

Report type:	Phase I Site Appraisal (Desk Study)
Site:	Land to West of White Post Road, Banbury
Client:	Gladman Developments Ltd
Ref:	GRM/P6194/DS.2
Date:	July, 2013

GRM Development Solutions
 Laurus House
 First Avenue
 Centrum 100
 Burton upon Trent
 Staffordshire, DE14 2WH
www.grm-uk.com

t. 01283 551249
 f. 01283 211968
 e. info@grm-uk.com



LAND to WEST OF WHITE POST ROAD, BANBURY
 PHASE I SITE APPRAISAL (DESK STUDY)
 FOR
 GLADMAN DEVELOPMENTS LTD

Project Ref:
 P6194

Date:
 July 2013

Prepared for:
 Gladman
 Gladman House
 Alexandria Way, Congleton Business Park
 Congleton, Cheshire CW12 1LB

This report has been prepared in accordance with GRM's Accredited Quality Procedures

Prepared by: David Johnson BSc MSc (Senior Geo-environmental Engineer) davidj@grm-uk.com	Reviewed by: Chris Storey BSc PGDip FGS (Divisional Manager) chriss@grm-uk.com	Approved by: Bill Peacock FGS CGeol (Director) billp@grm-uk.com
When required in-house geological, geotechnical, environmental, structural and civil staff helped to produce this document.		



info@grm-uk.com

constructionline
U.K. REGISTER OF PRE-QUALIFIED CONSTRUCTION SERVICES

www.grm-uk.com

TABLE OF CONTENTS

1 INTRODUCTION..... 1

2 PHASE I DESK STUDY AND SITE OBSERVATIONS 2

3 PHASE I CONCEPTUAL MODEL 7

4 CONTAMINATION/REMEDATION RECOMMENDATIONS 9

5 PRELIMINARY GEOTECHNICAL ASSESSMENT 9

6 FURTHER INVESTIGATION 10

7 CONCLUSIONS..... 10

APPENDICES

Data Sources, Standard Limitations	Appendix A
Site Location and Boundary Plan	Appendix B
Site Features Plan / General Site Photographs	Appendix C
Historical OS Maps	Appendix D
Environmental Data Report	Appendix E

1 INTRODUCTION

1.1 PREAMBLE

GRM Development Solutions Limited (GRM) has been appointed by Gladman Developments Ltd (Client) to undertake a Phase I Site Appraisal (desk study). The desk study and site inspection form Phase I of the assessment and allow the geotechnical and geo-environmental setting of the site to be determined and the identification of areas of particular concern that require targeted investigation.

This site appraisal is intended to provide information that will assist decision making by identifying potential ground engineering and contamination issues.

GRM Standard Limitations of Reporting are provided in Appendix A of this report.

The Client proposes the site is to be developed with up to 280 two and three storey houses and associated infrastructure. The proposed end use includes gardens and soft landscaping.

1.2 OBJECTIVES OF THE SITE APPRAISAL

The principal aims of the Phase I Site Appraisal (desk study) are as follows:

- a) Obtain information, from easily accessible sources, about the soil and groundwater conditions within the area of the site.
- b) Determine the possible ground related geotechnical and contamination hazards within the site boundaries that may affect the proposed development.
- c) Provide preliminary development recommendations.
- d) Provide advice on further works required for the cost-effective reduction of risks to the development and procedures likely to satisfy regulators.

Whilst every effort has been made to pre-empt the likely requirements of the Local Authority and the Environment Agency, they are likely to have specific requirements that will need to be discussed and addressed at a later date.

2 PHASE I DESK STUDY AND SITE OBSERVATIONS

2.1 INFORMATION SOURCES

In addition to the general sources of information listed in Appendix A (i) the Client has supplied the following information that has been used in the assessment of the site:

- the location of the site,
- services information.

2.2 SITE DESCRIPTION

2.2.1 Geographical Setting

The site is located approximately 2km south west of Banbury town centre. The National Grid Reference (NGR) for the approximate centre of the site is SP456 383. A Site Location and Boundary Plan is presented in Appendix B.

The site is presently used mainly for crops consisting of two fields. An area of allotments is present adjacent to the south west of the site, and grounds associated with a nursery in the east of the site. The site covers an area of approximately 17.53 hectares and the proposed development area is approximately 8.30 hectares.

The western boundary is formed by a large field, and the northern boundary mainly by Salt Lane, which is a cycle/walking track, with residential development to the north, and a nursery. The southern boundary is formed partly by Wykham Lane in the west, and Banbury Cricket Club grounds and an access road in the east. The eastern boundary is partly formed by White Post Road with a school immediately opposite, and the other eastern boundary by Banbury Cricket Club grounds.

2.2.2 Site Inspection Observations

The Site Features Plan/General Site Photographs presented in Appendix C illustrate the salient observations made during a site inspection on 8 July 2013.

The site is generally flat with a very gentle grade to the south and consists of two fields, the largest of which occupies most of the site in the western area. The ground surface appears to be acceptable for surface tracking. The grounds of a former vicarage, which is now a nursery and large private house, are located to the south of the vicarage and form the far eastern area of the site. A very small field occurs to the immediate west of the vicarage; however this could not be fully accessed.

Several large mature trees are present at the northern field boundary in the east of the site, south of the vicarage. Hedgerows occur along most of the site boundaries and along an internal north south aligned field boundary. An arboricultural specialist should conduct a tree survey should cohesive strata be revealed, so that the effects of desiccation on foundation depths may be assessed.

No evidence of asbestos, waste, fly tipping or drums were noted at the site. Overhead telephone cables occur in the north of the site crossing in an east west direction and also in a north south direction partly along the boundary between the western and eastern fields. A public footpath crosses the site through the western field in a north

south direction from Salt Way at the northern boundary to Wykham Lane at the southern boundary.

An area of allotments which are owned by a local charity occurs adjacent to the south west of the site and is accessed off Wykham Lane.

A tarmaced access road off White Post Road and to Banbury Cricket Club occurs in the east of the site, and this has various mature trees set back from the access road.

Significant Features identified during site inspection:
Mature trees in, and at the northern boundaries of the west of site

2.3 HISTORICAL DEVELOPMENT OF THE SITE

A review of the available historical Ordnance Survey (OS) maps gives an insight into the development of the site and can highlight potential hazards. Extracts of the maps reviewed are provided in Appendix D.

The earliest map reviewed (1881) shows the site to be agricultural land, consisting of three fields in the west and central areas, with a vicarage at part of the northern boundary and grounds within the eastern part of site.

The west of the site, where two former fields were previously shown, is shown as allotments on maps between 1920 and 1954. The site has since this date remained largely unchanged, apart from a remaining area of allotments adjacent to the south west corner of the site.

A very small building occurs at the northern boundary of the site and immediately west of the vicarage grounds on maps between 1881 and 1976

The area surrounding the site has included a small cemetery to the immediate south west of the site, as shown on maps from 1973 to the present day. Wykham Farm and associated agricultural land occurs to the west from 1881 to the present day, and other agricultural land occurs to the immediate south of Wykham Lane. The village of Bodicote occurs to the immediate south west, and housing developments have progressively occurred to the immediate north of the site from between 1954 and 1976 associated with expansion of Easington, a part of Banbury. A cricket ground occupies a previous field to the east of the site from 2002 and an associated access road is shown from White Post Road.

The hazards identified are summarised in the table below.

Significant Features identified on OS Maps:
None

2.4 ANTICIPATED GEOLOGY

The BGS Geological Sheet 218 for this area shows no superficial deposits at the site over a solid geology of the Marlstone Rock Bed (Ferruginous Limestone and Ironstone) in the north east and parts of the north west of the site. This overlies Dyrham Formation Clays, Silts and interbedded siltstone and mudstone

predominantly in the north of the site. The Marlstone is shown not to be present in the south and some of the central area of the site.

The underlying strata are known to contain naturally elevated levels of metals and as such the onsite topsoil may require additional assessment to prove it is suitable for reuse.

The BGS holds no useful borehole records close to the site. The local strata are reported to dip to the south. The site is not indicated to be directly affected by faulting.

Significant Features identified from geological data:
Naturally elevated levels of metals

2.5 HYDROGEOLOGICAL INFORMATION

No detailed information regarding the depths to groundwater is available; however, the groundwater level is likely to be subject to seasonal variations.

The Environment Agency has classified the underlying bedrock as a Secondary A aquifer for the Marlstone Rock Bed, having permeable layers capable for supporting water supplies at a local level. A Secondary (undifferentiated) aquifer is designated for the Dyrham Clay, Silts, Siltstone aquifers.

There are no recorded groundwater abstraction licenses within 500m of the site. The site is not recorded to be within a Groundwater Source Protection Zone.

Information available at this stage suggests a groundwater table locally in the bedrock deposits and a flow direction to the south.

Significant Features identified from hydrogeological data:
None

2.6 HYDROLOGICAL INFORMATION

Local surface water features include:

- An unknown tertiary river is shown to be 164m to the west of the site flowing to the south.

The site is not within 250m of a Zone 2 or Zone 3 Floodplain, however due to the site being in excess of 1 hectare, a Flood Risk Assessment will be required.

No significant pollution incidents have occurred which may affect the site.

Significant Features identified from hydrological data:
Flood risk assessment required

2.7 MINING AND QUARRYING

The site is not in area affected by coal mining activity. There is no evidence of any non-coal mineral extraction having taken place within, or close to the site area.

Potential Mining Hazards:
None

2.8 ENVIRONMENTAL INFORMATION

An Environmental Report has been acquired for the site; the full report is presented in Appendix E. A summary of the relevant information not included elsewhere in this report is presented below:

- A petrol station is located 187m to the north of the site (negligible risk)

Significant Features identified from Environmental data:
None

2.9 ARCHAEOLOGY

Archaeological information has not been sought as part of this desk study and has not been identified as an issue by the Client.

Archaeological Hazards:
None

2.10 INVASIVE PLANT SPECIES/ECOLOGY

GRM is not a specialist in this topic and has not conducted such a survey; however, we will endeavour to report easily recognisable issues such as Japanese Knotweed, Giant Hogweed, badger sets etc, when seen on site. No such issues were observed during the walkover; however, a survey by an ecological specialist will be required to confirm this.

Invasive Plant Species/Ecological Hazards:
None

2.11 RADON ASSESSMENT

The site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings' (BR211 2007).

The site is within a radon affected area as between 10-30% of properties are above the Action Level; full protective measures are considered necessary.

Radon Hazard:
Full protection required

2.12 CONTAMINANTS OF CONCERN

In addition to the general contaminants listed in Appendix A (ii), the following site specific contaminants have been identified:

- Pesticides and herbicide associated with agricultural use of land. (low risk)
- Possible ash, pesticides, and herbicides in small areas of allotments (low risk)
- Possible naturally elevated levels of metals (particularly arsenic) in topsoil.

2.13 SUMMARY OF POTENTIAL GEOTECHNICAL/GENERAL HAZARDS

Potential geotechnical/general hazards have been identified in earlier sections and are summarised below.

Potential Hazard	Potential Consequence	Action
Live services (overhead telephone lines) and other in ground services	Danger to personnel	Inform relevant parties for disconnection / diversion
Variable strata	Deepened foundations	Ground investigation
Shrinkable clay/trees	Deepened foundations	Ground investigation plasticity testing/tree survey

Potential sources, pathways and receptors are summarised in the Phase I conceptual model in Section 3.

3 PHASE I CONCEPTUAL MODEL

The conceptual model has been drafted following the current relevant guidance, the principles of which are set out in Appendix A (iii).

3.1 POTENTIAL SOURCE – PATHWAY – RECEPTOR

The site comprises fields with hedgerows and a few small ponds; historically the site has been used only for agricultural use. Given the current and former uses the risk of significant contamination being present is low. However the site is in an area where naturally elevated levels of metals may be encountered.

Potential contaminants of concern for the whole site include those listed in Section 2.12 and Appendix A (ii).

The development proposals are assumed to include 2-3 storey residential development with infrastructure and areas of soft landscaping including domestic gardens.

The primary human health receptors are end users of the completed development and construction workers. The primary pathways of concern include dermal contact with contaminated soil and soil dust, the ingestion of contaminated soil and soil dust, ingestion of vegetables that have taken up the contamination, indoor and outdoor inhalation of ground gas and soil vapours, and migration of contamination into water supply pipes.

For controlled waters, the primary receptor for the site is the Secondary A Aquifer. The primary pathways of concern are leaching of contaminants and vertical migration to the groundwater.

For construction materials, the primary receptors are water pipes and buried concrete. The primary pathways of concern are the migration of contamination leading to degradation of pipe materials and sulphate and/or acid attack on buried concrete.

The pollutant linkage model is illustrated in detail on the following page.

3.2 PHASE I CONCEPTUAL SITE MODEL

HUMAN HEALTH			
Source	Pathway	Receptor	Solution
Potentially contaminated soils from agricultural use Naturally occurring elevated metals	Indoor and outdoor inhalation of ground gas and soil vapours, the ingestion of contaminated soil and soil dust, and dermal contact with contaminated soil and soil dust.	End users and construction workers.	Detail quantitative risk assessment / possible remediation to soft landscaped areas.
Potential ground gases (methane/ carbon dioxide) from organic materials or made ground, and radon from natural strata	Inhalation.	End users.	Gas protection measures.
CONTROLLED WATERS			
Potentially contaminated soils associated with agricultural use.	Leaching of contaminants and vertical migration to the groundwater.	Secondary A Aquifer.	Assessment of groundwater quality and, if required, subsequent risk assessment and remediation.(unlikely to be required)
CONSTRUCTION MATERIALS			
Potentially contaminated soils associated with agricultural use.	Migration of contamination through leaks and joints, degradation of pipe materials.	Water pipes.	Upgraded water pipes/clean backfill material.
Elevated levels of sulphate and/or acidic ground conditions.	Direct contact.	Buried concrete.	Appropriate concrete specification.

This page has been
left intentionally
blank

4 CONTAMINATION/REMEDIATION RECOMMENDATIONS

The risk of ground contamination is considered low; though prior to development a ground investigation will be required, the scope of which is outlined in Section 6;

At this stage based on the desk study information available it is considered that allowance be made for the following:

- Full radon protection measures are required
- Additional assessment including bio-accessibility testing to prove that onsite soils maybe reused as topsoil.
- 600mm capping / soil mixing in all soft landscaped areas, or source removal of 5no contamination hotspots (dependant on additional soils analysis).

5 PRELIMINARY GEOTECHNICAL ASSESSMENT

It should be noted that the following comments and recommendations are based on the findings of this desk study which may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). Prior to development a ground investigation will be required to confirm the initial recommendations outlined below, the scope of which is outlined in Section 6. However, at this stage based on the desk based information available it is considered:

- The ground conditions are likely to comprise Ferruginous Limestone and Ironstone in the northern areas of the site, overlying Clays, Silts and interbedded Siltstone and Mudstone. The Ferruginous Limestone and Ironstone is probably absent in much of the southern area of the site.
- Providing soft or loose materials are not present the site may be suitable for the use of traditional trench or pad foundations.
- Due to the suspected presence of cohesive soils in parts of the site and the presence of trees, particularly around some of the margins of the site, allowance should be made for deepening foundations in accordance with NHBC standards.
- To allow for engineered design of foundations deeper than 2.50m a desiccation survey should be incorporated into future ground investigation. Such a survey may avoid the need for piling near to trees and hedges.
- Providing deep made ground and/or soft or loose materials are not present the site may be suitable for the use of ground bearing slabs; however, at this stage allowance should be made for the use of suspended floors.
- Overly aggressive ground conditions are not expected and standard concrete should be suitable.

6 FURTHER INVESTIGATION

A Phase II ground investigation is recommended to determine more accurately the effect of the identified hazards on the development. Initially, this should include:

- A window sampling, trial pits and cable percussive borehole investigation to confirm ground conditions, determine soil parameters for piling (if required) and collect samples for analysis.
- Chemical analysis of soils to determine reuse of subsoil and topsoil in gardens and landscaping, including bio-accessibility testing in the event of elevated arsenic.
- Gas monitoring to assess the risk posed by ground gases (other than radon, which is known to be present).
- Geotechnical soils testing of the founding strata to assess its strength and suitable grades of buried concrete.
- Desiccation survey of soils near trees to possibly avoid the need for piling
- Flood Risk Assessment

7 CONCLUSIONS

This Phase I Site Appraisal has shown the site is suitable for the proposed development, assuming compliance with all the recommendations contained within this report.



A P P E N D I X A

GRM Development Solutions provides multi-disciplinary consultancy services, UK-wide:

- Geotechnical and Geo-environmental Services
- Civil and Infrastructure Services
- Structural Engineering Services
- Construction Management
- Site Services

Tel: 01283 551249

info@grm-uk.com

Fax: 01283 211968

www.grm-uk.com

This page has been
left intentionally
blank

GENERAL APPRAISAL COMMENTS
i INFORMATION SOURCES

Where available the following sources have been used for the identification and assessment of potential ground hazards:

- Relevant British Standards
- British Geological Survey (BGS) Geology Map Scale 1:10,000 for local area
- British Geological Survey (BGS) Geology Map Scale 1:50,000/1:63,320
- BGS Memoir
- BGS Borehole Records
- Environment Agency Groundwater Vulnerability Maps
- Historical Ordnance Survey (OS) Maps
- Environmental Data Report
- Environment Agency Website: <http://www.environment-agency.gov.uk/>
- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR, 2010.
- Coal Authority Records / Coal Mining Report
- DEFRA/Environment Agency Contaminated Land publications and DoE Industry Profiles
- BRE Guide BR211 (2007), 'Radon: Guidance on protective measures for new buildings'
- HPA-RPD-033 (2007), 'Indicative Atlas of Radon in England and Wales'
- NRPB Publication W26 (2002), 'Radon Atlas of England and Wales'
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- Other technical references used throughout this document are detailed in the text.

ii CONTAMINANTS OF CONCERN

The DoE Industry Profiles are normally used to assess likely contaminants from past land use and potential nearby industrial sources. For land uses where no profile is available, likely contaminants of concern are selected by GRM based on past experience of similar sites, a general screening suite of contaminants covered by CLEA and common contaminants from the Industry Profiles.

- | | | |
|------------|-------------------|--|
| • Arsenic | • Copper | • Water soluble sulphate |
| • Cadmium | • Nickel | • PAH (polycyclic aromatic hydrocarbons) |
| • Chromium | • Zinc | |
| • Lead | • Phenols | |
| • Mercury | • cyanide (total) | |
| • Selenium | • pH | |

Asbestos and PCBs are listed in the vast majority of profiles. PCBs are listed as the profiles expect electricity substations and switch boxes on all industrial sites. There is the potential for asbestos containing material to be mixed up with made ground, following any demolition works.

iii CONCEPTUAL MODEL METHODOLOGY

The consideration of contamination is based upon the principles of risk assessment, using the 'source-pathway-receptor' model in order to establish the presence, or potential presence, of a pollutant linkage.

To create a risk, contamination must have the potential to cause harm to susceptible targets or receptors such as humans, the water environment or the built environment. The potential for harm to occur requires three conditions to be satisfied to form a pollutant linkage:

- The presence of substances that may cause harm (SOURCE).
- The presence of a target which may be harmed (RECEPTOR).
- The existence of a plausible migration route between the source and the receptor (PATHWAY).

In the absence of a plausible pollutant linkage there is no risk. Where a potential linkage is identified in order for it not to pose a risk to the identified receptor it must be broken.

iv INTRUSIVE INVESTIGATION SAMPLING METHODOLOGY

The ground investigation (including fieldwork, sampling, monitoring and laboratory analyses) has been designed to identify and assess potential ground related problems and to allow cost effective solutions to be advised. It has been planned on the basis of the desk study, site inspection and the proposed development layout (where available). All fieldwork and soil descriptions were carried out in general accordance with relevant British Standards.

The exploratory holes have been positioned and advanced to depths to determine the general ground/groundwater/gas conditions below the site. A general grid pattern has been adopted, where possible, to provide sufficient information based on the current proposed layout scheme. Some holes have been targeted at particular hazards identified in the Phase I assessment. The resultant exploratory hole density is considered to be commensurate with the complexity of the site conditions and detail of information required for this phase of the investigation.

v GROUND GAS RISK ASSESSMENT METHODOLOGY

Gas monitoring programmes undertaken by GRM are designed to broadly comply with the recommendations outlined in CIRIA Report C665 'Assessing risks posed by hazardous ground gas to buildings' (2007).

To assess the risks posed by ground gases such as radon, carbon dioxide and methane, the relevant current guidance has been used. For radon the site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings (BR211: 2007)'. For methane and carbon dioxide the primary guidance document used to determine if protection measures are required is CIRIA Report C665 'Assessing risks posed by hazardous ground gases to buildings' (2007). This uses Gas Screening Values (GSVs), which are gas concentrations multiplied by borehole flow rate, along with additional limiting factors (such as maximum methane concentrations) to classify the gas regime of a site.

The guidance document includes two methods of characterising a site. The main method 'Situation A' is based on work by Wilson and Card and is used for all types of development except low rise housing that meets the assumptions of 'Situation B'. The 'Situation B' method proposed by Boyle and Witherington for the NHBC assumes all properties have pre-cast suspended floors (beam and block) with ventilated underfloor voids.

Where flow is not recorded during the monitoring a default flow rate of 0.1l/hr will be used in the assessment to produce a positive result.

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

Guidance contained in the Environment Agency's CLEA Report has been used to assess the risks posed to human health.

For residential developments that include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land with plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered including the consumption of home-grown vegetables.

For residential developments that do not include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land without plant uptake' are used, i.e. a female with a start age class of

one and an end age class of six. All pathways are considered except the consumption of home-grown vegetables.

For commercial/industrial developments the default Tier 1 Assessment Criteria (TAC) for 'commercial/industrial' are used, i.e. a female with a start age class of sixteen and an end age class of eighteen. All pathways are considered except the consumption of home-grown vegetables.

The TAC used by GRM include Soil Guideline Values (SGV) published by the EA, values calculated by GRM using the CLEA v1.06 risk assessment and values and chemical data developed by LQM/CIEH. The TAC used in the assessment are selected based on the lowest site specific SOM values returned as part of the chemical analysis.

Where soil chemical analysis results are found to exceed the TAC, Site-Specific Risk Assessments may be undertaken using the CLEA v1.06 risk assessment software using the age classes and pathways described above.

vii RISK TO SITE WORKERS – GENERAL COMMENTS

The risks to site workers are similar to those posed to site end users, although likely to be less severe due to the site workers' shorter exposure to the identified contamination. However, site workers (particularly groundworkers) are more likely to come into direct contact with contaminated soils due to the nature of their work. On this basis ground and construction workers should be provided with basic Personal Protective Equipment based on the site's general health and safety risk assessment, but including as a minimum safety footwear, gloves and overalls.

A site specific risk assessment should be carried out for all hazards identified within the ground investigation in accordance with current health and safety legislation. This assessment should identify any measures required to further reduce risks i.e. providing further Personal Protective Equipment, welfare facilities and if necessary preventing access to certain areas.

Demolition and dismantling of existing structures on the site must be carried out to a safe and acceptable standard, in accordance with current UK guidance and best practice. Whilst not ground related, asbestos and hazardous substances surveys should be conducted prior to any demolition.

Any unusual colours, odours and suspicious ground should be reported immediately to site management and then GRM.

Whilst this appraisal has considered the long-term effects of contamination, GRM can also help during the formulation of Health and Safety documentation, if required.

viii CONTROLLED WATERS RISK ASSESSMENT METHODOLOGY

Where the desk study and fieldwork do not reveal a potential source of contamination no leachate or groundwater testing will be performed. Where a potential source is identified the testing will comprise leachate testing on the material considered most likely to pose a risk, groundwater testing will be undertaken if water is present at shallow depth.

The UK Drinking Water Standards (UKDWS) or Environmental Quality Standards (EQS) are usually adopted for comparison with the leachate/groundwater test results. When the most sensitive receptor is considered to be the an aquifer (groundwater) UKDWS will be adopted as the Initial Tier 1 screening values. Where the most sensitive receptor is a surface water feature the EQS values will be used as Initial Tier I Screening values.

ix CONSTRUCTION MATERIALS RISK ASSESSMENT METHODOLOGY

The 'screening levels' adopted for the assessment of risk to construction materials are taken from the following documents:

- UK Water Industry Research (UKWIR) Contamination thresholds for sub-surface water pipes, for the protection of buried pipes.
- Building Research Establishment (BRE) Special Digest SD1 (2005), 'Concrete in Aggressive Ground', for the protection of buried concrete.

WASTE DISPOSAL AND SITE WASTE MANAGEMENT PLANS

Under current Waste Management Regulations, waste soil materials produced from the site will require characterisation to enable it to be disposed of correctly.

The chemical analysis results included in this report should be provided to the relevant landfill operators to establish the characterisation of the waste, confirm its suitability for landfill disposal and provide estimated costings. If material is classified as hazardous, then the site will need to be registered with the Environment Agency prior to the movement of the waste. Depending on the receiving landfill's current permit, further chemical analysis, incorporating Waste Acceptance Criteria (WAC) leachate analysis, may be required.

All materials removed from the site will be classified as 'waste' and therefore must be removed by a suitably licensed carrier of waste. This applies whether or not the waste is contaminated. All waste removed to landfill will attract Landfill Tax.

The developer/builder is likely to be classed as the waste producer and therefore, has a duty of care to ensure that all waste is disposed of appropriately. This includes ensuring the waste carrier is licensed and disposes of the waste to a suitably licensed landfill site. They are also required to keep a paper trail from 'cradle to grave' including copies of the waste disposal tickets.

Efficient materials management on site is recommended as it can lead to significant cost savings when compared to the traditional side casting or single stockpile of arisings. Likewise making the site as volume neutral as possible will reduce the costs of development.

Site Waste Management Plans allow better waste management practices, help to reduce the amount of waste produced and identify best environmental disposal options. Implementing a Site Waste Management Plan (SWMP) can reduce costs (increasing business profits) and maximise resource efficiency.

SWMPs are a legal requirement for all projects with an overall development cost of over £300k. GRM can assist in the production of SWMPs which comply with the Code of Practice and identify best environmental disposal options when dealing with waste.

GEOTECHNICAL ASSESSMENT GENERAL COMMENTS

Where finished floor levels of proposed structures have not been provided by the Client, then for the purposes of initial assessment, GRM will assume that finished levels will not vary appreciably from the existing ground levels. If the depths of any underground engineering works (i.e. sewers, pumping stations etc.) are unknown they will not be taken in to account in the assessment and it will be assumed that any such works will not compromise foundation or ground stability.

Should the development proposals or finished levels be different from these assumptions then the comments/recommendations in the Geotechnical Assessment may require revising.

It should be noted that the results of window sampling and/or cable percussive boreholes may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). GRM consider that that prior to development trial pitting should be undertaken to confirm the recommendations in the Geotechnical Assessment.

GEOTECHNICAL ASSESSMENT – ENGINEERING GROUND TREATMENT

Near surface soils have the potential to be disturbed by weathering and site traffic. Precautions should always be taken to avoid this, as excessive disturbance may leads to more onerous floor slab designs, road cap thickness and increased amounts of off site disposal etc.

Near surface soils may need treatment or reinforcing to allow safe movement of construction plant and labour. An assessment by the contractor should be undertaken once the type of machinery/plant needed to complete the development is known.

GEOTECHNICAL ASSESSMENT – EXCAVATIONS

Excavation instability (over-break) can result in damage to existing services or structures (e.g. foundations, roads or boundary walls/fences) both on and off-site, as well as increased foundation concrete costs. In order to minimise this, all excavations deeper than 1.2m deep (or any excavation within 1.5m of any existing structure or service) should be supported. Full support should be provided to the full depth of all near vertically sided excavations in made ground, soft and very soft clays and granular soils. A reduction to intermediate support should be acceptable within firm and stiffer natural clays.

Wherever possible, man entry into excavations should be prevented; however, where this is not possible, entry to, and time spent in, excavations should be kept to a minimum.

The build program should be tailored to reflect the impact that deep excavations through potentially unstable strata can have on adjacent properties, so that they are not undermined.

All excavations on site should be in accordance with HSE guidelines and stability should be practically maintained at all times. Reference should be made to HSE construction information sheet No. 8 (Revision 1) 'Safety in Excavations'.

Care should be taken to ensure that falls from excavation faces do not adversely affect the integrity of foundation concrete.

If contaminated water enters excavations it should be removed and transported to an appropriate treatment facility by a suitably licensed carrier before construction begins.

GEOTECHNICAL ASSESSMENT – SUBSTRUCTURES

Where practicable, existing buried construction should be fully removed; however, if this is not practicable all new foundations should be carried down to fully penetrate it and it should be broken well away from all new structures.

There may be existing structures and/or infrastructure in close proximity to the proposed development. New build foundations may be constructed next to pavements with existing underground services beneath them, or excavations may be required near existing footings associated with adjacent properties. These potential hazards need to be taken into consideration when designing foundations and the groundworker needs to be made aware of their potential impact during the redevelopment works. Foundations close to existing underground services or buildings may require alternative foundation techniques (such as piling) to protect the integrity of these structures.

The contractor for the works should carry them out in such a fashion so as to not cause excessive overbreak, concrete usage or undermine existing buildings/roads/ services that are to be retained.

GEOTECHNICAL ASSESSMENT – SOAKAWAYS

Soakaway testing in trial pits by GRM is broadly carried out in accordance with BRE 365 (1991). The testing comprises the excavation of a test pit to a suitable depth, and the placement of water into the pit. The level of water present is then monitored over time. For borehole installations, the permeability testing (falling head/rising head) is undertaken in accordance with BS5930.

If it is decided to proceed with the use of soakaway drainage, then the following general points should be noted:

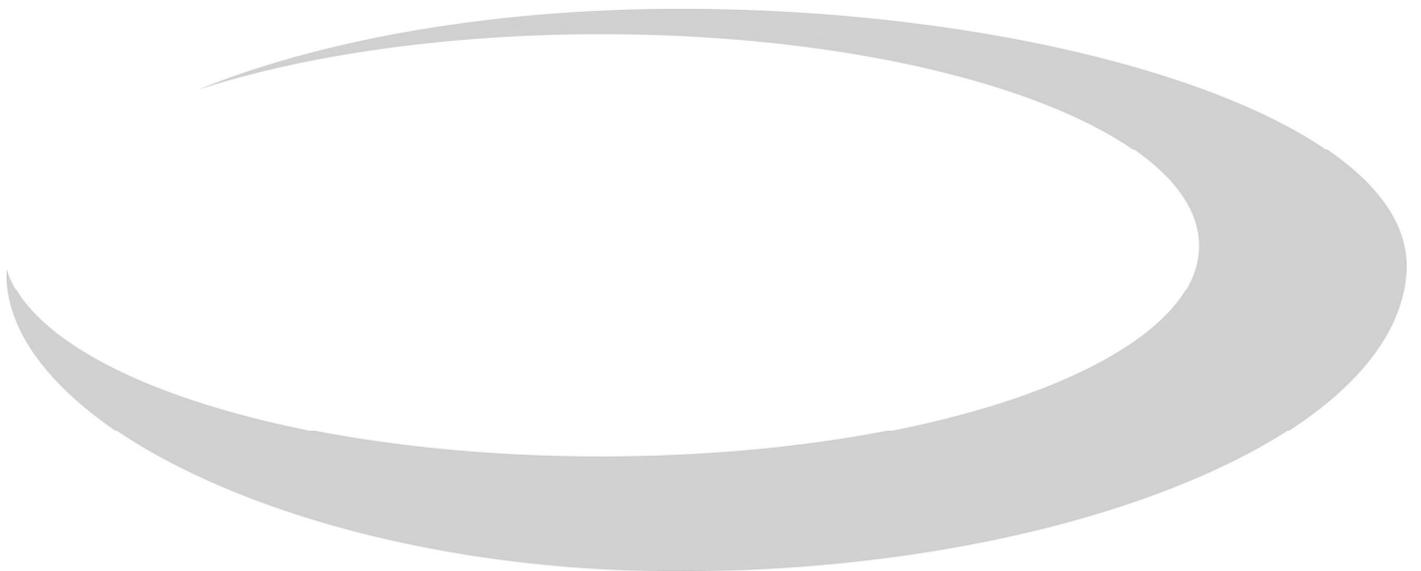
- Soakaways should not be placed so that water can be discharged through potentially contaminated made ground.
- The Environment Agency may require soakaways to be sealed systems such that only roof run off falls to soakaway.
- Interceptors are likely to be required for soakaways for highway drainage. The adopting authority for the highways should be consulted at the earliest opportunity regarding the use of soakaways for highways drainage.
- Consideration of site levels and slopes should be taken into account during the design.

- The construction of all soakaways should be in accordance with the current building regulations.
- Soakaways should not be placed within 5m of a proposed building.
- Placement of soakaways needs to be considered so as to avoid ponding of water down slope.
- The base of a soakaway should not be below the highest recorded water level.
- The Environment Agency prefer 1m of dry soil to be present between the base of a soakaway and the water table to provide attenuation for contamination.

xvi GEOTECHNICAL ASSESSMENT – FOUNDATIONS

If soft or hard spots are encountered during foundation excavation then they should be replaced with suitably compacted material or the footings deepened to suitable strata, to avoid differential settlement.

If strata of differing bearing character (e.g. sand and clay) are encountered at foundation levels within the excavations for a single plot then the excavation depths should be altered as appropriate to ensure the foundations rest on a single stratum, or strata that will not induce differential settlement. Where this is impractical then GRM should be contacted to assess a reinforced concrete detail or an alternative foundation solution (e.g. piles or vibro-replacement).



NOTES ON LIMITATIONS**General**

GRM Development Solutions Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement had been executed, or with whom an assignment had been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from GRM Development Solutions Limited; a charge may be levied against such approval.

GRM Development Solutions Limited accepts no responsibility or liability for:

- a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and
- b) the consequences of this document being used by any third party with whom an agreement has not been executed.

Phase I Environmental Audits/ Desk Studies

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, GRM Development Solutions Limited reserves the right to review such information and as considered necessary and appropriate to modify the opinions accordingly. It should be noted that any risks identified in a Phase 1 report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits (Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, and controlled waters.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as provisional only and must, in any event, be confirmed by a commercial adviser.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. Whilst exploratory testing is intended to gain an accurate representation of the site, the very nature of sampling and testing is such that it cannot ensure that all localised conditions are detected.

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Phase II Geo-environmental Investigations (Combined Geotechnical and Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environment risks together with engineering and development implications. If costs have been included in relation to site development a commercial adviser must confirm these.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site for each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time the site work was conducted. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects. The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

This page has been
left intentionally
blank



A P P E N D I X B

GRM Development Solutions provides multi-disciplinary consultancy services, UK-wide:

- Geotechnical and Geo-environmental Services
- Civil and Infrastructure Services
- Structural Engineering Services
- Construction Management
- Site Services

Tel: 01283 551249

info@grm-uk.com

Fax: 01283 211968

www.grm-uk.com

This page has been
left intentionally
blank



NOTES: DO NOT SCALE

○ Site Location



GRM Development Solutions Ltd
 Laurus House, First Ave, Centrum 100,
 Burton-on-Trent, Staffordshire
 Tel: 01283 551 249 Fax: 01283 211 968
mail@grm-uk.com www.grm-uk.com

CLIENT:
Gladman

PROJECT:
**Land to South of Salt Way,
 Banbury**

TITLE:
Site Location Plan

SCALE@SIZE : NTS	ISSUE: FINAL
DESIGN/DRAWN : DJ	DATE: July 2013
PROJECT No: P6194	DRAWING No: Figure 1

© GRM Development Solutions Ltd
 © Crown Copyright. AL 100014100



DO NOT SCALE

NOTES:



GRM Development Solutions Ltd

Laurus House, First Ave, Centrum 100,

Burton-on-Trent, Staffordshire

Tel: 01283 551 249 Fax: 01283 211 968

mail@grm-uk.com www.grm-uk.com

CLIENT:

Gladman

PROJECT:

**Land to South of Salt Way
Banbury**

TITLE:

Site Boundary Plan

SCALE@SIZE:

NTS

ISSUE:

FINAL

DESIGN/DRAWN:

DJ

DATE:

July 2015

PROJECT No:

P6194

DRAWING No:

Figure 2a

© GRM Development Solutions Ltd

© Crown Copyright. AL 100014100



A P P E N D I X C

**GRM Development Solutions provides
multi-disciplinary consultancy services, UK-wide:**

- Geotechnical and Geo-environmental Services
- Civil and Infrastructure Services
- Structural Engineering Services
- Construction Management
- Site Services

Tel: 01283 551249

info@grm-uk.com

Fax: 01283 211968

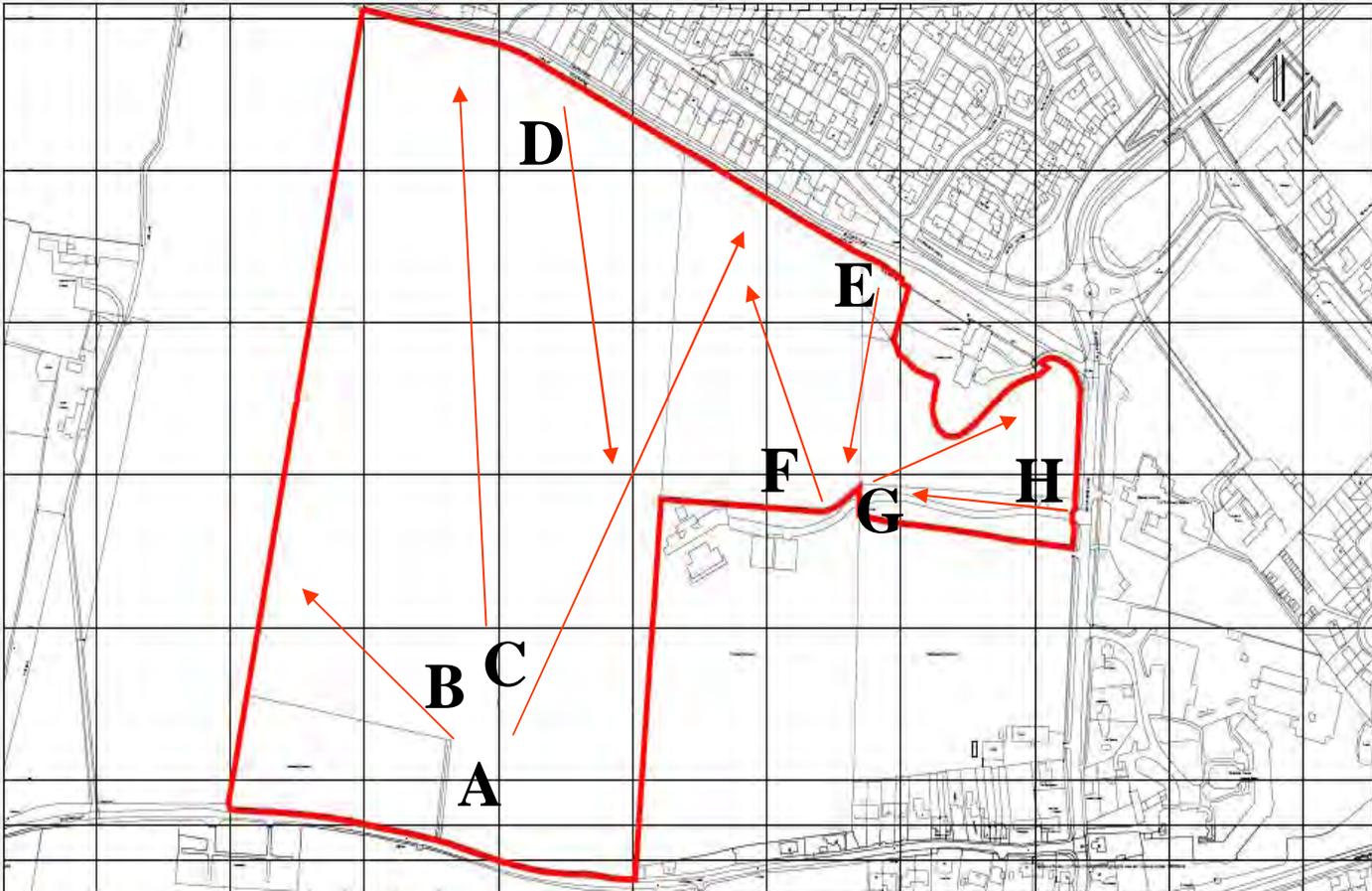
www.grm-uk.com

This page has been
left intentionally
blank



DO NOT SCALE

NOTES:



Rev	Date	By	Revision notes

Status: INFORMATION

Project:	LAND SOUTH OF SALT WAY BANBURY
Title:	LOCATION PLAN

Drawn by:	AJG	Issue date:	MAY 2013
Scale(s):	1:2500@A3		
Drawing No:	2013-049-100-001		

GRM Development Solutions Ltd
 Laurus House, First Ave, Centrum 100,
 Burton-on-Trent, Staffordshire
 Tel: 01283 551 249 Fax: 01283 211 968
mail@grm-uk.com www.grm-uk.com

CLIENT:
Gladman

PROJECT:
**Land to South of Salt Way
 Banbury**

TITLE:
**Site Features Plan/Photographic
 locations**

SCALE@SIZE :	ISSUE:
NTS	FINAL

DESIGN/DRAWN :	DATE:
DJ	July 2013

PROJECT No:	DRAWING No:
P6194	Figure 3

© GRM Development Solutions Ltd
 © Crown Copyright. AL 100014100

This page has been
left intentionally
blank



DO NOT SCALE
NOTES:



A



B



C



D



GRM Development Solutions Ltd
Laurus House, First Ave, Centrum 100,
Burton-on-Trent, Staffordshire
Tel: 01283 551 249 Fax: 01283 211 968
mail@grm-uk.com www.grm-uk.com

CLIENT:

Gladman

PROJECT:

**Land to South of Salt Way
Banbury**

TITLE:

General Site Photographs

SCALE@SIZE :

NTS

ISSUE:

FINAL

DESIGN/DRAWN :

DJ

DATE:

July 2013

PROJECT No:

P6194

DRAWING No:

Figure 4

© GRM Development Solutions Ltd
© Crown Copyright. AL 100014100



DO NOT SCALE
NOTES:



E



F



G



H



GRM Development Solutions Ltd
Laurus House, First Ave, Centrum 100,
Burton-on-Trent, Staffordshire
Tel: 01283 551 249 Fax: 01283 211 968
mail@grm-uk.com www.grm-uk.com

CLIENT:

Gladman

PROJECT:

**Land to South of Salt Way
Banbury**

TITLE:

General Site Photographs

SCALE@SIZE :

NTS

ISSUE:

FINAL

DESIGN/DRAWN :

DJ

DATE:

July 2013

PROJECT No:

P6194

DRAWING No:

Figure 5

© GRM Development Solutions Ltd
© Crown Copyright. AL 100014100



A P P E N D I X D

GRM Development Solutions provides multi-disciplinary consultancy services, UK-wide:

- Geotechnical and Geo-environmental Services
- Civil and Infrastructure Services
- Structural Engineering Services
- Construction Management
- Site Services

Tel: 01283 551249

info@grm-uk.com

Fax: 01283 211968

www.grm-uk.com

This page has been
left intentionally
blank

Site Details:

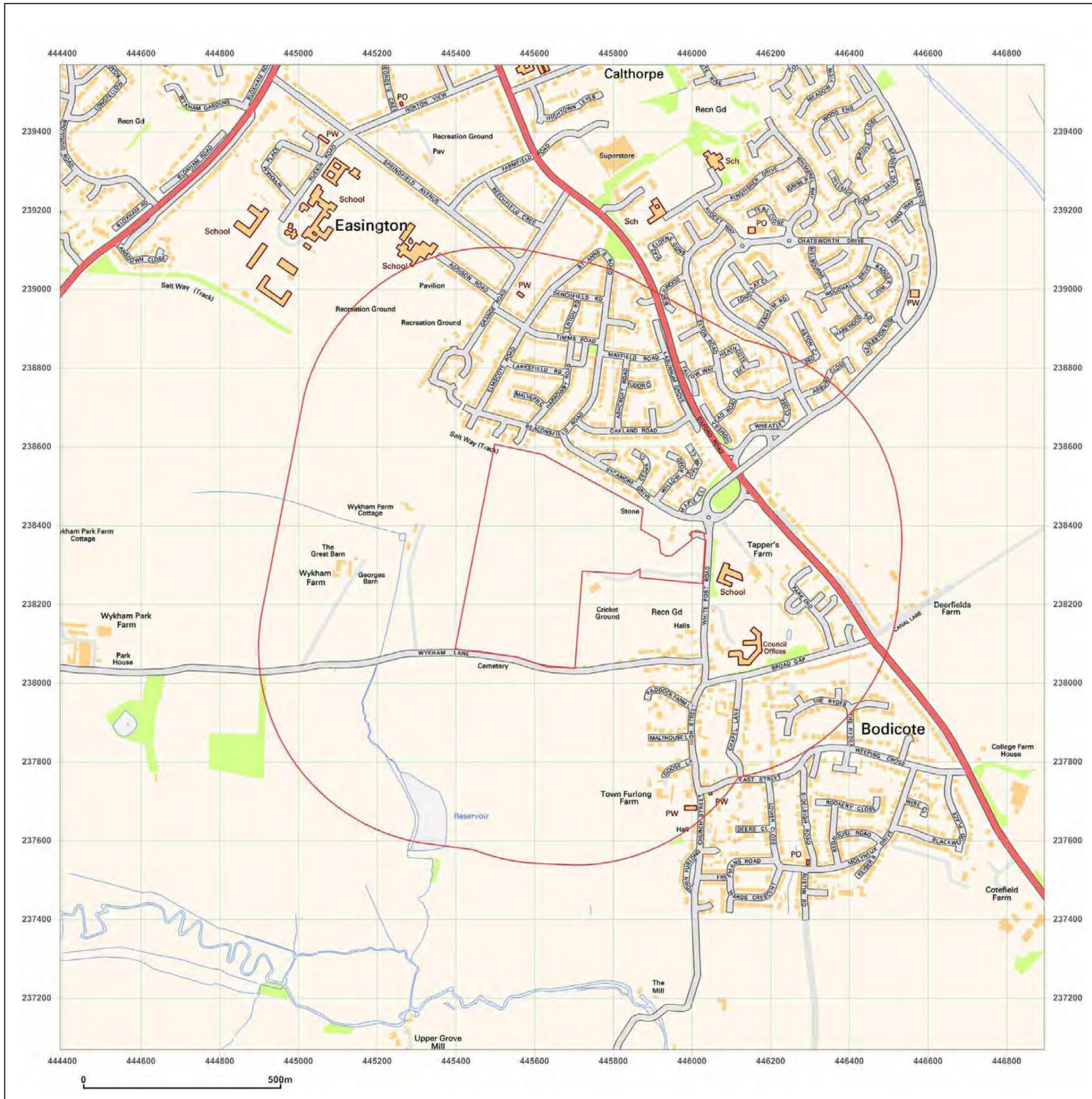
Client Ref: EMS_208122_273628
 Report Ref: EMS-208122_273628
 Grid Ref: 445645, 238319

Map Name: National Grid

Map date: 2012

Scale: 1:10,000

Printed at: 1:10,000



Produced by
GroundSure GroundSure Environmental Insight
www.groundsure.com



Supplied by:
www.emapsite.com
 sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)

Site Details:

Client Ref: EMS_208122_273628
Report Ref: EMS-208122_273628
Grid Ref: 445645, 238319

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



Produced by
GroundSure Environmental Insight
www.groundsure.com



Supplied by:
www.emapsite.com
sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)



Site Details:

Client Ref: EMS_208122_273628
 Report Ref: EMS-208122_273628
 Grid Ref: 445645, 238319

Map Name: National Grid

Map date: 1982

Scale: 1:10,000

Printed at: 1:10,000



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

Produced by
GroundSure GroundSure Environmental Insight
www.groundsure.com



Supplied by:
www.emapsite.com
sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)

Site Details:

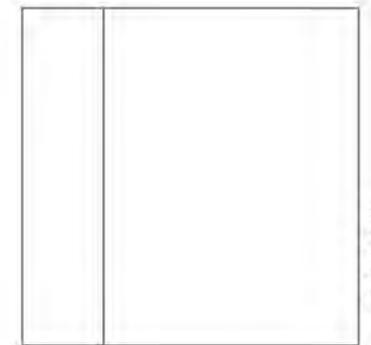
Client Ref: EMS_208122_273628
Report Ref: EMS-208122_273628
Grid Ref: 445645, 238319

Map Name: National Grid

Map date: 1976

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1973
 Revised 1976
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 GroundSure Environmental Insight
www.groundsure.com

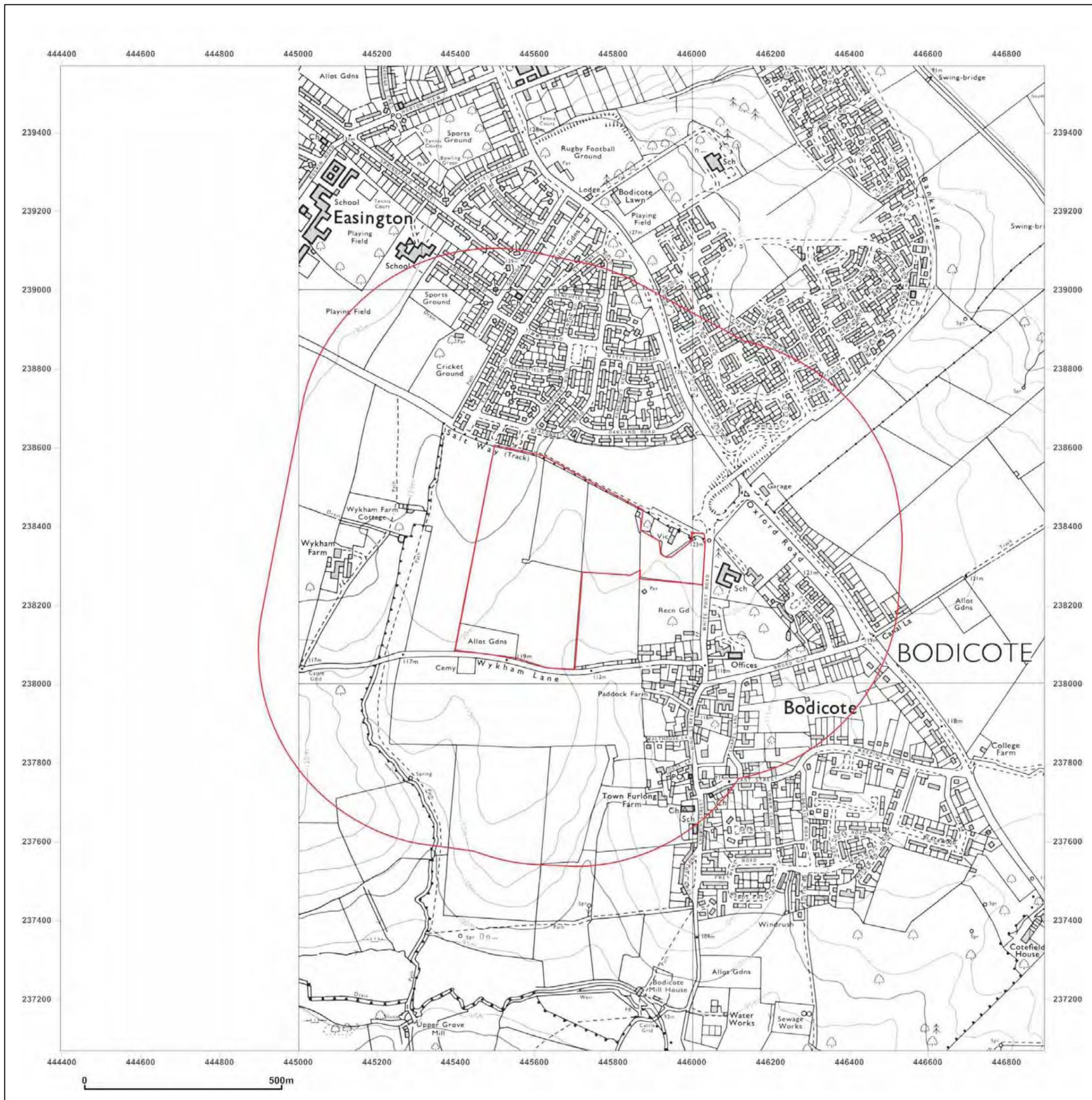


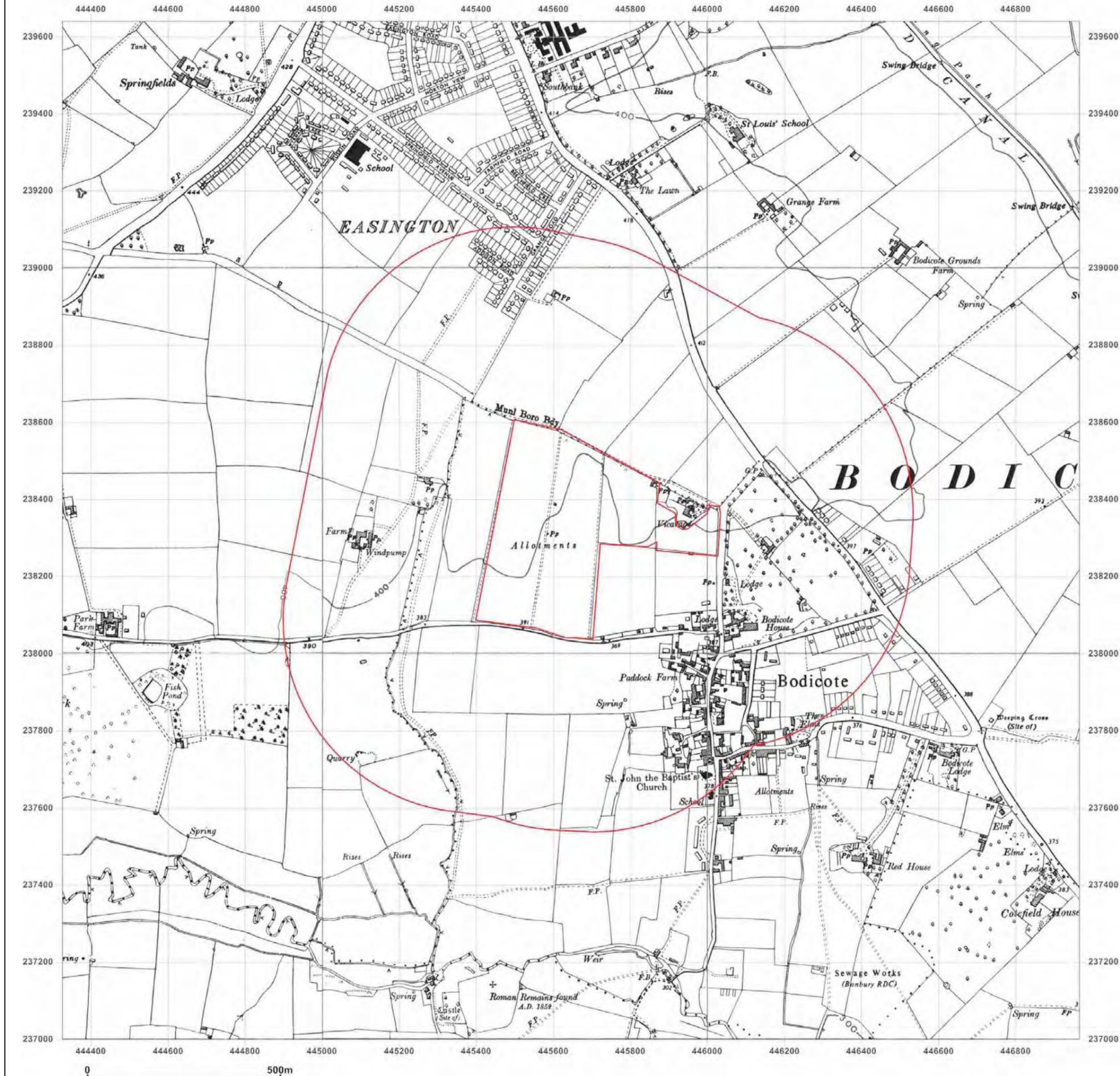
Supplied by:
www.emapsite.com
 sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)





Site Details:

Client Ref: EMS_208122_273628
 Report Ref: EMS-208122_273628
 Grid Ref: 445645, 238319

Map Name: Provisional

Map date: 1954

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1949
 Revised 1949
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1949
 Revised 1954
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 GroundSure Environmental Insight
www.groundsure.com



Supplied by:
www.emapsite.com
sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)

Site Details:

Client Ref: EMS_208122_273628
Report Ref: EMS-208122_273628
Grid Ref: 445645, 238319

Map Name: County Series

Map date: 1938

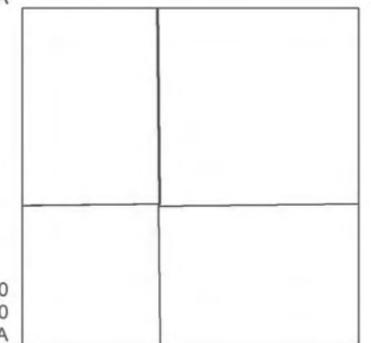
Scale: 1:10,560

Printed at: 1:10,560

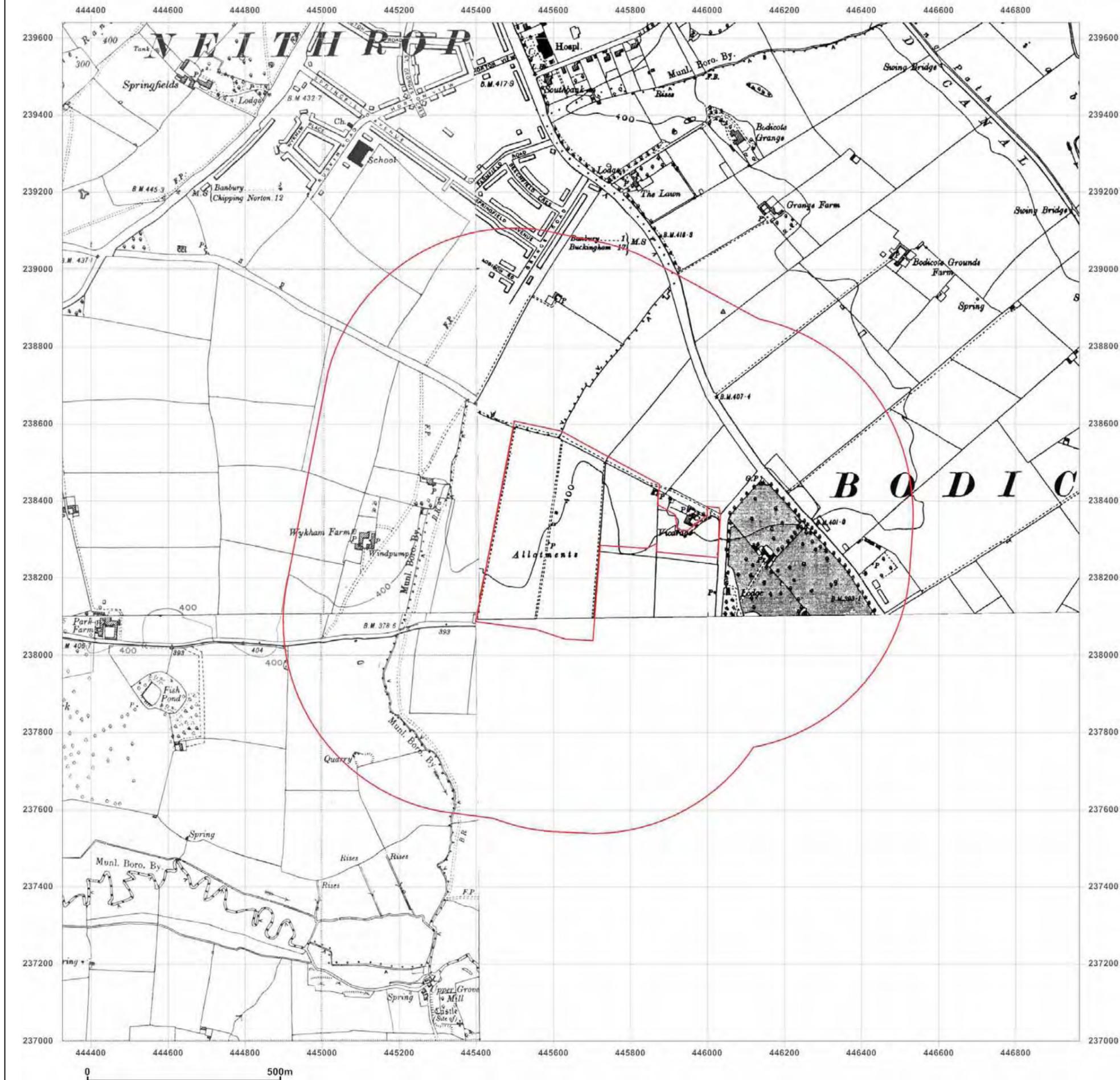


Surveyed 1880
 Revised 1938
 Edition 1938
 Copyright N/A
 Levelled N/A

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



 Produced by GroundSure Environmental Insight
www.groundsure.com

 Ordnance Survey
 Licensed Partner

Supplied by:
www.emapsite.com
sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)

Site Details:

Client Ref: EMS_208122_273628
Report Ref: EMS-208122_273628
Grid Ref: 445645, 238319

Map Name: County Series

Map date: 1920-1923

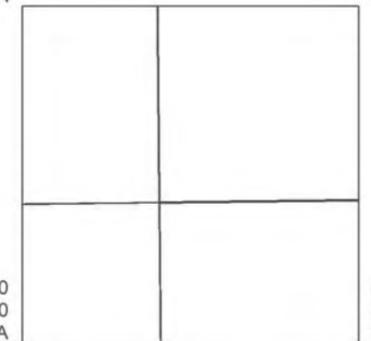
Scale: 1:10,560

Printed at: 1:10,560



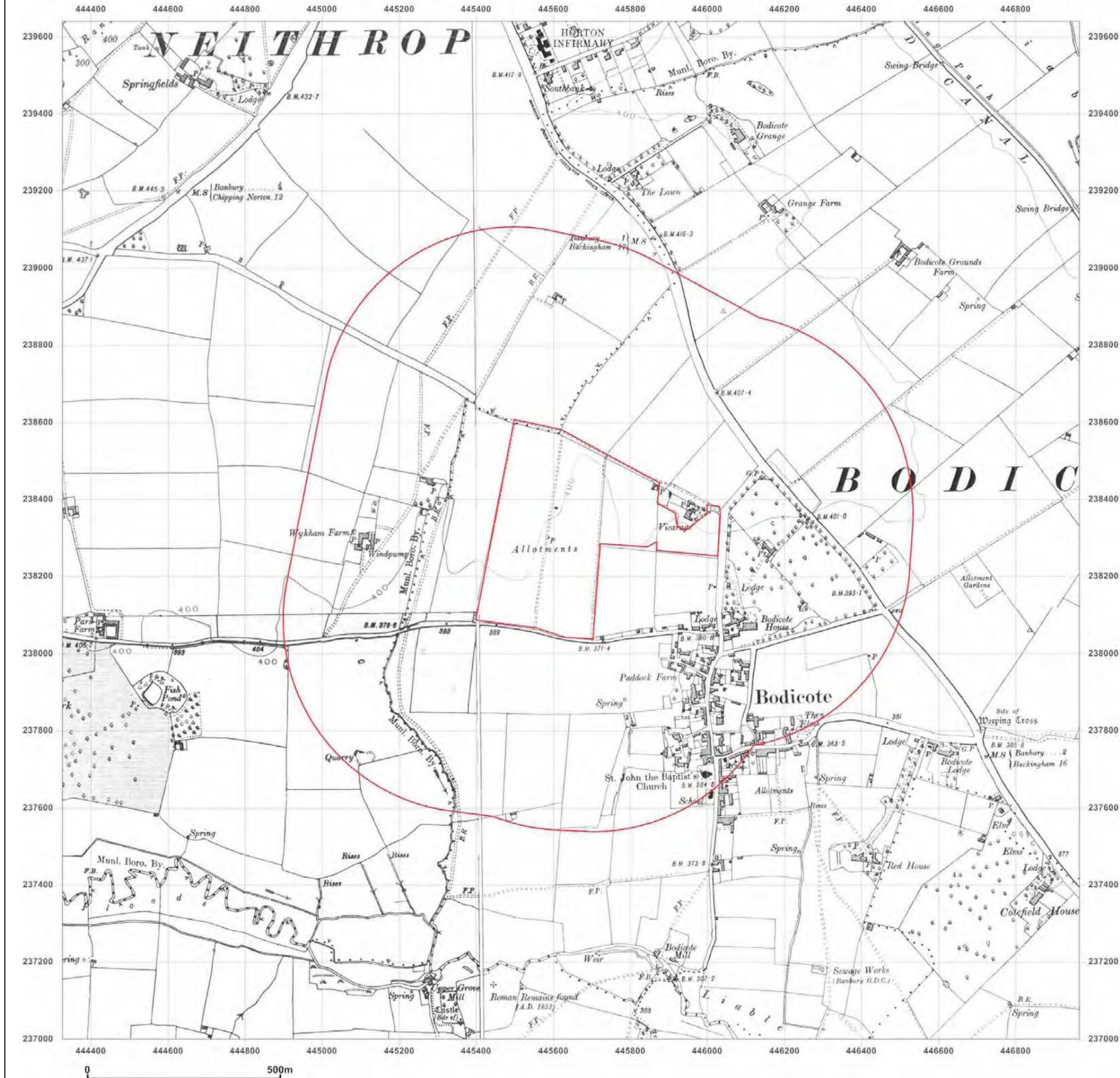
Surveyed 1880
 Revised 1920
 Edition N/A
 Copyright N/A
 Levelled N/A

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



Produced by
 GroundSure Environmental Insight
www.groundsure.com

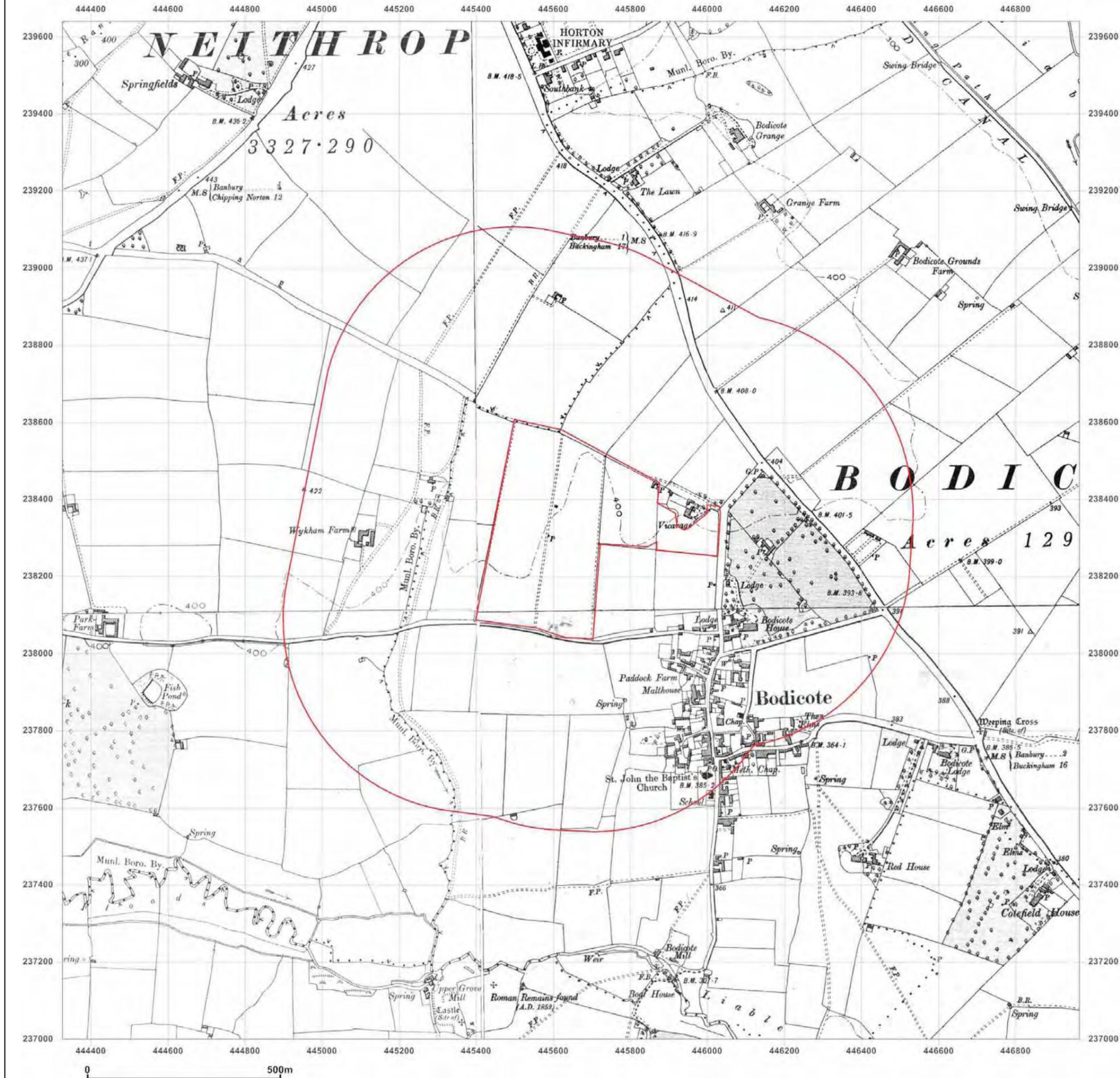


Supplied by:
www.emapsite.com
 sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)



Site Details:

Client Ref: EMS_208122_273628
 Report Ref: EMS-208122_273628
 Grid Ref: 445645, 238319

Map Name: County Series

Map date: 1899-1900

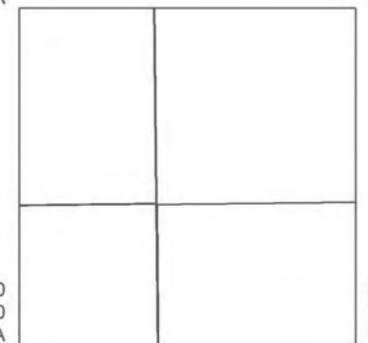
Scale: 1:10,560

Printed at: 1:10,560



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



Produced by GroundSure Environmental Insight
www.groundsure.com



Supplied by:
www.emapsite.com
 sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)

Site Details:

Client Ref: EMS_208122_273628
Report Ref: EMS-208122_273628
Grid Ref: 445645, 238319

Map Name: County Series

Map date: 1881

Scale: 1:10,560

Printed at: 1:10,560



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



Produced by
 GroundSure Environmental Insight
www.groundsure.com

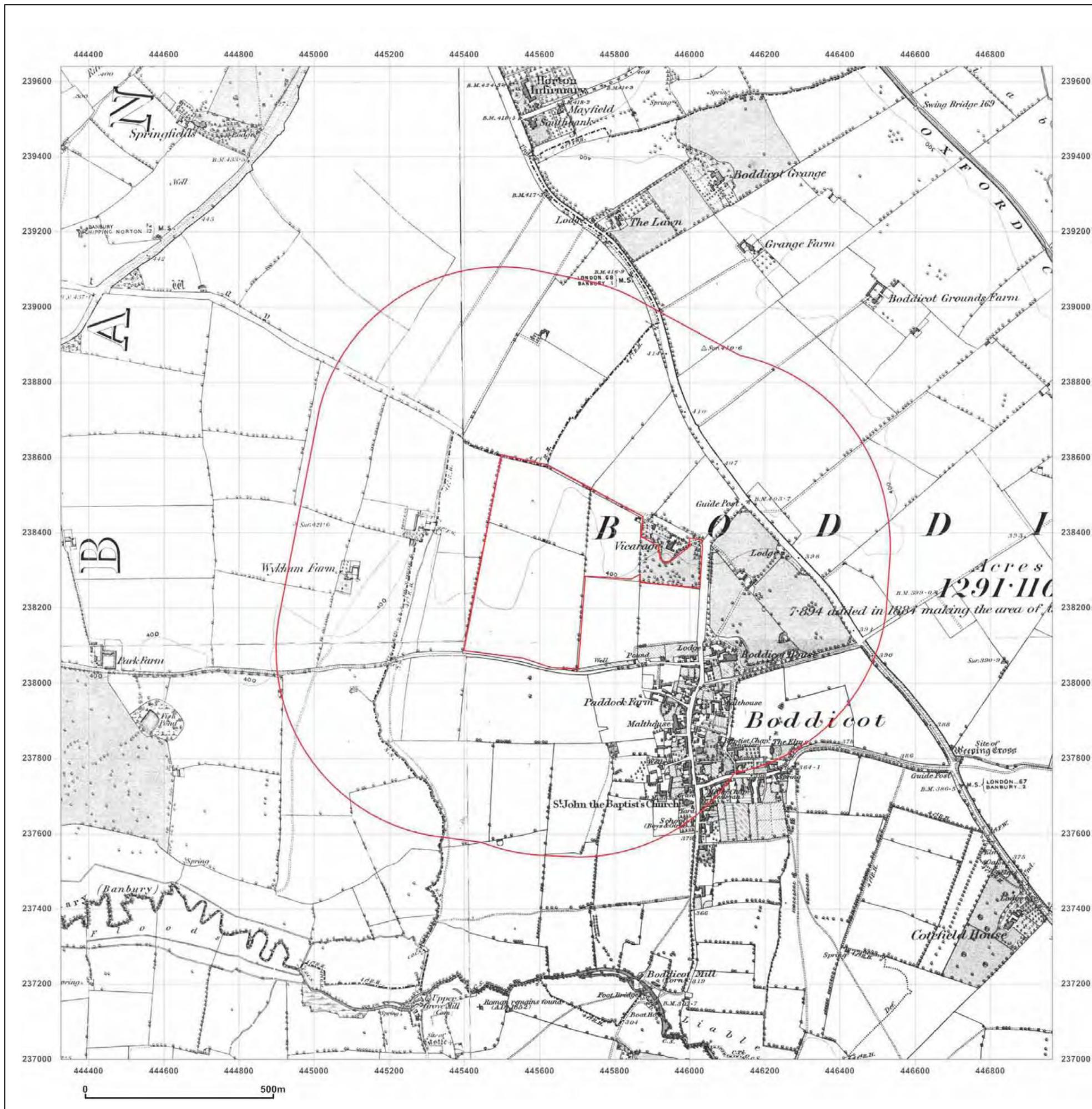


Supplied by:
www.emapsite.com
 sales@emapsite.com

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 07 June 2013

To view map legend click here [Legend](#)





A P P E N D I X E

**GRM Development Solutions provides
multi-disciplinary consultancy services, UK-wide:**

- Geotechnical and Geo-environmental Services
- Civil and Infrastructure Services
- Structural Engineering Services
- Construction Management
- Site Services

Tel: 01283 551249

info@grm-uk.com

Fax: 01283 211968

www.grm-uk.com

Aerial Photograph of Study Site



Aerial photography supplied by Getmapping PLC.
© Copyright Getmapping PLC 2003. All Rights Reserved.

Site Name: ,
Grid Reference: 445645,238319
Size of Site: 18.73 ha

Report Reference: [EMS-208122_273630](#)

If you would like any further assistance regarding this report then please contact emapsite on (T) 0118 9736883, (F) 0118 9730002 or email: sales@emapsite.com

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.

Report Section	Number of records found within (X) m of the study site boundary					
	on-site	0-50	51-250	251-500	501-1000	1000-1500
1. Environmental Permits, Incidents and Registers						
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations						
Records of historic IPC Authorisations	0	0	0	0	-	-
Records of Part A(1) and IPPC Authorised Activities	0	0	0	0	-	-
Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0	-	-
Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0	-	-
Records of List 1 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of List 2 Dangerous Substances Inventory sites	0	0	0	0	-	-
Records of Part A(2) and Part B Activities and Enforcements	0	0	1	1	-	-
Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0	-	-
Records of Licensed Discharge Consents	0	0	2	1	-	-
Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0		
1.2 Records of COMAH and NIHHS sites	0	0	0	0	-	-
1.3 Environment Agency Recorded Pollution Incidents						
National Incidents Recording System, List 2	0	0	1	-	-	-
National Incidents Recording System, List 1	0	0	0	-	-	-
1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990	0	0	0	0	-	-
2. Landfill and Other Waste Sites						
2.1 Landfill Sites						
Environment Agency Registered Landfill Sites	0	0	0	0	0	-
Landfill Data – Operational Landfill Sites	0	0	0	0	0	-
Environment Agency Historic Landfill Sites	0	0	0	0	0	1
Landfill Data – Non-Operational Landfill Sites	0	0	0	0	0	-
BGS/DoE Landfill Site Survey	0	0	0	0	0	0
GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	0
2.2 Landfill and Other Waste Sites Findings						
Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	-	-
Environment Agency Licensed Waste Sites	0	0	0	0	0	0

3. Current Land Uses	on-site	0-50	51-250	251-500	501-1000	1000-1500
3.1 Current Industrial Sites Data	0	0	13	-	-	-
3.2 Records of Petrol and Fuel Sites	0	0	1	1	-	-
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0	-	-

4. Geology Description

4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site? * No

4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site? * No

4.3 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.

Source: Scale: 1:50,000 BGS Sheet 218

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

5. Hydrogeology and Hydrology on-site 0-50 51-250 251-500 501-1000 1001-2000

5.1 Are there any records of Productive Strata in the Superficial Geology within 500m of the study site? No

5.2 Are there any records of Productive Strata in the Bedrock Geology within 500m of the study site? Yes

5.3 Groundwater Abstraction Licences (within 2000m of the study site). 0 0 0 0 0 5

5.4 Surface Water Abstraction Licences (within 2000m of the study site). 0 0 0 2 5 0

5.5 Potable Water Abstraction Licences (within 2000m of the study site). 0 0 0 0 3 0

5.6 Are there any Source Protection Zones within 500m of the study site? No

5.7 River Quality on-site 0-50 51-250 251-500 501-1000 1001-1500

Is there any Environment Agency information on river quality within 1500m of the study site? No No No No No No

5.8 Detailed River Network entries within 500m of the site 0 0 5 3 - -

5.9 Surface water features within 250m of the study site No No Yes - - -

6. Flooding

6.1 Are there any Environment Agency indicative Zone 2 floodplains within 250m of the study site? No

6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site? No

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

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

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

6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site? High

6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas? Low

7. Designated Environmentally Sensitive Sites on-site 0-50 51-250 251-500 501-1000 1001-2000

7.1 Records of Sites of Special Scientific Interest (SSSI) 0 0 0 0 0 0

7.2 Records of National Nature Reserves (NNR) 0 0 0 0 0 0

7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.3 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
7.4 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
7.5 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.6 Records of Ramsar sites	0	0	0	0	0	0
7.7 Records of World Heritage Sites	0	0	0	0	0	0
7.8 Records of Environmentally Sensitive Areas	0	0	0	0	0	2
7.9 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.10 Records of National Parks	0	0	0	0	0	0
7.11 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.12 Records of Nitrate Vulnerable Zones	1	0	0	0	0	1
7.13 Records of Ancient Woodlands	0	0	0	0	0	0

8. Natural Hazards

8.1 What is the maximum risk of natural ground subsidence? Low

9. Mining

9.1 Are there any coal mining areas within 75m of the study site? No

9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site? Negligible

9.3 Are there any brine affected areas within 75m of the study site? No

Using this Report

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

1. Environmental Permits, Incidents and Registers

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

2. Landfills and Other Waste Sites

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

3. Current Land Uses

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

4. Geology

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

5. Hydrogeology and Hydrology

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

6. Flooding

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

7. Designated Environmentally Sensitive Sites

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

8. Natural Hazards

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

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

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

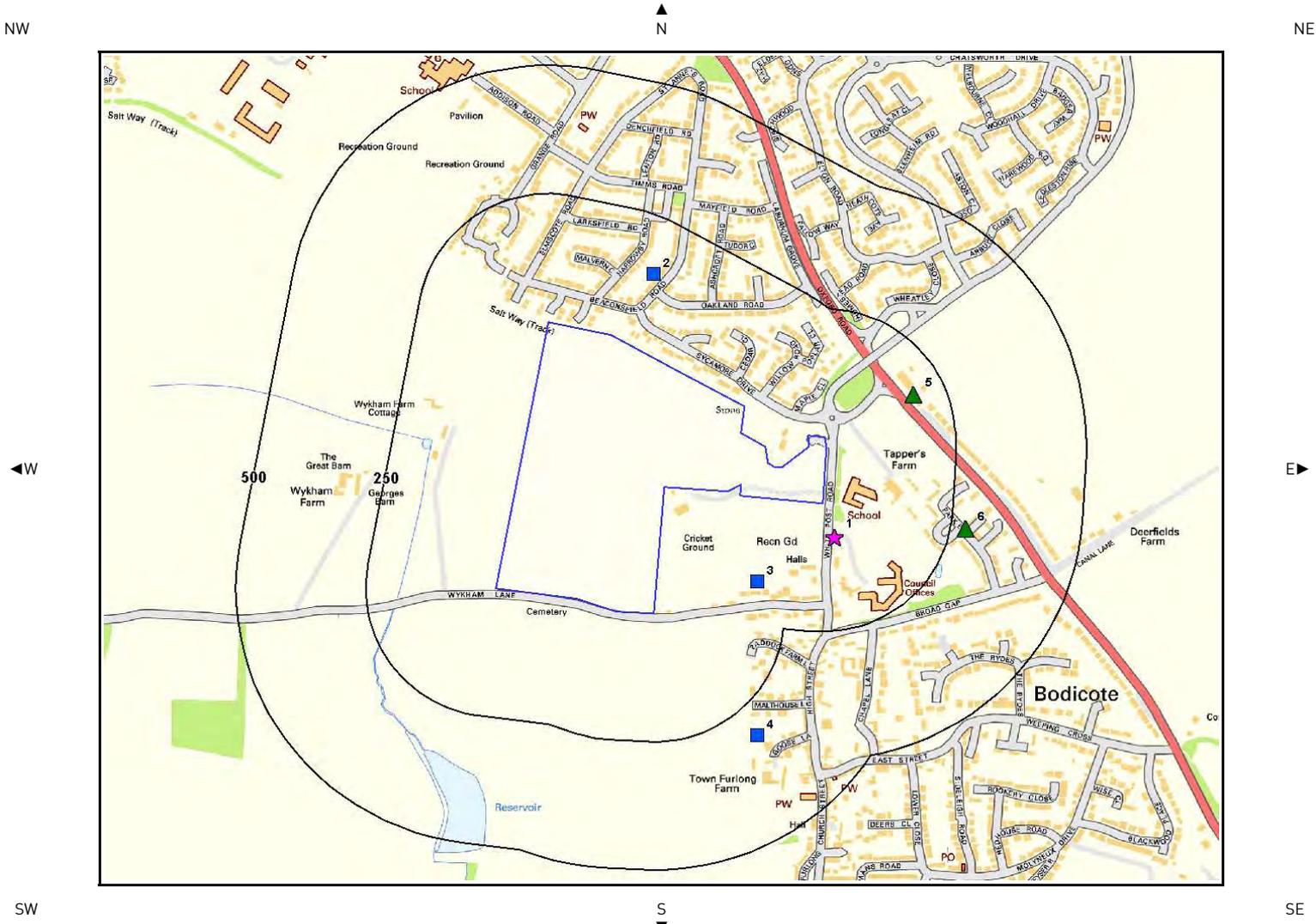
Note: Maps

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

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

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

1. Environmental Permits, Incidents and Registers Map



Authorisations, Incidents and Registers Legend



© Crown copyright and database rights 2013. Ordnance Survey license 100035207.

- | | | | | | |
|--|--------------|--|-------------------------------|--|--|
| | Site Outline | | Recorded Pollution Incident | | RAS 3 & 4 Authorisations |
| | 250 | | Dangerous Substances (List 1) | | Part A(1) Authorised Processes and Historic IPC Authorisations |
| | 500 | | Dangerous Substances (List 2) | | Part A(2) and Part B Authorised Processes |
| | | | Water Industry Referrals | | COMAH / NIHHS Sites |
| | | | Licensed Discharge Consents | | Sites Determined as Contaminated Land |
| | | | Red List Discharge Consents | | Hazardous Substance Consents and Enforcements |

1.Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

Records of historic IPC Authorisations within 500m of the study site: 0

Database searched and no data found.

Records of Part A(1) and IPPC Authorised Activities within 500m of the study site: 0

Database searched and no data found.

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.

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.

Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site: 0

Database searched and no data found.

Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site: 0

Database searched and no data found.

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 Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details
5	187.0	NE	446199, 238461	<p>Address: Banbury Service Station, (ROC UK Ltd), Oxford Road, Bodicote, Banbury, Oxon, OX15 4AB</p> <p>Process: Service Stations Unloading Petrol</p> <p>Status: Current Permit</p> <p>Permit Type: Part B</p> <p>Enforcement: Data requested, not received.</p> <p>Date of Enforcement: Data requested, not received.</p> <p>Comment: Data requested, not received.</p>

6	279.0	E	446300, 238200	Address: Jay Bee Motors Process: Waste Oil Burning Process Status: Historical Permit Permit Type: Part B	Enforcement: Data requested, not received. Date of Enforcement: Data requested, not received. Comment: Data requested, not received.
---	-------	---	-------------------	---	--

Records of Category 3 or 4 Radioactive Substance Licences within 500m of the study site: 0

Database searched and no data found.

Records of Licensed Discharge Consents within 500m of the study site: 3

The following Licensed Discharge Consents records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
2	143.0	NE	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: 2/11/1989 Effective Date: 2/11/1989 Revocation Date: -
3	164.0	S	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: 2/11/1989 Effective Date: 2/11/1989 Revocation Date: -
4	310.0	SE	445900, 237800	Address: Malthouse Lane, Malthouse Lane Effluent Type: Sewage Discharges - Pumping Station - Water Company Permit Number: TEMP.1442 Permit Version: 1	Receiving Water: Sor Brook Status: Revoked - Unspecified Issue date: 2/11/1989 Effective Date: 2/11/1989 Revocation Date: -

Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site: 0

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

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

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

Records of National Incidents Recording System, List 2 within 250m of the study site: 1

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

ID	Distance	Direction	NGR	Details	
1	70.0	S	446047, 238186	Incident Date: 23/1/2002 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)

Records of National Incidents Recording System, List 1 within 250m of the study site: **0**

Database searched and no data found.

1.4 Sites Determined as Contaminated Land under Part IIA EPA 1990

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

Database searched and no data found.

2. Landfill and Other Waste Sites Map

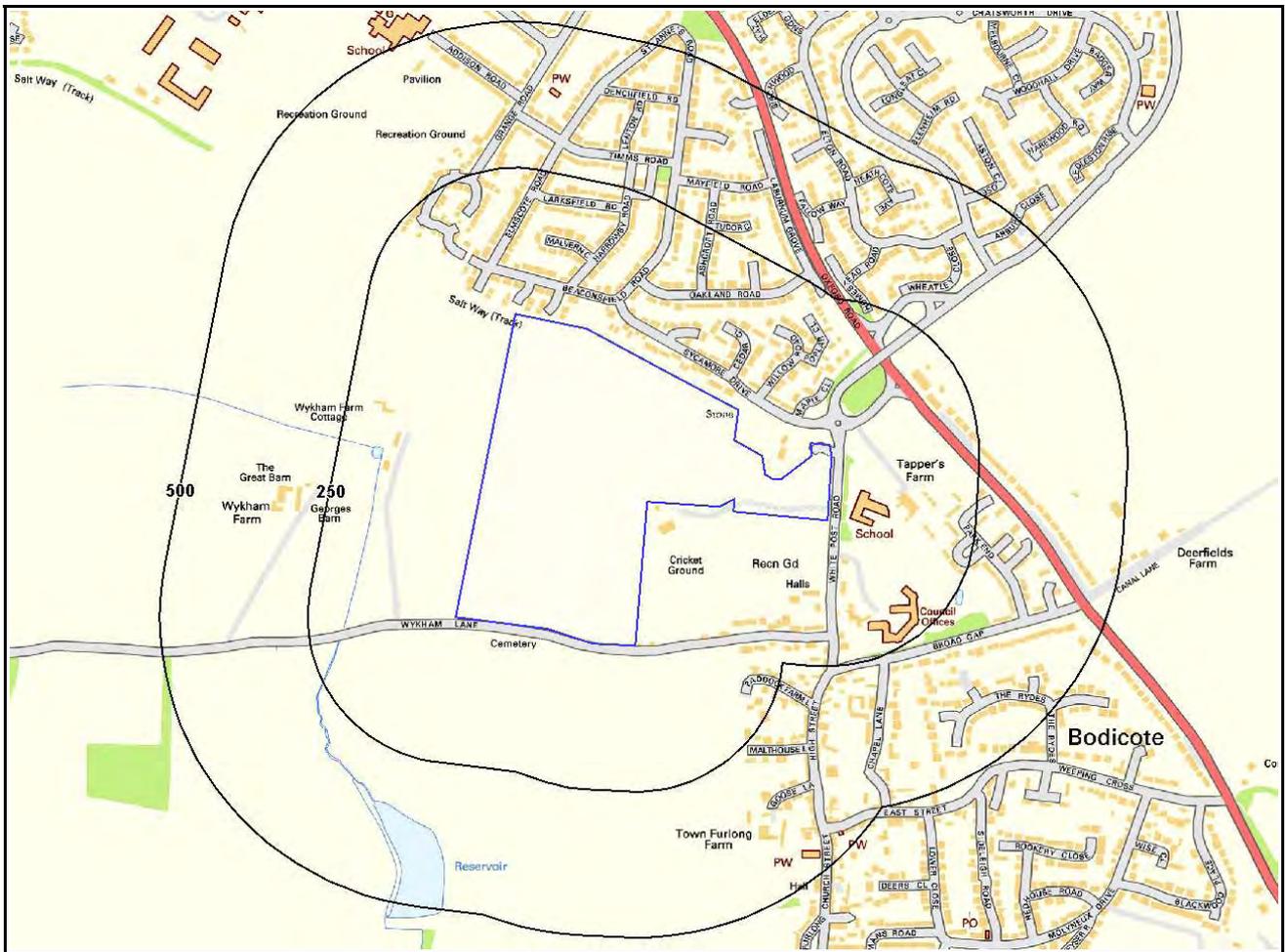
NW

N

NE

W

E



SW

S

SE

Landfill & Other Waste Sites Legend

Mapping sourced from Ordnance Survey

© Crown copyright and database rights 2013. Ordnance Survey license 100035207.

- | | | |
|------------------------|---------------------------------------|-------------------------------------|
| Site Outline | E.A. Active Landfill | Operational Waste Treatment Licence |
| 250 Search Buffers (m) | E.A. Historic Landfill (Area Data) | Closed Waste Treatment Licence |
| 500 Search Buffers (m) | E.A. Historic Landfill (Point Data) | REGIS Waste Licence |
| | BGS / DoE Survey Landfill | Operational Landfill |
| | Local Authority Landfill (Area Data) | Closed Landfill |
| | Local Authority Landfill (Point Data) | |

2. Landfill and Other Waste Sites

2.1 Landfill Sites

Records from Environment Agency landfill data within 1000m of the study site: 0

Database searched and no data found.

Records of operational landfill sites sourced from Landmark within 1000m of the study site: 0

Database searched and no data found.

Records of Environment Agency historic landfill sites within 1500m of the study site: 1

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

ID	Distance	Direction	NGR	Details	
Not shown	1450.0	NE	446200, 239900	Site Address: Tramway Road, Banbury, Oxfordshire Waste Licence: - Site Reference: TP0012, 13.6.4639 Waste Type: Inert, Industrial, Household, Liquid sludge Regis Reference: -	Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: Banbury Rural District Council

Records of non-operational landfill sites sourced from Landmark within 1000m of the study site: 0

Database searched and no data found.

Records of BGS/DoE non-operational landfill sites within 1500m of the study site: 0

Database searched and no data found.

Records of Local Authority landfill sites within 1500m of the study site: 0

Database searched and no data found.

2.2 Other Waste Sites

Records of operational waste treatment, transfer or disposal sites within 500m of the study site: 0

Database searched and no data found.

Records of non-operational waste treatment, transfer or disposal sites within 500m of the study site: 0

Database searched and no data found.

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

0

Database searched and no data found.
