



Blakeney Homes Limited

Ground Investigation Report

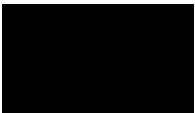
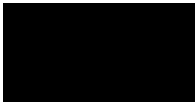
**Land South of Hambridge Way
Pirton
Hitchin
SG5 3QY**

**Report Ref: 24.09.008 – f01
December 2024**



DOCUMENT RECORD

Report Title	Ground Investigation Report
Development	50 residential units with associated driveways, access roads and private gardens
Project Address	Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY
Project Ref	24.09.008
Client	Blakeney Homes Limited

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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	24.09.008
Site Location	Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY
OS Grid Reference	515069, 231608
Development Proposals	Fifty residential units with associated driveways, access roads and private gardens
Current Site Use	The site lies in a predominantly agricultural field with two areas of storage of materials.
Existing Buildings	On-site features include an old shed with corrugate roof, storage large container, grouter machine, unspecified tanks, deteriorated skip, potential diesel/petrol cans, designated burning area covered by corrugated panels, unspecified farm corrosive metal items and a pallet with brick and construction materials.
Topography	The general topography of the area is predominantly flat with uneven ground in the west of the northern field and northwest of the southern field.
Vegetation	Mature trees and hedgerows are present along the site boundaries and separating the northern and southern fields. The site is primarily made up of open fields, existing infrastructure, and access roads.
Published Geology	According to the British Geological Survey (BGS), the assessment site is not underlain by artificial ground with superficial deposits of the Lowestoft Formation mapped in the east of the site. The bedrock geology is the West Melbury Marly Chalk Formation of Cretaceous Age, described as grey and off-white, soft, marly chalk and hard grey limestone arranged in couplets.
Hydrology	The anticipate direction of hydraulic flow is to the east-west and the nearest watercourse is on site, the Stondon Brook, an inland river not influenced by normal tidal action.
Hydrogeology	Superficial Aquifer – Superficial Secondary Undifferentiated West Melbury Marly Chalk – Principal Aquifer No recorded groundwater abstraction licenses within 1,000m of the site, and the site is located outside any Source Protection Zones (SPZ), according to EA data.
Site History	From 1881 to 1884, the site was divided into two fields, with a tree line separating the northern undeveloped field and the southern field, which contained allotments. The northern boundary had an unnamed road, and the surrounding area featured open fields, treelines, and residential development to the northwest. There were moat features located to the southwest and northwest, with wells found further out. By 1898-1901, the southern allotments were no longer labelled, and a beer house replaced the parish house at the northern boundary. Ground workings were identified near the moat features, and a few more wells were located nearby. In the 1920s, there were no significant changes except for some surface ground workings by the moat and the addition of a pumping station. By the 1960s-1970s, there was a building near the southwest, but no major changes occurred. From 1980 to 1982, allotment gardens reappeared in the southern field, and nearby developments included residential buildings, a pond, and two pavilions with a playing field. By 1993-1995, there were no significant changes, but from 2001 to 2003, the allotment gardens were no longer present. From 2010 to 2024, a small shed was added to the site, but overall, no significant changes occurred.
Unexploded Ordnance	The is in low-risk area of UXOs.

Potential Sources of Contamination	The desk study and walkover survey identified several potential contamination sources at or near the site. The site itself has remained largely undeveloped, with the exception of a shed built in 2010. Historical use as an allotment raises the possibility of contamination from pesticides, fertilizers, and potentially contaminated soil or compost, which could contain elevated levels of metals like lead, arsenic, and cadmium. A historical gas feature located 27m to the southwest could also be a source of contamination. During the walkover, several on-site features were identified as potential pollution sources, including an old shed, storage containers, tanks, and various construction materials, which could contribute hydrocarbons, heavy metals, asbestos, and solvents. In terms of ground gas contamination, methane and carbon dioxide from organic decomposition and radon gas from natural decay of thorium and uranium are potential risks. While the risk to nearby residential development is considered low, proximity to surface ground workings, including ponds, warrants ground gas monitoring to assess the need for protective measures.
Ground Conditions Encountered	The intrusive investigation revealed that the general succession of strata was as follows: a layer of topsoil which varies in thickness from 0.10m to 0.40m across the site. Beneath this, Made Ground was encountered at locations CT06, HP01 to HP04, and TP10, with thicknesses ranging from 0.30m to 0.80m, predominantly found in the northwest of the site. The Lowestoft Formation is present across the site, with thicknesses ranging from 0.30m to 1.20m, and depths varying between 0.10m and 1.60m. Below this, the West Melbury Marly Chalk Formation is encountered throughout the site, with a thickness of 4.40m to 5.80m, extending down to a base of 6.00m.
Groundwater Encountered	Groundwater was encountered in boreholes CT01, CT02, and CT03 at a depth of 1.0m below ground level (bgl) in the weathered chalk, and in test pits TP06 and TP09 at depths of 1.75m and 1.70m bgl, respectively. Boreholes CT04 to CT06, as well as monitoring points HP01 to HP04 and test pits TP01 to TP05, TP08, and TP10, were dry.
Risks to Human Health	No significant risk.
Ground Gas Risks	No radon protection measures are necessary in the construction of new dwellings or extensions without underground rooms.
Risks to Controlled Waters	The procedures set out in EA's <i>RTM Hydrogeological risk assessment for contaminated land</i> (2006), have been followed. The potential Controlled Waters receptors considered during this risk assessment were: • The Stondon Brook adjacent to the north boundary. • The superficial Aquifer is Secondary Undifferentiated of medium vulnerability overlain the West Melbury Marly Chalk Formation as a Bedrock Principal of High Vulnerability.
Remediation Required	No remedial measures required.
Chemical Attack on Buried Concrete	Design Sulphate Class DS-1 ACEC Class AC-1
Geotechnical Hazards	The desk study information records the risk of solution features and mining at the development site to be low. Our subsequent investigations have not recorded obvious evidence of loose or voided ground and hence we concur with these recommendations. As with all sites where chalk deposits are present however, site operatives should remain vigilant, report any loosening or weak zones of soil and seek advice from a specialist.
Potential Foundation Solutions	Conventional spread foundations (or Piled foundations should deepening of footings due to potential desiccation in shrinkable soils preclude the use of strip footings) Depth: At least 1.0m bgl or 0.2m into the Lowestoft Formation or West Melbury Marly Chalk

Allowable Bearing Pressure	Conventional spread foundations: 100kPa Depth: At least 1.0m bgl or 0.2m into the Lowestoft Formation of the West Melbury Marly Chalk. Volume change potential: Medium
Roads and Hardstanding Design	The structural design of a road or hardstanding is based on the strength of the subgrade, which is assessed on the California Bearing Ratio (CBR) scale. With reference to Transport and Road Research Laboratory, Report LR1132 and the laboratory classification tests it is recommended that for formation prepared in Lowestoft Formation, a subgrade CBR value of 2% is adopted for preliminary design purposes based on equilibrium soil conditions, a thin pavement construction, low water table and average construction conditions.
Infiltration Measures	The infiltration rate could not be calculated in any of the trial pits, as the ground did not allow any water to infiltrate. Alternative means of surface water drainage are likely to be required.
Limitations and Recommendations	<i>Environmental</i> No elevated concentrations of contaminants were recorded by this investigation and whilst there is considered to be a low risk of contamination at this site, some areas of the site have not been investigated. 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. <i>Geotechnical</i> Based on our investigation, the risk from chalk dissolution features is considered to be low. As a precaution, we recommend a watching brief is prepared during groundworks and should any evidence of loosened or weak zones of soil be encountered, then we recommend further advice is sought from a specialist.

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

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- Historical Ordnance Survey and National Grid Maps

GROUND INVESTIGATION REPORT

INTRODUCTION

A Ground Investigation Report has been undertaken for fifty residential units with associated driveways, access roads and private gardens at Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY. A Site Location Plan is provided in Appendix A. The Ordnance Survey National Grid reference for the approximate centre of the site is 515069, 231608.

Instructions to undertake the investigation were received from our client, Blakeney Homes Limited in their email dated 5th September 2024.

This report describes the desk study and intrusive site investigation activities carried out by ListersGeo in order to provide an evaluation of the ground conditions and the extent of any soil, gas or groundwater contamination present on the site. The report presents human health and groundwater risk assessments based on the findings of the desk study information and subsequent contamination laboratory testing.

The report also discusses the geotechnical implications with regard to the proposed development based on the findings of the fieldwork and subsequent laboratory testing.

To our knowledge, the site has not been subject to any previous investigations.

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, provide an assessment of the geotechnical engineering properties of the ground and the extent of any soil, gas or groundwater contamination on the site. A contaminated land risk assessment was undertaken based on Environment Agency (EA) Remedial Targets Methodology (RTM) guidelines.

The investigation also includes a preliminary assessment of the feasibility of adopting a soakaway drainage solution at the site, as well as providing parameters to aid pavement design.

The scope of the investigation was to provide an assessment of the geotechnical engineering properties of the ground with relation to the proposed development.

PROPOSALS

It is proposed to develop the site to accommodate fifty residential units with associated driveways, access roads and private gardens. At the time of writing this report, proposed loads had not been provided. A proposed site layout plan is provided in Appendix A.

The report is based upon the above development proposals and the existing ground levels. Should either of 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 25th September 2024, preceding the fieldwork. A selection of site photographs is presented in Appendix A along with a plan showing the existing site layout annotated with the salient features identified.

Setting, Size and Current Use

The site lies in a predominantly agricultural field with two areas of storage sheds, storage of materials and uneven ground in the west of the northern field and northwest of the southern field. Access to the site was afforded via Hambridge Way and Cotman end Lane.

The site consists of land, aligned approximately in a rectangular configuration from east to west. The site measures approximately 260m by 130m and extends to approximately 3.1ha.

The site is bordered by:

Direction	Feature
North	Hambridge Way with housing beyond.
East	Country Lane and fields.
South	Cotman end Lane and Pirton Sports & Social Club.
West	Residential area and a construction site.

Topography and Surface Conditions

The general topography of the area is predominantly flat with uneven ground in the west of the northern field and northwest of the southern field.

Potential Pollution Sources

During the site walkover conducted prior to the ground investigation, no evidence of contamination was observed. However, several potential features on-site, old shed with corrugate roof, storage large container, grouter machine, unspecified tanks, deteriorated skip, potential diesel/petrol cans, designed burning area covered by corrugated panels, unspecified farm corrosive metal items, pallet with brick and construction materials have been identified as potential pollution sources.

Vegetation

A treeline (mature trees and hedgerows) run along the perimeter of the site and also cut across the site, separating the northern and southern fields. However, the designated development area itself is devoid of vegetation. The site is primarily made up of open fields, existing infrastructure, and access roads.

Structural Observations and Hazards

The existing building on site appears to be abandoned and in a state of significant deterioration. Signs of neglect are evident, with visible corrosion on the building's structure, suggesting long-term exposure to the elements. The deterioration is further compounded by the growth of vegetation, which has overtaken parts of the building.

DESK STUDY AND BACKGROUND INFORMATION

A desk study review of the site and its history has been undertaken to determine the former land use and the potential for any historically derived sources of chemical contamination, as well as provide information to aid our geotechnical assessment.

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 E 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
- The Coal Authority
- British Geological Survey (BGS), National Geoscience Information Service
- 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 and geotechnical appraisal.

GEOLOGY

Published Geology

Reference to the BGS 1:50,000 scale map, Sheet 221, and other published geological information on the area indicates that the site is underlain by the West Melbury Marly Chalk Formation of Cretaceous Age, described as grey and off-white, soft, marly chalk and hard grey limestone arranged in couplets.

The BGS states that the assessment site is not underlain by artificial ground (Made Ground).

Superficial Deposits of the Lowestoft Formation (a chalky till together with outwash sands, gravels, silts and clays) with clasts of chalk and flint are mapped in the east of the site. The BGS does not map superficial deposits of less than 1m thick and hence the Lowestoft Formation may still be present across other parts of the site but is anticipated to thin towards the west.

Head and Glaciofluvial Deposits are also mapped in the wider area.

Structural Features

There are no records of linear geological features, bedrock faults and landslip activity within 250m of the site. geological faults mapped at surface.

Solution Features

Chalk, as a calcium-carbonate rich rock, is highly susceptible to dissolution by water containing carbon dioxide. This dissolution can create three common types of features within the chalk, grouped together under the generic term 'dissolution features'. These features include:

Sinkholes	Depressions at the ground surface caused by the collapse of overlying chalk or superficial deposits into underground voids created by dissolution. The shape and size are dependent on the underlying void feature.
Solution pipes	A feature in the surface of the chalk caused by increased dissolution in an area of closely spaced discontinuities. These features may, or may not, have a ground surface expression. They occur up to 20m in diameter, though are commonly much smaller.
Swallow Holes	A void within the surface of the chalk where a stream is 'swallowed' by the chalk to flow underground. They often occur at the junction of impermeable strata and chalk. Infilled ancient swallow holes do exist where streams used to flow and may not have any surface expression. They can occur up to 14m in diameter, though commonly a few metres.

The Groundsure report indicates that the site predominantly presents a negligible to very low risk (in the east of the site where superficial deposits are mapped), noting the presence of soluble rocks within the ground. While some dissolution features may be present, the potential for difficult ground conditions or localized subsidence is considered minimal, particularly along the eastern boundary of the site, where these risks are not deemed significant. The Grey Chalk Subgroup is also generally considered to be at low risk of chalk dissolution features.

Further site-specific information is provided in the Geotechnical Hazards section of the report.

Historical Boreholes

The BGS holds records of exploratory holes historically put down during previous investigations. There are seven historical boreholes records within 250m of the Site. The record of the closest available historical borehole is located 225m to the southwest of the site, have been reviewed to aid the preliminary assessment of the ground conditions.

A borehole drilled in 1910 and encountered six meters of chalk marl over nine meters of blue clay like chalk, which overlay the gault. The borehole was terminated at a depth of 36m bgl. No comments on groundwater were noted.

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 urban soils in the site area:

Heavy Metal	Level in Rural Soil (mg/kg)
Arsenic	15 to 25
Cadmium	1.8
Chromium	20 to 90
Lead	100
Bio-accessible Lead	60
Nickel	15 to 45

There is no data in the urban soils in the site area. However, the above does not record any significantly elevated values.

Sulphate Bearing Strata

The West Melbury Marly Chalk Formation is not known to contain pyrite or iron sulphide, which, if oxidized, could create an aggressive chemical environment for buried concrete. However, historical borehole data has identified the presence of Gault Clay, which is known to contain pyrite and some glacial Till soils can have elevated contents.

HYDROLOGY

The anticipate direction of hydraulic flow is to the east-west and the nearest watercourse is on site, the Stondon Brook, an inland river not influenced by normal tidal action.

The Environment Agency's Catchment Data Explorer records the Stondon Brook, to be heavily modified and of generally Moderate ecological status for the latest reported period, of 2022.

The following flood risks are recorded for the site:

- River or coastal waters: no records, indicating Negligible risk.
- Surface water: the highest recorded risk is 0.1m to 0.3m in a 1-in-1,000-year return period.
- Groundwater: Moderate-High.

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.

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

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 Lowestoft Formation as a Secondary Undifferentiated of medium vulnerability and the West Melbury Marly Chalk Formation as a Bedrock Principal of High Vulnerability.

There are no recorded current groundwater abstraction licenses located within 1000m of the site.

According to information provided by the EA the site is outside of any Source Protection Zones (SPZ).

An SPZ is a protection zone placed around a well or borehole (or group of such) that supplies groundwater of potable quality and is divided into three sub-zones, defined as follows:

- Zone 1 – Travel time (of water) of 50 days or less to the groundwater source
- Zone 2 – The greater of: 25% of the source area, or a travel time of 400 days
- Zone 3 – The total area needed to support the discharge and abstraction from the source

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 revealed the following:

Time Period	Historical Site Use	Historical Use of the Surrounding Area
From 1881 to 1884	The assessment site is divided by two fields separated by a tree line. The northern field is undeveloped, and the southern field is occupied by allotments.	Unnamed road located along the northern site boundary. Open fields and associated treelines in all directions. Residential development 50, to the NW. Roaf Hill located 350m to the W. Moat features located 110m to the SW & NW. Allotment next to the southern boundary. Parish buildings beyond the unnamed road on the northern boundary. A few wells are located 200m to the NW & 300m and 400m to the SW of the site.
From 1898 to 1901	Footpath allocated in the southern boundary. Allotments are not labelled on site.	Parish House at the north boundary is replaced by a Beer House. Allotments are not present along the southern boundary. Ponds near to the moat features, 130m to the W. Residential development 150m to the SW. A few more wells located 100m, 200 & 450m to the N of the site.

Time Period	Historical Site Use	Historical Use of the Surrounding Area
From 1922 to 1925	No significant changes.	Some surface ground working noted around the ponds and the moat. Pumping Station located 350m to the NW. Small allotment gardens located 50m to the SW of the site. Sewage tank located 500m to the N.
From 1925 to 196	Unmapped	Unmapped
From 1960 to 1970	No significant changes	Works building located 400m to the SW.
From 1980 to 1982	Allotment Gardens allocated in the southern field of the site.	Residential development next to the NW and W. A pond located 50m to the SW. Two pavilion building and associated playing field next to the southern boundary.
From 1993 to 1995	No significant changes	No significant changes
From 2001 to 2003	Allotment Gardens are not allocated in the south field on site.	A brock located beyond the road along the northern boundary.
From 2010 to 2024	Small shed located on site.	No significant changes.

INDUSTRIAL USE SITES

There are four past or present potentially contaminative activities that have been identified between 27m and 250m from the site. These include gas features, unspecified ground workings, electricity substation and a pumping station.

The following table summarises the historical potentially contaminative activities and current industrial land uses that have been identified within 150m from the site:

Distance (m)	Direction	Feature/Activity
27	SW	Gas Features
116	SW	Historical unspecified ground workings last mapped 1960.
138	N	Electricity Substation

There is no obvious sign of the gas feature on the historical maps and it may be a private LPG tank etc for the nearby residential properties or playing field buildings.

According to the relevant Department of the Environment (DoE) Industry Profile, the Gas Works adjacent to the site would potentially have used or produced contaminants including metals, asbestos, PCBs, mineral oils.

Historical Site Use

The site was occupied by undeveloped area in the north with allotments in the south until the current features were established in 2010 for agricultural purposes.

Current Site Use

The site is currently utilized as an agricultural land with associated features such as old shed, storage large container, grouter machine, unspecified tanks, skip, designated burning area (ash from a bonfire) covered by corrugated panels, unspecified farm tools and pallet with brick and construction materials.

Electricity Substations

Generally, if an electricity substation was installed prior to 1981, it should be assumed to potentially contain polychlorinated biphenyls (PCBs) in the transformer oil used as a coolant or dielectric fluid. Whilst not particularly mobile in the environment, PCBs are persistent in the environment and were banned for use in new equipment in 1981 and should not be present in equipment installed after that date. Given the distance to the substation, it is not considered to pose a significant risk to the site.

ENVIRONMENTAL PERMITS, INCIDENTS AND REGISTERS

There are no records of pollution incidents or accidents, industrial activities, storage of dangerous, hazardous or radioactive substances, pollution control licenses or contaminated land within 500m of the site.

There is one licensed discharge consent record with 250m of the site. One concerned, unspecified detail is provided and it is considered unlikely that the incident would have significantly affected the site itself.

POTENTIALLY SENSITIVE LAND USES

There are two records of Nitrate Vulnerable zones and SSSI Impact Risk Zones registered on site.

WASTE TREATMENT AND LANDFILL SITES

Reference to records indicates that there is a waste exemption within 250m of the site. The record is located 48m northwest of the site, as farm category described as a waste in construction.

There are no records of current/historical landfill or waste transfer sites.

MADE GROUND

Made Ground is recorded some 150m to the west around the area of Toot Hill that is noted to have had a motte & bailey castle and number moats and bonds with associated ground workings mapped around them. Evidence of infilling in these areas is/ is not shown on the geological/historical maps though some of the former ponds are no longer present and hence are assumed to be infilled.

Made Ground should also be anticipated linked to the historical and existing developments on and around the site.

RADON GAS

Desk study information indicates that the site lies within an area where less than 1% of homes exceed the action level of 200Bq/m³ for radon gas. Therefore, in accordance with BR 211, 'Radon: guidance on protective measures for new dwellings', no radon protection measures are necessary in the construction of new dwellings or extensions.

GEOTECHNICAL HAZARDS

Naturally Occurring Hazards

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

Ground Stability Hazard	Hazard Potential Rating	Comments
Shrinking and swelling clays	Low	Associated to the West Melbury Marly Chalk Formation
Collapsible deposits	Very Low	-
Ground dissolution of soluble rocks	Very Low	Negligible on the main part of the site and very low in the areas overlain by the Lowestoft Formation.
Landslides	Very Low	-
Running sand	Very Low	-
Compressible deposits	Negligible	-

Made Ground is not included in the table above. The geotechnical risks associated with this deposit will be assessed following the intrusive investigation.

Mining and Man-Made Cavities

The desk study information identified that the site does not lie within an area likely to be affected by coal mining. However, there are two non-coal mining records on site, which are both described as Class A Chalk. Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Groundsure note that the potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

There are seven records of surface ground working within 250m of the site. The closest record is a pond 105m to the west mapped in 1960 and an unspecified ground working 116m to the southwest of the site.

The desk study information and mapping has not identified any recorded man-made or mining cavities within 500m of the site.

A few wells were noted on the historical maps between 100m to 450m N and SW of the site and therefore, these wells may potentially still exist as a void beneath the site.

Natural Cavities Database

It should be appreciated that the subsidence from dissolution features hazard rating is based on the statistical relationship of cavity occurrences, adopting database information referenced within the Predicting Natural Cavities in Chalk, 2001 publication. As a result, this rating is not unequivocal and does not take into consideration updated records or the occurrence of new subsidence features that may have occurred.

Dissolution Feature Risk Assessment

The site location was assessed for its susceptibility to dissolution features, using the risk assessment methodology published by Edmonds, 2001, *Predicting natural cavities in chalk*.

The assessment provided a not anticipated hazard rating for the site, compared to the negligible to very low hazard rating provided in the Groundsure report. This does not mean that there is no risk of the occurrence of dissolution features, however, it appears unlikely. If the client is risk averse to such features, then further detailed investigation should be undertaken, although the benefits may turn out to be minimal.

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 residential houses with private gardens.

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

The results of the desk study and walkover indicate that the following potential sources of soil or groundwater contamination are present at, or in close proximity to, the site:

- The site has remained largely undeveloped, aside from the construction of a shed and associated features in 2010.
- Made Ground is likely to be present at the site associated with historical developments and the use of the site as allotments.
- Due to its historical use as an allotment, contaminants on the site may include pesticides and fertilizers, which can lead to elevated levels of nitrogen, phosphorus, and heavy metals. Additionally, the use of contaminated soil or compost could have contributed to increased concentrations of metals such as lead, arsenic, and cadmium. However,
-
- During the site walkover several potential features on-site were encountered such as old shed with corrugate roof, storage large container, grouter machine, unspecified tanks, deteriorated skip, potential diesel/petrol cans, designated burning area (bonfire ash) covered by corrugated panels, unspecified farm corrosive metal items, pallet with brick and construction materials have been identified as potential pollution sources. These features may contribute to potential pollutants such as hydrocarbons, heavy metals, asbestos and solvents.
- Although there are no recorded pollution incidents on or near the site, other potential sources of contamination exist. There are unspecified works located 400m to the southwest of the site. This could have used or produced contaminants like metals, PCBs, mineral oils, solvents, and lubricants but it is unlikely to affect the site.

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.

However, given the proximity to the adjacent surface ground working including ponds, it is recommended that ground gas monitoring is undertaken to assess the need for ground gas protection measures.

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 and adult.

Human Health – Short Term Exposure

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

The critical receptor is an adult.

Controlled Waters and Environment

- The Stondon Brook located beyond the road at the northern boundary of the site with a drainage ditch on the eastern site boundary/immediately to the east.
- The Superficial Lowestoft Formation Secondary Undifferentiated of medium vulnerability and the West Melbury Marly Chalk Formation as a Bedrock Principal of High Vulnerability.
- There are two records of Nitrate Vulnerable zones and SSSI Impact Risk Zones registered on site.

Infrastructure

- Substructures
- 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
- Inhalation of indoor and outdoor vapours and dust
- Dermal contact with contaminated soil
- Inhalation of soil gases migrating through permeable strata into the building

Controlled Waters and Environment

- Migration/leaching of contaminants through the unsaturated zone
- Migration of contaminants through the groundwater
- Movement of contaminants through drains or services runs
- Run-off to the nearby Stondon Brook and ditches

Infrastructure

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

PRELIMINARY RISK ASSESSMENT

Desk Study research and site walkover has identified several potential contamination sources on the site linked to Made Ground as part of the existing structures. However, generally the potential sources of contamination are considered to be relatively localised and of relatively low mobility (other than petrol/diesel cans and unspecified tanks).

Given the proximity to the watercourse and the highly permeable strata, it is likely that a laterally continuous body of groundwater exist between the site and the Stondon Brook which is considered to be a sensitive receptor given the distance from the site and local moderate-high permeability geology.

The Principal High Vulnerability Aquifer is overlain by the Medium Vulnerability.

It is considered that gas monitoring is required at this site.

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 definitions and methodology are presented in Appendix D and the results are presented in the following table:

On-site and Off-site – or combine into one table which may be simpler

ON-SITE SOURCES

Potential On-site Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification	Explanation
Contaminants within the Made Ground - heavy metals, PAH, TPH, asbestos	Ingestion Dermal Contact Inhalation	End Users - Residents	Low likelihood	Medium	Moderate / Low	On-site contamination is anticipated to be moderate/low due to the site will be covered with area of soft landscaping.
		Nearby Residents	Unlikely	Medium	Low	
		Construction Workers	Low likelihood	Mild	Low	Exposure to maintenance and construction workers can be mitigated by use of appropriate PPE and maintaining good hygiene levels.
	Migration through unsaturated zone, groundwater, drains or service runs	Secondary (Undifferentiated) Aquifer	Moderate likelihood	Medium	Moderate/Low	There are no known groundwater abstractions within 1000m of the site and therefore the groundwater is classed as a non-sensitive receptor, however it is likely that the aquifers are in hydraulic connectivity with the surface water receptors.
		Stondon Brook - northern boundary and drainage ditch to the east	Moderate Likelihood	Medium	Moderate/Low	Whilst their presence is unlikely, It is considered that if present, significant site-derived contaminated groundwater would migrate to the nearby surface water due to their distance from the site.
	Direct contact	Substructures Water supply pipes	Low likelihood	Medium	Moderate/Low	The West Melbury Marly Chalk Formation is not known to potentially contain sulphates at concentrations that may accelerate the degradation of buried concrete. However, the Till may include such minerals and further assessment may be required if pyrite/selenite is encountered. Limited contamination which may impact pipes is anticipated.

Potential On-site Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification	Explanation
Unexploded Ordnance (UXO)	Direct contact	End Users – Residents Nearby Residents Buildings	Low Likelihood	Low	Low	The is in a very low to low-risk area of London Bombing Density. Explosives Ordnance Disposal (EOD) supervisors are not required.
Ground gas in organic rich soils -Carbon dioxide or methane	Inhalation	End Users – Residents	Low likelihood	Low	Low	If organic soils or a significant thickness of Made Ground are present then further testing, monitoring or gas protection measures may be required.
	Accumulation in building	On-site buildings	Unlikely	Low		
Radon gas	Inhalation	End Users - Residents	Low likelihood	Low	Low	Less than 1% of homes exceed the action level of 200Bq/m ³ for radon gas. No radon protection measures are necessary.

OFF-SITE SOURCES

Potential Off-site Source	Pathway	Potential Receptor	Probability	Consequence	Risk Classification	Explanation
Historical site adjacent to the site and 250m to the east	Inhalation	End Users	Low likelihood	Medium	Moderate / Low	It is possible that gases could migrate to the site but are likely to disperse before they reach the site.
	Accumulation of gases	On-site buildings	Low likelihood	Severe	Moderate/Low	

The geoenvironmental investigation and risk assessment detailed in the remainder of this report have been conducted to validate this CSM.

INITIAL GEOTECHNICAL GROUND MODEL

Based on the desk study information, the site is anticipated to be underlain by Topsoil and Made Ground, overlying the West Melbury Marly Chalk Formation with deposits of the Lowestoft Formation thickening to the east, are expected to be encountered during the ground investigation. Considering the proposed development, shallow foundations will be evaluated, with particular attention to groundwater levels during the investigation.

At this stage, therefore, the main potential geotechnical hazards for the site are considered to be,

- Made Ground which may contain soft compressible soils and obstructions.
- Shallow groundwater within the coarse-grained the West Melbury Marly Chalk Formation (or perched within Made Ground/Fill) or Superficial Deposits.
- Potential for shrinkable soils (weathered chalk and Lowestoft Formation) along with the presence of mature trees on and surrounding the site.

The intrusive investigation has been implemented to address these main issues and establish any potential problems for foundations and the general development of the site.

EXPLORATION AND TESTING

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

- Six continuous tube sampler boreholes (CT01 to CT06)
- Ten mechanically-excavated trial pits (TP01 to TP10)
- Four hand-excavated trial pits (HP01 to HP04)
- In-situ testing (including Standard Penetration Tests, Hand Shear Vane tests, Plate Loading tests, and Soil Infiltration tests)
- Gas and groundwater monitoring well installations
- Four gas and groundwater monitoring visits
- Geotechnical laboratory testing
- Chemical laboratory testing

The exploratory holes were formed on 25th September 2024 with the hand augers on the 16th October.

Co-ordinates of the boreholes and trial pits were approximated on the basis of field measurements and freely available georeferenced on-line information/aerial imagery.

The positions of all exploratory holes undertaken at the site as part of this investigation can be seen on the Exploratory Hole Location Plan in Appendix A. The logs, and field test and monitoring results are provided in Appendix B and the results of the laboratory testing are provided in Appendix C.

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.

SAMPLING STRATEGY

The investigation was undertaken in accordance with the scope of works agreed with our client. The exploratory holes were selected by ListersGeo to provide a wide coverage of information on the site area. And avoid potential buried services.

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

Potential Source	Type	Exploratory Hole(s)
Existing sheds and associated site features	Point	HP01 to HP04, TP03, TP07 and CT04.

METHODOLOGY

Health and Safety

Prior to commencement of boring and excavation, to minimise the dangers from/to buried services, the proposed locations were scanned using a Cable Avoidance Tool. At the borehole and probe locations, a service avoidance pit was dug, using /insulated/ hand tools, to a depth of around 1.2m below ground level (bgl). No buried services were encountered in the locations of the exploratory holes.

Exploratory Holes

Hand auger boreholes HP01 to HP04, were put down using a Dutch portable hand auger to a maximum depth of 0.90m below existing ground level. The 55mm diameter auger head was rotated and pushed down into the soil by means of a T-handle to obtain selected disturbed soil samples at regular intervals.

Trial pits TP01 to TP10, were excavated with an 8-tonne rubber-tyred backhoe excavator to depths of between 0.50m and 3.20m bgl, under the supervision of a geotechnical engineer, who made a record of the arisings. 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 in thin layers, ensuring that excavated material was replaced in the same order as it had been removed.

Continuous tube sample boreholes CT01 to CT06, were put down using an Archway Competitor rig to a maximum depth of 6m. Boreholes were advanced using a plastic lined steel tube sampling system, driven into the ground by a top drive percussive hammer. A near continuous 47mm diameter core sample was recovered for subsequent examination, sub-sampling and laboratory testing. Standard Penetration Tests (SPTs) were taken at 1.0m intervals and the energy ratio for the hammer used for these SPT tests was 75%.

Correction to the field 'N' values (to 'N₆₀') for the effects of energy delivery have been applied to the SPT (Standard Penetration Test) results from this investigation, in line with the recommendations given in BS EN ISO 22476-3, 2005, National Annex A.

On completion the boreholes were backfilled with arisings, ensuring that excavated material was replaced in the same order as it had been removed up to approximately 6m depth below the existing ground level.

Installations

On completion of the boring, boreholes CT01, CT03 and CT05 were utilised for the installation of a 50mm diameter slotted uPVC standpipe from the base of the borehole up to within 3m below existing ground level. From 1m depth up to ground level a plain pipe was added. The slotted section of the standpipe was surrounded with pea gravel, while expansive bentonite clay was added around the plain pipe 2m and below the slotted section to seal the borehole. The standpipe was finished with a rubber bung and gas tap and protected with a stopcock cover, which was then concreted flush with ground level.

In-situ Testing

In-situ Dynamic Plate Loading tests were undertaken in seven of the trial pits using a Light Weight Deflectometer (LWD) at depths of between 0.4m and 0.6m in trial pits TP01 to TP05, TP08 and TP10. The tests determine the dynamic deformation modulus (E_{vd}) of the formation soils and have been used to assess the California Bearing Ratio (CBR) of the formation. The 300mm diameter plate was subject to pulse loads applied by a dropped weight and the mean value of three measurements of vertical displacement is recorded.

Infiltration testing was undertaken in trial pits TP01, TP03 and TP04 in accord with BRE Digest 365 'Soakaway Design'.

Monitoring and Sampling

Ground gas monitoring was carried out in the monitoring wells using a calibrated Geotech GA 5000 gas analyser.

Groundwater levels were monitored using a standard Geotech dip meter.

Groundwater samples were collected using a bailer following the purging of the borehole(s) in order to obtain a fresh sample.

GROUND CONDITIONS

The intrusive investigation revealed that the general succession of strata was as follows: a layer of Topsoil above Made Ground above Lowestoft Formation overlying the West Melbury Marly Chalk Formation to the full depth of the investigation at 6m.

The general succession of strata revealed by the fieldwork is summarised below, followed by further details of each:

Stratum	Locations encountered	Stratum			Comments
		Top (m)	Base (m)	Thickness (m)	
Topsoil	All	GL	0.10 to 0.40		-
Made Ground	CT06, HP01, HP04, TP10	0.10 to 0.50	0.40 to 0.90	0.30 – 0.50	North- west of site only
Lowestoft Formation	All	0.10 - 0.40	0.30 - 1.60	0.30 – 1.20	-
West Melbury Marly Chalk Formation	All	0.30 - 1.60	6.00	4.40 – 5.80	-

TOPSOIL

Topsoil was encountered at all locations from ground level down to depths of between 0.10m and 0.40m, with an average thickness of 0.20m.

The Topsoil comprised, in general, a dark grey organic rich slightly gravelly silty clay with abundant rootlets. Gravel is fine to coarse sub-angular flint and sub-rounded quartzite and chalk.

Laboratory Testing revealed a Water Content (%) of 17.

MADE GROUND

Made Ground was encountered at CT06, TP10 and HP01 to HP04 below the topsoil between 0.10 and 0.90m, with an average thickness of 0.30m. The base of the Made Ground was not encountered in HP01 to HP04.

The Made Ground soils comprised a variable mix of firm slightly gravelly clay. Gravel is fine to medium of flint, chalk/calcium carbonate, brick, charcoal and ceramic.

LOWESTOFT FORMATION

Lowestoft Formation deposits were encountered at all locations from between 0.10m and 0.40m depth, down to depths of between 0.30 and 1.60m, with an average thickness of 1m.

The Lowestoft Formation comprised, in general, a variable mixture of firm brown becoming orange brown slightly gravelly silty clay. Gravel is fine sub-rounded white chalk and fine to medium sub-angular flint and rare sub-rounded quartzite.

The results of the field strength tests, and other relevant data, are summarised below:

Parameter	Range	Comments
SPT 'N ₆₀ ' value	12 to 15	Tentatively equivalent to undrained shear strengths of between 65kPa and 80kPa (using Stroud, f_1 , conversion factor =4.5). Medium to High strength (BS 5930-2015, Table 9)

Laboratory testing revealed the following:

Parameter	Range	Comments
Water Content (%)	12 to 27	-
Liquid Limit (%)	31 to 41	CLAY of Low to High Plasticity (BS5930 Casagrande)
Plastic Limit (%)	17 to 23	
Plasticity Index (%)	14 to 30	
Modified Plasticity Index (%)	8 to 30	Non-shrinkable and Shrinkable soil of Medium Volume-Change Potential (NHBC Standards)
Retained on 425µm sieve (%)	0 to 48	BS1377 'coarse soil' fraction
Passing 63µm sieve (%)	42 to 98	Fines (silt/clay) fraction
Undrained Shear Strength (kPa)	75 to 105	Converted from Pocket Penetrometer (using conversion factor of 30). High strength (BS 5930-2015, Table 9)

WEST MELBURY MARLY CHALK FORMATION

West Melbury Marly Chalk Formation soils were encountered at all locations from between 0.30m and 1.60m depth, down to beyond the base of the trial pits and boreholes at 6m depth, with an average thickness of 5m.

The unit comprised, in general, weak medium-density structured chalk with iron staining and patches of orange silt. Chalk is stiff closely fractured light grey clayey silty slightly gravelly. Gravel is un-compact fine chalk blocks. Grade C4.

It should be noted that Chalk can be significantly affected by percussive sampling methods and that the borehole descriptions of the Chalk reflect this. It is likely that the in-situ state of the Chalk is less weathered than indicated by the borehole logs.

The results of the field strength test, and other relevant data, are summarised below:

Parameter	Range	Comments
SPT 'N ₆₀ ' value	16 to 19	Tentatively equivalent to undrained shear strengths of between 70kPa and 85kPa (using Stroud, f_1 , conversion factor = 30). Medium to High strength (BS 5930-2015, Table 9)

Laboratory testing revealed the following:

Parameter	Range	Comments
Water Content (%)	21 to 28	-
Liquid Limit (%)	47 to 56	CLAY of Intermediate to High Plasticity (BS5930 Casagrande)
Plastic Limit (%)	26 to 33	
Plasticity Index (%)	26 to 33	
Modified Plasticity Index (%)	26 to 33	Shrinkable soil of Medium Volume-Change Potential (NHBC Standards)
Retained on 425µm sieve (%)	0 to 1	BS1377 'coarse soil' fraction
Passing 63µm sieve (%)	95 to 97	Fines (silt/clay) fraction
Undrained Shear Strength (kPa)	75 to 153	Converted from Pocket Penetrometer (using conversion factor of 30). High strength (BS 5930-2015, Table 9)

GROUNDWATER

Groundwater was encountered at various depths in some of the exploratory holes, as summarised below:

Borehole	Strike Depth (m bgl)	Depth after 20 minutes/on completion (m bgl)	Stratum	Comment
CT01	1.0		West Melbury Marly Chalk Formation	SP (1m plain/2m slotted) After monitoring rounds, water is encountered at 0.66m bgl and 0.63m bgl.
CT02	1.0	-	West Melbury Marly Chalk Formation	No installations.
CT03	1.0	-	West Melbury Marly Chalk Formation	SP (1m plain/2m slotted). After monitoring rounds, water is encountered at 0.71m bgl and 0.63m bgl.
CT04	Dry	-	Lowestof Formation	No Installations
CT05	Dry	-	West Melbury Marly Chalk Formation	SP (1m plain/2m slotted). After monitoring rounds, water is encountered at 2.61m bgl and 2.93m bgl. Potentially bottom of the standing pipe is silt up to 2.93m.
CT06	Dry	-	-	No installations
HP01 to HP4	Dry	-	-	-
TP02	2.30	-	West Melbury Marly Chalk Formation	Inflow

Borehole	Strike Depth (m bgl)	Depth after 20 minutes/on completion (m bgl)	Stratum	Comment
TP01, TP03, TP04, T05, TP07, TP8 and TP10	Dry	-	-	-
TP06 (second pit)	1.50	1.75	West Melbury Marly Chalk Formation	Land drain intercepted at 0.50m. Fast inflow flooded pit. First pit backfilled and another dug alongside.
TP09	1.70	-	West Melbury Marly Chalk Formation	Groundwater seepage in base of pit

Long term monitoring carried out as part of the project has revealed standing groundwater levels within the natural deposits of between 0.63m in CT01 within the shallow chalk and around 2.61m below the existing ground level in CT05 also in the chalk.

OBSERVED SOIL CONTAMINATION

No visual or olfactory signs of contamination were noted during the fieldwork.

In areas of uneven ground to the west of the northern field and northwest of the southern field, Made Ground was encountered in CT06, HP01, HP04, and TP10, with a thickness of up to 0.50m. The final thickness of this layer was not proven HP01 to HP04 as they were terminated within the Made Ground.

CALIFORNIA BEARING RATIO (CBR)

In-situ Dynamic Plate Loading tests were undertaken in TP01, TP02, TP03, TP04, TP05, TP08 and TP10 of the trial pits using a Light Weight Deflectometer (LWD) at depths of between 0.40m and 0.60m.

Results of the testing recorded corresponding CBR values between 2% and 3% as listed in the table below and presented in Appendix B.

Location	Stratum	Depth (m)	E _{vd} (MN/m ²)	Equivalent CBR (%)	Comments
TP01	Lowestoft Formation	0.50	5.42	2	
TP02	Lowestoft Formation	0.40	6.90	3	
TP03	Lowestoft Formation	0.50	4.81	2	
TP04	West Melbury Marly Chalk Formation	0.40	6.17	2	
TP05	Lowestoft Formation	0.50	7.72	3	
TP08	Lowestoft Formation	0.60	9.44	3	

Location	Stratum	Depth (m)	E _{vd} (MN/m ²)	Equivalent CBR (%)	Comments
TP10	Made Ground	0.50	5.16	2	

INFILTRATION TESTING

To assess the infiltration capacity of the soils, infiltration testing was carried out at the site in accord with BRE Digest 365, Soakaway Design.

Testing was undertaken in the Lowestoft Formation stratum, at a depth of 1m bgl in TP01 and in the West Melbury Marly Chalk Formation (TP03 & TP04) at a depth of between 0.31m and 1.04m bgl depth

The infiltration rate could not be calculated in any of the trial pits, as the ground did not allow any water to infiltrate.

GROUND GAS MONITORING

Ground gas monitoring was carried out in the monitoring wells installed in CT01, CT03 and CT05 as a part of this investigation, on two occasions.

The response zones of the standpipes are detailed below:

Well	Response Zone (m)	Stratum
CT01	1 to 3	West Melbury Marly Chalk Formation
CT03	1 to 3	West Melbury Marly Chalk Formation
CT05	1 to 3	West Melbury Marly Chalk Formation

The response zones of the monitoring wells targeted the West Melbury Marly Chalk Formation.

The results of the monitoring across the site as a whole are summarised in the table below:

Parameter	Range	Comments
Oxygen (%v/v)	18 to 21	Normal ranges for non-gassing ground
Carbon Dioxide (%v/v)	0.1 to 2.1	
Methane (%v/v)	<0.1	
Flow rate (l/h)	0 to 0.6	

The results have revealed oxygen levels of between 18%v/v and 21%v/v, carbon dioxide levels of between 0.1%v/v and 2.1%v/v, and methane levels below detectable limits 0.1%v/v. Flow rates ranged between 0l/hr and 0.6l/hr.

A rising barometric pressure was recorded prior to the first monitoring visit on the 2nd October with a decreasing pressure on the second visit on the 16th October.

CONCRETE AGGRESSION TEST RESULTS

The results of laboratory concrete aggression tests on selected samples of soil are summarised below:

Stratum	Water-soluble Sulphate SO ₄ (mg/l)	pH (pH units)	Number tested
Made Ground	7.95 to 29.1	7.8 to 8.0	3
Lowestoft Formation	8 to 80	7.9 to 8.1	6
West Melbury Marly Chalk	60 to 120	8.4 to 8.9	9

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

Fourteen samples of the Made Ground and topsoil samples collected on site during this investigation were tested for a range of constituents of potential concern (CoPC).

The test suite included:

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

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.

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 a residential development and associates gardens and road 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.

RISK ASSESSMENT GUIDELINES – CONTROLLED WATERS

The procedures set out in EA's RTM *Hydrogeological risk assessment for contaminated land* (2006), have been followed.

RESULTS OF ASBESTOS SCREENING

Screening for the presence of asbestos did not reveal any asbestos containing material (ACM) or fibres in the fourteen samples of Made Ground soils tested.

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.

Where S4ULs have been adopted for the organic contaminants, analytical results have been compared to the most conservative value, which is that for soils of 1% soil organic matter (SOM) as a preliminary screening tool.

The testing results did not reveal any exceedances of contaminants in the samples of Made Ground or natural ground. However, Pendimethalin, a type of herbicide (pesticide), was detected, and it is considered a potential health and environmental hazard.

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.

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

None of the soil contamination tests carried out as part of this investigation revealed elevated concentrations of contaminants in the soil when compared with the relevant GACs.

No Asbestos Containing Materials (ACMs) were identified during the analysis of this site.

However, Pendimethalin, a type of herbicide (pesticide), was detected above the limit of detection in one of the three samples tested. The value was from CT02 in a sample between 0.10m and 0.40m with a value of 20 µg/kg recorded against a detection limit of 10 µg/kg. Pendimethalin is noted to be a herbicide used to control most annual grasses and many annual broad-leaved weeds. However, it is noted to be of low acute toxicity based on freely available information from the American Environmental Protection Agency (EPA) that is possibly carcinogenic to humans but that has a half life of thirty to ninety days. Therefore, the levels recorded are likely to be below the limit of detection in the near future and hence will not pose a significant risk to the end users of the site.

As such there is considered to be no significant risk of significant harm to the above referenced long term exposure receptors.

NEARBY RESIDENTS/STAFF/WORKERS

The human health guideline values have been calculated with the most sensitive receptor in mind, the end users of the site. As such, given that there is no significant risk to the on-site receptors, there is also considered to be no significant risk to the off-site receptors.

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'.

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".

Although no asbestos was identified in the soils at the site, the presence of ACM and fibres within Made Ground at any site cannot be ruled out. Groundworkers should be made aware of potential risks of asbestos during the groundworks prior to beginning work.

GROUND GAS RISK ASSESSMENT

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

The site has been shown to be underlain by a relatively thin layer of Made Ground that is not putrescible.

The results of the gas monitoring have revealed that low levels of 0.1% carbon dioxide gas up to 2.1% are being produced in the ground, methane gas being produced in the ground are less than the detection limits of 0.1%. Flow rates between 0l/hr and 0.6l/hr were recorded.

The low flow rates show that no significant volumes of gas are being produced in the ground. There was no significant thickness of Made Ground and no organic rich soil beneath the site.

GROUND GAS SCREENING VALUES

The results have been evaluated with reference to Code of practice for the characterization and remediation from ground gas in affected developments, BS8485 and the NHBC Traffic Light system for housing.

Using the maximum carbon dioxide reading of 2.1% with the highest recorded absolute flow rate of 0.6l/hr, the maximum gas screening value is 0.0126l/hr.

There were no carbon dioxide levels above 5% and no methane levels above 1%.

This classifies the site as Characteristic Situation 1 (CS1) and NHBC Green traffic light system. The NHBC guidance is specifically derived for an 8m by 8m house and relies upon the building having a 150mm under slab void.

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 Stondon Brook adjacent to the north boundary.
- The superficial Aquifer is Secondary Undifferentiated of medium vulnerability overlain the West Melbury Marly Chalk Formation as a Bedrock Principal of High Vulnerability.

DISCUSSION

The site is due to be largely covered by dwellings and hardstanding, with only the areas containing soft landscaping presenting a potential risk for contaminant exposure. The hardstanding surfaces will reduce the downward drainage of water into the underlying aquifer, directing water towards drainage runs instead. The Made Ground is limited to the southwest portion of the site, and no visual or olfactory signs of free-phase contamination were observed during the site investigation.



The results of soil testing did not reveal any elevated concentrations of organic compounds, PAHs, or hydrocarbons.

Overall, it is considered that the Controlled Waters receptors identified on the site will not be at significant risk from potential groundwater pollution.

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

ON-SITE SOURCES

Potential On-site Source	Pathway	Potential Receptor	Revised Probability	Consequence	Revised Risk Classification	Explanation
Contaminants within the Made Ground <i>- Including: heavy metals, PAH, petroleum hydrocarbons, asbestos</i>	Ingestion Dermal Contact Inhalation	End Users - Residents	Unlikely	Medium	Low	Intrusive investigation did not encounter any significant thicknesses of Made Ground.
		Nearby Residents	Unlikely	Medium	Low	Chemical testing has demonstrated that there are no significant concentrations of contaminants in the soils beneath the site
		Construction Workers	Unlikely	Mild	Very Low	Mitigate potential exposure by use of appropriate PPE and maintaining good hygiene levels
	Migration through unsaturated zone Migration through groundwater Migration through drains or service runs	Secondary (Undifferentiated) Aquifer Principal Aquifer	Unlikely	Mild	Very Low	Intrusive investigation did not encounter any significant thicknesses of Made Ground Chemical testing has demonstrated that there are no significant concentrations of contaminants in the soils beneath the site
		Historical wells – from 100m to 450m N & SW Pond - 105m W Stondon Brook - northern boundary	Unlikely	Medium	Low	Intrusive investigation did not encounter any significant thicknesses of Made Ground Chemical testing has demonstrated that there are no significant concentrations of contaminants in the soils beneath the site

Potential On-site Source	Pathway	Potential Receptor	Revised Probability	Consequence	Revised Risk Classification	Explanation
	Direct contact	Substructures Water supply pipes	Low likelihood	Mild	Low	Use appropriate Concrete Design Classification Check water pipe specification with regional water supply company
Unexploded Ordnance (UXO)	Direct contact	End Users – Residents Nearby Residents Buildings	Low Likelihood	Low	Low	The is in a very low to low-risk area of London Bombing Density. Explosives Ordnance Disposal (EOD) supervisors are not required.
Ground gas in organic rich soils -Carbon dioxide or methane	Inhalation	End Users – Residents	Low likelihood	Low	Low	Ground gas protection measures are not required
	Accumulation in building	On-site buildings	Unlikely	Low		
Radon gas	Inhalation	End Users - Residents	High likelihood	Low	Low	No radon protection measures are necessary.

OFF-SITE SOURCES

Potential Off-site Source	Pathway	Potential Receptor	Revised Probability	Consequence	Revised Risk Classification	Explanation
Historical site adjacent to the site and 250m to the east	Inhalation	End Users	Unlikely	Medium	Low	Contamination testing and gas monitoring has indicated that the risks are acceptably low
	Accumulation of gases	On-site buildings	Unlikely	Severe	Very Low	



The revised CSM indicates that no remedial measures are required at this site and risks to human health and Controlled Waters are considered to be Very Low to Low.

Whilst no remedial measures are required at this site, the developer should ensure that the thickness and physical quality of the soils in the designated areas of soft landscaping are suitable for the intended use.

GEOTECHNICAL ENGINEERING CONCLUSIONS

We understand the proposed re-development comprises the construction of fifty residential units with associated driveways, access roads and private gardens. At the time of writing this report, proposed loads had not been provided. If site conditions should be altered significantly, such as changes to existing levels, then this report may require re-evaluation.

REVISED GROUND MODEL

The desk study information records the risk of solution features and mining at the development site to be low. Our subsequent investigations have not recorded obvious evidence of loose or voided ground and hence we concur with these recommendations. As with all sites where chalk deposits are present however, site operatives should remain vigilant, report any loosening or weak zones of soil and seek advice from a specialist.

Our exploratory investigation has confirmed the expected general strata sequence, consisting of a layer of topsoil which varies in thickness from 0.10m to 0.40m across the site. Beneath this, Made Ground was encountered at locations CT06, HP01 to HP04 (terminated in what still may be Made Ground or may be the Lowestoft Formation), and TP10, with thicknesses ranging from 0.30m to 0.80m, predominantly found in the northwest of the site. The Lowestoft Formation is present across the site, with thicknesses ranging from 0.30m to 1.20m, and depths varying between 0.10m and 1.60m. Below this, the West Melbury Marly Chalk Formation is encountered throughout the site, with a thickness of 4.40m to 5.80m, extending down to a base of 6.00m

Groundwater was encountered in boreholes CT01, CT02, and CT03 at a depth of 1.0m below ground level (bgl), and in test pits TP06 and TP09 at depths of 1.75m and 1.70m bgl, respectively with the chalk. Boreholes CT04 to CT06, as well as monitoring points HP01 to HP04 and test pits TP01 to TP05, TP08, and TP10, were dry.

The natural medium to high strength soils of the Lowestoft Formation are considered suitable for a shallow foundation solution. Our investigations confirmed the presence of clay soils with a medium volume change potential at depths ranging from 0.50m to 1.10m

Regarding the West Melbury Marly Chalk Formation, the shear strength of the fine soils varies between 70kPa and 85kPa, increasing with depth. This classification is in line with the description of medium to high strength as per BS 5930:2015 (Table 9).

CHALK CAVITY HAZARDS

Intrusive investigation has shown Lowestoft Formation overlying the West Melbury Marly Chalk Formation across the site. This differs from the initial geological desk study of the site where the Lowestoft Formation was not mapped beneath the majority of the site. However, the original Edmond Risk Classification had already accounted for the 'worst-case' of the Lowestoft soils being present and therefore, it is considered that the risk assessment does not require reassessment.

However, consideration should be given to potential changes in the chalk geology in the future, due to variations in the water table, leaking drains/pipes or influences from off-site drainage.

Limitations & Considerations

It should be appreciated that the investigation was limited to exploratory holes put down in the external areas of the site. Consideration should be given to inevitable ground disturbances associated with the demolition of the existing buildings and removal of existing foundations. Records of ground disturbances should be maintained during demolition works and passed on to the structural engineer to assist with foundation design.

SITE EXCAVATION

In line with HSE guidelines, all excavations requiring personnel access should be adequately supported to avoid the risk of collapse. Consideration should also be given to the stability of open trenches where personnel are working in close proximity. Some instability should be anticipated within coarse-grained soils (if encountered) particularly where groundwater is present.

Shallow excavations are likely to remain dry in the short term (,1m deep). It should be appreciated, however, that seasonal variations may exist and hence groundwater entries may occur particularly during wetter months or after periods of inclement weather. It would be useful to undertake a trial before any final decisions are made along with seasonal groundwater monitoring/rising head testing to monitor the rate of groundwater inflows.

Where excavations in the chalk are affected by frost action, then instability is likely to ensue. It would be prudent to carry out all ground works in the late summer or autumn when frosts are unlikely.

Foundation excavations should be inspected by a suitably qualified person to assess the soil and groundwater conditions. If conditions differ from those identified within this report, then further assessment may be required. Any roots, organic matter, 'soft/loose' ground, or otherwise unsuitable material, encountered at founding depth should be removed prior to pouring of concrete.

FOUNDATION SOLUTIONS

Shallow Foundations

The Made Ground is considered unsuitable as a bearing stratum due to its variability, and potential for unacceptable total and differential settlement under applied foundation loadings.

The Lowestoft Formation and the West Melbury Marly Chalk are considered to be a suitable bearing stratum for traditional spread foundations.

A minimum foundation depth of 1.0m below existing ground level is recommended, or 0.20m into the top of the formation, whichever is the deeper.

The allowable bearing pressure recommended below is made on the assumption of an acceptable total settlement for the proposed structures of 25mm. Should the building design require a significantly different serviceability limit state (tolerance to settlement) then it is recommended that these recommendations be revised accordingly.

At the minimum founding depth provided above, an allowable bearing pressure (or net loading intensity increase) of 100kPa may be adopted for isolated, uniformly loaded, conventional 600mm wide strip footings foundations.

This allows for a suitable factor of safety and differential and total vertical settlements under these conditions are likely to take a few weeks to complete.

Where foundations are to be constructed within the vicinity of trees or shrubs on this site then they will require deepening in accord with guidelines given in NHBC Building Standards Chapter 4.2. For trees that are not to be removed, mature tree heights should be assumed when determining the foundation depths. The soils should be considered as being of medium volume change potential.

In order to minimise differential settlement of spread foundations spanning variable soils (or where only a thin layer of the Lowestoft remains beneath the footings for example) it is recommended that suitable reinforcing be placed in the base of foundation excavations to avoid the occurrence of localised movement and the creation of hard spots.

Given the plastic nature of some of the soils at founding depth, they will be prone to rapid softening when wetted up. In the event that any delays occur between excavating for the foundations, and pouring of the concrete, a blinding layer of concrete should be placed in the base of the open excavations to prevent the occurrence of localized softening. Similarly, in dry conditions, if the soils at the base of the excavation become excessively dried out then the trenches will require re-bottoming prior to concreting.

Care should be taken to ensure that any new planting in the development will not affect the new foundations.

Chalk is prone to rapid softening when wetted up. In the event that any delays occur between excavating for the foundations, and pouring of the concrete, a blinding layer of concrete should be placed in the base of the open excavations to prevent the occurrence of localized softening.

If there is any significant layer of puttyed chalk at the base of the excavations, this should be removed and a blinding layer of concrete should be placed in the base of the open excavations to prevent the occurrence of softening due to potential water ingress.

SUBSURFACE CONCRETE

The concrete mix design recommendations for subsurface concrete have been assessed in terms of BRE Special Digest 1.

In view of the known site history, the site must be considered as a brownfield location.

The groundwater beneath the site should be considered as mobile for shallow foundations.

Chemical tests have recorded a characteristic soil soluble sulphate concentration of <10mg/l to 120mg/l and a characteristic pH of 7.9 to 8.9 pH units.

These results correspond to a Design Sulphate Class of DS-1.

The above assessment provides an Aggressive Chemical Environment for Concrete (ACEC) class of AC-1.

Any soils imported to site within the vicinity of the new foundations, should be tested to ensure that they do not exceed the above classification.

ACCESS ROADS AND PARKING

The structural design of a road or hardstanding is based on the strength of the subgrade, which is assessed on the California Bearing Ratio (CBR) scale. With reference to Transport and Road Research Laboratory, Report LR1132, the in-situ testing and the laboratory classification tests it is recommended that for formation prepared in Lowestoft Formation, a subgrade CBR value of 2% is adopted for preliminary design purposes based on equilibrium soil conditions, a thin pavement construction, low water table and average construction conditions.

Site conditions should be reassessed at the time of construction and the CBR/pavement design updated accordingly if considered necessary. If pavement construction is undertaken during wetter parts of the year, then a greater pavement thickness or geogrid reinforcement may be required.

Any areas of soft or deleterious material should be excavated and replaced with a properly compacted coarse-grained fill.

With the assessed risk of dissolution features at the site, it may be prudent to adopt high tensile geotextiles in areas of parking, access roads and pathways at the site to reduce the potential for catastrophic collapse should instability occur in the future.

INFILTRATION MEASURES

Appropriately designed sustainable drainage systems (SuDS) are more sustainable than using piped drainage to local sewer systems. However, infiltration measures close to buildings may result in undermining of foundations and softening of soils leading to instability and should be located at suitable distances from foundations and infrastructure.

Consideration must be given to the effects on slopes, flooding and mobilisation of contaminants and the potential for future rises in groundwater levels.

Test Results

The infiltration rate could not be calculated in any of the trial pits, as the ground did not allow any water to infiltrate.

Alternative means of surface water drainage are likely to be required.

Considerations

Whilst soakaways are not considered viable on the site, the following recommendations are noted: Due to the high groundwater table, the effectiveness of soakaway performance may be reduced. The base of a soakaway should be at least 1m above the maximum expected groundwater table, providing a buffer zone of unsaturated soils. This buffer zone may be greater for other effluent type discharges. Subsequent groundwater monitoring should be undertaken to assess seasonal variations in the groundwater levels

In chalk deposits soakaways can initiate new dissolution voids, or reactivate existing features, and in areas where dissolution features are known to be prevalent, soakaways should be avoided if possible, but if unavoidable, should be sited at least 20m away from any foundations for structures, roads or railways. Where the chalk is of low density, or its density is not known, soakaways should be sited at least 10m away from any foundations for structures, roads or railways. Where the chalk is of medium density or higher, the closest part of the soakaway should be sited at least 5m away from any foundations for structures, roads or railways.

LIMITATIONS 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.

Environmental

No elevated concentrations of contaminants were recorded by this investigation and whilst there is considered to be a low risk of contamination at this site, some areas of the site have not been investigated. However, as A Discovery Strategy should therefore 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.

Geotechnical

Based on our investigation, the risk from chalk dissolution features is considered to be low. As a precaution, we recommend a watching brief is prepared during groundworks and should any evidence of loosened or weak zones of soil be encountered, then we recommend further advice is sought from a specialist.

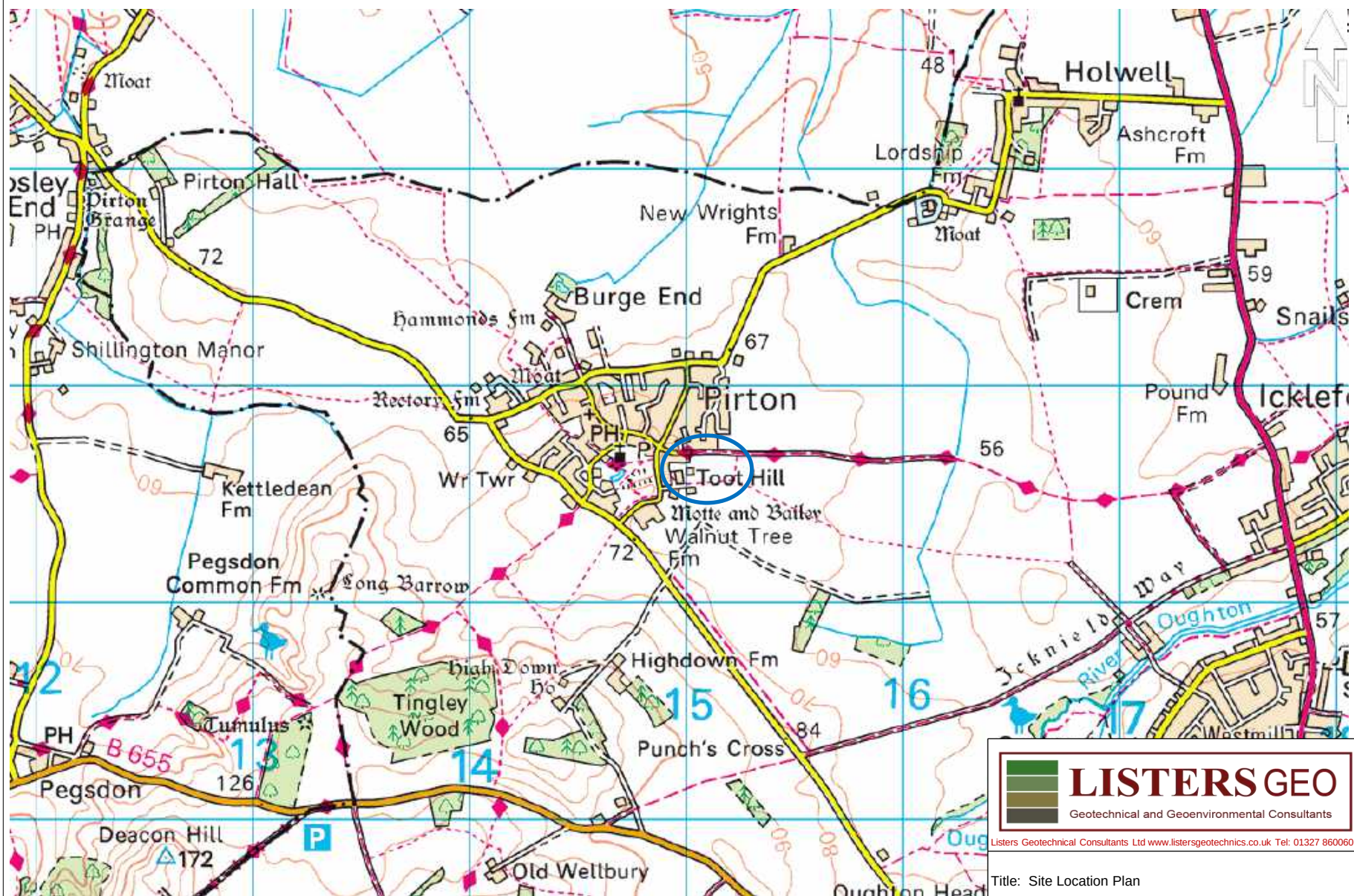
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BRE=Building Research Establishment. BSI=British Standards Institution. CIRIA=Construction Industry Research and Information Association. AGS=Association of Geotechnical and Geoenvironmental Specialists. EA=Environment Agency. HSE=Health and Safety Executive. NHBC=National House Building Council. DEFRA=Department for Environment, Food and Rural Affairs. ASP=Amherst Scientific Publishers. CL:AIRE=Contaminated Land: Applications in Real Environments. LQM=Land Quality Management. BGS=British Geological Survey. WHO=World Health Organisation. SoBRA=Society of Brownfield Risk Assessment. TRRL=Transport and Road Research Laboratory. UKWIR=UK Water Industry Research

APPENDIX A PLANS & PHOTOGRAPHS



LISTERS GEO

Geotechnical and Geoenvironmental Consultants

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

Title: Site Location Plan

Site:
Land South of Hambridge Way, Pirton, Hitchin SG5 3QY

Scale: NTS

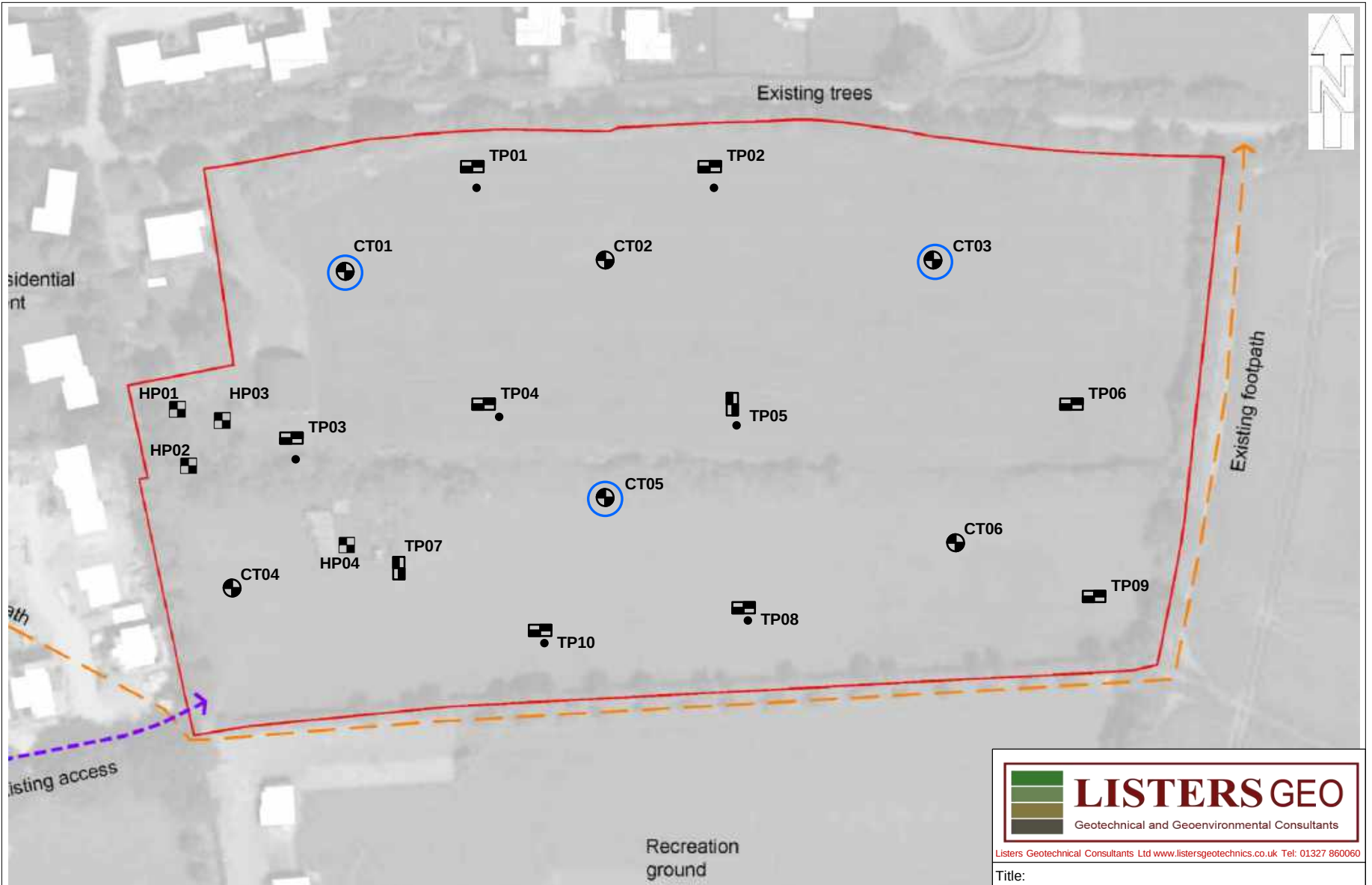
Project No: 24.09.008

Drawn By: AD

Key:



Approximate site location



Extract from David Coles Architects drawing Ref: 22130 (SK) 005, dated August 2024, Location Plan



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

Title:
Exploratory Hole Location Plan – Existing Site Layout

Site:
Land South of Hambridge Way, Pirton, Hitchin SG5 3QY

Scale: NTS	Project No: 24.09.008	Drawn By: AD
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Key:					
	Continuous Tube Sampler Borehole		Monitoring Well Installation		Dynamic Plate Test
	Approximate Site Boundary		Machine Excavated Trial Pit		Hand Excavated Trial Pit



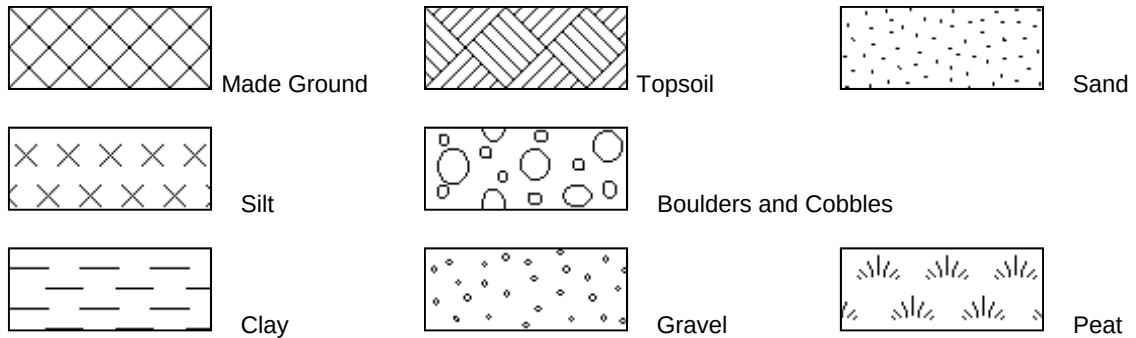
Key:  Continuous Tube Sampler Borehole		 Monitoring Well Installation	 Dynamic Plate Test
 Approximate Site Boundary		 Machine Excavated Trial Pit	

 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: Land South of Hambridge Way, Pirton, Hitchin SG5 3QY		
Scale: NTS	Project No: 24.09.008	Drawn By: AD

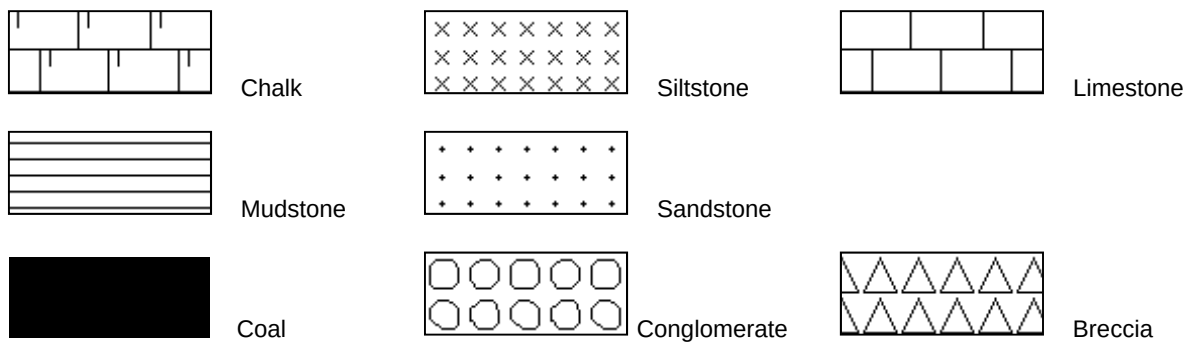
APPENDIX B

FIELDWORK AND TESTING

LEGEND - Soils



LEGEND - Rocks (Sedimentary)



LOG ABBREVIATIONS

W	Water Sample		Water Strike
B	Bulk Sample		Water (Standing Level)
D	Disturbed Sample	PP	Pocket Penetrometer
J	Jar Sample	HV	Hand Vane
U	Undisturbed Sample	SPT	Standard Penetration Test
(No. of blows shown in brackets for U100 samples)		CPT	Cone Penetration Test
WAC	Waste Acceptance Criteria Sample	CBR	California Bearing Ratio
		*	Extrapolated Value

Pocket penetrometer testing provides values of unconfined compressive strength. The results have been converted to an approximate equivalent shear strength which should be used with due circumspection. As the pocket penetrometer tends to overestimate shear strength, we have used an appropriate reduction factor.

LOG KEY

Continuous Tube Sampler Log

Borehole No.

CT 01
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515023E - 231642N

Project Number:
24.09.008

Level:
Logged By:
Dates: 25/09/2024

 Amanda David
to BS 5930:2015

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Result					
		0.10 - 0.40	D		0.10			TOPSOIL	
		0.40 - 1.00	D		0.40			Dark grey organic rich slightly gravelly silty CLAY with frequent rootlets. Gravel is fine to coarse sub-angular to sub-rounded flint quartzite and chalk.	
		1.00 - 1.60	D					LOWESTOFT FORMATION	1
		1.00	PP	3.5kg/cm ²				Firm brown silty slightly sandy CLAY with rare fine to medium angular flint and rootlets	
		1.25	SPT(C)	N=17 (4/3,3,5,6)				WEATHERED WEST MELBURY MARLY CHALK FORMATION	
		1.50	PP	3.0kg/cm ²				Firm structured low density light grey mottled brown clayey silty CHALK.	
		1.60 - 2.00	D		1.60				
		1.75	PP	>5.0kg/cm ²					
		2.00 - 2.50	D						
		2.00	PP	>5.0kg/cm ²					
		2.25	SPT(C)	N=43 (13/11,11,10,11)					2
		2.50	PP	3.0kg/cm ²					
		2.50 - 3.00	D						
		2.75	PP	>5.0kg/cm ²					
		3.00 - 3.50	D		3.00				
		3.00	PP	3.0kg/cm ²					
		3.00	SPT(C)	N=34 (9/6,8,9,11)					
		3.25	PP	>5.0kg/cm ²					
		3.50	PP	>5.0kg/cm ²					3
		3.75	PP	>5.0kg/cm ²					
		4.00	PP	>5.0kg/cm ²					
		4.00	SPT(C)	N=38 (9/8,11,9,10)					
		4.25	PP	4.0kg/cm ²					4
		4.50	PP	4.2kg/cm ²					
		4.75	PP	>5.0kg/cm ²					
		5.00 - 5.50	D						
		5.00	PP	>5.0kg/cm ²					5
		5.00	SPT(C)	N=55 (16/12,13,14,16)					
		5.25	PP	>5.0kg/cm ²					
		5.50	PP	>5.0kg/cm ²					
		5.75	PP	>5.0kg/cm ²					6
		6.00	PP	>5.0kg/cm ²	6.00				
								End of Borehole at 6.00m	6
									7

Borehole Diameter: 47mm

Groundwater: Seepage from 1.00m

Instrumentation: Monitoring well installed with response zone from 1.00m to 3.00m

Remarks: Inspection pit excavated to 1.20m. Co-ordinates interpolated from public domain data


Continuous Tube Sampler Log

Borehole No.

CT 02
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515085E - 231665N

Project Number:
24.09.008

Level:
Dates: 25/09/2024

Logged By:

 Amanda David
to BS 5930:2015

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Result					
					0.10			TOPSOIL	
		0.40 - 1.00	D		0.40			Firm dark brown organic slightly gravelly silty CLAY. Gravel is fine to medium angular flint and occasional sub-rounded quartzite	
								LOWESTOFT FORMATION	
								Soft brown silty CLAY with rare fine sub-angular flint and occasional chalk nodules.	
		1.00 - 1.60	D					Firm below 0.3m	
		1.00	PP	2.5kg/cm ²				WEATHERED WEST MELBURY MARLY CHALK FORMATION	1
		1.00	SPT(C)	N=16 (4/3,3,4,6)					
		1.25	PP	3.8kg/cm ²					
		1.50	PP	3.8kg/cm ²				Firm structured low density light grey mottled brown clayey silty CHALK.	
		1.60 - 2.00	D						
		1.75	PP	4.0kg/cm ²					
		2.00 - 2.50	D						2
		2.00	PP	>5.0kg/cm ²					
		2.00	SPT(C)	N=19 (6/4,4,5,6)					
		2.25	PP	>5.0kg/cm ²					
		2.50	PP	>5.0kg/cm ²		2.50			
		2.75	PP	>5.0kg/cm ²				WEST MELBURY MARLY CHALK FORMATION	3
								Weak low-density structured CHALK. Chalk is stiff closely fractured light grey clayey silty slightly gravelly. Gravel is loose fine chalk blocks. Grade C4	
		3.00 - 3.50	D						
		3.00	PP	>5.0kg/cm ²					
		3.00	SPT(C)	N=40 (13/9,9,10,12)					
		3.25	PP	>5.0kg/cm ²					
		3.50	PP	>5.0kg/cm ²					
		3.75	PP	>5.0kg/cm ²					
		4.00	PP	>5.0kg/cm ²					4
		4.00	SPT(C)	N=41 (10/8,9,11,13)					
		4.25	PP	>5.0kg/cm ²					
		4.50 - 5.00	D						
		4.50	PP	>5.0kg/cm ²					
		4.75	PP	>5.0kg/cm ²					
		5.00 - 5.50	D						5
		5.00	PP	>5.0kg/cm ²					
		5.00	SPT(C)	N=29 (12/7,6,7,9)					
		5.25	PP	>5.0kg/cm ²					
		5.50	PP	>5.0kg/cm ²					
		5.75	PP	>5.0kg/cm ²					
6.00	PP	>5.0kg/cm ²		6.00			6		
						End of Borehole at 6.00m			
							7		

Borehole Diameter: 47mm

Groundwater: Seepage from 1.00m

Instrumentation: Backfilled with arisings

Remarks: Inspection pit excavated to 1.20m. Co-ordinates interpolated from public domain data


Continuous Tube Sampler Log

Borehole No.

CT 03
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515157E - 231662N

Project Number:
24.09.008

Level:
Dates: 25/09/2024

Logged By:

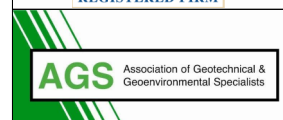
 Amanda David
to BS 5930:2015

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Result					
		0.10 - 0.40	D		0.10			TOPSOIL	
		0.40 - 0.60	D					Dark brown organic gravelly silty CLAY with abundant roots. Gravel is fine to medium angular flint and occasional sub-rounded quartzite	
		0.60 - 1.00	D		0.60			LOWESTOFT FORMATION	
		1.00 - 1.50	D					Soft brown silty slightly sandy slightly chalky CLAY with rare fine sub-angular calcareous gravel.	1
		1.00	PP	3.5kg/cm ²					
		1.00	SPT(C)	N=16 (4/3,3,4,6)					
		1.25	PP	3.5kg/cm ²					
		1.50 - 2.00	D		1.50			WEATHERED WEST MELBURY MARLY CHALK FORMATION	
		1.50	PP	4.0kg/cm ²					
		1.75	PP	>5.0kg/cm ²					
		2.00 - 2.50	D					WEST MELBURY MARLY CHALK FORMATION	2
		2.00	PP	4.2kg/cm ²					
		2.00	SPT(C)	N=23 (8/4,6,6,7)					
		2.25	PP	>5.0kg/cm ²					
		2.50 - 3.00	D					Weak low-density structured CHALK. Chalk is stiff closely fractured light grey clayey silty slightly gravelly. Gravel is un-compact fine chalk blocks. Grade C4?	
		2.50	PP	4.0kg/cm ²					
		2.75	PP	>5.0kg/cm ²					
		3.00	PP	>5.0kg/cm ²					3
		3.00	SPT(C)	N=38 (10/7,9,10,12)					
		3.25	PP	>5.0kg/cm ²					
		3.50 - 4.00	D						
		3.50	PP	>5.0kg/cm ²					
		3.75	PP	>5.0kg/cm ²					
		4.00	PP	>5.0kg/cm ²					4
		4.00	SPT(C)	N=35 (11/7,8,9,11)					
		4.25	PP	>5.0kg/cm ²					
		4.50 - 5.00	D					Chalk has brown staining below 4.5m	5
		4.50	PP	>5.0kg/cm ²					
		4.75	PP	>5.0kg/cm ²					
		5.00	PP	>5.0kg/cm ²					
		5.00	SPT(C)	N=37 (10/7,9,10,11)					
		5.25	PP	>5.0kg/cm ²					
		5.50 - 6.00	D						6
		5.50	PP	>5.0kg/cm ²					
		5.75	PP	>5.0kg/cm ²					
		6.00	PP	>5.0kg/cm ²	6.00			End of Borehole at 6.00m	7

Borehole Diameter: 47mm

Groundwater: Seepage from 1.00m

Instrumentation: Monitoring well installed with response zone from 1.00m to 3.00m

Remarks: Inspection pit excavated to 1.20m. Co-ordinates interpolated from public domain data


Continuous Tube Sampler Log

Borehole No.

CT 04
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 514996E - 231581N

Project Number:
24.09.008

Level:
Dates: 25/09/2024

Logged By:

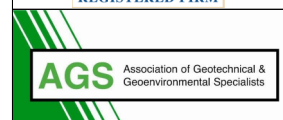
 Amanda David
to BS 5930:2015

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Result					
					0.10			TOPSOIL	
					0.40			Dark brown organic slightly gravelly silty CLAY. Gravel is fine to medium angular flint and occasional sub-rounded quartzite	
					0.60			LOWESTOFT FORMATION	
								Soft brown silty slightly sandy slightly chalky CLAY with rare fine sub-angular calcareous gravel with rare roots.	
		1.00 - 1.50	D					LOWESTOFT FORMATION	1
		1.00	PP	2.5kg/cm ²				Firm brown silty slightly sandy slightly gravelly CLAY. Gravel is fine angular to sub-angular flint.	
		1.00	SPT(C)	N=12 (4/2,3,3,4)				LOWESTOFT FORMATION	
		1.25	PP	2.8kg/cm ²				Firm light grey silty slightly gravelly CLAY.	
		1.50	PP	2.8kg/cm ²	1.50			Gravel is fine angular to sub-angular flint.	
		1.75	PP	3.0kg/cm ²				WEST MELBURY MARLY CHALK FORMATION	
		2.00 - 2.50	D					Weak low-density structured CHALK. Chalk is stiff closely fractured light grey clayey silty slightly gravelly CHALK. Gravel is un-compact fine chalk blocks. Grade C4?	2
		2.00	PP	4.0kg/cm ²					
		2.00	SPT(C)	N=23 (7/4,5,7,7)					
		2.25	PP	>5.0kg/cm ²					
		2.50	PP	>5.0kg/cm ²					
		2.75	PP	>5.0kg/cm ²					
		3.00	PP	>5.0kg/cm ²					
		3.00	SPT(C)	N=36 (11/8,8,8,12)					3
		3.25	PP	>5.0kg/cm ²					
		3.50 - 4.00	D						
		3.50	PP	>5.0kg/cm ²					
		3.75	PP	>5.0kg/cm ²					
		4.00	PP	>5.0kg/cm ²					
		4.00	SPT(C)	N=35 (11/7,8,9,11)					4
		4.25	PP	>5.0kg/cm ²					
		4.50	PP	>5.0kg/cm ²					
		4.75	PP	>5.0kg/cm ²					
		5.00	PP	>5.0kg/cm ²					
		5.00	SPT(C)	N=27 (10/5,5,7,10)					5
		5.25	PP	>5.0kg/cm ²					
		5.50 - 6.00	D						
		5.50	PP	>5.0kg/cm ²					
		5.75	PP	>5.0kg/cm ²					
		6.00	PP	>5.0kg/cm ²	6.00				
								End of Borehole at 6.00m	6
									7

Borehole Diameter: 47mm

Groundwater: Not encountered

Instrumentation: Backfilled with arisings

Remarks: Inspection pit excavated to 1.20m. Co-ordinates interpolated from public domain data


Continuous Tube Sampler Log

Borehole No.

CT 05
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515112E - 231597N

Project Number:
24.09.008

Level:
Dates: 25/09/2024

Logged By:

 Amanda David
to BS 5930:2015

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Result					
					0.10			TOPSOIL	
		0.40 - 1.00	D		0.40			Dark brown organic slightly gravelly silty CLAY. Gravel is fine to medium angular flint and occasional sub-rounded quartzite.	
								LOWESTOFT FORMATION	1
		1.00 - 1.50	D					Soft to firm greyish brown silty slightly gravelly CLAY. Gravel is fine sub-angular flint and calcareous nodules.	
		1.00	PP	3.5kg/cm ²				WEATHERED WEST MELBURY MARLY CHALK FORMATION	
		1.00	SPT(C)	N=16 (5/4,3,4,5)				Firm structured low density light grey mottled brown clayey silty CHALK.	
		1.25	PP	3.0kg/cm ²					2
		1.50 - 2.00	D		1.50			WEST MELBURY MARLY CHALK FORMATION	
		1.50	PP	4.0kg/cm ²				Weak medium-density structured CHALK with iron staining and patches of orange silt. Chalk is stiff closely fractured light grey clayey silty slightly gravelly. Gravel is un-compact fine chalk blocks. Grade C4.	
		1.75	PP	>5.0kg/cm ²					
		2.00	PP	>5.0kg/cm ²					
		2.00	SPT(C)	N=29 (7/5,6,8,10)					
		2.25	PP	>5.0kg/cm ²					
		2.50	PP	>5.0kg/cm ²					
		2.75	PP	>5.0kg/cm ²					3
		3.00 - 3.50	D						
		3.00	PP	>5.0kg/cm ²					
		3.00	SPT(C)	N=25 (8/5,5,7,8)					
		3.25	PP	>5.0kg/cm ²					4
		3.50	PP	>5.0kg/cm ²					
		3.75	PP	>5.0kg/cm ²					
		4.00	PP	>5.0kg/cm ²					
		4.00	SPT(C)	N=34 (11/7,8,9,10)					
		4.25	PP	>5.0kg/cm ²					
		4.50 - 5.00	D						
		4.50	PP	>5.0kg/cm ²					5
		4.75	PP	>5.0kg/cm ²					
		5.00	PP	>5.0kg/cm ²					
		5.00	SPT(C)	N=46 (17/8,9,12,17)					
		5.25	PP	>5.0kg/cm ²					
		5.50	PP	>5.0kg/cm ²					
		5.75	PP	>5.0kg/cm ²					
		6.00	PP	>5.0kg/cm ²	6.00				6
								End of Borehole at 6.00m	7

Borehole Diameter: 47mm

Groundwater: Not encountered

Instrumentation: Monitoring well installed with response zone from 1.00m to 3.00m

Remarks: Inspection pit excavated to 1.20m.. Co-ordinates interpolated from public domain data


Continuous Tube Sampler Log

Borehole No.

CT 06
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515164E - 231589N

Project Number:
24.09.008

Level:
Logged By:
Dates: 25/09/2024

 Amanda David
to BS 5930:2015

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Result					
					0.10			TOPSOIL	1
		0.40 - 1.10	D		0.40			Dark brown organic slightly gravelly silty CLAY. Gravel is fine to medium angular flint and occasional sub-rounded quartzite	
								MADE GROUND	
		1.00	PP	3.5kg/cm ²				Soft brown silty slightly sandy gravelly CLAY. Gravel is fine sub-angular flint and chalk with rare fine red brick and frequent roots.	
		1.00	SPT(C)	N=15 (5/3,4,4,4)				LOWESTOFT FORMATION	1
		1.10 - 1.50	D					Firm brown silty slightly sandy slightly gravelly CLAY. Gravel is fine angular to sub-angular flint with occasional chalk nodules.	
		1.25	PP	3.0kg/cm ²					
		1.50 - 2.00	D		1.50				
		1.50	PP	3.2kg/cm ²				WEST MELBURY MARLY CHALK FORMATION	
		1.75	PP	3.0kg/cm ²				Weak medium-density structured CHALK. Chalk is stiff closely fractured light grey clayey silty slightly gravelly. Gravel is un-compact fine chalk blocks. Grade C4	
		2.00	PP	3.0kg/cm ²					2
		2.00	SPT(C)	N=23 (7/5,5,6,7)					
		2.25	PP	>5.0kg/cm ²					
		2.50 - 3.00	D						
		2.50	PP	>5.0kg/cm ²					
		2.75	PP	>5.0kg/cm ²					
		3.00	PP	>5.0kg/cm ²					3
		3.00	SPT(C)	N=18 (7/3,4,5,6)					
		3.25	PP	>5.0kg/cm ²					
		3.50	PP	>5.0kg/cm ²					
		3.75	PP	>5.0kg/cm ²					
		4.00 - 4.50	D						
		4.00	PP	>5.0kg/cm ²					4
		4.00	SPT(C)	N=31 (11/6,6,8,11)					
		4.25	PP	>5.0kg/cm ²					
		4.50	PP	>5.0kg/cm ²					
		4.75	PP	>5.0kg/cm ²					
		5.00	PP	>5.0kg/cm ²					
		5.00	SPT(C)	N=48 (20/10,10,14,14)					5
		5.25	PP	>5.0kg/cm ²					
		5.50	PP	>5.0kg/cm ²					
		5.75	PP	>5.0kg/cm ²					
		6.00	PP	>5.0kg/cm ²	6.00				6
						End of Borehole at 6.00m	6		
								7	

Borehole Diameter: 47mm

Groundwater: Not encountered

Instrumentation: Backfilled with arisings

Remarks: Inspection pit excavated to 1.20m. Co-ordinates interpolated from public domain data


Test Location	Depth at Start of Test (m)	Spoon or Cone	Blows per 75mm Penetration (unless otherwise stated)				Field 'N' Value	'N ₆₀ ' Value	Stratum
CT 01	1.00	C	3	3	5	6	17	21	LF
	2.00	C	11	11	10	11	43	54	WMMCF
	3.00	C	6	8	9	11	34	43	
	4.00	C	8	11	9	10	38	48	
	5.00	C	12	13	14	16	55	69	
CT 02	1.00	C	3	3	4	6	16	30	LF
	2.00	C	4	4	5	6	19	35	WMMCF
	3.00	C	9	9	10	12	40	62	
	4.00	C	8	9	11	13	41	55	
	5.00	C	7	6	7	9	29	35	
CT 03	1.00	C	3	3	4	6	16	20	LF
	2.00	C	4	6	6	7	23	29	WMMCF
	3.00	C	7	9	10	12	38	48	
	4.00	C	7	8	9	11	35	44	
	5.00	C	7	9	10	11	37	46	
CT 04	1.00	C	2	3	3	4	12	15	LF
	2.00	C	4	5	7	7	23	29	WMMCF
	3.00	C	8	8	8	12	36	45	
	4.00	C	7	8	9	11	35	44	
	5.00	C	5	5	7	10	27	34	
CT 05	1.00	C	4	3	4	5	16	20	LF
	2.00	C	5	6	8	10	29	36	WMMCF
	3.00	C	5	5	7	8	25	31	
	4.00	C	7	8	9	10	34	43	
	5.00	C	8	9	12	17	46	58	
CT 06	1.00	C	3	4	4	4	15	19	LF
	2.00	C	5	5	6	7	23	29	WMMCF
	3.00	C	3	4	5	6	18	23	
	4.00	C	6	6	8	11	31	39	
	5.00	C	10	10	14	14	48	60	
Key: MG = MADE GROUND LF = LOWESTOFT FORMATION WMMCF = WEST MELBURY MARLY CHALK FORMATION * = N-value extrapolated in accordance with CIRIA R143*. Corrections in accordance with BS EN ISO 22476-3, 2005, National Annex A; using Energy Ratio (75%) from current equipment calibrations									
STANDARD PENETRATION TEST SUMMARY								Report: 24.07.046 Sheet 1 of 1	

Trial Pit Log

Trial Pit No.

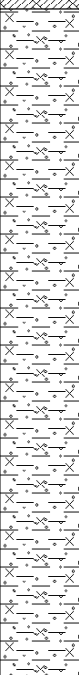
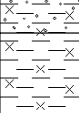
TP 01
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515049E - 231678N

Project Number:
24.09.008

Level:
Logged By:
Dates: 25/09/2024

 Amanda David
to BS 5930:2015

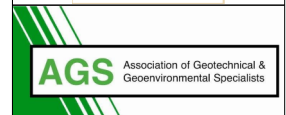
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.10	D		0.20			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
	1.00	D		1.40			LOWESTOFT FORMATION Firm orange brown slightly gravelly silty CLAY with roots. Gravel is fine white chalk and fine to coarse sub-angular flint	1
	1.50	D		1.60			WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white silty CLAY with a blocky texture	
							End of Trial Pit at 1.60m	2

Method of excavation: JCB 3CX

Dimensions: 0.60m(W) x 1.65m(L) x 1.60m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Roots visible down to 1.30m. Co-ordinates interpolated from public domain data


Trial Pit Log

Trial Pit No.
TP 02

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515114E - 131681N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 25/09/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
▼	0.40	D		0.25			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
				0.60			LOWESTOFT FORMATION Soft pale brown silty CLAY with occasional medium sub-angular flint and fine chalk gravel	
				1.00			WEST MELBURY MARLY CHALK FORMATION Firm pale grey silty CLAY with orange coloured pocket	1
	1.50	D					WEST MELBURY MARLY CHALK FORMATION Stiff pale grey blocky silty CLAY becoming extremely weak Chalk with local orange staining on joint faces. Recovered as fine to coarse gravel	
	2.50	D						2
	3.00	D		3.20				3
							End of Trial Pit at 3.20m	4

Method of excavation: JCB 3CX **Dimensions:** 0.60m(W) x 2.50m(L) x 3.20m(D)

Stability: Sides stable

Groundwater: Groundwater inflow from 2.30m depth

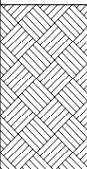
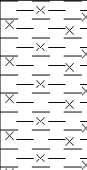
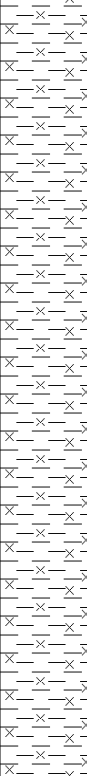
Remarks: Roots visible down to 0.20m. Co-ordinates interpolated from public domain data

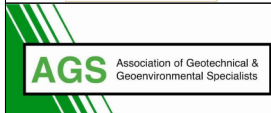


Trial Pit Log

Trial Pit No.
TP 03

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515012E - 231614N	Project Number: 24.09.008
	Level: Dates: 25/09/2024	Logged By: Amanda David to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.20	D		0.30			TOPSOIL Grey brown friable slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint, sub-rounded quartzite and fine chalk	
				0.60			LOWESTOFT FORMATION Firm buff brown silty CLAY	
	1.00	D					WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white silty CLAY. Becomes blocky with depth. Some orange staining on join faces	1
	1.90	D		1.95			End of Trial Pit at 1.95m	2

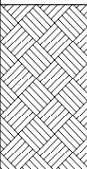
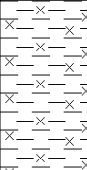
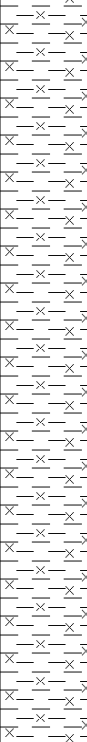
Method of excavation: JCB 3CX		Dimensions: 0.45m(W) x 2.00m(L) x 1.95m(D)		
Stability:	Sides stable	Groundwater:	Not encountered	
Remarks:	Roots visible down to 0.50m. Co-ordinates interpolated from public domain data			
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				Sheet 1 of 1

LISTERS GEO Geotechnical and Geoenvironmental Consultants				Trial Pit Log				Trial Pit No. TP 04	
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY				Co-ords: 515057E - 231622N		Project Number: 24.09.008			
				Level:		Logged By: Amanda David to BS 5930:2015			
				Dates: 25/09/2024					
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Result						
	0.10	D		0.30			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	1	
	0.50	D					WEST MELBURY MARLY CHALK FORMATION Firm pale grey silty CLAY		
				0.70			End of Trial Pit at 0.70m		
Method of excavation: JCB 3CX				Dimensions: 0.60m(W) x 2.00m(L) x 0.70m(D)				QM SV ISO 9001 REGISTERED FIRM AGS Association of Geotechnical & Geoenvironmental Specialists	
Stability: Sides stable									
Groundwater: Not encountered									
Remarks: Roots visible down to 0.25m. Co-ordinates interpolated from public domain data									
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060								Sheet 1 of 1	

Trial Pit Log

Trial Pit No.
TP 05

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515126E - 231622N	Project Number: 24.09.008
	Level: Dates: 25/09/2024	Logged By: Amanda David to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.30			TOPSOIL Grey brown slightly gravelly silty CLAY with abundant rootlets	
	0.60	D		0.60			LOWESTOFT FORMATION Firm light buff brown mottled orange silty CLAY	
	1.00	D					WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white silty CLAY. Becomes blocky with depth. Rare coarse sub-angular flint gravel	1
	1.80	D		1.90			End of Trial Pit at 1.90m	2

Method of excavation: JCB 3CX **Dimensions:** 0.45m(W) x 1.90m(L) x 1.90m(D)
Stability: Sides stable
Groundwater: Not encountered, groundwater inflow from land drain at 0.90m
Remarks: Roots visible down to 0.60m. Co-ordinates interpolated from public domain data

Trial Pit Log

Trial Pit No.

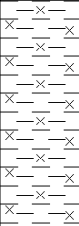
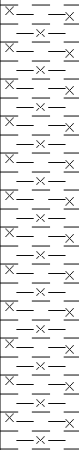
TP 06
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515195E - 231623N

Project Number:
24.09.008

Level:
Logged By:
Dates: 25/09/2024

 Amanda David
to BS 5930:2015

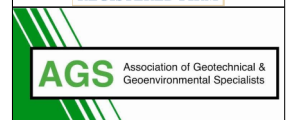
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.10	D					TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
				0.30			LOWESTOFT FORMATION Firm light orange brown silty CLAY with fine white chalk gravel	
				0.70			WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white blocky silty CLAY	
	1.00	D						1
				1.50			WEST MELBURY MARLY CHALK FORMATION Extremely weak pale grey-white MARL	
	1.80	D		1.80			End of Trial Pit at 1.80m	2

Method of excavation: JCB 3CX

Dimensions: 0.45m(W) x 2.00m(L) x 1.80m(D)

Stability: Sides stable

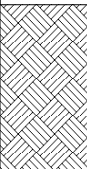
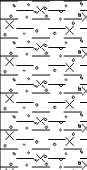
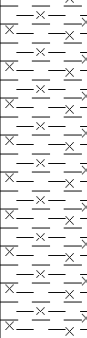
Groundwater: Land drain intercepted at 0.50m. Fast inflow flooded pit. Second pit seepage from 1.50m. Standing in base of pit at 1.75m after 15 minutes

Remarks: Roots visible down to 0.30m. First pit backfilled and another dug alongside. Co-ordinates interpolated from public domain data


Trial Pit Log

Trial Pit No.
TP 07

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515035E - 231582N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 25/09/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.20	D		0.30			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
	0.50	D		0.60			LOWESTOFT FORMATION Firm orange brown slightly gravelly silty CLAY with roots. Gravel is fine white chalk and fine to coarse sub-angular flint	
				1.20			WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white blocky silty CLAY with local iron-staining	1
							End of Trial Pit at 1.20m	2

Method of excavation: JCB 3CX **Dimensions:** 0.60m(W) x 2.00m(L) x 1.20m(D)

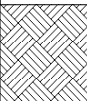
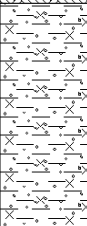
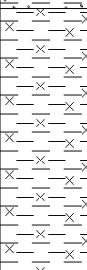
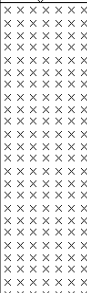
Stability: Sides stable

Groundwater: Not encountered

Remarks: Roots visible down to 0.30m. Co-ordinates interpolated from public domain data



				Trial Pit Log				Trial Pit No. TP 08	
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY						Co-ords: 515127E - 231573N		Project Number: 24.09.008	
						Level:		Logged By: Amanda David to BS 5930:2015	
						Dates: 25/09/2024			

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Result						
	0.10	D		0.30			TOPSOIL Dark grey organic rich slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint and sub-rounded quartzite and chalk	1	
							LOWESTOFT FORMATION Soft orange brown slightly gravelly silty CLAY. Gravel is fine sub-rounded flint and chalk. Becomes grey with depth. Occasional flint cobbles		
	1.00	D		1.00			WEST MELBURY MARLY CHALK FORMATION Uneven surface into stiff pale grey silty CLAY with a blocky texture		
	2.00	D		1.80			WEST MELBURY MARLY CHALK FORMATION Extremely weak pale grey SILTSTONE with iron staining and patches of orange silt. Recovered as blocks of fine and coarse gravel and small cobbles		2
	2.60	D		2.70			End of Trial Pit at 2.70m		
								3	
								4	

Method of excavation: JCB 3CX		Dimensions: 0.6m(W) x 2.2m(L) x 2.70m(D)		
Stability: Sides stable				
Groundwater: Not encountered				
Remarks: No roots visible. Co-ordinates interpolated from public domain data				

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Sheet 1 of 1

Trial Pit Log

Trial Pit No.

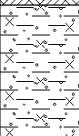
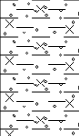
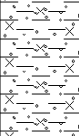
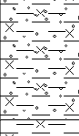
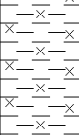
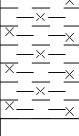
TP 09
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515197E - 231573N

Project Number:
24.09.008

Level:
Logged By:
Dates: 25/09/2027

 Amanda David
to BS 5930:2015

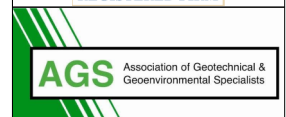
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.25			TOPSOIL Dark grey organic rich slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint and sub-rounded quartzite and chalk	
	0.50	D					LOWESTOFT FORMATION Firm brown becoming orange brown slightly gravelly silty CLAY. Gravel is fine sub-rounded white chalk and fine to medium sub-angular flint and rare sub-rounded quartzite	
							- Lens of grey silty CLAY at 0.60m to 0.70m	
	1.00	D						1
				1.20				
							WEST MELBURY MARLY CHALK FORMATION Stiff grey silty CLAY with a rubbly texture. Iron stained locally	
	1.50	D						
▼				1.70				
							End of Trial Pit at 1.70m	2

Method of excavation: JCB 3CX

Dimensions: 0.60m(W) x 2.20m(L) x 1.70m(D)

Stability: Sides stable

Groundwater: Groundwater seepage in base of pit

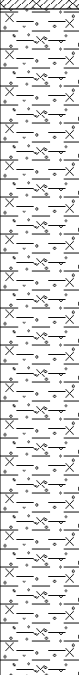
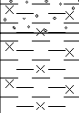
Remarks: Roots visible down to 0.80m. Co-ordinates interpolated from public domain data


LISTERS GEO Geotechnical and Geoenvironmental Consultants				Trial Pit Log				Trial Pit No. TP 10	
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY					Co-ords: 515076E - 231562N		Project Number: 24.09.008		
					Level:		Logged By: Amanda David to BS 5930:2015		
					Dates: 25/09/2024				
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Result						
	0.40	D		0.30			TOPSOIL Dark grey organic rich slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint and sub-rounded quartzite and chalk	1	
				0.40			MADE GROUND Soft brown slightly gravelly silty CLAY. Gravel is fine to coarse angular to sub-rounded charcoal, red brick, ceramic and flint		
				0.50			WEST MELBURY MARLY CHALK FORMATION Firm pale grey silty CLAY		
									End of Trial Pit at 0.50m
Method of excavation: JCB 3CX Dimensions: 0.60m(W) x 1.50m(L) x 0.50m(D) Stability: Sides stable Groundwater: Not encountered Remarks: Roots visible down to 0.30m. Co-ordinates interpolated from public domain data								QM SV ISO 9001 REGISTERED FIRM AGS Association of Geotechnical & Geoenvironmental Specialists	
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060								Sheet 1 of 1	

Trial Pit Log

Trial Pit No.
TP 01

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515049E - 231678N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 25/09/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.10	D		0.20			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
	1.00	D		1.40			LOWESTOFT FORMATION Firm orange brown slightly gravelly silty CLAY with roots. Gravel is fine white chalk and fine to coarse sub-angular flint	1
	1.50	D		1.60			WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white silty CLAY with a blocky texture	
							End of Trial Pit at 1.60m	2

Method of excavation: JCB 3CX	Dimensions: 0.60m(W) x 1.65m(L) x 1.60m(D)	 ISO 9001 REGISTERED FIRM  AGS Association of Geotechnical & Geoenvironmental Specialists
Stability: Sides stable		
Groundwater: Not encountered		
Remarks: Roots visible down to 1.30m. Co-ordinates interpolated from public domain data		
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Trial Pit Log

Trial Pit No.
TP 02

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515114E - 131681N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 25/09/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
▼	0.40	D		0.25			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
				0.60			LOWESTOFT FORMATION Soft pale brown silty CLAY with occasional medium sub-angular flint and fine chalk gravel	
				1.00			WEST MELBURY MARLY CHALK FORMATION Firm pale grey silty CLAY with orange coloured pocket	1
	1.50	D					WEST MELBURY MARLY CHALK FORMATION Stiff pale grey blocky silty CLAY becoming extremely weak Chalk with local orange staining on joint faces. Recovered as fine to coarse gravel	
	2.50	D						2
	3.00	D		3.20				3
							End of Trial Pit at 3.20m	4

Method of excavation: JCB 3CX **Dimensions:** 0.60m(W) x 2.50m(L) x 3.20m(D)

Stability: Sides stable

Groundwater: Groundwater inflow from 2.30m depth

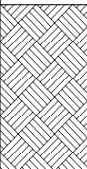
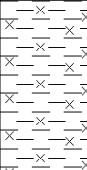
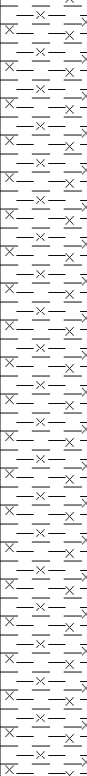
Remarks: Roots visible down to 0.20m. Co-ordinates interpolated from public domain data



Trial Pit Log

Trial Pit No.
TP 03

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515012E - 231614N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 25/09/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.20	D		0.30			TOPSOIL Grey brown friable slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint, sub-rounded quartzite and fine chalk	
				0.60			LOWESTOFT FORMATION Firm buff brown silty CLAY	
	1.00	D					WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white silty CLAY. Becomes blocky with depth. Some orange staining on join faces	1
	1.90	D		1.95			End of Trial Pit at 1.95m	2

Method of excavation: JCB 3CX **Dimensions:** 0.45m(W) x 2.00m(L) x 1.95m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: Roots visible down to 0.50m. Co-ordinates interpolated from public domain data

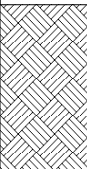
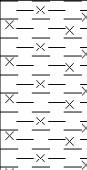
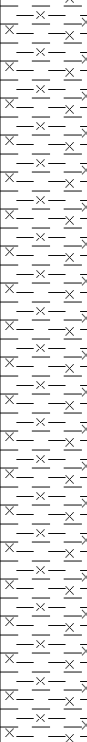


LISTERS GEO Geotechnical and Geoenvironmental Consultants				Trial Pit Log				Trial Pit No. TP 04	
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY					Co-ords: 515057E - 231622N		Project Number: 24.09.008		
					Level:		Logged By: Amanda David to BS 5930:2015		
					Dates: 25/09/2024				
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Result						
	0.10	D		0.30			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	1	
	0.50	D					WEST MELBURY MARLY CHALK FORMATION Firm pale grey silty CLAY		
				0.70			End of Trial Pit at 0.70m		
Method of excavation: JCB 3CX Dimensions: 0.60m(W) x 2.00m(L) x 0.70m(D) Stability: Sides stable Groundwater: Not encountered Remarks: Roots visible down to 0.25m. Co-ordinates interpolated from public domain data								QM SV ISO 9001 REGISTERED FIRM AGS Association of Geotechnical & Geoenvironmental Specialists	
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060								Sheet 1 of 1	

Trial Pit Log

Trial Pit No.
TP 05

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515126E - 231622N	Project Number: 24.09.008
	Level: Dates: 25/09/2024	Logged By: Amanda David to BS 5930:2015

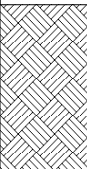
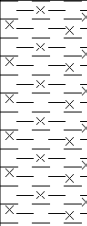
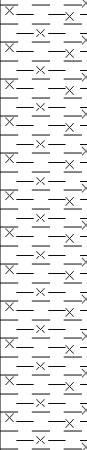
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.30			TOPSOIL Grey brown slightly gravelly silty CLAY with abundant rootlets	
	0.60	D		0.60			LOWESTOFT FORMATION Firm light buff brown mottled orange silty CLAY	
	1.00	D					WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white silty CLAY. Becomes blocky with depth. Rare coarse sub-angular flint gravel	1
	1.80	D		1.90			End of Trial Pit at 1.90m	2

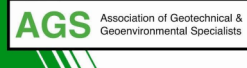
Method of excavation: JCB 3CX	Dimensions: 0.45m(W) x 1.90m(L) x 1.90m(D)	 
Stability: Sides stable		
Groundwater: Not encountered, groundwater inflow from land drain at 0.90m		
Remarks: Roots visible down to 0.60m. Co-ordinates interpolated from public domain data		
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060		Sheet 1 of 1

Trial Pit Log

Trial Pit No.
TP 06

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515195E - 231623N	Project Number: 24.09.008
	Level: Dates: 25/09/2024	Logged By: Amanda David to BS 5930:2015

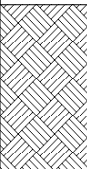
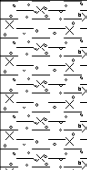
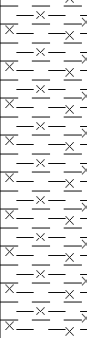
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.10	D					TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
				0.30			LOWESTOFT FORMATION Firm light orange brown silty CLAY with fine white chalk gravel	
				0.70			WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white blocky silty CLAY	1
	1.00	D						
				1.50			WEST MELBURY MARLY CHALK FORMATION Extremely weak pale grey-white MARL	
	1.80	D		1.80			End of Trial Pit at 1.80m	2

Method of excavation:	JCB 3CX	Dimensions:	0.45m(W) x 2.00m(L) x 1.80m(D)	 ISO 9001 REGISTERED FIRM
Stability:	Sides stable			
Groundwater:	Land drain intercepted at 0.50m. Fast inflow flooded pit. Second pit seepage from 1.50m. Standing in base of pit at 1.75m after 15 minutes			
Remarks:	Roots visible down to 0.30m. First pit backfilled and another dug alongside. Co-ordinates interpolated from public domain data			 AGS Association of Geotechnical & Geoenvironmental Specialists
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060				
				Sheet 1 of 1

Trial Pit Log

Trial Pit No.
TP 07

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515035E - 231582N	Project Number: 24.09.008
	Level: Dates: 25/09/2024	Logged By: Amanda David to BS 5930:2015

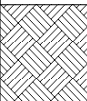
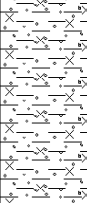
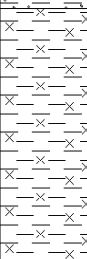
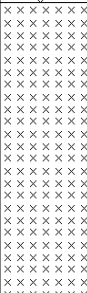
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.20	D		0.30			TOPSOIL Brown organic rich slightly gravelly silty CLAY with abundant roots. Gravel is fine to coarse sub-angular flint and occasional sub-rounded quartzite	
	0.50	D		0.60			LOWESTOFT FORMATION Firm orange brown slightly gravelly silty CLAY with roots. Gravel is fine white chalk and fine to coarse sub-angular flint	
				1.20			WEST MELBURY MARLY CHALK FORMATION Stiff pale grey-white blocky silty CLAY with local iron-staining	1
							End of Trial Pit at 1.20m	2

Method of excavation: JCB 3CX	Dimensions: 0.60m(W) x 2.00m(L) x 1.20m(D)	 ISO 9001 REGISTERED FIRM  Association of Geotechnical & Geoenvironmental Specialists
Stability: Sides stable		
Groundwater: Not encountered		
Remarks: Roots visible down to 0.30m. Co-ordinates interpolated from public domain data		
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060		Sheet 1 of 1

Trial Pit Log

Trial Pit No.
TP 08

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515127E - 231573N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 25/09/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.10	D		0.30			TOPSOIL Dark grey organic rich slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint and sub-rounded quartzite and chalk	
							LOWESTOFT FORMATION Soft orange brown slightly gravelly silty CLAY. Gravel is fine sub-rounded flint and chalk. Becomes grey with depth. Occasional flint cobbles	
	1.00	D		1.00			WEST MELBURY MARLY CHALK FORMATION Uneven surface into stiff pale grey silty CLAY with a blocky texture	1
							WEST MELBURY MARLY CHALK FORMATION Extremely weak pale grey SILTSTONE with iron staining and patches of orange silt. Recovered as blocks of fine and coarse gravel and small cobbles	2
	2.00	D		1.80				
	2.60	D		2.70			End of Trial Pit at 2.70m	3
								4

Method of excavation: JCB 3CX **Dimensions:** 0.6m(W) x 2.2m(L) x 2.70m(D)

Stability: Sides stable

Groundwater: Not encountered

Remarks: No roots visible. Co-ordinates interpolated from public domain data



Trial Pit Log

Trial Pit No.

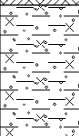
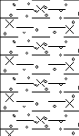
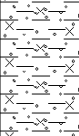
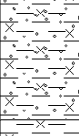
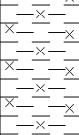
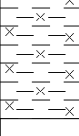
TP 09
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Co-ords: 515197E - 231573N

Project Number:
24.09.008

Level:
Logged By:
Dates: 25/09/2027

 Amanda David
to BS 5930:2015

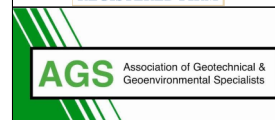
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
				0.25			TOPSOIL Dark grey organic rich slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint and sub-rounded quartzite and chalk	
	0.50	D					LOWESTOFT FORMATION Firm brown becoming orange brown slightly gravelly silty CLAY. Gravel is fine sub-rounded white chalk and fine to medium sub-angular flint and rare sub-rounded quartzite	
							- Lens of grey silty CLAY at 0.60m to 0.70m	
	1.00	D						1
				1.20				
							WEST MELBURY MARLY CHALK FORMATION Stiff grey silty CLAY with a rubbly texture. Iron stained locally	
	1.50	D						
				1.70				
▼							End of Trial Pit at 1.70m	2

Method of excavation: JCB 3CX

Dimensions: 0.60m(W) x 2.20m(L) x 1.70m(D)

Stability: Sides stable

Groundwater: Groundwater seepage in base of pit

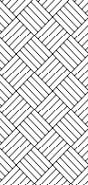
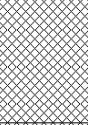
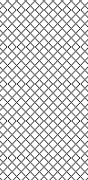
Remarks: Roots visible down to 0.80m. Co-ordinates interpolated from public domain data


LISTERS GEO Geotechnical and Geoenvironmental Consultants				Trial Pit Log				Trial Pit No. TP 10	
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY					Co-ords: 515076E - 231562N		Project Number: 24.09.008		
					Level:		Logged By: Amanda David to BS 5930:2015		
					Dates: 25/09/2024				
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Result						
	0.40	D		0.30			TOPSOIL Dark grey organic rich slightly gravelly silty CLAY with abundant rootlets. Gravel is fine to coarse sub-angular flint and sub-rounded quartzite and chalk	1	
				0.40			MADE GROUND Soft brown slightly gravelly silty CLAY. Gravel is fine to coarse angular to sub-rounded charcoal, red brick, ceramic and flint		
				0.50			WEST MELBURY MARLY CHALK FORMATION Firm pale grey silty CLAY		
									End of Trial Pit at 0.50m
Method of excavation: JCB 3CX Dimensions: 0.60m(W) x 1.50m(L) x 0.50m(D) Stability: Sides stable Groundwater: Not encountered Remarks: Roots visible down to 0.30m. Co-ordinates interpolated from public domain data								QM SV ISO 9001 REGISTERED FIRM AGS Association of Geotechnical & Geoenvironmental Specialists	
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Hand Auger Log

Borehole No.
HP 01

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 514991E - 231623N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 16/10/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.20	D		0.30			TOPSOIL Firm slightly gravelly CLAY. Gravel is fine to medium. Gravel is flint and calcium Carbonate. CLAY is medium brown and gravel is angular to sub-angular	
	0.40	D		0.50			MADE GROUND Firm light brown slightly gravelly CLAY. Gravel is fine to coarse and sub-angular to rounded. Gravel is sandstone and Calcium carbonate	
	0.55	D					MADE GROUND Firm light brown slightly gravelly CLAY. Gravel is fine to coarse and rounded to sub-angular. Gravel is sandstone flint and calcium carbonate.	
	0.80	D		0.80			End of Borehole at 0.80m	

Method of excavation: Hand digging tools

Stability: Sides stable

Groundwater: Not encountered

Hand Auger Dimensions: 0.25m(W) x 0.25m(L) x 0.8m(D)

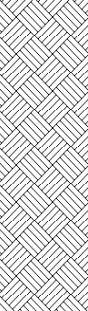
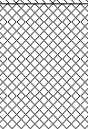
Remarks: Roots visible down to 0.60m. Co-ordinates interpolated from public domain data



Hand Auger Log

Borehole No.
HP 02

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 514992E - 231613N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 16/10/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.30	D					TOPSOIL Firm slightly gravelly CLAY. Gravel is fine to medium. Gravel is flint and calcium carbonate. CLAY is medium brown and gravel is angular to sub-angular	
	0.60	D		0.50			MADE GROUND Stiff light brown/grey slightly gravelly CLAY. Gravel is fine to medium sub-rounded to sub-angular of flint and calcium carbonate	
	0.75	D		0.70			MADE GROUND Light brown stiff slightly gravelly CLAY. Gravel is fine to medium sub rounded to sub angular mostly of flint and calcium carbonate.	
	0.90	D		0.85 0.90			MADE GROUND Gravel is fine, angular to sub-angular of calcium carbonate and flint. Light grey/brown stiff CLAY End of Borehole at 0.90m	1
								2

Method of excavation: Hand digging tools

Stability: Sides stable

Groundwater: Not encountered

Hand Auger Dimensions: 0.25m(W) 0.25m (L) x 0.90m(D)

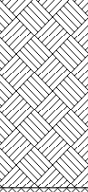
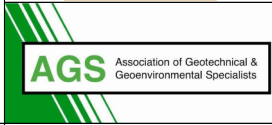
Remarks: Roots visible down to 0.50m. Co-ordinates interpolated from public domain data



ISO 9001
REGISTERED FIRM



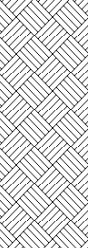
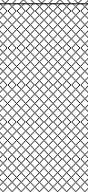
AGS Association of Geotechnical & Geoenvironmental Specialists

				Hand Auger Log				Borehole No. HP 03	
Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY						Co-ords: 514999E - 231622N		Project Number: 24.09.008	
						Level:		Logged By: Amanda David to BS 5930:2015	
						Dates: 16/10/2024			
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Result						
	0.20	D					TOPSOIL Firm slightly gravelly CLAY. Gravel is fine to medium. Gravel is flint and calcium carbonate. CLAY is medium brown and gravel is angular to sub-angular		
	0.35	D		0.30			MADE GROUND Firm light brown slightly gravelly CLAY. Gravel is fine to coarse and sub-angular to rounded. Gravel is sandstone and calcium carbonate.		
				0.40			End of Borehole at 0.40m		
								1	
								2	
Method of excavation: Hand digging tools									
Stability: Sides stable									
Groundwater: Not encountered									
Hand Auger Dimensions: 0.25m(W) x 0.25m(L) x 0.4m(D)									
Remarks: Roots visible down to 0.40m. Co-ordinates interpolated from public domain data									
Listers Geotechnical Consultants LTD www.listersgeotechnics.co.uk Tel: 01327 860060								Sheet 1 of 1	

Hand Auger Log

Borehole No.
HP 04

Project Location: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Co-ords: 515023E - 231590N	Project Number: 24.09.008
	Level:	Logged By: Amanda David to BS 5930:2015
Dates: 16/10/2024		

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	Result					
	0.25 0.30	D D		0.40			TOPSOIL Firm slightly gravelly CLAY. Gravel is fine to medium. Gravel is flint and calcium carbonate. CLAY is medium brown and gravel is angular to sub-angular	
				0.70			MADE GROUND Slightly firm, slightly lighter brown than before. Still medium brown slightly gravelly CLAY. Gravel is fine to medium sub-angular to rounded. Mostly flint, and calcium carbonate, possibly with sandstone	
	0.75	D		0.80			MADE GROUND Firm light brown slightly gravelly CLAY. Gravel is fine to coarse and sub-angular to rounded. Gravel is sandstone and calcium carbonate End of Borehole at 0.80m	
								1
								2

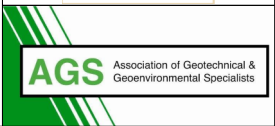
Method of excavation: Hand digging tools

Stability: Sides stable

Groundwater: Not encountered

Hand Auger Dimensions: 0.25m(W) 0.25m(L) x 0.80m(D)

Remarks: Roots visible down to 0.50m. Co-ordinates interpolated from public domain data



Report No: 24.09.008
Site: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

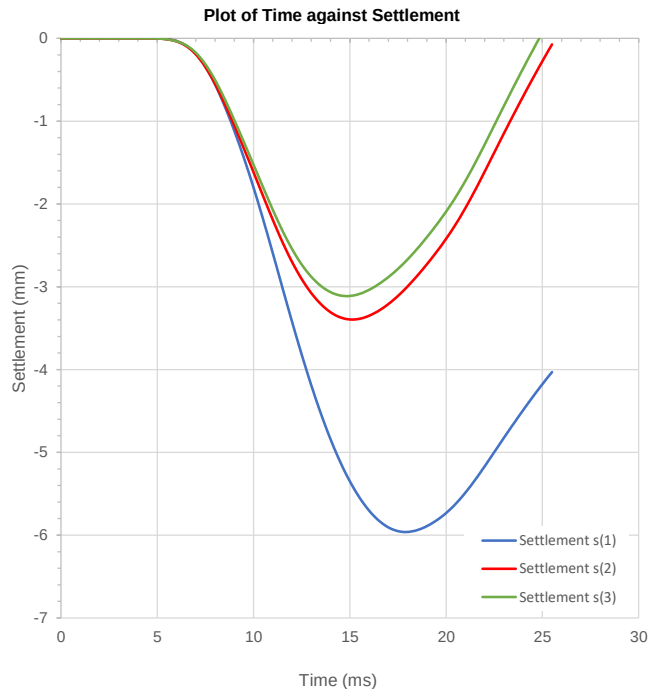
Test Location Reference TP03
Test Number Test1
Depth of test 0.5m
Plate size 300 mm diameter circular
Sample reference TP03
Sample depth 0.4 m (below Ground Level)
Technician AD
Date of test 25.09.2024
Weather -

Description of test stratum/strata Firm buff brown silty CLAY.

Test Record

Device No. 8342
Measuring Series 9
Plate diameter 300 mm
Mass of drop weight 10 kg
Height of drop 1,135 mm
Max impact force 7070 N
Duration of impact 18 ms

Max Settlement (mm)
s(1) = 5.962 mm
s(2) = 3.396 mm
s(3) = 3.113 mm
Max Velocity (mm/s)
v(1) = 178.0 mm/s
v(2) = 579.4 mm/s
v(3) = 549.5 mm/s
Mean Settlement (mm)
s(m) = 4.157 mm
Mean Velocity (mm/s)
v(m) = 435.6 mm/s



Calculation and Result

Dynamic compactness ratio, s/v = 0.010
Dynamic Modulus of Deformation, E_{vd} = 4.81 MPa

Equivalent CBR value 2 %

Remarks: Test for guidance only - result outside acceptable range for this method: $10\text{MPa} < E_{vd} < 70\text{MPa}$
Settlement 3 excluded from calculation as unreliable

DYNAMIC PLATE LOAD TEST CERTIFICATE

TP BF-StB, Part B 8.3. Technical specification for soil and rock in road construction, Dynamic Plate Loading Test, German Road and Transportation Research Association, 2003

Report No.:

24.09.008

Report No: 24.09.008
Site: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Test Details

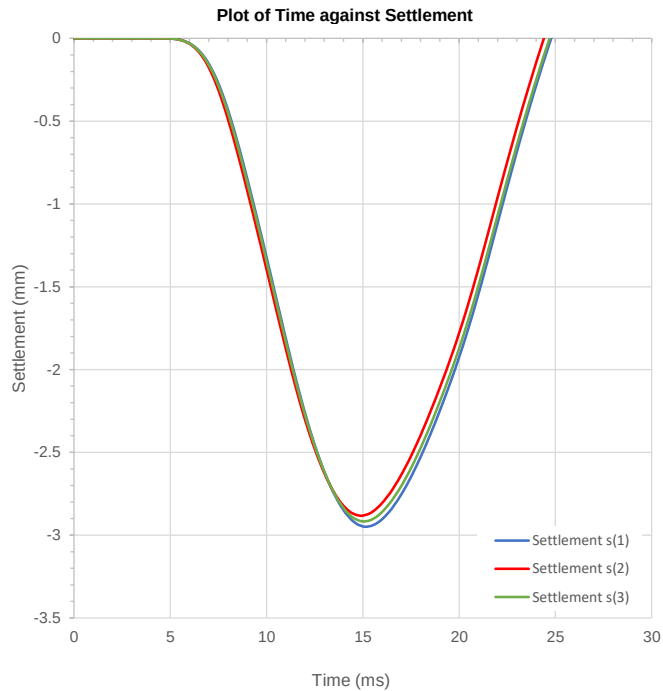
Test Location Reference	TP05	
Test Number	Test 1	
Depth of test	0.5m	
Plate size	300	mm diameter circular
Sample reference	TP05	
Sample depth	0.35	m (below Ground Level)
Technician	AD	
Date of test	25.09.2024	
Weather	-	

Description of test stratum/strata

Test Record

Device No.	8342
Measuring Series	10
Plate diameter	300
Mass of drop weight	10
Height of drop	1,135
Max impact force	7070
Duration of impact	18

mm
 kg
 mm
 N
 ms



Max Settlement (mm)	Max Velocity (mm/s)
s(1) = 2.949 mm	v(1) = 492.1 mm/s
s(2) = 2.883 mm	v(2) = 484.4 mm/s
s(3) = 2.917 mm	v(3) = 489.4 mm/s
Mean Settlement (mm)	Mean Velocity (mm/s)
s(m) = 2.916 mm	v(m) = 488.6 mm/s

Calculation and Result

Dynamic compactness ratio, s/v =	0.006	
Dynamic Modulus of Deformation, E_{vd} =	7.72	MPa

Equivalent CBR value **3** %

Remarks: Test for guidance only - result outside acceptable range for this method: $10\text{MPa} < E_{vd} < 70\text{MPa}$

DYNAMIC PLATE LOAD TEST CERTIFICATE

TP BF-StB, Part B 8.3. Technical specification for soil and rock in road construction, Dynamic Plate Loading Test, German Road and Transportation Research Association, 2003

Report No.:

24.09.008

Report No: 24.09.008
Site: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Test Details

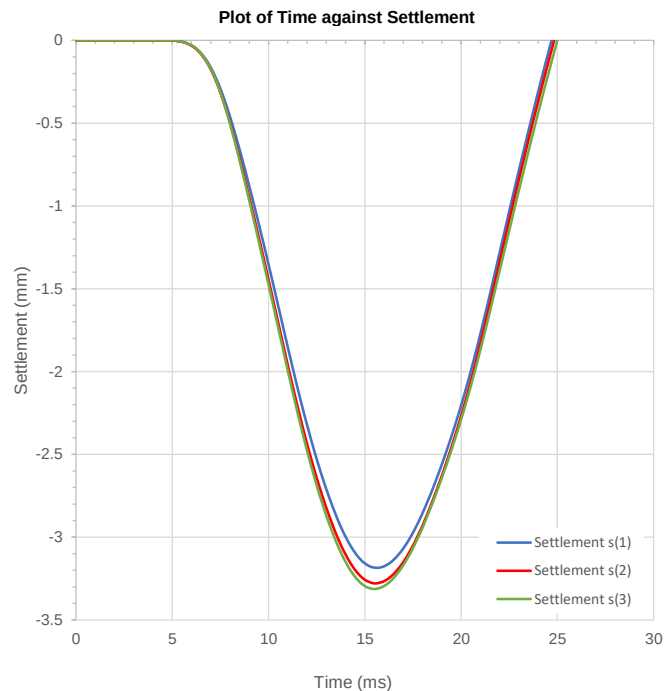
Test Location Reference TP02
Test Number Test 1
Depth of test 0.4m
Plate size 300 mm diameter circular
Sample reference TP02
Sample depth 0.25 m (below Ground Level)
Technician
Date of test 25.09.2024
Weather -

Description of test stratum/strata

Test Record

Device No. 8342
Measuring Series 11
Plate diameter 300 mm
Mass of drop weight 10 kg
Height of drop 1,135 mm
Max impact force 7070 N
Duration of impact 18 ms

Max Settlement (mm)
 s(1) = 3.186 mm
 s(2) = 3.279 mm
 s(3) = 3.313 mm
Max Velocity (mm/s)
 v(1) = 502.3 mm/s
 v(2) = 517.9 mm/s
 v(3) = 521.6 mm/s
Mean Settlement (mm)
 s(m) = 3.259 mm
Mean Velocity (mm/s)
 v(m) = 513.9 mm/s



Calculation and Result

Dynamic compactness ratio, s/v = 0.006
 Dynamic Modulus of Deformation, E_{vd} = 6.90 MPa

Equivalent CBR value 3 %

Remarks: Test for guidance only - result outside acceptable range for this method: $10\text{MPa} < E_{vd} < 70\text{MPa}$

DYNAMIC PLATE LOAD TEST CERTIFICATE

TP BF-StB, Part B 8.3. Technical specification for soil and rock in road construction, Dynamic Plate Loading Test, German Road and Transportation Research Association, 2003

Report No.:

24.09.008

Report No: 24.09.008
Site: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Test Details

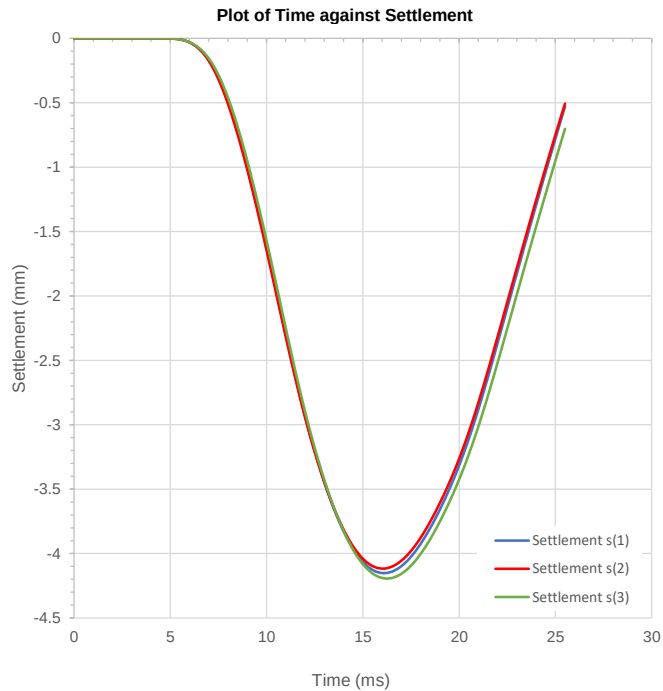
Test Location Reference	TP01	
Test Number	Test 1	
Depth of test	0.50	
Plate size	300	mm diameter circular
Sample reference	TP01	
Sample depth	0.10	m (below Ground Level)
Technician	AD	
Date of test	25.09.2024	
Weather	-	

Description of test stratum/strata

Test Record

Device No.	8342
Measuring Series	12
Plate diameter	300
Mass of drop weight	10
Height of drop	1,135
Max impact force	7070
Duration of impact	18

mm
 kg
 mm
 N
 ms



Max Settlement (mm)	Max Velocity (mm/s)
s(1) = 4.152 mm	v(1) = 26.1 mm/s
s(2) = 4.117 mm	v(2) = 22.2 mm/s
s(3) = 4.194 mm	v(3) = 31.1 mm/s
Mean Settlement (mm)	Mean Velocity (mm/s)
s(m) = 4.154 mm	v(m) = 26.4 mm/s

Calculation and Result

Dynamic compactness ratio, s/v =	0.157	
Dynamic Modulus of Deformation, E_{vd} =	5.42	MPa

Equivalent CBR value	2	%
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Remarks: Test for guidance only - result outside acceptable range for this method: $10\text{MPa} < E_{vd} < 70\text{MPa}$

DYNAMIC PLATE LOAD TEST CERTIFICATE

TP BF-StB, Part B 8.3. Technical specification for soil and rock in road construction, Dynamic Plate Loading Test, German Road and Transportation Research Association, 2003

Report No.:

24.09.008

Report No: 24.09.008
Site: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Test Details

Test Location Reference	TP04	
Test Number	Test 1	
Depth of test	0.4m	
Plate size	300	mm diameter circular
Sample reference	TP04	
Sample depth	0.10	m (below Ground Level)
Technician	AD	
Date of test	25.09.2024	
Weather	-	

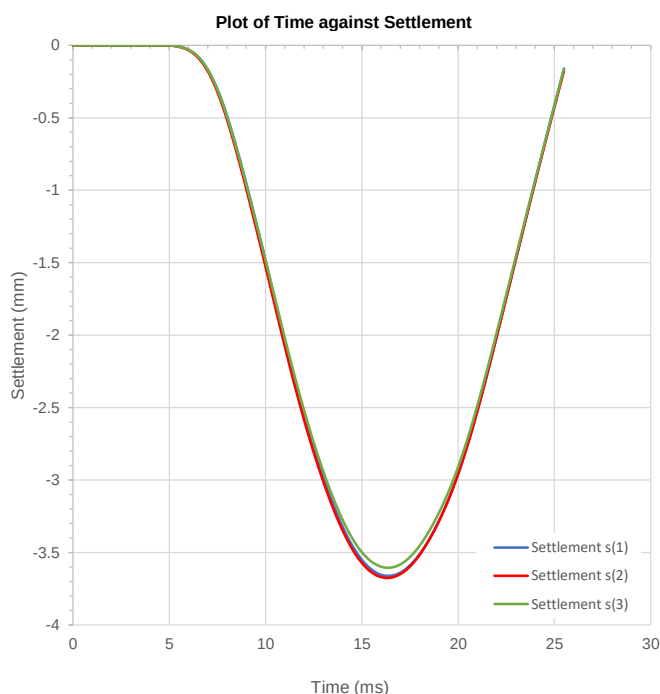
Description of test stratum/strata

Test Record

Device No. 8342
Measuring Series 13
Plate diameter 300
Mass of drop weight 10
Height of drop 1,135
Max impact force 7070
Duration of impact 18

mm
kg
mm
N
ms

Max Settlement (mm)	Max Velocity (mm/s)
s(1) = 3.662 mm	v(1) = 553.5 mm/s
s(2) = 3.676 mm	v(2) = 552.7 mm/s
s(3) = 3.606 mm	v(3) = 539.0 mm/s
Mean Settlement (mm)	Mean Velocity (mm/s)
s(m) = 3.648 mm	v(m) = 548.4 mm/s



Calculation and Result

Dynamic compactness ratio, s/v = 0.007
 Dynamic Modulus of Deformation, E_{vd} = 6.17 MPa

Equivalent CBR value 2 %

Remarks: Test for guidance only - result outside acceptable range for this method: $10\text{MPa} < E_{vd} < 70\text{MPa}$

DYNAMIC PLATE LOAD TEST CERTIFICATE

TP BF-StB, Part B 8.3. Technical specification for soil and rock in road construction, Dynamic Plate Loading Test, German Road and Transportation Research Association, 2003

Report No.:

24.09.008

Report No: 24.09.008
Site: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Test Details

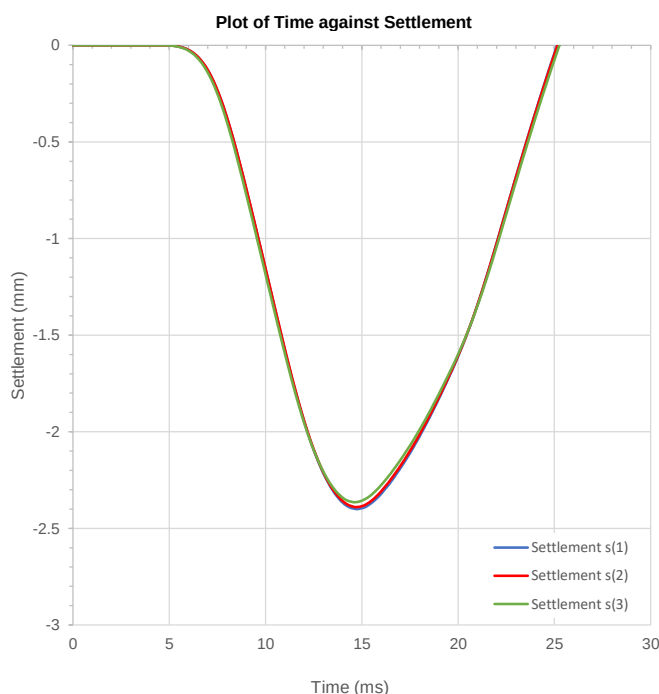
Test Location Reference	TP08	
Test Number	Test 1	
Depth of test	0.6m	
Plate size	300	mm diameter circular
Sample reference	TP08	
Sample depth	0.30	m (below Ground Level)
Technician	AD	
Date of test	25.09.2024	
Weather	-	

Description of test stratum/strata

Test Record

Device No.	8342	
Measuring Series	14	
Plate diameter	300	mm
Mass of drop weight	10	kg
Height of drop	1,135	mm
Max impact force	7070	N
Duration of impact	18	ms

Max Settlement (mm)	Max Velocity (mm/s)
s(1) = 2.400 mm	v(1) = 420.2 mm/s
s(2) = 2.390 mm	v(2) = 419.6 mm/s
s(3) = 2.365 mm	v(3) = 415.4 mm/s
Mean Settlement (mm)	Mean Velocity (mm/s)
s(m) = 2.385 mm	v(m) = 418.4 mm/s



Calculation and Result

Dynamic compactness ratio, s/v = 0.006
 Dynamic Modulus of Deformation, E_{vd} = 9.44 MPa

Equivalent CBR value **3** %

Remarks: Test for guidance only - result outside acceptable range for this method: $10\text{MPa} < E_{vd} < 70\text{MPa}$

DYNAMIC PLATE LOAD TEST CERTIFICATE

TP BF-StB, Part B 8.3. Technical specification for soil and rock in road construction, Dynamic Plate Loading Test, German Road and Transportation Research Association, 2003

Report No.:

24.09.008

Report No: 24.09.008
Site: Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY

Test Details

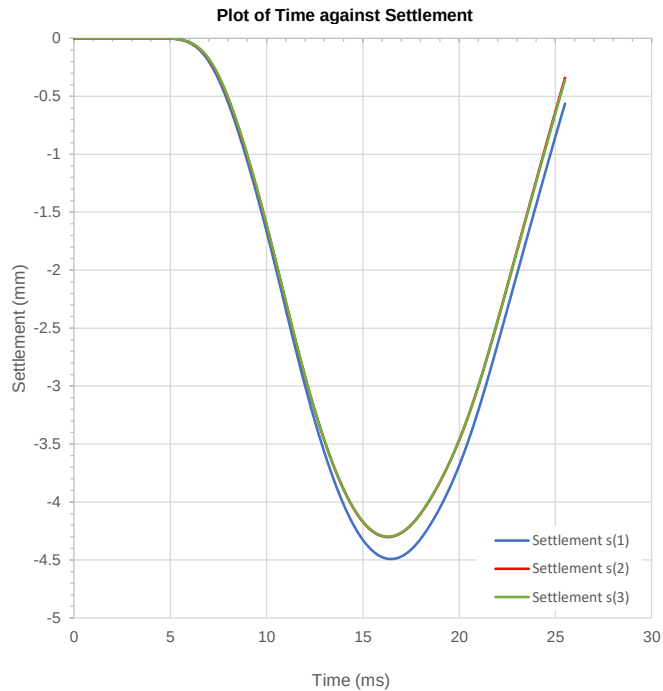
Test Location Reference	TP10	
Test Number	Test 1	
Depth of test	0.50	
Plate size	300	mm diameter circular
Sample reference	TP10	
Sample depth	0.30	m (below Ground Level)
Technician	AD	
Date of test	25.09.2024	
Weather	-	

Description of test stratum/strata

Test Record

Device No.	8342
Measuring Series	15
Plate diameter	300
Mass of drop weight	10
Height of drop	1,135
Max impact force	7070
Duration of impact	18

mm
 kg
 mm
 N
 ms



Max Settlement (mm)	Max Velocity (mm/s)
s(1) = 4.492 mm	v(1) = 27.5 mm/s
s(2) = 4.302 mm	v(2) = 15.6 mm/s
s(3) = 4.298 mm	v(3) = 16.5 mm/s
Mean Settlement (mm)	Mean Velocity (mm/s)
s(m) = 4.364 mm	v(m) = 19.9 mm/s

Calculation and Result

Dynamic compactness ratio, s/v =	0.220	
Dynamic Modulus of Deformation, E_{vd} =	5.16	MPa

Equivalent CBR value **2** %

Remarks: Test for guidance only - result outside acceptable range for this method: $10\text{MPa} < E_{vd} < 70\text{MPa}$

DYNAMIC PLATE LOAD TEST CERTIFICATE

TP BF-StB, Part B 8.3. Technical specification for soil and rock in road construction, Dynamic Plate Loading Test, German Road and Transportation Research Association, 2003

Report No.:

24.09.008

Site: Land South of Hambridge Way, Pirton, Hitchin,
SG5 3QY

Report No: 24.09.008

Date Tested: 25/09/2024

Test Location: TP01_test1

Groundwater: unknown

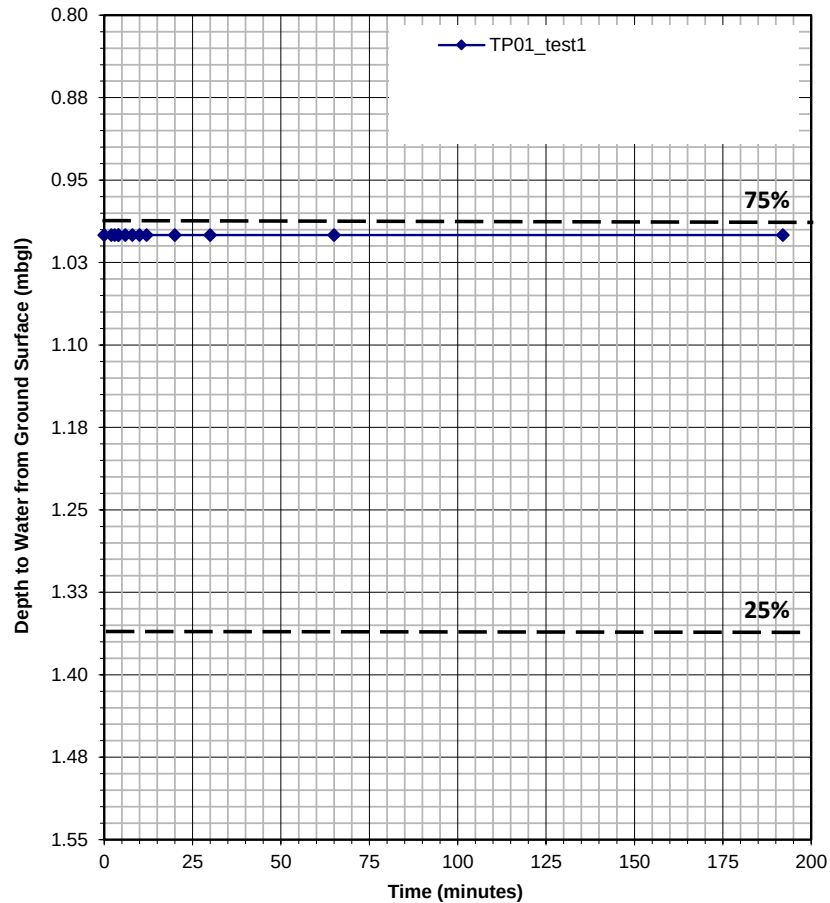
Dimensions: 0.7mWx3.0mLx1.65mD

Soil Description - test response zone:

0

Time (mins) Depth BGL

0	1.00
2	1.00
3	1.00
4	1.00
4	1.00
6	1.00
8	1.00
10	1.00
12	1.00
20	1.00
30	1.00
65	1.00
192	1.00



Infiltration Rate could not be calculated(0.00m drop; 00% empty in 192 minutes)

**TRIAL PIT INFILTRATION TESTING
to BRE Digest 365**

Report:
24.09.008

Site: Land South of Hambridge Way, Pirton, Hitchin,
SG5 3QY

Report No: 24.09.008

Date Tested: 25/09/2024

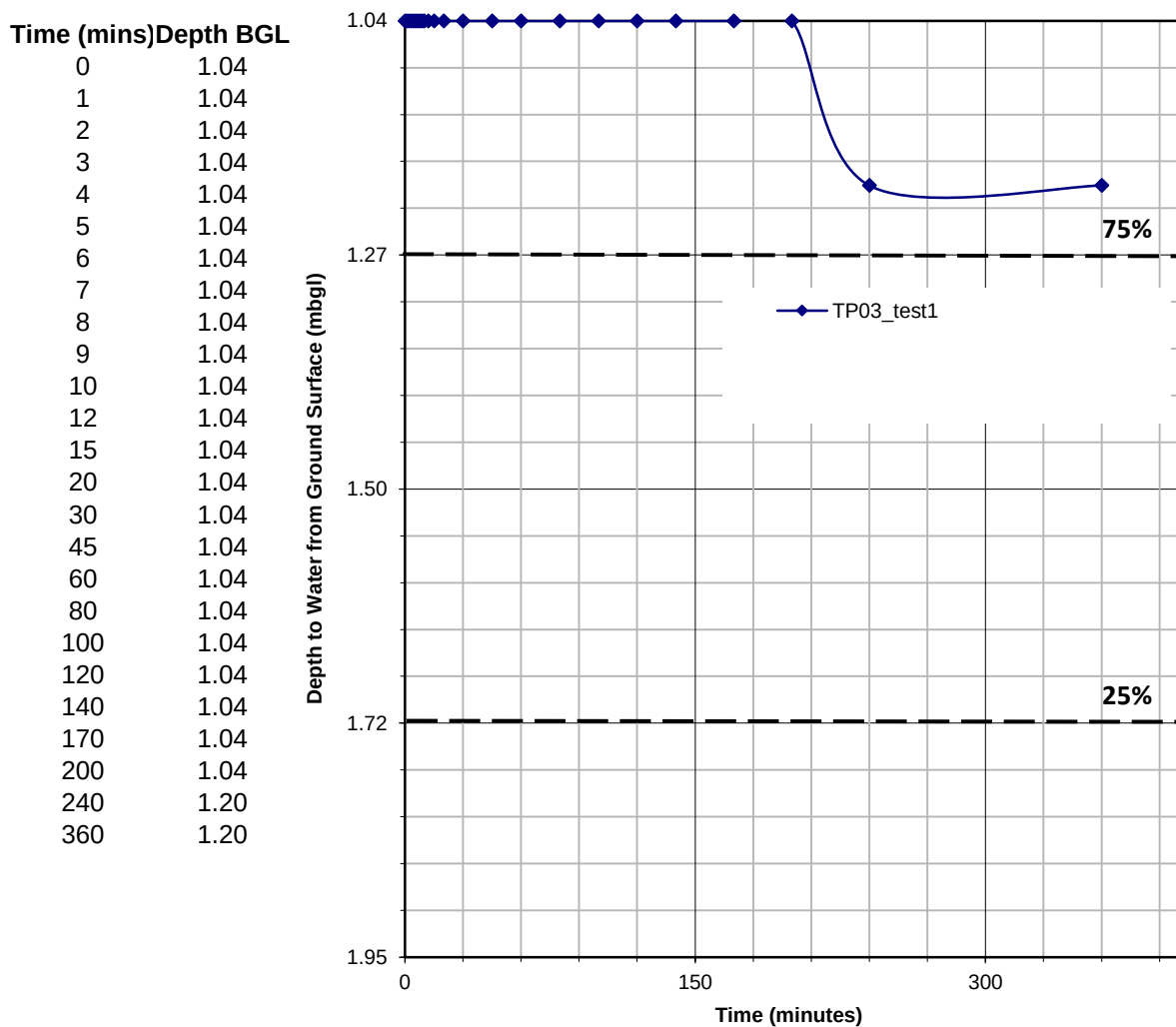
Test Location: TP03_Test1

Groundwater: unknown

Dimensions: 0.5mWx2.2mLx1.95mD

Soil Description - test response zone:

See TP03 log



Infiltration Rate could not be calculated(0.16m drop; 18% empty in 360 minutes)

TRIAL PIT INFILTRATION TESTING
to BRE Digest 365

Report:
24.09.008

Site: Land South of Hambridge Way, Pirton, Hitchin,
SG5 3QY

Report No: 24.09.008

Date Tested: 25/09/2024

Test Location: TP04_test1

Groundwater: unknown

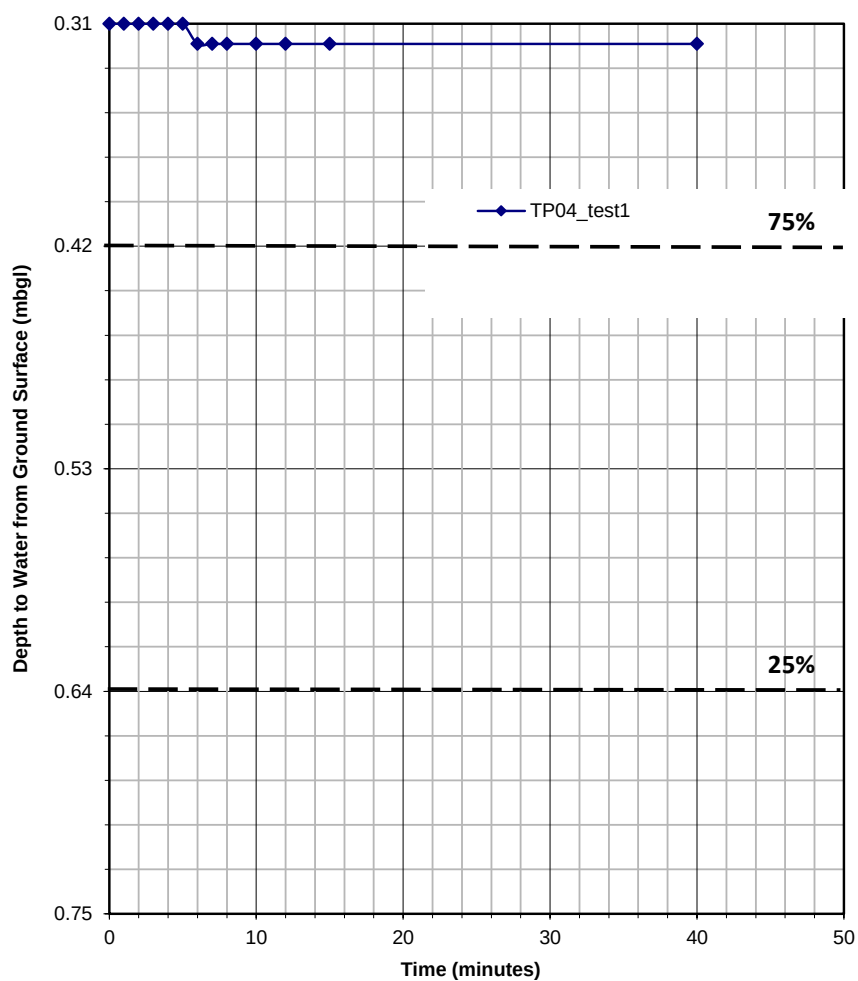
Dimensions: 0.7mWx2.0mLx0.75mD

Soil Description - test response zone:

See TP04 log

Time (mins) Depth BGL

0	0.31
1	0.31
2	0.31
3	0.31
4	0.31
5	0.31
6	0.32
7	0.32
8	0.32
10	0.32
12	0.32
15	0.32
40	0.32



Infiltration Rate could not be calculated(0.01m drop; 02% empty in 40 minutes)

**TRIAL PIT INFILTRATION TESTING
to BRE Digest 365**

Report:
24.09.008



Project:	Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY
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Ambient air temperature (°C): 14

Barometric pressure (mB): 1017

Barometric trend: Increasing Pressure

Weather conditions: Cloudy

Groundwater monitoring

Hole ID	Ground level (mAOD)	Water depth (m)	Water level (mAOD)	Depth of pipe base (m)	Remarks
CT05		2.61		3.00	
CT01		0.66		3.00	

Gas monitoring

Gas Monitoring							
Hole ID	Methane CH ₄ (%v/v)	Carbon Dioxide CO ₂ (%v/v)	Oxygen O ₂ (%v/v)	Flow Rate (l/h)	Well Pressure (mBar)	PID* (ppm)	Remarks
CT05	<0.1	0.9	19.3	0.3	10.83		
CT01	<0.1	0.8	20.0	0.2	22.11		

Note: See Exploratory Hole log for well details

SUMMARY OF GAS & GROUNDWATER MONITORING - 02.Oct.24

Report No.
24.09.008



Project:	Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY
-----------------	---

Ambient air temperature (°C): 17

Barometric pressure (mB): 1004

Barometric trend: Decreasing Pressure

Weather conditions: Rain

Groundwater monitoring

Groundwater Monitoring					
Hole ID	Ground level (mAOD)	Water depth (m)	Water level (mAOD)	Depth of pipe base (m)	Remarks
CT01		0.63		2.93	
CT05		2.03		3.04	

Gas monitoring

Hole ID	Methane CH ₄ (%v/v)	Carbon Dioxide CO ₂ (%v/v)	Oxygen O ₂ (%v/v)	Flow Rate (l/h)	Well Pressure (mBar)	PID* (ppm)	Remarks
CT01	<0.1	2.1	2.1	0.5	0.05		
CT05	<0.1	0.6	0.6	0.5	12.01		

Note: See Exploratory Hole log for well details

SUMMARY OF GAS & GROUNDWATER MONITORING - 16.Oct.24

Report No.
24.09.008

APPENDIX C

LABORATORY TEST REPORTS

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone:- 01327 860947/860060

Email: lab@listersgeotechnics.co.uk

PROJECT INFORMATION		SAMPLE INFORMATION		
Site Location:-	Land South of Hambridge Way, Pirton, Hitchin, SG5 3QY	Laboratory Tests Undertaken:-		
		TEST TYPE	TEST METHOD	TESTED
		Natural Moisture Contents (MC%)	(BS 1377:Part 2:1990 Clause 3.2)	✓
		Liquid Limits (%)	(BS 1377:Part 2:1990 Clause 4.3)	✓
		Plastic Limits (%)	(BS 1377:Part 2:1990 Clause 5.3)	✓
		Plasticity Index (%)	(BS 1377:Part 2:1990 Clause 5.4)	✓
		Saturated Moisture Content (%)	(BS1377 : Part 2 : 1990, clause 3.3)	✓
		PSD - Wet Sieving	(BS 1377:Part 2:1990 Clause 9.2)	
Client Reference:-		Engineering Sample Descriptions	(BS 5930 : Section 6)	
		Passing 425/63 (µm)	-	✓
		Hydrometer	(BS 1377:Part 2:1990 Clause 9.5)	
Date Samples Received:-	27 September 2024	Loss on Ignition (%)	-	
Date Testing Completed:-	31 October 2024	Soil Suctions (kPa)	BRE Digest IP 4/93, 1993	
		Bulk Density (Mg/m ³)	(BS 1377:Part 2:1990 Clause 7.2)	
		Strength Tests	(BS 1377:Part 7:1990 Clause 8 & 9)	
		Soluble Sulphate Content (SO ₄ g/l)	(BS 1377:Part 3:1990 Clause 5.3)	✓
		pH value	(BS 1377:Part 3:1990 Clause 9.4)	✓
		California Bearing Ratios (CBR)	(BS 1377:Part 4:1990 Clause 7)	
		Compaction Tests	(BS 1377:Part 4:1990 Clauses 3.0-3.6)	
The results relate only to the samples tested				
This test-report may not be reproduced, except with full and written approval of GROUNDTECH LABORATORIES		Laboratory testing in accord with BS EN ISO/IEC 17025-2000 and Quality Management in accord with ISO 9001		
Signed on behalf of GroundTech Laboratories:- 			Technical Signatory	
			Quality Assured to ISO 9001	
GEOTECHNICAL LABORATORY TEST RESULTS			Report No: 24.09.008	

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060

Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

Quality Assured
to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS			
Test Location	Sample Type	Sample Depth -m	Test Type	WC %	LL %	PL %	PI %	Passing 425 μm %	Modified PI %	Class	Passing 63 μm %	WC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m³	Test Type	Cell Pressure kN/m²	Deviator Stress kN/m²	Apparent Cohesion kN/m²	φ	pH Value	Soluble Sulphate Content SO4 g/l		
CT 01	D	0.10	PI/63	18	56	23	33	99	33	CH	95	0.43	25	0.03									8.5	0.10		
	D	0.40		24																						
	D	1.00		24																						
	D	1.60		22																						
	D	2.00		23																						
CT 02	D	2.50	PI/63	22	54	23	31	100	31	CH	98	0.41	25	-0.03									8.8	0.12		
	D	3.00		20																						
	D	5.00		22																						
	D	0.40		24																						
	D	1.00		22																						
CT 03	D	1.60	PI/63	21	49	22	27	99	27	CI	95	0.45	23	0.00									8.6	0.10		
	D	2.00		22																						
	D	3.00		22																						
	D	4.50		28																						
	D	5.00		21																						
	D	0.10		22																						
	D	0.40		21																						
	D	0.60		28																						
	D	1.00		23																						
D	1.50	21																								
D	2.00	22																								
D	2.50	21																								
D	3.50	23																								
Symbols:				U	Undisturbed Sample					R	Remoulded				PI	Plasticity Index			T	Triaxial Undrained				L	100mm specimen	
				D	Disturbed Sample					63	Passing 63μm				F	Filter Paper Suction Tests			M	Multistage Triaxial				S	38mm specimen	
				B	Bulk Sample					H	Hydrometer				CC	Continuous Core			HP	Hand Penetrometer						
				W	Water Sample					PSD	Wet Sieving								V	Vane Test						
LABORATORY TEST RESULTS																				Project Reference 24.09.008						

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060

Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

Quality Assured
to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS				
Test Location	Sample Type	Sample Depth -m	Test Type	WC %	LL %	PL %	PI %	Passing 425 μm %	Modified PI %	Class	Passing 63 μm %	WC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m³	Test Type	Cell Pressure kN/m²	Deviator Stress kN/m²	Apparent Cohesion kN/m²	φ	pH Value	Soluble Sulphate Content SO4 g/l			
CT 03	D	4.50	PI/63	21	53	23	30	100	30	CH	98	0.51	25	0.13									7.9	0.08			
D	5.50	18																									
CT 04	D	1.00		27																					21	20	
CT 05	D	2.00	PI/63	21	55	22	33	100	33	CH	96	0.38	24	-0.03													
	D	3.50		20																							
	D	5.50		19																							
CT 06	D	0.40	PI/63	22	58	24	34	100	34	CH	97	0.40	26	-0.03									8.4	0.06			
	D	1.00		21																							
	D	1.50		23																					58	25	33
CT 06	D	3.00	PI/63	22																							
	D	4.50		19																							
	D	0.40		19																							
TP 01	D	1.10	PI/63	21	52	22	30	100	30	CH	97	0.40	24	-0.03													
	D	1.50		25																							
	D	2.50		21																							
TP 02	D	4.00	PI/63	18	51	21	30	100	30	CH	97	0.35	23	-0.10									8.7	0.10			
	D	1.00		24																							
	D	1.50	PI/63	24	57	23	34	99	34	CH	96	0.42	25	0.03													
TP 03	D	0.40	PI/63	25	56	25	31	100	31	CH	97	0.52	27	0.13									8.9	0.10			
	D	1.50		24																							
	D	3.00		29																							
	D	0.20		17																							
	D	1.00		26																							
Symbols:				U	Undisturbed Sample					R	Remoulded				PI	Plasticity Index			T	Triaxial Undrained					L	100mm specimen	
				D	Disturbed Sample					63	Passing 63μm				F	Filter Paper Suction Tests			M	Multistage Triaxial					S	38mm specimen	
				B	Bulk Sample					H	Hydrometer				CC	Continuous Core			HP	Hand Penetrometer							
				W	Water Sample					PSD	Wet Sieving								V	Vane Test							
LABORATORY TEST RESULTS																					Project Reference 24.09.008						

GroundTech Laboratories

Geotechnical Testing Facility

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Telephone: 01327 860947/860060

Fax: 01327 860430

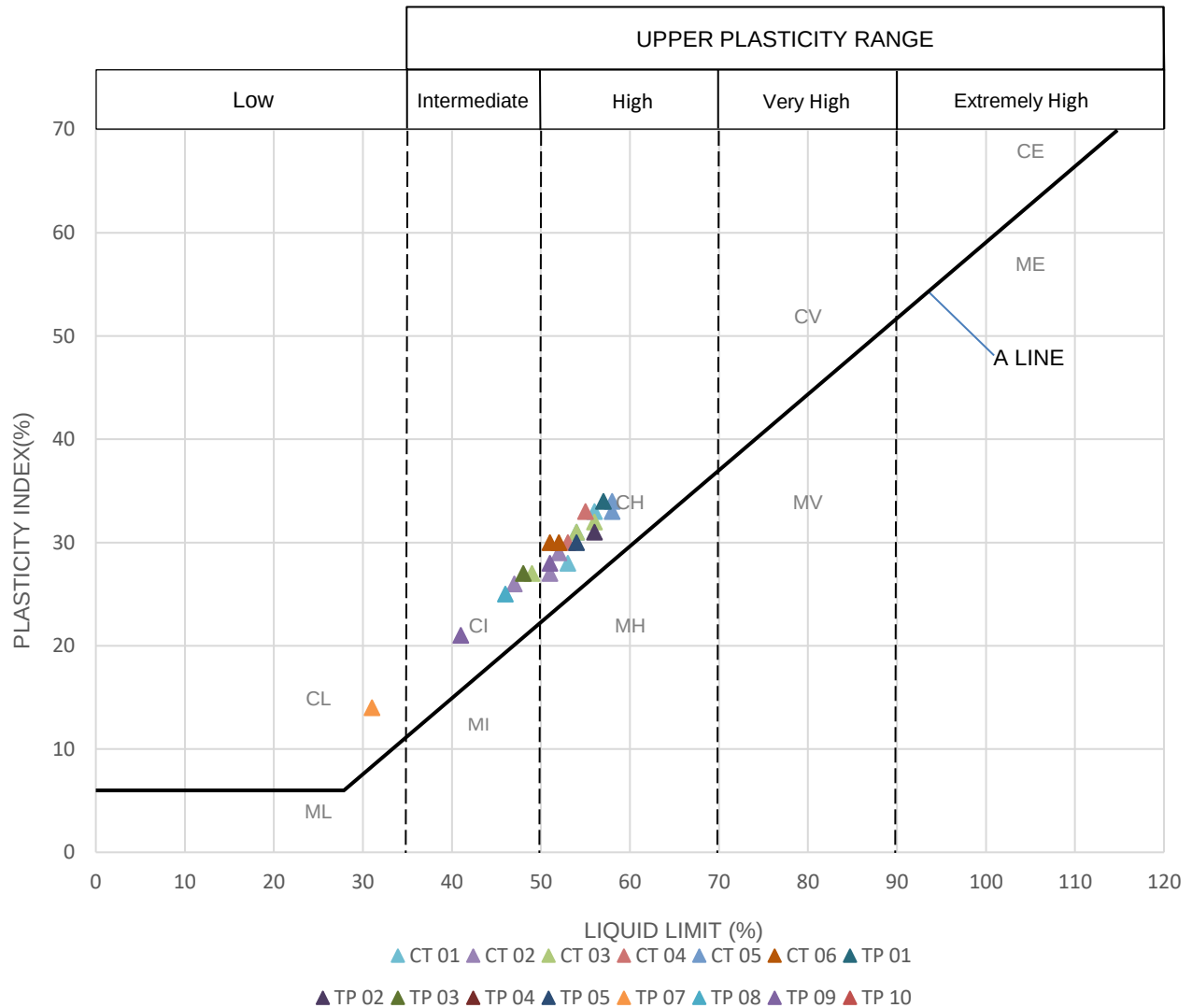
Email: groundtech@listersgeotechnics.co.uk

Quality Assured
to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS			
Test Location	Sample Type	Sample Depth -m	Test Type	WC %	LL %	PL %	PI %	Passing 425 μm %	Modified PI %	Class	Passing 63 μm %	WC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m³	Test Type	Cell Pressure kN/m²	Deviator Stress kN/m²	Apparent Cohesion kN/m²	φ	pH Value	Soluble Sulphate Content SO4 g/l		
TP 03	D	1.90	PI/63	21	48	21	27	100	27	CI	97	0.44	23	0.00												
TP 04	D	0.50		26																						
TP 05	D	0.60		24																						
	D	1.80	PI/63	25	54	24	30	99	30	CH	95	0.46	26	0.03									8.9	0.12		
TP 07	D	0.50	PI/63	12	31	17	14	52	7	CL	42	0.39	19	-0.36												
TP 08	D	1.00	PI/63	22	46	21	25	93	23	CI	89	0.48	23	0.04									8.7	0.12		
	D	2.60		16																						
TP 09	D	1.00	PI/63	25	41	20	21	97	20	CI	93	0.61	22	0.24												
	D	1.80	PI/63	25	51	23	28	99	28	CH	94	0.49	25	0.07									8.8	0.10		
TP 10	D	0.40		24																						
Symbols:				U	Undisturbed Sample					R	Remoulded				PI	Plasticity Index			T	Triaxial Undrained				L	100mm specimen	
				D	Disturbed Sample					63	Passing 63μm				F	Filter Paper Suction Tests			M	Multistage Triaxial				S	38mm specimen	
				B	Bulk Sample					H	Hydrometer				CC	Continuous Core			HP	Hand Penetrometer						
				W	Water Sample					PSD	Wet Sieving								V	Vane Test						
LABORATORY TEST RESULTS																					Project Reference 24.09.008					

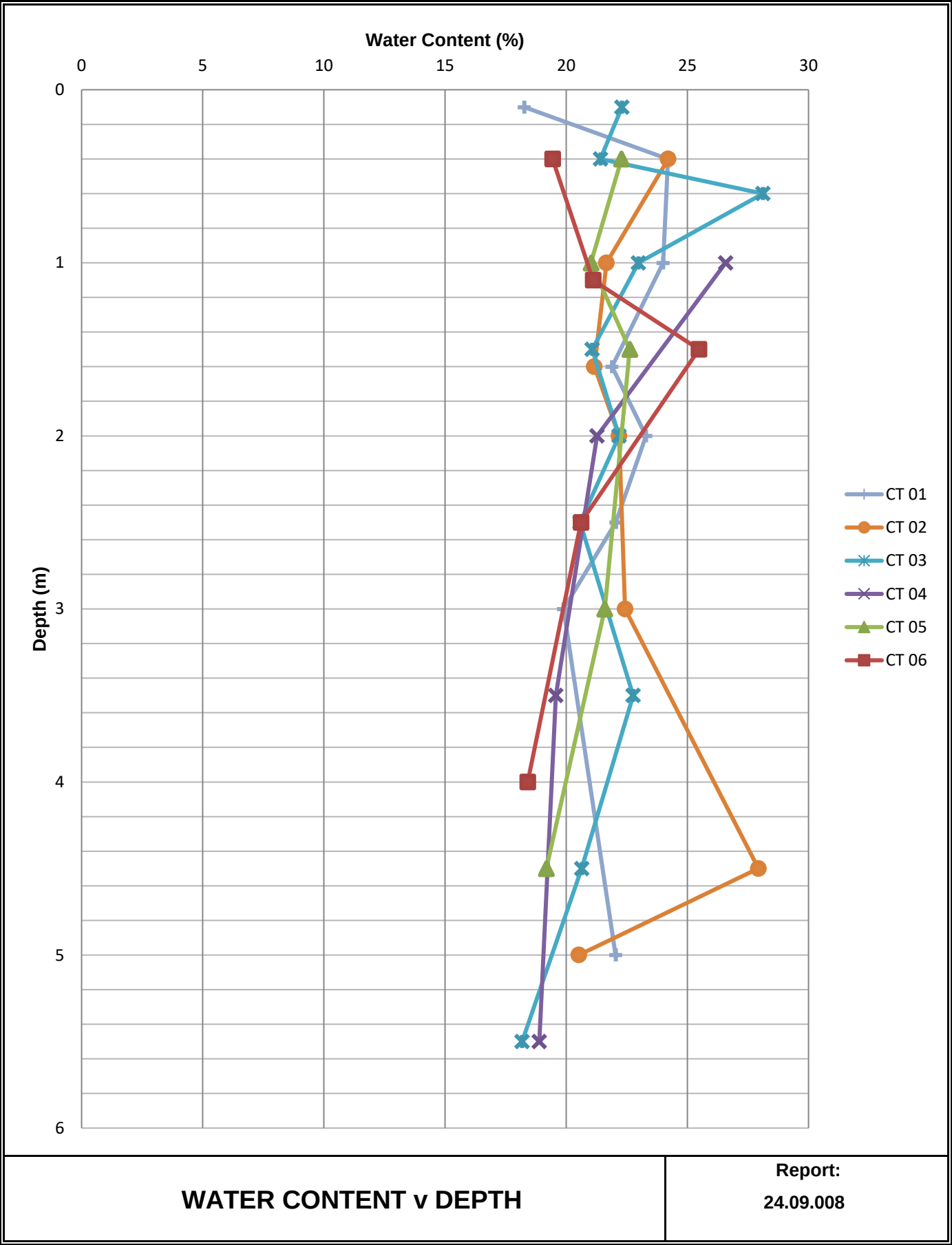
Telephone: 01327 860947/860060 Fax: 01327 860430

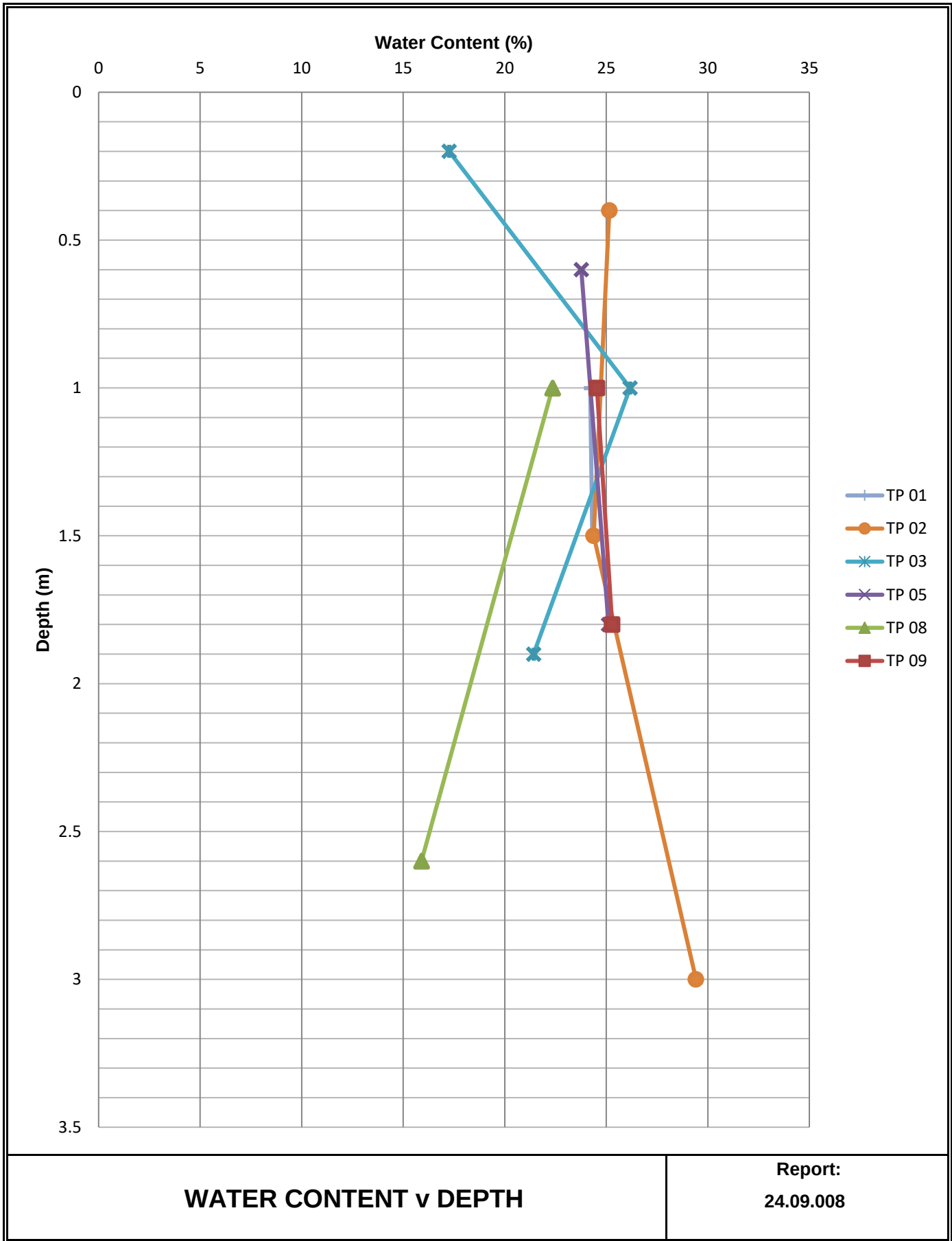
Test Location	Sample				Spec Ref.	SWC %	Intact Bulk Density	Intact Dry Density	CIRIA C574 Density Sciae
	Ref	Top	Base	Type			Mg/m³	Mg/m³	
CT 01		2.50	3.00	D	2	24	1.99	1.63	M
CT 02		5.00	5.50	D	2	49	1.4	1.16	L
CT 03		2.00	2.50	D	2	23	2.05	1.68	M
CT 04	1	1.00	1.50	D	1	29	1.91	1.51	L
CT 05	9	4.50	5.00	D	1	24	1.94	1.63	M
CT 06	13	2.50	3.00	D	1	22	2.04	1.69	M
TP 02	27	3.00		D	5	18	2.15	1.83	H
Date 02/10/2024	SATURATION WATER CONTENT						Report No. 24.09.008		L: Low M: Medium H: High VH: Very High
Tested in accordance with BS1377 : Part 2 : 1990, clause 3.3 unless annotated otherwise.									VH: Very High



PLASTICITY CHART

Report:
24.09.008







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: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: amanda@listersgeotechnics.co.uk

Analytical Report Number : 24-045935

Project / Site name:	Land South of Hambridge Road, Pirton Hitchin SG5 3QY	Samples received on:	07/10/2024
Your job number:	24 09 008	Samples instructed on/ Analysis started on:	07/10/2024
Your order number:	24 09 008 842	Analysis completed by:	14/10/2024
Report Issue Number:	1	Report issued on:	15/10/2024
Samples Analysed:	9 soil samples		

Signed:

Trevor Hill
Customer Service 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

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

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: 24-045935

Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24 09 008 842

Lab Sample Number				338817	338818	338819	338820	338821
Sample Reference				CT01	CT02	CT03	CT04	CT05
Sample Number				TS	TS	TS	TS	TS
Depth (m)				0.10-0.40	0.10-0.40	0.10-0.40	0.10-0.40	0.10-0.40
Date Sampled				25/09/2024	25/09/2024	25/09/2024	25/09/2024	25/09/2024
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	56.8	61.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	13	16	16	15
Total mass of sample received	kg	0.1	NONE	0.7	0.2	0.7	0.1	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MUA	-	MUA	-	MUA

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	8.1	7.9	8	7.9	8
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	100	16	36	25	26
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	50.1	7.97	17.8	12.5	13
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7	-	1.9	-	1.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.06	< 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	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.07	0.27	0.11
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.19	< 0.05	0.1	0.61	0.18
Pyrene	mg/kg	0.05	MCERTS	0.17	< 0.05	0.08	0.54	0.18
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.08	< 0.05	< 0.05	0.28	0.11
Chrysene	mg/kg	0.05	MCERTS	0.13	< 0.05	0.06	0.36	0.13
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.13	< 0.05	< 0.05	0.46	0.16
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	< 0.05	0.18	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	< 0.05	0.4	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.08	< 0.05	< 0.05	0.22	0.07
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05	0.27	0.11

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.13	< 0.80	< 0.80	3.65	1.15
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	8.7	10	13	14
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.3	< 0.2	0.4
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	27	22	30	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	16	15	16	30	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	24	24	49	44
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	20	23	21	26	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	57	48	66	100	93

Analytical Report Number: 24-045935

Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24 09 008 842

Lab Sample Number				338817	338818	338819	338820	338821
Sample Reference				CT01	CT02	CT03	CT04	CT05
Sample Number				TS	TS	TS	TS	TS
Depth (m)				0.10-0.40	0.10-0.40	0.10-0.40	0.10-0.40	0.10-0.40
Date Sampled				25/09/2024	25/09/2024	25/09/2024	25/09/2024	25/09/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Pesticides

Alpha-BHC (Benzene Hexachloride)	µg/kg	10	NONE	-	< 10	-	-	-
Alachlor	µg/kg	10	NONE	-	< 10	-	-	-
Bifenthrin	µg/kg	10	NONE	-	< 10	-	-	-
Cyhalothrin (Lambda)	µg/kg	10	NONE	-	< 10	-	-	-
Gamma-BHC (Lindane, gamma HCH)	µg/kg	10	NONE	-	< 10	-	-	-
Ormethoate	µg/kg	10	NONE	-	< 10	-	-	-
1,2,3-Trichlorobenzene	µg/kg	10	NONE	-	< 10	-	-	-
1,3,5-Trichlorobenzene	µg/kg	10	NONE	-	< 10	-	-	-
2,6-Dichlorobenzonitrile	µg/kg	10	NONE	-	< 10	-	-	-
Dimethylvinphos	µg/kg	10	NONE	-	< 10	-	-	-
Demeton-O	µg/kg	10	NONE	-	< 10	-	-	-
Demeton-S	µg/kg	10	NONE	-	< 10	-	-	-
Endrin Aldehyde	µg/kg	10	NONE	-	< 10	-	-	-
Endrin Ketone	µg/kg	10	NONE	-	< 10	-	-	-
Hexachlorobutadiene	µg/kg	10	NONE	-	< 10	-	-	-
Phosphamidon (Sum)	µg/kg	10	NONE	-	< 10	-	-	-
1,2,4,5-Tetrachlorobenzene	µg/kg	10	NONE	-	< 10	-	-	-
Cis-Permethrin	µg/kg	10	NONE	-	< 10	-	-	-
Endosulfan sulfate	µg/kg	10	NONE	-	< 10	-	-	-
Etrifos	µg/kg	10	NONE	-	< 10	-	-	-
Fenvalerate (Sum)	µg/kg	10	NONE	-	< 10	-	-	-
Hexachlorobenzene	µg/kg	10	NONE	-	< 10	-	-	-
Mevinphos, E+Z	µg/kg	10	NONE	-	< 10	-	-	-
Pentachlorobenzene	µg/kg	10	NONE	-	< 10	-	-	-
Pirimiphos-ethyl	µg/kg	10	NONE	-	< 10	-	-	-
Propetamphos	µg/kg	10	NONE	-	< 10	-	-	-
Tecnazene	µg/kg	10	NONE	-	< 10	-	-	-
Triadimefon	µg/kg	10	NONE	-	< 10	-	-	-
Trans-Permethrin	µg/kg	10	NONE	-	< 10	-	-	-
Aldrin	µg/kg	10	NONE	-	< 10	-	-	-
Azinphos-methyl	µg/kg	10	NONE	-	< 10	-	-	-
Beta-BHC	µg/kg	10	NONE	-	< 10	-	-	-
Cis-Chlordane	µg/kg	10	NONE	-	< 10	-	-	-
Chlorfenvinphos	µg/kg	10	NONE	-	< 10	-	-	-
Chlorpyrifos	µg/kg	10	NONE	-	< 10	-	-	-
Chlorothalonil	µg/kg	10	NONE	-	< 10	-	-	-
Carbophenothion	µg/kg	10	NONE	-	< 10	-	-	-
Cyfluthrin (Sum)	µg/kg	10	NONE	-	< 10	-	-	-
Delta-BHC	µg/kg	10	NONE	-	< 10	-	-	-
Dieldrin	µg/kg	10	NONE	-	< 10	-	-	-
Deltamethrin	µg/kg	10	NONE	-	< 10	-	-	-
Heptachlor Exo-epoxide	µg/kg	10	NONE	-	< 10	-	-	-
Endrin	µg/kg	10	NONE	-	< 10	-	-	-
Endosulfan I (alpha isomer)	µg/kg	10	NONE	-	< 10	-	-	-
Endosulfan II (beta isomer)	µg/kg	10	NONE	-	< 10	-	-	-
Fenthion	µg/kg	10	NONE	-	< 10	-	-	-
Isodrin	µg/kg	10	NONE	-	< 10	-	-	-
Methacrifos	µg/kg	10	NONE	-	< 10	-	-	-
O,p'-DDD	µg/kg	10	NONE	-	< 10	-	-	-
O,p'-DDE	µg/kg	10	NONE	-	< 10	-	-	-
O,p'-DDT	µg/kg	10	NONE	-	< 10	-	-	-

Analytical Report Number: 24-045935

Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24 09 008 842

Lab Sample Number				338817	338818	338819	338820	338821
Sample Reference				CT01	CT02	CT03	CT04	CT05
Sample Number				TS	TS	TS	TS	TS
Depth (m)				0.10-0.40	0.10-0.40	0.10-0.40	0.10-0.40	0.10-0.40
Date Sampled				25/09/2024	25/09/2024	25/09/2024	25/09/2024	25/09/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Parathion	µg/kg	10	NONE	-	< 10	-	-	-
Parathion-methyl	µg/kg	10	NONE	-	< 10	-	-	-
Pendimethalin	µg/kg	10	NONE	-	20	-	-	-
Phorate	µg/kg	10	NONE	-	< 10	-	-	-
Phosalone	µg/kg	10	NONE	-	< 10	-	-	-
P,p'-DDD	µg/kg	10	NONE	-	< 10	-	-	-
P,p'-DDE	µg/kg	10	NONE	-	< 10	-	-	-
P,p'-DDT	µg/kg	10	NONE	-	< 10	-	-	-
P,p'-Methoxychlor	µg/kg	10	NONE	-	< 10	-	-	-
Propyzamide	µg/kg	10	NONE	-	< 10	-	-	-
Triazophos	µg/kg	10	NONE	-	< 10	-	-	-
Trans-Chlordane	µg/kg	10	NONE	-	< 10	-	-	-
Cypermethrin (Sum)	µg/kg	10	NONE	-	< 10	-	-	-
Dichlorvos	µg/kg	10	NONE	-	< 10	-	-	-
Dimethoate	µg/kg	10	NONE	-	< 10	-	-	-
Diazinon	µg/kg	10	NONE	-	< 10	-	-	-
Ethion	µg/kg	10	NONE	-	< 10	-	-	-
Fenitrothion	µg/kg	10	NONE	-	< 10	-	-	-
Malathion	µg/kg	10	NONE	-	< 10	-	-	-
Pirimiphos-methyl	µg/kg	10	NONE	-	< 10	-	-	-
Trifluralin	µg/kg	10	NONE	-	< 10	-	-	-
Azinphos-ethyl	µg/kg	10	NONE	-	< 10	-	-	-

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

Analytical Report Number: 24-045935

Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24 09 008 842

Lab Sample Number				338822	338823	338824	338825
Sample Reference				CT06	TP03	TP07	TP10
Sample Number				TS	TS	TS	MG
Depth (m)				0.10-0.40	0.20	0.20	0.40
Date Sampled				25/09/2024	25/09/2024	25/09/2024	25/09/2024
Time Taken				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
Moisture Content	%	0.01	NONE	18	12	15	14
Total mass of sample received	kg	0.1	NONE	0.1	0.7	0.1	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	-	PKU	-	PKU

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	7.8	7.9	8	7.9
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	24	19	18	58
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.9	9.26	9.01	29.1
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-	1.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.06	< 0.05	0.16	0.1
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.13	0.14	0.32	0.23
Pyrene	mg/kg	0.05	MCERTS	0.12	0.14	0.28	0.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	0.08	0.16	0.11
Chrysene	mg/kg	0.05	MCERTS	0.07	0.08	0.23	0.11
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.11	0.15	0.27	0.2
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.13	0.07
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.1	0.11	0.22	0.15
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.06	0.06	0.14	0.09
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.08	0.09	0.2	0.12

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	0.85	2.1	1.38
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	10	15	14
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4	0.5	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	34	26	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	29	19	35	35
Lead (aqua regia extractable)	mg/kg	1	MCERTS	44	30	50	42
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29	23	26	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	97	240	200	92

Analytical Report Number: 24-045935

Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24 09 008 842

Lab Sample Number	338822	338823	338824	338825
Sample Reference	CT06	TP03	TP07	TP10
Sample Number	TS	TS	TS	MG
Depth (m)	0.10-0.40	0.20	0.20	0.40
Date Sampled	25/09/2024	25/09/2024	25/09/2024	25/09/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Pesticides

Alpha-BHC (Benzene Hexachloride)	µg/kg	10	NONE	-	-	-	-
Alachlor	µg/kg	10	NONE	-	-	-	-
Bifenthrin	µg/kg	10	NONE	-	-	-	-
Cyhalothrin (Lambda)	µg/kg	10	NONE	-	-	-	-
Gamma-BHC (Lindane, gamma HCH)	µg/kg	10	NONE	-	-	-	-
Ormethoate	µg/kg	10	NONE	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	10	NONE	-	-	-	-
1,3,5-Trichlorobenzene	µg/kg	10	NONE	-	-	-	-
2,6-Dichlorobenzonitrile	µg/kg	10	NONE	-	-	-	-
Dimethylvinphos	µg/kg	10	NONE	-	-	-	-
Demeton-O	µg/kg	10	NONE	-	-	-	-
Demeton-S	µg/kg	10	NONE	-	-	-	-
Endrin Aldehyde	µg/kg	10	NONE	-	-	-	-
Endrin Ketone	µg/kg	10	NONE	-	-	-	-
Hexachlorobutadiene	µg/kg	10	NONE	-	-	-	-
Phosphamidon (Sum)	µg/kg	10	NONE	-	-	-	-
1,2,4,5-Tetrachlorobenzene	µg/kg	10	NONE	-	-	-	-
Cis-Permethrin	µg/kg	10	NONE	-	-	-	-
Endosulfan sulfate	µg/kg	10	NONE	-	-	-	-
Etrinfos	µg/kg	10	NONE	-	-	-	-
Fenvalerate (Sum)	µg/kg	10	NONE	-	-	-	-
Hexachlorobenzene	µg/kg	10	NONE	-	-	-	-
Mevinphos, E+Z	µg/kg	10	NONE	-	-	-	-
Pentachlorobenzene	µg/kg	10	NONE	-	-	-	-
Pirimiphos-ethyl	µg/kg	10	NONE	-	-	-	-
Propetamphos	µg/kg	10	NONE	-	-	-	-
Tecnazene	µg/kg	10	NONE	-	-	-	-
Triadimefon	µg/kg	10	NONE	-	-	-	-
Trans-Permethrin	µg/kg	10	NONE	-	-	-	-
Aldrin	µg/kg	10	NONE	-	-	-	-
Azinphos-methyl	µg/kg	10	NONE	-	-	-	-
Beta-BHC	µg/kg	10	NONE	-	-	-	-
Cis-Chlordane	µg/kg	10	NONE	-	-	-	-
Chlorfenvinphos	µg/kg	10	NONE	-	-	-	-
Chlorpyrifos	µg/kg	10	NONE	-	-	-	-
Chlorothalonil	µg/kg	10	NONE	-	-	-	-
Carbophenothion	µg/kg	10	NONE	-	-	-	-
Cyfluthrin (Sum)	µg/kg	10	NONE	-	-	-	-
Delta-BHC	µg/kg	10	NONE	-	-	-	-
Dieldrin	µg/kg	10	NONE	-	-	-	-
Deltamethrin	µg/kg	10	NONE	-	-	-	-
Heptachlor Exo-epoxide	µg/kg	10	NONE	-	-	-	-
Endrin	µg/kg	10	NONE	-	-	-	-
Endosulfan I (alpha isomer)	µg/kg	10	NONE	-	-	-	-
Endosulfan II (beta isomer)	µg/kg	10	NONE	-	-	-	-
Fenthion	µg/kg	10	NONE	-	-	-	-
Isodrin	µg/kg	10	NONE	-	-	-	-
Methacrifos	µg/kg	10	NONE	-	-	-	-
O,p'-DDD	µg/kg	10	NONE	-	-	-	-
O,p'-DDE	µg/kg	10	NONE	-	-	-	-
O,p'-DDT	µg/kg	10	NONE	-	-	-	-

Analytical Report Number: 24-045935

Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24 09 008 842

Lab Sample Number				338822	338823	338824	338825
Sample Reference				CT06	TP03	TP07	TP10
Sample Number				TS	TS	TS	MG
Depth (m)				0.10-0.40	0.20	0.20	0.40
Date Sampled				25/09/2024	25/09/2024	25/09/2024	25/09/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status				
Parathion	µg/kg	10	NONE	-	-	-	-
Parathion-methyl	µg/kg	10	NONE	-	-	-	-
Pendimethalin	µg/kg	10	NONE	-	-	-	-
Phorate	µg/kg	10	NONE	-	-	-	-
Phosalone	µg/kg	10	NONE	-	-	-	-
P,p'-DDD	µg/kg	10	NONE	-	-	-	-
P,p'-DDE	µg/kg	10	NONE	-	-	-	-
P,p'-DDT	µg/kg	10	NONE	-	-	-	-
P,p'-Methoxychlor	µg/kg	10	NONE	-	-	-	-
Propyzamide	µg/kg	10	NONE	-	-	-	-
Triazophos	µg/kg	10	NONE	-	-	-	-
Trans-Chlordane	µg/kg	10	NONE	-	-	-	-
Cypermethrin (Sum)	µg/kg	10	NONE	-	-	-	-
Dichlorvos	µg/kg	10	NONE	-	-	-	-
Dimethoate	µg/kg	10	NONE	-	-	-	-
Diazinon	µg/kg	10	NONE	-	-	-	-
Ethion	µg/kg	10	NONE	-	-	-	-
Fenitrothion	µg/kg	10	NONE	-	-	-	-
Malathion	µg/kg	10	NONE	-	-	-	-
Pirimiphos-methyl	µg/kg	10	NONE	-	-	-	-
Trifluralin	µg/kg	10	NONE	-	-	-	-
Azinphos-ethyl	µg/kg	10	NONE	-	-	-	-

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

Analytical Report Number : 24-045935
Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

* 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 *
338817	CT01	TS	0.10-0.40	Brown loam and clay with gravel and vegetation
338818	CT02	TS	0.10-0.40	Brown loam and clay with vegetation and stones
338819	CT03	TS	0.10-0.40	Brown loam and clay with vegetation and stones
338820	CT04	TS	0.10-0.40	Brown loam and clay with gravel and vegetation
338821	CT05	TS	0.10-0.40	Brown loam and clay with gravel and vegetation
338822	CT06	TS	0.10-0.40	Brown loam and clay with gravel and vegetation
338823	TP03	TS	0.2	Brown loam and clay with gravel and vegetation
338824	TP07	TS	0.2	Brown loam and clay with gravel and vegetation
338825	TP10	MG	0.4	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-045935

Project / Site name: Land South of Hambridge Road, Pirton Hitchin SG5 3QY

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (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
Pesticides by GC-MS/MS	Determination of Pesticides in soil by GC MS/MS	In-house method	L055B	W	NONE
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

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



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Analytical Report Number : 24-048777

Project / Site name:	Land south of Hambridge Road, Pirton Hitchin SG5 3QY	Samples received on:	18/10/2024
Your job number:	24.09.008	Samples instructed on/ Analysis started on:	18/10/2024
Your order number:	24.09.008 842	Analysis completed by:	28/10/2024
Report Issue Number:	1	Report issued on:	28/10/2024
Samples Analysed:	5 soil samples		



Signed: _____

Anna Goc
PL Head of Reporting Team
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

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

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: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/07/2024	16/07/2024	16/07/2024	16/07/2024	16/07/2024
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	42.5	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	23	14	22	17
Total mass of sample received	kg	0.1	NONE	0.6	0.1	0.5	0.1	0.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	SPU	-	SPU	PKU	-

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	7.9	8	8.2	8	8
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	33	30	36	19	16
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.3	14.8	18.2	9.64	7.95

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.13	0.05	0.16	0.12
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.05	0.63	0.44
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.08	0.08
Fluoranthene	mg/kg	0.05	MCERTS	0.12	0.16	0.12	0.81	0.56
Pyrene	mg/kg	0.05	MCERTS	0.11	0.14	0.12	0.69	0.48
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.06	0.07	0.06	0.32	0.23
Chrysene	mg/kg	0.05	MCERTS	0.07	0.1	0.08	0.38	0.31
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.12	0.09	0.43	0.32
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.05	0.05	0.2	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.07	0.37	0.27
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	0.17	0.14
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	0.22	0.18

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	1.06	< 0.80	4.51	3.28
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	8.3	8.1	14	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.4	0.3	0.5	0.5
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	20	16	25	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	17	18	35	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	26	43	55	55
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	23	20	17	25	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	90	120	78	120	120

Analytical Report Number: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/07/2024	16/07/2024	16/07/2024	16/07/2024	16/07/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Pesticides

Alpha-BHC (Benzene Hexachloride)	µg/kg	10	NONE	< 10	-	-	< 10	-
Alachlor	µg/kg	10	NONE	< 10	-	-	< 10	-
Bifenthrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Cyhalothrin (Lambda)	µg/kg	10	NONE	< 10	-	-	< 10	-
Gamma-BHC (Lindane, gamma HCH)	µg/kg	10	NONE	< 10	-	-	< 10	-
Omethoate	µg/kg	10	NONE	< 10	-	-	< 10	-
1,2,3-Trichlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
1,3,5-Trichlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
2,6-Dichlorobenzonitrile	µg/kg	10	NONE	< 10	-	-	< 10	-
Dimethylvinphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Demeton-O	µg/kg	10	NONE	< 10	-	-	< 10	-
Demeton-S	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin Aldehyde	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin Ketone	µg/kg	10	NONE	< 10	-	-	< 10	-
Hexachlorobutadiene	µg/kg	10	NONE	< 10	-	-	< 10	-
Phosphamidon (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
1,2,4,5-Tetrachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Cis-Permethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan sulfate	µg/kg	10	NONE	< 10	-	-	< 10	-
Etrinfos	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenvalerate (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Hexachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Mevinphos, E+Z	µg/kg	10	NONE	< 10	-	-	< 10	-
Pentachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Pirimiphos-ethyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Propetamphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Tecnazene	µg/kg	10	NONE	< 10	-	-	< 10	-
Triadimefon	µg/kg	10	NONE	< 10	-	-	< 10	-
Trans-Permethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Aldrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Azinphos-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Beta-BHC	µg/kg	10	NONE	< 10	-	-	< 10	-
Cis-Chlordane	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorfenvinphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorpyrifos	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorothalonil	µg/kg	10	NONE	< 10	-	-	< 10	-
Carbophenothion	µg/kg	10	NONE	< 10	-	-	< 10	-
Cyfluthrin (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Delta-BHC	µg/kg	10	NONE	< 10	-	-	< 10	-
Dieldrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Deltamethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Heptachlor Exo-epoxide	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan I (alpha isomer)	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan II (beta isomer)	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenthion	µg/kg	10	NONE	< 10	-	-	< 10	-
Isodrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Methacrifos	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDD	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDE	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDT	µg/kg	10	NONE	< 10	-	-	< 10	-

Analytical Report Number: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/07/2024	16/07/2024	16/07/2024	16/07/2024	16/07/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Parathion	µg/kg	10	NONE	< 10	-	-	< 10	-
Parathion-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Pendimethalin	µg/kg	10	NONE	< 10	-	-	< 10	-
Phorate	µg/kg	10	NONE	< 10	-	-	< 10	-
Phosalone	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-DDD	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-DDE	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-DDT	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-Methoxychlor	µg/kg	10	NONE	< 10	-	-	< 10	-
Propyzamide	µg/kg	10	NONE	< 10	-	-	< 10	-
Triazophos	µg/kg	10	NONE	< 10	-	-	< 10	-
Trans-Chlordane	µg/kg	10	NONE	< 10	-	-	< 10	-
Cypermethrin (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Dichlorvos	µg/kg	10	NONE	< 10	-	-	< 10	-
Dimethoate	µg/kg	10	NONE	< 10	-	-	< 10	-
Diazinon	µg/kg	10	NONE	< 10	-	-	< 10	-
Ethion	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenitrothion	µg/kg	10	NONE	< 10	-	-	< 10	-
Malathion	µg/kg	10	NONE	< 10	-	-	< 10	-
Pirimiphos-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Trifluralin	µg/kg	10	NONE	< 10	-	-	< 10	-
Azinphos-ethyl	µg/kg	10	NONE	< 10	-	-	< 10	-

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

Analytical Report Number : 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

* 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 *
353527	HP01	None Supplied	0.2	Brown loam and clay with gravel and vegetation
353528	HP02	None Supplied	0.3	Brown loam and clay with gravel and vegetation
353529	HP03	None Supplied	0.2	Brown loam and clay with vegetation and stones
353530	HP04	None Supplied	0.25	Brown loam and clay with gravel and vegetation
353531	HP04	None Supplied	0.5	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (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
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
Pesticides by GC-MS/MS	Determination of Pesticides in soil by GC MS/MS	In-house method	L055B	W	NONE
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

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

Analytical Report Number : 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
HP01	N/A	S	353527	c	Pesticides by GC-MS/MS	L055B	c
HP01	N/A	S	353527	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HP01	N/A	S	353527	c	pH at 20°C in soil	L005B	c
HP02	N/A	S	353528	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HP02	N/A	S	353528	c	pH at 20°C in soil	L005B	c
HP03	N/A	S	353529	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HP03	N/A	S	353529	c	pH at 20°C in soil	L005B	c
HP04	N/A	S	353530	c	Pesticides by GC-MS/MS	L055B	c
HP04	N/A	S	353530	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HP04	N/A	S	353530	c	pH at 20°C in soil	L005B	c
HP04	N/A	S	353531	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
HP04	N/A	S	353531	c	pH at 20°C in soil	L005B	c

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Analytical Report Number : 24-048777-2

Replaces Analytical Report Number: 24-048777, issue no. 1
Client sampling date amended.
Sampled Dates amended as per client request

Project / Site name:	Land south of Hambridge Road, Pirton Hitchin SG5 3QY	Samples received on:	18/10/2024
Your job number:	24.09.008	Samples instructed on/ Analysis started on:	18/10/2024
Your order number:	24.09.008 842	Analysis completed by:	28/10/2024
Report Issue Number:	2	Report issued on:	12/11/2024
Samples Analysed:	5 soil samples		

Signed

Tuhina Mukerjee
Senior Customer Service 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

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

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: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number	353527	353528	353529	353530	353531
Sample Reference	HP01	HP02	HP03	HP04	HP04
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20	0.30	0.20	0.25	0.50
Date Sampled	16/10/2024	16/10/2024	16/10/2024	16/10/2024	16/10/2024
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	42.5	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	23	14	22	17
Total mass of sample received	kg	0.1	NONE	0.6	0.1	0.5	0.1	0.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	SPU	-	SPU	PKU	-

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	7.9	8	8.2	8	8
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	33	30	36	19	16
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.3	14.8	18.2	9.64	7.95

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.13	0.05	0.16	0.12
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.05	0.63	0.44
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.08	0.08
Fluoranthene	mg/kg	0.05	MCERTS	0.12	0.16	0.12	0.81	0.56
Pyrene	mg/kg	0.05	MCERTS	0.11	0.14	0.12	0.69	0.48
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.06	0.07	0.06	0.32	0.23
Chrysene	mg/kg	0.05	MCERTS	0.07	0.1	0.08	0.38	0.31
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.12	0.09	0.43	0.32
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.05	0.05	0.2	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.07	0.37	0.27
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	0.17	0.14
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	0.22	0.18

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	1.06	< 0.80	4.51	3.28
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	8.3	8.1	14	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.4	0.3	0.5	0.5
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	20	16	25	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	17	18	35	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	26	43	55	55
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	23	20	17	25	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	90	120	78	120	120

Pesticides

Alpha-BHC (Benzene Hexachloride)	µg/kg	10	NONE	< 10	-	-	< 10	-
Alachlor	µg/kg	10	NONE	< 10	-	-	< 10	-
Bifenthrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Cyhalothrin (Lambda)	µg/kg	10	NONE	< 10	-	-	< 10	-

Analytical Report Number: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/10/2024	16/10/2024	16/10/2024	16/10/2024	16/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Gamma-BHC (Lindane, gamma HCH)	µg/kg	10	NONE	< 10	-	-	< 10	-
Omethoate	µg/kg	10	NONE	< 10	-	-	< 10	-
1,2,3-Trichlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
1,3,5-Trichlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
2,6-Dichlorobenzonitrile	µg/kg	10	NONE	< 10	-	-	< 10	-
Dimethylvinphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Demeton-O	µg/kg	10	NONE	< 10	-	-	< 10	-
Demeton-S	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin Aldehyde	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin Ketone	µg/kg	10	NONE	< 10	-	-	< 10	-
Hexachlorobutadiene	µg/kg	10	NONE	< 10	-	-	< 10	-
Phosphamidon (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
1,2,4,5-Tetrachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Cis-Permethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan sulfate	µg/kg	10	NONE	< 10	-	-	< 10	-
Etrimfos	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenvalerate (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Hexachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Mevinphos, E+Z	µg/kg	10	NONE	< 10	-	-	< 10	-
Pentachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Pirimiphos-ethyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Propetamphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Tecnazene	µg/kg	10	NONE	< 10	-	-	< 10	-
Triadimefon	µg/kg	10	NONE	< 10	-	-	< 10	-
Trans-Permethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Aldrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Azinphos-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Beta-BHC	µg/kg	10	NONE	< 10	-	-	< 10	-
Cis-Chlordane	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorfenvinphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorpyrifos	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorothalonil	µg/kg	10	NONE	< 10	-	-	< 10	-
Carbophenothion	µg/kg	10	NONE	< 10	-	-	< 10	-
Cyfluthrin (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Delta-BHC	µg/kg	10	NONE	< 10	-	-	< 10	-
Dieldrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Deltamethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Heptachlor Exo-epoxide	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan I (alpha isomer)	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan II (beta isomer)	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenthion	µg/kg	10	NONE	< 10	-	-	< 10	-
Isodrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Methacrifos	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDD	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDE	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDT	µg/kg	10	NONE	< 10	-	-	< 10	-
Parathion	µg/kg	10	NONE	< 10	-	-	< 10	-
Parathion-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Pendimethalin	µg/kg	10	NONE	< 10	-	-	< 10	-
Phorate	µg/kg	10	NONE	< 10	-	-	< 10	-
Phosalone	µg/kg	10	NONE	< 10	-	-	< 10	-

Analytical Report Number: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/10/2024	16/10/2024	16/10/2024	16/10/2024	16/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
P,p'-DDD	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-DDE	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-DDT	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-Methoxychlor	µg/kg	10	NONE	< 10	-	-	< 10	-
Propyzamide	µg/kg	10	NONE	< 10	-	-	< 10	-
Triazophos	µg/kg	10	NONE	< 10	-	-	< 10	-
Trans-Chlordane	µg/kg	10	NONE	< 10	-	-	< 10	-
Cypermethrin (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Dichlorvos	µg/kg	10	NONE	< 10	-	-	< 10	-
Dimethoate	µg/kg	10	NONE	< 10	-	-	< 10	-
Diazinon	µg/kg	10	NONE	< 10	-	-	< 10	-
Ethion	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenitrothion	µg/kg	10	NONE	< 10	-	-	< 10	-
Malathion	µg/kg	10	NONE	< 10	-	-	< 10	-
Pirimiphos-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Trifluralin	µg/kg	10	NONE	< 10	-	-	< 10	-
Azinphos-ethyl	µg/kg	10	NONE	< 10	-	-	< 10	-

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

Analytical Report Number : 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

* 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 *
353527	HP01	None Supplied	0.2	Brown loam and clay with gravel and vegetation
353528	HP02	None Supplied	0.3	Brown loam and clay with gravel and vegetation
353529	HP03	None Supplied	0.2	Brown loam and clay with vegetation and stones
353530	HP04	None Supplied	0.25	Brown loam and clay with gravel and vegetation
353531	HP04	None Supplied	0.5	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (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
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
Pesticides by GC-MS/MS	Determination of Pesticides in soil by GC MS/MS	In-house method	L055B	W	NONE
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

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

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Analytical Report Number : 24-048777-2

Replaces Analytical Report Number: 24-048777, issue no. 1
Client sampling date amended.
Sampled Dates amended as per client request

Project / Site name:	Land south of Hambridge Road, Pirton Hitchin SG5 3QY	Samples received on:	18/10/2024
Your job number:	24.09.008	Samples instructed on/ Analysis started on:	18/10/2024
Your order number:	24.09.008 842	Analysis completed by:	28/10/2024
Report Issue Number:	2	Report issued on:	12/11/2024
Samples Analysed:	5 soil samples		

Signed

Tuhina Mukerjee
Senior Customer Service 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

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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: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/10/2024	16/10/2024	16/10/2024	16/10/2024	16/10/2024
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	42.5	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	23	14	22	17
Total mass of sample received	kg	0.1	NONE	0.6	0.1	0.5	0.1	0.6

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	SPU	-	SPU	PKU	-

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	7.9	8	8.2	8	8
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	33	30	36	19	16
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.3	14.8	18.2	9.64	7.95

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.13	0.05	0.16	0.12
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.06	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.05	0.63	0.44
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.08	0.08
Fluoranthene	mg/kg	0.05	MCERTS	0.12	0.16	0.12	0.81	0.56
Pyrene	mg/kg	0.05	MCERTS	0.11	0.14	0.12	0.69	0.48
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.06	0.07	0.06	0.32	0.23
Chrysene	mg/kg	0.05	MCERTS	0.07	0.1	0.08	0.38	0.31
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.12	0.09	0.43	0.32
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.05	0.05	0.2	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.07	0.37	0.27
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	0.17	0.14
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.07	< 0.05	0.22	0.18

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	1.06	< 0.80	4.51	3.28
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	8.3	8.1	14	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.4	0.3	0.5	0.5
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	20	16	25	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	17	18	35	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	29	26	43	55	55
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	23	20	17	25	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	90	120	78	120	120

Pesticides

Alpha-BHC (Benzene Hexachloride)	µg/kg	10	NONE	< 10	-	-	< 10	-
Alachlor	µg/kg	10	NONE	< 10	-	-	< 10	-
Bifenthrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Cyhalothrin (Lambda)	µg/kg	10	NONE	< 10	-	-	< 10	-

Analytical Report Number: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/10/2024	16/10/2024	16/10/2024	16/10/2024	16/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Gamma-BHC (Lindane, gamma HCH)	µg/kg	10	NONE	< 10	-	-	< 10	-
Omethoate	µg/kg	10	NONE	< 10	-	-	< 10	-
1,2,3-Trichlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
1,3,5-Trichlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
2,6-Dichlorobenzonitrile	µg/kg	10	NONE	< 10	-	-	< 10	-
Dimethylvinphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Demeton-O	µg/kg	10	NONE	< 10	-	-	< 10	-
Demeton-S	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin Aldehyde	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin Ketone	µg/kg	10	NONE	< 10	-	-	< 10	-
Hexachlorobutadiene	µg/kg	10	NONE	< 10	-	-	< 10	-
Phosphamidon (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
1,2,4,5-Tetrachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Cis-Permethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan sulfate	µg/kg	10	NONE	< 10	-	-	< 10	-
Etrimfos	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenvalerate (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Hexachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Mevinphos, E+Z	µg/kg	10	NONE	< 10	-	-	< 10	-
Pentachlorobenzene	µg/kg	10	NONE	< 10	-	-	< 10	-
Pirimiphos-ethyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Propetamphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Tecnazene	µg/kg	10	NONE	< 10	-	-	< 10	-
Triadimefon	µg/kg	10	NONE	< 10	-	-	< 10	-
Trans-Permethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Aldrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Azinphos-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Beta-BHC	µg/kg	10	NONE	< 10	-	-	< 10	-
Cis-Chlordane	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorfenvinphos	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorpyrifos	µg/kg	10	NONE	< 10	-	-	< 10	-
Chlorothalonil	µg/kg	10	NONE	< 10	-	-	< 10	-
Carbophenothion	µg/kg	10	NONE	< 10	-	-	< 10	-
Cyfluthrin (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Delta-BHC	µg/kg	10	NONE	< 10	-	-	< 10	-
Dieldrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Deltamethrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Heptachlor Exo-epoxide	µg/kg	10	NONE	< 10	-	-	< 10	-
Endrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan I (alpha isomer)	µg/kg	10	NONE	< 10	-	-	< 10	-
Endosulfan II (beta isomer)	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenthion	µg/kg	10	NONE	< 10	-	-	< 10	-
Isodrin	µg/kg	10	NONE	< 10	-	-	< 10	-
Methacrifos	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDD	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDE	µg/kg	10	NONE	< 10	-	-	< 10	-
O,p'-DDT	µg/kg	10	NONE	< 10	-	-	< 10	-
Parathion	µg/kg	10	NONE	< 10	-	-	< 10	-
Parathion-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Pendimethalin	µg/kg	10	NONE	< 10	-	-	< 10	-
Phorate	µg/kg	10	NONE	< 10	-	-	< 10	-
Phosalone	µg/kg	10	NONE	< 10	-	-	< 10	-

Analytical Report Number: 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Your Order No: 24.09.008 842

Lab Sample Number				353527	353528	353529	353530	353531
Sample Reference				HP01	HP02	HP03	HP04	HP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.30	0.20	0.25	0.50
Date Sampled				16/10/2024	16/10/2024	16/10/2024	16/10/2024	16/10/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
P,p'-DDD	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-DDE	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-DDT	µg/kg	10	NONE	< 10	-	-	< 10	-
P,p'-Methoxychlor	µg/kg	10	NONE	< 10	-	-	< 10	-
Propyzamide	µg/kg	10	NONE	< 10	-	-	< 10	-
Triazophos	µg/kg	10	NONE	< 10	-	-	< 10	-
Trans-Chlordane	µg/kg	10	NONE	< 10	-	-	< 10	-
Cypermethrin (Sum)	µg/kg	10	NONE	< 10	-	-	< 10	-
Dichlorvos	µg/kg	10	NONE	< 10	-	-	< 10	-
Dimethoate	µg/kg	10	NONE	< 10	-	-	< 10	-
Diazinon	µg/kg	10	NONE	< 10	-	-	< 10	-
Ethion	µg/kg	10	NONE	< 10	-	-	< 10	-
Fenitrothion	µg/kg	10	NONE	< 10	-	-	< 10	-
Malathion	µg/kg	10	NONE	< 10	-	-	< 10	-
Pirimiphos-methyl	µg/kg	10	NONE	< 10	-	-	< 10	-
Trifluralin	µg/kg	10	NONE	< 10	-	-	< 10	-
Azinphos-ethyl	µg/kg	10	NONE	< 10	-	-	< 10	-

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

Analytical Report Number : 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

* 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 *
353527	HP01	None Supplied	0.2	Brown loam and clay with gravel and vegetation
353528	HP02	None Supplied	0.3	Brown loam and clay with gravel and vegetation
353529	HP03	None Supplied	0.2	Brown loam and clay with vegetation and stones
353530	HP04	None Supplied	0.25	Brown loam and clay with gravel and vegetation
353531	HP04	None Supplied	0.5	Brown loam and clay with gravel and vegetation

Analytical Report Number : 24-048777

Project / Site name: Land south of Hambridge Road, Pirton Hitchin SG5 3QY

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (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
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
Pesticides by GC-MS/MS	Determination of Pesticides in soil by GC MS/MS	In-house method	L055B	W	NONE
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

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

APPENDIX D – CONTAMINATION RISK ASSESSMENT WORKSHEET

Contaminated Land Risk Assessment – Definition of Methodology

The Contaminated Land Risk Assessment methodology followed in this report is based on Environment Agency's (EA) online guidance, Land Contamination: Risk Management (LCRM), published in October 2020. The new guidance is based upon the principles of the EA's CLR11 guidance, Model procedures for the management of land contamination, published in 2004, now withdrawn.

The preliminary Conceptual Site Model (CSM) has been assessed using the methodology set out in CIRIA C552, Contaminated Land Risk Assessment - A Guide to Good Practice, published in 2001, as detailed below.

Risk evaluation determines the magnitude of risks present by assessing the likelihood of a particular risk being present alongside the severity of the consequence, should that event occur. The overall risk classification is a combination of the two and provides a qualitative assessment upon which to base any further work or remedial measures, where deemed necessary.

Where complete pollutant linkages are present, the probability of a contamination risk occurring at the site has been classified in accordance with the terms listed and defined in the table below.

Classification	Definition of Probability
High Likelihood	An event appears very likely in the short term and almost inevitable in the long term; or there is evidence at the receptor that harm or pollution is occurring.
Likely	It is probable that an event will occur, however, the event is not inevitable. It is possible in the short term and is likely over the long term.
Low Likelihood	Circumstances are possible under which an event could occur. However, it is uncertain that the event would occur even over a longer period and even less likely in the short term.
Unlikely	Circumstances are such that it is improbable that an event would occur even in the very long term.

The magnitude of the consequence of a contamination event occurring at this site is classified in accordance with the definitions listed in the following table. The classification of the consequence does not take into account the probability of the consequences being realised.

Classification	Definition of Consequence	Examples
Severe	Short term (acute) risk to human health likely to result in “significant harm” as defined by the Environment protection Act (1990), Part IIA. Short term risk of pollution of controlled waters. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion causing building collapse (can also equate to a short-term human health risk if buildings are occupied.).
Medium	Chronic damage to Human Health (“significant harm”). Pollution of controlled waters. A significant change in a particular ecosystem, or organism forming part of such ecosystem.	Concentrations of contaminants from site exceeding generic or site-specific screening criteria. Leaching of contaminants into a major or minor aquifer. Death of species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or the environment	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy. (e.g. foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by measures such as protective clothing etc). Easily reparable effects of damage to buildings, structures and services	The presence of contaminants at such concentration that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

Once the probability and consequence of each pathway has been classified, the potential overall risk classification can be evaluated using the following matrix.

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

The definitions of the risk categories provided in CIRIA C552, together with actions that are likely to be necessary, are presented below.

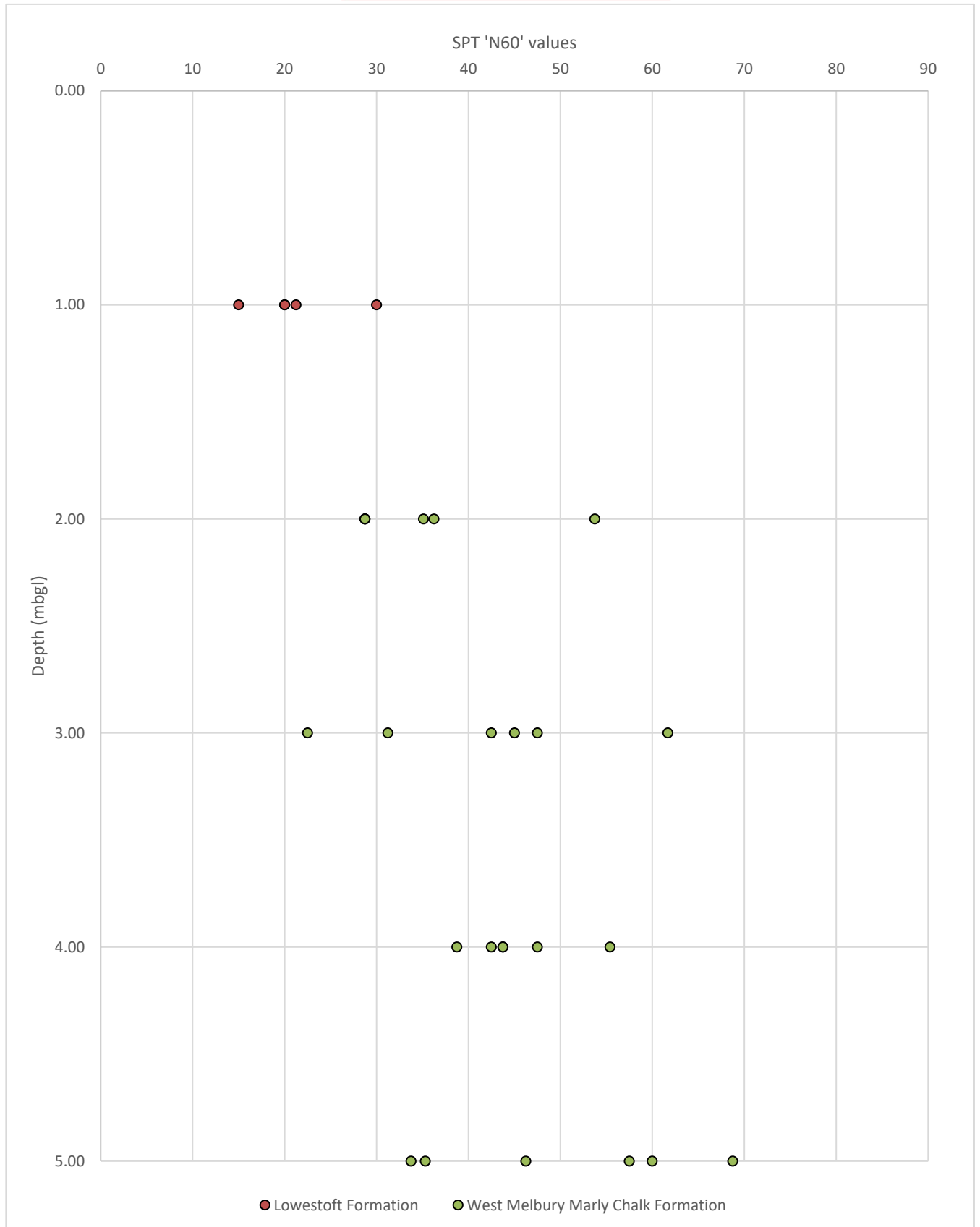
Classification	Definition of Risk and Likely Actions Required
Very High Risk	• High probability that severe harm could arise or that severe harm is already occurring • This risk, if realised, is likely to result in a substantial liability • Urgent investigation and remediation are likely to be required
High Risk	• Harm is likely to arise • The risk, if realised, is likely to present a substantial liability • Urgent investigation is required and remediation may be necessary in the short term and likely over the longer term
Moderate Risk	• It is possible that harm could arise, however, it is unlikely that any harm would be severe and more likely it would be relatively mild • Investigation is likely to be required to clarify the risk and determine potential liability • Some remediation may be required in the longer term
Low Risk	• It is possible that harm could arise, but is likely that this harm, if realised, would be mild at worst
Very Low Risk	• There is a low possibility that harm could arise • If realised, such harm is not likely to be severe

Reference:

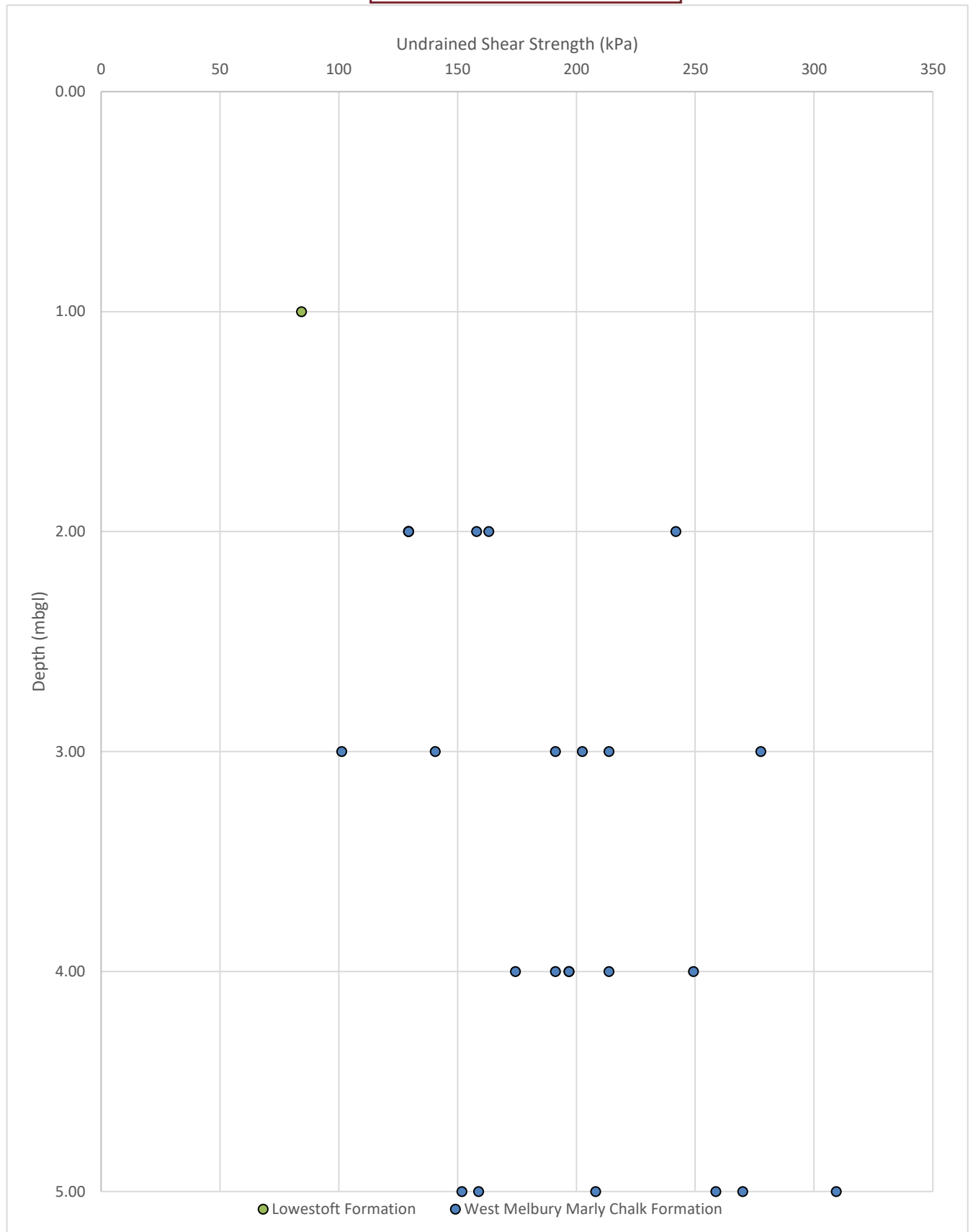
Rudland, D J, Lancefield, R M, Mayell, P N, Contaminated land Risk Assessment. A guide to Good Practice, CIRIA Report C552, 2001.

APPENDIX E

GEOTECHNICAL PLOTS AND TABLES



Corrections in accordance with BS EN ISO 22476-3, 2005, National Annex A; using Energy Ratios (75%) from current equipment calibrations



Stroud conversion factor, $f_1=4.5$ applied to SPT N_{60} values

UNDRAINED SHEAR STRENGTH FROM SPT ' N_{60} ' VALUE AGAINST DEPTH

**Project Ref
24.09.008**

APPENDIX F - APPENDIX G DESK STUDY INFORMATION

LAND SOUTH OF HAMBRIDGE WAY, PIRTON, HERTFORDSHIRE, SG5 3QY

Order Details

Date: 20/09/2024
Your ref: 24.09.008/842
Our Ref: GS-XB9-XI7-TS1-9TG

Site Details

Location: 515099 231615
Area: 3.1 ha
Authority: [North Hertfordshire District Council](#) ↗



Summary of findings

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

[p. 9 >](#)

OS MasterMap site plan

[p.14 >](#) [Insight User Guide](#) ↗

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	2	7	-
16	1.2	Historical tanks	0	0	0	0	-
16 >	1.3 >	Historical energy features >	0	0	0	6	-
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	2	8	-
19	2.2	Historical tanks	0	0	0	0	-
19 >	2.3 >	Historical energy features >	0	0	0	11	-
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	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22	3.5	Historical waste sites	0	0	0	0	-
22	3.6	Licensed waste sites	0	0	0	0	-
22 >	3.7 >	Waste exemptions >	0	1	0	1	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
24 >	4.1 >	Recent industrial land uses >	0	1	1	-	-
25	4.2	Current or recent petrol stations	0	0	0	0	-
25	4.3	Electricity cables	0	0	0	0	-
25	4.4	Gas pipelines	0	0	0	0	-
25	4.5	Sites determined as Contaminated Land	0	0	0	0	-



25	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
26	4.7	Regulated explosive sites	0	0	0	0	-
26	4.8	Hazardous substance storage/usage	0	0	0	0	-
26	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
26	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
26	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
27	4.12	Radioactive Substance Authorisations	0	0	0	0	-
27 >	4.13 >	Licensed Discharges to controlled waters >	0	0	1	0	-
27	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
27	4.15	Pollutant release to public sewer	0	0	0	0	-
28	4.16	List 1 Dangerous Substances	0	0	0	0	-
28	4.17	List 2 Dangerous Substances	0	0	0	0	-
28	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
28	4.19	Pollution inventory substances	0	0	0	0	-
28	4.20	Pollution inventory waste transfers	0	0	0	0	-
29	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
30 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
32 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
34 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
35 >	5.4 >	Groundwater vulnerability- soluble rock risk >	Identified (within 0m)				
36	5.5	Groundwater vulnerability- local information	None (within 0m)				
37 >	5.6 >	Groundwater abstractions >	0	0	0	0	5
39 >	5.7 >	Surface water abstractions >	0	0	0	0	4
40 >	5.8 >	Potable abstractions >	0	0	0	0	3
41 >	5.9 >	Source Protection Zones >	0	0	0	1	-
41	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
42 >	6.1 >	Water Network (OS MasterMap) >	1	11	14	-	-



45 >	6.2 >	Surface water features >	1	6	7	-	-
45 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
45 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
46 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
47	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
47	7.2	Historical Flood Events	0	0	0	-	-
47	7.3	Flood Defences	0	0	0	-	-
48	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
48	7.5	Flood Storage Areas	0	0	0	-	-
49	7.6	Flood Zone 2	None (within 50m)				
49	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
50	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding >					
51 >	9.1 >	Groundwater flooding >	Moderate-High (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
52 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	0	0	0	0	1
53	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
53	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
53	10.4	Special Protection Areas (SPA)	0	0	0	0	0
53 >	10.5 >	National Nature Reserves (NNR) >	0	0	0	0	1
54 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	1
54 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	2
54	10.8	Biosphere Reserves	0	0	0	0	0
55	10.9	Forest Parks	0	0	0	0	0
55	10.10	Marine Conservation Zones	0	0	0	0	0
55 >	10.11 >	Green Belt >	0	0	0	0	1
55	10.12	Proposed Ramsar sites	0	0	0	0	0



56	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
56	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
56	10.15	Nitrate Sensitive Areas	0	0	0	0	0
56 >	10.16 >	Nitrate Vulnerable Zones >	2	0	0	0	2
58 >	10.17 >	SSSI Impact Risk Zones >	2	-	-	-	-
59 >	10.18 >	SSSI Units >	0	0	0	0	1
Page	Section	Visual and cultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
60	11.1	World Heritage Sites	0	0	0	-	-
61	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
61	11.3	National Parks	0	0	0	-	-
61 >	11.4 >	Listed Buildings >	0	0	12	-	-
62 >	11.5 >	Conservation Areas >	1	0	0	-	-
62 >	11.6 >	Scheduled Ancient Monuments >	0	0	1	-	-
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 2 (within 250m)				
65 >	12.2 >	Open Access Land >	0	0	1	-	-
65	12.3	Tree Felling Licences	0	0	0	-	-
65	12.4	Environmental Stewardship Schemes	0	0	0	-	-
66 >	12.5 >	Countryside Stewardship Schemes >	1	0	2	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
67	13.1	Priority Habitat Inventory	0	0	0	-	-
67	13.2	Habitat Networks	0	0	0	-	-
67	13.3	Open Mosaic Habitat	0	0	0	-	-
67	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
68 >	14.1 >	10k Availability >	Identified (within 500m)				
69	14.2	Artificial and made ground (10k)	0	0	0	0	-
70	14.3	Superficial geology (10k)	0	0	0	0	-

70	14.4	Landslip (10k)	0	0	0	0	-
71	14.5	Bedrock geology (10k)	0	0	0	0	-
71	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
72 >	15.1 >	50k Availability >	Identified (within 500m)				
73 >	15.2 >	Artificial and made ground (50k) >	0	0	1	0	-
74	15.3	Artificial ground permeability (50k)	0	0	-	-	-
75 >	15.4 >	Superficial geology (50k) >	1	0	2	1	-
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	0	2	2	-
78 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
78 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	0	1	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
79 >	16.1 >	BGS Boreholes >	0	0	7	-	-
Page	Section	Natural ground subsidence >					
81 >	17.1 >	Shrink swell clays >	Low (within 50m)				
82 >	17.2 >	Running sands >	Very low (within 50m)				
84 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
85 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
86 >	17.5 >	Landslides >	Very low (within 50m)				
88 >	17.6 >	Ground dissolution of soluble rocks >	Very low (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
90	18.1	BritPits	0	0	0	0	-
91 >	18.2 >	Surface ground workings >	0	0	7	-	-
91	18.3	Underground workings	0	0	0	0	0
91	18.4	Underground mining extents	0	0	0	0	-
92	18.5	Historical Mineral Planning Areas	0	0	0	0	-



92 >	18.6 >	Non-coal mining >	2	0	0	0	0
92	18.7	JPB mining areas	None (within 0m)				
93	18.8	The Coal Authority non-coal mining	0	0	0	0	-
93	18.9	Researched mining	0	0	0	0	-
93	18.10	Mining record office plans	0	0	0	0	-
93	18.11	BGS mine plans	0	0	0	0	-
94	18.12	Coal mining	None (within 0m)				
94	18.13	Brine areas	None (within 0m)				
94	18.14	Gypsum areas	None (within 0m)				
94	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	-
96	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
97 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
99 >	21.1 >	BGS Estimated Background Soil Chemistry >	3	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 1	0	0	0	0	-
102	22.9	Crossrail 2	0	0	0	0	-
102	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 07/04/2020

Site Area: 3.1ha



Recent site history - 2017 aerial photograph



Capture Date: 11/08/2017

Site Area: 3.1ha



Recent site history - 2015 aerial photograph



Capture Date: 03/07/2015

Site Area: 3.1ha



Recent site history - 2007 aerial photograph



Capture Date: 16/11/2007

Site Area: 3.1ha



Recent site history - 1999 aerial photograph



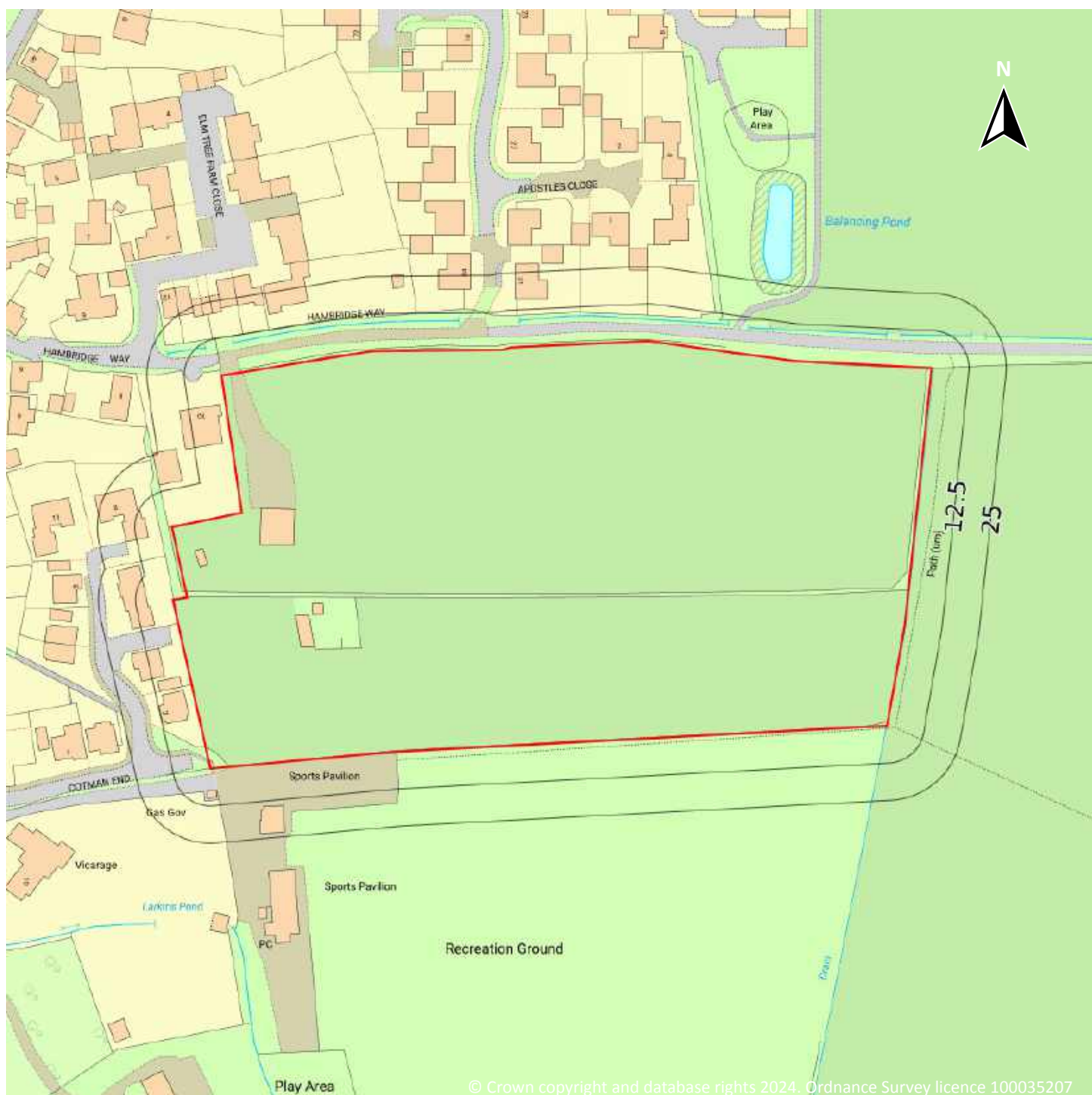
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2024. All Rights Reserved.

Capture Date: 27/05/1999

Site Area: 3.1ha



OS MasterMap site plan



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Site Area: 3.1ha



1 Past land use



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

1.1 Historical industrial land uses

Records within 500m

9

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 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	116m SW	Unspecified Ground Workings	1960	2091071



ID	Location	Land use	Dates present	Group ID
A	239m N	Pumping Station	1925	2093419
B	296m NW	Pumping Station	1922	2125943
B	296m NW	Pumping Station	1947	2126466
D	333m W	Unspecified Works	1960	2080148
D	336m W	Glove Works	1947	2135403
D	336m W	Glove Works	1922	2135811
D	340m W	Glove Works	1925	2135627
2	368m W	Smithy	1899	2111396

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

6

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	261m N	Electricity Substation	1980 - 1993	253939
B	287m NW	Electricity Substation	1980 - 1995	255189
C	333m W	Electricity Substation	1980	257458



ID	Location	Land use	Dates present	Group ID
C	334m W	Electricity Substation	1995	254016
E	493m W	Electricity Substation	1995	251844
E	494m W	Electricity Substation	1980	251285

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

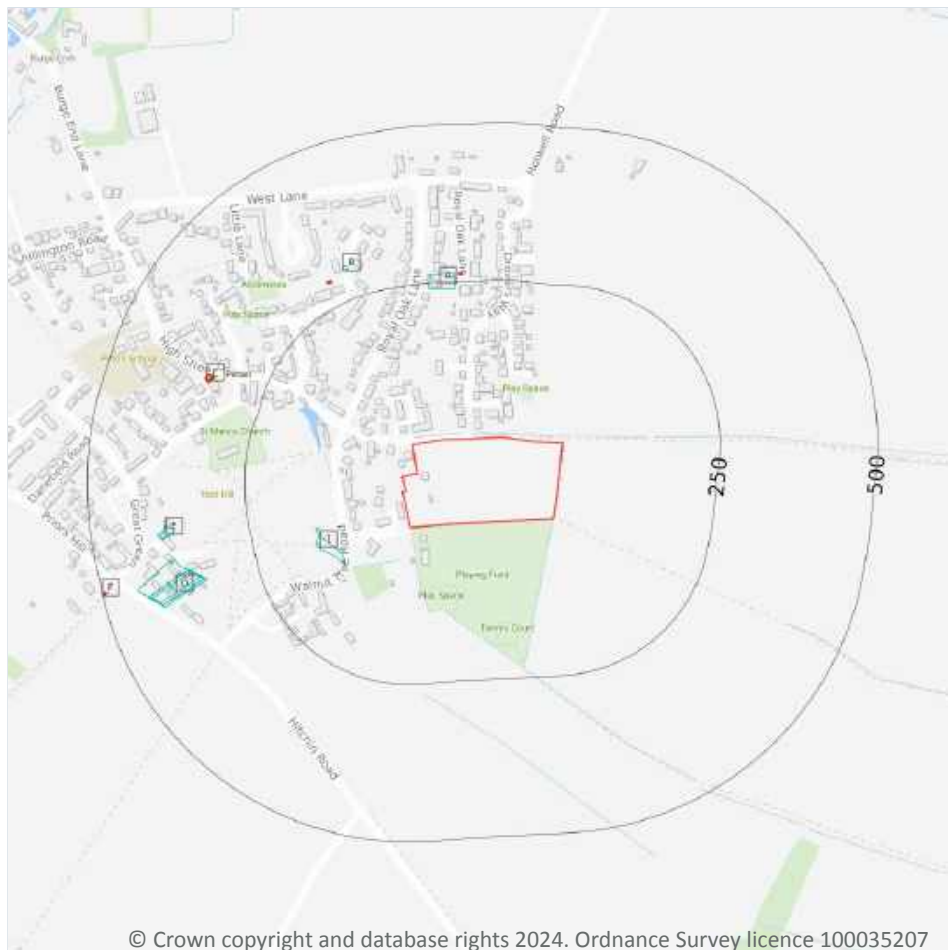
0

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

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



2 Past land use - un-grouped



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

2.1 Historical industrial land uses

Records within 500m

10

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

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

ID	Location	Land Use	Date	Group ID
1	116m SW	Unspecified Ground Workings	1960	2091071
A	239m N	Pumping Station	1925	2093419
B	296m NW	Pumping Station	1947	2126466



ID	Location	Land Use	Date	Group ID
B	296m NW	Pumping Station	1922	2125943
D	333m W	Unspecified Works	1960	2080148
D	336m W	Glove Works	1947	2135403
D	336m W	Glove Works	1922	2135811
D	340m W	Glove Works	1925	2135627
E	368m W	Smithy	1899	2111396
E	368m W	Smithy	1899	2111396

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	0
----------------------------	----------

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

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	11
----------------------------	-----------

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

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

ID	Location	Land Use	Date	Group ID
A	261m N	Electricity Substation	1993	253939
A	261m N	Electricity Substation	1980	253939
B	287m NW	Electricity Substation	1995	255189
B	287m NW	Electricity Substation	1995	255189
B	288m NW	Electricity Substation	1980	255189
C	333m W	Electricity Substation	1980	257458



ID	Location	Land Use	Date	Group ID
C	334m W	Electricity Substation	1995	254016
C	334m W	Electricity Substation	1995	254016
F	493m W	Electricity Substation	1995	251844
F	493m W	Electricity Substation	1995	251844
F	494m W	Electricity Substation	1980	251285

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

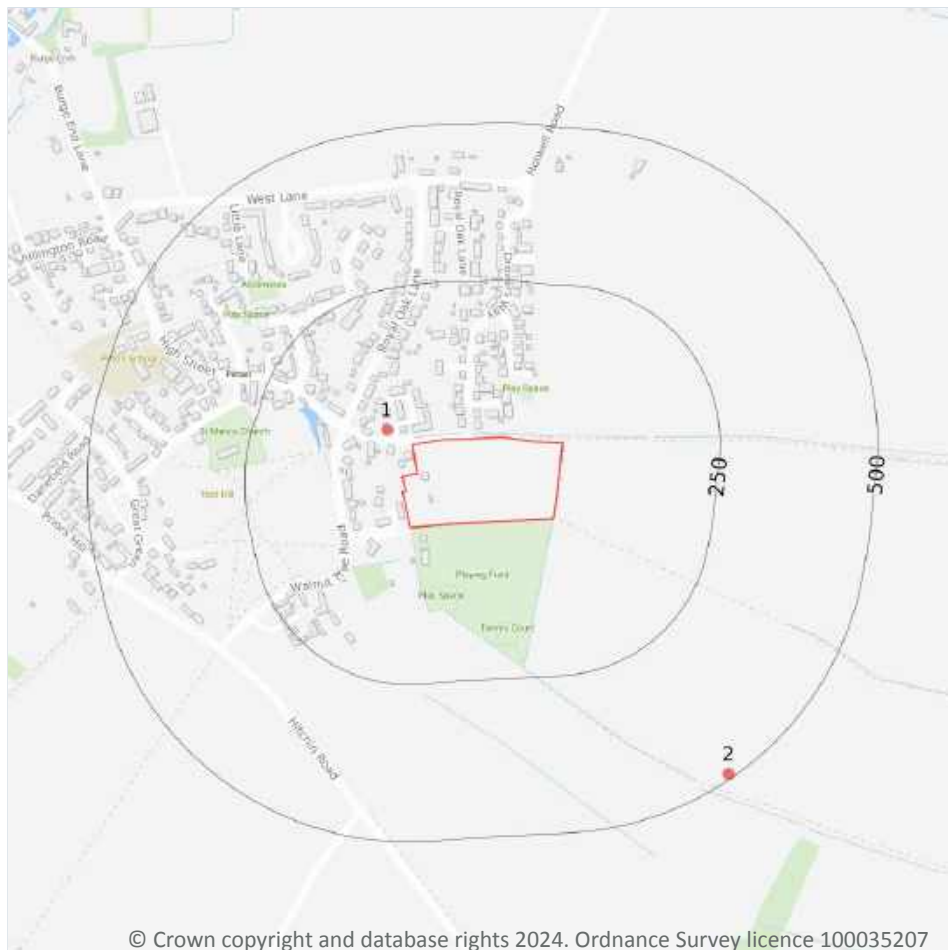
0

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)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

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

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

3.2 Historical landfill (BGS records)

Records within 500m

0

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

This data is sourced from the British Geological Survey.



3.3 Historical landfill (LA/mapping records)

Records within 500m**0**

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m**0**

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

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

3.5 Historical waste sites

Records within 500m**0**

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

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

3.6 Licensed waste sites

Records within 500m**0**

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

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

3.7 Waste exemptions

Records within 500m**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](#) >

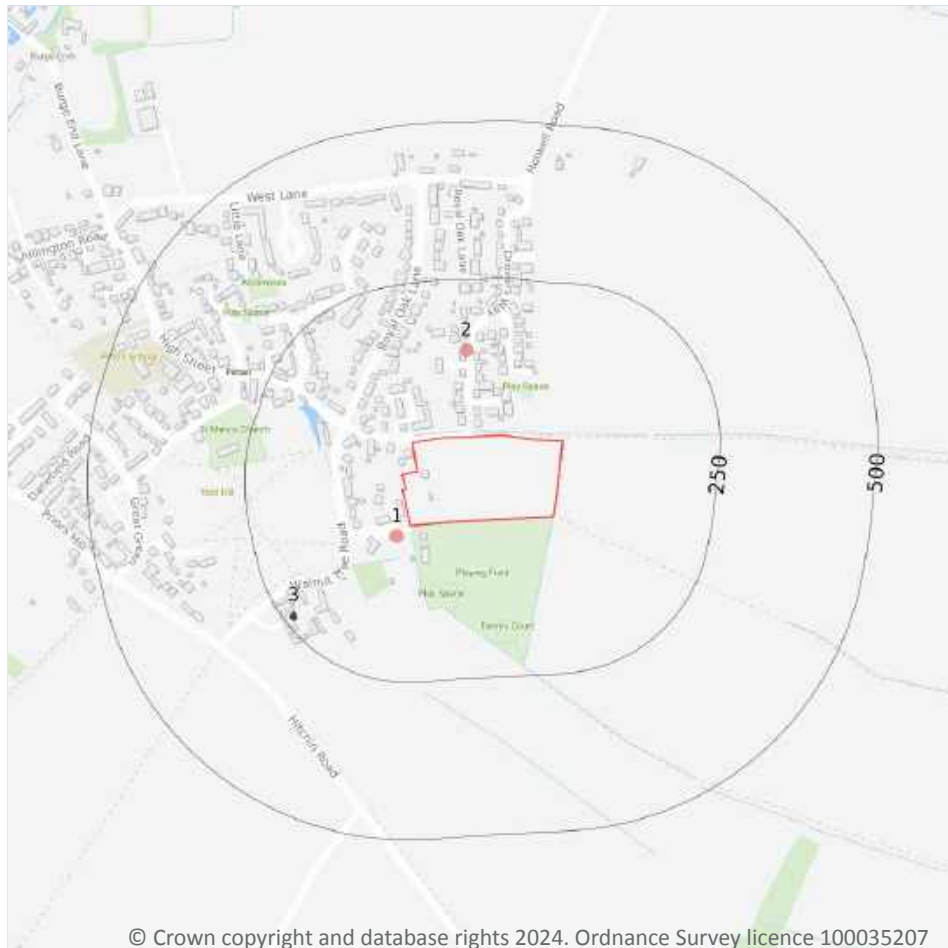


ID	Location	Site	Reference	Category	Sub-Category	Description
1	48m NW	A J Walker, Elm Tree Far, Hambridge Way, Pirton, Hitchin, Sg5 3qs	WEX089068	Using waste exemption	On a farm	Use of waste in construction
2	493m SE	-	WEX294655	Storing waste exemption	On a farm	Storage of sludge

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

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	27m SW	Gas Governor	Hertfordshire, SG5	Gas Features	Infrastructure and Facilities
2	138m N	Electricity Sub Station	Hertfordshire, SG5	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.



4.2 Current or recent petrol stations

Records within 500m**0**

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m**0**

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m

0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m

0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m

0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

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

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

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

Records within 500m

0

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

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m

1

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991. Features are displayed on the Current industrial land use map on [page 24 >](#)

ID	Location	Address	Details	
3	234m SW	WALNUT TREE FARM.PIRTON, PIRTON, HITCHIN, SG5	Effluent Type: UNSPECIFIED Permit Number: PR1NFG0514 Permit Version: 1 Receiving Water: unknown	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 24/05/1963 Effective Date: 24/05/1963 Revocation Date: 20/02/1991

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m

0

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

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

4.15 Pollutant release to public sewer

Records within 500m

0

Discharges of Special Category Effluents to the public sewer.

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



4.16 List 1 Dangerous Substances

Records within 500m**0**

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

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

4.17 List 2 Dangerous Substances

Records within 500m**0**

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m**0**

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

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

4.19 Pollution inventory substances

Records within 500m**0**

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

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

4.20 Pollution inventory waste transfers

Records within 500m**0**

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

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



4.21 Pollution inventory radioactive waste

Records within 500m

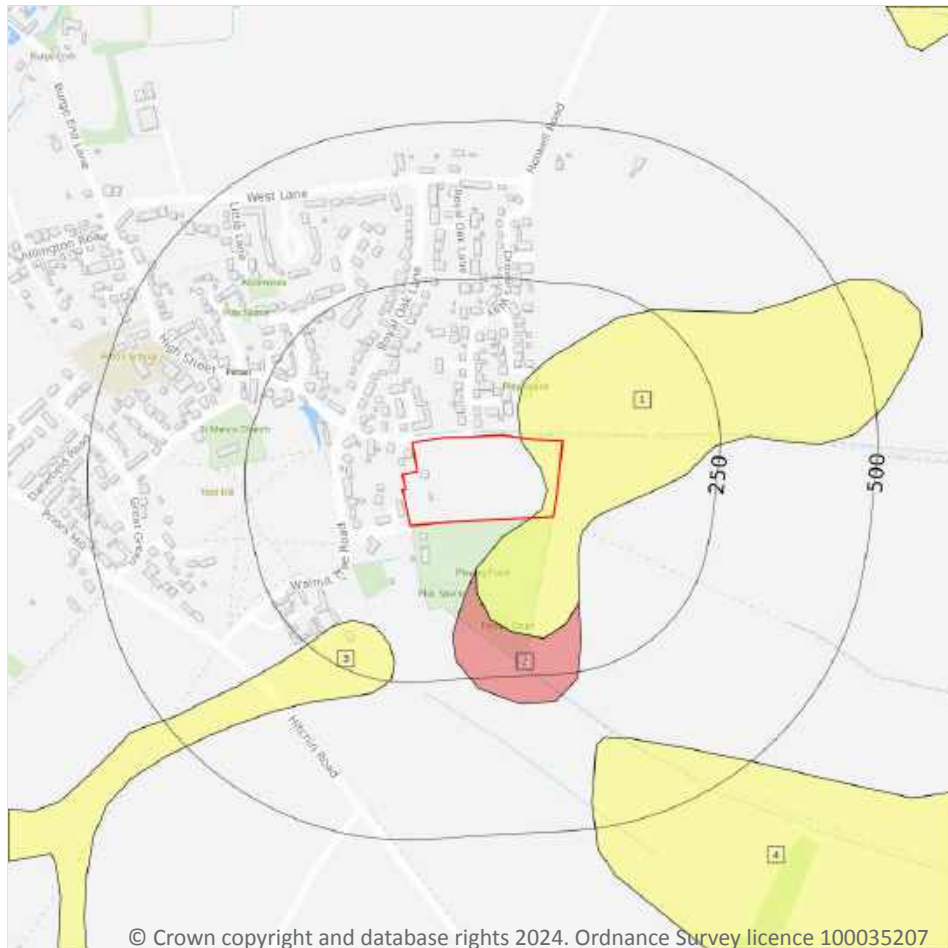
0

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

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



5 Hydrogeology - Superficial aquifer



- 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 30](#) >

ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	76m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

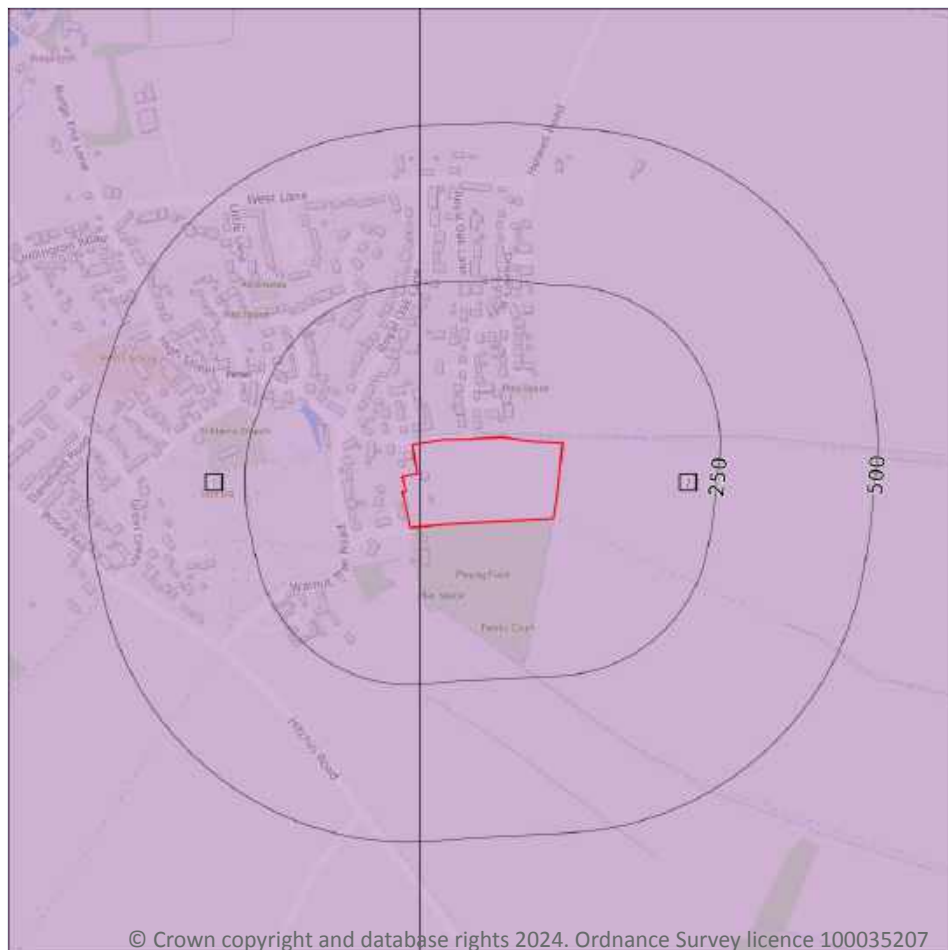


ID	Location	Designation	Description
3	170m SW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	360m SE	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

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5.2 Bedrock aquifer

Records within 500m

2

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on [page 32](#) >

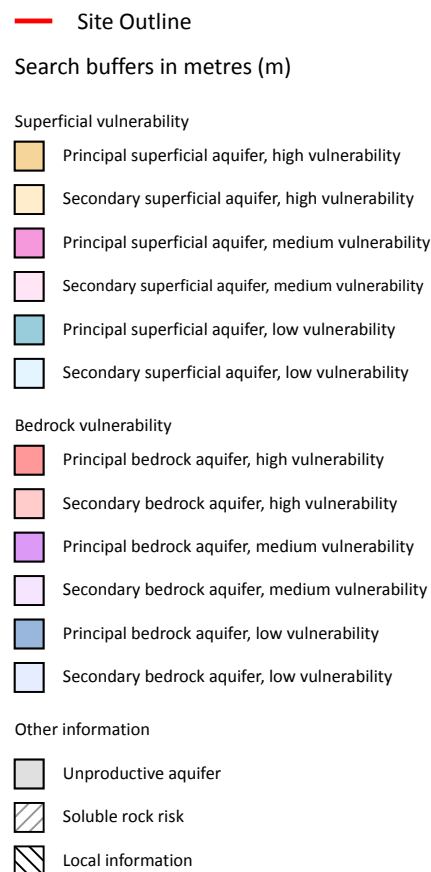
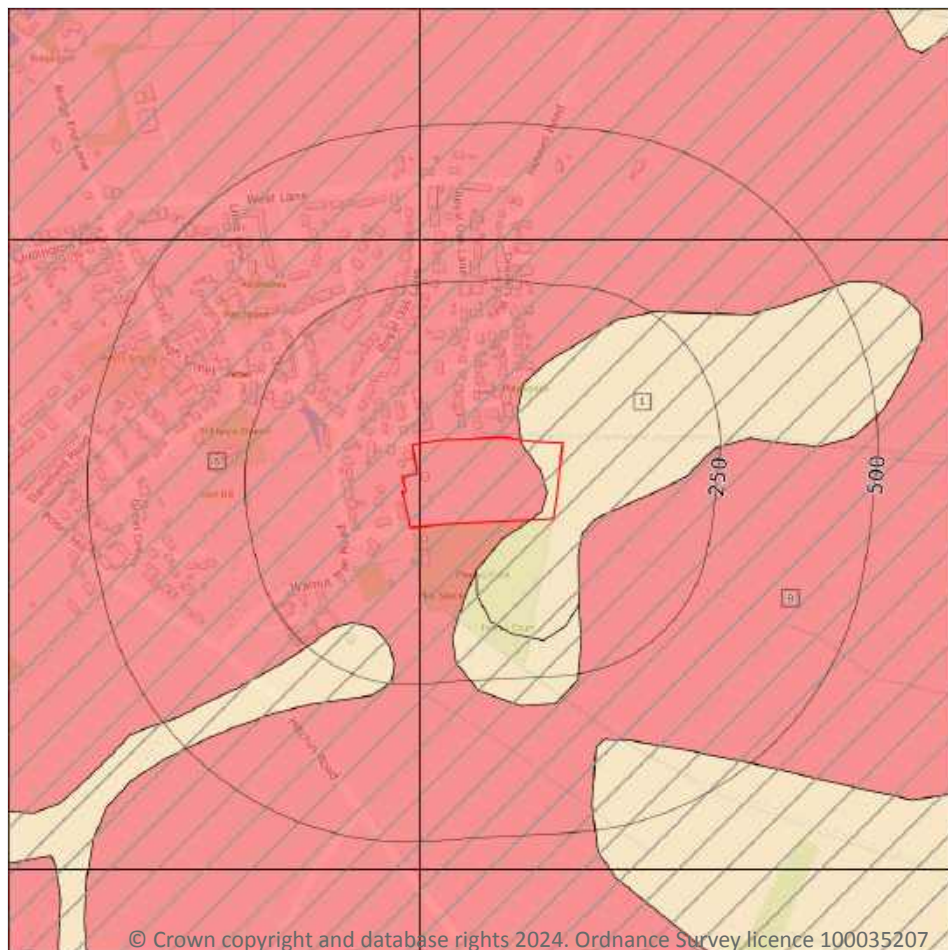
ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	On site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



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: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
A	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures
B	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m 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	2
-----------------	---

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
A	Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.	10.0%
B	Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.	31.0%

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



5.5 Groundwater vulnerability- local information

Records on site

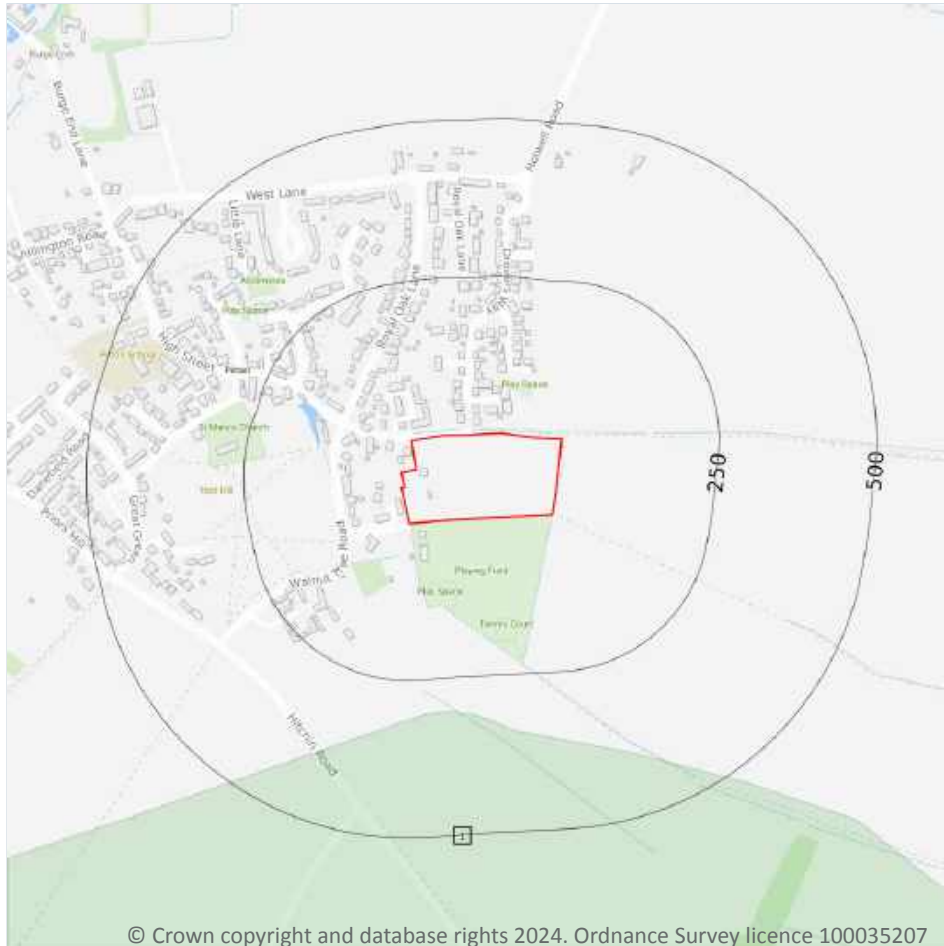
0

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
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

5

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	
-	890m SW	Status: Historical Licence No: 6/33/13/*G/0024 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT WALNUT TREE FARM Data Type: Point Name: ROGERS Easting: 514700 Northing: 230700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/02/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/02/1995 Version End Date: -
-	1794m E	Status: Historical Licence No: 6/33/13/*G/0047 Details: General Farming & Domestic Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL N OF HAMBRIDGE WAY Data Type: Point Name: PARKER Easting: 517020 Northing: 231620	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/11/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/02/1969 Version End Date: -
-	1858m SE	Status: Active Licence No: 6/33/13/*G/0011 Details: General Use Relating To Secondary Category (Very Low Loss) Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL, OUGHTON HEAD, HITCHIN Data Type: Point Name: Affinity Water Limited Easting: 515904 Northing: 229832	Annual Volume (m ³): 1659323 Max Daily Volume (m ³): 6547 Original Application No: NPS/WR/033625 Original Start Date: 01/11/1966 Expiry Date: - Issue No: 103 Version Start Date: 02/11/2020 Version End Date: -
-	1858m SE	Status: Active Licence No: 6/33/13/*G/0011 Details: Potable Water Supply - Direct Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL, OUGHTON HEAD, HITCHIN Data Type: Point Name: Affinity Water Limited Easting: 515904 Northing: 229832	Annual Volume (m ³): 1659323 Max Daily Volume (m ³): 6547 Original Application No: NPS/WR/033625 Original Start Date: 01/11/1966 Expiry Date: - Issue No: 103 Version Start Date: 02/11/2020 Version End Date: -
-	1887m SE	Status: Historical Licence No: 6/33/13/*G/0011 Details: Potable Water Supply - Direct Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL, OUGHTON HEAD, HITCHIN Data Type: Point Name: Affinity Water Limited Easting: 515900 Northing: 229800	Annual Volume (m ³): 1659327 Max Daily Volume (m ³): 6546.24 Original Application No: - Original Start Date: 01/11/1966 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.

5.7 Surface water abstractions

Records within 2000m

4

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.

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

ID	Location	Details	
-	1945m N	Status: Active Licence No: 6/33/13/*S/0100 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: DRAIN NEAR HOLWELL Data Type: Line Name: PARRISH Easting: 515772 Northing: 234196	Annual Volume (m ³): 1819 Max Daily Volume (m ³): 165 Original Application No: NPS/WR/027029 Original Start Date: 01/05/1996 Expiry Date: - Issue No: 101 Version Start Date: 21/08/2017 Version End Date: -
-	1946m N	Status: Historical Licence No: 6/33/13/*S/0100 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: DRAIN NEAR HOLWELL Data Type: Line Name: PARRISH Easting: 515780 Northing: 234200	Annual Volume (m ³): 3637 Max Daily Volume (m ³): 329 Original Application No: - Original Start Date: 01/05/1996 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1996 Version End Date: -
-	1984m N	Status: Active Licence No: 6/33/13/*S/0100 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: DRAIN NEAR HOLWELL Data Type: Line Name: PARRISH Easting: 515580 Northing: 233912	Annual Volume (m ³): 1819 Max Daily Volume (m ³): 165 Original Application No: NPS/WR/027029 Original Start Date: 01/05/1996 Expiry Date: - Issue No: 101 Version Start Date: 21/08/2017 Version End Date: -
-	1991m N	Status: Historical Licence No: 6/33/13/*S/0100 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER SOURCE OF SUPPLY Point: DRAIN NEAR HOLWELL Data Type: Line Name: PARRISH Easting: 515560 Northing: 233910	Annual Volume (m ³): 3637 Max Daily Volume (m ³): 329 Original Application No: - Original Start Date: 01/05/1996 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1996 Version End Date: -



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

5.8 Potable abstractions

Records within 2000m

3

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	
-	890m SW	Status: Historical Licence No: 6/33/13/*G/0024 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL AT WALNUT TREE FARM Data Type: Point Name: ROGERS Easting: 514700 Northing: 230700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 01/02/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/02/1995 Version End Date: -
-	1858m SE	Status: Active Licence No: 6/33/13/*G/0011 Details: Potable Water Supply - Direct Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL, OUGHTON HEAD, HITCHIN Data Type: Point Name: Affinity Water Limited Easting: 515904 Northing: 229832	Annual Volume (m ³): 1659323 Max Daily Volume (m ³): 6547 Original Application No: NPS/WR/033625 Original Start Date: 01/11/1966 Expiry Date: - Issue No: 103 Version Start Date: 02/11/2020 Version End Date: -
-	1887m SE	Status: Historical Licence No: 6/33/13/*G/0011 Details: Potable Water Supply - Direct Direct Source: GROUND WATER SOURCE OF SUPPLY Point: WELL, OUGHTON HEAD, HITCHIN Data Type: Point Name: Affinity Water Limited Easting: 515900 Northing: 229800	Annual Volume (m ³): 1659327 Max Daily Volume (m ³): 6546.24 Original Application No: - Original Start Date: 01/11/1966 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**1**

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

ID	Location	Type	Description
1	303m S	3	Total catchment

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

5.10 Source Protection Zones (confined aquifer)

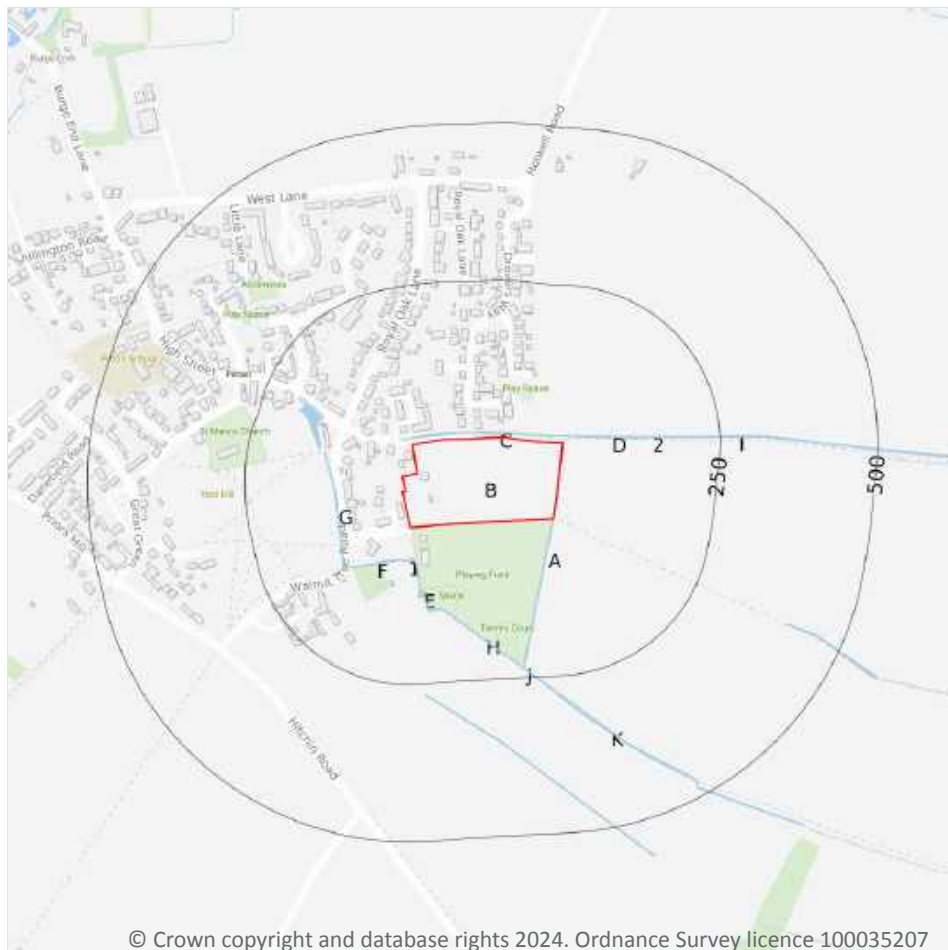
Records within 500m**0**

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

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



6 Hydrology



- 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

26

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

Features are displayed on the Hydrology map on [page 42](#) >

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



ID	Location	Type of water feature	Ground level	Permanence	Name
C	7m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	9m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	9m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	9m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	10m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	10m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	10m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
C	11m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	11m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	17m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
D	21m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
1	53m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Larkins Pond
E	54m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
F	55m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	105m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	112m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
E	133m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
2	134m E	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
H	137m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
I	147m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	225m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
J	229m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	235m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
J	236m S	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
K	241m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.



6.2 Surface water features

Records within 250m

14

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

Features are displayed on the Hydrology map on [page 42 >](#)

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 42 >](#)

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
B	On site	River	Stondon Brook	GB105033037710	Ivel	Ouse Upper and Bedford

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 42 >](#)

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	2637m N	River	Stondon Brook	GB105033037710 ↗	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 42](#) >

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
B	On site	Upper Bedford Ouse Chalk	GB40601G603000 ↗	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.

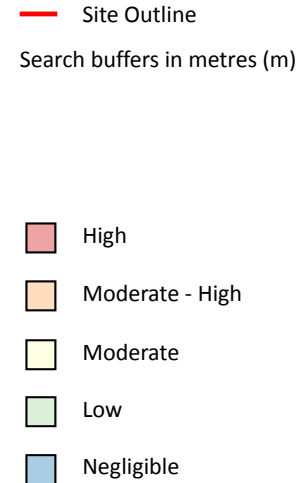
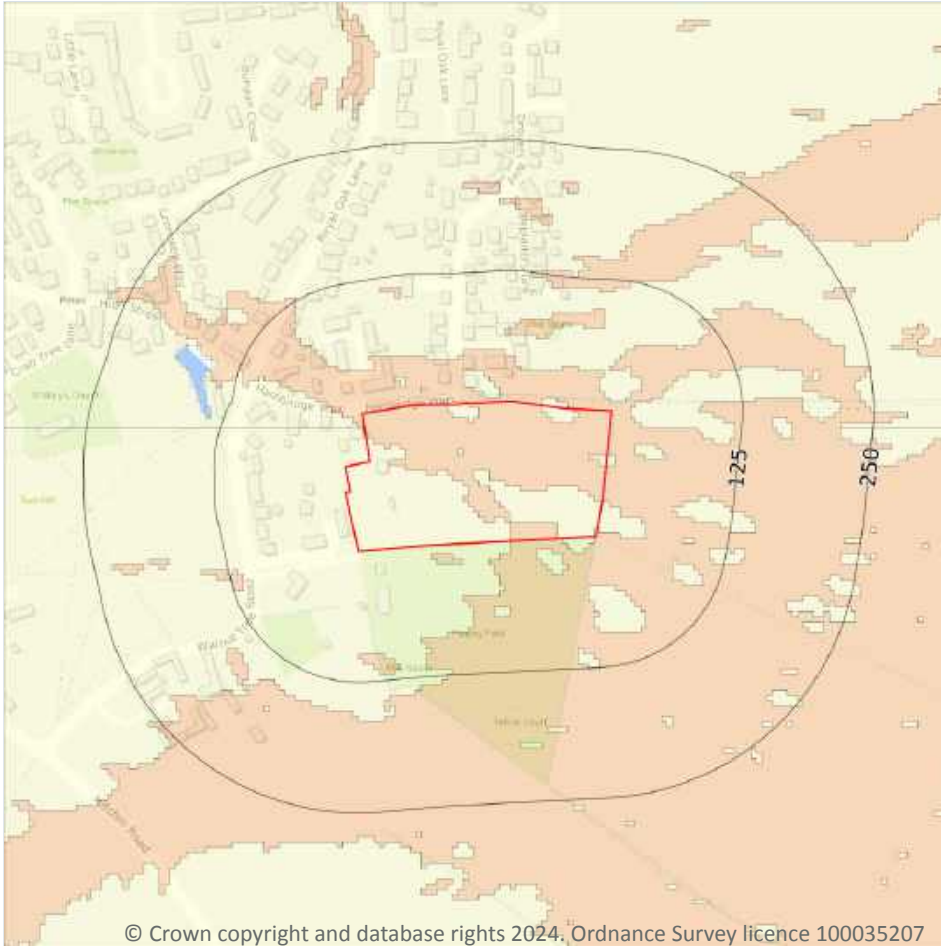
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site. The table below shows the maximum flood depths for a range of return periods for the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

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
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

Moderate-High

Highest risk within 50m

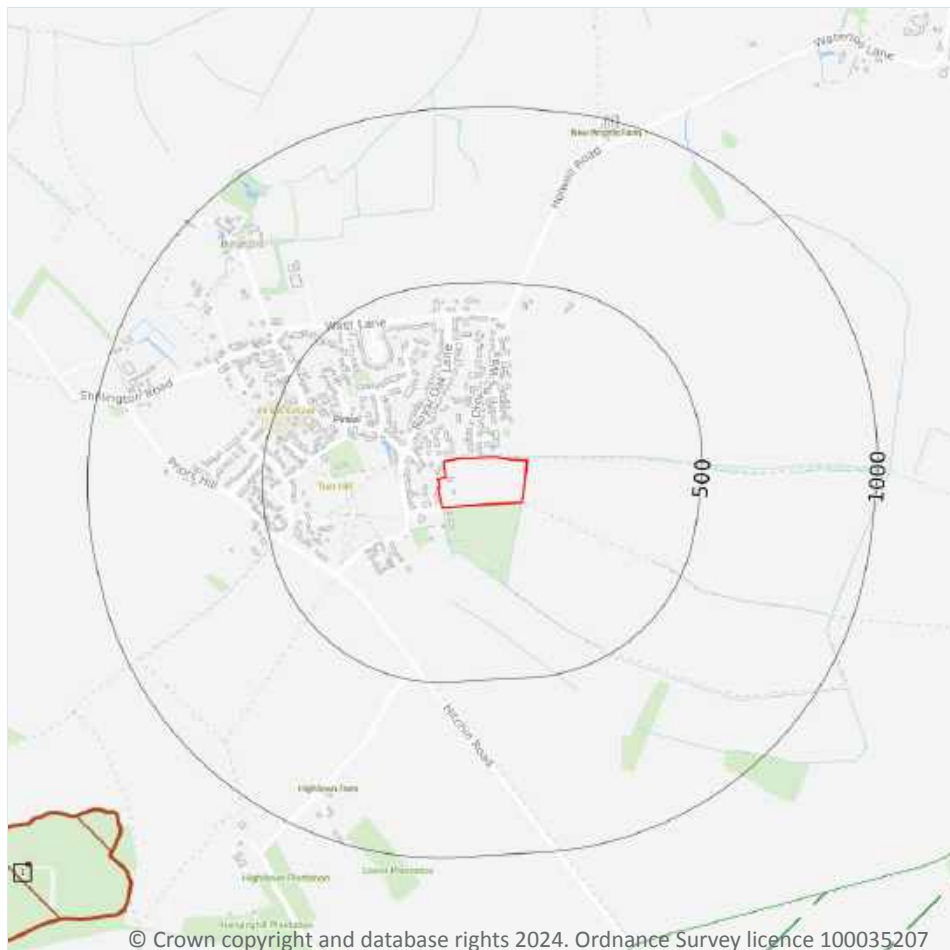
Moderate-High

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 51](#) >

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- × National Nature Reserves (NNR)
- + Local Nature Reserves (LNR)
- Designated Ancient Woodland
- Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

1

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.

Features are displayed on the Environmental designations map on [page 52](#) >

ID	Location	Name	Data source
-	1872m SW	Knocking Hoe	Natural England



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

1

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.

Features are displayed on the Environmental designations map on [page 52 >](#)

ID	Location	Name	Data source
-	1872m SW	Knocking Hoe	Natural England



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

10.6 Local Nature Reserves (LNR)

Records within 2000m

1

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency. Features are displayed on the Environmental designations map on [page 52 >](#)

ID	Location	Name	Data source
-	1830m SE	Oughtonhead Common	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m

2

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 52 >](#)

ID	Location	Name	Woodland Type
1	1275m SW	Tingley Wood	Ancient & Semi-Natural Woodland
-	1740m SW	Unknown	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**1**

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

Features are displayed on the Environmental designations map on [page 52 >](#)

ID	Location	Name	Local Authority name
A	1301m S	London	North Hertfordshire

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

10.12 Proposed Ramsar sites

Records within 2000m**0**

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

This data is sourced from Natural England.



10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

4

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

Location	Name	Type	NVZ ID	Status
On site	Great Ouse NVZ	Surface Water	391	Existing

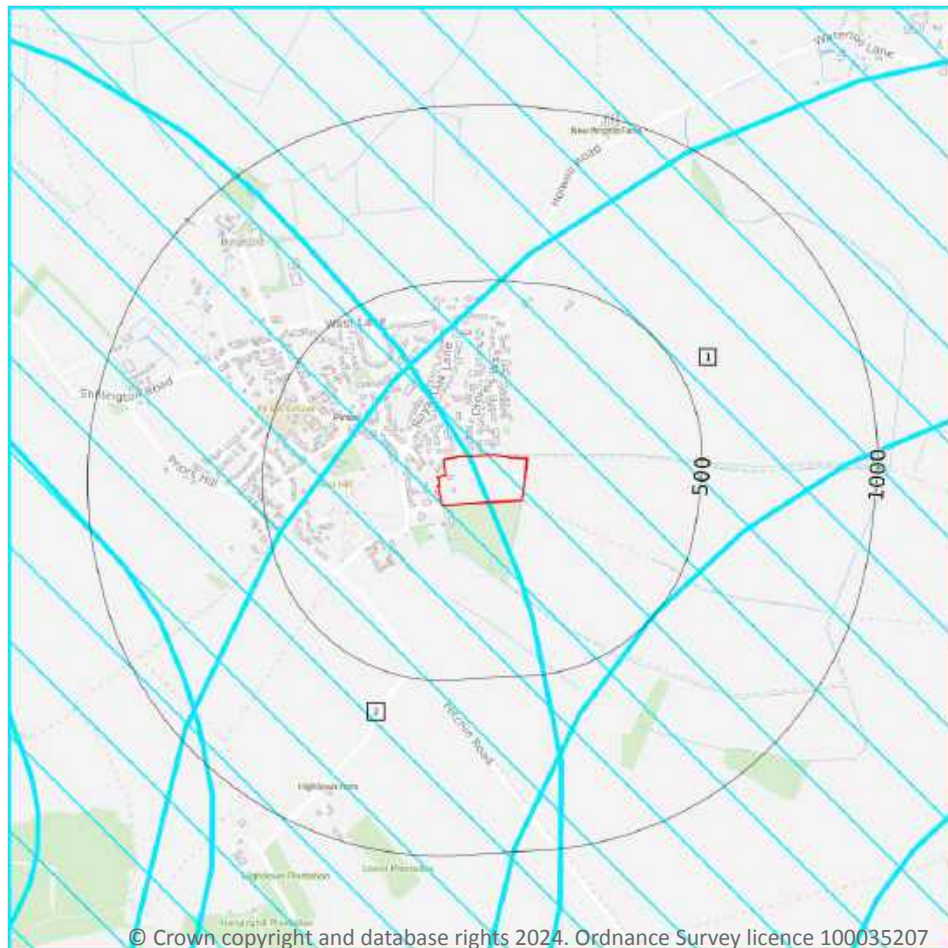


Location	Name	Type	NVZ ID	Status
On site	Anglian Chalk	Groundwater	71	Existing
880m W	Great Ouse NVZ	Surface Water	391	Existing
880m W	Anglian Chalk	Groundwater	71	Existing

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



SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site

2

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

Features are displayed on the SSSI Impact Zones and Units map on [page 58 >](#)

ID	Location	Type of developments requiring consultation
1	On site	Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t.



ID	Location	Type of developments requiring consultation
2	On site	Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t). Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion. Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill. Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	1
-----------------------------	----------

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.

Features are displayed on the SSSI Impact Zones and Units map on [page 58 >](#)

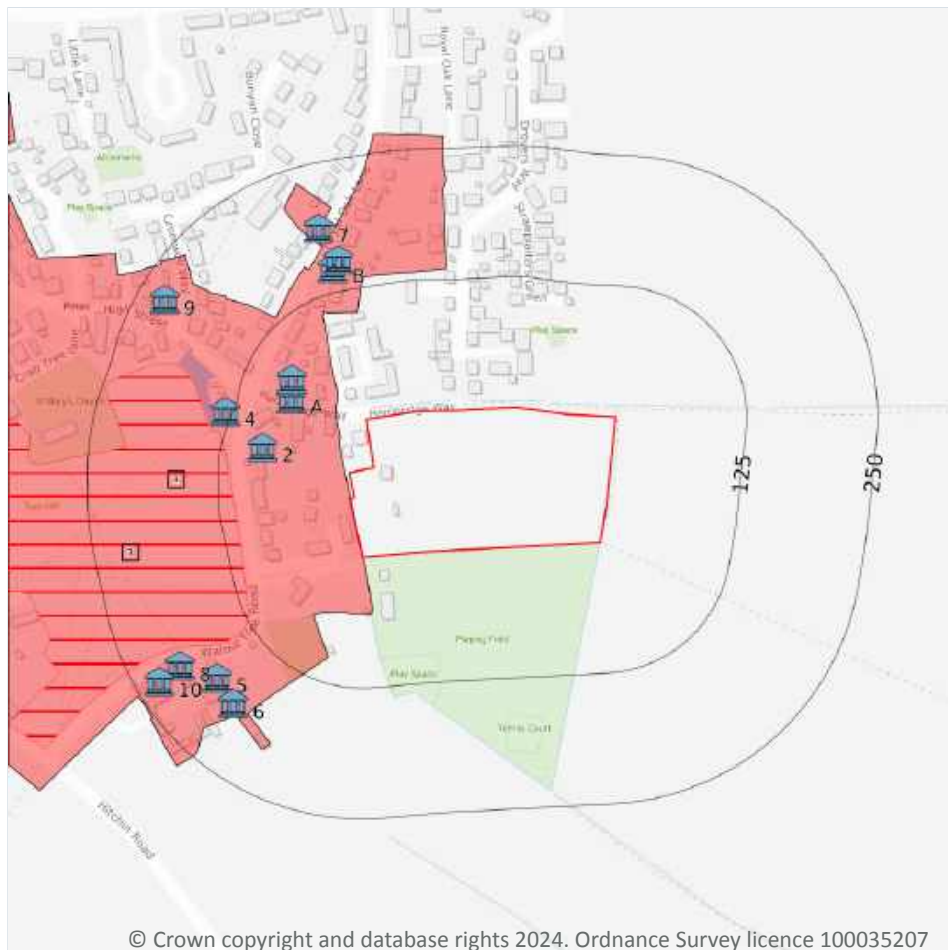
ID: -
 Location: 1872m SW
 SSSI name: Knocking Hoe
 Unit name: Whole Site
 Broad habitat: Calcareous Grassland - Lowland
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
Lowland calcareous grassland (CG2)	Favourable	22/12/2022
Lowland calcareous grassland (CG3-5)	Favourable	22/12/2022
Vascular plant assemblage	Favourable	22/12/2022

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

12

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 60 >](#)

ID	Location	Name	Grade	Reference Number	Listed date
A	75m NW	South-East Barn At No 1 (Elm Tree Farm)	II	1103190	24/10/1988
A	81m NW	Elm Tree Farmhouse	II	1308350	24/10/1988
2	86m W	7, Walnut Tree Road	II	1175604	24/10/1988
4	132m W	4-6, Walnut Tree Road	II	1347097	24/10/1988
B	148m NW	Primrose Cottage	II	1347077	24/10/1988
B	155m NW	14, Royal Oak Lane	II	1175517	24/10/1988



ID	Location	Name	Grade	Reference Number	Listed date
5	180m SW	Walnut Tree Farmhouse	II	1103161	27/05/1968
6	186m SW	South-East Barn At Walnut Tree Farm	II	1103162	24/10/1988
7	188m NW	19-21, Royal Oak Lane	II	1103194	24/10/1988
8	203m SW	Farmbuildings Fronting Road At Walnut Tree Farm	II	1175626	24/10/1988
9	225m NW	Cromwell Cottage	II	1103192	24/10/1988
10	228m SW	23-25, Walnut Tree Road	II	1308247	24/10/1988

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

11.5 Conservation Areas

Records within 250m

1

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.

Features are displayed on the Visual and cultural designations map on [page 60 >](#)

ID	Location	Name	District	Date of designation
1	On site	Pirton	North Hertfordshire	06/10/1969

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

11.6 Scheduled Ancient Monuments

Records within 250m

1

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.

Features are displayed on the Visual and cultural designations map on [page 60 >](#)

ID	Location	Ancient monument name	Reference number
3	109m W	Toot Hill motte and bailey castle and shrunken medieval village at Pirton	1012325



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

11.7 Registered Parks and Gardens

Records within 250m

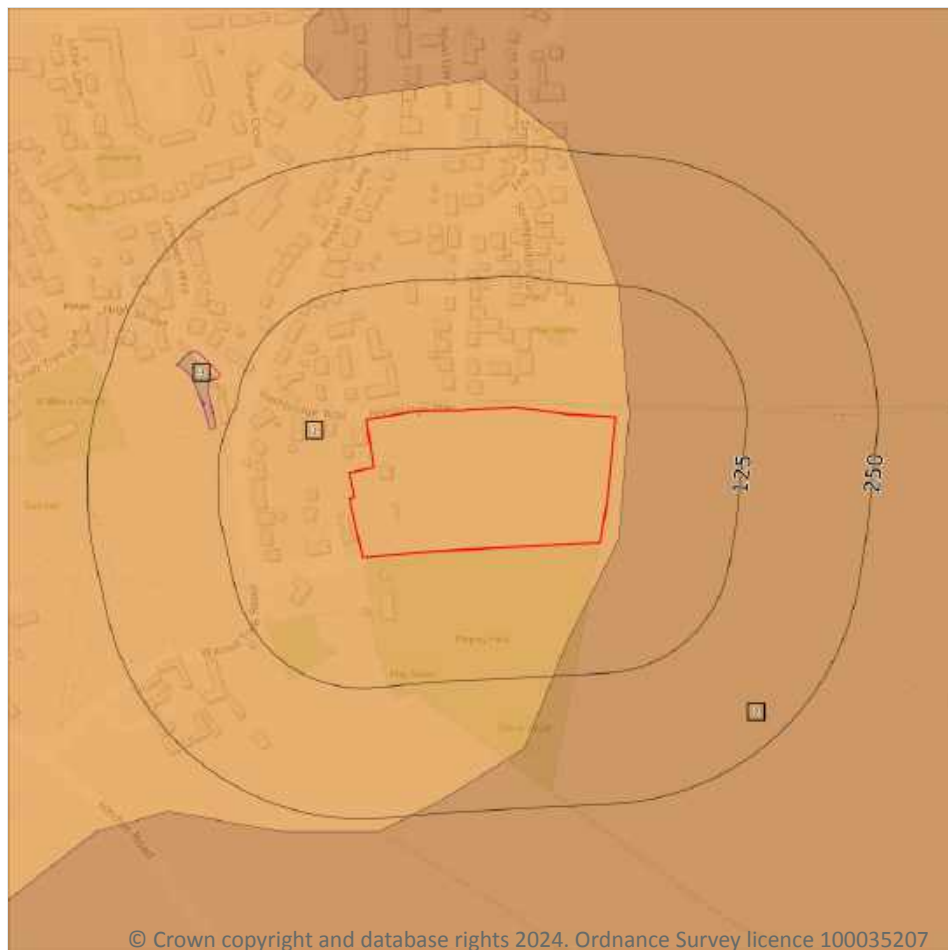
0

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

2

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.

ID	Location	Classification	Description
2	13m NE	Grade 2	Very good quality agricultural land. Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m

1

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.

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

ID	Location	Name	Classification	Other relevant legislation
3	134m W	Blacksmiths Pond	Section 4 Conclusive Registered Common Land	-

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**3**

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

Location	Reference	Scheme	Start Date	End Date
On site	1271038	Countryside Stewardship (Middle Tier)	01/01/2022	31/12/2026
106m W	1684358	Countryside Stewardship (Middle Tier)	01/01/2024	31/12/2028
134m E	1261021	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 68](#) >

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

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

14.3 Superficial geology (10k)

Records within 500m

0

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.

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

14.5 Bedrock geology (10k)

Records within 500m

0

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.

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m

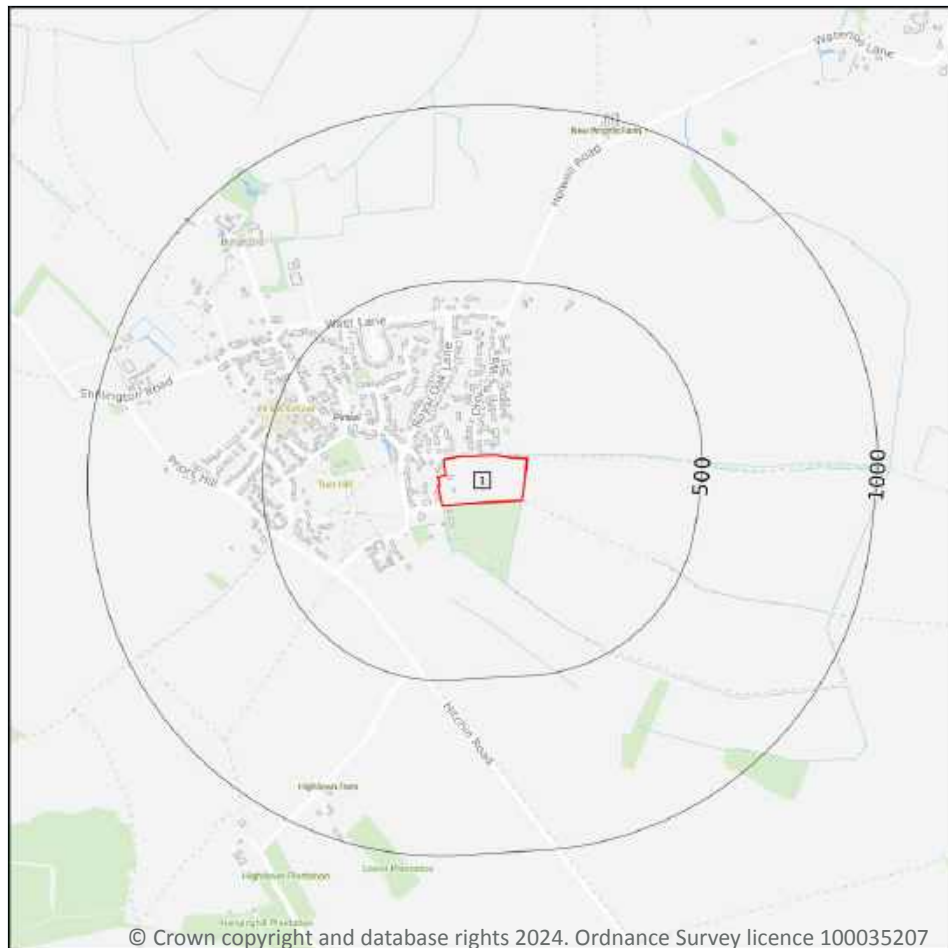
0

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.

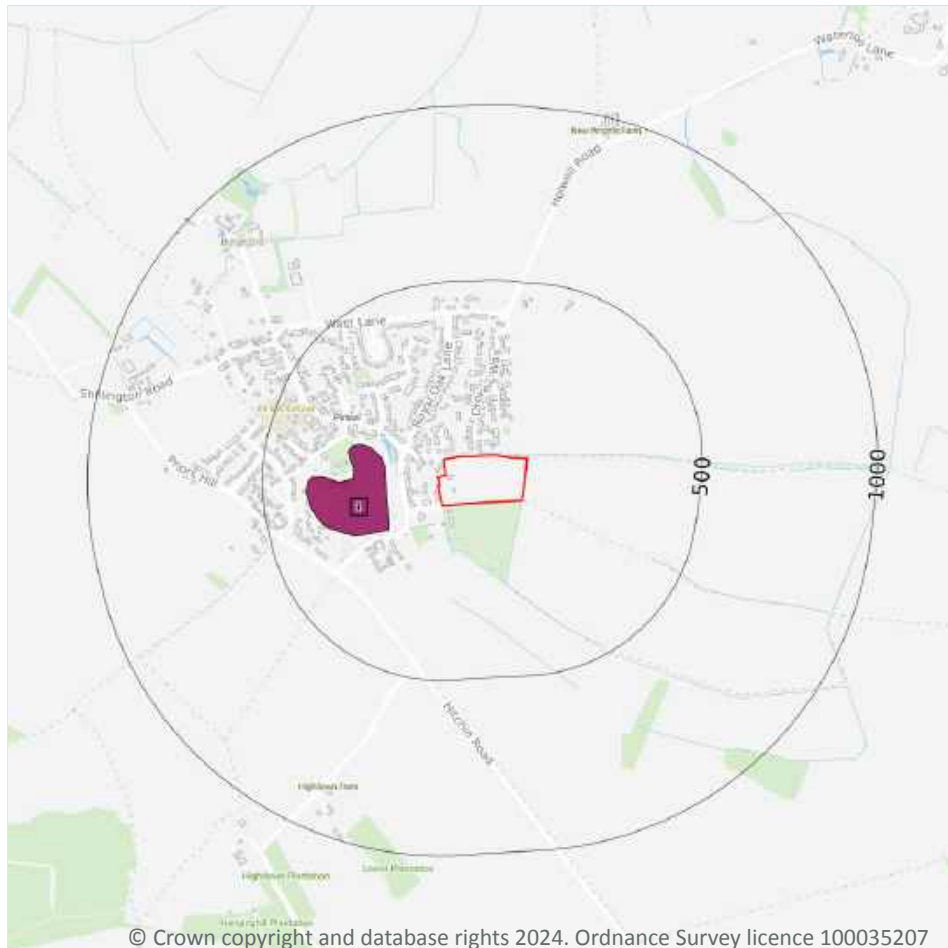
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 72](#) >

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW221_hitchin_v4

This data is sourced from the British Geological Survey.



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



- Site Outline**
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

1

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on [page 73 >](#)

ID	Location	LEX Code	Description	Rock description
1	148m W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.



15.3 Artificial ground permeability (50k)

Records within 50m

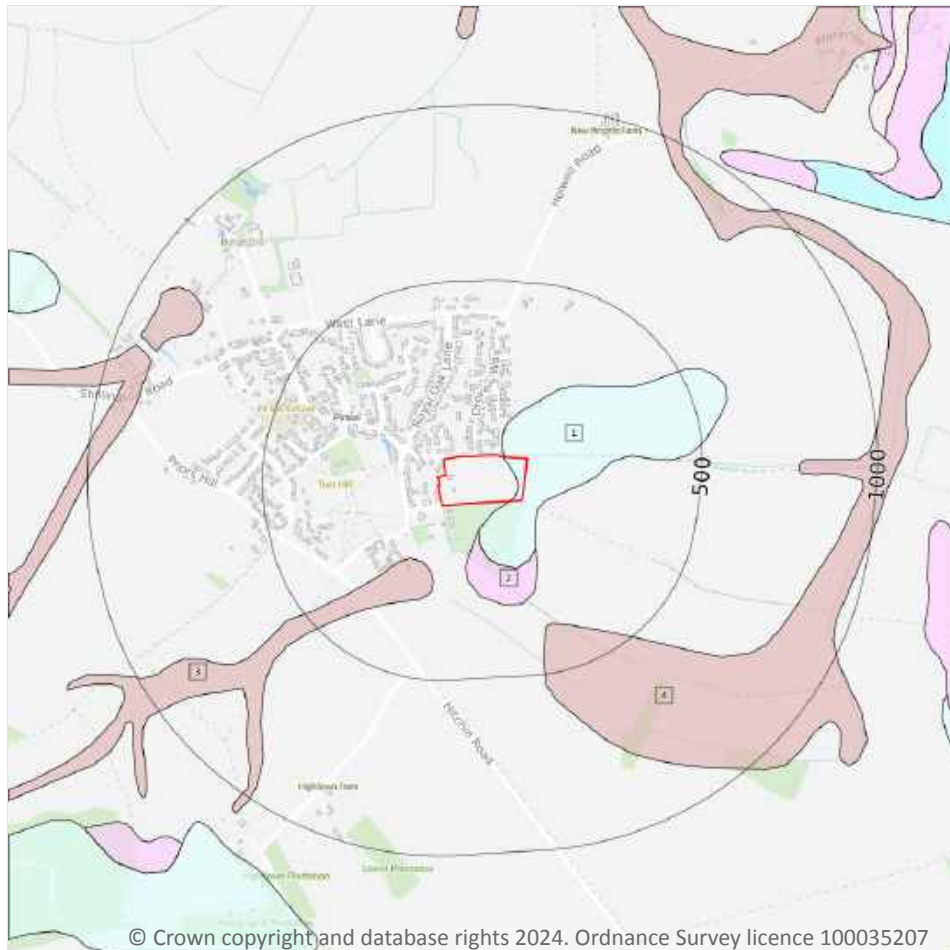
0

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

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m

4

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	LOFT-DMTN	LOWESTOFT FORMATION	DIAMICTON
2	76m S	GFDMP-XSV	GLACIOFLUVIAL DEPOSITS, MID PLEISTOCENE	SAND AND GRAVEL
3	170m SW	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL



ID	Location	LEX Code	Description	Rock description
4	360m SE	HEAD- XCZSV	HEAD	CLAY, SILT, 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	Mixed	Moderate	Low

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

5

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	WMCH-CHLK	WEST MELBURY MARLY CHALK FORMATION - CHALK	CENOMANIAN
2	110m NW	TTST-CHLK	TOTTERNHOE STONE MEMBER - CHALK	CENOMANIAN
3	144m NW	ZZCH-CHLK	ZIG ZAG CHALK FORMATION - CHALK	CENOMANIAN

ID	Location	LEX Code	Description	Rock age
5	431m SW	TTST-CHLK	TOTTERNHOE STONE MEMBER - CHALK	CENOMANIAN
6	460m SW	ZZCH-CHLK	ZIG ZAG CHALK FORMATION - CHALK	CENOMANIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2
---------------------------	----------

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Very High	High
On site	Fracture	Very High	High

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	1
----------------------------	----------

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

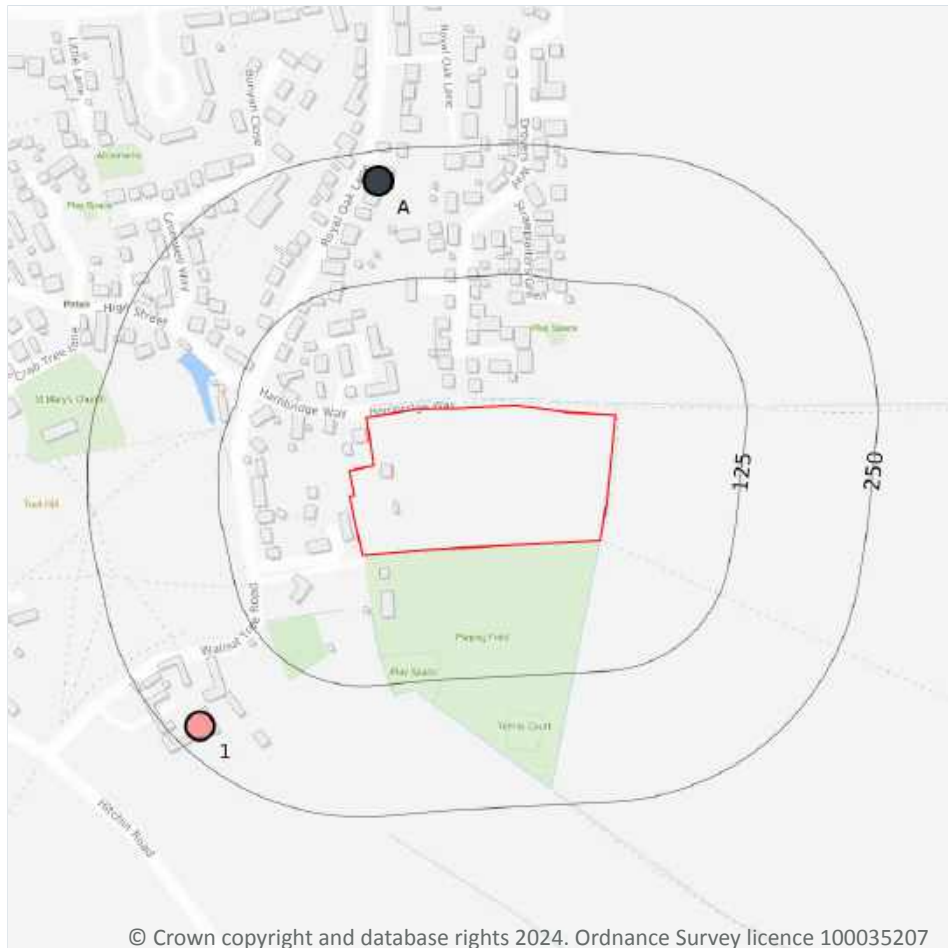
Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 77 >](#)

ID	Location	Category	Description
4	425m SW	FAULT	Fault, inferred

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

7

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
A	221m N	515000 231900	26 ROYAL OAK LANE PIRTON HERTFORDSHIRE TP 2	-	Y	N/A
A	221m N	515000 231900	26 ROYAL OAK LANE PIRTON HERTFORDSHIRE TP 4	-	Y	N/A

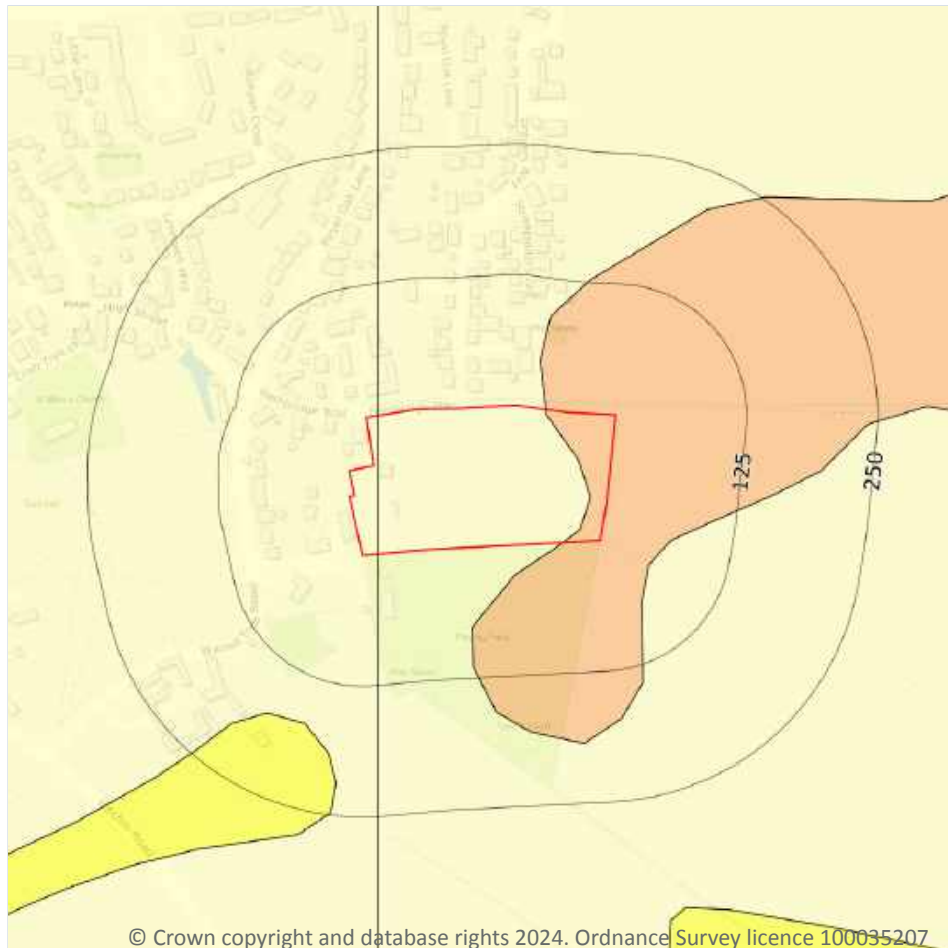


ID	Location	Grid reference	Name	Length	Confidential	Web link
A	221m N	515000 231900	26 ROYAL OAK LANE PIRTON HERTFORDSHIRE 1	-	Y	N/A
A	221m N	515000 231900	26 ROYAL OAK LANE PIRTON HERTFORDSHIRE TP 3	-	Y	N/A
A	221m N	515000 231900	26 ROYAL OAK LANE PIRTON HERTFORDSHIRE 2	-	Y	N/A
A	221m N	515000 231900	26 ROYAL OAK LANE PIRTON HERTFORDSHIRE TP 1	-	Y	N/A
1	225m SW	514830 231380	WALNUT TREE FARM PIRTON	36.57	N	529056 ↗

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

17.1 Shrink swell clays

Records within 50m

2

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

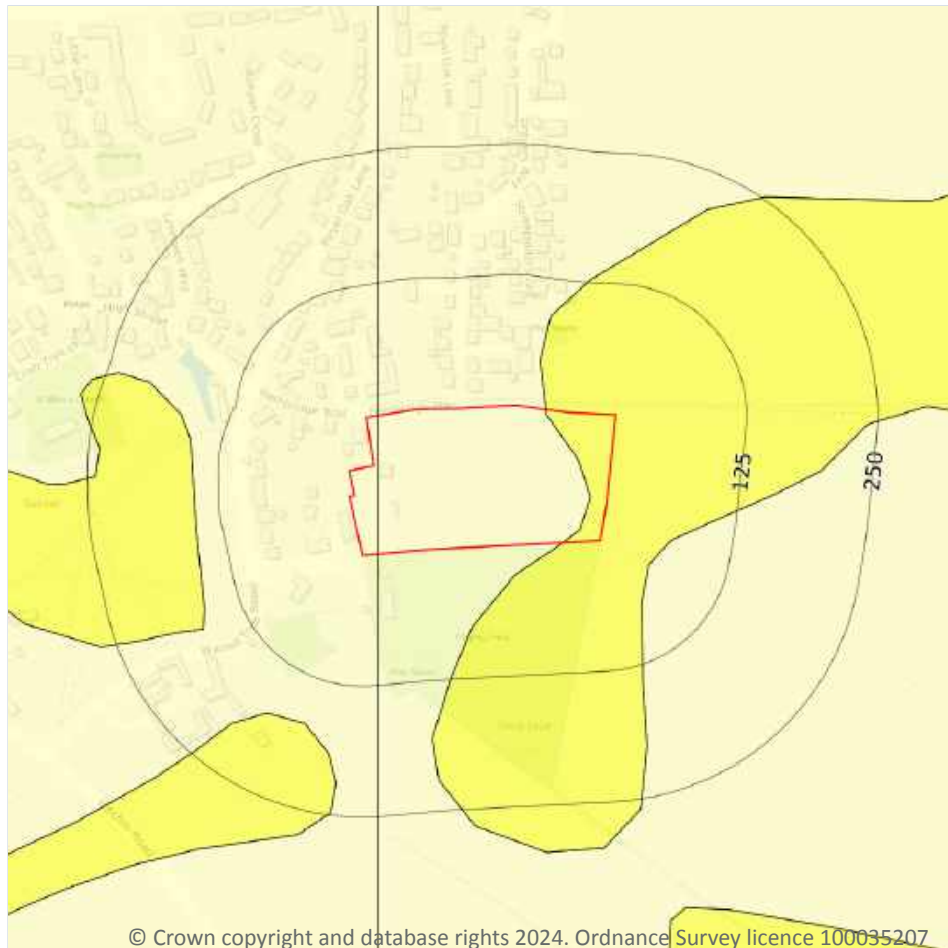
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 81](#) >

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

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



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

17.2 Running sands

Records within 50m

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 82 >](#)

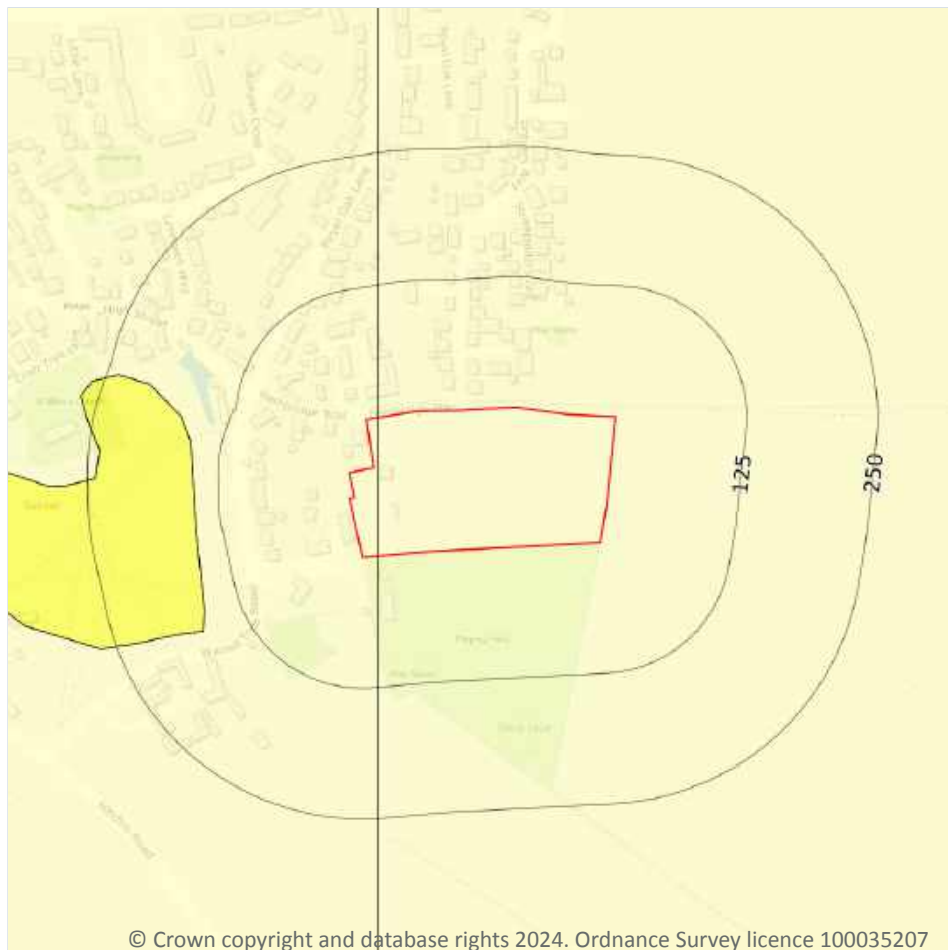
Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

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

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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.

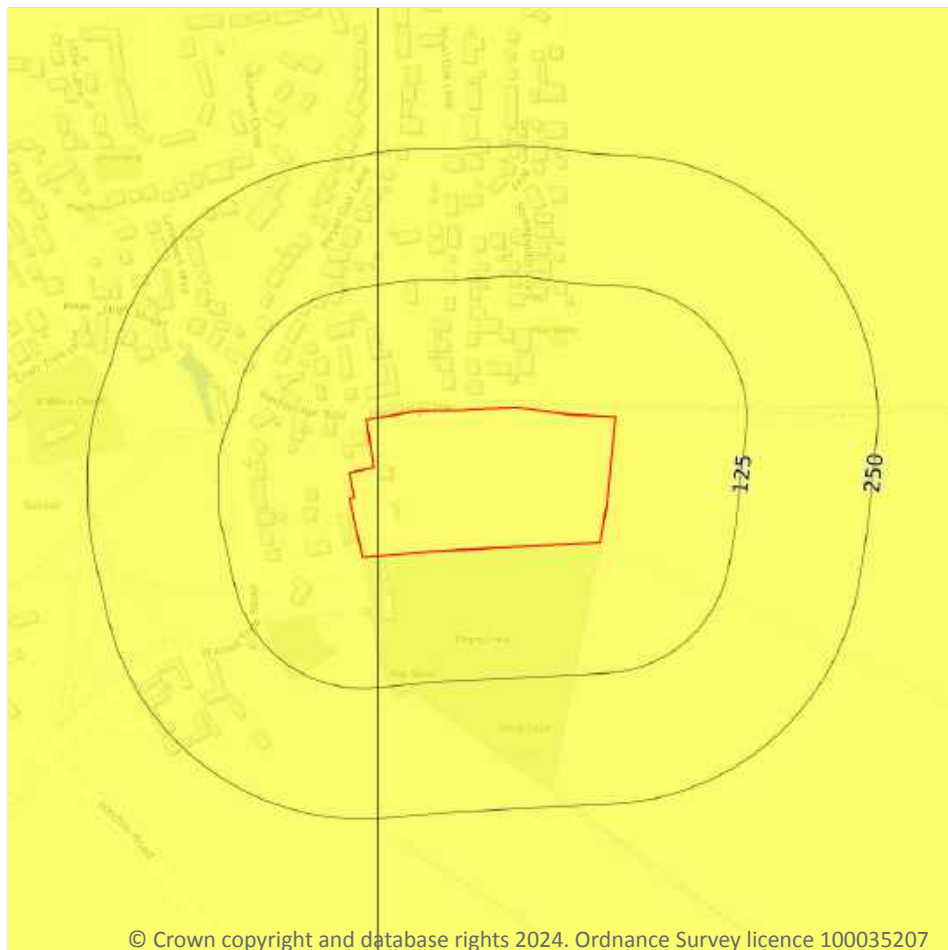
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 84](#) >

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.

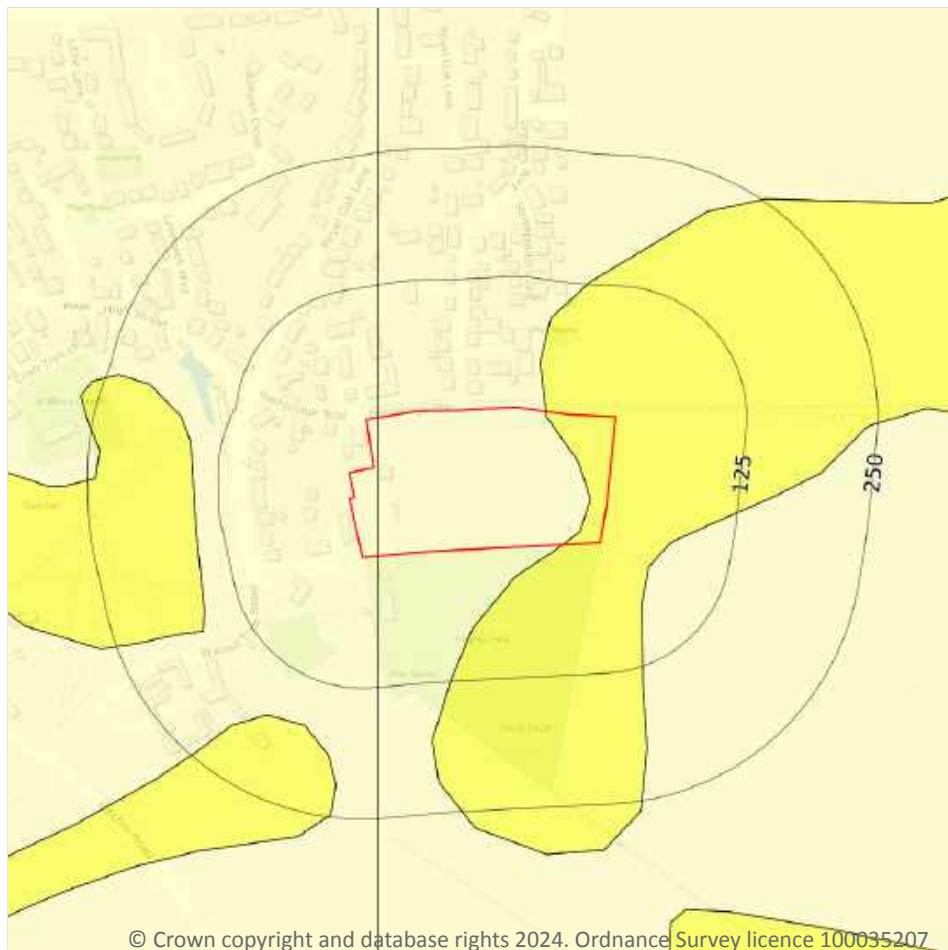
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 85 >](#)

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

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 86](#) >

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.

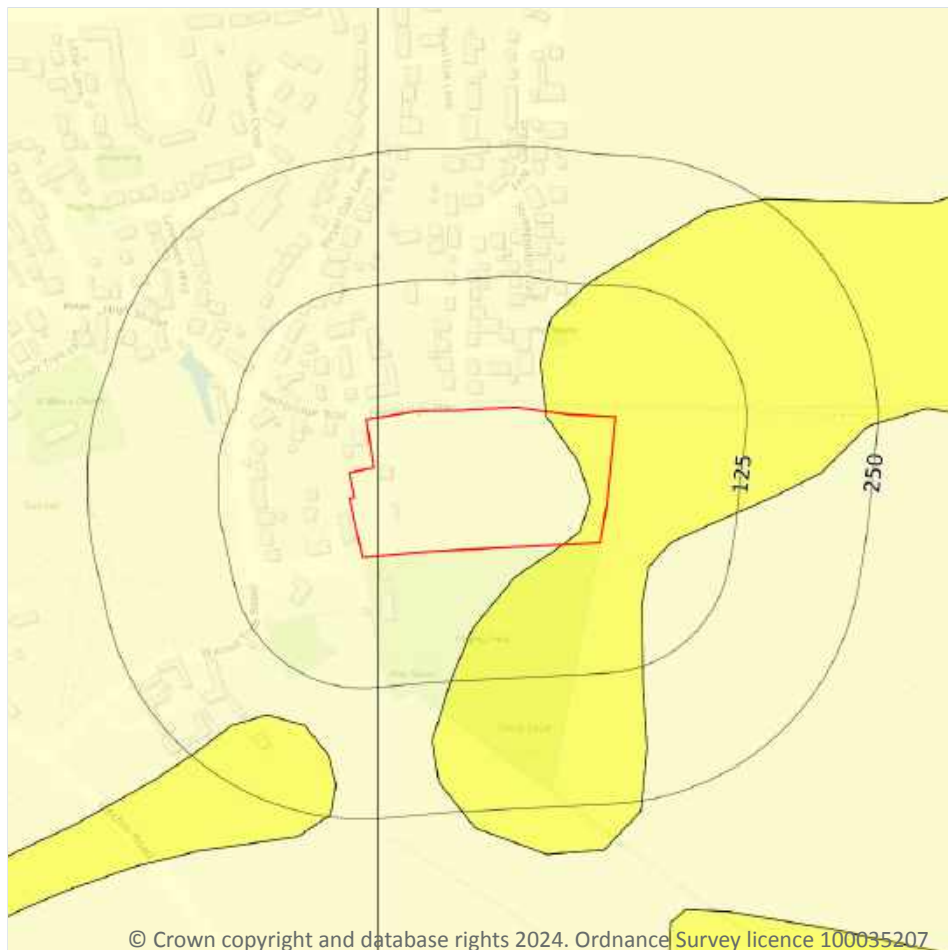


Location	Hazard rating	Details
On site	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

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 88](#) >

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

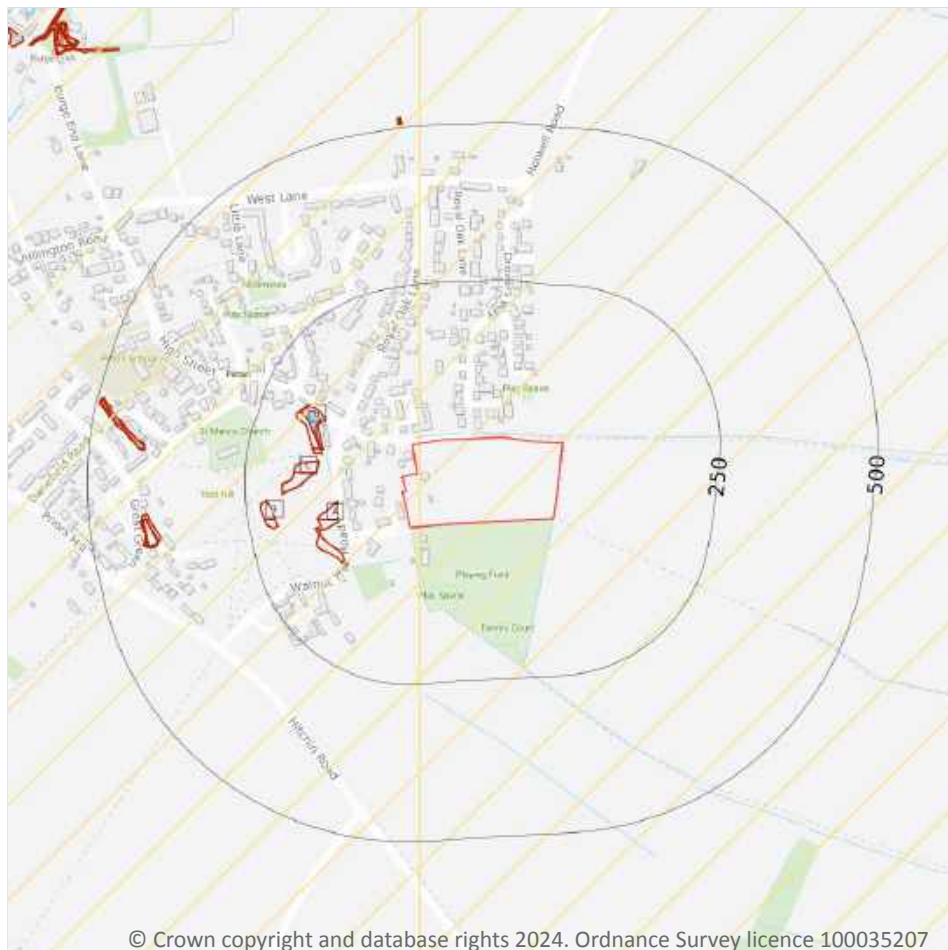


Location	Hazard rating	Details
On site	Very low	Soluble rocks are present within the ground. Few dissolution features are likely to be present. Potential for difficult ground conditions or localised subsidence are at a level where they need not be considered.

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

0

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

This data is sourced from the British Geological Survey.



18.2 Surface ground workings

Records within 250m

7

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 90](#) >

ID	Location	Land Use	Year of mapping	Mapping scale
A	105m W	Pond	1960	1:10560
A	116m SW	Unspecified Ground Workings	1960	1:10560
B	132m W	Pond	1884	1:10560
B	133m W	Pond	1981	1:10000
C	134m W	Pond	1947	1:10560
C	134m W	Pond	1922	1:10560
3	205m W	Pond	1960	1:10560

This 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

2

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

Features are displayed on the Mining and ground workings map on [page 90 >](#)

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.
2	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.

19.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

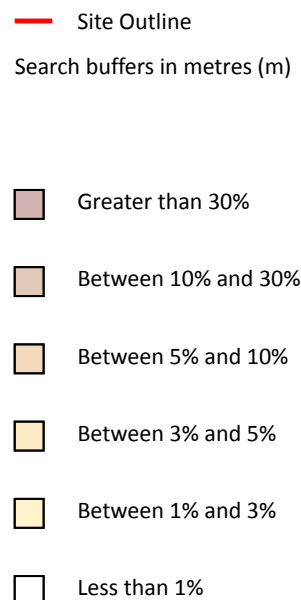
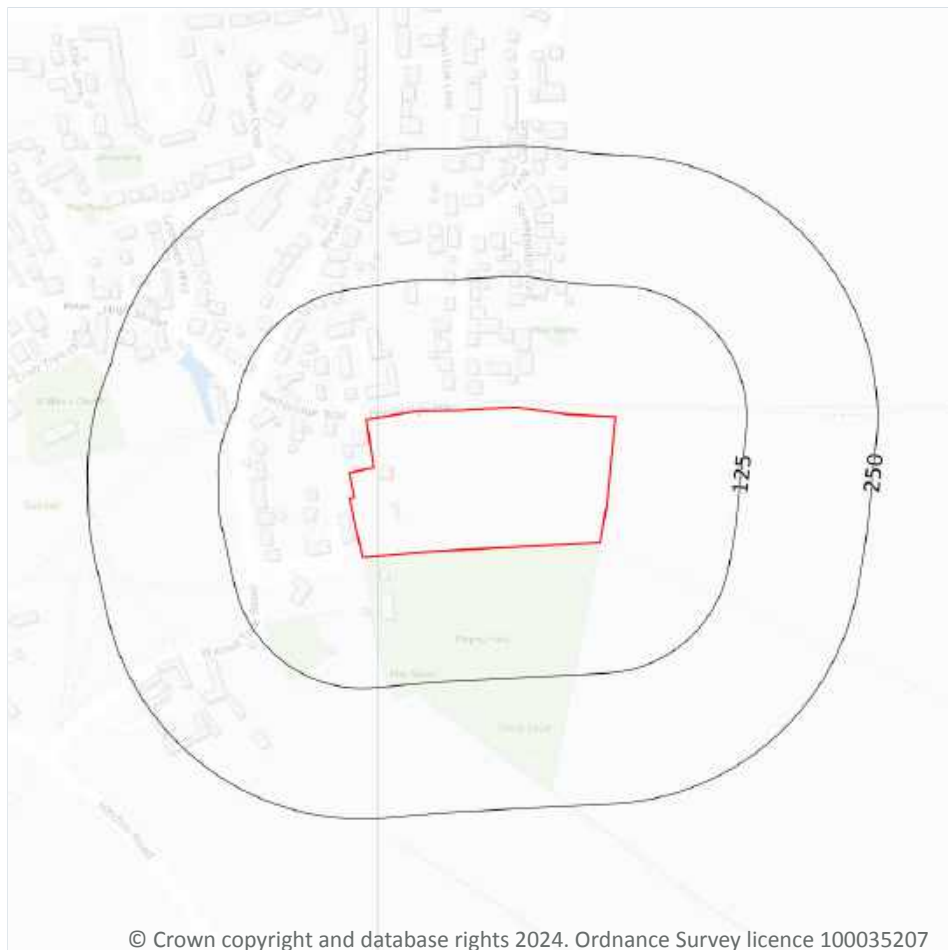
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.



20 Radon



20.1 Radon

Records on site

1

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	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

5

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	30 - 45 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	20 - 40 mg/kg	15 - 30 mg/kg
On site	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg
42m SW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	20 - 40 mg/kg	15 - 30 mg/kg
44m SW	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	40 - 60 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 1

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m

0

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

This data is sourced from HS2 Ltd.



Data providers

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

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Grid Ref: 515099, 231614

Map Name: County Series

Map date: 1881-1882

Scale: 1:2,500

Printed at: 1:2,500



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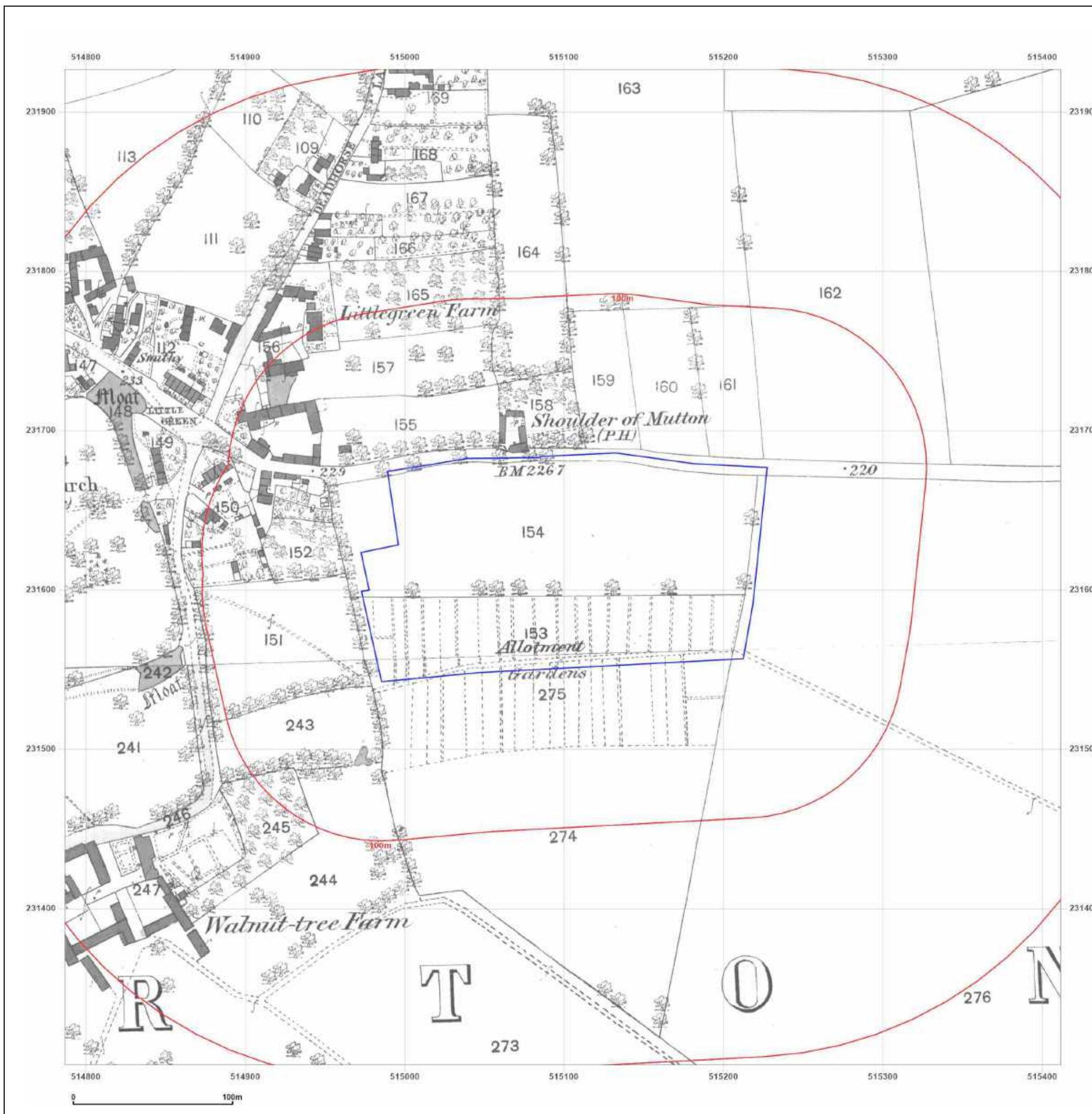


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Grid Ref: 515099, 231614

Map Name: County Series

Map date: 1898

Scale: 1:2,500

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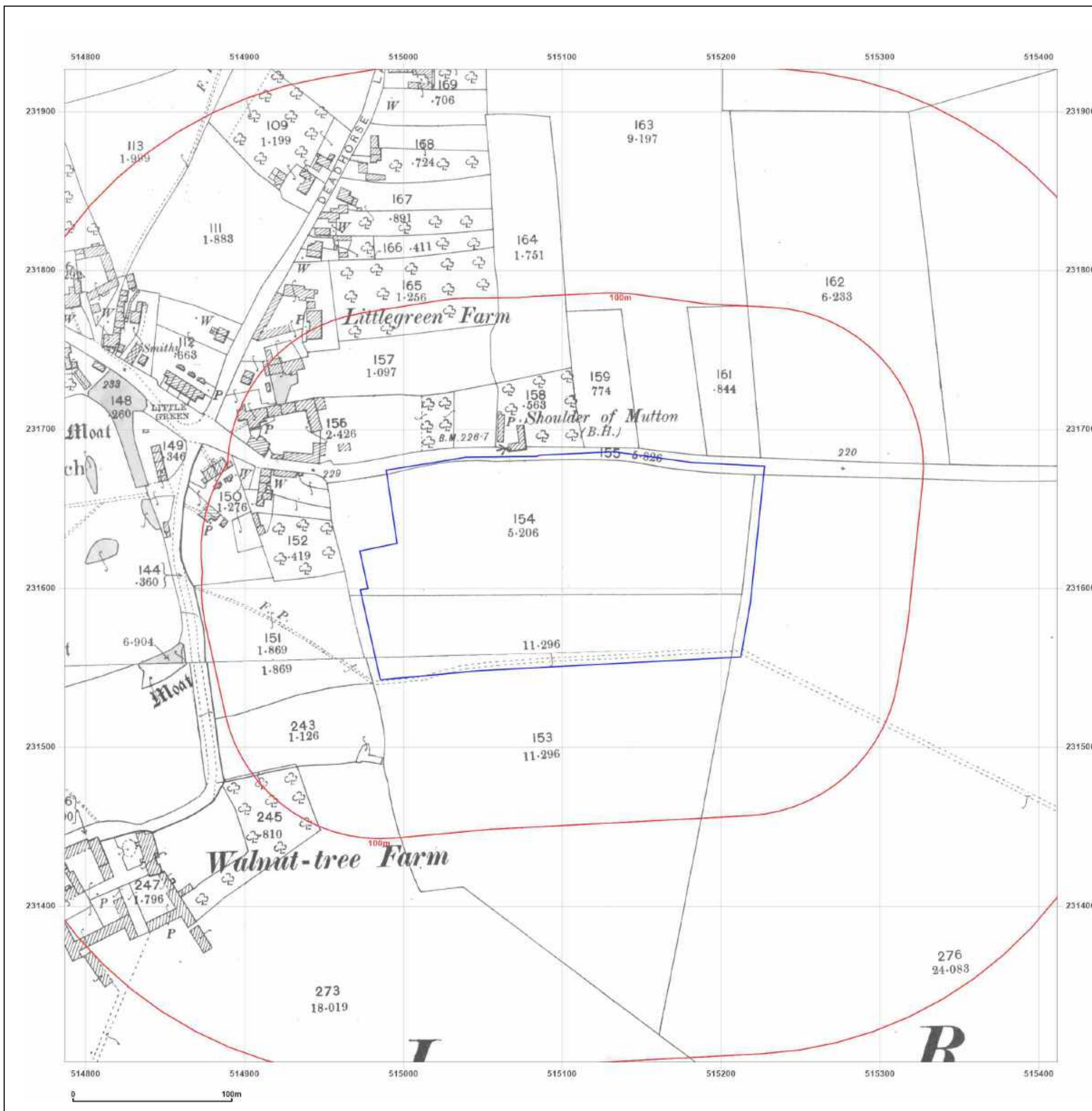


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Map Name: County Series

Map date: 1901

Scale: 1:2,500

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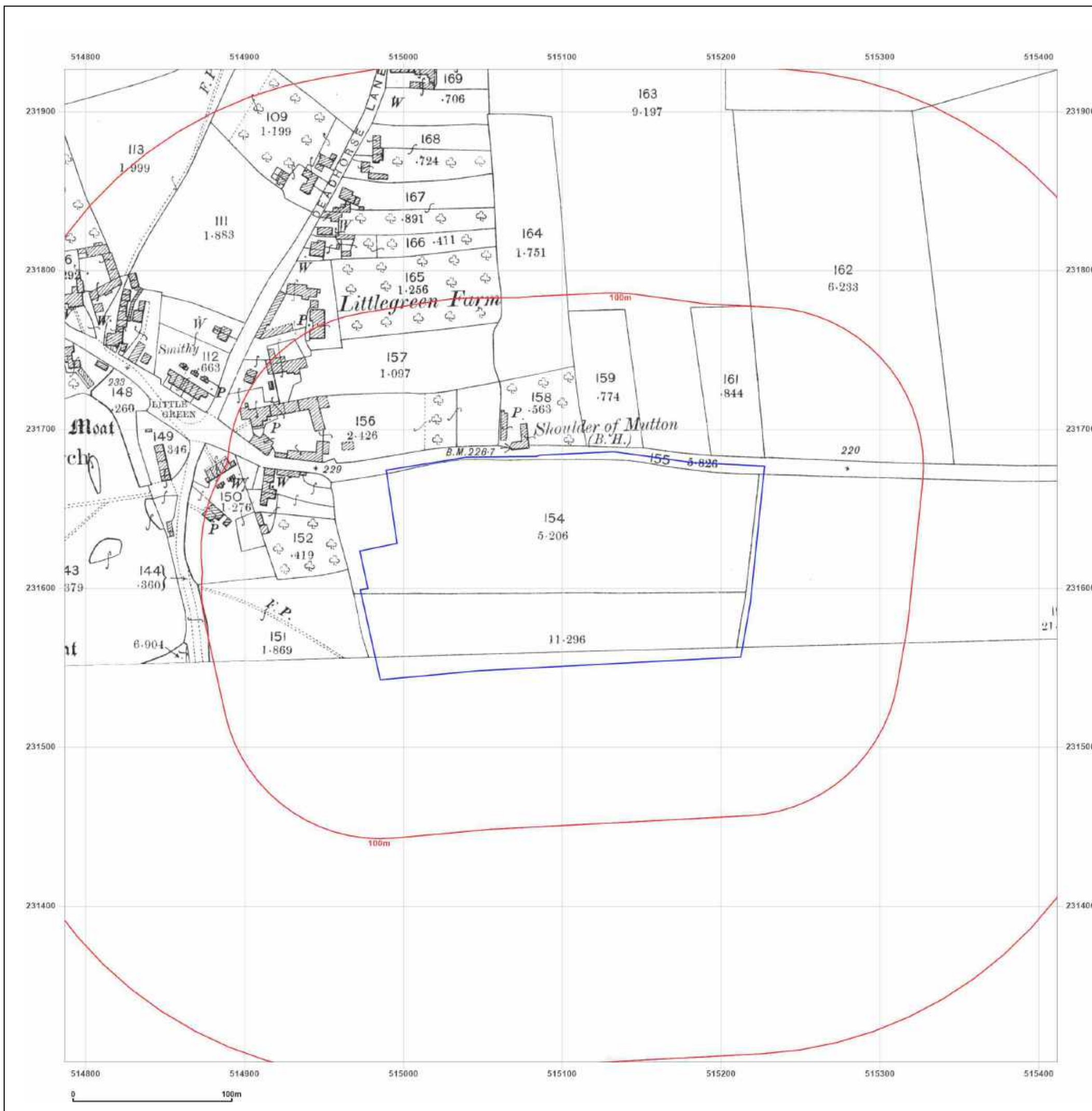


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Map Name: County Series

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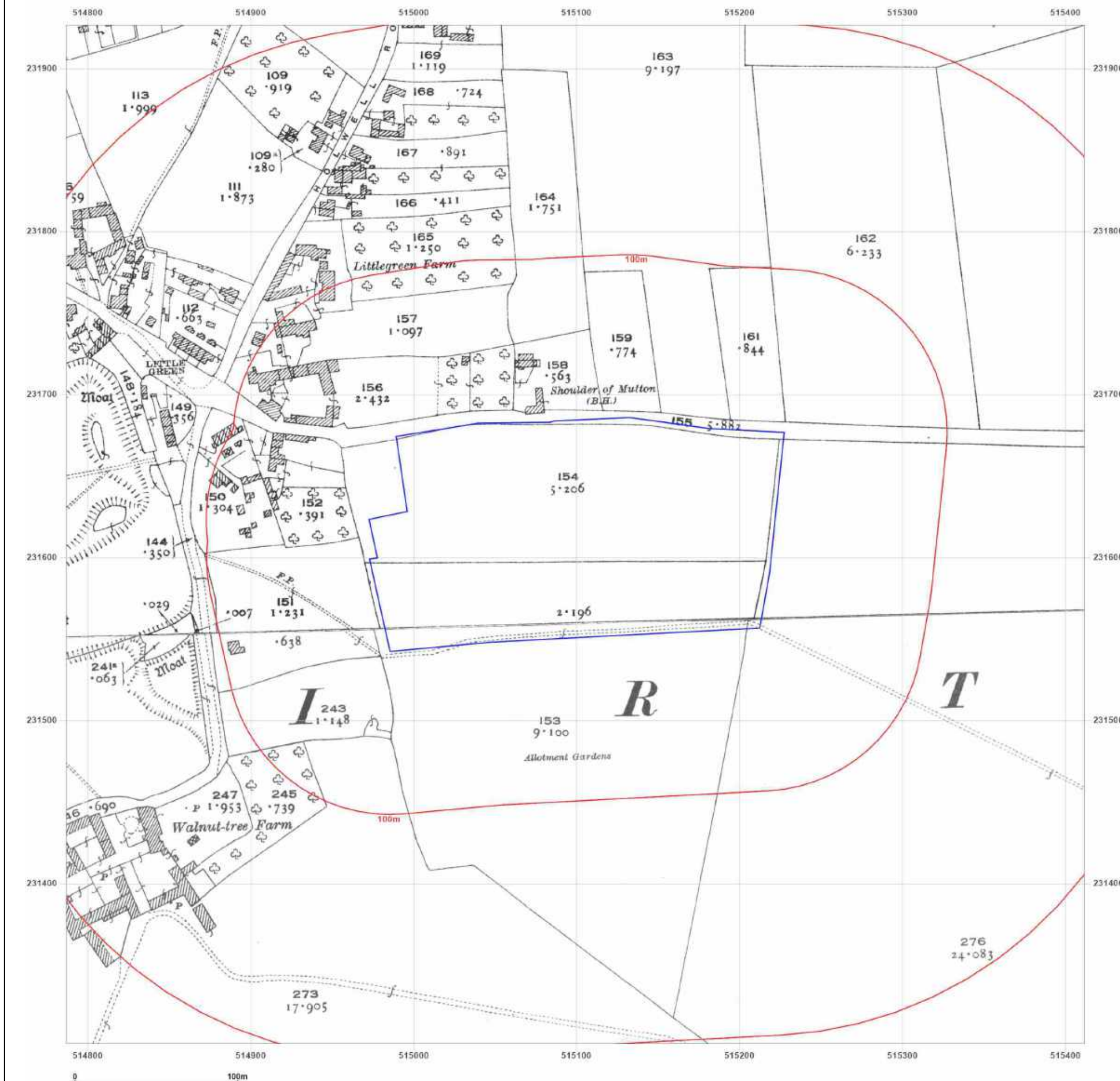


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Grid Ref: 515099, 231614

Map Name: National Grid

Map date: 1980

Scale: 1:2,500

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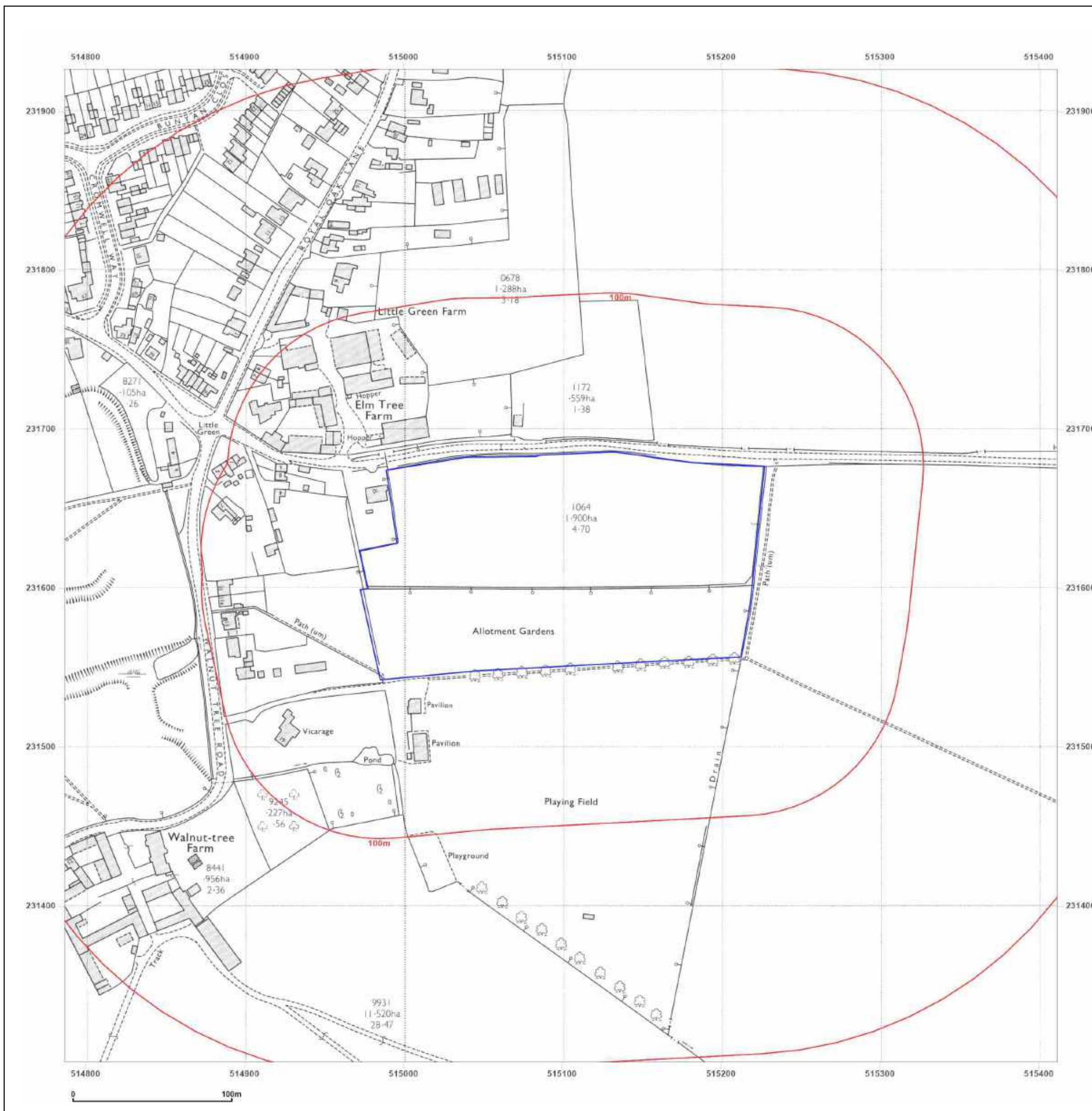


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Map date: 1980

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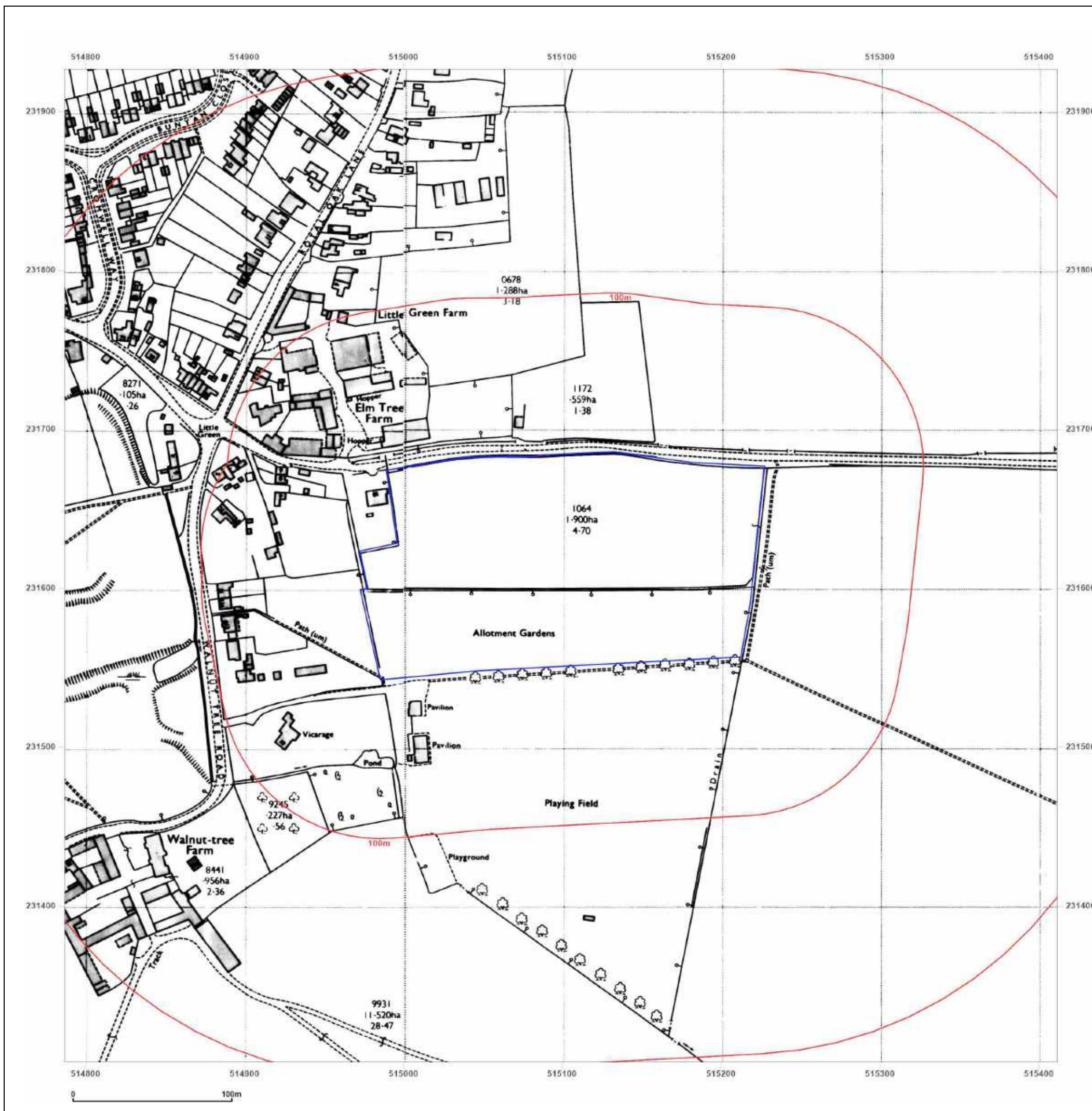


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Grid Ref: 515099, 231614

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

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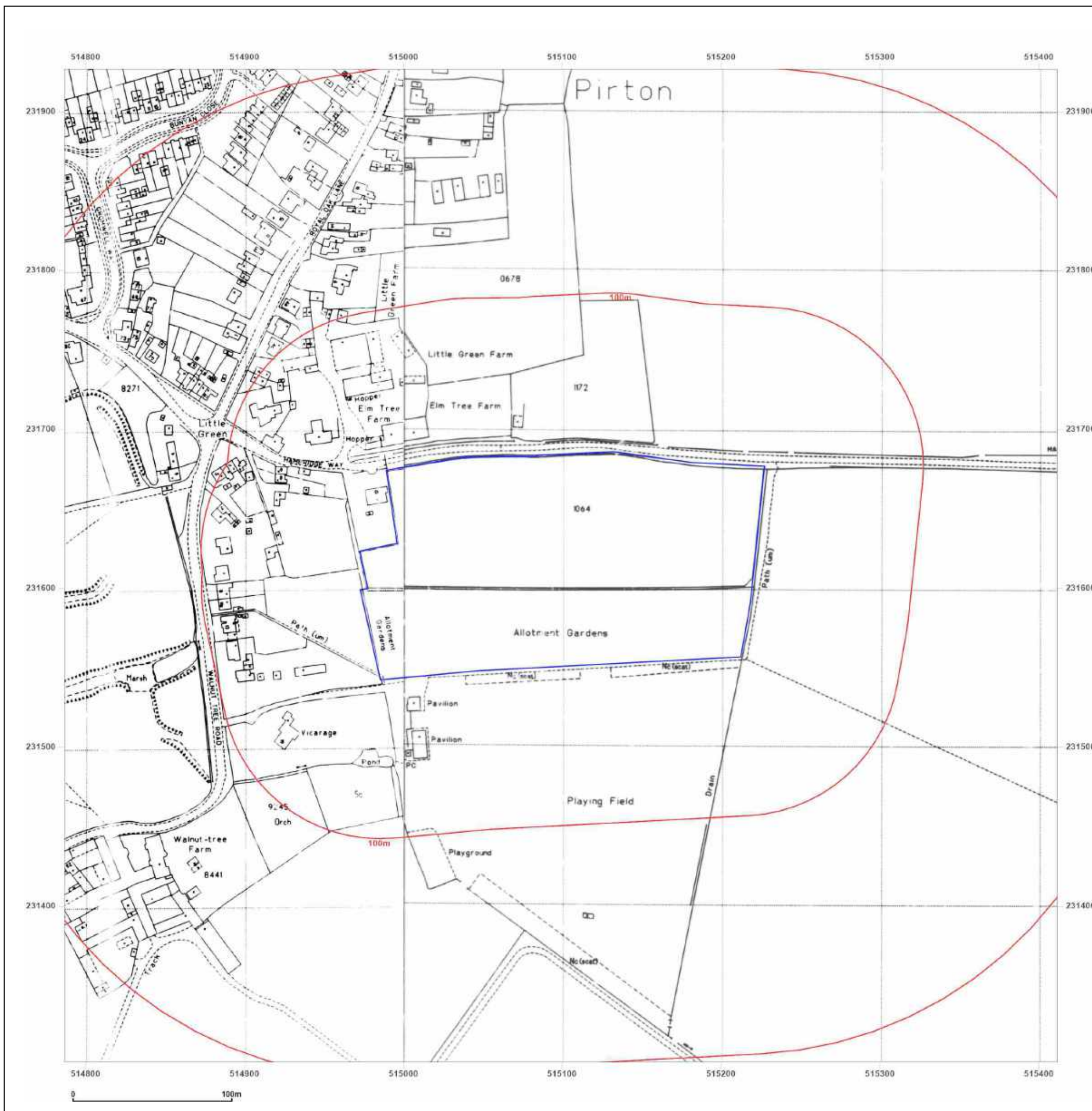


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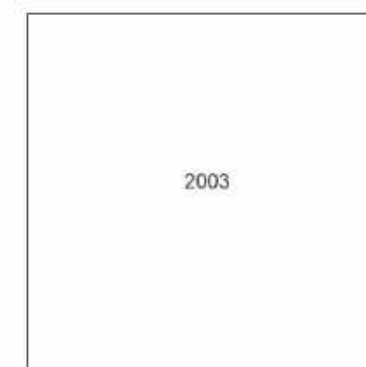
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Map Name: LandLine

Map date: 2003

Scale: 1:1,250

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Map Name: County Series

Map date: 1881

Scale: 1:10,560

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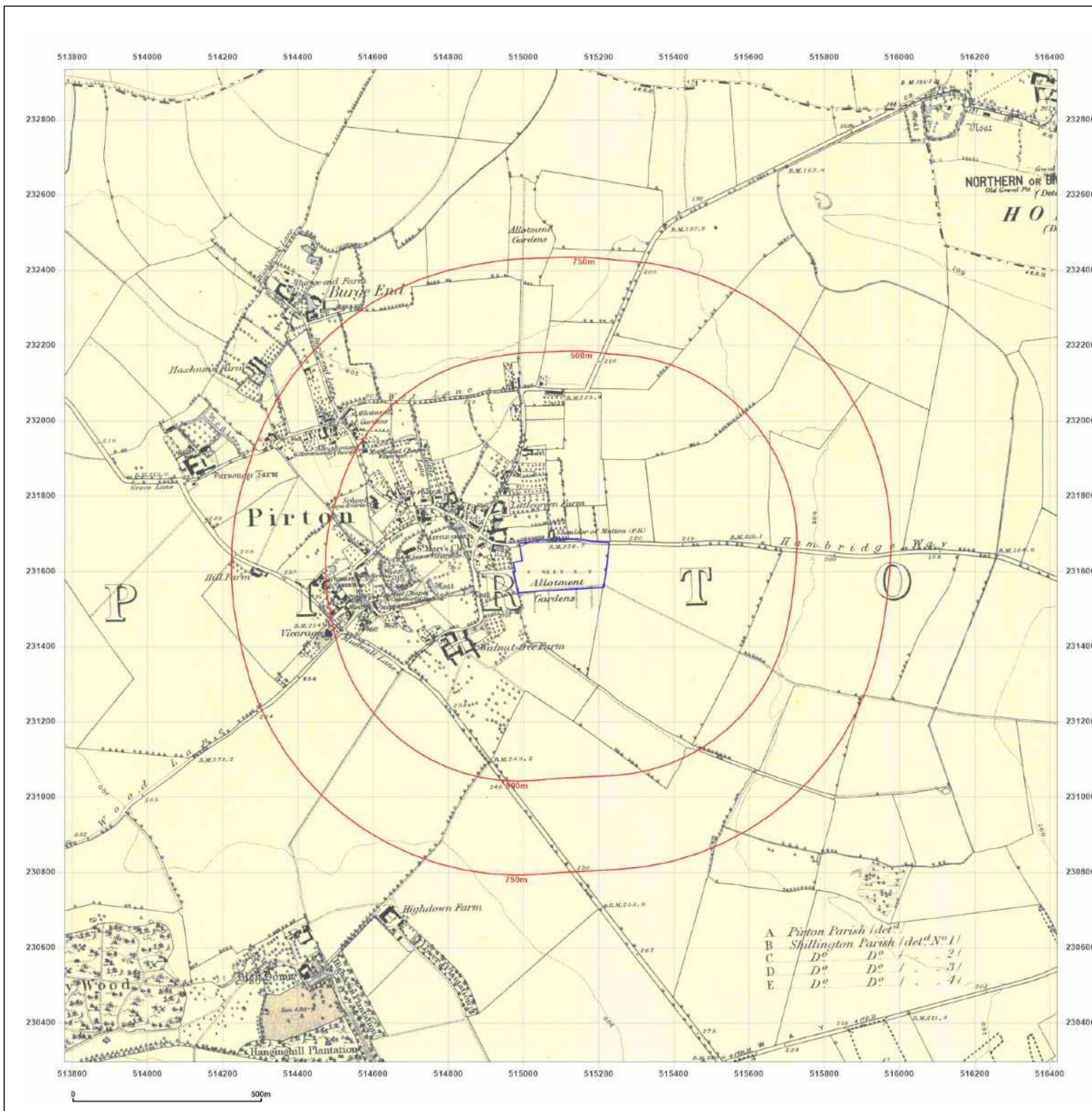


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Map Name: County Series

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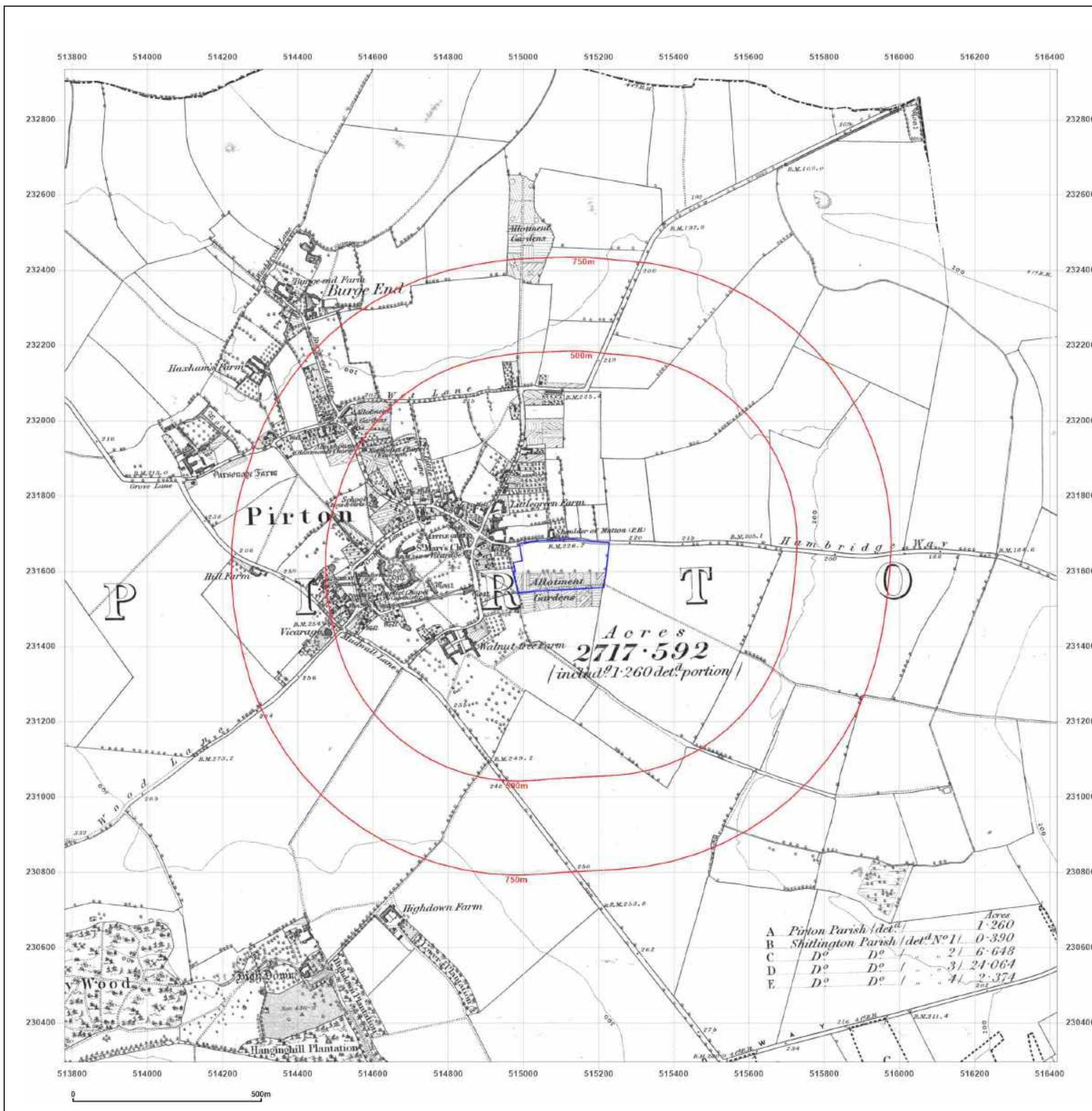


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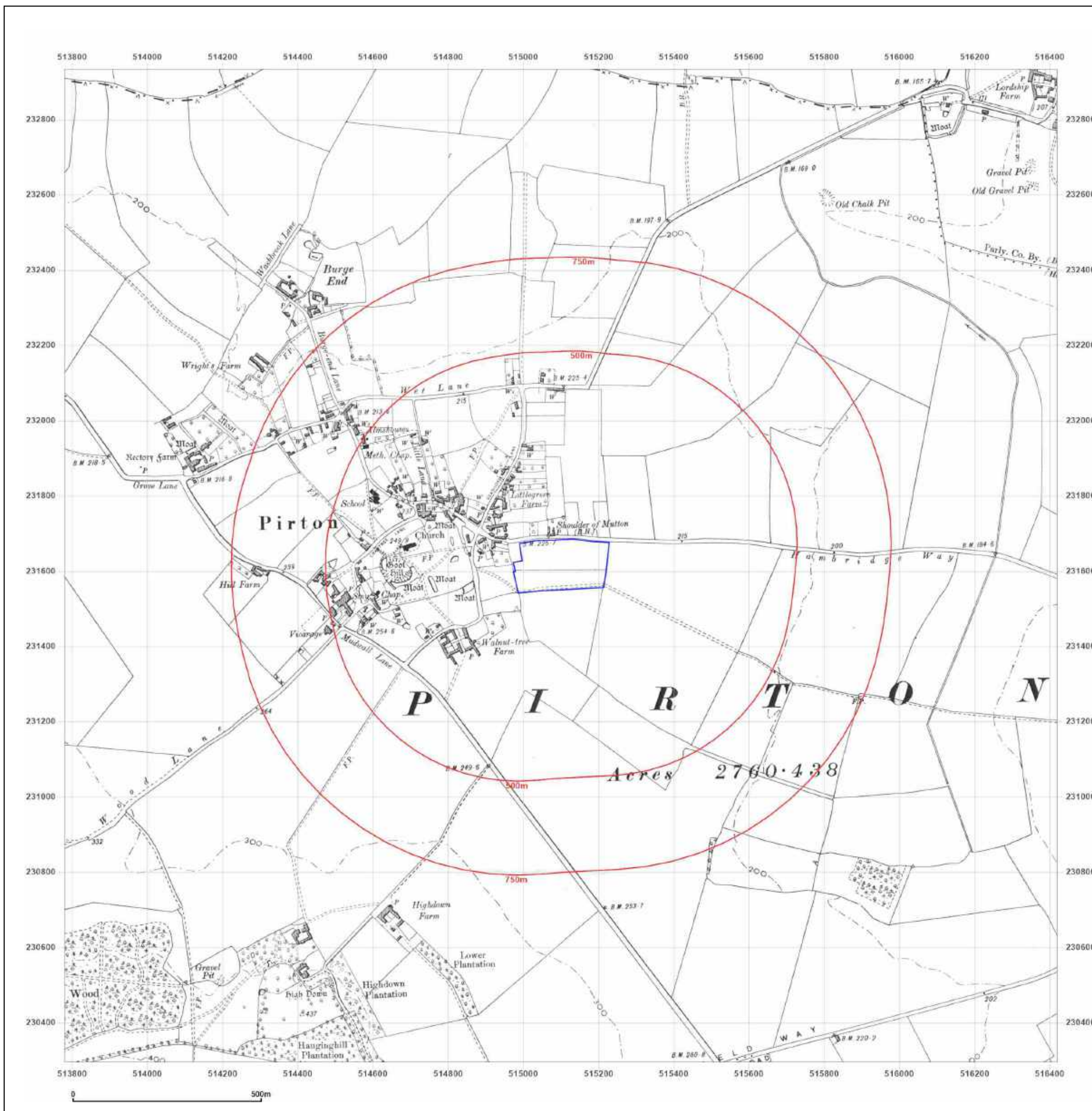


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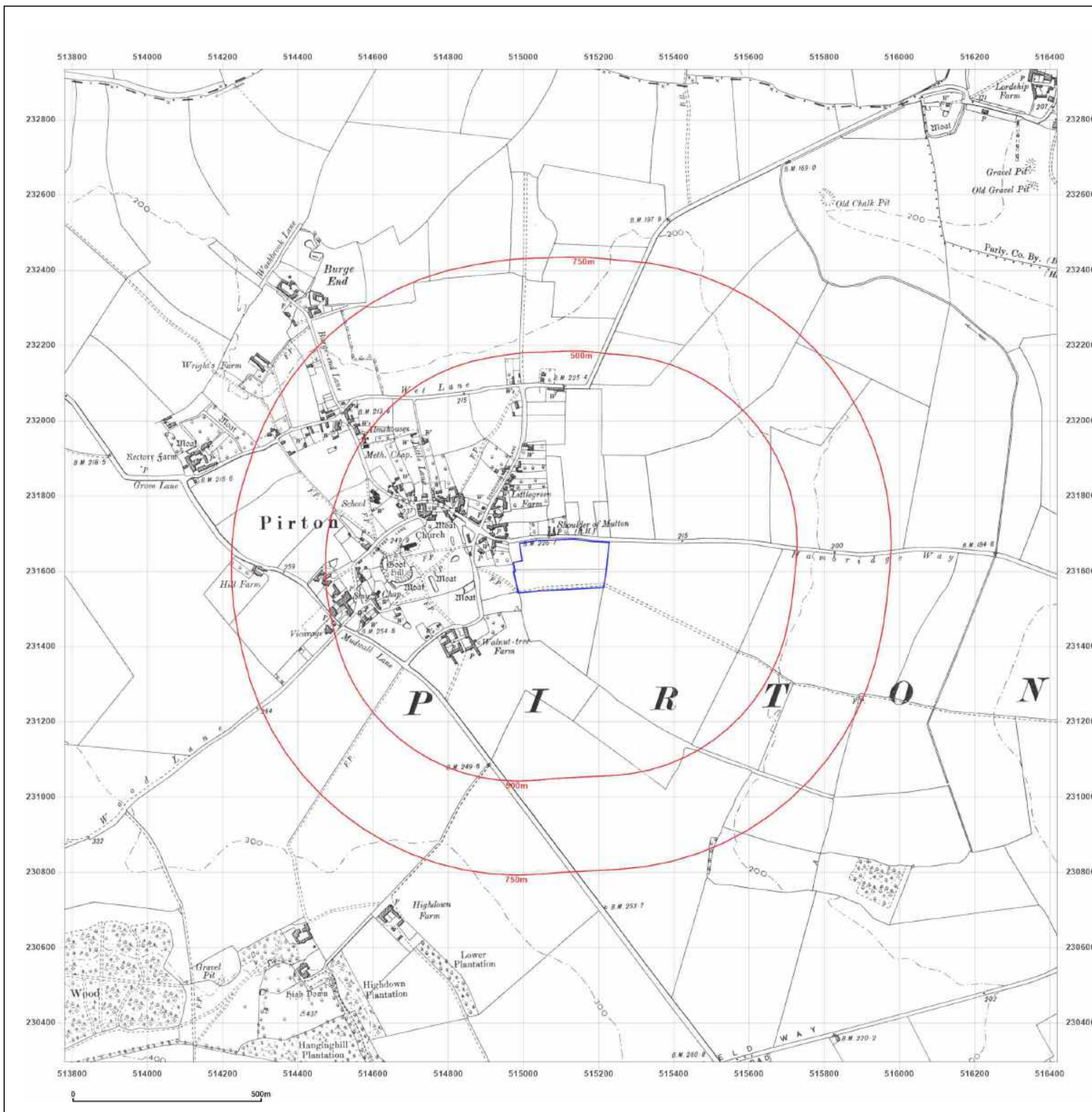


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Map Name: County Series

Map date: 1922

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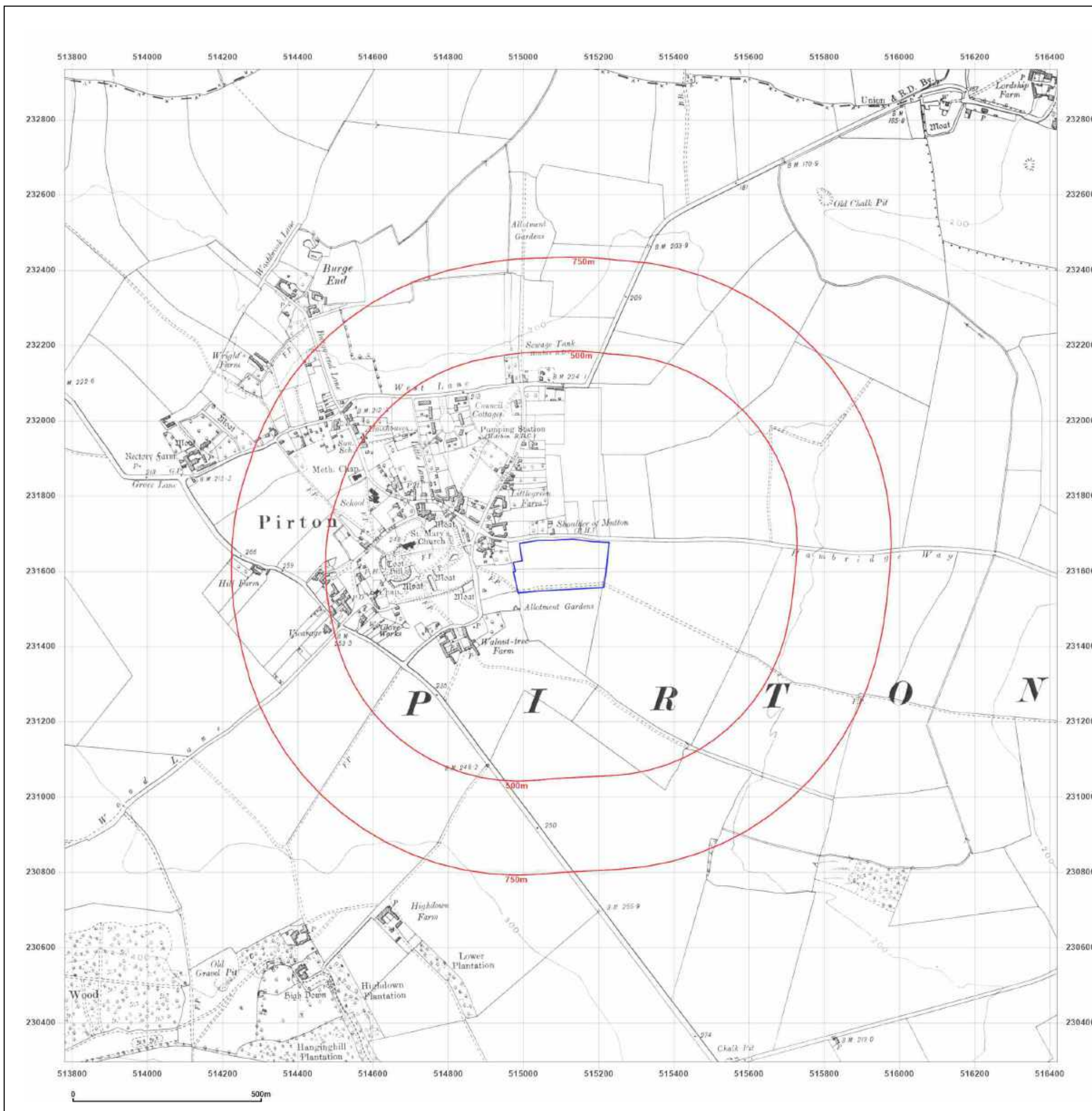


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Map Name: County Series

Map date: 1925

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881
Revised 1922
Edition 1925
Copyright N/A
Levelled 1922

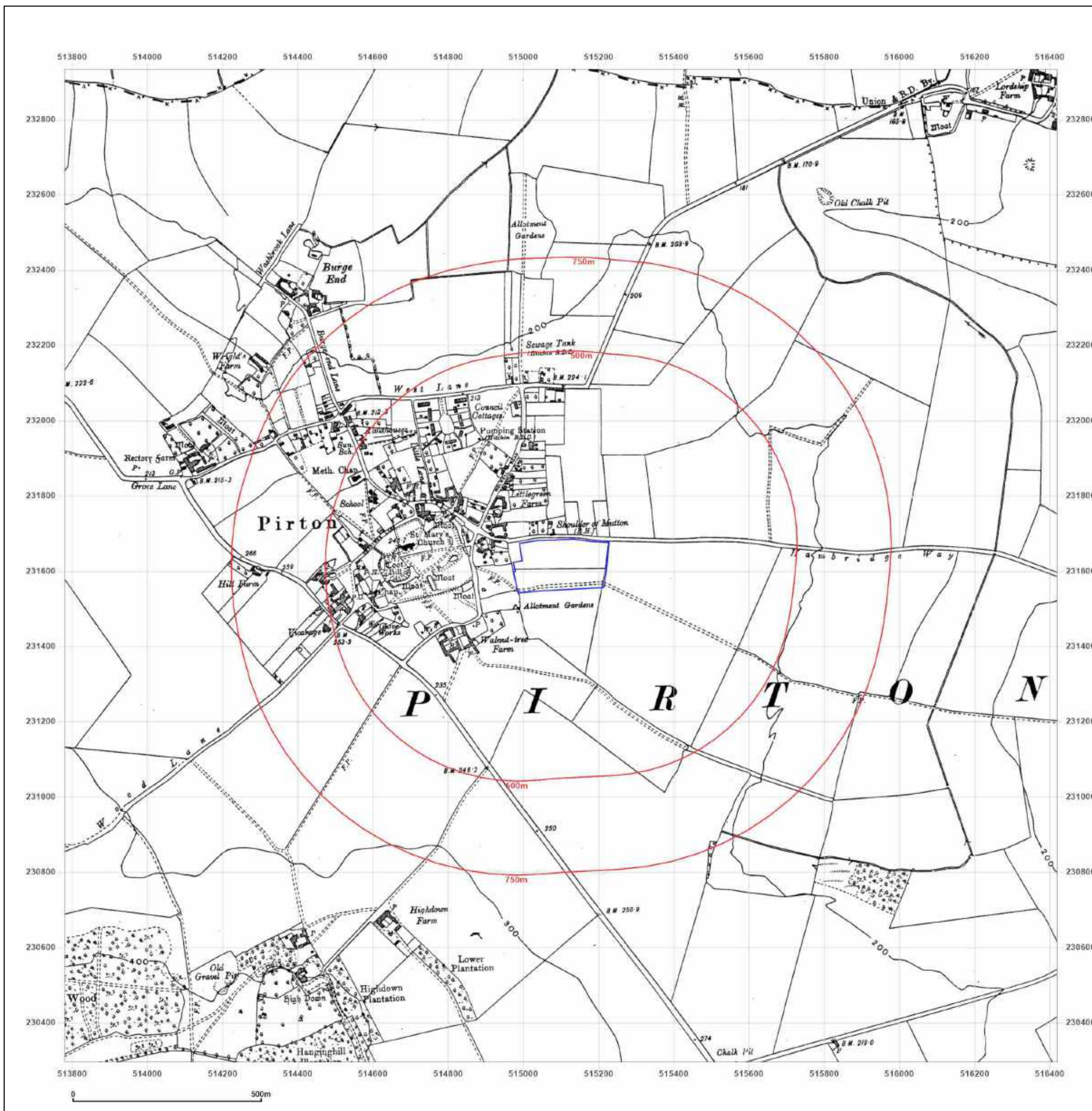


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Site Details:

LAND SOUTH OF HAMBRIDGE
WAY, PIRTON,
HERTFORDSHIRE, SG5 3QY

Client Ref: 24.09.008/842
Report Ref: GS-316-IH8-GI9-6ML
Grid Ref: 515099, 231614

Map Name: County Series

Map date: 1947

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A

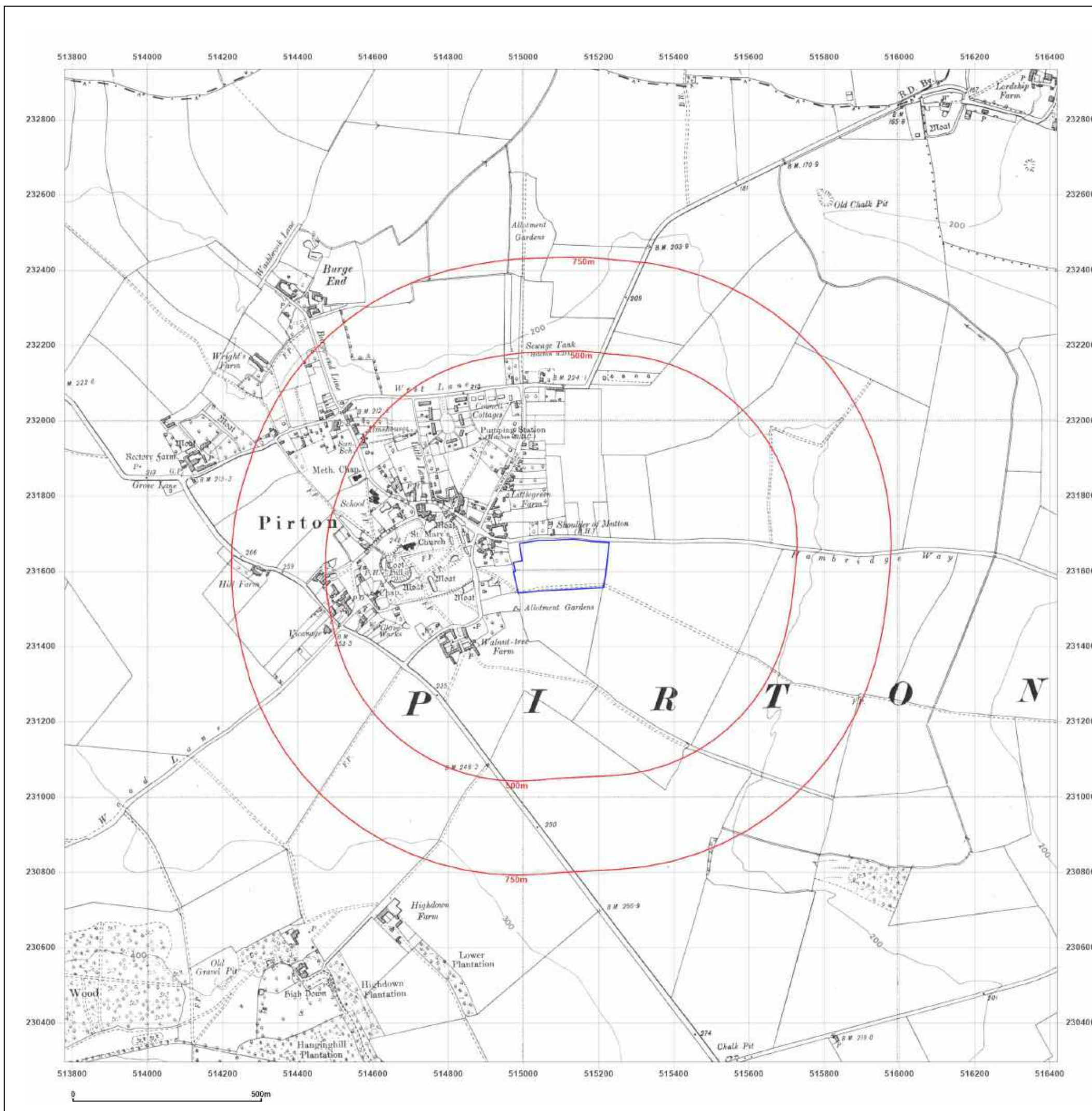


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Site Details:

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Client Ref: 24.09.008/842
Report Ref: GS-316-IH8-GI9-6ML
Grid Ref: 515099, 231614

Map Name: Provisional

Map date: 1960

Scale: 1:10,560

Printed at: 1:10,560



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

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

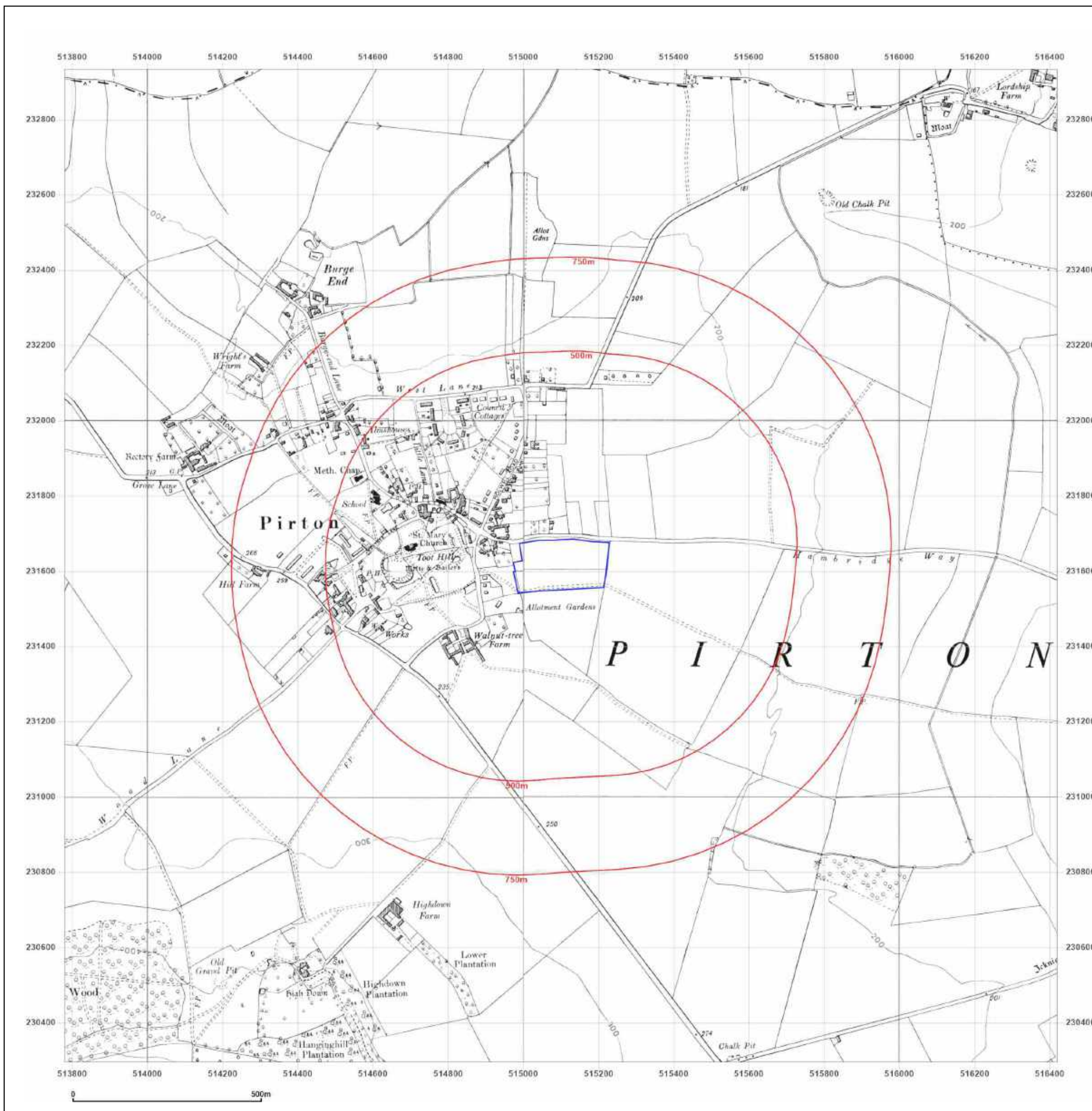


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Client Ref: 24.09.008/842
Report Ref: GS-3I6-IH8-GI9-6ML
Grid Ref: 515099, 231614

Map Name: Provisional

Map date: 1970

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
Revised 1970
Edition N/A
Copyright 1960
Levelled N/A

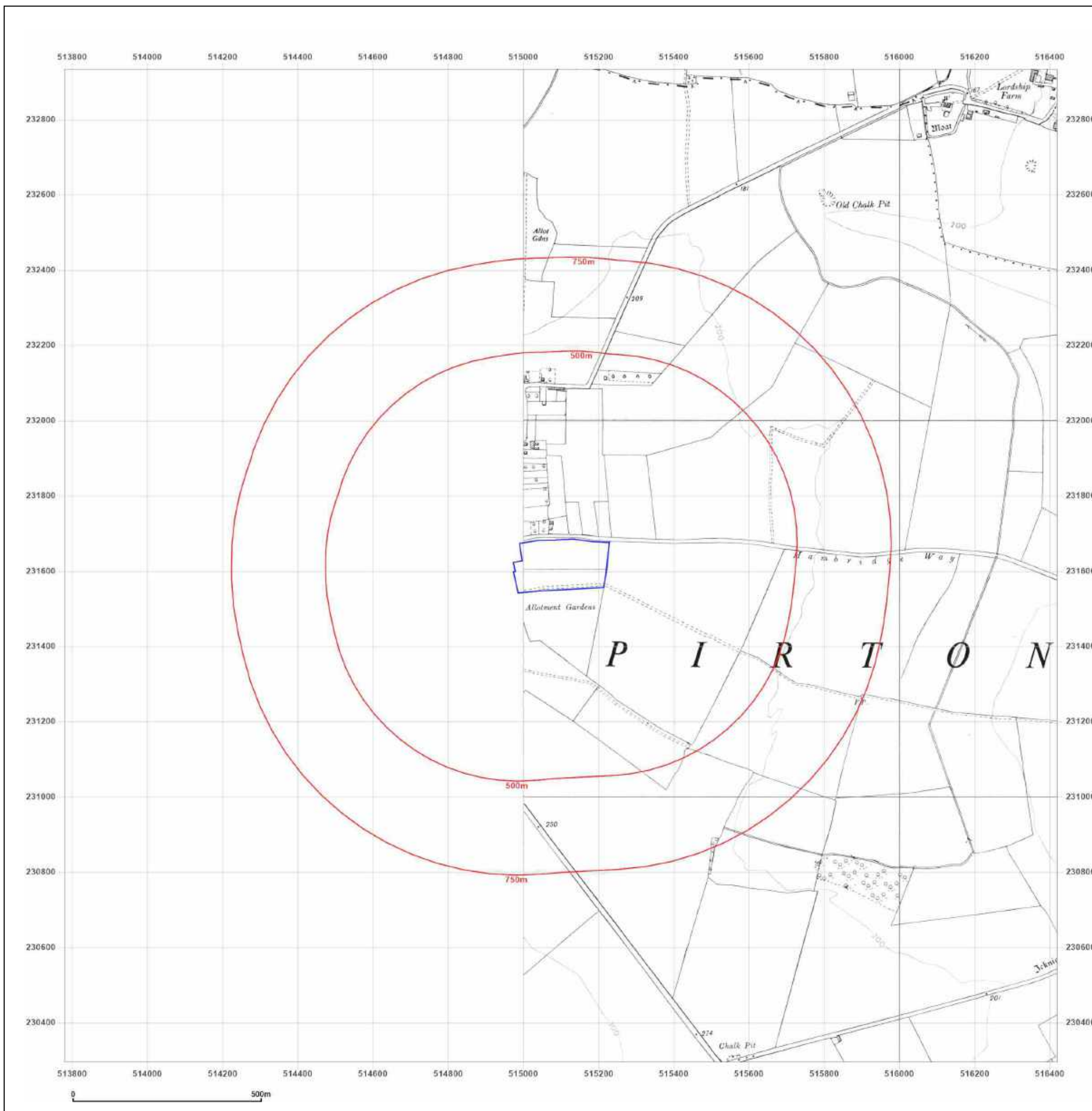


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WAY, PIRTON,
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Client Ref: 24.09.008/842
Report Ref: GS-316-IH8-GI9-6ML
Grid Ref: 515099, 231614

Map Name: National Grid

Map date: 1981-1982

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1978
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1980
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

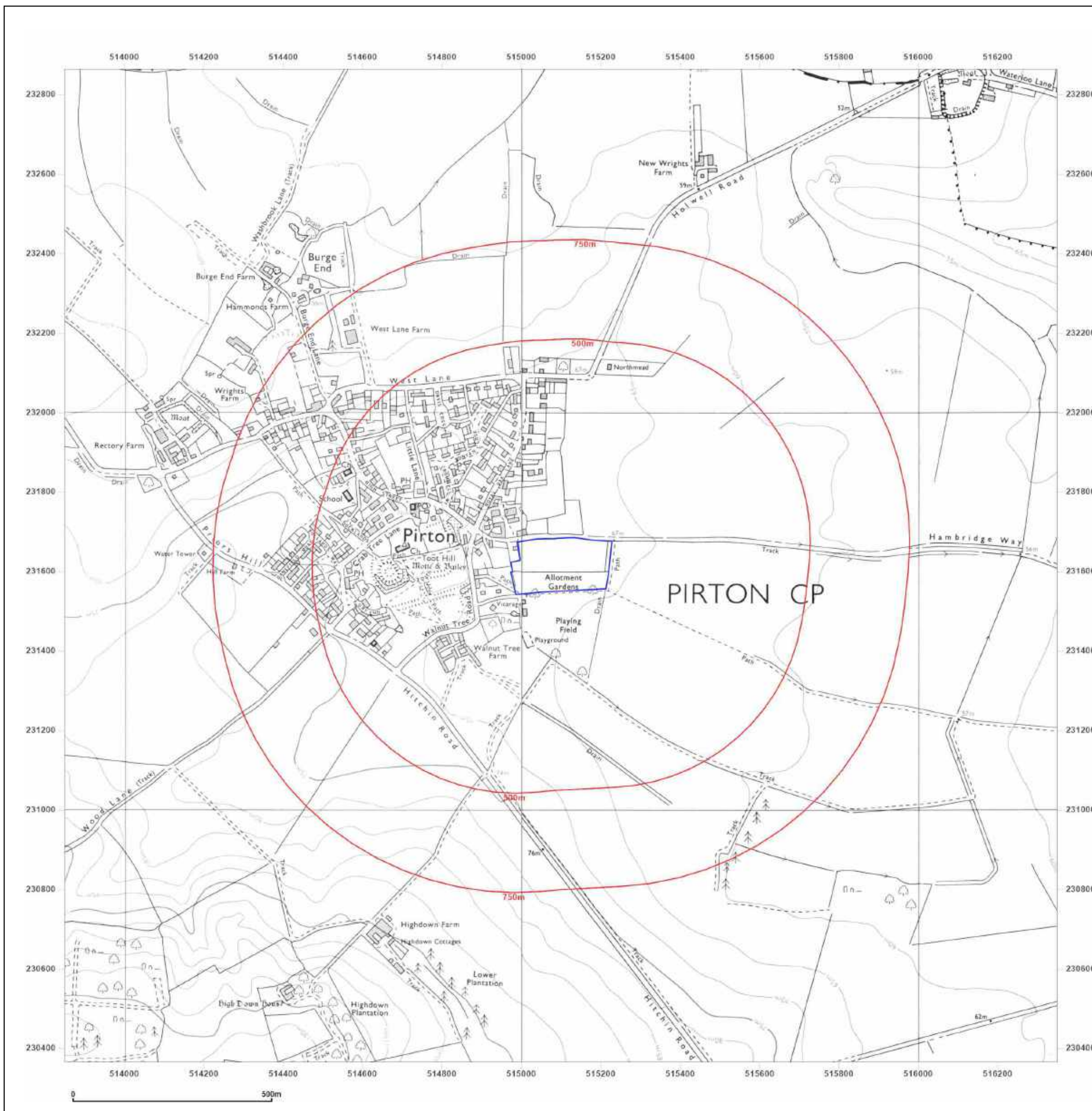


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Site Details:

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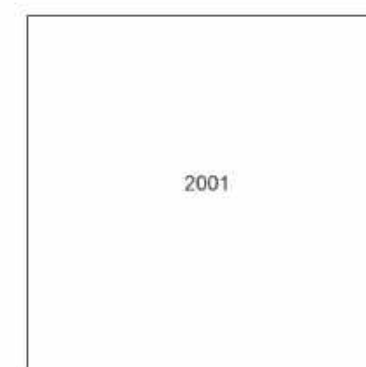
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Report Ref: GS-316-IH8-GI9-6ML
Grid Ref: 515099, 231614

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000

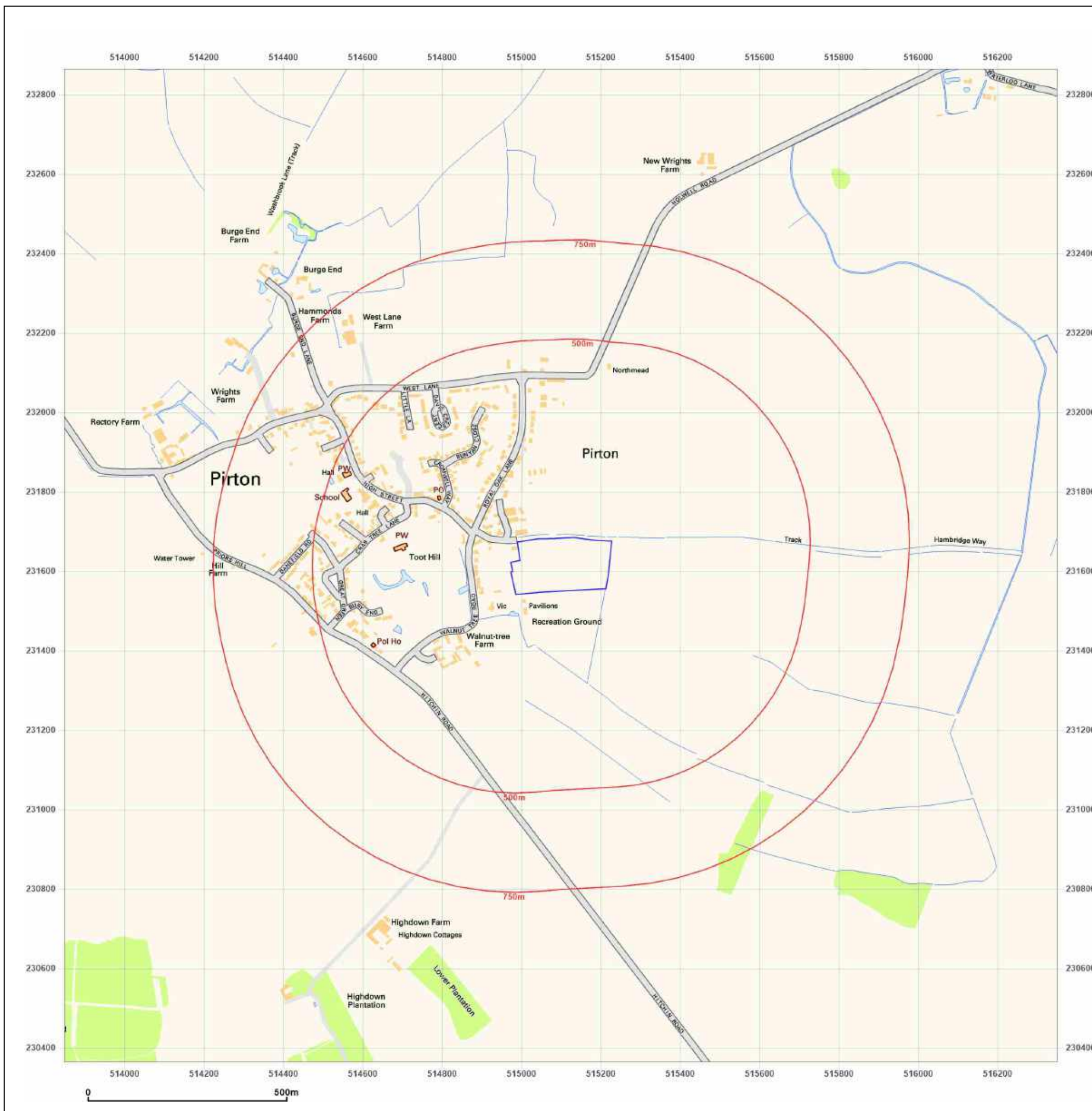


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Client Ref: 24.09.008/842
Report Ref: GS-316-IH8-GI9-6ML
Grid Ref: 515099, 231614

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



2010



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