

ENVIRONMENT

Ric h b orough
Land to North of Little Green Lane
Croxley Green
Phase 1 Geo-Environmental Assessment

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EXECUTIVE SUMMARY

Executive Summary	
Site Address	The site is located to the Land to North of Little Green Lane, Croxley Green, Rickmansworth, WD3 3SR and is currently accessed via Rousebarn Lane to the east.
Proposed Development	The proposed development is anticipated to comprise a 600 residential dwellings, a 5-bedroom property for children's social care and supported living. Two vehicular access points from Little Green Lane and further pedestrian and cycleway accesses. A one form entry primary school (plus expansion land for a two form entry primary school). A mixed use local centre including a health centre, community building, retail and café provision, community allotments, community orchard and landscaping with associated infrastructure including sustainable urban drainage systems.
Current Site Use	The site currently comprises agricultural land.
Site History	The site remains predominantly the same throughout its mapped history, presumed agricultural use. A topographical depression is mapped to the northwest of the site from the earliest plans, possibly relating to mineral extraction or a solution feature. An old gravel pit is mapped in the southeast of the site in 1914. Residential dwellings are mapped in the southeast corner from the early 1960s mapping, with additional buildings present from the 1960s.
Ground Condition	Information published by the BGS indicates that the majority of the site is at or above the level of superficial deposits, except for the northern corner and western field which are underlain by the Gerrards Cross Gravel (sand and gravel) Formation. The bedrock geology comprises the Seaford Chalk Formation and Newhaven Chalk Formation. Previous ground investigation records on-site record ground conditions to comprise reddish brown clayey gravelly sand or sandy gravel, over chalk encountered at depths of 2.7 – 3.1m below ground level.
Geotechnical Review	Based on the proposed low-density housing at the site, shallow strip foundation bearing onto the weathered bedrock or Gerrards Cross Gravel are likely to be suitable at the site. Further assessment is required to inform on the possible impacts regarding foundation design associated with potential ground dissolution, and in areas within close proximity to the former gravel pit in the south east and the depression in the north west.
Environmental Review	The proposed development is considered to pose a moderate/low risk to human health due to the potential for hazardous ground gases to arise from loess Made Ground, as well as the potential exposure to elevated levels of radon. The risk posed to controlled waters is considered to be low due to no significant contamination identified at the site.
Recommendation	Ground investigation should be undertaken at the site to confirm ground conditions at the site, determine the ground gas regime, allow for in-situ and laboratory testing to quantify contaminant linkages and inform foundation design. It is recommended that a Natural Cavities Report is procured for the site to assess the risk associated with potential ground dissolution.
This summary should be read in conjunction with BWB's full report (ref. LGL-BWB-EGT-XX-RP-LE-0001_Ph1) and reflects an assessment of the site based on information received by BWB at the time of production.	

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1. INTRODUCTION

Instruction

- 1.1 BWB Consulting (BWB) was instructed by Richborough (the Client) to carry out a Phase 1 Geo-Environmental Assessment for the site at Land to North of Little Green Lane, Croxley Green. Details of the project brief are included in BWB proposal reference 20231214/01/233574/DIH/OS, dated December 2023.
- 1.2 The Client is seeking outline planning permission for 600 residential dwellings, a 5 bedroom property for children's social care and supported living. Two vehicular access points from Little Green Lane and further pedestrian / cycleway accesses. A one form entry primary school (plus expansion land for a two-form entry primary school). A mixed-use local centre including a medical centre, community building, retail and café provision, car parking and associated infrastructure. A country park, areas for play and recreation, allotments, community orchard and landscaping with associated infrastructure including sustainable urban drainage systems.
- 1.3 An illustrative masterplan ref: P24-1200_DE_021_01C, dated 18.09.24 is presented in **Appendix 1**.

Objectives

- 1.4 This report has been completed to present pertinent information into the risks and liabilities associated with the site. It has been completed to fulfil requirements of a preliminary risk assessment in accordance with BS10175:2011+A2:2017 '*Investigation of potentially contaminated sites, code of practice*' and EA Guidance on Risk Management of Land Contamination <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>.
- 1.5 The report has also been prepared with reference to land contamination guidance available through <https://www.gov.uk/government/collections/land-contamination-technical-guidance>.
- 1.6 The objectives of this report are to:
 - Assess historical activities at the site with respect to their potential impact on the site environment;
 - Characterise the environmental setting of the site, identify migration pathways and vulnerable receptors for contamination originating at the site, focusing on potential soil and groundwater liabilities;
 - Assess historical and current surrounding land use in relation to known or potential off-site contamination issues that may impact the site;
 - Review existing site investigation and remediation information for the site, where available;
 - Develop a preliminary Conceptual Site Model (CSM); and

Assess potential environmental liabilities associated with the site.

Previous Reports

1.7 BWB have been provided with the following reports which that Client has reliance on:

‘Preliminary Permeability Assessment - Land off Little Green Lane, Croxley Green’ by PJS Geotechnical Engineers for Richborough Estates, reference PJSG20-01-R02, dated February 2020; and

‘Desk Study Report - Land off Little Green Lane, Croxley Green’ by PJS Geotechnical Engineers for Richborough Estates, reference PJSG20-01-R01, dated March 2020.

1.8 Relevant information is utilised to inform this report.

Scope of Work

1.9 The scope of work included:

A site visit to inspect the current site and immediate surroundings, identify potential hazards associated with ground conditions or contamination and to determine potential constraints with regards to ground investigation (photographs presented as **Appendix 2**);

A review of the following information:

- o Groundsure report, reference GS-L3H-L6M-LO8-LG8 (**Appendix 3**);
- o Historical Ordnance Survey Mapping (**Appendix 4**);
- o Historical aerial photographs (Google Earth) and other imagery (Groundsure);
- o British Geological Survey (BGS) 1:50 000 Scale, ‘*Beaconsfield*’, Sheet 255, Solid and Drift, (2005);
- o BGS online geological maps and exploratory hole records (www.bgs.ac.uk);
- o MAGIC website (www.natureonthemap.naturalengland.org.uk/magicmap);
- o Coal Authority Interactive Map Viewer (<http://mapapps2.bgs.ac.uk/coalauthority/home.html>); and
- o Regional unexploded bomb risk maps

A summary of the key hazards or uncertainties that require additional investigation in order to further characterise the associated risks; and

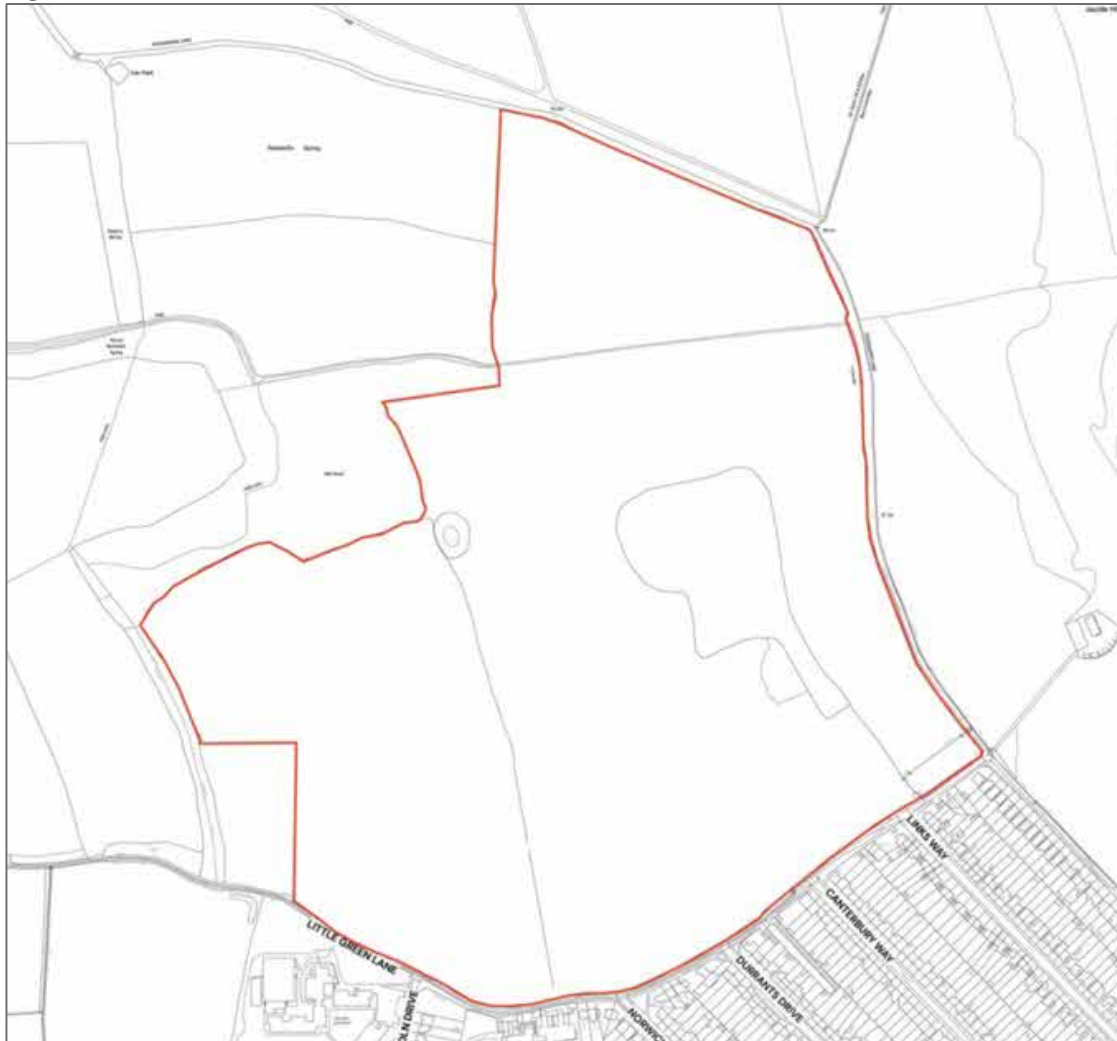
Production of a Geo-Environmental Assessment (this report), concluding in a qualitative assessment of the risks from contamination and ground-related constraints which may impact on the site.

2. THE SITE

Site Location

- 2.1 The site is located off Land to North of Little Green Lane, in Croxley Green, centred at approximate National Grid Reference 507844, 196953. The approximate location of the site is shown below in **Figure 2:1**.

Figure 2:1: Site Location Plan



Site Description

- 2.2 The site is an irregular shaped plot of land covering an area of approximately 40 hectares. The site comprises agricultural land with an area of woodland centrally. The area to the south is used residentially, the area to the west is used agriculturally, and towards the north and east predominately woodland with a golf course beyond in the east.
- 2.3 The site has an elevation of approximately 77mAOD in the northwestern section. It slopes to lows of approximately 58-60mAOD in the eastern portion.

Site Walkover

- 2.4 A site walkover was completed on 19/06/2024 by a representative of BWB. Photographs from the walkover are presented in **Appendix 2**.
- 2.5 At the time of the walkover, the site comprised several fields with an area of woodland in the centre. All fields were noted to be covered with a mix of tall wheat, shrubs and wildflowers.
- 2.6 A public footpath traverses across the northern part of the site. Members of the public were seen walking across the public footpath through the site.
- 2.7 Vehicular access to the site was via a gate in the southeast corner of the site off Little Green Lane, which is noted to be a public bridleway. For the walkover, the site was accessed via the footpath that crosses the site in the north, from Rousebarn Lane along the eastern boundary.
- 2.8 A second gate is located in the southwest, although, vehicle access was restricted due to the narrow nature of the bridleway in the southwest. Both gates were noted to have barbed wire across the top.
- 2.9 The woodland in the centre was not accessed due to it being densely vegetated. Mature trees were noted within the woodland and along hedgerows.
- 2.10 A small, steep hollow feature was present in the northwest, noted to be heavily vegetated and contained corrugated metal in places.
- 2.11 Numerous service cabinets and masts were noted along Little Green Lane, opposite Links Way.

Potential Constraints to Ground Investigation

- 2.12 Access over potentially soft ground or cropped fields will be required during intrusive works.
- 2.13 The access gate in the southeast was noted to be overgrown during the walkover. Vegetation clearance may be needed to gain vehicular access.
- 2.14 Overhead services were noted along Little Green Lane which will restrict vehicle heights.
- 2.15 Specialist vegetation clearance would need to be arranged for any intrusive investigation locations within the central woodland area and the pit feature to the north.

Site Surroundings

- 2.16 The surrounding land uses at the time of the walkover survey are summarised in **Table 2:1**.

Table 2:1: Surrounding Land Use

Surrounding Land Use	
North	Dell Wood, Rousebarn Lane and Whippendell Wood beyond
East	Rousebarn Lane with West Herts Golf Club beyond
South	Little Green Lane with residential dwellings
West	Agricultural fields

- 2.17 An aerial photograph representative of the site and surroundings, dated 21/04/2022, is included within the Groundsure report, presented as **Appendix 3**.

3. PREVIOUS INVESTIGATIONS

3.1 The following third-party reports have been provided by the Client:

‘Preliminary Permeability Assessment - Land off Little Green Lane, Croxley Green’ by PJS Geotechnical Engineers for Richborough Estates, reference PJSG20-01-R02, dated February 2020; and

‘Desk Study Report - Land off Little Green Lane, Croxley Green’ by PJS Geotechnical Engineers for Richborough Estates, reference PJSG20-01-R01, dated March 2020.

3.2 The reports below have been identified following a review of the planning portal, with reports relating to neighbouring land:

Geo-Environmental Report, by enzygo geo environmental, for Hill Residential Ltd, dated July 2019 (201881FUL);

Factual Borehole Soakaway Report, by Southern Testing Environmental and Geotechnical, for the Hill Group, dated May 2023 (230319FUL);

Phase 1 Geo-Environmental Desk Study, by eps, for Hertfordshire County Council, dated November 2021 (240352HCR3); and

Phase 2 Geo-Environmental Assessment, by eps, for Hertfordshire County Council, dated January 2022 (240352HCR3).

3.3 The reports are summarised below.

‘Preliminary Permeability Assessment’ by PJS Geotechnical Engineers for Richborough Estates, reference PJSG20-01-R02, dated February 2020.

3.4 A Preliminary Permeability Assessment was undertaken for a proposed residential development at Land off Little Green Lane, Croxley Green (the site). The testing was required to determine the suitability of the underlying geology at the site to support soakaway drainage for a proposed residential development. A ground investigation was undertaken on 4th – 5th January 2020 and comprised the completion of ten machine dug trial pit locations, with eight of these undergoing soakaway testing in general accordance with ‘BRE365: Soakaway Design 2016’ guidance to assess the permeability characteristics of the soils present on-site.

3.5 The ground conditions on-site generally comprised reworked agricultural topsoil mixed with natural sands, overlying reddish / brown clayey gravelly fine to medium sand, overlying structureless chalk. No groundwater was encountered during the works undertaken to date.

3.6 Results of the soil infiltration testing undertaken ranged from 2.33×10^{-4} to 7.78×10^{-6} . The preliminary rates recorded indicated that the proposed infiltration basin was likely to provide a suitable solution for the disposal of surface water, subject to detailed design.

3.7 A desk-based study identified a moderate risk of ground dissolution in the western portion of the site. Further consideration was recommended to determine the suitability of infiltration drainage within this area of the site.

'Desk Study Report - Land off Little Green Lane, Croxley Green' by PJS Geotechnical Engineers for Richborough Estates, reference PJSG20-01-R01, dated March 2020.

- 3.8 The desk study report covered largely the same information as c report and is not repeated here. A site walkover was undertaken which referenced an empty tank within the 'spinney in the eastern portion of the site'.
- 3.9 It is noted that the reported radon levels reported in this document are now outdated, with the updated background data summarised in **Section 4**, below.
- 3.10 The report included a Detailed UXO Risk Assessment report which indicated that the site was in a low to medium risk level. The recommended mitigation comprised a UXO Risk Management Plan and Site Specific UXO Awareness Briefings to all person conducting intrusive works.

Geo-Environmental Report, by Enzygo Ltd, for Hill Residential Ltd, dated July 2019

- 3.11 The report was produced for a site located approximately 300-400m southwest of the site boundary and presented the findings of a desk study and ground investigation comprising twelve trial pits, six soakaway tests, thirty-four window sampler boreholes and eight hand pits.
- 3.12 The encountered ground conditions were consistent with expected ground conditions and comprised topsoil over medium dense/dense sand and gravel, which in turn overlay chalk at depth. Groundwater was not encountered.
- 3.13 No contamination was recorded during this investigation. No gas risk was identified during the investigation.
- 3.14 Shallow spread foundations were deemed suitable for the proposed residential development. A CBR value for 6% was recommended for pavement design following proof rolling.
- 3.15 Shallow soakaways were not feasible, but a deep borehole recorded a suitable infiltration rate within the chalk.

Factual Borehole Soakaway Report, by Southern Testing Environmental and Geotechnical, for the Hill Group, dated May 2023

- 3.16 This site was located 300-400m west of the site boundary (the same area as the above report).
- 3.17 Fourteen boreholes were drilled with the primary purpose of borehole soakaway tests.
- 3.18 Ground conditions were consistent with the above report and published ground conditions.

- 3.19 No comments were made regarding the suitability of the recorded infiltration rates.

Phase 1 Geo-Environmental Desk Study, by EPS, for Hertfordshire County Council, dated November 2021

- 3.20 This report was completed for a site immediately southwest of the site boundary. The report covered a lot of the same information as this document and is therefore not repeated here.

Phase 2 Geo-Environmental Assessment, by EPS, for Hertfordshire County Council

- 3.21 This report was completed for the same site as the above report, and completed to support the development of a proposed school
- 3.22 Ground investigation comprised five boreholes and four trial pits advanced to varying depths.
- 3.23 The recorded ground conditions comprised topsoil overlying generally firm, gravelly clays, with some bands of granular soils. Groundwater was not encountered during the investigation. No evidence of contamination was identified during the works, which was supported by the results of the laboratory testing.
- 3.24 Waste Acceptance Criteria testing identified all soils on site as Inert for the purpose of offsite disposal.
- 3.25 The ground conditions across the site were considered suitable for conventional spread foundations, bearing on the underlying granular soils of the Lowestoft Formation. Bearing Capacities in regard to foundation depth were summarised in the report.
- 3.26 A CBR value of 3% was recommended for the natural soils encountered at anticipated pavement formation depth beneath the study area. Further in-situ testing was also recommended,
- 3.27 A design sulphate class of DS-1 was considered suitable for concrete in direct contact with natural Lowestoft Formation, with an aggressive chemical environment concrete (ACEC) of AC-1s.
- 3.28 Further investigation was recommended to further assess risks from chalk dissolution.

4. ANTICIPATED GROUND CONDITIONS

- 4.1 The anticipated ground conditions for the site and controlled water are discussed within **Table 4:1**.

Table 4:1: Summary of Anticipated Ground Conditions

Anticipated Ground Conditions	
Geology	Information published by the British Geological Survey (BGS) indicates that the majority of the site is absent of superficial deposits, except for the northern corner and western field, which are underlain by the Gerrards Cross Gravel (sand and gravel). The Winter Hill Gravel (sand and gravel) is mapped at southeastern boundary of the site. The bedrock geology comprise: the undifferentiated Seaford Chalk and Newhaven Chalk Formations. Localised Made Ground may be present adjacent to the old gravel working, the topographic depression in the northwest of site and buildings in the southeast of the site. One historical BGS borehole log is located in the north of the site (ref: TQ09NE7), which records ground conditions to comprise brown sandy p clay and stiff brown clay with flint gravels and cobbles (Glacial sand and gravel) to a depth of 2.6m bgl, overlying white powdery chalk (upper) to a depth of 2.7m bgl, at which the borehole ends. The previous Soakaway investigation on site recorded ground conditions to comprise reworked agricultural topsoil mixed with natural sands, clayey sands/ sandy clays, overlying structureless chalk.
Hydrogeology	The Environment Agency (EA) classifies the Superficial deposits as a Secondary A Aquifer and the undifferentiated Seaford Chalk and Newhaven Chalk Formations as a Principal Aquifer. No groundwater strikes were recorded in the historical BGS borehole log on site. Historical investigation on site and close by did not encounter groundwater. The majority of the site is within an EA Source Protection Zone 3, with southeastern corner being within a Source Protection Zone 2. An active groundwater abstraction point is located approximately 5m southeast and a historic point located approximately 690m southeast for spray irrigation and fish farm through flow. The nearest potable groundwater abstraction is located 1.7km north of site. The site is within a WFD groundwater body (Mid-Chilterns Chalk) with a poor overall, chemical, and quantitative rating. There is a low to high risk of groundwater flooding on site, with increased risk recorded along the eastern boundary.
Surface Waters	There are no surface water features within 500m of the site boundary. The site is located within a WFD Surface water body catchment (River Chess) (from confluence with Bulbourne to Chess). This is also a WFD Surface Water Body with a moderate overall rating, a failed chemical and moderate ecological rating. There is a low flood risk on site. The highest risk is a 1 in 30-year period. No active surface water abstraction points are located within 1km of the site boundary.
Ground Gas Radon	The northern half of the site is indicated to have between 3-5% of the properties as being affected by elevated radon levels, whereby basic protection measures are recommended for new properties. The southern half is predominantly indicated to be between 1-3% whereby radon protection measures are recommended for new properties.

Anticipated Ground Conditions	
	levels are not required, despite the geology being the same. Where super deposits are mapped, radon levels are reported to be <1%. Localised Made Ground associated with the former gravel pit or around the former structures in the southeast could represent a potential source of hazardous ground gas.
Mining and Mineral Extraction	The site is not located in an area associated with historical coal mining. A former gravel pit is indicated in the southeast of the site on historical mapping. There is a possible former mineral extraction pit in the northwest, however, this is not labelled as such on historical mapping, and may well be indicative of a solution feature. The underlying geology is similar to those which have been worked elsewhere however, underground mine workings are uncommon. The presence of difficult ground conditions is unlikely and are at a level where they need not be considered.
Environmental Sensitivity	The site is adjacent to Whippendell Wood which is a SSSI (Site of Special Scientific Interest) located to the north of the site. The site also has areas of Designated Ancient Woodland related to the C Lane Wood and Dell Wood. The Agricultural Designation of the site varies between Grade 2, Grade 3 and non-agricultural land.

5. SITE HISTORY

- 5.1 Historical Ordnance Survey (OS) mapping for the site area has been reviewed. These maps and plans date from 1877 to 2024. The historical plans reviewed are provided in **Appendix 4**. The key points of the historical development of the site area are summarised below. All distances quoted are approximate.
- 5.2 The site remains predominantly the same throughout its mapped history, with a presumed agricultural use. A topographical depression is mapped in the northwest of the site from the earliest plans, possibly relating to mineral extraction or a solution feature. An old gravel pit is mapped in the southeast of site from 1914. Residential dwellings are mapped in the southeast corner from the earliest mapping, with additional building present from the 1960s.
- 5.3 The surrounding area was predominantly woodland with sporadic farms and residences throughout the mapped history. From 1938 onwards, the area to the south of the site saw extensive residential development.

Historical Aerial Photography and Imagery

- 5.4 Aerial photographs/imagery available through Google Earth and included within the Groundsure report are summarised in **Table 5:1**.

Table 5:1: Summary of Aerial Photography

Date (Source)	Description
1945 - 2022 (Google Earth and Groundsure)	The field boundaries on site are the same layout throughout years, however from 1999 up until 2012, the small woodland on site in the northwest is noted to stockpiles in the centre.

Operational / Company Records

- 5.5 No operational records have been made available for review as part of this assessment.

Planning History

- 5.6 The Three Rivers District Council Planning Portal was accessed on 10/06/2024 and indicated that no pertinent planning applications have been submitted for the site. Several from the nearby surrounding area provide pertinent information, which are summarised in **Section 3**.

6. REGULATORY SETTING

Permits Consents and Authorisations

- 6.1 A full listing of permits, consents and authorisations including discharge consents, pollution incidences and other environmental information, is included in the Groundsure report, presented in **Appendix 3**. The following pertinent features have been identified which have the potential to have a detrimental impact on site:

A historical pollution incident is reported in the south of the site. It involved household waste and had no impact on water or air, with a minor impact on the land.

A historical pollution incident mapped adjacent to the southwest site boundary. It involved undefined waste materials and had no impact on water or air, with a minor impact on land.

A historical pollution incident approximately 20m northeast. It involved asbestos, and had no impact on water or air, with a minor impact on land.

- 6.2 The above entries are likely to be associated with fly-tipping around the site boundary roads.

Landfilling and Waste Management

- 6.3 No significant facilities have been identified which are considered likely to have had a detrimental impact on the site.

7. GEOTECHNICAL APPRAISAL

- 7.1 The Groundsure report, site history, current site setting and geology setting have all been considered in order to provide an indication of the potential ground related constraints and opportunities in the context of the proposed development as set out in **Table 7:1**.

Table 7:1: Ground Related Constraints & Opportunities

Potential Constraint / Opportunity	Explanation	Potential Mitigation Options
Topsoil / Made Ground	Topsoil is present across the site. Limited Made Ground may be present in areas of historical surface workings and the historical structures in the southeast.	Topsoil and Made Ground may be suitable for reuse or subject to confirmation of chemical status and engineering properties via ground investigation, and confirmation of potential restrictions on reuse associated with waste management licencing.
Ground Dissolution	The Groundsure Report indicates a very low to moderate risk relating to dissolution of soluble rocks. Six sinkholes and solution pipes within the chalk are recorded approximately 50m south-west of the site boundary, with an additional 9 sinkholes/ solution pipes 270m southwest. Furthermore, there is a possibility that the topographic depression on site is a solution feature.	It is recommended that a Natural Cavities Report is procured for the site, to assess the risk associated with potential ground dissolution.
Ground Subsidence Risks	The Groundsure Report indicates a negligible risk at site associated with shrink/swell clays, landslides and compressible deposits, negligible to very low risk running sands, and a very low risk of collapsible deposits.	No further action.
Preliminary Foundation Solution	Based on the proposed low-density housing at the shallow strip foundation, bearing onto the bedrock or superficial deposits are likely to be suitable at the site. Further assessment is required to assess the risk from ground dissolution including the former gravel pit in the south east and depression in north west.	Ground investigation should be undertaken to confirm ground conditions at the site and allow for in-situ and laboratory testing to inform foundation design. Foundations will also need to consider the findings of the Natural Cavities Report.

Potential Constraint / Opportunity	Explanation	Potential Mitigation Options
Trees	Mature trees were noted on site, along the site boundaries and clustered around the site.	Foundations in close proximity to new or existing trees may need to be locally deepened beyond the zone of influence of roots and/or heave precautions adopted.
Drainage and Soakaway	Infiltration testing on site indicated soil permeabilities ranging from 2.33×10^{-4} to 7.78×10^{-6} .	Soakaway drainage is likely to be viable at the site but should also consider the potential solubility of the underlying chalk.
Roads and Pavements	California Bearing Ratio (CBR) values should be sought for road, car park and pavement design.	In-situ testing should be undertaken to infer CBR values. Furthermore, geotechnical testing should be undertaken to provide consistency of results.

8. PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

Introduction

- 8.1 The risk posed by any contaminants in soil or groundwater will depend on the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.
- 8.2 Three impact potentials exist for any given site, all of which need to be considered in a risk assessment, which are:
- The site impacting upon itself;
 - The site impacting on its surroundings; and
 - The surroundings impacting on the site.
- 8.3 The following sections discuss all the identified potential on and off-site sources, pathways and receptors in the context of the proposed development and plausible contaminant linkages which may represent a risk to identified receptors such as human health and/or controlled waters from the data gained from the desk study.
- 8.4 The assessment is qualitative and aimed to determine all likely contaminant linkages, with consideration of significance and allowing for uncertainties.
- 8.5 **Sources (S):** These are potential or known sources of contamination that arise from a former land use or present site feature or process (e.g. fuel storage tanks).
- 8.6 **Pathways (P):** A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development.
- 8.7 **Receptors (R):** Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).

Conceptual Site Model

- 8.8 Consideration has been given to the likely sources, pathways and receptors which may be present, based on the information in the previous sections. These are presented in **Table 8:1** and **Table 8:2** and further information about the risk classification scheme is included within **Appendix 5**, with reference to CIRIA C552 '*Contaminated land risk assessment - a guide to good practice*'.
- 8.9 A tabulated version of the Preliminary CSM based on the desk study and site observations is presented in **Table 8:3**.

Table 8.1: Potential Sources of Contamination

Location	Potential Source	Contaminants of Potential Concern (CoPC)
On-site	Possible localised MADE GROUND within areas of historical surface workings, topographical depression and the former structures in the southeast.	Heavy metals Inorganics, such as cyanides, sulphates and nitrates pH Asbestos Containing Materials (ACMs) Polycyclic aromatic hydrocarbons (PAHs) Petroleum hydrocarbons Methane, carbon dioxide
	Possible HISTORICAL TANK reported in central woodland area.	Heavy metals Petroleum hydrocarbons
	AGRICULTURAL WORKS carried throughout the site	Inorganics, such as cyanides, sulphates and nitrates pH Pesticides & herbicides Petroleum hydrocarbons
	Naturally elevated Radon levels	Radon
	CONTAMINATION associated with pollution incidents at site boundary.	Asbestos Containing Materials (ACMs) Heavy metals Petroleum hydrocarbons
Off site	Possible CONTAMINATION associated with development to the south of site.	Heavy metals Petroleum hydrocarbons

Table 8.2: Relevant Potential Pathways and Receptors

Receptors	Pathways
Human Health: Future site users (residential) Neighbouring public (residential) Intrusive maintenance workers	Dermal contact with soil or dust Incidental ingestion of soil and/or dust Inhalation of dust and/or fibres Ingestion of contaminated vegetables and/or crops attached to vegetables Migration and accumulation of ground gas in enclosed spaces leading to inhalation or explosion
Controlled Waters: Groundwater (Secondary A Aquifers, Principal Aquifers and EA Source Protection Zones) Surface water	Leaching of soil contaminants Vertical and lateral migration Surface run-off
Ecology: Flora and Fauna SSSI	Lateral migration Uptake and accumulation
Property: Underground utilities Building structures	Direct Contact Accumulation and explosion of gas

Table 8.3: Preliminary Conceptual Site Model

Source	Pathway	Receptor	Con	Prob	Risk	Potential Mitigation/Investigation Requirements
On-site sources as detailed in Table 8.1.	Dermal contact with, and incidental ingestion of soil and/or dust. Inhalation of dust and/or fibres.	Future site users (residential)	Md	UI	L	As part of the proposed development, it is anticipated that hardstanding will be present across some of the site. This will limit the potential for direct contact with and minimise dust generation from potentially contaminated soils at the site construction. In public open space/landscape areas/garden areas the provision of a clean capping layer would restrict direct access to potentially contaminated soils. It is recommended that an intrusive ground investigation be completed in order to assess the extent of any contamination at the site.
	Ingestion of contaminated vegetable and/or soil attached to vegetables.	Future site users (residential)	Md	UI	L	In garden areas the provision of a clean capping layer with appropriate demarcation at depth would limit the potential for vegetables to be grown in potentially contaminated soils
	Migration and accumulation of ground gases in enclosed spaces leading to asphyxiation (carbon dioxide) or explosion (methane).	Future site users (residential)	Md	Lw	M/L	Limited Made Ground is expected across the site but may be present in the vicinity of historical surface workings and for minor structures in the southeast. The presence of the above indicates a potential for ground gases. Ground investigation should include the installation of ground gas monitoring wells in order to determine the risk posed from ground gases.
	Inhalation/ingestion of Radon gasses.	Future site users (residential)	Md	Lw	M/L	The site is partly in a radon affected area and will therefore require radon protection measures to be installed. These measures also offer protection from hazardous ground gases if present.
	Leaching and permeation through ground profile.	Groundwater: Underlying Secondary Aquifer	Sv	UI	M/L	A significant source of contamination has not been identified at the site; however, the underlying groundwater is highly sensitive. The risk to controlled waters should be quantified through appropriate ground investigation and risk assessment.
	Vertical and lateral migration of contaminants	Principal Aquifer, Source protection Zones				

Source	Pathway	Receptor	Con	Prob	Risk	Potential Mitigation/Investigation Requirements
		Buried structures/ foundations.	Md	UI	L	Sulphates and low pH in the ground could accelerate degradation of buried concrete structures (e.g. foundations). Ground investigation should include an assessment of concrete design class.
Off-site sources as detailed in Table 8.1.	Migration and accumulation of gases in enclosed spaces leading to asphyxiation (carbon dioxide) or explosion (methane).	Future site users (residential)	Md	Lw	M/L	The presence of Made Ground in areas surrounding the site represents a potential risk to future site users. Ground gas monitoring should be undertaken to inform the ground gas risk.
	Lateral migration of contaminants.	Groundwater: Underlying Secondary A a Principal Aquifer, Source protection Zones	Sv	UI	M/L	A significant source of off-site contamination has not been identified. However, the Principal Aquifer can be porous, potentially allowing off site contamination to impact water quality under the site.
VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low KEY: Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor, Hi = High, Li = Likely, Lw = Low Likelihood, UI = Unlikely						
Contaminant linkage Assessment Summary When considered in the context of the conceptual site model and the historical activities that have taken place (minor surface workings), the proposed development is considered to pose a MODERATE/LOW risk to human health. It is considered that the main driver for the risk rating for human health is potential for hazardous ground gases and naturally elevated radon to impact on future site users. The risk posed to controlled waters is predominantly considered to be MODERATE/LOW based on the potential presence of localised contamination directly over a sensitive aquifer. It is recommended that a ground investigation be undertaken to quantify the identified contaminant linkages and assess likely mitigation measures.						

9. ENVIRONMENTAL LIABILITY ASSESSMENT AND DEVELOPMENT IMPLICATIONS

Statutory Liability

- 9.1 The contaminated land regime has implications for those who cause or knowingly permit land to be contaminated, or who own or occupy land that is contaminated. Contaminated land is defined in Section 78A(2) of Part IIA of the Environmental Protection Act 1990 as:

“Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:

- i. Significant harm is being caused or there is a significant possibility of such harm being caused; or*
- ii. Significant pollution of controlled waters is being caused or there is a significant possibility of such pollution being caused.”*

- 9.2 Harm is defined in Section 78A(4) of the Environmental Protection Act 1990 as:

“Harm to the health of living organisms or other interference with ecological systems of which they form part and, in the case of man, includes harm to his property.”

- 9.3 Once an area of land has been identified as contaminated land, appropriate persons will be identified as being responsible for the cost of cleaning up the land by the enforcing authority. The appropriate person will be liable for all or part of the remediation of the land. Two classes of appropriate person have been identified:

Class A appropriate persons are those who cause or knowingly permit the pollutants to be in, on or under the land.

Class B appropriate persons are the owners(s) or occupier(s) of the land.

- 9.4 Where no Class A appropriate persons can be identified, then Class B appropriate persons may become liable.

- 9.5 Based on the information available regarding the site, the potential for Statutory Authority action based on “pollution of controlled water” or “significant harm” defined by Part IIA of the Environmental Protection Act 1990 is considered to be **LOW**.

Third Party Liability

- 9.6 Based on the information contained in this report, it is the opinion of BWB that the potential for legal action by surrounding landowners, based on the potential contamination to migrate off-site, is considered to be **LOW** when considering the agricultural history of the area.

Public Relations

- 9.7 The likelihood of public relations being tarnished due to contamination |
are considered to be **LOW**.

10. CONCLUSION AND RECOMMENDATIONS

Conclusions

- 10.1 The site is an irregular shaped plot of land covering an area of approximately 40 hectares. The site comprises agricultural land with a large area of woodland centrally.
- 10.2 The proposed development is for up to 600 residential dwellings, a 5-bedroom property for children's social care and supported living. Two vehicular access points from Little Green Lane and further pedestrian / cycleway accesses. A one form entry primary school (plus expansion land for a two form entry primary school). A mixed use local centre including a medical centre, community building, retail and café provision, car parking and associated infrastructure. A country park, areas for play and recreation, allotments, community orchard and landscaping with associated infrastructure including sustainable urban drainage systems.
- 10.3 The site remains predominantly the same throughout its mapped history, with presumed agricultural use. A topographical depression is mapped in the northwest of the site from the earliest plans, possibly relating to mineral extraction or a solution feature. An old gravel pit is mapped in the southeast of site from 1914. Residential dwellings are mapped in the southeast corner from the earliest mapping, with additional building present from the 1960s.
- 10.4 The surrounding area was predominantly woodland with sporadic farms and residences throughout the mapped history. From 1938 onwards, the area to the south of the site saw extensive residential development.
- 10.5 Information published by the British Geological Survey (BGS) indicates that the majority of the site is absent of superficial deposits, except for the northern corner and western field, which are underlain by the Gerrards Cross Gravel (sand and gravel). The Winter Hill Gravel (sand and gravel) is mapped at the southeastern boundary of the site. The bedrock geology comprises the undifferentiated Seaford Chalk and Newhaven Chalk Formations. Localised Made Ground may be present adjacent to the old gravel workings, the topographic depression in the northwest of site and buildings in the southeast of the site. Previous exploratory holes on and close to the site generally confirm this. The underlying chalk is indicated to have naturally elevated radon levels.
- 10.6 A significant source of contamination has not been identified at the site. The proposed development is considered to pose a moderate/low risk to human health due to the potential for hazardous ground gases and naturally elevated radon to impact on future site users. The risk posed to controlled waters is considered to be moderate/low site based on the potential presence of localised contamination directly overlying a sensitive aquifer.
- 10.7 Based on the proposed low-density housing at the site, shallow strip foundations bearing onto the Gerrards Cross Gravel or weathered bedrock are likely to be suitable at the site. Further assessment is required to inform on the possible impacts on foundation design associated with potential ground dissolution, and in areas within close proximity to the former gravel pit in south east and depression in the north west.

Recommendations

- 10.8 A ground investigation should be undertaken at the site to confirm ground conditions at the site, determine the ground gas regime, allow for in-situ and laboratory testing to quantify contaminant linkages and inform foundation design.
- 10.9 It is recommended that a Natural Cavities Report is procured for the site, to assess the risk associated with potential ground dissolution.

11. REFERENCES

1. BS 10175:2011+A2:2017 Investigation of potentially contaminated sites. Code of practice. British Standards Institute, 2017.
2. CIRIA C552 *Contaminated land risk assessment. A guide to good practice*. Rudland, D J, Lancefield, R M, Mayell, P N, 2001.
3. Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance. Department for Environment Food and Rural Affairs (DEFRA), 2012.
4. Land Contamination Risk Management. Environment Agency, 2020.
5. <https://www.gov.uk/government/collections/land-contamination-technical-guidance>.
6. The Control of Asbestos Regulations. Health and Safety Executive, 2012.

APPENDICES

Appendix 1: Illustrative Masterplan



- KEY**
- SITE LOCATION
 - PUBLIC OPEN SPACE
 - EXISTING TREES
 - NEW TREE PLANTING
 - WILDFLOWER / LONG GRASS
 - COMMUNITY ORCHARD
 - AREA FOR PLAY
 - SUSTAINABLE DRAINAGE

KEY PRINCIPLES

Appendix 2: Site Photographs



Photo 1— Access gate to the south east off Little Green Lane



Photo 2— Secondary Access gate to the south west



Photo 3— Little Green Lane looking from west to east



Photo 4— Overhead services and cabinets on Little Green Lane



Photo 5— Restricted access on Little Green Lane in the south west



Photo 6— Rousebarn Lane



Photo 7— Central field with the woodland beyond



Photo 8— Public footpath crossing the north of the site



Photo 9— The woodland in the centre of the site



Photo 10— Central woodland boundary



Photo 11— Field Cover in the south of the site



Photo 12— Far north corner of the site



Photo 13— Field cover in the north of the site



Photo 14— Pit feature in the north



Photo 16— Evidence of waste materials in the pit



Photo 18— Dense vegetation which restricted access into the pit feature

Appendix 3: Groundsure Report

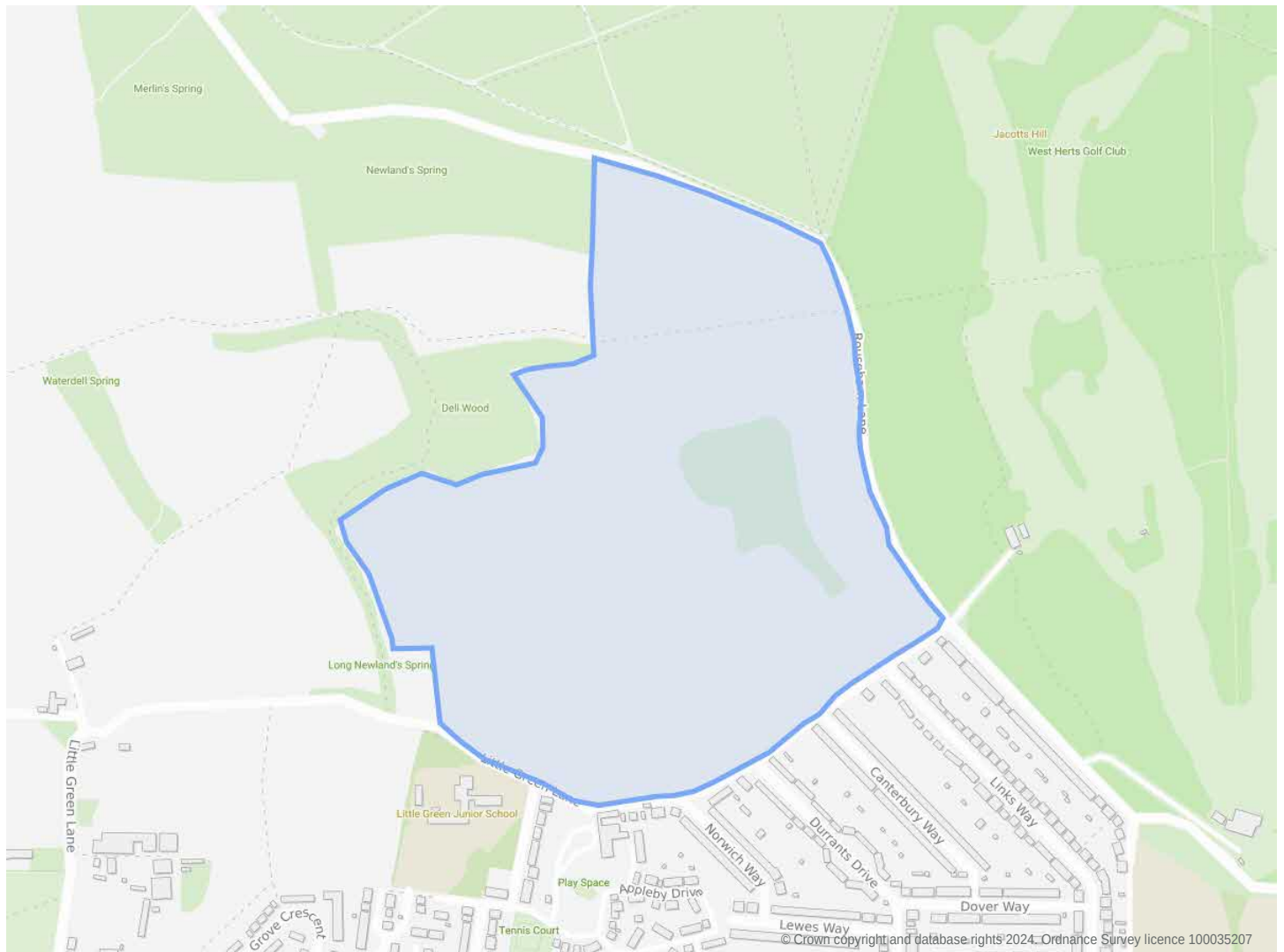
LAND OFF LITTLE GREEN, LITTLE GREEN LANE, CROXLEY GREEN, HERTFORDSHIRE, WD3 3JQ

Order Details

Date: 11/06/2024
Your ref: 8592
Our Ref: GS-L3H-L6M -LO8-LG8

Site Details

Location: 507884 196953
Area: 40.73 ha
Authority: [Three Rivers District Council](#) ↗



[Summary of findings](#)

[p. 2 >](#)

[Aerial image](#)

[p. 9 >](#)

[OS MasterMap site plan](#)

N/A: >10ha

[Insight User Guide](#) ↗

Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
14 >	1.1 >	Historical industrial land uses >	7	2	1	6	-
15 >	1.2 >	Historical tanks >	0	1	1	0	-
16 >	1.3 >	Historical energy features >	0	0	1	1	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
18 >	2.1 >	Historical industrial land uses >	12	2	1	8	-
19 >	2.2 >	Historical tanks >	0	2	2	0	-
20 >	2.3 >	Historical energy features >	0	0	2	2	-
20	2.4	Historical petrol stations	0	0	0	0	-
21	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	0	-
22	3.2	Historical landfill (BGS records)	0	0	0	0	-
23	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
23	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
23	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
23 >	3.7 >	Waste exemptions >	0	0	0	19	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
26 >	4.1 >	Recent industrial land uses >	0	2	3	-	-
27	4.2	Current or recent petrol stations	0	0	0	0	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-



28	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
29	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29 >	4.13 >	<u>Licensed Discharges to controlled waters ></u>	0	0	0	1	-
29	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
30	4.15	Pollutant release to public sewer	0	0	0	0	-
30	4.16	List 1 Dangerous Substances	0	0	0	0	-
30	4.17	List 2 Dangerous Substances	0	0	0	0	-
30 >	4.18 >	<u>Pollution Incidents (EA/NRW) ></u>	1	2	0	0	-
31	4.19	Pollution inventory substances	0	0	0	0	-
31	4.20	Pollution inventory waste transfers	0	0	0	0	-
31	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	<u>Hydrogeology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
32 >	5.1 >	<u>Superficial aquifer ></u>	Identified (within 500m)				
34 >	5.2 >	<u>Bedrock aquifer ></u>	Identified (within 500m)				
35 >	5.3 >	<u>Groundwater vulnerability ></u>	Identified (within 50m)				
37 >	5.4 >	<u>Groundwater vulnerability- soluble rock risk ></u>	Identified (within 0m)				
37	5.5	Groundwater vulnerability- local information	None (within 0m)				
38 >	5.6 >	<u>Groundwater abstractions ></u>	0	0	0	3	29
45 >	5.7 >	<u>Surface water abstractions ></u>	0	0	0	0	3
46 >	5.8 >	<u>Potable abstractions ></u>	0	0	0	0	7
48 >	5.9 >	<u>Source Protection Zones ></u>	2	1	0	1	-
48	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	<u>Hydrology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
50	6.1	Water Network (OS MasterMap)	0	0	0	-	-



50	6.2	Surface water features	0	0	0	-	-
51 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
51 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
52 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
53	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
53	7.2	Historical Flood Events	0	0	0	-	-
53	7.3	Flood Defences	0	0	0	-	-
54	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
54	7.5	Flood Storage Areas	0	0	0	-	-
55	7.6	Flood Zone 2	None (within 50m)				
55	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
56 >	8.1 >	Surface water flooding >	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
58 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
59 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	1	0	0	0	3
60	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
60	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
60	10.4	Special Protection Areas (SPA)	0	0	0	0	0
61	10.5	National Nature Reserves (NNR)	0	0	0	0	0
61 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	2
61 >	10.7 >	Designated Ancient Woodland >	3	1	1	0	12
62	10.8	Biosphere Reserves	0	0	0	0	0
62	10.9	Forest Parks	0	0	0	0	0
63	10.10	Marine Conservation Zones	0	0	0	0	0
63 >	10.11 >	Green Belt >	1	1	0	0	1
63	10.12	Proposed Ramsar sites	0	0	0	0	0

63	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
64	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
64	10.15	Nitrate Sensitive Areas	0	0	0	0	0
64	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
65 >	10.17 >	SSSI Impact Risk Zones >	7	-	-	-	-
68 >	10.18 >	SSSI Units >	1	0	0	0	3
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
71	11.1	World Heritage Sites	0	0	0	-	-
72	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
72	11.3	National Parks	0	0	0	-	-
72 >	11.4 >	Listed Buildings >	0	1	0	-	-
73	11.5	Conservation Areas	0	0	0	-	-
73	11.6	Scheduled Ancient Monuments	0	0	0	-	-
73 >	11.7 >	Registered Parks and Gardens >	0	1	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
74 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
75	12.2	Open Access Land	0	0	0	-	-
75	12.3	Tree Felling Licences	0	0	0	-	-
75	12.4	Environmental Stewardship Schemes	0	0	0	-	-
76 >	12.5 >	Countryside Stewardship Schemes >	1	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
77 >	13.1 >	Priority Habitat Inventory >	5	7	8	-	-
78	13.2	Habitat Networks	0	0	0	-	-
78	13.3	Open Mosaic Habitat	0	0	0	-	-
79	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
80 >	14.1 >	10k Availability >	Identified (within 500m)				
81 >	14.2 >	Artificial and made ground (10k) >	1	1	1	1	-
83 >	14.3 >	Superficial geology (10k) >	2	0	1	0	-

84	14.4	Landslip (10k)	0	0	0	0	-
85 >	14.5 >	Bedrock geology (10k) >	1	0	0	0	-
86	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
87 >	15.1 >	50k Availability >	Identified (within 500m)				
88 >	15.2 >	Artificial and made ground (50k) >	0	1	1	0	-
89	15.3	Artificial ground permeability (50k)	0	0	-	-	-
90 >	15.4 >	Superficial geology (50k) >	2	0	1	0	-
91 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
91	15.6	Landslip (50k)	0	0	0	0	-
91	15.7	Landslip permeability (50k)	None (within 50m)				
92 >	15.8 >	Bedrock geology (50k) >	1	0	0	0	-
93 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
93	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
94 >	16.1 >	BGS Boreholes >	1	0	0	-	-
Page	Section	Natural ground subsidence >					
95 >	17.1 >	Shrink swell clays >	Negligible (within 50m)				
96 >	17.2 >	Running sands >	Very low (within 50m)				
98 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
99 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
100 >	17.5 >	Landslides >	Very low (within 50m)				
102 >	17.6 >	Ground dissolution of soluble rocks >	Moderate (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
104	18.1	BritPits	0	0	0	0	-
105 >	18.2 >	Surface ground workings >	11	3	0	-	-
105	18.3	Underground workings	0	0	0	0	0
106	18.4	Underground mining extents	0	0	0	0	-
106	18.5	Historical Mineral Planning Areas	0	0	0	0	-



106 >	18.6 >	Non-coal mining >	1	0	0	0	1
107	18.7	JPB mining areas	None (within 0m)				
107	18.8	The Coal Authority non-coal mining	0	0	0	0	-
107	18.9	Researched mining	0	0	0	0	-
107	18.10	Mining record office plans	0	0	0	0	-
108	18.11	BGS mine plans	0	0	0	0	-
108	18.12	Coal mining	None (within 0m)				
108	18.13	Brine areas	None (within 0m)				
108	18.14	Gypsum areas	None (within 0m)				
108	18.15	Tin mining	None (within 0m)				
109	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes >	On site	0-50m	50-250m	250-500m	500-2000m
110 >	19.1 >	Natural cavities >	0	0	1	1	-
111	19.2	Mining cavities	0	0	0	0	0
111	19.3	Reported recent incidents	0	0	0	0	-
111	19.4	Historical incidents	0	0	0	0	-
112	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
113 >	20.1 >	Radon >	Between 3% and 5% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
115 >	21.1 >	BGS Estimated Background Soil Chemistry >	12	3	-	-	-
116	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
116	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
117	22.1	Underground railways (London)	0	0	0	-	-
117	22.2	Underground railways (Non-London)	0	0	0	-	-
117	22.3	Railway tunnels	0	0	0	-	-
117	22.4	Historical railway and tunnel features	0	0	0	-	-
117	22.5	Royal Mail tunnels	0	0	0	-	-



118	22.6	Historical railways	0	0	0	-	-
118	22.7	Railways	0	0	0	-	-
118	22.8	Crossrail 1	0	0	0	0	-
118	22.9	Crossrail 2	0	0	0	0	-
118	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 21/04/2022

Site Area: 40.73ha



Recent site history - 2019 aerial photograph

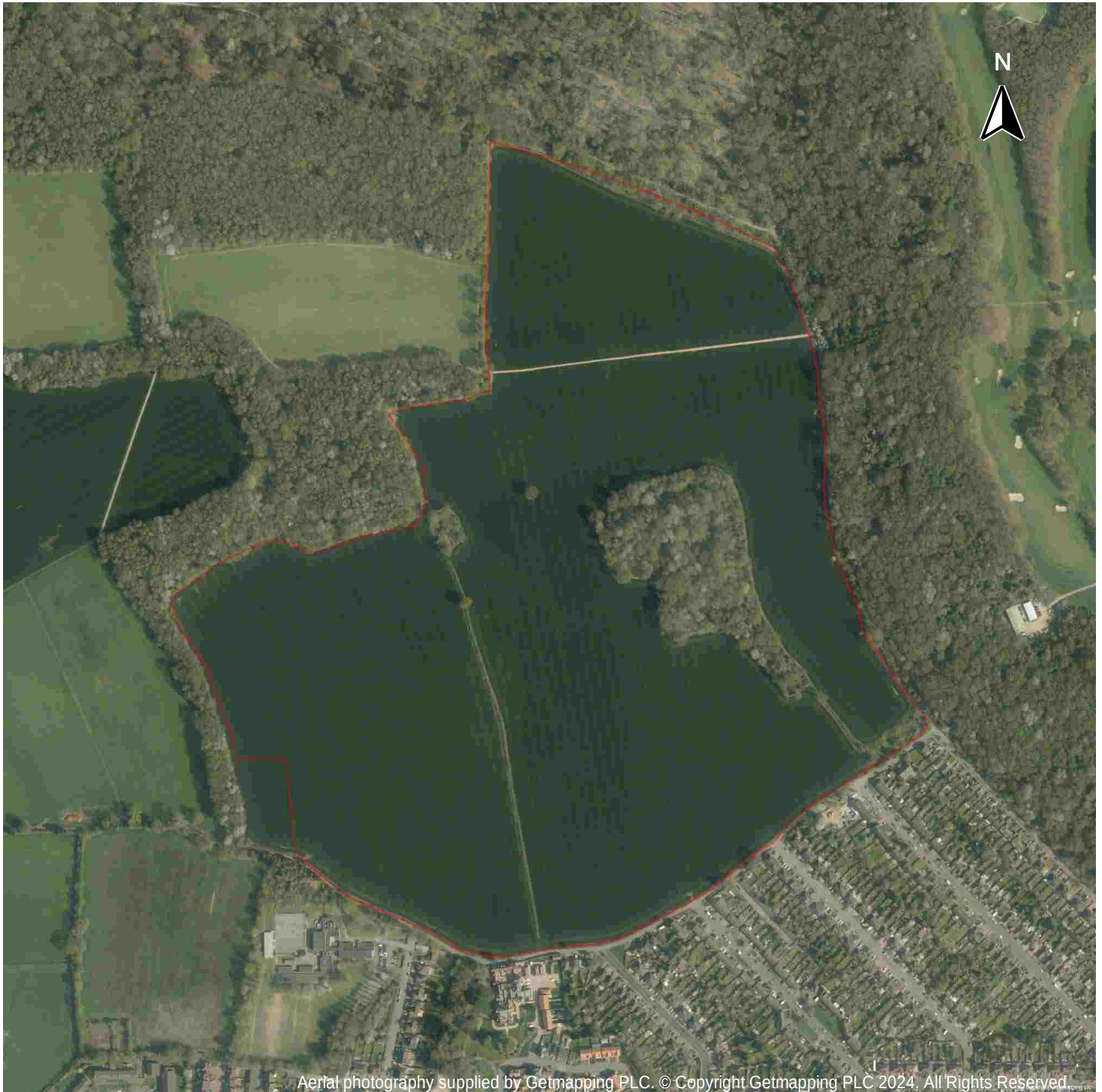


Capture Date: 22/08/2019

Site Area: 40.73ha



Recent site history - 2015 aerial photograph



Capture Date: 20/04/2015

Site Area: 40.73ha



Recent site history - 2013 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved

Capture Date: 28/04/2013

Site Area: 40.73ha



Recent site history - 1999 aerial photograph

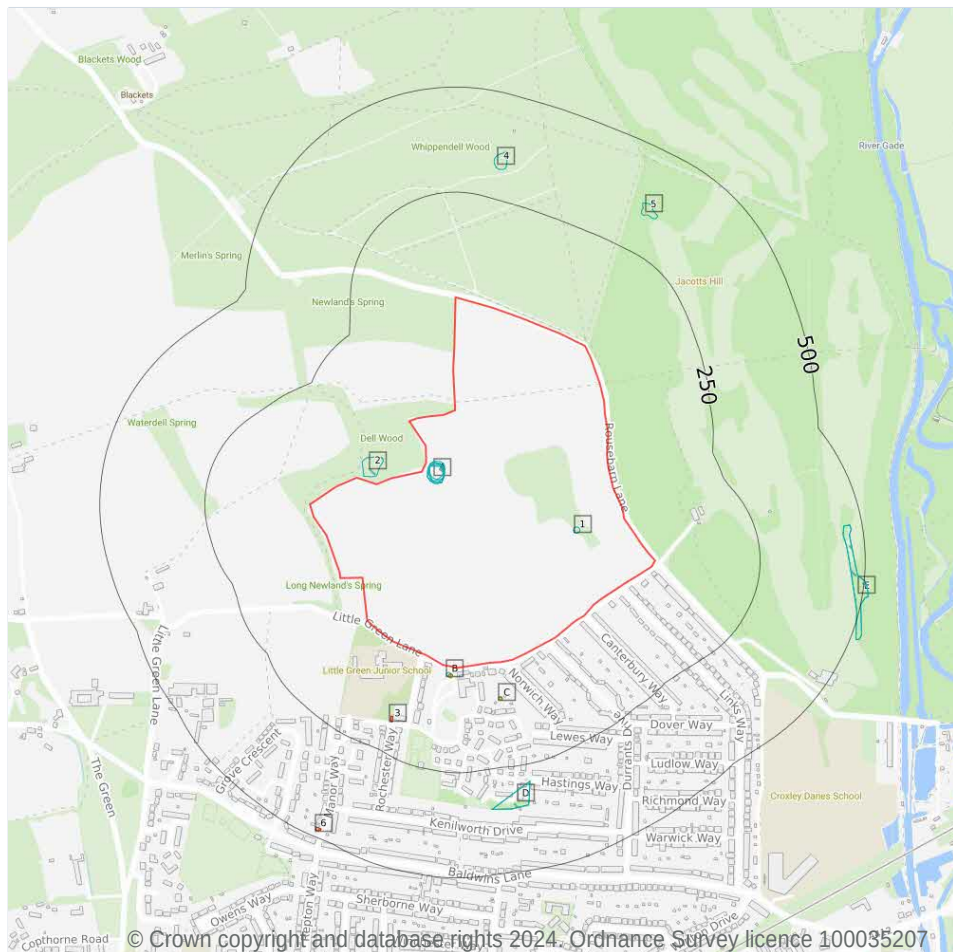


Capture Date: 29/08/1999

Site Area: 40.73ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

1.1 Historical industrial land uses

Records within 500m

16

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 14](#) >

ID	Location	Land use	Dates present	Group ID
1	On site	Unspecified Tank	1920	2154601



ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Pit	1913 - 1955	2171057
A	On site	Unspecified Pit	1966 - 1990	2209089
A	On site	Unspecified Pit	1896	2232053
A	On site	Unspecified Pit	1938	2242645
A	On site	Unspecified Pit	1878	2262757
A	On site	Unspecified Pit	1898	2289660
2	8m W	Unspecified Pit	1878	2125022
B	15m S	Unspecified Tank	1898	2154602
C	82m S	Unspecified Tank	1913	2154603
D	291m S	Unspecified Heap	1966 - 1976	2213931
D	291m S	Unspecified Heap	1990	2267006
4	321m N	Unspecified Pit	1877	2125020
5	340m NE	Unspecified Pit	1872	2125021
E	451m E	Unspecified Ground Workings	1966 - 1976	2249030
E	451m E	Unspecified Ground Workings	1990	2285783

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

2

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 14 >](#)

ID	Location	Land use	Dates present	Group ID
B	17m S	Unspecified Tank	1872 - 1898	391750
C	83m S	Unspecified Tank	1872 - 1898	388651

This data is sourced from Ordnance Survey / Groundsure.



1.3 Historical energy features

Records within 500m**2**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on [page 14 >](#)

ID	Location	Land use	Dates present	Group ID
3	165m SW	Electricity Substation	1993 - 1994	292629
6	477m SW	Electricity Substation	1975 - 1993	287077

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m**0**

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m**0**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



1.6 Historical military land

Records within 500m

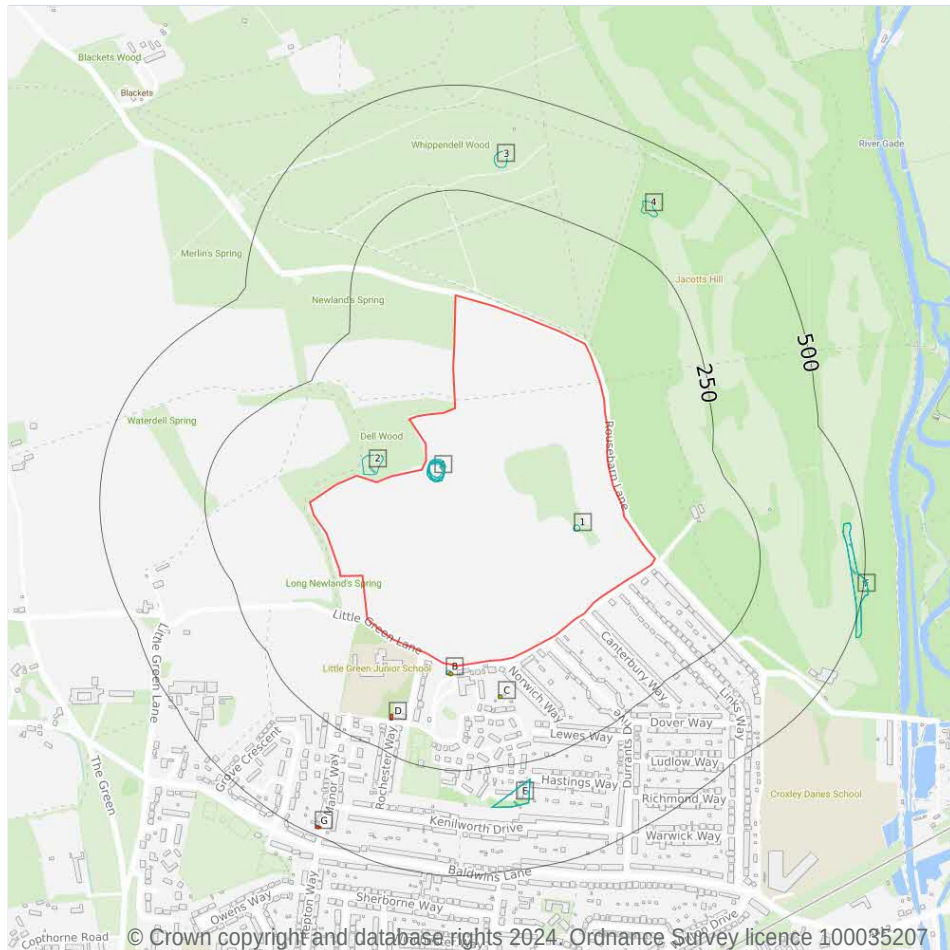
0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

2.1 Historical industrial land uses

Records within 500m

23

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 18](#) >

ID	Location	Land Use	Date	Group ID
1	On site	Unspecified Tank	1920	2154601
A	On site	Unspecified Pit	1938	2171057
A	On site	Unspecified Pit	1913	2171057



ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Pit	1896	2232053
A	On site	Unspecified Pit	1878	2262757
A	On site	Unspecified Pit	1898	2289660
A	On site	Unspecified Pit	1955	2171057
A	On site	Unspecified Pit	1990	2209089
A	On site	Unspecified Pit	1966	2209089
A	On site	Unspecified Pit	1976	2209089
A	On site	Unspecified Pit	1938	2242645
A	On site	Unspecified Pit	1938	2242645
2	8m W	Unspecified Pit	1878	2125022
B	15m S	Unspecified Tank	1898	2154602
C	82m S	Unspecified Tank	1913	2154603
E	291m S	Unspecified Heap	1990	2267006
E	291m S	Unspecified Heap	1966	2213931
E	291m S	Unspecified Heap	1976	2213931
3	321m N	Unspecified Pit	1877	2125020
4	340m NE	Unspecified Pit	1872	2125021
F	451m E	Unspecified Ground Workings	1990	2285783
F	451m E	Unspecified Ground Workings	1966	2249030
F	451m E	Unspecified Ground Workings	1976	2249030

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

4

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 18 >](#)



ID	Location	Land Use	Date	Group ID
B	17m S	Unspecified Tank	1872	391750
B	17m S	Unspecified Tank	1898	391750
C	83m S	Unspecified Tank	1872	388651
C	83m S	Unspecified Tank	1898	388651

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	4
---------------------	---

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on [page 18 >](#)

ID	Location	Land Use	Date	Group ID
D	165m SW	Electricity Substation	1994	292629
D	165m SW	Electricity Substation	1993	292629
G	477m SW	Electricity Substation	1993	287077
G	479m SW	Electricity Substation	1975	287077

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0
---------------------	---

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

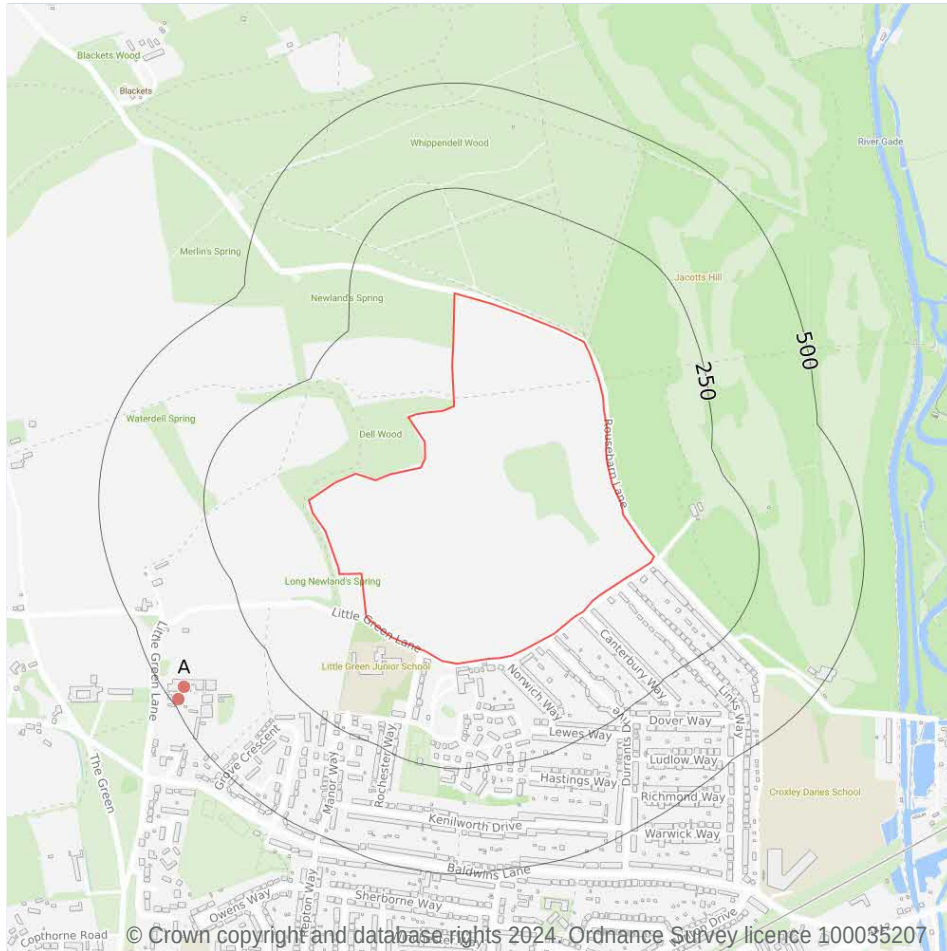
0

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m

0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m

0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m

0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m

0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m

19

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on [page 22 >](#)

ID	Location	Site	Reference	Category	Sub-Category	Description
A	458m SW	-	WEX340805	Using waste exemption	On a farm	Use of waste in construction



ID	Location	Site	Reference	Category	Sub-Category	Description
A	458m SW	-	WEX340805	Using waste exemption	On a farm	Use of waste for a specified purpose
A	458m SW	-	WEX340805	Using waste exemption	On a farm	Pig and poultry ash
A	458m SW	-	WEX340805	Storing waste exemption	On a farm	Storage of waste in a secure place
A	458m SW	-	WEX340805	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	458m SW	-	WEX340805	Disposing of waste exemption	On a farm	Burning waste in the open
A	458m SW	-	WEX215333	Using waste exemption	On a farm	Use of waste in construction
A	458m SW	-	WEX215333	Storing waste exemption	On a farm	Storage of waste in a secure place
A	458m SW	-	WEX215333	Using waste exemption	On a farm	Pig and poultry ash
A	458m SW	-	WEX215333	Using waste exemption	On a farm	Use of waste for a specified purpose
A	458m SW	-	WEX215333	Disposing of waste exemption	On a farm	Burning waste in the open
A	458m SW	-	WEX215333	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	487m SW	Killingdonn Farm, Little Green Lane, Croxley Green, Rickmansworth, Wd3 3jj	WEX018942	Storing waste exemption	On a farm	Storage of waste in secure containers
A	487m SW	Killingdonn Farm, Little Green Lane, Croxley Green, Rickmansworth, Wd3 3jj	WEX018942	Storing waste exemption	On a farm	Storage of waste in a secure place
A	487m SW	Killingdonn Farm, Little Green Lane, Croxley Green, Rickmansworth, Wd3 3jj	WEX018942	Disposing of waste exemption	On a farm	Burning waste in the open
A	487m SW	Killingdonn Farm Little Green Lane Rickmansworth Hertfordshire Wd3 3jj	EPR/ZE5656Q G/A001	Treating waste exemption	Agricultural waste only	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising



ID	Location	Site	Reference	Category	Sub-Category	Description
A	487m SW	Killingdonn Farm Little Green Lane Rickmansworth Hertfordshire Wd3 3jj	EPR/ZE5656Q G/A001	Using waste exemption	Agricultural waste only	Use of waste for a specified purpose
A	487m SW	Killingdonn Farm Little Green Lane Rickmansworth Hertfordshire Wd3 3jj	EPR/ZE5656Q G/A001	Disposing of waste exemption	Agricultural waste only	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
A	487m SW	Killingdonn Farm Little Green Lane Rickmansworth Hertfordshire Wd3 3jj	EPR/ZE5656Q G/A001	Disposing of waste exemption	Agricultural waste only	Burning waste in the open

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

5

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 26](#) >

ID	Location	Company	Address	Activity	Category
4	23m SE	Electricity Sub Station	Hertfordshire, WD3	Electrical Features	Infrastructure and Facilities
5	28m E	Gas Governor	Hertfordshire, WD3	Gas Features	Infrastructure and Facilities
6	173m S	Electricity Sub Station	Hertfordshire, WD3	Electrical Features	Infrastructure and Facilities



ID	Location	Company	Address	Activity	Category
7	173m SW	Electricity Sub Station	Hertfordshire, WD3	Electrical Features	Infrastructure and Facilities
8	243m SE	Mervyn Sellers Fireplaces	14, Lewes Way, Croxley Green, Hertfordshire, WD3 3SN	Fireplaces and Mantelpieces	Consumer Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m 0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m 0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m 0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m 0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.



4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m

0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

0

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m

1

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on [page 26](#) >

ID	Location	Address	Details	
9	456m SE	9-INCH SURFACE WATER OUTFALL, CASSI, 9-INCH SURFACE WATER OUTFALL, CA, SSIQBURY PARK, WATFORD, HERTS	Effluent Type: MISCELLANEOUS DISCHARGES - SWIMMING POOL WATER Permit Number: CTCP.0474 Permit Version: 1 Receiving Water: R GADE	Status: REVOKED - UNSPECIFIED Issue date: 11/03/1965 Effective Date: 11/03/1965 Revocation Date: 21/08/1990

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.



4.15 Pollutant release to public sewer

Records within 500m

0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m

3

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on [page 26](#) >

ID	Location	Details	
1	On site	Incident Date: 08/04/2002 Incident Identification: 69655 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
2	3m SW	Incident Date: 01/08/2003 Incident Identification: 178354 Pollutant: Specific Waste Materials Pollutant Description: Other Specific Waste Material	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

ID	Location	Details	
3	22m NE	Incident Date: 30/07/2003 Incident Identification: 177832 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0
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The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0
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The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m	0
---------------------	---

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

[illegible]

-  Principal
-  Secondary A
-  Secondary B
-  Secondary Undifferentiated
-  Unproductive
-  Unknown

Records within 500m	3
---------------------	---

Features are displayed on the Hydrogeology map on [page 32](#) >

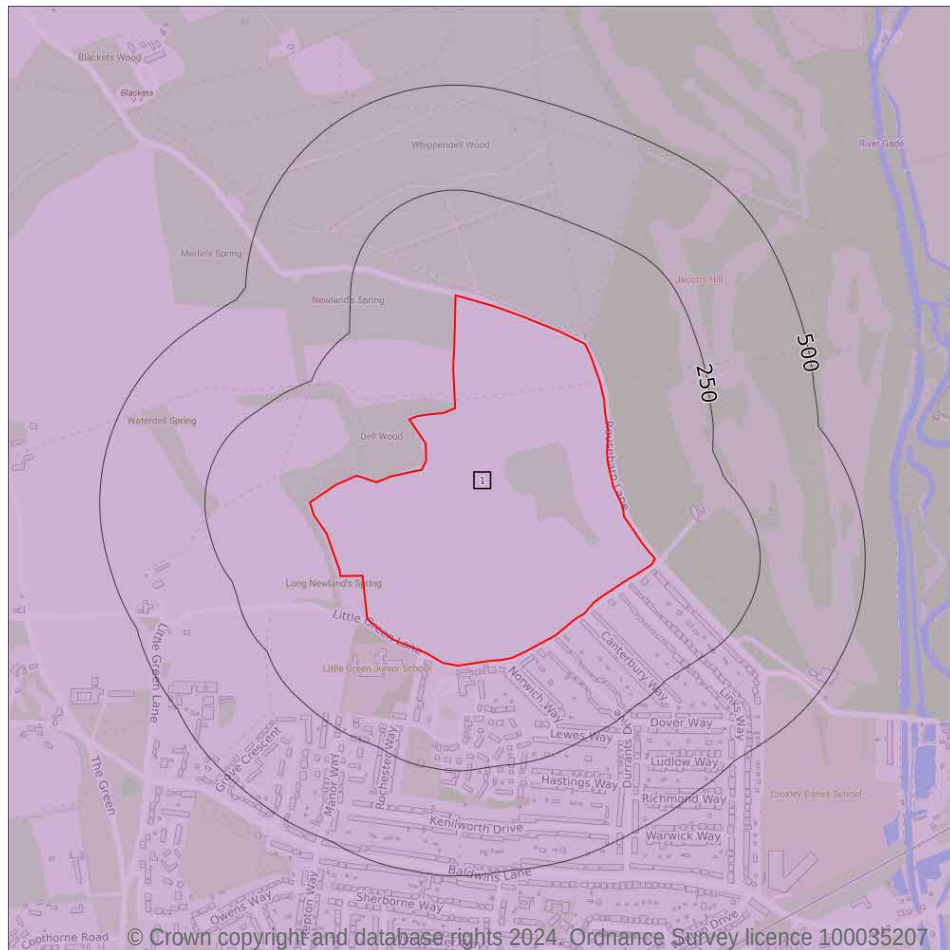
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	111m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

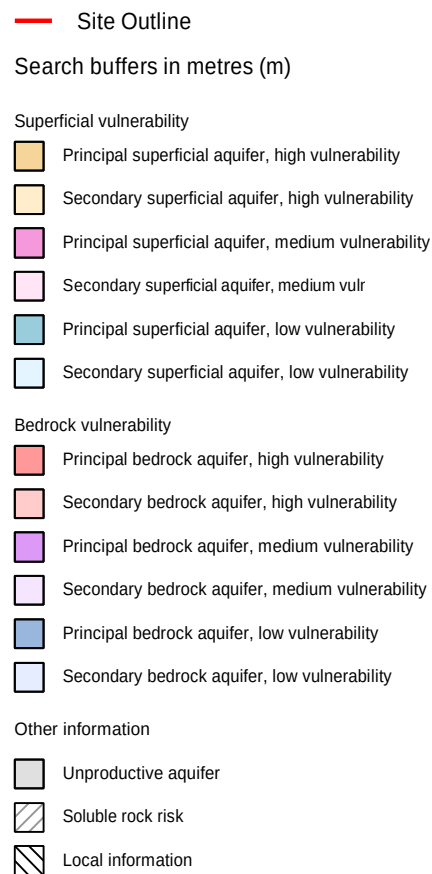
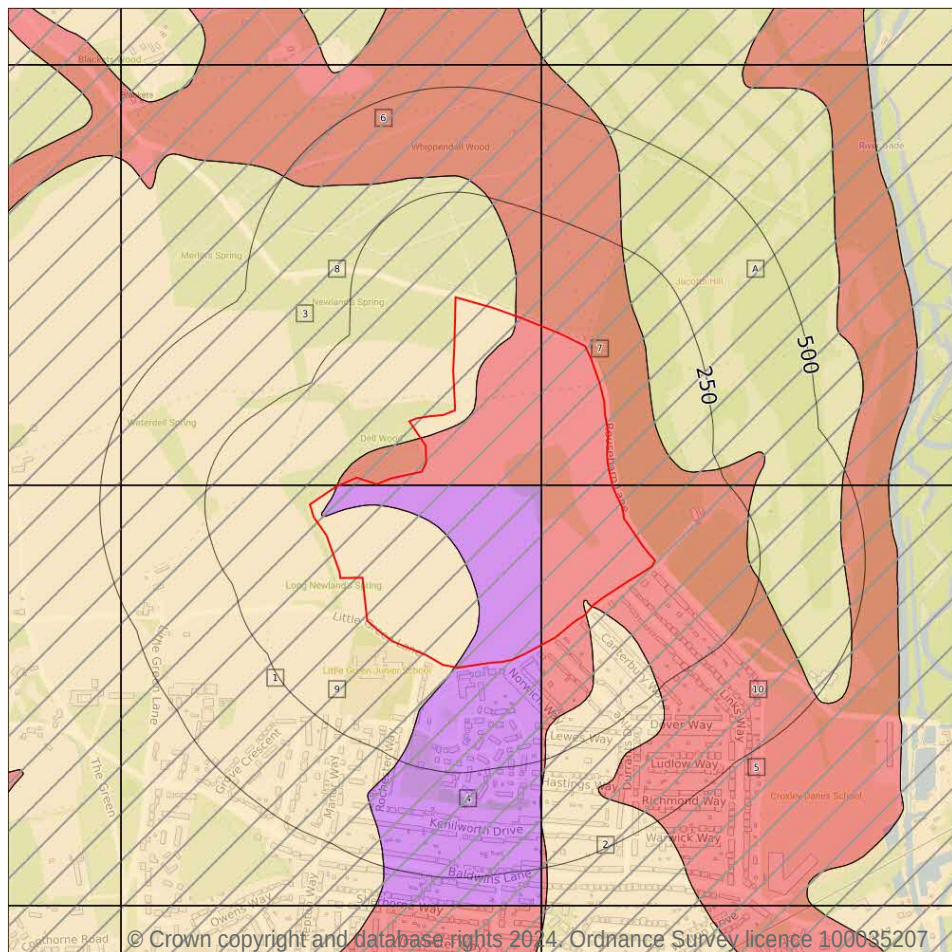
Features are displayed on the Bedrock aquifer map on [page 34](#) >

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

7

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on [page 35](#) >



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Principal Flow mechanism: Well connected fractures
2	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
3	On site	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
4	On site	Summary Classification: Principal bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: >90% Recharge potential: High	Vulnerability: Medium Aquifer type: Principal Flow mechanism: Well connected fractures
5	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
6	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
7	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



5.4 Groundwater vulnerability- soluble rock risk

Records on site

4

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
8	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	7.000000000000001%
9	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	13.0%
10	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	19.0%
A	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	15.0%

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site

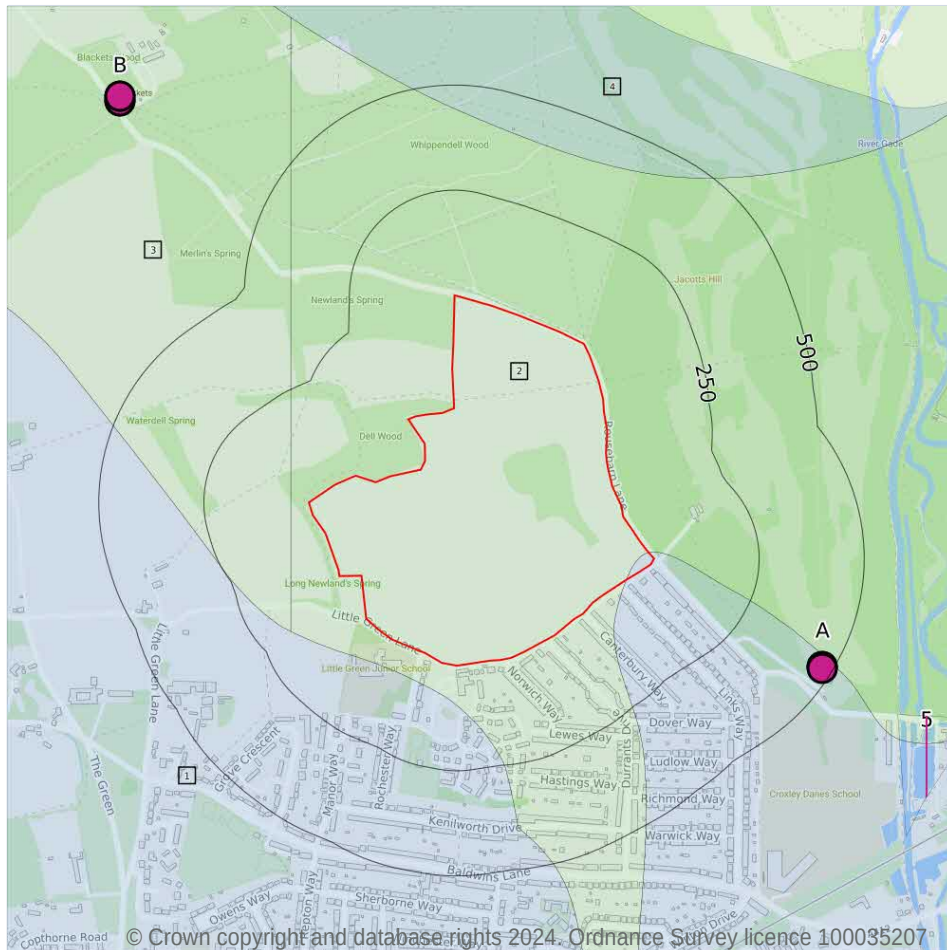
0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk ↗ .

This data is sourced from the British Geological Survey and the Environment Agency.



Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- ▭ Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- ▭ Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

32

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 38 >](#)

ID	Location	Details	
A	474m SE	Status: Active Licence No: TH/039/0028/037 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: WEST HERTS GOLF CLUB-BOREHOLE Data Type: Point Name: WEST HERTS GOLF CLUB LIMITED Easting: 508671 Northing: 196565	Annual Volume (m ³): 16000 Max Daily Volume (m ³): 200 Original Application No: NPS/WR/012713 Original Start Date: 01/04/2014 Expiry Date: 31/03/2026 Issue No: 1 Version Start Date: 01/04/2014 Version End Date: -
A	474m SE	Status: Historical Licence No: TH/039/0028/004 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: WEST HERTS GOLF CLUB-BOREHOLE Data Type: Point Name: WEST HERTS GOLF CLUB LIMITED Easting: 508671 Northing: 196565	Annual Volume (m ³): 42800 Max Daily Volume (m ³): 200 Original Application No: - Original Start Date: 01/01/2009 Expiry Date: 31/03/2014 Issue No: 1 Version Start Date: 01/04/2012 Version End Date: -
A	476m SE	Status: Historical Licence No: 28/39/28/0597 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: WEST HERTS GOLF CLUB-BOREHOLE Data Type: Point Name: WEST HERTS COLF CLUB LIMITED Easting: 508670 Northing: 196560	Annual Volume (m ³): 42800 Max Daily Volume (m ³): 200 Original Application No: - Original Start Date: 15/11/2005 Expiry Date: 31/12/2008 Issue No: 1 Version Start Date: 15/11/2005 Version End Date: -
5	687m SE	Status: Active Licence No: 28/39/28/0313 Details: Fish Farm/Cress Pond Throughflow Direct Source: THAMES GROUNDWATER Point: SEVEN BOREHOLES AT ROUSEBARN LANE, WATFORD Data Type: Poly4 Name: Stephen Cardell Easting: 508850 Northing: 196450	Annual Volume (m ³): 625088 Max Daily Volume (m ³): 3546 Original Application No: NPS/WR/008177 Original Start Date: 08/05/1967 Expiry Date: - Issue No: 102 Version Start Date: 29/09/2011 Version End Date: -
B	920m NW	Status: Historical Licence No: 28/39/28/0308 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: WELL AT CHANDLERS CROSS, NEAR RICKMANSWORTH Data Type: Point Name: HITCHCOCK Easting: 507000 Northing: 197910	Annual Volume (m ³): 3304.92 Max Daily Volume (m ³): 45.46 Original Application No: - Original Start Date: 08/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -



ID	Location	Details	
B	920m NW	Status: Historical Licence No: 28/39/28/0308 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: WELL AT CHANDLERS CROSS, NEAR RICKMANSWORTH Data Type: Point Name: HITCHCOCK Easting: 507000 Northing: 197910	Annual Volume (m ³): 3304.92 Max Daily Volume (m ³): 45.46 Original Application No: - Original Start Date: 08/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
B	925m NW	Status: Historical Licence No: 28/39/28/0308 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHANDLERS CROSS, NEAR RICKMANSWORTH Data Type: Point Name: HITCHCOCK Easting: 507000 Northing: 197920	Annual Volume (m ³): 3304.92 Max Daily Volume (m ³): 45.46 Original Application No: - Original Start Date: 08/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
B	925m NW	Status: Historical Licence No: 28/39/28/0308 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHANDLERS CROSS, NEAR RICKMANSWORTH Data Type: Point Name: HITCHCOCK Easting: 507000 Northing: 197920	Annual Volume (m ³): 3304.92 Max Daily Volume (m ³): 45.46 Original Application No: - Original Start Date: 08/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
-	1267m NE	Status: Active Licence No: 28/39/28/0539 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: WELL A AT THE GROVE, LANGLEYBURY Data Type: Point Name: RALPH TRUSTEES LTD & STUDAN Easting: 508600 Northing: 198500	Annual Volume (m ³): 19039 Max Daily Volume (m ³): 178.5 Original Application No: WRA/6562 Original Start Date: 13/06/1997 Expiry Date: - Issue No: 100 Version Start Date: 08/06/2001 Version End Date: -



ID	Location	Details	
-	1267m NE	Status: Active Licence No: 28/39/28/0539 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: WELL A AT THE GROVE, LANGLEYBURY Data Type: Point Name: RALPH TRUSTEES LTD & STUDAN Easting: 508600 Northing: 198500	Annual Volume (m ³): 19039 Max Daily Volume (m ³): 178.5 Original Application No: WRA/6562 Original Start Date: 13/06/1997 Expiry Date: - Issue No: 100 Version Start Date: 08/06/2001 Version End Date: -
-	1275m NE	Status: Active Licence No: 28/39/28/0539 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: WELL B AT THE GROVE, LANGLEYBURY, WATFORD Data Type: Point Name: RALPH TRUSTEES LTD & STUDAN Easting: 508800 Northing: 198400	Annual Volume (m ³): 19039 Max Daily Volume (m ³): 178.5 Original Application No: WRA/6562 Original Start Date: 13/06/1997 Expiry Date: - Issue No: 100 Version Start Date: 08/06/2001 Version End Date: -
-	1275m NE	Status: Active Licence No: 28/39/28/0539 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: WELL B AT THE GROVE, LANGLEYBURY, WATFORD Data Type: Point Name: RALPH TRUSTEES LTD & STUDAN Easting: 508800 Northing: 198400	Annual Volume (m ³): 19039 Max Daily Volume (m ³): 178.5 Original Application No: WRA/6562 Original Start Date: 13/06/1997 Expiry Date: - Issue No: 100 Version Start Date: 08/06/2001 Version End Date: -
-	1329m NW	Status: Historical Licence No: 28/39/28/0537 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHANDLERS CROSS NURSERY, CHANDLERS CROSS Data Type: Point Name: MILSOM Easting: 506900 Northing: 198430	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 08/10/1999 Expiry Date: 31-Dec-06 Issue No: 101 Version Start Date: 08/10/1999 Version End Date: -
-	1452m NW	Status: Active Licence No: 28/39/28/0318 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHANDLERS CROSS Data Type: Point Name: LOWE Easting: 506700 Northing: 198400	Annual Volume (m ³): 2136 Max Daily Volume (m ³): 20.5 Original Application No: - Original Start Date: 08/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 08/05/1967 Version End Date: -



ID	Location	Details	
-	1452m NW	Status: Active Licence No: 28/39/28/0318 Details: Spray Irrigation - Spray Irrigation Definition Order Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT CHANDLERS CROSS Data Type: Point Name: LOWE Easting: 506700 Northing: 198400	Annual Volume (m ³): 2136 Max Daily Volume (m ³): 20.5 Original Application No: - Original Start Date: 08/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 08/05/1967 Version End Date: -
-	1620m NW	Status: Historical Licence No: 28/39/28/0540 Details: Mineral Washing Direct Source: THAMES GROUNDWATER Point: WESTWOOD QUARRY-BOREHOLE Data Type: Point Name: CEMEX UK MATERIALS LIMITED Easting: 507040 Northing: 198880	Annual Volume (m ³): 550000 Max Daily Volume (m ³): 4065 Original Application No: - Original Start Date: 26/06/1998 Expiry Date: 31/12/2008 Issue No: 103 Version Start Date: 12/06/2008 Version End Date: -
-	1620m NW	Status: Historical Licence No: 28/39/28/0540 Details: Process Water Direct Source: THAMES GROUNDWATER Point: WESTWOOD QUARRY-BOREHOLE Data Type: Point Name: CEMEX UK MATERIALS LIMITED Easting: 507040 Northing: 198880	Annual Volume (m ³): 550000 Max Daily Volume (m ³): 4065 Original Application No: - Original Start Date: 26/06/1998 Expiry Date: 31/12/2008 Issue No: 103 Version Start Date: 12/06/2008 Version End Date: -
-	1633m NW	Status: Historical Licence No: 28/39/28/0540 Details: Mineral Washing Direct Source: THAMES GROUNDWATER Point: WESTWOOD QUARRY, RICKMANSWORTH - BOREHOLE Data Type: Point Name: RMC AGGREGATES (GREATER LONDON) LTD Easting: 507030 Northing: 198890	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 26/06/1998 Expiry Date: 31/12/2008 Issue No: 101 Version Start Date: 06/03/2003 Version End Date: -
-	1633m NW	Status: Historical Licence No: 28/39/28/0540 Details: Process water Direct Source: THAMES GROUNDWATER Point: WESTWOOD QUARRY, RICKMANSWORTH - BOREHOLE Data Type: Point Name: RMC AGGREGATES (GREATER LONDON) LTD Easting: 507030 Northing: 198890	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 26/06/1998 Expiry Date: 31/12/2008 Issue No: 101 Version Start Date: 06/03/2003 Version End Date: -



ID	Location	Details	
-	1633m NW	Status: Historical Licence No: 28/39/28/0540 Details: Mineral Washing Direct Source: THAMES GROUNDWATER Point: WESTWOOD QUARRY, RICKMANSWORTH - BOREHOLE Data Type: Point Name: RMC AGGREGATES (GREATER LONDON) LTD Easting: 507030 Northing: 198890	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 26/06/1998 Expiry Date: 31/12/2008 Issue No: 101 Version Start Date: 06/03/2003 Version End Date: -
-	1633m NW	Status: Historical Licence No: 28/39/28/0540 Details: Process water Direct Source: THAMES GROUNDWATER Point: WESTWOOD QUARRY, RICKMANSWORTH - BOREHOLE Data Type: Point Name: RMC AGGREGATES (GREATER LONDON) LTD Easting: 507030 Northing: 198890	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 26/06/1998 Expiry Date: 31/12/2008 Issue No: 101 Version Start Date: 06/03/2003 Version End Date: -
-	1656m NW	Status: Historical Licence No: 28/39/28/0540 Details: Mineral Washing Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WESTWOOD QUARRY, RICKMANSWORTH Data Type: Point Name: RMC AGGREGATES (GREATER LONDON) LTD Easting: 507000 Northing: 198900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/01/1999 Expiry Date: 31-Dec-08 Issue No: 100 Version Start Date: 21/12/2000 Version End Date: -
-	1656m NW	Status: Historical Licence No: 28/39/28/0540 Details: Process water Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WESTWOOD QUARRY, RICKMANSWORTH Data Type: Point Name: RMC AGGREGATES (GREATER LONDON) LTD Easting: 507000 Northing: 198900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/01/1999 Expiry Date: 31-Dec-08 Issue No: 100 Version Start Date: 21/12/2000 Version End Date: -



ID	Location	Details	
-	1679m SE	Status: Historical Licence No: 28/39/28/0043 Details: Laundry Use Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WATFORD LAUNDRY, SYDNEY ROAD, WATFORD Data Type: Point Name: J R M P Properties Limited Easting: 509570 Northing: 195752	Annual Volume (m ³): 113652 Max Daily Volume (m ³): 473 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 25/09/2017 Version End Date: -
-	1736m SE	Status: Historical Licence No: 28/39/28/0043 Details: Laundry Use Direct Source: THAMES GROUNDWATER Point: BOREHOLE AT WATFORD LAUNDRY, SYDNEY ROAD, WATFORD Data Type: Point Name: WATFORD LAUNDERERS & CLEANERS LTD Easting: 509600 Northing: 195700	Annual Volume (m ³): 113652 Max Daily Volume (m ³): 473 Original Application No: - Original Start Date: 14/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 12/08/2013 Version End Date: -
-	1786m N	Status: Active Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH1 (A) Data Type: Point Name: Affinity Water Limited Easting: 508722 Northing: 199013	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 41770.27 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1786m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH1 (A) Data Type: Point Name: Affinity Water Limited Easting: 508722 Northing: 199013	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29778 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1788m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE PUMPING STATION Data Type: Point Name: Affinity Water Limited Easting: 508710 Northing: 199020	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29777.34 Original Application No: - Original Start Date: 13/02/1967 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -



ID	Location	Details	
-	1790m N	Status: Active Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH2 (B) Data Type: Point Name: Affinity Water Limited Easting: 508726 Northing: 199016	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 41770.27 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1790m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH2 (B) Data Type: Point Name: Affinity Water Limited Easting: 508726 Northing: 199016	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29778 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1793m N	Status: Active Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH3 (C) Data Type: Point Name: Affinity Water Limited Easting: 508730 Northing: 199018	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 41770.27 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1793m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH3 (C) Data Type: Point Name: Affinity Water Limited Easting: 508730 Northing: 199018	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29778 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

3

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 38](#) >



ID	Location	Details	
-	961m SE	Status: Historical Licence No: 28/39/28/0508 Details: General Use Relating To Secondary Category (Very Low Loss) Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER GADE AT ROUSEBARN LANE, WATFORD Data Type: Point Name: Stephen Cardell Easting: 509080 Northing: 196300	Annual Volume (m ³): 549000 Max Daily Volume (m ³): 1500 Original Application No: NPS/WR/008161 Original Start Date: 30/11/1991 Expiry Date: - Issue No: 102 Version Start Date: 29/09/2011 Version End Date: -
-	1267m NE	Status: Historical Licence No: 28/39/28/0538 Details: Spray Irrigation - Direct Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER GADE 'A' AT THE GROVE, LANGLEYBURY Data Type: Point Name: RALPH TRUSTEES LTD & STUDAN Easting: 508600 Northing: 198500	Annual Volume (m ³): 1455 Max Daily Volume (m ³): 145 Original Application No: - Original Start Date: 13/06/1997 Expiry Date: - Issue No: 100 Version Start Date: 07/06/2001 Version End Date: -
-	1275m NE	Status: Historical Licence No: 28/39/28/0538 Details: Spray Irrigation - Direct Direct Source: THAMES SURFACE WATER - NON TIDAL Point: RIVER GADE 'B' AT THE GROVE, LANGLEYBURY Data Type: Point Name: RALPH TRUSTEES LTD & STUDAN Easting: 508800 Northing: 198400	Annual Volume (m ³): 1455 Max Daily Volume (m ³): 145 Original Application No: - Original Start Date: 13/06/1997 Expiry Date: - Issue No: 100 Version Start Date: 07/06/2001 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m

7

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on [page 38](#) >



ID	Location	Details	
-	1786m N	Status: Active Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH1 (A) Data Type: Point Name: Affinity Water Limited Easting: 508722 Northing: 199013	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 41770.27 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1786m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH1 (A) Data Type: Point Name: Affinity Water Limited Easting: 508722 Northing: 199013	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29778 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1788m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE PUMPING STATION Data Type: Point Name: Affinity Water Limited Easting: 508710 Northing: 199020	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29777.34 Original Application No: - Original Start Date: 13/02/1967 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -
-	1790m N	Status: Active Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH2 (B) Data Type: Point Name: Affinity Water Limited Easting: 508726 Northing: 199016	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 41770.27 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1790m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH2 (B) Data Type: Point Name: Affinity Water Limited Easting: 508726 Northing: 199016	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29778 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -



ID	Location	Details	
-	1793m N	Status: Active Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH3 (C) Data Type: Point Name: Affinity Water Limited Easting: 508730 Northing: 199018	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 41770.27 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -
-	1793m N	Status: Historical Licence No: 28/39/28/0270 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: THE GROVE BH3 (C) Data Type: Point Name: Affinity Water Limited Easting: 508730 Northing: 199018	Annual Volume (m ³): 7986580 Max Daily Volume (m ³): 29778 Original Application No: NPS/WR/031635 Original Start Date: 13/02/1967 Expiry Date: - Issue No: 103 Version Start Date: 21/05/2021 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	4
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Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination. Features are displayed on the Abstractions and Source Protection Zones map on [page 38](#) >

ID	Location	Type	Description
1	On site	2	Outer catchment
2	On site	3	Total catchment
3	43m W	3	Total catchment
4	402m N	2	Outer catchment

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0
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Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.



This data is sourced from the Environment Agency and Natural Resources Wales.



This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site

1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on [page 50](#) >

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	River	Gade (from confluence with Bulbourne to Chess)	GB106039029860	Colne	Colne

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified

1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on [page 50](#) >

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	662m E	River	Gade (from confluence with Bulbourne to Chess)	GB106039029860 ↗	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.



6.5 WFD Groundwater bodies

Records on site

1

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on [page 50 >](#)

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Mid-Chilterns Chalk	GB40601G601200 ↗	Poor	Poor	Poor	2019

This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m

0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m

0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

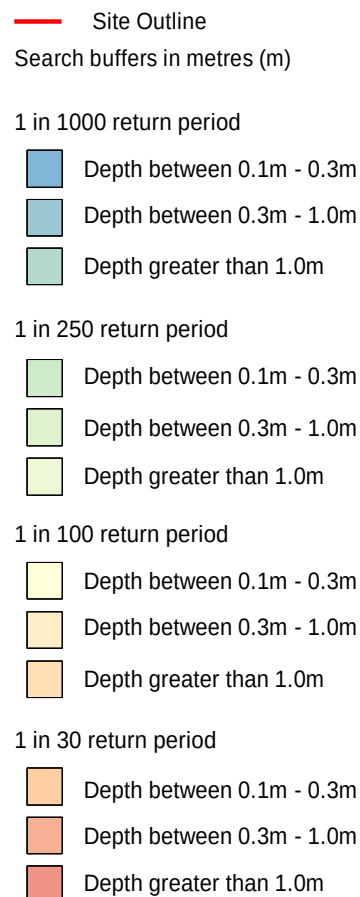
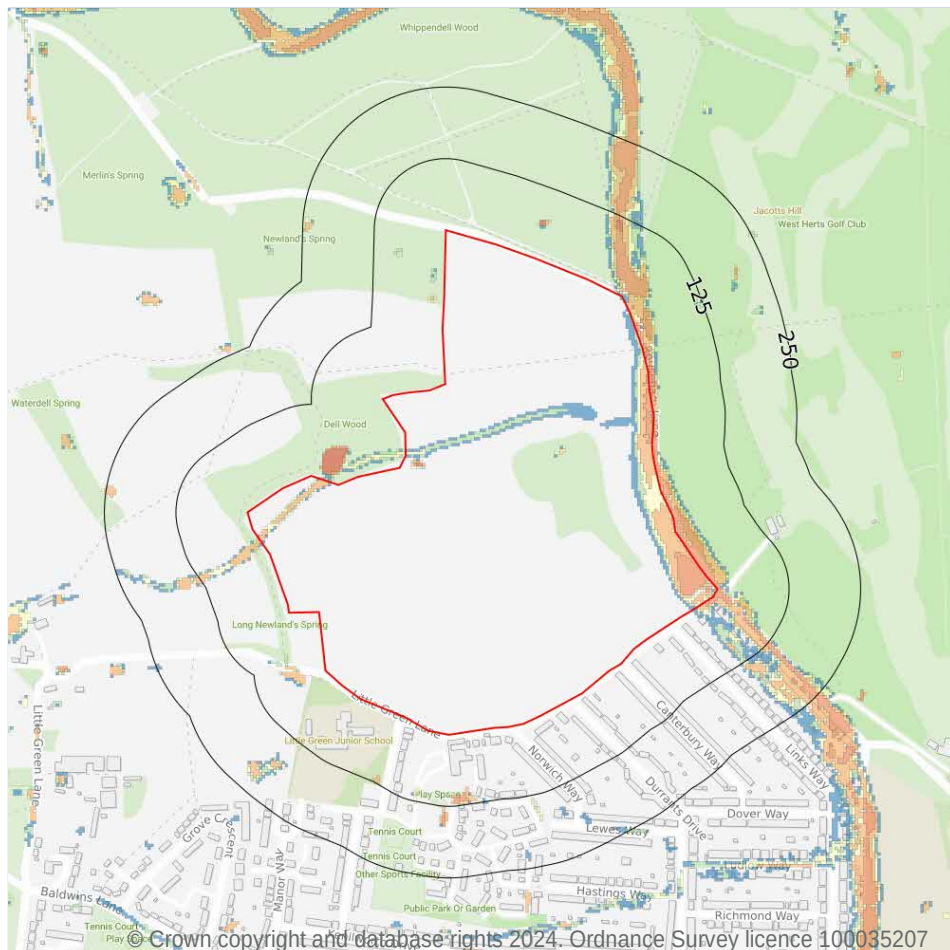
Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

1 in 30 year, Greater than 1.0m

Highest risk within 50m

1 in 30 year, Greater than 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on [page 56 >](#)

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

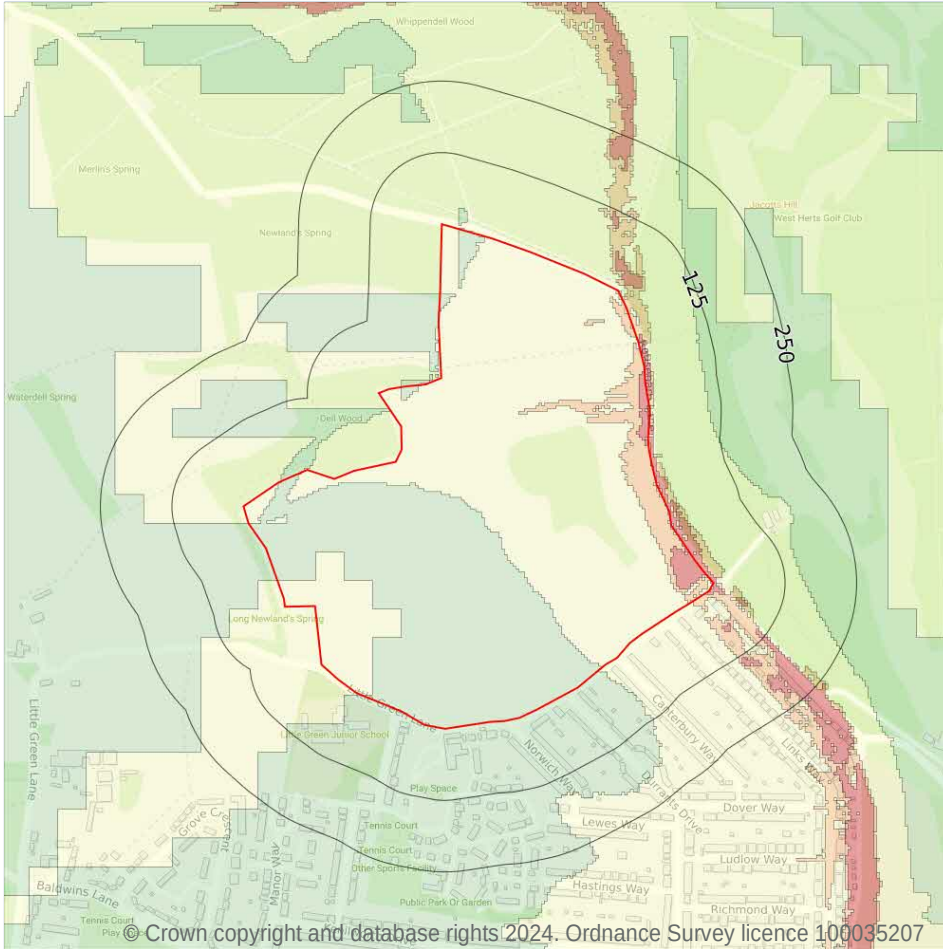
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

Highest risk on site

High

Highest risk within 50m

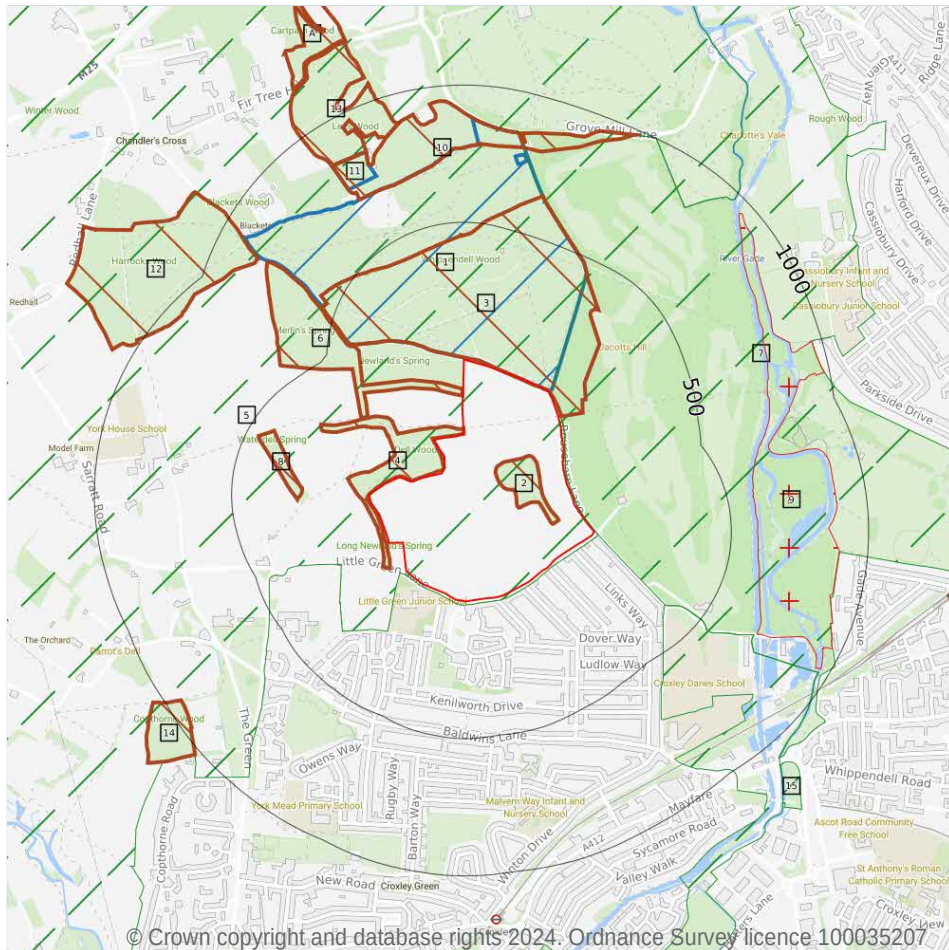
High

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on [page 58 >](#)

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSI)
- + Local Nature Reserves (LNR)
- Designated Ancient Woodland
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

4

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Features are displayed on the Environmental designations map on [page 59](#) >

ID	Location	Name	Data source
1	On site	Whippendell Wood	Natural England



ID	Location	Name	Data source
11	741m N	Whippendell Wood	Natural England
-	1392m S	Croxley Common Moor	Natural England
-	1981m N	Westwood Quarry	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0
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Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0
----------------------	---

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0
----------------------	---

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m

0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m

2

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on [page 59 >](#)

ID	Location	Name	Data source
9	591m E	Cassiobury Park	Natural England
-	1392m S	Croxley Common Moor	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

17

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on [page 59 >](#)

ID	Location	Name	Woodland Type
2	On site	Green Lane Wood	Ancient & Semi-Natural Woodland
3	On site	Dell Wood	Ancient & Semi-Natural Woodland
4	On site	Dell Wood	Ancient & Semi-Natural Woodland
6	2m N	Dell Wood	Ancient & Semi-Natural Woodland
8	244m W	Unknown	Ancient & Semi-Natural Woodland



ID	Location	Name	Woodland Type
10	685m N	Unknown	Ancient & Semi-Natural Woodland
12	834m NW	Dell Wood	Ancient & Semi-Natural Woodland
13	837m N	Unknown	Ancient Replanted Woodland
14	946m SW	Copthorne Wood	Ancient & Semi-Natural Woodland
A	1165m NW	Unknown	Ancient & Semi-Natural Woodland
A	1301m N	Unknown	Ancient & Semi-Natural Woodland
-	1440m N	Heath Wood	Ancient & Semi-Natural Woodland
-	1560m SW	Croxleyhall Wood	Ancient Replanted Woodland
-	1647m W	Welling Wood	Ancient Replanted Woodland
-	1743m W	Welling Wood	Ancient & Semi-Natural Woodland
-	1917m NW	Unknown	Ancient & Semi-Natural Woodland
-	1986m N	Beechen Bottom	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.



10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

3

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on [page 59 >](#)

ID	Location	Name	Local Authority name
5	On site	London	Three Rivers
7	3m NE	London	Watford
15	1081m SE	London	Watford

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

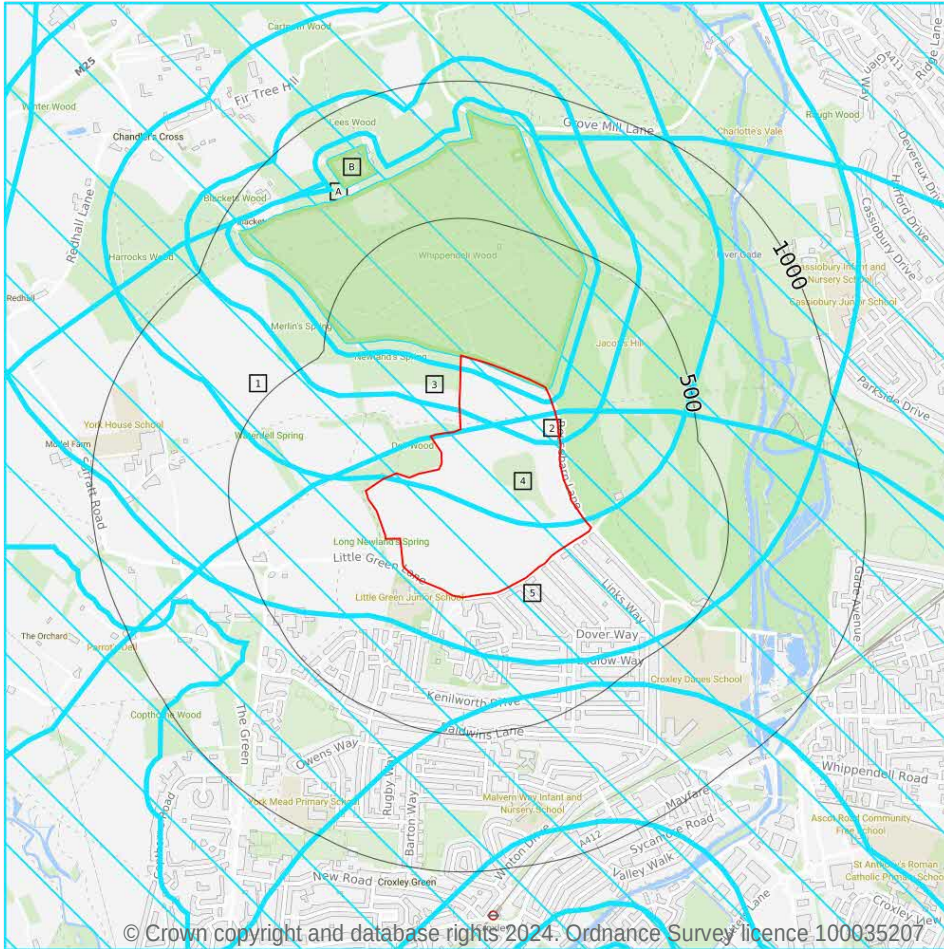
Records within 2000m

0

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

7

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on [page 65](#) >



ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.
2	On site	Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.



ID	Location	Type of developments requiring consultation
3	On site	Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.
4	On site	Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas. Air pollution - Any development that could cause AIR POLLUTION (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management. Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.



ID	Location	Type of developments requiring consultation
5	On site	Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha. Rural residential - Any residential development of 100 or more houses outside existing settlements/urban areas. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream. Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.
A	On site	All applications - ALL PLANNING APPLICATIONS - EXCEPT HOUSEHOLDER APPLICATIONS.
A	On site	All applications - ALL PLANNING APPLICATIONS.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m

4

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on [page 65 >](#)

ID: A
 Location: On site
 SSSI name: Whippendell Wood
 Unit name: 1
 Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
 Condition: Favourable
 Reportable features:



Feature name	Feature condition	Date of assessment
Invert. assemblage A1 arboreal canopy	Favourable	29/10/2010
Lowland mixed deciduous woodland	Favourable	29/10/2010

ID: B
 Location: 741m N
 SSSI name: Whippendell Wood
 Unit name: 2
 Broad habitat: Broadleaved, Mixed And Yew Woodland - Lowland
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
Invert. assemblage A1 arboreal canopy	Favourable	29/10/2010
Lowland mixed deciduous woodland	Favourable	12/10/2021

ID: -
 Location: 1392m S
 SSSI name: Croxley Common Moor
 Unit name: Common Moor
 Broad habitat: Acid Grassland - Lowland
 Condition: Unfavourable - Recovering
 Reportable features:

Feature name	Feature condition	Date of assessment
Floodplain fen (lowland)	Unfavourable - Recovering	10/06/2011
Lowland dry acid grassland (U1e)	Favourable	10/06/2011

ID: -
 Location: 1981m N
 SSSI name: Westwood Quarry
 Unit name: Whole Site
 Broad habitat: Earth Heritage
 Condition: Favourable
 Reportable features:

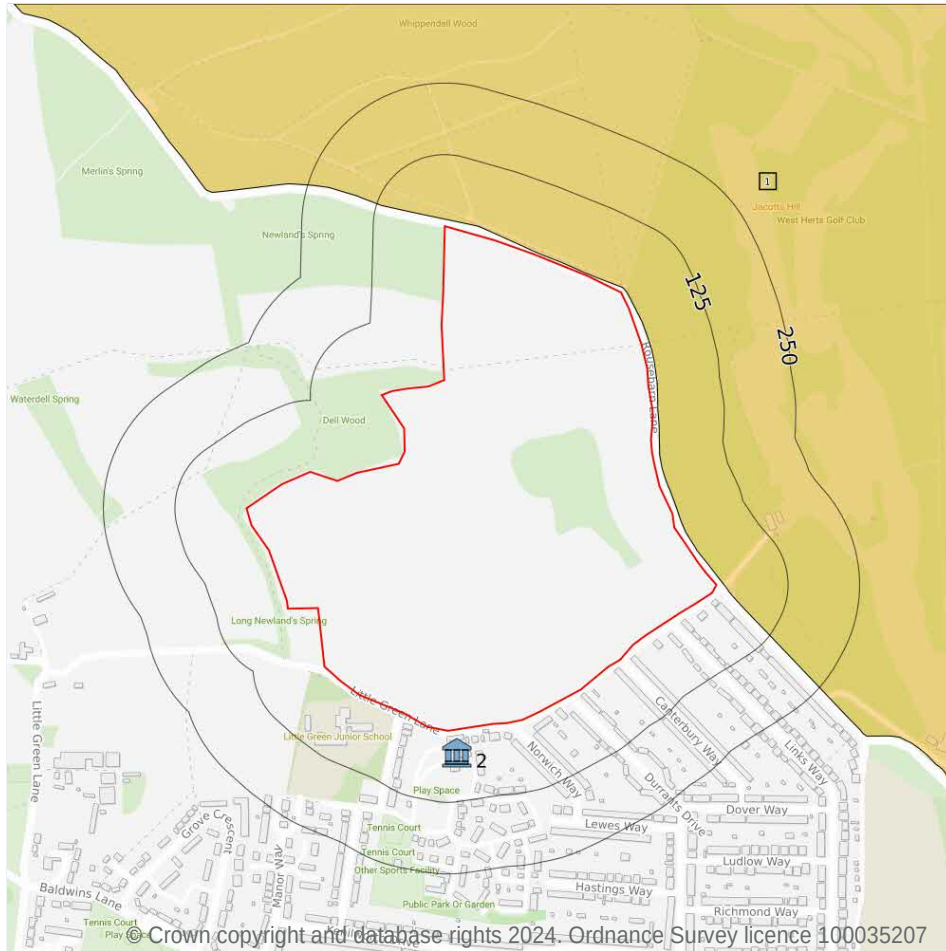
Feature name	Feature condition	Date of assessment
ED - Quaternary of the Thames	Favourable	15/09/2015



This data is sourced from Natural England and Natural Resources Wales.



11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

1

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on [page 71 >](#)

ID	Location	Name	Grade	Reference Number	Listed date
2	41m S	Durrants House With Steps Directly To South And Associated Walls And Gate Posts To West	II	1403581	19/07/2011

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



11.5 Conservation Areas

Records within 250m

0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

1

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

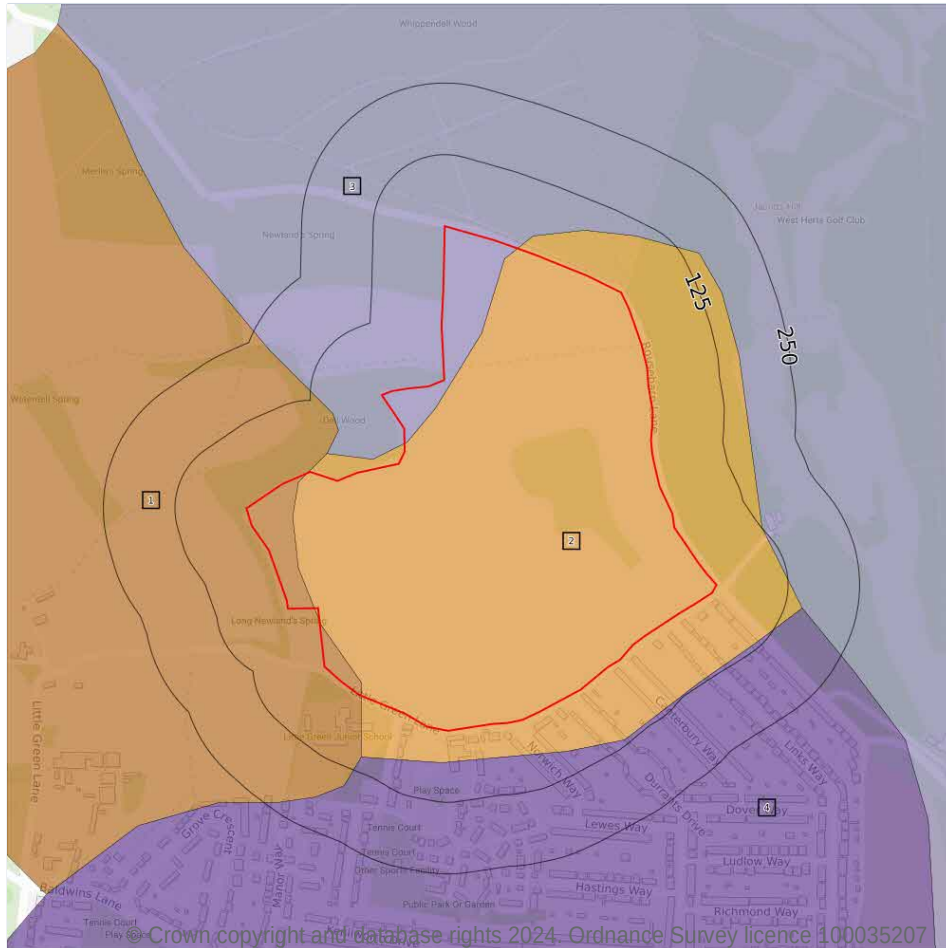
Features are displayed on the Visual and cultural designations map on [page 71](#) >

ID	Location	Name	Grade
1	3m N	Cassiobury Park	II

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

4

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on [page 74 >](#)

ID	Location	Classification	Description
1	On site	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
2	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
3	On site	Non Agricultural	-
4	55m S	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m

0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.



This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m

1

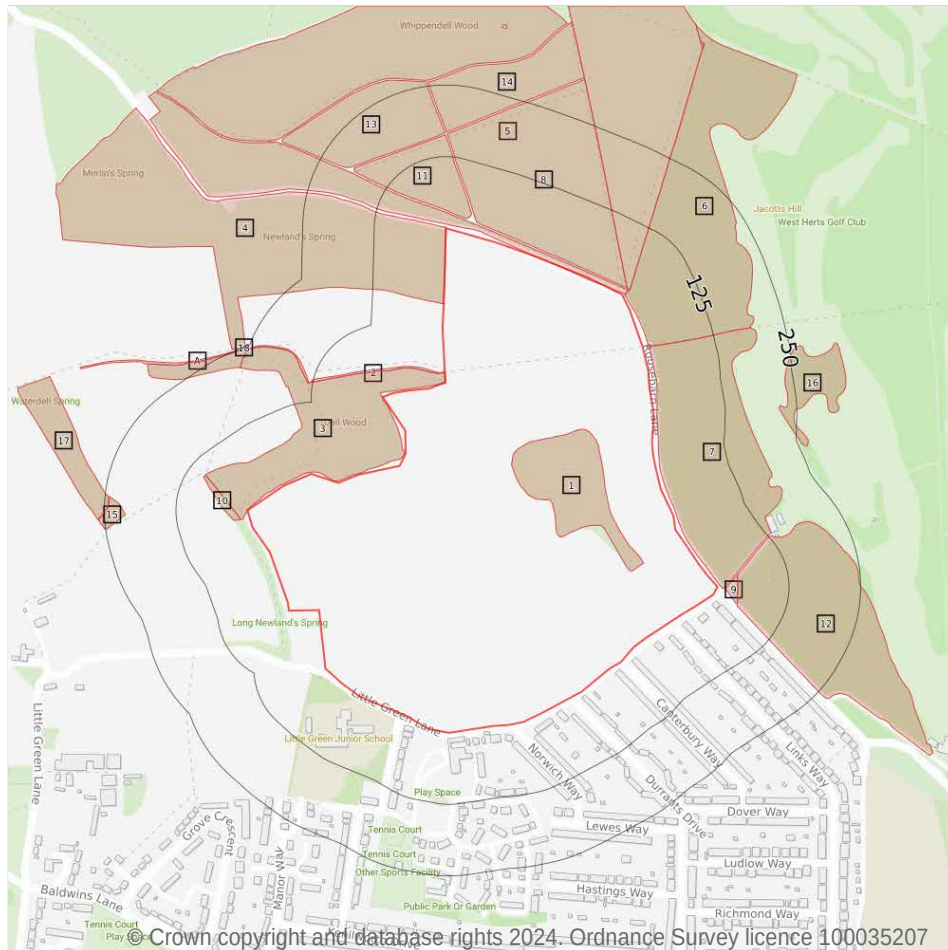
Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
On site	624704	Countryside Stewardship (Higher Tier)	01/01/2019	31/12/2023

This data is sourced from Natural England.



13 Habitat designations



- Site Outline
- Search buffers in metres (m)
- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders
- Habitat Networks
 - Primary Habitat
 - Restorable Habitat
 - Associated Habitats
 - Habitat Restoration-Creation
 - Network Enhancement Zone 1
 - Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m

20

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on [page 77 >](#)

ID	Location	Main Habitat	Other habitats
1	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)



ID	Location	Main Habitat	Other habitats
5	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
6	4m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	5m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	12m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
9	14m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	16m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
11	26m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
12	36m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	132m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
13	156m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
14	168m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%, ENSIS L1)
15	214m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
16	219m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
A	220m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
17	244m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
18	248m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.



13.4 Limestone Pavement Orders

Records within 250m

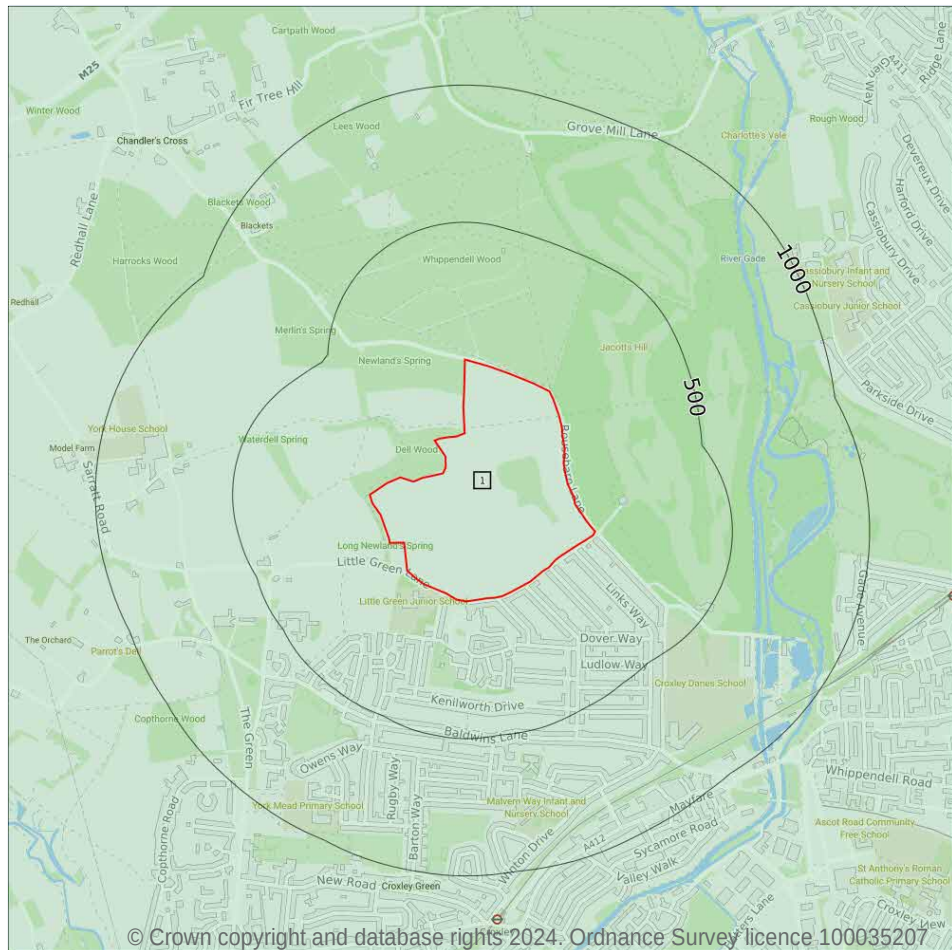
0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Full coverage
 - Partial coverage
 - No coverage

14.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

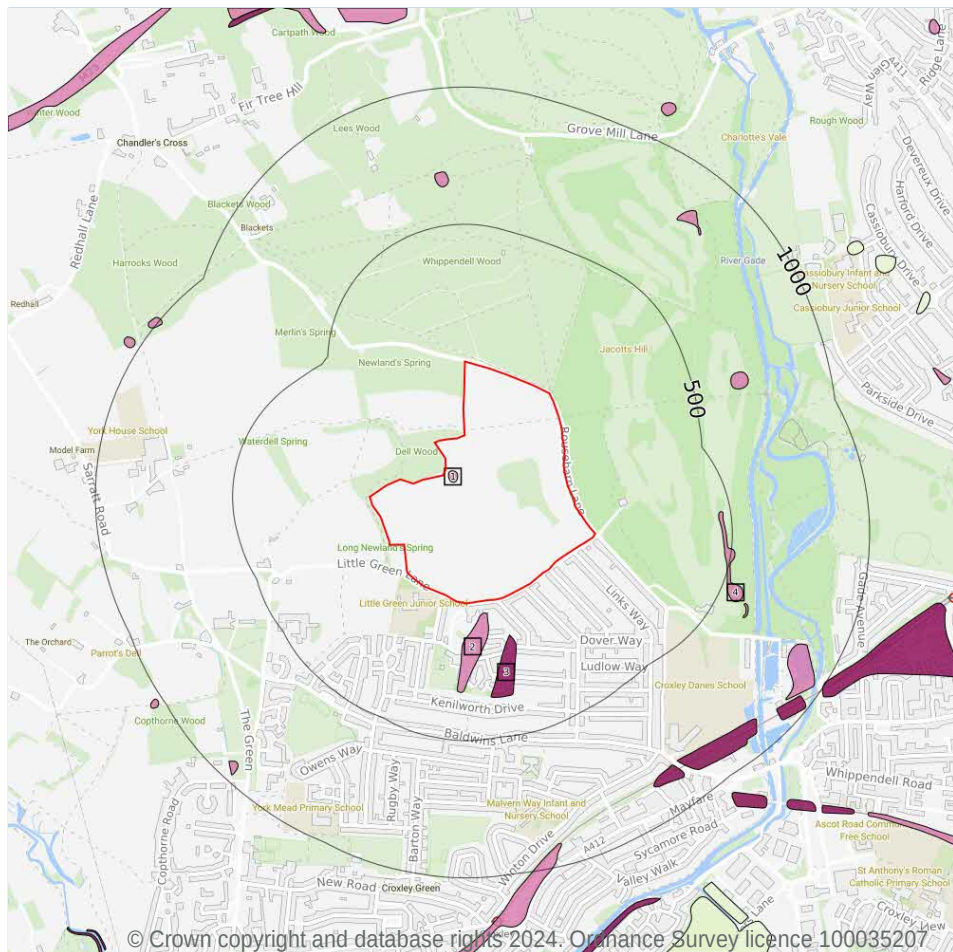
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 80](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	TQ09NE

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Artificial and made ground



- Site Outline**
- Search buffers in metres (m)**
- Reclaimed ground
 - Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m

4

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 81](#) >

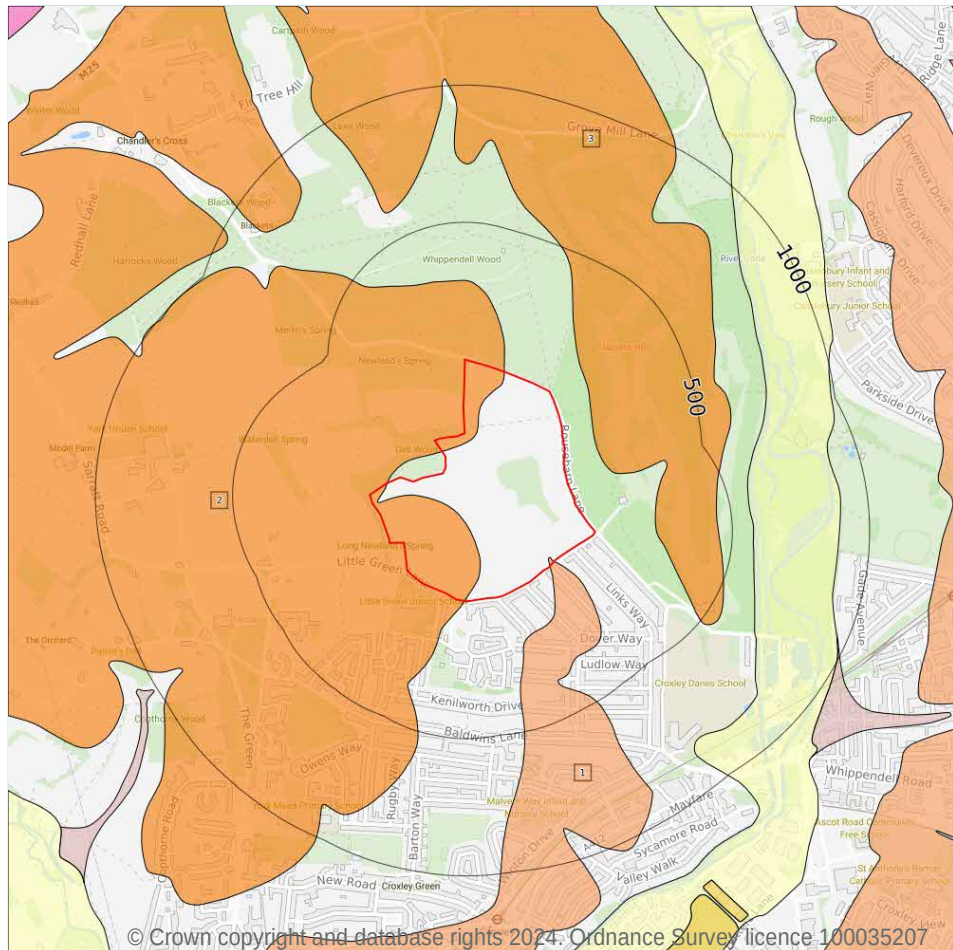
ID	Location	LEX Code	Description	Rock description
1	On site	WGR-VOID	Worked Ground (Undivided)	Void
2	45m S	WGR-VOID	Worked Ground (Undivided)	Void
3	137m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	454m E	WGR-VOID	Worked Ground (Undivided)	Void



This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



— Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

3

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 83](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	WIHG-XSV	Winter Hill Gravel - Sand And Gravel	Sand And Gravel
2	On site	GCGR-XSV	Gerrards Cross Gravel - Sand And Gravel	Sand And Gravel
3	112m NE	GCGR-XSV	Gerrards Cross Gravel - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.



14.4 Landslip (10k)

Records within 500m

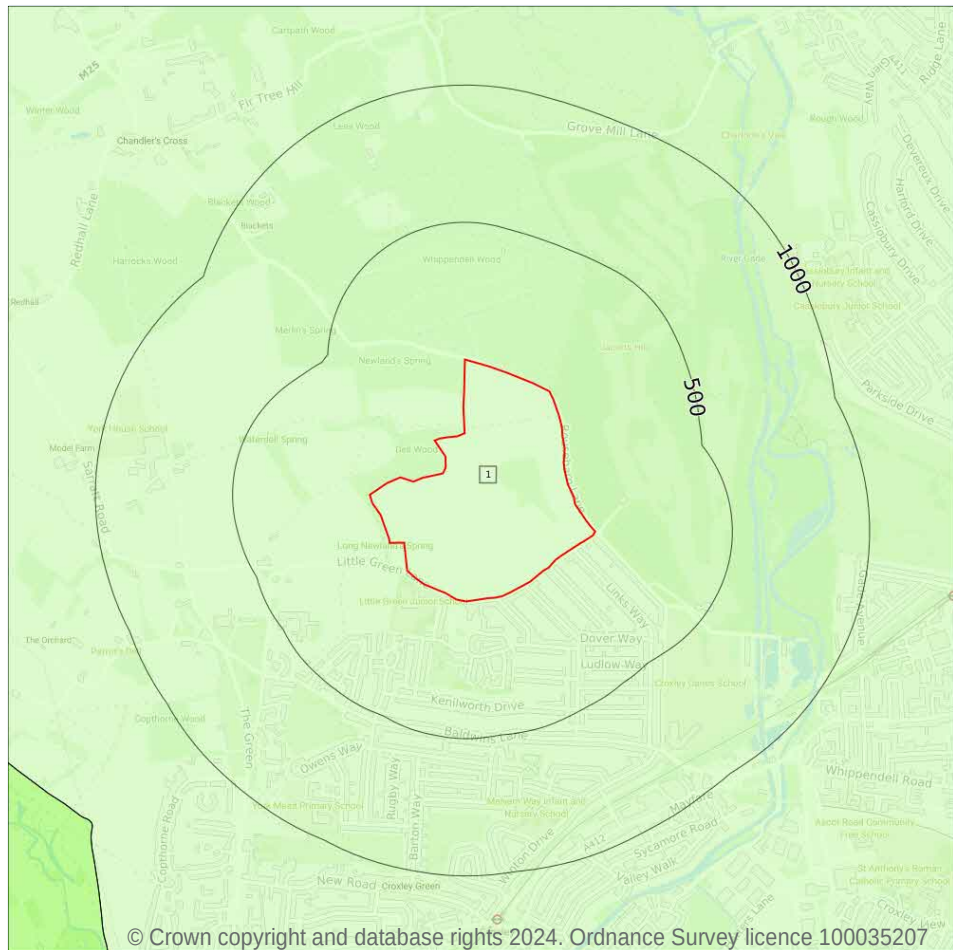
0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

--- Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m

1

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 85](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	SNCK-CHLK	Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) - Chalk	Campanian Age - Coniacian Age

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

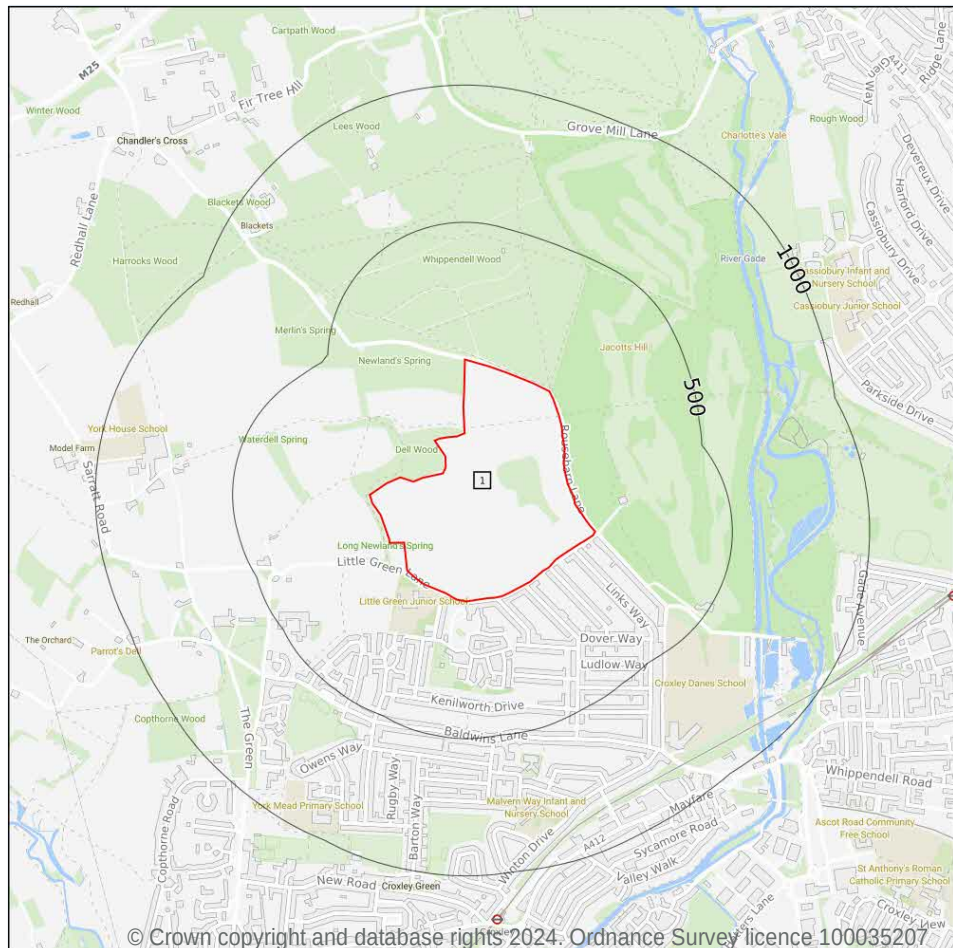
0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



15 Geology 1:50,000 scale - Availability



— Site Outline
Search buffers in metres (m)

☐ Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

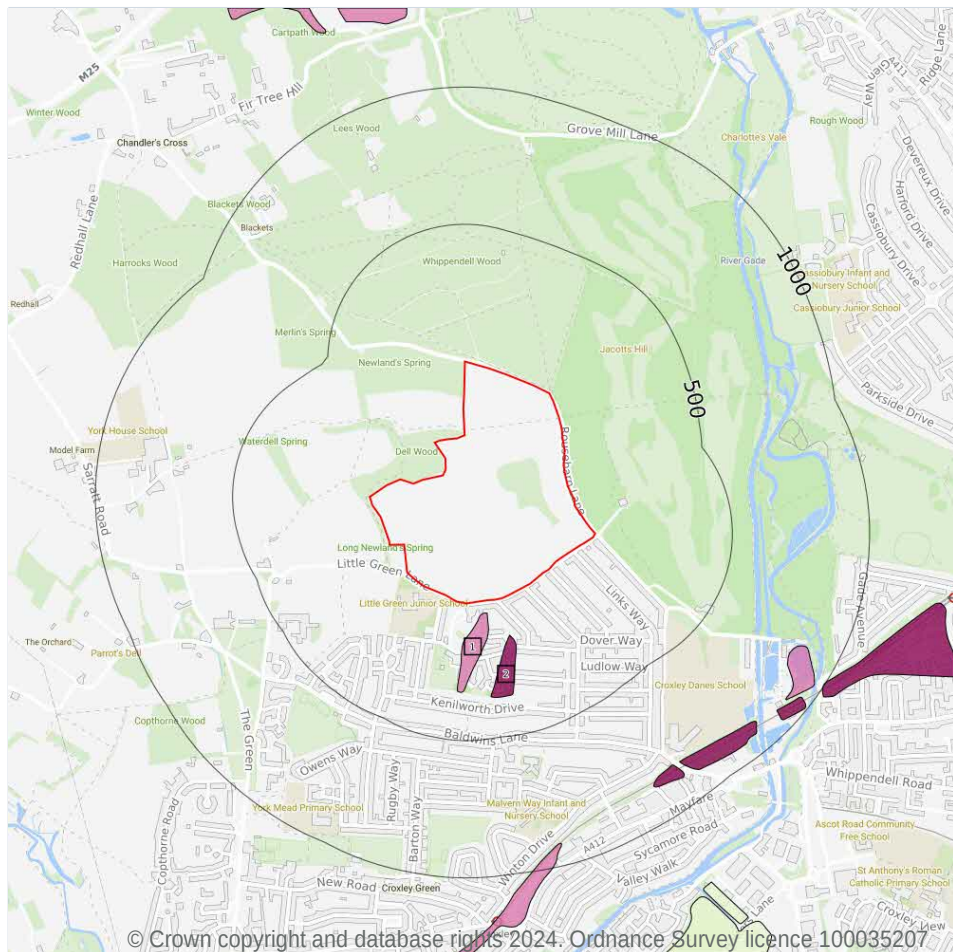
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 87 >](#)

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW255_beaconsfield_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground



- Site Outline
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

2

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on [page 88](#) >

ID	Location	LEX Code	Description	Rock description
1	45m S	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
2	138m S	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.



15.3 Artificial ground permeability (50k)

Records within 50m

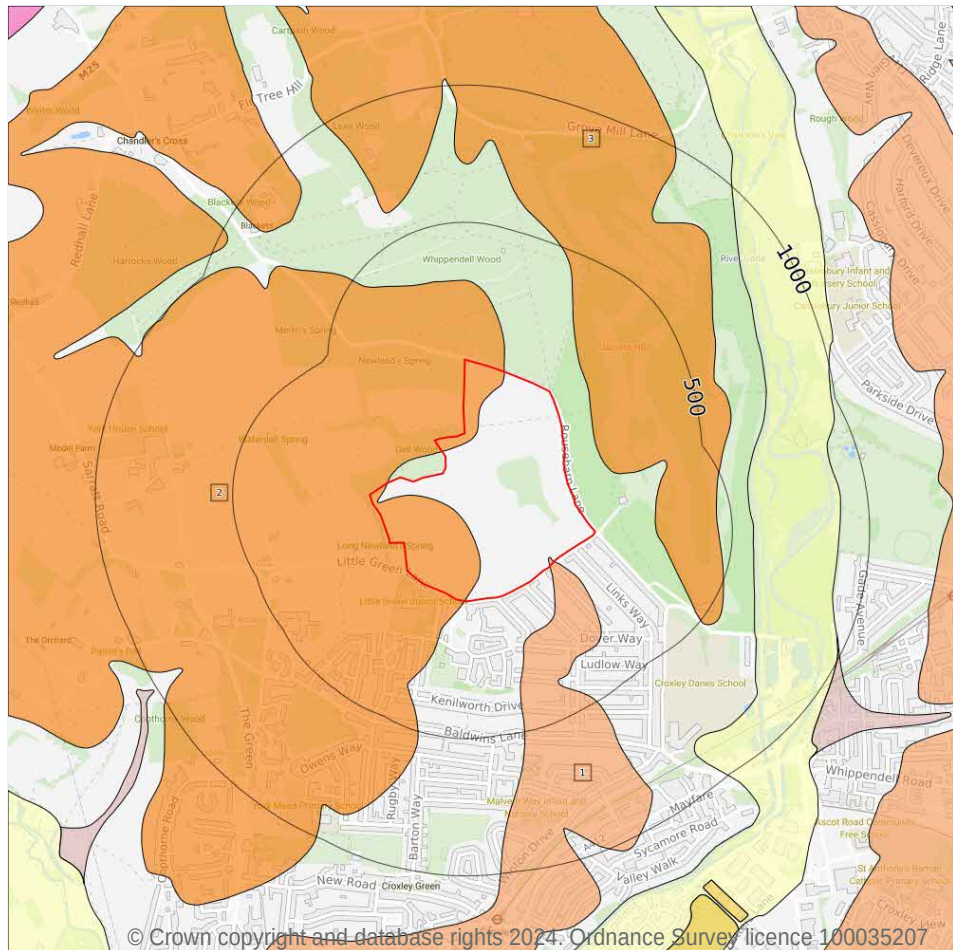
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

3

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 90](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	WIHG-XSV	WINTER HILL GRAVEL	SAND AND GRAVEL
2	On site	GCGR-XSV	GERRARDS CROSS GRAVEL	SAND AND GRAVEL
3	111m NE	GCGR-XSV	GERRARDS CROSS GRAVEL	SAND AND GRAVEL

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m

2

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Intergranular	Very High	High
On site	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m

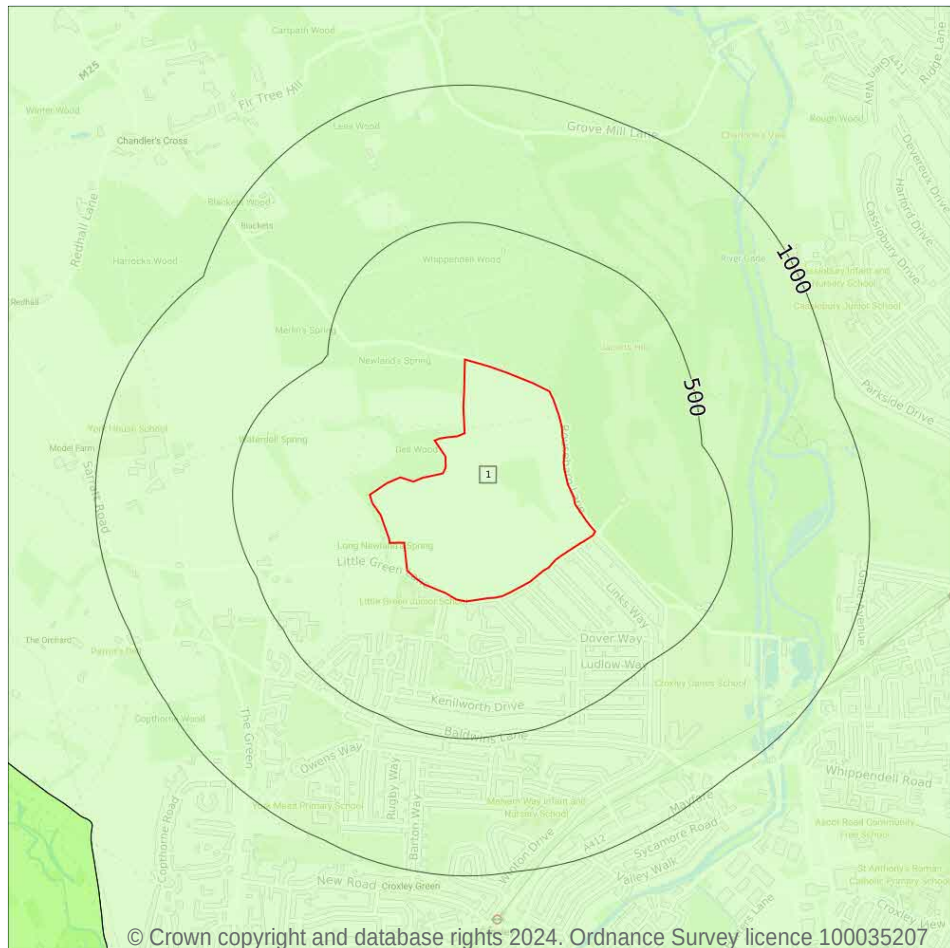
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

--- Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

1

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 92](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	SNCK-CHLK	SEAFOORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	CONIACIAN

This data is sourced from the British Geological Survey.



15.9 Bedrock permeability (50k)

Records within 50m**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Very High	Very High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m**0**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.



16 Boreholes



- Site Outline
- Search buffers in metres (m)
- Confidential
 - 0 - 10m
 - 10 - 30m
 - 30m+
 - Unknown

16.1 BGS Boreholes

Records within 250m

1

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

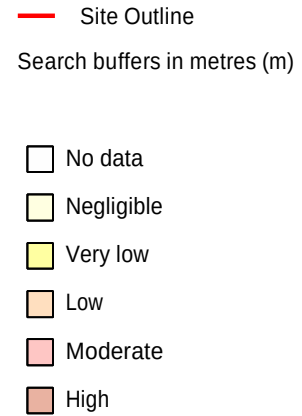
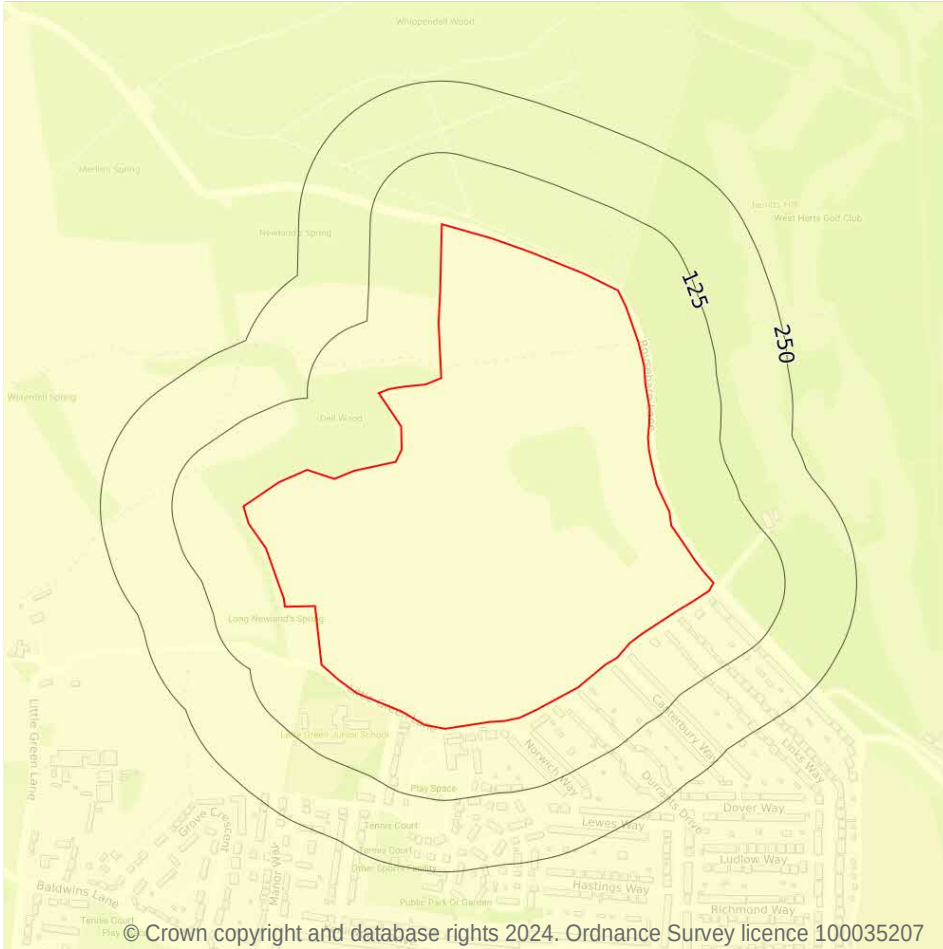
Features are displayed on the Boreholes map on [page 94](#) >

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	507820 197200	DELL WOOD SARRATT	2.7	N	576740 ↗

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m

1

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

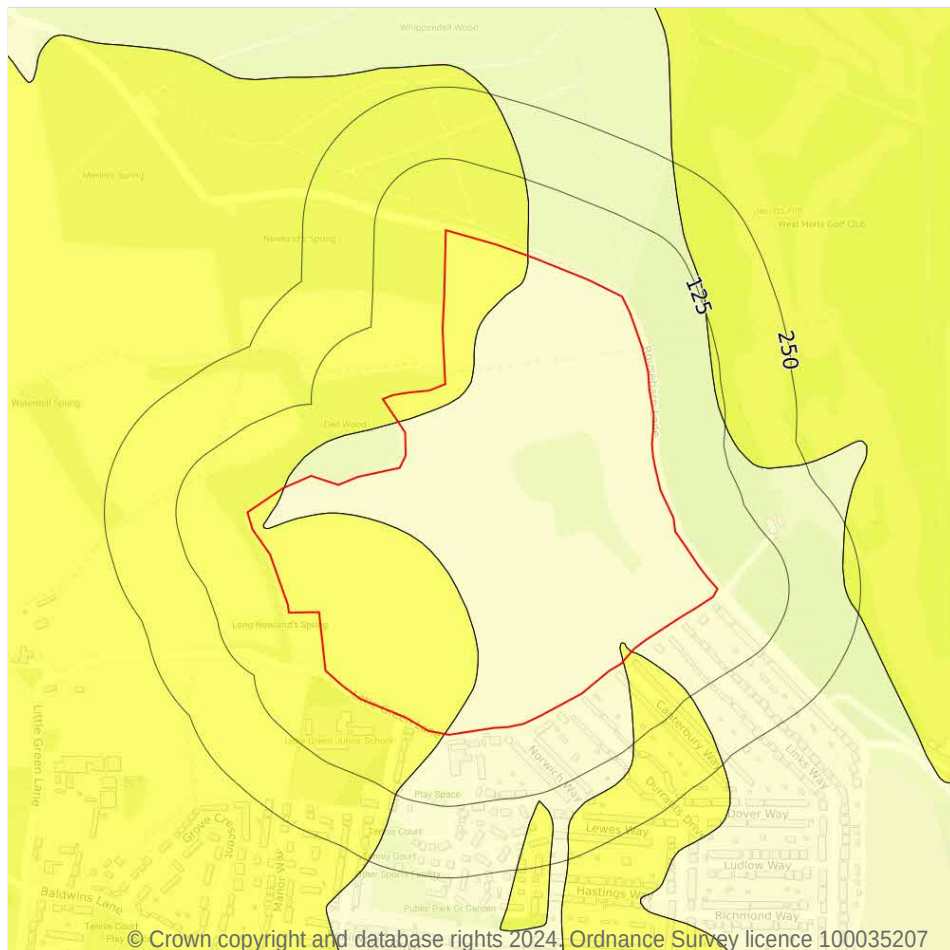
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 95 >](#)

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.2 Running sands

Records within 50m

2

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on [page 96](#) >

Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

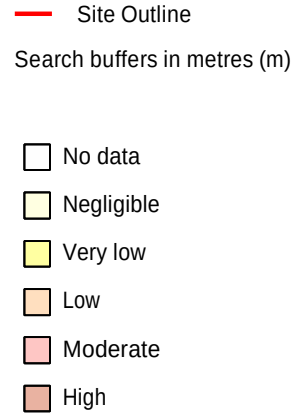
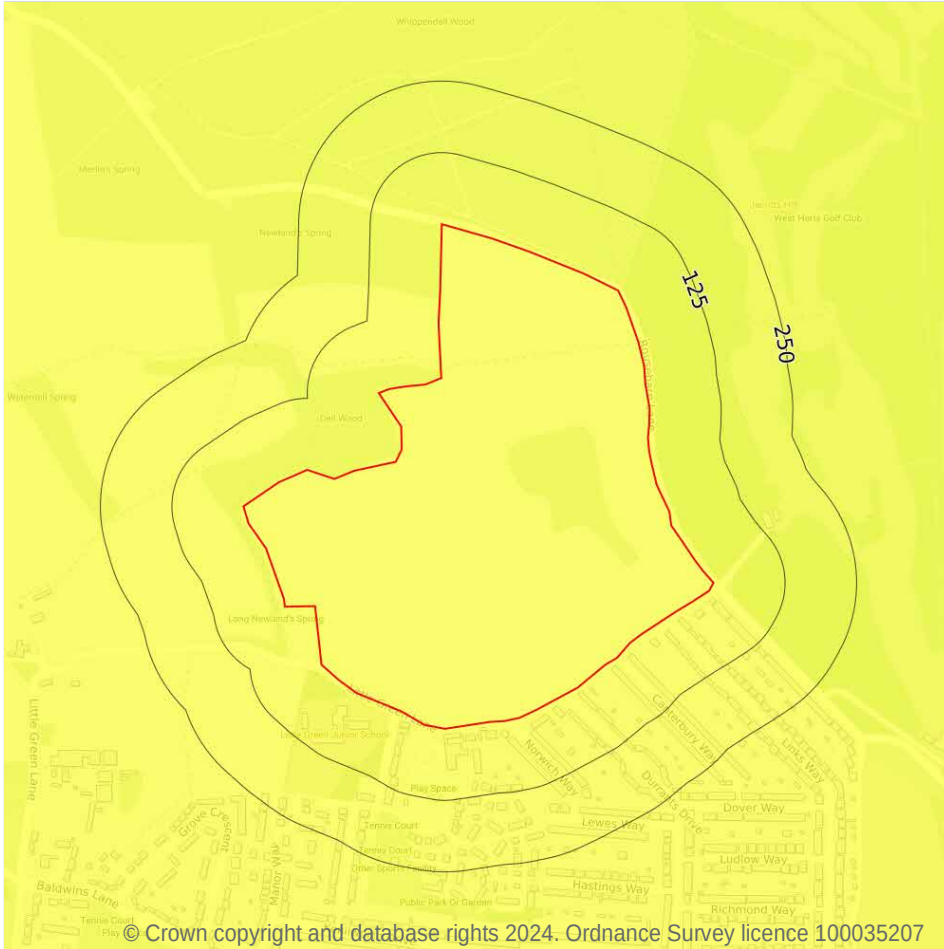


Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

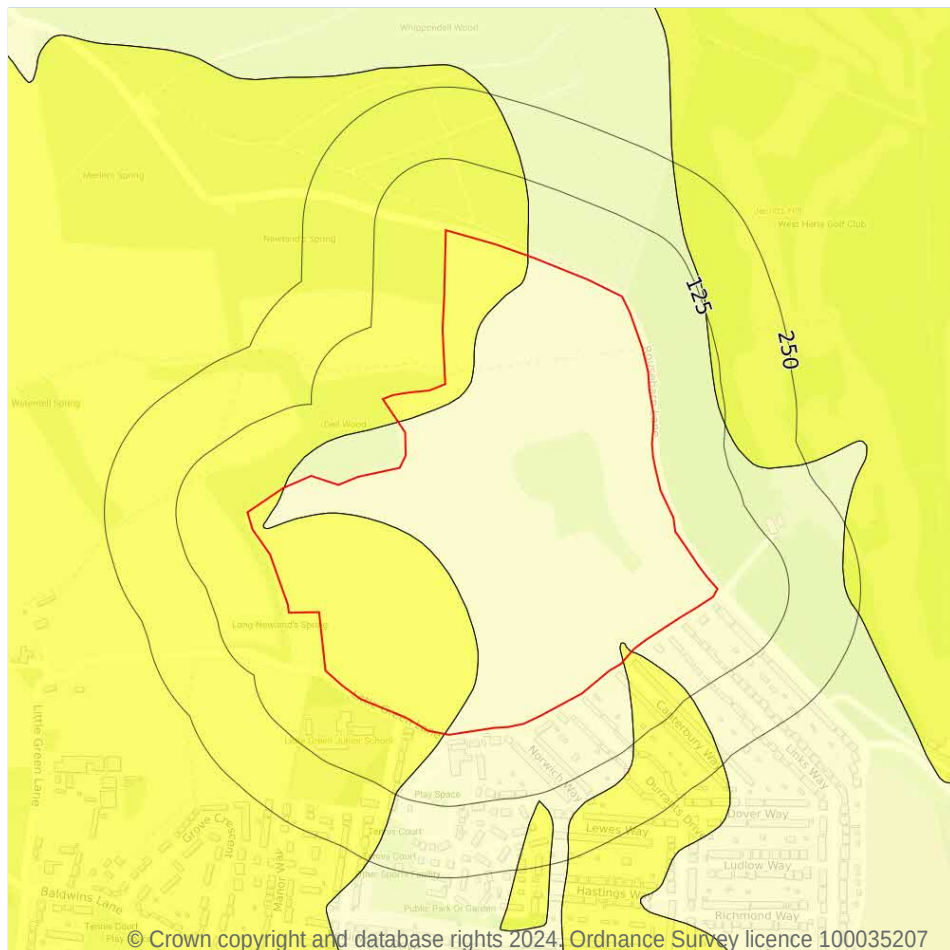
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 99](#) >

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.5 Landslides

Records within 50m

2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on [page 100 >](#)

Location	Hazard rating	Details
On site	Negligible	Slope instability problems are not thought to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

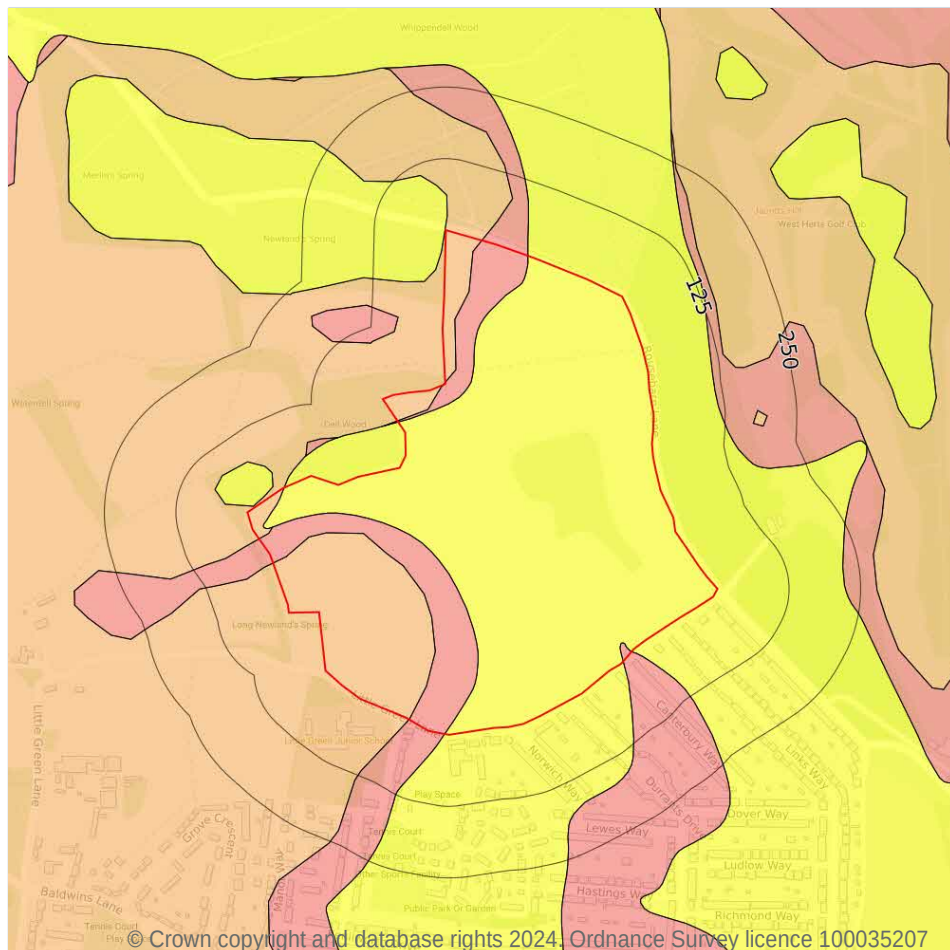


Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.6 Ground dissolution of soluble rocks

Records within 50m

6

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 102](#) >

Location	Hazard rating	Details
On site	Very low	Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.

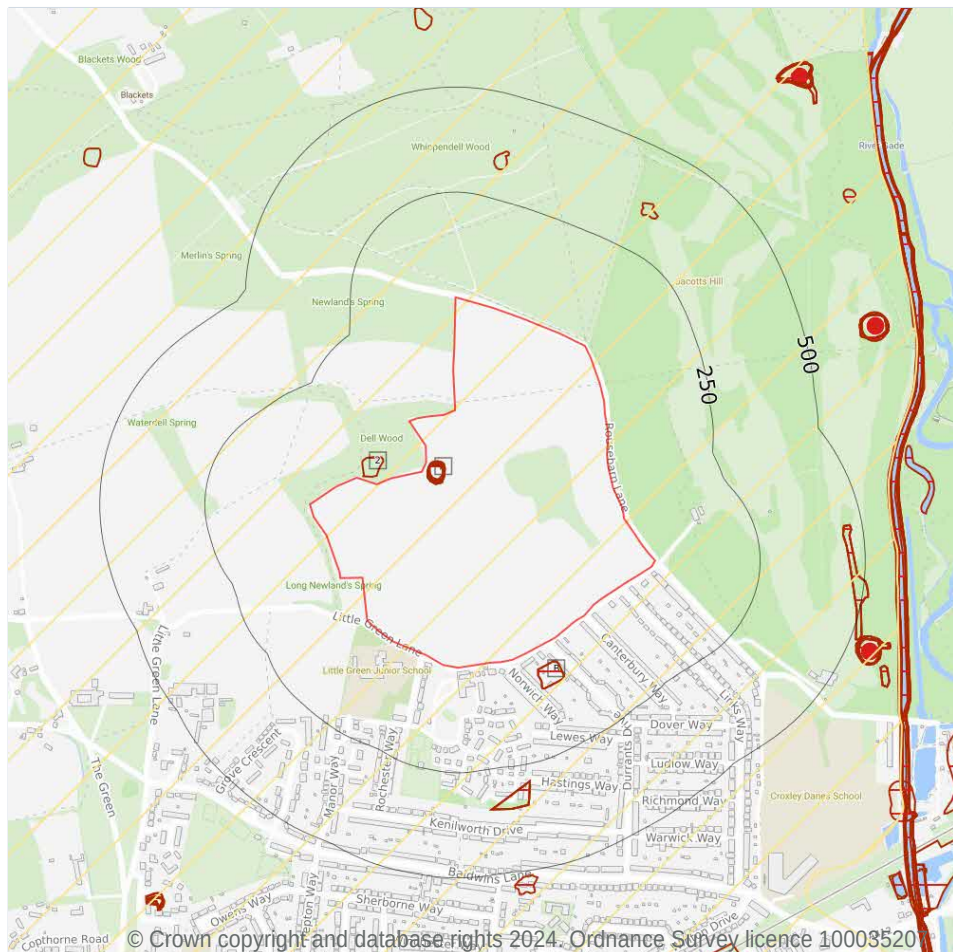


Location	Hazard rating	Details
On site	Low	Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not be considered except in exceptional circumstances.
On site	Moderate	Soluble rocks are present within the ground. Many dissolution features may be present. Potential for difficult ground conditions are at a level where they should be considered. Potential for subsidence is at a level where it may need to be considered.
2m N	Very low	Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.
3m W	Very low	Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.
36m W	Moderate	Soluble rocks are present within the ground. Many dissolution features may be present. Potential for difficult ground conditions are at a level where they should be considered. Potential for subsidence is at a level where it may need to be considered.

This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m

0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m

14

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 104 >](#)

ID	Location	Land Use	Year of mapping	Mapping scale
A	On site	Unspecified Pit	1938	1:10560
A	On site	Unspecified Pit	1913	1:10560
A	On site	Unspecified Pit	1896	1:10560
A	On site	Unspecified Pit	1990	1:10000
A	On site	Unspecified Pit	1966	1:10560
A	On site	Unspecified Pit	1976	1:10000
A	On site	Unspecified Pit	1938	1:10560
A	On site	Unspecified Pit	1938	1:10560
A	On site	Unspecified Pit	1955	1:10560
A	On site	Unspecified Pit	1878	1:10560
A	On site	Unspecified Pit	1898	1:10560
2	8m W	Unspecified Pit	1878	1:10560
B	48m S	Pond	1920	1:10560
B	48m S	Pond	1913	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m

0

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

This is data is sourced from Ordnance Survey/Groundsure.



18.4 Underground mining extents

Records within 500m

0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m

2

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on [page 104 >](#)

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	887m E	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.



18.7 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m

0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m

0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m

0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m

0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site

0

Areas which could be affected by past, current or future coal mining.

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site

0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.14 Gypsum areas

Records on site

0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site

0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

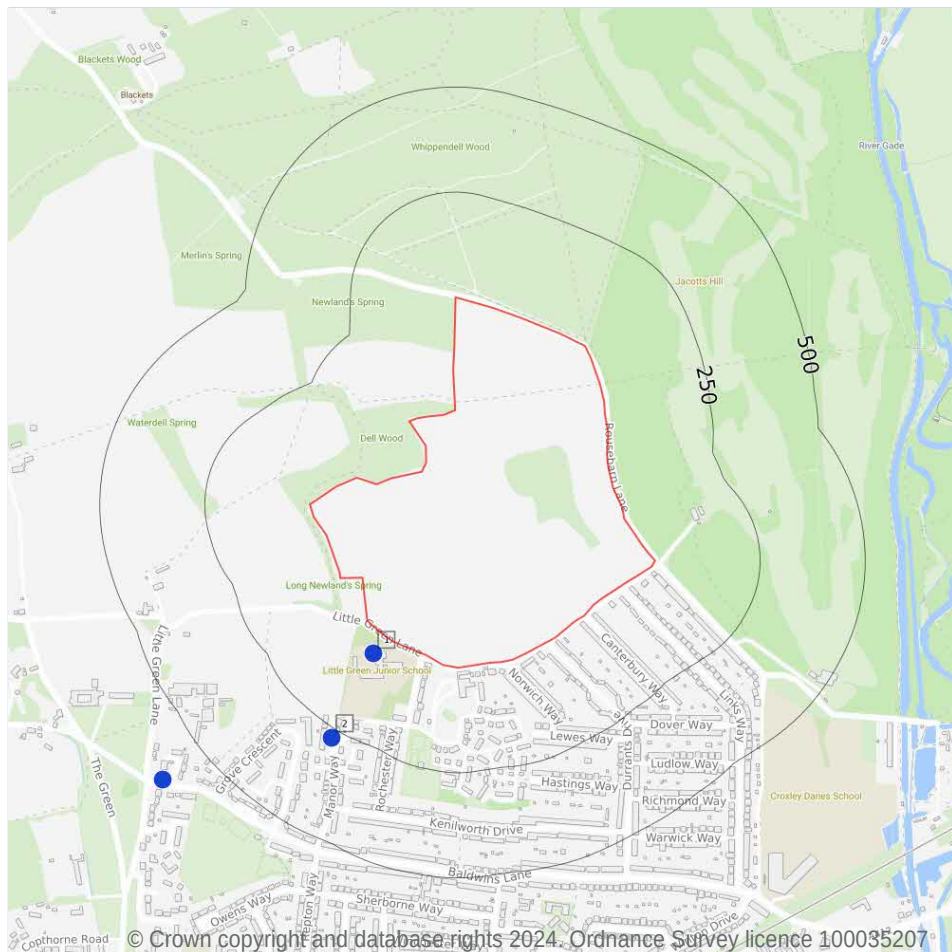
Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).



19 Ground cavities and sinkholes



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- Mining cavities
- Reported recent incidents
- Historical incidents
- BGS karst database (Point)
- BGS karst database (Line)
- BGS karst database (Area)

19.1 Natural cavities

Records within 500m

2

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

Features are displayed on the Ground cavities and sinkholes map on [page 110](#) >

ID	Location	Details	Source
1	50m SW	Type: Sinkhole x 6, Solution Pipe x 6 Superficial Geology: Gerrards Cross Gravel Bedrock Geology: Chalk Group	Simple Bibliography: Confidential Full Bibliography: Confidential Confidentiality: Data source to remain anonymous, data can be used freely

ID	Location	Details	Source
2	271m SW	Type: Sinkhole x 9, Solution Pipe x 9 Superficial Geology: Gerrards Cross Gravel Bedrock Geology: Chalk Group	Simple Bibliography: Hertfordshire County Council Full Bibliography: - Confidentiality: Data source can be revealed, data can be used freely

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.



19.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

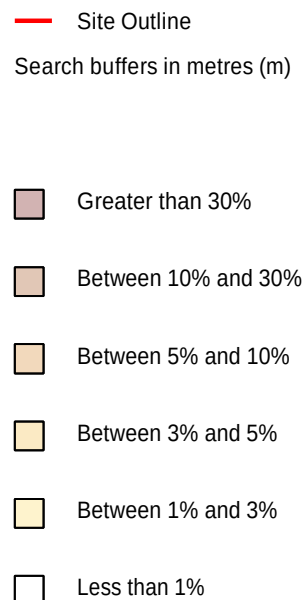
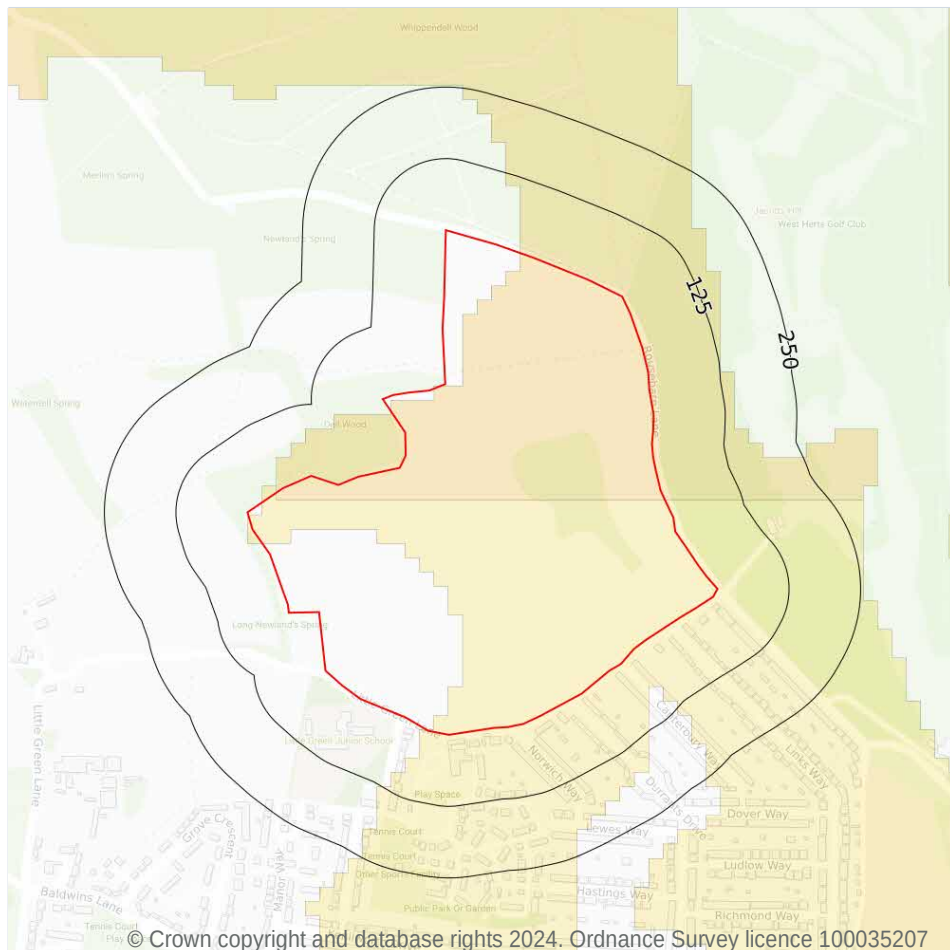
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.



20 Radon



20.1 Radon

Records on site

3

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 113](#) >

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 3% and 5%	Basic



Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None
On site	Between 1% and 3%	None

This data is sourced from the British Geological Survey and UK Health Security Agency.



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m

15

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
2m W	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
9m W	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg
9m W	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 mg/kg

This data is sourced from the British Geological Survey.



21.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



22 Railway infrastructure and projects

22.1 Underground railways (London)

Records within 250m	0
---------------------	---

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0
---------------------	---

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0
---------------------	---

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	0
---------------------	---

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0
---------------------	---

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.



This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m

0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m

0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m

0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m

0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m

0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> ↗ .

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Appendix 4: Historical Mapping

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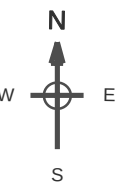
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Grid Ref: 507359, 196506

Map Name: National Grid

Map date: 1959-1960

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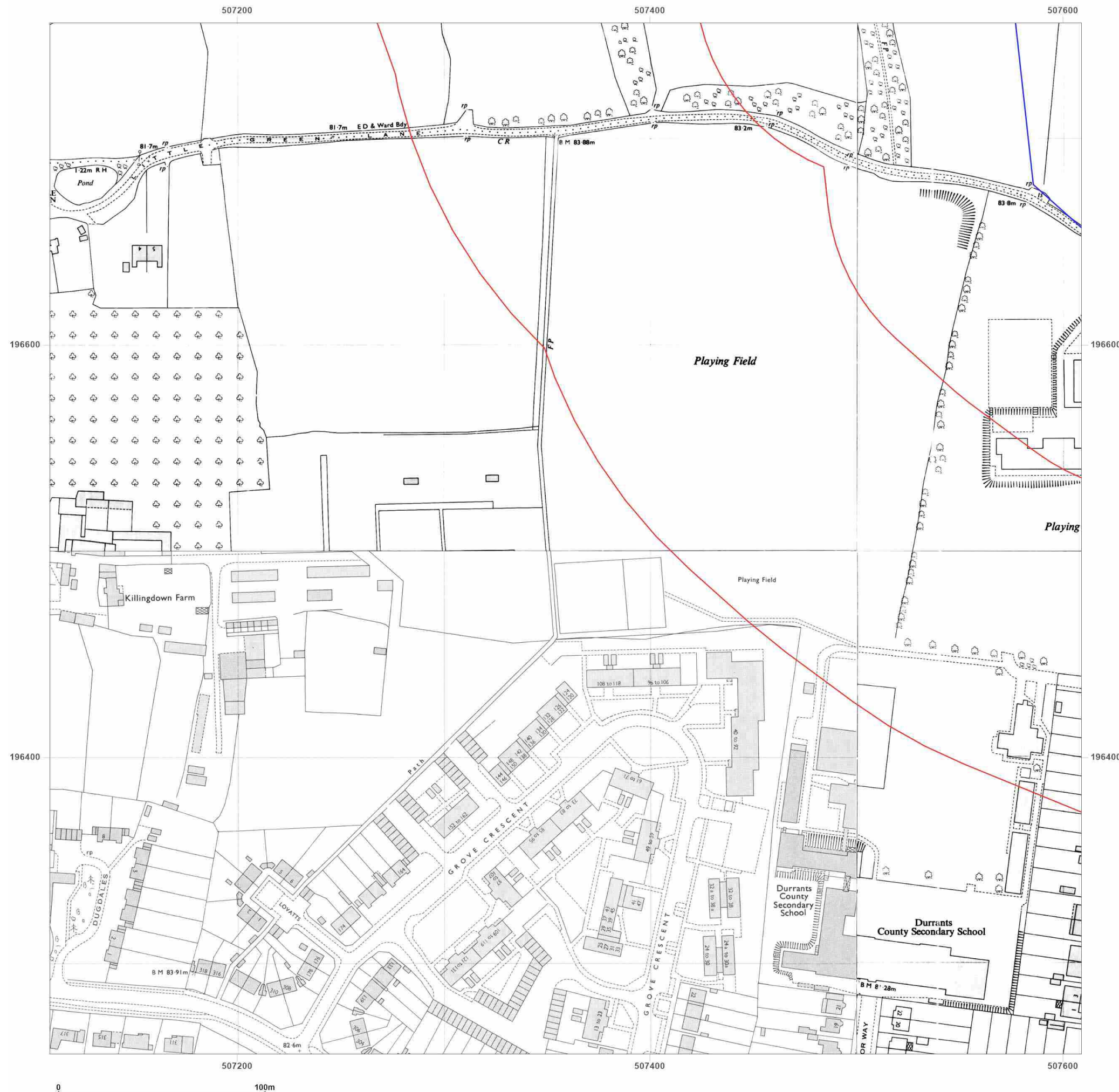


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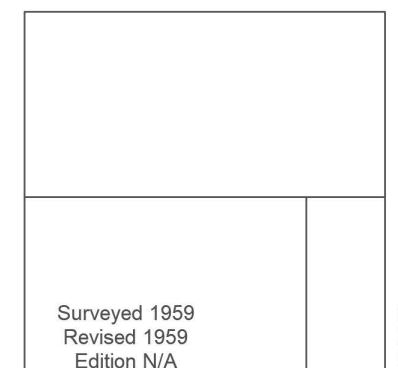
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Grid Ref: 507359, 197006

Map Name: National Grid

Map date: **1959-1960**

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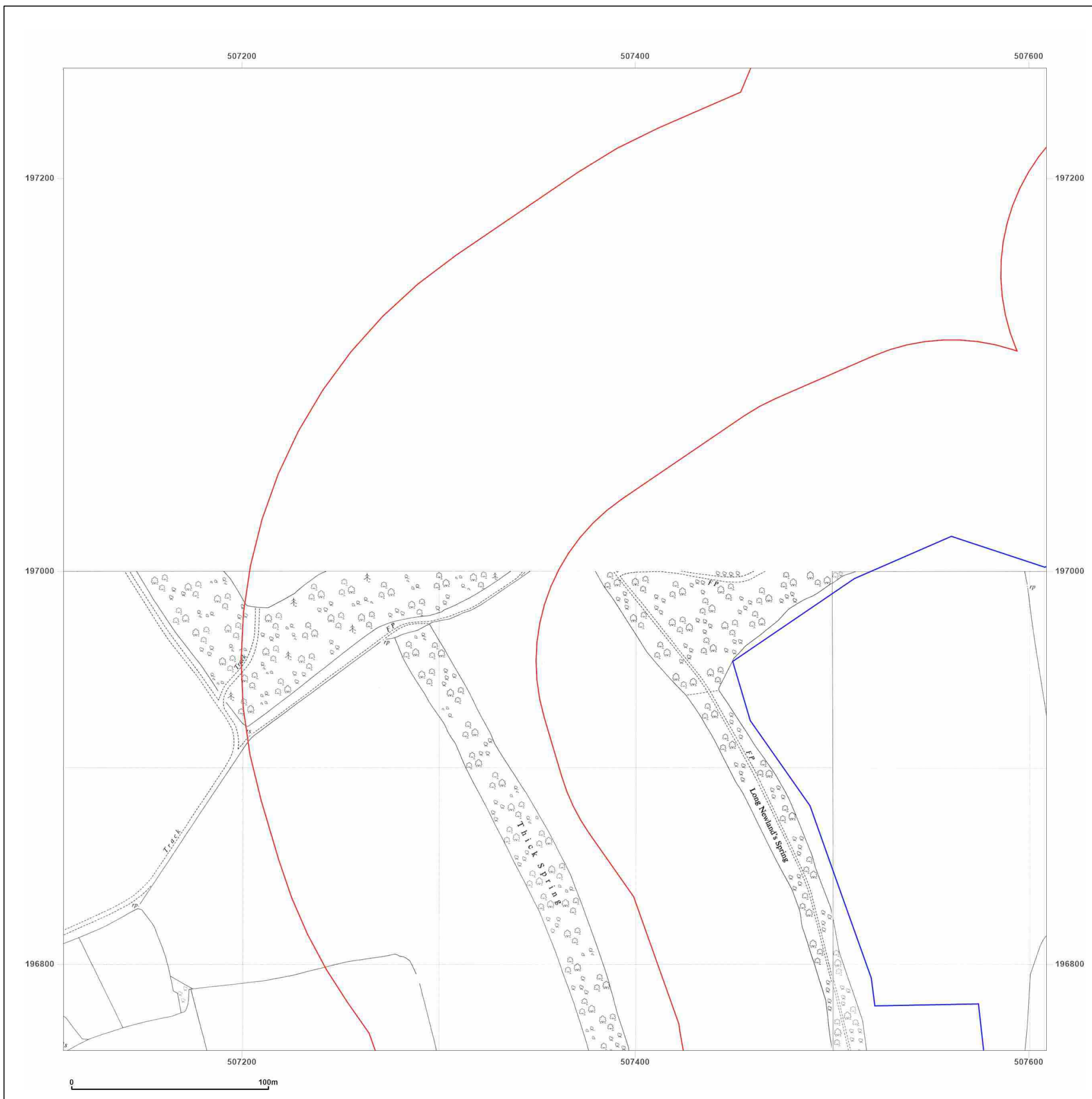


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Map date: **1960**

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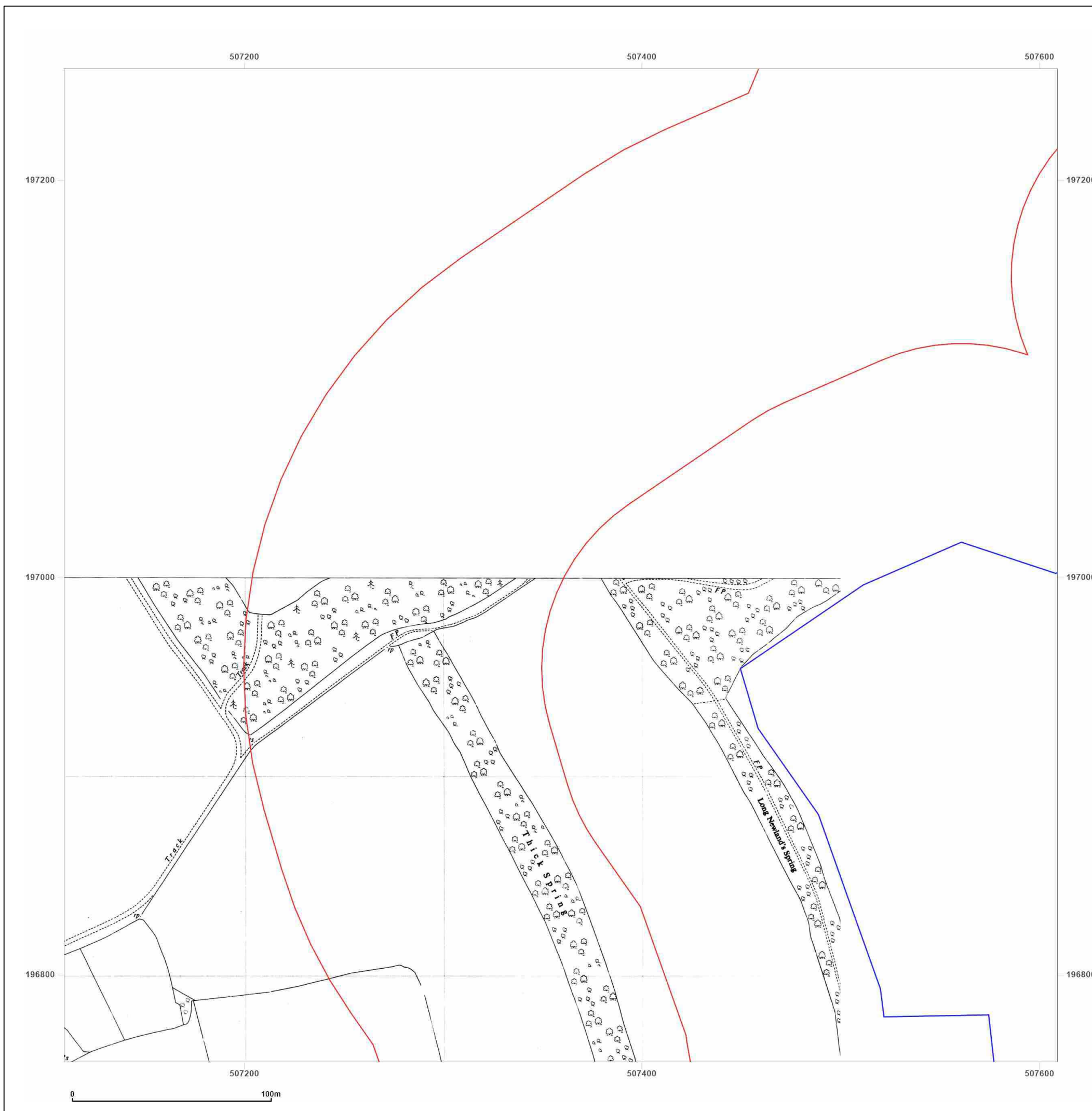


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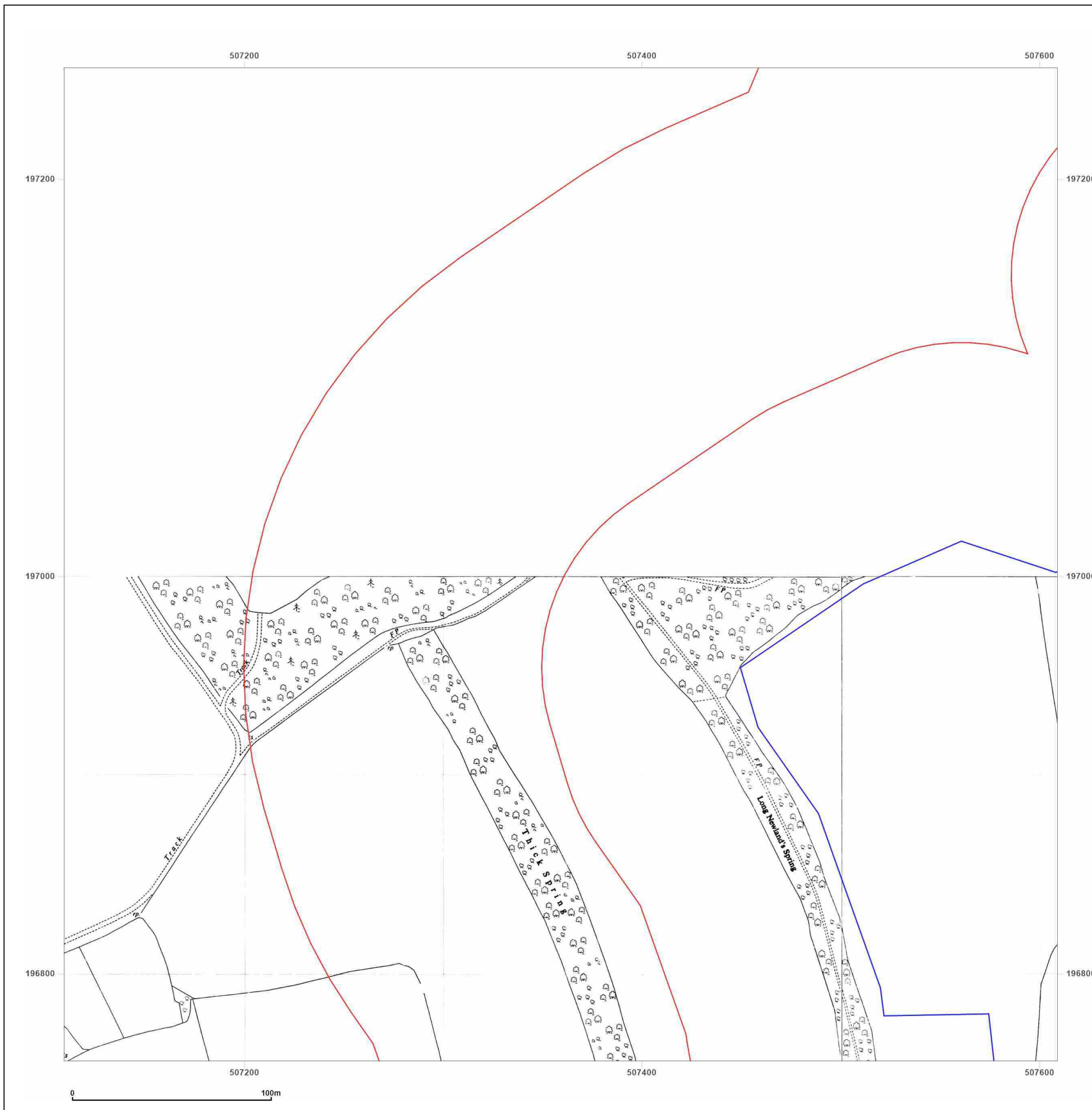


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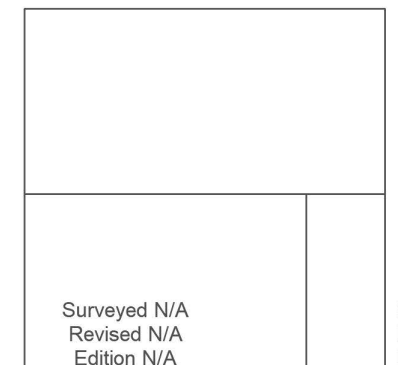
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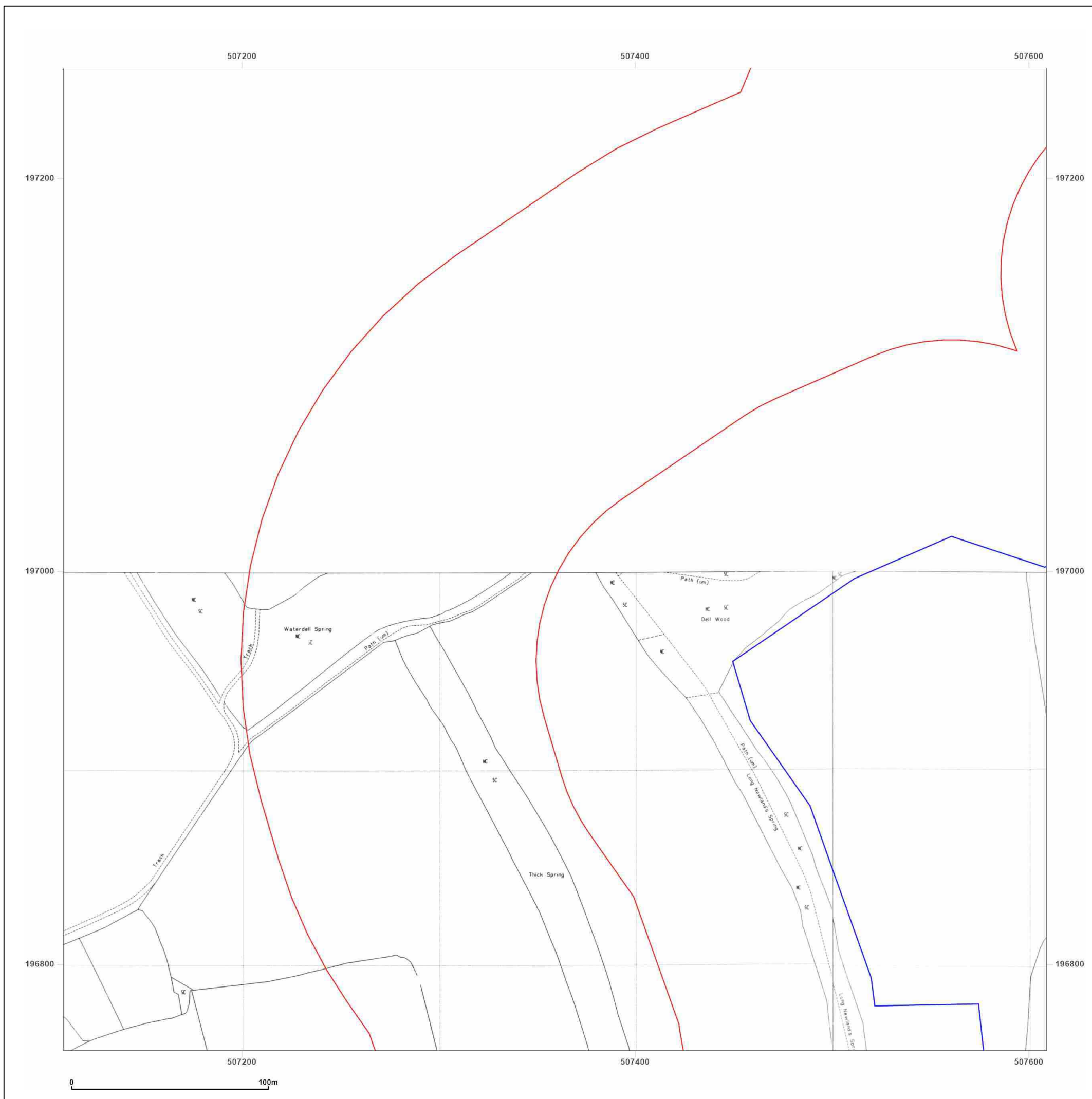


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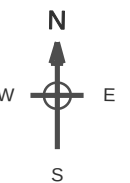
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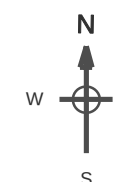
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Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_1250_2_1
Grid Ref: 507859, 196506

Map Name: National Grid

Map date: **1993**

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
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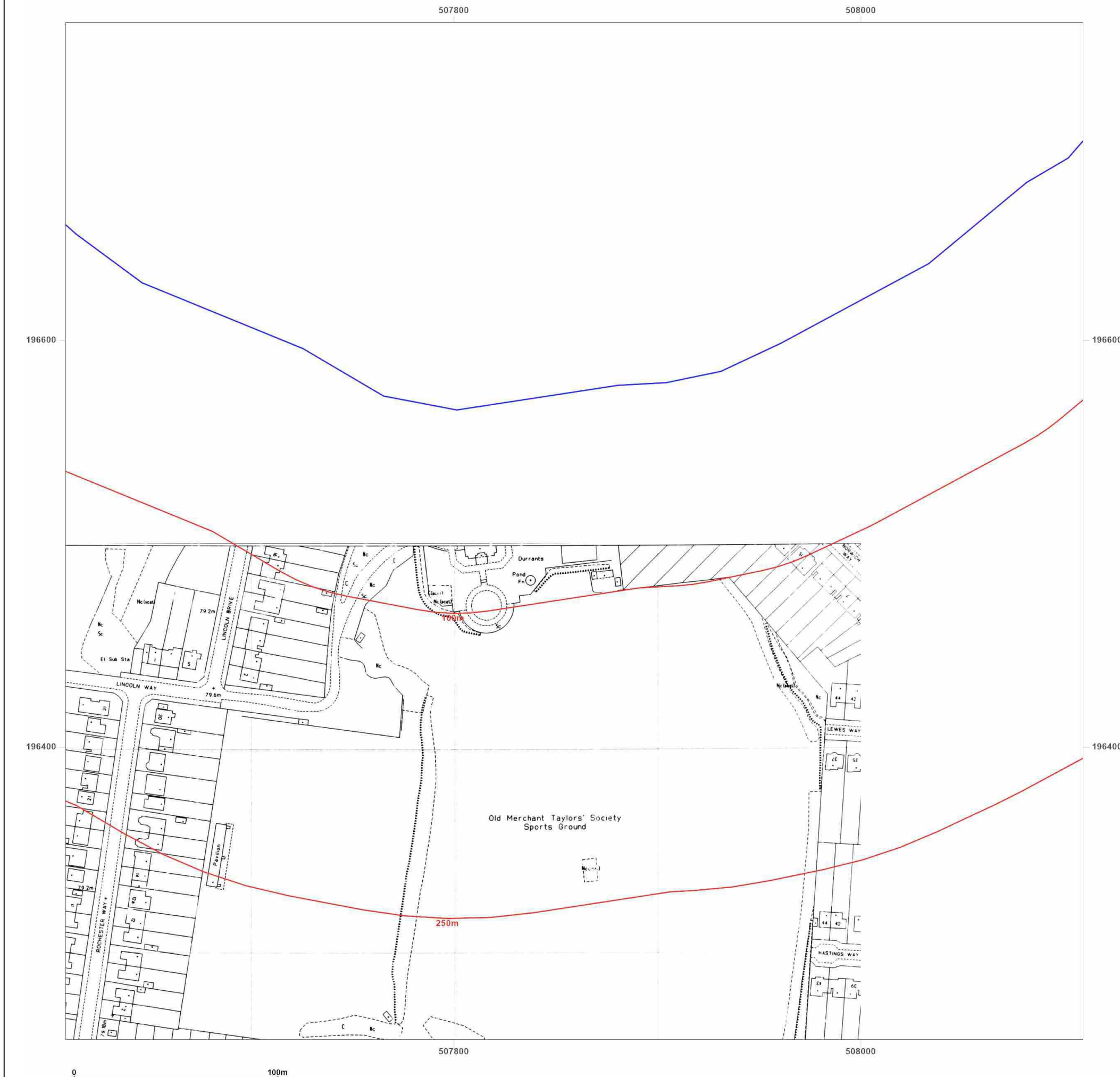


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_1250_2_1
Grid Ref: 507859, 196506

Map Name: National Grid

Map date: **1993**

Scale: 1:1,250

Printed at: 1:2,000



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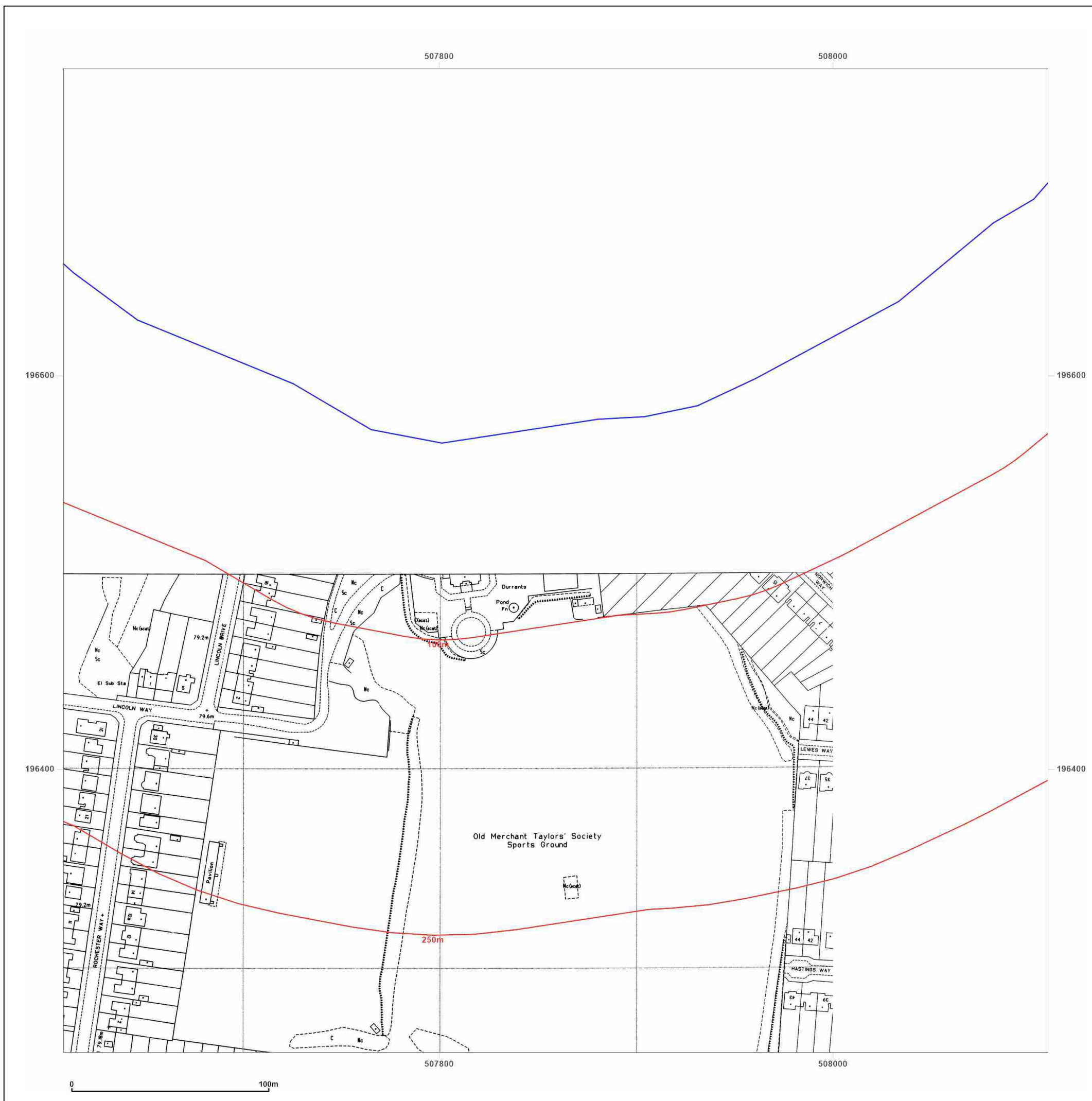


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_1250_2_1
Grid Ref: 507859, 196506

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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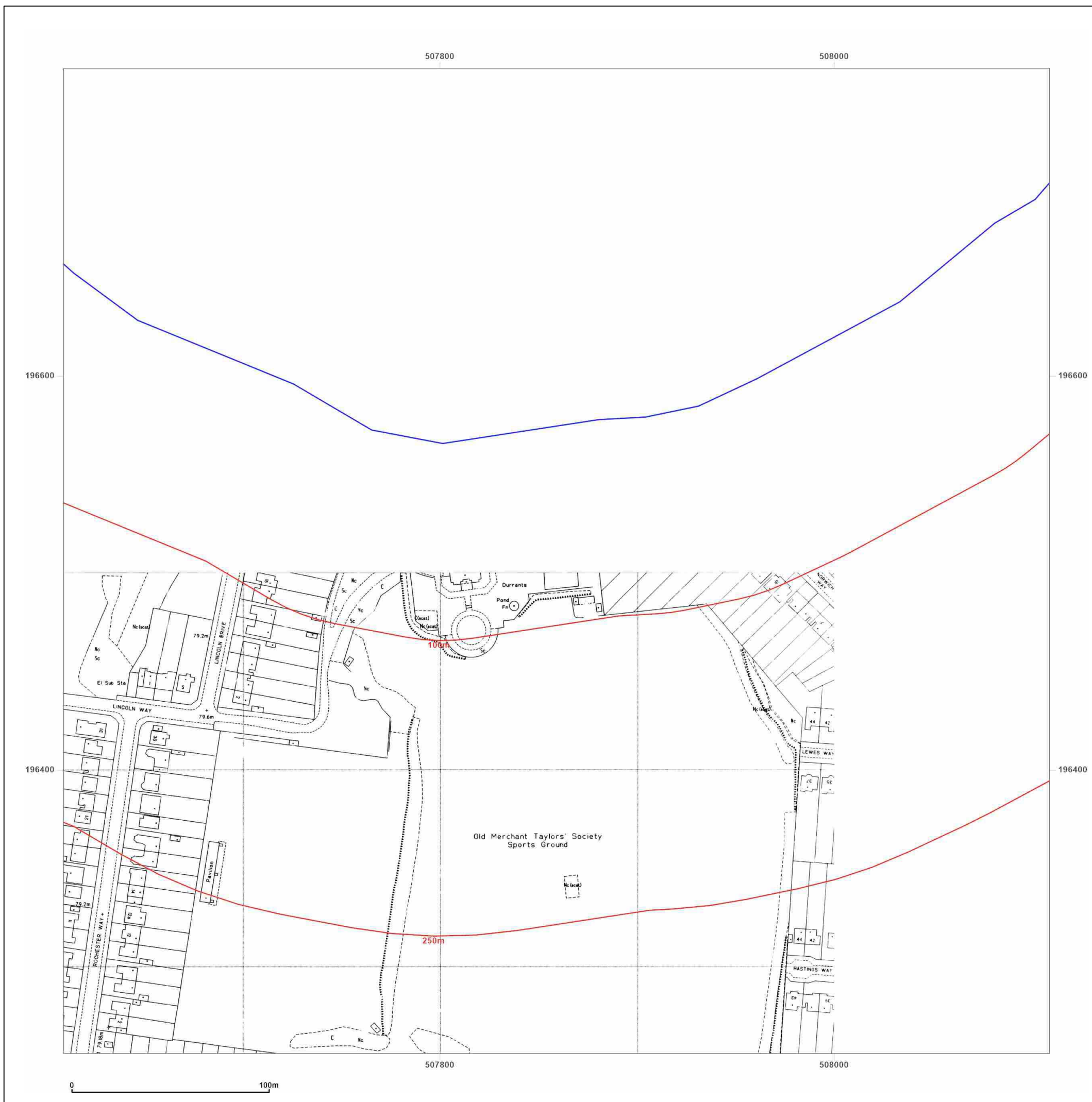


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_1250_2_1
Grid Ref: 507859, 196506

Map Name: National Grid

Map date: **1994**

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Revised 1994
Edition N/A
Copyright 1994
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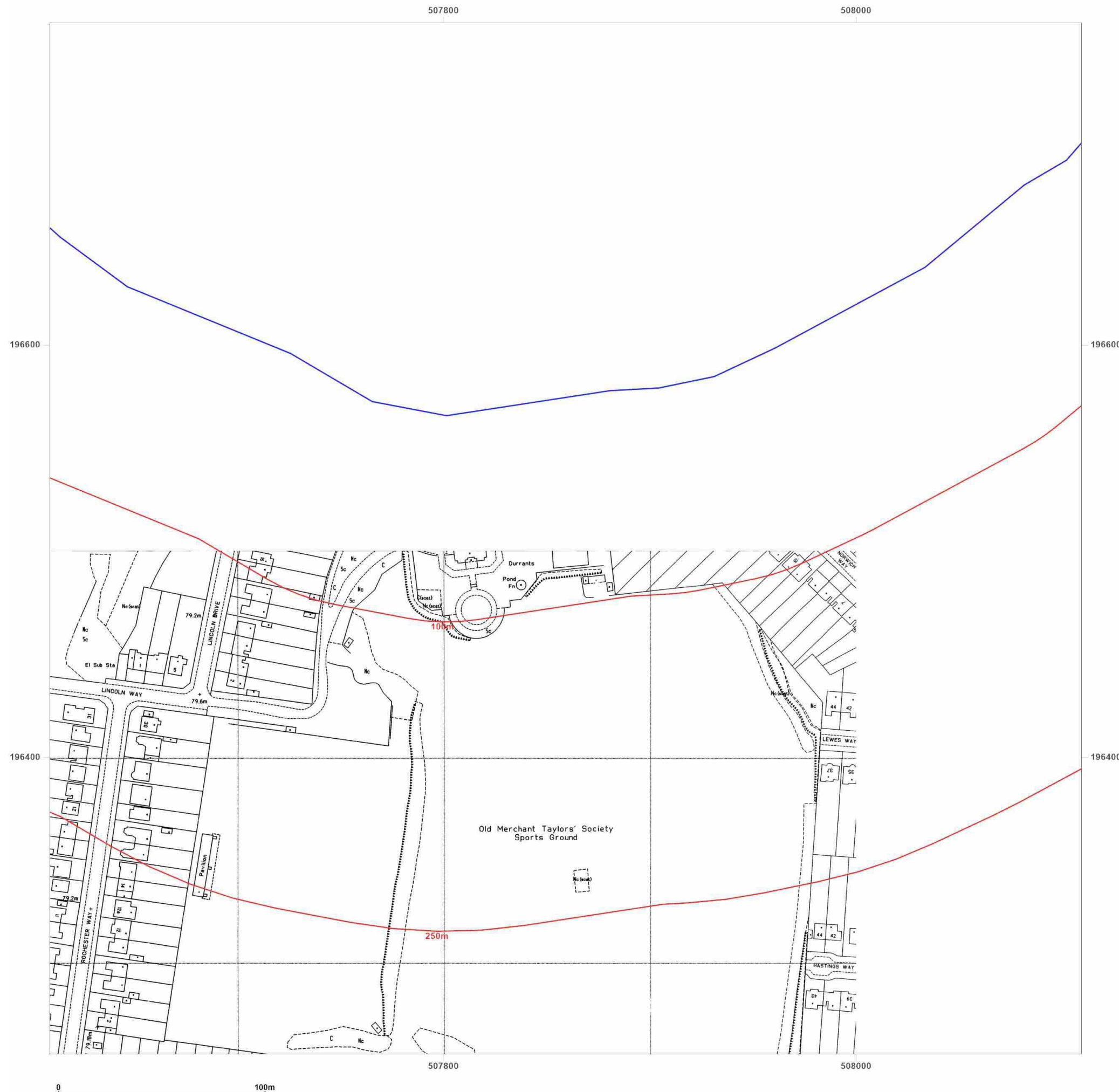


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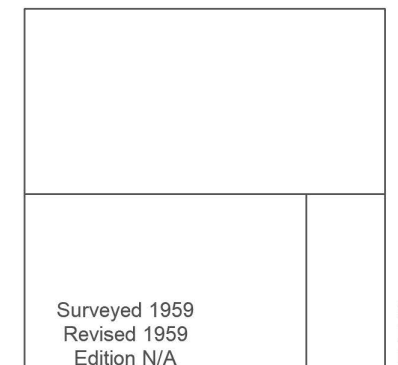
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Report Ref: GS-MM2-9GB-2OE-TRK_1250_2_2
Grid Ref: 507859, 197006

Map Name: National Grid

Map date: **1960**

Scale: 1:1,250

Printed at: 1:2,000



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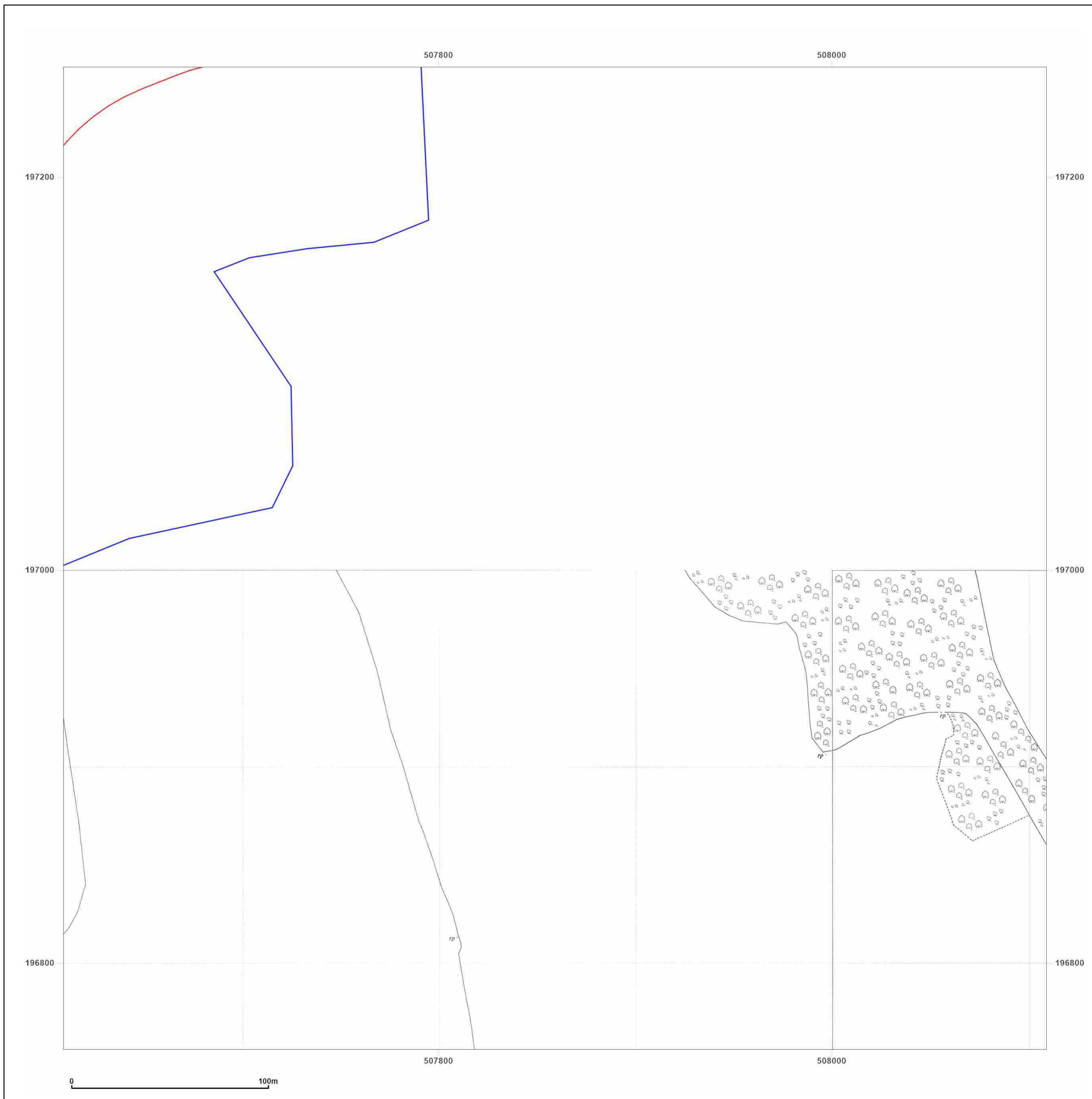


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Client Ref: 8592

Report Ref: GS-MM2-9GB-2OE-TRK_1250_2_2

Grid Ref: 507859, 197006

Map Name: National Grid

Map date: 1976

Scale: 1:1,250

Printed at: 1:2,000

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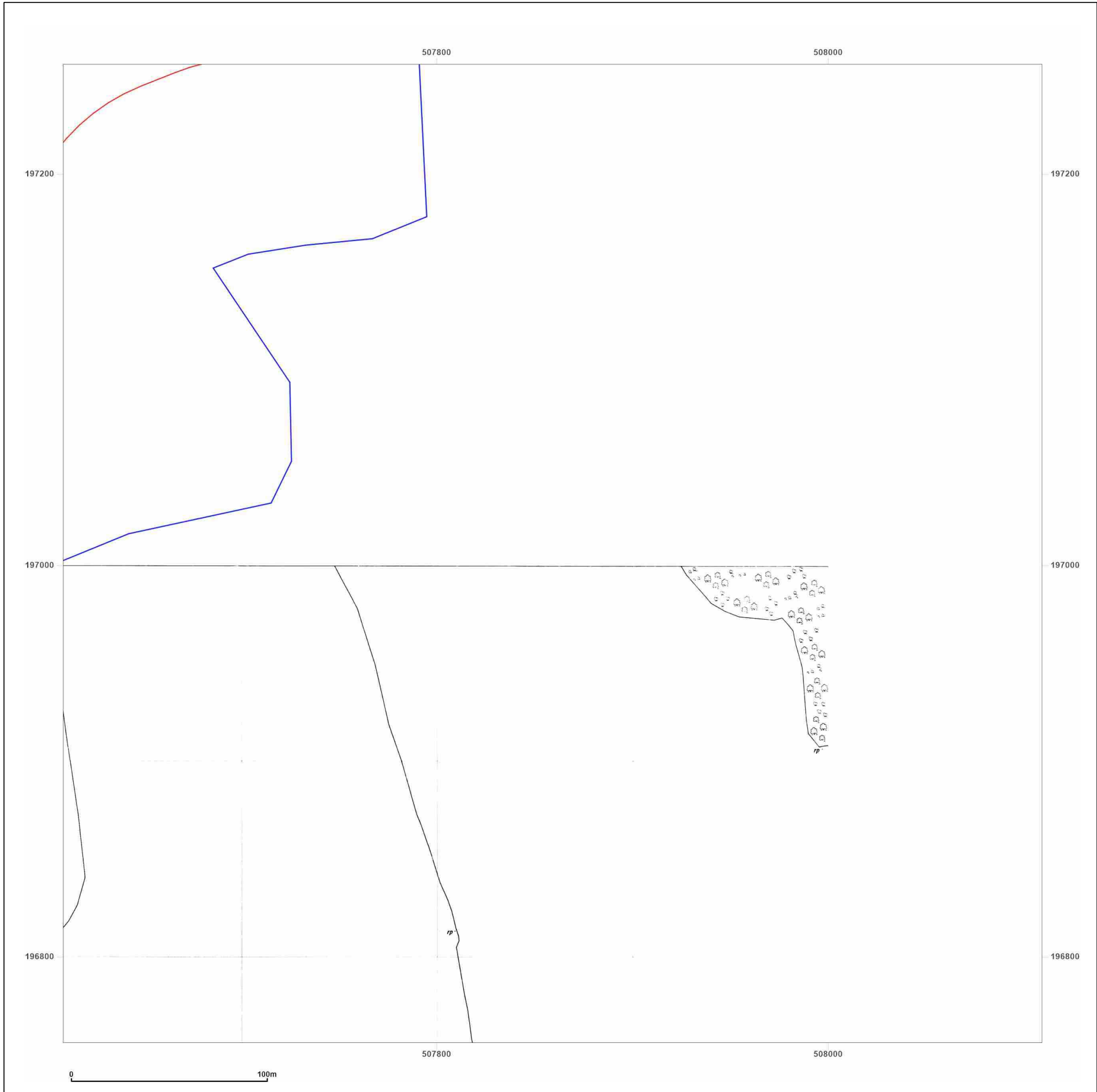
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Client Ref: 8592

Report Ref: GS-MM2-9GB-2OE-TRK_1250_2_2

Grid Ref: 507859, 197006

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000

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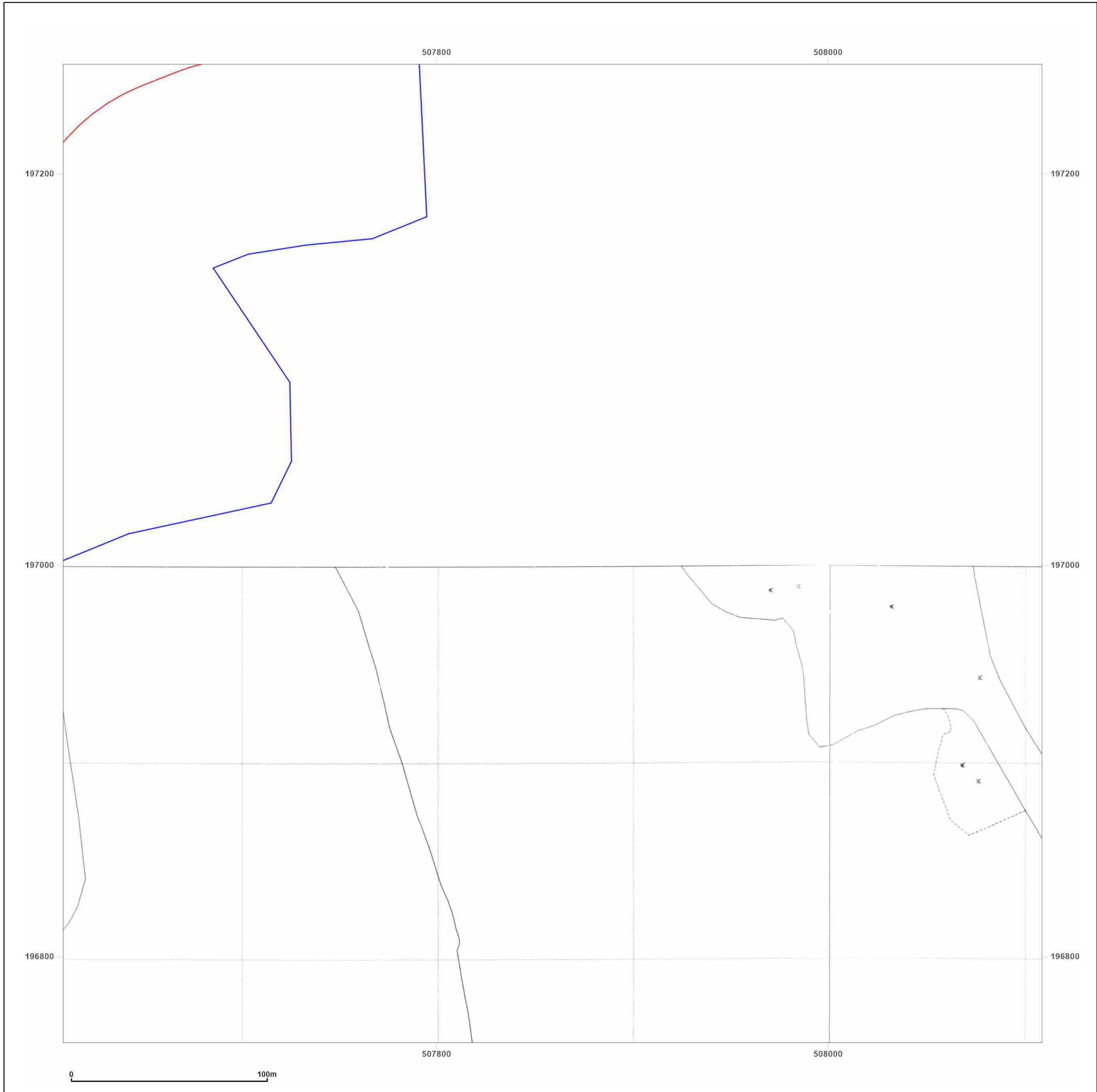
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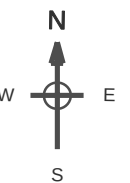
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Report Ref: GS-MM2-9GB-2OE-TRK_1250_3_1
Grid Ref: 508359, 196506

Map Name: National Grid

Map date: 1960

Scale: 1:1,250

Printed at: 1:2,000



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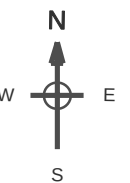
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Grid Ref: 508359, 196506

Map Name: National Grid

Map date: 1992

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_1250_3_2
Grid Ref: 508359, 197006

Map Name: National Grid

Map date: **1960**

Scale: 1:1,250

Printed at: 1:2,000



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Levelled 1956

Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1956

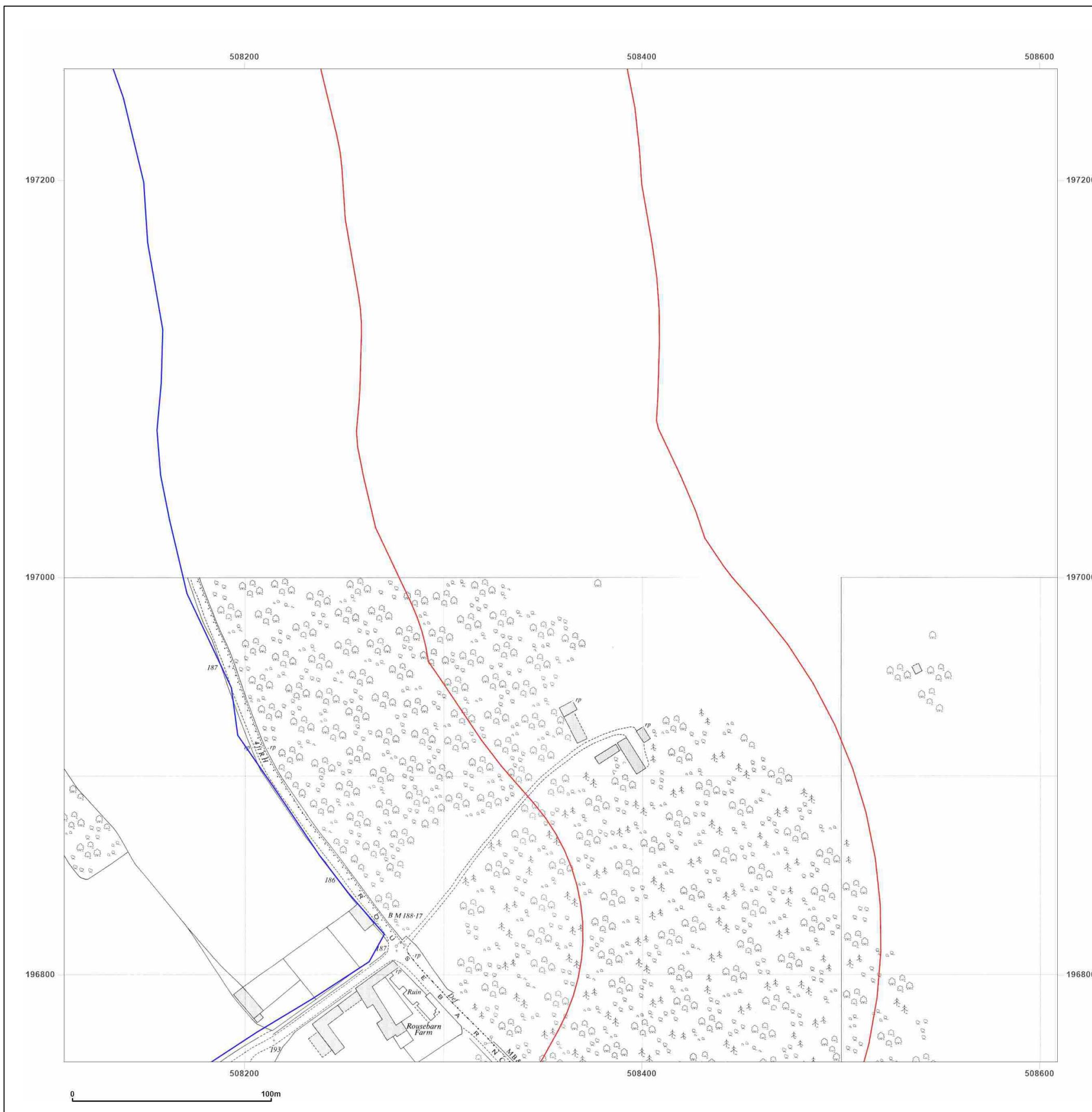


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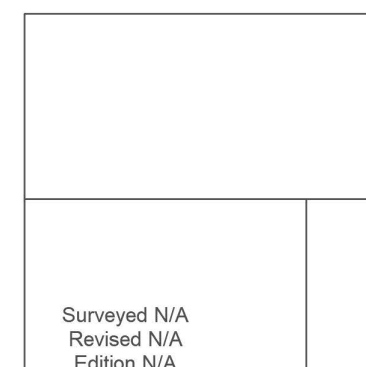
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Grid Ref: 508359, 197006

Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
Edition N/A
Copyright N/A
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Revised N/A
Edition N/A
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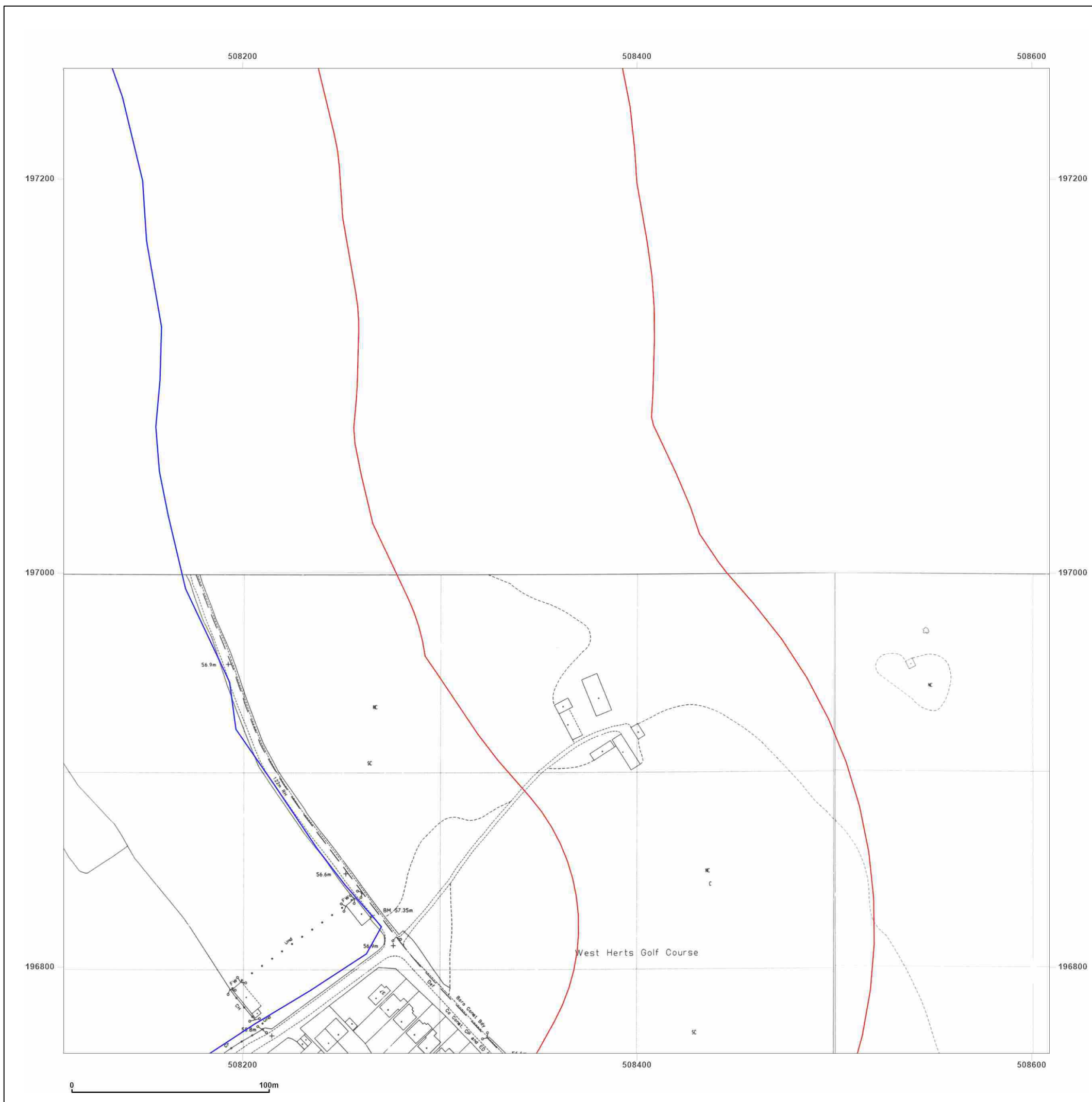


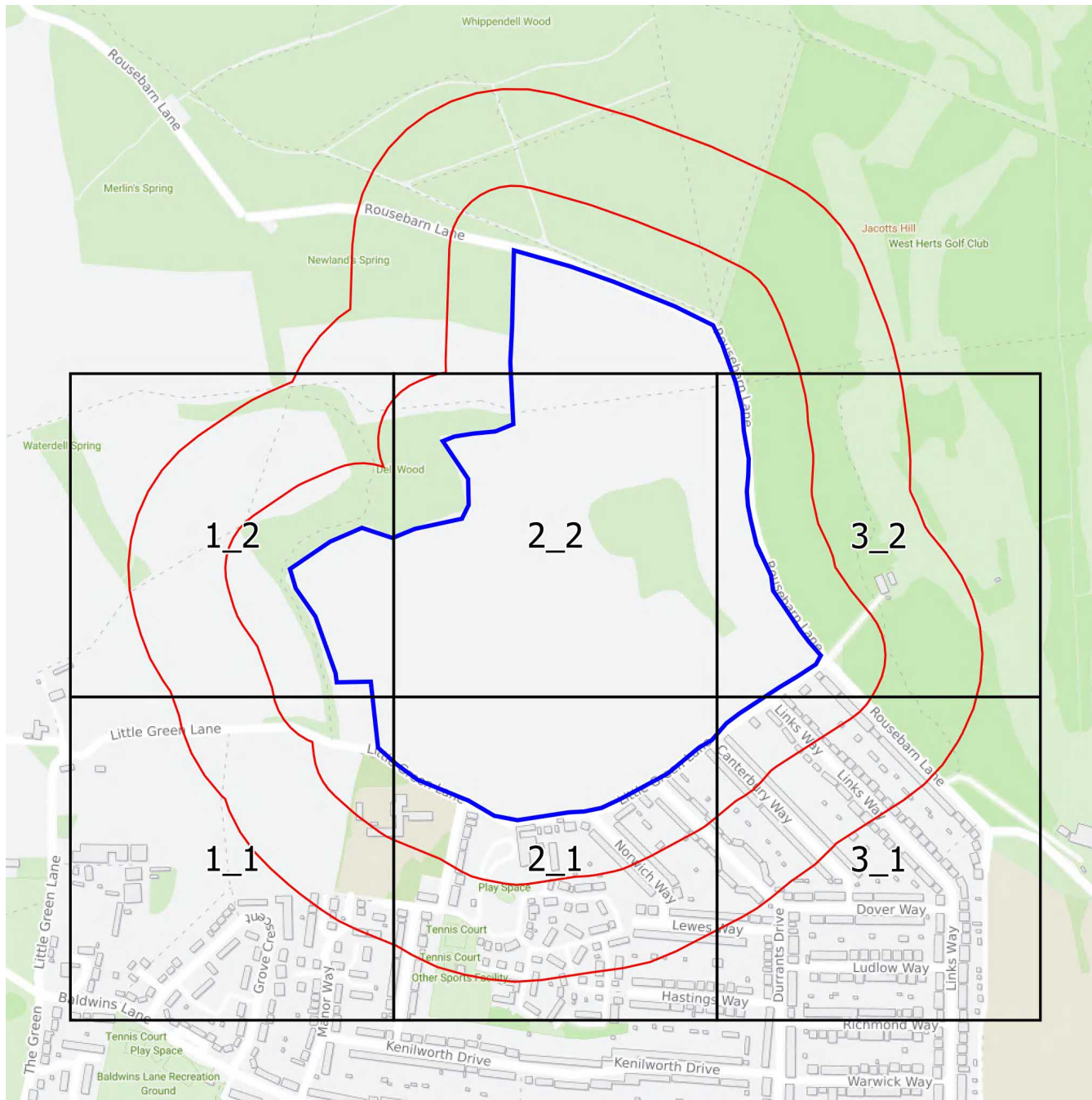
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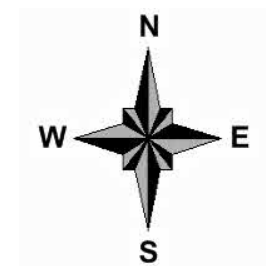
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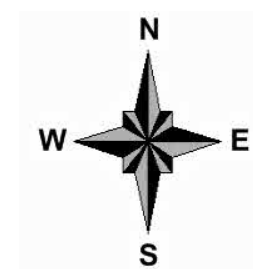
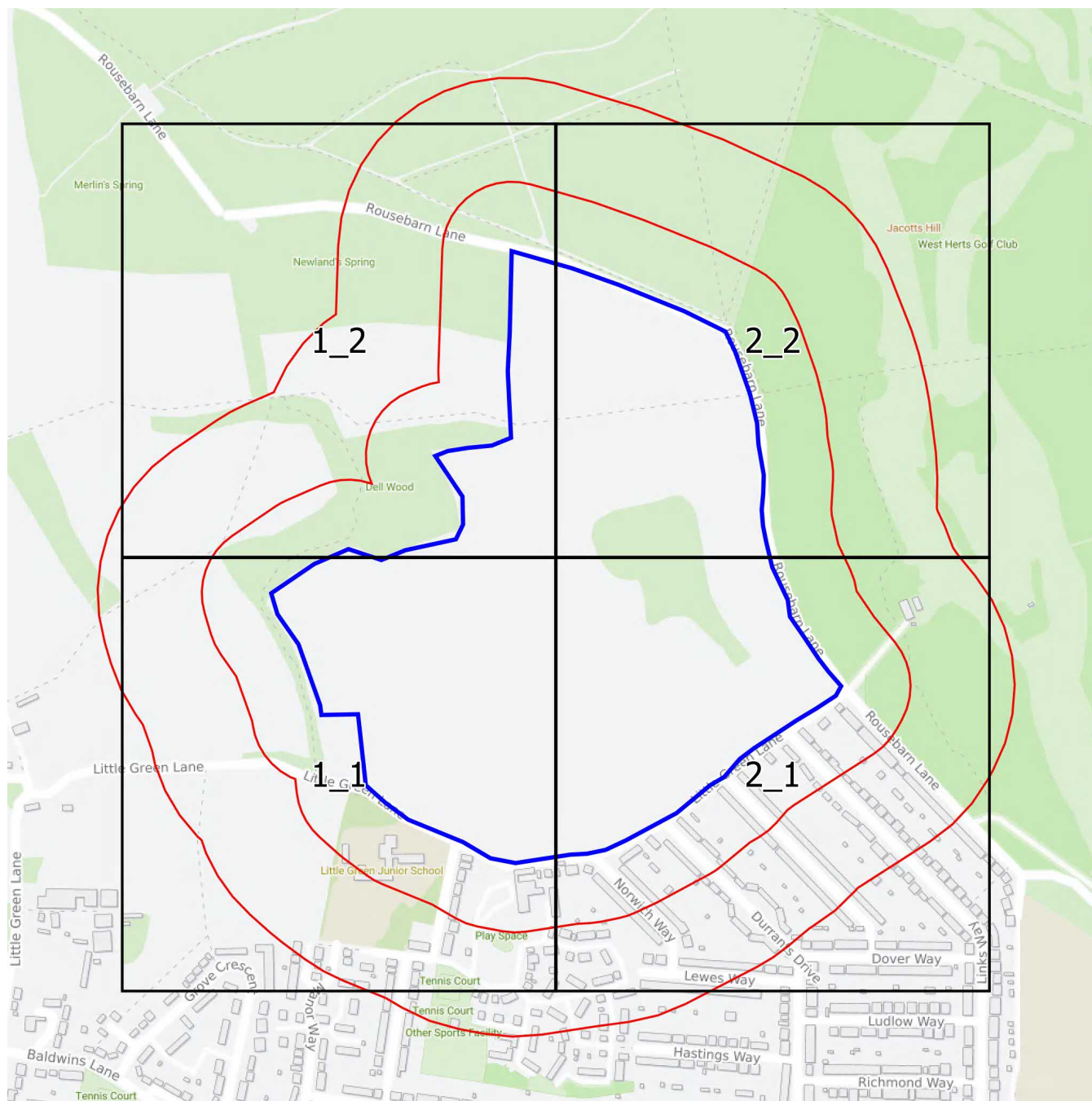
1:1,250 Scale Grid Index





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1:2,500 Scale Grid Index



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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_1
Grid Ref: 507546, 196693

Map Name: County Series

Map date: 1872

Scale: 1:2,500

Printed at: 1:2,500



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

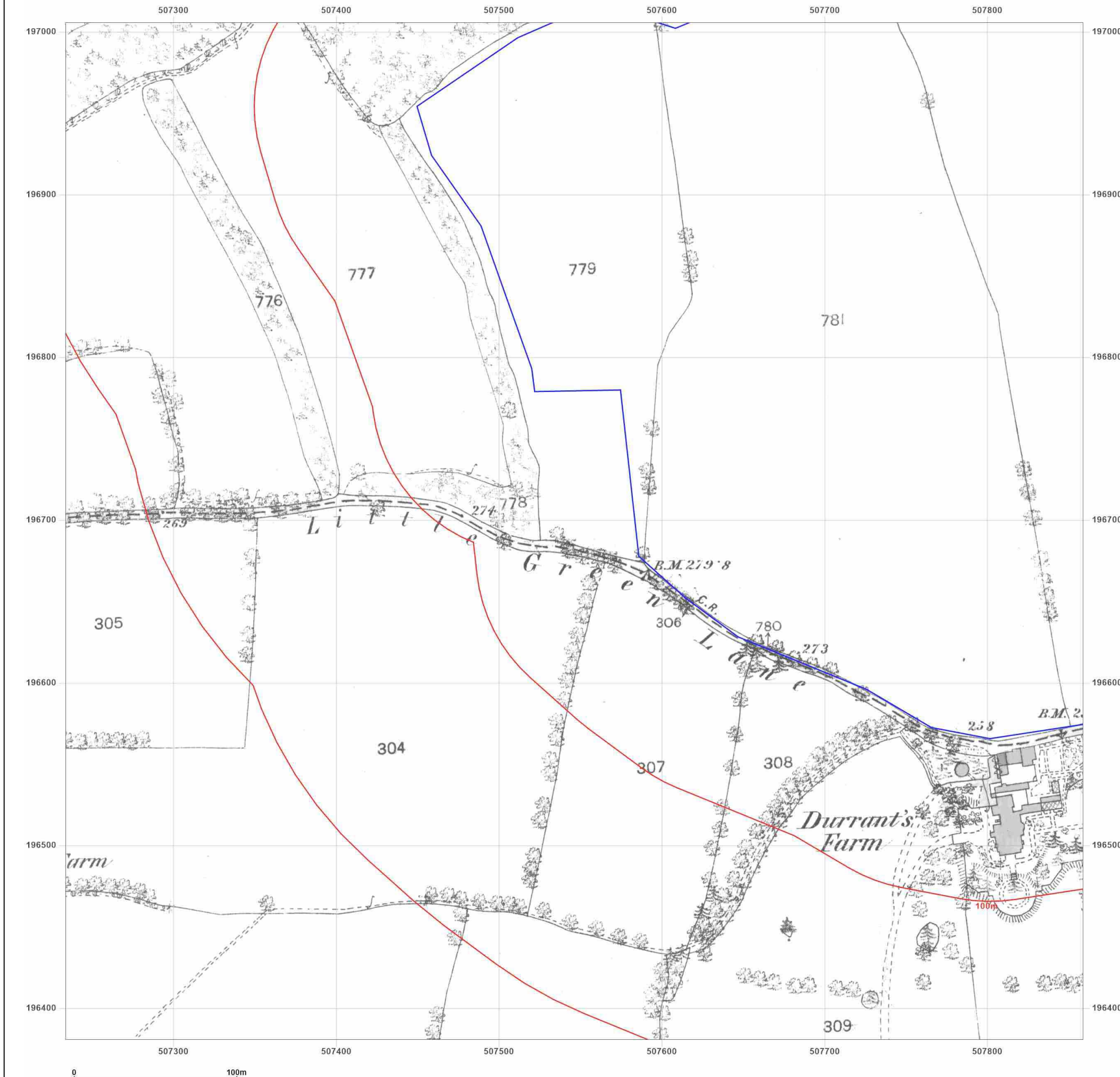


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Site Details:

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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_1
Grid Ref: 507546, 196693

Map Name: County Series

Map date: **1898**

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
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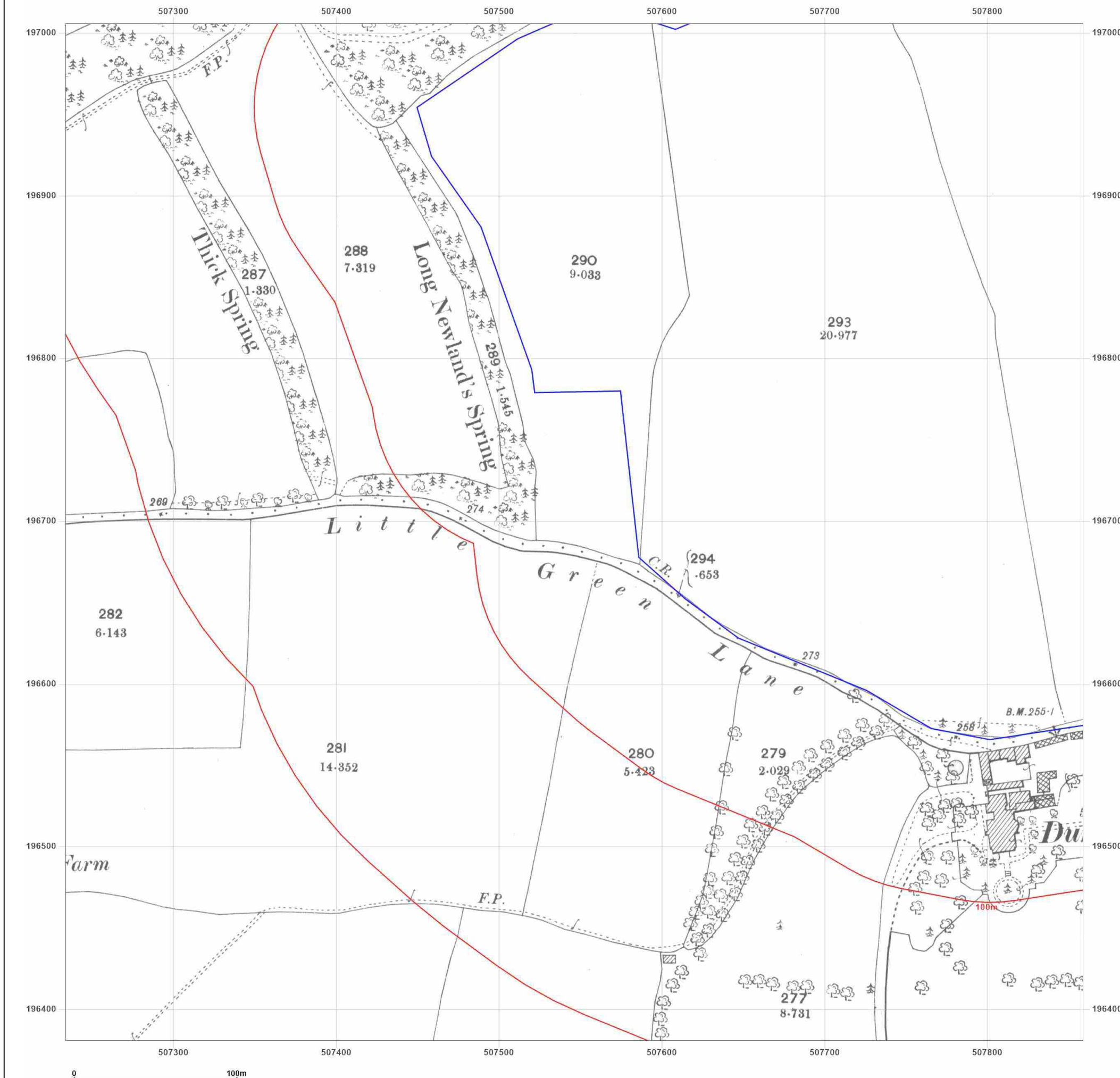


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_1
Grid Ref: 507546, 196693

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

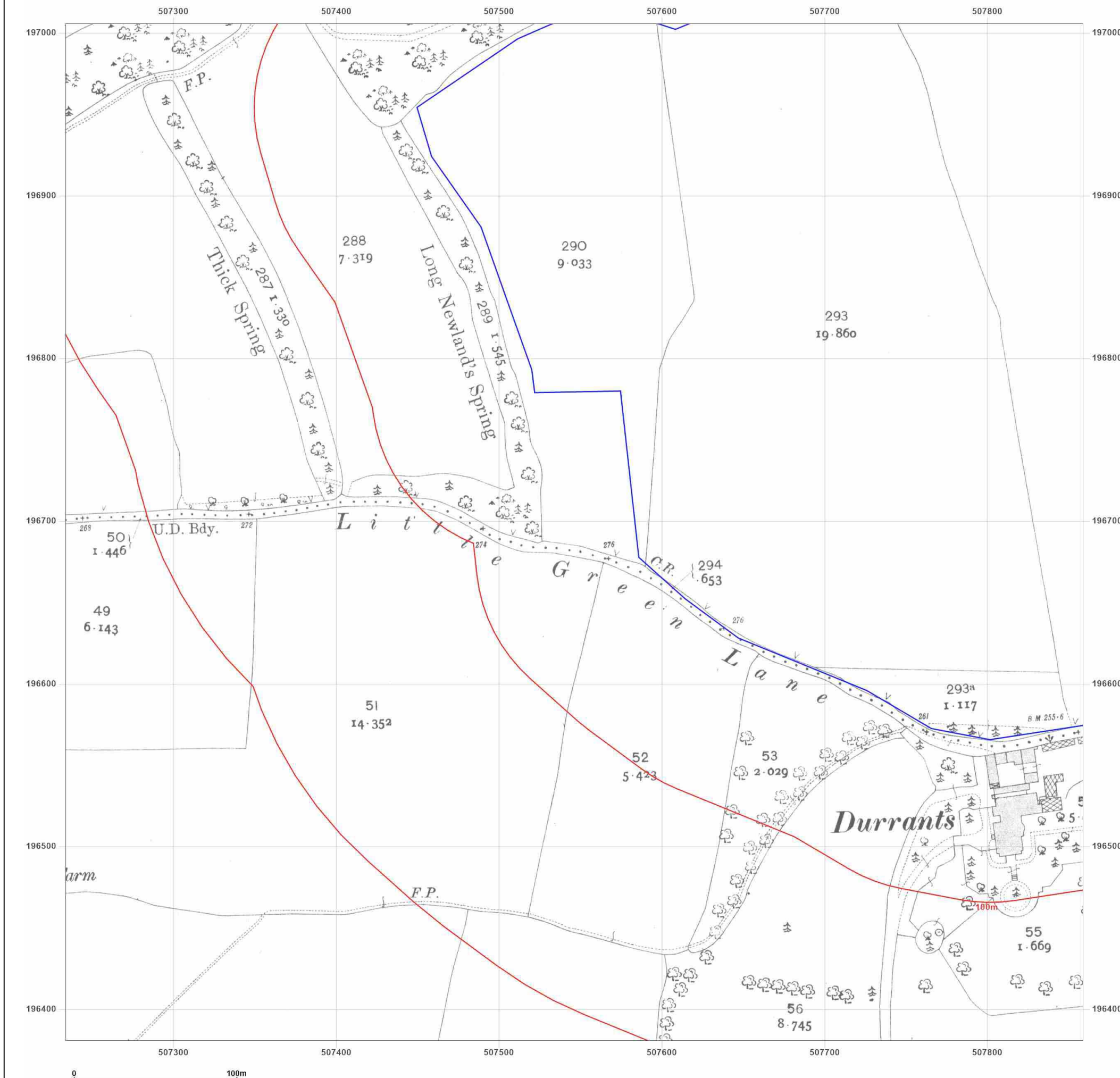


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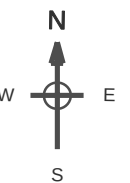
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Grid Ref: 507546, 196693

Map Name: National Grid

Map date: **1959-1960**

Scale: 1:2,500

Printed at: 1:2,500



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Edition N/A
Copyright 1961
Levelled 1956

Surveyed 1959
Revised 1959
Edition 1961
Copyright 1961
Levelled 1956

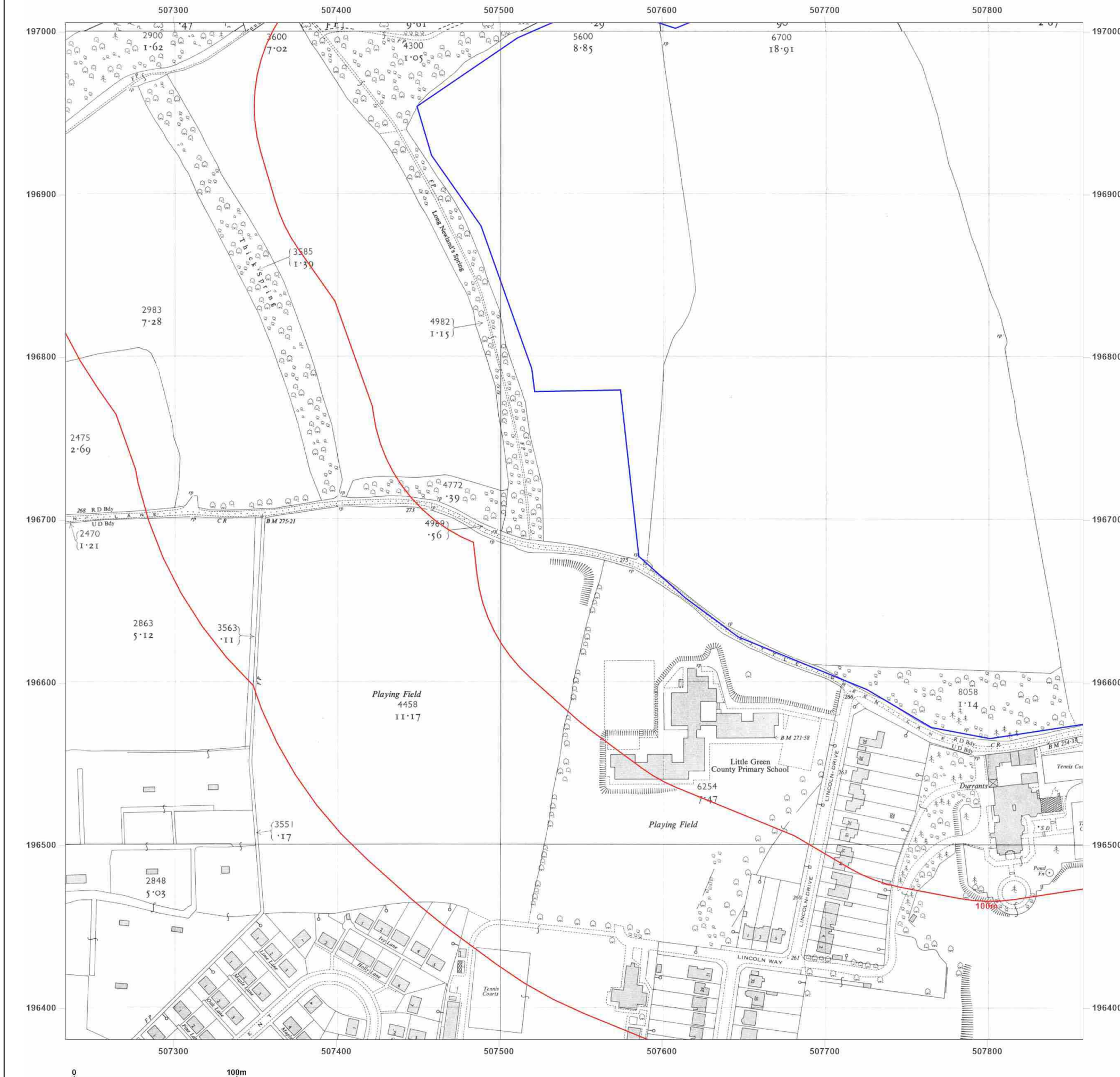


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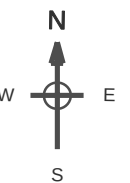
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Grid Ref: 507546, 196693

Map Name: National Grid

Map date: **1961**

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
Edition N/A
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Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
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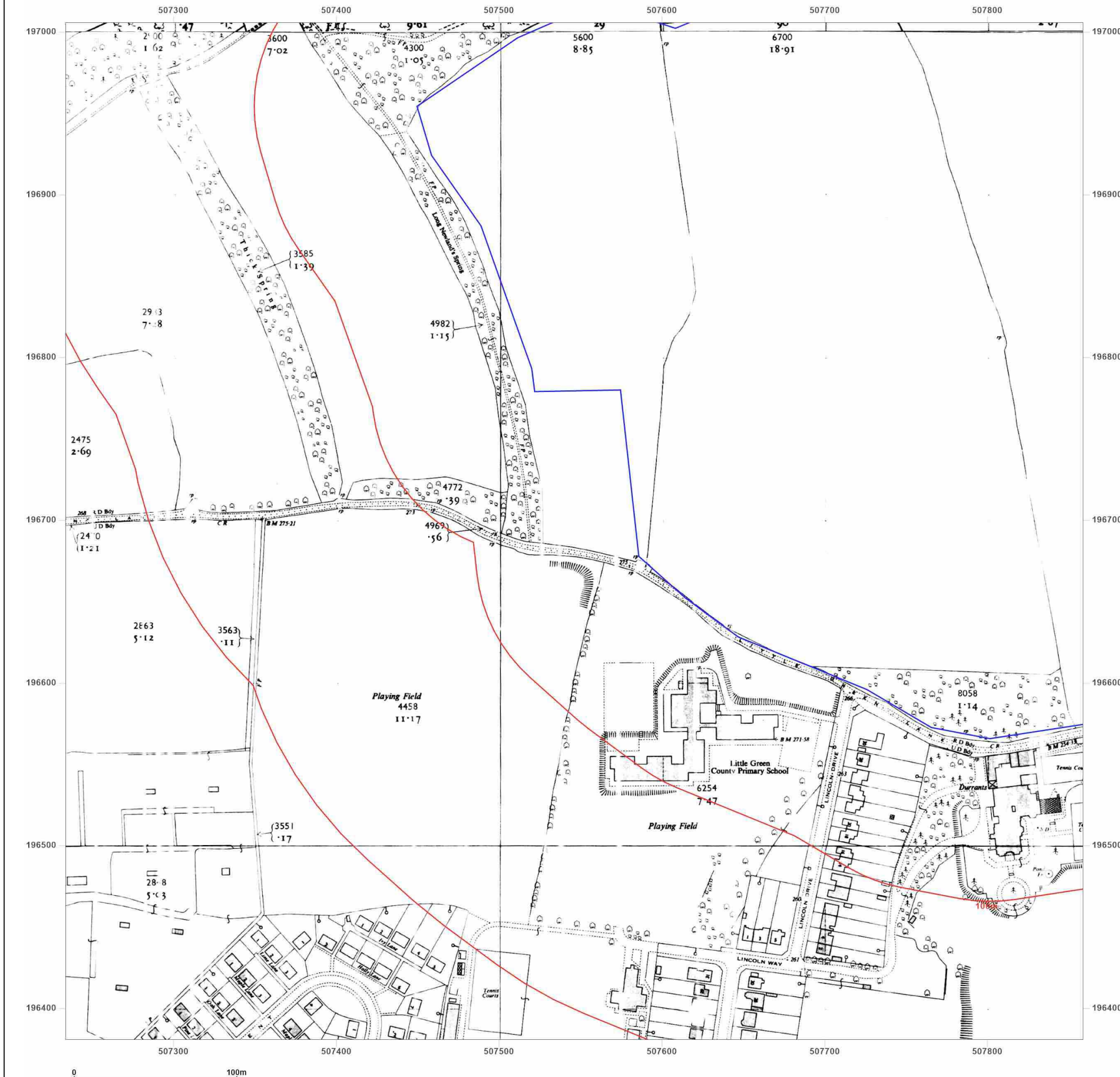


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Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_2
Grid Ref: 507546, 197318

Map Name: County Series

Map date: **1871-1872**

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1871
Revised 1871
Edition N/A
Copyright N/A
Levelled N/A

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

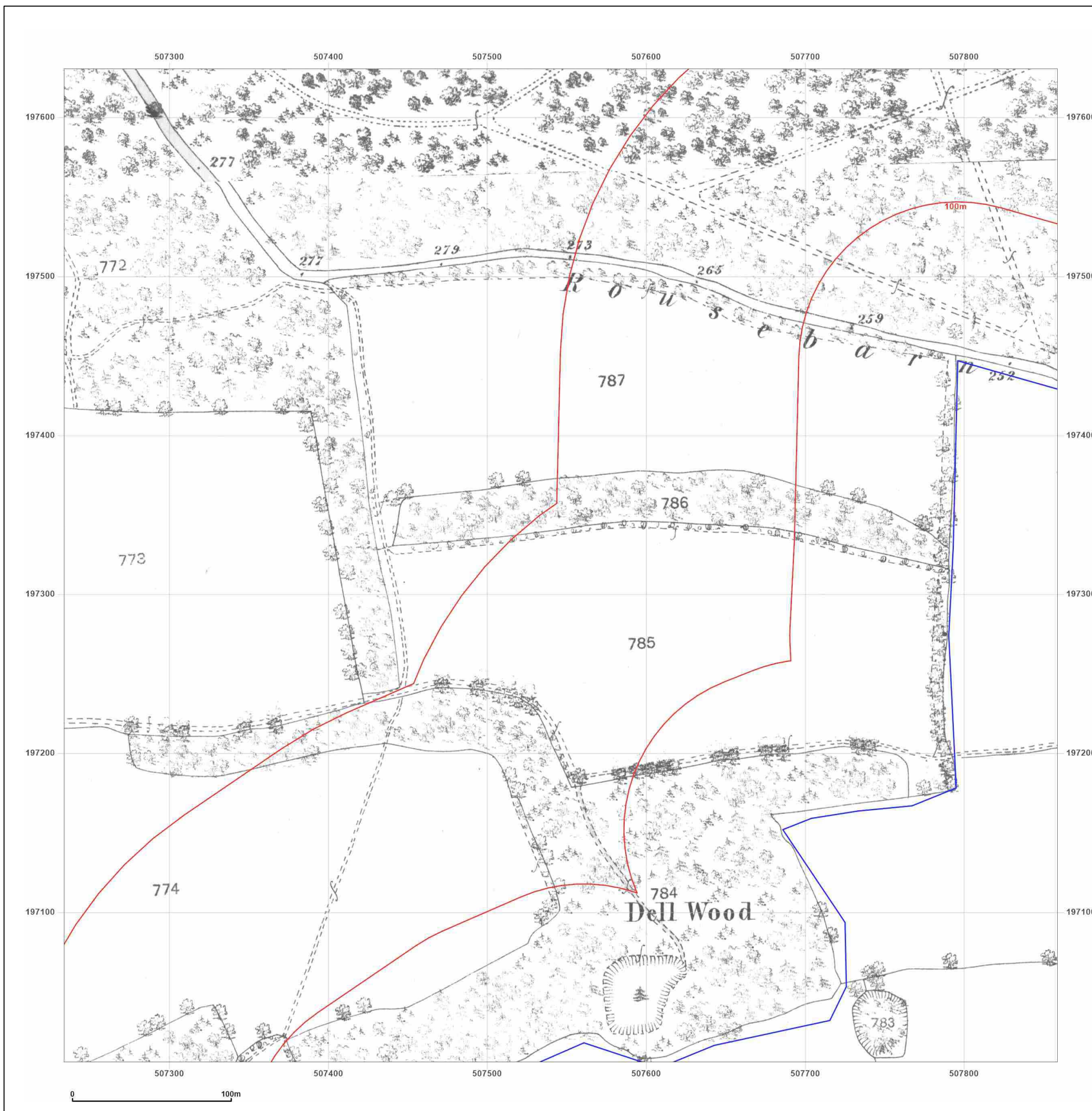


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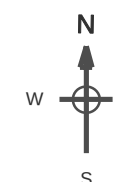
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Grid Ref: 507546, 197318

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1898
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Edition N/A
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Surveyed 1898
Revised 1898
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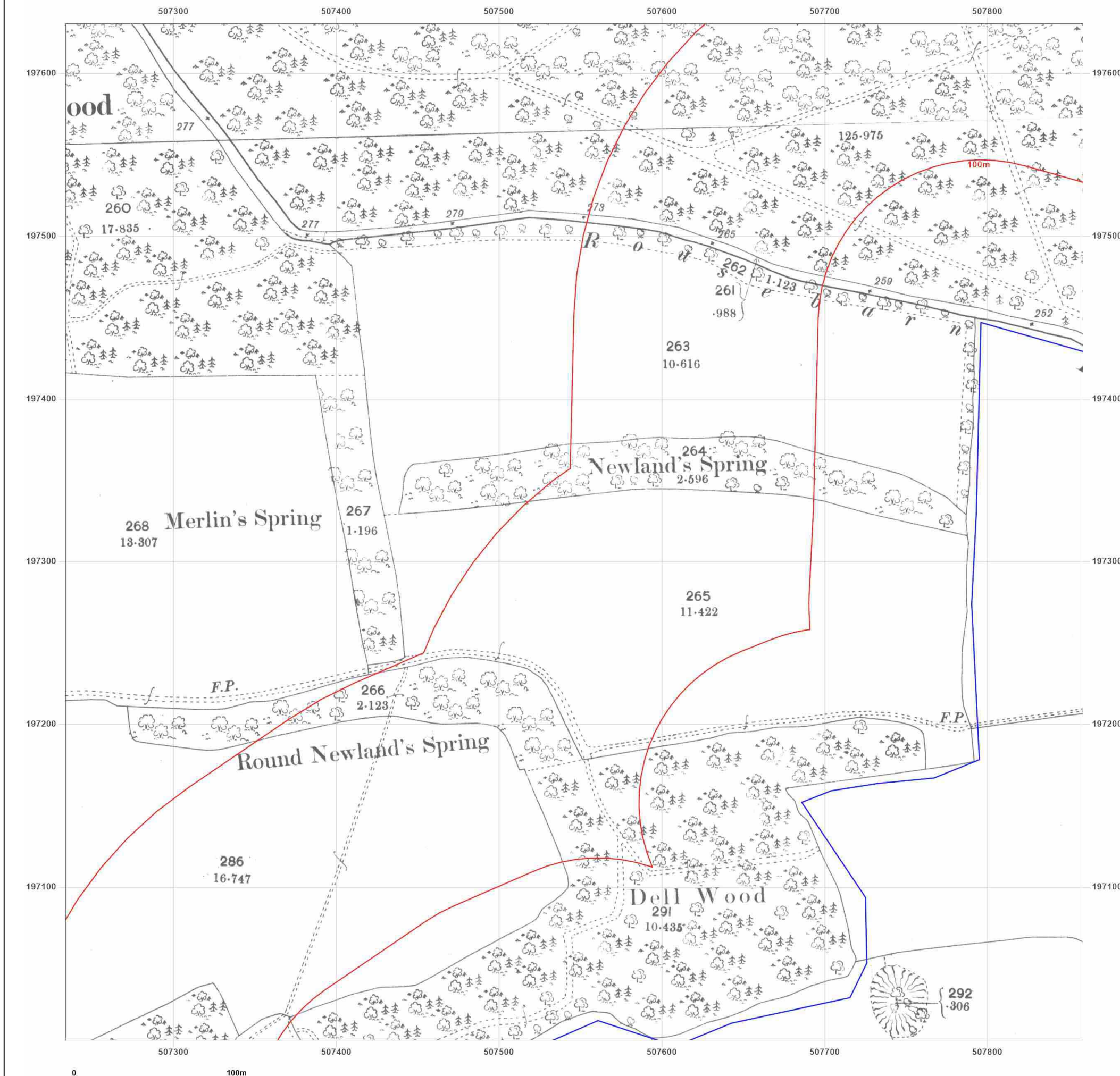


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Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_2
Grid Ref: 507546, 197318

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
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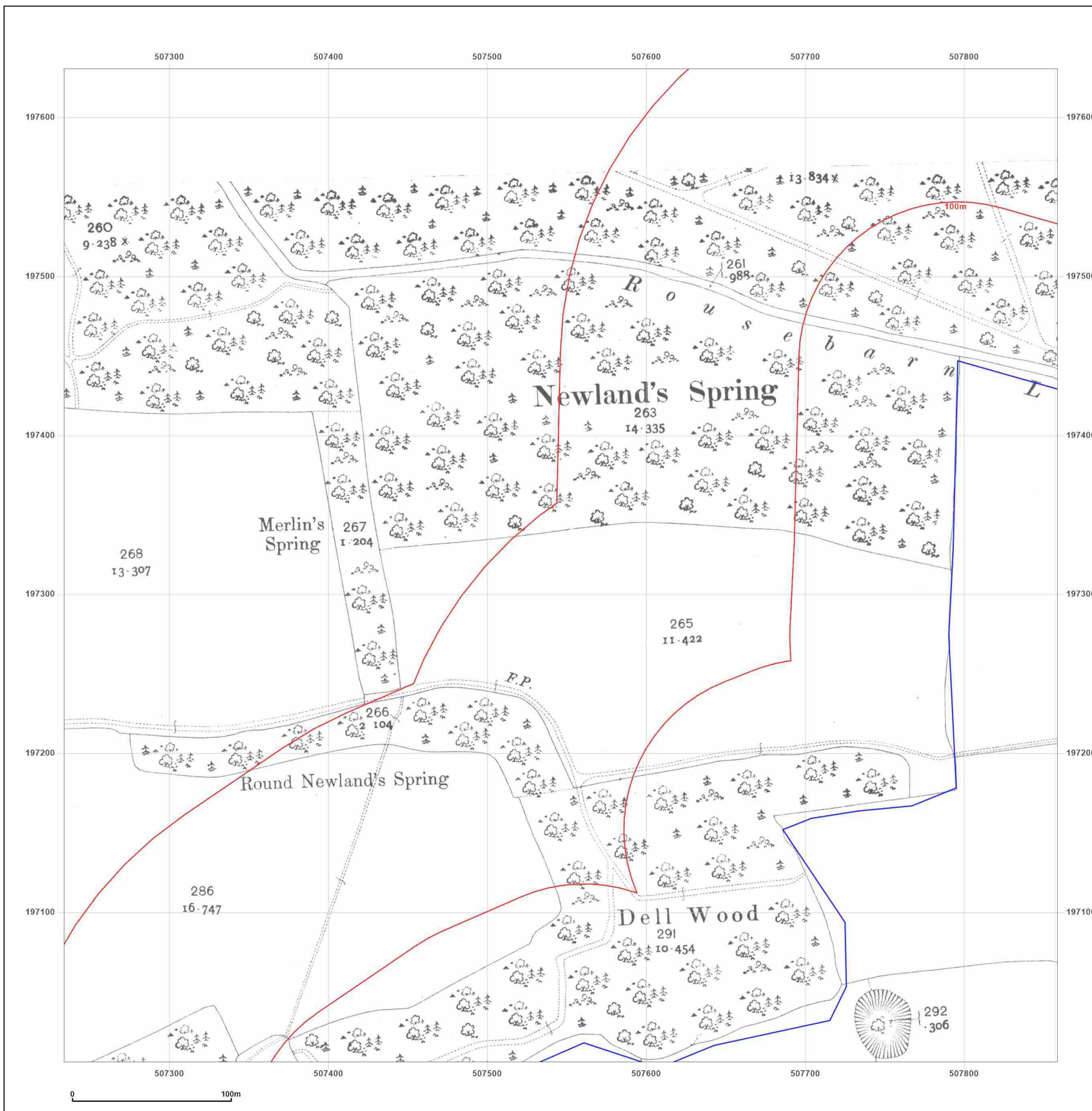


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_2
Grid Ref: 507546, 197318

Map Name: National Grid

Map date: 1960

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1956

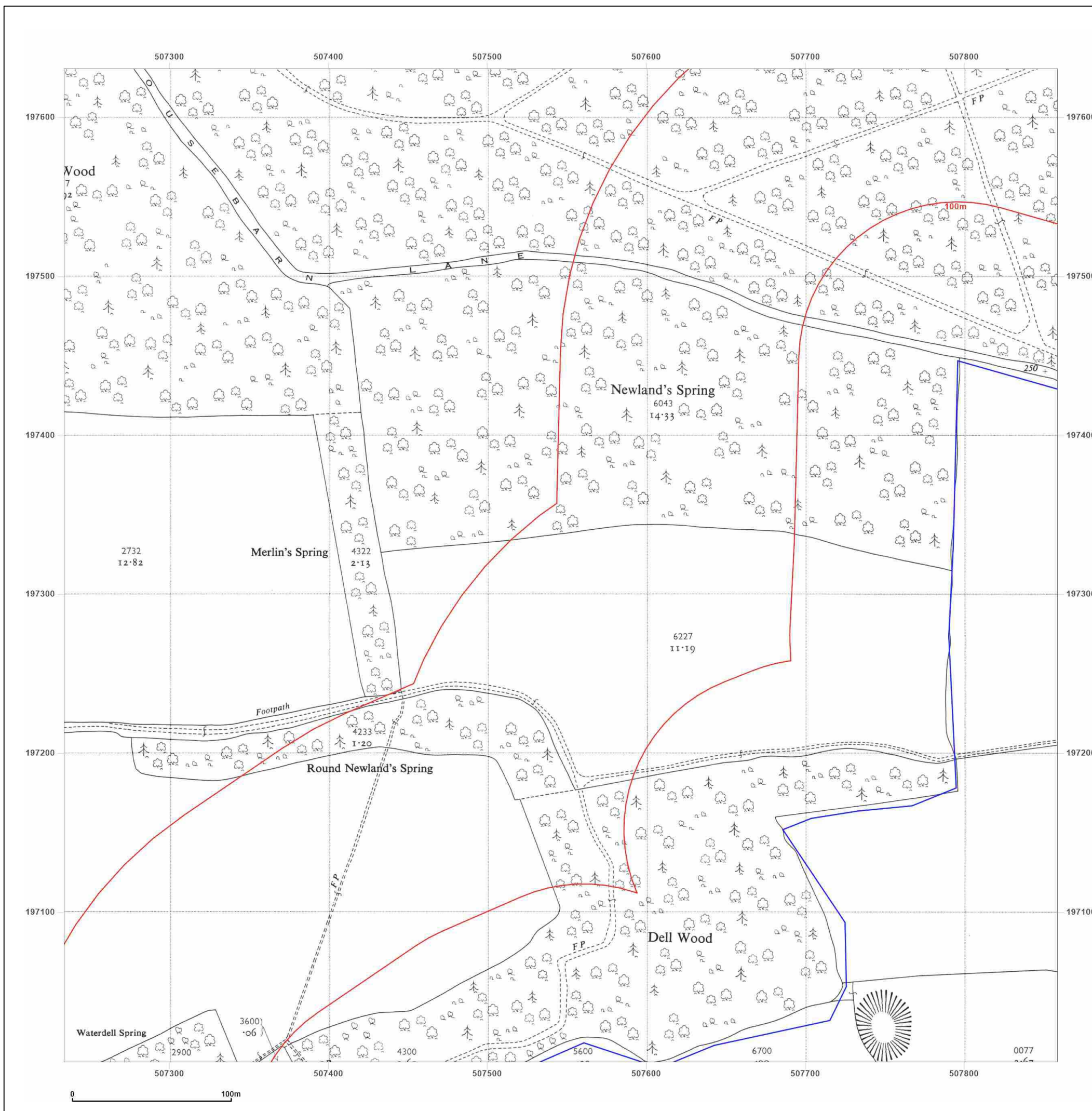


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Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_2
Grid Ref: 507546, 197318

Map Name: National Grid

Map date: **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

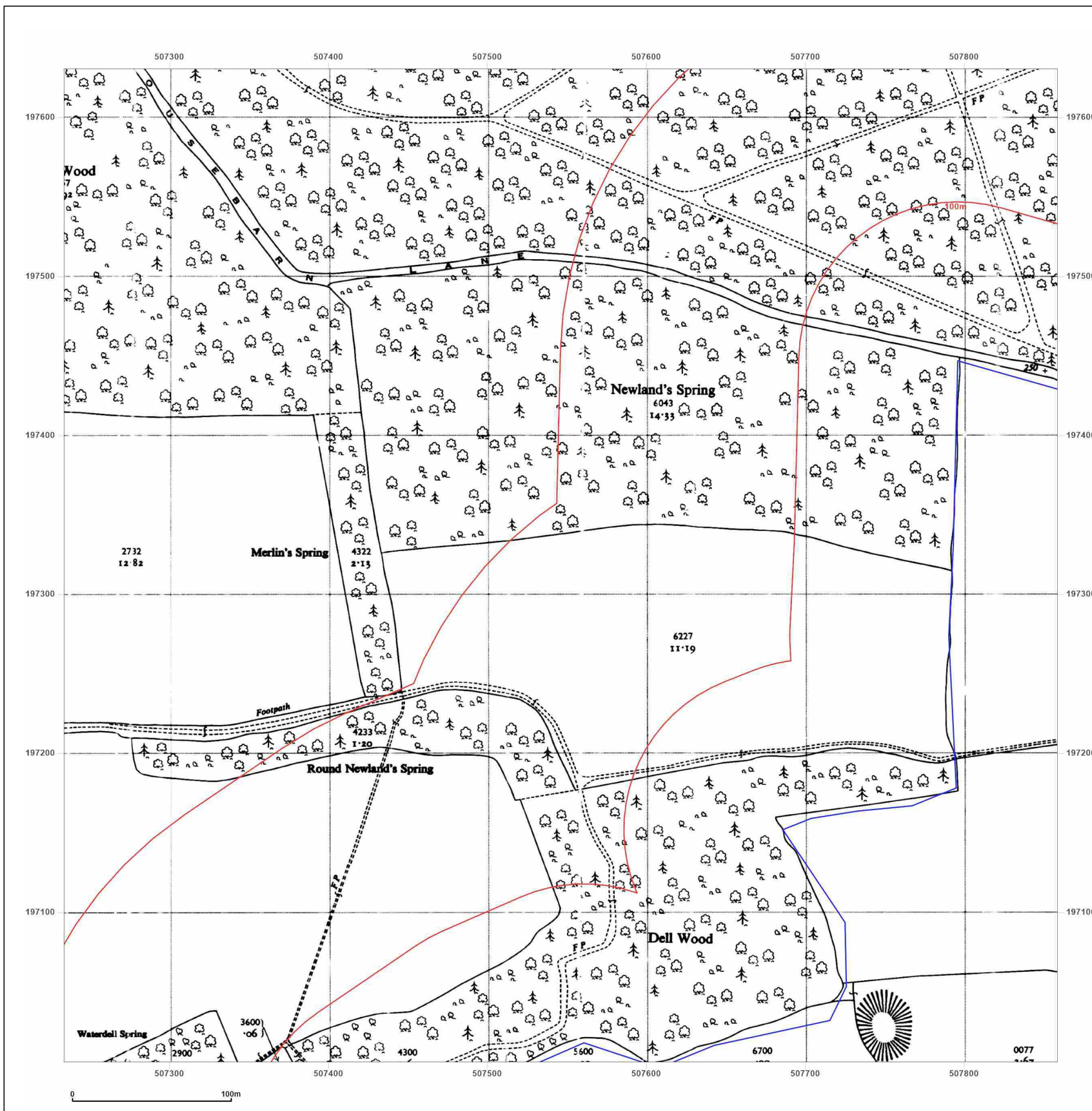


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GREEN, HERTFORDSHIRE, WD3
3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_1_2
Grid Ref: 507546, 197318

Map Name: National Grid

Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500



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

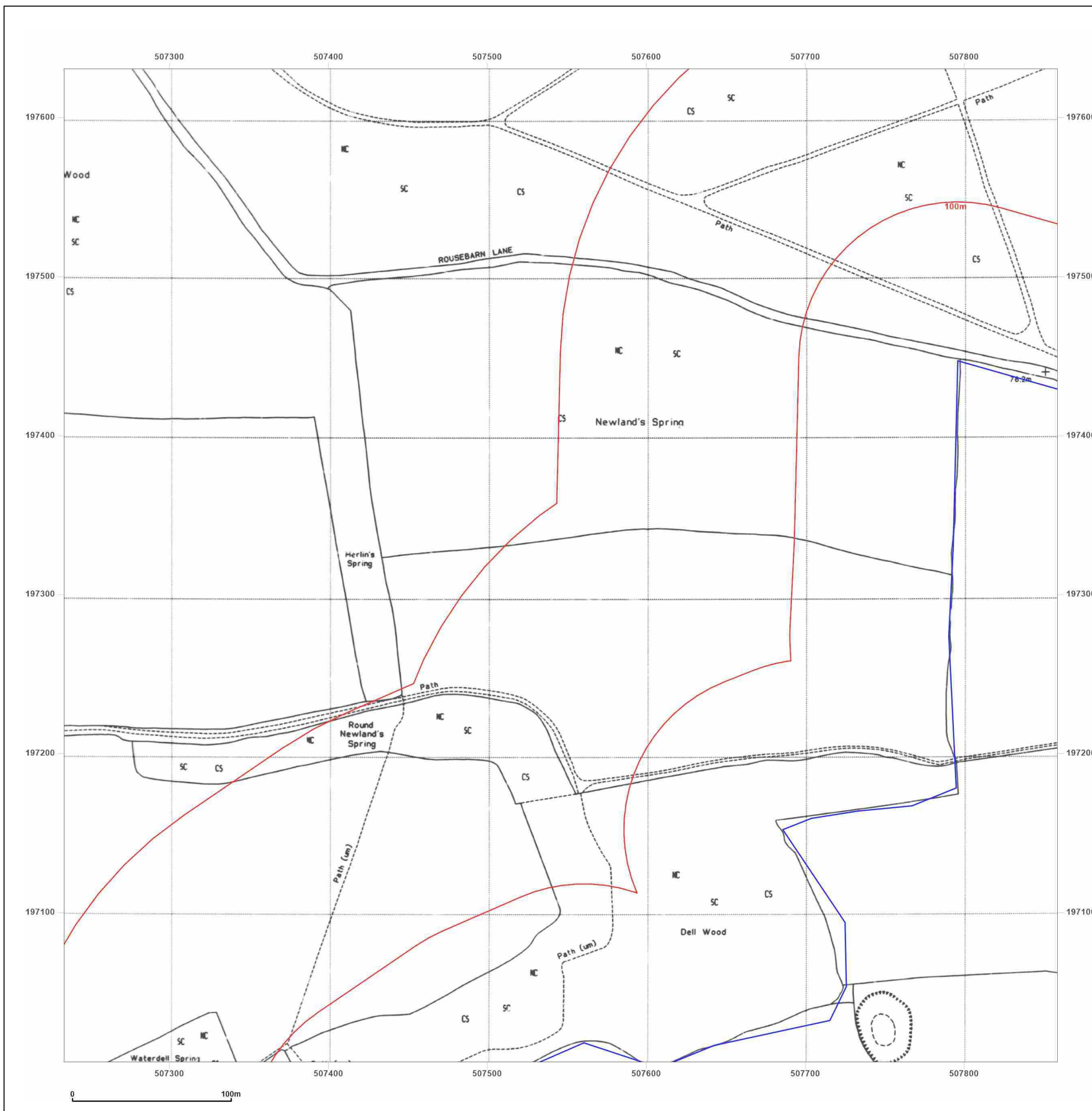


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_2_1
Grid Ref: 508171, 196693

Map Name: County Series

Map date: 1879

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1879
Revised 1879
Edition N/A
Copyright N/A
Levelled N/A

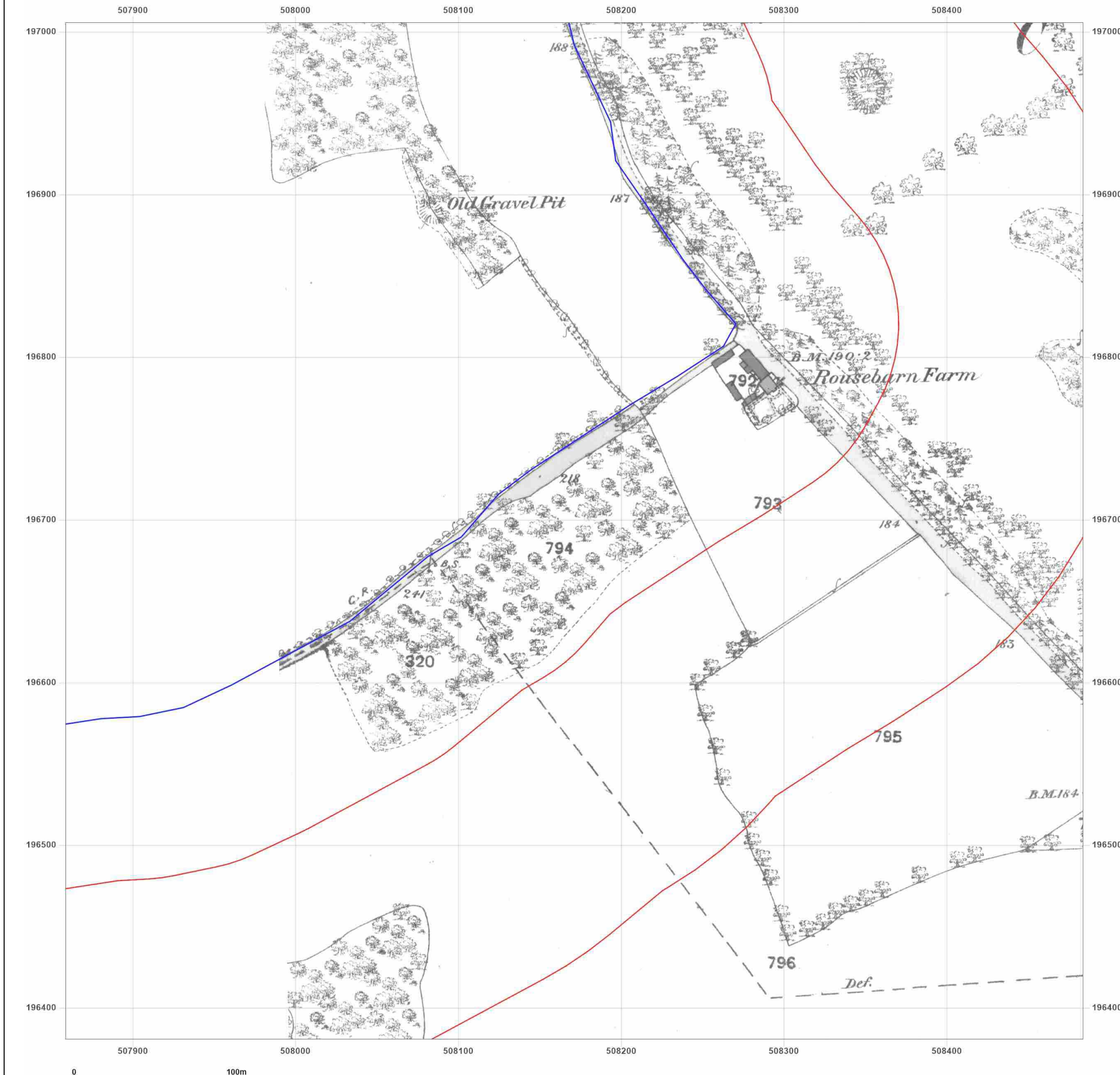


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Site Details:

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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_2_1
Grid Ref: 508171, 196693

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1898
Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

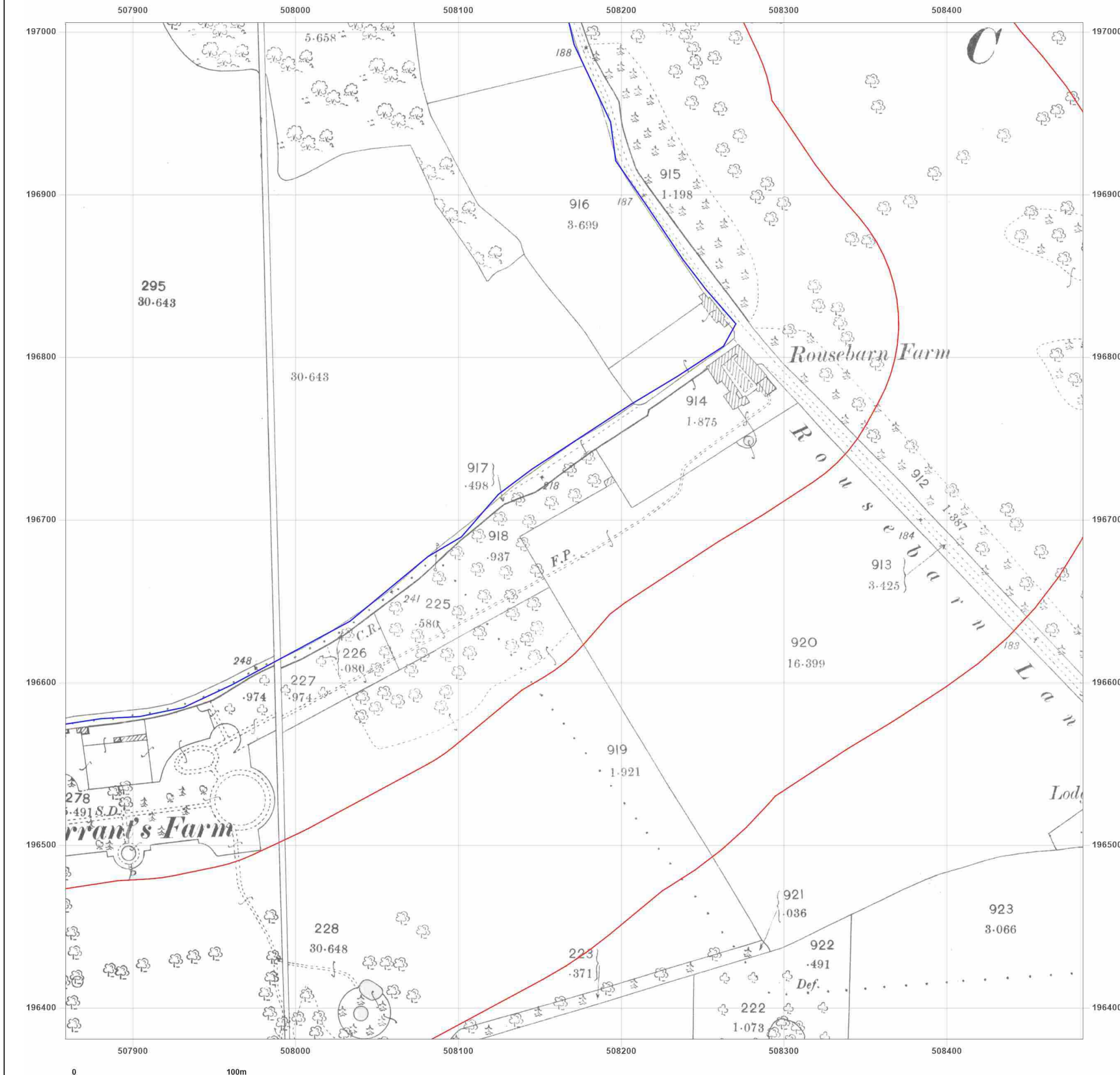


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_2_1
Grid Ref: 508171, 196693

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

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

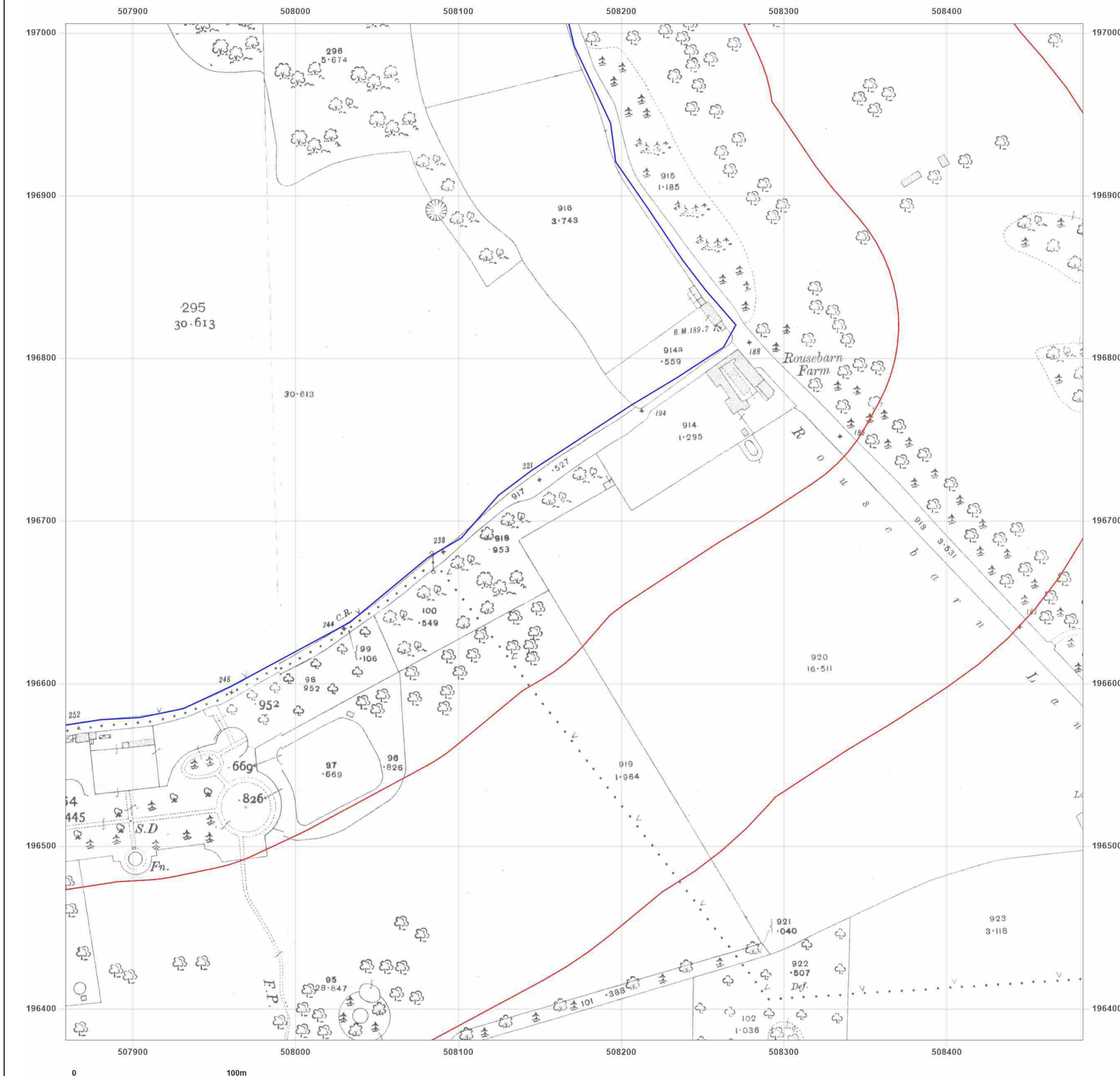


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GREEN, HERTFORDSHIRE, WD3
3JQ

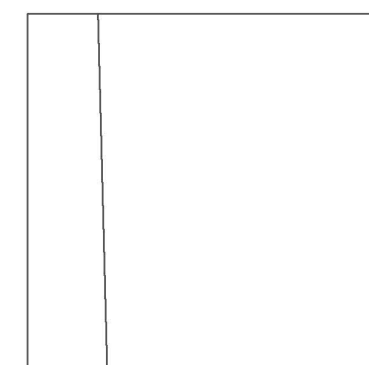
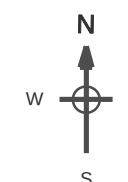
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Grid Ref: 508171, 196693

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

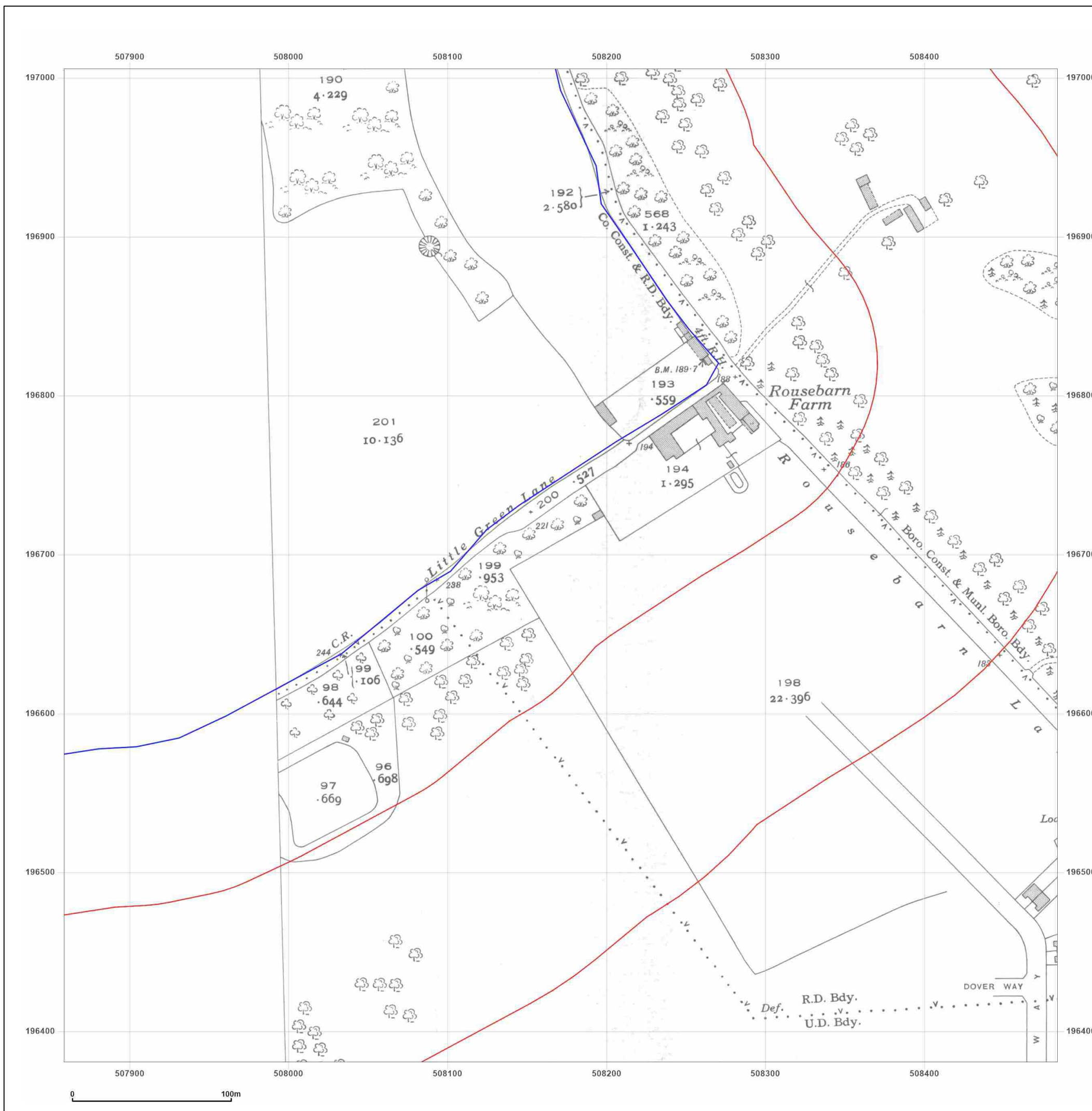


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3JQ

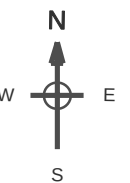
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Grid Ref: 508171, 196693

Map Name: National Grid

Map date: **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

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

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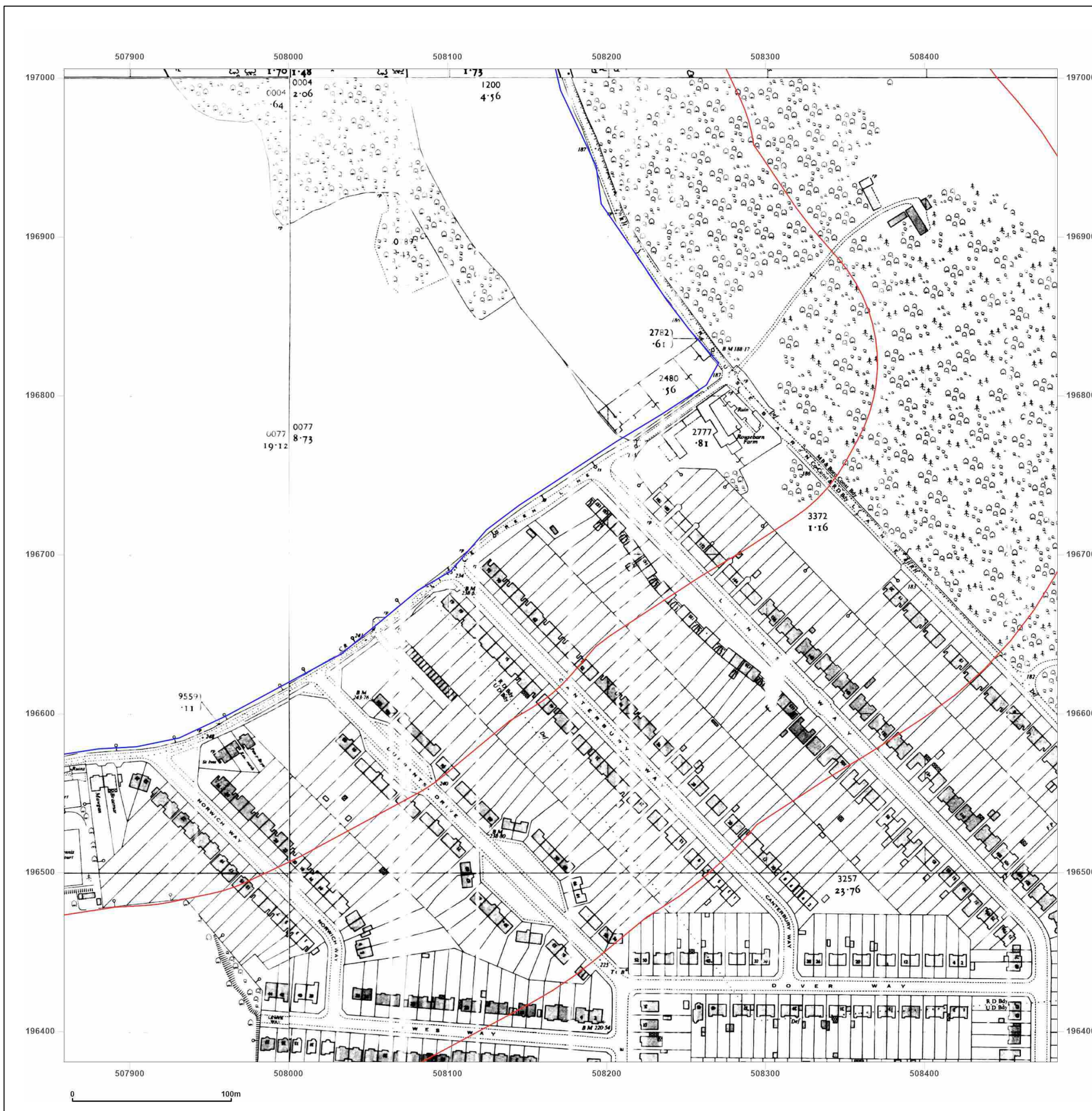


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3JQ

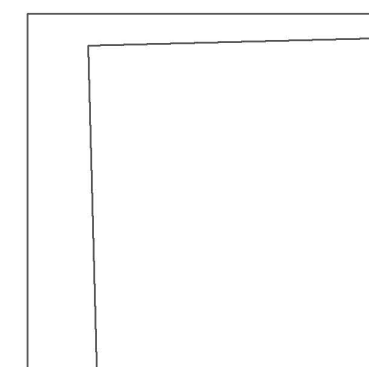
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Grid Ref: 508171, 197318

Map Name: County Series

Map date: 1879

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1879
Revised 1879
Edition N/A
Copyright N/A
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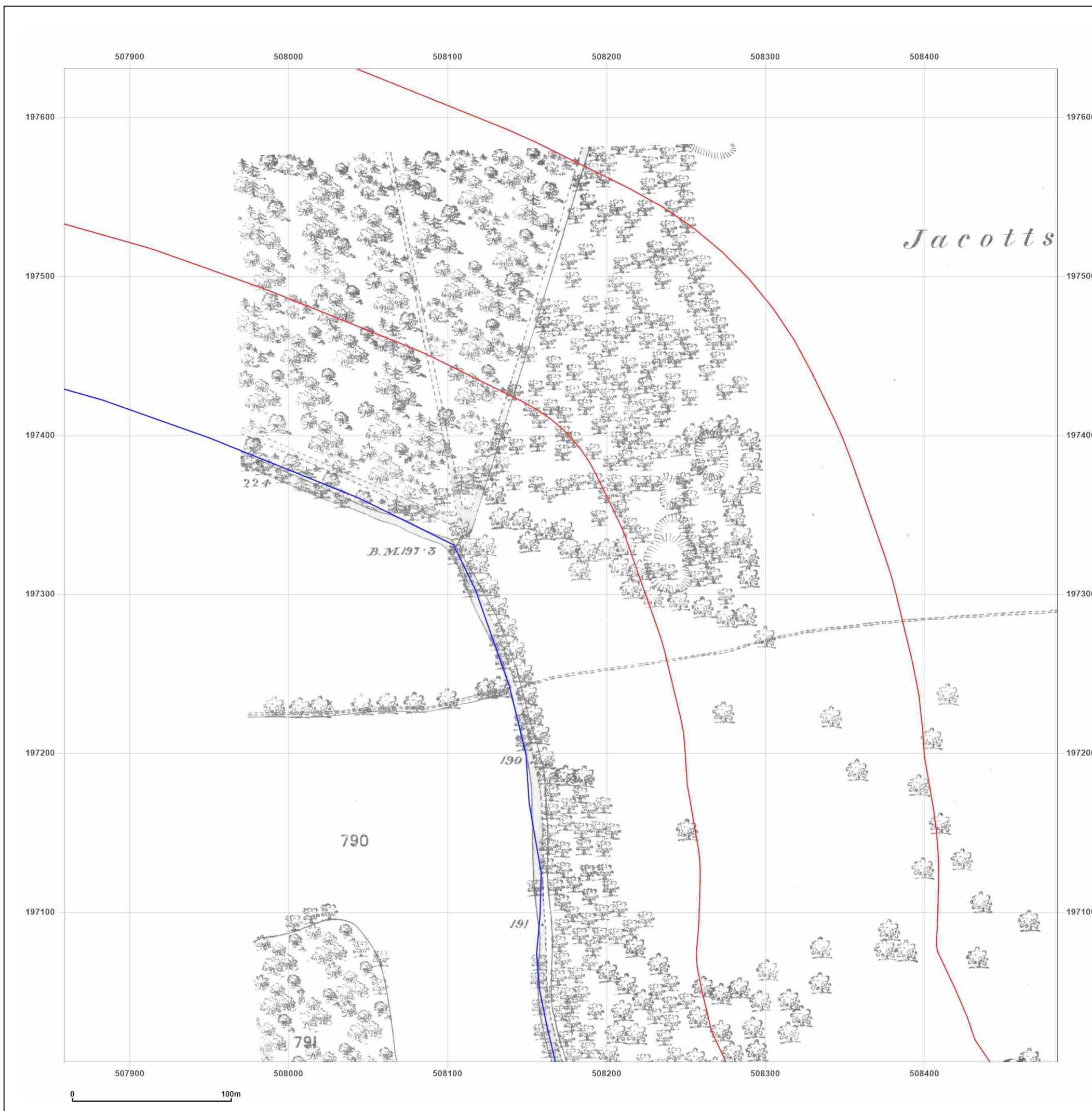


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3JQ

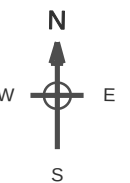
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Grid Ref: 508171, 197318

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500

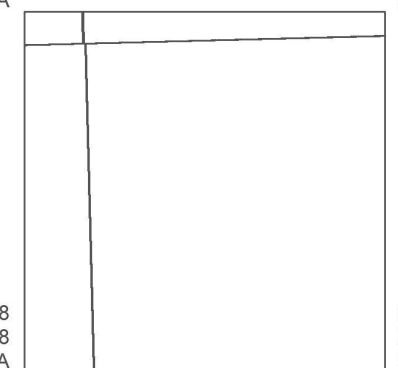


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Edition N/A
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Levelled N/A

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Revised 1898
Edition N/A
Copyright N/A
Levelled N/A

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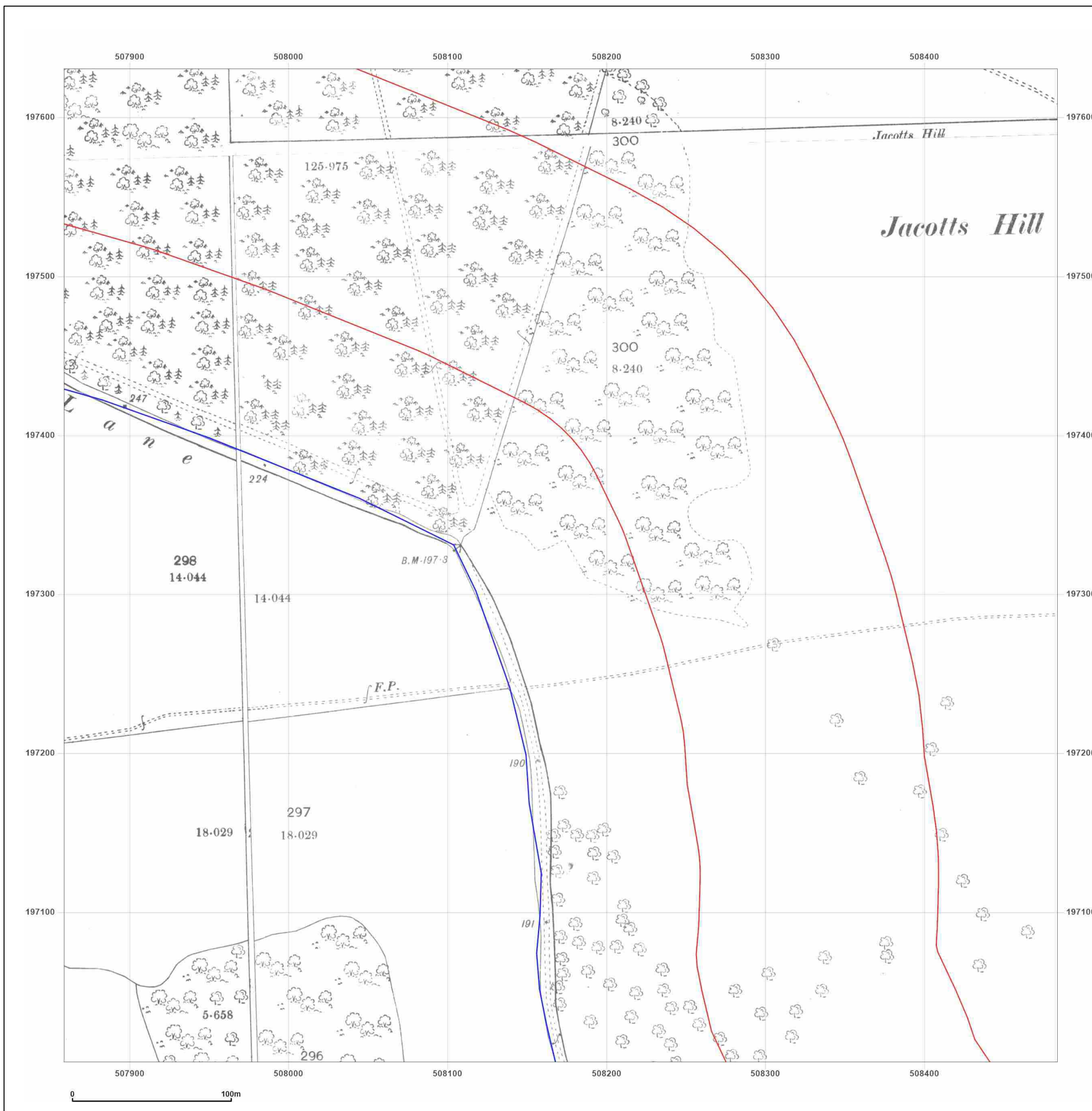


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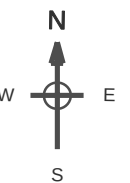
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Map Name: County Series

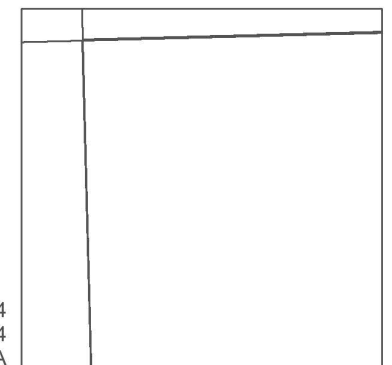
Map date: **1914**

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1914
Edition N/A
Copyright N/A
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Edition N/A
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Revised 1914
Edition N/A
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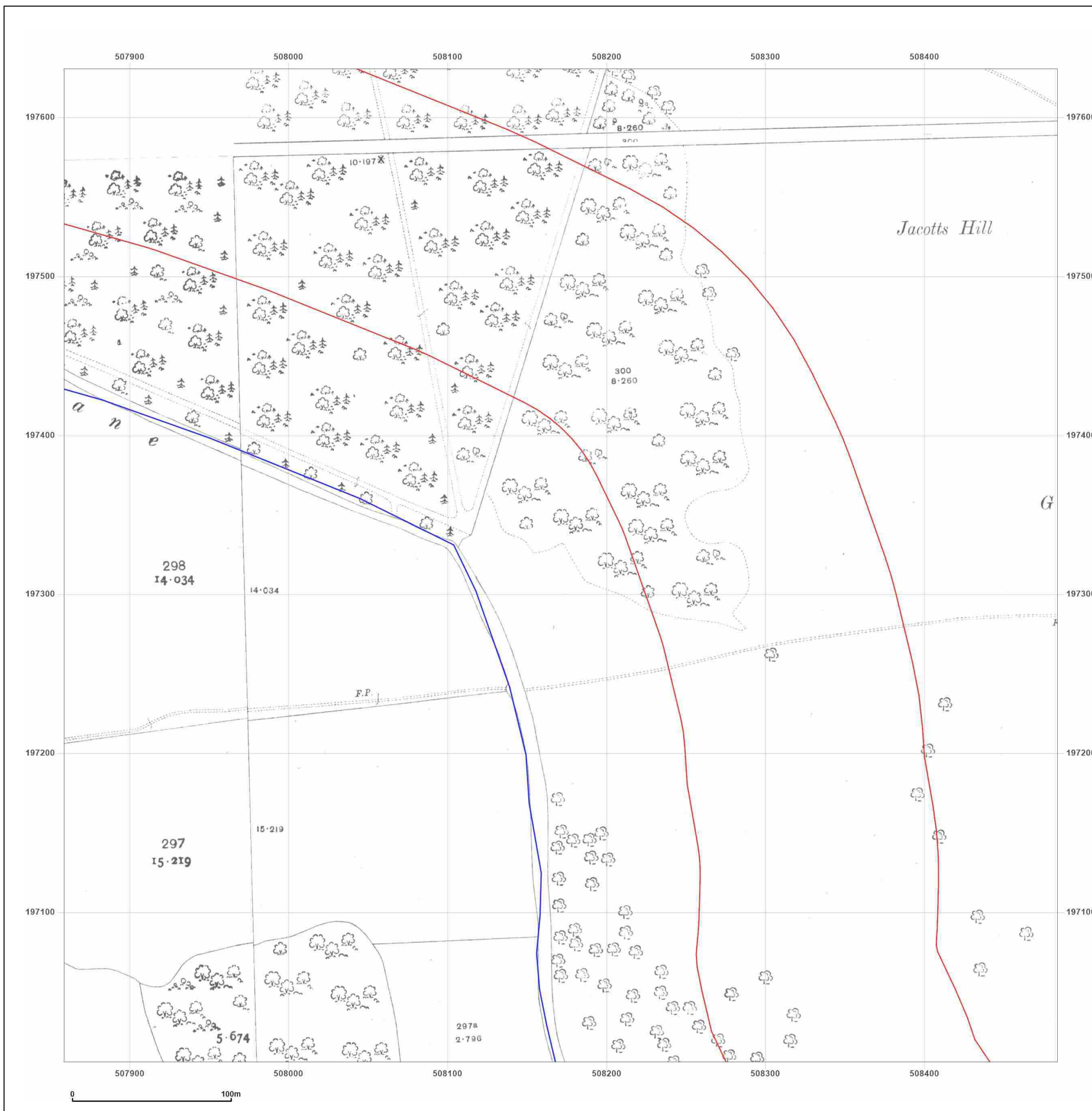


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3JQ

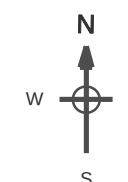
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Map Name: County Series

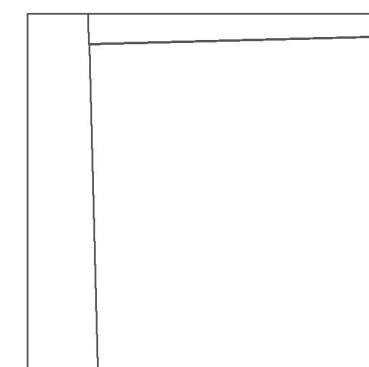
Map date: **1939-1940**

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1939
Revised 1939
Edition N/A
Copyright N/A
Levelled N/A



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

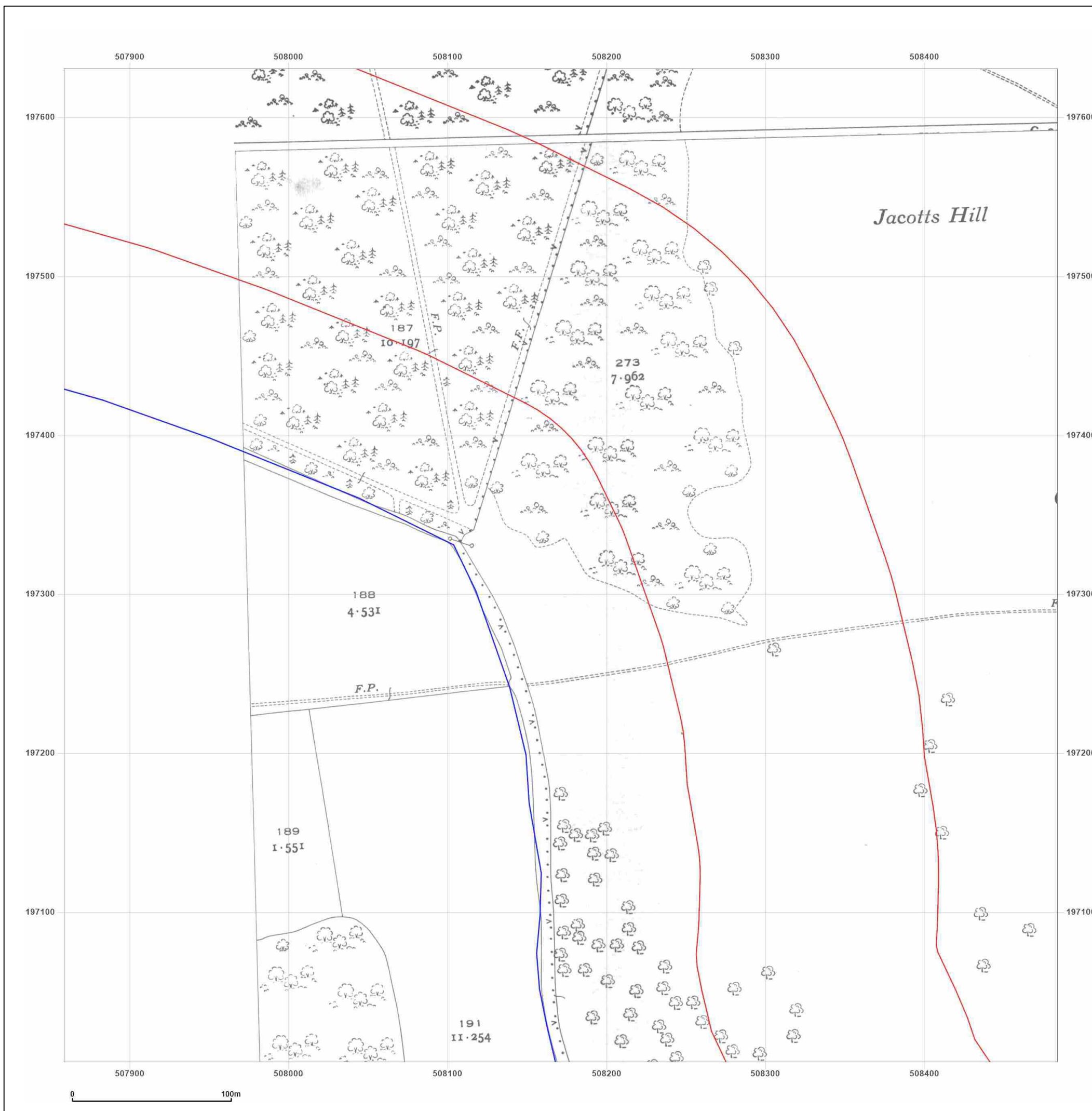


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_2_2
Grid Ref: 508171, 197318

Map Name: National Grid

Map date: **1958-1960**

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1956

Surveyed 1958
Revised 1960
Edition 1961
Copyright 1961
Levelled 1956

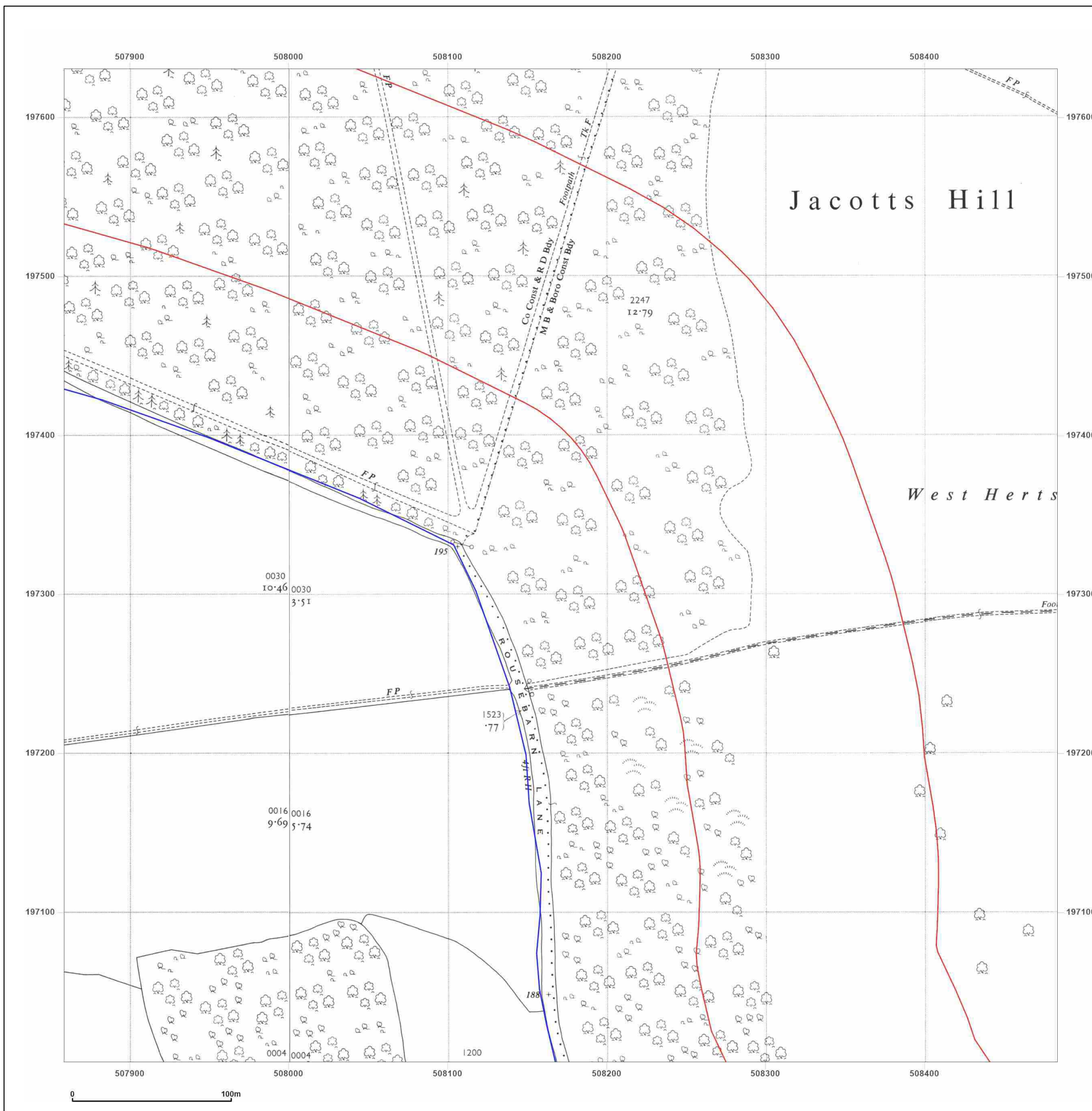


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_LS_2_2
Grid Ref: 508171, 197318

Map Name: National Grid

Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500



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Edition N/A
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Surveyed N/A
Revised N/A
Edition N/A
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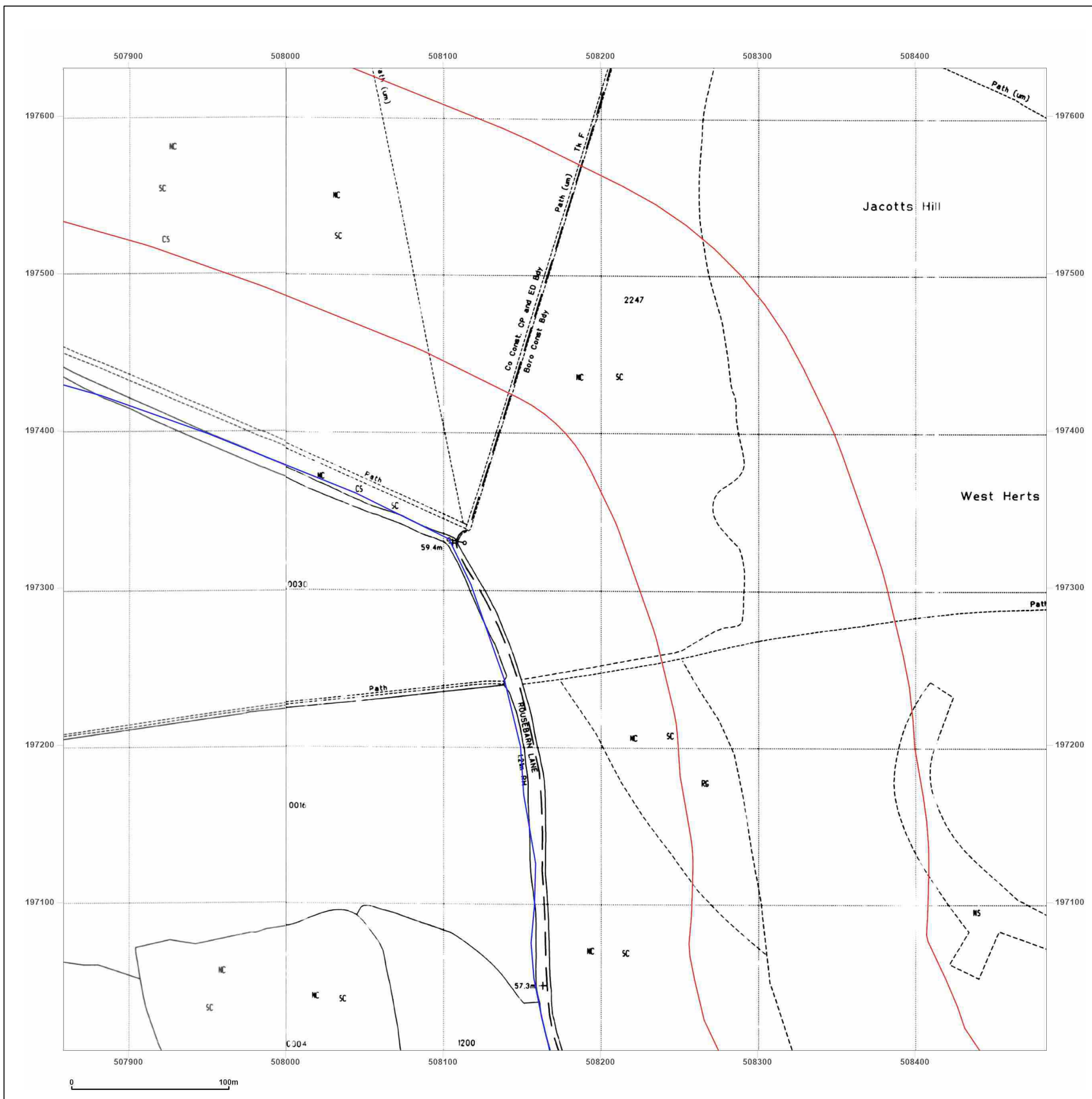


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_Landline_1_1
Grid Ref: 507559, 196706

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003

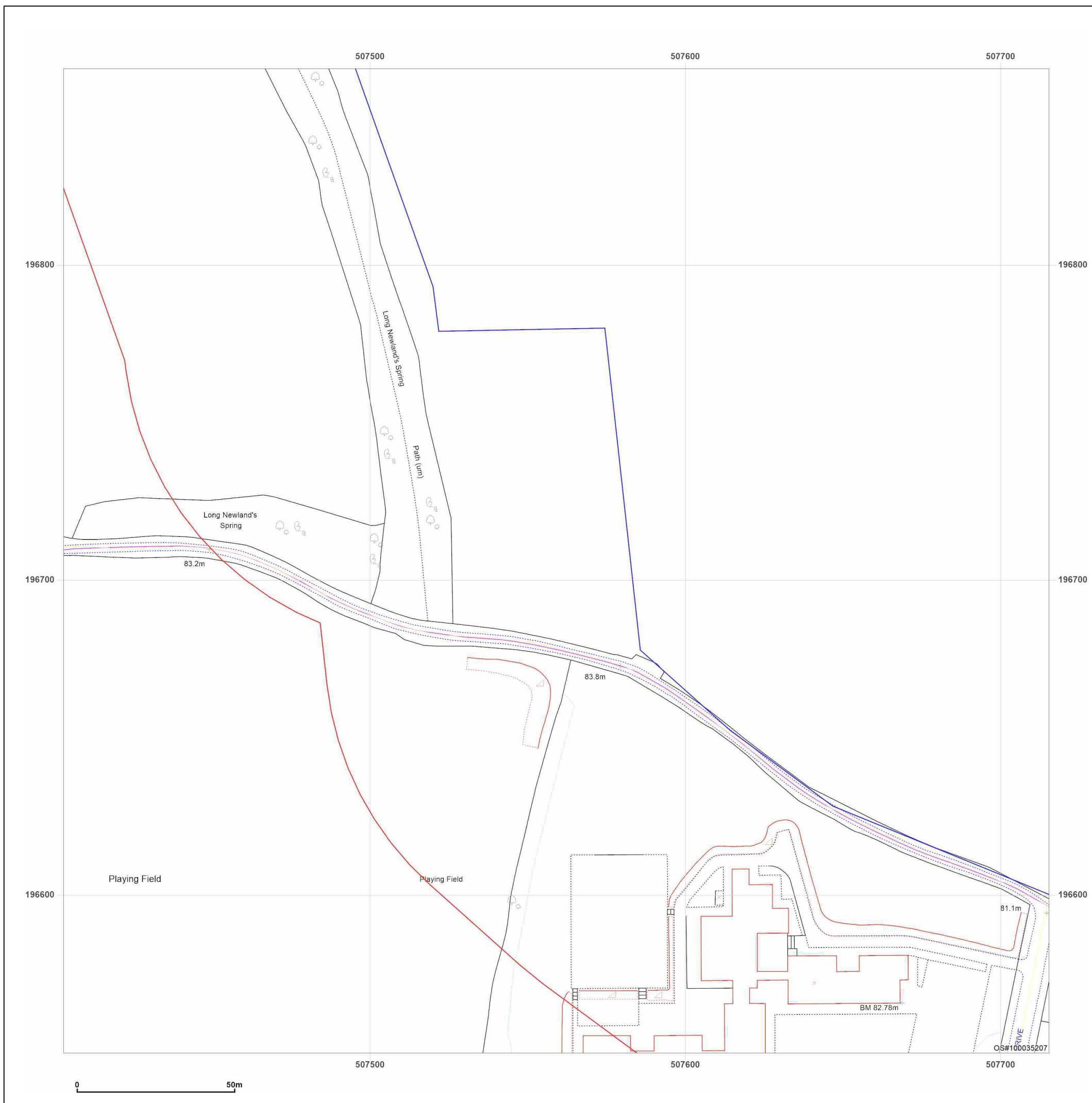


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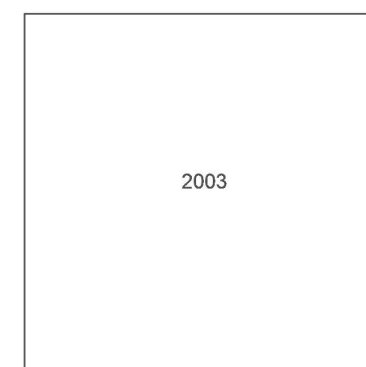
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Map Name: LandLine

Map date: 2003

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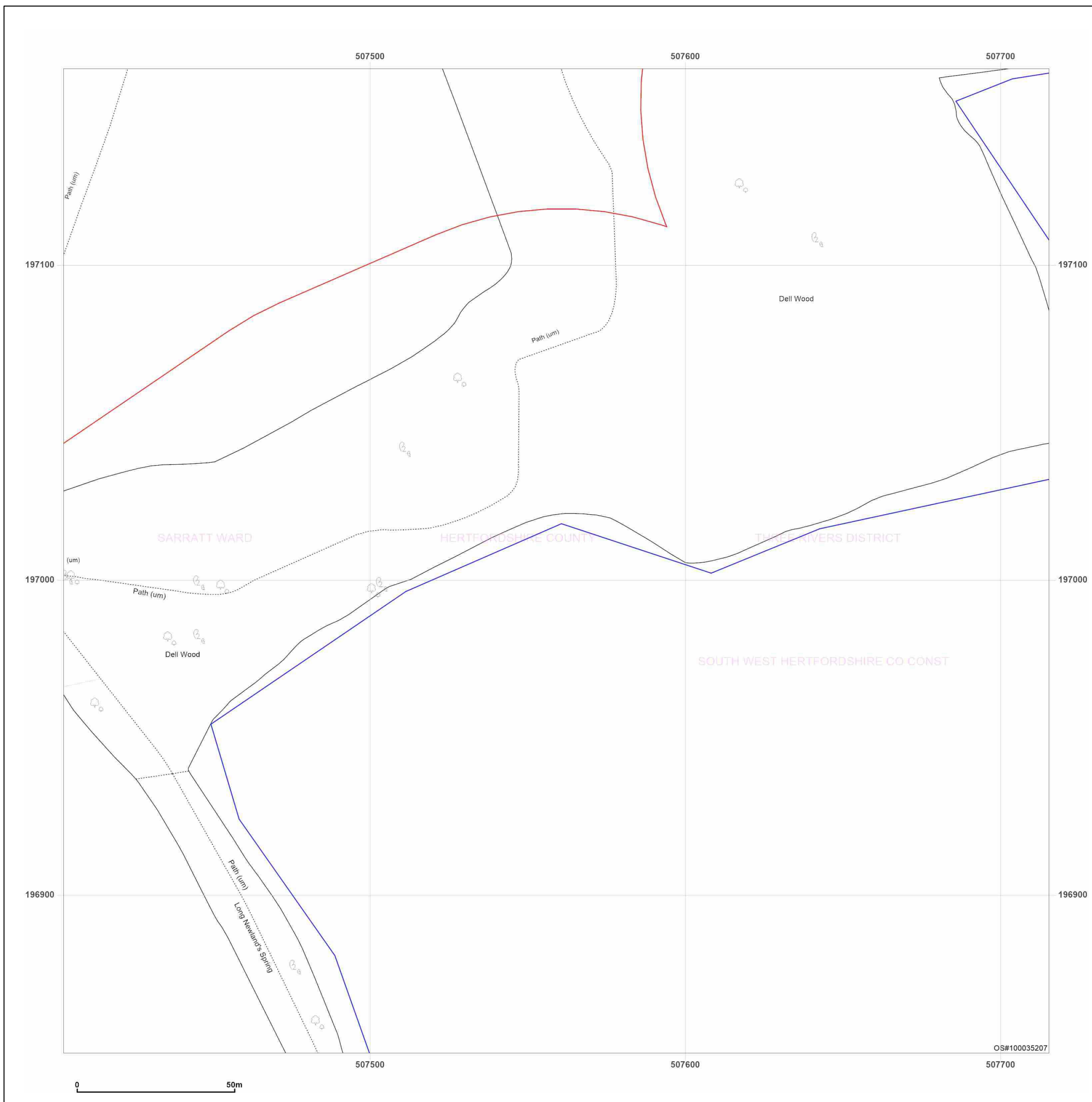


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GREEN, HERTFORDSHIRE, WD3
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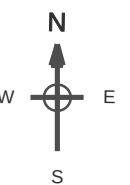
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Grid Ref: 507559, 197306

Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250



2003

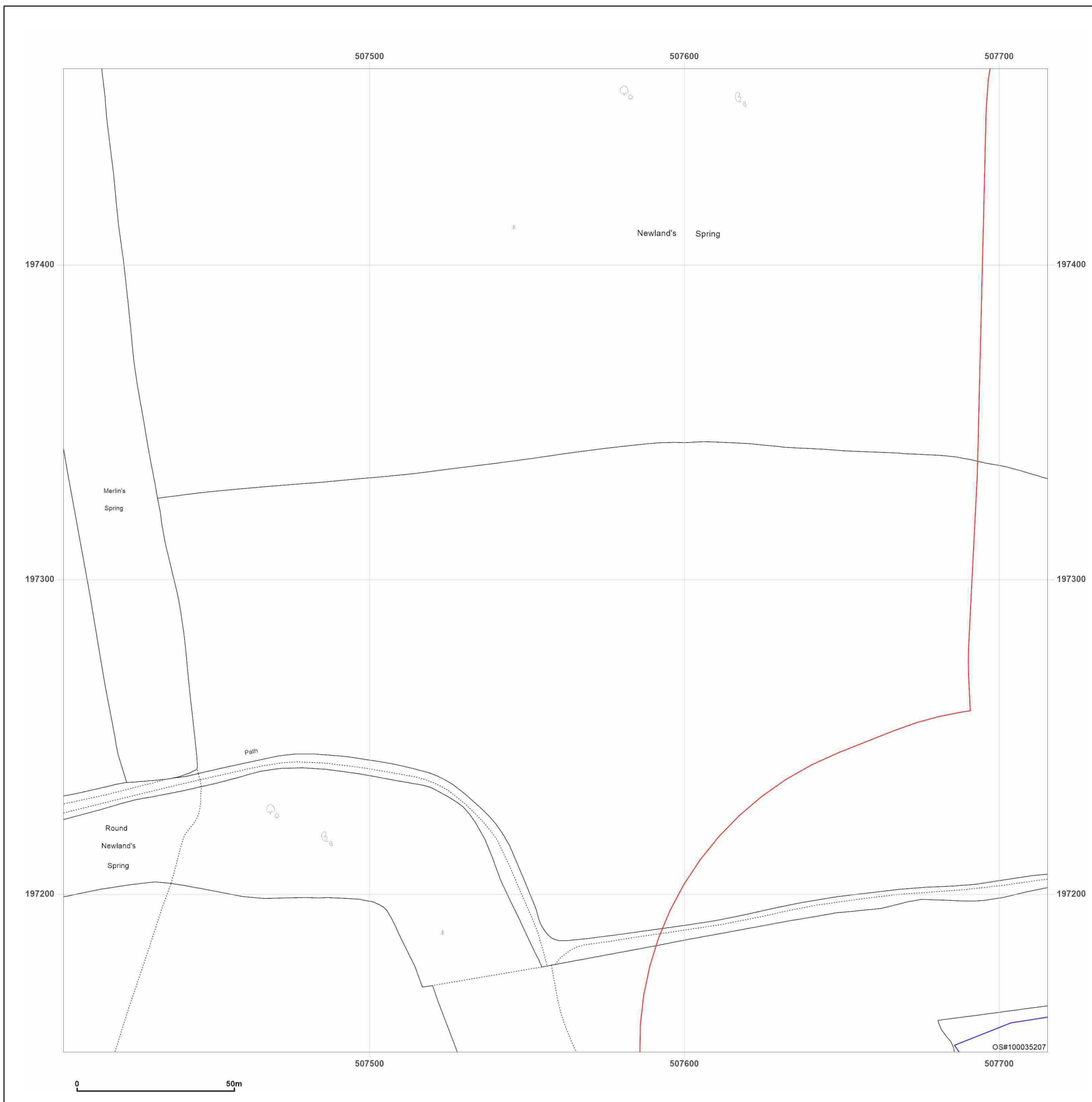


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GREEN, HERTFORDSHIRE, WD3
3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_Landline_2_1
Grid Ref: 507859, 196706

Map Name: LandLine

Map date: **2003**

Scale: 1:1,250

Printed at: 1:1,250



2003

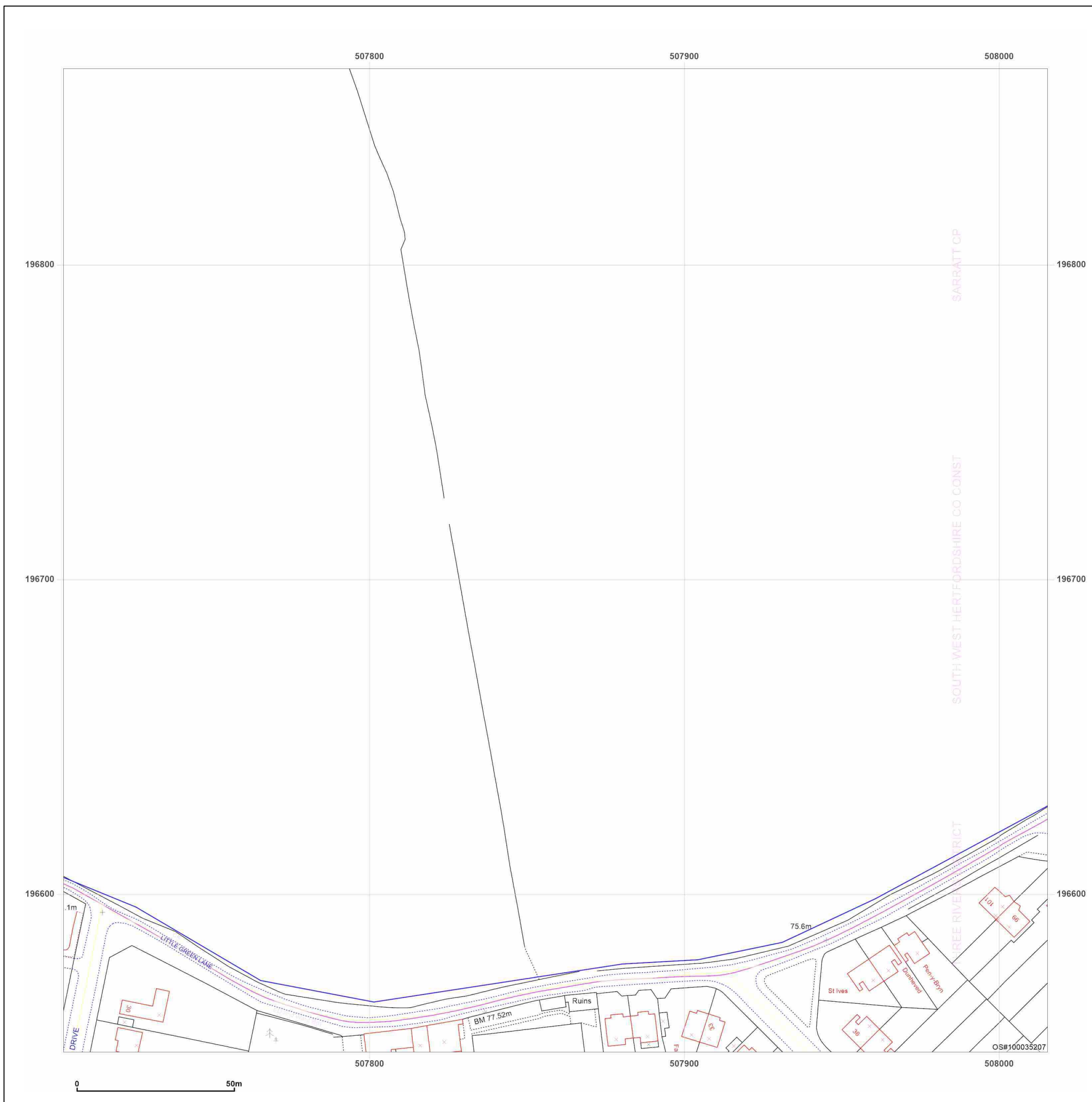


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3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_Landline_2_2
Grid Ref: 507859, 197006

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003

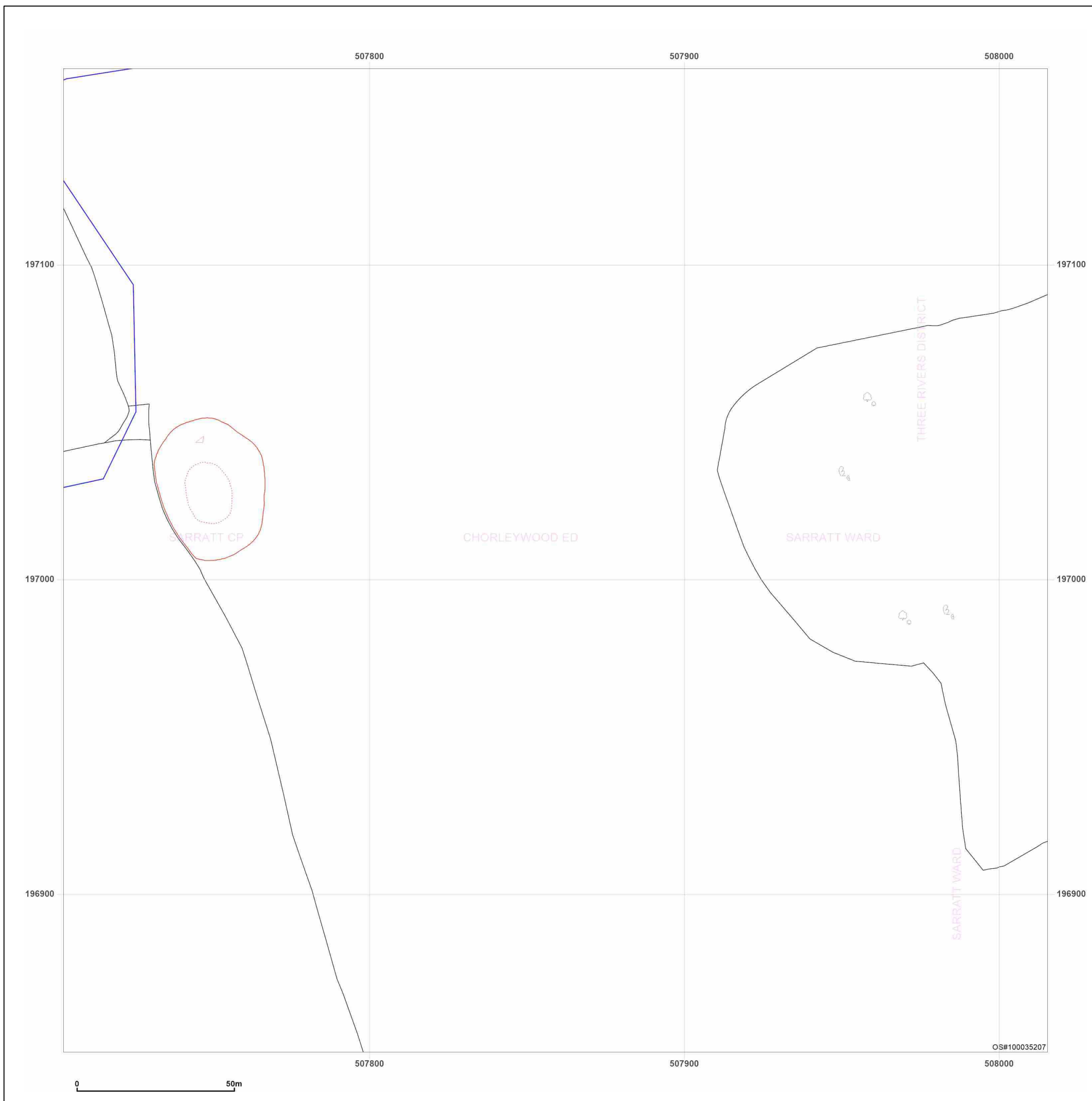


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GREEN, HERTFORDSHIRE, WD3
3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_Landline_2_3
Grid Ref: 507859, 197306

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003

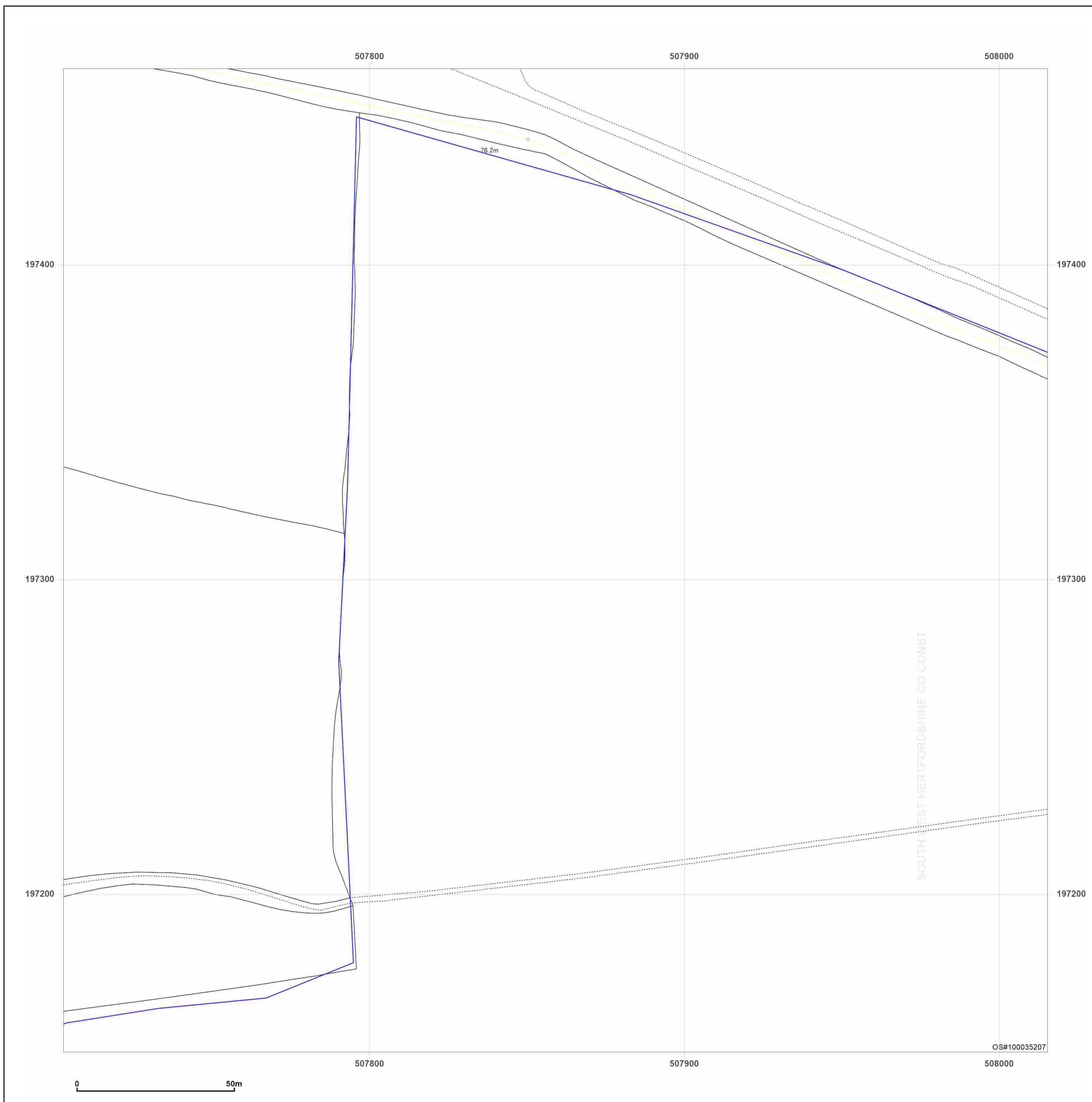


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GREEN, HERTFORDSHIRE, WD3
3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_Landline_3_1
Grid Ref: 508159, 196706

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003



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GREEN, HERTFORDSHIRE, WD3
3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_Landline_3_2
Grid Ref: 508159, 197006

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003

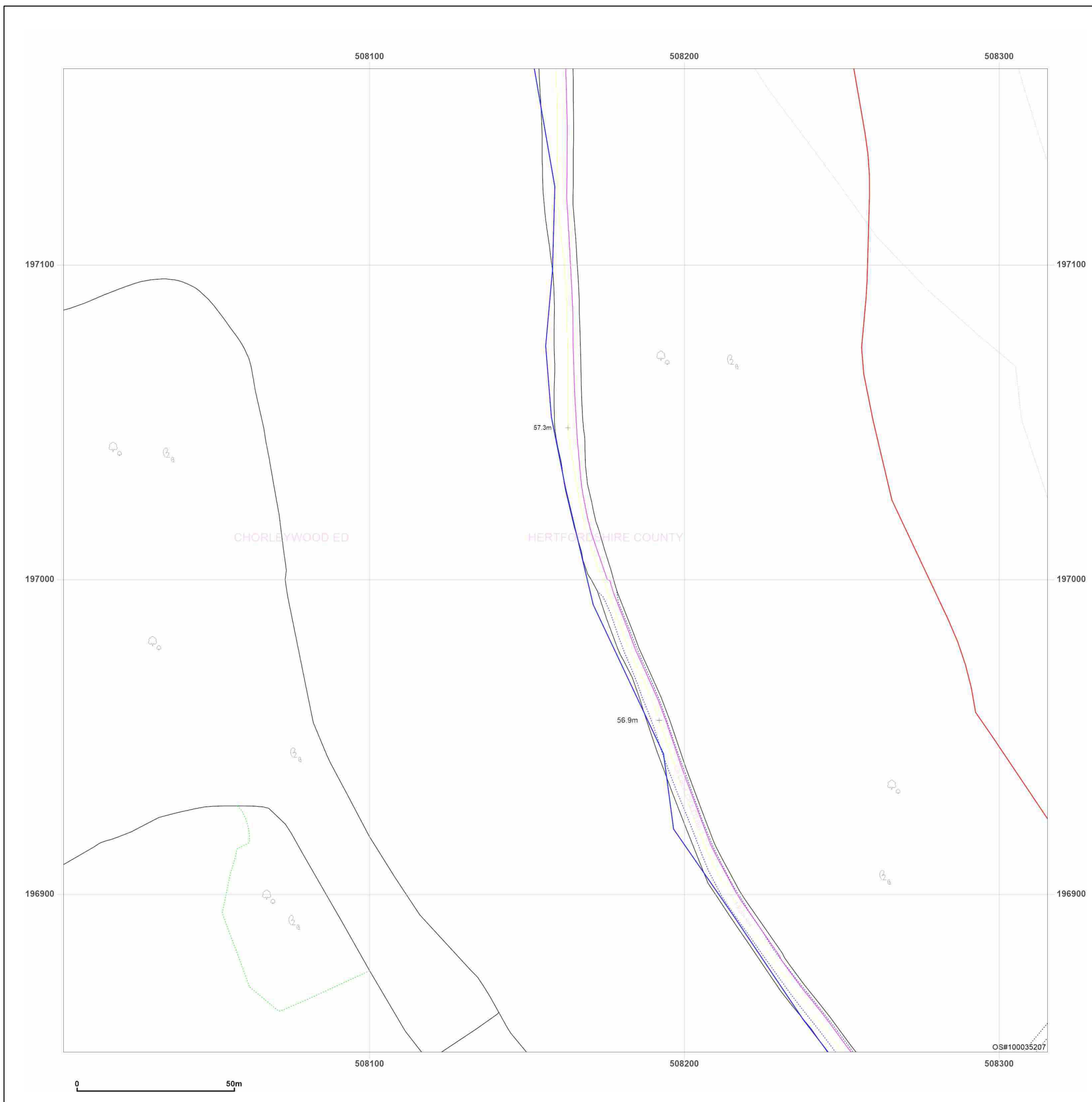


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Site Details:

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LITTLE GREEN LANE, CROXLEY
GREEN, HERTFORDSHIRE, WD3
3JQ

Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK_Landline_3_3
Grid Ref: 508159, 197306

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

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2003

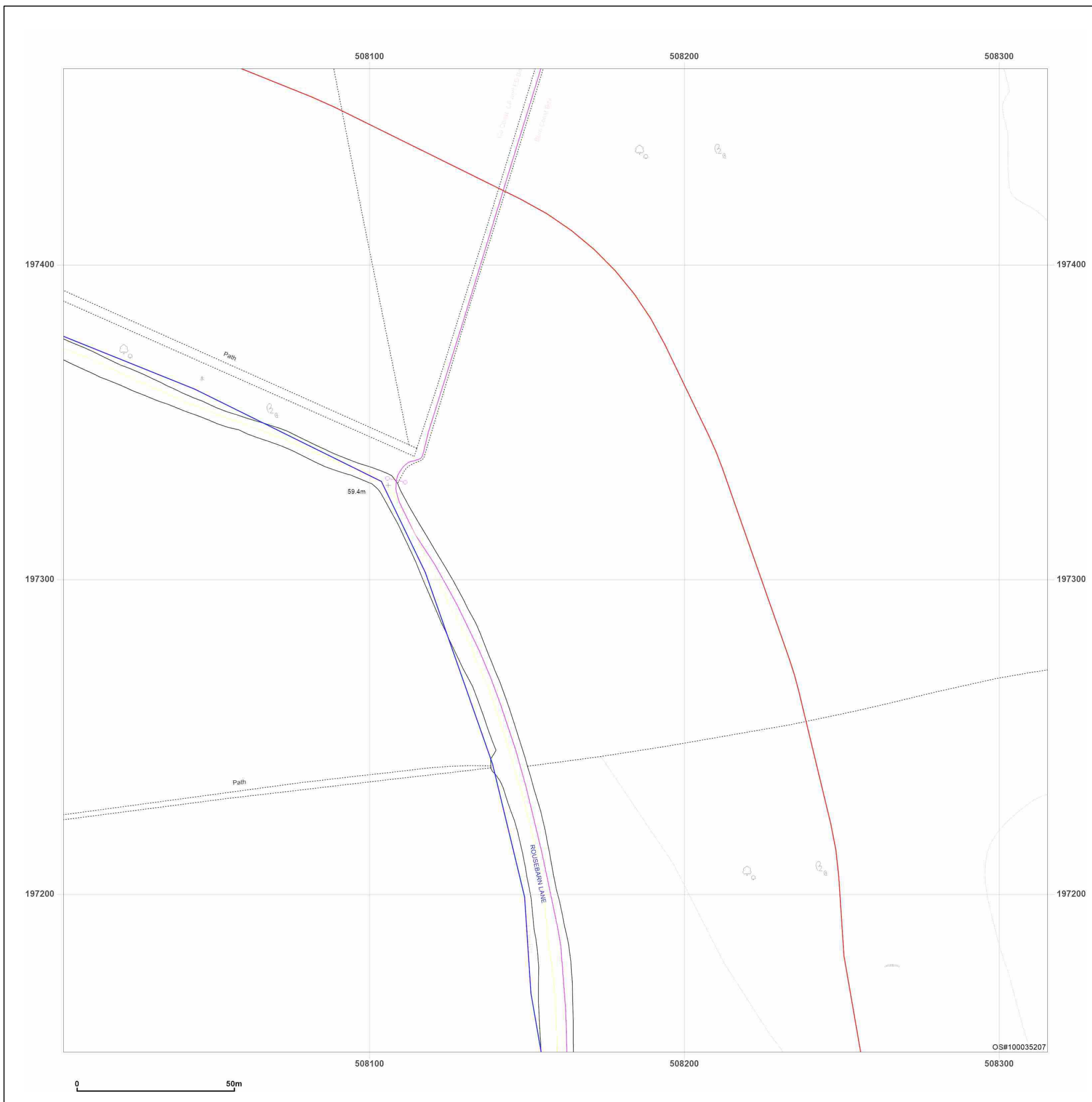


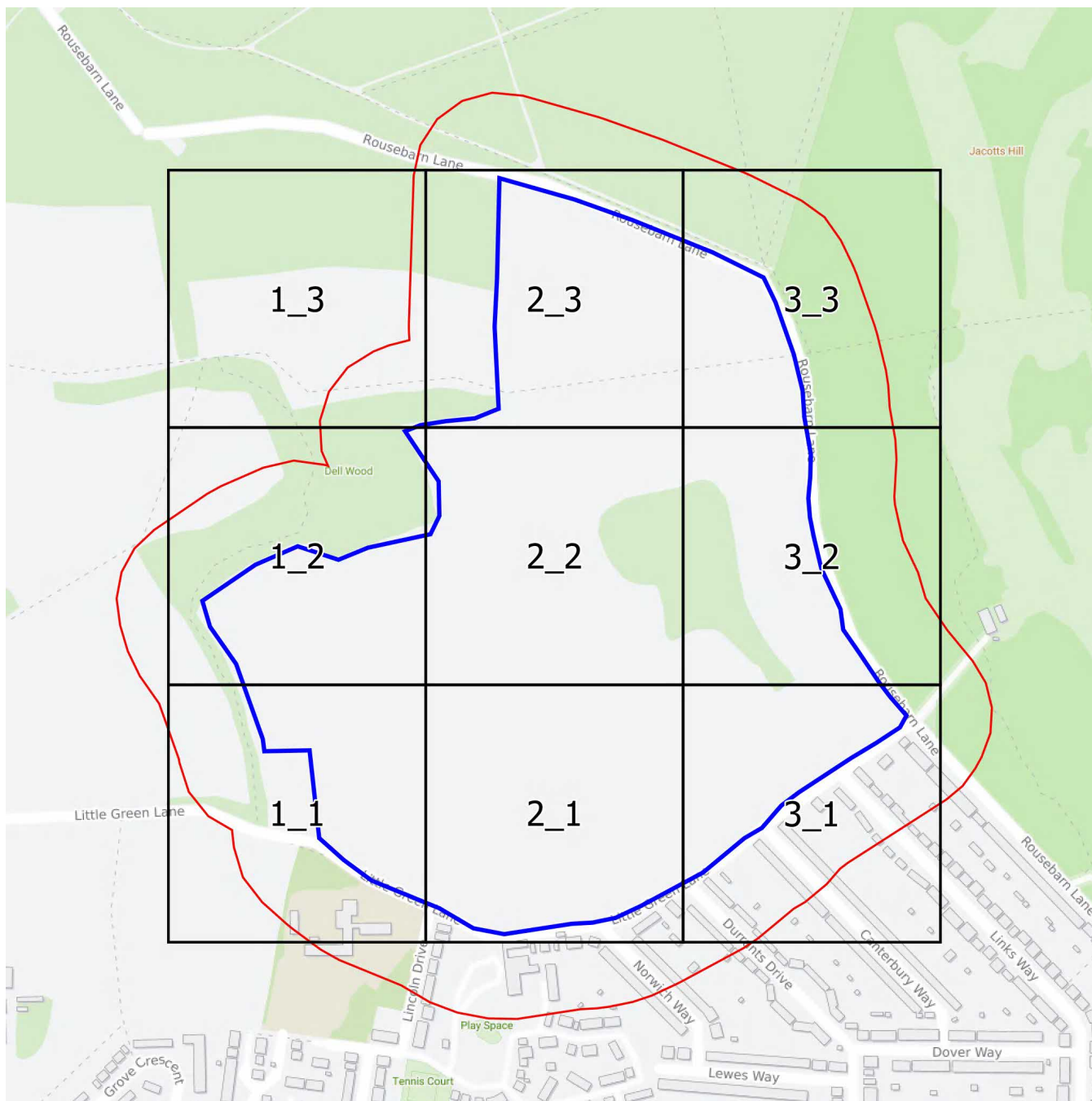
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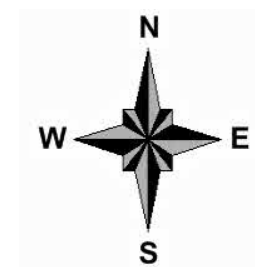
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Report Ref: GS-MM2-9GB-2OE-TRK
Grid Ref: 507859, 197006

Map Name: County Series

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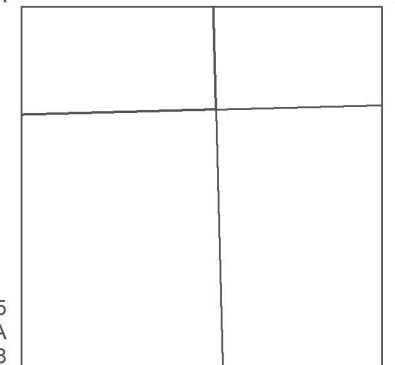
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Surveyed 1872
Revised 1872
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Edition 1868
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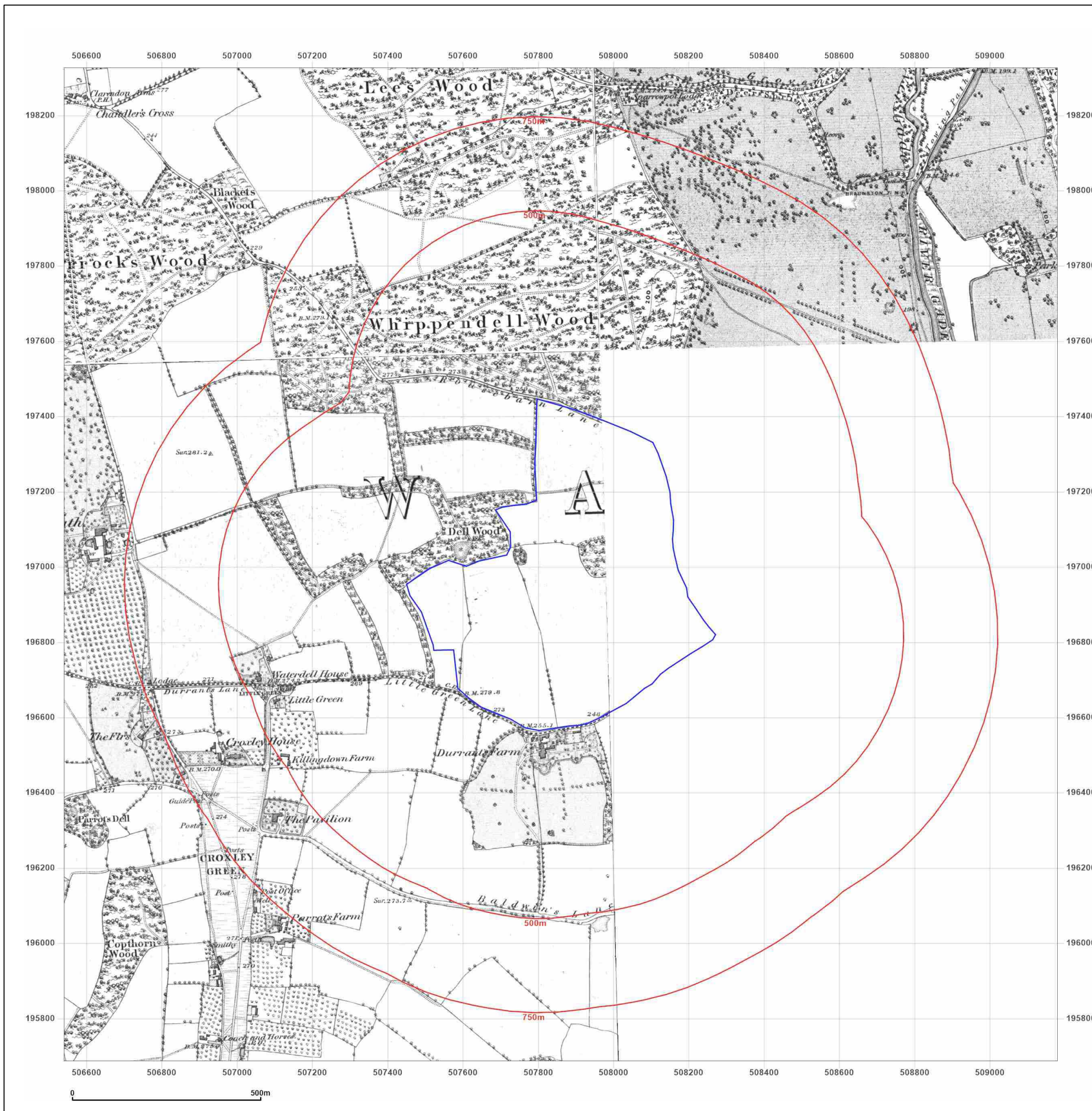


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Report Ref: GS-MM2-9GB-2OE-TRK
Grid Ref: 507859, 197006

Map Name: County Series

Map date: 1896

Scale: 1:10,560

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Surveyed 1871
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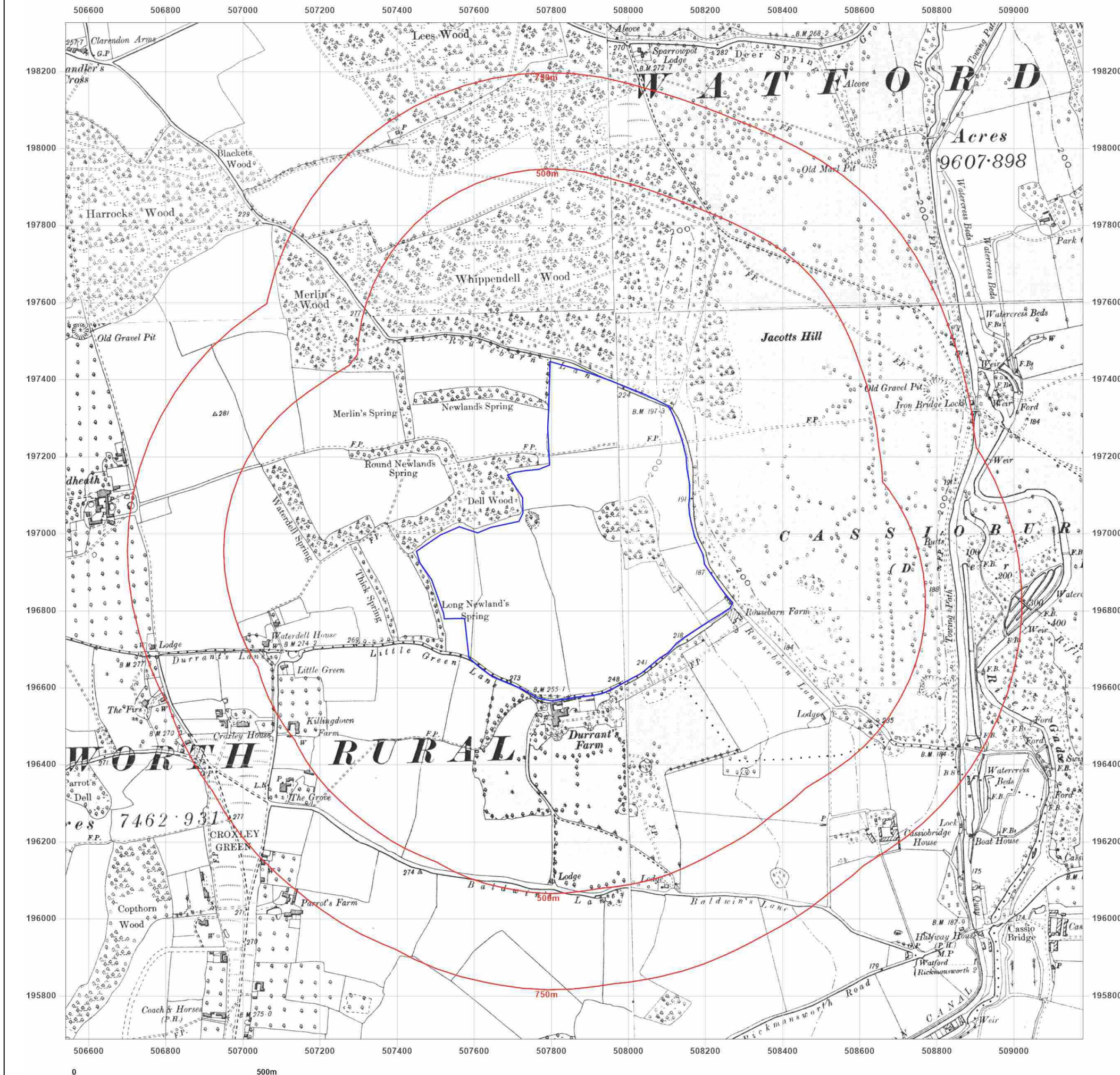


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Map date: 1898-1899

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Edition 1899
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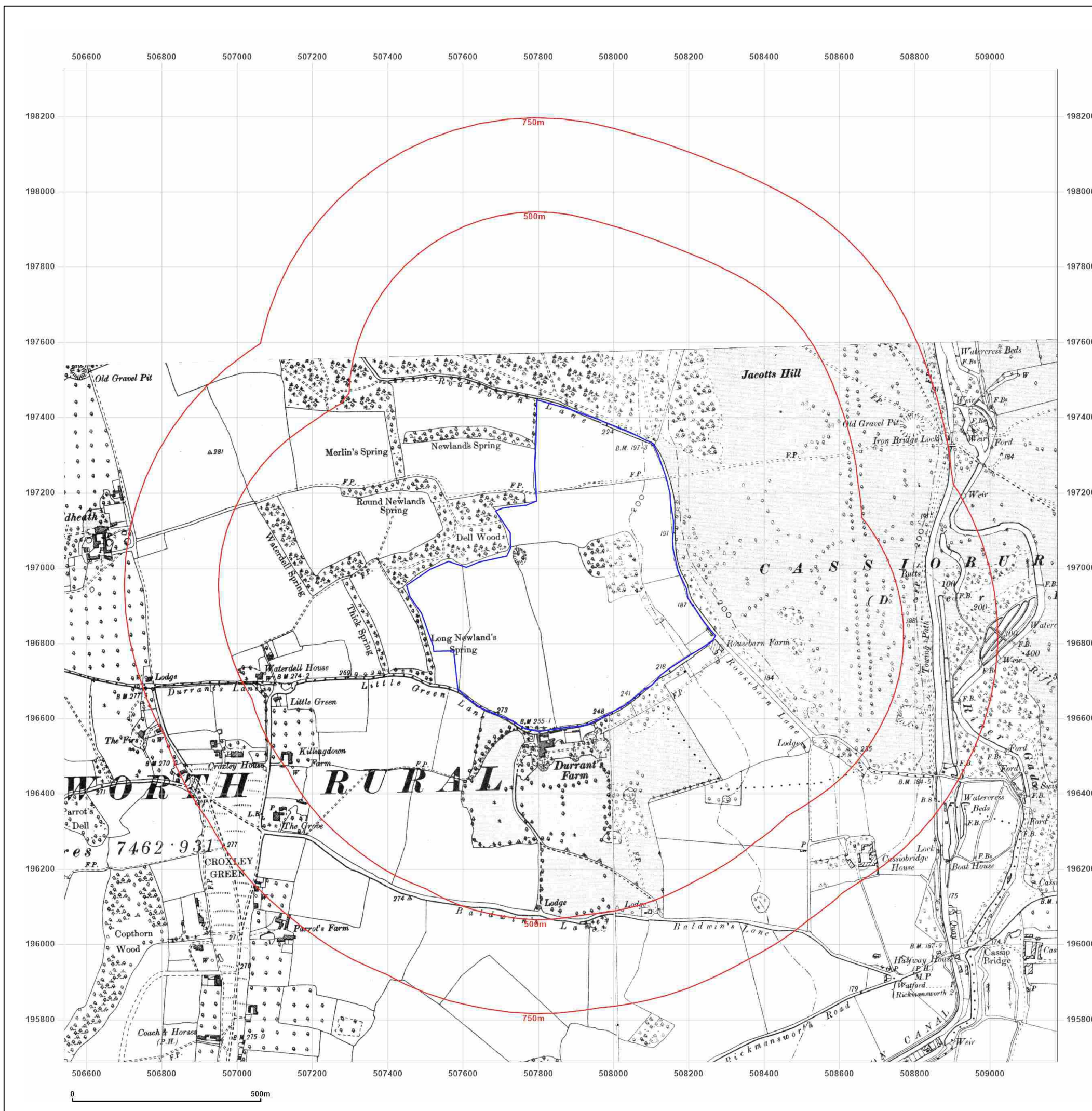


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Grid Ref: 507859, 197006

Map Name: County Series

Map date: 1913

Scale: 1:10,560

Printed at: 1:10,560



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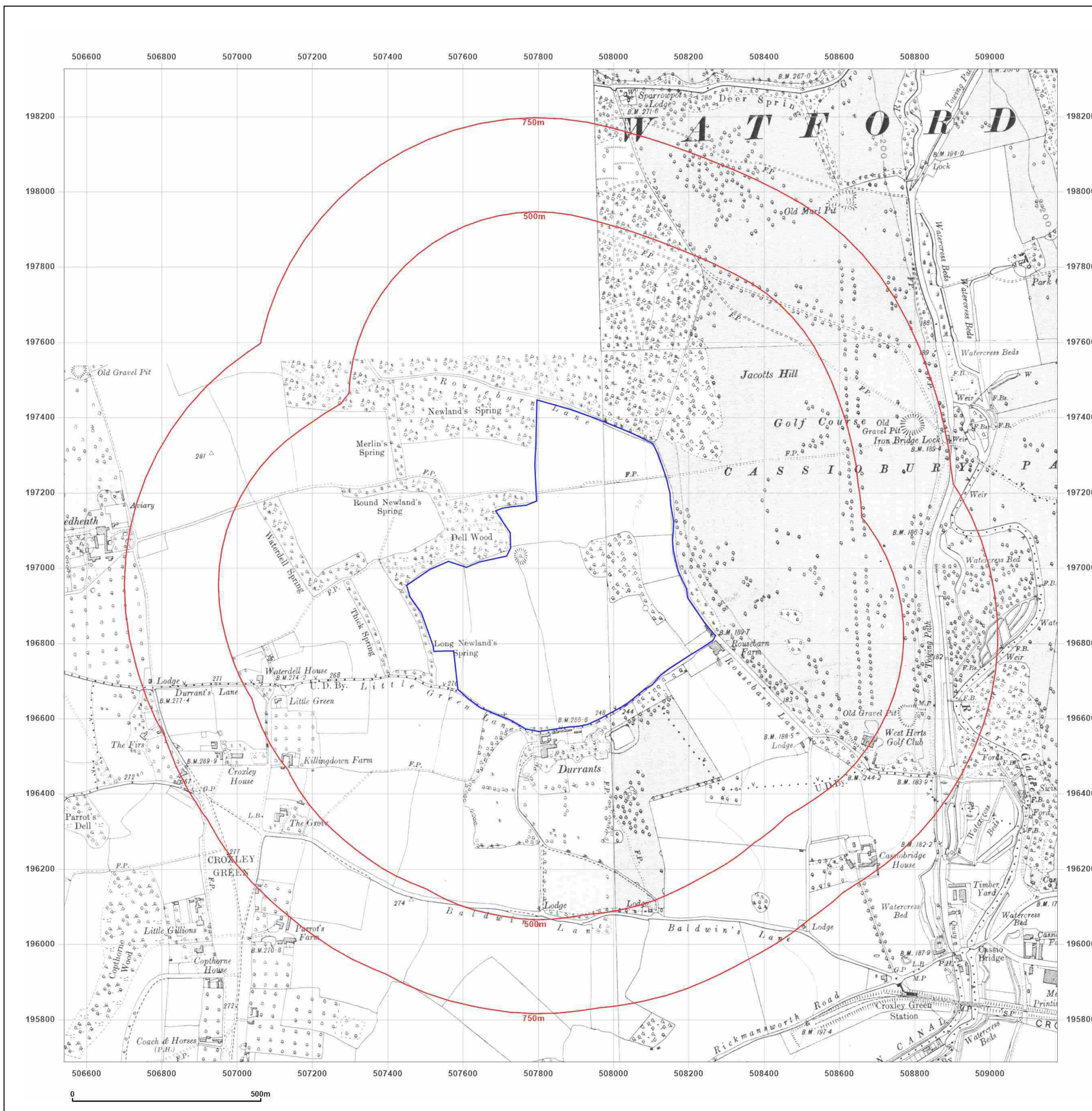


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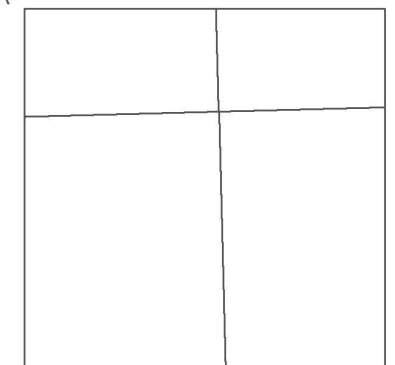
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Printed at: 1:10,560



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Surveyed 1872
Revised 1920
Edition N/A
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Levelled N/A

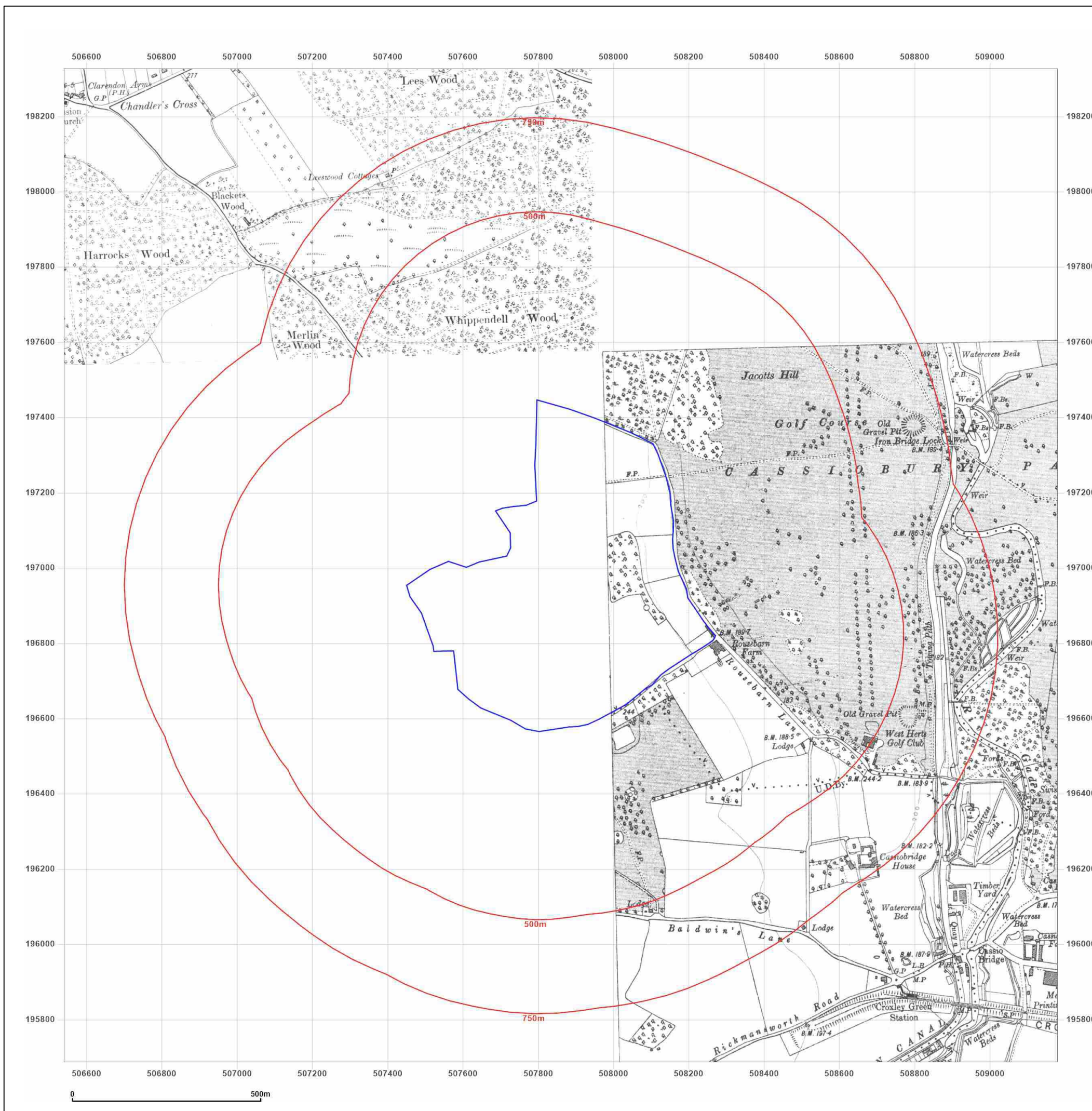


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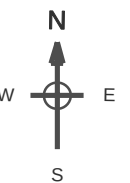
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Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



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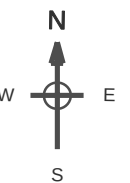
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Grid Ref: 507859, 197006

Map Name: Provisional

Map date: 1960

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Printed at: 1:10,560



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Revised 1955
Edition 1960
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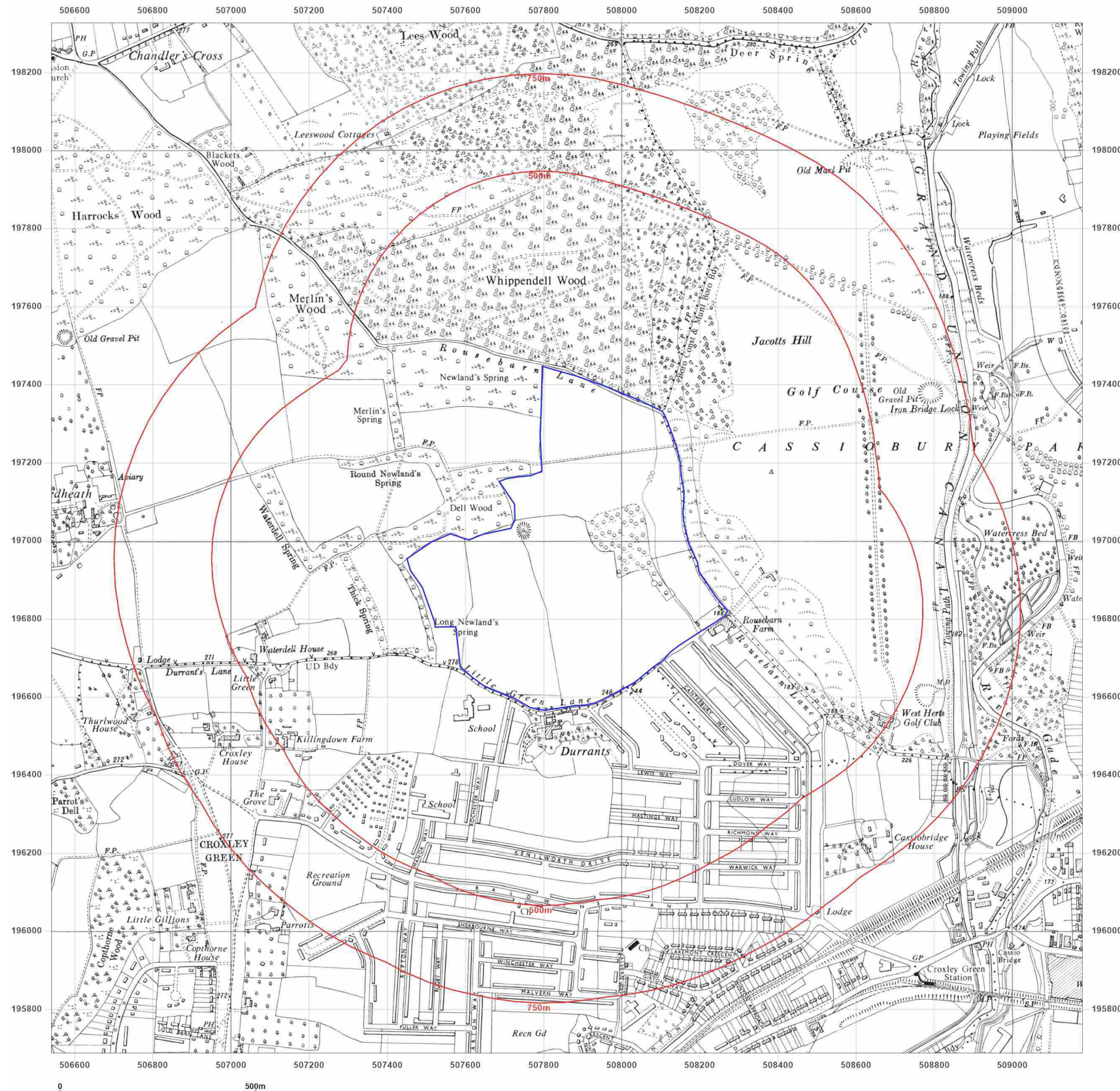


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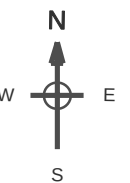
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Printed at: 1:10,560



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Revised 1966
Edition N/A
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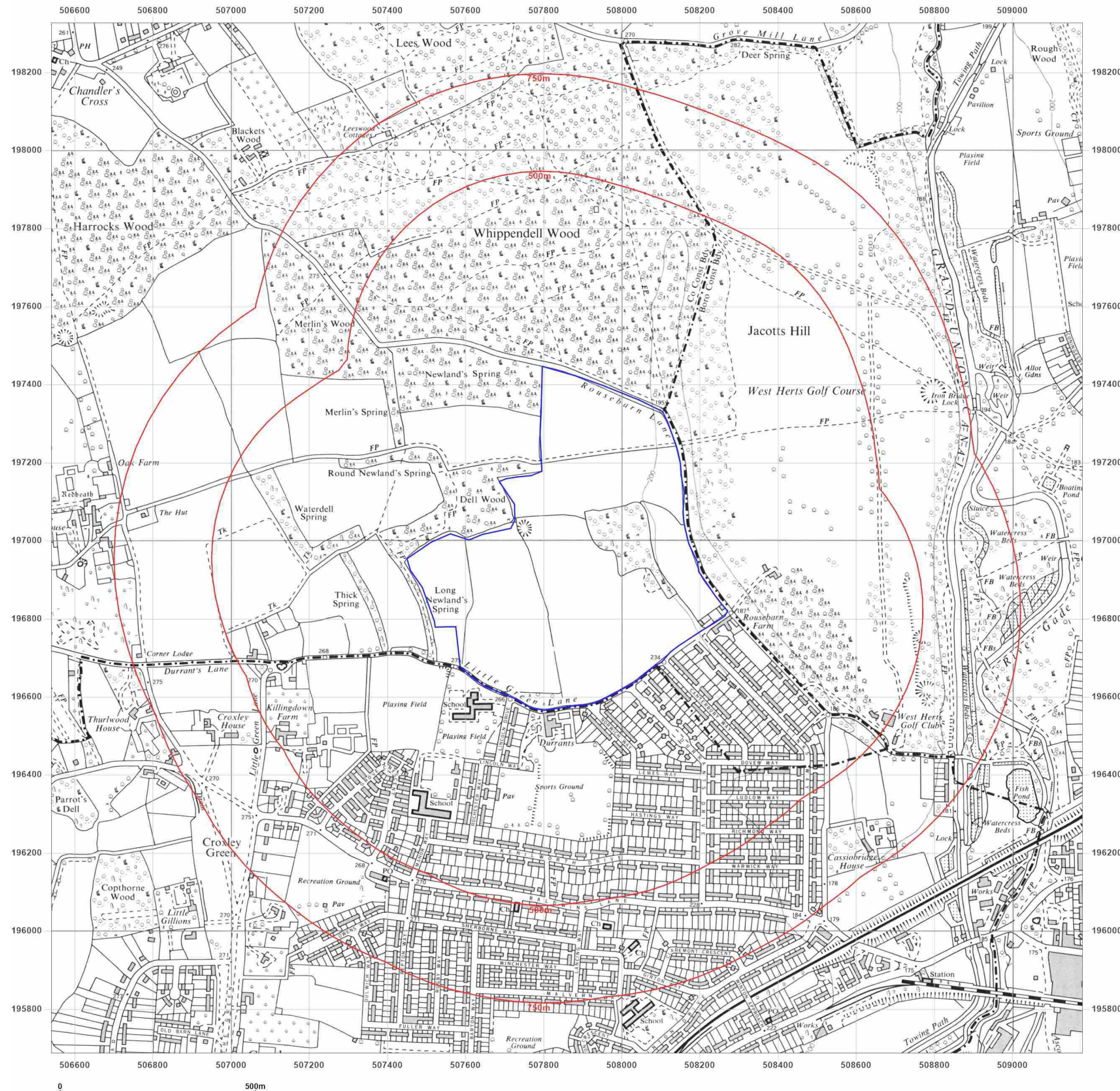


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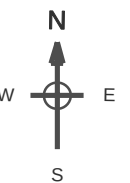
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Map Name: National Grid

Map date: 1978

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1975
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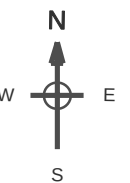
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Map date: 1990

Scale: 1:10,000

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Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK
Grid Ref: 507859, 197006

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

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2001



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Client Ref: 8592
Report Ref: GS-MM2-9GB-2OE-TRK
Grid Ref: 507859, 197006

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010



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Report Ref: GS-MM2-9GB-2OE-TRK
Grid Ref: 507859, 197006

Map Name: National Grid

Map date: **2024**

Scale: 1:10,000

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Appendix 5: Classification of Risk

BWB RISK ASSESSMENT CLASSIFICATION (REFERENCE CIRIA C552, *CONTAMINATED LAND RISK ASSESSMENT: A GUIDE TO GOOD PRACTICE*, 2001)

CIRIA C552, *Contaminated Land Risk Assessment A Guide to Good Practice*, 2001 sets out a methodology for estimating risk. The methodology for risk evaluation is a qualitative method for interpreting the output for the risk estimation stage of the assessment. It involves the classification of the:

- Magnitude of the potential consequence (severity) of risk occurring; and
- Magnitude of the probability (likelihood) of the risk occurring.

The classification of consequence and probability are replicated in **Table 1** and **Table 2**, respectively.

Table 1: Classification of Consequence

Classification	Definition	Examples
Severe (Sv)	Short term (acute) risk to human health likely to result in “significant harm” as defined by the Environment Protection Act 1990, Part IIA. Short term risk of pollution of sensitive water resource. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium (Md)	Chronic damage to Human Health (“significant harm”). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of a contaminant from site exceeding the generic or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of species within a designated nature reserve.
Mild (Mi)	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor (Mr)	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by measures such as protective clothing etc.). Easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentration that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

The classification of consequence does not take into account the probability of the consequence being realised. Therefore, there may be more than one consequence for a particular pollutant linkage. Both a severe and medium classification can result in death.

Severe relates to short term (acute) risk while medium relates to long term (chronic) risk. Mild relates to significant harm but to less sensitive receptors. Minor classification relates to harm which is not significant but could have a financial cost.

Table 2: Classification of Probability

Classification	Definition
High likelihood (Hi)	There is a pollutant linkage and an event that either appears very likely in the short term and almost inevitable in the long term, or there is evidence at the receptor of harm or pollution.
Likely (Li)	There is a pollutant linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood (Lw)	There is a pollutant linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely (Ui)	There is a pollutant linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

The classification gives a guide as to the severity and consequence of identified risk when compared with other risk presented on the site. It should be noted that if a risk is identified it cannot be classified as “no risk” but as “very low risk”. Differing stakeholders may have a different view on the acceptability of a risk.

Once the consequence and probability have been classified these can be compared using a matrix to identify an overall risk category, as shown in **Table 3**. These categories and the actions required are categorised in **Table 4**.

Table 3: Risk Evaluation Matrix

Consequence		Severe (Sv)	Medium (Md)	Mild (Mi)	Minor (Mr)
Probability	High likelihood (Hi)	Very High Risk (VH)	High Risk (H)	Moderate Risk (M)	Mod/Low Risk (M/L)
	Likely (Li)	High Risk (H)	Moderate Risk (M)	Mod/Low Risk (M/L)	Low Risk (L)
	Low likelihood (Lw)	Moderate Risk (M)	Mod/Low Risk (M/L)	Low Risk (L)	Very Low Risk (VL)
	Unlikely (Ui)	Mod/Low Risk (M/L)	Low Risk (L)	Very Low Risk (VL)	Very Low Risk (VL)

Table 4: Risk Categorisations

Very High Risk (VH)	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High Risk (H)	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer-term.
Moderate Risk (M)	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 (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low Risk (L)	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 (VL)	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Reference:

CIRIA C552 *Contaminated land risk assessment. A guide to good practice*. Rudland, D J, Lancefield, R M, Mayell, P N, 2001.

