

DRAFT

Scroxton & Partners

Geoenvironmental Ground Investigation

**Ridge Farm
Rabley Heath Road
Codicote
Herts
AL6 9UA**

**Report Ref: 25.11.018-dr01
December 2025**



DOCUMENT RECORD

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Client	Scroxtton & Partners

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For and on behalf of ListersGeo, trading name of Listers Geotechnical Consultants Ltd

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EXECUTIVE SUMMARY

Project Reference	25.11.018
Site Location	Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA
OS Grid Reference	522571 218101
Development Proposals	Four two-storey residential dwellings with associated gardens, garages, access road and soft landscaping areas.
Current Site Use	The site is primarily occupied by single-storey sheds and workshops, interspersed with asphalt, gravel, and soft landscaping. Scattered vehicles, storage containers, a disused animal feeder, and oil drums were present. The easternmost building has been converted into a café, while other buildings are used for vehicle and cycling workshops or restoration. The western and eastern areas are largely soft-landscaped and used for animal grazing.
Existing Buildings	Multiple buildings constructed breezeblock with timber cladding. There was a circular metal structure located in south of the site considered to represent a silo, possibly used to contain grain or animal feed or similar.
Topography	The general topography of the area slopes gently down to the south-southwest towards the valley of the River Mimram. The site itself appears generally flat lying to the eye, and slopes very gently towards the east southeast.
Published Geology	Superficial Deposits: The site is mainly covered by Clay-with-Flints, a sandy clay with flint nodules and pebbles, which can vary in thickness. Nearby maps show potential Head deposits (sands and gravels with some clay and organic material) 72 m southeast, and Glaciofluvial deposits (well-sorted sands and gravels) 92 m northeast, which may also occur on site. Bedrock: The bedrock is Seaford Chalk, made of white, fine-grained chalk with flint bands and occasional clay-rich layers.
Hydrology	The site is situated on a gentle south-southwest-facing slope above the River Mimram valley, with groundwater expected to flow south-southeast toward the river, which lies approximately 1 km from the site.
Hydrogeology	The EA records the Superficial Clay-with-Flints Formation as a Superficial Secondary A Aquifer of High Vulnerability. The bedrock Seaford Chalk Formation is recorded as a Principal Aquifer of High Vulnerability.
Site History	From 1881 to the early 1970s, the site and surrounding area were predominantly agricultural, with minimal structures apart from a water well-house to the west and a line of trees to the southeast. Between 1970 and 1975, the site saw the construction of poultry houses, outbuildings, and tracks, while nearby Ridge Farm and residential developments expanded. Further additions were made to the site in the early 1990s, including a large building southeast of the poultry houses, alongside continued development at Ridge Farm and surrounding residential areas. Since 2003, the former poultry outbuildings at Ridge Farm have been repurposed for vehicle and bicycle maintenance and a café, while no significant changes have occurred in the wider surrounding area.
Unexploded Ordnance	Low risk. Works can normally proceed without any special precautions.
Potential Sources of Contamination	Potential sources of contamination at the site include hydrocarbons from former agricultural machinery and later vehicle restoration activities; elevated heavy metals from historic and contemporary on site practices; polycyclic aromatic hydrocarbons (PAHs) from waste oil handling and burning debris; possible asbestos from the age and construction of former poultry houses and workshops; and an unknown pit between buildings 'B' and 'C', likely a former vehicle inspection pit.
Ground Conditions Encountered	The intrusive investigation found Made Ground across all locations, ranging from 0.20 m to 0.45 m depth, consisting mainly of light brown to brown sandy, gravelly clay with flint, quartzite, and occasional concrete and glass, with visible asbestos-containing material noted in TP10. Beneath the Made Ground, the Clay-with-Flints Formation was encountered at nine locations (not TP10), extending from 0.20–0.45 m down to 0.40–0.60 m, consisting of light brown to brown, slightly sandy, gravelly clay with flint and occasional quartzite.

Groundwater Encountered	Groundwater was not encountered during the fieldwork down to 0.60m depth, for the short time that the holes were open. It should be noted that groundwater monitoring has not been undertaken as part of this investigation and therefore seasonal variations in groundwater cannot be quantified.
Risks to Human Health	Elevated levels of lead and PAHs were recorded in the soils as well as loose fibres and debris of Chrysotile. Remedial measures are therefore required. Results of TPH testing will be issued in an updated report upon receipt.
Ground Gas Risks	No special precautions required for radon (without basements), carbon dioxide or methane.
Risks to Controlled Waters	There are considered to be no significant risks to controlled waters.
Remediation Required	Soils: A simple cover system across the site, pending receipt of further TPH testing. Gas protection: None Groundwater: None
Limitations and Recommendations	Access to central areas of the site was limited, and further sampling is recommended once buildings, vehicles, and other obstructions are removed. Soil testing identified elevated lead and PAH levels, as well as Chrysotile asbestos fibres, indicating a potential significant risk to human health and necessitating remedial measures. A Remedial Strategy and Post-Remediation Verification will be required, alongside a Discovery Strategy during demolition and groundworks to manage any unexpected contamination. An asbestos survey and removal by licensed contractors is also advised prior to development. This report will be updated once the results of gravimetric asbestos testing and Total Petroleum Hydrocarbon (TPH) analysis are received and incorporated.

This executive summary should be read in conjunction with the main report.

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APPENDICES – see overleaf

APPENDICES

APPENDIX A – PLANS AND PHOTOGRAPHS

- Site Location Plan
- Exploratory Hole Location Plan Showing Existing Site Layout
- Exploratory Hole Location Plan Showing Development Proposals
- Site Photographs

APPENDIX B – FIELDWORK RESULTS AND INFORMATION

- Hand Dug Trial Pit logs

APPENDIX C – FIELDWORK RESULTS AND INFORMATION

- Preliminary Chemical Laboratory Testing Report
- Double Ratio Plot

APPENDIX D – DESK STUDY INFORMATION

- Groundsure Enviro and Geo Insight
- Historical Ordnance Survey and National Grid Maps

PHASE 1 GEOENVIRONMENTAL DESK STUDY REPORT

INTRODUCTION

A Geoenvironmental Ground Investigation has been undertaken for a new residential development (circa 4 dwellings) at Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA. A Site Location Plan is provided in Appendix A. The Ordnance Survey National Grid reference for the approximate centre of the site is 522571 218101.

Instructions to undertake the investigation were received from our client, Scroxton and partners, in their email dated 14th November 2025.

This report describes the desk study and walkover survey carried out by ListersGeo in order to provide an evaluation of the potential ground conditions and potential for any soil, gas or groundwater contamination at the site. The report presents a preliminary human health and groundwater risk assessment based on the findings of the desk study information and subsequent intrusive investigation.

Our report does not provide a geotechnical assessment of the site, nor does it provide an infiltration assessment of the soils.

This report has been prepared for the sole use of the client and their professional advisors. This report shall not be relied upon by third parties without the express written authority of ListersGeo. If an unauthorised third party comes into possession of this report they must not rely on it and the authors owe them no duty of care and skill.

SCOPE OF THE INVESTIGATION

The scope of the investigation was to undertake a desk study and walkover survey, and to provide an assessment the ground and the extent of any soil, gas or groundwater contamination on the site. A contaminated land risk assessment was undertaken based on the Contaminated Land Exposure Assessment (CLEA) and Environment Agency (EA) Remedial Targets Methodology (RTM) guidelines.

PROPOSALS

It is proposed to develop the site to accommodate four residential dwellings with associated private gardens, access roads and car parking. A proposed site layout plan is provided in Appendix A.

The report is based upon the above development proposals. Should these alter significantly following issue of this report, then the contents will require re-evaluation.

SITE INFORMATION AND RECONNAISSANCE

A reconnaissance of the site and its immediate surrounds was undertaken on the 3rd December 2025, prior to undertaking the intrusive investigation. A selection of site photographs is presented in Appendix A along with a plan showing the existing site layout. The site consists of a roughly rectangular parcel of land aligned approximately northwest to southeast accessed off Rabley Heath Road (runs along the northwestern site

boundary) via a gateway in the northwest of the site. With dimensions of approximately 100m (northwest-southeast) by 50m (northeast-southwest) the site extends to approximately 0.47ha.

The site was predominantly occupied by single-storey breeze-block maintenance sheds and workshops with timber cladding, interspersed with areas of asphalt-concrete (asphalt), gravel fill, and isolated pockets of soft landscaping. Several motor vehicles of varying ages and conditions were scattered throughout the site, along with two storage containers (one of which appears to have been plumbed in for toilets) and a small disused animal feed/grain feeder and some localised oil drums.

The easternmost building has been converted into a small café with an adjacent outdoor seating area. The remaining buildings appear to function primarily as vehicle and cycling workshops or restoration facilities. To the west, a large soft-landscaped area had been subdivided into smaller plots used for animal roaming and grazing.

The eastern portion of the site comprised a substantial soft-landscaped area, also utilised for animal grazing. Access to several areas was restricted due to obstacles and the presence of what is considered likely to be a vehicle inspection pit in the centre of the site, marked between building 'B' and building 'C' on the existing site plan in appendix A. However, access could not be gained to the pit for further inspection.

In the southwest corner, a small area was identified as being used for the incineration or disposal of waste, although the specific nature of the waste being burned was not determined.

The general topography of the area slopes gently down to the south southwest towards the valley of the River Mimram. The site itself appears generally flat lying to the eye, and slopes very gently towards the east southeast.

The site is bordered by:

Direction	Feature
Northeast	Rabley Heath Road with agricultural fields beyond
Northwest	Hedgerow with soft landscaping and residential dwellings beyond
Southeast	Wooden fencing with residential housing beyond
Southwest	Agricultural fields with hedgerows beyond

Towards the west/southwest of the site, beyond the Spoke Cycles café, in the location of HA010, pieces of what are suspected to be asbestos containing material (ACM) were visually identified at surface. No further obvious visual or olfactory signs of free-phase contamination were observed on the site itself.

DESK STUDY AND BACKGROUND INFORMATION

A desk study review of the site and its history has been undertaken to determine the former land usage and the potential for any historically derived sources of chemical contamination.

The information provided in the desk study is obtained from independent third-party sources. We have relied on this information, but no guarantee can be given for the accuracy or completeness of the third-party data used. It should be appreciated that such data is not exhaustive and is constantly being updated and reviewed in light of new information and procedures. Therefore, improved practices, technology and new information may affect our conclusions and hence this report should be referred back to us for reassessment if new data comes to light, or changes in legislation/best practise is identified prior to development. Similarly, should the development commence more than one year from publication of this report, then we recommend this report is referred back to us for reassessment.

A copy of the desk study information obtained from Groundsure is presented in Appendix D of this report.

The desk study comprises a review of data compiled from multiple organisations and information sources, including:

- Ordnance Survey
- Environment Agency (EA)
- Local Authority
- Natural England
- UK Health Security Agency (UKHSA)
- Centre for Ecology & Hydrology
- Contemporary Trade Directories
- The Coal Authority
- British Geological Survey (BGS), National Geoscience Information Service
- Arup and Stantec
- Aerial Imagery

Information from the above referenced sources has been utilised to develop a conceptual model of the site for use in the source-pathway-receptor risk assessment.

PUBLISHED GEOLOGY

Reference to the BGS 1:50,000 scale map, Sheet 239 for Hertford, and other published geological information on the area indicates that the site is underlain by Quaternary-aged superficial Clay with Flints Formation, overlying a Bedrock geology of the Late Cretaceous Seaford Chalk Formation.

Artificial Deposits

No records on or within 250m of the site. However, a surface covering of Topsoil/Made Ground is anticipated at the site associated with its agricultural land use.

Superficial Deposits

BGS mapping indicates that the site is underlain by superficial deposits of the Clay-with-Flints Formation. This formation, in general, is represented by orange-brown and red-brown sandy clay, with abundant nodules and rounded pebbles of flint. The formation can be of variable thicknesses depending on the degree of weathering of the underlying chalk and on the presence/absence of a pinnacle rock head.

Reference to BGS mapping shows Head deposits located 72m to the southeast of the site and Glaciofluvial deposits located 92m to the northeast. As BGS mapping only records superficial deposits greater than 1.0m in thickness, there is therefore a likely possibility of encountering these deposits on site.

Head is a general term used for unconsolidated material including sand and gravel which are poorly sorted and stratified, and often contain lenses of silt, clay and organic material such as peat. They are generally deposited by solifluction and gelifluction processes.

The superficial Glaciofluvial deposits, comprise, in general, well sorted deposits of sand and gravels which are deposited by glacial meltwater.

Bedrock

The bedrock Seaford Chalk Formation is generally represented by white, fine-grained chalk with regular tabular flint bands and occasional nodular flints, and occasional thin marl (clay-rich) layers.

Historical Boreholes

The British Geological Survey holds records of exploratory holes historically put down during previous investigations. Desk study information indicates a borehole located 243m to the southwest of the site (BGS ID: 533235), put down in March 1955, with water levels continually monitored until March 1957. There is however no record of the ground conditions encountered during the intrusive works and given its distance from site the geology is considered likely to vary in terms of depths to bedrock.

BACKGROUND SOIL CHEMISTRY

Information from the BGS is provided in the table below listing the background soil chemistry of some commonly occurring heavy metals in the natural soils in the site area:

Heavy Metal	Level in Topsoil (mg/kg)
Arsenic	15 to 25
Bio-accessible Arsenic	N/A
Cadmium	1.8
Chromium	60 to 90
Lead	100
Bio-accessible Lead	60
Nickel	15 to 45

HYDROLOGY

The site lies on a gentle, south southwest-facing slope above the valley of the River Mimram. The anticipated direction of hydraulic flow is to the south-southeast and the nearest surface watercourse in that direction is River Mimram (southeast draining) itself, approximately 1km from the site.

The Environment Agency's Catchment Data Explorer records the River Mimram (Codicote bottom to Lee) to be 'not designated artificial or heavily modified' and of generally Poor ecological quality for the latest reported period in 2022.

There are no current surface water abstraction or potable abstraction licenses recorded within 1000m of the site.

The desk study data indicates that the following flood risks are recorded for the site:

- River or coastal waters: No records, indicating Negligible risk.
- Surface water: Negligible risk.
- Groundwater: Negligible to Low risk

These data do not constitute a site-specific Flood Risk Assessment, and we recommend further enquiries to determine if such an assessment would be required to support a development application for the site.

The site is therefore considered to be remote of surface water features.

HYDROGEOLOGY

The groundwater vulnerability and aquifer designation data are based on geological mapping provided by the British Geological Survey.

Groundwater vulnerability is divided, by the EA, into High, Medium and Low ranks (as further detailed in the appended Desk Study Report).

The aquifer designation is initially divided as below:

- **Superficial (Drift)** - permeable unconsolidated (loose) deposits. For example, sands and gravels
- **Bedrock** - solid permeable formations. For example, sandstone, chalk and limestone

And, for each of these, there are sub-classifications as Principal, Secondary A and Secondary B Aquifers and Unproductive Strata, each with a decreasing rank of importance.

The EA records the Superficial Clay-with-Flints Formation as a Superficial Secondary A Aquifer of High Vulnerability.

The bedrock Seaford Chalk Formation is recorded as a Principal Aquifer of High Vulnerability. A principal aquifer is characterised as Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

There is one current groundwater abstraction license within 1000m of the site. The license was issued in 1967, and its current status is active. The license was issued for horticultural watering, as is assigned to Old Welwyn Nurseries. The site lies within a type 2 (outer catchment) source protection zone. Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

POTENTIALLY SENSITIVE LAND USES

The site is located on designated green belt land, and within a surface water nitrate vulnerable zone (NVZ). The site is not located in close proximity to any other environmentally sensitive land uses.

The site area and its surrounds are designated as Grade 3 agricultural land. This is defined as good to moderate quality agricultural land. It's classified as land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield.

HISTORY OF THE SITE

The history of the site has been assessed by reviewing historical Ordnance Survey and National Grid maps dating back to 1881 on-line information sources and aerial imagery of the area. This has established the following:

Time Period	Historical Site Use	Historical Use of the Surrounding Area
1881 to 1898	The site is occupied by agricultural land with a road to the northwest and tree in the east.	The surrounding area is occupied by agricultural land and is devoid of any structures. A water well-house/pumping station is located approximately 300m to the west southwest. Line of mature trees approximately 50m to the southeast of the site.
1898 to 1924	No significant changes.	No significant changes. Trees not mapped but still considered likely to be present.
1924 to 1964	No significant changes.	No significant changes
1970 to 1975	The site area itself saw development of approximately four poultry houses, along with three small outbuildings and a track in the west.	Development of Ridge Farm immediately to the west with associated buildings extending onto the site. adjacent to the site area. The land to the northeast of the site has been subdivided into five private plots, each containing newly constructed residential dwellings. Additional development is evident to the west-southwest at the location of the former water house, although it is unclear whether this facility remains in use or has since been redeveloped. Significant development has also taken place to the south of the site, where the areas formerly comprising Rolls Wood and Little Rolls Wood have been reduced in size, with multiple residential properties constructed along their southern boundaries.
1979	1979 map has not been georeferenced properly and hence has been ignored as it is not considered to be reflective of the site.	
1990 to 1992	Addition of one large building towards the southeast of the site, behind the existing poultry houses.	Development has taken place adjacent to the site in association with Ridge Farm. Additional construction has also occurred to the northeast with the establishment of Little Bury Farm. To the south of the site, the areas formerly comprising Rolls Wood and Little Rolls Wood have been further reduced in extent due to substantial residential development in the surrounding area.
1990 to 2003	No significant changes	No significant changes
2003 to present	Outbuildings at Ridge Farm transitioned from their original use as poultry housing to facilities for vehicle and bicycle restoration and maintenance. In addition, one of the buildings was converted into a café for Spoke Cycles CC, accompanied by the construction of a small outdoor seating area.	No significant changes

UNEXPLODED ORDNANCE AND BOMB SITES

The Zetica bomb risk map shows that the site is located in an area where there is a low risk of encountering unexploded ordnance (UXO) beneath the site. Works can normally proceed without any special precautions.

INDUSTRIAL USAGE SITES

There are two recent industrial land uses within 250m of the site boundary. One land use is marked on site and is related to poultry farming, and the other relates to an electrical substation located 17m to the northeast of the site.

There is one historical record relating to a gravel pit some 163m to the southwest on the 1947 map. The pit appears to have been relatively small scale and short lived and is only recorded between 1937 and 1947 and has since been covered by an area of woodland.

There are also some chalk pits, gravel pits and unspecified pits between 317m to the west and 400m to the southwest.

ENVIRONMENTAL PERMITS, INCIDENTS AND REGISTERS

There are six historical records of licensed discharge consents between the site and 250m from the site. The license on site and nearby relate to the discharge of treated sewage water. All licenses were revoked between 1996 and 2006. There is no noted storage of dangerous, hazardous or radioactive substances, pollution control licenses or contaminated land within 250m of the site.

WASTE TREATMENT AND LANDFILL SITES

Reference to records indicates that there is one historical landfill disposal sites within 500m of the site. This is located 295m to the southwest of the site. The name for the historical landfill is Sisserversness Hill Pit. There is no detail regarding the nature of the disposal waste, however a risk to major and minor aquifers is noted by the desk study information.

A review of records from the British Geological Survey (BGS), the Environment Agency (EA), and the Local Authority indicates the presence of one waste exemption licence within 250 metres of the site. The details of this license are outlined below:

Distance (m)	Direction	Category	Sub-Category	Description
83	N	Storing waste exemption	Non-agricultural waste only	Storage of sludge

Given the distance involved and nature of the licence, it is considered unlikely that they would have significantly impacted the ground beneath the site.

RADON GAS

Desk study information indicates that the site lies within an area where between 1% and 3% of homes exceed the action level of 200Bq/m³ for radon gas. Therefore, in accordance with BR 211, 'Radon: guidance on

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protective measures for new dwellings', no radon protection measures are necessary in the construction of new dwellings or extensions on this site.

GEOTECHNICAL HAZARDS

The following geotechnical information from Groundsure is provided here, but no formal geotechnical desk study or recommendations form part of the scope of this geoenvironmental report.

The risk of naturally occurring geotechnical hazards associated with the natural soils mapped at the site is recorded in the Groundsure report to be as follows:

Ground Stability Hazard	Hazard Potential Rating	Comments
Ground dissolution of soluble rocks	Low	Soluble rocks are present within the ground.
Running Sands	Very Low	Not thought to occur whatever the position of the water table.
Collapsible deposits	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.
Landslides	Very Low	Slope instability problems are not thought to occur.
Compressible deposits	Negligible	Compressible strata are not thought to occur.
Shrink swell clays	Negligible	Ground conditions predominantly non-plastic.

Mining and Man-Made Cavities

The desk study resources indicates that the site is located within 500m of three historical brit pits (surface mineral workings). All three have ceased to extract their commodity (chalk) and may be considered as closed by the operator. There is also a historical gravel pit located 163m to the southwest of the site. Underground chalk mine workings are considered unlikely to be present, despite the geology being similar to that worked elsewhere.

The desk study indicates that the site is not located within an area likely to be affected by coal mining activities.

Natural Cavities Database

Information held by Stantec UK has not identified any naturally formed dissolution features within 500m of the site.

GEOTECHNICAL RISK SUMMARY

Whilst a geotechnical assessment is outside the scope of this investigation the following risks are noted, as a minimum, and further assessment with regards to the geotechnical risks is recommended.

The site is in an area of known gravel and chalk extraction and a site-specific risk assessment is recommended to further assess the risk of both mining, quarrying and chalk dissolution beneath the site.

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Soils on site are likely to have a volume change potential which could pose a risk to the proposed development within the zone of influence of trees which would also be key to foundation design and should be assessed further.

INITIAL CONTAMINATION CONCEPTUAL SITE MODEL

A qualitative Preliminary Risk Assessment (PRA) has been undertaken in line with the EA's online guidance Land Contamination: Risk Management (LCRM).

It is understood that the development proposals are for four residential dwellings with associated driveways, car parking areas, private gardens and communal landscaped areas.

Potential sources of contamination and potential receptors have been assessed using the source-pathway-receptor principle to create a Conceptual Site Model (CSM). This takes into account the fact that a complete pathway must exist between a potential source of contamination and a potential receptor for there to be considered a risk.

POTENTIAL CONTAMINATION SOURCES

Potential Solid-, Liquid- and Vapour-phase Contamination Sources

Desk study research indicates that the site has transitioned from early agricultural use to poultry farming and later, vehicle and bicycle maintenance, with several potential sources of ground contamination having been therefore identified. The storage and use of agricultural machinery on site, and the subsequent workshop activities could potentially cause elevated levels of total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) through spills or leaks of fuels, oils, solvents, and cleaning agents.

Given the above, the risk of wide-spread contamination being present beneath the site is considered to be low to medium; however, the following potential sources of contamination may have locally impacted the ground beneath the site:

- Hydrocarbon contamination, including fuel, oil and lubricants, arising from former agricultural machinery use and later vehicle restoration activities.
- Elevated heavy metal concentrations associated with historic applications of fertilisers, pesticides and related agricultural products.
- Polycyclic aromatic hydrocarbons (PAHs) potentially present due to waste oil handling and burning debris/combustion-related residues.
- Potential asbestos contamination linked to the age and historical construction materials of the former poultry houses and workshops.
- Unknown pit in the centre of the site, between building 'B' and building 'C', likely a vehicle inspection pit.

Potential Ground Gas Contamination Sources

Two main groups of gaseous-phase contamination have been considered: the gases (including methane and carbon-dioxide) that result from organic decomposition of constituents in the ground; and Radon gas that results from the radioactive decay of thorium and uranium (found, in varying quantities, in most soils and rocks).

In consideration of the source-pathway-receptor methodology for ground gas risk assessment set out in CIRIA C665, the sensitivity of the residential development is considered to be low.

The site is located in an area where the risks from ground gases are considered to be low. We have therefore provisionally assessed the risk of ground gas impacting the site, by reference to the CL:AIRE research bulletin RB17, "A pragmatic approach to ground gas risk assessment" 2012.

The following potential sources have been assessed:

- The site has not been a registered landfill and does not lie within 250m of the nearest registered landfill.
- No credible sources or pathways for landfill gas migration from an off-site landfill have been identified.
- Significant thicknesses of Made Ground are not anticipated beneath the site.
- The site is not mapped to be underlain by naturally organic soils, such as Alluvium or Peat.
- Historical landfills and pits in the area of relatively small scale, have been ceased for around sixty years and have a significant layer of mapped fine-grained Clay-with-flints between the site and the pits which is considered likely to reduce the change of ground gases migrating to the site.

Therefore, no significant potential sources of land fill type gases (carbon dioxide or methane) have been identified for the site. If significant volatile contamination is encountered and depending on the nature of the pit, then a vapour and our ground gas assessment may be required.

No radon protection measures are required for this residential development. Should the proposed dwellings include basements, the need for radon protection measures should be re-evaluated to ensure that appropriate mitigation is incorporated into the design.

RECEPTORS

The following most sensitive receptors have been identified at the site:

Human Health – Long Term Exposure

- End users of the site - the future residents
- Nearby residents

The critical receptor is a child.

Human Health – Short Term Exposure

- Construction workers (during redevelopment)
- General Public (during redevelopment)
- Maintenance Workers

The critical receptor is an adult.

Controlled Waters and the Environment

- The superficial Clay with Flints Formation, classified as a Superficial Secondary A Aquifer of High Vulnerability.
- The bedrock Seaford Chalk Formation, which is recorded as a Principal Aquifer of High Vulnerability.

Infrastructure

- Water supply pipes

PATHWAYS

It is considered that a number of potential pathways exist between these potential sources and the above identified receptors. The viability of these pathways is discussed in the preliminary risk assessment.

Human Health

- Direct soil ingestion in areas of exposed soil
- Ingestion of soil attached to homegrown produce
- Ingestion of homegrown produce with contamination uptake
- Dermal contact with contaminated soil

Controlled Waters and Environmental

- Migration/leaching of contaminants through the unsaturated zone
- Migration of contaminants through the groundwater

Infrastructure

- Leachable or corrosive contaminants within the soil
- Corrosive contaminants within the groundwater

PRELIMINARY RISK ASSESSMENT

Based on the desk study research, the following potentially-complete pollutant linkages have been assessed and in accordance with CIRIA C552, a consequence and probability rating has been applied to each potential contamination source to create an overall risk rating. The results are presented in the following table.

Potential			Probability	Consequence	Risk Classification
Source	Pathway/s	Receptor			
Near surface soils may have been impacted by: Hydrocarbon (fuel/oil/lubricants) spills/leaks from agricultural machinery PAHs due to waste oil handling and combustion-related residues Heavy metal contaminants deriving from products historically used on site	Ingestion Dermal Contact Inhalation	End Users: residents	Low/Medium	Medium	Moderate/Low
		Construction Workers			
		Nearby residents, maintenance workers and general public	Low	Moderate/Low	
	Explanation: The areas of the site proposed to be covered by hardstanding will significantly limit the exposure routes; it is in the soft landscaped areas of the site, such as the private gardens, where it is considered complete pollutant linkages may occur. Whilst large areas of soft landscaping are likely to remain, the risk of widespread gross contamination of the site is considered low. Whilst a moderate/low risk classification has been established for construction workers, exposure to can be mitigated by use of appropriate PPE, work practices and maintaining good hygiene levels.				
	Migration through unsaturated zone and any groundwater Migration through drains or service runs	Superficial and Bedrock Secondary A and principal Aquifers respectively, beneath the site of high vulnerability – Clay with Flints and Seaford Chalk Formations	Low	Medium/High	Moderate
	Explanation: Widespread gross levels of contamination (that pose a risk to controlled waters) are not anticipated (low-likelihood). Lateral distance of surface water features too great to pose a significant risk.				
	Direct contact	Water supply pipes	Low	Medium	Moderate/Low
	Explanation: Organic contaminants, such as petroleum or polycyclic aromatic hydrocarbons, possibly present in the soils beneath the site may attack plastic pipes. Utility companies often have their own local guidelines and standards that should be referenced prior to installation.				
Asbestos contamination linked to the historical construction materials of the on-site structures	Ingestion Dermal Contact Inhalation	End Users: Residents	Medium	High	Moderate/High
		Construction Workers			
	Explanation: Asbestos is considered a moderate–high risk because, while its presence is reasonably possible, the consequences for construction workers and future site users would be severe if contamination is encountered.				

EXPLORATION AND TESTING

As part of the Phase 2 intrusive investigation, a total of ten exploratory holes were formed at the site. The works comprised:

- Ten hand dug trial pits/hand auger boreholes (TP01 to TP10)
- Chemical laboratory testing

The works were undertaken at the site on the 3rd of December 2025.

The positions of the hand dug trial pits can be seen on the Exploratory Hole Location Plan in Appendix A and the logs, and field test results are provided in Appendix B.

The investigation was undertaken in accordance with the scope of works agreed with our client. The exploratory hole locations were selected by ListersGeo to provide a coverage of information across the site area.

Engineering conclusions given in this report are based on data obtained from these sources, but it should be noted that variations, which affect these conclusions, may inevitably occur between and beyond the test locations. Also, water levels may vary seasonally and with other factors.

Excavations were avoided in the northeast portion of the site due to the presence of a high-pressure gas main, and in an area between two of the buildings due to vehicles obstructing any access routes. These areas are outlined in the exploratory hole location plan provided in appendix A.

As the desk study and walkover survey had identified potential pollution sources at the site several of the exploratory holes were targeted on these sources. These included:

Potential Source	Type	Exploratory Hole(s)
Disused Silo/grain feeder	Point	TP07
Vehicle workshops	Point	TP05

The other exploratory holes were positioned to create a semi-regular pattern across the site, in order to provide a spread of information.

It should be noted that access was not available to the east of the site due to a gas main running in this area and access was also limited to external areas of the site with no access with the areas between buildings B and C, in addition to C and D.

METHODOLOGY

Prior to commencement of excavation, to minimise the dangers from/to buried services, the proposed locations were scanned using a Cable Avoidance Tool. No buried services were encountered in the locations of the exploratory excavations.

At positions located on existing hardstanding/engineered gravel fill, the surfacing was broken out using a handheld electric breaker.

Shallow trial holes TP01 to TP10, were excavated using insulated hand tools from ground level down to depths of between 0.30m and 0.60m below ground level. Disturbed samples were taken at selected depths down to the base of the holes for subsequent laboratory testing and inspection. On completion, all trial pits were carefully backfilled with arisings, ensuring that excavated material was replaced in the same order as it had been removed.

Trial hole TP10 was terminated at 0.30m depth due to the presence of visually identified asbestos containing material (ACM). A representative disturbed sample was taken at 0.10m depth for subsequent laboratory testing.

GROUND CONDITIONS

The intrusive investigation revealed that the general succession of strata was as follows:

MADE GROUND

Made Ground was encountered at all of the locations, from between ground level down to depths of between 0.20m and 0.45m.

The Made Ground comprised, in general, light brown to brown, slightly sandy to sandy, gravelly clay. The gravel portion comprised fine to coarse sub-angular to sub-rounded flint, quartzite, and occasional concrete and glass.

As noted previously, visible pieces of asbestos containing material (ACM) were identified in the Made Ground obtained from TP10.

CLAY WITH FLINTS FORMATION

Soils of the Clay-with-Flints Formation were encountered at nine of the locations (not in TP10 which was terminated at 0.30m depth due to the presence of ACM), directly underlying the Made Ground, from between 0.20m and 0.45m depth, down to beyond the base of the trial pits at depths of between 0.40m and 0.60m.

The Clay with Flints Formation comprised, in general, light brown to brown, slightly sandy, gravelly clay to very clayey gravel. The gravel comprised fine to coarse, angular to sub-rounded flint and occasional quartzite.

GROUNDWATER

Groundwater was not encountered in any of the exploratory holes during the fieldwork down to 0.60m depth below the existing ground level, for the short time that the holes were open. However, seasonal groundwater monitoring and deeper pits have not been undertaken.

OBSERVED SOIL CONTAMINATION

During the fieldwork, evidence of contamination was noted in TP10, to the southeast of the site. The contamination was noted as visually identified pieces of suspected asbestos containing material (ACM) within the upper 0.30m of Made Ground. There were no other clear visual or olfactory signs of free-phase contamination noted during the fieldwork.

GROUND CONTAMINATION ASSESSMENT

The contamination risk assessment has been undertaken in line with the EA's online guidance Land Contamination: Risk Management (LCRM) in order to validate the Preliminary Risk Assessment (PRA) using Generic Quantitative Risk Assessment (GQRA), followed by Detailed Quantitative Risk Assessment (DQRA) if required.

SOIL TESTING

Four samples of the Made Ground, three samples of the Topsoil and three samples of the natural soils collected on site during this investigation were tested for a range of constituents of potential concern (CoPC). Some of the samples to be tested were recovered from the test locations targeting the potential sources of contamination listed in the Conceptual Site Model and the identified visual and olfactory contamination described in the Exploration and Testing section of this report. These are summarised below:

Trial Pit	Target	Sample depth (m)	Associated Testing
TP05	Disused Silo	0.10	TPH, PAHs, Heavy Metals & Asbestos
TP07	Vehicle Workshops	0.01 and 0.55	TPH, PAHs, TOC & Heavy Metals
TP10	Suspected ACM	0.10	TPH, PAHs, Heavy Metals & Asbestos

The remaining seven soil samples collected on site during this investigation were tested for a range of constituents of potential concern (CoPC).

The suite of testing carried out on the samples was decided upon following consultation of R&D CLR Publications, published as part of the Contaminated Land Exposure Assessment (CLEA), a joint venture between the Department for Environment, Food and Rural Affairs (DEFRA) and the EA.

At the time of writing only interim results had been received with results for the TPH and asbestos quantification still pending. The overall test suite included:

Group	Details
Asbestos	Screening for ACMs and fibres with the naked eye and microscopy (awaiting results)
Inorganic substances	Arsenic, cadmium, chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, zinc (awaiting results for HA08) Sulphates
Organic substances	16 (EPA) speciated polycyclic aromatic hydrocarbons (PAH) Total petroleum hydrocarbons (TPH) with four-band (awaiting results) or aliphatic-aromatic split Benzene, toluene, ethylbenzene and xylene (BTEX) Methyl tert-butyl ether (MTBE)
Other	pH

Group	Details
	Total organic carbon (TOC)

Unless explicitly stated on the laboratory report, the soil samples were tested to obtain 'Total' values within the soil. The results of the chemical tests from this investigation are included in Appendix C.

RISK ASSESSMENT GUIDELINES – HUMAN HEALTH

The human health risk assessment has been undertaken using the guidance provided in the EA's LCRM guidance and the CLEA guidelines.

This assesses risks associated with the ingestion, dermal contact, and vapour inhalation pathways related to contaminated soils and groundwater. Risks associated with the inhalation of Ground Gas, for example that resulting from landfill, is not addressed by LCRM.

Human health assessment criteria used are based upon the proposed final land use of the site. As the site is to be redeveloped to accommodate residential dwellings with associated private gardens and soft landscaping areas, the Generic Assessment Criteria (GACs) for the standard land-use, 'Residential with homegrown produce' have been used.

Consideration has also been given to potential risks to groundworkers coming into contact with the soil during demolition or construction phases.

If the proposed site use should alter from the above, then the human health risk assessment will require re-evaluation for the new end use scenario.

The results of the soil samples tested have been compared to the following published assessment criteria:

Category 4 Screening Levels (C4SLs)

Published in March 2014 by DEFRA, a limited number of generic Category 4 Screening Levels (C4SLs) were produced to support the revised Statutory Guidance to support Part 2A of the Environmental Protection Act 1990, which was published in April 2012. This Guidance introduced a new four-category system for classifying land under Part 2A for cases of a Significant Possibility of Significant Harm to human health, where Category 1 includes land where the level of risk is clearly unacceptable and Category 4 includes land where the level of risk posed is acceptably low.

Further C4SLs have been and are being produced by CL:AIRE, with support from SoBRA and SAGTA, for a limited number of volatile organic compounds, as time allows.

Suitable 4 Use Levels (S4ULs)

To supplement the small number of C4SL, a set of Suitable for Use Levels (S4UL) were produced, in 2015, by Land Quality Management (LQM) and the Chartered Institute of Environmental Health (CIEH), using the EA's Contaminated Land Exposure Assessment (CLEA) software, version 1.06 (2009), and the revised assumptions used in deriving the C4SL. The S4UL are more conservative than the C4SL and are derived to

represent the minimal levels of risk to human health as described in the EA's SR2 guidance, with the intention of being 'suitable for use' under planning.

Groundwater Vapour Generic Assessment Criteria (Vapour GACs)

In February 2017, guidance was published by The Society of Brownfield Risk Assessment (SoBRA) for the assessment of risk to human health from vapours from hydrocarbons in groundwater.

The generic vapour GACs assume groundwater at 0.65m below ground/floor slab level, a sandy soil and an infinite source.

RESULTS OF ASBESTOS SCREENING

Screening for the presence of asbestos revealed chrysotile fibres and debris in the samples of Made Ground collected from 0.10m depth in TP05 and TP10, from the central and eastern portion of the site. Subsequent gravimetric analysis is scheduled to be undertaken to determine asbestos concentrations, and the results will be included in an updated version of this report once received. Our current assessment is based on asbestos fibres being present at concentrations in excess of 0.001%.

RESULTS OF TOTAL SOIL TESTS

Results of the total soil testing have been compared to relevant published GAC as discussed above. For S4ULs, a range of values have been published for the organic contaminants based on the soil's organic matter content.

The soil testing indicates that the soils have a total organic carbon (TOC) content of between 0.80% and 2.90% which is approximately 1.38% and 4.99% soil organic matter (SOM) respectively. Therefore, the S4ULs for 2.5% SOM have been referred to for the organic contaminants.

Of the remaining determinants tested for, several recorded values higher than their relevant GAC for human health for a residential setting. These contaminants are discussed further below.

At the time of writing only interim results had been received with results for the TPH and asbestos quantification still pending and the metals for HA08.

Where an exceedance of the assessment criteria has occurred, statistical analyses using the methodology set out in the CL:AIRE Document "Guidance on Comparing Soil Contamination Data with a Critical Concentration", have been undertaken on the laboratory test results in order to establish a 'true mean concentration (μ)' within the planning scenario for each determinant over the whole site area.

These analyses establish whether the data is normally distributed as well as taking into account possible erroneously high values and determine whether contamination 'outlier' features are present on the site. Once this has been established the 'upper confidence limit of 95% on μ ' are subsequently compared with the relevant environmental standard value, or 'Critical Concentration (C_c)'.

The GACs are conservative screening criteria and used initially to determine whether or not a site may pose an unacceptable risk to human health and whether further work or assessment may be required. An exceedance of a GAC does not mean that remediation is required.

Inorganic Substances

Of all of the inorganic substances tested one significantly elevated concentration of lead was recorded in the sample of Made Ground from TP05, at a depth of 0.10m. Of all the remaining samples, no significantly elevated concentrations of inorganic substances were recorded in comparison to typically naturally occurring or urban background levels; and no values were recorded in excess of the referenced GACs (pending the results of HA08).

Lead

Of the ten samples tested, the values obtained ranged from 20mg/kg to 290mg/kg.

The referenced C4SL for residential dwellings for lead is 200mg/kg. The only exceedance was recorded in TP05 at 0.10m depth.

Polycyclic Aromatic Hydrocarbons (PAHs)

Of the ten samples tested, several of the polycyclic aromatic hydrocarbon (PAH) compounds recorded values exceeding the GACs for a residential dwelling with homegrown produce end use. These were benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and dibenz(a,h) anthracene.:

Contaminant	Range (mg/kg)	GAC (mg/kg)	Number of exceedances	Pathway of Concern
Benzo(a)anthracene	0.11 to 9.3	7.2	1	Human Exposure
Benzo(b)fluoranthene	0.22 to 8.2	2.6	2	Human Exposure
Benzo(a)pyrene	0.18 to 8	5	1	Human Exposure
Dibenz(a,h)anthracene	<0.05 to 0.62	0.24	2	Human Exposure

Assessment of the PAH Double ratio plot for the samples as attributed these PAHs to coal derived and petroleum combustion products.

Total Petroleum Hydrocarbons (TPH)

As stated above, the results from the Total Petroleum Hydrocarbon (TPH) testing for all ten samples are not yet available and will be issued in an updated version of the report upon receipt. It should be noted that gross petroleum hydrocarbon contamination is not anticipated, as no visual or olfactory evidence of hydrocarbon contamination was observed on site during the walkover and fieldwork.

However, unless significantly mobile contaminants are recorded, the following guidance and remediation measures are considered likely to also protect the identified receptors.

HUMAN HEALTH RISK ASSESSMENT

The following quantitative risk assessment has been carried out using the source-pathway-receptor principle. Potential sources of contamination identified in the Conceptual Site Model (CSM) have been assessed using

the CLEA Guidelines. This takes into account the fact that a complete pathway must exist between a potential source of contamination and a potential receptor for there to be considered a risk.

The potential human receptors evaluated for their individual risk are:

Long-Term Exposure

- End users of the site – the future residents/workers.
- Nearby residents.

Short-Term Exposure

- Construction workers and the general public (during redevelopment).
- Maintenance workers

If the proposed site use or layout should alter significantly, then the human health risk assessment will require re-evaluation.

SOIL CONTAMINATION RISK

The qualitative preliminary risk assessment (PRA) identified a number of potential sources of contamination at the site. Following the intrusive investigation and contamination testing the CSM has thus been reassessed.

The results of the chemical testing are summarised below relating to each potential source:

Potential Source	Chemical Testing Comments
Hydrocarbon contamination, including fuel, oil and lubricants, arising from former agricultural machinery use and later vehicle restoration activities.	The results of the organic TPH testing are not yet available and will be incorporated into an updated version of the report upon receipt but PAHs have been encountered.
Elevated heavy metal concentrations associated with historic applications of fertilisers, pesticides and related agricultural products.	Testing identified elevated lead concentrations in TP05 at a depth of 0.10 m. No additional heavy metal contamination was detected in the remaining samples analysed pending the results of HA08.
Potential asbestos contamination linked to the age and historical construction materials of the former poultry houses and workshops.	Testing identified the presence of loose fibres and debris of asbestos-containing material, specifically chrysotile, in two of the samples analysed. These were detected at a depth of 0.10 m in TP05 and TP10.
Polycyclic aromatic hydrocarbons (PAHs) potentially present due to waste oil handling and combustion-related residues.	Exceedances of specific PAHs were identified in TP02 and TP04 at depths of 0.50m and 0.20m, respectively. No elevated PAH concentrations were detected in the remaining samples.

The BGS background levels for the site area indicate that levels of commonly occurring heavy metals are all well below the GACs for a residential dwelling with homegrown produce.

The soil contamination tests carried out as part of this investigation revealed elevated concentrations of lead and specific PAHs in the soil when compared to the relevant GACs. Hydrocarbon contamination associated

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with the former use of agricultural machinery, and contemporary vehicle restoration practices is unable to be assessed. The results of total petroleum hydrocarbons testing will be incorporated in an updated version of this report upon receipt.

Asbestos

Pieces of asbestos containing material (ACM), specifically loose fibres and debris of Chrysotile, were identified in TP05 and TP10. Subsequent gravimetric analysis is scheduled to be undertaken to determine asbestos concentrations, and the results will be included in an updated version of the report.

END USERS OF THE SITE

The elevated concentrations of lead, asbestos and specific PAHs encountered within the Made Ground soils have the potential to cause significant harm to the future end users. The exposure route of primary concern for the contamination is 'direct soil ingestion' and inhalation of asbestos fibres.

It is therefore considered that it is necessary to implement remedial measures at the site to break the source-pathway-receptor linkage between the contaminated soils and the end users. Please see the Remediation section of the report.

NEARBY RESIDENTS/ WORKERS

The identified contamination is not considered to be significantly mobile and thus would not pose a significant risk to neighbouring receptors with the exception of asbestos fibres if these are mobilised/disturbed during the construction phase. Protection measures for construction workers are considered to be sufficient to also protect adjacent site users.

CONSTRUCTION WORKERS

For construction workers and maintenance workers that are exposed to the ground, there is a short-term exposure risk (at each site they attend, which contributes to an overall lifetime exposure risk) and the pathway of primary concern is 'direct soil ingestion'.

There is considered to be a significant short-term risk to the construction workers involved in the development of the site.

Pending the results of asbestos fibre quantification, the presence of chrysotile fibres identified in the soils at the site means that groundworks will need to be suitably controlled. The ground will need to remain damp to prevent any fibres becoming airborne and being inhaled.

Protective measures are different to those taken to protect the long-term exposure group (such as end-users of the site) are, therefore, required and these are outlined in the Remediation section, below.

Demolition and redevelopment activities have the potential to create short-term pollutant linkages to the general public. These risks should be managed by means of the Construction Phase (Health & Safety) Plan.

To reduce the risk to as low as reasonably practicable for the construction workers it is recommended that appropriate health and safety measures be implemented along with the use of Personal Protective Equipment (PPE). All personnel coming into contact with the soil, ground workers in particular, should be instructed to use

gloves when on site to avoid dermal contact and restrict inadvertent hand-to-mouth ingestion. Washing facilities should be provided for the site staff to use and should be used prior to eating or smoking. Reference should be made to the HSE Document, "Protection of Workers and the General Public during Development of Contaminated Land".

WATER SUPPLY PIPES

The water supply service pipes on site will be installed to a suitable specification as agreed with the local water supply company.

REGULATORY APPROVAL

We recommend that the conclusions of this report are agreed with the relevant Local Authority at the earliest stage, to reduce potential delays to the development.

GROUND GAS RISK ASSESSMENT

The preliminary ground gas risk assessment indicated that gas monitoring was not required.

The intrusive investigation confirmed the conceptual site model, with only a thin surface veneer of non-putrescible Made Ground and no further ground gas risk assessment is required. However, this may need to be reviewed as greater access to the site becomes available and pending the results of the Discovery Strategy and the TPH testing if this encounters volatile contaminants.

Controlled Waters Risk Assessment

The following Controlled Waters risk assessment has been carried out in accordance with the procedures set out in the EA's *RTM Hydrogeological risk assessment for contaminated land* (2006). Using the source-pathway-receptor principle, this takes into account the fact that a complete pathway must exist between a potential source of contamination and a potential receptor for there to be considered a risk.

The potential Controlled Waters receptors considered during this risk assessment were:

- The superficial Clay with Flints Formation, classified as a Superficial Secondary A Aquifer of High Vulnerability.
- The bedrock Seaford Chalk Formation, which is recorded as a Principal Aquifer of High Vulnerability.

DISCUSSION

No gross contamination was identified during the walkover. No obvious olfactory or visual evidence of contamination were observed during the investigation.

The results of the soil testing identified concentrations of lead and specific PAHs in the Made Ground at the site that were elevated above what are considered to be 'normal' background levels. The origin of the PAHs in the soil was assessed by plotting the results on a double-ratio plot, provided in Appendix C. The PAH identified at this site has, thus, been attributed to petroleum combustion and coal-derived products. As these substances are not readily soluble or mobile in the environment, it is considered that the low levels of PAHs at this site do not pose a significant risk to Controlled Waters.

The site has been shown to be underlain by clay soils of the Clay-with-Flints. This is considered to limit the downward migration of contaminants into the chalk from which the groundwater abstraction is considered to be linked.

It is therefore considered that the above recognised Controlled Waters receptors will not be at any significant risk from potential groundwater pollution at the site.

It should be noted that, pending receipt and review of the petroleum hydrocarbon testing results, the potential risk to controlled waters may be subject to revision.

REGULATORY APPROVAL

We recommend that the conclusions of this report are agreed with the relevant Local Authority at the earliest stage, to reduce potential delays to the development.

REVISED CONCEPTUAL SITE MODEL

Following GQRA and DQRA, the CSM has been updated and the Relevant Pollutant Linkages (RPLs) are presented in the following table.

Potential			Probability	Consequence	Revised Risk Classification
Source	Pathway/s	Receptor			
Near surface soils may have been impacted by: Hydrocarbon (fuel/oil/lubricants) spills/leaks from agricultural machinery	Ingestion Dermal Contact Inhalation	End Users: residents	Medium/High	Medium	Moderate/High
		Construction Workers			
		Nearby residents, maintenance workers and general public	Low/Medium		Moderate/High
	Explanation: The areas of the site proposed to be covered by hardstanding will significantly limit the exposure routes; it is in the soft landscaped areas of the site, such as the private gardens, where it is considered complete pollutant linkages may occur. In the areas where soft landscaping is proposed, contamination is relatively localised and gross contamination is not though to be widespread. The consequence of human exposure to the contaminants is considered to be medium/high, and therefore a revised moderate/high risk classification has been imposed. The identified contamination is not considered to be significantly mobile and thus would not pose a significant risk to neighbouring receptors.				
PAHs due to waste oil handling and combustion-related residues Heavy metal contaminants deriving from products historically used on site, including fertilisers, pesticides and herbicides	Migration through unsaturated zone and any groundwater Migration through drains or service runs	Superficial and Bedrock Secondary A and principal Aquifers respectively, beneath the site of high vulnerability – Clay with Flints and Seaford Chalk Formations	Low	Medium/High	Low
	Explanation: Widespread gross levels of contamination (that pose a risk to controlled waters) are not present (low-likelihood). Lateral distance of surface water features too great to pose a significant risk.				
	Direct contact	Water supply pipes	Low/Medium	Medium	Moderate
Explanation: Organic contaminants, such as petroleum or polycyclic aromatic hydrocarbons, present in the soils beneath the site may attack plastic pipes. All contamination has been identified as being relatively localised and is not thought to be widespread. Utility companies often have their own local guidelines and standards that should be referenced prior to installation.					
Asbestos contamination linked to the historical construction materials of the on-site structures	Ingestion Dermal Contact Inhalation	End Users: Residents	Medium	High	High
		Construction Workers			
	Explanation: Asbestos is considered a high risk because, whilst its presence is reasonably localised and not widespread, the consequences for construction workers and future site users would be severe if contamination is encountered.				

The revised CSM indicates that remedial measures are required at this site and risks to human health are considered to be moderate to high. The risk posed to controlled waters is considered to be low to moderate, due to the lateral distance of surface water features and the contamination identified thought not to be significantly mobile.

The revised CSM indicates that remedial measures are required at this site to mitigate risks to human health. The remedial options are presented below.

REMEDICATION

Elevated concentrations of lead, specific PAHs and Chrysotile fibres have been recorded within soil samples collected from the site pending the results of asbestos fibre quantification and TPH testing results.

From the revised CSM, it has been established that these pose a significant long-term risk to the end users of the site and the surrounding residents. The main pathway of concern for these contaminants is direct soil ingestion, ingestion of soil attached to homegrown produce, and inhalation of airborne fibres.

Therefore, it is the exposed areas of soil at the site that will pose the greatest risk to human health, which, for this development, includes gardens and areas of soft landscaping within the development.

OPTIONS APPRAISAL

Contamination in soils can be remediated in a number of ways, including chemical or biological processes, physical removal, providing a physical barrier or reducing the exposure to acceptable levels.

For this site, the following remedial solutions are recommended. The client should discuss these options with the environmental consultant and a Remediation Strategy should be drawn up providing full details of the selected remedial option or options.

For disposal details of soils requiring removal from site, reference should be made to the Disposal of Arisings section at the end of this report.

Simple Cover System

This method involves the reducing the exposure risks to acceptable levels, by adding a simple cover layer in areas of domestic gardens and soft landscaped areas on the site.

This cover layer would consist of a combination of 180mm of clean Topsoil and 420mm of clean Subsoil totalling at least 600mm.

The depth is based upon the maximum likely digging depth of 600mm, or two spade depths, as defined in the guidance document BRE 465, 'Cover Thickness Design for Regeneration', produced by ENSR International Ltd.

The Topsoil portion should not exceed 300mm in thickness, but allowance for settlement should be made.

This may be undertaken by either raising site levels or removing some of the soil to create the depth required.

The resulting reduced level surface should be proof rolled to reduce the amount of root penetration and burrowing animals but not so much as to inhibit drainage.

An asbestos marker layer/no dig layer may be required pending the results of the asbestos fibre quantification.

If all of the contaminated Made Ground soils are removed, then the landscaping specification may revert back to the guidelines provided in the NHBC Standards and adhere to requirements for rooting depths for any specified vegetation.

The thickness of the capping layer will be verified by way of an independent investigation once the cover system is in place.

ASBESTOS

Chrysotile fibres and debris were identified in two samples of Made Ground from TP05 and TP10 at 0.10m depth. Subsequent gravimetric analysis is scheduled to be undertaken to determine asbestos concentrations, and the results will be included in an updated version of the report.

It is recommended that any asbestos containing materials, such as corrugated roofing sheets, are removed by licensed contractors.

Any developer undertaking construction works on this site where the Made Ground will be disturbed will have a duty of care to its employees and the surrounding residents to ensure that the Control of Asbestos Regulations 2012 are adhered to.

A watching brief should be employed during any excavation works in the Made Ground and any suspected asbestos double bagged and removed from site by suitably trained groundworkers.

IMPORTED TOPSOIL AND SUBSOIL SPECIFICATION

Any new Topsoil or Subsoil imported to the site requires testing for a range of contaminants to ensure that the soil is suitable for the particular development. The analysis should include a range of inorganic and organic contaminants and samples should be screened for asbestos.

The geoenvironmental engineer performing the remediation verification will need a copy of the chemical testing results to assess the suitability of the supply prior to the cover system being constructed. If there are no chemical testing results available for the soils to be imported, or the soils are not naturally sourced, then additional chemical testing must be undertaken to demonstrate that the imported soils are suitable for use.

Recycled soils which have been screened from demolition rubble often contain visible contaminants or sharps, such as fragments of glass, ceramic, metal, plastic, textiles or treated wood, which are physically unsuitable for the landscaping scheme.

If the imported soil is found to be chemically or physically unsuitable, it will need removal and replacing with a more suitable supply.

REMEDIAL STRATEGY

Once remediation methods have been finalised, and pending the results of further testing, a Remediation Strategy report will be required so that all parties involved in the development are clear about the selected methods, implementation programmes and verification testing regimes that are required.

Should unexpected contamination be encountered during the groundworks or remediation, then the Human Health Risk Assessment and Remedial Strategy will require updating.

DISCOVERY STRATEGY

As with all sites with an industrial legacy, the developer should prepare a method statement to cater for unexpected contamination uncovered during the groundworks. Should any suspicious soils or materials be encountered that differ from our ground model, work should cease in that area and further assessment will be necessary by a suitably qualified geoenvironmental engineer. This may require further intrusive investigation or soil sampling along with supplementary contamination risk assessment and potentially remediation. Any further recommendations will require regulatory approval.

The Discovery Strategy should be implemented throughout the groundworks and the Remediation Strategy updated and approved by the regulators if necessary.

REGULATORY APPROVAL

Any remedial measures concerning human health will need to be approved by the relevant Local Authority Environmental Health Department or warranty provider prior to development, who should be provided with a copy of this report and any other related reports as soon as possible prior to development to avoid delays.

POST REMEDIATION VERIFICATION

Any remedial measures undertaken at the site will require independent verification once completed to ensure the pollutant linkage to the end users of the site has been removed. This is undertaken to satisfy the relevant regulatory authorities and other interested parties, including future owners of the site, banks, insurers and mortgage companies.

This will involve an independent on-site verification investigation to confirm that the remediation has been implemented in accordance with the Remedial Strategy.

A Post Remediation Verification Report will be prepared detailing the verification and validation works listed above.

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER WORK

The ground is seldom homogeneous and variations, which affect our conclusions, may inevitably occur between and beyond the test locations. The risk of significant variations to our Ground Model is considered to be low however should ground conditions vary noticeably from our Ground Model, then we recommend further assessment by a suitably qualified person. Access to the central areas of the site was limited at the time of the assessment. It is therefore recommended that further sampling and testing be undertaken once buildings, vehicles, and other obstructions have been removed, to ensure a comprehensive evaluation of the site conditions.

The soil contamination testing revealed elevated concentrations of lead and PAHs, as well as the presence of Chrysotile fibres in the samples obtained during the intrusive investigation, which poses a potential significant risk to human health. Therefore, remedial measures are required, as outlined in this report. This assessment will be further revised once the results for HA08 and for the TPH and asbestos fibre quantification are received.

As remedial measures are required, a Remedial Strategy followed by Post Remediation Verification of the measures undertaken will be required.

A Discovery Strategy should be implemented during demolition and groundworks, and should suspicious soils be encountered, work should cease immediately, and the soils be assessed by a suitably qualified engineer.

An asbestos survey of the site along with removal of any asbestos by licenced contractors is recommended prior to development.

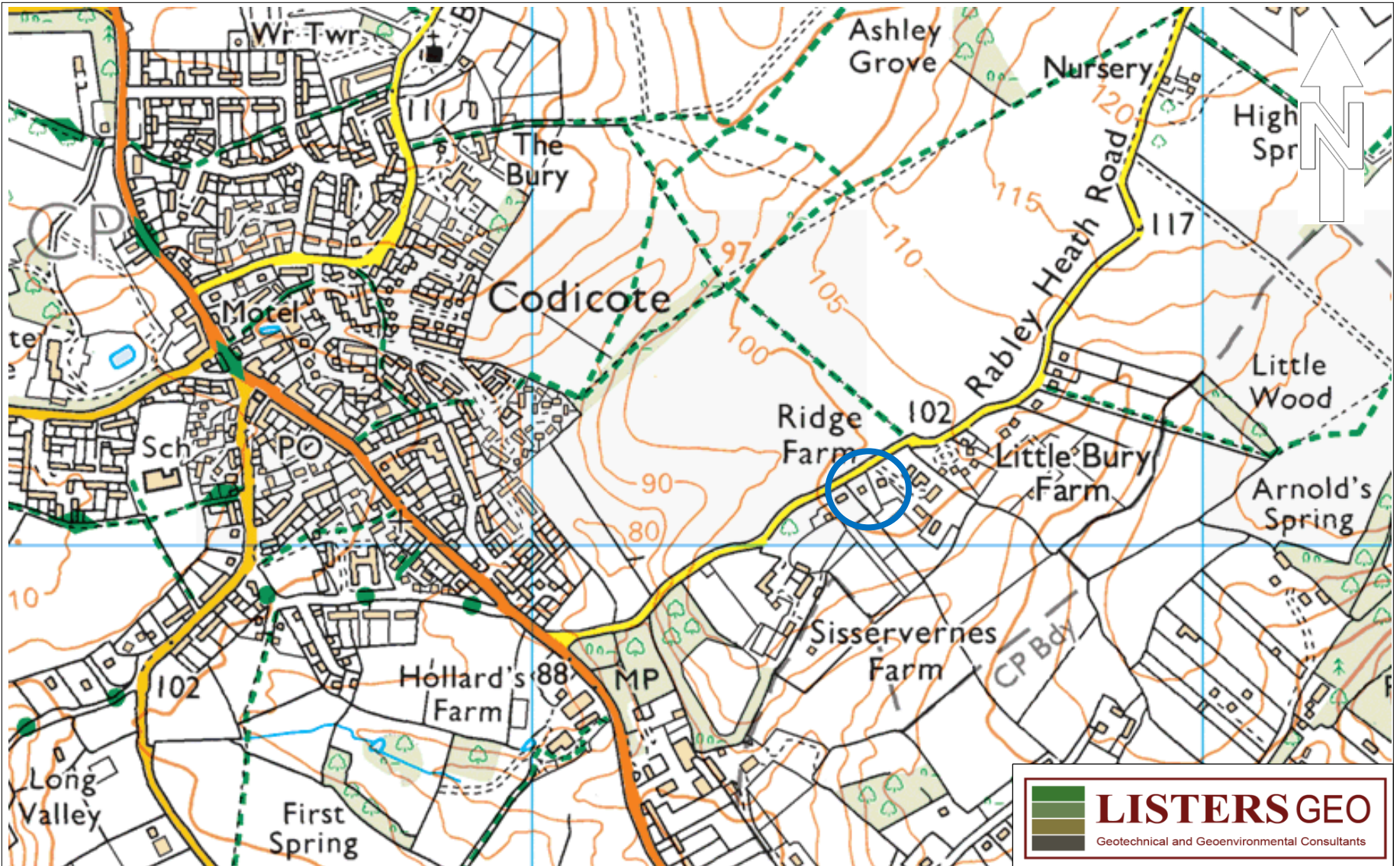
An updated version of this report will be issued once the results of the gravimetric testing, undertaken to determine asbestos concentrations in the soil, and the Total Petroleum Hydrocarbon (TPH) testing have been received, reviewed, and appropriately incorporated, ensuring that all relevant data and findings are fully reflected in the revised assessment.

REFERENCES

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- Association of Geotechnical and Geoenvironmental Specialists (AGS), Site Investigation Asbestos Risk Assessment, AGS Interim Guidance, 2013
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- The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015
- Card G, Wilson S, Mortimer S, A Pragmatic Approach to Ground Gas Risk Assessment, CL:AIRE Research Bulletin RB17, 2012
- CIRIA, Assessing Risks Posed by Hazardous Ground Gases to Buildings, C665, 2007

BRE=Building Research Establishment. BSI=British Standards Institution. AGS=Association of Geotechnical and Geoenvironmental Specialists CIRIA=Construction Industry Research and Information Association. EA=Environment Agency. NHBC=National House Building Council. BGS=British Geological Survey.

APPENDIX A PLANS & PHOTOGRAPHS



LISTERSGEO

Geotechnical and Geoenvironmental Consultants

Listers Geotechnical Consultants Ltd www.listersgeo.co.uk Tel: 01327 860060

Title: Site Location Plan

Site: Ridge Farm, Rabley Heath Road, Codicote, Herts,
AL6 9UA

Scale: NTS

Job Number: 25.11.018

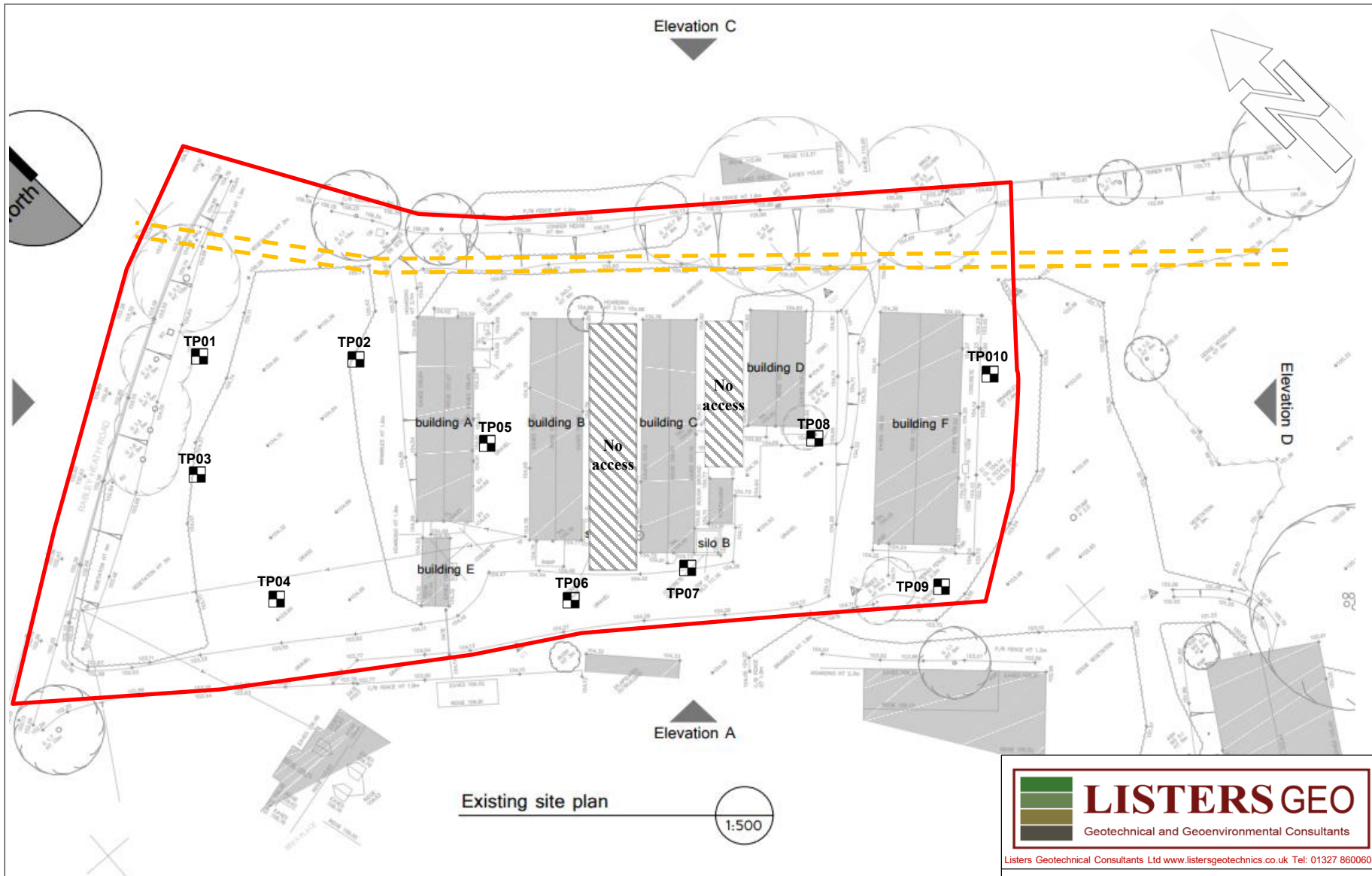
Drawn By: AC

Key:



Approximate site location

Reproduced from Ordnance Survey mapping with the permission of the Controller of His Majesty's Stationery Office. Crown Copyright reserved
(Licence No: 100006010)



Extract of site layout taken from nettassets, 'Existing Site Plan' job reference 18041, drawing no. PL 08, dated June 2018

Key:



Approximate Site Boundary



Hand Dug Trial Pits



Approximate Position of LHP
Gas Mains



LISTERSGEO

Geotechnical and Geoenvironmental Consultants

Listers Geotechnical Consultants Ltd www.listersgeotechnics.co.uk Tel: 01327 860060

Title: Exploratory Hole Location Plan – Existing Site
Layout

Site: Ridge Farm, Rabley Heath Road, Codicote, Herts,
AL6 9UA

Scale: NTS

Job Number: 25.11.018

Drawn By: AC



Extract of site layout taken from nettassets, 'Proposed Site Plan' job reference 18041, drawing no. PL 02, dated June 2018

Key:



Approximate Site Boundary



Hand Dug Trial Pits



Approximate Position of LHP
Gas Mains



LISTERS GEO

Geotechnical and Geoenvironmental Consultants

Listers Geotechnical Consultants Ltd www.listersgeotechnics.co.uk Tel: 01327 860060

Title: Exploratory Hole Location Plan – Proposed Site
Layout

Site: Ridge Farm, Rabley Heath Road, Codicote, Herts,
AL6 9UA

Scale: NTS

Job Number: 25.11.018

Drawn By: AC



View of the site access off Rabley Heath Road.



View of soft-landscaping area to the west of the site, where TP01 to TP04 were excavated.

Site Photographs	Report: 25.11.018
-------------------------	-----------------------------



View looking southeast, from the entrance of the site towards the rear.



View from the rear of the site, looking northwest towards the main entrance. The disused silo is visible in the foreground.



View from the southeast of the site, behind the Spokes Cycles CC Café, looking northwest towards the entrance.



View from the center of the driveway, looking southeast towards the café at the rear of the site.



View looking north, northeast, between the existing structures used for vehicle maintenance.



View looking northeast, between building B and building C, where access was limited.



View looking northeast, with the disused silo and building C in the left foreground of the photograph



View looking towards the east, with building F, used as the Spokes Cycles CC café in the center



A view towards the east of the site, from behind the Spokes Cycles CC cafe



View looking northeast, in the position of TP010, to the rear of the café.

Site Photographs

Report:
25.11.018

APPENDIX B

FIELDWORK RESULTS AND INFORMATION

Trial Pit Log

Trial Pit No.
TP01
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

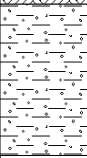
Co-ords: 522539E - 218126N

Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

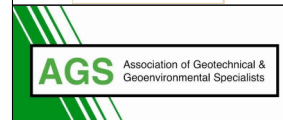
 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.40			MADE GROUND Grass over brown gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint	
				0.60			CLAY WITH FLINTS FORMATION Brown sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint	
							End of Trial Pit at 0.60m	

Method of excavation: Hand Excavated **Dimensions:** 0.45m(W) x 0.45m(L) x 0.60m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.60m


Trial Pit Log

Trial Pit No.

TP02
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Co-ords: 522550E - 218120N

Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

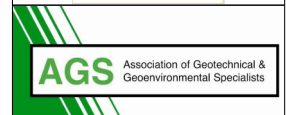
 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.40			MADE GROUND Grass over brown gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint	
				0.50			CLAY WITH FLINTS FORMATION Brown slightly sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded flint	
							End of Trial Pit at 0.50m	

Method of excavation: Hand Excavated **Dimensions:** 0.45m(W) x 0.45m(L) x 0.50m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.50m


Trial Pit Log

Trial Pit No.
TP03
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

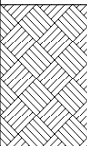
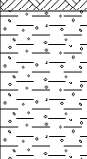
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Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

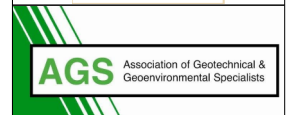
 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.20			MADE GROUND Grass over brown sandy gravelly CLAY. Gravel is fine to coarse angular to sub-rounded flint	
				0.40			CLAY WITH FLINTS FORMATION Brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint	
							End of Trial Pit at 0.40m	

Method of excavation: Hand Excavated **Dimensions:** 0.40m(W) x 0.40m(L) x 0.40m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.40m


Trial Pit Log

Trial Pit No.
TP04
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

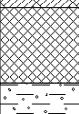
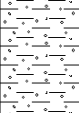
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Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

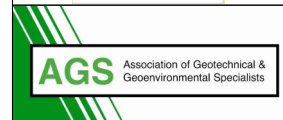
 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.30			MADE GROUND Grass over brown gravelly very sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint and quartzite	
				0.40			MADE GROUND Brown slightly sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint, concrete and glass	
				0.60			CLAY WITH FLINTS FORMATION Light brown sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint	
							End of Trial Pit at 0.60m	

Method of excavation: Hand Excavated **Dimensions:** 0.40m(W) x 0.40m(L) x 0.60m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.60m


Trial Pit Log

Trial Pit No.

TP05
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

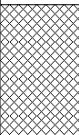
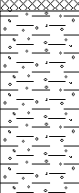
Co-ords: 522563E - 218110N

Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

 Mia Park
to BS 5930:2015

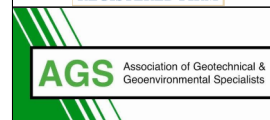
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.20			MADE GROUND Grass overlying brown very sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint	
				0.45			CLAY WITH FLINTS FORMATION Light grey to brown sandy gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded quartzite and flint	
							End of Trial Pit at 0.45m	

Method of excavation: Hand Excavated

Dimensions: 0.45m(W) x 0.45m(L) x 0.45m(D) //
Hand excavated to 1.0m depth, 87mm to 57mm thereafter

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.45m


Trial Pit Log

Trial Pit No.

TP06
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

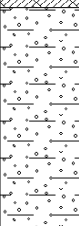
Co-ords: 522559E - 218092N

Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.30			MADE GROUND Brown sandy gravelly CLAY with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded flint.	
				0.60			CLAY WITH FLINTS FORMATION Brown sandy clayey GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded flint	
							End of Trial Pit at 0.60m	

Method of excavation: Hand Excavated **Dimensions:** 0.45m(W) x 0.45m(L) x 0.60m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.60m


Trial Pit Log

Trial Pit No.
TP07
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

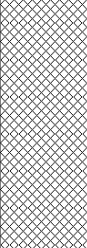
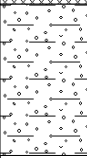
Co-ords: 522570E - 218083N

Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.05			FILL Black GRAVEL of asphalt, concrete and flint	
							MADE GROUND Brown gravelly very sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint	
				0.40			CLAY WITH FLINTS FORMATION Brown sandy very clayey GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded flint	
				0.60			End of Trial Pit at 0.60m	

Method of excavation: Hand Excavated **Dimensions:** 0.45m(W) x 0.45m(L) x 0.60m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.60m


Trial Pit Log

Trial Pit No.

TP08
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

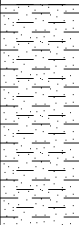
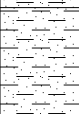
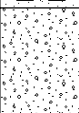
Co-ords: 522590E - 218085N

Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

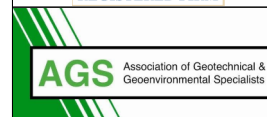
 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.30			MADE GROUND Dark brown slightly gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of flint	
				0.45			MADE GROUND Dark brown gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded of flint	
				0.60			CLAY WITH FLINTS FORMATION Orange brown clayey SAND and GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded flint	
							End of Trial Pit at 0.60m	

Method of excavation: Hand Excavated **Dimensions:** 0.45m(W) x 0.45m(L) x 0.60m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Hand pit terminated at 0.60m


Trial Pit Log

Trial Pit No.
TP09
Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

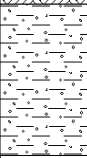
Co-ords: 522588E - 218063N

Project Number:
25.11.018

Level: mAOD

Logged By:
Dates: 03/12/2025

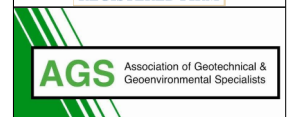
 Mia Park
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.40			MADE GROUND Brown gravelly very sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint and glass	
				0.60			CLAY WITH FLINTS FORMATION Brown gravelly very sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint and quartzite	
							End of Trial Pit at 0.60m	

Method of excavation: Hand Excavated **Dimensions:** 0.45m(W) x 0.45m(L) x 0.60m(D)

Stability: Sides stable

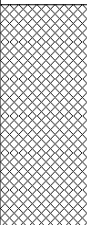
Groundwater: Not encountered

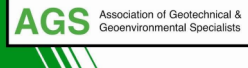
Remarks: Hand pit terminated at 0.60m


Trial Pit Log

Trial Pit No.
TP10

Project Location: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA	Co-ords: 522611E - 218074N	Project Number: 25.11.018
	Level: mAOD	Logged By: Mia Park
	Dates: 03/12/2025	to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.30			MADE GROUND Grass overlying brown gravelly sandy CLAY. Gravel is fine to coarse sub-angular to sub-rounded flint, quartzite and asbestos containing material (ACM)	
							End of Trial Pit at 0.30m	

Method of excavation: Hand Excavated	Dimensions: 0.45m(W) x 0.45m(L) x 0.30m(D)	 
Stability:		
Groundwater: Not encountered		
Remarks: Hand pit terminated at 0.30m depth due to the presence of Asbestos containing material (ACM)		
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060		Sheet 1 of 1

APPENDIX C

FIELDWORK RESULTS AND INFORMATION

Listers Geo
Slapton Hill Barn, Blakesley Road
Slapton
Towcester
Northamptonshire
NN12 8QD

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t:

t: 01923 225404

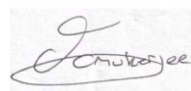
e: andrew@listersgeotechnics.co.uk

f: 01923 237404

e: info-i2analytical@normecgroup.com

Preliminary Report Number : 25-065915

Project / Site name:	Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA	Samples received on:	05/12/2025
Your job number:	25.11.018	Samples instructed on/ Analysis started on:	05/12/2025
Your order number:	25.11.018 501	Analysis completed by:	Not complete
Report Issue Number:	0	Report issued on:	18/12/2025
Samples Analysed:	10 soil samples		



Signed:

Tuhina Mukerjee
Senior Customer Services Advisor
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Preliminary reports provided at the request of the client should be considered as incomplete and have not been through the complete quality control procedure.

Results contained in preliminary reports may be subject to change and therefore should not be used as a basis for decision making, except at the risk of the client.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.

Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Your Order No: 25.11.018 501

Lab Sample Number	773047	773048	773049	773050	773051
Sample Reference	HA01	HA02	HA04	HA05	HA06
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.20	0.50	0.20	0.10	0.20
Date Sampled	03/12/2025	03/12/2025	03/12/2025	03/12/2025	03/12/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	15	16	11	14
Total mass of sample received	kg	0.1	NONE	0.1	0.1	0.1	0.1	0.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KMC	KMC	KMC	KMC	KMC
Analysis completed	N/A	N/A	N/A	16/12/2025	16/12/2025	16/12/2025	16/12/2025	16/12/2025
Actinolite detected	Type	N/A	ISO 17025	-	-	-	Not-detected	-
Amosite detected	Type	N/A	ISO 17025	-	-	-	Not-detected	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	Not-detected	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	Detected	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	Not-detected	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-	Not-detected	-

Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	Loose Fibres	-
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General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	8.1	8.2	8.1	7.7	7.4
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	24	20	27	73	36
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.9	9.84	13.4	36.5	18.1
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.6	-	-	-	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	2.6	7.1	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	6.6	16	0.07	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	5.6	13	0.12	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	21	49	1.9	0.13
Anthracene	mg/kg	0.05	MCERTS	0.1	4.6	11	1.7	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.8	10	22	6.8	0.46
Pyrene	mg/kg	0.05	MCERTS	0.7	11	25	5.4	0.53
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.38	4	9.3	2.8	0.27
Chrysene	mg/kg	0.05	MCERTS	0.37	4	8.9	2.8	0.31
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.28	3	8.2	1.8	0.46
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.21	1.7	3	0.78	0.19
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.26	3.3	8	1.2	0.33
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.13	1.4	3.2	0.47	0.24
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.34	0.62	0.15	0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.16	2	4.7	0.5	0.28

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.56	81.6	190	26.4	3.24
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Analytical Report Number: 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Your Order No: 25.11.018 501

Lab Sample Number	773047	773048	773049	773050	773051
Sample Reference	HA01	HA02	HA04	HA05	HA06
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.20	0.50	0.20	0.10	0.20
Date Sampled	03/12/2025	03/12/2025	03/12/2025	03/12/2025	03/12/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	14	13	18	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.4	0.4	0.4	0.6
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	-	-	-	-
Chromium (hexavalent) by IC	mg/kg	1.8	NONE	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	22	22	23	64	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	45	37	73	34	44
Lead (aqua regia extractable)	mg/kg	1	MCERTS	42	34	44	290	54
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	17	18	20	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.2	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	87	88	100	130	150

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	-	-	-
TPHCWG - Aliphatic >EC35 - EC44 EH_CU_1D_AL	mg/kg	8.4	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC44 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	-	-	-	-
TPHCWG - Aromatic >EC35 - EC44 EH_CU_1D_AR	mg/kg	8.4	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-
TPHCWG - Aromatic >EC5 - EC44 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	-	-	-

TPH (>EC10 - EC12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	to follow	to follow	to follow	to follow	to follow
TPH (>EC12 - EC16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	to follow	to follow	to follow	to follow	to follow
TPH (>EC16 - EC21) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	to follow	to follow	to follow	to follow	to follow
TPH (>EC21 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	to follow	to follow	to follow	to follow	to follow

TPH Total >EC5 - EC44 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	-	-	-	-	-
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TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	to follow	to follow	to follow	to follow	to follow
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Analytical Report Number: 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Your Order No: 25.11.018 501

Lab Sample Number	773047	773048	773049	773050	773051
Sample Reference	HA01	HA02	HA04	HA05	HA06
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.20	0.50	0.20	0.10	0.20
Date Sampled	03/12/2025	03/12/2025	03/12/2025	03/12/2025	03/12/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-Xylene	µg/kg	8	MCERTS	-	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Your Order No: 25.11.018 501

Lab Sample Number	773052				773053	773054	773055	773056
Sample Reference	HA07				HA07	HA08	HA09	HA10
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A				N/A	N/A	N/A	N/A
Depth (m)	0.01				0.55	0.10	0.50	0.10
Date Sampled	03/12/2025				03/12/2025	03/12/2025	03/12/2025	03/12/2025
Time Taken	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					

Stone Content	%	0.1	NONE	< 0.1	3.3	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	9.5	9.2	14	7.3
Total mass of sample received	kg	0.1	NONE	0.3	0.3	0.1	0.1	0.1

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	-	-	Detected
Asbestos Analyst ID	N/A	N/A	N/A	-	-	-	-	KMC
Analysis completed	N/A	N/A	N/A	-	-	-	-	16/12/2025
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected

Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	Loose Fibres, Loose Fibrous Debris
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General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	7	8.2	7.9	8.2	8.1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	25	39	40	23	31
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	12.4	19.6	20.1	11.6	15.2
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	2.9	0.8	-	2.2	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.11	< 0.05	0.07
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.15	0.05	0.51	0.09	0.52
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.17	< 0.05	0.09
Fluoranthene	mg/kg	0.05	MCERTS	0.53	0.18	1.3	0.23	1.4
Pyrene	mg/kg	0.05	MCERTS	0.57	0.17	1.3	0.27	1.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.28	0.11	0.8	0.16	0.81
Chrysene	mg/kg	0.05	MCERTS	0.38	0.17	0.85	0.18	0.84
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.54	0.31	1.8	0.22	1.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.21	< 0.05	0.54	0.09	0.43
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.3	0.21	1.3	0.18	0.94
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.32	0.15	0.82	0.1	0.51
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.08	< 0.05	0.22	< 0.05	0.13
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.37	0.19	0.95	0.12	0.58

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.75	1.54	10.7	1.64	8.96
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Analytical Report Number: 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Your Order No: 25.11.018 501

Lab Sample Number	773052	773053	773054	773055	773056
Sample Reference	HA07	HA07	HA08	HA09	HA10
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.01	0.55	0.10	0.50	0.10
Date Sampled	03/12/2025	03/12/2025	03/12/2025	03/12/2025	03/12/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	12	to follow	19	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.7	0.4	to follow	0.6	0.5
Chromium (hexavalent)	mg/kg	1.8	MCERTS	U/S ^{U/S 9}	< 1.8	-	-	-
Chromium (hexavalent) by IC	mg/kg	1.8	NONE	< 1.80	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	23	to follow	24	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	16	to follow	33	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	54	20	to follow	76	45
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	to follow	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	16	to follow	20	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.1	to follow	1.1	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	57	to follow	190	110

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPHCWG - Aliphatic >EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	< 8.4	< 8.4	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	-	-	-
TPHCWG - Aliphatic >EC5 - EC44 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	-	-	-

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	-	-	-
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	-	-
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	-	-
TPHCWG - Aromatic >EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	8.6	-	-	-
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	-	-	-
TPHCWG - Aromatic >EC5 - EC44 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	-	-	-

TPH (>EC10 - EC12) _{EH_CU_1D_TOTAL}	mg/kg	2	MCERTS	-	-	to follow	to follow	to follow
TPH (>EC12 - EC16) _{EH_CU_1D_TOTAL}	mg/kg	4	MCERTS	-	-	to follow	to follow	to follow
TPH (>EC16 - EC21) _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	-	-	to follow	to follow	to follow
TPH (>EC21 - EC40) _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	-	-	to follow	to follow	to follow

TPH Total >EC5 - EC44 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	< 10	< 10	-	-	-
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TPH (EC10 - EC40) _{EH_CU_1D_TOTAL}	mg/kg	10	MCERTS	-	-	to follow	to follow	to follow
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Analytical Report Number: 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Your Order No: 25.11.018 501

Lab Sample Number	773052	773053	773054	773055	773056
Sample Reference	HA07	HA07	HA08	HA09	HA10
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix	N/A	N/A	N/A	N/A	N/A
Depth (m)	0.01	0.55	0.10	0.50	0.10
Date Sampled	03/12/2025	03/12/2025	03/12/2025	03/12/2025	03/12/2025
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
773047	HA01	None Supplied	0.2	Brown loam with gravel and vegetation
773048	HA02	None Supplied	0.5	Brown loam and sand with gravel and vegetation
773049	HA04	None Supplied	0.2	Brown loam and sand with gravel and vegetation
773050	HA05	None Supplied	0.1	Brown loam and sand with gravel and vegetation
773051	HA06	None Supplied	0.2	Brown loam and sand with gravel and vegetation
773052	HA07	None Supplied	0.01	Brown loam and clay with gravel and vegetation
773053	HA07	None Supplied	0.55	Brown clay and sand with gravel and stones
773054	HA08	None Supplied	0.1	Brown loam and sand with gravel and vegetation
773055	HA09	None Supplied	0.5	Brown loam and sand with gravel and vegetation
773056	HA10	None Supplied	0.1	Brown loam and sand with gravel and vegetation

Analytical Report Number : 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
TPH Chromatogram in soil	TPH Chromatogram in soil	In-house method	L064B	D	NONE
Total petroleum hydrocarbons by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID	In-house method	L076B	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
Hexavalent chromium in soil by Ion Chromatography	Determination of hexavalent chromium in alkaline soil extract by use of ion chromatography with spectrophotometric detection	In-house method	L130B	W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE

Analytical Report Number : 25-065915

Project / Site name: Ridge Farm, Rabley Heath Road, Codicote, Herts, AL6 9UA

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)

Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

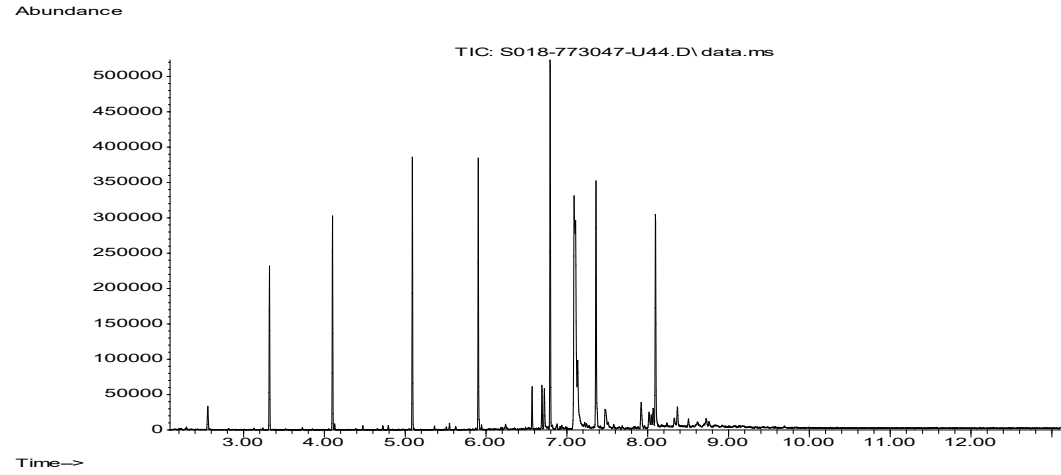
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

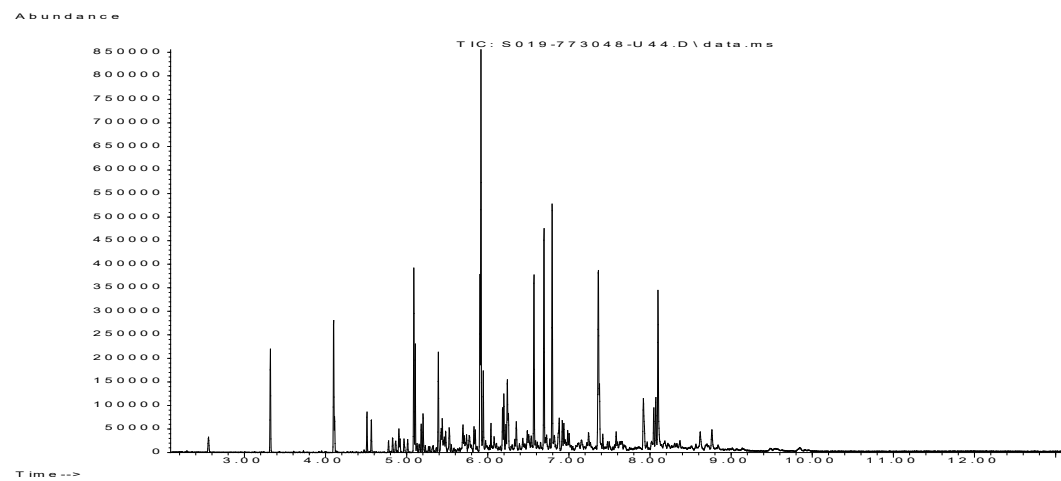
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

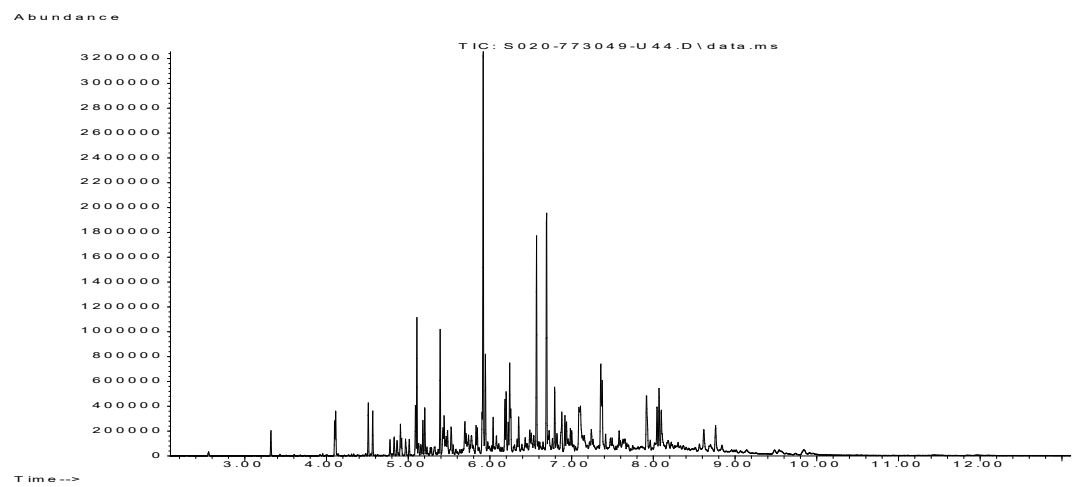
Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

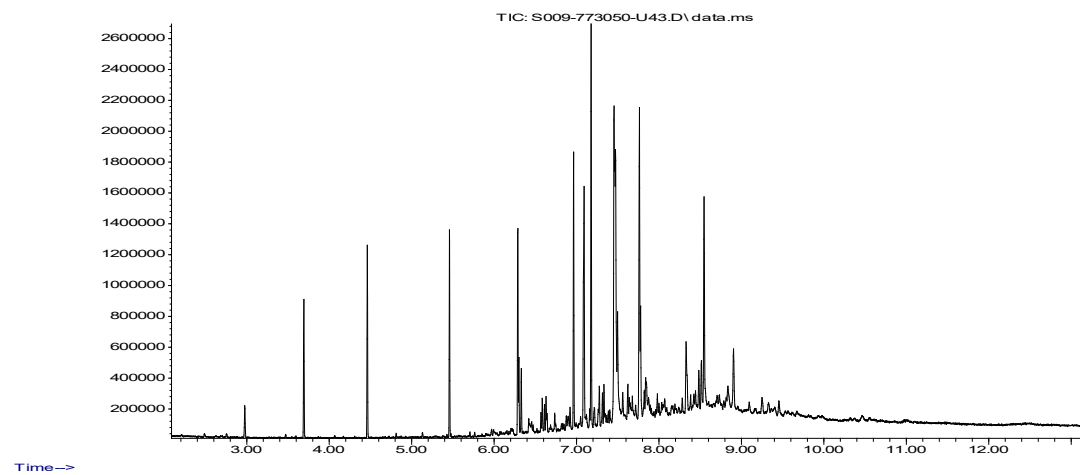
*U/S g- Unsuitable for analysis due to high colour intensity.

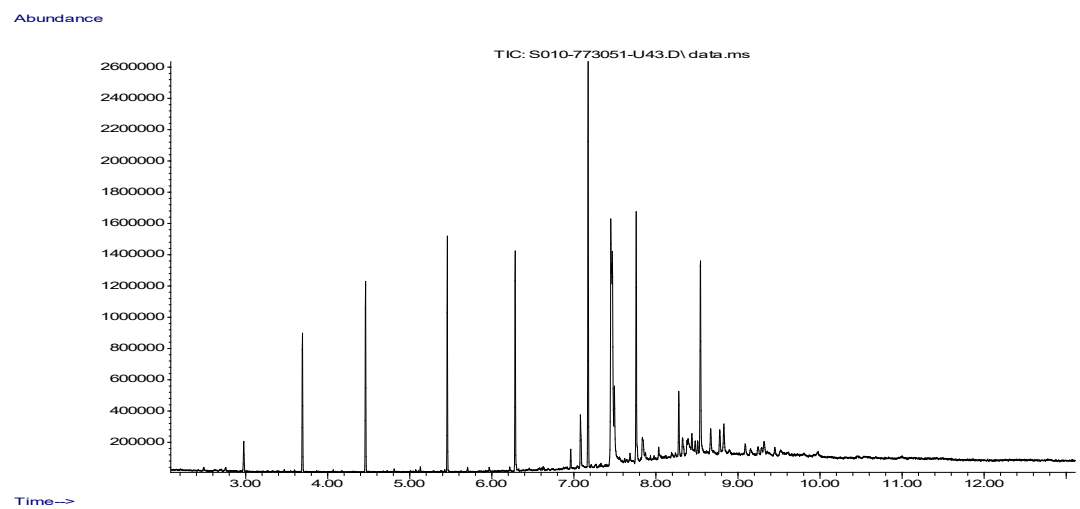


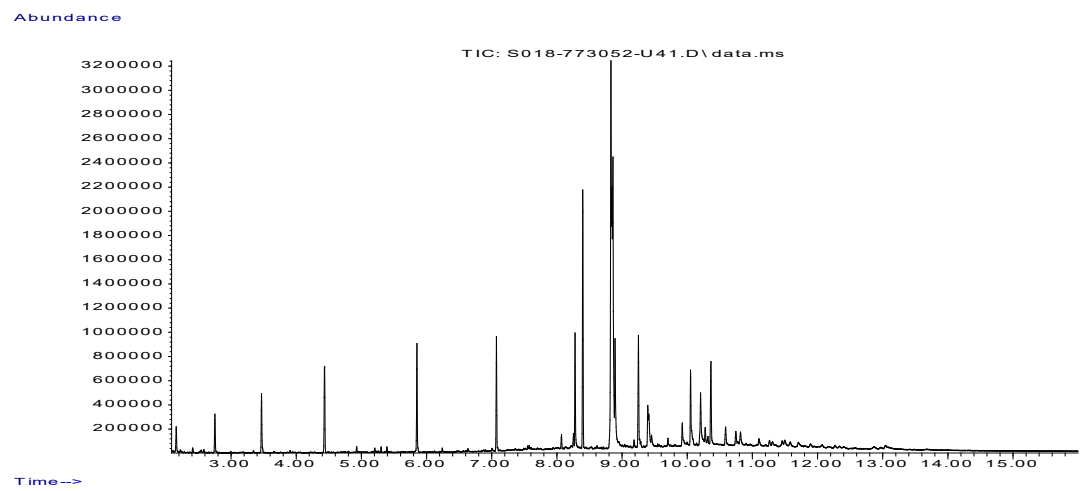




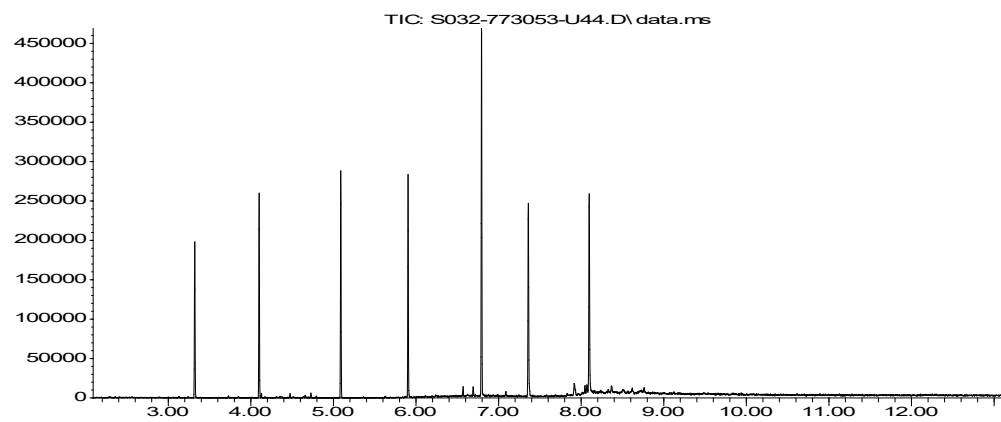
Abundance



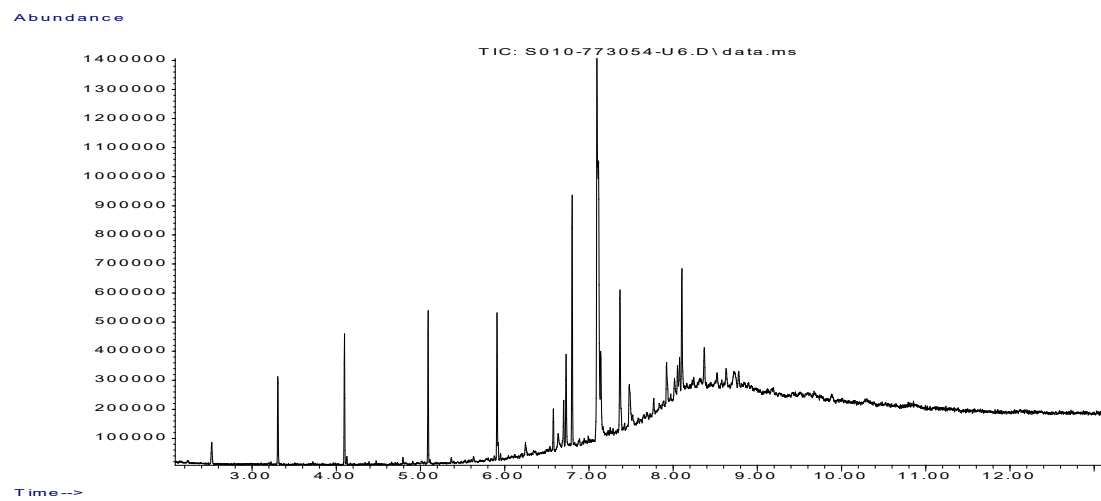


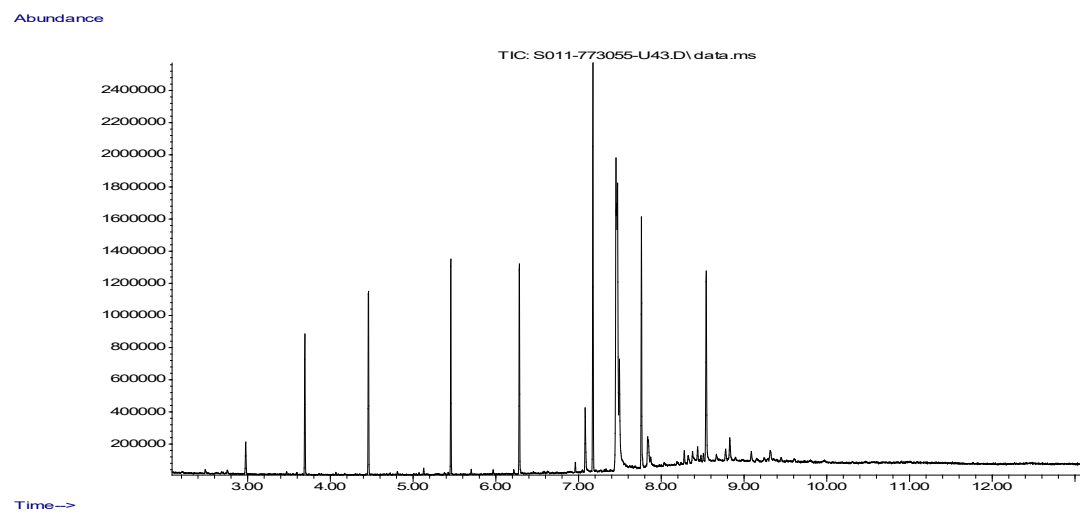


Abundance

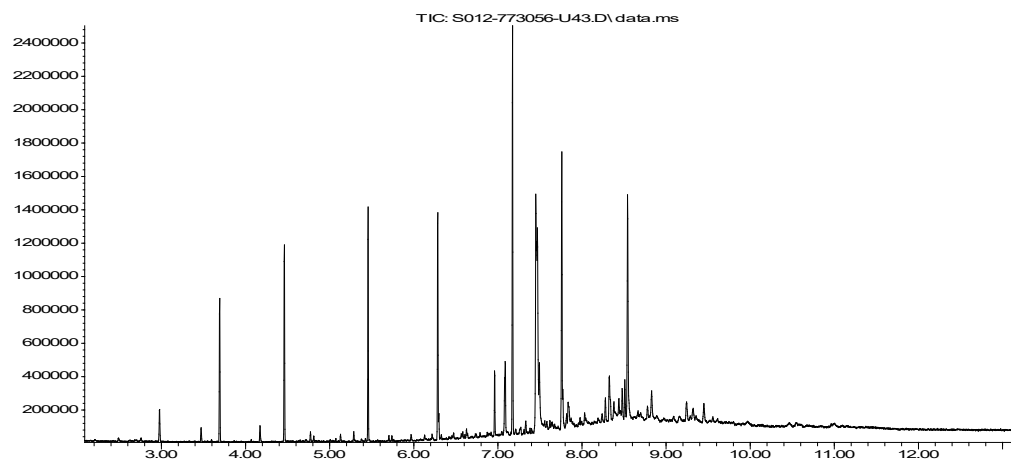


Time-->

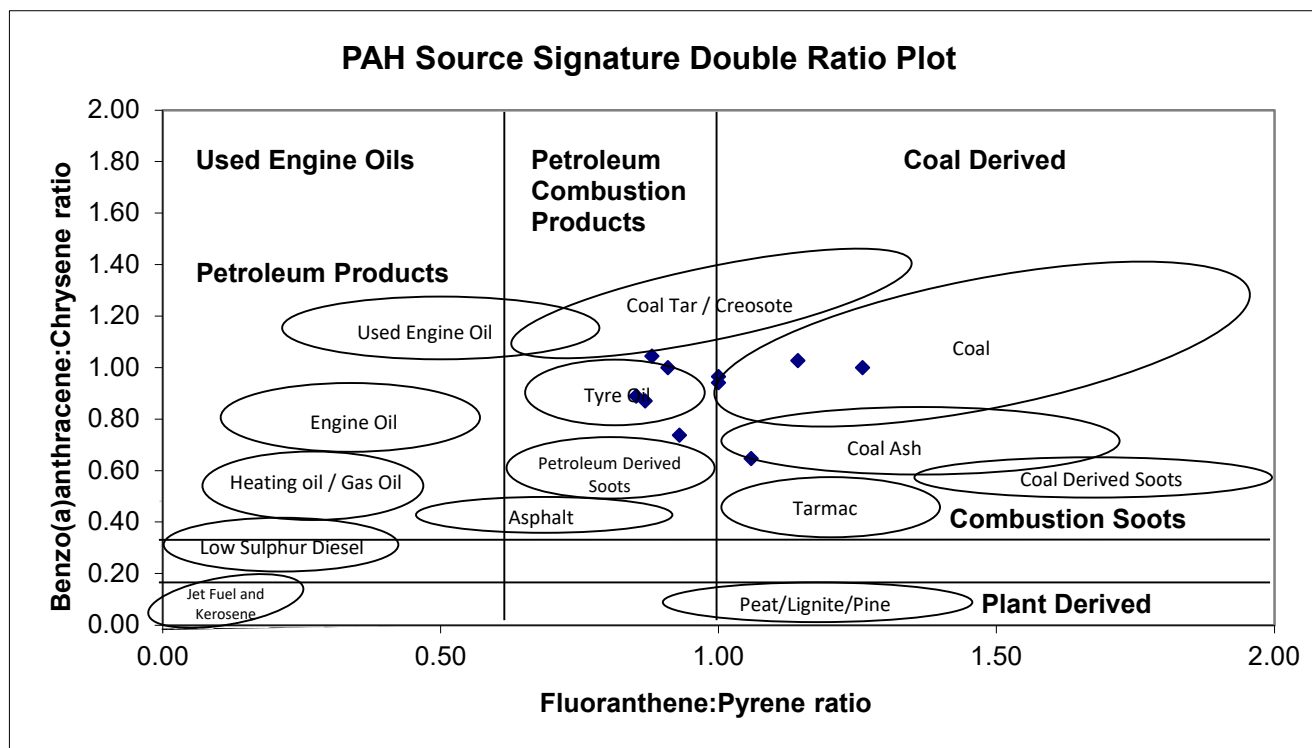




Abundance



Time-->



DOUBLE RATIO PLOT

Report:
25.11.018

APPENDIX D

DESK STUDY INFORMATION

RIDGE FARM, RABLEY HEATH ROAD, CODICOTE, HERTFORDSHIRE, AL6 9UA

Order Details

Date: 21/11/2025
Your ref: 25.11.018/501
Our Ref: GS-8BD-8NQ-VXJ-Y8C

Site Details

Location: 522571 218101
Area: 0.47 ha
Authority: [North Hertfordshire District Council](#) ↗



Summary of findings

[p. 2 >](#) **Aerial image**

[p. 9 >](#)

OS MasterMap site plan

[p.14 >](#) [Insight User Guide](#) ↗

Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	0	1	4	-
16 >	1.2 >	Historical tanks >	0	0	0	3	-
16 >	1.3 >	Historical energy features >	1	2	0	0	-
17	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	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
18 >	2.1 >	Historical industrial land uses >	0	0	1	5	-
19 >	2.2 >	Historical tanks >	0	0	0	6	-
19 >	2.3 >	Historical energy features >	2	2	0	0	-
20	2.4	Historical petrol stations	0	0	0	0	-
20	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
21	3.1	Active or recent landfill	0	0	0	0	-
21 >	3.2 >	Historical landfill (BGS records) >	0	0	0	1	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	0	1	-
22	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
23 >	3.7 >	Waste exemptions >	0	0	2	0	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
24 >	4.1 >	Recent industrial land uses >	1	1	0	-	-
25	4.2	National Geographic Database (NGD) - Current or recent tanks	0	0	0	-	-
25	4.3	Current or recent petrol stations	0	0	0	0	-
25	4.4	Electricity cables	0	0	0	0	-
25	4.5	Gas pipelines	0	0	0	0	-



25	4.6	Sites determined as Contaminated Land	0	0	0	0	-
25	4.7	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
26	4.8	Regulated explosive sites	0	0	0	0	-
26	4.9	Hazardous substance storage/usage	0	0	0	0	-
26	4.10	Historical licensed industrial activities (IPC)	0	0	0	0	-
26	4.11	Licensed industrial activities (Part A(1))	0	0	0	0	-
26	4.12	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
27	4.13	Radioactive Substance Authorisations	0	0	0	0	-
27 >	4.14 >	<u>Licensed Discharges to controlled waters ></u>	1	4	1	2	-
28	4.15	Pollutant release to surface waters (Red List)	0	0	0	0	-
28	4.16	Pollutant release to public sewer	0	0	0	0	-
28	4.17	List 1 Dangerous Substances	0	0	0	0	-
29	4.18	List 2 Dangerous Substances	0	0	0	0	-
29 >	4.19 >	<u>Pollution Incidents (EA/NRW) ></u>	0	0	0	1	-
29	4.20	Pollution inventory substances	0	0	0	0	-
29	4.21	Pollution inventory waste transfers	0	0	0	0	-
30	4.22	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	<u>Hydrogeology ></u>	On site	0-50m	50-250m	250-500m	500-2000m
31 >	5.1 >	<u>Superficial aquifer ></u>	Identified (within 500m)				
33 >	5.2 >	<u>Bedrock aquifer ></u>	Identified (within 500m)				
34 >	5.3 >	<u>Groundwater vulnerability ></u>	Identified (within 50m)				
35 >	5.4 >	<u>Groundwater vulnerability- soluble rock risk ></u>	Identified (within 0m)				
35	5.5	Groundwater vulnerability- local information	None (within 0m)				
37 >	5.6 >	<u>Groundwater abstractions ></u>	0	0	0	0	17
41	5.7	Surface water abstractions	0	0	0	0	0
41 >	5.8 >	<u>Potable abstractions ></u>	0	0	0	0	13
44 >	5.9 >	<u>Source Protection Zones ></u>	1	0	1	0	-
45	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	<u>Hydrology ></u>	On site	0-50m	50-250m	250-500m	500-2000m

46	6.1	Water Network (OS MasterMap)	0	0	0	-	-
46	6.2	Surface water features	0	0	0	-	-
47 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
47 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
48 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
49	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
49	7.2	Historical Flood Events	0	0	0	-	-
49	7.3	Flood Defences	0	0	0	-	-
50	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
50	7.5	Flood Storage Areas	0	0	0	-	-
51	7.6	Flood Zone 2	None (within 50m)				
51	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
52	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding >					
53 >	9.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
54	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
55	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
55	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
55	10.4	Special Protection Areas (SPA)	0	0	0	0	0
55	10.5	National Nature Reserves (NNR)	0	0	0	0	0
56 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	5
56 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	6
57	10.8	Biosphere Reserves	0	0	0	0	0
57	10.9	Forest Parks	0	0	0	0	0
57	10.10	Marine Conservation Zones	0	0	0	0	0
57 >	10.11 >	Green Belt >	1	0	1	0	0



58	10.12	Proposed Ramsar sites	0	0	0	0	0
58	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
58	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
58	10.15	Nitrate Sensitive Areas	0	0	0	0	0
59 >	10.16 >	Nitrate Vulnerable Zones >	1	0	0	0	1
60	10.17	SSSI Impact Risk Zones	0	-	-	-	-
60	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
61	11.1	World Heritage Sites	0	0	0	-	-
62	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
62	11.3	National Parks	0	0	0	-	-
62 >	11.4 >	Listed Buildings >	0	0	3	-	-
63	11.5	Conservation Areas	0	0	0	-	-
63	11.6	Scheduled Ancient Monuments	0	0	0	-	-
63	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
64 >	12.1 >	Agricultural Land Classification >	Grade 3 (within 250m)				
65	12.2	Open Access Land	0	0	0	-	-
65	12.3	Tree Felling Licences	0	0	0	-	-
65	12.4	Environmental Stewardship Schemes	0	0	0	-	-
65 >	12.5 >	Countryside Stewardship Schemes >	0	1	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
66	13.1	Priority Habitat Inventory	0	0	0	-	-
66	13.2	Habitat Networks	0	0	0	-	-
66	13.3	Open Mosaic Habitat	0	0	0	-	-
66	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
67 >	14.1 >	10k Availability >	Identified (within 500m)				
68	14.2	Artificial and made ground (10k)	0	0	0	0	-

69 >	14.3 >	Superficial geology (10k) >	1	0	3	2	-
70	14.4	Landslip (10k)	0	0	0	0	-
71 >	14.5 >	Bedrock geology (10k) >	1	1	0	0	-
72	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
73 >	15.1 >	50k Availability >	Identified (within 500m)				
74	15.2	Artificial and made ground (50k)	0	0	0	0	-
74	15.3	Artificial ground permeability (50k)	0	0	-	-	-
75 >	15.4 >	Superficial geology (50k) >	1	0	3	2	-
76 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
76	15.6	Landslip (50k)	0	0	0	0	-
76	15.7	Landslip permeability (50k)	None (within 50m)				
77 >	15.8 >	Bedrock geology (50k) >	1	1	0	0	-
78 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
78	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
79 >	16.1 >	BGS Boreholes >	0	0	1	-	-
Page	Section	Natural ground subsidence >					
80 >	17.1 >	Shrink swell clays >	Negligible (within 50m)				
81 >	17.2 >	Running sands >	Very low (within 50m)				
83 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
84 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
85 >	17.5 >	Landslides >	Very low (within 50m)				
87 >	17.6 >	Ground dissolution of soluble rocks >	Low (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
89 >	18.1 >	BritPits >	0	0	0	3	-
90 >	18.2 >	Surface ground workings >	0	0	1	-	-
91	18.3	Underground workings	0	0	0	0	0
91	18.4	Underground mining extents	0	0	0	0	-



91	18.5	Historical Mineral Planning Areas	0	0	0	0	-
91 >	18.6 >	Non-coal mining >	1	0	0	0	0
92	18.7	JPB mining areas	None (within 0m)				
92	18.8	The Coal Authority non-coal mining	0	0	0	0	-
92	18.9	Researched mining	0	0	0	0	-
92	18.10	Mining record office plans	0	0	0	0	-
93	18.11	BGS mine plans	0	0	0	0	-
93	18.12	Coal mining	None (within 0m)				
93	18.13	Brine areas	None (within 0m)				
93	18.14	Gypsum areas	None (within 0m)				
93	18.15	Tin mining	None (within 0m)				
94	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
95	19.1	Natural cavities	0	0	0	0	-
95	19.2	Mining cavities	0	0	0	0	0
95	19.3	Reported recent incidents	0	0	0	0	-
95	19.4	Historical incidents	0	0	0	0	-
Page	Section	Radon >					
97 >	20.1 >	Radon >	Between 1% and 3% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
99 >	21.1 >	BGS Estimated Background Soil Chemistry >	2	2	-	-	-
99	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
100	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
101	22.1	Underground railways (London)	0	0	0	-	-
101	22.2	Underground railways (Non-London)	0	0	0	-	-
101	22.3	Railway tunnels	0	0	0	-	-
101	22.4	Historical railway and tunnel features	0	0	0	-	-
101	22.5	Royal Mail tunnels	0	0	0	-	-



102	22.6	Historical railways	0	0	0	-	-
102	22.7	Railways	0	0	0	-	-
102	22.8	Crossrail 2	0	0	0	0	-
102	22.9	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 05/08/2022

Site Area: 0.47ha



Recent site history - 2020 aerial photograph



Capture Date: 09/04/2020

Site Area: 0.47ha



Recent site history - 2014 aerial photograph



Capture Date: 01/06/2014

Site Area: 0.47ha



Recent site history - 2010 aerial photograph



Capture Date: 27/04/2010

Site Area: 0.47ha



Recent site history - 1999 aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2025. All Rights Reserved.

Capture Date: 18/07/1999

Site Area: 0.47ha



OS MasterMap site plan



Site Area: 0.47ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features

1.1 Historical industrial land uses

Records within 500m

5

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

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
1	163m SW	Gravel Pit	1947	2095182



ID	Location	Land use	Dates present	Group ID
2	317m W	Chalk Pit	1897	2094582
3	362m NW	Unspecified Pit	1884	2088170
4	400m SW	Gravel Pit	1947	2095183
B	489m W	Septic Tank	1922 - 1947	2122405

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

3

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

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
B	484m W	Septic Tank	1970 - 1990	372437
B	485m W	Septic Tank	1993	369040
B	490m W	Septic Tank	1924 - 1937	370827

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

3

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

Features are displayed on the Past land use map on [page 15 >](#)

ID	Location	Land use	Dates present	Group ID
A	On site	Electricity Substation	1989 - 1990	262806



ID	Location	Land use	Dates present	Group ID
A	1m NE	Electricity Substation	1993	255163
A	2m NE	Electricity Substation	1970	255917

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

0

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

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



ID	Location	Land Use	Date	Group ID
4	400m SW	Gravel Pit	1947	2095183
B	489m W	Septic Tank	1947	2122405
B	489m W	Septic Tank	1922	2122405

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

6

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'.

Features are displayed on the Past land use - un-grouped map on [page 18 >](#)

ID	Location	Land Use	Date	Group ID
B	484m W	Septic Tank	1989	372437
B	484m W	Septic Tank	1990	372437
B	484m W	Septic Tank	1970	372437
B	485m W	Septic Tank	1993	369040
B	490m W	Septic Tank	1937	370827
B	492m W	Septic Tank	1924	370827

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

4

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 18 >](#)

ID	Location	Land Use	Date	Group ID
A	On site	Electricity Substation	1989	262806
A	On site	Electricity Substation	1990	262806



ID	Location	Land Use	Date	Group ID
A	1m NE	Electricity Substation	1993	255163
A	2m NE	Electricity Substation	1970	255917

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



- Site Outline
- Search buffers in metres (m)
- Historical landfill (EA/NRW)
- Historical landfill (BGS)
- 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

1

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.

Features are displayed on the Waste and landfill map on [page 21 >](#)



ID	Location	Address	BGS Number	Risk	Waste Type
B	333m W	Sisserversness Hill Pit, Codicote, Herts	2245	Risk to major and minor aquifer	N/A

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	1
----------------------------	----------

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.

Features are displayed on the Waste and landfill map on [page 21 >](#)

ID	Location	Details		
B	295m SW	Site Address: Sisserversness Hill Pit, Codicote, Hertfordshire Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: - Licence Holder: - First Recorded: - Last Recorded: -

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**2**

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 21 >](#)

ID	Location	Site	Reference	Category	Sub-Category	Description
A	83m N	Ramridge Farm Kimpton Hertfordshire	EPR/DE5644H R/A001	Storing waste exemption	Non-agricultural waste only	Storage of sludge
A	83m N	Ramridge Farm Hertfordshire	EPR/ME5648E T/A001	Storing waste exemption	Non-agricultural waste only	Storage of sludge

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



4 Current industrial land use



- 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

2

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 24](#) >

ID	Location	Company	Address	Activity	Category
1	On site	Poultry Houses	Hertfordshire, AL6	Poultry Farming, Equipment and Supplies	Farming
A	17m NE	Electricity Sub Station	Hertfordshire, AL6	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.



4.2 National Geographic Database (NGD) - Current or recent tanks

Records within 250m**0**

Current or recent tanks identified from the Ordnance Survey NGD.

This data is sourced from Ordnance Survey.

4.3 Current or recent petrol stations

Records within 500m**0**

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.4 Electricity cables

Records within 500m**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.5 Gas pipelines

Records within 500m**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.6 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.

4.7 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.



4.8 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.

4.9 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.

4.10 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.

4.11 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.

4.12 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.



4.13 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.

4.14 Licensed Discharges to controlled waters

Records within 500m

8

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 24](#) >

ID	Location	Address	Details	
A	On site	RABLEY HEATH ROAD, CODICOTE, HERTS, RABLEY HEATH ROAD, CODICOTE, HER, TS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.1960 Permit Version: 1 Receiving Water: UPPER CHALK	Status: TRANSFERRED FROM COPA 1974 Issue date: 03/11/1987 Effective Date: 03/11/1987 Revocation Date: 04/05/2006
A	11m NE	RABLEY HEATH ROAD, CODICOTE, HERTS, RABLEY HEATH ROAD, CODICOTE, HER, TS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.1961 Permit Version: 1 Receiving Water: UPPER CHALK	Status: TRANSFERRED FROM COPA 1974 Issue date: 03/11/1987 Effective Date: 03/11/1987 Revocation Date: 17/03/2006
A	25m NE	RABLEY HEATH ROAD, CODICOTE, HERTS, RABLEY HEATH ROAD, CODICOTE, HER, TS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.1962 Permit Version: 1 Receiving Water: UPPER CHALK	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 03/11/1987 Effective Date: 03/11/1987 Revocation Date: 01/10/1996
A	32m NE	FARMHOUSE, RABLEY HEATH ROAD, CODIC, FARMHOUSE, RABLEY HEATH ROAD, CO, DICOTE, HITCHIN, HERTS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTLU.0345 Permit Version: 1 Receiving Water: -	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 24/05/1974 Effective Date: 24/05/1974 Revocation Date: 01/10/1996
A	48m NE	RABLEY HEATH ROAD, CODICOTE, HERTS, RABLEY HEATH ROAD, CODICOTE, HER, TS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.1963 Permit Version: 1 Receiving Water: UPPER CHALK	Status: TRANSFERRED FROM COPA 1974 Issue date: 03/11/1987 Effective Date: 03/11/1987 Revocation Date: 17/03/2006



ID	Location	Address	Details	
A	53m NE	RABLEY HEATH ROAD, CODICOTE, HERTS, RABLEY HEATH ROAD, CODICOTE, HER, TS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.1964 Permit Version: 1 Receiving Water: UPPER CHALK	Status: TRANSFERRED FROM COPA 1974 Issue date: 03/11/1987 Effective Date: 03/11/1987 Revocation Date: 03/04/2006
B	304m SW	SISSERVENES FARM, RABLEY HEATH ROAD, RABLEY HEATH ROAD, WELWYN, HERTFORDSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.2228 Permit Version: 2 Receiving Water: UPPER CHALK	Status: TRANSFERRED FROM COPA 1974 Issue date: 12/01/2006 Effective Date: 12/01/2006 Revocation Date: 12/01/2017
B	304m SW	SISSERVENES FARM, RABLEY HEATH ROAD, RABLEY HEATH ROAD, WELWYN, HERTFORDSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.2228 Permit Version: 1 Receiving Water: UPPER CHALK	Status: TRANSFERRED FROM COPA 1974 Issue date: 19/02/1988 Effective Date: 19/02/1988 Revocation Date: 11/01/2006

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

4.15 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.

4.16 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.

4.17 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.



4.18 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.

4.19 Pollution Incidents (EA/NRW)

Records within 500m

1

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 24 >](#)

ID	Location	Details	
2	371m SW	Incident Date: 03/04/2002 Incident Identification: 68474 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.20 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.

4.21 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.



4.22 Pollution inventory radioactive waste

Records within 500m

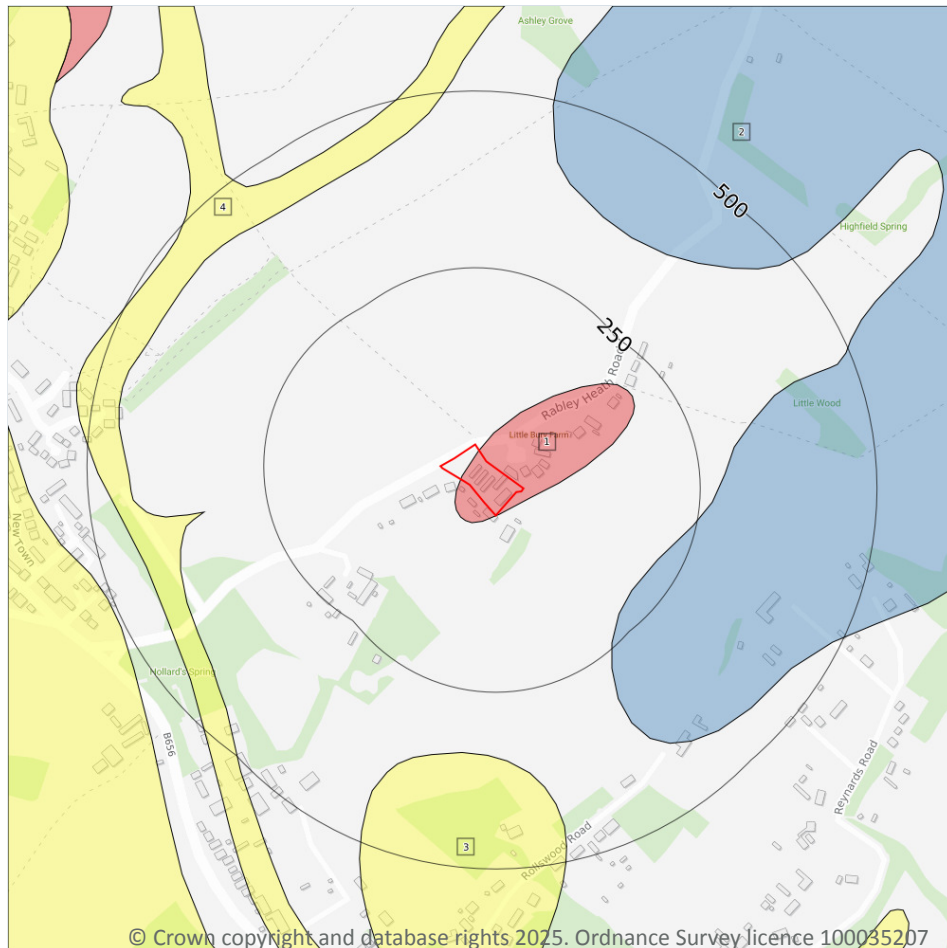
0

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

4

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on [page 31](#) >

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	210m SE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow



ID	Location	Designation	Description
3	338m S	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	341m W	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

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



Bedrock aquifer



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

5.2 Bedrock aquifer

Records within 500m

1

Aquifer status of groundwater held within bedrock geology.

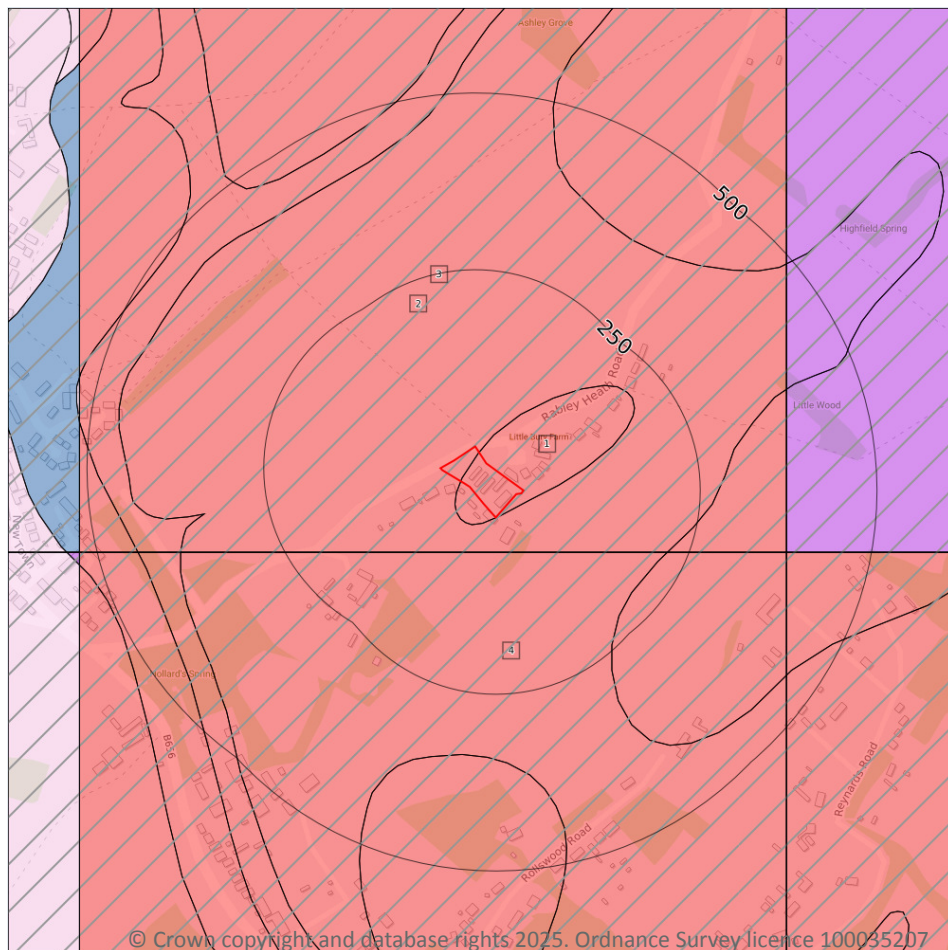
Features are displayed on the Bedrock aquifer map on [page 33](#) >

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

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



Groundwater vulnerability



— Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

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 34](#) >

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
2	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
4	49m S	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Intermediate Infiltration value: 40-70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal 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	1
------------------------	----------

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

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
3	Very significant soluble rocks are likely to be present with a moderate possibility of localised natural subsidence or dissolution-related degradation of bedrock, especially in adverse conditions such as concentrated surface or subsurface water flow.	12.0%

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

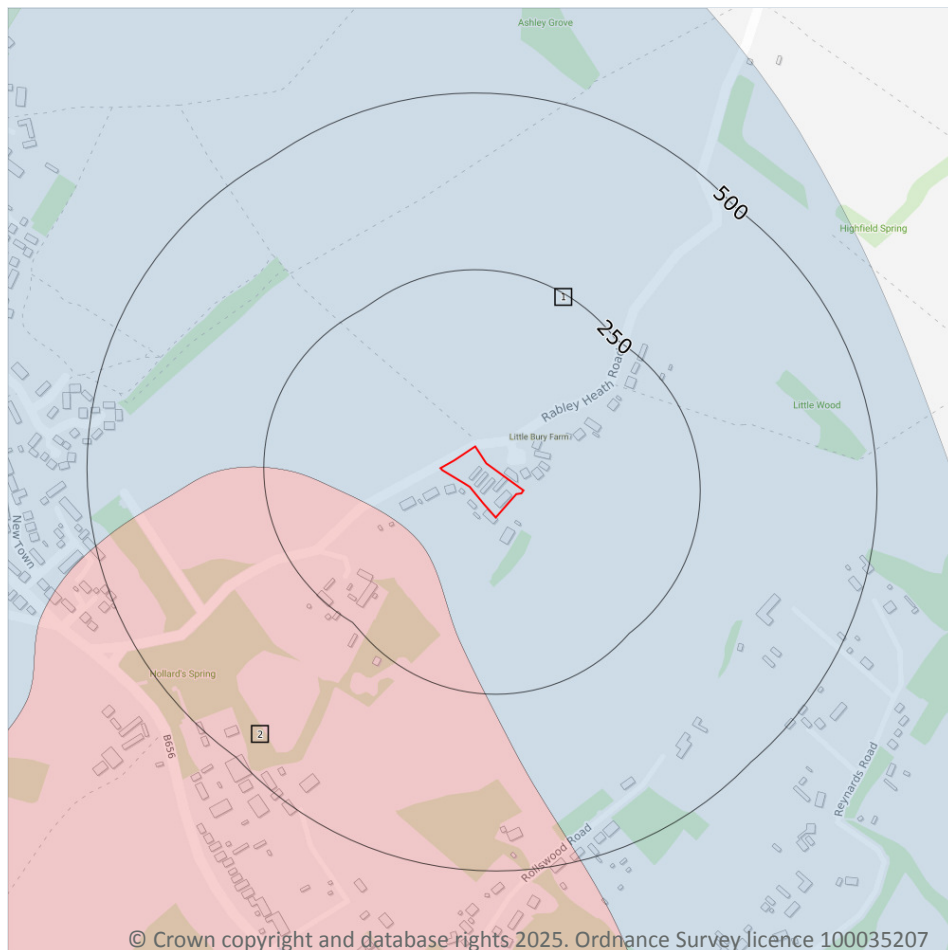


email on enquiries@environment-agency.gov.uk ↗.

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



Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Point features
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

17

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.

Features are displayed on the Abstractions and Source Protection Zones map on [page 37](#) >



ID	Location	Details	
-	846m NE	Status: Active Licence No: 29/38/02/0017 Details: Horticultural Watering Direct Source: THAMES GROUNDWATER Point: OLD WELWYN NURSERIES, WELWYN - BOREHOLE Data Type: Point Name: DAY Easting: 523100 Northing: 218800	Annual Volume (m ³): 1300.16 Max Daily Volume (m ³): 34.1 Original Application No: W/246 Original Start Date: 20/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 13/10/1967 Version End Date: -
-	846m NE	Status: Historical Licence No: 29/38/02/0017 Details: Horticultural Watering Direct Source: THAMES GROUNDWATER Point: OLD WELWYN NURSERIES, WELWYN - BOREHOLE Data Type: Point Name: DAY Easting: 523100 Northing: 218800	Annual Volume (m ³): 1300.16 Max Daily Volume (m ³): 34.09 Original Application No: W/246 Original Start Date: 20/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 13/10/1967 Version End Date: -
-	1149m S	Status: Historical Licence No: 29/38/02/0073 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'A' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522600 Northing: 216900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: 31/12/2001 Issue No: 100 Version Start Date: 22/07/1991 Version End Date: -
-	1149m S	Status: Historical Licence No: 29/38/02/0084 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION AT POINT A Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522600 Northing: 216900	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 26/11/2001 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -
-	1149m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'A' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522600 Northing: 216900	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/09/1966 Version End Date: -



ID	Location	Details	
-	1151m S	Status: Active Licence No: 29/38/02/0047/1 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'A' Data Type: Point Name: Affinity Water Limited Easting: 522650 Northing: 216900	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: NPS/WR/011805 Original Start Date: 20/09/1966 Expiry Date: - Issue No: 1 Version Start Date: 01/04/2018 Version End Date: -
-	1151m S	Status: Historical Licence No: 29/38/02/0089 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'A' Data Type: Point Name: Affinity Water Limited Easting: 522650 Northing: 216900	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 20/05/2008 Expiry Date: 31/03/2015 Issue No: 3 Version Start Date: 14/11/2012 Version End Date: -
-	1151m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'A' Data Type: Point Name: Affinity Water Limited Easting: 522650 Northing: 216900	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -
-	1435m S	Status: Historical Licence No: 29/38/02/0084 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION AT POINT B Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522800 Northing: 216630	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 26/11/2001 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -
-	1449m S	Status: Active Licence No: 29/38/02/0047/1 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'B' Data Type: Point Name: Affinity Water Limited Easting: 522880 Northing: 216630	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: NPS/WR/011805 Original Start Date: 20/09/1966 Expiry Date: - Issue No: 1 Version Start Date: 01/04/2018 Version End Date: -



ID	Location	Details	
-	1449m S	Status: Historical Licence No: 29/38/02/0089 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'B' Data Type: Point Name: Affinity Water Limited Easting: 522880 Northing: 216630	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 20/05/2008 Expiry Date: 31/03/2015 Issue No: 3 Version Start Date: 14/11/2012 Version End Date: -
-	1449m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'B' Data Type: Point Name: Affinity Water Limited Easting: 522880 Northing: 216630	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -
-	1465m S	Status: Historical Licence No: 29/38/02/0073 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'B' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522800 Northing: 216600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: 31/12/2001 Issue No: 100 Version Start Date: 22/07/1991 Version End Date: -
-	1465m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'B' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522800 Northing: 216600	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/09/1966 Version End Date: -
-	1611m W	Status: Historical Licence No: 29/38/02/0075 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: HEATH LANE, CODICTOE - BOREHOLE Data Type: Point Name: BRIDGE Easting: 520900 Northing: 218100	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 24/08/1993 Expiry Date: - Issue No: 100 Version Start Date: 24/08/1993 Version End Date: -



ID	Location	Details	
-	1633m W	Status: Active Licence No: 29/38/02/0045 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: CODICOTE PUMPING STATION Data Type: Point Name: Affinity Water Limited Easting: 521000 Northing: 217500	Annual Volume (m ³): 238942 Max Daily Volume (m ³): 654.64 Original Application No: NPS/WR/011805 Original Start Date: 20/09/1966 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -
-	1937m W	Status: Historical Licence No: 29/38/02/0030 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: BOTTOM FARM, CODICOTE - WELL Data Type: Point Name: SAPSED Easting: 520600 Northing: 217800	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 20/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/03/1966 Version End Date: -

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

13

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.

Features are displayed on the Abstractions and Source Protection Zones map on [page 37](#) >

ID	Location	Details	
-	1149m S	Status: Historical Licence No: 29/38/02/0073 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'A' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522600 Northing: 216900	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: 31/12/2001 Issue No: 100 Version Start Date: 22/07/1991 Version End Date: -
-	1149m S	Status: Historical Licence No: 29/38/02/0084 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILLPUMPING STATION AT POINT A Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522600 Northing: 216900	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 26/11/2001 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -
-	1149m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'A' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522600 Northing: 216900	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/09/1966 Version End Date: -
-	1151m S	Status: Active Licence No: 29/38/02/0047/1 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'A' Data Type: Point Name: Affinity Water Limited Easting: 522650 Northing: 216900	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: NPS/WR/011805 Original Start Date: 20/09/1966 Expiry Date: - Issue No: 1 Version Start Date: 01/04/2018 Version End Date: -
-	1151m S	Status: Historical Licence No: 29/38/02/0089 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'A' Data Type: Point Name: Affinity Water Limited Easting: 522650 Northing: 216900	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 20/05/2008 Expiry Date: 31/03/2015 Issue No: 3 Version Start Date: 14/11/2012 Version End Date: -



ID	Location	Details	
-	1151m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'A' Data Type: Point Name: Affinity Water Limited Easting: 522650 Northing: 216900	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -
-	1435m S	Status: Historical Licence No: 29/38/02/0084 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION AT POINT B Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522800 Northing: 216630	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 26/11/2001 Expiry Date: 31/03/2008 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -
-	1449m S	Status: Active Licence No: 29/38/02/0047/1 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'B' Data Type: Point Name: Affinity Water Limited Easting: 522880 Northing: 216630	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: NPS/WR/011805 Original Start Date: 20/09/1966 Expiry Date: - Issue No: 1 Version Start Date: 01/04/2018 Version End Date: -
-	1449m S	Status: Historical Licence No: 29/38/02/0089 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'B' Data Type: Point Name: Affinity Water Limited Easting: 522880 Northing: 216630	Annual Volume (m ³): 6196198 Max Daily Volume (m ³): 20457 Original Application No: - Original Start Date: 20/05/2008 Expiry Date: 31/03/2015 Issue No: 3 Version Start Date: 14/11/2012 Version End Date: -
-	1449m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION - POINT 'B' Data Type: Point Name: Affinity Water Limited Easting: 522880 Northing: 216630	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -



ID	Location	Details	
-	1465m S	Status: Historical Licence No: 29/38/02/0073 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'B' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522800 Northing: 216600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: - Expiry Date: 31/12/2001 Issue No: 100 Version Start Date: 22/07/1991 Version End Date: -
-	1465m S	Status: Historical Licence No: 29/38/02/0047 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: FULLING MILL PUMPING STATION 'B' Data Type: Point Name: THREE VALLEYS WATER PLC Easting: 522800 Northing: 216600	Annual Volume (m ³): 2045743 Max Daily Volume (m ³): 9092.19 Original Application No: - Original Start Date: 20/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 20/09/1966 Version End Date: -
-	1633m W	Status: Active Licence No: 29/38/02/0045 Details: Potable Water Supply - Direct Direct Source: THAMES GROUNDWATER Point: CODICOTE PUMPING STATION Data Type: Point Name: Affinity Water Limited Easting: 521000 Northing: 217500	Annual Volume (m ³): 238942 Max Daily Volume (m ³): 654.64 Original Application No: NPS/WR/011805 Original Start Date: 20/09/1966 Expiry Date: - Issue No: 102 Version Start Date: 14/11/2012 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m	2
----------------------------	----------

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination. Features are displayed on the Abstractions and Source Protection Zones map on [page 37 >](#)

ID	Location	Type	Description
1	On site	2	Outer catchment
2	97m SW	1	Inner catchment

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



5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

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

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



6 Hydrology



- 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

0

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

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

0

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.

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 46](#) >

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	On site	River	Mimram (Codicote Bottom to Lee)	GB106038033270	Lee Upper	Lee Upper

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 46](#) >

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	1112m S	River	Mimram (Codicote Bottom to Lee)	GB106038033270 ↗	Moderate	Fail	Moderate	2019

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 46](#) >

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	Upper Lee Chalk	GB40601G602900 ↗	Poor	Poor	Poor	2019

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 the sea

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; 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). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

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

7.2 Historical Flood Events

Records within 250m

0

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

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

7.3 Flood Defences

Records within 250m

0

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

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



7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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

7.5 Flood Storage Areas

Records within 250m

0

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

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

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

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

7.7 Flood Zone 3

Records within 50m

0

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

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



8 Surface water flooding

8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

Negligible

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

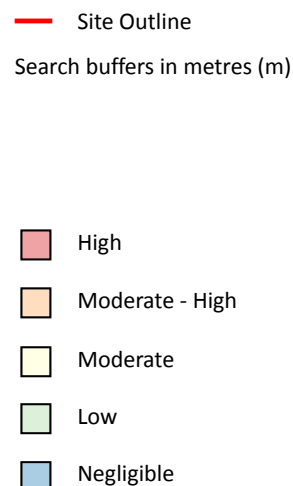
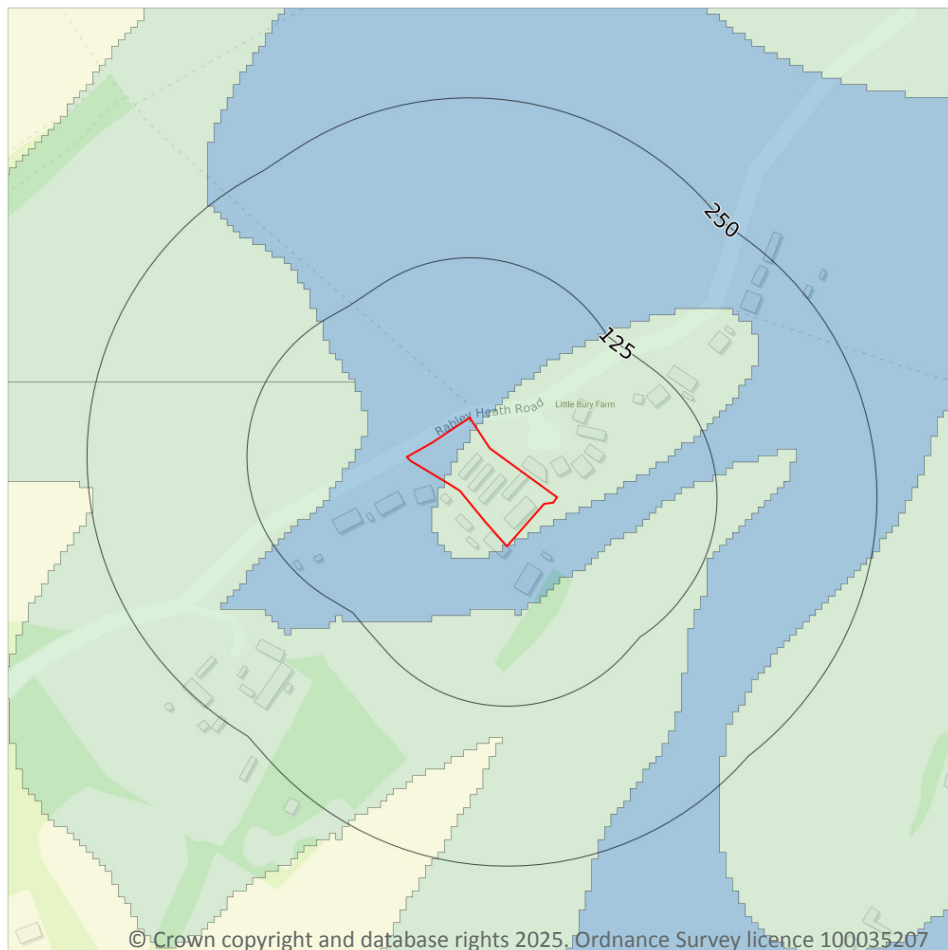
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site. The table below shows the maximum flood depths for a range of return periods for the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

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

This data is sourced from Ambiental Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

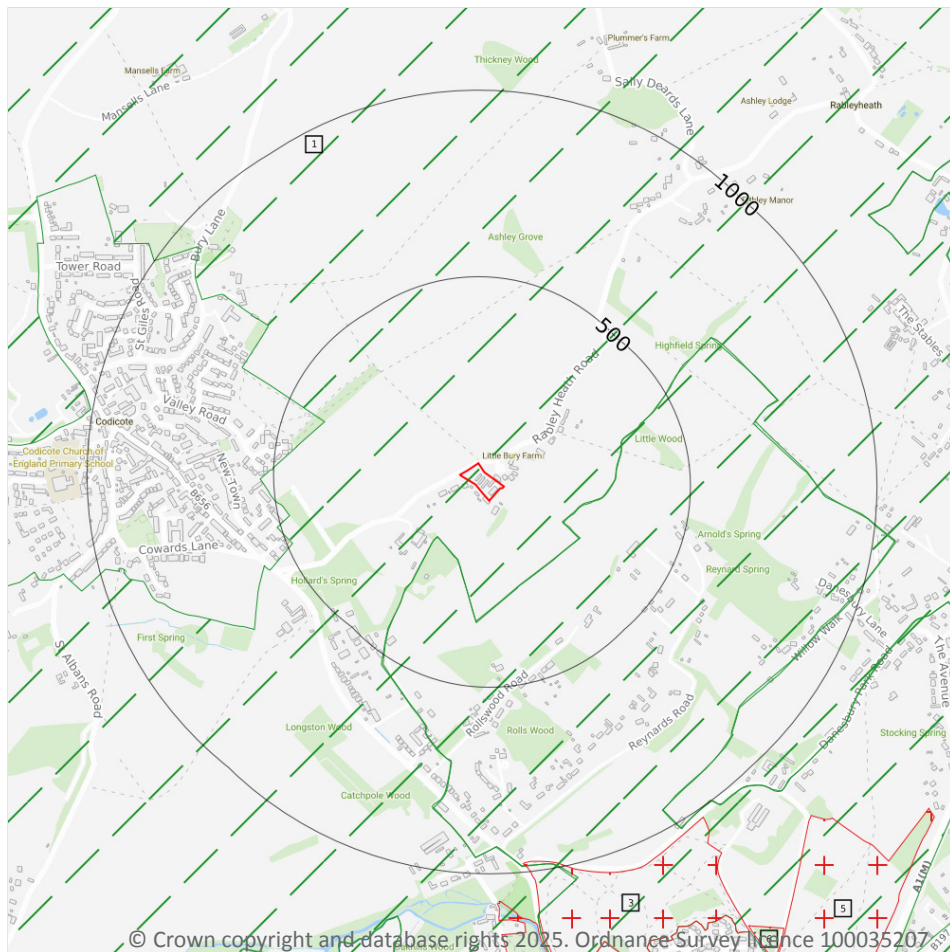
Low

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 53](#) >

This data is sourced from Ambiantal 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

5

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 54 >](#)

ID	Location	Name	Data source
3	973m S	Danesbury Park	Natural England
4	1074m S	Singlers Marsh	Natural England
5	1206m SE	Danesbury Park	Natural England
6	1335m SE	Danesbury Park	Natural England
-	1567m E	Mardley Heath	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m

6

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 54 >](#)

ID	Location	Name	Woodland Type
-	1467m E	Unknown	Ancient & Semi-Natural Woodland
-	1517m NE	Unknown	Ancient & Semi-Natural Woodland
-	1541m E	Unknown	Ancient & Semi-Natural Woodland
-	1583m E	Unknown	Ancient & Semi-Natural Woodland
-	1873m SE	Puttockhill Wood	Ancient Replanted Woodland
-	1972m SE	Puttockhill Wood	Ancient & Semi-Natural Woodland

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



10.8 Biosphere Reserves

Records within 2000m

0

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

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

10.9 Forest Parks

Records within 2000m

0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

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

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

10.11 Green Belt

Records within 2000m

2

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

Features are displayed on the Environmental designations map on [page 54 >](#)

ID	Location	Name	Local Authority name
1	On site	London Green Belt	North Hertfordshire
2	168m SW	London Green Belt	Welwyn Hatfield

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**2**

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	LEE NVZ	Surface Water	443	Existing
1464m E	LEE NVZ	Surface Water	443	Existing

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



SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site	0
-----------------	---

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

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0
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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



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

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

3

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.

Features are displayed on the Visual and cultural designations map on [page 61](#) >

ID	Location	Name	Grade	Reference Number	Listed date
A	181m SW	North Barn At Sisservernes	II	1102815	21/03/1984
A	197m SW	East Barn At Sisservernes	II	1347303	21/03/1984
1	244m SW	Sisservernes Farmhouse	II	1173790	21/03/1984

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

11.7 Registered Parks and Gardens

Records within 250m

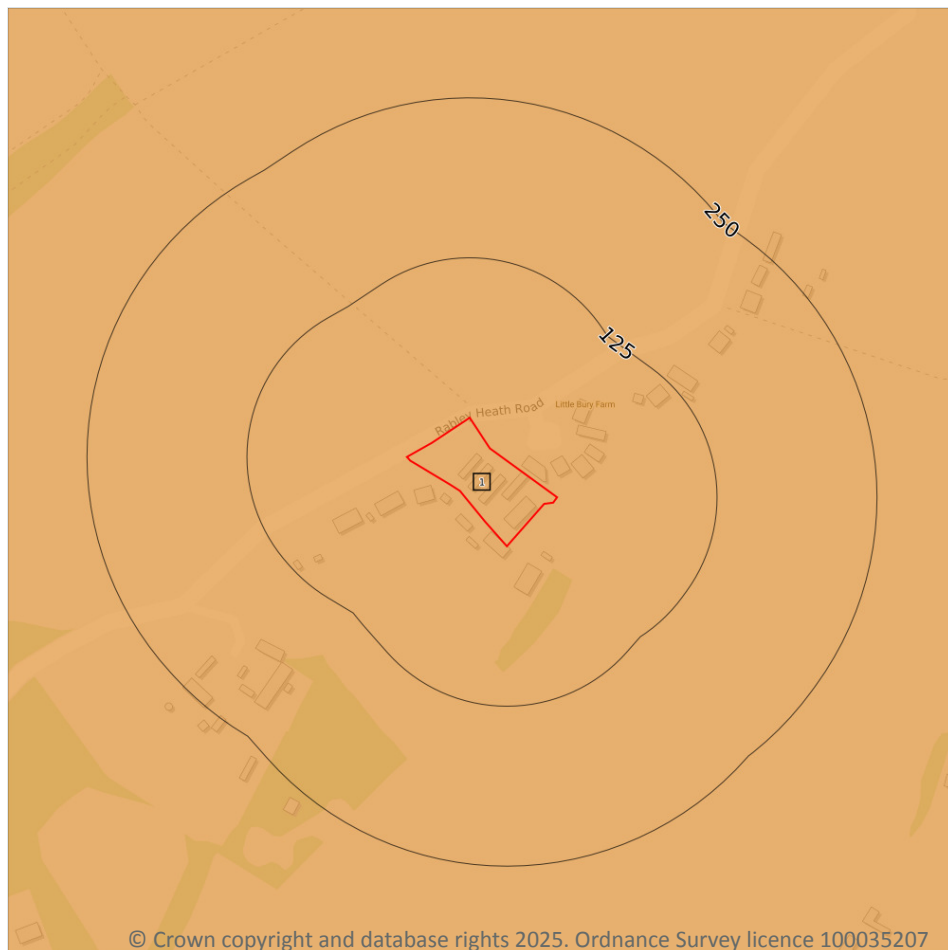
0

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 Historic England, 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

1

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

Features are displayed on the Agricultural designations map on [page 64](#) >

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

This data is sourced from Natural England.



12.2 Open Access Land

Records within 250m

0

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

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

12.3 Tree Felling Licences

Records within 250m

0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m

1

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

Location	Reference	Scheme	Start Date	End Date
5m N	1270229	Countryside Stewardship (Middle Tier)	01/01/2022	31/12/2026

This data is sourced from Natural England.



13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m

0

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

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

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

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

0

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

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on [page 67](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	TL21NW

This data is sourced from the British Geological Survey.



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

14.2 Artificial and made ground (10k)

Records within 500m

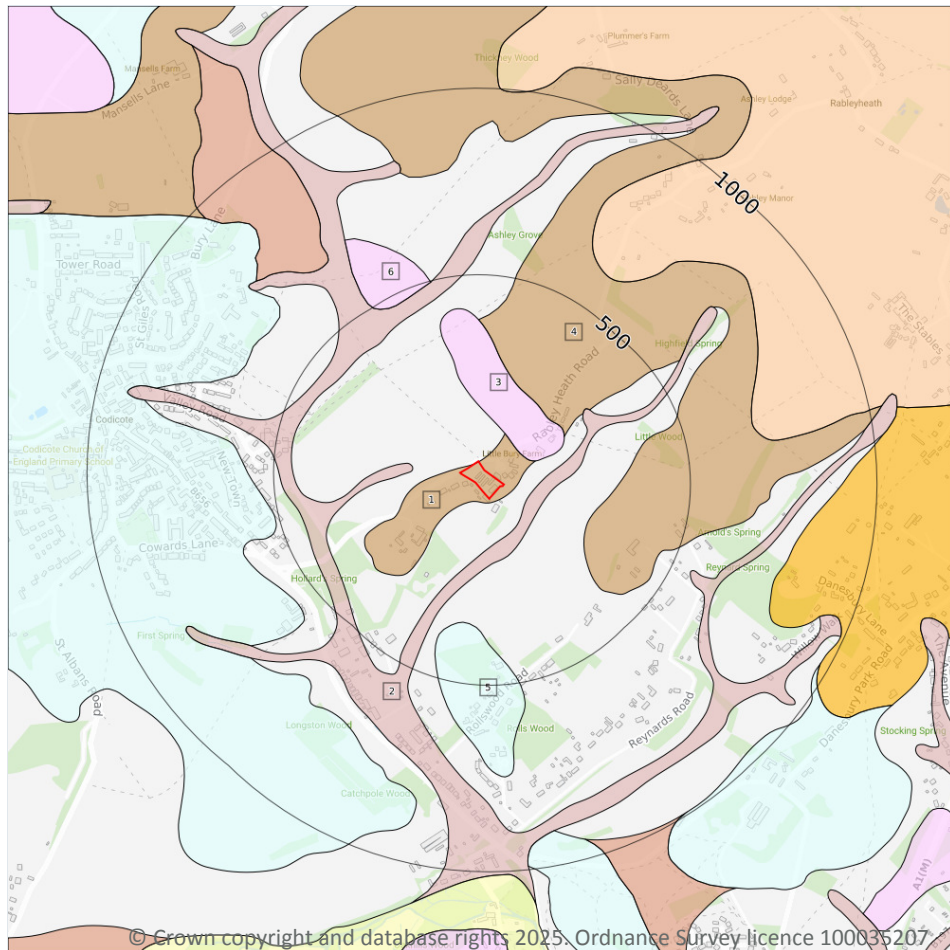
0

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

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (10k)

Superficial geology (10k)
Please see table for more details.

14.3 Superficial geology (10k)

Records within 500m

6

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 69](#) >

ID	Location	LEX Code	Description	Rock description
1	On site	CWF-XCZSV	Clay-With-Flints Formation-Clay, Silt, Sand And Gravel	Clay, silt, sand and gravel
2	73m SE	HEAD-XCZSV	Head-Clay, Silt, Sand And Gravel	Clay, silt, sand and gravel
3	92m NE	GFDUA-XSV	Glaciofluvial Deposits, Anglian-Sand And Gravel	Sand and gravel

ID	Location	LEX Code	Description	Rock description
4	207m NE	CWF-XCZSV	Clay-With-Flints Formation-Clay, Silt, Sand And Gravel	Clay, silt, sand and gravel
5	338m S	LOFT-CSV	Lowestoft Formation-Gravelly Sandy Clay	Gravelly sandy clay
6	472m NW	GFDUA-XSV	Glaciofluvial Deposits, Anglian-Sand And Gravel	Sand and gravel

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

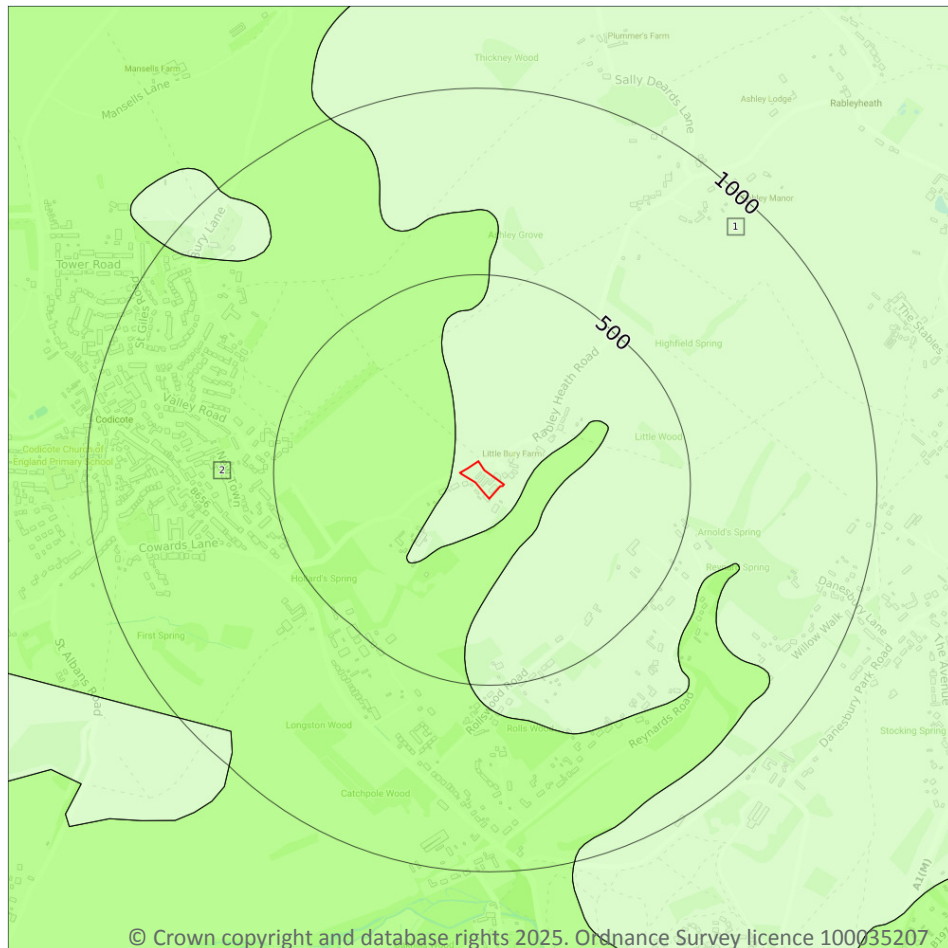
0

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

2

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 71](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	SECK-CHLK	Seafood Chalk Formation-Chalk	Coniacian
2	23m W	LECH-CHLK	Lewes Nodular Chalk Formation-Chalk	Turonian

This data is sourced from the British Geological Survey.



14.6 Bedrock faults and other linear features (10k)

Records within 500m

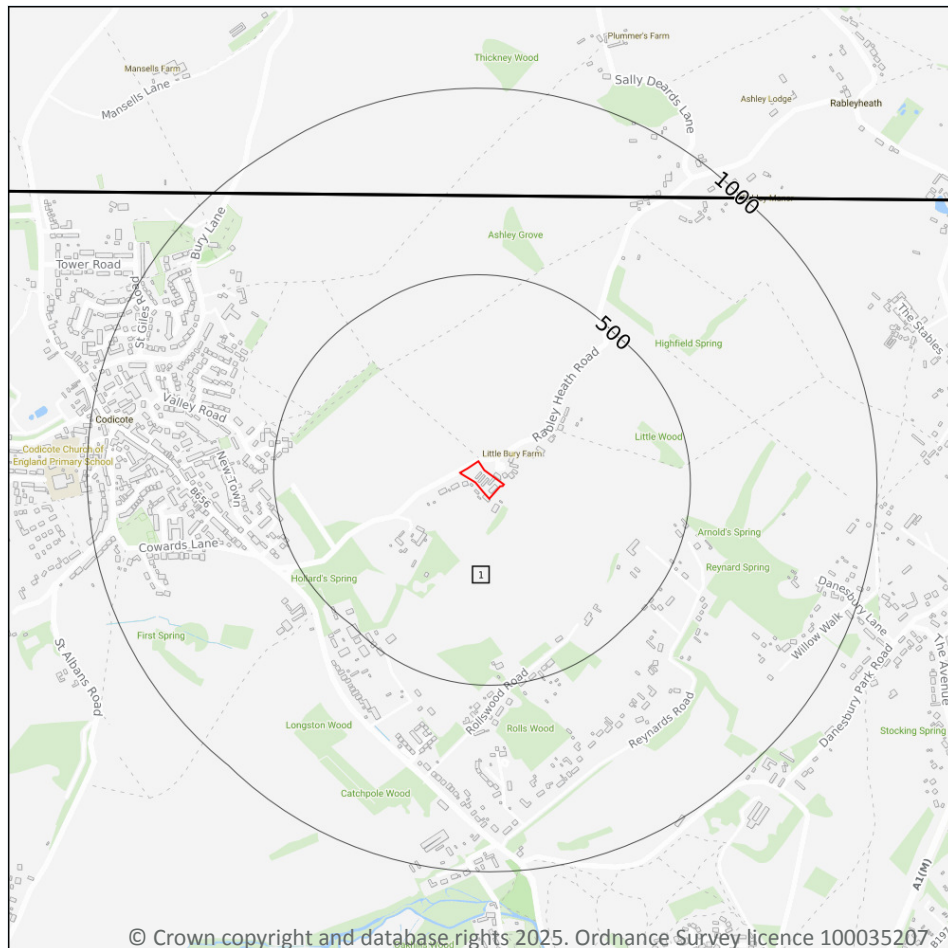
0

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.

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 73](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	Full	Full	No coverage	EW239_hertford_v4

This data is sourced from the British Geological Survey.



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

15.2 Artificial and made ground (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

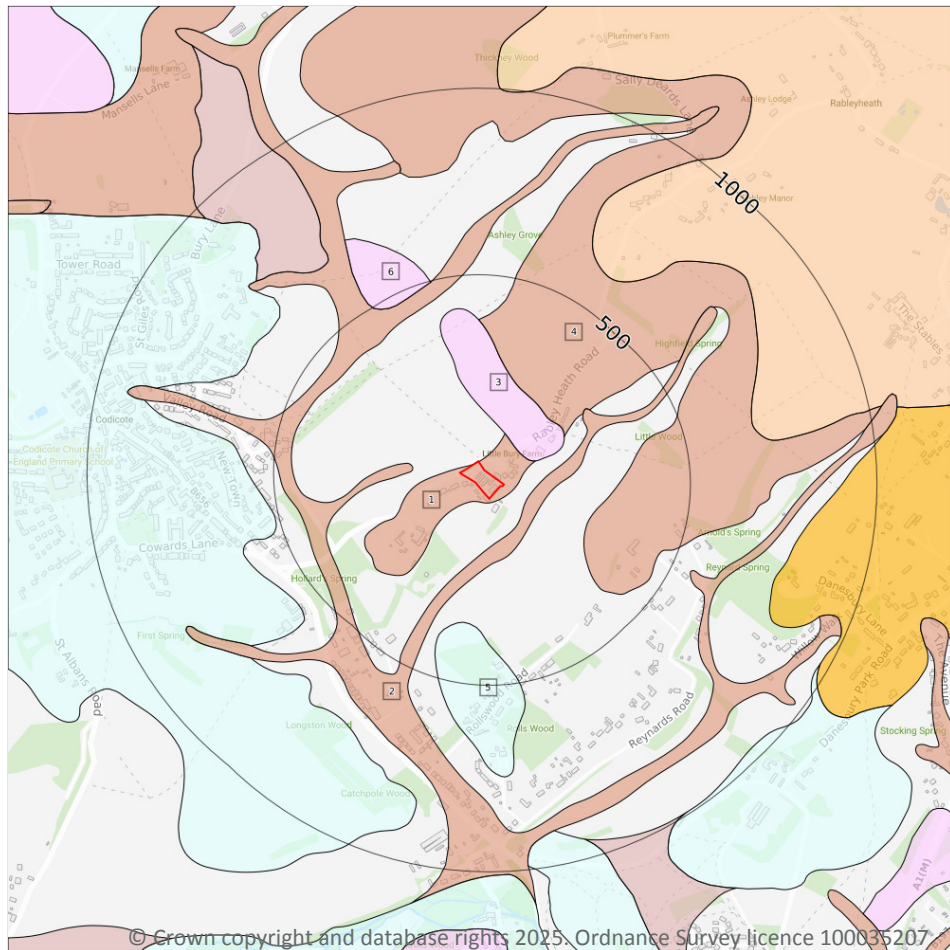
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m

6

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 75 >](#)

ID	Location	LEX Code	Description	Rock description
1	On site	CWF-XCZSV	Clay-with-flints Formation	Clay, silt, sand and gravel
2	73m SE	HEAD-XCZSV	Head	Clay, silt, sand and gravel
3	92m NE	GFDUA-XSV	Glaciofluvial deposits, Anglian	Sand and gravel



ID	Location	LEX Code	Description	Rock description
4	207m NE	CWF-XCZSV	Clay-with-flints Formation	Clay, silt, sand and gravel
5	338m S	LOFT-CSV	Lowestoft Formation	Gravelly sandy clay
6	472m NW	GFDUA-XSV	Glaciofluvial deposits, Anglian	Sand and gravel

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m

1

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	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

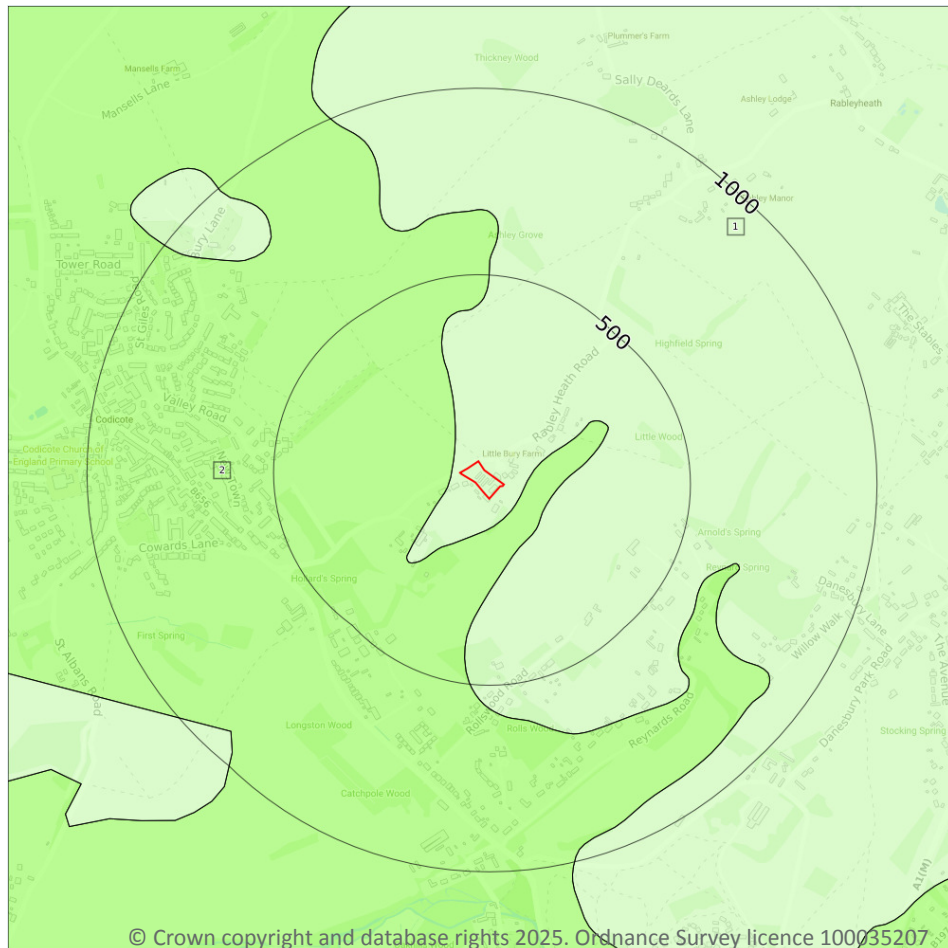
0

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

2

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 77](#) >

ID	Location	LEX Code	Description	Rock age
1	On site	SECK-CHLK	Seafood Chalk Formation-Chalk	Coniacian
2	23m W	LECH-CHLK	Lewes Nodular Chalk Formation-Chalk	Turonian

This data is sourced from the British Geological Survey.



15.9 Bedrock permeability (50k)

Records within 50m

1

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	Very High	Very High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.



16 Boreholes



— Site Outline
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m

1

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.

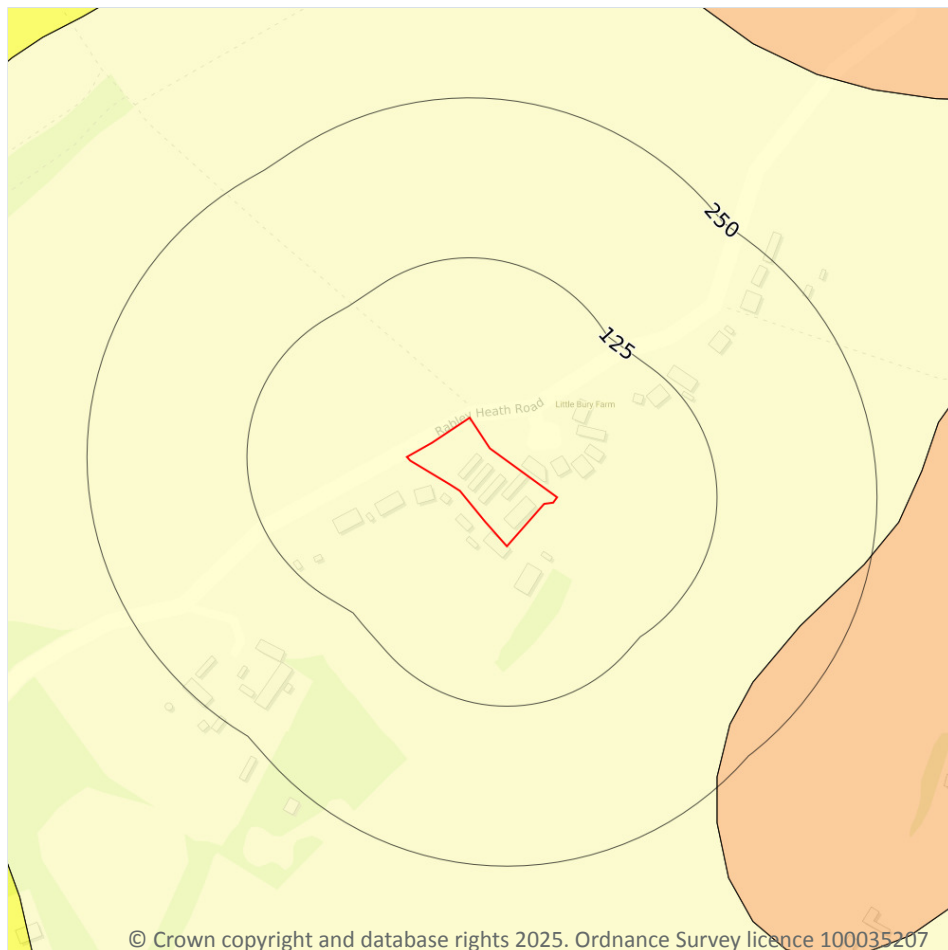
Features are displayed on the Boreholes map on [page 79 >](#)

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	243m SW	522370 217920	SISSERVERNES FARM CODICOTE	32.0	N	533235 ↗

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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17.1 Shrink swell clays

Records within 50m

1

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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 80 >](#)

Location	Hazard rating	Details
On site	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.2 Running sands

Records within 50m

2

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 81](#) >

Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.



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



- 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.

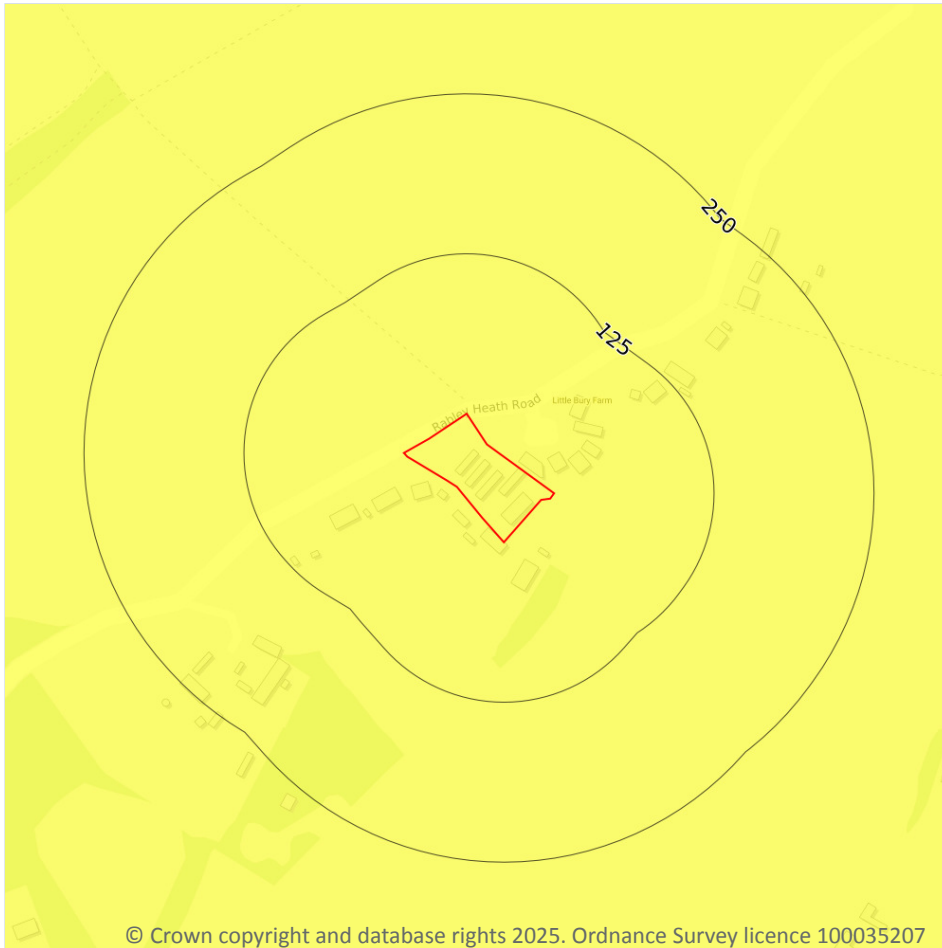
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 83](#) >

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☒ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

17.4 Collapsible deposits

Records within 50m

1

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

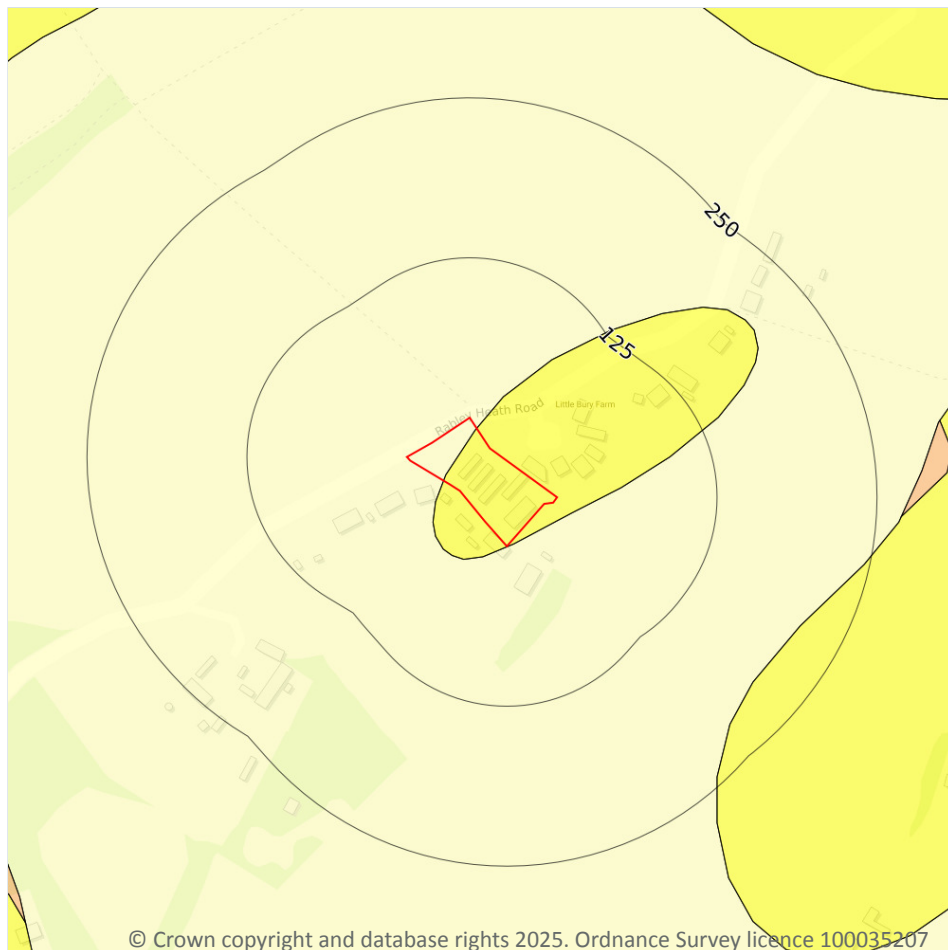
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 84 >](#)

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



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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17.5 Landslides

Records within 50m

2

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 85](#) >

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

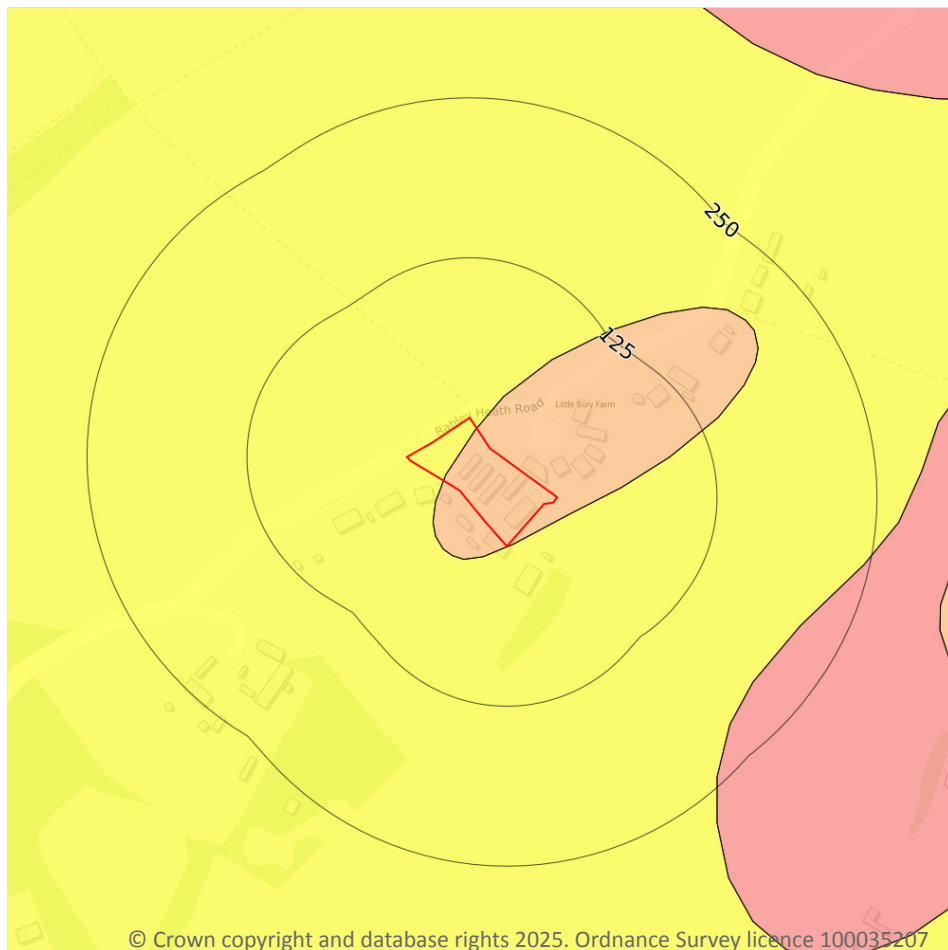


Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline
- Search buffers in metres (m)
- ☐ No data
 - ☐ Negligible
 - ☐ Very low
 - ☐ Low
 - ☐ Moderate
 - ☐ High

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17.6 Ground dissolution of soluble rocks

Records within 50m

2

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 87](#)

Location	Hazard rating	Details
On site	Very low	Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.

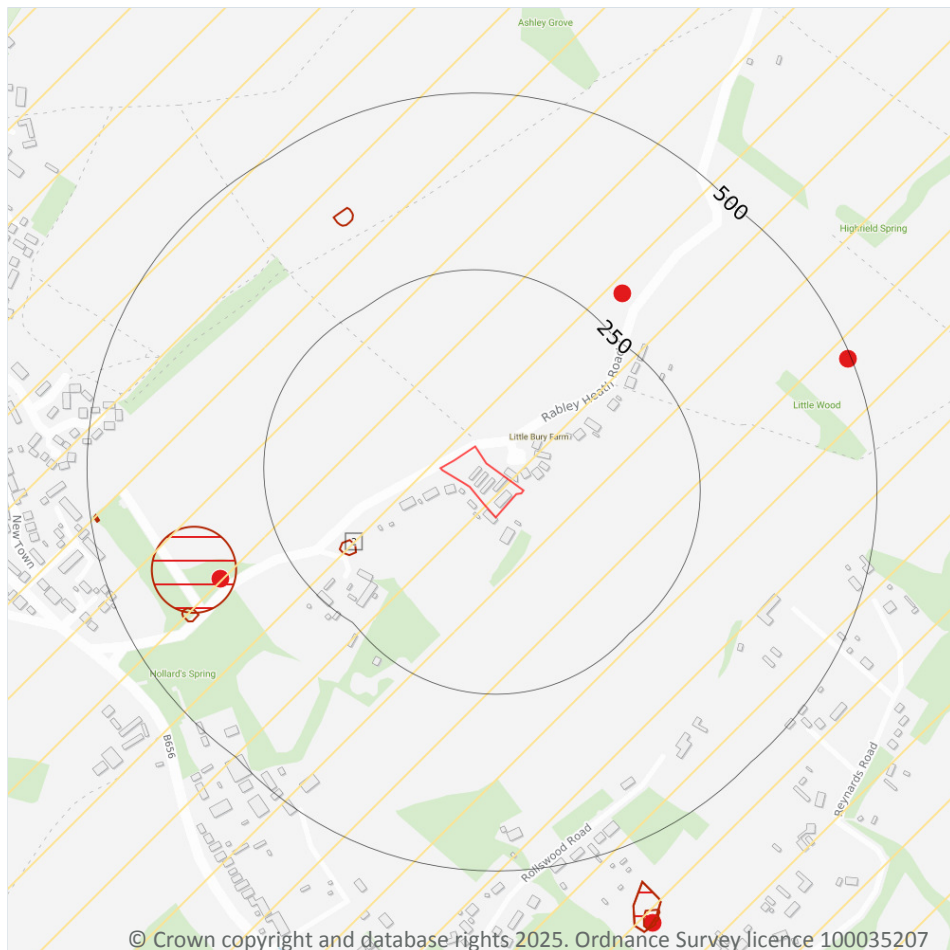


Location	Hazard rating	Details
On site	Low	Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not be considered except in exceptional circumstances.

This data is sourced from the British Geological Survey.



18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining
- 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 BritPits

Records within 500m

3

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.

Features are displayed on the Mining and ground workings map on [page 89](#) >

ID	Location	Details	Description
3	300m NE	Name: Sisserfens Chalk Pit Address: Codicote, STEVENAGE, Hertfordshire Commodity: Chalk Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
A	349m SW	Name: Sisserfens Chalk Pit Address: Codicote, STEVENAGE, Hertfordshire Commodity: Chalk Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.
6	495m E	Name: Litle Wood Pit Address: Codicote, STEVENAGE, Hertfordshire Commodity: Chalk Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Delf, Delph, Gravel Pit, Sand Pit, Sand and Gravel Pit, Clay Pit, Pit, Opencast Coal Site or Surface Mine. It may be mapped as Worked Ground or Worked and Made Ground on BGS mapping. Status description: Site which has ceased to extract minerals. May be considered as 'Closed' by operator. May be considered to have 'Active', 'Dormant' or 'Expired' planning permissions by the Mineral Planning Authority.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m

1

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

Features are displayed on the Mining and ground workings map on [page 89](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
2	163m SW	Gravel Pit	1947	1:10560

This is data is sourced from Ordnance Survey/Groundsure.



18.3 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 data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m

0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from 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

1

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 and ground workings map on [page 89](#) >

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Chalk	A	Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.



18.7 JPB mining areas

Records on site

0

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

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m

0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m

0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m

0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.



18.11 BGS mine plans

Records within 500m

0

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.12 Coal mining

Records on site

0

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

This data is sourced from the Coal Authority.

18.13 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.

18.14 Gypsum areas

Records on site

0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site

0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.



18.16 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 Ground cavities and sinkholes

19.1 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 Stantec UK Ltd.

19.2 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 Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

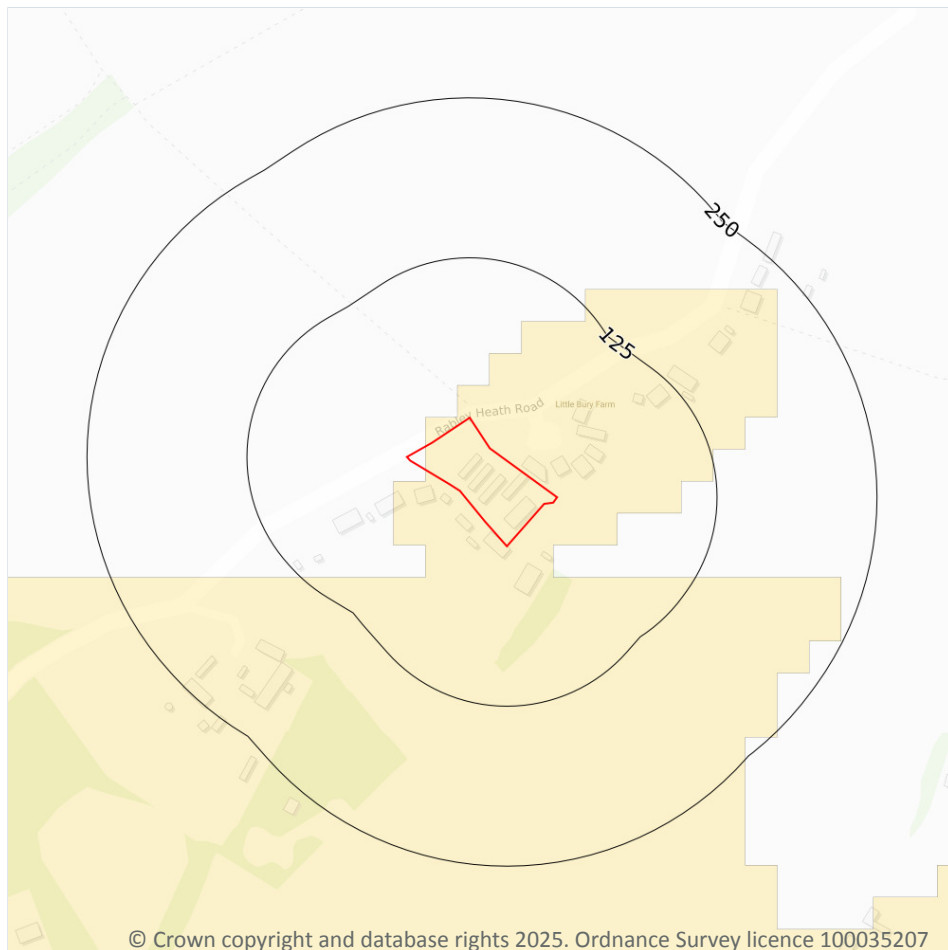
Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.



This data is sourced from Groundsure.



20 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%

20.1 Radon

Records on site

2

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 97 >](#)

Location	Estimated properties affected	Radon Protection Measures required
On site	Between 1% and 3%	None



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

This data is sourced from the British Geological Survey and UK Health Security Agency.



21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m

4

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 km². 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 km²; 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	30 - 45 mg/kg
11m W	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg
49m 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

This data is sourced from the British Geological Survey.

21.2 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 km²).

This data is sourced from the British Geological Survey.



21.3 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 km².

This data is sourced from the British Geological Survey.



22 Railway infrastructure and projects

22.1 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.

22.2 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.

22.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 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.

22.5 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.

22.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.

22.7 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.

22.8 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.

22.9 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> ↗.

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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: County Series

Map date: 1881

Scale: 1:2,500

Printed at: 1:2,500



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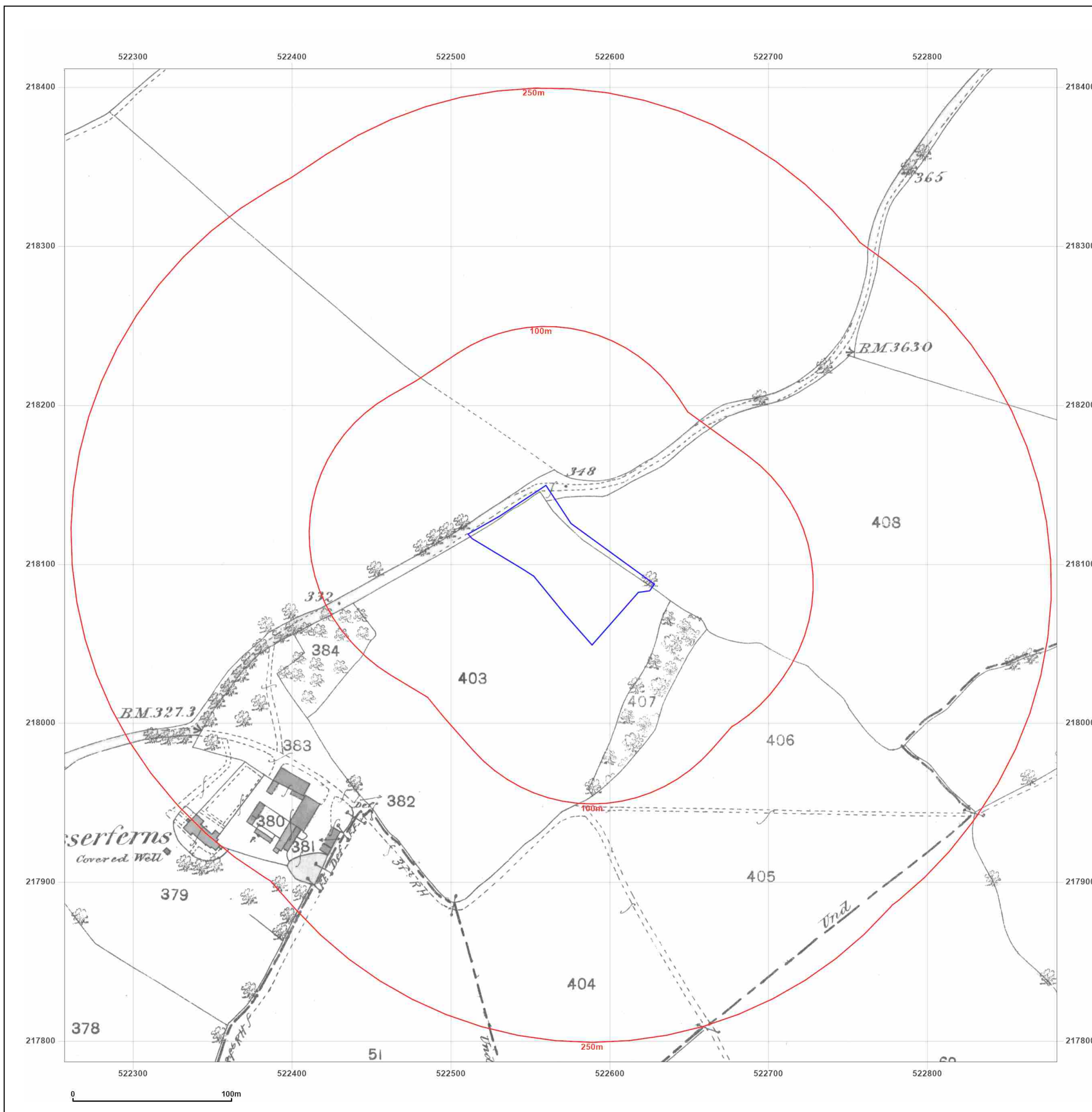


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Client Ref: 25.11.018/501
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Grid Ref: 522569, 218099

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1898
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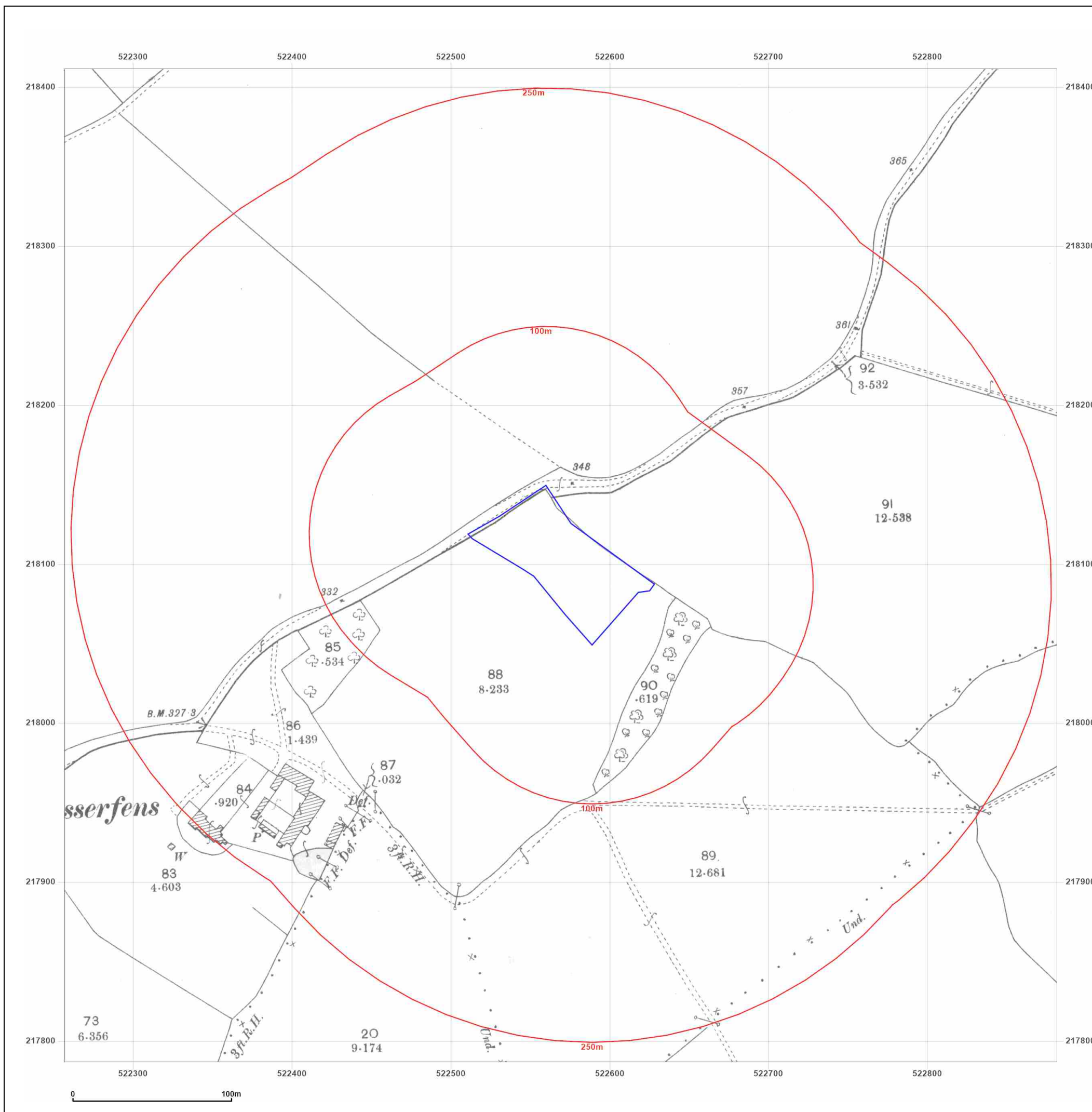


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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: County Series

Map date: 1924

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1924
Revised 1924
Edition N/A
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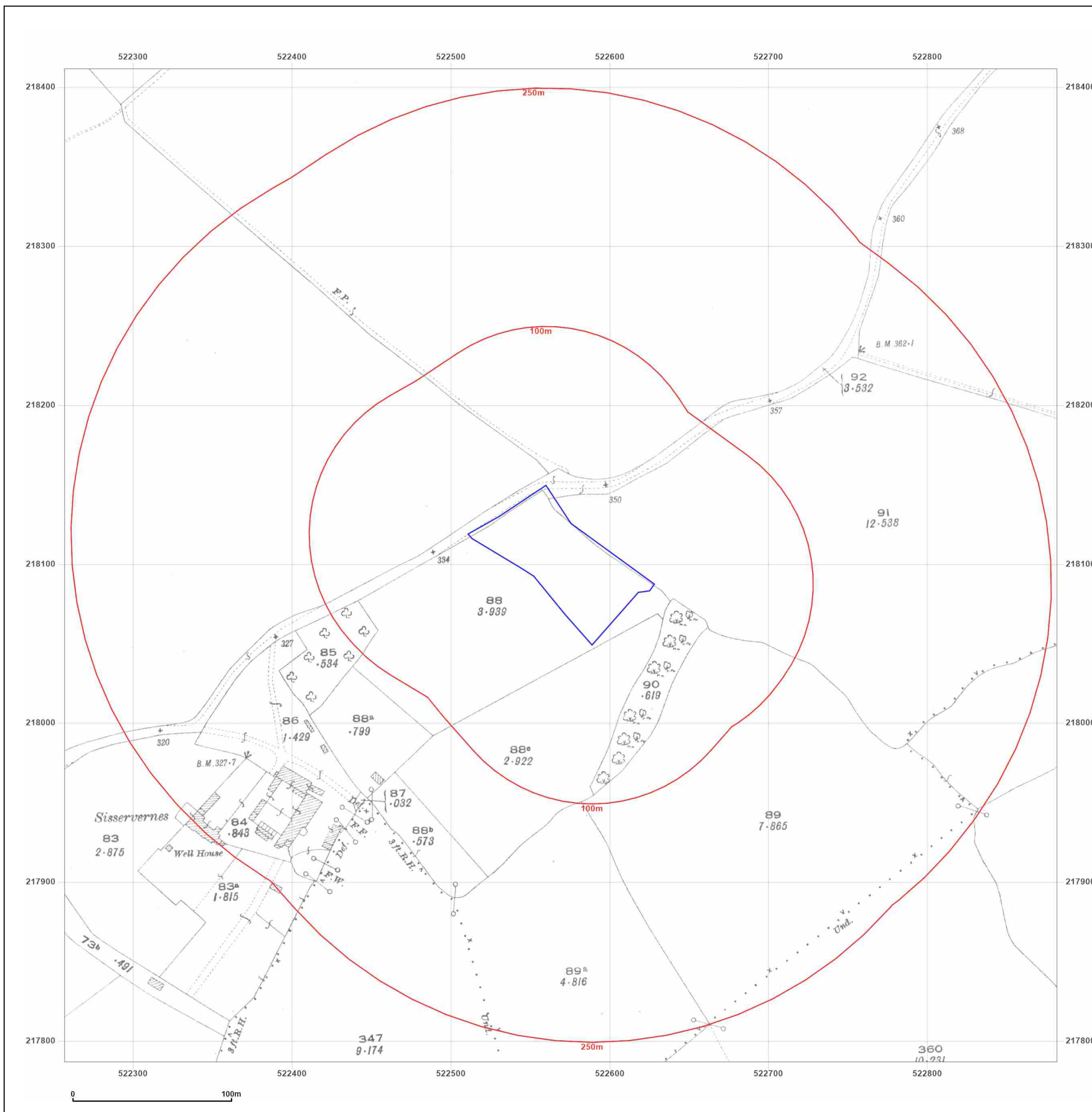


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Grid Ref: 522569, 218099

Map Name: County Series

Map date: 1937

Scale: 1:2,500

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Revised 1937
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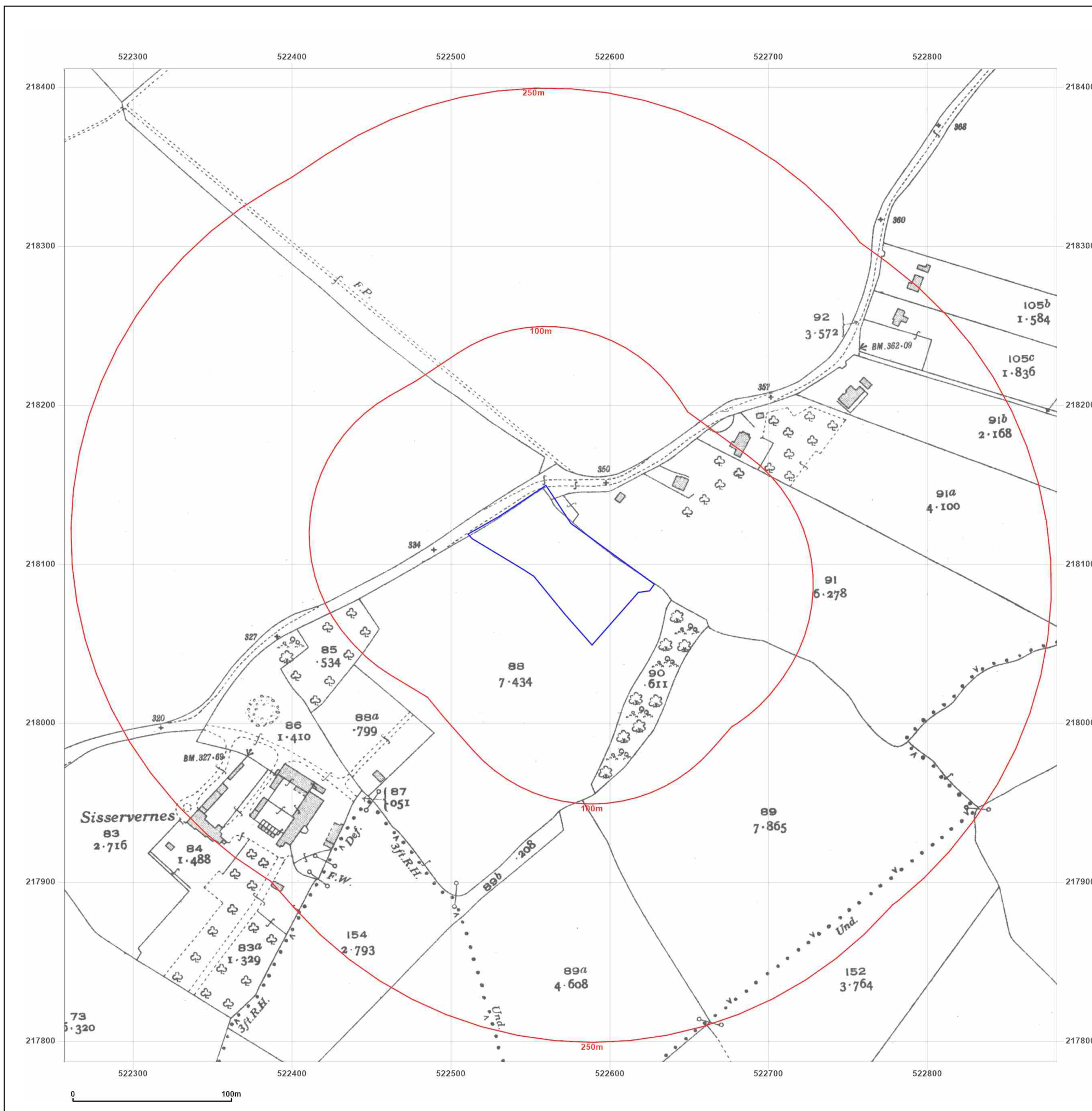


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Grid Ref: 522569, 218099

Map Name: National Grid

Map date: 1974

Scale: 1:2,500

Printed at: 1:2,500



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Edition N/A
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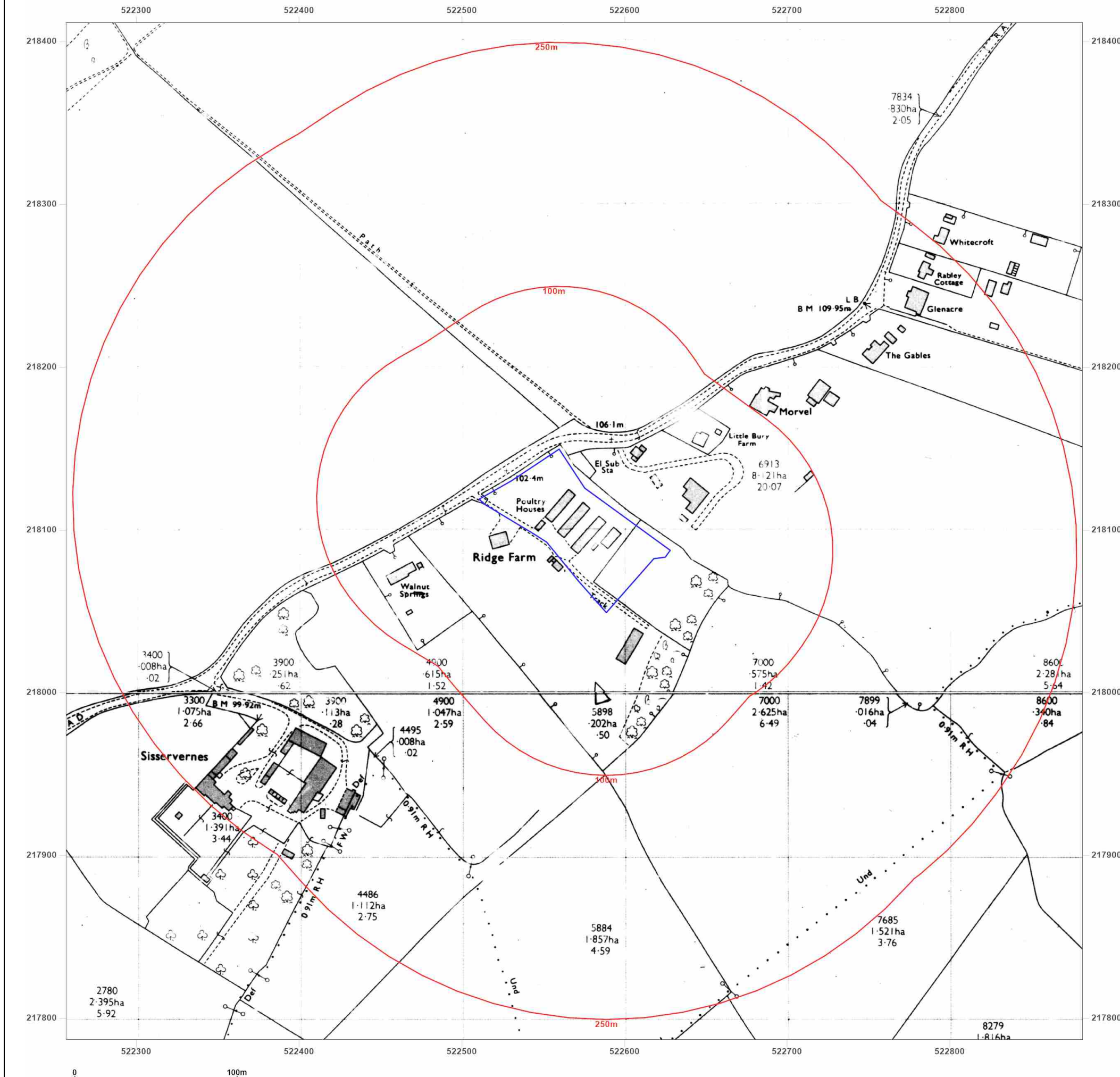


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Client Ref: 25.11.018/501
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Grid Ref: 522569, 218099

Map Name: National Grid

Map date: 1979

Scale: 1:2,500

Printed at: 1:2,500



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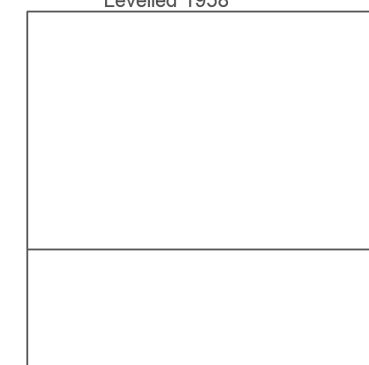
Map date: 1990

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1990
Edition N/A
Copyright 1990
Levelled 1958

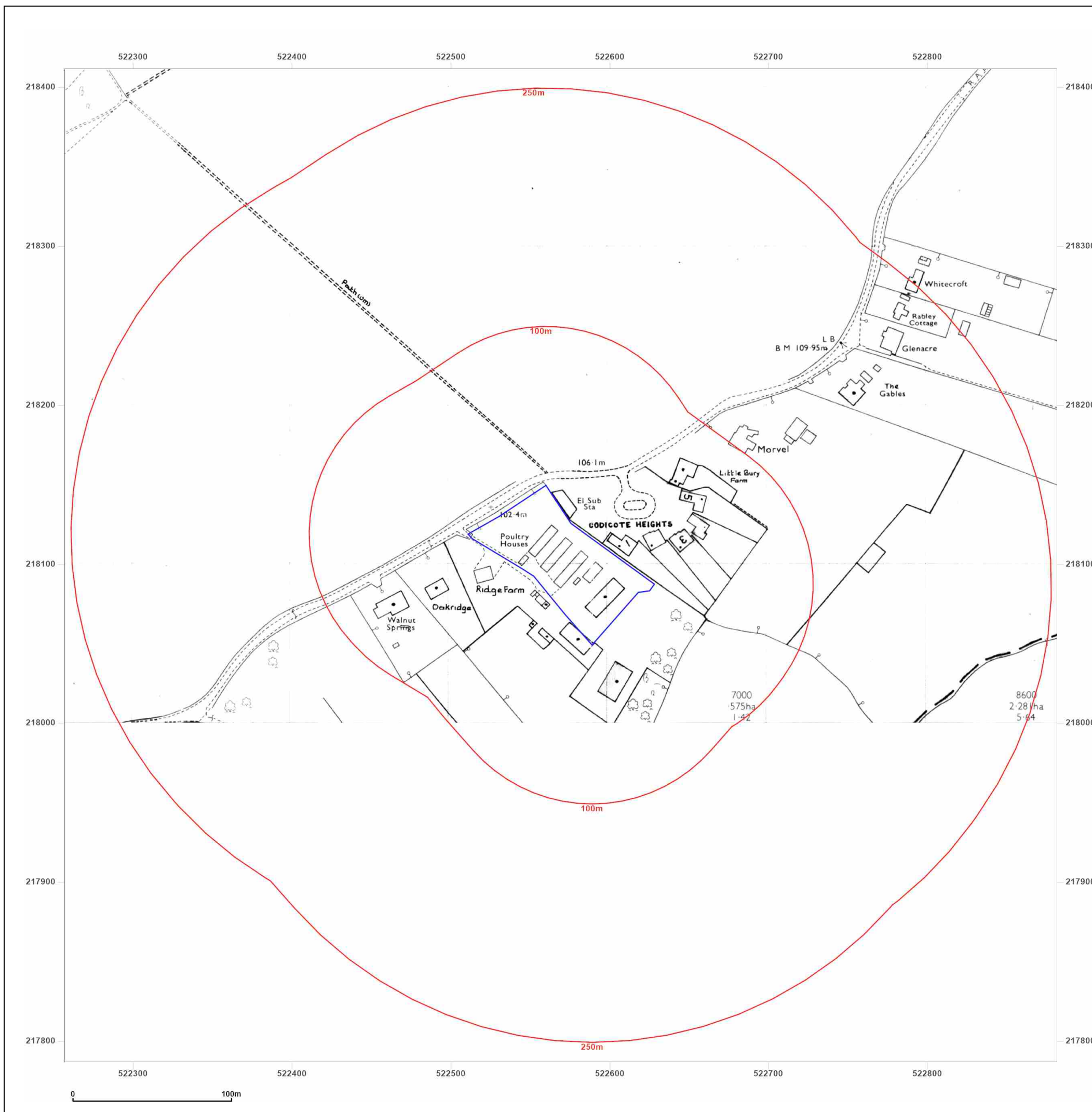


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Grid Ref: 522569, 218099

Map Name: National Grid

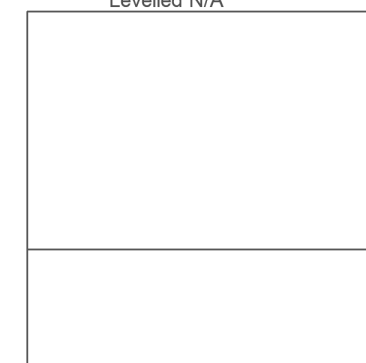
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Edition N/A
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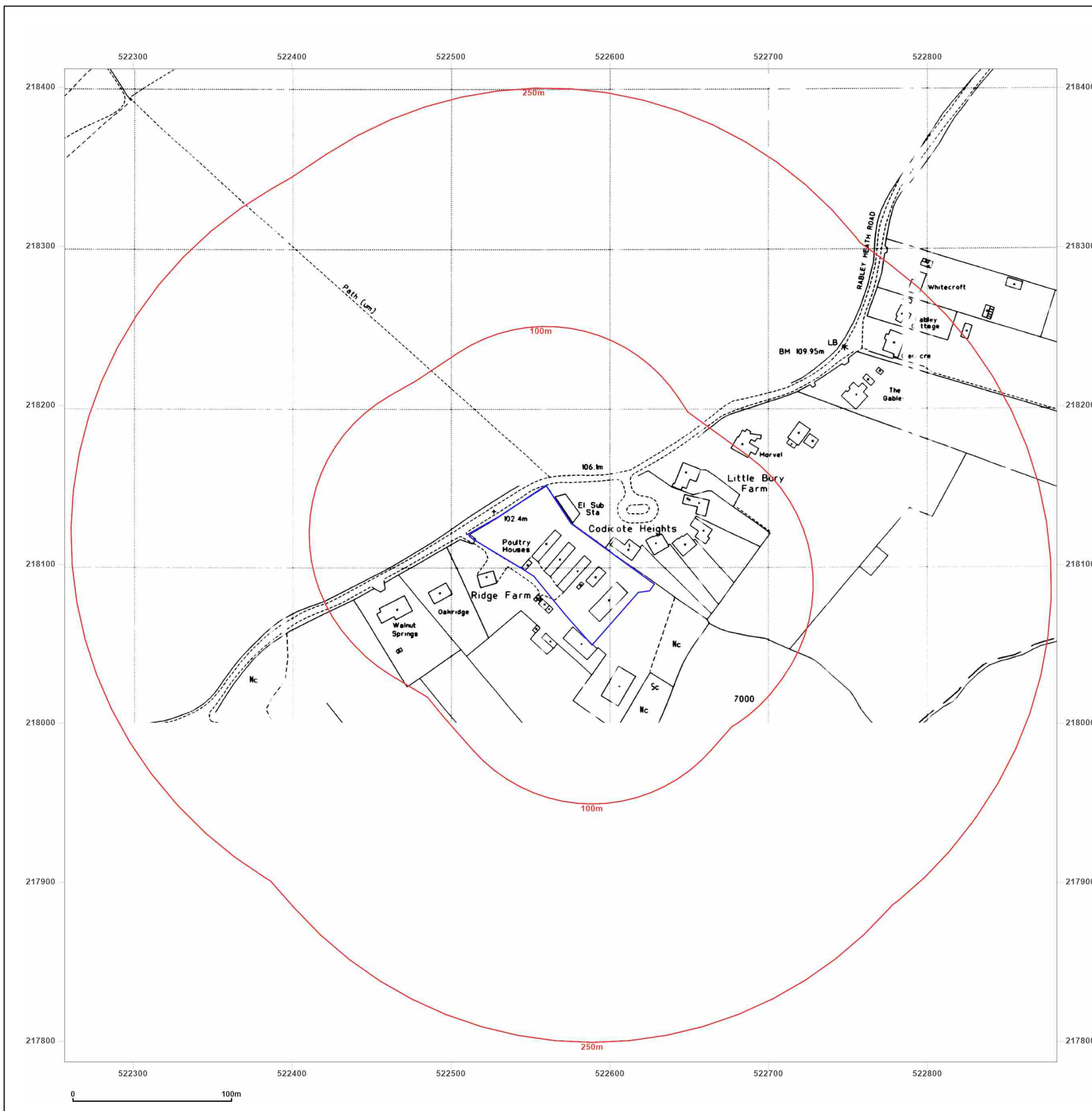


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Map Name: National Grid

Map date: 1989-1993

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1958
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Edition N/A
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Surveyed 1993
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Edition N/A
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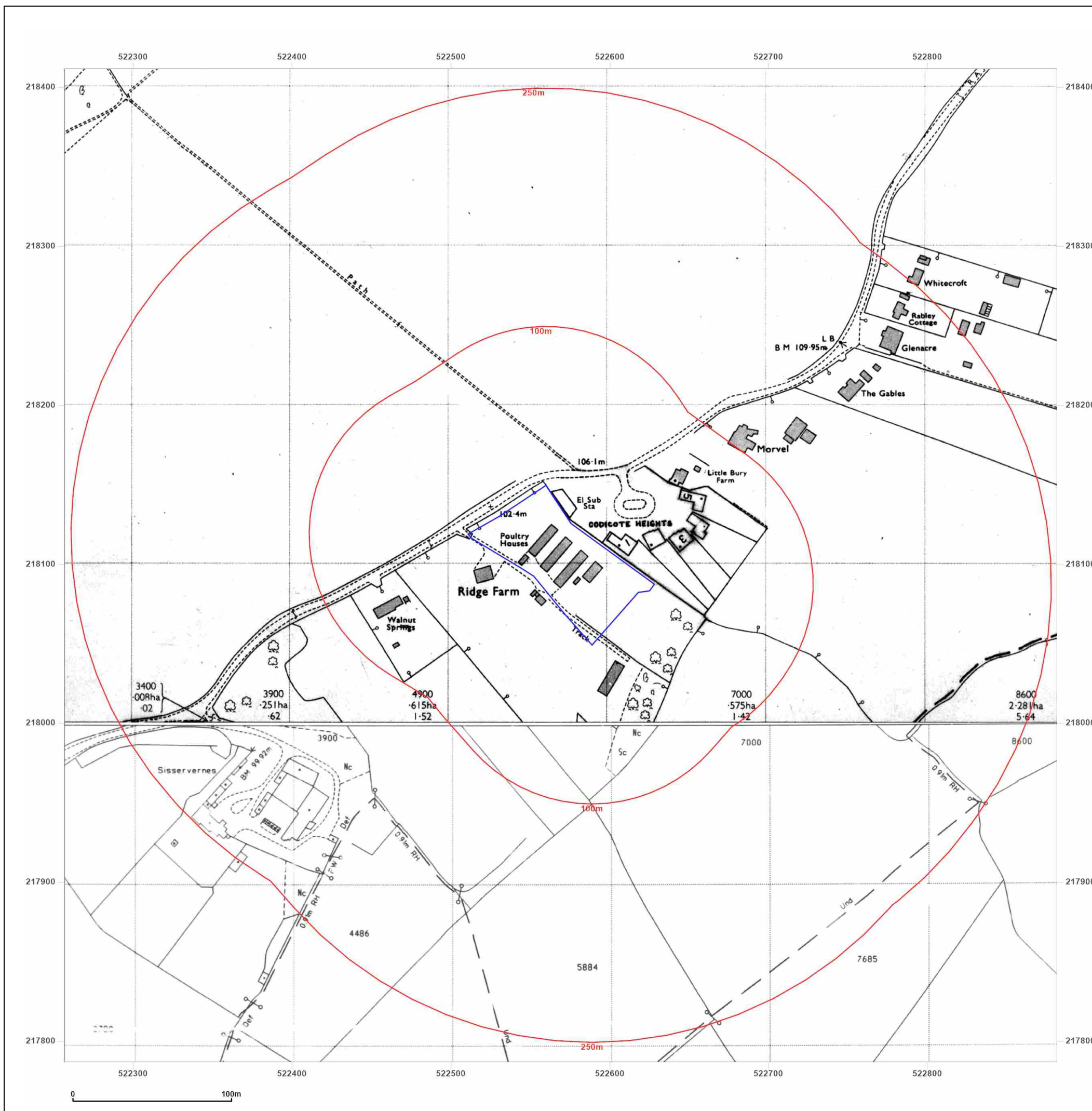


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Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003

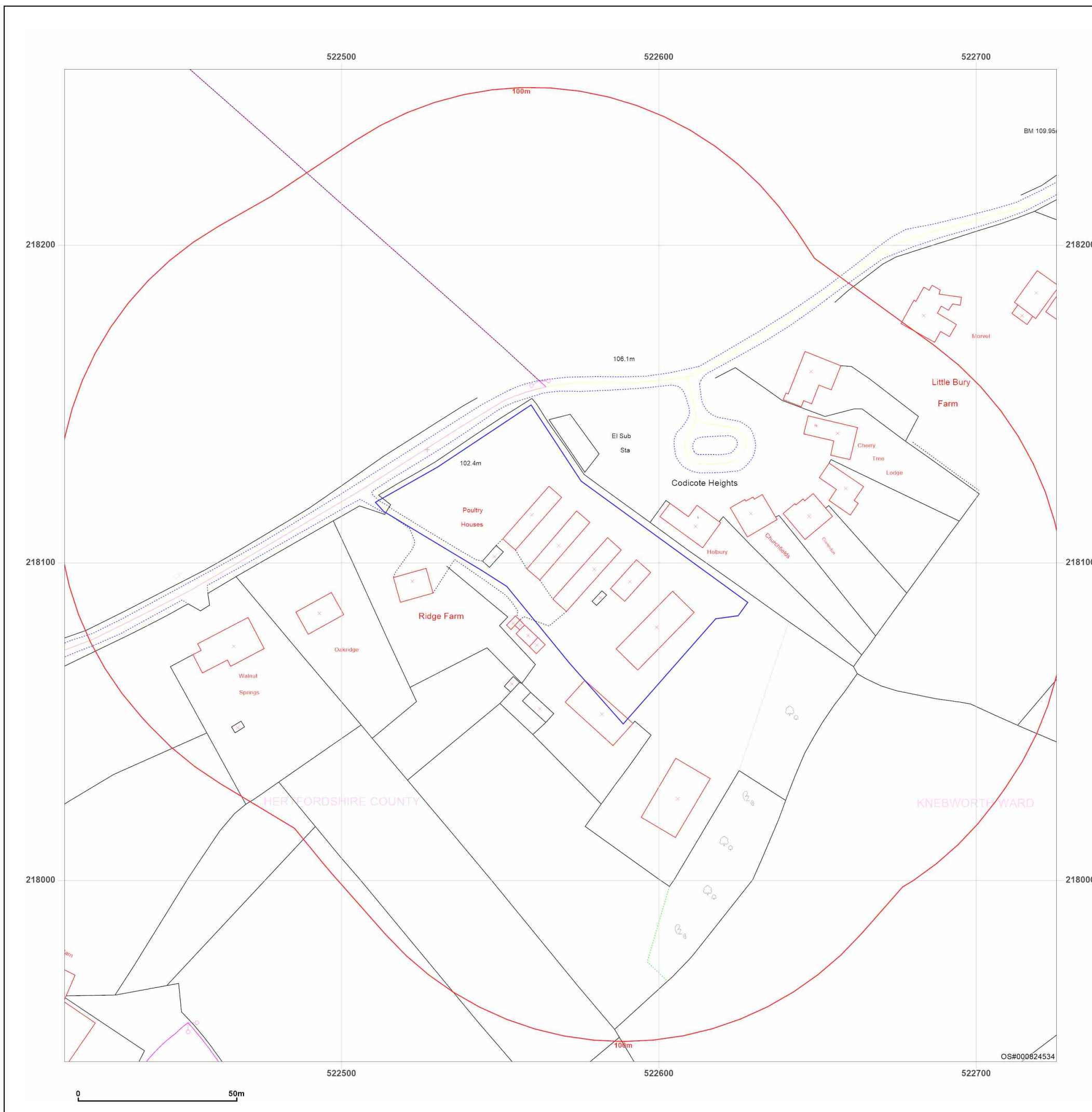


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Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: County Series
Map date: 1884
Scale: 1:10,560
Printed at: 1:10,560



Surveyed 1881
Revised N/A
Edition 1884
Copyright N/A
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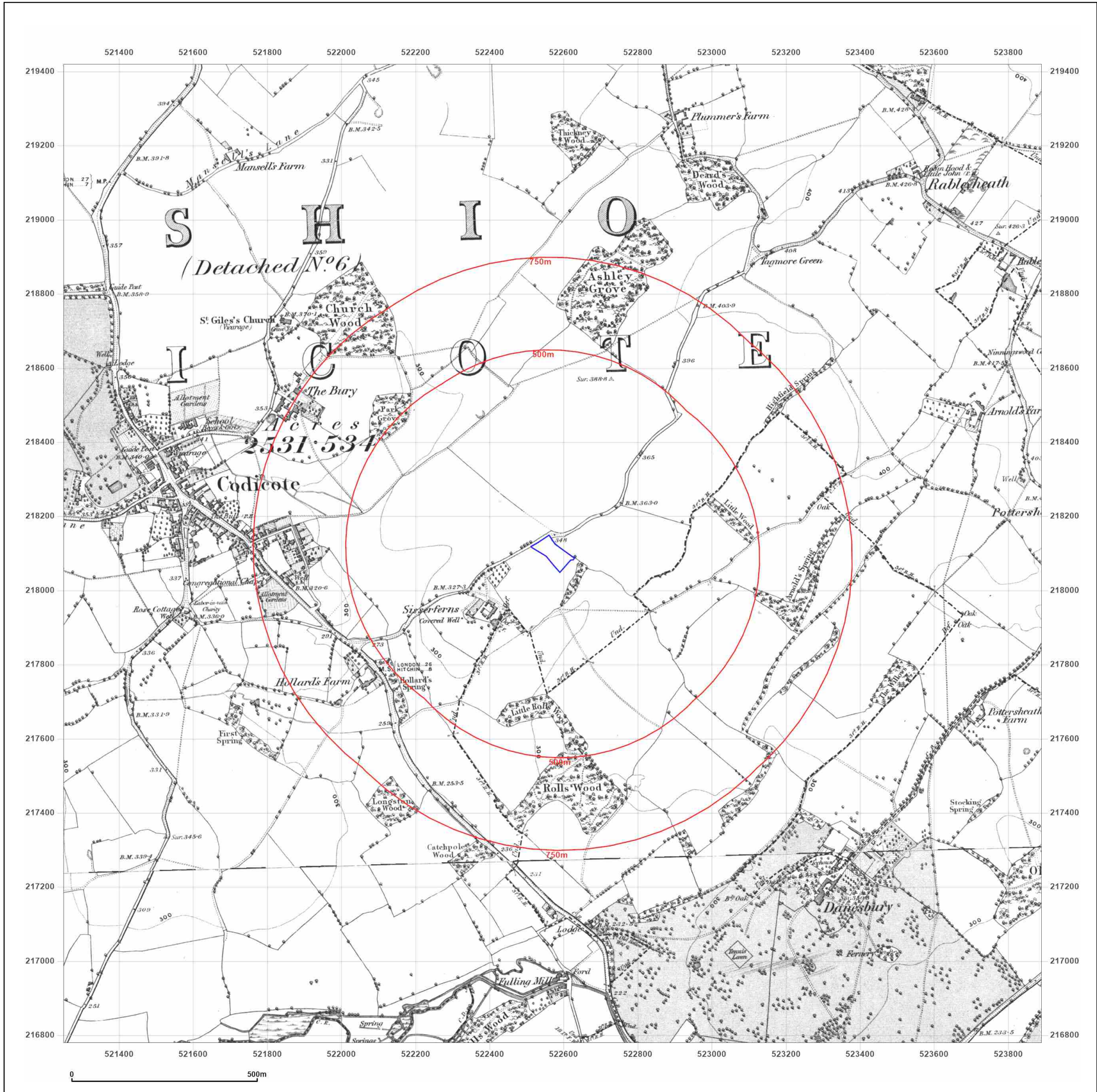
Surveyed 1881
Revised N/A
Edition 1884
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Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: County Series

Map date: 1897-1899

Scale: 1:10,560

Printed at: 1:10,560



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Revised 1897
Edition N/A
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Surveyed 1881
Revised 1897
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1881
Revised 1897
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1897
Edition 1899
Copyright N/A
Levelled N/A

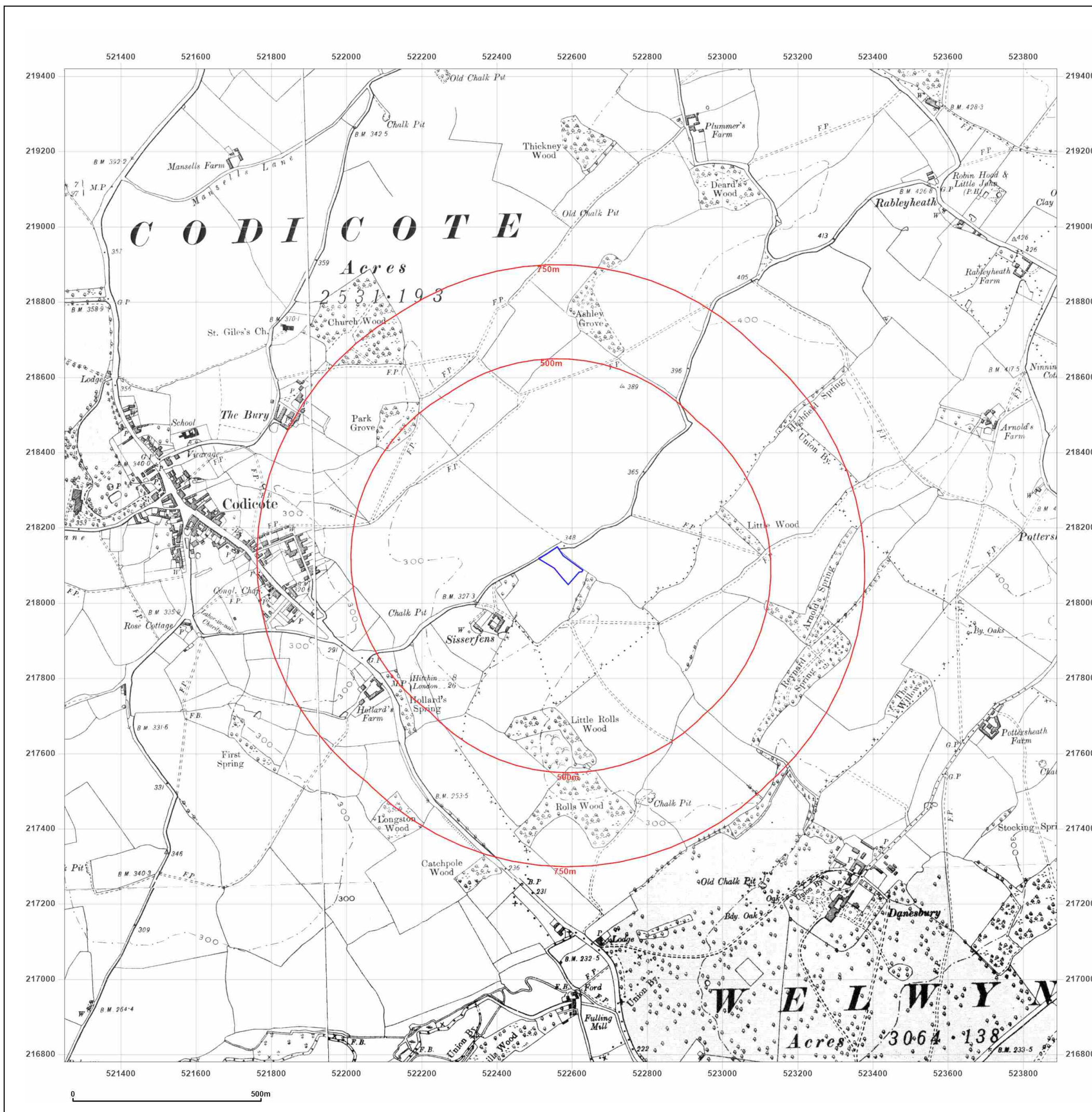


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Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: County Series

Map date: 1922-1925

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1880
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1880
Revised 1922
Edition 1925
Copyright N/A
Levelled 1922

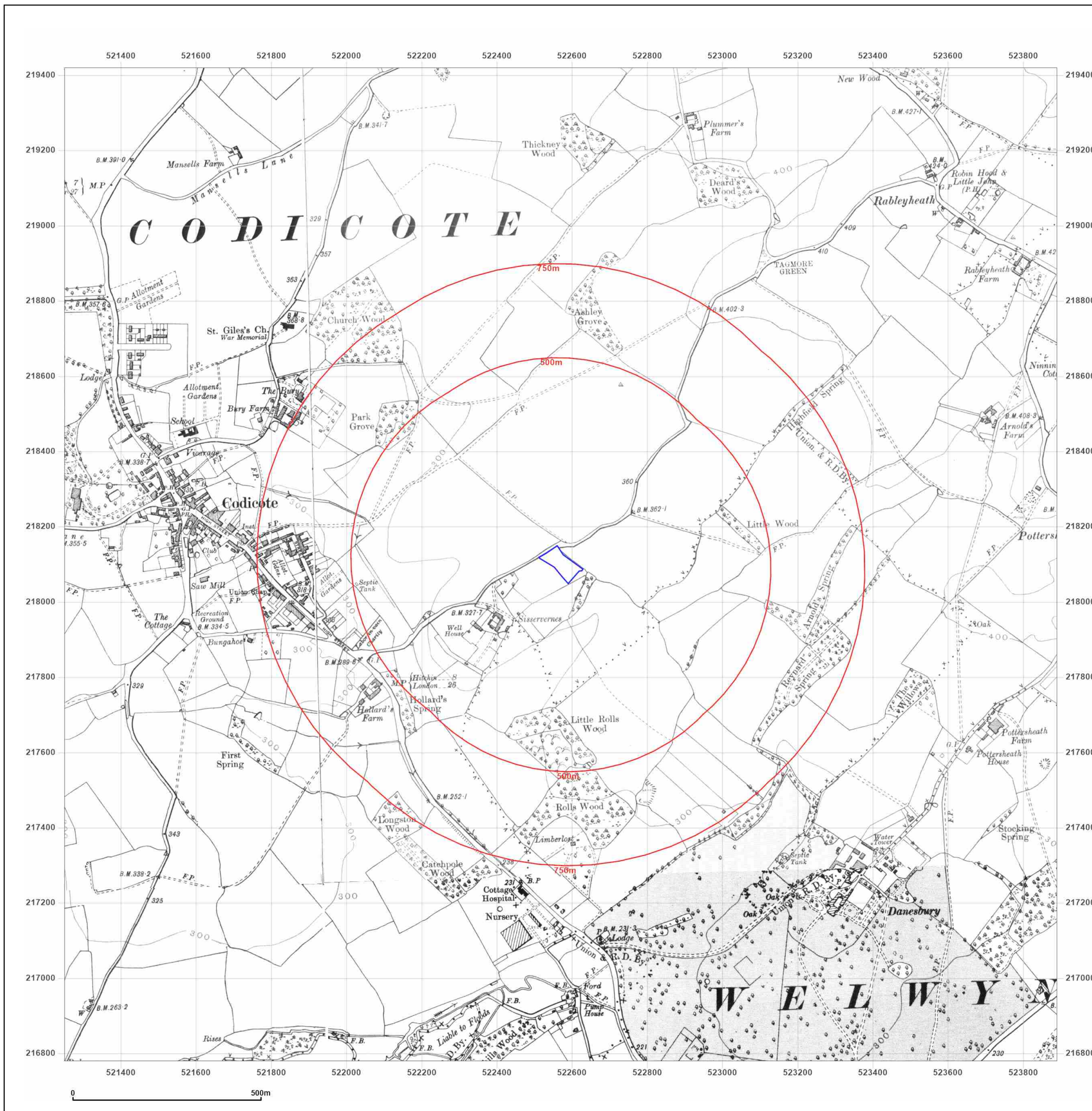


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Site Details:

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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: County Series

Map date: 1946-1947

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1880
Revised 1946
Edition N/A
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Surveyed 1880
Revised 1947
Edition N/A
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Surveyed 1880
Revised 1946
Edition N/A
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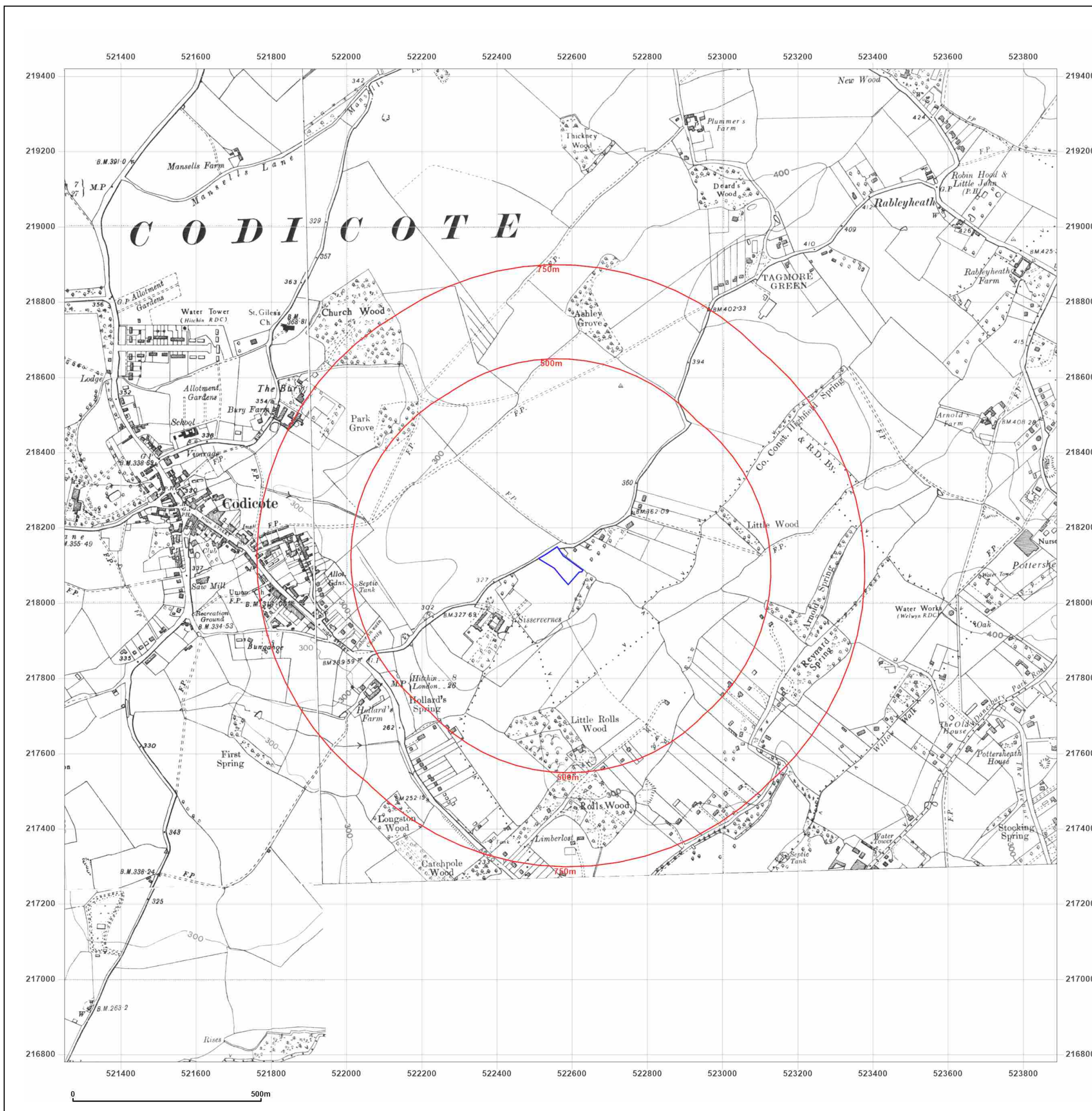


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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: Provisional
Map date: 1964
Scale: 1:10,560
Printed at: 1:10,560



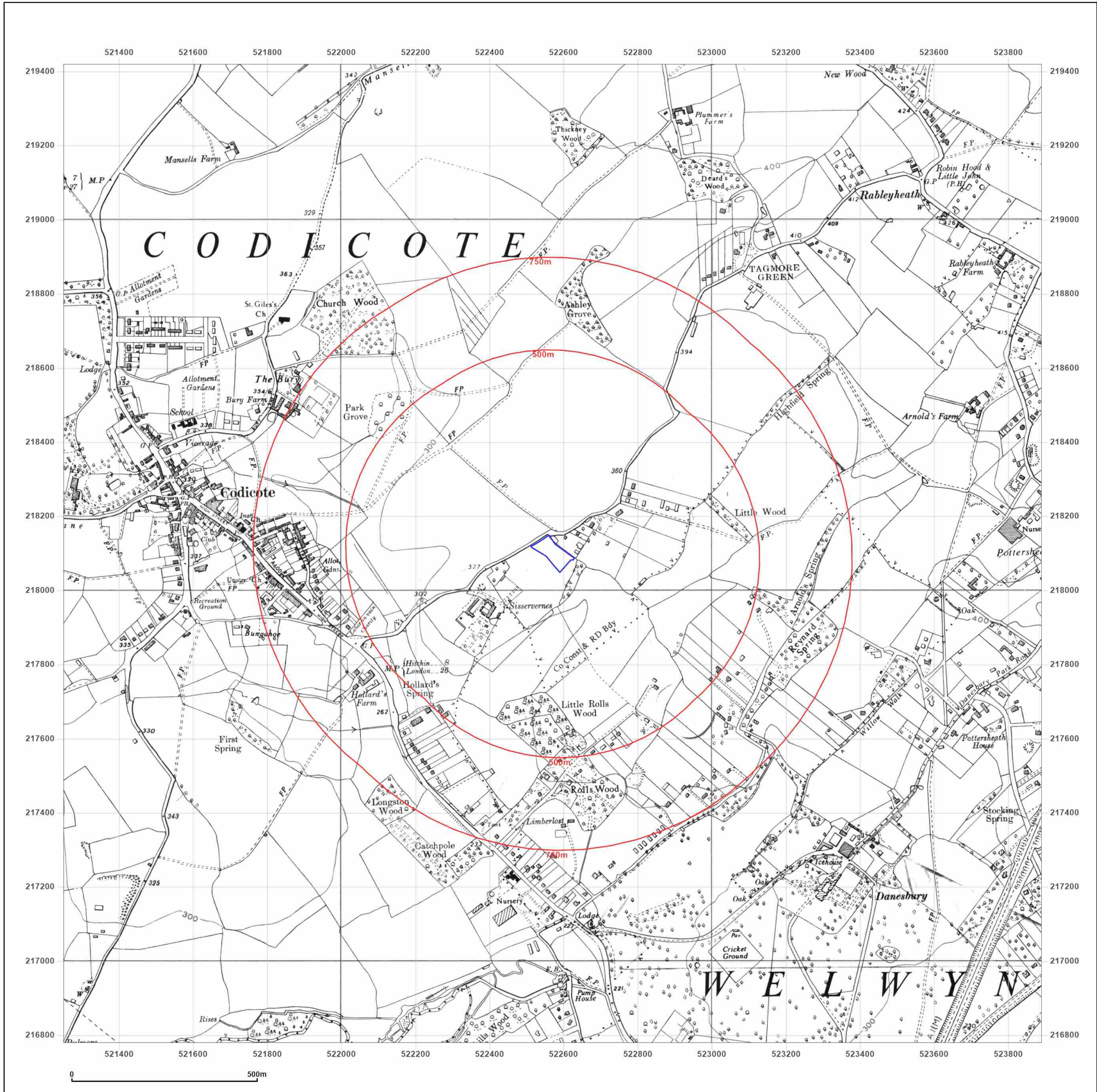
Surveyed N/A
Revised 1964
Edition N/A
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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: National Grid

Map date: 1975

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1971
Revised 1975
Edition N/A
Copyright 1975
Levelled 1973

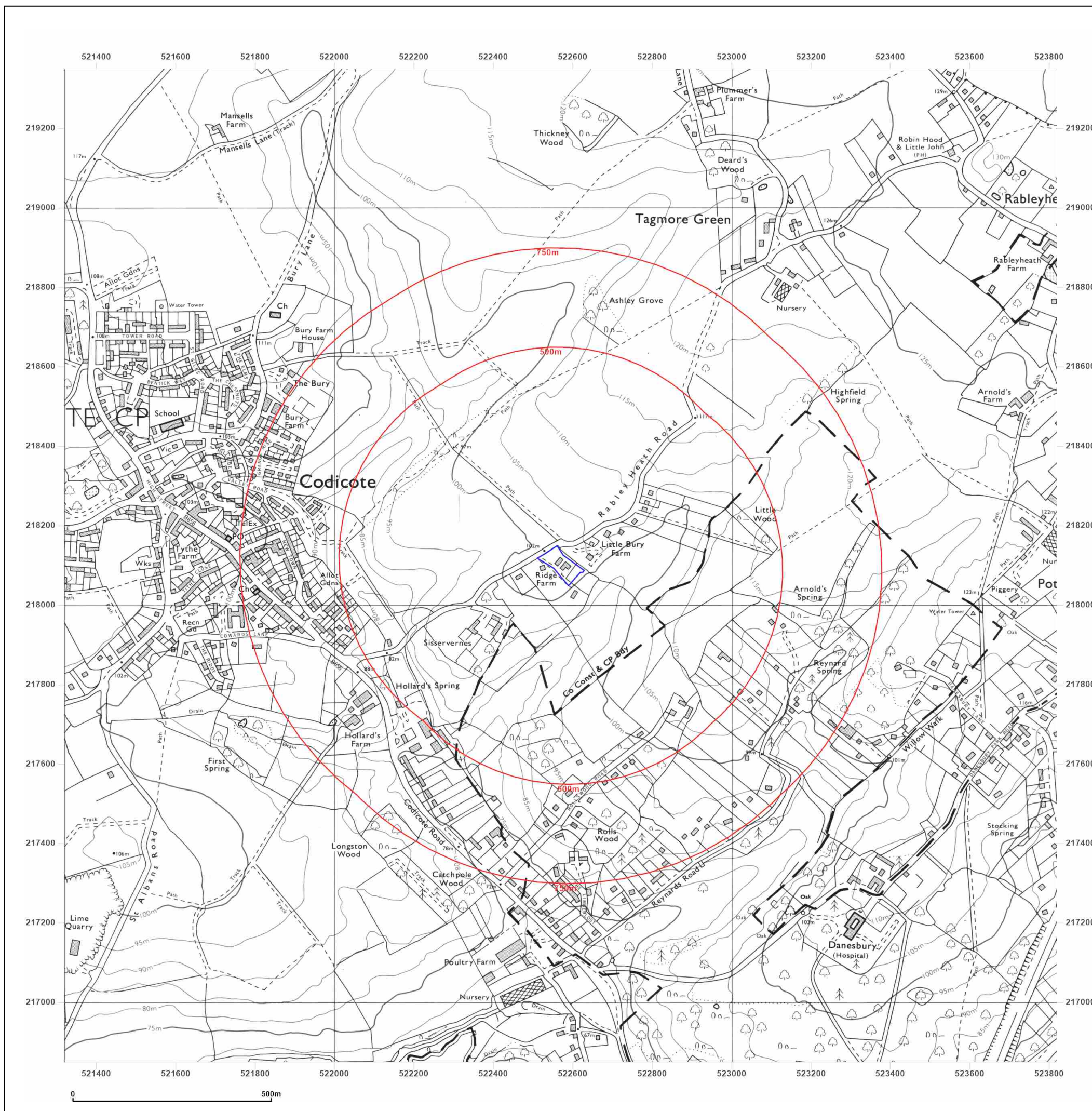


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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1973
Revised 1991
Edition N/A
Copyright 1992
Levelled N/A

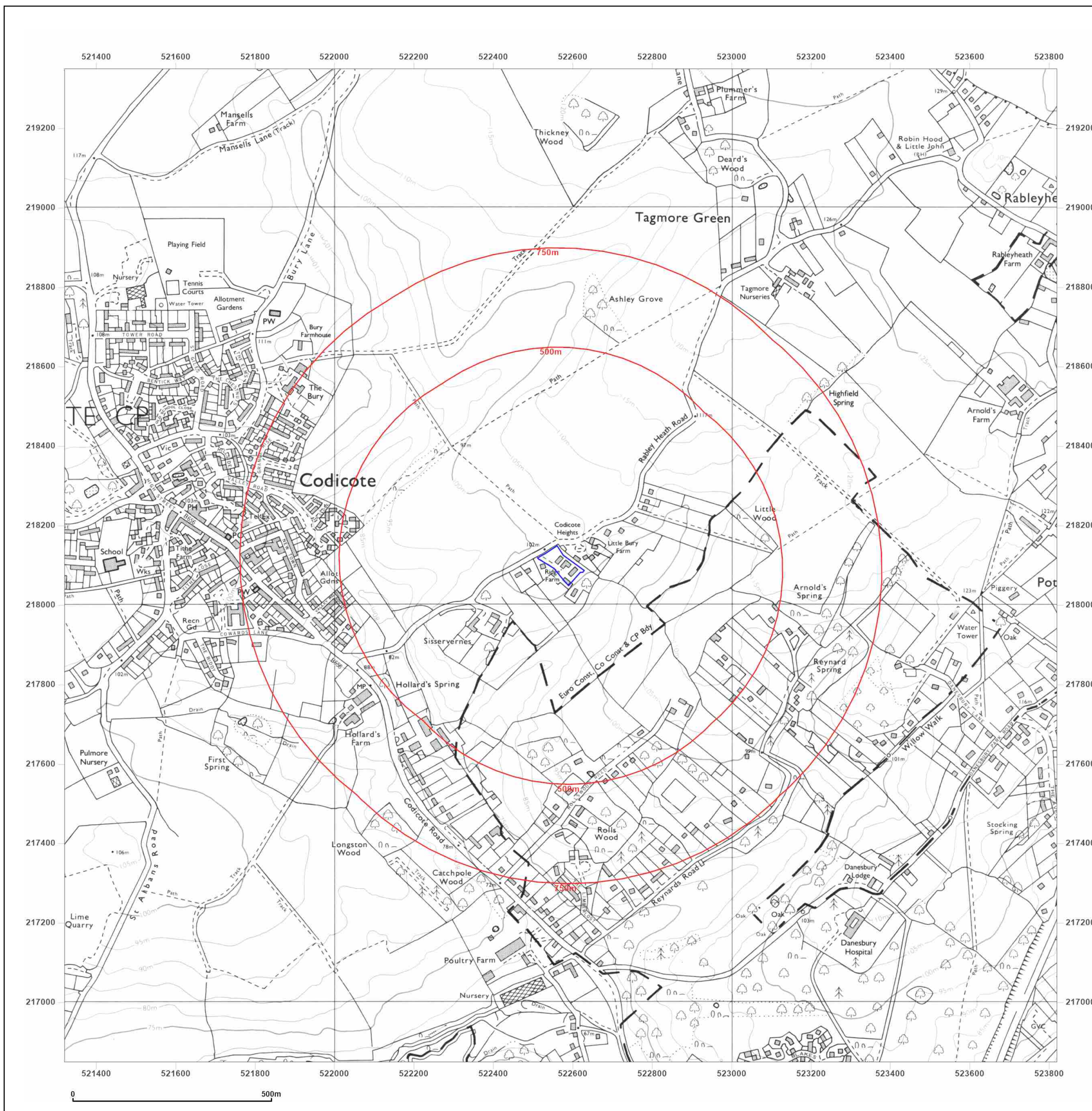


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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



2001

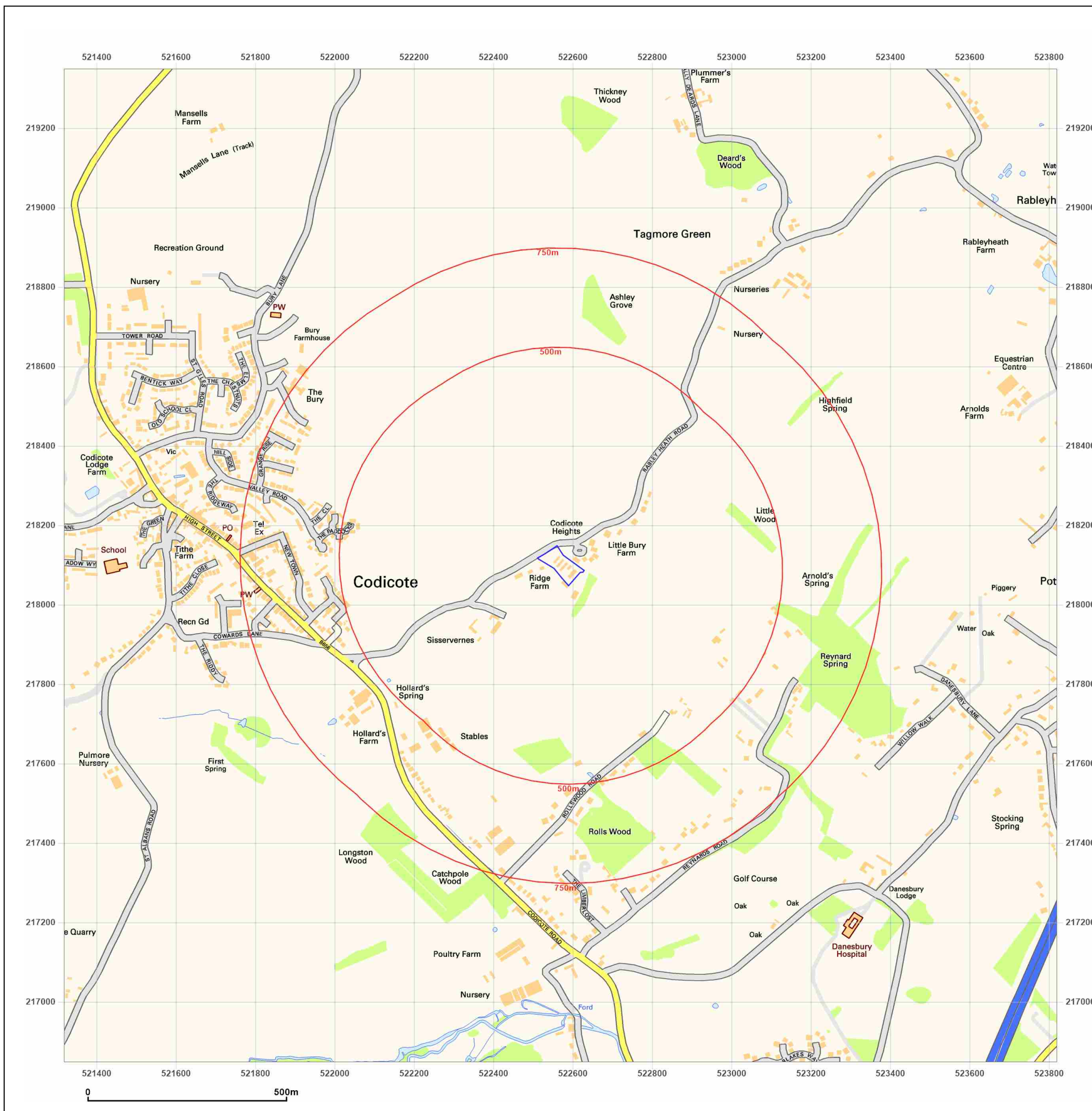


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Client Ref: 25.11.018/501
Report Ref: GS-3HL-WSK-2G5-TPR
Grid Ref: 522569, 218099

Map Name: National Grid

Map date: 2025

Scale: 1:10,000

Printed at: 1:10,000



2025



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