

GROUNDTECH
CONSULTING

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Plans		
Plan Reference	Revision	Title
20046 01	-	*Project Location Plan*
20046 02	-	*Preliminary Development Constraints Plan*
20046 03	-	*Illustrative Preliminary CSM*

1.0 INTRODUCTION

1.1 Project Objectives

Groundtech Consulting Limited have been instructed by Johnson Mowat Planning Limited and their consultant Walker Ingram Associates Limited to undertake a Preliminary Risk Assessment for a site at Lee Lane in Royston.

The objectives of the Preliminary Risk Assessment were to establish the sites environmental and geotechnical background in order to generate a Conceptual Site Model to identify any potential constraints and linkages which may affect the redevelopment of the site.

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

1.2 Proposed Development

The proposed development is for residential end-use comprising low-rise housing with associated soft landscaped gardens and infrastructure.

1.3 Limitations

This Preliminary Risk Assessment is based on information obtained from a number of sources, and the information is assumed to be correct.

Other conditions may exist on the site that have not been taken into account in this assessment as they are outside the scope of works. Groundtech Consulting are not responsible for these circumstances that are not outlined in the report.

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2.0 SITE SETTING

2.1 Location

The site is located circa 4.8 kilometres north of Barnsley Town Centre, as shown on the Project Location Plan 20046 01 and is approximately centred on National Grid Reference 434944, 411325.



Access to the site is gained off Lee Lane to the north of the site.

2.2 Site Description

The site, which is irregular in shape, covers an area of 3.57Ha and gently slopes down to the north west.

There are no existing structures on the site at present. The site comprises grass fields with a large area of standing water at the surface of the site in the north, where the site slopes down.

A single caravan is present in the centre of the site adjacent to a stand of trees running north west to south east, which divides the site into two.

Trees and hedgerows with post and wire fencing bound the site on all sides.

The site is surrounded by:

- North - Lee Lane with a new residential development beyond.
- East - A residential housing estate.
- South - Undeveloped fields.
- West - Undeveloped fields.

Photographs are presented in Appendix 2 and any relevant features are recorded on the Preliminary Development Constraints Plan 20046 02.

3.0 ENVIRONMENTAL SETTING

3.1 Site History

Available historical maps have been obtained and a list of dates and scale are listed in the table below:

Scale	Date
1:1,250	*1976, 1993, 2003.*
1:2,500	*1893, 1906, 1913-1918, 1960, 1970, 1993.*
1:10,000/10,560	*1854, 1891, 1904, 1930, 1938, 1948, 1951-1956, 1965-1966, 1973-1978, 1989-1993, 2001, 2010, 2020.*

The plans were examined and potential issues have been identified and summarised in the table below:

Date	Site	Surrounding Area
1854	*The site comprises undeveloped fields with no significant features.*	*Lee Lane is immediately north of the site.* *The surrounding area comprises undeveloped fields.*
1891	*The eastern half of the site comprises* ***allotment gardens****.*	***Barnsley Coal Railway*** *is located c.300m north and west of the site.* *Small ponds are located c.80m west, c.300m north and c.400m east.* *A pump is located c.175m west.*
1893	*A pond is located in the south of the site and a further pond is present in the north west corner of the site.*	*No significant changes.*
1918	*No significant changes.*	*Two small buildings c.75m to the east.*
1930	*Allotment gardens now indicated to be off site immediately south.*	*Residential development c.275m east.* *Pond c.400m east is no longer shown, residential properties in its place.*
1938	*No significant changes.*	*Further residential development c.250m north east of the site.*
1960	*No significant changes.*	*Two ponds c.100m east of the site.*
1978	*No significant changes.*	*Lee Lane Farm c.100m north west.* *Barnsley Coal Railway shown as dismantled.*
2010	*Ponds no longer shown on site, potentially* ***backfilled****.*	*No significant changes.*
2020	*No significant changes.*	*No significant changes.*

The historical plans are presented in Appendix 3.

3.2 Geology

The following British Geological Survey (BGS) records and other available information were inspected to accurately determine the geology underlying the site:

- 1:50,000 Scale Geological Sheet 87, Barnsley – Solid and Drift Edition.
- BGS Online Interactive Map.
- BGS Records.

Made Ground

Made Ground is not indicated to underly the site on the geological maps.

Superficial Deposits

The site is indicated to be underlain by Glacial Till, this stratum characteristically comprises a wide range of deposits including Clay, Silt, Sand and Gravel.



Solid Geology

The bedrock underlying the site is indicated to be the Ackton Rock which comprises Sandstone. This is interbedded with the Pennine Middle Coal Measures Formation which comprises Mudstone, Siltstone, Sandstone and coal seams.

The shallowest worked seam beneath the site is indicated by the geological map to be the Swinton Pottery Coal which is highly variable in thickness, between 0.1m and 2.1m. The seam is c.600m from the site and is indicated to dip at 3°, therefore the seam is c.31.5m below the top of the bedrock beneath the site, indicating a significant thickness of competent rock above the seam. Furthermore, the Coal Mining Report indicates that the shallowest worked seam beneath the site is 220m bgl and that all movement in the ground is likely to have ceased.

Geological Faults

No faults are shown on the site, with the nearest fault running north east to south west c.50m to the south. The area is no longer tectonically active and all movement along the fault is likely to have ceased.

BGS Records

There are no BGS borehole records within 250m of the site.

3.3 Hydrogeology

The superficial deposits in this area are classified by the Environment Agency as a Secondary Undifferentiated Aquifer. This designation has been assigned in cases where it has not been possible to attribute either category A or B to a soil type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the soil type.

The bedrock is classified as a Secondary A Aquifer. This is defined as permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

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

There are no groundwater or potable water abstraction licences within 2000m of the site.

The soils leaching potential is considered to be low.

3.4 Hydrology

The nearest watercourse is an unnamed watercourse 98m north west of the site. The nearest named watercourse is Owler Beck 566m south west of the site.

Environment Agency information indicates that the site is not within a Zone 2 or 3 floodplain and Risk of Flooding from Rivers and the Sea (RoFRaS) is very low.

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. The highest risk on site is 1 in 30 year, with a depth of between 0.3m and 1.0m in the north east corner of the site.

The chemical rating of Owler Beck is good, and the biological rating is moderate.

There are no surface water abstractions within 2000m of the site.

3.5 Environmental Consultations

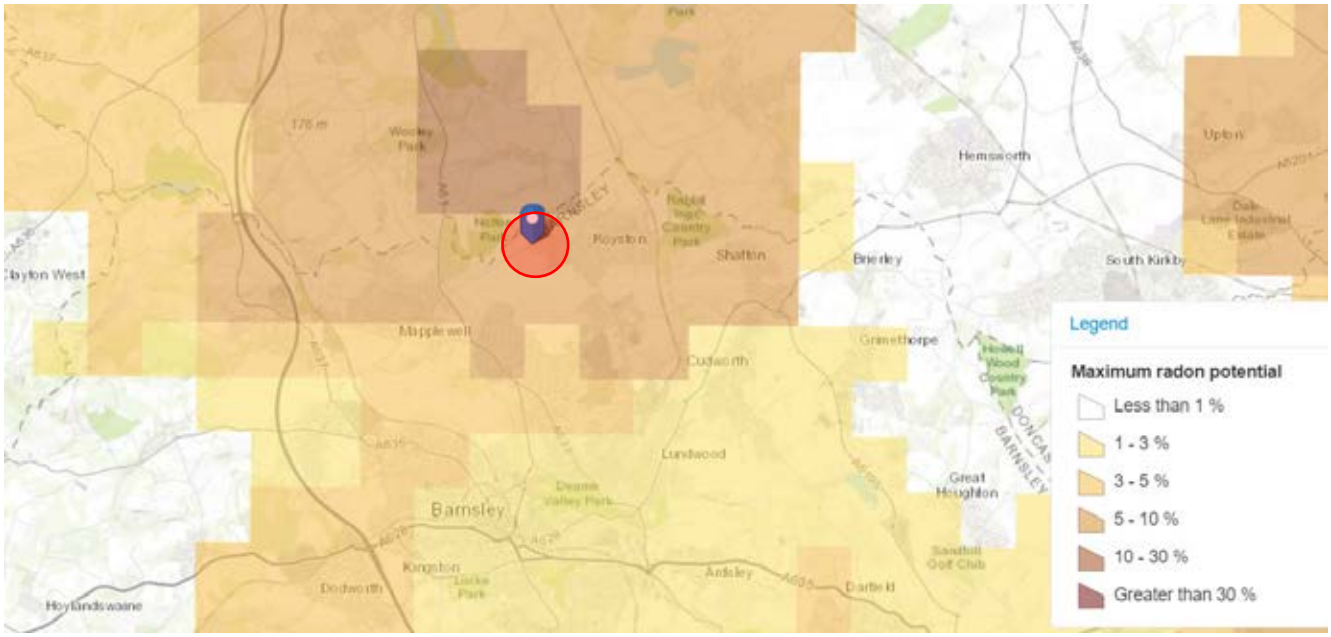
A request has been submitted to the Contaminated Land Officer at Barnsley Council for information pertaining to the site. This information is currently outstanding and will be submitted upon receipt.

An environmental search has been conducted through Groundsure, which accesses British Geological Survey and Environment Agency databases. The complete EnviroInsight Report can be found in Appendix 4 and a summary of the more relevant points is presented in the table below.

Record	<250m	250 – 500m	Description
Authorised Processes	*0*	*0*	*N/A*
Pollution Incidents	*0*	*3*	*The nearest pollution incident took place 367m north of the site in 2002, the incident was a minor impact to water with no impact to land or air.*
Landfill and Waste Treatment	*0*	*0*	*There are no landfill or waste treatment facilities within 500m of the site, however 5 records of waste exemptions are noted within 500m of the site. The nearest recorded waste exemption is 157m north east of the site and is described as use of waste in construction.*
Discharge Consents	*2*	*0*	*Two licenced discharges to controlled waters are recorded 150m north of the site for sewage discharges.*
Petrol Filling Stations	*0*	*0*	*N/A*
Current industrial Uses	*6*	*N/A*	*There are 6 current industrial uses recorded within 250m of the site. The nearest relates to an electricity substation 94m north of the site.*

3.6 Radon

Map 14 'Derbyshire, Leicestershire and Nottinghamshire' from BRE 211 and HPA were examined which defines areas requiring radon protective measures. The probability is 5% to 10% and Royston is an area requiring basic radon precautions in foundations in accordance with BRE Report 211 'Radon – Guidance on protective measures for new dwellings' 2015 Edition.



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

It is recommended that a site specific radon search is undertaken through the British Geological Survey.

3.7 Coal Authority Consultation

The site lies in an area where the Law Society and Coal Authority recommends a mining search is undertaken due to past or current mining possible affecting the site.

A search was carried out with the Coal Authority, the report is presented in Appendix 5 and the main findings are outlined below.

Past Mining
The property is in a surface area that could be affected by underground mining in 9 seams of coal at 220m to 550m depth, and last worked in 1979.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

Present Mining
The site is not within the zone of influence of any present underground coal workings.

Future Mining
The property is not in an area where the Coal Authority are determining whether to grant a licence to remove coal by underground workings.

The property is not in an area likely to be affected at the surface by any planned underground workings.

Reserves of coal exist in the local area that may be worked in the future.

No notice of the risk of land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine Entries
There are no records of any mine entries on or within 20m of site boundary.

Coal Mining Geology
The Authority is not aware of any damage arising due to geological faults or lines of weakness that have been affected by coal mining.

Opencast Coal Mining
The property is not in an area affected by past or present coal mining extracted by opencast methods. The property is also not in an area affected by a proposed opencast coal mine.

Subsidence
The Coal Authority has not received a damage notice or claim for the subject property or within 50m since 31 October 1994.

Mine Gas
There is no record of mine gas emission requiring action by the Coal Authority within the boundary of the property.

Withdrawal of Support
The property is in an area where notices to withdraw support were given in 1947, 1977 and 1986.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

4.0 LAND QUALITY CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

4.1 Introduction

The potential level of risk posed by contaminants in soil and/or groundwater will be influenced by the type and concentration of the contamination at source, the likelihood of exposure occurring, the potential pollution linkages and the likely chronic or acute effects on the receptors.

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

Section 4.0 compiles the information from the previous sections to assemble a Conceptual Site Model to inform the risk assessment process. The potential sources identified on the site and off the site that are within influencing distance are assessed to determine if pollution linkages exist and an unacceptable risk is posed to human health and controlled waters. The assessment has been carried out on a qualitative basis and aims to produce a complete and comprehensive Preliminary Conceptual Site Model, the potential pollution linkages are displayed on 20046 03 - Illustrative Preliminary CSM.

Three potential types of impacts exist for a site and all three need to be considered in the qualitative preliminary risk assessment:

- Impacts from sources on the subject site.
- Impacts to the surrounding area from the subject site.
- Impacts to the subject site from the surrounding area.

4.2 Potential Contamination Sources

On-Site Sources and Associated Contaminants

From the information obtained during the preliminary risk assessment, allotment gardens were historically present on site which may affect the redevelopment of the site for residential end use.

Allotment gardens are a potential source of pesticides and herbicides.

Two small ponds were historically present on site, however based on the size of the ponds they are not likely to be significantly deep. Depending on the depth and composition of the fill material ground gases may be generated. Furthermore materials used to fill the ponds may be contaminated with a range of potential determinands including heavy metals, PAHs and asbestos.

Off-Site Sources and Associated Contaminants

A number of potential off-site sources were identified which may affect the redevelopment of the site for residential end use, these include:

- Allotment Gardens - Immediately south and east
- Electricity Substation - 94m north.
- Barnsley Coal Railway - C.300m north and c.400m west.

As discussed above, allotment gardens are a potential source of heavy metals from pesticides and herbicides.

PCBs were historically used as coolants within the transformers of electricity substations.

The DoE profile for Railway Lands indicates that potential contaminants may include metals, PAHs, fuel derived hydrocarbons, PCBs, solvents, pesticides, asbestos and ground gases.

4.3 Pollution Linkages

The definition of a pollution linkage is a medium which allows a contaminant to impact a receptor. Potential pollution linkages have been recognised for the proposed residential development from the identified contamination sources that exist.

At this stage, the potential contaminants identified above are considered to pose an unacceptable risk to human health and controlled waters through the following pollution linkages:

- Direct soil and dust ingestion.
- Dermal contact with soil both indoors and outdoors.
- Indoor air inhalation from soil and vapour.
- Outdoor inhalation of soil and vapour.
- Migration and accumulation of ground gas into internal spaces.
- Impaction of groundwater from soil contamination (diffuse and point).
- Impaction of groundwater from groundwater plume.
- Migration of soil and groundwater contamination impacting surface waters.

4.4 Receptors

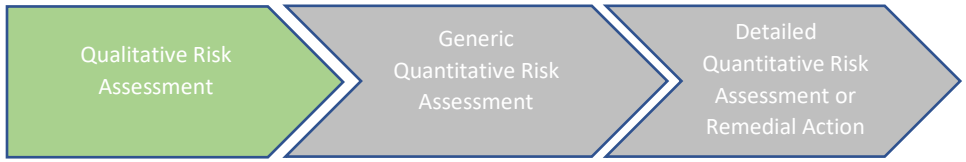
Receptors generally fall into the categories of human health or controlled waters within the river basin system. The recognised receptors are listed below:

- Site end users.
- Secondary (A) Aquifer Bedrock.
- Unnamed Watercourse 98m north west of the site.
- Clean potable water supply pipes.

4.5 Preliminary Conceptual Site Model (CSM)

The factual information obtained from the searches and summarised in Section 2.0 and 3.0 has been used to compile a Preliminary CSM. Using Source-Pathway-Receptor assessment criteria that is applicable in the UK, a risk assessment has been completed to determine if a plausible pollution linkage exists between the identified contaminants and receptors. The risk classification has been estimated in accordance with the CIRIA C552 assessment criteria outlined in Appendix 7.

Human Health Pollution Linkage Assessment



- The table below represents the first stage in the land quality risk assessment process - **the Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

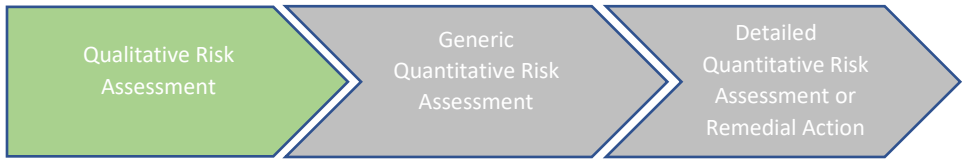
Conceptual Site Model					*Qualitative Risk Assessment*	
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
PL1	Contaminated Soils	Ingestion of soil and dust. Dermal contact with soil.	Unlikely	Medium	Low	*Pollution Linkage 1 refers to proposed site users coming into contact with contaminated soils on the site.* *The site is currently and has historically been an undeveloped field. Allotment gardens were historically present on site which may be a source of heavy metals within the topsoil across the southern and eastern portions of the site. No further significant on-site sources of contamination have been identified.* *It is considered likely that the ponds on site had dried up on the maps where they do not appear, therefore no significant contamination is anticipated. A watching brief for potential Made Ground should be in place during future ground works in these areas, if Made Ground is encountered soils should be excavated and stockpiled separately for geo-environmental testing.* *Once topsoil has been stripped and stockpiled geo-environmental testing should be undertaken to determiner of the topsoil is suitable for reuse within garden areas.*

Conceptual Site Model						*Qualitative Risk Assessment*
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
						The Barnsley Coal Railway (now disused) was formerly located c.300m north of the site and potential contaminants include heavy metals, PAHs, hydrocarbons, PCBs, solvents, pesticides and asbestos. The railway line is considered to be a sufficient distance from the site that it is very unlikely contaminants will migrate to the site due to the relative immobility of most of the contaminants and the distance between the potential source and the site. Furthermore the Glacial Till underlying the site will inhibit the migration of mobile contamination including hydrocarbons and solvents. *Depending on the age of the electricity substation located 94m north of the site, PCBs may have been used as a cooling agent within the transformers. However, due to the relative immobility of PCBs and the small volume used they are unlikely to have impacted the site.* *The proposed development is residential end use comprising low rise housing with associated private garden areas.* *In conclusion, there is no evidence that Made Ground will be present beneath the surface of the site and there are no significant sources of contamination. Therefore, there is not considered to be a significant pollution linkage.*
PL2	Contaminated Soils	Inhalation of vapour.	Unlikely	Medium to Severe	Low	*Pollution linkage 2 refers to hydrocarbon vapours migrating into confined spaces within the proposed development. There are no potential sources of hydrocarbon contamination identified by the Preliminary Risk Assessment, therefore there is not considered to be a pollution linkage.*

Conceptual Site Model						*Qualitative Risk Assessment*
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
PL3	Contaminated Soils	Inhalation of soil dust by adjacent site users.	Unlikely	Medium	Low	*Pollution Linkage 3 relates to contamination on the subject site affecting adjacent site users. No sources of mobile contamination have been identified by the PERA therefore, no pollution linkage is considered to exist.*
PL4	Contaminated Soils	Attacking potable water supply pipe.	Unlikely	Medium	Low	*Pollution Linkage 4 refers to the possible contaminants permeating potable water pipes and consumption by the future site end users of the tainted water supply. Made Ground is not likely to be present at the water supply pipe installation depth, therefore there is not considered to be a pollution linkage.*
PL5	Ground Gas	Migration and accumulation of ground gas in internal spaces.	Unlikely	Medium to Severe	Low	*Two small ponds are shown on the site up until the map of 2003, one in the south of the site and another in the north west corner. The ponds are no longer shown on the later maps and are inferred to have been infilled, however due to the extremely small scale of the ponds a significant depth of Made Ground is not anticipated. Furthermore, as the ponds were potentially backfilled relatively recently (between 2003 and 2010), it is considered likely that the ponds were filled with inert not putrescible material.* *The superficial strata underlying the site is indicated to be Glacial Till, based on the poor drainage conditions at the surface of the site it is considered likely that*

Conceptual Site Model						*Qualitative Risk Assessment*
PL	Potential Source	Pollution Linkage	Likelihood	Consequence/ Severity	Risk Rating	*Rationale and Action*
						these deposits predominantly consist of clay. Therefore, there is not considered to be a pathway for the migration of ground gases through the superficial deposits underlying the site. *The site is potentially in an area requiring basic radon precautions and a site-specific radon search should be carried out with the BGS to confirm what measures are needed.* *In conclusion, there is not considered to be a pollution linkage associated with ground gases at the site, however basic radon precautions may be required within foundations of proposed plots.*

Controlled Waters Pollution Linkage Assessment



- The table below represents the first stage in the land quality risk assessment process – **Qualitative Risk Assessment**.
- In order for a development site to be deemed 'suitable for use' the level of risk needs to be reduced to an acceptable level - low to negligible risk. The purpose of each stage of risk assessment is to establish if there is a requirement for additional stages of assessment in order to have sufficient confidence to support a risk characterisation or remedial action.

Conceptual Site Model					*Qualitative Risk Assessment*	
P	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	*Rationale*
PL6	Contaminated Soils	Impaction of groundwater from soil contamination (diffuse and point). Impaction of groundwater from groundwater plume.	Unlikely	Medium	Low	*Based on the findings of the PERA, significant Made Ground is not anticipated at the site, furthermore no sources of mobile contamination have been identified.* *Geological maps indicate that the site is underlain by Glacial Till. The bedrock underlying the site is the Pennine Middle Coal Measures Formation which comprises Mudstone, Siltstone and Sandstone with occasional bands of coal. Based on the poor drainage conditions identified on site during the walkover it is considered likely that the underlying soils consist largely of Clay, therefore no pollution linkage is considered to exist to the underlying Secondary (A) Aquifer bedrock.* *The site is not within 500m of a SPZ and is not considered a sensitive resource, there are no potable groundwater abstractions within 2km of the site.* *Furthermore, the proposed development will incorporate a new drainage system. This will reduce infiltration and leaching of potential contaminants.* *Therefore, no pollution linkage is considered to exist.*

Conceptual Site Model						*Qualitative Risk Assessment*
P	Potential source	Pollution linkage	Likelihood	Severity	Level of risk	*Rationale*
PL7	Contaminated Soils	Migration of soil and groundwater contamination impacting surface waters.	Unlikely	Medium	Low	*Pollution Linkage 7 refers to the impaction of an unnamed watercourse 98m north west of the site from contaminated soils and groundwater.* *No significant sources of mobile contamination have been identified by the desk-based consultations. Furthermore, if contamination is found to be present at the site, the distance is sufficient to allow considerable attenuation and the Glacial Till will considerably reduce lateral migration.*

5.0 GROUND ENGINEERING RECOMENDATIONS AND POTENTIAL LIMITATIONS

5.1 Preliminary Foundation Assessment

Deep Made Ground is not anticipated at the site as the site has generally been a field. The BGS maps indicate that Glacial Till is present at the surface of the site and on-site observations of the poor drainage conditions of the site indicate that clay is likely to be encountered in near surface soils.

The proposed development is for residential end use comprising low rise housing with associated soft landscaped gardens and infrastructure. The exact type of construction is not available at this stage.

Depending on the loadings and the strength of the Glacial Till clay, traditional shallow strip foundations may be suitable at the site. If the shallow clay does not provide the required bearing capacity, foundations could be deepened or a deep foundation solution utilised.

A number of mature broad-leafed trees and hedgerows are indicated to be present along the boundaries of the site and running through the middle of the site. The shallow founding stratum is likely to be Clay and foundations may require deepening with the use of the necessary heave precautions in accordance with NHBC Chapter 4.2.

The above preliminary foundation recommendations are based on desk-based information and should be confirmed by a ground investigation in accordance with current guidance.

5.2 Additional Limitations

The site slopes gently down to the north and due to the poor drainage conditions of the soils this has resulted in large areas of perched surface water in the northern portion of the site. Any ground investigation works should be undertaken during a period of dry weather to ensure good site coverage is achieved.

Based on the observed poor drainage conditions at the site the use of SuDS is not likely to be feasible.

Design should account for poor drainage conditions and ponding in the north of the site to ensure this does not occur post development. The ponding appears to have occurred in a recess in the ground, therefore raising site levels may be considered in this area, however this is dependent on proposed finished site levels.

A mining search was undertaken in addition a inspection of the available resources. The shallowest seam is indicated to be c31m below the surface of the bedrock and is recorded as being between 0.1m and 2.1m bgl, therefore a significant thickness of competent bedrock exists above the coal seam. Furthermore the mining report indicates that the shallowest worked seam beneath the site is 220m deep. Therefore the risk from mining is considered to be low.

The sloping site should be taken into account in the design and layout of the proposed development.

6.0 CONCLUSIONS AND GROUND INVESTIGATION SCOPE RATIONALE

6.1 Land Quality

Since the 1850s the site has remained undeveloped to the present day. Allotment gardens were indicated to be present from c.1891 to c.1930. Two small ponds were also present on site until c.2003. The surrounding area of the site largely comprised undeveloped fields, with allotment gardens present immediately to the south, an electricity substation 94m north and a railway line c.300m north. Residential developments are also situated to the east.

The risk to human health from contaminated soils is considered to be low as no significant sources of contamination have been identified by the desk-based consultations.

The risk to controlled waters is considered to be low as no sources of mobile contamination have been identified.

The risk from ground gases is considered to be low as no significant sources of ground gases have been identified.

However, the site is within an area potentially requiring basic radon precautions within foundations of proposed buildings. A site specific radon assessment should be carried out through BGS to determine if radon precautions are required.

6.2 Ground Engineering

The site is indicated to be underlain by Glacial Till deposits which are likely to comprise Clay at founding depth. Depending on the proposed loadings and strength of the clay, traditional shallow strip footings are likely to be feasible.

Based on the poor drainage conditions identified on site during the walkover, the use of SuDS is not likely to be feasible without significant attenuation.

6.3 Additional Considerations

Standing water is present on a large portion of the site due to recent bad weather, site works should be undertaken following a period of dry weather to ensure good coverage is achieved during the investigation.

Based on the geological maps and coal mining report there is not considered to be a risk from historic mining.

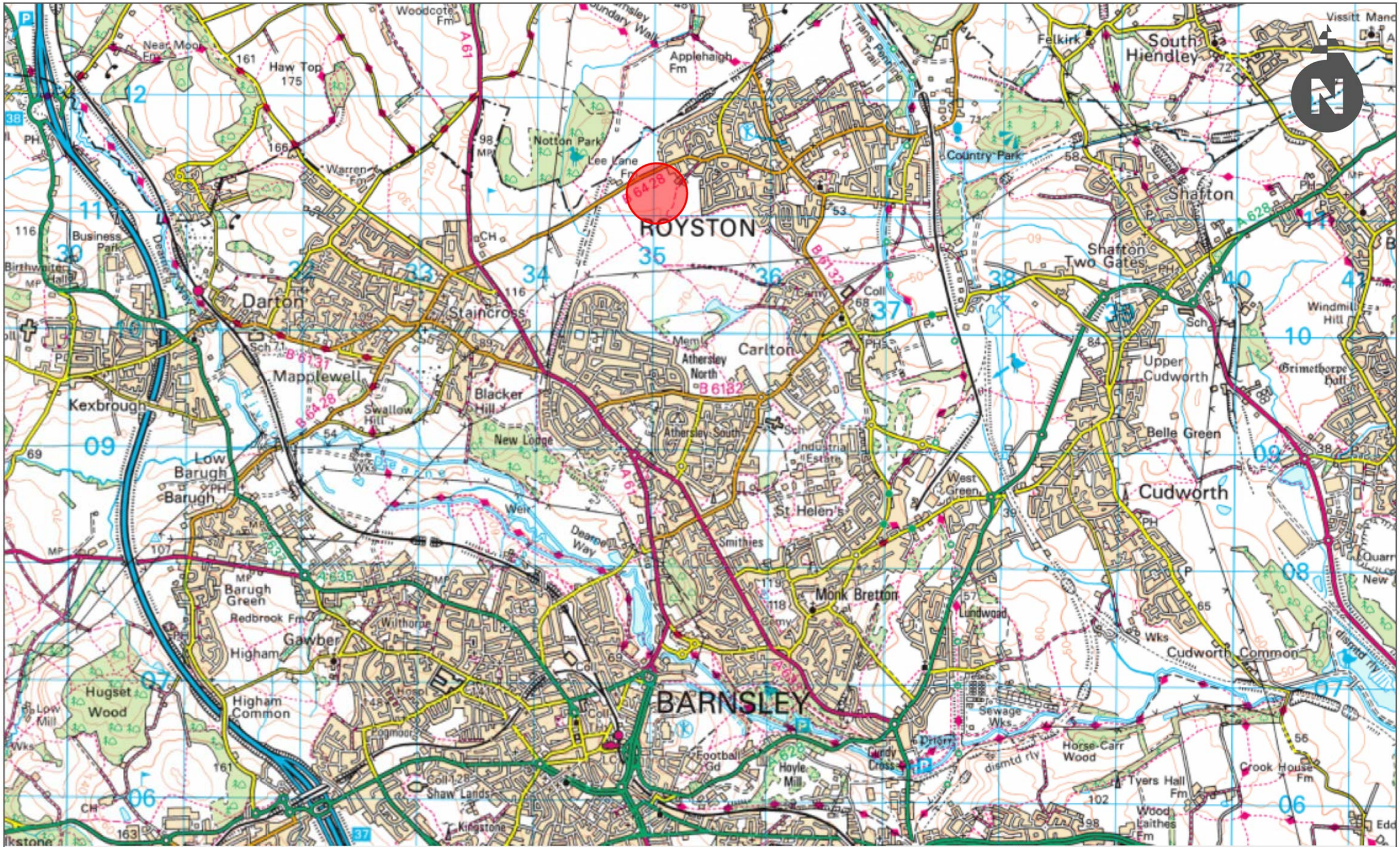
6.4 Recommended Ground Investigation Scope of Investigation

Based on the information in this report we consider a main investigation is required in accordance with BS 10175:2013 and BS 22475. The following scope of works is recommended based on the Preliminary CSM compiled, additional works maybe required as the result of planning conditions for the proposed development:

Method of Investigation	G / E
15 to 20 No. trial pits to 3.0m to 4.0m bgl including in situ hand vane tests	*G/E*
Chemical testing comprising heavy metals, PAHs, pesticides and asbestos screening (if Made Ground is encountered)	*E*
Geotechnical testing comprising pH/SO_4, Atterberg Limits, moisture content	*G*

Note **Environmental (E) / Geotechnical (G)**

APPENDIX 1 - Plans



GROUNDTECH CONSULTING	CLIENT	DATE				Status	
	JOHNSON MOWAT PLANNING LTD	MARCH 2020				Preliminary	
	PROJECT TITLE	SCALE				Draft	
	LEE LANE, ROYSTON	NTS				Issued	●
	PLAN TITLE	PLAN NUMBER				For Comment	
	PROJECT LOCATION PLAN	20046 01	Rev.	Details	Date	Approved	

Notes

Location of Site



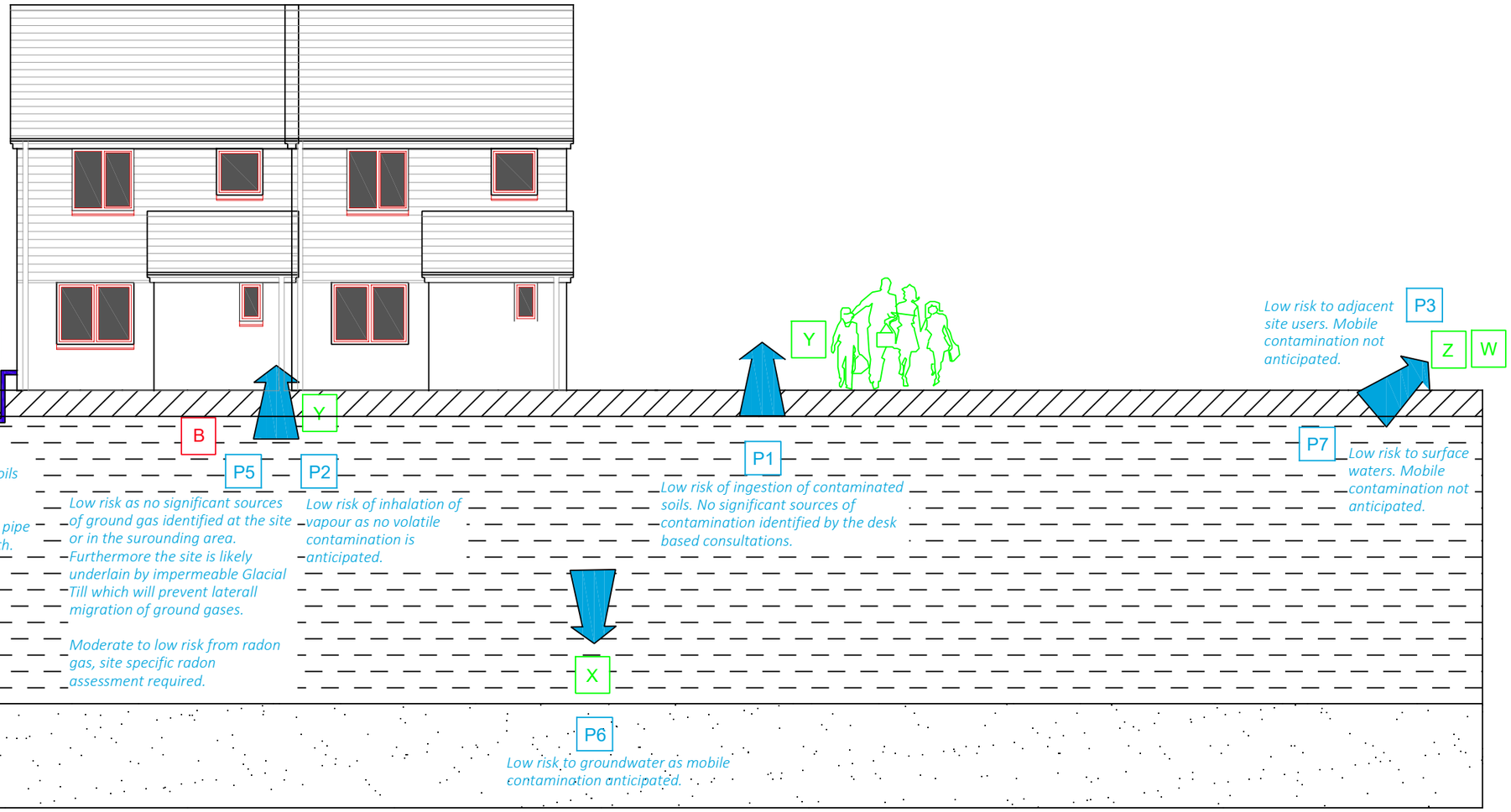
GROUNDTECH CONSULTING	CLIENT	DATE				Status	
	JOHNSON MOWAT PLANNING LTD	MARCH 2020				Preliminary	
	PROJECT TITLE	SCALE				Draft	
	LEE LANE, ROYSTON	NTS				Issued	●
	PLAN TITLE	PLAN NUMBER				For Comment	
	PRELIMINARY DEVELOPMENT CONSTRAINTS PLAN	20046 02	Rev.	Details	Date	Approved	

Notes

- Approximate extent of flooding
- Approximate location of caravan
- Indicative tree lines
- Indicative slope of the site

SOURCES	POLLUTION LINKAGES	RECEPTORS
A. Contaminated soils / Made Ground. B. Ground gas.	P1. Ingestion of soil and dust. P2. Inhalation of vapour. P3. Inhalation of soil dust by adjacent site users. P4. Attacking of potable water supply pipe. P5. Migration and accumulation of ground gas in internal places. P6. Impaction of groundwater from soil contamination. P7. Migration of soil and groundwater contamination impacting surface waters.	W. Unnamed Watercourse 98m north west. X. Groundwater within the underlying Secondary (A) Aquifer bedrock. Y. Site end users. Z. Adjacent site users.

Proposed Residential Properties with Associated Soft Landscaped Gardens



GROUNDTECH CONSULTING

CLIENT	JOHNSON MOWAT PLANNING LTD
DATE	MARCH 2020
PROJECT TITLE	LEE LANE, ROYSTON
SCALE	NTS
PLAN TITLE	ILLUSTRATIVE PRELIMINARY CSM
PLAN NUMBER	20046 03

Rev.	Details	Date

Status	
Preliminary	
Draft	
Issued	●
For Comment	
Approved	

Notes

APPENDIX 2 - Photographs



1. Northern site area with large pool of standing water.



2. Northern site area with large pool of standing water.



3. Looking south west across the northern extent of the site with caravan.



4. Stand of trees and hedges running through the centre of the site.



5. Small pool of water in north east corner of site.



6. Looking south near the centre of the site.

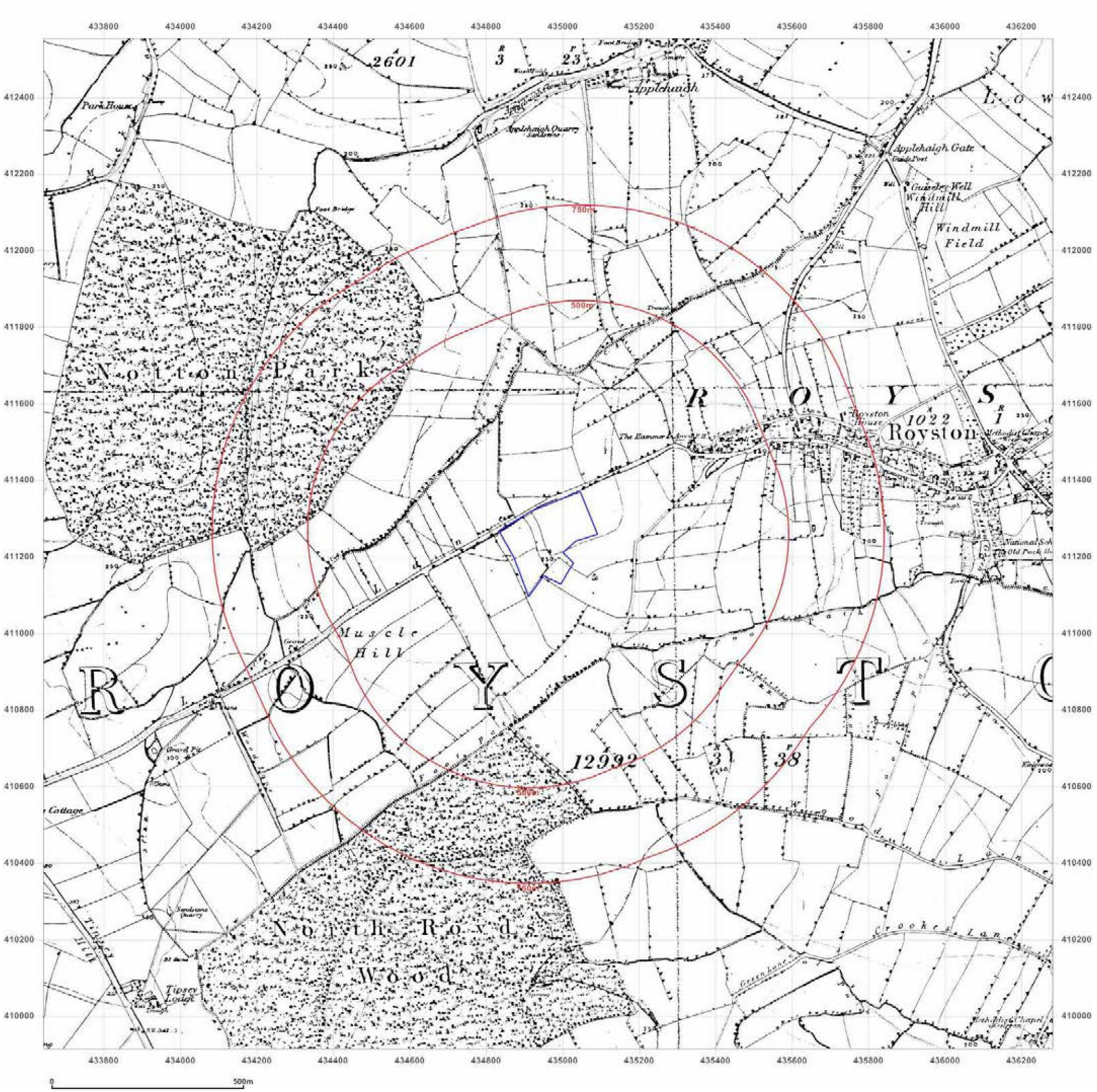


7. Looking south in the west of the site.



8. New housing development to the north of Lee Lane.

APPENDIX 3 - Historical Maps



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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: County Series

Map date: **1854**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1851
Revised N/A
Edition 1854
Copyright N/A
Levelled N/A

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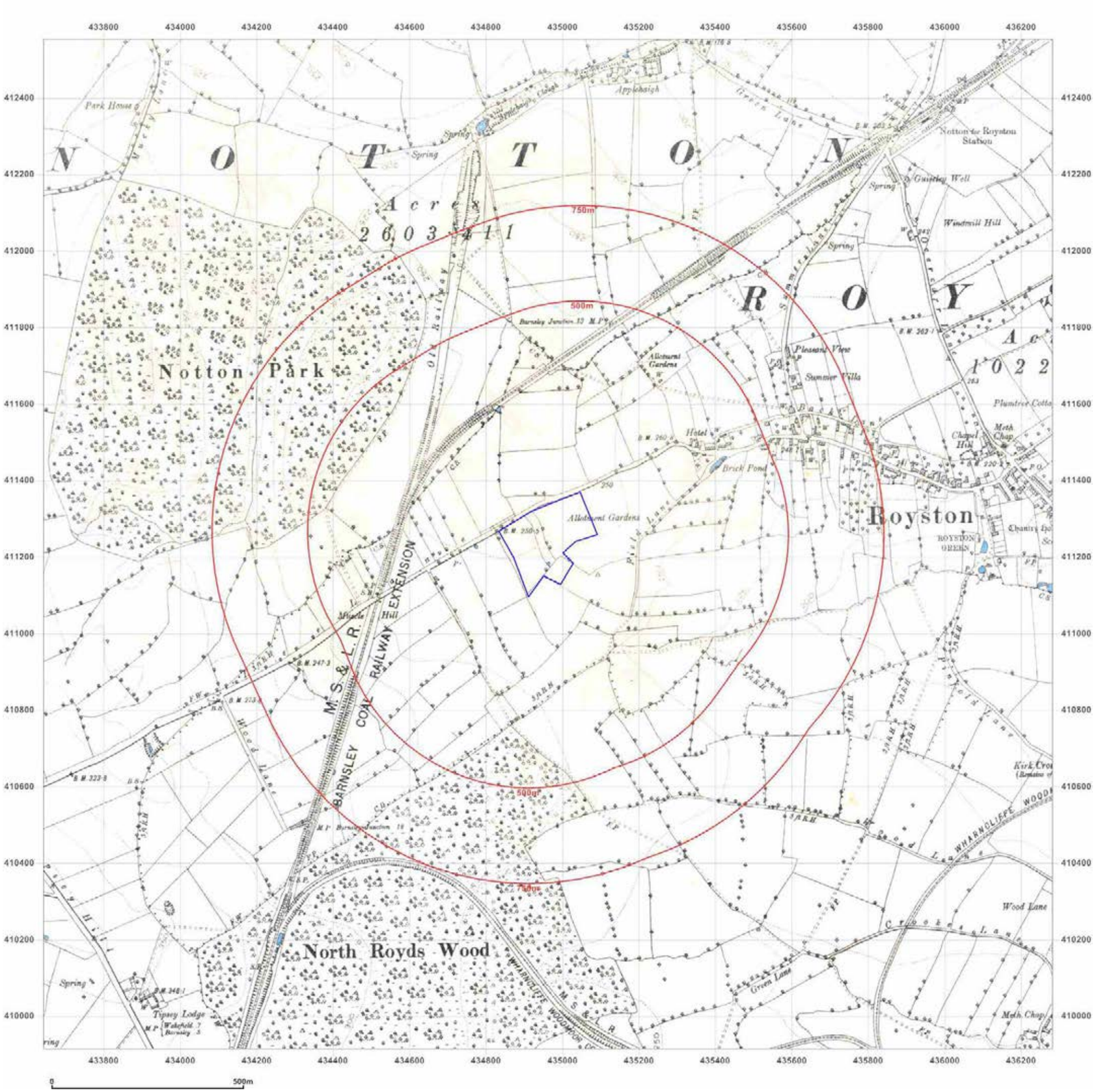
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Production date: 13 February 2020

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



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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: County Series

Map date: **1891**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1891
Revised 1891
Edition 1891
Copyright N/A
Levelled N/A

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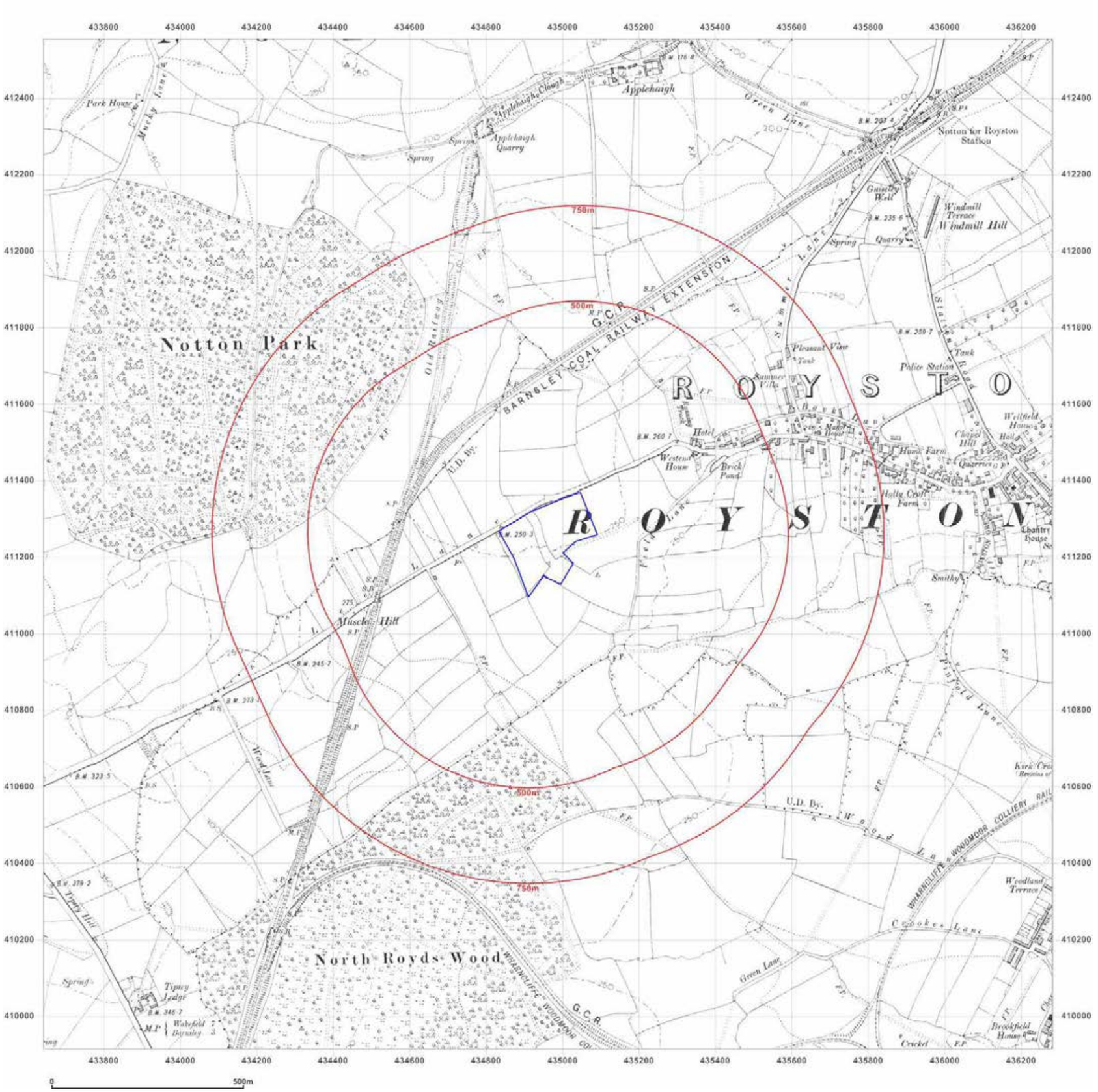
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Map legend available at:
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: County Series

Map date: **1904**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1891
Revised 1904
Edition 1904
Copyright N/A
Levelled N/A

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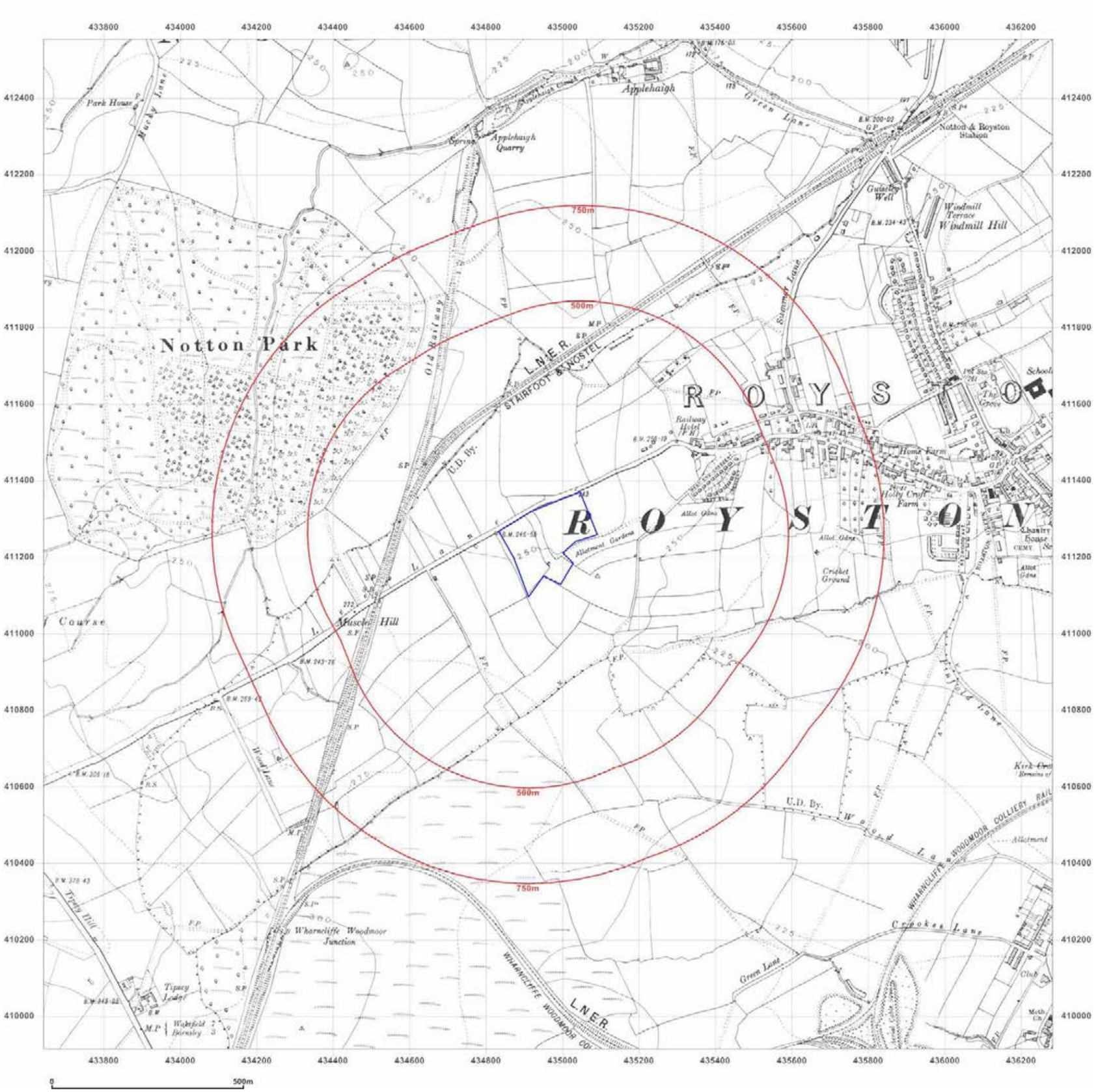
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: County Series

Map date: **1930**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1851
Revised 1930
Edition 1930
Copyright N/A
Levelled 1929

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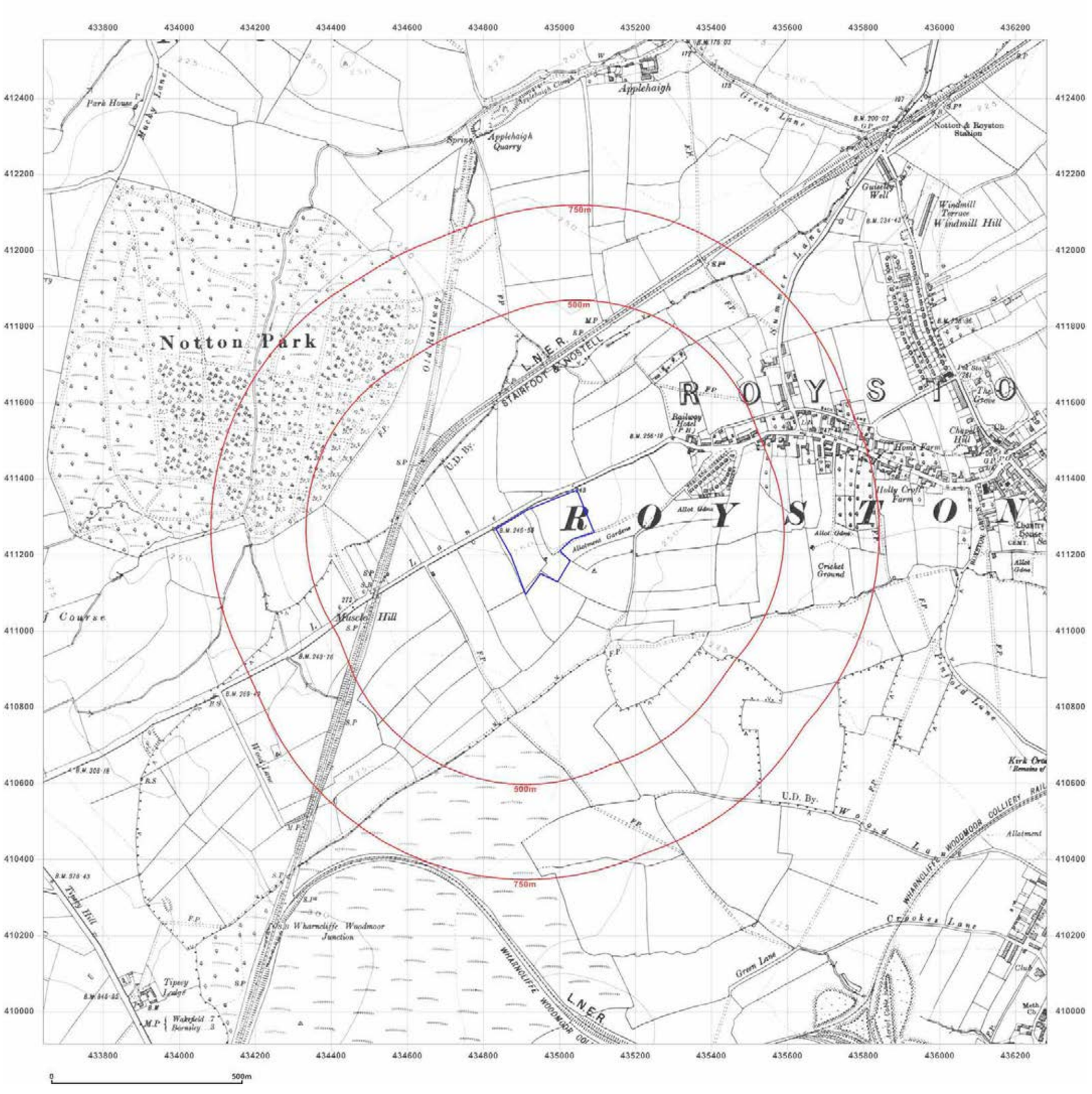
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: County Series

Map date: **1930**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1851
Revised 1930
Edition 1930
Copyright N/A
Levelled 1929

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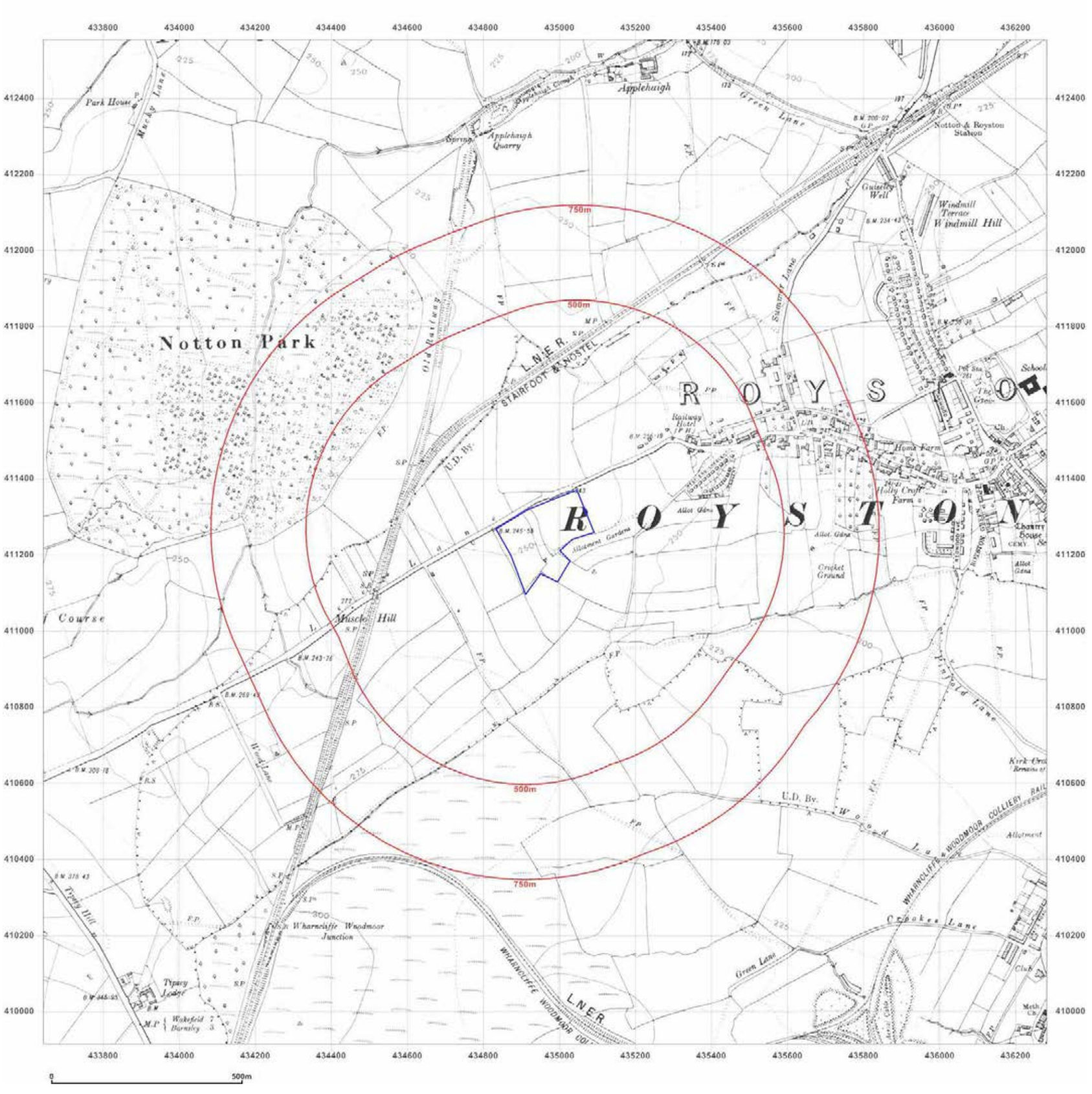
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1851
Revised 1938
Edition 1938
Copyright N/A
Levelled 1929

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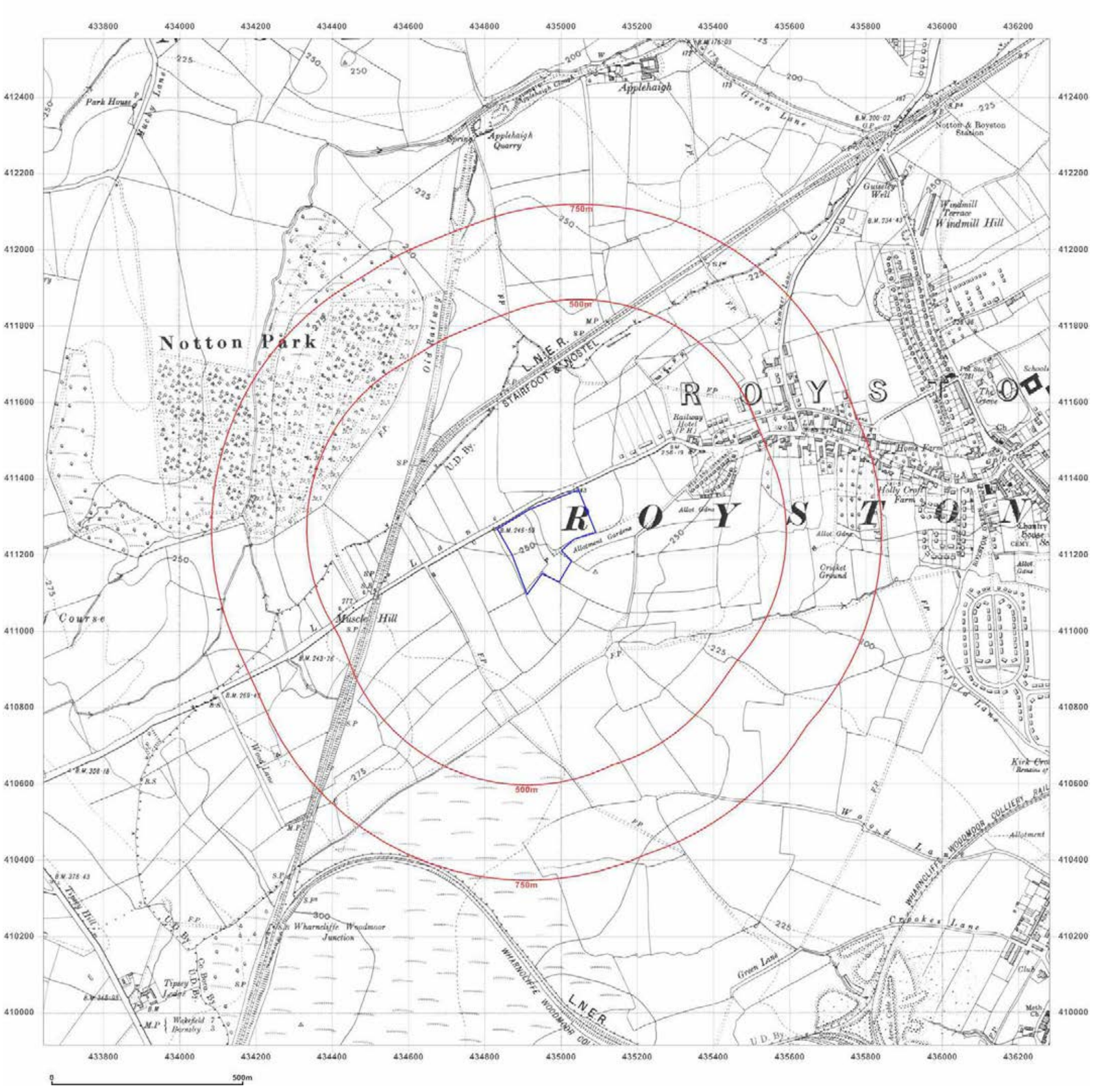
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: County Series

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1851
Revised 1948
Edition 1948
Copyright N/A
Levelled 1929

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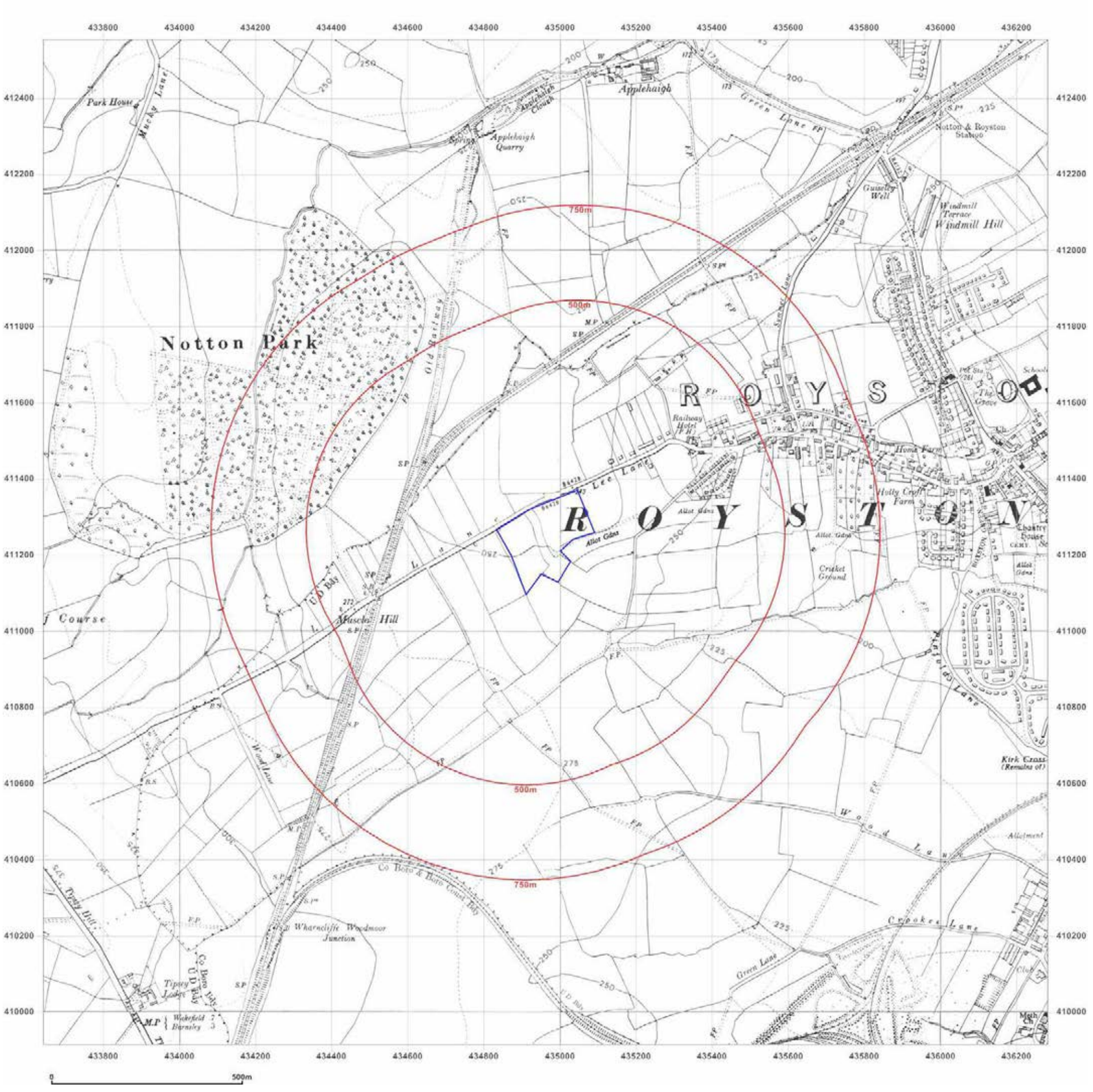
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Site Details:

Lee Lane, Royston

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Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: Provisional
Map date: **1951-1956**
Scale: 1:10,560
Printed at: 1:10,560

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Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1951
Revised 1951
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Copyright 1951
Levelled N/A

Surveyed N/A
Revised 1955
Edition N/A
Copyright 1956
Levelled N/A

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Edition N/A
Copyright 1955
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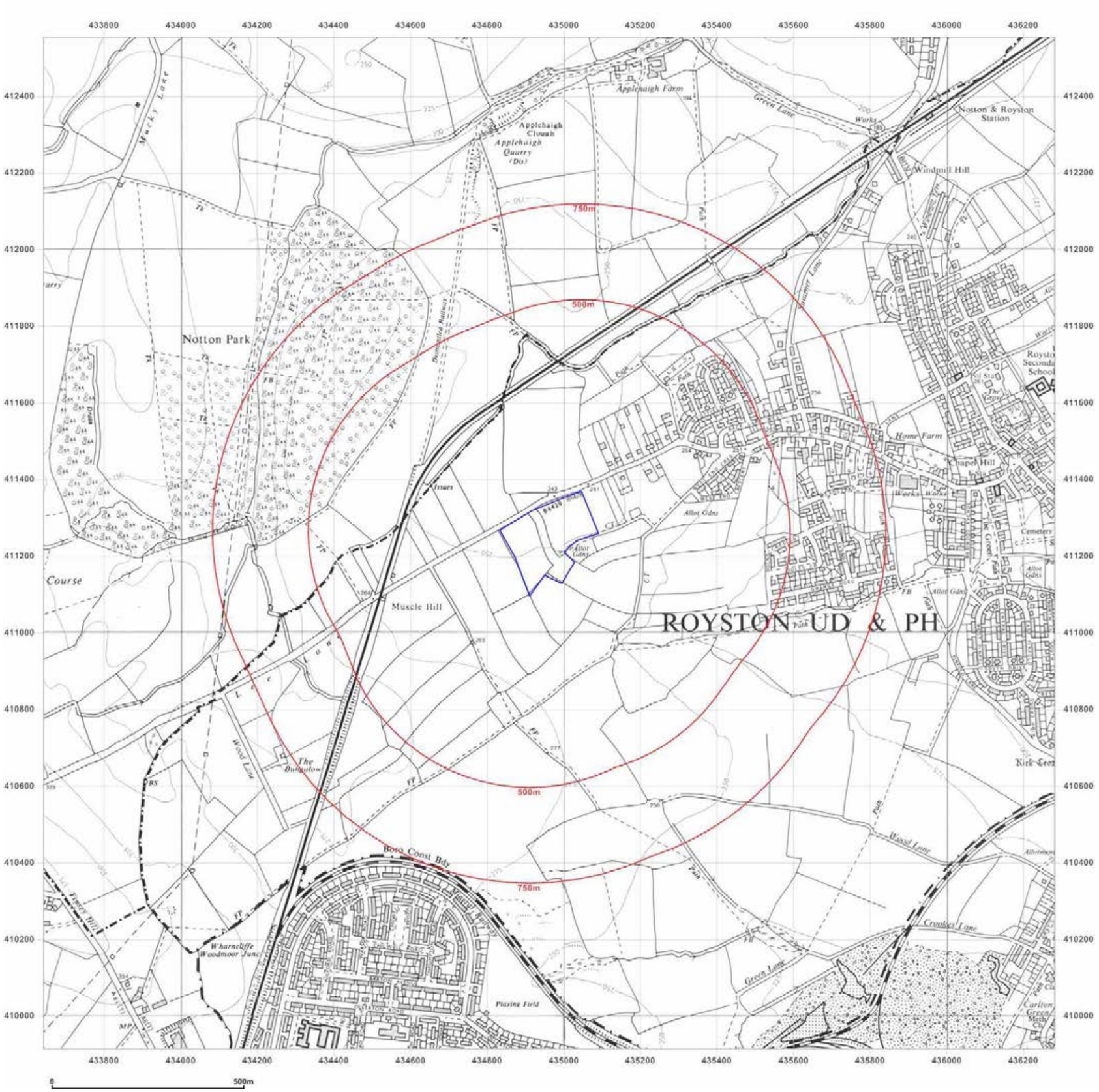
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Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: Provisional

Map date: **1965-1966**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1965
Revised 1965
Edition N/A
Copyright N/A
Levelled N/A

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

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

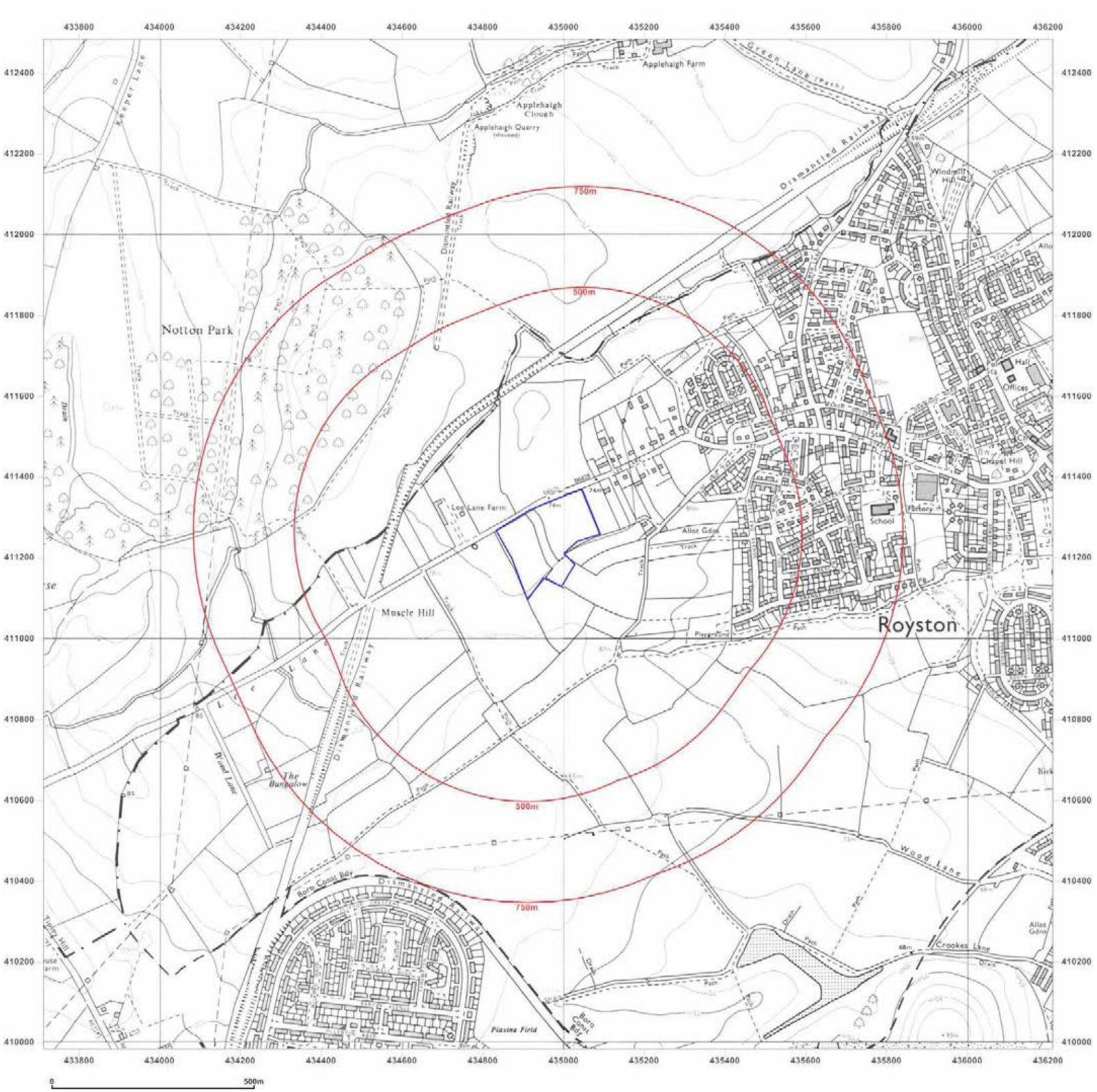
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Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

Map date: **1973-1978**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1977
Revised 1978
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1976
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Copyright 1979
Levelled 1978

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

Surveyed 1974
Revised 1974
Edition N/A
Copyright 1975
Levelled 1978

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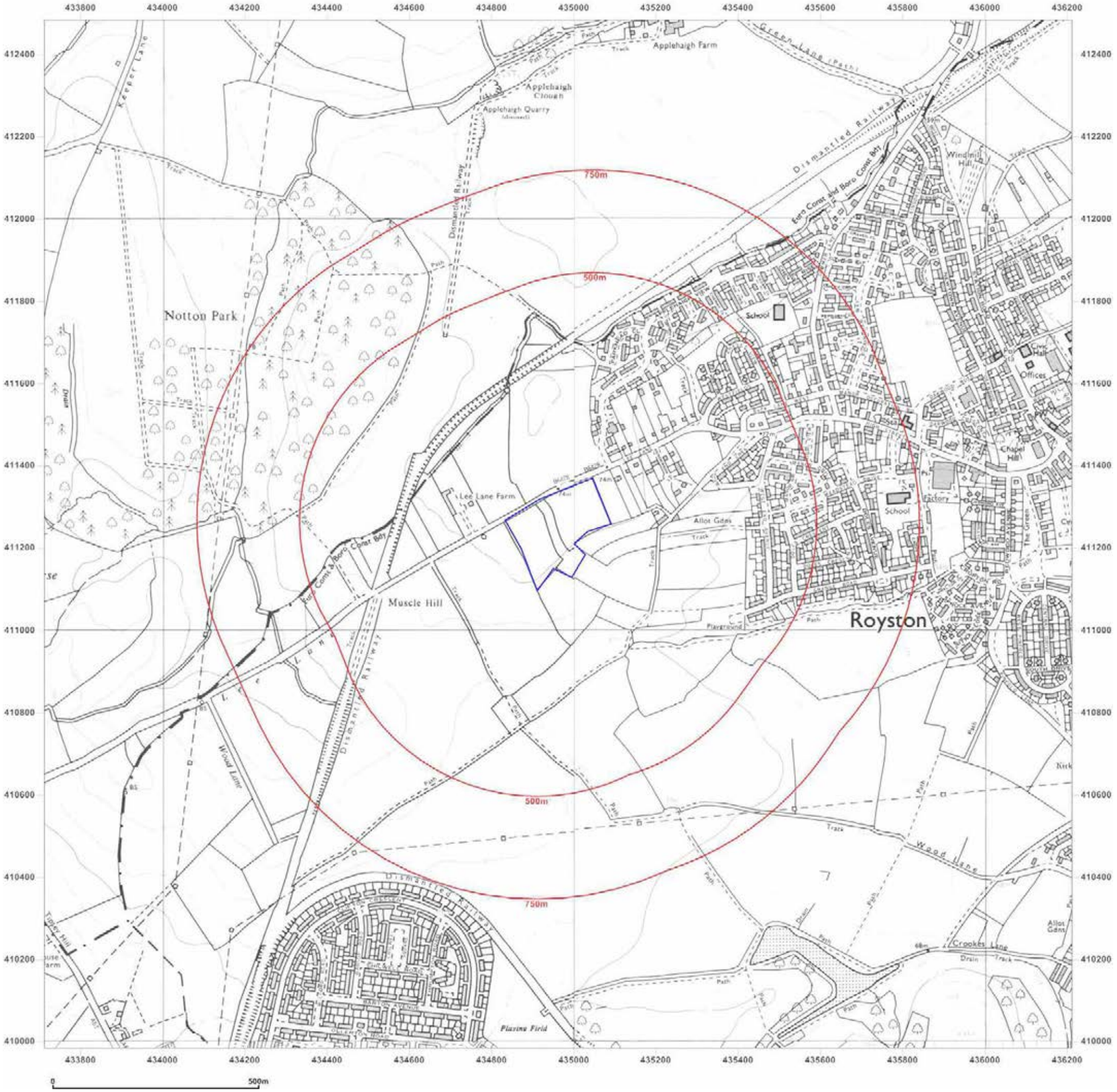
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Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

Map date: **1989-1993**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1983
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1984
Revised 1989
Edition N/A
Copyright 1990
Levelled 1978

Surveyed 1992
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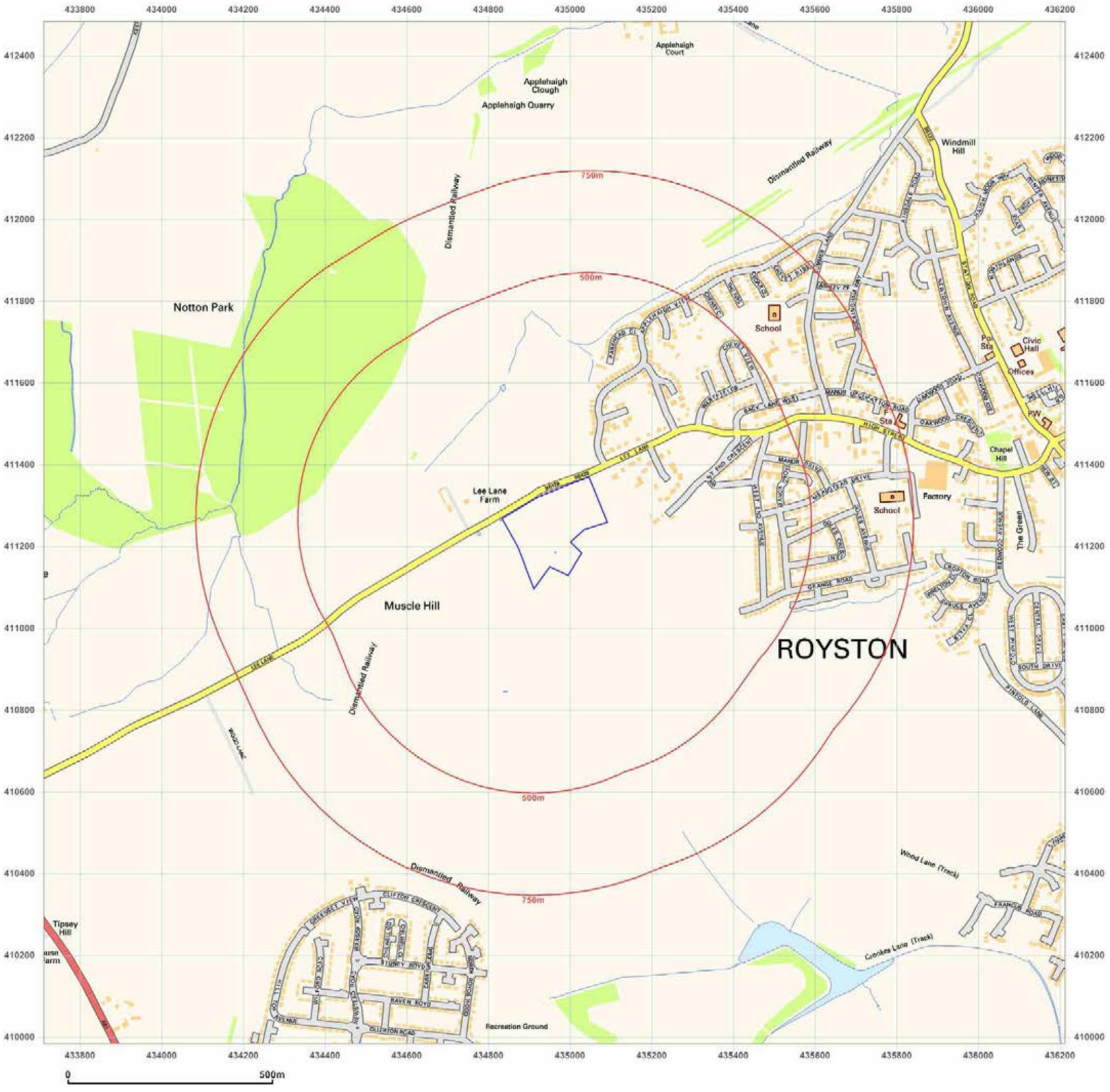
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid
Map date: **2001**
Scale: 1:10,000
Printed at: 1:10,000

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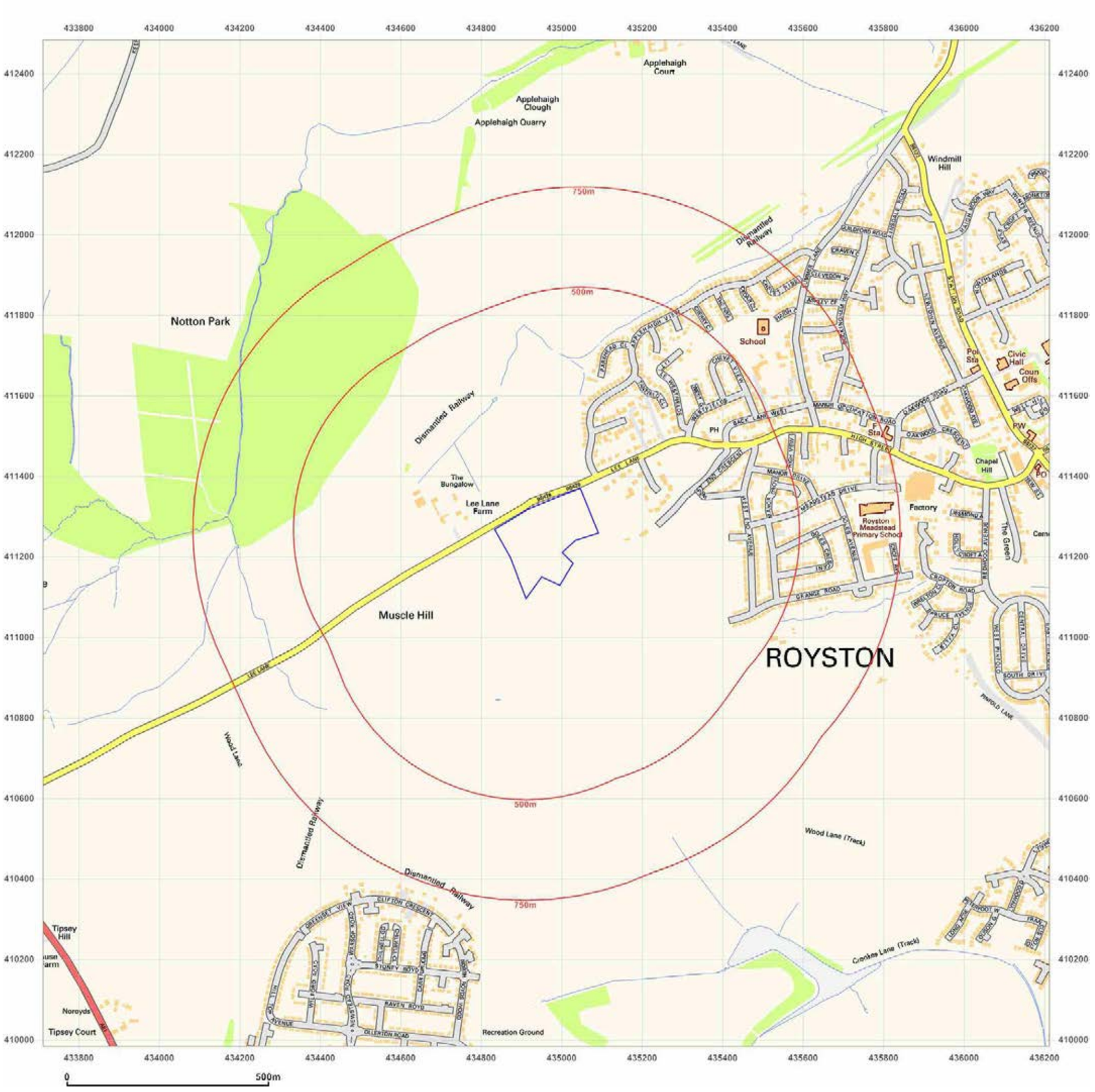
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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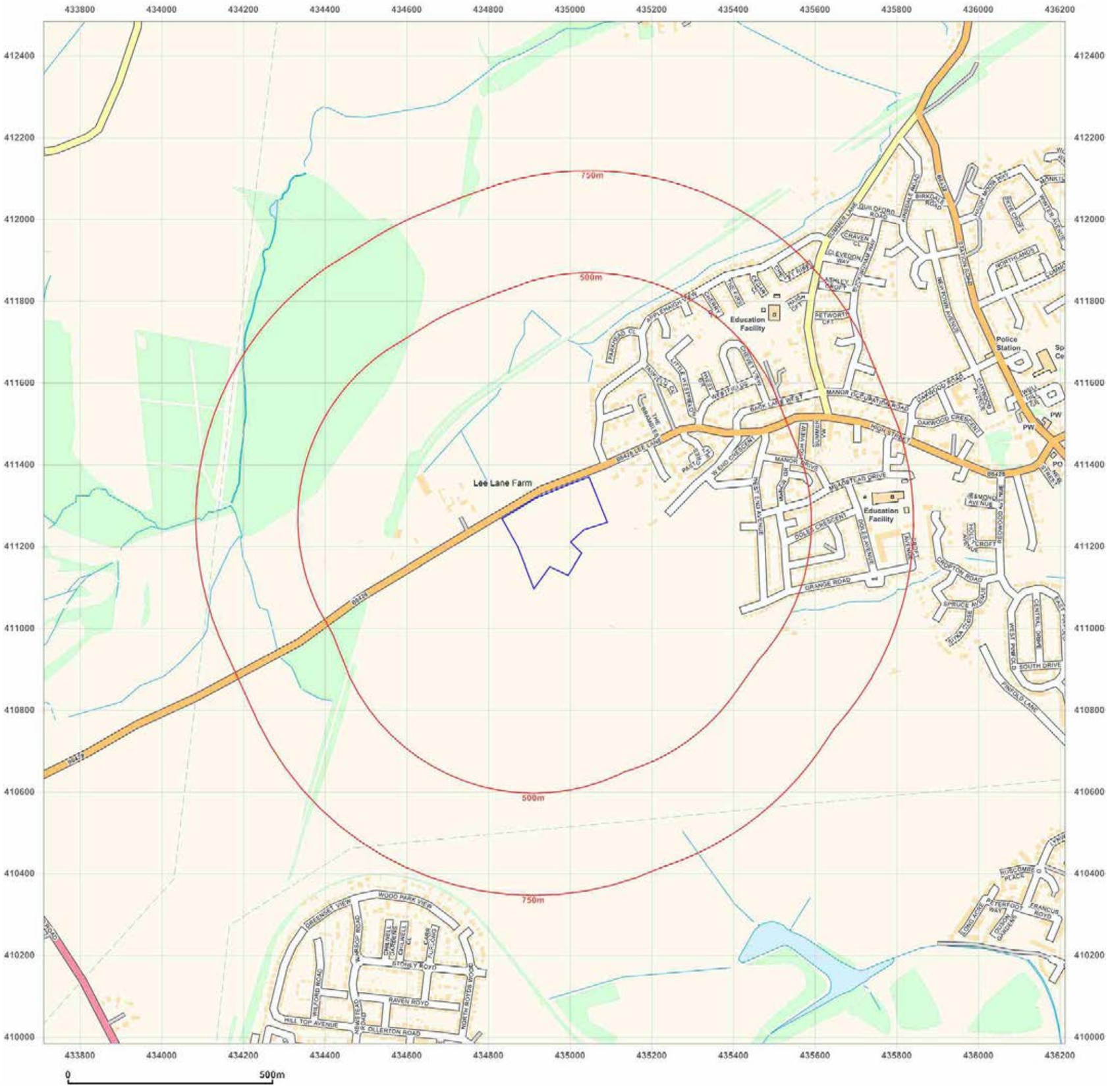
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Production date: 13 February 2020

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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

Map date: **2020**

Scale: 1:10,000

Printed at: 1:10,000

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2020

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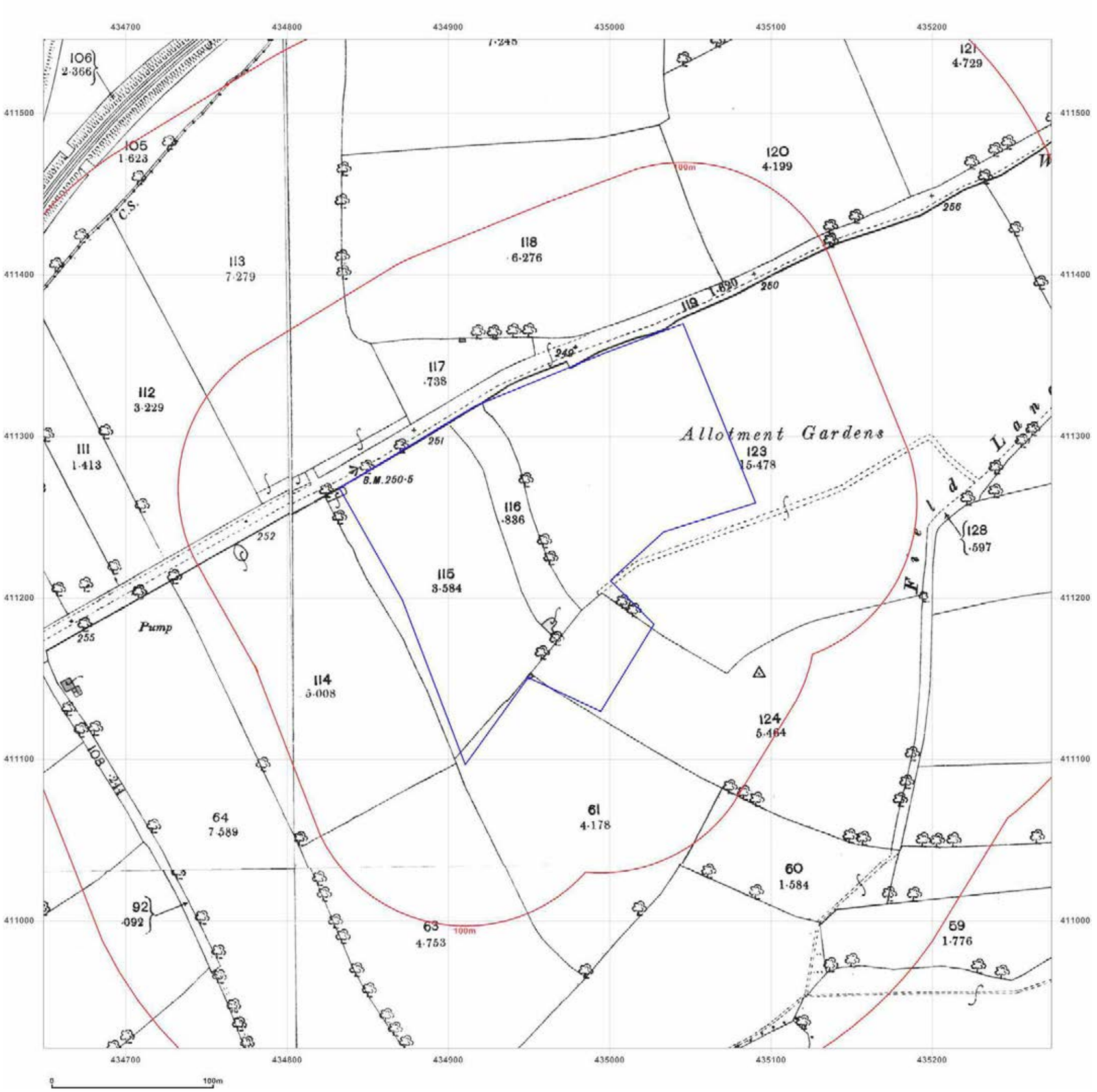
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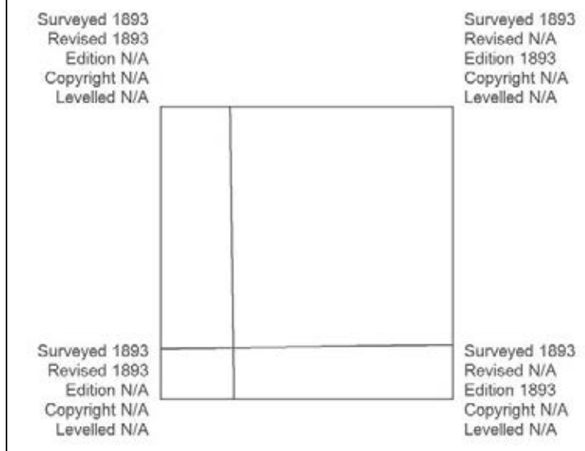
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Grid Ref: 434961, 411233

Map Name: County Series
Map date: **1893**
Scale: 1:2,500
Printed at: 1:2,500

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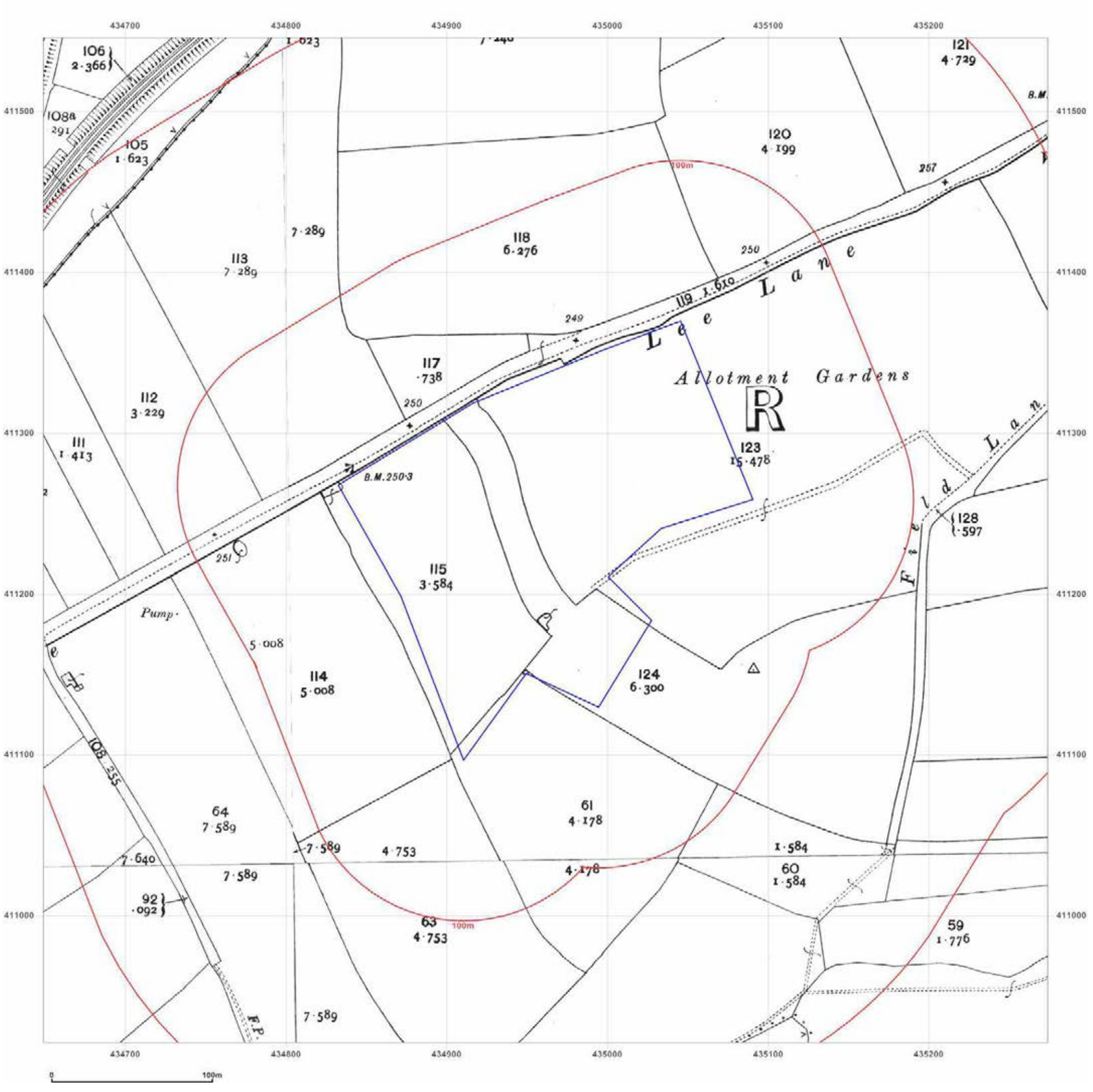
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Map legend available at:
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Lee Lane, Royston

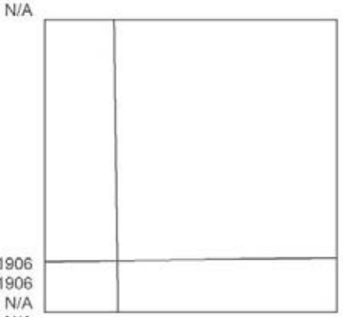
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Map Name: County Series
Map date: **1906**
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Printed at: 1:2,500

N
W E
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Surveyed 1906
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1890
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1906
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1890
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Copyright N/A
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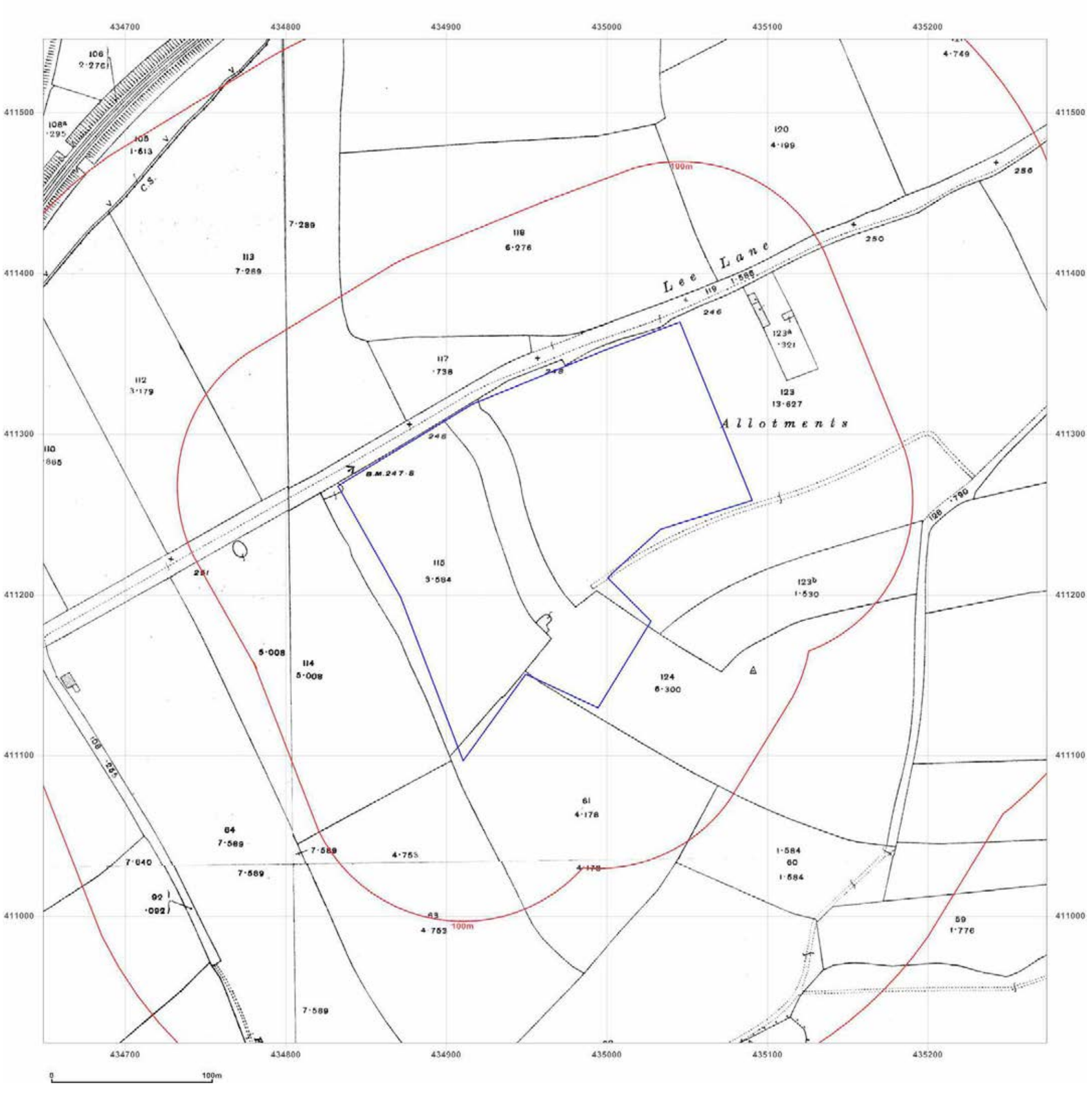
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Production date: 13 February 2020

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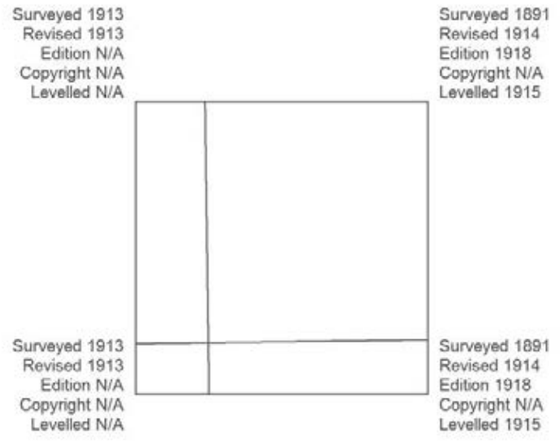
Site Details:

Lee Lane, Royston

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Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

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Printed at: 1:2,500

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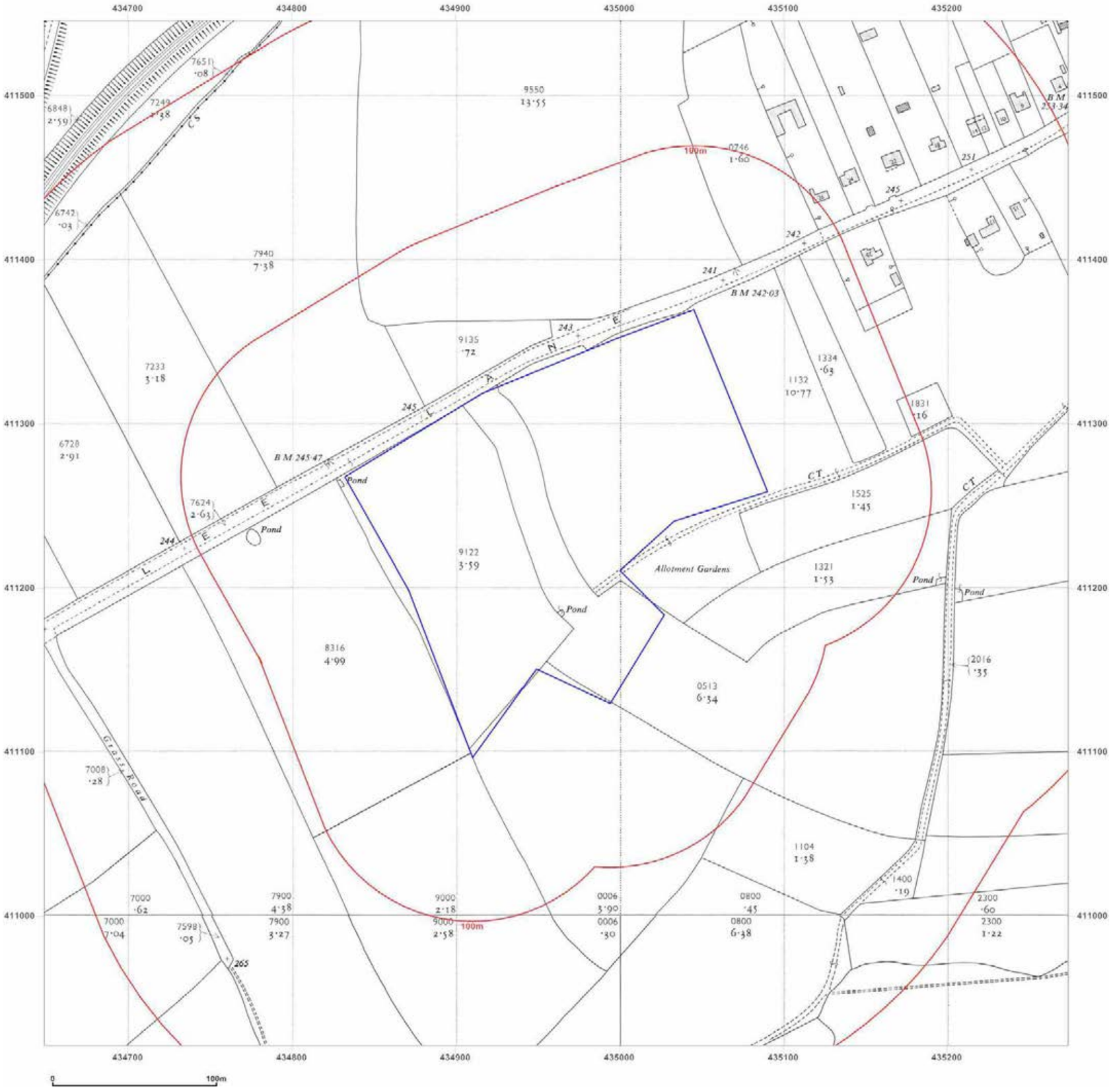
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

Map date: **1960**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1960
Revised 1960
Edition N/A
Copyright 1962
Levelled 1959

Surveyed 1960
Revised 1960
Edition 1962
Copyright 1962
Levelled 1959

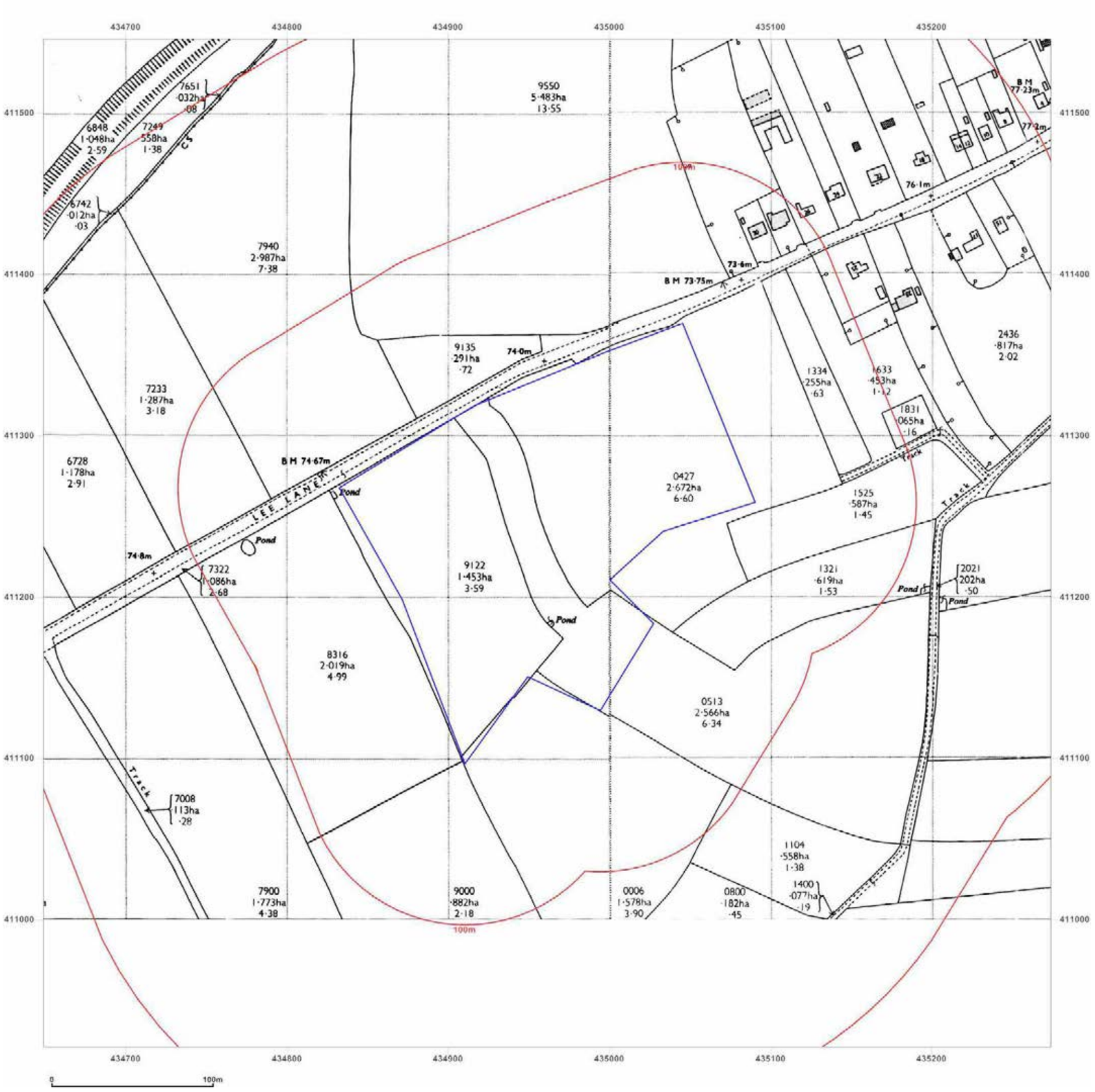
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

Map date: **1970**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed N/A
Revised N/A
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Site Details:

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Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

Map date: **1970**

Scale: 1:2,500

Printed at: 1:2,500

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Revised 1970
Edition N/A
Copyright 1970
Levelled 1964

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Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

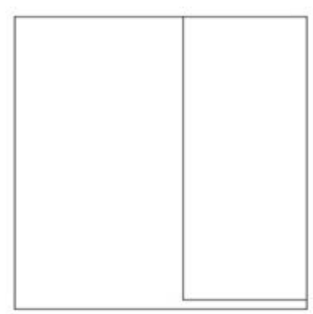
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Map date: **1976**

Scale: 1:1,250

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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

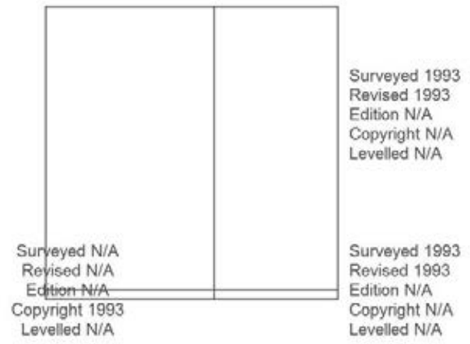
Map Name: National Grid

Map date: **1993**

Scale: 1:1,250

Printed at: 1:2,000

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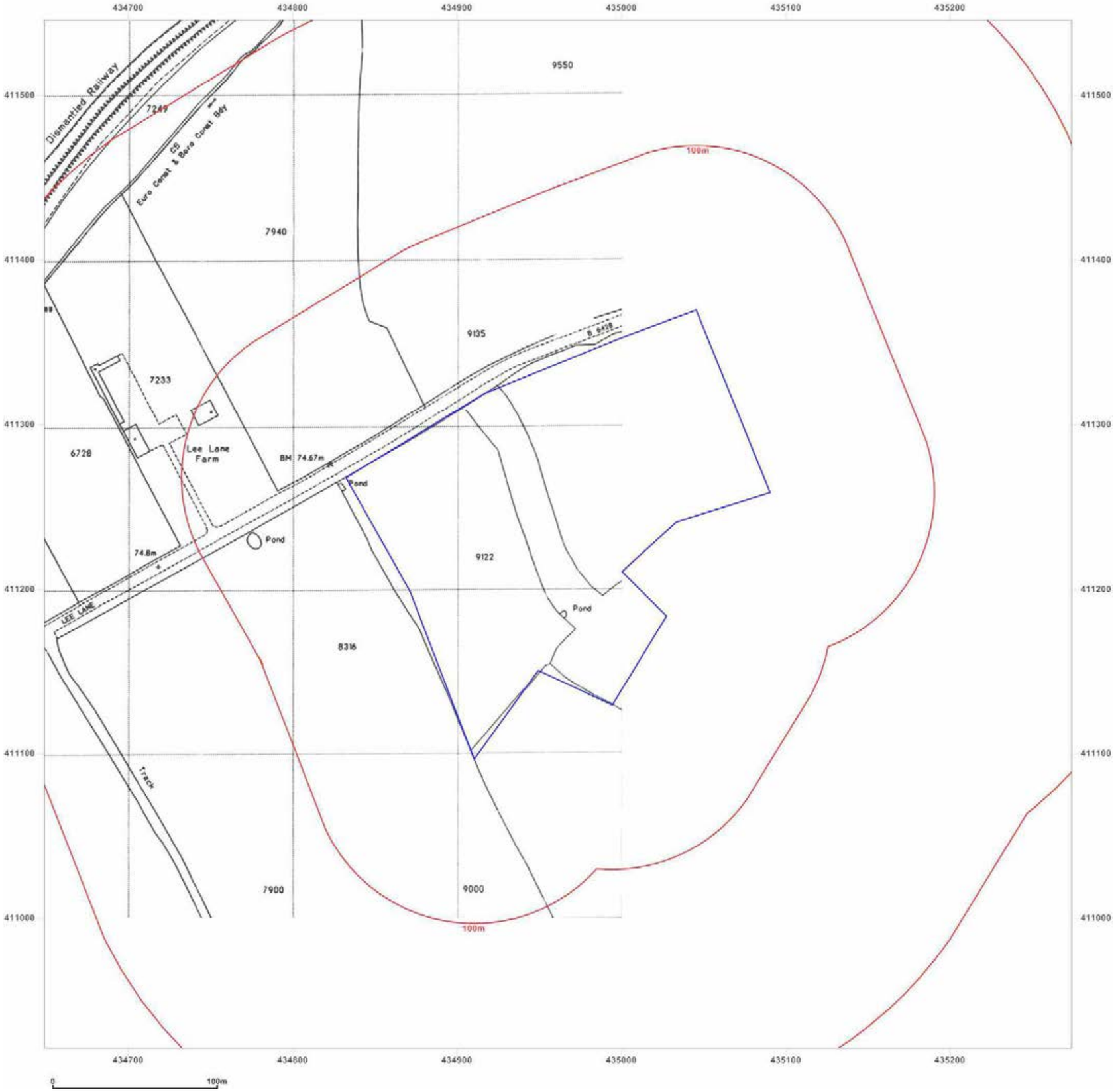
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Site Details:

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Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: National Grid

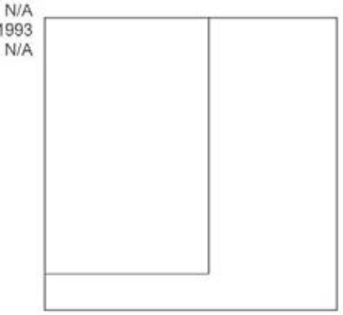
Map date: **1993**

Scale: 1:2,500

Printed at: 1:2,500

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



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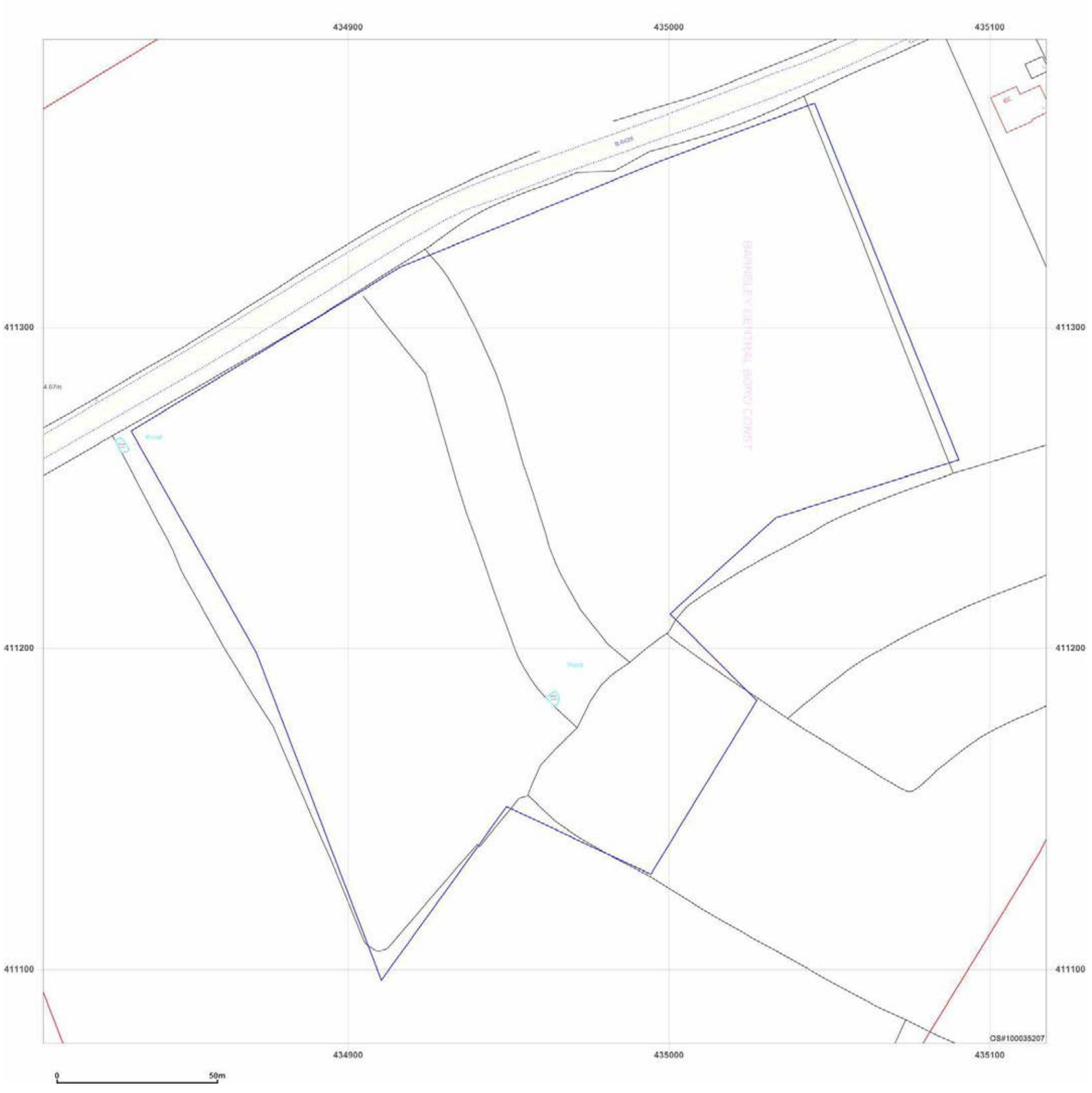
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Site Details:

Lee Lane, Royston

Client Ref: EMS_593523_794863
Report Ref: EMS-593523_794863
Grid Ref: 434961, 411233

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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Production date: 13 February 2020

Map legend available at:
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APPENDIX 4 - Groundsure Report

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo
Insight

Lee Lane, Royston,

Order Details

Date: 17/02/2020

Your ref: EMS_594069_795536

Our Ref: EMS-594069_795536

Client: emapsite

Site Details

Location: 434960 411245

Area: 3.57 ha



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Summary of findings p. 2

OS MasterMap site plan p.12

Aerial image p. 8

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info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	**1.1**	**Historical industrial land uses**	0	0	0	6	-
14	1.2	Historical tanks	0	0	0	0	-
14	**1.3**	**Historical energy features**	0	0	0	9	-
15	1.4	Historical petrol stations	0	0	0	0	-
15	1.5	Historical garages	0	0	0	0	-
15	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
16	**2.1**	**Historical industrial land uses**	0	0	0	9	-
17	2.2	Historical tanks	0	0	0	0	-
17	**2.3**	**Historical energy features**	0	0	0	11	-
18	2.4	Historical petrol stations	0	0	0	0	-
18	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
19	3.1	Active or recent landfill	0	0	0	0	-
19	3.2	Historical landfill (BGS records)	0	0	0	0	-
20	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
20	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
20	3.5	Historical waste sites	0	0	0	0	-
20	3.6	Licensed waste sites	0	0	0	0	-
20	**3.7**	**Waste exemptions**	0	0	2	3	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
22	**4.1**	**Recent industrial land uses**	0	0	6	-	-
23	4.2	Current or recent petrol stations	0	0	0	0	-
23	4.3	Electricity cables	0	0	0	0	-
23	4.4	Gas pipelines	0	0	0	0	-
23	4.5	Sites determined as Contaminated Land	0	0	0	0	-

24	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
24	4.7	Regulated explosive sites	0	0	0	0	-
24	4.8	Hazardous substance storage/usage	0	0	0	0	-
24	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
24	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
25	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
25	4.12	Radioactive Substance Authorisations	0	0	0	0	-
25	**4.13**	**Licensed Discharges to controlled waters**	0	0	2	0	-
25	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
26	4.15	Pollutant release to public sewer	0	0	0	0	-
26	4.16	List 1 Dangerous Substances	0	0	0	0	-
26	4.17	List 2 Dangerous Substances	0	0	0	0	-
26	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	0	3	-
27	4.19	Pollution inventory substances	0	0	0	0	-
27	4.20	Pollution inventory waste transfers	0	0	0	0	-
27	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
28	**5.1**	**Superficial aquifer**	Identified (within 500m)				
30	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
32	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
33	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
33	5.5	Groundwater vulnerability- local information	None (within 0m)				
34	5.6	Groundwater abstractions	0	0	0	0	0
34	5.7	Surface water abstractions	0	0	0	0	0
34	5.8	Potable abstractions	0	0	0	0	0
34	5.9	Source Protection Zones	0	0	0	0	-
35	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
36	**6.1**	**Water Network (OS MasterMap)**	0	0	3	-	-

37	**6.2**	**Surface water features**	0	0	3	-	-
37	**6.3**	**WFD Surface water body catchments**	1	-	-	-	-
38	**6.4**	**WFD Surface water bodies**	0	0	0	-	-
38	**6.5**	**WFD Groundwater bodies**	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
39	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
39	7.2	Historical Flood Events	0	0	0	-	-
39	7.3	Flood Defences	0	0	0	-	-
39	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
40	7.5	Flood Storage Areas	0	0	0	-	-
41	7.6	Flood Zone 2	None (within 50m)				
41	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding	
42	**8.1**	**Surface water flooding**	1 in 30 year, 0.3m - 1.0m (within 50m)

Page	Section	Groundwater flooding	
44	**9.1**	**Groundwater flooding**	Low (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
45	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
46	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
46	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
46	10.4	Special Protection Areas (SPA)	0	0	0	0	0
46	10.5	National Nature Reserves (NNR)	0	0	0	0	0
47	**10.6**	**Local Nature Reserves (LNR)**	0	0	0	1	0
47	**10.7**	**Designated Ancient Woodland**	0	0	0	2	1
47	10.8	Biosphere Reserves	0	0	0	0	0
48	10.9	Forest Parks	0	0	0	0	0
48	10.10	Marine Conservation Zones	0	0	0	0	0
48	**10.11**	**Green Belt**	0	0	1	1	0
48	10.12	Proposed Ramsar sites	0	0	0	0	0

49	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
49	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
49	10.15	Nitrate Sensitive Areas	0	0	0	0	0
49	**10.16**	**Nitrate Vulnerable Zones**	1	1	0	0	2
51	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
52	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
53	11.1	World Heritage Sites	0	0	0	-	-
53	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
53	11.3	National Parks	0	0	0	-	-
53	11.4	Listed Buildings	0	0	0	-	-
54	11.5	Conservation Areas	0	0	0	-	-
54	11.6	Scheduled Ancient Monuments	0	0	0	-	-
54	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
55	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
56	12.2	Open Access Land	0	0	0	-	-
56	12.3	Tree Felling Licences	0	0	0	-	-
57	12.4	Environmental Stewardship Schemes	0	0	0	-	-
57	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
58	**13.1**	**Priority Habitat Inventory**	0	0	2	-	-
59	13.2	Habitat Networks	0	0	0	-	-
59	13.3	Open Mosaic Habitat	0	0	0	-	-
59	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
60	**14.1**	**10k Availability**	Identified (within 500m)				
61	**14.2**	**Artificial and made ground (10k)**	0	0	1	6	-
63	**14.3**	**Superficial geology (10k)**	2	1	0	5	-

64	14.4	Landslip (10k)	0	0	0	0	-
65	14.5	Bedrock geology (10k)	3	2	5	3	-
66	14.6	Bedrock faults and other linear features (10k)	0	2	4	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
68	15.1	50k Availability	Identified (within 500m)				
69	15.2	Artificial and made ground (50k)	0	0	1	0	-
70	15.3	Artificial ground permeability (50k)	0	0	-	-	-
71	15.4	Superficial geology (50k)	1	1	0	1	-
72	15.5	Superficial permeability (50k)	Identified (within 50m)				
72	15.6	Landslip (50k)	0	0	0	0	-
72	15.7	Landslip permeability (50k)	None (within 50m)				
73	15.8	Bedrock geology (50k)	2	1	4	3	-
74	15.9	Bedrock permeability (50k)	Identified (within 50m)				
74	15.10	Bedrock faults and other linear features (50k)	0	1	4	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
76	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence					
77	17.1	Shrink swell clays	Very low (within 50m)				
78	17.2	Running sands	Very low (within 50m)				
79	17.3	Compressible deposits	Negligible (within 50m)				
80	17.4	Collapsible deposits	Very low (within 50m)				
81	17.5	Landslides	Very low (within 50m)				
82	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
83	18.1	Natural cavities	0	0	0	0	-
84	18.2	BritPits	0	0	0	0	-
84	18.3	Surface ground workings	0	0	0	-	-
84	18.4	Underground workings	0	0	0	0	0
84	18.5	Historical Mineral Planning Areas	0	0	0	0	-

84	**18.6**	**Non-coal mining**	2	2	0	1	6
86	18.7	Mining cavities	0	0	0	0	0
86	18.8	JPB mining areas	None (within 0m)				
86	**18.9**	**Coal mining**	Identified (within 0m)				
87	18.10	Brine areas	None (within 0m)				
87	18.11	Gypsum areas	None (within 0m)				
87	18.12	Tin mining	None (within 0m)				
87	18.13	Clay mining	None (within 0m)				

Page	Section	Radon	
88	**19.1**	**Radon**	Less than 1% (within 0m)

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
89	**20.1**	**BGS Estimated Background Soil Chemistry**	2	4	-	-	-
89	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
90	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
91	21.1	Underground railways (London)	0	0	0	-	-
91	21.2	Underground railways (Non-London)	0	0	0	-	-
92	21.3	Railway tunnels	0	0	0	-	-
92	21.4	Historical railway and tunnel features	0	0	0	-	-
92	21.5	Royal Mail tunnels	0	0	0	-	-
92	**21.6**	**Historical railways**	0	0	2	-	-
93	21.7	Railways	0	0	0	-	-
93	21.8	Crossrail 1	0	0	0	0	-
93	21.9	Crossrail 2	0	0	0	0	-
93	21.10	HS2	0	0	0	0	-

Recent aerial photograph



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Capture Date: 01/07/2018

Site Area: 3.57ha

Recent site history - 2012 aerial photograph



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Capture Date: 26/03/2012

Site Area: 3.57ha

Recent site history - 2009 aerial photograph

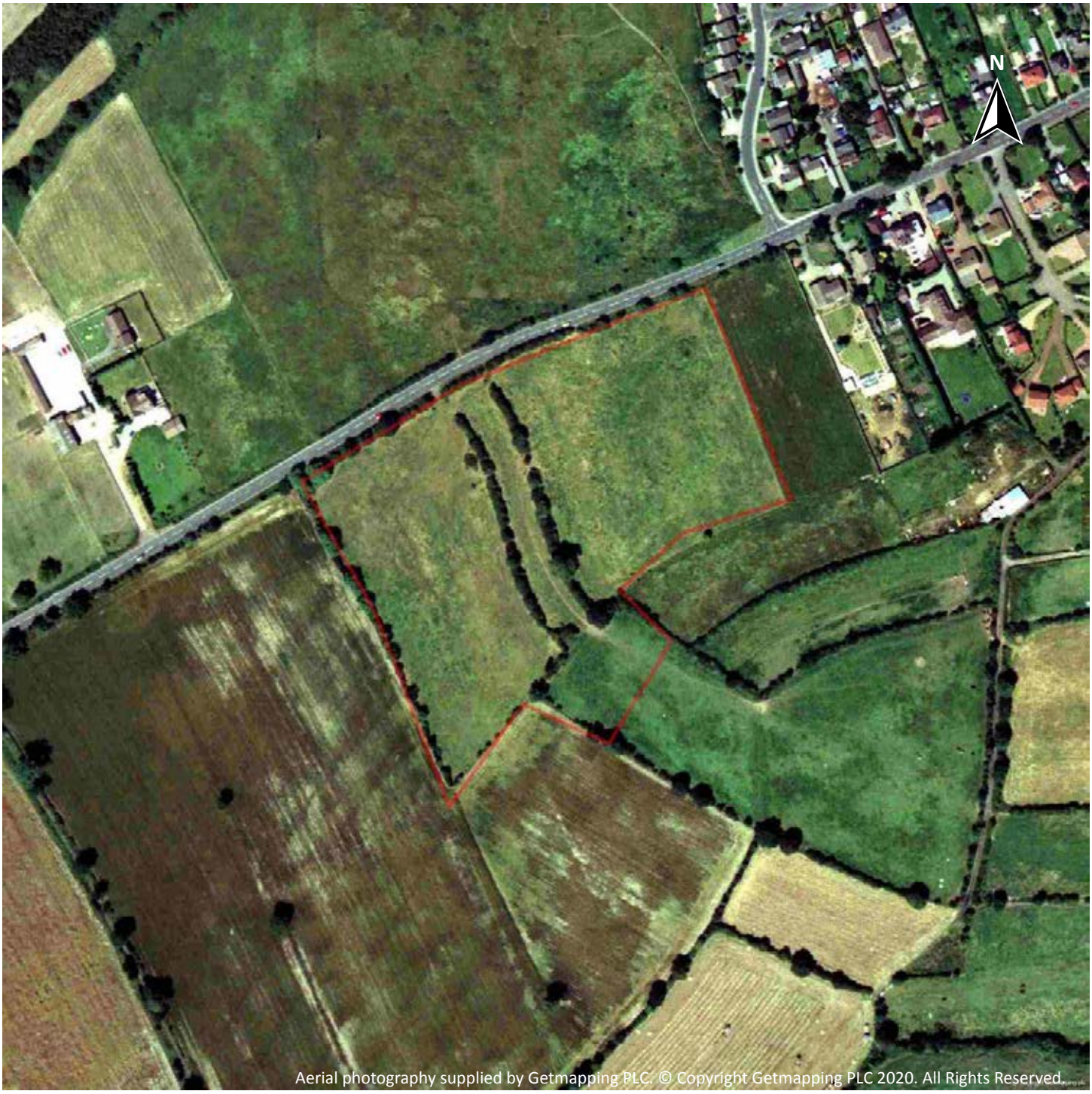


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Capture Date: 11/09/2009

Site Area: 3.57ha

Recent site history - 1999 aerial photograph



Capture Date: 10/07/1999

Site Area: 3.57ha

OS MasterMap site plan



Site Area: 3.57ha

1 Past land use



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Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical energy features

1.1 Historical industrial land uses

Records within 500m	6

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 13**

ID	Location	Land use	Dates present	Group ID
1	347m SW	Railway Building	1965	1430417

ID	Location	Land use	Dates present	Group ID
D	431m NW	Cuttings	1904	1507816
D	431m NW	Cuttings	1948	1551534
D	432m NW	Cuttings	1951	1515924
D	434m NW	Cuttings	1930	1494609
D	439m NW	Cuttings	1938	1537975

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 un-grouped 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	**9**

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 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 13**

ID	Location	Land use	Dates present	Group ID
A	348m NE	Electricity Substation	1986	133544
A	348m NE	Electricity Substation	1995	141374
A	349m NE	Electricity Substation	1981	133088
B	402m E	Electricity Substation	1970 - 1976	147025
B	402m E	Electricity Substation	1993	135558
C	414m SE	Electricity Substation	1976 - 1993	137675

ID	Location	Land use	Dates present	Group ID
C	415m SE	Electricity Substation	1985	134063
C	415m SE	Electricity Substation	1970	142713
C	417m SE	Electricity Substation	1993	132681

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 un-grouped 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 un-grouped 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

Historical energy features

2.1 Historical industrial land uses

Records within 500m	9

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 16**

ID	Location	Land Use	Date	Group ID
1	347m SW	Railway Building	1965	1430417
D	431m NW	Cuttings	1948	1551534
D	431m NW	Cuttings	1904	1507816

ID	Location	Land Use	Date	Group ID
D	432m NW	Cuttings	1951	1515924
D	434m NW	Cuttings	1930	1494609
D	434m NW	Cuttings	1930	1494609
D	434m NW	Cuttings	1930	1494609
D	434m NW	Cuttings	1930	1494609
D	439m NW	Cuttings	1938	1537975

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	**11**

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'.

Features are displayed on the Past land use - un-grouped map on **page 16**

ID	Location	Land Use	Date	Group ID
A	348m NE	Electricity Substation	1986	133544
A	348m NE	Electricity Substation	1995	141374
A	349m NE	Electricity Substation	1981	133088
B	402m E	Electricity Substation	1970	147025
B	402m E	Electricity Substation	1976	147025
B	402m E	Electricity Substation	1993	135558
C	414m SE	Electricity Substation	1976	137675

ID	Location	Land Use	Date	Group ID
C	414m SE	Electricity Substation	1993	137675
C	415m SE	Electricity Substation	1985	134063
C	415m SE	Electricity Substation	1970	142713
C	417m SE	Electricity Substation	1993	132681

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



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Site Outline

Search buffers in metres (m)

Waste exemptions

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	5

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.

Features are displayed on the Waste and landfill map on **page 19**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	157m NE	0, L/O lee Lane , Royston , S71 4RT	WEX132695	Using waste exemption	Not on a farm	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
2	231m W	The Bungalow Lee Lane Farm Lee Lane BARNSLEY South Yorkshire S71 4RT	EPR/GF0308UX/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction
A	470m E	Pond Lane Piggeries S71 4RR	EPR/ZE5257YT/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
A	470m E	Pond Lane Piggeries S71 4RR	EPR/ZE5257YT/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
A	470m E	Pond Lane Piggeries S71 4RR	EPR/ZE5257YT/A001	Using waste exemption	Agricultural Waste Only	Use of waste for a specified purpose

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

4 Current industrial land use



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Site Outline

Search buffers in metres (m)

Recent industrial land uses

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	6

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 22**

ID	Location	Company	Address	Activity	Category
1	94m N	Electricity Sub Station	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
A	144m N	Pumping Station	South Yorkshire, S71	Water Pumping Stations	Industrial Features
B	161m N	Pumping Station	South Yorkshire, S71	Water Pumping Stations	Industrial Features

ID	Location	Company	Address	Activity	Category
B	164m N	Sewage Pumping Station	South Yorkshire, S71	Waste Storage, Processing and Disposal	Infrastructure and Facilities
2	185m N	Pianotech	124, Applehaigh View, Royston, Barnsley, South Yorkshire, S71 4JG	Musical Instruments	Consumer Products
3	241m E	A 1 Caravan Care	8, The Pastures, Royston, Barnsley, South Yorkshire, S71 4RQ	Sports and Leisure Equipment Repair	Repair and Servicing

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	**0**

High pressure underground gas transmission pipelines.

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	2

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 22**

ID	Location	Address	Details	
A	150m N	APPLEHAIGH VIEW SPS, ROYSTON, BARNSLEY, SOUTH YORKSHIRE, S71 4JG	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: WADC12 Permit Version: 1 Receiving Water: BLEAKLEY DYKE	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 02/11/1989 Effective Date: 02/11/1989 Revocation Date: 13/04/2009
A	150m N	APPLEHAIGH VIEW SPS, ROYSTON, BARNSLEY, SOUTH YORKSHIRE, S71 4JG	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: WADC12 Permit Version: 2 Receiving Water: BLEAKLEY DYKE	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 14/04/2009 Effective Date: 14/04/2009 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	3

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

Features are displayed on the Current industrial land use map on **page 22**

ID	Location	Details	
C	367m N	Incident Date: 05/06/2002 Incident Identification: 82915 Pollutant: Contaminated Water Pollutant Description: Other Contaminated Water	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	370m N	Incident Date: 17/03/2003 Incident Identification: 143659 Pollutant: Contaminated Water Pollutant Description: Other Contaminated Water	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

ID	Location	Details	
4	470m E	Incident Date: 03/12/2001 Incident Identification: 46273 Pollutant: Inorganic Chemicals/Products Pollutant Description: Other Inorganic Chemical or Product	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

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.

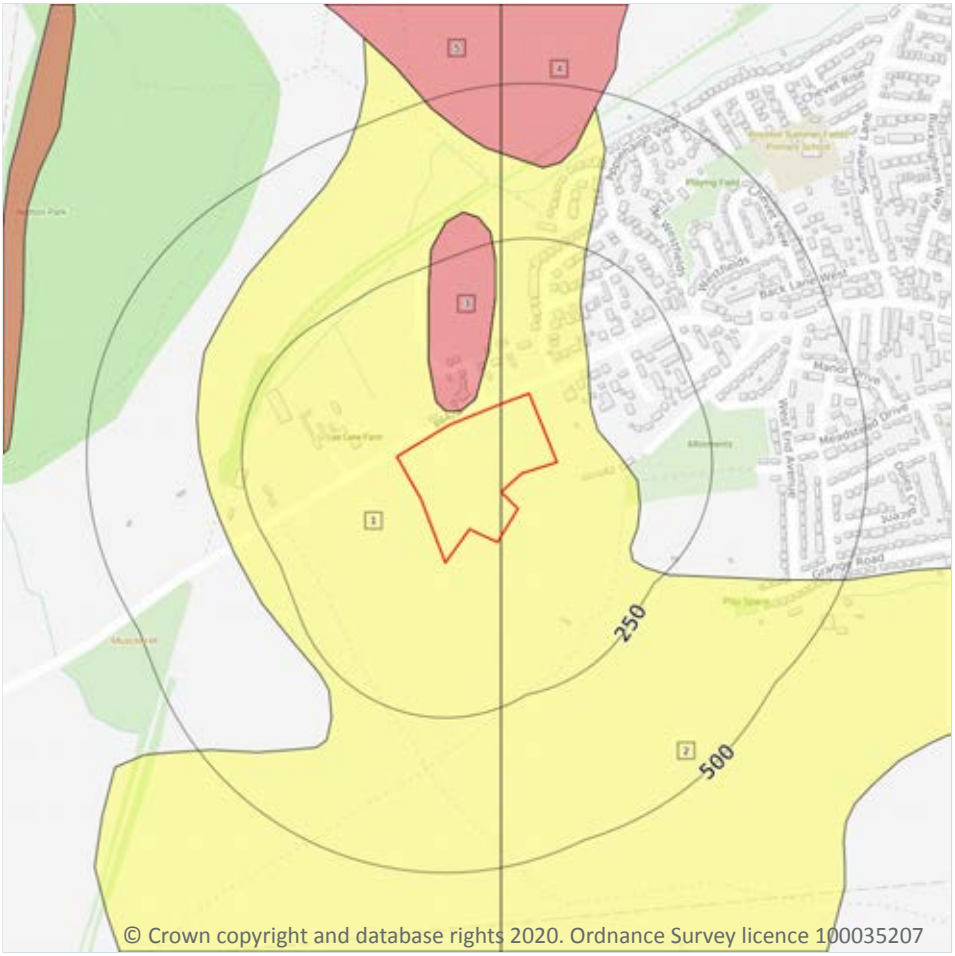
4.21 Pollution inventory radioactive waste

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



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

5.1 Superficial aquifer

Records within 500m	5

Aquifer status of groundwater held within superficial geology.

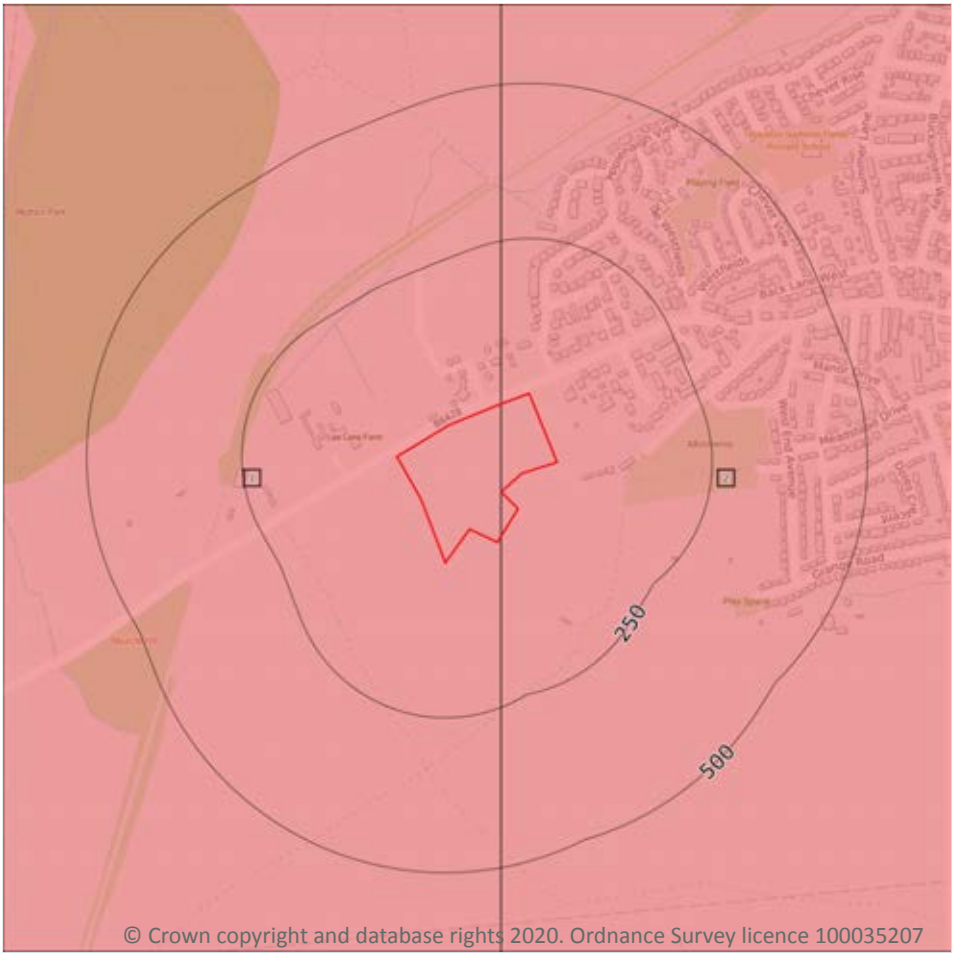
Features are displayed on the Hydrogeology map on **page 28**

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	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

ID	Location	Designation	Description
3	14m N	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	365m N	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
5	390m N	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	2

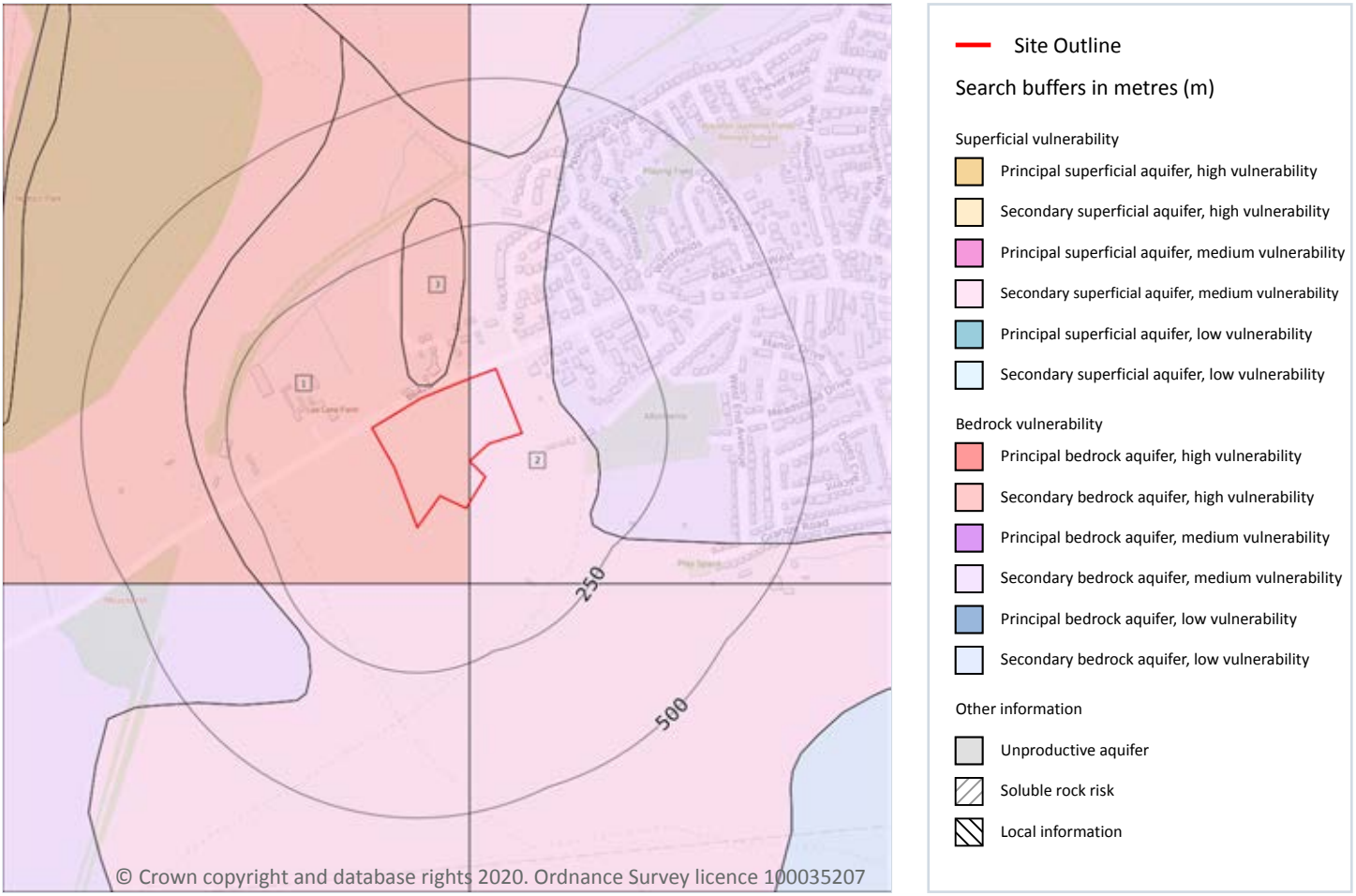
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 30**

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
2	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	3

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 32**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures**
2	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: Medium**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
3	13m N	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High 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

Records on site	**0**

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

Records on site	**0**

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	0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

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



Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**3**

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 36**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	98m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
C	217m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	234m NW	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	**3**

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 36**

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 36**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River WB catchment**	**Owler Beck from Source to River Calder**	**GB104027062530**	**Lower Calder**	**Aire and Calder**

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 36**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Biological rating	Year
-	566m SW	River	Owler Beck from Source to River Calder	GB104027062530	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site	1

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 36**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.**	**GB40402G700400**	**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



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Site Outline
Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

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.

Features are displayed on the Surface water flooding map on **page 42**

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	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.3m and 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



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Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

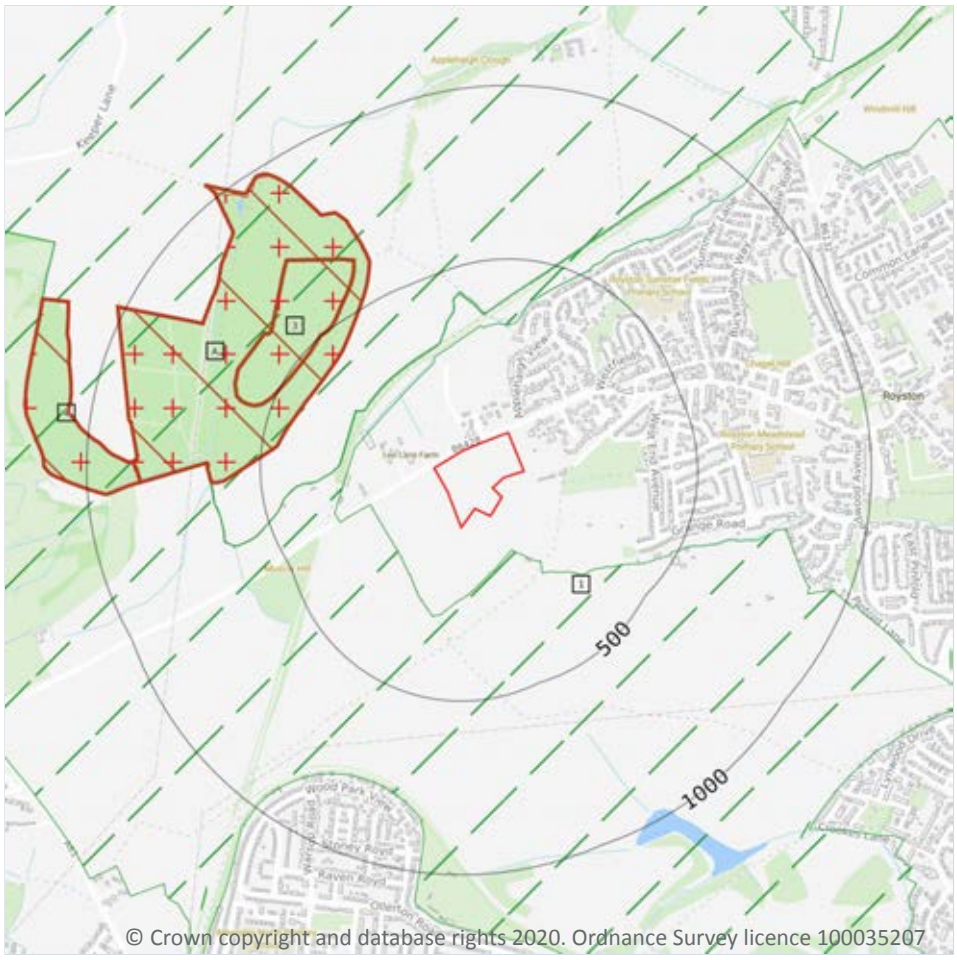
Highest risk on site	**Low**
Highest risk within 50m	**Low**

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 44**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Local Nature Reserves (LNR)

Designated Ancient Woodland

Green Belt

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	1

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.

Features are displayed on the Environmental designations map on **page 45**

ID	Location	Name	Data source
A	409m NW	Notton Wood	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	3

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 45**

ID	Location	Name	Woodland Type
A	409m NW	NOTTON PARK	Ancient & Semi-Natural Woodland
3	487m NW	NOTTON PARK	Ancient Replanted Woodland
4	846m W	NOTTON PARK	Ancient Replanted 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	2

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

Features are displayed on the Environmental designations map on **page 45**

ID	Location	Name	Local Authority name
1	116m SE	Liverpool, Manchester and West Yorks Greenbelt	Barnsley District (B)
2	260m NW	Liverpool, Manchester and West Yorks Greenbelt	Wakefield

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	4

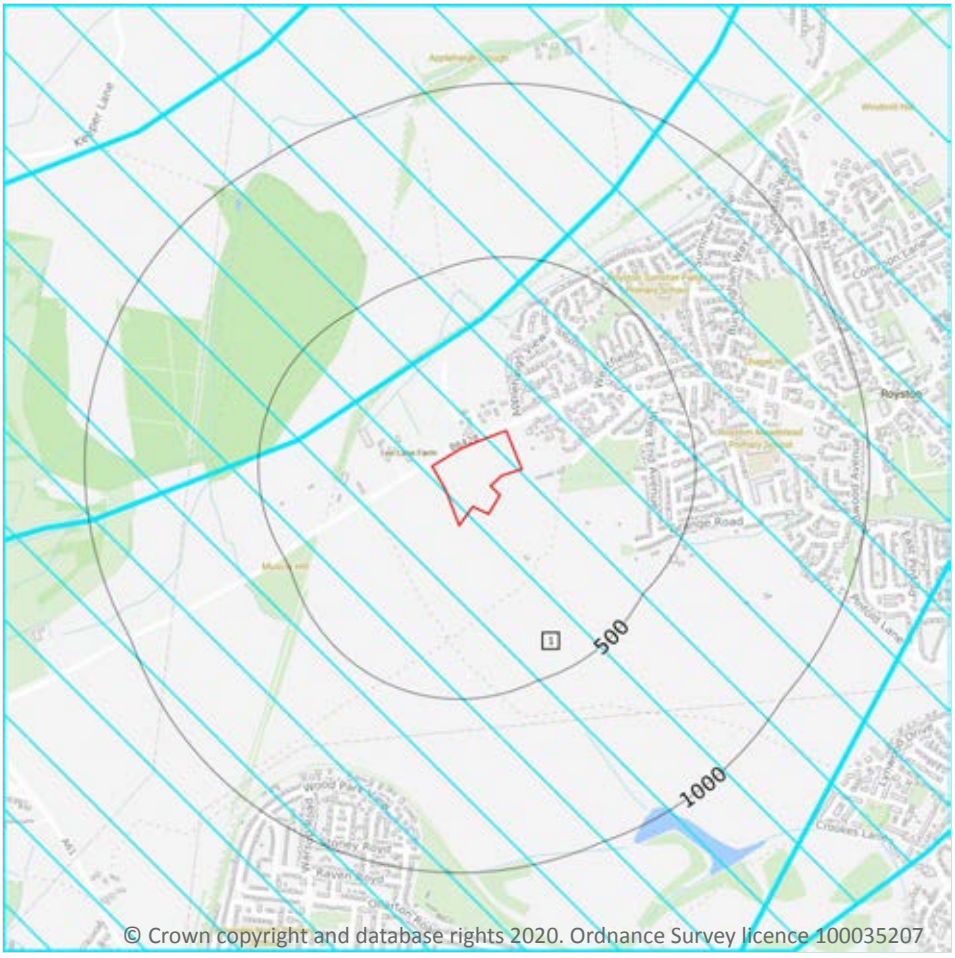
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	**Owler Beck from Source to River Calder NVZ**	**Surface Water**	**S268**	**Existing**

Location	Name	Type	NVZ ID	Status
7m SE	River Dearne NVZ	Surface Water	S278	Existing
740m NW	Owler Beck from Source to River Calder NVZ	Surface Water	S268	Existing
1334m W	River Dearne NVZ	Surface Water	S278	Existing

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

Not recorded

Favourable

Unfavourable - Recovering

Unfavourable - No change

Unfavourable - Declining

Partially destroyed

Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

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.

Features are displayed on the SSSI Impact Zones and Units map on **page 51**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons > 750m² & manure stores > 3500t.** **Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

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.

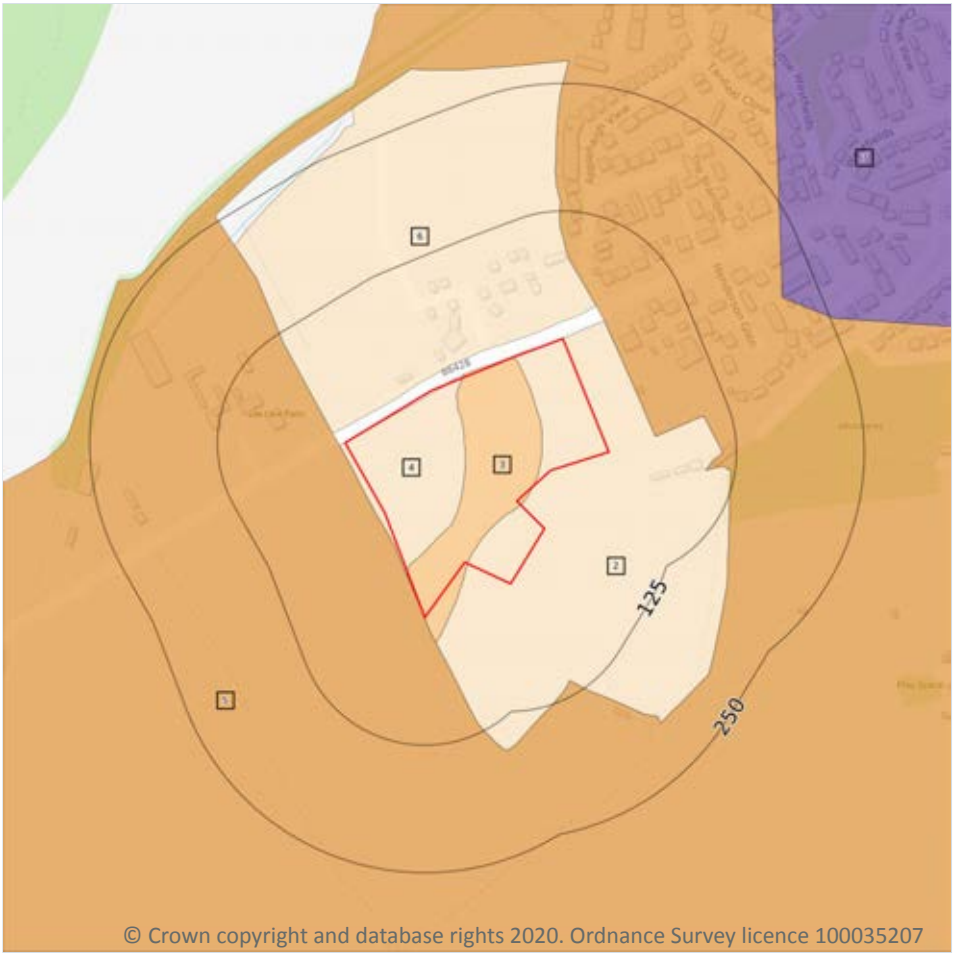
11.7 Registered Parks and Gardens

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



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	6

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 55**

ID	Location	Classification	Description
2	**On site**	**Grade 3b**	**Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.**

ID	Location	Classification	Description
3	**On site**	**Grade 3a**	**Good quality agricultural land. Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.**
4	**On site**	**Grade 3b**	**Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.**
5	0m W	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.
6	11m NW	Grade 3b	Moderate quality agricultural land. Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
7	214m E	Urban	-

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	0

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.

This data is sourced from Natural England.

13 Habitat designations



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Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks

Primary Habitat
Restorable Habitat
Associated Habitats
Habitat Restoration-Creation
Network Enhancement Zone 1
Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	2

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 58**

ID	Location	Main Habitat	Other habitats
1	219m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	235m W	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	2

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 60**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SE31SE**
2	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SE31SW**

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Reclaimed ground
- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

14.2 Artificial and made ground (10k)

Records within 500m **7**

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.

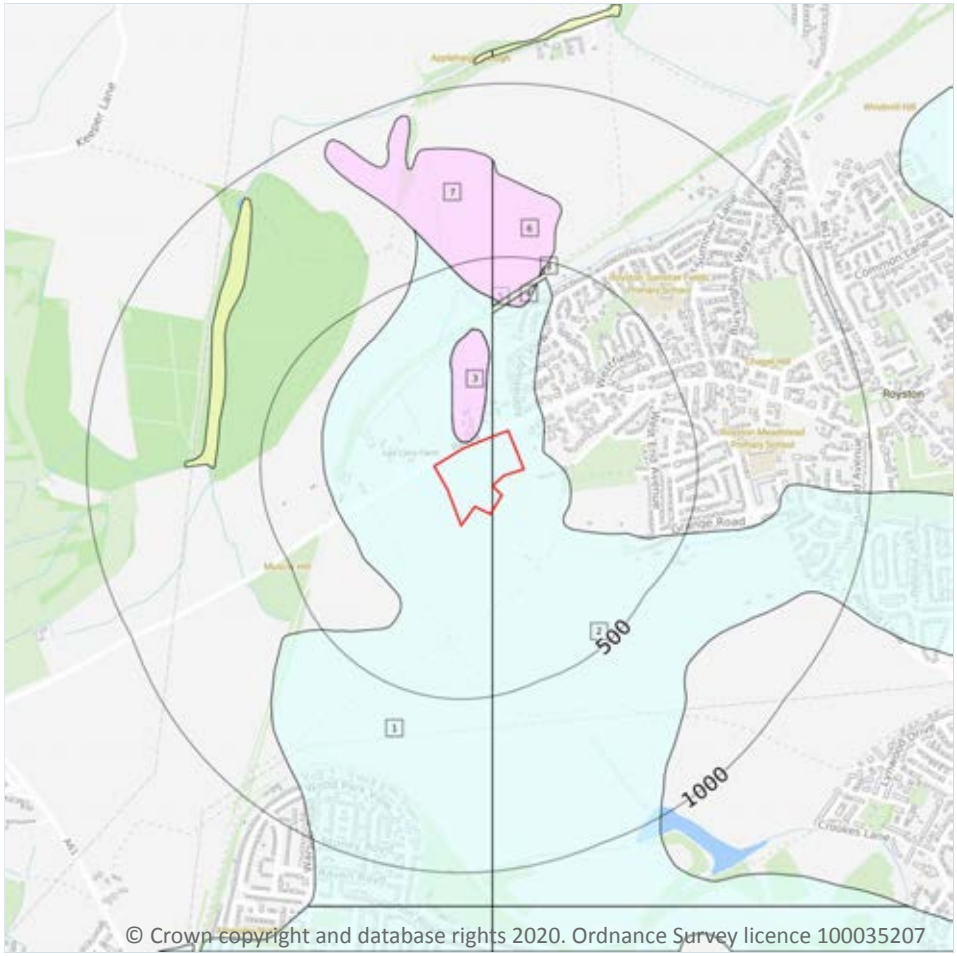
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 61**

ID	Location	LEX Code	Description	Rock description
1	221m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	323m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	333m N	WMGR-ARTDP	Infilled Ground	Artificial Deposit
A	341m N	WGR-VOID	Worked Ground (Undivided)	Void

ID	Location	LEX Code	Description	Rock description
3	355m SW	WGR-VOID	Worked Ground (Undivided)	Void
4	447m NW	WGR-VOID	Worked Ground (Undivided)	Void
5	494m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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 **8**

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 63**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILMP-DMTN**	**Till, Mid Pleistocene - Diamicton**	**Diamicton**
2	**On site**	**TILMP-DMTN**	**Till, Mid Pleistocene - Diamicton**	**Diamicton**
3	12m N	GFDMP-XSV	Glaciofluvial Deposits, Mid Pleistocene - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
4	358m N	GFDMP-XSV	Glaciofluvial Deposits, Mid Pleistocene - Sand And Gravel	Sand And Gravel
5	360m N	TILMP-DMTN	Till, Mid Pleistocene - Diamicton	Diamicton
6	372m N	GFDMP-XSV	Glaciofluvial Deposits, Mid Pleistocene - Sand And Gravel	Sand And Gravel
7	384m N	GFDMP-XSV	Glaciofluvial Deposits, Mid Pleistocene - Sand And Gravel	Sand And Gravel
8	454m N	TILMP-DMTN	Till, Mid Pleistocene - Diamicton	Diamicton

This data is sourced from the British Geological Survey.

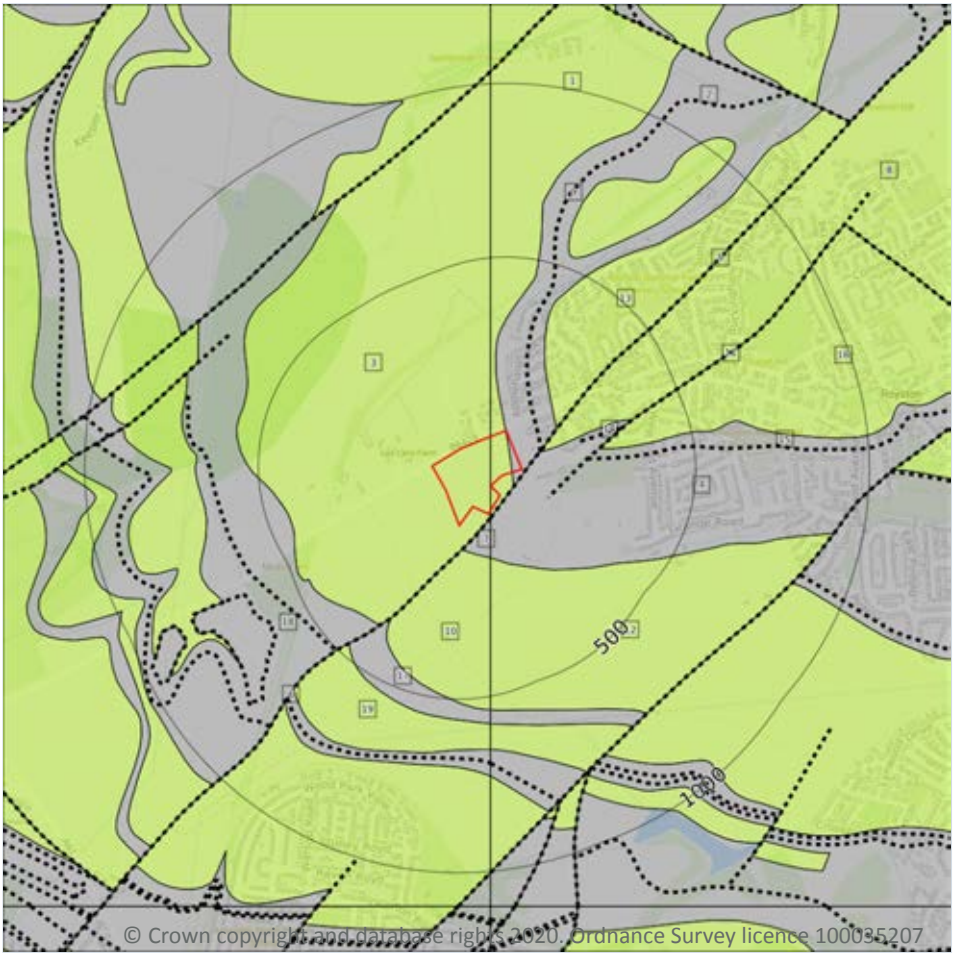
14.4 Landslip (10k)

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	13

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 65**

ID	Location	LEX Code	Description	Rock age
1	On site	OR-SDST	Oaks Rock - Sandstone	Duckmantian Sub-age
2	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
3	On site	OR-SDST	Oaks Rock - Sandstone	Duckmantian Sub-age

ID	Location	LEX Code	Description	Rock age
4	11m SE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
7	13m SE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
8	66m E	MXR-SDST	Mexborough Rock - Sandstone	Bolsovian Sub-age
10	71m S	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
12	126m S	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
13	136m E	ACR-SDST	Ackton Rock - Sandstone	Bolsovian Sub-age
16	230m E	MXR-SDST	Mexborough Rock - Sandstone	Bolsovian Sub-age
17	332m SW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
18	368m SW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
19	465m SW	ACR-SDST	Ackton Rock - Sandstone	Bolsovian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m **6**

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 65**

ID	Location	Category	Description
5	11m SE	FAULT	Normal fault, inferred
6	13m SE	FAULT	Normal fault, inferred
9	67m E	FOSSIL_HORIZON	Fossil horizon, marine band
11	111m SE	FAULT	Normal fault, inferred
14	184m E	ROCK	Coal seam, inferred
15	191m E	ROCK	Coal seam, inferred

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	1

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 68**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW087_barnsley_v4**

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	1

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.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 69**

ID	Location	LEX Code	Description	Rock description
1	195m W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

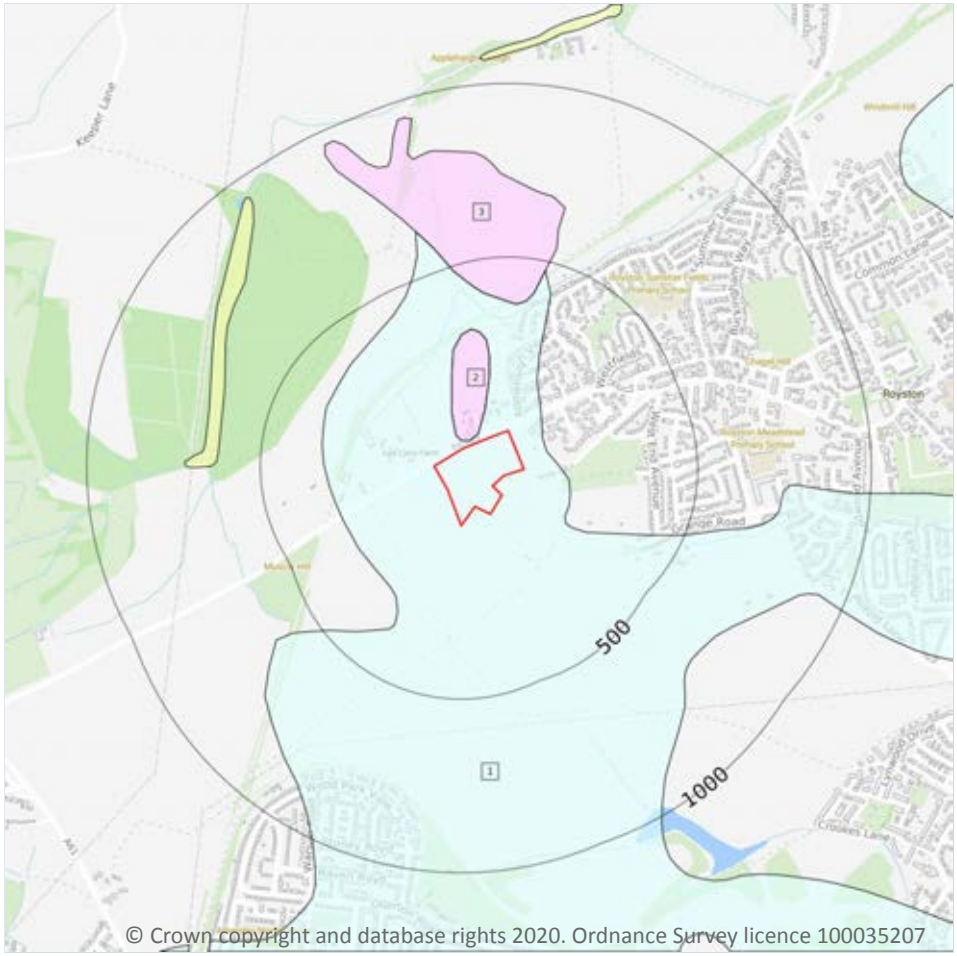
15.3 Artificial ground permeability (50k)

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 **3**

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 71**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILMP-DMTN**	**TILL, MID PLEISTOCENE**	**DIAMICTON**
2	14m N	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
3	365m N	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	**3**

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
On site	**Mixed**	**High**	**Low**
On site	**Mixed**	**High**	**Low**
14m N	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	**0**

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.

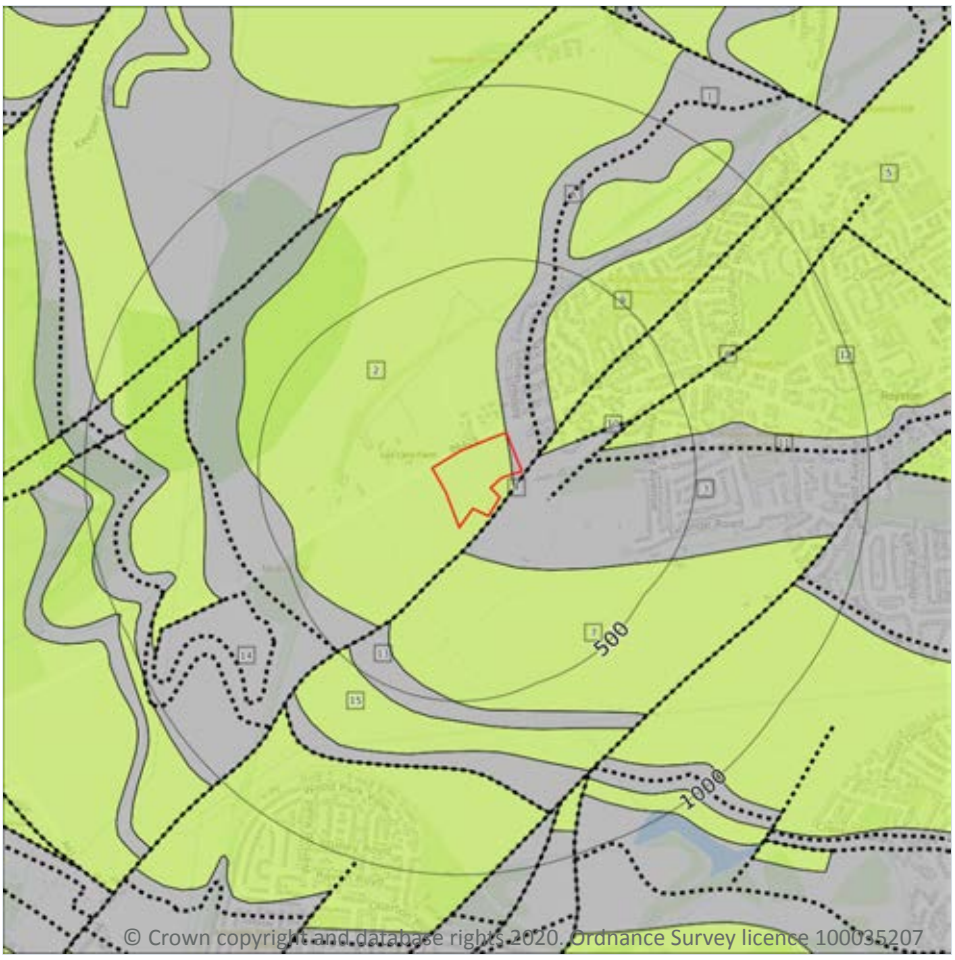
15.7 Landslip permeability (50k)

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.

15.8 Bedrock geology (50k)

Records within 500m	10

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 73**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PMCM-MDSS**	**PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
2	**On site**	**OR-SDST**	**OAKS ROCK - SANDSTONE**	**WESTPHALIAN**
3	10m SE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
5	58m E	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE	WESTPHALIAN
7	71m S	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
9	136m E	ACR-SDST	ACKTON ROCK - SANDSTONE	WESTPHALIAN
12	231m E	MXR-SDST	MEXBOROUGH ROCK - SANDSTONE	WESTPHALIAN
13	333m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14	368m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	466m SW	ACR-SDST	ACKTON ROCK - SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	**4**

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
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**Moderate**	**Low**
13m S	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	**5**

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.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 73**

ID	Location	Category	Description
4	10m SE	FAULT	Fault, inferred
6	67m E	FOSSIL_HORIZON	Marine band
8	111m SE	FAULT	Fault, inferred
10	180m E	ROCK	Coal seam, inferred
11	190m E	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

16 Boreholes

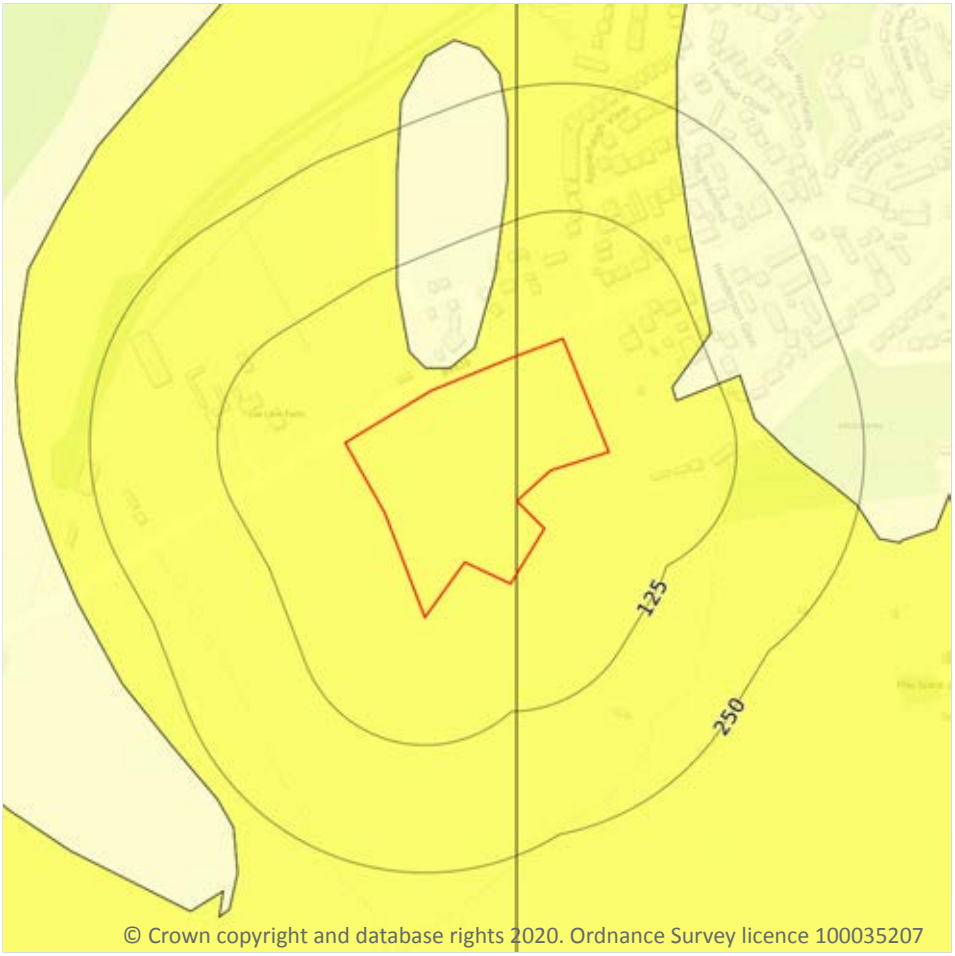
16.1 BGS Boreholes

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



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Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	2

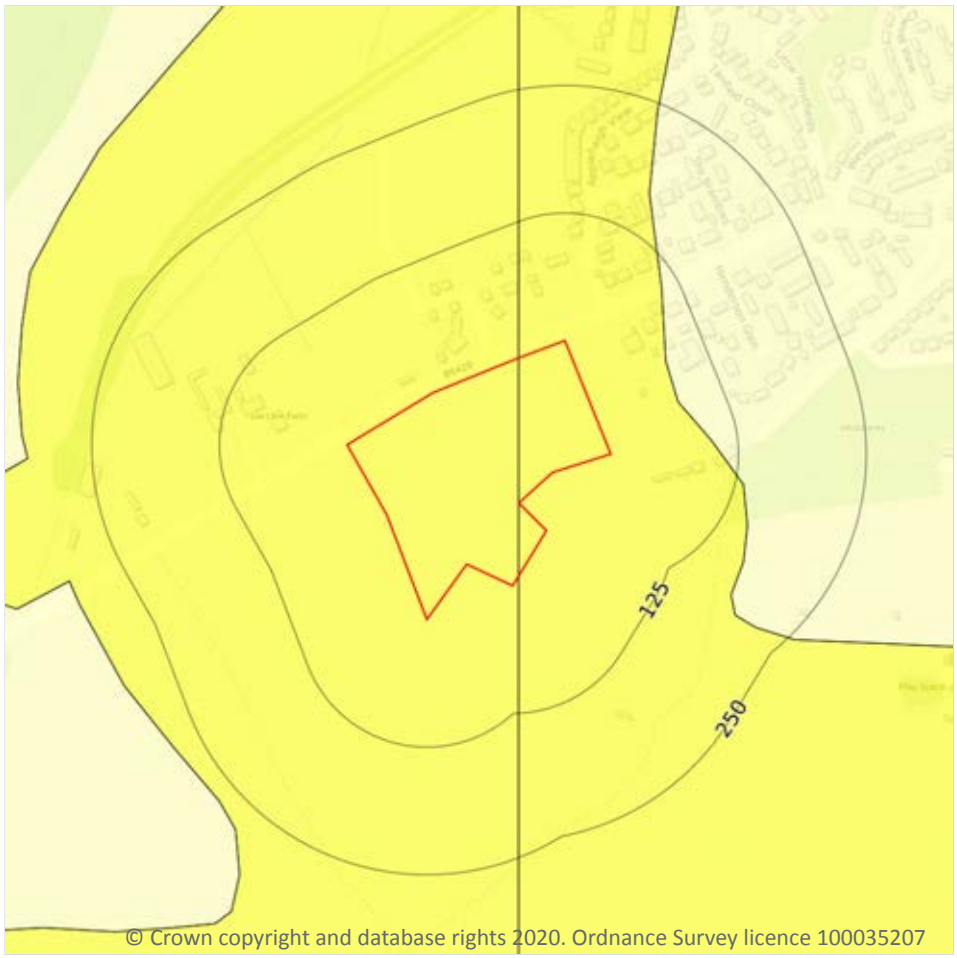
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 77**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**
14m N	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



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Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

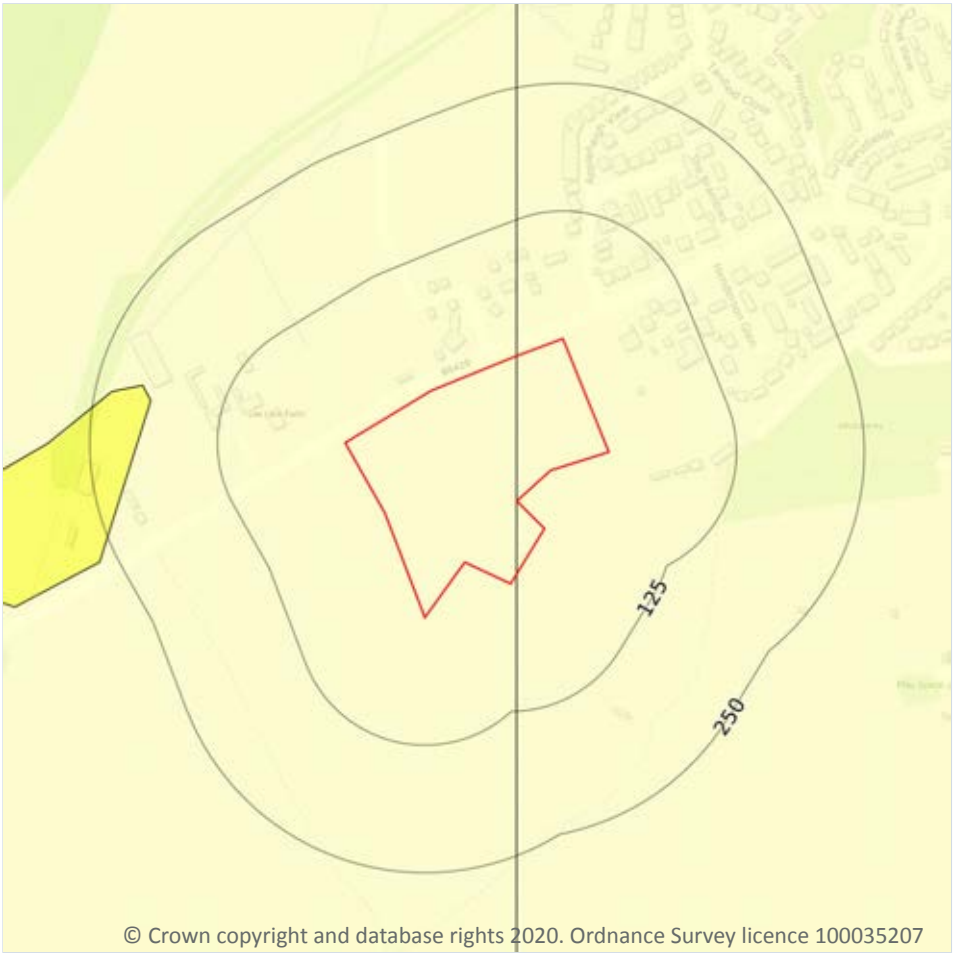
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 78**

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



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Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

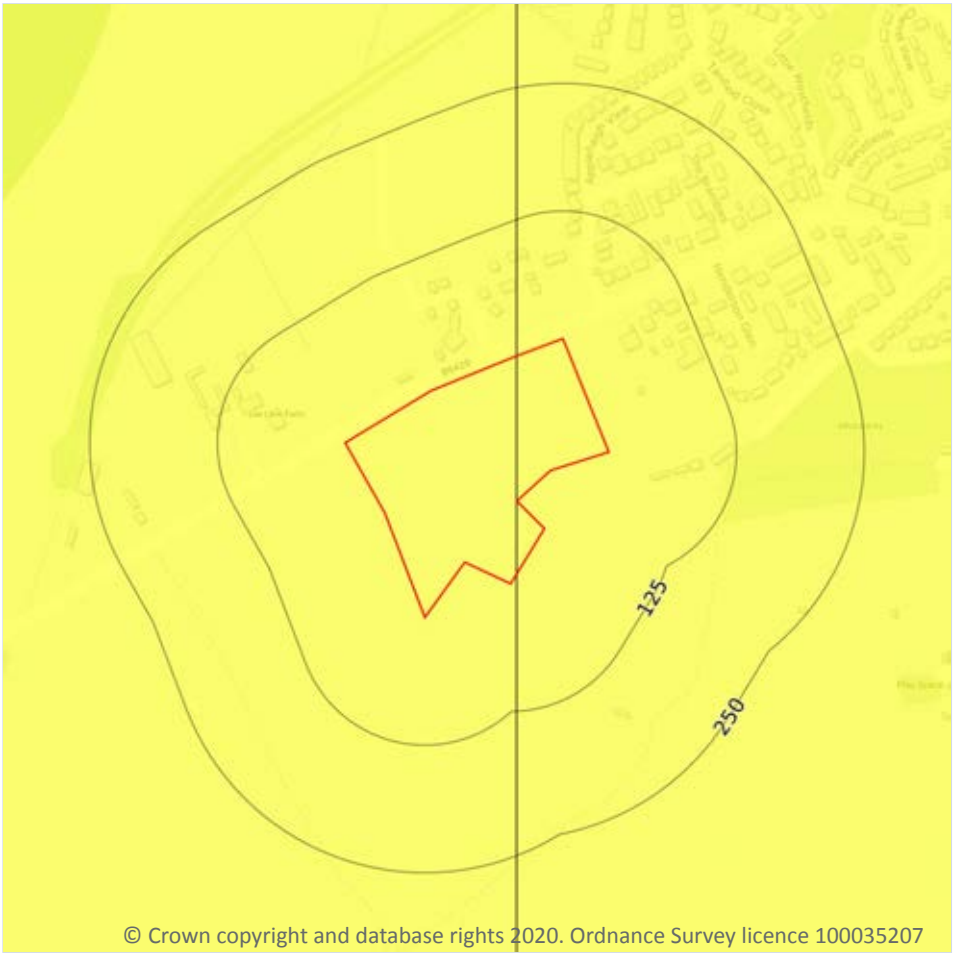
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 79**

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



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Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	**1**

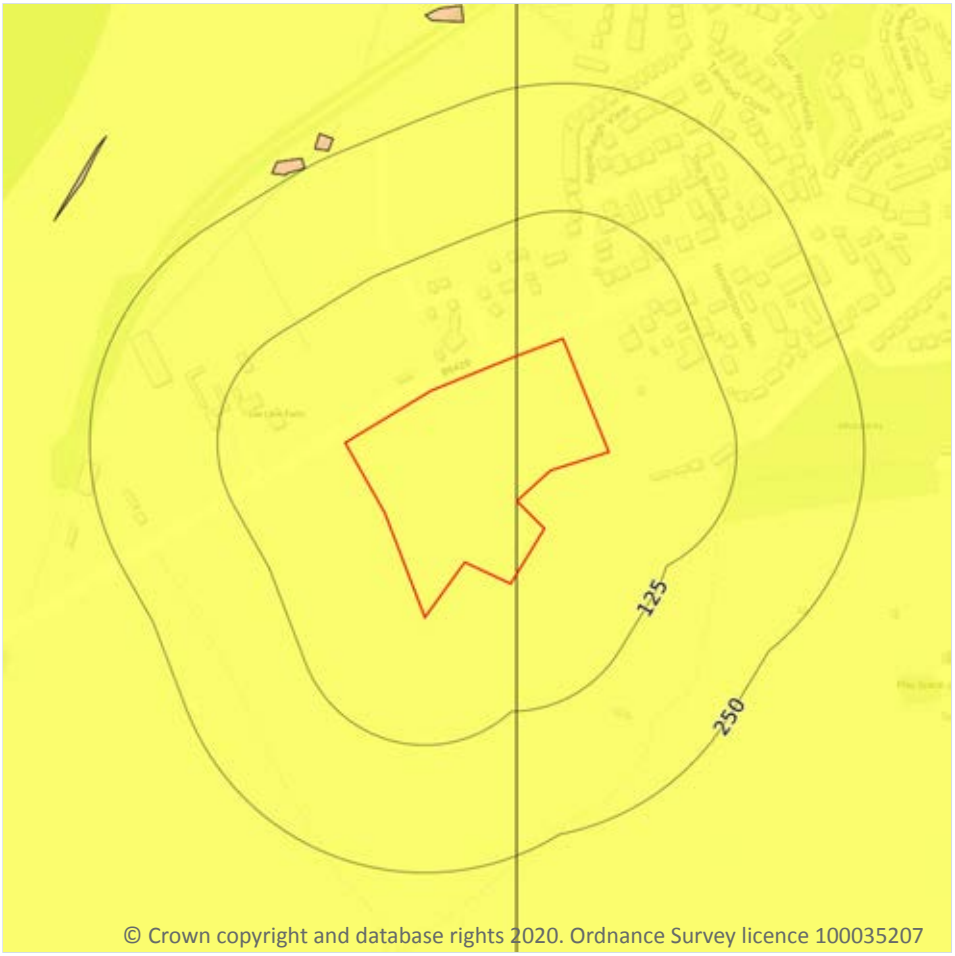
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 80**

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



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Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	1

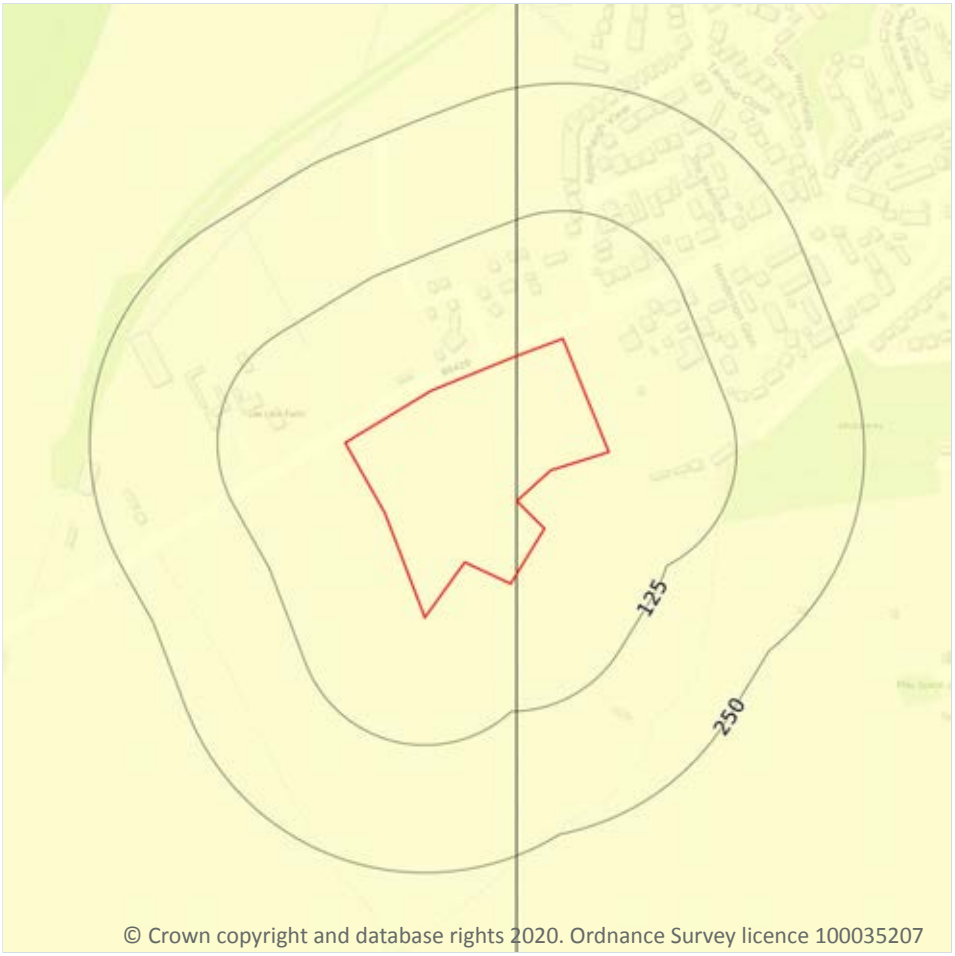
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 81**

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



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Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

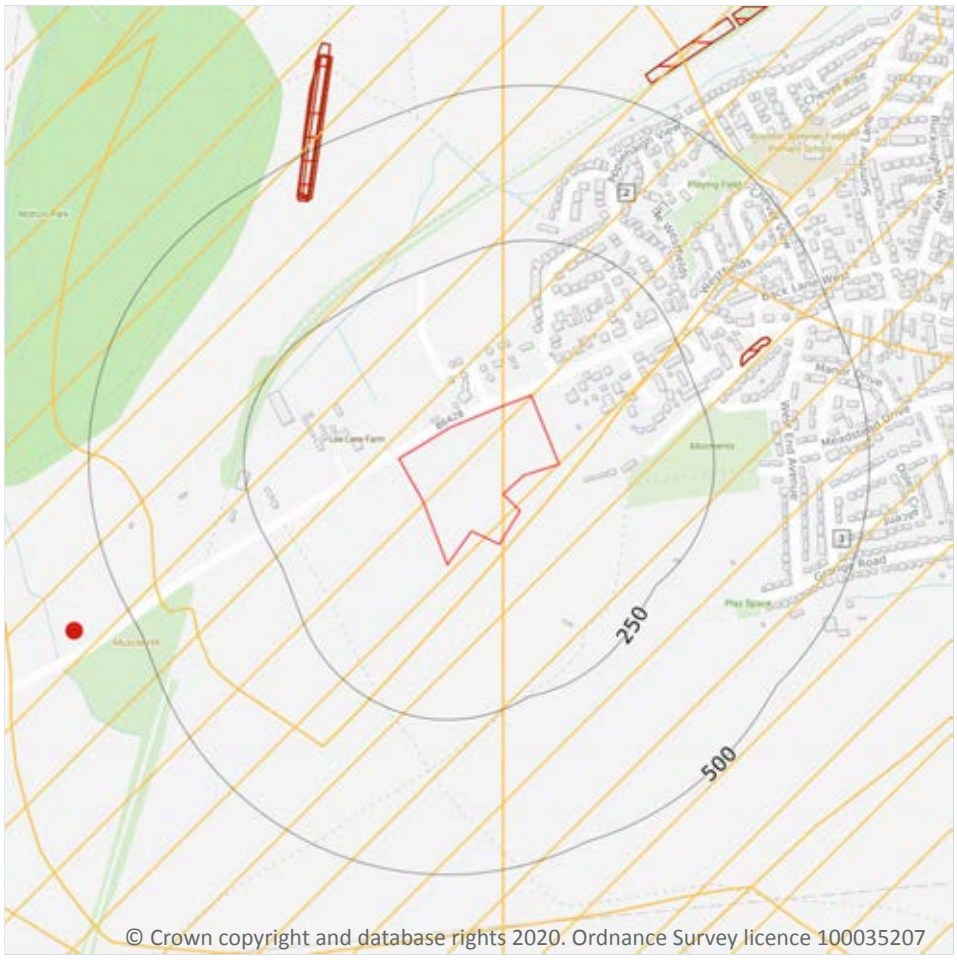
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 82**

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



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

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	0

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.

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	11

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 83**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Sheffield Area**	**Vein Mineral/Iron ore**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
2	**On site**	**Sheffield Area**	**Vein Mineral/Iron ore**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
3	13m SE	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
4	14m SE	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
5	370m NE	Sheffield Area	Iron Ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
6	506m NE	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
8	593m S	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
9	681m SE	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
11	686m SE	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
12	809m W	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

ID	Location	Name	Commodity	Class	Likelihood
-	920m S	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or 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	**1**

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	**The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.**

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

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

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

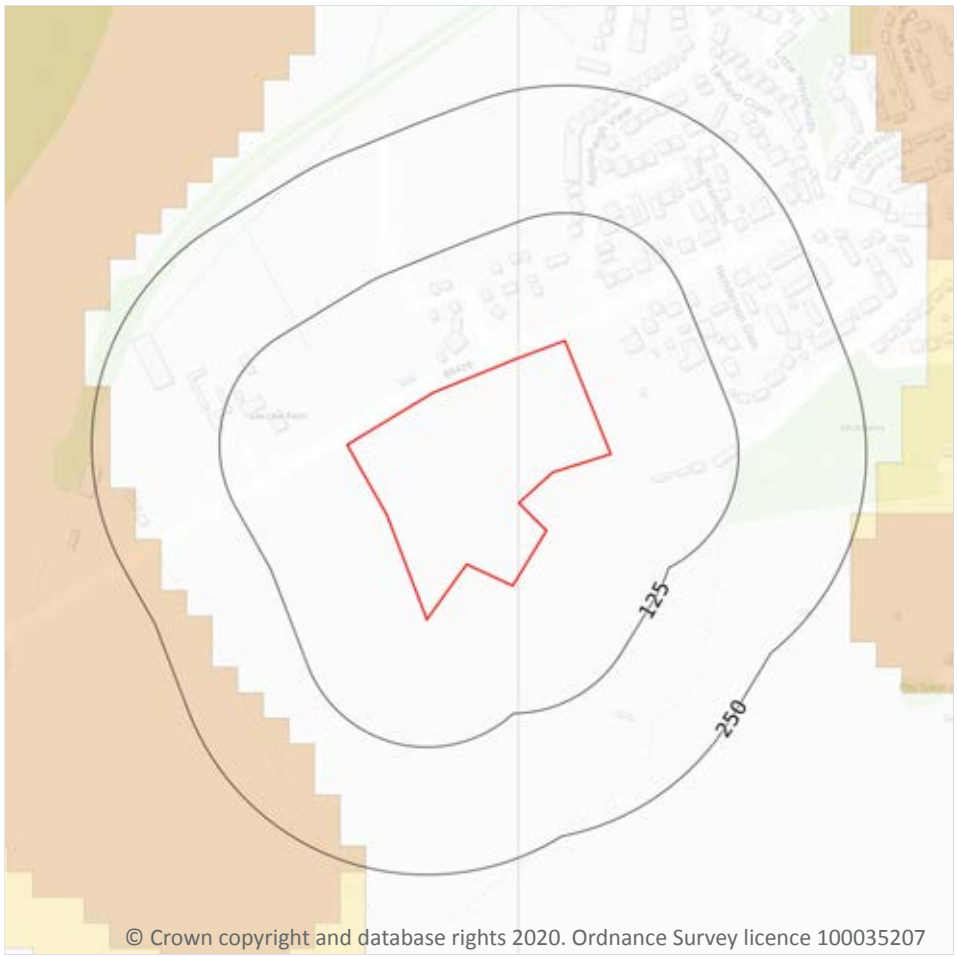
18.13 Clay mining

Records on site	0

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



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

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 88**

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	6

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^2. 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^2; 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 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
13m SE	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
14m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
23m E	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
27m 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^2).

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^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



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Site Outline
Search buffers in metres (m)
Crossrail 1 Stations
Crossrail 1 Route
Crossrail 1 Worksites
Crossrail 2 Stations
Crossrail 2 Route
Crossrail 2 Worksites
Crossrail 2 Safeguarding
Crossrail 2 Headhouses
Railway stations
Active railways
Active tunnels
Abandoned railways
Historic railways
Historic tunnels
Underground stations
Underground Lines
Royal Mail tunnels
HS2 optimised route
HS2 Stations
HS2 Depots
HS2 Surface Safeguarding
HS2 Subsurface Safeguarding

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	2

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

Features are displayed on the Railway infrastructure and projects map on **page 91**

Location	Description
249m W	Razed
249m W	Abandoned

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 5 - Coal Authority Report

The Coal Authority

CON29M
coal mining report

LEE LANE FARM, 50 LEE LANE, ROYSTON, BARNSLEY, S71 4RT

Known or potential coal mining risks

Past underground coal mining	Page 3
Future underground coal mining	Page 3
Withdrawal of support	Page 5

Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit www.groundstability.com

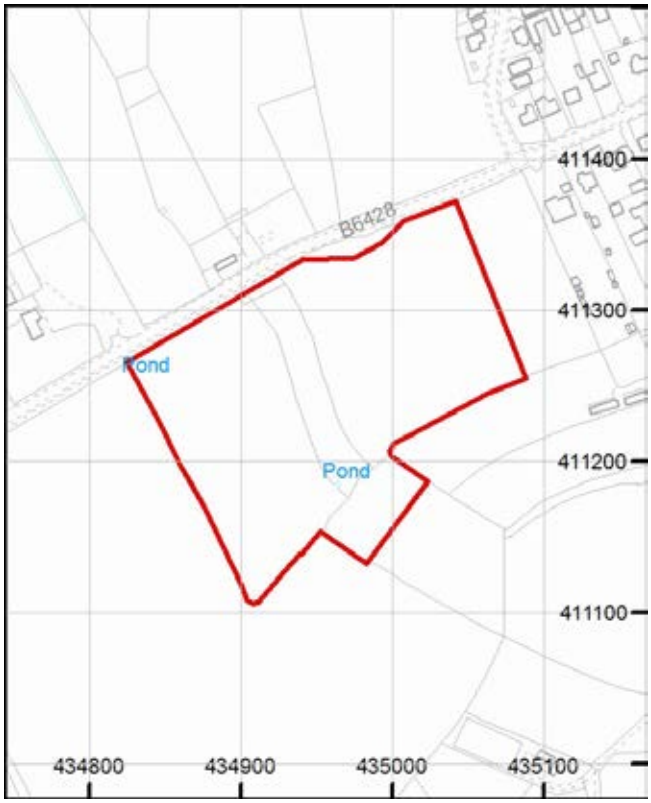
Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. It is unlikely that these features will impact on the stability of the enquiry boundary.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



We can confirm that the location is **on the coalfield**

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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.

Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

The Coal Authority owns the copyright in this report and the information used to produce this report is protected by our database rights. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

1 Past underground coal mining

The property is in a surface area that could be affected by underground mining in 9 seams of coal at 220m to 550m depth, and last worked in 1979.

Any movement in the ground due to coal mining activity associated with these workings should have stopped by now.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4 Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

The property is in an area where notices to withdraw support were given in 1947, 1977 and 1986.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.
www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call 01623 646 333. Further information can be found on our website: www.gov.uk/coalauthority.

Glossary

Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

APPENDIX 6 - CIRIA Risk Assessment Methodology

Contaminated Land Risk Assessment

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

Hazard Identification ⇨ Hazard Assessment ⇨ Risk Estimation ⇨ Risk Evaluation

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

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

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

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

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

- High likelihood: There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;

- Likely: There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;

- Low likelihood: There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term;

- Unlikely: There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

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

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX 7 - Relevant Legislative Background

Legislative Background

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

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

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

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

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

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

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

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

Relevant Guidance Documents

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

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

Relevant Legislative Documents

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

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

APPENDIX 8 - Limitations

Limitations

This contract was completed by Groundtech Consulting on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with due skill and care, taking into consideration the project brief provided, project objectives, agreed scope of works, prevailing site conditions and budget allocation.

Other than that defined in the paragraph above, Groundtech Consulting provides no other accountability or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted industry practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Groundtech Consulting. A third party who relies on this report, does so at their own and sole risk and no liability to such parties is provided by Groundtech Consulting.

It is the understanding of Groundtech Consulting that this report is to be used for the intended purpose as set out in the introduction. The purpose was instrumental in determining the scope and level of the services provided. Should the purpose of the report or the proposed end use of the site change, this report will no longer be directly applicable, and its validity readdressed. No reliance upon the report in the revised situation should be assumed by the client without the permission of Groundtech Consulting.

The report was written in 2020, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change and should be investigated if there is any significant delay in acting on the findings of this report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions in this report should not be relied upon in the future without the written confirmation from Groundtech Consulting that it is safe to do so.

The observations and conclusions outlined in this report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting.

Groundtech Consulting are not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The services provided are based upon Groundtech Consulting observations of existing physical conditions at the site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and Groundtech Consulting assume the information to be correct.

No responsibility can be accepted for errors for third party information presented in this report. Groundtech Consulting were not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Groundtech Consulting are not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting and forms the contract with the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable due to its heterogeneous properties and as investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater

conditions, together with other constraints such as the position of any existing structures and underground utilities. Geo-Environmental testing was carried out for a limited number of parameters [as stipulated in the contract] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawings provided in this report are not meant to be an accurate base plan, but are preliminary and used to present the general relative locations of features on, and surrounding, the site.

