



*Geotechnical and Geo-environmental Consultants*

**PHASE 1 GEO-ENVIRONMENTAL  
DESK STUDY REPORT**

**LAND SOUTH OF CHURCH ROAD  
WESTHORPE  
IP14 4SU**

**Reference Number 2056/Rpt 1v1  
April 2018**

Prepared for

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Report Title	Phase 1 Geo-environmental Desk Study Report Land South of Church Road, Westhorpe, IP14 4SU
Reference Number	2056/Rpt 1v1
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## EXECUTIVE SUMMARY

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*This report describes the findings of a Geo-environmental Desk Study of Land South of Church Road, Westhorpe, IP14 4SU.*

*The site is open land that is covered with rough grass. As AST is located 5m beyond the north west corner of the site. The site walk-over did not identify any on site potential sources of contamination. The off-site tank is considered to be a potential source of contamination, but no active pollution linkages were identified.*

*The review of the historical maps identified that the site remained agricultural land and has not been developed. The review of the historical land use did not identify any potential sources of contamination.*

*A review of the environmental setting indicated the site to be underlain by the Lowestoft Formation overlying the Crag Group. The Crag Group is classified as a Principal Aquifer. The Lowestoft Formation is classified as a Secondary (Undifferentiated) Aquifer. Surface water features were identified along the northern boundary of the site. The environmental sensitivity of the site is classified as Low.*

*The review of the industrial setting did not identify any potential sources of contamination.*

*The Conceptual Model prepared for the site has not identified any active pollution linkages between the off-site AST and the subject site.*

*From the findings of the Desk Study, it is considered that contamination would not prevent the site being developed as residential.*

*No recommendations for further site investigation have been made.*

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## 1 INTRODUCTION

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### 1.1 Background

Brown 2 Green Associates Ltd have been commissioned by Hartog Hutton Ltd to undertake a Phase I Geo-Environmental Desk Study of Land South of Church Road, Westhorpe, IP14 4SU. The site is centred on National Grid Reference 604619, 269117. The site location is presented in Figure 1.

### 1.2 Proposed Development

A proposed development layout is not known for the site. For risk assessment purposes it has been assumed the site will be developed as residential with private gardens.

### 1.3 Objectives

The objectives of the work are to provide an Environmental Risk Assessment to inform about potential re-development of the site, address the requirements of the National Planning Policy Framework<sup>1</sup> and Planning Practice Guidance. These objectives are achieved by:

- Undertaking a site inspection to identify any current areas of potential environmental concern;
- Reviewing historical plans, geology, hydrogeology, site sensitivity, flood-plain issues, mining records and any local authority information available in order to complete a Desk Study in line with (CLR11).

The information obtained in this study has been used to develop an initial Conceptual Site Model (CSM) and outline potential risks from contamination at the site. This CSM examines potential Source-Pathway-Receptor contaminant linkages in relation to identified or potential contamination issues at the site and vicinity, incorporating them into a Preliminary Risk Assessment. This report has been completed in accordance with CLR11<sup>2</sup>.

The Preliminary Risk Assessment seeks to establish firstly whether unacceptable risk as defined in Part 2A of the Environmental Protection Act 1990 is present and secondly whether a possibility of harm to controlled waters, human health or property is present and further investigation is therefore needed to better inform about risk assessment.

### 1.4 Sources of Information

Background information relating to the site was acquired and referenced from the following sources:

- Historical mapping (Appendix III);
- Environmental Database Search. All relevant data is summarised in the text of the report. A full copy is presented in Appendix IV;
- On-line planning records held by Redbridge District Council;
- Consultations with representatives of the Mid Suffolk District Council;

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<sup>1</sup> National Planning Policy Framework, Department for Communities and Local Government, May 2012.

<sup>2</sup> Contaminated Land Research Report CLR 11, Environment Agency (2004). Model Procedures for the Management of Contaminated Land: Risk Assessment Procedure.

- British Geological Survey website ([www.bgs.ac.uk](http://www.bgs.ac.uk)).

A site walkover was carried out by a Geo-environmental Consultant from Brown 2 Green Associates on the 2<sup>nd</sup> April 2018.

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## 2 SITE LOCATION AND DESCRIPTION

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### 2.1 Site Location and Surrounding Area

The site is located in a rural area within the village of Westhorpe. The land uses immediately adjacent to the site are summarised below:

Direction	Land Use
North	Church Road, residential and village hall
East	Residential
South	Agricultural
West	Residential

The topography of the surrounding area slopes down towards the south and south east.

The site location is presented in Figure 1.

### 2.2 Site Descriptions and Observations

The site layout is presented in Figure 2. A photographic record of the site is included in Appendix II.

The subject parcel of land is rectangular in shape and covers 0.82 hectares. Access to the site is via a gate from Church Road.

The northern boundary is defined by a ditch. The eastern and western boundaries are defined by fences and hedgerows. The southern boundary is open with the agricultural land beyond.

At the time of the site walk-over the site was covered with rough grass and brambles, except for a small part of the site which is agricultural land and has been planted with cereal crops. A track crosses the site from the entrance to the agricultural land beyond.

The topography of the site slopes down towards the north.

### 2.3 Storage of Chemicals and Hazardous Substances

#### Above Ground Storage Tanks (ASTs)

No above ground storage tanks (ASTs) or evidence of former ASTs were observed on the site. An AST is located approximately 5m beyond the north west corner of the site, within the grounds of the residual property to the west. It is likely that the tank is used for the storage of heating oil. No visual or olfactory evidence of contamination was identified.

#### Underground Storage Tanks (USTs)

No underground storage tanks (USTs) or evidence of USTs were observed at the site.

#### Other Chemical Storage

No significant storage of chemicals was noted at the time of the walkover.

### **Polychlorinated Biphenyls**

No equipment that may potentially contain polychlorinated biphenyls (PCBs) was observed at the site.

### **Asbestos Containing Materials**

During the inspection no materials suspected to contain asbestos were observed at the site. No buildings were present.

### **Waste Disposal**

No waste disposal activities were identified.

### **Site Drainage**

No trade effluent is generated by the site.

No oil/water interceptors were identified.

No soakaways were identified.

Rainwater will either infiltrate into the ground or is lost through surface water run-off or evapotranspiration.

## **2.4 Visual and Olfactory Evidence of Contamination**

No specific visual or olfactory evidence of contamination was noted.

## **2.5 Potential Sources of Contamination**

During the site walk-over the following plausible potential sources of contamination were identified:

- AST located beyond the north west corner.

### 3 SITE HISTORY

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#### 3.1 Historical Maps

The maps at scales of 1: 2,500, 1:10,000 and 1:10,560 were reviewed to determine the history of the site. A summary of the site history is presented below. The historical maps are included in Appendix III.

Date	Site	Surrounding Area
1884 - 1885 1:2,500	The site is part of a larger field. A track crosses the site from the site entrance. The ditches observed during the site walk-over are present along the northern boundary.	The surrounding area is predominately agricultural. Residential properties are presented within the village. A pond is shown 20m to the north
1903 - 1904 1:2,500	As 1884 – 1885.	No relevant changes identified.
1950 1:10,560	As 1884 – 1885.	Houses have been constructed north of Church Road.
1957 - 1958 1:10,560	As 1884 – 1885.	No relevant changes identified.
1978 1:2,500	As 1884 – 1885.	The pond to the north of Church Road has been backfilled and the site has been developed as residential.
1995 1:2,500	As 1884 – 1885.	No relevant changes identified.
2002 1:10,000	As 1884 – 1885.	No relevant changes identified.

#### 3.2 Local Authority – Planning

A review of on-line planning records from Mid-Suffolk District Council was completed on 5<sup>th</sup> April 2018. No relevant information was identified.

#### 3.3 Other Sources

A review has been made of satellite photographs contained on Google Earth. Photographs show the site was agricultural land. No relevant information was observed.

#### 3.4 Potential Sources of Contamination

During the review of the historical land use of the site and surrounding area, no potential sources of contamination were identified where it is considered that there is a plausible pollution pathway.

## 4 ENVIRONMENTAL SETTING

### 4.1 Geology and Hydrogeology

The British Geological Survey website indicates that the site is underlain by the following geology:

Drift/Solid	Geological Unit	Description
Drift/Superficial	Lowestoft Formation	Diamicton
Solid	Crag Group	Sand

The Superficial Deposits are classified as a Secondary (Undifferentiated) Aquifer. The solid geology is classified as a Principal Aquifer. The groundwater vulnerability is classified as Minor Intermediate.

There are no active licenced groundwater abstraction points within 1km radius of the site. There are no Source Protection Zones within the vicinity of the site.

### 4.2 Geochemistry

The British Geological Survey estimates of the geochemistry of the soils beneath the site are:

Determinants	Soil Type	Concentration (mg/kg)
Arsenic	Rural	<15
Cadmium		<1.8
Chromium		40 - 60
Nickel		15 - 30
Lead		<100

### 4.3 Hydrology

Detailed River Network entries indicate the nearest surface water feature is a Tertiary River located 164m to the east. The Tertiary River flows towards the east. Along the northern boundary of the site there is a drainage ditch and a pond.

There are no licensed surface water abstraction points within 500m radius of the site.

The database indicates that the site does not lie in a fluvial or tidal floodplain. Flood risk rating from flooding from rivers and the sea (RoFRaS) is Low.

### 4.4 Ecologically Sensitive Areas

There are no ecologically sensitive sites within 250m radius of the site.

### 4.5 Radon

The site is located in an area where less than 1% of homes are above the Action Levels and Radon Protective Measures are not necessary in the construction of new dwellings or extensions.

### 4.6 Natural Hazards

BGS GeoSure Data presented within the Environmental Database presented in Appendix IV identifies the following ground conditions:

<b>Hazard</b>	<b>Designation</b>	<b>Hazard</b>
Potential for Shrinking or Swelling of Clays	Low	Ground conditions predominantly medium plasticity
Potential for Landslide Ground	Very Low	Slope instability problems are unlikely to be present
Potential for Ground Dissolution	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions.
Potential for Compressible Ground	Negligible	No indicators for compressible ground identified
Collapsible Ground	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
Potential for Running Sands	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water.



## 5 INDUSTRIAL SETTING

### 5.1 Current Industrial Land Use

There are no potentially contaminative industrial entries for the site or within 250m radius of the site.

Within 500m radius of the site there are no entries for filling stations.

### 5.2 Landfill Sites and Waste Disposal Facilities

There are no historical or operational landfill sites or waste management facilities within 250m radius of the site.

### 5.3 Environmental Permits, Incidents and Registers

The following information is a summary of the data contained on the Environmental Database presented in Appendix IV.

	On Site	0 – 250m	Details of Nearest	Potential Risk to Site
Authorised industrial processes (IPC/IPPC/LAPPC)	0	0	-	No
Red List Discharge Consents	0	0	-	No
Dangerous Substance Inventory Sites	0	0	-	No
Radioactive Substances Authorisations	0	0	-	No
Licensed Discharge Consents	0	1	235m to the east for the discharge of treated sewage. Consent is classified as historic.	No
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	-	No
Control of Major Accident Hazard (COMAH/NIHHS) sites	0	0	-	No
Pollution Incidents	0	0	-	No
Contaminated Land Register Entries and Notices (Part 2A EPA 1990)	0	0	-	No

### 5.4 Ground Workings, Mining and Natural Cavities

The database indicates that there are no historical mining areas within 1000m of the study site boundary.

The database states that the site is not located in an area affected by coal mining.

The Johnson, Poole and Bloomer database indicates that there are no JPB Mining areas within 1000m of the study site boundary.

The database states that there are no non-coal mining areas within 1000m of the site.

The database states that according to the Peter Brett Associates mining cavity database there are

no non-coal mining cavities within 1000m of the site.

The database states that according to the Peter Brett Associates mining cavity database there are no recorded natural cavities within 1000m of the site.

The database states that the site is not located in a salt brine extraction area.

The database states that there is no gypsum extraction within 1000m of the site.

The database states that there is no tin mining within 1000m of the site.

The database states that there is no kaolin and ball clay mining within 1000m of the site.

## **6 PREVIOUS REPORT**

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No previous site investigation reports were identified or made available.

## 7 INITIAL CONCEPTUAL MODEL

Brown 2 Green Associates Ltd has developed a Conceptual Model to identify potential sources, migration pathways and receptors within the study area. Assuming there is an active pollution pathway linkage between the source and receptor an assessment has been made of the level of risk. The level of risk is a consideration of both:

- the likelihood of an event (probability) [takes into account both the presence of the hazard and receptor and the integrity of the pathway]; and
- the severity of the potential consequence [takes into account both the potential severity of the hazard and the sensitivity of the receptor].

The classifications of the likelihood of an event occurring based on C552 CIRIA, 2001<sup>3</sup> are presented below:

Likelihood		Definition
High Likelihood	> 90% of hazard receptor linkage	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor that there is harm or contamination
Likely	45-90% of hazard receptor linkage	There is a pollution linkage and all the elements are present and in the right place which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term
Low likelihood	10-50% of hazard receptor linkage	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	10% of hazard receptor linkage	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term.

The classifications of the severity of an event are presented below:

Severity	Category	Definition	Examples
Severe:  It is likely that the hazard source could cause harm to a designated receptor and harm would be significant.	Humans	Short term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA.	High concentrations of cyanide on the surface of an informal recreation area.
	Controlled Water	Short term risk of pollution of sensitive water resource.	Major spillage of contaminants from site into controlled water.
	Property	Catastrophic damage to building or property	Explosion causing building to collapse.
	Ecological systems	A short term risk to a particular ecosystem, or organism forming part of such an ecosystem.	Loss of ecosystem.
Medium:  It is possible that the hazard source could cause harm to a designated receptor, but it is unlikely that the harm would be significant	Humans	Chronic damage to human health ("significant harm" as defined in the DETR, 2000).	Concentrations of a contaminant from site exceeds the generic, or site specific assessment criteria
	Controlled Water	Pollution of sensitive water resources.	Leaching of contaminants from a site to a Principal Aquifer.
	Ecological systems	A significant change in a particular ecosystem, or organism forming part of such an ecosystem.	Death of a species within a designated nature reserve.

<sup>3</sup> Contaminated land risk assessment. A guide to good practice (C552), D J Rudland, R M Lancefield and P N Mayell.

Severity	Category	Definition	Examples
Mild:  It is possible that the hazard source could cause significant harm to a designated receptor, however it is likely to be mild	Controlled Waters	Pollution of non-sensitive water resource.	Pollution of non-classified groundwater
	Property	Significant damage to buildings/structures and crops ("significant harm" as defined in the DETR, 2000). Damage to sensitive buildings/structures or the environment.	Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor:  The potential hazard source cannot cause significant harm to the receptor.	Financial or project	Harm, although not necessarily significant harm, which may result in a financial loss, or an expenditure to resolve.	
	Humans	Non-permanent health effects to human health (easily prevented by means such as Personal Protective Clothing, etc).	The presence of contaminants at such concentrations that protective equipment is required during site works.
	Property	Easily repairable effects of damage to buildings/structures	The loss of plants in landscaping scheme.  Discolouration of concrete.

The comparisons of Likelihood against Severity are presented below:

		Severity			
		Severe	Medium	Mild	Minor
Likelihood	High Likelihood	Very High Risk	High Risk	Moderate Risk	Moderate / Low Risk
	Likely	High Risk	Moderate Risk	Moderate / Low Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate / Low Risk	Low Risk	Very Low Risk
	Unlikely	Moderate / Low Risk	Low Risk	Very Low Risk	Very Low Risk

The potential consequences of risk classifications are presented below:

<b>Very High Risks</b>	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
<b>High Risks</b>	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term.
<b>Moderate Risks</b>	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term.
<b>Moderate / Low Risks</b>	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 medium to mild and professional judgement is required. Some remediation works may be required in the long term where high sensitivity receptors are involved.
<b>Low Risks</b>	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.
<b>Very Low Risks</b>	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.

## **7.1 Potential Sources of Contamination**

### **On-site Potential Sources**

Based on the findings of the site walk-over and the desk study information review no potentially significant on-site sources of ground contamination have been identified that may plausibly result in impact to the site.

### **Off-site Potential Sources**

Based on the findings of the site walk-over and the desk study information review the following potential off-site sources of contaminants that may plausibly impact the site were identified:

- AST used for storage of fuel oil, located 5m north west of the site.

## **7.2 Potential Pathways**

Potential pathways identified for each contaminant at are presented in the Initial Conceptual Model detailed overleaf.

## **7.3 Potential Receptors**

Brown 2 Green Associates Ltd has identified the following possible receptors:

- Human health - future users of the site (residential with private gardens).
- Human health - construction workers.
- Controlled water (groundwater and surface water).
- Buildings and construction materials (concrete).
- Water supply pipework.

## **7.4 Discussion of Potential Pollutant Linkages**

Potential pollution linkages identified are presented in the Initial Conceptual Model detailed overleaf.

**Initial Conceptual Model and Risk Assessment**

<i>Potential Contaminant</i>	<i>Potential migration pathway</i>	<i>Potential Receptors</i>	<i>Likelihood</i>	<i>Severity</i>	<i>Risk Classification</i>	<i>Comments</i> <i>Active/Inactive</i>
<b>Off-site Sources</b>						
<b>AST located 5m north west</b>						
Heating oil	Spillage from tank onto ground	Future site users	Unlikely	Minor	Very low	<b>Pollution linkage is inactive.</b>  Should spillage occur, lost fuel would not flow on to site as drainage ditch located along boundary will act as barrier to hydrocarbons entering the subject site.

## **8 CONCLUSIONS AND RECOMMENDATIONS**

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### **8.1 Conclusions**

The site is open land that is covered with rough grass. An AST is located 5m beyond the north west corner of the site. The site walk-over did not identify any on site potential sources of contamination. The off-site tank is considered to be a potential source of contamination, but no active pollution linkages were identified.

The review of the historical maps identified that the site remained agricultural land and has not been developed. The review of the historical land use did not identify any potential sources of contamination.

A review of the environmental setting indicated the site to be underlain by the Lowestoft Formation overlying the Crag Group. The Crag Group is classified as a Principal Aquifer. The Lowestoft Formation is classified as a Secondary (Undifferentiated) Aquifer. Surface water features were identified along the northern boundary of the site. The environmental sensitivity of the site is classified as Low.

The review of the industrial setting did not identify any potential sources of contamination.

The Conceptual Model prepared for the site has not identified any active pollution linkages between the off-site AST and the subject site.

From the findings of the Desk Study, it is considered that contamination would not prevent the site being developed as residential.

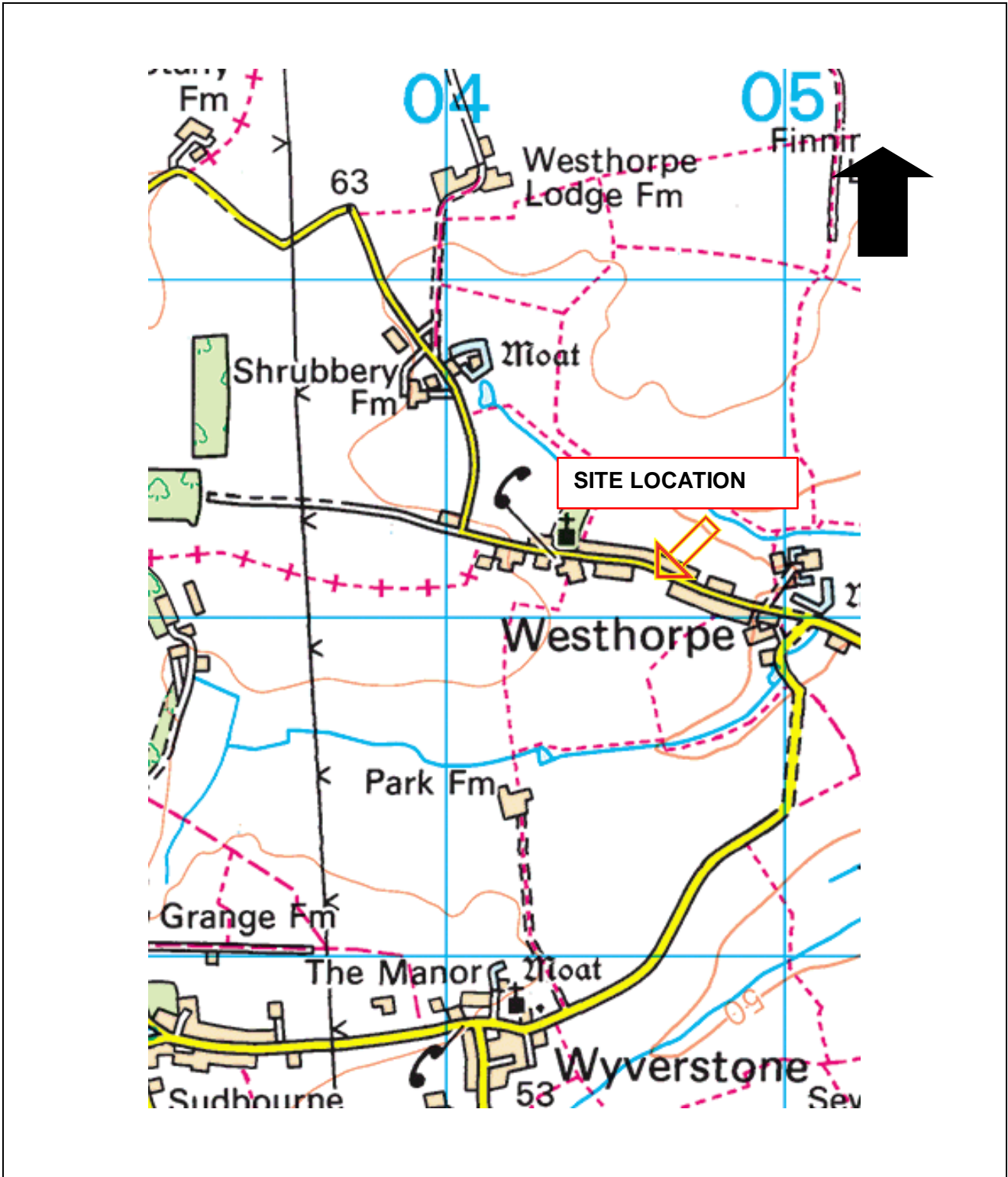
### **8.2 Recommendations**

From the results of the Desk Study no recommendations are made.


During the development of the site, should any evidence of contamination be identified contact should be made with a Contaminated Land Consultant.

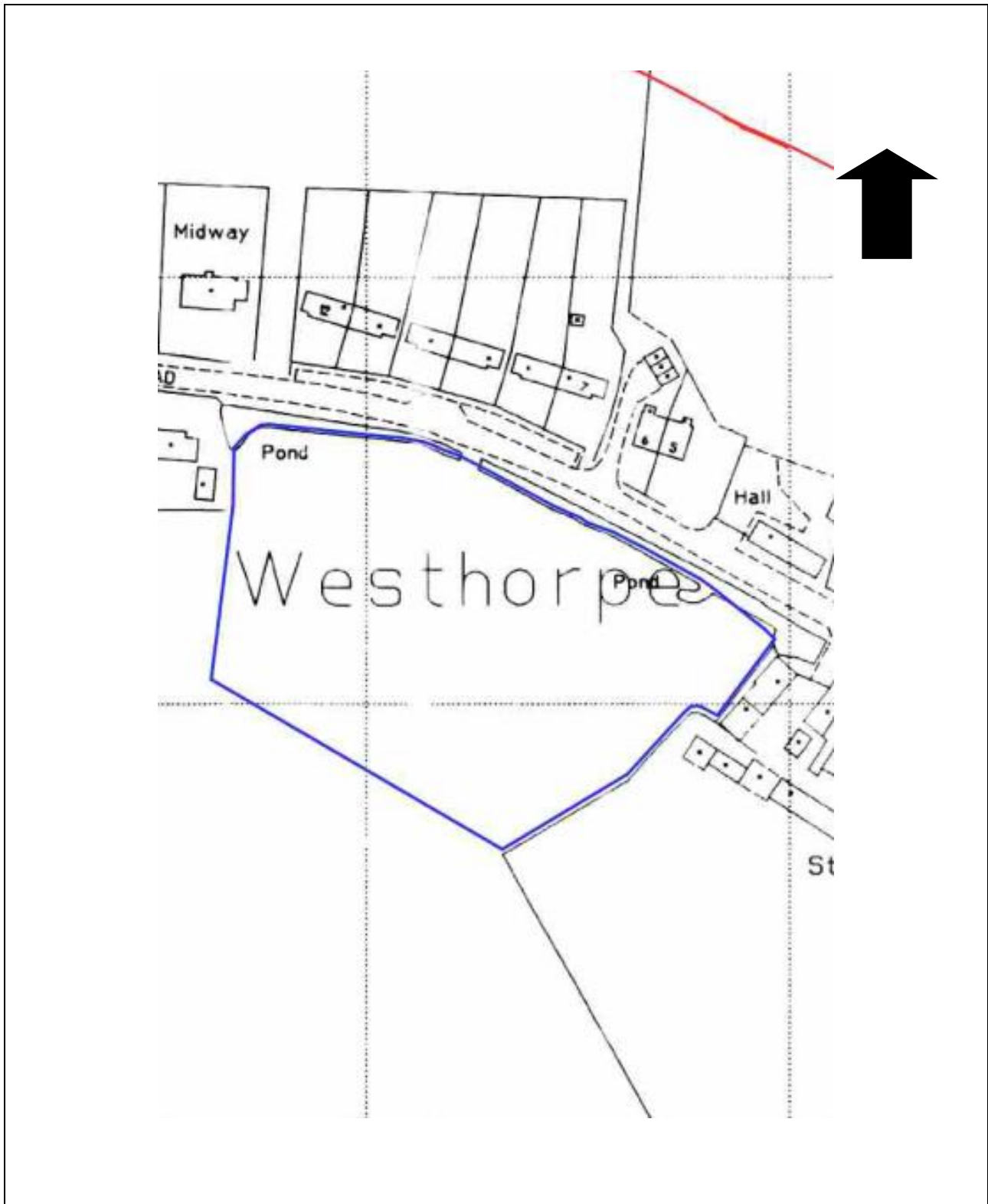



## **FIGURES**



Based on an Ordnance Survey map with permission of HMSO. Crown copy right reserved. Licence number 100053399

<b>Project Number:</b> 2056	<b>Project:</b> Land South of Church Road, Westhorpe	<b>Scale:</b> NTS
<b>Figure 1</b>	<b>Site Location Plan</b>	



<b>Project Number:</b> 2056	<b>Project:</b> Land South of Church Road, Westhorpe	<b>Scale:</b> NTS
<b>Figure 2</b>	<b>Site Layout Plan</b>	

**APPENDIX I**  
**LIMITATIONS AND CONSTRAINTS**

Brown 2 Green Associates Limited has prepared this report in accordance with our standard Terms and Conditions solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.

Brown 2 Green Associates Ltd cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The client cannot place reliance on the report until full payment has been made. The copyright in this report and other plans and documents prepared by Brown 2 Green Associates Ltd is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of the report may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by Brown 2 Green Associates Ltd in this connection without their explicit written agreement thereto by Brown 2 Green Associates Ltd.

For the work, reliance has been placed on publicly available data obtained from the sources identified and data supplied by other parties. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information. Brown 2 Green Associates Ltd does not warrant work / data undertaken / provided by others.

Due to the short timescales associated with these projects responses may not have been received from all parties. Brown 2 Green Associates Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.

This report has been produced in accordance with UK policy and legislative requirements for land and groundwater contamination at the time the report was commissioned. Should changes in legislation or policy occur the report findings may need revisiting once the development layout is confirmed.

During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walk-over no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown or the location of the area has not been made known, or where access has not been permitted.

Access considerations, the presence of services and the activities being carried out on the site limited the positions where sampling locations could be installed and the techniques that could be used.

This report presents an interpretation of the geo-environmental information established by excavation, observation and testing. It should be noted that when investigating, or developing land it is important to recognise that sub-surface conditions may vary spatially and also with time. Groundwater conditions are dependent on seasonal and other factors. Consequently there may be conditions present not revealed by this investigation. The absence of certain ground, ground gas, and contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Due to the presence of existing buildings and structures access could not be obtained to all areas. Additional contamination may be identified following the removal of the buildings or hard standing.

The scope of any investigation is based on the specific development and land use scenario proposed by the Client and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.

Rather, this investigation has been undertaken to provide a characterisation of the existing sub-surface geo-environmental characteristics and make up and the findings of this study are our best interpretation of the data collected, within the scope of work and agreed budget. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

During any development programme Brown 2 Green Associates Limited should be consulted if alternative ground conditions are encountered. It assumes during any site works that the contractor will use their best endeavours to manage and control groundwater and other unforeseen ground conditions. Brown 2 Green Associates Limited will not be liable for actions taken prior to consultation.

Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and does not constitute or replace full and proper surveys.

**APPENDIX II**  
**SITE PHOTOGRAPHS**





**General view looking south**



**General view looking north**





**Pond beyond north east corner of the site**



**Drainage ditch along northern boundary**





**Off-site AST beyond north west corner.**

**APPENDIX III**  
**HISTORICAL MAPS**



**Site Details:**

LANBD SOUTH OF CHURCH ROAD, WESTHORPE, IP14 4SU

Client Ref: 2056  
 Report Ref: B2G-4846423  
 Grid Ref: 604629, 269115

Map Name: County Series

Map date: 1884-1885

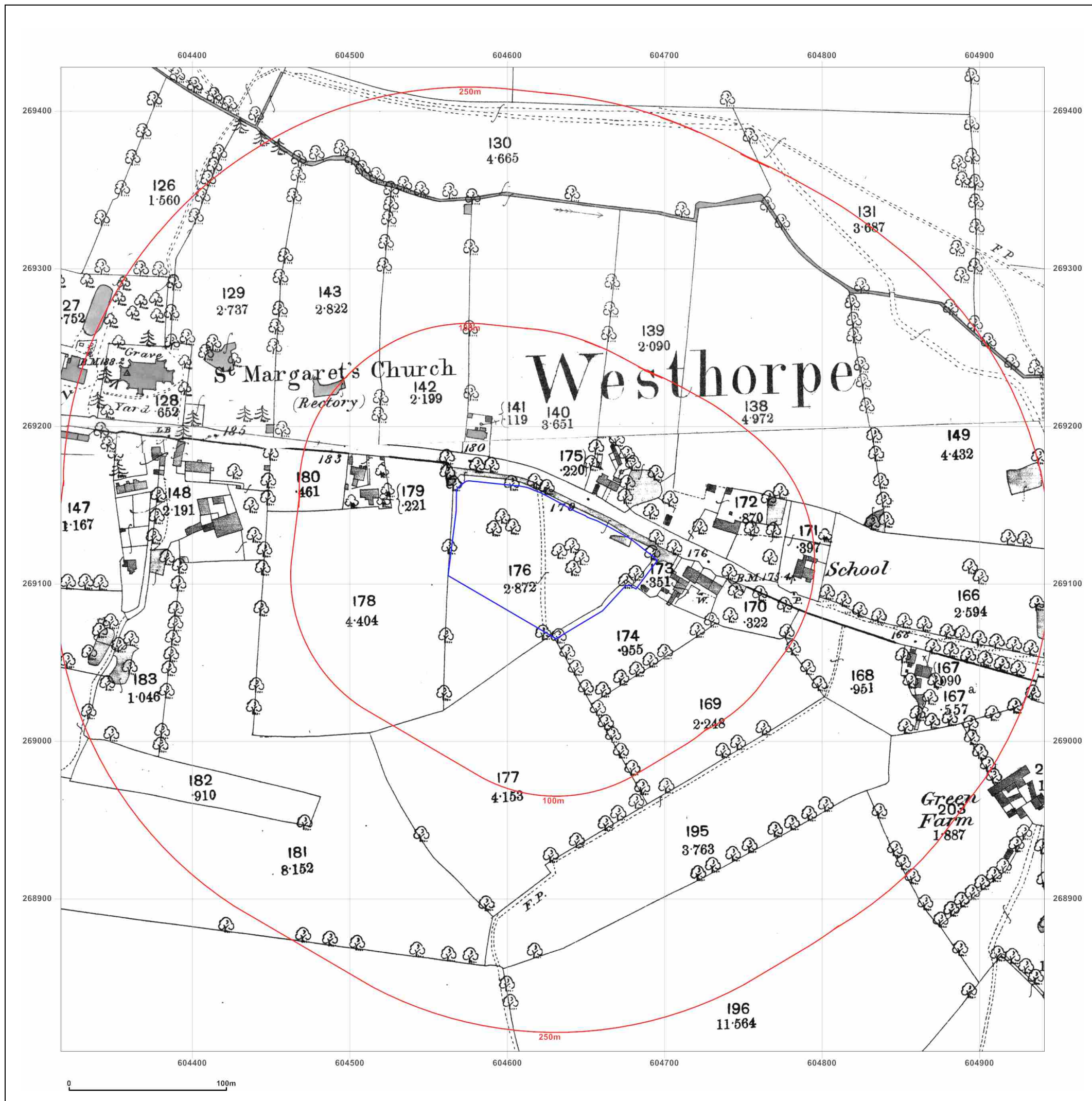
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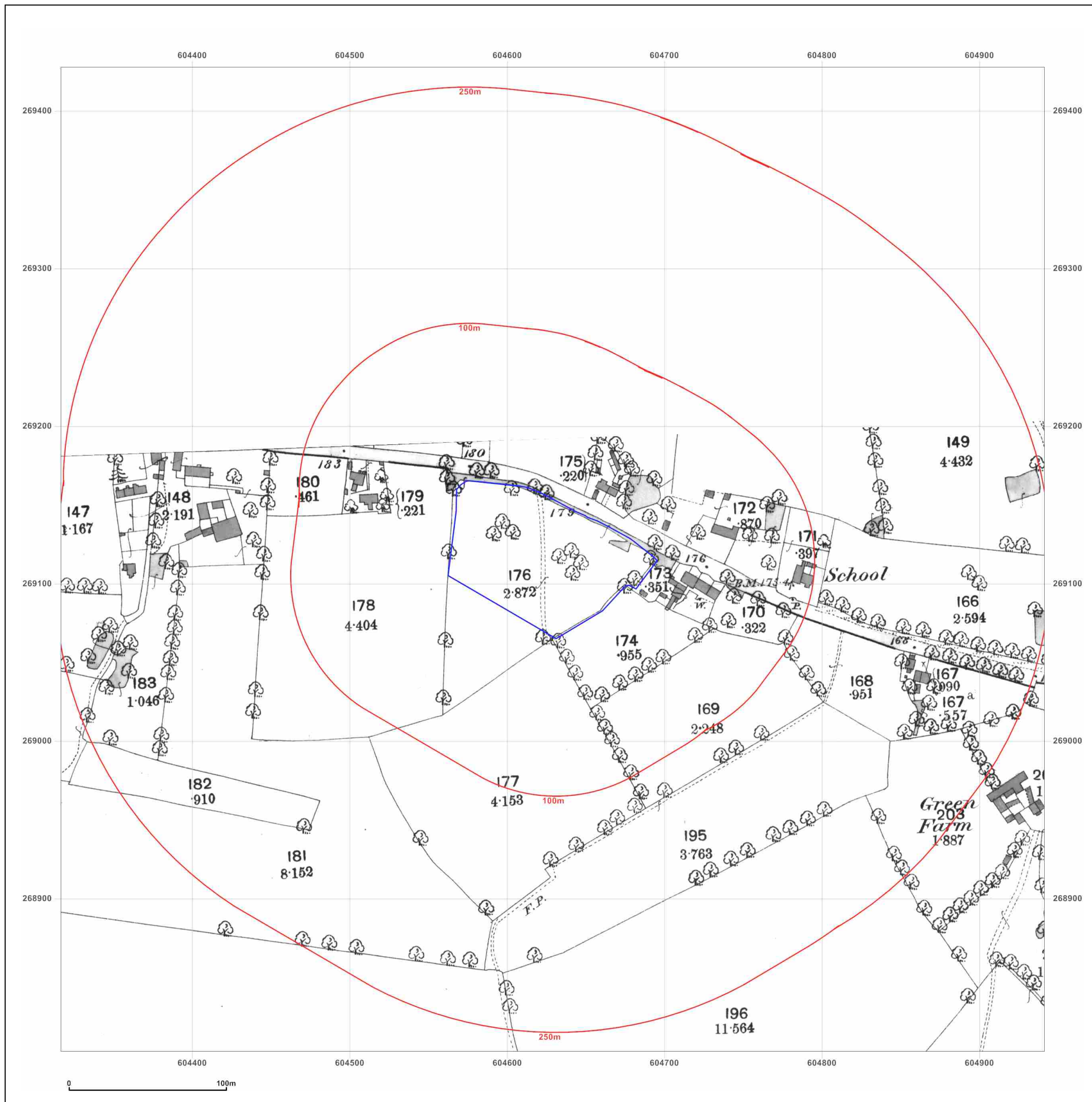
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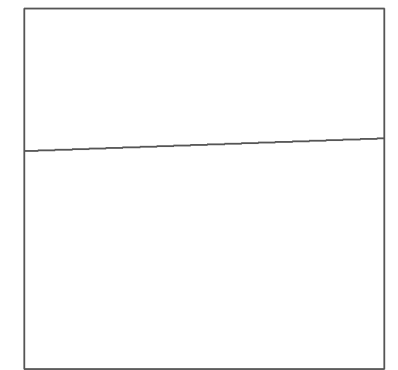
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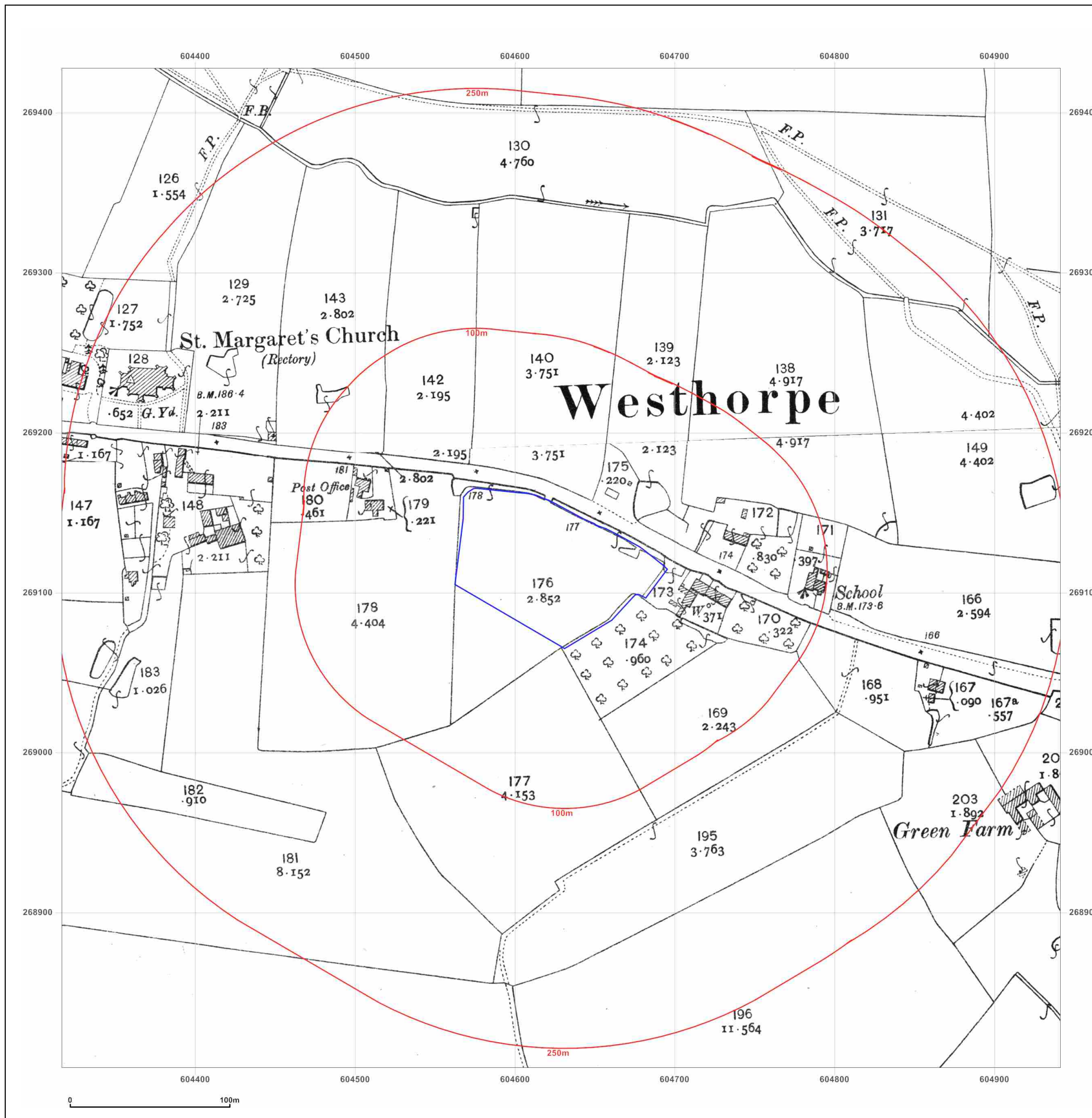
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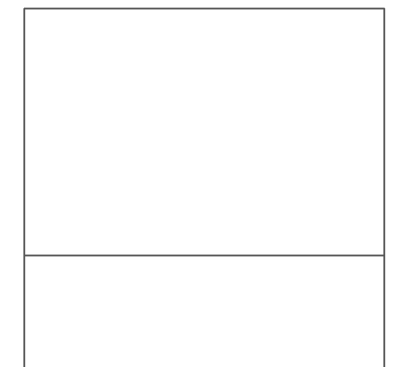
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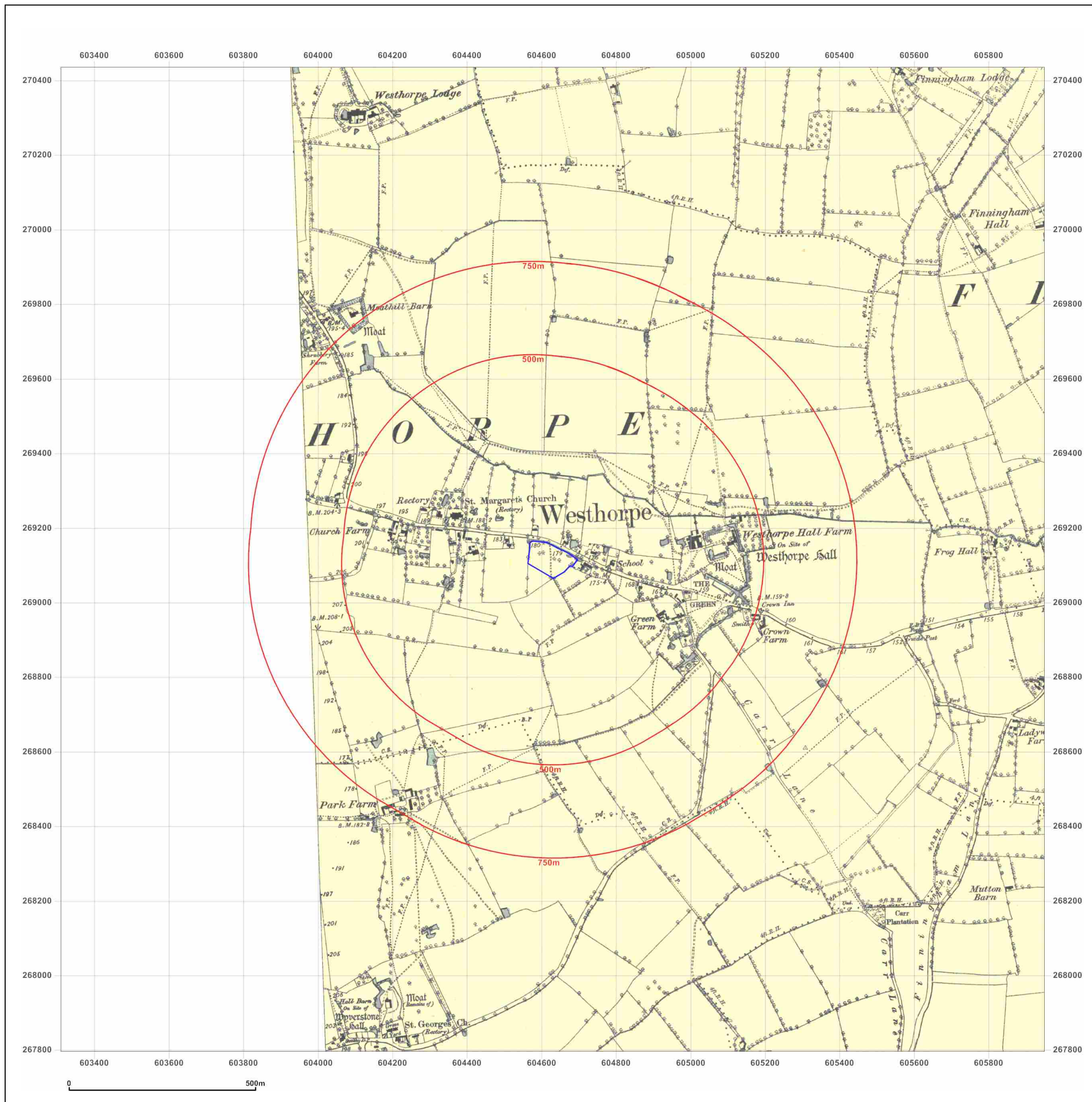
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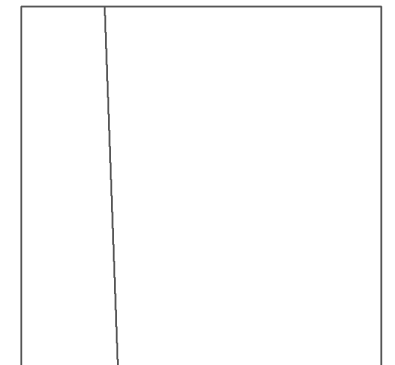
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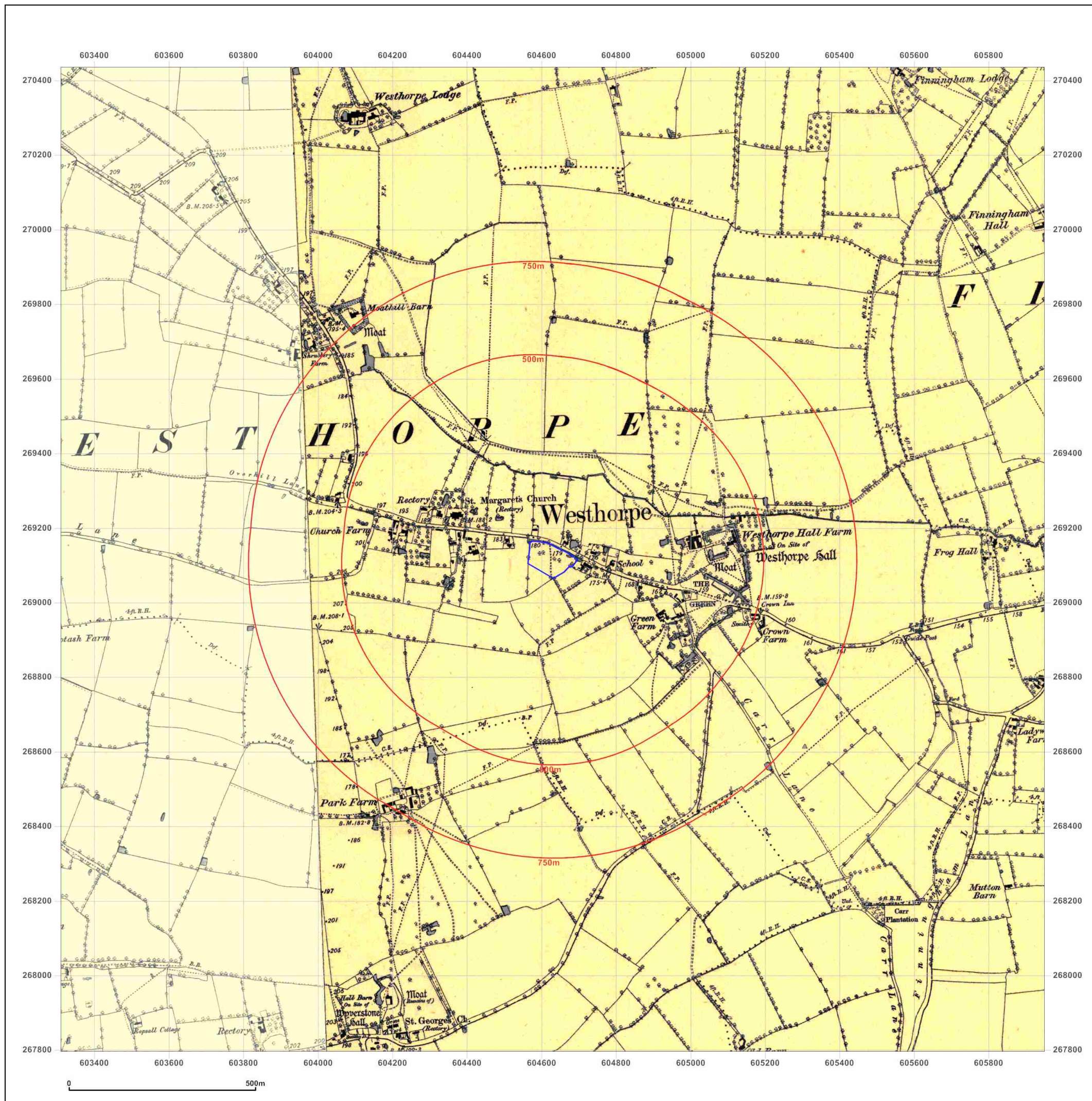


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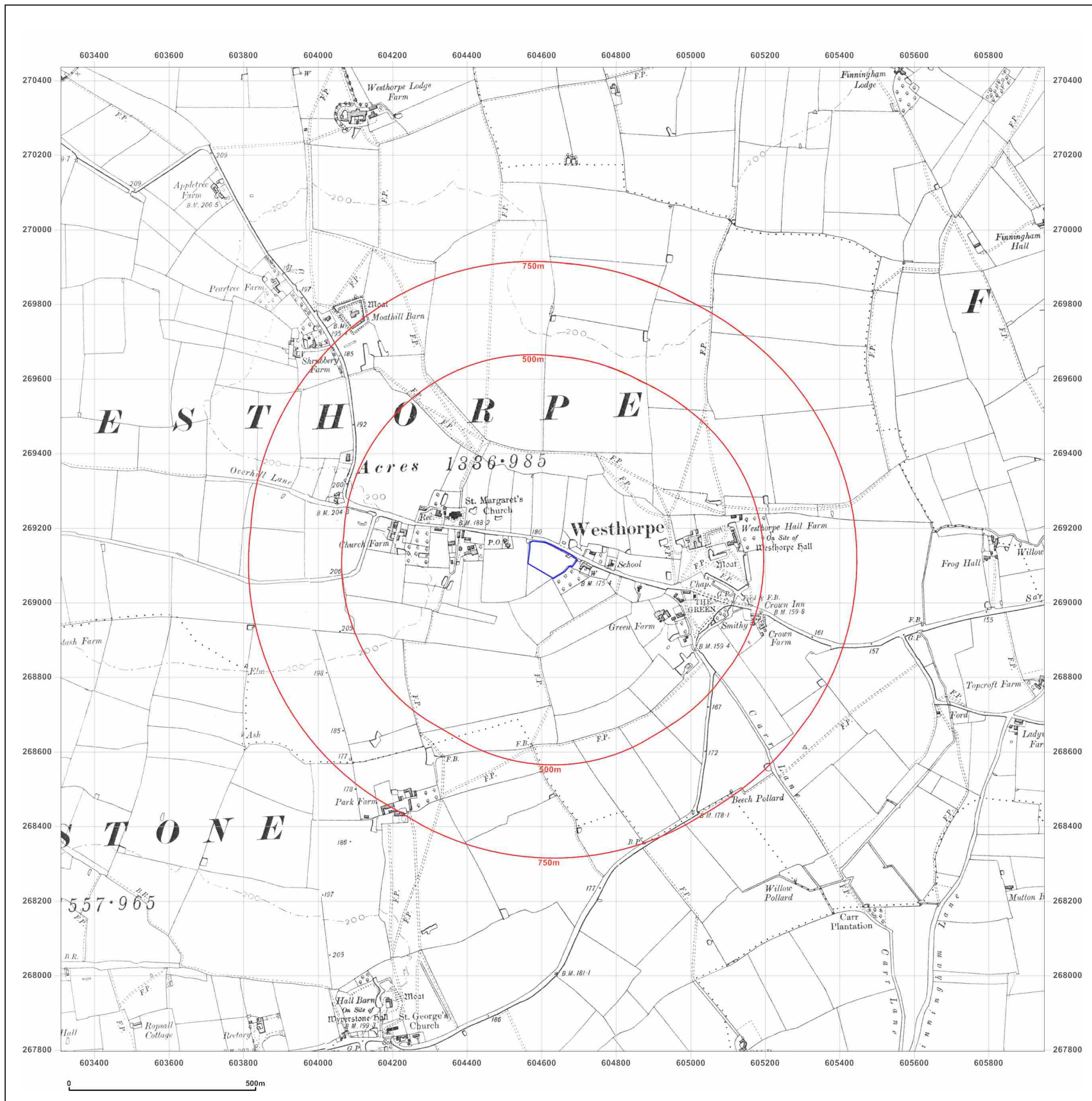


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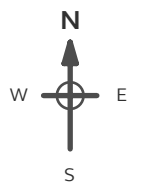
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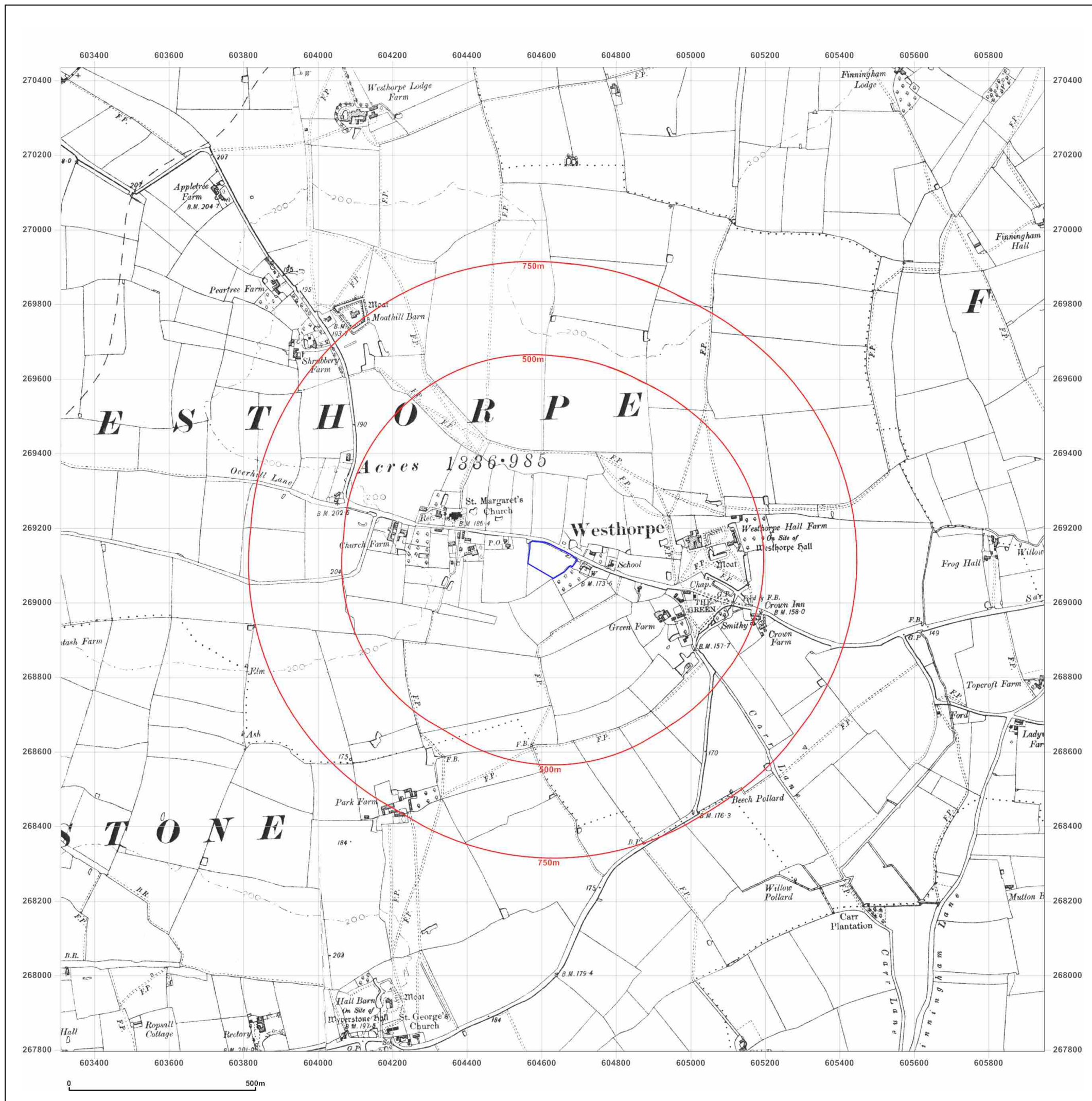


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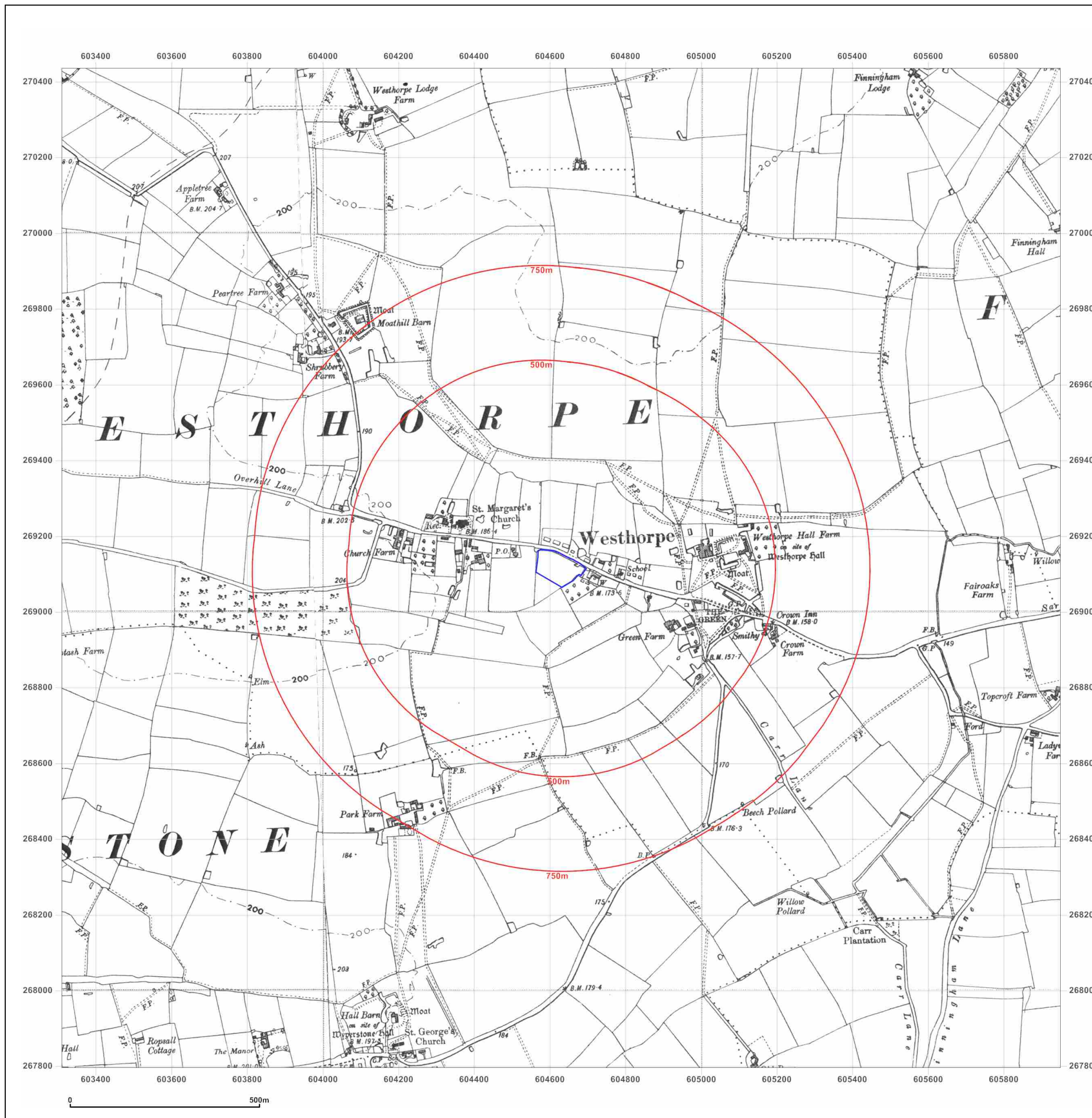


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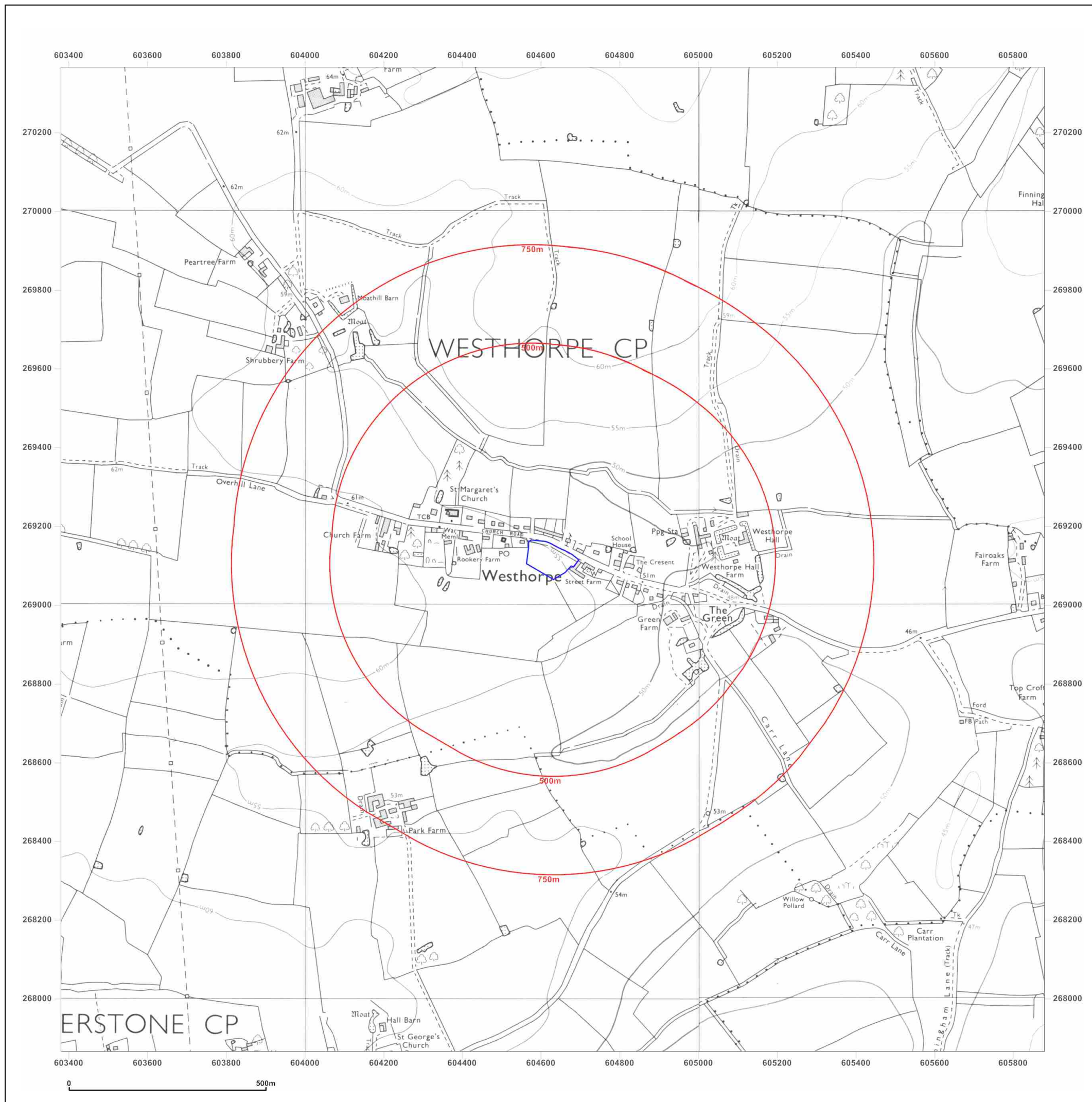
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**Map Name:** National Grid

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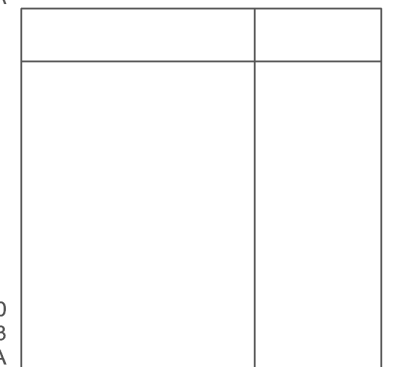
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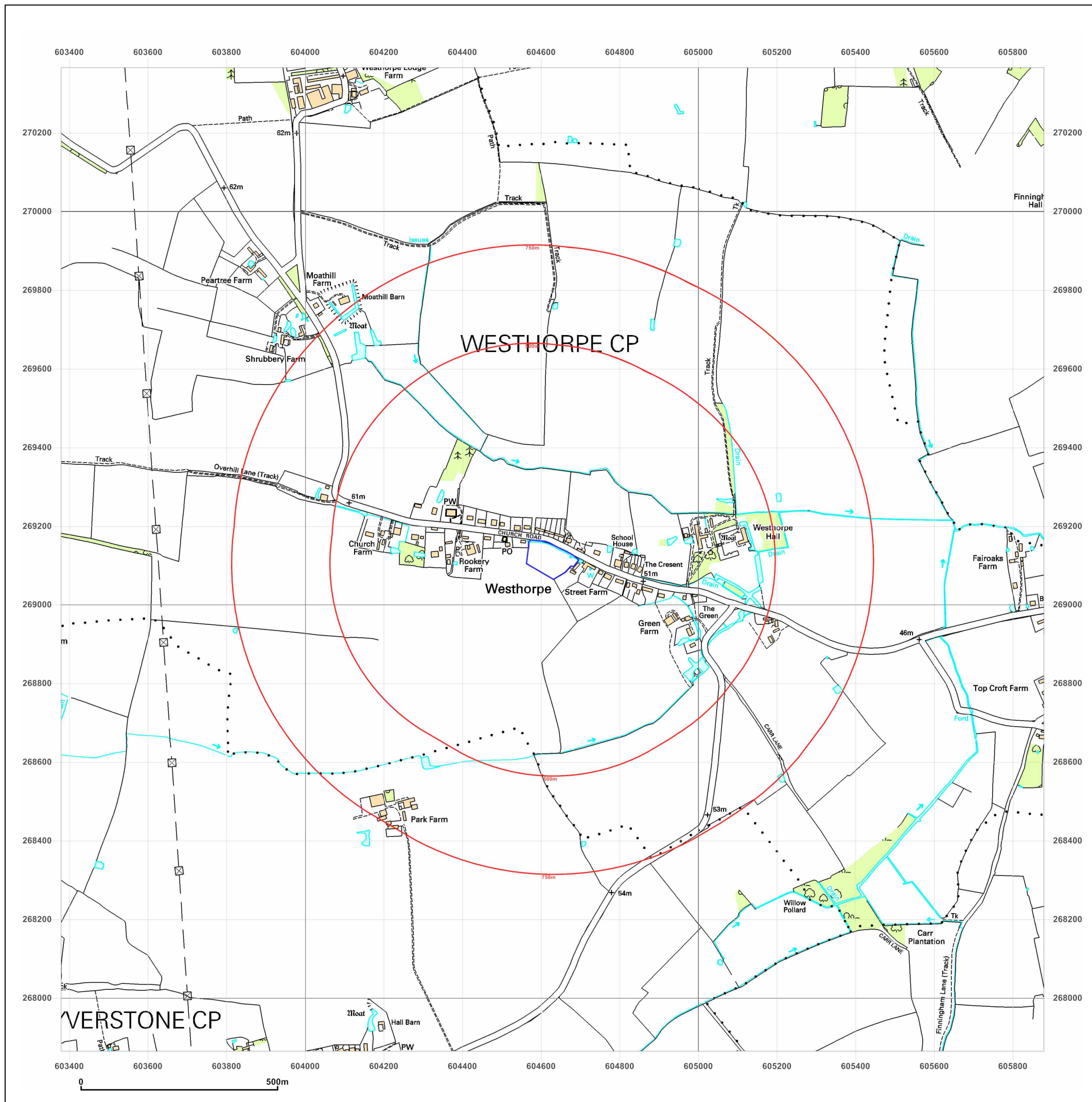


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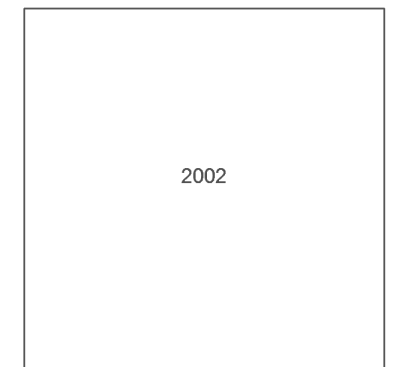
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**APPENDIX IV**  
**ENVIRONMENTAL DATABASE**



Brown2Green Associates Limited  
Suite 1 Wenden Court, Station Road,  
Saffron Walden, CB11 4LB

Groundsure Reference: B2G-4846424

Your Reference: 2056

Report Date 28 Mar 2018

Report Delivery Method: Email - pdf

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If you need any further assistance, please do not hesitate to contact our helpline on 08444 159 000 quoting the above report reference number.

Yours faithfully,

Brown2Green Associates Ltd

Enc.  
Groundsure Enviroinsight

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**Date:** 28 Mar 2018  
**Reference:** B2G-4846424  
**Client:** Brown2Green Associates Limited



**Aerial Photograph Capture date:** 18-May-2014  
**Grid Reference:** 604619,269117  
**Site Size:** 0.82ha

**Report Reference:** B2G-4846424  
**Client Reference:** 2056

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# Overview of Findings

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<b>Section 1: Historical Industrial Sites</b>	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	0	6
1.2 Additional Information – Historical Tank Database	0	0	0	2
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
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	0	0	0
1.6 Potentially Infilled Land	1	0	7	19

<b>Section 2: Environmental Permits, Incidents and Registers</b>	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	0	0	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	1	5
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	0	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
<b>3.1 Landfill Sites</b>							
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0	1
3.1.3 BGS/DoE Landfill Site Survey	0	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	0
<b>3.2 Landfill and Other Waste Sites Findings</b>							
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	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	0
<b>Section 4: Current Land Use</b>		On-site	0-50m	51-250	251-500		
4.1 Current Industrial Sites Data	0	0	0	1	0	Not searched	
4.2 Records of Petrol and Fuel Sites	0	0	0	0	0	0	
4.3 National Grid Underground Electricity Cables	0	0	0	0	0	0	
4.4 National Grid Gas Transmission Pipelines	0	0	0	0	0	0	
<b>Section 5: Geology</b>							
5.1 Records of Artificial Ground and Made Ground present beneath the study site				None identified			
5.2 Records of Superficial Ground and Drift Geology present beneath the study site				Identified			
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section							
<b>Section 6: Hydrogeology and Hydrology</b>				0-500m			
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site				Identified			
6.2 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	1
6.4 Surface Water Abstraction Licences (within 2000m of the study site)		0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)		0	0	0	0	0	0
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	0	2	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 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	Yes	No
6.10 Detailed River Network entries within 500m of the site	0	0	2	14	Not searched	Not searched
6.11 Surface water features within 250m of the study site	Yes	No	Yes	Not searched	Not searched	Not searched

## Section 7: Flooding

7.1 Environment Agency Zone 2 floodplains within 250m of the study site	None identified					
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified					
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low					
7.4 Flood Defences within 250m of the study site	None identified					
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified					
7.6 Areas used for Flood Storage within 250m of the study site	None identified					
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Limited potential					
7.8 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	0

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	1	2
8.14 Records of Green Belt land	0	0	0	0	0	0

## Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Very Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Very Low
9.2 Radon	
9.2.1 Radon Affected Area rating	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Radon protection measures requirements	No radon protective measures are necessary.

## Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	None identified
10.3 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.

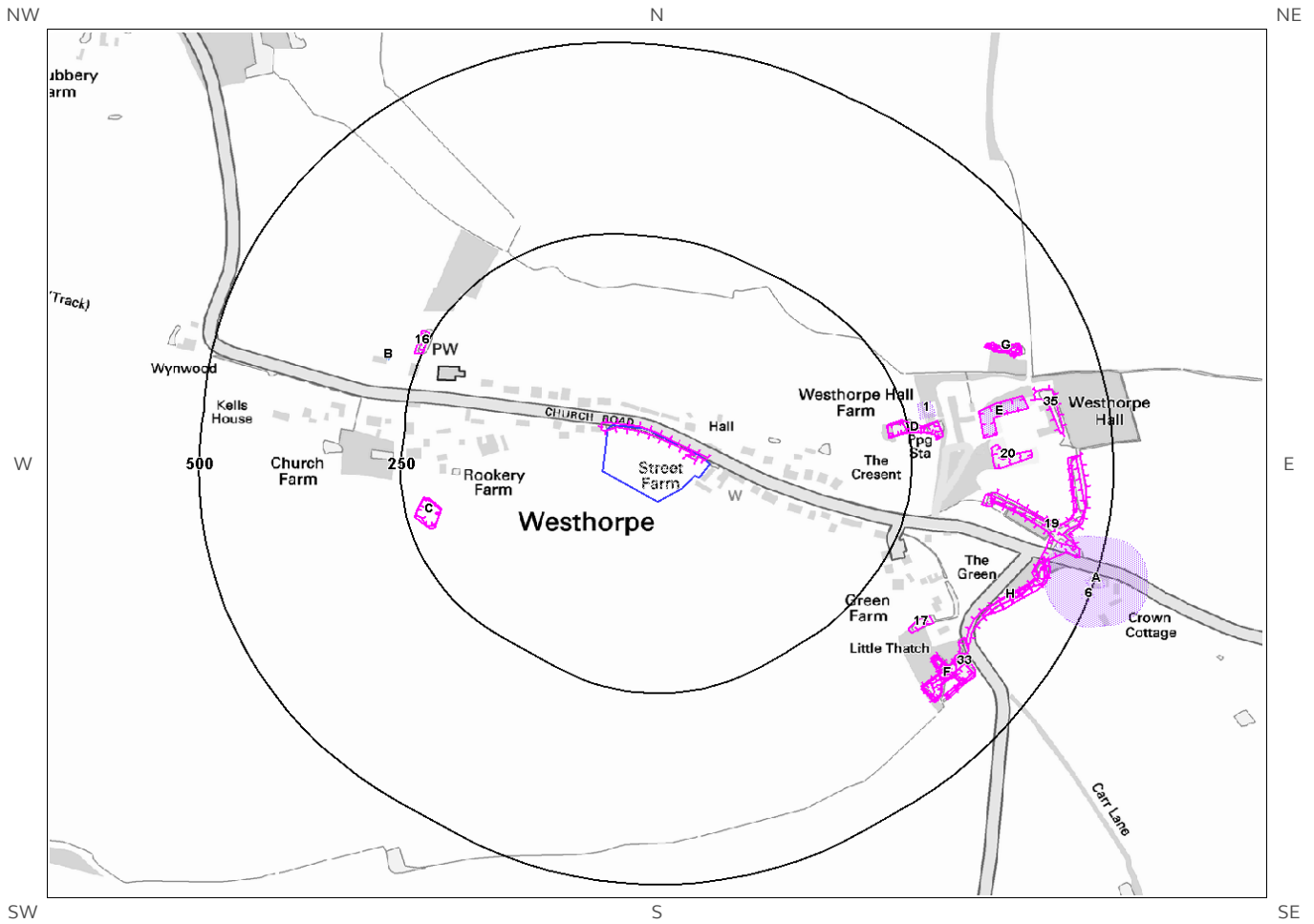
### Note: Maps

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).

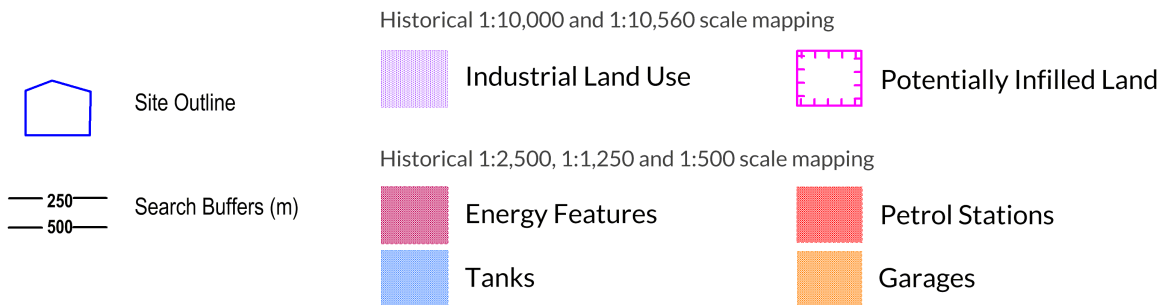
Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

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



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# 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: 6

ID	Distance [m]	Direction	Use	Date
1	267	E	Pumping Station	1983
2E	340	E	Unspecified Pit	1957
3A	436	E	Smithy	1950
4A	436	E	Smithy	1884
5A	489	E	Smithy	1905
6	491	E	Smithy	1957

## 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: 2

ID	Distance (m)	Direction	Use	Date
7B	284	W	Unspecified Tank	1884
8B	284	W	Unspecified Tank	1904

## 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: 0

Database searched and no data found.

## 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: 0

Database searched and no data found.

## 1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 27

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

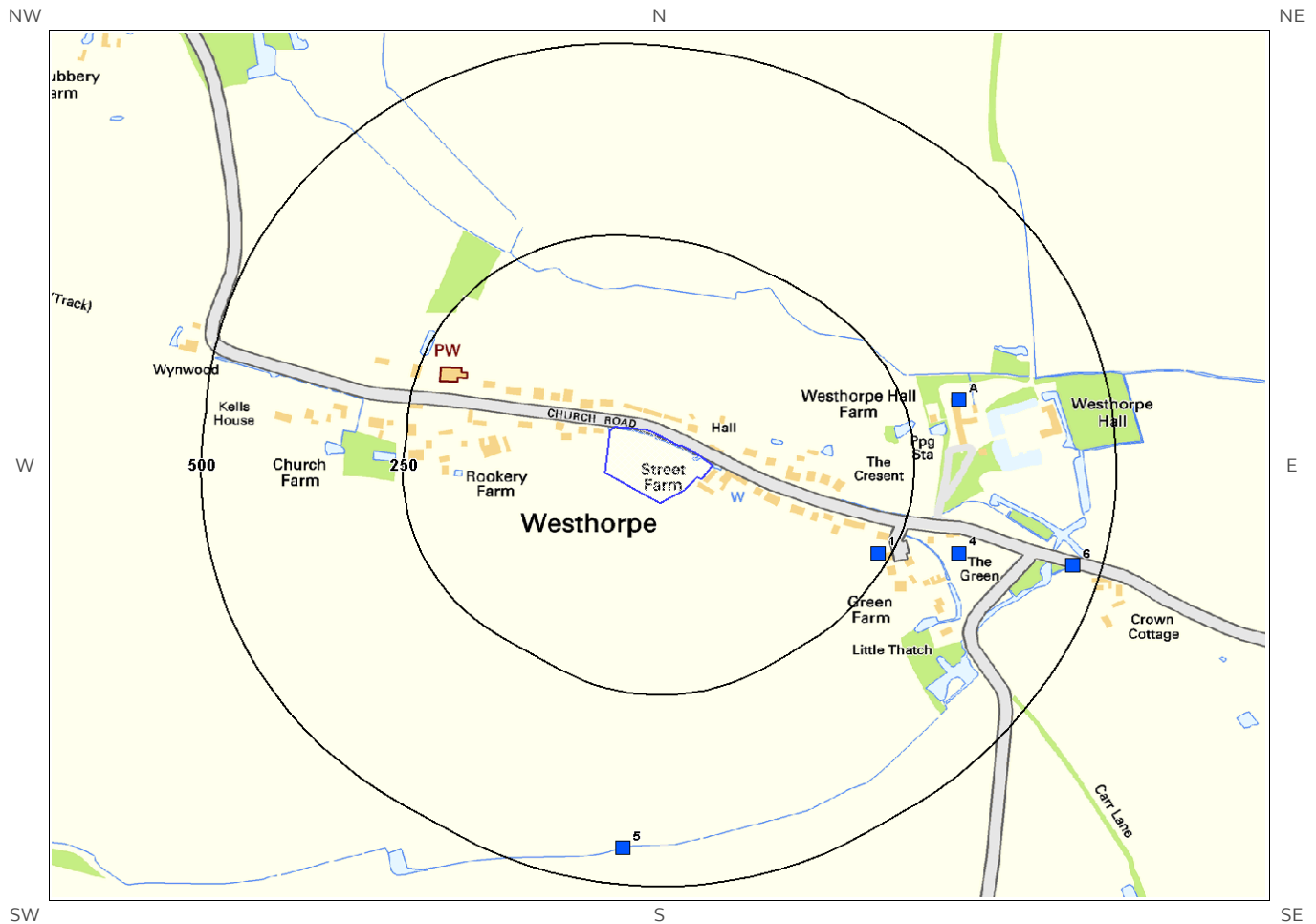
ID	Distance(m)	Direction	Use	Date
9	0	On Site	Ponds	1884
10C	206	W	Ponds	1983
11C	206	W	Ponds	1950
12C	207	W	Ponds	1905
13D	224	E	Ponds	1905
14D	225	E	Ponds	1983
15D	225	E	Ponds	1950
16	249	NW	Pond	1905
17	326	SE	Pond	1905
18E	340	E	Unspecified Pit	1957
19	341	E	Ponds	1957
20	349	E	Pond	1957
21	350	E	Ponds	1983
22F	371	SE	Pond	1905
23F	373	SE	Pond	1884
24G	373	NE	Pond	1957
25F	373	SE	Pond	1983
26F	373	SE	Pond	1950
27F	374	SE	Pond	1950
28G	375	NE	Pond	1950
29G	375	NE	Pond	1884
30G	376	NE	Pond	1905
31H	384	SE	Pond	1884
32H	384	SE	Pond	1950

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












33	386	SE	Pond	1983
34H	391	SE	Pond	1983
35	411	E	Pond	1957

---

# 2. Environmental Permits, Incidents and Registers Map



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

0

Database searched and no data found.

### 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:

6

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

ID	Distance (m)	Direction	NGR	Details	
1	235	SE	604900 269000	Address: GREEN FARM, WESTHORPE, BACTON, STOWMARKET, IP14 4LD Effluent Type: UNSPECIFIED Permit Number: PR4LF78038 Permit Version: 1	Receiving Water: land Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 22/02/1978 Effective Date: 22-Feb-1978 Revocation Date: 09/09/1998
2A	317	E	605000 269200	Address: WESTHORPE, THE CRESCENT (6 DWELLINGS) Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: AW4NF772X Permit Version: 2	Receiving Water: River Dove NT Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 04/06/1984 Effective Date: 04-Jun-1984 Revocation Date: -
3A	317	E	605000 269200	Address: WESTHORPE, THE CRESCENT (6 DWELLINGS) Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: AW4NF772X Permit Version: 1	Receiving Water: River Dove NT Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 09/03/1973 Effective Date: 09-Mar-1973 Revocation Date: 03/06/1984
4	326	E	605000 269000	Address: BEDFIELD ( 10 DWELLINGS), BEDFIELD, WOODBRIDGE, IP Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: AW4NF439X Permit Version: 1	Receiving Water: Trib River Deben Status: PRE NRA LEGISLATION WHERE ISSUE DATE < 01-SEP-89 (HISTORIC ONLY) Issue date: 28/02/1964 Effective Date: 28-Feb-1964 Revocation Date: 13/02/1969
5	453	S	604584 268615	Address: FLINT BARN, PARK FARM, WYVERSTONE, STOWMARKET, SUFFOLK, IP14 4SP Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD010930 Permit Version: 1	Receiving Water: TRIB OF THORNDON POOL Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 07/04/2010 Effective Date: 07-Apr-2010 Revocation Date: -

ID	Distance (m)	Direction	NGR	Details	
6	465	E	605141 268984	Address: THE OLD CROWN, FINNINGHAM ROAD, WESTHORPE, STOWMARKET, SUFFOLK, IP14 4TE Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD008826 Permit Version: 1	Receiving Water: UN-NAMED TRIB OF RIVER DOVE Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 13/08/2009 Effective Date: 13-Aug-2009 Revocation Date: -

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:

0

Database searched and no data found.

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

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

## 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	1492	E	606200 269100	Site Address: The Old Forge, Westhorpe Road, Finningham, Suffolk Waste Licence: Yes Site Reference: 907/01/13/29, FSMS 11 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 07-Nov-1988 Licence Surrendered: Licence Holder Address: The Old Forge, Westhorpe Road, Finningham, Stowmarket Operator: R P Miller Licence Holder: Mr and Mrs R P Miller First Recorded: 07-Nov-1988 Last Recorded: 31-Dec-1989

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.

---

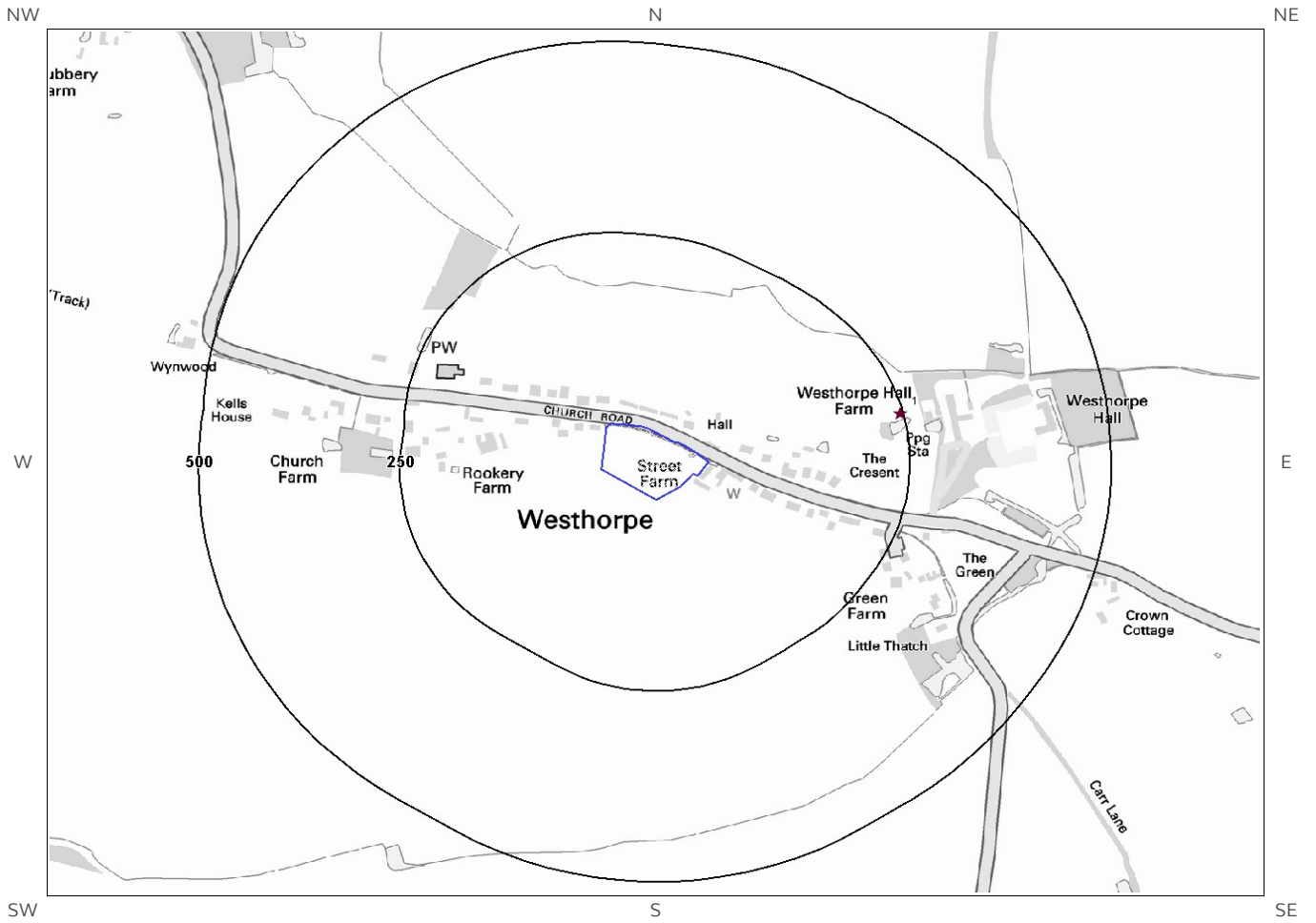
#### 3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

---

# 4. Current Land Use Map



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-  Site Outline
-  Current Industrial Sites
-  Electricity Transmission Cables
-  Search Buffers (m)
-  Petrol & Fuel Sites
-  Gas Transmission Pipelines



# 4. Current Land Uses

## 4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 1

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	246	E	Pumping Station	604933 269179	IP14	Water Pumping Stations	Industrial Features

## 4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

## 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

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

Lex Code	Description	Rock Type
LOFT-DMTN	LOWESTOFT FORMATION	DIAMICTON

---

## 5.3 Bedrock and Solid Geology

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

Lex Code	Description	Rock Type
CRAG-S	CRAG GROUP	SAND

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

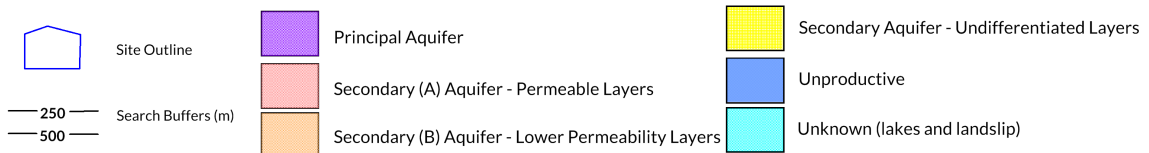
---

# 6 Hydrogeology and Hydrology

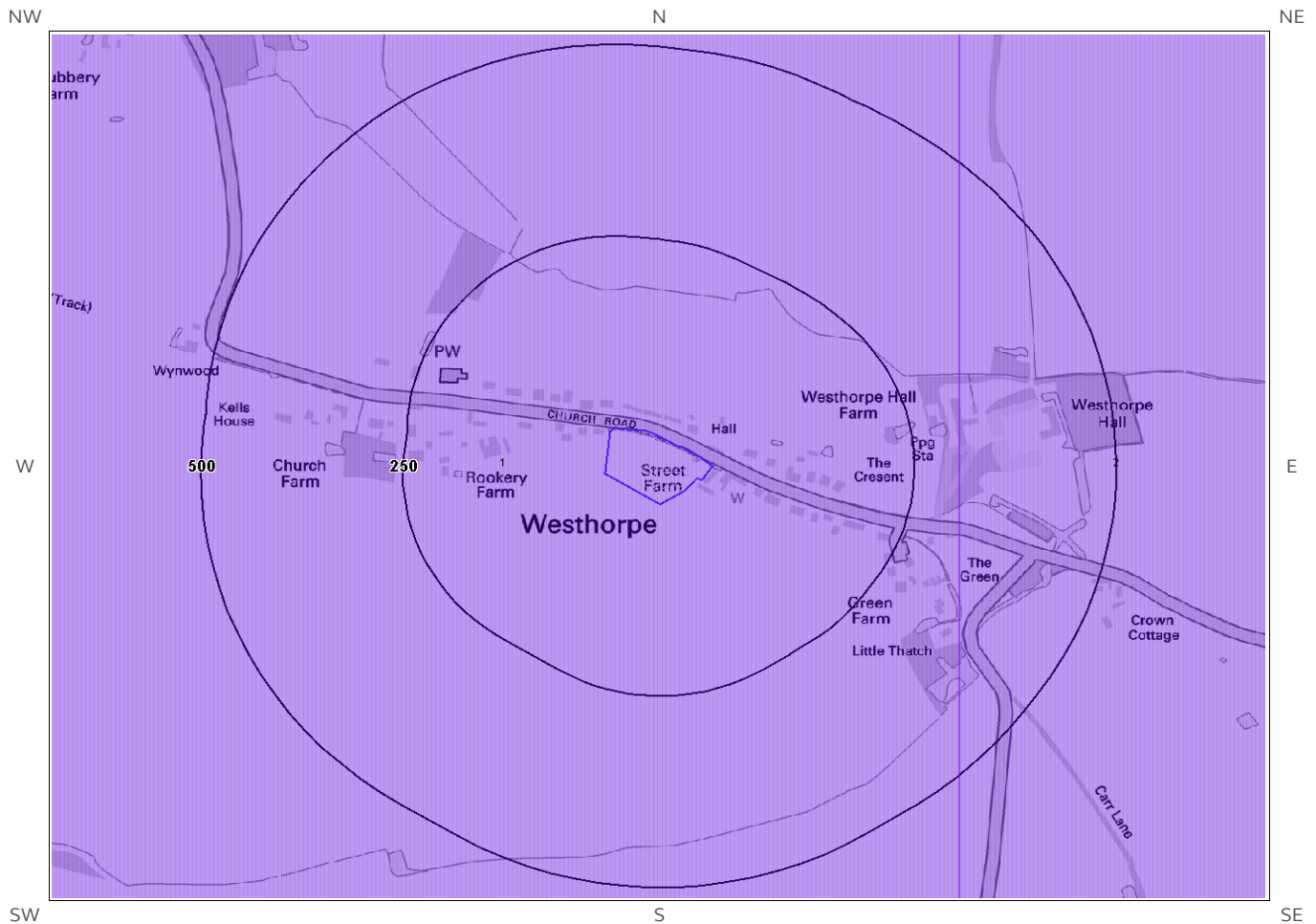
## 6a. Aquifer Within Superficial Geology



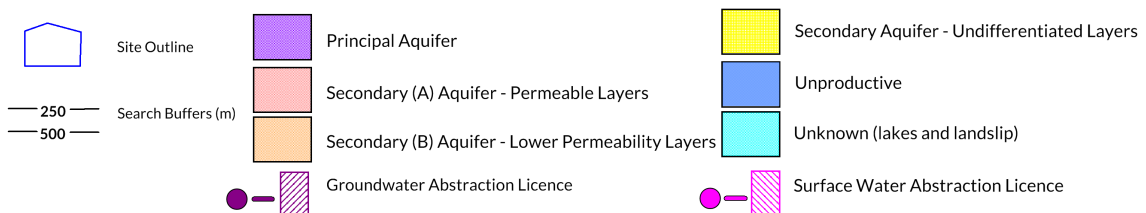
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# 6b. Aquifer Within Bedrock Geology and Abstraction Licenses

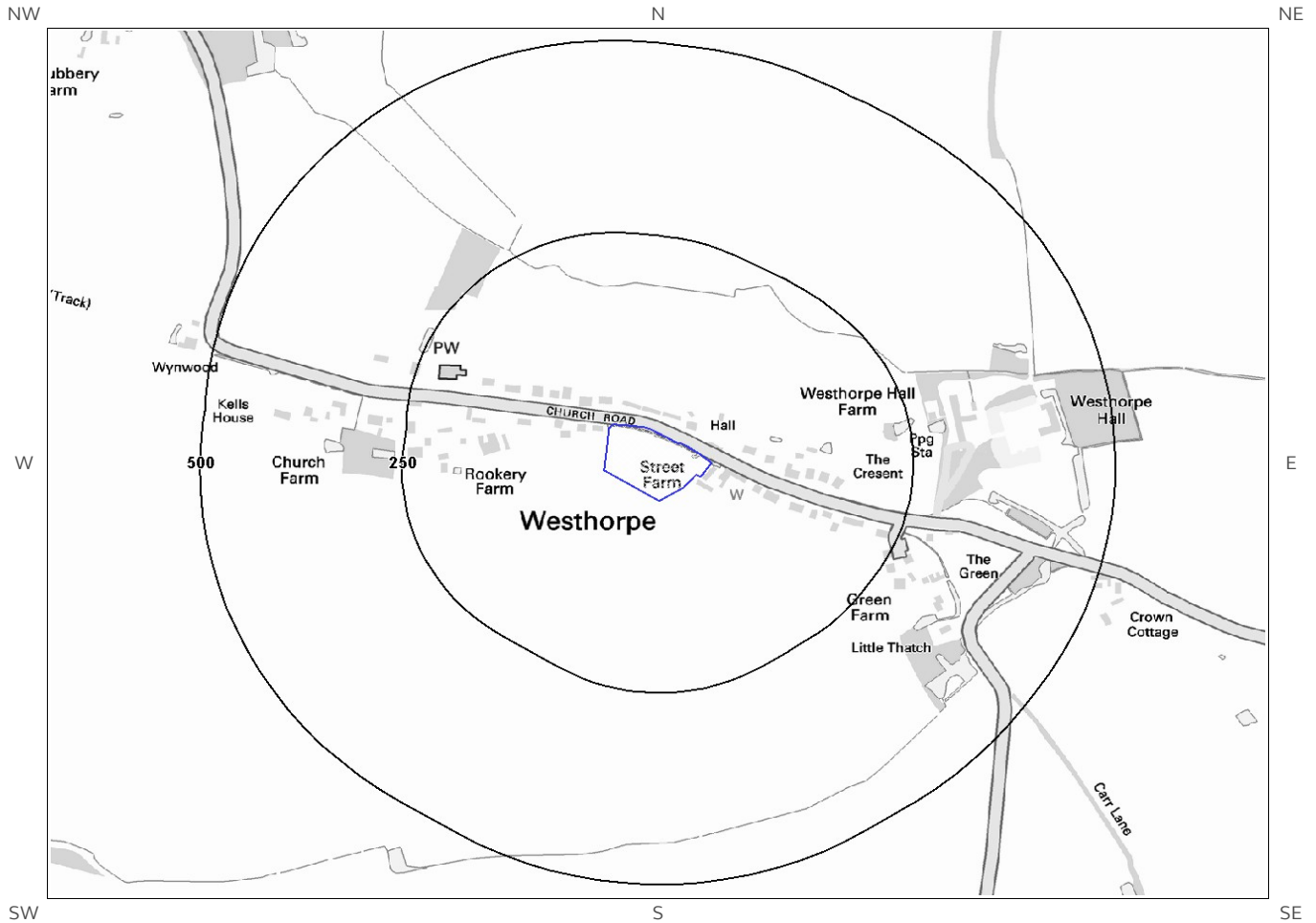


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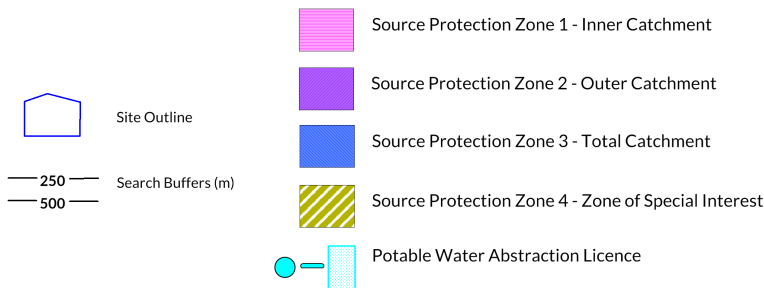




# 6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



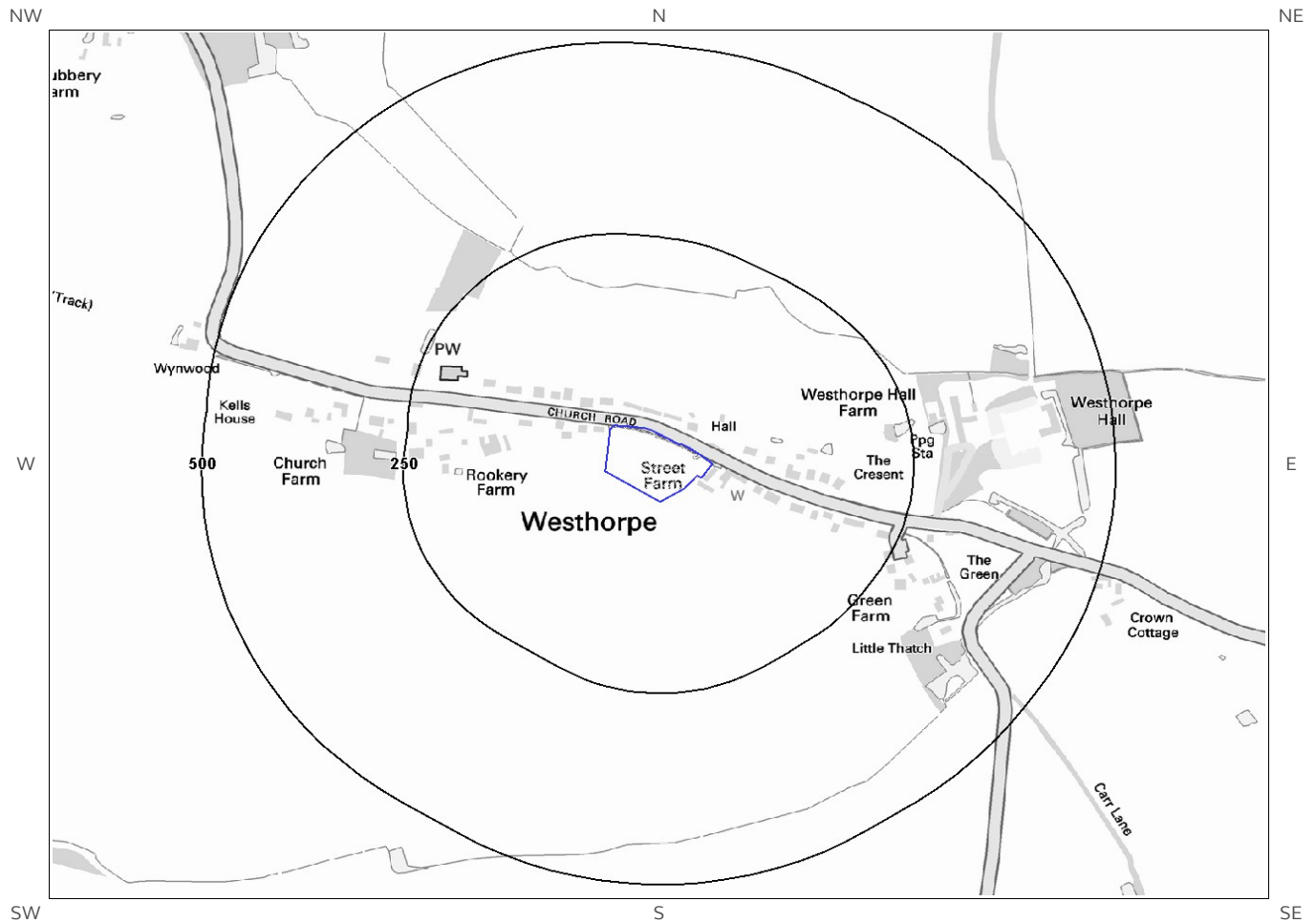
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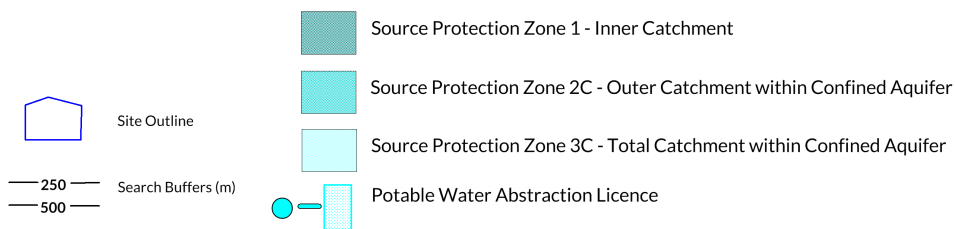




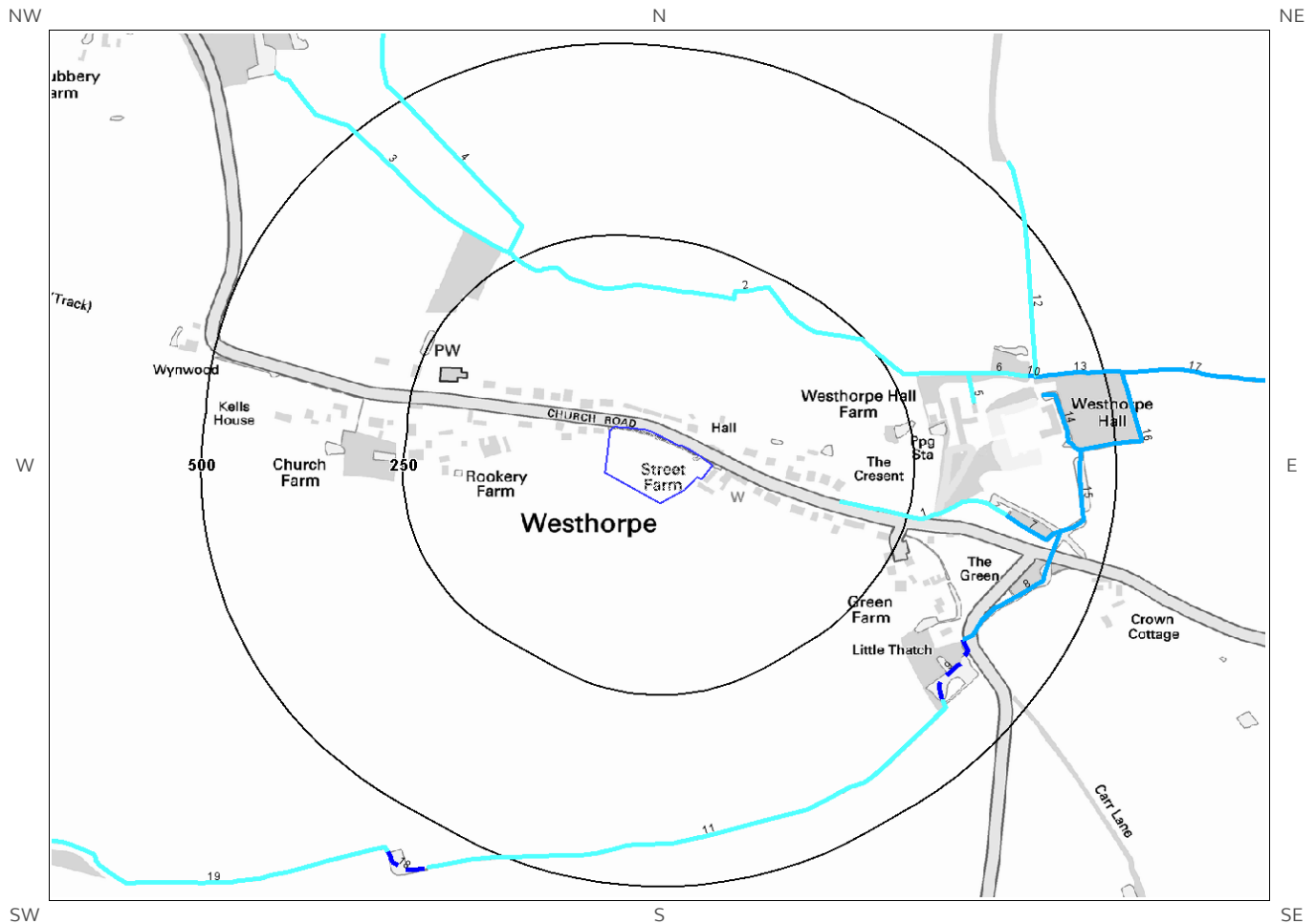
# 6d. Hydrogeology – Source Protection Zones within confined aquifer








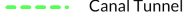



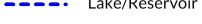
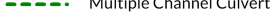
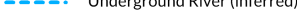
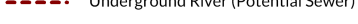

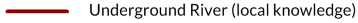

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# 6e. Hydrology – Detailed River Network and River Quality



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- |  |   |  |
|--|---|--|
|  Site Outline           |  Primary River                         |  Canal                               |
|  250 Search Buffers (m) |  Secondary River                       |  Canal Tunnel                        |
|  500 Search Buffers (m) |  Tertiary River                        |  Culvert                             |
|  |  Lake/Reservoir                        |  Multiple Channel Culvert            |
|  |  Underground River (inferred)          |  Underground River (Potential Sewer) |
|  |  General Quality Assessment: Biology   |  Underground River (local knowledge) |
|  |  General Quality Assessment: Chemistry |  |

# 6. Hydrogeology and Hydrology

## 6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial 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 Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
3	0	On Site	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	305	E	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
1	321	E	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

## 6.2 Aquifer within Bedrock Deposits

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	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	305	E	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

## 6.3 Groundwater Abstraction Licences

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	967	NW	603890 269850	<p>Status: Historical Licence No: 7/34/17/*G/0020 Details: General Farming &amp; Domestic Direct Source: Ground Water Source Of Supply Point: Bore At Pear Tree Fm,westhorpe Data Type: Point Name: THOMAS</p> <p>Annual Volume (m<sup>3</sup>): - Max Daily Volume (m<sup>3</sup>): - Original Application No: - Original Start Date: 1/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/8/1981 Version End Date:</p>
Not shown	1846	NW	603200 270400	<p>Status: Historical Licence No: 6/33/41/*G/0106 Details: General Farming &amp; Domestic Direct Source: Ground Water Source Of Supply Point: Borehole At Botany Farm Data Type: Point Name: TROOP &amp; RICE</p> <p>Annual Volume (m<sup>3</sup>): - Max Daily Volume (m<sup>3</sup>): - Original Application No: - Original Start Date: 1/6/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/6/1966 Version End Date:</p>

## 6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

## 6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

## 6.6 Source Protection Zones

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

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

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/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
125	SW	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
225	N	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

## 6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site Identified

### 6.9.1 Biological Quality:

Database searched and no data found.



Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GQAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
Not shown	714	NW	604100 269700	River Name: Dove Reach: Westthorpe River Dove End/Start of Stretch: Start of Stretch NGR	D	D	D	C	D

## 6.10 Detailed River Network

Detailed River Network entries within 500m of the study site

Identified

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1	164	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
2	181	N	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
3	262	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
4	262	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
5	333	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
6	339	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
7	370	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
8	384	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
9	384	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Lake/Reservoir Main River Status: Currently Undefined
10	409	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
11	413	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
12	416	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
13	416	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
14	418	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
15	439	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
16	456	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

## 6.11 Surface Water Features

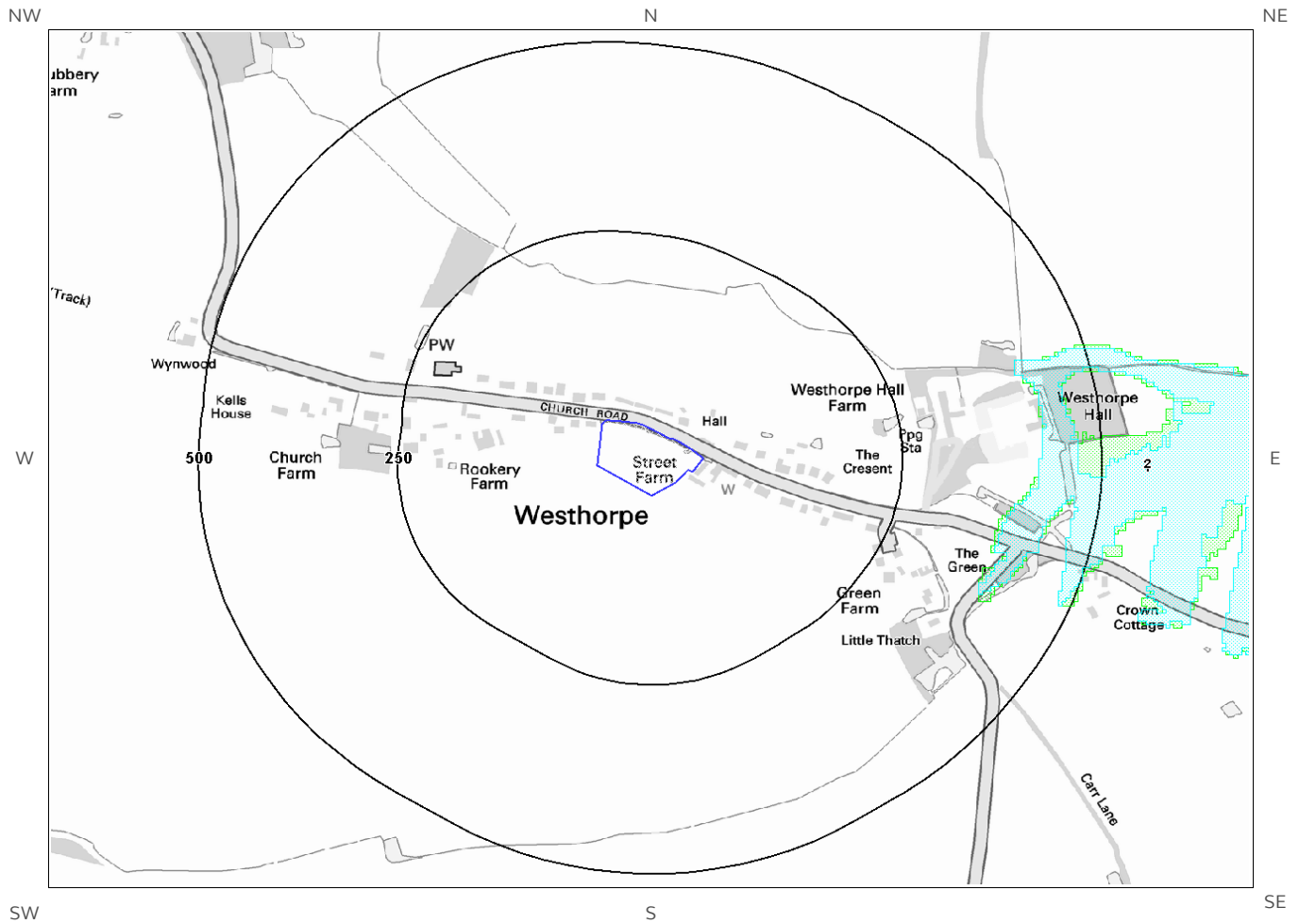
Surface water features within 250m of the study site

Identified

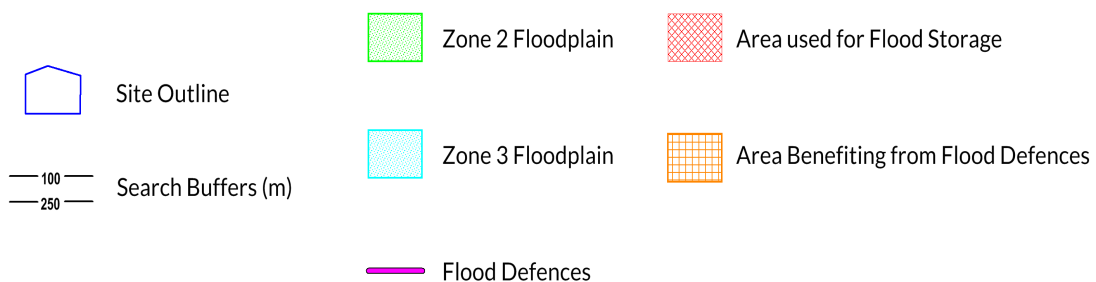
The following surface water records are not represented on mapping:

Distance (m)	Direction
0	On Site
0	On Site
164	E
181	N
229	E
230	NE

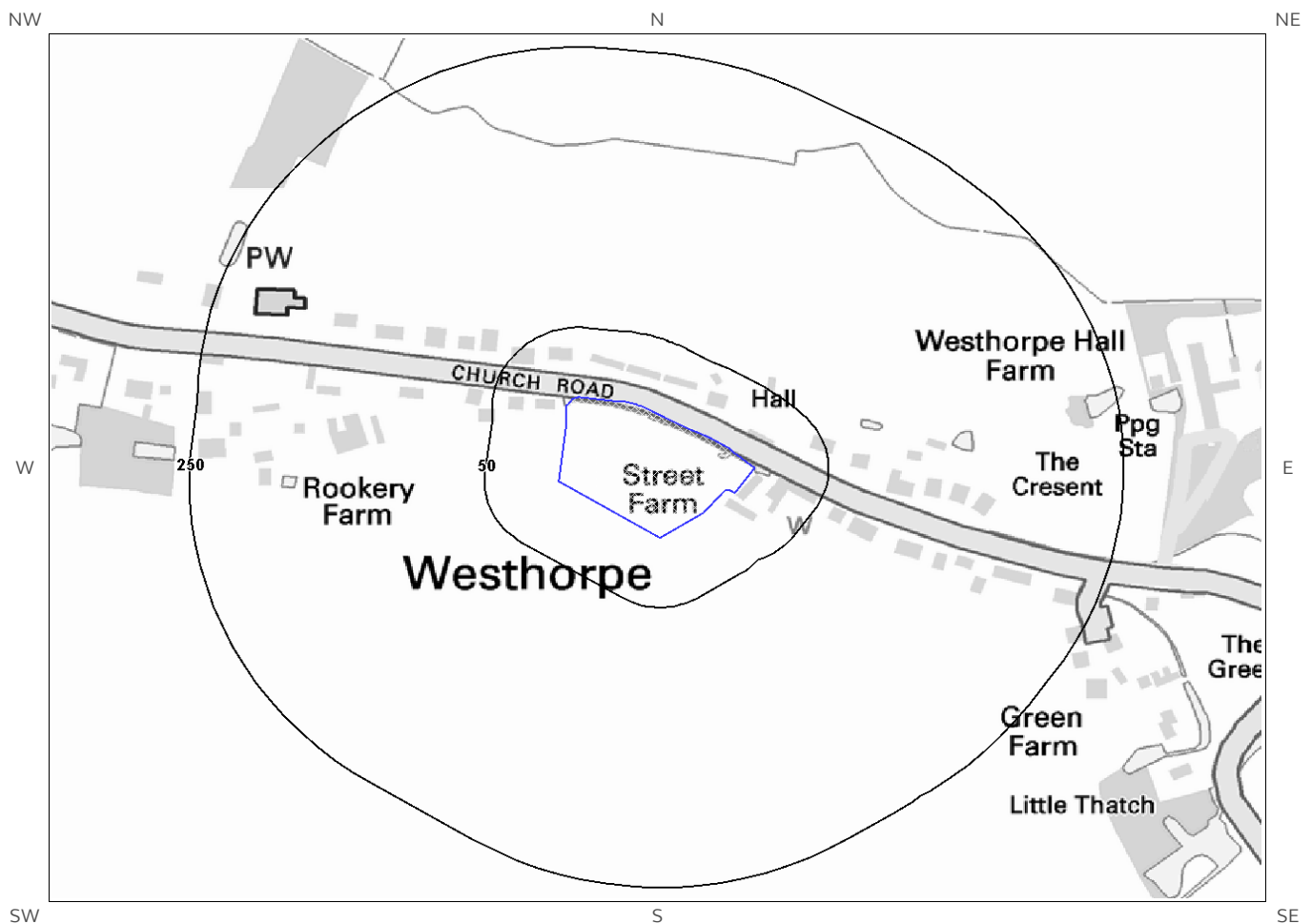
# 7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



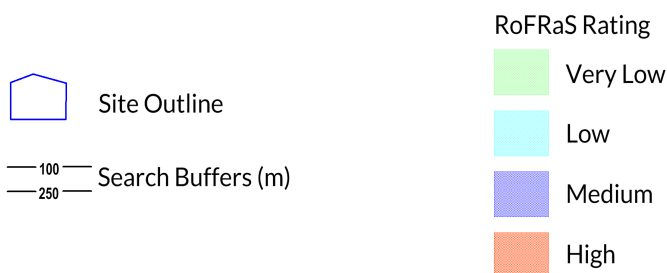
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# 7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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# 7 Flooding

## 7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m 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

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m 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

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

Flood Defences within 250m of the study site None identified  
Database searched and no data found.

---

## 7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site None identified

---



## 7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site

None identified

## 7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site

Identified

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 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

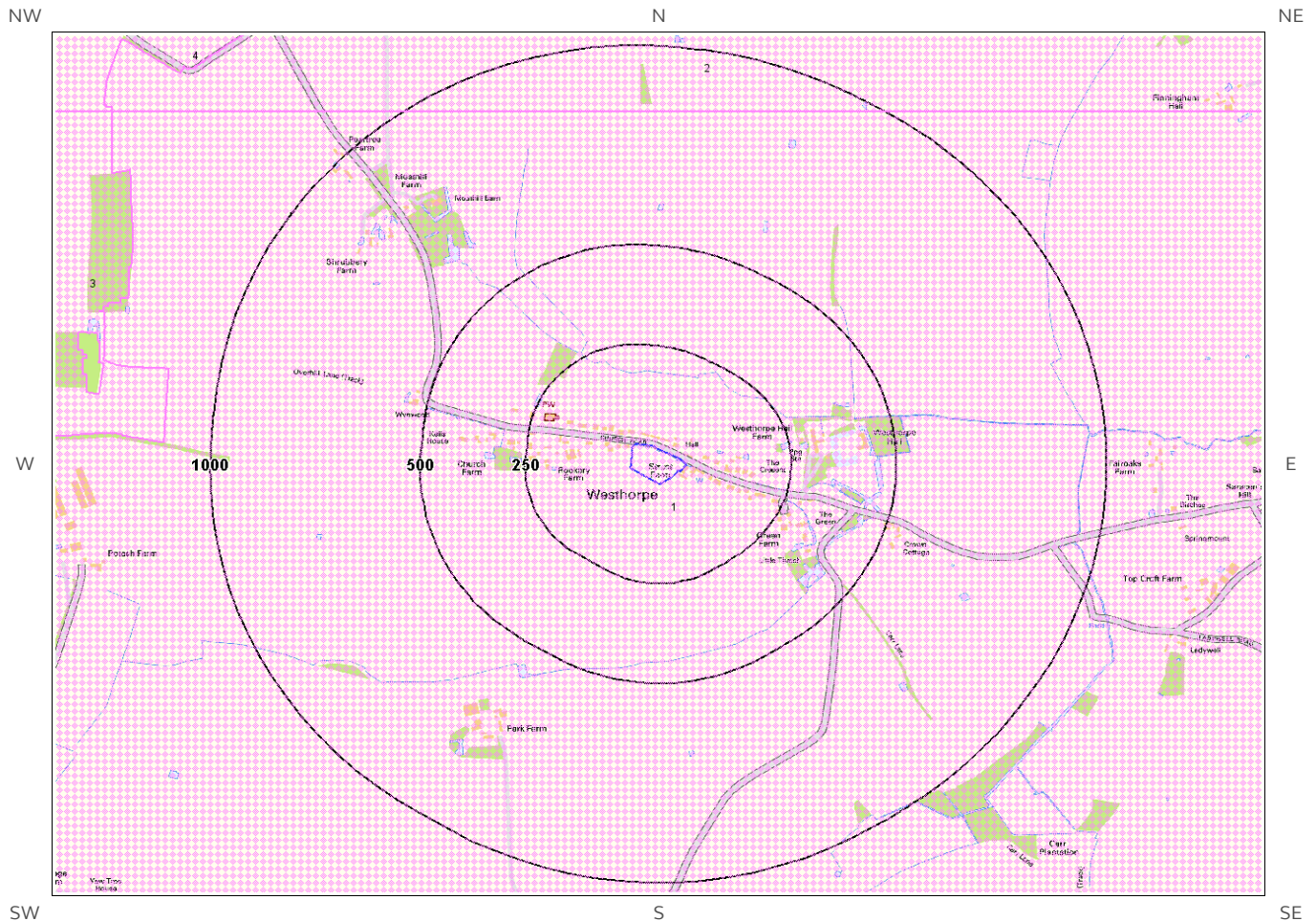
British Geological Survey confidence rating in this result

Low

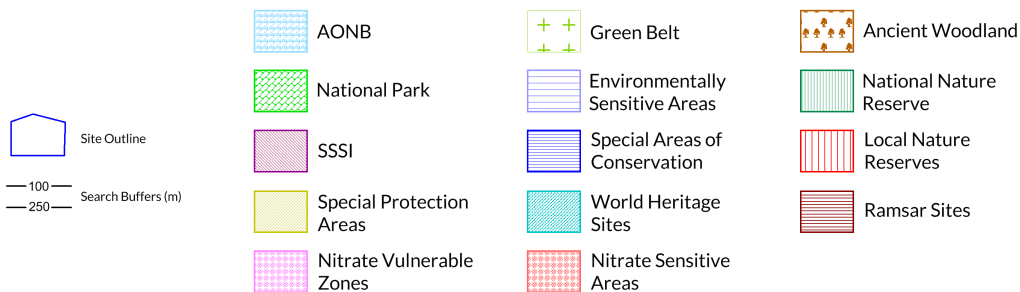
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

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



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# 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:

Database searched and no data found.

---

0

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

Database searched and no data found.

---

0

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

Database searched and no data found.

---

0

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

Database searched and no data found.

---

0

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

Database searched and no data found.

---

0

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

Database searched and no data found.

---

0

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

Database searched and no data found.

---

0

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

4

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
2	835	N	Existing	DEFRA
3	1111	W	Existing	DEFRA
4	1196	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

Maximum Shrink-Swell\*\* hazard rating identified on the study site Low

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

Hazard
Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

### 9.1.2 Landslides

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

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

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

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

Maximum Running Sand\*\* 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**

Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. 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

Radon Affected Area assessment: The site is not in a Radon Affected Area, as less than 1% 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

Radon protection measures requirements for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment: No radon protective measures are necessary.

# 10. Mining

## 10.1 Coal Mining

Coal mining areas within 75m of the study site None identified

Database searched and no data found.

---

## 10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary None identified

Database searched and no data found.

---

## 10.3 Brine Affected Areas

Brine affected areas within 75m of the study site None identified  
Guidance: No Guidance Required.

---

# Contact Details

**Brown2Green Associates Ltd**  
Telephone: 08444 159 000  
philip.miles@brown2green.co.uk



## 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](http://www.bgs.ac.uk)

BGS Geological Hazards Reports and general geological enquiries:  
[enquiries@bgs.ac.uk](mailto: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](http://www.environment-agency.gov.uk)

Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)



## Public Health England

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Public Health England, Wellington House  
133-155 Waterloo Road, London, SE1 8UG  
[www.gov.uk/phe](http://www.gov.uk/phe)

Email: [enquiries@phe.gov.uk](mailto:enquiries@phe.gov.uk)  
Main switchboard: 020 7654 8000



**Public Health England**

## The Coal Authority

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Mansfield  
Notts NG18 4RG  
Tel: 0345 7626 848  
DX 716176 Mansfield 5  
[www.coal.gov.uk](http://www.coal.gov.uk)



**The Coal Authority**

## Ordnance Survey

Adanac Drive, Southampton  
SO16 0AS  
Tel: 08456 050505



## Local Authority

Authority: Mid Suffolk District Council  
Phone: 0845 606 6067

Web: <http://www.midsuffolk.gov.uk/>

Address: Council Offices, 131 High Street, Needham Market,

## Gemapping PLC

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







**Groundsure**

LOCATION INTELLIGENCE



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.

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