



**SHADBOLT**  
ENVIRONMENTAL



Newton Park, Mitford

Desktop Study Assessment

For Mitford Estate LLP

Issue V1

April 2020



**SHADBOLT**  
GROUP

# Newton Park, Mitford

## Desktop Study Assessment

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## CONTENTS

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>SITE INFORMATION .....</b>	<b>2</b>
2.1	General.....	2
2.2	Site Description .....	3
<b>3.0</b>	<b>HISTORICAL LAND USE .....</b>	<b>4</b>
<b>4.0</b>	<b>ENVIRONMENTAL SETTING .....</b>	<b>5</b>
4.1	Geology, Mining, Ground Stability and Ground Workings.....	5
4.1.1	Geology .....	5
4.1.2	Coal Mining .....	5
4.1.3	Non-coal Mining and Natural Cavities .....	5
4.1.4	Ground Stability .....	5
4.1.5	Ground Workings.....	6
4.2	Radon .....	6
4.3	Soil Chemistry.....	6
4.4	Hydrogeology, Hydrology, Flood Risk and Drainage Issues .....	6
4.4.1	Hydrogeology.....	6
4.4.2	Hydrology and Flood Risk.....	6
4.4.3	Watercourse Network, Surface Water Features.....	7
4.4.4	Groundwater, Surface Water and Potable Water Abstraction Licences .....	7
4.4.5	Source protection Zones.....	7
4.4.6	Groundwater Vulnerability .....	7
4.5	Environmental Permits, Incidents and Registers.....	7
4.5.1	Industrial Sites Holding Environmental Permits and/or Authorisations .....	7
4.5.2	Dangerous or Hazardous Sites .....	8
4.5.3	Environment Agency Recorded Pollution Incidents.....	8
4.5.4	Contaminated Land.....	8
4.6	Landfill and Other Waste Sites.....	8
4.6.1	Landfill Sites .....	8
4.6.2	Other Waste Sites .....	8
4.7	Current Land Uses.....	8
4.8	Designated Environmentally Sensitive Sites.....	9
<b>5.0</b>	<b>PREVIOUS INVESTIGATIONS .....</b>	<b>10</b>
<b>6.0</b>	<b>CONCEPTUAL SITE MODEL.....</b>	<b>11</b>
6.1	Contaminated Land Regulations.....	11
6.2	Potential Hazard Sources .....	12
6.3	Potential Contaminant Pathways .....	12
6.4	Potential Receptors at Risk .....	13
6.5	Risk Assessment .....	13
<b>7.0</b>	<b>GROUND ENGINEERING CONSIDERATIONS .....</b>	<b>16</b>

7.1	Site Access .....	16
7.2	Ground Obstructions .....	16
7.3	Existing Structures.....	16
7.4	Settlement and Subsidence .....	16
7.5	Slope Stability.....	16
7.6	Excavations.....	16
7.7	Foundations / Earthworks .....	17
7.8	Flooding Issues.....	17
7.9	Environmental Issues .....	17
7.10	Invasive species.....	17
7.10	Mining Issues.....	17
7.11	Archaeological Issues .....	17
<b>8.0</b>	<b>SUMMARY CONCLUSIONS.....</b>	<b>18</b>
<b>9.0</b>	<b>RECOMMENDATIONS .....</b>	<b>19</b>
<b>10.0</b>	<b>REFERENCES .....</b>	<b>20</b>

## APPENDICES

Appendix A	Report Conditions
Appendix B	Historical Plans
Appendix C	Enviro/Geo Insite Report
Appendix D	Site Walkover Photos

## 1.0 INTRODUCTION

**Shadbolt Group (SG)** were commissioned by the Client, **Mitford Estate LLP.**, to carry out a Preliminary Risk Assessment (PRA), also referred to as Desk Top Study or Phase 1 Investigation in respect of the proposed barn conversions at Newton Underwood in Mitford near Morpeth.

This report provides an overview of the site and has been compiled from a review of readily available information, published data, historical information, preliminary data searches and a site walk over and is intended as preliminary appraisal only.

The following list of information sources represent the 'standard' documents, datasets or surveys undertaken during the production of a Preliminary Risk Assessment. Where additional sources are incorporated including previous investigations carried at or surrounding the site these are referenced in Section 10.

- Site walkover survey.
- Historical and Recent Ordnance Survey maps and plans.
- British Geological Survey.
- The Environment Agency.
- Groundsure Report.
- The Coal Authority.
- NRPB-W26 'Radon Atlas of England and Wales,' NRPB, 2002.
- CIRIA 132 'A guide for safe working on contaminated sites,' CIRIA, 1996.
- CIRIA C552 'Contaminated Land Risk assessment. A guide to good practice,' CIRIA, 2001.
- BS10175 'Investigation of potentially contaminated sites – code of practice,' BS, 2011.
- CLR 11: Model Procedures for the management of land contamination (EA 2004)
- Environmental Protection Act 1990: Part IIA
- Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance April 2012.
- Ciria C733 Asbestos in soil and made ground: a guide to understanding and managing risks, March 2014.

This report has been prepared in accordance with the letter of appointment, report conditions and the terms and conditions of the agreement.



## 2.0 SITE INFORMATION

### 2.1 General

The site is located North-West of Mitford, Northumberland approximately 4km West of Morpeth. The site has an area of approximately 0.61ha and is currently a functioning farmyard occupied by farm buildings.

The approximate National Grid Reference (NRG) for the centre of the site is 415794m East, 586607m North.

A general site location plan of the site is presented as Figure 1 and an aerial photograph as Figure 2.

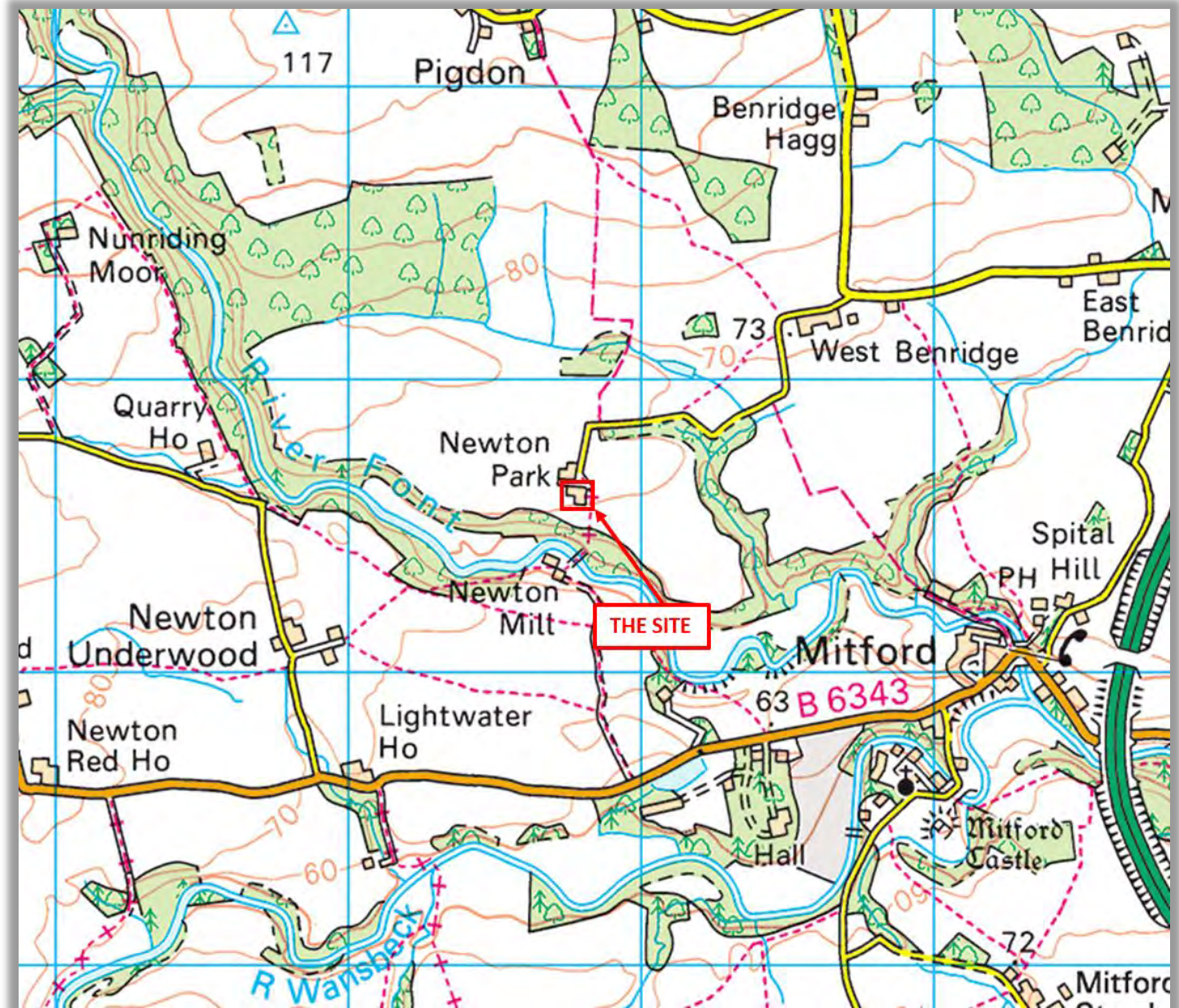


Fig. 1 – General Site Location Plan

## 2.2 Site Description

The site comprises a rectangular plot of land to the North-West of Mitford. Set in rural Northumberland, the site is generally bounded by arable farmland and grassland. A natural track intersects the site to the North and East connecting the farm buildings on site which are relatively central to the site and cover approximately 50% of the site.

During site reconnaissance no significant obvious visual or olfactory evidence of contamination was noted. There is residential dwelling located in the northwest section of the site currently in good state of repair.

Farm structures are present directly East of the residential dwelling and are typical of farm buildings encountered in the estate comprising sandstone block construction with a slate roof. The main structure appears to be in reasonable condition however holes were noted within the roof.

Farm/stable buildings are located directly South-East of the residential dwelling and appears to be in reasonable state of repair. Roof materials appear to be asbestos cement sheeting. Horses were observed within the central courtyard and stables.

2 No. of storage buildings are located in the South-East of the site and are of more modern construction, observable in the site photos, and comprise steel portal frame with corrugated metal roofing and side panels. The taller more northerly shed was open on all four sides whilst the shorter shed on the southern boundary was enclosed on 3 No. sides (block work and corrugate metal sheets). Both sheds were used for vehicle and materials (feed) storage and appeared to be in good condition.



Fig.2 – Aerial Photograph Showing the Development Area



### 3.0 HISTORICAL LAND USE

The following provides a summary of the historical land use of the site respectively and its surroundings. This information is drawn from a study of available historical plans contained within the GroundSure report presented in Appendix B.

Map Date	Site	Surrounding Area
<b>1855 to 1897</b>	The site comprises farm buildings located in a similar position to the present day. A track intersects the site to the North and East. A circular structure to the centre is considered to be a silo or water tank.	Structures associated with Newton Mill are present approximately 240m to the South.  The site is bounded by arable farmland and grassland, two small farm buildings are present to the immediate North and North-West.  Front Wood and East Wood are present within 100m South of the site. The River Font runs West to East within 250m to the South of the site.  Properties including an Inn, a Church and Mitford Hall are located approximately 1km South-East of the site.
<b>1922 to Present</b>	The circular structure has been removed and two large farm buildings have been developed on the South of the site doubling the amount of land built upon on site.	The surrounding areas have remained mainly undeveloped and used as arable farmland, grassland and associated farm buildings. A small farm building has been developed approximately 50m North of the site adjacent to the track.

#### Summary

The site has historically consisted of farm buildings with further development between 1923 and 1973. The removal of a potential tank and the construction of a small farm building 50m north of the site also occurred during this time.

The remaining immediate surrounding areas of the site have remained predominantly undeveloped / agricultural fields and arable pastures for livestock since the 1850s to present day. Evidence of developments such as Newton Mill 240m South and various large buildings approximately 1km South-East of the site have been mapped historically.

## 4.0 ENVIRONMENTAL SETTING

Details of the geology underlying the site were gained from BGS Plans, GroundSure's Geo-Insight Report. The Insight reports are included in **Appendix C**

Information on potentially contaminative activities/conditions and details of any areas of environmental sensitivity and/or under legislative protection in the vicinity of the site are detailed within Insight Report, included in **Appendix C**.

The following sections represent a brief overview of the salient points contained within the above reports, for more detailed information reference should be made to the original documents.

### 4.1 Geology, Mining, Ground Stability and Ground Workings

#### 4.1.1 Geology

No artificial deposits (Made Ground) are indicated within the site boundary.

Geological plans indicate that the site is underlain by superficial glaciofluvial deposits of diamicton till.

The solid geology beneath the site predominantly comprises undifferentiated Mudstone, Siltstone and Sandstone of the Stainmore Formation (of Namurian age).

There no borehole records available to view around the site; therefore, it would be difficult to comment on the current depth of rockhead within the site unless a site investigation is undertaken.

No faults are indicated to be present within 500m of the site.

#### 4.1.2 Coal Mining

The site is not located within an area where the effects of potential coal mining should be assessed as stated in the Groundsure report and verified by The Coal Authority's Gazetteer.

#### 4.1.3 Non-coal Mining and Natural Cavities

The BGS BRITPITS database contains no records relating to current ground workings within 1000m of the site.

**There is 1 No. Non-Coal Mining areas identified within the site boundary.** This relates to vein mineral extraction on a small scale. Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size and infrequent. However, the site is not within 500m of an area of Natural Cavities, Brine Extraction, Gypsum Extraction, Tin Mining, Clay Mining or any other Non-Coal Mining Activities.

#### 4.1.4 Ground Stability

The BGS consider the overall risk to the site from natural ground subsidence to be Low to negligible. This takes in to account the combined risks on site from Shrink-Swell Clays, Landslides, Soluble Rocks, Compressible Ground, Collapsible Rocks and Running Sands.

## 4.1.5 Ground Workings

There is 1 No. historical surface ground workings within 250m of the site. This record is located 245m south and relates to a historical water body feature.

There are no records of Historical Underground Workings Features within 1000m of the site.

The BGS BRITPITS database contains no records relating to Current Ground Workings active or closed within 1000m of the site.

## 4.2 Radon

Reference to the NRPB Report W26 'Radon Atlas of England and Wales,' 2002 and information contained in the EnviroInsight's report indicates the following.

The site is not in a Radon Affected Area as defined by the Health Protection Agency (HPA) as less than 1% of properties are above the Action Level.

The site is not in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment.

## 4.3 Soil Chemistry

There are 2 No. records of estimated background soil chemistry available from the BGS within 50m of the site. Both records display the same levels of contaminants present. Records are located both on-site and 5m from the site. 15mg/kg of arsenic, 100mg/kg of lead, 60mg/kg of bioaccessible lead, 1.8mg/kg of cadmium, 60-90mg/kg of chromium and 15-30mg/kg of nickel is estimated to be present. This is based upon a sample density of approximately 1 per 2-2.5km<sup>2</sup>.

## 4.4 Hydrogeology, Hydrology, Flood Risk and Drainage Issues

### 4.4.1 Hydrogeology

Information on the hydrogeological characteristics of the site has been obtained from the following:

- The Environment Agency Groundwater Vulnerability Maps
- The GroundSure Report

The superficial geology located beneath the site is designated as a **Secondary Aquifer (Undifferentiated)**; Secondary (Undifferentiated) is 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.

The solid geology located beneath the site is designated a **Secondary (A) Aquifer**; formerly classified as minor aquifers Secondary (A) Aquifers comprise 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.

### 4.4.2 Hydrology and Flood Risk

Information from the Environment Agency (EA) indicates that the site does not lie within 250m of an indicated Environment Agency Zone 2 or Zone 3 flood plain and can therefore be assumed to be located on land classed as Flood Zone 1.

Information from the Environment Agency RoFRaS (Risk of Flooding from Rivers and Sea) database indicates that the risk of surface flooding on the site is **Negligible** and the risk of groundwater flooding

on-site is **Low**. This classification indicates that the site has a less than 1 in 1000 chance of flooding in any given year.

The BGS indicate that the site does not lie within 50m of groundwater flooding susceptible areas and the highest risk of groundwater flooding within this distance is deemed to be **Low**. The BGS note that the area is not considered to be prone to groundwater flooding based on rock type.

Additionally, there are no Flood Defences or areas benefitting from Flood Defences or Flood Storage within 250m of the site.

### **4.4.3 Watercourse Network, Surface Water Features and Groundwater Features**

There are 4 No. Ordnance Survey Surface Water Feature Records within 250m and 2 No. Ordnance Survey MasterMap Water Network records within 250m of the site. The closest record is 136m South and relates to the River Font.

**There is 1 No. WFD Surface Water Body Catchment record on site.** This relates to a River WB Catchment and is within the Font from source to Wansbeck water body catchment.

**There is 1 No. Ordnance Survey MasterMap Water Surface Body within 500m of the site.** This relates to an inland river known as the River Font located 136m South of the site. Inland river not influenced by normal tidal action. It is on ground surface in relation to the ground level. Water course also contains water year around (in normal conditions). The WFD have deemed the chemical rating of this river as 'good'.

**There is 1 No. Ordnance Survey MasterMap Groundwater Body on site.** This relates to a groundwater body found on-site relating to the Northumberland Carboniferous Limestone and Coal Measures. The feature is deemed to have a chemical rating of 'poor' and overall rating of 'poor' by the WFD.

### **4.4.4 Groundwater, Surface Water and Potable Water Abstraction Licences**

There are no Groundwater Abstraction Licenses within 2000m of the site.

There are no Surface Water Abstraction Licence within 2000m of the site.

There are no Potable Water Abstraction Licences within 2000m of the site.

### **4.4.5 Source protection Zones**

**There is 1 No. Source Protection Zones within 250m of the site.** This record is 106m South-West of the site and is a Type 3 zone relating to total catchment.

There are no Source Protection Zones within a Confined Aquifer within 500m of the site.

### **4.4.6 Groundwater Vulnerability**

Superficial and Bedrock Vulnerability on-site is classified as Low relating to the Secondary Aquifers present and soils on-site are deemed to have a Low Leaching Potential.

Superficial Permeability on site is deemed to comprise mixed flow types with a High maximum permeability and a Low minimum permeability.

Bedrock permeability on site is deemed to consist of a fracture flow type with a High maximum permeability and a Low minimum permeability.

## **4.5 Environmental Permits, Incidents and Registers**

### **4.5.1 Industrial Sites Holding Environmental Permits and/or Authorisations**

There are no records of historic IPC Authorisations within 500m of the site.

There are no records of Part A (1) Authorised Industrial Activities within 500m of the site.

There are no records of Part A (2)/B Authorised Pollutant Release within 500m of the site.

There are no records of Red List Discharge Consents (potentially harmful discharges to surface waters) within 500m of the site.

There are no records of List 1 Dangerous Substances Inventory sites within 500m of the site.

There are no records of List 2 Dangerous Substances Inventory sites within 500m of the site.

There are no records of Radioactive Substance Authorisations within 500m of the site.

**There is 1 No. record of Licenced Discharges to Controlled Waters within 500m of the site.** This record is located 231m South of the site and relates to treated effluent discharge.

There are no records of Water Industry Referrals (potentially harmful discharges to public sewers) within 500m of the site.

There are no records of Planning Hazardous Substance Consents and Enforcements within 500m of the site.

## **4.5.2 Dangerous or Hazardous Sites**

There are no records of COMAH and NIHHS sites within 500m of the site.

## **4.5.3 Environment Agency Recorded Pollution Incidents**

There are no records on the Environment Agency National Incidents Recording System, List 2 within 500m of site.

There are no records on the Environment Agency National Incidents Recording System, List 1 within 500m of site.

## **4.5.4 Contaminated Land**

There are no records of Sites Determined as Contaminated Land under Part 2A EPA 1990 within 500m of the site.

## **4.6 Landfill and Other Waste Sites**

### **4.6.1 Landfill Sites**

There are no records of Environment Agency Registered Landfill Sites within 500m of the site.

There are no record of Environment Agency Historic Landfill Sites within 500m of the site.

There are no records on the BGS / DoE Landfill Site Survey Database within 500m of the site relating to a site.

There are no records of Local Authority Landfill Sites within 500m of the site.

### **4.6.2 Other Waste Sites**

There are no records of Waste Treatment, Transfer or Disposal Sites within 500m of the site.

There are no Environment Agency Licensed Waste Sites within 500m of the site.



## 4.7 Current Land Uses

**There are 5 No. records of Potentially Contaminative Industrial Sites within 500m of the site.** All records relate to various mills, the closest relating to a historical Corn Mill located 163m South of the site.

There are no records of Petrol and Fuel Sites within 500m of the site.

There are no records of historical tanks or historical energy features identified from historical Ordnance Survey mapping within 500m of the site.

There are no records of National Grid High Voltage Underground Electricity Transmission Cables within 500m of the site.

**There are 2 No. records of National Grid High Pressure Gas Pipelines** within 500m of the site. The closest location is situated 336m West of the site and related to a pipe running from Thrunton to Saltwick.

## 4.8 Designated Environmentally Sensitive Sites

There are no records of Sites of Special Scientific Interest (SSSI) on site.

There are no records of National Nature Reserves (NNR) within 2000m of the site.

There are no records of Special Areas of Conservation (SAC) within 2000m of the site.

There are no records of Special Protection Areas (SPA) within 2000m of the site.

There are no records of Ramsar Sites within 2000m of the site.

**There are 9 No. records of Ancient Woodland within 2000m of the site.** These relate to Ancient Replanted and Ancient and Semi-Natural Woodlands, the closest of which is Nunriding Wood recorded 55m South of the site.

There are no records of Local Nature Reserves (LNR) within 2000m of the site.

There are no records of World Heritage Sites within 2000m of the site.

There are no records of an Environmentally Sensitive Area within 2000m of the site.

There are no records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the site.

There are no records of National Parks within 2000m of the site.

There are no records of Nitrate Sensitive Areas within 2000m of the site.

There are no records of Nitrate Vulnerable Zones on site.

There are no records of Green Belt Land within 2000m of the site.

## 5.0 PREVIOUS INVESTIGATIONS

SE have not had sight of any previous ground investigation reports which may have been undertaken at the site and no borehole logs are available within close proximity to the site from the BGS.

## 6.0 CONCEPTUAL SITE MODEL

The information presented in the previous sections of this report has been collated and evaluated to establish an initial qualitative risk assessment and conceptual site model for the site. The following risk assessment identifies hazards posed both by, and to the site in its current status as well as potential future risks which may occur when the proposed end use is established. The proposed use of the site is **RESIDENTIAL (with Plant Uptake)** by conversion of existing farm buildings.

### 6.1 Contaminated Land Regulations

Part IIA of the Environmental Protection Act 1990 provides a regime for the control of specific threats to health or the environment from existing land contamination. In accordance with the Act, the statutory guidance document and The Contaminated Land (England) Regulations 2000, the definition of contaminated land is intended to embody the concept of risk assessment. Within the meaning of the Act, land is only “contaminated land” where it appears to the regulatory authority, by reason of substances within, on, or under the land that:

- **Significant harm** is being caused, or there is significant possibility of such harm being caused; or
- **Pollution of controlled waters** is being, or is likely to be, caused.

The guidance defines “risk” as the combination of:

- **Probability**, or frequency, of occurrence of a defined hazard (for example, exposure of a property to a substance with the potential to cause harm); and
- **Magnitude** (including the seriousness) of the consequences.

For a risk of pollution or environmental harm to occur as a result of ground contamination, all of the following elements must be present:

- **Source**, i.e. a substance that is capable of causing pollution or harm;
- **Receptor** (or target), i.e. something which could be adversely affected by the contaminant; and
- **Pathway**, i.e. a route by which the contaminant can reach the receptor.

If one of these elements is missing there can be **no significant risk**. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

## 6.2 Potential Hazard Sources

Based on a review of the information currently available for the site it is considered that the following potential sources of contamination may be present at the site:

### Actual / Potential on site sources

Given the site history and the current topography Made Ground is not likely to be present in significant quantities at the site. Any present will likely comprise disturbed natural materials from the site's agricultural / farm buildings history.

Considering the above, potential contaminants may include hydrocarbons (fuels and lubricants), sealants, solvents, asbestos, metals and metalloids and inorganic compounds but are unlikely to be present at significant concentrations.

However, asbestos cement sheets have been observed on the rooves of farm buildings to the South.

The potential also exists for naturally occurring organic material in the superficial strata resulting in the potential for 'landfill' gas production by the burial and decomposition of organic material.

### Potential off-site sources

The potential exists for minor contamination to be present within the ground surrounding the site which may be transmitted to the site through the fabric of the underlying superficial strata from neighbouring historic agricultural activities. The site may also be susceptible to any airborne contaminants such as airborne particulates or vapours from surrounding land uses and the road network.

## 6.3 Potential Contaminant Pathways

Potential pathways are considered to be:

- Inhalation of dust and volatile contaminants
- Direct contact (ingestion and dermal contact)
- Leaching of contaminants and migration through permeable soils
- Groundwater migration
- Migration through service conduits
- Migration through the local drainage network
- Leakage from site drainage
- Surface water run-off
- Ground gas migration
- Plant root up-take

## 6.4 Potential Receptors at Risk

Potential receptors are considered to be as follows:

### *Human Health*

- Current site users (Dog walkers etc.)
- Future site users (Residential)
- Site development workers
- Site maintenance workers

### *Environmental*

- Local aquifers
- Local surface waters
- Flora and fauna
- Buildings and underground services

## 6.5 Risk Assessment

The qualitative risk assessment has been undertaken to assess the significance of any potential pollutant linkages. The risks posed to each of the identified potential receptors are discussed separately and attributed a low, moderate or high level of risk. The risk assessment has been undertaken in accordance with BS10175:2001 and CIRIA Document C552: Contaminated Land Risk assessment, A Guide to Good Practice. The source – pathway – receptor linkages are developed around the information presented above.

The risk assessment has been undertaken by assessing the severity of the potential consequence, taking into account both the potential severity of the hazard and the sensitivity of the target, based on the categories given below.

<i>Category</i>	<i>Definition</i>
<b>Severe</b>	Acute risks to human health, catastrophic damage to buildings / property, major pollution of controlled waters
<b>Medium</b>	Chronic risk to human health, pollution of sensitive controlled waters, significant effects on sensitive ecosystems or species, significant damage to buildings or structures
<b>Mild</b>	Pollution of non-sensitive waters, minor damage to buildings or structures
<b>Minor</b>	Requirement for protective equipment during site works to mitigate health effects, damage to non-sensitive ecosystems or species

**Table 6.1 – Definition of Risk Severity**



The likelihood of an event (probability) takes into account both the presence of the hazard and target and the integrity of the pathway and has been assessed based on the categories given below.

<i>Category</i>	<i>Definition</i>
<b>High Likelihood</b>	Pollutant linkage may be present, and risk is almost certain to occur in long term, or there is evidence of harm to the receptor
<b>Likely</b>	Pollutant linkage may be present, and it is probable that the risk will occur over the long term
<b>Low Likelihood</b>	Pollutant linkage may be present, and there is a possibility of the risk occurring, although there is no certainty that it will do so
<b>Unlikely</b>	Pollutant linkage may be present, but the circumstances under which harm would occur are improbable

**Table 6.2 – Definition of Risk Probability**

The potential severity of the risk and the probability of the risk occurring have been combined in accordance with the following matrix in order to give a level of risk for each potential hazard.

		<i>Potential Severity</i>			
		<i>Severe</i>	<i>Medium</i>	<i>Mild</i>	<i>Minor</i>
<i>Probability of Risk</i>	<i>High Likelihood</i>	Very high	High	Moderate	Low/Moderate
	<i>Likely</i>	High	Moderate	Low/Moderate	Low
	<i>Low likelihood</i>	Moderate	Low/Moderate	Low	Very low
	<i>Unlikely</i>	Low/Moderate	Low	Very low	Very low

**Table 6.3 – Risk Matrix of Potential Hazard**

The following table provides an initial qualitative risk assessment for the site. Additional details are provided in the subsequent discussion sections.

The risk assessment for the site based on identified sources is presented in Table 6.4.

Hazard / Pollutant	Source	Pathway	Receptor	Potential severity	Probability of risk	Level of risk
Made Ground / Agricultural History, (Hydrocarbons, PAH Compounds, Pesticides and Fertilisers, Asbestos, Metals and Metalloids, Inorganic Compounds etc.)	Potential Made Ground, former and current off-site sources.	Inhalation, Dermal contact and Ingestion	Future site users, development workers, future buildings and structures.	Medium	Likely	Moderate (asbestos roofing)
		Root Uptake	Plants	Minor	Unlikely	Very Low
		Groundwater Migration	Secondary (A) Aquifer, Watercourses, surface waters	Medium	Unlikely	Very Low
Hazardous gas and volatile compounds	Migration from possible Made Ground and buried organic soils	Inhalation, Explosion	Future site users, Structures	Medium	Unlikely	Low
			Site development workers	Medium	Unlikely	Low

**Table 6.4 – Environmental Risk Assessment**

*The Risk Assessment presented above should be considered as preliminary and should be reassessed following intrusive ground investigations.*

## 7.0 GROUND ENGINEERING CONSIDERATIONS

A number of potential geotechnical issues at the site could affect any proposed development on the site. The following should be taken into account when designing site investigation, earthmoving and construction works at the site.

### 7.1 Site Access

Pedestrian and vehicle access to the site is not considered a significant risk and access is gained via a minor road/track branching from the A192 main road.

### 7.2 Ground Obstructions

Given the sites lack historical development, significant ground obstructions are not considered likely in the form of buried walls or former cellars etc. The potential exists for land drains, sewers and services and the possibility of redundant structures or Made Ground associated on site. Additionally, large cobbles and boulders naturally occur within the superficial strata recorded at the site and may require localised deepening or extending of excavations to remove if required.

### 7.3 Existing Structures

The existing structures are to be redeveloped and converted to residential properties.

### 7.4 Settlement and Subsidence

The BGS consider the overall risk to the site from natural ground subsidence to be Negligible to Low. This takes in to account the combined risks on site from Shrink-Swell Clays, Landslides, Soluble Rocks, Compressible Ground, Collapsible Rocks and Running Sands.

### 7.5 Slope Stability

Given the topography of the site slope stability is unlikely to be of concern.

### 7.6 Excavations

Excavations in natural cohesive strata are likely to remain stable for a reasonable length of time, where excavations encounter granular strata the stability is likely to be greatly reduced. If excavations are to remain open for more than a few hours, it is anticipated that some form of trench support will be required. The requirement for temporary support should be determined in accordance with current health and safety guidance.

## 7.7 Foundations / Earthworks

With regards to future development, at this initial stage, depending on the suitability of the underlying natural ground and the loadings required it is anticipated that the existing foundations of the farm structures may be utilised. It is recommended that the existing foundations are investigated to confirm their suitability prior to development.

## 7.8 Flooding Issues

The site is not located within 250m of indicated EA Zone 2 or Zone 3 floodplains and has a RoFRaS rating of very low.

## 7.9 Environmental Issues

Given the site history and the current topography, Made Ground is not likely to be present in significant quantities at the site. Any present will likely comprise disturbed natural materials from the site's agricultural history or demolition materials from the previous farm buildings in the centre of the site. Asbestos is considered to be the principal contaminant of concern.

The potential also exists for naturally occurring organic material in the superficial strata resulting in the potential for 'landfill' gas production by the burial and decomposition of organic material.

The potential exists for contamination to be present within the ground surrounding the site which may be transmitted to the site through the fabric of the underlying superficial strata including from the agricultural activities. The site would also be susceptible to any airborne contaminants such as airborne particulates or vapours from surrounding land uses and the road network.

## 7.10 Invasive species

No obvious invasive species have been noted at the site; however it is recommended that an Invasive Species Survey is undertaken by a suitably qualified ecologist. Should any suspected invasive species be identified advice should be sought from a suitably qualified and experienced professional.

## 7.10 Mining Issues

The study site is located outside the specified search distance of any identified mining areas, therefore a Coal Authority Mining report was not required.

## 7.11 Archaeological Issues

The Local Planning Authority (County Archaeologist) would be able to advise on any requirements arising from archaeological interest at the site.

## 8.0 SUMMARY CONCLUSIONS

The site comprises a rectangular plot of land to the North-West of Mitford. The site is bounded by arable farmland and grassland with a track intersecting the site to the North and East. The site currently comprises a residential building and miscellaneous farm buildings in generally good condition. Roof material on farm buildings to the South were noted to comprise asbestos cement sheeting.

Geological plans indicate that the site is underlain by superficial glaciofluvial deposits of diamicton till and the solid geology beneath the site predominantly comprises undifferentiated Mudstone, Siltstone and Sandstone of the Stainmore Formation.

The risk to developments at the site as a result of underground mine workings is considered to be negligible.

The BGS consider the overall risk to the site from natural ground subsidence to be Negligible to Low. This takes in to account the combined risks on site from Shrink-Swell Clays, Landslides, Soluble Rocks, Compressible Ground, Collapsible Rocks and Running Sands.

Given the site history and the current topography Made Ground is not likely to be present in significant quantities at the site. Any present will likely comprise disturbed natural materials from the site's agricultural history / farm buildings.

No obvious olfactory or visual evidence of significant contamination was noted during site reconnaissance. However, the presence of Asbestos Cement roof sheeting was noted on farm buildings to the South.

The initial preliminary risk assessment based on a proposed Residential end use determines the risk to future site users and the environment from potential contamination located at the site to be **VERY LOW / MODERATE (asbestos sheeting)**.

The Local Planning Authority (County Archaeologist) would be able to advise on any requirements arising from archaeological interest at the site.



## 9.0 RECOMMENDATIONS

The Local Planning Authority (County Archaeologist) would be able to advise on any requirements arising from archaeological interest at the site.

*The Shadbolt Group*

## 10.0 REFERENCES

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- RocScience Slide and Settle 3D Software

# APPENDIX A

## REPORT CONDITIONS

## REPORT CONDITIONS

### PRELIMINARY RISK ASSESSMENT

*This report is produced for the benefit of **MITFORD ESTATE** in accordance with the terms of the appointment.*

*This report has been prepared in accordance with the terms and conditions of the appointment and relates to the condition of the site at the time of ground investigations. No warranty is provided as to the possibility of future changes in the condition of the site.*

*Whilst the contamination assessment detailed within this report reflects our view, because there are no exact UK definitions of these matters, being subject to risk analysis, Shadbolt Environmental are unable to give categoric assurances that they will be accepted by authorities or funds without question. This report is prepared and written for the purposed uses stated in the report and should not be used in a different context without reference to Shadbolt Environmental. In time, improved practices or amended legislation may necessitate a re-assessment.*

*The report is limited to the geotechnical and environmental aspects detailed within the report and is necessarily restricted and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents.*

## APPENDIX B

### HISTORICAL PLANS



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Newton Park, Mitford

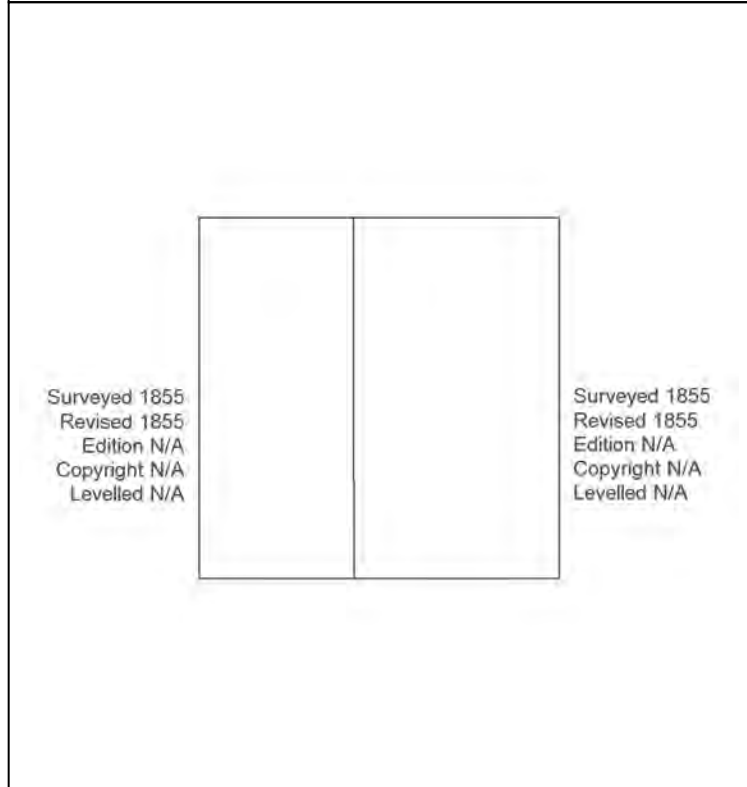
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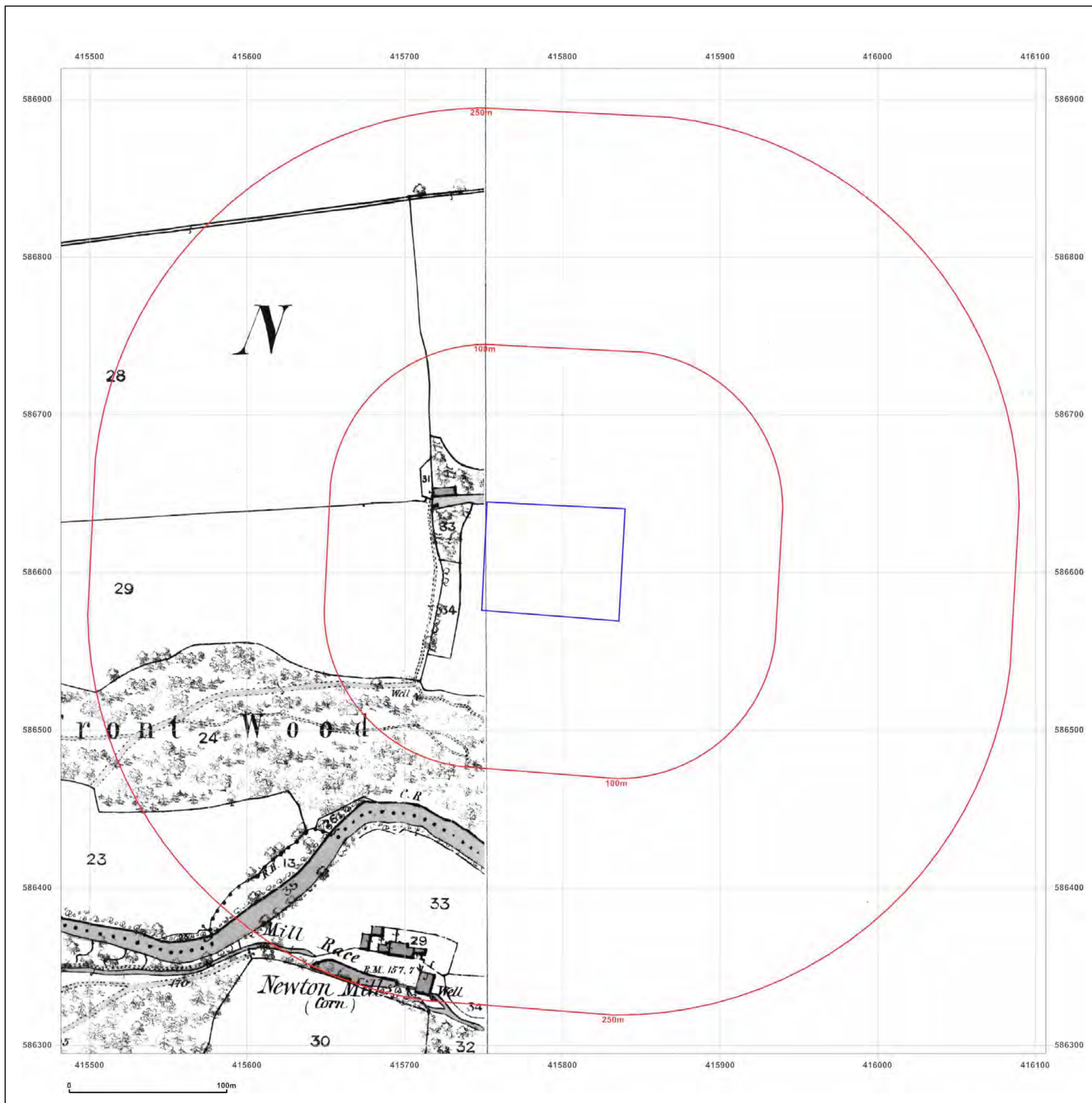
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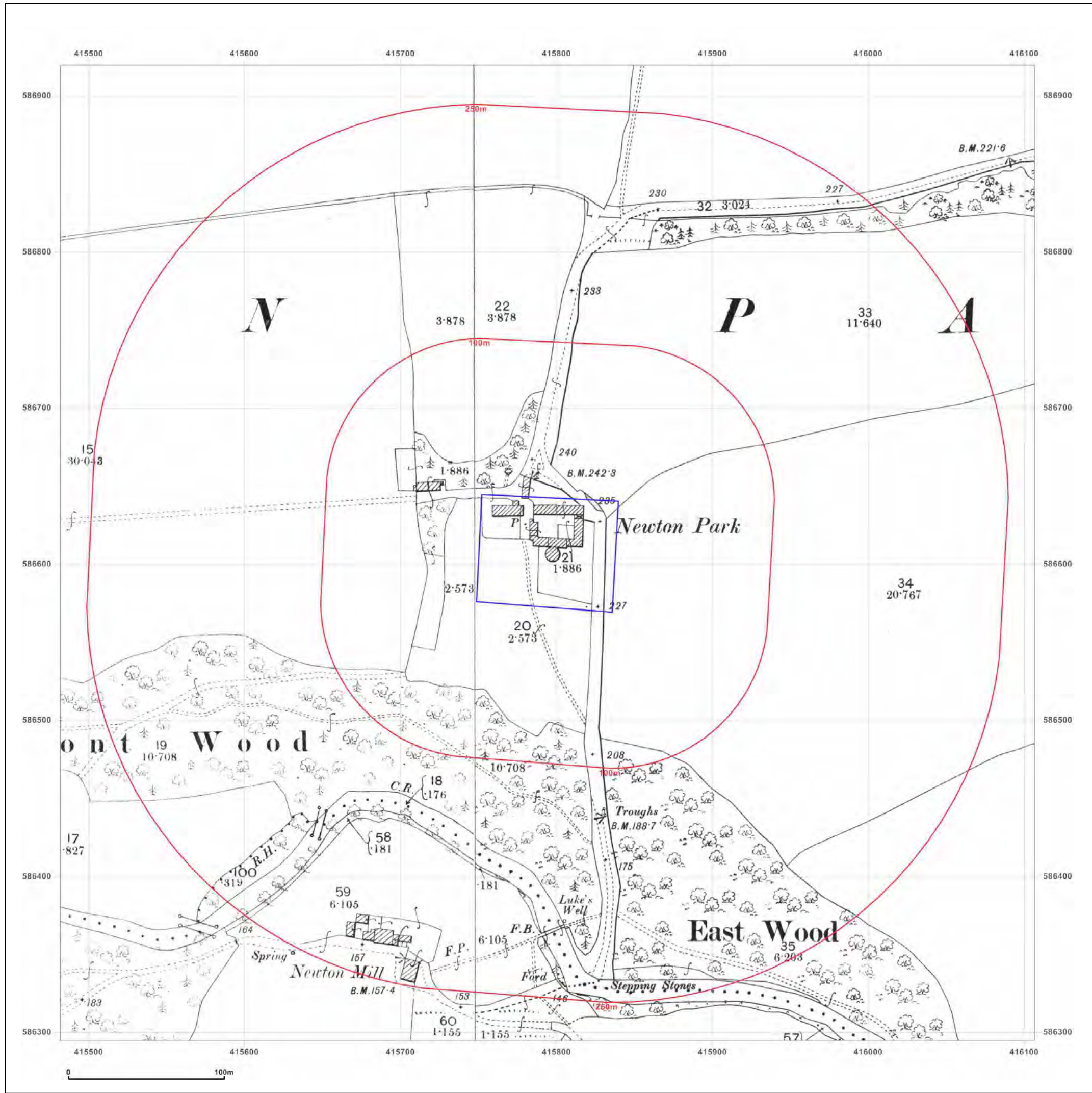
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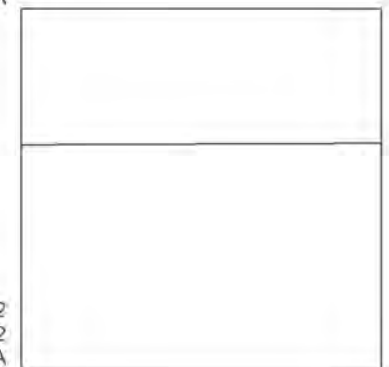
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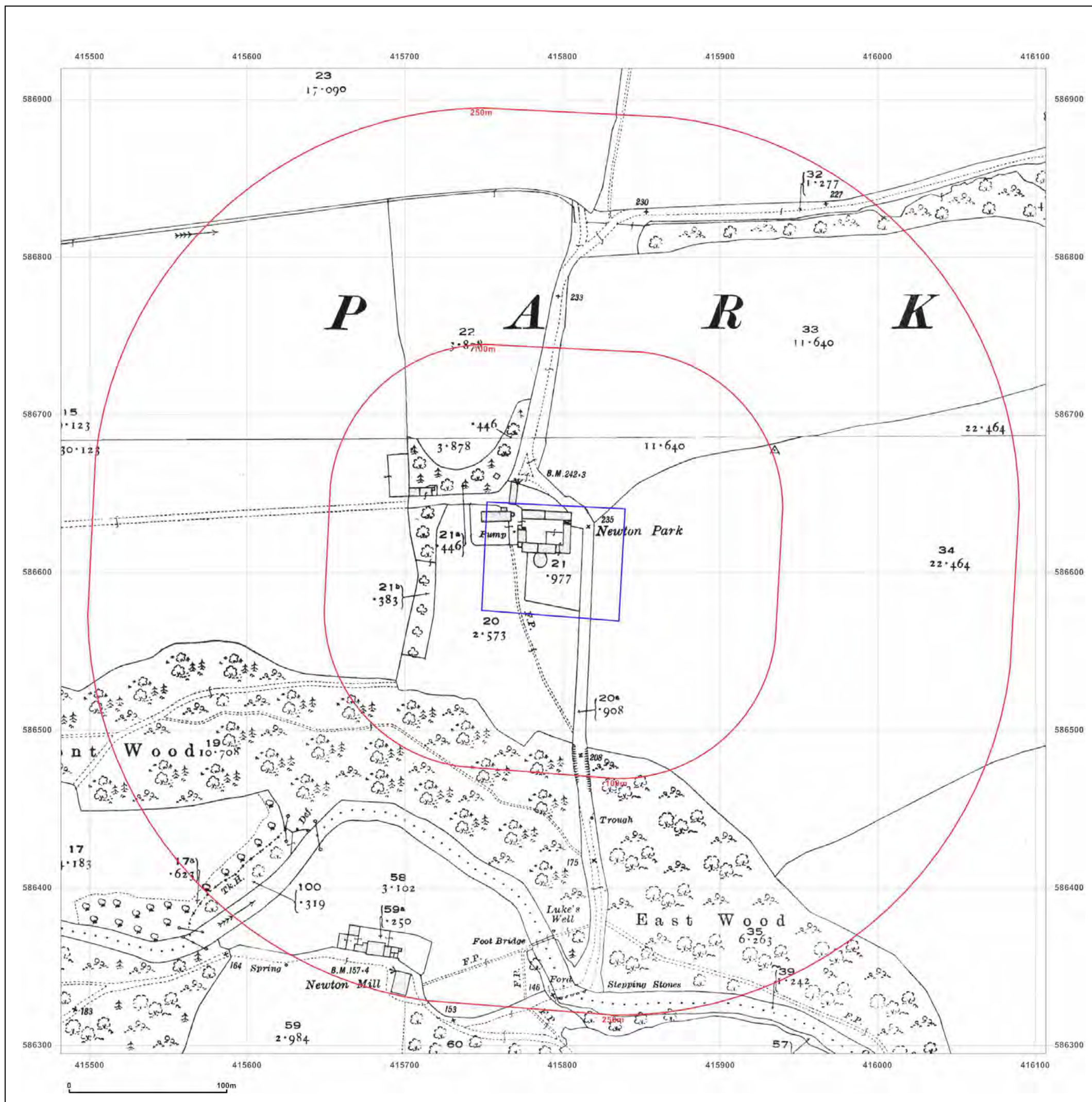
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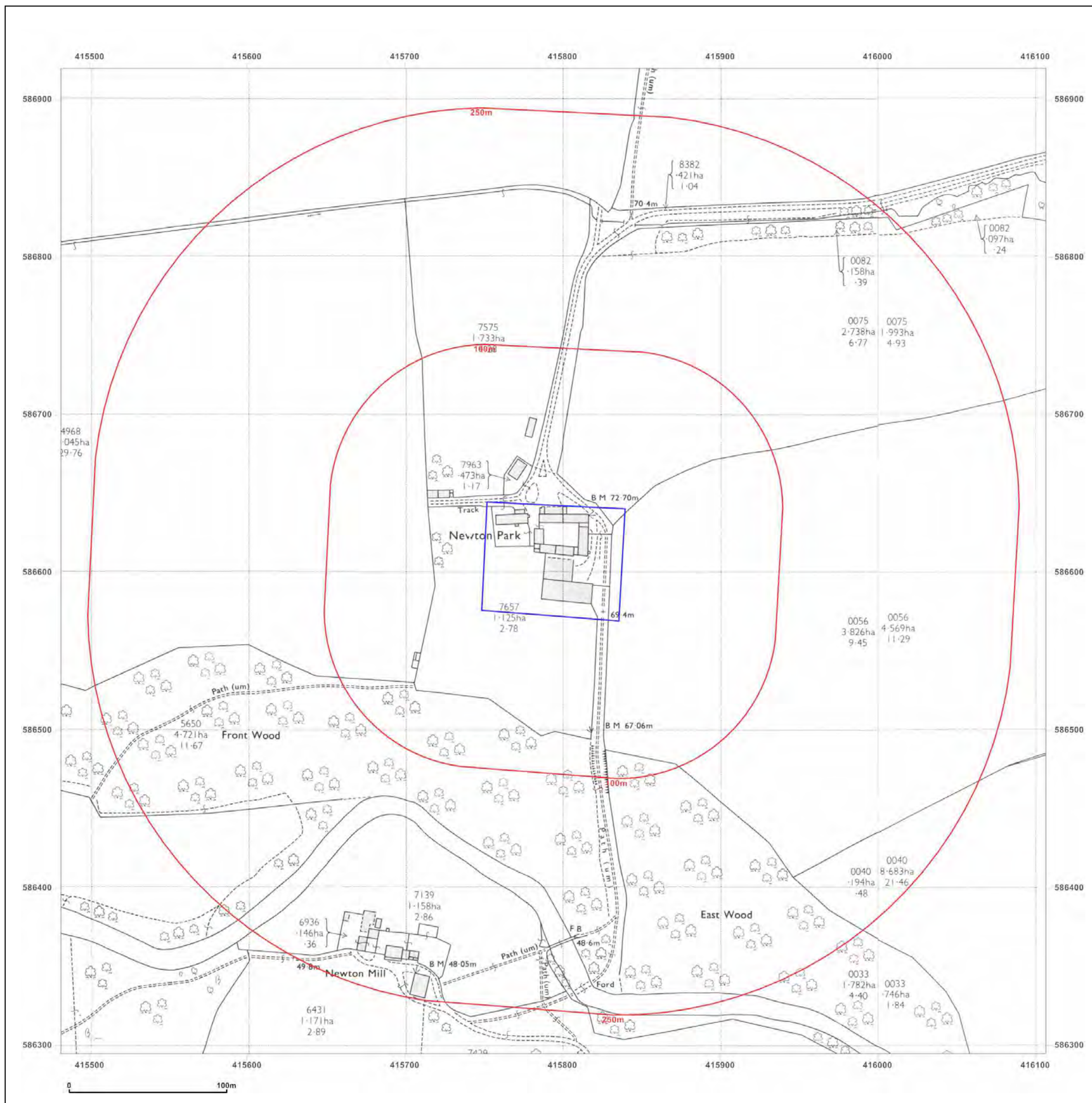


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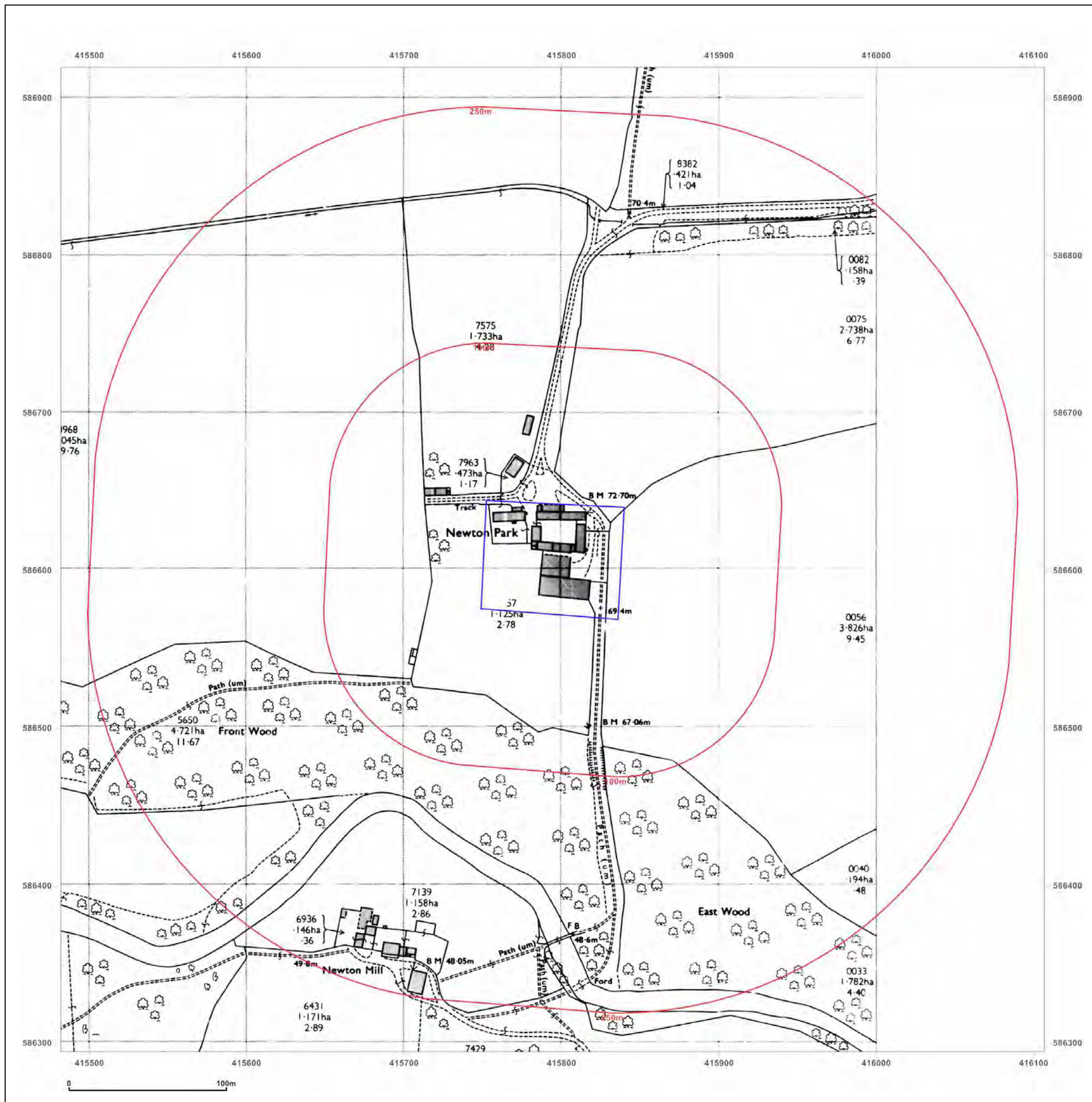
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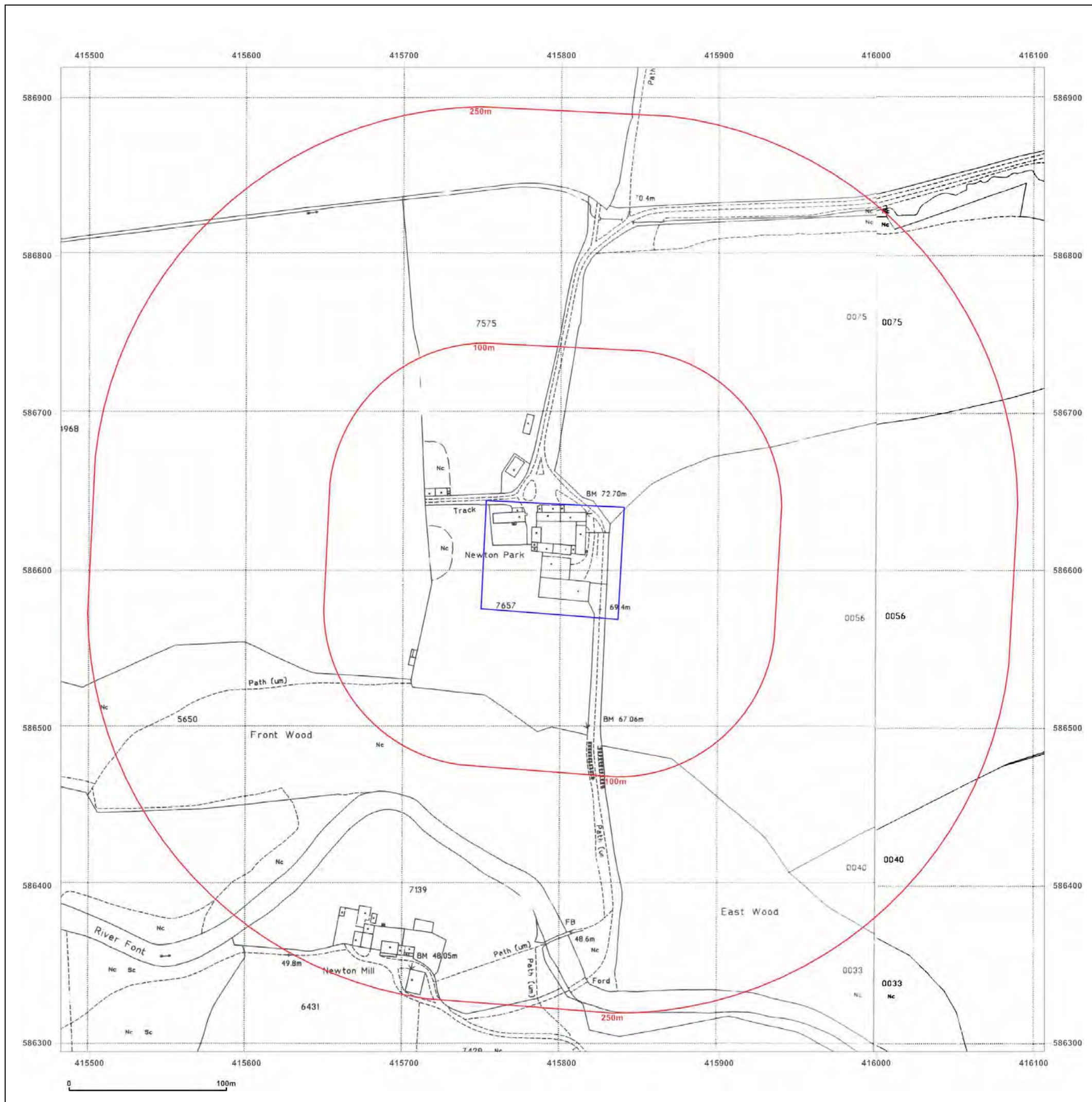
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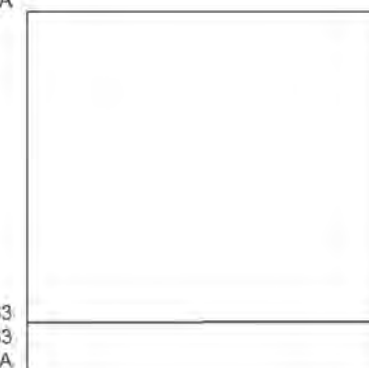
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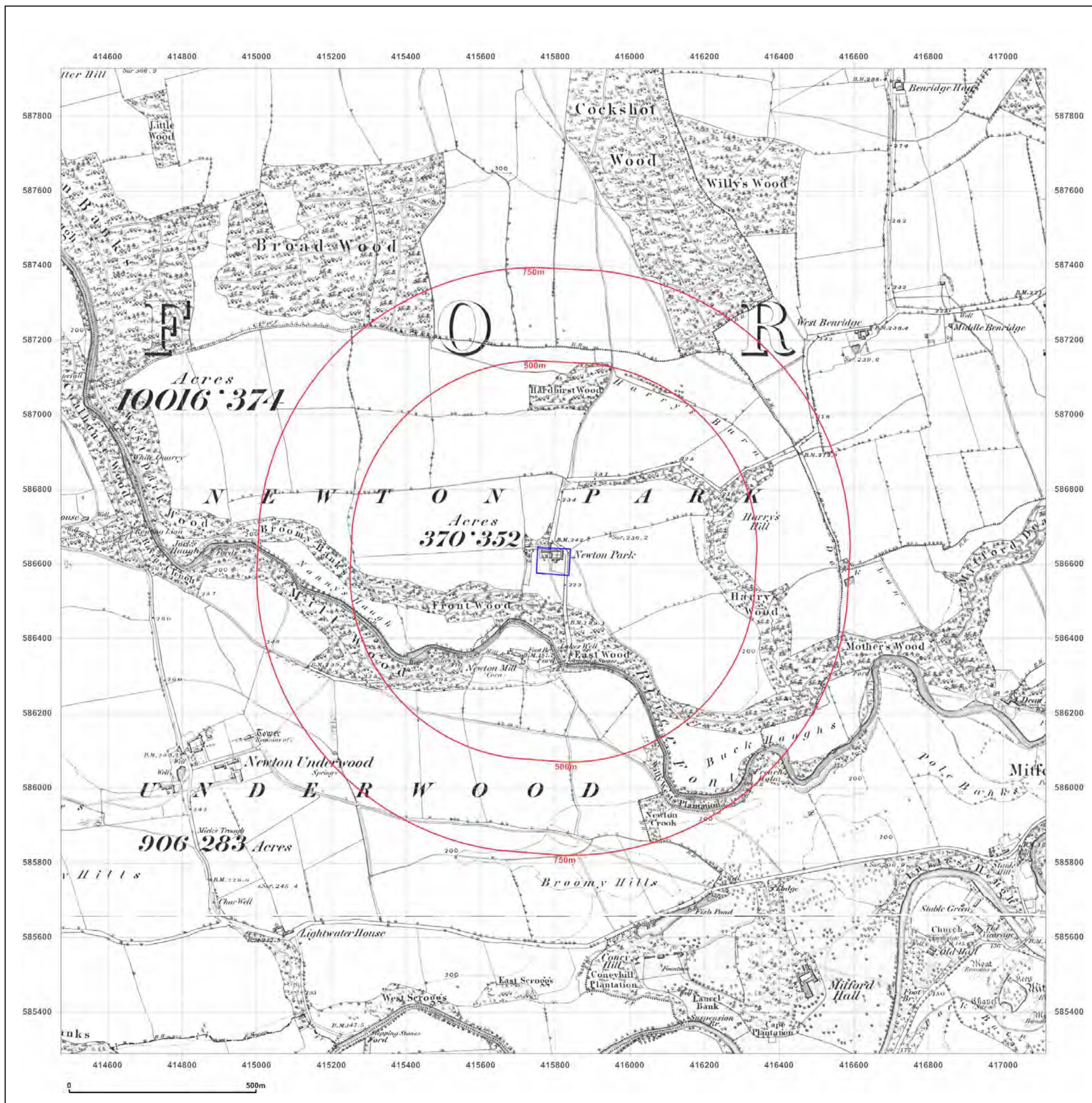


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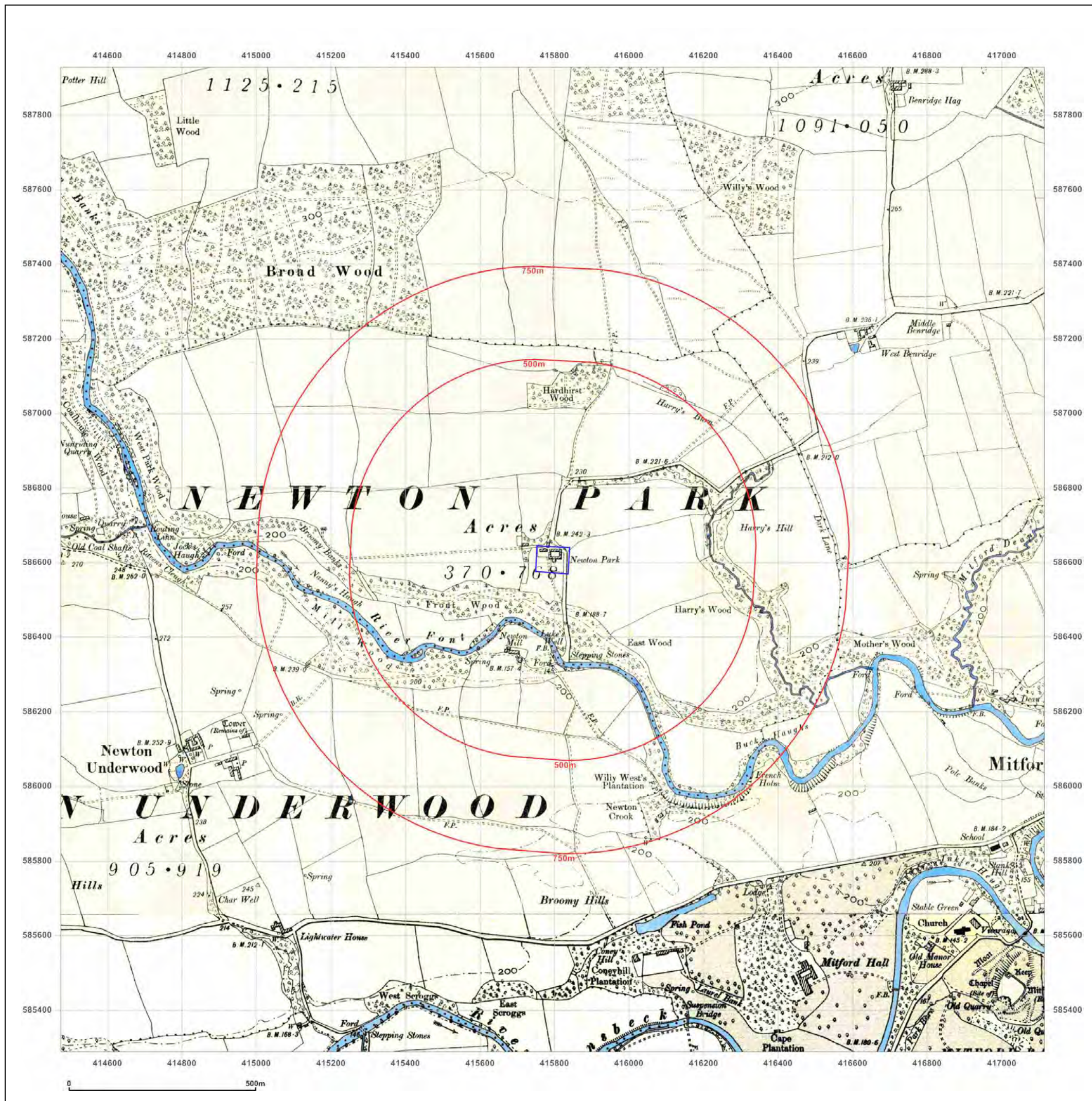


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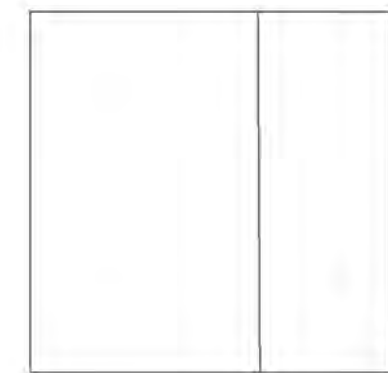
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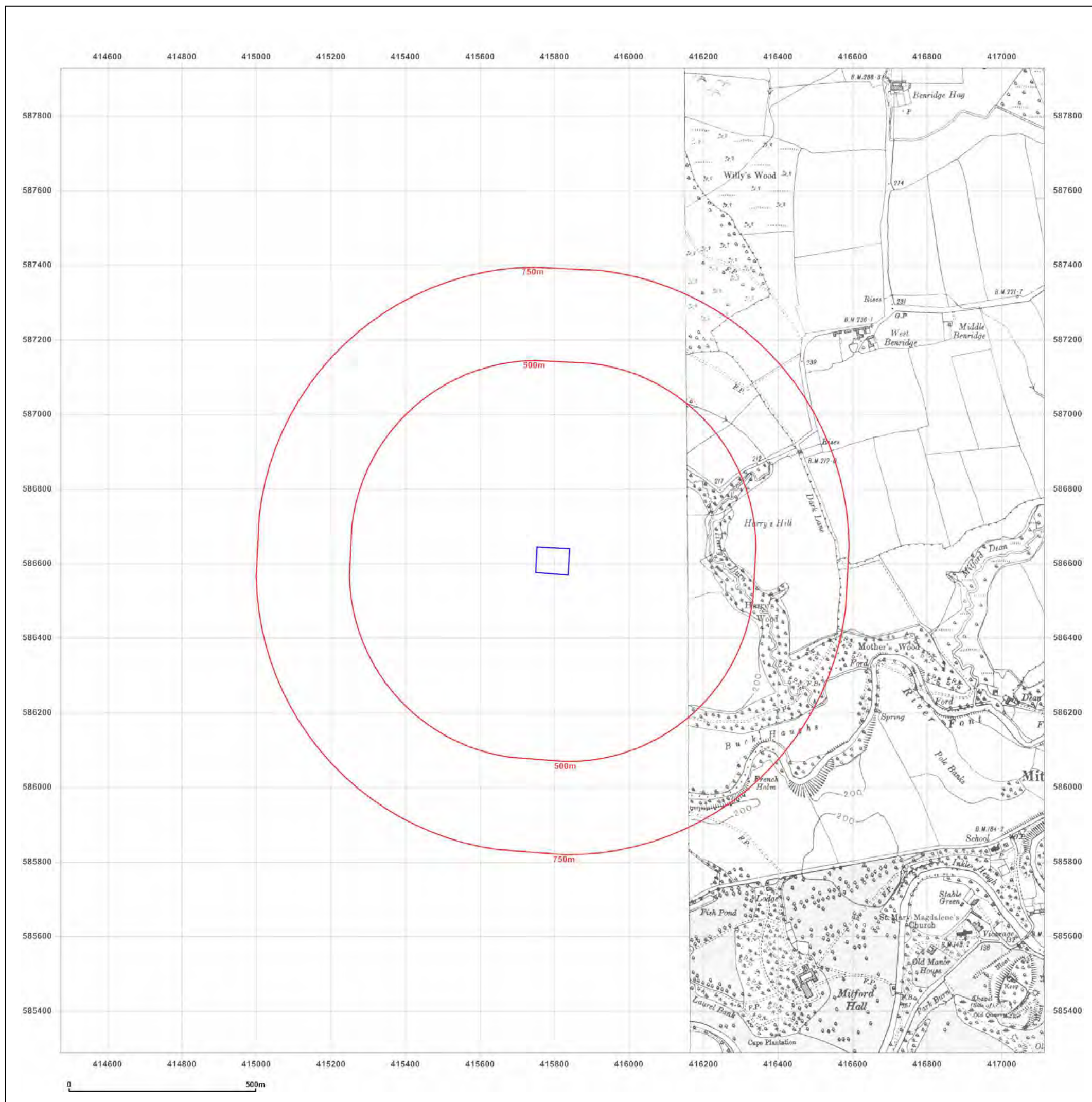


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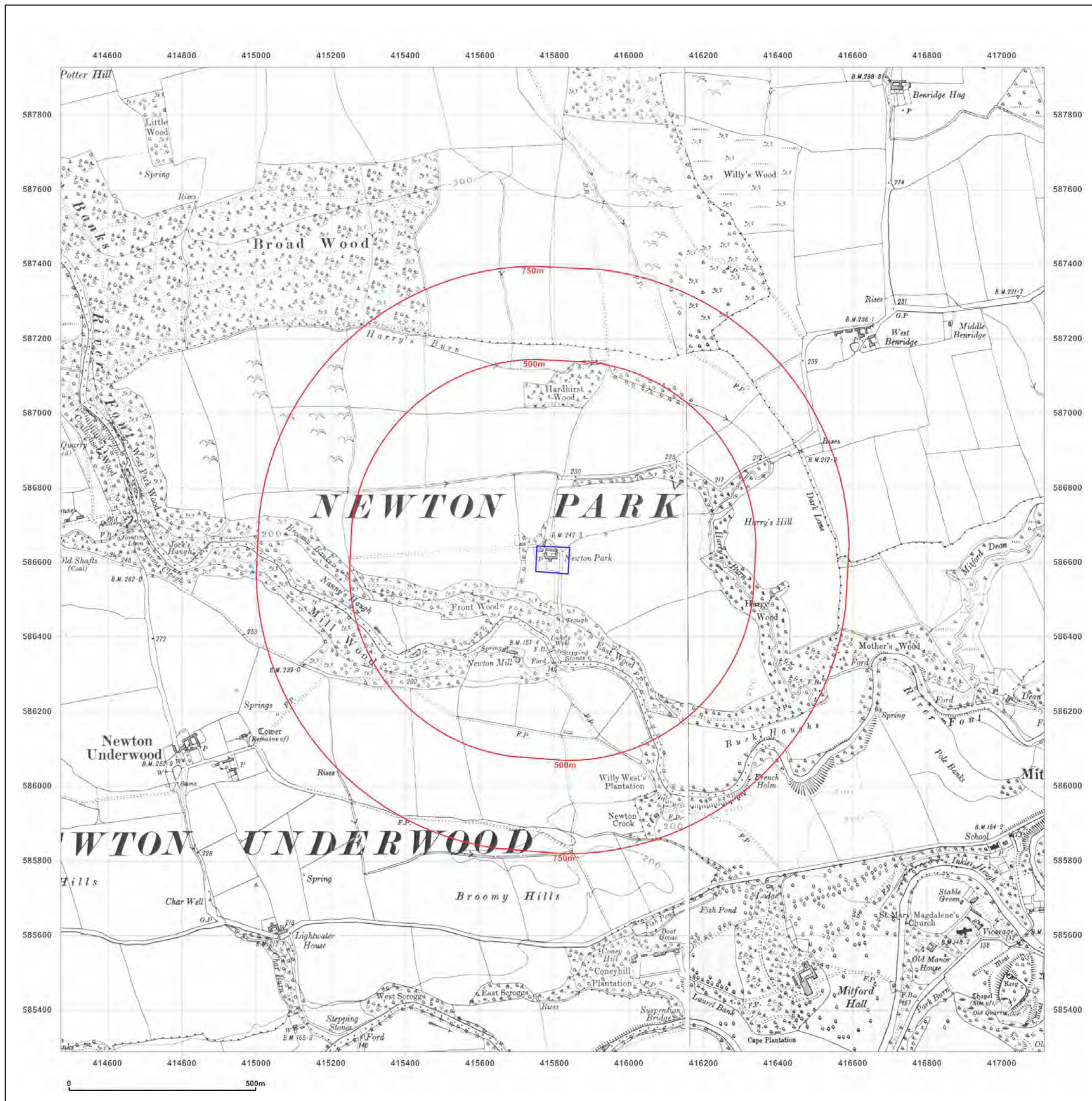
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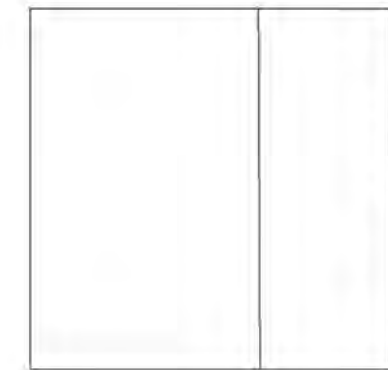
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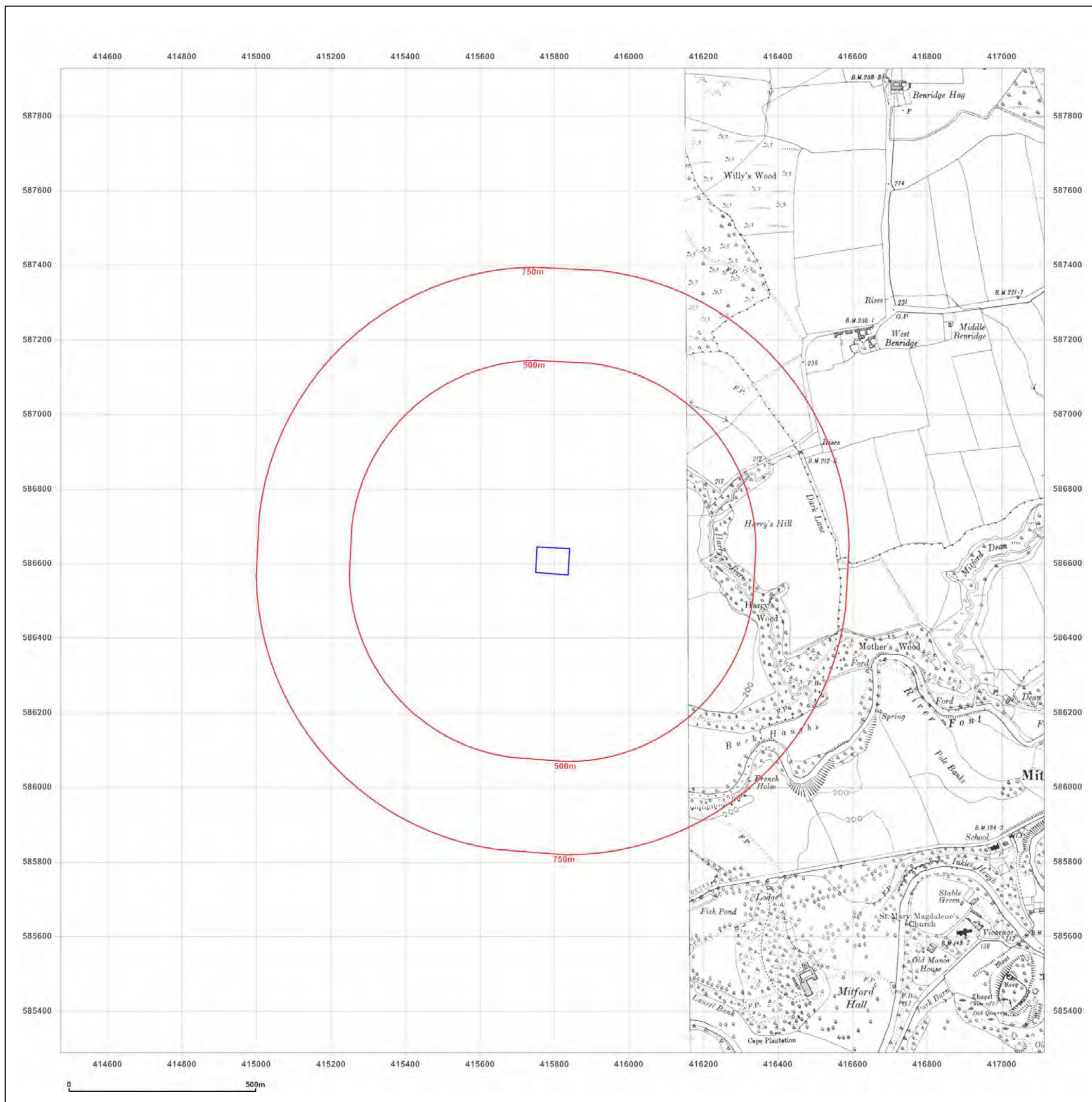


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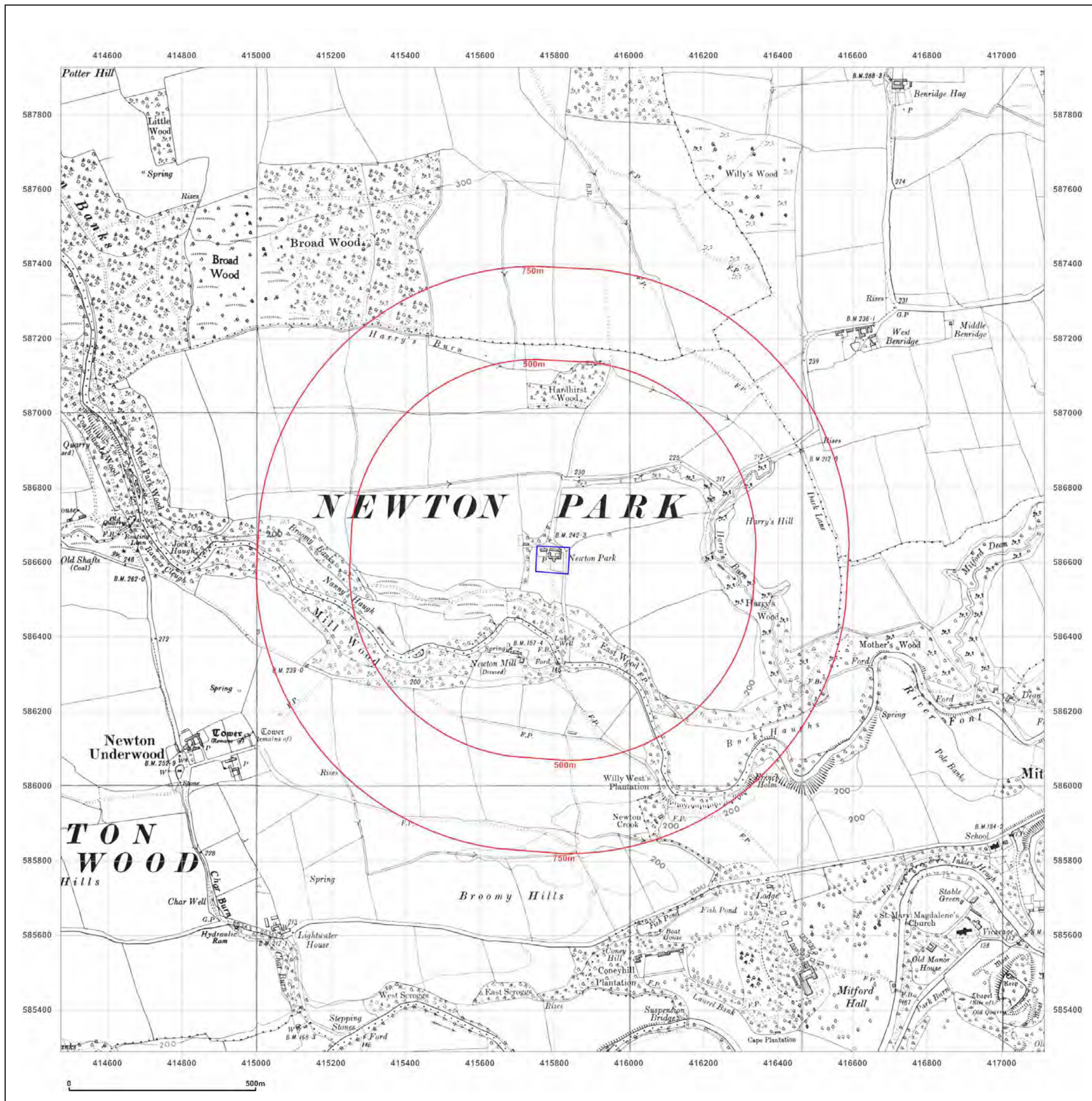


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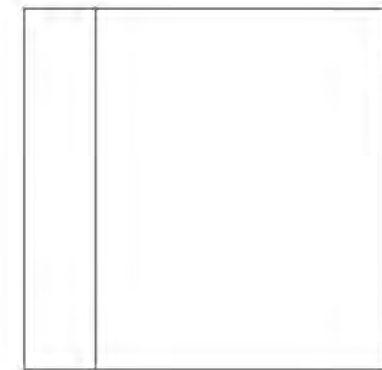
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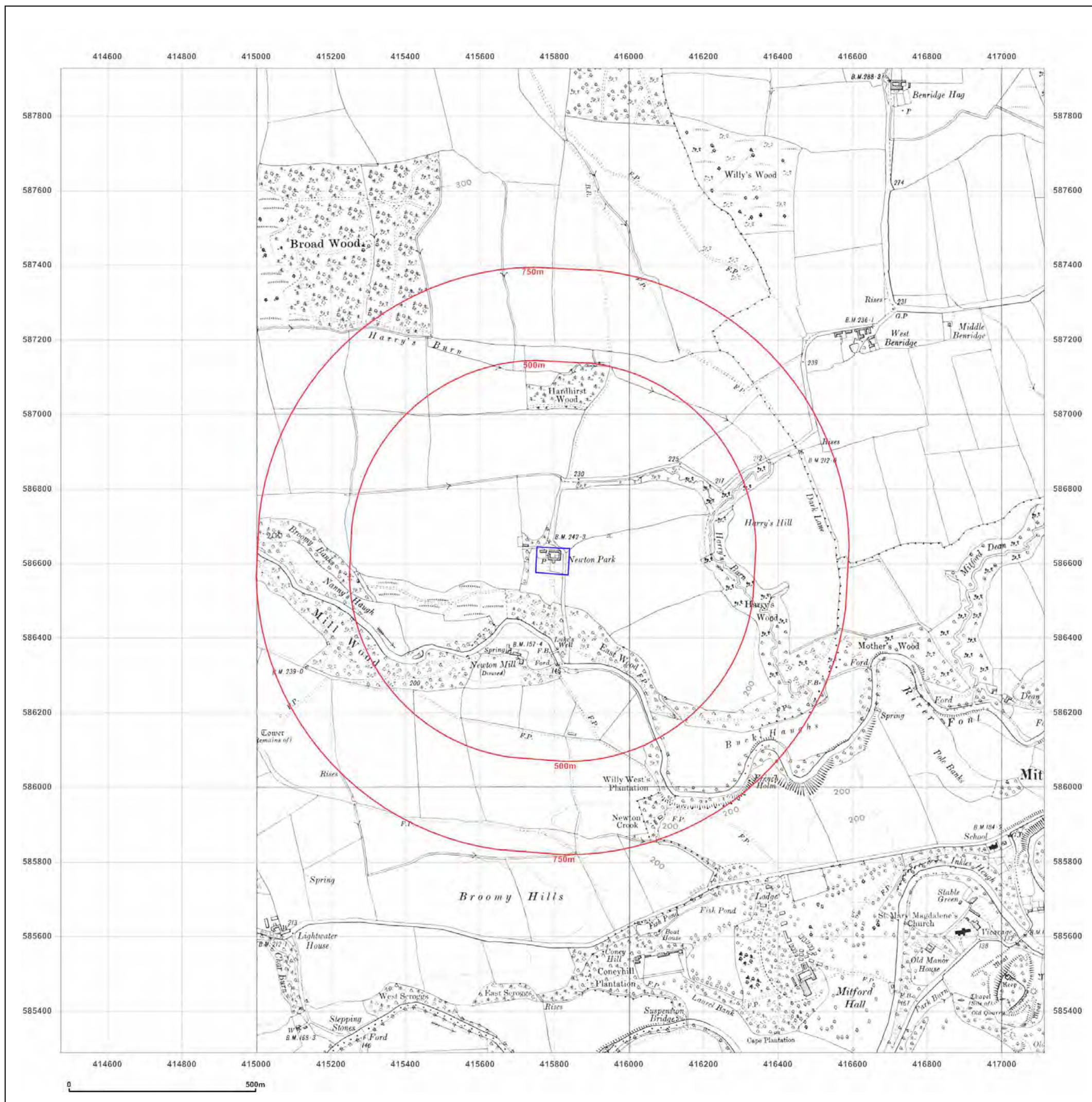


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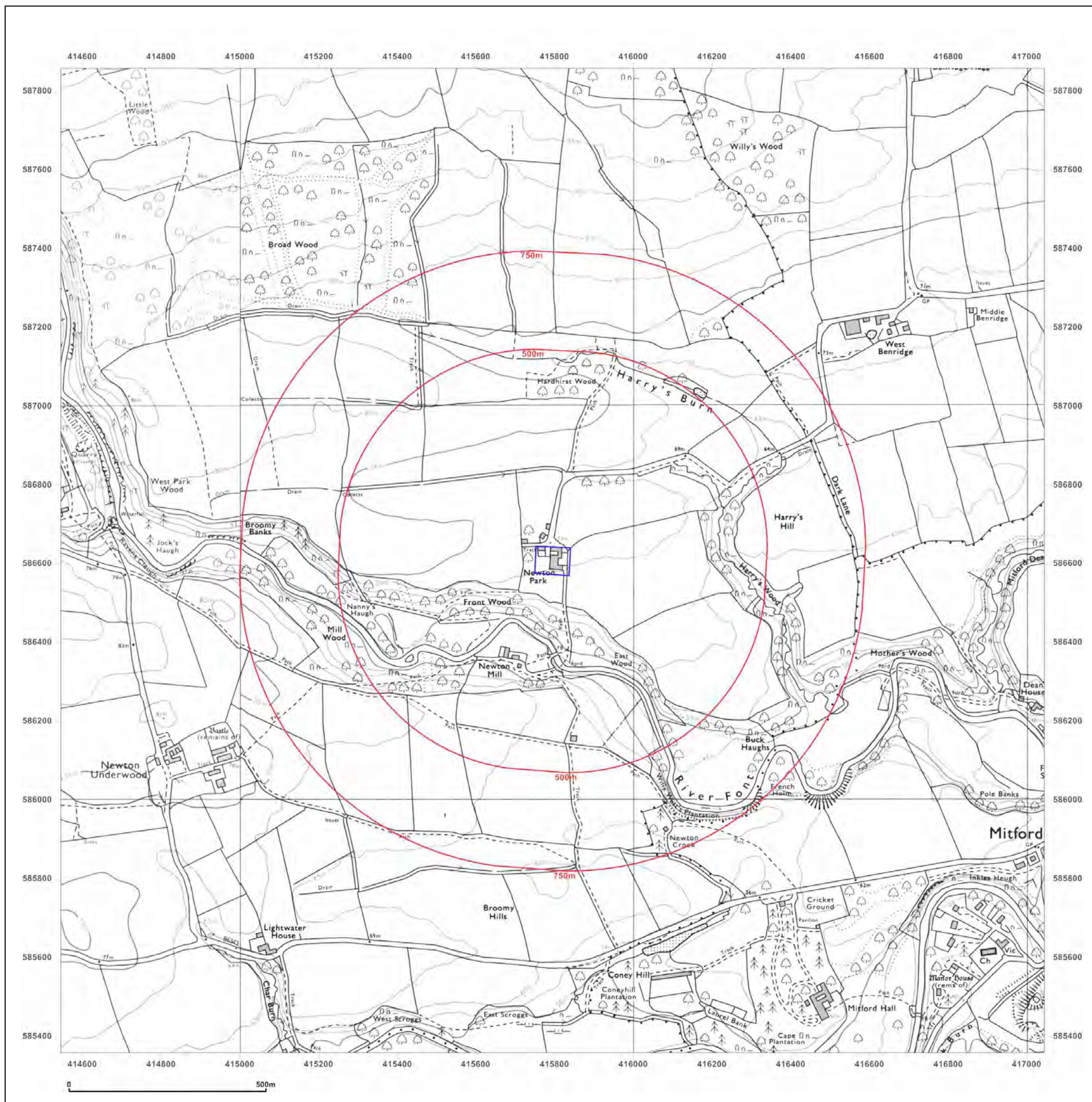


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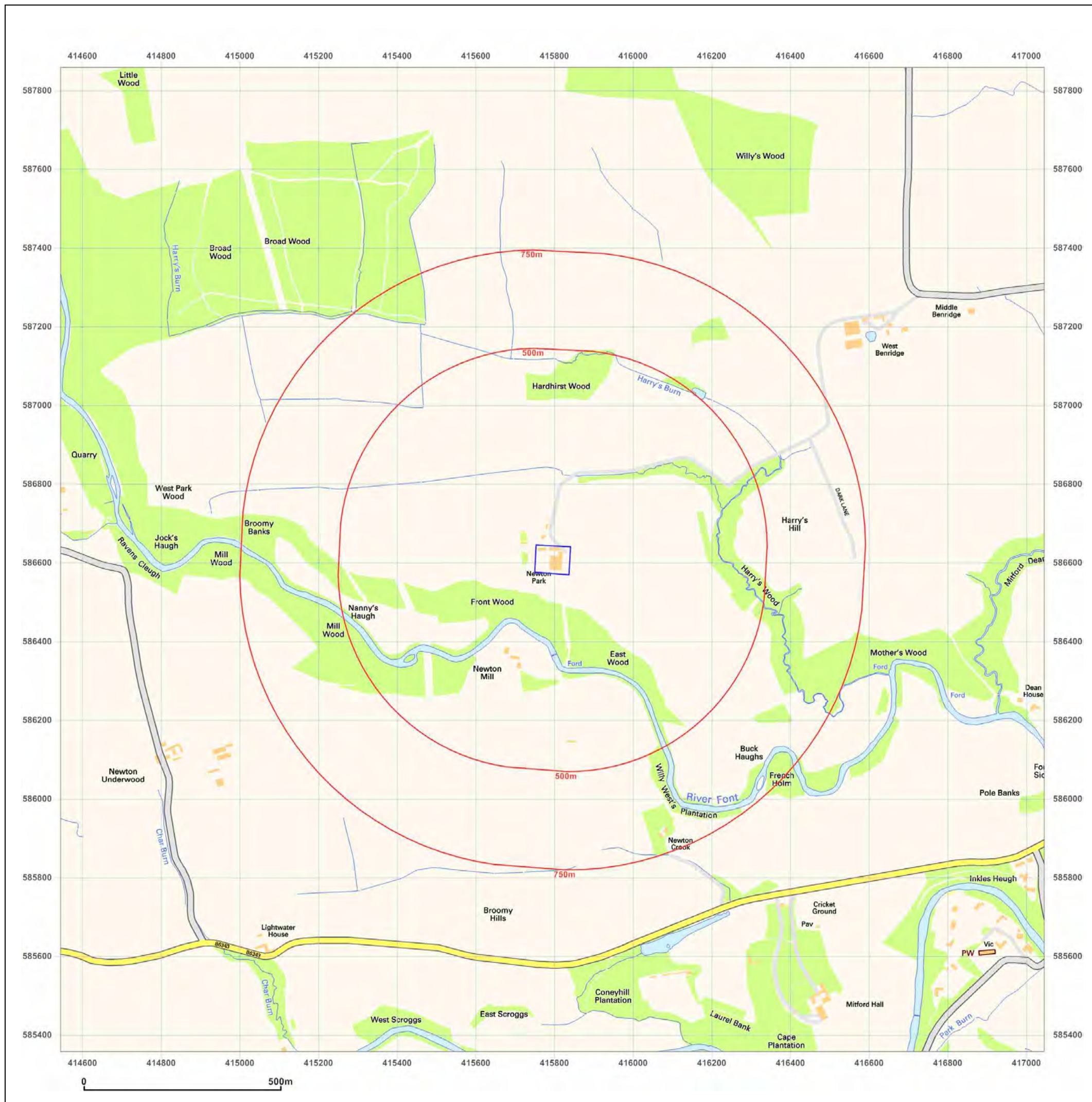
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[www.groundsure.com/sites/default/files/groundsure\\_legend.pdf](http://www.groundsure.com/sites/default/files/groundsure_legend.pdf)







**Site Details:**

Newton Park, Mitford

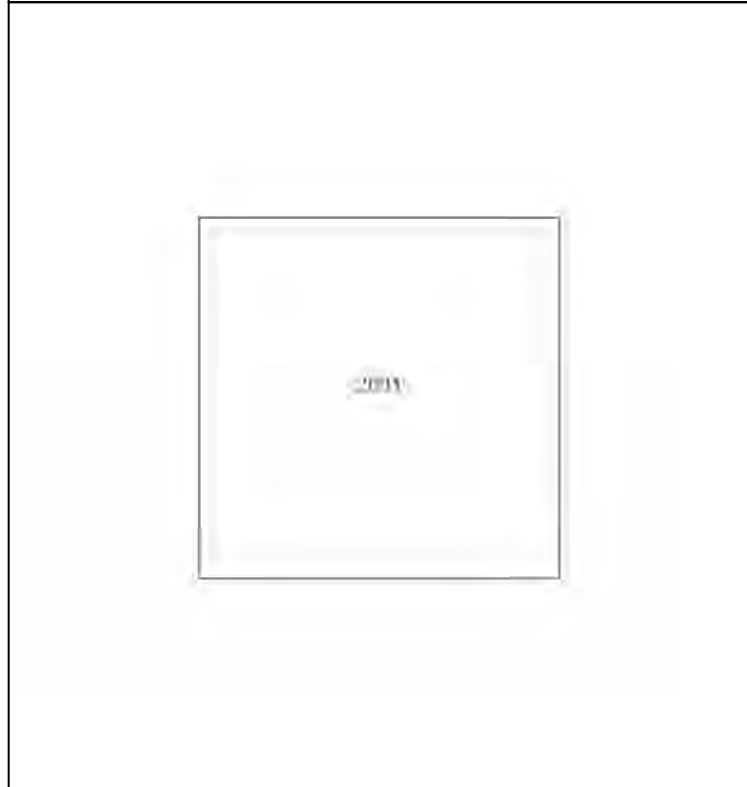
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**Report Ref:** CMAPS-CM-871293-4281-030420HIS  
**Grid Ref:** 415794, 586607

**Map Name:** National Grid

**Map date:** 2001

**Scale:** 1:10,000

**Printed at:** 1:10,000



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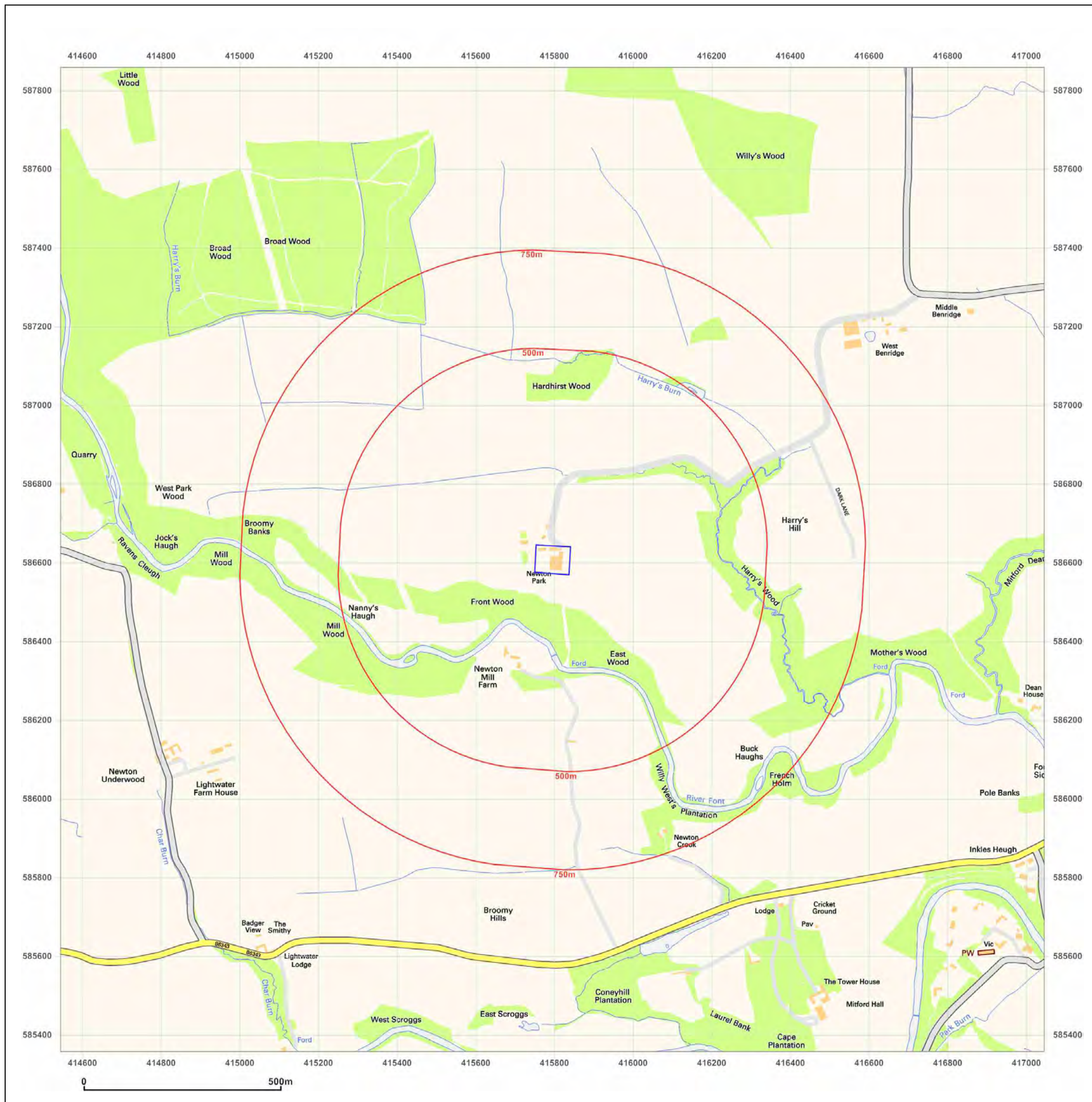
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Production date: 03 April 2020

Map legend available at:  
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**Site Details:**

Newton Park, Mitford

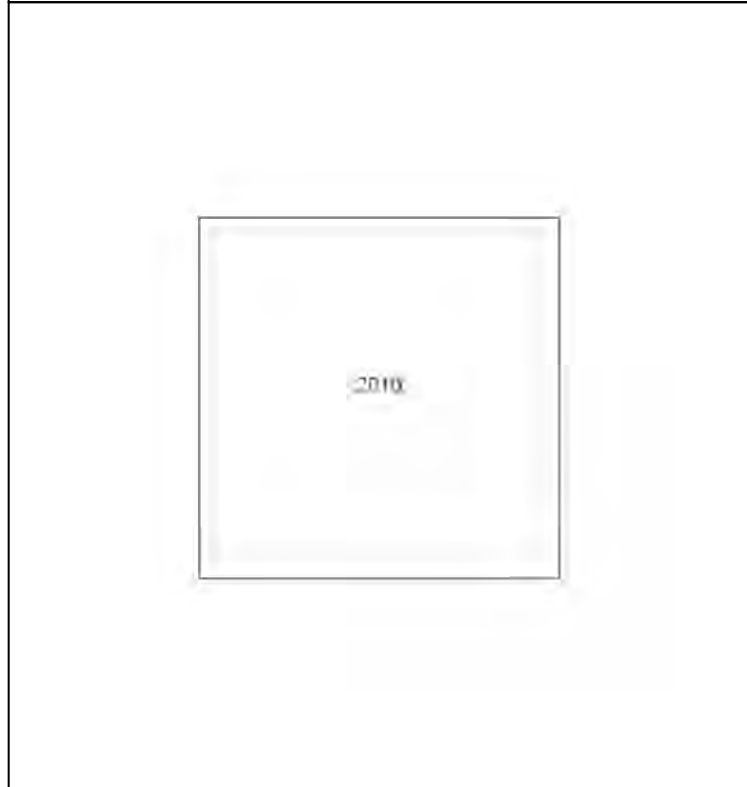
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**Report Ref:** CMAPS-CM-871293-4281-030420HIS  
**Grid Ref:** 415794, 586607

**Map Name:** National Grid

**Map date:** 2010

**Scale:** 1:10,000

**Printed at:** 1:10,000



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Production date: 03 April 2020

Map legend available at:  
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**Site Details:**

Newton Park, Mitford

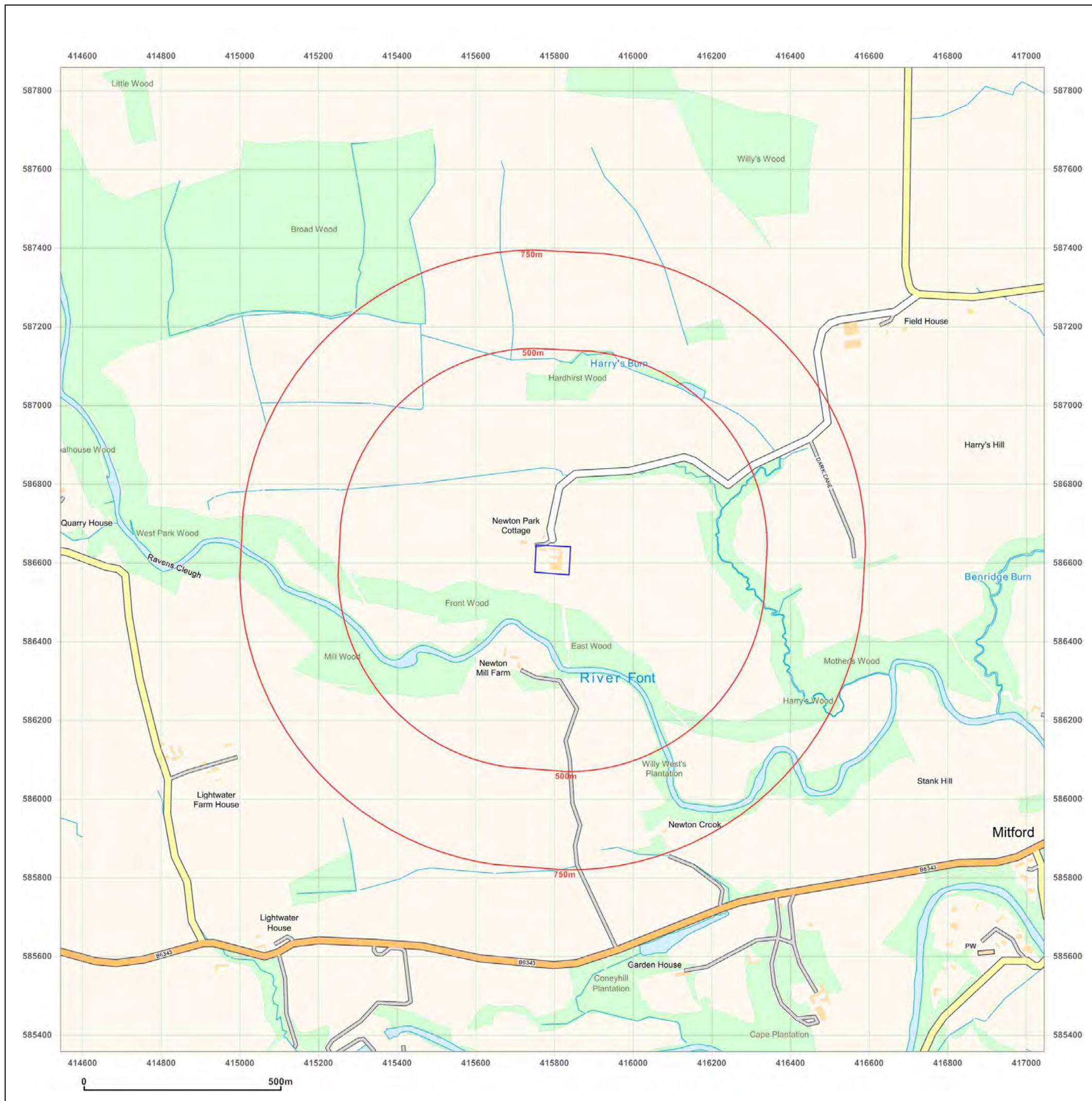
**Client Ref:** 4281  
**Report Ref:** CMAPS-CM-871293-4281-030420HIS  
**Grid Ref:** 415794, 586607

**Map Name:** National Grid

**Map date:** 2020

**Scale:** 1:10,000

**Printed at:** 1:10,000



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Production date: 03 April 2020

Map legend available at:  
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APPENDIX C  
ENVIRO / GEO INSITE REPORT



Newton Park, Mitford,

## Order Details

**Date:** 03/04/2020  
**Your ref:** 4281  
**Our Ref:** CMAPS-CM-871293-4281-030420EDRGEO  
**Client:** CENTREMAPS

## Site Details

**Location:** 415794 586607  
**Area:** 0.61 ha  
**Authority:** [Northumberland Council](#)



**Summary of findings**

p. 2

**Aerial image**

p. 8

**OS MasterMap site plan**

p.10

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08444 159 000

## Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
<b>11</b>	<b>1.1</b>	<b><u>Historical industrial land uses</u></b>	0	0	5	0	-
12	1.2	Historical tanks	0	0	0	0	-
12	1.3	Historical energy features	0	0	0	0	-
12	1.4	Historical petrol stations	0	0	0	0	-
13	1.5	Historical garages	0	0	0	0	-
13	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
<b>14</b>	<b>2.1</b>	<b><u>Historical industrial land uses</u></b>	0	0	5	0	-
15	2.2	Historical tanks	0	0	0	0	-
15	2.3	Historical energy features	0	0	0	0	-
15	2.4	Historical petrol stations	0	0	0	0	-
15	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
16	3.1	Active or recent landfill	0	0	0	0	-
16	3.2	Historical landfill (BGS records)	0	0	0	0	-
16	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
16	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
16	3.5	Historical waste sites	0	0	0	0	-
17	3.6	Licensed waste sites	0	0	0	0	-
17	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
18	4.1	Recent industrial land uses	0	0	0	-	-
18	4.2	Current or recent petrol stations	0	0	0	0	-
19	4.3	Electricity cables	0	0	0	0	-
<b>19</b>	<b>4.4</b>	<b><u>Gas pipelines</u></b>	0	0	0	2	-
19	4.5	Sites determined as Contaminated Land	0	0	0	0	-



19	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
20	4.7	Regulated explosive sites	0	0	0	0	-
20	4.8	Hazardous substance storage/usage	0	0	0	0	-
20	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
20	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
20	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
21	4.12	Radioactive Substance Authorisations	0	0	0	0	-
<b>21</b>	<b>4.13</b>	<b><u>Licensed Discharges to controlled waters</u></b>	0	0	<b>1</b>	0	-
21	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
21	4.15	Pollutant release to public sewer	0	0	0	0	-
22	4.16	List 1 Dangerous Substances	0	0	0	0	-
22	4.17	List 2 Dangerous Substances	0	0	0	0	-
22	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
22	4.19	Pollution inventory substances	0	0	0	0	-
22	4.20	Pollution inventory waste transfers	0	0	0	0	-
23	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
<b>24</b>	<b>5.1</b>	<b><u>Superficial aquifer</u></b>	Identified (within 500m)				
<b>26</b>	<b>5.2</b>	<b><u>Bedrock aquifer</u></b>	Identified (within 500m)				
<b>27</b>	<b>5.3</b>	<b><u>Groundwater vulnerability</u></b>	Identified (within 50m)				
28	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
28	5.5	Groundwater vulnerability- local information	None (within 0m)				
29	5.6	Groundwater abstractions	0	0	0	0	0
30	5.7	Surface water abstractions	0	0	0	0	0
30	5.8	Potable abstractions	0	0	0	0	0
<b>30</b>	<b>5.9</b>	<b><u>Source Protection Zones</u></b>	0	0	<b>1</b>	0	-
30	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
<b>31</b>	<b>6.1</b>	<b><u>Water Network (OS MasterMap)</u></b>	0	0	<b>2</b>	-	-



Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
<b>32</b>	<b>6.2</b>	<b><u>Surface water features</u></b>	0	0	4	-	-
<b>32</b>	<b>6.3</b>	<b><u>WFD Surface water body catchments</u></b>	1	-	-	-	-
<b>32</b>	<b>6.4</b>	<b><u>WFD Surface water bodies</u></b>	0	0	1	-	-
<b>33</b>	<b>6.5</b>	<b><u>WFD Groundwater bodies</u></b>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
34	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
34	7.2	Historical Flood Events	0	0	0	-	-
34	7.3	Flood Defences	0	0	0	-	-
34	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
35	7.5	Flood Storage Areas	0	0	0	-	-
36	7.6	Flood Zone 2	None (within 50m)				
36	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
37	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding					
<b>38</b>	<b>9.1</b>	<b><u>Groundwater flooding</u></b>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
39	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
40	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
40	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
40	10.4	Special Protection Areas (SPA)	0	0	0	0	0
40	10.5	National Nature Reserves (NNR)	0	0	0	0	0
41	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
<b>41</b>	<b>10.7</b>	<b><u>Designated Ancient Woodland</u></b>	0	0	1	1	7
41	10.8	Biosphere Reserves	0	0	0	0	0
42	10.9	Forest Parks	0	0	0	0	0
42	10.10	Marine Conservation Zones	0	0	0	0	0
42	10.11	Green Belt	0	0	0	0	0
42	10.12	Proposed Ramsar sites	0	0	0	0	0



42	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
43	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
43	10.15	Nitrate Sensitive Areas	0	0	0	0	0
43	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
44	10.17	SSSI Impact Risk Zones	0	-	-	-	-
44	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
45	11.1	World Heritage Sites	0	0	0	-	-
45	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
45	11.3	National Parks	0	0	0	-	-
45	11.4	Listed Buildings	0	0	0	-	-
46	11.5	Conservation Areas	0	0	0	-	-
46	11.6	Scheduled Ancient Monuments	0	0	0	-	-
46	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
<b>47</b>	<b>12.1</b>	<b><u>Agricultural Land Classification</u></b>	Grade 3 (within 250m)				
48	12.2	Open Access Land	0	0	0	-	-
48	12.3	Tree Felling Licences	0	0	0	-	-
48	12.4	Environmental Stewardship Schemes	0	0	0	-	-
<b>48</b>	<b>12.5</b>	<b><u>Countryside Stewardship Schemes</u></b>	1	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
<b>49</b>	<b>13.1</b>	<b><u>Priority Habitat Inventory</u></b>	1	0	2	-	-
50	13.2	Habitat Networks	0	0	0	-	-
50	13.3	Open Mosaic Habitat	0	0	0	-	-
50	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
<b>51</b>	<b>14.1</b>	<b><u>10k Availability</u></b>	Identified (within 500m)				
52	14.2	Artificial and made ground (10k)	0	0	0	0	-
<b>53</b>	<b>14.3</b>	<b><u>Superficial geology (10k)</u></b>	1	0	5	7	-

54	14.4	Landslip (10k)	0	0	0	0	-
<b>55</b>	<b>14.5</b>	<b><u>Bedrock geology (10k)</u></b>	1	0	0	0	-
<b>56</b>	<b>14.6</b>	<b><u>Bedrock faults and other linear features (10k)</u></b>	0	0	0	2	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
<b>57</b>	<b>15.1</b>	<b><u>50k Availability</u></b>	Identified (within 500m)				
58	15.2	Artificial and made ground (50k)	0	0	0	0	-
58	15.3	Artificial ground permeability (50k)	0	0	-	-	-
<b>59</b>	<b>15.4</b>	<b><u>Superficial geology (50k)</u></b>	1	1	5	7	-
<b>60</b>	<b>15.5</b>	<b><u>Superficial permeability (50k)</u></b>	Identified (within 50m)				
60	15.6	Landslip (50k)	0	0	0	0	-
61	15.7	Landslip permeability (50k)	None (within 50m)				
<b>62</b>	<b>15.8</b>	<b><u>Bedrock geology (50k)</u></b>	1	1	0	0	-
<b>63</b>	<b>15.9</b>	<b><u>Bedrock permeability (50k)</u></b>	Identified (within 50m)				
63	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
64	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
<b>65</b>	<b>17.1</b>	<b><u>Shrink swell clays</u></b>	Low (within 50m)				
<b>66</b>	<b>17.2</b>	<b><u>Running sands</u></b>	Very low (within 50m)				
<b>67</b>	<b>17.3</b>	<b><u>Compressible deposits</u></b>	Negligible (within 50m)				
<b>68</b>	<b>17.4</b>	<b><u>Collapsible deposits</u></b>	Very low (within 50m)				
<b>69</b>	<b>17.5</b>	<b><u>Landslides</u></b>	Very low (within 50m)				
<b>70</b>	<b>17.6</b>	<b><u>Ground dissolution of soluble rocks</u></b>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
71	18.1	Natural cavities	0	0	0	0	-
72	18.2	BritPits	0	0	0	0	-
<b>72</b>	<b>18.3</b>	<b><u>Surface ground workings</u></b>	0	0	1	-	-
72	18.4	Underground workings	0	0	0	0	0
72	18.5	Historical Mineral Planning Areas	0	0	0	0	-

<b>73</b>	<b>18.6</b>	<b><u>Non-coal mining</u></b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
73	18.7	Mining cavities		0	0	0	0	0
73	18.8	JPB mining areas	None (within 0m)					
74	18.9	Coal mining	None (within 0m)					
74	18.10	Brine areas	None (within 0m)					
74	18.11	Gypsum areas	None (within 0m)					
74	18.12	Tin mining	None (within 0m)					
74	18.13	Clay mining	None (within 0m)					
<b>Page</b>	<b>Section</b>	<b>Radon</b>						
<b>75</b>	<b>19.1</b>	<b><u>Radon</u></b>	<b>Less than 1% (within 0m)</b>					
<b>Page</b>	<b>Section</b>	<b>Soil chemistry</b>	<b>On site</b>	<b>0-50m</b>	<b>50-250m</b>	<b>250-500m</b>	<b>500-2000m</b>	
<b>76</b>	<b>20.1</b>	<b><u>BGS Estimated Background Soil Chemistry</u></b>	<b>1</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	
76	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-	
76	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-	
<b>Page</b>	<b>Section</b>	<b>Railway infrastructure and projects</b>	<b>On site</b>	<b>0-50m</b>	<b>50-250m</b>	<b>250-500m</b>	<b>500-2000m</b>	
77	21.1	Underground railways (London)	0	0	0	-	-	
77	21.2	Underground railways (Non-London)	0	0	0	-	-	
77	21.3	Railway tunnels	0	0	0	-	-	
77	21.4	Historical railway and tunnel features	0	0	0	-	-	
77	21.5	Royal Mail tunnels	0	0	0	-	-	
78	21.6	Historical railways	0	0	0	-	-	
78	21.7	Railways	0	0	0	-	-	
78	21.8	Crossrail 1	0	0	0	0	-	
78	21.9	Crossrail 2	0	0	0	0	-	
78	21.10	HS2	0	0	0	0	-	

## Recent aerial photograph



Capture Date: 06/05/2016

Site Area: 0.61ha



Contact us with any questions at:

[info@groundsure.com](mailto:info@groundsure.com)

08444 159 000

Date: 3 April 2020



## Recent site history - 2000 aerial photograph



Capture Date: 21/07/2000

Site Area: 0.61ha

## OS MasterMap site plan



Site Area: 0.61ha



Contact us with any questions at:

[info@groundsure.com](mailto:info@groundsure.com)

08444 159 000

Date: 3 April 2020



## 1 Past land use



— Site Outline

Search buffers in metres (m)

Historical industrial land uses

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### 1.1 Historical industrial land uses

Records within 500m

5

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

Features are displayed on the Past land use map on **page 11**

ID	Location	Land use	Dates present	Group ID
A	163m S	Corn Mill	1863	1324331

ID	Location	Land use	Dates present	Group ID
A	187m S	Unspecified Mill	1924	1362285
A	212m S	Unspecified Mill	1896	1395914
A	227m S	Unspecified Disused Mill	1949	1326480
A	227m S	Unspecified Mill	1975	1354364

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.2 Historical tanks

**Records within 500m**

**0**

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.3 Historical energy features

**Records within 500m**

**0**

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.4 Historical petrol stations

**Records within 500m**

**0**

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

*This data is sourced from Ordnance Survey / Groundsure.*



## 1.5 Historical garages

Records within 500m

0

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.6 Historical military land

Records within 500m

0

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

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



## 2 Past land use - un-grouped



**Site Outline**

**Search buffers in metres (m)**

**Historical industrial land uses**

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### 2.1 Historical industrial land uses

**Records within 500m**

**5**

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

Features are displayed on the Past land use - un-grouped map on **page 14**

ID	Location	Land Use	Date	Group ID
A	163m S	Corn Mill	1863	1324331
A	187m S	Unspecified Mill	1924	1362285
A	212m S	Unspecified Mill	1896	1395914



ID	Location	Land Use	Date	Group ID
A	227m S	Unspecified Disused Mill	1949	1326480
A	227m S	Unspecified Mill	1975	1354364

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.2 Historical tanks

**Records within 500m**

**0**

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.3 Historical energy features

**Records within 500m**

**0**

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.4 Historical petrol stations

**Records within 500m**

**0**

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.5 Historical garages

**Records within 500m**

**0**

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

*This data is sourced from Ordnance Survey / Groundsure.*



## 3 Waste and landfill

### 3.1 Active or recent landfill

Records within 500m

0

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

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

### 3.2 Historical landfill (BGS records)

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*

### 3.3 Historical landfill (LA/mapping records)

Records within 500m

0

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

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

### 3.4 Historical landfill (EA/NRW records)

Records within 500m

0

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

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

### 3.5 Historical waste sites

Records within 500m

0

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

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



### 3.6 Licensed waste sites

Records within 500m

0

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

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

### 3.7 Waste exemptions

Records within 500m

0

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

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

## 4 Current industrial land use



### 4.1 Recent industrial land uses

**Records within 250m** **0**

Current potentially contaminative industrial sites.

*This data is sourced from Ordnance Survey.*

### 4.2 Current or recent petrol stations

**Records within 500m** **0**

Open, closed, under development and obsolete petrol stations.

*This data is sourced from Experian.*

### 4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*

### 4.4 Gas pipelines

Records within 500m

2

High pressure underground gas transmission pipelines.

Features are displayed on the Current industrial land use map on **page 18**

ID	Location	Pipe Name	Details	
2	336m W	THRUNTON TO SALTWICK	Pipe Number: - Pipeline Safety Regulations Number: - Ownership: National Grid Maximum Operating Pressure (Bar): -	Pipeline Diameter (mm): 600 Wall Thickness (mm): - Year of commission: Not specified Abandonment Status: Not abandoned
3	395m NW	SIMPRIM TO CORBRIDGE	Pipe Number: - Pipeline Safety Regulations Number: - Ownership: National Grid Maximum Operating Pressure (Bar): -	Pipeline Diameter (mm): 1050 Wall Thickness (mm): - Year of commission: Not specified Abandonment Status: Not abandoned

*This data is sourced from National Grid.*

### 4.5 Sites determined as Contaminated Land

Records within 500m

0

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

*This data is sourced from Local Authority records.*

### 4.6 Control of Major Accident Hazards (COMAH)

Records within 500m

0

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

*This data is sourced from the Health and Safety Executive.*



## 4.7 Regulated explosive sites

Records within 500m

0

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

*This data is sourced from the Health and Safety Executive.*

## 4.8 Hazardous substance storage/usage

Records within 500m

0

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

*This data is sourced from Local Authority records.*

## 4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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

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

## 4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

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

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

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

Records within 500m

0

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

*This data is sourced from Local Authority records.*





## 4.12 Radioactive Substance Authorisations

Records within 500m

0

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

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

## 4.13 Licensed Discharges to controlled waters

Records within 500m

1

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

Features are displayed on the Current industrial land use map on **page 18**

ID	Location	Address	Details	
1	231m S	NEWTON MILL, MITFORD, NR MORPETH, NORTHUMBERLAND	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: 225/0913 Permit Version: 1 Receiving Water: FONT TRIBUTARY	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 25/11/1991 Effective Date: 25/11/1991 Revocation Date: -

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

## 4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

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

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

## 4.15 Pollutant release to public sewer

Records within 500m

0

Discharges of Special Category Effluents to the public sewer.

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



#### 4.16 List 1 Dangerous Substances

Records within 500m

0

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

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

#### 4.17 List 2 Dangerous Substances

Records within 500m

0

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

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

#### 4.18 Pollution Incidents (EA/NRW)

Records within 500m

0

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

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

#### 4.19 Pollution inventory substances

Records within 500m

0

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

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

#### 4.20 Pollution inventory waste transfers

Records within 500m

0

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

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



## 4.21 Pollution inventory radioactive waste

Records within 500m

0

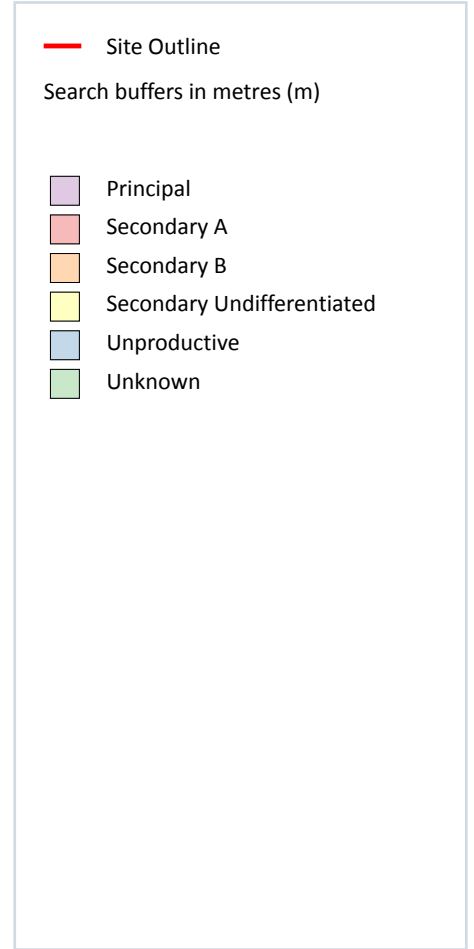
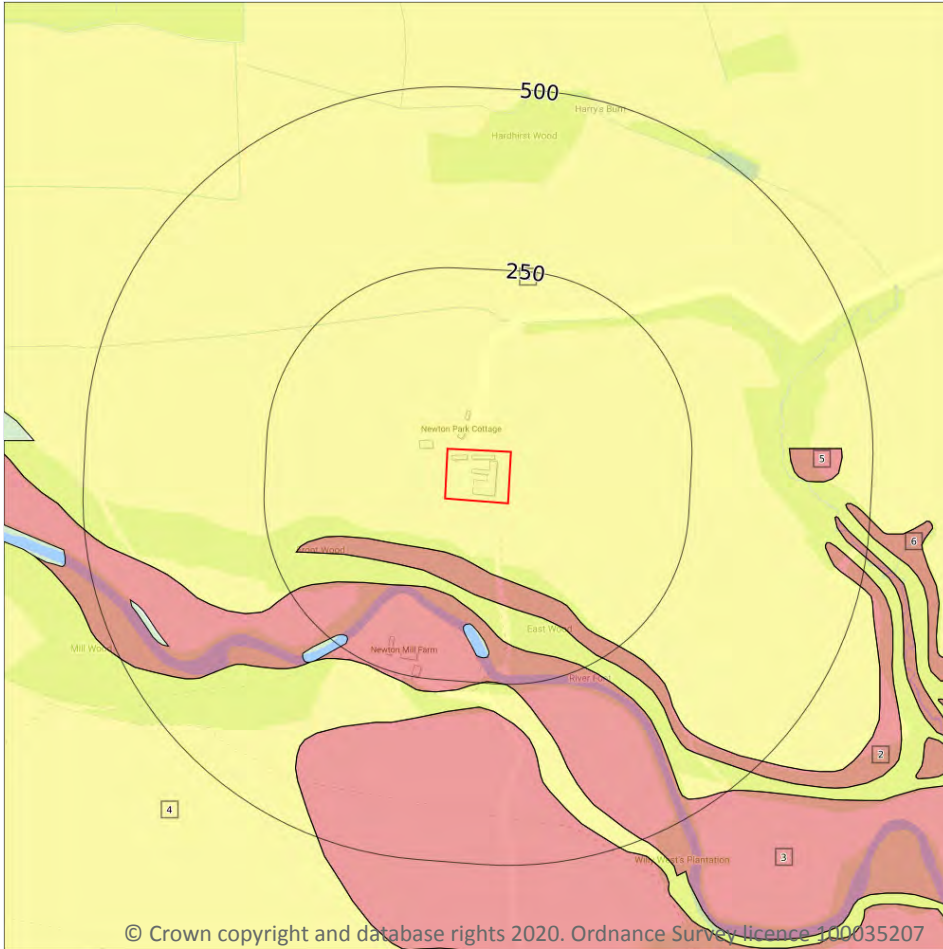
The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

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





## 5 Hydrogeology - Superficial aquifer



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### 5.1 Superficial aquifer

Records within 500m

6

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 24**

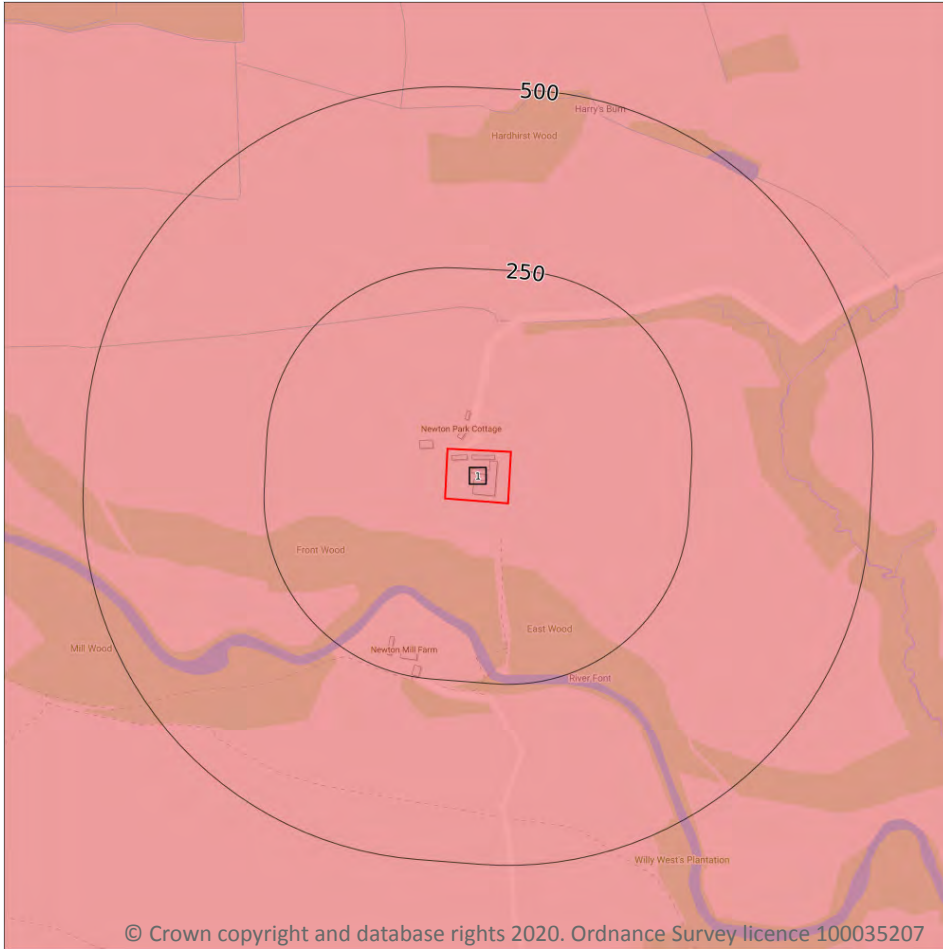
ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	73m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	125m S	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
4	248m S	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
5	385m 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	466m 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

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



## Bedrock aquifer



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

### 5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 26**

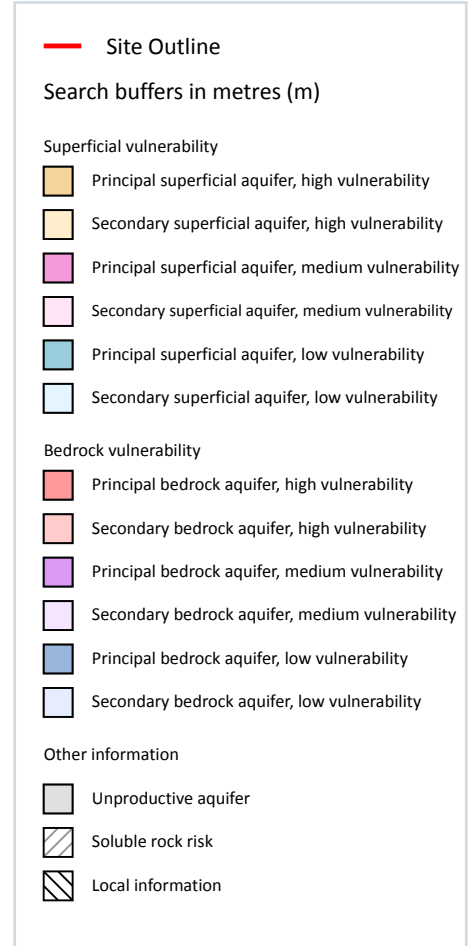
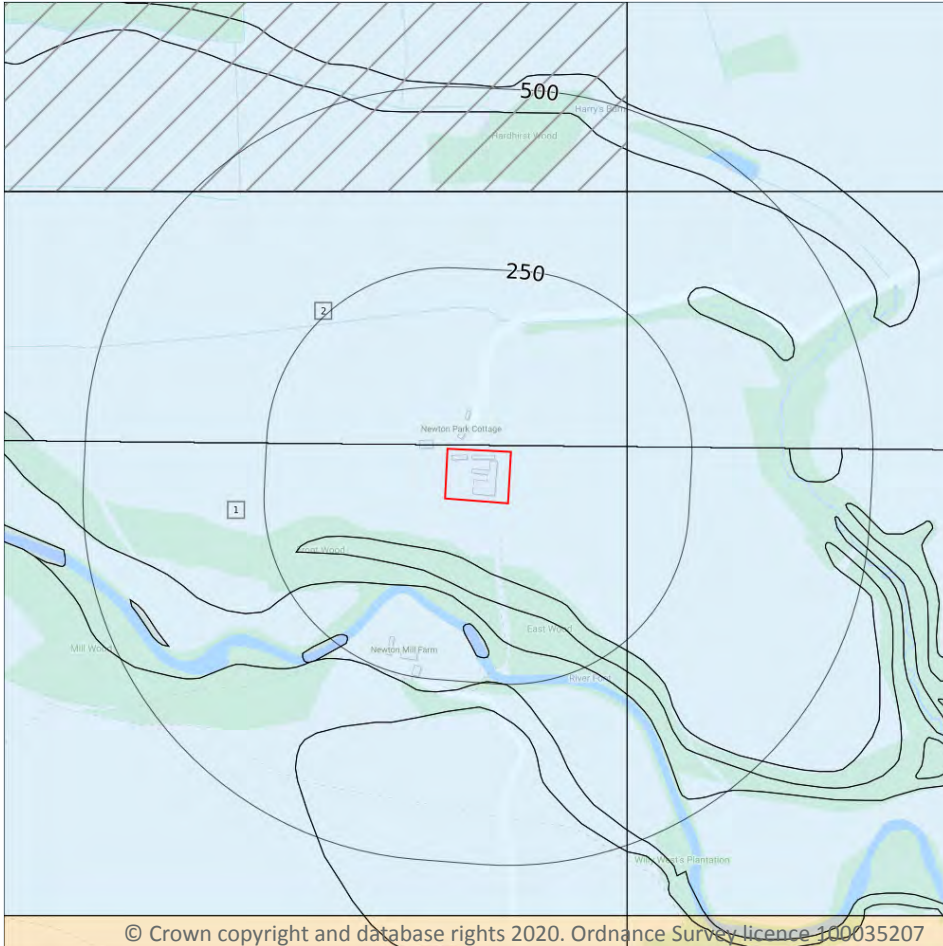
ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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





## Groundwater vulnerability



### 5.3 Groundwater vulnerability

Records within 50m

2

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

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

Features are displayed on the Groundwater vulnerability map on **page 27**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	<b>Summary Classification:</b> Secondary superficial aquifer - Low Vulnerability <b>Combined classification:</b> Productive Bedrock Aquifer, Productive Superficial Aquifer	<b>Leaching class: Low</b> <b>Infiltration value:</b> <40% <b>Dilution value: 300-</b> <b>550mm/year</b>	<b>Vulnerability: Low</b> <b>Aquifer type: Secondary</b> <b>Thickness: &gt;10m</b> <b>Patchiness value: &gt;90%</b> <b>Recharge potential: High</b>	<b>Vulnerability: Low</b> <b>Aquifer type:</b> <b>Secondary</b> <b>Flow mechanism: Well</b> <b>connected fractures</b>
2	5m N	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300- 550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: High	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

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

## 5.4 Groundwater vulnerability- soluble rock risk

<b>Records on site</b>	<b>0</b>
------------------------	----------

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

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

## 5.5 Groundwater vulnerability- local information

<b>Records on site</b>	<b>0</b>
------------------------	----------

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

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

## Abstractions and Source Protection Zones



### 5.6 Groundwater abstractions

Records within 2000m

0

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

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



## 5.7 Surface water abstractions

Records within 2000m

0

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

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

## 5.8 Potable abstractions

Records within 2000m

0

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

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

## 5.9 Source Protection Zones

Records within 500m

1

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination. Features are displayed on the Abstractions and Source Protection Zones map on **page 29**

ID	Location	Type	Description
1	106m SW	3	Total catchment

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

## 5.10 Source Protection Zones (confined aquifer)

Records within 500m

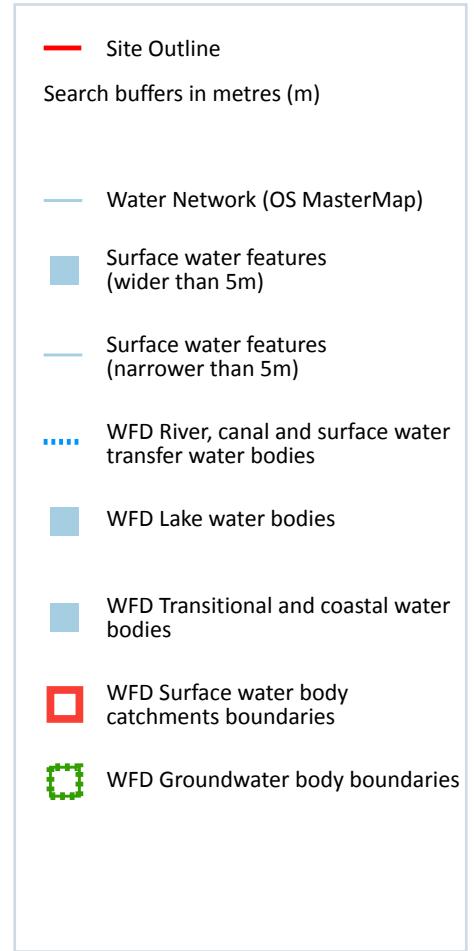
0

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

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



## 6 Hydrology



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### 6.1 Water Network (OS MasterMap)

Records within 250m

2

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 31**

ID	Location	Type of water feature	Ground level	Permanence	Name
4	136m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Font

ID	Location	Type of water feature	Ground level	Permanence	Name
A	178m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

*This data is sourced from the Ordnance Survey.*

## 6.2 Surface water features

**Records within 250m**

**4**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 31**

*This data is sourced from the Ordnance Survey.*

## 6.3 WFD Surface water body catchments

**Records on site**

**1**

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

Features are displayed on the Hydrology map on **page 31**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	On site	River WB catchment	Font from Source to Wansbeck	GB103022076510	Wansbeck	Northumberland Rivers

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

## 6.4 WFD Surface water bodies

**Records identified**

**1**

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





water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed. Features are displayed on the Hydrology map on **page 31**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
5	137m S	River	Font from Source to Wansbeck	<a href="#">GB103022076510</a>	Moderate	Good	Moderate	2016

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

## 6.5 WFD Groundwater bodies

<b>Records on site</b>	<b>1</b>
------------------------	----------

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

Features are displayed on the Hydrology map on **page 31**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	On site	Northumberland Carboniferous Limestone and Coal Measures	<a href="#">GB40302G700200</a>	Poor	Poor	Good	2015

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

## 7 River and coastal flooding

### 7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

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

### 7.2 Historical Flood Events

Records within 250m

0

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

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

### 7.3 Flood Defences

Records within 250m

0

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

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

### 7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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



## 7.5 Flood Storage Areas

Records within 250m

0

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

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





## River and coastal flooding - Flood Zones

### 7.6 Flood Zone 2

Records within 50m

0

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

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

### 7.7 Flood Zone 3

Records within 50m

0

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

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



## 8 Surface water flooding

### 8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

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

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

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

*This data is sourced from Ambiental Risk Analytics.*



## 9 Groundwater flooding



### 9.1 Groundwater flooding

<b>Highest risk on site</b>	<b>Low</b>
<b>Highest risk within 50m</b>	<b>Low</b>

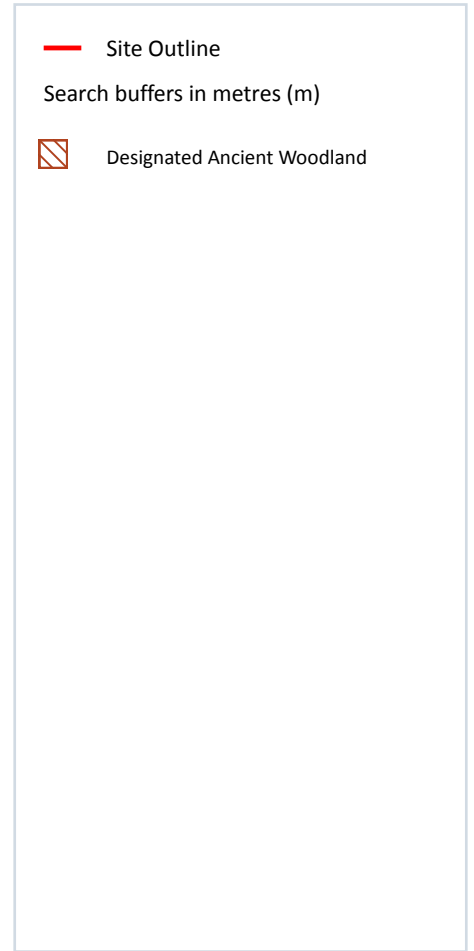
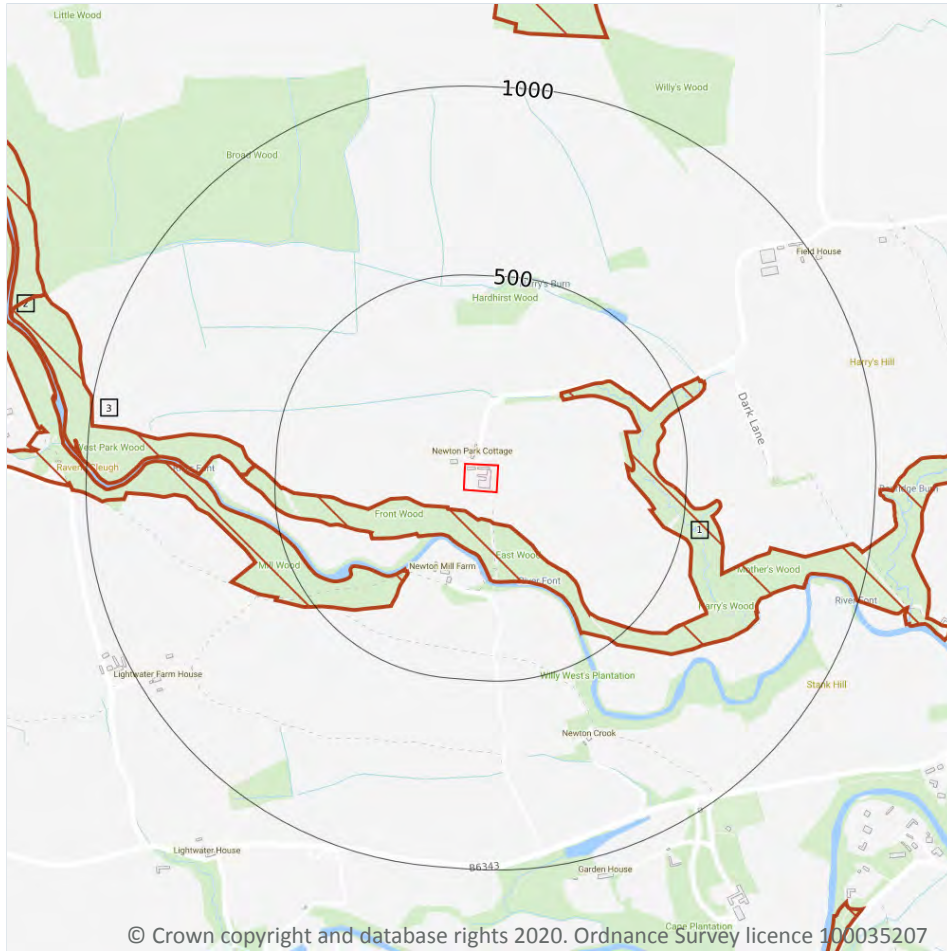
Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks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

Features are displayed on the Groundwater flooding map on **page 38**

*This data is sourced from Ambiantal Risk Analytics.*



## 10 Environmental designations



### 10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

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

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

## 10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m

0

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

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

## 10.3 Special Areas of Conservation (SAC)

Records within 2000m

0

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

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

## 10.4 Special Protection Areas (SPA)

Records within 2000m

0

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

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

## 10.5 National Nature Reserves (NNR)

Records within 2000m

0

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

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



## 10.6 Local Nature Reserves (LNR)

Records within 2000m

0

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

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

## 10.7 Designated Ancient Woodland

Records within 2000m

9

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

Features are displayed on the Environmental designations map on **page 39**

ID	Location	Name	Woodland Type
1	55m S	NUNRIDING WOOD	Ancient & Semi-Natural Woodland
2	262m SW	NUNRIDING WOOD	Ancient & Semi-Natural Woodland
3	555m W	NUNRIDING WOOD	Ancient Replanted Woodland
4	1146m N	COCKSHOT WOOD	Ancient Replanted Woodland
5	1198m W	NUNRIDING WOOD	Ancient & Semi-Natural Woodland
6	1248m E	NUNRIDING WOOD	Ancient & Semi-Natural Woodland
-	1381m S	Unknown	Ancient Replanted Woodland
8	1426m SE	Unknown	Ancient & Semi-Natural Woodland
-	1698m SE	BOROUGH WOOD	Ancient & Semi-Natural Woodland

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

## 10.8 Biosphere Reserves

Records within 2000m

0

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





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

## 10.9 Forest Parks

**Records within 2000m**

**0**

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

*This data is sourced from the Forestry Commission.*

## 10.10 Marine Conservation Zones

**Records within 2000m**

**0**

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

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

## 10.11 Green Belt

**Records within 2000m**

**0**

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

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

## 10.12 Proposed Ramsar sites

**Records within 2000m**

**0**

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

*This data is sourced from Natural England.*

## 10.13 Possible Special Areas of Conservation (pSAC)

**Records within 2000m**

**0**

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

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



## 10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

*This data is sourced from Natural England.*

## 10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

*This data is sourced from Natural England.*

## 10.16 Nitrate Vulnerable Zones

Records within 2000m

0

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

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



## SSSI Impact Zones and Units

### 10.17 SSSI Impact Risk Zones

Records on site

0

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

*This data is sourced from Natural England.*

### 10.18 SSSI Units

Records within 2000m

0

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

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



## 11 Visual and cultural designations

### 11.1 World Heritage Sites

Records within 250m

0

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

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

### 11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

### 11.3 National Parks

Records within 250m

0

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

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

### 11.4 Listed Buildings

Records within 250m

0

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





*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*

## 11.5 Conservation Areas

**Records within 250m**

**0**

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

*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*

## 11.6 Scheduled Ancient Monuments

**Records within 250m**

**0**

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

*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*

## 11.7 Registered Parks and Gardens

**Records within 250m**

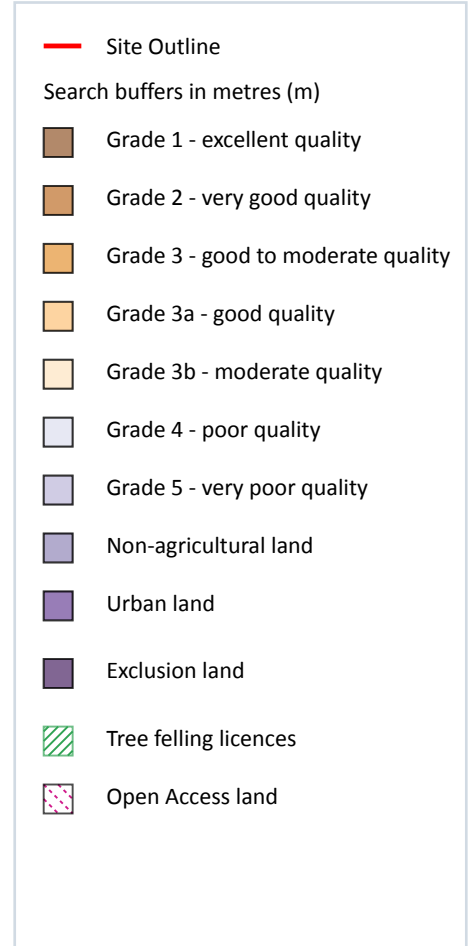
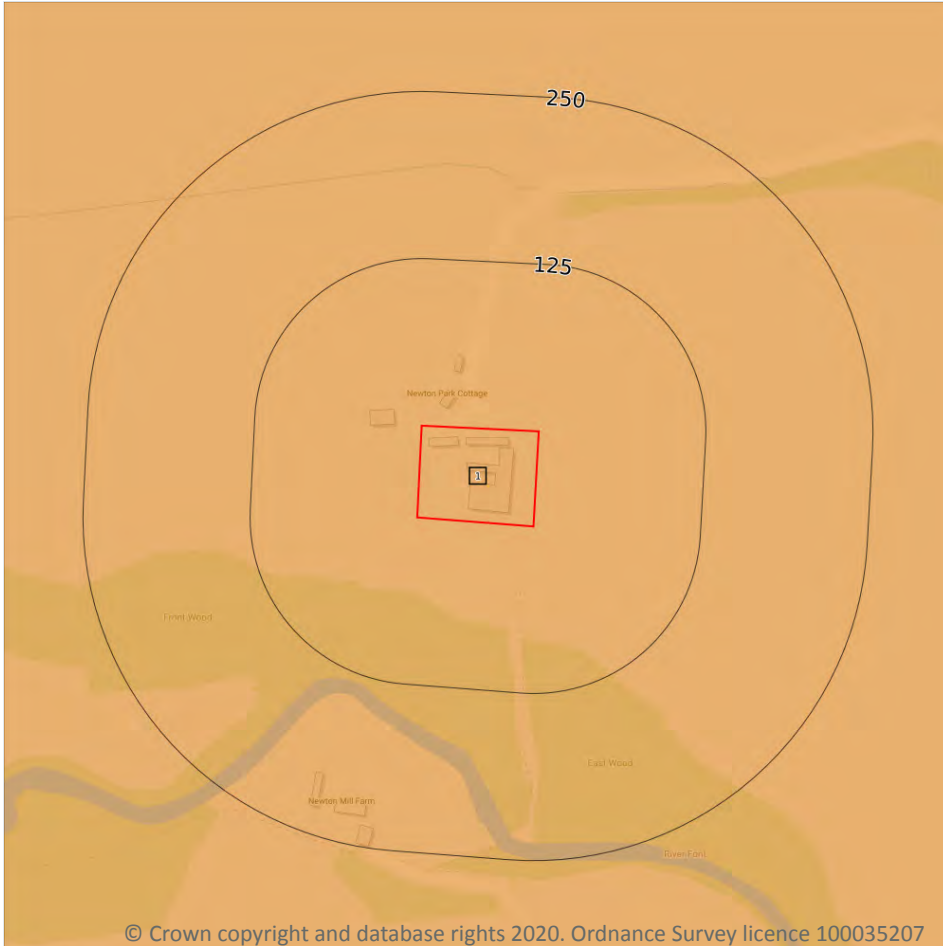
**0**

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

*This data is sourced from English Heritage, Cadw and Historic Environment Scotland.*



## 12 Agricultural designations



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### 12.1 Agricultural Land Classification

Records within 250m

1

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

Features are displayed on the Agricultural designations map on **page 47**

ID	Location	Classification	Description
1	On site	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

This data is sourced from Natural England.



## 12.2 Open Access Land

Records within 250m

0

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

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

## 12.3 Tree Felling Licences

Records within 250m

0

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

*This data is sourced from the Forestry Commission.*

## 12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment.

*This data is sourced from Natural England.*

## 12.5 Countryside Stewardship Schemes

Records within 250m

1

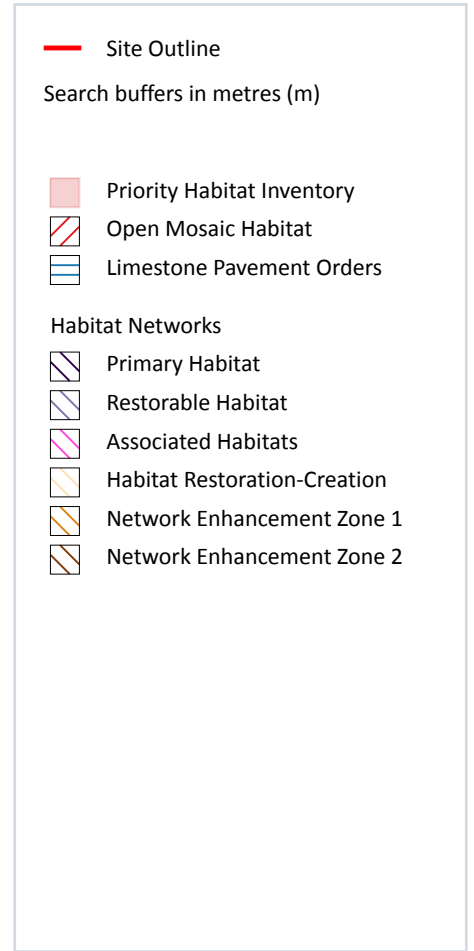
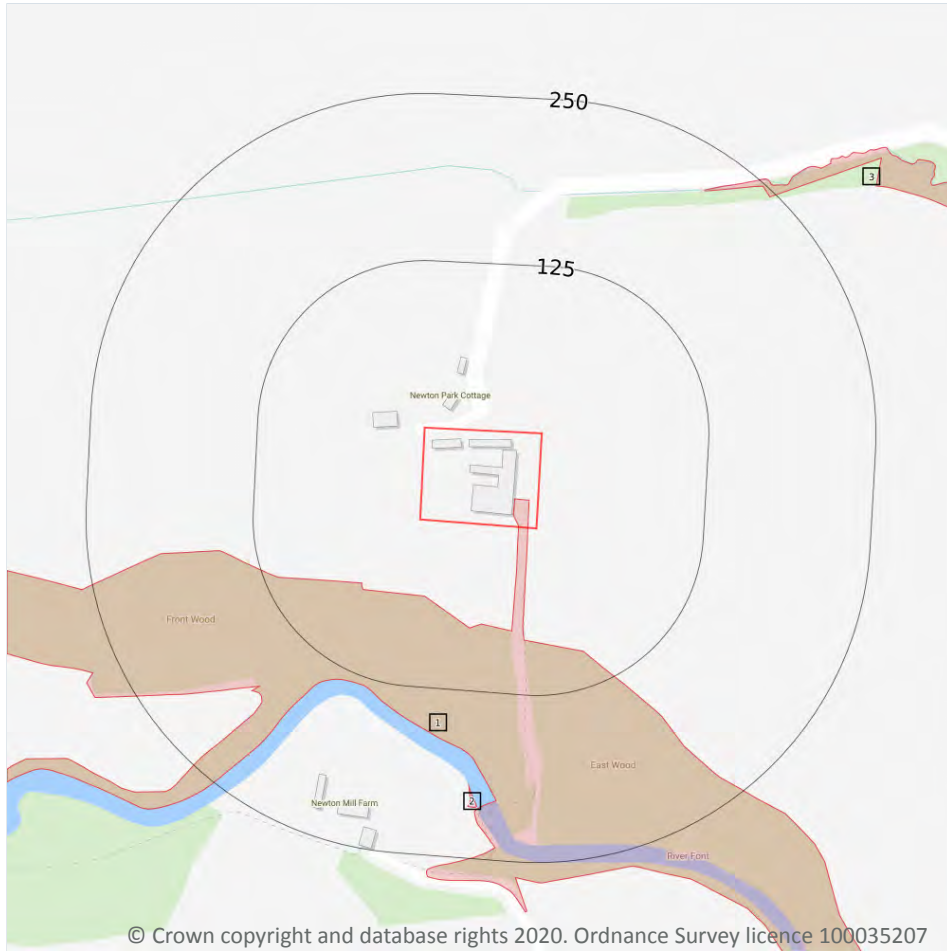
Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

Location	Reference	Scheme	Start Date	End Date
On site	643348	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023

*This data is sourced from Natural England.*



## 13 Habitat designations



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### 13.1 Priority Habitat Inventory

Records within 250m

3

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

Features are displayed on the Habitat designations map on **page 49**

ID	Location	Main Habitat	Other habitats
1	On site	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	196m S	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	219m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.



## 13.2 Habitat Networks

Records within 250m

0

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

*This data is sourced from Natural England.*

## 13.3 Open Mosaic Habitat

Records within 250m

0

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

*This data is sourced from Natural England.*

## 13.4 Limestone Pavement Orders

Records within 250m

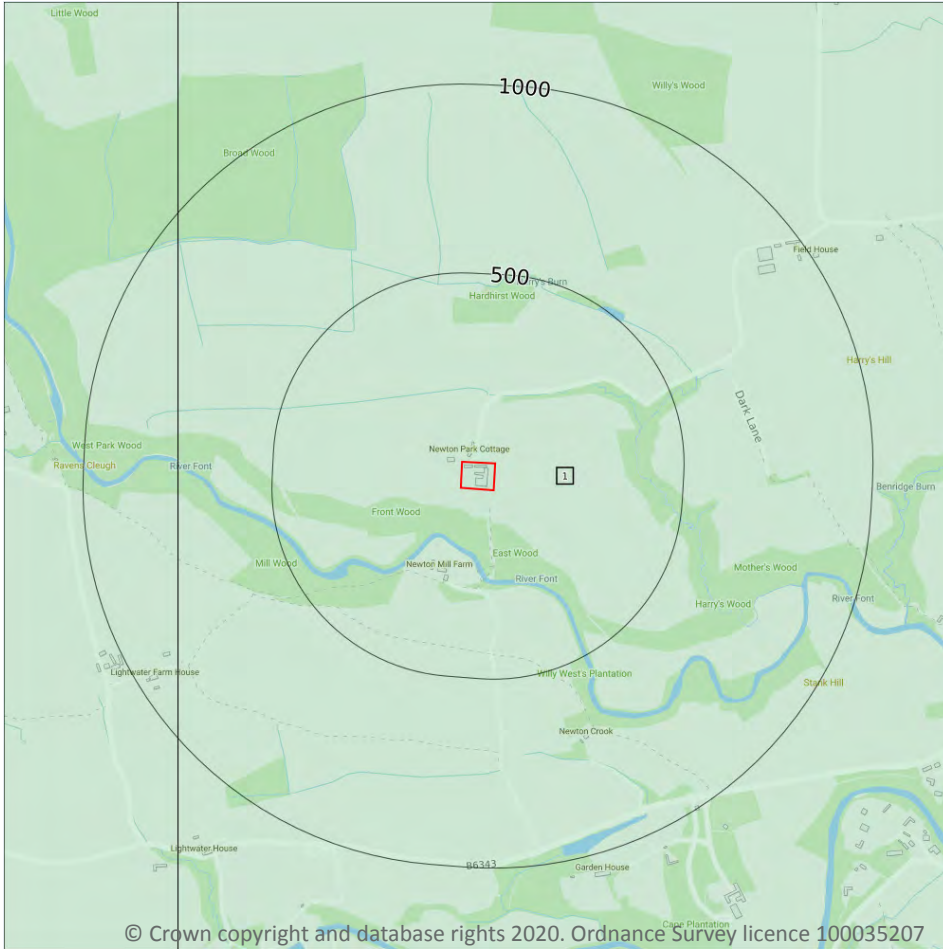
0

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

*This data is sourced from Natural England.*



## 14 Geology 1:10,000 scale - Availability



— Site Outline  
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

### 14.1 10k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 51**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	NZ18NE

*This data is sourced from the British Geological Survey.*

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

### 14.2 Artificial and made ground (10k)

Records within 500m

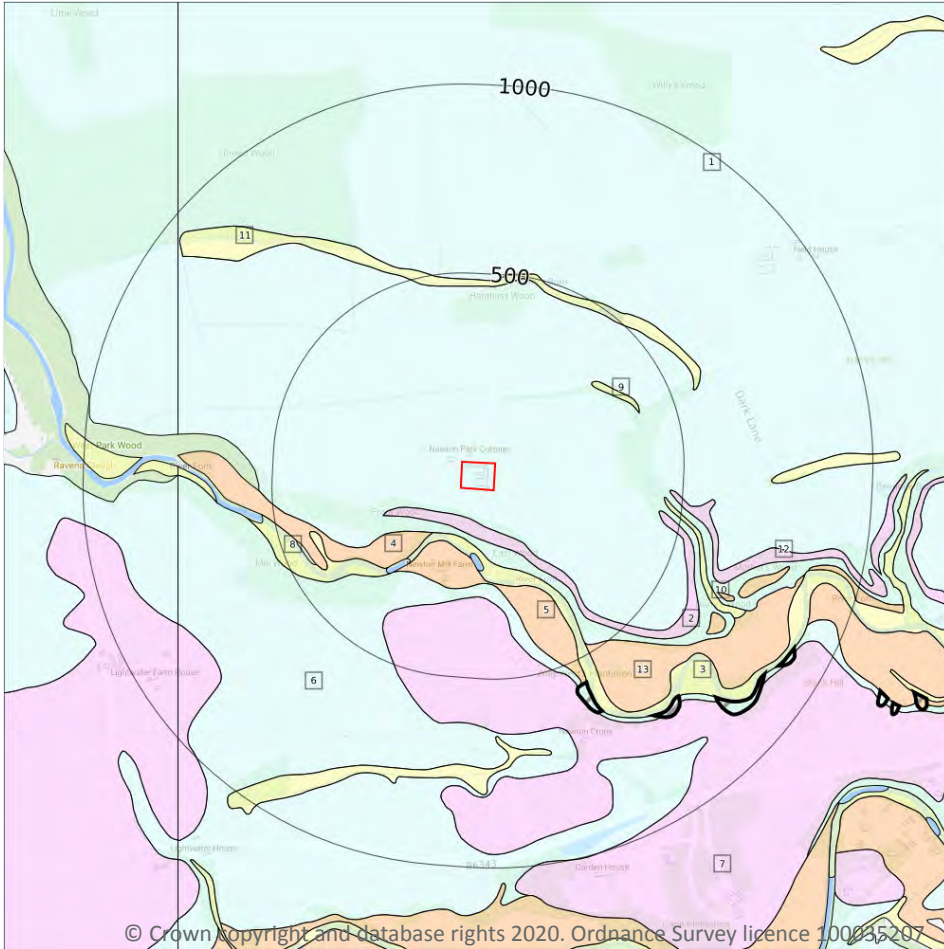
0

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

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Superficial



- Site Outline
- Search buffers in metres (m)
- Landslip (10k)
- Superficial geology (10k)  
Please see table for more details.

### 14.3 Superficial geology (10k)

Records within 500m

13

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 53**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
2	73m S	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
3	125m S	ALV-XVSZ	Alluvium - Gravel, Sand And Silt	Gravel, Sand And Silt



ID	Location	LEX Code	Description	Rock description
4	140m SW	RTDU-XVSZ	River Terrace Deposits (undifferentiated) - Gravel, Sand And Silt	Gravel, Sand And Silt
5	147m S	RTDU-XVSZ	River Terrace Deposits (undifferentiated) - Gravel, Sand And Silt	Gravel, Sand And Silt
6	248m S	TILLD-DMTN	Till, Devensian - Diamicton	Diamicton
7	284m S	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
8	287m SW	ALV-XVSZ	Alluvium - Gravel, Sand And Silt	Gravel, Sand And Silt
9	330m NE	ALV-XVSZ	Alluvium - Gravel, Sand And Silt	Gravel, Sand And Silt
10	452m E	ALV-XVSZ	Alluvium - Gravel, Sand And Silt	Gravel, Sand And Silt
11	465m N	ALV-XVSZ	Alluvium - Gravel, Sand And Silt	Gravel, Sand And Silt
12	466m E	GFDUD-XSV	Glaciofluvial Deposits, Devensian - Sand And Gravel	Sand And Gravel
13	470m SE	RTDU-XVSZ	River Terrace Deposits (undifferentiated) - Gravel, Sand And Silt	Gravel, Sand And Silt

*This data is sourced from the British Geological Survey.*

## 14.4 Landslip (10k)

**Records within 500m**

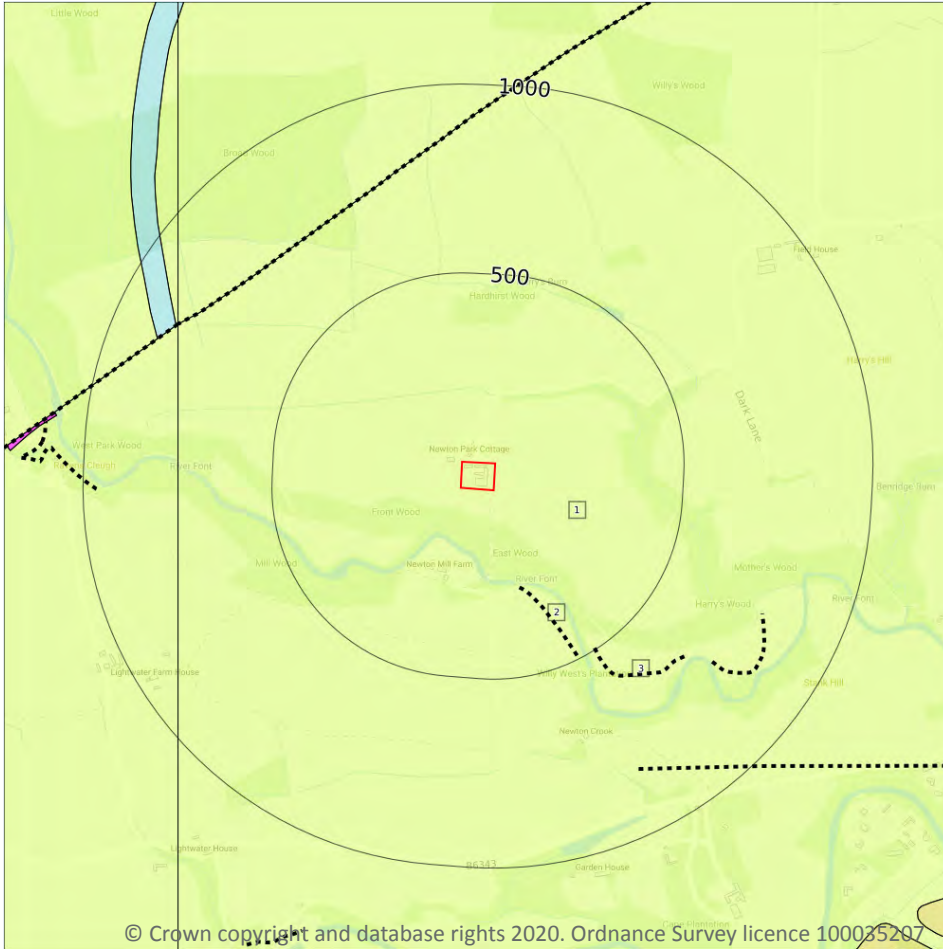
**0**

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

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- ..... Bedrock faults and other linear features (10k)
- Bedrock geology (10k)  
Please see table for more details.

### 14.5 Bedrock geology (10k)

Records within 500m

1

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 55**

ID	Location	LEX Code	Description	Rock age
1	On site	SMGP-MDSS	Stainmore Formation - Mudstone, Siltstone And Sandstone	Namurian Age

*This data is sourced from the British Geological Survey.*

## 14.6 Bedrock faults and other linear features (10k)

Records within 500m

2

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

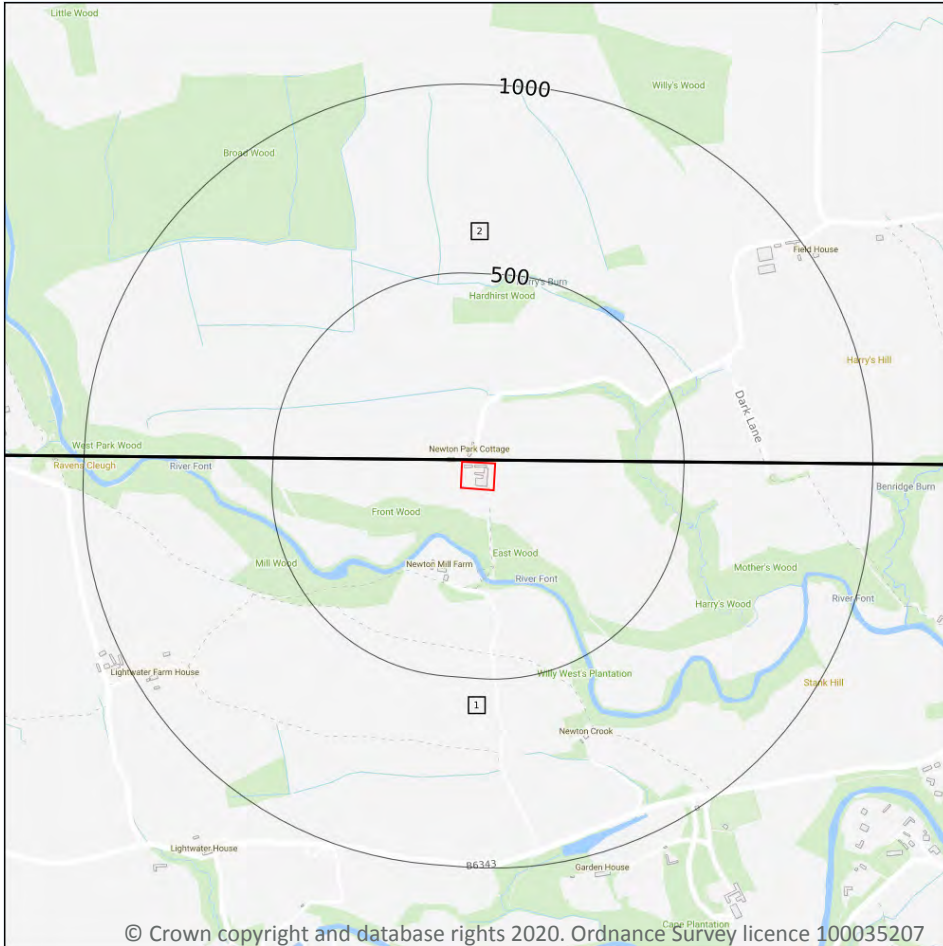
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 55**

ID	Location	Category	Description
2	264m S	LANDFORM	Backfeature of terrace margin, arrowheads denote uphill side
3	496m SE	LANDFORM	Backfeature of terrace margin, arrowheads denote uphill side

*This data is sourced from the British Geological Survey.*



## 15 Geology 1:50,000 scale - Availability



**Site Outline**

Search buffers in metres (m)

**Geological map tile**

### 15.1 50k Availability

Records within 500m

2

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 57**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW014_morpeth_v4
2	5m N	No coverage	Full	Full	No coverage	EW009_rothbury_v4

This data is sourced from the British Geological Survey.



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

### 15.2 Artificial and made ground (50k)

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*

### 15.3 Artificial ground permeability (50k)

Records within 50m

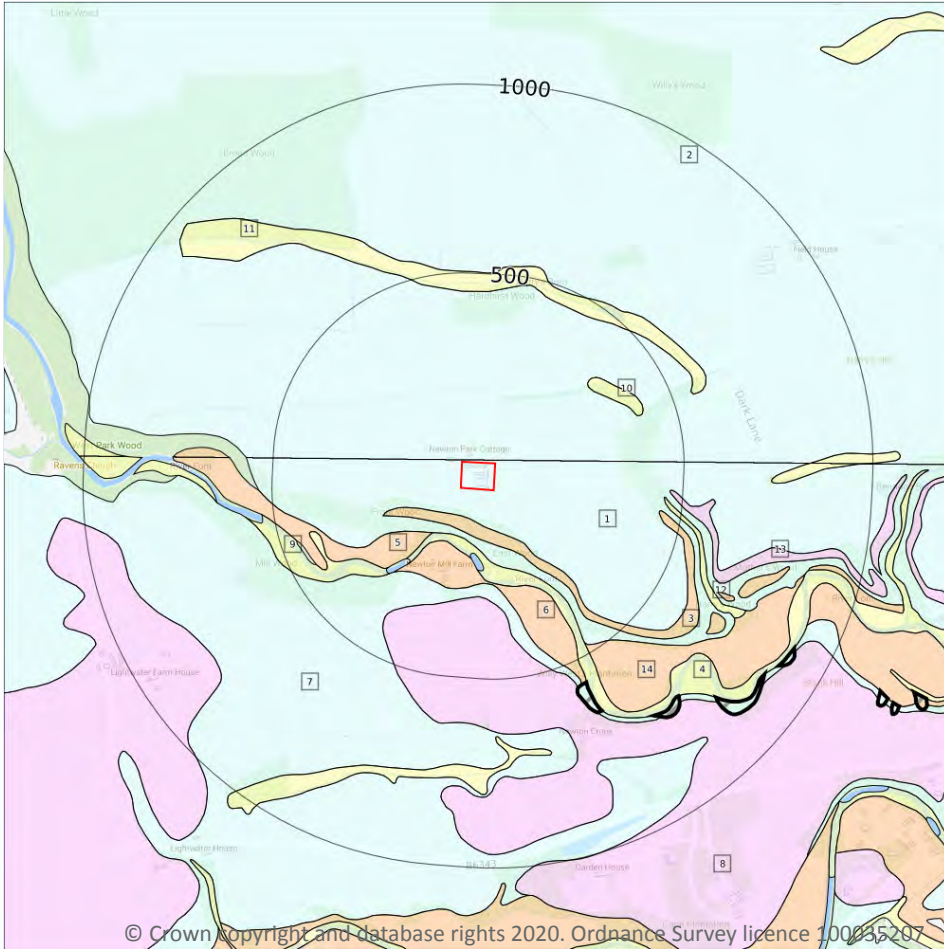
0

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

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Superficial



**— Site Outline**  
Search buffers in metres (m)

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

### 15.4 Superficial geology (50k)

Records within 500m

14

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 59**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON
2	5m N	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON
3	73m S	RTDU-XVSZ	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	GRAVEL, SAND AND SILT

ID	Location	LEX Code	Description	Rock description
4	125m S	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
5	141m SW	RTDU-XVSZ	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	GRAVEL, SAND AND SILT
6	147m S	RTDU-XVSZ	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	GRAVEL, SAND AND SILT
7	248m S	TILLD-DMTN	TILL, DEVENSIAN	DIAMICTON
8	284m S	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
9	287m SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
10	320m NE	ALV-XVSZ	ALLUVIUM	GRAVEL, SAND AND SILT
11	452m N	ALV-XVSZ	ALLUVIUM	GRAVEL, SAND AND SILT
12	452m E	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
13	466m E	GFDUD-XSV	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL
14	470m SE	RTDU-XVSZ	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	GRAVEL, SAND AND SILT

This data is sourced from the British Geological Survey.

## 15.5 Superficial permeability (50k)

<b>Records within 50m</b>	<b>1</b>
---------------------------	----------

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

Location	Flow type	Maximum permeability	Minimum permeability
<b>On site</b>	<b>Mixed</b>	<b>High</b>	<b>Low</b>

This data is sourced from the British Geological Survey.

## 15.6 Landslip (50k)

<b>Records within 500m</b>	<b>0</b>
----------------------------	----------

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

This data is sourced from the British Geological Survey.



## 15.7 Landslip permeability (50k)

Records within 50m

0

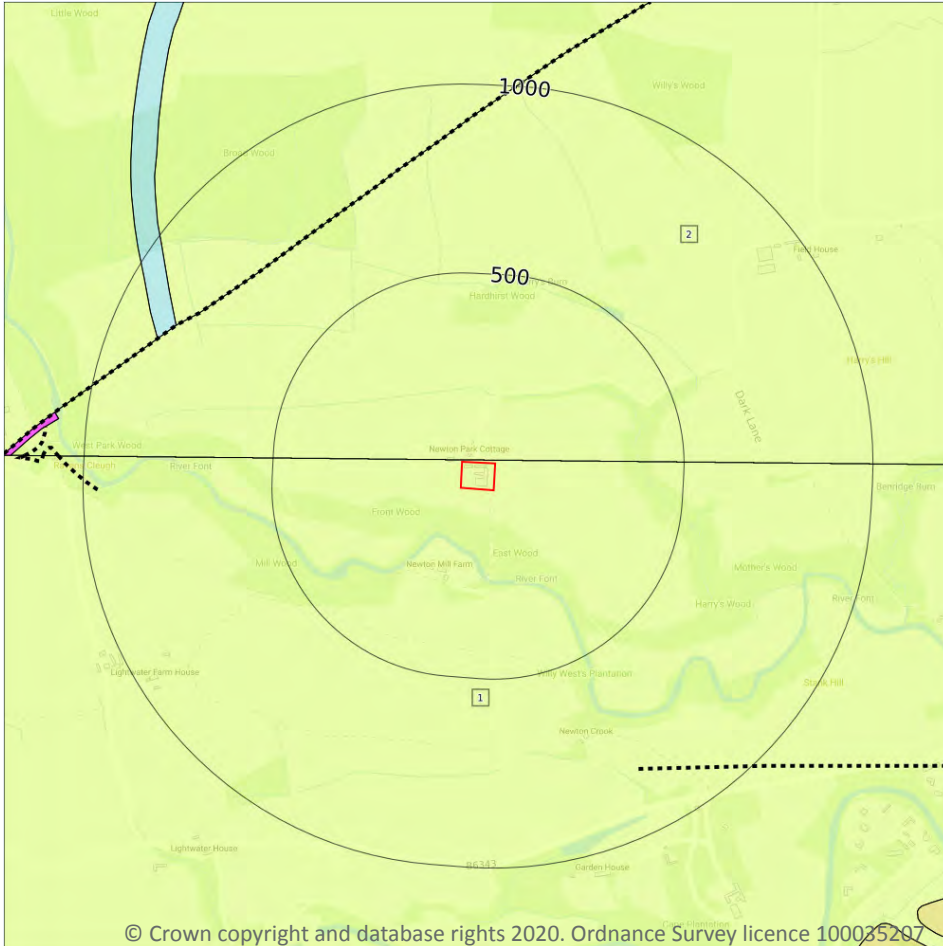
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

*This data is sourced from the British Geological Survey.*





## Geology 1:50,000 scale - Bedrock



**— Site Outline**

Search buffers in metres (m)

**..... Bedrock faults and other linear features (50k)**

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

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### 15.8 Bedrock geology (50k)

<b>Records within 500m</b>	<b>2</b>
----------------------------	----------

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 62**

ID	Location	LEX Code	Description	Rock age
1	On site	SMGP-MDSL	STAINMORE FORMATION - MUDSTONE, SANDSTONE AND LIMESTONE	NAMURIAN
2	5m N	SMGP-MDSS	STAINMORE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN

*This data is sourced from the British Geological Survey.*

## 15.9 Bedrock permeability (50k)

Records within 50m

2

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

Location	Flow type	Maximum permeability	Minimum permeability
<b>On site</b>	<b>Fracture</b>	<b>High</b>	<b>Low</b>
5m NE	Fracture	Moderate	Low

*This data is sourced from the British Geological Survey.*

## 15.10 Bedrock faults and other linear features (50k)

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*

## 16 Boreholes

### 16.1 BGS Boreholes

Records within 250m

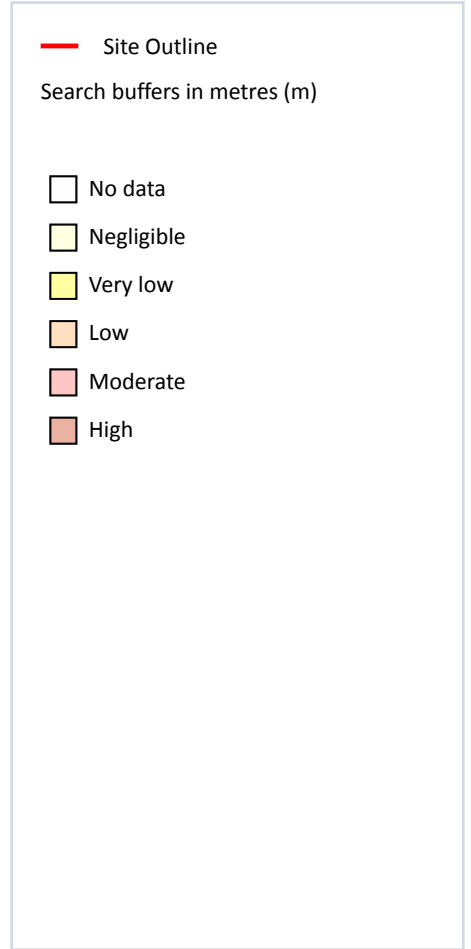
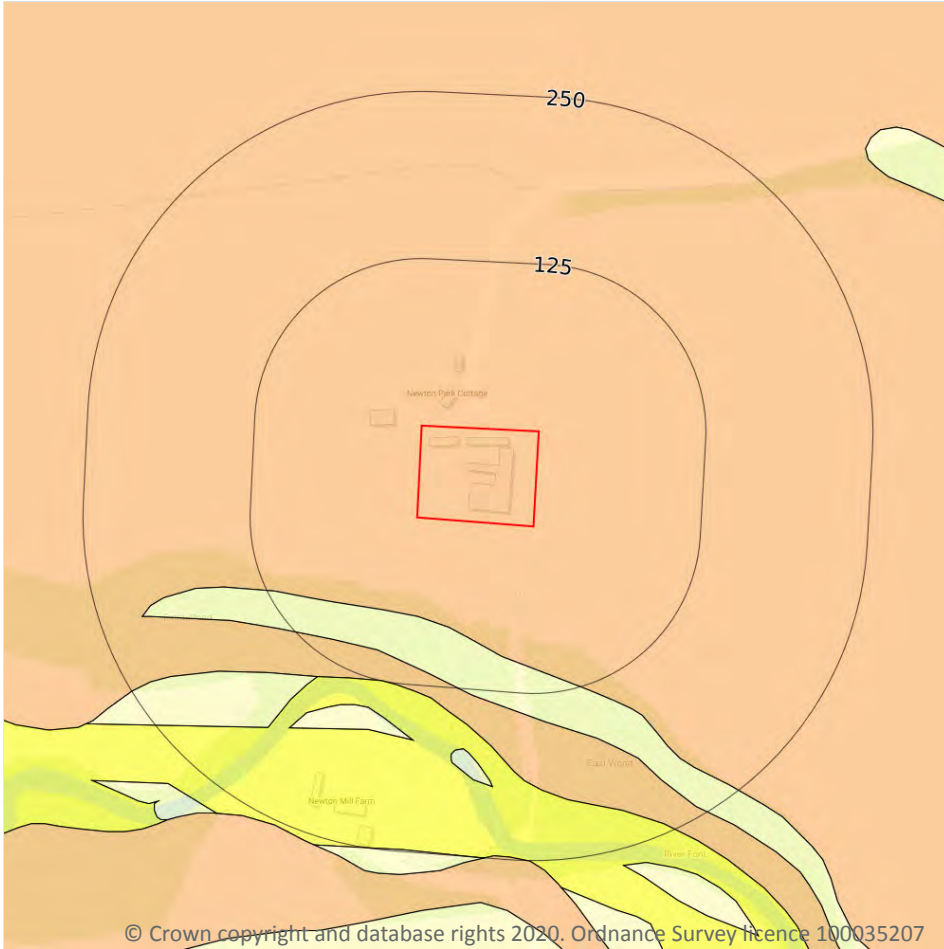
0

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

*This data is sourced from the British Geological Survey.*



## 17 Natural ground subsidence - Shrink swell clays



### 17.1 Shrink swell clays

Records within 50m

1

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

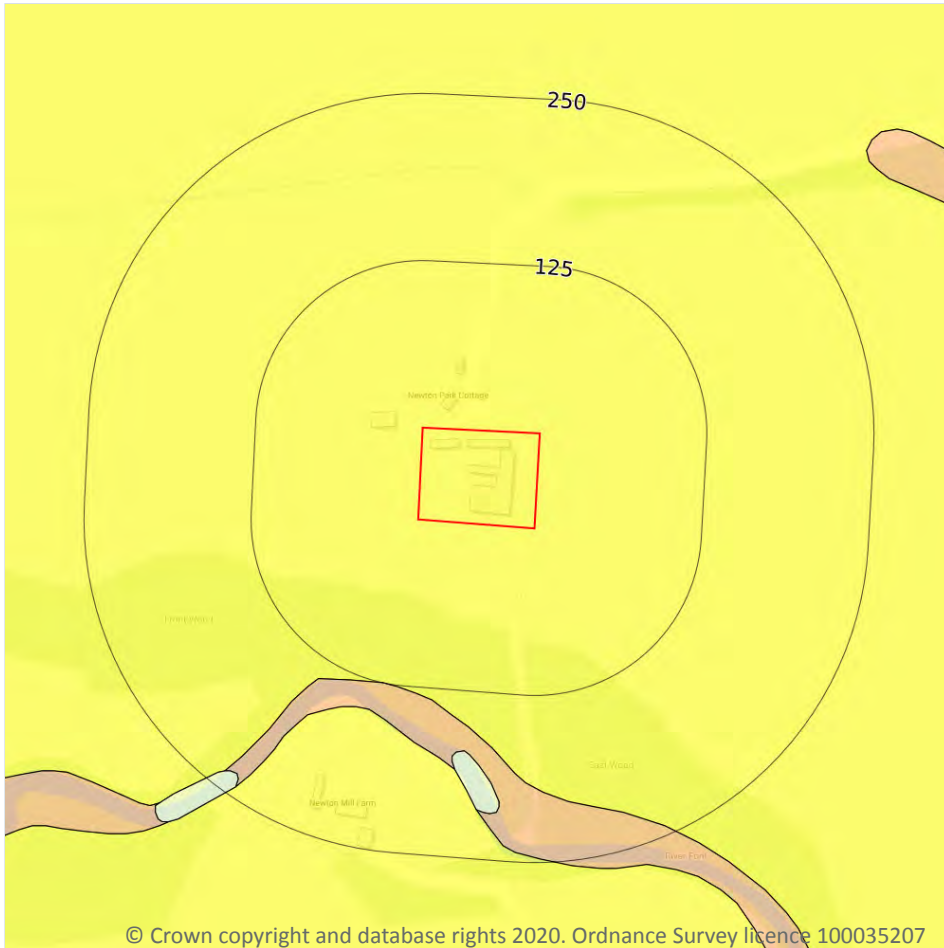
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 65**

Location	Hazard rating	Details
On site	Low	Ground conditions predominantly medium plasticity.

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Running sands



**Site Outline**

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

### 17.2 Running sands

**Records within 50m**

**1**

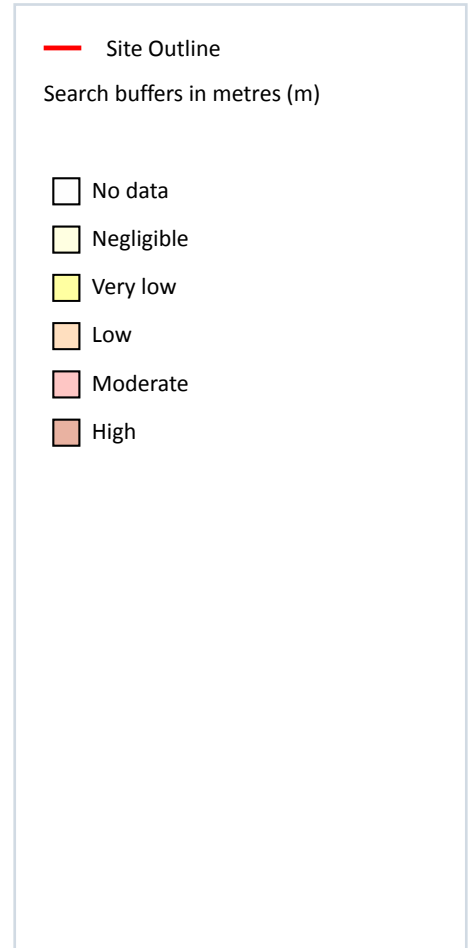
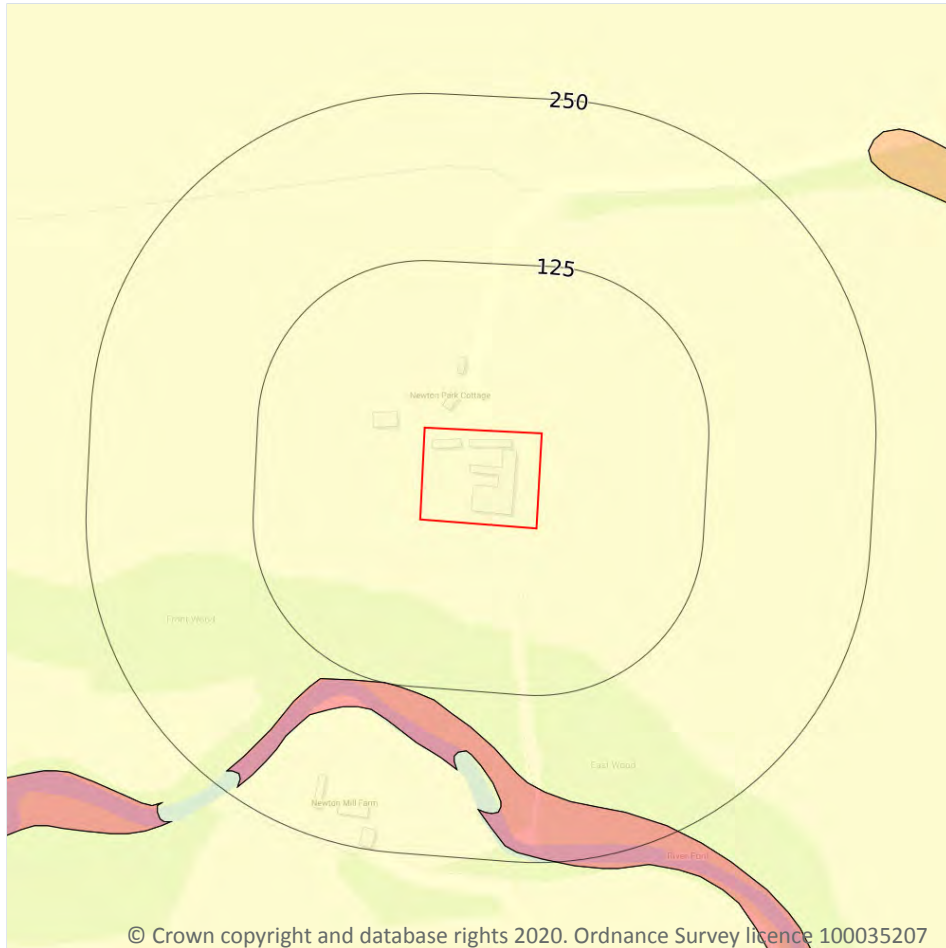
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 66**

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

*This data is sourced from the British Geological Survey.*

## Natural ground subsidence - Compressible deposits



### 17.3 Compressible deposits

Records within 50m

1

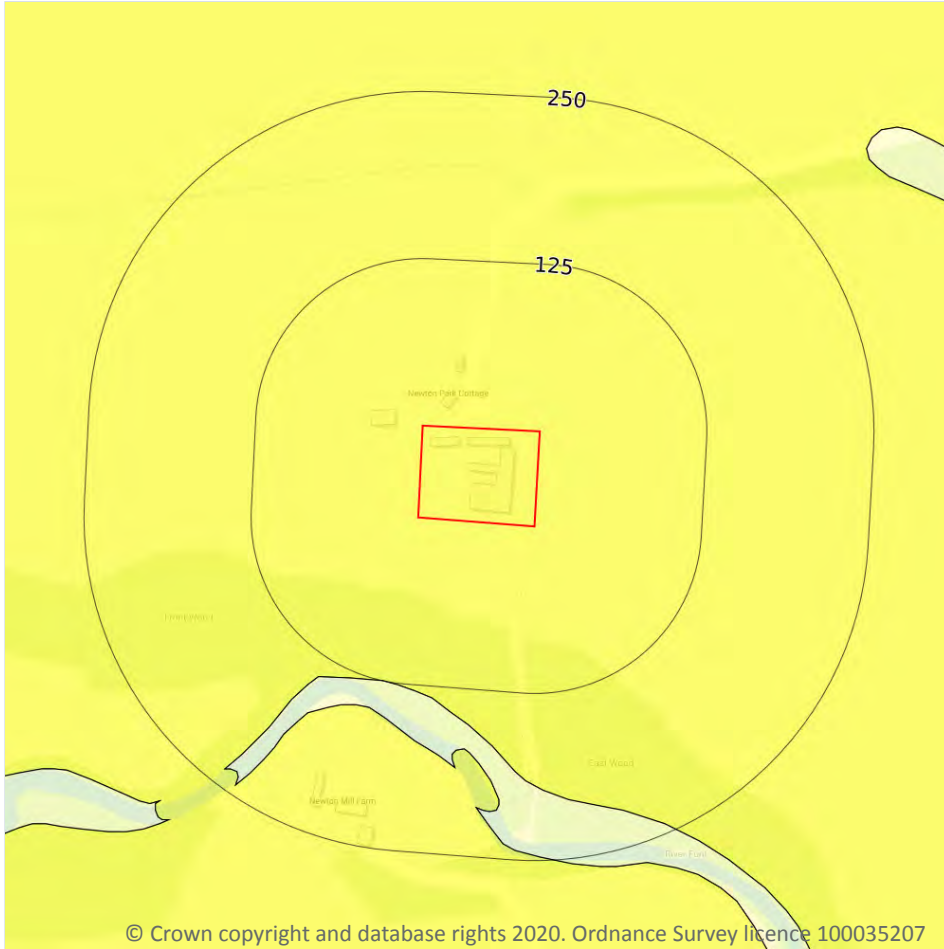
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 67**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

*This data is sourced from the British Geological Survey.*

## Natural ground subsidence - Collapsible deposits



**— Site Outline**

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

### 17.4 Collapsible deposits

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 68**

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

*This data is sourced from the British Geological Survey.*

## Natural ground subsidence - Landslides



### 17.5 Landslides

Records within 50m

1

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

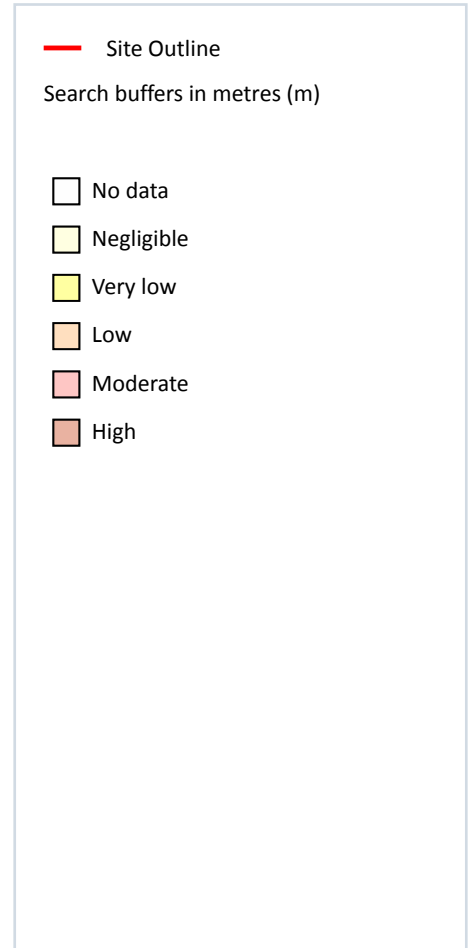
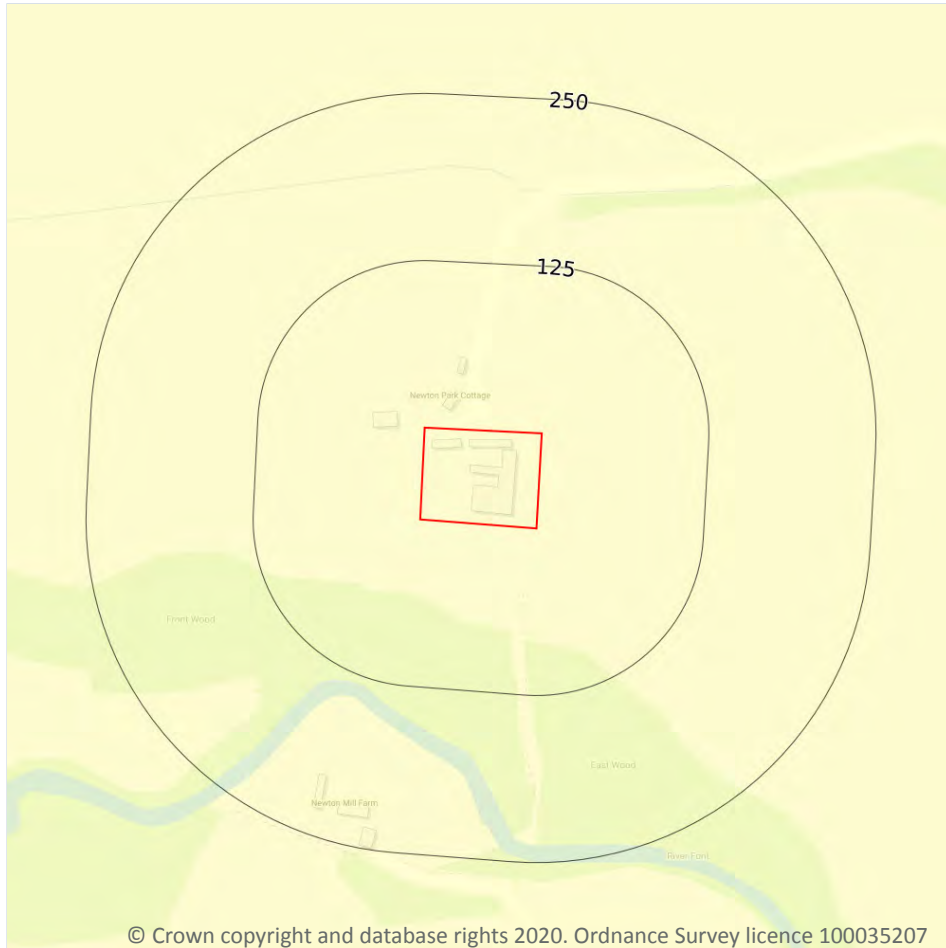
Features are displayed on the Natural ground subsidence - Landslides map on **page 69**

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

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Ground dissolution of soluble rocks



### 17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 70**

Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

*This data is sourced from the British Geological Survey.*

## 18 Mining, ground workings and natural cavities



### 18.1 Natural cavities

Records within 500m

0

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

*This data is sourced from Peter Brett Associates (PBA).*

## 18.2 BritPits

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*

## 18.3 Surface ground workings

Records within 250m

1

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 71**

ID	Location	Land Use	Year of mapping	Mapping scale
2	245m S	Water Body	1863	1:10560

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.4 Underground workings

Records within 1000m

0

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

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.5 Historical Mineral Planning Areas

Records within 500m

0

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

*This data is sourced from the British Geological Survey.*



## 18.6 Non-coal mining

Records within 1000m

2

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 71**

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Vein Mineral	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
-	749m W	Not available	Vein Mineral	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

*This data is sourced from the British Geological Survey.*

## 18.7 Mining cavities

Records within 1000m

0

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

*This data is sourced from Peter Brett Associates (PBA).*

## 18.8 JPB mining areas

Records on site

0

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

*This data is sourced from Johnson Poole and Bloomer.*





## 18.9 Coal mining

Records on site	0
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Areas which could be affected by past, current or future coal mining.

*This data is sourced from the Coal Authority.*

## 18.10 Brine areas

Records on site	0
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The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

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

## 18.11 Gypsum areas

Records on site	0
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Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

*This data is sourced from Mining Searches UK.*

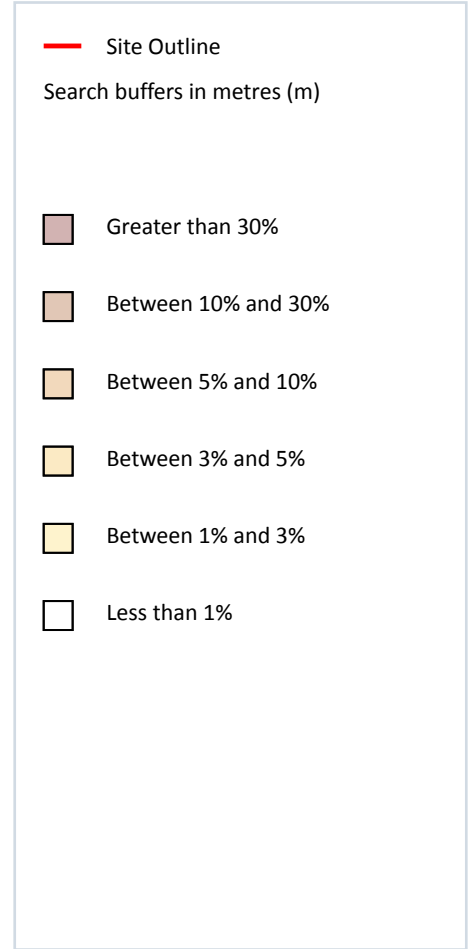
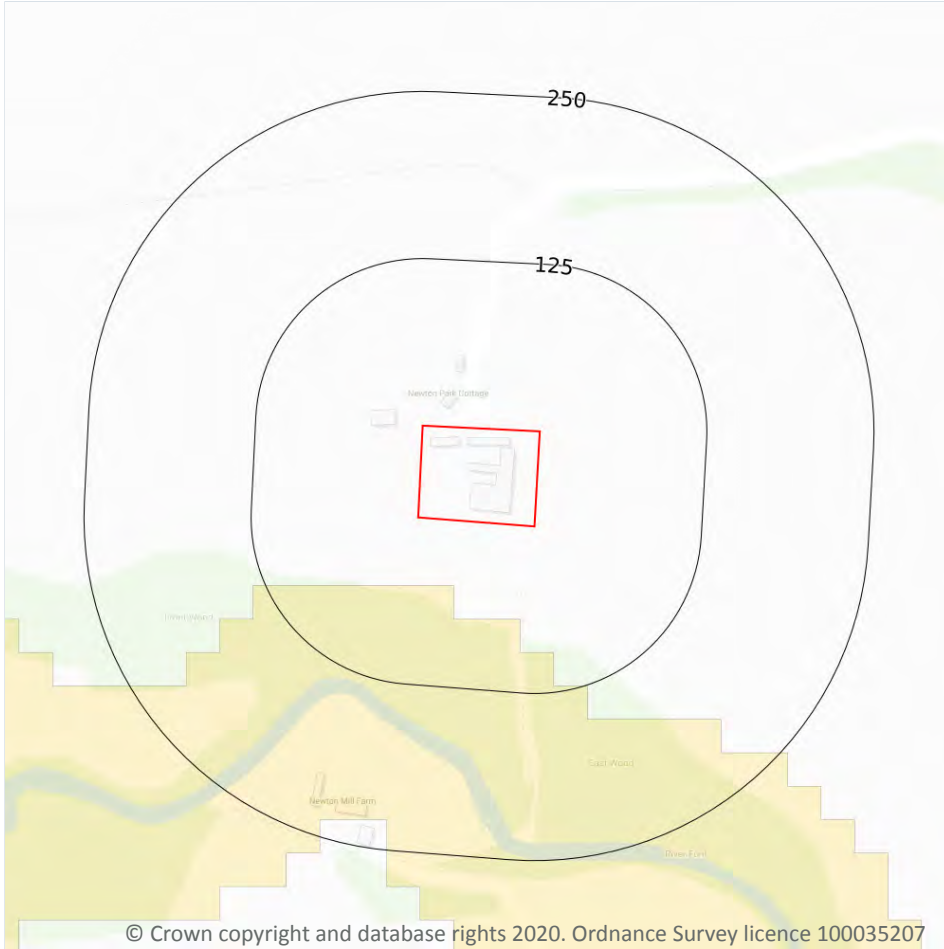
## 18.13 Clay mining

Records on site	0
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Generalised areas that may be affected by kaolin and ball clay extraction.

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

## 19 Radon



### 19.1 Radon

#### Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 75**

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None**

*This data is sourced from the British Geological Survey and Public Health England.*

## 20 Soil chemistry

### 20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
5m N	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

*This data is sourced from the British Geological Survey.*

### 20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km<sup>2</sup>).

*This data is sourced from the British Geological Survey.*

### 20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km<sup>2</sup>.

*This data is sourced from the British Geological Survey.*



## 21 Railway infrastructure and projects

### 21.1 Underground railways (London)

Records within 250m

0

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

*This data is sourced from publicly available information by Groundsure.*

### 21.2 Underground railways (Non-London)

Records within 250m

0

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

*This data is sourced from publicly available information by Groundsure.*

### 21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

### 21.4 Historical railway and tunnel features

Records within 250m

0

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

*This data is sourced from Ordnance Survey/Groundsure.*

### 21.5 Royal Mail tunnels

Records within 250m

0

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





*This data is sourced from Groundsure/the Postal Museum.*

## 21.6 Historical railways

**Records within 250m**

**0**

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

*This data is sourced from OpenStreetMap.*

## 21.7 Railways

**Records within 250m**

**0**

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

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 21.8 Crossrail 1

**Records within 500m**

**0**

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

*This data is sourced from publicly available information by Groundsure.*

## 21.9 Crossrail 2

**Records within 500m**

**0**

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

*This data is sourced from publicly available information by Groundsure.*

## 21.10 HS2

**Records within 500m**

**0**

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

*This data is sourced from HS2 Ltd.*



## Data providers

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

## Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-jan-2020/>.



APPENDIX D  
SITE WALKOVER PHOTOS











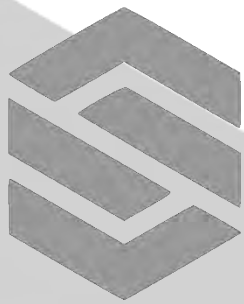












# SHADBOLT GROUP

DESIGN | MANAGE | CONSTRUCT