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Environmental

Barns at Radwell Grange
Phase 1 Geo-Environmental Report
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Revision P01

Site Barns at Radwell Grange,
 Baldock,
 SG7 5EU

Client Peter George Town Planning

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24th March 2025

Executive Summary

Site Description

On 14th January 2025, a comprehensive site walkover took place, with a photographic record available in Appendix A.

The site comprises a plot of land occupied by 3 main barns, a small assumed residential property and various smaller structures. The three main barns are identified as Barn A and Barn B in the north of the site, both identified as agricultural storage barns, and Barn C in the south of the site, which is identified as Herts & Beds Transmissions Ltd, a vehicle components store/garage. Barns A and B are currently understood to be in use as storage overflow for the garage. A residential property exists adjacent north of Barn A and Barn B and it is accessible via a locked gate between the two buildings.

The site is accessible via an access road, which leads off of the A1 into the west of the site. This comprises predominantly hardstanding concrete surfacing. Much of the concrete hardstanding between the barns is used as car parking and the area adjacent south of the garage is used as a parking area to store cars at the garage. Some parking areas were surfaced with compacted gravel, as were some of the access roads within the site.

Whilst much of the site comprised hardstanding surfacing, some parts of the site comprised soft landscaping, including short grasses, shrubs and semi-mature/mature trees. In the south-west of the site, to the west of Barn C, a fenced-off allotment area was present, with various plants being grown. Within this area, unspecified small containers were also present alongside a greenhouse and a small wooden shed.

On the eastern side of Barn C, oil drums and a large above-ground plastic storage tank, assumed to contain oil, were identified. These were predominantly placed in hardstanding areas and raised up off the ground on wooden pallets.

Beyond the presence of Made Ground, no significant visual or olfactory evidence of contamination was observed.

Proposed Development

The proposed development on site is to include the conversion of Barns A and B (in the north of the site) to residential use, and the demolition of Barn C (in the south of the site).

Geology

Geological maps of the area show the site to be underlain by superficial strata of the Lowestoft Formation, comprising Diamicton.

Geological maps of the area show most of the site to be situated upon bedrock of the Zig Zag Chalk Formation, comprising Chalk.

Hydrogeology

The underlying superficial geology is classified as a Secondary Undifferentiated Aquifer, assigned where it is not possible to attribute either category A or B to a rock type.

	The underlying superficial geology is classified as a Principal Aquifer, comprising geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.
Hydrology	A small river is recorded from 12m north of the site.
Radon	The Groundsure reports included within Appendix C shows that the site is located within an area where the percentage of homes above the radon action level is below 1%. Therefore, it is considered that no specific radon protection measures are required for this development.
Ground Gas	Potentially deep made ground and spillages associated with the on-site vehicle components store/garage and oil drums identified in the site walkover have been identified as potential sources of ground gases/ vapours for this site.
Conclusions / Recommendations	This report concludes that there is at least 'Moderate' potential risk to future site users and 'Low to Moderate' potential risk to controlled waters. In order to address the uncertainties highlighted in this report, including whether the potential contaminants of concern are present on-site, and if so in what quantities, a Phase II intrusive investigation is recommended. Therefore, the following recommendations are considered appropriate for this development: - Investigation, logging and sampling of general ground conditions (superficial deposits and Made Ground soils) to assess the variability of soils. - Chemical laboratory testing of soils for a range of contaminants, including generic contaminants as well as those specifically identified within this report's conceptual site model. - The installation and monitoring of a sufficient number of ground gas / water monitoring installations, so as to suitably characterise the site. A programme of vapours & ground gas and ground water monitoring should then be undertaken in accordance with BS 8485:2015+A1:2019. - It is considered that geo-technical in-situ and laboratory testing be carried out alongside any contamination investigation. This may include – but not be limited to – infiltration testing, plasticity index testing, and attaining shear strength of underlying cohesive materials. - The production of a Phase II Geo-Environmental Report to present the above-mentioned findings, conclusions and recommendations. These recommendations are considered appropriate based on the site's history, site walkover observations, and scale of the proposed development. These conclusions & recommendation should be approved by the local planning authority.

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Appendix C – Historical Maps (Groundsure)

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1. Introduction

1.1. Client Brief

Dice Environmental was instructed by Peter George Town Planning to undertake a Phase 1 Geo-Environmental Report for the site known as 'Barns at Radwell Grange, Baldock, SG7 5EU'.

The proposed development on site is to include the conversion of Barns A and B (in the north of the site) to residential use, and the demolition of Barn C (in the south of the site).

The site location plan and layout are included within Appendix A.

1.2. Report Objectives

This Phase I Geo-Environmental Assessment includes:

- A record, including photographic evidence, of a site inspection walkover, subsequent site description, and appraisal of any observed land contamination, or potential contaminative sources.
- A review of historical maps, including aerial imagery, for the site and surrounding area, with respect to potential sources of contamination.
- A review of the general expected environmental setting, including geology, hydrogeology and hydrology, alongside BGS Borehole Archive records.
- The development of a preliminary conceptual site model based on the concept of 'contaminant linkage', which considers potential contamination sources, pathways and receptors.
- Conclusions and Recommendations drawn from the qualitative risk assessment.
- An Executive Summary.

1.3. References

Assessment guidance and site-specific information has been sought from the following locations:

- EA/DEFRA (2020) LCRM: Land contamination Risk Management (Supersedes (2004), CLR11: Model Procedures for the Assessment of Land Contamination).
- CIRIA. (2001). *Contaminated land risk assessment A guide to good practice*.
- DEFRA. (2018). *MAGIC*. Retrieved from Magic Map: <http://magic.defra.gov.uk/MagicMap.aspx>

- Environment Agency. (March 2017). *New Groundwater Vulnerability Mapping Methodology in England and Wales*. Reference SC040016/R. Environment Agency.
- Environment Agency. (2008). *R&D Publication 66. Guidance for the Safe Development of Housing on Land Affected by Contamination*.
- Google (2024) Google Earth Pro 7.3.6.9796. Retrieved from: https://www.google.com/intl/en_uk/earth/about/versions/#earth-pro
- Scivyer, C. (2015). *BRE 211. Radon: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)*. Fifth Edition.
- The Coal Authority. (2018). *Coal Authority Interactive Viewer*. Retrieved from <http://mapapps2.bgs.ac.uk/coalauthority/home.html>

1.4. Limitations

The recommendations and opinions expressed in this report are based on information obtained as part of the desk study or provided by others. Information provided from other sources is taken in good faith and Dice Environmental cannot guarantee its accuracy. The ultimate responsibility for any action taken, or lack thereof, shall lie with the developer.

This report does not include specific investigation for the presence of either Potential Asbestos Containing Material (PACM) or Japanese Knotweed at the subject site however, if obvious evidence of either is observed during site walkover, details will be provided in this report. Specialist contractors should be commissioned to make detailed assessments and recommendations if these materials are suspected. This report takes into account coal mining areas as a potential source of contamination (ground gas (CH_4 & CO_2)), however makes no comment on other potential associated concerns (geo-technical).

The information contained in this report is intended for the use of Peter George Town Planning and Dice Environmental can take no responsibility for the use of this information by any third party or for uses other than that described in this report or detailed within the terms of our engagement.

2. Site Information

2.1. Site Location

The site is located 3.30km north of Baldock town centre. The national grid reference (NGR) for the approximate centre of the site is TL 234 371 and the coordinates are 523484E , 237120N.

A site plan is presented within Appendix A.

2.2. Site Description

On 14th January 2025, a comprehensive site walkover took place, with a photographic record available in Appendix A.

The site comprises a plot of land occupied by 3 main barns, a small assumed residential property and various smaller structures. The three main barns are identified as Barn A and Barn B in the north of the site, both identified as agricultural storage barns, and Barn C in the south of the site, which is identified as Herts & Beds Transmissions Ltd, a vehicle components store/garage. Barns A and B are currently understood to be in use as storage overflow for the garage. A residential property exists adjacent north of Barn A and Barn B and it is accessible via a locked gate between the two buildings.

The site is accessible via an access road, which leads off of the A1 into the west of the site. This comprises predominantly hardstanding concrete surfacing. Much of the concrete hardstanding between the barns is used as car parking and the area adjacent south of the garage is used as a parking area to store cars at the garage. Some parking areas were surfaced with compacted gravel, as were some of the access roads within the site.

Whilst much of the site comprised hardstanding surfacing, some parts of the site comprised soft landscaping, including short grasses, shrubs and semi-mature/mature trees. In the south-west of the site, to the west of Barn C, a fenced-off allotment area was present, with various plants being grown. Within this area, unspecified small containers were also present alongside a greenhouse and a small wooden shed.

On the eastern side of Barn C, oil drums and a large above-ground plastic storage tank, assumed to contain oil, were identified. These were predominantly placed in hardstanding areas and raised up off the ground on wooden pallets.

Beyond the presence of Made Ground, no significant visual or olfactory evidence of contamination was observed.

2.3. General Area Context

North: To the north of the site there is an access road and predominantly open fields.

- East: To the east of the site there is the remainder of the wider Radwell Grange site, comprising unspecified buildings, a woodland area and open fields beyond.
- South: To the south of the site there are additional agricultural barns associated with the wider Radwell Grange site. Approximately 320m south is the Baldock Service area with associated petrol station and parking facilities.
- West: To the west of the site there is the access road leading into the site, with predominantly open fields beyond. The A1 is approximately 320m west.

3. Geo-Environmental Setting

3.1. Geology

3.1.1 Mapping Data

Geological maps of the area show the site to be underlain by superficial strata of the Lowestoft Formation, comprising Diamicton.

Geological maps of the area show most of the site to be situated upon bedrock of the Zig Zag Chalk Formation, comprising Chalk.

3.1.2 BGS Borehole Archive

No BGS borehole records are available within 250m of the site.

3.1.3. Soil Chemistry

Estimated natural background concentrations of potentially harmful elements available for the site are recorded within the Groundsure Reports (Appendix B) and reproduced in the table below:

Element	Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
Concentration (mg/kg)	15-25	100	60	1.8	60-90	30-45

Table 1: Background soil chemistry values

3.2. Hydrogeology

The underlying superficial geology is classified as a Secondary Undifferentiated Aquifer, assigned where it is not possible to attribute either category A or B to a rock type.

The underlying superficial geology is classified as a Principal Aquifer, comprising geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

The underlying bedrock and superficial aquifers are classified as being of high groundwater vulnerability, an area able to easily transmit pollution to groundwater. They are characterised by high leaching soils and the absence of low permeability superficial deposits.

The site is not located within a Source Protection Zone.

There are no historical groundwater abstraction licenses recorded within 500m of the site.

3.3. Hydrology

A small river is recorded from 12m north of the site.

3.4. Ecology

There are no Sites of Special Scientific Interest (SSSIs), Conserved wetland sites (Ramsar Sites), Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Local Nature Reserves (LNRs) or National Nature Reserves (NNRs) recorded within 500m of the site.

The site is located within the Great Ouse Nitrate Vulnerable Zone (surface water) and Anglian Chalk Nitrate Vulnerable Zone (groundwater). Nitrate Vulnerable Zones are identified areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC)

3.5. Radon

The Groundsure reports included within Appendix B shows that the site is located within an area where the percentage of homes above the radon action level is less than 1%.

Therefore, it is considered that no specific radon protection measures are required for this development.

3.6 Heritage & Archaeological Sites

No Areas of Outstanding Natural Beauty, World Heritage Sites, Conservation Areas or Scheduled Ancient monuments are present within 500m of the site.

2No. Listed Buildings are present within 250m of the site, the closest being 43m north of the site, identified as Barn At Radwell Grange 50 Metre To North-West Of House.

3.7. Historical Coal & Non-Coal Mining

The site is not located within a coal mining reporting area as defined by the Coal Authority.

On-site chalk mining is recorded within the Groundsure reports included within Appendix B. However, potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

3.8. Landfills & Waste Sites

The Groundsure reports included within Appendix B show that:

- There are no active landfills recorded within 250m of the site.
- There are no historical landfills recorded within 250m of the site.

3.9. Industrial Land Use

3.9.1. Current Industrial Land Use

The Groundsure reports included within Appendix B show that:

- No waste treatment works are recorded within 250m of the site.
- 1No. open petrol station is present 448m south of the site.

Currently, the site is recorded to contain a vehicle components transmission shop/ garage.

No off-site recent industrial land use is recorded within 250m of the site.

3.9.2. Historic Industrial Land Use

The Groundsure reports included within Appendix C show that:

- No historic petrol stations are recorded within 500m of the site.

The only historical industrial land use recorded within 500m of the site includes cuttings 428m south-west, recorded around 1969 to 1985.

4. Site History

4.1. Historical Map Review

A review of all relevant mapping resources, including aerial images and Groundsure Mapping, has been undertaken below, identifying all the significant changes between 1877 and 2025. Groundsure mapping provides data between 1877 and 2025. Supplementary aerial images between 2000 and 2024 have been obtained from Google Earth Pro.

Map Date	Significant Changes on Site	Significant Changes in the Surrounding Area
1877	The site is an empty plot of land adjacent to Radwell Grange. A road lined with trees runs through the approximate centre of the site, from east to west.	The surroundings of the site predominantly comprise open fields. Radwell Grange, with an associated pump, orchard and pond, is situated adjacent east of the site.
1899	No significant change.	A clay mill, clay pit and brick/tile works is present 750m west of the site.
1920	A small structure is present in the north-west of the site.	The clay mill and brick/tile works has been removed, and the clay pit expanded.
1921-22	An additional building is present in the north of the site.	No significant change.
1968-69	One of the northern buildings has been replaced with a larger structure. An additional structure has been constructed in the south of the site.	The clay pit is no longer labelled.
1993	The smaller structure in the north of the site has been demolished. An additional building has been developed in the west of the site.	No significant change.
2000	An additional building has been constructed in the north of the site.	No significant change.
2003	No significant change.	The orchard adjacent east of the site is no longer labelled.
2005	A small extension has been built on the western barn.	No significant change.
2008	An extension has been built onto the southern barn.	No significant change.
2012	No significant change.	A barn has been developed adjacent south of the site.
2025	No significant change.	No significant change.

Table 2: Summary of site targeted historical map data.

A copy of the historical maps and aerial images used for this review are included within Appendix C and Appendix D.

Mapping data available demonstrates the site was originally an empty plot of land with a road running through the site by 1877. Between 1920 and 2000, small structures, assumed to be barns, were constructed and replaced. By 2008, 2 of the remaining 3 on-site barns had extensions constructed.

The site has remained surrounded by predominantly open fields beyond the adjacent Radwell Grange site, which comprises additional barns and small woodland areas, and previously comprised an orchard between 1877 and 2003.

4.2 Council Records

4.2.1. Planning Application History

Significant planning applications previously submitted at the site include:

Application Reference	Date	Description
12/01511/1	15/04/2013	Change of use, partial re-building and conversion of existing barns to form three 3 bed dwellings and one 2-bedroom dwelling and two self-contained offices with first floor accommodation. Single storey extension to form plant room and covered parking bays following demolition of existing structure. Associated surface car parking, amenity areas and ancillary works (variation to Planning permission 09/00047/1 granted 27/01/2011 and further amended by drawings received on 6.11.2012). (Approval with Conditions)
12/01294/1LB	28/05/2012	Change of use, partial re-building and conversion of existing barns to form three 3 bed dwellings and one 2 bedroom dwelling and two self contained offices with first floor accommodation. Single storey extension to form plant room and covered parking bays following demolition of existing structure. Associated surface car parking, amenity areas and ancillary works (amendment to Listed Building application 09/00048/1LB granted 27/01/2011 and further amended by drawings received on 6.11.2012). Conditional consent.
08/00890/1	21/04/2008	Change of use of barns to five 2 bedroom dwellings, self contained office, associated car parking and ancillary works (Application Withdrawn).
19/02993/PNR	17/01/2020	Change of use of agricultural building to B1/B8 (office and storage use). Prior approval given.

Table 3: Previous site planning applications

Significant planning applications have been identified close to the proposed development, in the wider Radwell Grange site. These include the submission to use agricultural land and barn adjacent east of the site for residential purposes in association with existing dwelling; erection of detached building for indoor swimming pool, changing and games rooms following demolition of existing outbuilding in 1985

(85/01680/1). Later, in 2018, permission was sought to convert an existing barn to 2-bed annexe and erection of detached triple carport and store (18/00352/FP). This was granted conditionally, with no conditions relating to contaminated land.

Adjacent south of the site, a planning application was submitted in 2010 for the Erection of open fronted agricultural barn for storing straw (10/03043/1AG). Prior approval was not required.

Further planning applications for the change of use of the adjacent agricultural barns to residential/office use were submitted adjacent to the site, however many were withdrawn (08/00891/1LB). However, an application was submitted for the change of use, partial re-building and conversion of existing barns to form three 3 bed dwellings and one 2 bedroom dwelling and two self contained offices with first floor accommodation. (12/01511/1), which was granted conditionally, including the submission of a preliminary environmental risk assessment. No documents supporting this application are available to view. Multiple variations of this planning application have been submitted (09/00047/1, 09/00048/1LB, 13/01081/1LB, 13/01136/1) some of which enter into the site boundary (12/01511/1, 12/01294/1LB)

5. Conceptual Site Model

5.1. Potential Sources

Significant potential on-site sources of contamination which have been identified for the site include:

- Shallow made ground across the site associated with the general use of the site as agricultural barns, parking facilities and a vehicle components store/garage. The potential contaminants of concern associated with this potential source include:
 - o Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons (TPH), asbestos containing materials (ACMs) and fibres.
- Potential contaminants associated with the allotments present adjacent to Barn C, in the south-west of the site. The potential contaminants of concern associated with this potential source include:
 - o Pesticides & Herbicides
- Potentially deep made ground and spillages associated with the on-site vehicle components store/garage and oil drums identified in the site walkover. The potential contaminants of concern associated with this potential source include:
 - o Ground Gas (CO₂ & CH₄) and vapours.

Significant potential off-site sources of contamination which have been identified for the site include:

- Potential migratory contaminants associated with the orchard adjacent to the site between 1877 and 2003. The potential contaminants of concern associated with this potential source include:
 - o Pesticides & Herbicides

5.2. Potential Pathways

Pathways to human receptors:

- Direct dermal contact or ingestion of soils, or inhalation of dust/fibres and/or vapours (i.e. human interaction with surface and subsurface materials).
- The migration and accumulation of ground gases through permeable sub-surface materials and/ or preferential pathways.

Pathways to environmental receptors:

- Lateral and vertical migration of groundwater through permeable sub-surface materials and/ or preferential pathways, alongside overland flow.
- Direct dermal contact or ingestion of soils by fauna.

5.3. Potential Receptors

The potential receptors for the site include:

- Humans: site workers during the redevelopment of the site, intended end users of the site (residents) and neighbours.
- Groundwater: The Secondary Undifferentiated Aquifer within the underlying superficial strata and Principal Aquifer within the underlying bedrock strata
- Surface water: the small river recorded from 12m north of the site.
- Ecology: Flora and fauna associated with the end use of the site.

5.4. Classification of Consequence, Probability and Risk

Classification of Consequence of Risk

Category	Definition
Severe	Short-term (acute) risk to human health likely to result in 'significant harm' as defined within Part 2A of the Environment Protection Act (1990). Short-term risk of pollution of a sensitive water resource. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem, or organism forming part of such ecosystem.
Medium	Chronic damage to human health (significant harm). Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures, services or the environment. Non-permanent health effects to human health.
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Easily repairable effects of damage to buildings, structures and services.

Classification of Probability of Risk

Category	Definition
High Likelihood	There is a contaminant linkage and an event, which would either appear likely in the short term and almost inevitable over the long term, or, there is evidence at the receptor of harm or pollution.
Likely	There is a contaminant linkage, and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	There is a contaminant linkage, and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place and is less likely in the shorter term.
Unlikely	There is a contaminant linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

Risk as a Function of Consequence and Probability

		Consequence			
		Severe	Medium	Mild	Minor
Risk	High	Very High Risk	High Risk	Moderate Risk	Low to Moderate Risk
	Likely	High Risk	Moderate Risk	Low to Moderate Risk	Low Risk
	Low	Moderate Risk	Low to Moderate Risk	Low Risk	Very Low Risk
	Unlikely	Low to Moderate Risk	Low Risk	Very Low Risk	Very Low Risk

6. Phase I Conceptual Site Model

Sources	Potential Contaminants of Concern	Pathway	Receptor	Probability	Consequence	Overall Risk
On – Site Sources						
Shallow made ground across the site associated with the general use of the site as agricultural barns, parking facilities and a vehicle components store/garage.	Heavy Metals, Polyaromatic Hydrocarbon (PAHs), Petroleum Hydrocarbons (TPH), asbestos containing materials (ACMs) and fibres.	Direct dermal contact or ingestion of soils, or inhalation of dust/fibres.	Site workers during the redevelopment of the site.	Likely	Medium	Moderate
			Intended end users of the site (residents).	Likely	Medium	Moderate
			Neighbours	Low	Medium	Low to Moderate
		Lateral and vertical migration of groundwater, alongside overland flow.	The Secondary Undifferentiated aquifer within the underlying superficial strata.	Low	Medium	Low to Moderate
			The Principal aquifer within the underlying bedrock strata.	Low	Medium	Low to Moderate
			The small river recorded from 12m north of the site.	Low	Mild	Low
		Root uptake of plant life and subsequent ingestion by fauna. Direct dermal contact or ingestion of soils.	Flora and fauna associated with the end use of the site.	Low	Mild	Low
Potential contaminants associated with the allotments present adjacent to Barn C, in the south-west of the site.	Pesticides & Herbicides	Direct dermal contact or ingestion of soils, or inhalation of dust/fibres.	Site workers during the redevelopment of the site.	Likely	Mild	Low to Moderate
			Intended end users of the site (residents).	Likely	Mild	Low to Moderate
			Neighbours	Low	Mild	Low
		Lateral and vertical migration of groundwater, alongside overland flow.	The Secondary Undifferentiated aquifer within the underlying superficial strata.	Low	Medium	Low to Moderate

			The Principal aquifer within the underlying bedrock strata.	Low	Medium	Low to Moderate
			The small river recorded from 12m north of the site.	Low	Mild	Low
		Root uptake of plant life and subsequent ingestion by fauna. Direct dermal contact or ingestion of soils.	Flora and fauna associated with the end use of the site.	Low	Mild	Low
Potentially deep made ground and spillages associated with the on-site vehicle components store/garage and oil drums identified in the site walkover.	Ground Gas (CH4, CO2) & vapours	The migration and accumulation of ground gases and vapours through permeable sub-surface materials and/ or preferential pathways.	Site workers during the redevelopment of the site.	Low	Medium	Low to Moderate
			Intended end users of the site (residents).	Likely	Medium	Moderate
			Neighbours	Low	Mild	Low to Moderate
Off – Site Sources						
Potential migratory contaminants associated with the orchard adjacent to the site between 1877 and 2003.	Pesticides & Herbicides	Direct dermal contact or ingestion of soils, or inhalation of dust/fibres	Site workers during the redevelopment of the site.	Low	Medium	Low to Moderate
			Intended end users of the site (residents).	Low	Medium	Low to Moderate
		Lateral and vertical migration of groundwater, alongside overland flow.	The Secondary Undifferentiated aquifer within the underlying superficial strata.	Low	Medium	Low to Moderate
			The Principal aquifer within the underlying bedrock strata.	Low	Medium	Low to Moderate

7. Uncertainties and Limitations

A comprehensive evaluation of potential on-site contamination has been conducted through analysis of historical maps, environmental data, available council records, and a site walkover inspection.

The Phase 1 investigation has identified several issues necessitating further intrusive investigation and assessment to inform the proposed development's design:

1. On-site Made Ground: The risk to human health from potential on-site Made Ground and proximal potential sources of contamination has been determined as 'Moderate'. The presence, extent, and depth of Made Ground should be determined, along with any potential contaminants resulting from identified on-site and off-site sources. The status of natural underlying soils should also be investigated to assess the extent of potential contamination.
2. Ground Gas: The desk study has identified a 'Moderate' risk to human health due to potential migration and accumulation of ground gas and vapours from on-site sources. Further investigation is required to confirm or rule out the presence and quantities of potentially hazardous ground gases and vapours.
3. Controlled Waters: The risk to controlled waters, including the river 12m north of the site, the on-site secondary undifferentiated aquifer and principal aquifer, is currently assessed as 'Low to Moderate'. Additional investigation is recommended to examine underground contaminants, groundwater table depth, and any potential hydrological links.

Recommendations on how to address and investigate these uncertainties will be discussed in Section 8.

8. Conclusions and Recommendations

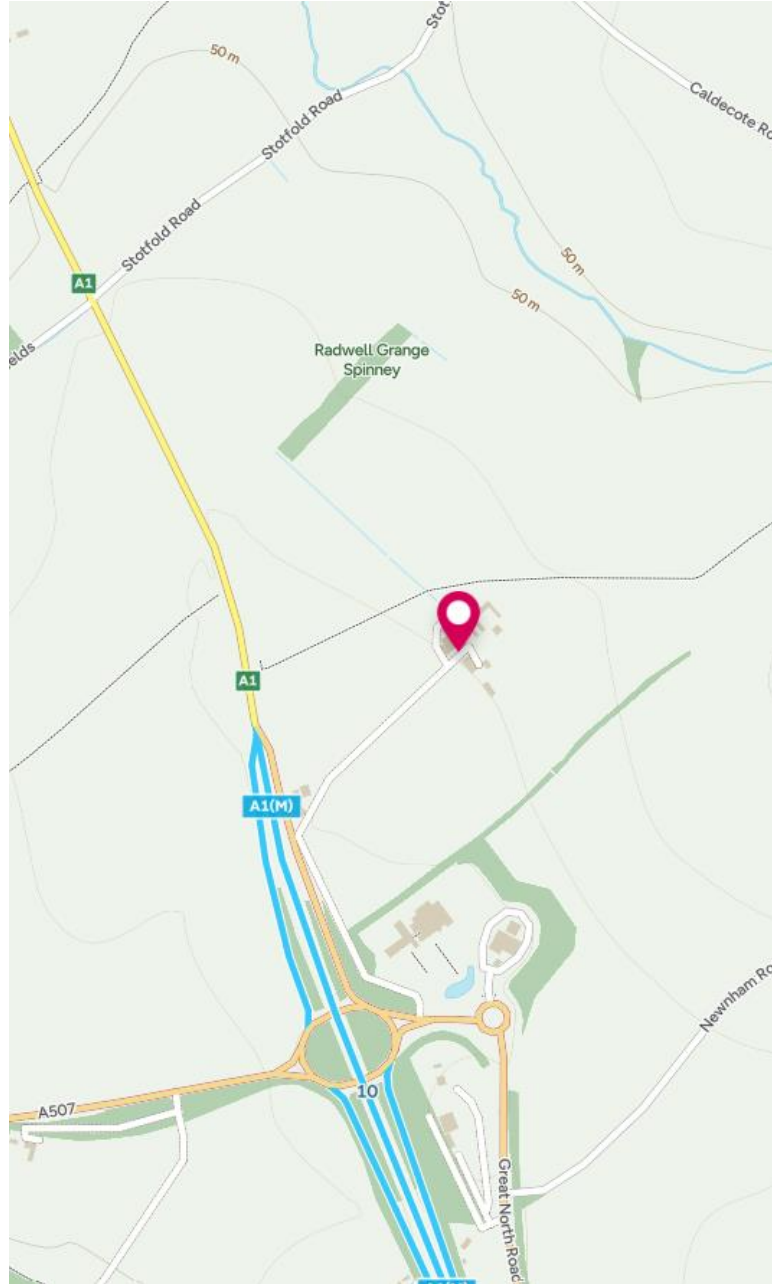
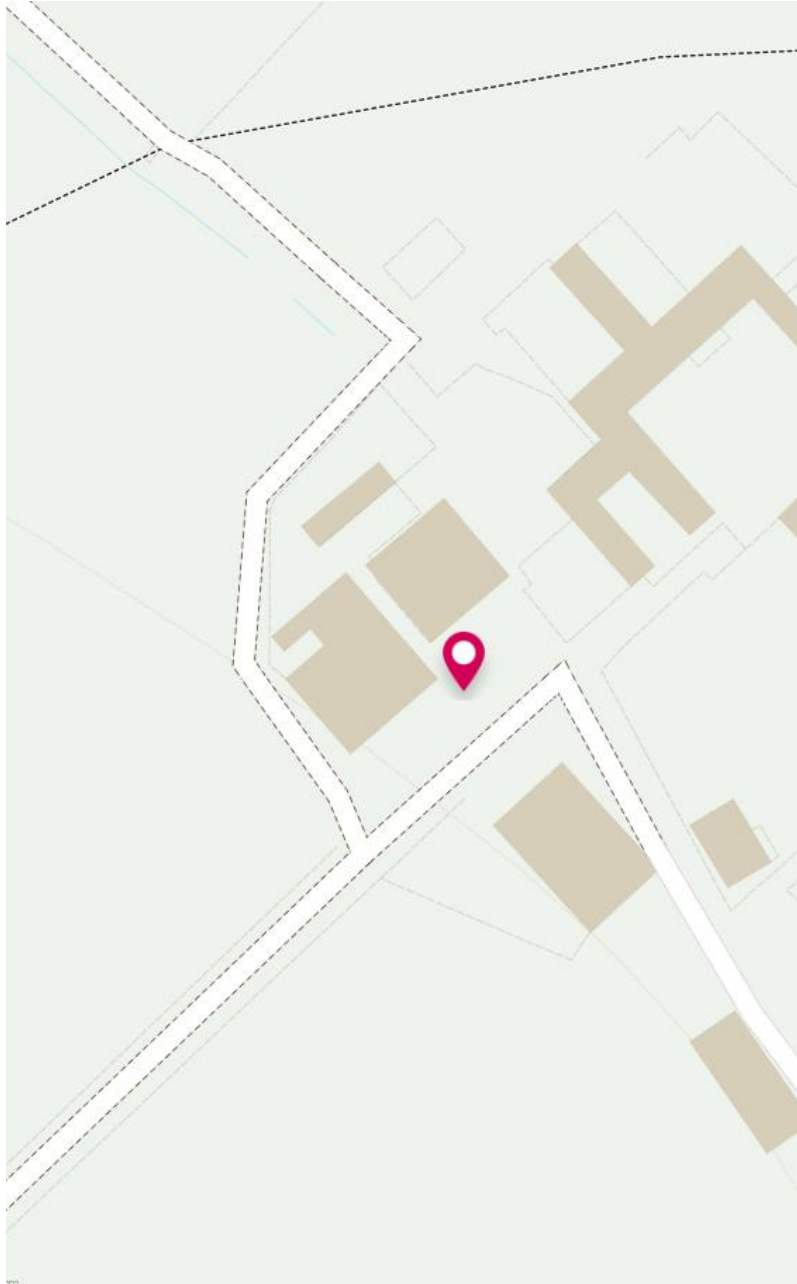
This report concludes that there is at least 'Moderate' potential risk to future site users and 'Low to Moderate' potential risk to controlled waters. In order to address the uncertainties highlighted in this report, including whether the potential contaminants of concern are present on-site, and if so in what quantities, a Phase II intrusive investigation is recommended.

Therefore, the following recommendations are considered appropriate for this development:

- Investigation, logging and sampling of general ground conditions (superficial deposits and Made Ground soils) to assess the variability of soils.
- Chemical laboratory testing of soils for a range of contaminants, including generic contaminants as well as those specifically identified within this report's conceptual site model.
- The installation and monitoring of a sufficient number of ground gas / water monitoring installations, so as to suitably characterise the site. A programme of vapours & ground gas and ground water monitoring should then be undertaken in accordance with BS 8485:2015+A1:2019.
- It is considered that geo-technical in-situ and laboratory testing be carried out alongside any contamination investigation. This may include – but not be limited to – infiltration testing, plasticity index testing, and attaining shear strength of underlying cohesive materials.
- The production of a Phase II Geo-Environmental Report to present the above-mentioned findings, conclusions and recommendations.

These recommendations are considered appropriate based on the site's history, site walkover observations, and scale of the proposed development. These conclusions & recommendation should be approved by the local planning authority.

APPENDIX A



Title
Site Location

Reference
101723

Date
20/01/2025

Site Address

**Barns at Radwell Grange,
Baldock,
SG7 5EU**

Legend

 **Approximate Site Centre**

Scale
NTS

Drawn
AMD

Figure Number
Fig.1



Title
Site Layout

Reference
101723

Date
20/01/2025

Site Address

Barns at Radwell Grange,
Baldock,
SG7 5EU

Legend

Scale
NTS

Drawn
AMD

Figure Number
Fig.2



Title
Photos

Reference
101723

Date
20/01/2025

Site Address

Barns at Radwell Grange,
Baldock,
SG7 5EU

Legend

Scale
NTS

Drawn
AMD

Figure Number
Fig.3



Title
Photos

Reference
101723

Date
20/01/2025

Site Address

Barns at Radwell Grange,
Baldock,
SG7 5EU

Legend

Scale
NTS

Drawn
AMD

Figure Number
Fig.4

APPENDIX B



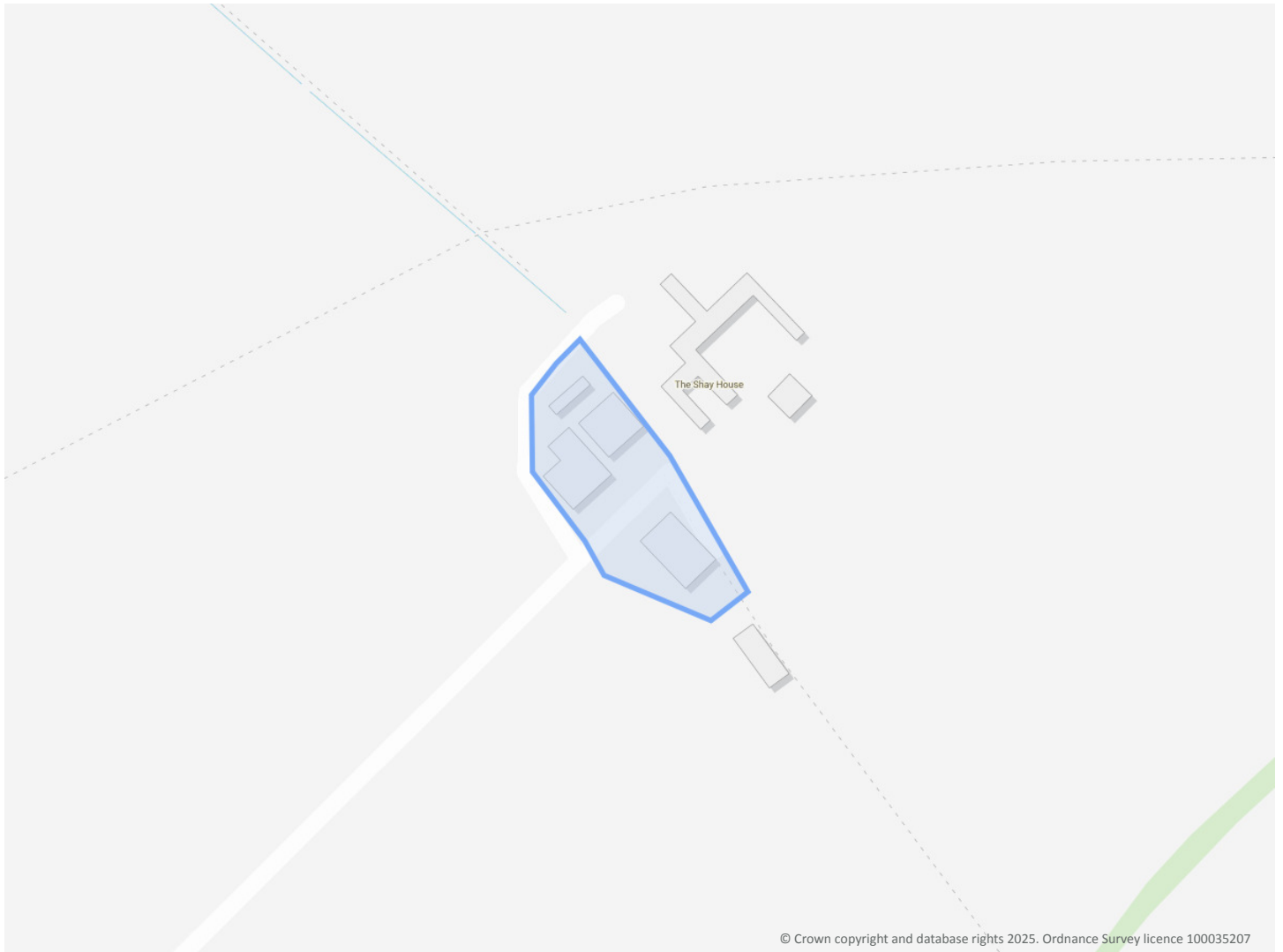
unspecified

Order Details

Date: 13/01/2025
Your ref: EMS_994989_1239013
Our Ref: EMS-994989_1259980

Site Details

Location: 523490 237104
Area: 0.45 ha
Authority: [North Hertfordshire District Council](#) ↗



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[Summary of findings](#)

[p. 2 >](#)

[Aerial image](#)

[p. 9 >](#)

[OS MasterMap site plan](#)

[p.14 >](#)

[Insight User Guide](#) ↗

Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	0	0	0	1	-
16	1.2	Historical tanks	0	0	0	0	-
16	1.3	Historical energy features	0	0	0	0	-
16	1.4	Historical petrol stations	0	0	0	0	-
16	1.5	Historical garages	0	0	0	0	-
17	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
18 >	2.1 >	Historical industrial land uses >	0	0	0	2	-
19	2.2	Historical tanks	0	0	0	0	-
19	2.3	Historical energy features	0	0	0	0	-
19	2.4	Historical petrol stations	0	0	0	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 >	3.7 >	Waste exemptions >	0	0	4	3	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
23 >	4.1 >	Recent industrial land uses >	1	0	0	-	-
24 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
24	4.3	Electricity cables	0	0	0	0	-
24	4.4	Gas pipelines	0	0	0	0	-
24	4.5	Sites determined as Contaminated Land	0	0	0	0	-



24	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
25	4.7	Regulated explosive sites	0	0	0	0	-
25	4.8	Hazardous substance storage/usage	0	0	0	0	-
25	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
25	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
25 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	0	1	-
26	4.12	Radioactive Substance Authorisations	0	0	0	0	-
26	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
26	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
26	4.15	Pollutant release to public sewer	0	0	0	0	-
27	4.16	List 1 Dangerous Substances	0	0	0	0	-
27 >	4.17 >	List 2 Dangerous Substances >	0	0	0	1	-
27	4.18	Pollution Incidents (EA/NRW)	0	0	0	0	-
27	4.19	Pollution inventory substances	0	0	0	0	-
28	4.20	Pollution inventory waste transfers	0	0	0	0	-
28	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
29 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
31 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
32 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
33 >	5.4 >	Groundwater vulnerability- soluble rock risk >	Identified (within 0m)				
33	5.5	Groundwater vulnerability- local information	None (within 0m)				
34 >	5.6 >	Groundwater abstractions >	0	0	0	0	6
36 >	5.7 >	Surface water abstractions >	0	0	0	0	11
38	5.8	Potable abstractions	0	0	0	0	0
39 >	5.9 >	Source Protection Zones >	0	0	0	1	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
40 >	6.1 >	Water Network (OS MasterMap) >	0	3	0	-	-



41 >	6.2 >	Surface water features >	0	1	2	-	-
41 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
42 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
42 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
43	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
43	7.2	Historical Flood Events	0	0	0	-	-
43	7.3	Flood Defences	0	0	0	-	-
44	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
44	7.5	Flood Storage Areas	0	0	0	-	-
45	7.6	Flood Zone 2	None (within 50m)				
45	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
46 >	8.1 >	Surface water flooding >	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding >					
48 >	9.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
49	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
50	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
50	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
50	10.4	Special Protection Areas (SPA)	0	0	0	0	0
50	10.5	National Nature Reserves (NNR)	0	0	0	0	0
51 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	1
51	10.7	Designated Ancient Woodland	0	0	0	0	0
51	10.8	Biosphere Reserves	0	0	0	0	0
51	10.9	Forest Parks	0	0	0	0	0
52	10.10	Marine Conservation Zones	0	0	0	0	0
52 >	10.11 >	Green Belt >	0	0	0	0	1
52	10.12	Proposed Ramsar sites	0	0	0	0	0



52	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
53	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
53	10.15	Nitrate Sensitive Areas	0	0	0	0	0
53 >	10.16 >	<u>Nitrate Vulnerable Zones ></u>	2	0	0	0	8
55	10.17	SSSI Impact Risk Zones	0	-	-	-	-
55	10.18	SSSI Units	0	0	0	0	0
Page	Section	<u>Visual and cultural designations ></u>	On site	0-50m	50-250m	250-500m	500-2000m
56	11.1	World Heritage Sites	0	0	0	-	-
57	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
57	11.3	National Parks	0	0	0	-	-
57 >	11.4 >	<u>Listed Buildings ></u>	0	1	1	-	-
58	11.5	Conservation Areas	0	0	0	-	-
58	11.6	Scheduled Ancient Monuments	0	0	0	-	-
58	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	<u>Agricultural designations ></u>	On site	0-50m	50-250m	250-500m	500-2000m
59 >	12.1 >	<u>Agricultural Land Classification ></u>	Grade 2 (within 250m)				
60	12.2	Open Access Land	0	0	0	-	-
60	12.3	Tree Felling Licences	0	0	0	-	-
60	12.4	Environmental Stewardship Schemes	0	0	0	-	-
61 >	12.5 >	<u>Countryside Stewardship Schemes ></u>	1	0	2	-	-
Page	Section	<u>Habitat designations ></u>	On site	0-50m	50-250m	250-500m	500-2000m
62 >	13.1 >	<u>Priority Habitat Inventory ></u>	1	0	0	-	-
63	13.2	Habitat Networks	0	0	0	-	-
63	13.3	Open Mosaic Habitat	0	0	0	-	-
63	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	<u>Geology 1:10,000 scale ></u>	On site	0-50m	50-250m	250-500m	500-2000m
64 >	14.1 >	<u>10k Availability ></u>	Identified (within 500m)				
65	14.2	Artificial and made ground (10k)	0	0	0	0	-
66	14.3	Superficial geology (10k)	0	0	0	0	-



66	14.4	Landslip (10k)	0	0	0	0	-
67	14.5	Bedrock geology (10k)	0	0	0	0	-
67	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
68 >	15.1 >	50k Availability >	Identified (within 500m)				
69 >	15.2 >	Artificial and made ground (50k) >	0	0	0	1	-
70	15.3	Artificial ground permeability (50k)	0	0	-	-	-
71 >	15.4 >	Superficial geology (50k) >	1	0	1	6	-
72 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
72	15.6	Landslip (50k)	0	0	0	0	-
72	15.7	Landslip permeability (50k)	None (within 50m)				
73 >	15.8 >	Bedrock geology (50k) >	1	0	2	0	-
74 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
74	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
75	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
76 >	17.1 >	Shrink swell clays >	Low (within 50m)				
77 >	17.2 >	Running sands >	Very low (within 50m)				
78 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
79 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
80 >	17.5 >	Landslides >	Very low (within 50m)				
81 >	17.6 >	Ground dissolution of soluble rocks >	Very low (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
83	18.1	BritPits	0	0	0	0	-
84 >	18.2 >	Surface ground workings >	0	0	8	-	-
84	18.3	Underground workings	0	0	0	0	0
84	18.4	Underground mining extents	0	0	0	0	-
85	18.5	Historical Mineral Planning Areas	0	0	0	0	-

85 >	18.6 >	Non-coal mining >	1	0	0	0	1
85	18.7	JPB mining areas	None (within 0m)				
86	18.8	The Coal Authority non-coal mining	0	0	0	0	-
86	18.9	Researched mining	0	0	0	0	-
86	18.10	Mining record office plans	0	0	0	0	-
86	18.11	BGS mine plans	0	0	0	0	-
87	18.12	Coal mining	None (within 0m)				
87	18.13	Brine areas	None (within 0m)				
87	18.14	Gypsum areas	None (within 0m)				
87	18.15	Tin mining	None (within 0m)				
87	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
88	19.1	Natural cavities	0	0	0	0	-
88	19.2	Mining cavities	0	0	0	0	0
88	19.3	Reported recent incidents	0	0	0	0	-
88	19.4	Historical incidents	0	0	0	0	-
Page	Section	Radon >					
90 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
92 >	21.1 >	BGS Estimated Background Soil Chemistry >	2	0	-	-	-
92	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
92	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
93	22.1	Underground railways (London)	0	0	0	-	-
93	22.2	Underground railways (Non-London)	0	0	0	-	-
93	22.3	Railway tunnels	0	0	0	-	-
93	22.4	Historical railway and tunnel features	0	0	0	-	-
93	22.5	Royal Mail tunnels	0	0	0	-	-
94	22.6	Historical railways	0	0	0	-	-



94	22.7	Railways	0	0	0	-	-
94	22.8	Crossrail 2	0	0	0	0	-
94	22.9	HS2	0	0	0	0	-

Recent aerial photograph



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

Capture Date: 27/05/2023

Site Area: 0.45ha



Recent site history - 2020 aerial photograph



Capture Date: 07/04/2020

Site Area: 0.45ha



Recent site history - 2015 aerial photograph

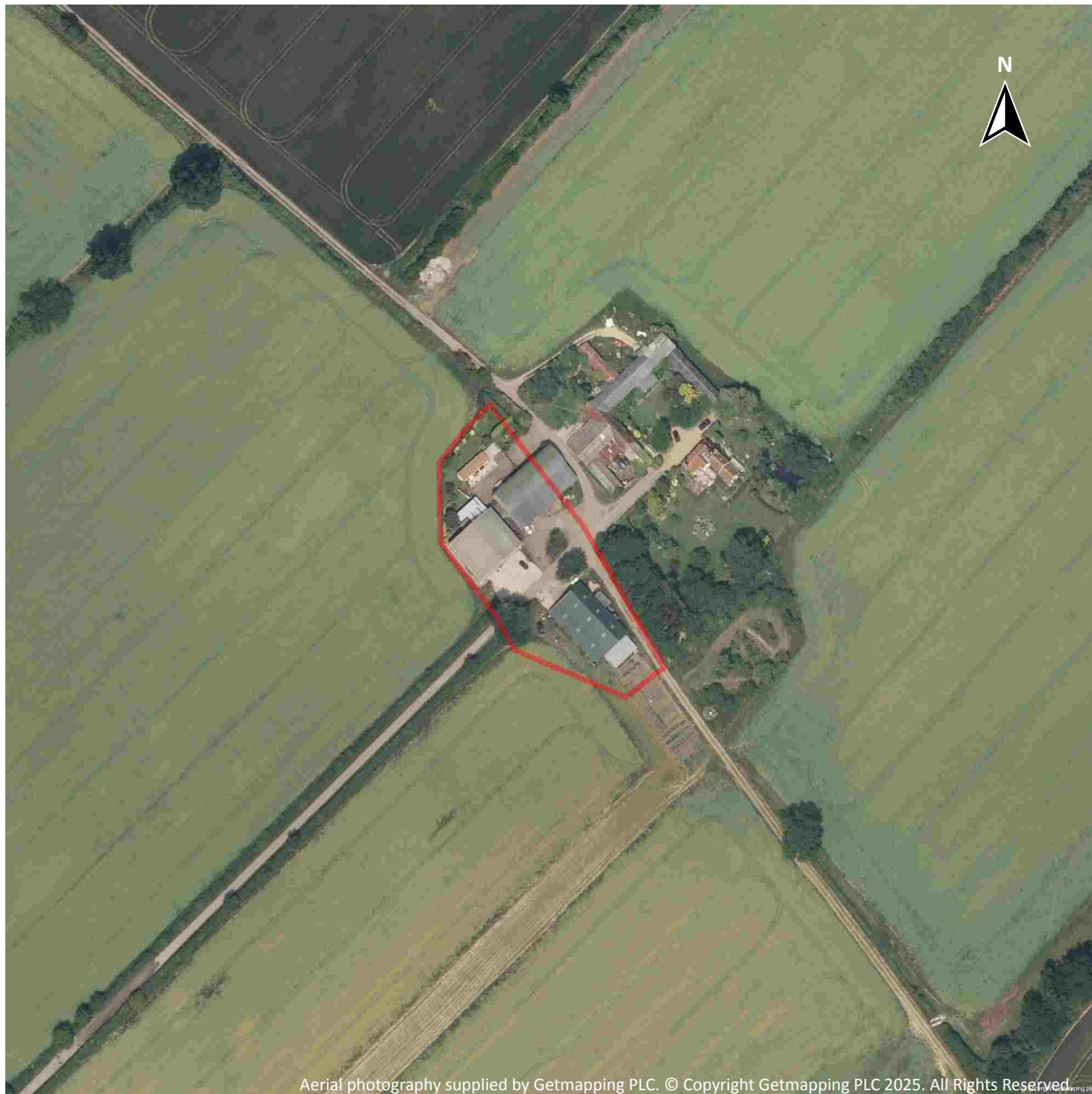


Capture Date: 16/04/2015

Site Area: 0.45ha



Recent site history - 2009 aerial photograph



Capture Date: 29/06/2009

Site Area: 0.45ha



Recent site history - 1999 aerial photograph



Capture Date: 09/06/1999

Site Area: 0.45ha



OS MasterMap site plan



Site Area: 0.45ha



1 Past land use



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

1.1 Historical industrial land uses

Records within 500m

1

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

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

ID	Location	Land use	Dates present	Group ID
1	428m SW	Cuttings	1969 - 1985	2120374



This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m

0

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



This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

0

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

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



The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.3m and 1.0m
1 in 100 year	Between 0.3m and 1.0m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiantal Risk Analytics.

