BROWNFIELD SOLUTIONS LTD

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

HOLLINS STRATEGIC LAND

Tappers Farm, Bodicote

Desk Study Assessment Report

EC/C3797/1552

April 2018

Unit 5, Alfred Court, Saxon Business Park, Stoke Prior, Bromsgrove, B60 4AD

Tel: +44 (0) 121 572 9014

brownfield-solutions.com

PROJECT QUALITY CONTROL DATA SHEET

Site Name:	Tappers Farm, Bodicote		
Report Title:	Desk Study Assessment Report		
Report No:	EC/C3797/1552		
Status:	Final		
Date:	April 2018		
Revision:			

Client: Hollins Strategic Land	**Engineer:**
Suite 4 1 King Street Manchester M2 6AW	
Contact: Mr Josh Ramsey	Contact:

Written by:	Checked by:	Approved by:
[redacted]		
E Craggs Graduate Geo-Environmental Engineer	D M Gates Senior Project Engineer	J M Jacob Director

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DRAWINGS

Drawing Number	Rev	Title
C3797/01	-	Site Location Plan

APPENDICES

DESK STUDY ASSESSMENT REPORT
FOR A SITE NAMED TAPPERS FARM, BODICOTE

1.0 INTRODUCTION

1.1 Objectives

1.1.1 This report describes a Desk Study Assessment carried out by Brownfield Solutions Limited (BSL) for Hollins Strategic Land on a site off Oxford Road, Tappers Farm, Bodicote.

1.1.2 The objectives of the Desk Study Assessment were to determine the sites environmental setting and likely site conditions, highlighting potential areas of concern that may govern the sites redevelopment.

1.1.3 The report has been completed to fulfil the requirements of a preliminary risk assessment in accordance with CLR11 "Model Procedures for the Management of Land Contamination".

1.2 Proposed Development

1.2.1 The proposed development is residential end use comprising approximately 52 residential houses and associated access roads.

1.3 Limitations

1.3.1 This Desk Study Assessment has been carried out based on information obtained from a number of areas, BSL have assumed that this information is correct.

1.3.2 There may be other conditions prevailing on the site which are outside the scope of work and have not been highlighted by this assessment and therefore have not been taken into account by this report. Responsibility cannot be accepted for such site conditions not revealed by the assessment.

1.3.3 This report has been prepared for the sole use of the client. No other third parties may rely upon or reproduce the contents of this report without the written permission of Brownfield Solutions Ltd (BSL). If any unauthorised third party comes into possession of this report they rely on it at their own risk and BSL do not owe them any Duty of Care.

2.0 THE SITE

2.1 Location & Access

2.1.1 The site covers an area of approximately 2.2 hectares and is situated approximately 1.5 miles south of Banbury town centre.

2.1.2 The site is centred on National Grid Reference 446173, 238356 as shown on the Site Location Plan C3797/01.

2.1.3 Access to the site is gained off White Post Road to the north of the site.

2.2 Site Description

2.2.1 The site is roughly rectangular in shape and is relatively flat in topography.

2.2.2 The site predominantly comprises an undeveloped area of open grassland, with a vehicle track along the south-western edge of the site, leading from Oxford Road to a cluster of buildings marked on current maps as a Farm Shop, with associated parking areas.

2.2.3 The site appears to be at least partially used for temporary caravan storage.

2.2.4 The site boundary is defined by wooden fencing and hedges, with vehicle access off White Post Road.

2.2.5 Several mature and semi-mature trees are present both along the site boundary and within the area of open grassland.

3.0 ENVIRONMENTAL SETTING

3.1 Geological Search

3.1.1 The following publications of the British Geological Survey (BGS) were examined in respect of the geology underlying the site:

- 1:50,000 Scale Geological Sheet 218, Chipping Norton. Solid and Drift
- BGS Geology of Britain Viewer

Made Ground

3.1.2 No made ground is recorded underlying the site.

Superficial Deposits

3.1.3 No superficial deposits are recorded underlying the site.

Solid Geology

3.1.4 The solid geology underlying the site is indicated to comprise the Marlstone Rock Formation. The BGS describes the Marlstone Rock Formation as comprising 'sandy, shell-fragmental and ooidal ferruginous limestone interbedded with ferruginous calcareous sandstone, and generally subordinate ferruginous mudstone beds'.

3.1.5 No faults are shown on or within an influencing distance of the site.

3.2 Hydrogeology

3.2.1 The solid geology underlying the site is classified by the Environment Agency as a Secondary (A) Aquifer. These are defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

3.2.2 The site does not lie in, or within 500m of a Source Protection Zone.

3.2.3 The nearest recorded active groundwater abstraction license is 969m to the south-east of the site. There are no other groundwater water abstraction licenses, active or historic, recorded within 1000m of the site.

3.2.4 Although no superficial deposits are recorded by the BGS on site there is an area on site recorded by the Environment Agency as being of high soil leaching potential, classified as HU. This classification is applied to urban areas and restored mineral workings.

3.2.5 The site is within a Nitrate Vulnerable Zone.

3.3 Hydrology

3.3.1 There are no surface water features within 500m of the site.

3.3.2 Information obtained from the Environment Agency indicates that the site will not be affected by an extreme flood event.

3.3.3 The nearest surface water abstraction license is 1045m to the south-west, used for spray irrigation. The license is active, with a historical license for the same site and use also recorded.

3.4 Historical Setting

3.4.1 Information has been obtained from historical Ordnance Survey Maps with the pertinent issues that may have affected the site or its environs summarised below.

3.4.2 The following plans produced by the Ordnance Survey were examined.

Scale	Date
1:1250	1966-1967, 1976-1978, 1983-1987, 1989-1990 and 1990-1994
1:2500	1881-1882, 1898-1900, 1923 and 1972
1:10000/10560	1881, 1883, 1883-1884, 1899-1900, 1900, 1920-1923, 1923, 1938, 1954, 1977-1982, 1992, 2002, 2010 and 2014

The Site

3.4.3 The earliest maps dated 1881 and 1881-1882 indicate the site to be mostly undeveloped, containing sections of several open fields, with a building marked as a Lodge present in the eastern corner, and a cluster of buildings present in the southern area of the site marked on the map of 1983-1987 as **Tapper's Farm**. This was accessed by tracks to the south and west of the site.

3.4.4 The map of 1898-1900 shows the Lodge to have been removed from the site, with the area that contained it now an area of open fields. Additional buildings had been added to the farm.

3.4.6 The map of 1983-1987 shows a track to have been added along the south-western edge of the site, providing access to the farm from Oxford Road to the north-west.

3.4.7 Between 1990 and 1994 two further small buildings have been erected to the northeast of the Tappers Farm.

3.4.8 No further significant changes are shown on the later mapping.

Surrounding Area

3.4.9 The earliest maps dated 1881 and 1881-1882 show the site to be surrounded by open fields, with an area of light residential buildings (labelled Bodicote on later maps) to the south of the site, with the nearest buildings approximately 160m from the site.

3.4.10 The map of 1966-1967 shows an area of residential buildings to have been added to the south-east, with the nearest buildings within 5m of the site. A **Garage** has been added approximately 30m to the north-east of the site, across Oxford road.

3.4.11 By 1972 the Bishop Loveday School had been constructed immediately adjacent the site to the west.

3.4.12 By 1982 a row of residential garages have been erected immediately south of the site.

3.4.13 No further significant changes are shown in the vicinity of the site on the later mapping.

3.4.14 The Historical Maps are presented in Appendix A.

3.5 Environmental Searches

3.5.1 An Environmental Search has been conducted through Groundsure, which utilises British Geological Survey and Environment Agency databases. The full report can be found in Appendix B. Although a summary of the more relevant findings is presented below.

Entry	0 – 249m	250 – 500m	Details
Authorised industrial processes (IPC/IPPC/LAPPC)	2	0	There are two recorded Part B permits within 250m of the site, one is 30m to the north-east relating to unloading petrol and is current. The other is 116m to the south-east and is related to the historic burning of waste oil.
Pollution Incidents	1	0	The only recorded incident within 500m of the site was in 2002 and was 125m to the south-west of the site, recorded as petrol having no impact on water, land or air.
Landfill and Waste treatment	0	0	There are no landfill sites recorded within 500m of the site.
Discharge consent	0	2	The closest discharge consent is 293m to the south-west and relates to sewage discharges from a pumping station to Sor Brook. A second consent relating to the same effluent type is located 484m to the north-west of the site discharging to the River Cherwell. Both of these consents were issued in 1989 and revoked in 1997.
Control of Major Accident Hazard (COMAH) sites	0	0	There are no records of any COMAH or NIHHS sites within 500m of the site.
Consents issued under planning (Hazardous substances) Act 1990	0	0	There are no records of any planning hazardous substance consents or enforcements within 500m of the site.
Radioactive substances	0	0	There are no records of any radioactive substances authorisations within 500m of the site.

Entry	0 – 249m	250 – 500m	Details
Fuel Station entries	1	0	There is one recorded fuel station within 500m of the site, recorded as being 23m to the north-east, likely relating to the Garage noted on the historical mapping.
Other Current industrial land uses	7	0	Two of these industrial land uses are 33m to the north-east of the site and relate to the above fuel stations. Another record is 37m to the north-east of the site relating to new vehicles and is likely to also be related to the historic Garage. Three of the remaining records relate to electrical features between 135m and 211m to the south-east, south and south-west, with the remaining record relating to household goods 146m to the south-west of the site.

3.6 Radon

3.6.1 Map 9 Oxfordshire, Northamptonshire and Warwickshire was inspected which defines areas which require radon protective measures. The site is within an area in which more than 30% of homes are above the action level and developments in this area would likely require radon precautions in foundations in accordance with BRE Report 211 'Radon – Guidance on protective measures for new dwellings' 2007 Edition.

3.6.2 BRE Report 211 provides a general indication of which areas require radon protection, a site specific assessment can be carried out through UK Radon or BGS.

3.7 Coal Authority Search

3.7.1 The site is outside the area of a designated coalfield, the Law Society and Coal Authority state a mining search is not required.

3.8 BGS Boreholes

3.8.1 There are two borehole records between 150m and 250m to the north and east of site, however these do not extend below 6m depth and are of limited use in assessing the site due to the lack of proximity.

4.0 DESK STUDY SUMMARY AND RISK ASSESSMENT

4.1 Introduction

4.1.1 The risk posed by any contaminants in soil or groundwater will depend on the nature and level of the source, the probability of exposure occurring, the potential pollution pathway and the likely effects on the receptors.

4.1.2 A contaminant is defined as a substance that has the potential to cause harm, a risk is considered to exist if such a substance is present at sufficient concentrations to cause harm and if a pathway is present a receptor could be exposed to the contaminant.

4.1.3 The following sections discuss the identified potential on-site and off-site sources, and any pollution that could impact receptors through the pathways associated with the proposed development. Pollution linkages are assessed which may represent a risk to human health and/or controlled water receptors from the information gained from the desk study searches. The assessment has been carried out on a qualitative basis and aims to produce a complete and comprehensive Preliminary Conceptual Site Model.

4.1.4 Three potential impacts exist for any given site and all three need to be considered in the qualitative risk assessment, these are:

- On- site impacts;
- The site impacting its surroundings;
- Off-site sources impacting the subject site.

4.2 Potential Contaminative Sources

<u>On-Site</u>

4.2.1 From the information obtained during the desk study two potentially contaminative sources have been identified which may affect the redevelopment of the site for residential end use.

- A number of buildings have been present in the southern area of the site since 1881, being used as a **farm**, then as a farm shop. While in use as a farm the buildings may have been used for potentially contaminative processes, potentially releasing contamination into the soil.

- A building designated a lodge was removed from the site prior to the map of 1898-1900, this is likely to have resulted in localised potentially contaminative **made ground** being present underlying the site.

<u>Off-Site</u>

4.2.2 The map of 1966-1967 shows a **Garage** to have been added approximately 30m to the north-east of the site with a fuel station currently operating in the same location in the present day. Due to the potential for fuel spills on the fuel station forecourt or leakage from underground storage tanks or vehicles at the Garage it is considered to be a potential source of contamination.

Associated Contaminants

4.2.3 The contaminants commonly associated with the potential sources of contamination are presented in the table below:

Source	Associated Contaminant(s)
Farm	Metals and metalloids, PAHs
Made Ground (Demolished Lodge)	Metals and metalloids, PAHs
Garage	Petroleum Hydrocarbons, Chlorinated Hydrocarbons, organic compounds including solvents.

4.3 Pathways

4.3.1 A pathway is defined as a medium by which a contaminant comes into contact with, or otherwise impacts a receptor. Due to the sites proposed end-use being residential potential pollution pathways for contaminant migration at the site will exist.

4.3.2 At this stage the potential contaminants identified above are considered to present potential risks to site end users and controlled waters through the following pathways:

- Ingestion or inhalation of contaminated soils or dusts;
- Dermal contact with contamination;
- Inhalation of gases or vapours in both indoor and outdoor air;
- Direct contact by buried structures such as services pipes;
- Leaching of mobile contamination into groundwater;
- Migration of perched groundwater in any permeable soils or along existing or proposed service runs
- Saturated zone flow through the Secondary (A) Aquifer underlying the site;

4.4 Receptors

4.4.1 Receptors generally fall into the categories of human health or controlled waters. The identified receptors are listed below:

- Site end-users of the proposed residential development.
- Secondary (A) Aquifer within bedrock.

4.4.2 Site end-users could potentially be exposed to migratory contaminants (free phase, leachate or impacted soils and groundwater) underlying the site through dermal contact, ingestion or inhalation of dust, ground gas or vapour.

4.4.3 The Secondary (A) Aquifer beneath the site could be exposed to migratory contaminants through leaching of the soils or migration of free phase contaminants into groundwater.

4.4.4 Contaminants within the soil and groundwater could potentially attack the clean potable water supply pipe, the contaminants should be assessed to determine the correct pipe material and level of precautions.

4.5 Preliminary Conceptual Site Model

4.5.1 The information obtained in the previous sections has been used to compile a Preliminary CSM. The identified potential contaminants and receptors have been assessed in the table below as to whether a plausible source-pathway-receptor pollutant leakage for the proposed end use of the site exists. The risk classification has been estimated in accordance with information in Appendix C.

Human Health

4.5.2 The Preliminary CSM for human health is presented in the table below:

Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk
ON-SITE					
Made Ground	Ingestion, direct contact, inhalation of dusts/vapours.	End-users	Unlikely	Medium	Low
Farm	Ingestion, direct contact, inhalation of dusts.	End-users	Unlikely	Medium	Low
Made Ground (Ground Gas)	Ingress of ground gases into confined spaces	End-users Property	Unlikely	Severe	Moderate/Low
OFF-SITE					
Garage	Ingestion, direct contact, inhalation of dusts/vapours.	End Users	Low likelihood	Medium	Low

Human Health Justification

4.5.3 The Lodge is unlikely to have been the site of any contaminative processes and any made ground created is unlikely to contain significant levels of contamination. The made ground will have remained on site for over 120 years, any contamination related to it is likely to have attenuated over that time, due to the presence of a Secondary (A) Aquifer immediately underlying the site (indicating a high degree of permeability). The risk to site end-users is considered to be low.

4.5.4 The farm on site has been present for a long period of time, however the footprint of the buildings is limited and has not been expanded or extended significantly over time. It is unlikely that any significantly contaminative processes have occurred within the farm and due to the small size of the farm any release of contamination would be of low volume. The risk to site end-users is considered to be low.

4.5.5 The made ground present locally on site may be a source of ground gas, however the gas generation potential of the made ground is likely to be low and as stated above the, age of the made ground indicates that fill is unlikely to be putrescible and any gas is likely to have dissipated over time. Despite this, the potential consequences are severe if explosive gases are present. The risk to end-users and property are therefore considered to be moderate/low.

4.5.6 The garage to the north-east of the site is a potential source of contamination, due to the potential for the release of contamination during normal operations or from

any leaks or spills. The garage is currently in operation, therefore it is assumed that associated drainage and tankage is maintained, reducing the likelihood of contamination being released from the site. There are no recorded pollution incidents or enforcements relating to the garage and in the absence of any proximate groundwater abstractions any contamination released is likely to dissipate omnidirectionally through the underlying Secondary (A) Aquifer. The risk to site end-users is therefore considered to be low.

Controlled Waters

4.5.4 The Preliminary CSM for controlled waters is presented in the table below:

Potential Source	Potential Pathway	Potential Receptor	Likelihood	Severity	Level of Risk
Made Ground	Migration through groundwater or permeable soils.	Secondary (A) Aquifer	Low likelihood	Mild	Low
Farm	Migration through groundwater or permeable soils.	Secondary (A) Aquifer	Low likelihood	Mild	Low

Controlled Waters Justification

4.5.5 There are no superficial deposits recorded beneath the site, the site does not lie within a Source Protection Zone and the nearest active groundwater abstraction license is 969m from the site. However the underlying bedrock aquifer is a Secondary (A) Aquifer. The sensitivity of the aquifer is therefore considered to be moderate. There are no surface water features in the vicinity of the site.

4.5.6 The levels of contamination anticipated from on-site sources are considered to be low, due to either the dissipation of contamination over time or a lack of significant contaminative processes occurring. The levels of contamination reaching the aquifer are likely to be low and the risks to the aquifer are considered to be low.

4.6 Ground Gas Risk Assessment

4.6.1 A potential on-site gas source has been identified and the preliminary CSM considers it to be a moderate to low risk to site end users. This should be investigated during the intrusive phase 2 works.

5.0 DEVELOPMENT CONSTRAINTS

5.1 Foundations

5.1.1 Traditional shallow foundations are likely to be feasible bearing on the Marlstone Rock Formation bedrock deposits immediately underlying the site. This should be confirmed by an intrusive investigation.

5.1.2 Some clay soils may be present on site, therefore foundations may need to be adjusted in the area of influence of existing, proposed or recently removed trees, again this should be confirmed by on site intrusive investigation. It is recommended that a survey of all trees within an influencing distance of the site is undertaken.

5.2 Other Constraints

5.2.1 Asbestos was not covered in this report. It should be noted that a Demolition / Refurbishment Asbestos Survey will be required prior to commencing the works.

5.2.2 The risk to ground workers from potential contaminants in the soils should be considered and mitigated through appropriate risk assessments, method statements and effective control measures/PPE.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Environmental

6.1.1 The site contains two areas of development, one of which, in the eastern corner of the site, has been cleared of buildings over 120 years ago. A group of buildings is present in the south of the site, having experienced minimal redevelopment over the known history of the site. No significant redevelopment has occurred on any of the areas of the site.

6.1.2 It is proposed to construct a residential development comprising 52 plots across the site.

6.1.3 Made ground due to the removed structures and an on-site farm were identified as potential sources of on-site contamination through the desk study. The risks to the proposed residential development are considered to be low.

6.1.4 A potential on-site source of ground gas was noted in the form of the potential made ground. The risks to the proposed commercial development are considered to be low.

6.1.5 One off-site source of contamination was identified; a garage circa 30m north-east of the site. The risk associated with this source is deemed to be low.

6.1.6 The risks to controlled waters have been assessed as low, due to both the lack of any significant on-site sources of contamination.

6.1.7 It is recommended that an intrusive Phase 2 ground investigation is undertaken at the site. This will allow the risks to site end-users and controlled waters to be quantified and for the conceptual site model (CSM) to be verified.

6.2 Geotechnical

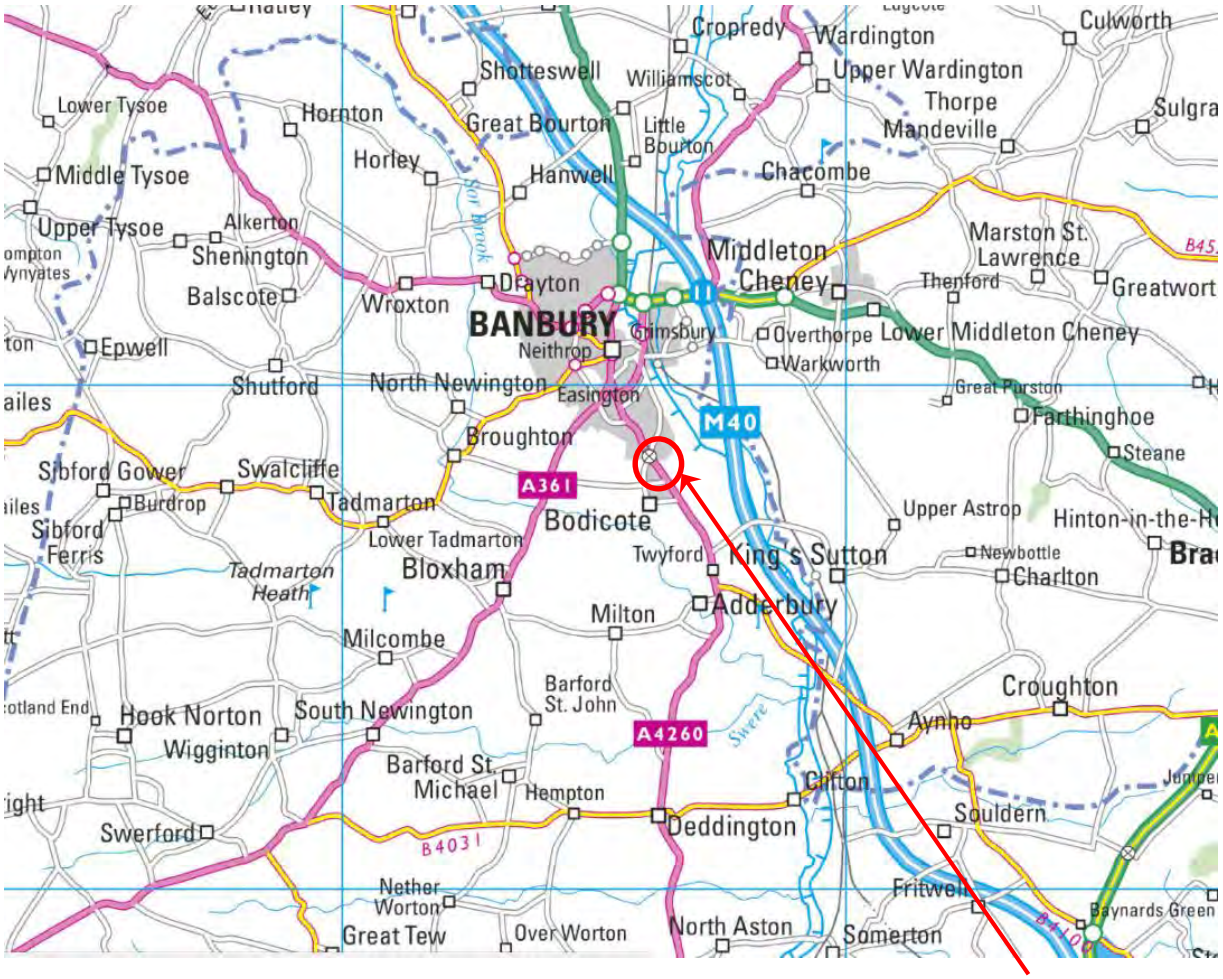
6.2.1 It is likely that shallow foundations bearing on the underlying bedrock would be suitable for the proposed development. Intrusive investigations are required to confirm ground conditions and foundation requirements.

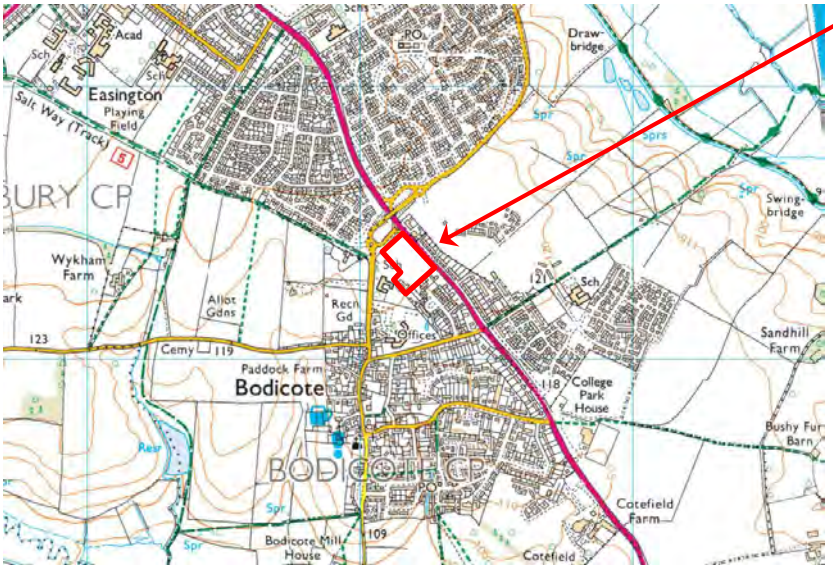
6.3 Further Work

6.3.1 To allow future development of the site the following further works are recommended, although this list is not exhaustive and should be read in conjunction with any planning conditions that are applicable to the site.

- Topographical survey
- Intrusive site investigations.
- Ground gas monitoring and assessment.
- Demolition / Refurbishment Asbestos survey.
- Design of remedial strategy, if required.
- Foundation design.
- Confirmation of findings with Local Authority

DRAWINGS





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HOLLINS STRATEGIC LAND

Tappers Farm, Bodicote

Site Location Plan

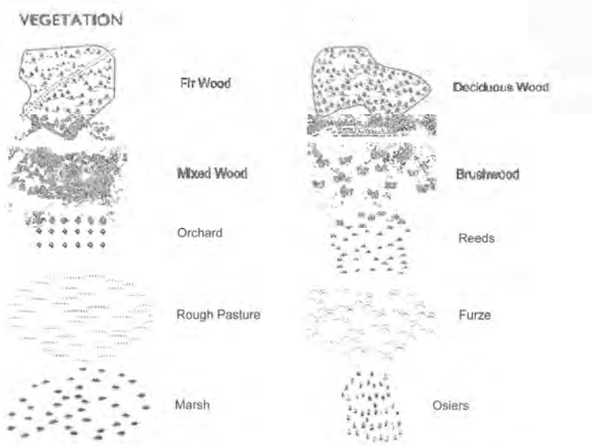
Drawing Number C3797/01

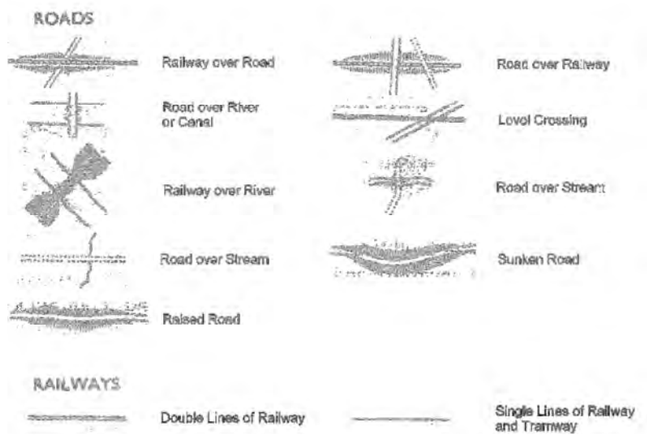
Scale: NTS

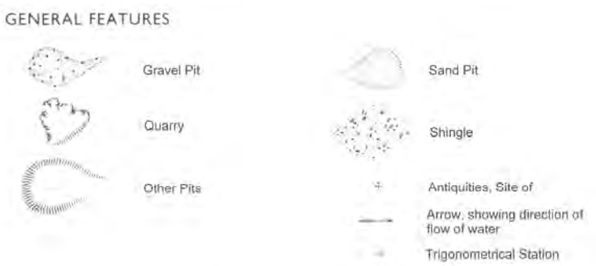
Drawn By: EC	Checked By: DMG

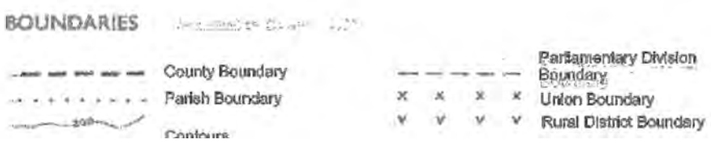
APPENDIX A
Historical Maps

County Series 1:10,560 scale









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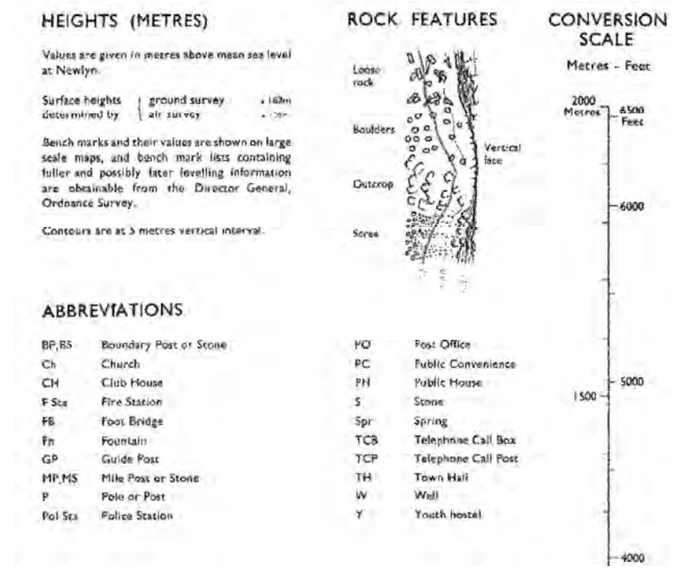

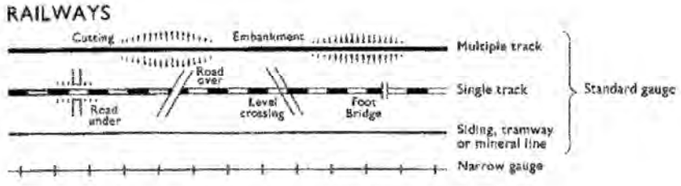

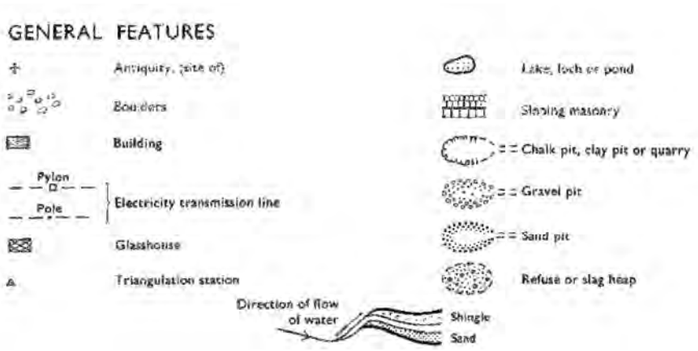

GroundSure

Historical Map Pack Legend

County Series & National Grid

1:10,560 scale

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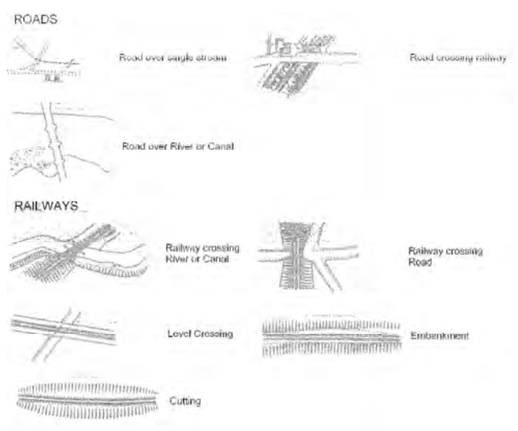
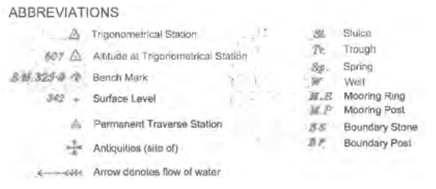
groundsureinsight@groundsure.com
www.groundsure.com

County Series 1:2,500 scale





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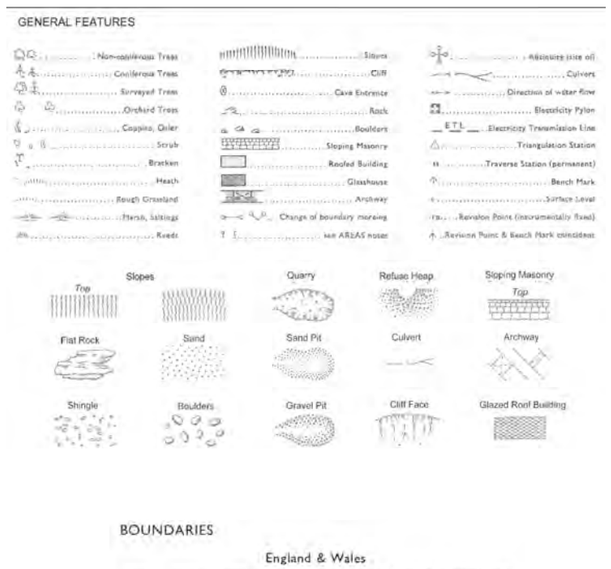

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Historical Map Pack Legend

County Series

1:1,250 scale

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County Series & National Grid

1:2,500 scale

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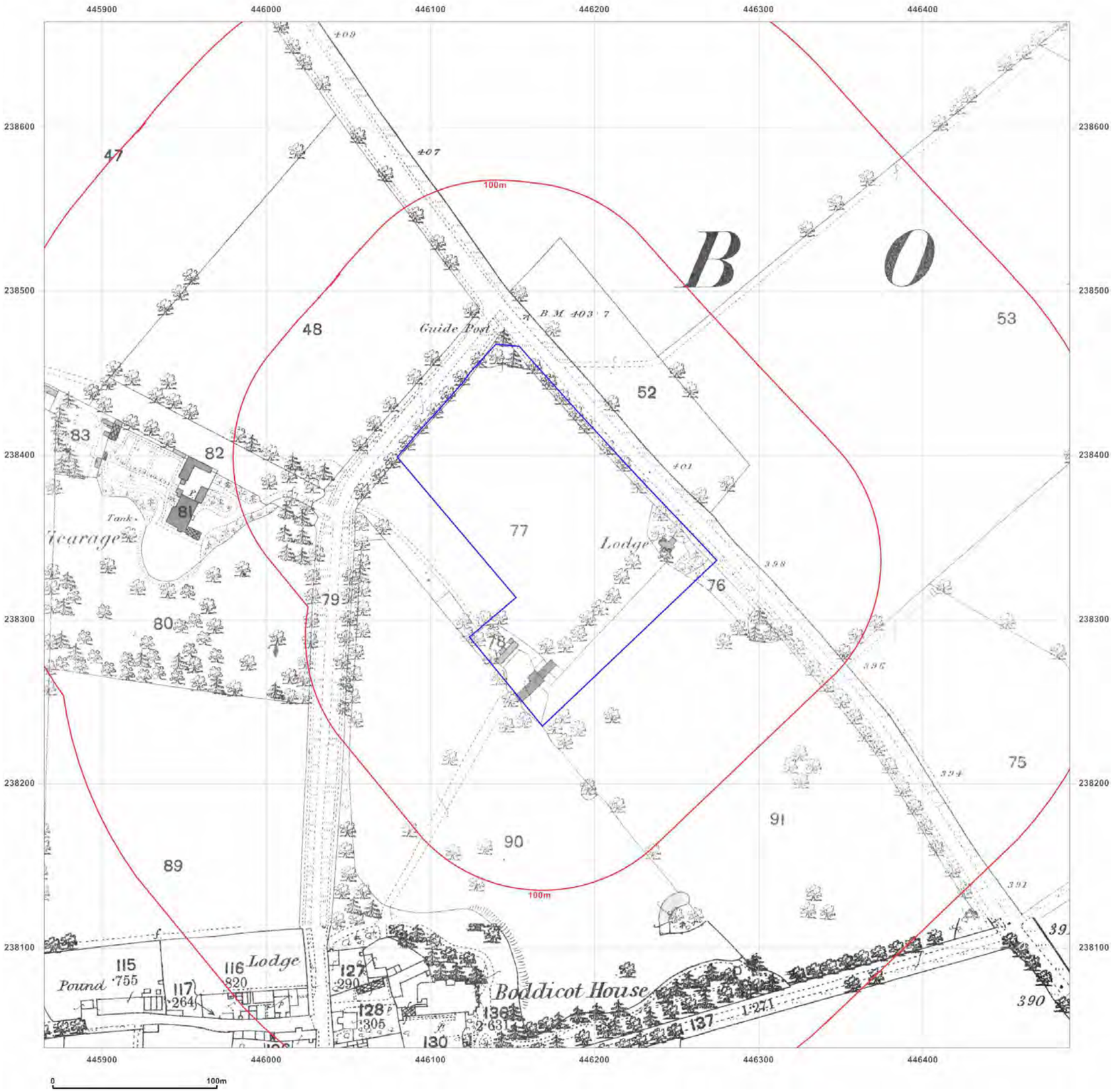

emapsite™

Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1881-1882**

Scale: 1:2,500

Printed at: 1:2,500

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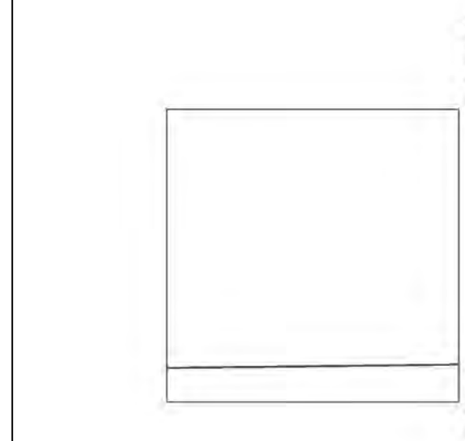

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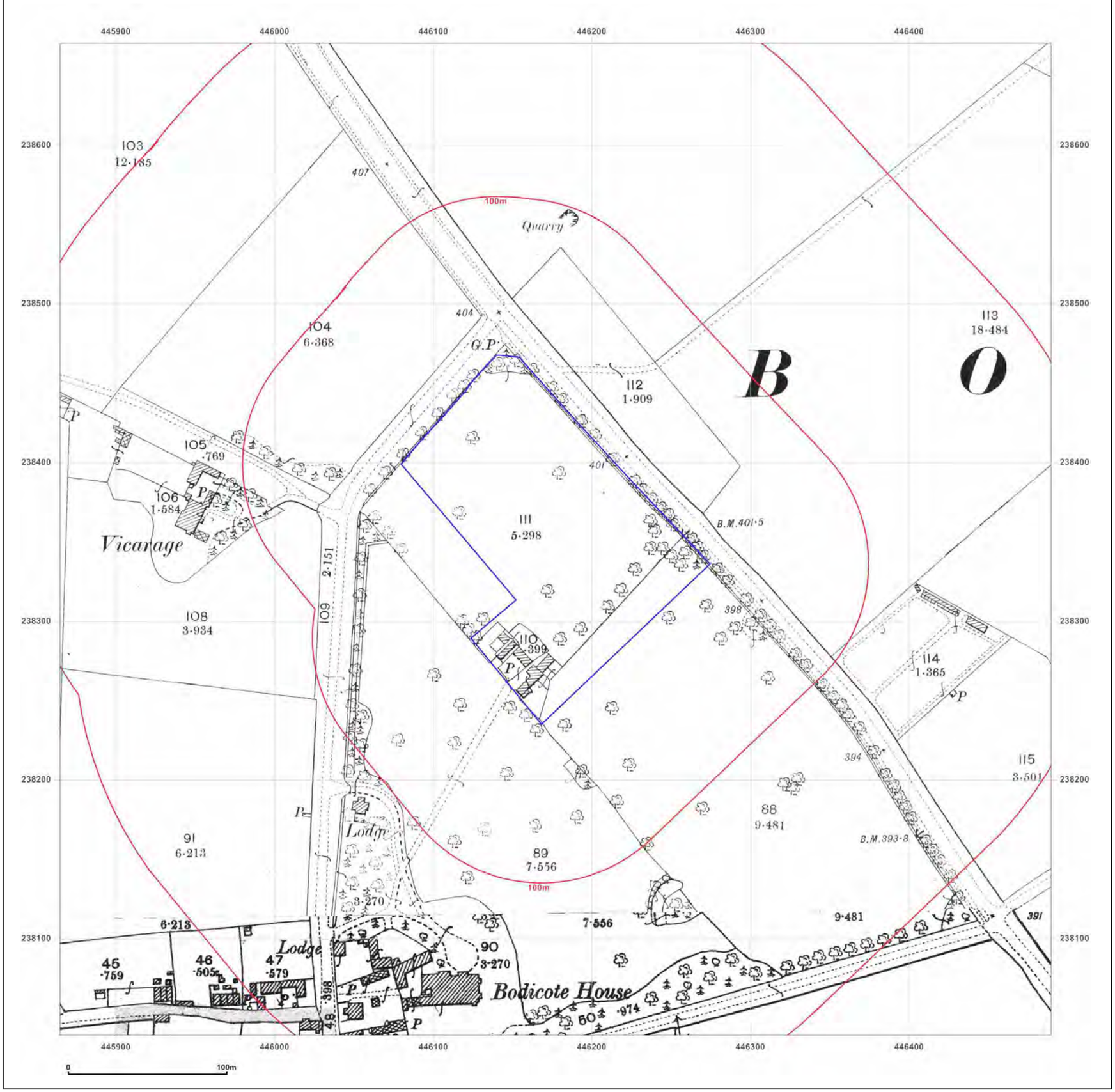
www.emapsite.com
sales@emapsite.com

Production date: 10 April 2018

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



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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1898-1900**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

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

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Production date: 10 April 2018

Map legend available at:
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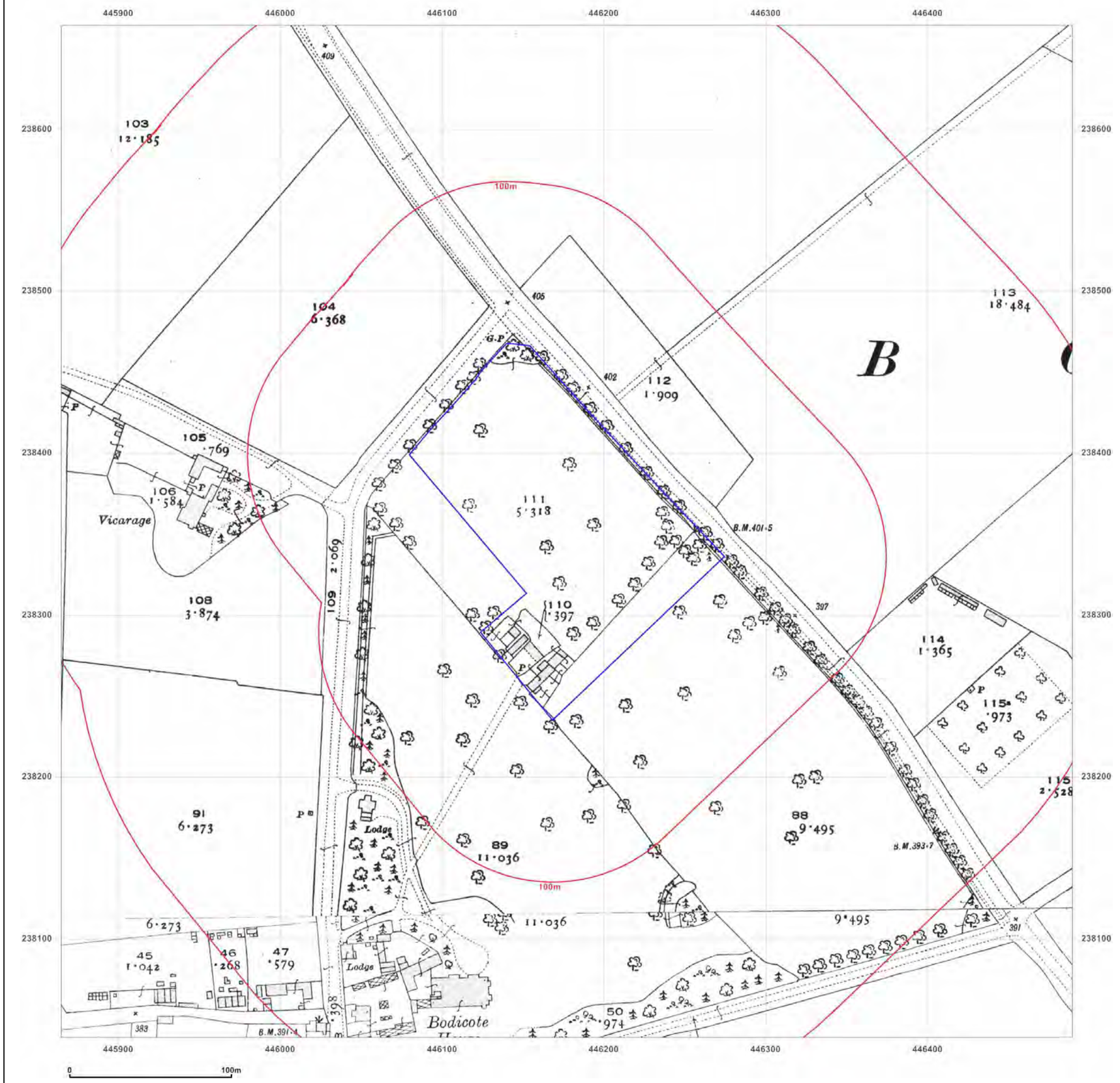

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1923**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1923
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1923
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1966-1967**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1966
Levelled 1964

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1964

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

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1964

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Production date: 10 April 2018

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1972**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1966	Surveyed 1966
Revised 1972	Revised 1972
Edition N/A	Edition N/A
Copyright 1973	Copyright 1973
Levelled 1964	Levelled 1970

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1976-1978**

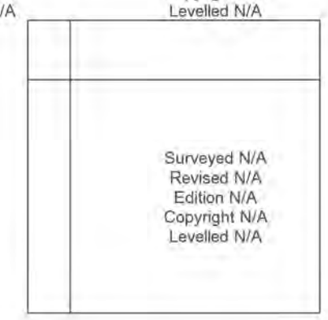
Scale: 1:1,250

Printed at: 1:2,000

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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Production date: 10 April 2018

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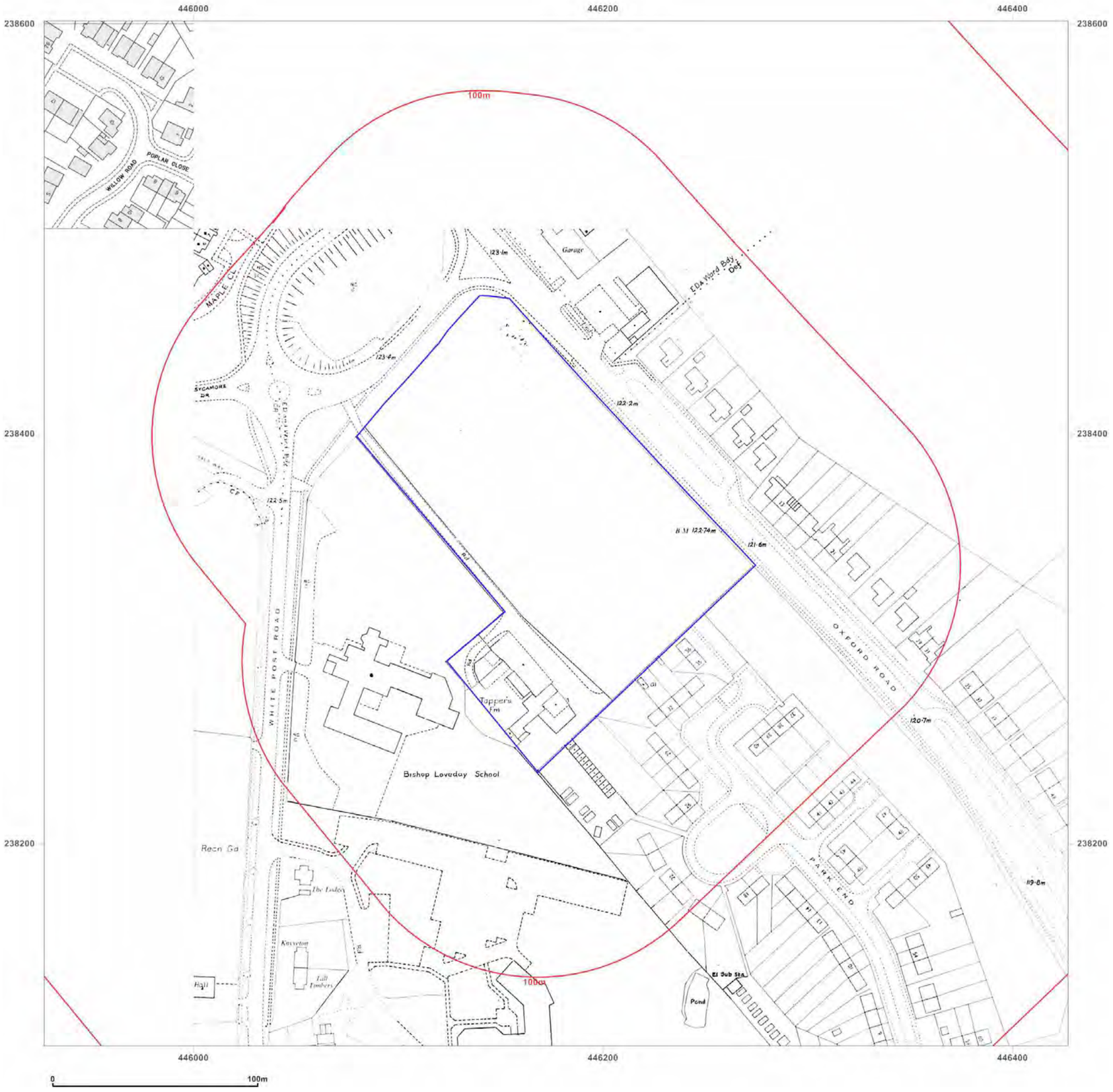

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1983-1987**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1966
Revised 1982
Edition N/A
Copyright 1983
Levelled 1964

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1987
Levelled 1970

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Production date: 10 April 2018

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1989-1990**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

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

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

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

Surveyed 1970
Revised 1990
Edition N/A
Copyright 1990
Levelled 1970

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Site Details:

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Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1990-1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

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

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

Surveyed 1994
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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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1881**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

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

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

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

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

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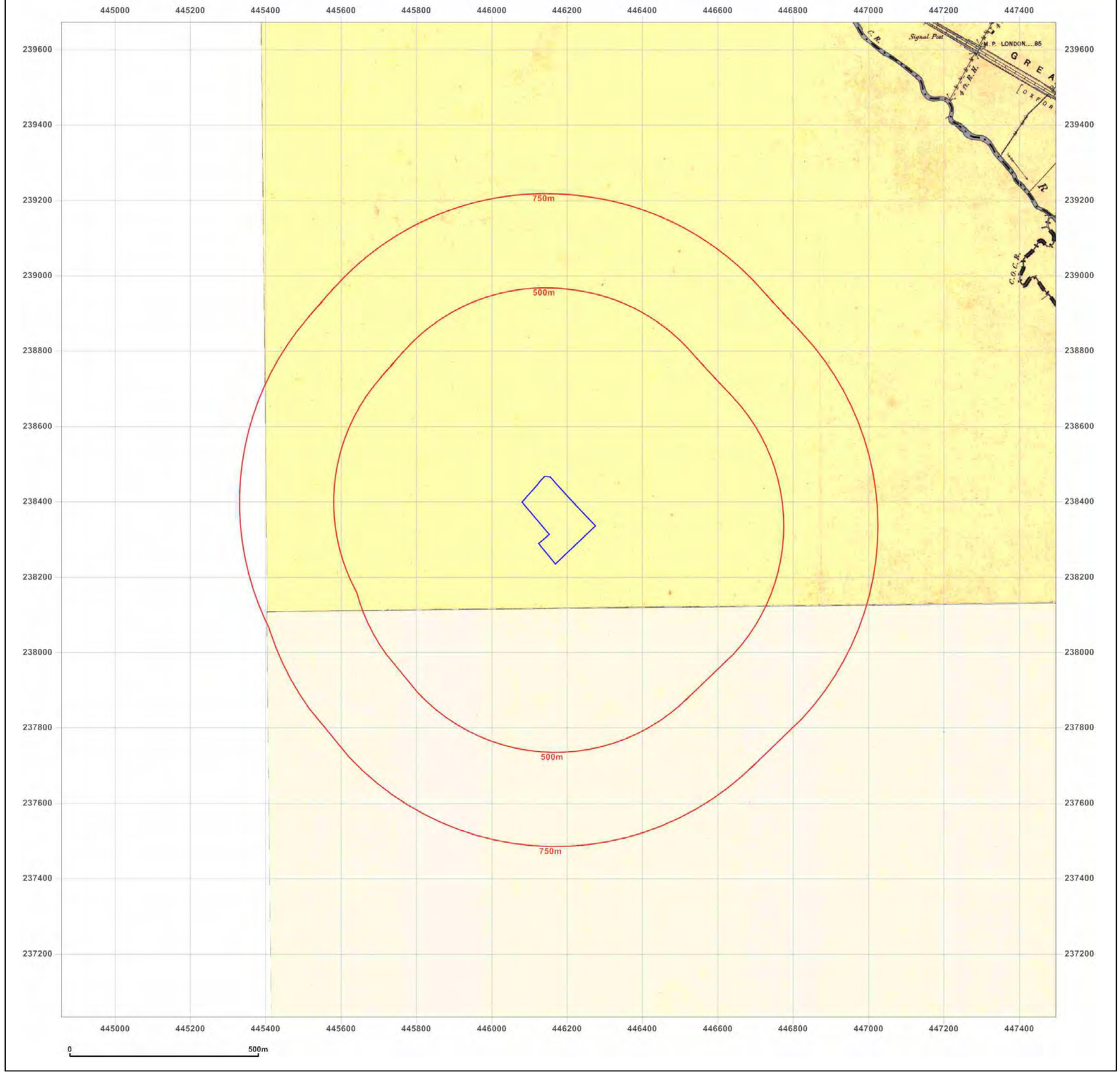

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

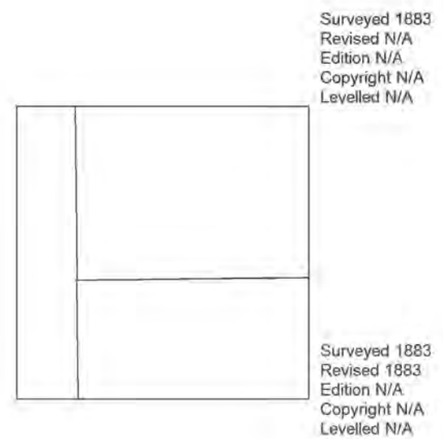
Map Name: County Series

Map date: **1883**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



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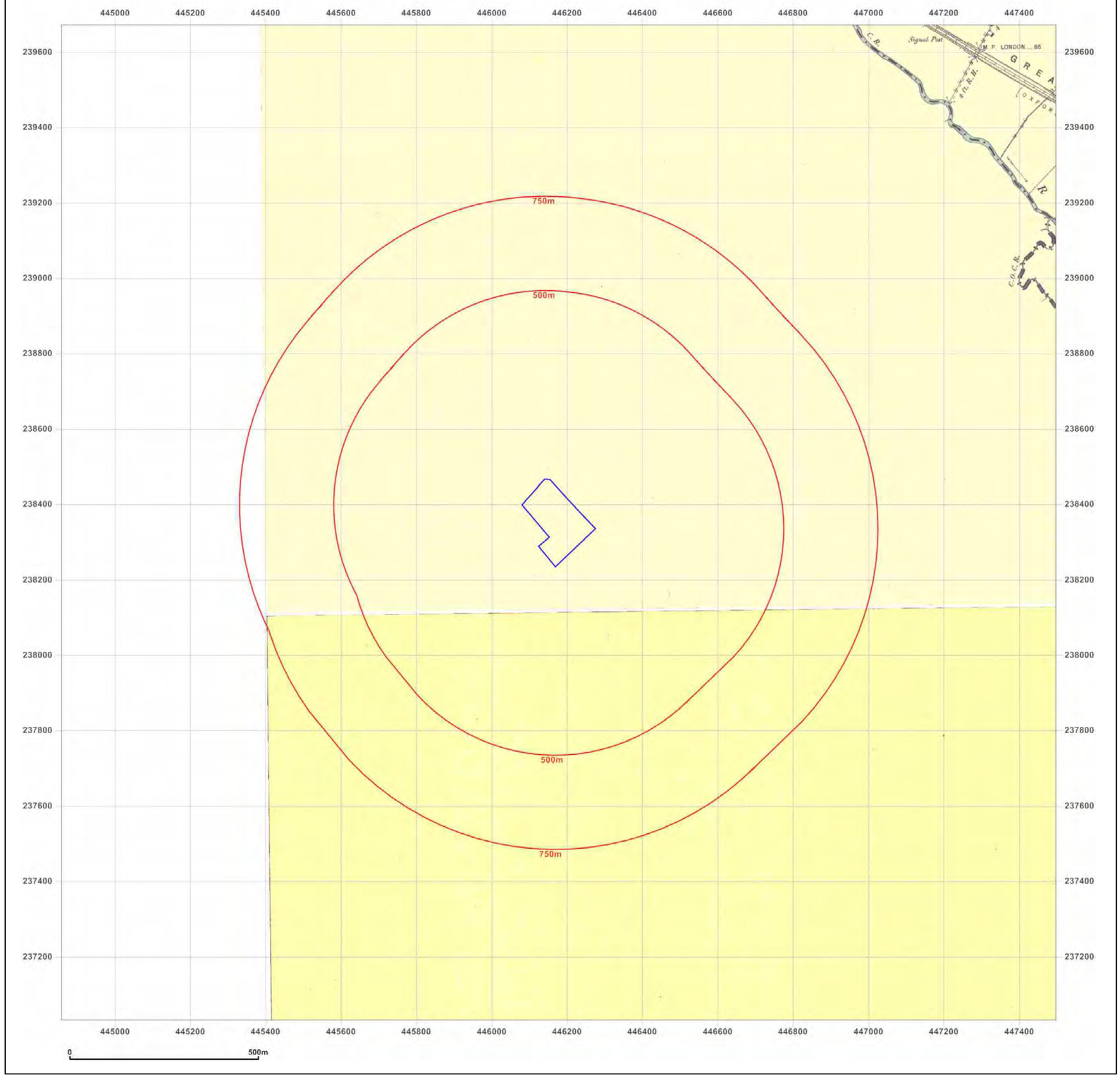

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

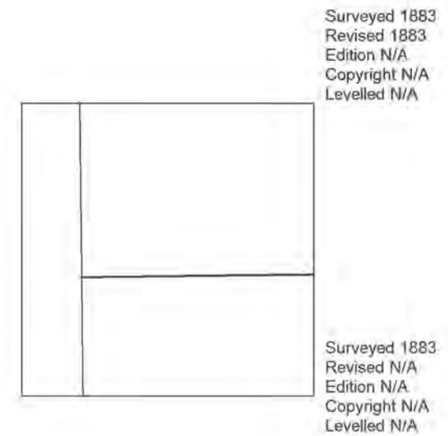
Map Name: County Series

Map date: **1883-1884**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



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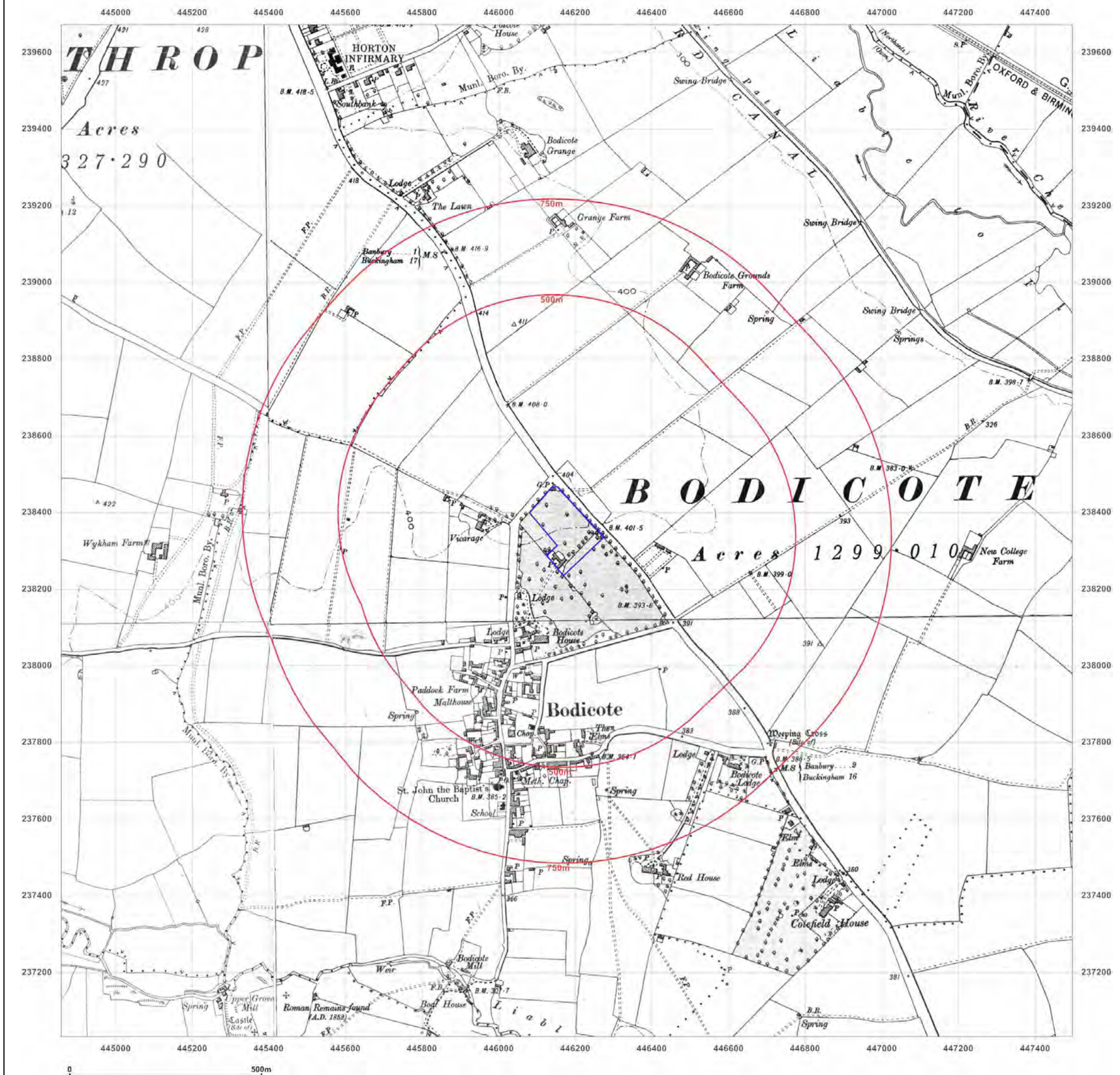


Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1899-1900**

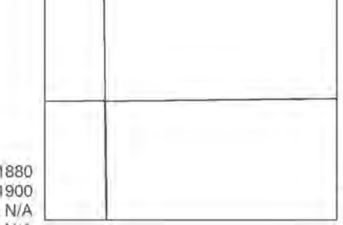
Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1899
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 1880
Revised 1900
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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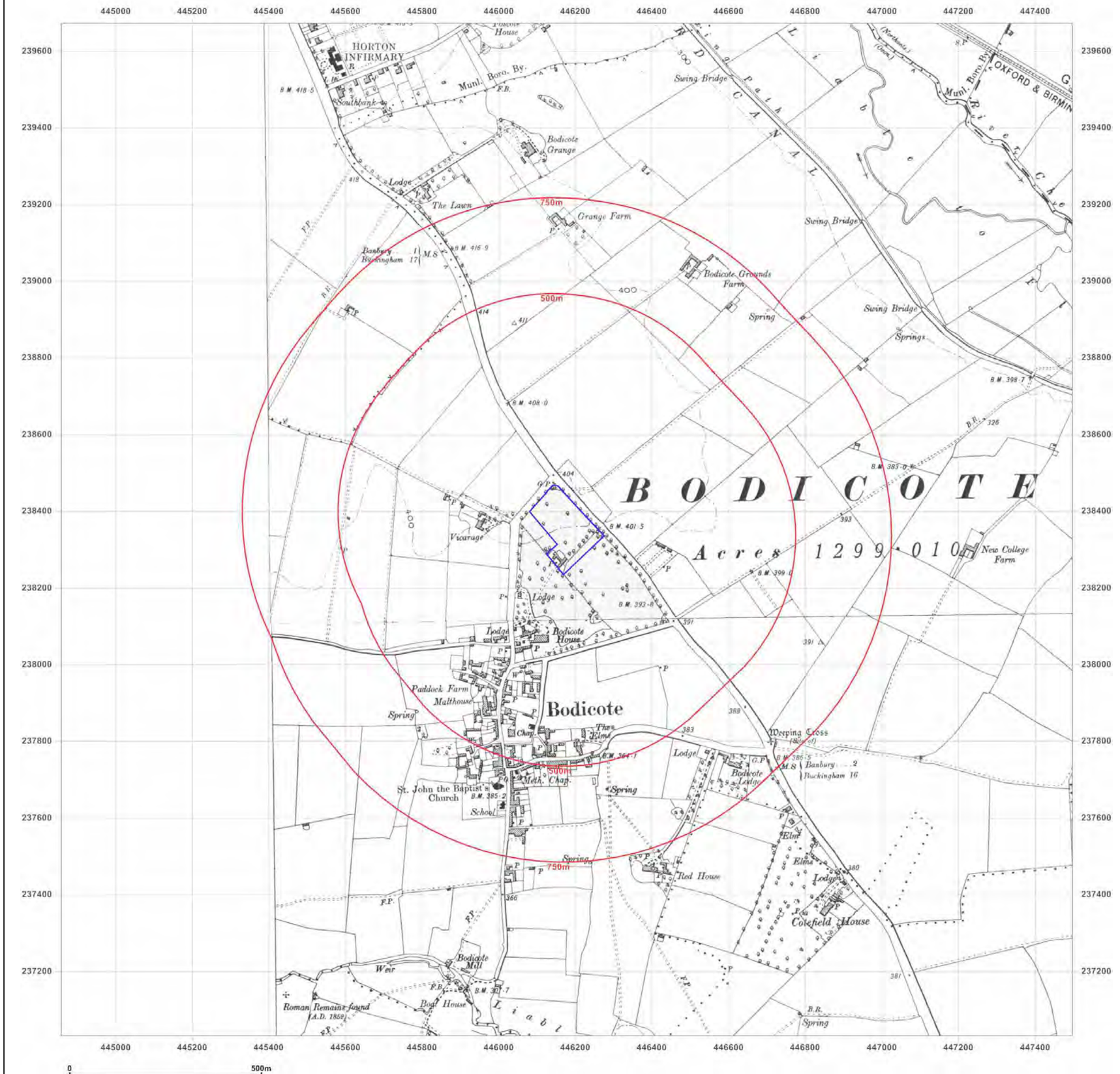

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

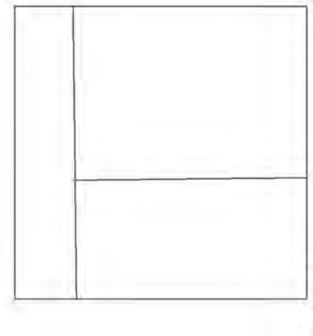
Map Name: County Series

Map date: **1900**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



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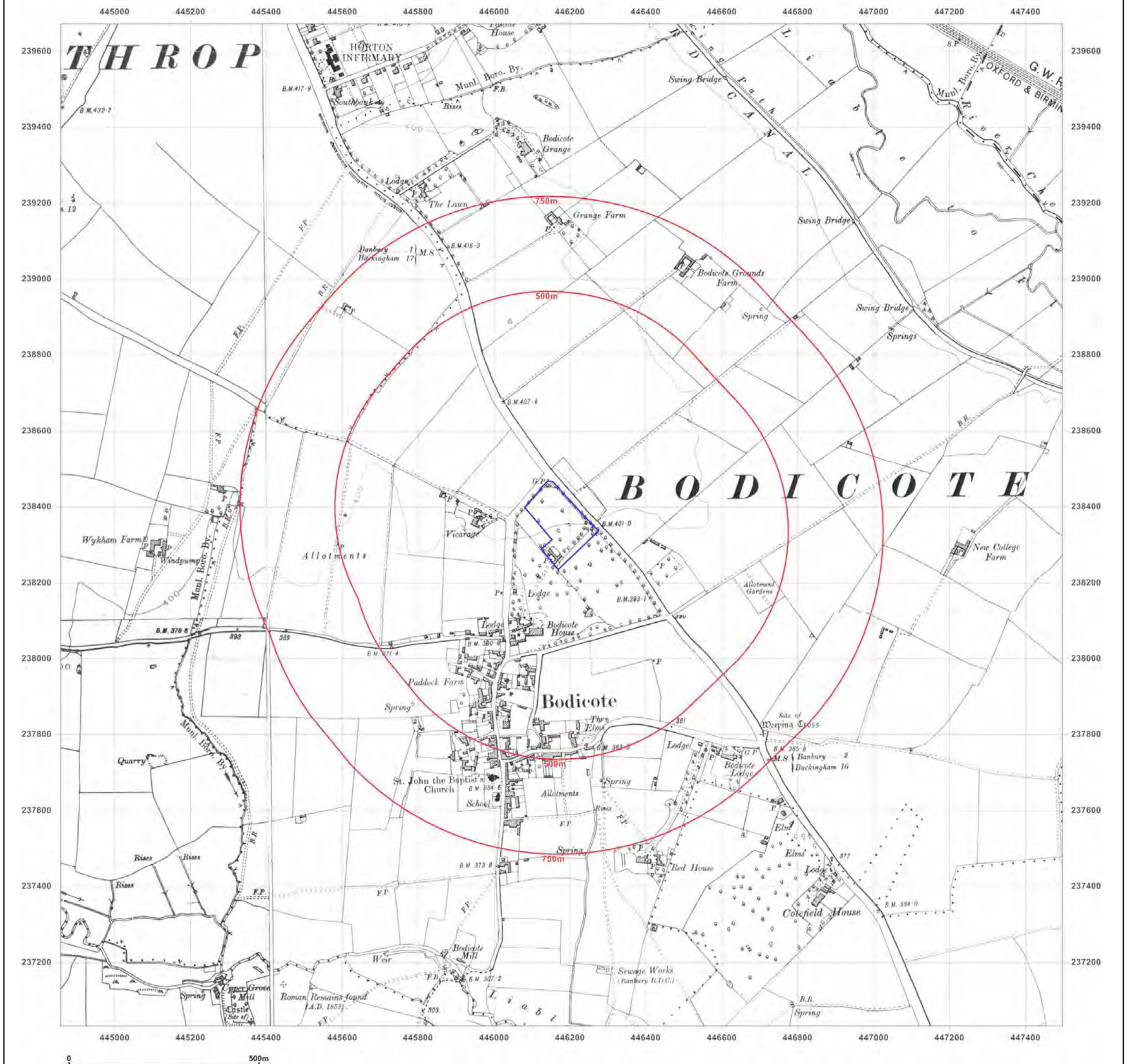

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1920-1923**

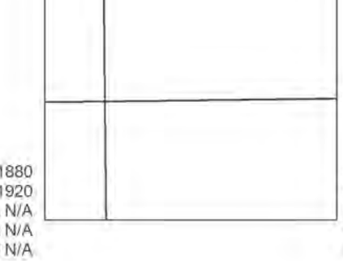
Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1923
Edition 1923
Copyright N/A
Levelled N/A



Surveyed 1880
Revised 1920
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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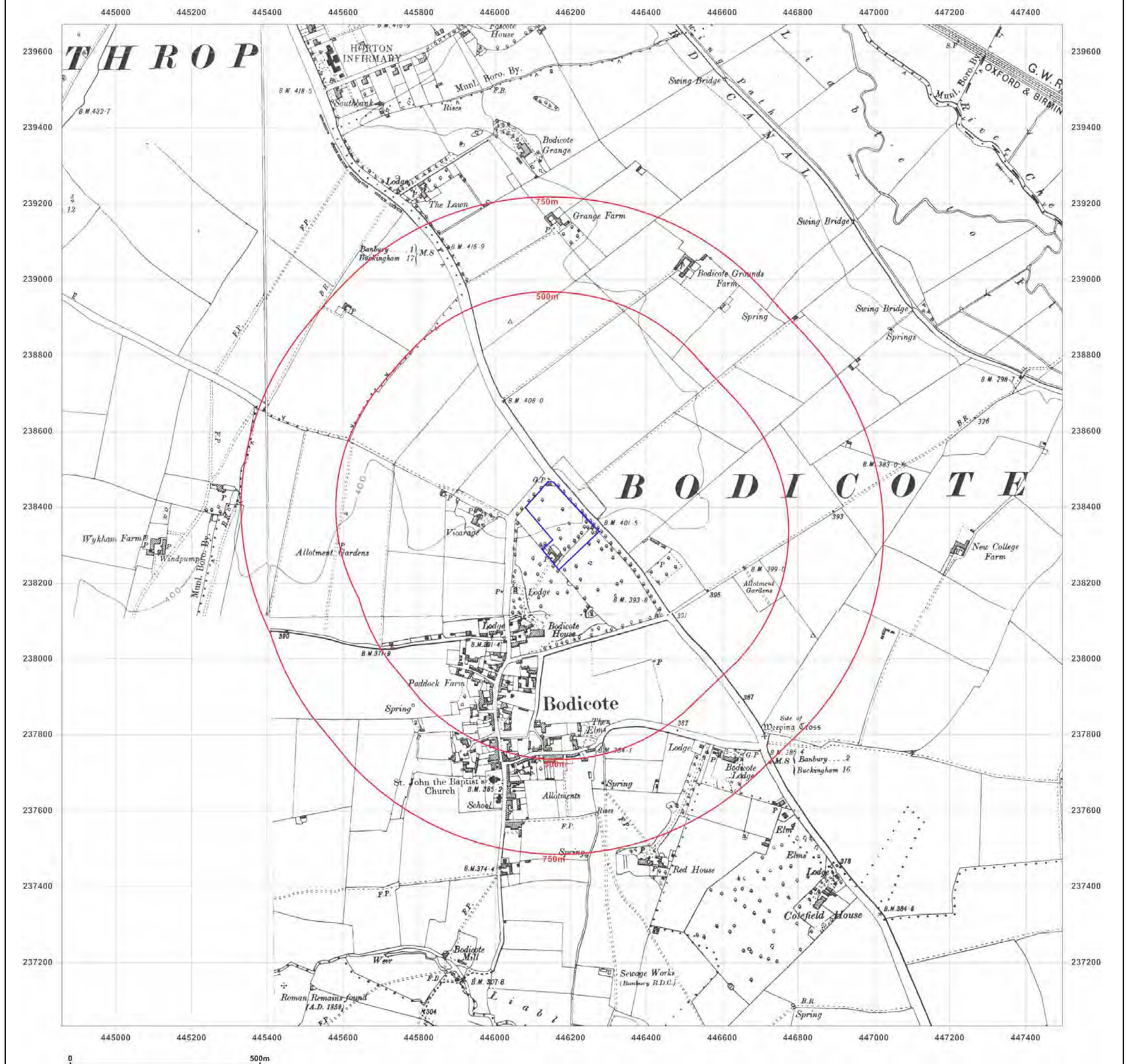

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1923**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1882
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1883
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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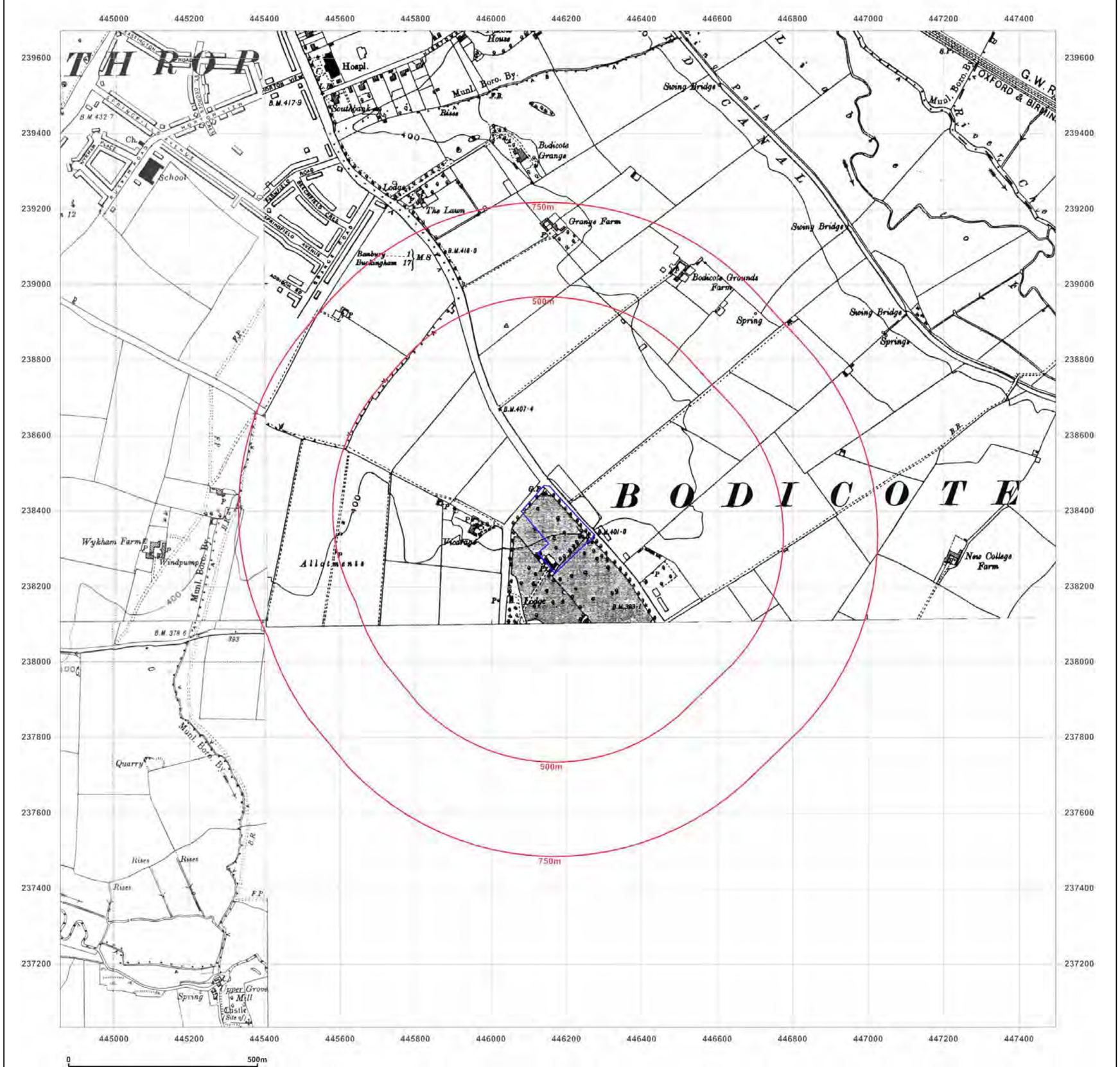

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

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

Surveyed 1880
Revised 1880
Edition N/A
Copyright N/A
Levelled N/A

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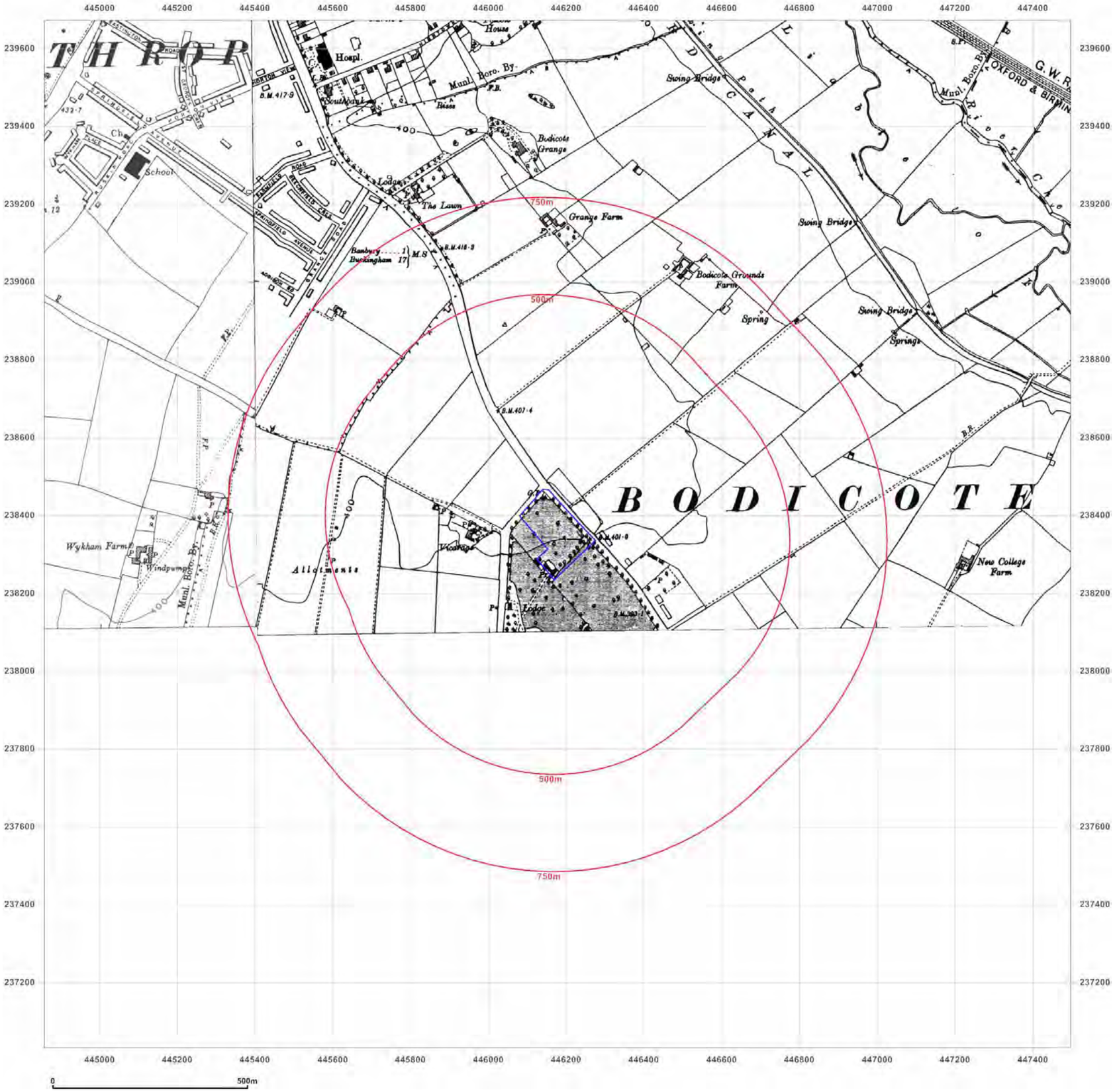

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: County Series

Map date: **1938**

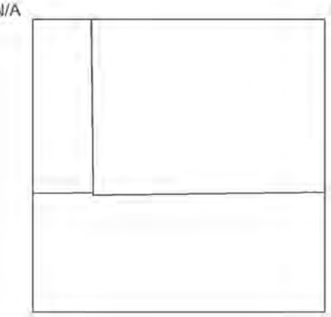
Scale: 1:10,560

Printed at: 1:10,560

N
W E
S

Surveyed 1880
Revised 1938
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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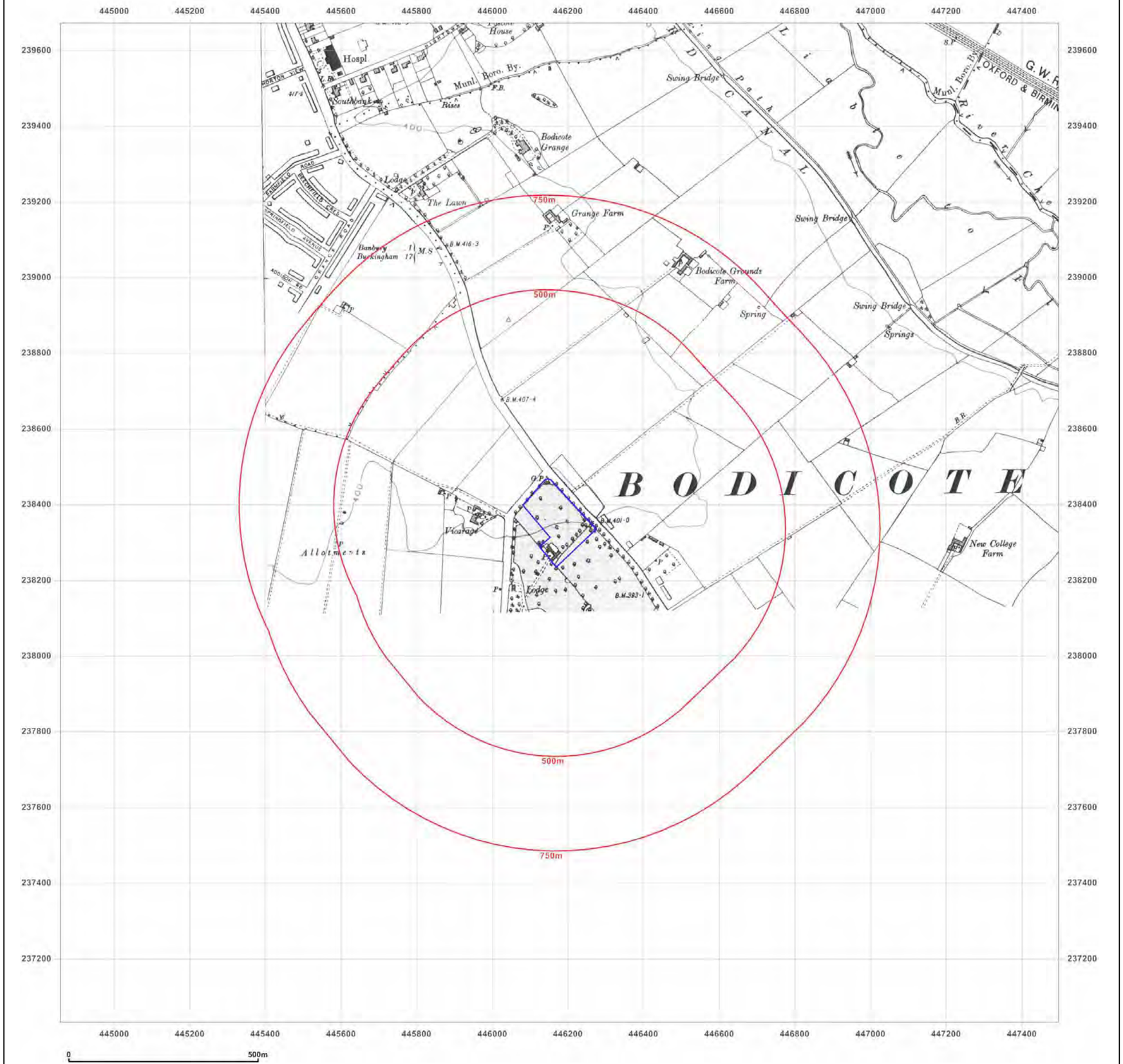

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

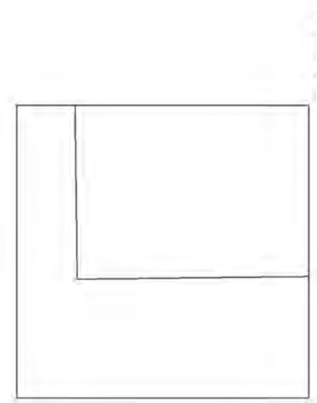
Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



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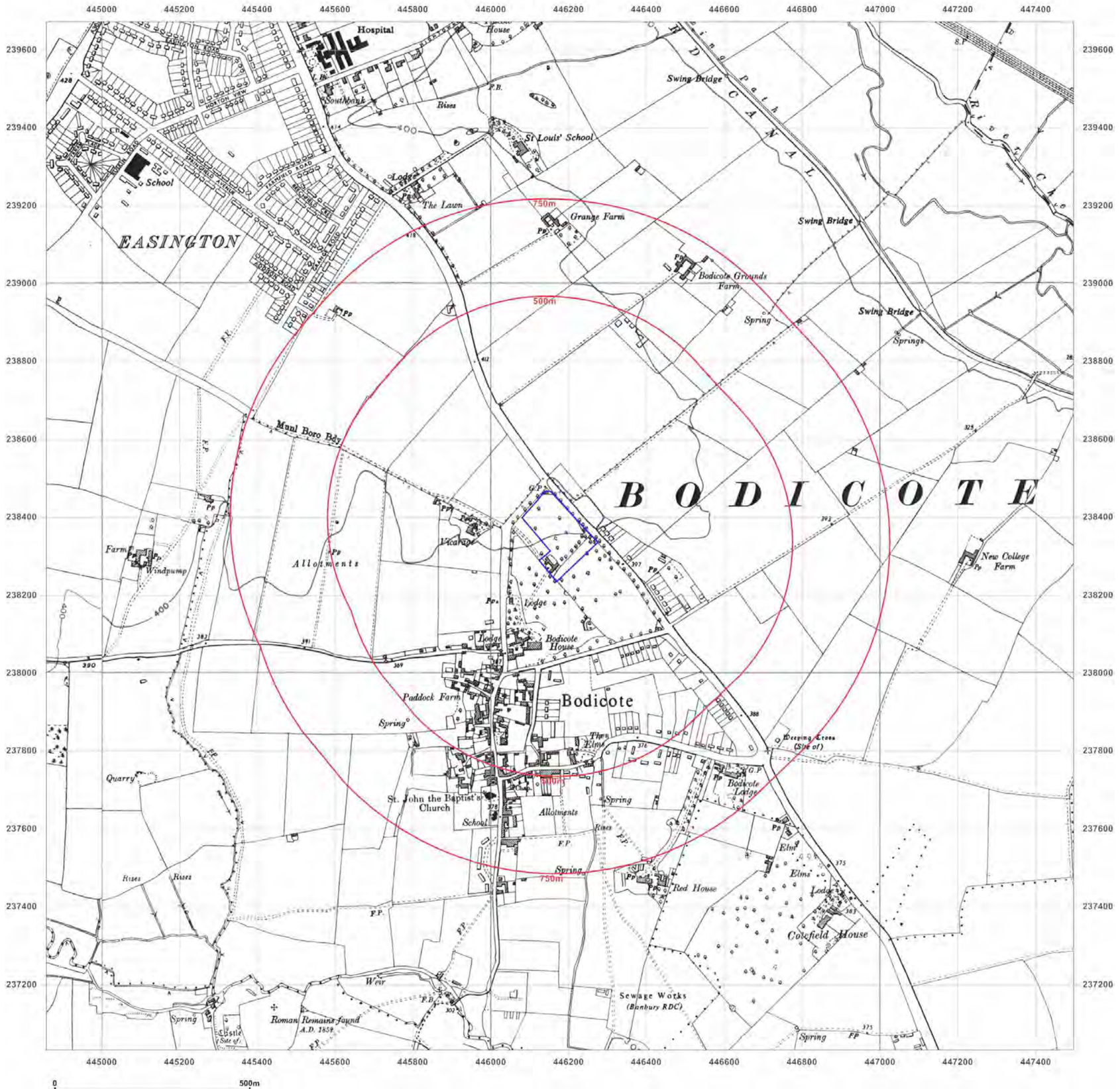

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

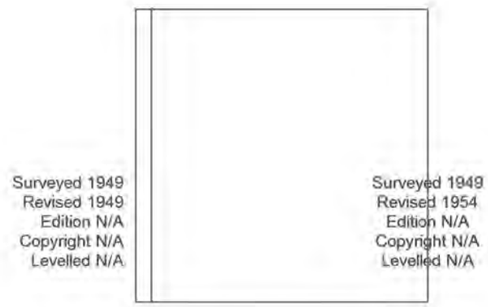
Map Name: Provisional

Map date: **1954**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
S



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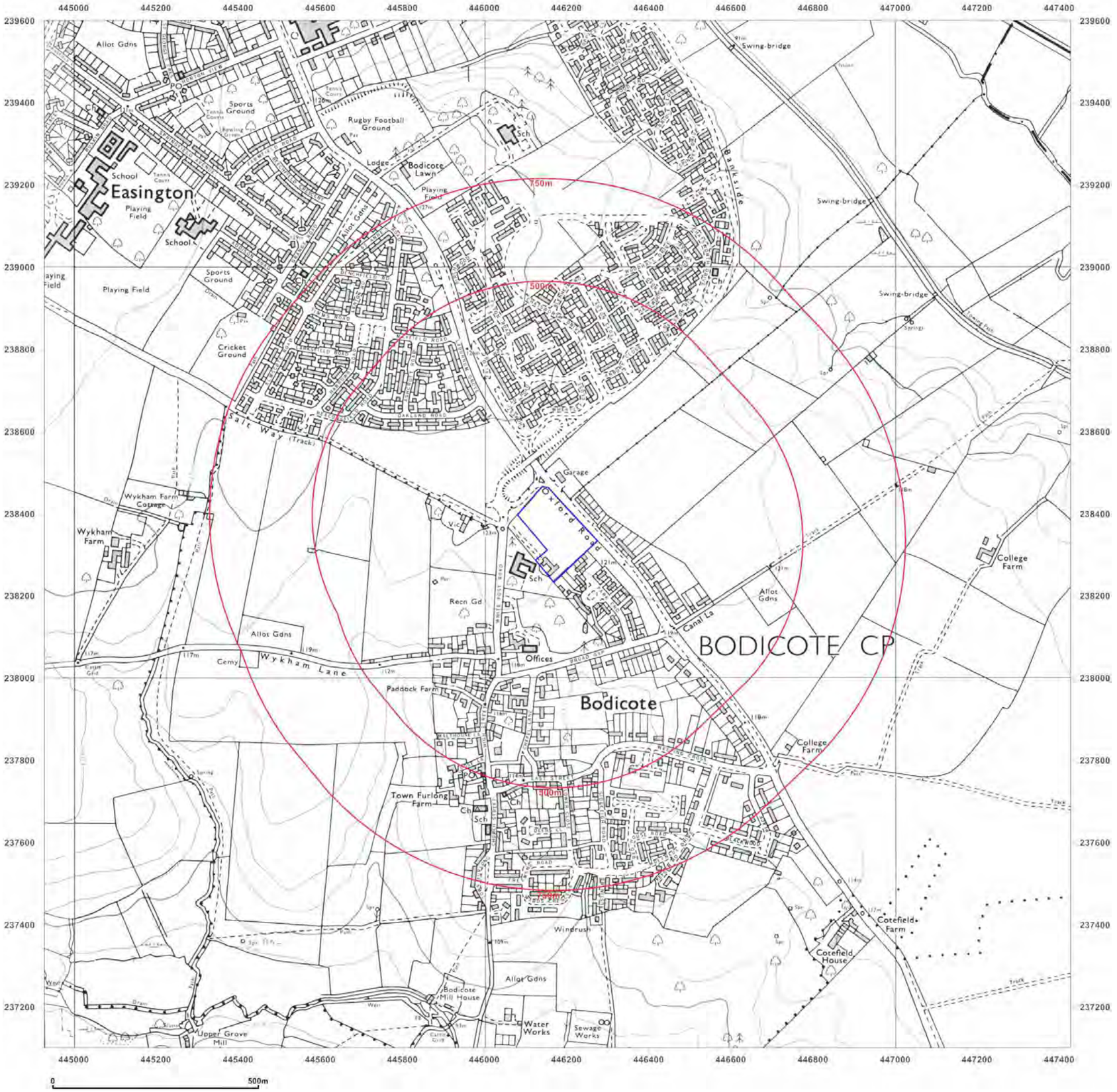

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1977-1982**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1977
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1973
Revised 1977
Edition N/A
Copyright 1977
Levelled 1972

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Map legend available at:
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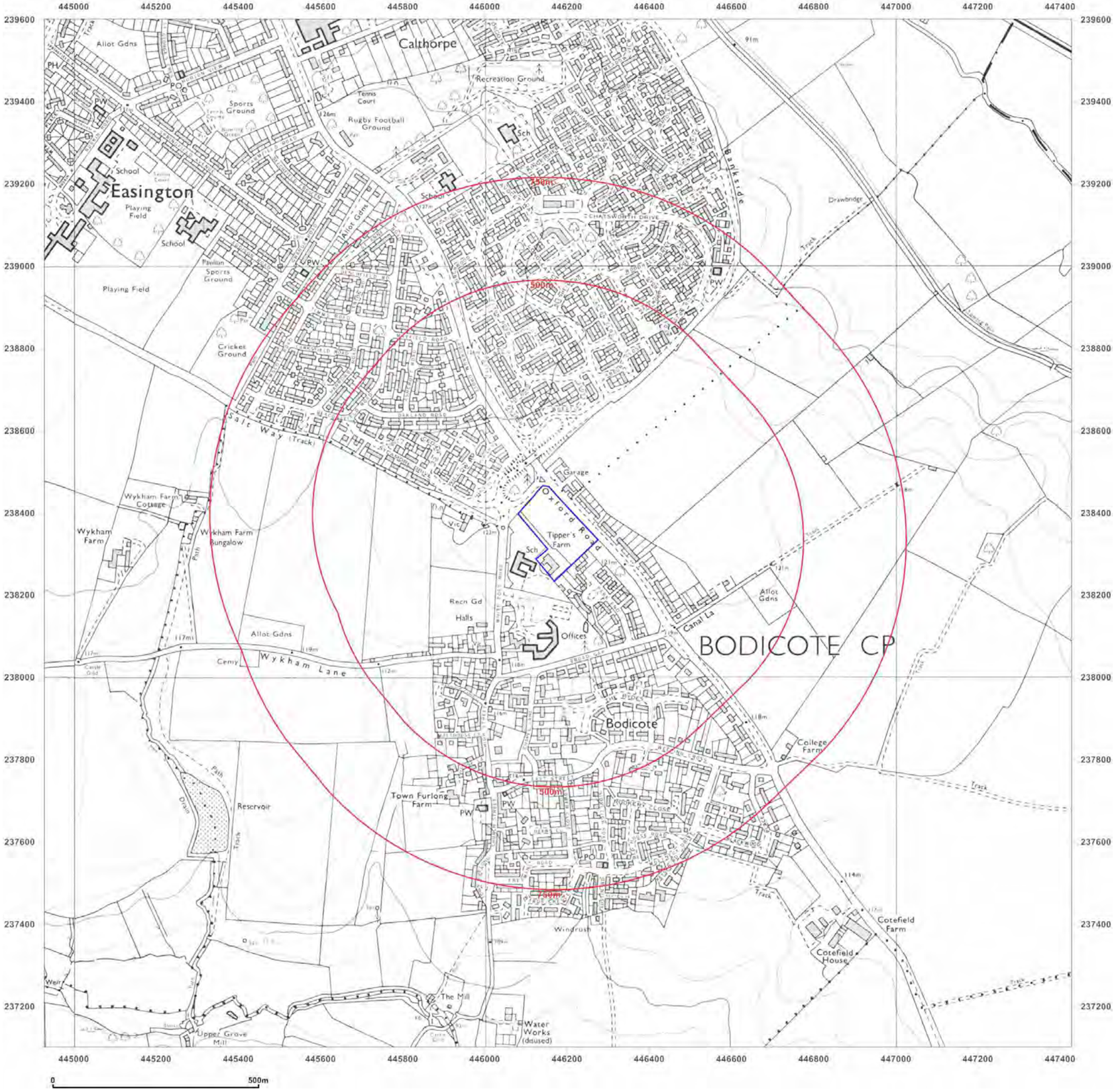

emapsite™

Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **1992**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
S

Surveyed 1990
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1990
Revised 1992
Edition N/A
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Map legend available at:
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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

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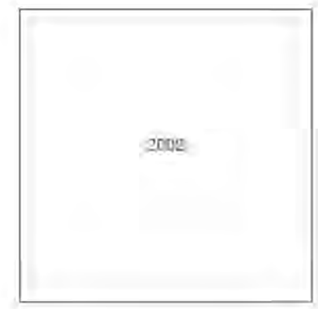

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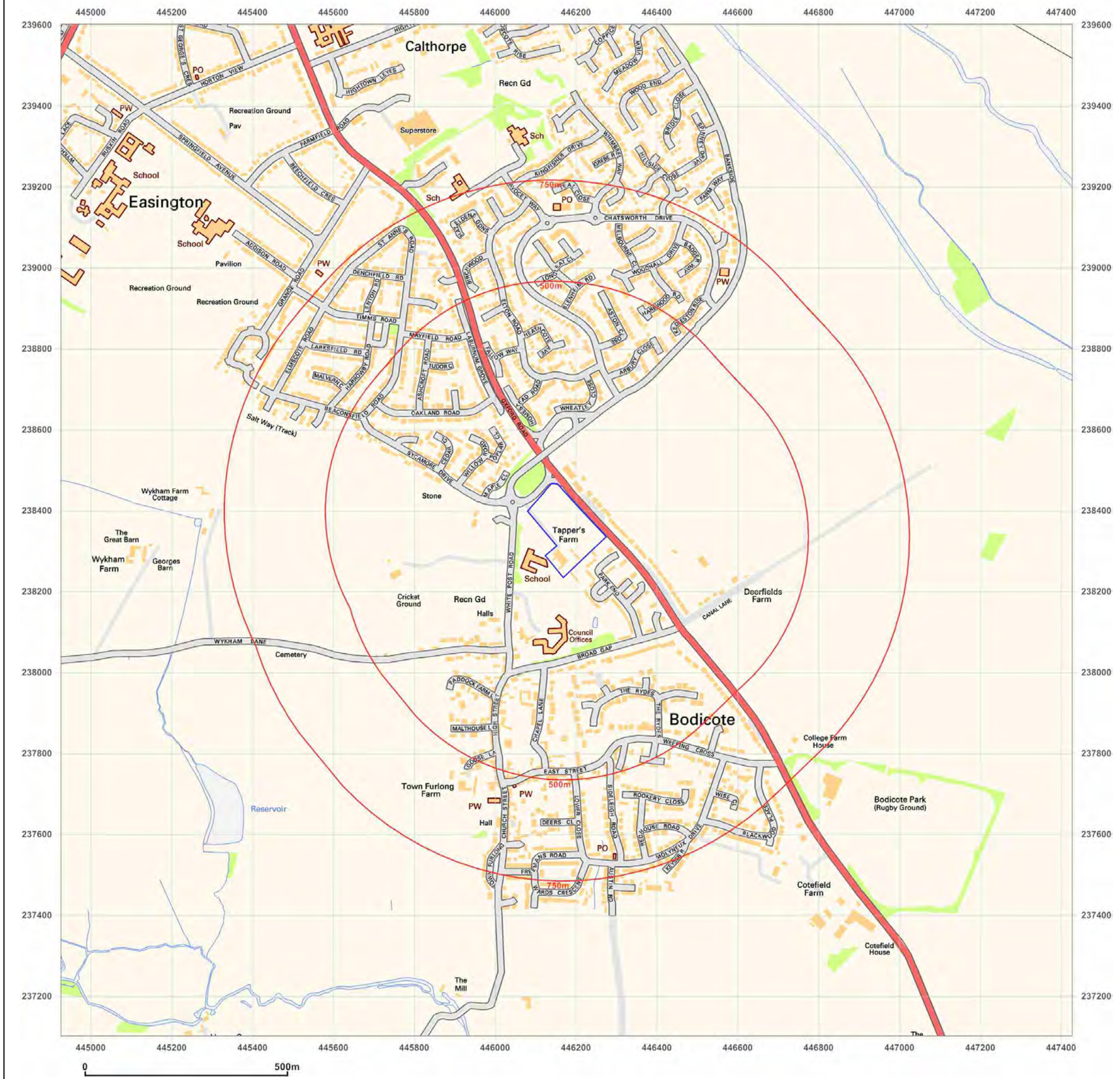

emapsite™

Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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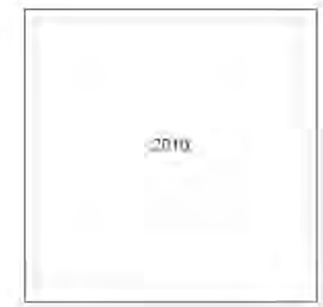

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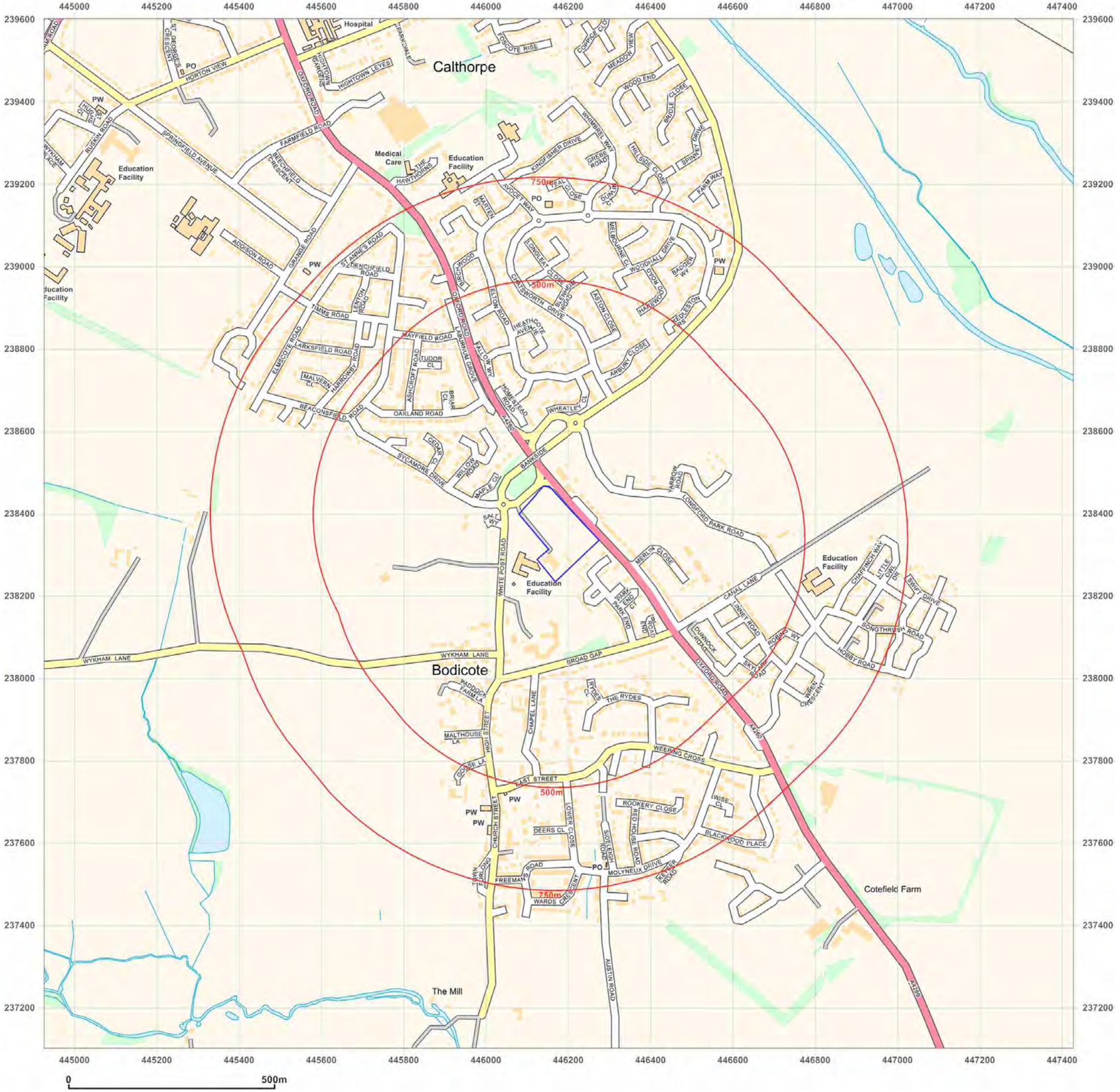

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Site Details:

Bodicote,Oxford Road

Client Ref: EMS_471385_633240
Report Ref: EMS-471385_633240
Grid Ref: 446177, 238351

Map Name: National Grid

Map date: **2014**

Scale: 1:10,000

Printed at: 1:10,000

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APPENDIX B
GroundSure Report

EmapSite

Masdar House, 1 Reading Road,
Eversley, RG27 0RP

Groundsure Reference:	EMS-471385_633241
Your Reference:	EMS_471385_633241
Report Date	10 Apr 2018
Report Delivery Method:	Email - pdf

Enviro Insight

Address: Bodicote, Oxford Road,

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you would like further assistance regarding this report then please contact the emapsite customer services team on 0118 9736883 quoting the above report reference number.

Yours faithfully,

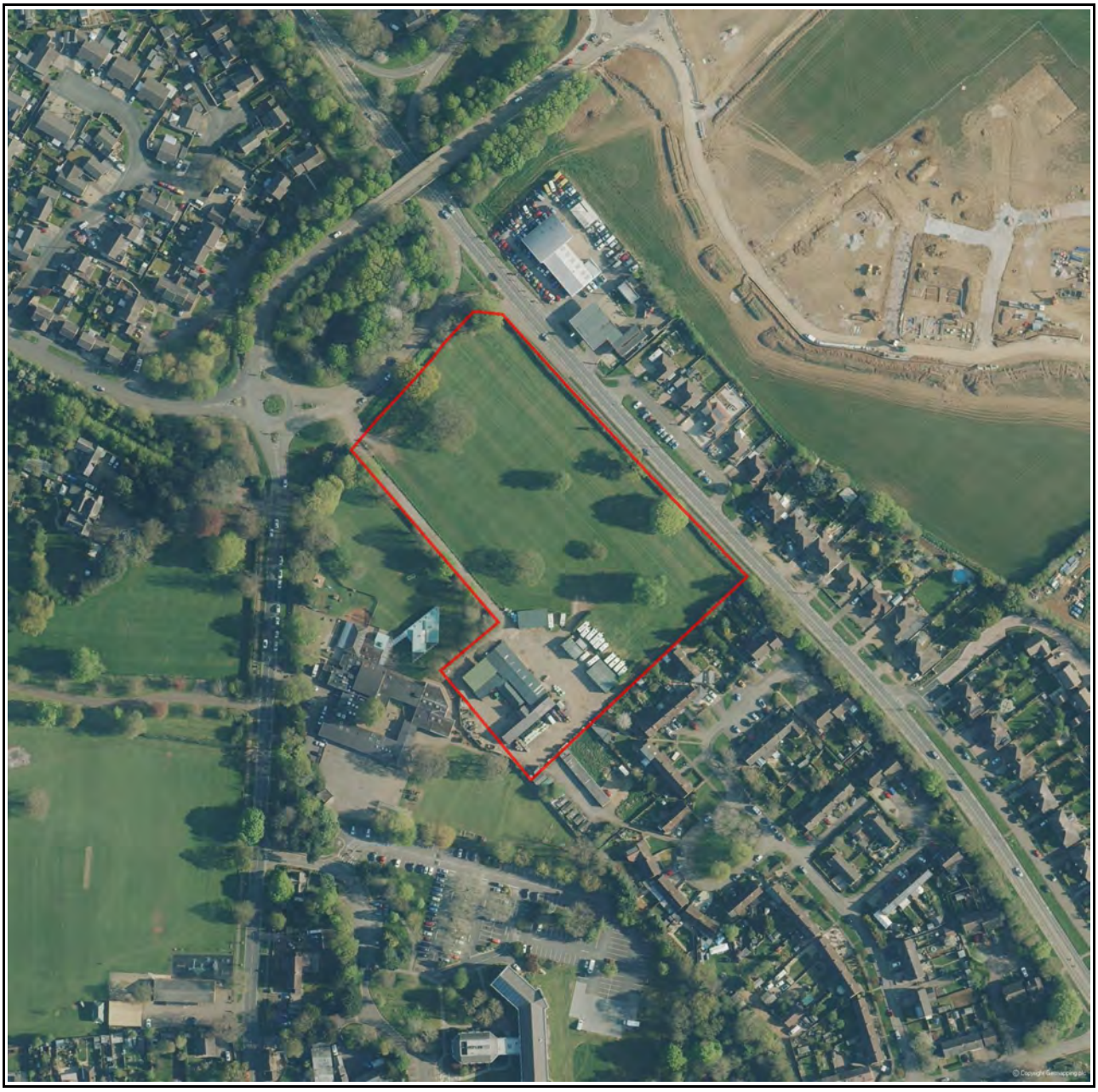
emapsite customer services team

Enc.
Groundsure Enviroinsight

Enviro Insight

Address:	**Bodicote, Oxford Road,**
Date:	**10 Apr 2018**
Reference:	**EMS-471385_633241**
Client:	**EmapSite**

NW N NE



W E

SW S SE

Aerial Photograph Capture date:	05-May-2016
Grid Reference:	446173,238356
Site Size:	2.17ha

Report Reference: EMS-471385_633241
Client Reference: EMS_471385_633241

Contents Page

Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	4	1	4
1.2 Additional Information – Historical Tank Database	0	0	1	0
1.3 Additional Information – Historical Energy Features Database	0	0	7	19
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	8	0	7
1.6 Potentially Infilled Land	0	2	1	0

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	1	1	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	2
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	1	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	3	4	Not searched
4.2 Records of Petrol and Fuel Sites	0	1	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	None identified
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	None identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	None identified
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	1	2
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	7
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	3
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	1	1	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	0	0	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Enviroment Agency Zone 2 floodplains within 250m of the study site?	None identified
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low
7.4 Are there any Flood Defences within 250m of the study site?	None identified
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	None identified
7.6 Are there any areas used for Flood Storage within 250m of the study site?	None identified
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Limited potential
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Low

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	2

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	1	0	0	0	0	1
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Very Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Negligible
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Negligible
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	Full radon protective measures are necessary.

Section 10: Mining

10.1 Are there any coal mining areas within 75m of the study site?	None identified
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	None identified
10.3 Are there any brine affected areas within 75m of the study site?	None identified

Using this report

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

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

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

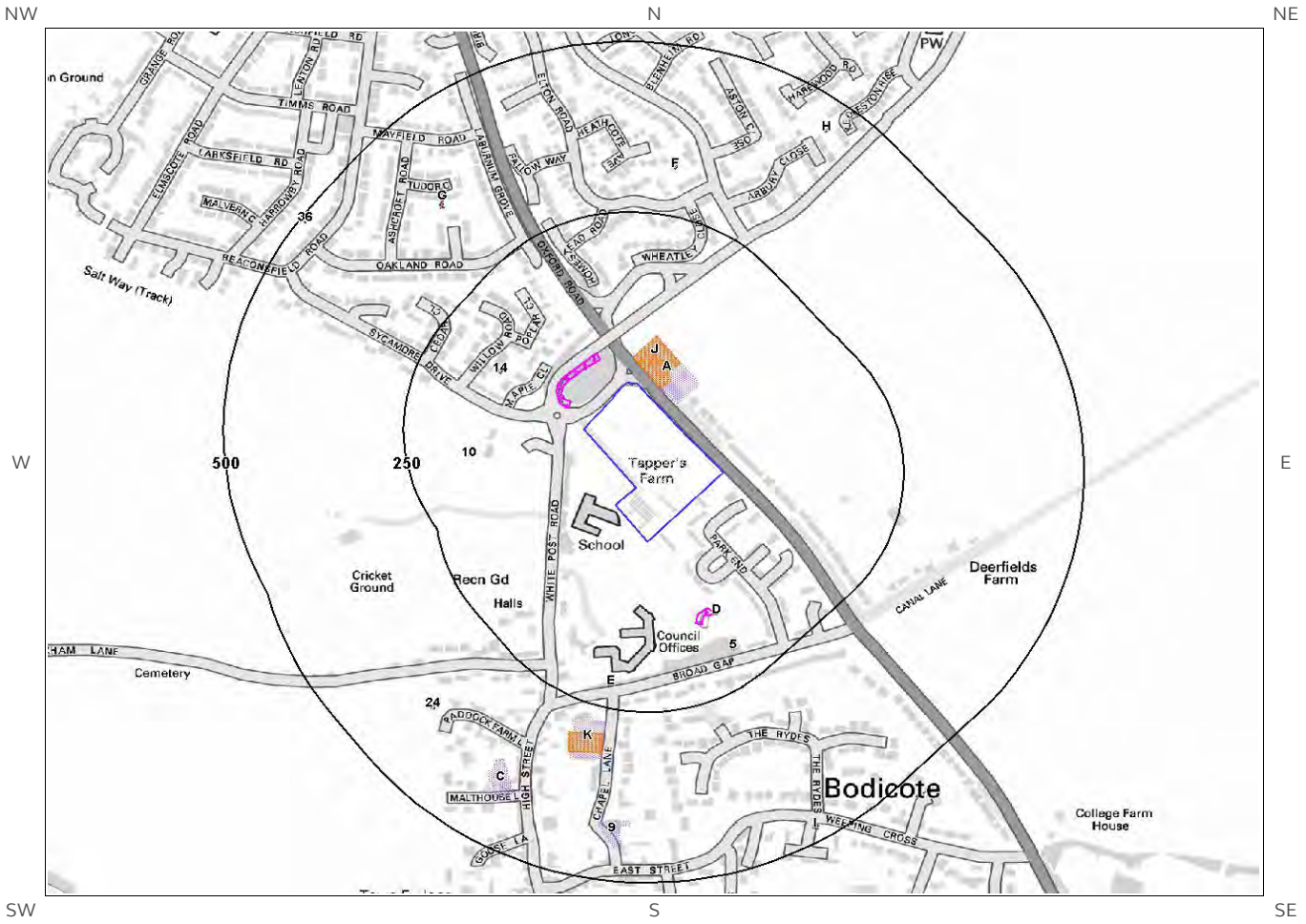
Note: Maps

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

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

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

1. Historical Land Use



Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 9

ID	Distance [m]	Direction	Use	Date
1A	20	NE	Garage	1992
2A	20	NE	Garage	1976
3B	37	NW	Unspecified Ground Workings	1976
4B	37	NW	Unspecified Ground Workings	1992
5	194	SE	Unspecified Tank	1881
6K	269	S	Malthouse	1881
7C	376	SW	Unspecified Malthouse	1900
8C	380	SW	Malthouse	1881
9	411	S	Malthouse	1881

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 1

ID	Distance (m)	Direction	Use	Date
10	163	W	Unspecified Tank	1882

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 26

ID	Distance (m)	Direction	Use	Date
11D	139	SE	Electricity Substation	1990
12D	139	SE	Electricity Substation	1987

13D	140	SE	Electricity Substation	1996
14	141	NW	Electricity Substation	1989
15E	211	S	Electricity Substation	1996
16E	213	S	Electricity Substation	1990
17E	213	S	Electricity Substation	1987
18F	319	N	Electricity Substation	1990
19F	319	N	Electricity Substation	1990
20F	319	N	Electricity Substation	1978
21G	361	NW	Electricity Substation	1994
22G	362	NW	Electricity Substation	1983
23G	362	NW	Electricity Substation	1983
24	379	SW	Electricity Substation	1994
25H	452	NE	Electricity Substation	1990
26H	452	NE	Electricity Substation	1990
27H	452	NE	Electricity Substation	1978
28I	474	SE	Electricity Transformer	1988
29I	475	SE	Electricity Transformer	1988
30I	475	SE	Electricity Transformer	1988
31I	475	SE	Electricity Transformer	1972
32I	476	SE	Electricity Substation	1982
33I	476	SE	Electricity Substation	1984
34I	476	SE	Electricity Substation	1984
35I	476	SE	Electricity Transformer	1967
36	490	NW	Electricity Substation	1994

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 15

ID	Distance (m)	Direction	Use	Date
37A	19	NE	Garage	1972
38A	20	NE	Garage	1967

39A	20	NE	Garage	1996
40A	31	NE	Garage	1987
41A	31	NE	Garage	1990
42J	33	N	Garage	1990
43J	33	N	Garage	1990
44J	33	N	Garage	1978
45K	287	S	Garage	1972
46K	289	S	Garage	1967
47K	289	S	Garage	1988
48K	289	S	Garage	1988
49K	289	S	Garage	1988
50K	289	S	Garage	1988
51K	294	S	Garage	1982

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 3

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
52B	37	NW	Unspecified Ground Workings	1976
53B	37	NW	Unspecified Ground Workings	1992
54D	127	SE	Pond	1881

2. Environmental Permits, Incidents and Registers Map

Site Outline

250 / 500 Search Buffers (m)

Recorded Pollution Incident

Dangerous Substances (List 1)

Dangerous Substances (List 2)

Water Industry Referrals

Licenced Discharge Consents

Red List Discharge Consents

RAS 3 & 4 Authorisations

Part A(1) Authorised Processes and Historic IPC Authorisations

Part A(2) and Part B Authorised Processes

COMAH / NIHHS Sites

Sites Determined as Contaminated Land

Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	NGR	Details	
4	30	NE	446199 238462	Address: Banbury Service Station, (ROC UK Ltd), Oxford Road, Bodicote, Banbury, Oxon, OX15 4AB Process: Service Stations Unloading Petrol Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified
5	116	SE	446299 238199	Address: Jay Bee Motors, Oxford Rd, Bodicote, Banbury, Oxfordshire, England, OX15 4AB Process: waste oil burning process Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of Enforcement: No Enforcements Notified Comment: No Enforcements Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	NGR	Details	
2	293	SW	445900 238100	Address: Wykham Lane, Wykham Lane, -, -, - Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.2319 Permit Version: 1	Receiving Water: SOR BROOK Status: REVOKED - UNSPECIFIED Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 25/11/1997
3	484	NW	445700 238700	Address: Beaconsfield Road, Beaconsfield Road, -, -, - Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0415 Permit Version: 1	Receiving Water: RIVER CHERWELL Status: REVOKED - UNSPECIFIED Issue date: 02/11/1989 Effective Date: 02-Nov-1989 Revocation Date: 25/11/1997

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	125	SW	446047 238186	Incident Date: 23-Jan-2002 Incident Identification: 54148 Pollutant: Oils and Fuel Pollutant Description: Petrol	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

0

Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?	0

Database searched and no data found.

3. Landfill and Other Waste Sites Map

Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

1

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

ID	Distance (m)	Direction	NGR	Details	
Not shown	1404	N	446200 239900	Site Address: Tramway Road, Banbury, Oxfordshire Waste Licence: - Site Reference: TP0012, 13.6.4639 Waste Type: Inert, Industrial, Household, Liquid sludge Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Banbury Rural District Council Licence Holder: - First Recorded: - Last Recorded: -

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

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

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

0

Database searched and no data found.

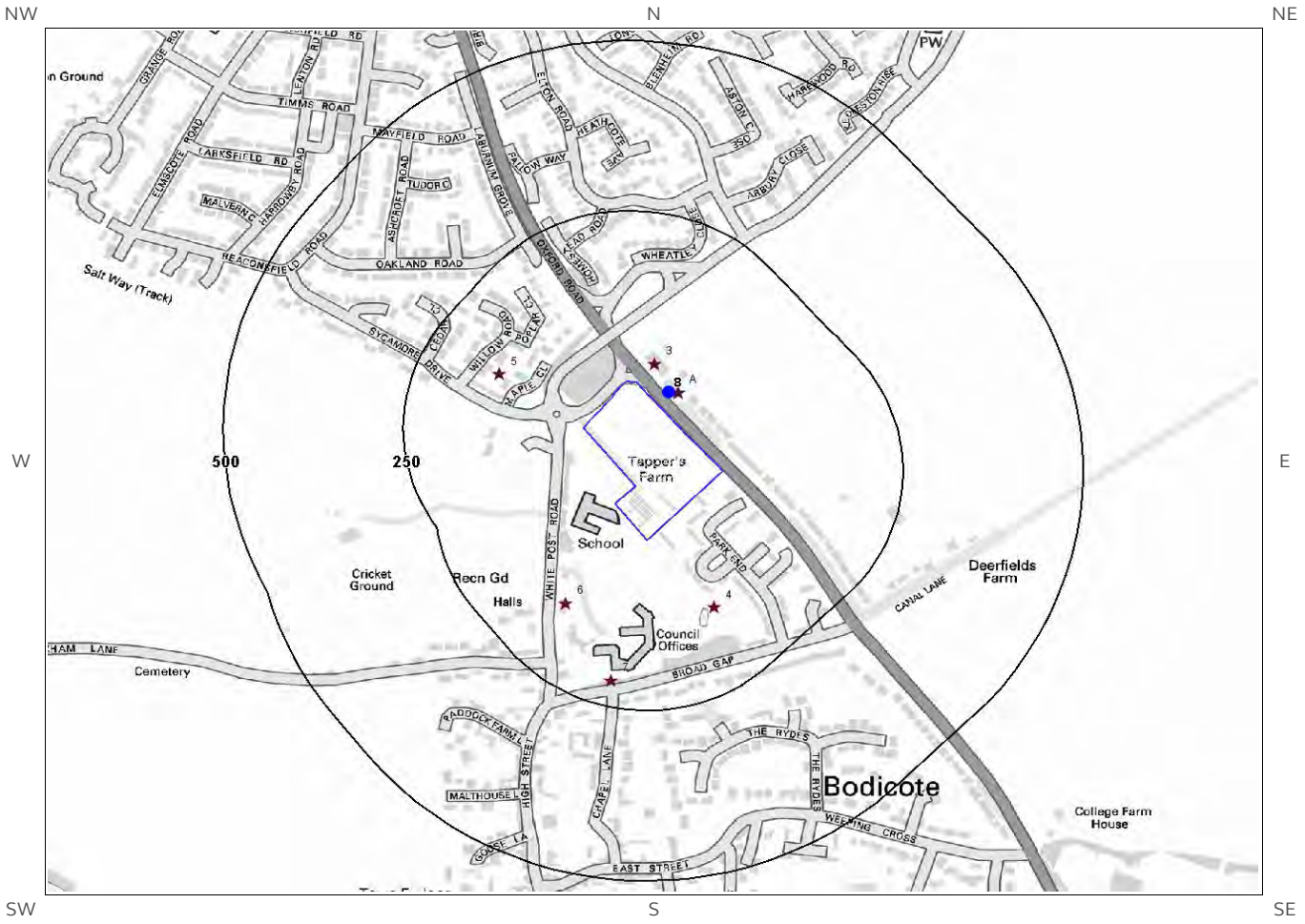
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

---

4. Current Land Use Map



Site Outline

Search Buffers (m)
250
500

Current Industrial Sites

Petrol & Fuel Sites

Electricity Transmission Cables

Gas Transmission Pipelines

4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 7

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1A	33	NE	Esso	446211 238452	Oxford Road, Bodicote, Banbury, OX15 4AB	Petrol and Fuel Stations	Road and Rail
2A	33	NE	Banbury Otr Service Station	446211 238452	Oxford Road, Bodicote, Banbury, OX15 4AB	Petrol and Fuel Stations	Road and Rail
3	37	NE	Jaybee Motors	446178 238494	Oxford Road, Bodicote, Banbury, OX15 4AB	New Vehicles	Motoring
4	135	SE	Electricity Sub Station	446261 238137	OX15	Electrical Features	Infrastructure and Facilities
5	141	NW	Electricity Sub Station	445963 238479	OX16	Electrical Features	Infrastructure and Facilities
6	146	SW	Floor-it Direct	446054 238143	Knyveton, White Post Road, Bodicote, Banbury, OX15 4BN	Carpets, Flooring, Rugs and Soft Furnishings	Consumer Products
7	211	S	Electricity Sub Station	446118 238030	OX15	Electrical Features	Infrastructure and Facilities

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 1

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
8	23	NE	446198 238452	Esso	Banbury Service Station, Oxford Road, Oxford Road, Banbury, Oxfordshire, OX15 4AB	No	Open

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

---

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 Superficial Ground and Drift Geology

Database searched and no data found.

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

5.3 Bedrock and Solid Geology

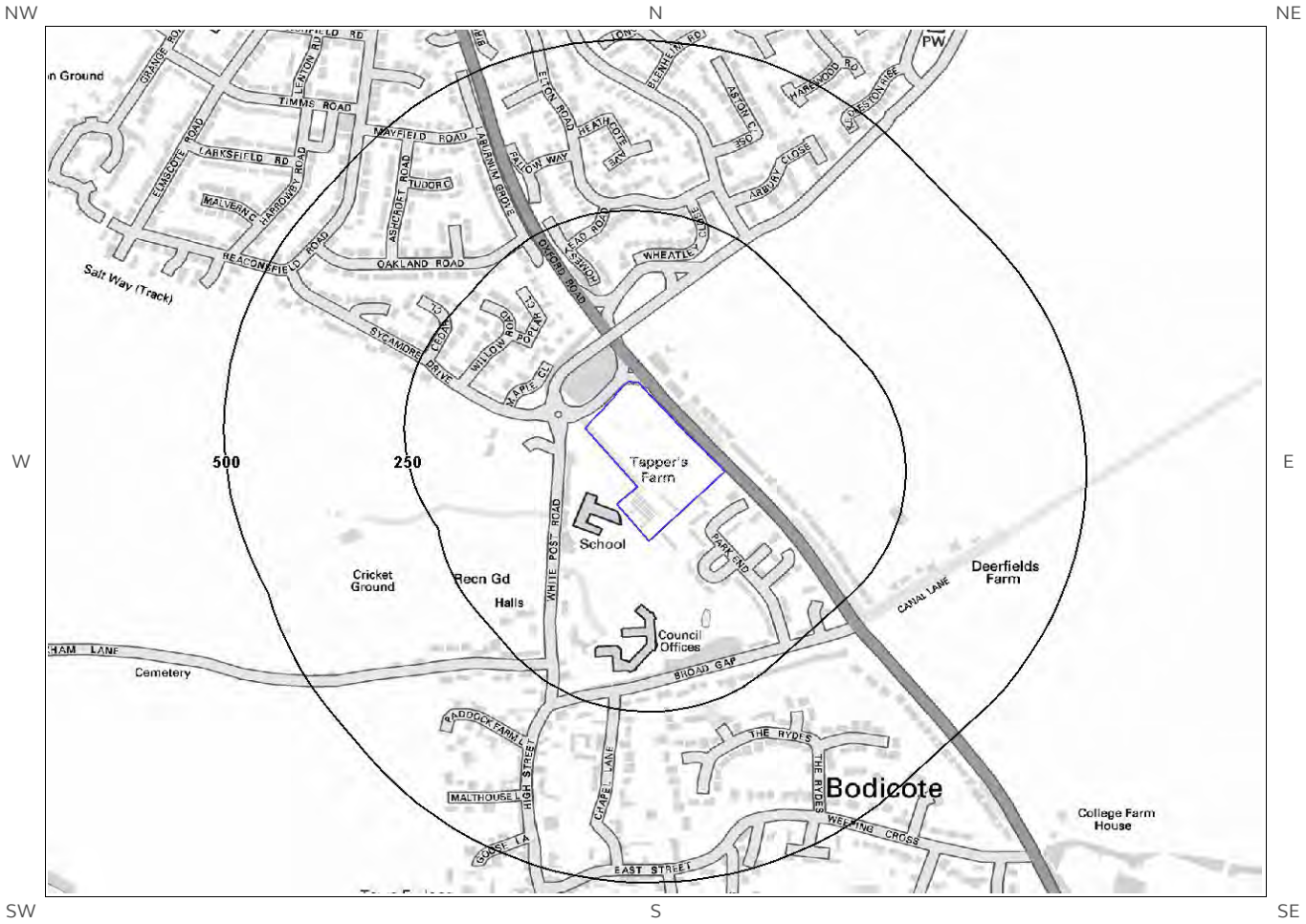
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
MRB-FLIR	MARLSTONE ROCK FORMATION	FERRUGINOUS LIMESTONE AND IRONSTONE

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

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



Site Outline

250 — Search Buffers (m)
500

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

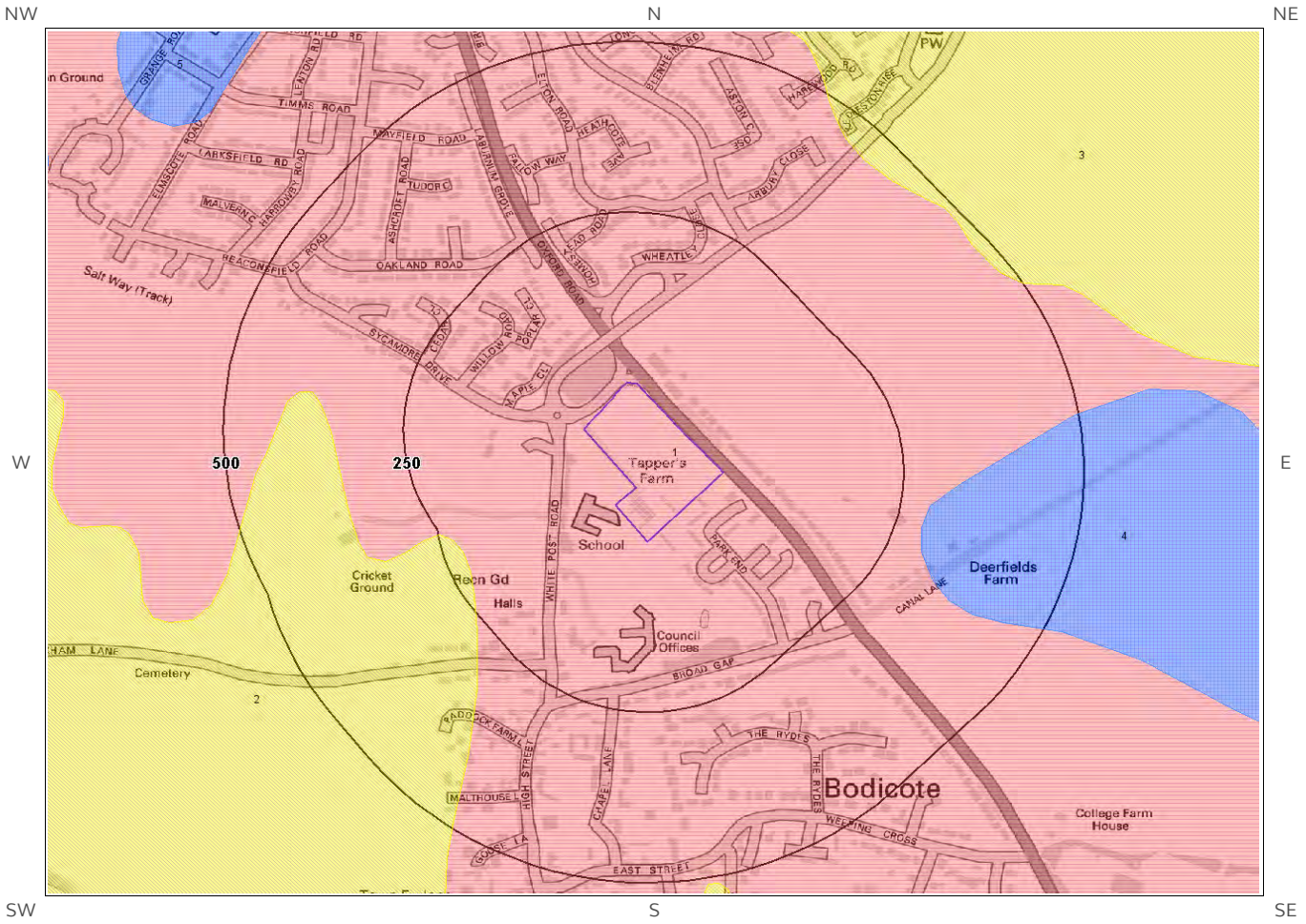
Secondary (B) Aquifer - Lower Permeability Layers

Secondary Aquifer - Undifferentiated Layers

Unproductive

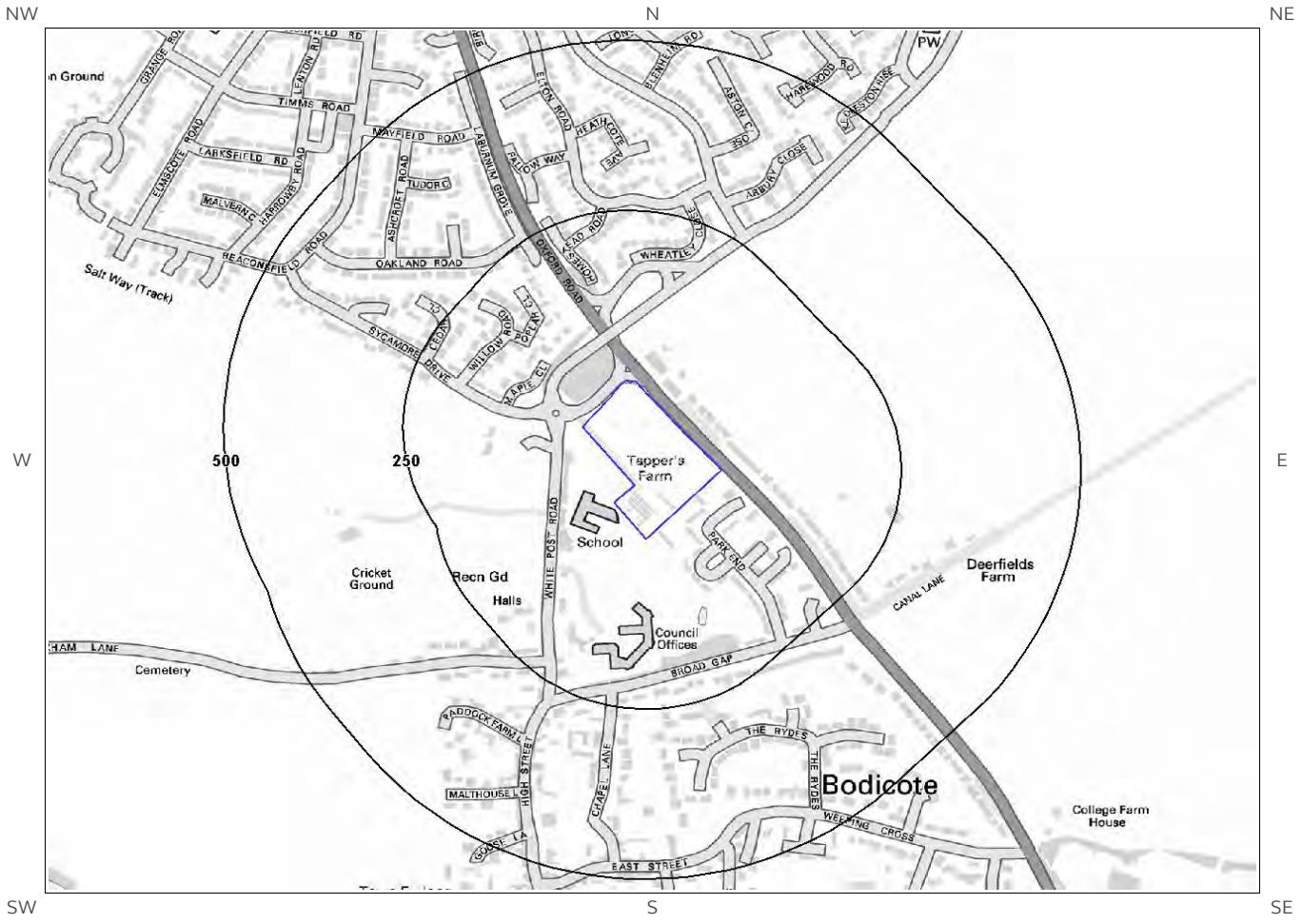
Unknown (lakes and landslip)

6b. Aquifer Within Bedrock Geology and Abstraction Licenses



Site Outline
250
500
Search Buffers (m)
Principal Aquifer
Secondary (A) Aquifer - Permeable Layers
Secondary (B) Aquifer - Lower Permeability Layers
Groundwater Abstraction Licence
Secondary Aquifer - Undifferentiated Layers
Unproductive
Unknown (lakes and landslip)
Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

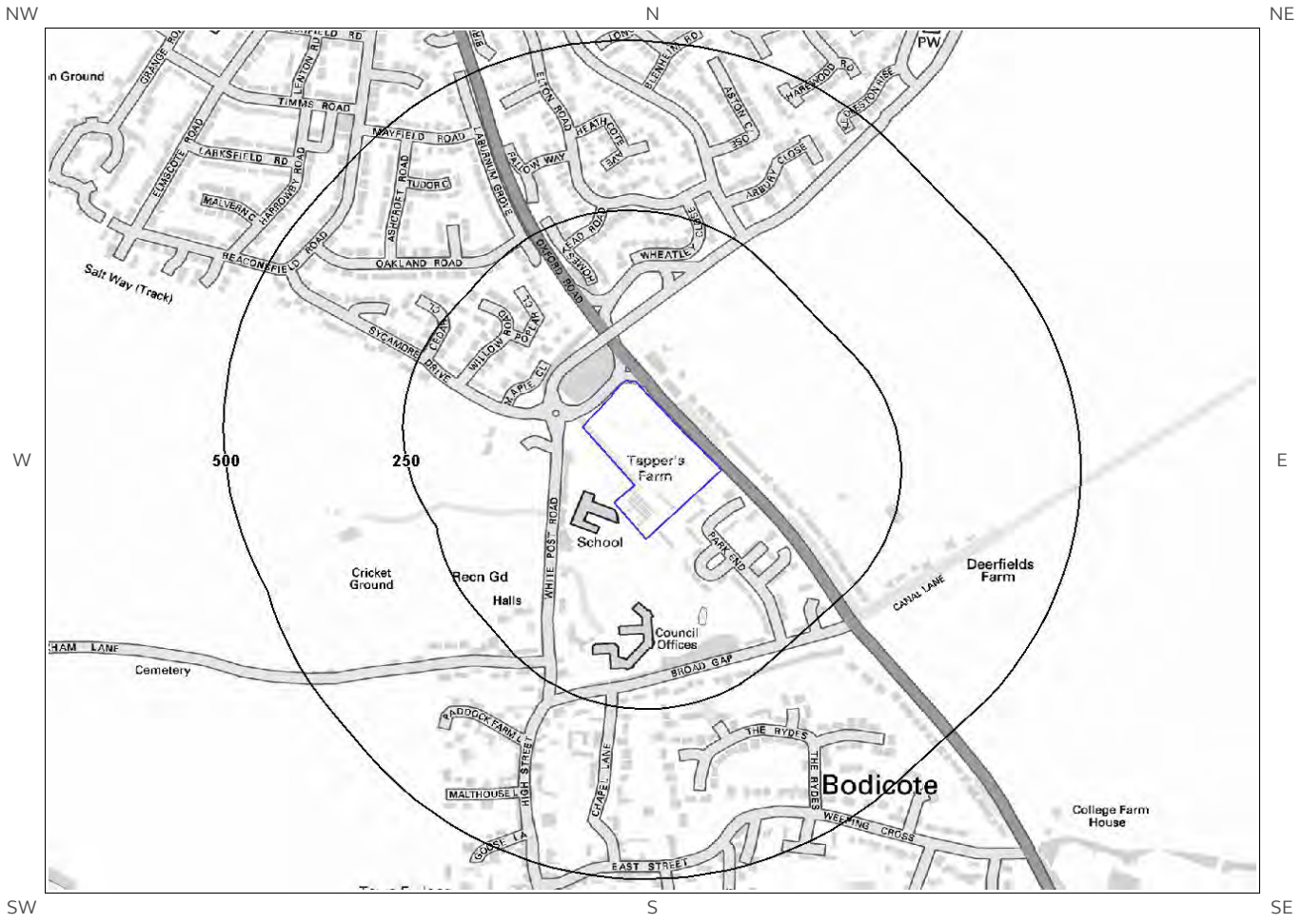
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

Site Outline

250
500
Search Buffers (m)

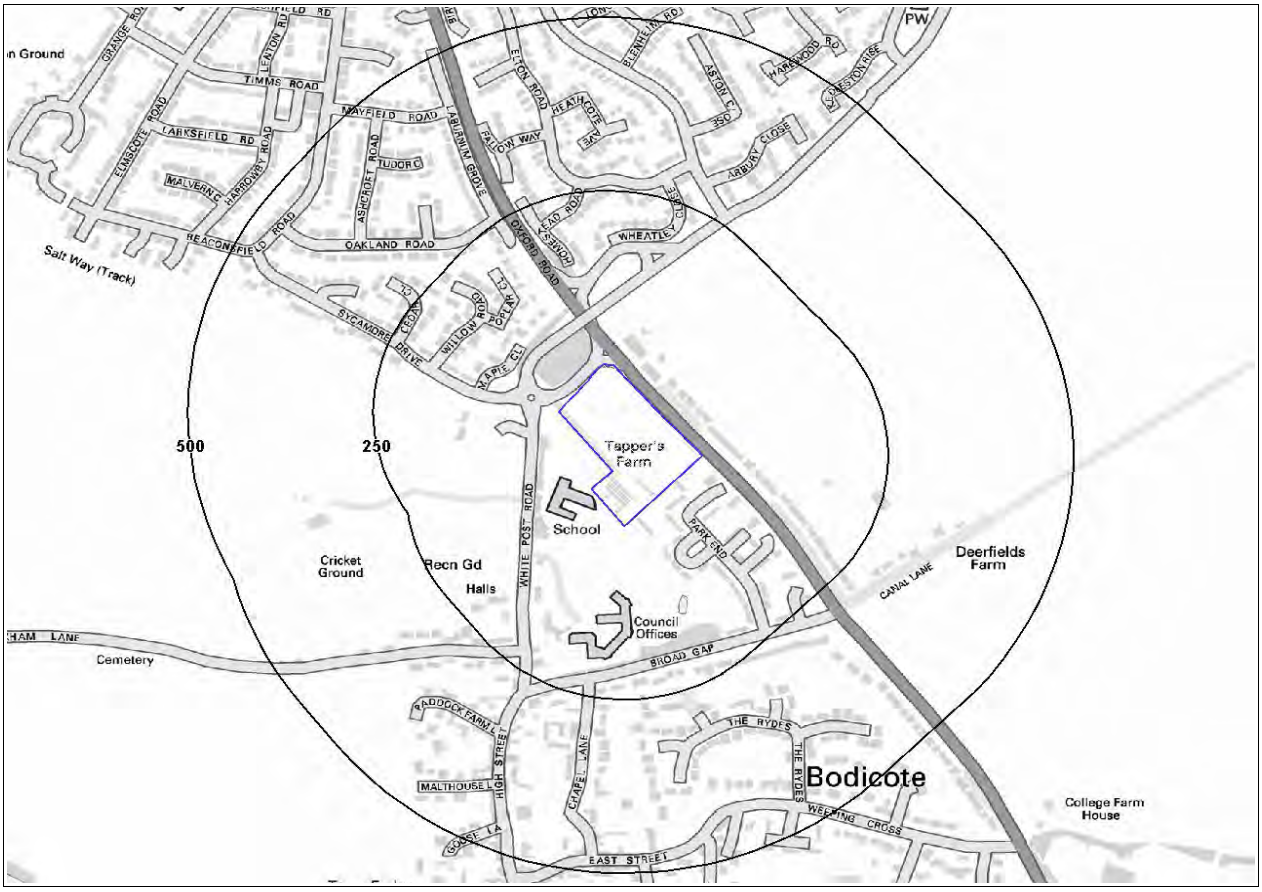
Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



Site Outline

250 — 500 — Search Buffers (m)

Tidal River

Inland River

Underground or Elevated Tidal River

Underground or Elevated Inland River

Foreshore

General Quality Assessment: Chemistry

Canal

Underground or Elevated Canal

Lock or Flight of Locks

Lake, Reservoir, or Marsh

Drain or Transfer

General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

Database searched and no data found.

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

6.2 Aquifer within Bedrock Deposits

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

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

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	222	W	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	285	E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
3	455	NE	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.3 Groundwater Abstraction Licences

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

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	969	SE	446800 237500	Status: Active Licence No: 28/39/14/0314 Details: Vegetable Washing Direct Source: Thames Groundwater Point: Cotefield Farm, Bodicate, Banbury, Oxon Data Type: Point Name: BRATT	Annual Volume (m^3): 20000 Max Daily Volume (m^3): 109 Original Application No: WRA./5964 Original Start Date: 9/7/1992 Expiry Date: - Issue No: 100 Version Start Date: 9/7/1992 Version End Date:
Not shown	1509	S	445700 236800	Status: Historical Licence No: 28/39/14/0008 Details: General Farming & Domestic Direct Source: Thames Groundwater Point: Bloxham Grove, Bodicote (a) Data Type: Point Name: C R ADAMS & SONS	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: WR.A/959 Original Start Date: 14/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 9/5/1979 Version End Date:
Not shown	1706	NE	447800 239100	Status: Active Licence No: 28/39/14/0206 Details: General Farming & Domestic Direct Source: Thames Groundwater Point: Sutton Lodge, Twyford (a) Data Type: Point Name: K J CHERRY & SONS LTD	Annual Volume (m^3): 4546 Max Daily Volume (m^3): 27.28 Original Application No: WR.A/682 Original Start Date: 10/4/1967 Expiry Date: - Issue No: 100 Version Start Date: 10/4/1967 Version End Date:

6.4 Surface Water Abstraction Licences

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

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1045	SW	445200 237800	Status: Historical Licence No: 28/39/14/0296 Details: Spray Irrigation - Storage Direct Source: Thames Surface Water - Non Tidal Point: Wykham Park Farm, Banbury, Oxon (point A) Data Type: Point Name: H COLEGRAVE & SON	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: WRA./4804 Original Start Date: 18/7/1984 Expiry Date: - Issue No: 100 Version Start Date: 18/7/1984 Version End Date:
Not shown	1045	SW	445200 237800	Status: Active Licence No: 28/39/14/0296 Details: Spray Irrigation - Storage Direct Source: Thames Surface Water - Non Tidal Point: Wykham Park Farm, Banbury, Oxon (point A) - Trib.of.sor Broo Data Type: Point Name: H COLEGRAVE & SON	Annual Volume (m^3): 27276 Max Daily Volume (m^3): 828 Application No: WRA./4804 Original Start Date: 18/7/1984 Expiry Date: - Issue No: 100 Version Start Date: 18/7/1984 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1147	S	446000 237100	Status: Historical Licence No: 28/39/14/0234 Details: Potable Water Supply - Direct Direct Source: Thames Surface Water - Non Tidal Point: Bodicote Pumping Stationsor Brook Data Type: Point Name: THAMES WATER UTILITIES LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: RG480 Original Start Date: 9/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 18/2/1994 Version End Date:
Not shown	1147	S	446000 237100	Status: Historical Licence No: 28/39/14/0234 Details: Potable Water Supply - Direct Direct Source: Thames Surface Water - Non Tidal Point: Bodicote Pumping Station Data Type: Point Name: THAMES WATER UTILITIES LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: RG480 Original Start Date: 9/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 18/2/1994 Version End Date:
Not shown	1147	S	446000 237100	Status: Active Licence No: 28/39/14/0234 Details: Potable Water Supply - Direct Direct Source: Thames Surface Water - Non Tidal Point: Bodicote Pumping Station - Sor Brook Data Type: Point Name: THAMES WATER UTILITIES LTD	Annual Volume (m^3): 1663836 Max Daily Volume (m^3): 4546 Application No: RG480 Original Start Date: 9/10/1967 Expiry Date: - Issue No: 100 Version Start Date: 18/2/1994 Version End Date:
Not shown	1656	W	444500 237900	Status: Historical Licence No: 28/39/14/0296 Details: Spray Irrigation - Storage Direct Source: Thames Surface Water - Non Tidal Point: Wykham Park Farm, Banbury, Oxon (point B) Data Type: Point Name: H COLEGRAVE & SON	Annual Volume (m^3): - Max Daily Volume (m^3): - Application No: WRA./4804 Original Start Date: 18/7/1984 Expiry Date: - Issue No: 100 Version Start Date: 18/7/1984 Version End Date:
Not shown	1656	W	444500 237900	Status: Active Licence No: 28/39/14/0296 Details: Spray Irrigation - Storage Direct Source: Thames Surface Water - Non Tidal Point: Wykham Park Farm, Banbury, Oxon (point B) -trib.of.sor Brook Data Type: Point Name: H COLEGRAVE & SON	Annual Volume (m^3): 27276 Max Daily Volume (m^3): 828 Application No: WRA./4804 Original Start Date: 18/7/1984 Expiry Date: - Issue No: 100 Version Start Date: 18/7/1984 Version End Date:

6.5 Potable Water Abstraction Licences

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

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1147	S	446000 237100	Status: Historical Licence No: 28/39/14/0234 Details: Potable Water Supply - Direct Direct Source: Thames Surface Water - Non Tidal Point: Bodicote Pumping Stationsor Brook Data Type: Point Name: THAMES WATER UTILITIES LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: RG480 Original Start Date: 9/10/1967 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1147	S	446000 237100	Status: Historical Licence No: 28/39/14/0234 Details: Potable Water Supply - Direct Direct Source: Thames Surface Water - Non Tidal Point: Bodicote Pumping Station Data Type: Point Name: THAMES WATER UTILITIES LTD	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: RG480 Original Start Date: 9/10/1967 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:
Not shown	1147	S	446000 237100	Status: Active Licence No: 28/39/14/0234 Details: Potable Water Supply - Direct Direct Source: Thames Surface Water - Non Tidal Point: Bodicote Pumping Station - Sor Brook Data Type: Point Name: THAMES WATER UTILITIES LTD	Annual Volume (m^3): 1663836 Max Daily Volume (m^3): 4546 Original Application No: RG480 Original Start Date: 9/10/1967 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? None identified

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.
13	NE	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
165	W	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.

6.9 River Quality

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

Are there any Ordnance Survey MasterMap Water Network entries within 500m of the study site? #DRN_Count#

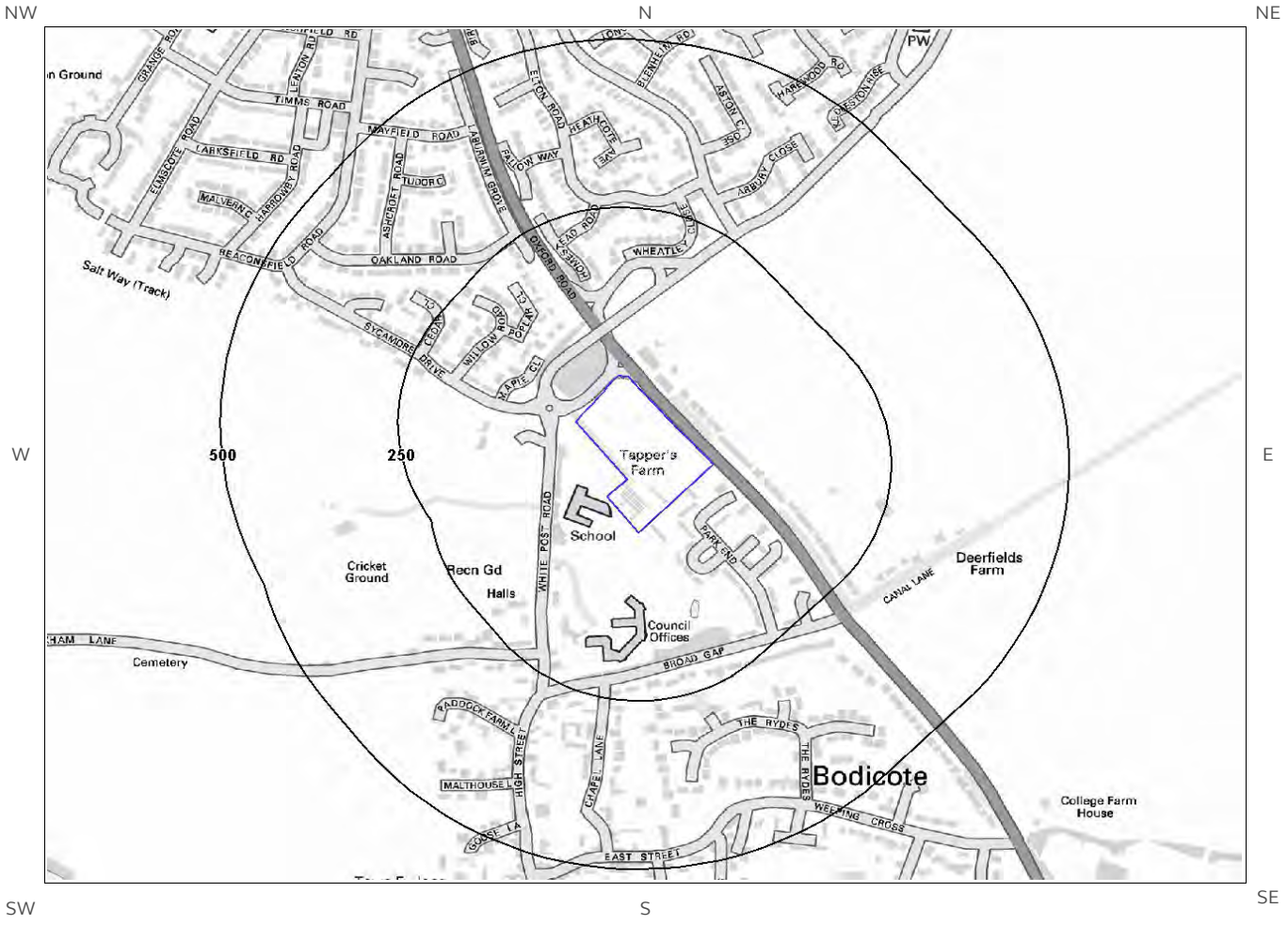
#NDF_DRN_tag#

6.11 Surface Water Features

Are there any surface water features within 250m of the study site? None identified

Database searched and no data found.

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

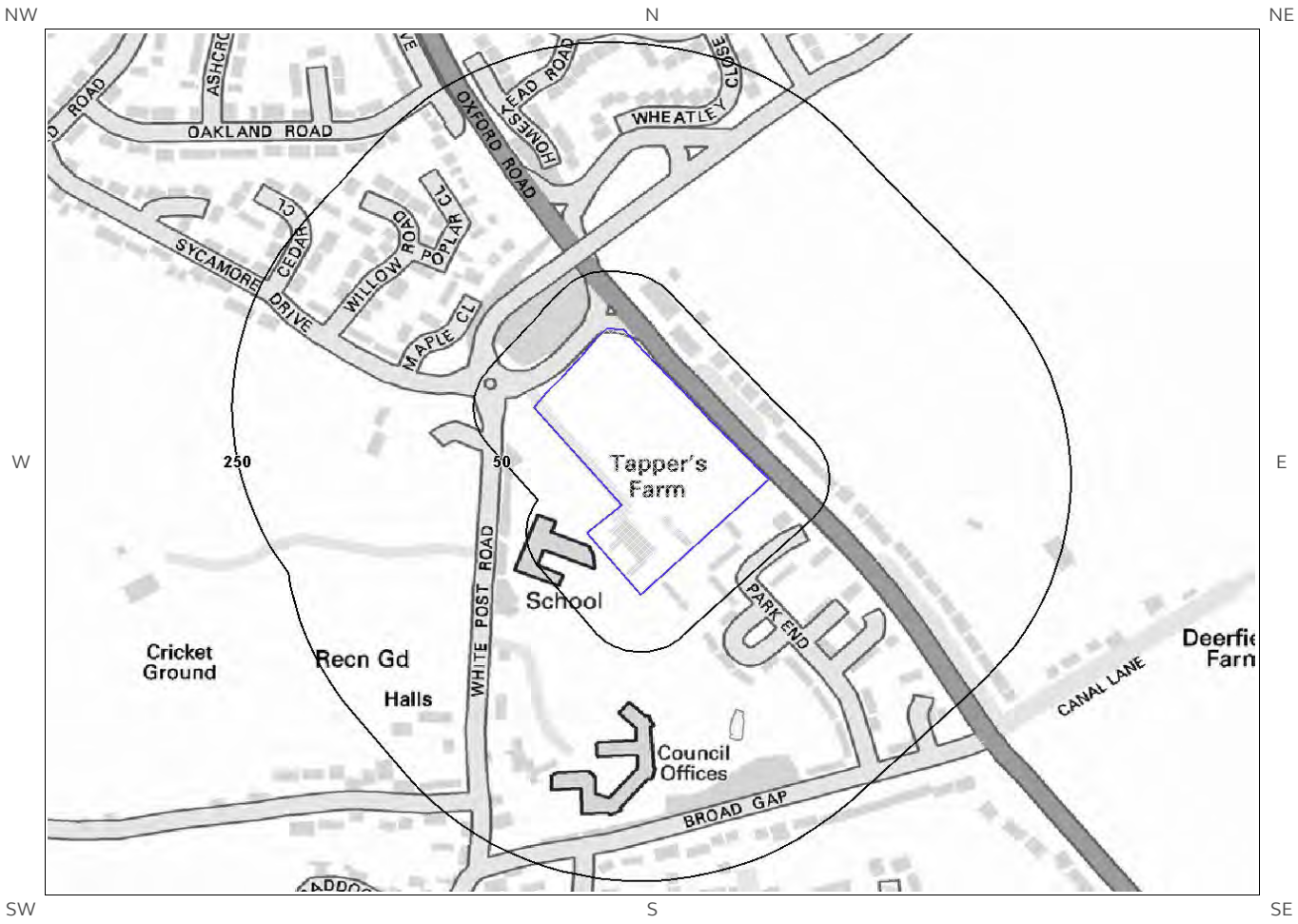
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



Site Outline

100 250 Search Buffers (m)

RoFRaS Rating

Very Low

Low

Medium

High

7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? None identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? None identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? None identified

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? None identified

7.7 Groundwater Flooding Susceptibility Areas

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

Does this relate to Clearwater Flooding or Superficial Deposits Flooding? Clearwater Flooding

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

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

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

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

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

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

8. Designated Environmentally Sensitive Sites Map

Site Outline
100
250
Search Buffers (m)

AONB
National Park
SSSI
Special Protection Areas
Nitrate Vulnerable Zones
Green Belt
Environmentally Sensitive Areas
Special Areas of Conservation
World Heritage Sites
Nitrate Sensitive Areas
Ancient Woodland
National Nature Reserve
Local Nature Reserves
Ramsar Sites

8. Designated Environmentally Sensitive Sites

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

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	ESA Name	Data Source
3	1031	NE	Upper Thames Tributaries	Natural England
Not shown	1550	N	Upper Thames Tributaries	Natural England

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

2

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

ID	Distance (m)	Direction	NVZ Name	Data Source
1	0	On Site	Existing	DEFRA
Not shown	1532	N	Existing	DEFRA

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell*[*] hazard rating identified on the study site? Negligible

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

Hazard
Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

9.1.2 Landslides

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

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

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

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

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

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

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

9.1.4 Compressible Ground

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

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

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

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

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

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

9.1.6 Running Sand

What is the maximum Running Sand*[*] hazard rating identified on the study site? Negligible

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

Hazard
No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

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

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is in a Radon Affected Area, as between 10 and 30% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing
ones as described in publication BR211 by the Building Research Establishment? Full radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? None identified

Database searched and no data found.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? None identified

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? None identified
Guidance: No Guidance Required.

Contact Details

emapsite
Telephone: 0118 9736883
sales@emapsite.com

British Geological Survey Enquiries
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

Public Health England
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email:**enquiries@phe.gov.uk**
Main switchboard**: 020 7654 8000**

The Coal Authority
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Cherwell District Council
Phone: 01295 252 535
Web: http://www.cherwell-dc.gov.uk/
Address: Bodicote House, Bodicote, Banbury, Oxfordshire, OX15 4AA

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

Standard Terms and Conditions

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APPENDIX C
Risk Assessment Methodology

Contaminated Land Risk Assessment

Contaminated Land Risk Assessment is a technique that identifies and considers the associated risk, determines whether the risks are significant and whether action needs to be taken. The four main stages of risk assessment are:

Hazard Identification ⇨ Hazard Assessment ⇨ Risk Estimation ⇨ Risk Evaluation

CLR11 outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process. Under CLR11, three tiers of risk assessment exist - Preliminary, Generic Quantitative and Detailed Quantitative.

Formulating and developing a conceptual model for the site is an important requirement of risk assessment, this supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process.

Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk.

The risk assessment process needs to take into account the degree of confidence required in decisions. Identification of uncertainties is an essential step in risk assessment.

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552:

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

The severity is also classified using a system based on CIRIA C552. The terms and definitions are:

- **Severe**: Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
  Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse;

- **Medium**: Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
  Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve;

- **Mild**: Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment;
  Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.

- **Minor**: harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
  Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

Once the likelihood and severity have been determined, a risk category can be assigned using the table below.

		Consequences			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**Highly likely**	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low

Definitions of the risk categories obtained from the above table are as follows together with an assessment of the further work that might be required:

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

- **High**: Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term;

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

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

- **Very Low**: There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

APPENDIX D
Frequency and Duration of Gas Monitoring

Ground Gas Guidance

Redevelopment on brownfield sites is an ever increasing occurrence, including those sites where a potential ground gas issue is present.

CIRIA C665 is the current guidance which gives up-to-date advice on all aspects of ground gas. It outlines good practice in investigation, the collection of relevant data and monitoring programmes in a risk-based approach to gas contaminated land. Two semi-quantitative methods are set out for the assessment of risk:

1 For low rise housing with a ventilated under floor void at minimum 150 mm (Boyle and Witherington);
2 For all other development types (Wilson and Card).

Both methods use the concept of Gas Screening Values (GSVs) to identify levels of risk. The mitigation and management of potentially unacceptable risk is described with reference to both passive and active systems of gas. Source removal is also discussed as an option.

CIRIA C665 and the advice it contains has been prepared to be generally consistent with CLR11 *Model Procedures for the management of land contamination* (Defra and Environment Agency, 2004a). The aim of CIRIA C665 is a consistent approach to decision making, particularly relating to the scope of protective design measures on a site specific basis.

Legislative Framework

CIRIA C665 provides technical guidance however also recognises the context into which the guidance has to be employed. Government policy is based upon a "suitable for use approach", which is relevant to both the current and proposed future use of land. When considering the current use of land, Part IIA of the Environment Protection Act 1990 provides the regulatory regime. The presence of hazardous ground gases could provide the "source" in a "pollutant linkage" which could lead the regulator to determine that considerable harm or there is a significant possibility of such harm being caused. Under such circumstances, the regulator would determine the land to be "contaminated land" under the provisions of the Act, setting out the process of remediation as described in the DETR Circular 02/2000 *Statutory guidance on contaminated land* (DETR, 2000a).

Frequency and Duration of Monitoring

The monitoring period for a specific site covers the "worst case" scenario. A "worst case" scenario will occur during falling atmospheric pressure and, in particular, weather conditions such as rainfall, frost and dry weather.

The benefits of the additional information and whether it is likely to change the scope of gas protection should be considered, as are the consequences of failing to characterise adequately pollutant linkages. Investigations concerned with soil gas are required to provide monitoring data sufficient to allow prediction of worst case conditions enabling the confident assessment of risk and subsequent design of appropriate gas protection schemes. Monitoring programmes should not be an academic exercise in data collection.

Below are matrices that will aid in determining an appropriate number of gas monitoring visits and the length of monitoring period.

Typical/idealised periods of monitoring

		Generation of Potential Source				
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Sensitivity of Development	**Low (Commercial)**	1 month	2 months	3 months	6 months	12 months
	Moderate (Flats)	2 months	3 months	6 months	12 months	24 months
	High (Residential with Gardens)	3 months	6 months	6 months	12 months	24 months

Typical/idealised frequency of monitoring

		Generation of Potential Source				
		Very Low	**Low**	**Moderate**	**High**	**Very High**
Sensitivity of Development	**Low (Commercial)**	4	6	6	12	12
	Moderate (Flats)	6	6	9	12	24
	High (Residential with Gardens)	6	9	12	24	24

Note

1 NHBC guidance also recommends this period of monitoring (Boyle and Witherington, 2007).
2 There is no industry consent over "high", "medium" or "low" generation potential of source.
3 At least two sets of readings should be at low and falling atmospheric pressure (but not restricted to periods below <1000 mb) known as worst case conditions. Historical data can be used as part of the data set (Table 5.5b).

It is recommended that newly installed monitoring wells are left for 24 hours to allow the soil gas to reach equilibrium. It should be recognised, however, that some soil gas regimes could take considerably longer (up to seven days). Interpretation of any initial readings should take this equilibrium process into account.

APPENDIX E
Legislative Background

Legislative Background

Environmental liabilities and risks have been evaluated in terms of a source -pathway - target relationship in accordance with the approach set out in:

- The 1995 Environment Act;
- The Contaminated Land (England) Regulations 2000;
- The DETR circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land.

Contaminated land is defined within the legislative framework as land which is in such condition by reason of substances in, on or under the land that:

1) Significant harm is being caused or there is a significant possibility of such harm being caused;
2) Significant pollution of controlled waters is being or is likely to be caused.

The potential for harm is based on the presence of three factors:

- **Source** - substances that are potential contaminants or pollutants that may cause harm;
- **Pathway** - a potential route by which contaminants can move from the source to the receptor;
- **Receptor** - a receptor that may be harmed, for example the water environment, humans and water.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused. The presence of a source does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors are site specific and will vary according to the intended end use of the site, its characteristics and its surroundings.

The key principle which supports the SPR approach is 'suitable for use' criteria. This requires remedial action only where contamination is considered to pose unacceptable actual or potential risks to health or the environment and, taking into account the proposed use of the site.

Relevant Guidance Documents

This report has been prepared in accordance with the list of guidance below however the list is not exhaustive:

- CLR11 – Model Procedures;
- Contamination and Environmental Matters - Their implications for Property Professionals (2nd Edition RICS Nov 2003);
- Brownfields – Managing the development of previously developed land – A client's guide, CIRIA 2002;
- DEFRA and Environment Agency publications CLR7 – 10, supported by the TOX guides and SGV guides, dated March 2002;
- DETR Circular 02/2000, Contaminated Land: Implementation of Part IIA of the Environmental Protection Act 1990;
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002;

Relevant Legislative Documents

The following is a non-exhaustive list of legislative framework documents that has been considered in the production of this report:

- The Environment Act (1995);
- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
- The Environment Protection Act (1990);
- The Contaminated Land (England) Act (2000);
- Contaminated Land (England) Regulations (2012);
- The Water Resources Act (1991);
- The Pollution Prevention and Control (England and Wales) Regulations (2000);
- The Landfill Regulations (England and Wales) Regulations (2002);
- The Landfill (England and Wales) (Amendment) Regulations (2004);
- Health and Safety at Work Act;

APPENDIX F
Limitations

Standard Limitations

This desk study report was conducted and has been prepared for the sole internal use and reliance of the Client, Hollins Strategic Land. This report shall not be relied upon or transferred to any other parties without the express written authorisation of BSL. If an unauthorised third party comes into possession of this report they rely on it at their risk and the authors owe them no duty of care or skill.

The findings and opinions conveyed via the desk study are based on information obtained from a variety of sources as detailed within this report, which BSL believes are reliable. Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

Any recommendations made in this report should be confirmed with the Regulatory bodies and Planning Authority prior to implementation to ensure compliance.

No existing manhole covers were lifted or drainage runs inspected during the course of this ground investigation.

The site plans enclosed in this report should not be scaled off.