Tritax Symmetry (Hinckley) Limited

HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE

The Hinckley National Rail Freight Interchange Development Consent Order

Project reference TR050007

ES Appendix 15.2: Preliminary Ground Investigation Report (Part 1 of 2)

Report Prepared by: Hydrock

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Revision: 01

June 2019

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 Regulation 5(2)(a)

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 Regulation 14

This document forms a part of the Environmental Statement for the Hinckley National Rail Freight Interchange project.

Tritax Symmetry (Hinckley) Limited (TSH) has applied to the Secretary of State for Transport for a Development Consent Order (DCO) for the Hinckley National Rail Freight Interchange (HNRFI).

To help inform the determination of the DCO application, TSH has undertaken an environmental impact assessment (EIA) of its proposals. EIA is a process that aims to improve the environmental design of a development proposal, and to provide the decision maker with sufficient information about the environmental effects of the project to make a decision.

The findings of an EIA are described in a written report known as an Environmental Statement (ES). An ES provides environmental information about the scheme, including a description of the development, its predicted environmental effects and the measures proposed to ameliorate any adverse effects.

This document was prepared by Hydrock in 2019 as part of the baseline gathering exercise for the HNRFI. Since this report was prepared amendments have been made to the defined Order Limits as a result design development. Having reviewed the content against the revised Order Limits as submitted in the DCO, the content remains applicable and as such this appendix is used to support the assessment in Chapter 15 and 16 (doc ref 6.1.15 and 6.1.16) of the ES.

Further details about the proposed Hinckley National Rail Freight Interchange are available on the project website:

http://www.hinckleynrfi.co.uk/

The DCO application and documents relating to the examination of the proposed development can be viewed on the Planning Inspectorate's National Infrastructure Planning website:

https://infrastructure.planninginspectorate.gov.uk/projects/east-midlands/hinckley-national-rail-freight-interchange/

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Author:	Andrew Fitzpatrick BSc (Hons) MSc FGS
Checked:	Julian Charlesworth BEng FGS
Approved:	Chris Vincett BSc MSc CGeol CSci EurGeol FGS

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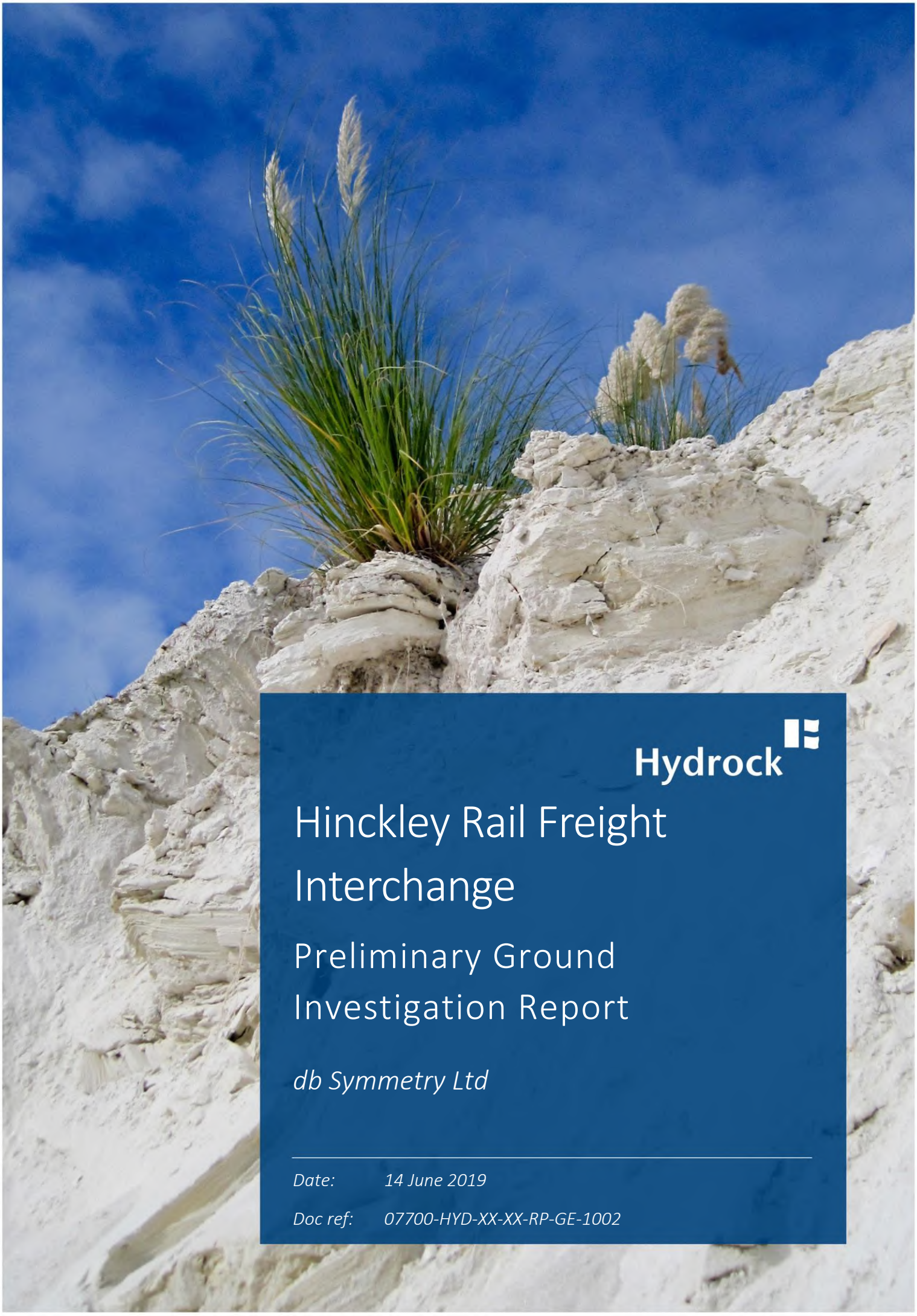

Hydrock

Hinckley Rail Freight Interchange

Preliminary Ground Investigation Report

db Symmetry Ltd

Date: *14 June 2019*

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Checked by		Julian Charlesworth BEng FGS
Approved by		Chris Vincett BSc MSc CGeol CSci EurGeol FGS

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EXECUTIVE SUMMARY

SITE INFORMATION AND SETTING	
Objectives	The objectives of the Phase 2 Preliminary Ground Investigation are to refine the Preliminary Conceptual Ground Model, to indicate the general geo-environmental and geotechnical site conditions, to identify key contamination risks, to identify mitigation requirements likely to be required to enable development and to provide initial geotechnical recommendations for design. This is a Preliminary investigation, designed to provide sufficient information for the Development Consent Order (DCO) process. This will be followed up at a later stage with further phases of more detailed investigation for the purposes of detailed design.
Client	db Symmetry ltd
Site name and location	Hinckley National Rail Freight Interchange (HNRFI). The site comprises approximately 225 Hectares of mainly mixed agricultural land, the southern edge of which is approximately 3km to the north-east of Hinckley, in Blaby District, Leicestershire. The site lies to the north-west of (and includes) Junction 2 of the M69 motorway along the south eastern edge of the site and to the east and south of the Felixstowe to Nuneaton railway line. The National Grid Reference of the approximate centre of the site is 446221E, 294902N. To aid the description of the site in this report, it has been divided into five zones, identified as Zones 1 to 5 as shown on Drawing RFI-HYD-XX-ZZ-DR-GE-1005. Zones 1 to 4 generally comprise agricultural land with a number of farms. A railway line is located along the north western boundary. Zone 5 is predominately occupied by the M69 motorway with fields located adjacent to the highway infrastructure in the southern part of Zone 5.
Proposed development	The HNRFI project includes the following proposed elements. • Railway sidings and freight transfer area alongside the two-track railway between Hinckley and Leicester. This line forms a part of Network Rail's 'F2N' freight route between Felixstowe and Nuneaton. • [warehouses etc] • This is a dedicated road access directly from Junction 2 of the M69 motorway. As a part of the proposals, a northbound off-slip and a southbound on-slip would be added to this junction.
GROUND MODEL	
Desk study summary	The site is an irregular triangular shape, aligned south-west to north-east. The north-western side is generally formed by the Felixstowe to Nuneaton railway line and the south-east side by the M69 motorway. The M69 motorway includes extensions to accommodate specific access and infrastructure arrangements. To the south-west of the site are deciduous woodland including Burbage Wood (SSSI), Aston Firs and Freeholt Wood and two traveller community sites. Field boundaries on the site are in many cases formed by hedges or other boundary markers. The site is rural with a few scattered buildings and individual houses, mostly associated with farms. The site area is approximately 225 hectares (ha) and it currently consists of arable and grazing fields together with associated farm buildings, other residential and commercial buildings, roads and other infrastructure. Review of historical Ordnance Survey data indicates that the site development has comprised sporadic buildings and the Nuneaton railway line since at least 1886. Development on site largely comprised of additional farm buildings until the construction of the M69 motorway circa 1977.

	A non-specialist UXO assessment indicates the bomb risk is low. The recorded geology at the site consists of Alluvium associated with the streams present on site. Bosworth Clay Member, Thrussington Member and Wolston Sand and Gravel are present across most of the site with Mercia Mudstone Group at depth. The streams and watercourses on the site are unnamed and have been identified as tributaries of Thurlaston Brook and the River Soar. Several streams/drainage ditched and ponds are recorded across site.
Ground and groundwater conditions encountered by investigation.	The ground conditions as proven by the investigations undertaken at the site comprise: Topsoil, Made Ground, Bosworth Clay Member, Thrussington Member and Mercia Mudstone. Depths and descriptions are provided in Section 4. Groundwater was encountered in four exploratory positions during fieldwork at between 3.10m bgl and 3.90m bgl. Water levels recorded post-fieldwork range from 0.44m bgl to 4.68m bgl (96.18m OD to 89.98m OD).
GEOTECHNICAL CONCLUSIONS	
Conclusions of geotechnical assessment	Detailed site investigation and geotechnical design is required. Obstructions associated with railway and highway infrastructure should be anticipated. Excavation to proposed founding depth generally should be readily achievable with standard excavation plant. Heavy duty excavation plant/breaking equipment may be required to excavate through any buried construction. Excavations during investigation were generally stable. Water seepages into excavations are likely to be adequately controlled by sump pumping. It is recommended that all Made Ground and Alluvium should be excavated from beneath commercial/industrial buildings due low strength soils and high organic contents. Subject to suitable earthworks being undertaken, foundations are recommended to comprise: • pad foundations are recommended at a depth greater than 1.0m bgl within either engineered fill or natural deposits (excluding alluvium). • permissible net bearing pressure of 100kN/m² can be allowed for preliminary design of pad foundations. A design CBR of 3% is recommended for all soils excluding alluvium where <2.5% is recommended. Cut and Fill - Whilst Hydrock has not been provided with the specific requirements for earthworks (cut / fill depths and volumes), it is understood significant cut to fill earthworks involving large volumes of material will be required. Slope stability – cuttings / embankments - All slopes (cut or on embankments) should be designed in accordance with a formal geotechnical design using appropriate geotechnical design parameters based on a full investigation. Retaining walls - Hydrock understand a number retaining walls across site will be required to accommodate the changes in level, although Hydrock has not been provided with final design details and the heights are not known at this stage. It is recommended that all retaining walls are individually designed using site-specific design criteria, assessed as part of the required geotechnical design. As-built records will be required for verification purposes.

	Soakaway drainage is considered unsuitable for this site due to the likely low permeability of the geological strata and the requirement for extensive thick deposits of engineered fill. Design Sulfate Class - DS-1 and ACEC Class AC-1. Should concrete structures be in contact with groundwater the Design Sulfate Class - DS-4 and ACEC Class AC-4 should be assumed initially. Further testing may indicate less stringent precautions against sulfate attack for buried concrete.
GEO-ENVIRONMENTAL CONCLUSIONS	
Conclusions of contamination Generic risk assessment	Human health: • Hydrock does not consider that the site poses a significant risk human health. Plant growth: • Hydrock considers there are generally no unacceptable risks to plant life from contamination at the site and additional consideration is not generally required with regard to risks to plant life. Controlled Waters: • Hydrock considers that contamination at the site does not pose a significant risk to controlled waters. Ground gases or vapours: Generally Low to moderate risk from ground gases. Locally CS2 conditions may apply. Radon: • The site is not in a radon affected area. Water supply pipes: • Developed areas of the site such as the existing farmsteads are classed as brownfield site and the presumption in the guidance is that barrier pipe for potable water will be required in these areas. However, the investigation and assessment has indicated no significant Contaminants of Concern across the majority of the previously undeveloped site and as such standard pipework may be suitable I these areas following negotiations with the water supply company.
Waste management	Excavated soils to be disposed of as waste, are likely to be classed as: non-hazardous. • Made Ground soils associated existing farmsteads may be classed as hazardous waste; • Natural soils are likely to be classed as non-hazardous waste, and will be able to be disposed of to an inert landfill site. Topsoil will require separate classification on account of its organic content; Further testing will be required for final classification of soils for disposal as waste.
Proposed contamination mitigation measures	Contamination mitigation measures As detailed in Table 6.5 Hydrock consider the following mitigation is required to ensure the site is suitable for use for the proposed end use. These mitigation works will be undertaken in a number of phases and can be separated into: • Demolition Phase; • Enablement Phase; and • Construction Phase. Demolition Phase The existing buildings, predominantly in the farmsteads, including barns, farmhouses and associated buildings, together with their infrastructure need to be demolished The following works are considered necessary prior to or during the Demolition Phase of works: • demolition asbestos survey; • site clearance;

	• removal of asbestos by specialist Contractors in accordance with the asbestos survey and relevant legislation; • removal of tanks and associated pipework; • demolition of site buildings and ancillary structures to slab level; and • processing the demolition arisings to a suitable specification in accordance with the WRAP protocol. **Enablement Phase** Any remediation of ground contamination will be undertaken where required as part of the Enablement Phase. A Remediation Strategy and Verification Plan will need to be submitted to the regulatory authorities for prior approval. The following works are considered necessary during the Enablement Phase of works: • break out of all hardstanding and below ground obstructions and processing for reuse in accordance with a suitable specification and a Materials Management Plan (MMP); • removal of below ground tanks, existing drainage system and associated pipework; • examination of soils below and around all potential point sources (tanks, drums, pipes, drains and areas of staining), known hotspots and excavation of impacted soils (as possible depending on site constraints); • excavation and stockpiling of any contaminated soils (or treatment and reuse if considered suitable); • excavation of Made Ground and natural soils as required to allow construction with appropriate materials management and processing of excavated soils using a combination of: excavation and stockpiling and screening of soils to leave the site at the level required for the installation of a working platform and pavement construction. • design of use of contaminated soils in earthworks where they will pose no risks, or treatment to make them suitable for use; • removal of any free phase hydrocarbons and disposal (none encountered to date); • off-site disposal of unsuitable or excess material; and • verification reports by suitably qualified independent geo-environmental specialists will be required following completion of any remedial works (including ground gas membrane installation). **Construction Phase** The Construction Phase of works will comprise: • appropriate materials handling and stockpiling in accordance with the Materials Management Plan (MMP), with a declaration by a Qualified Person; • excavation of areas of Cut and placement of engineered fill in areas of Fill to a suitable specification; • construction of roads, infrastructure, buildings, and associated works; • geotechnical verification reports of all earthworks. The writing and approval of a Materials Management Plan (MMP) will be required to allow reuse of suitable material at the site. As processing of Made Ground is required, an appropriate Environmental Permit will also be required.
FUTURE CONSIDERATIONS	
Further work	Following the preliminary ground investigation works undertaken to date, the following further works will be required: • detailed site investigation to refine the geo-environmental assessment and waste management / re-use strategy to ensure maximum sustainability;

	• detailed site investigation to assess the risks posed to the proposed development by ground gases and landfill gases; • demolition asbestos survey; • detailed cut to fill earthworks assessment and design; • drainage design; • discussion and agreement with service providers regarding the materials suitable for water supply pipework; • assessment of tree influence on foundations and design of foundations; • provision of geotechnical design for all Category 2 structures (including earthworks, retaining walls, floor slabs, building foundations, bridges, railway line design, road and pavement design, slope design in cuttings and embankments; • design of access roads and associated networks linked to the M69 Junction 2 and other public adopted roads. • writing of a Remediation Strategy and Verification Plan (and agreement with the regulatory bodies); • writing of a Materials Management Plan relating to reuse of soils at the site and import of soils to the site; • work to carry out remediation and mitigation of contamination; and • verification of the earthworks, remediation and mitigation works.

This Executive Summary forms part of Hydrock Consultants Limited report number 07700-HYD-XX-XX-RP-GE-1002 and should not be used as a separate document.

1. INTRODUCTION

1.1 Terms of reference

In October 2017, Hydrock Consultants Limited (Hydrock) was commissioned by db Symmetry Ltd (the Client) to undertake a Phase 1 Desk Study for an area of land located northwest of Hinckley, Leicestershire. The purpose of the investigation is to support an application for a Development Consent Order (DCO) for the proposed Hinckley National Rail Freight Interchange (HNRFI).

The works have been undertaken in accordance with Hydrock's proposal referenced (C-07700-E PT1.001 Proposal (Geo) on 3rd August 2017.

The Preliminary Desk Study Report (Ref 07700-HYD-XX-XX-RP-GE-1001) is presented separately and should be read in conjunction with this Preliminary Ground Investigation Report (GIR).

1.2 The Site

The site is 225 hectares in area and comprises the land covered by the DCO application It currently consists of a mixture of agricultural arable and pastural fields with associated farm buildings, farmhouses, and barns, together with a small number of separate houses, and commercial buildings such as kennels and a farm shop. Burbage Common Road passes through the site and there are also private roads and farm access tracks.

The site is bounded by a railway line along the northwest site boundary and the M69 motorway to the east with Junction 2 to the southeast.

A site location plan (Drawing 07700-HYD-XX-ZZ-DR-G-1000) and current site features plan (Drawing 07700-HYD-XX-ZZ-DR-G-1006 are presented in Appendix A. For ease of reference in this report, Hydrock has split the site into five zones with individual fields labelled as detailed in Appendix A with detailed field descriptions presented in Appendix B. Further details of the site are discussed in Section 2.

For further details of the site description, please refer to the Phase 1 Desk Study.

1.3 Objectives

The objective of the Preliminary Phase 2 Ground Investigation Report (GIR) is to:

- refine the Preliminary Ground Conceptual Model and to quantify risks to identified receptors;
- assess the environmental quality of the underlying soils and groundwater and their potential to adversely impact on site end users and the wider environment;
- to enable an initial characterisation of the prevailing permanent ground gas regime; and
- to provide geotechnical data to allow preliminary zonation and a preliminary geotechnical assessment of the site.

The GIR refines the Preliminary Conceptual Ground Model set out in the Phase 1 Desk Study Report, and determines background geo-environmental and geotechnical site conditions, key contamination risks, likely mitigation requirements and provides an initial outline geotechnical assessment.

1.4 Scope

The scope of the Phase 2 Ground Investigation comprises:

- an initial ground investigation including trial pitting and window sampling, to:
  - obtain data on the general ground and groundwater conditions across the site;
  - allow collection of samples for geotechnical and chemical laboratory analysis;
  - allow geotechnical field tests to be undertaken;
  - install gas and groundwater wells;
- gas and groundwater monitoring;
- gas and groundwater sampling;
- geotechnical and chemical laboratory analysis;
- an updated ground model;
- a preliminary geotechnical risk register;
- initial geotechnical design recommendations;
- a preliminary updated Conceptual Site Model (CSM), including identification of plausible pollutant linkages;
- generic quantitative risk assessment of potential chemical contaminants to establish 'suitability for use' under the current planning regime;
- discussion of potential environmental liabilities associated with land contamination (soil, water and gas); and
- outline mitigation requirements to ensure the site is 'suitable for use'.

1.5 Available information

The following have been provided to Hydrock by db Symmetry Ltd for use in the preparation of this report:

- RPS. 'Existing Utility Infrastructure Constraints', Dated 28th February 2018, reference NK019188-RPS-Z-XX-DR-M-SK01;
- The Planning Inspectorate. April 2018. Scoping Opinion: Proposed Hinckley National Rail Freight Interchange; Case Reference: TR050007);
- Savills. 'Hinckley National Rail Freight Interchange: DCO boundary', Dated 20th June 2018, reference HDCO-BP-Revision 11;
- AJA Architects. 'Illustrative Context Parameters Plan', dated 17th October 2018 and referenced 5905-94; and
- AJA Architects. 'Illustrative Context Masterplan', dated 17th October 2018 and referenced 5905-93.

It is assumed that db Symmetry Ltd has commissioned or obtained assignment of the above documents and that Hydrock has full reliance on them.

The following have been provided to Hydrock by Highways England for use in the preparation of this report:

- stage 1 Investigation, M69 Coventry - Leicester New Route, Geotechnical Report, dated November 1970, report No. 8054/JD;

- site Investigation, M69 Coventry Leicester Motorway Main Route, Factual Report, dated December 1972; and
- site Investigation, M69 Leicester – Coventry Motorway Stag 2, dated January 1972, Report No. 8640/JD.

1.6 Regulatory context and guidance

The investigation work has been carried out in general compliance with recognised best practice, including (but not limited to) BS 5930:2015, BS 10175:2011+A2:2017 and the AGS (2006) Good Practice Guidelines for Site Investigations.

The geo-environmental section of this report is written in broad agreement with BS 10175:2011+ A2:2017, the CLR 11 Model Procedures (Environment Agency 2004) and the AGS (2006) Good Practice Guidelines for Site Investigations.

The methods used follow a risk-based approach, with the first stage being a Phase 1 desk study and field reconnaissance with the potential geo-environmental risk assessed qualitatively using the 'source-pathway-receptor contaminant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990). Potential geotechnical risks are also assessed.

Phase 2 comprises intrusive ground investigation work and testing. The factual data from Phase 1 and Phase 2 are used to develop the Conceptual Site Model (CSM). This comprises a ground model of the physical conditions and an exposure model of the possible contaminant linkages. The CSM forms the basis for Generic Quantitative Risk Assessment (GQRA) in accordance with current guidelines. This GQRA might lead to more Detailed Quantitative Risk Assessment (DQRA).

Professional judgement is then used to evaluate the findings of the risk assessments and to provide recommendations for the project.

This geotechnical section of this report is undertaken in general accordance with BS EN 1997-1 and BS EN 1997-2 and BS 8004:2015. This report forms a Ground Investigation Report (GIR) as described in Part 2 of Eurocode 7 (BS EN 1997-2) (EC7). However, it is not intended to fulfil the requirements of a Geotechnical Design Report (GDR) as detailed in EC7.

The geo-environmental and geotechnical aspects are discussed in separate sections. Throughout the report the term 'geotechnical' is used to describe aspects relating to the physical nature of the site (such as foundation requirements) and the term 'geo-environmental' is used to describe aspects relating to ground-related environmental issues (such as potential contamination). However, it should be appreciated that this is an integrated investigation and these two main aspects are inter-related. Designers should take all aspects of the investigation into account.

Remaining uncertainties and recommendations for further work are listed in Section 8 and Section 9.

Reference to the technical details of the approach and the methodologies adopted are provided in Appendix L.

2. PRELIMINARY CONCEPTUAL SITE MODEL

The preliminary ground model of the site has been collated using the available desk study data reported in the Preliminary Desk Study Report (Ref 07700-HYD-XX-XX-RP-GE-1001-P1-S2). This report is the basis of the understanding of the ground conditions that will inform the geo-environmental exposure model and the geotechnical hazard assessment.

As reported in the desk study the site has been split into five zones (Zones 1 to 5) with individual references assigned to each field as shown on Figure 2.1 and Drawings RFI-HYD-XX-ZZ-DR-GE-1005 and RFI-HYD-XX-ZZ-DR-GE-1006, which are presented in Appendix A.

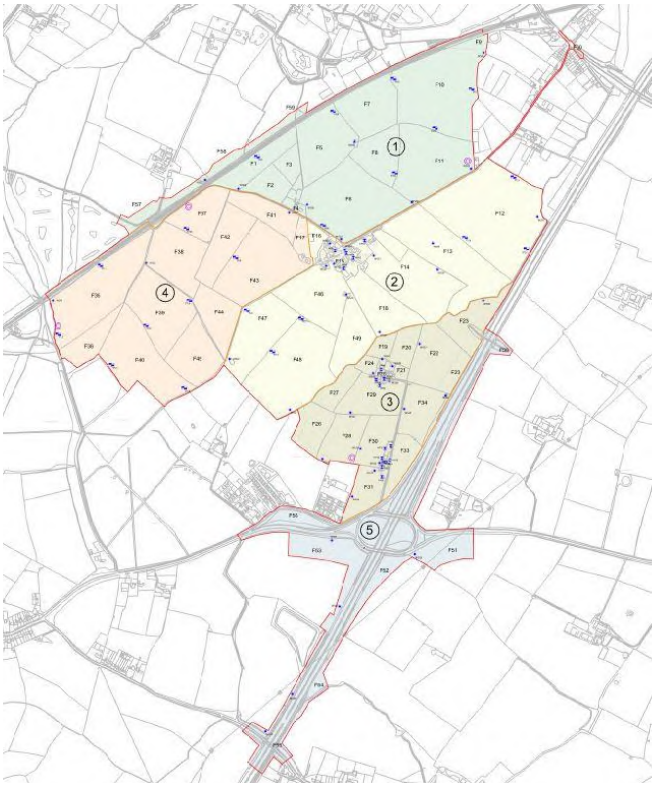


Figure 2.1: Site boundary detailing zones and field references. (Refer to Appendix A for full drawing).

2.1 Preliminary Ground model

The preliminary ground model is presented in Section 2.0 which forms the understanding of the ground conditions that inform the preliminary geotechnical hazard assessment (Section 2.2) and the preliminary geo-environmental exposure model (Section 2.3).

2.2 Geotechnical hazard identification

The preliminary geotechnical hazard identification has been undertaken in accordance with the general requirements of ICE/DETR Document 'Managing Geotechnical Risk' and the HE documents HD 41/15 and HD 22/08.

Zones 1 to 4 have been assessed together as existing site usage is uniform and they mostly comprise the proposed development area of the HNRFI. Zone5 comprises the area of the proposed works to provide additional access roads at Junction 2 of the M69 motorway and has been assessed separately.

The following section summarises the primary geotechnical hazards detailed in the Phase 1 Desk Study and the development elements potentially affected (see Table J.1 and J.2 in Appendix J for further detail).

2.2.1 *Plausible geotechnical hazards identified in Zones 1 to 4*

Plausible geotechnical hazards identified are:

- Uncontrolled Made Ground (variable strength and compressibility).
- Soft / loose compressible ground (low strength and high settlement potential).
- Shrink swell of the clay fraction of soils under the influence of vegetation.
- Variable lateral and vertical changes in ground conditions.
- Attack of buried concrete by aggressive ground conditions.
- Obstructions.
- Shallow groundwater.
- Changing groundwater conditions.
- Risk from erosion or flooding.
- Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of excavations.
- Slope stability issues
  - general slopes.
  - retaining walls.
- Earthworks
  - permissible bearing pressures in new fill.
  - suitability of site won material to be reused as fill.
- Problematic soils (silts and rewetting etc.).

2.2.2 *Potential development elements affected in Zones 1 to 4*

Development elements potentially affected by the identified geotechnical hazards are:

- Buildings – foundations and floors;
- Roads and pavements;
- Rail tracks;
- Gantry cranes and associated facilities;
- Underground and overground services;
- Cutting and embankment slopes;
- Retaining walls;
- Concrete below ground;

- Earthworks control;
- Cut to fill balance in earthworks; and
- Construction staff, vehicles and plant operators.

2.2.3 Plausible geotechnical hazards identified in Zone 5

Plausible geotechnical hazards identified are:

- Uncontrolled Made Ground (variable strength and compressibility).
- Soft / loose compressible ground (low strength and high settlement potential).
- Shrink swell of the clay fraction of soils under the influence of vegetation.
- Variable lateral and vertical changes in ground conditions.
- Attack of buried concrete by aggressive ground conditions.
- Obstructions.
- Shallow groundwater.
- Changing groundwater conditions.
- Risk from erosion or flooding.
- Running sands and / or loose Made Ground, leading to difficulty with excavation and collapse of excavations.
- Slope stability issues
  - general slopes.
  - retaining walls.
- Earthworks
  - permissible bearing pressures in new fill.
  - suitability of site won material to be reused as fill.
- Problematic soils (silts and rewetting etc.).

2.2.4 Potential development elements affected in Zone 5

Development elements potentially affected by the identified geotechnical hazards are:

- Roads and pavements;
- Underground and overground services;
- Cutting and embankment slopes;
- Retaining walls;
- Concrete below ground;
- Earthworks control;
- Cut to fill balance in earthworks; and
- Construction staff, vehicles and plant operators.

Health and safety risks to site contractors and maintenance workers have not been assessed during these works but will need to be considered during design.

The above plausible geotechnical hazards and development elements affected have been carried forward for investigation and assessment. Details of the investigation are presented in Section 4 and the assessment is presented in Section 5.

2.3 Geo-environmental exposure model

The preliminary exposure model is based on information presented in the Phase 1 Desk Study report and is used for geo-environmental hazard identification and establishing potential contaminant linkages based on the contaminant Source-Pathway-Receptor (S-P-R) approach.

The site has been split into five Zones as shown in Figure 2.1 and Appendix A with potential contamination sources assessed individually for each zone. A pollutant linkage requires all the elements of the S-P-R linkage to be present. If only one or two of these elements are present, there is no linkage and further assessment is not required for the case concerned.

2.3.1 Potential contaminants

The following section is a summary of the Preliminary Conceptual Site Model in the Phase 1 Desk Study. For the purpose of this assessment, the potential contaminants for each area have been considered according to whether they are likely to originate from on-site or off-site sources.

2.3.2 Potential on-site sources of contamination

Zone 1

S 1. Made Ground containing metals, metalloids, PAH, asbestos and petroleum hydrocarbons associated with development on site and backfilled ponds.

S 2. Hydrocarbon fuels, lubricants and solvents used on site including leakage from former tanks, the pipework between tanks and pumps and general spillage, together with uncontrolled disposal and spillage from waste receptacles. A tank plinth was noted in the Weeping Willows located in Field F4.

S 3. Made Ground containing biological contamination such as e-coli and metals recorded in the cesspit in The Weeping Willows in Field F4.

S 4. Pesticides and herbicides from agricultural use and railway line maintenance.

S 5. Ground gases (carbon dioxide and methane) from organic materials in Made Ground and backfilled ponds.

S 6. Buildings on site and railway land (asbestos).

Zone 2

S 7. Made Ground containing metals, metalloids, PAH, asbestos and petroleum hydrocarbons associated with development on site and backfilled ponds.

S 8. Hydrocarbon fuels, lubricants and solvents used on site including leakage from tanks, the pipework between tanks and pumps and general spillage, together with uncontrolled disposal and spillage from waste receptacles. Several tanks recorded in Woodhouse Farm (Field F17, Zone 2).

S 9. Pesticides and herbicides from agricultural use.

S 10. Ground gases (carbon dioxide and methane) from organic materials in Made Ground, backfilled ponds and alluvial deposits.

S 11. Buildings on site (asbestos).

Zone 3

S 12. Made Ground containing metals, metalloids, PAH, asbestos and petroleum hydrocarbons associated with development on site and backfilled ponds.

S 13. Hydrocarbon fuels, lubricants and solvents used on site including leakage from tank, the pipework between tanks and pumps and general spillage, together with uncontrolled disposal and spillage from waste receptacles. A number of tanks were recorded in Hobbs Hayes Farm (Field F25, Zone 3) and Freeholt Lodge (Field F32, Zone 3).

S 14. Pesticides and herbicides from agricultural use.

S 15. Ground gases (carbon dioxide and methane) from organic materials in Made Ground, backfilled ponds and alluvial deposits.

S 16. Buildings on site (asbestos).

Zone 4

S 17. Made Ground containing metals, metalloids, PAH, asbestos and petroleum hydrocarbons associated with potentially infilled land and backfilled ponds.

S 18. Pesticides and herbicides from agricultural use and railway line maintenance.

S 19. Ground gases (carbon dioxide and methane) from organic materials in Made Ground and backfilled ponds.

Zone 5

S 20. Made Ground containing metals, metalloids, PAH, asbestos and petroleum hydrocarbons associated with highway development on site, potentially infilled land and backfilled ponds.

S 21. Pesticides and herbicides from agricultural use.

S 22. Ground gases (carbon dioxide and methane) from organic materials in Made Ground.

Potential off-site sources of contamination

S 23. 24. Ground gases (carbon dioxide and methane) from organic materials in the former landfill, located 246m southeast Zone 5, F52.

S 25. 26. Ground gases (carbon dioxide and methane) from organic materials in the backfill to the former brick/clay quarry, now filled, 50m north of Zone 5, F51.

S 27. 28. Ground gases (carbon dioxide and methane) from organic materials in potentially infilled land located adjacent southern boundary of Zone 5, F55.

S 29. 30. Ground gases (carbon dioxide and methane) from organic materials in potentially infilled land located 100m north of Zone 1, F59.

S 31. 32. Substation located 16m east of Zone 3, F31.

Potential pathways

The following potential pathways have been identified.

P 1. Humans: ingestion, skin contact, inhalation of dust and outdoor air.

P 2. Buildings: methane ingress via permeable soils and/or construction gaps.

P 3. Buildings: VOC and petroleum hydrocarbon vapour ingress via permeable soils and/or construction gaps.

P 4. Plant life: root uptake.

P 5. Plant uptake: methane ingress to the root zone from the landfill site.

P 6. Underlying groundwater: migration of contaminant via leachate dispersion through the unsaturated zone in the superficial deposits.

P 7. Underlying groundwater: migration of contaminant into the Mercia Mudstone Group aquifer.

P 8. Surface water: overland flow.

P 9. Surface water: drainage discharge.

P 10. Surface water: base flow from groundwater

Potential receptors

The following potential receptors in relation to the proposed land use have been identified.

R 1. Humans (neighbours, site end users).

R 2. Development end use (buildings, utilities and landscaping).

R 3. Groundwater: Secondary A aquifer status of the Alluvium, and Wolston Sand and Gravels.

R 4. Surface water: Tributaries associated with the Thurlaston Brook and River Soar, on-site streams/drainage ditches and ponds on and adjacent site.

Contamination risks to site contractors and maintenance workers have not been assessed during these works and will need to be considered separately.

The above plausible sources, pathways and receptors have been carried forward for investigation and assessment. The investigation is presented in Section 4 and the assessment is presented in Section 6. The Source – Pathway – Receptor linkages are assessed in Section 6 and are presented in Appendix K (Table K.1).

3. GROUND INVESTIGATION WORKS

3.1 Investigation rationale

The intrusive site works for the investigation were designed to provide a general preliminary indication of ground conditions to approximately 5m depth to confirm the geological ground conditions and the shallow gas/groundwater conditions, together with genera contamination conditions, sufficient to inform the DCO application process. The investigation is based on a wide spaced (>100m) grid of holes, with a few targeting 'worst case' conditions e.g. near tanks. Not designed for detailed contamination or geotechnical assessment. To provide the background to be used in the later design of a detailed investigation. Subject to access restrictions agreed between the client and landowners/occupiers.

The ground investigation rationale is based on the findings of the preliminary risk assessment and is summarised in Table 3.1. The main areas targeted were the agricultural fields, including those planted with crops and used for grazing and raising stock. The constraints to investigating the different types of areas are set out in the following section.

Table 3.1: Investigation rationale

Exploratory Holes	Purpose
Farmsteads	
Hand Pitting	To investigate potential specific sources of contamination at locations targeted around existing buildings and fuel tanks (where possible) as identified during the site reconnaissance and detailed in the Desk Study report.
Window Sampling	To assess deeper (up to 5.0m bgl) ground conditions to compare with the expected geology, and to detect generic ground and contamination conditions. Also, to allow SPTs and collection of samples for geotechnical characterisation and contamination testing. Installation of a limited number of gas and groundwater monitoring and sampling wells.
Agriculture/ crop fields	
Trial Pitting	To assess shallow ground conditions. To allow collection of samples for geotechnical testing. Limited geotechnical earthworks sampling targeted to enable preliminary cut and fill recommendations to be made.
Window Sampling	To assess deeper ground conditions (up to 5m bgl) to allow SPTs and collection of samples for general geotechnical characterisation. To allow collection of samples for geotechnical and contamination testing. Installation of a limited number of gas and groundwater monitoring and sampling wells.
Pasture/Livestock land	
Window Sampling	To assess deeper ground conditions (up to 5m bgl) to compare with the expected geology, and to detect generic contamination conditions. Also, to allow SPTs and collection of samples for geotechnical characterisation. To allow collection of samples for geotechnical and contamination testing. Installation of gas and leachate/groundwater monitoring and sampling wells. Due to presence of Livestock actively using the land, trial pitting could not be undertaken.

3.2 Constraints

Intrusive Investigation within the farmsteads was limited as positions were limited to less invasive investigatory methods such as hand investigations. This was to reduce the disturbance to the local residents and to their businesses.

During investigation works a number of the farm yards on site were active preventing targeted investigation, such as within the grounds of The Weeping Willows and Woodhouse Farm.

No investigation was undertaken below the floor slabs of existing buildings as they were still occupied. Similarly, no investigation was undertaken under existing hardstanding to avoid damage to property or restriction of access.

The types of standpipe installations used (flush with the ground or projecting above ground level) were agreed with the appropriate owners or users of the land.

The footprints of all buildings across site could not be fully investigated as the building were operational during site work.

Exploratory locations in Zone 4 were limited to dynamic sampling techniques due to the presence of livestock in the fields, to avoid the risks to stock in the vicinity of trial pits.

Exploratory positions were generally placed at field boundaries to minimise damage to the crops and ground surface.

3.3 Site works

The fieldworks were undertaken between 7th August 2018 and 24th August 2018, and are summarised in Section 4.

The site investigation locations were surveyed in using a Total Station GPS survey instrument and are shown on the Exploratory Hole Location Plan (Hydrock 07700-HYD-XX-ZZ-DR-G-1003) in Appendix A.

The exploratory hole logs, including details of ground conditions, soil sampling, *in situ* testing and any installations, are also presented in Appendix E.

Table 3.2: Summary of site works undertaken in Zone 1

Activity	Method	No.	Depth (m) (Maximum / Range)	In situ tests	Notes (e.g. installations)
Drilling, Pitting and Probing					
Trial Pitting	JCB 3CX excavator	6	2.50 to 4.00	Hand shear vane	All excavations sides remained upright during site works.
Windowless Sampling	Terrier windowless sampler & 4x4 modified Terrier windowless sampler	7	3.00 to 5.45	SPT's	Five standpipe installations installed.

Table 3.3: Summary of site works undertaken in Zone 2

Activity	Method	No.	Depth (m) (Maximum / Range)	In situ tests	Notes (e.g. installations)
Trial Pitting	JCB 3CX excavator	6	2.00 to 4.10	Hand shear vane	All excavations sides remained upright during site works.
Windowless Sampling	Terrier windowless sampler & 4x4 modified Terrier windowless sampler	12	4.00 to 5.45	SPT's	Four positions drilled within Woodhouse Farm Five standpipe installations installed.
Hand Dug trial pits	Hand Tools	5	1.2	None	Positions situated around Woodhouse Farm buildings.

Table 3.4: Summary of site works undertaken in Zone 3

Activity	Method	No.	Depth (m) (Maximum / Range)	In situ tests	Notes (e.g. installations)
Windowless Sampling	Terrier windowless sampler & 4x4 modified Terrier windowless sampler	15	4.00 to 5.45	SPT's	Six standpipe installations have been installed.
Hand Dug trial pits	Hand Tools	4	1.20	None	Hobbs Hayes Farm buildings.
Hand Dug trial pits	Hand Tools	7	1.20	None	Woodhouse Farm buildings.

Table 3.5: Summary of site works undertaken in Zone 4

Activity	Method	No.	Depth (m) (Maximum / Range)	In situ tests	Notes (e.g. installations)
Trial Pitting	JCB 3CX excavator	8	2.60 to 4.00	Hand shear vane	All excavations sides remained upright during site works.
Windowless Sampling	Terrier windowless sampler & 4x4 modified Terrier windowless sampler	3	3.00 to 5.45	SPT's	Five standpipe installations installed.

Table 3.6: Summary of site works undertaken in Zone 5

Activity	Method	No.	Depth (m) (Maximum / Range)	In situ tests	Notes (e.g. installations)
Windowless Sampling	Terrier windowless sampler & 4x4 modified Terrier windowless sampler	5	3.00 to 5.45	SPT's	-

Of the forty-three window sample boreholes drilled, seventeen were installed with wells for monitoring groundwater levels and ground gas concentrations and to facilitate the sampling of groundwater. A summary of the monitoring is presented in Table 3.7.

Table 3.7: Summary of monitoring installations

Exploratory Holes	Ground level (m OD)	Standpipe diameter (mm)	Screen top and base depth (m bgl)	Screen top and base elevation (m OD)	Strata targeted
WS02	94.36	63	0.50 to 2.50	93.86 to 91.86	Thrussington Member and Mercia Mudstone
WS03	88.78		0.50 to 5.00	88.28 to 83.78	
WS04	91.17		0.50 to 3.00	90.67 to 88.17	
WS05	94.66		1.00 to 5.00	93.66 to 89.66	Thrussington Member
WS08	93.93		0.50 to 4.00	93.43 to 89.93	Thrussington Member and Mercia Mudstone
WS11	96.62		1.00 to 5.00	95.62 to 91.62	
WS13	95.18		1.00 to 5.00	94.18 to 90.18	Thrussington Member
WS21	100.76		1.00 to 3.00	99.76 to 97.76	
WS22	102.98		1.00 to 2.20	101.98 to 100.78	Alluvium
WS26	95.21		1.00 to 4.00	94.21 to 91.21	Alluvium and Mercia Mudstone
WS29	94.95		1.00 to 5.00	93.95 to 89.95	Thrussington Member and Mercia Mudstone
WS30	103.46		1.00 to 4.00	102.46 to 99.46	
WS31	93.69		1.00 to 3.00	92.69 to 90.69	Thrussington Member
WS37	92.06		1.00 to 5.00	91.06 to 87.06	
WS38	89.06		1.00 to 3.00	88.06 to 86.06	Bosworth Clay Member
WS39	86.34		1.00 to 4.00	85.34 to 82.34	Made Ground, Alluvium and Mercia Mudstone
WS42	104.9		1.00 to 3.00	103.9 to 101.90	Thrussington Member

3.4 Geo-environmental testing

3.4.1 Sampling strategy and protocols

The exploratory hole positions were determined by reference to the conditions identified in the preliminary Conceptual Site Model (CSM) outlined in the Desk Study report, as discussed in Section 2.3.1. As discussed in paragraph 3.2 access to a number of potential sources were not possible due to the activities on site.

Samples were taken, stored and transported in general accordance with BS 10175:2011+A2:2017.

3.4.2 Geo-environmental monitoring

Gas monitoring has been undertaken in combined gas and water installations installed in the boreholes which were monitored on six occasions. The results of the monitoring are presented in Appendix G.

3.4.3 Geo-environmental laboratory analyses

The chemical test certificates are provided in Appendix H. Wherever possible, UKAS and MCERTS accredited procedures have been used. The geo-environmental analyses undertaken on soils are summarised in Table 3.8.

Table 3.8: Geo-environmental analyses of soils

Determinand Suite	Made Ground	Topsoil	Alluvium	Thrussington member	Mercia Mudstone
Hydrock suite of determinands for solids	19	16	4	4	1
Benzene, toluene, ethylbenzene and xylene (BTEX) by GC-MS	7	1	-	-	-
Total petroleum hydrocarbons by GC-FID	7	1	-	-	-
Asbestos Quantification	1	-	-	-	-

The chemical test data in soils are interpreted and assessed in Sections 6.3 and 6.4. The geo-environmental analyses undertaken on water samples from the standpipes are summarised in Table 3.9. The groundwater chemical test data are interpreted and assessed in Section 6.4.2.

Table 3.9: Geo-environmental analyses of water samples from standpipes

Determinand Suite	Ground-water
Hydrock minimum suite of determinands for waters	6
Total petroleum hydrocarbons by GC-FID	2

3.4.4 Geotechnical laboratory testing

The tests undertaken are summarised in Table 3.10 and the geotechnical test certificates are provided in Appendix F. Wherever possible, UKAS accredited procedures have been used. The testing is intended to provide general information on the properties of the main types of materials encountered. It is not intended to be sufficient for design purposes.

Table 3.10: Summary of sample numbers for geotechnical tests

Test	Bosworth Member	Thrussington Member	Mercia Mudstone
Natural moisture content	18	14	3
Atterberg limit determination (4 point)	18	20	4
Particle size distribution (sieve/sedimentation)	4	6	-
Remoulded CBR	2	3	-
Soaked CBR	1	4	-
Sulfate and aggressive chemical environment classification for buried concrete classification (full BRE SD1 suite)	6	9	1
Optimum moisture content (maximum dry density 2.5kg & 4.5kg)	2	3	-

The geotechnical test data are summarised in Section 4.0 and interpreted and assessed in Section 5.

4. GROUND INVESTIGATION RECORDS AND DATA

4.1 Physical ground conditions

4.1.1 Summary of strata encountered

The following section presents a summary of the ground and groundwater conditions encountered and their properties, based on field observations, interpretation of the field data and laboratory test results, and taking into account drilling, excavation and sampling methods, transport, handling and specimen preparation.

Details of the ground investigation works are provided in the logs in Appendix E, historical data is provided in Appendix D, a summary of the ground model in each Zone is presented in Table 4.1 Tables 4.1 to 4.5 and the individual strata are described in the sections below.

4.1.2 Made Ground

Zones 1 to 3

Made Ground was observed under access roads and tracks to depths between 0.15m and >1.20mbgl. The thickness of Made Ground deposits was only proven to the depth investigated which in the hand dug pits was a maximum of 1.20m.

Made Ground deposits generally consisted of reddish brown, grey, yellowish brown, greyish brown, sandy gravelly clay, sandy gravel, gravelly sand, sandy gravelly clay. Gravel is angular to rounded concrete, brick, quartz and limestone, and chert. Asbestos containing material was encountered in one location in exploratory position WS15 located in Zone 2.

Made Ground was generally encountered in the grounds within and surrounding the farmsteads comprising:

- Weeping Willows Kennels in Zone 1, F4;
- Woodhouse Farm in Zone 2, F15;
- Hobs Hayes Farm in Zone 3, F25; and
- Freeholt Lodge in Zone 3, F32.

Zone 4

Made Ground was not encountered in Zone 4. However, Made Ground deposits are likely to be present beneath areas roads, tracks and the railway line.

Zone 5

Made Ground was not encountered in Zone 5. However, Made Ground deposits are likely to be present beneath areas roads and tracks.

4.1.3 Topsoil

For the purposes of this report, topsoil is defined in accordance with BS5930:2015 as the upper layer of an *in-situ* soil profile, usually darker in colour and more fertile than the layer below (subsoil), which is a product of natural chemical, physical, biological and environmental processes. The description of soil in

the exploratory hole logs as Topsoil does not imply compliance with BS 3882:2015. Reuse of topsoil as a growing medium at the site is a soil science or agricultural matter and should be determined by an agricultural consultant, landscape architect or other suitable specialist.

The topsoil thicknesses recorded represent the depth recorded at the specified locations and could vary at intermediate locations.

Topsoil deposits generally comprised brown, light brown, dark brown sandy gravelly clay, sandy clay, slightly sandy slightly gravelly clay and generally with occasional to frequent rootlets.

Zones 1 to 4

Topsoil deposits were generally encountered across Zones 1 to 4 with the exception of areas of development and were Topsoil was encountered within developed areas it was thinner with recorded depths between 0.05 and 0.10m. Topsoil was generally encountered between 0.20m and 0.50m thick.

Zone 5

Topsoil was encountered across Zone 5 between 0.20m to 0.30m thick.

4.1.4 Bosworth Clay Formation

Glacial Till belonging to the Bosworth Clay Formation generally comprises brown, orange brown, light brown dark brown, grey and red slightly sandy or silty clay and clayey silty sand. Course deposits were only encountered in seven locations between depths of 1.80m and 4.70m bgl.

Zones 1 to 4

The Bosworth Clay Formation was encountered generally across the whole of Zone 1, the northern part of Zone 2, the central and southern parts of Zone 3 and the southern part of Zone 4. Bosworth Clay was encountered below the topsoil at depths between 0.10m and 0.80m, to maximum proven depths of between 2.00m and 3.50mbgl. The full thickness of the deposits was not proven.

Zone 5

Bosworth Clay Formation glacial till was encountered in the south western part of Zone 5 at depths between 0.20 and 0.30m. Its thickness was up to at least 4.45m but the total thickness greater than this was not proven.

4.1.5 Thrussington Member

The Thrussington Member glacial till is silt and clay-rich, laid down as a sheet deposit with clasts of chalk and material derived from the Mercia Mudstone and Coal Measures.

The Thrussington Member was generally encountered as reddish brown, mottled grey, greenish grey and bluish grey, firm and stiff clays with a variable content of sand and gravel. The gravel content consisted of angular to sub rounded / rounded fine to coarse quartz, sandstone, mudstone and some chert.

Zones 1 to 4

The Thrussington Member glacial till was generally encountered in the central part of Zone 2, the northern part of Zone 3 and the central part of Zone 4. Such deposits were encountered from between ground level and 1.10mbgl, to depths between 1.90m and 5.00m bgl.

Zone 5

The Thrussington Member glacial till was generally encountered in the northern section of Zone 5. The deposits were encountered from 0.20mbgl, but the full thicknesses of the deposits were not proven beyond 4.45mbgl.

4.1.6 Mercia Mudstone

Where encountered, the Mercia Mudstone deposits generally comprised reddish brown, occasionally grey, gravelly clayey sand and slightly gravelly, sandy silty clay with frequent lithorelicts of reddish-brown mudstone. Gravel is subangular fine of sandstone.

In its unweathered condition, Mercia Mudstone is a mudstone which is commonly jointed and fissured. The material is subject to weathering progressively encroaching along the joints and fissures, and penetrating further into the rock matrix, resulting in lithorelicts of mudstone surrounded by a matrix of silty clay. Ultimately in its fully weathered condition, there are no lithorelicts and the material is entirely composed of the silty clay matrix. The weathering process is a combination of chemical degradation and physical breakdown of the particle bonds making up the material. The weathering grades I (unweathered), II, III and IVa (partially weathered) and IVb (fully weathered, as described in CIRIA C570 (Engineering in Mercia Mudstone, 2001) have been adopted where appropriate in this report. In general, the depths investigated in this phase of investigation only penetrated into the Fully Weathered and Partially Weathered zones of the Mercia Mudstone.

Zones 1 to 4

Mercia Mudstone was encountered under the glacial till in Zones 1, 2 and 3 at depths between 1.90m and 5.00mbgl. The full thicknesses of the deposits were not proven beyond 4.45m bgl.

Zone 5

Mercia Mudstone was not encountered in Zone 5.

4.1.7 Ground model summary of Zones 1 to 5

Table 4.1: Strata encountered in Zone 1

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Proven Thickness (m) (range)	Thickness (m) (average)
Made Ground	0.00	0.40	0.40	0.40
Topsoil	0.00	0.10 to 0.50	0.10 to 0.50	0.35
Bosworth Clay Formation	0.10 to 0.50	2.50 to 3.50	2.60 to 3.25	2.83
Mercia Mudstone	3.00 to 3.50	Not proven	Not proven	Not proven

Table 4.2: Strata encountered in Zone 2

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Proven Thickness (m) (range)	Thickness (m) (average)
Made Ground	0.00	0.30 to 1.10	0.30 to 1.10	0.69
Topsoil	0.00	0.10 to 0.40	0.10 to 0.40	0.28
Alluvium	0.00	0.10 to 0.40	0.10 to 0.40	0.28
Bosworth Clay Formation	0.15 to 0.80	2.00 to >4.45	1.60 to 1.85	3.02
Thrussington Member	0.10 to 1.10	2.90 to 5.00	2.50 to 4.50	2.96
Mercia Mudstone	2.00 to 5.00	Not proven	Not proven	Not proven

Table 4.3: Strata encountered in Zone 3

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Proven Thickness (m) (range)	Thickness (m) (average)
Made Ground	0.00	0.05 to 0.85	0.15 to 0.85	0.58
Topsoil	0.00	0.05 to 0.40	0.05 to 0.40	0.25
Bosworth Clay Formation	0.30	>3.00	>2.70	>2.70
Thrussington Member	0.0 to 0.85	1.90 to 4.0	1.60 to 3.60	2.27
Mercia Mudstone	1.9 to 4.0	Not proven	Not proven	Not proven

Table 4.4: Strata encountered in Zone 4

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Proven Thickness (m) (range)	Thickness (m) (average)
Topsoil	0.00	0.2 to 0.5	0.2 to 0.5	0.33
Bosworth Clay Formation	0.30 to 0.40	>4.00	>4.00	3.68
Thrussington Member	0.20 to 0.50	Not proven	Not proven	Not proven

Table 4.5: Strata encountered in Zone 5

Stratum	Depth to top (m bgl)	Depth to base (m bgl)	Thickness (m) (range)	Thickness (m) (average)
Made Ground	-	-	-	-
Topsoil	0.00	0.20 to 0.30	0.20 to 0.30	0.23m
Bosworth Clay Formation	0.20 to 0.30	>4.45	>4.15	Not proven
Thrussington Member	0.20	Not proven	Not proven	Not proven

4.2 Obstructions

No significant obstructions were encountered during dynamic sampling or machine excavated trial pits.

4.3 Visual and olfactory evidence of contamination (soil)

No significant visual and olfactory evidence of contamination was encountered.

4.4 Groundwater

4.4.1 Groundwater strikes and levels

Groundwater strikes encountered in boreholes are summarised in Table 4.6. No groundwater strikes were observed in any of the trial pit excavations.

Table 4.6: Groundwater strikes in boreholes

Stratum	Date	Exploratory hole	Fieldwork	
			Groundwater strike	
			Depth (m bgl)	Level (m OD)
Thrussington Member	15/08/18	WS25	3.50	95.76
	14/08/18	WS39	3.80	95.33
Mercia Mudstone	14/08/18	WS27	3.10	86.34
	15/08/18	WS41	3.90	94.67

Groundwater levels recorded during post-fieldwork monitoring are summarised in Table 4.7.

Table 4.7: Groundwater level data summary

Stratum	Date range	Exploratory hole	Post-fieldwork monitoring	
			Depth to groundwater - range	
			Depth (m bgl)	Level (m OD)
Thrussington Member	02/10/18 to 14/12/18	WS31	3.50 to 3.15	90.19 to 89.96
		WS37	3.15 to 1.10	88.91 to 88.91
		WS42	2.84	102.06
Bosworth Clay		WS04	2.29 to 2.43	88.88 to 88.74
		WS05	4.68 to 4.68	89.98 to 89.98
		WS08	0.96 to 1.86	92.97 to 92.07
		WS38	1.04 to 1.10	88.02 to 87.96
Bosworth Clay Member and Mercia Mudstone		WS02	2.07 to 2.50	92.29 to 91.8
		WS03	0.83 to 1.94	87.95 to 86.84
		WS39	1.41 to 1.47	84.93 to 84.87
Thrussington Member and Mercia Mudstone		WS11	0.44 to 0.58*	96.18 to 96.04
		WS26	1.69 to 1.68	93.52 to 93.19
		WS29	1.61 to 2.70	93.34 to 93.27

Stratum	Date range	Exploratory hole	Post-fieldwork monitoring	
			Depth to groundwater - range	
			Depth (m bgl)	Level (m OD)
		WS30	2.64 to 3.73	100.82 to 100.76
Thrussington Member and Mercia Mudstone		WS26	1.69 to 1.68	93.52 to 93.19
		WS29	1.61 to 2.70	93.34 to 93.27
		WS30	2.64 to 3.73	100.82 to 100.76

*water levels are not likely to be representative of geological conditions. Bentonite seal likely to have failed.

4.4.2 *Groundwater summary*

In general, shallow groundwater was encountered within the Bosworth Clay Member, Thrussington Member and Mercia Mudstone at depths between 0.83m and 4.50m bgl (87.95mOD and 90.68m OD).

Shallow groundwater recorded between in WS38 is likely due to the close proximity of the brook. Groundwater recorded in WS03 and WS08 are likely to be associated with the drainage along Burbage Common Road.

4.5 Ground gases (carbon dioxide and methane)

Ground gas monitoring records from the standpipe installations in boreholes are presented in Appendix G and summarised in Table 4.8. Six monitoring visits have been undertaken and the scheduled monitoring programme is complete. The ground gas data are assessed in Section 6.6.

Table 4.8: Summary of ranges of ground gas data

Testing	Methane (%)	Carbon dioxide (%)	Oxygen (%)	Steady flow rate (l/hr)
General site coverage	0.1	<0.10 to 6.0	14.8 to 20.8	<0.01

4.6 Geotechnical Properties

This section summarises the general geotechnical properties of the strata encountered, based on site observations, descriptions, *in situ* testing and laboratory testing.

4.6.1 *Moisture content*

The moisture content of the strata encountered is presented in Table 4.8.

Table 4.9: Moisture content of strata encountered

Stratum	No. of tests	Moisture content (%)		
		Min.	Max.	Av.
Bosworth Clay Member	10	13	28	19
Thrussington Member	14	7	30	19
Mercia Mudstone	5	16	26	24

4.6.2 Plasticity

The plasticity properties and volume change potentials of the strata encountered, in terms of BRE Digest 298 have been determined from the results of plastic limit, liquid limit and plasticity index tests on samples of soil. These are summarised in Table 4.10. The modified plasticity index has been derived as a proportion of the derived values times the percentage of material passing the 425µm sieve.

Table 4.10: Plasticity and potential volume change properties

Stratum	No. of tests	Plasticity Index			Modified Plasticity Index			Plasticity designation	Volume Change Potential
		Min.	Max.	Av.	Min.	Max.	Av.		
Bosworth Clay Member	10	18	28	24	17	28	22	Low	Medium
Thrussington Member	14	14	31	23	13	28	22		
Mercia Mudstone	5	15	24	20	11	24	19		

4.6.3 Particle size distribution

The results of Particle Size Distribution tests (PSDs) are summarised in Table 4.11 PSD plots of the materials analysed are presented in Appendix F.

Table 4.11: PSD results summary

Stratum	No. of tests	Silt/Clay %	Sand %	Gravel %	General description
Bosworth Clay Member	2	92 to 98	2 to 8	<1	Slightly sandy silty clay.
Thrussington Member	2	30 to 98	7 to 70	0.40	Silty clayey sand and silty slightly sandy clay.
Mercia Mudstone	1	34	66	-	Silty clayey sand.

4.6.4 Soil strength

Table 4.12 summarises information pertaining to the shear strength results of the soils according to geological stratum. Factual results are summarised for laboratory tests, field tests (e.g. hand shear vane) and uncorrected Standard Penetration Tests (SPTs). Where the SPT is used to infer shear strength by published correlation, this is also tabulated. A shear strength versus depth profile is presented in Figure Appendix FFigure 4.1.

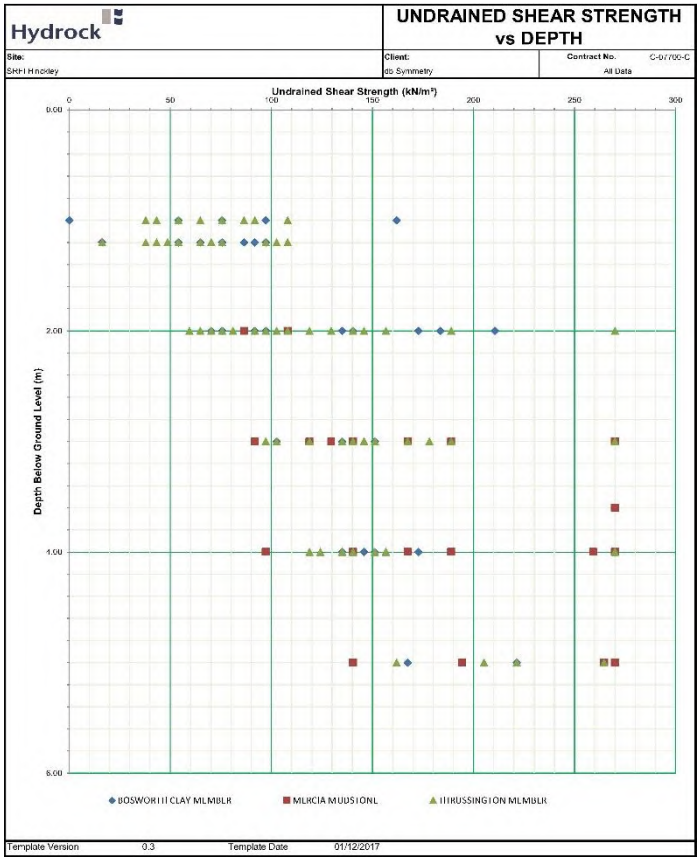
Table 4.12: Soil strength results and derived values

Stratum	No. of tests	SPT (N-value) (range)	c_u (kPa)	Method
Bosworth Clay Member	58	7 to 50[A]	40 to 270[C]	SPT – windowless sampler boreholes.
	19	-	71 to 140	Hand shear vane
Thrussington Member	90	3 to 50[B]	36 to 270[C]	SPT – windowless sampler boreholes.
	10	-	53 to 140	Hand shear vane
Mercia Mudstone	27	16 to 50	83 to 270[C]	SPT – windowless sampler boreholes.

[A] One SPT test result was recorded at 0 and one at 3, the results are generally between 10 and 50.

[B] One SPT test result was recorded at 3, the results are generally between 7 and 50.

[C] Correlation with Stroud (1975) based on 'average' plasticity of 20 and using an 'f1' value of 5.4.



The undrained shear strength of the fine start encountered at 1.0m bgl was calculated as approximately 50kN/m^2, generally increasing with depth to in excess of 80kN/m^2 below between 2.0m bgl.

Figure 4.1: Undrained shear strength versus depth summary

4.6.5 Relative density

Table 4.13 summarises information pertaining to the relative density of the granular soils according to geological stratum.

The two tests undertaken in coarse deposits of the Bosworth Clay Member indicated that the deposits are loose. Testing undertaken in the Thrussington Member were indicates that the deposits are medium dense becoming very dense with depth and testing undertaken in the Mercia Mudstone deposits are medium dense becoming very dense with depth.

Table 4.13: Relative density results and derived values

Stratum	No. of tests	Method	SPT (N-value) (Range)	phi' (°)
Thrussington Member	2	SPT – windowless sampler boreholes (Peck et. al. (1967).	8 to 9	25 to 34
Bosworth Clay Member	7		10 to 50	26 to 34
Mercia Mudstone	3		26 to 50	30 to 34

4.6.6 Compaction and moisture content

Table 4.14 presents a summary of the moisture content tests and compaction studies undertaken at the site.

Table 4.14: Compaction study results

Stratum	No. tests	Method	Average Natural moisture content (%)	Optimum moisture content (%)	Particle density (Mg/m^3)	Maximum dry density (Mg/m^3)
Bosworth Clay	2	2.5kg Rammer	19	21	2.60 to 2.65	1.66 to 1.67
Thrussington Member	2		19	15 to 17	2.70 to 2.75	1.80 to 1.88
Mercia Group	1		24	15	2.70	1.83

These results indicate that the average natural moisture content of the Bosworth Clay is dry of optimum and the Thrussington Member and Mercia Mudstone is wet of optimum.

4.6.7 Subgrade stiffness

The subgrade stiffness (CBR and Modulus of Subgrade Reaction) results are summarised in Table 4.15.

Table 4.15: CBR results and derived values

Stratum	No. tests	Method	CBR (%) (Range)	Modulus of Subgrade Reaction k ($MN/m^2/m$) (Range)
Bosworth Clay	3	Laboratory remoulded sample at NMC	3.2 to 20	30 to 80
Thrussington Member	7		0.3 to 12*	0.60 to 62
Where using the IAN method, 'k' has been back calculated from the Equivalent CBR.				

4.6.8 Sulfate content

In accordance with BRE (Special Digest 1), the Design Sulfate (DS) classification and the Aggressive Chemical Environment for Concrete (ACEC) classification are presented in Table 4.16.

Design Sulfate Class - DS-1 and ACEC Class AC-1. Should concrete structures be in contact with groundwater the Design Sulfate Class - DS-4 and ACEC Class AC-4 should be assumed initially. Further testing may indicate less stringent precautions against sulfate attack for buried concrete. The assessment summary sheets are presented in Appendix F.

Table 4.16: Aggressive chemical environment concrete classification

Stratum	No. tests	DS	ACEC
Bosworth Clay	6	DS-1	AC-1
Thrussington Member	9		
Mercia Mudstone	1		
Groundwater	6	DS-2	AC-2

5. GEOTECHNICAL ASSESSMENT

5.1 Geotechnical categorization of the proposed development

Eurocode 7, Section 2 advocates the use of geotechnical categorization of the proposed structures to establish the design requirements.

The proposed development proposals have not been finalised, but a proposed site layout is shown on Drawing RFI-HYD-XX-ZZ-DR-GE-1001 in Appendix A. Outline plans for the proposed development indicate that it will comprise a collection of large warehouses with associated railway sidings and freight transfer facilities, along with parking, a network of access roads, attenuation ponds and drainage courses.

In order to create the proposed development platforms, it will be necessary to undertake a significant amount of cutting and earthworks filling. However, the proposed final floor levels and finished external ground levels have not been decided. The proposed development is also likely to involve the construction of retaining walls and other civil engineering structures, in addition to the warehouses, roads, rail tracks, buried infrastructure and other features. Therefore, the following comments are of a general nature and further investigation and assessment will be required at a later stage when the design proposals are at a more complete stage.

The proposed new approach lanes at Junction 2 of the M69 will also involve considerable earthworks and associated structures. Hydrock understands that alterations to the M69 motorway include a dedicated road access to the HNRFI directly from both north and south on Junction 2 of the M69 motorway by means of the construction of new northbound off-slip and southbound on-slip roads.

The proposed HNRFI development will include retaining walls, attenuation ponds and a significant cut and fill exercise to facilitate the final development platform levels to facilitate construction.

Preliminary geotechnical hazards have been identified for Zones 1 to 4 and separately in Zone 5. These are summarised in Section 2 and in Tables J.1 and J.2 in Appendix J. This section provides a brief preliminary geotechnical assessment of the site as a whole. When plans are closer to being finalised, a more detailed geotechnical assessment will need to be undertaken to address issues identified in Section 5.

Based on the above, for the purposes of this investigation, the proposed structures have been classed as Geotechnical Category 2 and a Geotechnical Design Report with associated verification reports will therefore be required.

A preliminary geotechnical hazard identification undertaken is presented in Section 2.2 has been updated.

Assessment has been undertaken in accordance with the general requirements of ICE/DETR Document ‘Managing Geotechnical Risk’ and the HE documents HD 41/15 and HD 22/08. The Preliminary Geotechnical Risk Register following investigation is provided in Appendix J (Table J.3) and will need to be updated as the design works proceed.

5.2 Characteristic design values

As part of the geotechnical design stage for Category 2 structures, the designer will need to determine the characteristic geotechnical design values. The values in this preliminary report are intended for

initial purposes only. The final characteristic design values will need to be determined after more detailed investigation has been undertaken and when more details of the proposed development have been made available.

5.3 Groundwork

5.3.1 Site preparation

The redevelopment will initially involve demolition of existing buildings in the form of farms, houses, barns and associated structures. Demolition should be undertaken to an appropriate specification to ensure that if any asset materials are to be recovered for re-use, they are suitable for use in all relevant respects.

Most of the site is undeveloped and no significant buried man-made obstructions were encountered by this investigation. However, although the possibility of buried obstructions being encountered is considered to be low, they cannot be discounted.

A topsoil strip will be required from beneath the entire site including areas for building and hardstanding at existing grade, all areas of proposed cut where materials are to be re-used in earthworks, and all areas where fill is to be placed.

Topsoil for re-use should be stockpiled and protected to prevent deterioration. If required for re-use, it should be appropriately tested and assessed by specialists.

5.3.2 Groundworks

Following breaking out of hardstanding and obstructions, and topsoil removal, excavation of shallow soils should be feasible using conventional plant and equipment.

Trial pit faces across the site were generally noted to remain vertical without significant collapse. The faces of shallow, near vertically sided excavations put down at the site are likely to remain stable for short periods of time, but if left open for any period of time, they could collapse and they should be assumed to be unstable. Slopes in excavated ground should be cut to slopes designed to provide an adequate factor of safety for the short term or long term condition as appropriate.

It should be noted that significant Alluvium and Wolston Sand and Gravel deposits were not encountered during this preliminary investigation and no comment can be made on the stability of such deposits. However, they may exist, along with other types of deposit and these should be investigated as appropriate to enable them to be taken into account in the design of the works.

Temporary trench support, or battering of excavation sides, is recommended for all excavations that are to be left open for any length of time and must be provided where man entry is required. Particular attention should be paid to excavation at, or close to, site boundaries adjoining existing road and rail structures, where collapse of excavation faces could have a disproportionate effect.

A risk assessment of the stability of any open excavation should be undertaken by a competent person and appropriate measures adopted to ensure safe working practise in and around open excavations. Further guidance on responsibilities and requirements for working near, and in, excavations can be obtained from the Construction Design and Management Regulations (2015); Construction Information Sheet 47: Inspections and Reports (2005) and HSG47: Avoiding Danger from Underground Services.

To ensure no loads are imposed on the sides of the excavation, spoil should not be placed immediately adjacent to the excavation. Spoil should be placed a suitable distance from the side of the excavation (as assessed by a competent person).

5.3.3 *Earthworks/reuse of site-won materials*

Whilst Hydrock has not been provided with the specific requirements for earthworks (cut / fill depths and volumes), it is understood significant cut to fill earthworks involving large volumes of material will be required. The works will be at least Category 2 in accordance with BS EN ISO 1997-1 (EC 7) and further geotechnical investigation and design will be necessary. When site proposals have been further defined, more specific consideration will need to be given to the reuse of materials.

An initial earthworks assessment has been completed on the potential to reuse site-won materials as a General Fill material. This is summarised in Table 5.1.

The classification of materials depends on both the proposed end use and whether the material will meet the performance requirements of that end use. Based on Hydrock's understanding, the following assessment is based on General Fill for use under external areas and Structural Fill for under the footprints of the proposed buildings, gantries and other structures where high loads will be applied.

An initial assessment of the soil classification and earthworks testing data (see Section 4.0) and Appendix F) has been completed based on Hydrock's current understanding of the general development proposals and the potential to reuse site-won materials from areas of cut as engineered fill material. However, the current investigation has probably not covered the full depth of cut required and is of limited scope, therefore the following comments should be taken as preliminary only. The preliminary earthworks assessment is summarised in Table 5.1.

Table 5.1: Preliminary earthworks assessment

Stratum	Proposed end use	Preliminary classification (SHW Series 600)	Comment	Suitability for improvement by the inclusion of binders
Made Ground	Open space	Class 4 (Landscape Fill)	Likely to be unsuitable for General Fill due to organic content. Further testing required. Processing to remove oversize and deleterious material required.	May be suitable subject to further detailed design and testing.
Topsoil	Open space	Class 4 (Landscape Fill)	Likely to be unsuitable for General Fill due to organic content. Further testing required. Can only be used in areas which are not sensitive to settlement.	-
Alluvium	External areas	Class 2A General Fill	Wet of Optimum Moisture Content. Moisture Conditioning (e.g. lime modification) likely to be required.	May be suitable, subject to further detailed design and testing.

Stratum	Proposed end use	Preliminary classification (SHW Series 600)	Comment	Suitability for improvement by the inclusion of binders
Bosworth Clay Member	External areas and below structures	Class 2A or 2B General Fill Class 7* Structural Fill	Near surface soils are likely to be wet of optimum, and moisture conditioning (e.g. air drying or lime modification) is likely to be required. Deeper soils may be dry of optimum.	May be suitable, subject to further detailed design and testing.
Thrussington Member				
Wolston Sand and Gravel.	External areas and below structures	Class 2A or 2C General Fill Class 7* Structural Fill	May be wet of optimum, but air drying and being allowed to drain may be sufficient to enable re-use.	May be suitable, subject to further detailed design and testing.
Mercia Mudstone Group	External areas and below structures	Class 2A or 2B General Fill Class 7* Structural Fill	Near surface soils are likely to be wet of Optimum, Moisture Content control likely to be required. Deeper soils may be dry of optimum.	May be suitable, subject to further detailed design and testing.
*Where the as dug material does not meet the requirements of a Class 7 Fill, but is still required for use below structures, it can be treated with hydraulic binders to form a suitable Class 9 fill. The exact sub-class under Class 9 will depend on the hydraulic binder used. This will be subject to detailed design by a specialist Contractor.				

Where it is proposed to reuse site won materials as an engineered fill it will be necessary to develop an appropriate site-specific earthworks specification. The basis for the specification should be BS 6031:2009 and the latest version of the SHW, Series 600 Earthworks. Further investigation and more specific consideration will need to be given to the reuse of materials during the design.

All movement of materials at the site will need to be undertaken under a Materials Management Plan in accordance with the CL:AIRE guidance 'The Definition of Waste: Development Industry Code of Practice' (Version 2, March 2011), (DoWCoP).

Where it is proposed to reuse site won materials as an engineered fill it will be necessary to develop an appropriate Site-Specific Earthworks Specification. The basis for the Specification should be BS 6031:2009 and the latest version of the SHW, Series 600 Earthworks. When site proposals have been further defined, more specific consideration will need to be given to the reuse of materials.

5.4 Slopes and retaining walls

5.4.1 Slope Stability

The site is to be reprofiled to create development platforms, which will lead to the creation of numerous slopes (both in cut and on embankments) across the site.

As a preliminary assessment (and subject to further investigation, assessment and detailed design), most cut slopes ae expected to be in glacial till and weathered Mercia Mudstone. For steeper slopes, dependent upon the ground condition and loads to be carried by the soils in the slopes, the slope heights and the space available, geogrid reinforcement may be necessary. Where reinforced systems

are utilised, such as gabions, reinforced soil slopes or crib walls, the stability of the entire slope should be considered in the design in addition to the internal stability of the system utilised.

Cut slopes and slopes where embankment fill is placed will need to incorporate drainage as necessary.

Embankments will need to be founded on a suitable bearing stratum, which should be inspected by a suitably competent person prior to the onset of construction to ensure that the ground conditions are similar to those taken into account in the design.

Where embankment slopes are constructed close to cut areas (or backfilled, over-excavated areas), this will need to be accounted for in the design.

All slopes (cut or on embankments) should be designed in accordance with a formal geotechnical design using appropriate geotechnical design parameters based on a full investigation.

5.4.2 Retaining walls

Hydrock understand a number retaining walls across site will be required to accommodate the changes in level, although Hydrock has not been provided with final design details and the heights are not known at this stage. It is recommended that all retaining walls are individually designed using site-specific design criteria, assessed as part of the required geotechnical design. As-built records will be required for verification purposes.

Allowance should be made in the design of the retaining walls for adequate drainage behind the structures, or for water seepage through the face of the wall. The overall stability of the slopes being retained should be included in the design process.

All low strength soils e.g. Made Ground and Alluvium should be removed from beneath retaining walls and the founding soils inspected for any soft, loose or poor-quality founding materials.

Dependent upon the individual designs and subject to the ground model characteristics of each proposed retaining wall, the retaining structures could be selected from several options:

- Preformed or cast in situ reinforced concrete units;
- driven sheet piles; or king posts with concrete or other infill panels for retaining structures founded in engineered fill, allowance should be made for creep and differential settlement over time. If the risk of settlement is unacceptable to the designer, or does not meet appropriate serviceability criteria, then a flexible retaining construction may be found suitable. This could comprise:
- gabion cage walls;
- timber crib walls; or
- reinforced earth system, or other suitable construction method.

Care will need to be taken to ensure that any works close to the site boundaries will not destabilise or cause damage to, neighbouring properties, including existing boundary walls and fences. In addition, care should be undertaken to ensure that stability considerations are applied to internal boundaries within the site.

5.5 Foundation recommendations

In accordance with EC7, BS EN 1997-1:2004+A1:2013 the proposed structures are considered to be Geotechnical Category 2. The preliminary recommendations below are for Geotechnical Category 2 structures and are presented to aid development proposals only. Separate geotechnical designs will be required at the design stage following extensive additional site specific investigations, subsequent Geotechnical Design Reports, and appropriate as-built verification records.

5.5.1 *Foundation* types

Topsoil, Made Ground and alluvial deposits soils are considered unsuitable in their present condition for use as founding soils on the basis of their unpredictable nature likely deposition in an uncontrolled manner and high organic matter content, and they should be fully penetrated by all new foundations. In addition, soil conditions locally may be unsuitable as bearing horizons for supporting foundations and these will need further investigation and delineation.

On the basis of the ground conditions indicated from the current investigation, the foundations are likely to comprise:

- Spread foundations founding in undisturbed natural soils in areas of cut, where the earthworks will need to take into account acceptable total and differential settlements including immediate settlement and long term consolidation settlement.
- In areas of fill, spread foundations may be suitable provided that the fill has been placed in accordance with a suitable Earthworks Specification and verification has been undertaken to confirm the correct design parameters have been achieved. In addition, consolidation and self-weight settlements of the fill itself, and consolidation settlement of materials under the fill should be taken into account.
- Piled foundations may be required if spread foundations cannot be designed to a suitable permissible bearing pressure to reduce, total and differential settlement from consolidation and self-weight settlements to tolerable levels.

Foundations are discussed in more detail in Sections 5.5.2 and 5.5.3 below.

Confirmation of the bearing pressures for foundation design will be subject to further investigation, assessment and specific detailed design and will need to take into consideration the risk of shear failure of the ground (ultimate limit state) and settlements (serviceability limit state). Serviceability limit state assessment will need to be undertaken as part of the separate geotechnical design.

5.5.2 Pad foundations

Pad foundations should be founded at a minimum depth of 0.9m bgl in the firm / medium dense (or better) *in situ* natural glacial till deposits of the Bosworth Member, Thrussington Member and weathered Mercia Mudstone deposits.

In addition, spread foundations may be feasible in engineered fill, provided that it has been laid to a suitable specification and the anticipated settlements are in accordance with the structural performance criteria.

All spread foundations should be laid at least 1.00m below finished ground level to protect against seasonal shrinkage and swelling of the clay soils.

On the basis that an appropriate geotechnical assessment and design is followed, including all comments relating to over-excavation, proof-rolling and removal of soft spots (and works to reduce, differential, consolidation and self-weight settlements to tolerable levels), then a permissible net bearing pressure of 100kN/m² can be applied for the Bosworth Member, and Thrussington Member of the glacial till deposits and the weathered Mercia Mudstone.

Where foundations are constructed in ground to remain at approximately current site levels, in close proximity to pre-existing trees or hedges, the foundations may need to be deepened to below the depth of influence of trees.

Where trees are to be removed, the roots should be grubbed out and foundations extended to below the zone of disturbance created by this activity and to below any remaining root hairs and obvious desiccation.

Deepening of foundations due to vegetation should be undertaken in accordance with BRE 240 and BRE 298 and will need to account for existing, removed or proposed trees and proposed shrub planting. NHBC Standards (Chapter 4.2), whilst not directly pertinent to this type of development, provide a useful assessment with regards to foundation depths due to the influence of vegetation, and the designer may wish to incorporate this into the assessment of foundation depths. A tree survey in accordance with BS 5837:2012 should be undertaken by an arboriculturist to identify the type, and height of existing trees on the site and including any off-site trees, that could have an effect on foundation design.

Where it is not practical to deepen individual pads beyond the influencing distance of any desiccated soils, it is recommended that bulk excavation of the affected area be undertaken and, following moisture conditioning, the soils replaced to a suitable specification.

In addition, where foundations are located where there were previously drainage ditches, ponds, watercourses or other depressions that are later infilled, they may need to be deepened to found in suitable materials.

Foundation formations should be inspected by a suitably competent person to ensure the founding conditions are suitable, and as indicated in this report. Any formation materials deemed as unsuitable should be excavated and replaced with lean mix concrete or deepened to suitable strata.

Foundation excavations should be protected from rain, snow, inflow of surface water, frost and freezing conditions. They should also be protected from drying out in hot dry weather.

Any water that collects at the base of the foundation excavations should be removed by pumping from sumps in the base and any softened soils removed. If this is insufficient, alternative methods of groundwater control will need to be considered.

The cohesive Bosworth, Thrussington and Mercia Mudstone deposits can swell and soften in contact with water. Therefore, care will be required to ensure that foundation excavations are kept as free of water as practicable. Foundation concrete should be poured as soon as practicable after excavation.

5.5.3 Piled foundations

Where the proposed earthworks cannot be designed to reduce differential, consolidation and self-weight settlements to tolerable levels for pad foundations, piled foundations may be necessary, extending through the engineered fill into the underlying competent undisturbed natural deposits.

Bored piles with the use of casing, CFA piles, or driven piles are considered suitable to support the foundations for the proposed structures. However, the choice of piling system should be undertaken by a specialist piling contractor and the design of piles is beyond the scope of this report. The decision on pile type and design should take into account the following factors relevant to the site:

- Groundwater levels are generally shallower at lower elevations and in the vicinity of streams and buried watercourses. Temporary casing may be required in such areas for bored piles. If CFA piles are used, concrete is placed as the auger is withdrawn, which can balance the water pressure if the operation is undertaken carefully.
- Piles should extend a suitable depth into the natural strata to mobilise sufficient shaft friction and end-bearing resistance to carry the required loads without unacceptable settlement.
- Where piles are to be constructed through compressible soils, fill and/or have fill placed over them, they should also be designed to cater for the potential down-drag effects of negative skin friction from the secondary consolidation / creep of the recently placed fill.
- Collapse of the pile shaft can be caused by 'necking' of the pile in running sand conditions, leading to pile failure.
- Where bored piles extend through very soft ground, bulging of the concrete can occur, leading to lateral pressure on adjacent piles.
- Where foundations are constructed on clay soils within the influencing distance of trees design should include for the upper section of the pile to be sleeved or additional length allowed for to resist stresses from clay swelling or shrinkage. In addition, heave protection may be required on the inside faces and underside of the ground beams.

5.5.4 Working platforms

Working platforms will be required prior to the arrival on site of tracked piling plant. These should be designed and installed in accordance with BR470 (BRE 2004) based on data on the piling plant in accordance with an FPS certificate for the rig loadings.

The working platform should be incorporated into the design of the earthworks.

5.6 Ground floor slabs

Subject to geotechnical design and on the basis that excavation and replacement of softer soils will be undertaken, and all structural fill will be placed and verified strictly in accordance with an appropriate Earthworks Specification, then ground bearing floor slabs may be adopted. However, it is expected that the loads on floor slabs from high racking systems will be high and the tolerance to total and differential settlement will be low, if specialist computer controlled racking management systems are adopted. These factors should be taken into account in the design of floor slabs within the warehouses and in areas where storage of containers will apply high loadings.

Ground bearing floor slabs may also be adopted on areas of cut (where a suitably high strength formation is present), subject to confirmation that the potential for swelling of the formation is acceptably low and subject to consideration of the factors mentioned above.

If the proposed earthworks are not designed to carry the required loads or to reduce differential, consolidation and/or self-weight settlements to tolerable levels for the proposed floor slabs, then the

floor slabs would need to be placed on piles, or on soils that have been improved such as using vibro-compacted stone columns (VSCs).

If an unacceptable degree of soil swelling below the floor slab is anticipated, then piled slabs, with suitable sub-floor voids may be necessary.

Should a higher net bearing pressure be required, consideration should be given to ground improvement (such as using VSCs) to increase the stiffness of the earthworks fill.

The floor slabs should be designed by structural engineers and limit state assessment should be undertaken as part of the geotechnical design process, using appropriate characteristic design parameters specific to the relevant site.

Prior to the placement of the founding materials and the construction of the ground bearing floor slabs, the sub-formations and formations will need to be inspected and checked by a competent person to ensure the ground conditions at time of construction are consistent with the Specification and the design parameters derived from the geotechnical design.

Testing should be undertaken in accordance with The Concrete Society Technical Report 34 (The Concrete Society 2013) and DMRB IAN 73/06. It is recommended that the verification of the sub-formation and formation include, as a minimum, the measurement of modulus of sub-grade reaction (k) determined by static plate load testing.

5.7 Roads and pavements

Based on the test results and subject to *in situ* testing during construction, it is considered likely an equilibrium CBR of 3% will be achievable for the design of roads, pavements and trackways over most of the site.

Proof rolling of the formation level will be required and any loose or soft spots should be removed and replaced with an engineered fill, in accordance with a suitable Specification. The formation level will also need to be protected during inclement weather from deterioration; all slopes should be trimmed to falls to shed rain water and the surface sealed to limit infiltration.

Prior to the placement of the founding materials and the construction of the road pavement, the sub-formation and formation will need to be inspected and checked in accordance with a suitable specification to ensure the ground conditions are as expected. All testing should be carried out in accordance with DMRB IAN 73/06 to confirm that the ground conditions at time of construction are consistent with the previous design parameters.

Where the CBR is found to be less than 3%, the sub-grade may be unsuitable for both the trafficking of site plant and as support for a permanent foundation, without improvement works being undertaken. Improvement works should be carried out in accordance with DMRB IAN 73/06 Rev 1 Chapter 5. In summary, consideration may be given to the following potential remedial techniques:

- excavation and re-engineering or replacement of weaker soils;
- the inclusion of geosynthetic reinforcement within the unbound layers of the capping and sub-grade;
- where cohesive soils are present and they are deemed suitable for treatment with hydraulic binders, to employ modification and/or stabilisation techniques on the formation; and

- where granular soils are present, de-watering and re-engineering the formation.

5.8 Drainage

The design of soakaways and SUDS drainage systems will need to take into consideration the anticipated generally low infiltration rates in the clay soils encountered. Infiltration testing will be needed to confirm this assessment.

5.9 Buried concrete

Based on guidelines provided in BRE Special Digest 1 (BRE 2005) and the preliminary information presented in Section 4.6.8 (Table 4.16):

- Bosworth Clay Member, Thrussington Member and Mercia Mudstone can be classified as Design Sulfate Class DS-1 and ACEC Class AC-1. However, Mercia Mudstone, and soils derived from Mercia Mudstone, commonly contain sulphates in the form of gypsum, and a higher grade of concrete may be necessary. Further testing is required to confirm this.
- Water samples indicated that the groundwater can be classified as Design Sulfate Class DS-2 and ACEC Class AC-2. However, as above, further testing is recommended to confirm this.

The designer should check and confirm the classification of concrete using the information presented in Appendix E and Appendix F during the design.

6. GEO-ENVIRONMENTAL ASSESSMENT

6.1 Updated conceptual site model

6.1.1 Updated ground model

The preliminary conceptual ground model initially developed from the desk study and field reconnaissance survey (summarised in Section 2) has been updated using the findings of the ground investigation and is detailed in Section 4. This ground model is used in the geo-environmental assessment presented in the following section.

It should be noted that this assessment is based on a preliminary widely spaced investigation, to limited depth, and is provided for initial assessment purposes. Further investigation and assessment will be required, particularly in targeted areas around identified potential source of contamination, to enable final remediation requirements to be determined. However, as most of the site is formed of agricultural land, with few potential sources of contamination, the investigation and testing results contained in this report are considered generally representative of the majority of the site.

6.1.2 Updated exposure model

Following this preliminary site investigation, the plausible contaminant sources, receptors and pathways identified in the preliminary geo-environmental exposure model (Section 2), have been updated or confirmed as follows.

Sources

No potential sources have been removed from, or added to, the exposure model.

Pathways

No pathways have been removed from, or added to, the exposure model.

Receptors

No potential receptors have been removed from, or added to, the exposure model.

With reference to the updated ground model and updated exposure model reported above, generic risk assessment is undertaken below.

6.2 Risk assessment approach

A number of generic risk assessments have been undertaken in accordance with the principles of CLR 11 (Environment Agency 2004) using the CSM that has been updated following the ground investigation.

Exploratory locations were positioned to target areas of potential contamination primary comprising the following Zones of development

- The Weeping Willows (Zone 1, Field F4);
- Woodhouse Farm (Zone 2, Field F15);
- Hobbs Hayes Farm (Zone 3, Field F25);
- Freeholt Lodge (Zone 3, Field F32); and

- Railway infrastructure (northern boundary of Zones 1 and 4).

However, specific sources such as tanks could not be targeted due to access constraints.

Firstly, the risks associated with the identified potential contaminant linkages have been estimated using standardised methods (typically involving comparison of site data with published 'screening values'. Secondly, where screening values are exceeded, the risks have been evaluated in an authoritative review of the findings with other pertinent information to determine if the exceedance may be acceptable in the particular circumstances. For details please refer to the reference in Appendix L.

The data sets used comprise the appropriate analytical results obtained by Hydrock and listed in Section 3. In cases where unacceptable risks are indicated, mitigation measures such as more advanced stages of risk assessment or remediation are proposed in Section 6.10.

6.3 Human health risk assessment

This is a Tier 2 assessment using soil screening values for commercial land use scenarios.

The soil screening values used are generic assessment criteria (GAC). The Category 4 Screening Levels (C4SL) for lead have been used as there are no recognised GAC and the use of the term 'GAC' in this report includes these.

Statistical testing is used where data sets are suitable. For data sets with low sample numbers and where sampling is targeted at specific areas, individual sample test results are compared directly with the screening values.

The phrase 'further assessment required' is used to denote soil concentrations that are equal to, or exceed, a GAC. This does not necessarily mean that the soil is 'contaminated' or not fit for use. The assessment and any mitigation work required are to ensure the site does not pose an 'unacceptable risk'.

The results of the assessment are presented in Appendix H.

6.3.1 Averaging areas

The 'averaging area' used in this report is based on the conceptual model and the proposed development, and is has been split into five areas comprising Zone 1 to Zone 5, with the data separated into Made Ground and Topsoil/natural soils.

6.3.2 Risk estimation (including statistical testing)

Outliers

Whilst the analysis of the data set indicates that statistical outliers may be present, the relatively small size of the data set per area means that it is not possible to determine if separate averaging areas are appropriate nor if these represent contaminant hotspots. Consequently, a conservative approach has been adopted and no outliers have been removed from the data.

6.3.3 Risk estimation (without statistical testing)

Hydrock default list of determinands

There are no individual test results that exceed the GAC.

Asbestos

Asbestos has been identified by laboratory testing in one of the forty-three soil samples tested across the 5 Zones. Asbestos was detected in Woodhouse Farm (Zone 2) in WS15 at a depth of 0.30m bgl. Further investigation work is likely required to determine the extent of the asbestos contamination.

The presence of Asbestos Containing Materials and asbestos fibres, quantification testing undertaken on the sample indicates that the concentration of asbestos is <0.001%.

Petroleum hydrocarbons (PHC) and Volatile organic substances (VOC)

No petroleum hydrocarbons or volatile organic substances were detected above guideline values.

In Zone 2 exploratory positions HP01 and WS15 targeted fuel tanks. Three of the remaining (known) tanks were not targeted due to access constraints.

In Zone 3 exploratory positions HP06 targeted a fuel tank the second (known) tank was not targeted due to access constraints.

6.3.4 Risk evaluation

The preliminary screening exercise has identified asbestos in Made Ground soils at concentrations above the GAC. These are considered further here to assess if the exceedance may be acceptable with respect to the proposed development. The phrase 'further assessment' does not necessarily mean that the soil is 'contaminated' or not fit for use.

Asbestos

Asbestos fibres were detected in one exploratory hole location (WS15), asbestos quantification testing indicated fibres below <0.001%v/v of chrysotile.

Hydrock consider it plausible for asbestos to be present in any of the Made Ground soils and asbestos, (even at low concentrations), represents a risk and control/mitigation measures will be required In Woodhouse Farm (Zone 2, Field F15).

Further testing is considered necessary within the following areas of development:

- The Weeping Willows (Zone 1, Field F4);
- Hobbs Hayes Farm (Zone 3, Field F25);
- Freeholt Lodge (Zone 3, Field F32); and
- Railway infrastructure (northern boundary of Zones 1 and 4).

Guidance on the assessment of risk associated with asbestos in soils was published by CIRIA C733 in 2014. This proposed a semi-quantitative risk assessment methodology for asbestos, based on potential for inhalation of airborne fibres. As many factors affect the potential magnitude of fibre inhalation in addition to concentration, it is not practicable to derive generic screening criteria for asbestos concentrations in soil. Risk factors applicable to the site are considered below:

- No visible evidence of asbestos materials was noted in the exploratory holes, suggesting that asbestos materials are present only as very minor constituents in the soil.
- Where asbestos was identified by laboratory testing, the concentration was assessed as being less than the limit of detection (0.001%).
- Only chrysotile (white) asbestos fibres were identified. Chrysotile is the least hazardous of the three principle asbestos forms, most commonly associated with asbestos cement products.
- Although the impacted soils might be excavated and disturbed, with consequent potential for fibre release during groundworks.
- The materials in which asbestos was identified were of mixed composition but included some clay content. The likelihood of asbestos fibres being released from cohesive materials is less than might be the case for loose material such as sand /silt.

Subject to regulatory approval, whilst Hydrock consider it plausible for asbestos to be present in any of the Made Ground soils, overall, the risk associated with the identified presence of asbestos is considered to be low. This assessment s to be confirmed with further investigation and testing.

6.4 Plant life risk assessment

6.4.1 Risk estimation

Priority phytotoxic chemical concentrations have been screened against published values to determine the likely risk to plant growth and the findings presented in Appendix H. Sample test results are compared directly with the screening values.

Based on a US_{95} exceedance of the GAC, the pervasive chemicals of potential concern which require further assessment are summarised in Table 6.1.

Table 6.1: Pervasive chemicals of potential concern for which further assessment is required (risk to plants)

Chemical of potential concern	Generic criterion (mg/kg)	Basis for generic criterion	No. samples	Min. (mg/kg)	Max. (mg/kg)	No. samples exceeding generic criterion	Sample location
Made Ground – Zone 1							
Boron	3	New Zealand timber 1997	1	3.3		-	WS14 at 0.3m
Made Ground – Zone 2							
Boron	3	New Zealand timber 1997	6	0.5	8.2	1	HP03 at 0.5m
Made Ground – Zone 3							
Boron	3	New Zealand timber 1997	12	0.8	3.7	1	HP14 at 0.2m
Zinc	300	BS3882 2015	12	35	530	1	HP14 at 0.3m
Copper	135	BS3882 2015	8	1	2100	1	HP15 at 0.3m
Natural soils – Zone 2							
Boron	3	New Zealand timber 1997	6	1	4.1	1	WS19 at 0.1m

Chemical of potential concern	Generic criterion (mg/kg)	Basis for generic criterion	No. samples	Min. (mg/kg)	Max. (mg/kg)	No. samples exceeding generic criterion	Sample location
Natural soils – Zone 3							
Boron	3	New Zealand timber 1997	8	1	3.7	1	HP14 at 0.3m
Natural soils – Zone 4							
Boron	3	New Zealand timber 1997	3	2.5	3.5	2	TP12 at 0.1m and 0.2m

6.4.2 Risk evaluation

Within Zones 1, 2 and 3, out of 12 samples tested, three samples contained elevated concentrations of boron and one with elevated concentration of zinc which were detected in Made Ground deposits. Concentrations of boron and zinc are marginally elevated compared to the GAC.

Within Zones 2, 3 and 4, three samples were found to contain elevated concentrations of boron and one with and elevated concentration of zinc was detected in a sample of Topsoil. Concentrations of boron and zinc in Made Ground soils are also slightly elevated when compared to the GAC.

Detriment to plant life is difficult to quantify and many of the GAC are based on agricultural crop yields rather than harm to particular plant species. As the exceedances are generally slight and the vegetation on site did not show any visible signs of distress, Hydrock does not believe there to be an unacceptable risk to plant life from contamination and no any additional consideration is required with regard to risks to plant life. However, this should be confirmed by soil specialists where risks might apply to topsoil which is to be re-used on or off the site.

6.5 Pollution of controlled waters risk assessment

6.5.1 Risk estimation

The risks to groundwater and surface water from contaminants on site have been assessed in accordance with the Environment Agency (2006) Remedial Targets Methodology (RTM).

Site contaminant loadings are compared with relevant screening values (Water Quality Targets (WQT)), which are linked to the Conceptual Site Model. Acceptable WQT are defined for protection of human health (based on Drinking Water Standards (DWS)) and for protection of aquatic ecosystems (Environmental Quality Standards (EQS)). As related specifically to this site, the data are compared with criteria selected in accordance with the methodology presented in Appendix L. This methodology involves selecting, which of several alternative risk scenarios apply in this case. The assessment is presented in Table 6.2 below, with the justification for the scenarios selected explained in the following text:

Table 6.2: Summary of water quality risk assessment protocol

Hydrock scenario	Water body receptors	Secondary receptors	Example contaminant linkages	RTM level and data used	Water quality targets
B	Groundwater. Surface water.	Aquatic ecosystem	Contaminants from site leach or seep into groundwater body and this feeds inland surface water by base flow. The surface water may be an aquatic ecosystem.	RTM Level 2 - Groundwater. Direct comparison of surface water samples	EQS (inland)
Notes: Some EQS are water hardness dependent. This is measured either in the receiving surface water or in groundwater (if it is part of the pathway), or is estimated from national maps. Inland waters EQS applicable to freshwater, 'other' waters EQS applicable to coastal or transitional waters. This table and the results of the assessment are considered as a first screening for potential risks of pollution of Controlled Waters. More specific requirements may be stipulated by the relevant Agency.					

The results of the screening assessment are presented in Appendix H and are summarised in Table 6.3.

There are no WQT for petroleum hydrocarbon fractions in water. However, because of the sensitivity of the water environment to petroleum hydrocarbons, an initial screening exercise is also included in Table 6.3 irrespective of the assessment scenario(s) stated in Table 6.2.

In some instances, the reporting limit (or detection limit) quoted by the laboratory may be greater than the WQT that it is being assessed against. As the current exercise is an initial screening assessment, further assessment of these elements has not been undertaken.

Table 6.3: Chemicals of potential concern for which further assessment is required (controlled waters)

Chemical of potential concern	Water quality target (WQT) (µg/l)	Basis for water quality target	No. samples tested	No. samples above LoD	Min. (µg/l)	Max. (µg/l)	No. samples exceeding WQT and above LoD
Chromium	3.4	EQS	6	1	<1	5.4	1
Copper	1	EQS bio†	6	6	1.8	19	6
Manganese	123		6	4	190	490	4
Nickel	4		6	1	1.1	6.7	1
Zinc	10.9		6	1	2.5	60	1
Sulphate	400000	EQS	6	1	53000	898000	1
Note: the maximum recorded value is compared with the water quality target. † The EQS for these substances represents a bioavailable concentration, which will be a proportion of the actual dissolved concentrations in water. No site-specific bioavailablity testing was able to be undertaken at the site and therefore the EQS bioavailable represents a conservative screening approach.							

Total Petroleum Hydrocarbons were not detected above limit of detection. In either of the water samples tested (WS11 and WS26).

6.5.2 Risk evaluation

Metals

The EQS for chromium, copper, manganese, nickel and zinc are marginally exceeded.

There is a single exceedance of the EQS is recorded for chromium identified in WS26, located in Zone 3, F25). The exceedance is minor and there are no known sources of chromium within this part of the site. Hydrock do not consider that chromium poses a significant risk to controlled waters and does not need to be assessed further.

The EQS for copper, manganese, nickel and zinc are based on the bioavailable fraction and although bioavailability has not been calculated for these metals, the exceedances are only slight. The assessment is therefore conservative as it is based on the assumption of 100% bioavailability. On this basis, Hydrock does not consider that these determinands pose a significant risk to controlled waters from the areas where spoils have been tested. However, more detailed investigation is required to confirm this.

Sulphate

The EQS for sulphate is exceeded in one of six samples tested (WS39, located in Zone 2, F12). The exceedance is minor and Hydrock does not consider that these determinands pose a significant contamination risk to controlled waters.

Summary

Hydrock does not believe that the site poses a significant risk to water receptors but recommends that additional water monitoring wells and testing is undertaken in a later phase of investigation to confirm this.

The National Planning Policy Framework requires that a site should be incapable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990. On the basis of the current preliminary investigation, Hydrock considers that this is the case and there are no areas within the site that have the potential to be determined as contaminated land under Part 2A.

6.6 Ground gases risk assessment

6.6.1 Ground Gas Data

It is judged from the available evidence that the gas generation potential from alluvium deposits and backfilled ponds at the site is low. The sensitivity of the proposed commercial nature of the development is also low. Consequently, and in accordance with CIRIA C665 (Table 5.5a and 5.5b), an appropriate minimum monitoring regime is considered to be six readings over two months, provided other monitoring requirements are also met, such as prevailing atmospheric pressure conditions (for example, BS 8485:2015 suggests monitoring should include a period of falling atmospheric pressure).

Hydrock has undertaken the six readings as scheduled including during low / falling atmospheric pressure. As such, the conclusions presented below are considered representative. However, they are based on a small dataset and further investigation and monitoring will be required to confirm the ground gas conditions for design purposes.

6.6.2 Ground Gas Assessment

The risks associated with the ground gases methane (CH_4) and carbon dioxide (CO_2) have been assessed using BS 8485:2015 +A1:2019, which cites the guidelines published by CIRIA (Wilson et al 2007) (known as Situation A).

The assessment guidelines published by CIRIA are based on interpretation of the gas concentrations and the gas flow rates, amongst other variables, and are compliant with the model procedures of CLR11. The modified Wilson and Card assessment has been used by comparing the maximum gas concentrations and gas screening values (GSV[1]) in Appendix D with the published table (CIRIA Table 8.5, reproduced below as Table 5.4) and the assessment is summarised in Table 6.4.

Table 6.4: Ground gas risk assessment

	Min	Max	Typical	Comment
Steady Flow Rate (l/hr)	0	0	0	-
Methane (%)	0.1	0.1	<1	-
Carbon Dioxide (%)	0.0	6.0	<5	Three of six monitoring visits recorded Carbon Dioxide above 5% in WS11.
Carbon Monoxide (%)	1	1	1	-
Hydrogen Sulphide (%)	1	1	1	-
Oxygen (%)	14.8	20.8	20	-
Carbon Dioxide GSV (l/hr)	0.0001	0.0060	<0.0060	CS1
Methane GSV (l/hr)	0.0001	0.0001	<0.0001	CS1
For the purposes of the calculation, where the recorded gas flow rate is below the manufacturer's limit of detection for the instrument used, the detection limit has been adopted for the gas flow rate.				

As indicated in Table 6.4, the computed GSVs for carbon dioxide and methane indicate CS1 conditions. However, carbon dioxide at concentrations above 5% indicates the classification should be increased. Carbon Dioxide was detected above 5% in WS11 in three of the six monitoring visits indicating a CS2 classification. No elevated readings were recorded in WS13 located approximately 50m east of WS11. Due to the due diligence nature of this report further gas monitoring rounds are required in accordance with CIRIA C665. During the detailed ground investigation Hydrock recommend additional gas monitoring installations are installed to confirm the suitability of the CS2 classification.

On that basis of the above the site local to WS11 is classed as CS2. Further investigation and testing is required to zone the areas required gas protection measures.

It is likely that existing Made Ground soils will be removed during anticipated earthworks. In addition, the earthworks will involve substantial amounts of cut and fill which will change the ground gas regime from that shown by the current monitoring. The need for ground gas precautions will need to be

[1] Note: GSV is synonymous with 'site characteristic hazardous gas flow rate' (Q_{hgs}) of BS 8485:2019.

addressed on an individual basis for each building and area, when more details of the proposed development are available, and following site-specific ground investigations.

6.6.3 Off-site risks from carbon dioxide and methane

Whilst slightly elevated carbon dioxide concentrations have been detected, Hydrock do not believe these are significant with regards to off-site risk. On this basis, Hydrock does not believe that the site poses a risk to adjacent sites with regards to gaseous contamination. Similarly, no off-site sources of gas have been identified that could pose a risk to the proposed development. Therefore, Hydrock considers that there are no areas within the site that could be determined as contaminated land under Part 2A of the Environmental Protection Act 1990.

6.7 Construction materials risk assessment

6.7.1 Water pipelines

A formal water pipe investigation and risk assessment is beyond the scope of this report and this will need to be undertaken as part of the design process. However, the findings of this preliminary investigation have been compared to the threshold values in Water UK HBF (2014), Table 1 as far as is practicable, to give an indication of the possible restrictions to the use of plastic pipes for water supply to the site (see the reference in Appendix L for further details).

The site is predominantly previously undeveloped, with small brownfield areas predominantly in the farm areas where development has taken place. Assessment has indicated no exceedance of the Water UK threshold values in the open agriculture fields of the site. However, a number of the threshold values for petroleum hydrocarbon fractions are locally exceeded. Subject to agreement with the Water Authority, it may be possible for the site to be classified as 'dual status', i.e. contaminated and non-contaminated, from the perspective of the water supply pipe requirements, with standard pipework for the undeveloped parts of the site and barrier pipework in the areas of development.

Further investigation and testing is required to confirm the above assessment and the results should be included in the design process.

6.7.2 Other construction materials

The implications of aggressive ground conditions for buried concrete, primarily from sulfates and pH condition in the soils, are discussed in Section 5.9. These will need to be considered in the light of the development proposals in the design stages.

6.8 Contamination risks to ground workers

Whilst risks to construction workers are not discussed in detail, the following section discusses potential risks that should be considered in planning the construction works.

Information presented in this document is provided to assist in managing the risk associated with contamination in soil and groundwater at the site but is not definitive. Contractors are responsible for undertaking their own assessments and assessing what risks are present and what control measures are required.

Task specific risk assessments and method statements should be in place, and risks and required mitigation measures communicated to all relevant personnel prior to the works commencing. Appropriate PPE and, if required, RPE should be provided and utilised.

6.8.1 *Metals, metalloids, PAH and petroleum hydrocarbons*

The Made Ground soils contain elevated concentrations of metals, metalloids and PAH. Appropriate health and safety precautions will need to be undertaken particularly when working with Made Ground at the site.

6.8.2 *Ground Gas*

It is noted that concentrations of carbon dioxide (an asphyxiant) in the soil locally exceed HSE Workplace Exposure Limits for personnel in the working environment of 1.5% for short term (15 minutes) exposure and 0.5% for long term exposure. Furthermore, in some soil gas, the concentrations of oxygen are below the HSE minimum recommendation of 18%.

Soil gas concentrations are not necessarily reflected by those in the breathing zone. However, contractors and maintenance workers should be made aware of the possible presence of carbon dioxide and should take all necessary health and safety precautions when working in trenches or confined spaces.

6.8.3 *Asbestos*

Apart from the ACM noted on the farm buildings, no clearly identifiable asbestos has been seen during the site walkover or detected during the site investigation, with the exception of loose fibres which were detected in one sample of Made Ground in soil from WS15.

Site staff will need to be made aware of the possibility of encountering asbestos within the Made Ground soils anywhere on the site at any stage of the development and suitable precautions will need to be applied.

Risk Assessments should be undertaken in accordance the Control of Asbestos Regulations 2012 (CAR2012). The results of the assessment should be used to compile a methodology in accordance with CAR2012, which limits the potential exposure and spread of asbestos fibres. Appropriate training should be provided to all site staff identified within the risk assessment as having the potential to be exposed or encounter asbestos during their work.

It is the responsibility of contractors to ensure that mitigation measures are suitable and sufficient to prevent exposure to airborne asbestos so far as is reasonably practicable. If asbestos fibres are detected in a soil matrix, keeping it damp, with appropriate site hygiene measures in place, should assist in minimising the release of airborne fibres.

6.9 Findings of the generic contamination risk assessments

The potential sources, pathways and receptors identified in the desk study (Section 2.0) have been investigated (Sections 3 and 4) and assessed (Sections 6.2 to 6.7). A Source-Pathway-Receptor linkage assessment has been undertaken and is presented for each of the site zones (Zones 1 to 5) in Appendix K (Table K.2).

A summary of the Source-Pathway-Receptor (S-P-R) contaminant linkages for which the risks may be unacceptable and require mitigation (those that are moderate or higher) are discussed in Table 6.5.

Table 6.5 assumes the following S-P-R linkages which have been discounted (subject to agreement) at the risk evaluation stage are confirmed by the regulators as not requiring further consideration (mitigation). If these assumptions are not agreed during regulatory discussions, the conclusions as noted in Table 6.5 will need to be updated:

Table 6.5: Final conceptual model and residual risks following risk evaluation

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation/further work
Zone 1					
PL 1.	Made Ground associated with development on site and backfilled ponds.	Ingestion, inhalation or direct contact.	Human health.	No exceedance of the GACs.	Additional investigation required to target backfilled ponds and Weeping Willows Kennels.
PL 2.	Hydrocarbon in fuel tanks e.g. in Field F4.	Ingestion, inhalation or direct contact.	Human health.	Localised occurrences	Additional investigation and testing required to target tanks e.g. the tank plinth in the Weeping Willows Kennels.
PL 3.	Made Ground containing biological contamination e.g. in The Weeping Willows in Field F4.	Ingestion or direct contact.	Human health.	Localised occurrences	Additional investigation and testing required to target the septic tank in the Weeping Willows Kennels.
PL 4.	Pesticides and herbicides from agricultural use and railway line maintenance.	Ingestion, inhalation or direct contact.	Human health.	-	Additional more detailed investigation and testing required.
PL 5.	Ground gases (carbon dioxide and methane) from organic materials in Made Ground and backfilled ponds.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation). Users of off-site properties (asphyxiation).	Assume Characteristic Situation 1.	Additional investigation and testing required to confirm classification.

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation/further work
PL 6.	Buildings on site and railway land (asbestos).	Inhalation of fugitive dust.	Human health.	Made Ground locally detected to contain asbestos-containing materials in WS15 (6.8.3)	Additional investigation and testing required to delineate extent of materials containing asbestos.
Zone 2					
PL 7.	Made Ground associated with development on site and backfilled ponds.	Ingestion or direct contact.	Human health.	No exceedance of the GACs.	Additional investigation and testing required to target areas such as Woodhouse Farm and backfilled ponds.
PL 8.	Hydrocarbon fuels: Tanks recorded in Woodhouse Farm.	Ingestion, inhalation or direct contact.	Human health.	-	Additional investigation and testing required to target the tanks located in Woodhouse Farm.
PL 9.	Pesticides and herbicides from agricultural use.	Ingestion, inhalation or direct contact.	Human health.	Likely to be mainly in Topsoil	Additional investigation and testing of topsoil and shallow soils required.
PL 10.	Ground gases (carbon dioxide and methane) from organic materials in Made Ground, backfilled ponds and alluvial deposits.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation). Users of off-site properties (asphyxiation).	Assume Characteristic Situation 1.	Additional investigation and testing required to confirm classification.
PL 11.	Asbestos – in buildings and in soils on site.	Inhalation of fugitive dust.	Human health.	No asbestos detected in soil testing undertaken to date.	Additional investigation and testing required. Demolition and material handling to be undertaking using appropriate precautions for asbestos in building materials.

Cont…

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation/further work
Zone 3					
PL 12.	Made Ground associated with development on site and backfilled ponds.	Ingestion or direct contact.	Human health.	-	Additional investigation and testing required to target Hobbs Hayes Farm, Freeholt Lodge and backfilled ponds.
PL 13.	Hydrocarbon fuels Tanks recorded in Hobbs Hayes Farm and Freeholt Lodge.	Ingestion, inhalation or direct contact.	Human health.	-	Additional investigation and testing required to target the tanks located in Hobbs Hayes Farm and Freeholt Lodge.
PL 14.	Pesticides and herbicides from agricultural use.	Ingestion, inhalation or direct contact.	Human health.	Likely to be mainly in Topsoil	Additional investigation and testing required.
PL 15.	Ground gases (carbon dioxide and methane) from organic materials in Made Ground, backfilled ponds and alluvial deposits.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation). Users of off-site properties (asphyxiation).	Assume Characteristic Situation 1.	Additional investigation and testing required to confirm classification.
PL 16.	Buildings on site (asbestos).	Inhalation of fugitive dust.	Human health.	No asbestos detected in soil testing undertaken to date.	Additional investigation and testing required. Demolition and material handling to be undertaking using appropriate precautions for asbestos in building materials.

Cont…

Contaminant Linkage				Comments	
Pollutant Linkage	Sources	Pathways	Receptors	General	Mitigation/further work
Zone 4					
PL 17.	Made Ground associated with potentially infilled land and backfilled ponds.	Ingestion or direct contact.	Human health.	No exceedance of the GACs.	Additional investigation and testing required to target potential back filled ponds.
PL 18.	Pesticides and herbicides from agricultural use and railway line maintenance	Ingestion, inhalation or direct contact.	Human health.	Likely to be mainly in Topsoil	Additional investigation and testing required.
PL 19.	Ground gases (carbon dioxide and methane) from organic materials in Made Ground and backfilled ponds.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation). Users of off-site properties (asphyxiation).	Assume Characteristic Situation 1.	Additional investigation and testing required to confirm classification.
Zone 5					
PL 20.	Made Ground associated with highway development on site, potentially infilled land and backfilled ponds.	Ingestion or direct contact.	Human health.	No exceedance of the GACs.	Additional investigation and testing required to target potentially infilled land.
PL 21.	Pesticides and herbicides from agricultural use.	Ingestion, inhalation or direct contact.	Human health.	Likely to be mainly in Topsoil.	Additional investigation and testing required.
PL 22.	Ground gases (carbon dioxide and methane) from organic materials in Made Ground.	Migration through soils or groundwater to indoor air.	End users of new buildings (asphyxiation). Users of off-site properties (asphyxiation).	Assume Characteristic Situation 1.	Additional investigation and testing required to confirm classification.

6.10 Mitigation measures

As detailed in

Table 6.5, Hydrock consider the following mitigation measures against soil contamination will be required to ensure the site is suitable for use for the proposed end use. These mitigation works will be undertaken in a number of phases and can be separated into:

- Demolition Phase;
- Enablement Phase; and
- Construction Phase.

There will also be a requirement to undertake works to ensure the site is geotechnically suitable.

The methodology for the remediation should be detailed in Remediation Strategies and Verification Plans, which will need to be submitted to the regulatory authorities for approval.

The writing and approval of Materials Management Plans will be required to allow reuse of suitable material at the site. As processing of Made Ground is required, appropriate Environmental Permits may also be required.

Verification reports by a suitably qualified independent geo-environmental specialist will be required following completion of any remedial works (including ground gas membrane installation where appropriate).

6.10.1 Demolition Phase

The existing buildings and associated infrastructure will be demolished as part of the remediation works and the following works are considered necessary:

- demolition asbestos survey;
- site clearance;
- removal of any asbestos by specialist Contractors in accordance with the asbestos survey and relevant legislation;
- removal of tanks and associated pipework;
- demolition of site buildings and ancillary structures to slab level; and
- processing the demolition arisings to a suitable specification in accordance with the WRAP protocol.

6.10.2 Enablement Phase

The following works will be necessary during the Enablement Phase of construction:

- break out of all hardstanding and below ground obstructions and processing for reuse in accordance with a suitable specification and Materials Management Plans (MMP);
- removal of below ground tanks, existing drainage system and associated pipework;
- examination of soils below and around all potential point sources (tanks, drums, pipes, drains and areas of staining), known hotspots and excavation of impacted soils (as possible depending on site constraints);

- disposal of petroleum hydrocarbon contaminated soils (or treatment and reuse if considered viable);
- excavation of Made Ground and natural soils as required to allow construction with appropriate materials management and processing of excavated soils using a combination of: excavation and stockpiling and screening of soils to leave the site at the level required for the installation of a working platform and pavement construction.
- removal of any free phase hydrocarbons and disposal (none encountered to date);
- off-site disposal of unsuitable or excess material; and
- verification during enablement works.

6.10.3 Construction Phase

The Construction Phase of works includes an extensive phase of earthworks, including cuttings, embankments for structural and landscaping use, slopes, and retaining walls, followed by construction of the proposed structures, paved areas, drainage, and other infrastructure. The precautions to be taken in terms of contamination in the construction phase will include:

- appropriate materials handling and stockpiling in accordance with Materials Management Plans (MMP);
- ensuring soils are suitable for their intended end use, chemically and geotechnically;
- provision of clean cover systems where required;
- installation of Protectaline pipework where required; and
- installation of ground gas mitigation measures in buildings where required, to comply with CS2 conditions or otherwise as determined from further investigation (as detailed in Section 6.10.4).

6.10.4 Gas protection measures

Mitigation of the risk from ground gases needs to be undertaken in accordance with BRE 414, CIRIA 665, BS 8485:2015 and CIRIA C735. In accordance with BS 8485:2015 +A1:2019, the design of gas protection measures needs to be undertaken in accordance with the Characteristic Situation and the building type:

- The site is provisionally classified as Characteristic Situation 2
- The warehouses are classified as Type D buildings.

As such, the buildings require 1.5 points of protection. This is illustrated in Table 6.6.

Table 6.6: Gas protection score by CS and type of building (after BS 8485:2015 +A1:2019)

Characteristic Situation	Minimum gas protection score (points)			
	High risk		Medium risk	Low risk
	Type A building	Type B building	Type C building	Type D building
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5[A]	5.5[A]	4.5	3.5

Characteristic Situation	Minimum gas protection score (points)			
	High risk		Medium risk	Low risk
	Type A building	Type B building	Type C building	Type D building
5	_ [B]	6.0[A]	5.5	4.5
6	_ [B]	_ [B]	_ [B]	6.0

The final design of ground gas protection measures is to be specified by the designer (in accordance with CIRIA 665 and BS 8485:2015) and the protection will need to be achieved by a combination of two or more of the following three types of protection measures:

- the structural barrier of the floor slab;
- ventilation measures; and
- gas resistant membrane.

Where design elements are required to meet certain standards to qualify for the protection points (e.g. cast *in situ* monolithic reinforced floor slab), it is up to the designer to ensure the minimum requirements of the standards are met.

Where used, gas resistant membranes should be:

- sufficiently impervious to methane and carbon dioxide;
- capable, after installation, of providing a complete barrier to the entry of the relevant gas;
- sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions;
- sufficiently strong to withstand in service stresses (e.g. due to ground settlement if placed below a floor slab);
- sufficiently strong to withstand the installation process and following construction activities until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, and dropping tools); and
- chemically resistant to degradation by other contaminants that might be present.

As preliminary guidance, Hydrock would suggest the following:

Either:

- Beam and block or pre-cast concrete floor slab (0 points);
- passive sub floor ventilation e.g. void (1.5 points); and
- 2000g gas resistant membrane (2.0 points).

Or:

- Cast *in situ* suspended floor slab (with only nominal mesh reinforcement) (0.5 points);
- passive sub floor ventilation e.g. void (1.5 points); and
- 2000g gas resistant membrane (2.0 points).

Other variations are possible. It is up to the designer to design and specify ground gas protection measures.

Where a gas resistant membrane is required as part of the design, all joints and penetrations are to be sealed and the installation is to be verified in accordance with CIRIA C735 (Mallet et al 2014) or it will score zero points and will not be deemed to afford any protection. This verification will involve verification by the Contractor and independent verification on a selected number of plots by Hydrock or alternative qualified independent third party.

Whilst tape can be utilised to seal the seams Hydrock would recommend the membranes are sealed using welded seams and the use of specialist seals around penetrations (top hats etc.). The installer is to present an installation methodology and a QA/QC plan for installation to Hydrock for comment, with particular attention given to sealing the membrane.

In order to achieve the points specified for ventilation, the architect is to design passive ventilation to meet at least 'good performance', as detailed in Annex B of BS8485:2015.

7. WASTE AND MATERIALS MANAGEMENT

7.1 Waste

7.1.1 Introduction

In order for excavated materials to be used on this site or other sites as earthworks fill, one or more Materials Management Plans (MMP) will be required. For material which does not fall within the MMP and is to be taken off site, the following comments will apply (see Section 7.2.2).

Any material excavated on site may be classified as waste and it is the responsibility of the holder of a material to form their own view on whether or not it is waste. For further details, please refer to Appendix L.

Prior to removal from site, any waste material must be classified as being either hazardous or non-hazardous, using the characterisation assessment and analysis described by the WM3 technical guidance. Then, if a waste hierarchy assessment determines that disposal to landfill is the appropriate option for the waste, chemical WAC testing must be undertaken on the actual soils designated as waste and destined for inert, stable non-reactive hazardous or hazardous classes of landfill.

The following section is a preliminary classification of waste based on the site investigation data. However, the actual classification can only be undertaken by the receiving landfill as licence conditions vary from landfill to landfill. If material is to be removed from the site, prior to export, the data in this report should be presented to the proposed receiving landfill site for it to confirm that it is suitably licensed to accept them. Additional testing on the actual excavated soils to be disposed of, will be necessary at the time of disposal.

7.1.2 Preliminary waste classifications

Based on the site history, WAC testing and the HazWasteOnline™ assessment (see Appendix I), if suitable segregation of different types of waste is put in place, for soils to be disposed of, it is considered that:

- Made Ground soils associated with developed area on site (Woodhouse Farm in Zone 2) could be classed as Hazardous waste by virtue of elevated petroleum hydrocarbons.
- Made Ground soils associated with Hayes Farm in Zonae 3 and Freeholt Lodge in Zone 3 could be classed as hazardous waste by virtue of elevated copper, lead and petroleum hydrocarbons.
- Excavated natural soils which are not affected by contamination and Topsoil are likely to be classed as non-hazardous waste and subject to further testing and assessment, could probably be disposed of at Inert landfill.

It should be noted that:

- The above preliminary assessment has been made on the basis of the soils tested as part of the preliminary ground investigation. Limited testing has been undertaken and not on all soils likely to be involved in the proposed works. Prior to disposal, the characteristics of the actual soils to be disposed of will need testing and classification in consultation with landfill sites and waste disposal Contractors. The receiving landfill will make the final decision on the classification and acceptability of the waste.

- All waste soils require pre-treatment (which can include separation, sorting and screening) prior to disposal. Mixing of waste classes is not allowed.
- The costs for disposal of non-hazardous and hazardous soils are significant compared to disposal of inert material.
- In addition to disposal costs, landfill tax will be applicable. Non-hazardous and hazardous waste will generally be subject to the Standard Rate Landfill Tax (£88.95 per tonne as at 1 April 2018). Inert waste will generally be subject to the Lower Rate Landfill Tax (£2.80 per tonne as at 1 April 2018). These are set to rise further in the future.

7.2 Materials management

7.2.1 Introduction

From 1 April 2018, the scope of Landfill Tax has been extended to sites operating without the appropriate environmental disposal permit, and operators of illegal waste sites will now be liable for Landfill Tax. Full details are available at: https://www.gov.uk/government/publications/landfill-tax-disposals-not-made-at-landfill-sites/landfill-tax-disposals-not-made-at-landfill-sites.

HM Revenue and Customs (HMRC) will be charging landfill tax on illegal waste deposits on construction sites and HMRC also has the ability to prosecute for landfill tax evasion fines for any illegal deposits. However, where an operator can demonstrate they are compliant with a recognised waste exemption, Code of Practice, or Quality Protocol, they will remain outside the scope of the tax.

In summary, if non-natural or contaminated soils are excavated and reused on sites (or soils are moved to or from another site for reuse), without a MMP or appropriate Permit in place, anyone who knowingly facilitates the disposal may be jointly and severally liable to any assessment of tax, fines, or prosecution.

It is worth noting that the legislation covering waste management has not changed. However, the mechanism that the Environment Agency and HMRC will use to enforce it has changed.

However, provided that soils are managed in accordance with 'The Definition of Waste: Development Industry Code of Practice', Version 2 (CL:AIRE), known as the DowCoP, the soils will never become a waste.

7.3 Materials management scenarios

7.3.1 Naturally occurring, uncontaminated soils

Where soils are naturally occurring, uncontaminated and are reused on the site they are excavated (i.e. completely uncontaminated greenfield site, with no Made Ground), they will fall outside the Waste Framework Directive (WFD) (i.e. they will not be a waste when reused on the site of origin).

However, there needs to be certainty of that reuse, and evidence is necessary to support this strategy. As such, Hydrock would recommend that a Materials Management Strategy document is prepared to prove certainty.

Where soils are naturally occurring and uncontaminated, they only become a waste on leaving the site.

When moving uncontaminated, naturally occurring soils between sites, it must be ensured they are being transferred under a MMP.

7.3.2 Made Ground or contaminated soils

On sites where Made Ground or contaminated (including by naturally occurring chemicals) soils are present, any soils excavated may be a waste.

As such, for any site where Made Ground is present and soils are being moved and reused on, or off site, it could be deemed a waste, and subject to either:

- a Materials Management Plan (MMP), to prevent the material ever being classified as a waste; or
- an exemption (for limited volumes); or
- a permit, dependant on its status.

If Made Ground is being moved between sites, it must be ensured that appropriate permits are in place to ensure the soils are not classified as a waste.

All recycled materials (6F2 etc.) must be produced under the 2013 Aggregates Protocol, whether on site or off site. If it is not, then it will be deemed a waste and can only be used on site under a permit. More information can be found at https://www.gov.uk/government/publications/quality-protocol-production-of-aggregates-from-inert-waste.

If materials are not managed as above, all materials placed would be deemed a waste and subject to Landfill Tax at the Standard Rate (£91.35 per tonne as at 1 April 2019).

7.3.3 Materials management plan

Where required, to prevent soils being classified as waste, all materials / soils movements should be managed under the CLAIRE Definition of Waste: Development Industry Code of Practice (DoWCoP) and a Materials Management Plan (MMP).

Under DoWCoP, to prevent materials being classified as waste, the following factors need to be proven to ensure the soils to be excavated are not waste:

- Factor 1: Protection of human health and protection of the environment.
- Factor 2: Suitability for use, without further treatment.
- Factor 3: Certainty of Use.
- Factor 4: Quantity of Material.

Hydrock recommend that the reuse of soils at sites should be considered during the planning and development process.

Under the DoWCoP, all soils reused must be tested post-excavation to prove they are fit for use.

Construction activities carried out on uncontaminated soils solely for the purpose of improving geotechnical properties e.g. lime / cement modification, are not generally regarded as waste treatment operations and do not require a permit. Should processing be needed (such as screening, treatment or improvement), that would constitute a waste activity and require a mobile treatment permit. This may

be as simple as removing oversize material with an excavator bucket, to using a riddle bucket to remove hardcore to full mechanical screening.

Once the MMP is collated, it must be declared by a Qualified Person:

- before soils are placed (where soils are naturally occurring, uncontaminated and reused on the site of origin); or
- before excavation of soils is undertaken (on sites where Made Ground or contaminated soils are present, or soils are to be imported).

Once all material movements have been completed in accordance with the MMP a verification report must be produced, kept for 2 years and provided to the EA on request.

7.3.4 Conclusions

In summary, with regard to materials management:

- The reuse of soils at sites should be considered during the planning and development process.
- If uncontaminated, naturally occurring soils are being excavated and reused on the site of origin in the course of construction activities (i.e. the site is greenfield), a MMP is not required. However, Hydrock would recommend that documentation is prepared that sets out the reasoning for why excavated soils considered not to be a waste.
- If non-natural or contaminated soils are excavated and reused on sites without a MMP, exemption, or appropriate Permit in place, anyone who knowingly facilitates the disposal may be jointly and severally liable to any assessment of tax, fines or prosecution.
- If soils are being moved from one site to another, they need to be uncontaminated, naturally occurring soils and a MMP needs to be in place; or, if Made Ground, appropriate permits must be in place to ensure the soils are not classified as a waste.
- If processing is being undertaken, an appropriate permit must be in place.
- The MMP must have a declaration by a Qualified Person, and verified to ensure it has been undertaken as planned.
- All recycled materials (6F2 etc.) must be produced under the 2013 Aggregates Protocol, whether on site or off site, certificates will be required to prove this.

8. UNCERTAINTIES AND LIMITATIONS

8.1 Site-specific comments

The scope of this preliminary investigation is designed to cover the application phase of the DCO, but is insufficient at this stage to fully characterise the site in accordance with CIRIA Report 665 or to design the engineering works. Extensive additional investigation and monitoring is required to enable planning conditions and design works to be undertaken.

Investigation within developed parts of the site was limited due to access constraints as the majority of developments on site were active farms and/or businesses. Due to this, investigation to quantify and delineate potential contamination sources such as tanks was not possible. In addition, some sources may exist for which no investigation has been undertaken. However, outside of these generally localised sources, the risk of significant wide spread contamination is considered to be low.

Further investigation will be required to confirm this once full access to these areas can be permitted.

8.2 General comments

Hydrock Consultants Limited (Hydrock) has prepared this report in accordance with the instructions of db Symmetry (the Client), under the terms of appointment for Hydrock. Hydrock shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared and provided.

This report details the findings of work carried out in 2018 and 2019. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, all potential environmental constraints or liabilities associated with the site may not have been revealed.

Hydrock has used reasonable skill, care and diligence in the design of the investigation of the site. The inherent variation of ground conditions allows only definition of the actual conditions at the locations and depths of trial pits and boreholes at the time of the investigation. At intermediate locations, conditions can only be inferred.

The findings described are only representative of the dates on which they were made and features such as groundwater or ground gas levels may vary.

At the time of this report, the proposed ground levels and profiles had not been defined. Therefore, the recommendations in this report will need to be reviewed as and when such information becomes available, alongside further investigation which will need to be undertaken.

Information provided by third parties has been used in good faith and is taken at face value. However, Hydrock cannot guarantee its accuracy or completeness.

Where the existing documents prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock. Should this not be the case Hydrock should be informed immediately as additional work may be required. Hydrock is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or recent activities.

The work has been carried out in general accordance with recognised best practice. The various methodologies used are referenced in Appendix L. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

The chemical analyses reported were scheduled for the purposes of assessment of risk from contamination with respect to human health, plant life and controlled waters as discussed in the report. Whilst the results may be useful in applying the Hazardous Waste Assessment Methodology given in Environment Agency Technical Guidance WM3, they are not primarily intended for that purpose and additional analysis will be required at the time of disposal to fully classify waste.

Unless otherwise stated, at the time of this investigation the future routes of water supply pipes had not been established. This investigation and sampling strategy may not be fully compliant with UKWIR recommendations. Consequently, a targeted investigation and specific sampling and chemical testing may be required at a later date once the routes of the supply pipes are known. In addition, it is recommended that the relevant water supply company be contacted at an early stage to confirm its requirements for assessment, which may not necessarily be the same as those recommended by UKWIR.

Whilst the preliminary risk assessment process has identified potential risks to construction workers, consideration of occupational health and safety issues is beyond the scope of this report.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential hazards and specialist advice should be sought.

Any site boundary line depicted on plans does not imply legal ownership of land.

9. RECOMMENDATIONS FOR FURTHER WORK

Following the ground investigation works undertaken to date, the following further works will be required:

- Further intrusive site investigation to define and delineate potential contamination hotspot areas and to collect further geotechnical information to allow for final design. The investigation should be targeted according to the proposed development layout and levels to provide detailed information for design purposes and to allow preparation of remediation strategies where applicable;
- supplementary site investigation to further assess the risk posed by ground gases;
- supplementary site investigation to further assess the risk posed by asbestos;
- supplementary site investigation to refine preliminary waste classifications;
- asbestos surveys on buildings to be demolished; and
- discussion with regulators regarding the conclusions and recommendations in this report.

Following further investigation, the following will be required:

- discussion and agreement with service providers regarding the materials suitable for pipework;
- assessment of the design of foundations including tree influence where applicable;
- investigation for piling where required;
- provision of geotechnical design reports for Category 2 structures (including earthworks, retaining walls, floor slabs, and foundations);
- writing of Remediation Strategies and Verification Plans (and agreement with the regulatory bodies);
- writing of Materials Management Plans relating to reuse of soils at the site and import of soils to the site;
- writing of Materials Management Strategies relating to reuse of soils at the site;
- remediation and mitigation work; and
- verification of the earthworks, remediation and mitigation works.

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Appendix A

Drawings

Notes:

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. Based on drawings supplied by the Client.

Legend

Site Boundary (approximate)

Status Rev	Date	Description	By	Ckd

Architect :

Hydrock

Hydrock Consultants Ltd
3 Hawthorn Road
Holdenby Road
Spratton, Northampton
NN6 8LD
T +44(0)1604 842888
northampton@hydrock.com
www.hydrock.com

Client :

db Symmetry

Project Title:

SRFI
HINCKLEY

Drawing Title:

Site Layout Plan

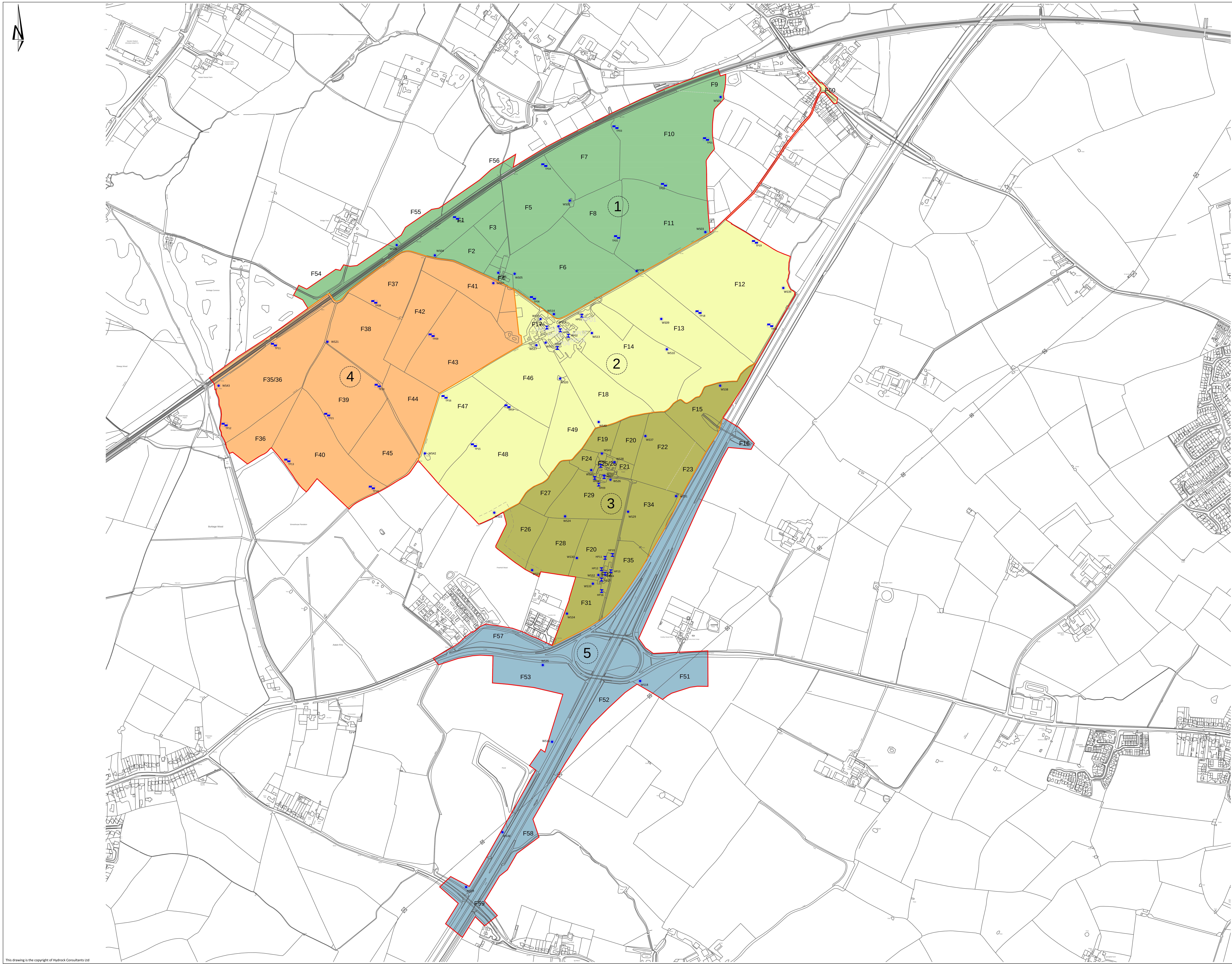
Reference:

RFI-HYD-XX-ZZ-DR-GE-1001

Hydrock Job No: C-07700-C

Drawn	Checked	Scale @ A0	Date	Issue Date
SD	JC	1:2500	18/04/18	18/04/18

Revision: P1 Status: S2



Notes:

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. Based on drawings supplied by the Client.

Legend

Site Boundary (approximate)

Hydrock Trial Pit

Hydrock Window Sampler Borehole

Hydrock Hand Dug Trial Pit

Defined Areas (1 to 5)

F# Field Number

Status Rev	Date	Description	By	Ckd

Architect :

Hydrock

Hydrock Consultants Ltd
3 Hawthorn Road
Holdenby Road
Spratton, Northampton
NN6 8LD
T +44(0)1604 842888
northampton@hydrock.com
www.hydrock.com

Client :

db Symmetry

Project Title:

SRFI
HINCKLEY

Drawing Title:

Defined Areas & Field Numbers

Reference:
RFI-HYD-XX-ZZ-DR-GE-1005

Hydrock Job No: C-07700-C

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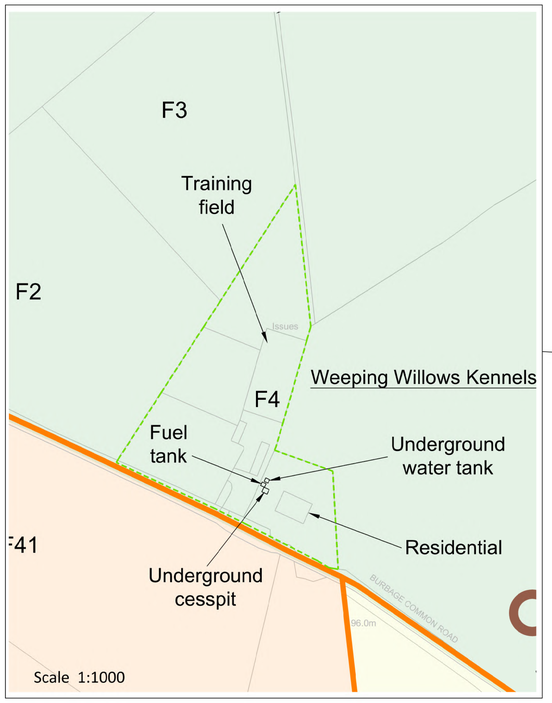

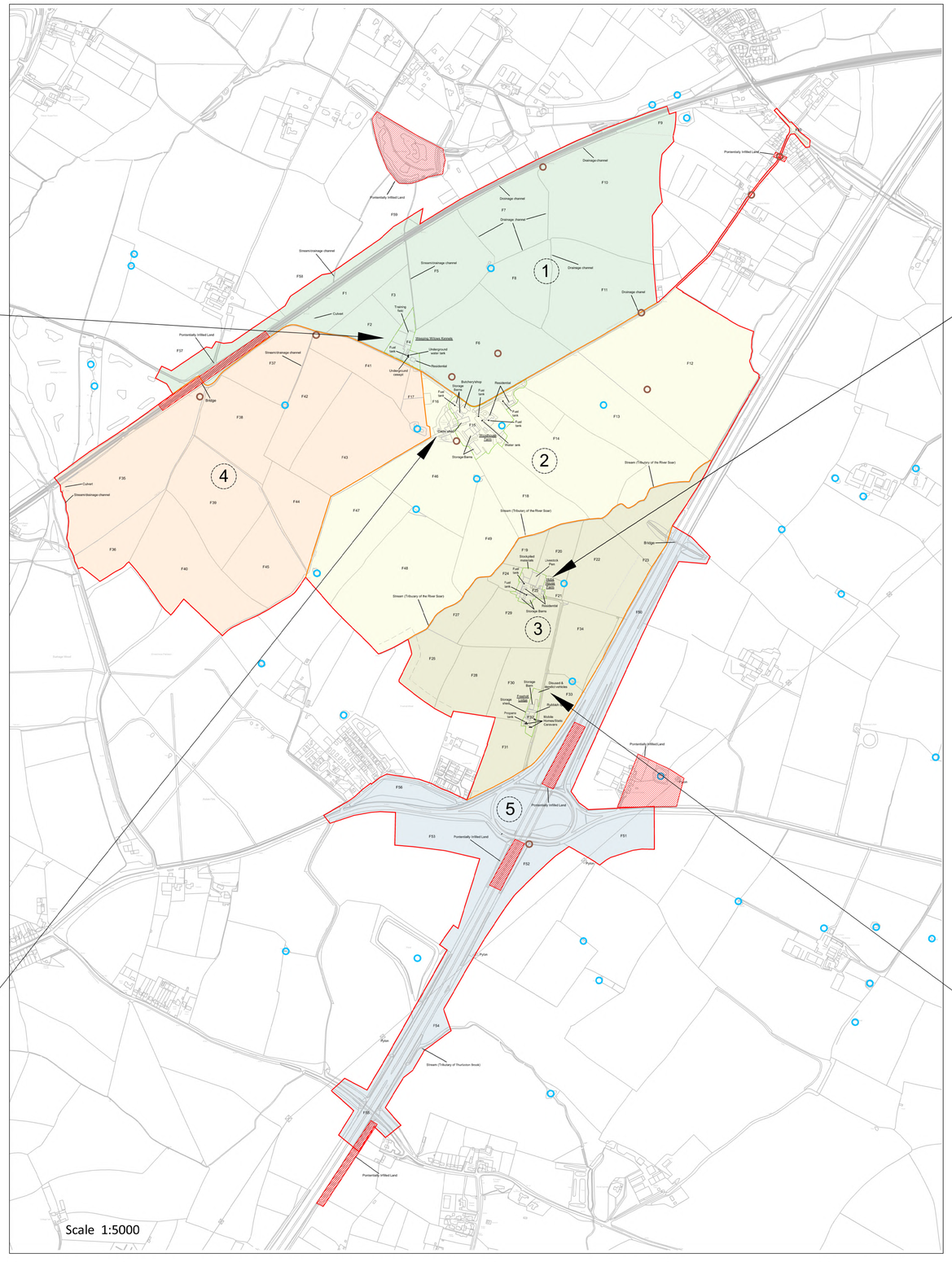

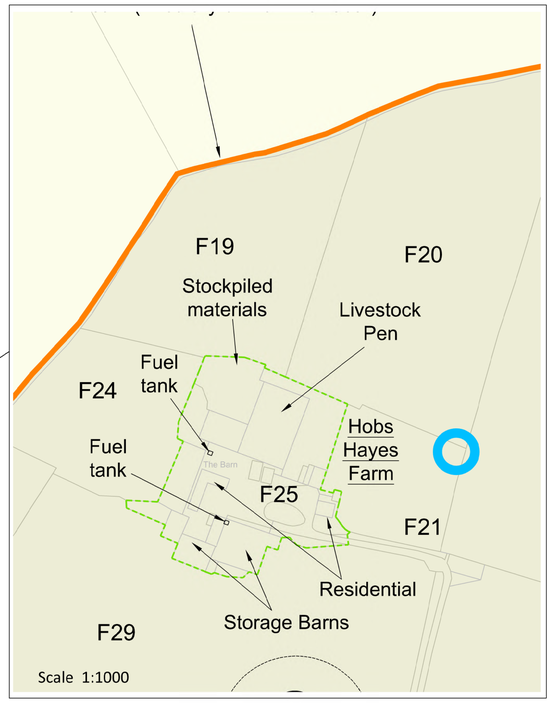

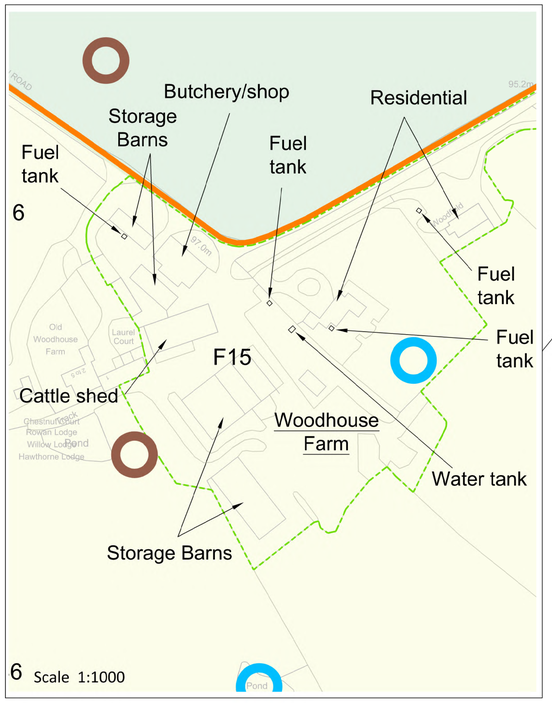

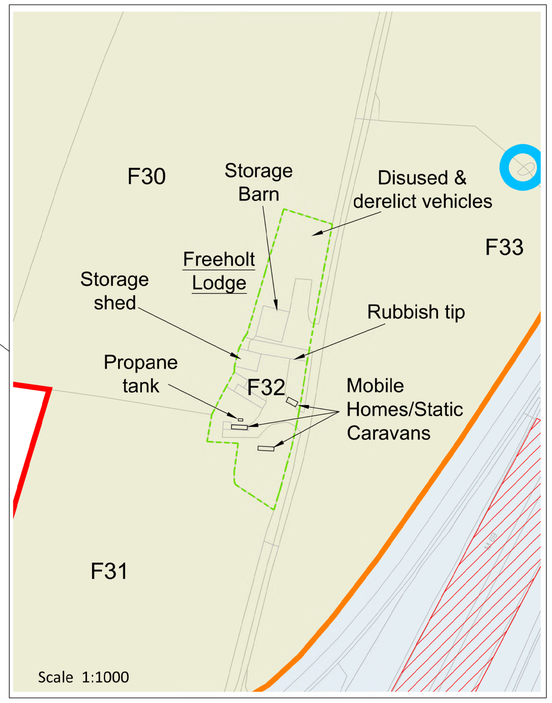

Notes:

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2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.
3. Based on drawings supplied by the Client.

Legend

- Site Boundary (approximate)
- (#) Defined Areas (1 to 5)
- Potentially Infilled Land
- F# Field Number
- Pond
- Backfilled Pond

Status/ Rev.	Date	Description	By	Chd

Architect:

Hydrock
Hydrock Consultants Ltd
4 Hawthorn Road
Rothersthorpe
Northampton
NN4 8JD
T +44(0)1604 8428888
northamptonsh@hydrock.com
www.hydrock.com

Client:
db Symmetry

Project Title:
SRFI
HINCKLEY

Drawing Title:
Site Features Plan

Reference:
RFI-HYD-XX-ZZ-DR-GE-1006

Hydrock Job No:
C-07700-C

Drawn	Checked	Scale @ A0	Date	Issue Date
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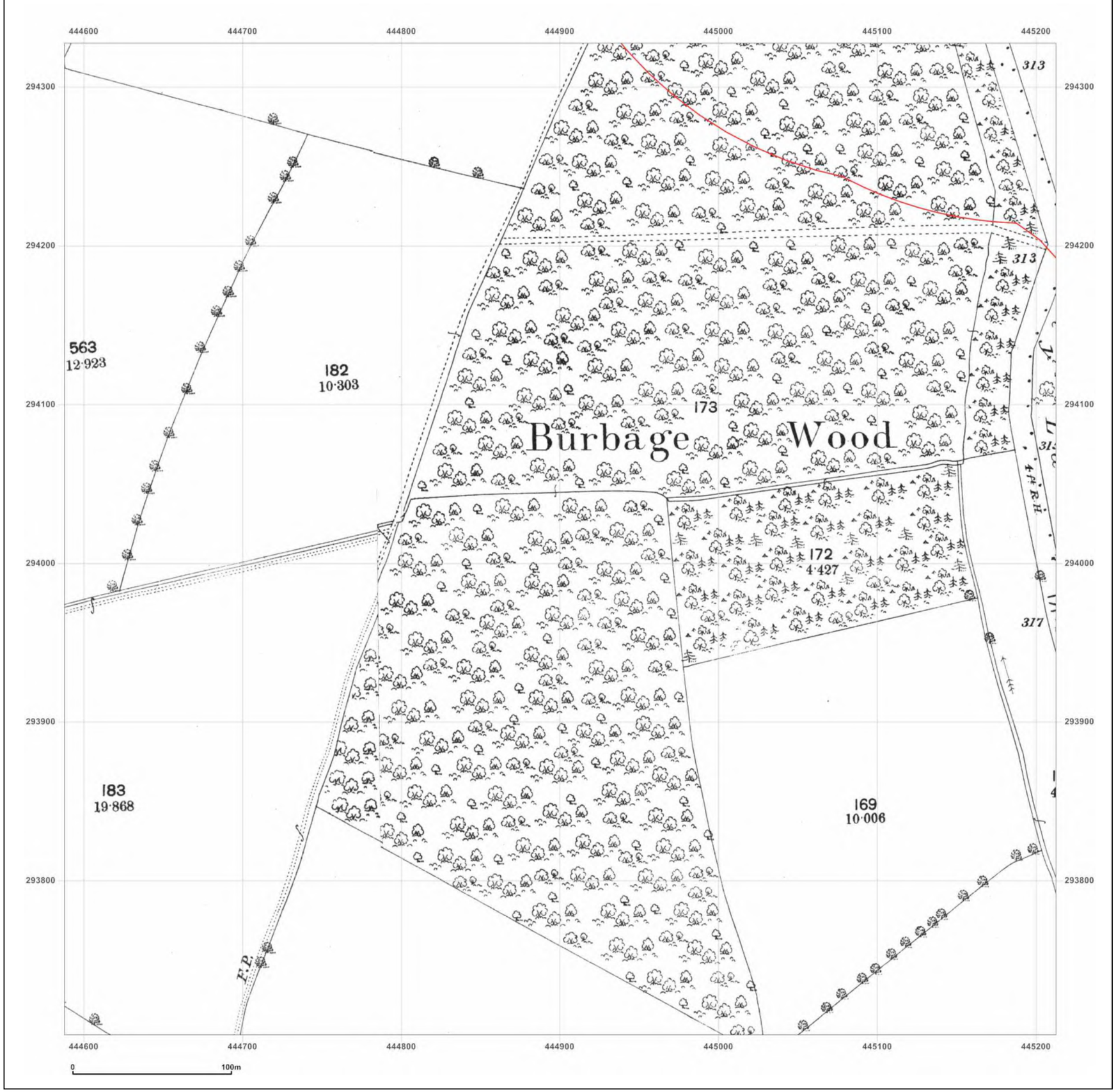
Revision: P1 | Status: S2

Appendix B

Field Reconnaissance Photographs

Appendix C

Historical Ordnance Survey Maps



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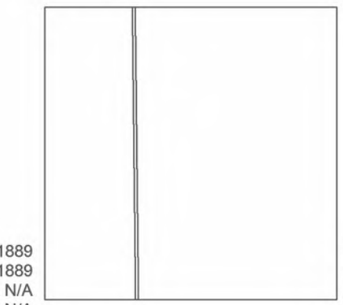

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Produced by
Groundsure Insights
T: 08444 159000
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W: www.groundsure.com

Production date: 30 January 2018

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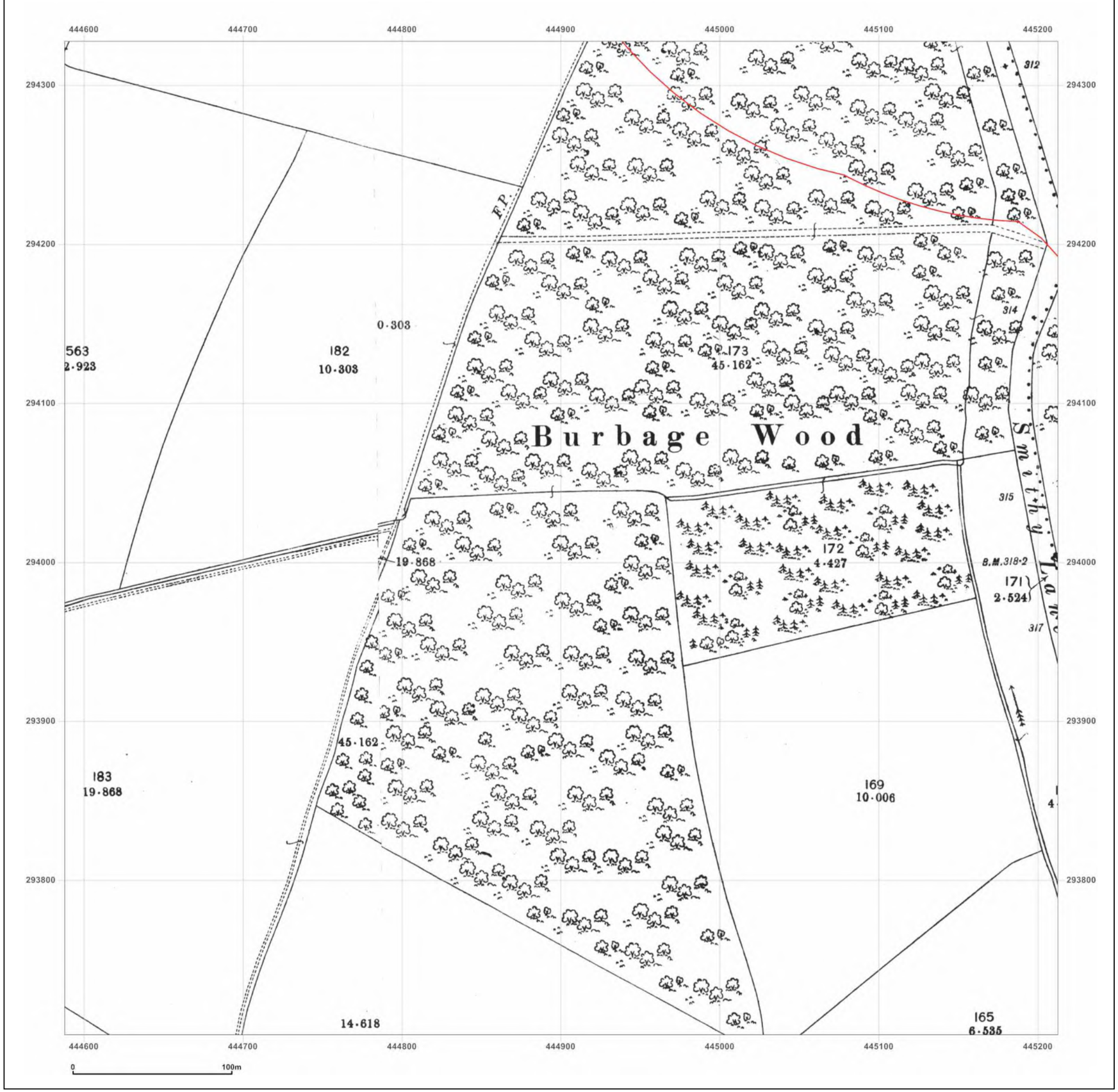

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Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1903
Revised 1903
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Copyright N/A
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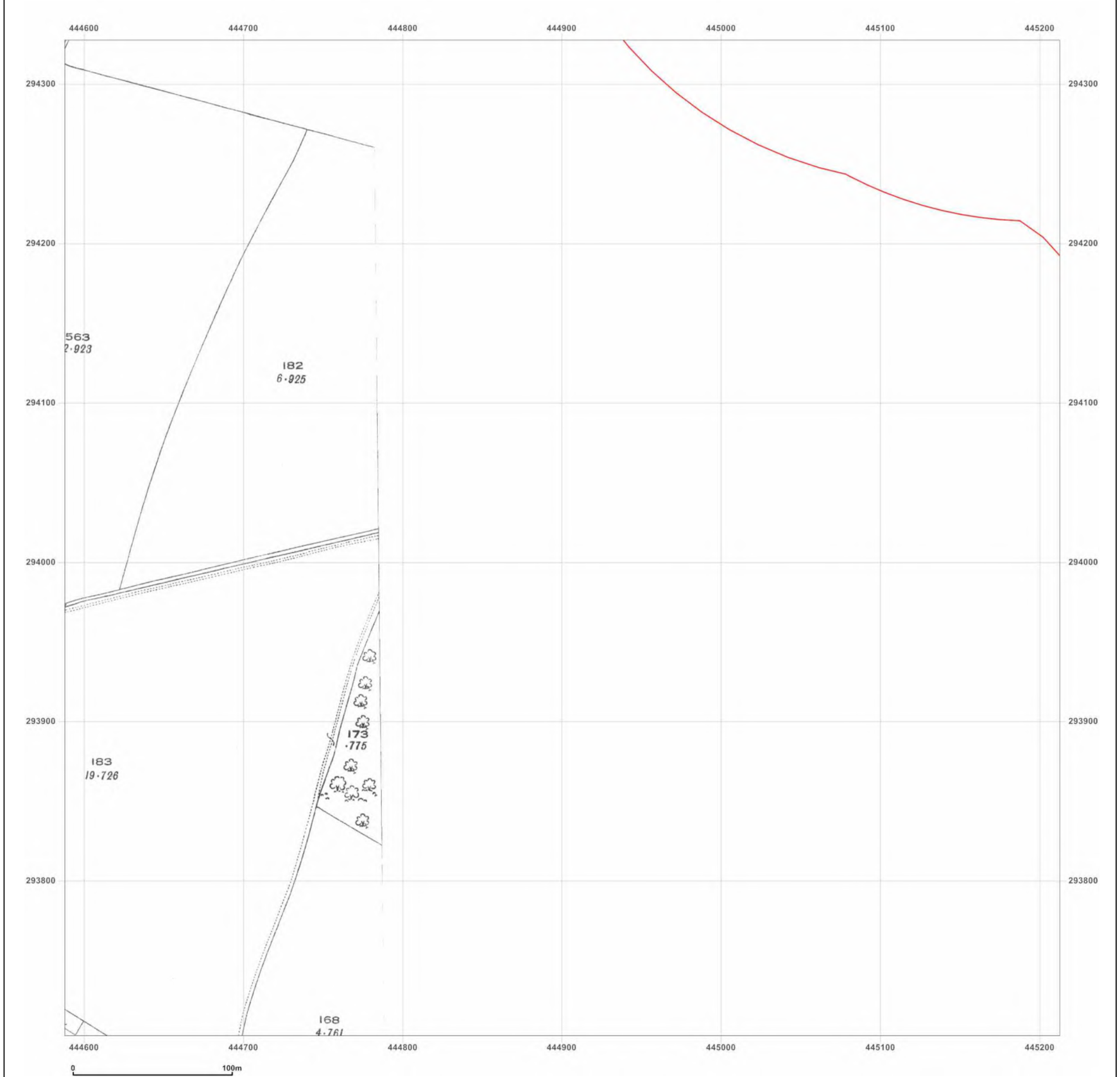

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Map date: **1924**

Scale: 1:2,500

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Surveyed 1924
Revised 1924
Edition N/A
Copyright N/A
Levelled N/A

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T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

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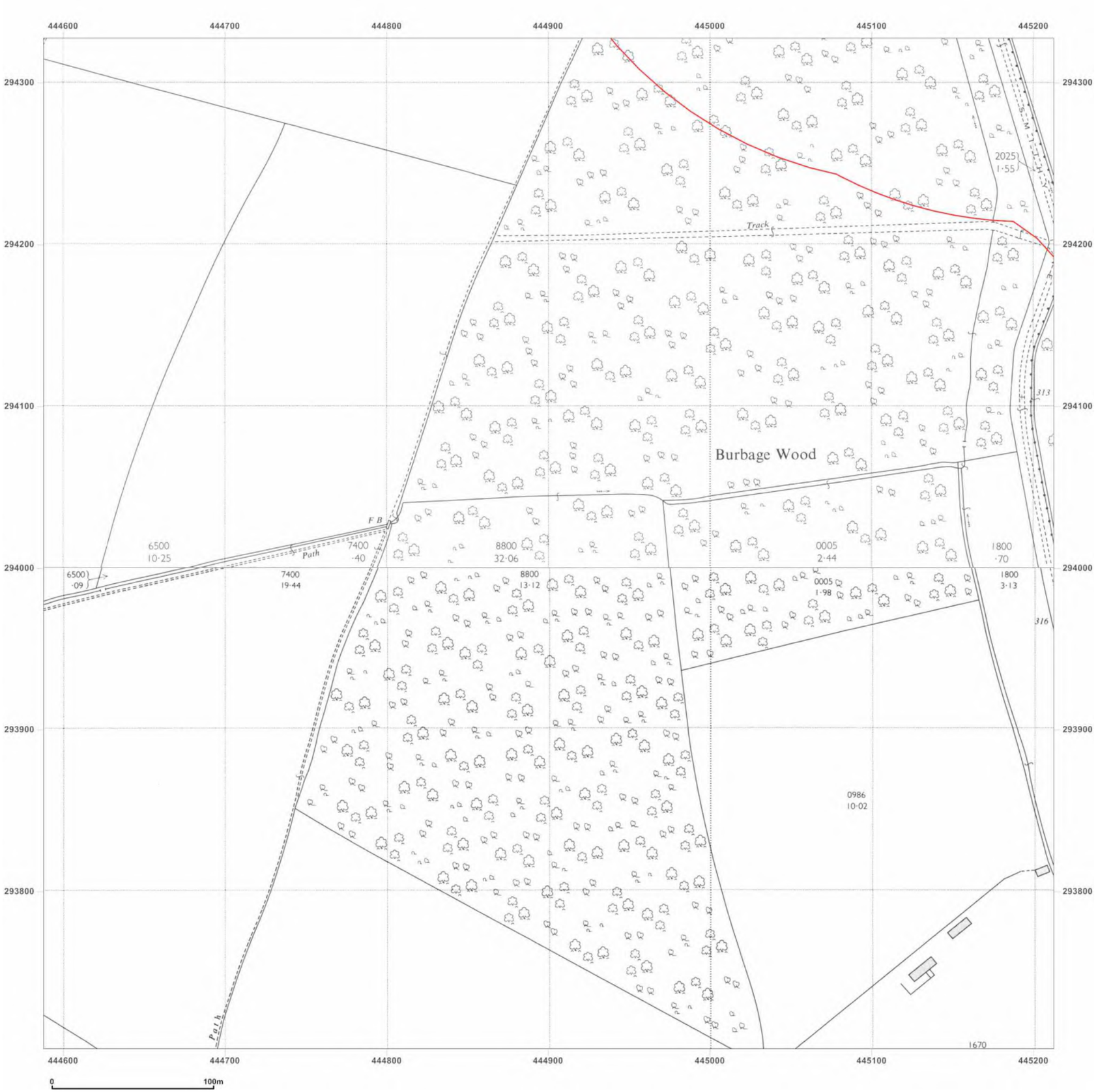

Groundsure INSIGHTS

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Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

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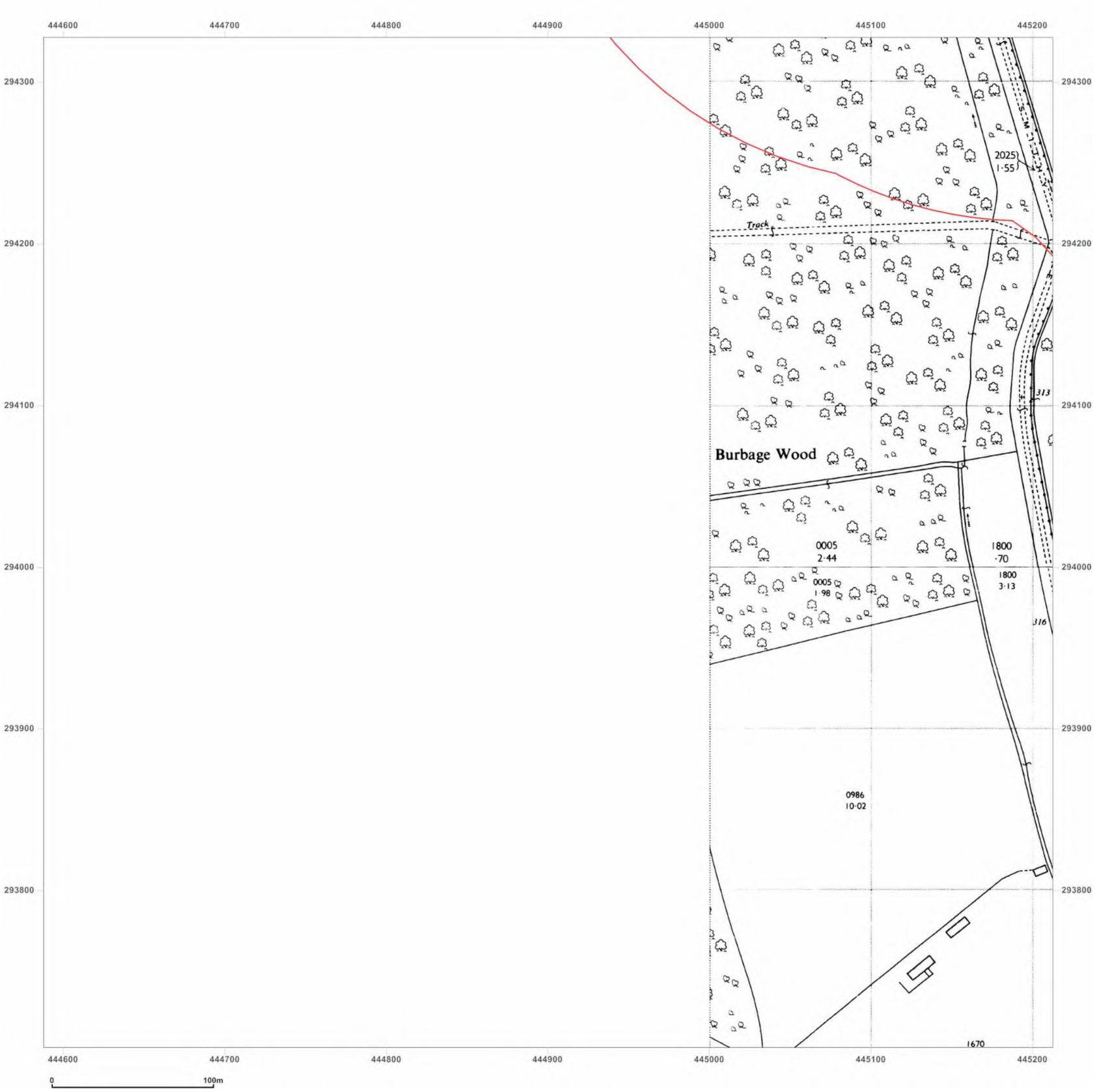

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_3
Grid Ref: 444900, 294015

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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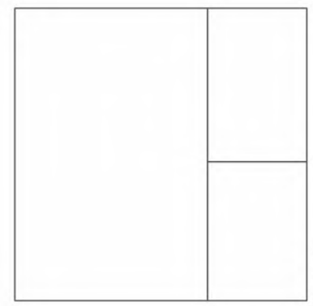

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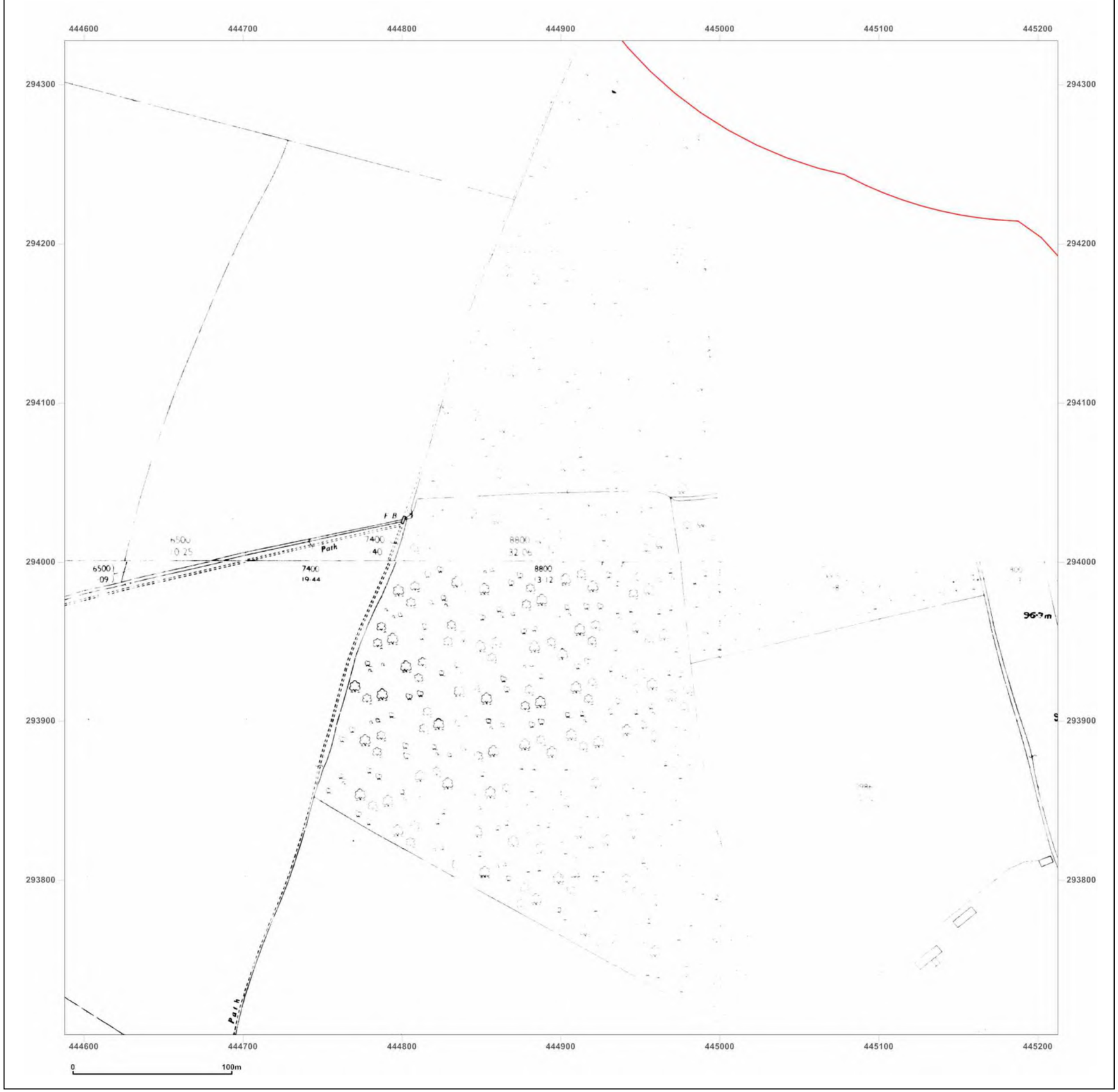

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_3
Grid Ref: 444900, 294015

Map Name: National Grid

Map date: **1975-1977**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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

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

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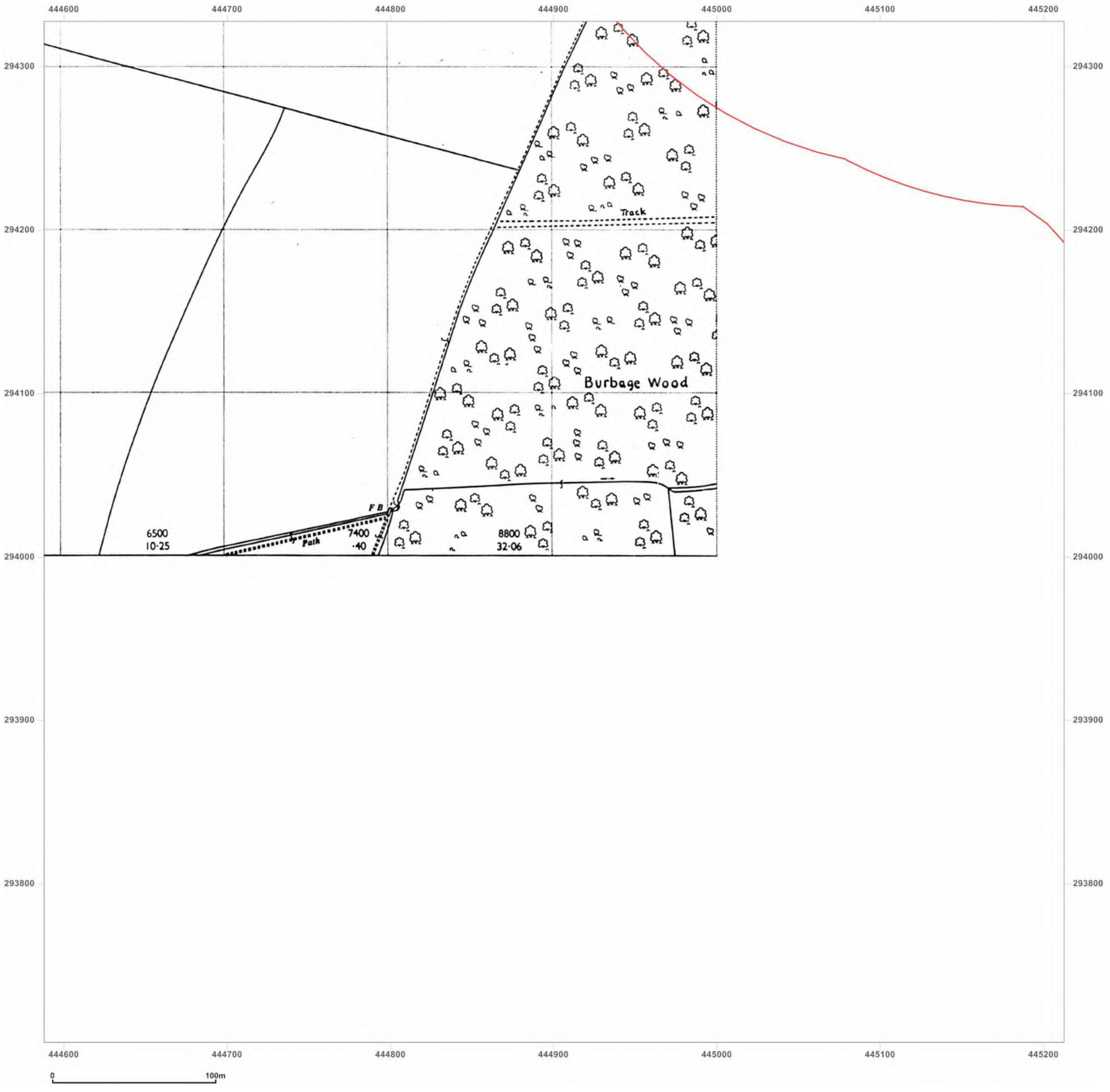

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_3
Grid Ref: 444900, 294015

Map Name: National Grid

Map date: **1987**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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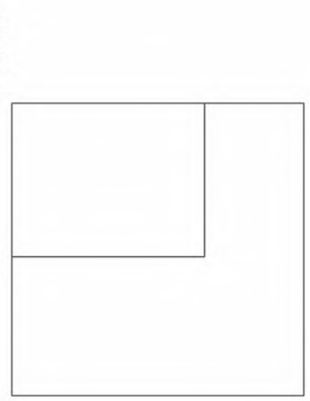
Surveyed 1945
Revised 1987
Edition N/A
Copyright 1987
Levelled 1945



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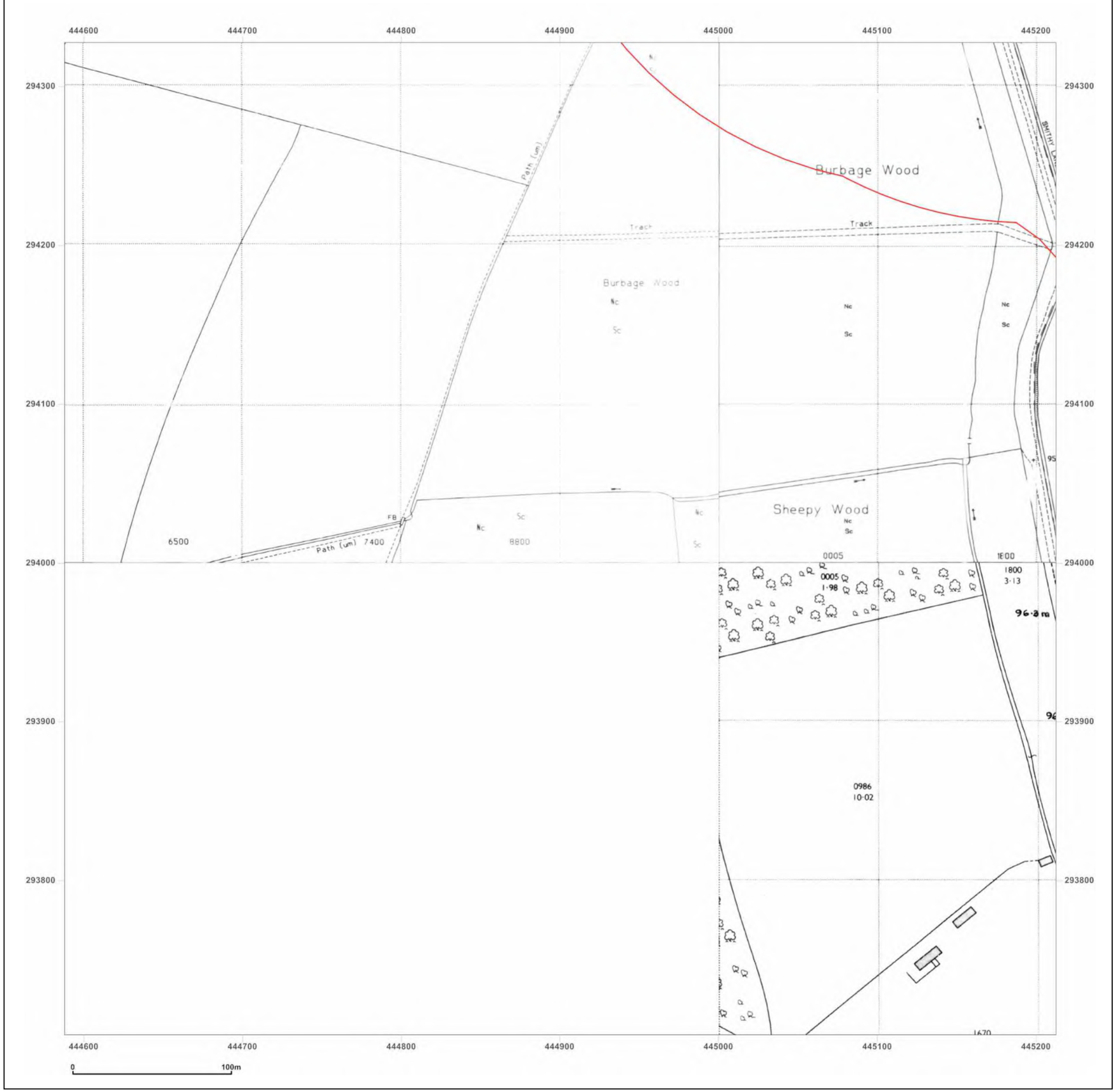

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_3
Grid Ref: 444900, 294015

Map Name: National Grid

Map date: **1992-1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1993
Revised 1993
Edition N/A
Copyright N/A
Levelled N/A

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

Surveyed 1945
Revised 1992
Edition N/A
Copyright 1992
Levelled 1945

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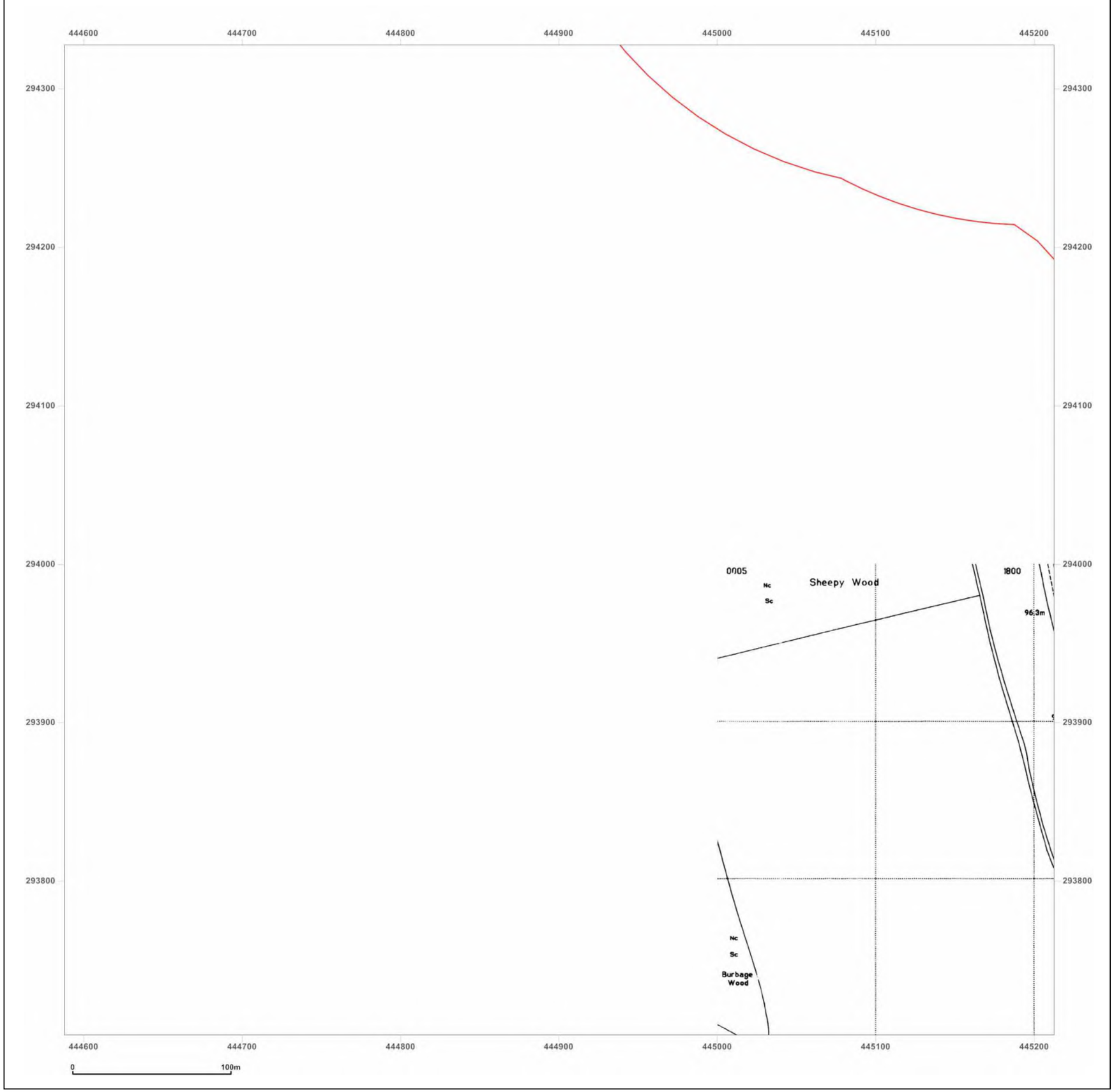


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_3
Grid Ref: 444900, 294015

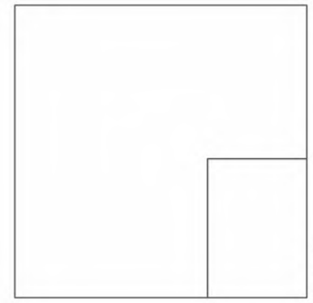
Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



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

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Production date: 30 January 2018

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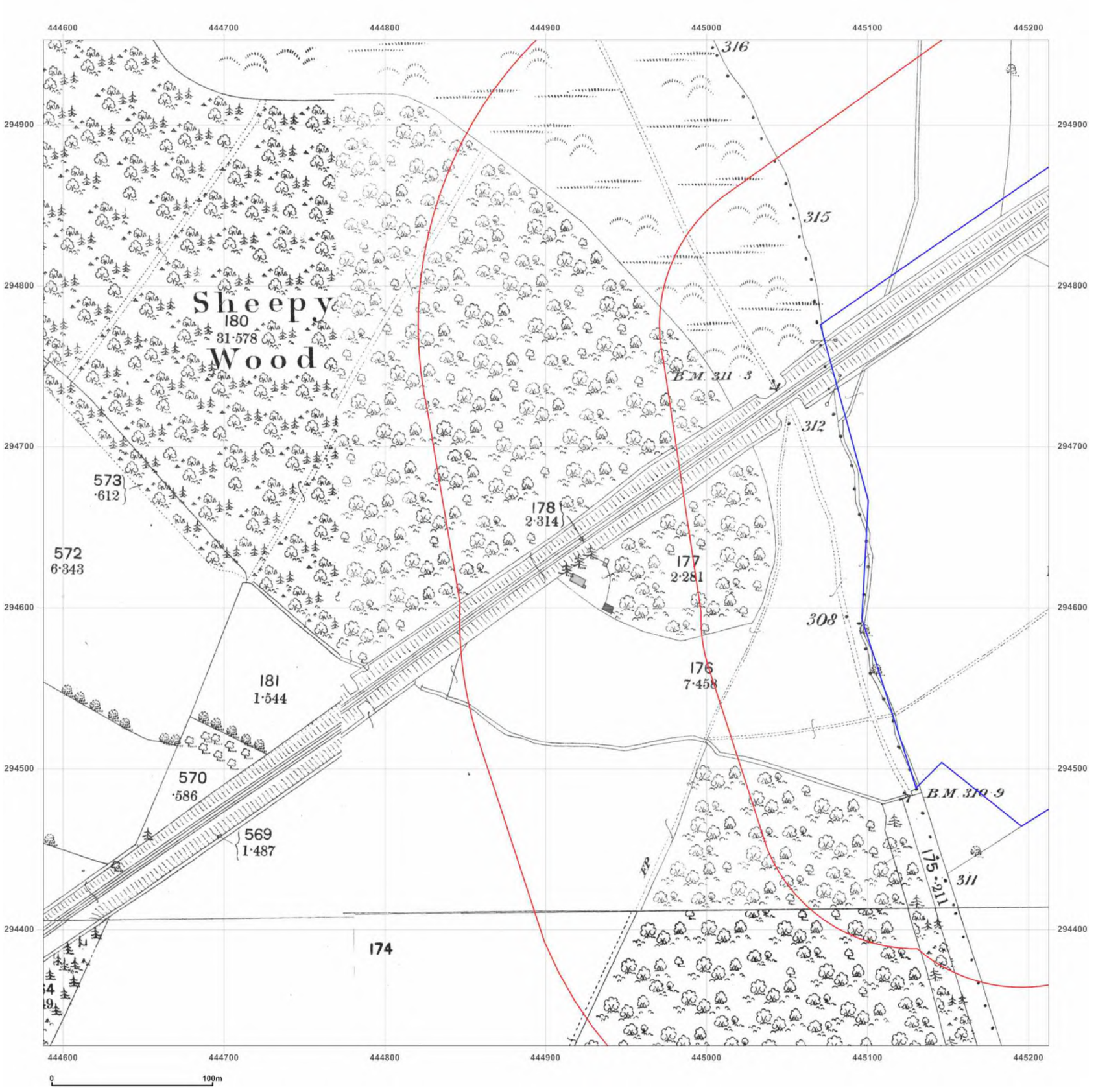

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: County Series

Map date: **1887-1889**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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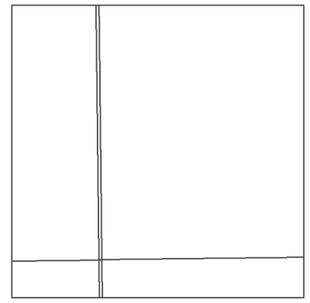
Surveyed 1889
Revised 1889
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1889
Revised 1889
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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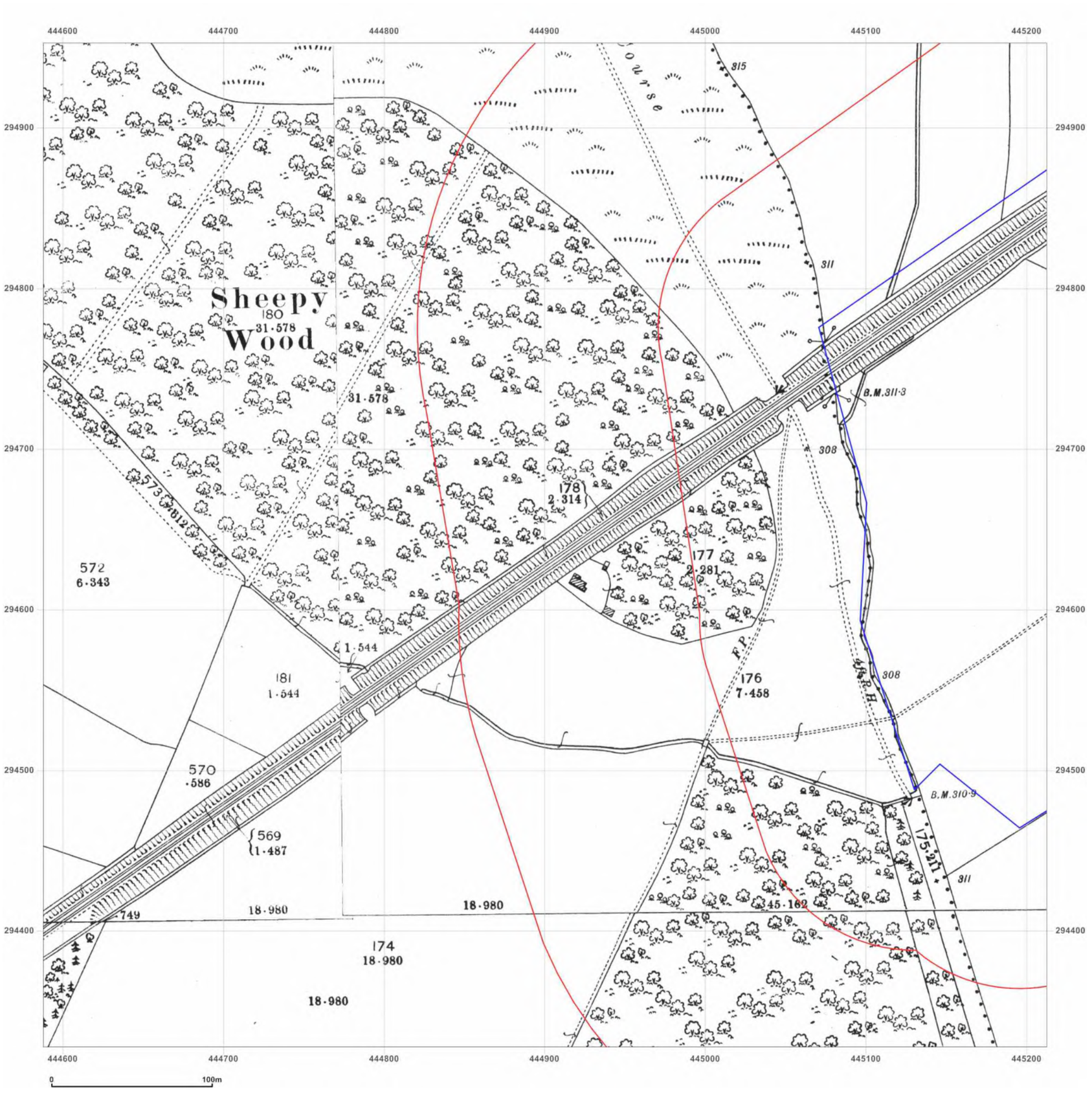


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: County Series

Map date: **1903**

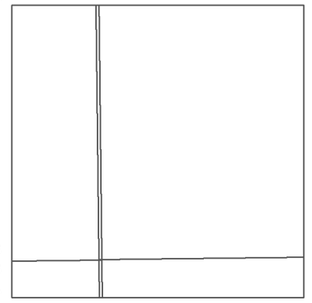
Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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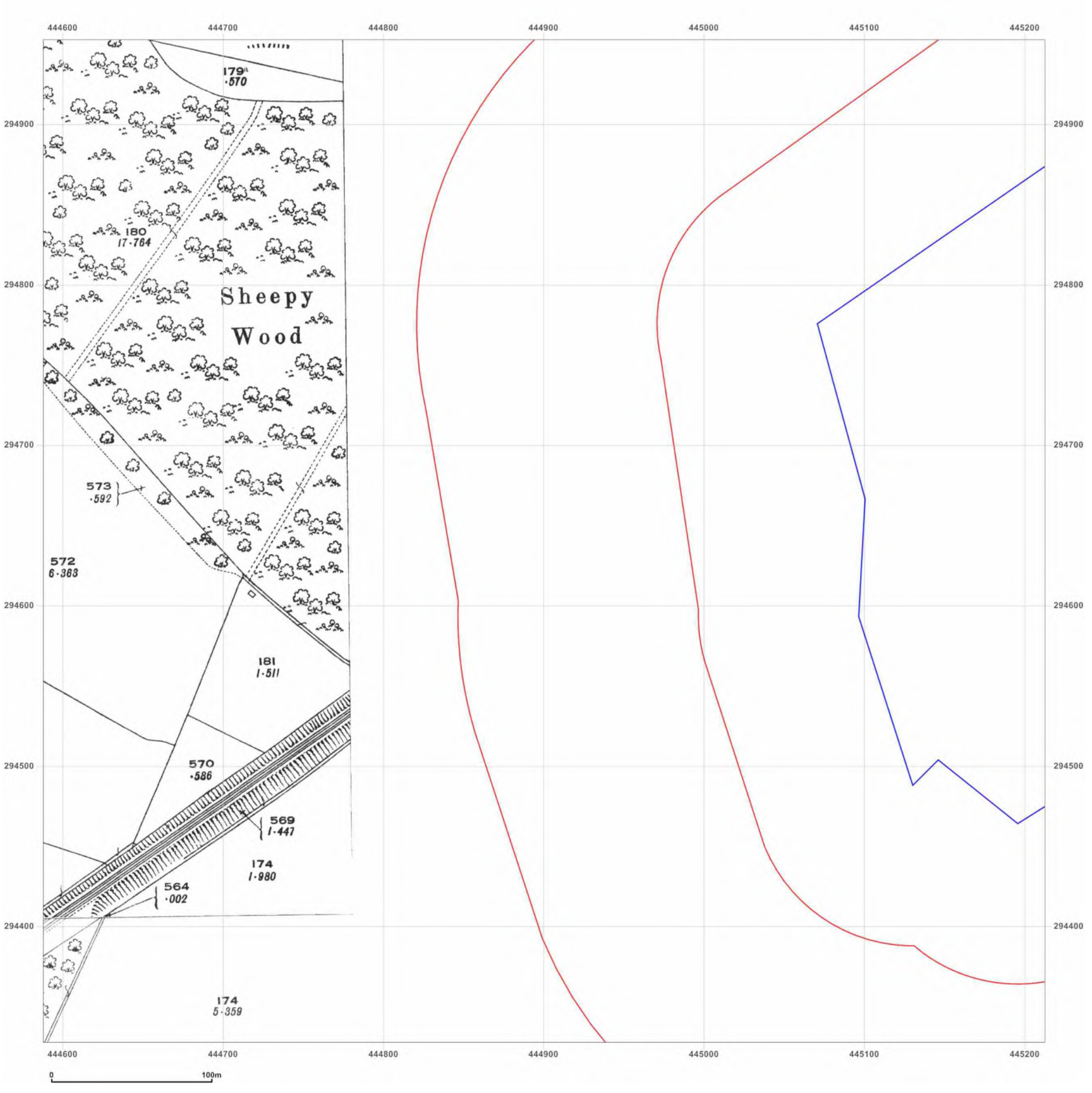

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: County Series

Map date: **1924**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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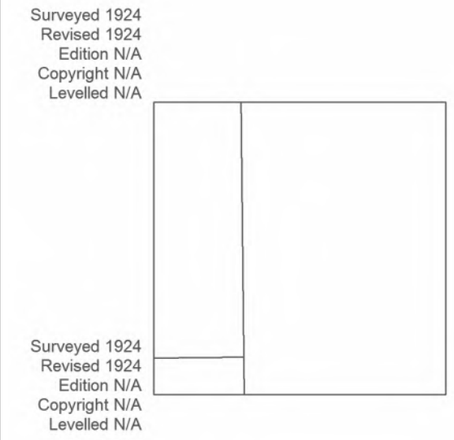

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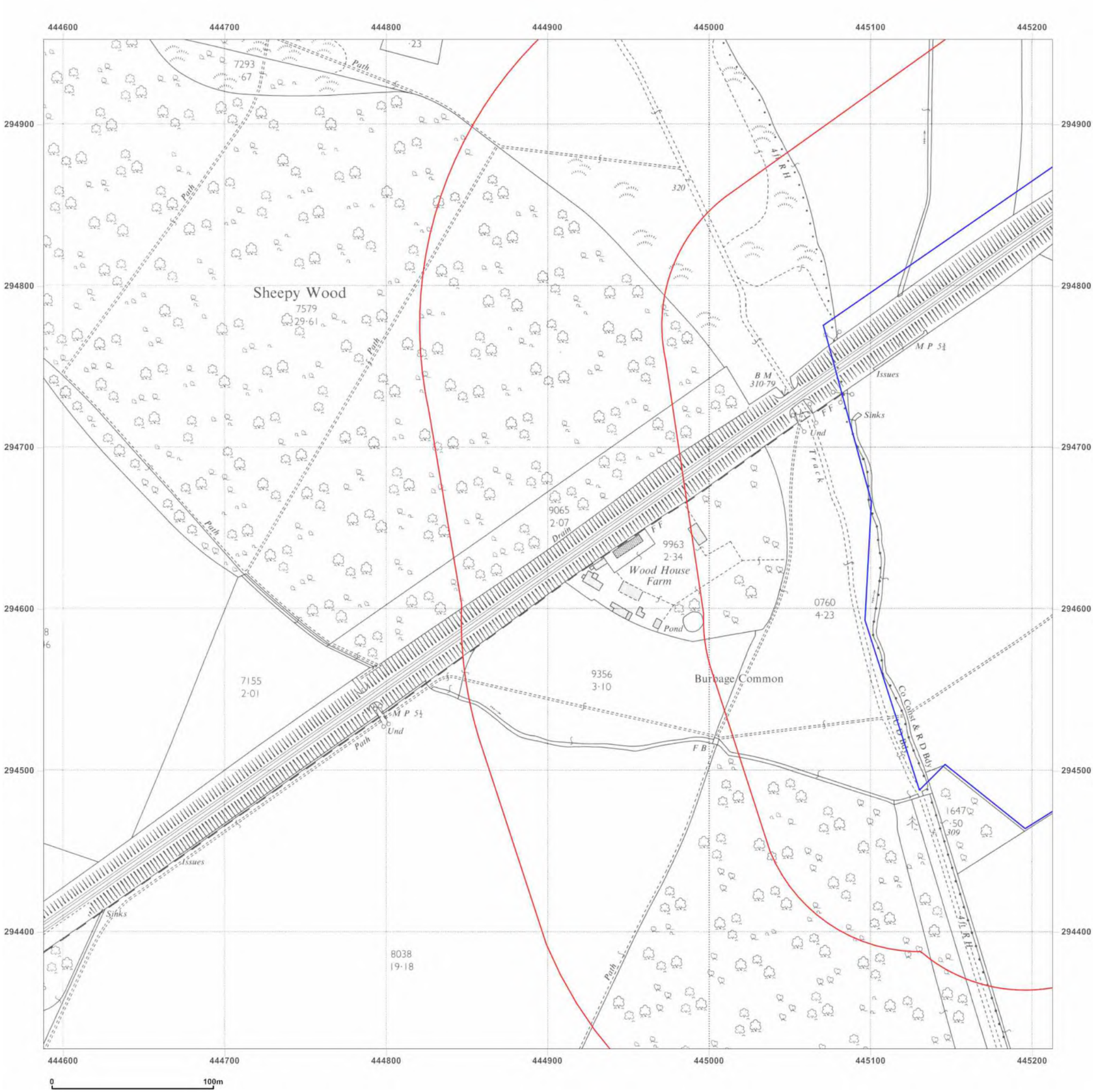

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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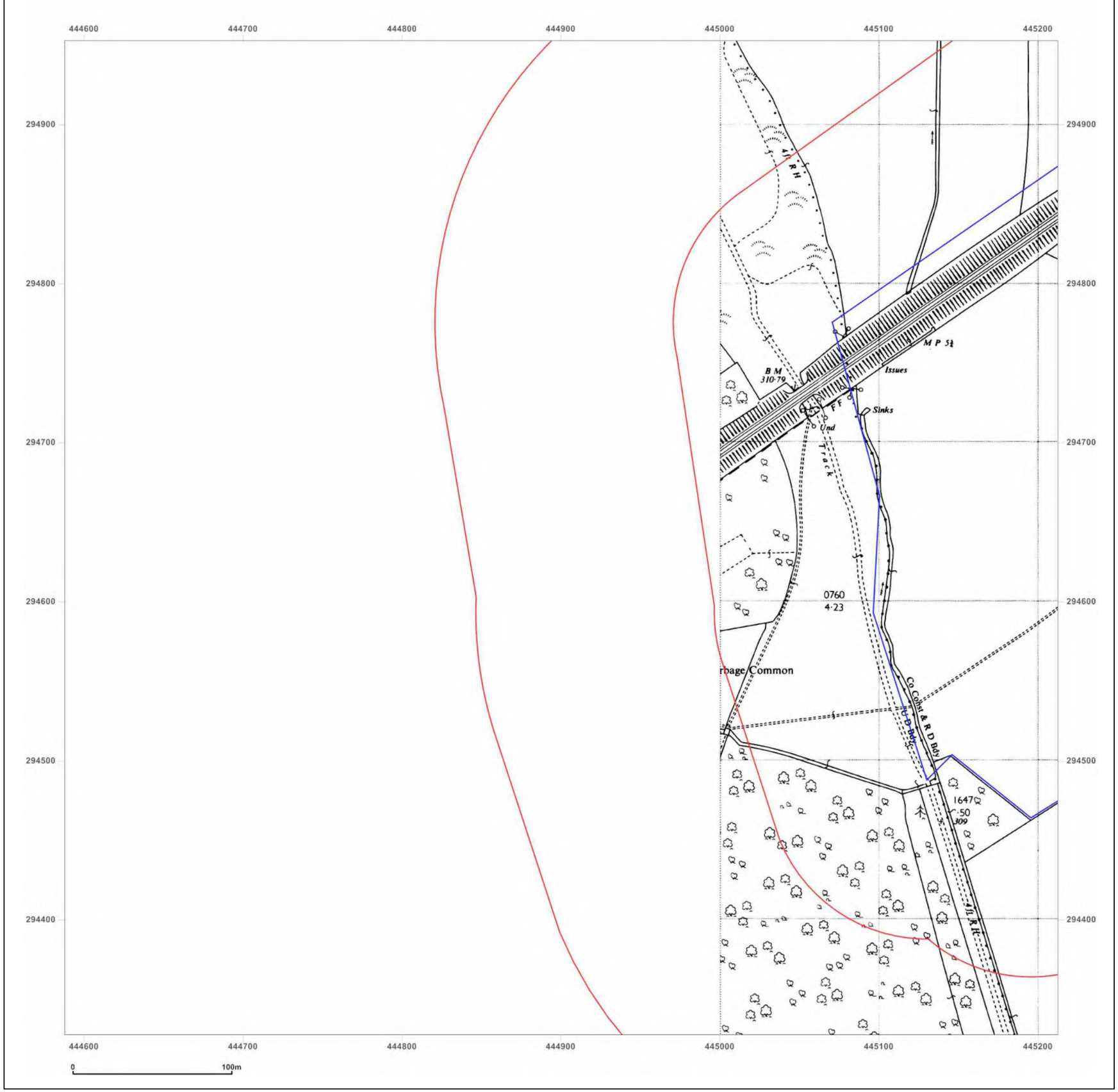

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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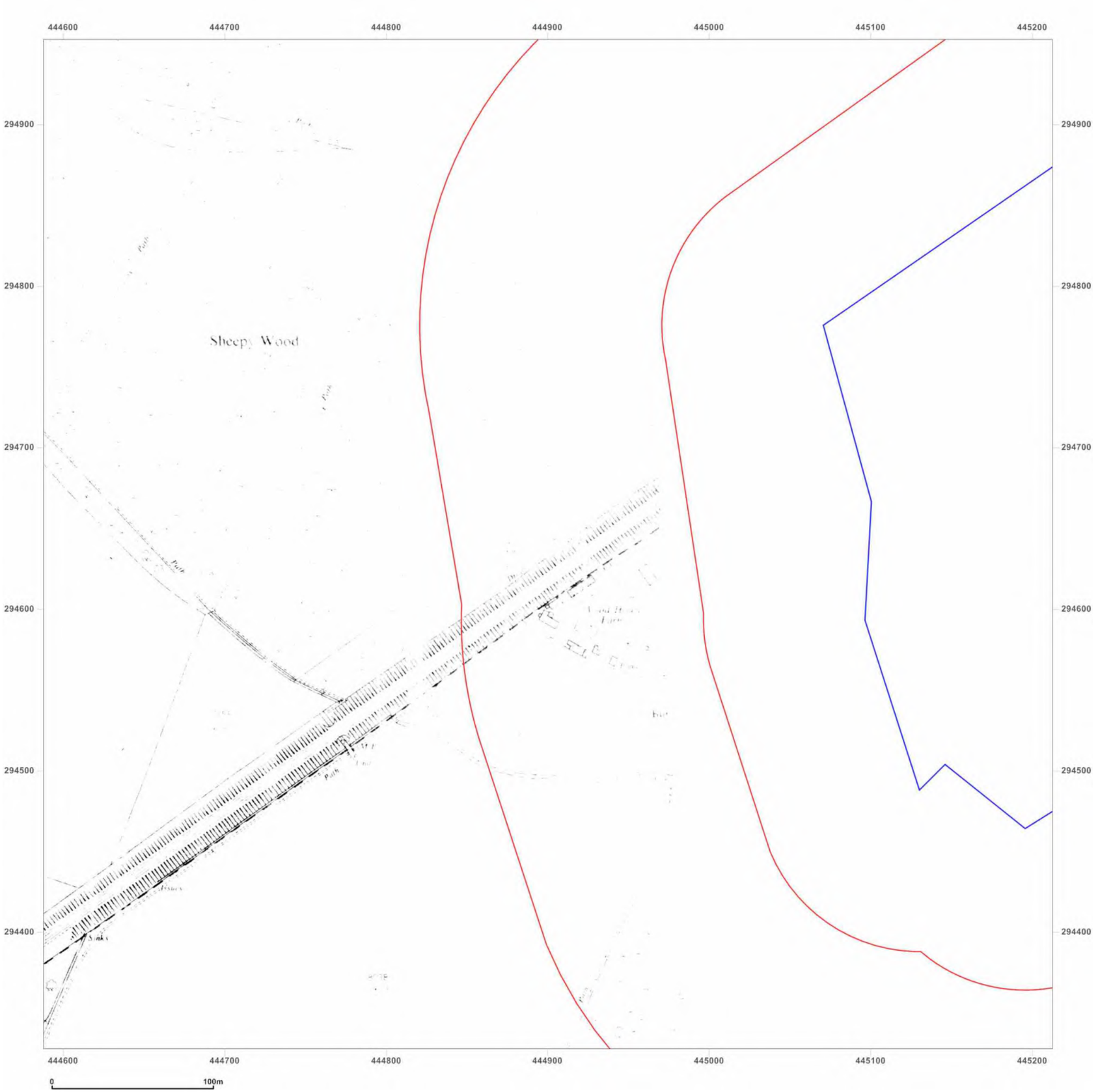

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: National Grid

Map date: **1975**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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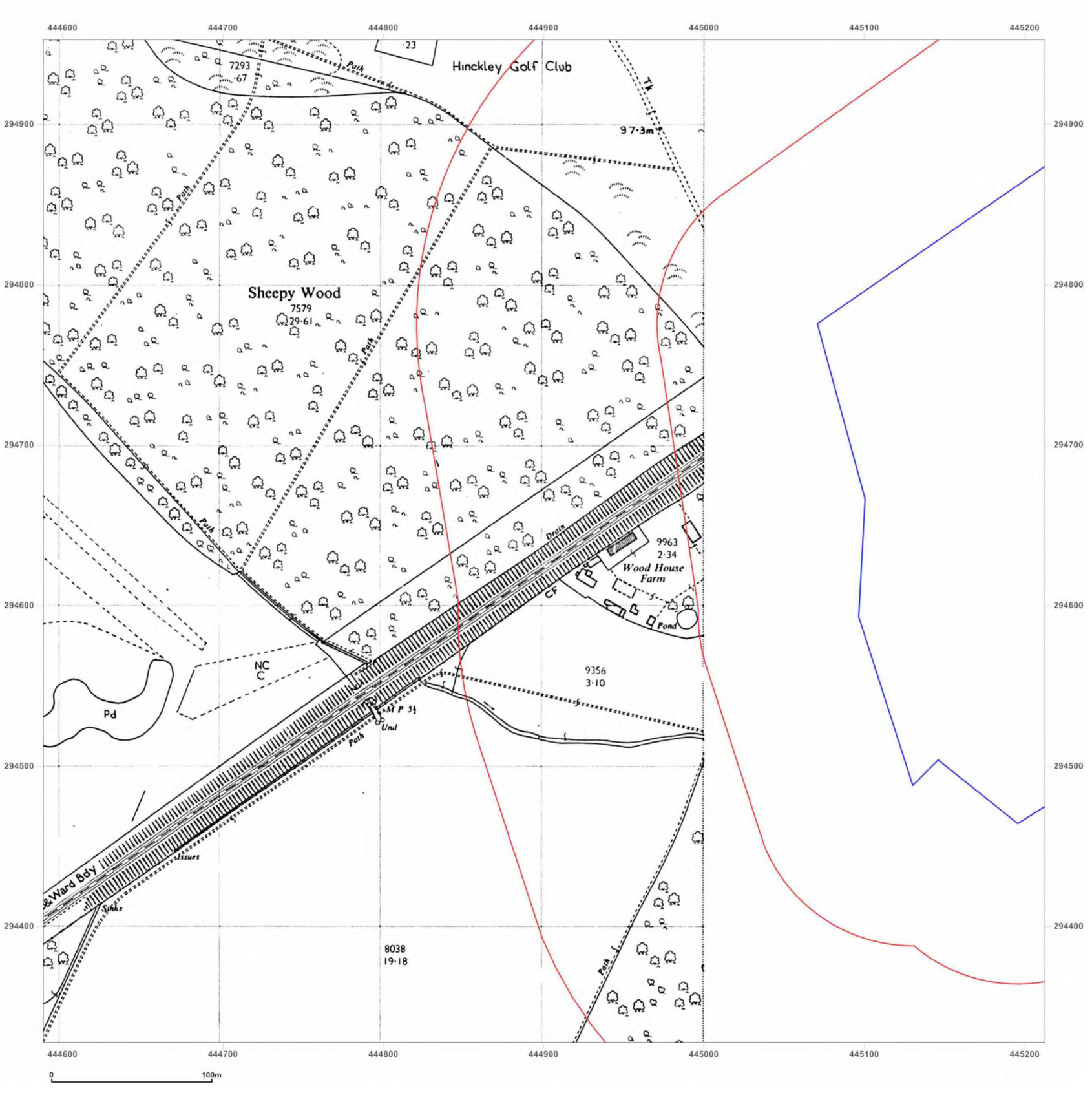

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: National Grid

Map date: **1987**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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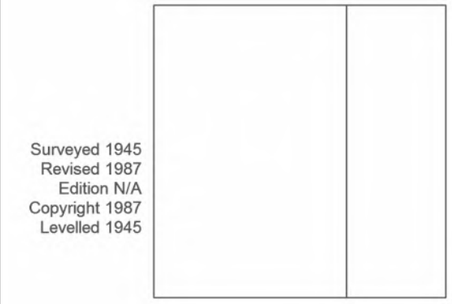

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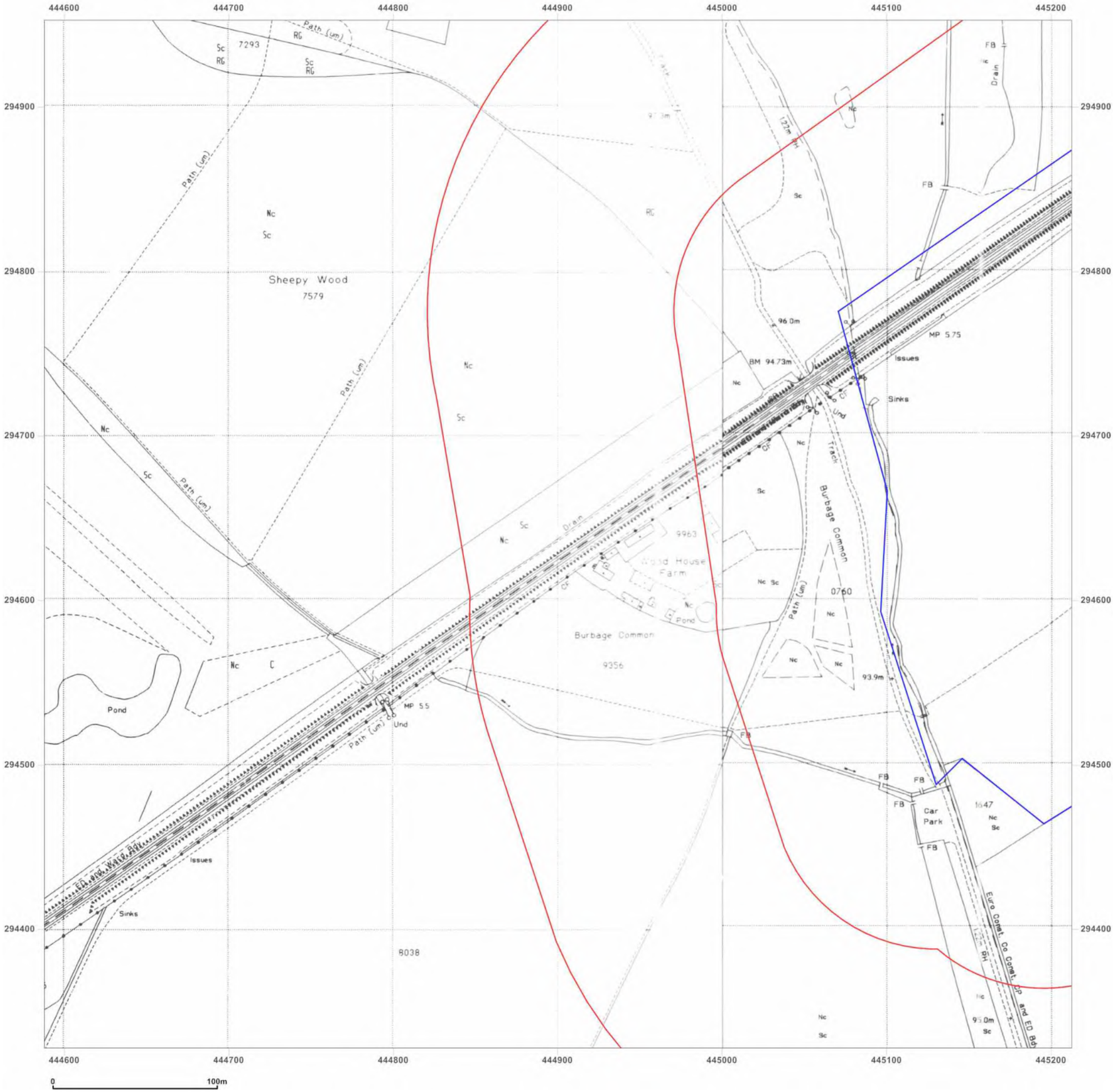

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_4
Grid Ref: 444900, 294640

Map Name: National Grid

Map date: **1993-1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1993
Revised 1993
Edition N/A
Copyright N/A
Levelled N/A

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

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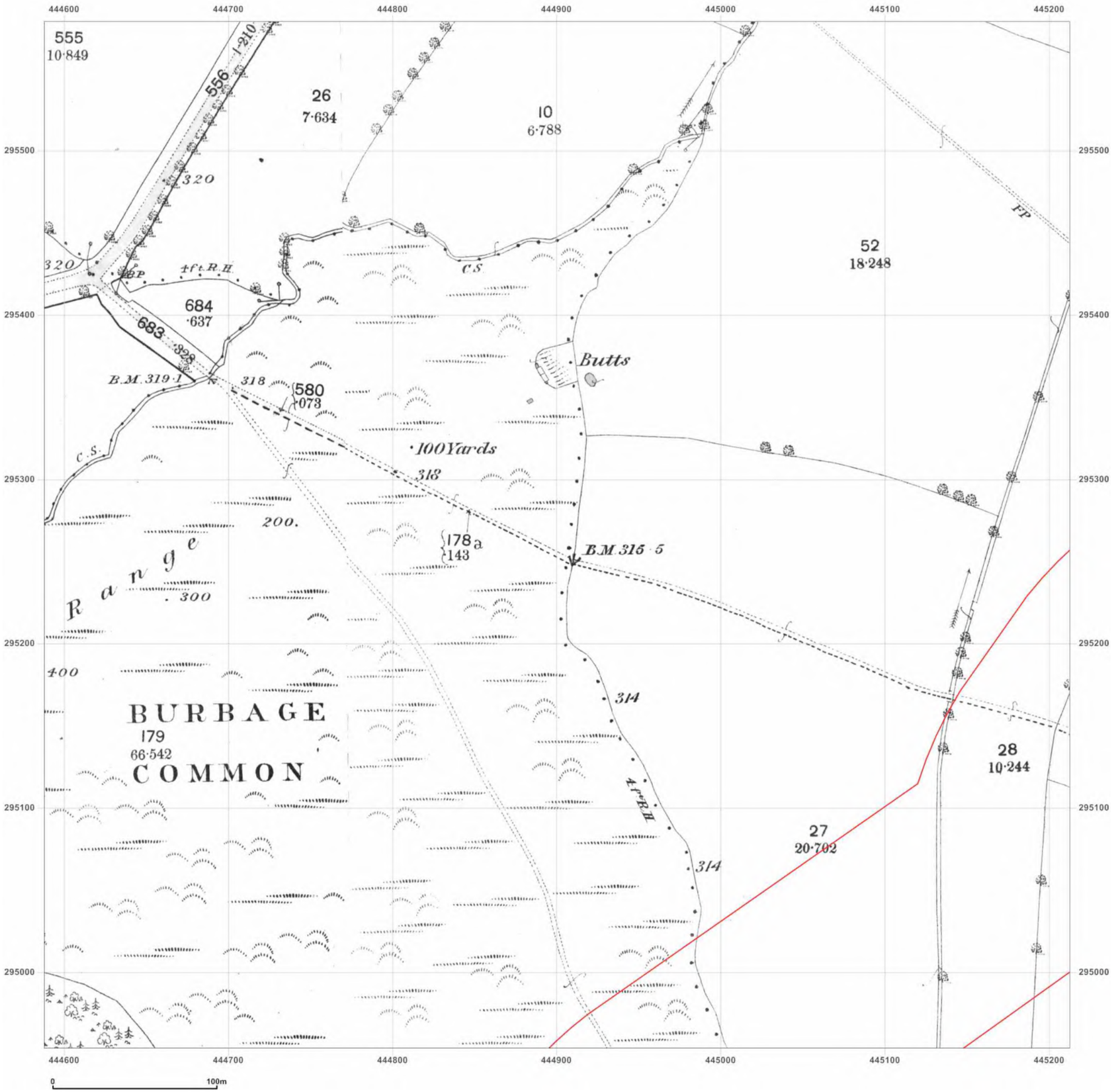

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

Map Name: County Series

Map date: **1887-1889**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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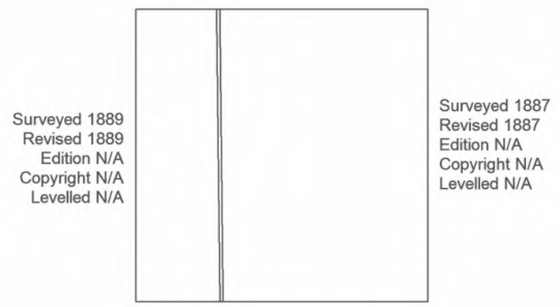

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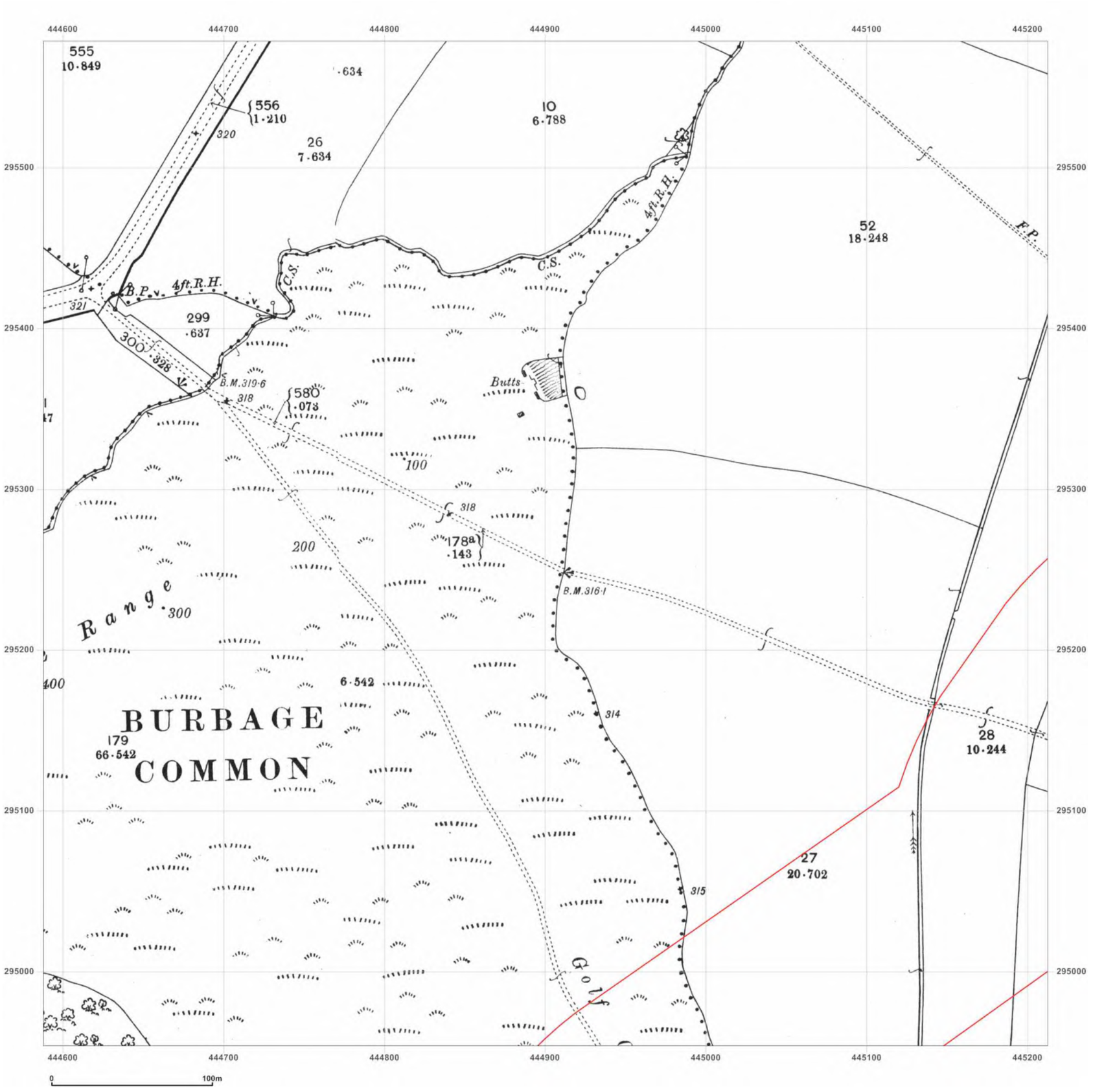


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

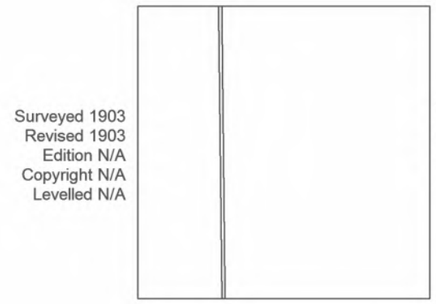
Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



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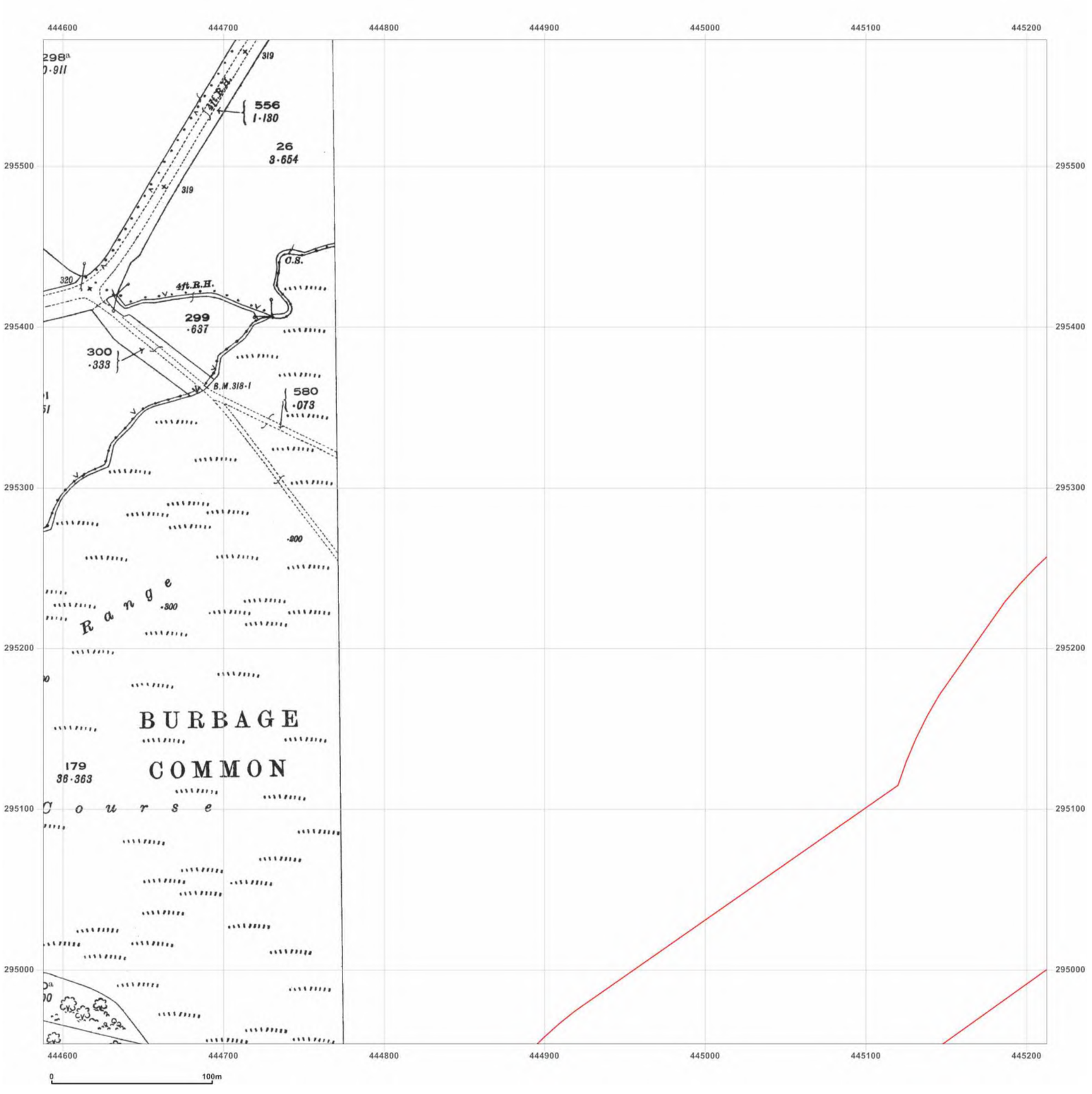

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

Map Name: County Series

Map date: **1924**

Scale: 1:2,500

Printed at: 1:2,500

N
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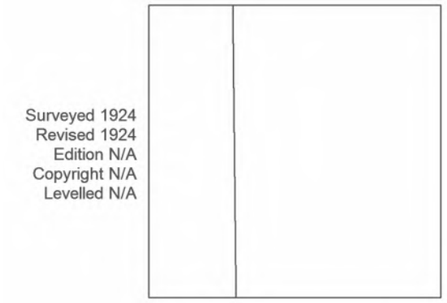

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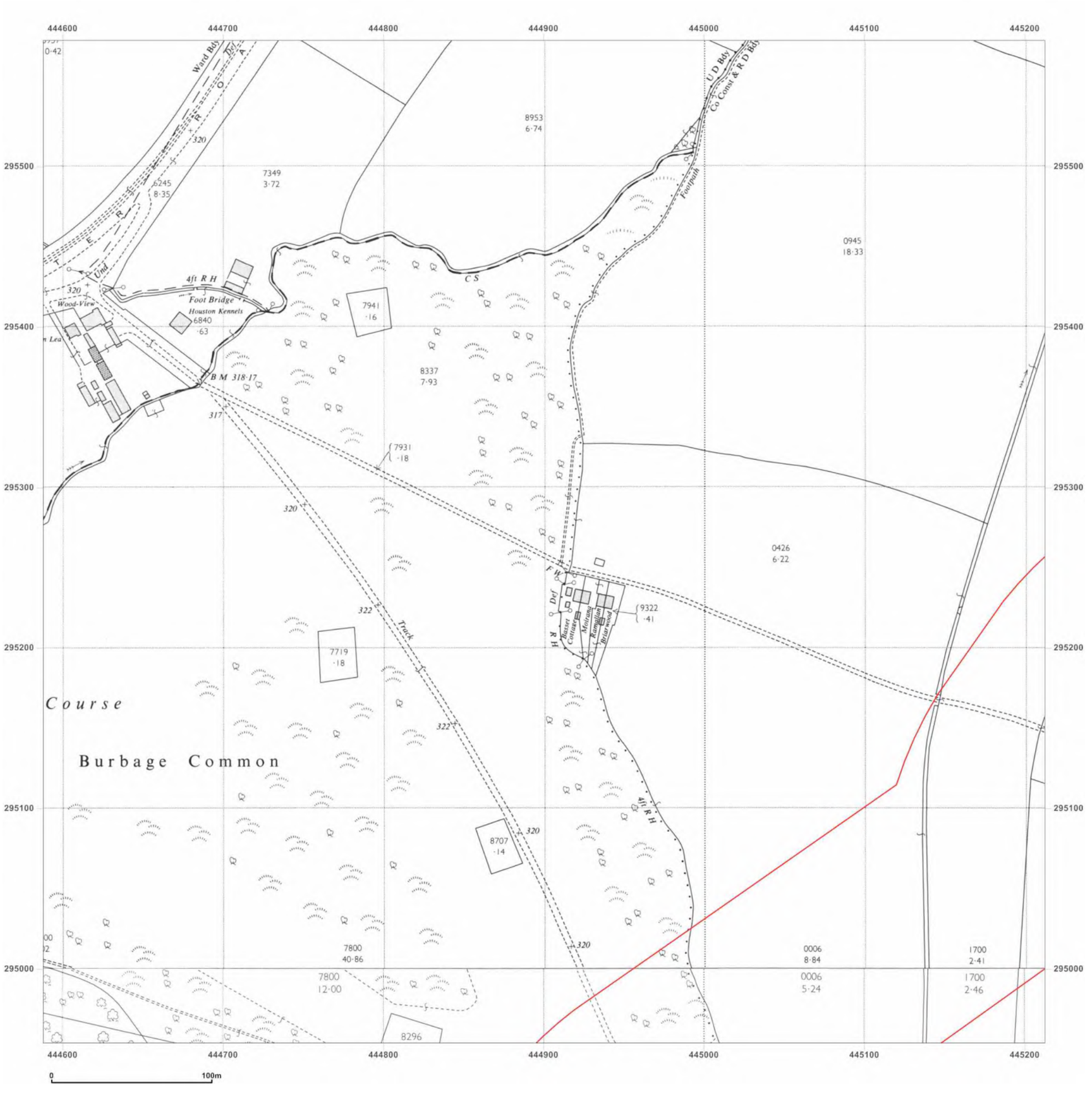

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

Map Name: National Grid

Map date: **1962-1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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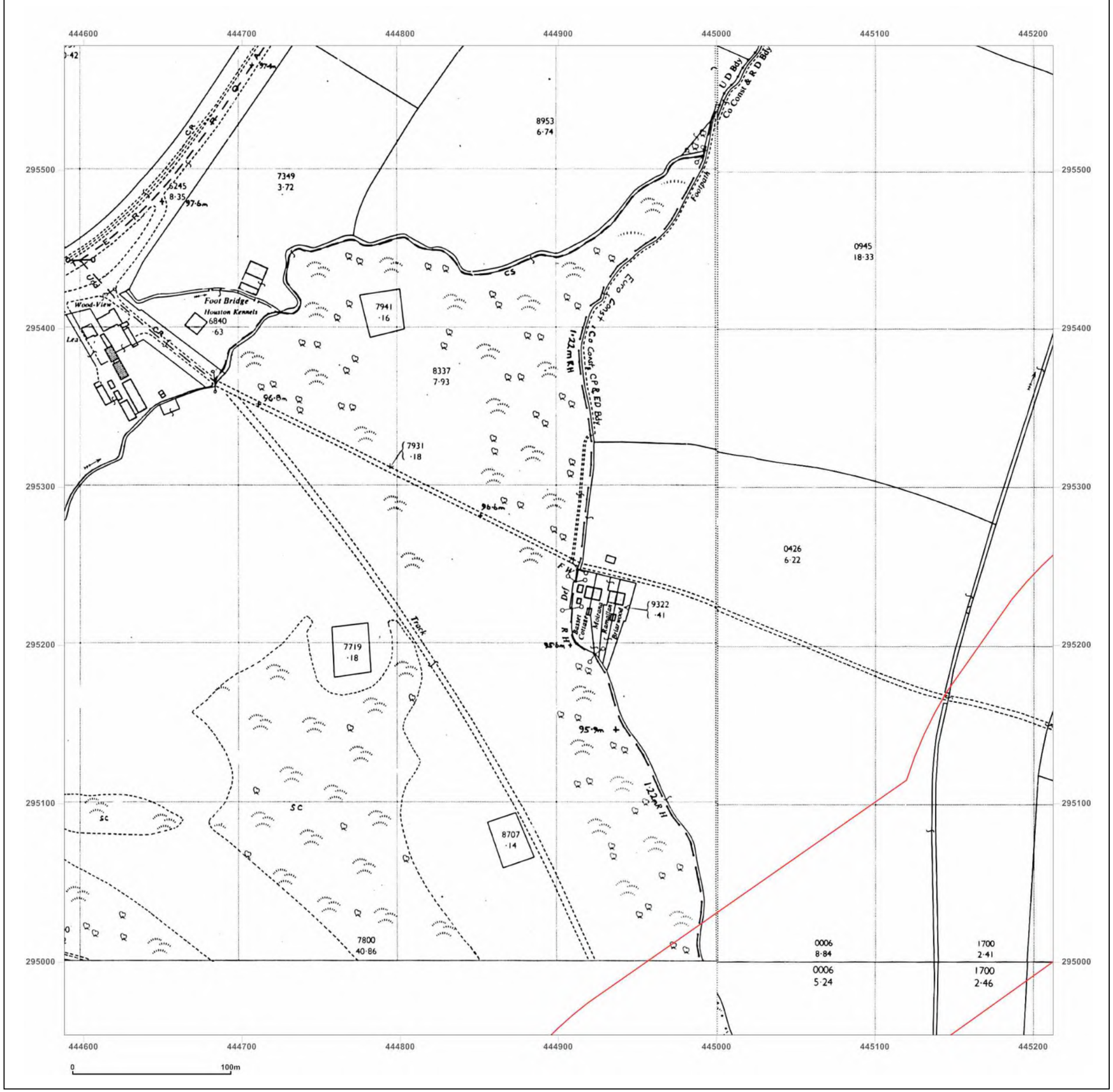

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

Map Name: National Grid

Map date: **1963-1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled 1963

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

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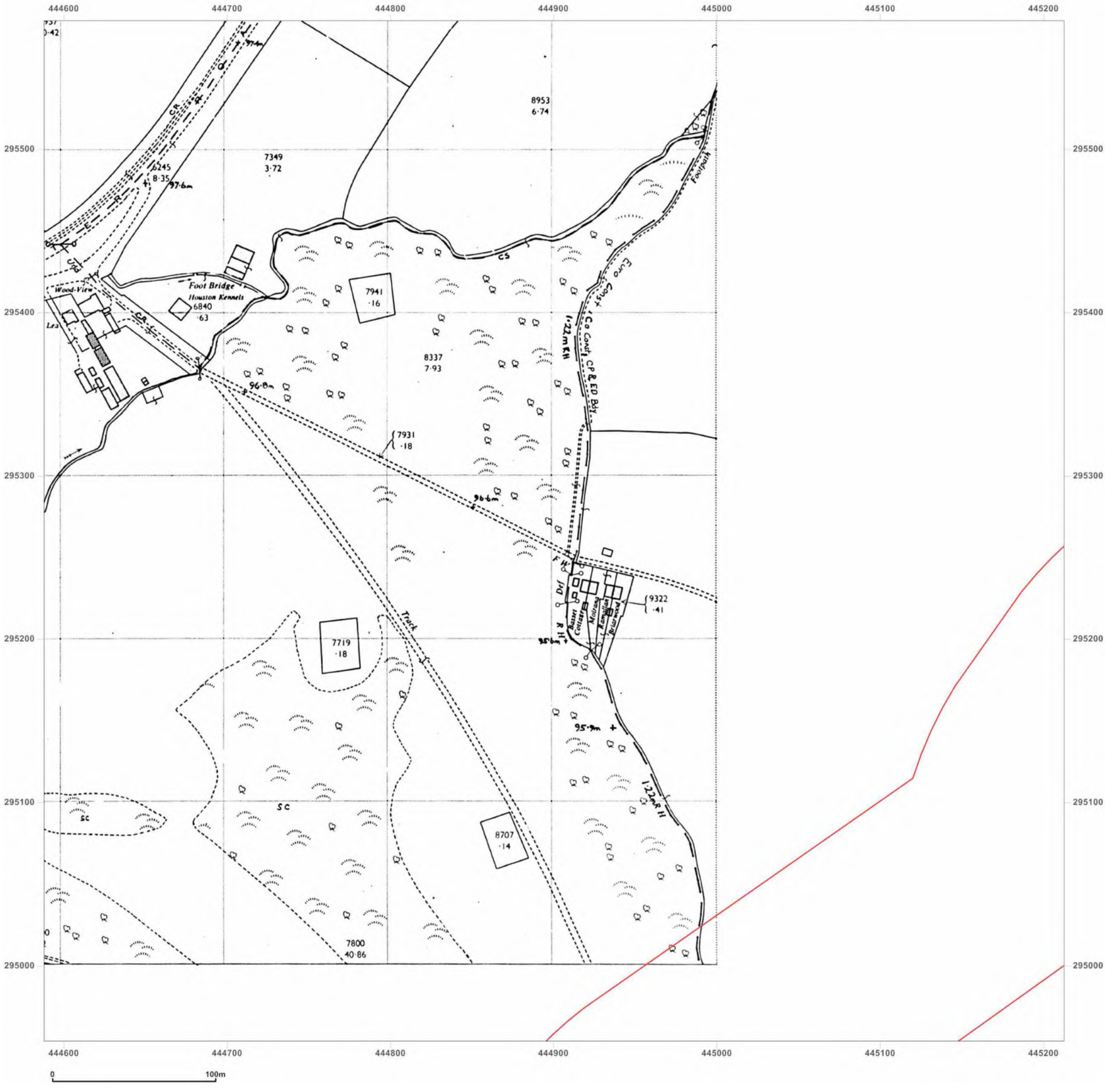


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

Map Name: National Grid

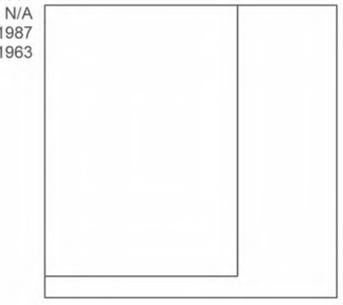
Map date: **1987**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1987
Edition N/A
Copyright 1987
Levelled 1963



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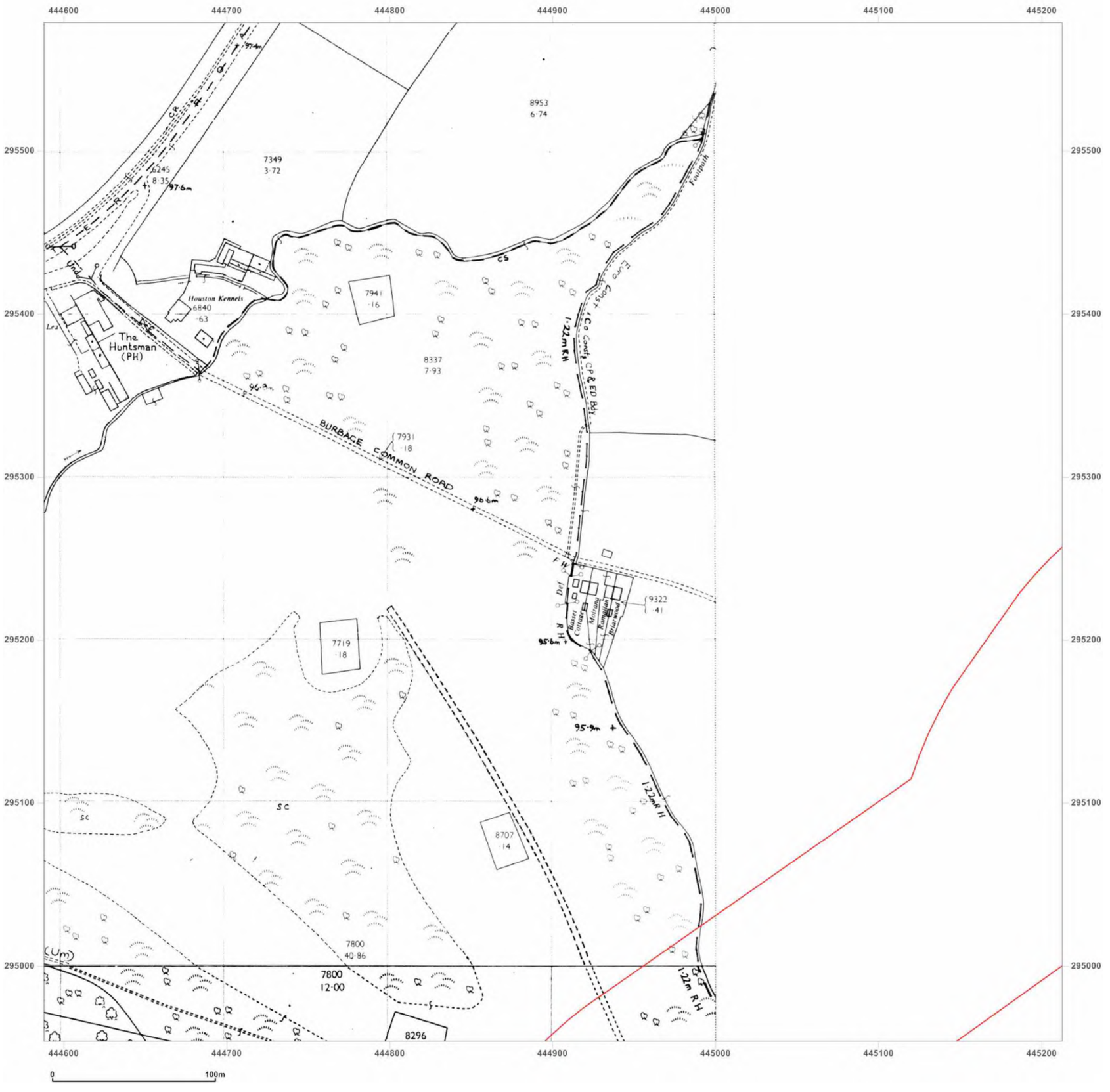

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Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

Map Name: National Grid

Map date: **1987-1991**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1991
Edition N/A
Copyright 1991
Levelled 1963

Surveyed 1945
Revised 1987
Edition N/A
Copyright 1987
Levelled 1945

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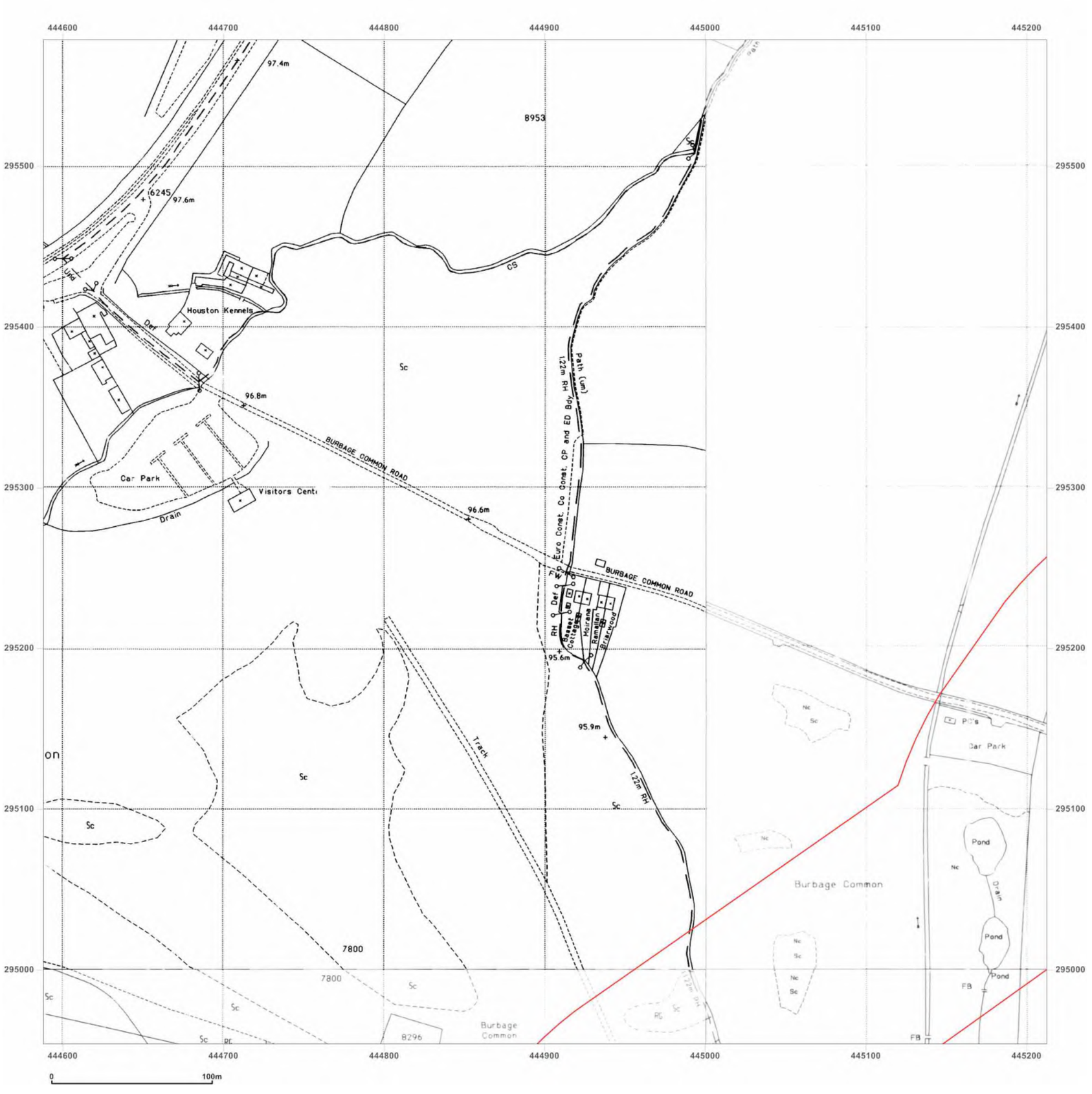

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_1_5
Grid Ref: 444900, 295266

Map Name: National Grid

Map date: **1993-1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed N/A Revised N/A Edition N/A Copyright 1993 Levelled N/A	Surveyed 1994 Revised 1994 Edition N/A Copyright N/A Levelled N/A
Surveyed 1993 Revised 1993 Edition N/A Copyright N/A Levelled N/A	Surveyed 1994 Revised 1994 Edition N/A Copyright N/A Levelled N/A

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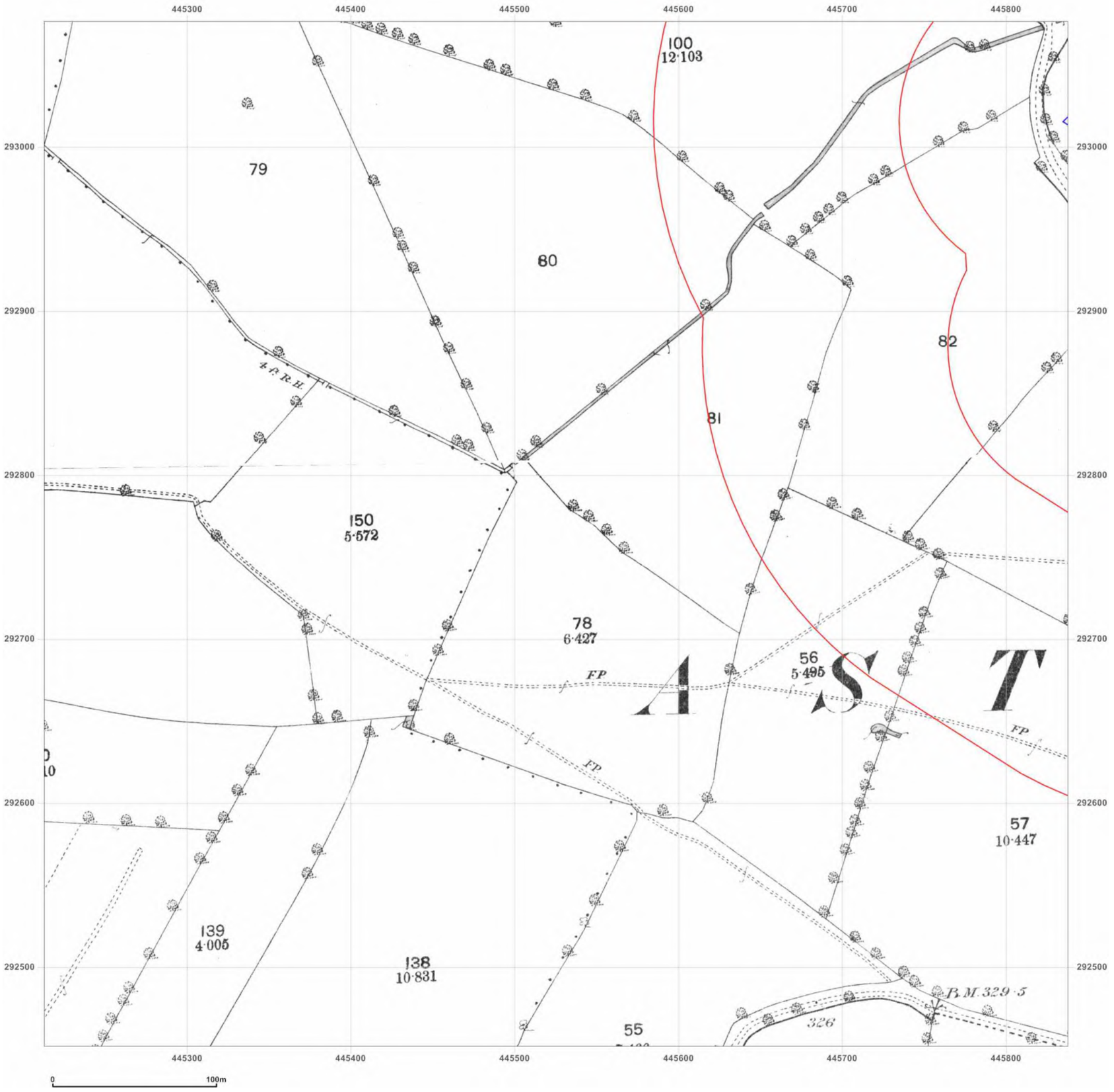


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: County Series

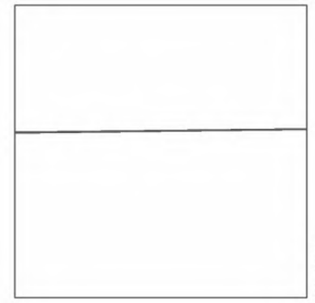
Map date: **1887-1888**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

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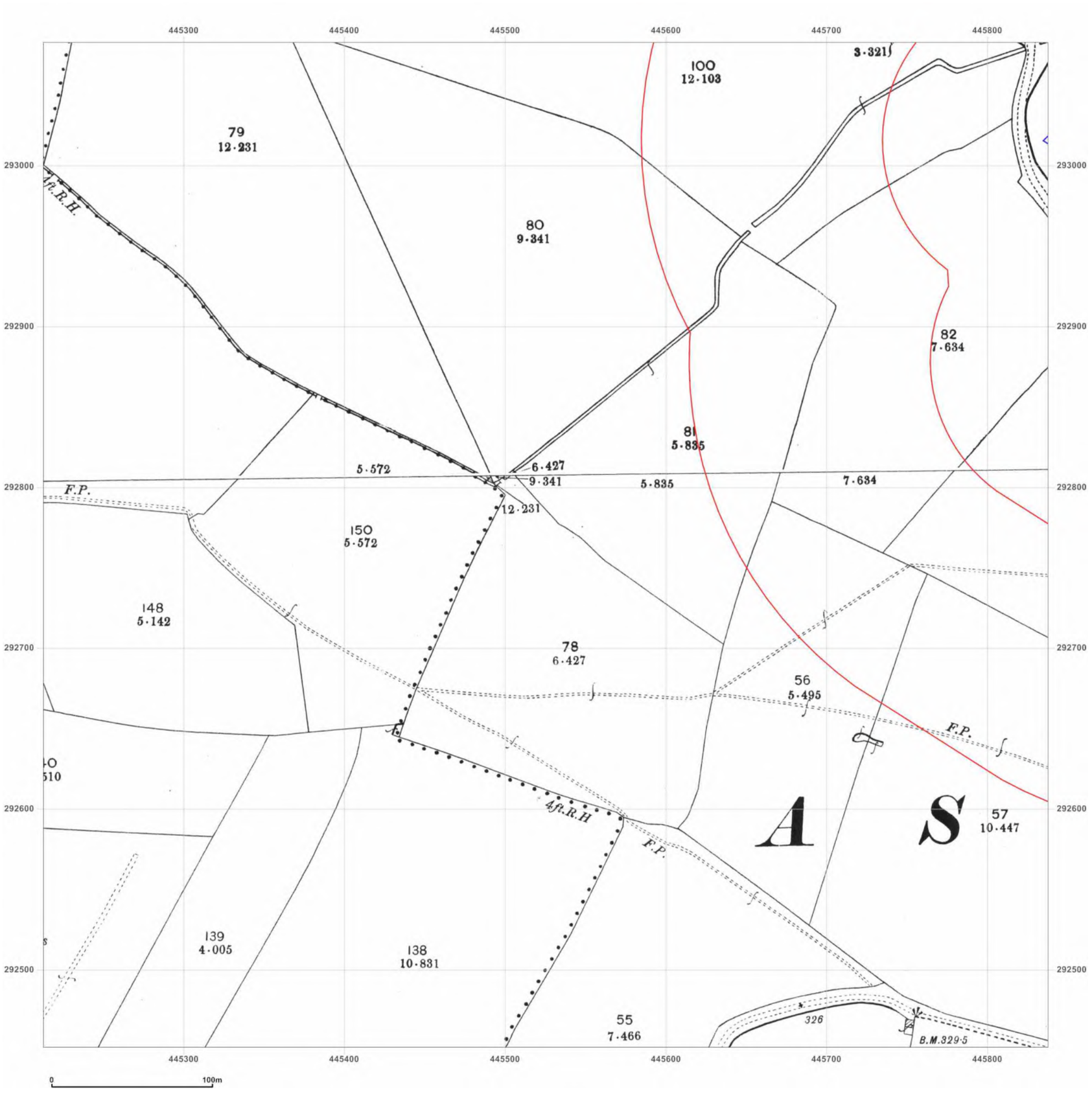


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: County Series

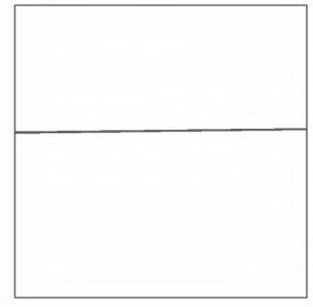
Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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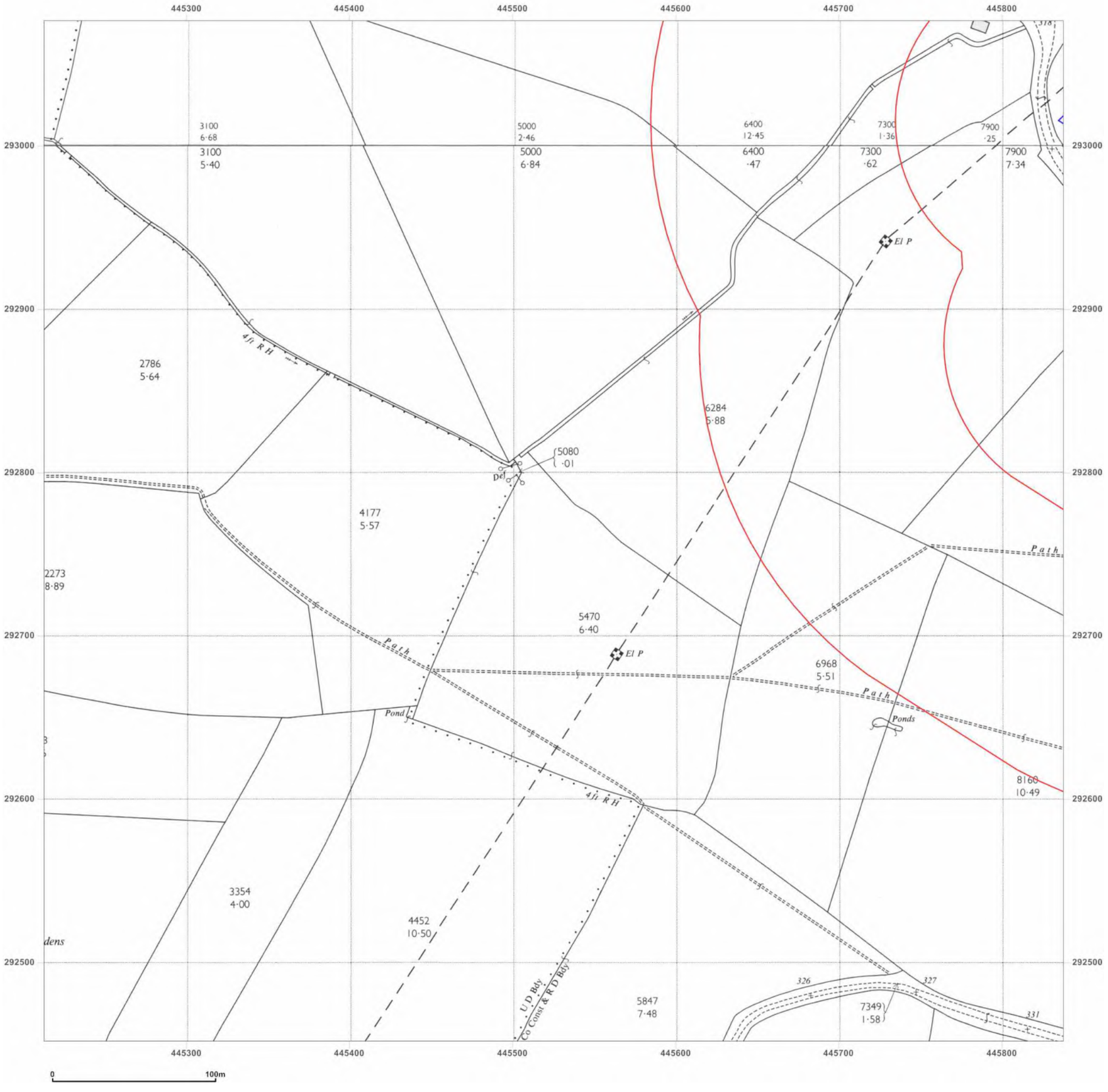

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

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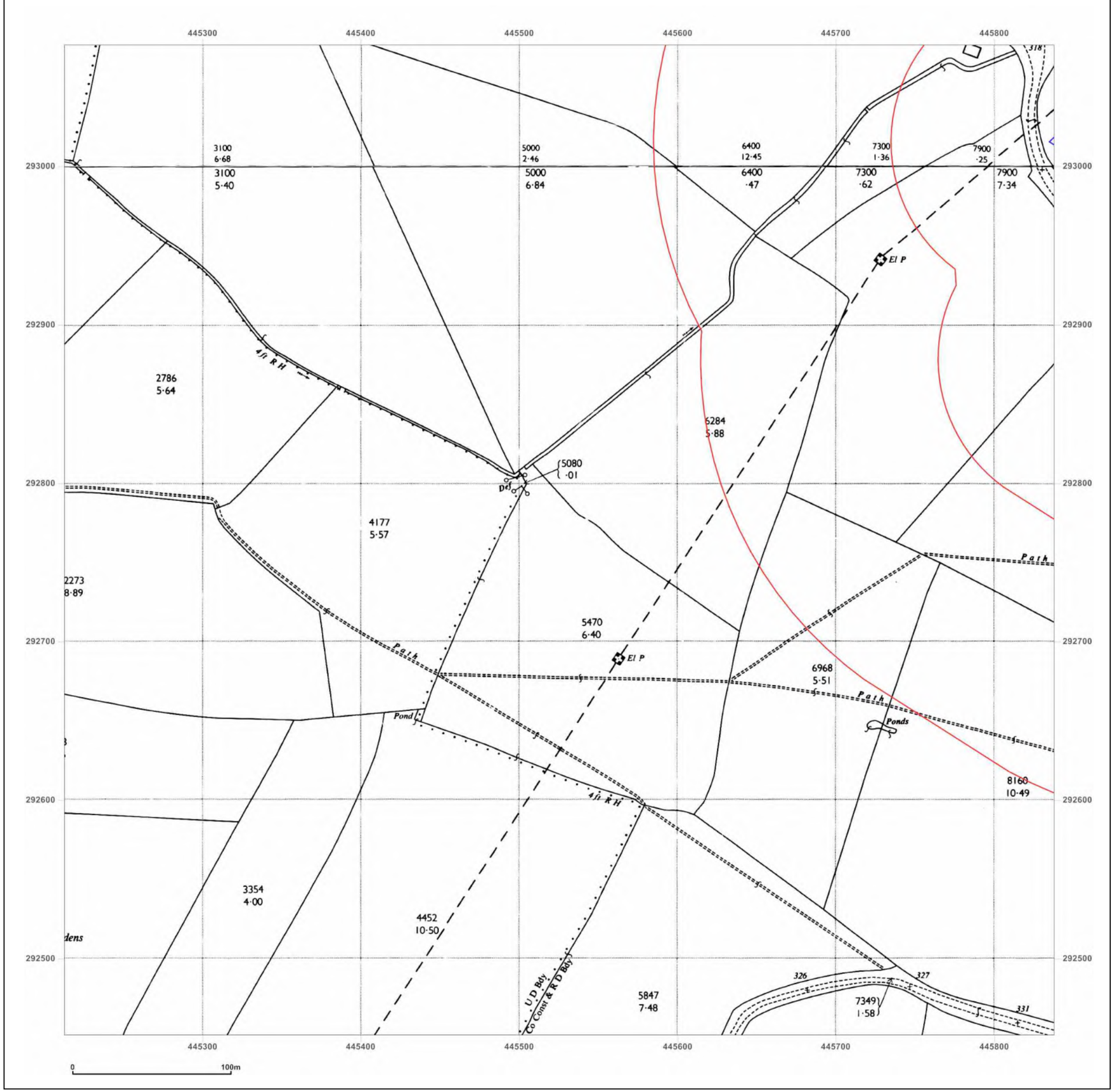

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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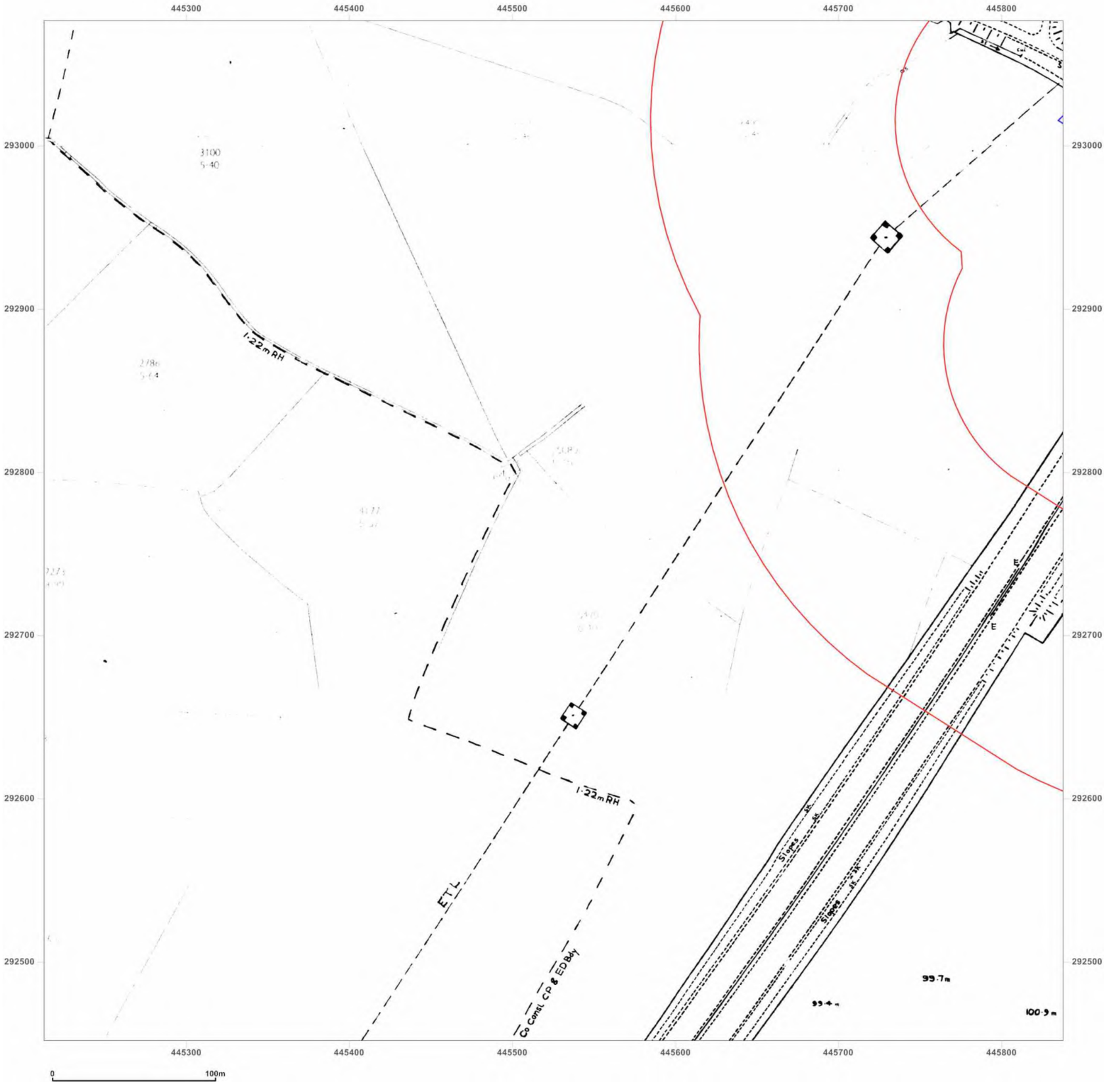

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: National Grid

Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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
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Levelled N/A

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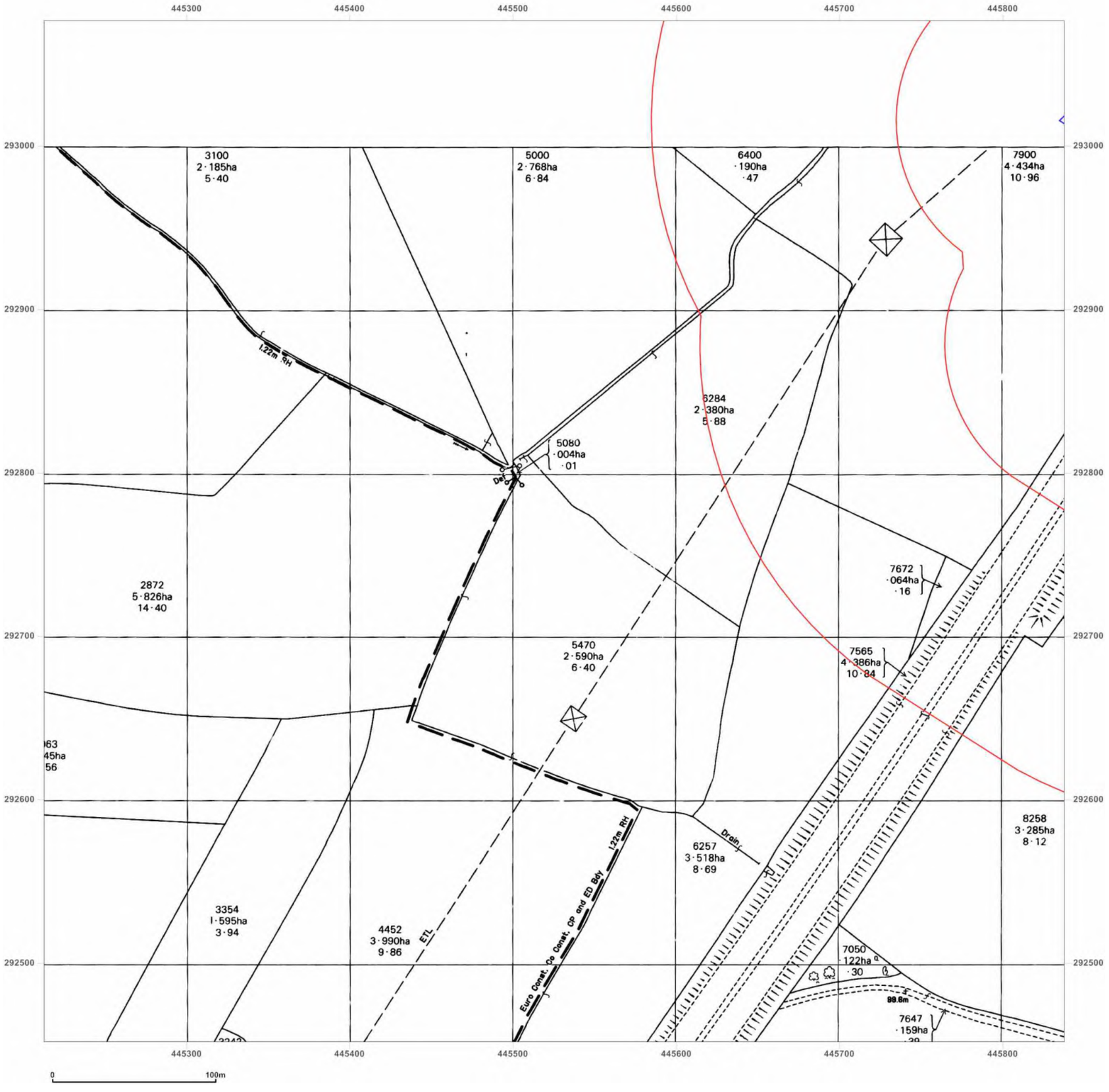

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: National Grid

Map date: **1988**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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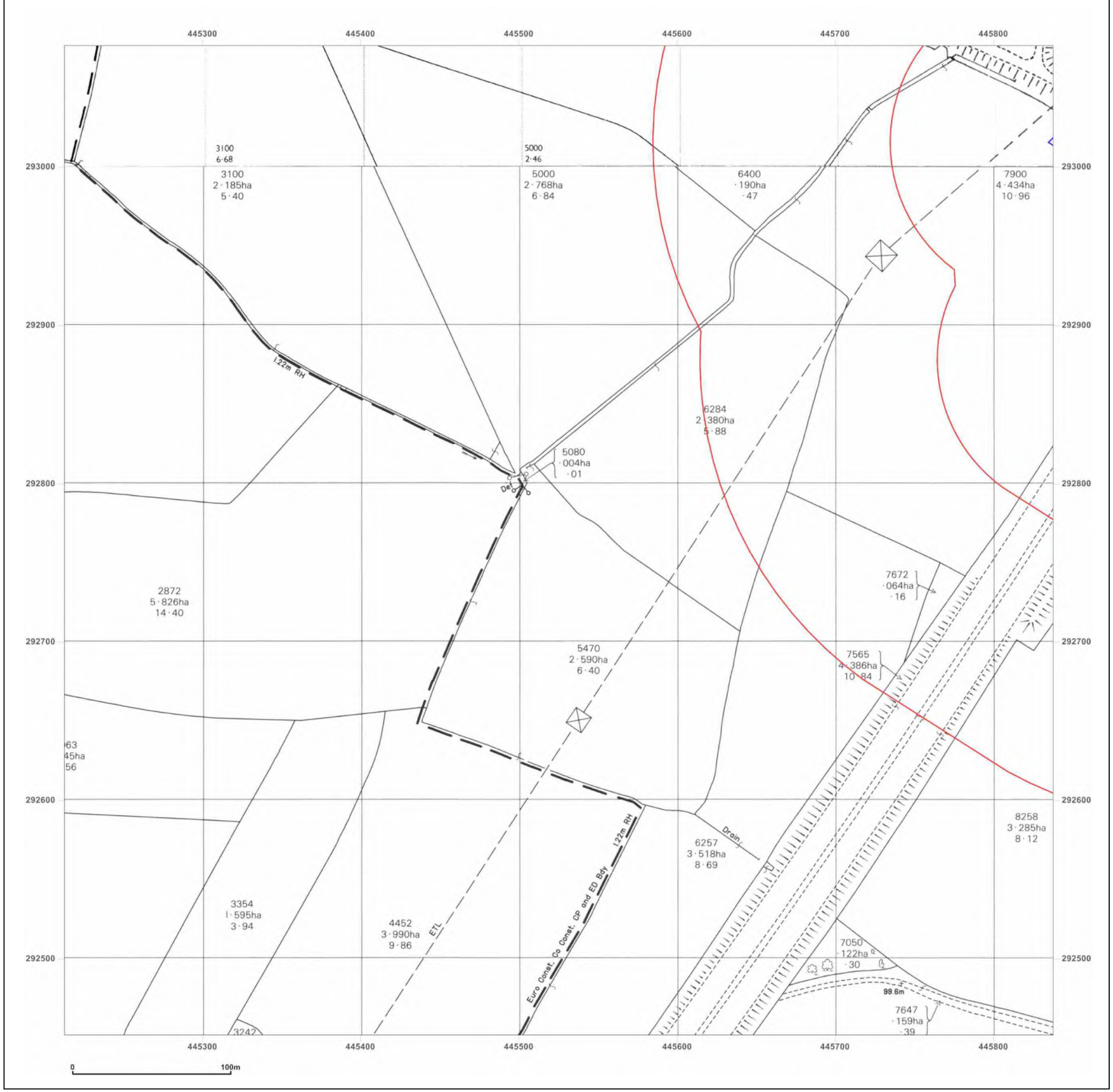

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: National Grid

Map date: **1987-1992**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1945
Revised 1992
Edition N/A
Copyright 1992
Levelled 1945

Surveyed 1972
Revised 1987
Edition N/A
Copyright 1988
Levelled 1964

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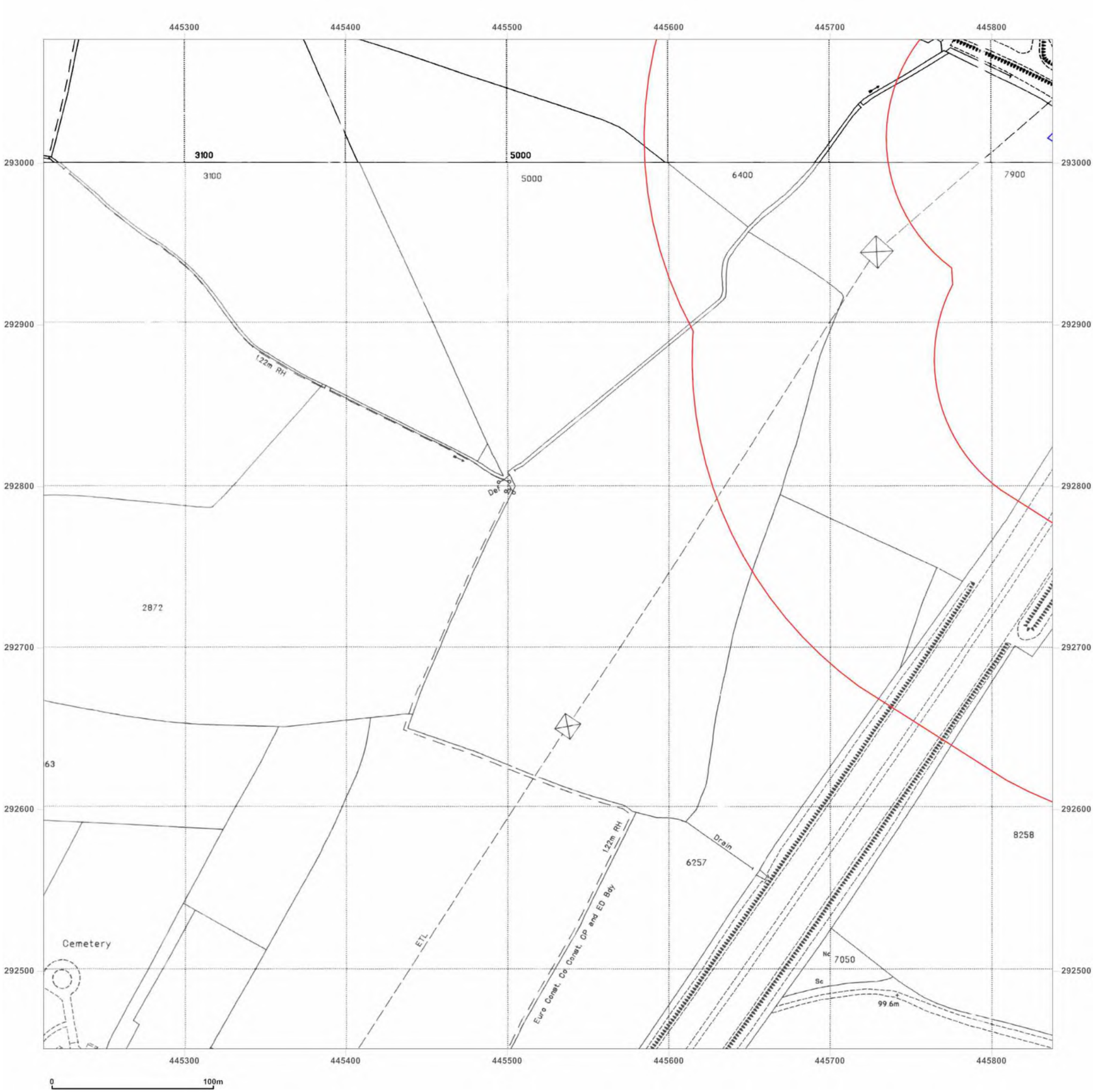

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_1
Grid Ref: 445525, 292764

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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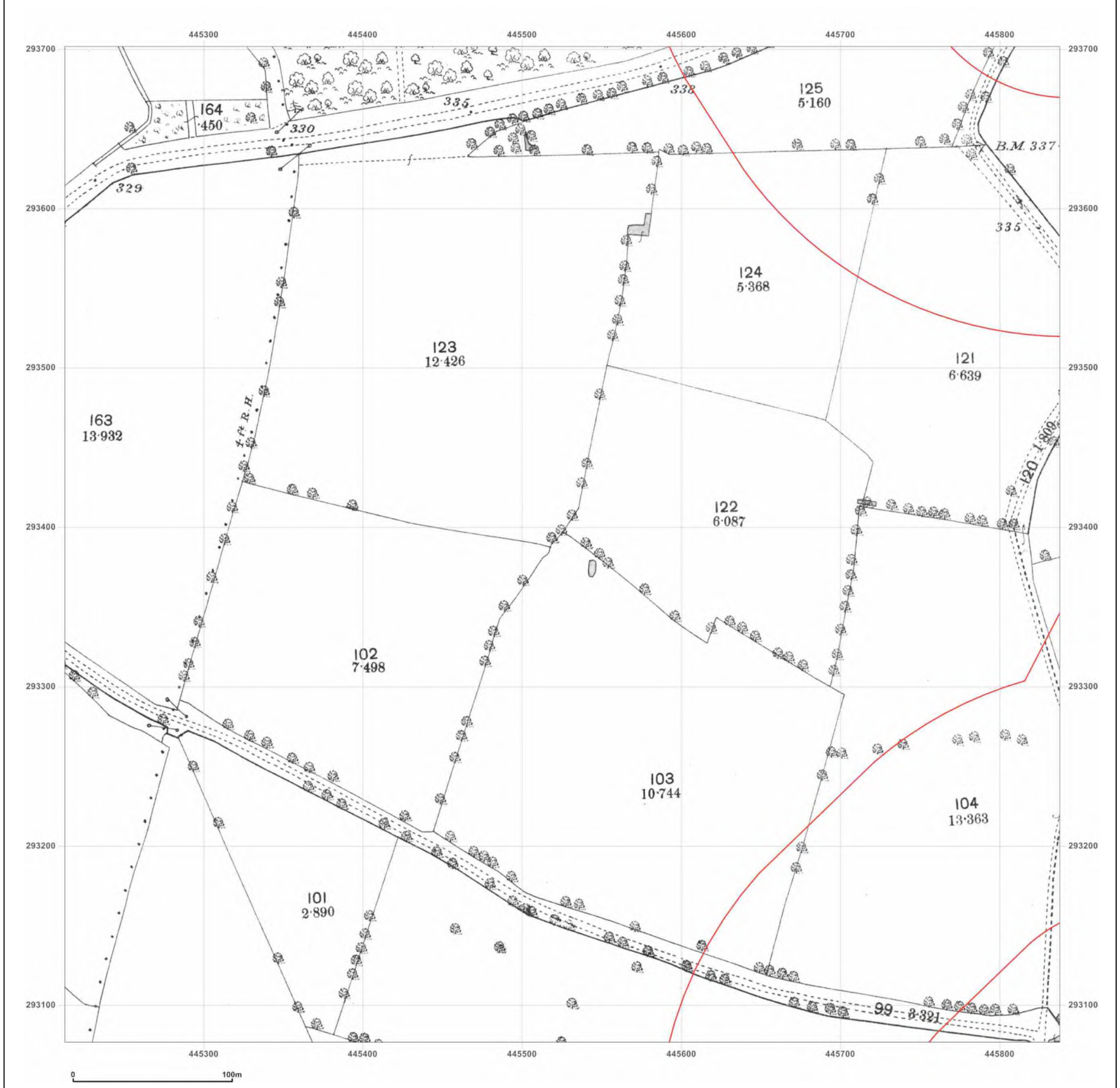

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_2
Grid Ref: 445525, 293389

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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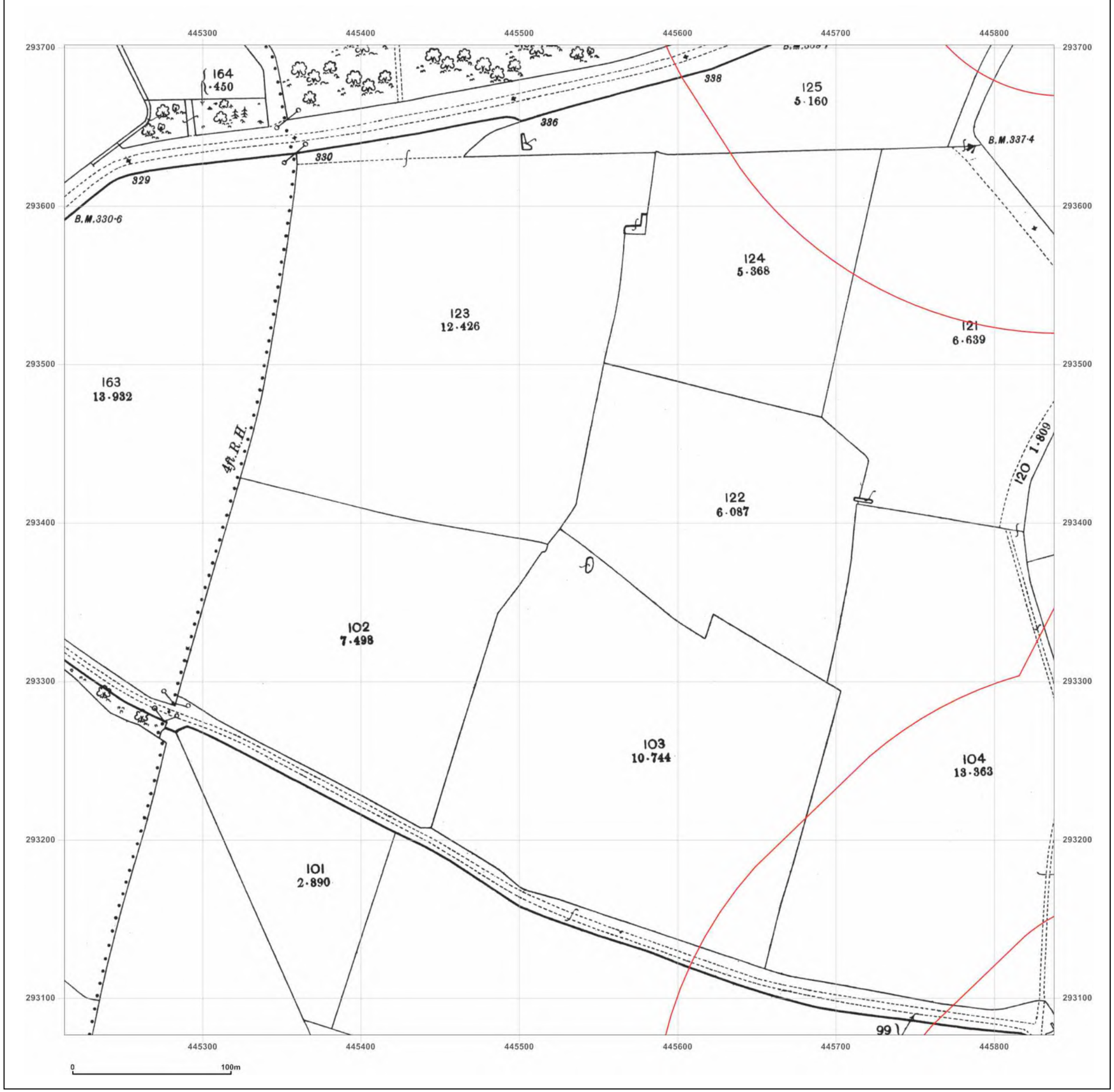

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_2
Grid Ref: 445525, 293389

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_2
Grid Ref: 445525, 293389

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_2
Grid Ref: 445525, 293389

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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Production date: 30 January 2018

Map legend available at:
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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_2
Grid Ref: 445525, 293389

Map Name: National Grid

Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_2
Grid Ref: 445525, 293389

Map Name: National Grid

Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1945
Revised 1992
Edition N/A
Copyright 1992
Levelled 1945

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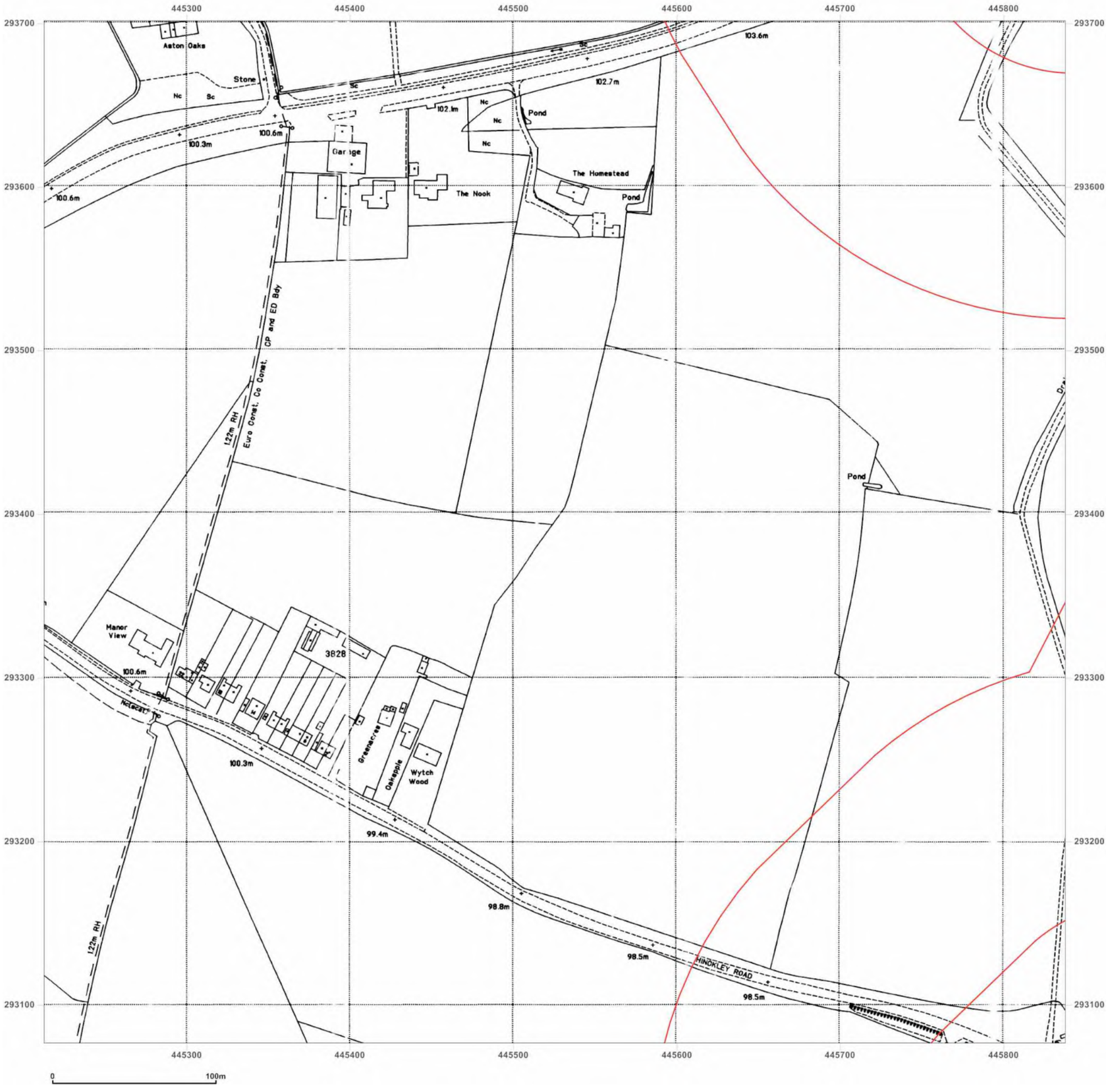

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_2
Grid Ref: 445525, 293389

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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Production date: 30 January 2018

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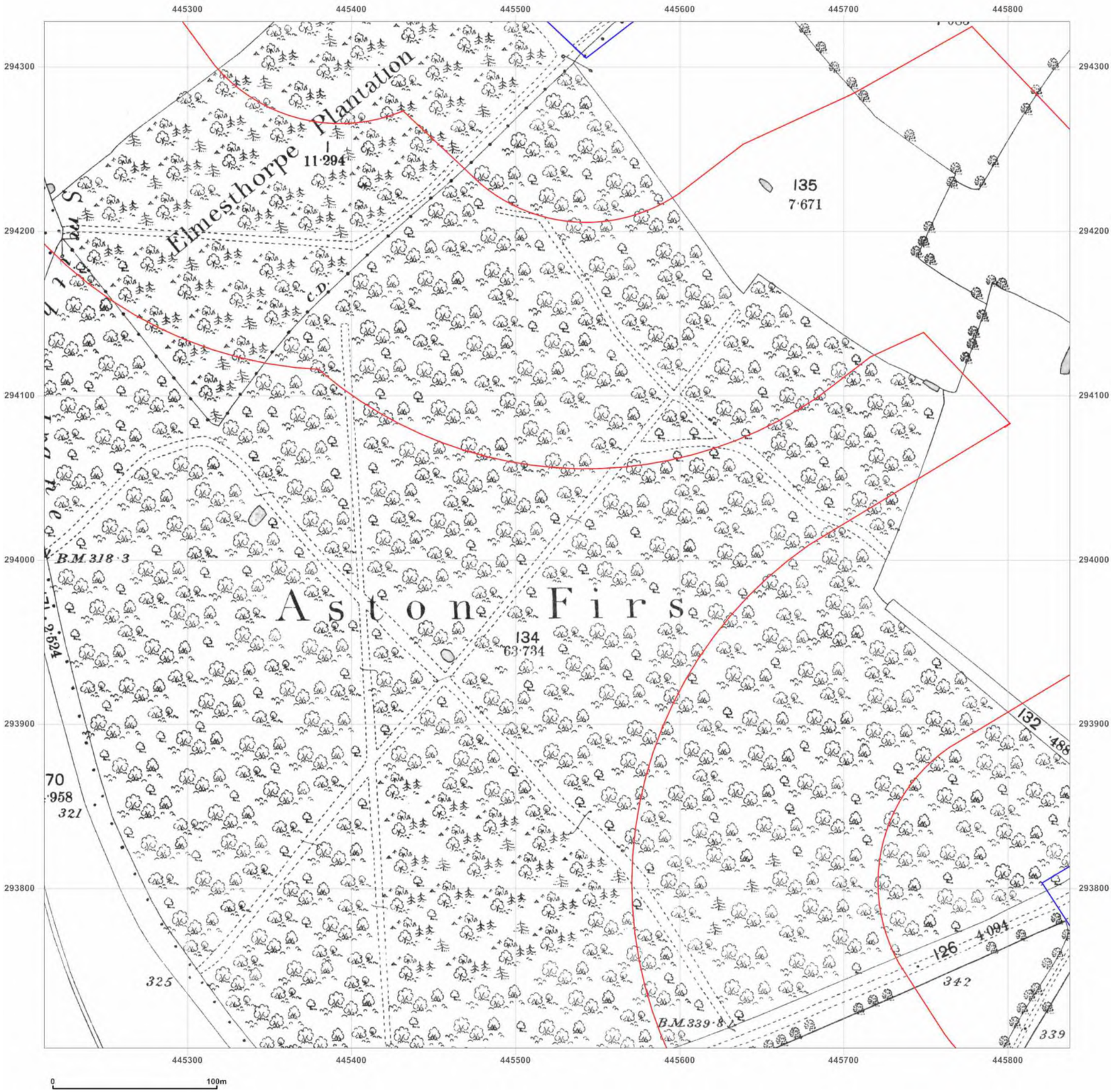

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_3
Grid Ref: 445525, 294015

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

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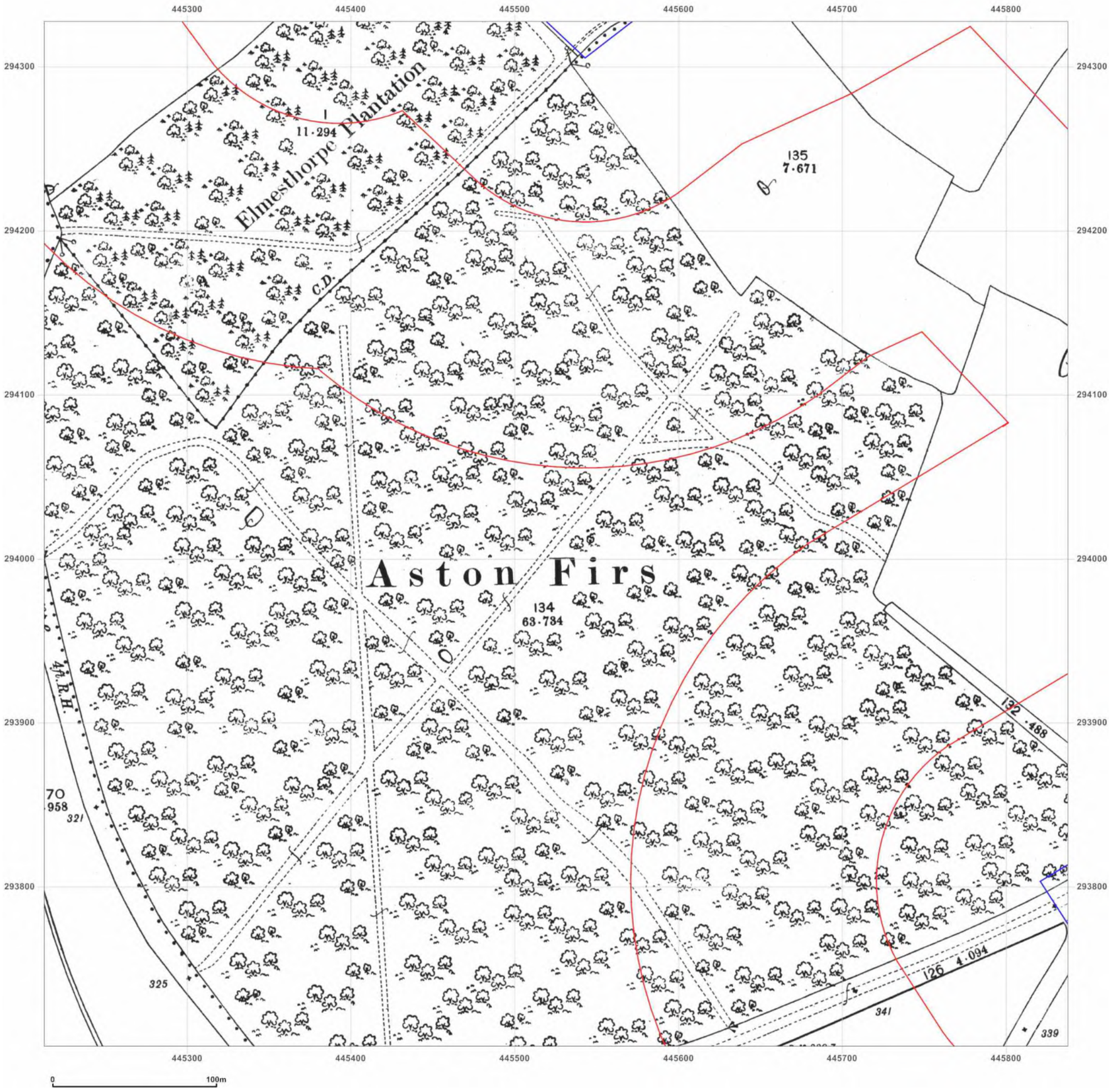

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_3
Grid Ref: 445525, 294015

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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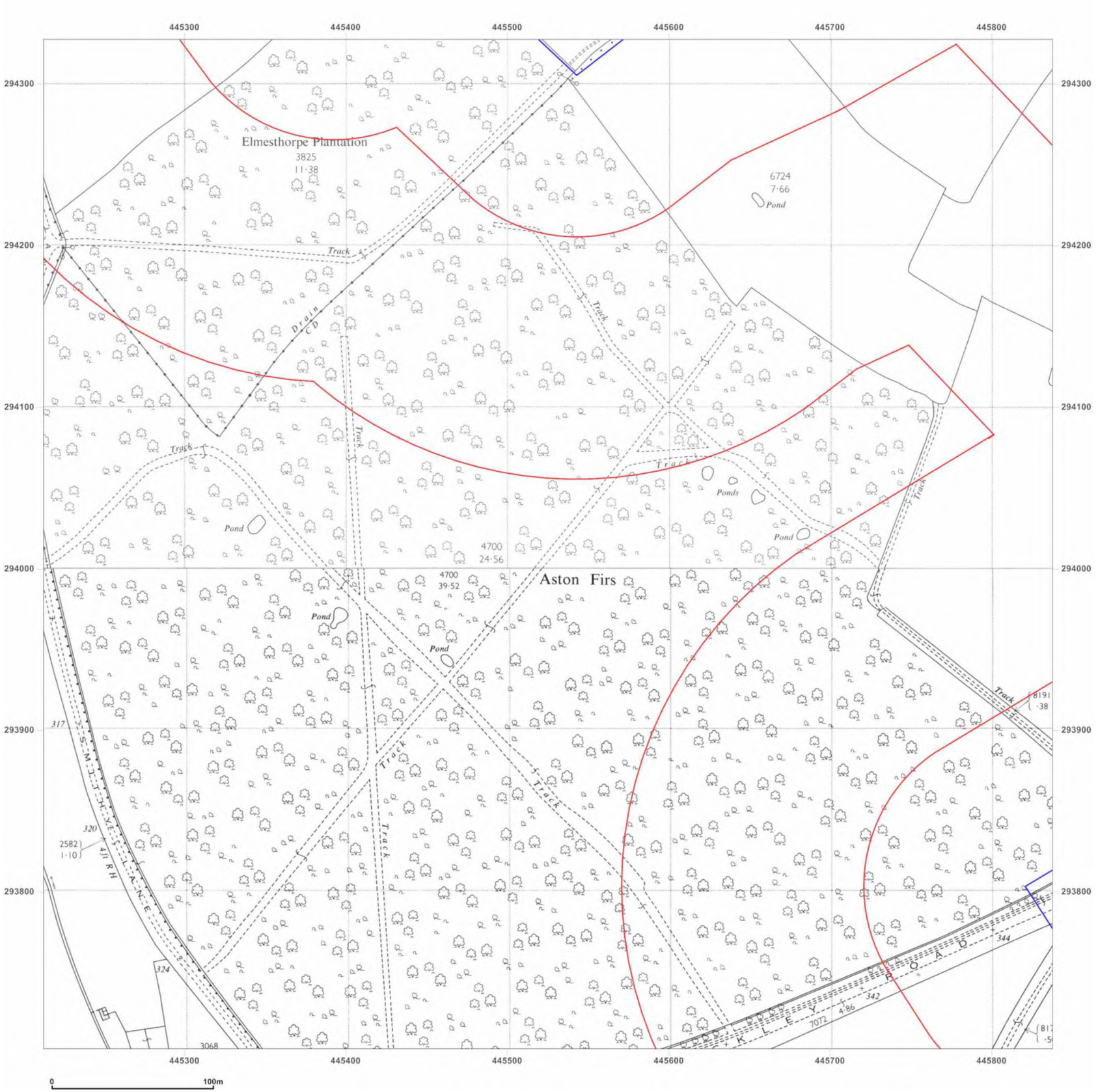

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_3
Grid Ref: 445525, 294015

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

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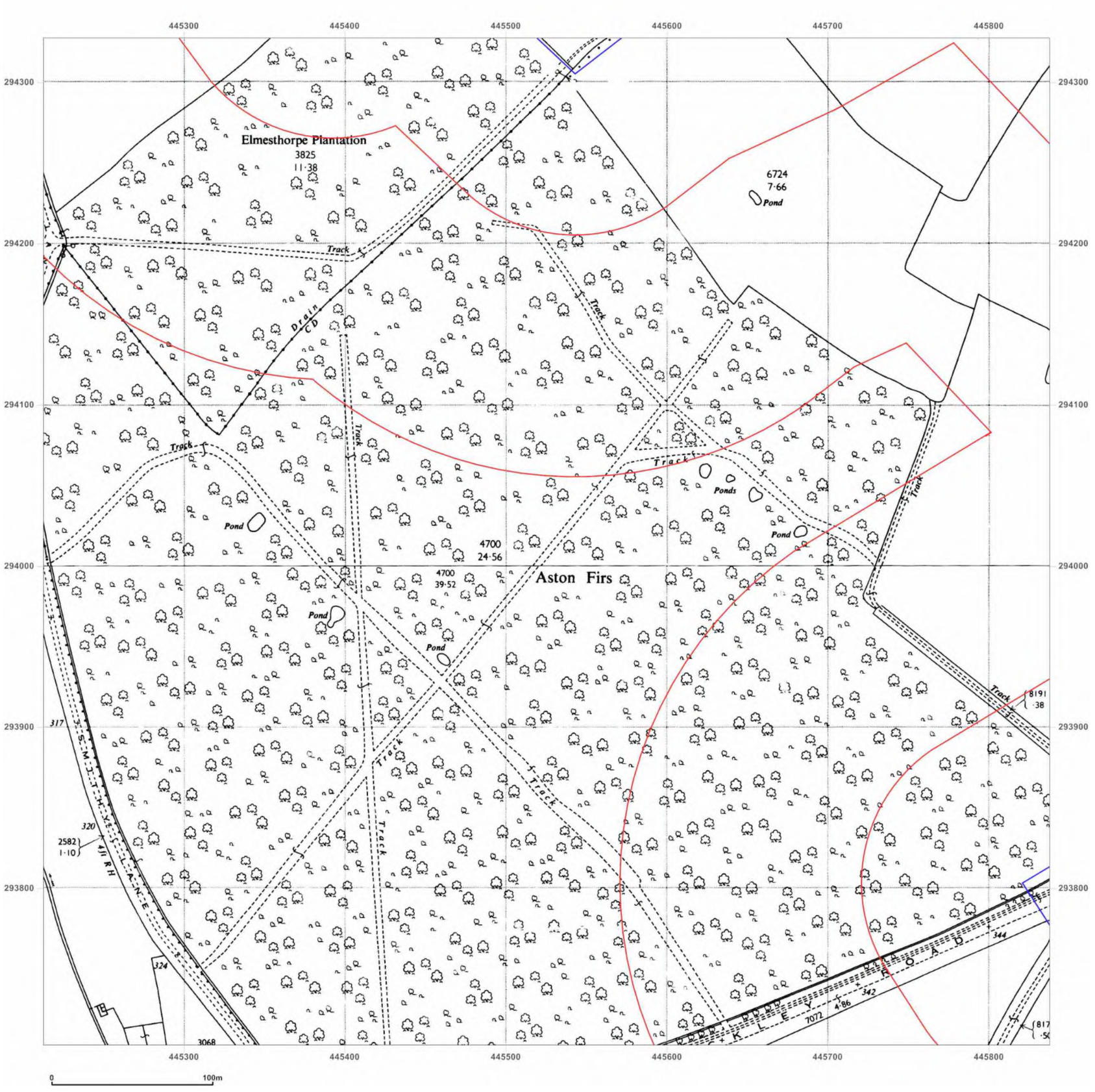

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_3
Grid Ref: 445525, 294015

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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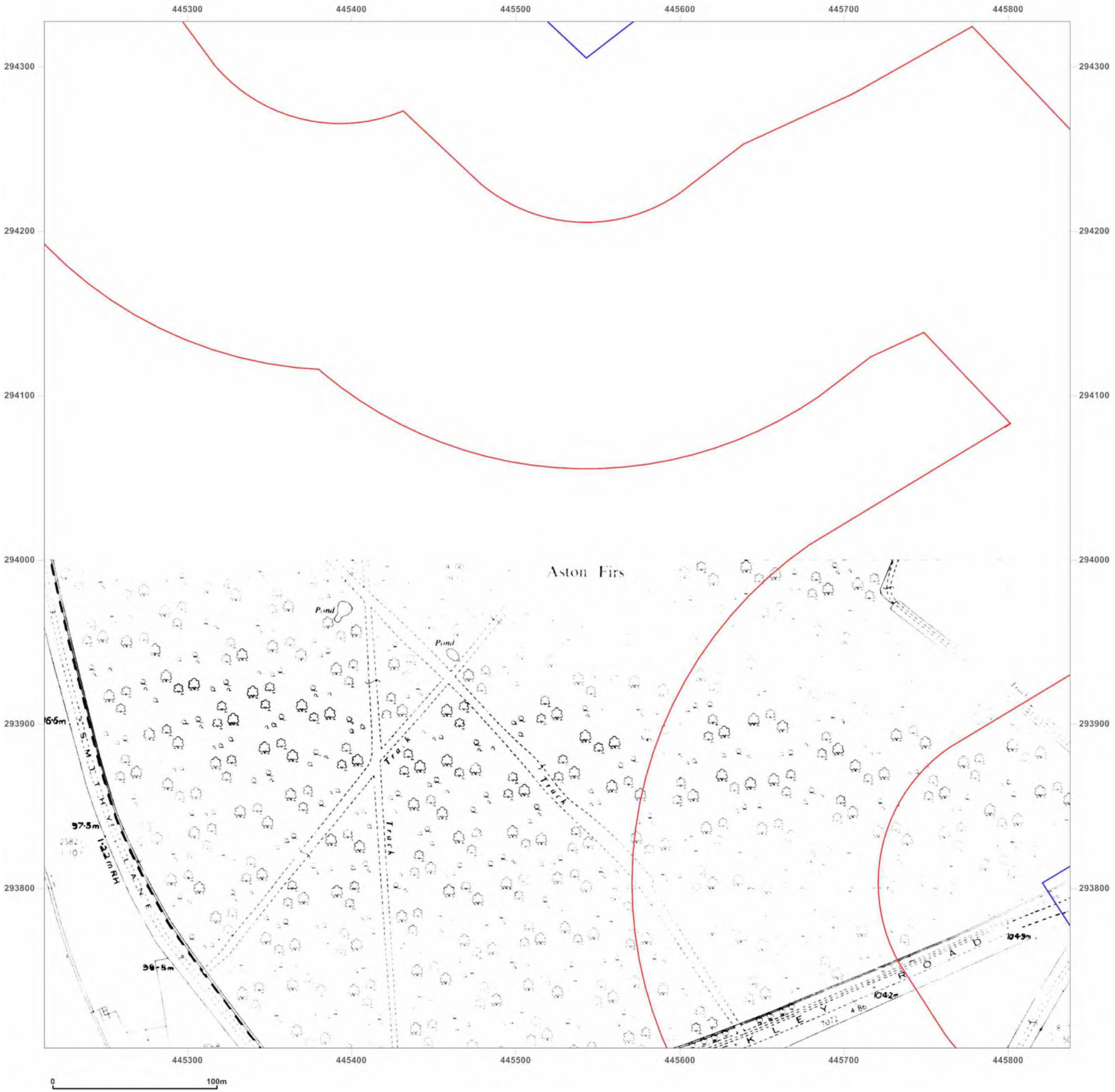

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_3
Grid Ref: 445525, 294015

Map Name: National Grid

Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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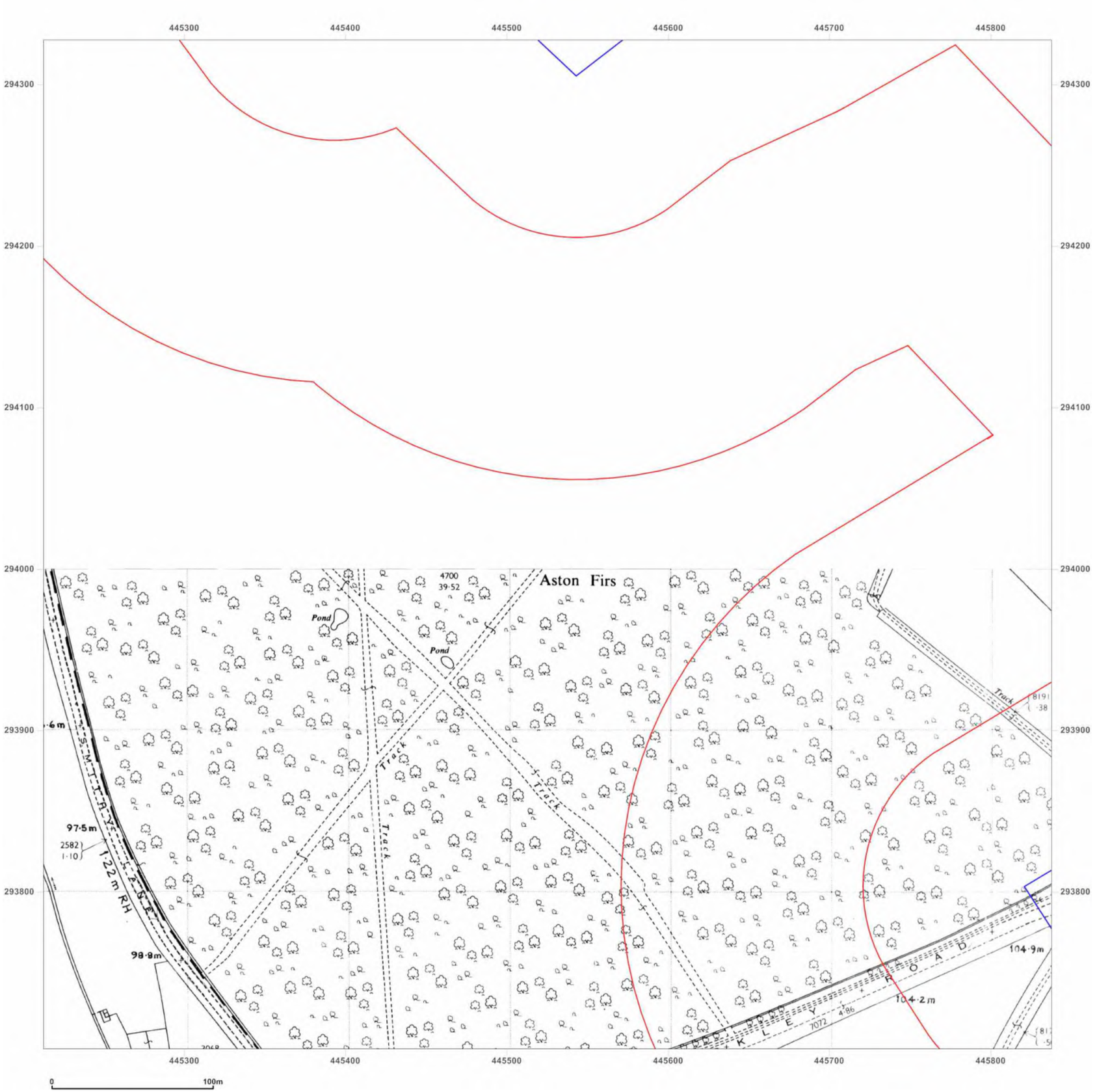

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_3
Grid Ref: 445525, 294015

Map Name: National Grid

Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1945
Revised 1992
Edition N/A
Copyright 1992
Levelled 1945

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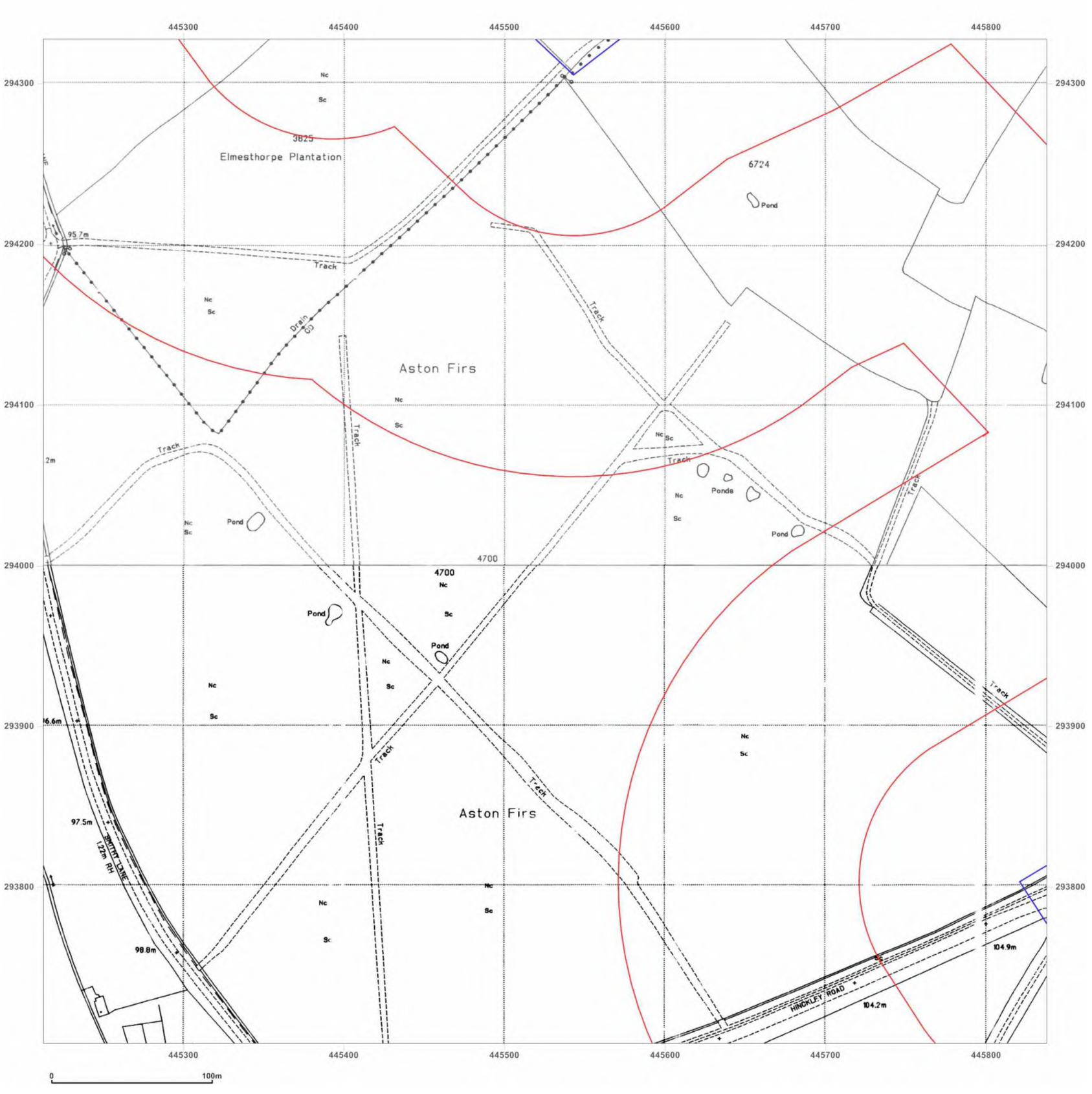

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_3
Grid Ref: 445525, 294015

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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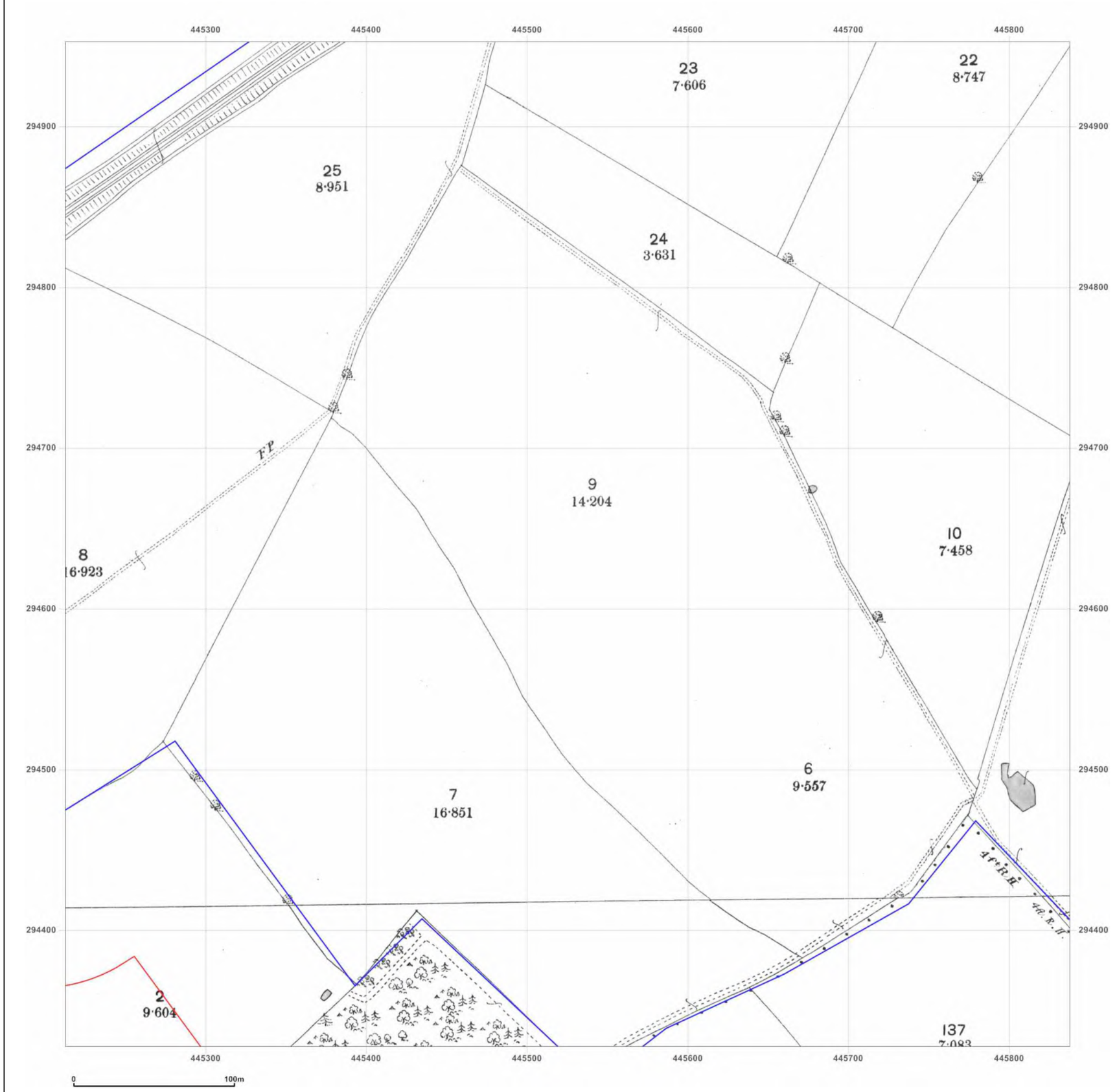

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_4
Grid Ref: 445525, 294640

Map Name: County Series

Map date: 1887

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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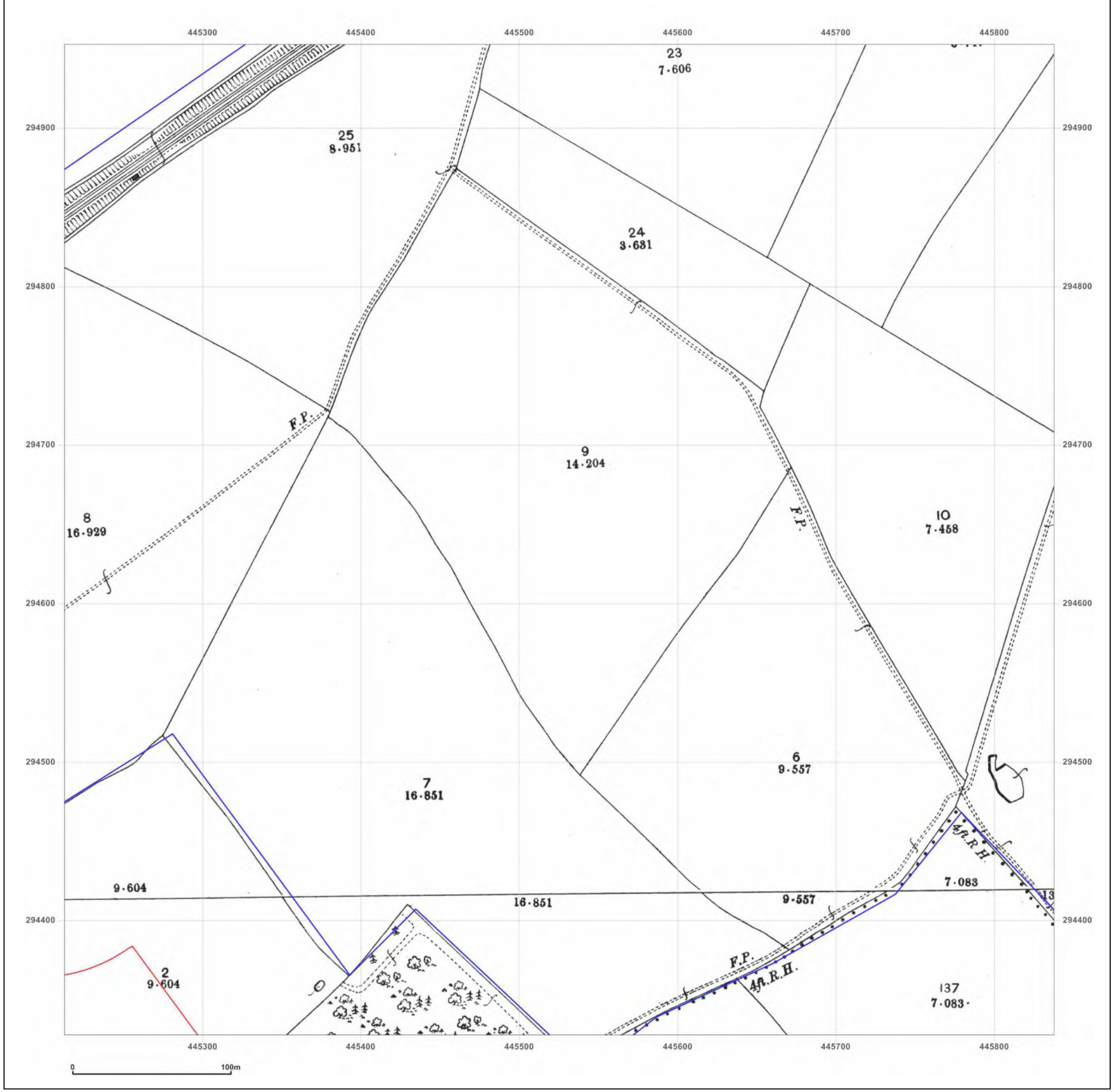


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_4
Grid Ref: 445525, 294640

Map Name: County Series

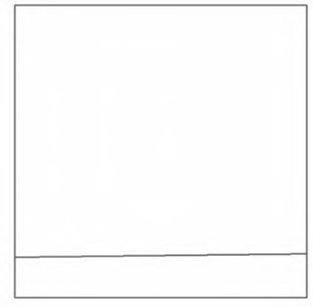
Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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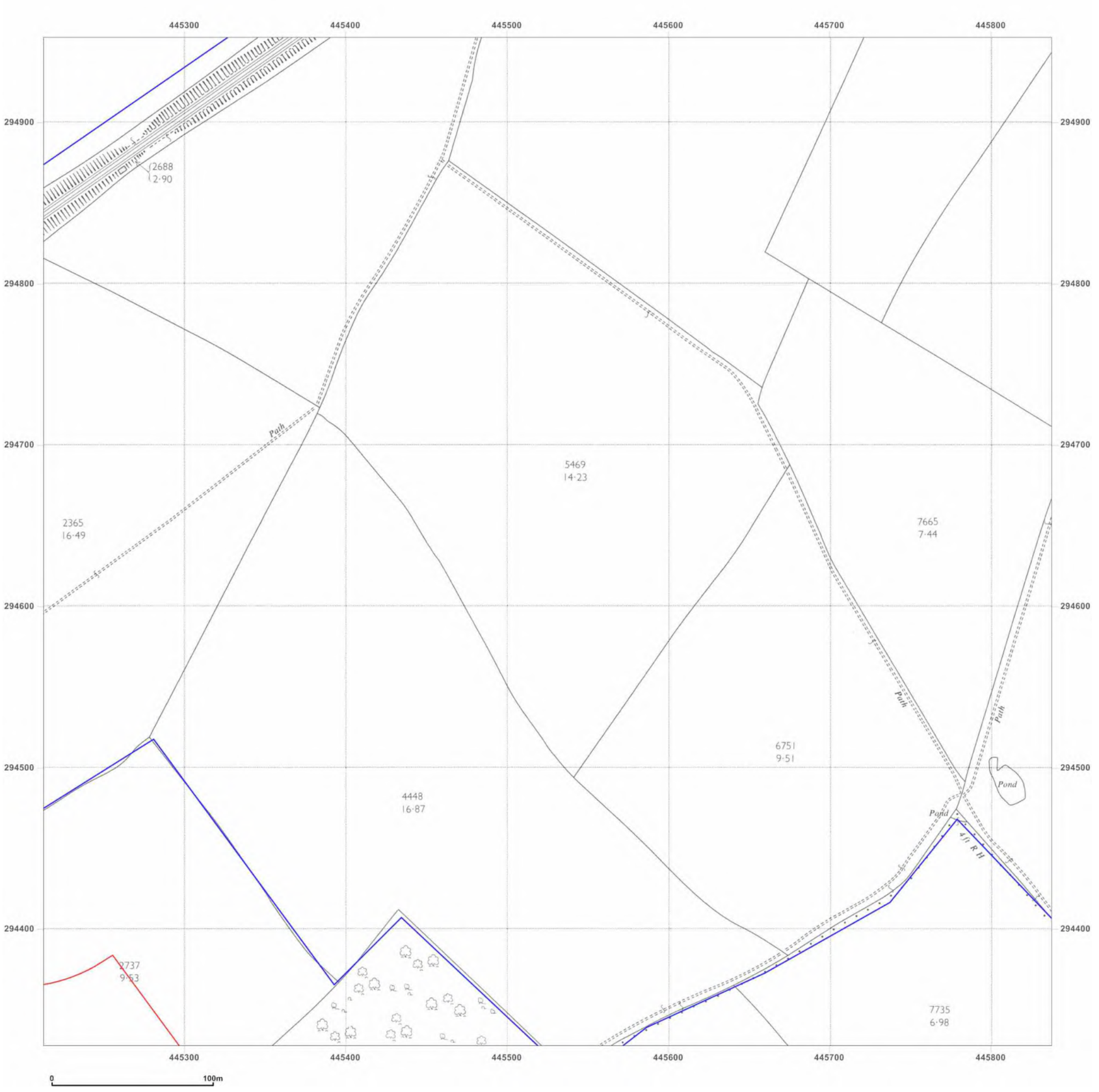

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_4
Grid Ref: 445525, 294640

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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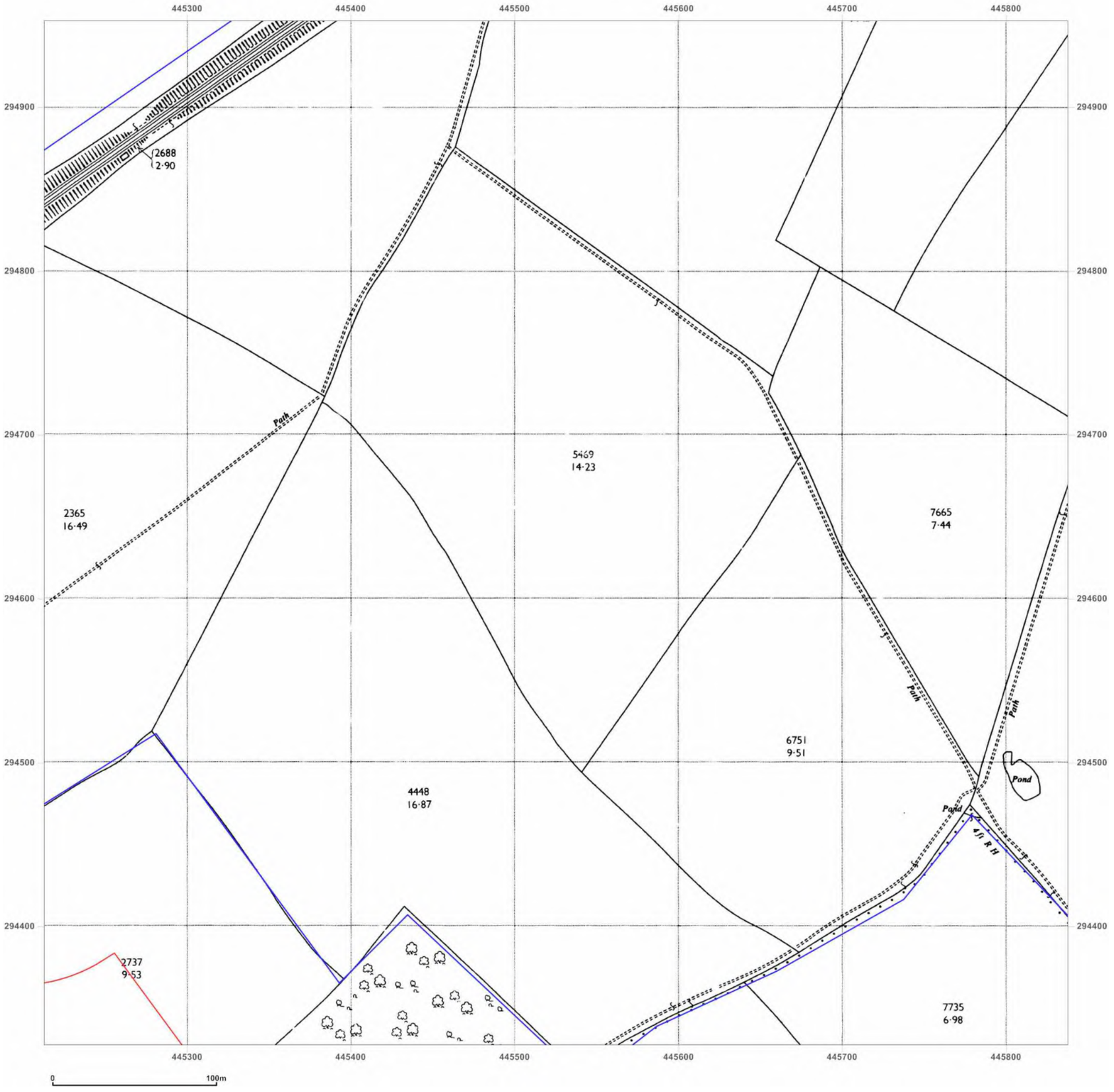

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_4
Grid Ref: 445525, 294640

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

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

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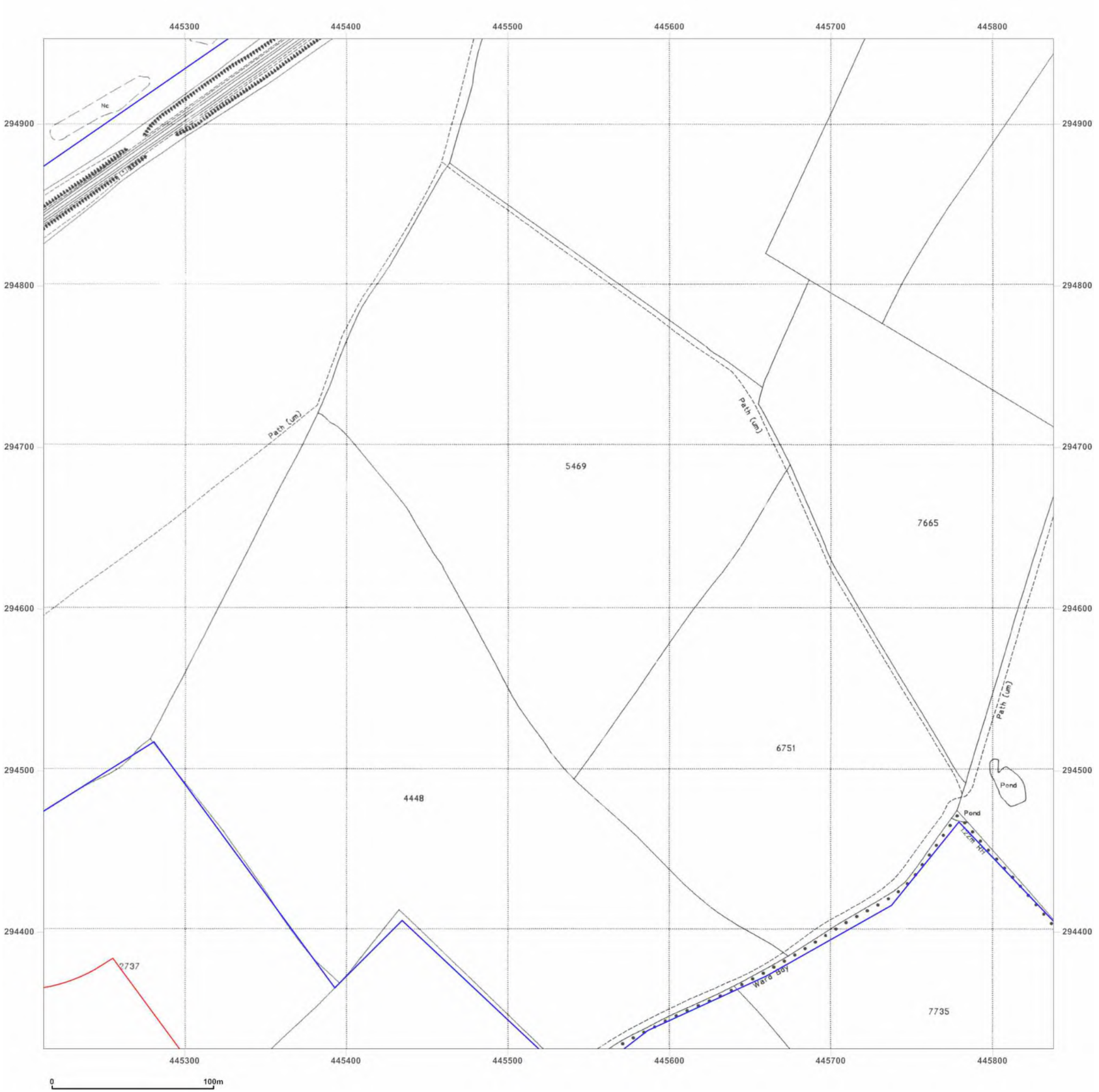

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_4
Grid Ref: 445525, 294640

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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Production date: 30 January 2018

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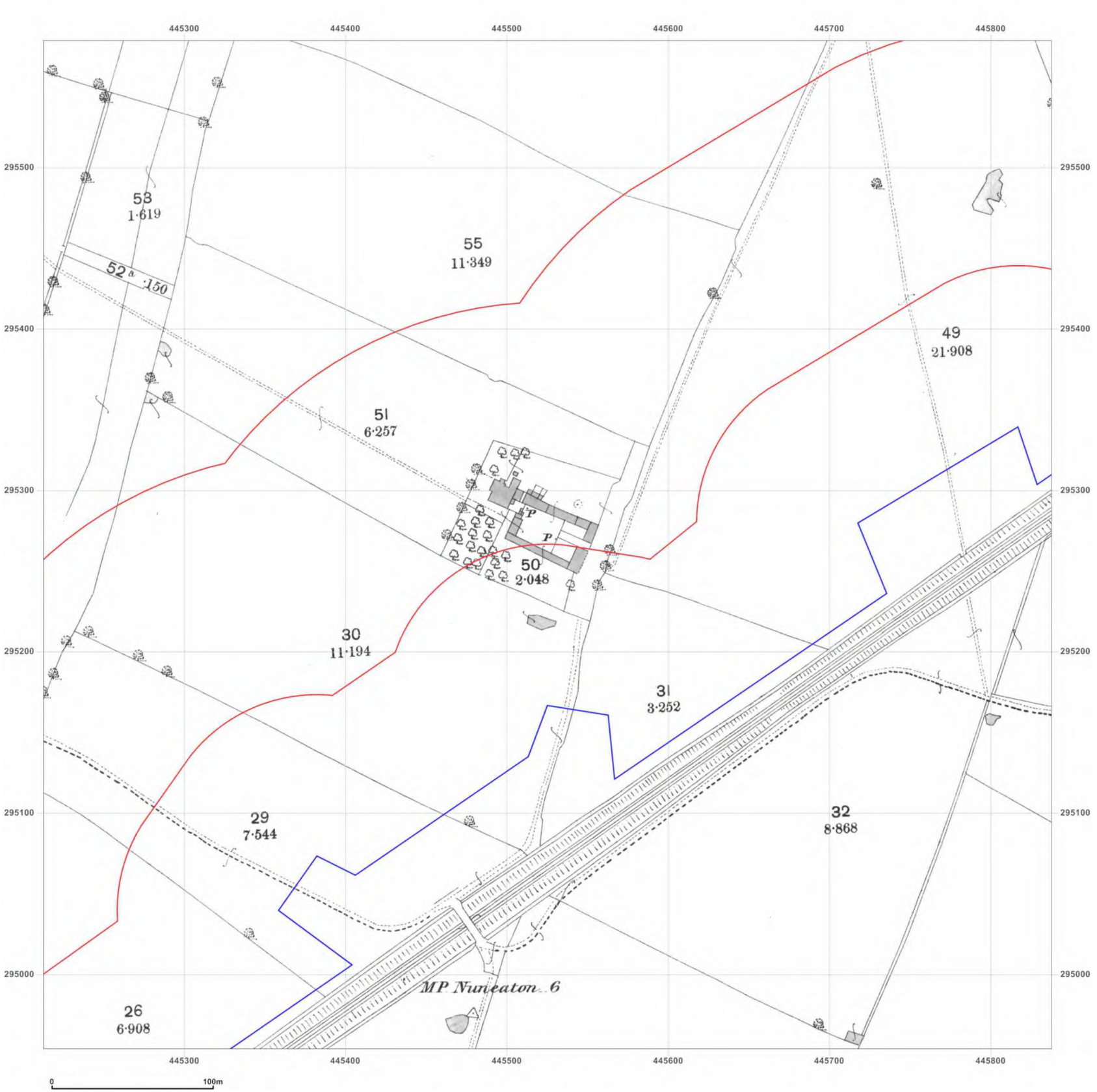

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_5
Grid Ref: 445525, 295266

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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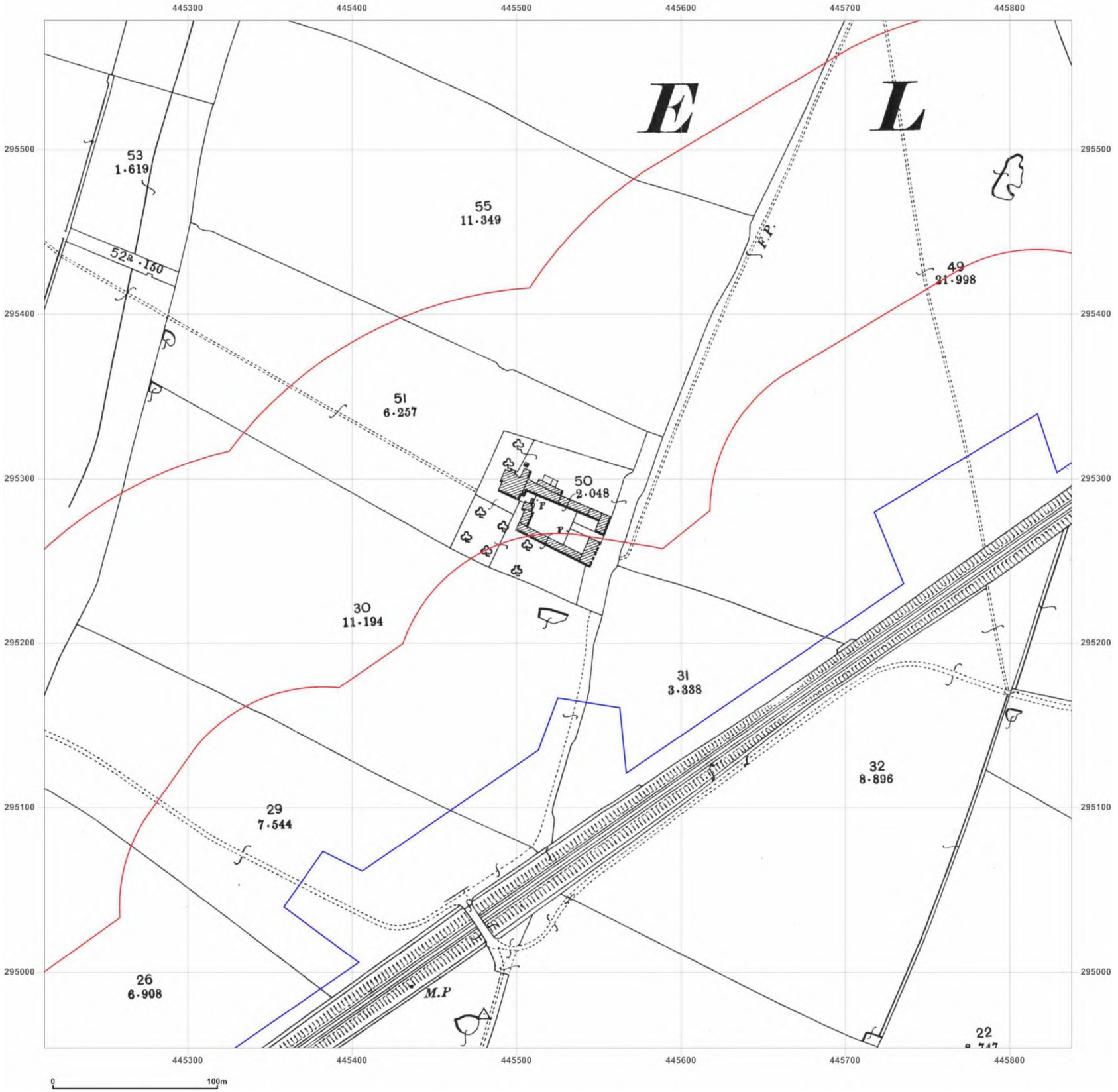

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_5
Grid Ref: 445525, 295266

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_5
Grid Ref: 445525, 295266

Map Name: National Grid

Map date: **1962-1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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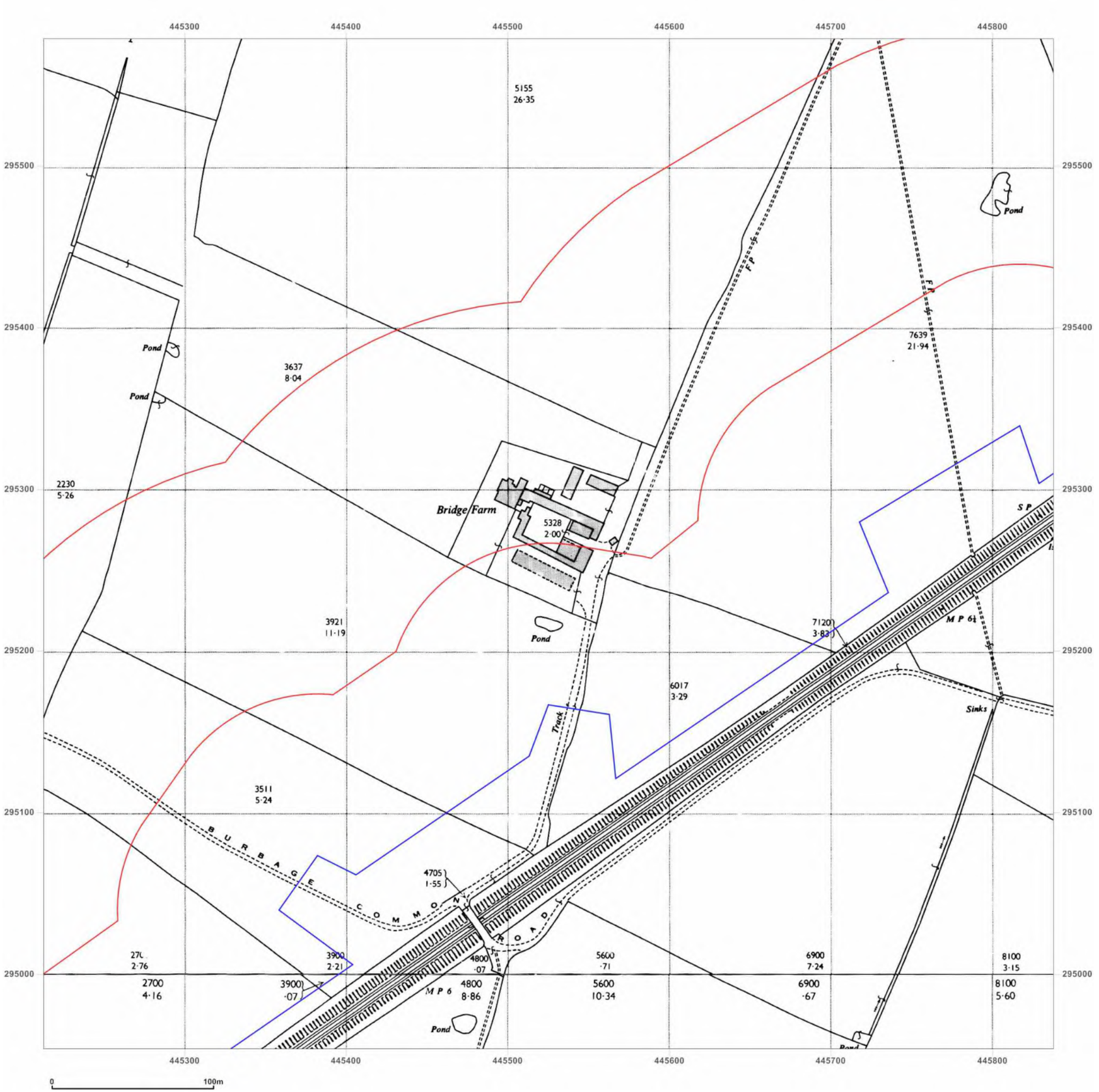

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_5
Grid Ref: 445525, 295266

Map Name: National Grid

Map date: **1963-1964**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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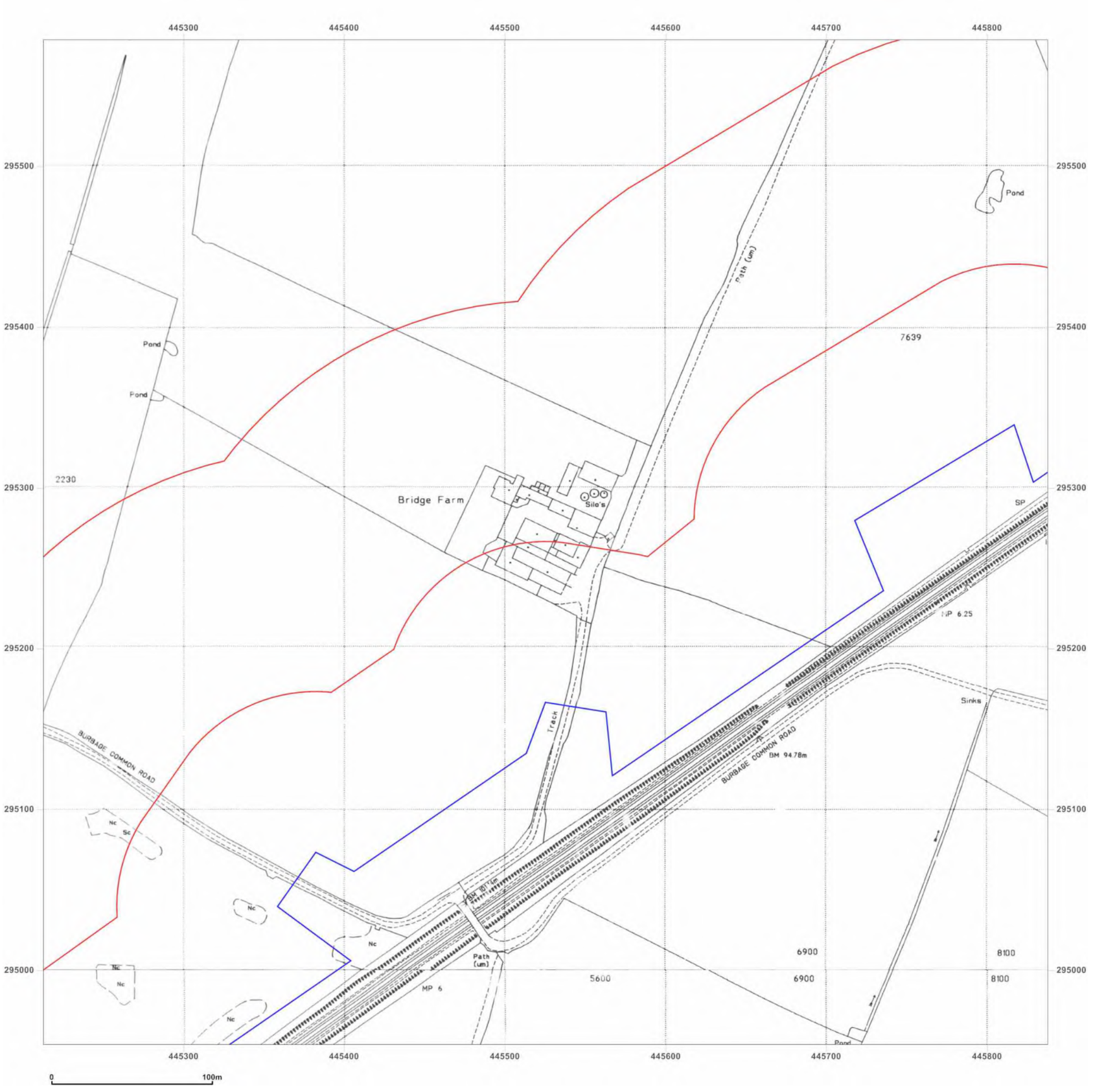

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_5
Grid Ref: 445525, 295266

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1994
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

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

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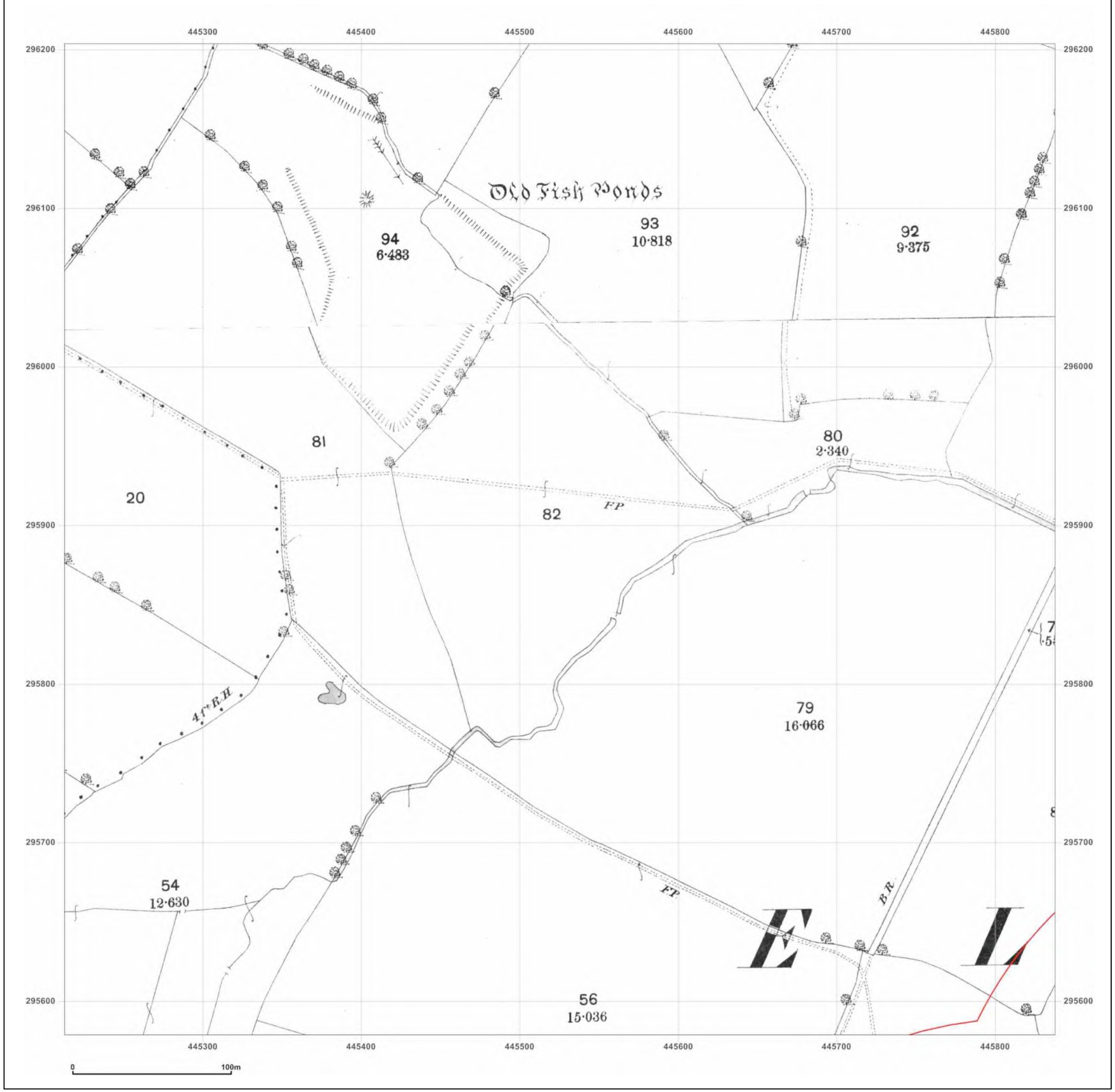

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: County Series

Map date: **1887-1888**

Scale: 1:2,500

Printed at: 1:2,500

N
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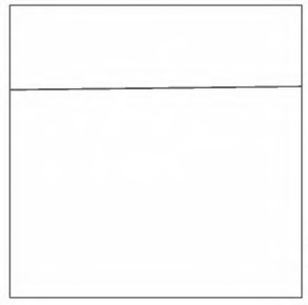
Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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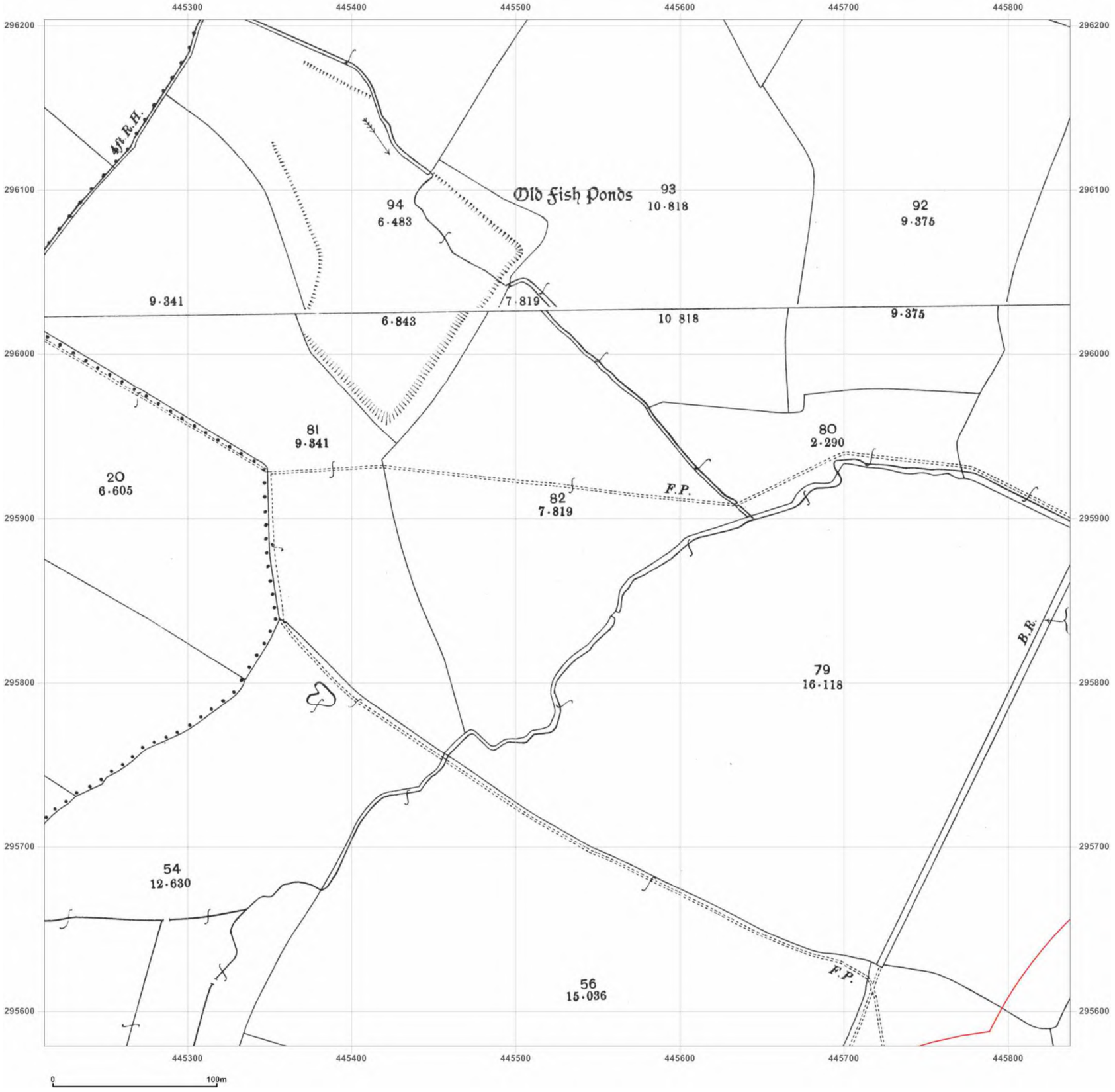

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
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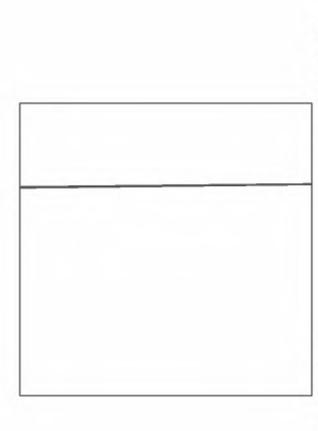

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Production date: 30 January 2018

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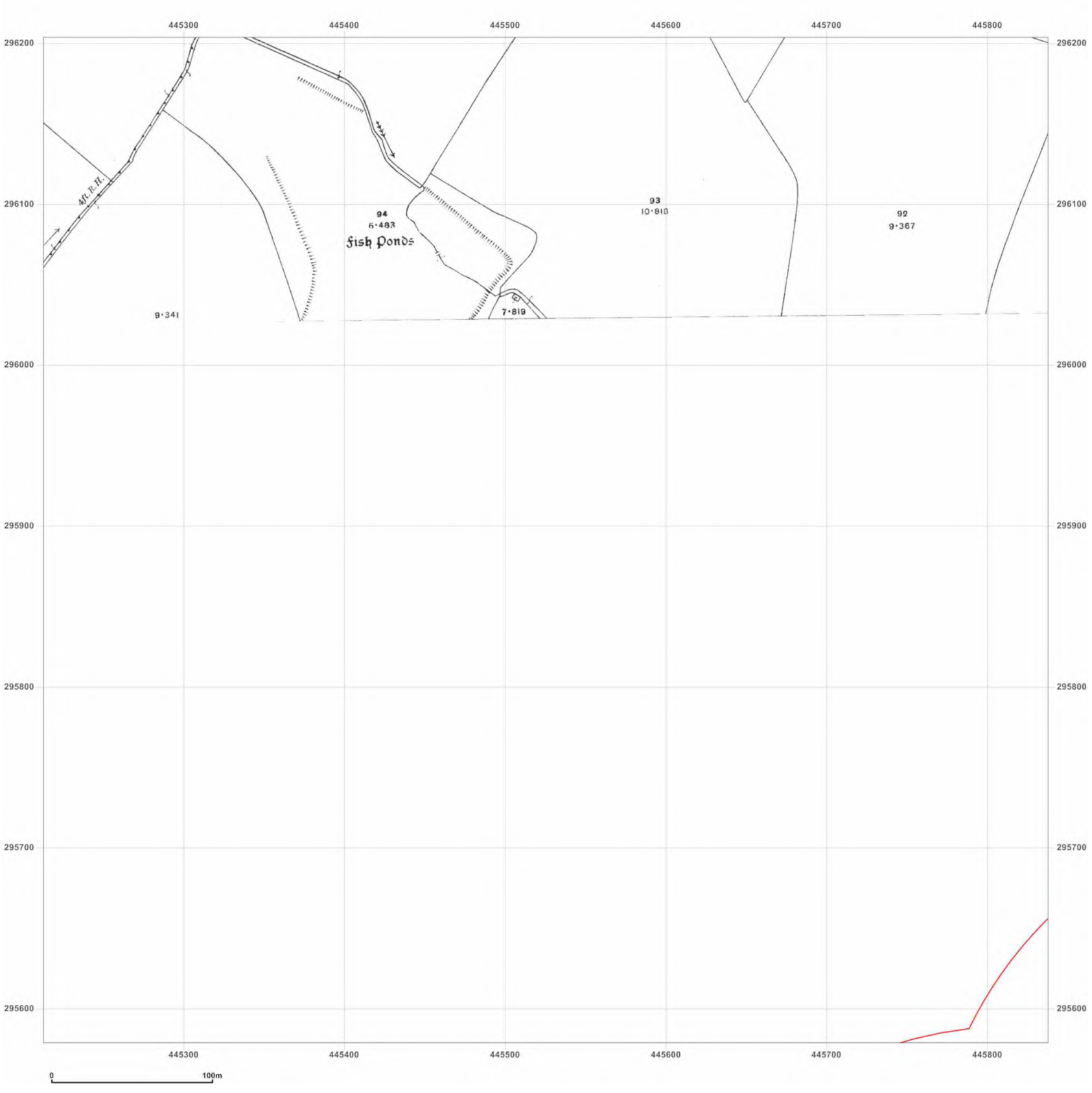

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: County Series

Map date: **1916**

Scale: 1:2,500

Printed at: 1:2,500

N
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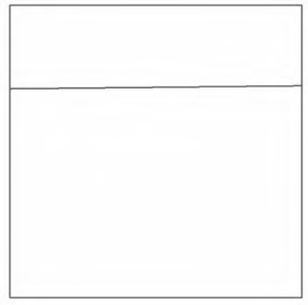
Surveyed 1916
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A



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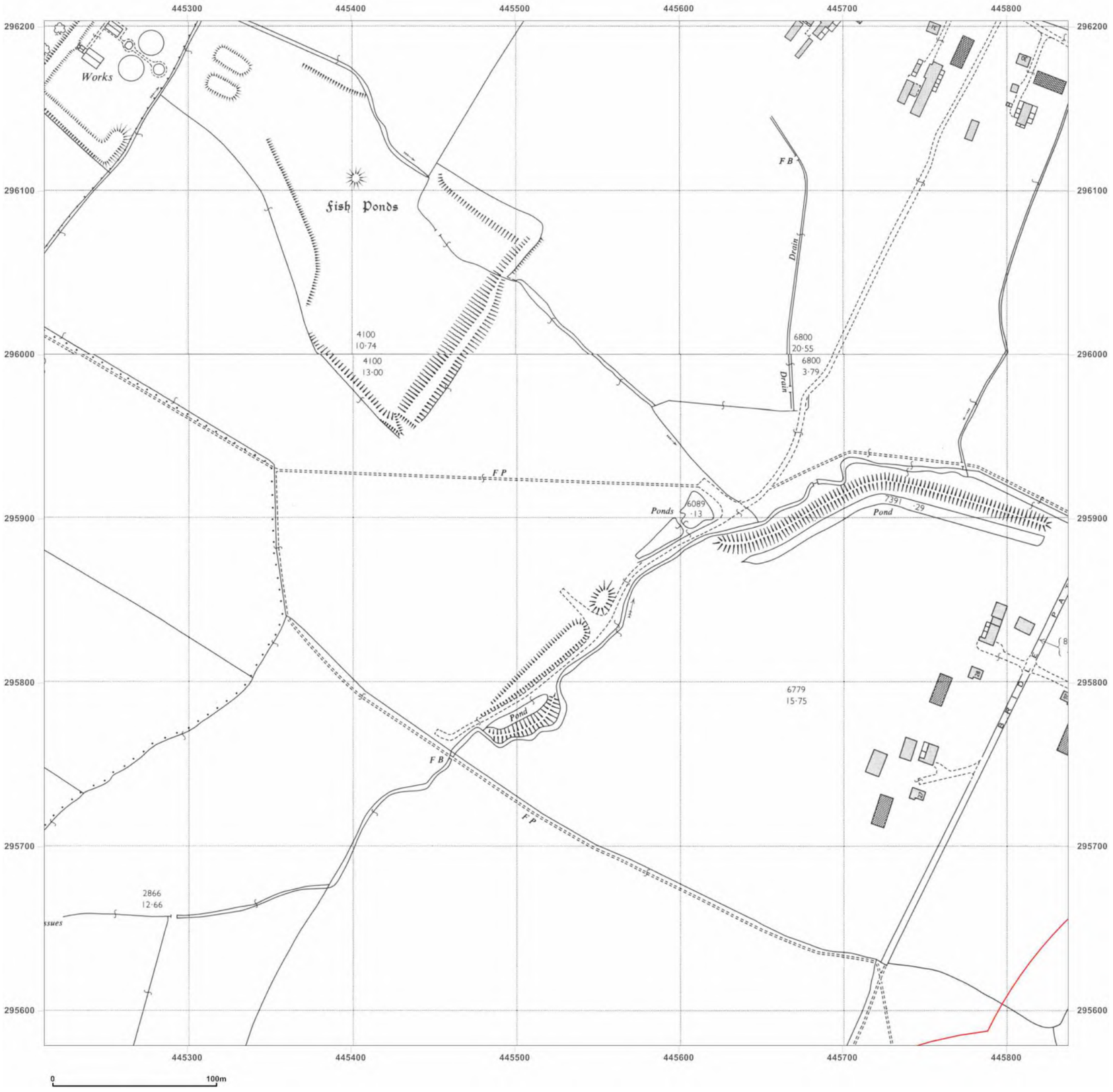

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
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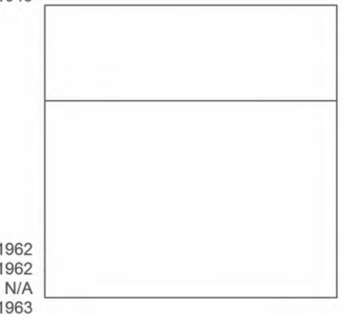
Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1945



Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

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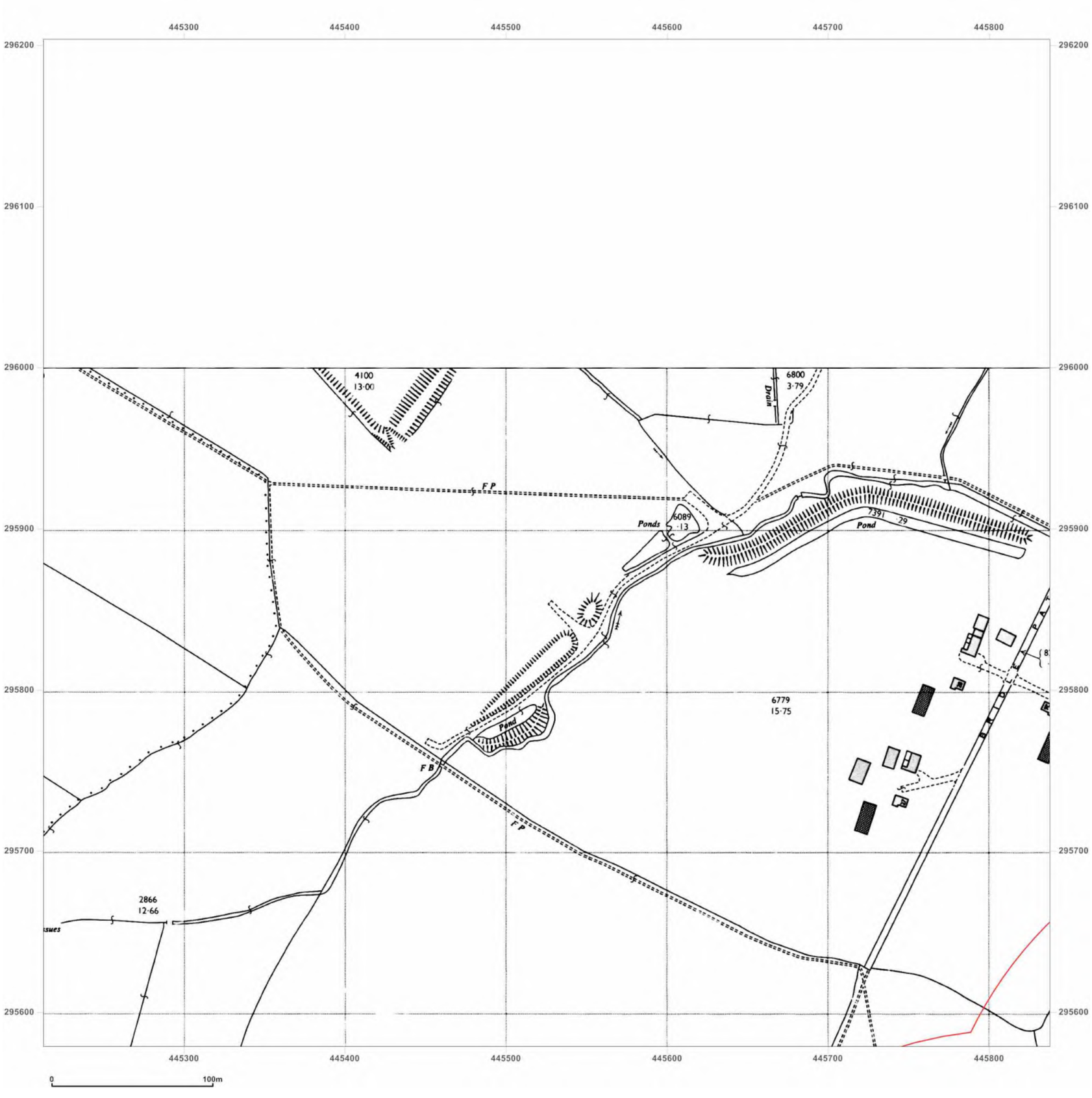

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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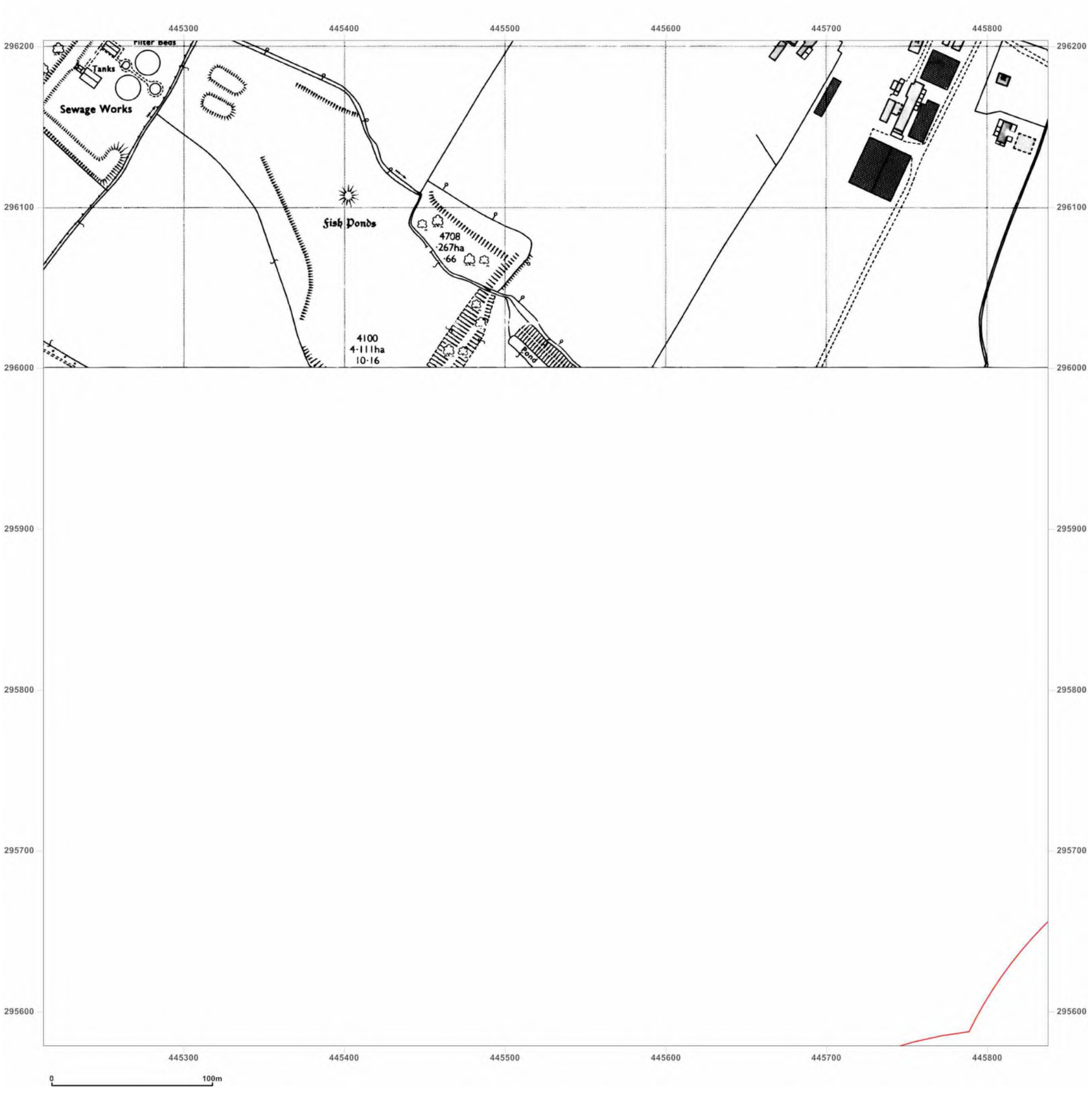


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: National Grid

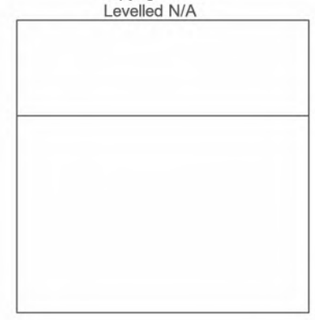
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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



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Production date: 30 January 2018

Map legend available at:
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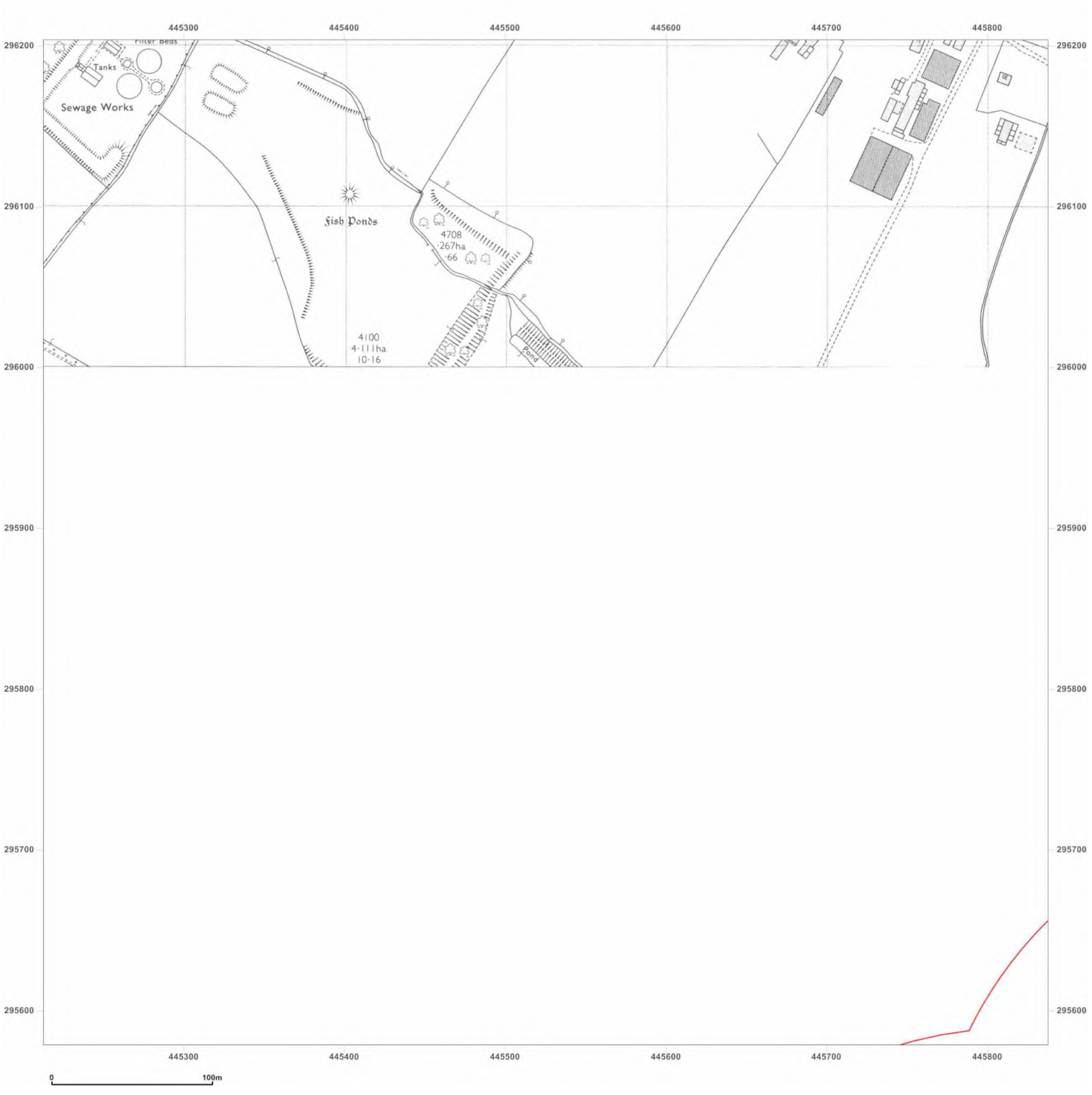


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: National Grid

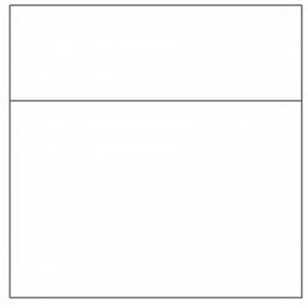
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1972
Revised 1972
Edition N/A
Copyright N/A
Levelled 1964



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Production date: 30 January 2018

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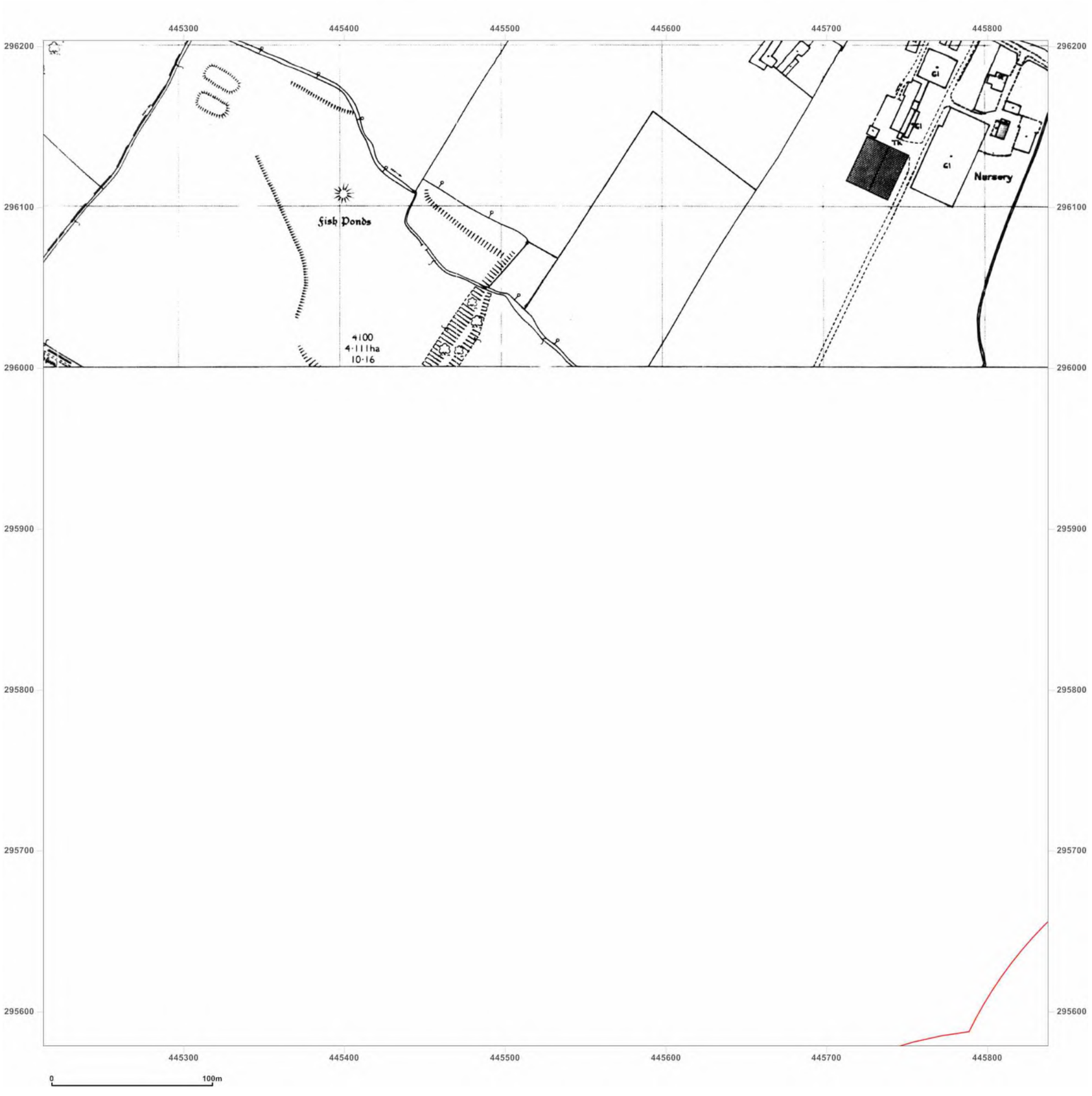

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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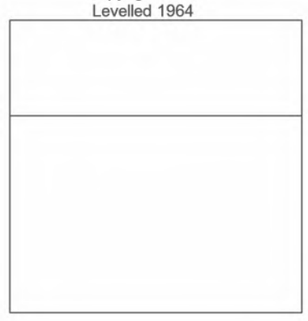
Surveyed 1964
Revised 1989
Edition N/A
Copyright 1989
Levelled 1964



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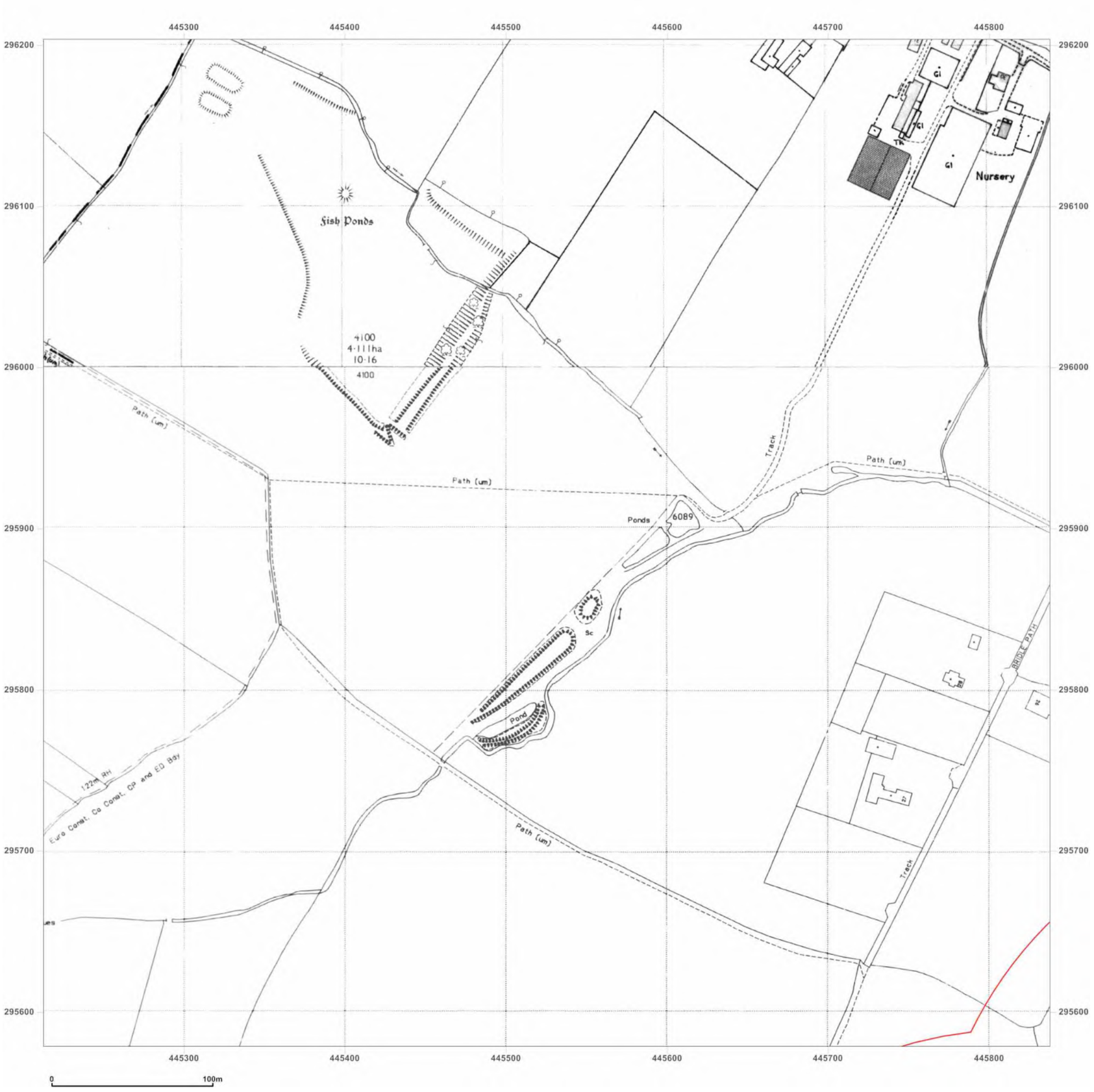

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: National Grid

Map date: **1989-1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1964
Revised 1989
Edition N/A
Copyright 1989
Levelled 1964

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

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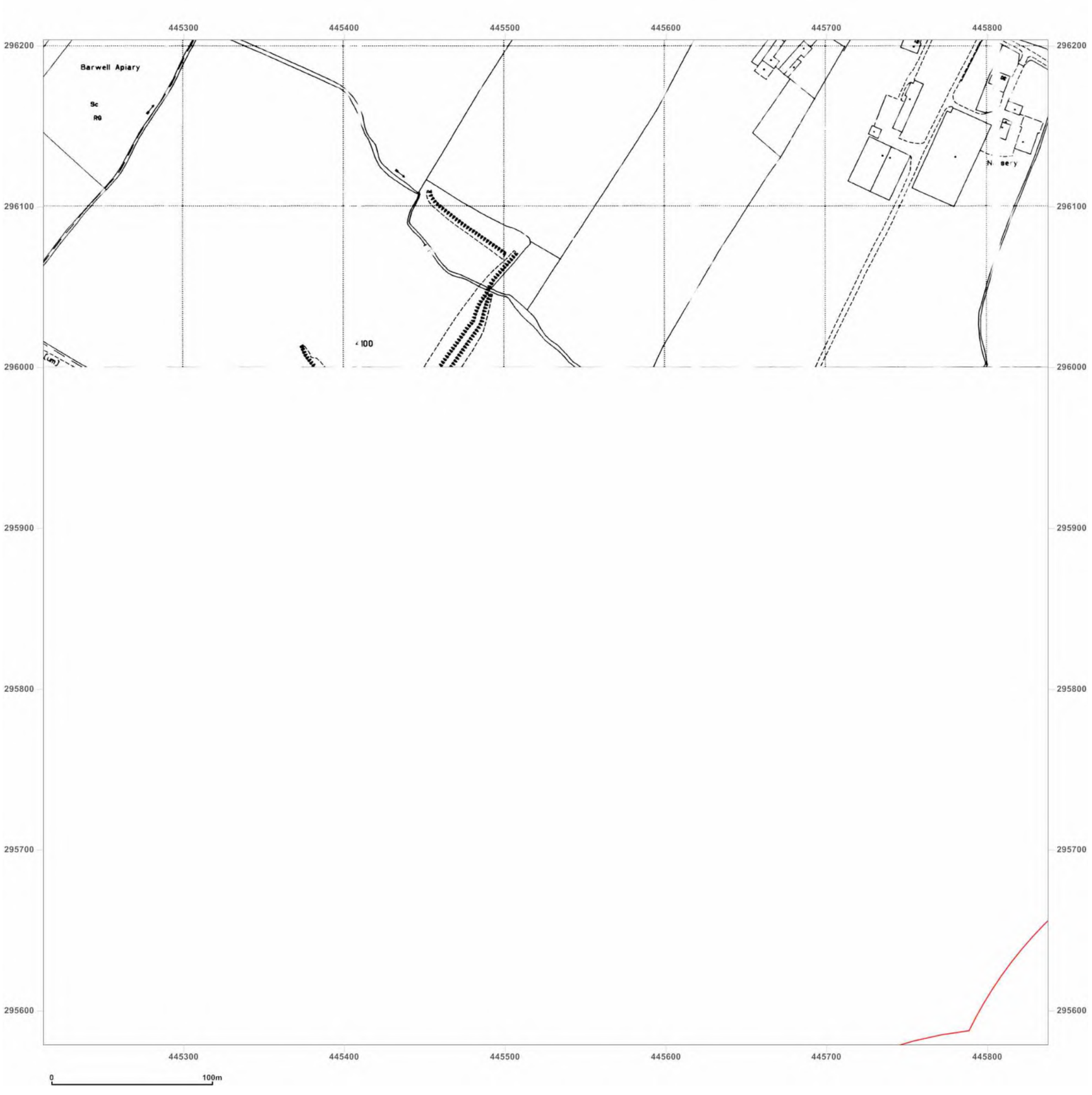
Production date: 30 January 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_2_6
Grid Ref: 445525, 295891

Map Name: National Grid

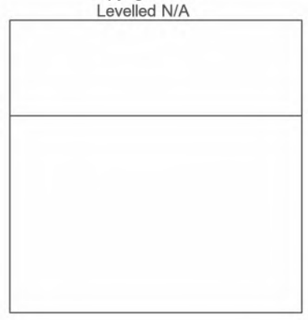
Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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



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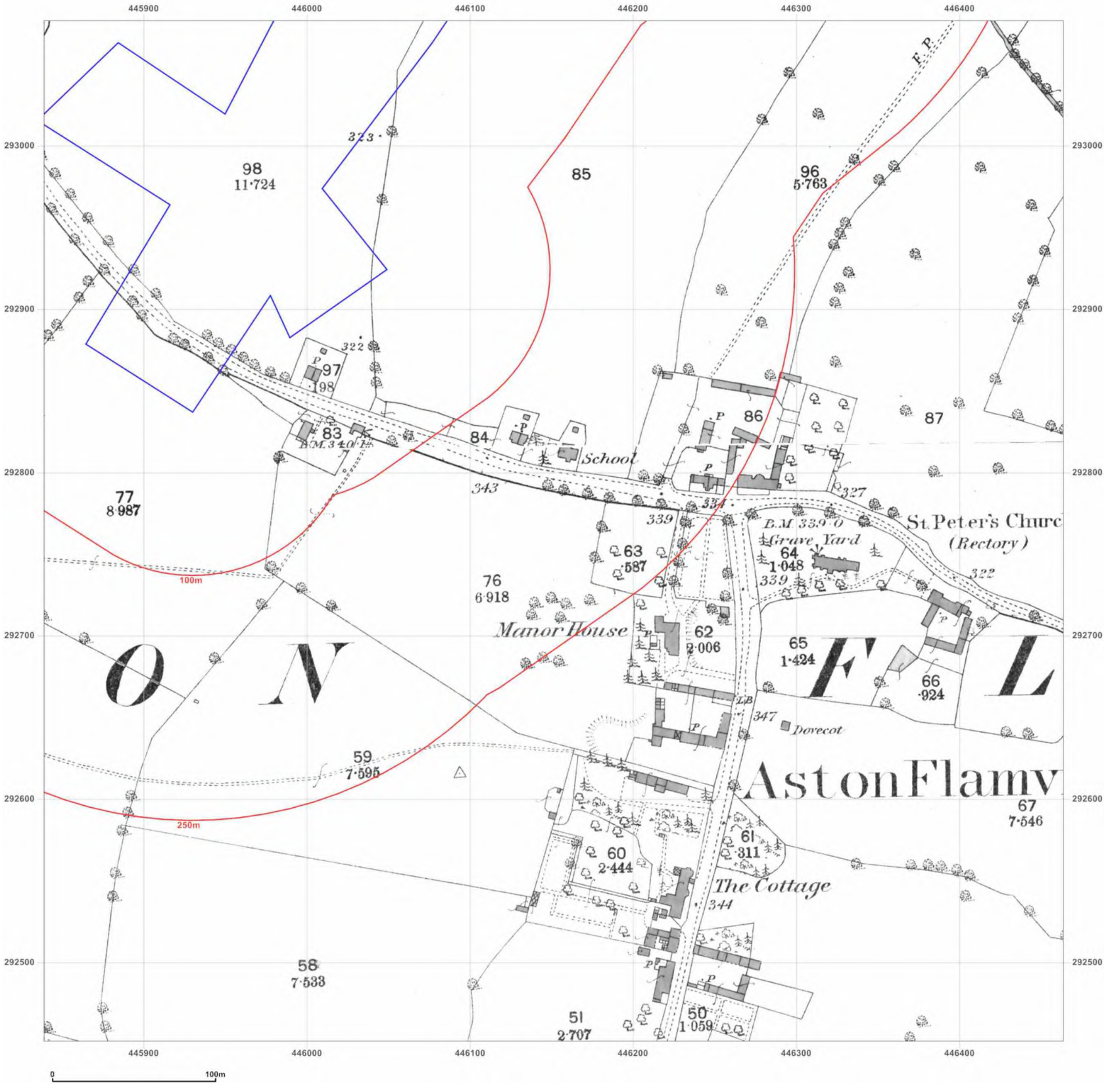

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: County Series

Map date: **1887-1888**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

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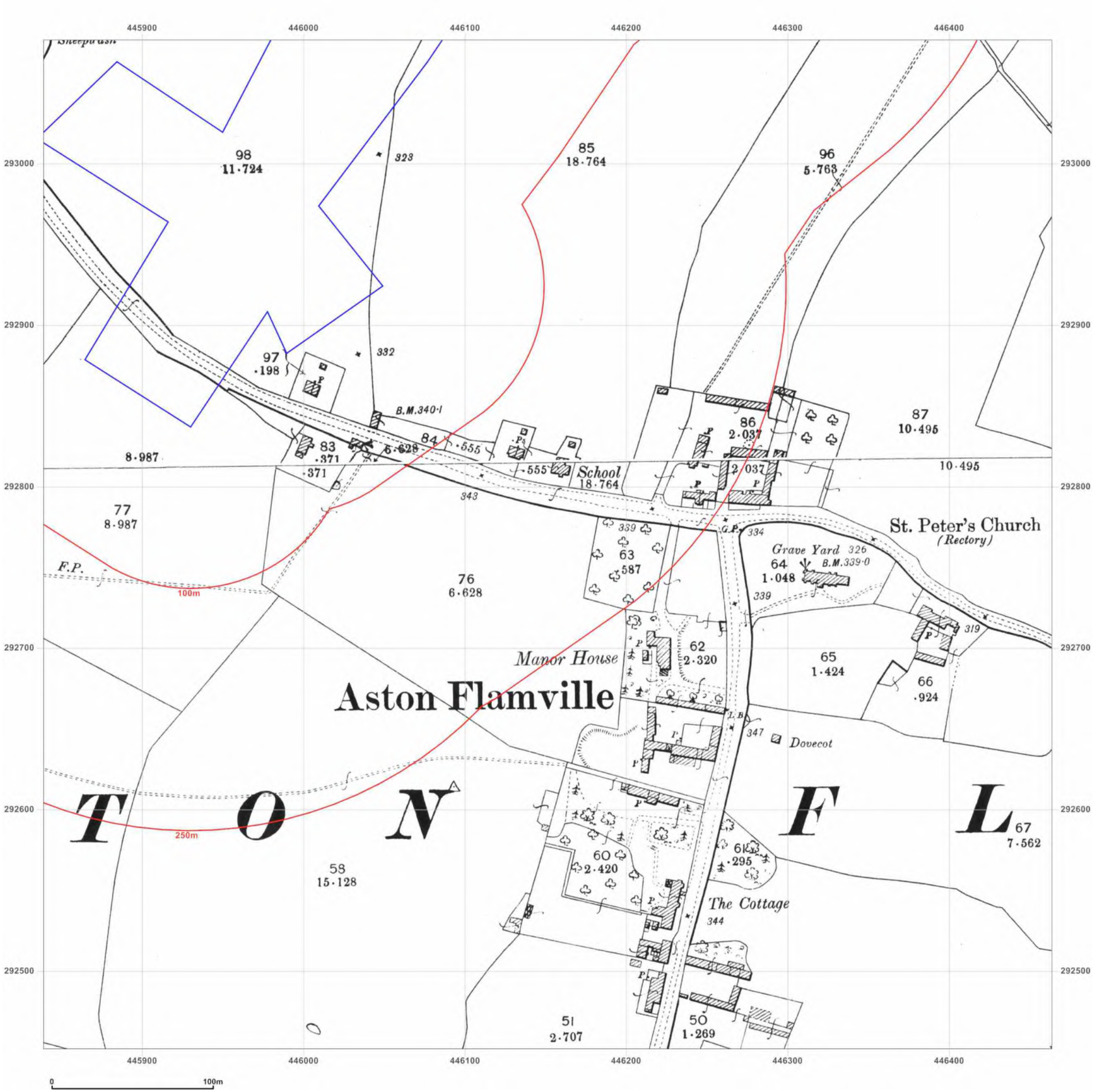


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: County Series

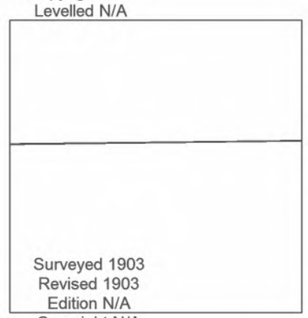
Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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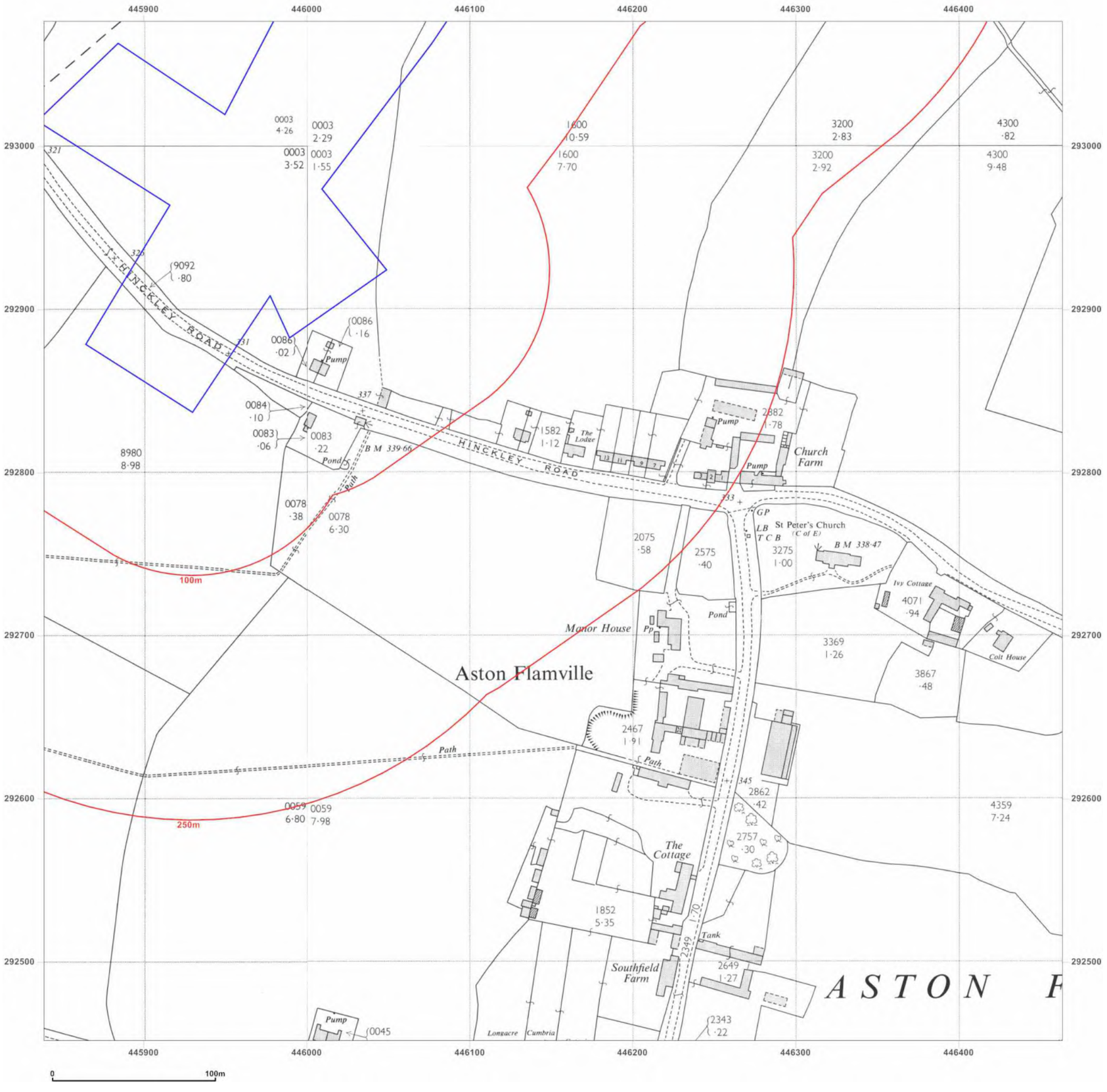

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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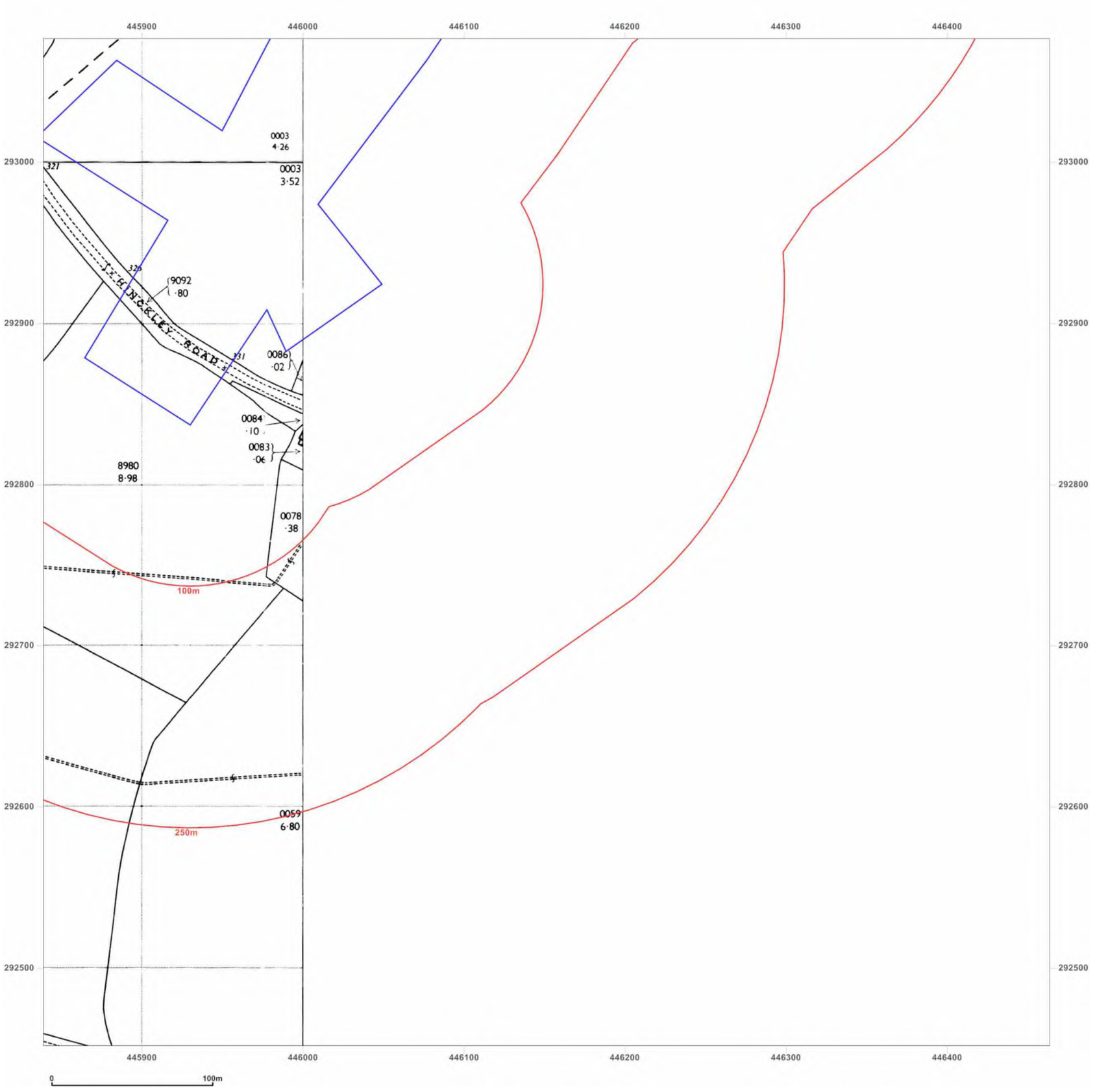


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: National Grid

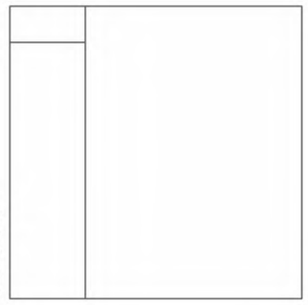
Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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



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

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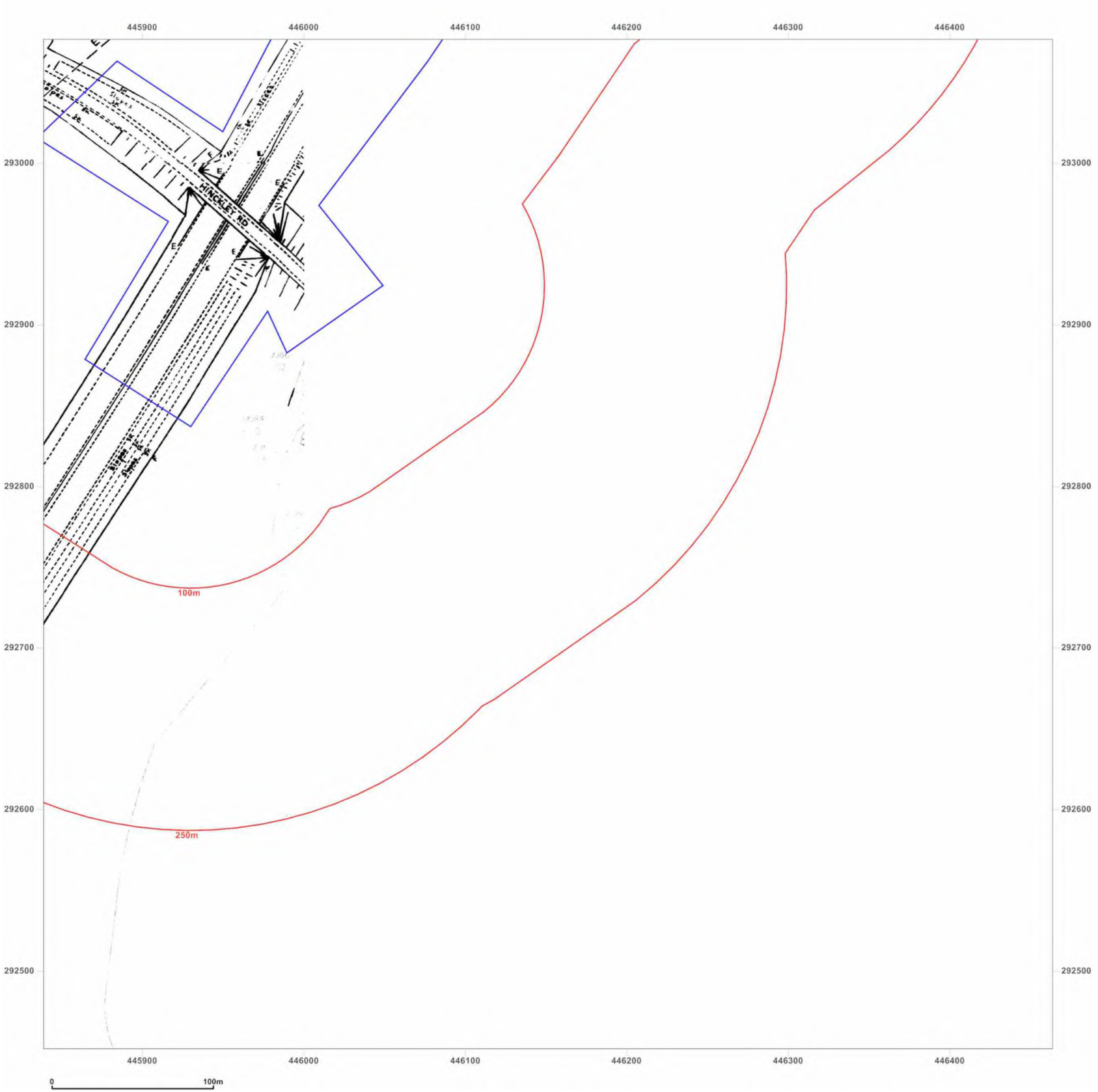


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: National Grid

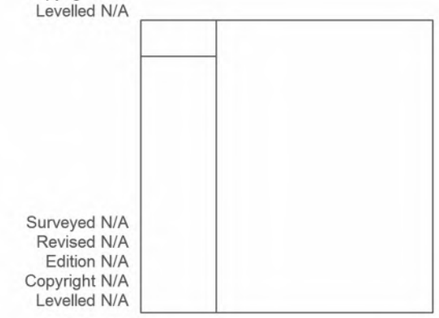
Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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



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

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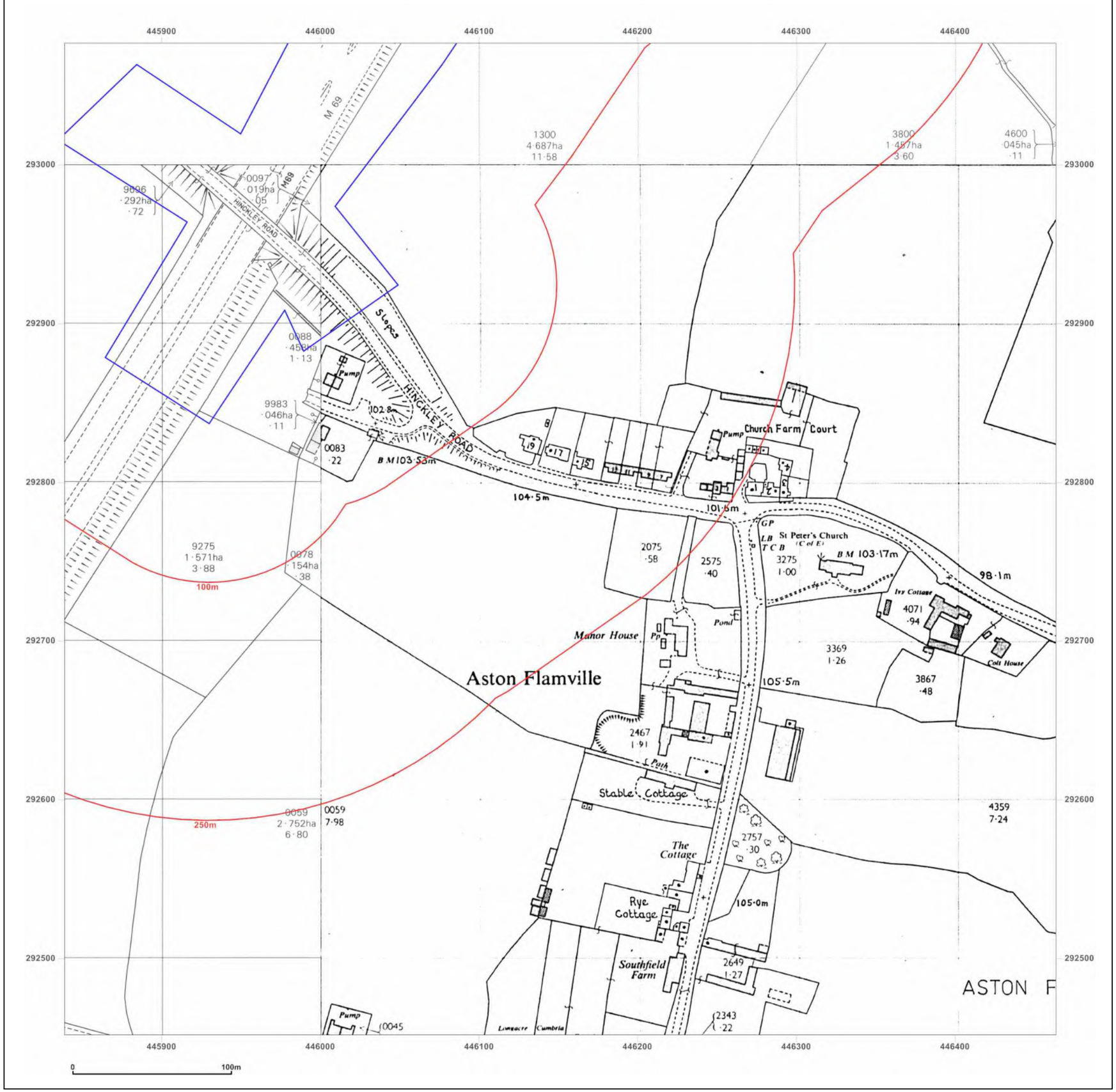

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: National Grid

Map date: **1983-1987**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

Surveyed 1972
Revised 1987
Edition N/A
Copyright 1988
Levelled 1964

Surveyed 1964
Revised 1986
Edition N/A
Copyright 1986
Levelled 1964

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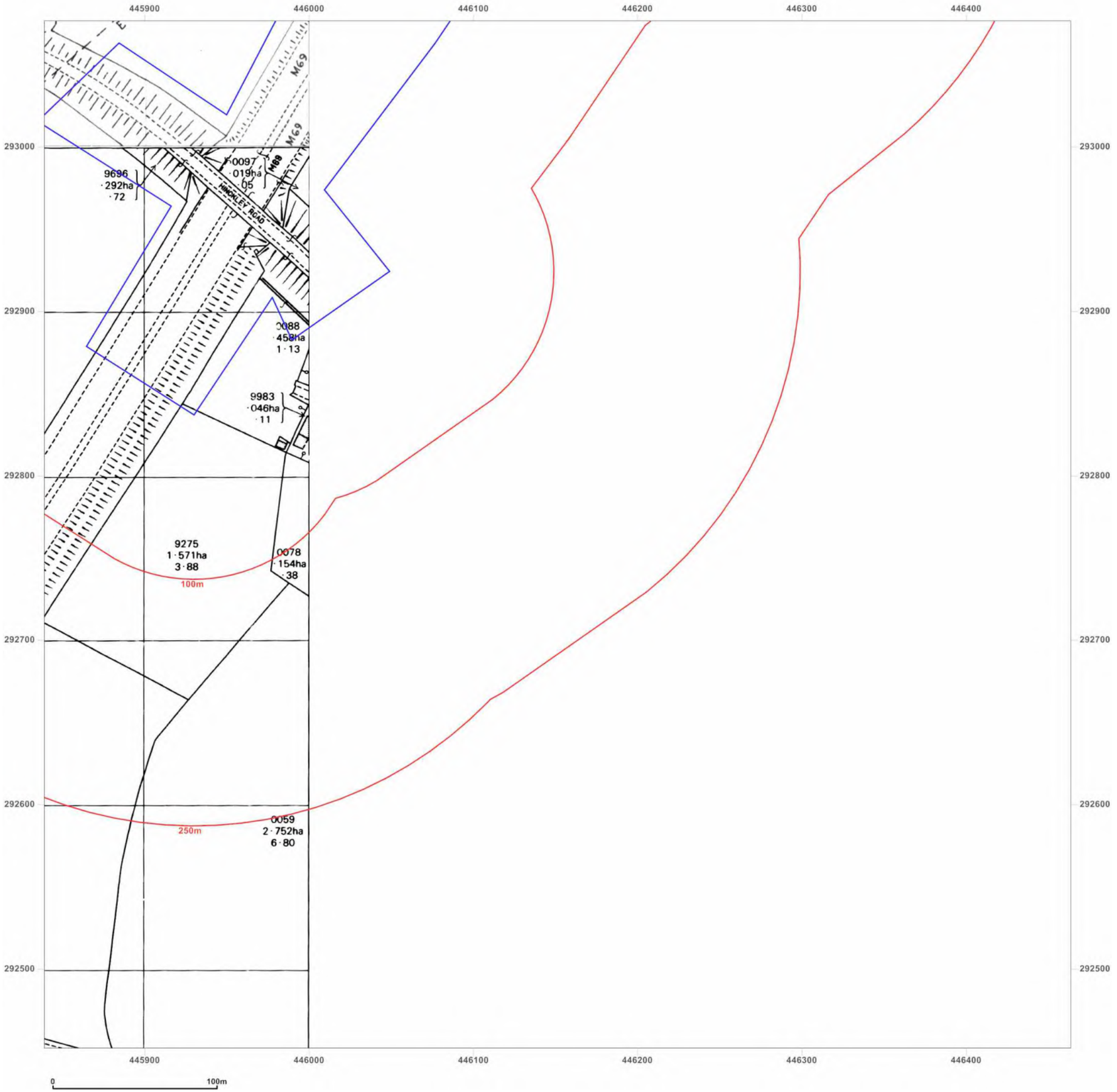


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: National Grid

Map date: **1988-1992**

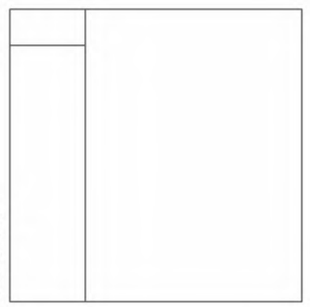
Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1945
Revised 1992
Edition N/A
Copyright 1992
Levelled 1945

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



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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_1
Grid Ref: 446151, 292764

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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

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

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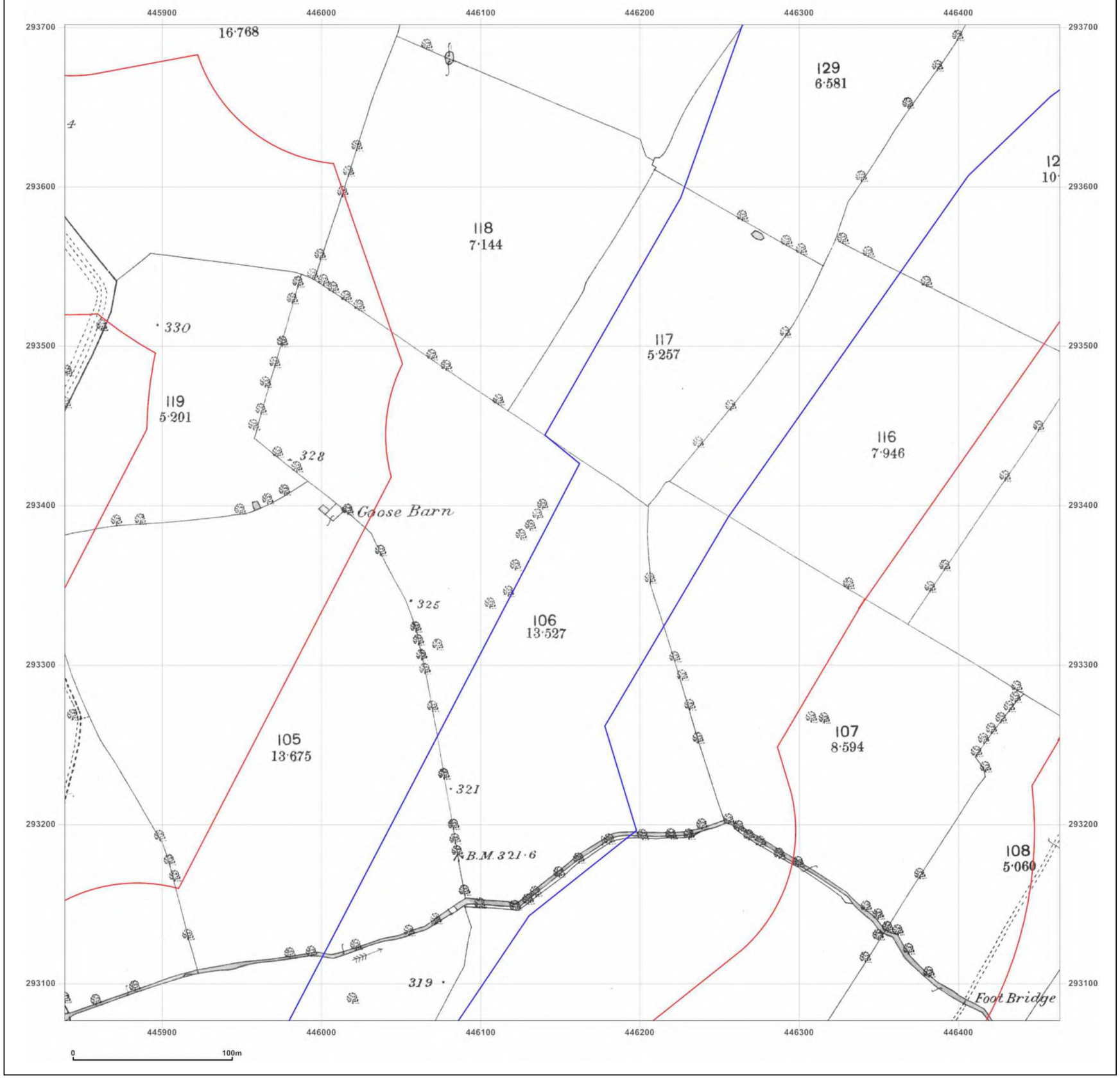

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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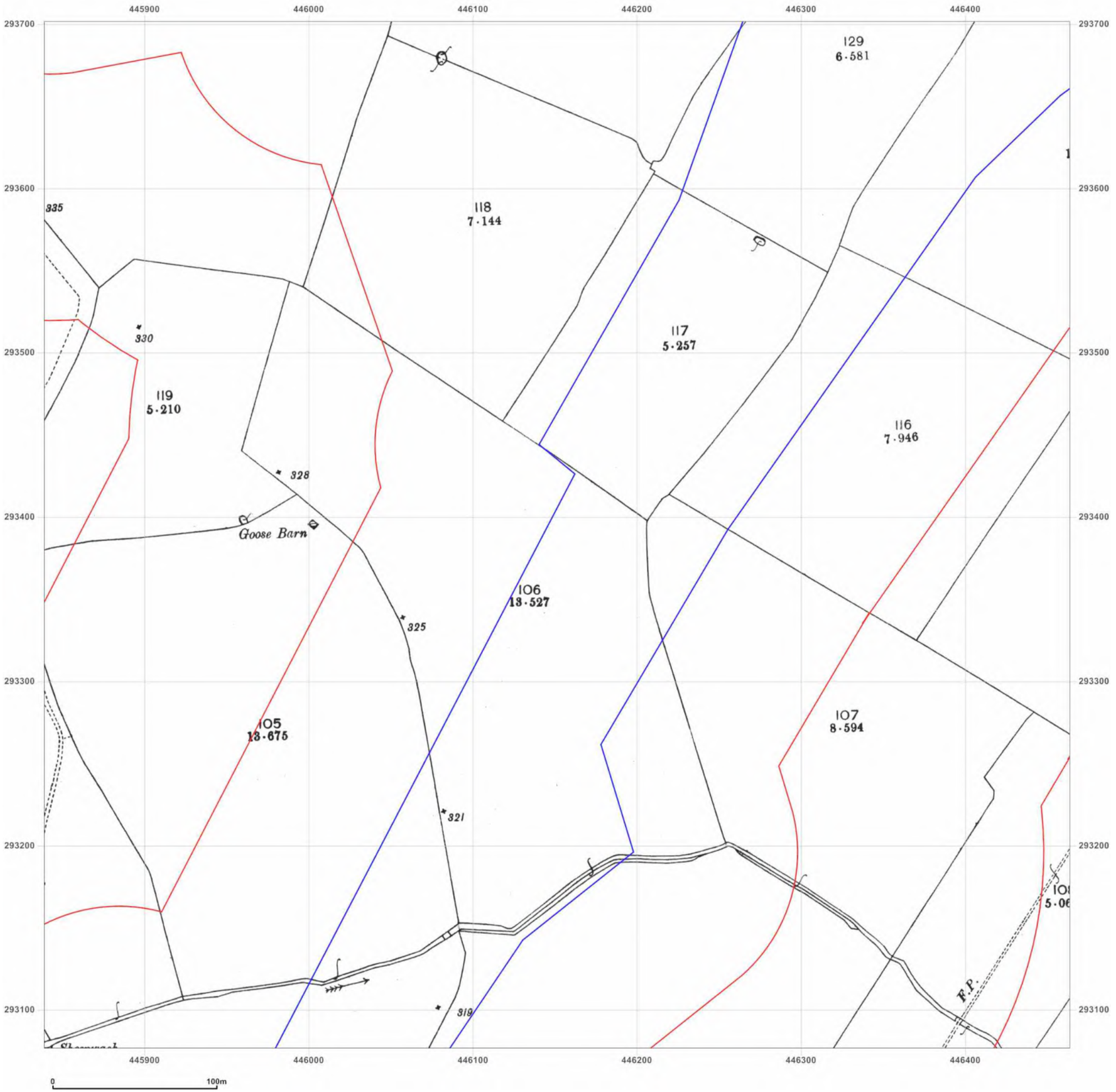

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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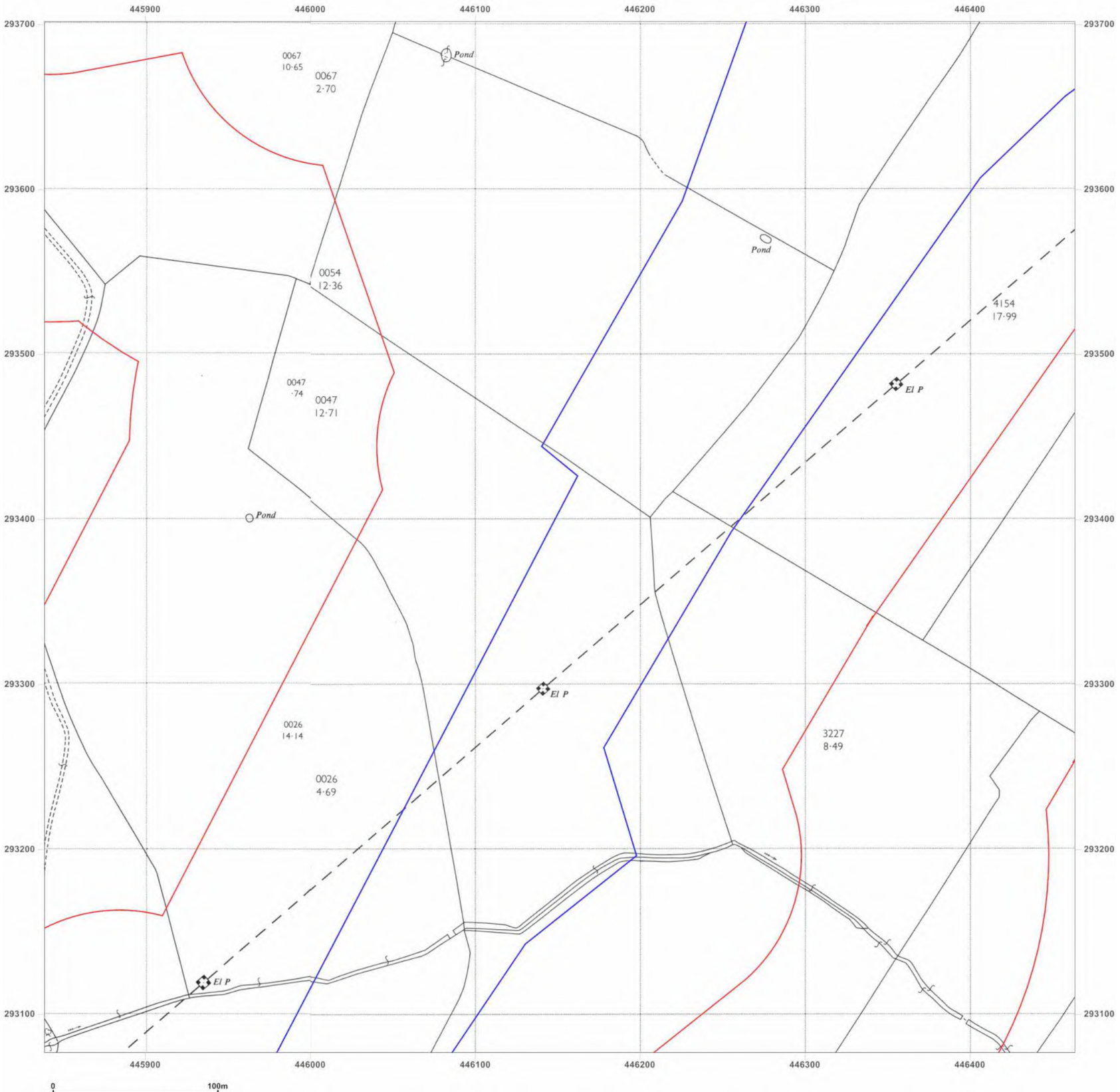

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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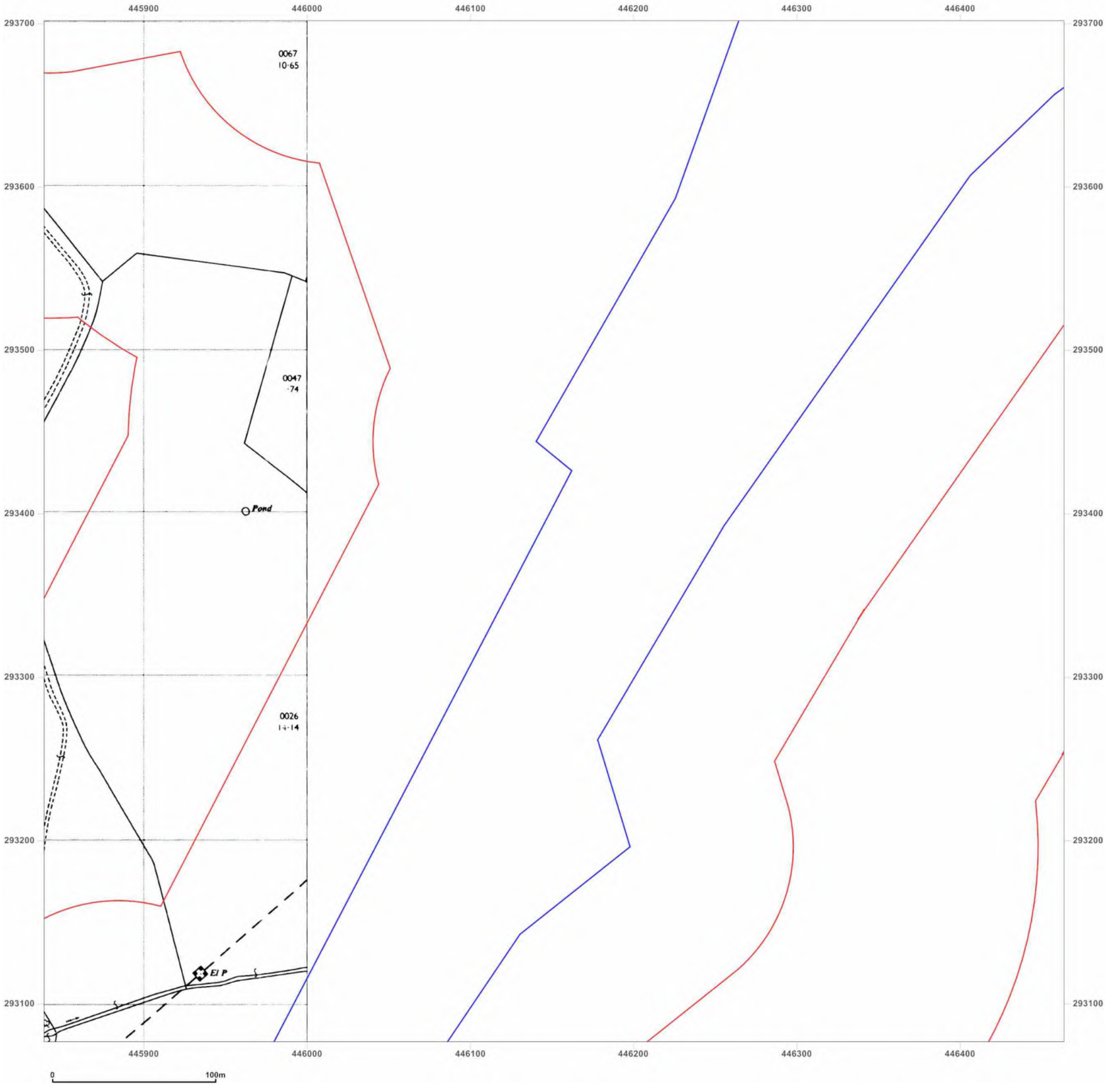

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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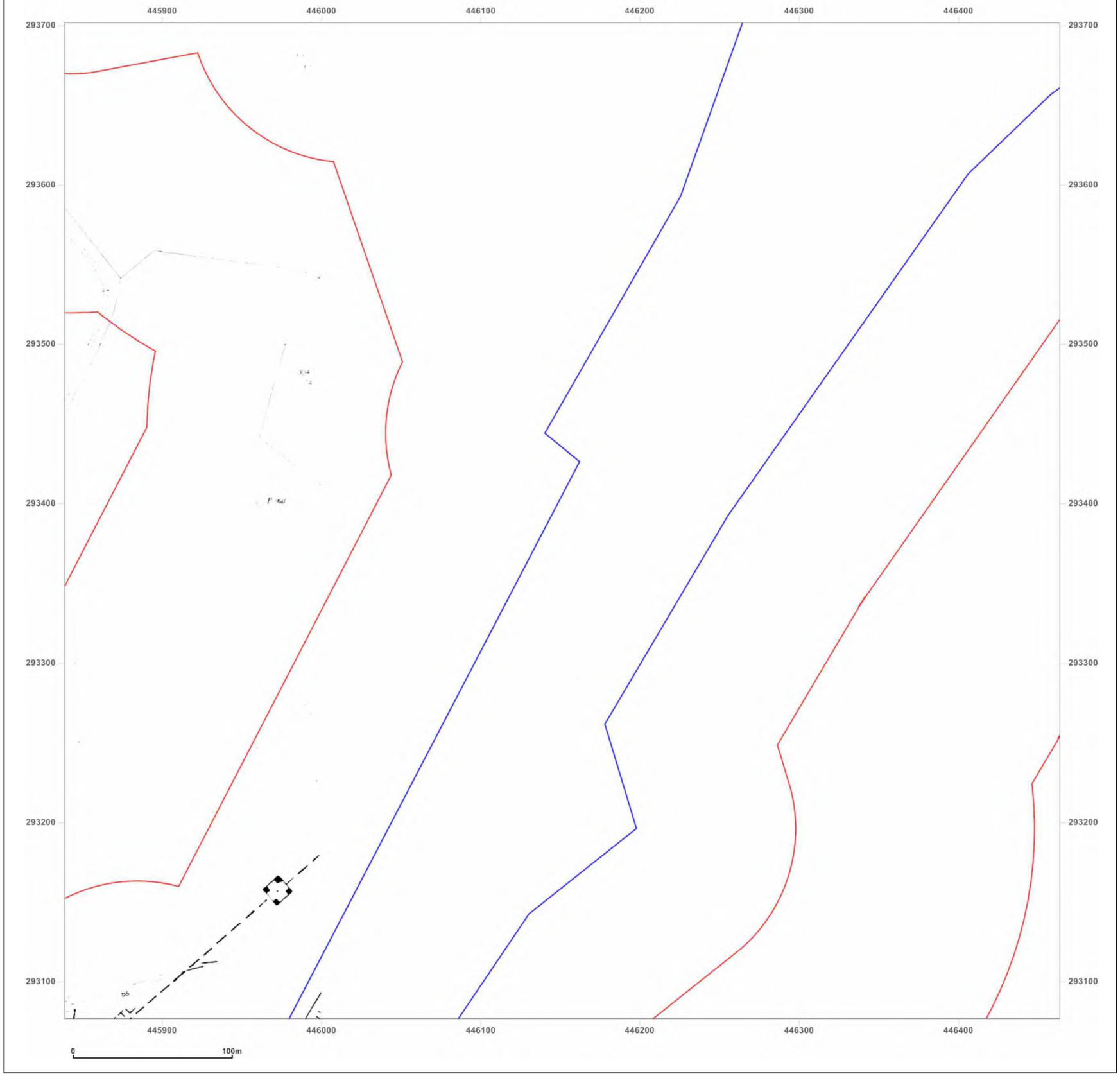


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

Map Name: National Grid

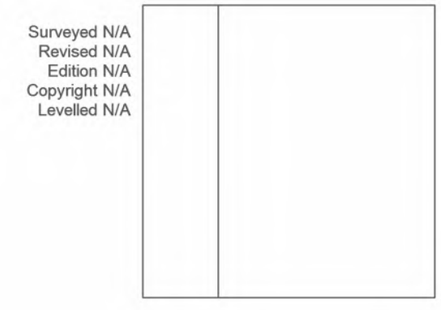
Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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



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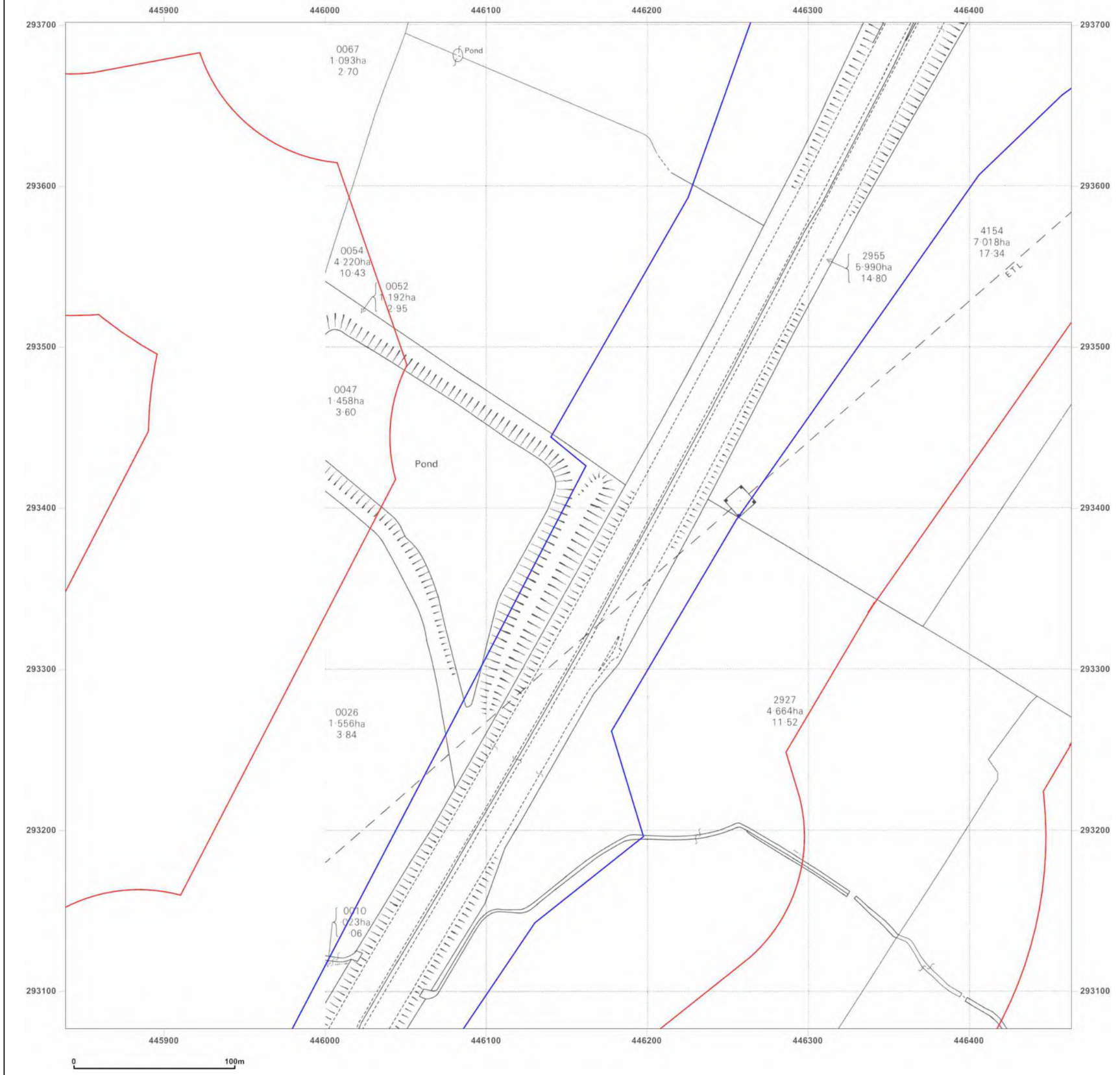


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

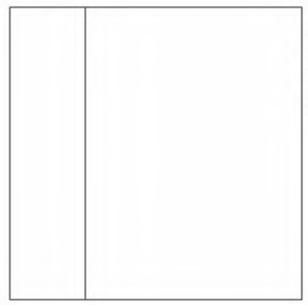
Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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Production date: 30 January 2018

Map legend available at:
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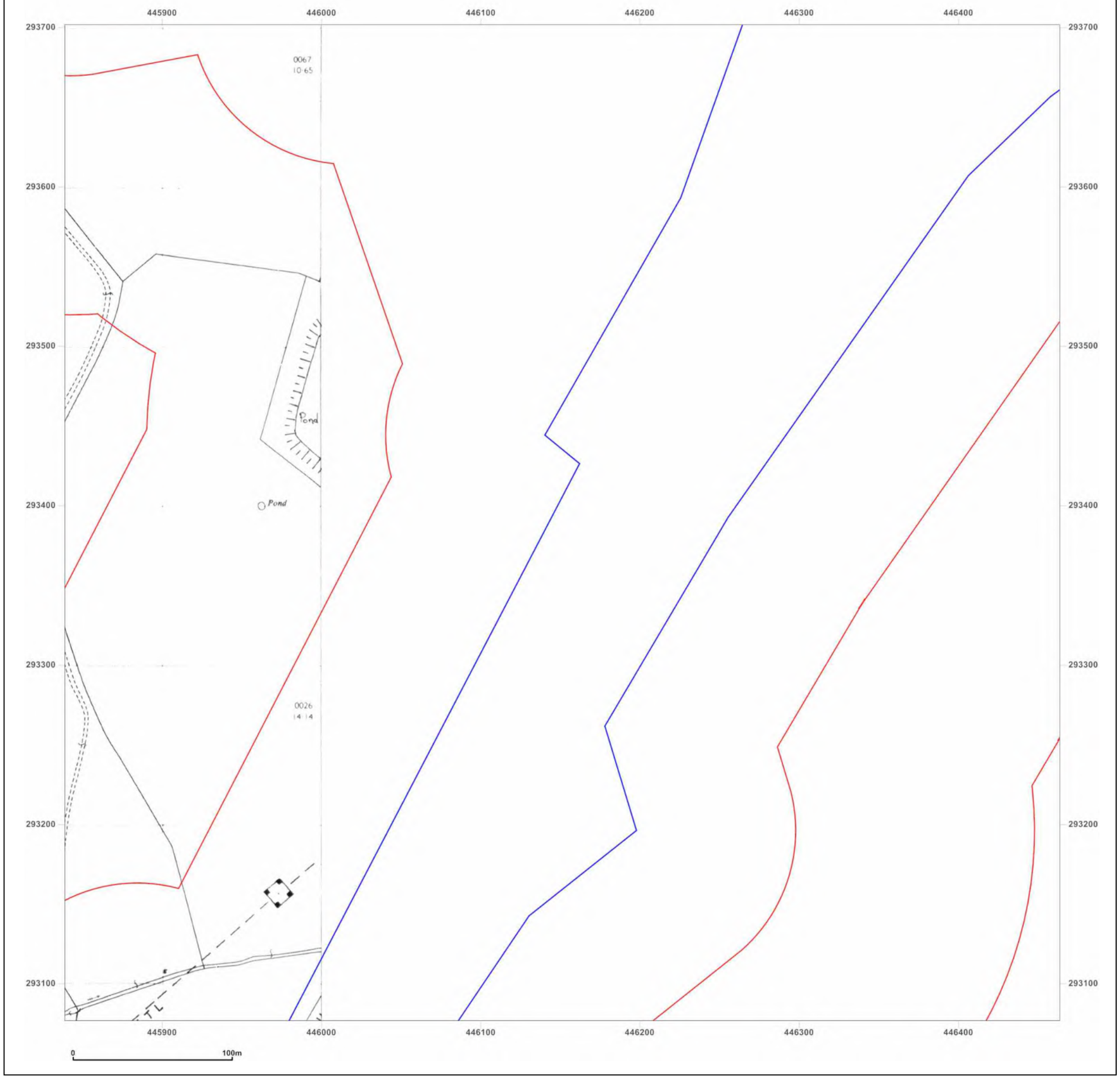


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

Map Name: National Grid

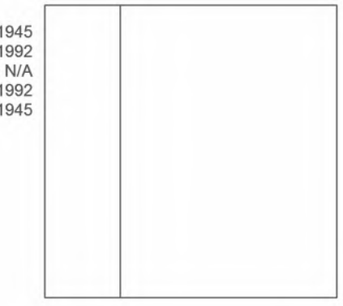
Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1945
Revised 1992
Edition N/A
Copyright 1992
Levelled 1945



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Production date: 30 January 2018

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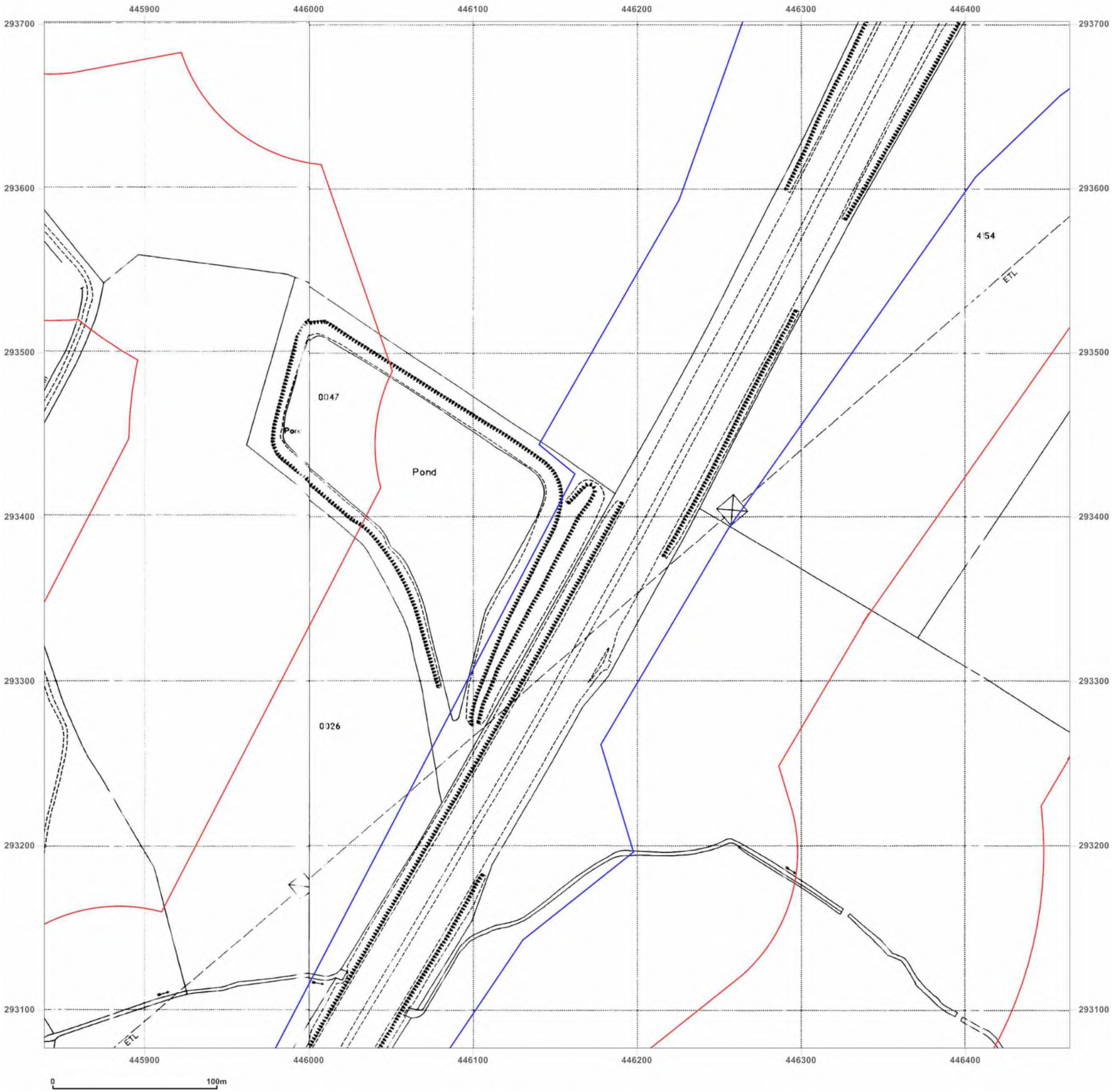

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_2
Grid Ref: 446151, 293389

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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Production date: 30 January 2018

Map legend available at:
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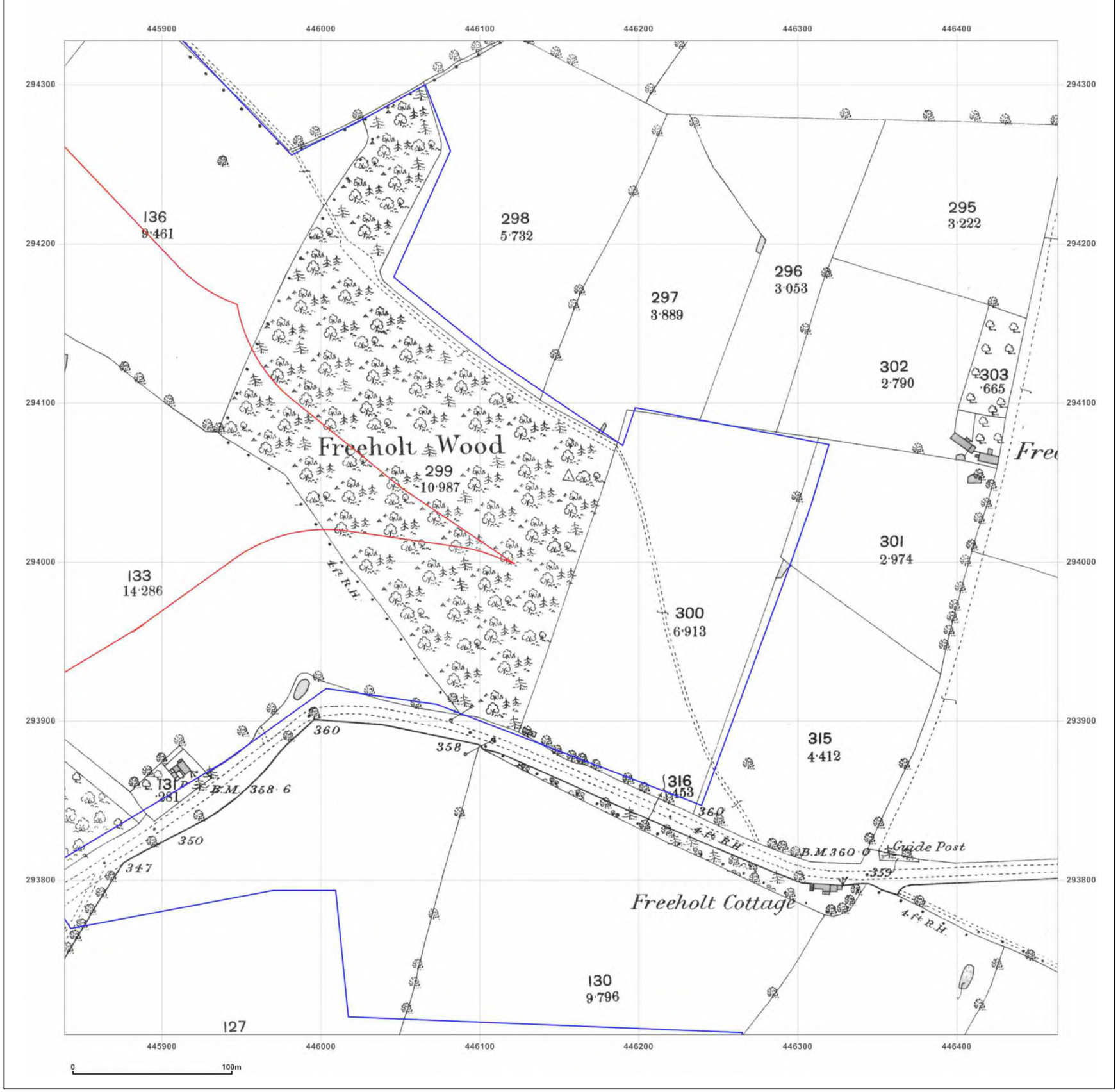

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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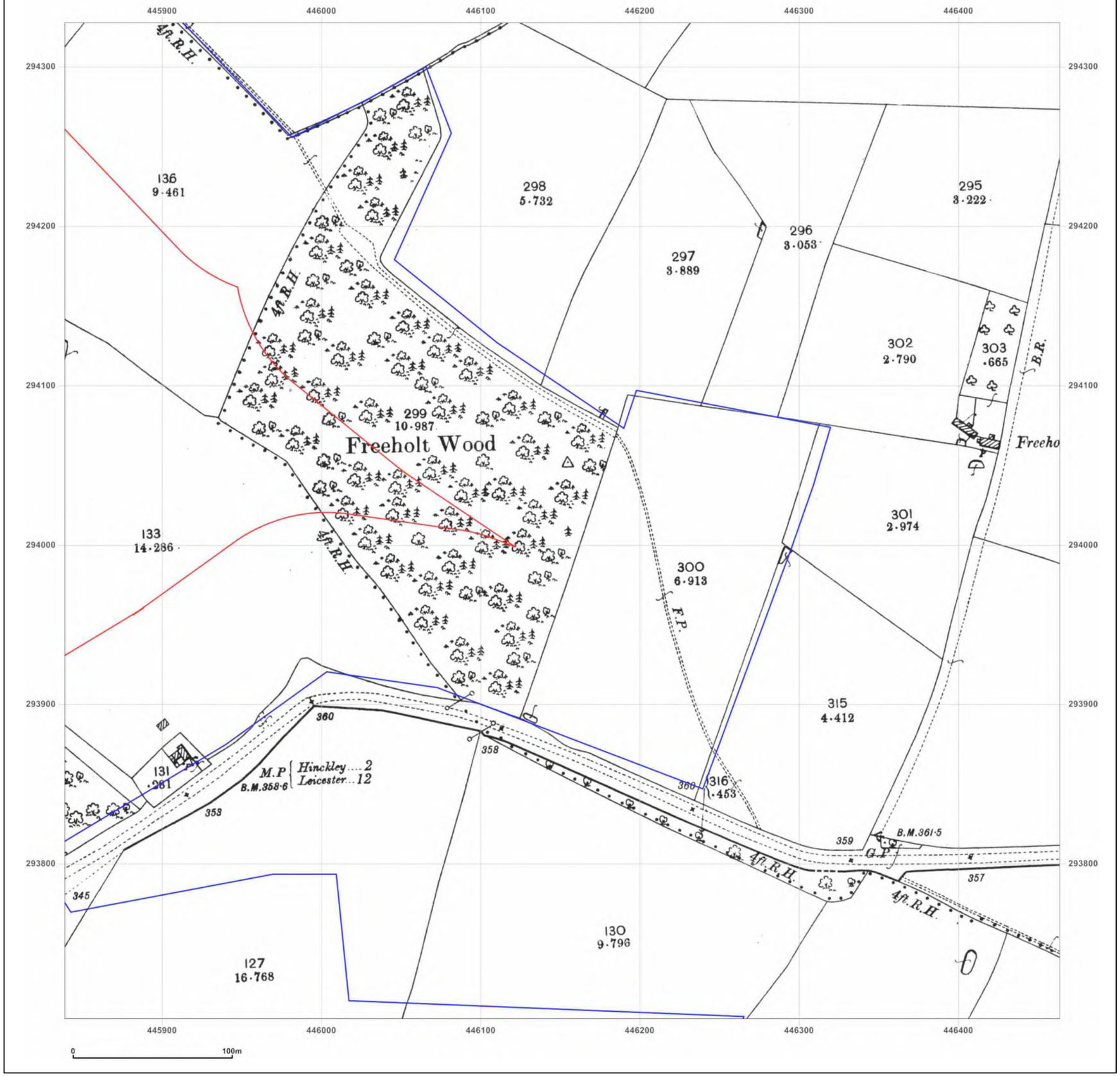

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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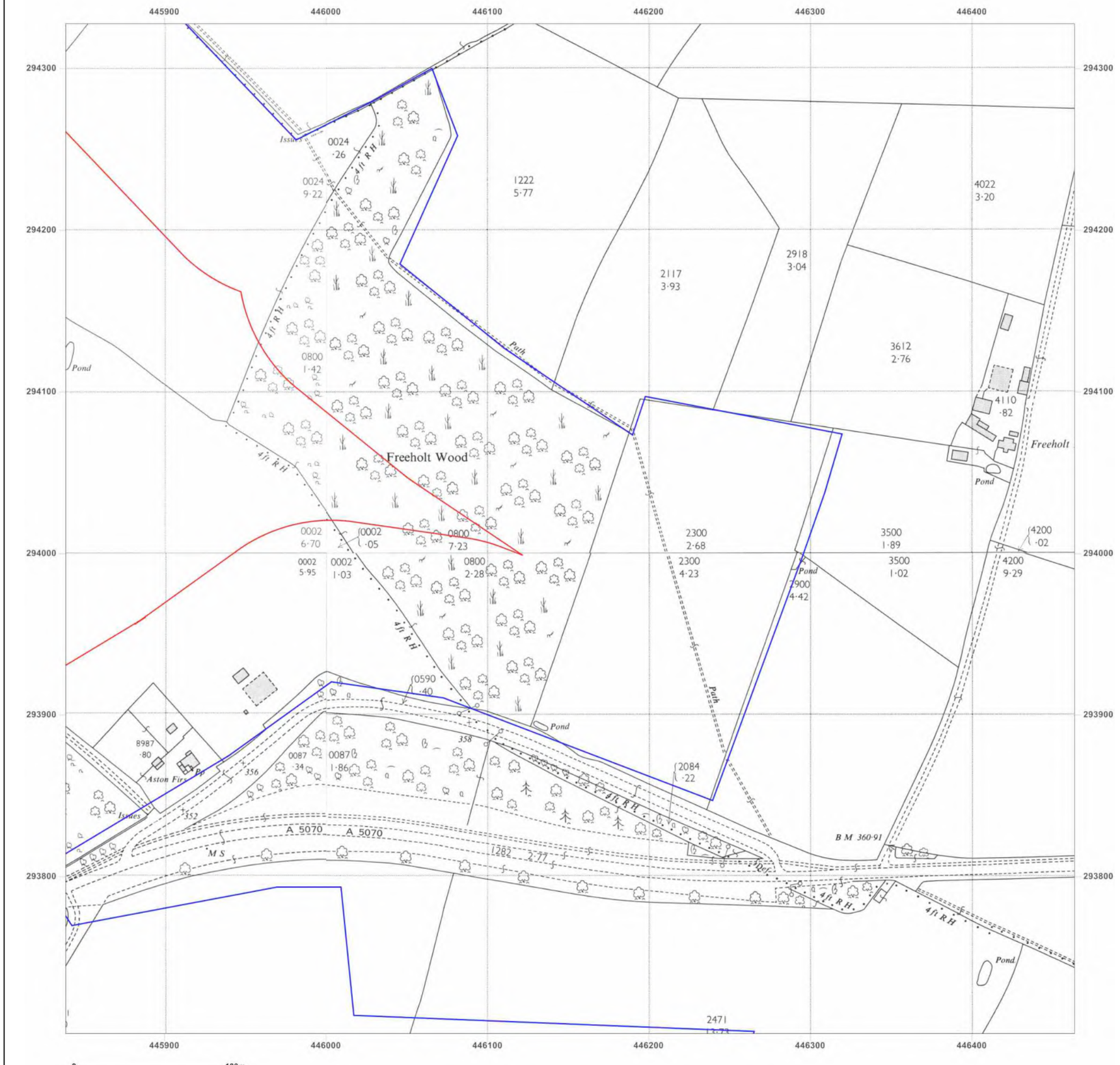

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition 1964
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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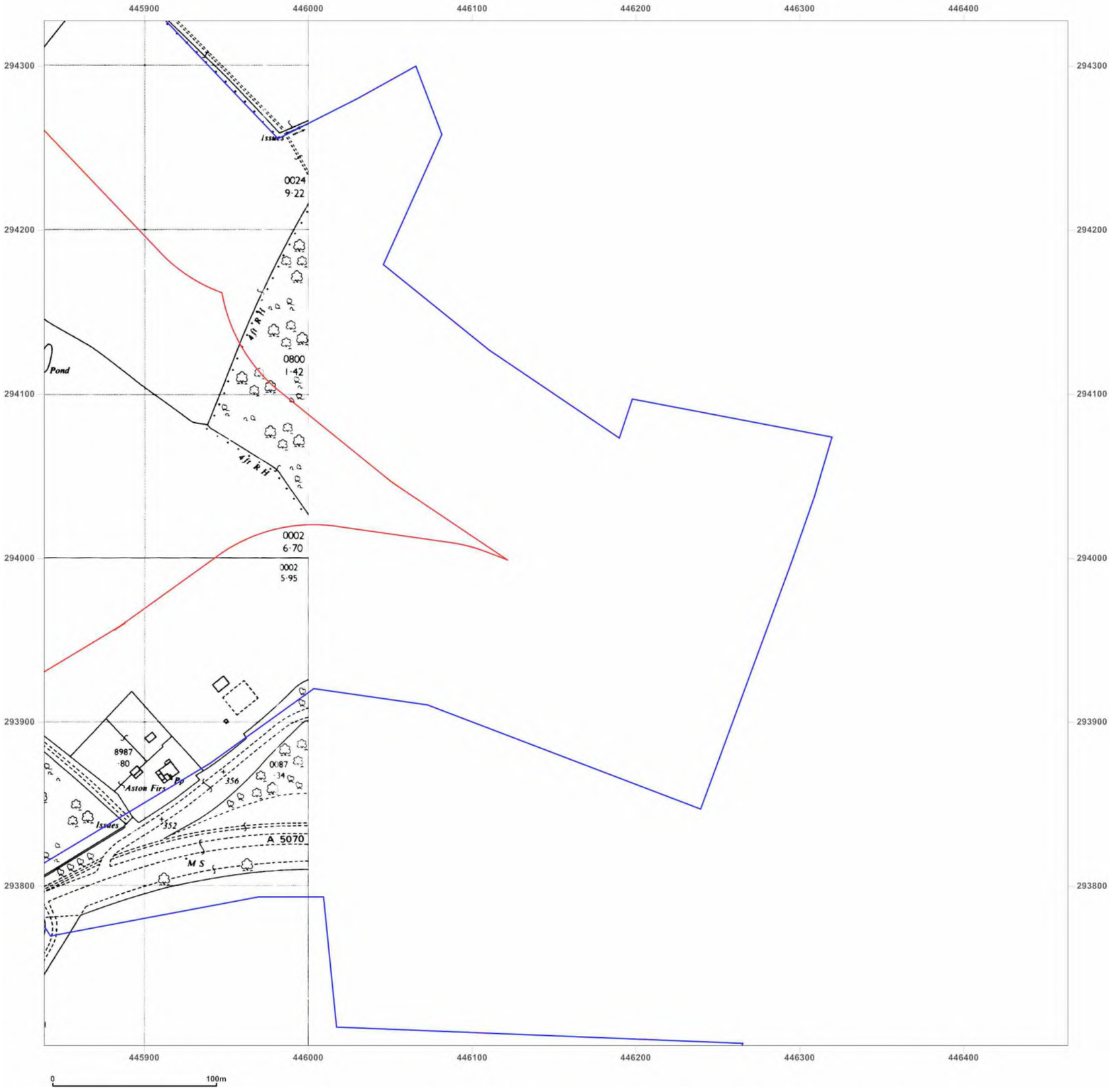

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

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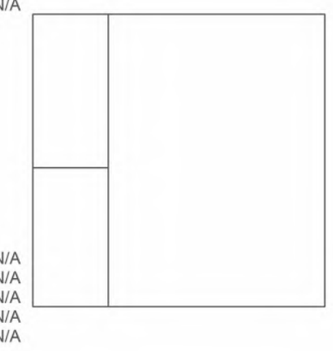
Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



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

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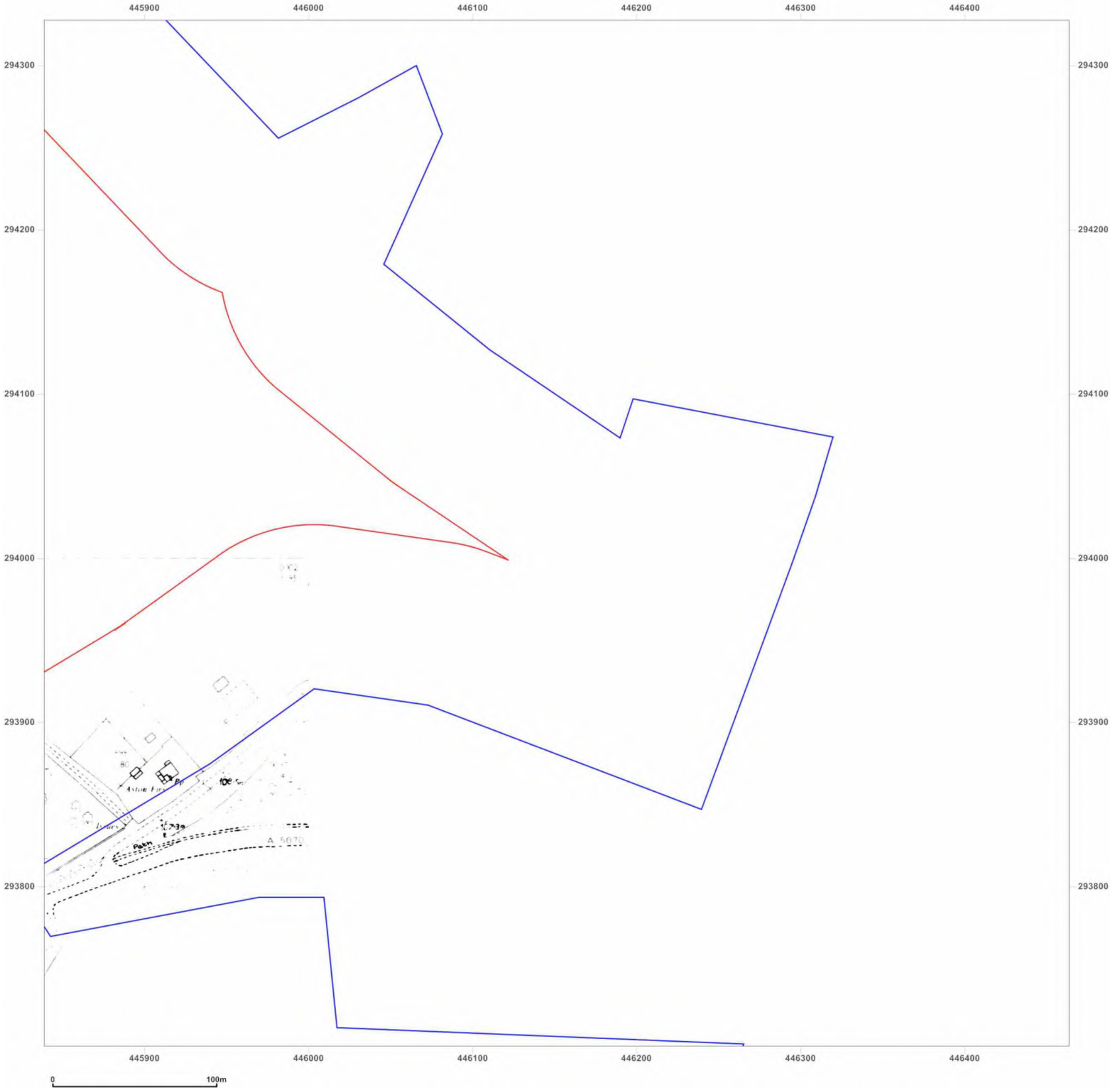

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: National Grid

Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

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

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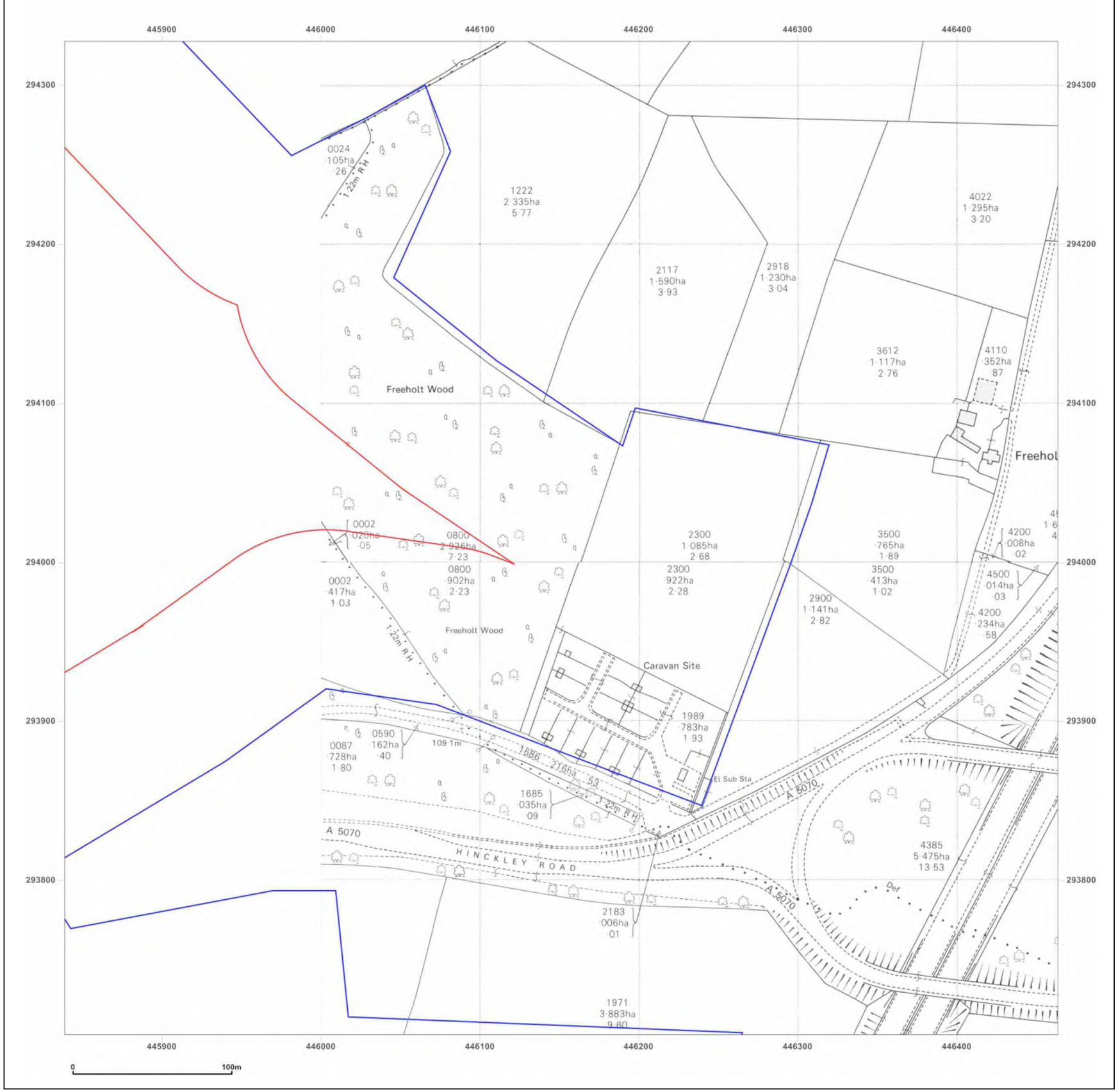

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
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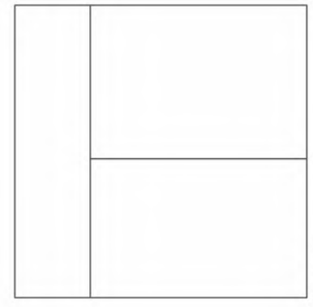

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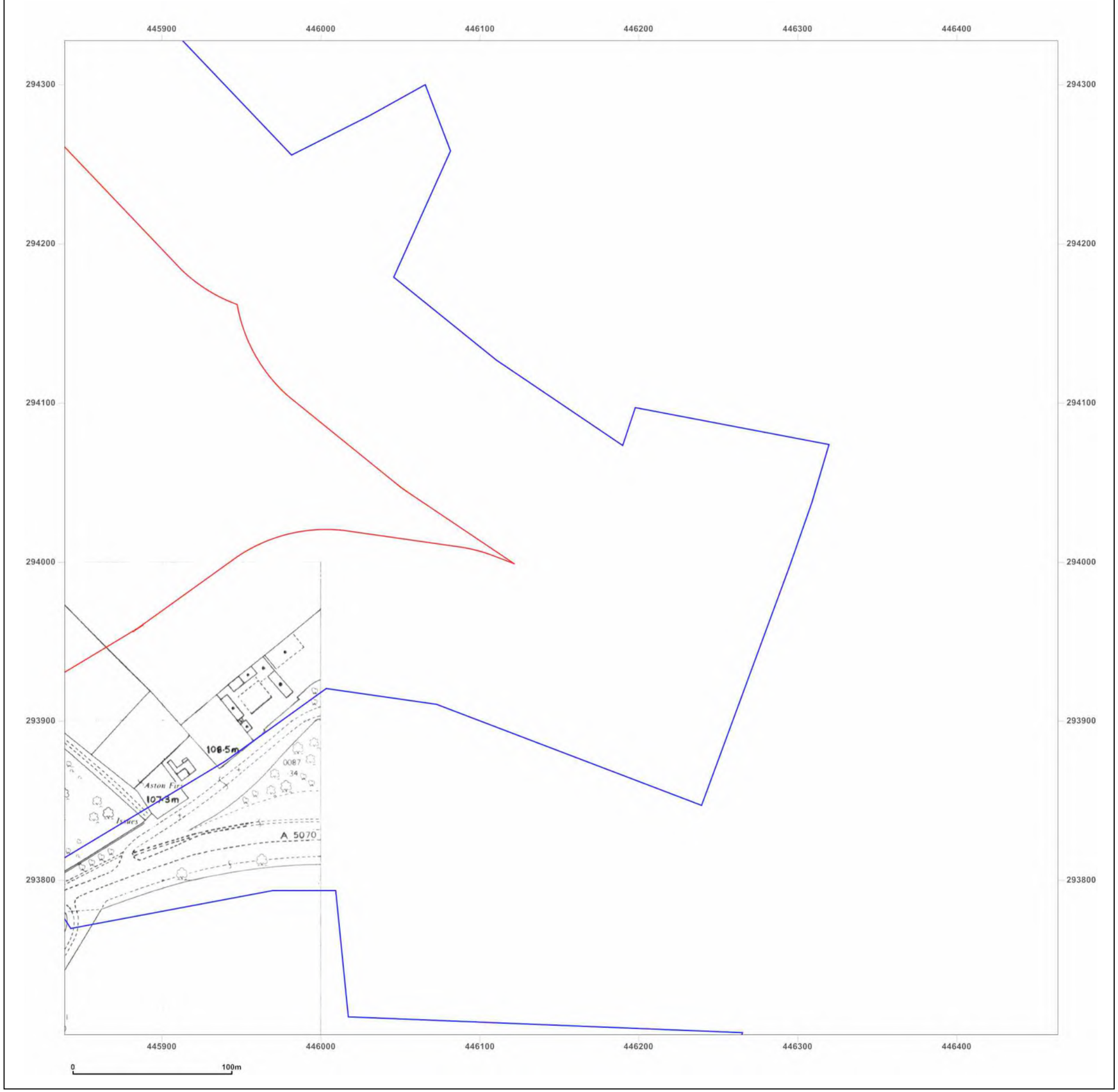

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: National Grid

Map date: **1992**

Scale: 1:2,500

Printed at: 1:2,500

N
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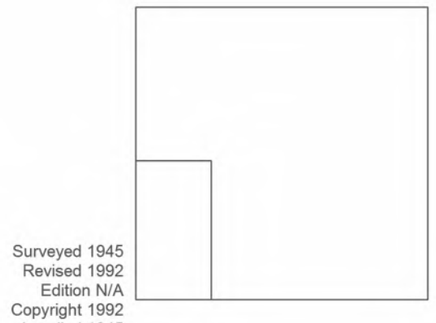

Surveyed 1945
Revised 1992
Edition N/A
Copyright 1992
Levelled 1945

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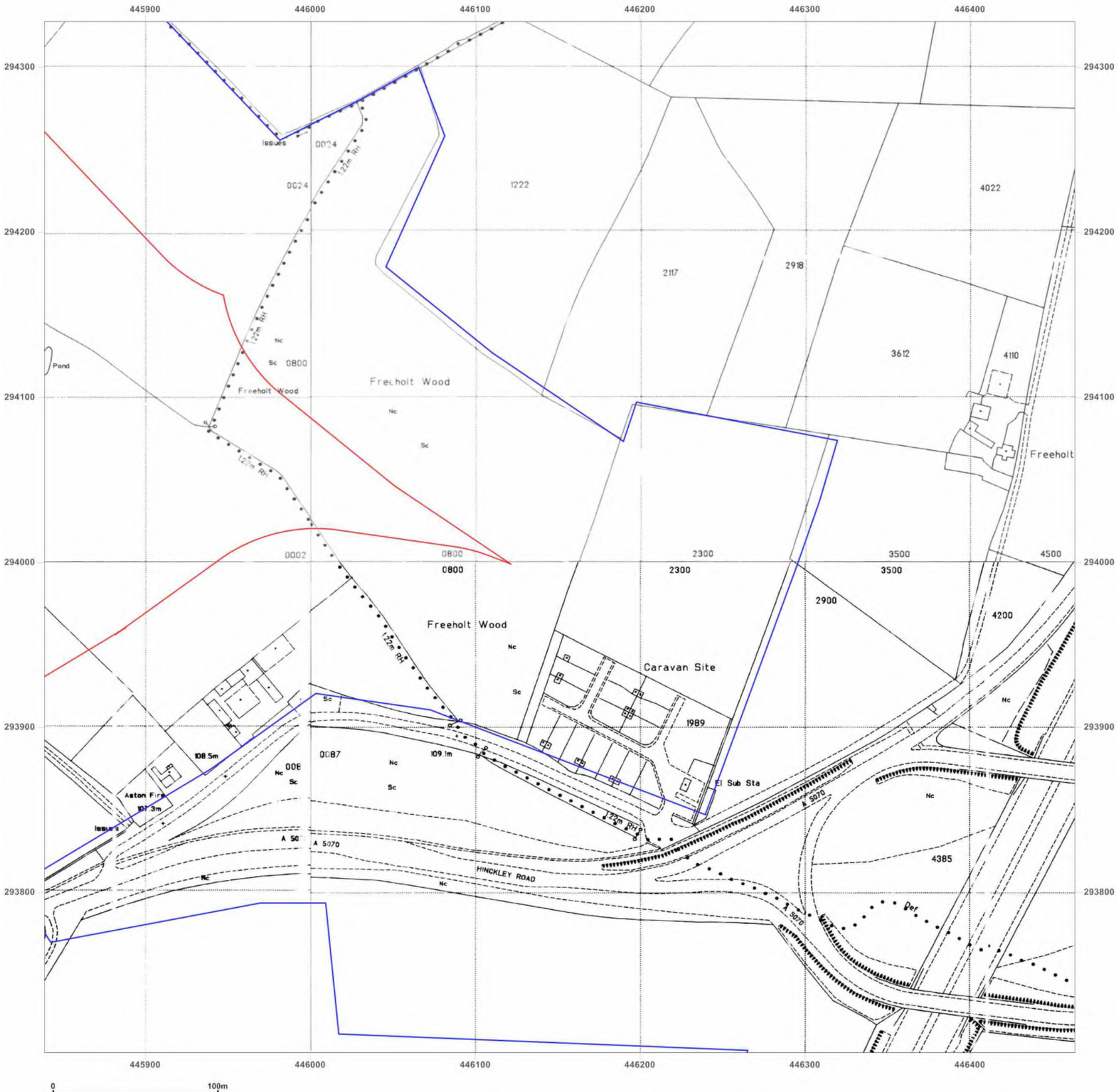

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_3
Grid Ref: 446151, 294015

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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

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

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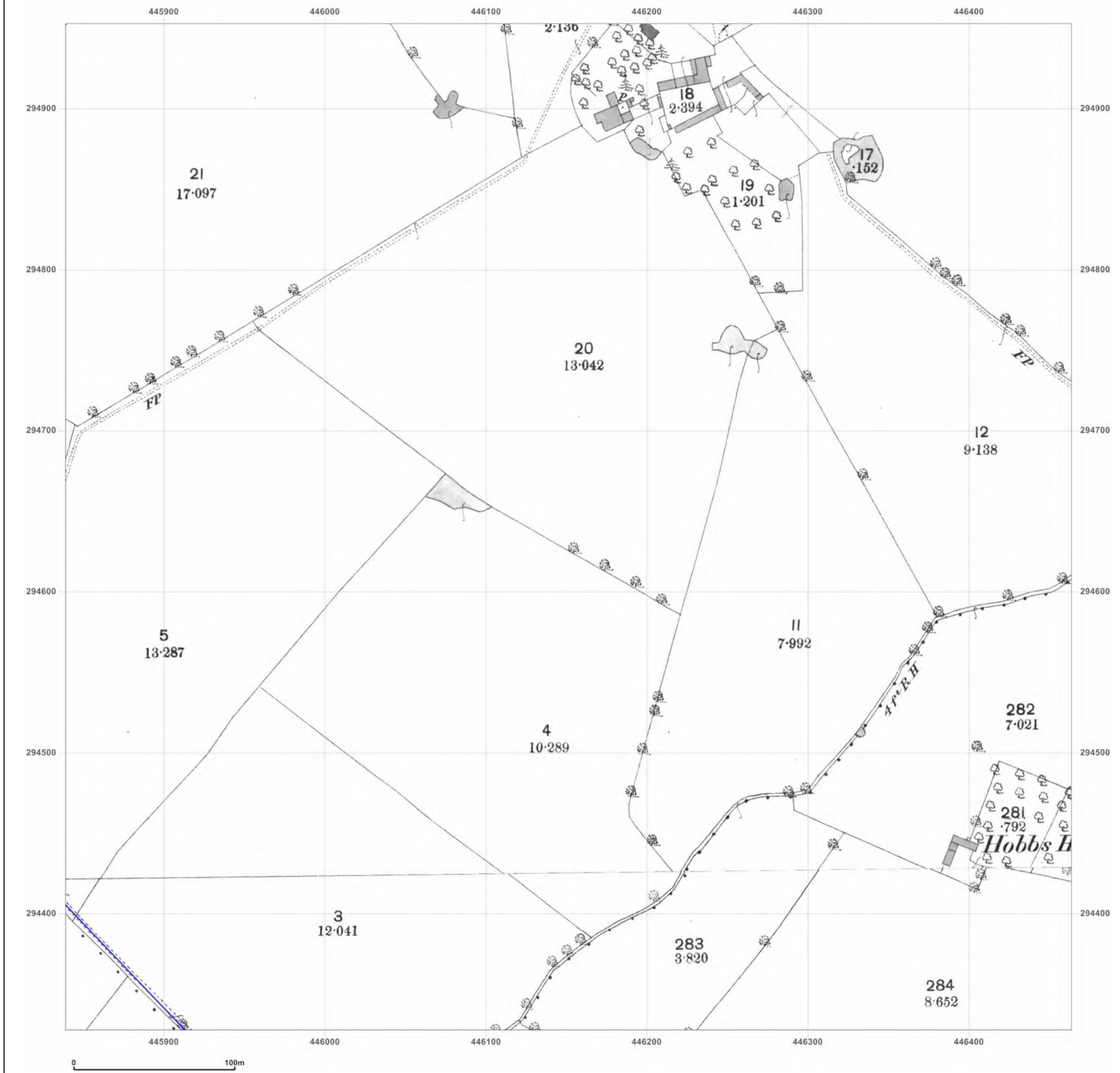

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_4
Grid Ref: 446151, 294640

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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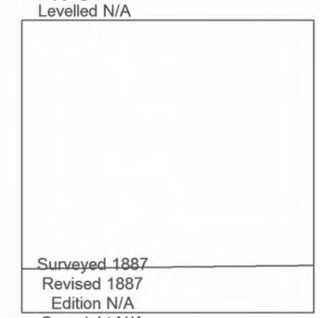
Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A



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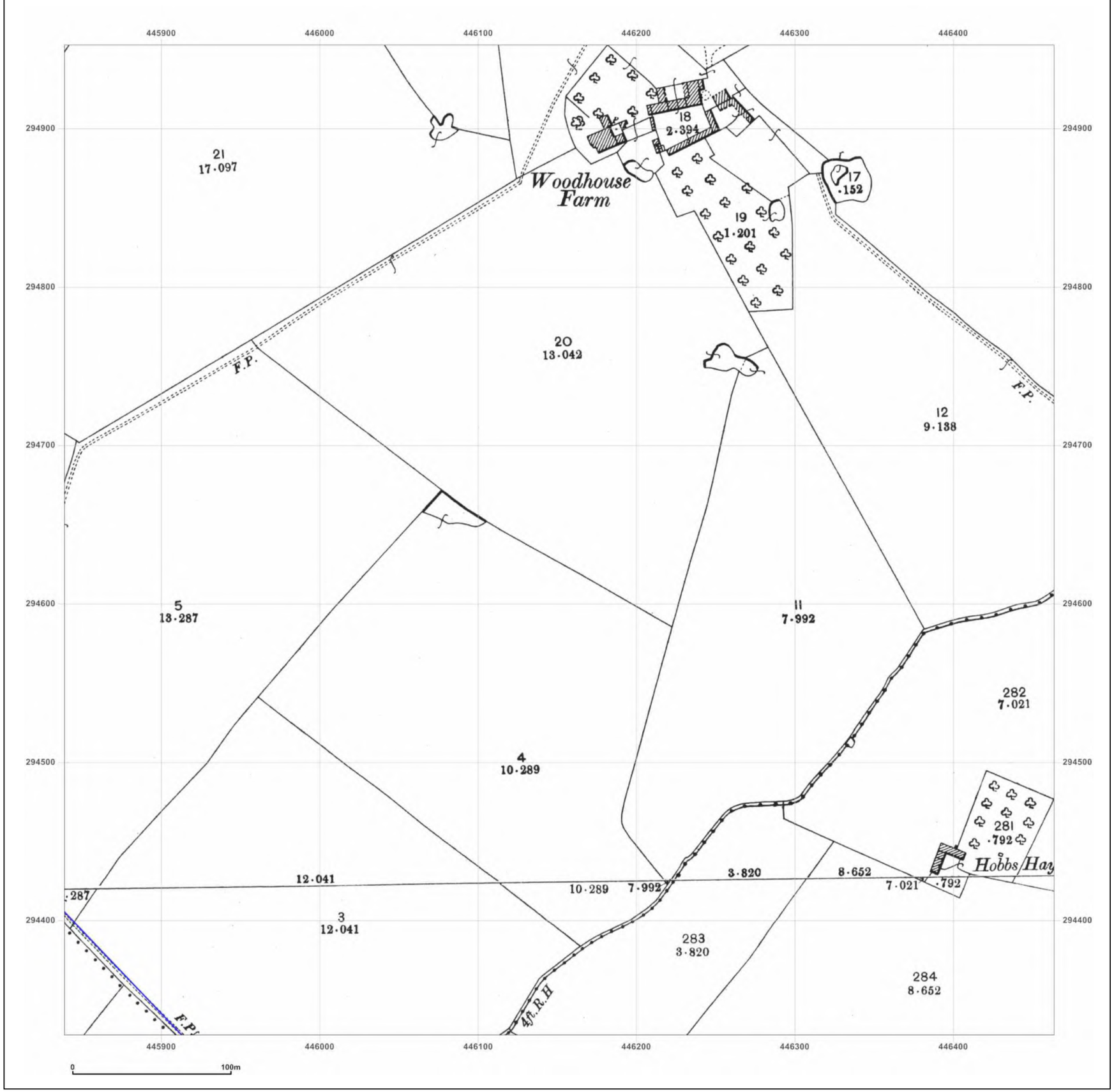

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_4
Grid Ref: 446151, 294640

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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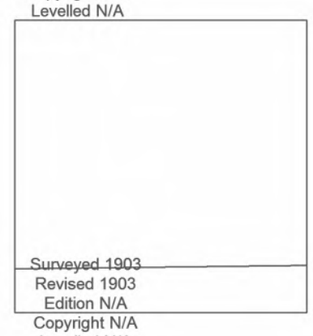
Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



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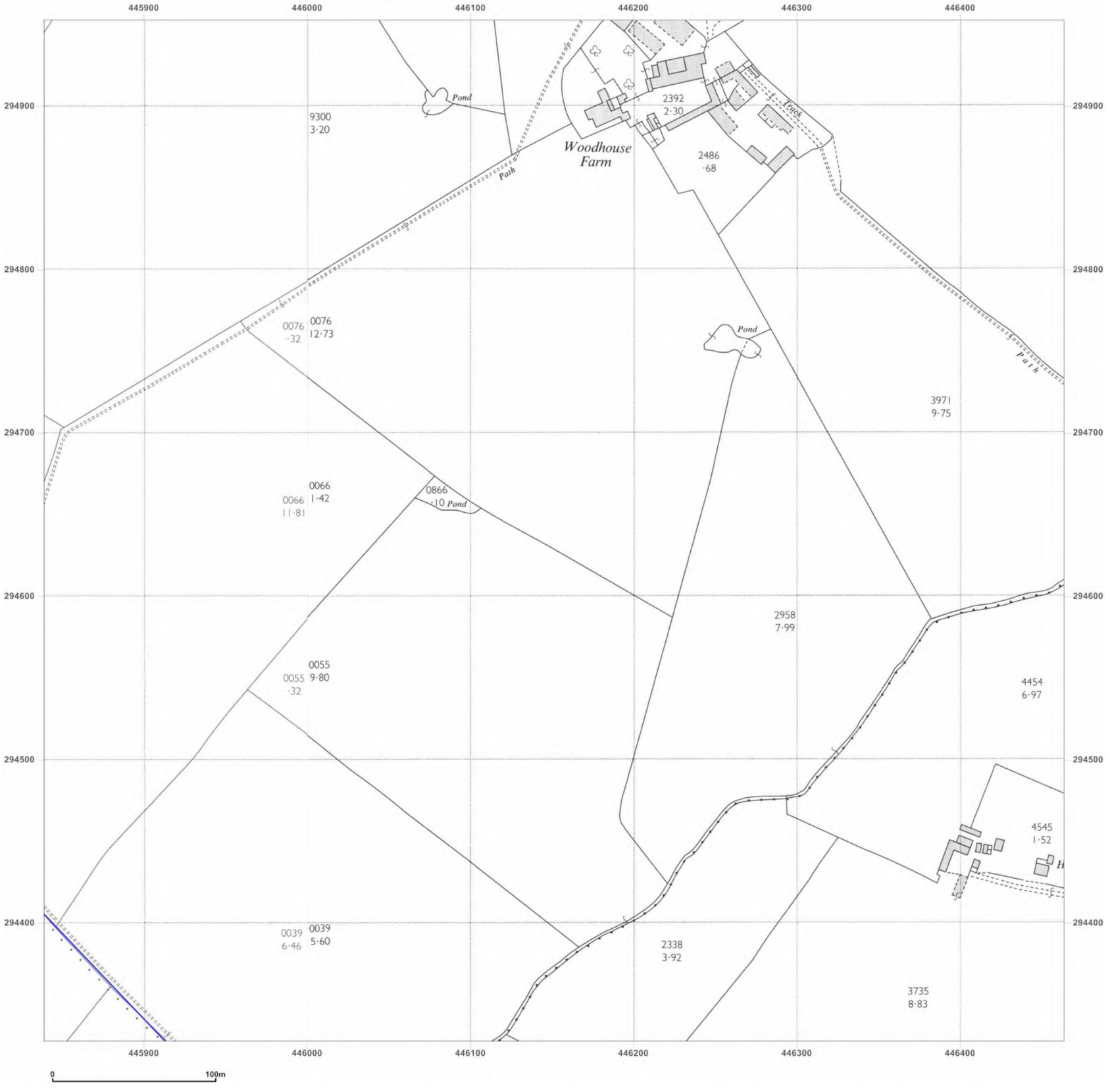

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_4
Grid Ref: 446151, 294640

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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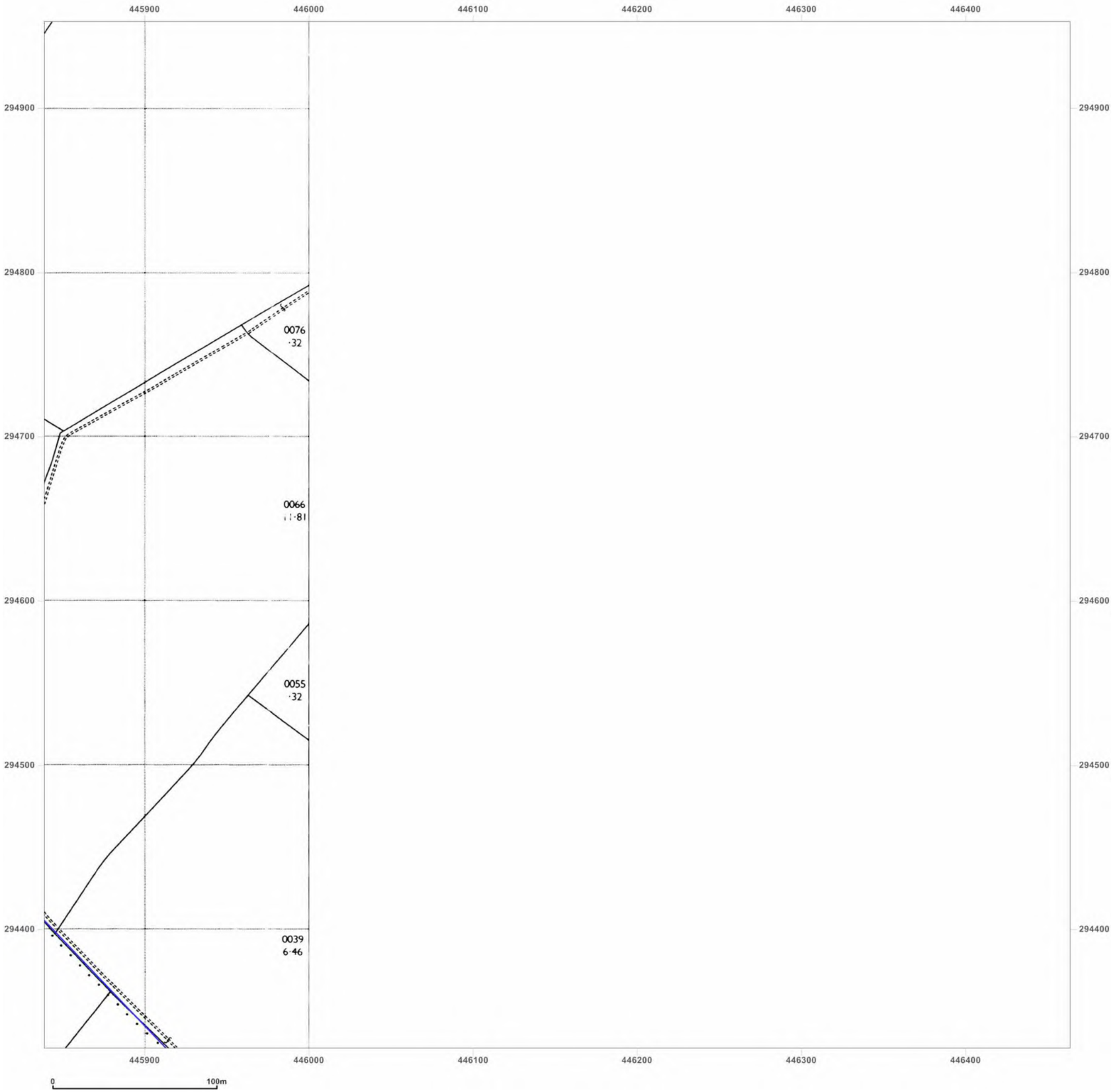

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_4
Grid Ref: 446151, 294640

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

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

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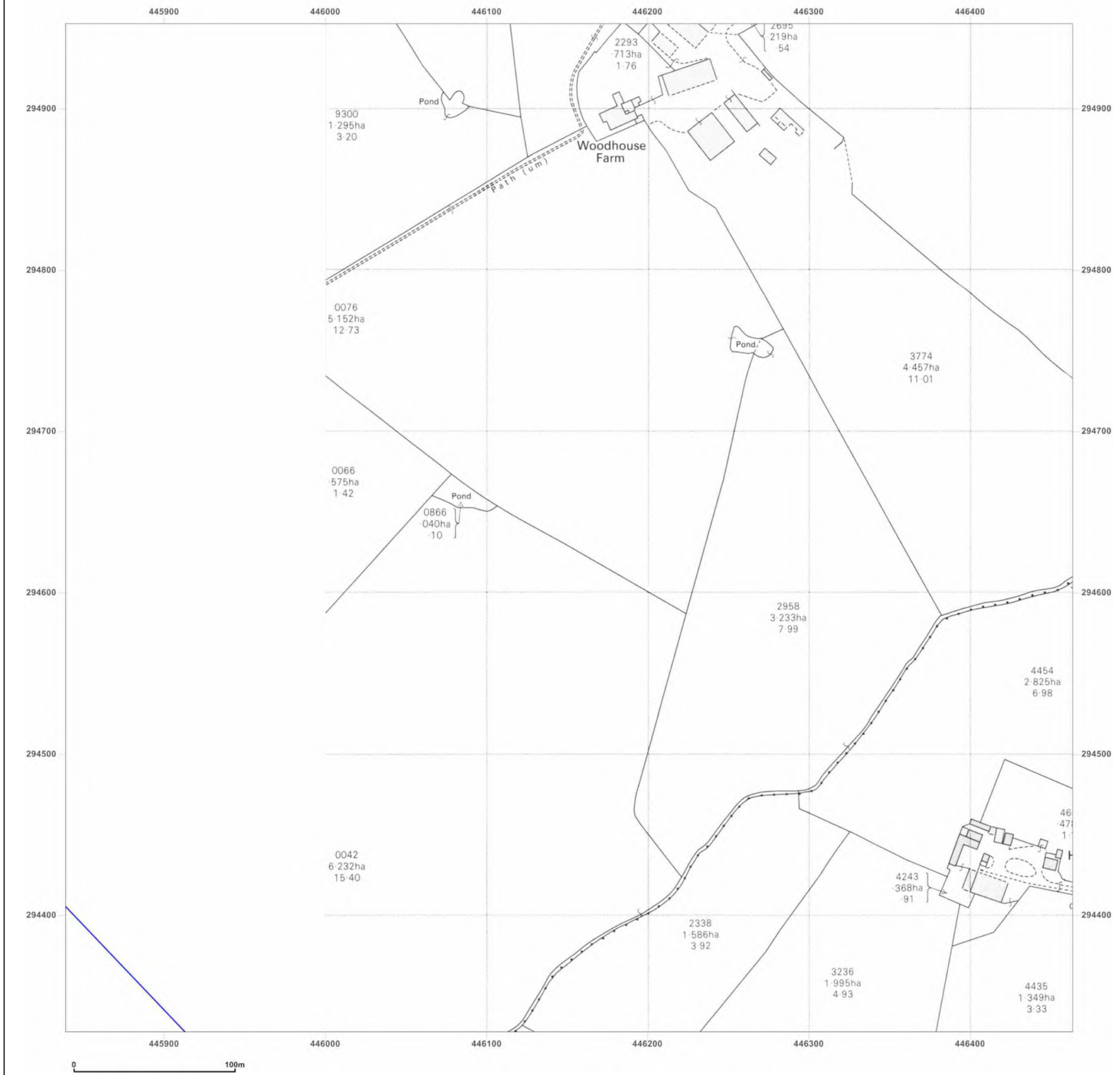

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_4
Grid Ref: 446151, 294640

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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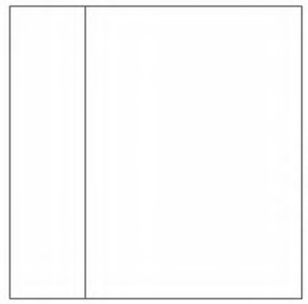

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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Production date: 30 January 2018

Map legend available at:
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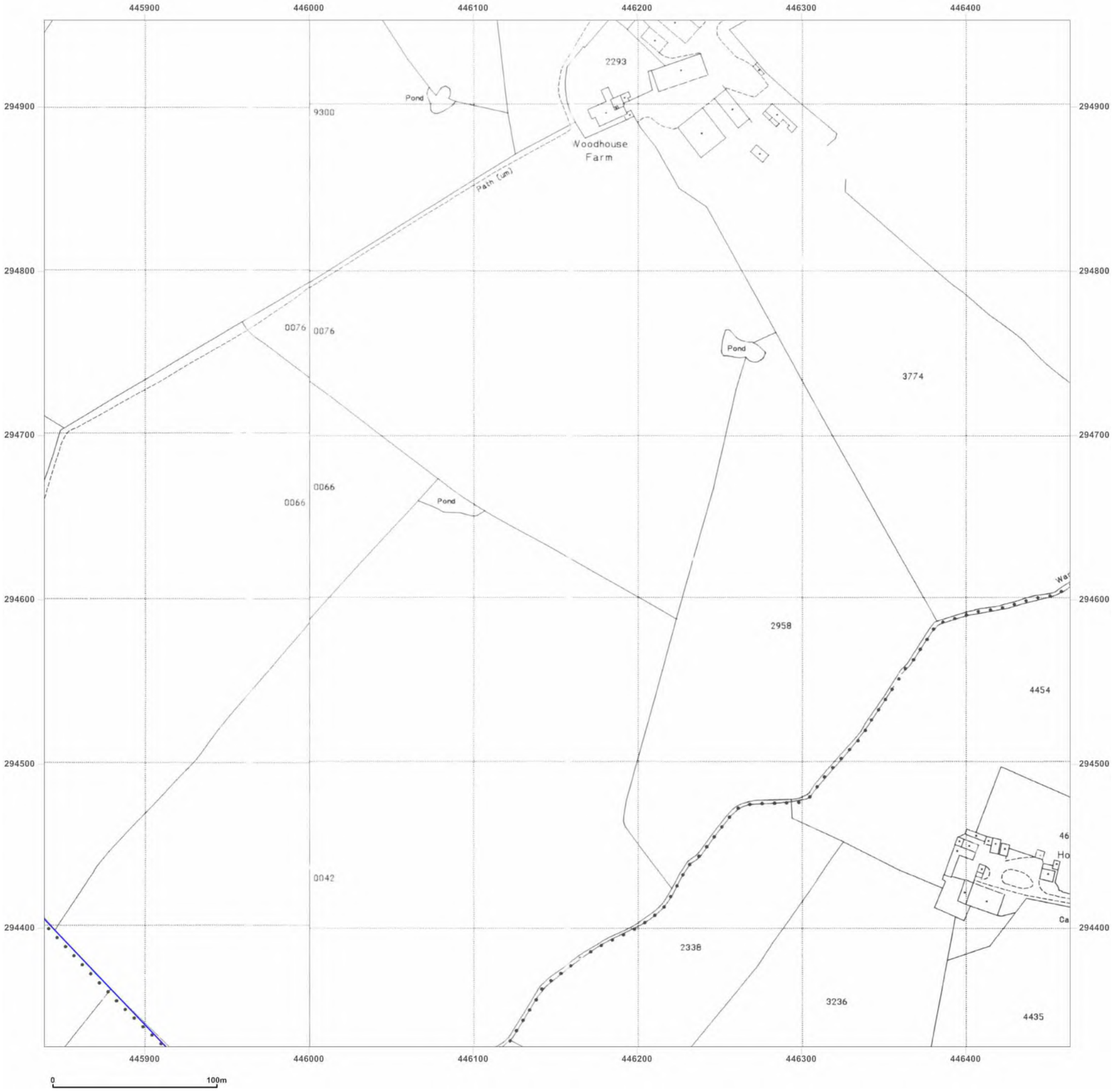

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_4
Grid Ref: 446151, 294640

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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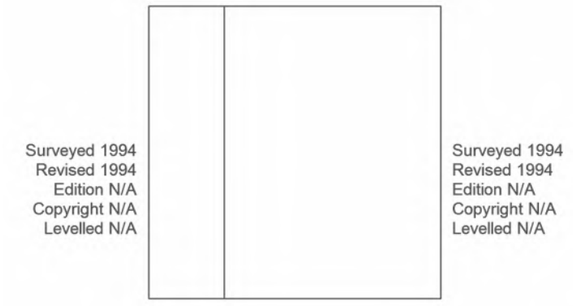

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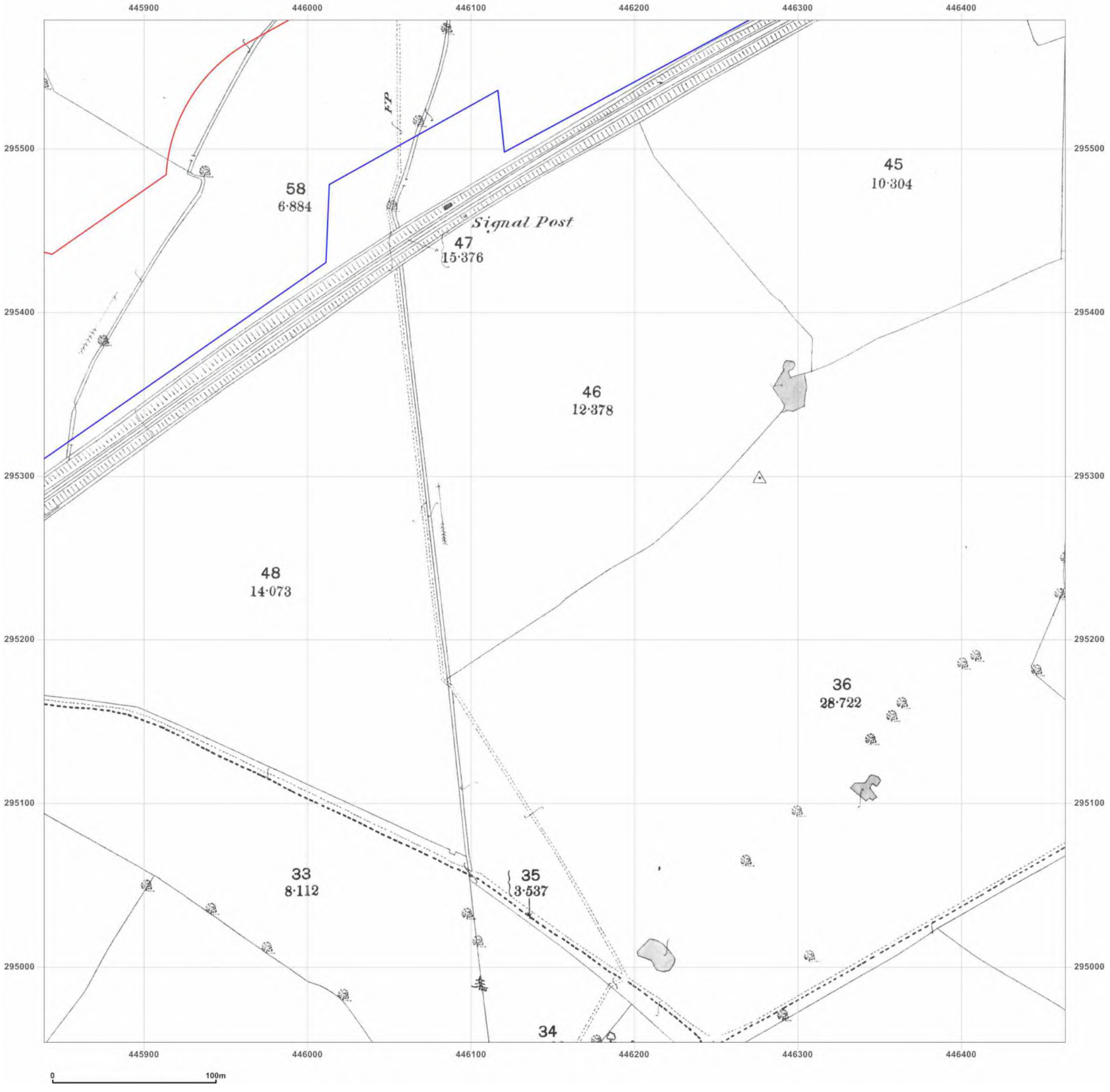
Production date: 30 January 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_5
Grid Ref: 446151, 295266

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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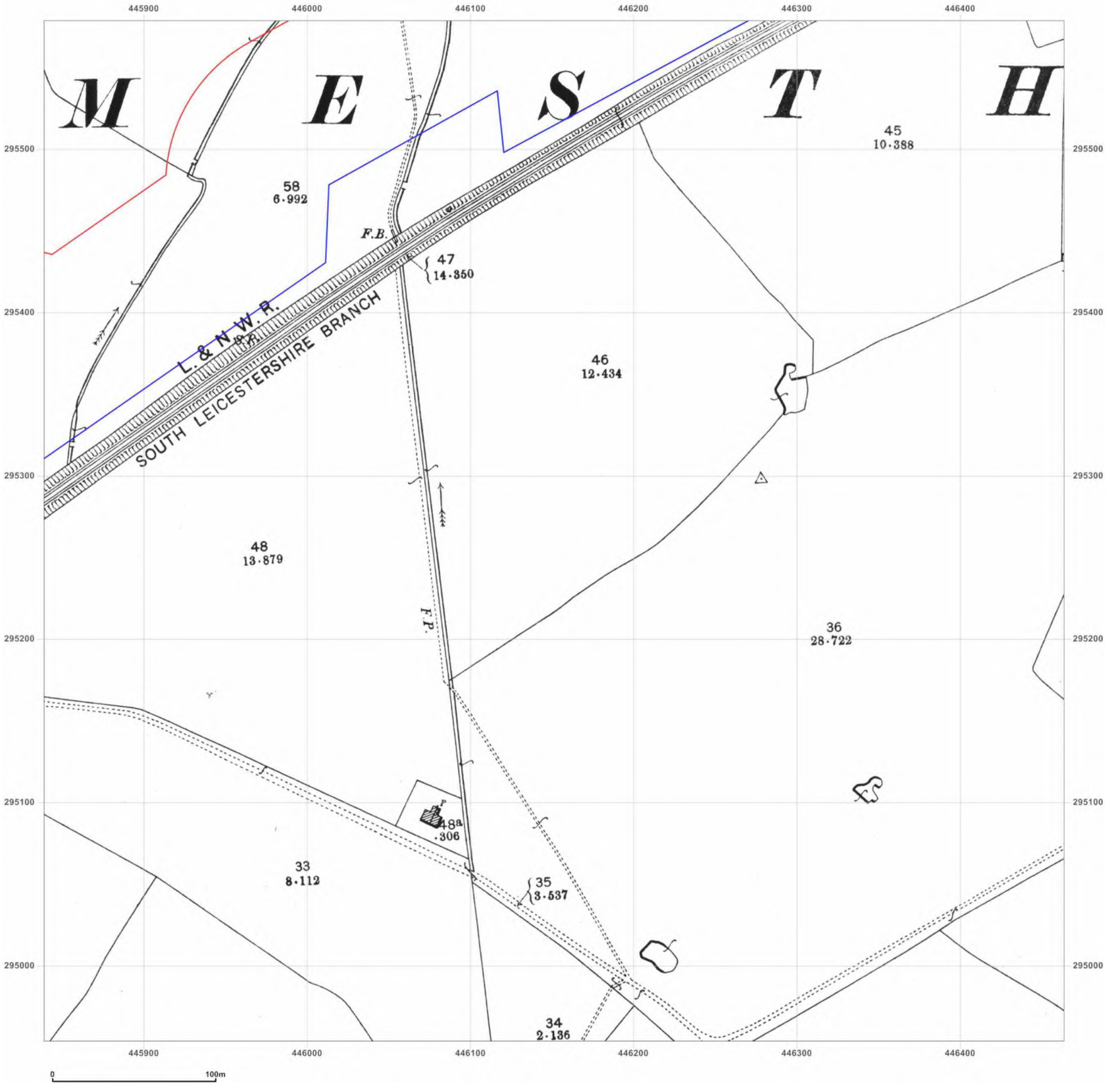

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_5
Grid Ref: 446151, 295266

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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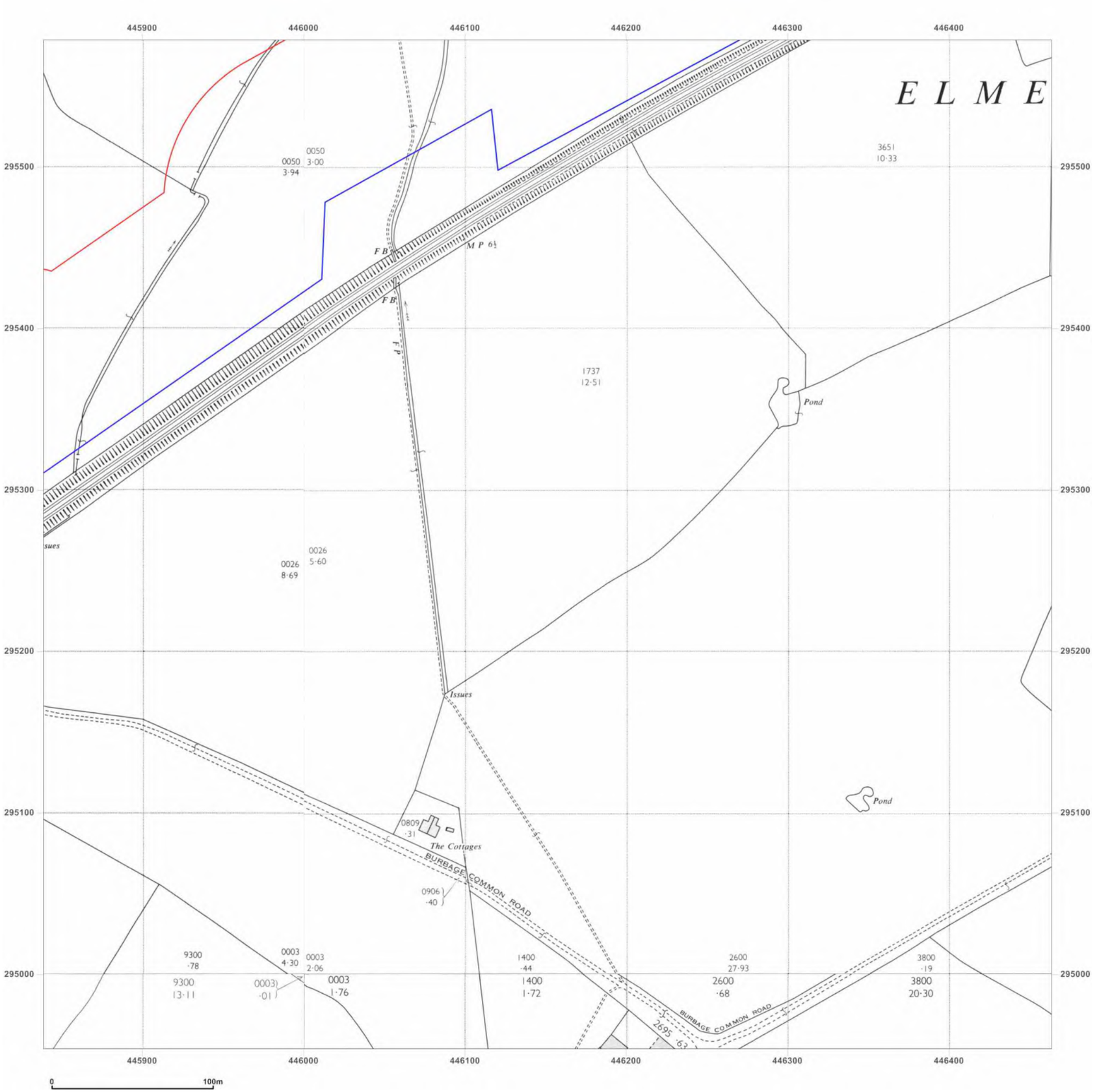

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_5
Grid Ref: 446151, 295266

Map Name: National Grid

Map date: **1962-1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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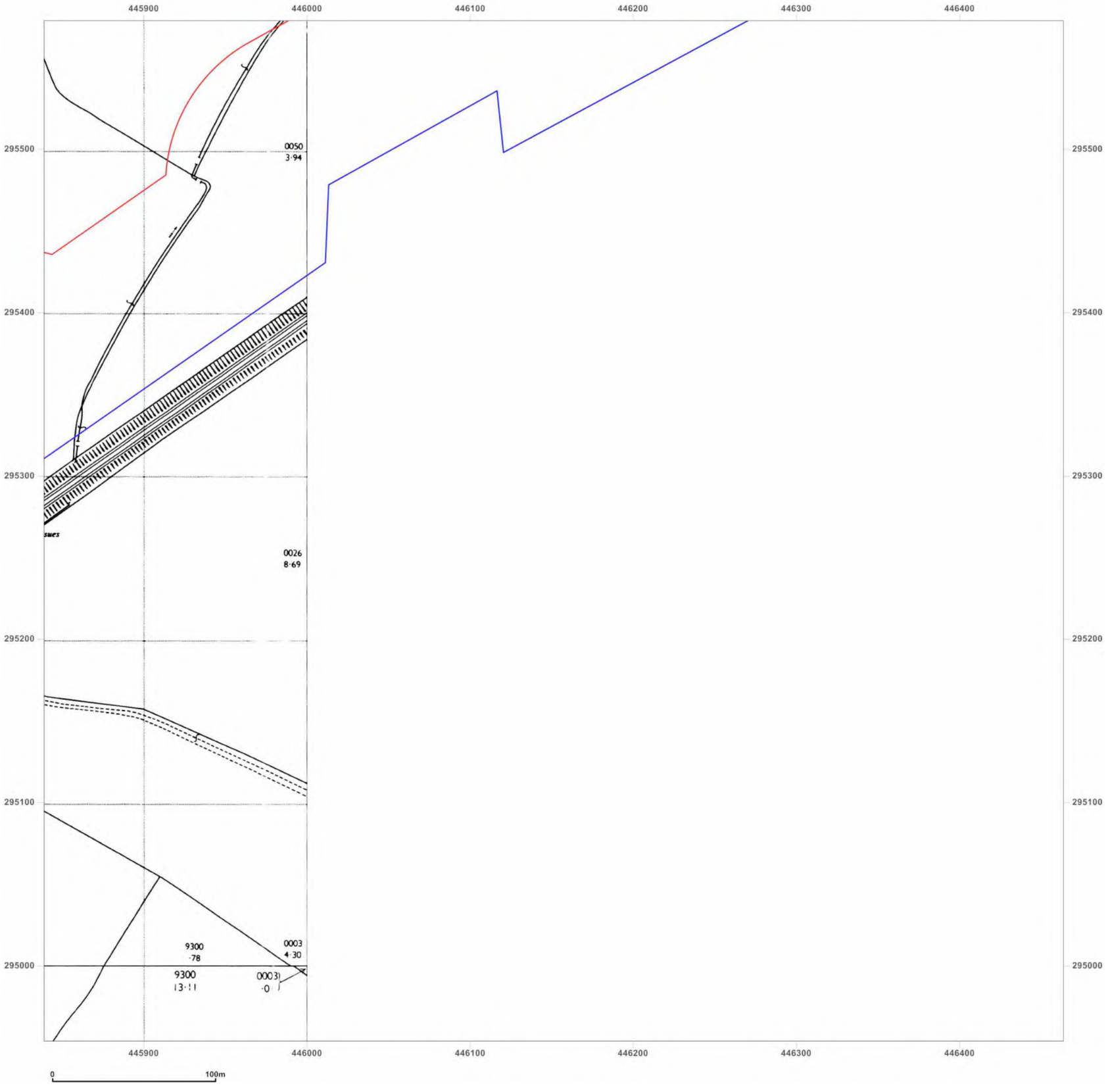

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_5
Grid Ref: 446151, 295266

Map Name: National Grid

Map date: **1963-1964**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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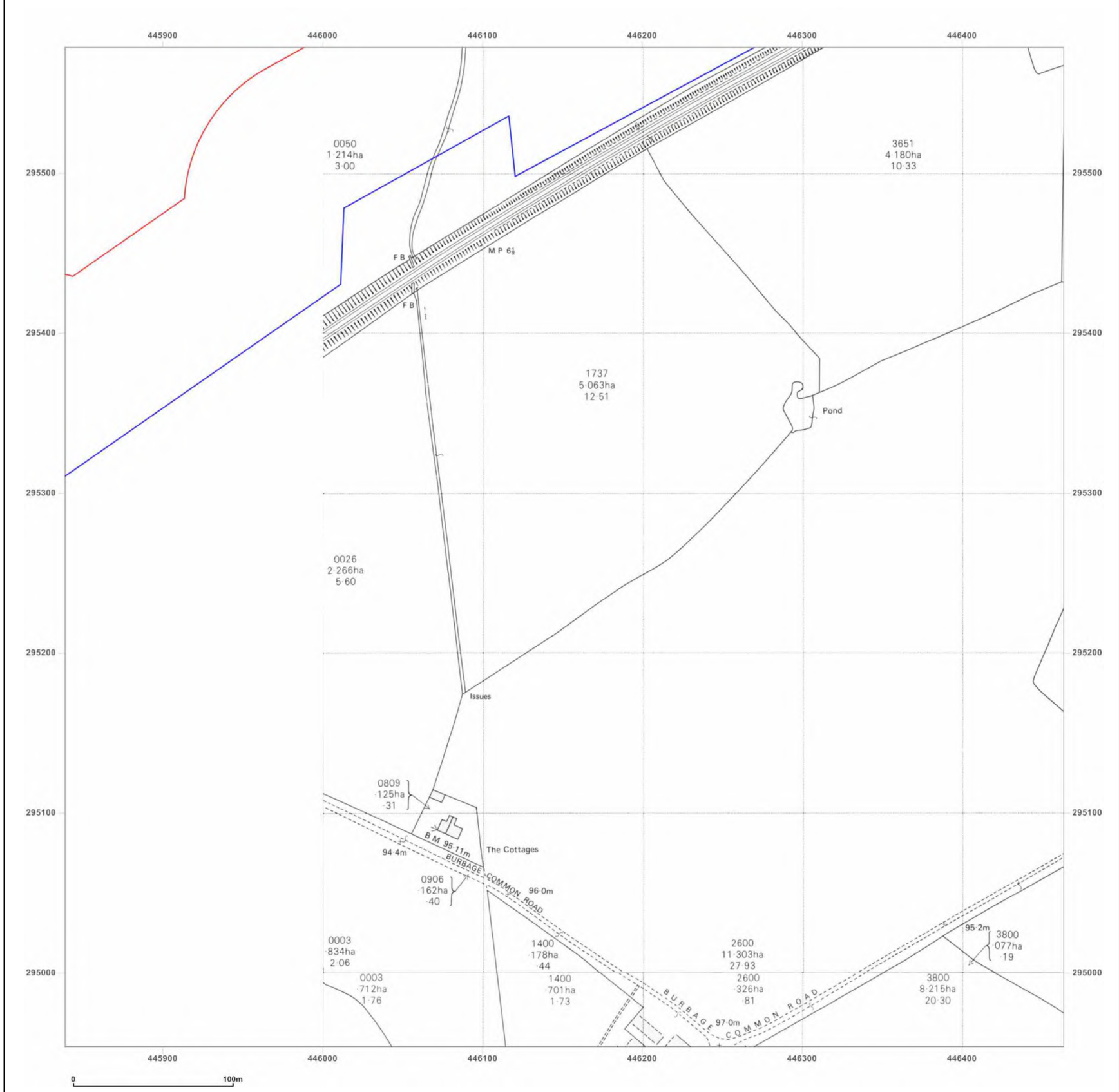

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_5
Grid Ref: 446151, 295266

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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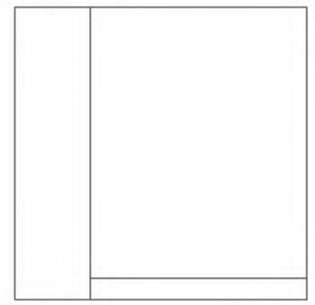

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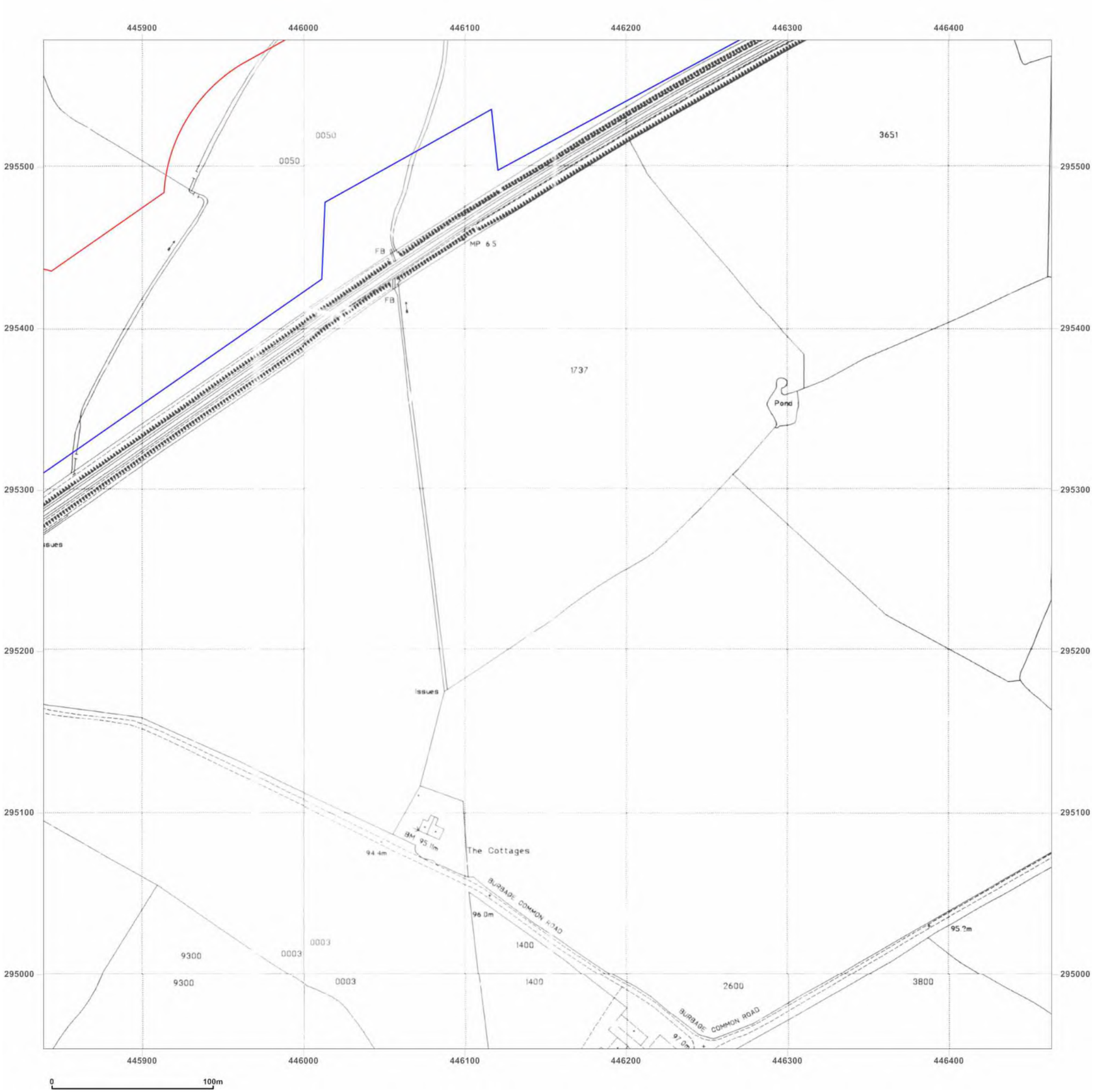

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_5
Grid Ref: 446151, 295266

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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

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Revised 1994
Edition N/A
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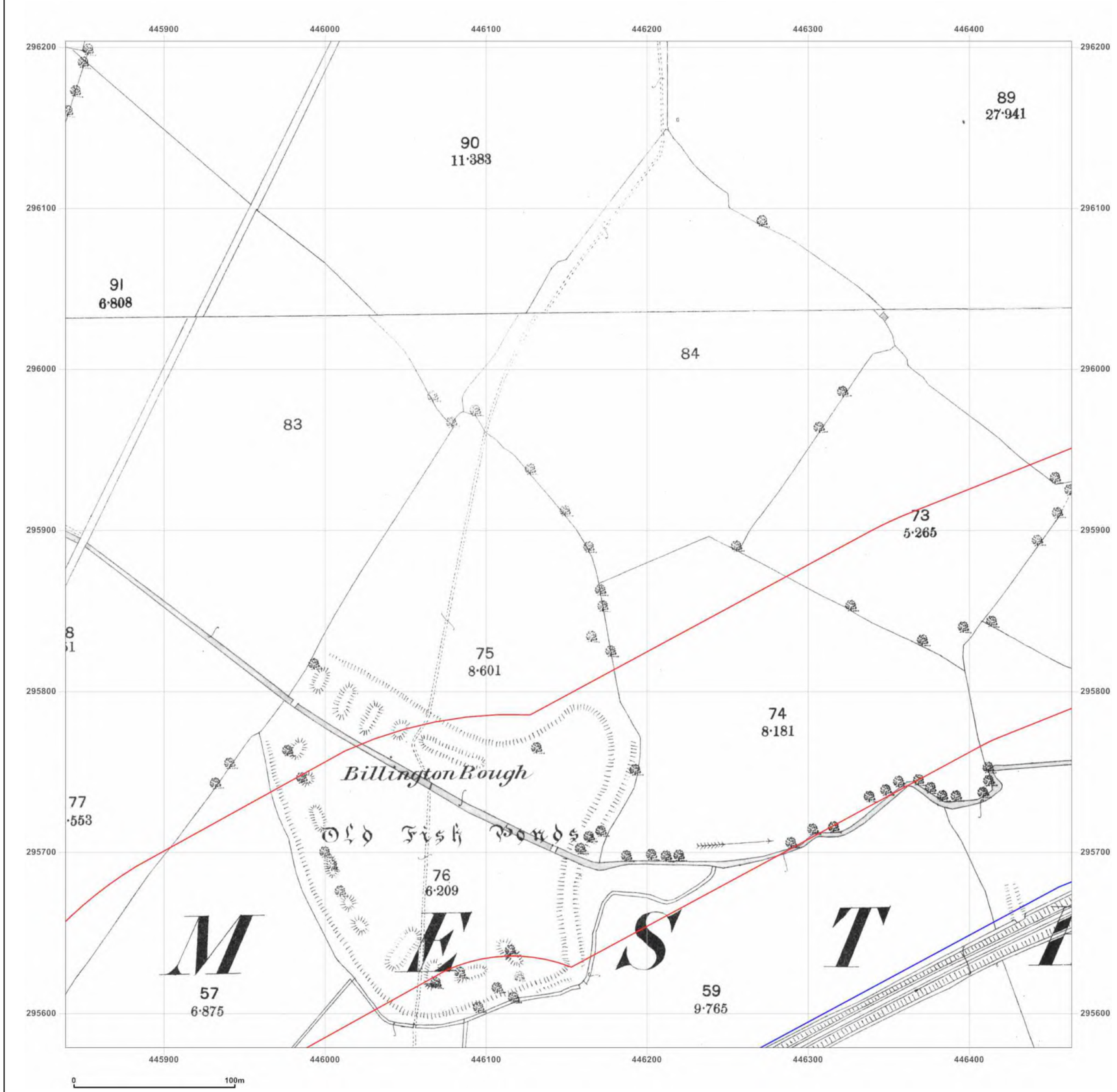

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: County Series

Map date: **1887-1888**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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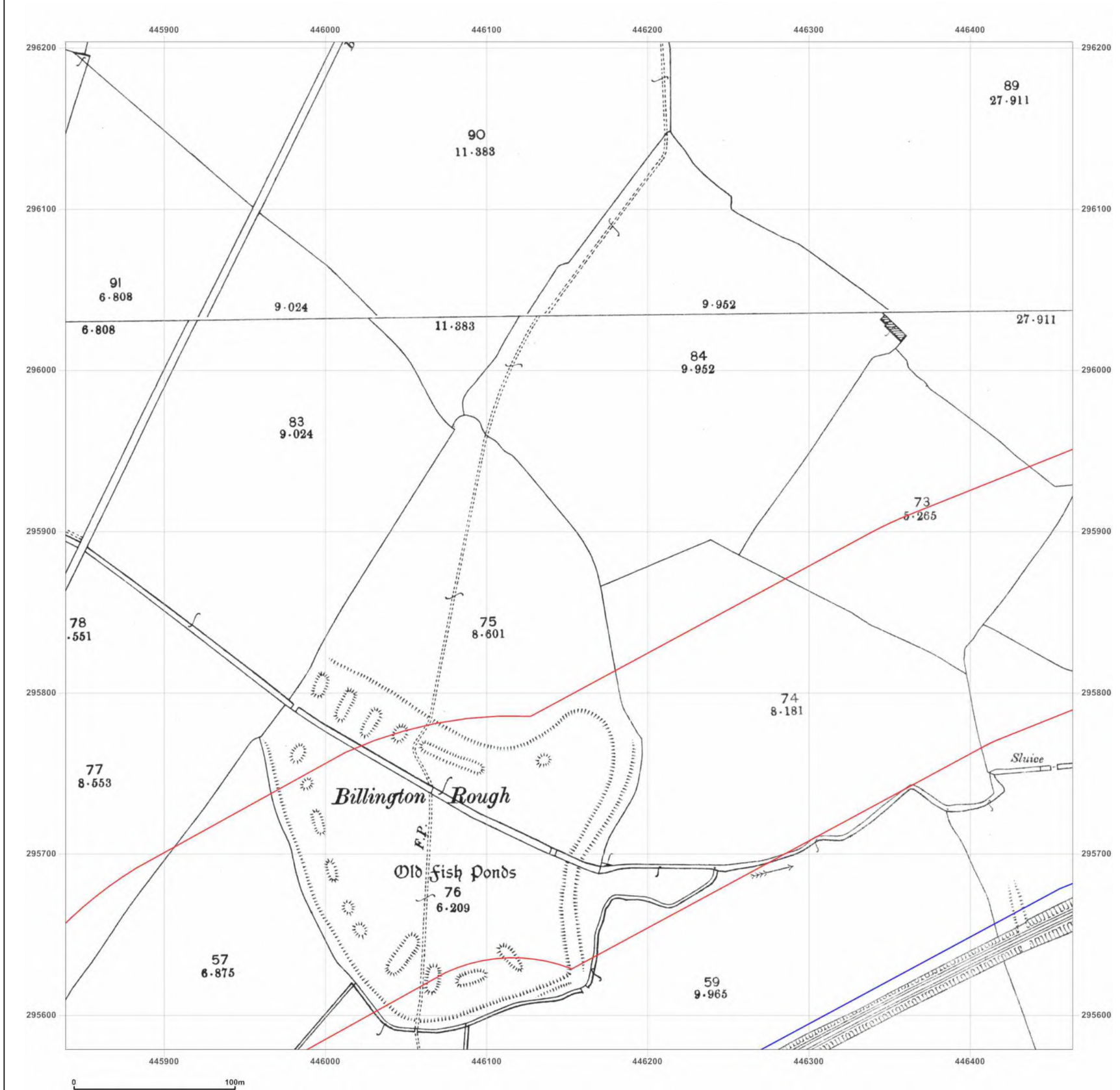


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: County Series

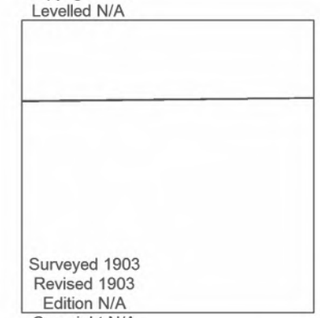
Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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Map legend available at:
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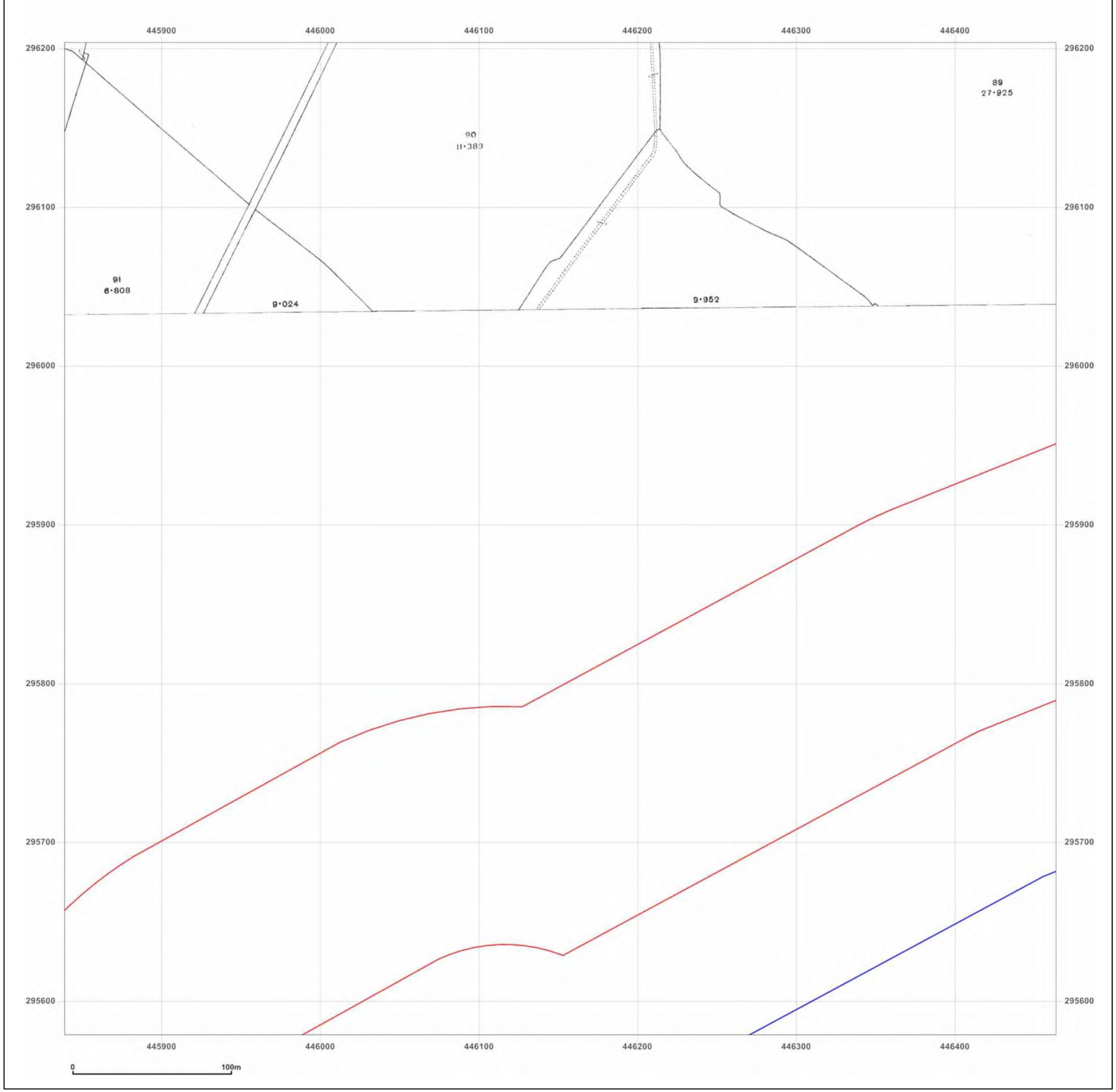


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: County Series

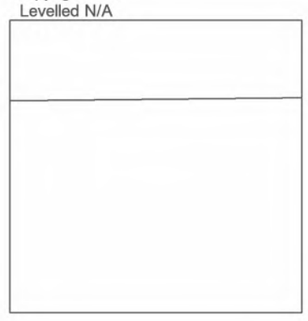
Map date: **1916**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1916
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A



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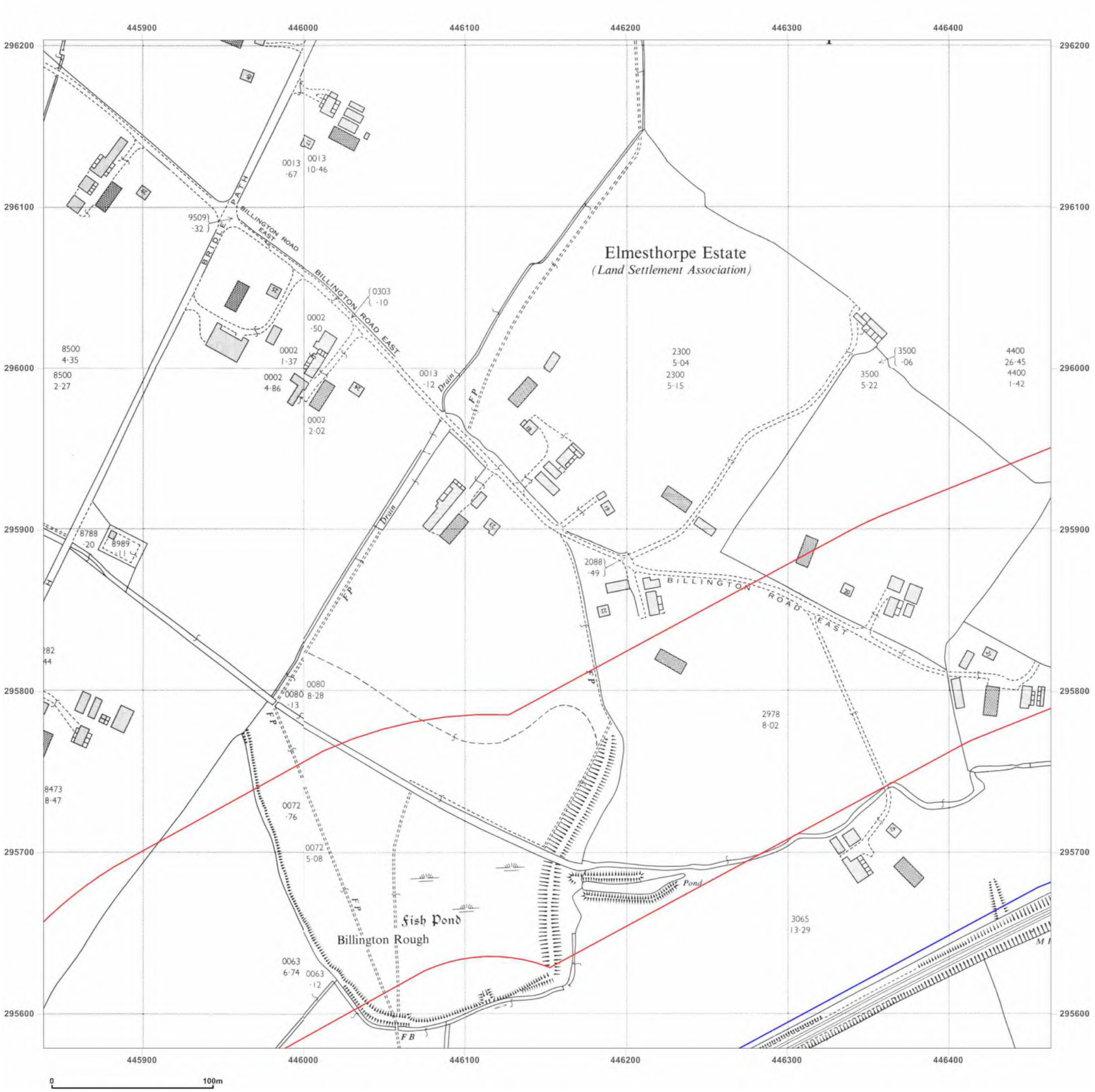

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1964
Levelled 1945

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

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Production date: 30 January 2018

Map legend available at:
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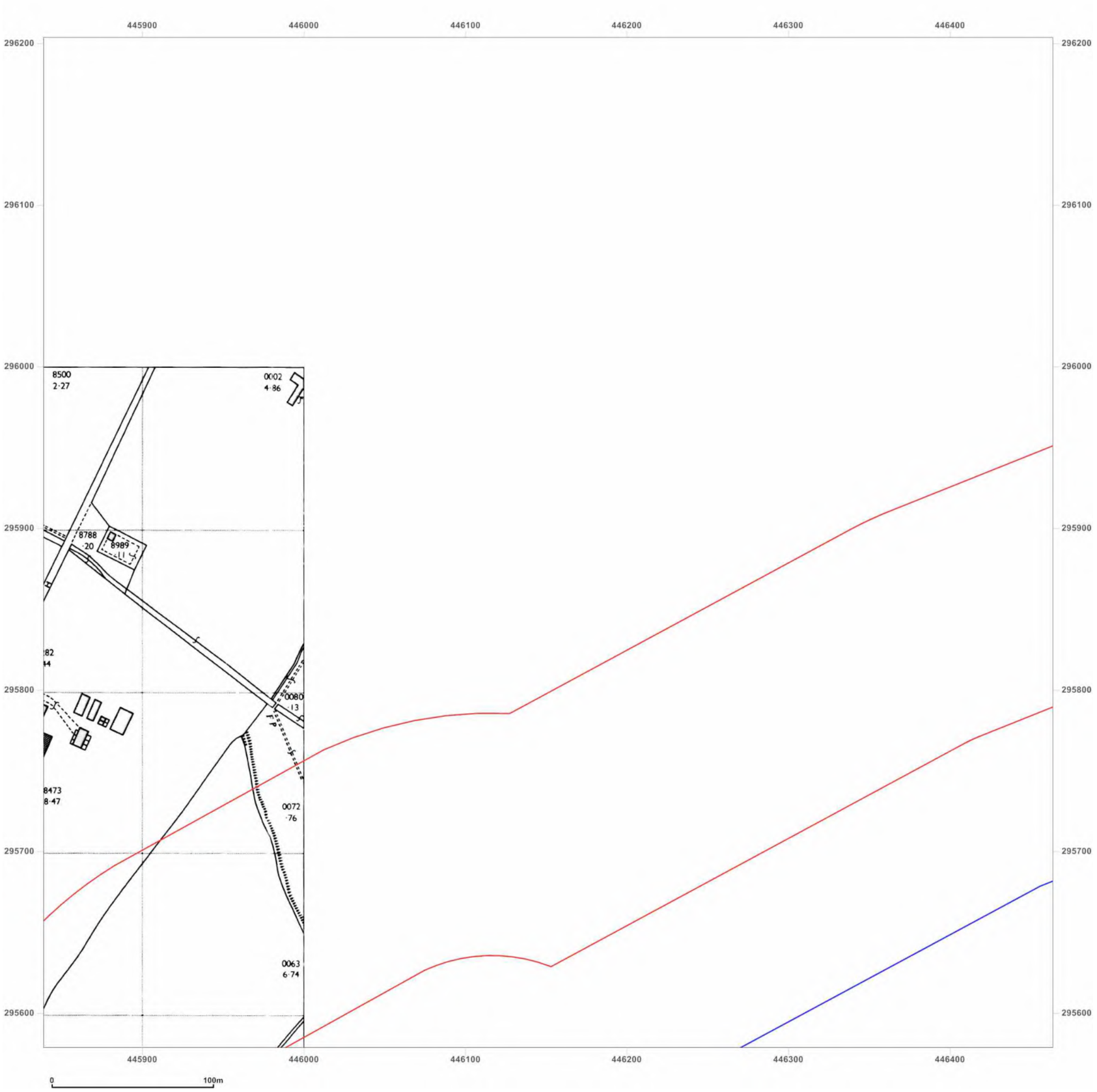

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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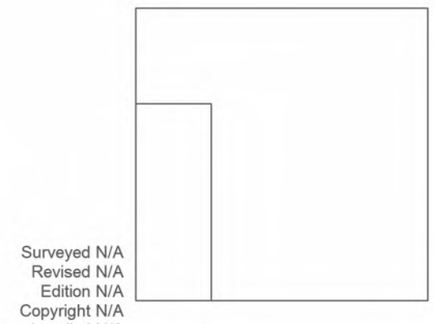

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

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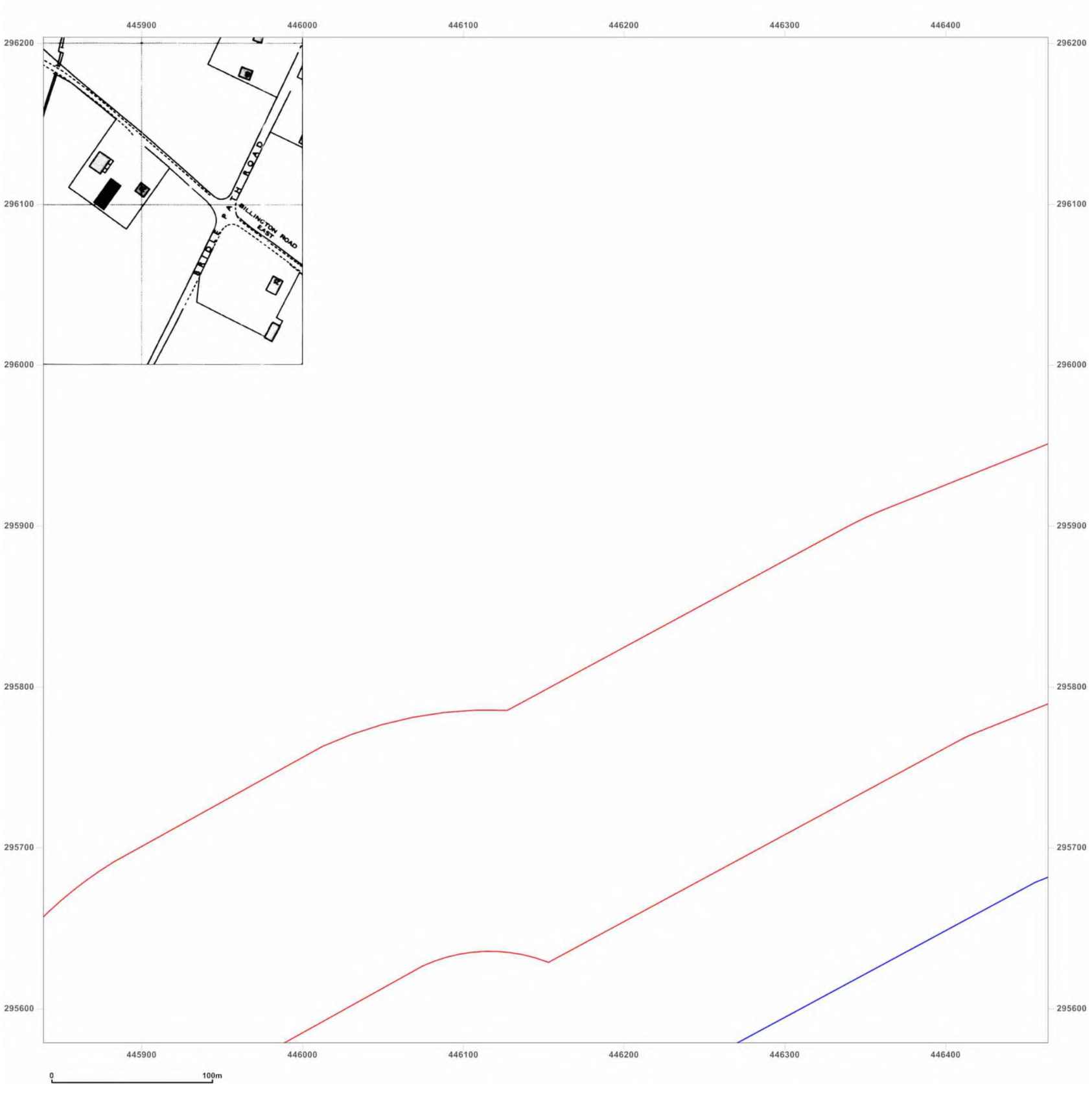

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

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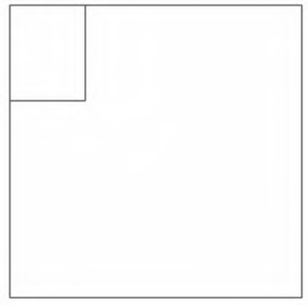
Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A



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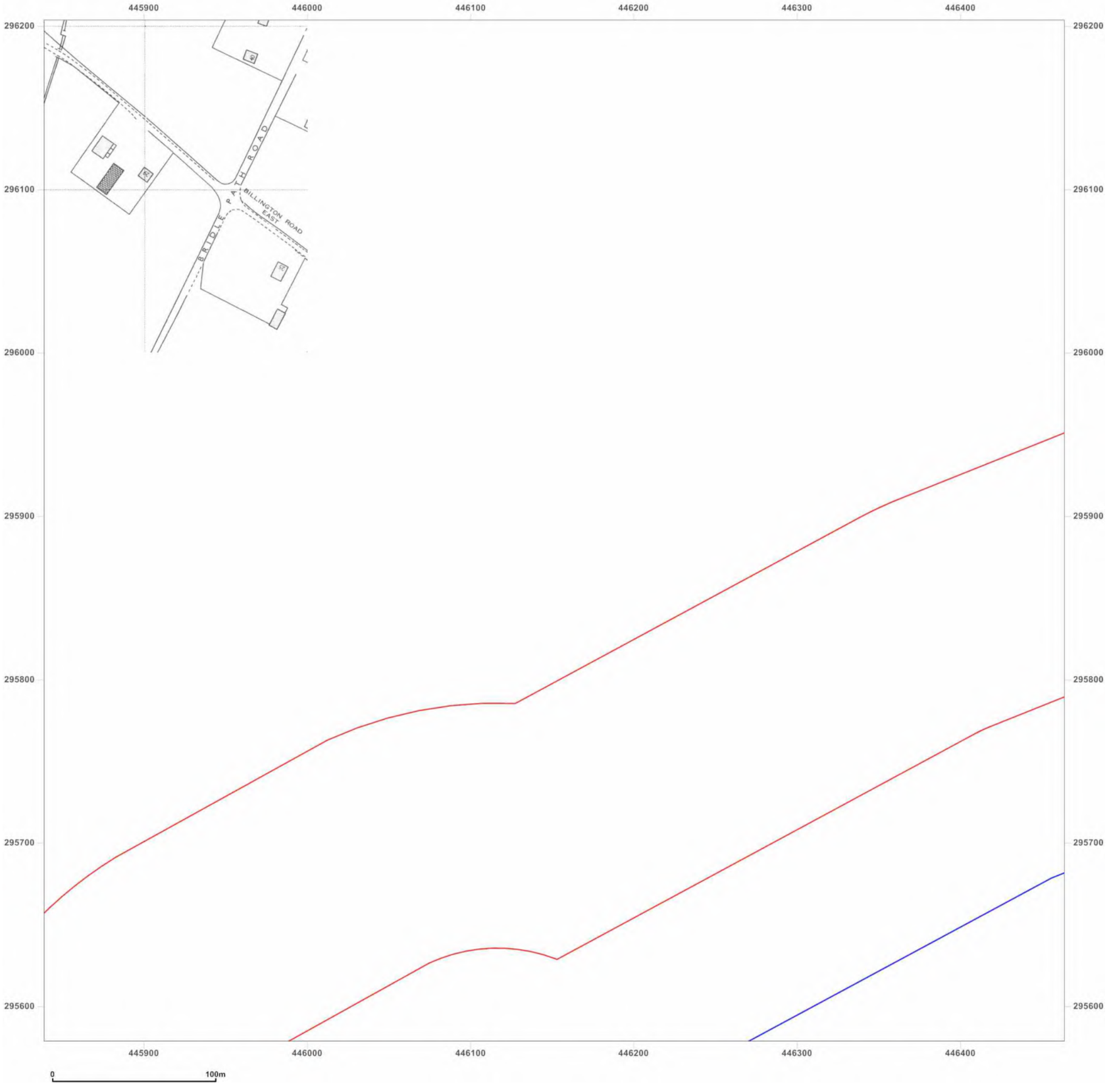


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

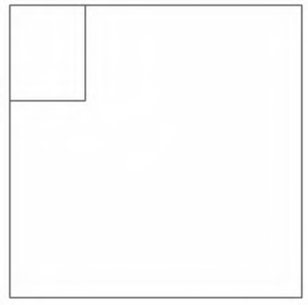
Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1972
Revised 1972
Edition N/A
Copyright N/A
Levelled 1964



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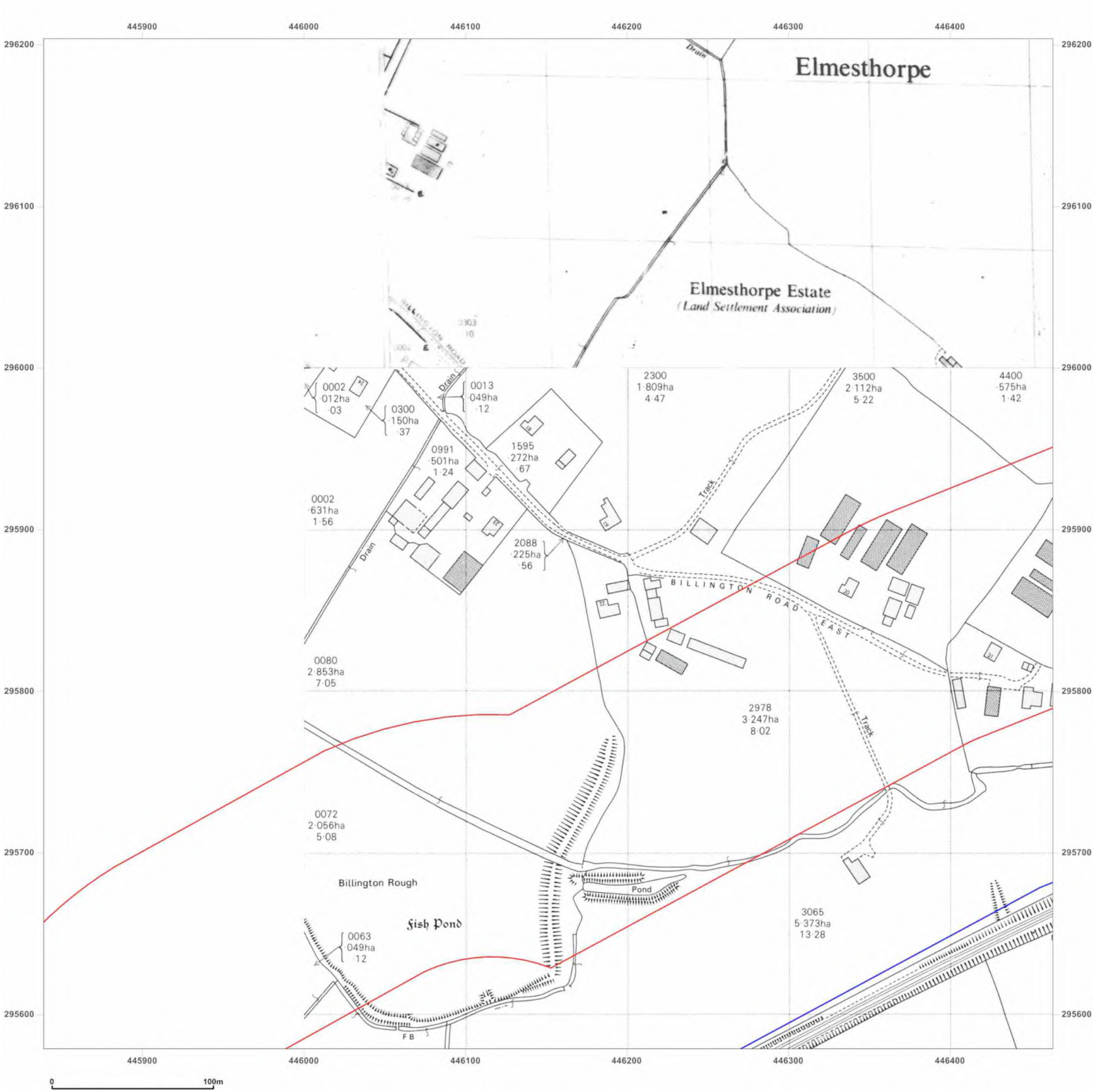

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

Map date: **1978-1983**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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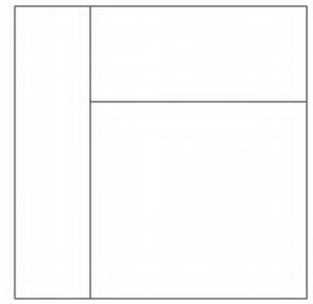
Surveyed 1978
Revised 1978
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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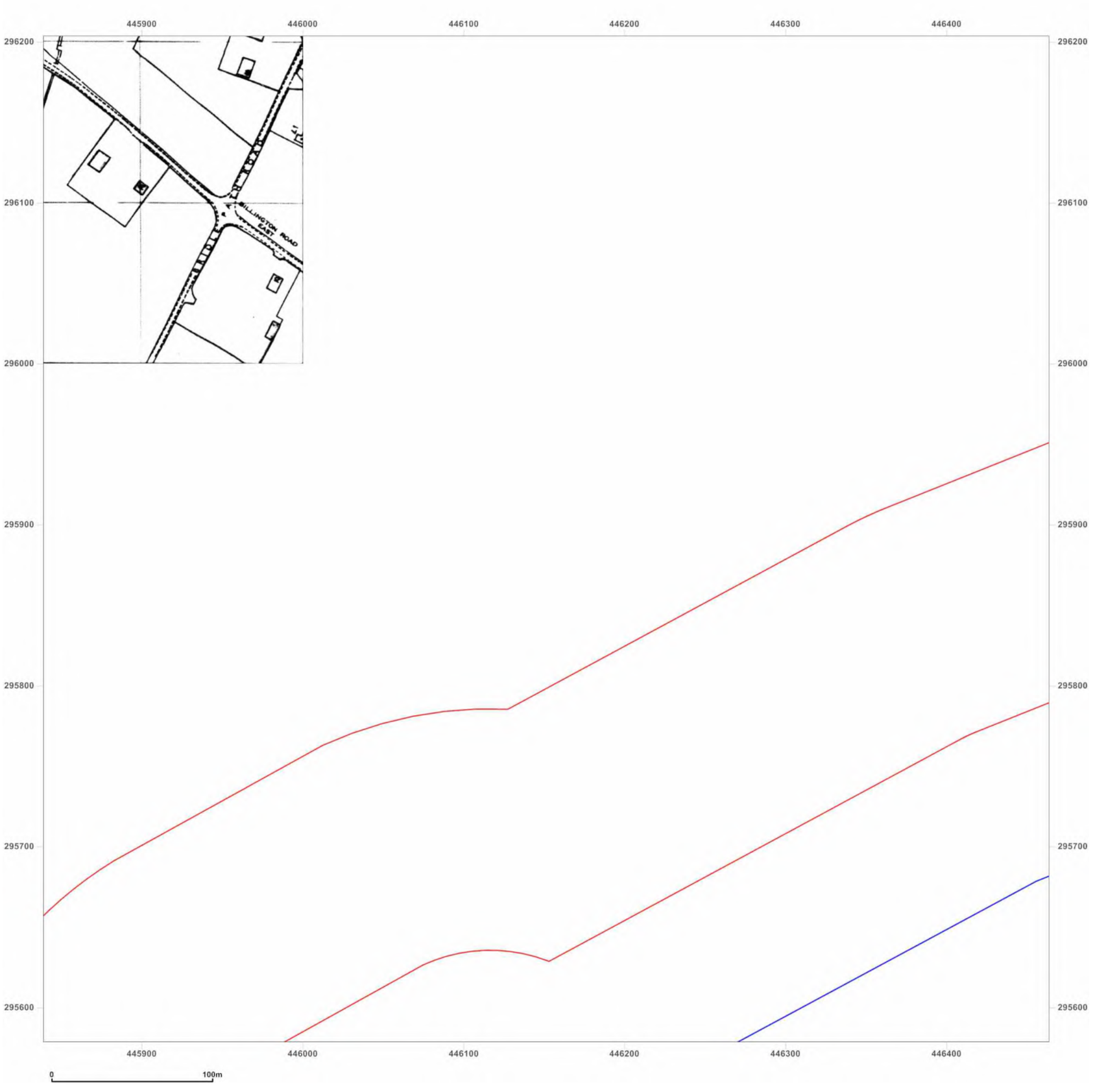

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

Map date: **1989**

Scale: 1:2,500

Printed at: 1:2,500

N
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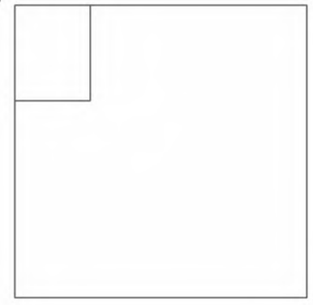
Surveyed 1964
Revised 1989
Edition N/A
Copyright 1989
Levelled 1964



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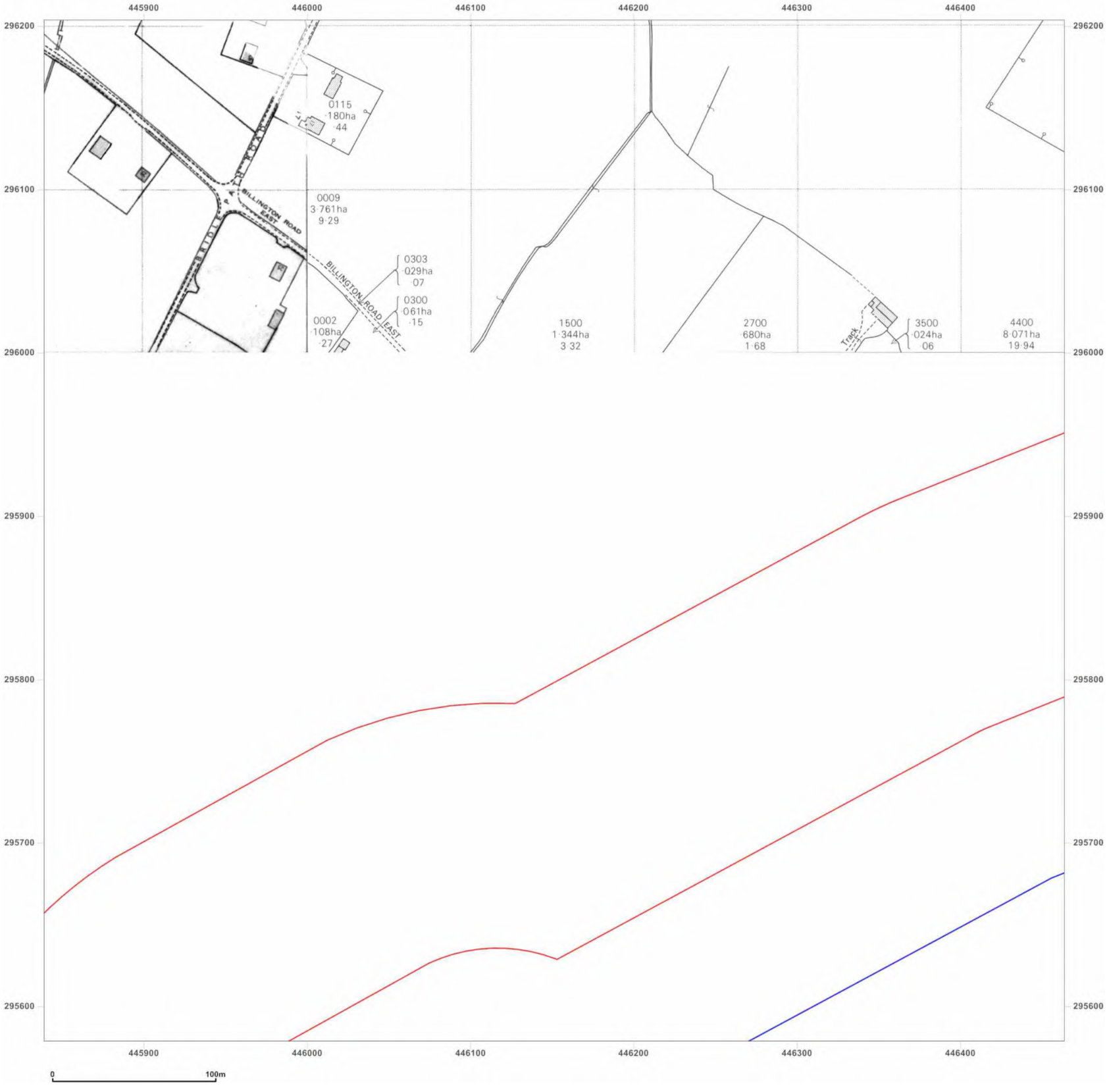

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

Map date: **1984-1989**

Scale: 1:2,500

Printed at: 1:2,500

N
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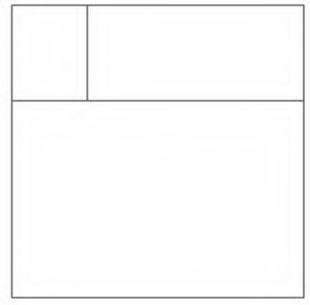
Surveyed 1964
Revised 1989
Edition N/A
Copyright 1989
Levelled 1964

Surveyed 1984
Revised 1984
Edition N/A
Copyright 1985
Levelled 1964



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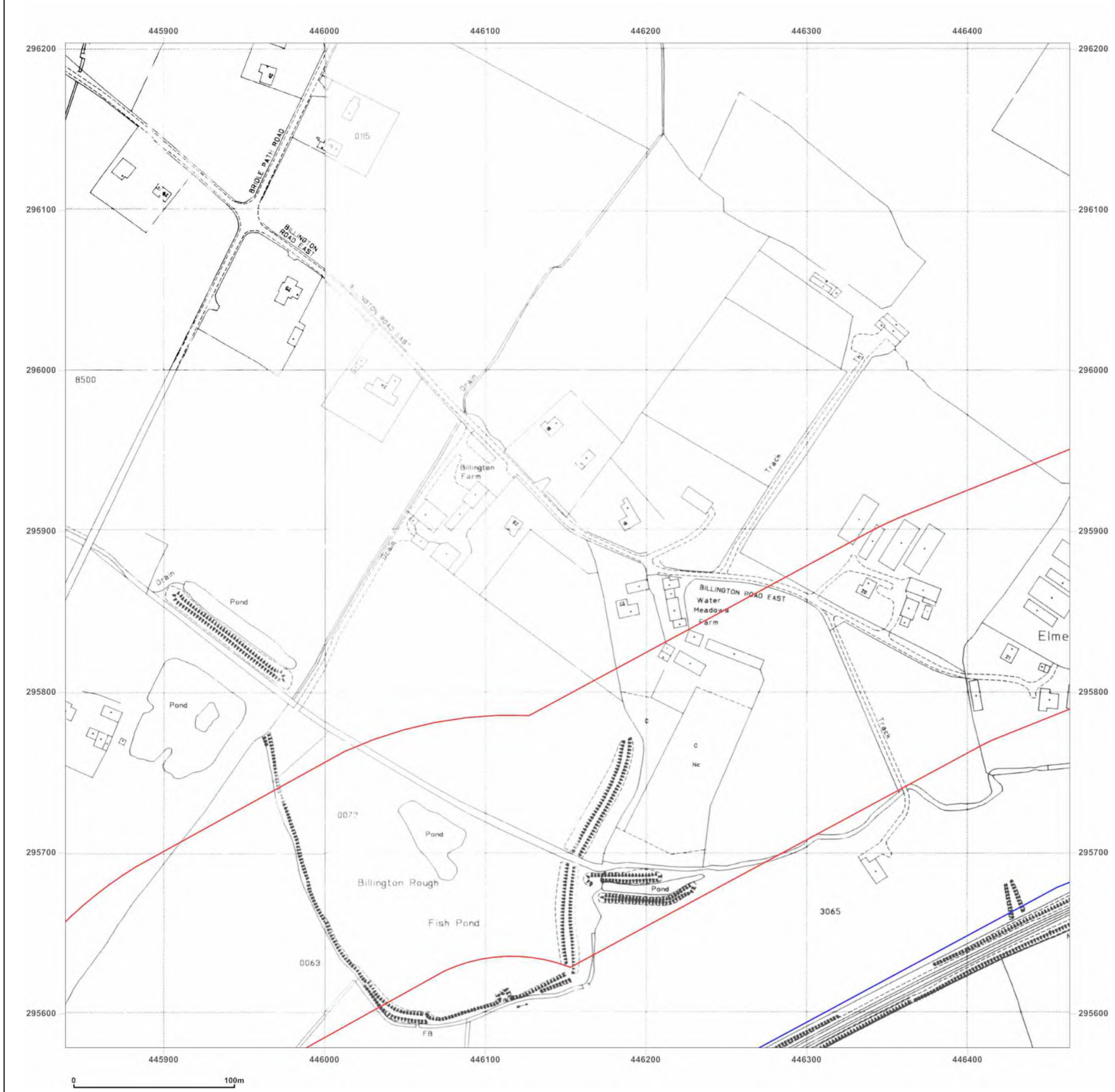

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_3_6
Grid Ref: 446151, 295891

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

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

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

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

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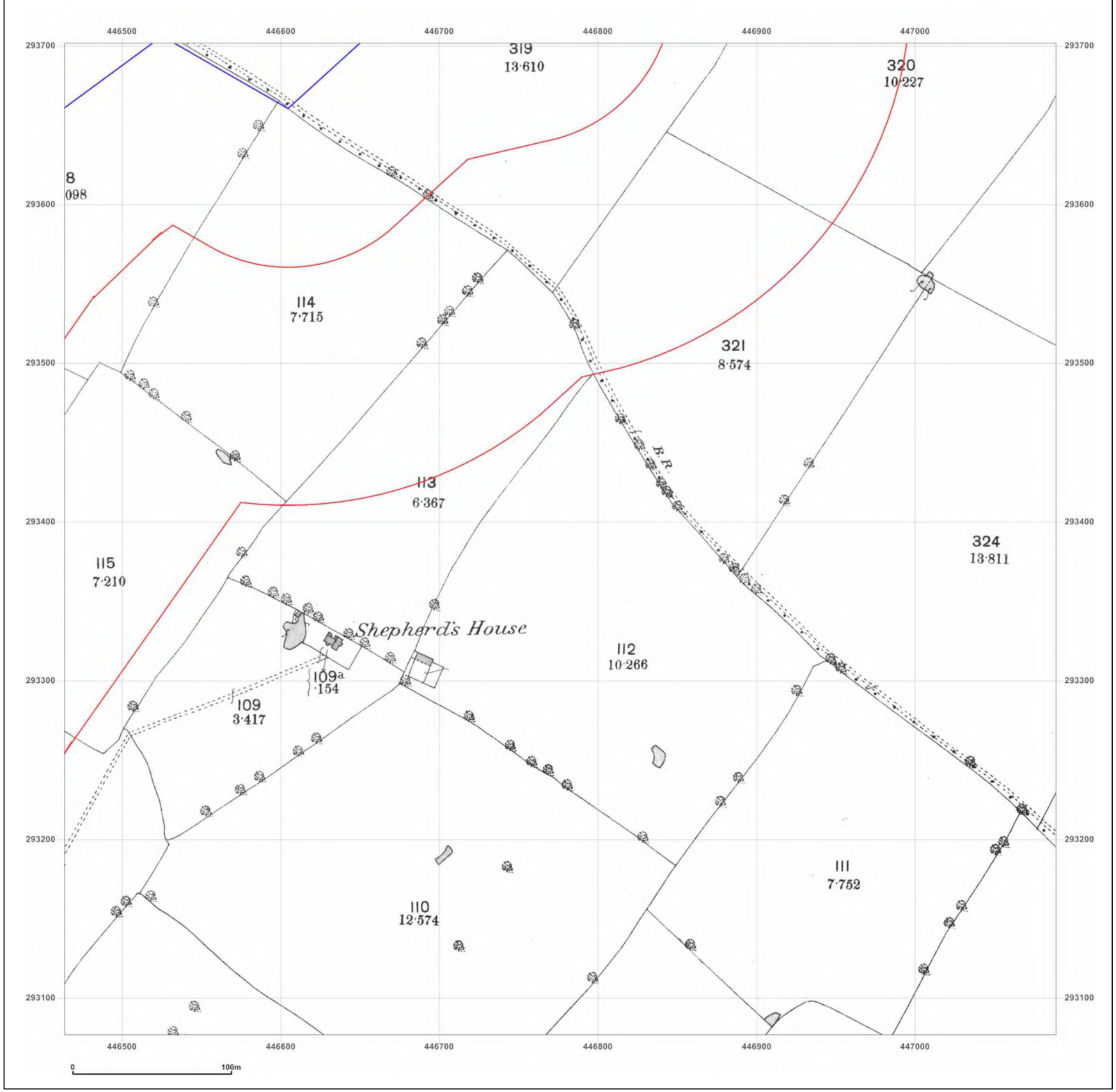

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_2
Grid Ref: 446776, 293389

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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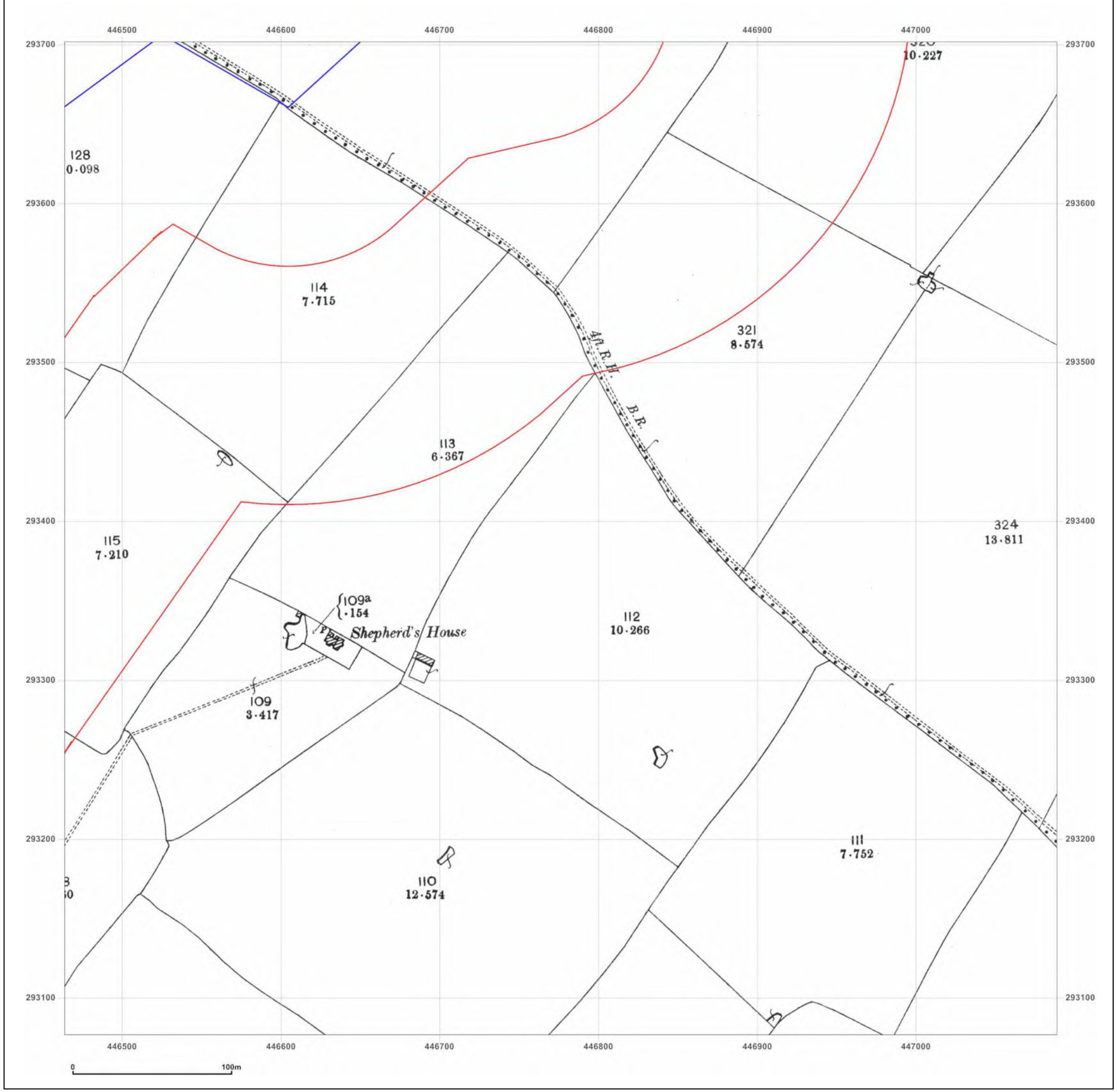


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_2
Grid Ref: 446776, 293389

Map Name: County Series

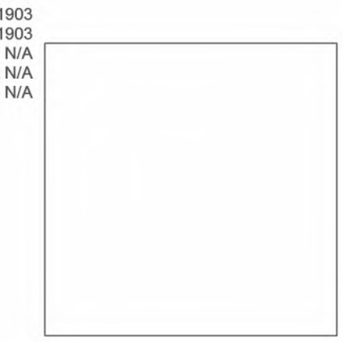
Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



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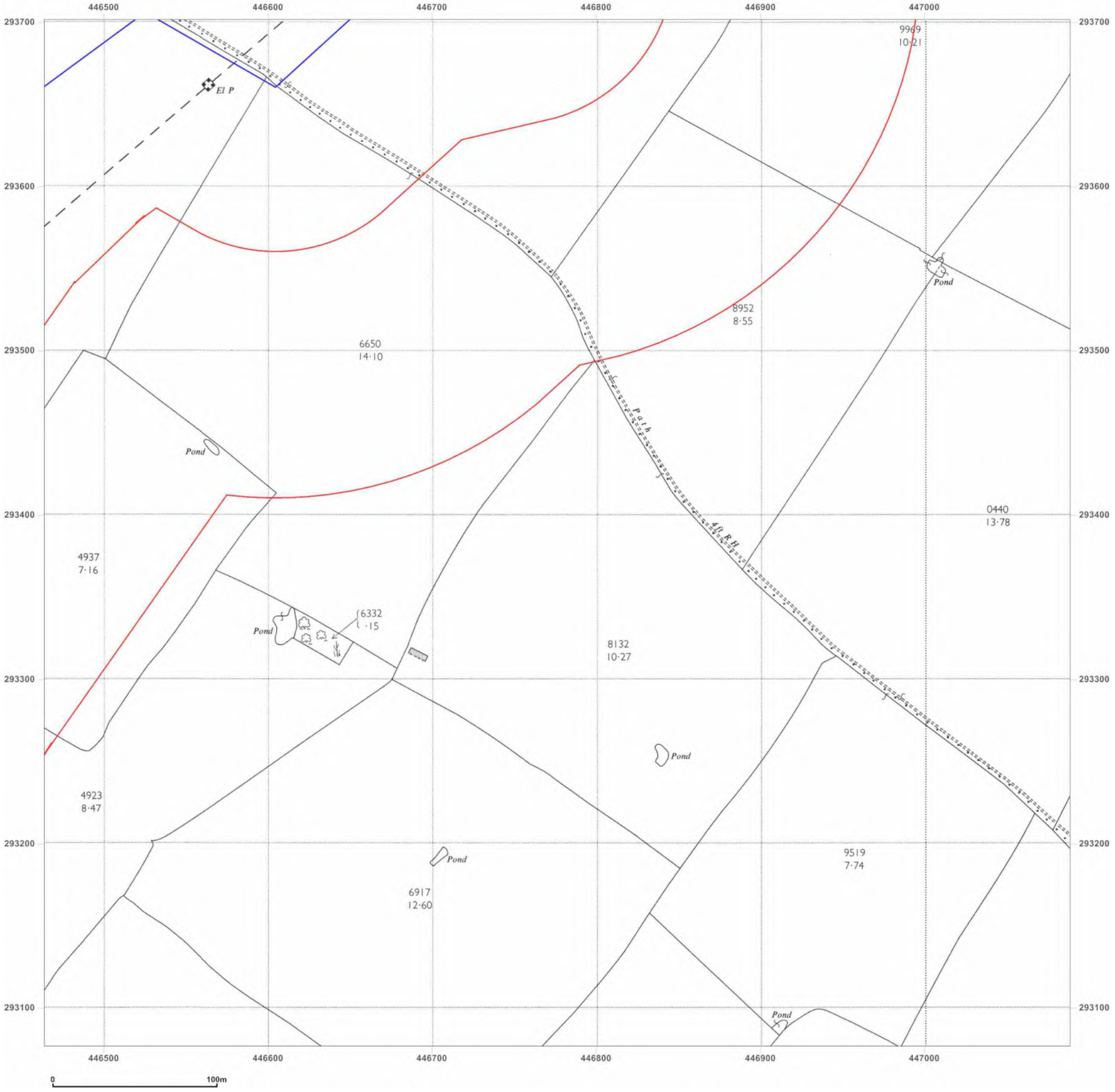

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_2
Grid Ref: 446776, 293389

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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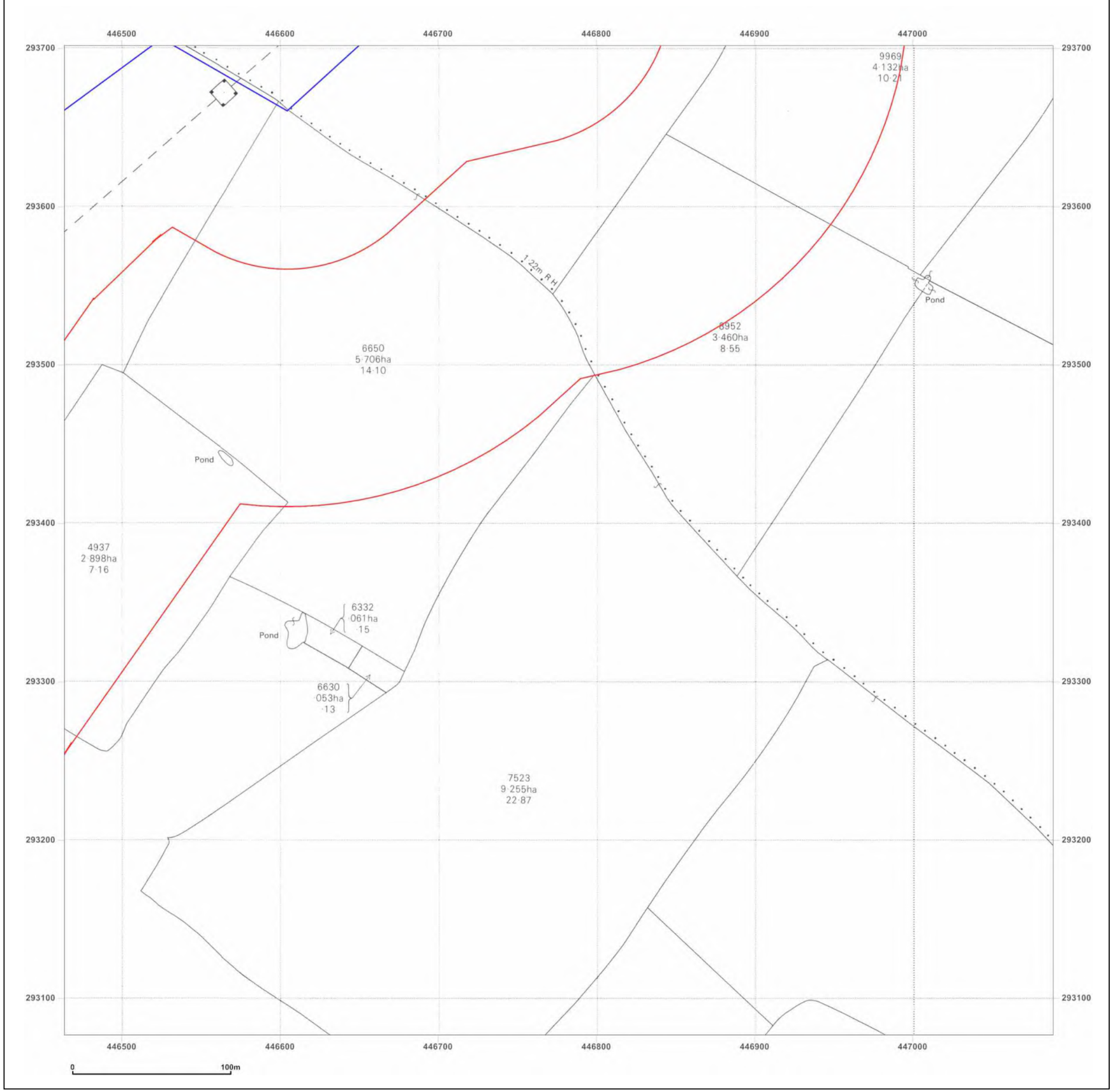

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_2
Grid Ref: 446776, 293389

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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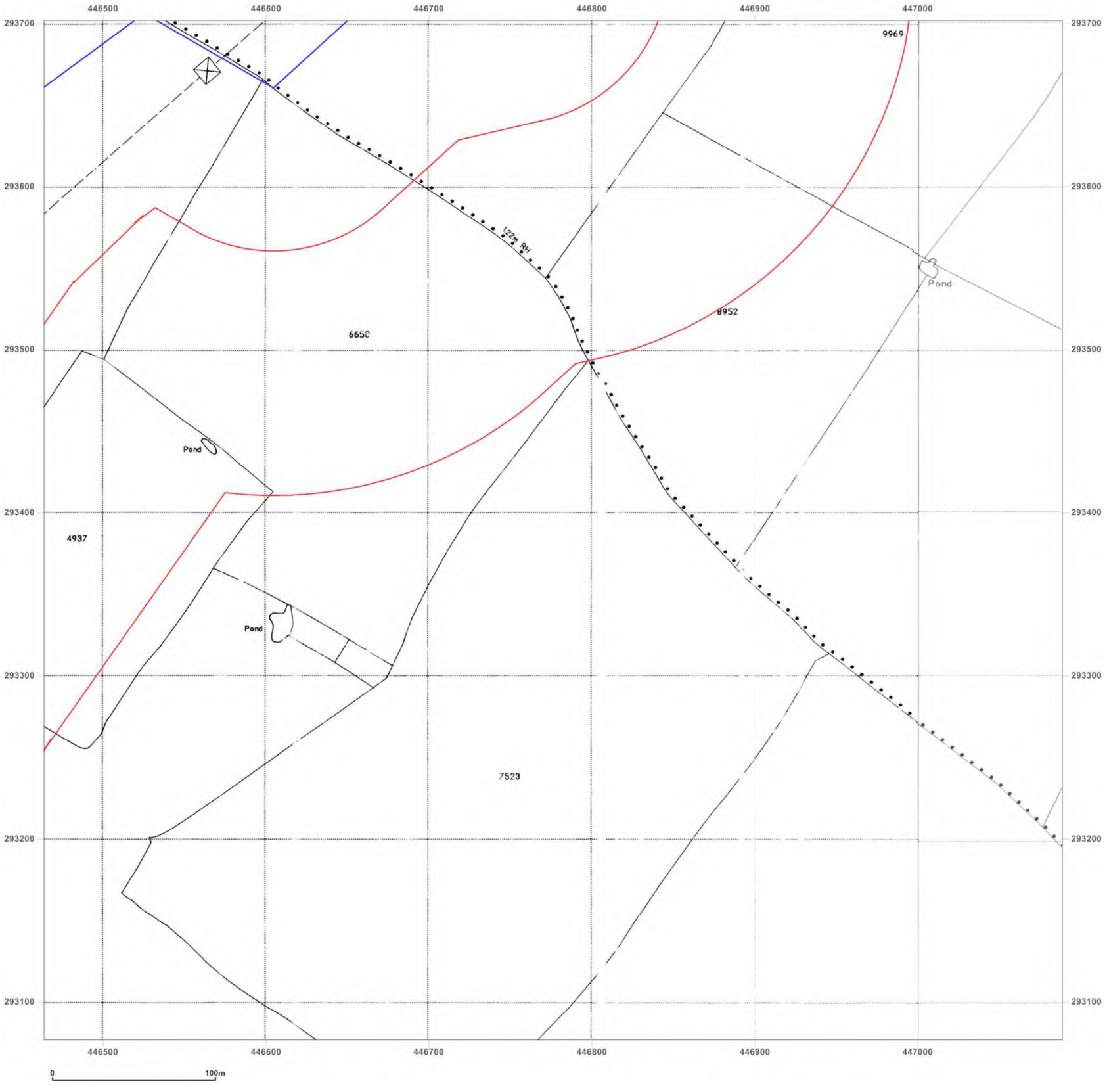

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_2
Grid Ref: 446776, 293389

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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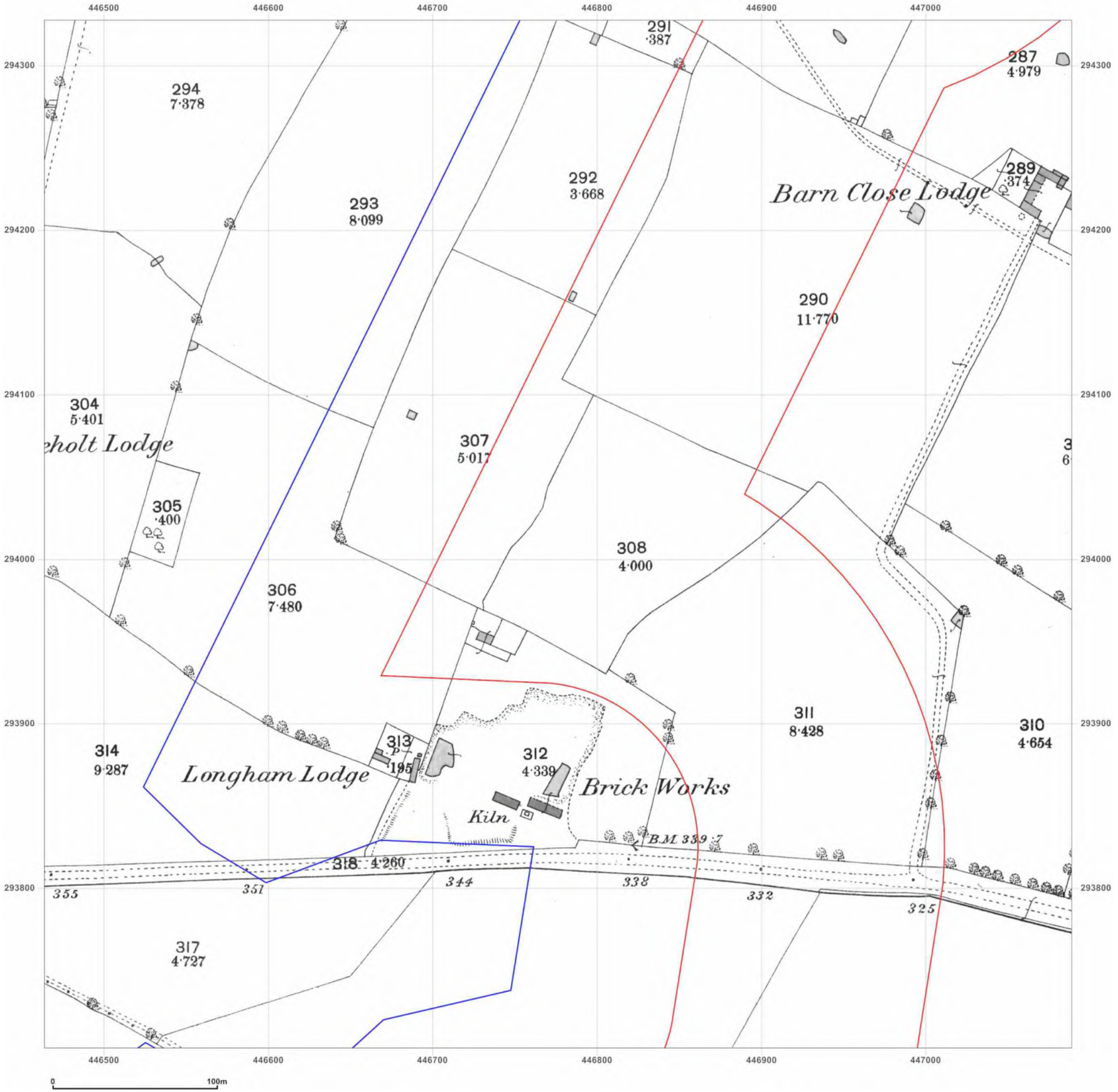

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_3
Grid Ref: 446776, 294015

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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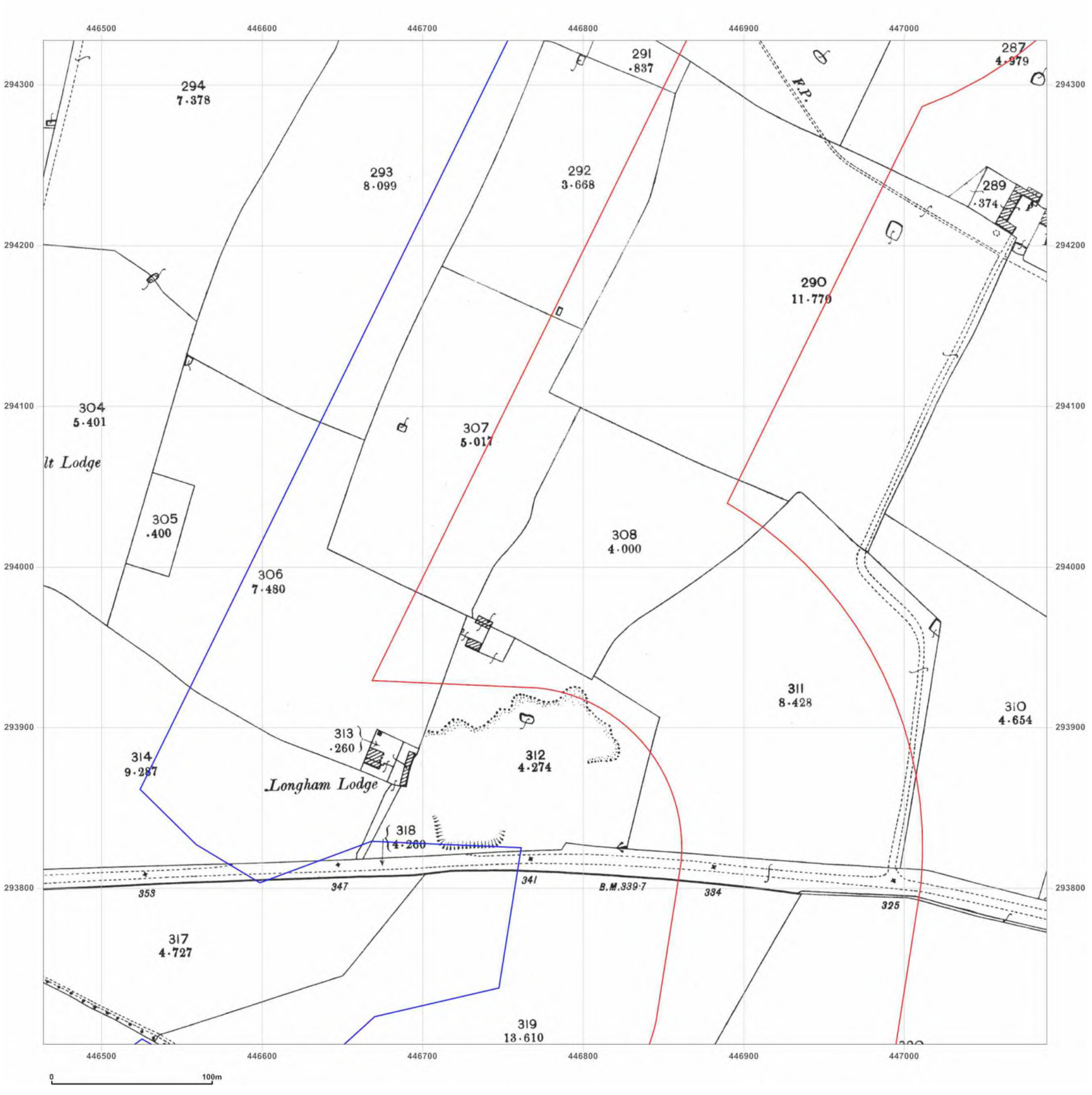

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_3
Grid Ref: 446776, 294015

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_3
Grid Ref: 446776, 294015

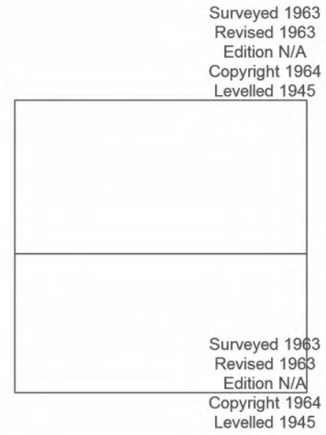
Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



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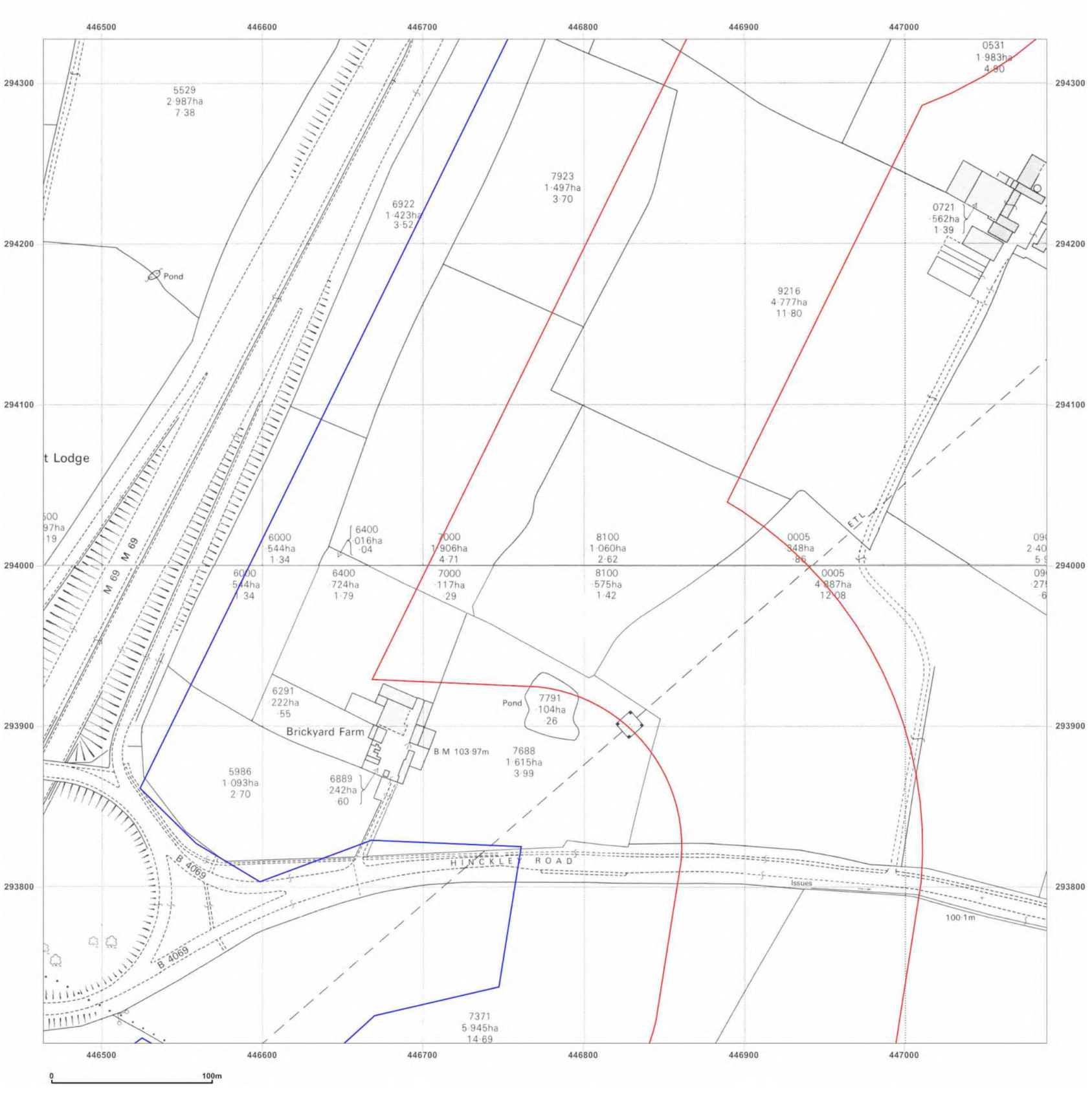
W: www.groundsure.com

Production date: 30 January 2018

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_3
Grid Ref: 446776, 294015

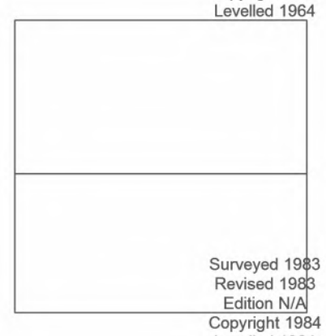
Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S



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Map legend available at:
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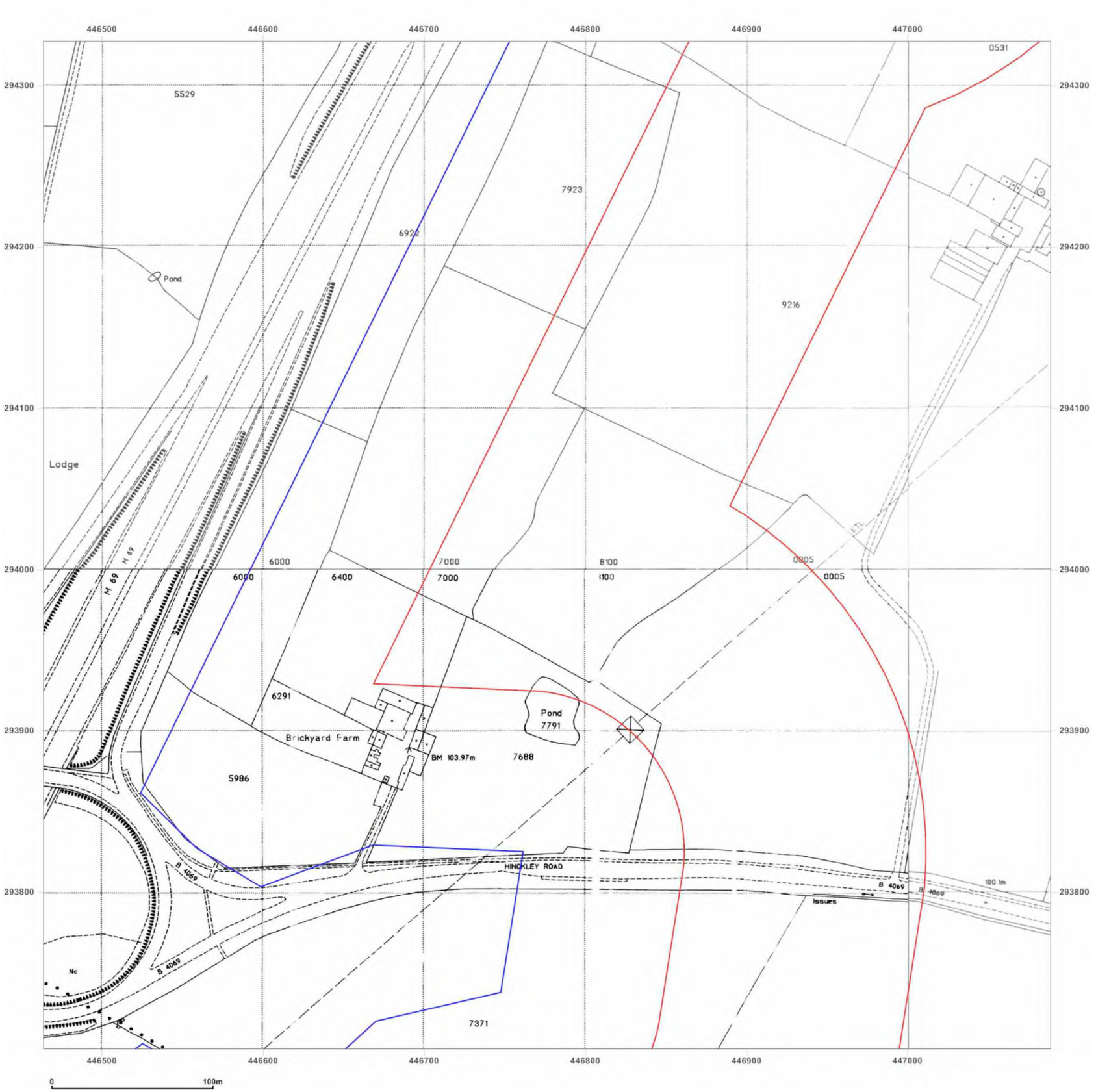

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_3
Grid Ref: 446776, 294015

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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

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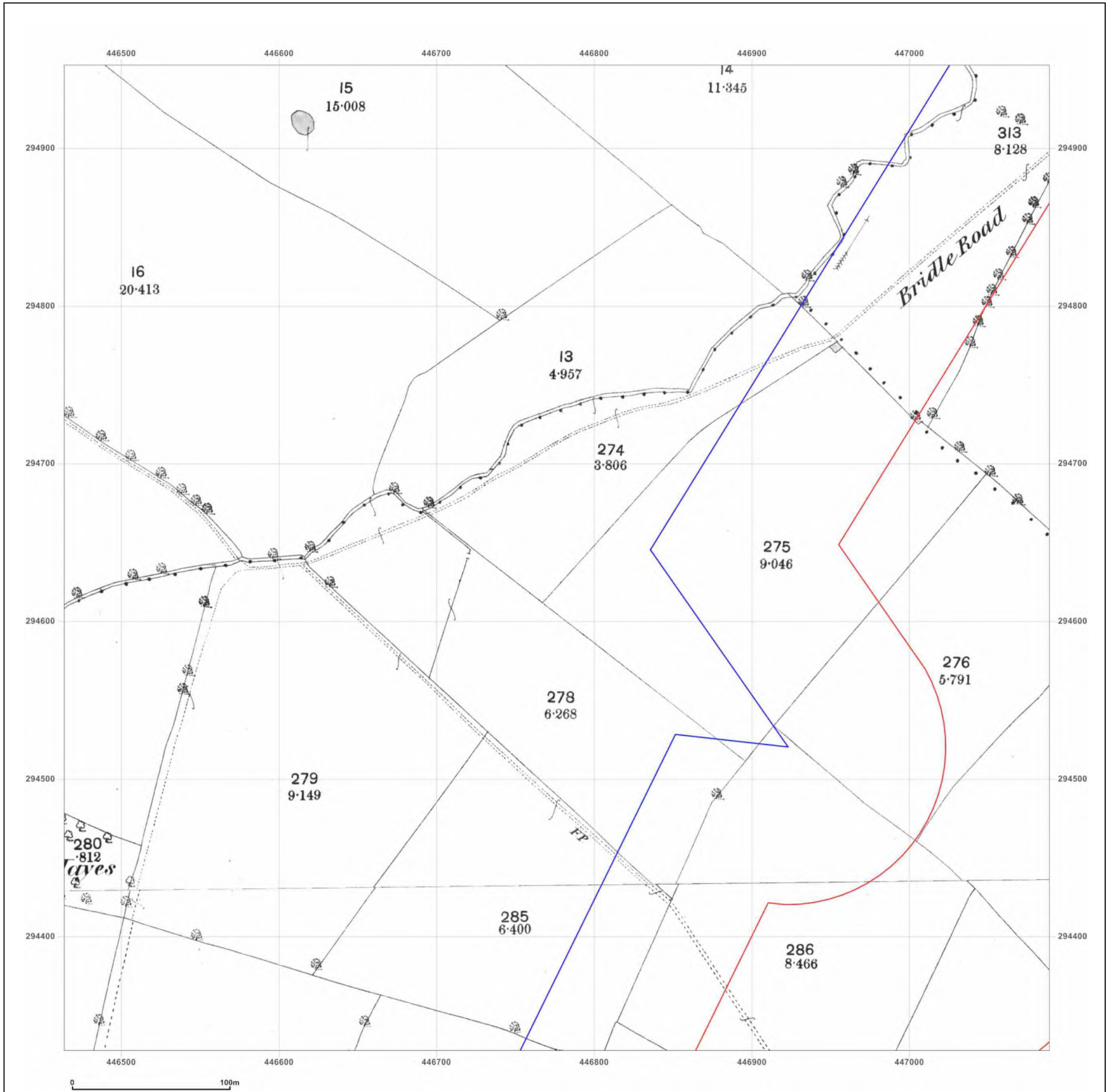

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_4
Grid Ref: 446776, 294640

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
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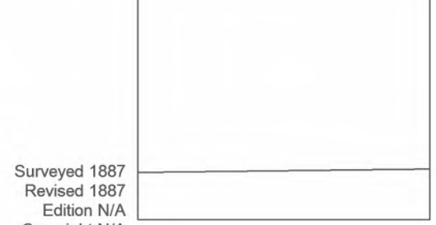
Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1887
Revised 1887
Edition N/A
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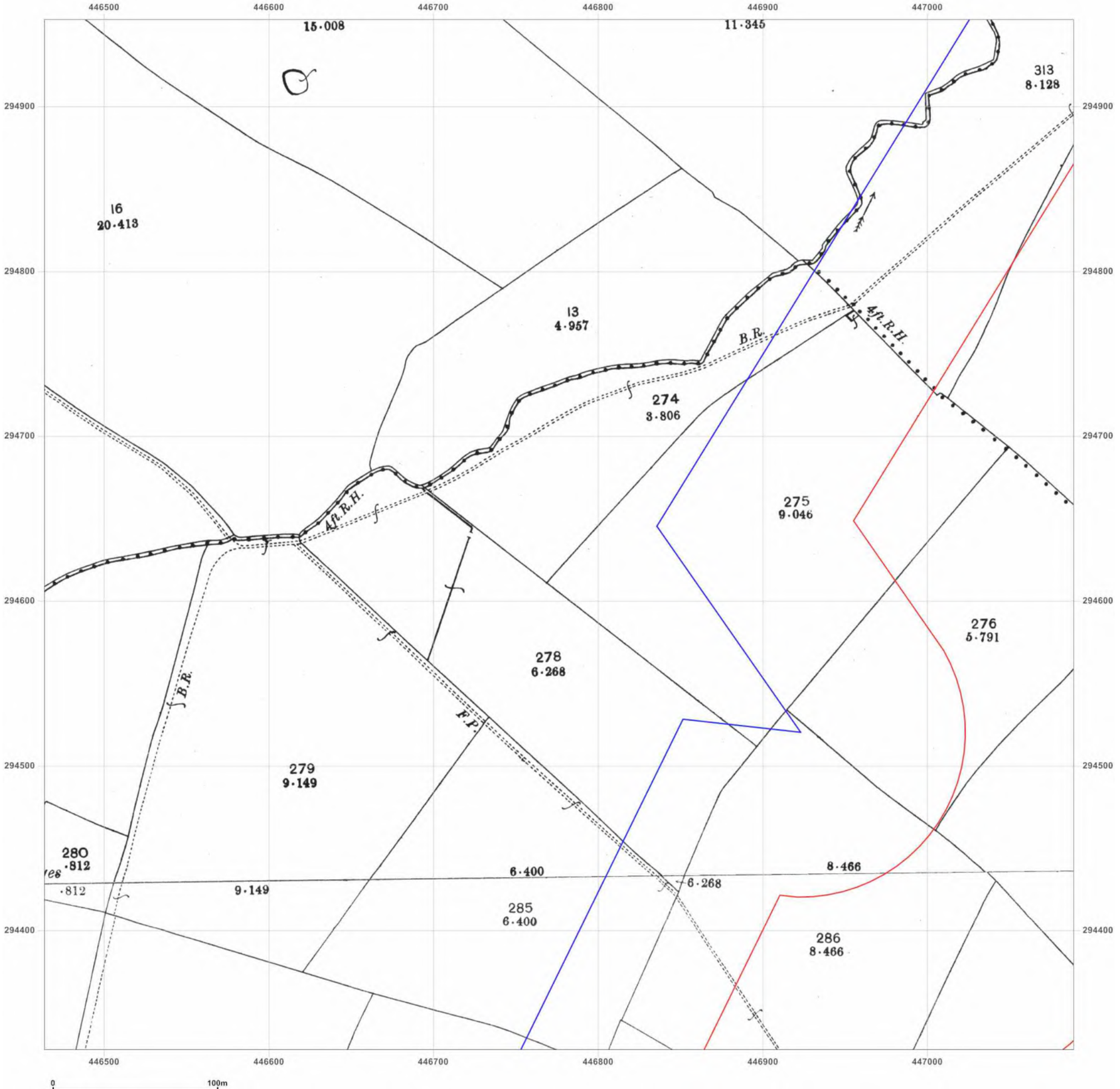

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_4
Grid Ref: 446776, 294640

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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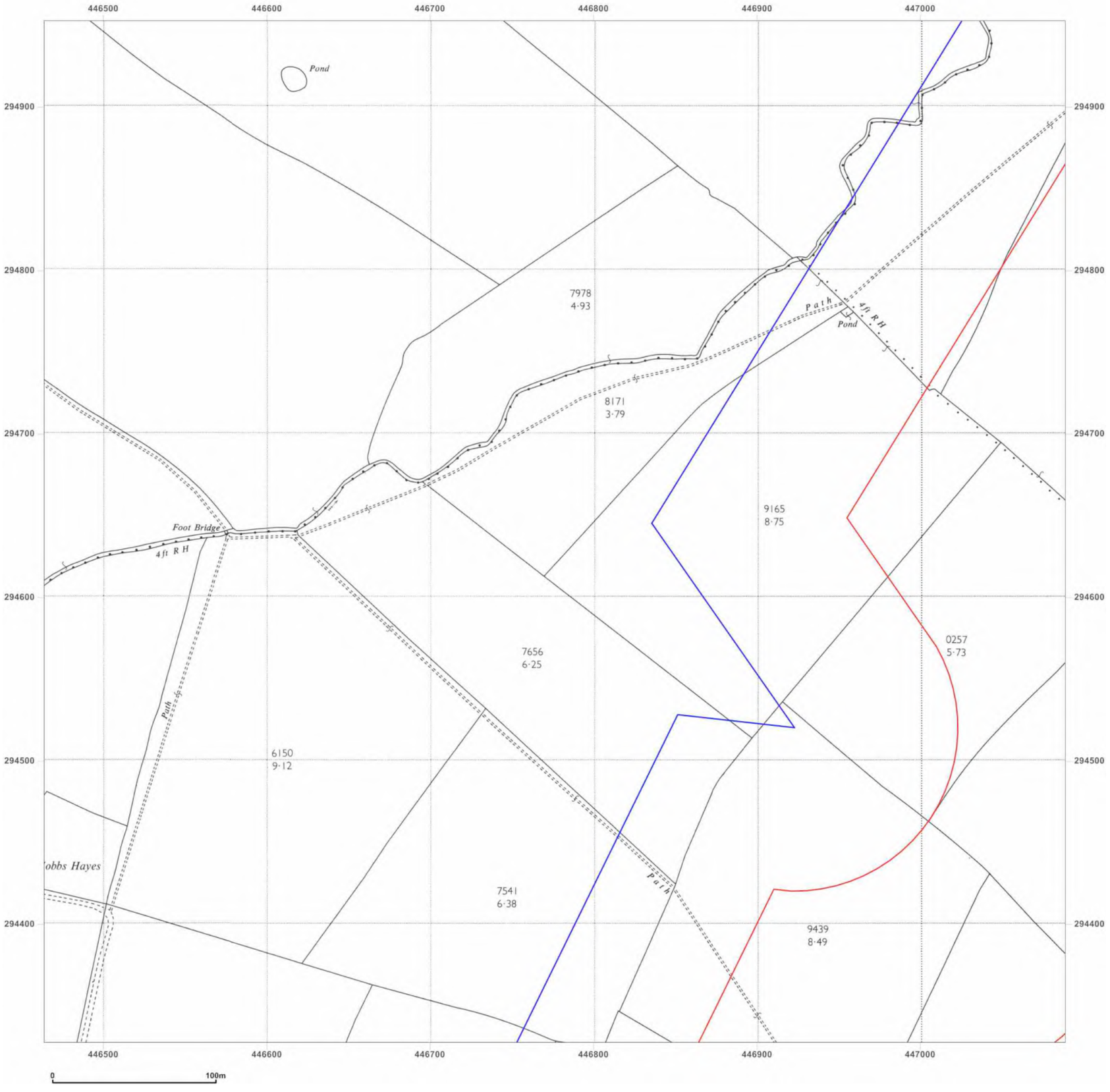

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_4
Grid Ref: 446776, 294640

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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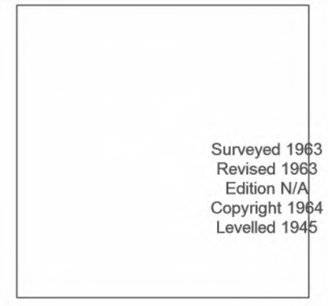

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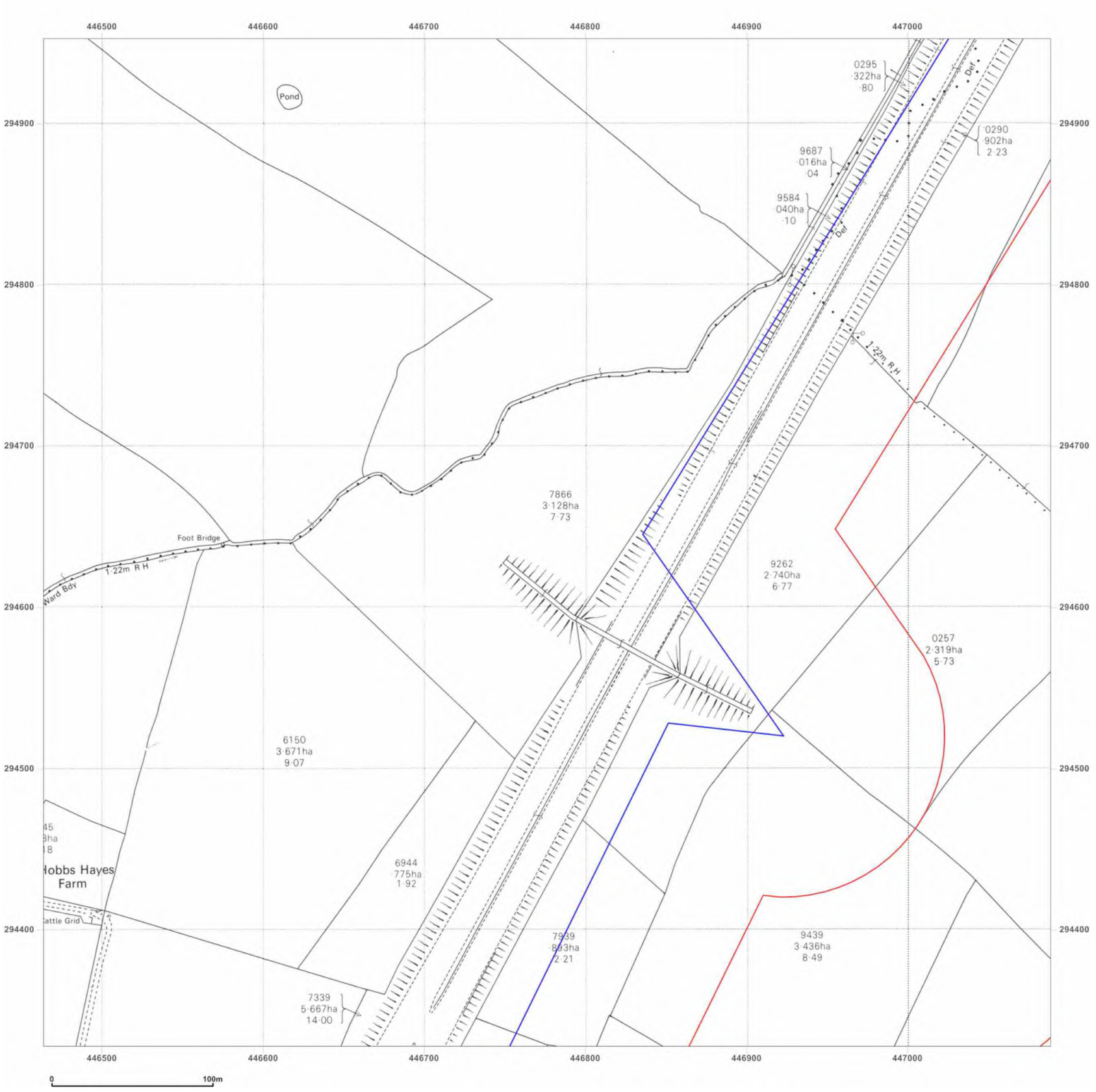

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_4
Grid Ref: 446776, 294640

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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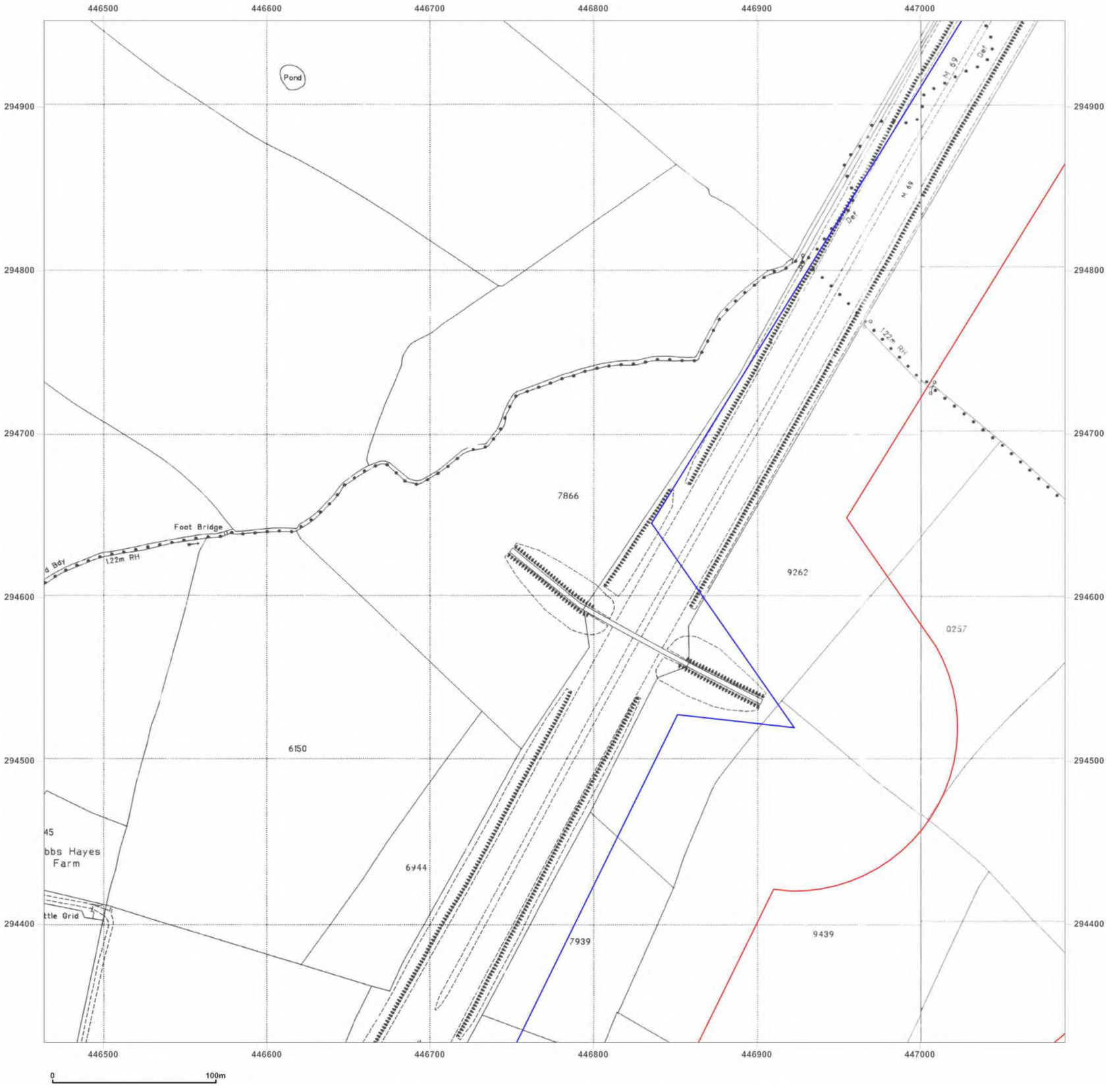

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_4
Grid Ref: 446776, 294640

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
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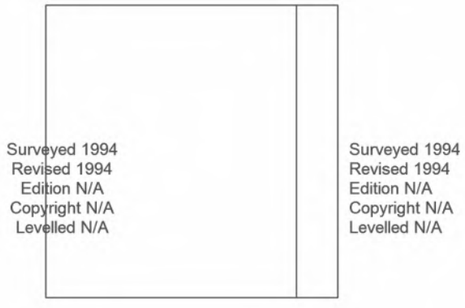

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Production date: 30 January 2018

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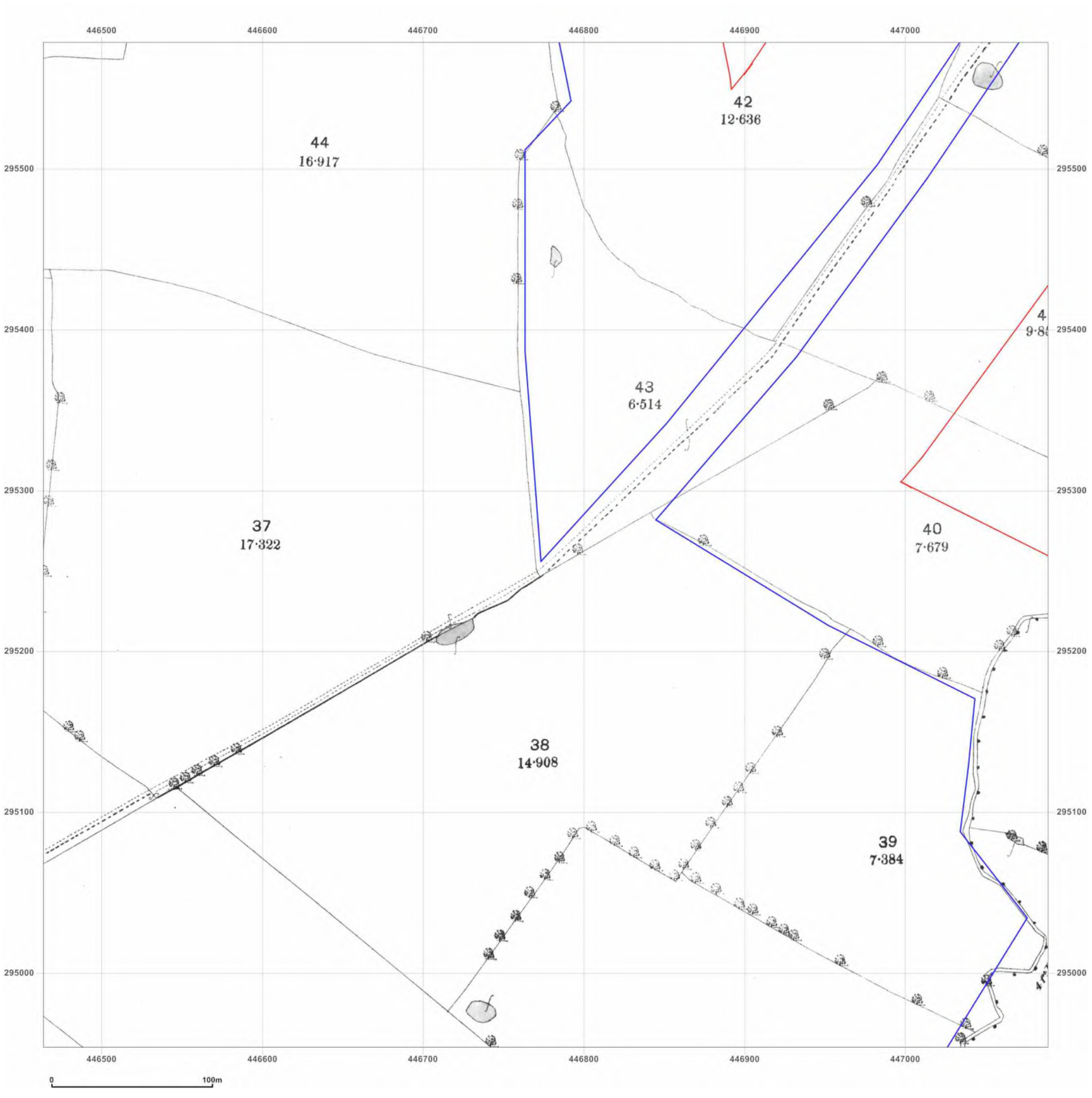

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_5
Grid Ref: 446776, 295266

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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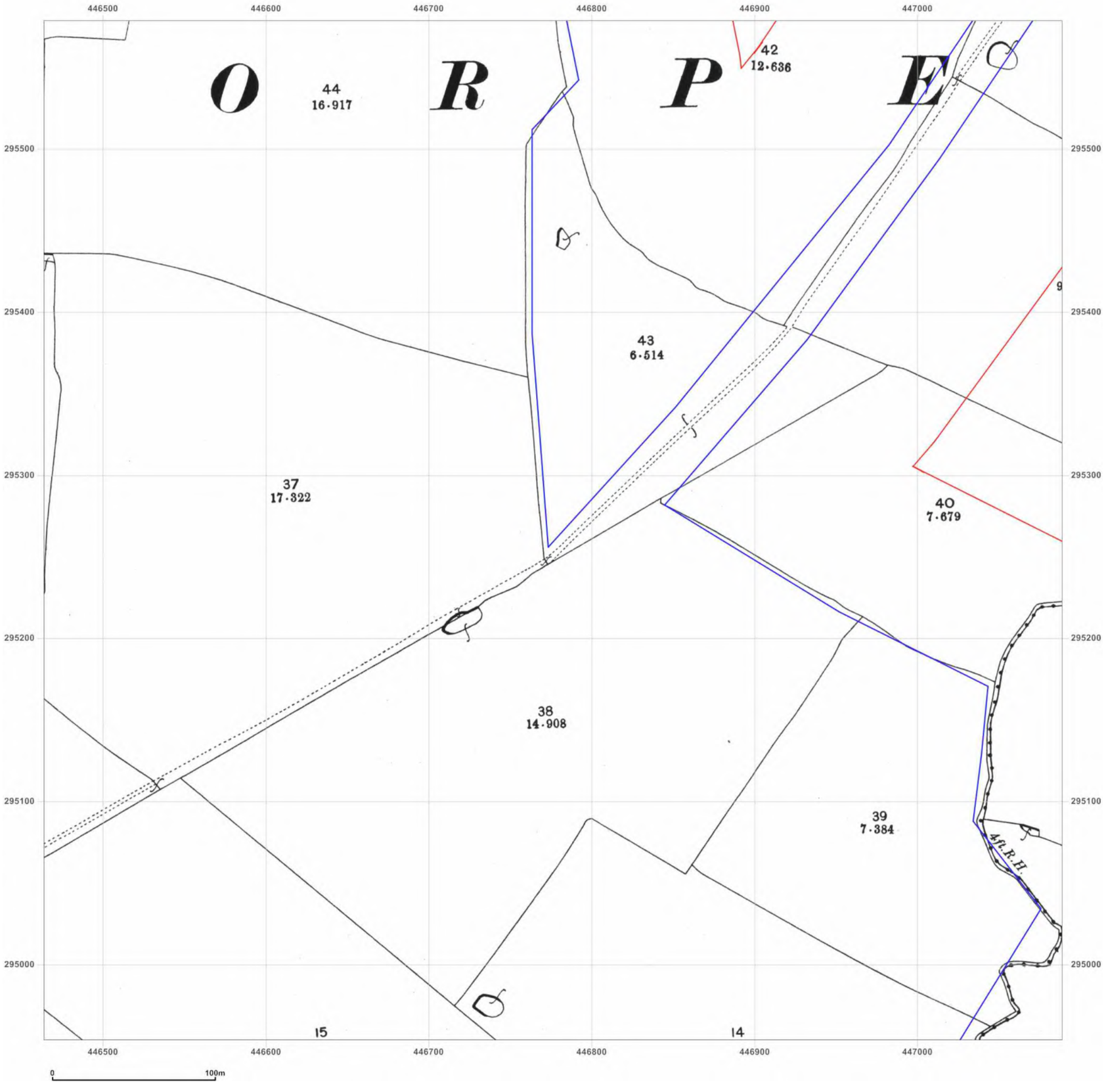

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_5
Grid Ref: 446776, 295266

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
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S

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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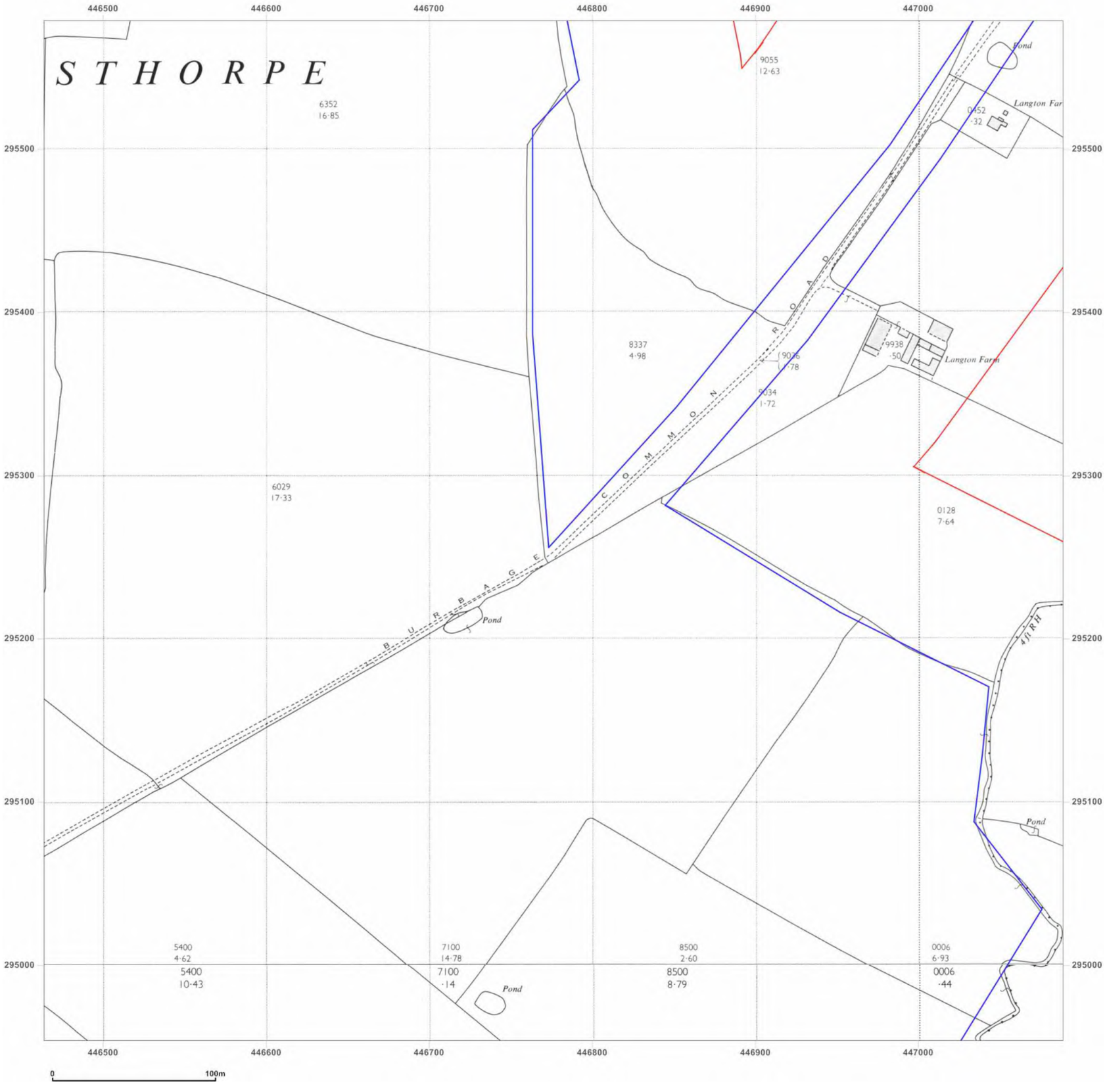

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_5
Grid Ref: 446776, 295266

Map Name: National Grid

Map date: **1962-1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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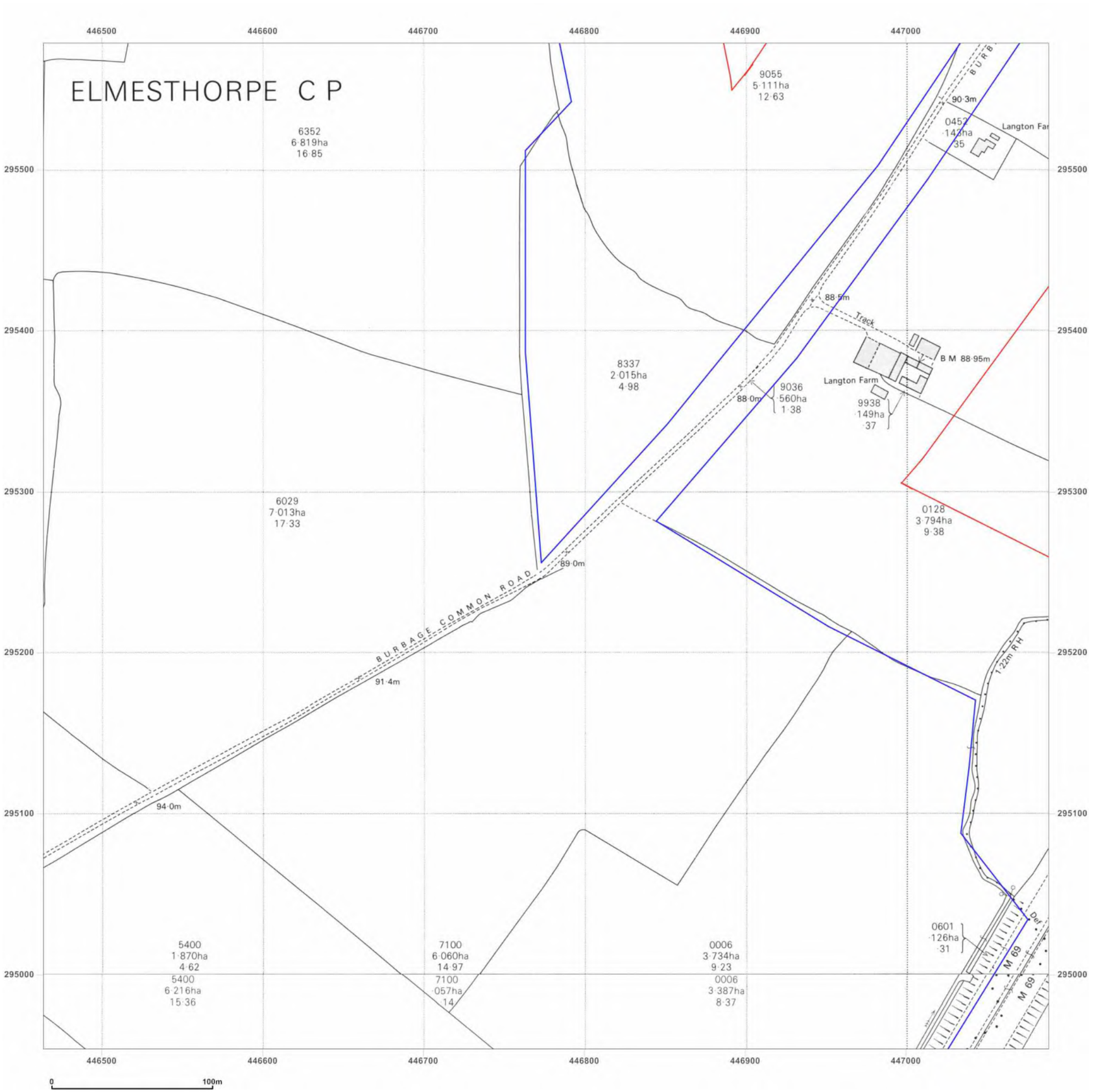

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_5
Grid Ref: 446776, 295266

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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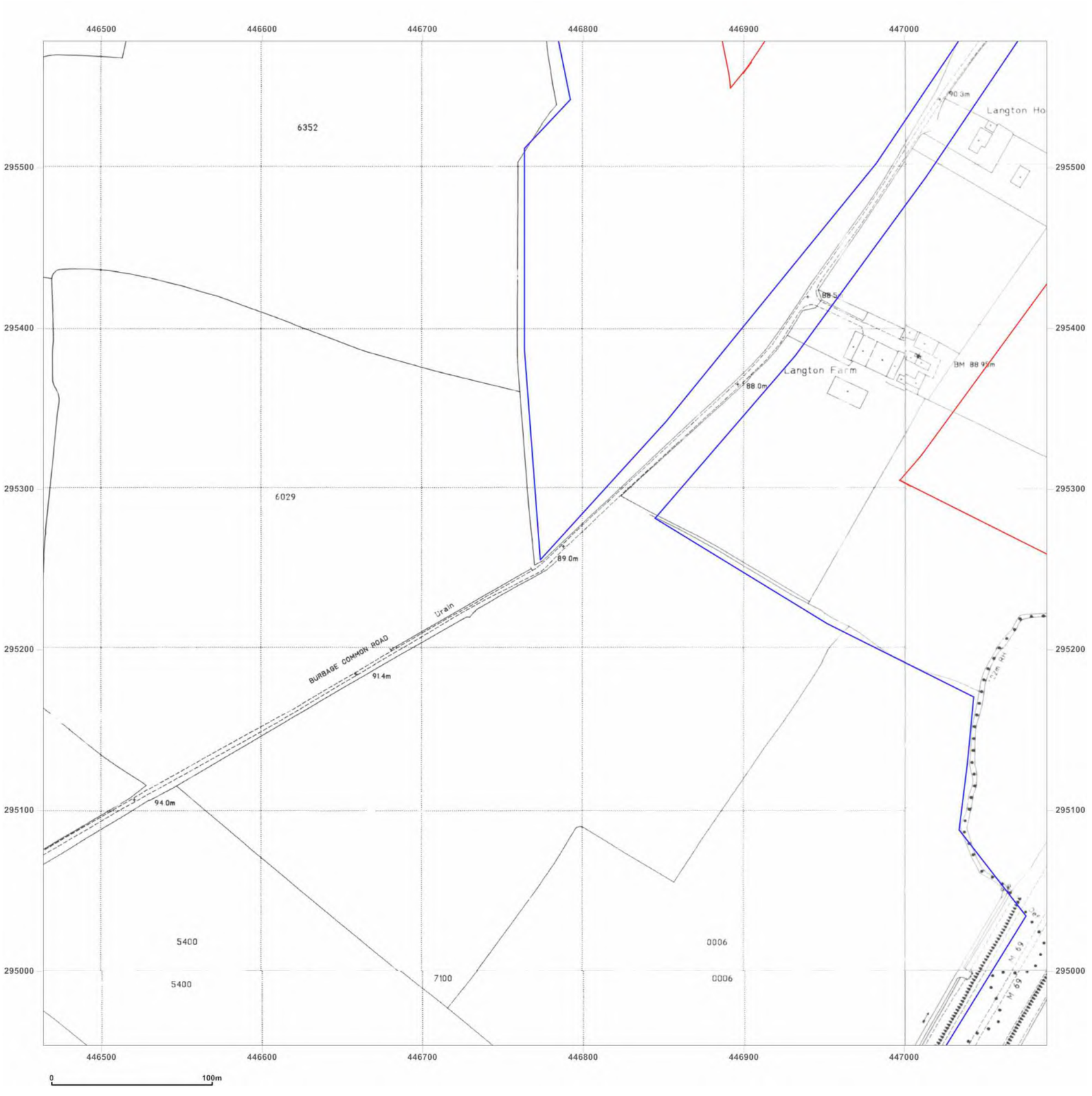

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_5
Grid Ref: 446776, 295266

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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

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

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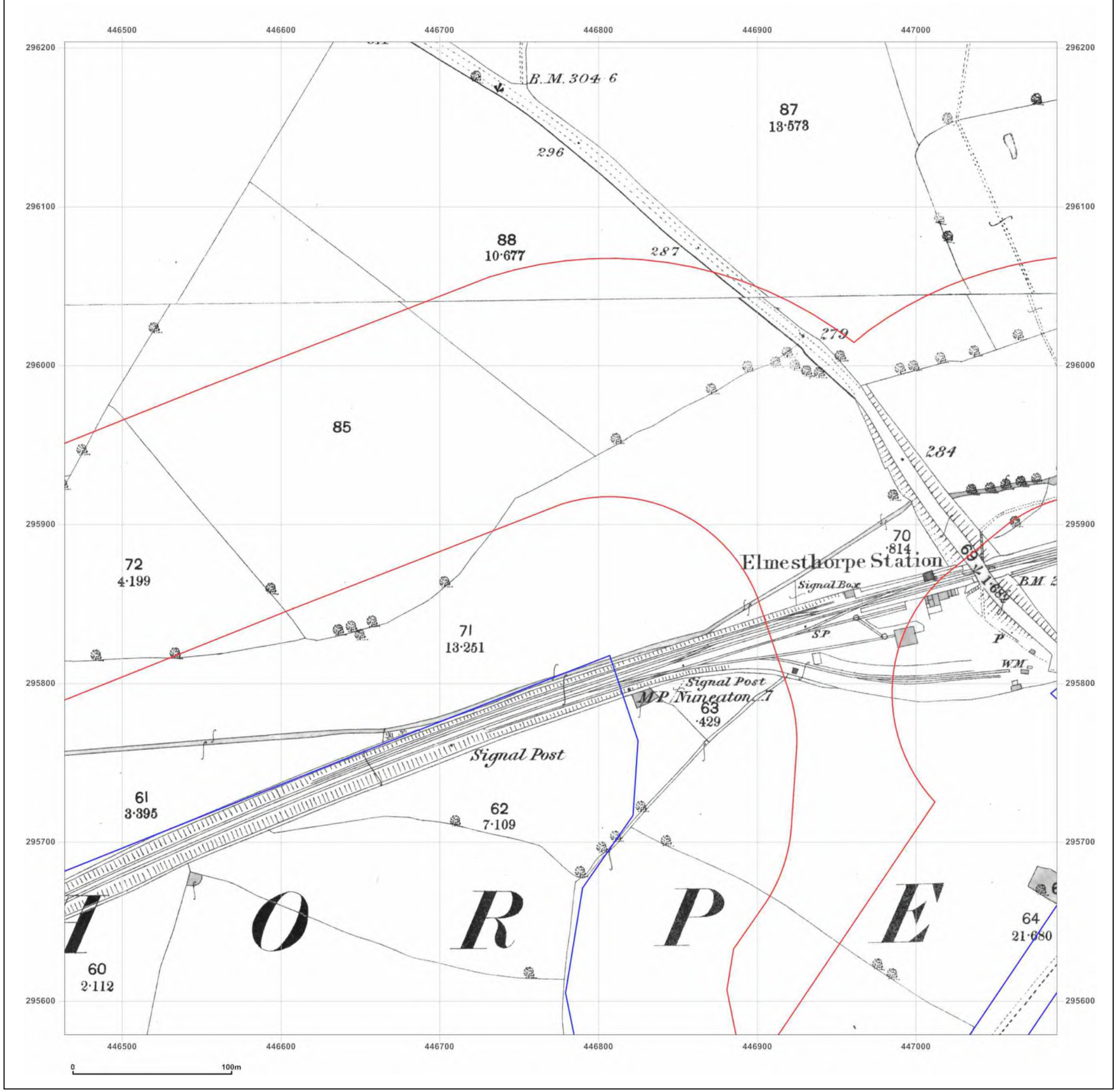

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: County Series

Map date: **1887-1888**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

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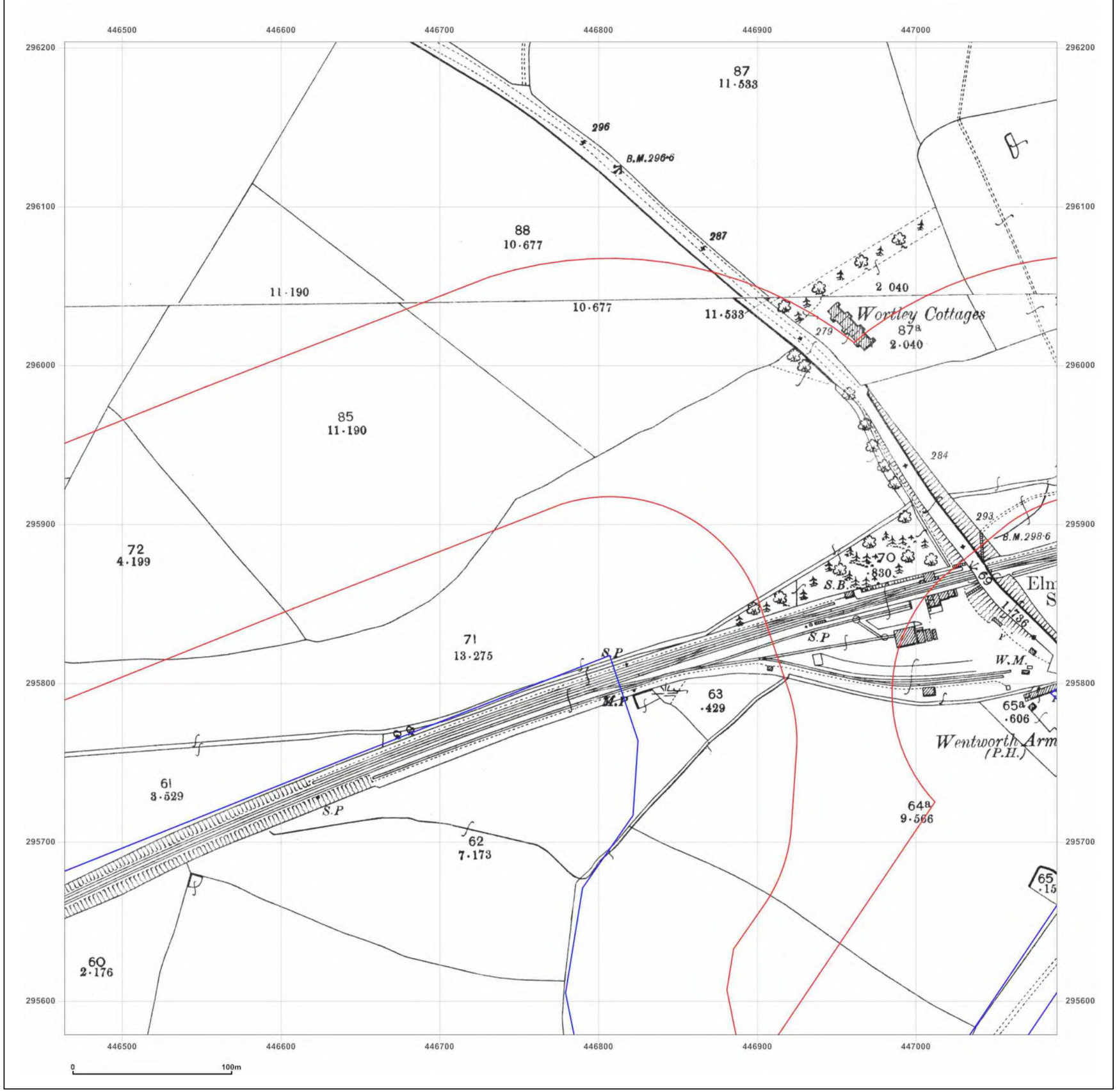

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
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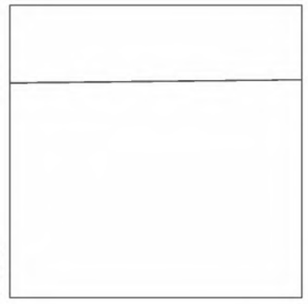
Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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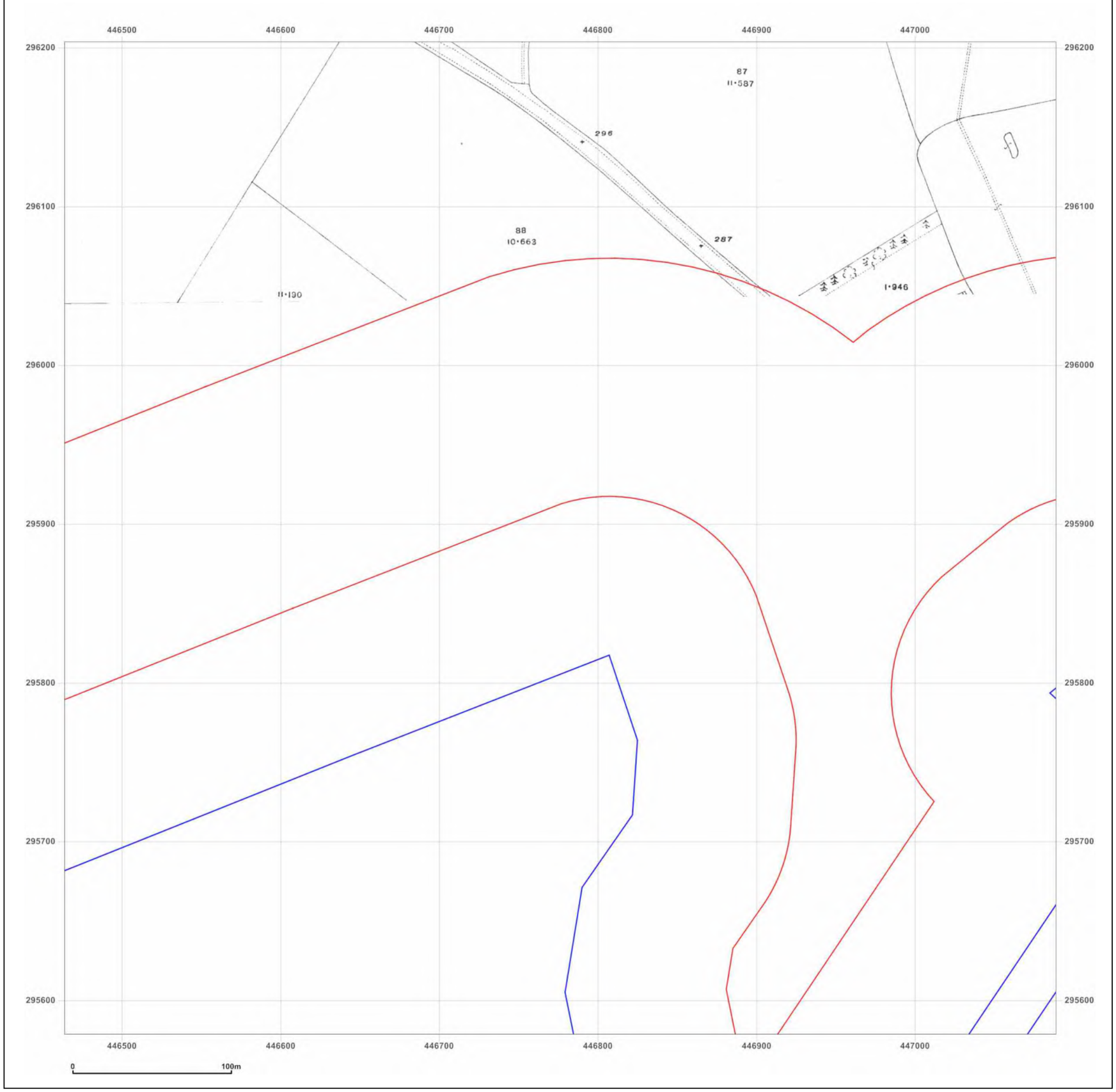

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: County Series

Map date: **1916**

Scale: 1:2,500

Printed at: 1:2,500

N
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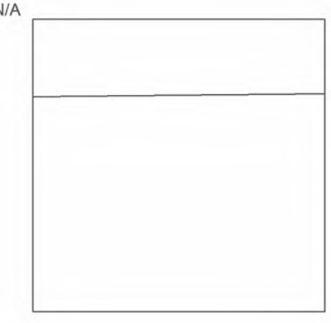
Surveyed 1916
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A



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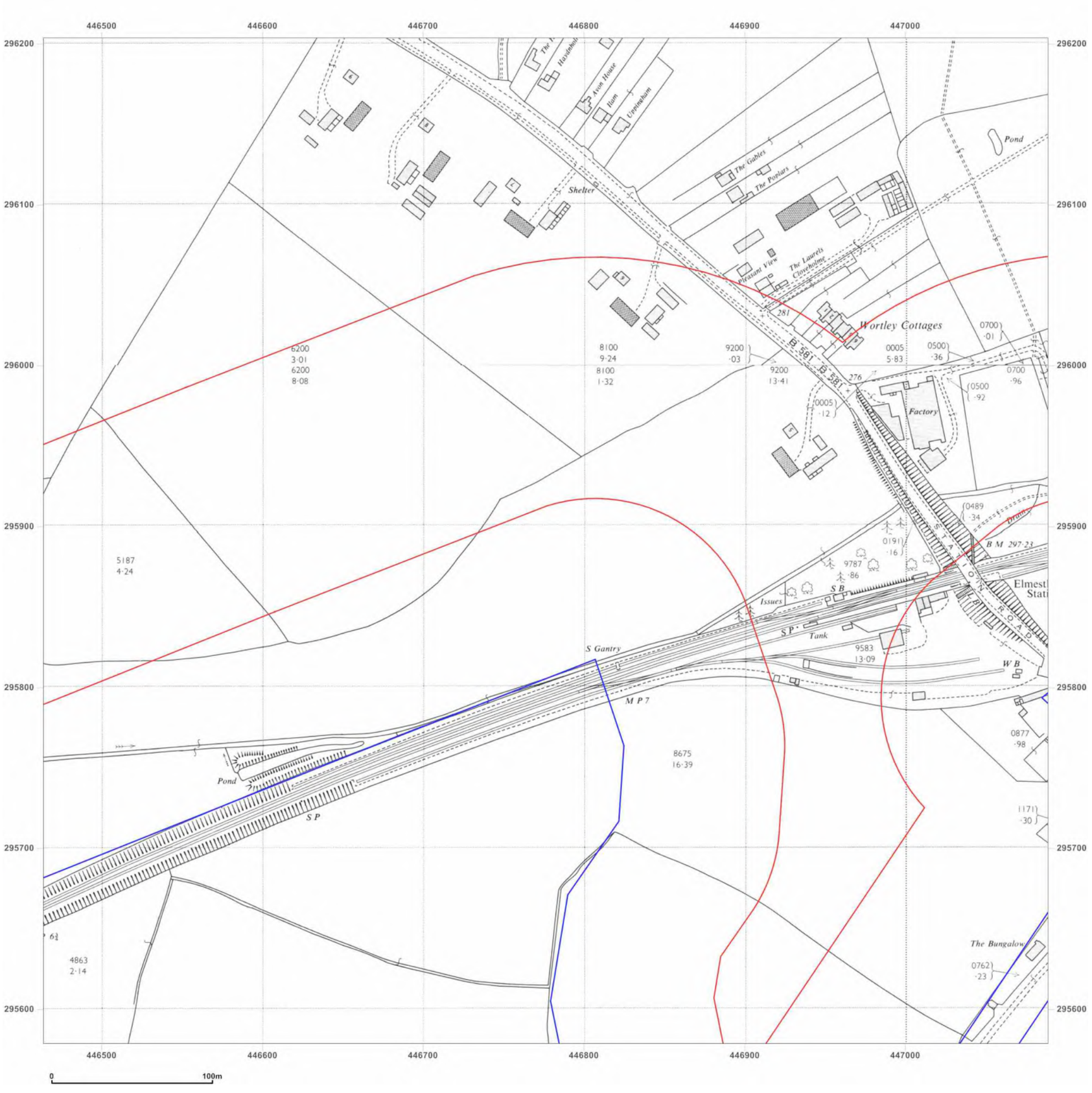

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
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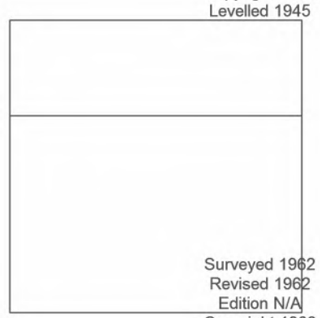
Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945



Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

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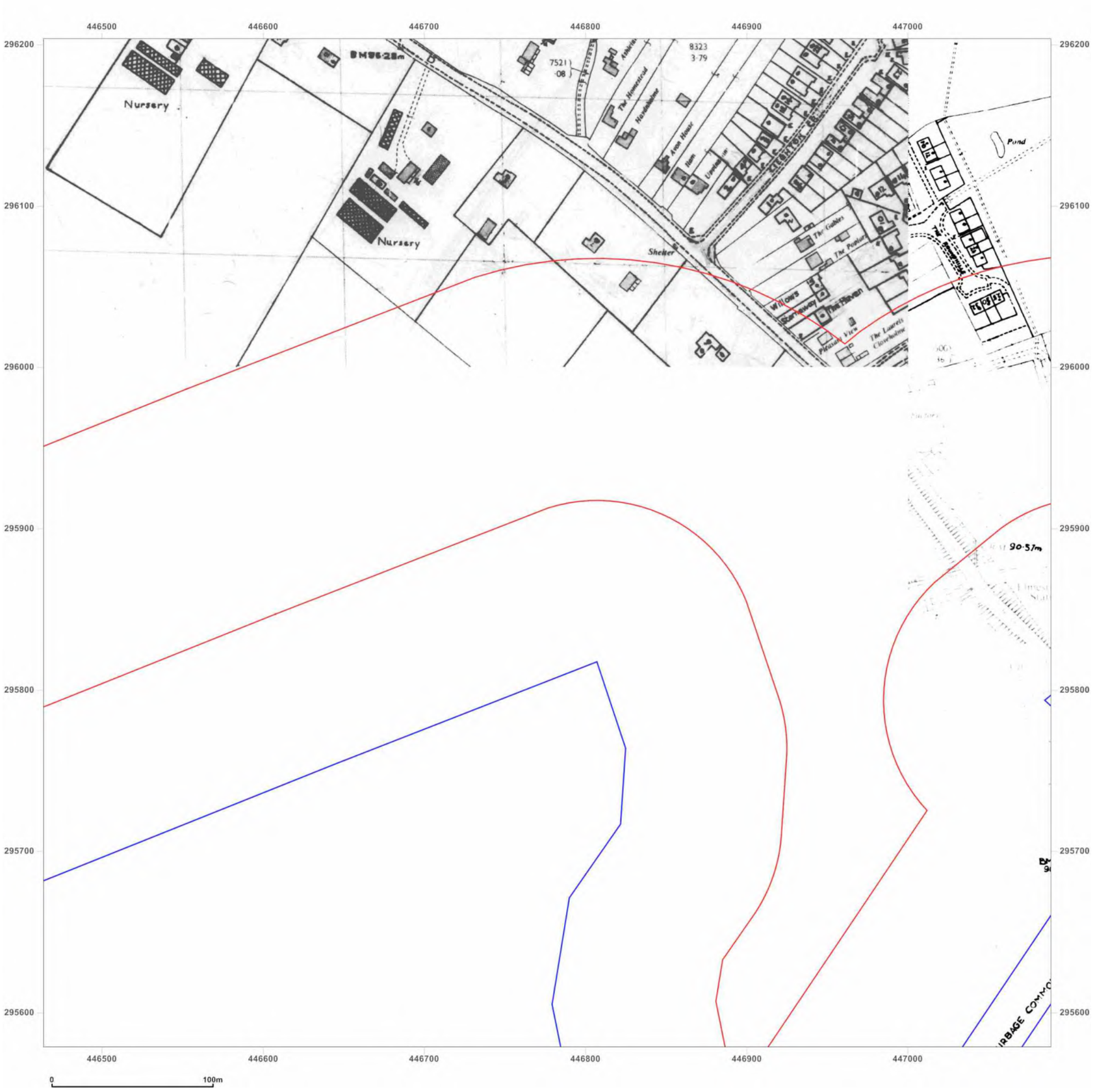

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: National Grid

Map date: **1977-1978**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1978
Revised 1978
Edition N/A
Copyright N/A
Levelled N/A

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

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

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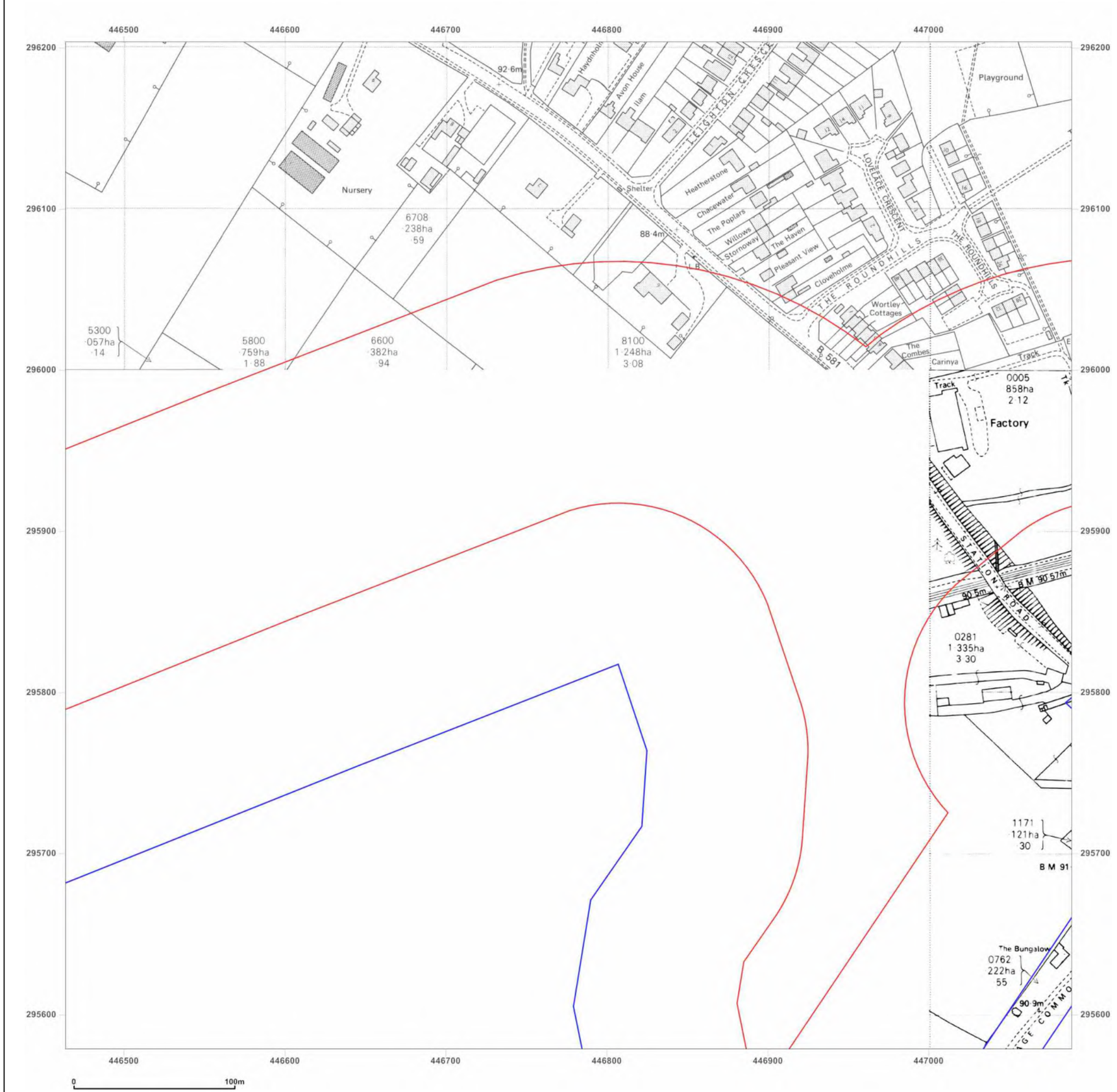

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

N
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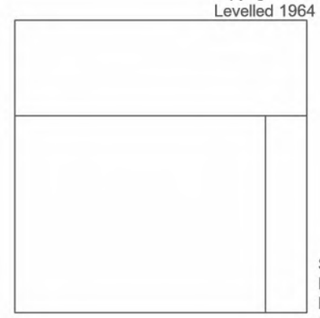
Surveyed 1984
Revised 1984
Edition N/A
Copyright 1985
Levelled 1964



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

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: National Grid

Map date: **1983-1985**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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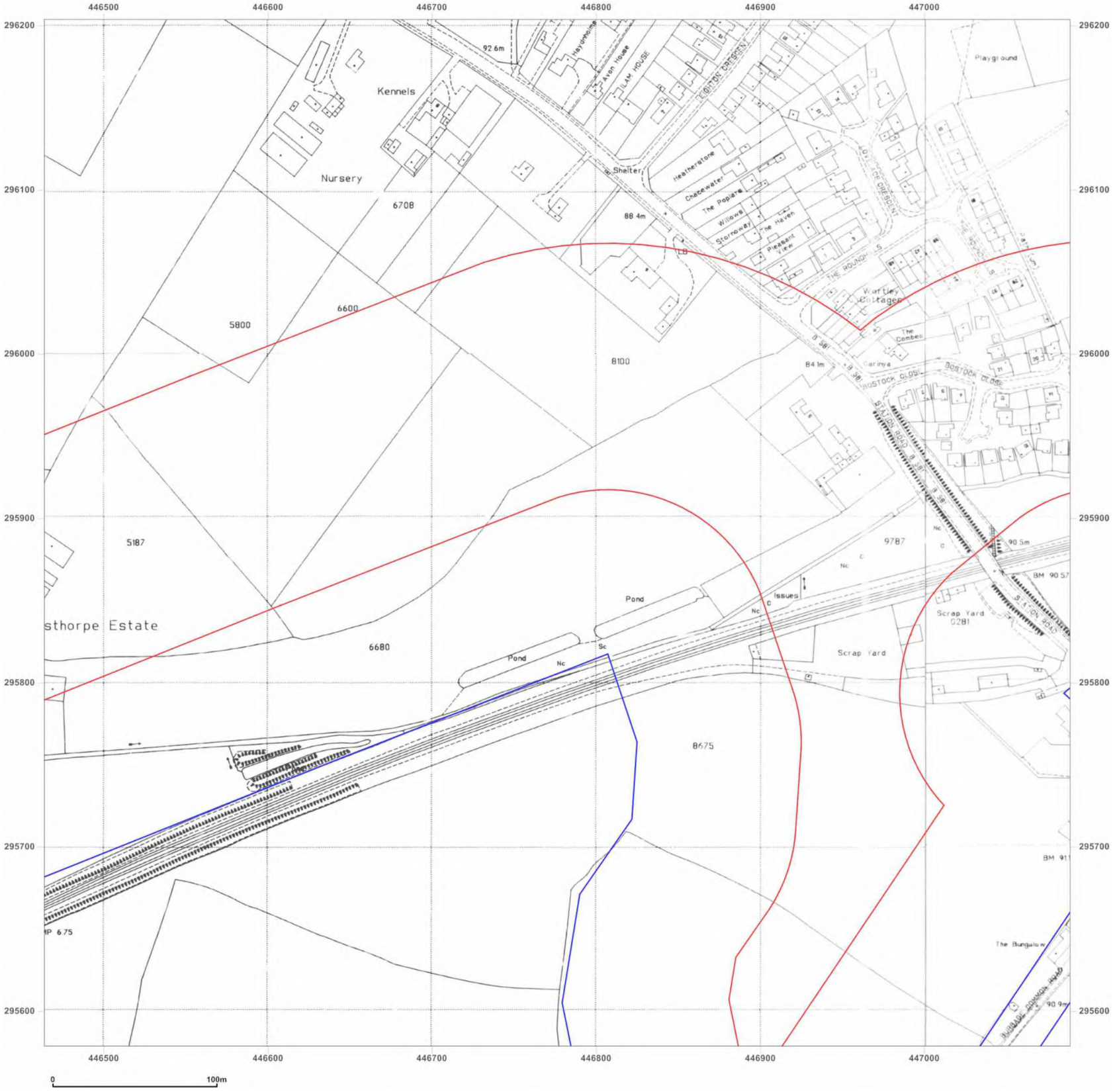

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_4_6
Grid Ref: 446776, 295891

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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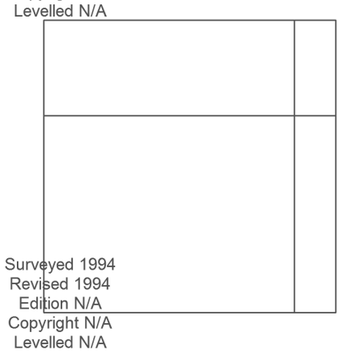
Surveyed 1994
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

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



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

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

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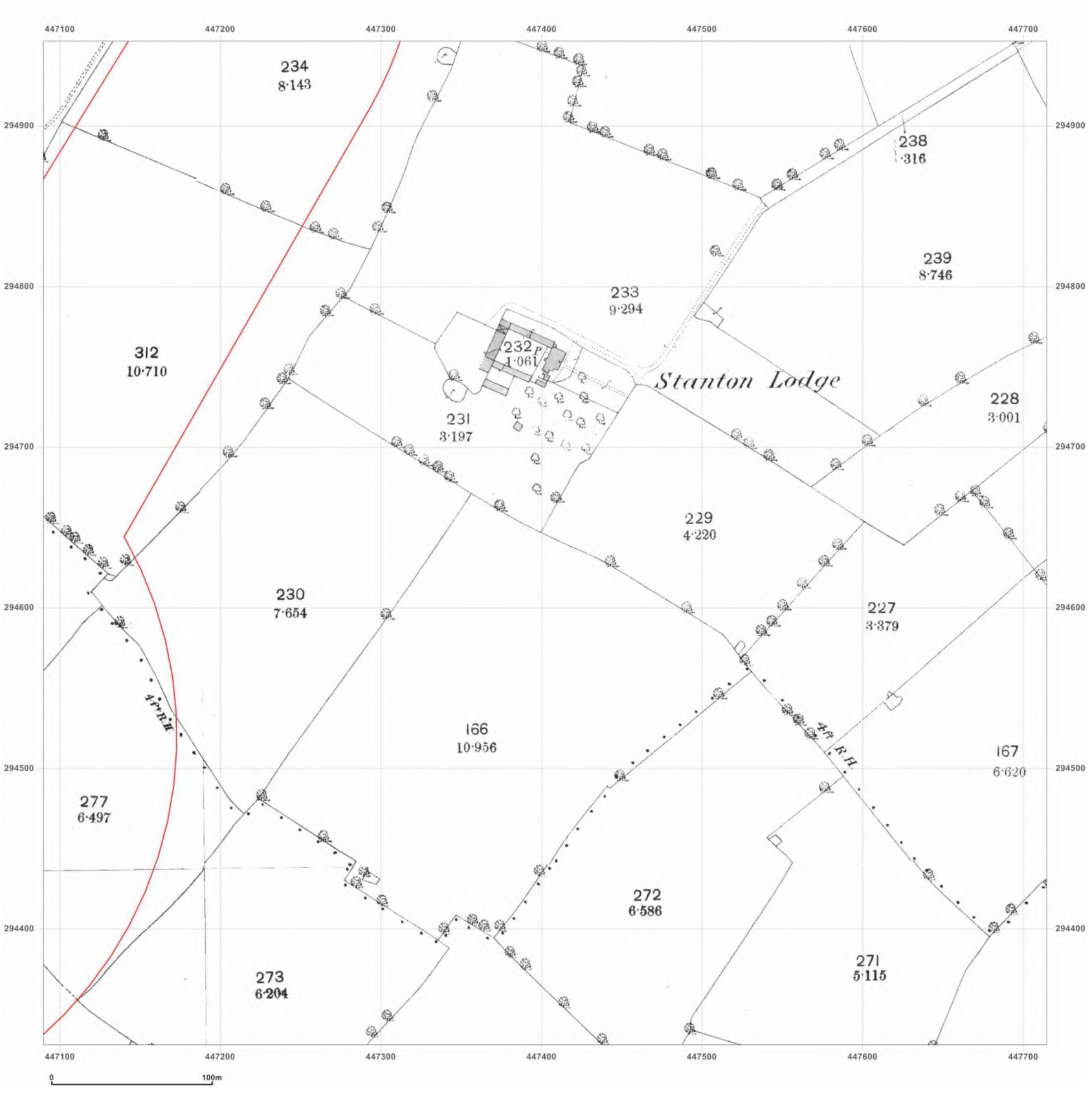

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

N
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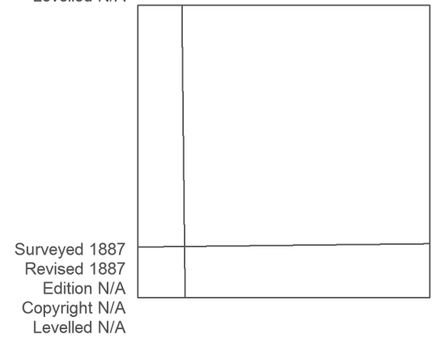
Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1887
Revised 1887
Edition N/A
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Revised 1887
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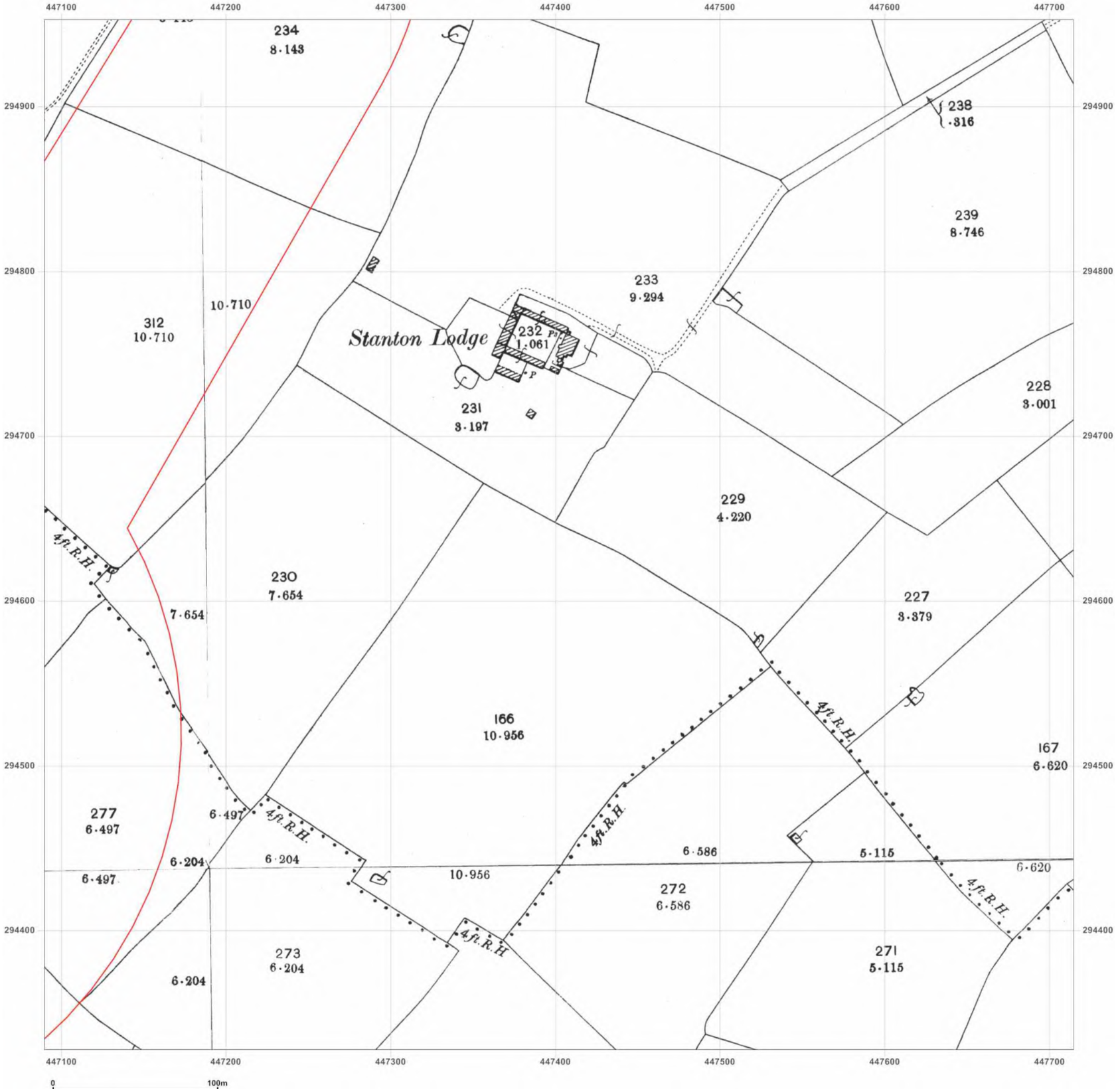

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

N
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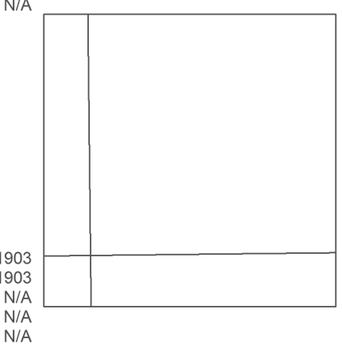
Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
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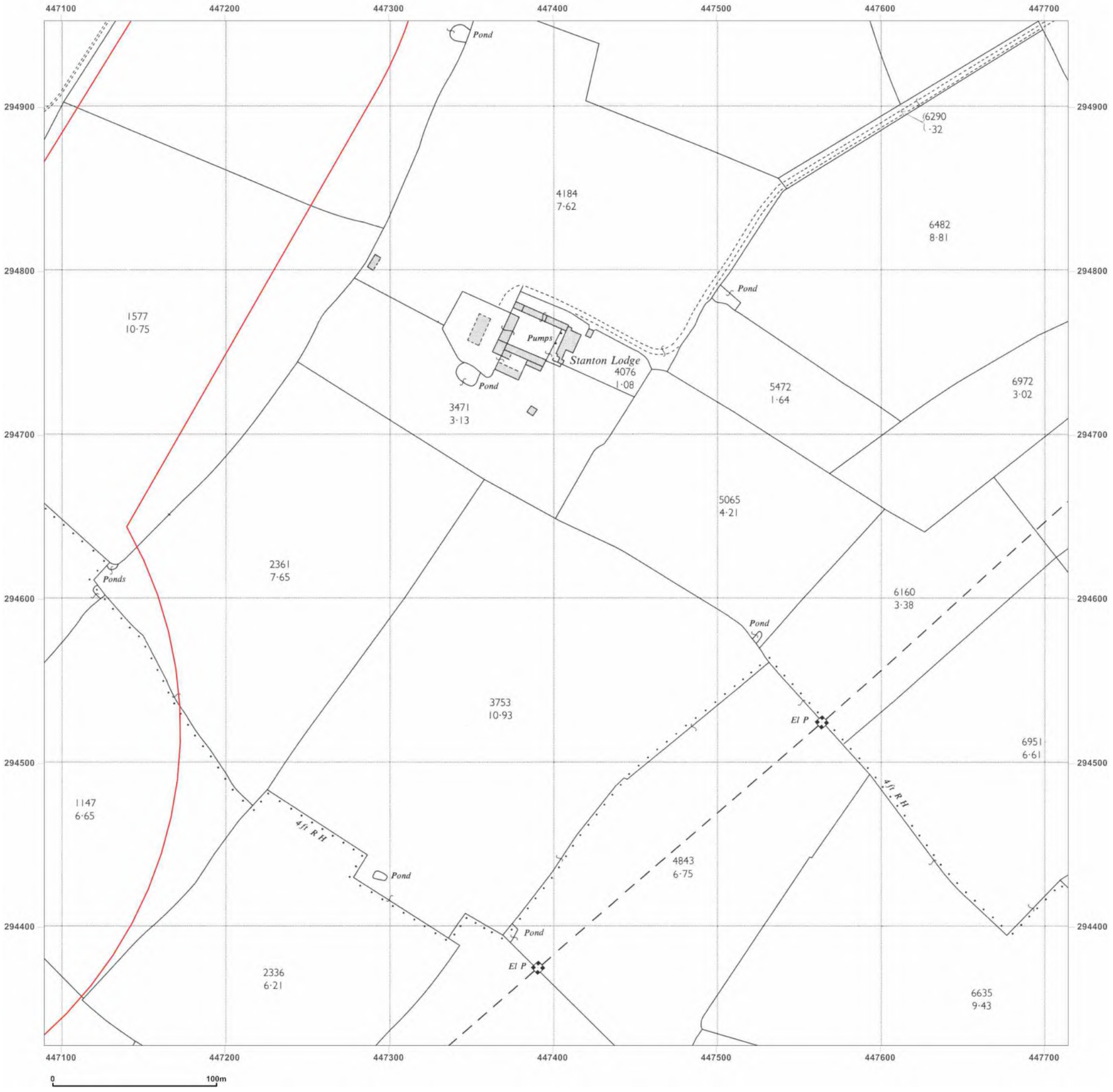

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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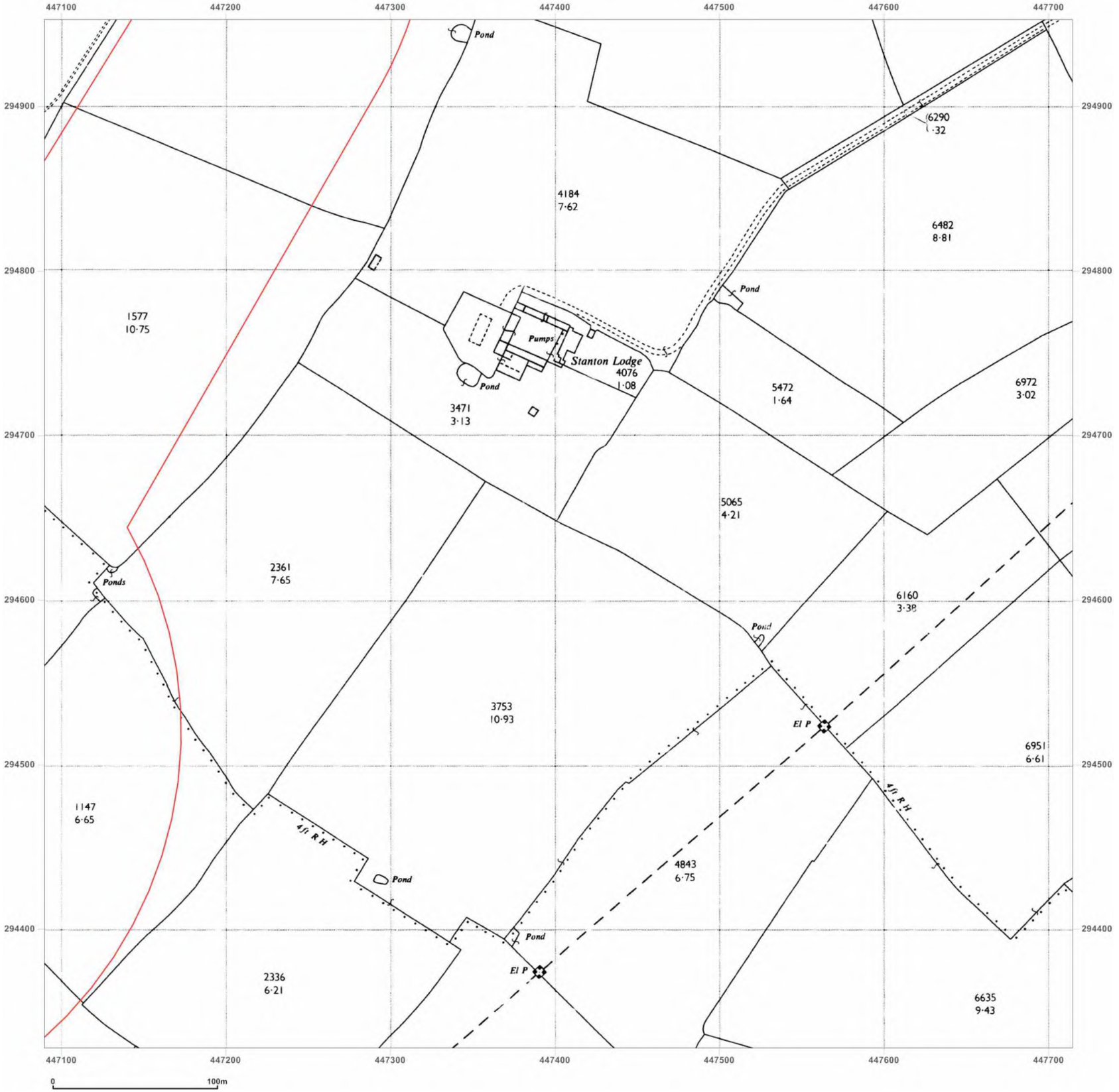

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: National Grid

Map date: **1964**

Scale: 1:2,500

Printed at: 1:2,500

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

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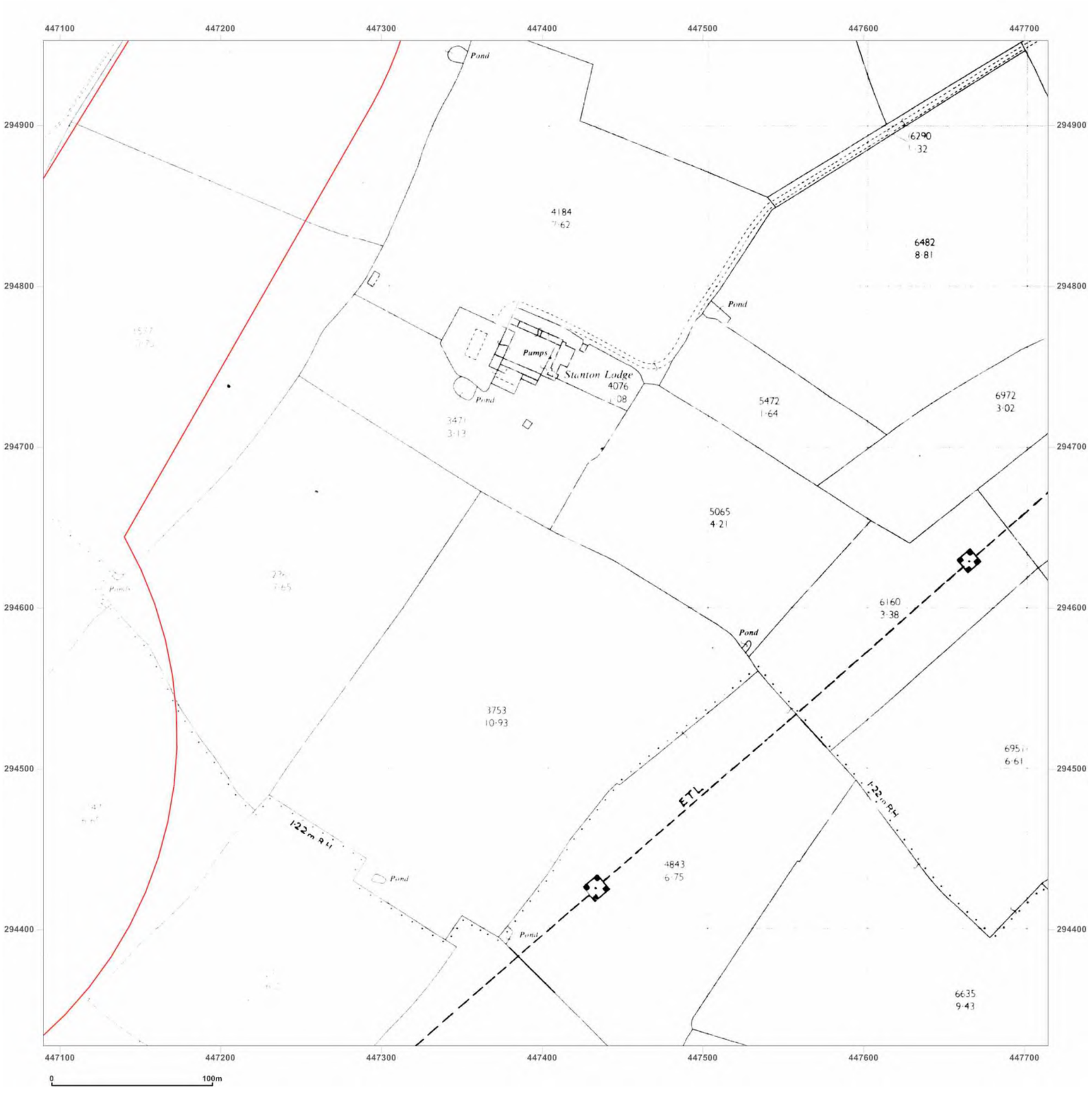

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: National Grid

Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

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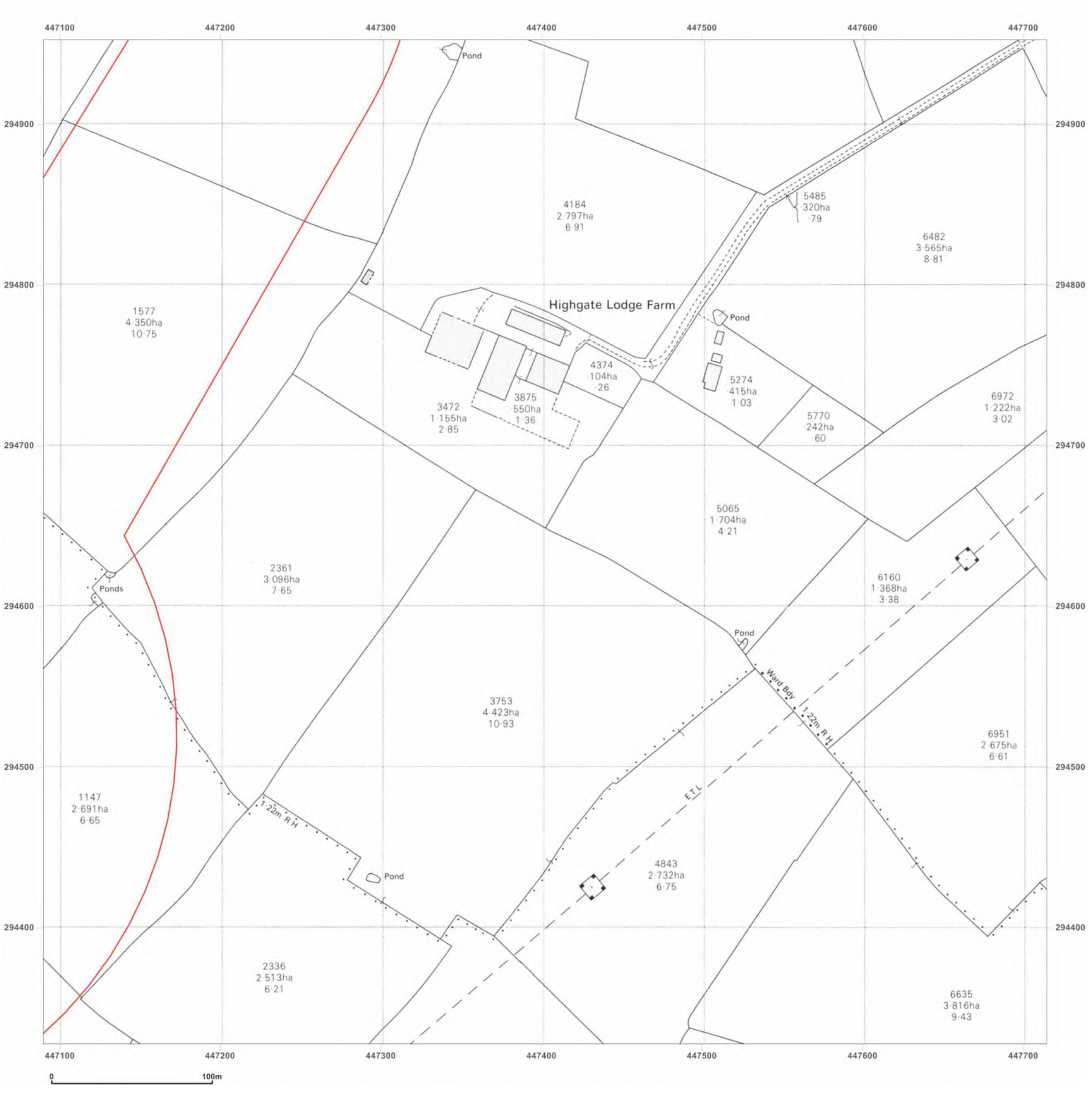

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: National Grid

Map date: **1983**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
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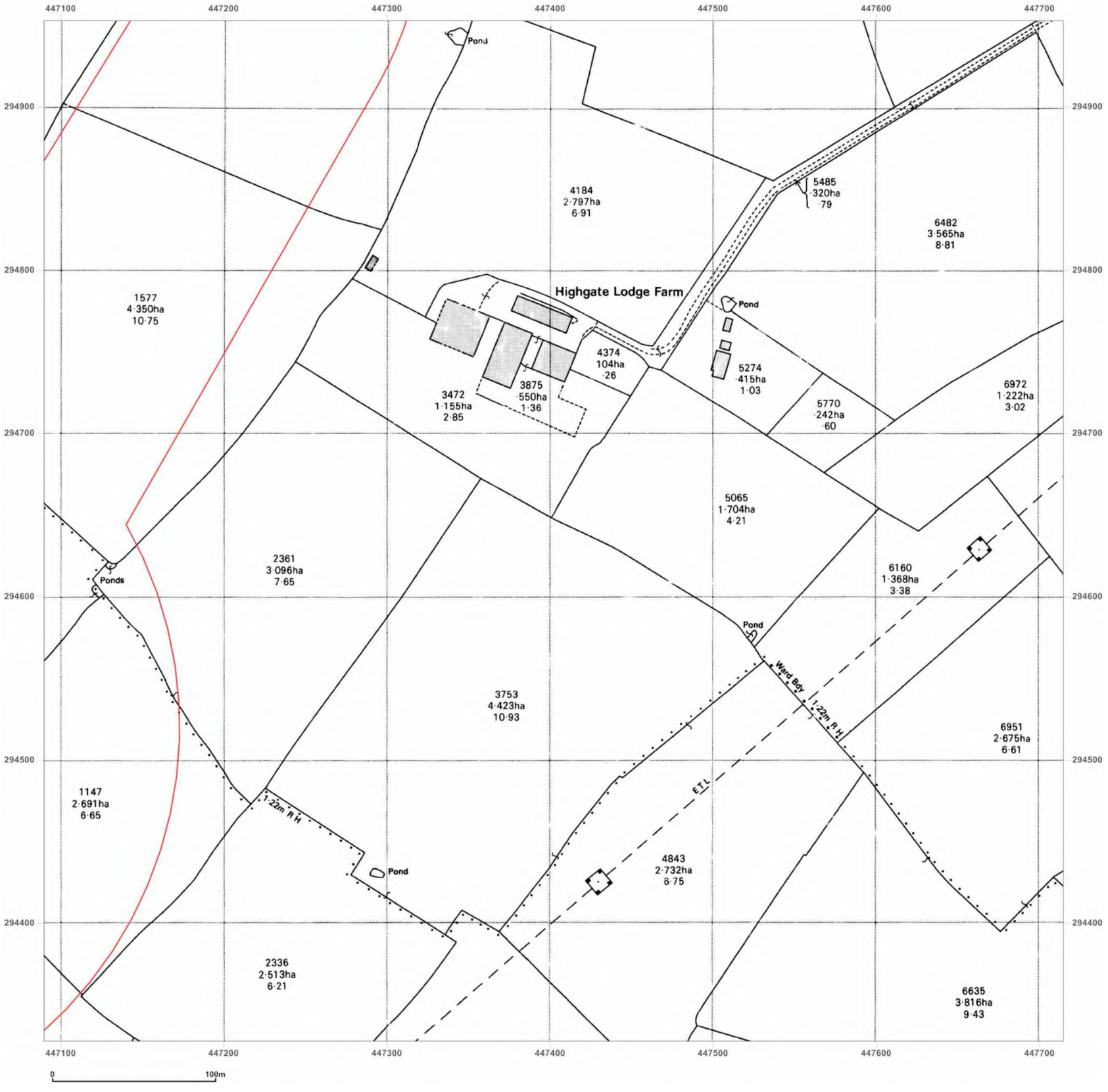

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

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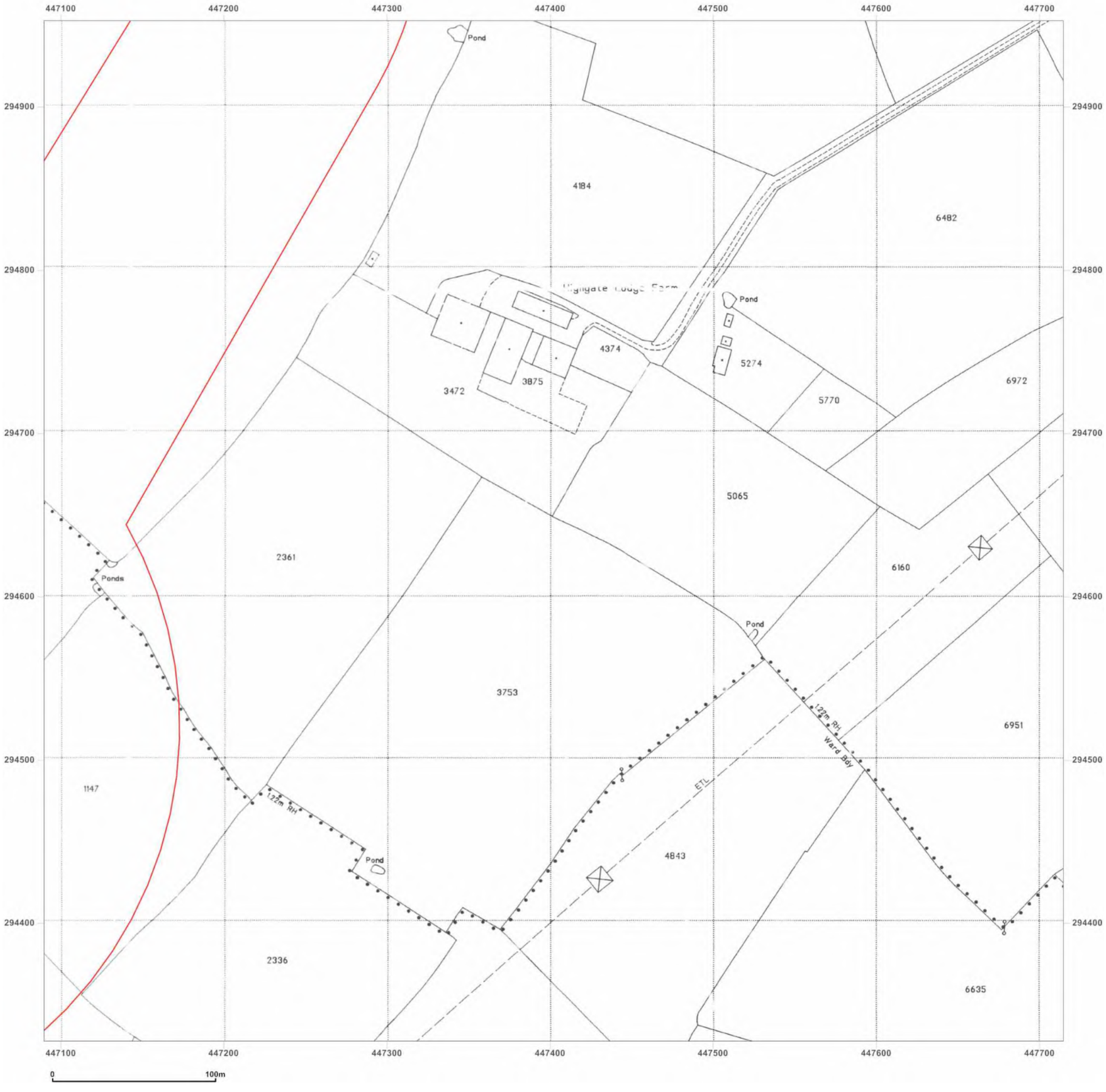

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_4
Grid Ref: 447402, 294640

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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

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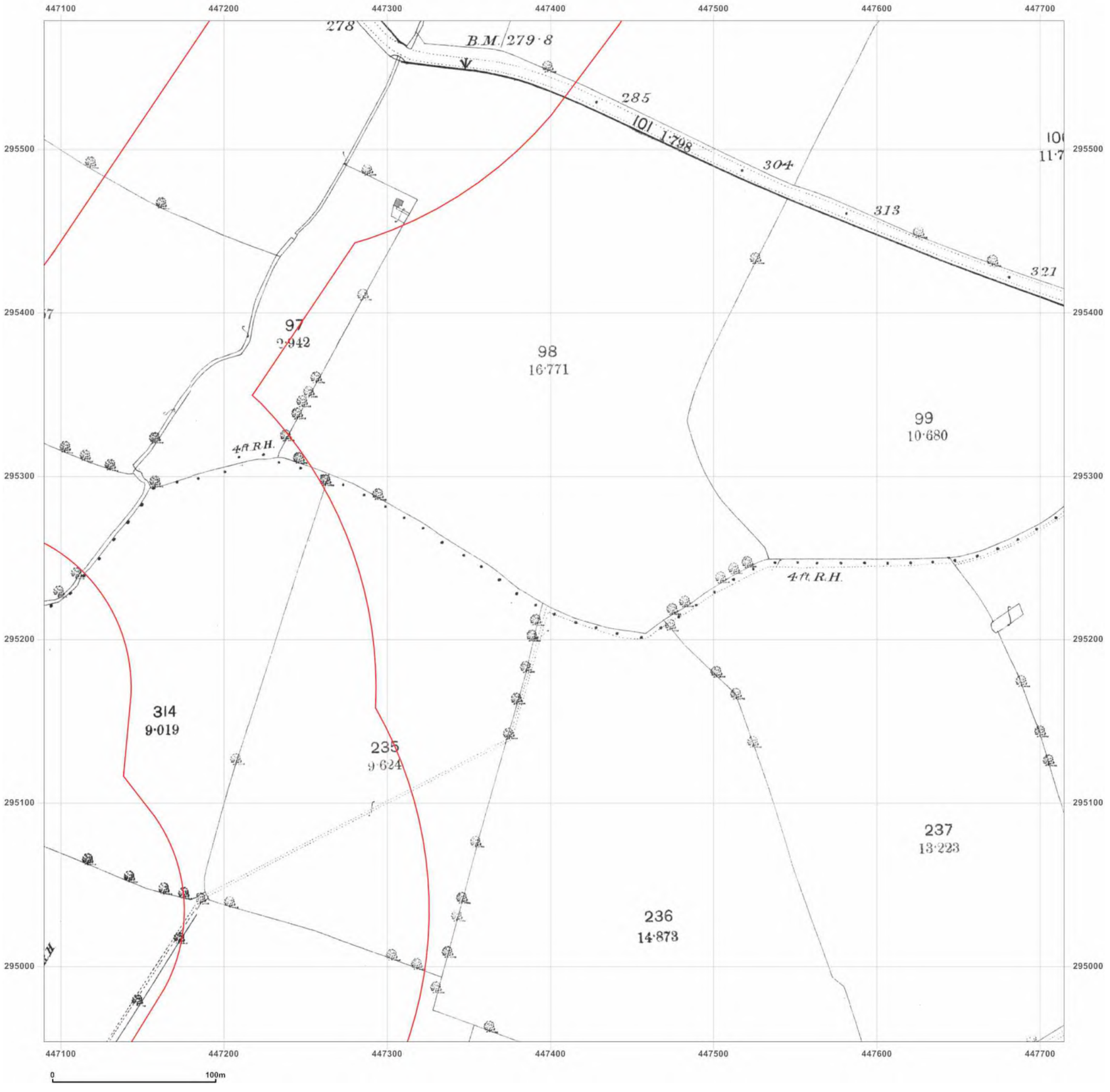

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: County Series

Map date: **1887**

Scale: 1:2,500

Printed at: 1:2,500

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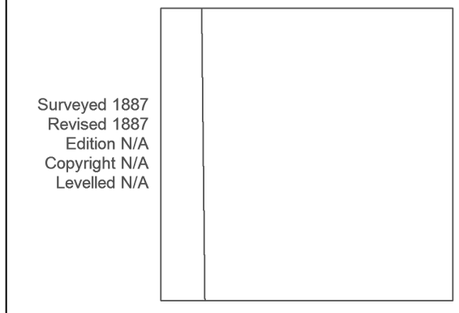

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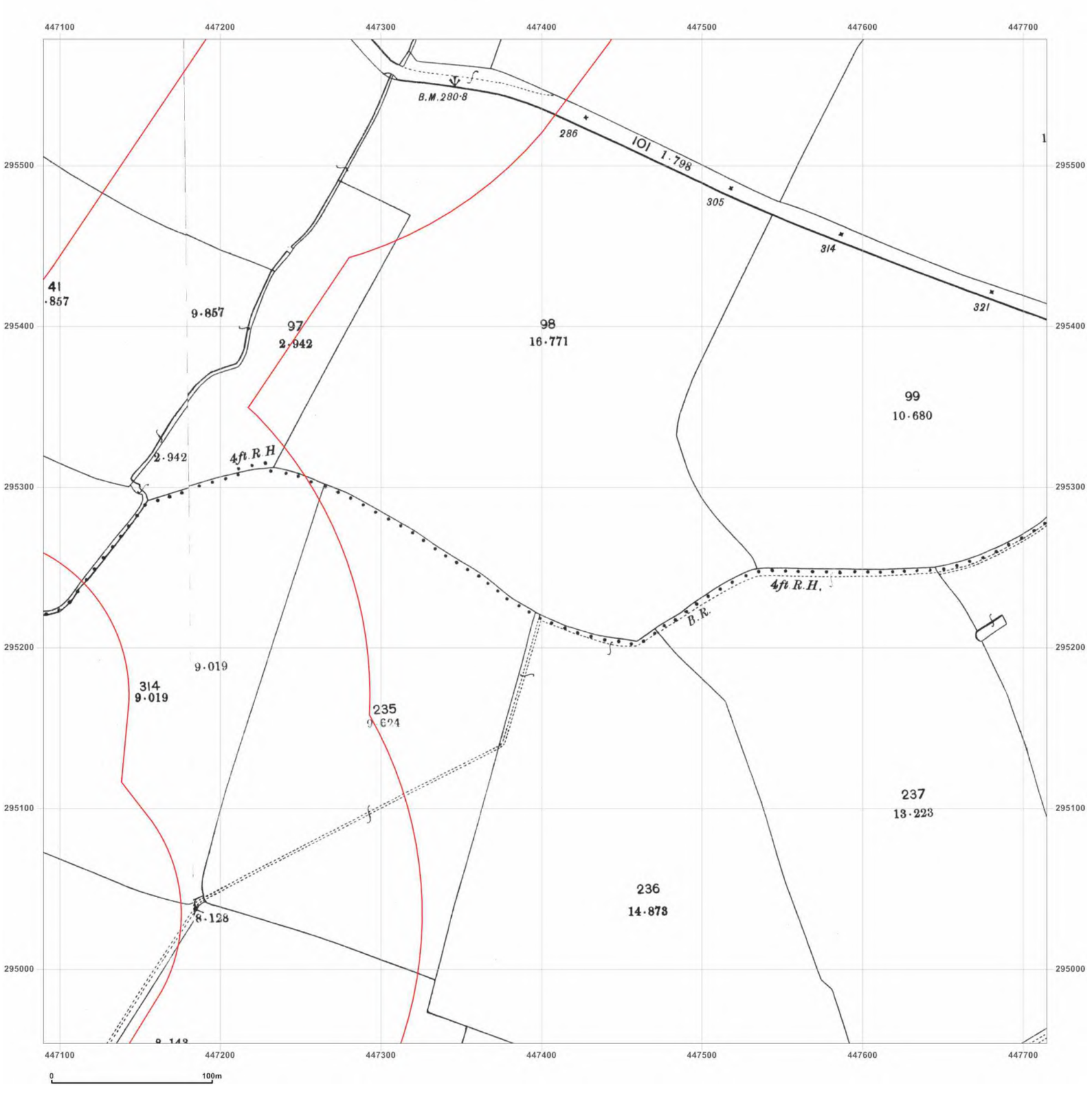

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

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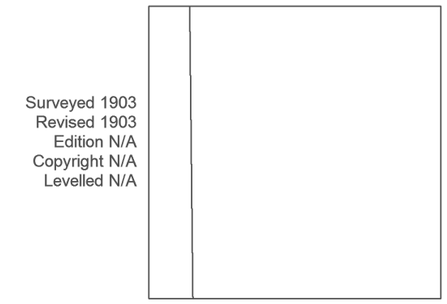

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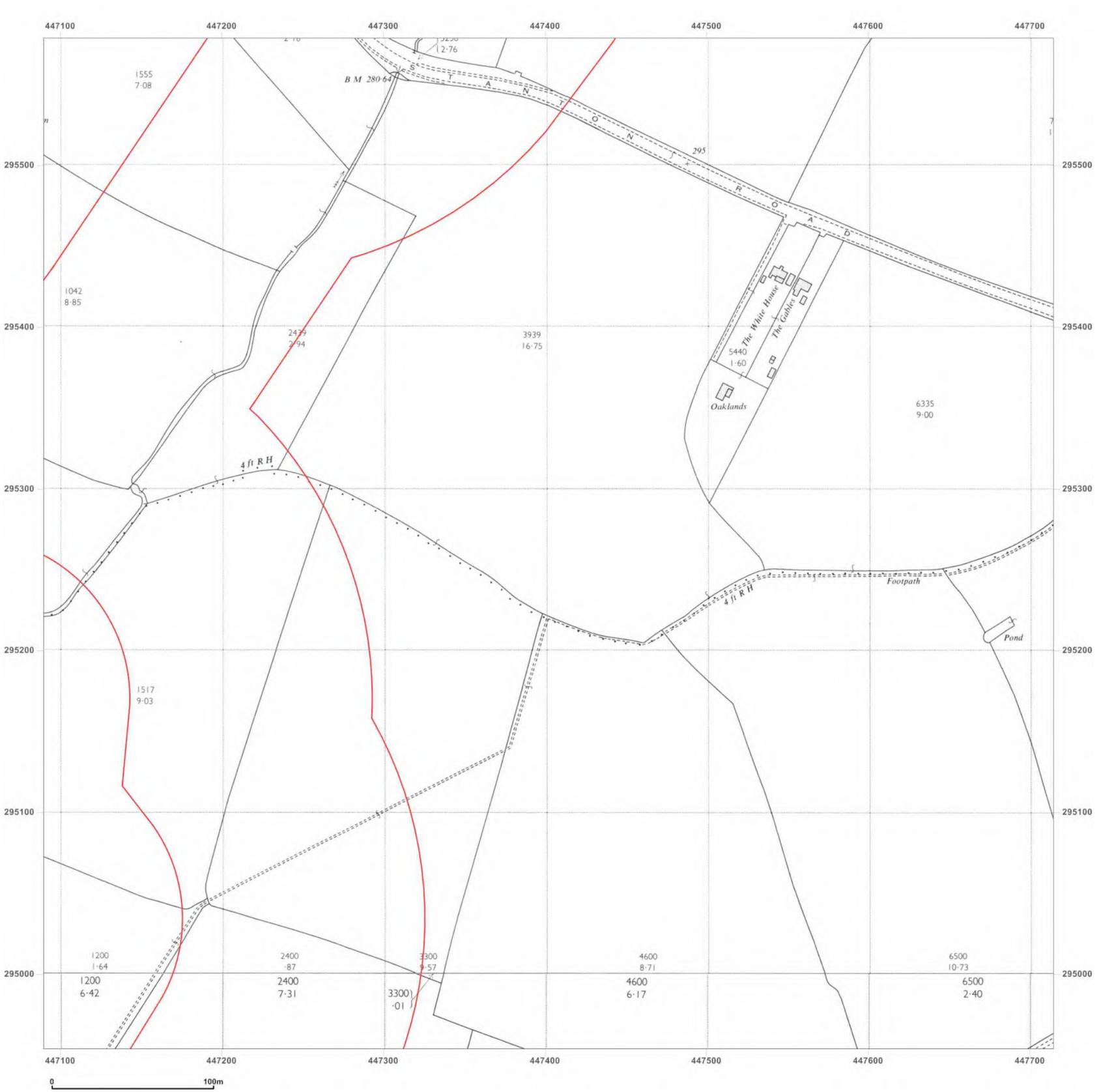

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: National Grid

Map date: **1962-1963**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

Surveyed 1963
Revised 1963
Edition N/A
Copyright 1964
Levelled 1945

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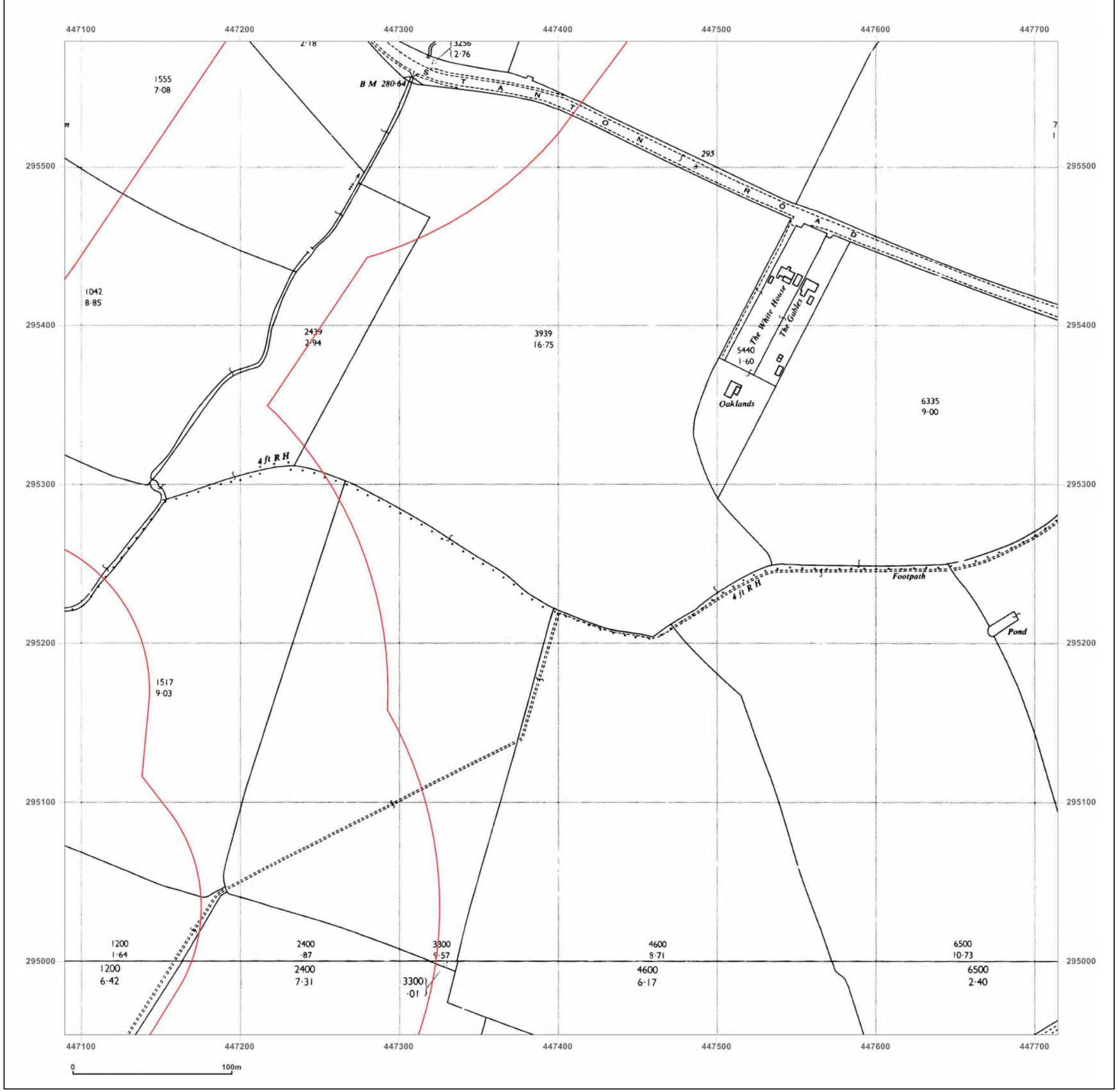

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: National Grid

Map date: **1963-1964**

Scale: 1:2,500

Printed at: 1:2,500

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

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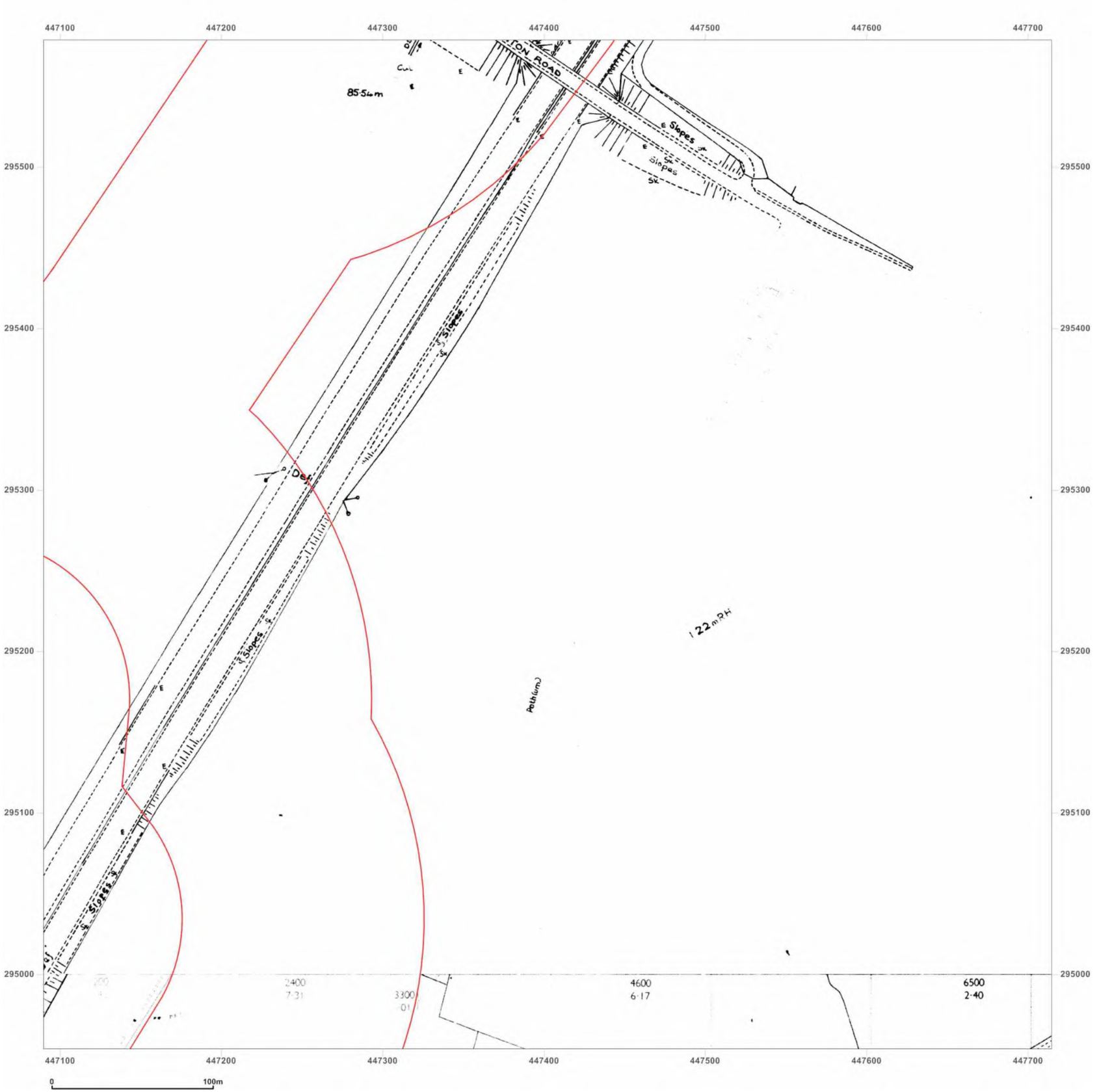

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: National Grid

Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

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

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Revised N/A
Edition N/A
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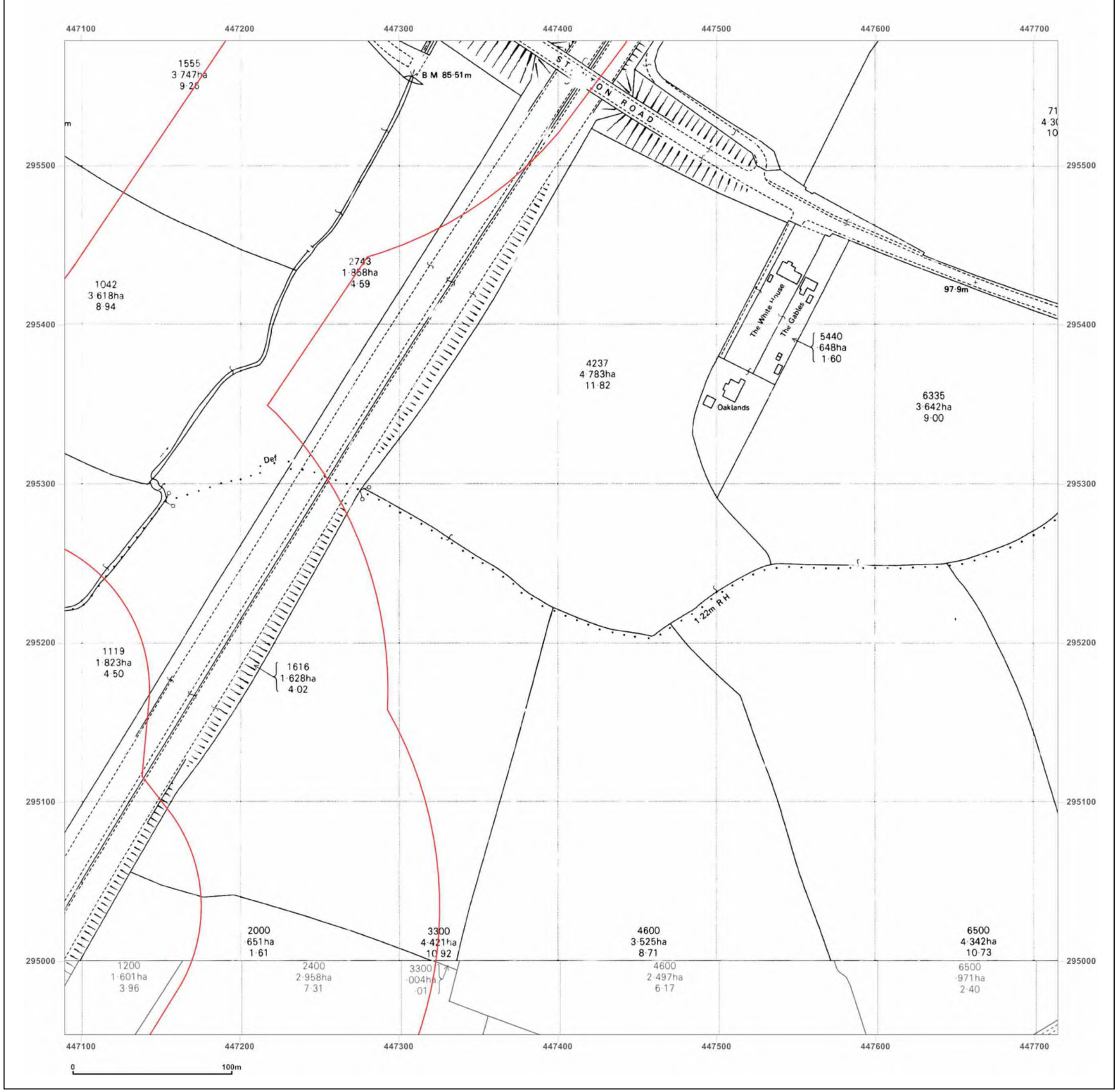

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: National Grid

Map date: **1983-1984**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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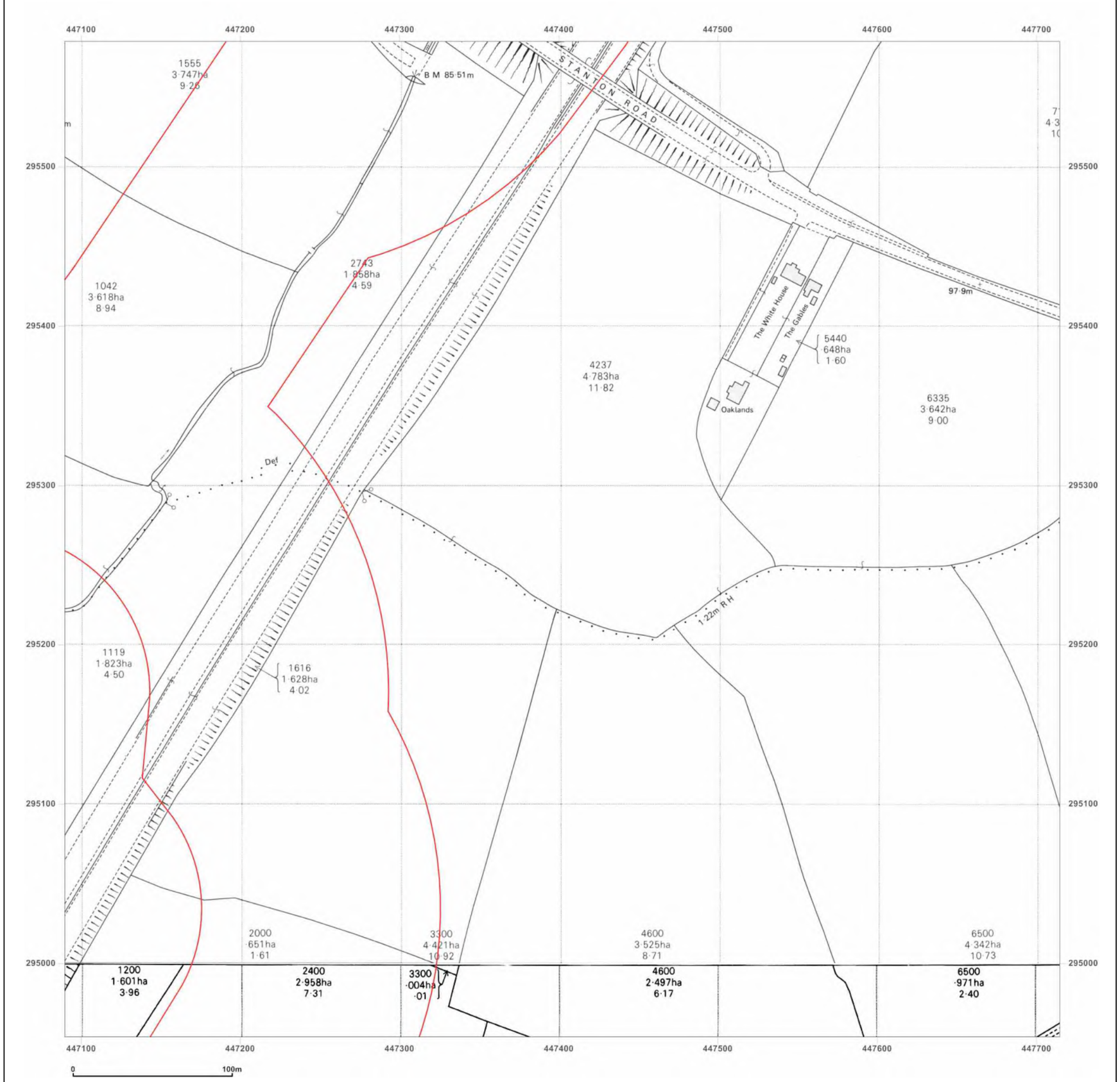

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: National Grid

Map date: **1983-1984**

Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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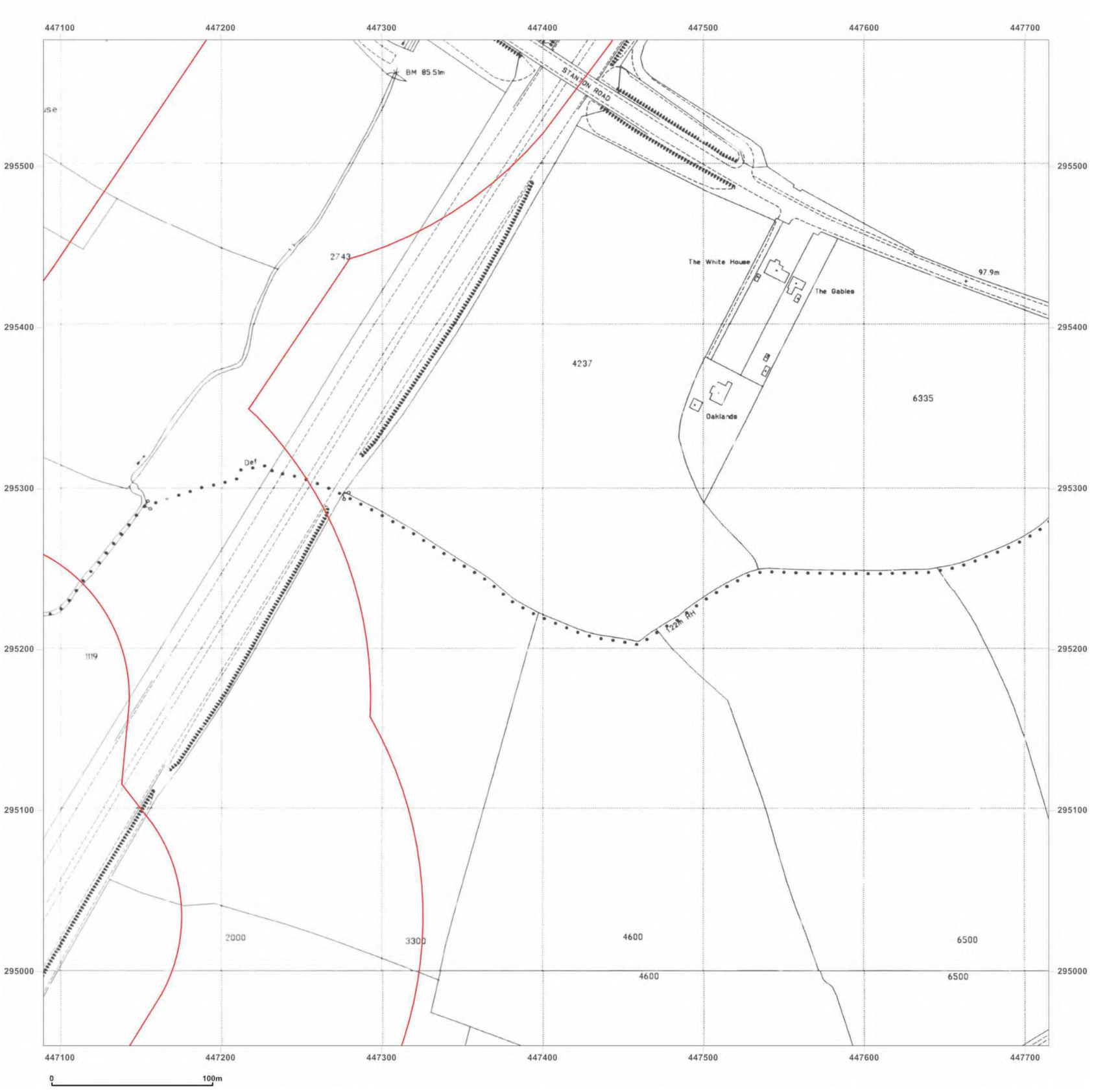

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_5
Grid Ref: 447402, 295266

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

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

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

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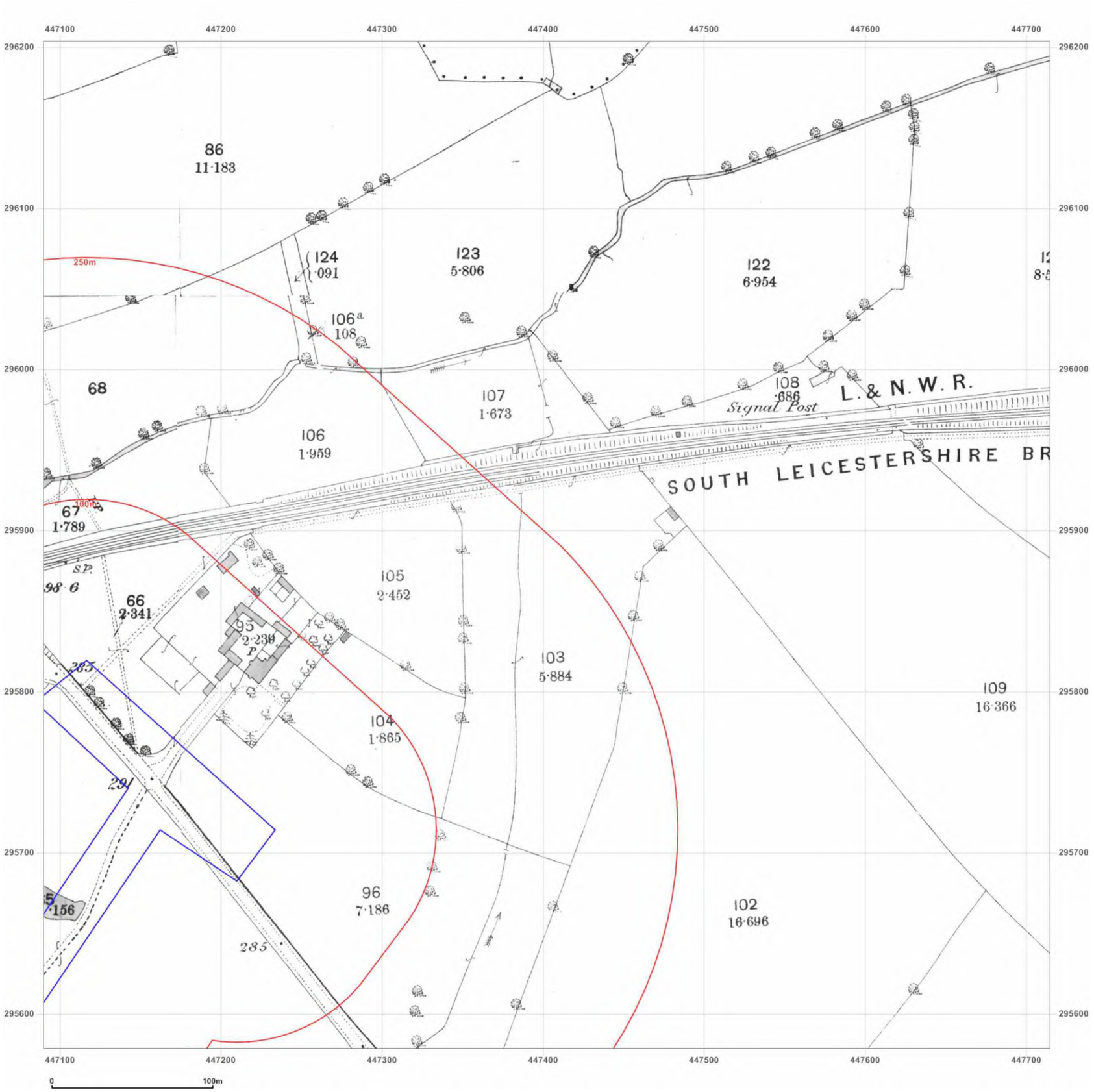

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: County Series

Map date: **1887-1888**

Scale: 1:2,500

Printed at: 1:2,500

N
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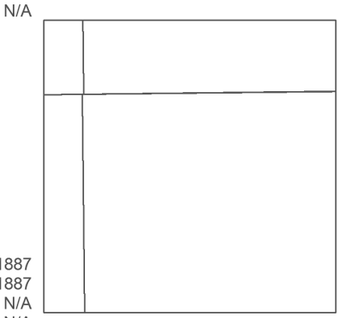
Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1888
Revised 1888
Edition N/A
Copyright N/A
Levelled N/A



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Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1887
Edition N/A
Copyright N/A
Levelled N/A

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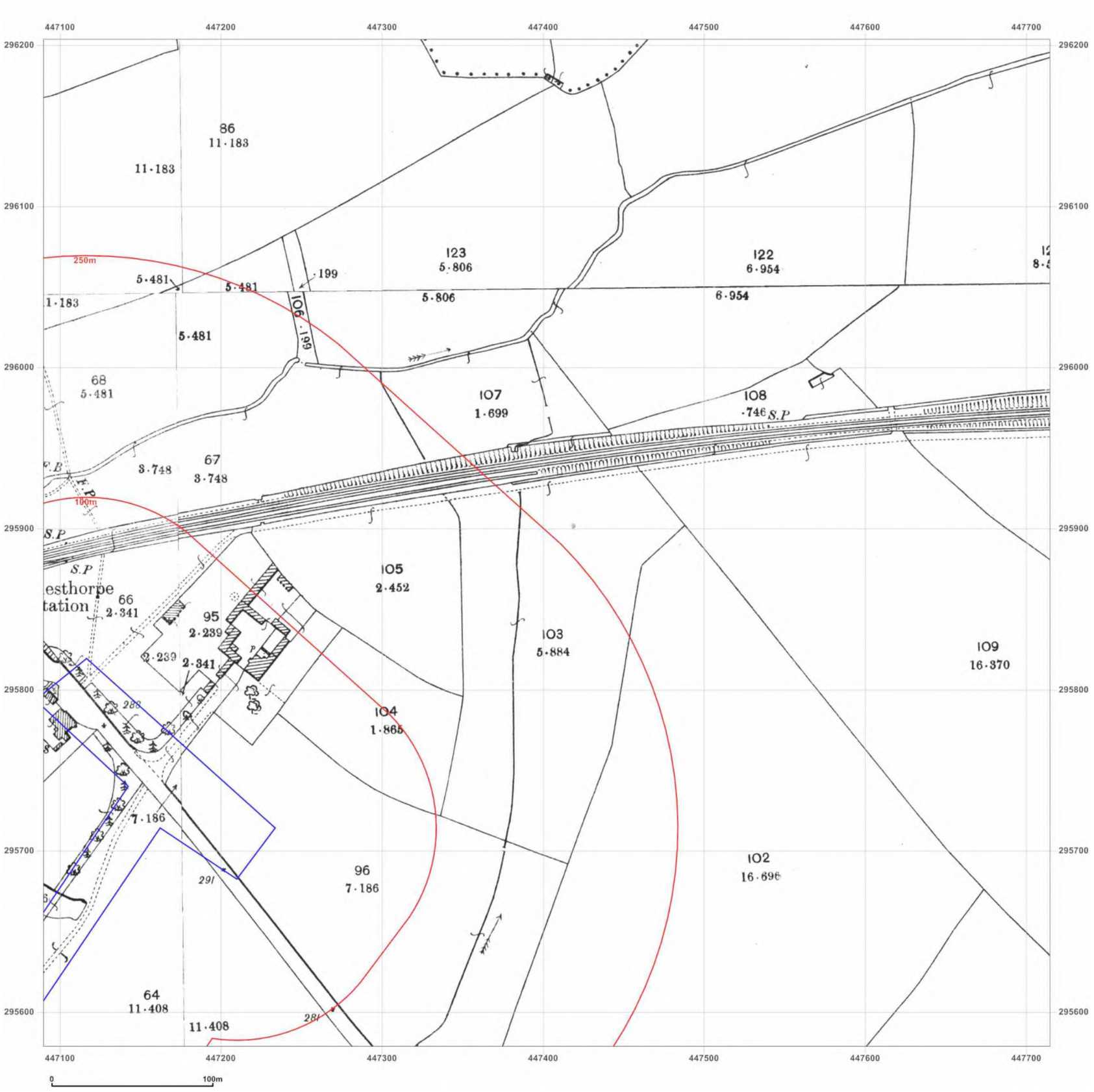

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: County Series

Map date: **1903**

Scale: 1:2,500

Printed at: 1:2,500

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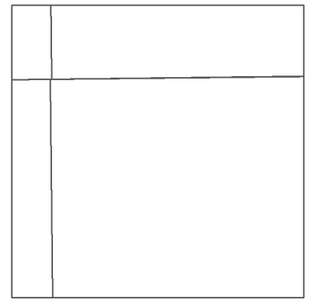
Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1903
Revised 1903
Edition N/A
Copyright N/A
Levelled N/A

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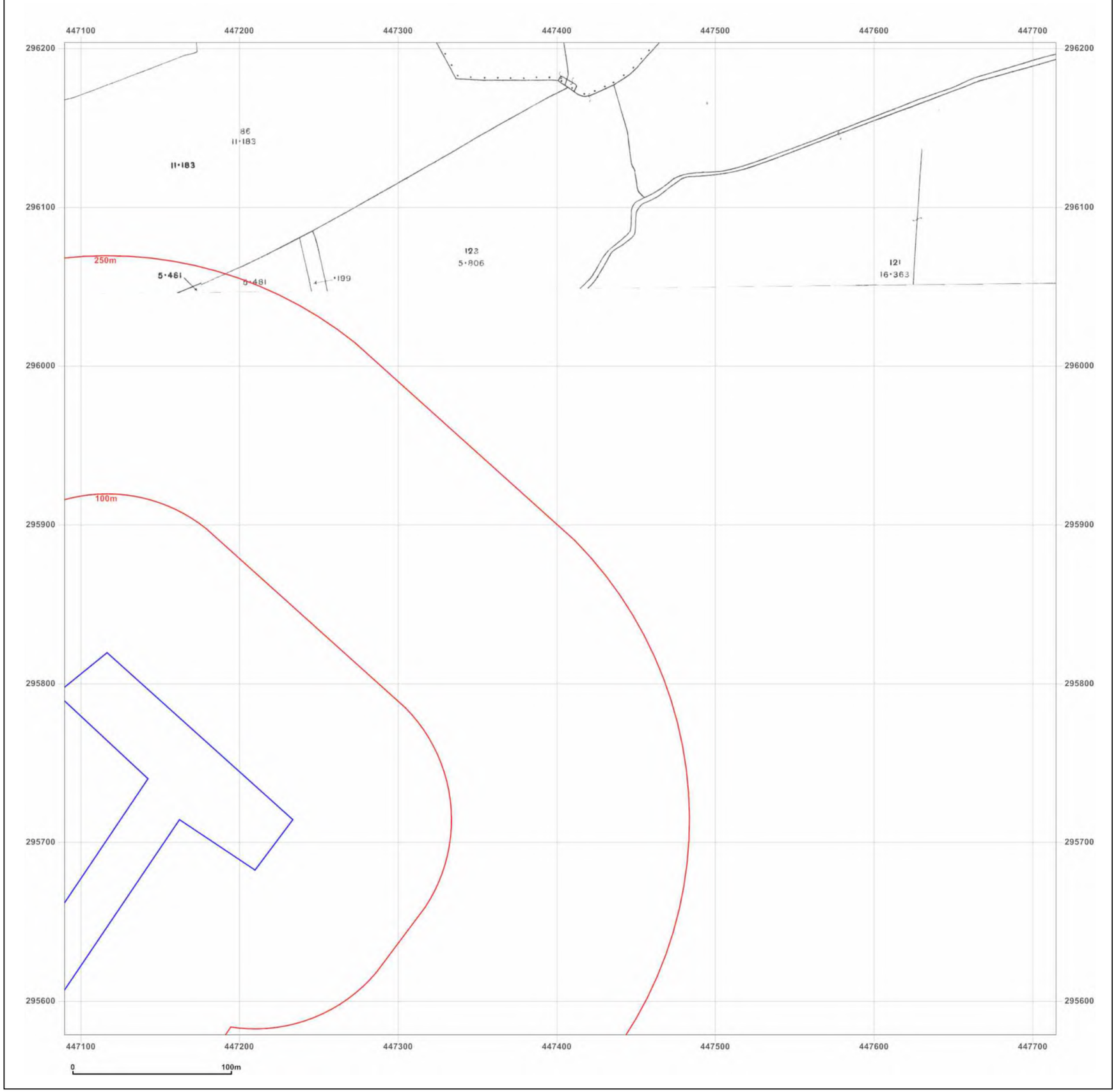

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: County Series

Map date: **1916**

Scale: 1:2,500

Printed at: 1:2,500

N
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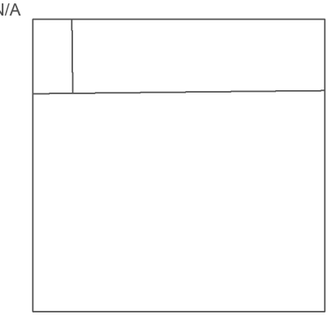
Surveyed 1916
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1916
Revised 1916
Edition N/A
Copyright N/A
Levelled N/A



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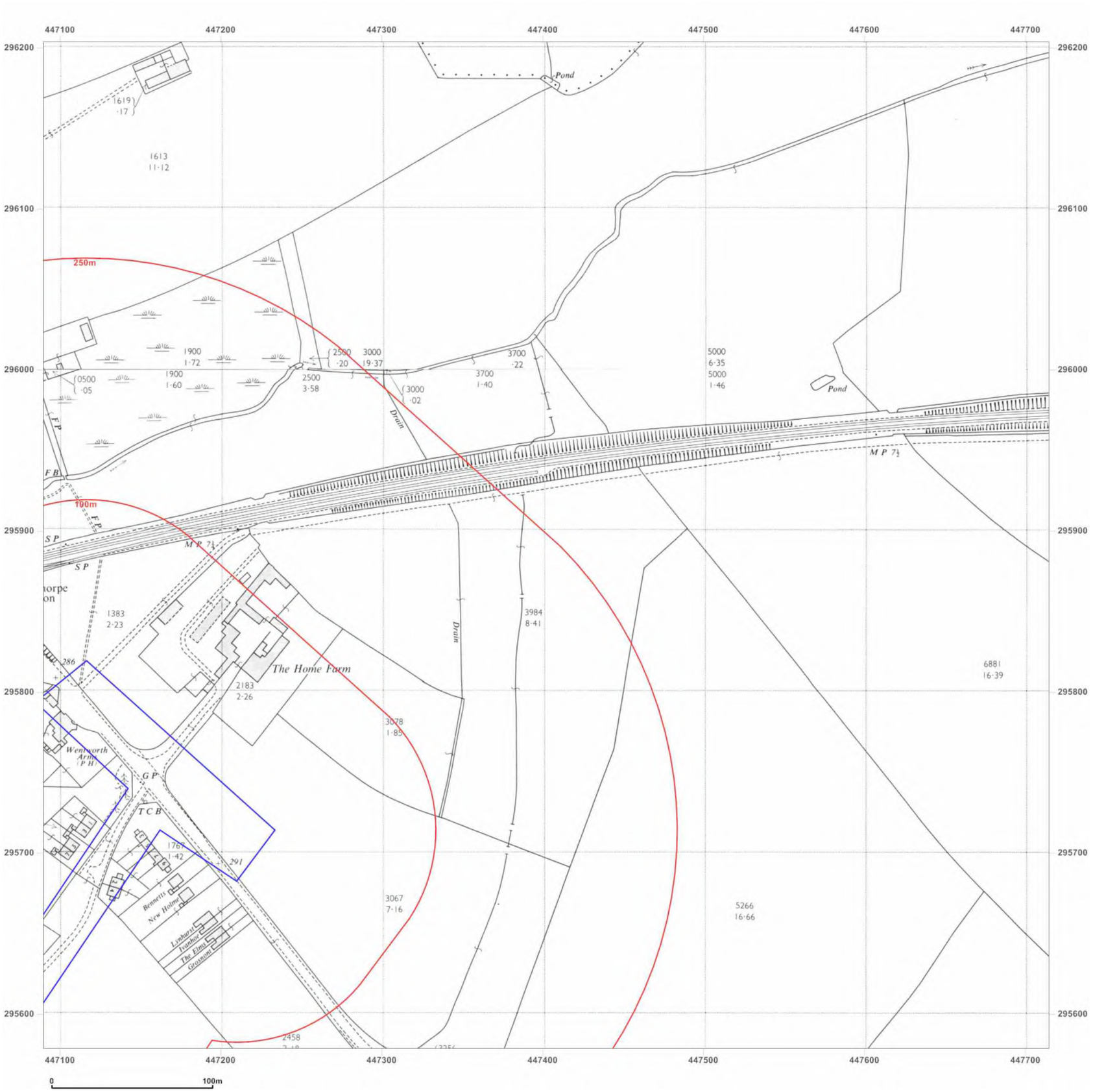


Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: National Grid

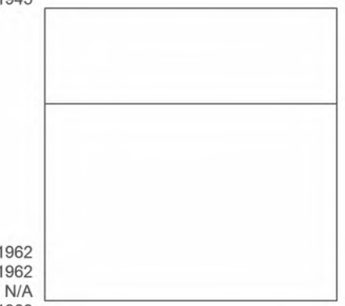
Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945



Surveyed 1962
Revised 1962
Edition N/A
Copyright 1963
Levelled 1945

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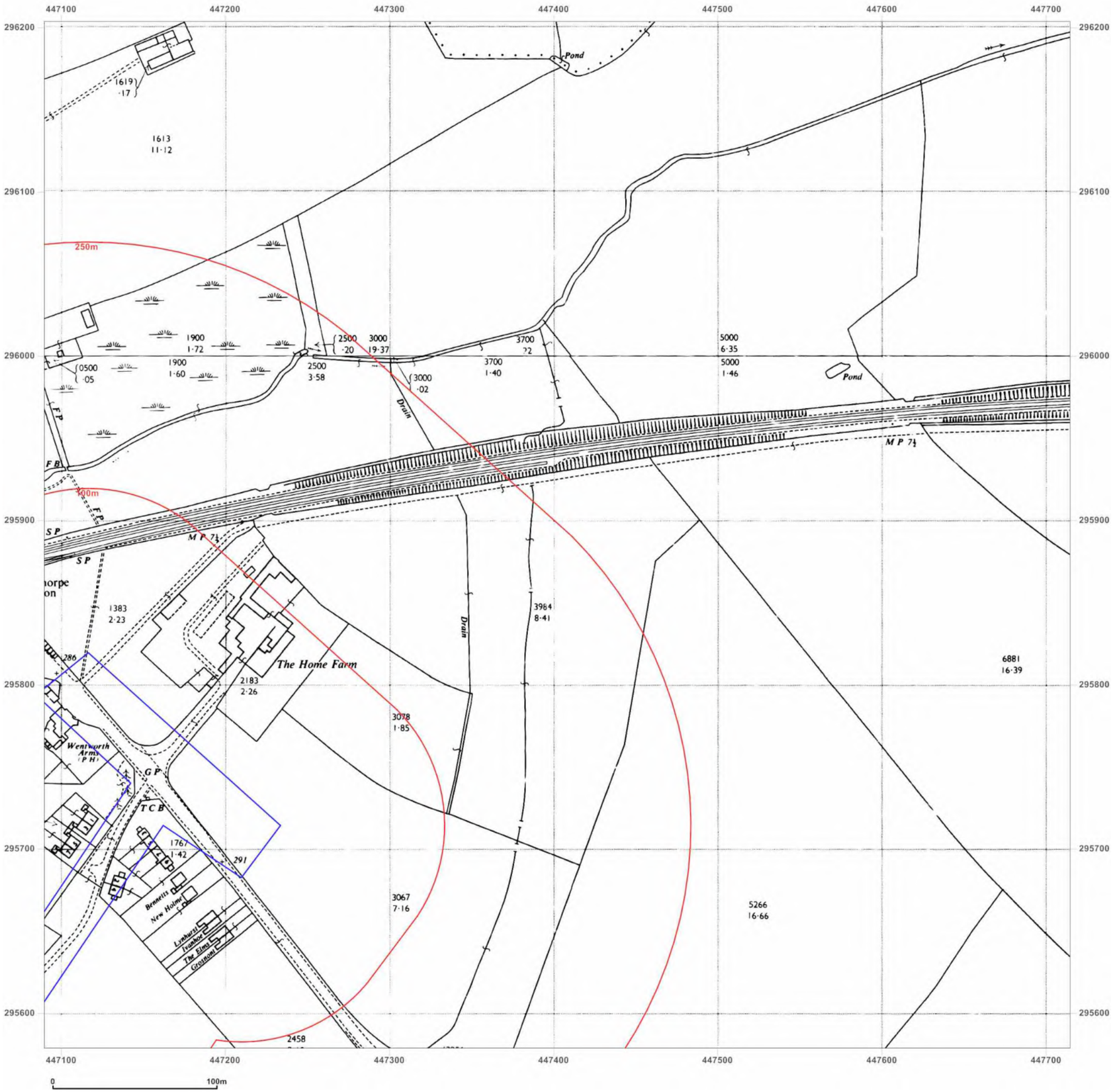

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: National Grid

Map date: **1963**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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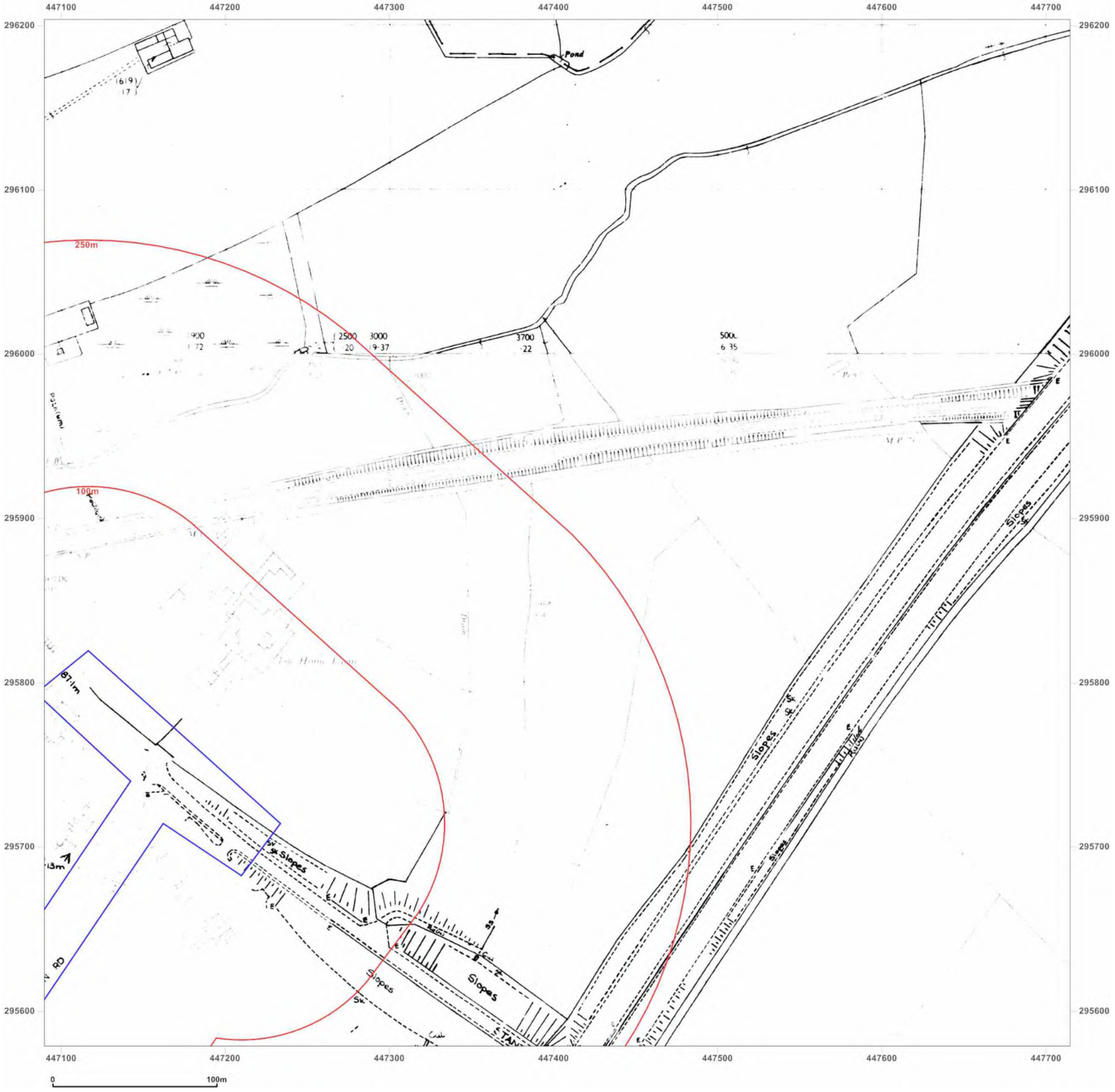

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: National Grid

Map date: **1977**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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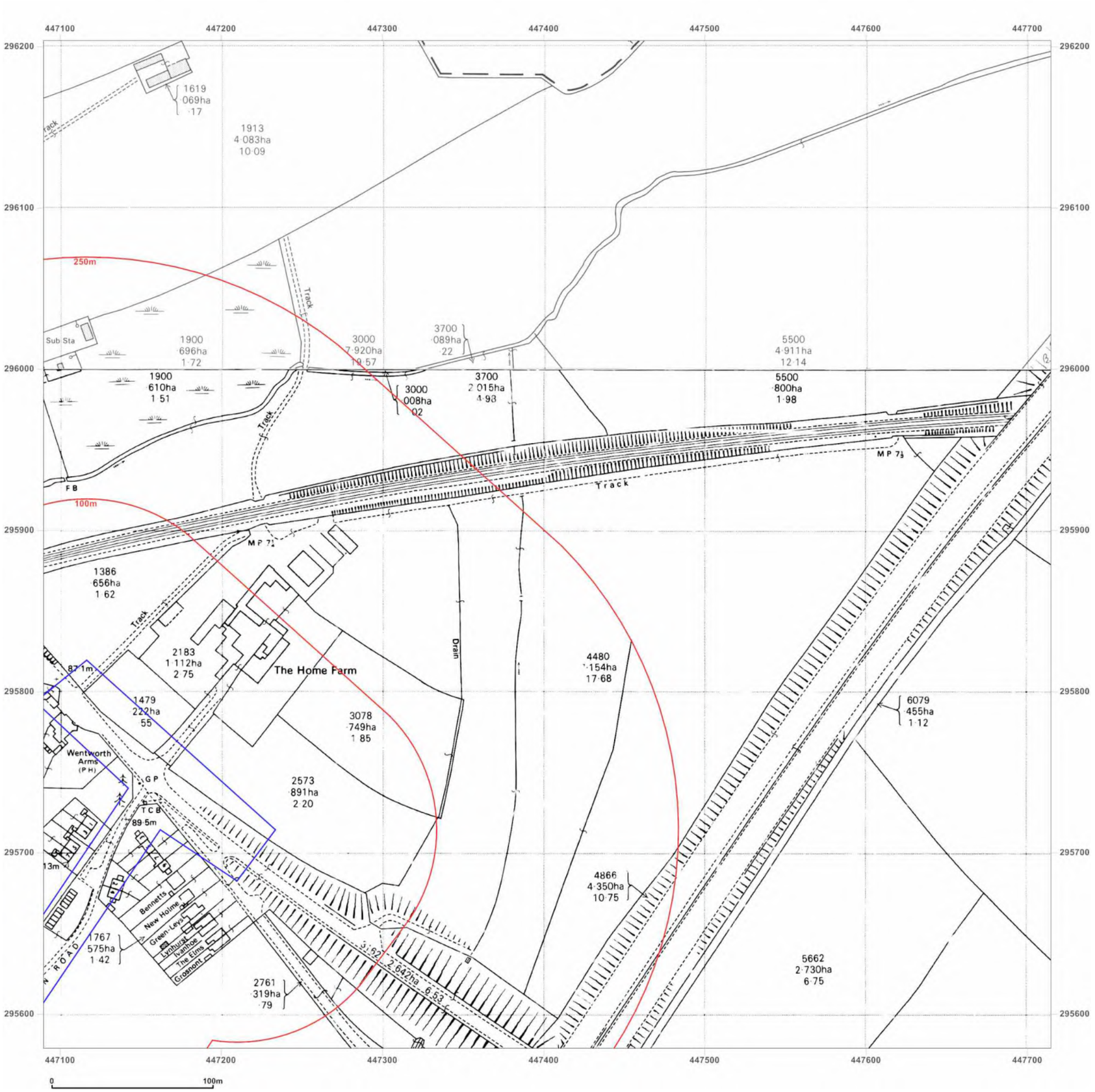

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: National Grid

Map date: **1984**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1984
Revised 1984
Edition N/A
Copyright 1985
Levelled 1964

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

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: National Grid

Map date: **1983-1985**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Surveyed 1983
Revised 1983
Edition N/A
Copyright 1984
Levelled 1964

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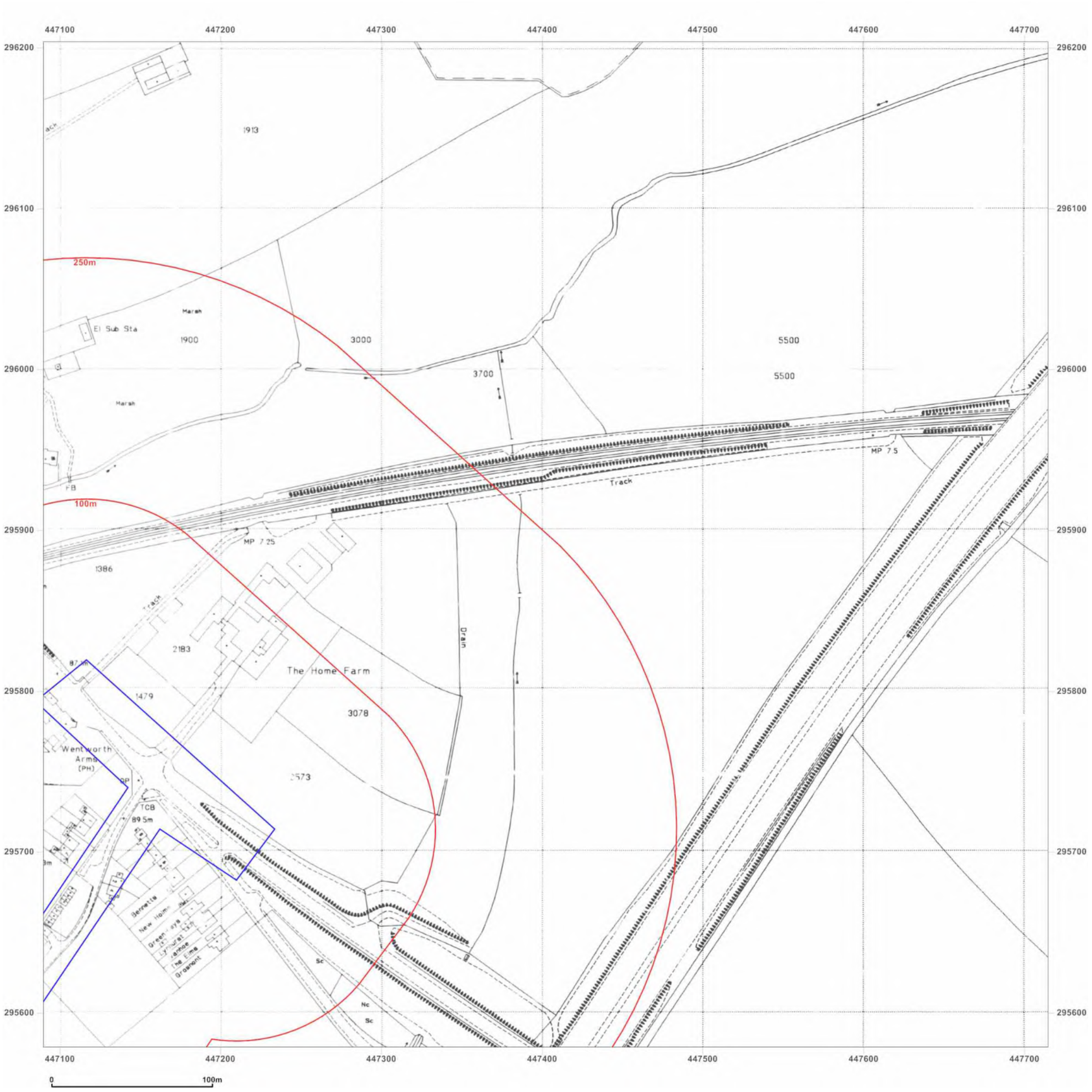

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_LS_5_6
Grid Ref: 447402, 295891

Map Name: National Grid

Map date: **1994**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1994
Revised 1994
Edition N/A
Copyright N/A
Levelled N/A

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

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: County Series

Map date: **1886**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1886 Revised 1886 Edition N/A Copyright N/A Levelled N/A			Surveyed 1886 Revised N/A Edition N/A Copyright N/A Levelled N/A
Surveyed 1886 Revised 1886 Edition N/A Copyright N/A Levelled N/A			Surveyed 1886 Revised 1886 Edition N/A Copyright N/A Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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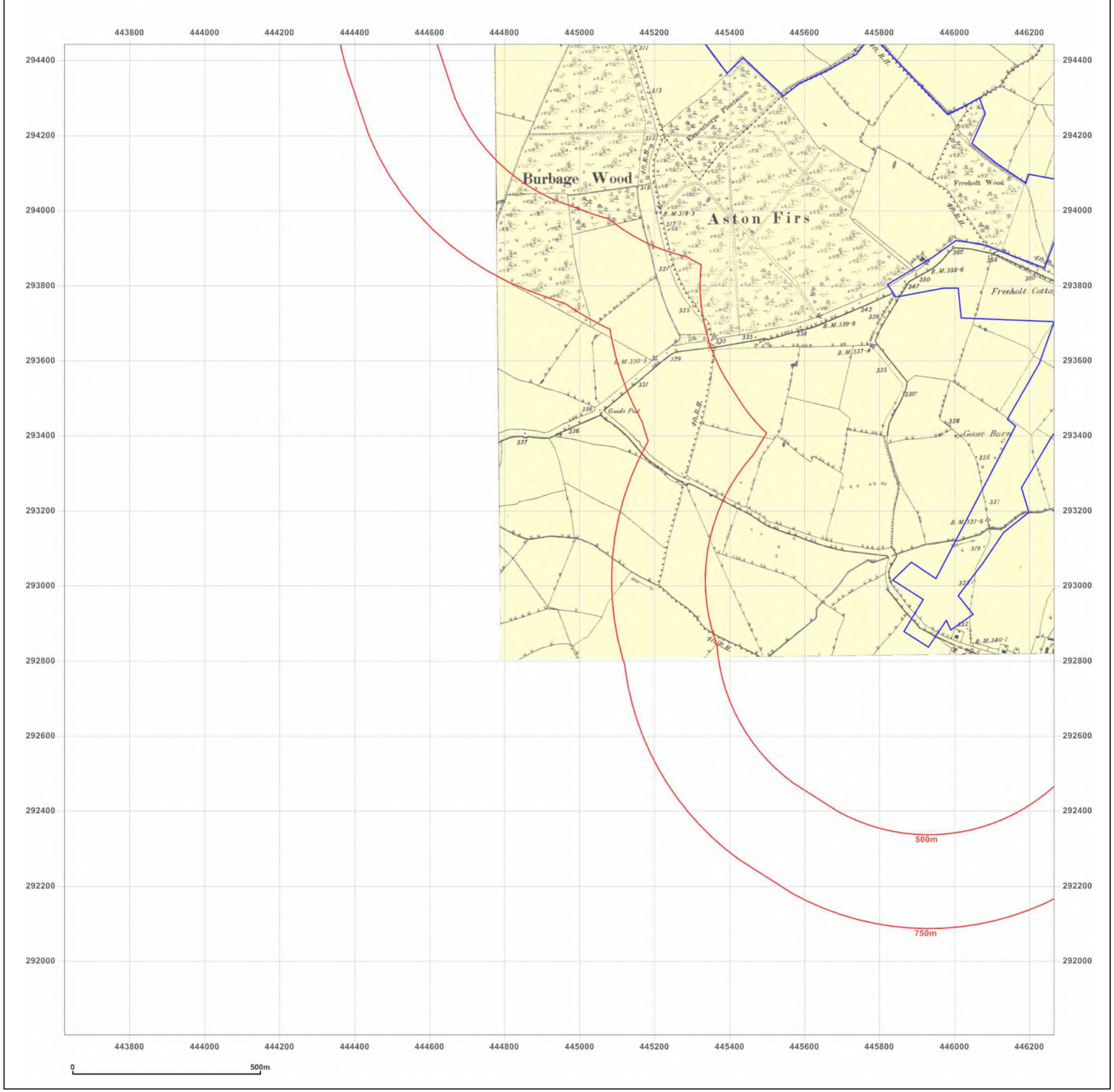

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: County Series

Map date: **1886**

Scale: 1:10,560

Printed at: 1:10,560

N
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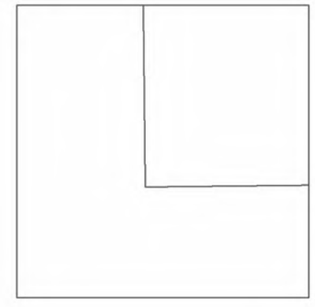
Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A



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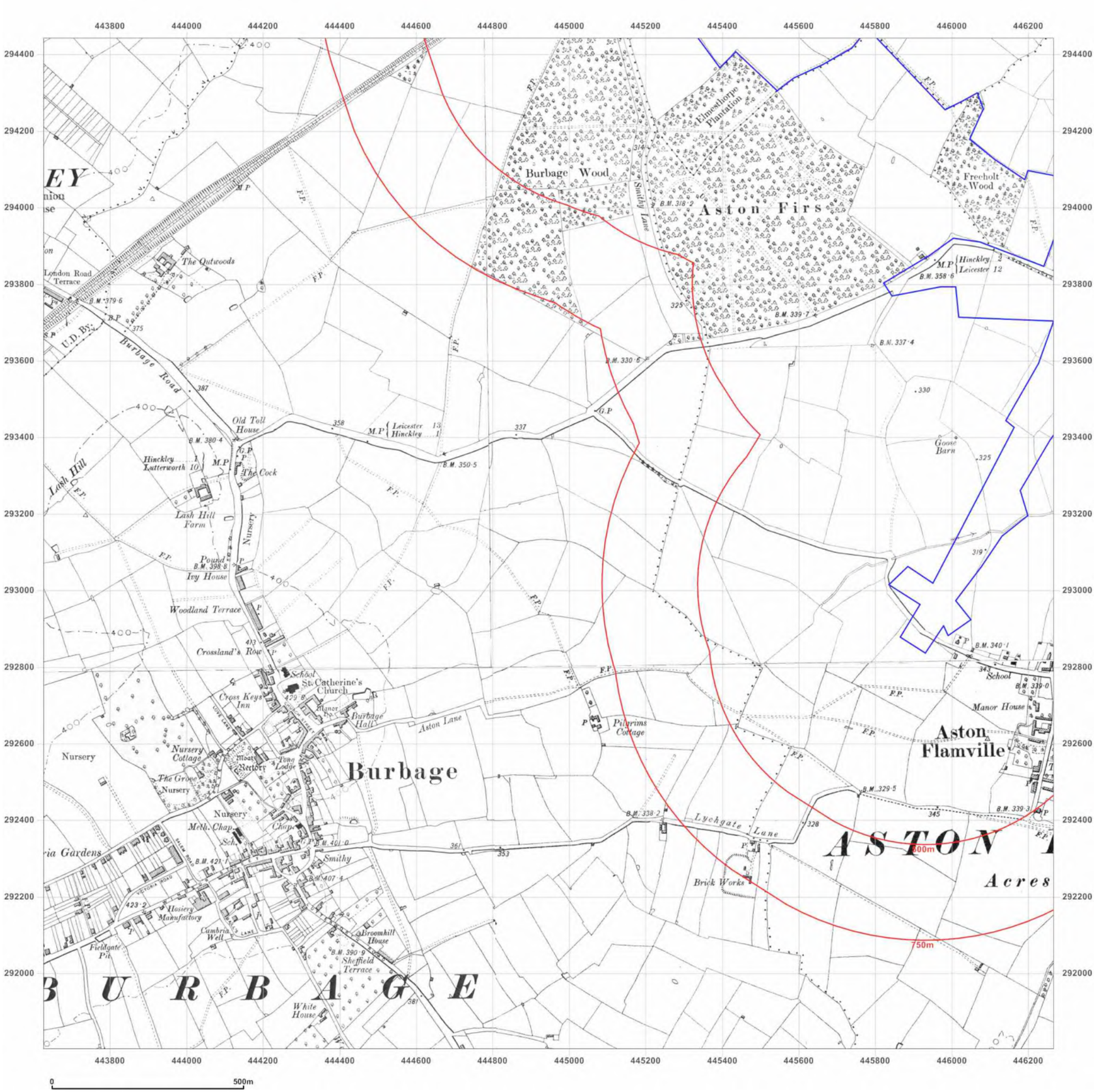

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: County Series

Map date: **1901-1904**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1887
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

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

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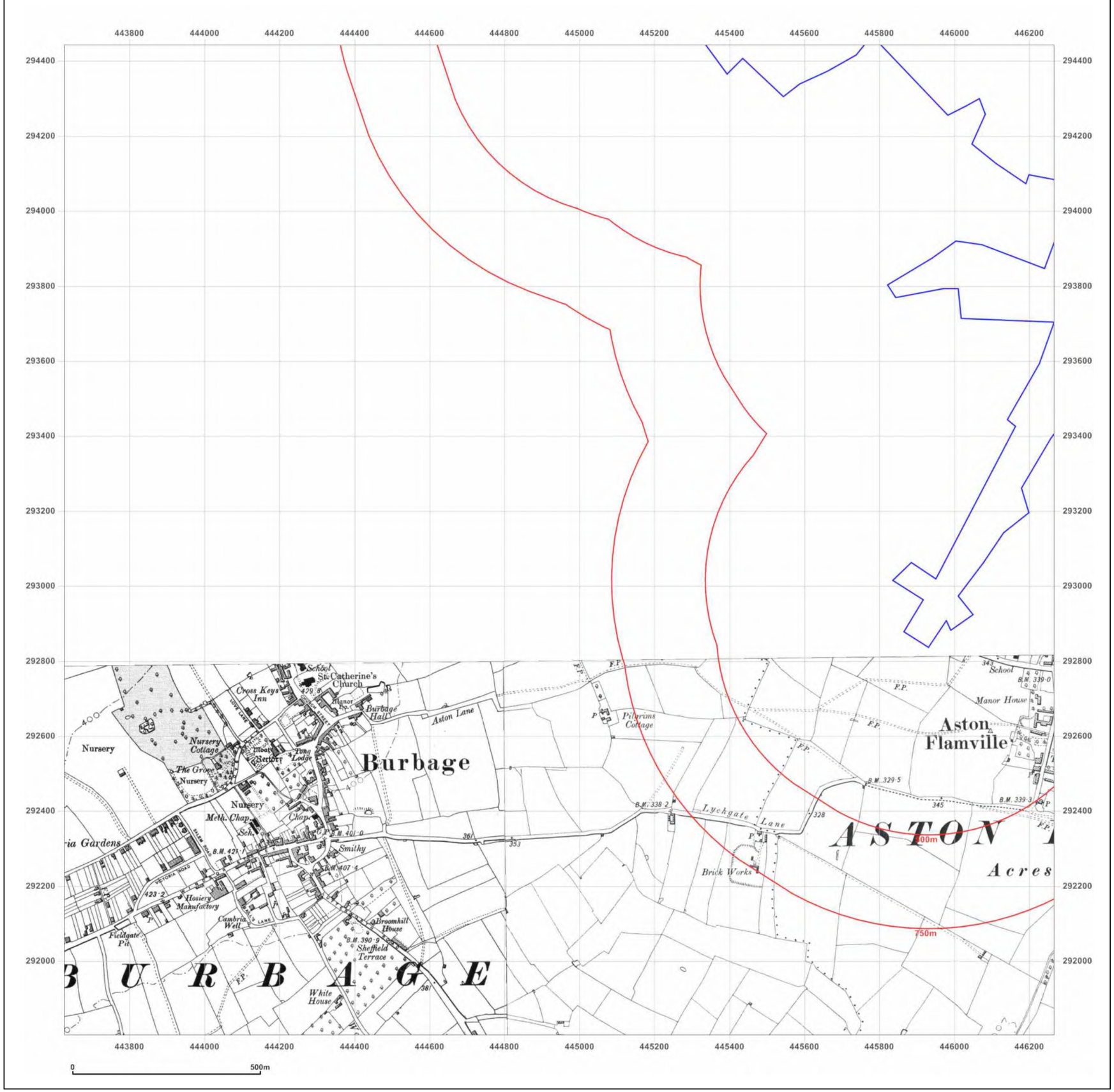

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: County Series

Map date: **1902-1904**

Scale: 1:10,560

Printed at: 1:10,560

N
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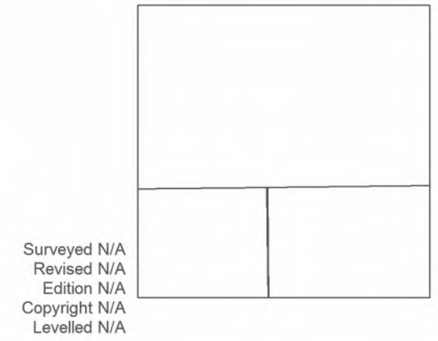

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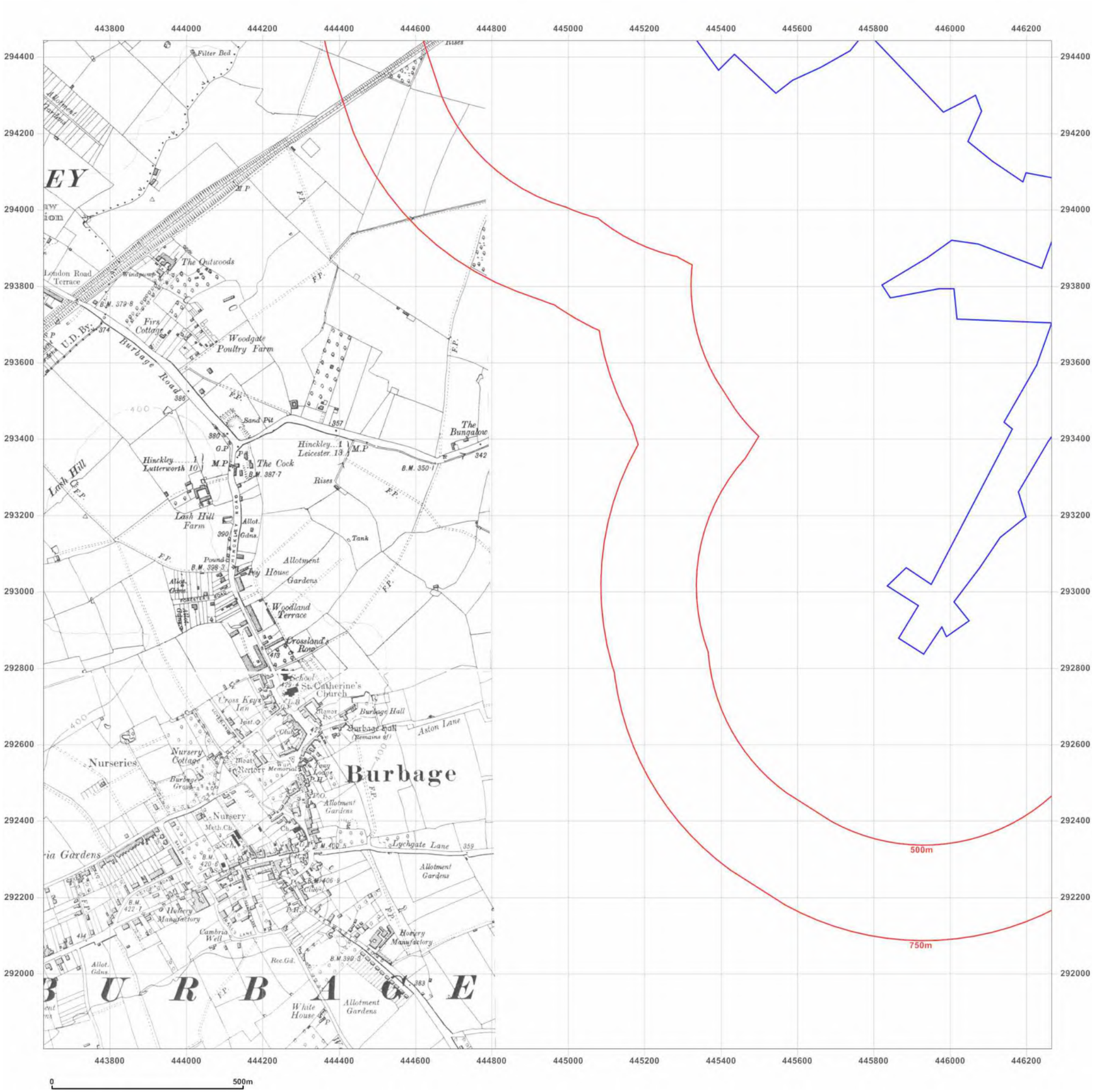

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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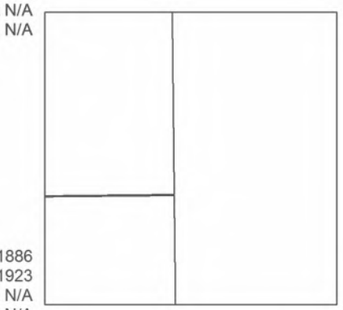
Surveyed 1886
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1886
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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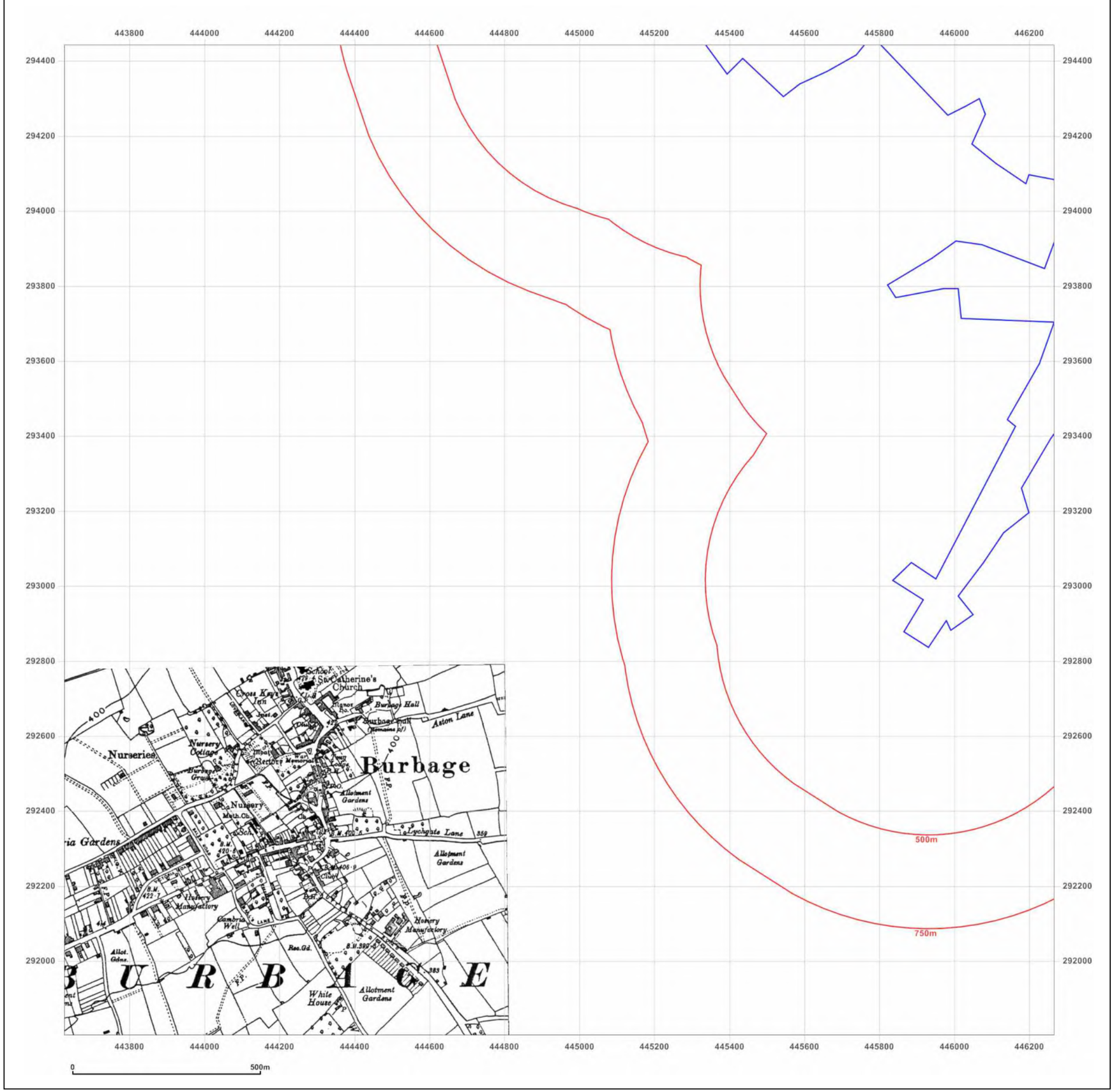

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: County Series

Map date: **1925**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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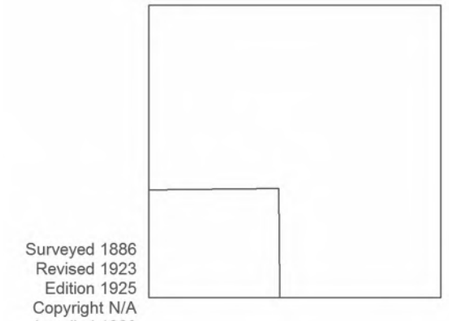

Surveyed 1886
Revised 1923
Edition 1925
Copyright N/A
Levelled 1923

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Production date: 30 January 2018

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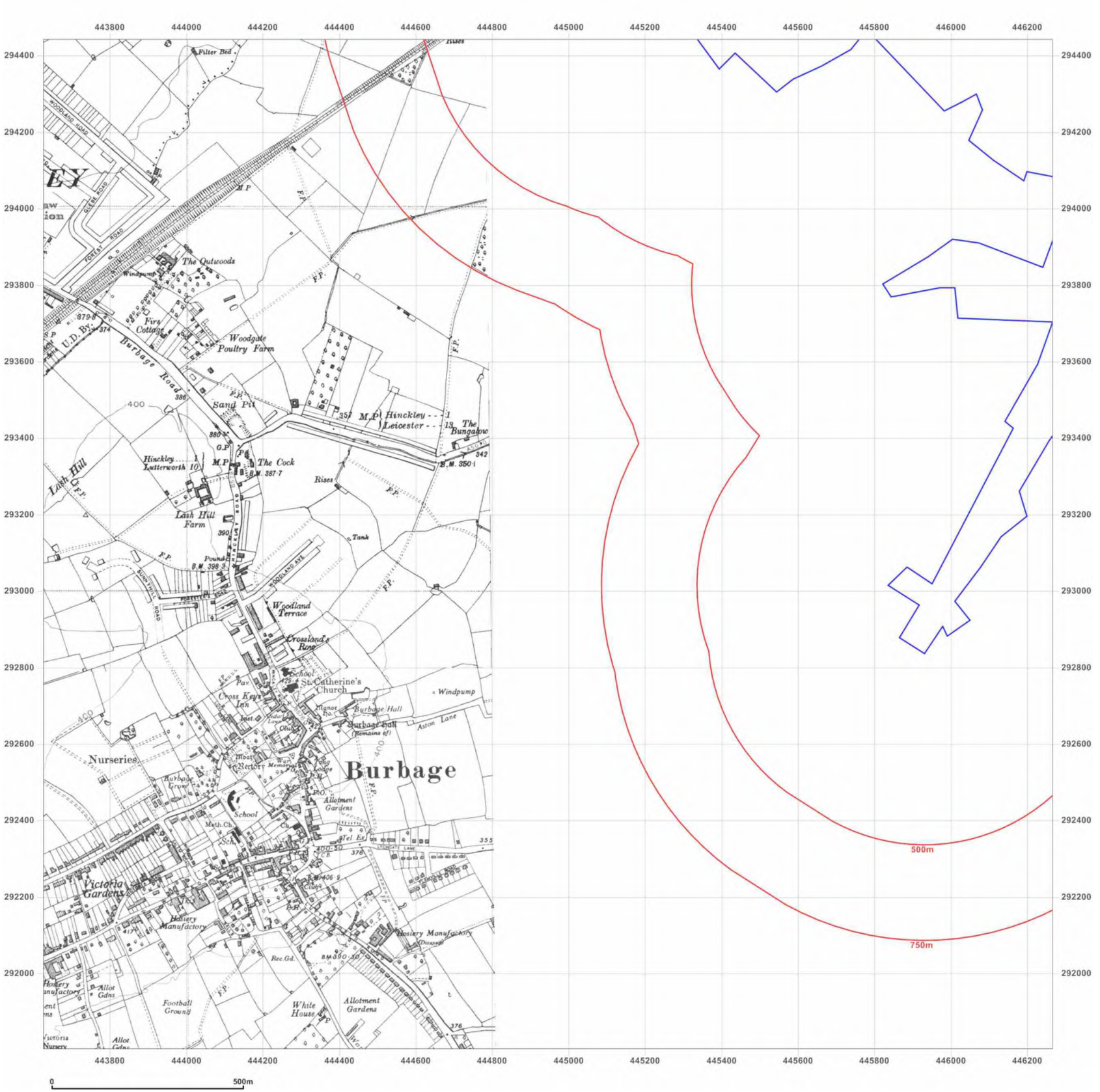

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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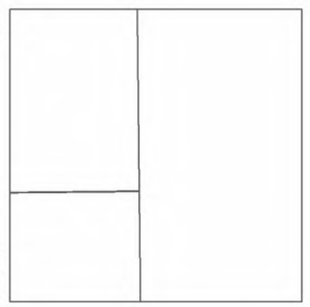
Surveyed 1886
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1886
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

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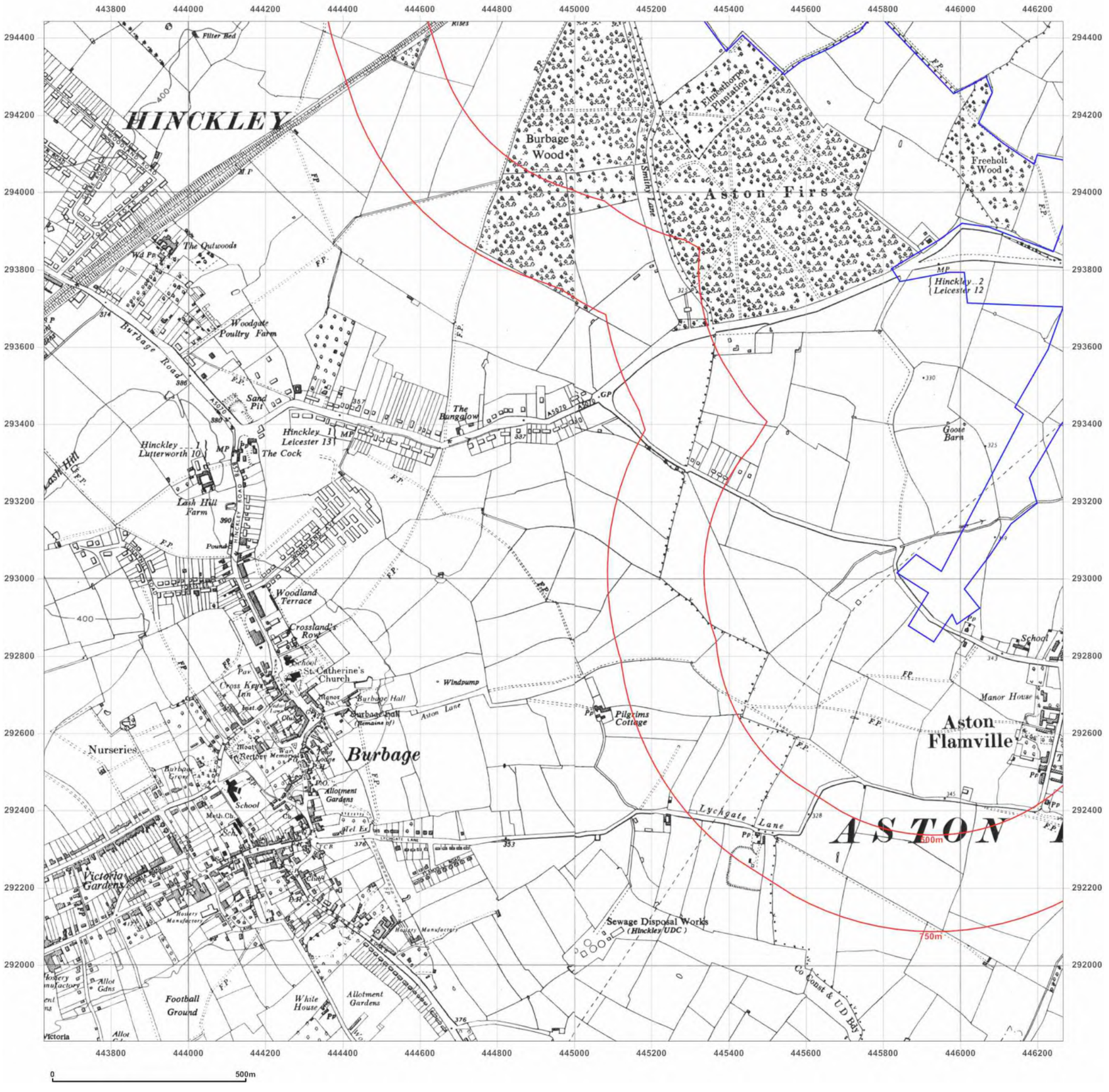

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: Provisional

Map date: **1950-1955**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1950
Revised 1950
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised 1954
Edition 1955
Copyright N/A
Levelled N/A

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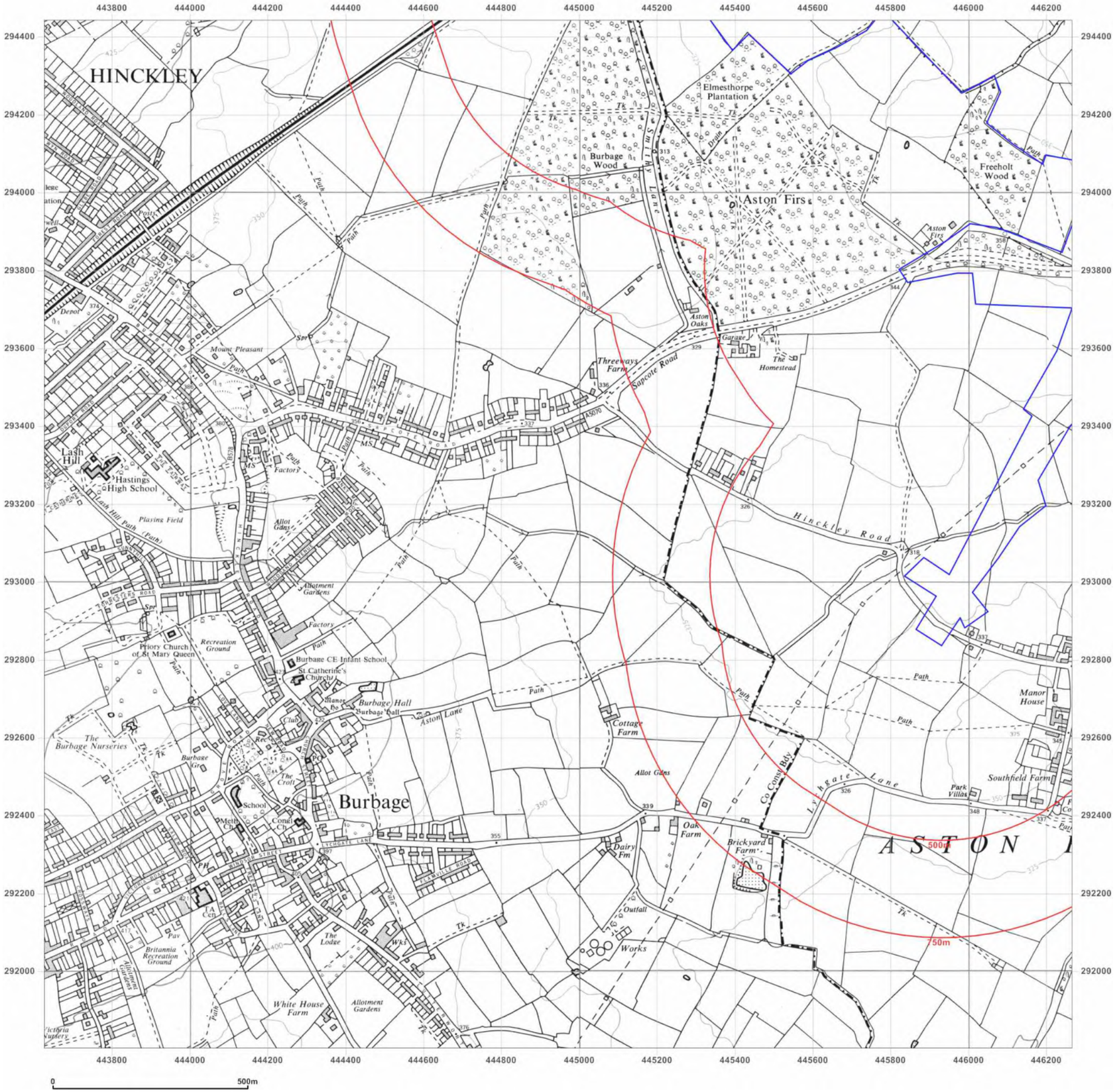

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: Provisional
Map date: **1968**
Scale: 1:10,560
Printed at: 1:10,560

N
W E
S

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

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

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: National Grid

Map date: **1977-1979**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1975
Revised 1977
Edition N/A
Copyright 1977
Levelled 1965

Surveyed 1976
Revised 1979
Edition N/A
Copyright 1979
Levelled 1965

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: National Grid

Map date: **1983**

Scale: 1:10,000

Printed at: 1:10,000

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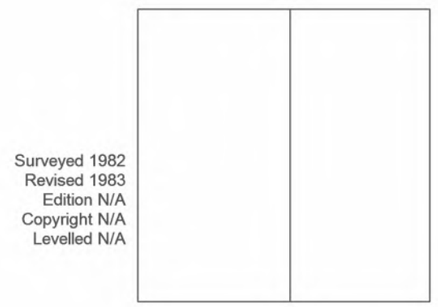

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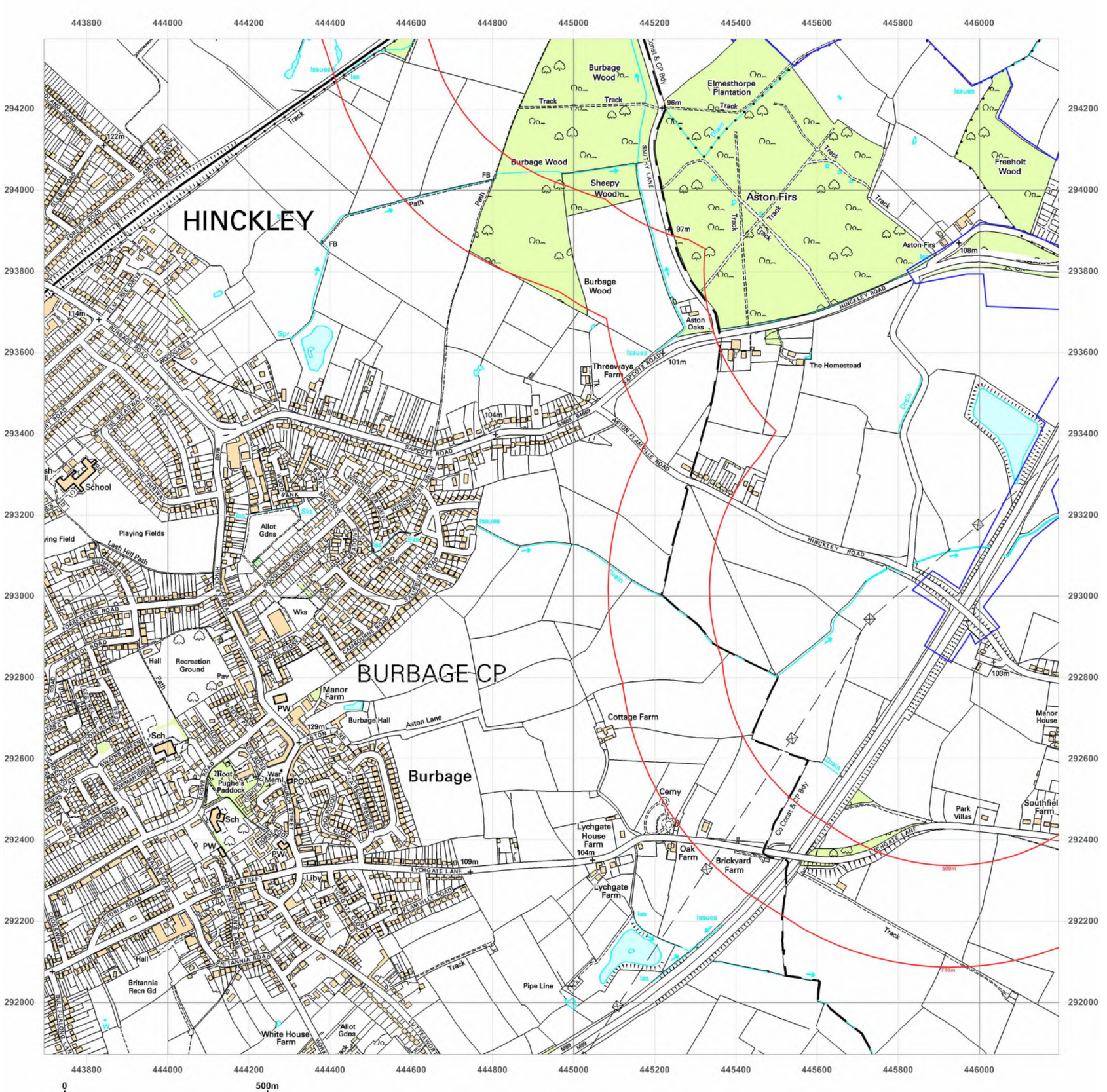

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

N
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2002

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Production date: 30 January 2018

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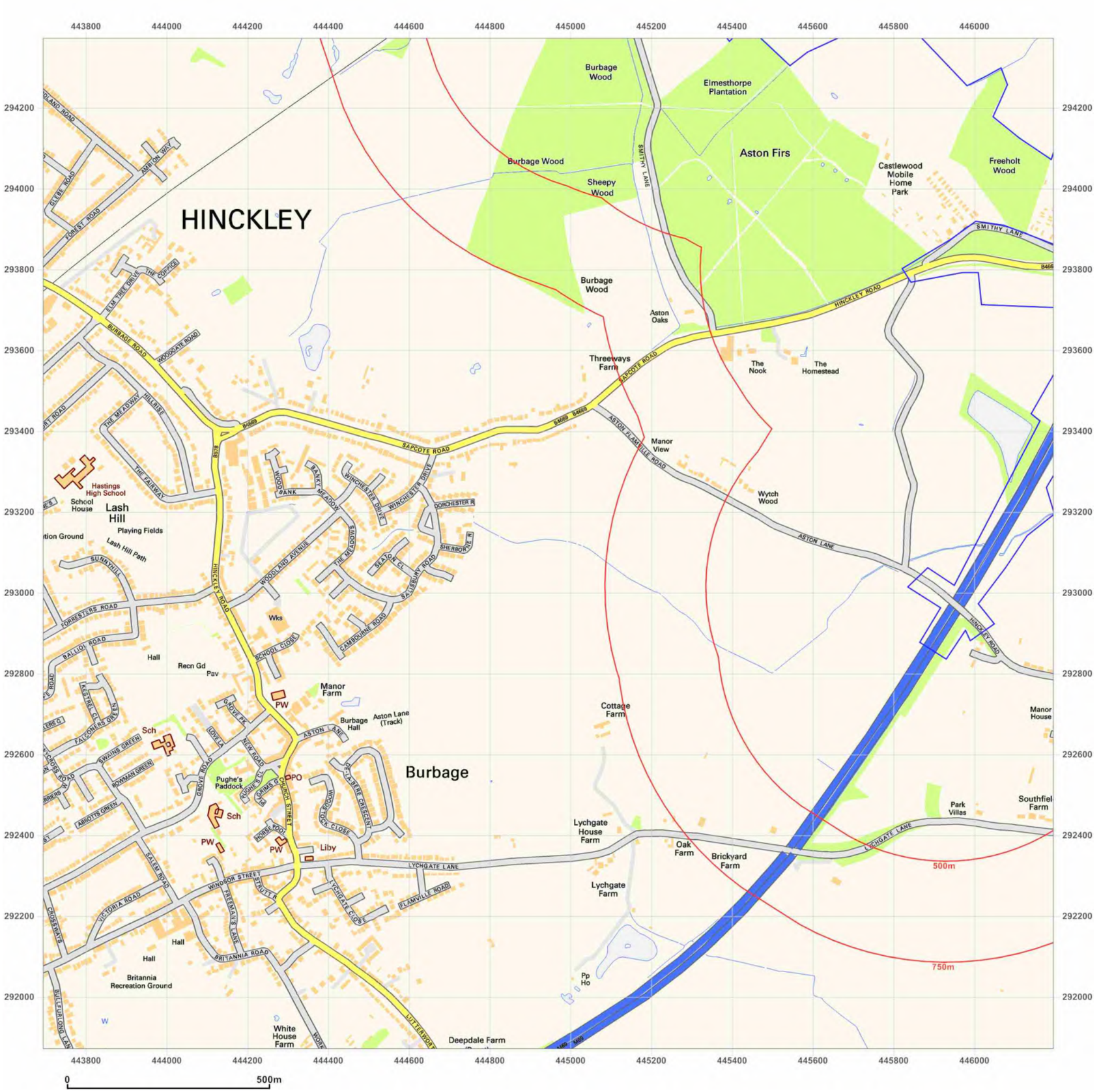

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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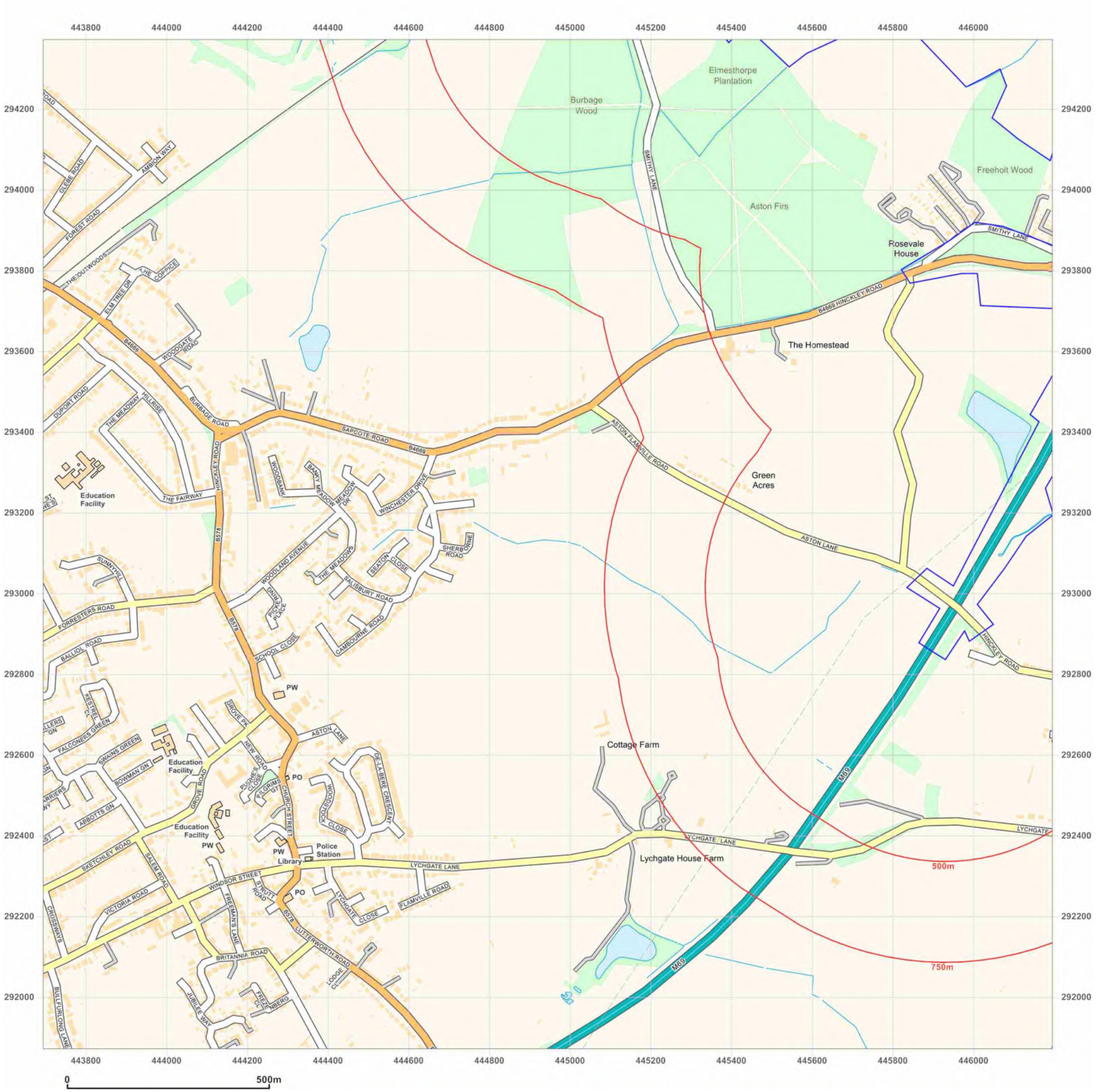

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_1
Grid Ref: 444945, 293122

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

N
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2014

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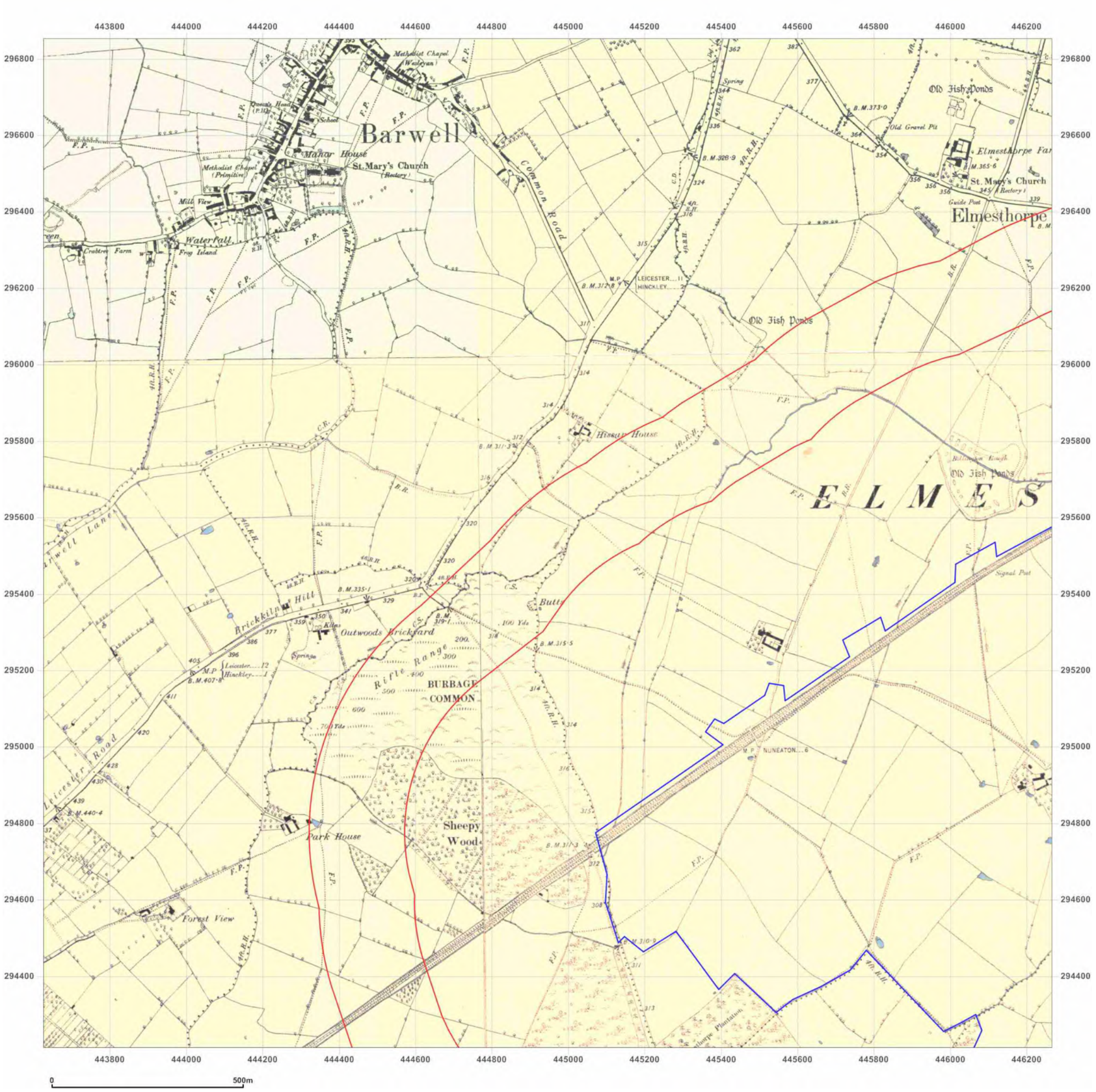

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: County Series

Map date: **1886**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

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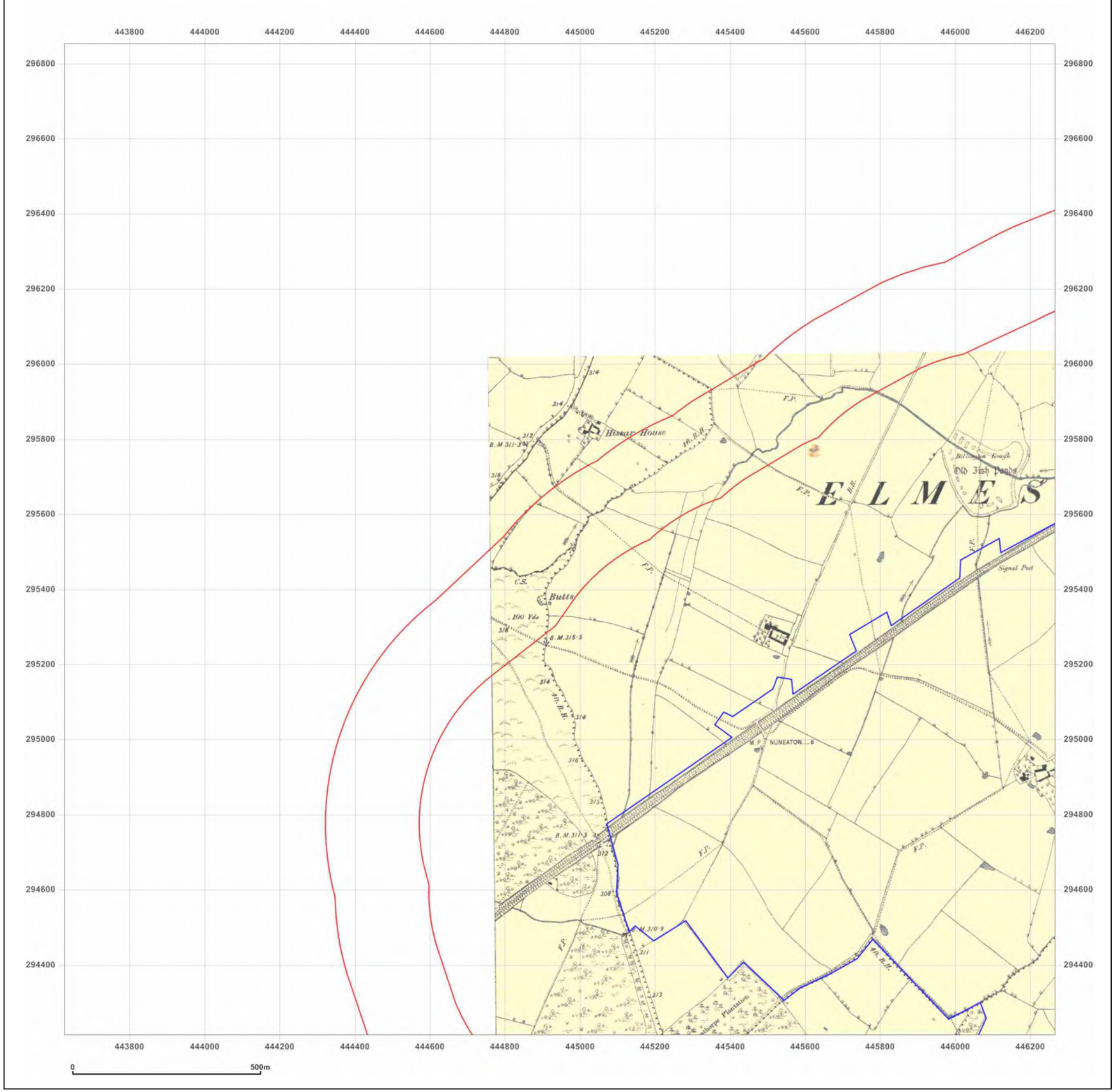

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: County Series

Map date: **1886**

Scale: 1:10,560

Printed at: 1:10,560

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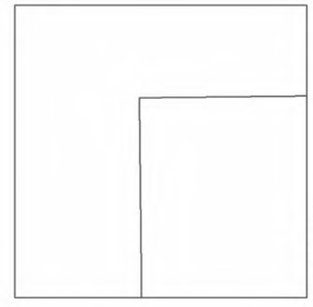

Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

Map legend available at:
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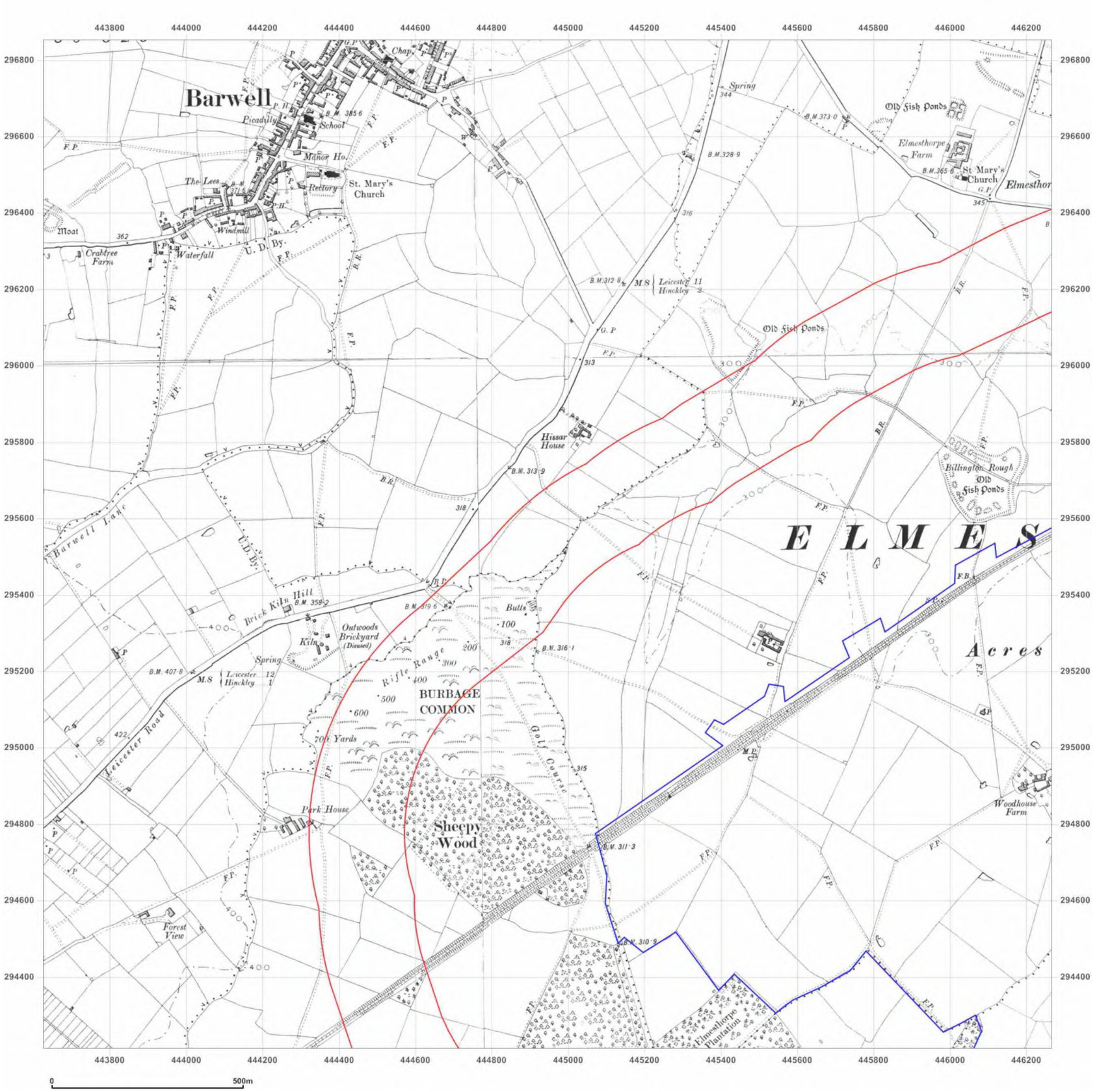

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: County Series

Map date: **1901-1904**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1886
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1887
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1904
Edition N/A
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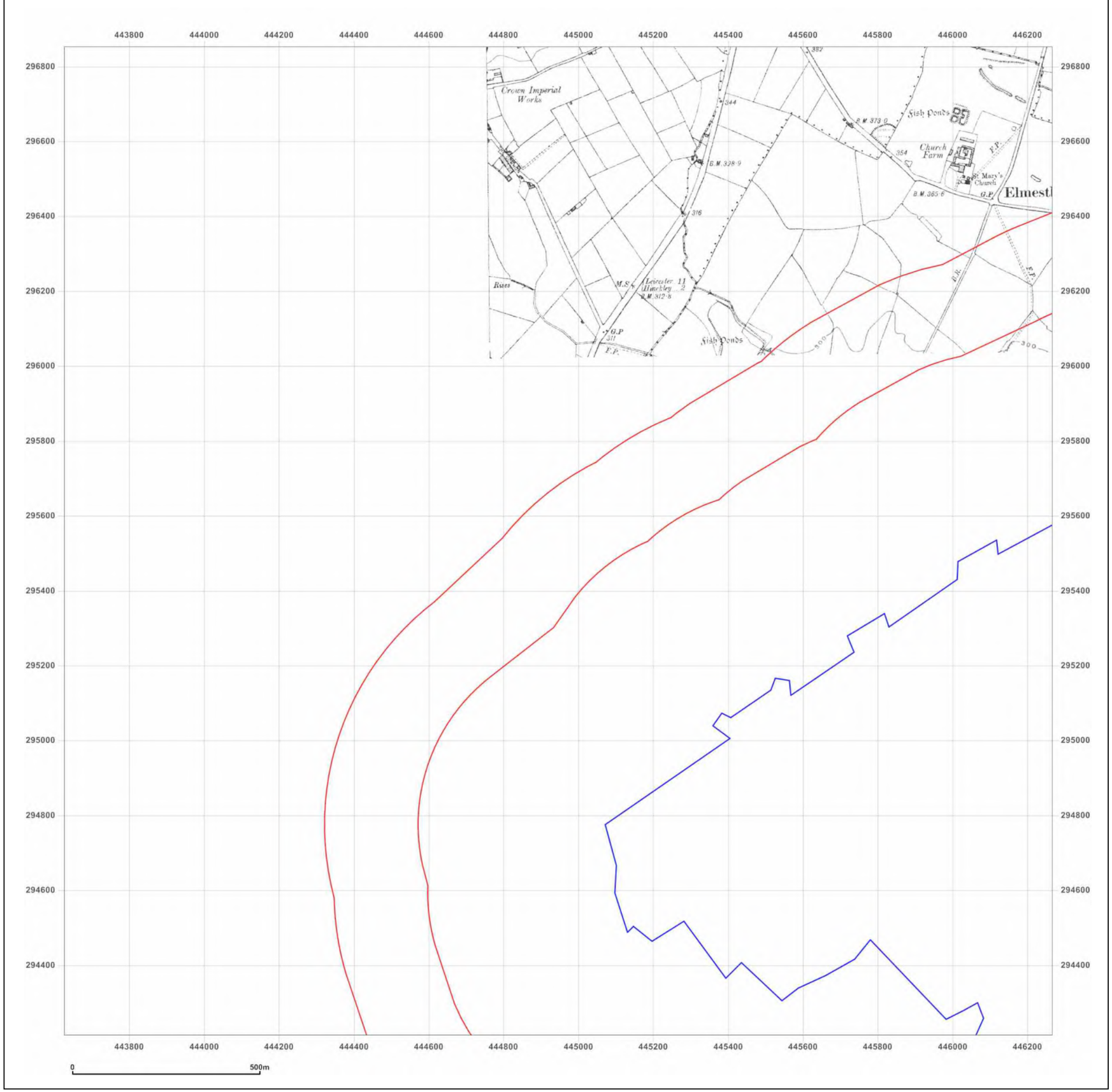

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: County Series

Map date: **1914**

Scale: 1:10,560

Printed at: 1:10,560

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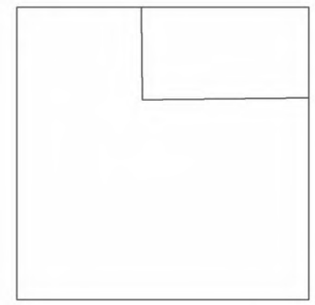
Surveyed 1886
Revised 1914
Edition N/A
Copyright N/A
Levelled N/A



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Production date: 30 January 2018

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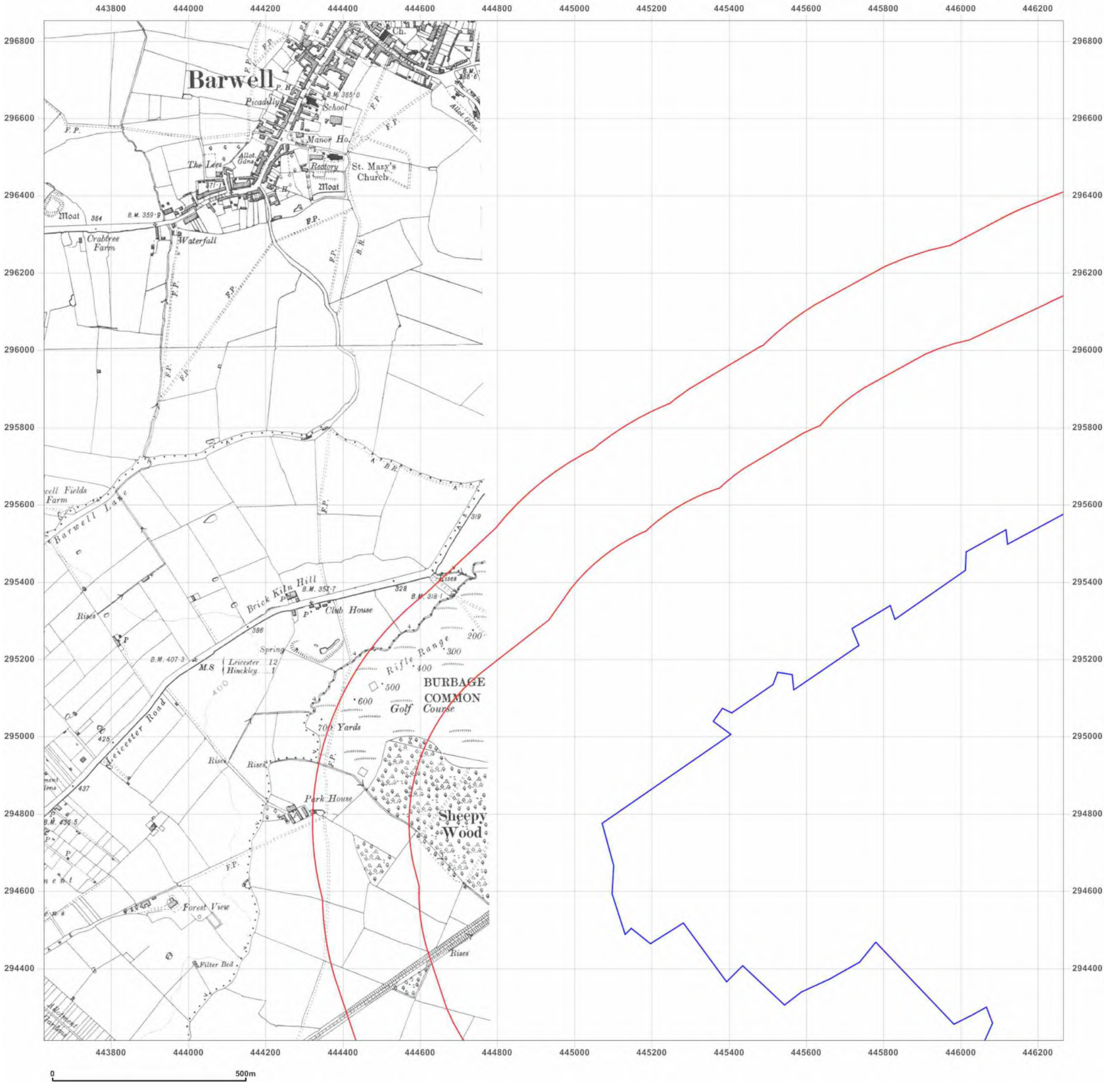

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: County Series

Map date: **1923-1927**

Scale: 1:10,560

Printed at: 1:10,560

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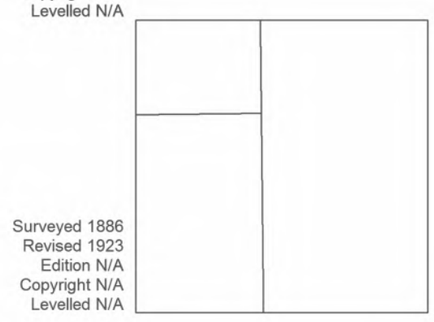
Surveyed 1886
Revised 1927
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1886
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

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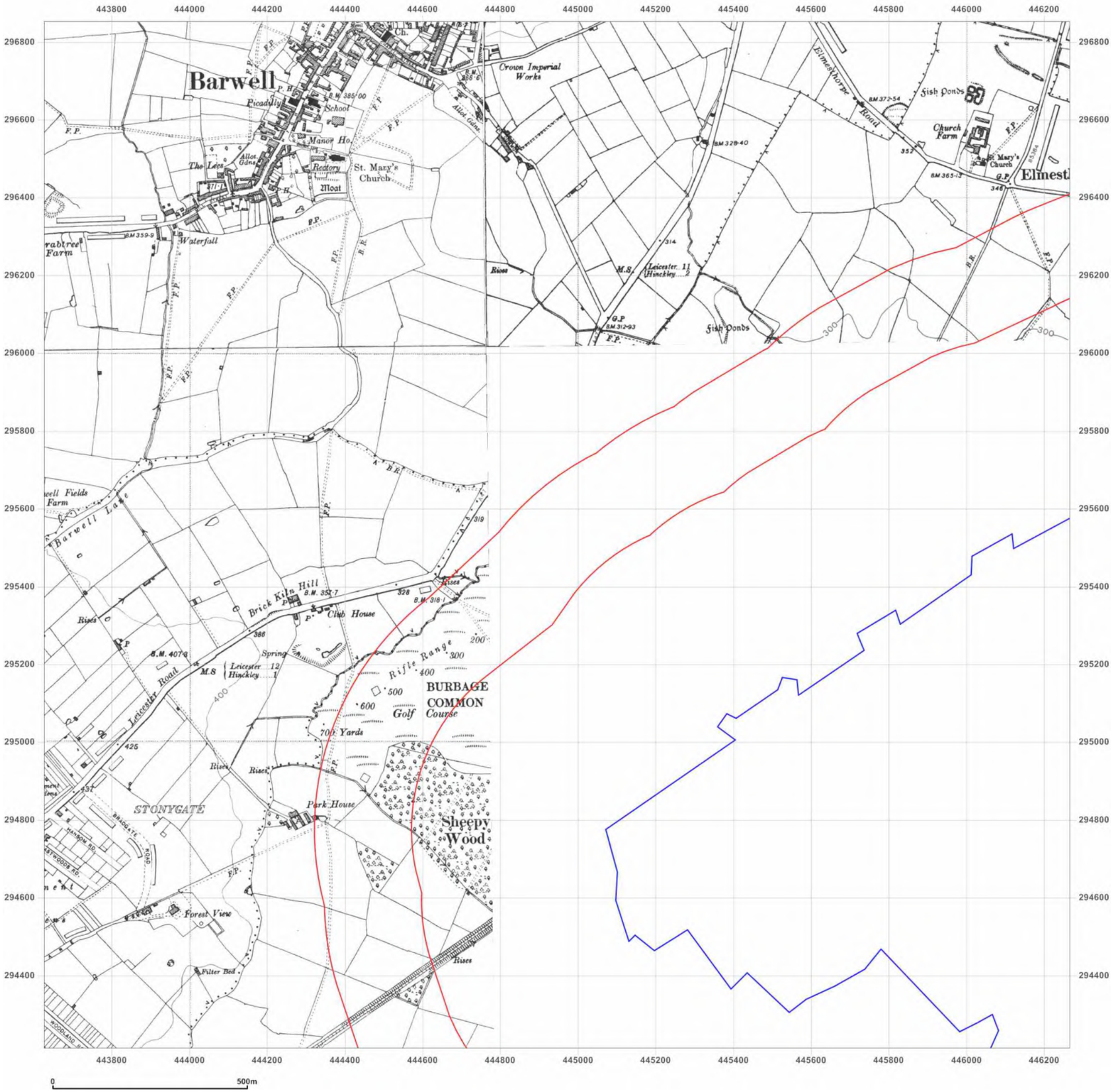

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

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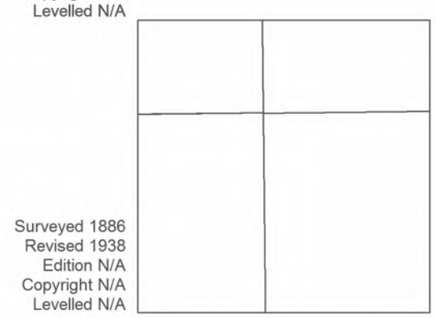
Surveyed 1886
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1886
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

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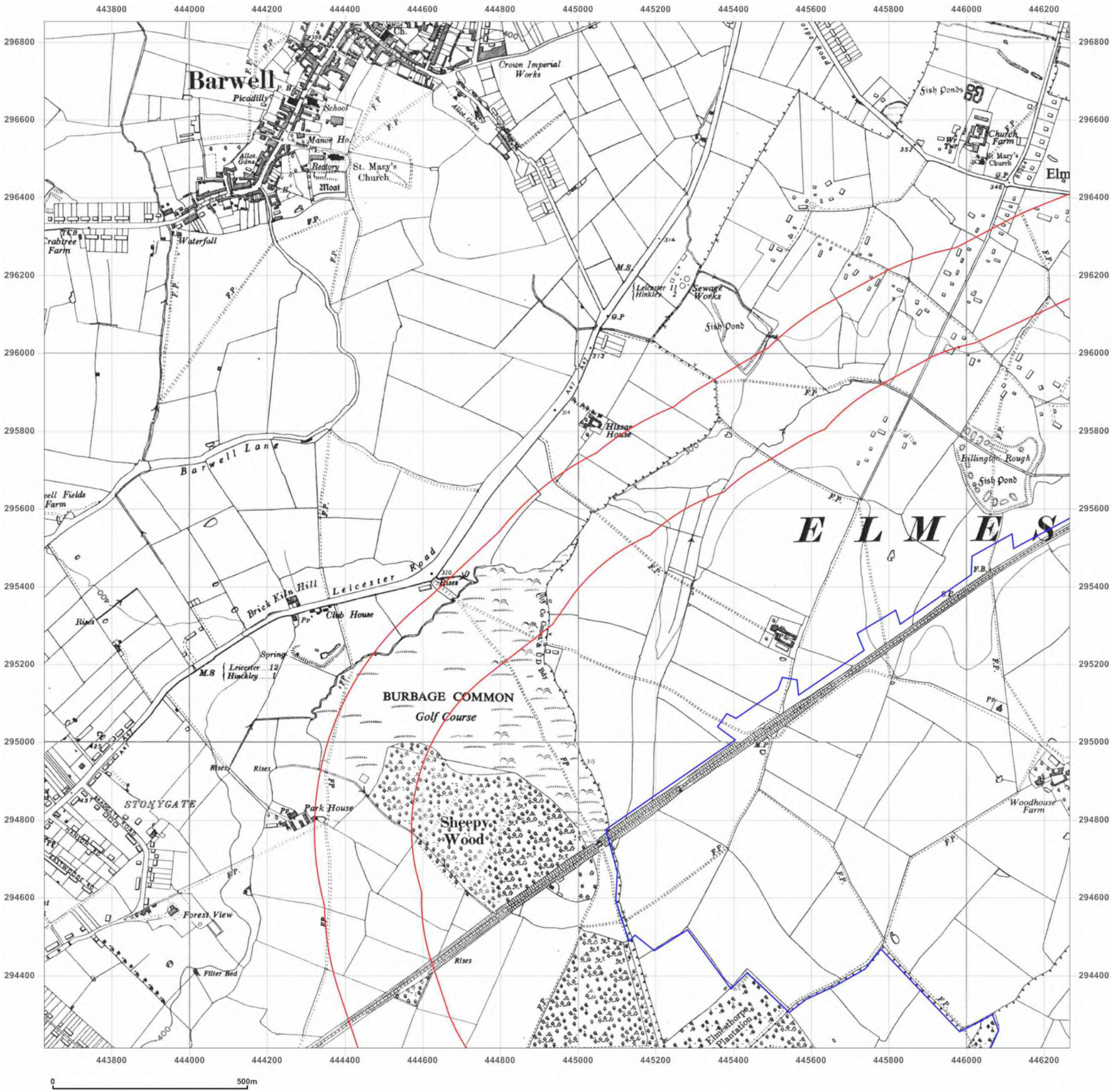

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: Provisional

Map date: **1950-1955**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1950 Revised 1950 Edition N/A Copyright N/A Levelled N/A	Surveyed 1950 Revised 1950 Edition N/A Copyright N/A Levelled N/A
Surveyed 1950 Revised 1950 Edition N/A Copyright N/A Levelled N/A	Surveyed N/A Revised 1954 Edition 1955 Copyright N/A Levelled N/A

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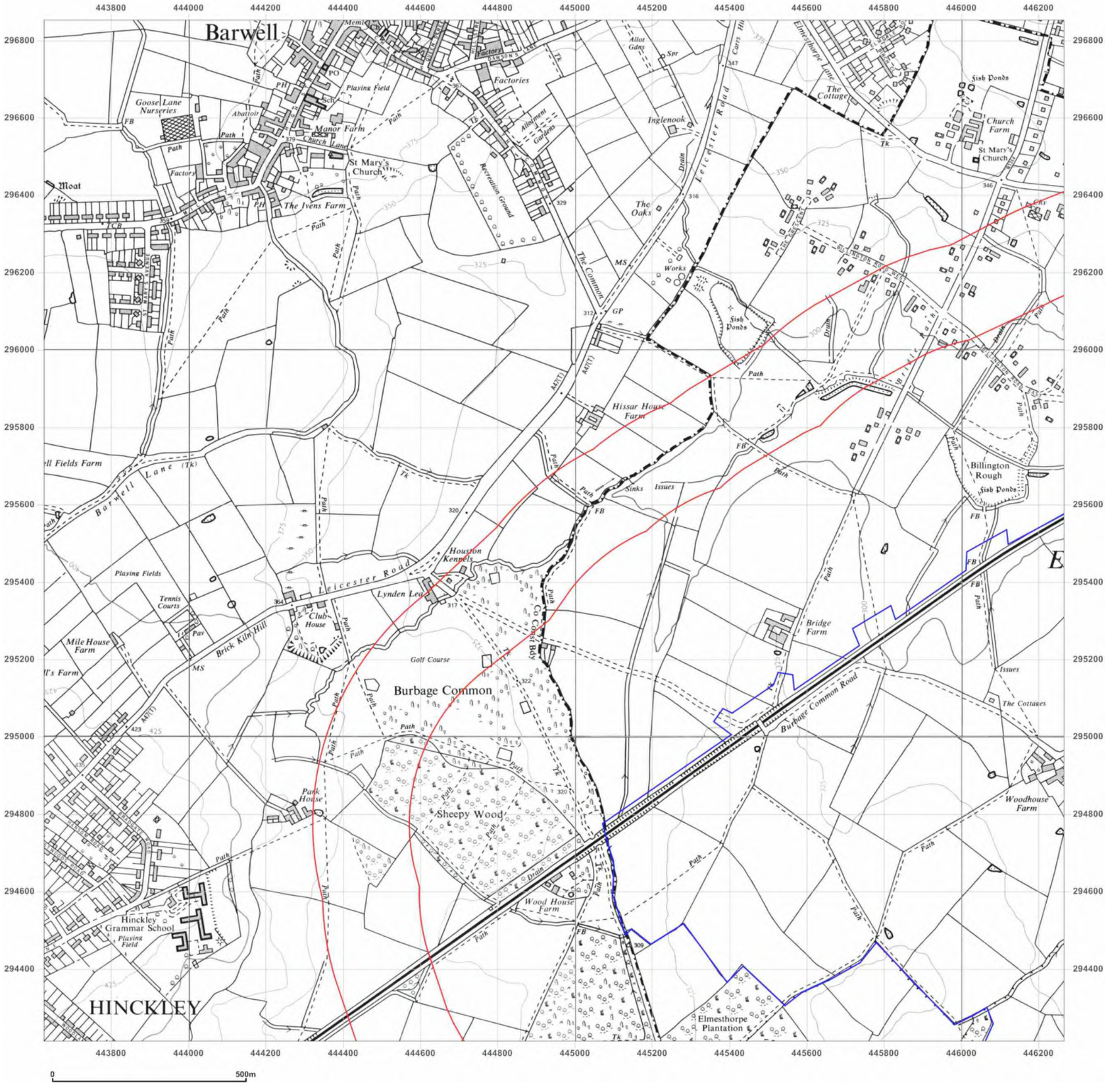

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: Provisional
Map date: **1967-1968**
Scale: 1:10,560
Printed at: 1:10,560

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

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

Surveyed 1968
Revised 1968
Edition N/A
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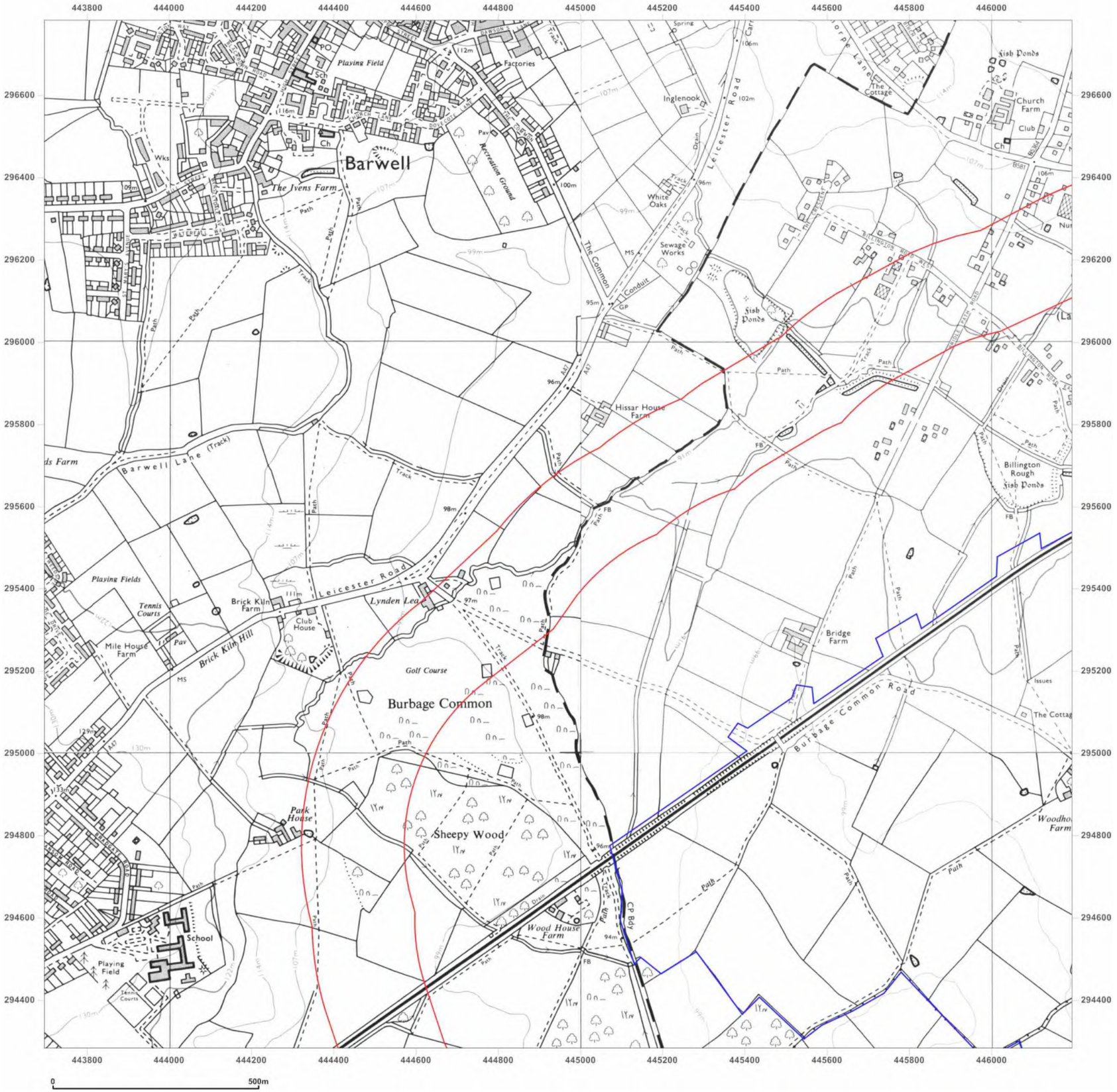

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: National Grid

Map date: **1977-1980**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1977
Revised 1979
Edition N/A
Copyright 1980
Levelled 1965

Surveyed 1972
Revised 1980
Edition N/A
Copyright 1980
Levelled 1965

Surveyed 1975
Revised 1977
Edition N/A
Copyright 1977
Levelled 1965

Surveyed 1976
Revised 1979
Edition N/A
Copyright 1979
Levelled 1965

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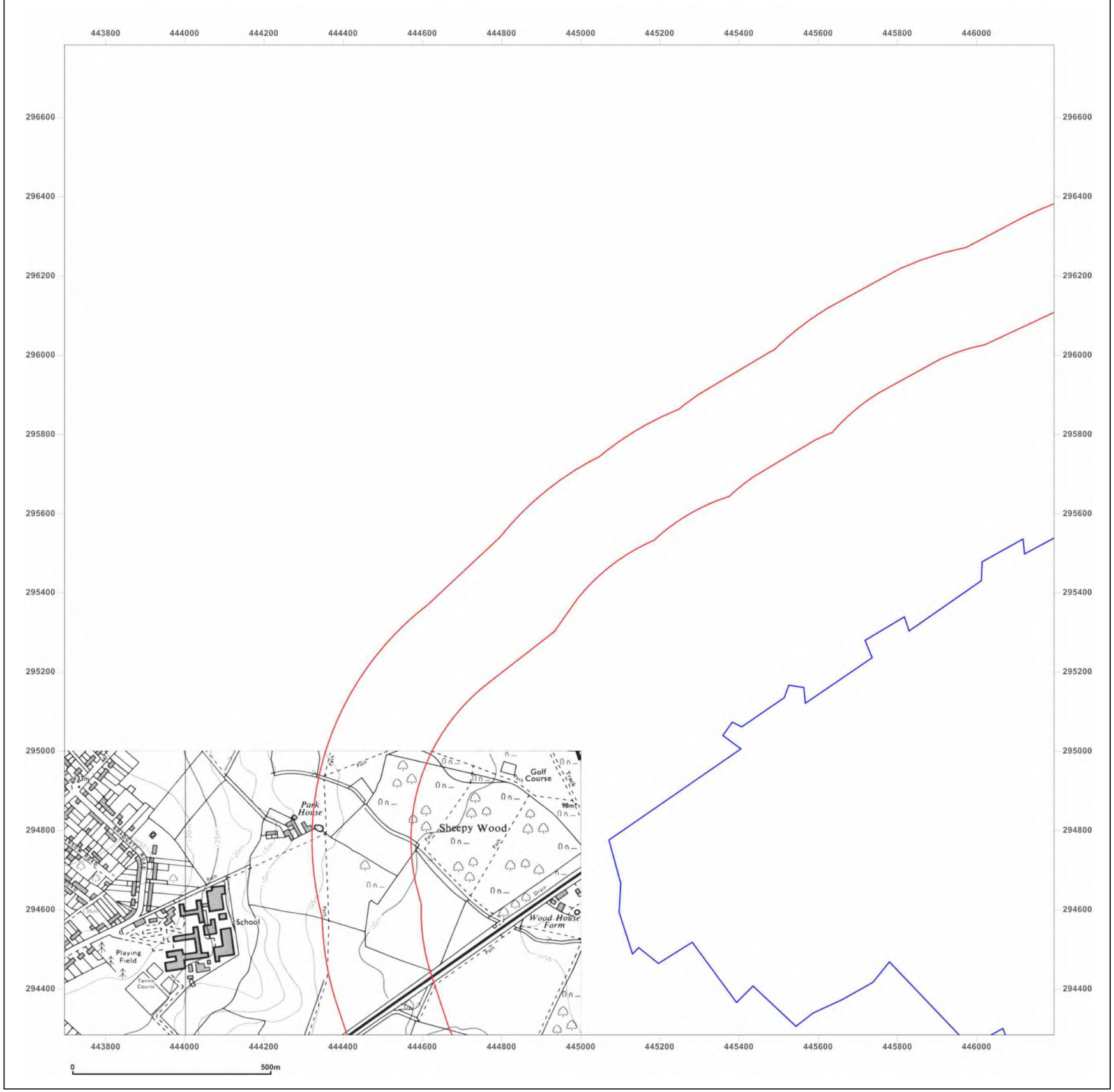

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: National Grid

Map date: **1983**

Scale: 1:10,000

Printed at: 1:10,000

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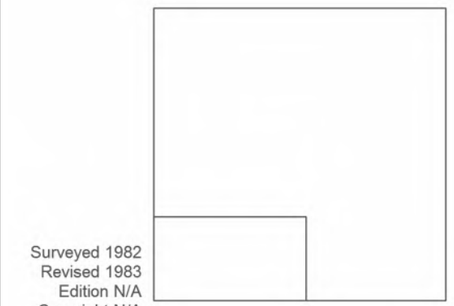

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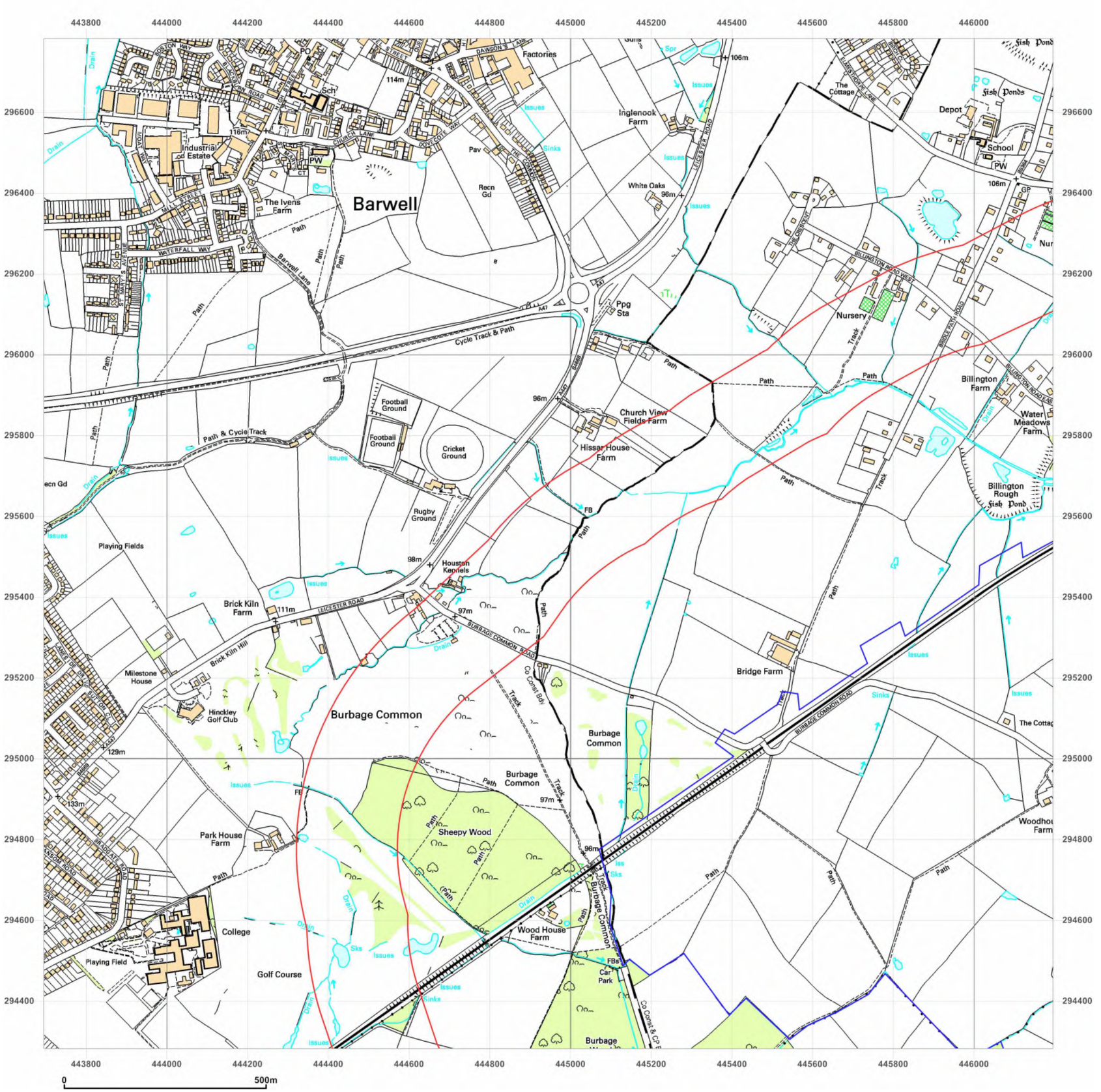

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

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2002

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Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: National Grid
Map date: **2010**
Scale: 1:10,000
Printed at: 1:10,000

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2010

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Production date: 30 January 2018

Map legend available at:
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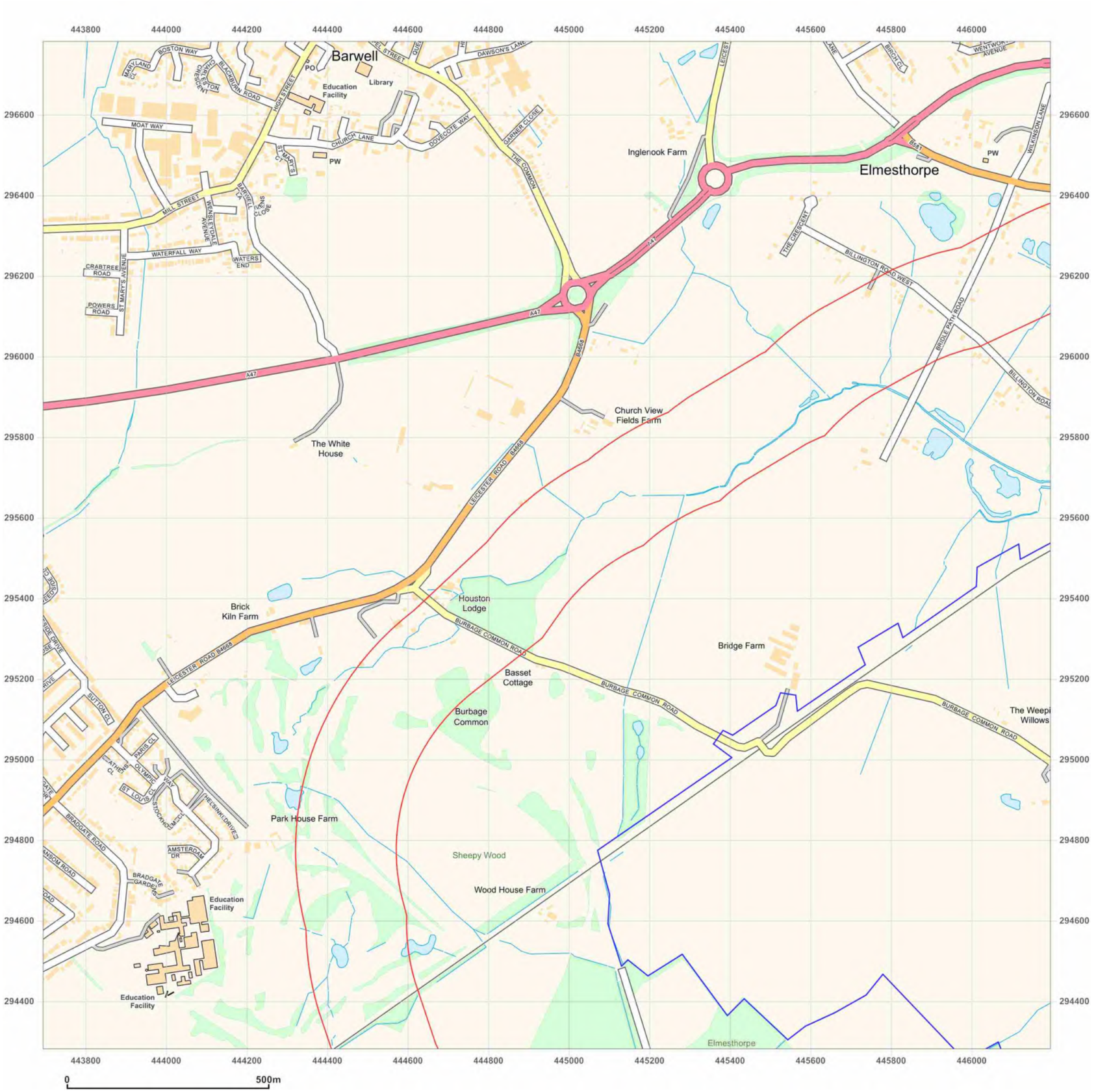

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_1_2
Grid Ref: 444945, 295532

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

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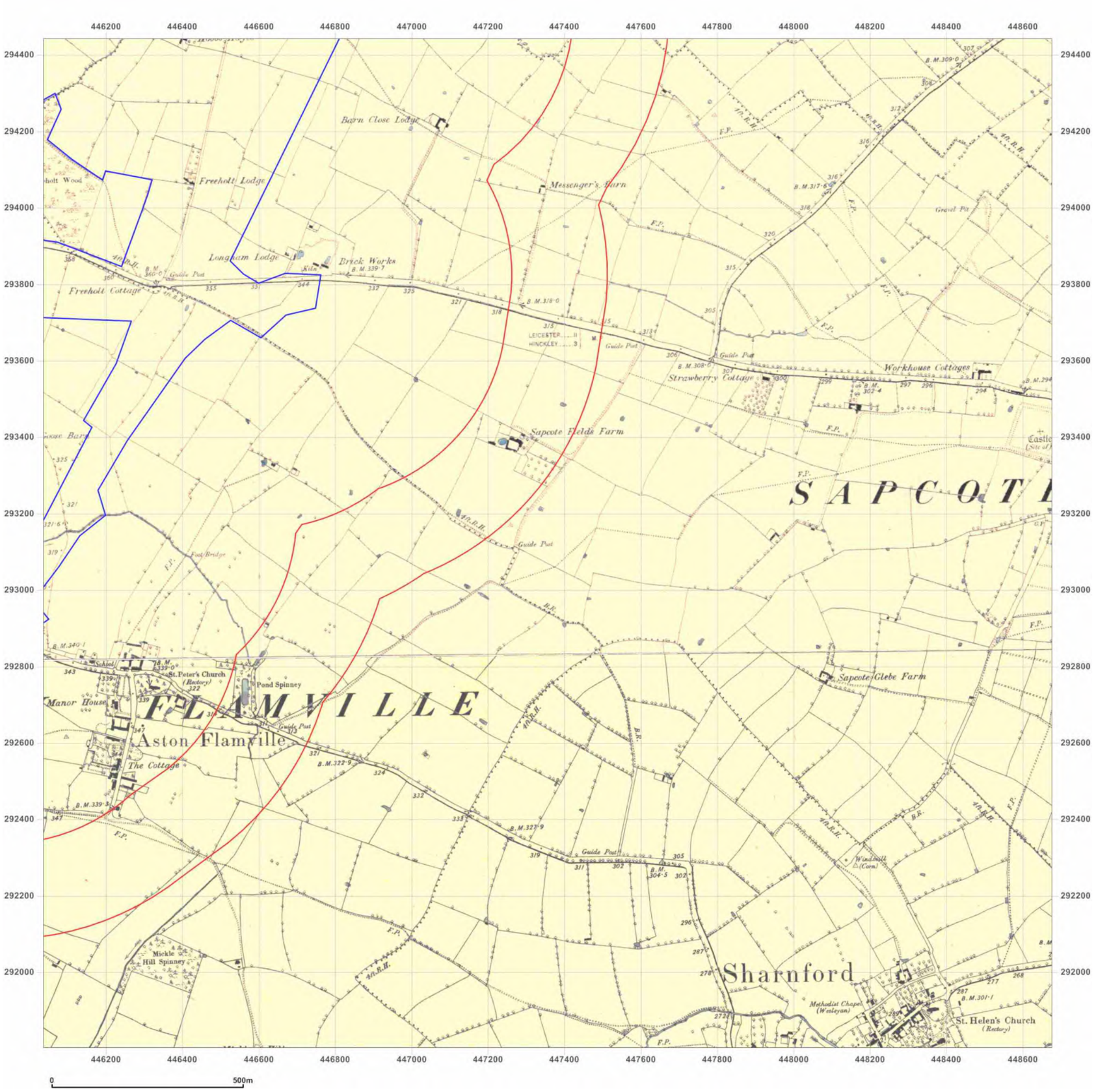

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_2_1
Grid Ref: 447355, 293122

Map Name: County Series

Map date: **1886**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1886
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1886
Revised 1886
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 30 January 2018

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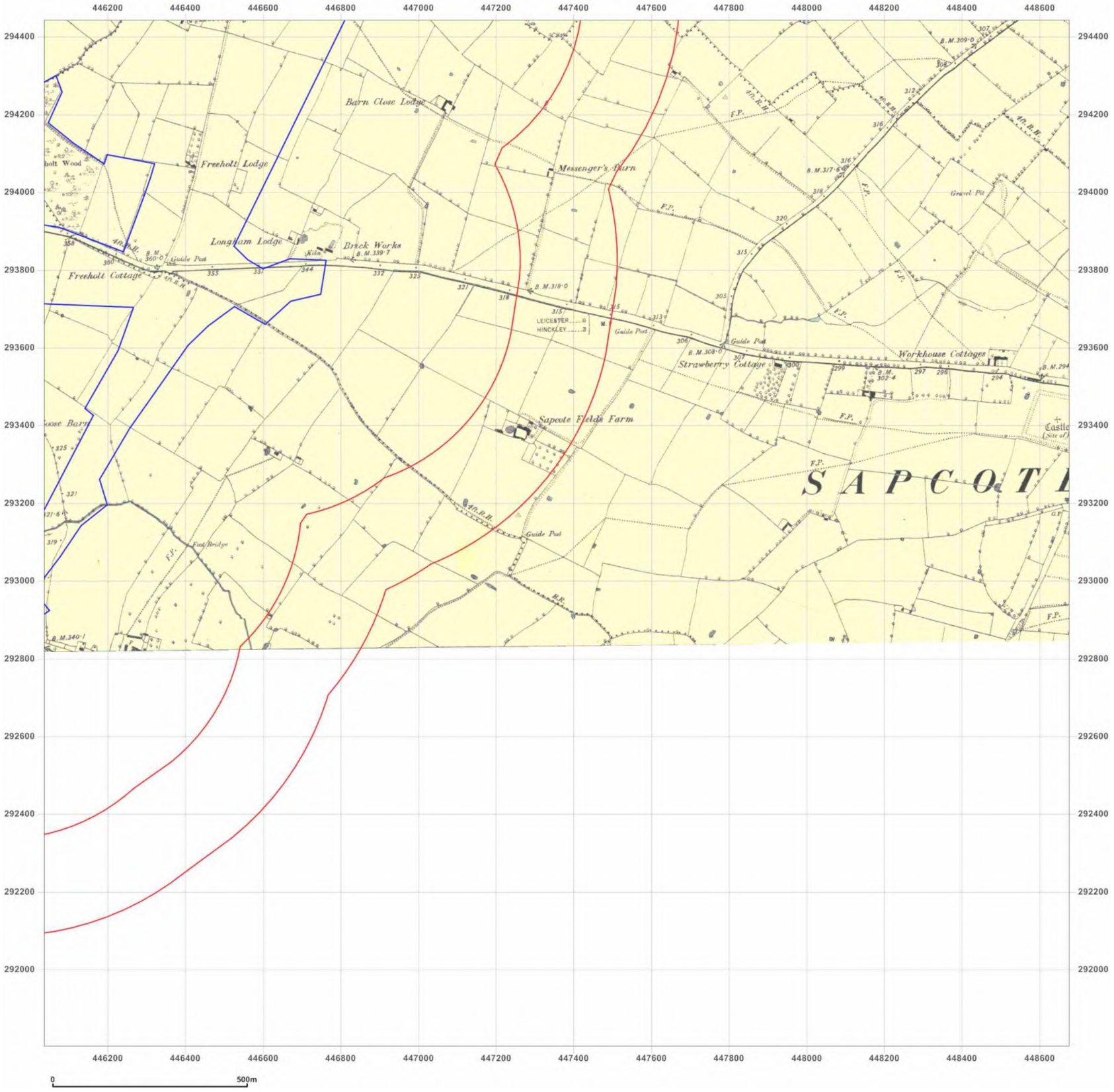

Groundsure INSIGHTS

Site Details:

446123, 294825

Client Ref: POP018343_hinckley
Report Ref: HYD-4695803_SS_2_1
Grid Ref: 447355, 293122

Map Name: County Series

Map date: **1886**

Scale: 1:10,560

Printed at: 1:10,560

N
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Revised 1886
Edition N/A
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