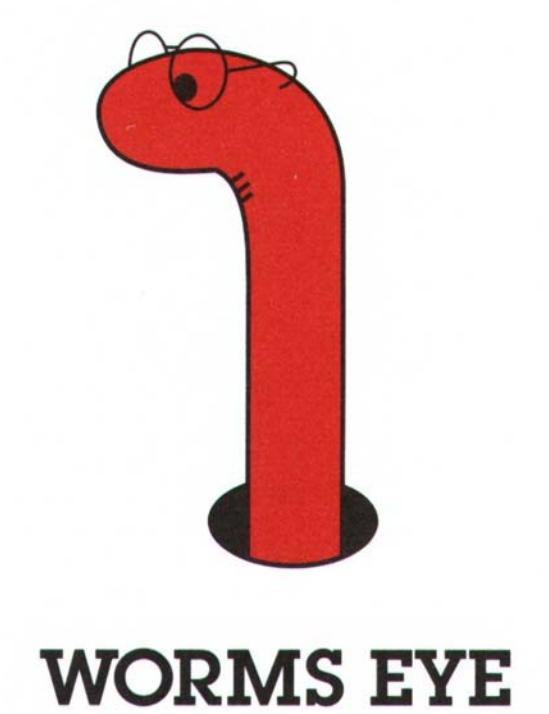
Electronic Report



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Our Ref: Abbey Gardens/BB7 4LE/2022
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ABBEY GARDENS, SAWLEY, CLITHEROE, BB7 4LE

PROPOSED INVESTIGATION

INTRODUCTION

A residential development is proposed. Following a PRA (28/11/22) the objective is to design a suitable investigation to consider contamination, landfill gas and geotechnical issues.

SITE DESCRIPTION

The site is rectangular, 170 x 45m, located to the northeast of Sawley, in Sawley, Clitheroe, and at OS Grid Reference 377744, 446 175. There at two derelict chicken sheds, one at the northwest (building 1) and one at the north middle (building 2), these have concrete floor slabs, concrete block dwarf walls and wood cladding above, with suspected asbestos containing material (ACM) in various places (sheet cement roof, rainwater pipes and cladding inside the building). There is building material, including probable ACM, on the ground around the buildings perimeter.

On the northeast of the site are two former chicken sheds (building 3 at the northeast corner, building 4 the southeast corner), both are collapsed with building 4 having previously suffered from a fire. This has left building material, including suspected ACM strewn across the northeast of the site.

There are concrete aprons between buildings 1 and 2, between buildings 2 and 3, and to the southwest of building 4. The remainder of the site is overgrown, unsurfaced, areas.

A heating oil tank is on a concrete apron at the rear of building 2, the original location is not known.

To the northwest, northeast and southeast are fields, to the southwest is vacant land with the road beyond and to the west is a house with gardens. A track forms the northwest boundary and a stream (Hollins Syke) flows southwest along the northwest side of the track/

The area slopes down to the southwest.

PROPOSED DEVELOPMENT

It is proposed to build two detached houses, one at the northeast and one at the southwest, each with associated gardens.

INDUSTRY PROFILE

The site was formerly a poultry farm, with now derelict buildings, ACM strewn around the northeast of the site and scattered around remaining buildings. A fire at the northeast has potential to have generated PAHs on site and the presence of made ground cannot be ruled out at this stage.

Source of Contaminants	Possible Contaminants
Poultry farm, fire and made ground	Metals: copper, zinc, chromium, nickel, lead, cadmium, arsenic, Inorganic compounds: cyanide, sulphates Fuel: petrol, diesel, MTBE (TPHs) Polycyclic aromatic hydrocarbons (PAH) Asbestos

CONCEPTUAL MODEL

Source	Receptors	Pathway	Potential/Likely Pollutant Linkage
Asbestos	End-users	Inhalation	Yes
	Off-site	Migration off-site	Yes
Inorganic contaminants	Householders	Direct contact, ingestion, from home grown vegetables, ingestion and inhalation of dust	Possible
	Groundwater	Leaching towards	No
	River/stream	Leaching towards	No
Sulphate	Building fabric	Concrete directly in contact with soil	Possible
Hydrocarbons	Householders	Direct contact, ingestion, from home grown vegetables, ingestion and inhalation of dust	Yes
	Service pipes	Seeping into drinking water pipes	Unlikely
	Groundwater	Leaching towards	No
	River/stream	Leaching towards	No
Hydrocarbon vapours	Householders	Inhalation of vapours indoors and outdoors	No
Landfill gas	End-users (inside)	Seeping into buildings, explosion, asphyxiation	No
Radon	End-users (inside)	Seeping into buildings	Yes

PROPOSED INVESTIGATION

There is probable ACM strewn around the northeast of the site and scattered around the buildings. This should be cleared, and the buildings demolished and cleared, prior to investigations being carried out.

Contamination

The site history suggests, excluding suspected ACM fibres, it is unlikely that contamination will be present on the site at high levels. Low levels, exceeding stringent residential thresholds, may however, be present in the surface soils around the site, especially at the northeast.

An intrusive investigation is required, consisting of boreholes/trial holes and tests to confirm the presence/absence and extent of contamination on the site. There are no specific point sources for contamination and the investigation will need to target proposed gardens and provide all round coverage.

Proposed Action

- *Excavate 16 trial holes up to about 1m deep and 10 to 0.1m deep.*
- *Test 16 shallow samples (about 0.25m deep) for: heavy metals, cyanide, sulphate, PAHs, TPHs, phenols and asbestos.*
- *Test 10 additional shallow samples (about 0.05m) for asbestos.*
- *Test 3 deeper samples for a suite of contaminants suitable for selecting water pipes.*

Controlled Waters

A very low risk to controlled water is expected at worst. No further action is considered necessary at this stage, but an allowance should be made for carrying out leachate tests, and tests from the adjacent water course, subject to soil test results.

Landfill Gas/Ground Gas/Radon

There are no credible on or off-site landfill or ground gas sources. The site is, however, in a high probability radon area and full radon protection measures are required. The following are required:

- Ventilation of confined spaces within building.
- A well-constructed reinforced concrete ground bearing slab with sub-floor depressurisation
- Or, suspended floor with passively ventilated sub-floor void >150mm, constructed to allow a fan to be fitted in the future if required.
- Minimum penetration of ground slab by services.
- Also radon precautions should continue across the cavity.
- Visqueen radon barrier (red) or equivalent (joints to be lapped and sealed).

Each membrane should be used with the appropriate matching cavity tray (or cavity membrane), DPC and service duct ‘top hats’ are also recommended.

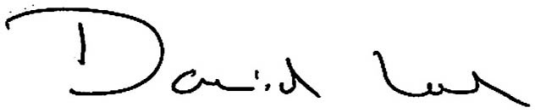
As the site is in a high probability radon area validation of the membrane is recommended as follows:

- Summary of gas risk assessment.
- Details of who carried out installation.
- Details of who carried out verification and inspection regime.
- Description of protection measures installed, including photographs.
- Details of non-conformances and how they were rectified.
- Completed gas measures inspection proforma.

General

The PRA, and these proposals, should be issued to the Local Authority for their comments before proceeding with the investigation.

Yours faithfully
on behalf of Worms Eye Ltd



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