

Your Environment

PHASE 1: DESKTOP STUDY AND PRELIMINARY RISK ASSESSMENT REPORT AT KENTS YARD, BROOKPIT LANE, CLIMPING, BN17 5QT.

For Smith, Simmons and Partners

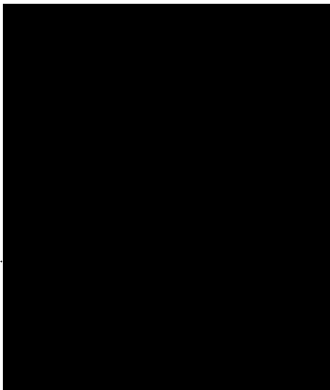
Your Environment

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1.0 Introduction

YourEnvironment (YE) was instructed by Smith, Simmons and Partners to produce a Phase 1: Desktop Study and Preliminary Risk Assessment Report for the site located at Kents Yard, Brookpit Lane, Climping, BN17 5QT (grid ref: 500696, 101751; area: 0.24ha).

We understand current plans for the redevelopment of the site include;

- Change of use of barns to three (3no.) residential dwellings.

A proposed site plan provided to YE, at the time of issuing this report can be reviewed within Appendix A.

Objectives

The objectives of this Phase 1 report are to:

- Establish the environmental setting, including sensitivity in relation to human health, surface water, groundwater and ecological receptors;
- Review historical and recent uses to assess the potential for contamination to be present from past and current land-use;
- Assess by qualitative means the potential nature and extent of contamination from those uses and the environmental risk and liabilities which may affect the site redevelopment;
- Identify the prevalent source-pathway-receptor linkages present on site by means of a Tier 1 contamination risk assessment which incorporates the formulation of a Conceptual Site Model.

Information Sources

During the production of this report the following information sources have been utilised:

- A review of Historical Ordnance Survey Maps, Envirolnsight and Geolnsight information obtained from Groundsure (4C Group Ltd).

It should be noted that the information from these sources referenced in this report has been predominantly limited to that identified within 100m of the site, in order to focus on the most pertinent information. Information from outside this 100m radius will be referenced when deemed relevant (for example, landfills). The full information from these sources can be reviewed within Appendices B & C.

2.0 Site Geology & Geological Hazards

Artificial/Made Ground

There are no records of artificial/Made Ground within 500m.

Superficial Ground and Drift Deposits

The superficial ground deposits underlying the study site are attributed to Raised Beach Deposits (sand and gravel).

Bedrock Geology

Underlying the superficial drift deposits is bedrock attributed to the Lewes Nodular Chalk, Seaford Chalk, Newhaven Chalk, Culver Chalk and Portsdown Chalk Formation (chalk).

Landslips

There are no records within 500m of the study site.

Linear Features

There are no records within 500m of the study site.

Coal Mining

There are no records of a coal mining area on site.

Non-Coal Mining

There are no records within 1000m of the study site.

Johnson Poole and Bloomer Mining

The study site is not located within a Johnson Poole and Bloomer mining area.

Historical Mining

There are no records within 500m of the study site. It was used for sand and gravel and is no longer operational.

Brine Extraction

The study site is not recorded as being within 100m of a brine extraction area.

Radon

The study site is located within a Radon Affected Area, as between 1% and 3% of properties are above the Action Level. However, no radon protective measures are necessary for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment.

Borehole Records

There are no records of boreholes within 100m of the study site.

3.0 Site Hydrogeology and Hydrology

Aquifer within Superficial Deposits

As a consequence of the superficial geology on site, it is classified as being a Secondary (A) Aquifer. These are defined as 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.

Permeability of Superficial Geology

The minimum permeability is recorded as being high, with the maximum permeability recorded as being very high.

Aquifer within Bedrock Geology

As a result of the bedrock geology on site, the aquifer is designated as being a Principal Aquifer. This is defined as layers with high intergranular and/or secondary permeability capable of supporting water supplies at strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as Major Aquifers.

Permeability of Bedrock Deposits

The minimum permeability is recorded as being very high with the maximum permeability recorded as being very high.

Groundwater and Surface Water Abstraction Licences

There are eight (8no.) records within 2000m of the site. The closest of which is 69m north for an active spray irrigation supply. The next closest active abstraction is over 1000m from the site.

Potable Water Abstraction Licences

There are no active records within 2000m of the site.

Groundwater Vulnerability and Soil Leaching Potential

The on-site soil vulnerability category is listed as medium for the superficial and low for the bedrock.

Source Protection Zones

The study site is not located within a Source Protection Zone.

Ordnance Survey Water Network

There are no records within 250m of the study site.

Surface Water Features

There are no records within 250m of the study site.

Licensed Discharge Consents

There are six records within 500m of the site, the nearest of which is 146m east for sewage discharges into land. The remaining records are over 150m from the site.

4.0 Site Environmental and Industrial Setting

Environmental Permits, Incidents and Registers

Records of Part A(1) and IPPC Authorised Activities

There are no records within 500m of the study site.

Records of Red List Discharge Consents

There are no records within 500m of the study site.

Records of List 1 Dangerous Substances Inventory Sites

There are no records within 500m of the study site.

Records of List 2 Dangerous Substance Inventory Sites

There are no records within 500m of the study site.

Records of Part A(2) and Part B Activities and Enforcements

There are three (3no.) records within 500m, none of these are within 100m of the study site.

Records of Category 3 or 4 Radioactive Substances Authorisations

There are no records within 500m of the study site.

Records of COMAH and NIHHS Sites

There are no records within 500m of the study site.

Sites Determined as Contaminated Land under Part IIA EPA 1990

There are no records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 within 500m.

Landfill and Other Waste Sites

Records of Landfill/Other Waste Sites

There are no records of landfill within 500m of the of the study site. There are six records within 500m of the sit, for waste exemption sites, the closest of which is 203m north for the storage of sludge. The remaining records are over 250m from the study site.

Workings/Tunnels and Railway Features

Historical Surface Ground Working Features

There is one (1no.) record within 250m of the study site. None of which are within 200m of the study site.

Historical Underground Working Features

There are no records within 1000m of the study site.

Current Ground Workings

There are no records within 100m of the study site.

Underground Railway Lines

There are no records within 100m of the study site.

Historical Railway and Tunnel Features

There are no records within 100m of the study site.

Active Railways

There are no records within 100m of the study site.

Historical/Current Land Uses

Historical Records of Potentially Contaminative Uses

There are two (2no.) records within 500m of the study site, the closest is 239m southwest for unspecified and sewage works.

Historical Tanks

There are two (2no.) records within 500m, both of which are greater than 350m from the site. YE have determined that due to the records distance from site, that they are unlikely to pose a risk the site.

Historical Energy Features

There are no records within 500m of the study site.

Historical Petrol and Fuel Sites

There are no records within 500m of the study site.

Historical Garage and Motor Vehicles Repairs

There are no records within 500m of the study site.

Petrol and Fuel Sites

There are no records within 500m of the study site.

Records of Potentially Contaminative Industrial Sites

There is one (1no.) record with a potentially contaminative industrial usage within 250m, the closest of which is 83m northwest for a metal works including blacksmiths.

Designated Environmentally Sensitive Sites

The study site is located within a SSSI Impact Risk Zone.

Information on the environmental and geological setting of the site is presented in a Groundsure Enviro-Insight and Geo-Insight Report prepared for the site, a copy of this report is reproduced in Appendix B.

5.0 Historical Mapping Study

The object of this search was to report on the evidence of site history and redevelopment of the site and its environs from available County Series and Ordnance Survey Maps dating from the mid to late 19th Century to the present day as downloaded from Groundsure.

Maps only represent a “snapshot” of the site and its environs at the date of the survey. Changes that had occurred either to the site and/or the environs may well not have been recorded on the maps and could represent a hazard to the site.

The information reported might not represent all pertinent information that could be obtained. Any maps with no discernible changes will not be commented on in this report.

The interpretation of the maps and/or other data commented on in this report is subjective.

Year	On site	Off site
1876	➤ The site is an irregular shaped parcel of land, with one structure on site.	➤ The site is surrounded by largely agricultural fields in its vicinity. There appear to be properties immediately east and north of the site.
1879	➤ Numerous outbuildings in addition to the main structure.	➤ No relevant changes.
1896	➤ Extension to existing main structure.	➤ No relevant changes.
1898	➤ No discernible changes	➤ No relevant changes
1910	➤ No discernible changes	➤ No relevant changes
1912	➤ No discernible changes	➤ No relevant changes
1932	➤ No discernible changes	➤ New structure 100m southeast.
1940	➤ No discernible changes	➤ No relevant changes
1950	➤ Incomplete mapping data.	➤ Incomplete mapping data.
1957	➤ No discernible changes	➤ Large road constructed approximately 200m north.
1961	➤ No discernible changes	➤ No relevant changes
1973	➤ Outbuildings at south of site no longer present (very small buildings)	➤ No relevant changes
1974	➤ No discernible changes	➤ Sewage works approximately 500m southwest
1981	➤ No discernible changes	➤ No relevant changes
1992	➤ No discernible changes	➤ No relevant changes
1994	➤ No discernible changes	➤ No relevant changes
2001	➤ No discernible changes	➤ No relevant changes
2003	➤ No discernible changes	➤ No relevant changes
2010	➤ No discernible changes	➤ No relevant changes
2020	➤ No discernible changes	➤ No relevant changes

Table 1: Historical Mapping Review

The Historical Ordnance Survey Maps were obtained from Groundsure and are available for review within Appendix C.

6.0 Walkover Survey

The site was visited by YE on February 20th 2020. The weather was wet and overcast at the time.

Access

The site is accessible via Crookthorn Lane with a wooden hoarding gate that could be opened to provide access to the courtyard area.

Topography

Both on and off site the ground is relatively flat.

Vegetation

The western portions of the site comprise an area of field, with grass and weeds throughout. The courtyard area in the centre of the site has several areas of weeds and grass growing through the concrete and gravel areas.

Mature trees are present approximately 20m off site to the south.

Buildings and Structures / Floor Covering

There are several single-story barn structures forming a horse-shoe shape on site. These sat empty at the time of the walkover. The structures in the southern section had roofs and guttering of potentially asbestos containing cement.

Surface Permeability / Ground Covering

It is estimated that approximately 30% of the site is impermeable concrete with approximately 70% comprising soft permeable landscaping.

Drainage Features

A surface water drain was noted in the centre of the courtyard. A drain cover was noted to be damaged in the north-western corner of the site revealing a drainage run full of debris.

Other Services

It is believed that the site has access to water via the sanitary station.

Direction	Description of Site boundary
North	No defined boundary line.
East	Flint wall approximately 2.5m in height.
South	No defined boundary line.
West	No defined boundary line.

Table 3: Summary of site boundaries

Direction	Description of Surrounding Land Use
North	Residential property with respective garden area.
East	Residential property with respective garden area.
South	Wooded area.
West	Arable fields.

Table 4: Summary of Surrounding Land Uses

Potentially Contaminative Land Uses

On site sources:

- Potential asbestos containing materials;
- Former agricultural usage.

Off site sources:

- None identified.

Photographs taken during the walkover of the site and surrounds, can be reviewed within Appendix D.

7.0 Framework for Assessment of Contamination

Environmental risks are assessed within the risk management framework established in Part IIA of the Environmental Protection Act (EPA) 1990 introduced by Section 57 of the Environment Act 1995 which provides a statutory definition of contaminated land. To fall within this definition it is necessary that, as a result of the condition of the land, substances may be present on or under the land such that:

(a) Significant harm is being caused or there is a significant possibility of such harm being caused;

or

(b) Pollution of controlled water is being, or is likely to be caused.

Risk from contamination is assessed by consideration of possible linkages between contaminant sources and potential receptors which could be harmed or polluted.

The key aspect of the framework is the development of a Conceptual Site Model (CSM) which illustrates the spatial interaction between the potential sources and receptors on site.

The information presented in this report was collated and evaluated to develop an initial CSM to assess ground contamination issues at the site.

For a risk of pollution or environmental harm to occur as a result of ground contamination, **all** of the following elements must be present:

- A source, i.e., a substance that is capable of causing pollution or harm;
- A receptor, i.e., something which could be adversely affected by the contaminant;
- A pathway, i.e., a route by which the contaminant can reach the receptor.

If one of these elements is absent there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

Potential sources, pathways and receptors are identified in the sections below and the risks associated with possible pollutant linkages outlined.

8.0 Contaminant Sources

On Site Sources

The following possible on-site sources have been identified from the historical study:

- Made Ground, from historical development (Not substantial).

The following on site sources have been identified from the site walkover:

- Potential asbestos containing materials

The following possible on-site sources have been identified from the Enviro-Insight and Geo-Insight:

- None identified.

The following contaminants are potentially associated with these sources:

- Asbestos; and
- Heavy Metals.

In practice, a broad contaminant screen should be analysed for to ensure that potential contaminants are not omitted.

Off Site Sources

The following off-site sources have been identified from the historical study:

- None identified.

There are further entries present, but these are considered far enough from the site to pose no risk.

The following off-site sources have been identified from the site walkover:

- None identified.

The following current off-site sources have been identified from the Geo-Insight and Enviro-Insight:

- Metal works - 86m northwest;

The following contaminants are potentially associated with these sources.

- Heavy Metals;

9.0 Source / Pathway / Receptor

Sources

The **main sources** of potential contamination that have been identified at the site or in the vicinity of the site are summarised above and below:

Source	Location	Description
Made Ground	On site	Unlikely to be any significant amount of made ground due to size of the structures demolished.
Metal Works	Off Site	Potential for a range of contaminants including, but not limited to: Heavy Metals, PAH, TPH, Asbestos, BTEX, MTBE, SVOCs, and VOCs.

Table 4: Sources

Pathways

In order for contaminants to reach potential receptors, there has to be a viable **pathway** for the contaminant. Potential pathways that may affect the migration of contaminants are listed below:

Pathway	Medium	Properties
Direct Contact	Dust, solid and liquid phase	There may be direct contact with potentially impacted soil and Made Ground across the site. There is a possibility of dust fumes being produced during earthworks in the construction phase. Dermal contact and ingestion of potentially contaminated soils during construction or operational phase of the site.
Leaching through Made Ground	Unsaturated flow	Potential for leaching and migration of potential contaminants along preferential flow paths in the Made Ground due to its heterogeneity.
Foundations and Underground Infrastructure and Obstructions	Preferential flow	Depending on the foundation solution adopted, preferential flow paths for the vertical migration of potential contaminants to the underlying groundwater could be created.
Migration of Ground Gas	Gaseous flow	Made Ground is known to be highly variable in composition. Migration through granular material in Made Ground and alongside buried utility pipes / cables or along preferential flow paths.

Table 5: Pathways

Receptors

The site-specific **receptors** that could be potentially affected by the contamination hazards identified during this preliminary appraisal are summarised below:

Category	Receptor	Properties
Humans	End users (such as residents and visitors)	Potential contact with contaminated soils in existing/proposed soft landscaping areas.
	Construction workers	Reworking of the contaminant impacted materials in Made Ground during construction works can expose workers to contamination.
Property	Materials and site structures	Foundations and site services may be damaged by potentially aggressive compounds present in soils.
Controlled Waters	Underlying superficial / bedrock Aquifer and surface water	The site is recorded as having a Secondary (A) Aquifer within the superficial deposits and a Principle Aquifer within the bedrock underlying the site.
Flora (species and uptake) and Fauna	Various	Attributes will be influenced by factors such as relative quality, scale, rarity and substitutability.

Table 6: Receptors

10.0 Qualitative Risk Assessment

Potential pollutant linkages are identified using the source-pathway-receptor framework detailed above. An assessment of the potential significance of each linkage is then made by consideration of the likely magnitude and mobility of the source, the sensitivity of the receptor and nature of the migration/exposure pathways.

This qualitative risk assessment has been undertaken in accordance with CIRIA C552: Contaminated Land Risk Assessment, A Guide to Good Practice (Rudland et al., 2001).

An assessment of the likelihood of the risk being realised and the magnitude of potential risk is presented below to give an estimation of the significance of each potential pollutant linkage identified.

The assessment is undertaken based on the current proposals for the site, at the time of issuing this report, which would be classed as been a generic end land use of 'residential with homegrown produce'.

11.0 Preliminary Conceptual Site Model

Contaminant Source	Pathways	Receptor	Potential Severity	Probability of Risk	Level of Risk	Justification
On Site: Made Ground soils on site possibly containing elevated metals, other organics such as TPH, PAH, phenols, VOC and SVOCs.	Ingestion, dermal contact, inhalation of dusts/vapours	Future end users and site visitors	Medium	Low Likelihood	Low ●	A low risk rating has been assessed due to the lack of potentially contaminative land uses on site. Contact is unlikely between future residential occupiers/visitors and contaminants in the shallow soil in garden areas of the site, soil/dust tracked back into the house, from ingestion of homegrown produce and from vapour intrusion.
		Construction Workers	Medium	Low Likelihood	Low/ Moderate ● ●	Construction workers are likely to come into direct contact with soils during groundworks. Safe working practices should be implemented and appropriate personal protective equipment (PPE) should be used to mitigate any potential risk from contact with soils and shallow/perched groundwater.
	Leaching through soils and migration via groundwater or soil pore moisture	Controlled Waters	Medium	Unlikely	Low ●	A low risk rating has been assessed due to the lack of contaminative sources on site and the presence of a Secondary (A) Aquifer within the superficial deposits and a Principle Aquifer within the bedrock underlying the site.
	Permeation of water pipes	Construction materials, future end users and site visitors	Medium	Unlikely	Low ●	Hydrocarbons, especially aromatics are known to permeate plastic pipes. Provision of water supply pipes and connectors formed from proprietary "barrier pipe" materials (e.g. polyethylene-aluminium-polyethylene) may be required by the water supply company.
	Uptake	Plant and Wildlife	Mild	Unlikely	Low ●	A low risk rating has been assessed as there are no indicated areas of soft landscaping on the proposed site plans.
On Site: Asbestos at/near ground surface in Made Ground soils.	Inhalation of fibres in airborne dust	Future end users and site visitors	Severe	Low Likelihood	Moderate ●	Potential ACMs were identified from the site walkover, however the risk from these ACMs could be mitigated by proper identification, removal and disposal. It is considered likely that an asbestos survey would be required on the existing structure, prior to redevelopment.
		Construction Workers	Severe	Low Likelihood	Moderate ●	Potential ACMs were identified from the site walkover, however the risk from these ACMs could be mitigated by proper identification, removal and disposal. It is considered likely that an asbestos survey would be required on the existing structure, prior to redevelopment.
On Site: Ground Gases (CH ₄ , CO ₂) from	Gas migration and build up within buildings	Future end users and building structures.	Medium	Unlikely	Low ●	A low risk rating has been assessed due to the limited amount of made ground on site. Current guidance indicates that Made Ground is generally classified as low risk in terms of potential for gas generation.

on-site Ground.	Made	(explosion/asphyxiation risk)					
Off Site: Historical land uses and activities, Made Ground/infilled material possibly containing elevated metals, other inorganics, TPH, PAH, PCBs, phenols, VOC and SVOCs.	Leaching through soils and migration via groundwater or soil pore moisture	Future end users and site visitors	Medium	Low Likelihood	Low/Moderate ●●	Given the variable permeability of the underlying geology and hydrogeology, there is a low/moderate risk for the leaching of contaminants. This combined with the variety of potentially contaminative activities in the surrounding area create a risk for contamination on site.	
	Ingestion, dermal contact, inhalation of dusts/vapours	Future end users and site visitors	Medium	Unlikely	Low ●	A low level of risk is assessed due to the types of potentially contaminative land uses/activities within proximity to the site that could pose a potential risk to the site.	
Off Site: Gases (CH ₄ , CO ₂ , H ₂ S) from offsite Made Ground historical land uses/activities.	Gas migration and build up within buildings (explosion/asphyxiation risk)	Future end users and building structures.	Medium	Unlikely	Low ●	A low risk rating has been assessed due to the lack of infilled land surrounding the site.	

Table 7: Preliminary Conceptual Site Model

12.0 Recommendations

12.1 Proposed Site Investigation

Given the findings of this report we do not anticipate the need for completing any Site Investigation (SI) works. The historical, current and proposed use of the site and the surrounding environs suggests there are no viable pollutant linkages present. However, we would recommend that a watching brief be undertaken during the groundworks stage.

12.2 Consultees

It is highly recommended that this report be forwarded to the relevant Local Authority Environmental Health and Planning Department to seek their comments and subsequent approval, otherwise further works may be required.

12.3 Groundworks Watching Brief

If during construction works any material is noted to show visual and/or olfactory signs of contamination an environmental consultant should be contacted to supervise/guide further works.

If any landscaping materials are to be imported on site they should be tested to check that they are suitable for the intended use.

12.4 Flood Risk Assessment

This report does not replace a full hydrogeological survey and specialist studies may need to be undertaken to ascertain the risks posed from flooding. Further details on site flood information can be found within the appendices.

13.0 Limitations and Uncertainties

This report has been prepared by YE with all reasonable skill, care and diligence. The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources, together with a site walkover inspection of the site.

The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned.

Information reviewed should not be considered exhaustive and accepted in good faith as providing true and representative data with respect to site conditions. Should additional information become available which may influence the opinion expressed in this report, YE reserves the right to review such information and, if warranted, to alter the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site. This report is an environmental phase 1 report and does not consider the geotechnical implications for the site, its redevelopment and proposed future use. Further advice should be sought on geotechnical investigation requirements for the proposed development.