PHASE 1: DESKTOP STUDY AND PRELIMINARY RISK ASSESSMENT REPORT AT 80 OLD SHOREHAM ROAD SHOREHAM-BY-SEA BN43 5TD

For Showtec

Your Environment
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Report Number: YE6061, September 2018

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For and on behalf of *Your*Environment				

Issue	Date	Description	Prepared	Reviewed	Approved
00	20.09.18	Final Report	RG	TLB	CH

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1.0 Introduction

*Your*Environment (YE) was instructed by Showtec (Quote No: Q6061, Dated: August 31st 2017) to produce a Phase 1: Desktop Study and Preliminary Risk Assessment Report for a site located at 80 Old Shoreham Road, Shoreham-By-Sea, BN43 5TD.

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

- Retention of commercial use as workshop, storage and sales on ground floor with associated office on part first floor;
- Part conversion of remainder of first floor of existing building and first floor extension over existing ground floor at rear to provide 1No. 2-bedroom flat and 1No. 1-bedroom flat with balconies at front and rear and associated alterations;
- Erection of garage/storage space/cycle store on northern boundary of site.

The purpose of this report is to satisfy a particular planning condition, which has been attached to the redevelopment of the site by Ardur District Council, application reference number: AWDM/1508/17, specifically condition 12.

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, EnviroInsight and GeoInsight information obtained from Groundsure (4C Group Ltd).

2.0 Site Location

The following table outlines the details of the site:

Site address	80 Old Shoreham Road, Shoreham-By-Sea, West Sussex, BN43 5TD
Grid reference	521065, 105543
Total area	0.05ha
Topography	The site is at approximately 2mAOD
Site Layout	The site is an approximate triangular shaped plot of land

Table 1: Site Details

3.0 Site Geology & Geological Hazards

Superficial Ground and Drift Deposits
The superficial ground deposits on site are comprised of Head deposits (clay, silt, sand and gravel).

Bedrock Geology
Underlying the superficial drift deposits is bedrock composed of Newhaven Chalk Formation (chalk).

Artificial/Made Ground
There are no records of artificial/Made Ground underlying the site.

Natural Hazards
On site, there is a moderate risk from running sand hazards and compressible ground, and a very low risk from shrink-swell hazards, landslides, soluble rocks and collapsible rocks.

Landslips
There are no records of landslips within 500m.

Linear Features
There are no records of linear features within 500m.

Coal Mining
The study site is not located within 75m of an identified mining area.

Non-Coal Mining
The study site is located within 50m of an identified non-coal mining area, which is on site for chalk. Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered.

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 two records within 250m of the study site, the closest of which is located 209m south drilled to a depth of 82m. The following records is 218m southeast drilled to a depth of 14m.

4.0 Site Hydrogeology and Hydrology

Aquifer within Superficial Deposits
As a consequence of the superficial geology on site the aquifer is designated as being a Secondary (undifferentiated) Aquifer. This is defined as layers that have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

Permeability of Superficial Geology
The minimum permeability is recorded as being very low with the maximum permeability recorded as being high.

Aquifer within Bedrock Geology
As a result of the bedrock geology on site, the aquifer is designated as being Principal. This is defined as having high intergranular and/or secondary permeability. These usually have a high level of water storage on a strategic scale. These are generally aquifers previously classified as Major Aquifers.

Permeability of Bedrock Deposits
The permeability is recorded as being very high.

Groundwater Abstraction Licences
There are three active groundwater abstraction licences within 2000m, all of which are 1300m north for direct potable water supply.

Surface Water Abstraction Licences
There are no records or active surface water abstraction licences within 2000m.

Potable Water Abstraction Licences
There are three active potable water abstraction licences within 2000m, all of which are 1300m north for direct water supply.

Groundwater Vulnerability and Soil Leaching Potential
The on site soil vulnerability category is listed as being 'HU', this is defined as soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

Source Protection Zones
The study site is located within a Source Protection Zone 3 (total catchment).

Detailed River Network
There are twenty-four records within 500m of the study site, the closest two of which are 185m southeast for West Lake. The remaining results are 190m from the study site.

Surface Water Features
There are three records within 250m of the study site, the closest of which is 100m southwest which we consider to be the high water mark of the River Adur. The remaining records are over 160m from the study site.

Licensed Discharge Consents
There are ten records of sites within 500m, the closest of which is located 369m south for sewage discharges – sewer storm overflow. The remaining records are over 370m from the study site.

5.0 Site Flood Information

The study site is within 250m of an Environment Agency Zone 2 (fluvial /tidal models) and Zone 3 (fluvial models) floodplain, which are both on site. With this in mind, the highest risk from flooding from rivers and sea (RoFRaS) on site is recorded as low/medium, with risks recorded as being low 36m northeast. There are no areas benefitting from flood

defences, flood defences or areas benefitting from flood storage within 250m of the study site.

There are British Geological Survey (BGS) groundwater flooding susceptibility areas within 50m of the boundary of the study site which relate to Clearwater Flooding and therefore the potential susceptibility is from unconfined aquifers.

The BGS confidence rating in respect of this result is high.

6.0 Site Environmental and Industrial Setting

Environmental Permits, Incidents and Registers

Records of National Incidents Recording System, List 2

There are nine records of sites within 500m, the closest two of which are 42m south for an incident in July 2002 involving oils and fuels that had a Category 3 (Minor) impact on water and land and a Category 4 (No Impact) for air. The remaining records are over 330m from the study area.

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

Potentially Infilled Land

There are thirty-one records of potentially infilled land within 500m, the closest of which is 165m east for a cemetery. The remaining records are over 165m from the study site.

Records of Environment Agency Historic Landfill Sites

There are four entries within 1500m, the closest of which is 284m south that was licensed to accept inert, commercial and household wastes. The remaining entries are over 400m from the study site.

Records of Waste Treatment, Transfer or Disposal Sites

There is one record within 500m, which is 162m south for a waste transfer station.

Workings/Tunnels and Railway Features

Historical Surface Ground Working Features

There are twenty-one ground working features within 250m, the closest of which are 165m east for a cemetery and 165m south for a pond. The remaining features are over 165m from the site.

Current Ground Workings

There is one entry within 1000m of the site located 869m north for Mill Hill Chalk Pit, a ceased chalk surface mineral working. Working is wholly on the surface.

Historical Railway and Tunnel Features

There are two records of historical railway and tunnel features within 250mm, both of which are on site for tramway sidings.

Historical Railway Lines

There are three records of historical railway lines within 250mm, the closest two of which are 72m southwest for abandoned railway lines. The remaining record is 162m from the study site.

Historical/Current Land Uses

Records of Potentially Contaminative Uses

There are forty-five records of sites with a potentially contaminative past land use within 500m, one of which is on site for tramway sidings. Off site, the nearest is 29m northwest for an unspecified tank. The remaining entries are over 135m from the study area.

Historical Tanks

There are thirteen records of sites within 500m, the nearest of which is 29m northwest for an unspecified tank. The next closest record is 35m northwest from the site also for an unspecified tank. The remaining results are over 230m from the study area.

Historical Energy Features

There are thirty-six records of sites within 500m, the nearest three of which are 137m east for an electricity substation. The remaining entries are over 190m from the study area for electricity substations.

Historical Garage and Motor Vehicles Repairs

There are twenty-one records of sites within 500m, the closest of which is on site for a garage. Off site, the closest record is 302-305m southeast for garages. The remaining records are over 360m from the study site.

Petrol and Fuel Sites

There is one record within 500m located 59m southeast for an obsolete petrol or fuel site.

Records of Potentially Contaminative Industrial Sites

There are eight records of sites with a potentially contaminative industrial usage within 250m, one of which is on site for vehicle repair, testing and servicing. The next closest record is 104m northwest for aviation engineers. The remaining entries are over 130m, including electricity substations, business parks, industrial estates and mooring and unloading facilities.

Designated Environmentally Sensitive Sites

The study site is located upon a Nitrate Vulnerable Zone.

Information on the environmental and geological setting of the site is presented in a Groundsure EnviroInsight and GeoInsight Report prepared for the site, a copy of this report is reproduced in **Appendix B.**

7.0 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 "snap shot" 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.

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

Year	Information
1873	The site is a triangular plot of land with no features within its boundaries. There is a row of trees along the existing Old Shoreham Road, a well 20m southeast of the site and railway tracks 60m southwest from the site. There are cottages and possibly residential dwellings 100m southeast and more development 230m southeast (Swiss Gardens) and 250m northwest, with surface water features namely West Lake and East Lake 180m southeast.
1896	There are new buildings established on site and 80m southwest, but the uses cannot be determined. There is a cemetery 240m northeast from the site and a footpath 40m north of the site running northwest – southeast.
1898	The site's boundaries encompass three buildings in the southern half. There has been a tank established 40m northwest of the site.
1909	The site remains unchanged. There is a tramway that crosses the southern boundary of the site towards the northwest for an additional 200m.
1912	Two buildings have been removed from the site, but one building remains in the southern corner for a tramway office.
1931	The mapping is incomplete, with no information available after 250m, with that in mind there have been no discernible changes in the region. The tramway on site has been removed and possible residential dwellings have been developed along Old Shoreham Road, opposite and west of the site.
1933	There is a fenced garden in the northern half of the site within the boundaries. There are two additional buildings east of the site with unknown usage, with a row of residential dwellings further east of the site.
1948	The site remains unchanged. There is a new big building established immediately east of the site and additional long buildings northeast of the site with unknown usage.
1951	The building in the south corner of the site has been removed. The large building immediately east of the site is established as a nursery and the other developments northeast of the site are possible residential dwellings. There is a depository 90m southeast from the site and a laundry 200m south. The footpath north of the site has been converted to a road named Connaught Avenue.
1952	There have been no discernible changes to the site or the surrounding environs.
1953	The mapping is incomplete, with no information until 70m west. With this in mind, there have been no discernible changes within the surrounding environs.
1963	There have been no discernible changes to the site or the surrounding environs.
1965	The mapping is incomplete, with no information available until 30m south. With this in mind, there have been no discernible changes within the surrounding environs.
1969	There have been no discernible changes to the site or the surrounding environs.
1974	There is a new building on site located centrally within the boundaries which is labelled as a garage. Off site, the nursery has been removed and replaced with a collection of buildings and additional roads have been built immediately east of the site to access the rear of the row of residential dwellings. An engineering works is located 180m south, a metal works is located 200m south and an unspecified works is located 250m south. Electricity substations are located 200m northeast and south.

1980	The new building on site can possibly be established as a garage but the road name immediately east of the site is uncertain as the mapping is incomplete between 0-10m east of the site and after 40m south and 70m west from the site.
1982	The site remains unchanged. The road immediately east of the site can be established as Orchard Close.
1985	The site remains unchanged. The ex-nursery building 10m northeast from the site has been redeveloped into residential dwellings, enclosed by Orchard Close and an electricity substation is located 150m southeast.
1994	The mapping is faded and difficult to interpret, therefore should be disregarded for this study.
2002	There have been no discernible changes to the site or the surrounding environs.
2010	There have been no discernible changes to the site or the surrounding environs.
2014	There have been no discernible changes to the site or the surrounding environs.

Table 2: Historical Mapping Review

Therefore, from the historical maps we can consider the following:

On site sources of possible contamination;

- Tramway sidings;
- Garage.

Off-site sources of possible contamination;

- Nursery (10m northeast);
- Unspecified tank (40m northwest);
- Tramway sidings (continued from within site to 200m northwest);
- Railway tracks (60m southwest);
- Laundry (200m south);
- Works (180-250m south);
- Electricity substations (150m southeast, 200m northeast and south).

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

8.0 Walkover Survey

The site was visited by YE on September 14th 2018. The weather was dry and sunny at the time.

Access
The site is accessible from Old Shoreham Road and entry through the centre with approximately 3.5m height allowance.

Topography
Both on and off site the ground is relatively flat with shallow gradients.

Vegetation
The site is bordered with vegetation outside the east wall next to Orchard Close and small weeds on the public alleyway on the northwest facing wall. There are trees in the southern, northeast corner and the midpoint of the east facing wall.

Buildings and Structures / Floor Covering

There are two structures located on site, the primary structure being the main storage and working area facing Old Shoreham Road is currently undergoing renovation and has two floors. It is of brick build with a concrete base, a steel frame and a slate and wooden rafting roof on the first floor, and a flat tar and concrete roof with pockets of sun-roofs for the ground floor. The other structure on site is a spare storage area made of bricks with a concrete base and concrete flat roof.

Surface Permeability / Ground Covering

It is estimated that approximately 95% of the site is impermeable tarmac and concrete, with 5% comprising soft landscaping and permeable soil running parallel with the site boundaries.

Drainage Features

The only drainage feature was in the staff toilets and the kitchenette.

Other Services

It was observed that the site has access to water and electric.

Surrounds

The site neighbour's residential properties with respective gardens to the north, south and west, with a metal structure considered to be commercial to the east of the site.

Direction	Description of Site boundary
North	Fenced residential garden and some overgrown shrubs.
East	Garden shrubs between site boundary wall and Orchard Close, one large tree.
South	Old Shoreham Road and a small tree in residential garden.
West	Public alleyway with small weeds and residential dwelling.

Table 3: Summary of site boundaries

Direction	Description of Surrounding Land Use
North	Residential dwellings with respective garden area.
East	Orchard Close and residential dwellings.
South	Respective garden areas to a row of residential dwellings and Old Shoreham Road.
West	Respective garden areas to a row of residential dwellings.

Table 4: Summary of Surrounding Land Uses

Potentially Contaminative Land Uses

On site sources:

- None identified.

Off site sources:

- None identified.

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

9.0 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.

10.0 Contaminant Sources

On Site Sources

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

- Tramway sidings;
- Garage.

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

- None identified.

The following possible on site sources have been identified from the EnviroInsight and GeoInsight:

- Tramway sidings;
- Vehicle repair and service centre.

The following contaminants are potentially associated with these sources:

- Heavy Metals;
- TPH and PAH;
- VOCs and SVOCs;
- PCBs;
- Potential asbestos;
- Ground gas – methane and carbon dioxide, from decomposition of organic carbon in Made Ground/infilled material associated with potential considerable depth of Made Ground on site and from the potential for hydrocarbon spillages which could volatilise in the subsurface of the site.

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:

- Nursery (10m northeast);
- Unspecified tank (40m northwest);
- Tramway sidings (continued from within site to 200m northwest);
- Railway tracks (60m southwest);
- Laundry (200m south);
- Works (180-250m south);
- Electricity substations (150m southeast, 200m northeast and south).

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 off site sources have been identified from the GeoInsight and EnviroInsight:

- Unspecified tank (29m, 35m northwest).

The following contaminants are potentially associated with these sources.

- Heavy metals;
- PAH and TPH;
- VOCs and SVOCs;
- Pesticides;
- PCBs;
- Ground gas – methane and carbon dioxide, from decomposition of organic carbon in Made Ground/infilled material associated with potential considerable depth of Made Ground on site and from the potential for hydrocarbon spillages which could volatilise in the subsurface of the site.

11.0 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
Tramway sidings	On and Off site	Potential for asbestos from brake linings as well as fuels and PCBs.
Vehicle repair garage	On site	Potential for TPH and PAH, heavy metals and VOCs and SVOCs.
Nursery	Off site	Potential contamination for a wide range of pesticides, asbestos and different types of fuels to heat glasshouses.
Unspecified tank	Off site	Potential contamination from hydrocarbons from spillage and leakage. However, the distance from the site reduces the risk.

Table 5: Sources

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 (Undifferentiated) Aquifer within the superficial deposits and a Secondary (A) Aquifer within the bedrock underlying the site. The nearest groundwater and potable water abstraction licence is 499m northwest for drinking, cooking, sanitary, washing, commercial, industrial and public services. There are no surface water abstraction licences within 2000m. In addition, the nearest surface water feature is 10m east for a dock, there are no river networks within 500m of the site and the site is not within a source protection zone.
Plant (species and uptake) and Wildlife	Various	Attributes will be influenced by factors such as relative quality, scale, rarity and substitutability.

Table 6: Receptors

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 7: Pathways

12.0 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 'commercial'.

13.0 Preliminary Conceptual Site Model

Contaminant Source	Pathways	Receptor	Potential Severity	Probability of Risk	Level of Risk	Justification
On Site: Historical garage use possibly containing elevated metals, other inorganics and 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/ Moderate	Despite the historical tramway and garage on site, direct contact is not likely between future residential occupiers/visitors and contaminants in the shallow soil as the proposed development does not contain any soft landscaping areas. However, there is a risk of vapour intrusion.
		Construction Workers	Medium	Likely	Moderate	If groundworks are to occur during the redevelopment, 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	Low Likelihood	Low/ Moderate	A low to moderate risk is assessed given the continued warehouse/storage site use and the lack of potable water abstraction proximal to the site. The site is underlain by a Secondary (Undifferentiated) Aquifer within the superficial deposits and a Secondary (A) Aquifer within the bedrock underlying the site. The nearest groundwater and potable water abstraction licence is 499m northwest for drinking, cooking, sanitary, washing, commercial, industrial and public services. There are no surface water abstraction licences within 2000m. In addition, the nearest surface water feature is 10m east for a dock, there are no river networks within 500m of the site and the site is not within a source protection zone.
	Permeation of water pipes	Construction materials, future end users and site visitors	Medium	Likely	Moderate	Hydrocarbons, especially aromatics are known to permeate plastic pipes. Provision of water supply pipes and connectors formed from proprietary “barrier pipe” materials (eg polyethylene-aluminium-polyethylene) may be required by the water supply company.
	Uptake	Plant and Wildlife	Mild	Low Likelihood	Low	A low risk is assessed as there are no indicated areas of soft landscaping on the proposed site plans.
On Site: Asbestos at/near ground surface from tramway sidings.	Inhalation of fibres in airborne dust	Future end users and site visitors	High	Low Likelihood	Low	Likelihood is considered to be low as although the site walkover did not identify any potential asbestos containing materials (ACMs), the commercial history of the site creates potential for asbestos contamination. An asbestos survey should be undertaken prior to investigative works proceeding.
		Construction Workers	High	Low Likelihood	Low	Despite the lack of identified ACMs during the walkover, safe working practices should be implemented and appropriate personal protective

						equipment (PPE) should be used to mitigate any potential risk from asbestos in soils.
On Site: Ground Gases (CH4, CO2) from on site Made Ground.	Gas migration and build up within buildings (explosion/ asphyxiation risk)	Future end users and building structures.	High	Low Likelihood	Low/ Moderate	A low to moderate risk is given despite the historical garage on site, given that the hardstanding is to be retained across the site and given the continued workshop/storage site use on the ground floor. Current guidance indicates that Made Ground is generally classified as low risk in terms of potential for gas generation.
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	Mild	Low Likelihood	Low/ Moderate	Given the variable permeability of the underlying geology and hydrogeology, there would be a moderate risk for the leaching of contaminants, however the risk is reduced given the lack of potentially contaminative activities proximal to the site that could cause a risk for contamination on site.
	Inhalation of vapours	Future end users and site visitors	Medium	Low Likelihood	Low/ Moderate	A low to moderate level of risk is assessed due to the lack of potentially contaminative land uses/activities within proximity to the site that could pose a potential risk to the site.

Table 8: Preliminary Conceptual Site Model

14.0 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.

15.0 Recommendations

15.1 Consultees

We would recommend that this report be forwarded to the relevant Local Authority Environmental Health and Planning Department prior to the proposed site investigation works commencing to seek their comments and subsequent approval.

15.2 Groundworks Watching Brief

During construction works visual and olfactory appraisal of the underlying soils should be made. 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. This material should be stockpiled separately and tested prior to its appropriate removal off site or re-use as necessary.

If any landscaping materials are to be imported on site they should be tested to check that they are suitable for the intended use. Clean, uncontaminated rock, subsoil brick rubble, crushed concrete, ceramics and topsoil only should be permitted as infill material.

15.3 Soakaways

Soakaways are for the disposal of clean uncontaminated surface water only and must not be constructed in contaminated land, or land suspected of having contamination present.

15.4 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.

15.5 Asbestos Survey

We would recommend that an asbestos survey is carried out on site, prior to construction works proceeding. If any asbestos containing material (ACMs) are identified these will need to be dealt with in accordance with current guidance.

15.6 Mining

Given the historic nature of mining activities identified to have taken place on site, it is recommended that a mining search is undertaken to establish what risks these features may pose to the study site.

In addition, this mining report and risk assessment may dictate whether a more onerous site investigation is required, to that outlined, as it will provide information on the extent of the workings present, and their depth in relation to the water table.

16.0 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 are they based and are relevant only to the purpose for which the report was commissioned.

Information reviewed should not be considered exhaustive and has 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.

The 'vicinity' of the site for the purposes of the report, is defined as locations situated within an approximate 250m radius of the site, although certain source of contamination and/or sensitive targets further than 250m of site have also been included.