



**Castledine
Environmental**

LAND CONTAMINATION SURVEYS

**Phase 1 Land Contamination
Risk Assessment**

for

**The Demolition of Existing Building
and Erection of a Single Self-Build
Dwelling (C3)**

on the site of

**Upper Pullins Farm,
Stoke Lane, Higham on the Hill,
Nuneaton CV13 6FG**

Date: August 2026

Status:

Final Report

Reference:

4358D P1 Marlow – Nuneaton

Date:

18/08/2026

Author:	Checked by:
DW	TR

EXECUTIVE SUMMARY

Based on the information contained in this report, it is the opinion of Castledine Environmental that the site represents an estimated **HIGH** level of risk with respect site workers and a **MODERATE** to **LOW** level of to the proposed development.

Recommendations include removal of all asbestos from the site; proper site hygiene practices and PPE, possibly including site specific RAMS; consultation with statutory water providers, and; a watching brief (as outlined in Appendix E).

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1.0 QUALITY ASSURANCE

Castledine Environmental confirm that all reasonable efforts have been made to ensure that the information outlined within this report is accurate.

Castledine Environmental would further confirm that due care, attention and technical skill were used in the creation of this report.

2.0 LIMITATIONS

The conclusions and recommendations made in this report are limited to those based on the findings of the investigation. Where comments are made based on information obtained from third parties, Castledine Environmental assumes that all third-party information is true and correct. No independent action has been undertaken to validate the findings of third parties. The assessments and interpretation have been made in line with legislation and guidelines in force at the time of writing, representing best practice at the time.

This survey has not included asbestos within existing structures, invasive plant species, geotechnical considerations or any elements unconnected with potential ground contamination at the site. If required, such surveys should be undertaken by suitably accredited organisations.

There may be other conditions prevailing at the site which have not been disclosed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigation.

3.0 INTRODUCTION AND SITE PROPOSALS

Castledine Environmental have been appointed by Ms. P. Marlow to undertake a Phase 1 Desk study on a site at Upper Pullins Farm, Stoke Lane, Higham on the Hill, Nuneaton CV13 6FG.

The site development proposals consist of the demolition of the existing barn and the erection of a new, self-build dwelling (use Class C3) with associated site works and landscaping.

4.0 SCOPE

Castledine Environmental have prepared this report for the sole use and reliance of Ms. P. Marlow and associated appointees for the purpose of ensuring compliance with:

- National Planning Policy Framework (NPPF) February 2025;
- Part C1 of the building regulations;
- Support of Planning Application No: 25/00913/FUL with Hinckley & Bosworth Borough Council.

This report may not be used or relied upon by any unauthorised third party, or for any other proposed use than that specified above, without the explicit written agreement of Castledine Environmental.

This report is to be regarded as a Preliminary Risk Assessment in accordance with the Environment Agency's Land Contamination Risk Management (LCRM – 2021), which replaces CLR11 "*Model Procedures for the Management of Land Contamination*", carried out in accordance with BS 10175:2011+A2:2017, "*Investigation of Potentially Contaminated Land - Code of Practice*" and relevant sections of BS5930:2015+A1:2020, "*Code of Practice for Ground Investigations*".

The objectives of the report are:-

- To assess historical activities at the site with respect to their potential impact on the site environment;

- To assess historical and current surrounding land use in relation to known or potential off-site contamination issues that may impact on the subject site;
- Review of geological, hydrogeological and hydrological conditions at the site, pertaining to land contamination issues;
- To characterise the environmental setting of the site, identify migration pathways and vulnerable receptors for contamination originating at the site, focusing on potential soil and groundwater liabilities; and
- To develop a preliminary conceptual site model (CSM).

This report has been produced in order to discharge any relevant planning conditions outlined by the Local Authority and Environment Agency; however, further requirements may be imposed after the findings of this report that may need to be addressed at a later date.

5.0 SITE DESCRIPTION

The site is located Higham on the Hill, Nuneaton, Leicestershire at National Grid Reference: 438502,295712 and is approximately 0.04ha in area.

The site is rectangular in shape with the site boundary contained to the barn itself. The site is located in a predominantly rural area set within a wider farmyard. The site is directly bounded by a site access route with a farmstead and yard beyond to the north, containers, a mobile home and a further yard area with field beyond to the east, the site access route with field and a further farmstead beyond to the south and Stoke Lane to the west with a pond and further field beyond this.

The site interior comprises an open-sided Dutch-barn, open to the south, set in a wider hardstanding yard area. Access to site was provided via an offsite gate south of the barns, providing access to the hardstanding yard area.

The barn was seen to be single-storey and constructed of breezeblocks, concrete flooring, steel frame and a mixture of corrugated plastic and metal cladding with PACM (Potential Asbestos Containing Material) roofing. The entirety of site is at this time occupied by hardstanding, beyond a thin extent of soil-based flooring to the rear (north) of the barn itself. A significant extent and amount of fragmented PACM was noted to the rear of the building (see Photograph No.5 in Appendix D). The barn was seen to be occupied by dog kennels, hay bales, a tractor, anvils, general farming & mechanical tools, and equipment on the day of the site walkover. No clear or evident staining, spillages or the storage of fuels nor hydrocarbons or similar chemicals was noted within the barn, with all concrete seen to be well-maintained, clean and intact.

The yard area to the immediate south of the barn was seen to be occupied by wagons, trailers, a tipper wagon and a tractor, with a second excavator noted to the rear of the barn.

Potential sources of contamination noted on the site walkover include the fragmented PACM noted underfoot to the rear of the barn, the PACM atop the barn and the general agricultural / heavy machinery usage of the immediate surrounding areas. Photos of the site are present in Appendix D.

5.1 SOILS AND GEOLOGY

British Geological Survey materials © NERC 2026 obtained from <http://www.bgs.ac.uk/data/mapViewers/home.html> under the [Open Government Licence](#).

5.1.1 SUPERFICIAL DEPOSITS

Both BGS geological mapping and the Groundsure report record superficial geological deposits of the Wolston Sand and Gravel occupying a small area of the western extent of site and comprising sands and gravels with possible lenses of silt, clay or peat; with records of the

Wolston Clay Member, comprising laminated clays and silts occupying the remainder of site.

5.1.2 BEDROCK DEPOSITS

Both BGS geological mapping and the Groundsure report records bedrock geology of the Gunthorpe Member underlying site, comprising a red-brown mudstone with subordinate dolomitic siltstones and fine-grained sandstones.

5.1.3 ARTIFICIAL GROUND

BGS geological mapping records an area of made ground (undivided) located 63m south west of site.

5.1.4 BOREHOLES

No nearby or relevant BGS historical borehole data is available for the site.

5.1.5 COAL MINING

The site is not located in a coal mining reporting area and the local geology is not considered appropriate for such extraction. As such the risk from coal mining activities is considered to be negligible.

5.1.6 NON-COAL MINING

The Groundsure report records no non-coal mining operations, activities or features located within 500m of site.

5.1.7 SURFACE WORKINGS

ID	Distance (m)	Direction	Land Usage	Year of Mapping
A	70	SW	Pond	1988
A	70	SW	Pond	1913
A	71	SW	Pond	1938

ID	Distance (m)	Direction	Land Usage	Year of Mapping
A	71	SW	Pond	1923
A	71	SW	Pond	1901
A	74	SW	Pond	1887
A	74	SW	Pond	1955
A	74	SW	Pond	1968
B	192	NW	Pond	1923
B	192	NW	Pond	1901
1	200	SW	Pond	1923

5.1.8 RADON

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No radon protective measures are necessary as described in publication BR211:2015 by the Building Research Establishment.

6.0 REGULATORY AUTHORITY AND OTHER ENVIRONMENTAL DATA

An environmental search listing historical and environmental factors likely to affect the property has been reviewed.

The most pertinent information is summarised in the following sections.

A copy is presented in Appendix A.

Additional geological and hydrological data was obtained from the British Geological Survey.

6.1 HYDROLOGICAL**6.1.1 AQUIFER****6.1.1.1 SUPERFICIAL DEPOSIT AQUIFER**

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.1.1.2 SUPERFICIAL DEPOSITS PERMEABILITY

The Groundsure report records the site as being within an area where the maximum permeability of superficial deposits is recorded as 'very high' and the minimum permeability as 'high', facilitated by intragranular flow mechanisms.

This is 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).

6.1.1.3 BEDROCK GEOLOGY AQUIFER

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers

6.1.1.4 BEDROCK PERMEABILITY

The Groundsure report records the site as being within an area where the maximum permeability of bedrock geology is recorded as 'low' and the minimum permeability as 'low' and facilitated by fracture flow mechanisms.

6.1.2 ABSTRACTIONS AND PRIVATE WATER SUPPLIES

The Groundsure report records an active groundwater abstraction site located 849m north west of site and related to transfer between sources, sourced via groundwaters (effective circa.2015 onwards); with an active surface water abstraction site located 918m north of site and related to process waters at a reservoir (effective circa.2015 onwards). No further active abstraction sites are located within 1000m of site.

6.1.3 SOURCE PROTECTION ZONE

Site is not in a source protection zone (SPZ).

6.1.4 GROUNDWATER VULNERABILITY AND SOIL LEACHING POTENTIAL

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.

ID	Location	Summary	Soil / Surface	Superficial Geology	Bedrock Geology
1	On site	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: <300mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

6.1.5 SURFACE WATER

The Groundsure report records no hydrological features located within 250m of site however satellite imagery shows a large pond located approximately 86m west of site.

6.1.6 DISCHARGE CONSENTS

The Groundsure report records a discharge consent held 388m west of site related to sewer storm overflow discharges (on behalf of the local water supplier) direct into a tributary of the Sibson Brook (effective circa.1996 onwards).

6.2 PERMITTED PROCESSES

None recorded within 500m of site.

6.3 POLLUTION INCIDENTS

The Groundsure report records no pollution incidents located within 250m of site and no significant impact incidents located within 500m of site.

6.4 RADIOACTIVE SUBSTANCES REGISTRATIONS

None recorded within 500m of site.

6.5 WASTE**6.5.1 LICENSED WASTE MANAGEMENT FACILITIES (LOCATIONS)**

None recorded within 500m of site.

6.5.2 LANDFILL SITES

None recorded within 500m of site.

6.6 HAZARDOUS SUBSTANCES

None recorded within 500m of site.

6.7 ECOLOGICAL RECEPTORS

The Groundsure report records the site as being located within the River Trent (from source to confluence with the River Derwent) surface waters Nitrate Vulnerable Zone (NVZ) with an additional record of the NVZ located 261m north of site. No further sensitive land usages are located within 1000m of site.

6.8 AERIAL PHOTOGRAPHY

Aerial photography shows the following:

6.8.1 GOOGLE EARTH

19 No. images are held in the historic imagery dataset, as follows:

Date	Description
December 1945	Site and immediate surrounding areas shown as open, unoccupied field.
December 1999	No major or discernible change on site, site remains as field. Farmstead seen north of site now present on mapping, as is the pond directly west of site (remains persistent until the present-day).
July 2006	Site is now occupied by the present-day linear barn and exterior hardstanding. An excavator is shown approx.10m south of site.
December 2006	No major or discernible change on site nor site relevant change to the surrounding areas.
September 2008	

Date	Description
December 2010	No major or discernible change on site nor site relevant change to the surrounding areas.
September 2011	The present-day hardstanding seen forming the yard area directly south of site has now been emplaced and vehicle is park south of site.
April 2015	No major or discernible change on site nor site relevant change to the surrounding areas.
April 2016	
April 2018	A heap of manure is located directly east of site. A new yard area associated with the farmstead is seen directly north of site, adj. to further manure heaps.
April 2020	No major or discernible change on site nor site relevant change to the surrounding areas.
February 2021	
March 2021	
June 2021	
February 2022	
May 2023	Containers and vehicles now parked atop hardstanding directly south of the site and barn. Manure heap north of site now has additional, indiscernible heaps adjacent to site.
November 2024	The site is now shown as that seen in the present-day with machinery arrayed to the south, SW and west of the barn, a mobile dwelling east and landscaped access routes and banking forming a compound. An area approx.70m east of site is now shown as the present-day yard and storage area seen here on the day of the walkover.
April 2025	No major or discernible change on site nor site relevant change to the surrounding areas.
April 2026	

6.8.2 GOOGLE STREET VIEW

Google Street View imagery is dated circa.2012, 2019, 2021 and 2023 with the site viewed from the access route. Imagery dated circa.2012 shows the site as largely unoccupied beyond hardstanding access and the present-day barn; before imagery dated through until circa.2023 shows little to no major change on site.

6.9 HISTORIC MAPPING

The following historic maps have been reviewed as part of this assessment:

Map	Onsite	Offsite
OS County Series: 1887, 1:10,560	Site is shown as open, unoccupied field.	Areas directly north, east and south of site comprise open field; that to the west comprises roadside (as in present-day) with field beyond and pond SW of site (remains persistent until the present-day). The wider village of Higham on the Hill is located approx.100m south & SW of site. A farmstead is located approx.150m north of site.
OS County Series: 1888, 1:2,500	No major or discernible change on site.	A grave yard is marked approx.250m SW of site.
OS County Series: 1901, 1:10,560		Surrounding areas see little site relevant change.
OS County Series: 1902, 1:10,560		
OS County Series: 1903, 1:2,500		
OS County Series: 1913, 1:10,560		
OS County Series: 1914, 1:2,500		
OS County Series: 1923, 1:10,560		
OS County Series: 1924-1929, 1:2,500		
OS County Series: 1938, 1:10,560		An area approx.464m NW of site (and extending north, NW beyond this) is now redacted as part of a military airfield.
Provisional: 1950- 1955, 1:10,560		
National Grid: 1962, 1:2,500		Surrounding areas see little site relevant change.
Provisional: 1967- 1968, 1:10,560		The airfield NW of site is no longer redacted and is now marked as a proving ground (i.e. vehicles).
National Grid: 1988, 1:10,000		A railway line formerly located approx.49m north of site in cuttings has been dismantled.
National Grid: 1989, 1:2,500		Surrounding areas see little site relevant change.
National Grid: 1994, 1:2,500		
National Grid: 2001, 1:10,000		

Map	Onsite	Offsite
Landline: 2003, 1:1,250		
National Grid: 2010, 1:10,000	The site is now shown as occupied by the present-day linear barn.	
National Grid: 2015, 1:10,000		
National Grid: 2025, 1:10,000	No major or discernible change on site.	The former airfield and proving ground NW of site is now shown with racetrack markings, evidencing the proving ground usage.

6.10 CURRENT LAND USE DATA

None recorded within 500m of site.

6.11 PETROL AND FUEL SITES

None recorded within 500m of site.

6.12 HISTORICAL PETROL AND FUEL SITE DATABASE

None recorded within 500m of site.

6.13 POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED ON MAPPING

ID	Distance (m)	Direction	Use	Date
B	239	S	Unspecified tank	1955
B	239	S	Unspecified tank	1938
B	241	S	Unspecified tank	1988
B	241	S	Unspecified tank	1923
D	399	W	Unspecified works	1968-1988
D	430	W	Unspecified tanks	1968-1988
E	447	SW	Smithy	1913
E	450	SW	Smithy	1901
2	459	NW	Cuttings	1887
3	464	NW	Airfield	1955
4	497	N	Cuttings	1887

6.14 HISTORICAL TANK DATABASE

ID	Distance (m)	Direction	Use	Date
1	98	NW	Unspecified tank	1962-1989

ID	Distance (m)	Direction	Use	Date
A	133	E	Unspecified tank	1989
A	169	E	Unspecified tank	1962
B	242	S	Unspecified tank	1962
B	242	S	Unspecified tank	1989
B	247	S	Unspecified tank	1914-1924
C	351	W	Unspecified tank	1989
C	351	W	Unspecified tank	1962

6.15 HISTORICAL ENERGY FACILITIES

None recorded within 500m of site.

6.16 HISTORICAL GARAGE DATABASE

The Groundsure report records a historical garage formerly located 448m south west of site and identified from historical mapping dated circa.1962-1989.

7.0 PRELIMINARY CONCEPTUAL SITE MODEL

The risk posed by any contaminants in soil or groundwater will depend on the nature of the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance in, on or under land (or within groundwaters) that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance. The following sections discuss all the identified potential on and off-site sources, pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors from the data gained from the desk study. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.

Source	A contaminant or pollutant that is in, on or under land that has the potential for cause harm or pollution to a receptor.
Pathway	The physical route by which a receptor is or could be affected by a contaminant or pollutant.
Receptor	Something or someone that could be adversely affected by a contaminant, i.e. people, controlled waters, ecological systems, buildings, crops, livestock.

By considering each of the three elements above, an assessment of actual and potential hazards to receptors can be carried out, taking into account the significance and degree of risk of each. The three elements above can exist separately; however, they only create a risk where they are linked together, thus creating a contaminant linkage. During the Preliminary Risk Assessment Stage, the linkages are referred to as 'Potential Contaminant Linkages', until they are confirmed via intrusive sampling, thus becoming 'Relevant Contaminant Linkages'. A tabled, diagrammatic or matrix of pollutant linkages is considered to be a Conceptual Site Model (CSM), the source-pathway-receptor linkages are reviewed and displayed, apportioning a risk-rating and mitigation suggestion after each summary.

Three impact potentials exist for any given site, these are:

- The site impacting upon itself;
- The site impacting on its surroundings; and
- The surroundings impacting on the site.

All three impacts need to be considered in a risk assessment.

7.1 SOURCES

The following potential sources of contamination have been identified:

Potential Sources and Associated Contaminants Identified	
Source (On Site)	Potential Contaminants of Concern
Potential for peat in superficial deposits (BGS data)	Ground gases
Erection & usage of the site for barn & storage purposes (circa.2010 onwards)	Asbestos, hydrocarbons TPH
Fragmented PACM (noted on site walkover)	Asbestos
Source (Off Site)	Potential Contaminants of Concern
General agricultural / heavy machinery usage on the immediate surrounding areas	TPH, VOCs
Adjacent farmstead & manure heaps (present north of site earliest mapping reviewed until present-day, heaps present circa.2018 onwards)	Agrichemicals (i.e. SVOC – manures), asbestos, heavy metals, metalloids, PAHs
Made ground 63m west of site	Ground gases

7.2 PATHWAYS

A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development are identified as follows:

- Ingestion (direct and indirect via crop uptake);
- Dermal contact;
- Inhalation;
- Plant uptake;

- Direct contact by buried structures (i.e. pipe degradation and leaching, pH & Sulphate attack on concrete); and
- Leaching of soluble contamination into groundwater.

7.3 RECEPTORS

Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).

- Human Health;
 - Current users of the site;
 - Future users of the site;
 - Users of neighbouring sites;
 - Construction workers;
 - Services personnel working in trenches;
- Buried concrete, which may be affected by high concentrations of sulphate and/or low pH, in the soils and groundwater underlying the site;
- Construction Materials;
- Buried water pipes;
- Controlled Waters;
- Ecological Receptors; and
- Flora and fauna using the proposed development.

The site proposals are understood to be **residential**, as such the likely receptors are site workers during site development, end-users of the site following redevelopment (i.e. residents / tenants, children, visitors, service personnel), controlled waters (i.e. aquifers, watercourses), adjacent receptors (neighbours, flora and fauna, ecological receptors) and building fabric and buried utilities.

8.0 CONCEPTUAL SITE MODEL

The Conceptual Site Model (CSM) is a hypothesis of the nature and sources of contamination, potential receptors that may be the recipient of

contamination arising from those sources and any pathways that may exist. It creates a plausible source-pathway-receptor pollutant linkage (hazard), set within the context of the ground and proposed end use of the site.

Based on the preliminary CSM for the site, an environmental risk assessment has been undertaken. A simple matrix can provide a consistent basis for decision making. It should be used with caution, recognising the over-simplification that it will normally represent. The probability and consequences are defined according to parameters relevant to the situation; the boundaries of risk acceptability (and tolerability, where relevant) indicated on the matrix provided below, can be tailored to the factors influencing the significance of the risk. Individual situations are mapped onto the matrix to provide a ready and consistent indication of their acceptability or tolerability.

TABLE 1. RISK CLASSIFICATION MATRIX

		Consequence			
		Severe (Sv)	Medium (Md)	Mild (Mi)	Minor (Mr)
Probability	High (Hi)	Very high risk	High risk	Moderate Risk	Moderate/ Low Risk
	Likely (Li)	High risk	Moderate Risk	Moderate/ Low Risk	Low Risk
	Low Likelihood (Lw)	Moderate Risk	Moderate/ Low Risk	Low Risk	Very Low Risk
	Unlikely (UI)	Moderate/ Low Risk	Low Risk	Very Low Risk	Very Low Risk

Source: CIRIA Report C552, Contaminated Land Risk Assessment. A Guide to Good Practice, 2001

These attributes are evaluated qualitatively against individual hazard assessments to determine the likelihood of a given hazard occurring. The risk evaluations for each plausible pollutant linkage are given in the last three columns of Table 1.

TABLE 2. CLASSIFICATION OF RISK

Very high risk (Vh)	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High risk (Hi)	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer term.
Moderate risk (Md)	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low risk (Lw)	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk (VI)	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Source: CIRIA Report C552, Contaminated Land Risk Assessment. A Guide to Good Practice, 2001

TABLE 3. SUMMARY OF SIGNIFICANT POLLUTION LINKAGES

Source	Receptor	Pathway	Probability of Linkage	Conseq.of Linkage	Risk	Justification
Soil contaminants: - Erection & usage of the site for barn & storage purposes (circa.2010 onwards); - Fragmented PACM (noted on site walkover); - Adjacent farmstead & manure heaps (present north of site earliest mapping reviewed until present-day, heaps present circa.2018 onwards). - General agricultural / heavy machinery usage on the immediate surrounding areas	Site workers (<i>during site works, excavations, eating and drinking</i>)	Ingestion, direct contact, inhalation of dust and dry arisings	Li	Sv	H	Significant fragmented quantities of asbestos identified on site which are considered credible risks to site workers.
	End users (<i>residents / tenants, children, visitors, service personnel</i>)	Crop uptake, ingestion, direct contact, inhalation of dust and dry arisings	UI	Md	L	No soft-landscaping is present within the site boundaries and therefore risks associated with soil contamination considered to be low.
	Flora and fauna (<i>on and offsite</i>)	Migration, crop uptake	UI	Md	L	Potential contaminants on the site may migrate to flora and/or fauna, though no sensitive ecology identified in this report.
	Controlled waters (<i>Secondary A & B Aquifers</i>)	Vertical and lateral migration (<i>superficial deposits permeable, bedrock predominantly low</i>)	UI	Md	L	Significant, gross or highly mobile contamination not expected to exist on site and local superficial deposits considered to be predominantly cohesive (i.e. Wolston Clay Member underlies majority of site).
	Services (<i>new potable supply piping</i>)	Direct contact (<i>pipe degradation and leaching</i>)	Lw	Md	M/L	There exists the potential for made ground deposits to impact new potable piping laid on site.
Ground gas: - Potential for peat presence within superficial deposits (BGS data). - General agricultural / heavy machinery usage on the immediate surrounding areas - Made ground 63m west of site.	Site workers & excavations, end users & building envelope (<i>ingress and build-up</i>)	Vertical and lateral migration (<i>superficial deposits permeable, bedrock predominantly low</i>)	UI	Md	L	No significant potential sources of ground gas identified beyond potential peat in superficial deposits (BS8576:2013 records natural soil strata, i.e. peat, as a very low gas risk, additionally, structure is already erected with no further foundational works required).
Vapours: General agricultural / heavy machinery usage on the immediate surrounding areas	Site workers & excavations, end users & building envelope (<i>ingress and build-up</i>)	Vertical and lateral migration (<i>superficial deposits permeable, bedrock predominantly low</i>)	UI	Md	L	Hazardous vapour impact considered to be low risk due to small length of time the site has been occupied coupled with the clean, intact nature of extant concrete (i.e. no staining or spillages nor storages of fuels evident).
Radon:	End users & building envelope	Vertical and lateral migration	UI	Md	L	Low radon affected area.

KEY: Probability of pollutant linkage Hi = Highly likely, Li = Likely, Lw = Low Likelihood, UI = Unlikely
Consequence Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor,
Overall Risk VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low

9.0 ENVIRONMENTAL RISK ASSESSMENT

Based on the information contained in this report, it is the opinion of Castledine Environmental that the site represents an estimated **HIGH** level of risk with respect site workers and a **MODERATE** to **LOW** level of to the proposed development. This is summarised below.

9.1 RESIDENTS / END-USERS

The site is proposed to be entirely building footprint and hardstanding following site redevelopment, which will act to sever any relevant pollutant linkages associated with soil contamination. The risks to end-users of the site are estimated to be low.

9.2 SITE WORKERS

Significant quantities of both intact and fragmented potential asbestos containing materials have been identified on site, which are considered credible and significant hazards to site workers. The provision for standard PPE and adherence to relevant HSE guidance may not be sufficient to mitigate the risks and a site-specific risk assessment (and removal of such sources, if proven as required) should be carried out. The risk to site-workers are estimated to be high.

9.3 CONTROLLED WATERS

The site is located in an area where the majority of superficial deposits and underlying bedrock deposits (Wolston Clay Member & Gunthorpe Member, respectively) are recorded as predominantly impermeable and thus will act to contain any contamination to the site itself. Additionally, significant, gross or highly mobile contamination is not expected to exist on site and no nearby active abstraction sites nor SPZs are recorded. The risks to controlled waters are estimated to be low.

9.4 FLORA AND FAUNA & OFFSITE RECEPTORS

Significant, gross or phytotoxic contamination is not expected to exist on site nor be associated with the site and the site is not located nearby to

any sensitive land usages nor ecologies. The risks to flora and fauna are estimated to be low.

9.5 GROUND GASES

No significant potential sources of hazardous ground gas generation (i.e. landfill records, infilled pits, ponds or quarries) have been identified and the potential for peat in superficial deposits is considered to be low. Peat is potentially present in the Wolstone Sand and Gravel Member, which only underlies a small extent of the far west of site and is not recorded underlying the structure itself, with the remainder of site occupied by the Wolston Clay Member, which is predominantly low in permeability. Furthermore, guidance found in BS8576:2013 refers to 'natural soil strata with a low degradable content, i.e. alluvium and peat' as a 'very low' ground gas risk. Accordingly, the risks to site structures from ground gas ingress and impact are estimated to be low.

9.6 HAZARDOUS VAPOURS

No significant potential sources of hazardous vapour nor hydrocarbon contamination capable of producing such vapours has been identified. Whilst the site has been occupied by some machinery, the site has not been developed for a significant period of site and concrete bases and flooring on site have been seen to be clean and intact with significant staining, spillages nor evidence of significant fuel storages noted (either visually or olfactorily). Accordingly, the risks to site structures from hazardous vapor impact are estimated to be low.

9.7 POTABLE WATER SUPPLY PIPING

Due to the limited potential for hydrocarbon presence in made ground deposits on site (road planings appear to have been emplaced around the site by circa.2011) on site, there exists the limited potential for new potable water piping to be impacted by residual site soils. Hydrocarbon degradation and leaching can impact potable supply piping and thus impact potable supplies themselves, offering a potential risk to end-users

via impacted water supplies. The level of risk is estimated to be moderate to low.

10.0 RECOMMENDATIONS

At this stage, based on the desk study information collected, it is considered that allowance be made for the following:

- Proper removal of any asbestos materials from exterior areas on site and on the structure itself;
- Usage of PPE and adherence to relevant HSE protocols during site redevelopment. Specific RAMS may be required;
- Contact with the local water supplier regarding their specifications for new potable water pipes. This may include laying of new piping in newly excavated service trenches, with in an inert pea-gravel matrix;
- A watching brief (as outlined in Appendix E) should be carried out by the site supervisor during the course of demolition, site clearance and construction works for any obvious contamination (e.g. oil spillage in ground, buried waste, possible asbestos containing material). Should previously unreported or undiscovered contamination be identified, then development should stop and Castledine Environmental should be contacted to determine if further assessment or changes to the remediation scheme are required.

Please contact Castledine Environmental for more information, or to request quotes for the above.

11.0 REFERENCES

11.1 LEGISLATION AND REGULATIONS

11.1.1 ACTS

- [1] Environmental Protection Act 1990, Part IIA: inserted by Environment Act 1995, Section 57. See Environment Act 1995 for text of Part IIA.

11.1.2 PLANNING REGULATIONS

- [2] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 SI1999/No.293

[3] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2000
SI2000/No.2867

[4] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2017 SI2017/No.571

11.1.3 CONTAMINATED LAND REGULATIONS

[5] The Contaminated Land (England) Regulations 2000. SI2000/No.227

[6] The Contaminated Land (England) (Amendment) Regulations 2001
SI2001/No.663

[7] The Contaminated Land (England) Regulations 2006
SI2006/No.1380

11.2 STATUTORY GUIDANCE

[8] Department of Environment, Food and Rural Affairs. 2012.
*Environmental Protection Act 1990: Part 2A Contaminated Land
Statutory Guidance.* Department of Environment, Food and Rural
Affairs

[9] Communities and local Government, 2024: National Planning Policy
Framework.

11.3 BRITISH STANDARDS

[10] BS 5930:2015+A1:2020 Code of practice for site investigations

[11] BS 10175:2011+A2:2017 Investigation of potentially contaminated
sites - Code of practice

[12] BS 8485:2015+A1:2019 Code of practice for the design of protective
measures for methane and carbon dioxide ground gases for new
buildings

[13] BS 8576:2013 Guidance on investigations for ground gas.
Permanent gases and Volatile Organic Compounds (VOCs)

- [14] Bs 10176:2020 Taking Soil Sample for Determination of Volatile Organic Compounds (VOCs)

11.4 NON-STATUTORY TECHNICAL GUIDANCE

11.4.1 ENVIRONMENT AGENCY

- [15] Land Contamination Risk Management (LCRM) 2020, updated 2023

11.4.2 CIRIA PUBLICATIONS

- [16] Wilson, S., Oliver, S., Mallett, H., Hutchings, H., and Card, G.. 2007, *C 665 Assessing risks posed by hazardous ground gases to buildings* London: Construction Industry Research and Information Association
- [17] Mallett, H., Cox, L., Wilson, S. and Corban, M... 2014, *C 735 Good practice on the testing and verification of protection systems for buildings against hazardous ground gases* London: Construction Industry Research and Information Association

11.4.3 CL:AIRE

- [18] Card G, Wilson S, Mortimer S. 2012. *A Pragmatic Approach to Ground Gas Risk Assessment. CL:AIRE Research Bulletin RB17*. CL:AIRE, London, UK. ISSN 2047- 6450 (Online)

12.0 APPENDICES

APPENDIX A ENVIRONMENTAL SEARCH

Separate Groundsure Report

APPENDIX B HISTORICAL MAPPING

Separate Map Packs (2 No. files)

APPENDIX C

CURRENT SITE PLANS



APPENDIX D

SITE PHOTOS AND LOCATIONS



Site Walkover Photos

Photo No.1: Facing NW from outside the southern boundary of site showing exterior hardstanding and onsite barn



**Address: Upper Pullins Farm, Higham on the Hill
Client: Ms. P. Marlow**

Photo No.2: Facing north from outside the southern boundary of site showing exterior hardstanding and onsite barn





Site Walkover Photos

Photo No.3: Facing NEW from outside the southern boundary of site showing exterior hardstanding and onsite barn



**Address: Upper Pullins Farm, Higham on the Hill
Client: Ms. P. Marlow**

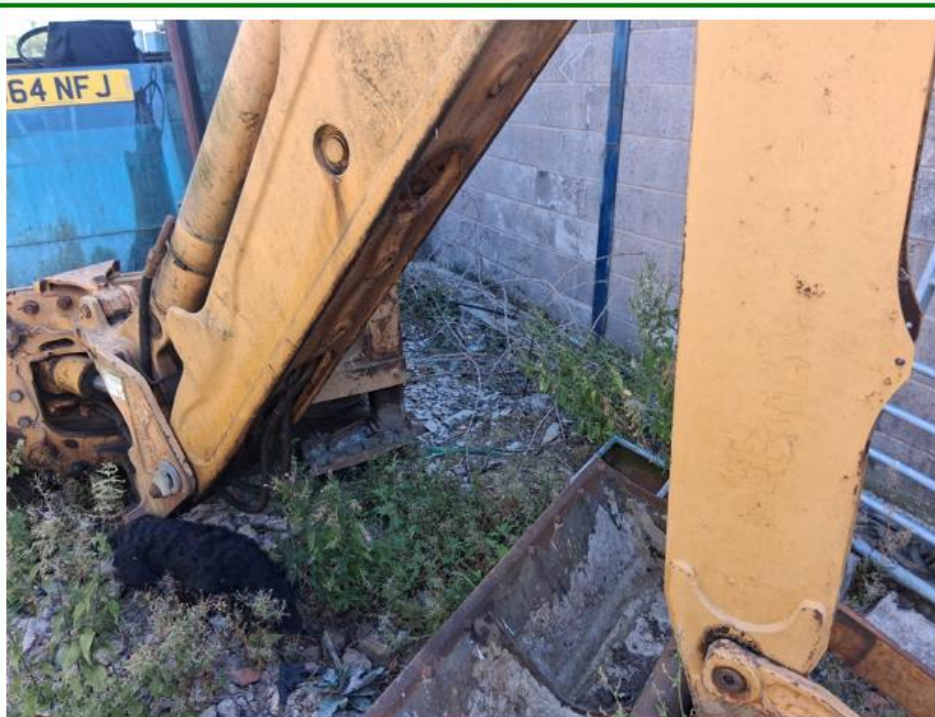
Photo No.4: Facing east showing the rear (northern) face of the barn





Site Walkover Photos

Photo No.5: Significant quantities of fragmented PACM noted underfoot to the rear of the barn (see centre of photograph)



Address: Upper Pullins Farm, Higham on the Hill
Client: Ms. P. Marlow

Photo No.6: Facing NW showing the barn occupation and hardstanding throughout the structure





Site Walkover Photos

Photo No.7: Facing north showing the barn hardstanding and lack of staining or spillages of hydrocarbons / oils



Address: Upper Pullins Farm, Higham on the Hill
Client: Ms. P. Marlow

Photo No.8: Facing north showing the barn hardstanding and lack of staining or spillages of hydrocarbons / oils (tank is empty)



APPENDIX E**WATCHING BRIEF**

It remains possible that previously unexpected soil conditions may be encountered during the construction process. Examples may include oily pockets within the soil, potential for asbestos containing materials, black ashy materials, soils exhibiting strong odours, brightly coloured materials, and former demolition materials.

Should previously undiscovered contamination be encountered during the demolition/construction of the new buildings the following course of action should be adhered to:

1. The ground workers should report any suspected contamination immediately to the Client's site supervisor. The supervisor should contact the Client or their appointed agent who will in turn contact Castledine Environmental to request an engineer to visit the site to assess the extent of the 'contamination'.
2. Castledine Environmental shall make records of their inspection, and pass details of these to the Local Authority.
3. Where the conditions revealed differ from those previously anticipated, the Castledine Environmental shall take samples as deemed appropriate to be dispatched for appropriate chemical testing.
4. Depending on the results of the testing either:
 - a. no further work will be required;
 - b. a further detailed risk assessment will be required; and/or
 - c. Localised specific remedial measures will be necessary.Appraisal criteria will vary depending on the nature of the assessment.
5. The results of any such testing will be sent to the Local Authority Pollution Control Section, Local Authority development control section, and the appointed building inspector. If remediation is required, the LA/Building inspector will be informed of the date and time of the proposed works.

6. Remediation will be undertaken in accordance with a method statement submitted for approval. The works shall be supervised where necessary by Castledine Environmental who shall provide a Verification Report for the Local Authorities.
7. A copy of the discovery strategy should be lodged on site and provisions made to ensure that all workers are made aware of their responsibility to observe, report and act on any potentially suspicious or contaminated materials they may encounter.

APPENDIX F

DISCOVERY STRATEGY

