



**Park Lane
Developments
(Oxfordshire) Limited**

Ground Investigation

**Park Farm
Alvescot
Oxfordshire
OX18 2QA**

**Report No: 21.01.007
March 2021**

EXECUTIVE SUMMARY

Project Reference	21.01.007
Site Location	Park Farm, Alvescot, Oxfordshire OX18 2QA
OS Grid Reference	427089, 204234
Development Proposals	Demolish the existing equestrian buildings and erect six two-storey dwellings, with associated private gardens, public open space, structural landscaping, vehicle access and car parking
Current Site Use and Existing Buildings	Stables, hardstanding and equestrian exercise areas
Topography	The site is an elevation of about +79.5mOD (Ordnance Datum) on a relatively flat plain between Alvescot Hill to the north-east, and the valley of Clanfield Brook, to the south-west. The site is also relatively flat and level, with an elevation difference, across the site, of about 0.5m.
Vegetation	An overgrowth of brambles and similar across much of the southern end of the site (cleared during this investigation). Hedgerows along the northern side of the track as far as The Green and, where the track continues to the west on the site, a hedgerow between the track and the site. A hedgerow between the paddock and the hay storage area, and the southern end of the site also contains a few trees
Published Geology	The site is shown to be directly underlain by the Jurassic Bedrock Kellaways and Cornbrash Formations
Site History	The site formed part of fields adjacent to a farmstead from the date of the earliest map (1881). The site is shown to have much as the present-day footprint by 1994 and is not recorded to have had any significant industrial use. The only, potentially significant, industrial use shown in the surrounding areas is a Hauliers yard to the south, shown on maps between 1971 and 1994
Unexploded Ordnance	Low recorded risk
Hydrology	Within the valley of the Clanfield Brook. The likely direction of hydraulic flow is to the south-west. The catchment is recorded to be Moderate overall quality. There are no records of surface water abstraction licenses within 500m
Hydrogeology	Wolvercote Sand and Gravel (mapped off-site) is a Superficial Secondary 'A' Aquifer of Medium Vulnerability. The Kellaways Clay is a Bedrock Unproductive stratum and the underlying Cornbrash is a Bedrock Secondary 'A' Aquifer of High Vulnerability
Ground Conditions Encountered	Topsoil/Made Ground (roadstone pavement) to a maximum depth of 0.80m; Superficial Clay (soft or firm, low to medium strength, light grey and orange-brown, slightly sandy and, locally, slightly gravelly, intermediate plasticity silty clay of low volume-change potential.) to variable depths: between 0.65m and 2.00m, suggesting deposition within erosional channels; Localised Superficial Gravel (medium dense, very clayey, sandy gravel); Kellaways Formation (firm or stiff, medium strength, becoming very stiff and high strength at the base, fissured, dark grey, weathering to light grey and orange-brown near-surface, locally slightly sandy, intermediate to high plasticity, silty clay, of low to (characteristically) medium volume-change potential); Cornbrash proven to full depth of boreholes, a maximum of 5.20m depth – very stiff silt rapidly into rock
Groundwater Encountered	Generally, <1.0m depth
Long-term Risks to Human Health	No significant solid-, liquid-, vapour- or gaseous-phase risks
Risks to Controlled Waters	No significant risks
Chemical Attack on Buried Concrete	Design Sulphate Class DS-2, characteristic pH, 6.0 Aggressive Chemical Environment for Concrete, AC-3z
Remediation Required	Ground remediation not required
Geotechnical Hazards	Shrinkable clay soils and nearby tree-influence. Groundwater entry into excavations.

Foundations	Spread foundations on the Superficial soils or the Kellaways Formation, at a minimum depth of 1.00m, with deepening if affected by trees or desiccation. Pile foundations or similar deep foundations may be preferred due to the likelihood of groundwater ingress and problems with trench instability
Allowable Bearing Pressure	For <25mm settlement on conventional 600mm wide strip footings: 85kPa at 1.00m depth. Where wholly within the Kellaways Formation (likely >2.0m depth): 110kPa
Floor Slabs	Ground-bearing if remote from desiccated soils. Alternatively, suspended.
Roads & Hardstanding Design	Preliminary design California Bearing Ratio values: <ul style="list-style-type: none"> • Superficial Clay: 2.0% These soils are potentially frost-susceptible
Infiltration Measures	The near-surface soils are of likely of Poor infiltration potential and the groundwater is high (<1m) so consideration will have to be given to alternatives to soakaways
Recommendations for Further Work	There are large areas of the site, such as beneath the buildings that have not been investigated. We recommend, therefore, that the developer adopt a Discovery Strategy during demolition and groundworks: maintaining a watching brief for suspicious soils or ground conditions. Should ground conditions vary noticeably from our Ground Model, then we recommend further assessment by a suitably qualified person or persons. If, in particular, there is concern over contamination in the ground, then work should cease immediately, pending suitable assessment. Consideration should be given to keeping a daily record of observations and findings and, ultimately, presenting this to the regulators. Supplementary coreholes may be needed to aid pile foundation design

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

CONTENTS

INTRODUCTION	1
SCOPE OF THE INVESTIGATION.....	1
PROPOSALS	1
SITE INFORMATION AND WALKOVER SURVEY	1
DESK STUDY AND BACKGROUND INFORMATION	3
GEOLOGY.....	3
<i>Worked-Out Ground and Artificial Ground</i>	<i>3</i>
<i>Superficial.....</i>	<i>3</i>
<i>Bedrock</i>	<i>4</i>
HISTORY OF THE SITE	4
UNEXPLODED ORDNANCE AND BOMB SITES	4
HYDROLOGY.....	5
HYDROGEOLOGY	5
LANDFILL AND WASTE TREATMENT SITES	5
ENVIRONMENTAL PERMITS, INCIDENTS AND REGISTERS.....	6
CURRENT INDUSTRIAL SITES.....	6
RADON GAS.....	6
POTENTIAL GEOTECHNICAL HAZARDS.....	6
<i>Geological.....</i>	<i>6</i>
<i>Mining</i>	<i>6</i>
SOIL CHEMISTRY	6
POTENTIALLY SENSITIVE LAND USES	7
INITIAL CONTAMINATION CONCEPTUAL SITE MODEL	8
POTENTIAL SOURCES OF CONTAMINATION.....	8
INITIAL GEOTECHNICAL CONCEPTUAL SITE MODEL.....	11
EXPLORATION AND TESTING	12
SAMPLING STRATEGY	12
METHODOLOGY	12
GROUND CONDITIONS.....	14
TOPSOIL	14
MADE GROUND	14
SUPERFICIAL CLAY.....	14
SUPERFICIAL GRAVEL.....	15
KELLAWAYS FORMATION	15
CORNBRASH FORMATION	15
GROUNDWATER	16
OBSERVED SOIL CONTAMINATION	16
INFILTRATION TESTING.....	16
SULPHATE AND PH TESTS.....	16
DESICCATION	16
GROUND CONTAMINATION ASSESSMENT	18
SOIL TESTING.....	18
RISK ASSESSMENT GUIDELINES – HUMAN HEALTH.....	18
<i>Category 4 Screening Levels (C4SL).....</i>	<i>18</i>
<i>Suitable 4 Use Levels (S4UL)</i>	<i>19</i>
RISK ASSESSMENT GUIDELINES – GROUNDWATER.....	19
RESULTS OF ASBESTOS SCREENING	19
RESULTS OF TOTAL SOIL TESTS.....	19
HUMAN HEALTH RISK ASSESSMENT	20
LONG-TERM RISK GROUP (ON-SITE RESIDENTS, ALL AGES).....	20
SHORT-TERM RISK GROUP (CONSTRUCTION AND MAINTENANCE WORKERS AND THE GENERAL PUBLIC)	21
GROUND GAS RISK ASSESSMENT	22
<i>Landfill Gases.....</i>	<i>22</i>
<i>Radon Gas</i>	<i>22</i>
<i>Hydrocarbon Vapours</i>	<i>22</i>

CONTROLLED WATERS RISK ASSESSMENT	23
GROUNDWATER CONTAMINATION.....	23
INFRASTRUCTURE RISK ASSESSMENT	24
SUBSURFACE CONCRETE	24
UNDERGROUND SERVICES.....	24
GEOTECHNICAL ENGINEERING CONCLUSIONS	25
SITE EXCAVATION	25
FOUNDATION SOLUTIONS.....	26
<i>Spread foundations</i>	<i>26</i>
<i>Pile Foundations.....</i>	<i>27</i>
GROUND FLOOR SLABS.....	27
<i>Ground-Bearing.....</i>	<i>27</i>
<i>Suspended</i>	<i>28</i>
ACCESS ROADS AND PARKING	28
INFILTRATION MEASURES	28
RECOMMENDATIONS FOR FURTHER WORK	29
REFERENCES	30

APPENDICES

APPENDIX A – PLANS, SECTION AND PHOTOGRAPHS

- Site Location Plan
- Exploratory Hole Location Plan - Existing Site Layout
- Exploratory Hole Location Plan - Proposed Site Layout
- Site Photographs

APPENDIX B – FIELDWORK

- Continuous Tube Sampler Borehole Logs
- Standard Penetration Test Summary
- Trial Pit Logs

APPENDIX C – LABORATORY TEST REPORTS

- Geotechnical Laboratory Test Report
- Chemical Laboratory Test Report

APPENDIX D – PRELIMINARY PILE DESIGN DATA

APPENDIX E – DESK STUDY DATA

- Groundsure Insight Report
- Historical Ordnance Survey and National Grid Maps



GROUND INVESTIGATION REPORT

INTRODUCTION

A Ground Investigation has been undertaken for a proposed residential development at Park Farm, Alvescot, Oxfordshire OX18 2QA: at the location shown on the Site Location Plan in Appendix A. The Ordnance Survey National Grid reference for the approximate centre of the site is 427089, 204234.

Instructions to undertake the investigation were received from Emma Kirby Design, on behalf of the client, Park Lane Developments (Oxfordshire) Limited, in their emails dated 9th and 27th January 2021.

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 soil contamination on the site. On the basis of those findings, and subsequent laboratory testing, and with regard to the proposed development, the report presents: initial human health and groundwater risk assessments (using the source-pathway-receptor risk assessment methodology); and geotechnical assessment and recommendations.

The site has, to our knowledge, not been the subject of any previous ground 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 soil contamination on the site. A contaminated land risk assessment was undertaken based on the Contaminated Land Exposure Assessment (CLEA) and Environment Agency Remedial Targets Methodology (RTM) guidelines.

PROPOSALS

It is proposed to demolish the existing equestrian buildings and erect six dwellings, with associated private gardens, public open space, structural landscaping, vehicle access and car parking. A proposed development layout plan is presented in Appendix A.

SITE INFORMATION AND WALKOVER SURVEY

A walkover survey of the site and its immediate surrounds was undertaken on the 26th January and, again, on 8th February 2021, in conjunction with the two phases of fieldwork. A selection of site photographs is presented in Appendix A, along with a plan showing the existing site layout.

The site entrance is on the western side of The Green, 190m south of the junction with Station Road, on the western side of the village of Alvescot, within a mixed-use (mostly equestrian, agricultural and residential) area.

The site is bounded by open fields to the west and north; residential properties on The Green to the east; and residential properties on Oakley Close (eastern end) and grassed fields (western end) to the south and the site is connected to The Green by a 100m long gravelled track.

The site is approximately rectangular on plan: extending around 85m from north to south and a maximum of about 125m east to west, covering an area of around 7,250m².

Some preliminary clearance and demolition was underway during our investigations and so the state of the site changed. At the time of our first visit, the site contained: a central area of hardstanding; an open-sided barn on the northern boundary; two attached stables within the south-eastern corner of the site, a horse exercise ring and surface-mounted oil storage tank along the southern boundary; and a former exercise yard, hay storage area, enclosed paddock and a manège arranged around the western side of the site. Large areas of the southern part of the site were overgrown with brambles and similar vegetation and this cover, the exercise ring, and most of the stored hay, were removed during and between the two phases of fieldwork.

The open-sided storage barn was demolished between the two phases of fieldwork.

The site is an elevation of about +79.5mOD (Ordnance Datum) on a relatively flat plain between Alvescot Hill to the north-east, and the valley of Clanfield Brook, to the south-west. The site is also relatively flat and level, with an elevation difference, across the site, of about 0.5m.

Other than the overgrowth of brambles and similar across much of the southern end of the site, there are hedgerows along the northern side of the track as far as The Green and, where the track continues to the west on the site, there is a hedgerow between the track and the site. There is a hedgerow between the paddock and the hay storage area, and the southern end of the site also contains a few trees.

Inspection of the site did not reveal any obvious signs of contamination sources. The stables were in use for horse stabling and so-on and the open-sided barn for temporary storage of household rubbish, field gates and two caravans. The oil storage tank appeared to be empty and there was no connecting pipework, no staining on the surface beneath and no odours emanating from the tank or surrounding ground surface.

Inspection of the site vicinity revealed no significant structural damage to any of the properties on the site, or of neighbouring properties.

DESK STUDY AND BACKGROUND INFORMATION

A desk study review of the site and its history has been undertaken to assess the former land uses and the potential for any historically-derived sources of contamination, as well as to provide information to aid our geotechnical assessment. The data obtained have been sourced from maps, aerial images, online sources and a third-party desk study report, a copy of which is presented in Appendix E of this report.

The information provided is obtained from independent third-party sources. We have relied on this information, but no guarantee can be given as to the accuracy or completeness of the 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. In such an event, or if the development commences after expiry of one year from publication of this report, then we recommend this report be referred to us for reassessment.

The desk study comprises a review of the following consultations and information sources:

- Environment Agency (EA)
- Natural England
- National Geoscience Information Service
- Public Health England
- Centre for Ecology & Hydrology
- British Geological Survey (BGS)
- Contemporary Trade Directories
- Historical Ordnance Survey maps
- Aerial Imagery

The information has been used to develop an Initial Site Conceptual Model for use in the source-pathway-receptor contamination risk assessments and an Initial Ground Model for use in the geotechnical appraisal.

GEOLOGY

Reference to the British Geological Survey 1:50,000 scale map, Sheet 236 (Witney, 1972), and other published geological information on the area, indicates that the site is directly underlain by the Jurassic Bedrock Kellaways and Cornbrash Formations. The Quaternary Superficial Wolvercote Sand and Gravel Member (of the Thames Valley Formation) is mapped at surface some 85m south of the site. As the BGS does not map Superficial units of less than 1m thick, it is possible that the Wolvercote Sand and Gravel extends across the site.

Worked-Out Ground and Artificial Ground

There are no records of Worked-Out Ground or Artificial Ground on, or in proximity to, the site.

Superficial

The Wolvercote Sand and Gravel typically comprises sand and flint and quartzite gravel. This deposit is recorded to be as much as 3m thick but, if present on the site, is likely to be <1m thick.

Bedrock

The Jurassic Bedrock are shown dipping gently down to the south-east and relatively free of faulting.

The Kellaways Formation is generally represented by overconsolidated, fissured, thinly laminated, green-grey or dark grey, variably limestone-gravelly, locally sandy, clays, locally with thin rock beds and nodules. The weathered deposit can contain crystalline or anhydrous forms of gypsum (selenite and anhydrite, respectively). This stratum is likely to be in the order of 3m to 5m thick beneath the site.

The Cornbrash Formation is generally represented by poorly bedded, fragmented, limestone, locally with thin interbeds of mudstone. This stratum is likely to be between 3m and 5m thick beneath the site.

HISTORY OF THE SITE

The history of the site has been assessed by reviewing available historical Ordnance Survey maps, online references and aerial images of the area and has revealed the following.

The earliest available maps (1881) show the site alongside a farmstead (later labelled as Park Farm). The western half of the site forms part of a large agricultural field with scattered trees; and the area now occupied by stables is part of a wooded area. A building (likely a barn) is shown immediately south of the footprint of the open-sided barn at the northern end of the site. The farmstead contains a range of buildings and fields. The village of Alvescot is less developed than present-day and contains a Smithy at the junction of The Green and Station Road, some 190m north-east of the site (last shown on the map of 1921). Several of the properties around the site (and a crop field south of the site) are shown with water extraction wells. Gravel Pits (old and new) are shown east of the site, the nearest being some 400m from the site, on the southern side of Station Road (1919).

A Hauliers Yard is shown adjacent to the southern site boundary on the 1971 and 1972 maps, but is unlabelled in 1994 and, by 2003, is close to the present-day, residential, footprint.

The site is shown to have much as the present-day footprint by 1994 and is not recorded to have had any significant industrial use.

The only, potentially significant, industrial use shown in the surrounding areas is the Hauliers yard to the south. Such yards are used for large vehicle standing and, often, for service, maintenance, cleaning and re-fuelling.

UNEXPLODED ORDNANCE AND BOMB SITES

The Zetica Unexploded Ordnance Preliminary Risk assessment tool indicates that the site is at Low risk of encountering unexploded ordnance in the ground. In general, further action to mitigate the risk is considered prudent, but not essential. However, as the site is in relative proximity (for bombing) to RAF Brize Norton, 3km to the north-east, that may have been targeted by the Luftwaffe, it may be prudent for the developer to undertake a more detailed risk assessment prior to the groundworks.

HYDROLOGY

The site is within the valley of Clanfield Brook, which is the nearest water course to the site (some 250m to the west), and which flows south-south-westwards towards Broadwell Brook. The likely direction of hydraulic flow is to the south-west.

The Environment Agency's Catchment Data Explorer records the Broadwell Brook to be 'not designated artificial or heavily modified' and of generally Moderate overall quality between 2013 and (the latest reported period) 2019.

There are no records of surface water abstraction licenses within 500m of the site.

The site is recorded with the following flood risk ratings:

- Low risk from rivers or the sea
- A 1-in-250 year risk of 0.1m to 0.3m of surface water flooding
- Negligible risk of groundwater flooding

These data do not constitute a site-specific Flood Risk Assessment (FRA). It is understood, however, that a site-specific FRA has been prepared by Glanville and submitted with the planning application.

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 Wolvercote Sand and Gravel, mapped off-site but possibly present on site, as a Superficial Secondary 'A' Aquifer of Medium vulnerability. The Kellaways Clay Member is recorded as an Unproductive Stratum and the underlying Cornbrash Formation is a Bedrock Secondary 'A' Aquifer of High Vulnerability.

There are two records of groundwater abstraction licenses within 1km of the site. The nearest is 372m north-west and is an historical record of extraction for 'general farming and domestic' at Butler Court Farm.

There are no records of potable water extractions within 1km of the site and the site is not within a potable water Source Protection Zone.

LANDFILL AND WASTE TREATMENT SITES

There are no records of either current/recent or historical landfills within 500m of the site:

There are no records of waste treatment facilities likely to significantly affect the site.

ENVIRONMENTAL PERMITS, INCIDENTS AND REGISTERS

There are no records of environmental permits, incidents or registers that we considered likely to have had significant impact on the site.

CURRENT INDUSTRIAL SITES

There are no significant records of current (or recent) industrial land uses within 250m of the site.

There are no records of fuel-filling stations within 500m of the site. The nearest former fuel-filling station was 188m north of the site.

RADON GAS

The site is recorded to be in an area not significantly affected by Radon gas for homes without below-ground rooms.

POTENTIAL GEOTECHNICAL HAZARDS

Geological

The risk of naturally-occurring ground stability hazards at the site is recorded to be as follows:

Ground Stability Hazard	Hazard Rating	Comments
Shrink-swell clays	Moderate	The Kellaways Clay is shrinkable
Running sand	Low	No significant thicknesses of sand thought to be present, however, the Wolvercote Sand and Gravel may be present with a limited thickness
Collapsible deposits	Very Low	No significantly collapsible soils or rocks present
Landslides	Very Low	Site is on relatively low-lying ground
Compressible deposits	Negligible	No significantly compressible soils or rocks present
Dissolution	Negligible	No significantly soluble soils or rocks present

Mining

The site is not recorded to lie within an area likely to be affected by any form of mining, with the nearest recorded surface workings (for sand and gravel) 374m east of the site.

SOIL CHEMISTRY

The BGS estimates of background levels of some heavy metals of potential concern are summarised below:

Heavy Metal	Background Level in Topsoil (mg/kg)
Arsenic	15 to 25
Cadmium	1.8
Chromium	90 to 120
Lead	100
Nickel	30 to 45



POTENTIALLY SENSITIVE LAND USES

The site is not located near to any environmentally sensitive land uses.

INITIAL CONTAMINATION CONCEPTUAL SITE MODEL

A preliminary, qualitative, risk assessment has been carried out using the source-pathway-receptor methodology to create a conceptual model for the site. This method is predicated on the principle that a pathway must exist between a potential source of contamination and a potential receptor for there to be a risk to that receptor. Potential sources of contamination and potential receptors have been assessed, using the Environment Agency’s online guidance, Land Contamination: Risk Management, published in October 2020, and are detailed below, together with the possible pathways that might allow pollutant linkages.

We understand that the development proposal is to demolish the existing barn and equestrian buildings and erect six dwellings, with associated private gardens, public open space, structural landscaping, vehicle access and car parking.

POTENTIAL SOURCES OF CONTAMINATION

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 near, the site:

Potential Source	Potential Contaminants
Historical use of farm buildings Made Ground from previous phases of development Storage and spillage of oil on site Vehicle standing on site Storage and spillage of fuels off-site, to the south	Variable: may include heavy metals, non-metals, polycyclic aromatic hydrocarbons, petroleum hydrocarbons and asbestos. (No evidence of agricultural chemical storage).
Building fabric	Asbestos from degradation of construction materials, such as roofs and downpipes, made with asbestos-containing materials

Potential Gaseous-phase 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 development is high (residential).

As the site is remote from active landfills, we have provisionally assessed the risk of ground gas impacting the site, by reference to the CL:AIRE research bulletin RB17, “A pragmatic approach to ground gas risk assessment”, 2012.

The following potential sources have been assessed:

- Landfill gas migration: no credible source has been identified
- Natural ground with gas-generation potential: the site is not thought to be underlain by such soils or rocks
- Radon gas: the site is within an area of insignificant generation for buildings without below-ground rooms. As the proposed development does not include below-ground rooms, the risk from Radon gas remains insignificant.

Thus, no potential sources of gaseous-phase contamination have been identified for the site

RECEPTORS

The following receptors have been identified at the site:

Human Health

- Long-term risk group: end users of the site – residents
- Short-term risk groups: construction workers (adult) and the general public (all ages) during redevelopment; and maintenance workers (adult) post-development

Environmental

- Clanfield Brook, which is the nearest water course to the site (some 250m to the west)
- Superficial Secondary Aquifer (Wolvercote Sand and Gravel) potentially present beneath the site
- The Bedrock Secondary Aquifer (Cornbrash Formation) beneath the site

Infrastructure

- Substructures
- Buried services

PATHWAYS

Potential pathways, between the potential sources and the above-identified receptors, are as follows.

For human receptors:

- Direct soil ingestion in areas of exposed soil
- Ingestion of soil attached to homegrown produce (long-term group only)
- Ingestion of homegrown produce with contamination uptake (long-term group only)
- Inhalation of indoor and outdoor vapours and dust
- Dermal contact with contaminated soil
- Inhalation of soil gases or vapours migrating through permeable strata into the building

For environmental receptors (Controlled Waters):

- Migration of contaminants through the unsaturated zone
- Migration of contaminants through the groundwater
- Movement of contaminants through drain runs or services

For infrastructure:

- Contact with leachable or corrosive contaminants within the soil
- Contact with leachable or corrosive contaminants within the groundwater

POTENTIAL LINKAGES

The relationship between a source, a pathway and a receptor is identified as the 'pollutant linkage' and, if this is not complete, then land does not present a risk to receptors. The potential linkages are summarised below:

Sources (Potential Contaminants)	⇒	Pathways	⇒	Receptors
Heavy metals, non-metals, polycyclic aromatic hydrocarbons, petroleum hydrocarbons and asbestos , in near-surface soils and (excluding asbestos) shallow groundwater - from possible historical use of farm buildings, possible Made Ground from previous phases of development. Oil storage on-site and possible fuel-storage off-site to the south although, the anticipated direction of hydraulic flow (to the south-west) would transport any such source away from the site	⇒	Contact, ingestion, inhalation	⇒	Construction workers and the general public during redevelopment and maintenance workers subsequently
	⇒		⇒	End users
	⇒	Contact	⇒	Infrastructure
	⇒	Migration, run-off	⇒	Controlled Waters
Asbestos - from building fabric	⇒	Contact, ingestion, inhalation	⇒	Construction workers and the general public during redevelopment and maintenance workers subsequently
	⇒		⇒	End users

Based on the desk study research alone, there does not seem to be a pathway to allow significant migration of contaminants from the site to the remote surface watercourse some 250m away. Furthermore, the Superficial Secondary Aquifer is not mapped on site and the Principal Bedrock Aquifer is anticipated to be protected, beneath the site, by around 5m of low permeability Kellaways Formation clays.

Nevertheless, the sources, pathways and receptors listed in the CSM are considered to have the potential to be present as complete pollutant linkages. The ground investigation and risk assessment, detailed below, have been conducted to test and refine this initial CSM: within the constraints detailed therein.



INITIAL GEOTECHNICAL CONCEPTUAL SITE MODEL

The site has been previously developed. Made Ground may be present and may be of variable strength and composition and of poor load-bearing character. Demolition of the existing buildings and hardstanding may cause disturbance of near-surface soils; and previous foundations, if left in the ground, will form hard obstructions.

The Wolvercote Sand and Gravel, if present, may contain beds or pockets of sand that would, in the presence of water, be a running sand hazard in excavations.

The Kellaways Formation may contain calcretes, which can cause: over-dig and delays for foundation trenches, and obstruction to the progress of piling rigs; and high sulphate contents, which may prove hazardous to buried concrete.

Fine-grained soils may present shrink-swell hazards that can affect buildings and structures.

The fieldwork and laboratory testing have been implemented to address these main issues and to further assess any potential problems for foundations and the general development of the site.

EXPLORATION AND TESTING

Eight exploratory holes were formed at the site, comprising: three continuous tube sampler boreholes (CT01 to CT03); and five mechanically-excavated trial pits (TP01 to TP05); in-situ testing (including Standard Penetration Tests), and these were supplemented by geotechnical and chemical laboratory testing.

The trial pits were formed on the 26th January 2021, and the boreholes on the 8th February 2021.

The positions of the exploratory holes are shown on the Exploratory Hole Location Plans in Appendix A. The logs and field test results are provided in Appendix B and the laboratory test reports in Appendix C.

Engineering and geoenvironmental 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 designed to provide a spread of information across the site, within the restrictions of access and services. Four of the trial pits (TP01, TP02, TP04 and TP05) were positioned, at the request of Emma Kirby Design, at proposed soakaway locations, with the intention of conducting infiltration tests. The fifth trial pit, TP03, was positioned alongside the oil tank to allow inspection of the ground for evidence of petroleum hydrocarbon contamination from that potential source as well as migration that may have occurred from the former haulage yard to the south. Access, for exploratory holes, to the inside of the buildings was not attempted.

METHODOLOGY

Prior to commencement of excavation, in order to minimise the dangers from/to buried services, the proposed locations were scanned using a Cable Avoidance Tool. The hardstanding at borehole locations was broken-out using a hand-held pneumatic breaker and, for the trial pit, a pneumatic pick attachment to the excavator. At the borehole locations, a service avoidance pit was dug, using hand tools, to a depth of around 1.2m bgl (below ground level).

The continuous tube sample boreholes were put down using hand-tools and an Archway Competitor Dart rig to a target depth of 6.00m bgl but, due to ground conditions, achieved depths of between 4.50m and 5.20m. The boreholes were advanced using a plastic-lined steel tube sampling system, driven into the ground by a top-drive percussive hammer. A near continuous, 85mm to 45mm diameter, core sample was recovered of the sampled materials to allow examination and sub-sampling. Standard Penetration Tests (SPTs) were performed at 1.0m intervals. On completion, the boreholes were backfilled with arisings.

The trial pits were excavated with a tracked mechanical excavator, to depths of between 1.05m and 1.75m. A log was made of the arisings and samples collected for subsequent laboratory testing. Hand vane tests were conducted on recovered blocks of soil (where the block size was sufficient) and the average of three tests at each depth is reported on the log. The planned infiltration tests were not conducted as significant groundwater inflows were encountered at relatively shallow depth. On completion, the pits were backfilled with arisings.



Observations of groundwater inflows were made in all exploratory holes and, where encountered in boreholes, the standing level on completion of the hole.

Correction to the field 'N' values (to 'N₆₀' values) 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.

GROUND CONDITIONS

The sequence of strata revealed by this investigation was: surfacing (mostly Made Ground, but locally Topsoil), Superficial Clay (most of the exploratory holes), localised Superficial Gravel, and Bedrock Kellaways and Cornbrash Formations. Further details of the relative disposition and properties of each are provided below.

TOPSOIL

Topsoil was encountered at surface of TP02 and comprised 0.25m of dark brown, sandy, organic silty clay.

MADE GROUND

Made Ground was encountered in seven of the eight exploratory holes (absent from TP02), and comprised between 0.25m and 0.80m of limestone roadstone surfacing of gravel and, locally, cobbles, locally admixed (in varying proportions, up to 35%) with brown sandy clay.

SUPERFICIAL CLAY

Superficial Clay (possibly representing part of the Wolvercote Sand and Gravel) was encountered in seven of the eight exploratory holes (absent from TP05 in the south-eastern corner of the site) and, where fully proven, extended to depths of between 0.65m and 2.00m: in proven thicknesses of between 0.25m and 1.20m. The variations in thicknesses across short distances is suggestive of channel deposition.

The Superficial Clay generally comprised soft or firm, friable, light grey and orange-brown, slightly sandy, locally slightly gravelly, silty clay, with gravel (<5%) of flint. Borehole CT01, located towards the northern end of the site, recorded pockets of sand and a low cobble content between 1.00m and 1.50m depths.

The three SPT 'N₆₀' values obtained were 8, 10 and 14: indicating Medium undrained shear strength. It should be noted, however, that the test in CT03 passed into Superficial Gravel for the last 50mm of the 300mm test drive. Hand vane tests recorded undrained shear strengths of between 48kPa and 60kPa: indicating Medium undrained shear strength.

Laboratory testing revealed the following:

Parameter	Range	Comments
Water Content (%)	20 to 32	Normal range
Liquid Limit (%)	38 to 41	CLAY of Intermediate Plasticity (BS5930 Casagrande)
Plastic Limit (%)	19 to 23	
Plasticity Index (%)	16 to 22	
Retained 425µm sieve (%)	5 to 16	BS 'coarse soil' fraction
Modified Plasticity Index (%)	13 to 19	Shrinkable soil of Low volume-change potential (NHBC Standards)
Passing 63µm sieve (%)	65 to 81	Fines (silt/clay) fraction

SUPERFICIAL GRAVEL

Superficial Gravel (possibly representing part of the Wolvercote Sand and Gravel) was encountered in one of the eight exploratory holes: CT03 (located towards the south-eastern corner of the site) and was present, between depths of 1.40m and 1.55m, as brown, very clayey, sandy gravel of fine to medium, sub-angular flint, sandstone and quartzite.

One SPT was conducted partly within the Superficial Gravel (50mm out of 300mm) and indicated medium dense conditions.

KELLAWAYS FORMATION

Horizons of the Kellaways Formation were encountered below depths of between 0.45m and 1.55m and, where fully proven, continued to depths of between 4.20m and 5.20m: being deeper at the northern end of the site (CT01).

The Kellaways Formation comprised stiff or firm, becoming stiff and very stiff with increasing depth, fissured, light grey an orange-brown, becoming dark grey (less weathered) with depth, locally slightly sandy, silty clay, rarely with fossil shell debris and locally with some selenite.

The SPT 'N₆₀' values obtained were between 8 and 23: indicating Low to High, but generally Medium, undrained shear strength.

Laboratory testing revealed the following:

Parameter	Range	Comments
Water Content (%)	15 to 29	Normal range of values for this stratum
Liquid Limit (%)	32 to 60	CLAY of Intermediate to High Plasticity (BS5930 Casagrande)
Plastic Limit (%)	17 to 24	
Plasticity Index (%)	11 to 37	
Retained 425µm sieve (%)	1 to 15	BS 'coarse soil' fraction
Modified Plasticity Index (%)	11 to 37	Shrinkable soil of Low to Medium volume-change potential (NHBC Standards)
Passing 63µm sieve (%)	68 to 96	Fines (silt/clay) fraction

CORNBRASH FORMATION

Horizons of the Cornbrash Formation were encountered, in the three boreholes, below depths of between 4.20m and 5.20m: being deeper at the northern end of the site (CT01). And continued (for a short proven depth) to the base of those holes at depths of between 4.50m and 5.20m.

Recovery in the Cornbrash was poor to none (getting less as soil gave way to rock) but where seen, it comprised very stiff, dark grey, calcareous clayey silt. All three boreholes terminated on impenetrable obstructions, which most likely represents limestone rock.

GROUNDWATER

Groundwater was encountered, in the trial pit excavations, at, in general, less than 1m depth, and deeper within the boreholes (where groundwater is usually slower to develop), as summarised below:

Hole ref.	Strike Depth (m)	Stratum	Standing Level (m)	Comment
CT01	3.00	Kellaways Formation	-	Dry on completion
CT02	1.50	Superficial Clay	0.95	
CT03	-	-	-	Not encountered
TP01	0.95	Superficial Clay	-	Moderate inflow
TP02	0.80	Superficial Clay	-	Moderate to fast inflow
TP03	1.00	Kellaways Formation	-	Slow inflow
TP04	0.65	Superficial Clay	-	Moderate to fast inflow
TP05	1.00	Kellaways Formation	-	Slow to moderate inflow

OBSERVED SOIL CONTAMINATION

There was no evidence, either visual or olfactory, of potential contamination in any of the exploratory holes.

INFILTRATION TESTING

Infiltration testing was planned to be undertaken in all five of the trial pits at proposed soakaway locations, but, following shallow groundwater strikes in each, the tests were not performed.

SULPHATE AND pH TESTS

The results of the laboratory pH and water-soluble sulphate tests on samples of soil are summarised below:

Stratum	Water-soluble Sulphate (mg/l)	pH (pH units)	No. tested
Superficial Clay	10 to 290	6.5 to 8.5	6
Kellaways Formation	40 & 1,270	5.4 & 8.0	2

DESICCATION

There are various techniques for assessing soil desiccation, including visual assessment based on the depth of root penetration and visible signs of desiccation, such as a dry appearance or friable state, and comparison of water contents with the Atterberg Limits.

The indicators are summarised below in terms of the indicated possible soil desiccation depths:

Location	Indicated Range of Possible Soil Desiccation from:				Comment
	Roots	Dry and friable	Water Content	Ground-water	
CT01	None	None	None	≥0.95m	No significant desiccation evident
CT02	None	None	None	≥0.95m	
CT03	None	None	None	Unclear	
TP01	None	None	None	≥0.95m	
TP02	None	None	None	≥0.80m	
TP03	None	None	None	≥1.00m	
TP04	None	None	None	≥0.65m	
TP05	None	None	None	≥1.00m	

It will be seen, from the summary above, that, at the time of our investigation (mid-Winter) there was no significant desiccation evident in any of the exploratory holes.

It should be remembered, however, that the state of desiccation is likely to vary with the seasons and other factors and that the exploratory holes were, necessarily, located remote from mature trees, where the state of desiccation should be expected to be higher all year round.

GROUND CONTAMINATION ASSESSMENT

The results of the laboratory tests from this investigation are included in Appendix C. The following is a description of: the testing schedule (number of tests from each stratum and the tests performed); the guidelines adopted for assessing the results, and a comparison of the test results from this investigation with those adopted guideline values. The implications of these comparisons are provided in the Risk Assessment sections that follow.

The risk assessment has been undertaken in line with the EA's guidance, Land Contamination: Risk Management, published October 2020. The assessment has been undertaken in order to validate the Preliminary Risk Assessment using a generic risk assessment methodology.

SOIL TESTING

One sample of Topsoil and two samples of Superficial Clay were tested for a range of constituents of potential concern. The test suite was selected following consultation of R&D CLR Publications, published as part of the Contaminated Land Exposure Assessment (CLEA), a joint venture between the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency and included the following:

- Inorganic substances, including metals and metalloids.
- Speciated Polycyclic Aromatic Hydrocarbons (PAHs)
- 'Total' Petroleum Hydrocarbons (TPHs), with aliphatic/aromatic splits
- Asbestos screening

Unless explicitly stated on the laboratory report, the soil samples were tested to obtain 'Total' values.

A further sample, of the Made Ground, was screened for asbestos content.

RISK ASSESSMENT GUIDELINES – HUMAN HEALTH

This part of the assessment does not include the risks from ground gases, which is presented in the Ground Gas Risk Assessment section of this report.

The human health assessment criteria used are based on the proposed end use of the site and the standard 'Residential, with plant uptake' land-use has been adopted for initial screening purposes.

The test results have been compared with the following GAC (Generic Assessment Criteria):

Category 4 Screening Levels (C4SL)

Published in March 2014 by DEFRA, a small range of Category 4 Screening Levels (C4SL) were produced to support the revised Statutory Guidance for Part 2A of the Environmental Protection Act, 1990. The revised 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 included land where the level of risk is clearly unacceptable, and Category 4 included land where the level of risk posed is acceptably low.

Although not the primary purpose of the C4SL, the Department for Communities and Local Government's 'Planning Portal' document of June 2014 and the DEFRA letter of 3rd September 2014 (from Lord de Mauley), established that the C4SL are also suitable for use in planning situations.

Suitable 4 Use Levels (S4UL)

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 – GROUNDWATER

The procedures set out in Environment Agency's Remedial Targets Methodology (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 in the two samples examined.

RESULTS OF TOTAL SOIL TESTS

Results of the total soil testing have been compared to the GAC established above. For S4UL, a range of values have been published for the organic contaminants based on the organic matter content of the soil. As a site-specific soil organic content was not determined, where S4UL have been used, test results have been initially compared to the most conservative value, which is that for soils of 1% soil organic matter (SOM).

Of the determinands tested for, none recorded values higher than their relevant GACs and, so, no further consideration of those results is necessary.

The conclusions with regard to human health, are provided in the Human Health Risk Assessment section, below.

HUMAN HEALTH RISK ASSESSMENT

Following the field observations and assessment of laboratory results from this investigation, the initial conceptual site model can now be revised using the CLEA Guidelines.

The following qualitative risk assessment has been carried out using the S-P-R (source-pathway-receptor) concept, which is predicated on the principle that a pathway must exist between a potential source and potential receptor for there to be a risk.

From the initial CSM, the potential human receptors at risk are:

- Long-term risk group: end users of the site – residents (all ages)
- Short-term risk group: construction and maintenance workers (adult) general public (all ages)

The risks to the two groups of human receptors and any necessary protective remedial measures resulting from development of the site are discussed below.

LONG-TERM RISK GROUP (ON-SITE RESIDENTS, ALL AGES)

The initial CSM identified heavy metals, non-metals, various hydrocarbons and asbestos as potential sources of contamination. The field works revealed no obvious visual or olfactory evidence of gross contamination on site. No asbestos was identified in the two samples of the Made Ground examined.

No significant sources of contamination have been identified by the site history, site walkover or exploratory hole inspections. Testing of soil samples for a wide range of potential contaminants returned determinant concentrations below GAC for the proposed site use. On the basis of the works to-date, therefore, it is considered that there is no need for remedial measures at this site prior to the proposed redevelopment, as the soils seen at the site pose a very low risk to this group of human receptors. As a portion of the site, particularly beneath buildings, has not been investigated, this position should be reassessed throughout the construction programme and with the benefit of a Discovery Strategy.

A proportion of the site is beneath the stable buildings and concrete hardstanding and has not been investigated. Our conclusions with regard to contamination risk are based on our ground model, which is based on those portions of the site investigated.

We, therefore, recommend that (unless the client commissions additional investigation in these areas following demolition) that the developer prepare a method statement to cater for unexpected contamination uncovered during the groundworks. Documentation of the findings and submission of that record to the Local Authority should be considered to further support the findings of this investigation.

Should any suspicious soils be encountered that differ from our ground model, work should cease in that area and further assessment will be necessary by a suitably qualified geoenvironmental engineer. This may require further intrusive investigation or soil sampling along with supplementary contamination risk assessment and potentially remediation. Any further recommendations will require regulatory approval.



SHORT-TERM RISK GROUP (CONSTRUCTION AND MAINTENANCE WORKERS AND THE GENERAL PUBLIC)

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'.

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

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

GROUND GAS RISK ASSESSMENT

Landfill Gases

The preliminary ground gas risk assessment concluded that there were no gaseous-phase contamination sources likely to affect the site.

The intrusive works revealed Made Ground beneath the site that was no more than 0.8m thick and this, as well as the naturally-deposited ground, did not contain any significant quantities of obviously gas-generating materials.

Therefore, it is considered that gas protection measures are not necessary with regard to methane and carbon dioxide gases.

Radon Gas

The site is not within an area of significant radon gas generation potential. The proposed development is not thought to include any underground rooms.

Radon gas protection measures, therefore, will not be necessary.

Hydrocarbon Vapours

The human health risk assessment indicated that vapour protection measures are not necessary at this site.

CONTROLLED WATERS RISK ASSESSMENT

Following the field observations and assessment of laboratory results from this investigation, the initial conceptual site model can now be revised.

The following qualitative risk assessment has been carried out in accordance with the procedures set out in the Environment Agency's Remedial Targets Methodology *Hydrogeological risk assessment for contaminated land* (2006) and uses the S-P-R (source-pathway-receptor) concept: which is predicated on the principle that a pathway must exist between a potential source and potential receptor for there to be a risk.

The potential environmental receptors, from the initial CSM, are:

- Controlled Waters - Superficial Secondary Aquifer (Wolvercote Sand and Gravel) potentially present beneath the site
- Controlled Waters - Bedrock Principal Aquifer (Cornbrash Formation) beneath the site

The potential linkages, from the initial CSM, are:

- Migration of potential heavy metals, non-metals, various petroleum hydrocarbons and other hydrocarbons into the aquifers beneath the site

GROUNDWATER CONTAMINATION

No gross contamination was identified in any part of the site (including concentrations of petroleum hydrocarbons). Groundwater was present, at shallow depth, but the near-surface soils were present, in the main, as fine-grained soils.

The Principal Aquifer (Cornbrash Formation) was seen to be present, beneath the site, at depths of between 4.20m and 5.20m, beneath predominantly clay soils that will serve to protect this lower aquifer from migration.

It is, therefore, considered that the above-recognised environmental receptors will not be at significant risk from potential groundwater pollution at the site. On the basis of the works to-date, therefore, remedial measures are not considered necessary to protect this receptor group, but this position should be reassessed throughout the construction programme and with the benefit of a Discovery Strategy.

INFRASTRUCTURE RISK ASSESSMENT

SUBSURFACE CONCRETE

The concrete design mix recommendations for subsurface concrete have been assessed in terms of BRE Special Digest 1, as follows:

Type of Site	Groundwater	Characteristic Sulphate	Characteristic	
		Soil Soluble (mg/l)	Design Sulphate Class	pH (pH units)
Brownfield	Mobile	780	DS-2	6.0

The above assessment provides an Aggressive Chemical Environment for Concrete (ACEC) class of **AC-3z**.

UNDERGROUND SERVICES

It should be noted that the utility companies often have their own local guidelines and standards on levels of shallow soil contamination in the ground that may or may not be acceptable for the installation of below ground services. These standards may be different to those specified for assessing risks to human health and groundwater.

The local requirements should be obtained from the particular service supply company as soon as possible to avoid unexpected delays or additional development costs.

Guidance can be sought from the UK Water Industry Research (UKWIR), 'Guidance for the selection of water supply pipes to be used in brownfield sites', reference 10/WM/03/21, 2010. This document proposes that the assessment of the hazard to potable water supply pipes should be based on the following pathways: contact with migrating groundwater, permeation of vapour, and direct contact with soil.

Approval should be sought for the type of pipes proposed before they are installed.

GEOTECHNICAL ENGINEERING CONCLUSIONS

It is proposed to demolish the existing equestrian buildings and erect six two-storey dwellings, with associated private gardens, public open space, structural landscaping, vehicle access and car parking.

The investigation has revealed that the site is underlain by either Topsoil, pavement construction or buildings, resting, in the main, on Superficial Clay and localised Superficial Gravel, with the Bedrock Kellaways and Cornbrash Formations beneath. The generalised depths to the base (and thickness) of each stratum in our exploratory holes, is summarised below:

Stratum	Base (m)	Thickness (m)
Topsoil or Roadstone/Topsoil admix	0.25 to 0.80	0.25 to 0.80
Superficial Clay	0.65 to 2.00	0.25 to 1.20
Superficial Gravel	1.55 (localised)	0.15
Kellaways Clay	4.20 to 5.20	2.20 to 3.70
Cornbrash	>4.50 to >5.20	>0.40

The Superficial Clay comprised soft or firm, low to medium strength, light grey and orange-brown, slightly sandy and, locally, slightly gravelly, intermediate plasticity silty clay of low volume-change potential.

The Superficial Gravel was identified at one location and comprised medium dense, very clayey sandy gravel.

The base of the Superficial deposits was quite variable: suggestive of deposition within erosional channels. Transition, between the Superficial and Bedrock deposits, across short distances, should therefore, be anticipated across the site.

The Kellaways Formation comprised firm or stiff, medium strength, becoming very stiff and high strength at the base, fissured, dark grey, weathering to light grey and orange-brown near-surface, locally slightly sandy, intermediate to high plasticity, silty clay, of low to (characteristically) medium volume-change potential.

Groundwater was struck, locally, during boring and pit excavations: around a depth of 1.00m, but as high as 0.65m depth, with slow to, locally, fast inflows.

Although the Superficial deposits and the Kellaways Formation should prove suitable for the proposed form of development, supporting traditional, moderately loaded, spread foundations, the need for groundwater control means that consideration should be given to a pile foundation solution.

SITE EXCAVATION

Conventional hydraulic plant should be satisfactory for excavating foundation and service trenches within the soils on site. Specialist breaking plant will, likely, be required to assist in the removal of existing foundations.

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.

Excavations are likely to remain open, unsupported, in the absence of water, but, where water enters the excavation, then internal erosion and wall collapse is possible. In the presence of water, spalling of excavation sides may occur and, thus, some form of temporary support may be required to keep excavations open. Significant groundwater ingress into shallow excavations is anticipated locally, but it must be noted that groundwater levels can vary significantly in response to weather and other factors. At the time of this investigation, the shallow groundwater table was about 1.0m below ground surface and entered excavations at variable rates, from slow to fast. It may be possible to control groundwater levels through the use of suitable screen sump pumping, but it would be prudent to trial some excavations prior to commencing construction.

Consideration should be given to the effects of trees and shrubs on service runs that cross the site. Soil movements brought on by the influence of vegetation can severely disrupt drain runs and mains services, and measures should be incorporated into the excavations to allow for future ground movements.

FOUNDATION SOLUTIONS

Spread foundations

Spread foundations should bypass the Made Ground and any soft soils and be placed within the firm, or stiffer, natural deposits: with a minimum embedment of 0.20m. A minimum foundation depth of 1.00m below existing ground level is recommended, but greater depths may be required within the zone of influence of existing or new planting.

The allowable bearing pressures recommended below are 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 depth provided above an allowable bearing pressure of 85kPa may be adopted for conventional 600mm wide strip footings. As there is a potential for foundation excavations to span variable soils, light reinforcement should be added to the base of the foundation to further protect against differential settlements.

If higher bearing pressures are required, foundations would need to bypass the Superficial deposits and be placed entirely within the underlying Kellaways Formation (likely resulting in foundation depths of >2.00m): where an allowable bearing pressure of 110kPa (for conventional 600mm wide strip footings) may be adopted; and reinforcement to reduce the risk of differential settlement will not be necessary.

The bearing pressures provided above allow for suitable factors-of-safety against general shear failure and should result in acceptable levels of differential and total vertical settlement that are likely to be substantially complete over a period of several months to years.

Within the zones of influence of existing vegetation, precautions will need to be taken with respect to root action (both existing and proposed). Reference should be made to the NHBC Standards (Chapter 4.2, Building near Trees) for appropriate guidance on foundation depths and design. The Superficial Clay is of Low Volume-

Change Potential and the underlying Kellaways Formation is (characteristically), of Medium Volume-Change Potential.

It is recommended that foundation excavations be subject to careful inspection by an experienced professional, with localised deepening carried out if desiccated or root-infested shrinkable clays are encountered.

Given the plastic nature of the foundation soils, they will be prone to softening when wetted. In the event of a delay between foundation excavation, and pouring of the foundation concrete, a blinding layer of concrete should be placed in the base of the open excavation to prevent softening.

Pile Foundations

For the ground conditions encountered, with groundwater being present near-surface, we consider that CFA or helical screw piles, terminating on the Cornbrash, should suit the ground conditions. Although a suitable alternative, the noise and vibration issues of conventional driven piles may mitigate against those.

Screw piles could be preferred for the relative ease and speed of installation and associated reduction in waste disposal costs, although it would be best to check with piling contractors that their particular methods are suited to terminating in rock (as not all are) and will be protected against corrosion by the shallow groundwater.

Guidance on the design of piles was not included within the scope of this investigation, but preliminary pile design data is presented in Appendix D: for guidance only. We anticipate that the preferred design would be for rock sockets into the Cornbrash. It should be noted that very limited penetration (maximum of 0.4m) was achieved into the Cornbrash and so detailed lithological information (including the possible presence of clay beds) and pile design information was not obtained. The recommended parameters should be regarded as being quite conservative. Higher rock socket values could, likely, be achievable but this would need to be corroborated by more detailed investigation using rotary coring or sonic techniques and/or a pile testing programme. The carrying capacity of the pile may be governed by the pile shaft.

We recommend that a specialist piling contractor is consulted at an early stage to advise on the most appropriate pile type and to ultimately provide the final pile design. This should address issues such as the potential clay softening/disturbance, any variations in ground profile and assessment of values for rock socket design. The pile designer or piling contractor may require additional investigation.

GROUND FLOOR SLABS

The site is underlain by shrinkable soils. The decision as to whether ground floor slabs will be ground-bearing or suspended on the main foundations will, in part, depend on the considerations detailed below:

Ground-Bearing

A suspended floor slab will be required in shrinkable soils, even in the absence of trees and shrubs, where the soil is seasonally desiccated. Under those circumstances the adoption of a suspended slab is only likely to be avoided if construction of the floor slab takes place during the wetter times of the year.

If a ground-bearing floor slab is to be adopted, then all pre-existing building foundations, Fill, Made Ground and disturbed or desiccated soil should be removed from beneath any proposed ground-bearing floor area and the exposed surface should be proof-rolled to expose any excessively soft or compressible zones, which should also be removed. Coarse-grained backfill should then be placed in layers and subjected to controlled compaction.

Suspended

In accord with NHBC guidelines: if it is required to deepen the main foundations below 1.50m depth, such as on account of trees or shrubs, then ground floor slab to that building should be suspended.

A void should be left below the floor slab to accommodate future moisture content-related soil movements. This may be achieved by use of a proprietary compressible material such as Clayboard or Cellcore.

ACCESS ROADS AND PARKING

In preparation for areas of pavement, the formation should be subject to inspection and heavy proof-rolling and any areas of very soft, very loose, very hard, organic, or otherwise unsuitable materials should be removed and replaced with suitable, well-compacted, coarse-grained fill.

Some areas of the site have peripheral mature vegetation. The presence of trees will mean that there is potential for ongoing desiccation issues which may affect the pavement surfacing within influencing distance. Thus, safeguarding against desiccation in this regard could be considered, such as lime cement stabilisation, which can limit the effects of shrinkage and swelling through desiccation, by altering the properties of the clay. Alternatively, it could be accepted that some seasonal movements may occur which could be accommodated through flexible surface finishes.

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 laboratory classification tests, the following CBR value is recommended for preliminary design purposes (on the basis of the recommendations for formation preparation, above):

- Superficial Clay: 2.0%

These values are based on equilibrium soil conditions, a thin pavement construction, high water table and poor construction conditions. The site conditions should be reassessed at the time of construction and the CBR/pavement design updated accordingly, if considered necessary.

However, these soils are potentially frost-susceptible and, for prevention of frost damage, all material within a suitable thickness of the surface should be non-frost-susceptible.

INFILTRATION MEASURES

The high groundwater and clay soils encountered strongly indicates that an alternative form of drainage (to the use of soakaways) will have to be adopted.



RECOMMENDATIONS FOR FURTHER WORK

The ground is seldom homogenous and variations likely to affect our conclusions may, inevitably, occur between and beyond our test locations. Also, there are areas of the site, such as beneath the buildings and hardstanding that have not been investigated. Our conclusions with regard to contamination risk and our general foundation assessment is based on our Ground Model. We, therefore, recommend that the developer adopt a Discovery Strategy during demolition and groundworks: maintaining a watching brief for suspicious soils or ground conditions. Should ground conditions vary noticeably from our Ground Model, then we recommend further assessment by a suitably qualified person or persons. If, in particular, there is concern over contamination in the ground, then work should cease immediately, pending suitable assessment. Consideration should be given to keeping a daily record of observations and findings and, ultimately, presenting this to the regulators.

Supplementary coreholes, by rotary or perhaps sonic means, may be needed to aid piled foundation design.

REFERENCES

1. Site Investigations, Code of Practice, BS 5930:2015 +A1:2020, 2020.
2. Investigation of Potentially Contaminated Sites – Code of Practice, BS 10175:2011+A2:2017.
3. Site Investigation Asbestos Risk Assessment, AGS Interim Guidance, 2013.
4. Building Research Establishment (BRE) BR 211, Radon: Guidance on Protective Measures for New Buildings, 2015.
5. BRE Quick Guide 7, Reducing Radon, Underground Rooms – Cellars and Basements, 2015.
6. National House Building Council (NHBC) Standards, Chapter 4.2 Building Near Trees, 2020.
7. National House Building Council (NHBC) Standards, Chapter 4.1 Land Quality – Managing Ground Conditions, 2020.
8. Environment Agency, Land contamination: risk management, October 2020
<https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm>
9. Contaminated Land Risk Assessment – A Guide to Good Practice, CIRIA C552, 2001.
10. Environment Agency, Human Health Toxicological Assessment of Contaminants in Soil (SR2), 2009.
11. Department for Environment, Food and Rural Affairs, SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document, March 2014.
12. The LQM/CIEH S4ULs for Human Health Risk Assessment, Land Quality Press, 2015, Document 3032.
13. Society of Brownfield Risk Assessment, Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater, February 2017.
14. Health and Safety Executive (HSE), Health and safety in construction, HSG150. HMSO London 2006.
<https://www.hse.gov.uk/pubns/priced/hsg150.pdf>
15. The Water Supply (Water Quality) Regulations 2016.
16. Water Framework Directive, 2015.
17. Soils for Civil Engineering Purposes, BS 1377-1:2016.
18. Foundations, BS 8004:2015.
19. BRE Digest 365, Soakaway design, 2016.
20. The SuDS Manual, CIRIA C753, 2015.
21. Card G, Wilson S, Mortimer S, A Pragmatic Approach to Ground Gas Risk Assessment, 2012. CL:AIRE Research Bulletin RB17.



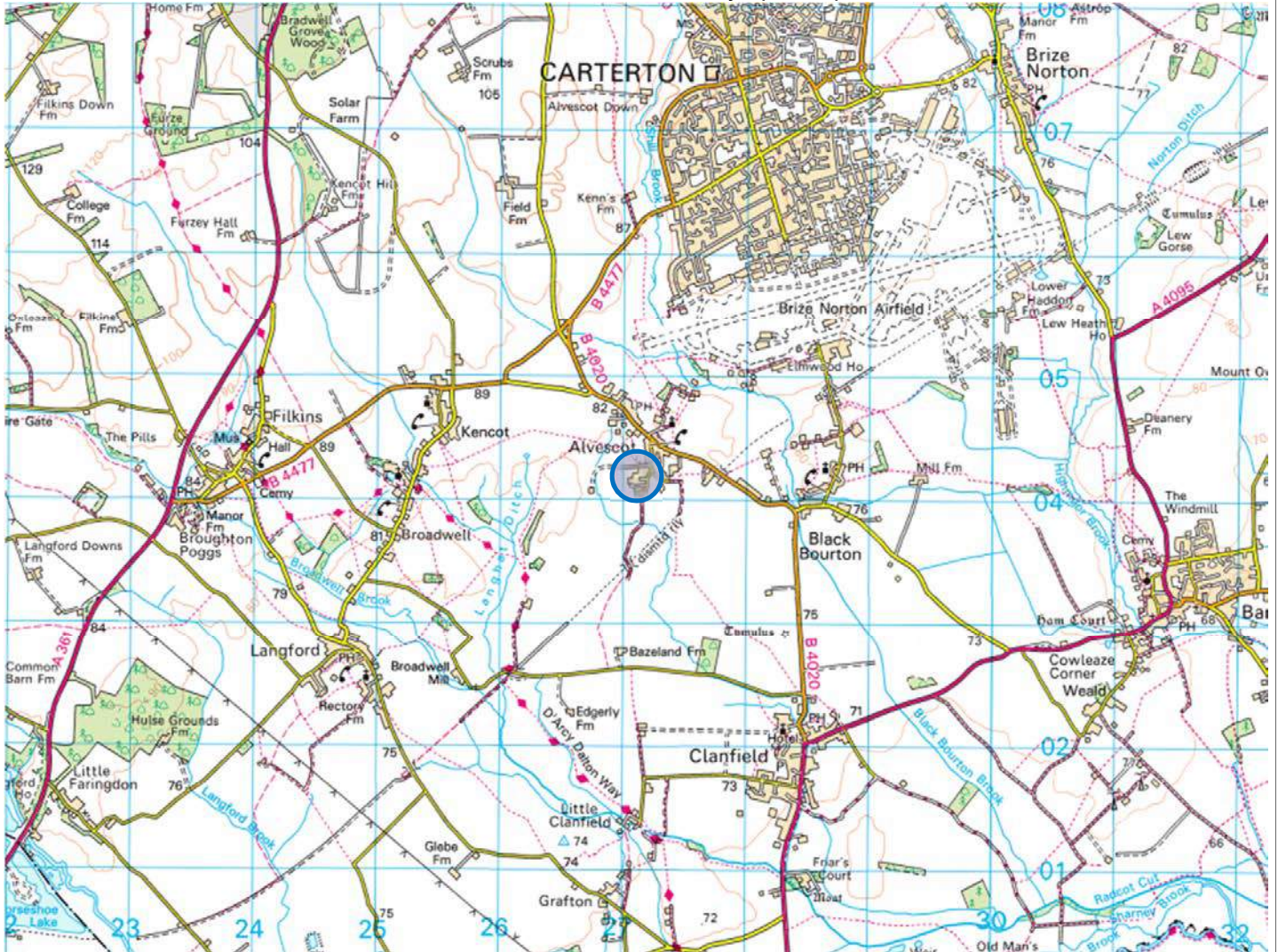
22. Assessing Risks Posed by Hazardous Ground Gases to Buildings, CIRIA C665, 2007.
23. Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings, BS 8485:2015+A1:2019.
24. BRE Special Digest 1, Concrete in Aggressive Ground, 2005.
25. Transport and Road Research Laboratory, Report 1132, The Structural Design of Bituminous Roads. 1984.
26. UK Water Industry Research (UKWIR), Guidance for the Selection of Water Supply Pipes to be Used in Brownfield Sites, 10/WM/03/21, 2010.



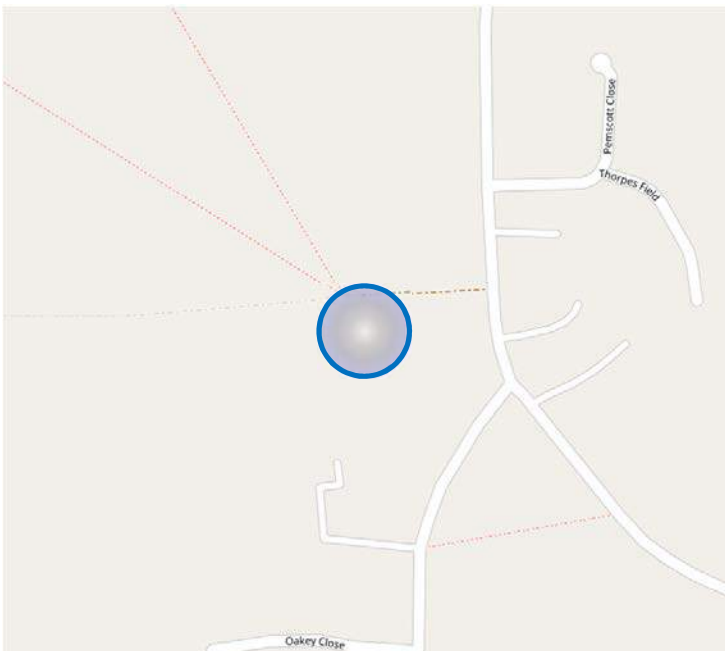
**APPENDIX A
PLANS, SECTION AND PHOTOGRAPHS**



Extract from 1:50,000 Ordnance Survey Explorer Map



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



Key:  Approximate site location



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

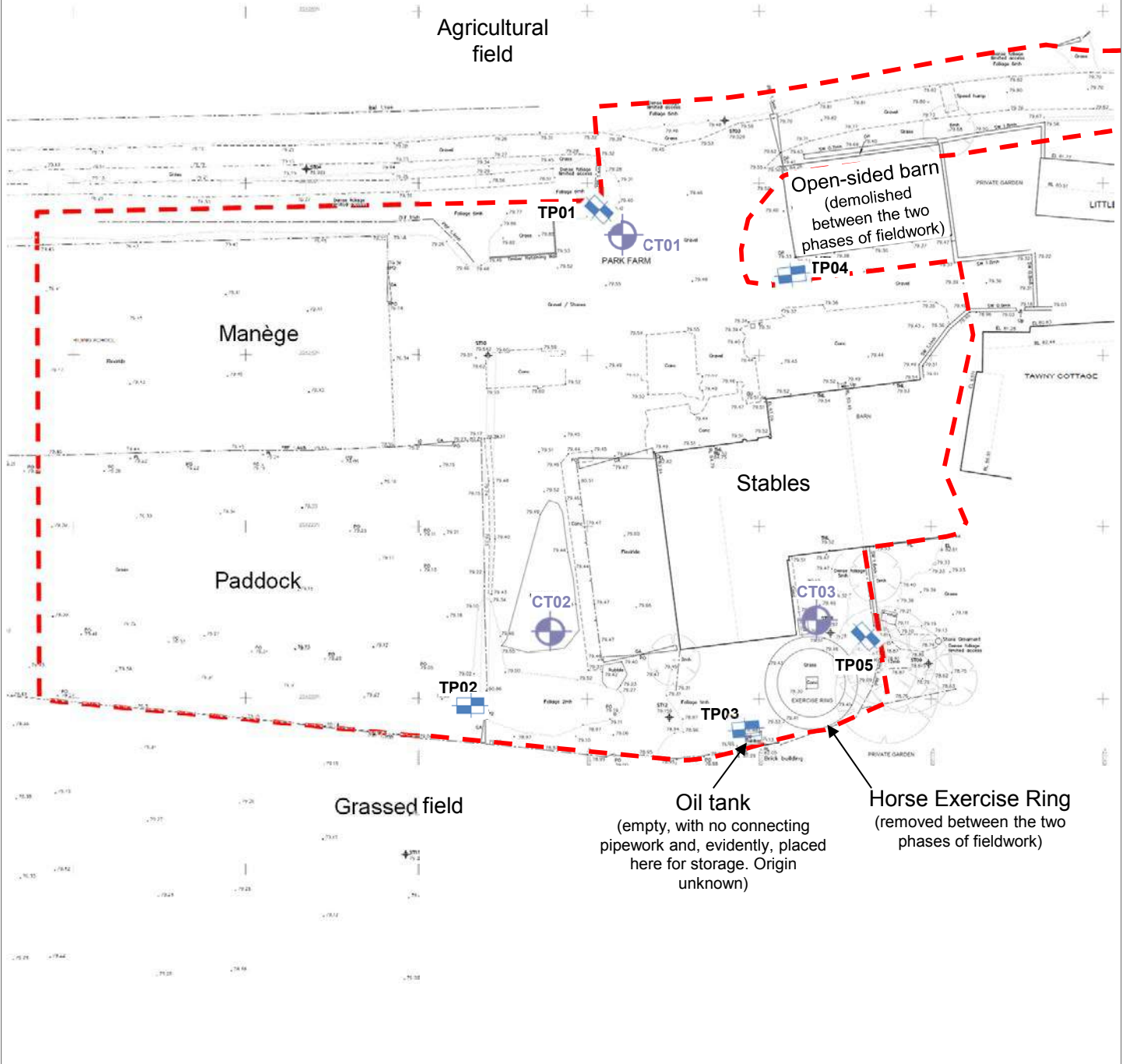
Title: Site Location Plan

Site: Park Farm, Alvescot, Oxfordshire OX18 2QA

Scale: NTS Job Number: 21.01.007 Drawn By: MX



Agricultural field



Open-sided barn
(demolished
between the two
phases of fieldwork)

Manège

Stables

Paddock

Grassed field

Oil tank
(empty, with no connecting
pipework and, evidently, placed
here for storage. Origin
unknown)



Horse Exercise Ring
(removed between the two
phases of fieldwork)



Extracts from Glanville's drawing, 8160487/4101, dated 26/05/2016

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

Key:

-  Mechanically-Excavated Trial Pit
-  Continuous Tube-Sampler Borehole


Approximate Site Boundary

Title: Exploratory Hole Location Plan – Existing Layout

Site: Park Farm, Alvescot, Oxfordshire OX18 2QA

Scale: NTS Job Number: 21.01.007 Drawn By: MX



Agricultural field

existing consent for conversion of barn to dwelling

track

TP01

CT01

barn 1

TP04

landscaped buffer strip

copse

barn 2

open space

CT02

CT03

cottages



TP02

TP03

TP05

landscaped buffer strip

Extracts from tsh architects' drawing, 2016028_P20D, dated April 2017

-  Mechanically-Excavated Trial Pit
-  Continuous Tube-Sampler Borehole

 Approximate Site Boundary



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

Title: Exploratory Hole Location Plan – Proposed Layout

Site: Park Farm, Alvescot, Oxfordshire OX18 2QA

Scale: NTS Job Number: 21.01.007 Drawn By: MX



View from The Green towards stables (centre) and open-sided barn (left)



View from The Green towards former exercise yard (centre, behind gates) and hay storage area (right) with residential properties beyond



View towards the south-western corner of the site, across paddock, with open fields beyond



View across manège



Surface-mounted oil storage tank. No evidence of leaks at base

Site Photographs
26/01/2021

Report:
21.01.007



Contents of open-sided barn



TP03: with groundwater at base



TP05: with groundwater beginning to seep in at the base



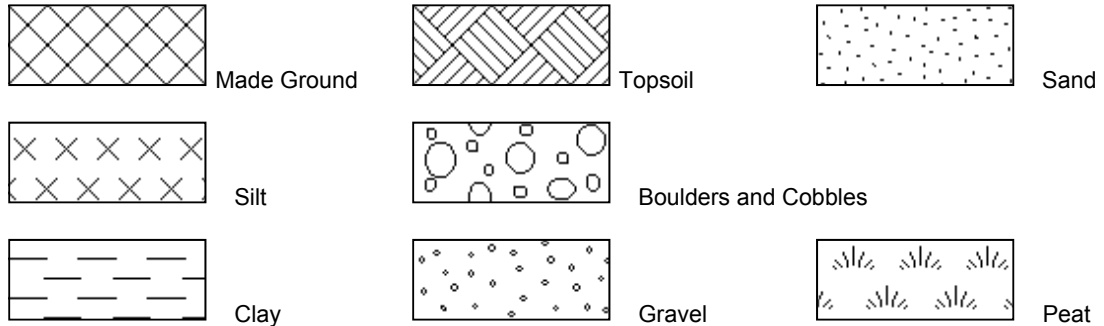
Site Photographs
08/02/2021

Report:
21.01.007

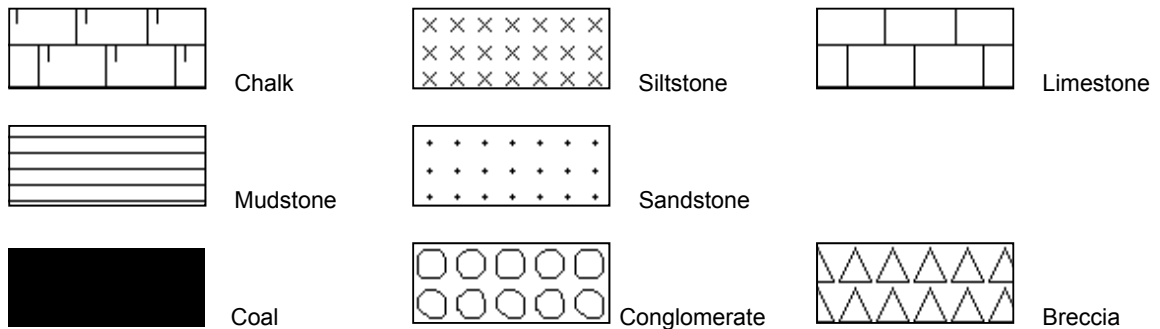


APPENDIX B FIELDWORK



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: Park Farm, Alvescot, Oxfordshire OX18 2QA

Co-ords:
Project Number:
21.01.007

Level:
Logged By:
Dates: 08/02/2021

 Matthew Clarke
to BS 5930:2015

Well	Ground water	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description	
		Depth (m)	Type	Result					
▽		0.10 - 0.50	D		0.50		MADE GROUND Limestone GRAVEL (roadstone) admixed with (c35%) brown, sandy CLAY. Low limestone cobble content.	1	
		0.50 - 1.00	D						
		1.00 - 1.50	D		1.00		SUPERFICIAL CLAY Firm, friable, dark brown, slightly sandy, silty CLAY. Faint organic odour.	1	
		1.00	PP	1.2kg/cm ²					
		1.00	SPT	N=8 (2/1,2,2,3)					
		1.25	PP	1.8kg/cm ²	1.50		SUPERFICIAL CLAY Firm, becoming stiff between 1.35m, brown and orange-brown, slightly sandy and gravelly, silty CLAY, with occasional pockets of sand and a low cobble content. Gravel (<5%) is of flint.	1	
		1.50 - 2.00	D						
		1.50	PP	1.8kg/cm ²	2.00 - 2.50		KELLAWAYS FORMATION Stiff, becoming firm below 2.0m, fissured, friable, light grey and orange-brown, slightly sandy, silty CLAY. Much fine selenite below 2.5m depth.	2	
		1.75	PP	2.8kg/cm ²					
		2.00	PP	3.0kg/cm ²					
		2.00	SPT	N=7 (2/1,2,2,2)	2.50 - 3.10		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	2	
		2.25	PP	2.0kg/cm ²					
		2.50 - 3.10	D		3.10		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	3	
		2.50	PP	2.2kg/cm ²					
		2.75	PP	1.0kg/cm ²					
		3.00	PP	2.0kg/cm ²	3.50 - 4.00		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	3	
		3.00	SPT	N=8 (2/2,2,2,2)					
		3.10 - 3.50	D		4.00 - 4.50		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	4	
		3.25	PP	3.0kg/cm ²					
		3.50	PP	1.8kg/cm ²					
	3.75	PP	2.5kg/cm ²	4.50 - 5.00		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	4		
	4.00 - 4.50	D							
	4.00	PP	3.2kg/cm ²						
	4.00	SPT	N=13 (2/3,2,4,4)	5.00 - 5.00		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	5		
	4.25	PP	3.5kg/cm ²						
	4.50 - 5.00	D		5.20		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	5		
	4.50	PP	3.5kg/cm ²						
	4.75	PP	4.0kg/cm ²						
	5.00	PP	>5.0kg/cm ²	5.00		KELLAWAYS FORMATION Stiff, becoming very stiff below 5.0m, fissured, dark grey, silty CLAY.	5		
	5.00	SPT	20 for 30mm (21/20 for 30mm)						
						Rock. (No recovery and no further penetration possible)			
						End of Borehole at 5.20m			

Diameter: 87mm to 57mm

Instrumentation: Backfilled with arisings

Groundwater: Strike at 3.00m. Slow inflow. Dry on completion.

Remarks:

 Hand-dug service avoidance pit to 1.2m depth - no services encountered.
No further penetration possible below 5.20m.


Continuous Tube Sampler Log

Borehole No.
CT 02
Project Location: Park Farm, Alvescot, Oxfordshire OX18 2QA


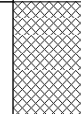




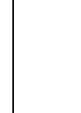

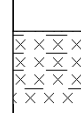

Co-ords:
Level:
Dates: 08/02/2021

Project Number:

21.01.007

Logged By:

 Matthew Clarke
 to BS 5930:2015

Well	Ground water	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description	
		Depth (m)	Type	Result					
		0.10 - 0.50	D		0.80		MADE GROUND Limestone GRAVEL and COBBLES (roadstone) admixed with (c25%) brown, sandy CLAY.	1	
		0.50 - 0.80	D						
		0.80 - 1.30	D		1.30		SUPERFICIAL CLAY Soft, friable, orange-brown, slightly sandy, silty CLAY.	1	
		1.00	PP	2.5kg/cm ²					
		1.00	SPT	N=6 (2/1,2,1,2)					
		1.25	PP	1.5kg/cm ²	2.00		SUPERFICIAL CLAY Firm, light grey and orange-brown, slightly sandy and gravelly, silty CLAY. Gravel (<5%) is of flint.	2	
		1.30 - 1.50	D						
		1.50	PP	1.0kg/cm ²					
		1.50 - 2.00	D		2.00		KELLAWAYS FORMATION Firm, fissured, light grey and orange-brown, slightly sandy, silty CLAY.	2	
		1.75	PP	1.2kg/cm ²					
		2.00 - 2.50	D						
		2.00	PP	1.5kg/cm ²	3.70		KELLAWAYS FORMATION Firm, fissured, light grey and orange-brown, slightly sandy, silty CLAY.	3	
		2.00	SPT	N=12 (3/2,3,3,4)					
		2.25	PP	2.0kg/cm ²					
		2.50 - 3.00	D		4.20		KELLAWAYS FORMATION Soft, dark grey-brown, slightly gravelly, silty CLAY. Gravel is of limestone.	4	
		2.50	PP	2.0kg/cm ²					
		2.75	PP	1.8kg/cm ²					
		3.00 - 3.70	D		4.60		KELLAWAYS FORMATION Soft, dark grey-brown, slightly gravelly, silty CLAY. Gravel is of limestone.	4	
		3.00	PP	1.8kg/cm ²					
		3.00	SPT	N=6 (2/2,1,2,1)					
	3.25	PP	1.2kg/cm ²	4.60		CORNBASH FORMATION Very stiff, dark grey, calcareous clayey SILT.	5		
	3.50	PP	1.5kg/cm ²						
	3.70 - 4.20	D							
	3.75	PP	0.5kg/cm ²	4.60		CORNBASH FORMATION Very stiff, dark grey, calcareous clayey SILT.	5		
	4.00	PP	0.5kg/cm ²						
	4.00	SPT	N=18 (2/1,4,5,8)						
	4.20 - 4.60	D		4.60		Rock. (No recovery and no further penetration possible) End of Borehole at 4.60m	5		

Diameter: 87mm to 57mm
Instrumentation: Backfilled with arisings
Groundwater: Strike at 1.50m. Standing at 0.95m on completion.

Remarks:
 Hand-dug service avoidance pit to 1.2m depth - no services encountered.
 No further penetration possible below 4.60m.



Continuous Tube Sampler Log

Borehole No.
CT 03
Project Location: Park Farm, Alvescot, Oxfordshire OX18 2QA

Co-ords:
Project Number:

21.01.007

Level:
Logged By:

Matthew Clarke

Dates: 08/02/2021

to BS 5930:2015

Well	Ground water	Sample and In Situ Testing			Depth (m)	Level (mOD)	Legend	Stratum Description	
		Depth (m)	Type	Result					
Well		0.15 - 0.50	D		0.15		MADE GROUND Limestone GRAVEL (roadstone) admixed with (c15%) dark brown, clayey sand.		
		0.50 - 1.00	D		0.50		MADE GROUND Limestone GRAVEL and COBBLES (roadstone) admixed with (c30%) stiff, dark brown, sandy clay. SUPERFICIAL CLAY Firm, friable, orange-brown, slightly sandy, silty CLAY. Faint organic odour.		
		1.00 - 1.40	D		1.40		SUPERFICIAL GRAVEL Medium dense, brown, very clayey, sandy GRAVEL. Gravel is fine to medium, of sub-angular flint, sandstone and quartzite. KELLAWAYS FORMATION Stiff, fissured, friable, light grey and orange-brown, silty CLAY.	1	
		1.00	PP	1.2kg/cm ²					
		1.00	SPT	N=11 (3/2,2,3,4)					
		1.25	PP	2.0kg/cm ²					
		1.40 - 1.55	D		1.55		KELLAWAYS FORMATION Stiff, fissured, friable, light grey and orange-brown, silty CLAY.	2	
		1.55 - 2.00	D						
		1.75	PP	2.0kg/cm ²					
		2.00 - 2.50	D		3.10		KELLAWAYS FORMATION Stiff, fissured, dark grey, silty CLAY. Rare fine fossil shell debris.	3	
		2.00	PP	2.0kg/cm ²					
		2.00	SPT	N=12 (3/2,3,3,4)					
		2.25	PP	2.5kg/cm ²					
		2.50 - 3.10	D		4.30		CORNBRASH FORMATION Very stiff, dark grey, calcareous clayey SILT. Rock. (No recovery and no further penetration possible)	4	
		2.50	PP	2.0kg/cm ²					
		2.75	PP	2.2kg/cm ²					
		3.00	PP	2.8kg/cm ²					
		3.00	SPT	N=13 (4/3,3,3,4)					
		3.10 - 3.50	D		4.50		End of Borehole at 4.50m	5	
		3.25	PP	3.5kg/cm ²					
	3.50 - 4.00	D							
	3.50	PP	3.5kg/cm ²						
	3.75	PP	3.0kg/cm ²						
	4.00 - 4.30	D		4.50		End of Borehole at 4.50m			
	4.00	PP	3.5kg/cm ²						
	4.00	SPT	N=76 (6/6,9,18,43)						
	4.25	PP	4.0kg/cm ²						
	4.30 - 4.50	D							

Diameter: 87mm to 57mm

Instrumentation: Backfilled with arisings

Groundwater: Not encountered.

Remarks:

Hand-dug service avoidance pit to 1.2m depth - no services encountered.

No further penetration possible below 4.50m.



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	S	1	2	2	3	8	10	Sup_CL
	2.00	S	1	2	2	2	7	9	KLB
	3.00	S	2	2	2	2	8	10	
	4.00	S	3	2	4	4	13	16	
	5.00	S	20/30mm	0/0mm	0/0mm	0/0mm	200*	250	Cb
CT 02	1.00	S	1	2	1	2	6	8	Sup_CL
	2.00	S	2	3	3	4	12	15	KLB
	3.00	S	2	1	2	1	6	8	
	4.00	S	1	4	5	8	18	23	
CT 03	1.00	S	2	2	3	4	11	14	Sup_CL/GR
	2.00	S	2	3	3	4	12	15	KLB
	3.00	S	3	3	3	4	13	16	
CT 03	4.00	S	6	9	18	43	76	95	KLB/Cb

Key: Sup_CL = SUPERFICIAL CLAY

Cb = CORNBASH

Sup_CL/GR = SUPERFICIAL CLAY INTO GRAVEL

KLB = KELLAWAYS FORMATION

KLB/Cb = KELLAWAYS INTO CORNBASH

* = N-value extrapolated in accordance with CIRIA R143.

Other corrections in accordance with BS EN ISO 22476-3, 2005, National Annex A; using Energy Ratio (75%) from current equipment calibration

STANDARD PENETRATION TEST SUMMARY

Report:

21.01.007

Sheet 1 of 1

Trial Pit Log

Trial Pit No.
TP 01

Project Location: Park Farm, Alvescot, Oxfordshire OX18 2QA

Co-ords:

Level:

Dates: 26/01/2021

Project Number:
21.01.007

Logged By:
Matthew Clarke
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	(kPa)					
▽	0.10	D		0.35			MADE GROUND Limestone GRAVEL (roadstone) admixed with (c35%) brown, slightly organic, sandy CLAY (TOPSOIL). Low limestone cobble content.	1
	0.50	D					SUPERFICIAL CLAY Firm, closely fissured, orange-brown, slightly sandy, silty CLAY.	
	1.00	D		1.05			End of Trial Pit at 1.05m	

Method: Tracked Mechanical Excavator
Dimensions: 1.00mW x 1.50mL x 1.05mDeep
Stability: Stable
Groundwater: Strike at 0.95m. Moderate inflow.

Remarks: Backfilled with arisings on completion.



Trial Pit Log

Trial Pit No.

TP 02

Project Location: Park Farm, Alvescot, Oxfordshire OX18 2QA

Co-ords:




Project Number:
21.01.007

Level:

Logged By:

Dates: 26/01/2021

Matthew Clarke
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	(kPa)					
▽	0.10	D		0.25			TOPSOIL Dark brown, sandy, organic silty CLAY.	
	0.50	D					0.90	
	1.00	D		1.75		KELLAWAYS FORMATION Firm, fissured, friable, light grey and orange-brown, slightly sandy, silty CLAY.		
	1.30	HV	53			End of Trial Pit at 1.75m		
	1.50	D						

Method: Tracked Mechanical Excavator
Dimensions: 0.65mW x 1.20mL x 0.45mDeep
Stability: Stable
Groundwater: Strike at 0.80m. Moderate to fast inflow.
Remarks: Backfilled with arisings on completion.



Trial Pit Log

Trial Pit No.
TP 03

Project Location: Park Farm, Alvescot, Oxfordshire OX18 2QA

Co-ords:

Project Number:
21.01.007

Level:

Logged By:

Dates: 26/01/2021

Matthew Clarke
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth (m)	Type	(kPa)				
▽	0.10	D		0.25			MADE GROUND Limestone GRAVEL (roadstone) admixed with (c30%) brown, slightly organic, sandy CLAY (TOPSOIL). Low limestone cobble content.
							SUPERFICIAL CLAY Soft, friable, orange-brown, slightly sandy, silty CLAY.
	0.50	D		0.80			KELLAWAYS FORMATION Firm, fissured, friable, light grey and orange-brown, slightly sandy, silty CLAY.
	0.95	HV	48			1.05	

Method: Tracked Mechanical Excavator
Dimensions: 1.00mW x 1.50mL x 1.05mDeep
Stability: Stable
Groundwater: Strike at 1.00m. Slow inflow.

Remarks: Backfilled with arisings on completion.



Trial Pit Log

Trial Pit No.
TP 04

Project Location: Park Farm, Alvescot, Oxfordshire OX18 2QA

Co-ords:

Level:

Dates: 26/01/2021

Project Number:
21.01.007

Logged By:
Matthew Clarke
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	(kPa)					
▽	0.10	D					MADE GROUND Limestone COBBLES and GRAVEL admixed with (c25%) brown, slightly organic, sandy CLAY (TOPSOIL).	
	0.50	D		0.40			SUPERFICIAL CLAY Soft, friable, grey, slightly sandy, silty CLAY.	
	1.00	D		0.65			KELLAWAYS FORMATION Firm, friable, orange-brown, slightly sandy, silty CLAY.	1
	1.10	HV	60					
				1.35			End of Trial Pit at 1.35m	2

Method: Tracked Mechanical Excavator
Dimensions: 1.00mW x 1.60mL x 1.35mDeep
Stability: Stable
Groundwater: Strike at 0.65m. Moderate to fast inflow.

Remarks: Pea-gravel surround (200mm thick) to unknown buried service at 0.50m (on Barn side of pit). Backfilled with arisings on completion.



Trial Pit Log

Trial Pit No.
TP 05

Project Location: Park Farm, Alvescot, Oxfordshire OX18 2QA

Co-ords:

Level:

Dates: 26/01/2021

Project Number:
21.01.007

Logged By:
Matthew Clarke
to BS 5930:2015

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth (m)	Type	(kPa)					
	0.10	D		0.45			MADE GROUND Firm, brown and light grey-brown, sandy and gravelly, silty CLAY. Low limestone and brick cobble content. A few small pieces of blue, plastic, water pipe.	
	0.50	D					KELLAWAYS FORMATION Firm, friable, orange-brown, slightly sandy, silty CLAY.	
▽	1.00	D					End of Trial Pit at 1.35m	1
				1.35				2

Method: Tracked Mechanical Excavator
Dimensions: 1.00mW x 1.60mL x 1.35mDeep
Stability: Stable
Groundwater: Strike at 1.00m. Slow to moderate inflow.

Remarks: Backfilled with arisings on completion.





APPENDIX C LABORATORY TEST REPORTS

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barrn, Blakesley Road, Slapton, Tewchester, Northants. NN12 8QD

Telephone: 01327 860947/860060

Fax: 01327 860430

Email: groundtech@listservegeotechnics.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/m ³	Test Type	Cell Pressure kN/m ²	Deviator Stress kN/m ²	Apparent Cohesion kN/m ²	φ	pH Value	Soluble Sulphate Content SO4 g/l				
CT 01	D	0.10	PI/63	15	38	22	16	84	13	CI	65	0.84	24	0.63										6.5	0.21			
	D	0.50	PI/63	32	38	22	16	84	13	CI	65	0.84	24	0.63										6.5	0.21			
	D	1.00	PI/63	26	38	22	16	84	13	CI	65	0.84	24	0.63										6.5	0.21			
	D	1.50	PI/63	16	46	21	25	95	24	CI	86	0.35	23	-0.20														
	D	2.00	PI/63	23	46	21	25	95	24	CI	86	0.35	23	-0.20														
	D	2.50	PI/63	28	46	21	25	95	24	CI	86	0.35	23	-0.20														
	D	3.10	PI/63	27	46	21	25	95	24	CI	86	0.35	23	-0.20														
	D	3.50	PI/63	24	46	21	25	95	24	CI	86	0.35	23	-0.20														
	D	4.00	PI/63	25	46	21	25	95	24	CI	86	0.35	23	-0.20														
	D	4.50	PI/63	18	46	21	25	95	24	CI	86	0.35	23	-0.20														
CT 02	D	0.10	PI/63	18	40	21	19	95	18	CI	81	0.70	23	0.37														
	D	0.50	PI/63	27	40	21	19	95	18	CI	81	0.70	23	0.37														
	D	0.80	PI/63	24	40	21	19	95	18	CI	81	0.70	23	0.37														
	D	1.30	PI/63	28	40	21	19	95	18	CI	81	0.70	23	0.37														
	D	1.50	PI/63	20	40	21	19	95	18	CI	81	0.70	23	0.37														
	D	2.00	PI/63	18	40	21	19	95	18	CI	81	0.70	23	0.37														
	D	2.50	PI/63	18	36	17	19	99	19	CI	78	0.50	19	0.05														
	D	3.00	PI/63	23	36	17	19	99	19	CI	78	0.50	19	0.05														
	D	3.70	PI/63	27	32	21	11	98	11	CL	68	0.84	23	0.55														
	D	4.20	PI/63	14	32	21	11	98	11	CL	68	0.84	23	0.55														
CT 03	D	0.15	PI/63	32	32	21	11	98	11	CL	68	0.84	23	0.55														
	D	0.50	PI/63	30	32	21	11	98	11	CL	68	0.84	23	0.55														
	D	1.00	PI/63	25	32	21	11	98	11	CL	68	0.84	23	0.55														
Symbols:				U	Undisturbed Sample				R	Remoulded				P1	Plasticity Index				T	Triaxial Undrained				L	100mm specimen			
				D	Disturbed Sample				63	Passing 63µm Hydrometer				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 21.01.007				

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barrn, Blakesley Road, Slapton, Tovechester, Northants. NN12 8QD

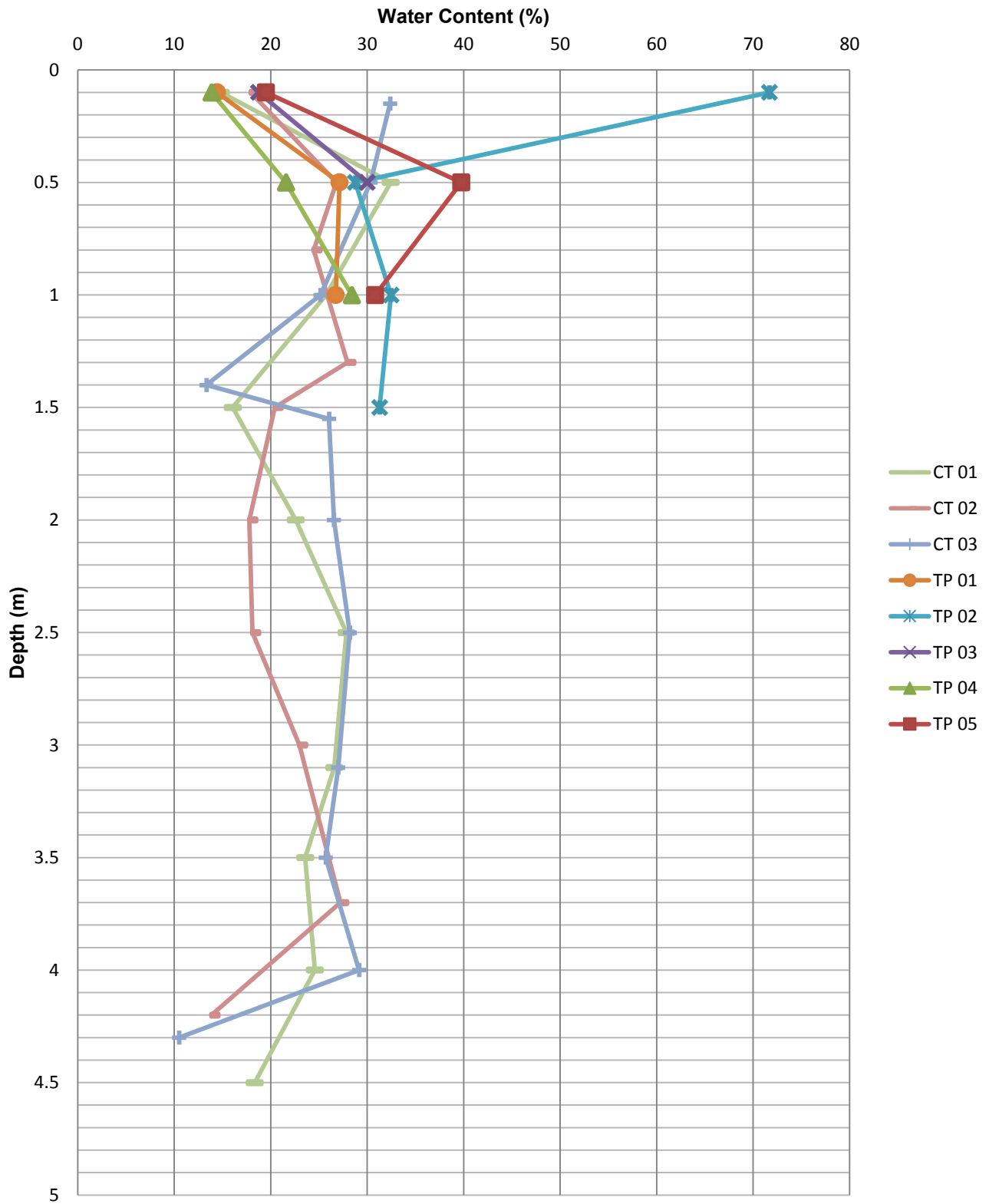
Telephone: 01327 860947/860060

Fax: 01327 860430

Email: groundtech@listersgeotechnics.co.uk

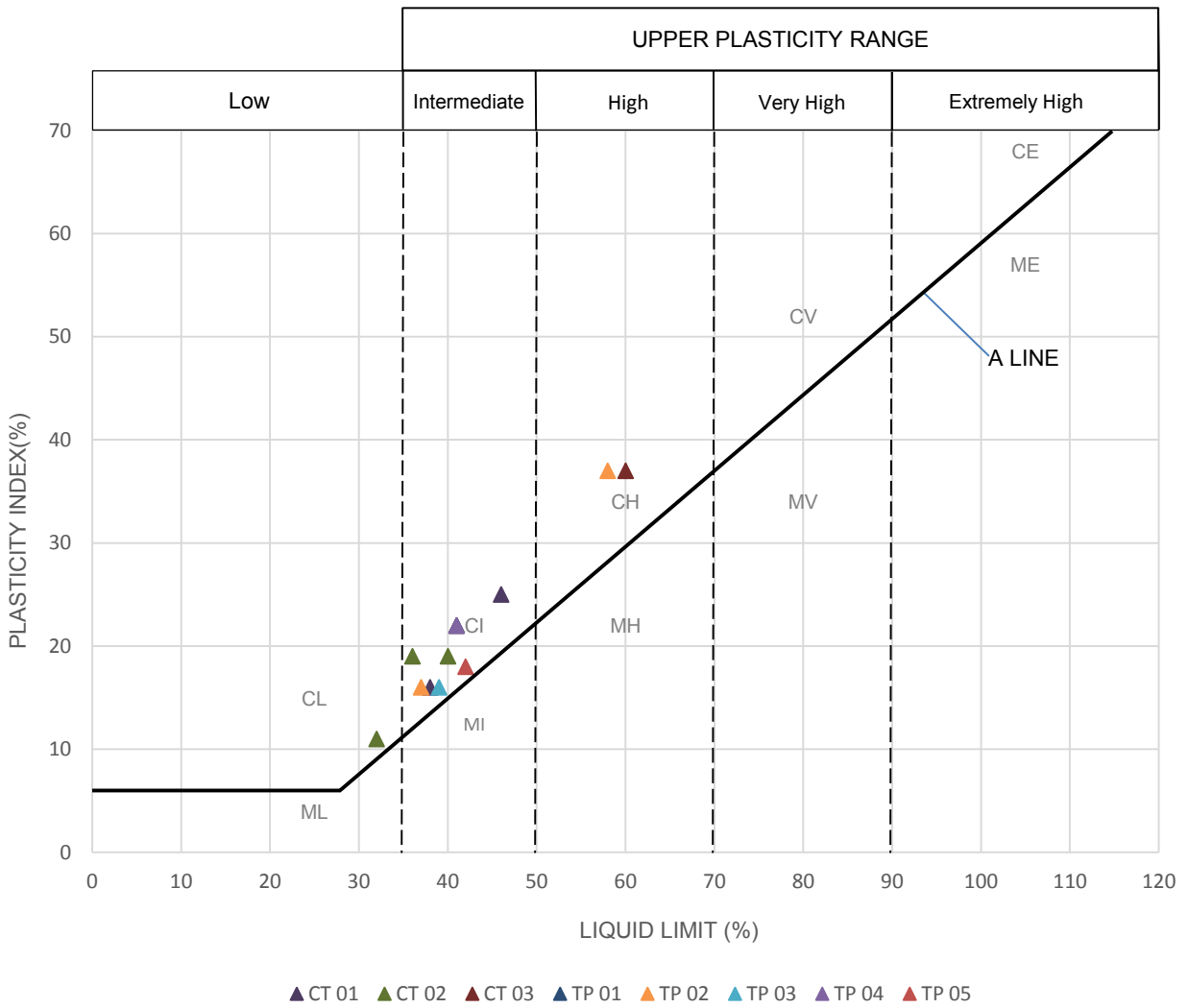
**Quality Assured
to ISO 9001**

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	1.40	PI/63	13	60	23	37	99	37	CH	98	0.43	25	0.08												
	D	1.55	PI/63	26																				5.4	1.27	
	D	2.00	PI/63	27																						
	D	2.50	PI/63	28																						
	D	3.10	PI/63	27																						
TP 01	D	3.50	PI/63	26																						
	D	4.00	PI/63	29	41	19	22	99	22	CI	96	0.71	21	0.45												
	D	4.30	PI/63	11																						
	D	0.10	PI/63	14																						
	D	0.50	PI/63	27																						
TP 02	D	1.00	PI/63	27	41	19	22	85	19	CI	70	0.66	21	0.36												
	D	0.10	PI/63	72																						
	D	0.50	PI/63	29	37	21	16	88	14	CI	67	0.78	23	0.50												
	D	1.00	PI/63	32																						
	D	1.50	PI/63	31	58	21	37	98	36	CH	94	0.53	23	0.27												
TP 03	D	0.10	PI/63	19																						
	D	0.50	PI/63	30	39	23	16	91	15	CI	71	0.77	25	0.44												
	D	0.10	PI/63	14																						
	D	0.50	PI/63	22																						
	D	1.00	PI/63	28	41	19	22	85	19	CI	69	0.68	21	0.41												
TP 04	D	0.10	PI/63	19																						
	D	0.50	PI/63	40																						
	D	1.00	PI/63	28																						
	D	0.10	PI/63	19																						
	D	0.50	PI/63	40																						
TP 05	D	1.00	PI/63	31	42	24	18	90	16	CI	74	0.74	26	0.39												
	D	0.50	PI/63	31																						
	D	0.10	PI/63	40																						
	D	0.50	PI/63	40																						
	D	1.00	PI/63	31																						
Symbols:			U Undisturbed Sample	R Remoulded	PI Plasticity Index	T Triaxial Undrained	L 100mm specimen																			
	D Disturbed Sample	63 Passing 63µm Hydrometer	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 21.01.007														



WATER CONTENT v DEPTH

Report:
21.01.007



PLASTICITY CHART

**Report:
21.01.007**



Final Report

Report No.: 21-02639-1

Initial Date of Issue: 03-Feb-2021

Client Listers Geotechnical Consultants

Client Address: Slapton Hill Barn, Blakesley Road
Slapton
Towcester
Northamptonshire
NN12 8QD

Contact(s): Matthew Clarke

Project 20.07.007 Park Farm, Alvescot,
Oxfordshire OX18 2QA

Quotation No.: Q18-12046 **Date Received:** 29-Jan-2021

Order No.: 20.07.007/10 **Date Instructed:** 29-Jan-2021

No. of Samples: 4

Turnaround (Wkdays): 5 **Results Due:** 04-Feb-2021

Date Approved: 03-Feb-2021

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: 20.07.007 Park Farm, Alvescot, Oxfordshire OX18 2QA

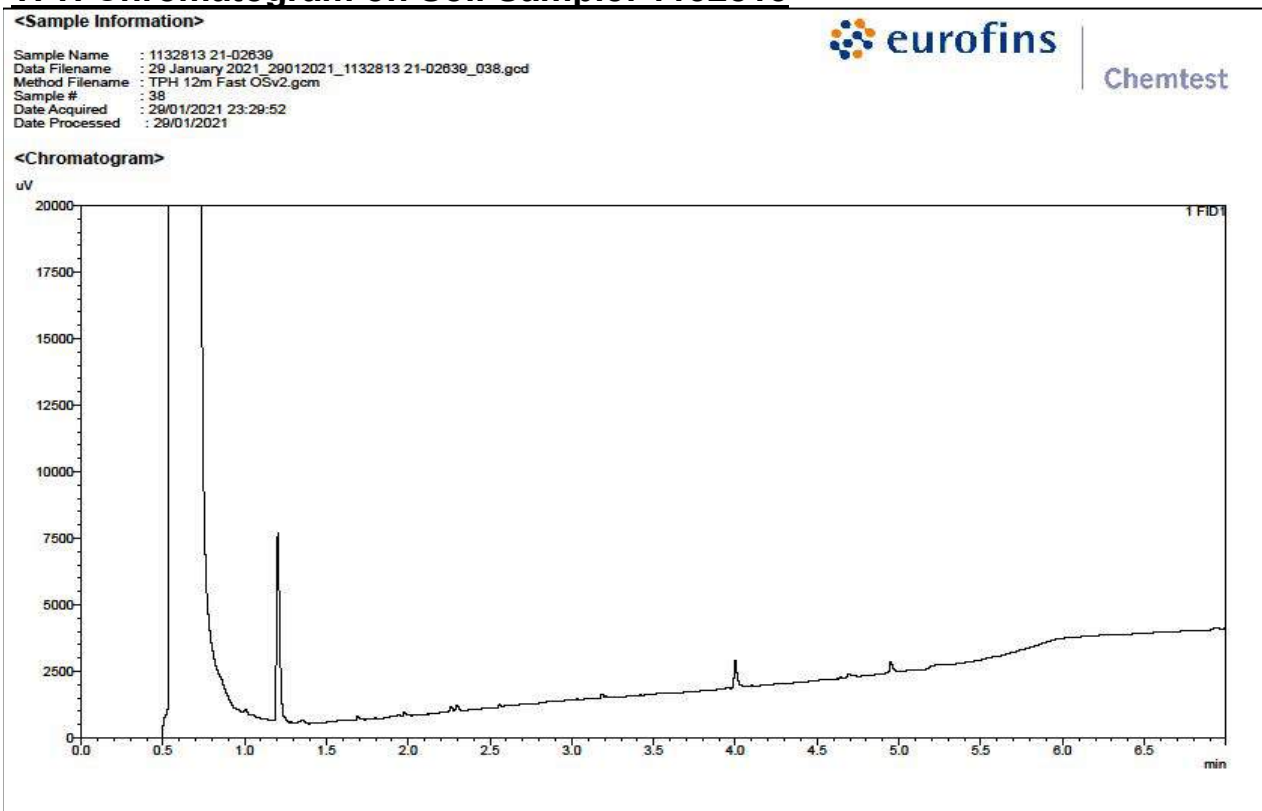
Client: Listers Geotechnical Consultants		Chemtest Job No.:		21-02639	21-02639	21-02639	21-02639
Quotation No.: Q18-12046		Chemtest Sample ID.:	1132813	1132814	1132815	1132816	
		Sample Location:	TP02	TP03	TP04	TP05	
		Sample Type:	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):	0.10	0.50	0.40	0.10	
		Date Sampled:	26-Jan-2021	26-Jan-2021	26-Jan-2021	26-Jan-2021	
		Asbestos Lab:			COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
ACM Type	U	2192		N/A			
Asbestos Identification	U	2192		N/A		No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A			
Moisture	N	2030	%	0.020	46	24	17
Chromatogram (TPH)	N			N/A	See Attached	See Attached	See Attached
pH	U	2010		4.0	7.5	8.1	8.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.030	< 0.010	< 0.010
Arsenic	U	2450	mg/kg	1.0	14	16	13
Cadmium	U	2450	mg/kg	0.10	0.24	0.25	0.11
Chromium	U	2450	mg/kg	1.0	24	30	21
Copper	U	2450	mg/kg	0.50	13	13	15
Mercury	U	2450	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	25	33	28
Lead	U	2450	mg/kg	0.50	26	18	11
Selenium	U	2450	mg/kg	0.20	0.57	0.59	< 0.20
Zinc	U	2450	mg/kg	0.50	75	66	47
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	5.4	1.1	0.31
Aliphatic TPH >C5-C6	N	2680	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Aliphatic TPH >C6-C8	N	2680	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Aliphatic TPH >C8-C10	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C5-C7	N	2680	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Aromatic TPH >C7-C8	N	2680	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Aromatic TPH >C8-C10	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	2680	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

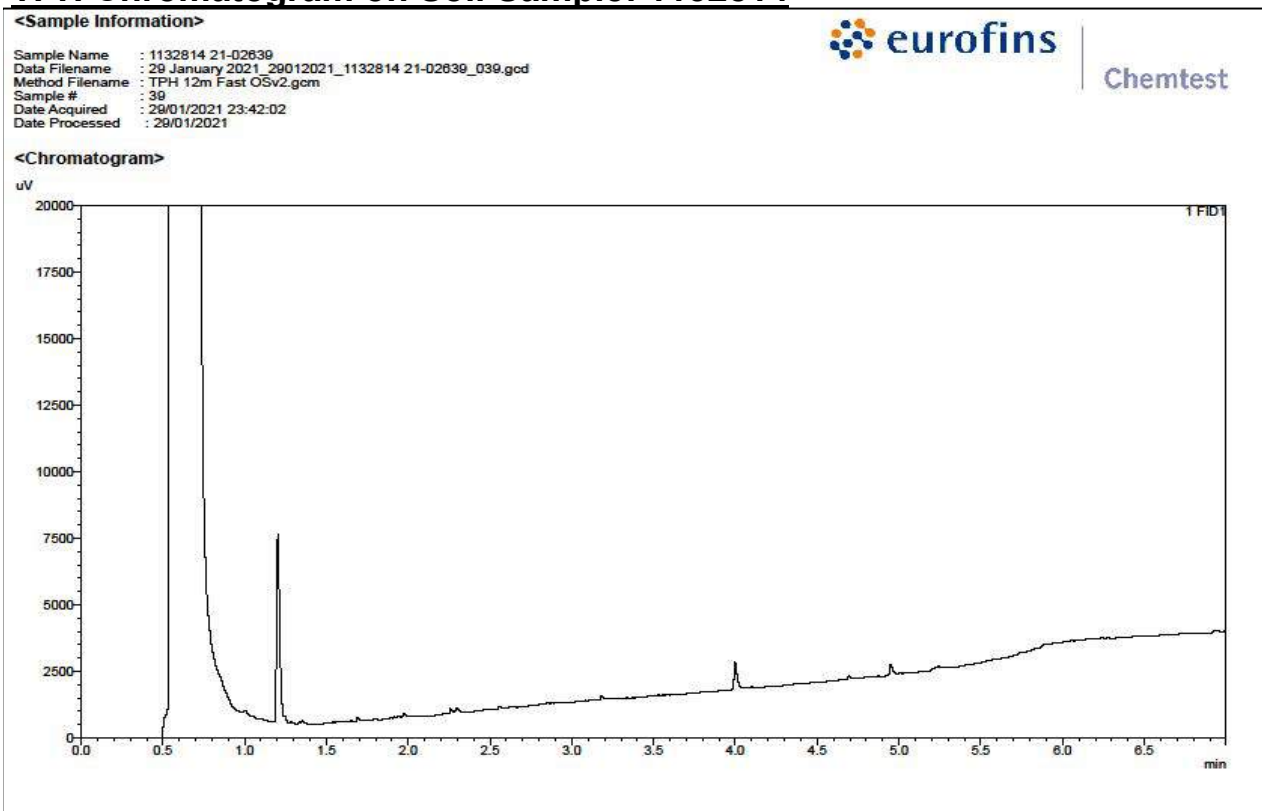
Project: 20.07.007 Park Farm, Alvescot, Oxfordshire OX18 2QA

Client: Listers Geotechnical Consultants		Chemtest Job No.:		21-02639	21-02639	21-02639	21-02639
Quotation No.: Q18-12046		Chemtest Sample ID.:		1132813	1132814	1132815	1132816
	Sample Location:	TP02		TP03	TP04	TP05	
	Sample Type:	SOIL		SOIL	SOIL	SOIL	
	Top Depth (m):	0.10		0.50	0.40	0.10	
	Date Sampled:	26-Jan-2021		26-Jan-2021	26-Jan-2021	26-Jan-2021	
	Asbestos Lab:				COVENTRY	COVENTRY	
Determinand	Accred.	SOP	Units	LOD			
Total Petroleum Hydrocarbons	N	2680	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	0.18	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	0.31	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	0.27	< 0.10	< 0.10
Benz[a]anthracene	U	2800	mg/kg	0.10	0.17	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	0.18	< 0.10	< 0.10
Benzofluoranthene	U	2800	mg/kg	0.10	0.20	< 0.10	< 0.10
Benzokfluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benz[a]pyrene	U	2800	mg/kg	0.10	0.16	< 0.10	< 0.10
Indeno[1,2,3-c,d]Pyrene	U	2800	mg/kg	0.10	0.15	< 0.10	< 0.10
Dibenz[a,h]Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzofluoranthene	U	2800	mg/kg	0.10	0.13	< 0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0

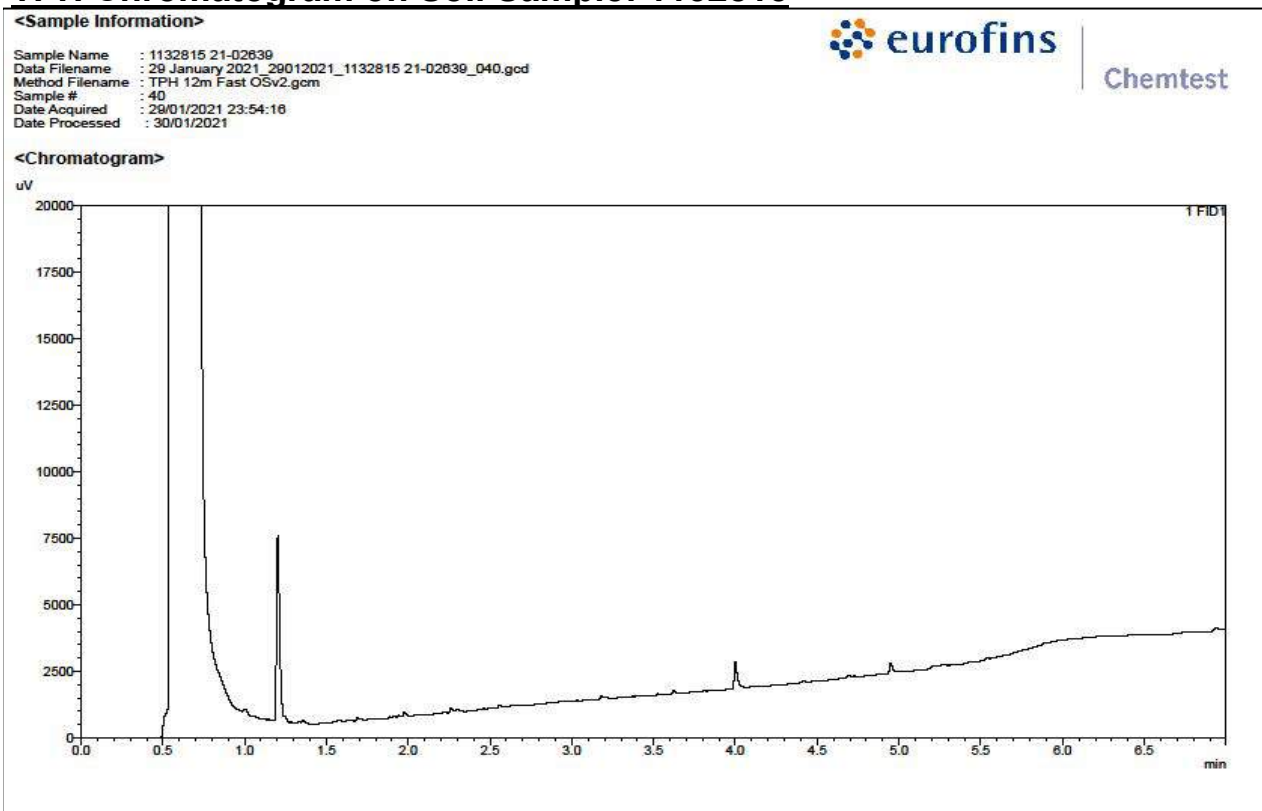
TPH Chromatogram on Soil Sample: 1132813



TPH Chromatogram on Soil Sample: 1132814



TPH Chromatogram on Soil Sample: 1132815



Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2680	TPH A/A Split	Aliphatics: >C5-C6, >C6-C8,>C8-C10, >C10-C12, >C12-C16, >C16-C21, >C21-C35, >C35- C44Aromatics: >C5-C7, >C7-C8, >C8- C10, >C10-C12, >C12-C16, >C16- C21, >C21- C35, >C35- C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operation procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com



APPENDIX D
PRELIMINARY PILE DESIGN DATA

The working load of a single pile is the sum of the ultimate shaft resistance and the ultimate end bearing resistance, each divided by an appropriate factor of safety. The following unit ultimate values of shaft resistance and end bearing resistance are proposed for preliminary pile design:

<u>Ultimate Skin Friction</u>	<u>kN</u>
Made Ground From G.L to, say, 0.8m bgl (maximum depth recorded)	Ignore
Superficial Clay 0.8m to, say, 1.4m bgl (variable)	20 x As
Superficial Gravel 1.4m to, say, 1.6m bgl (only locally present)	10 x As
Kellaways Beds 1.6m to, say, 4.5m bgl (variable)	30 x As
Cornbrash below, say, 4.5m bgl (variable)	75 x As
 <u>Ultimate End Bearing</u>	 <u>kN</u>
Cornbrash at, say, 4.5m bgl (variable)	150 x Ab

Notes:

As = area of the pile shaft (m²); Ab = area of pile base (m²)

Design GWL = 1.50m bgl

Fine soils: design guidance from LDSA (2009) wherein:

‘Adhesion’ factor, α , of 0.5 and Bearing Capacity Factor, N_c , of 9.0 have been used

Coarse soils: beta-method, on the basis of SPT N60-values and effective overburden pressure.

Assumes the use of CFA bored piles to minimise loosening as a result of pile installation

Rock: conservative estimate of rock socket value

PRELIMINARY PILE DESIGN DATA

**Report No:
21.01.007**

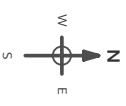


APPENDIX E DESK STUDY DATA

Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: County Series
Map date: 1878-1881
Scale: 1:2,500
Printed at: 1:2,500



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

Surveyed 1878
 Revised 1878
 Edition N/A
 Copyright N/A
 Levelled N/A

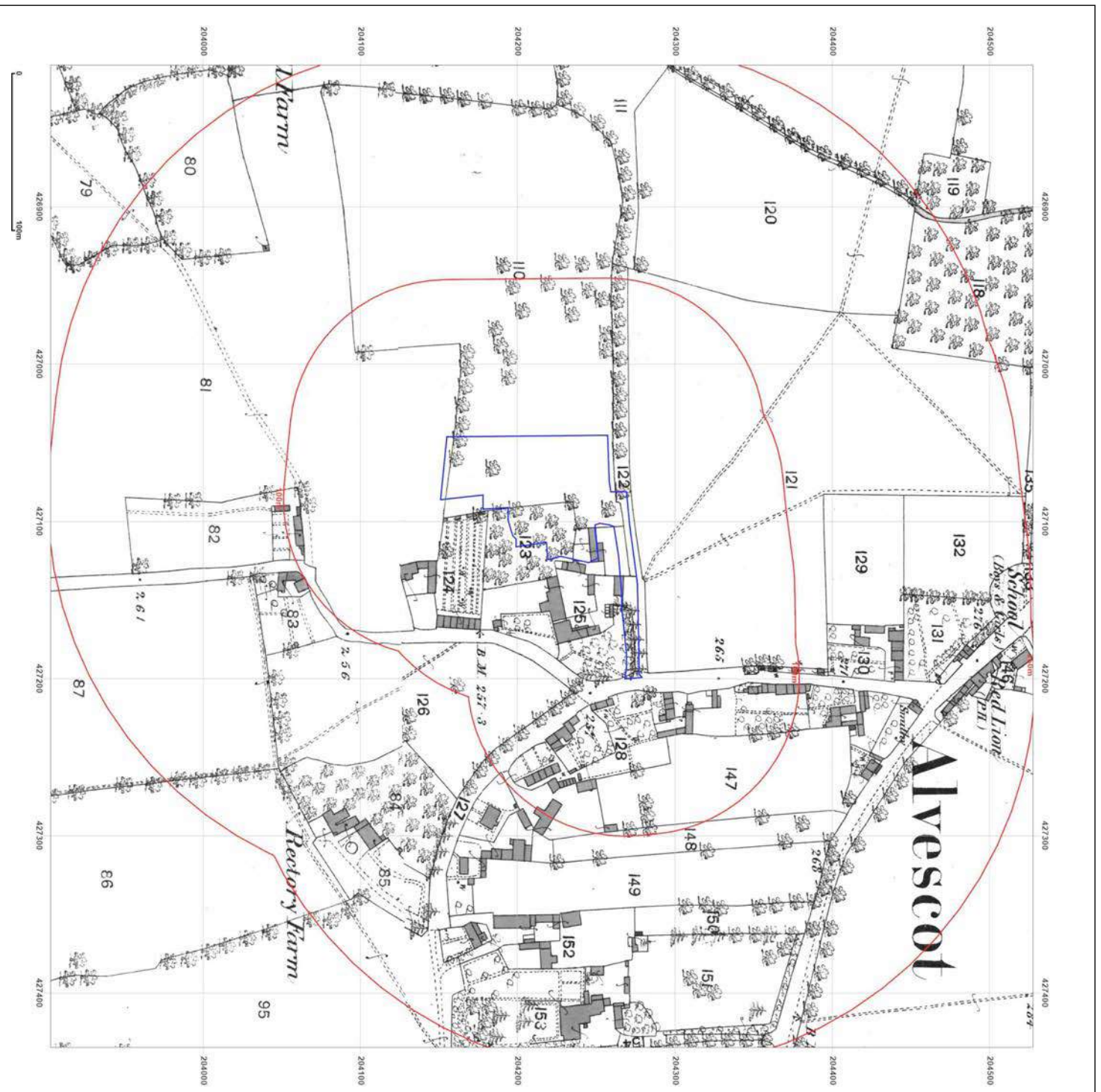


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

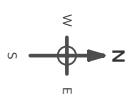
Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:
 Park Farm, Alvestock
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: County Series
Map date: 1899
Scale: 1:2,500
Printed at: 1:2,500



<p>Survewed 1899 Revised 1899 Edition N/A Copyright N/A Levelled N/A</p>	<p>Survewed 1899 Revised 1899 Edition N/A Copyright N/A Levelled N/A</p>
--	--

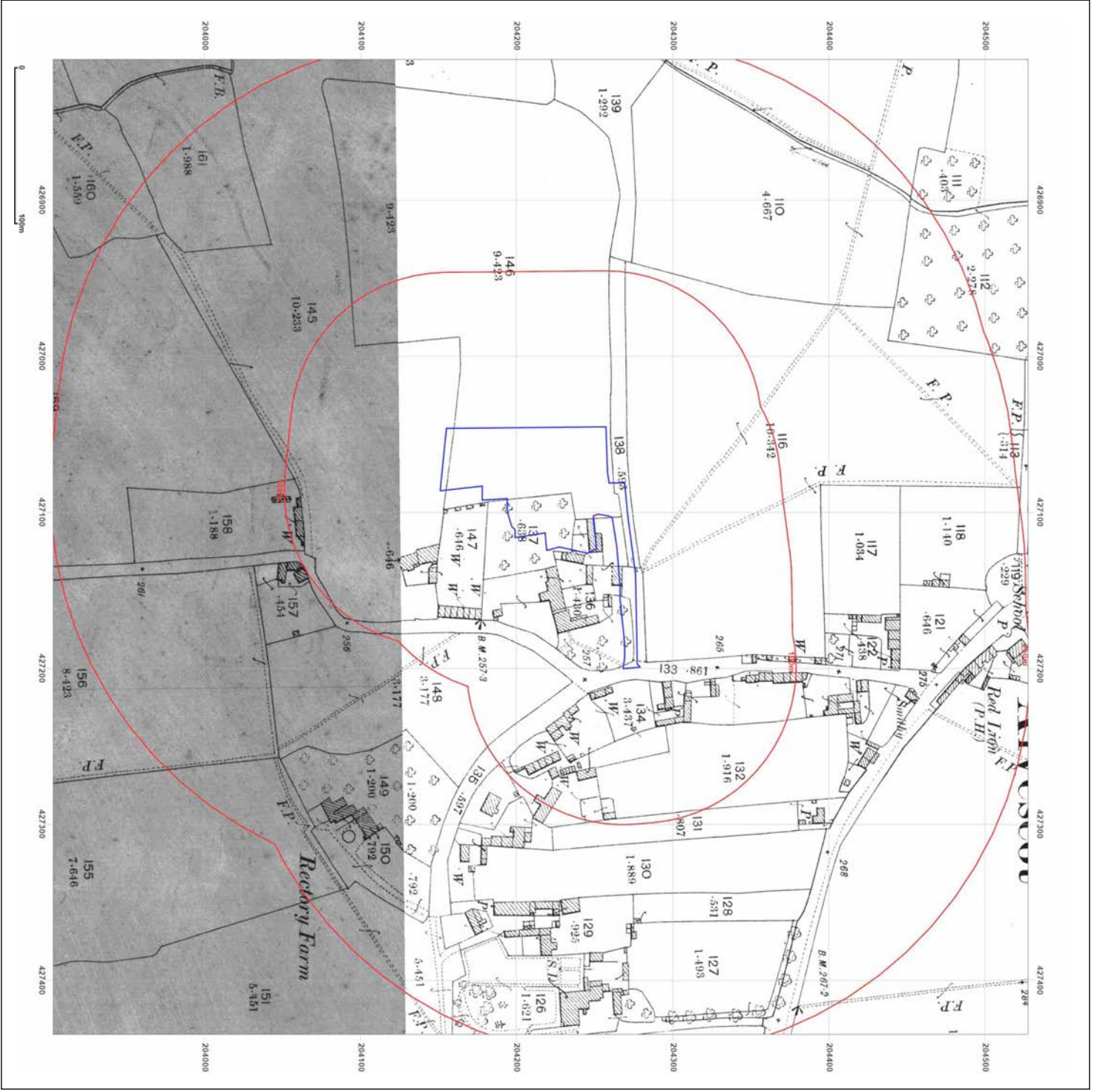
Powered by 

Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

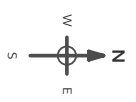
Map legend available at: www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: County Series
Map date: 1921
Scale: 1:2,500
Printed at: 1:2,500



<p>Survived 1921 Revised 1921 Edition N/A Copyright N/A Levelled N/A</p>	<p>Survived 1921 Revised 1921 Edition N/A Copyright N/A Levelled N/A</p>
--	--

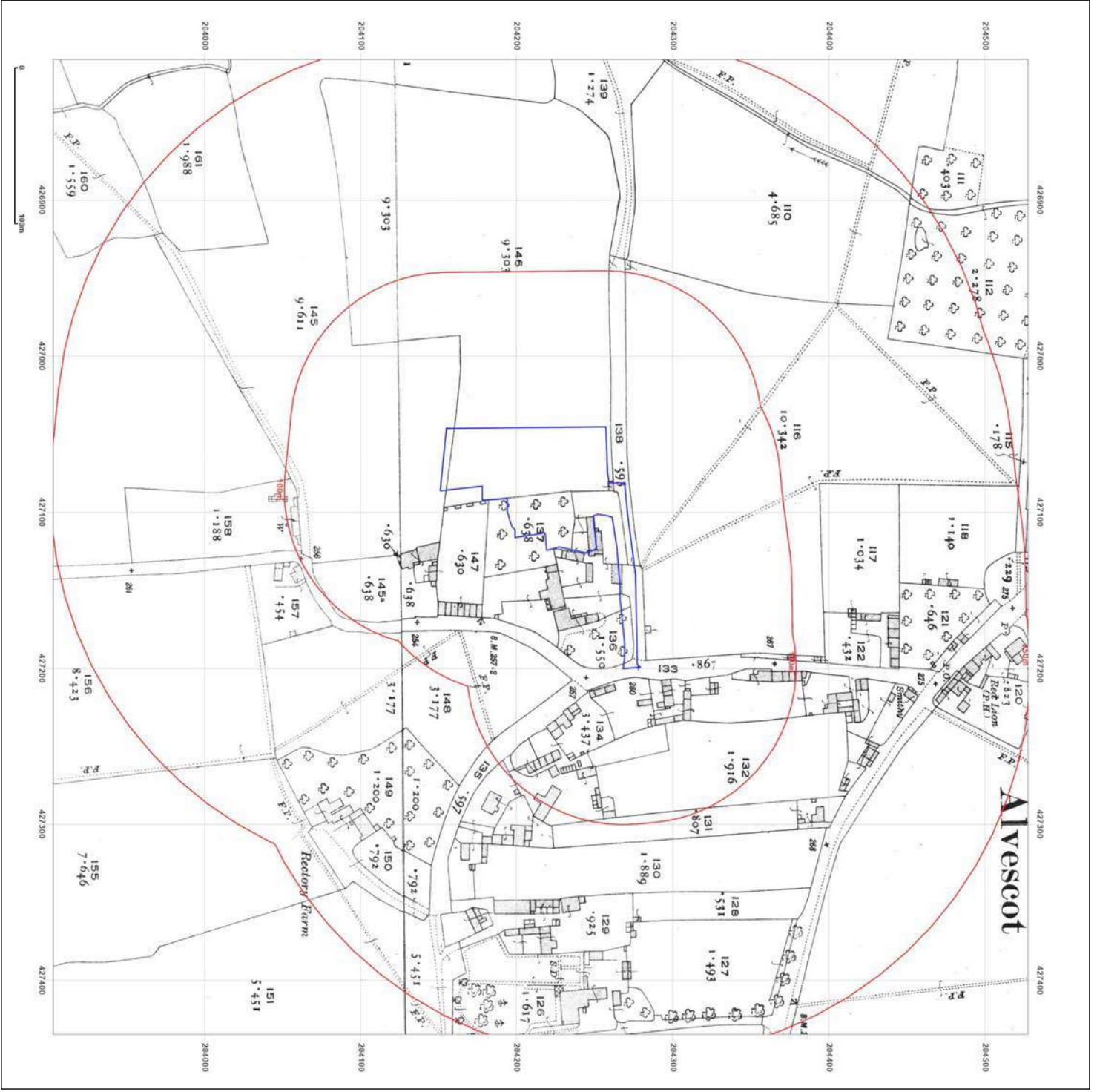
Powered by 

Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

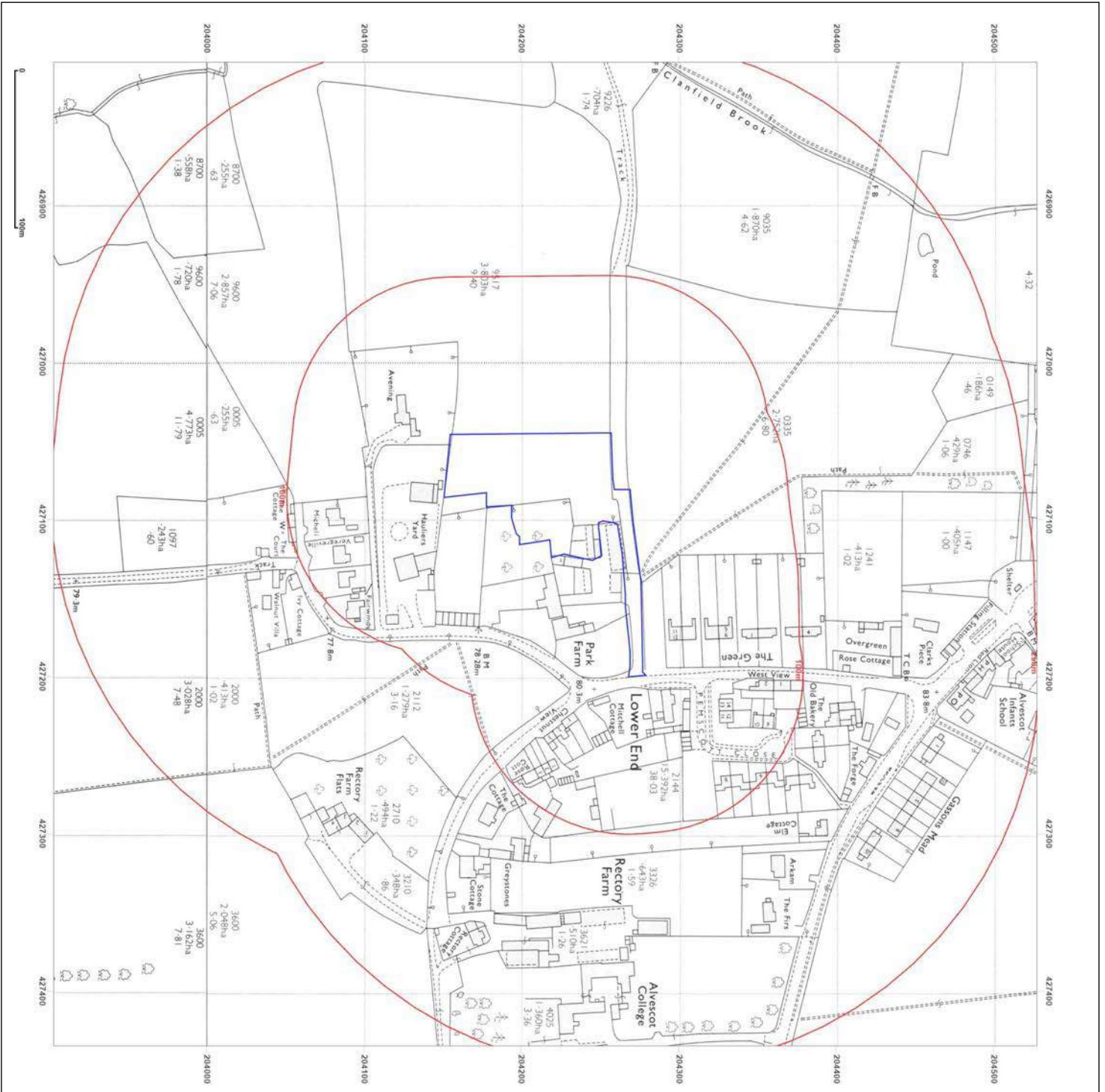
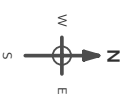
Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:
 Park Farm, Alveston
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid
Map date: 1971
Scale: 1:2,500
Printed at: 1:2,500



Surveyed 1971	Surveyed 1971
Revised 1971	Revised 1971
Edition N/A	Edition N/A
Copyright 1972	Copyright 1972
Levelled 1953	Levelled 1953
Surveyed 1971	Surveyed 1971
Revised 1971	Revised 1971
Edition N/A	Edition N/A
Copyright 1972	Copyright 1972
Levelled 1953	Levelled 1953



Powered by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

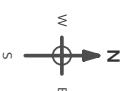
Production date: 25 January 2021

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

Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid
Map date: 1972
Scale: 1:2,500
Printed at: 1:2,500



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

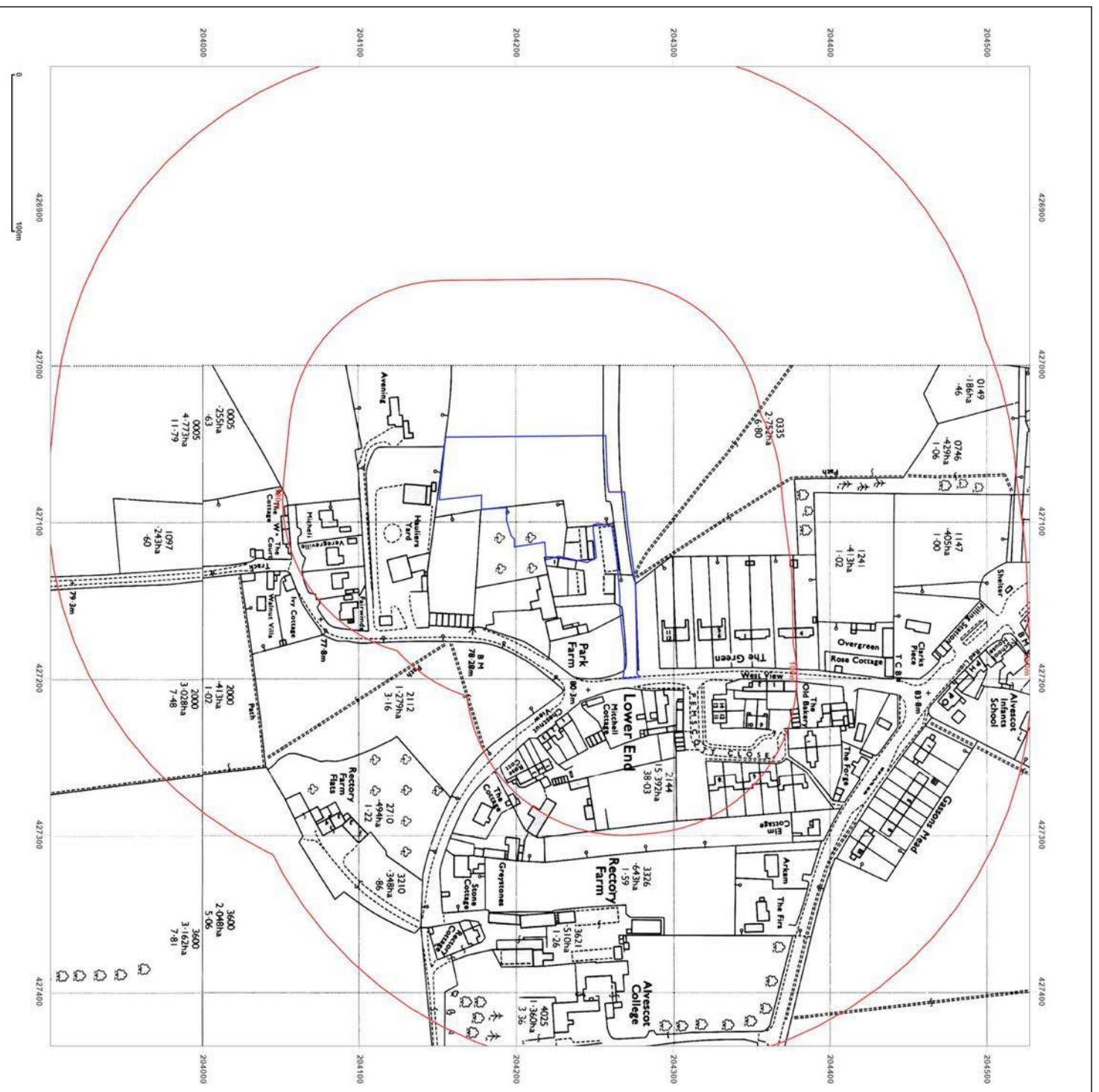


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

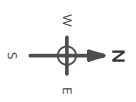
Map legend available at: www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid
Map date: 1994
Scale: 1:2,500
Printed at: 1:2,500



<p>Surveyed 1994 Revised 1994 Edition N/A Copyright N/A Levelled N/A</p>	<p>Surveyed 1994 Revised 1994 Edition N/A Copyright N/A Levelled N/A</p>
<p>Surveyed 1994 Revised 1994 Edition N/A Copyright N/A Levelled N/A</p>	<p>Surveyed 1994 Revised 1994 Edition N/A Copyright N/A Levelled N/A</p>

Powered by

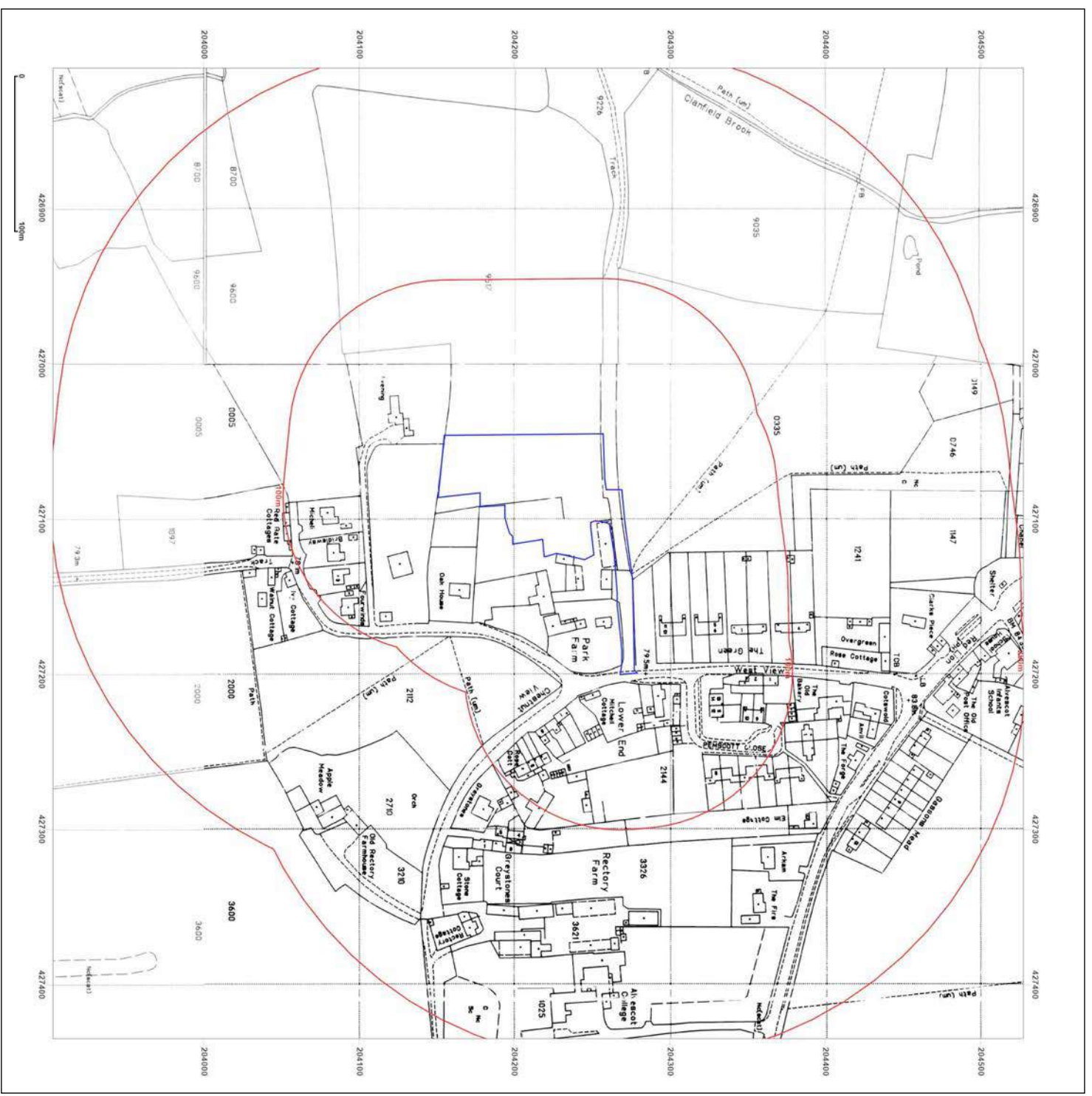


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

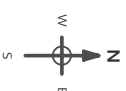
Map legend available at: www.groundsure.com/sites/default/files/groundsure_legend.pdf



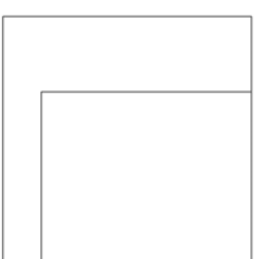
Site Details:
 Park Farm, Alveston
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid
Map date: 1994
Scale: 1:2,500
Printed at: 1:2,500



Surveyed 1974
 Revised 1994
 Edition N/A
 Copyright 1994
 Levelled 1974

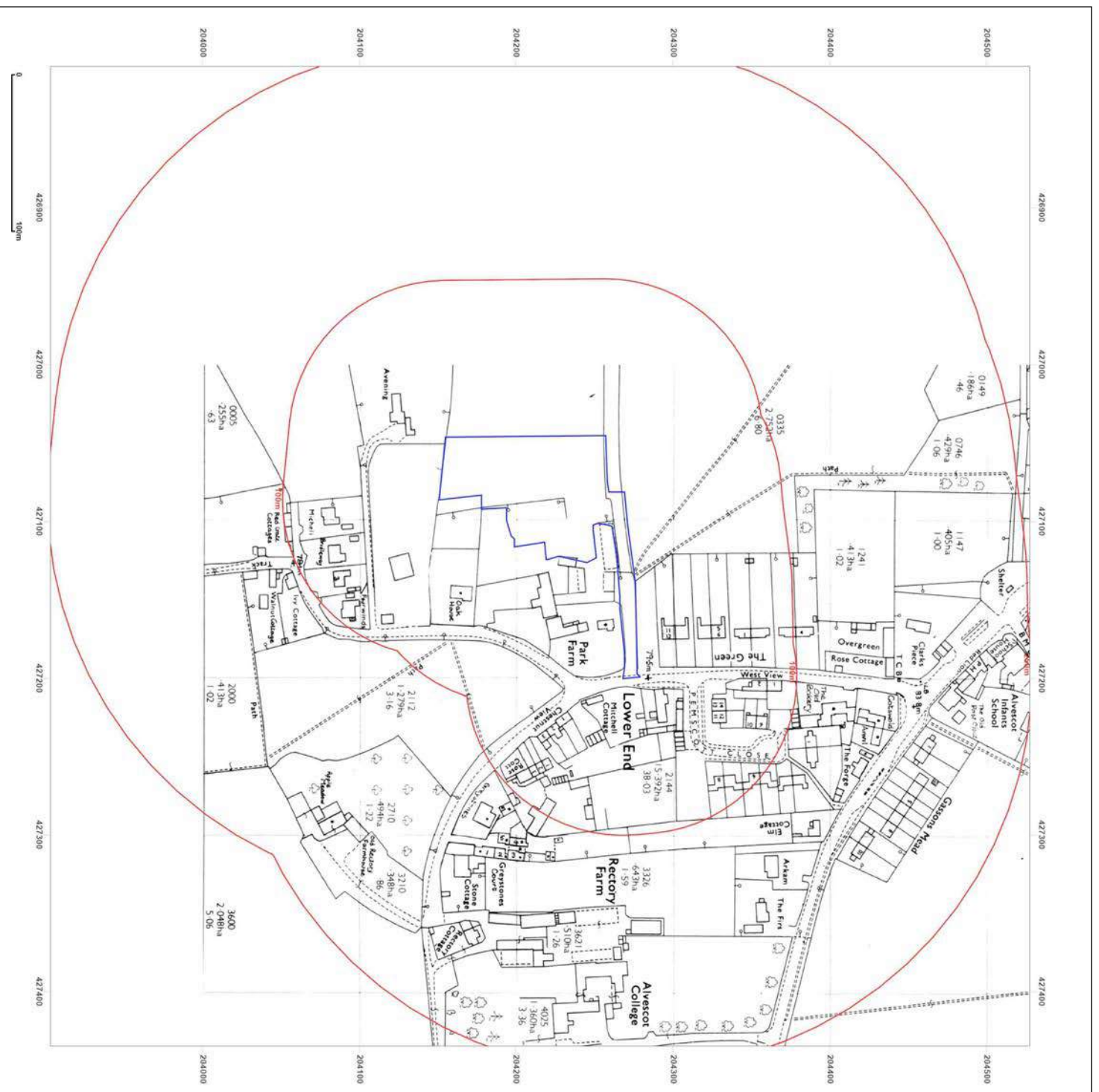


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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



Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

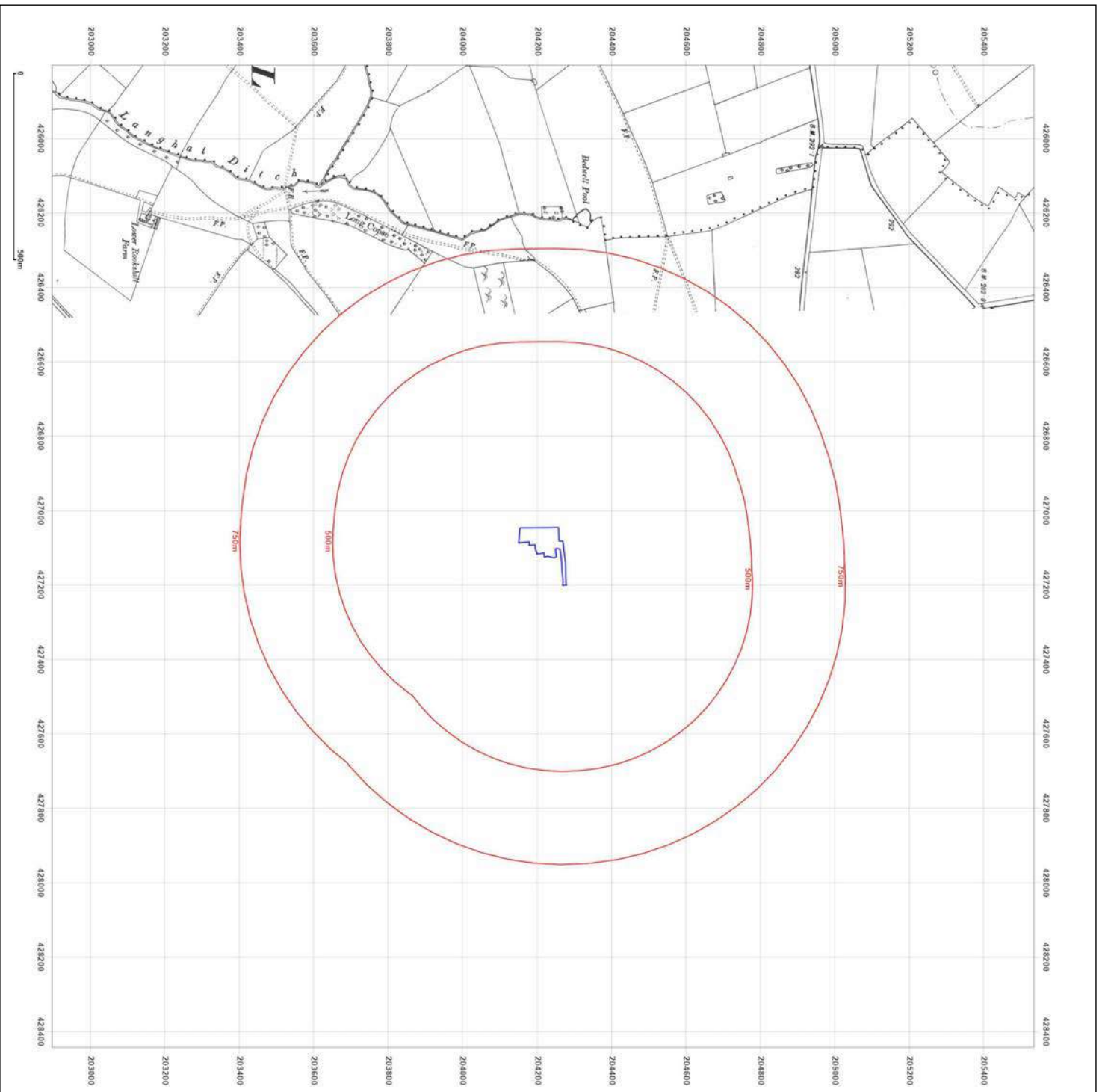
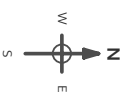
Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: County Series

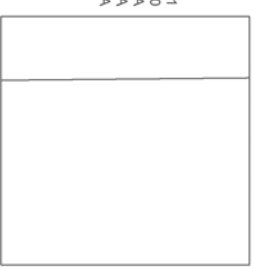
Map date: 1900

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881
 Revised 1900
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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

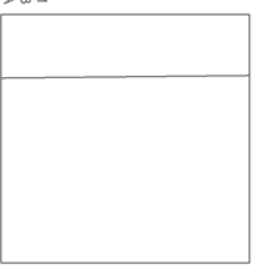
Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: County Series
Map date: 1923
Scale: 1:10,560
Printed at: 1:10,560



Surveyed 1881
 Revised 1923
 Edition N/A
 Copyright N/A
 Levelled N/A

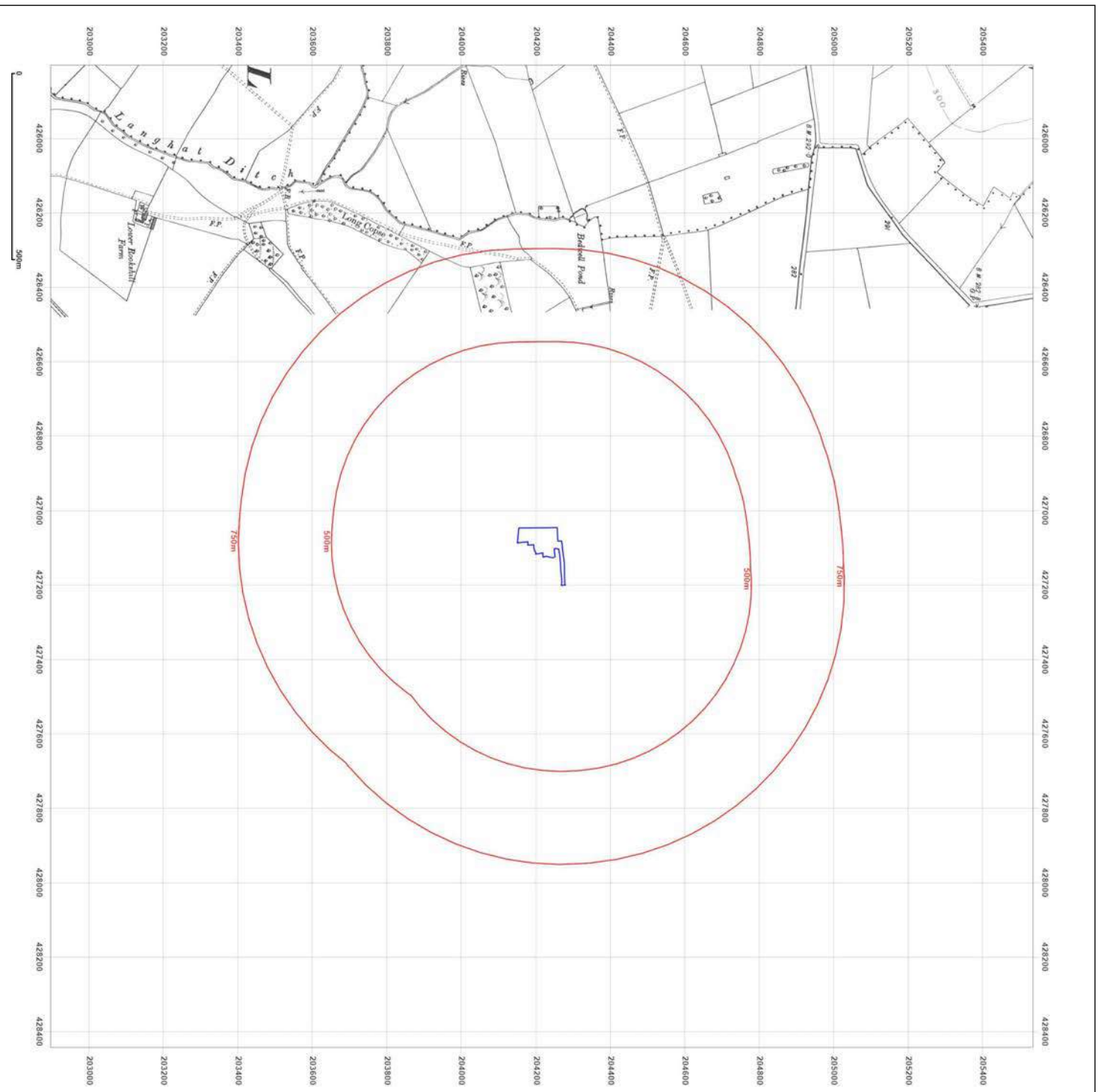


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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



Site Details:

Park Farm, Alvescot
Oxfordshire, OX18 2QA

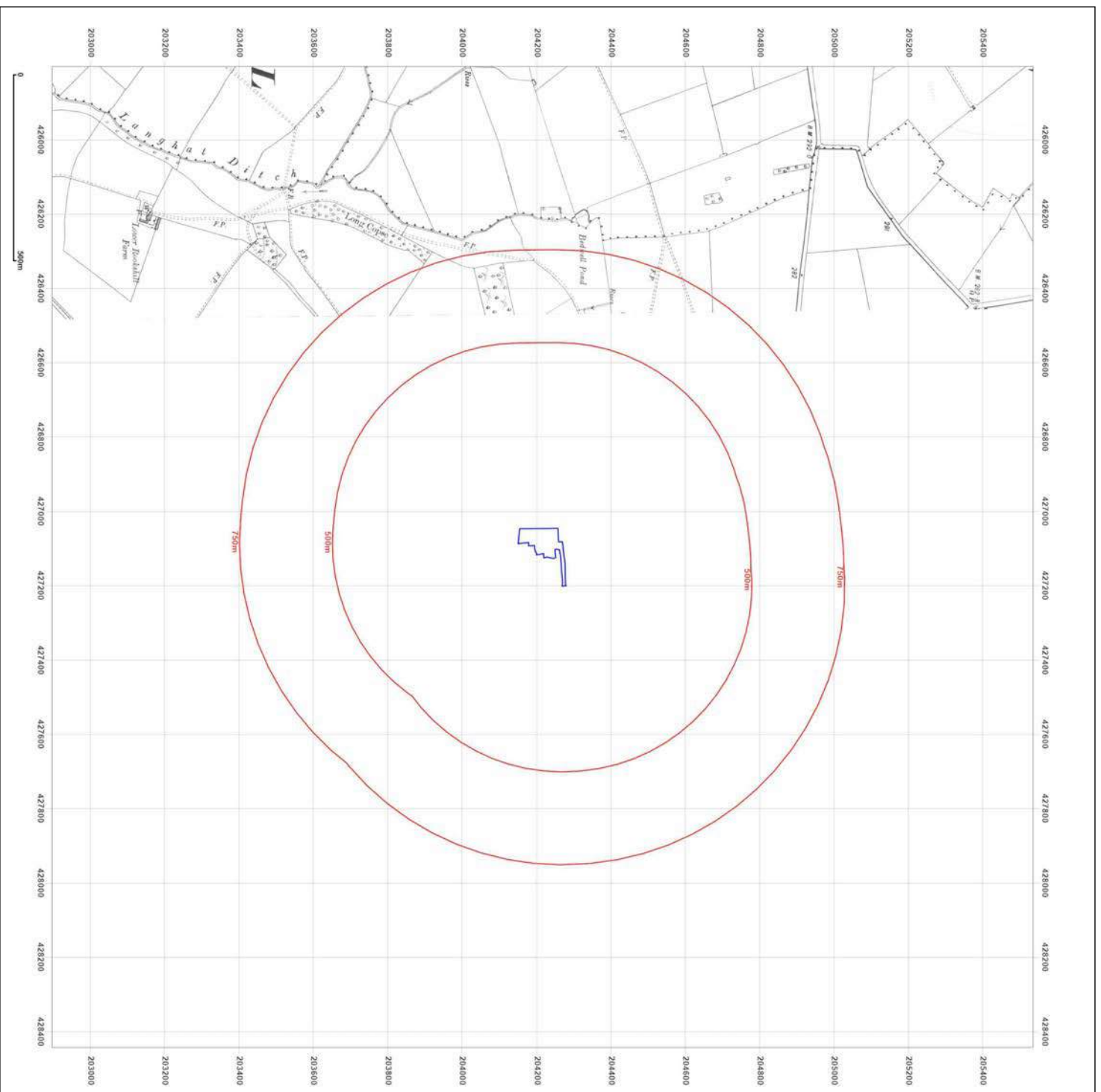
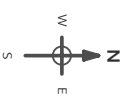
Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: County Series

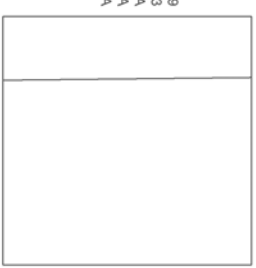
Map date: 1923

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1879
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A



Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

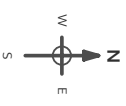
Production date: 25 January 2021

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

Site Details:
 Park Farm, Alveston
 Oxfordshire, OX18 2QA

Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

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



<p>Surveyed 1956 Revised 1956 Edition N/A Copyright N/A Levelled N/A</p>	<p>Surveyed 1956 Revised 1956 Edition N/A Copyright N/A Levelled N/A</p>
--	--

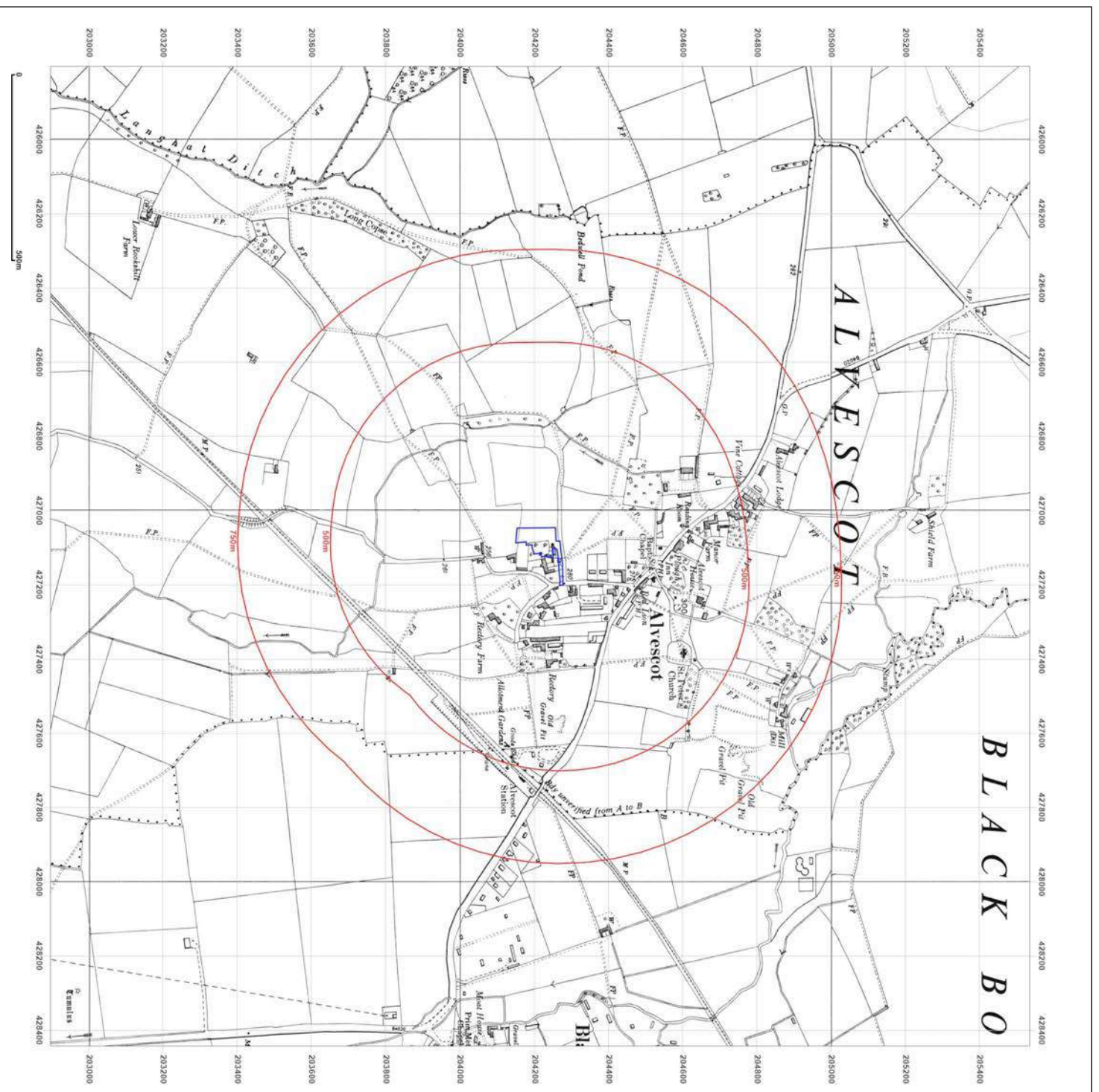


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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



Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

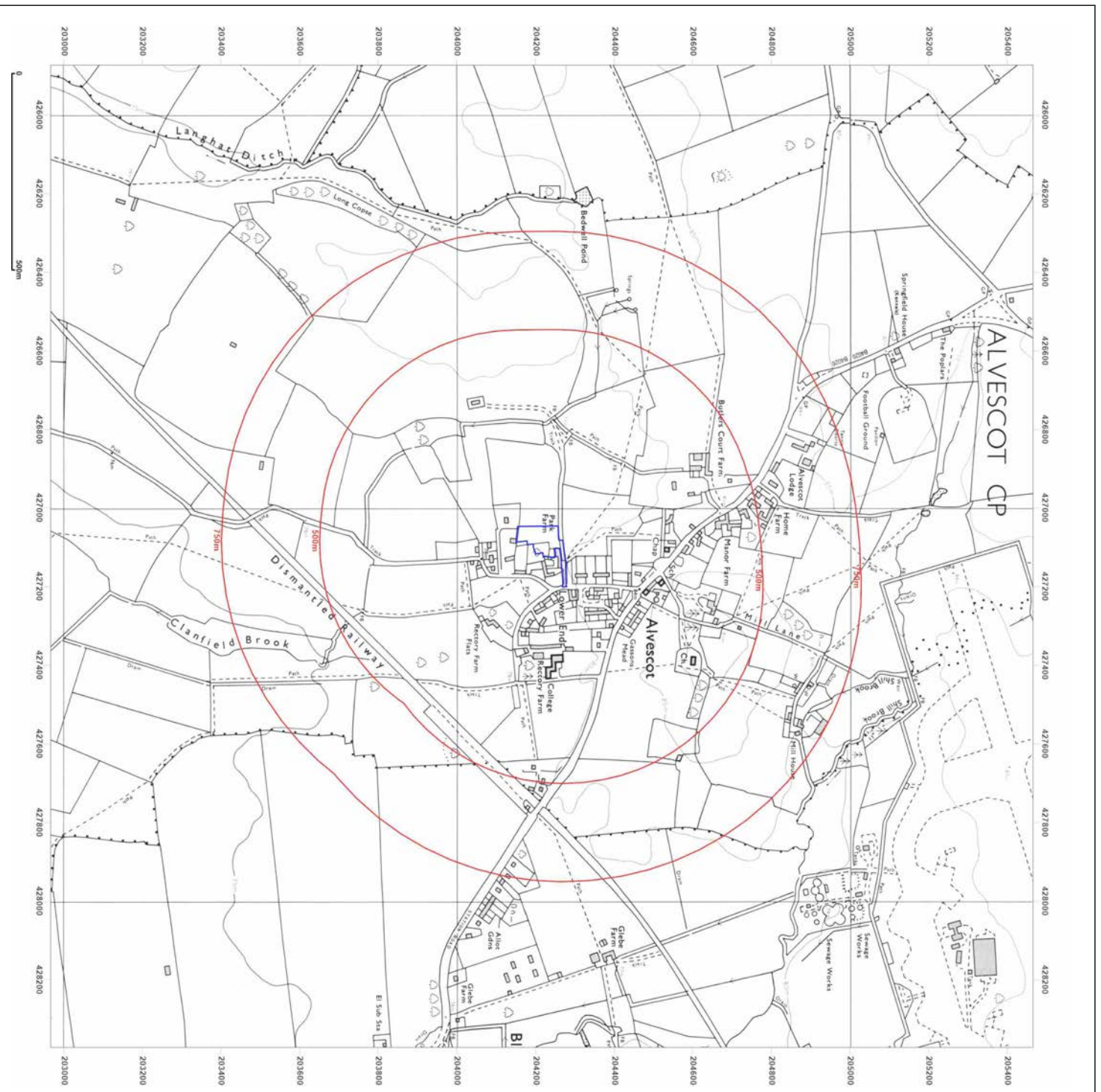
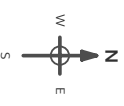
Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid

Map date: 1976

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1971 Revised 1976 Edition N/A Copyright 1976 Levelled 1974
Surveyed 1971 Revised 1976 Edition N/A Copyright 1976 Levelled 1974



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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

Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

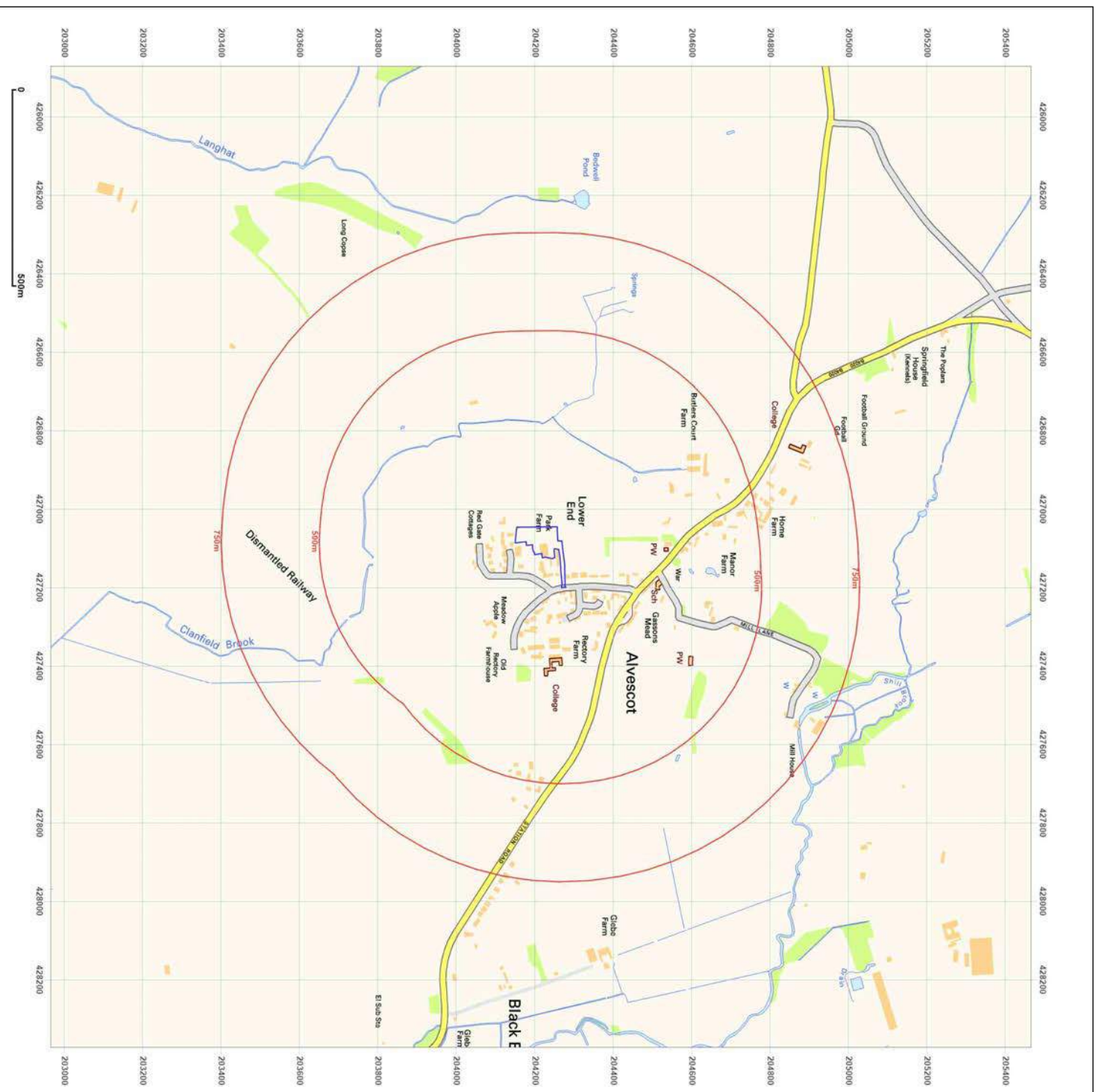
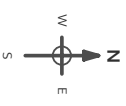
Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid

Map date: 2001

Scale: 1:10,000

Printed at: 1:10,000



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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

Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

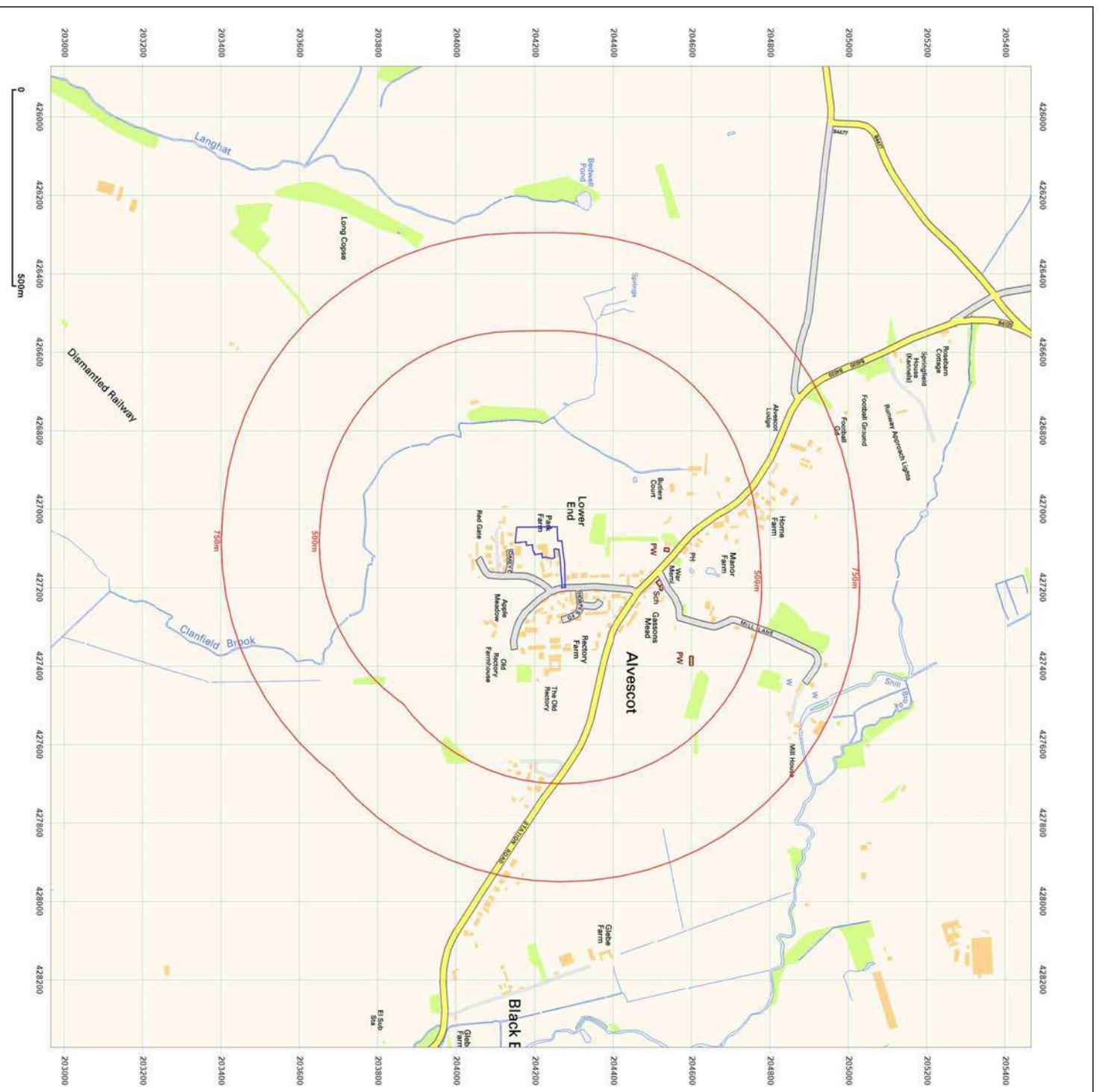
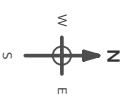
Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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

Site Details:
 Park Farm, Alvescot
 Oxfordshire, OX18 2QA

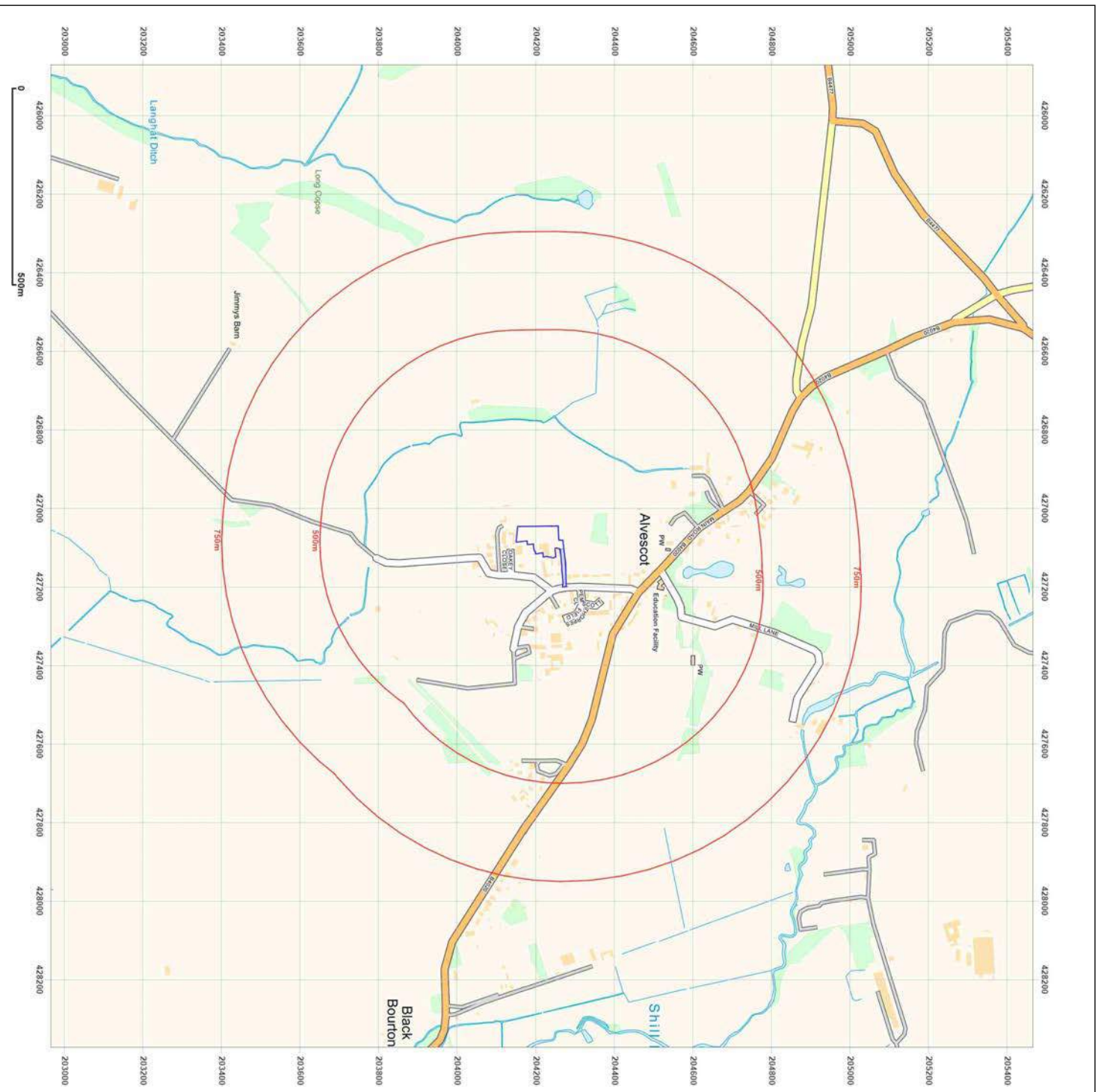
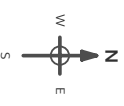
Client Ref: 21_01_007-710
Report Ref: GS-7508968
Grid Ref: 427122, 204215

Map Name: National Grid

Map date: 2021

Scale: 1:10,000

Printed at: 1:10,000



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2018 Ordnance Survey 100035207

Production date: 25 January 2021

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

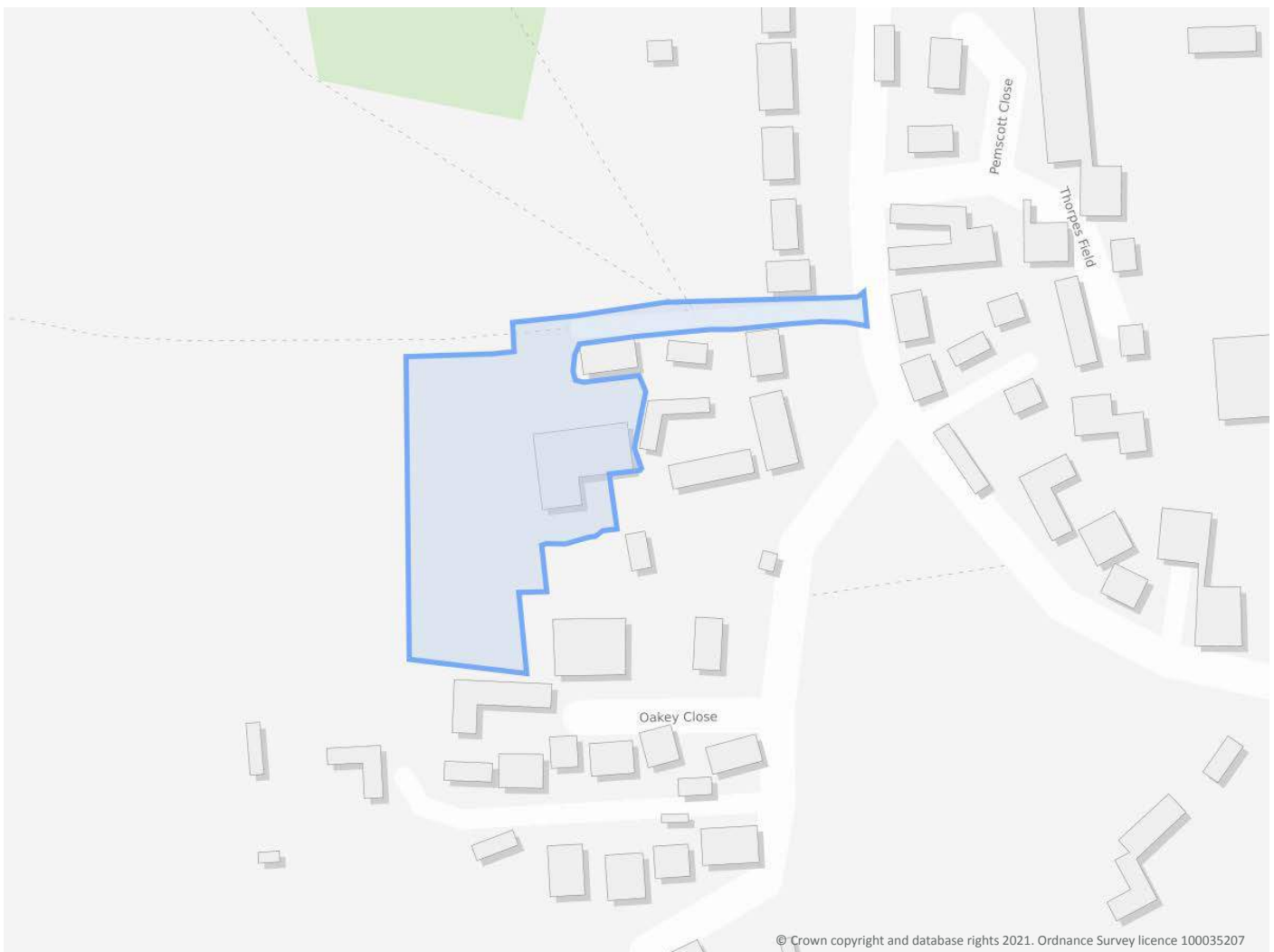
Park Farm, Alvescot, Oxfordshire, OX18 2QA

Order Details

Date: 25/01/2021
Your ref: 21_01_007-710
Our Ref: GS-7508969
Client: Listers Geotechnical Consultants Ltd

Site Details

Location: 427089 204234
Area: 0.74 ha
Authority: [West Oxfordshire District Council](#)



Summary of findings

p. 2

Aerial image

p. 8

OS MasterMap site plan

p.13

groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	<u>1.1</u>	<u>Historical industrial land uses</u>	0	0	2	10	-
15	1.2	Historical tanks	0	0	0	0	-
15	1.3	Historical energy features	0	0	0	0	-
16	<u>1.4</u>	<u>Historical petrol stations</u>	0	0	1	0	-
16	1.5	Historical garages	0	0	0	0	-
16	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
17	<u>2.1</u>	<u>Historical industrial land uses</u>	0	0	3	12	-
18	2.2	Historical tanks	0	0	0	0	-
18	2.3	Historical energy features	0	0	0	0	-
19	<u>2.4</u>	<u>Historical petrol stations</u>	0	0	1	0	-
19	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
20	3.1	Active or recent landfill	0	0	0	0	-
20	3.2	Historical landfill (BGS records)	0	0	0	0	-
21	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
21	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
21	3.5	Historical waste sites	0	0	0	0	-
21	3.6	Licensed waste sites	0	0	0	0	-
21	<u>3.7</u>	<u>Waste exemptions</u>	0	0	27	43	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
29	<u>4.1</u>	<u>Recent industrial land uses</u>	0	0	1	-	-
30	4.2	Current or recent petrol stations	0	0	0	0	-
30	4.3	Electricity cables	0	0	0	0	-
30	4.4	Gas pipelines	0	0	0	0	-
30	4.5	Sites determined as Contaminated Land	0	0	0	0	-



30	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
31	4.7	Regulated explosive sites	0	0	0	0	-
31	4.8	Hazardous substance storage/usage	0	0	0	0	-
31	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
31	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
31	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
32	4.12	Radioactive Substance Authorisations	0	0	0	0	-
32	4.13	<u>Licensed Discharges to controlled waters</u>	1	0	2	1	-
33	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
33	4.15	Pollutant release to public sewer	0	0	0	0	-
33	4.16	List 1 Dangerous Substances	0	0	0	0	-
33	4.17	List 2 Dangerous Substances	0	0	0	0	-
33	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
34	4.19	Pollution inventory substances	0	0	0	0	-
34	4.20	Pollution inventory waste transfers	0	0	0	0	-
34	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
35	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
37	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
39	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
40	5.4	<u>Groundwater vulnerability- soluble rock risk</u>	Identified (within 0m)				
41	5.5	Groundwater vulnerability- local information	None (within 0m)				
42	5.6	<u>Groundwater abstractions</u>	0	0	0	1	6
44	5.7	Surface water abstractions	0	0	0	0	0
44	5.8	<u>Potable abstractions</u>	0	0	0	0	1
45	5.9	Source Protection Zones	0	0	0	0	-
45	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
46	6.1	<u>Water Network (OS MasterMap)</u>	0	0	2	-	-



47	6.2	<u>Surface water features</u>	0	0	1	-	-
47	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
47	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
48	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
49	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
49	7.2	Historical Flood Events	0	0	0	-	-
49	7.3	Flood Defences	0	0	0	-	-
49	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
50	7.5	Flood Storage Areas	0	0	0	-	-
51	7.6	Flood Zone 2	None (within 50m)				
51	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
52	8.1	<u>Surface water flooding</u>	1 in 250 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
54	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
55	10.1	<u>Sites of Special Scientific Interest (SSSI)</u>	0	0	0	0	2
56	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
56	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
56	10.4	Special Protection Areas (SPA)	0	0	0	0	0
56	10.5	National Nature Reserves (NNR)	0	0	0	0	0
57	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
57	10.7	<u>Designated Ancient Woodland</u>	0	0	0	1	5
57	10.8	Biosphere Reserves	0	0	0	0	0
58	10.9	Forest Parks	0	0	0	0	0
58	10.10	Marine Conservation Zones	0	0	0	0	0
58	10.11	Green Belt	0	0	0	0	0
58	10.12	Proposed Ramsar sites	0	0	0	0	0



58	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
59	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
59	10.15	Nitrate Sensitive Areas	0	0	0	0	0
59	10.16	<u>Nitrate Vulnerable Zones</u>	1	0	1	0	2
60	10.17	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
61	10.18	<u>SSSI Units</u>	0	0	0	0	2

Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
63	11.1	World Heritage Sites	0	0	0	-	-
64	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
64	11.3	National Parks	0	0	0	-	-
64	11.4	<u>Listed Buildings</u>	0	5	6	-	-
65	11.5	<u>Conservation Areas</u>	1	0	0	-	-
66	11.6	Scheduled Ancient Monuments	0	0	0	-	-
66	11.7	Registered Parks and Gardens	0	0	0	-	-

Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
67	12.1	<u>Agricultural Land Classification</u>	Grade 3 (within 250m)				
68	12.2	<u>Open Access Land</u>	0	0	1	-	-
68	12.3	Tree Felling Licences	0	0	0	-	-
68	12.4	Environmental Stewardship Schemes	0	0	0	-	-
68	12.5	<u>Countryside Stewardship Schemes</u>	0	0	1	-	-

Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
70	13.1	<u>Priority Habitat Inventory</u>	0	0	4	-	-
71	13.2	<u>Habitat Networks</u>	0	0	1	-	-
71	13.3	Open Mosaic Habitat	0	0	0	-	-
71	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
72	14.1	<u>10k Availability</u>	Identified (within 500m)				
73	14.2	Artificial and made ground (10k)	0	0	0	0	-
74	14.3	Superficial geology (10k)	0	0	0	0	-

74	14.4	Landslip (10k)	0	0	0	0	-
75	14.5	Bedrock geology (10k)	0	0	0	0	-
75	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
76	15.1	<u>50k Availability</u>	Identified (within 500m)				
77	15.2	Artificial and made ground (50k)	0	0	0	0	-
77	15.3	Artificial ground permeability (50k)	0	0	-	-	-
78	15.4	<u>Superficial geology (50k)</u>	0	1	3	1	-
79	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
79	15.6	Landslip (50k)	0	0	0	0	-
79	15.7	Landslip permeability (50k)	None (within 50m)				
80	15.8	<u>Bedrock geology (50k)</u>	1	1	0	3	-
81	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
81	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-

Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
82	16.1	<u>BGS Boreholes</u>	0	0	5	-	-

Page	Section	Natural ground subsidence					
84	17.1	<u>Shrink swell clays</u>	Moderate (within 50m)				
85	17.2	<u>Running sands</u>	Low (within 50m)				
87	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
88	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
89	17.5	<u>Landslides</u>	Very low (within 50m)				
90	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				

Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
91	18.1	Natural cavities	0	0	0	0	-
92	18.2	<u>BritPits</u>	0	0	0	1	-
92	18.3	Surface ground workings	0	0	0	-	-
92	18.4	Underground workings	0	0	0	0	0
92	18.5	Historical Mineral Planning Areas	0	0	0	0	-



93	18.6	Non-coal mining	0	0	0	0	0
93	18.7	Mining cavities	0	0	0	0	0
93	18.8	JPB mining areas	None (within 0m)				
93	18.9	Coal mining	None (within 0m)				
93	18.10	Brine areas	None (within 0m)				
94	18.11	Gypsum areas	None (within 0m)				
94	18.12	Tin mining	None (within 0m)				
94	18.13	Clay mining	None (within 0m)				

Page	Section	Radon					
------	---------	-------	--	--	--	--	--

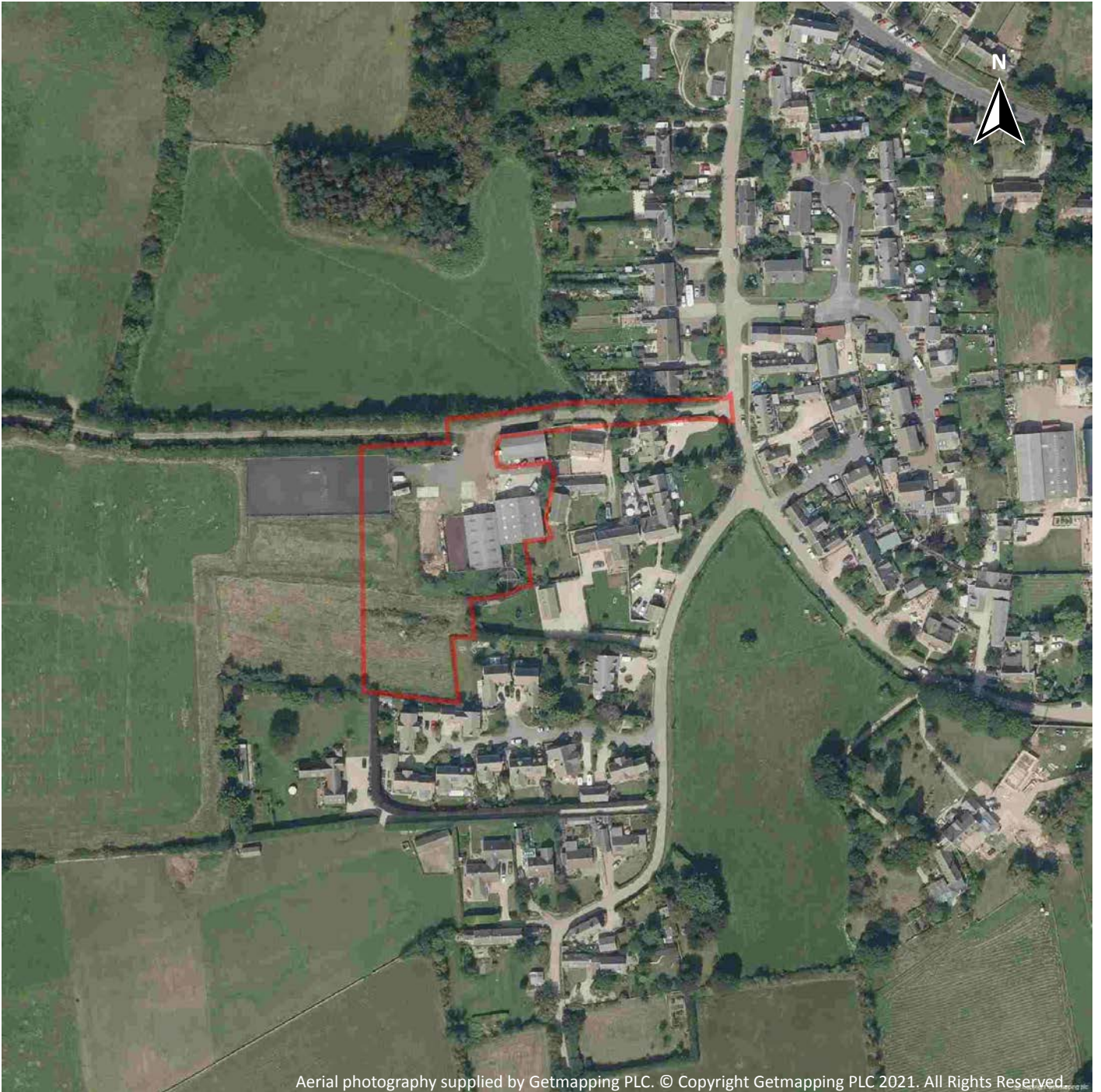
95	19.1	Radon	Less than 1% (within 0m)				
-----------	-------------	--------------	--------------------------	--	--	--	--

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
96	20.1	BGS Estimated Background Soil Chemistry	1	3	-	-	-
96	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
97	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
98	21.1	Underground railways (London)	0	0	0	-	-
98	21.2	Underground railways (Non-London)	0	0	0	-	-
98	21.3	Railway tunnels	0	0	0	-	-
98	21.4	Historical railway and tunnel features	0	0	0	-	-
98	21.5	Royal Mail tunnels	0	0	0	-	-
99	21.6	Historical railways	0	0	0	-	-
99	21.7	Railways	0	0	0	-	-
99	21.8	Crossrail 1	0	0	0	0	-
99	21.9	Crossrail 2	0	0	0	0	-
99	21.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 24/08/2019

Site Area: 0.74ha

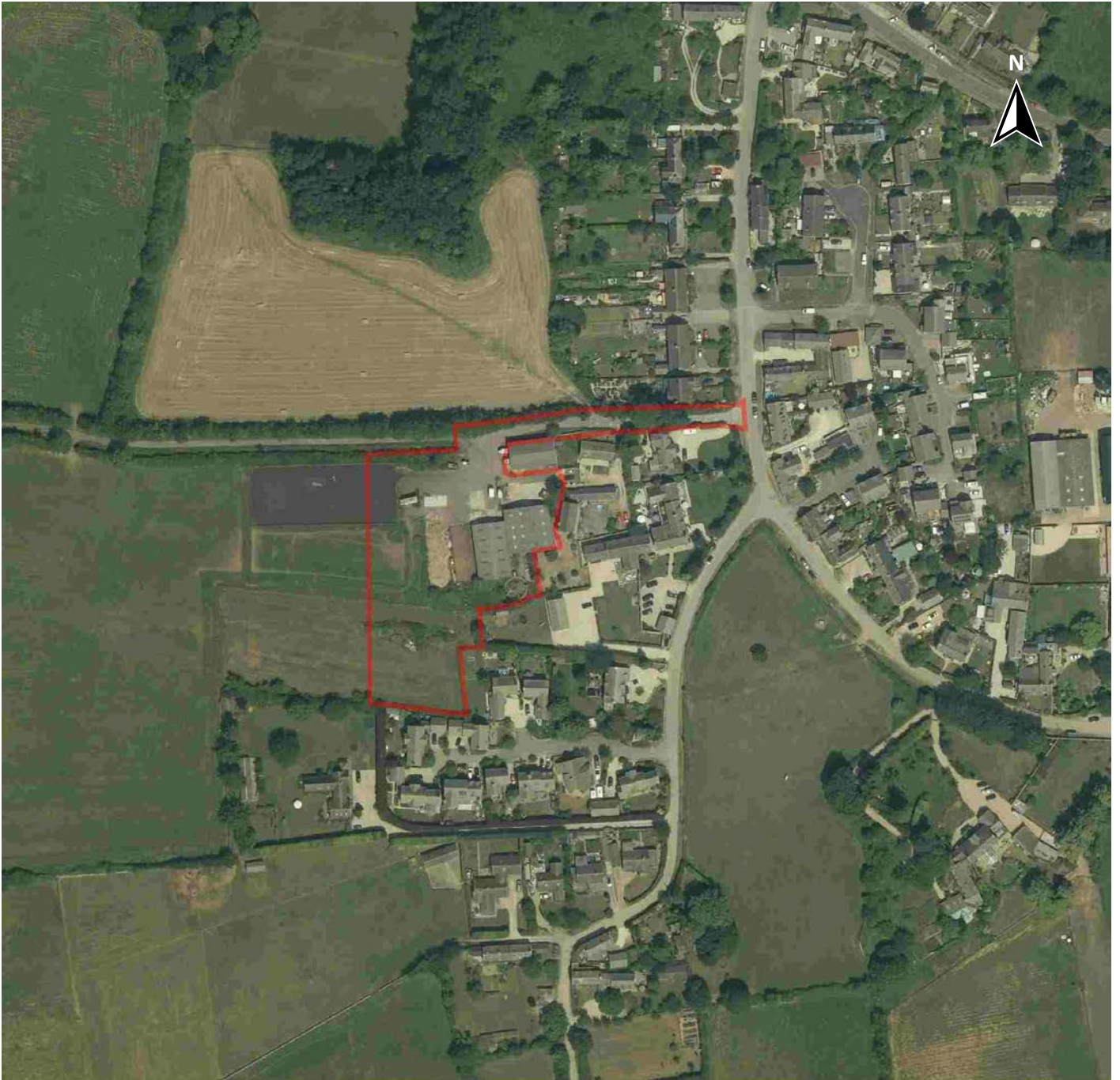


Contact us with any questions at:
info@groundsure.com
08444 159 000

Date: 25 January 2021



Recent site history - 2018 aerial photograph



Capture Date: 28/06/2018

Site Area: 0.74ha



Recent site history - 2015 aerial photograph

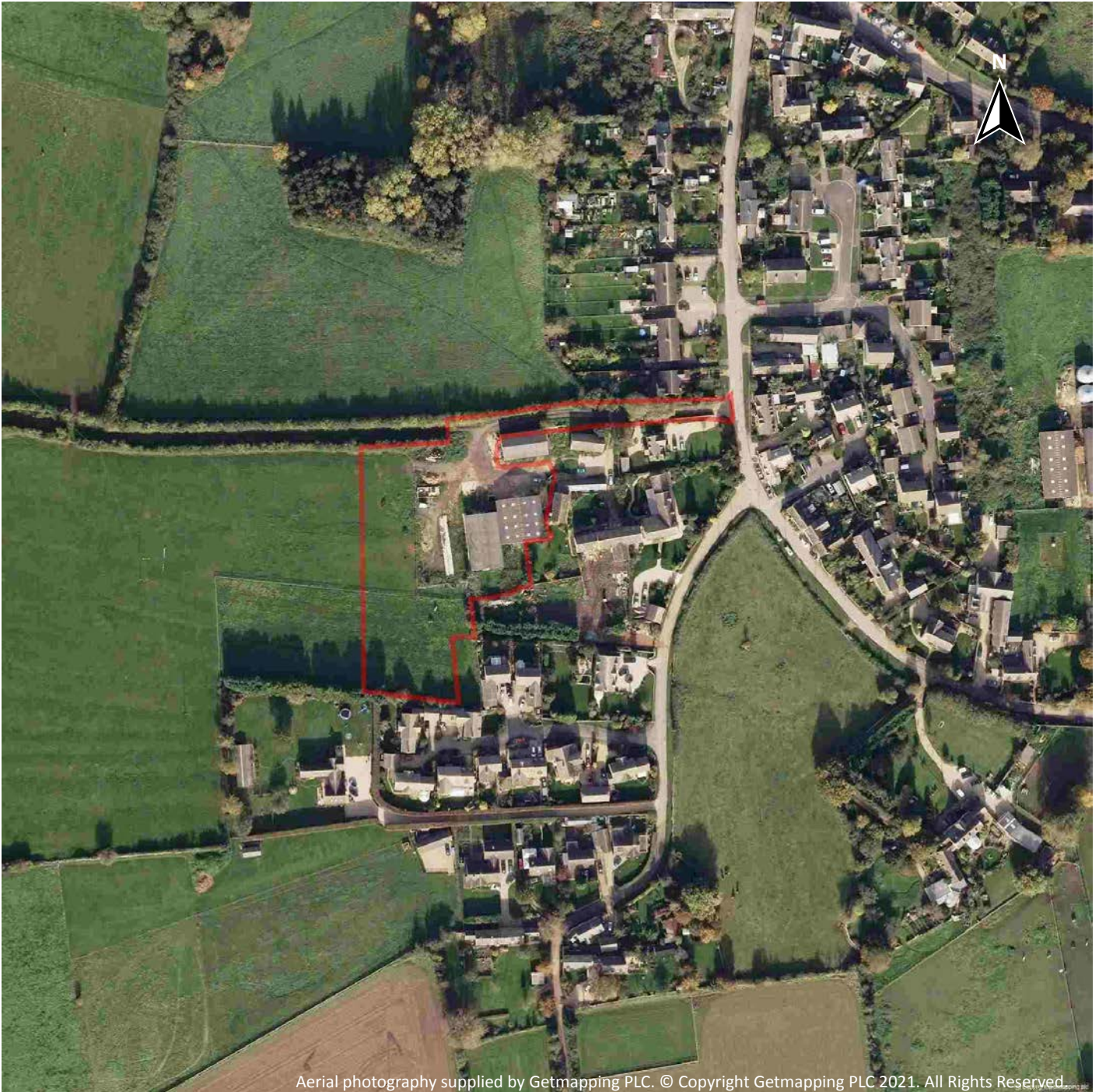


Capture Date: 10/09/2015

Site Area: 0.74ha



Recent site history - 2006 aerial photograph



Capture Date: 12/10/2006

Site Area: 0.74ha

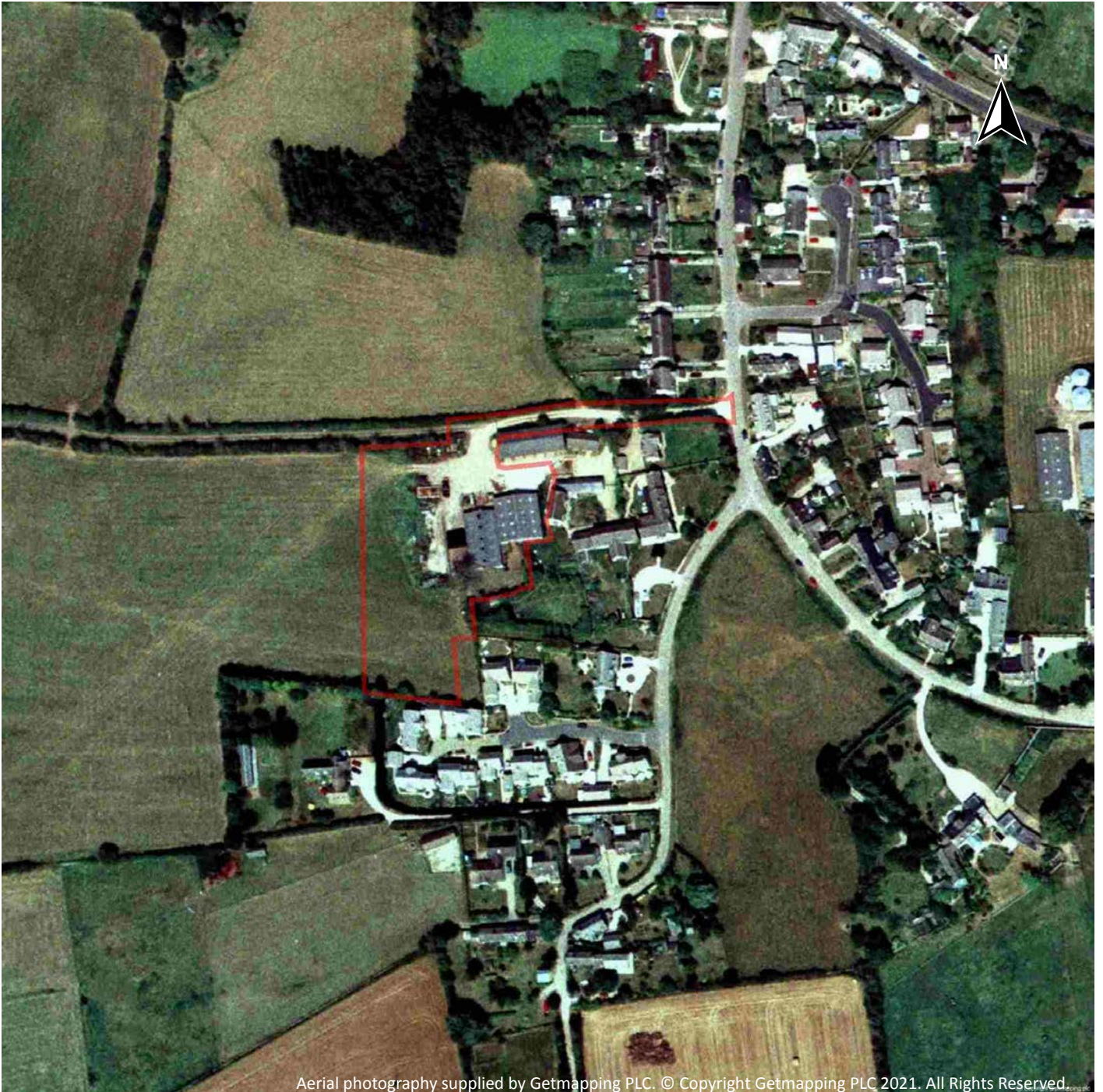


Contact us with any questions at:
info@groundsure.com
08444 159 000

Date: 25 January 2021



Recent site history - 1999 aerial photograph

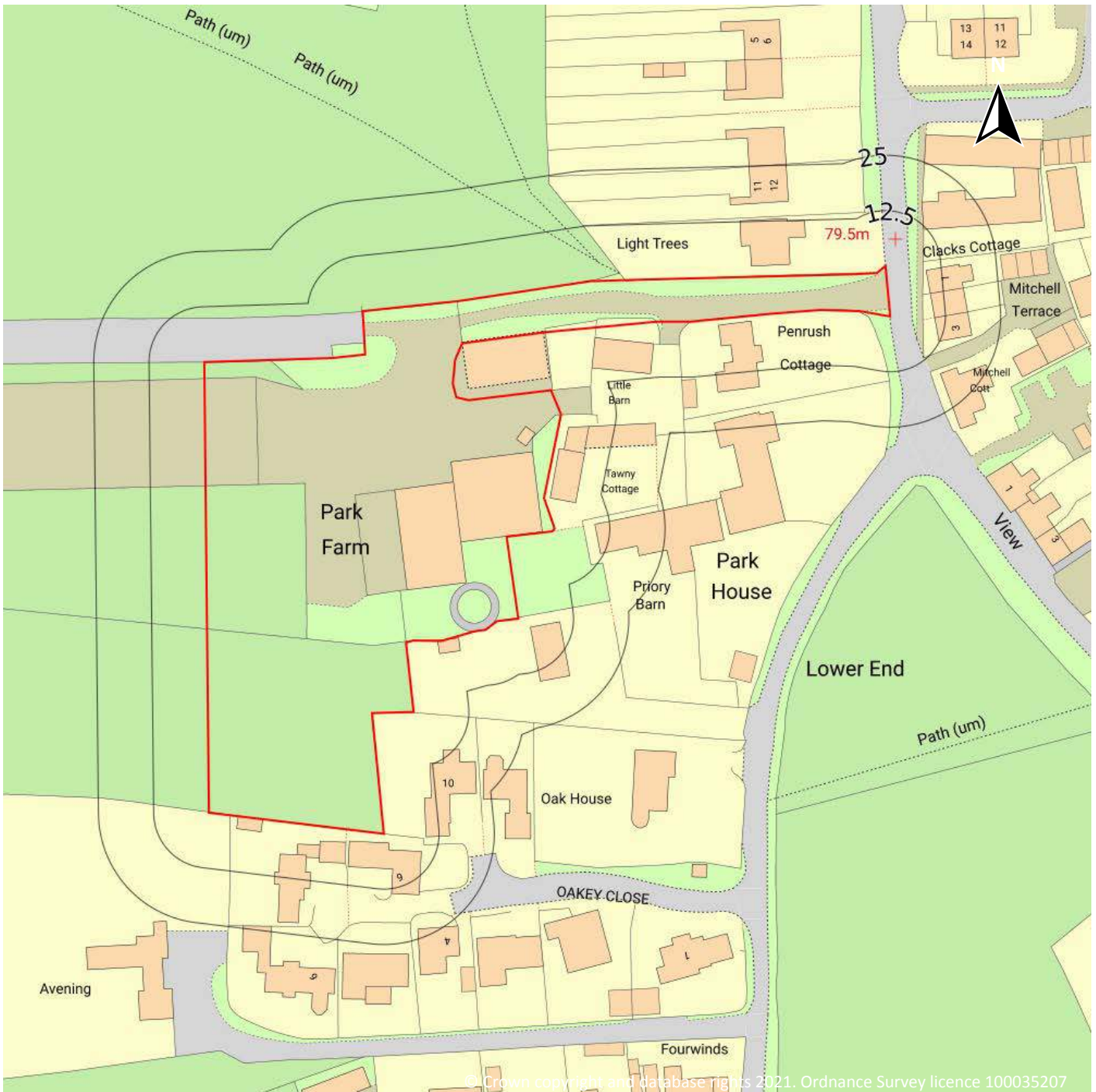


Capture Date: 30/07/1999

Site Area: 0.74ha



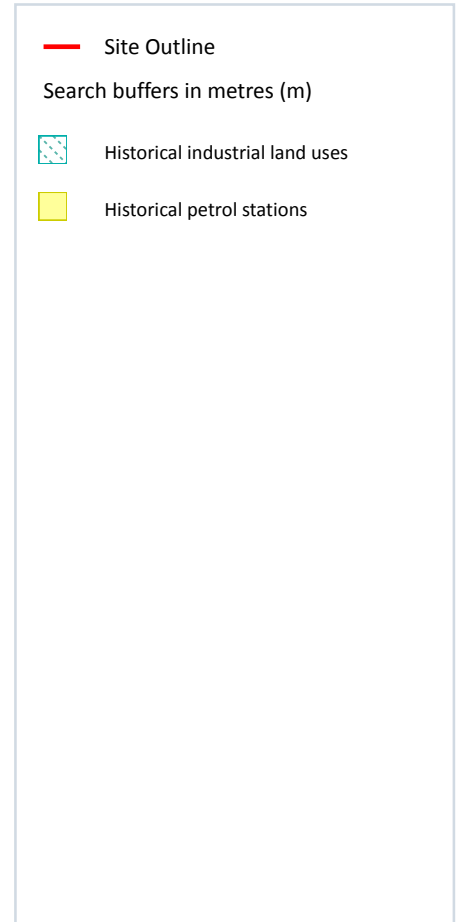
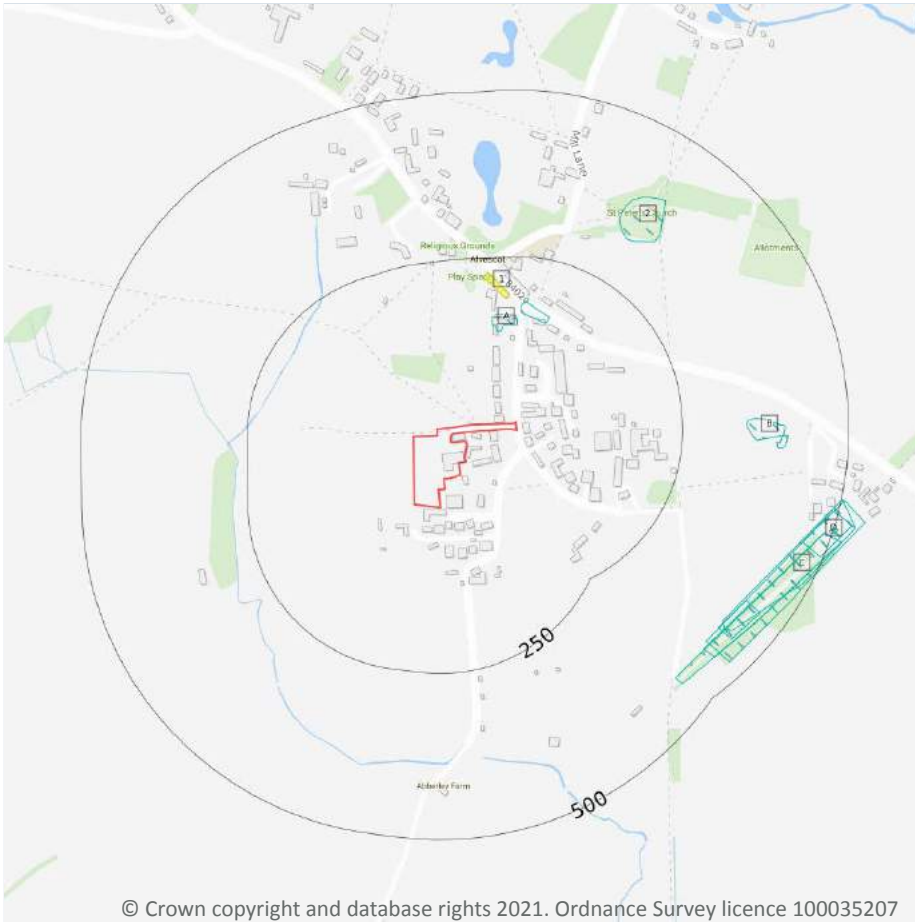
OS MasterMap site plan



Site Area: 0.74ha



1 Past land use



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

1.1 Historical industrial land uses

Records within 500m

12

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 14**

ID	Location	Land use	Dates present	Group ID
A	139m N	Smithy	1880	1779274

ID	Location	Land use	Dates present	Group ID
A	156m N	Smithy	1898 - 1919	1846351
2	322m NE	Grave Yard	1880	1762884
B	346m E	Old Gravel Pit	1919 - 1956	1786089
B	393m E	Sand Pit	1880	1753260
C	423m SE	Railway Sidings	1956	1827799
C	425m SE	Railway Sidings	1898	1844629
C	427m SE	Railway Sidings	1919	1817466
C	433m SE	Railway Sidings	1880	1795871
C	434m SE	Cuttings	1880	1751437
D	464m E	Railway Sidings	1898	1820989
D	495m E	Railway Building	1919 - 1956	1816226

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.



1.4 Historical petrol stations

Records within 500m

1

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'.

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

ID	Location	Land use	Dates present	Group ID
1	188m N	Filling Station	1971	2934

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

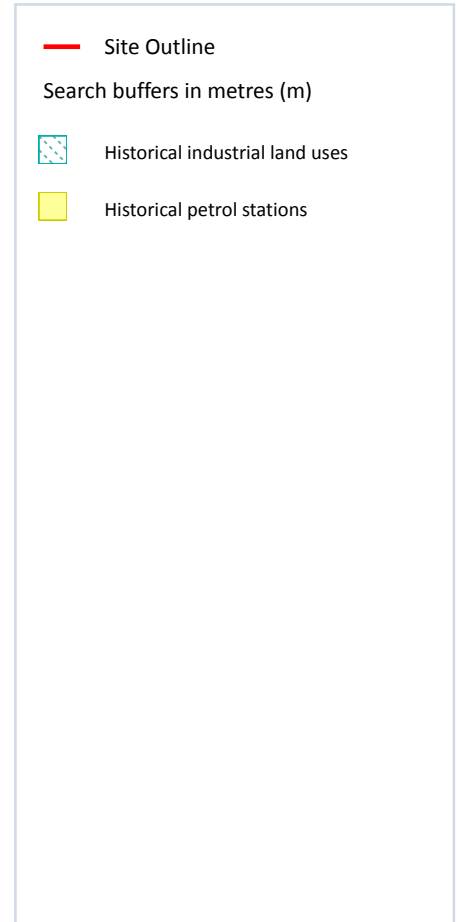
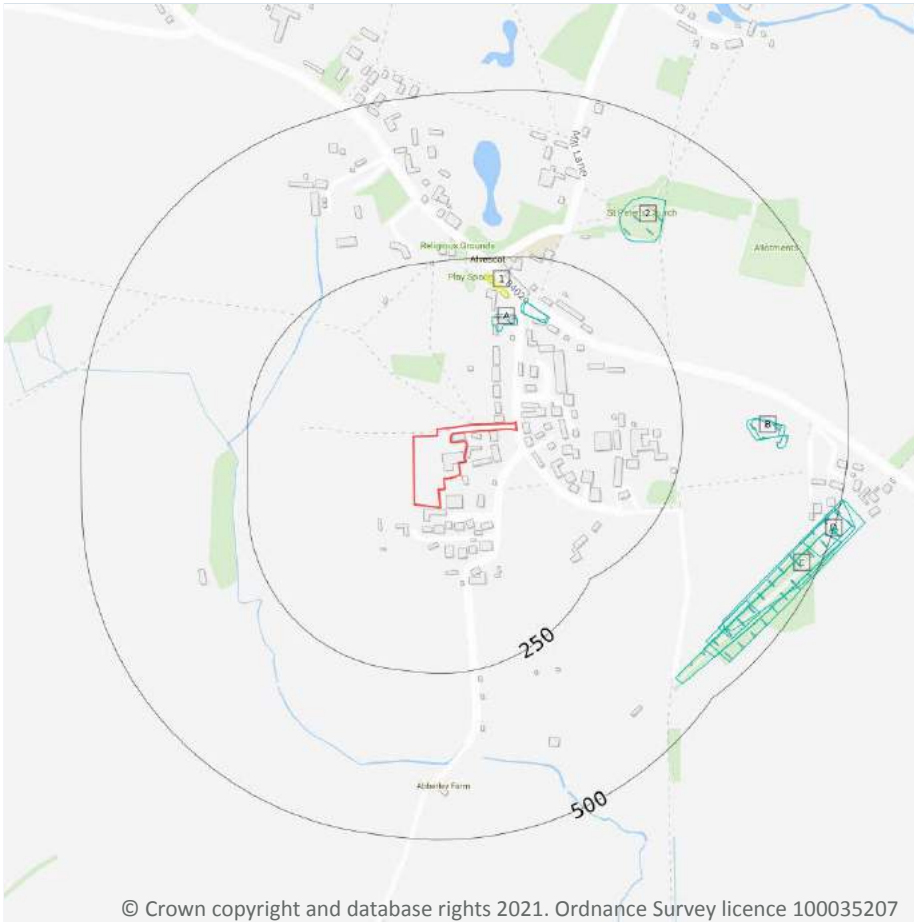
Records within 500m

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



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

2.1 Historical industrial land uses

Records within 500m

15

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 17**

ID	Location	Land Use	Date	Group ID
A	139m N	Smithy	1880	1779274
A	156m N	Smithy	1898	1846351
A	156m N	Smithy	1919	1846351

ID	Location	Land Use	Date	Group ID
2	322m NE	Grave Yard	1880	1762884
B	346m E	Old Gravel Pit	1956	1786089
B	354m E	Old Gravel Pit	1919	1786089
B	393m E	Sand Pit	1880	1753260
C	423m SE	Railway Sidings	1956	1827799
C	425m SE	Railway Sidings	1898	1844629
C	427m SE	Railway Sidings	1919	1817466
C	433m SE	Railway Sidings	1880	1795871
C	434m SE	Cuttings	1880	1751437
D	464m E	Railway Sidings	1898	1820989
D	495m E	Railway Building	1956	1816226
D	499m E	Railway Building	1919	1816226

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.



2.4 Historical petrol stations

Records within 500m

1

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'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
1	188m N	Filling Station	1971	2934

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

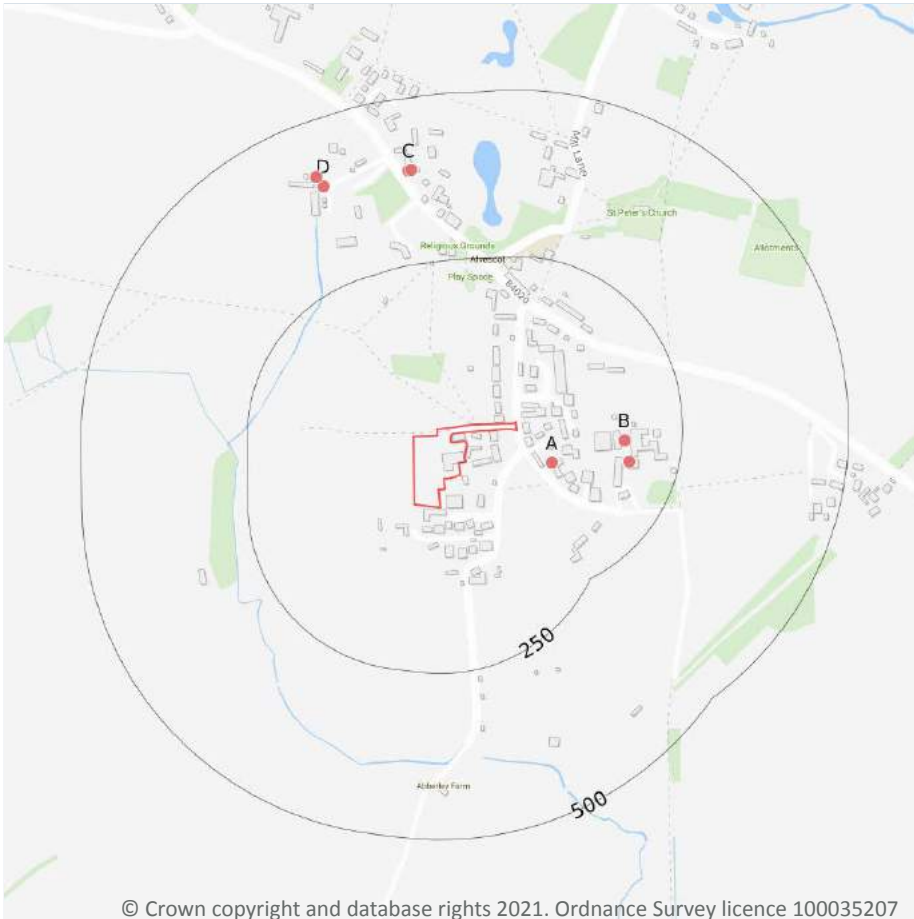
Records within 500m

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 **70**

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 20**

ID	Location	Site	Reference	Category	Sub-Category	Description
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Disposing of waste exemption	On a farm	Burning waste in the open

ID	Location	Site	Reference	Category	Sub-Category	Description
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Using waste exemption	On a farm	Spreading waste on agricultural land to confer benefit
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Using waste exemption	On a farm	Incorporation of ash into soil
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Storing waste exemption	On a farm	Storage of waste in a secure place
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Using waste exemption	On a farm	Use of waste in construction
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
A	73m SE	Rectory Farm , Lower End , Alvescot, Bampton , OX18 2QA	WEX091829	Using waste exemption	On a farm	Use of waste for a specified purpose
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Deposit of waste from dredging of inland waters
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Disposing of waste exemption	Both agricultural and non-agricultural waste	Burning waste in the open
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Treating waste exemption	Both agricultural and non-agricultural waste	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising



ID	Location	Site	Reference	Category	Sub-Category	Description
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Using waste exemption	Both agricultural and non- agricultural waste	Use of waste in construction
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Using waste exemption	Both agricultural and non- agricultural waste	Spreading waste on agricultural land to confer benefit
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Using waste exemption	Both agricultural and non- agricultural waste	Spreading of plant matter to confer benefit
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Using waste exemption	Both agricultural and non- agricultural waste	Incorporation of ash into soil
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Using waste exemption	Both agricultural and non- agricultural waste	Burning of waste as a fuel in a small appliance
B	163m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/VF0735EH /A001	Using waste exemption	Both agricultural and non- agricultural waste	Use of waste for a specified purpose
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Storing waste exemption	Agricultural Waste Only	Storage of waste in a secure place
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Treating waste exemption	Agricultural Waste Only	Aerobic composting and associated prior treatment



ID	Location	Site	Reference	Category	Sub-Category	Description
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Using waste exemption	Agricultural Waste Only	Spreading waste on agricultural land to confer benefit
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Using waste exemption	Agricultural Waste Only	Incorporation of ash into soil
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Using waste exemption	Agricultural Waste Only	Burning of waste as a fuel in a small appliance
B	177m E	Rectory Farm Lower End BAMPTON Oxfordshire OX18 2QA	EPR/QF0938A F/A001	Using waste exemption	Agricultural Waste Only	Use of waste for a specified purpose
C	391m N	Home Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/XH0075N E/A001	Disposing of waste exemption	Agricultural Waste Only	Deposit of waste from dredging of inland waters
C	391m N	Home Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/XH0075N E/A001	Disposing of waste exemption	Agricultural Waste Only	Burning waste in the open
C	391m N	Home Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/XH0075N E/A001	Treating waste exemption	Agricultural Waste Only	Cleaning, washing, spraying or coating relevant waste
C	391m N	Home Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/XH0075N E/A001	Using waste exemption	Agricultural Waste Only	Use of waste in construction
C	391m N	Home Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/XH0075N E/A001	Using waste exemption	Agricultural Waste Only	Incorporation of ash into soil
C	391m N	Home Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/XH0075N E/A001	Using waste exemption	Agricultural Waste Only	Burning of waste as a fuel in a small appliance
C	391m N	Home Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/XH0075N E/A001	Using waste exemption	Agricultural Waste Only	Use of waste for a specified purpose
C	392m N	Home Farm, Main Road, Alvescot, OX18 2PU	WEX038221	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters



ID	Location	Site	Reference	Category	Sub-Category	Description
C	392m N	Home Farm, Main Road, Alvescot, OX18 2PU	WEX038221	Disposing of waste exemption	On a farm	Burning waste in the open
C	392m N	Home Farm, Main Road, Alvescot, OX18 2PU	WEX038221	Treating waste exemption	On a farm	Cleaning, washing, spraying or coating relevant waste
C	392m N	Home Farm, Main Road, Alvescot, OX18 2PU	WEX038221	Using waste exemption	On a farm	Use of waste in construction
C	392m N	Home Farm, Main Road, Alvescot, OX18 2PU	WEX038221	Using waste exemption	On a farm	Incorporation of ash into soil
C	392m N	Home Farm, Main Road, Alvescot, OX18 2PU	WEX038221	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance
C	392m N	Home Farm, Main Road, Alvescot, OX18 2PU	WEX038221	Using waste exemption	On a farm	Use of waste for a specified purpose
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Disposing of waste exemption	On a farm	Deposit of waste from dredging of inland waters
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Disposing of waste exemption	On a farm	Deposit of agricultural waste consisting of plant tissue under a Plant Health notice
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Disposing of waste exemption	On a farm	Disposal by incineration
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Disposing of waste exemption	On a farm	Burning waste in the open
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Storing waste exemption	On a farm	Storage of waste in secure containers
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Storing waste exemption	On a farm	Storage of waste in a secure place
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Treating waste exemption	On a farm	Aerobic composting and associated prior treatment



ID	Location	Site	Reference	Category	Sub-Category	Description
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Treating waste exemption	On a farm	Treatment of waste in a biobed or biofilter
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Treating waste exemption	On a farm	Screening and blending of waste
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Treating waste exemption	On a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Treating waste exemption	On a farm	Recovery of scrap metal
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Using waste exemption	On a farm	Use of waste in construction
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Using waste exemption	On a farm	Use of mulch
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Using waste exemption	On a farm	Spreading of plant matter to confer benefit
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Using waste exemption	On a farm	Incorporation of ash into soil
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Using waste exemption	On a farm	Use of baled end-of-life tyres in construction
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Using waste exemption	On a farm	Burning of waste as a fuel in a small appliance



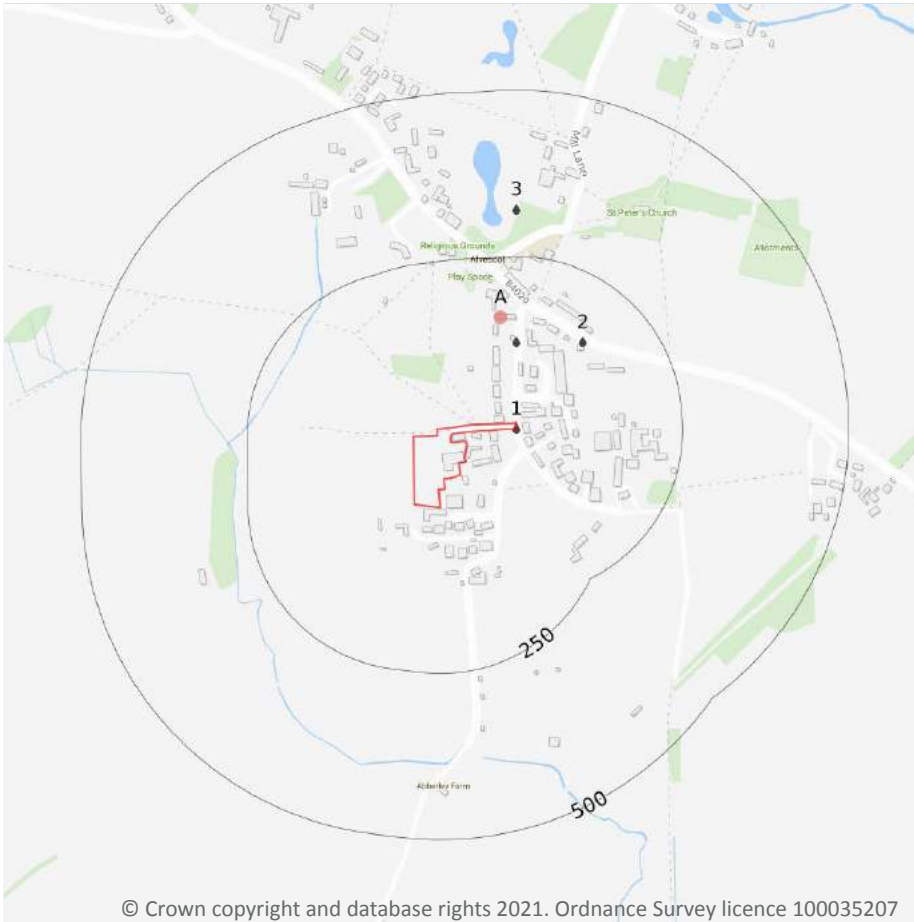
ID	Location	Site	Reference	Category	Sub-Category	Description
D	400m N	BUTLERS COURT FARM, THE OLD STABLES, MAIN ROAD, ALVESCOT, BAMPTON, OX18 2PU	WEX070452	Using waste exemption	On a farm	Use of waste for a specified purpose
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Disposing of waste exemption	Both agricultural and non- agricultural waste	Deposit of waste from dredging of inland waters
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Disposing of waste exemption	Both agricultural and non- agricultural waste	Burning waste in the open
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Cleaning, washing, spraying or coating relevant waste
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Aerobic composting and associated prior treatment
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Treatment of waste in a biobed or biofilter
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Treating waste exemption	Both agricultural and non- agricultural waste	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Using waste exemption	Both agricultural and non- agricultural waste	Use of waste in construction
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Using waste exemption	Both agricultural and non- agricultural waste	Spreading waste on agricultural land to confer benefit



ID	Location	Site	Reference	Category	Sub-Category	Description
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Using waste exemption	Both agricultural and non-agricultural waste	Incorporation of ash into soil
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Using waste exemption	Both agricultural and non-agricultural waste	Burning of waste as a fuel in a small appliance
D	418m N	The Old Stables Butlers Court Farm Main Road BAMPTON Oxfordshire OX18 2PU	EPR/WF0633H K/A001	Using waste exemption	Both agricultural and non-agricultural waste	Use of waste for a specified purpose

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

4 Current industrial land use



4.1 Recent industrial land uses

Records within 250m

1

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 29**

ID	Location	Company	Address	Activity	Category
A	160m N	R H Lewin	Overgreen, Lower End, Alvescot, Bampton, Oxfordshire, OX18 2QA	Furniture	Consumer Products

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

4

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 29**

ID	Location	Address	Details	
1	On site	STW AT THE GREEN, ALVESCOT, OXON, STW AT THE GREEN ALVESCOT OXON	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTCR.1716 Permit Version: 1 Receiving Water: TRIB OF CLANFIELD BROOK	Status: REVOKED - UNSPECIFIED Issue date: 18/12/1980 Effective Date: 18/12/1980 Revocation Date: 11/01/1989
A	121m N	Alvescot	Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: TEMP.0325 Permit Version: 1 Receiving Water: CLANFIELD BROOK	Status: REVOKED - UNSPECIFIED Issue date: 02/11/1989 Effective Date: 02/11/1989 Revocation Date: 26/11/2002
2	157m NE	MAIN STREET, ALVESCOT, OXON, MAIN STREET ALVESCOT OXON	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTCU.0847 Permit Version: 1 Receiving Water: -	Status: LAPSED UNDER SCHEDULE 23 ENVIRONMENT ACT 1995 Issue date: 24/01/1979 Effective Date: 24/01/1979 Revocation Date: 01/10/1996
3	321m N	THE PLOUGH INN, ALVESCOT, OXON, THE PLOUGH INN ALVESCOT OXON	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTCU.0803 Permit Version: 1 Receiving Water: CORNBRAH STRATA	Status: REVOKED - UNSPECIFIED Issue date: 26/04/1978 Effective Date: 26/04/1978 Revocation Date: 03/02/1989

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.

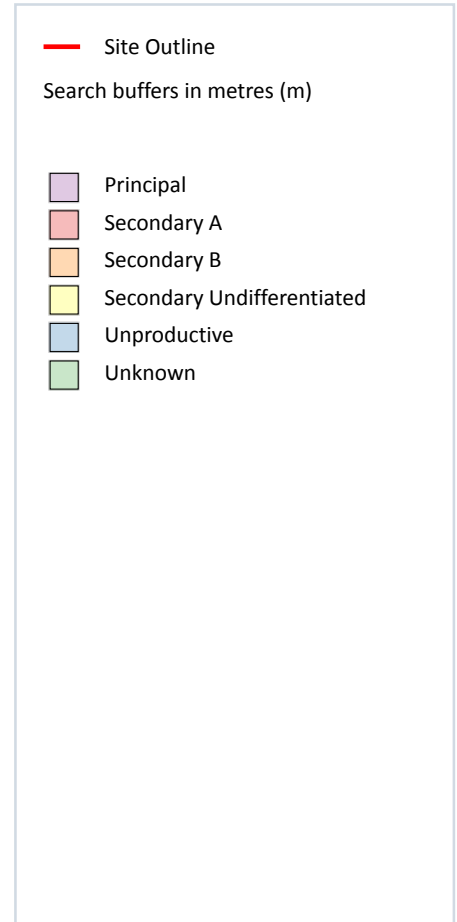
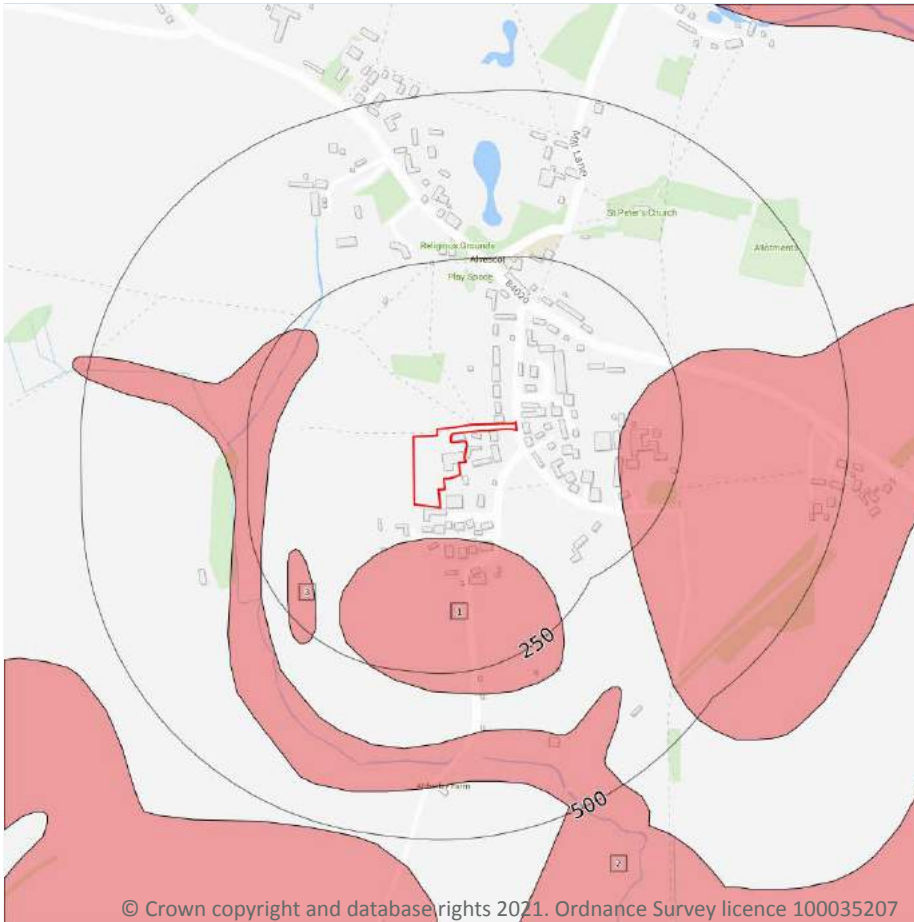
4.21 Pollution inventory radioactive waste

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



5.1 Superficial aquifer

Records within 500m

3

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 35**

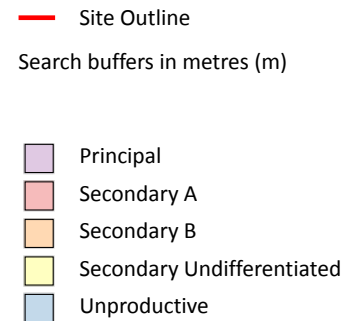
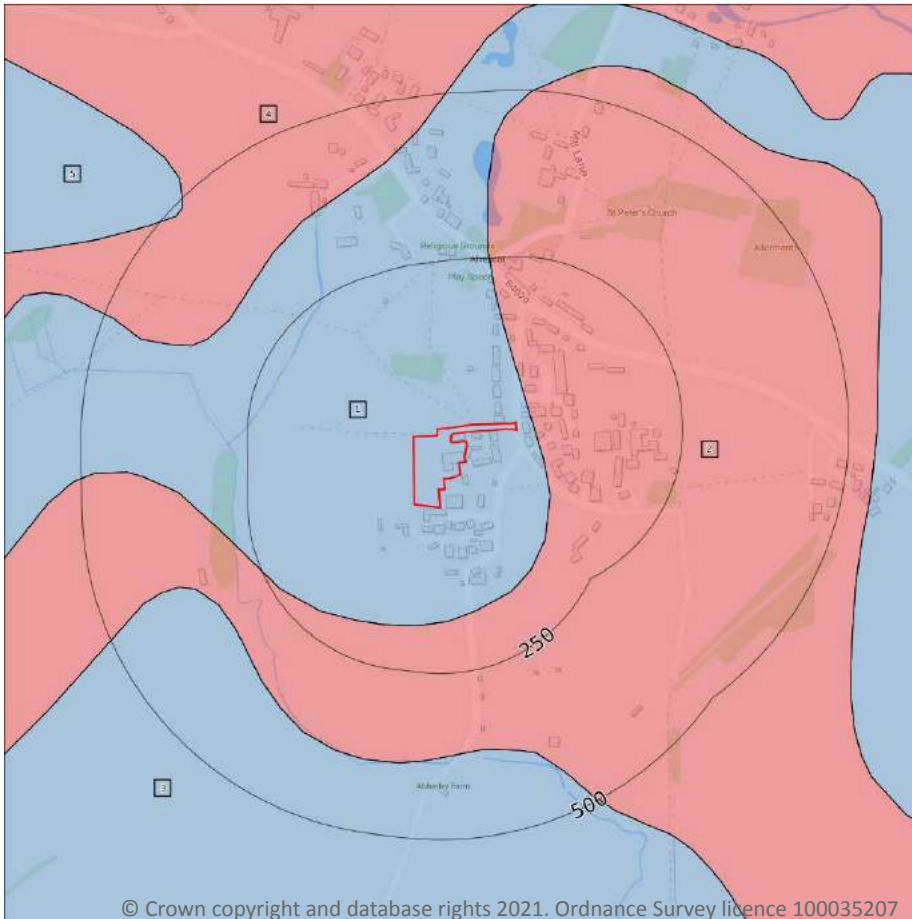
ID	Location	Designation	Description
1	47m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	157m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	184m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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



Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m

5

Aquifer status of groundwater held within bedrock geology.

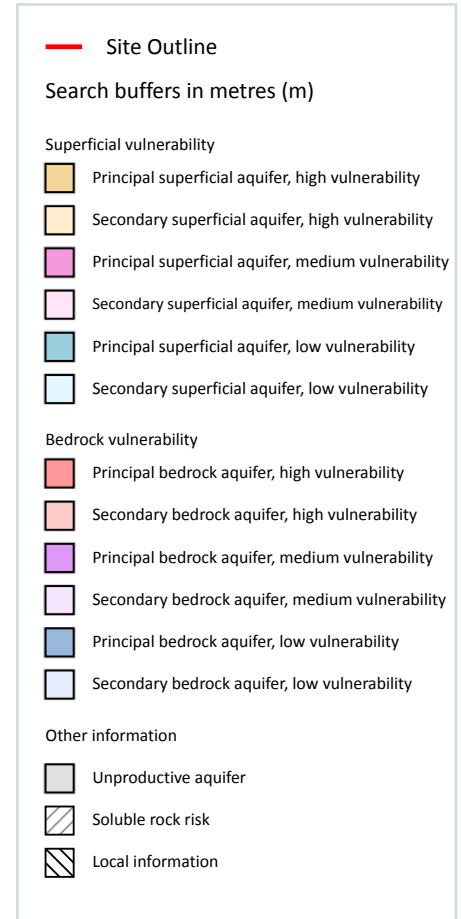
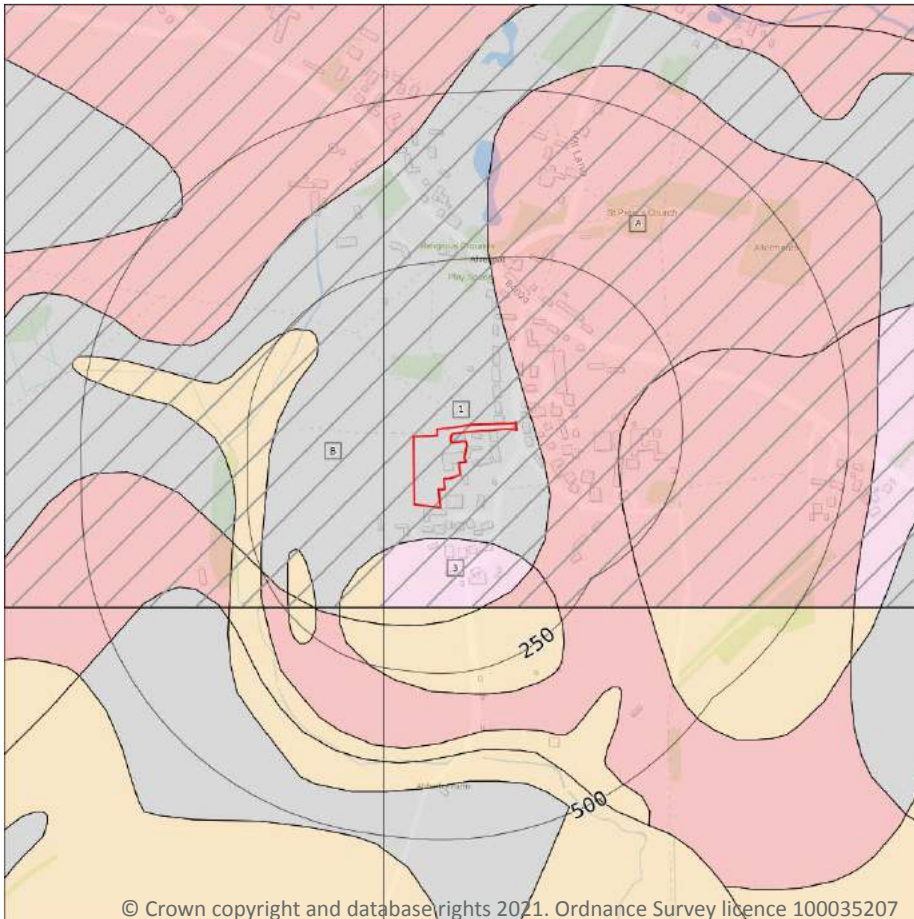
Features are displayed on the Bedrock aquifer map on **page 37**

ID	Location	Designation	Description
1	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	24m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	328m SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
4	328m NW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	488m NW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

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

4

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 39**



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures
A	24m E	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
B	45m W	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive 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: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures
3	46m S	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: High	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	1
------------------------	----------

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

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
A	Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.	7.000000000000001%

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

5.5 Groundwater vulnerability- local information

Records on site

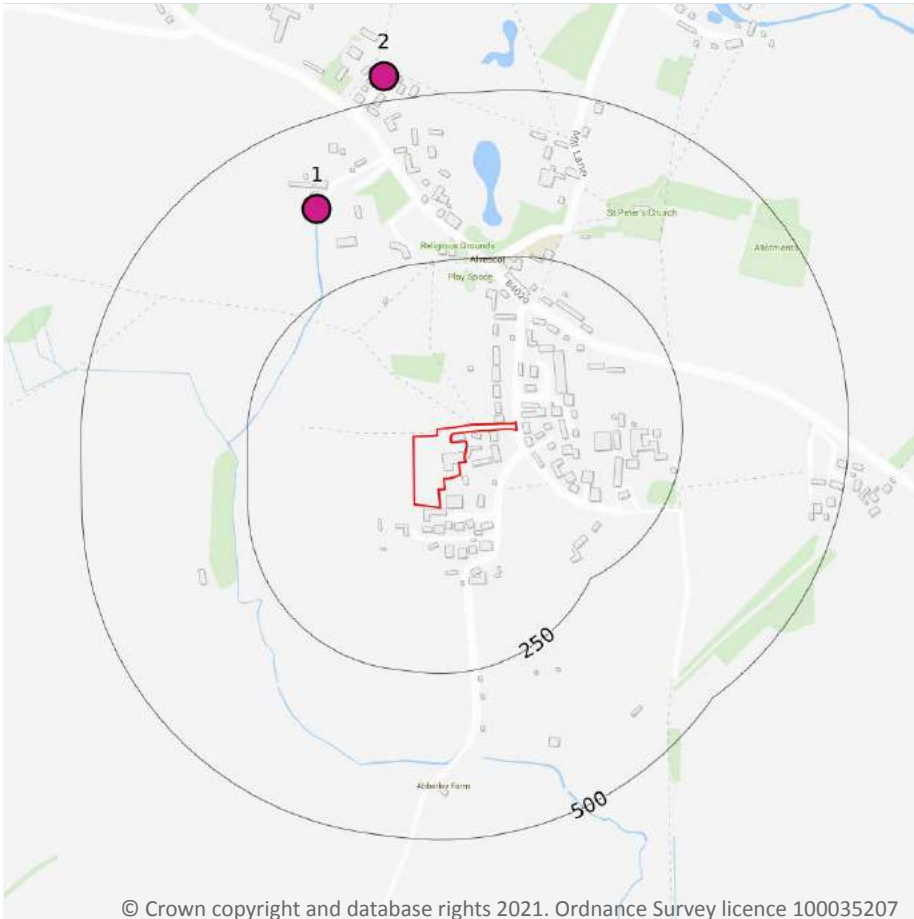
0

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

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



Abstractions and Source Protection Zones



5.6 Groundwater abstractions

Records within 2000m

7

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 42**

ID	Location	Details	
1	372m NW	Status: Historical Licence No: 28/39/09/0026 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: BUTLERS COURT FARM, ALVESCOTE, OXFORD Data Type: Point Name: EG & A J OAKEY Easting: 426900 Northing: 204600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 05/09/1966 Expiry Date: - Issue No: 100 Version Start Date: 31/12/1978 Version End Date: -
2	537m N	Status: Historical Licence No: 28/39/09/0049 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: HOME FARM, ALVESCOT, OXON Data Type: Point Name: HONOUR Easting: 427000 Northing: 204800	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/02/1967 Expiry Date: - Issue No: 100 Version Start Date: 31/12/1971 Version End Date: -
-	1407m S	Status: Historical Licence No: 28/39/09/0055 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: BAZELAND FARM, CLANFIELD, OXON (WELL) Data Type: Point Name: WOOLLIAMS Easting: 426950 Northing: 202750	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/03/1967 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2002 Version End Date: -
-	1465m W	Status: Historical Licence No: 28/39/09/0013 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: ASTHALL FARM, KENCOTT, GLOS Data Type: Point Name: WALKER Easting: 425600 Northing: 204500	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 11/07/1966 Expiry Date: - Issue No: 101 Version Start Date: 01/01/2005 Version End Date: -
-	1553m S	Status: Historical Licence No: 28/39/09/0055 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: BAZELAND FARM, CLANFIELD, OXON Data Type: Point Name: WOOLLIAMS Easting: 427000 Northing: 202600	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 13/03/1967 Expiry Date: - Issue No: 100 Version Start Date: 13/03/1967 Version End Date: -

ID	Location	Details	
-	1703m W	Status: Historical Licence No: 28/39/09/0005 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: HOME FARM, KENCOT, GLOS Data Type: Point Name: EUSTACE BROS Easting: 425400 Northing: 204700	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 14/03/1966 Expiry Date: - Issue No: 100 Version Start Date: 14/03/1966 Version End Date: -
-	1852m W	Status: Historical Licence No: 28/39/09/0088 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: THE FIVE BELLS, BROADWELL Data Type: Point Name: ORMONDS DEVELOPMENT AND MANAGEMENT LTD Easting: 425200 Northing: 204000	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 29/06/1992 Expiry Date: - Issue No: 101 Version Start Date: 16/04/2004 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m

0

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

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

5.8 Potable abstractions

Records within 2000m

1

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 42**

ID	Location	Details
-	1852m W	Status: Historical Licence No: 28/39/09/0088 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: THE FIVE BELLS, BROADWELL Data Type: Point Name: ORMONDS DEVELOPMENT AND MANAGEMENT LTD Easting: 425200 Northing: 204000
		Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 29/06/1992 Expiry Date: - Issue No: 101 Version Start Date: 16/04/2004 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m

0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m

0

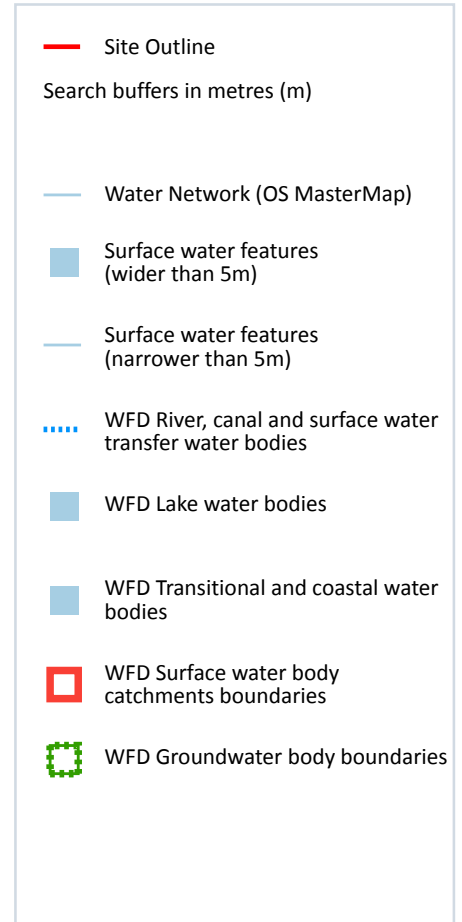
Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

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

6 Hydrology



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207



6.1 Water Network (OS MasterMap)

Records within 250m **2**

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

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type of water feature	Ground level	Permanence	Name
4	219m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Clanfield Brook

ID	Location	Type of water feature	Ground level	Permanence	Name
5	233m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Clanfield Brook

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	1
----------------------------	----------

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 46**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	1
------------------------	----------

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

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
2	On site	River WB catchment	Broadwell Brook	GB106039030232	Windrush	Cotswolds

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

6.4 WFD Surface water bodies

Records identified	1
---------------------------	----------

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

water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 46**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	2083m SW	River	Broadwell Brook	GB106039030232	Moderate	Good	Moderate	2016

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

6.5 WFD Groundwater bodies

Records on site

1

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

Features are displayed on the Hydrology map on **page 46**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
1	On site	Kemble Forest Marble	GB40602G600500	Good	Good	Good	2015

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



7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

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

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

7.2 Historical Flood Events

Records within 250m

0

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

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

7.3 Flood Defences

Records within 250m

0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

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

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

7.5 Flood Storage Areas

Records within 250m

0

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

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



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

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

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

7.7 Flood Zone 3

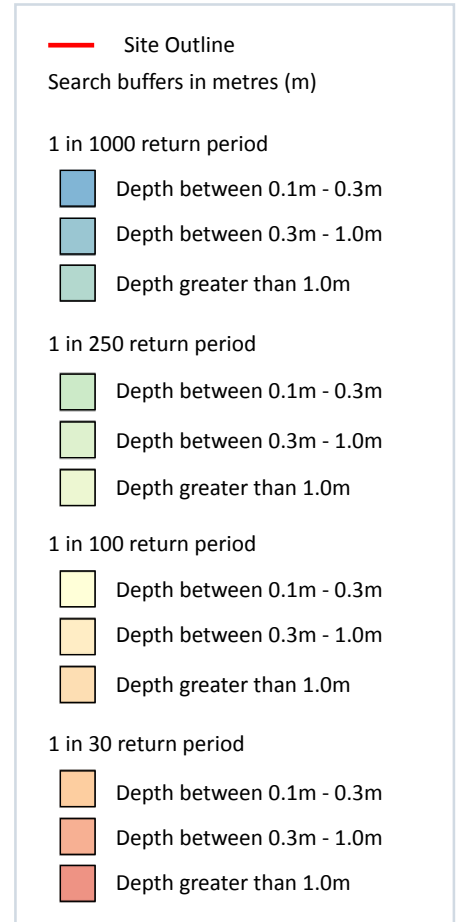
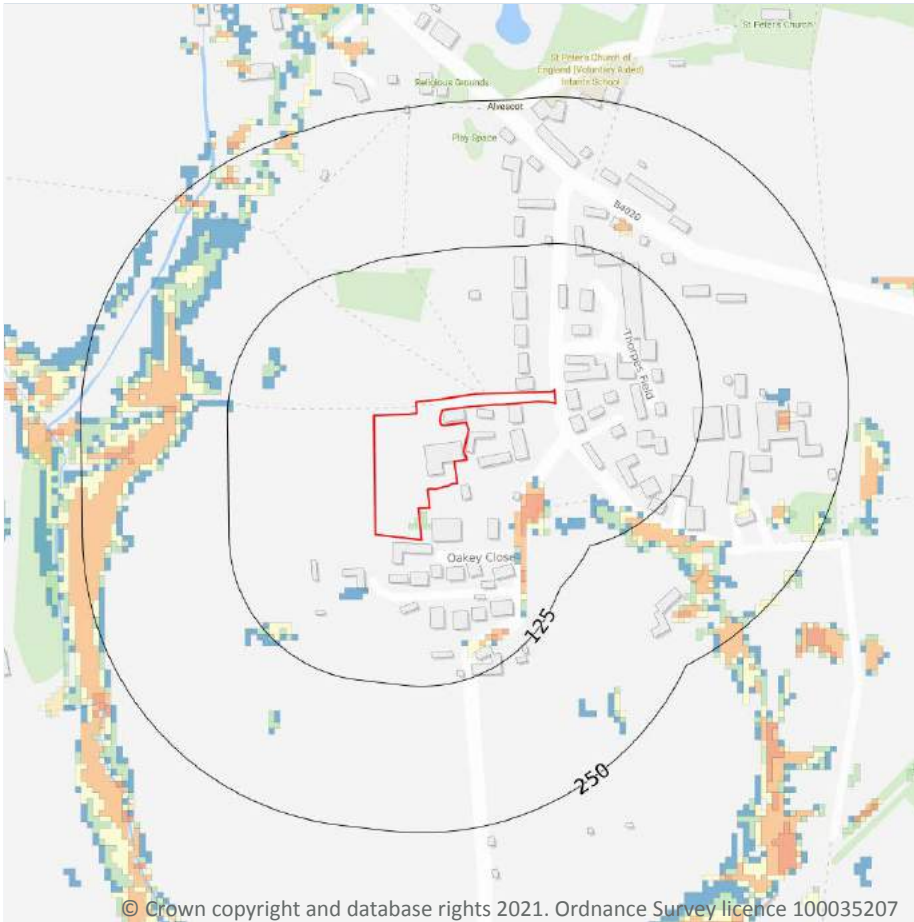
Records within 50m

0

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

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

8 Surface water flooding



8.1 Surface water flooding

Highest risk on site	1 in 250 year, 0.1m - 0.3m
Highest risk within 50m	1 in 250 year, 0.1m - 0.3m

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

Features are displayed on the Surface water flooding map on **page 52**

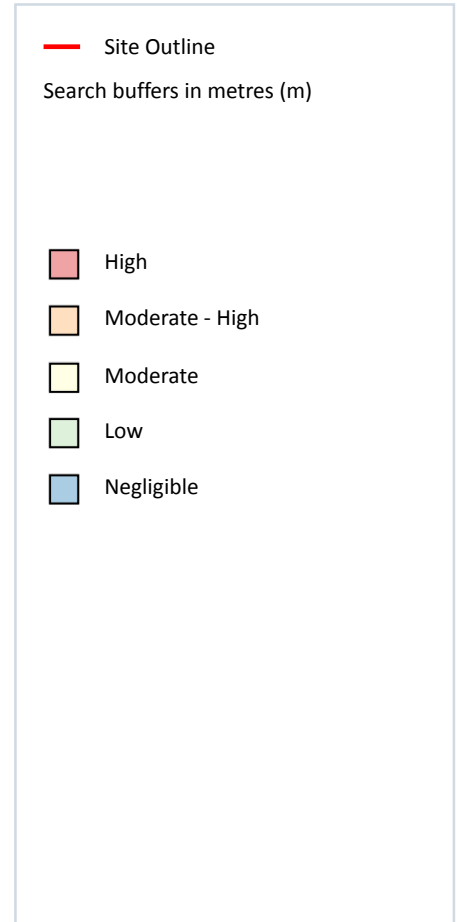
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Between 0.1m and 0.3m
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiantal Risk Analytics.

9 Groundwater flooding



9.1 Groundwater flooding

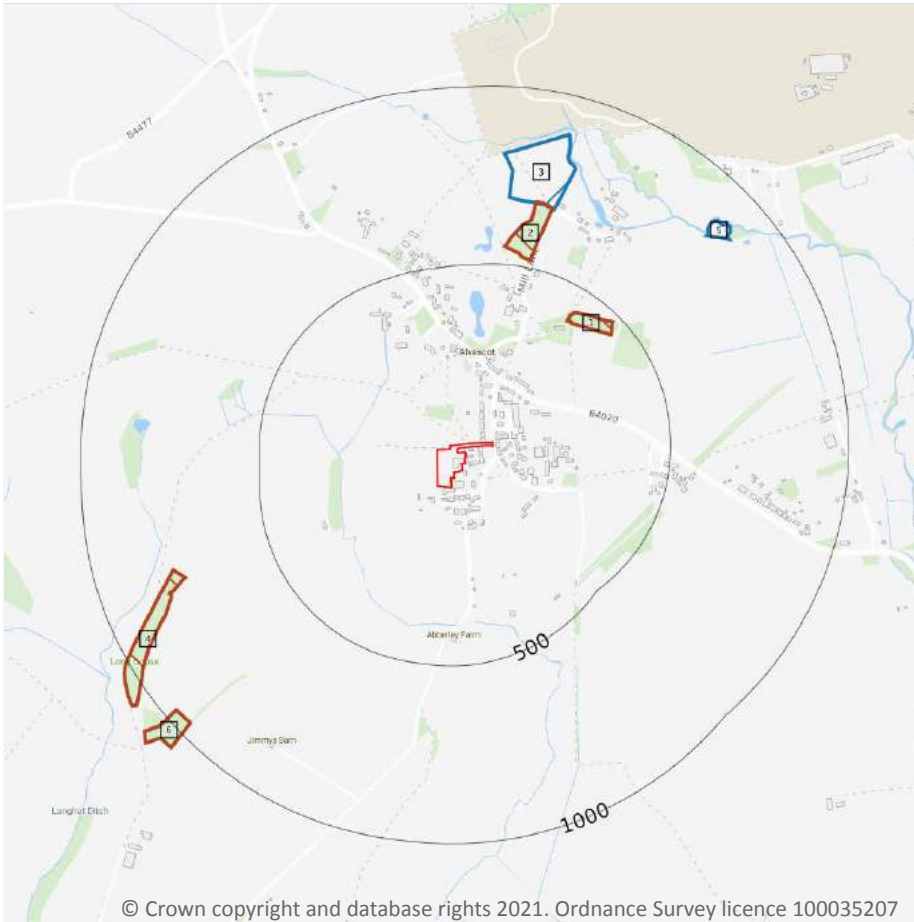
Highest risk on site	Negligible
Highest risk within 50m	Low

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

Features are displayed on the Groundwater flooding map on **page 54**


This data is sourced from Ambiental Risk Analytics.


10 Environmental designations



— Site Outline

Search buffers in metres (m)

 Sites of Special Scientific Interest (SSSI)

 Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

2

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 55**

ID	Location	Name	Data source
3	674m N	Alvescot Meadows	Natural England



ID	Location	Name	Data source
5	837m NE	Alvescot Meadows	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

0

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

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



10.6 Local Nature Reserves (LNR)

Records within 2000m

0

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

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

10.7 Designated Ancient Woodland

Records within 2000m

6

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

Features are displayed on the Environmental designations map on **page 55**

ID	Location	Name	Woodland Type
1	401m NE	Unknown	Ancient & Semi-Natural Woodland
2	521m N	Unknown	Ancient & Semi-Natural Woodland
4	754m W	Long Copse	Ancient & Semi-Natural Woodland
6	961m SW	Unknown	Ancient & Semi-Natural Woodland
-	1714m E	Garson's Copse	Ancient & Semi-Natural Woodland
-	1810m E	Garson's Copse	Ancient & Semi-Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m

0

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

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



10.9 Forest Parks

Records within 2000m	0
----------------------	---

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0
----------------------	---

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

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

10.11 Green Belt

Records within 2000m	0
----------------------	---

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0
----------------------	---

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0
----------------------	---

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

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



10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

4

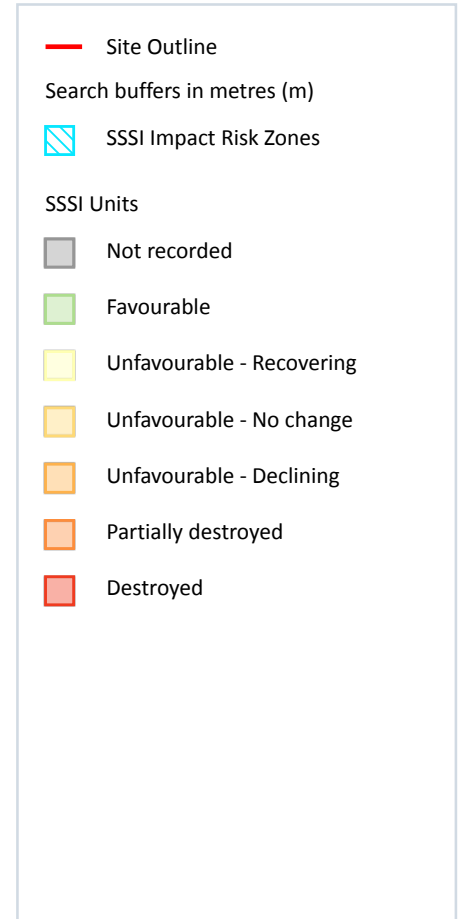
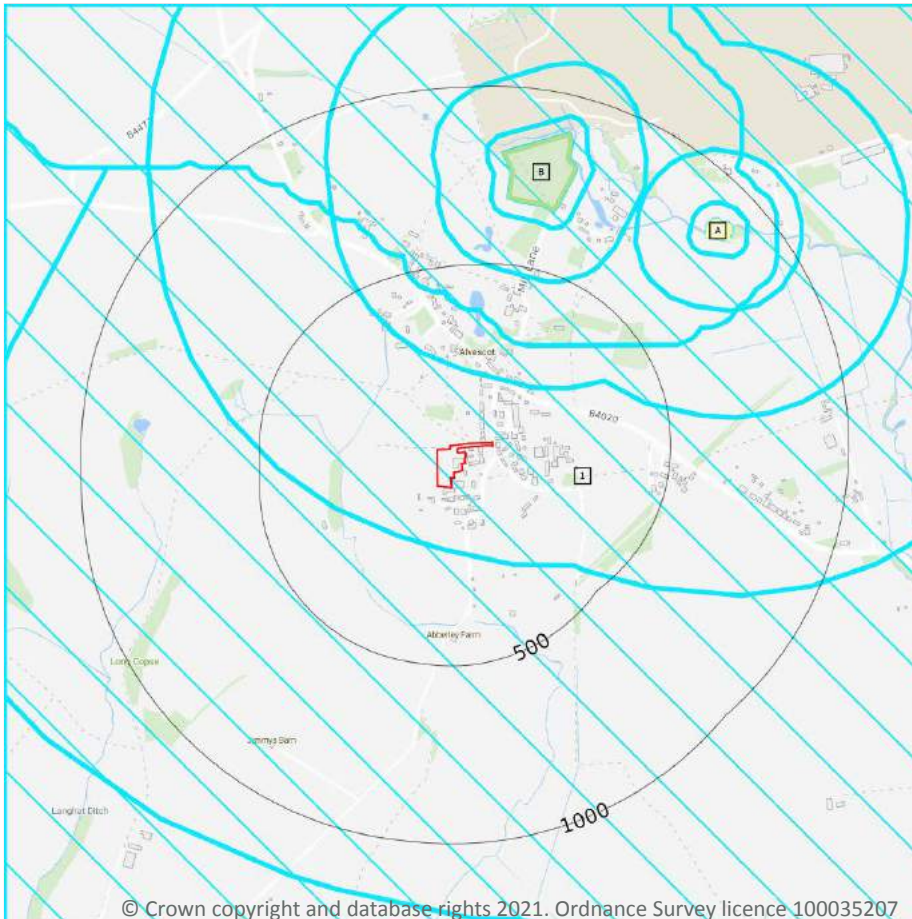
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	Great brook (Shill Brook to Thames) NVZ	Surface Water	S471	Existing
156m S	Upper Thames Gravels	Groundwater	G84	Existing
1704m N	Upper Thames Gravels	Groundwater	G84	Existing
1704m N	Great brook (Shill Brook to Thames) NVZ	Surface Water	S471	Existing

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



SSSI Impact Zones and Units



10.17 SSSI Impact Risk Zones

Records on site

1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 60**

ID	Location	Type of developments requiring consultation
1	On site	<p>Infrastructure - Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals</p> <p>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.</p> <p>Residential - Residential development of 100 units or more.</p> <p>Rural residential - Any residential development of 50 or more houses outside existing settlements/urban areas.</p> <p>Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t).</p> <p>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</p> <p>Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.</p> <p>Composting - Any composting proposal with more than 500 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.</p> <p>Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location)</p> <p>Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply</p>

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	2
-----------------------------	----------

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 60**

ID: B
 Location: 674m N
 SSSI name: Alvescot Meadows
 Unit name: Honours Field
 Broad habitat: Neutral Grassland - Lowland
 Condition: Favourable
 Reportable features:

Feature name	Feature condition	Date of assessment
Lowland neutral grassland (MG5)	Favourable	06/06/2011
Lowland neutral grassland (MG8)	Favourable	06/06/2011



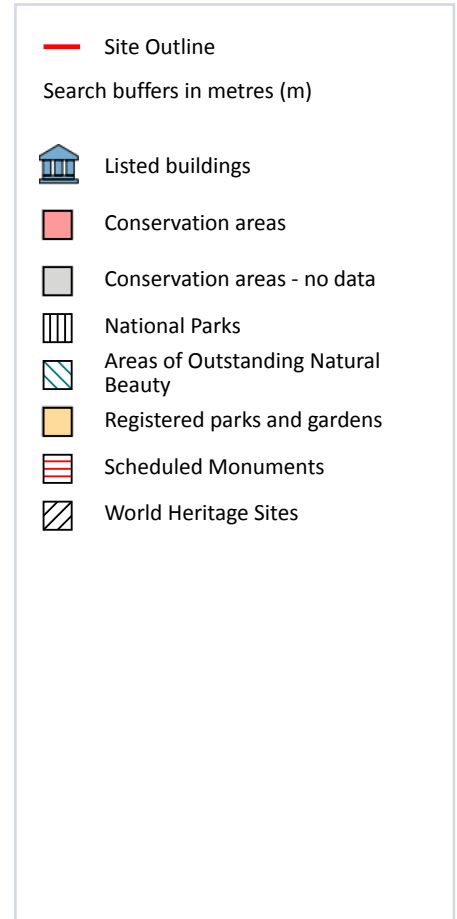
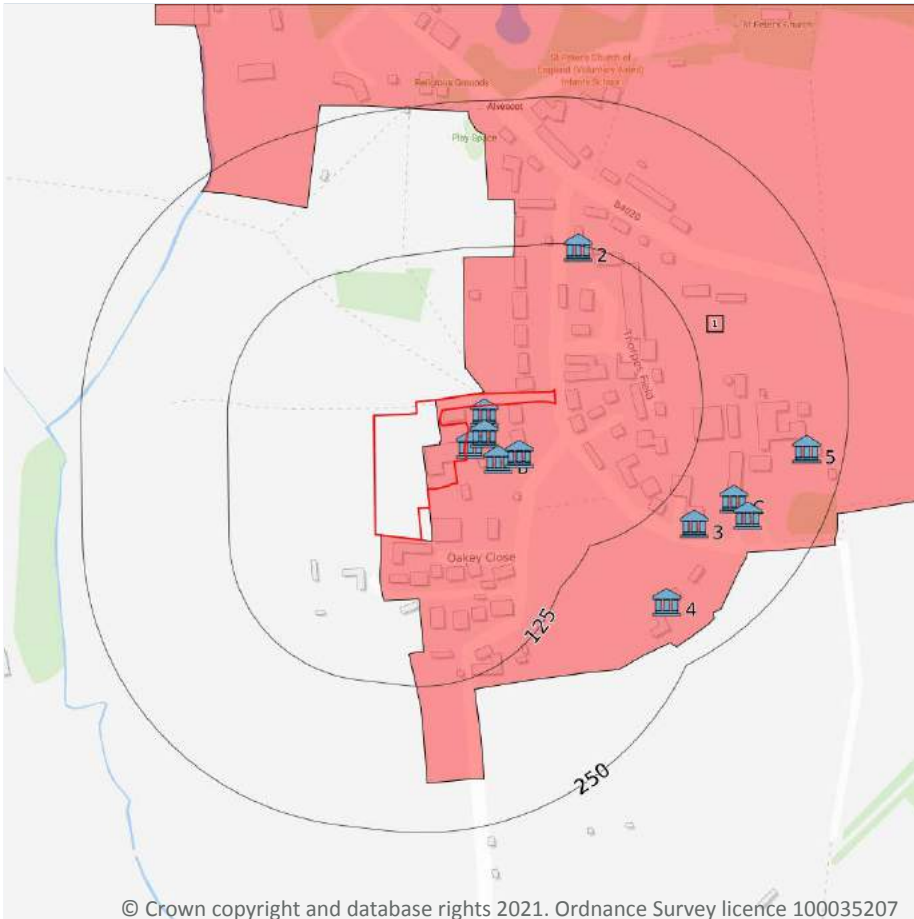
Feature name	Feature condition	Date of assessment
Lowland wetland including basin fen, valley fen, floodplain fen, waterfringe fen, spring/flush fen and raised bog lagg	Favourable	04/07/2012

ID: A
Location: 837m NE
SSSI name: Alvescot Meadows
Unit name: 2
Broad habitat: Neutral Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

Feature name	Feature condition	Date of assessment
Lowland neutral grassland (MG5)	Unfavourable - Recovering	04/07/2012

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

11 Visual and cultural designations



11.1 World Heritage Sites

Records within 250m

0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

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

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

11.3 National Parks

Records within 250m

0

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

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

11.4 Listed Buildings

Records within 250m

11

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 63**

ID	Location	Name	Grade	Reference Number	Listed date
A	4m E	Stable 30 Metres West Of Park Farmhouse, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1053582	12/09/1955
A	6m S	Cartshed 40 Metres North West Of Park Farmhouse, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1053583	12/09/1955
A	14m E	Cattle Shed 25 Metres North West Of Park Farmhouse, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1367678	12/09/1955

ID	Location	Name	Grade	Reference Number	Listed date
B	27m E	Barn Adjacent To West Of Park Farmhouse, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1053581	12/09/1955
B	43m S	Park Farmhouse, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1367677	12/09/1955
2	123m N	The Old Bakery, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1367675	04/05/1989
3	157m SE	Stone Cottage, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1053578	04/05/1989
C	173m SE	Stable 30 Metres North Of Stone Cottage, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1053579	04/05/1989
C	190m SE	Rectory Cottage, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1367676	04/05/1989
4	194m SE	Old Rectory Farmhouse, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1198087	04/05/1989
5	217m E	The Old Rectory, With Attached Garden Walls And Piers To South, Alvescot, West Oxfordshire, Oxfordshire, OX18	II	1053580	12/09/1955

This data is sourced from English Heritage, 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 63**

ID	Location	Name	District	Date of designation
1	On site	Alvescot	West Oxfordshire	06/07/1988

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



11.6 Scheduled Ancient Monuments

Records within 250m

0

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

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

11.7 Registered Parks and Gardens

Records within 250m

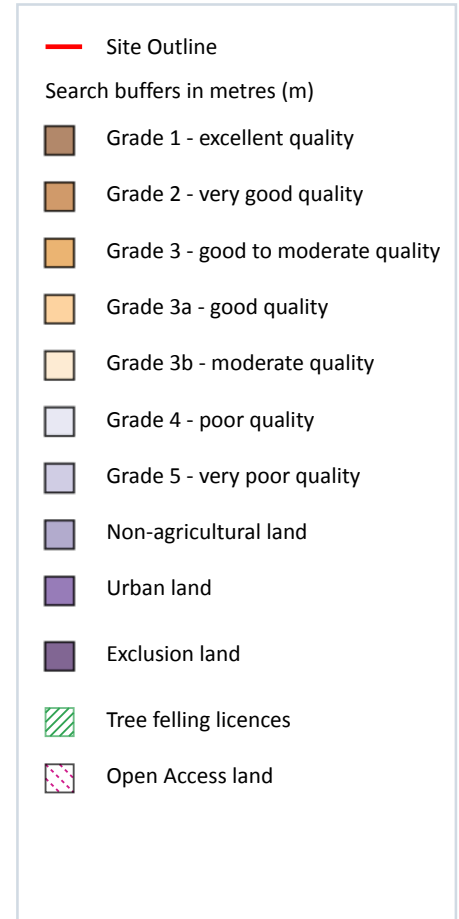
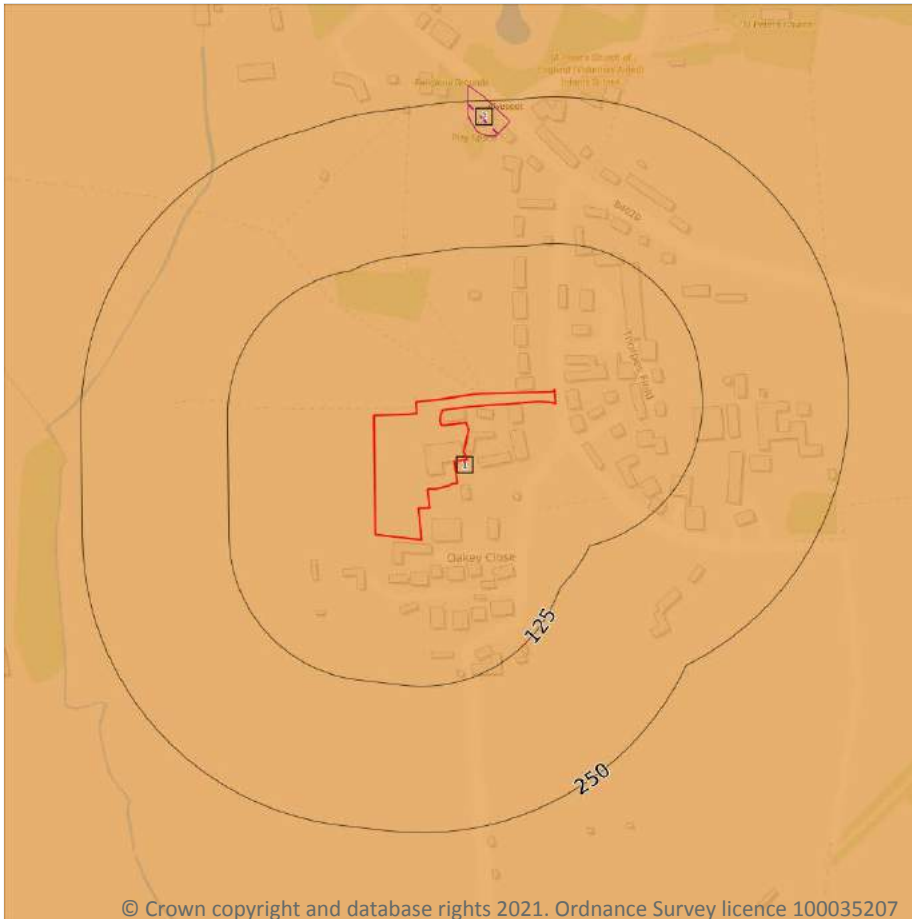
0

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

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



12 Agricultural designations



12.1 Agricultural Land Classification

Records within 250m

1

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

Features are displayed on the Agricultural designations map on **page 67**

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

This data is sourced from Natural England.



12.2 Open Access Land

Records within 250m

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 67**

ID	Location	Name	Classification	Other relevant legislation
2	220m N	Stocks Green	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.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m

1

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

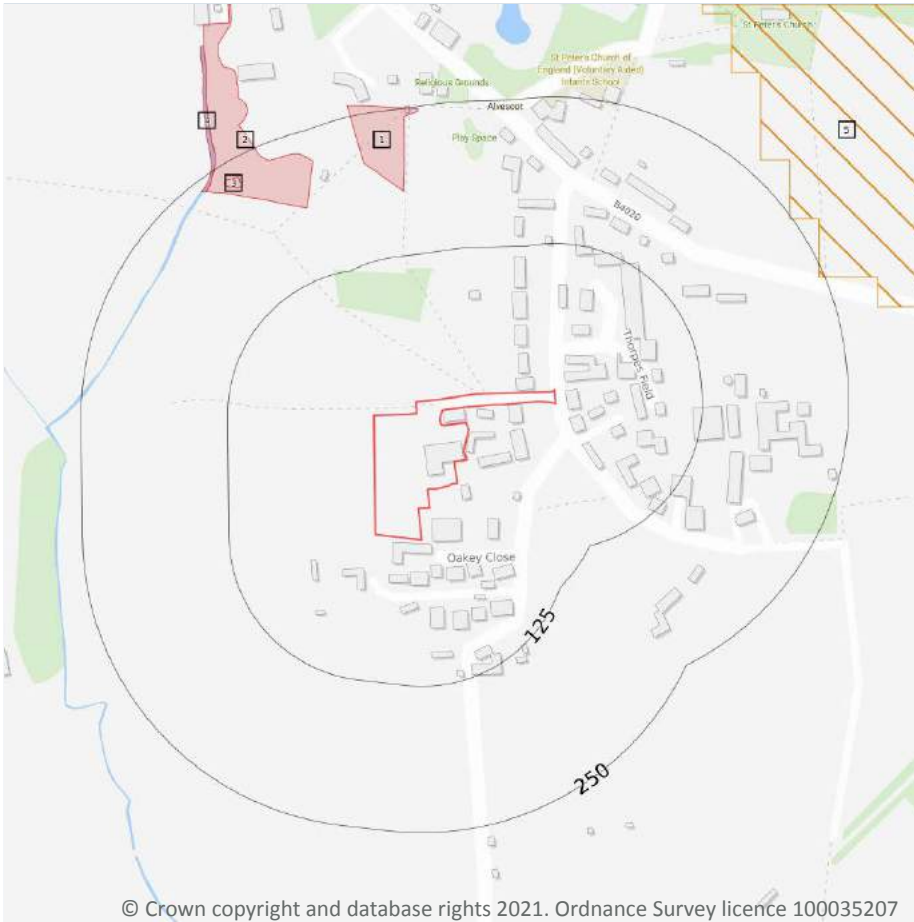
Location	Reference	Scheme	Start Date	End Date
234m E	644800	Countryside Stewardship (Middle Tier)	01/01/2019	31/12/2023



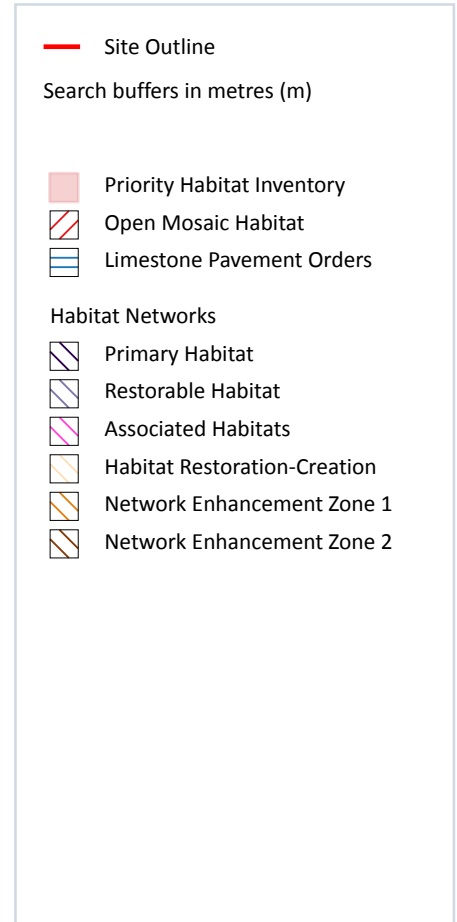
This data is sourced from Natural England.



13 Habitat designations



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207



13.1 Priority Habitat Inventory

Records within 250m

4

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

Features are displayed on the Habitat designations map on **page 70**

ID	Location	Main Habitat	Other habitats
1	180m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	186m N	No main habitat but additional habitats present	Main habitat: DWOOD (INV > 50%)
3	226m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	239m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

1

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.

Features are displayed on the Habitat designations map on **page 70**

ID	Location	Type	Habitat
5	245m NE	Network Enhancement Zone 1	Not specified

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

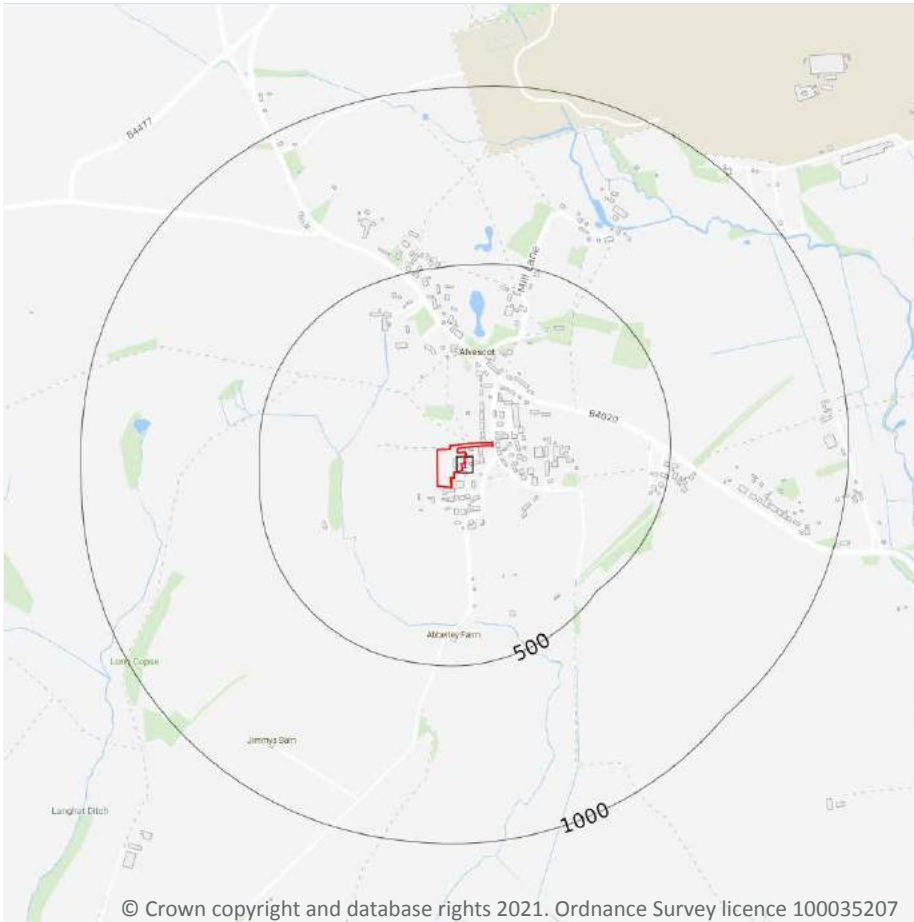
0

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 72**

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

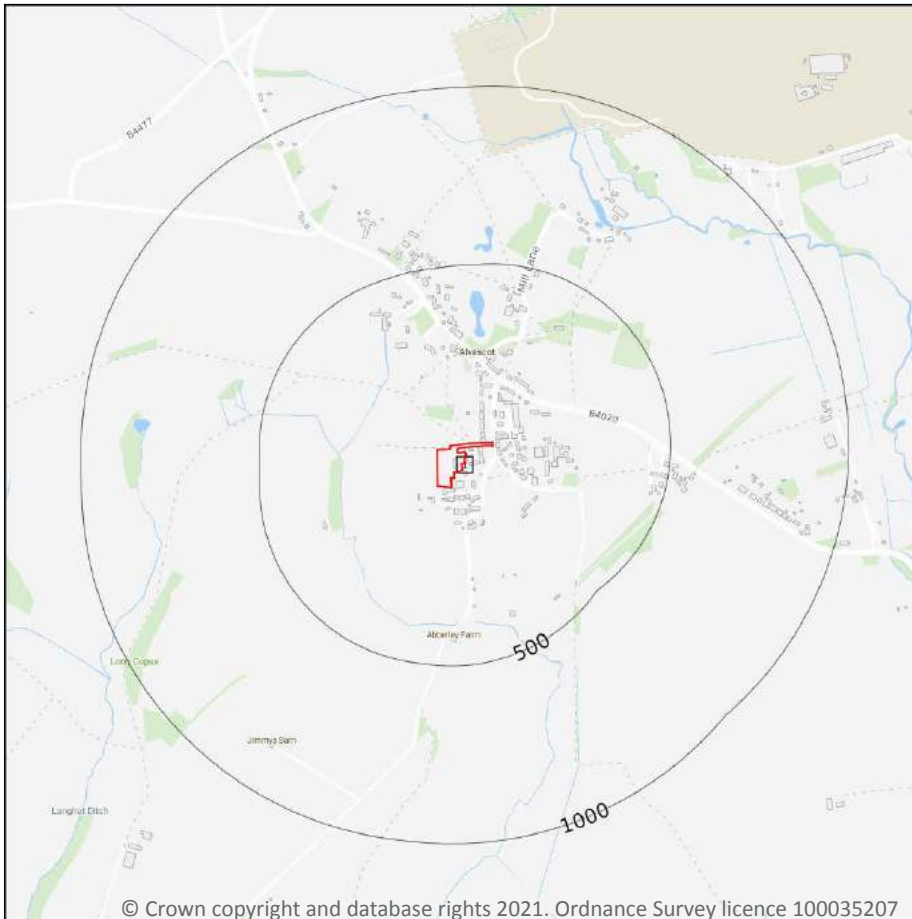
0

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 76**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW236_witney_v4

This data is sourced from the British Geological Survey.



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

15.2 Artificial and made ground (50k)

Records within 500m

0

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

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

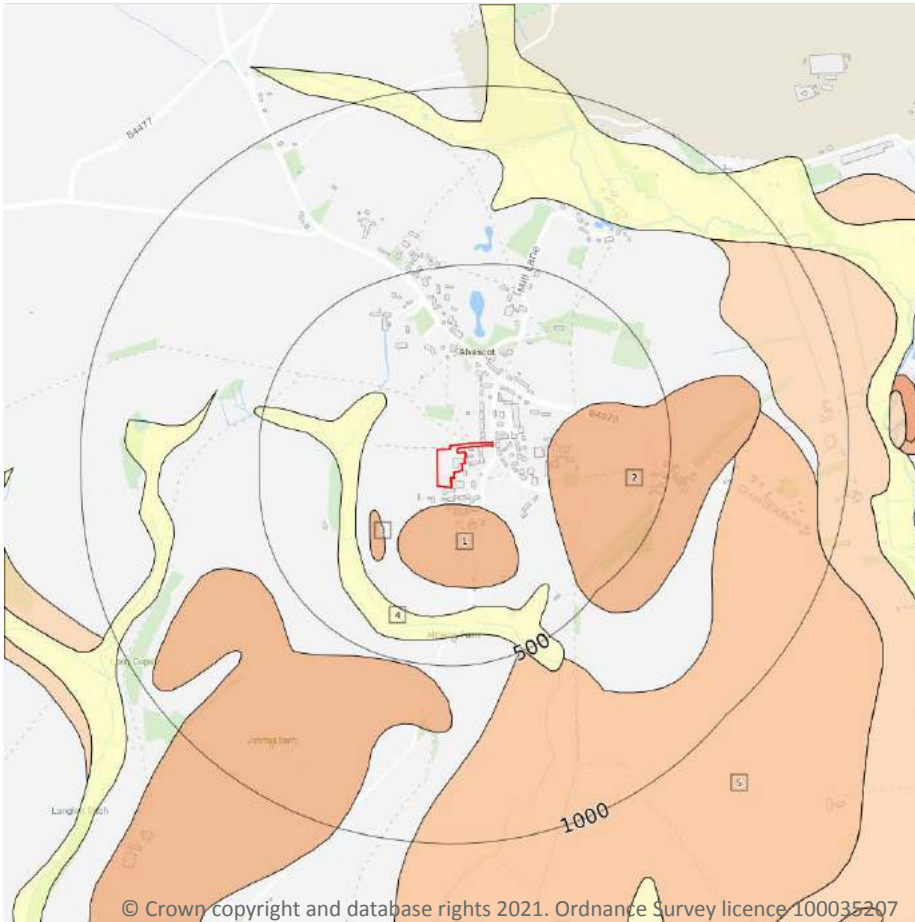
Records within 50m


0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



- Site Outline
- Search buffers in metres (m)
-  Landslip (50k)
- Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

5

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 78**

ID	Location	LEX Code	Description	Rock description
1	47m S	WV-XSV	WOLVERCOTE SAND AND GRAVEL MEMBER	SAND AND GRAVEL
2	157m E	WV-XSV	WOLVERCOTE SAND AND GRAVEL MEMBER	SAND AND GRAVEL
3	184m SW	WV-XSV	WOLVERCOTE SAND AND GRAVEL MEMBER	SAND AND GRAVEL
4	189m NW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
5	491m SE	SURA-XSV	SUMMERTOWN-RADLEY SAND AND GRAVEL MEMBER	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
47m S	Intergranular	Very High	High

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

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

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

This data is sourced from the British Geological Survey.

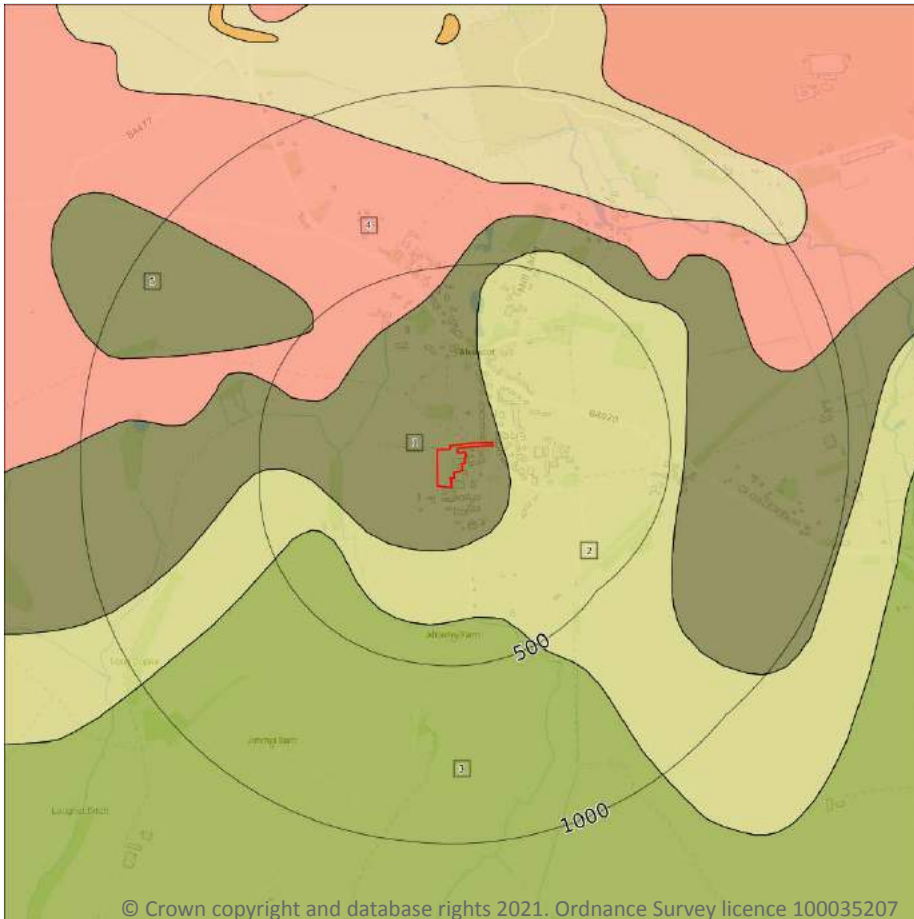
15.7 Landslip permeability (50k)

Records within 50m	0
---------------------------	----------

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



- Site Outline
- Search buffers in metres (m)
- Bedrock faults and other linear features (50k)
- Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

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 80**

ID	Location	LEX Code	Description	Rock age
1	On site	KLC-MDST	KELLAWAYS CLAY MEMBER - MUDSTONE	CALLOVIAN
2	24m E	KLS-SDSL	KELLAWAYS SAND MEMBER - SANDSTONE AND SILTSTONE, INTERBEDDED	CALLOVIAN
3	328m SW	OXWW-MDST	OXFORD CLAY FORMATION AND WEST WALTON FORMATION (UNDIFFERENTIATED) - MUDSTONE	CALLOVIAN

ID	Location	LEX Code	Description	Rock age
4	328m NW	CB-LMST	CORNBRASH FORMATION - LIMESTONE	BATHONIAN
5	488m NW	KLC-MDST	KELLAWAYS CLAY MEMBER - MUDSTONE	CALLOVIAN

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	Low	Very Low
24m SE	Mixed	Moderate	Moderate

This data is sourced from the British Geological Survey.

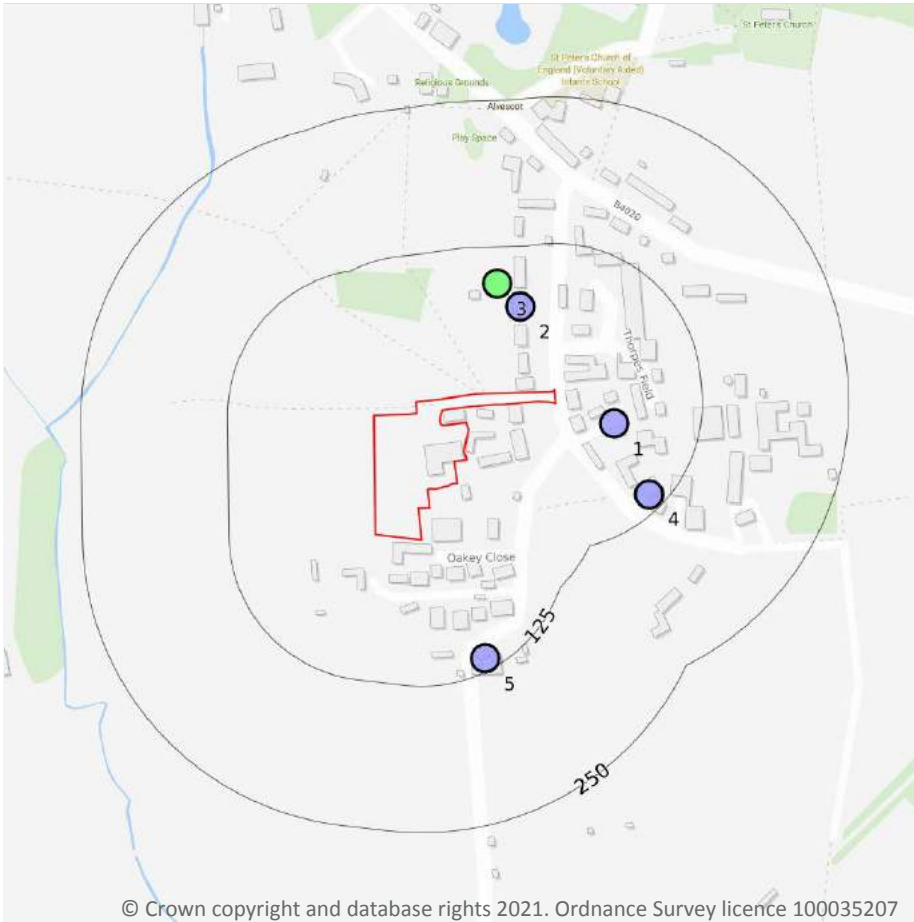
15.10 Bedrock faults and other linear features (50k)

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

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

This data is sourced from the British Geological Survey.

16 Boreholes



— Site Outline
 Search buffers in metres (m)

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

© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

16.1 BGS Boreholes

Records within 250m

5

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 82**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	53m E	427250 204250	NEAR COUNCIL HOUSES ALVESCOT	2.9	N	314837
2	74m N	427170 204350	COUNCIL HOUSES ALVESCOTT	-2.0	N	314839
3	94m N	427150 204370	ALVESCOT COUNCIL HOUSES OXON	19.2	N	314784

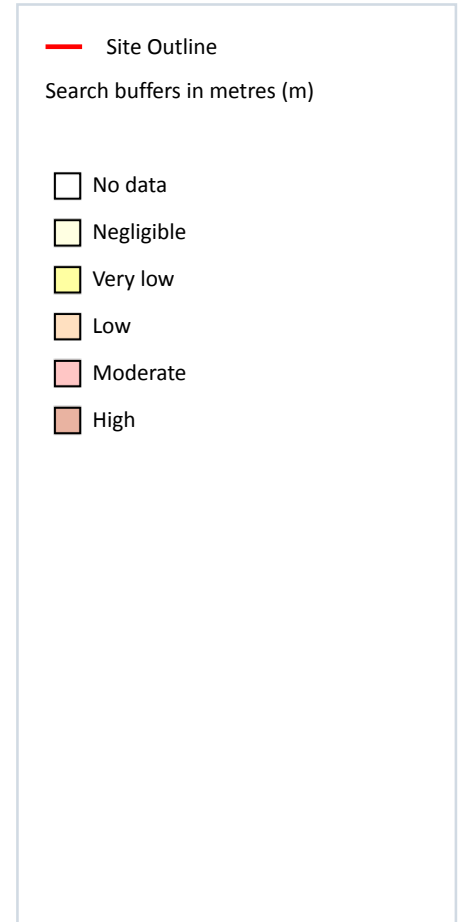
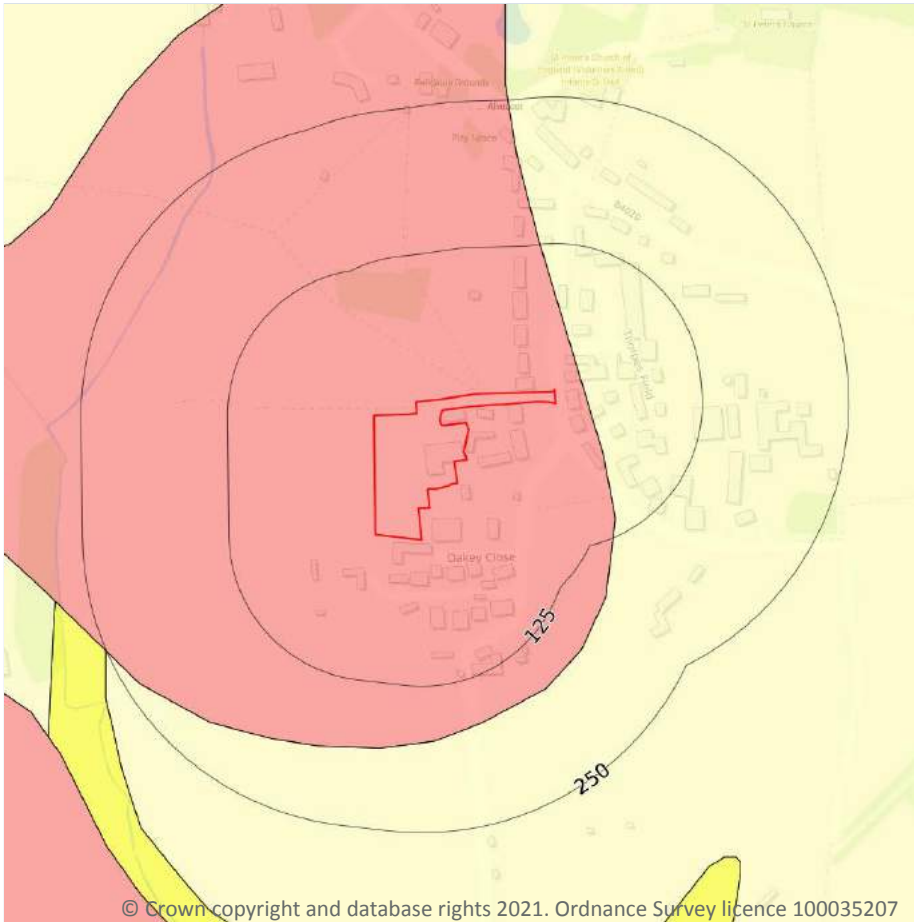


ID	Location	Grid reference	Name	Length	Confidential	Web link
4	111m SE	427280 204190	ROSE COTTAGE, ALVESCOT	5.8	N	314808
5	115m SE	427140 204050	WALNUT TREE COTTAGE, ALVESCOT	-2.0	N	314807

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



© Crown copyright and database rights 2021. Ordnance Survey licence 100035207

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).

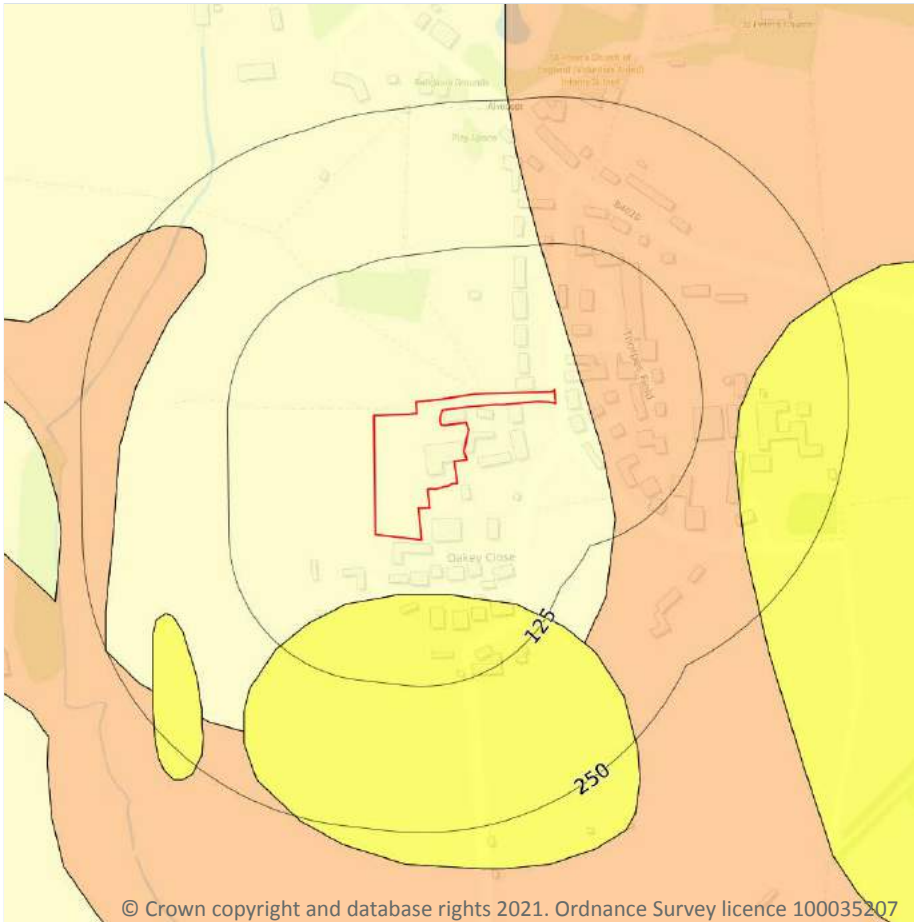
Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 84**

Location	Hazard rating	Details
On site	Moderate	Ground conditions predominantly high plasticity.
24m E	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

3

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 85**

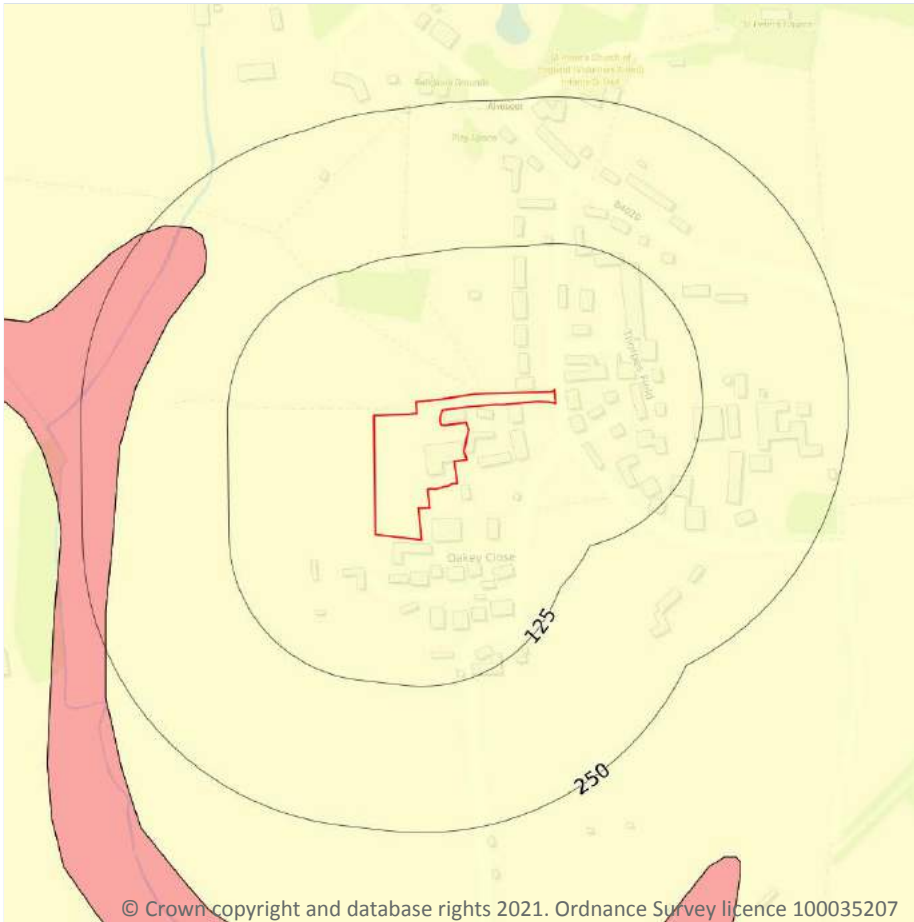
Location	Hazard rating	Details
On site	Negligible	Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.

Location	Hazard rating	Details
24m E	Low	Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.
47m S	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Compressible deposits



— Site Outline
Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m

1

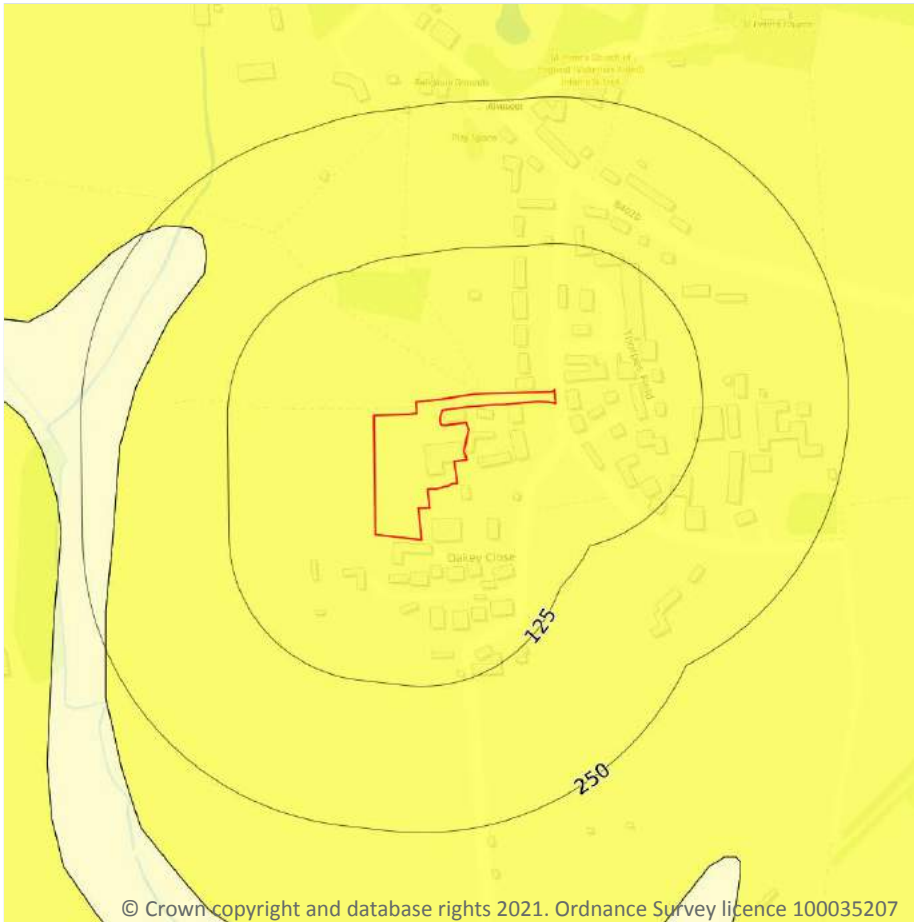
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 87**

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

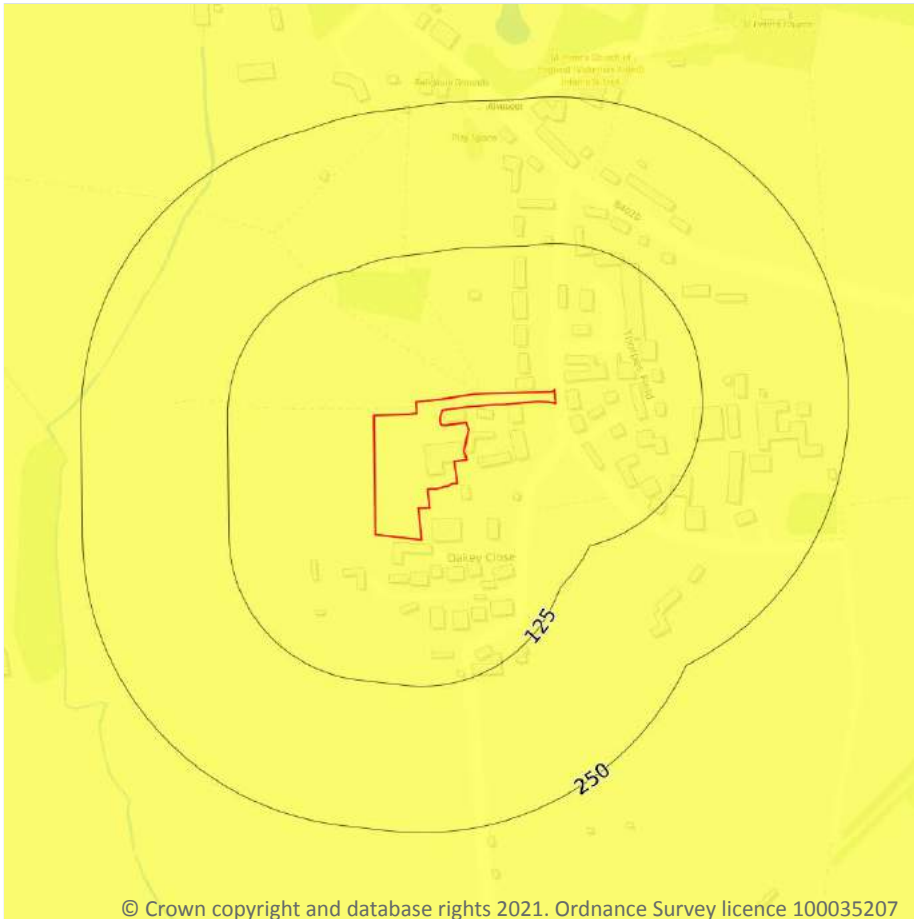
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 88**

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

1

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

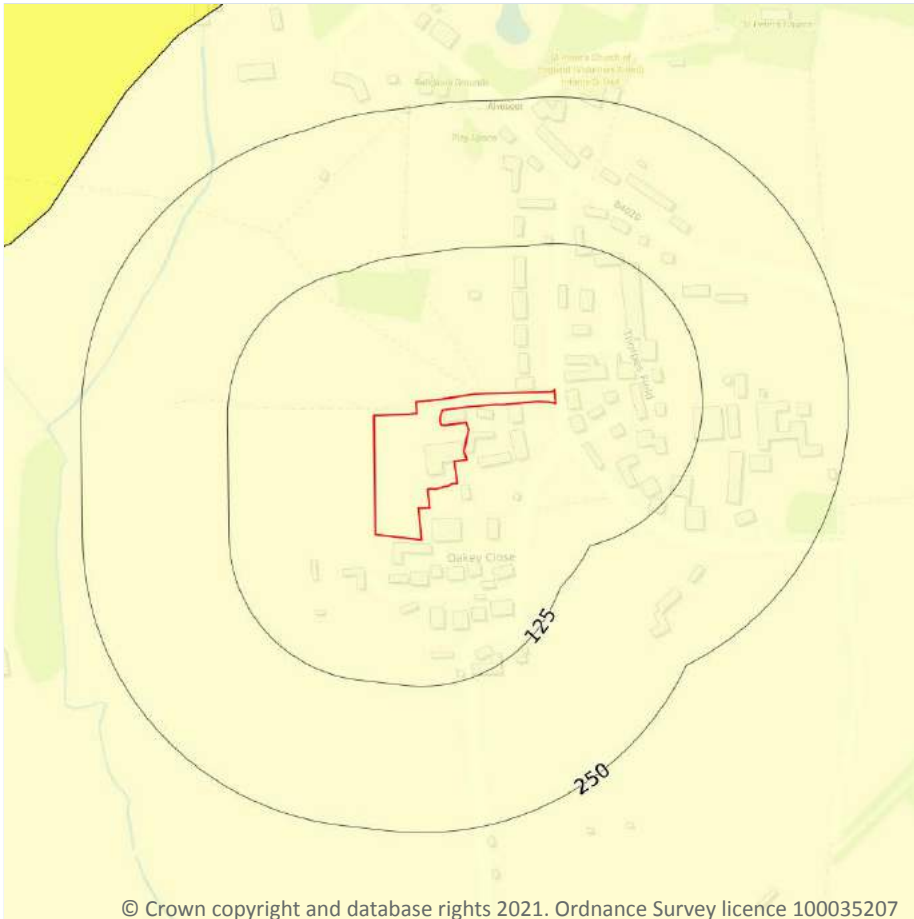
Features are displayed on the Natural ground subsidence - Landslides map on **page 89**

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

17.6 Ground dissolution of soluble rocks

Records within 50m

1

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

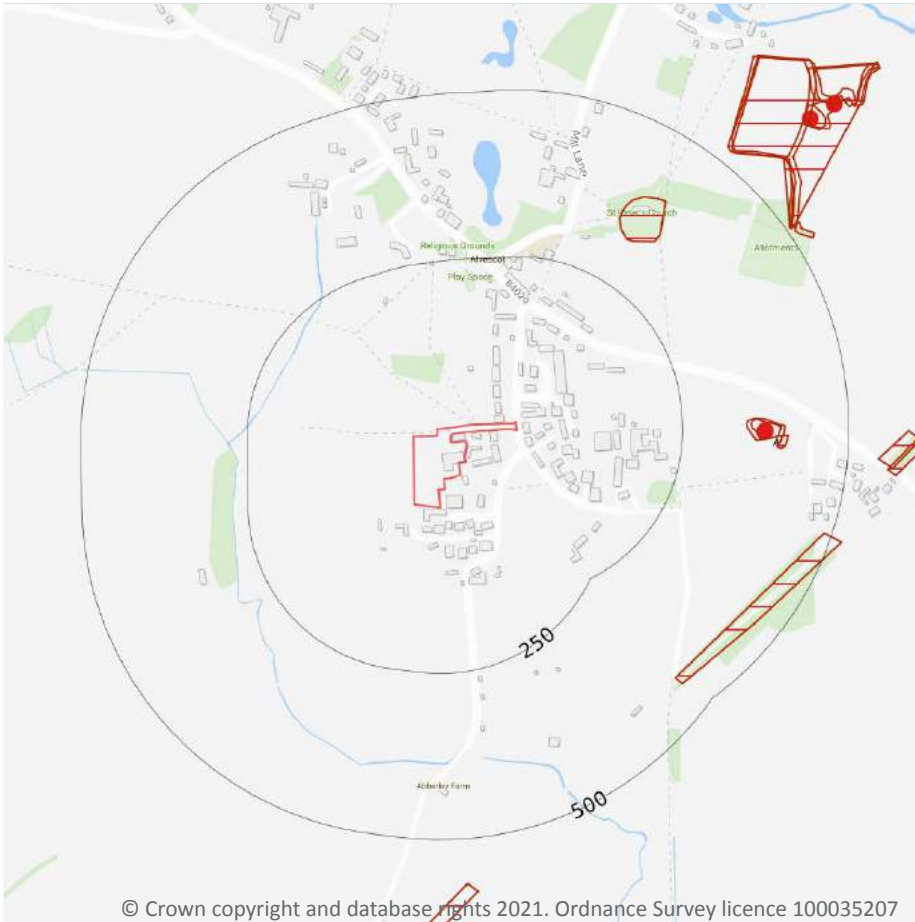
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 90**

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

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



18.1 Natural cavities

Records within 500m

0

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

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

18.2 BritPits

Records within 500m

1

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 91**

ID	Location	Details	Description
A	374m E	Name: Alvescot Address: Alvescot, FARINGDON, Oxfordshire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

0

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

This data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

0

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

This data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

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

This data is sourced from the British Geological Survey.



18.6 Non-coal mining

Records within 1000m	0
-----------------------------	----------

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).

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0
-----------------------------	----------

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

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

18.8 JPB mining areas

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

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

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

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

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

This data is sourced from the Coal Authority.

18.10 Brine areas

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

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

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

18.11 Gypsum areas

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

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

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

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

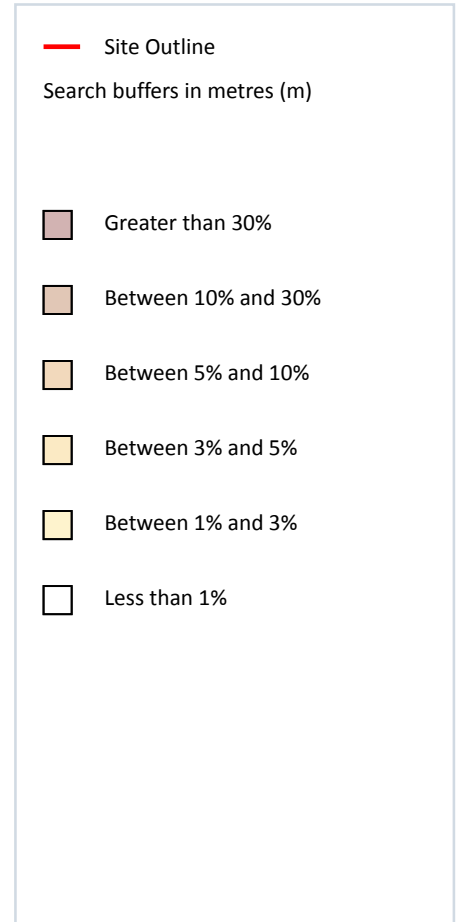
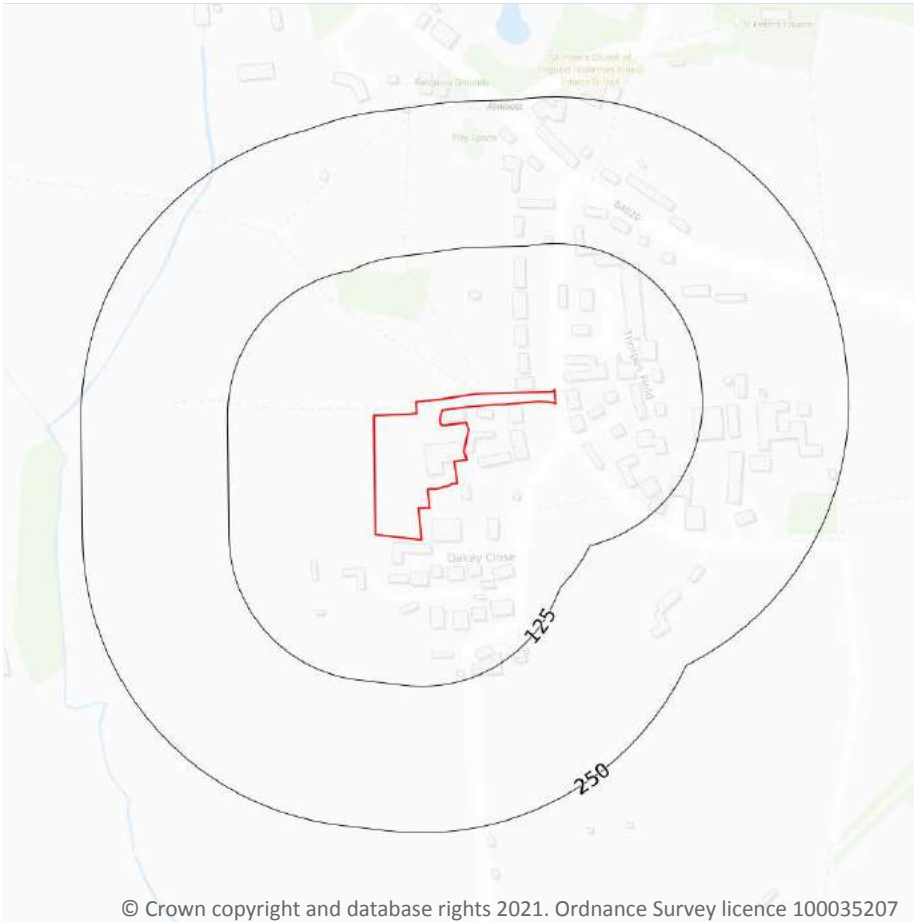
18.13 Clay mining

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

Generalised areas that may be affected by kaolin and ball clay extraction.

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

19 Radon



19.1 Radon

Records on site

1

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

Features are displayed on the Radon map on **page 95**

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

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

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

4

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg
24m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
45m W	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	30 - 45 mg/kg
47m S	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.



20.3 BGS Measured Urban Soil Chemistry

Records within 50m

0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects

21.1 Underground railways (London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m

0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

0

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

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m

0

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



This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m

0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m

0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m

0

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

This data is sourced from HS2 Ltd.



Data providers

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

Terms and conditions

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

