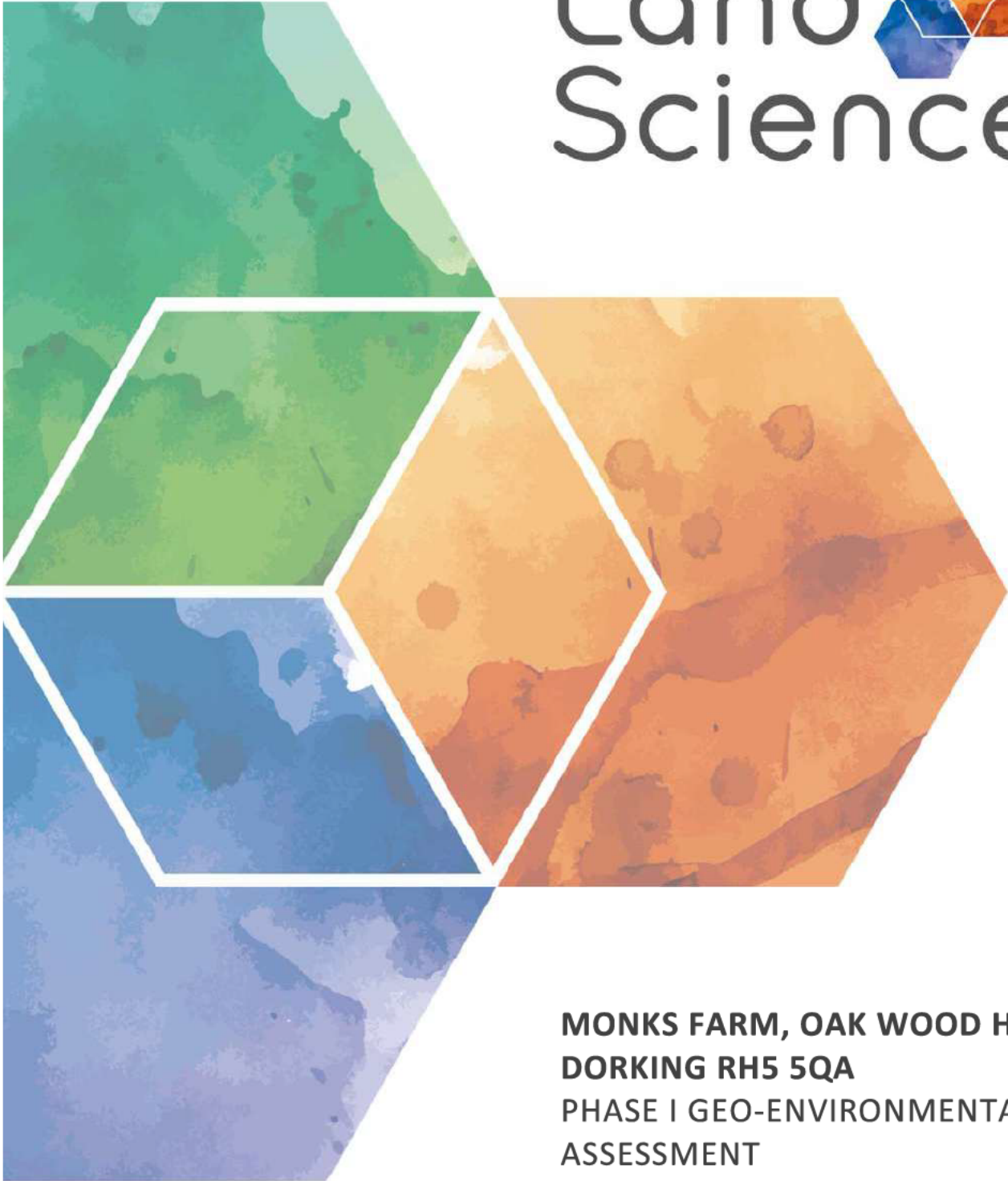




Land Science

**MONKS FARM, OAK WOOD HILL,
DORKING RH5 5QA
PHASE I GEO-ENVIRONMENTAL
ASSESSMENT
MR STEPHEN FLAVIN
19TH DECEMBER 2025
LS8796.1**

Site:	MONKS FARM, OAK WOOD FARM, DORKING RH5 5QA	
Title:	PHASE I GEO-ENVIRONMENTAL ASSESSMENT	
Project:	BARN CONVERSION TO DWELLING WITH GARDEN	
Client:	MR STEPHEN FLAVIN	
Contact:	STICKLAND WRIGHT (ARCHITECT)	
Date:	19TH DECEMBER 2025	
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1.0 INTRODUCTION

1.1 General

Land Science was instructed to undertake a Phase I Geo-Environmental Assessment (“desk study”) in relation to the proposed redevelopment at Monks Farm, Oak Wood Hill, Dorking RH5 5QA. The location is shown on Figure 1, which is centred at grid reference TQ 13106 36138.

1.2 Client

The Client for this appointment was Mr Stephen Flavin, supported by Stickland Wright architects. This report may only be used by this named client and their project team for the purposes set out and subject to the report conditions. It was understood that the Client already owned the property, and that this investigation was not a pre-purchase appraisal.

1.3 Area Under Investigation

The area under investigation comprised a steel-framed barn with a strip of land to the east. The layout is indicated on Figure 2, and a walkover survey is presented in section 2.0. The area was approximately 0.03 hectares.

1.4 Proposed Development

The proposed development was understood to comprise the barn conversion with rear extension to provide two dwellings with gardens. The proposed development was covered under planning application number DC/25/0636. Figure 3 illustrates the layout of the proposed redevelopment. The findings of this report may not be valid if the proposed development is altered.

1.5 Previous Investigations

Land Science was not aware of any previous desk studies or ground investigation(s) for this project.

1.6 Scope of Work

The work carried out is described in detail in the following sections but in summary included:

- A phase I assessment desk study.
- Full site inspection to identify areas of concern or indicators of potential hazards.
- Phase I preliminary risk assessment and CSM.
- Recommendations for phase II intrusive investigation works (if required).

The walkover was conducted on 14th October 2025, under the supervision of Land Science.

1.7 Geo-Environmental Objectives

A preliminary phase I assessment was carried out, to identify potential sources of contamination, to develop a preliminary Conceptual Site Model (CSM) and to form the basis of a Preliminary Risk Assessment (PRA).

The report was required to assess risks associated with end users, the proposed redevelopment, adjacent land uses, and the wider environment, in the context of the planning regime.

1.8 Standards

Where practicable, the investigation was undertaken in accordance with the following primary standards and guidance:

- Land Contamination Risk Management (LCRM) Environment Agency June 2025.
- BS10175:2011+A2:2017, Investigation of Potentially Contaminated Sites.
- National Planning Policy Framework, December 2024.
- Building Regulations Approved Document C: Site preparation and resistance to contaminants and moisture, HM Government, September 2013.
- NHBC Standards Chapter 4.1: Land Quality - Managing Ground Conditions, 2024.

Other technical sources have been cited in respect of specific aspects of the investigation, as referenced throughout the text.

2.0 WALKOVER SURVEY

2.1 General

A walkover survey was carried out in order to provide an assessment of the existing site conditions and to identify potential areas of concern. A record of the inspection is shown in Appendix A, with photographs in Appendix B.

2.2 Site Description

In summary, the area under investigation comprised a vacant and derelict barn comprising a steel framework on concrete pads, corrugated metal and cement board panels/roof, with localised wooden boarding. The cement boarding, gutters and downpipe were all noted to be potentially Asbestos Containing Materials (ACM). The barn was noted to be old and partly dilapidated with broken panels and sections of gutter missing.

The footprint of the barn was hardcore and chalk. The external eastern section the length of barn and ~5m width was compacted chalk gravel, noted as ~300mm thick.

The site and surrounding area were generally flat with a few drainage channels (dry) and slightly undulated from field rutting. A small stockpile (2m x 1m x 1m height) was located along the eastern boundary with brick and concrete noted at the surface.

Stored materials inside the barn included several pieces of old farming plant/equipment with rusty metal frames, tyres, an engine and small hand/electric tools, three Heras feet and construction fencing. Also, inside the barn were paper/plastic bags and containers: two motor oil, paint, concrete powder and road salt. Fly tipping noted included three vehicle batteries, several paint aerosols and a gas cylinder. Surface litter included rare plastic, metal, ceramic tile, textile and glass fragments.



There were open boundaries with the surroundings with Ruckmans Lane west, a field east, trees north, and a drainage channel south.

A small burrow (5cm dia) was noted in the edge of the grass field, and a larger burrow (8cm dia) in the hardstanding of northern section of barn footprint.

2.3 Neighbouring Land

Adjacent land uses included Ruckmans Lane west with horse field beyond, trees north, a field of long grass east, and a drainage channel and trees south before residential dwellings from approx. 95m and a caravan noted ~40m southeast.

2.4 Geo-Environmental Conditions

In terms of the environmental condition of the site, the following key features were identified below. No significant evidence of tanks, chemical storage, staining or sheens were noted.

- Existing/historic land uses – storage of farming equipment and possible hay bales
- Suspected asbestos – within corrugated cement board panelling, gutters and downpipes
- General condition of the site – poorly kept with old equipment, storage and litter
- Built up ground – hardcore and chalk within the barn footprint and adjacent to the east
- Signs of animals via burrows
- Tipped materials - small stockpile along eastern boundary; stored rusty equipment; containers (oil/paint/concrete/salt); fly tipping including vehicle batteries and surface general litter

2.5 Geotechnical Conditions

The walkover survey did not identify any areas of particular concern regarding the geotechnical condition of the site, except for some large mature oak trees (>15m in height) adjacent north of the barn and to the west. No significant evidence of underground structures, ground instability, subsidence, wet areas, significant earthworks, etc. were noted.

3.0 DESK STUDY

3.1 General

A desk study was carried out to inform the preliminary conceptual understanding of the site and its setting, and to identify potential aspects of concern, in the context of the stated report objectives.

3.2 Historical Mapping

Various historical records were reviewed to assess potential historical land uses and activities that may impact on ground conditions at the site.

A set of historical ordnance survey maps was obtained from Envirocheck and a copy is presented in Appendix C. The following key features were noted:

On site

- The earliest map dated 1894 showed the site comprised the edge of a track trending approx. north-south adjacent a line of trees, with the track leading to Monk's (later Monks) Farm (with pump) approx. 200m south. Immediately west of the site was an old limekiln.
- The 1897 map showed the site unchanged however the limekiln was no longer shown. The adjacent track was labelled as Stanes Street, the remains of a Roman road.
- No significant change was shown until 1974 when the western half of the site was shown as a structure which was likely the present-day barn. It was noted that the structure was not shown in the 1975 or 1993 maps.

Off site

- The earliest map dated 1894 showed the surrounding area as large sections of open land/fields, divided up by hedgerows/trees. A drain was approx. 10m west leading to a potential pond from 30m southwest (shown as reeds by 1897 and marsh by 1898). Four ponds were present: 200m south and 150m, 200m and 250m southwest. A wood (Ruckman's Copse) was located from 200m east. A ditch was present from 70m southeast trending approx. east-west with a further ditch from 70m northeast also trending approx. east-west. Flow for both ditches was indicated to the east/southeast for Dervall's Gill and Dawes Gill. By 1897 a pond was located approx. 220m northeast.
- By 1974 a building was located approx. 120m southwest. No further significant changes were noted in the latest map dated 1993 with a similar layout shown up to the 2025 map.
- The historical map set included aerial photographs dated 1949 and 1999. The first imagery showed the site on the edge of a field, whilst the latter imagery showed two potential structures in the western half of site, aligned north-south on the east side of the track with trees adjacent to the north, south and west and a field to the east. The dwelling and Monks Farm were shown southwest of the site.

3.3 Aerial Imagery

Recent aerial photography covering the site was examined using Google Earth Pro. The imagery identified the barn in 1999 with trees/hedgerows either side trending north-south, with fields beyond to east and west.

Historic England photo archive was examined with a 1959 photograph showing the area as fields with tree borders and woods to the east. The site is just off the photograph however the Roman road was identified.

3.4 Current Industrial Land Use Data

The desk study included a search of contemporary land use records from various databases. Such land uses may impact on the condition of the site and the vicinity. However, no significant land use information was identified except for Contemporary Trade Directories.

Contemporary Trade Directories

Location	Address	Details	Status
188m southwest	LTW Horse Transport, Monks Farm	Horse boxes and transporting	Inactive

3.5 Planning Portal

The online planning portal for Horsham District Council was checked with records between 2000 and present day reviewed. Several entries were recorded for the Monks Farm complex to the south but there were no specific details pertaining to ground conditions or contamination.

The following table summarises details considered to be relevant to the site and immediate area.

Planning reference	Proposal	Relevant information within the submitted documents
Planning application DC/25/0440 (onsite)	Prior Notification for Change of Use of Agricultural Building to 2no. dwellinghouses – approval required and permitted. Validated 21/03/2025	Existing drawings and elevations.
HRA/25/0008 (onsite)	Application under Regulation 77 of the Conservation of Habitats and Species Regulations 2017 relating to Prior Approval consent DC/25/0636 – application permitted. Validated 25/02/2025	Existing drawings and elevations.
DC/20/1090 (offsite – within the Monks Farm complex)	Prior approval for the change of use of the agricultural barn to C3 residential to form 1no dwelling. Prior approval required and refused 07/08/2020. Validated 15/06/2020.	Location drawing.
DC/20/0858 (offsite – within the Monks Farm complex)	Prior Notification for the change of use of agricultural building to a single dwellinghouse. Validated 06/05/2020	Location drawing.

3.6 Ground Conditions

A preliminary ground model was derived for the site based on a combination of various sources including published maps, borehole records previous investigations, and the site history. In summary, the following potential ground model was identified:

Strata	Approximate Depth (mbgl)	Summary Description
Made Ground		The site has been subject to previous development and

Strata	Approximate Depth (mbgl)	Summary Description
		there is a potential for construction and demolition wastes, imported fill materials, and zones of disturbed ground, etc.
Superficial -	-	None recorded
Bedrock – Weald Clay Formation	To depth	Dark grey thinly bedded mudstones (shales) and mudstones with subordinate siltstone and fine- to medium-sandstones including calcareous sandstone.

In addition, groundwater was anticipated, as follows:

- Perched water – in granular soils upon cohesive soil or buried structures or in old trenches
- Water table depth unknown, but possible flow direction along fissures and silt/sandstone bands

3.7 Geological Hazards

The desk study included searches of geological hazards. None of the hazards were rated as moderate or above, considered the screening threshold for further investigation.

A search of various databases for coal mining, mining, brine compensation, and natural cavities was carried out. No relevant features were identified.

3.8 Environmental Setting

The site lies in the following groundwater setting:

- Superficial aquifer: None identified.
- Bedrock aquifer: The Weald Clay Formation strata was classified as Unproductive Strata - Low permeability strata that have negligible significance for water supply or river base flow.
- Source protection zone: None - no groundwater Source Protection Zones were identified on site or in the vicinity.
- Flooding from Rivers and Sea: Zone 1 Low Probability - Land having a less than 1 in 1,000 annual probability of river or sea flooding.
- Surface water flooding on site: Very low risk - each year this area has a chance of flooding of less than 0.1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.
- Groundwater flooding on site: Not shown as a risk on site.
- Nearest Surface Water Feature: drainage ditches 10m west, and 53m south, both part of the Rother and Arun catchment area
- Nitrate Vulnerable Zone: River Arun Nvz – surface water.
- Ancient Woodland: from 160m northeast and 231m southeast.

3.9 Radon Gas

The requirement for Radon Protection Measures (RPM) has been assessed in accordance with BRE 211:2023 Public Health England and the BGS estimate the potential for radon and the requirement for Radon Protection Measures on site as follows:

- Radon probability: Not at risk - less than 1% of homes are estimated by PHE to exceed the threshold for Radon gas in residential dwellings.
- Radon Protection Measures (RPM): No Radon protection is required for new dwellings or extensions constructed at this location.

3.10 UXO Risk Assessment

Free online maps suggest the risk from UXO might be low. As such, no further assessment is considered necessary at this stage.

4.0 CONCEPTUAL SITE MODEL (CSM)

4.1 Source-Pathway-Receptor (SPR) Model

The assessment of potential contamination risks follows a Source-Pathway-Receptor (SPR) approach, following established guidance and best practice. The principle of primary and secondary sources has been adopted:

- A **primary source** for instance a leaking tank or drainage, industrial activity, buried fill materials, etc. identified as part of the desk study and site walkover.
- A **secondary source** is the environmental media (or phases) in which any resulting contamination may occur, being soils, ground gases, volatile vapours, and groundwater:

Secondary Source	Summary
Soil	Soils (Made Ground) contaminated with materials such as ash, clinker, bitumen, refuse, wastes, asbestos, etc. [Endogenic] or soils contaminated by discharges, spillage, drainage, run-off, migration etc. of contaminants from diffuse or point sources [Anthropogenic].
Ground water	Mobile contaminants entering groundwater, being either perched water (impermeable horizons such as clays or buried structures) or as a water table (more persistent water bodies within productive strata).
Volatile vapours	Volatile or semi-volatile compounds generating vapours which exist in a gas phase and may be generated from soils, groundwater or directly from storage such as underground tanks.
Ground gases	Ground gases occurring from a variety of natural and man-made sources, principally from the decomposition of waste materials, organic matter, organic contaminants. Examples include landfill sites, alluvium, and mine workings etc.

4.2 Qualitative Risk Assessment Framework

A qualitative estimate of risk associated with the identified source-pathway-receptor linkages has been made. Each source, pathway and receptor in each linkage is given a rating from 0-5, and the overall rating for the linkage is expressed as a multiple of the three numbers. The overall risk ratings are concluded in the next chapter (Preliminary Risk Assessment).

Rating	Source	Pathway	Receptor	SPR Linkage
Unlikely	0	0	0	0
Very Low	1	1	1	1-3
Low	2	2	2	4-17
Moderate	3	3	3	18-48
High	4	4	4	49-100
Very high	5	5	5	100+

The scoring is based on professional judgement and qualitative assessment of various factors:

Source - Whether it is on-site or off-site, the distance from the site, the age and time period, the history and evolution, whether it has been redeveloped and when, the overall magnitude or extent, any existing data or observations. Sources are identified from the conceptual site model.

Pathway - Proximity and relationship to the associated receptor, frequency, the ground conditions, flow directions, migration pathways. Pathways may vary between each source and each receptor.

Receptor - Direct or indirect effects, human health or non-human receptor, age classes, exposure duration and frequency, types of activity, materials, existing evidence of harm, quality of the receptor and significance of any harm. This will depend on any existing or proposed site uses.

Potential sources and receptors are identified first, before identifying whether any active realistic pathways exist between them.

4.3 Primary Sources

Potential sources of contamination were identified and rated as follows:

Primary sources	Soils	Ground Water	Vapours	Ground Gases
Made Ground <1m - widespread (onsite)	Low	Unlikely	Unlikely	Unlikely
Agricultural premises - farm barn (onsite)	High	Unlikely	Very Low	Unlikely
Agricultural - field (onsite)	Very Low	Unlikely	Unlikely	Unlikely
Agricultural land - field (offsite)	Unlikely	Unlikely	Unlikely	Unlikely
OVERALL RATING	High	Unlikely	Very low	Unlikely

Made Ground may be present on site as compacted hardcore within the barn footprint, and chalk within a raised section adjacent to the east of the barn. These materials may contain a wide range of potential contaminants including metals, non-metals and organic contaminants, however given the site history and the nature of the site, the composition of the Made Ground is not expected to be particularly onerous and rated as Low. Contaminants may be mobile and leach out into ground water, however only perched water was expected and rated as Unlikely. The age and composition of Made Ground was such that the potential for significant generation of organic vapours was Unlikely. The depth of Made Ground was not anticipated to be greater than 1.00m and therefore was Unlikely to be a significant source of ground gases.

Agricultural premises may have been used for contaminative activities including the use of persistent pesticides such as DDT, the application of sewage sludge or animal wastes, storage and burning of other wastes, slurry pits, and animal burials, use of fuels and maintenance of vehicles. For the barn this has been risked as High, mostly due to the potential asbestos containing materials in the structure, for the field adjacent to the east it has been rated as Very Low. Contaminants may be mobile and leach out into ground water, however only perched water was expected and rated as Unlikely. The age and composition of Made Ground was such that the potential for significant generation of organic vapours was Very Low for the barn due to potential leaking plant/vehicles/tools, and Unlikely for the field section. The depth of Made Ground was not anticipated to be greater than 1.00m and therefore was Unlikely to be a significant source of ground gases.

The agricultural land off site was rated as Unlikely for soil, groundwater, vapours and ground gas due to the land use, unproductive aquifer and distance to site.

Waste management facilities where soil and wastes are deposited in the ground can be significant sources of ground gases. No registered waste management facilities where landfilling has occurred were identified on site or within the vicinity.

Natural strata can be a source of ground gases; principally these are organic bearing strata such as alluvium, peat, dock silt and coal measures etc. Shallow mine workings may also be significant. These may sources generate levels of carbon dioxide and/or methane with corresponding oxygen levels reduced. No significant naturally occurring sources of ground gases were identified.

4.4 Potential Receptors

The following potential receptors associated with the site and the proposed development have been considered in this report:

Receptor	Rating	Justification
End Users	High	Occupants of the proposed redevelopment. The proposed development comprised a residential dwelling with private garden.
Adjacent Land	Low	Sensitive land uses identified locally. The site was surrounded by fields with a residential dwelling from approx. 120m southwest.
Soft Landscaping	High	Areas of planting including lawns, shrubs, trees, etc. A small section of the existing open field and part of the existing hardstanding were to be converted into a new private garden. No evidence of existing plant phytotoxicity was observed, and was unlikely to be a significant issue.
Structural Concrete	Moderate	New foundations etc. cast in contact with the ground. The development was anticipated to include shallow foundations.
Water Supply Pipework	High	Water supplies may be damaged or tainted when mains are laid in contaminated ground. New potable water mains are to be laid.
Groundwater	Very Low	Water below ground in permeable strata. The site overlies strata classified as unproductive strata and is negligibly permeable therefore unlikely to be used for potable or commercial abstractions.
Surface Water	Low	Surface water in lakes and rivers etc. A drainage ditch was located 10m west of the site.

4.5 Receptors Excluded

The following potential receptors were excluded from the assessment as they are covered by other legislative controls and are outside the remit of this report.

- Ecological receptors such as statutory protected species or wildlife areas. An assessment of such risks was outside the scope of this report.
- Site workers such as those involved in construction work or future maintenance. Any risks posed to site workers would be controlled through Health & Safety legislation, including the CDM and COSHH regulations etc.

5.0 PRELIMINARY RISK ASSESSMENT (PRA)

5.1 SPR Linkages and Risk Rating

The source-pathway-receptor linkages identified are summarised below:

Soils	Pathways	Rating	Receptor	Rating	Overall Rating
High	Dermal contact with soil and soil-borne dust	Very high	End Users	High	High
High	Ingestion of soil and soil-borne dust	Very high	End Users	High	High
High	Inhalation of soil-borne dust	Very high	End Users	High	High
High	Consumption of homegrown produce	Moderate	End Users	High	High
High	Inhalation of soil-borne dust	Moderate	Adjacent Land	Low	Moderate
High	Plant uptake, phytotoxic effects	Moderate	Planting	High	High
High	Chemical attack	High	Concrete	Moderate	High
High	Chemical attack	High	Pipework	High	High
High	Leaching-out, migration to water table	Unlikely	Groundwater	Very Low	Unlikely
High	Leaching-out, migration to water bodies	Low	Surface Water	Low	Low

Ground water	Pathways	Rating	Receptor	Rating	Overall Rating
Unlikely	Direct contact	Unlikely	End Users	High	Unlikely
Unlikely	Direct contact	Unlikely	Adjacent Land	Low	Unlikely
Unlikely	Plant uptake, phytotoxic effects	Very Low	Planting	High	Unlikely
Unlikely	Chemical attack	Very high	Concrete	Moderate	Unlikely
Unlikely	Chemical attack	Moderate	Pipework	High	Unlikely
Unlikely	Migration to Controlled Water receptor	Low	Groundwater	Very Low	Unlikely
Unlikely	Lateral migration to water bodies	Moderate	Surface Water	Low	Unlikely

Vapours	Pathways	Rating	Receptor	Rating	Overall Rating
Very low	Inhalation, ignition	High	End Users	High	Low
Very low	Inhalation, ignition	High	Adjacent Land	Low	Low
Very low	Root asphyxiation, phytotoxic effects	High	Planting	High	Low
Very low	Not a significant hazard	-	Concrete	Moderate	Unlikely
Very low	Chemical attack	High	Pipework	High	Low
Very low	Not a significant hazard	-	Groundwater	Very Low	Unlikely
Very low	Not a significant hazard	-	Surface Water	Low	Unlikely

Ground Gasses	Pathways	Rating	Receptor	Rating	Overall Rating
Unlikely	Inhalation, ignition	High	End Users	High	Unlikely
Unlikely	Inhalation, ignition	Unlikely	Adjacent Land	Low	Unlikely
Unlikely	Root asphyxiation, phytotoxic effects	Moderate	Planting	High	Unlikely
Unlikely	Not a significant hazard	-	Concrete	Moderate	Unlikely
Unlikely	Not a significant hazard	-	Pipework	High	Unlikely
Unlikely	Not a significant hazard	-	Groundwater	Very Low	Unlikely
Unlikely	Not a significant hazard	-	Surface Water	Low	Unlikely

5.2 Other Factors

The following other areas of possible concern were identified, but were outside the geo-environmental risk assessment:

Site managers are responsible for the safety of persons in their employ under a variety of instruments including the CDM regulations and Health & Safety at Work Act. In terms of working on contaminated sites, guidance can be sought from the CIRIA publication entitled "A Guide for Safe Working on Contaminated Sites". Any work in confined spaces should only be carried out following appropriate risk assessment. Detailed risk assessment for workers is outside the scope of this report.

Dumped wastes including domestic rubbish, hand tools and plant/equipment etc. were noted. An allowance should be made for removing such items as part of site preparation works.

Asbestos may exist within the building on site, including for instance in cement boarding. An appropriate survey should be undertaken to assess the presence of asbestos within the building fabric.

Weil's Disease is a bacterial infection spread by animals caused by *Leptospira* bacteria. Leptospirosis generally causes mild flu-like symptoms, such as headache, chills and muscle pain, but in severe cases can be life-threatening and cause organ failure and internal bleeding. Leptospirosis can be caught by touching soil or water contaminated with the urine of wild animals (generally cattle, pigs, dogs and rodents, particularly rats) infected with the bacteria. Higher risks may arise through contact with sewage or freshwater. Leptospirosis is rare in the UK; only 55 cases were confirmed by laboratory testing in England and Wales between 2020 and 2023 (many of the cases originated overseas).

Damaging, disturbing or removing protected species can result in prosecution under a range of environmental legislation. Potential impacts on the ecological environment include:

- Disturbance of birds, badgers, bats and other protected species
- Removal and fragmentation of habitats
- Disturbance to aquatic wildlife and water quality
- Disturbance to wildlife from noise and vibration
- Damage to trees and hedgerows.

It is recommended that the advice of an appropriately qualified ecologist should be sought prior to undertaking any works.

6.0 SUMMARY PHASE I ASSESSMENT

6.1 Qualitative Ratings

Overall, the level of risk ranged between Unlikely and High. Consequently, a **High** level of risk has been assigned to the site in respect of the proposed development. This is primarily due to the potential Asbestos Containing Materials (pACM) within the barn's structure, the previous agricultural land use and the proposed residential end use.

6.2 Recommendations

It would be necessary to undertake basic ground investigation works, which may include;

- Shallow boreholes, or trial pits, to assess the composition and depth of any Made Ground and any field evidence of contamination into the underlying soils.
- Selected samples (including materials bearing field evidence of contamination) should be sent for laboratory analysis. The main analytical suite is identified below.
- Soil samples should be screened for vapours using a Photoionisation Detector (PID).
- Positions should be located in areas of concern; i.e. targeted to specific points of potential contamination such as parking area of vehicles, and in receptor sensitive locations such as in proposed garden areas, below the footprint dwellings, in the location of buried services, etc.
- Positions should be located adjacent to the site boundaries in the eastern area, to evaluate the potential for contamination to have migrated laterally on site from the adjacent field.
- Positions should be targeted to potential source areas e.g. raised ground within barn, east of barn and small stockpile along eastern boundary.
- Samples of any perched water should be collected for laboratory testing.

The analytical suite, based on the known site history and walkover survey, should include:

- General parameters: acidity (pH), fraction of organic carbon.
- A selection of shallow samples should be screened for pesticides and herbicides.
- Metals; arsenic, cadmium, chromium (total), lead, mercury, selenium, boron, copper, nickel and zinc.
- Non-metals: water soluble sulphate, sulphide, total cyanide.
- Targeted organic parameters; TPH (speciated), BTEX, speciated PAHs, VOCs and SVOCs, scheduled based on PID screening and field evidence etc.
- Visual asbestos screening of all Made Ground samples. Where possible asbestos fibres or ACMs are identified, these should be examined under a microscope to determine type and quantification tests should be carried out.

Further positions may be required, additional samples analysed or additional determinands added to the analysis, as appropriate, based on any field evidence of possible contamination encountered.

In addition, the requirement for Waste Acceptance Criteria (WAC) testing should be considered to categorise soils in terms of disposal.

Geotechnical sampling/testing could be combined with the site works to assist with the proposed barn conversion and rear extension.

It would be prudent to confirm the scope of ground investigation works with the Local Authority and other stakeholders before carrying out these works.

REFERENCES

A number of technical references have been referred to in the preparation of this document, including:

- Smith, I. (2014) Smith's Elements of Soil Mechanics. Chichester. Wiley Blackwell. 9th edition.
- BRE Design Guide 365. Soakaway design ("DG365").
- Radon: Guidance on protective measures for new buildings, BRE Report BR 211, 2023 6th edition.
- The Environment Agency's approach to groundwater protection. February 2018 Version 1.2.
- Water UK and the Home Builders Federation; Contaminated Land Assessment Guidance, dated January 2014.
- Concrete – Complementary British Standard to BS EN 206; Part 1: Method of specifying and guidance for the specifier BS8500-1:2015+A1:2016, dated August 2016.
- Revised EU Waste Framework Directive 2008 2008/98/EC [transposed into English law under The Waste (England and Wales) Regulations 2011].
- European Community (EC) Directive 1999/31/EC [transposed into English law under the Landfill (England and Wales) Regulations 2002].
- Defining Waste Recovery - Permanent Deposit of Waste on Land, EPR13 v1.0, EA 2010.
- The definition of waste: Development Industry Code of Practice, v2, CL:AIRE 2011.
- Guidance on the classification and assessment of waste Technical Guidance WM3 ("WM3") EA publication (1st edition v1.2GB) dated 2021.

REPORT CONDITIONS

The Client

This report may only be used by the client named in section 1 and their appointed project team for the purpose of design, obtaining planning, building regulations approval, and in connection with finance. This report must not be used by any other persons or for other purposes without express written agreement of Land Science.

General

Land Science takes all reasonable professional care in the preparation of this report, using current standards and industry practice. However, the evaluation of ground conditions depends on an interpretation and extrapolation of the conditions revealed by a limited data set. The level of risk is related to the extent of investigation and no site is ever free of risk. The client should understand their risks and liabilities. We accept no liability whatsoever in respect of:

- The scope, extent or design of an investigation.
- Any conditions not directly revealed by the investigation.
- Published standards or methodologies used or adopted in this report.
- The opinion of any other party including any regulator, authority or stakeholder.
- Any dispute, claim or consequential loss arising from any findings of this report.
- Third party information and data.

This report relates solely to ground-related matters as set out in the objectives and makes no representation on other matters such as ecology, arboriculture, invasive plant species, the condition of buildings and structures, hazardous building materials such as insulation or asbestos, the locations of boundaries, unexploded ordnance, and or planning constraints etc. Further reports should be commissioned in this respect as appropriate.

Regulators and Approvals

This (and any other) report should be submitted to relevant authorities for their own assessments and to provide their approval or comments accordingly. This should be in good time before commencing on site in case additional work is to be carried out.

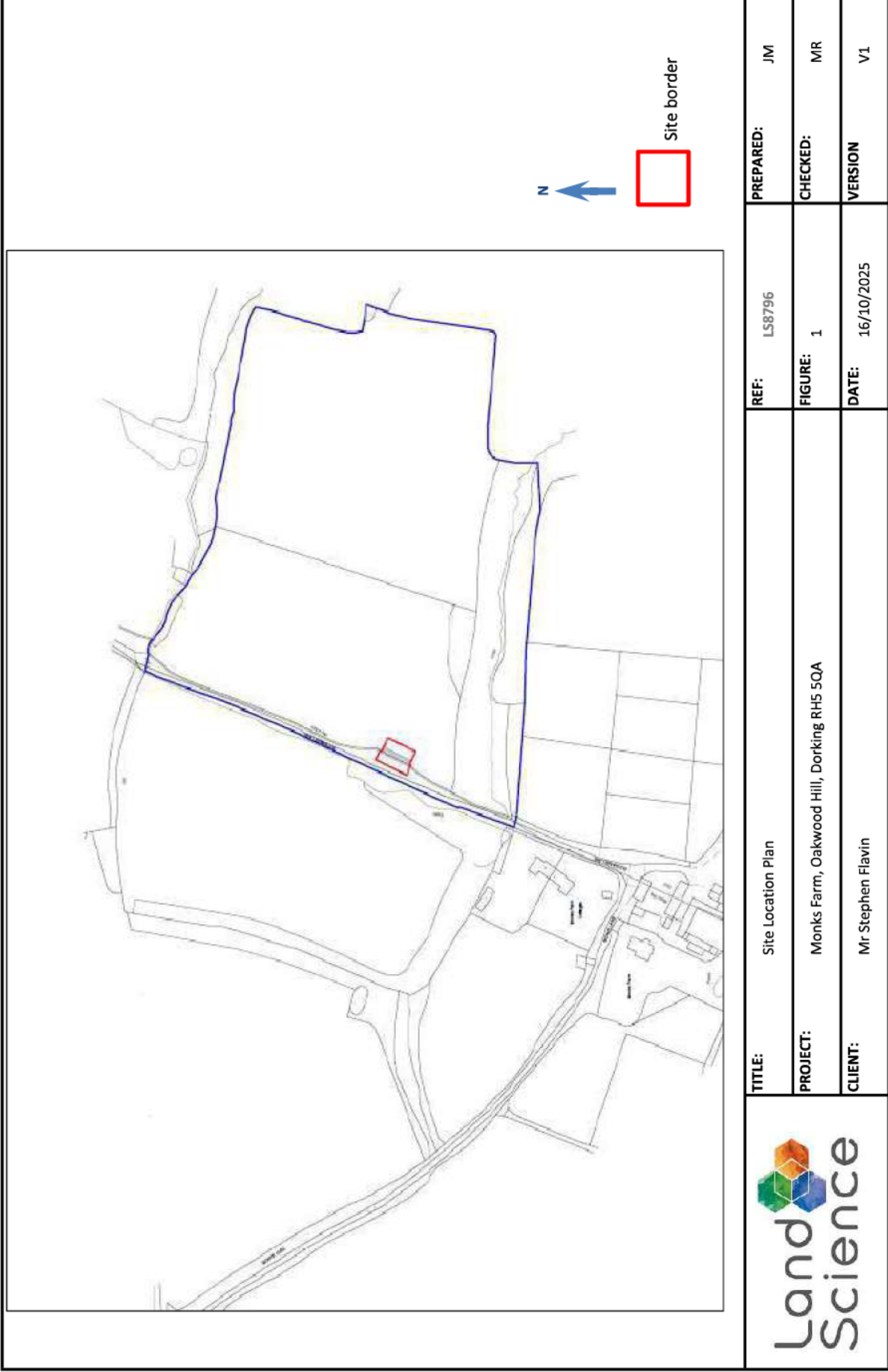
Standards, technical guidance and regulatory positions change over time and may therefore affect the findings and recommendations made in this report; this should be verified by the client prior to any critical project milestones. Where this information is used in design, the designer should verify that the information is appropriate and has been used correctly.

Variations with Time

The report relates to conditions revealed at the time of the investigation and any monitoring visits. Some parameters may vary over time or seasonally; groundwater levels, ground gas compositions, or concentrations of contaminants are particularly variable in this respect. Further monitoring or verification should be considered as appropriate.

GLOSSARY OF TERMS

ACM	Asbestos Containing Material
BGS	British Geological Survey
BRE	Building Research Establishment
BS	British Standard
C4SL	Category 4 Screening Level
CBR	California Bearing Ratio
CDM	Construction Design and Management regulations
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CLEA	Contaminated Land Exposure Assessment model
CSM	Conceptual Site Model
EA	Environment Agency
EQS	Environmental Quality Standards
FOC	Fraction of Organic Carbon
GAC	Generic Assessment Criterion
GQRA	Generic Quantitative Risk Assessment
mbgl	Meters Below Ground Level
NHBC	National House Building Council
mOD	Metres above Ordnance Datum
PAHs	Polycyclic Aromatic Hydrocarbons
PHE	Public Health England
PID	Photo-Ionisation Detector
PQRA	Preliminary Quantitative Risk Assessment
PSD	Particle Size Distribution Test
RMS	Remediation Method Statement
S4UL	Suitable for Use Level
SOM	Soil Organic Matter
SPZ	Source Protection Zone
SPT	Standard Penetration Test
SSSI	Sites of Special Scientific Interest
ST-WEL	Short Term Workplace Exposure Limit
SVOCs	Semi-Volatile Organic Compounds
TPH	Total Petroleum Hydrocarbons
TRRL / TRL	Transport Road Research Laboratory
TWA-WEL	Time Weighted Average Workplace Exposure Limit
UK HBF	United Kingdom House Building Federation
VOCs	Volatile Organic Compounds
WAC	Waste Acceptance Criteria



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TITLE:	Site Layout Plan	REF:	LS8796	PREPARED:	JM
PROJECT:	Monks Farm, Oakwood Hill, Dorking RH5 5QA	FIGURE:	2	CHECKED:	MR
CLIENT:	Mr Stephen Flavin	DATE:	16/10/2025	VERSION	V1

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