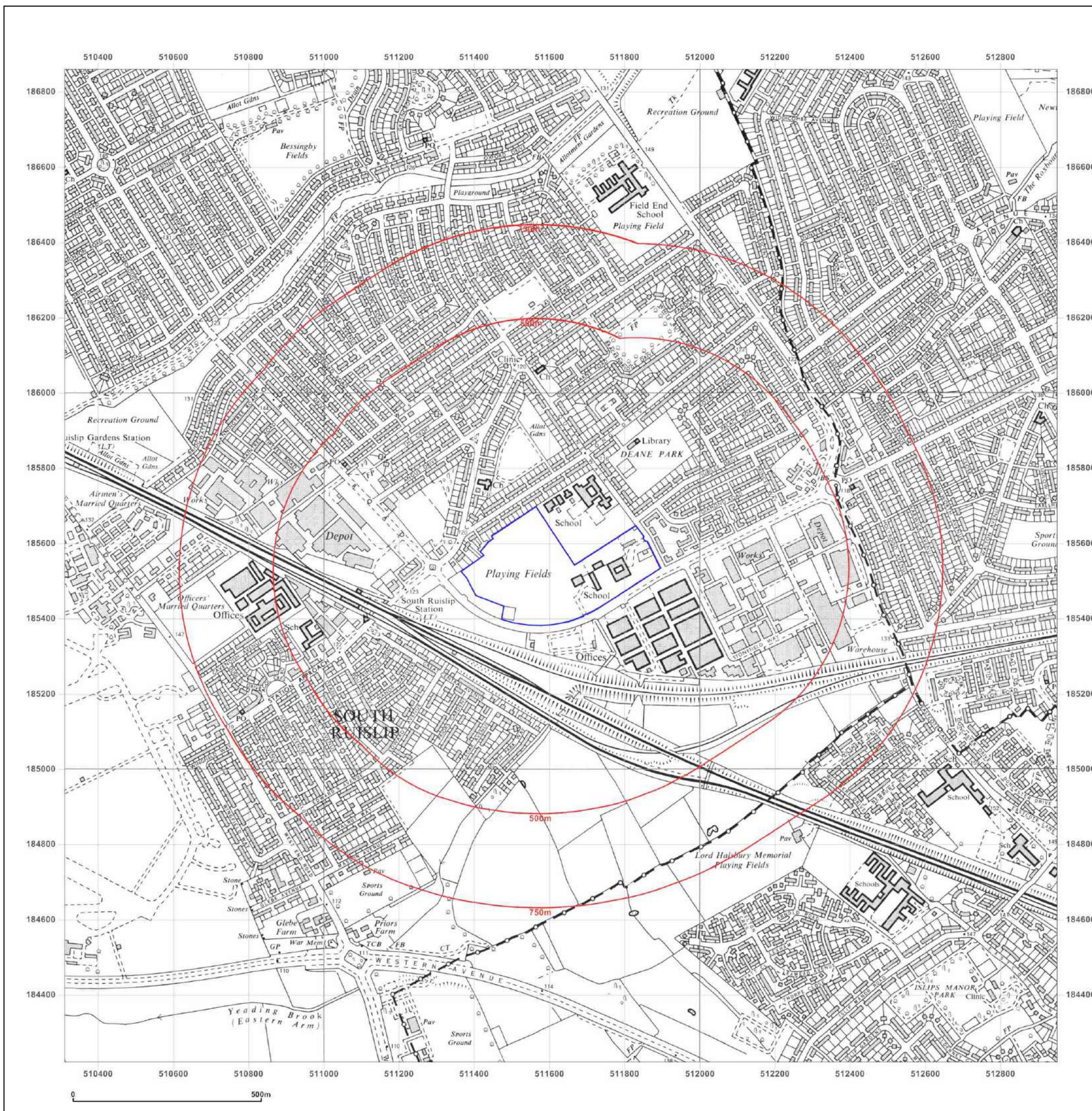


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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: National Grid

Map date: 1973-1974

Scale: 1:10,000

Printed at: 1:10,000



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Surveyed 1973
Revised 1973
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Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: National Grid

Map date: 1983

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1983
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Levelled N/A

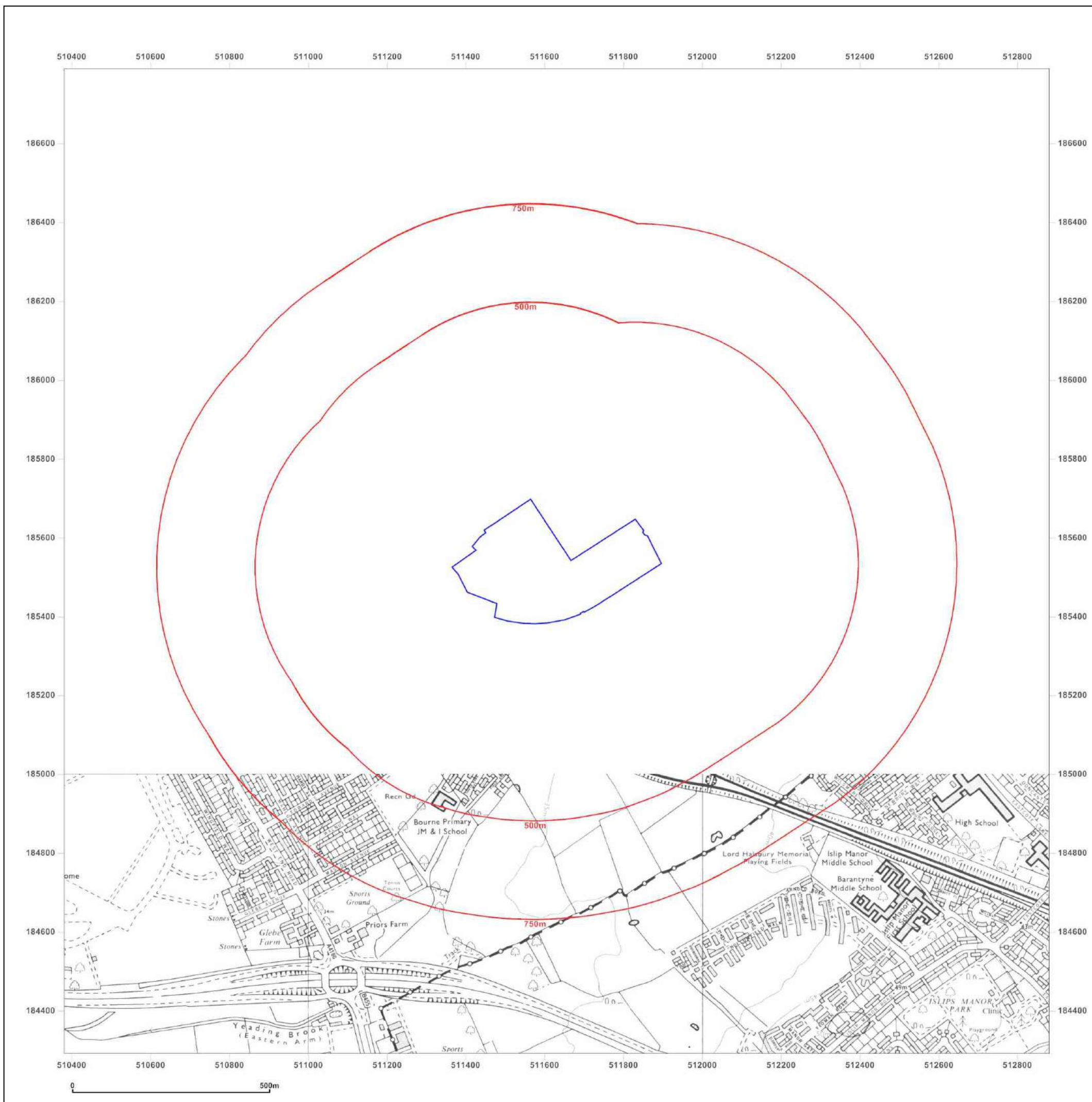


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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: National Grid

Map date: 1990-1994

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1984
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1983
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

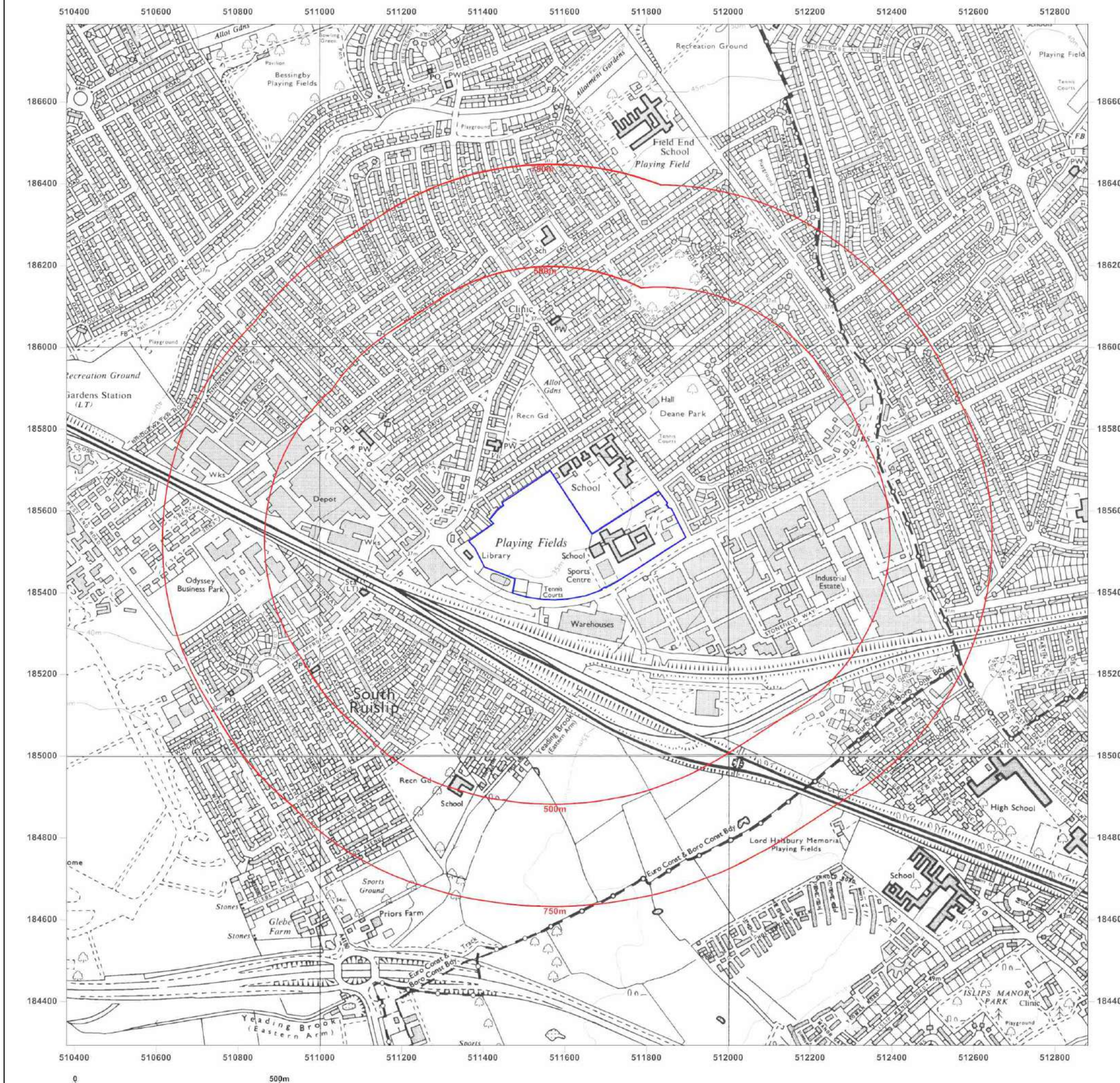


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Site Details:

QUEENSMEAD SCHOOL,
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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



2002



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Site Details:

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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010

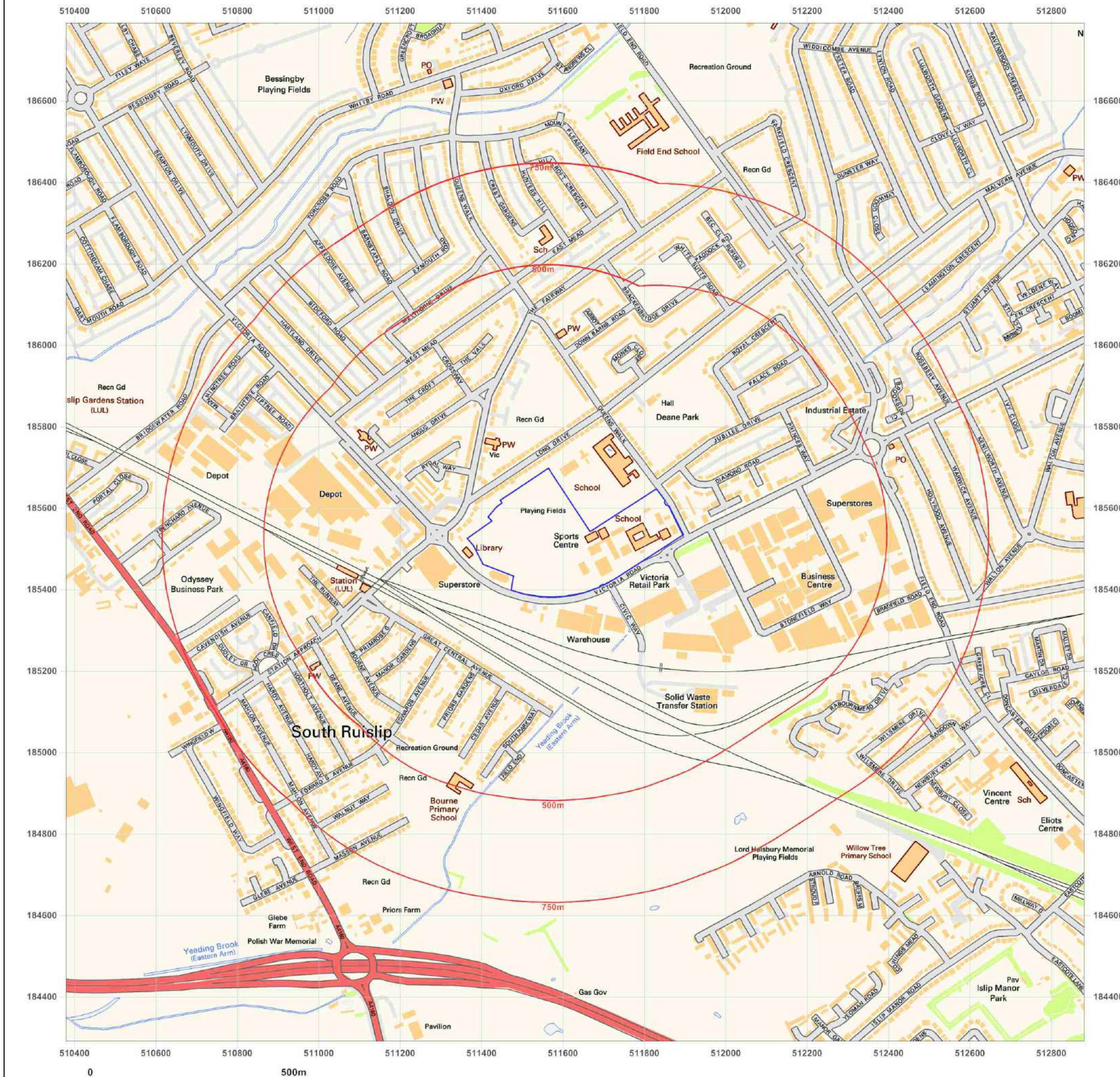


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Site Details:

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0LS

Client Ref: 5000407
Report Ref: GS-5280289
Grid Ref: 511630, 185540

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



2014

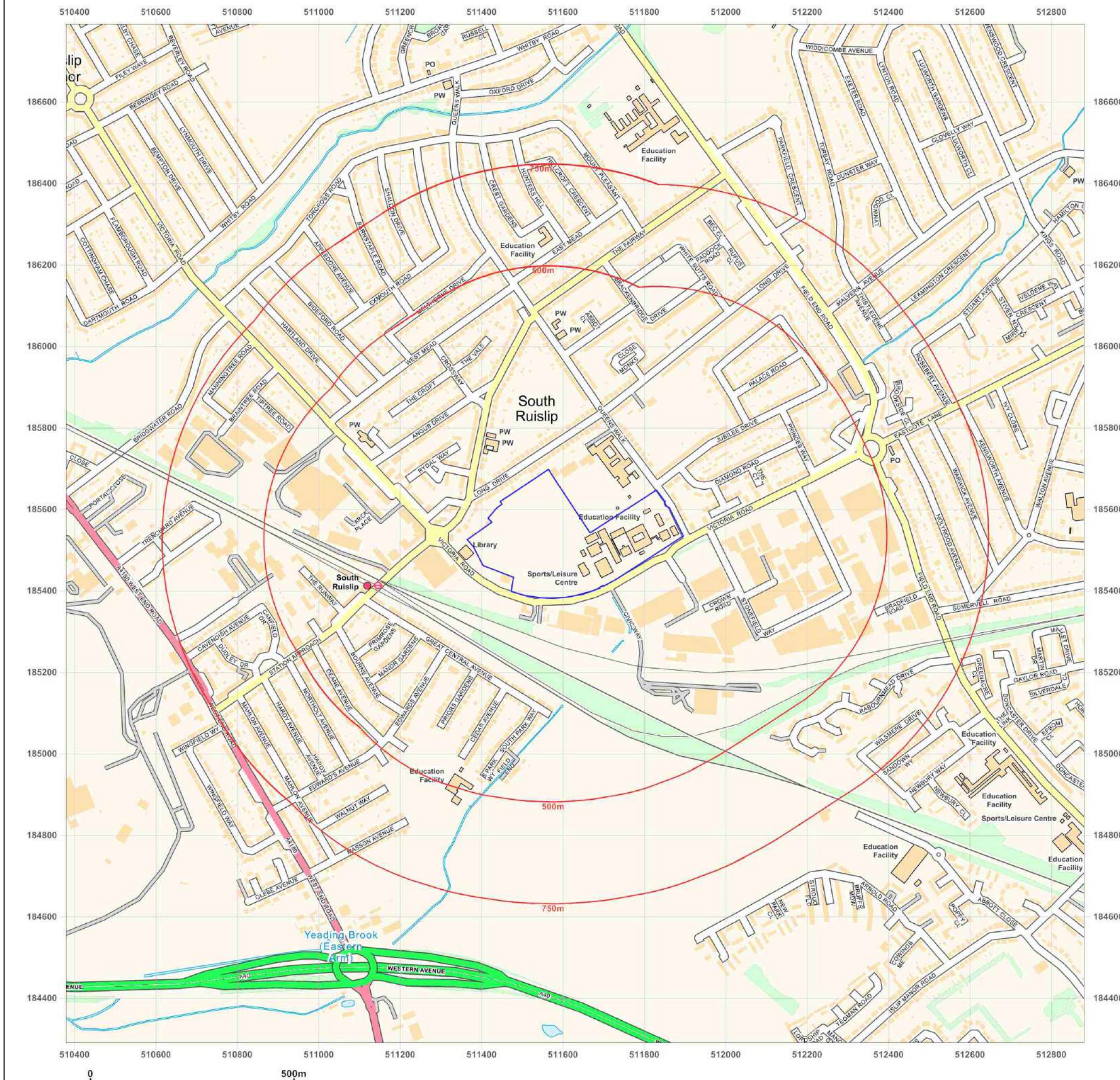


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VICTORIA ROAD, RUISLIP, HA4
0LS

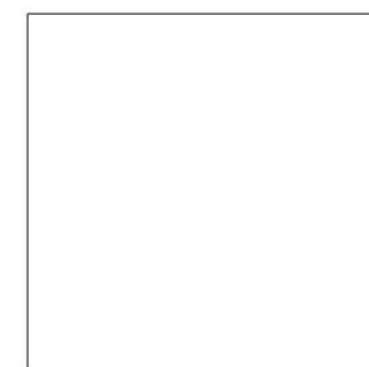
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Grid Ref: 511316, 185853

Map Name: County Series

Map date: 1865

Scale: 1:2,500

Printed at: 1:2,500



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

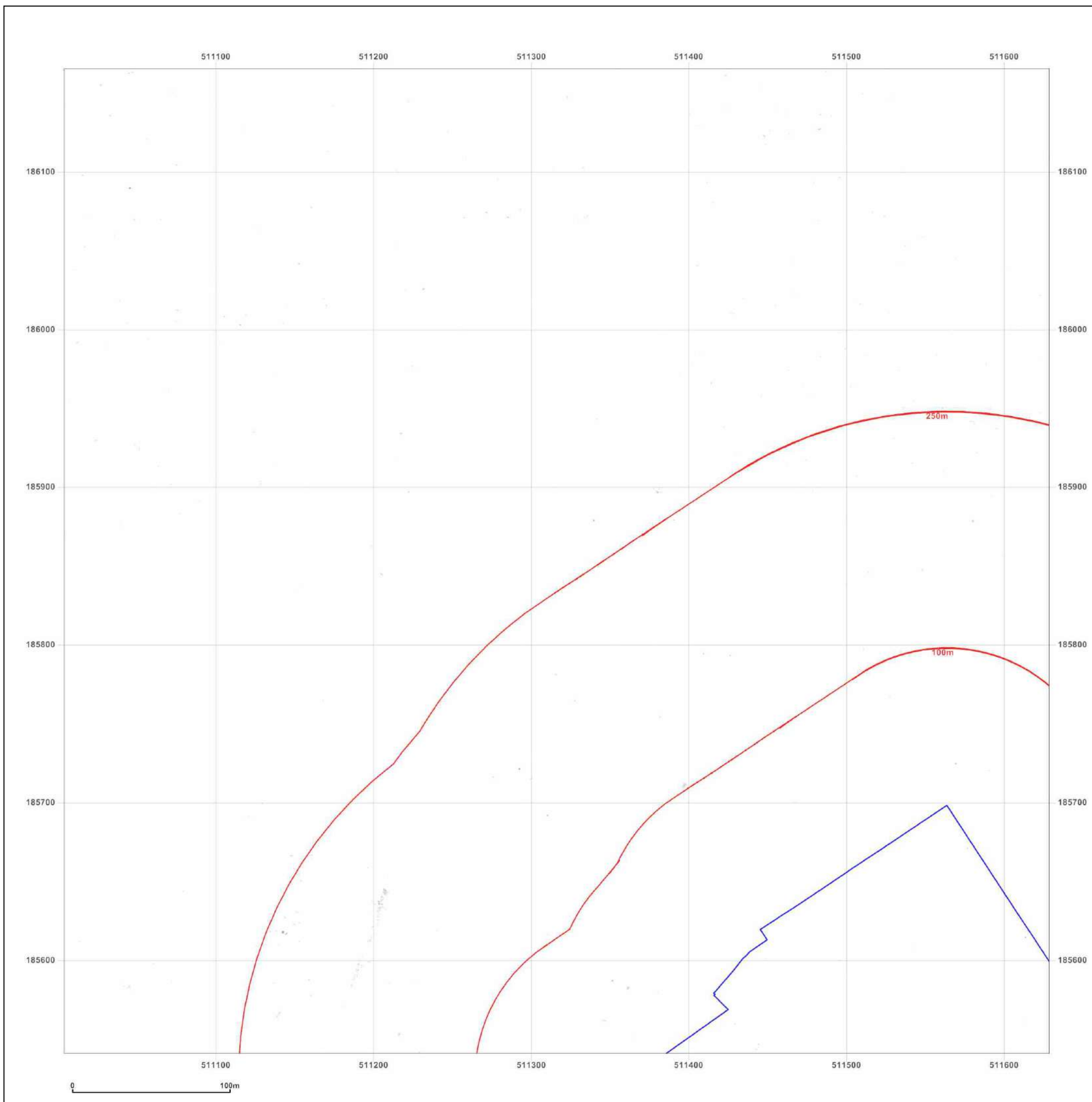


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Site Details:

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0LS

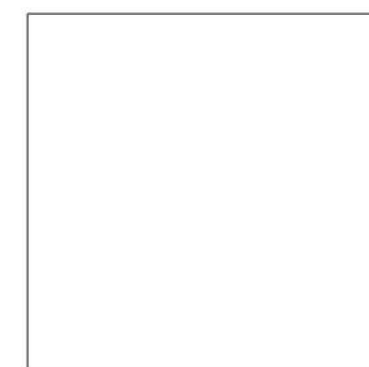
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Grid Ref: 511316, 185853

Map Name: County Series

Map date: 1865

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Printed at: 1:2,500



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

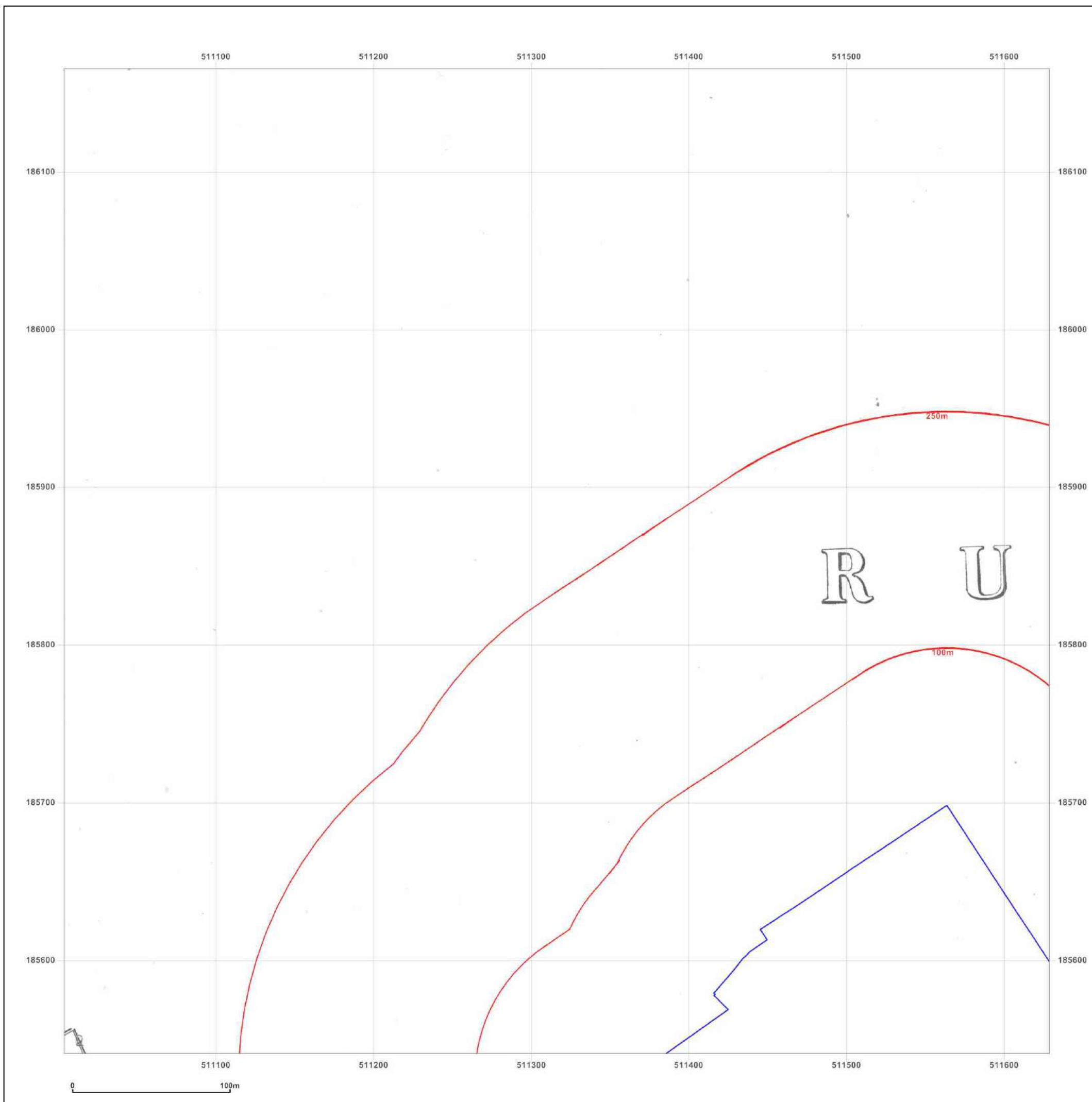


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Client Ref: 5000407
Report Ref: GS-5280289_LS_1_2
Grid Ref: 511316, 185853

Map Name: County Series

Map date: 1865

Scale: 1:2,500

Printed at: 1:2,500



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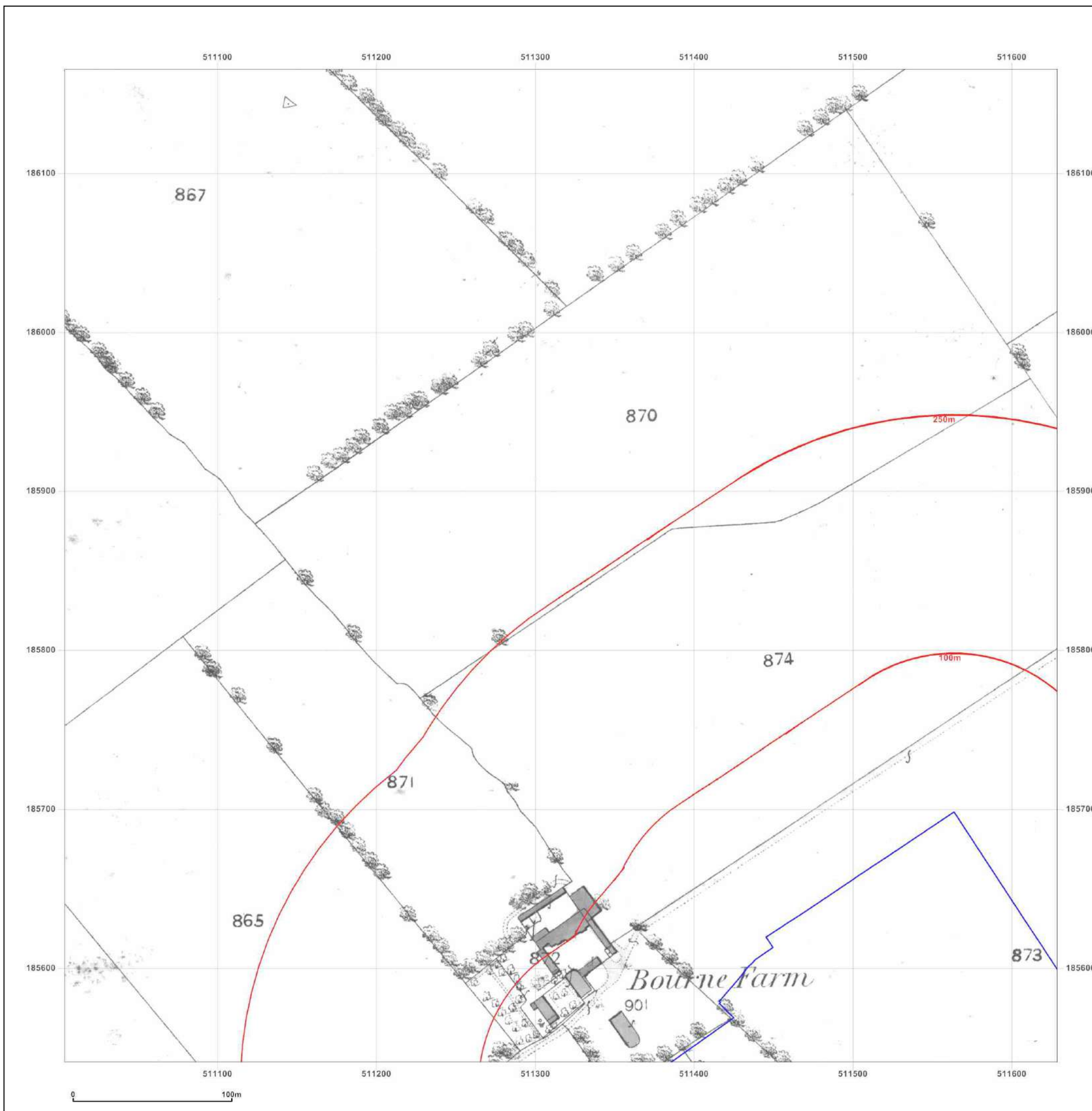


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Client Ref: 5000407
Report Ref: GS-5280289_LS_1_2
Grid Ref: 511316, 185853

Map Name: County Series

Map date: 1894

Scale: 1:2,500

Printed at: 1:2,500



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

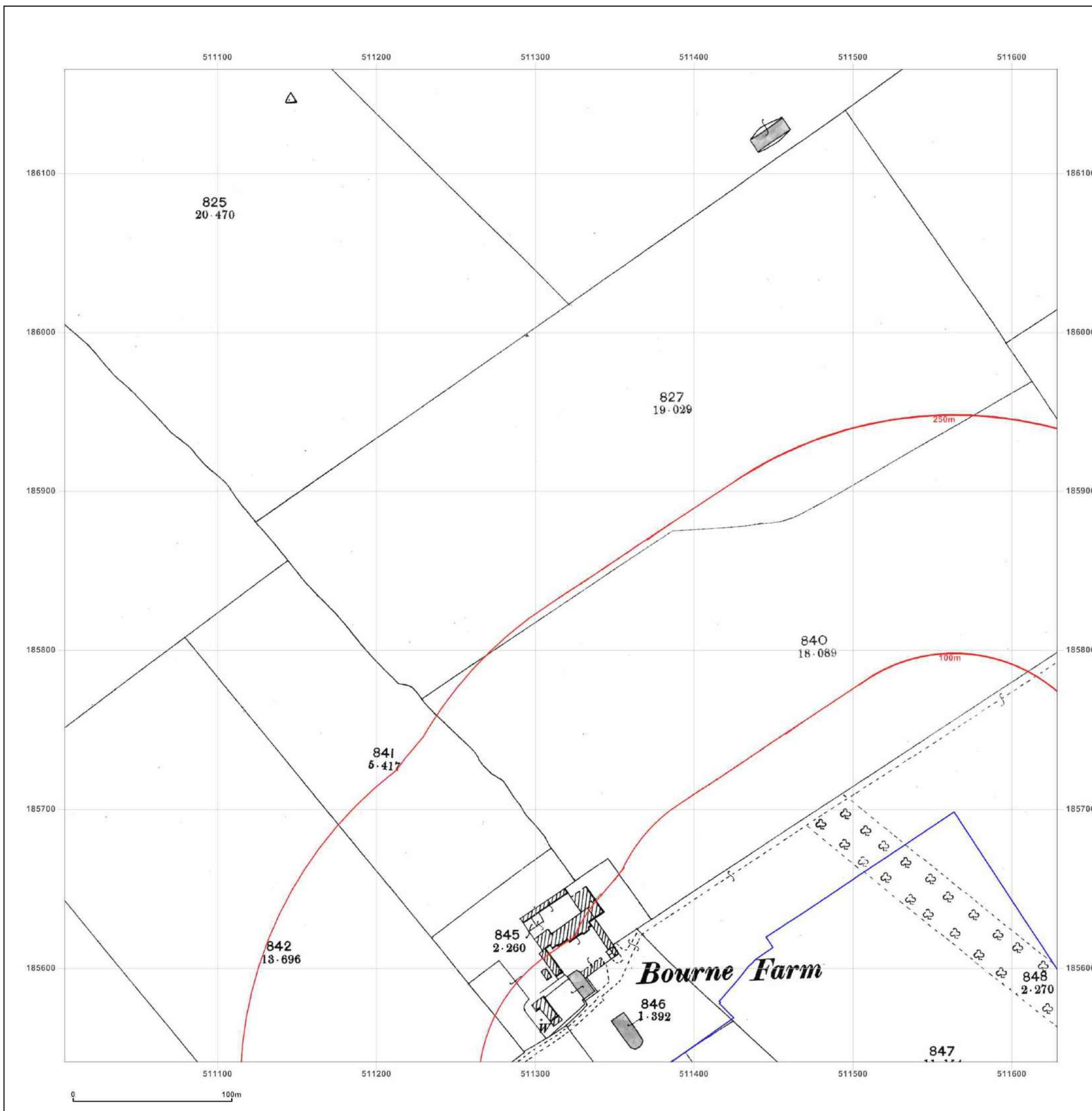


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Client Ref: 5000407
Report Ref: GS-5280289_LS_1_2
Grid Ref: 511316, 185853

Map Name: County Series

Map date: 1914

Scale: 1:2,500

Printed at: 1:2,500



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

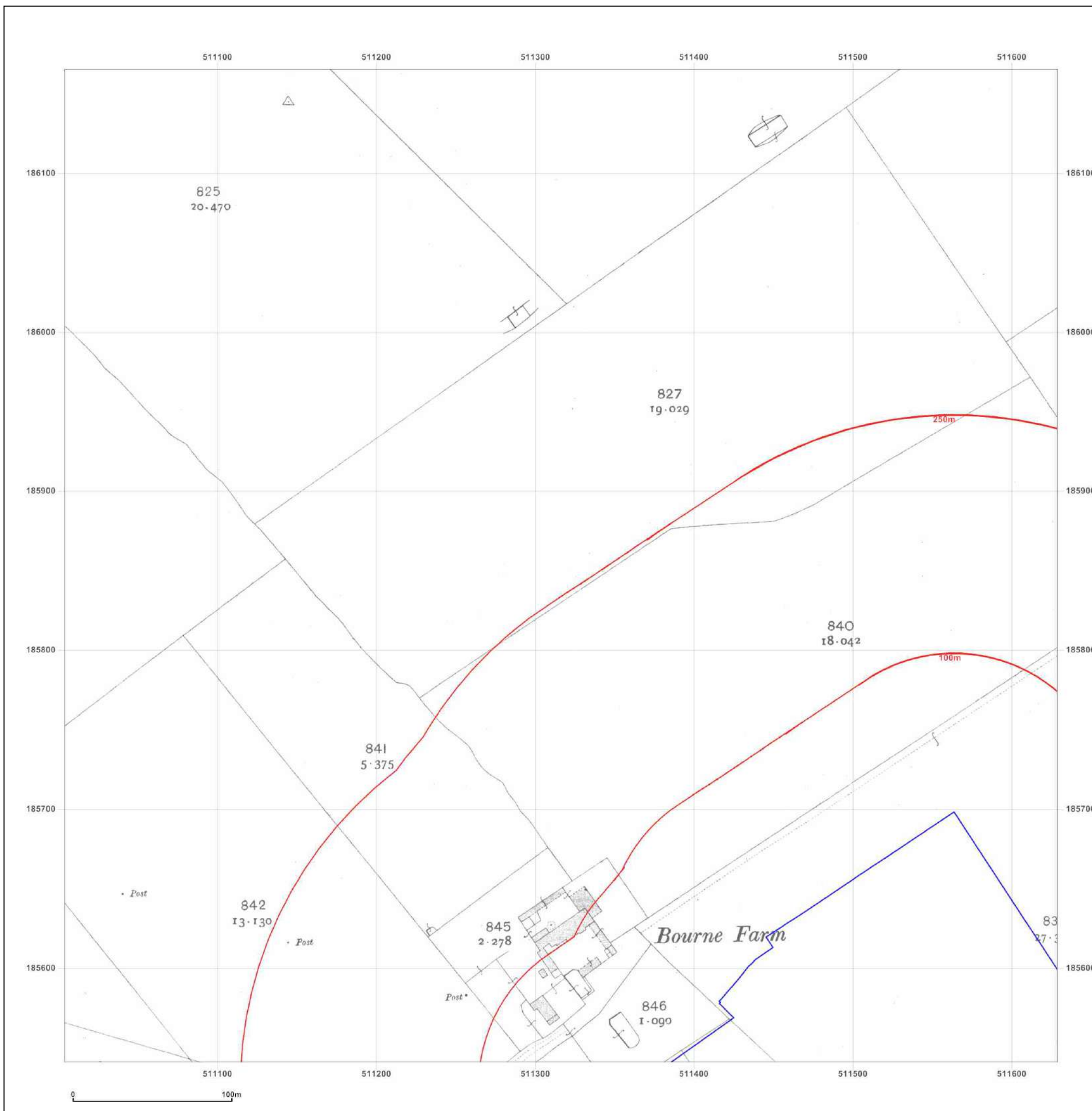


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0LS

Client Ref: 5000407
Report Ref: GS-5280289_LS_1_2
Grid Ref: 511316, 185853

Map Name: County Series

Map date: 1940

Scale: 1:2,500

Printed at: 1:2,500



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

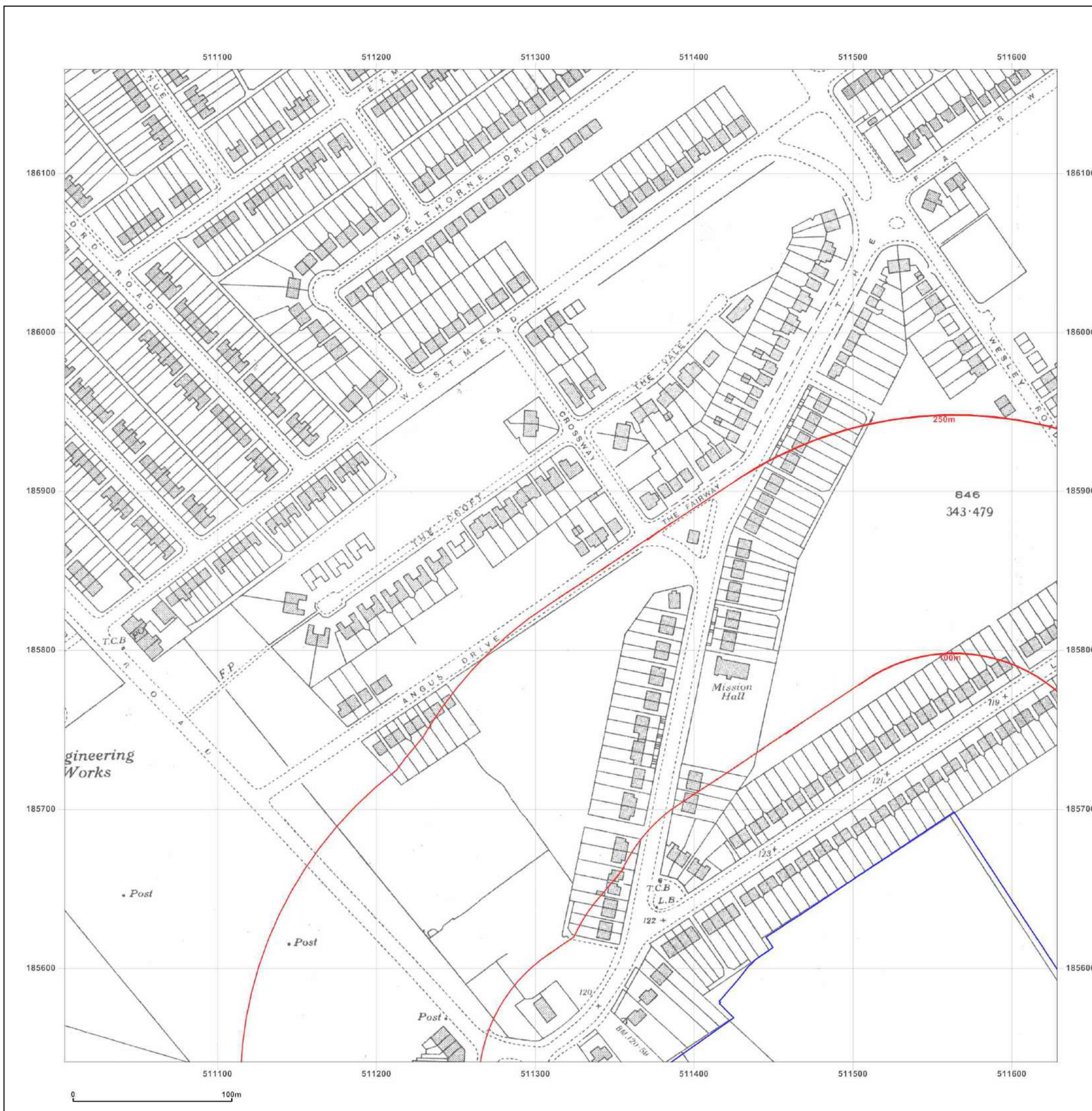


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Client Ref: 5000407
Report Ref: GS-5280289_LS_1_2
Grid Ref: 511316, 185853

Map Name: National Grid

Map date: 1959-1961

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959
Revised 1959
Edition 1961
Copyright 1961
Levelled 1959

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

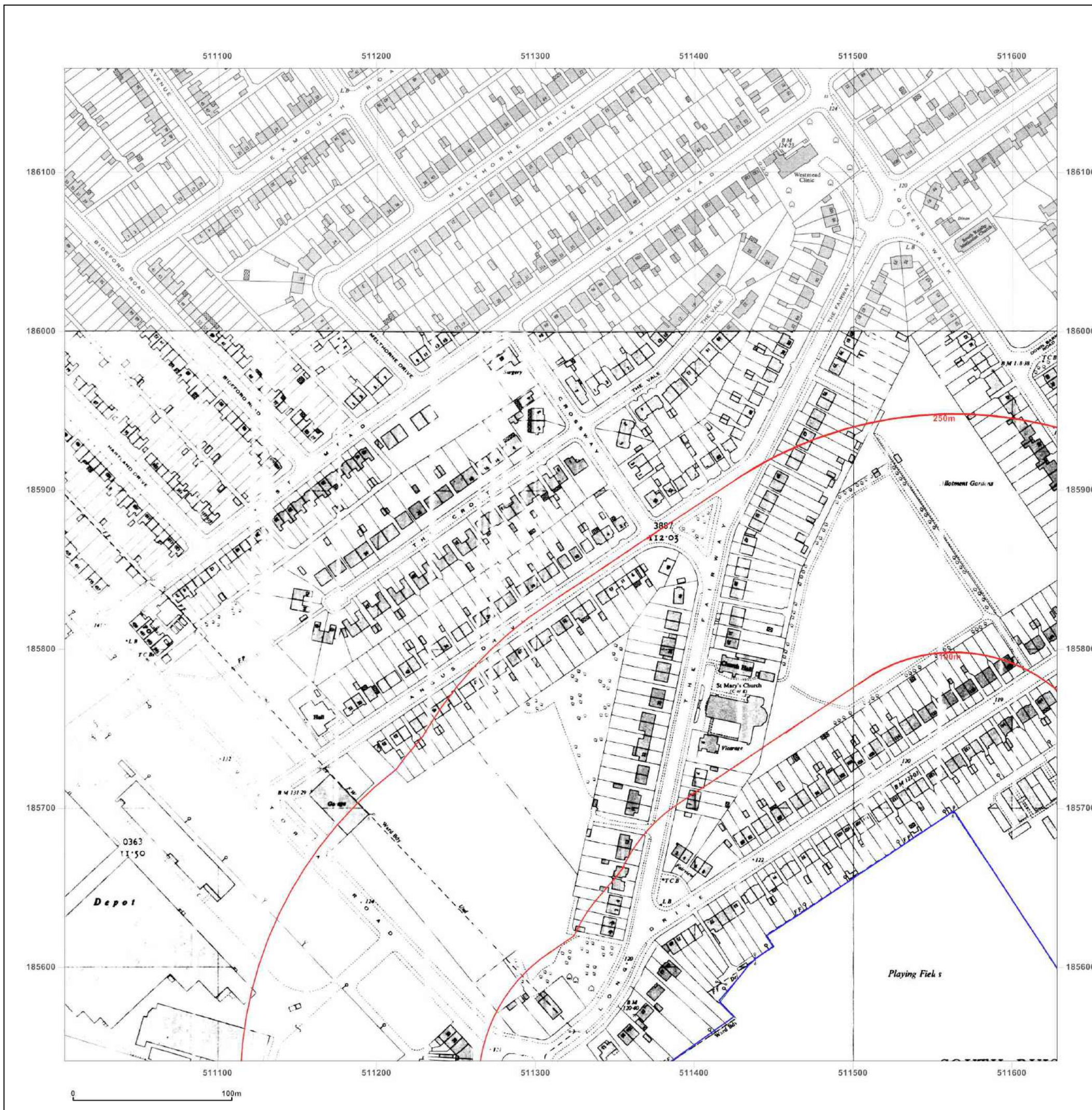


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Client Ref: 5000407
Report Ref: GS-5280289_LS_1_2
Grid Ref: 511316, 185853

Map Name: National Grid

Map date: 1960-1961

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1960
Revised 1960
Edition 1961
Copyright 1961
Levelled 1957

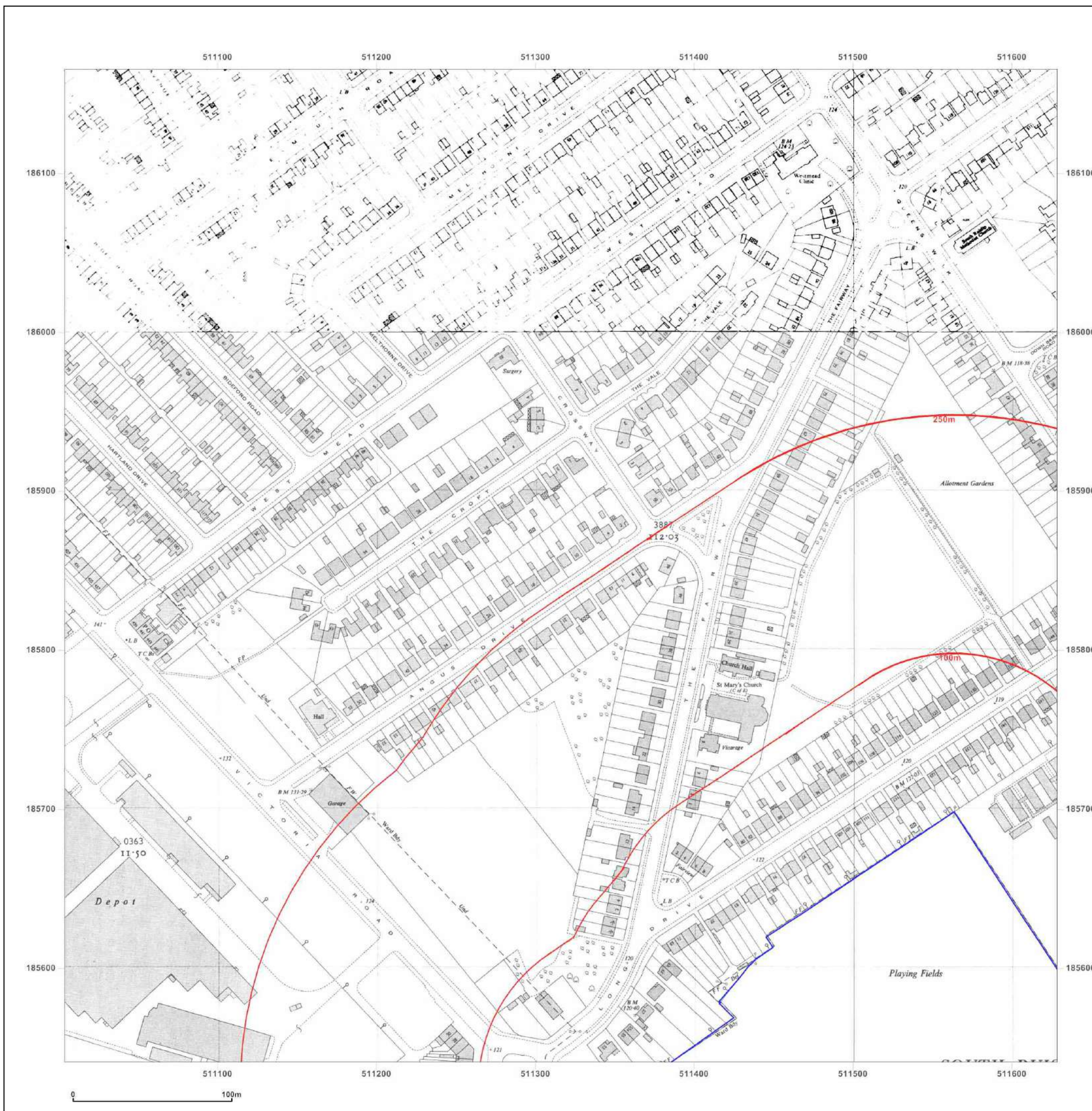


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APPENDIX 3 – GROUNDSURE REPORT