



**Castledine
Environmental**

LAND CONTAMINATION SURVEYS

**Phase 1 Land Contamination
Risk Assessment
for
The Erection of a Rural Workers
Dwelling and Agricultural
Building
on the site of
Moralee Farm, Haglands Lane,
West Chiltington, Pulborough**

Date: July 2025

Status:

Final Report

Reference:

4010D P1 EDC - Pulborough

Date:

22/07/2025

EXECUTIVE SUMMARY

The site presently comprises a gated site access, site access route, a small summerhouse / dwelling and an open and unoccupied field. Historically, the site has remained undeveloped field from the earliest mapping reviewed (circa.1875/76) through until around circa.2018, when the present-day summerhouse / small dwelling was erected on site, following which the site sees little to no change.

Due to the lack of site development history and potentially contaminative sources (both onsite and offsite) coupled with the lack of made ground expected on site, the risks from soil contamination are considered to be low.

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

It is not envisaged that any further works or investigation are required beyond the provision for a Phase 3 Remediation Strategy and Verification Plan, outlining the installation details of the required radon protective measures.

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.

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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. C. Holloway to undertake a Phase 1 Desk study on a site at Moralee Farm, Haglands Lane, West Chiltington, West Sussex RH20 2QS.

4.0 SCOPE

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

- National Planning Policy Framework (NPPF) February 2025;
- Part C1 of the building regulations;
- Condition No.4 of the Horsham District Council planning approval reference DC/22/2322.

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 in West Chiltington, West Sussex at National Grid Reference: 509026,117407 and is approximately 0.24ha in area.

The site is irregular in shape and is generally orientated north to south. The site is located in an area which is predominantly rural to the north and east (comprising fields and an associated barn east with further field beyond this) and residential areas to the south and west (comprising the dwellings and associated garden areas forming the village of West Chiltington).

The site interior comprises the gated site access, the site access route, a small summerhouse / dwelling and an open, largely unoccupied field. Access to site was provided via leading north off Haglands Lane, through the gated site access before the site access then leads east, inside the southern boundary of site, before bypassing the east and north of site. In the central southern extent of site, a small summerhouse / dwelling was noted, which appeared to be possibly be constructed of a bespoke container / summerhouse design (i.e. contemporary timber clad unit). The remaining areas of site then comprise open field / meadow with low grasses, with the only remaining feature in this area comprising a seating area in the central area of site.

No significant potential sources of contamination were noted on the site walkover and topographically, there is a very slight dip from the south of site down to the north.

Photos of the site are present in Appendix D.

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 GEOLOGY

ID	Distance (m)	Direction	Designation	Description
1	0	On Site (north)	Secondary (Undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	45	S	Secondary (Undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.1.1.2 BEDROCK GEOLOGY

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
2	233	SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

6.1.2 ABSTRACTIONS AND PRIVATE WATER SUPPLIES

The Groundsure report records:

- 2 No. active groundwater abstraction records located 173m south east of site and relating to general usages and raw water supplies, sourced direct from groundwaters (effective circa.2024 onwards);
- 2 No. active groundwaters abstraction records located 415m south east of site and relating to potable water supplies, sourced direct from groundwaters (effective circa.2016 onwards – also recorded as 2 No. potable water abstraction sites alongside groundwater abstraction).

6.1.3 SOURCE PROTECTION ZONE

The site is located in a Type 2 Outer Catchment Source Protection Zone (SPZ) with records of a Type 3 Total Catchment and Type 1 Inner Catchment SPZs then located 103m north west and 149m south east of site, respectively.

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 bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Mixed
2	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: 300- 550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures

6.1.5 POTENTIAL SURFACE WATER

The Groundsure report records an unnamed, surface level watercourse located 173m north of site at its most proximate point to site and a large pond approximately 244m north east of site.

6.1.6 DISCHARGE CONSENTS

The Groundsure report records no active licenced discharge consents held within 500m of site, with two records formerly located 486m south east and 498m north east of site (trade discharges / unspecified discharges, respectively) being revoked by circa,2009 and 2005.

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 no sensitive land usages located within 1000m of site.

6.8 SOILS AND GEOLOGY

"Contains British Geological Survey materials © NERC 2025" obtained from <http://www.bgs.ac.uk/data/mapViewers/home.html> under the [Open Government Licence](#)

6.8.1 SUPERFICIAL DEPOSITS

Both BGS geological mapping and the Groundsure report record superficial geological deposits of Glacial Head occupying the far northern extent of site and comprising gravels, sands and clays with possible lenses of silt, clay or peat and organic material.

6.8.2 SUPERFICIAL DEPOSITS PERMEABILITY

The Groundsure report records the site as being within an area where the maximum permeability of superficial deposits is recorded as 'high' and the minimum permeability as 'very low' and facilitated by mixed 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).

6.8.3 BEDROCK DEPOSITS

Both BGS geological mapping and the Groundsure report records bedrock geology of the Fittleworth Member underlying site, comprising glauconitic sandy clays and clayey sands, weathering to orange-brown and being bright green when un-weathered.

6.8.4 BEDROCK PERMEABILITY

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

6.8.5 ARTIFICIAL GROUND

BGS geological mapping records no artificial deposits located on or within 500m of site.

6.8.6 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.

6.8.7 NON-COAL MINING

The Groundsure report records the site as being located in an area where the limited extraction of sand may have taken place, the report states:

“Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.”

6.8.8 SURFACE WORKINGS

None recorded within 250m of site.

6.8.9 RADON

The site is located in a Radon Affected Area, with between 5% and 10% of properties estimated to be above the action level. Basic radon protective measures are considered necessary as described in publication BR211:2015 by the Building Research Establishment.

6.9 AERIAL PHOTOGRAPHY

Aerial photography shows the following:

6.9.1 GOOGLE EARTH

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

Date	Description
December 2001	Site is shown as open arable field. Surrounding areas remain consistent with the present-day (i.e. field to the north and east, residential areas to the south and west).
December 2009	No major or discernible change on site nor site relevant change to the surrounding areas.
September 2012	No major or discernible change on site nor site relevant change to the surrounding areas.
October 2012	No major or discernible change on site nor site relevant change to the surrounding areas.
June 2013	No major or discernible change on site nor site relevant change to the surrounding areas.
April 2015	No major or discernible change on site nor site relevant change to the surrounding areas.
September 2015	No major or discernible change on site nor site relevant change to the surrounding areas.
August 2018	The initial stages of development of the summerhouse in the south of site are now present on site and the associated barn seen directly east of site in the present-day is shown as under development.
April 2020	On site summerhouse / dwelling now finished, as is the barn directly east – the eastern and northern site boundaries are now demarcated by the present-day fencing.
February 2021	No major or discernible change on site nor site relevant change to the surrounding areas.
April 2021	No major or discernible change on site nor site relevant change to the surrounding areas.
March 2022	No major or discernible change on site nor site relevant change to the surrounding areas.
May 2025	No major or discernible change on site nor site relevant change to the surrounding areas.

6.9.2 GOOGLE STREET VIEW

Google Street View imagery is unavailable for the site due to the site's location to the rear of a densely vegetated southern site boundary, thus obscuring the site from view.

6.10 HISTORIC MAPPING

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

Map	Onsite	Offsite
OS County Series: 1875-1876, 1:10,560	Site is shown as open arable field.	Immediate surrounding areas to site comprise open field in all compass directions with Hagland Farm located approx.50m west of site and a second farmyard approx.50m south (with ponds in both areas – that to the west remains persistent until the present-day). Marshy areas are marked approx.230m west, 110m SW and 200m SE of site.
OS County Series: 1876, 1:2,500	No discernible change on site.	Surrounding areas see little site relevant change.
OS County Series: 1895-1896, 1:10,560, 1:10,560	No discernible change on site.	Surrounding areas see little site relevant change.
OS County Series: 1909, 1:10,560	No discernible change on site.	Surrounding areas see little site relevant change.
OS County Series: 1911, 1:2,500	No discernible change on site.	Surrounding areas see little site relevant change.
OS County Series: 1909-1913, 1:10,560	No discernible change on site.	Surrounding areas see little site relevant change.
OS County Series: 1937, 1:2,500	No discernible change on site.	Dwellings erected approx.200m west and SW of site, atop formerly marshy areas.
OS County Series: 1938, 1:10,560	No discernible change on site.	Surrounding areas see little site relevant change.
Provisional: 1957, 1:10,560	No discernible change on site.	Areas directly NW, west, SW and south now seen residential developments.

Map	Onsite	Offsite
National Grid: 1971, 1:2,500	No discernible change on site.	Small pond approx.40m south of site now removed. Large-scale nursery, pond, glasshouses and tanks now located approx.250m NE of site.
National Grid: 1976-1979, 1:2,500	No discernible change on site; however, mapping on site is truncated and missing.	Further residential dwellings erected to the west and SW of site.
National Grid: 1979, 1:2,500	No discernible change on site; however, mapping on site is truncated and missing.	Surrounding areas see little site relevant change.
National Grid: 1976-1980, 1:10,000	No discernible change on site.	Surrounding areas see little site relevant change.
National Grid: 1984, 1:2,500	No discernible change on site.	Surrounding areas see little site relevant change.
National Grid: 1991-1993, 1:2,500	No discernible change on site.	Former farmyard south of site redeveloped into dwellings.
National Grid: 1995, 1:2,500	No discernible change on site.	Surrounding areas see little site relevant change.
National Grid: 2001, 1:10,000	No discernible change on site.	Surrounding areas see little site relevant change.
Landline: 2003, 1:1,250	No discernible change on site.	Surrounding areas see little site relevant change.
National Grid: 2010, 1:10,000	No discernible change on site.	Surrounding areas see little site relevant change.
National Grid: 2025, 1:10,000	No discernible change on site; however, it is known that the summerhouse / dwelling has been present on site since at least circa.2018 onwards.	Associated barn seen east of site in the present-day has now been erected.

6.11 CURRENT LAND USE DATA

None recorded within 250m of site.

6.12 PETROL AND FUEL SITES

None recorded within 500m of site.

6.13 HISTORICAL PETROL AND FUEL SITE DATABASE

None recorded within 500m of site.

6.14 POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED ON MAPPING

ID	Distance (m)	Direction	Use	Date
1	148	N	Nurseries	1976
B	364	SE	Unspecified works	1957
B	390	SE	Pumping station	1976
4	458	W	Nursery	1976
5	476	NE	Cuttings	1957

6.15 HISTORICAL TANK DATABASE

ID	Distance (m)	Direction	Use	Date
2	354	NE	Unspecified tank	1971
3	425	NE	Unspecified tank	1971

6.16 HISTORICAL ENERGY FACILITIES

None recorded within 250m of site (reduced distance due to known low mobility of associated contaminants).

6.17 HISTORICAL GARAGE DATABASE

None recorded within 500m of site.

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:

7.1.1 ONSITE

No significant potential sources of contamination considered capable of impacting the proposed site development have been identified.

7.1.2 OFFSITE

No significant potential sources of offsite contamination considered capable of impacting the proposed site development have been identified.

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.

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.

8.1 PRELIMINARY CONCEPTUAL SITE MODEL

8.1.1 SOIL CONTAMINATION

The site presently comprises a gated site access, site access route, a small summerhouse / dwelling and an open and unoccupied field. Historically, the site has remained undeveloped field from the earliest

mapping reviewed (circa.1875/76) through until around circa.2018, when the present-day summerhouse / small dwelling was erected on site, following which the site sees little to no change.

Due to the lack of site development history and potentially contaminative sources (both onsite and offsite) coupled with the lack of made ground expected on site, the risks from soil contamination are considered to be low.

8.1.2 GROUND GAS AND HAZARDOUS VAPOURS

No significant structures, vehicle or fuel storages have been identified on or nearby to site (contemporary barn east of site not considered a significant source) and as such, the risks from hazardous vapours are considered to be low.

An infilled pond formerly located approximately 50m south of site, infilled circa.1971 has been discounted as a significant source of hazardous ground gas, due to the age since infill (approx.54 years since infill – likely well beyond gas generational peak) and the area being redeveloped into housing. No further potential sources of hazardous ground gas generation have been identified and Glacial Head deposits are likely to have weathered to cohesive clays (i.e. of low permeability) and bedrock deposits are recorded as predominantly moderate to low in permeability, thus acting to reduce credible pathways to site (additionally, no clear pressure gradient is present).

4010D EDC – Pulborough

TABLE 1. SUMMARY OF SIGNIFICANT POLLUTION LINKAGES

Source	Pathway	Receptor	Probability of Pollutant Linkage	Conseq.	Risk	Possible Mitigation
Contaminated Soils (<i>no significant potential sources identified</i>)	Direct Ingestion & Direct Contact	Site Workers (<i>during site works, excavations, eating and drinking</i>)	UI	Md	L	Site workers to wear appropriate PPE for health and safety reasons, suitable usage of PPE, adherence to relevant HSE guidance and maintenance of good hygiene protocols considered sufficient.
Contaminated Soils (<i>no significant potential sources identified</i>)	Inhalation of Dust, Dry Arisings	Site Workers (<i>during site works, excavations, eating and drinking</i>)	UI	Md	L	
Contaminated Soils (<i>no significant potential sources identified</i>)	Crop Uptake & Direct Ingestion, Direct Contact	End Users (<i>residents / tenants, children, visitors, service personnel</i>)	UI	Mi	VL	Due to the lack of site development history and potentially contaminative sources (both onsite and offsite) coupled with the lack of made ground expected on site, the risks from soil contamination are considered to be low. As such, it is recommended that 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.
Contaminated Soils (<i>no significant potential sources identified</i>)	Inhalation of Dust, Dry Arisings	End Users (<i>residents / tenants, children, visitors, service personnel</i>)	UI	Mi	VL	
Contaminated Soils (<i>no significant potential sources identified</i>)	Crop Uptake & Direct Ingestion, Direct Contact	Flora and Fauna (<i>on and offsite</i>)	UI	Mi	VL	
Contaminated Soils (<i>no significant potential sources identified</i>)	Vertical and lateral migration (<i>superficial high to very low – likely low in permeability; bedrock predominantly moderate to low</i>)	Controlled Waters (<i>Secondary Undifferentiated & Secondary A Aquifers</i>)	UI	Mi	VL	
Contaminated Soils (<i>no significant potential sources identified</i>)	Direct contact (<i>pipe degradation and leaching</i>)	Services (<i>impacted new potable supply piping</i>)	UI	Mi	VL	
Ground Gases (Methane and CO ₂) (<i>no significant potential sources identified</i>)	Vertical and lateral migration (<i>superficial high to very low – likely low in permeability; bedrock predominantly moderate to low</i>)	Site Workers & Excavations, End Users & Building Envelope (<i>ingress and build-up</i>)	UI	Md	L	No significant potential sources of hazardous ground gas generation identified, see Section 8.1.2.
Volatile and Semi-volatile Organic Compounds (<i>no significant potential sources identified</i>)	Vertical and lateral migration (<i>superficial high to very low – likely low in permeability; bedrock predominantly moderate to low</i>)	Site Workers & Excavations, End Users & Building Envelope (<i>ingress and build-up</i>)	UI	Mi	VL	No significant potential sources of hazardous vapours identified, see Section 8.1.2.
Radon	Vertical and lateral migration	End Users & Building Envelope	Li	Md	M	The site is located in a Radon Affected Area, with between 5% and 10% of properties estimated to be above the action level. Basic radon protective measures are considered necessary as described in publication BR211:2015 by the Building Research Establishment.

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

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 in Table 2, 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 2. 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 3. 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

9.0 ENVIRONMENTAL RISK ASSESSMENT

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

It is not envisaged that any further works or investigation are required beyond the provision for a Phase 3 Remediation Strategy and Verification Plan, outlining the installation details of the required radon protective measures.

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.

10.0 SUMMARY OF RISKS**11.0 HUMAN HEALTH****11.1.1 RESIDENTS / END-USERS**

The risks to end-users of the site are considered to be very low when assessed against the lack of site development history, lack of made ground expected on site and the lack of potentially contaminative usages identified on or nearby to site (agricultural / SVOC presence on site is not considered likely); however, risks remain associated with radon, for which suitable protective measures will be required.

11.1.2 SITE WORKERS

The risks to site workers are considered to be low when assessed against the lack of site development history, lack of made ground expected on site and the lack of potentially contaminative usages identified on or nearby to site. With the suitable provision for the considered usage of PPE, adherence to relevant HSE guidance and maintenance of good hygiene protocols during site works are sufficient to mitigate inherent site worker hazards to low.

12.0 CONTROLLED WATERS

The risks to controlled waters are considered to be low, due to the lack of significant, mobile or gross contamination expected on site and thus risks to controlled waters are considered to be low.

13.0 STRUCTURES**13.1.1 GROUND GASES**

An infilled pond formerly located approximately 50m south of site, infilled circa.1971 has been discounted as a significant source of hazardous ground gas, due to the age since infill (approx.54 years since infill – likely well beyond gas generational peak) and the area being redeveloped into housing. No further potential sources of hazardous ground gas generation have been identified and Glacial Head deposits are likely to have weathered to cohesive clays (i.e. of low permeability) and bedrock deposits are recorded as predominantly moderate to low in permeability, thus acting to reduce credible pathways to site (additionally, no clear pressure gradient is present).

13.1.2 HAZARDOUS VAPOURS

No significant structures, vehicle or fuel storages have been identified on or nearby to site (contemporary barn east of site not considered a significant source) and as such, the risks from hazardous vapours are considered to be low.

14.0 RECOMMENDATIONS

It is not envisaged that any further works or investigation are required beyond the provision for a Phase 3 Remediation Strategy and Verification Plan to be produced for the site, outlining the installation details of the required radon protective measures.

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.

15.0 REFERENCES**15.1 LEGISLATION AND REGULATIONS****15.1.1 ACTS**

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

15.1.2 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

15.1.3 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

15.2 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.

15.3 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)

15.4 NON-STATUTORY TECHNICAL GUIDANCE**15.4.1 ENVIRONMENT AGENCY**

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

15.4.2 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

15.4.3 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)

16.0 APPENDICES

APPENDIX A ENVIRONMENTAL SEARCH

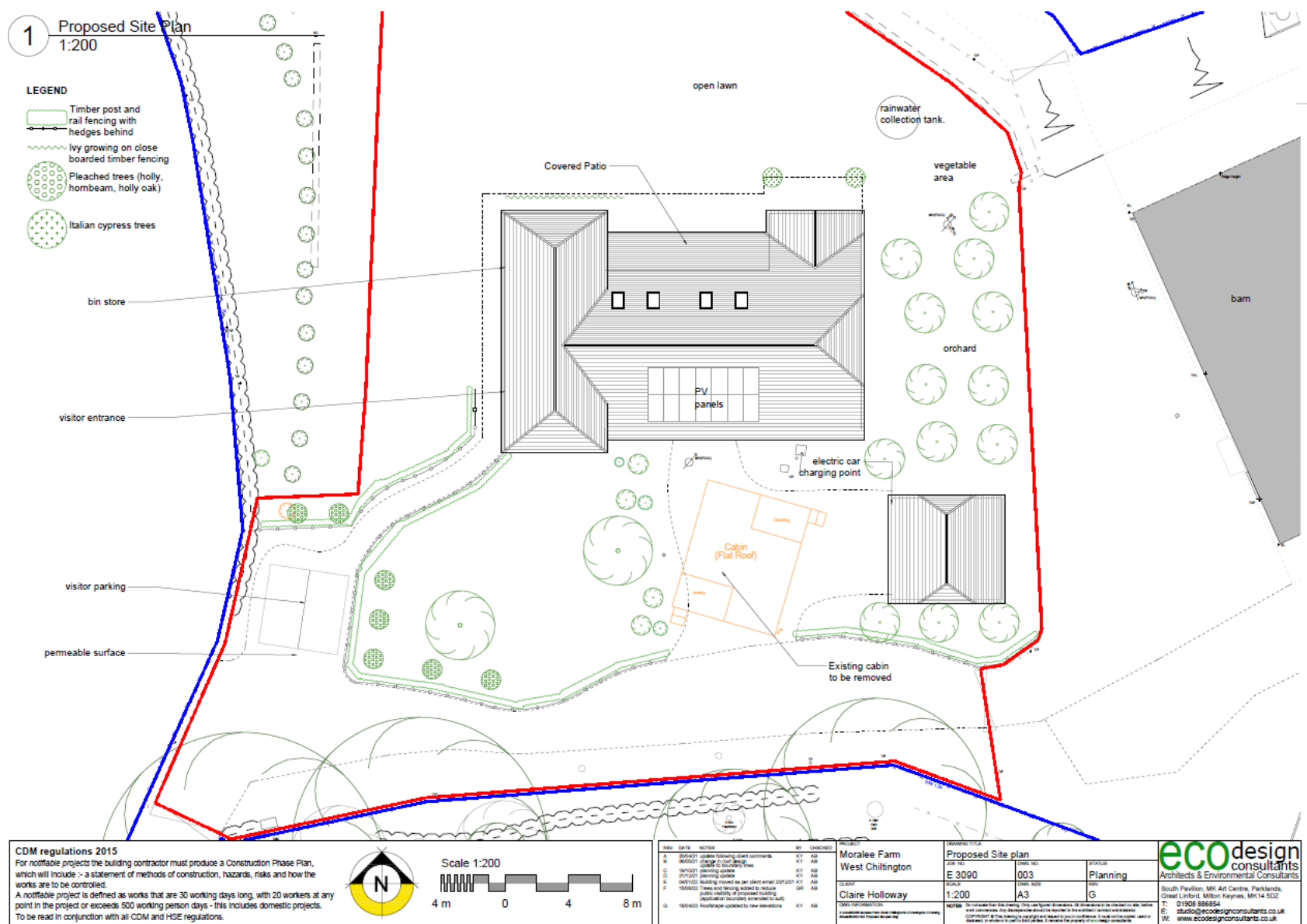
Separate Groundsure Report

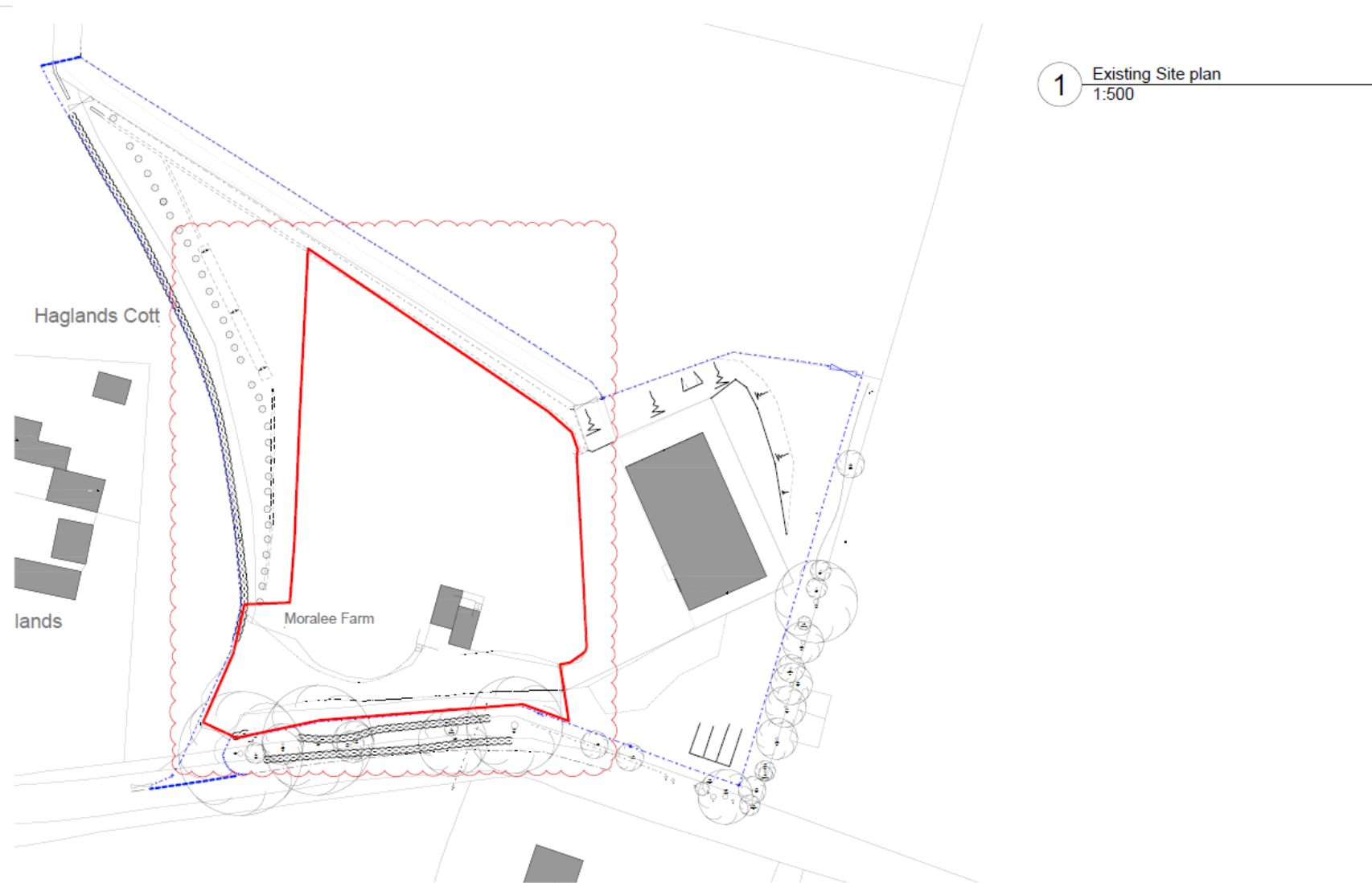
APPENDIX B HISTORICAL MAPPING

Separate Map Packs (2 No. files)

APPENDIX C

PROPOSED AND CURRENT SITE PLANS





1 Existing Site plan
1:500

CDM regulations 2015

For notifiable projects the building contractor must produce a Construction Phase Plan, which will include:- a statement of methods of construction, hazards, risks and how the works are to be controlled.

A notifiable project is defined as works that are 30 working days long, with 20 workers at any point in the project or exceeds 500 working person days - this includes domestic projects. To be read in conjunction with all CDM and HSE regulations.



Scale 1:500



REV	DATE	REASON	BY	CHKD	PROJECT	DRAWING TITLE	DATE	STATUS
A	16/09/22	Application boundary updated	GR	AK	Moralee Farm West Chiltington	Existing site plan	002	Planning
CLIENT						SCALE	DATE	REV
Claire Holloway						1:500	A3	A
NOTES								
1. The site plan shows the existing site boundaries. It does not show the location of any trees or structures. For development and/or works to be carried out on the site, the client must consult the relevant planning and/or other authorities. It is the client's responsibility to ensure that the site plan is up to date and that the site is suitable for the proposed development. It is the client's responsibility to ensure that the site plan is up to date and that the site is suitable for the proposed development.								

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APPENDIX D

SITE PHOTOS AND LOCATIONS



Site Walkover Photos

Photo No.1: Facing north from Haglands Lane showing the gated site access



Address: Moralee Farm, Haglands Lane, West Chiltington
Client: Ms. C. Holloway

Photo No.2: Facing south from onsite and atop the site access route showing the gated site access



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Site Walkover Photos

Photo No.3: Facing east from the SW extent of site



Address: Moralee Farm, Haglands Lane, West Chiltington
Client: Ms. C. Holloway

Photo No.4: Facing west from the SE corner of site showing the rear of the small summerhouse / dwelling here



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Site Walkover Photos

Photo No.5: Facing north up the eastern boundary of site



Address: Moralee Farm, Haglands Lane, West Chiltington
Client: Ms. C. Holloway

Photo No.6: Facing south down the eastern boundary of site showing adj. barn



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Site Walkover Photos

Photo No.7: Facing NW from the NE extent of site



Address: Moralee Farm, Haglands Lane, West Chiltington
Client: Ms. C. Holloway

Photo No.8: Facing south / SW from the far NW of site



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.

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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

