

K GOSSAGE & M PILLA



**HILLYBARN FARM, HILLYBARN ROAD, THE MOUNT,
IFIELD, CRAWLEY, WEST SUSSEX, RH11 0LH**

Preliminary Contamination Risk Assessment

January 2023



eas ltd

Environmental Assessment Services Ltd

REPORT DATA SHEET

Requirement	Data
Report Ref:	570/PRowe/HillybarnFarm/PCRA
Date	January 2023
Client	K Gossage & M Pilla
Report type	Preliminary Contamination Risk Assessment
Purpose	Planning (Condition 1(a))
Revisions	-
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1. CAUTION

This investigation relies largely on a superficial examination of the site, plus a review of data from Horsham District Council Planning and Environmental Health Departments, and the Environment Agency (EA). Even where no previous contaminating activity has been identified, it is possible that the site could be contaminated due to fly tipping or other unrecorded events. The age of a building may indicate probability but cannot be treated as proof of the absence or presence of asbestos. This report does not attempt to comment on the commercial value or viability of the site.

2. THE SITE & PROPOSED DEVELOPMENT

- 2.1. The site is currently occupied by an agricultural barn (former chicken shed) and surrounding grassland. The building footprint is approximately 650 sqm. The redline boundary plan for the site includes an area of land to the east of the building giving a total site area of approximately 0.13 ha (this does not include the access route from Hillybarn Road). The Ordnance Survey (OS) map reference for the site is TQ 23103 38231. The site elevation is approximately + 95 m OD. The site is predominantly level, with land falling fairly steeply to the south. See Appendix A: Location Plan.
- 2.2. It is proposed to redevelop the site for residential use to comprise 5 No. dwelling houses. See Appendix A: Block Plan (As Proposed)

3. GEOLOGY & HYDROGEOLOGICAL CONSIDERATION

- 3.1. According to the British Geological Survey (GeoIndex Onshore), the site lies on Weald Clay Formation – Mudstone.
- 3.2. The Environment Agency's (EA) Groundwater Vulnerability Map shows the site does not lie within an area of groundwater vulnerability. The underlying clay formation is classified as Unproductive Strata. The site does not lie within a groundwater source protection zone (SPZ). The site is not considered to be hydrogeologically sensitive.
- 3.3. According to the Environment Agency flood mapping, the site lies within Flood Zone 1 (low risk of tidal/fluviial flooding). The site is at very low risk of surface water flooding and is not at risk of flooding from reservoirs.

3.4. There are no records of active, recent, or historic landfills within 500 m of the site.

4. SITE DEVELOPMENT HISTORY

4.1. The site development history is derived from a review of historic maps from 1874 to 2003 and other references. The historic maps are provided in Appendix B. A summary of the relevant information provided in these maps is given in Table 4.1 below.

TABLE 4.1
SITE DEVELOPMENT HISTORY

Map date	Features on site	Features within surrounding area (<250 m)
1874	Undeveloped land – the site forms part of a field with boundaries as existing today. A footpath runs along the southern boundary of the field.	Development, named Upper Barn, lies adjacent to the southwest corner of the field. This is likely to be agricultural in nature, possibly stables. There is a pond 100 m east of the site. The remaining area comprises regular shaped fields and woodland.
1897	No change	A building, named Hilly Barn (later named Hilly Barn Farmhouse), has been developed to the south of the stables.
1910	The area between the existing building footprint and the stable buildings to the southwest appears to have been developed. The likely use is not clear.	No significant change
1974	The site has been developed to comprise the existing (former) chicken shed and a second shed of equal proportions to the east. The development noted in 1910, above, has been removed and the existing access track from the gate in the southwest corner of the field to the buildings is shown.	No significant change
1993	No changes shown on site.	The barn to the east has been removed, but the footprint is highlighted together with the access

		road suggesting that the foundations remain present as hard standing. The field in which the site lies is shown to be divided along the line of the developed footprint.
2003	No changes shown.	No significant changes.

- 4.2. The recent development history may also be traced from the planning history of the site. See Table 4.2 below.

TABLE 4.2
A SUMMARY OF PLANNING APPLICATIONS

Ref. Nos.	Description	Decision & Date
DC/19/2310	Retrospective application for the removal of 10m of hedging, the creation of new road access, installation of a perforated pipe into existing ditch and laying of hardstanding	<i>r</i> 04/11/2019

Key: ✓ planning permission granted ✗ planning permission refused *r* registered

- 4.3 More recent development history and land use can also be observed from recent aerial photographs. Aerial photographs centred on the site are provided in Appendix B, and a summary of the relevant information provided in these photographs is given in Table 4.3 below.

TABLE 4.3
A SUMMARY OF RECENT AERIAL PHOTOGRAPHS

Photo date	Features on site	Features adjacent to the site
04/09/1999	Barn to the west and strip of land to the east possibly including the remains of some surfacing material.	The field within which the site lies appears to be divided into three sections. The developed land former one section, land to the north forming another and the larger remaining area of the field forming the third. The second and third areas appear to be cropped. The footings of the former barn to the east are present and appear lightly vegetated.

28/08/2005	Barn to the west and strip of land to the east. The strip of land appears to include a shed and rows of planting (possibly fruit trees).	Concrete base of former building to the east.
27/05/2012	Barn to the west and strip of land to the east which appears to include rows of tree planting. Possibly orchard type planting.	Access road from Hillybarn Road leads to the southern façade of the building.
08/05/2018	Barn to the west and vegetated strip of land to the east.	Access from Hillybarn Road to the southwest and two parked cars to the south of the building plus surrounding grassland.
24/04/2021	Barn and adjacent land to the east including sparse vegetation to the south and possibly some small trees to the north.	The southern section of the building footings of the adjacent former barn to the east appear to be in situ. Fencing may be present to the south of the barn creating a storage area adjacent to the southeast corner of the building. Some items, possibly cars, are noted within this area.

5. THE EXISTING SITE

- 5.1 The site was visited on 18 January 2023. Photographs taken during the site walkover assessment are provided in Appendix C.
- 5.2 The site is located within a field on the eastern side of Hillybarn Road within a rural area to the west of Ifield, Crawley. Adjacent land to the south is developed for residential use with stables. Adjacent land to the north, east and west comprises underdeveloped fields. There is an area of mixed residential and commercial development to the west of the site. The remaining area mainly comprises regular shaped fields and woodland with isolated residential properties.
- 5.3 The proposed development site lies within the southwest corner of a field. There is vehicle access into the field and up to the existing building via a loose surface track and gate at the southern end of the western boundary, and a second gate towards the centre of the western boundary off Hillybarn Road. A public footpath runs along the southern boundary of the field. There are no dividing hedgerows or fences dividing the site from the wider field.

-
- 5.4 The existing building is a former chicken shed, believed to have been developed ca 1970. The current owners family have owned the site for approximately 30 years, during which time the site has been used for general storage.
- 5.5 The building is of wooden framed, single storey construction, with concrete block walls. The roofing is clad in corrugated asbestos cement sheets, with asbestos ridge tiles. There is also (what is likely to be) asbestos boarding lining some parts of the building internally. The northern end of the building has a dirt floor and the southern end has a concrete floor.
- 5.6 The building is presently used for general storage. Notable items include small machinery, disused vehicle batteries and some jerry cans.
- 5.7 As far as we are aware there has not been any bulk fuel storage at the site. The chicken sheds may have been heated in the past. Two chimney-like structures were noted towards the centre of the building, but no remains of heating units were observed inside the building.
- 5.8 The electrical switchboard within the building appeared fairly modern i.e. unlikely to contain asbestos parts.
- 5.9 It is understood that there was a second, similar, building on site running parallel to the east of the existing building. This building may have been of similar construction to the existing building. It is not known if any asbestos building materials from this building remain on site.
- 5.10 Externally there are a number of mixed waste piles and the remains of bonfires used to dispose of waste on site. These include:
- Bonfire remains located adjacent to both the northeast and southeast corners of the building and to the west of the building.
 - Large sections of concrete understood to be part of the remains of a concrete slab from the former building within the site located to the east of the building.
 - Mixed rubble (brick, concrete and metal) piles to the east of the building.
 - Brash piles to the east and west of the building.
 - Building materials, stored in bulk bags, adjacent to the southeast corner of the building.

6. RECORD DATA SEARCH RESULTS

- 6.1 An environmental records search (Enviro-Geo Insight Report) has been prepared for the site. The GroundSure Enviro-Geo Insight Report is provided in Appendix D and any items of potential contamination significance highlighted below.

6.1.1 *Historical Land Use*

There are five records of potentially contaminative land uses recorded from standard 1:10,560 and 1:10,000 scale historic mapping within 500 m of the site. These include unspecified tanks 459 – 463 m west, an unspecified pit 460 m southwest and a tank 465 m west.

Records of tanks from 1:1,250 and 1:2,500 scale historic maps within 500 m of the site include an unspecified tank 468 m west and tanks 472 m north. Tanks may be used to store fuels, liquid chemicals and waste products (amongst other things). There is a potential risk of contamination from the bulk storage of fluids, which may migrate either across the grounds surface or through the soil. The potential risk increases with proximity to the site, direction of flow and permeability of the soils (relating to the topography and geology of the area).

There are no records for historical energy features, petrol stations or garages from 1:1,250 and 1:2,500 scale historic maps, or military land (from various sources) within 500 m of the site.

6.1.2 *Landfill and other Waste Sites*

There are no records of active/recent or historic landfill sites within 500 m.

There are eight records of waste exemptions including burning waste in the open, incorporation of ash into soil, treatment of waste wood and waste plant matter by chipping, shredding, cutting and pulverising for a site approximately 370 m west.

6.1.3 *Current Land Uses*

There is licensed discharge consent for sewage discharge (which has lapsed) for a site 454 m west. There are no other potentially contaminative land uses or incidents identified/recorded within 500 m of the site.

The site has not been determined as Contaminated Land under Part IIA of the Environmental Protection Act 1990, and there are no records of such designation within 500 m of the site.

6.1.4 *Hydrology and Flood Risk*

The site lies within an area of Unproductive Strata i.e. the bedrock has low permeability.

There are no potable, ground or surface water abstraction points within 2000 m of the site.

The site does not lie within a groundwater Source Protection Zone.

There are no rivers, streams, lakes or canals within 250 m of the site. The site lies within the catchment area of the River Mole (via both the Baldhorns Brook to the north and Mole upstream of Horley to the south).

The site lies within Flood Zone 1 (low risk of flooding).

6.1.5 *Designated Environmentally Sensitive Sites*

and the site lies within a SSSI Impact Risk Zone. New Development that requires a public water supply within this area requires a Habitat Risk Assessment (HRA) to assess the impacts of groundwater abstraction or the Arun Valley SPA/SAC/RAMSAR site/s.

The site lies approximately 1800 m south of a Site of Special Scientific Interest (SSSI), Glover's Wood, an area of broadleaved, mixed and yew woodland.

There are 31 records of ancient woodland within 2000 m of the site, the closest approximately 212 m north of the site.

The site lies within an area designated poor quality agricultural land.

Land on site has been recorded as a Priority Habitat, Traditional Orchard, however, this designation has been overruled by the Traditional Orchards HAP Inventory dataset. This planting was noted on mapping, see Section 4 above.

The site does not lie within a Nitrate Vulnerable Zone. Nitrate Vulnerable Zones are designated as being at risk from agricultural nitrate pollution and were introduced in order to reduce the levels of nitrates in water.

6.1.6 *Natural Hazards Findings and Mining*

There is low, very low or negligible risk rating for natural hazards (shrink-swell, landslide, soluble rocks, compressible ground, collapsible rocks and running sand) within 50 m of the site as identified from BGS GeoSure Data.

The site is not within a radon-affected area. No radon protective measures for new buildings are necessary.

7 POTENTIAL SOURCES OF CONTAMINATION

7.1 The site was first developed ca 1970 with two poultry sheds and associated access from Hillybarn Road. The current family site owners have owned and used the site for general storage for approximately 30 years. The eastern shed was demolished prior to 1993. The southern section of the concrete base remains under a layer of vegetation. The northern section has been lifted and some concrete waste piles remain on site.

7.2 Potential contamination from historic land use is generally minor but may include elevated levels of heavy metals such copper associated with poultry

treatments. Copper levels within the site are not considered likely to breach the threshold for residential use.

- 7.3 The remaining western shed is currently used for general storage. The southern section of the building has a concrete floor. The northern section has a dirt floor. Notable items stored within the northern section, where the flooring is not sealed, includes some fuel cans and waste batteries. No significant staining was noted in these areas, suggesting that there have not been any significant spills. The footprint of the building will remain under hardcover once developed in line with the current plans.
- 7.4 The roof of the remaining building is clad in corrugated asbestos cement sheets, with asbestos ridge tiles. There is also (what is likely to be) asbestos boarding lining some parts of the building internally. This material will need to be removed as part of the site's redevelopment. Similar asbestos materials may also have been present within/on the eastern poultry shed prior to demolition. It is not known how this material was treated. It is considered possible that some asbestos containing materials from the demolished barn may be present, however, none were observed during the site walkover.
- 7.5 Externally there are a number of waste piles together with some bonfire residues. These are a source of potential contamination (including PAHs, TPH and heavy metals) and will need to be removed as part of the site's redevelopment. Materials used within the past construction of the site access route are unknown.
- 7.6 Fuels may have been stored on site in the past. However, there is no evidence of bulk fuel storage. There are two chimney like structures located towards the centre of the building. Fuel used for heating is most likely to have been stored internally close to this location. The flooring within this section of the building is concrete, which offers some protection to the underlying ground.
- 7.7 There may be some fill beneath the concrete flooring within the southern section of the building. Fill can be a potential source of contamination depending on the origin of the material used.

8 RISK ASSESSMENT

- 8.1 The risk to future site users can be assessed using the Conceptual Model. This comprises three elements, all of which must be present for there to be a risk. The three elements of the model are; a *source* of a potentially hazardous contaminant, a *pathway* by which the contaminant can be transmitted and a *receptor* on which the contaminant may have a harmful effect. A conceptual model for the site is given in Appendix E.
- 8.2 Potential contaminant linkages between source, pathway and receptor for the site are shown in Table 8.1 below.

TABLE 8.1
POTENTIAL CONTAMINANT LINKAGES

Source		Pathway	Receptor	Risk
Contaminated soil	Contaminated groundwater			
Minor contamination risk associated with waste and bonfire residues	No significant risk	Contact with contaminated soil, groundwater or soil gas	Existing and future site users	?
		Ingestion of or skin contact with contaminated soil, dust or groundwater	Maintenance or construction workers engaged in groundworks on the site	?
		Contact with contaminated soil or ground water	Building & services	✘
		Leeching of site contaminants into groundwater	Wider environment	✘

Key: ✓ Significant risk ✘ No significant risk ? Uncertain risk

8.3 From a review of available information, it is considered that there is some potential for generally minor contamination associated with stored and burnt waste within the external areas of the site (*source*).

8.4 It is proposed to redevelop the site for residential use. There will be soft landscaping adjacent to the dwellings which could be used for growing produce, so adjacent land has been considered as part of this assessment. In this case, potential *receptors* may include site workers (during the development and future maintenance of the site), future site users (considered to include children), buildings and services (including underground water mains) and the wider environment (which is not considered to be particularly hydrogeologically sensitive in this case as the site is on soil classified as Unproductive Strata).

8.5 Source – Receptor Pathways

8.5.1 Site workers (notably demolition and ground workers) may come into contact with building materials containing asbestos and contaminated waste / soils during the redevelopment of the site. Appropriate industrial hygiene measures will be required to reduce the risk of exposure to workers during the development phase.

8.5.2 In the absence of remediation, future site users and/or maintenance workers (e.g. gardeners) may come into direct contact with contaminated soils within the soft landscaping areas, and/or may consume produce grown within the gardens.

Exposure to contamination in this case may be via dermal contact, inhalation and/or ingestion.

- 8.5.3 Waste materials and fire ash residues, together with any affected underlying soils, will need to be removed from site as part of the site's redevelopment to effectively mitigate this risk.
- 8.6 There may be some fill beneath the concrete flooring within the southern section of the building. Consideration during the redevelopment of the site will need to be paid to those exposed to this material during the redevelopment and any building materials or services (such as water pipes) if the material is retained beneath the new flooring.
 - 8.6.1 Future site users may be exposed to tainted water supplied via underground mains to the site where any contamination with potential to degrade the pipes (such as hydrocarbon contamination) is present along the line of the water mains (see current UKWIR guidelines). Those involved in the laying of underground water supply pipes should satisfy themselves that either the route of the water main is free from contamination or appropriate pipework is used.
 - 8.6.2 Contamination at the site is not considered likely to pose a risk to the wider environment.

9 CONCLUSIONS

- 9.1 The site lies on Weald Clay Formation, which is classified as Unproductive Strata. The site does not lie within a groundwater Source Protection Zone and is not considered hydrogeologically sensitive.
- 9.2 The site does not lie within 250 m of waste disposal landfill or geology likely to be a source of ground gas. The site is not considered to be at significant risk of ground gas at this time.
- 9.3 Land use history at the site has included the rearing of poultry and general storage, and does not indicate any significant risk of contamination. However, there is building rubble and bonfire residues within the external areas of the site surrounding the building, which may pose a risk to future site users. These materials, together with any affected underlying soil, will need to be removed from the site as part of the site's redevelopment.
- 9.4 Asbestos containing materials have been identified within and on the building. There may also potentially be some asbestos materials within the waste building rubble piles (not observed, but possible). These materials will need to be removed, and appropriately disposed of, as part of the site's redevelopment.
- 9.5 The site is not within a radon-affected area. No radon protection measures are indicated in this case.

9.6 The overall environmental risk for the site is rated according to the risk assessment matrix in Table 8.1 below:

TABLE 8.1
RISK ASSESSMENT MATRIX

PROBABILITY OF IMPACT	CONTAMINATION POTENTIAL		
	SEVERE	MODERATE OR UNCERTAIN	MINIMAL
High	4	3	2
Medium	3	2	1
Low	2	1	1

1 = low risk, 2 = low to moderate risk, 3 = moderate to high risk, 4 = high risk.

9.7 In this case, some generally minor contamination potential has been identified at the site for which remedial works will be required as part of the site’s redevelopment. It is proposed to redevelop the site for a more vulnerable land use comprising residential use with surrounding soft landscaping that could be used for growing. In the absence of remediation, the probability of impact in this case would be high, giving an overall risk rating of 2 (moderate risk). However, this risk may be reduced to 1 (low) where the recommendations in section 10 below are implemented as part of the site’s redevelopment.

10 RECOMMENDATIONS

- 10.1 All asbestos containing materials within the site, including those within and on the building and any that may be present elsewhere, should be identified and removed from site by a suitable contractor. The removal and disposal should be recorded and submitted as evidence of completion.
- 10.2 All waste and bonfire residue should be removed as part of the site’s pre-development clearance, together with any affected underlying soil. The waste removal documents should be retained as evidence of this work.
- 10.3 Made ground may be retained beneath new hard standing, but any existing made ground together with any underlying fill should be removed down to clean soil within all soft landscaping areas associated with the site.
- 10.4 All site workers should wear appropriate PPE for the work being undertaken at the site.
- 10.5 Should any unexpected contamination be identified during the development phase, Horsham District Council must be notified and any necessary remediation work carried out as required.
- 10.6 Those laying any underground water supply pipework to the properties should satisfy themselves that the soil through which the pipes are laid is clean and/or

use barrier pipe where considered appropriate to prevent the degradation of the pipework.

☆☆☆☆☆☆

APPENDIX A
FIGURES

Address

Hillybarn Farm, The
Mount, Ifield, Crawley,
West Sussex, RH11 0LF

Drawing

Site:

Existing

Location Plan

Scale @ A3

1:1250

Drawn: 03.10.2022	Issued: 03.10.2022
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Drawn By MD	Checked By BK
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Job No.
2209HI_R0

Drawing No.
2209HI_R0_000

Status
FOR COMMENT

Revisions:
R.0

Notes:
Application Area: 1275.66 m²

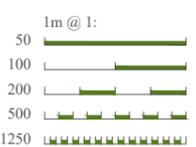
Ordnance Survey
Ukmapcentre.com



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Indicative: 0.0°



Building GEA is 646.85m² total
Proposed Curtilage is 1275.66m²

Existing North Half is GIA 309.71m²
Proposed North Half is GIA 298.86m²



Building is 646.85m² total
Proposed Curtilage is 1275.66m²

Existing South Half is GIA 318.74m²
Proposed South Half is GIA 303.87m²



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apply for Local Authority planning
purposes only.

All dimensions must be checked on
site prior to commencement of works.

Address

Hillybarn Farm, The
Mount, Ifield, Crawley,
West Sussex, RH11 0LF

Drawing

Site:

Proposed

Block Plan

Scale @ A3

1:200

Drawn:	Issued:
03.10.2022	03.10.2022

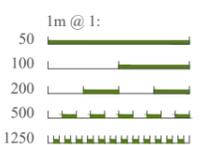
Drawn By	Checked By
MD	BK

Job No.
2209HI_R0

Drawing No.
2209HI_R0_001

Status
FOR COMMENT

Revisions:
R.0



APPENDIX B
HISTORIC MAPS

See separate file

APPENDIX C
PHOTOGRAPHS



Photographs 1 and 2: Access up to the southern façade of the shed and building materials stored adjacent to the southeast corner of the shed.



Photograph 3:

Bonfire residue adjacent to the southeast corner of the shed.



Photograph 4:

Mixed building rubble with some surface vegetation located adjacent to the southern end of the western façade of the shed.

Two chimneys located towards the centre of the shed on the eastern side of the building.



Photograph 5: Pile of brash (cut / felled wood), mixed soil and building rubble, large section of concrete slab / rubble.



Photograph 6:

Bonfire residue with remaining wood waste located adjacent to the northeast corner of the shed.

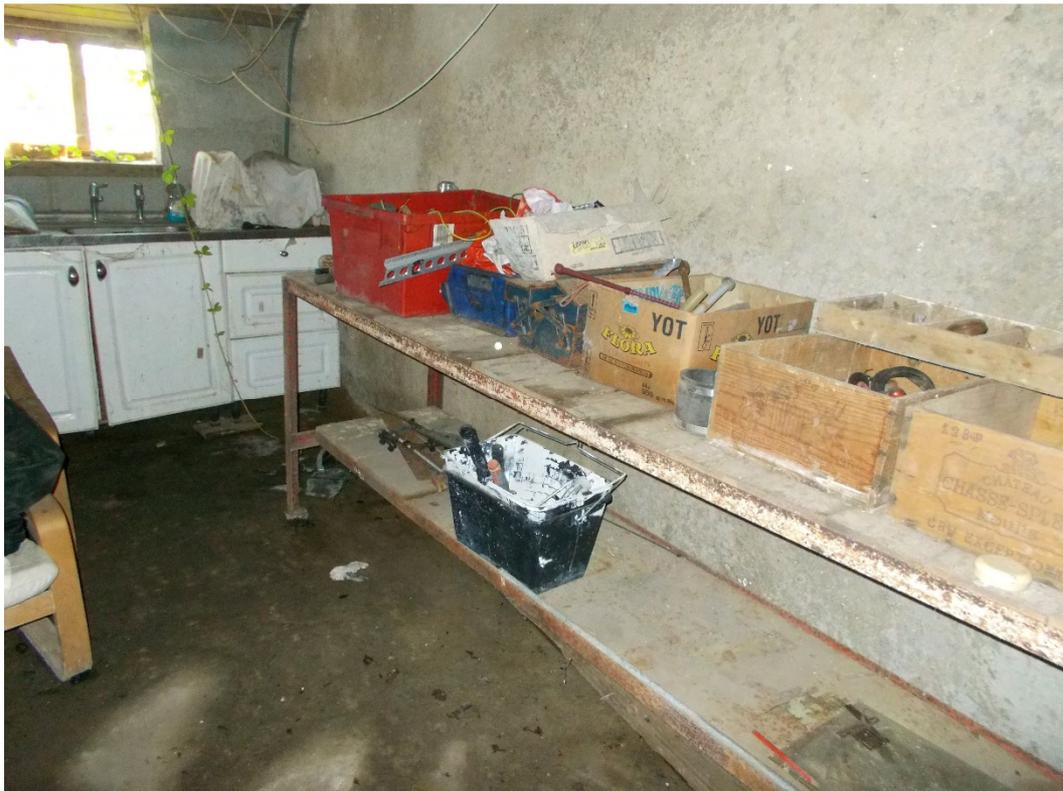


Photograph 7:

Bonfire residue and brash pile located to the west of the shed.



Photograph 8: Northern section of the shed with compressed dirt floor.



Photograph 9: Southern section of the shed with concrete flooring.

APPENDIX D
GROUNDSURE ENVIRO+GEO INSIGHT REPORT

See separate file

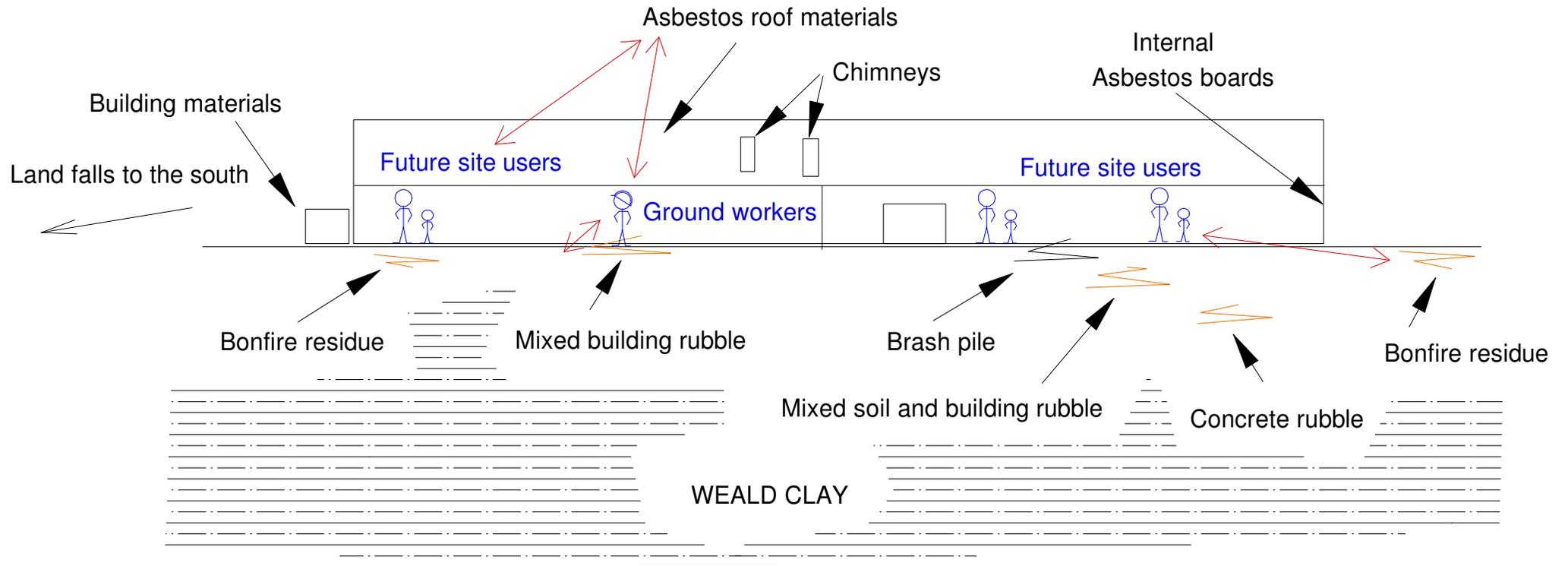
APPENDIX E
CONCEPTUAL MODEL

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HILLYBARN FARM, HILLYBARN ROAD, THE MOUNT,
IFIELD, CRAWLEY, WEST SUSSEX, RH11 0LH

Conceptual Model

January 2023



Receptor \longleftrightarrow Contamination (potential)

Not to scale



eas ltd

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