



PHASE 1 SITE INVESTIGATION

Bullfinch Lane, Hurstpierpoint

For

Suzanne Couchman

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Project No. 001SUCOP1

Prepared by

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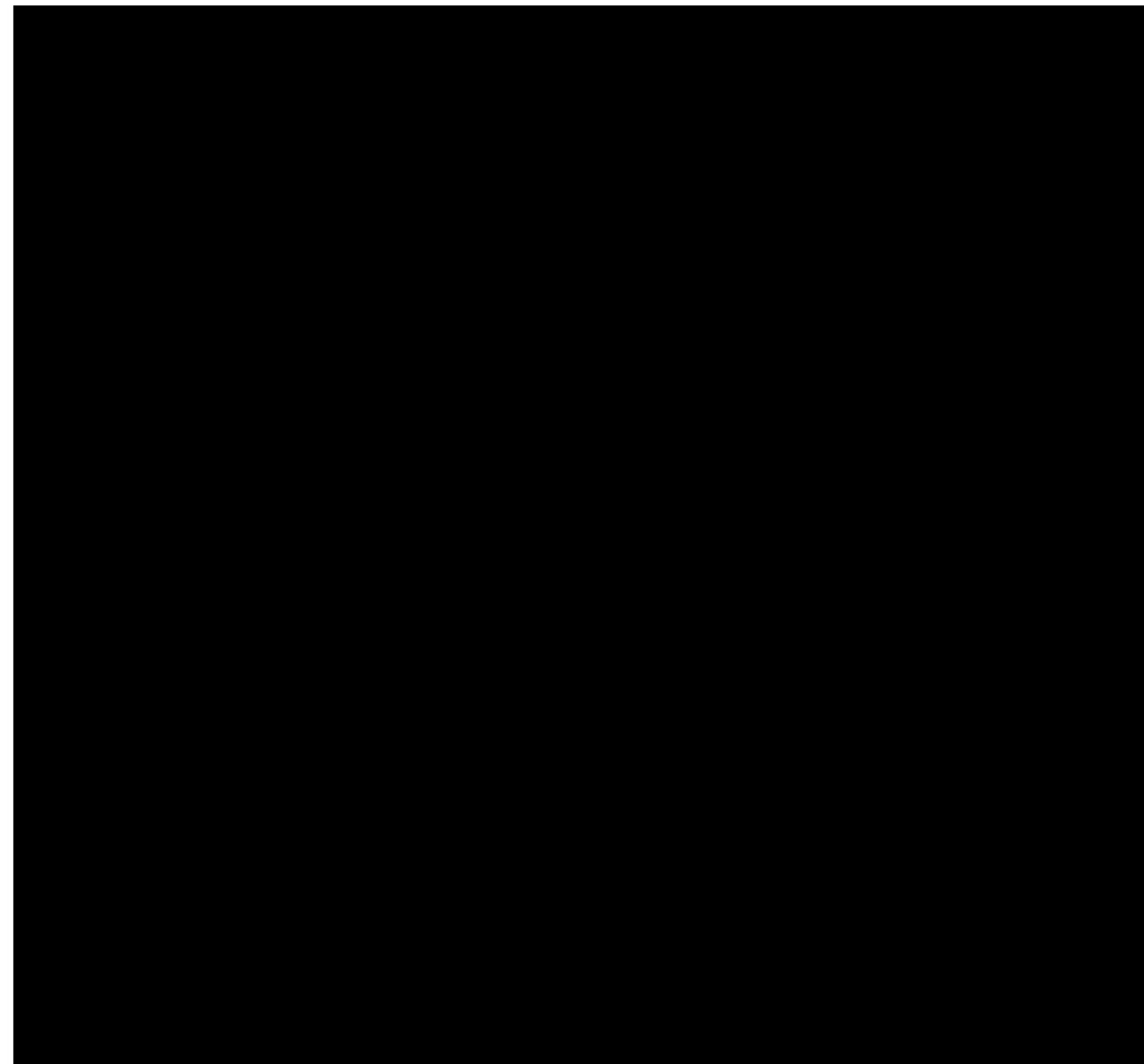
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The material and data in this report were prepared under the supervision and direction of the undersigned.



CONTENTS

1.0 Introduction1

1.1 General1

1.2 Scope of report1

2.0 Site Location and Description2

3.0 Site History3

3.1 Areas of Disturbed Ground3

3.2 Intended Site Use3

3.3 Historical Industrial sites3

3.3.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping 3

3.3.2 Historical Tank Database 3

3.3.3 Historical Energy Features Database 4

3.3.4 Historical Petrol and Fuel Site Database 4

3.3.5 Historical Garage and Motor Vehicle Repair Database 4

3.3.6 Historical military sites 4

4.0 Geological Setting1

4.1 Geology1

4.1.1 Man Made/ Induced Hazards 1

4.1.2 Natural Hazards 1

5.0 Environmental Setting2

5.1 Hydrology and Hydrogeology2

5.1.1 Surface and Groundwater Abstraction Points 2

5.1.2 Source Protection Zones 2

5.1.3 Surface water 2

5.1.4 Surface Water Flooding 2

5.1.5 River and coastal flooding - Flood Zones 3

5.1.6 Groundwater flooding 3

5.2 Sensitive Land Uses3

5.3 Landfill and Other Waste Sites4

5.4 Current Land Use4

5.5 Petrol and Fuel Sites4

5.6 Electricity cables4

5.7 Underground Gas Pipelines4

5.8 Environmental permits, Incidents and Registers5

6.0 Walkover survey and other information6

7.0 Preliminary Conceptual Site Model7

7.1 Introduction7

7.2 Potential Sources of Contamination7

7.3 Preliminary Risk Assessment7

7.4 Ground Gas10

7.5 Mining10

8.0 Conclusions and Recommendations10

9.0 Statement of Limitations11

10.0 References12

APPENDICES

Appendix A - Figures

Appendix B - Historical Maps

Appendix C - Environmental Data Reports

1.0 Introduction

1.1 General

Wesson Environmental were commissioned to carry out a Phase 1 Site Investigation of the site located at Bullfinch Lane, Hurstpierpoint.

The report uses documentary data (refs. 1, 2, 3).

The purpose of this report is to assess the potential risks to human, controlled water receptors and to the wider environment arising from past and present land use, and naturally occurring features present at or near the site.

1.2 Scope of report

This report aims to identify and address the following issues related to the use of the site for residential properties:

1. The potential presence of any contaminants.
2. Pathways which may feasibly exist between contaminant sources and receptors.
3. Potential impact on human, controlled waters and the wider environment.

The report will conclude with a preliminary risk assessment which will address issues associated with potential contaminants on the site based on the collation of documentary data.

2.0 Site Location and Description

The site is located at National Grid Reference 527042 116543 and covers an area of approximately 0.15 ha.

Current Site Use:

The site comprises agricultural buildings and associated land.

Site Boundaries:

The site is bounded by agricultural land to the south and west, with a track running from the south east part of the boundary. Land associated with the agricultural building is present to the north with land to the east in equestrian use. .

Surrounding Site Use:

The surrounding area is predominantly agricultural with residential properties to the north.

Storage Tanks:

No storage tanks are present on site.

3.0 Site History

Historical maps have been procured from the Ordnance Survey, which show development of the site and its surrounding area from 1887– 2022.

These maps are contained in Appendix B. Please note that maps showing no significant change to the site or surrounding area are not referred to in this section.

Site Area	Date	Scale	Surrounding Area
The site is located on agricultural land.	1887	1:2500	A saw pit is located 20m to the north of the site. Pakyns manor House, which comprises several buildings and associated land is located from 50m to the north. A feature denoted Bramber Well which appears to be an earthworks is present 240m to the north.
	1910	1:2500	The sawpit to the north is no longer shown. The buildings that made up the southern part of the Pakyns manor House have largely been removed.
	1937	1:2500	A small, presumably agricultural building is shown immediately to the east. A glass house is shown 40m to the north. A drain adjoins the southern boundary.
	1955	1:2500	A further glasshouse is present 50m to the north west. A tank is present 60m to the north east.
	1963	1:1250	The larger glasshouse is no longer present. Residential buildings are shown approximately 40m to the north east.
	1992	1:1250	A rad cutting is present 100m to the west.
An agricultural building is shown on the site.	2003	1:1250	Agricultural buildings are shown to the east of the site.

3.1 Areas of Disturbed Ground

An earthworks is shown consistently on mapping 240m to the north from the earliest records.

3.2 Intended Site Use

A residential development is planned on the site.

3.3 Historical Industrial sites

3.3.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping.

7 records found within 500m. Nearest:
On-site. Sawpit. 1875-1896.
120m NW. Flour Windmill.

3.3.2 Historical Tank Database

7 records found. Nearest:
63m E. Unspecified tank. Date: 1955-1962. .

3.3.3 *Historical Energy Features Database*

2 records found. Both:
476m W. Electricity Substation. Date: 1975-1997.

3.3.4 *Historical Petrol and Fuel Site Database*

No records found.

3.3.5 *Historical Garage and Motor Vehicle Repair Database*

No records found.

3.3.6 *Historical military sites*

No records found.

4.0 Geological Setting

4.1 Geology

Current geological maps of the region² have been consulted to provide information on geological conditions associated with the site.

Artificial/Made Ground:
1 record within 500m:
499m S. Made Ground.

Superficial Geology:
No superficial deposits are shown underlying the study site.

Bedrock/solid geology:
Mapping indicates that the site is underlain by Silty Sandstone of the Lower Greensand Group. Mixed flow is present and permeability is classified as Moderate.

4.1.1 Man Made/ Induced Hazards

Hazard	Risk
Natural cavities	No records found.
BritPits	No records found.
Surface ground workings	8 records found. Nearest: Onsite. Sawpit. Date: 1875-1896
Underground workings	No records found
Non-coal mining	2 records found. Nearest: On site. Commodity: Sand. Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
Mining cavities	No records found.
Coal Mining	No records found.
Brine extraction	No records found.
Gypsum extraction	No records found.
Tin Mining	No records found.
Clay mining	No records found.

4.1.2 Natural Hazards

Hazard	Risk
Shrinking/Swelling clay	Negligible
Running Sand	Very Low
Compressible deposits	Negligible
Collapseable deposits	Very Low
Landslides	Very Low
Ground Dissolution	Negligible
Radon	Less than 1% of properties are above the Action Level. No radon protective measures are necessary.

5.0 Environmental Setting

5.1 Hydrology and Hydrogeology

Groundwater:

Bedrock deposits underlying the site are classified as a Principal Aquifer. This refers to geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers.

Groundwater Vulnerability:

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.

The Principal Bedrock Aquifer is classified as medium vulnerability with principal flow mechanisms of well-connected fractures.

Soils are classified as low leaching class with an infiltration value of <40% and a dilution factor of 300-550mm/year.

5.1.1 Surface and Groundwater Abstraction Points

No groundwater abstractions are shown within 1000m.

No surface water abstractions are shown within 1000m.

No potable water abstractions are shown within 1000m.

5.1.2 Source Protection Zones

No source protection zones are shown within 500m of the study site.

5.1.3 Surface water

1 record is shown within 250m. This refers to an unnamed inland river located on site that contains water year round.

5.1.4 Surface Water Flooding

There are no Risk of Flooding from Rivers and The Sea (RoFRaS) records within 50m of the study site.

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e., land naturally vulnerable to surface water ponding or flooding and classifies the highest risk on site as Negligible.

5.1.5 River and coastal flooding - Flood Zones

No flood zones are located within 50m of the study site.

5.1.6 Groundwater flooding

The highest risk on site is classified as Negligible.

5.2 Sensitive Land Uses

Uses within 1km.

Designation	Details
Sites of Special Scientific Interest (SSSI)	No records found.
Ramsar sites	No records found.
Special Areas of Conservation (SAC)	No records found.
Special Protection Areas (SPA)	No records found.
National Nature Reserves (NNR)	No records found.
Local Nature Reserves (LNR)	No records found.
Ancient Woodland	4 records found. Nearest: 322m E. Grange Farm Shaw_N. Ancient & Semi-Natural Woodland.
Biosphere Reserves	1 record found: 950m E. Brighton and Lewes Downs
Forest Parks	No records found.
Marine Conservation Zones	No records found.
Green Belt	No records found.
Nitrate Sensitive Areas	No records found.
Nitrate Vulnerable Zones (NVZ)	4 records found. Nearest: On site. Chess Stream. Type: Surface water.
World Heritage Sites	No records found.
Areas of Outstanding Natural Beauty (AONB)	No records found.
National Parks (NP)	No records found.

5.3 Landfill and Other Waste Sites

Uses within 1km.

Records Searched:	Details
Active or recent landfill	No records found
Historical landfill (BGS records)	No records found
Local Authority and Mapping Records	1 record found: 465m S. Address: Kennels at Arden Grange, Albourne.
Historical Landfills from EA/NRW	1 record found: 468m S. Waste Type: Inert, Industrial. Dates: 1960-1965.
Historical waste sites	No records found
Licensed waste sites	No records found
Waste exemptions	22 records found. Nearest: 191m E. Using/treating/disposing of waste.

Full details in Appendix C.

5.4 Current Land Use

There is 1 current potentially contaminative industrial area within 250m of the study site.

171m SW. Mast - telecommunications.

Full details are contained in Appendix C.

5.5 Petrol and Fuel Sites

No records found.

5.6 Electricity cables

No records found.

5.7 Underground Gas Pipelines

No records found.

5.8 Environmental permits, Incidents and Registers	
Industrial Sites Holding Licences/ Authorisations:	Records Held:
Sites Determined as Contaminated Land under Part 2A EPA 1990	No records found
Control of Major Accident Hazards (COMAH)	No records found
Regulated explosive sites	No records found
Hazardous substance storage/usage	No records found
Historic IPC Authorisations	No records found
Part A (1) Licensed industrial activities	No records found
Licensed pollutant release (Part A(2)/B)	No records found
Radioactive Substances Authorisations	No records found
Licensed Discharges to controlled waters	4 records found. Nearest: 440m SE. Effluent type: Unspecified.
Pollutant release to surface waters (Red List)	No records found
Pollutant release to public sewer	No records found
List 1 Dangerous Substances	No records found
List 2 Dangerous Substances	No records found
Pollution Incidents	1 record found: 368m W. Pollutant Description: Crude Sewage. Water/Land/Air Impact: Category 3 (Minor).
Pollution inventory substances	No records found
Pollution inventory waste transfers	No records found
Pollution inventory radioactive waste	No records found

6.0 Walkover survey and other information

The site was visited on 8th August 2022 to allow a visual inspection to take place. The site was observed to comprise agricultural buildings and associated land. The southernmost building was metal framed with brickwork and wood construction. Cement bonded asbestos roofing was observed to be present in good condition with no breakages. It is understood that this had been used for lambing and poultry was present at the time of the visit. A dirt floor was present. The northernmost building was of the same construction but was used to store scaffolding and wood, with occasional machinery such as a lawn mower. To the north of this was an adjoined building which was outside of the planning boundary. This was used to store building material and was of similar construction, with the exception of being separated from the rest by walls constructed of cement bonded asbestos, which it is understood will be removed. The area to the north of this comprised bare ground on which building materials were present. Cement bonded asbestos sheets were stored against the building to the south with some breakage evident. A metal storage container was observed adjacent to the south of the building. The field to the west comprised pasture and was overgrown at the time of the visit. No tanks were observed.

7.0 Preliminary Conceptual Site Model

7.1 Introduction

To enable risks from contamination in soils, a preliminary conceptual site model (CSM) has been developed. This is based on documentary data sources such as site history, contemporary land use data, landfill records, geological mapping and hydrogeological/hydrological data.

The CSM allows the identification of potential pollution linkages and comprises the following three elements:

Source - Potential contaminants associated with former and current land use.

Receptor – who or what could be affected. May include site users, the water environment. Ecosystems and construction or building materials including services.

Pathway – How the receptor may be exposed to the source.

A pollution linkage is only considered to exist if all three elements are present. If a pollution linkage exists, then further assessment may be necessary.

7.2 Potential Sources of Contamination

Historical mapping shows the site in agricultural usage from the earliest records with it forming part of a field until mapping from the early 21st century when the current building was present. The buildings appear to have been used for storage and lambing with poultry present when visited so we would classify this as light agricultural use and not likely in itself to have led to an impact on site soils.

The historical industrial records indicate a saw pit on the site, but mapping shows this as being located some way to the north by approximately 20m. We would contend that the records showing the saw pit as being located on site do so because this will include access to this feature. We would also not consider this a contaminative land use. Saw pits were used historically for producing saw planks from tree trunks as opposed to cutting treated wood. Whilst this feature was infilled, this was done by the end of the 19th century and would therefore not consider this to be a plausible source of ground gas due to age of the feature.

Asbestos in the form of cement bonded corrugated materials were encountered on the site. These mainly formed part of the building structure such as roofing and were in good condition overall. It was also encountered internally as a partition and a small amount of breakage was observed. However, the intention is to remove this material using an asbestos removal company. A small amount of asbestos was observed near to a building to the north of the site with some breakage present. Being offsite some way to the north, this is considered unlikely to have impacted site soils.

7.3 Preliminary Risk Assessment

In developing the conceptual model, it is critical that not just the source of any potential contamination is assessed but also potential receptors and pathways. The future use of the site may introduce new pathways to any contaminants that may be present. A change in use of the site may also introduce human receptors to different exposure scenarios.

The use of risk assessment methodologies such as CLEA allows assessments to be made of whether concentrations of potential contaminants exceed a particular guideline value. The

exceedance of a particular guideline value does not however, in itself enable an evaluation to be made of whether or not the subsequent risk posed to receptors is acceptable.

The risks from a particular pollutant linkage should therefore be evaluated to enable a determination of whether or not the risks are acceptable. This requires classification of:

- The magnitude of the severity of the risk occurring (Table 7-1)
- The magnitude of the likelihood of the risk occurring (Table 7-2)

Classification	Definition
Severe	Short term risk to human health which is likely to result in ‘significant harm’ as defined by the Environmental Protection Act 1990, Part IIA. Short term risk of pollution of sensitive water resources. Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organism forming part of such an organism
Medium	Chronic damage to Human Health. Pollution of sensitive water resources. A significant change in a particular ecosystem, or organism forming part of such ecosystem.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services. Damage to sensitive buildings/structures/services or the environment
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent effects to human health which may easily be prevented by measures such as personal protective clothing, etc. Easily repairable effects of damage to buildings, structures and services

Table 7-1: Classification of severity of risk after CIRIA 552

Classification	Definition
High Likelihood	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.
Low likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such an event would take place, and is less likely in the shorter term
Unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

Table 7-2: Classification of likelihood of risk after CIRIA 552

To evaluate the risk that each pollutant linkage present on the site poses to a specified receptor, the classifications from each table are compared. It is important that this is only applied where the possibility of an existing pollutant linkage exists. This enables a risk category to be produced that range from ‘very high risk’ to ‘very low risk’ (Table 7-3.)

		Consequence			
		Severe	Medium	Mild	Minor
Likelihood	High Likelihood	Very High Risk	High Risk	Moderate risk	Moderate/low risk
	Likely	High Risk	Moderate Risk	Moderate/ low risk	Low risk
	Low likelihood	Moderate risk	Moderate/ low risk	Low risk	Very low risk
	Unlikely	Moderate/ low risk	Low risk	Very low risk	Very low risk

Table 7-3: Comparison of consequence with likelihood of risk occurring, after CIRIA 552.

The classification gives a guide to the severity and consequence of risks that have been identified at the site. It is not possible to classify a risk that has been identified as presenting ‘no risk’. ‘Very low risk’ is the lowest risk ranking classification. Whether action is required depends on how acceptable the stakeholder views that risk as being. Table 7-4 shows the action required for specific risk classifications.

Risk classification	Action
Very high risk	A high probability that severe harm could arise to a specified receptor from an identified hazard OR there is evidence that severe harm is currently happening. If the risk is realised it is likely to result in substantial liability If not already undertaken, urgent investigation is required, and remediation measures are likely to be required.
High risk	Harm is likely to arise to a specified receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. If not already undertaken, urgent investigation is required, and remedial works may be necessary in the short term and are likely over the longer term.
Moderate risk	It is possible that harm could arise to a specified receptor from an identified hazard. It is 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. If not already undertaken, investigation is normally required to clarify the risk and determine potential liability. Some remedial works may be required in the longer term.
Low risk	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	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.

Table 7-4: Description of the classified risks and likely action required after CIRIA 552.

As discussed in the previous section, the potential for impacts on site soils is considered to be unlikely in view of the former uses of the site and surrounding area. In the case of the asbestos observed on the site, the roofing was observed to be in good condition with this and the partitioning etc to be removed. The area where this is located will coincide with building footprint with hardstanding immediately to the east. As only a dust inhalation pathway is relevant in the case of asbestos, even if asbestos fibres were present in these locations, then a pathway will

not be present. Soft landscaping is anticipated to comprise the area to the west and this is unlikely to have been impacted by release of fibres. Therefore, impacts to site users and controlled waters are considered to be **NEGLIGIBLE** in the absence of a plausible contamination source or pathway.

7.4 Ground Gas

As discussed in the previous section, a ground gas source is considered unlikely to be present. Therefore, risks from ground gas are considered to be **NEGLIGIBLE**.

7.5 Mining

No mining related risks have been identified.

8.0 Conclusions and Recommendations

The review of documentary information indicates that there is a **NEGLIGIBLE** risk to human health and to controlled waters. Risks from ground gas are considered to be **NEGLIGIBLE**.

All site investigations carried out in the UK should follow the principles set out in LCRM. This specifies that a phased approach should be used with a desk top study carried out in the first instance in all cases. Where this does not indicate the potential for a pollutant linkage, there is not considered to be a requirement for further stages such as intrusive investigations that involve the physical sampling of soils⁴.

There are no recommendations for further investigation.

Should during any works on the site, evidence of contamination become apparent, this should be reported to the Local Authority contaminated land officer.

9.0 Statement of Limitations

This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project, without an independent check being carried out as to its suitability, and prior written authority of Wesson Environmental being obtained. This document can be relied upon by Suzanne Couchman. Wesson Environmental accepts no responsibility or liability for the consequences of this document being used for any purpose other than the purpose for which it was commissioned. Any person using or relying on the document for such other purpose, agrees, and will by such use or reliance, be taken to confirm his acceptance, to indemnify Wesson Environmental for all loss or damage resulting therefrom. Wesson Environmental accepts no responsibility or liability for this document to any other party.

10.0 References

- 1. Ordnance Survey Maps – Collated for Wesson Environmental by Groundsure. Ref: WES-8998771.
- 2. Groundsure Enviro and Geo Insight. Ref: WES-8998771.
- 3. Land contamination risk management (LCRM). 2020. Environment Agency.
- 4. RB17 – A pragmatic Approach to Ground Gas Risk Assessment (2012). CL: AIRE.
- 5. Wilson and Card 2011. A pragmatic approach to ground gas risk assessment for the 21st Century. EPG Group Limited.

APPENDIX A

Figures



Figure 1: The current building from the south west.



Figure 2. The interior of the southern part of the building.



Figure 3. Interior of northern part of building.



Figure 4. The internal partition.

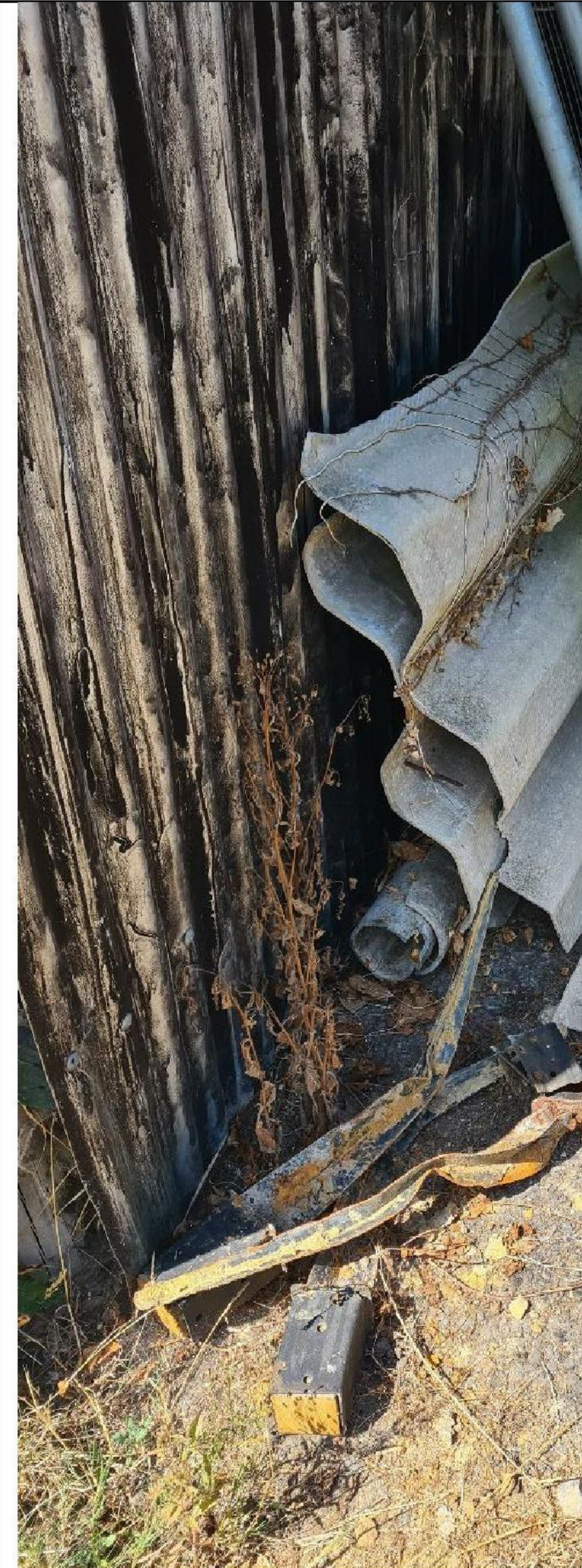


Figure 5. The asbestos materials c

APPENDIX B

Historical Maps

APPENDIX C
Environmental Reports