SYNTEGRA CONSULTING

Phase I Desk Top Study Report

830 Uxbridge Road, Hayes, UB4 0RR

Ref: 17-3077

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1. Introduction

Background

This report has been prepared to support the planning application for a proposed residential-led development at the site of the existing Adam and Eve Public House, 830 Uxbridge Road, Hayes, UB4 0RR.

This report is required to determine potential geo-environmental considerations associated with the development of the land, including refurbishment of the existing building and the erection of new dwellings to comprise a total of nineteen residential units.

Objectives

The objectives of the Phase I Geo-Environmental Site Assessment are to:

- Review historical plans, geology, hydrogeology, site sensitivity, flood-plain issues, mining records and any local authority information available in order to complete a Desk Study in line with the Environment Agency (EA) document "Model Procedures for the Management of Contaminated Land (Contaminated Land Report 11 (CLR11))";
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and off-site receptors; and,
- Provide a factual and interpretative report relating to the desk study and provide preliminary recommendations on any potential development issues with particular consideration of residential, construction worker and environmental receptors.

Sources of Information

Background information was sought from the following sources:

- Groundsure Environmental Database Search (GS-3822611);
- Historical Ordnance Survey Mapping (1866 – 2014);
- EA Groundwater Vulnerability Map (www.environment-agency.gov.uk/wiyby); and,
- British Geological Survey Map Sheet 255, Beaconsfield, Solid & Drift Edition at a scale of 1: 50,000.

Risk Classification

This report utilised the available data to classify the site on the basis of its likely contaminated land liability and potential for geotechnical constraints in relation to the property development. The risk classification definitions are summarised in Table 1.

Table 1 Risk Classification Definitions

Risk	Definition
Low	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property
Low-Moderate	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of a future redevelopment of the site etc.
Moderate	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or undertake further environmental improvements. Redevelopment of the site will likely require further site investigation
Moderate-High	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment including intrusive ground investigations
High	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine to level of risk and associated liability

Limitations

The limitations of this report are presented in Appendix 1.

2. Site Setting

Site Details

Site Address	The Adam and Eve Public House, 830 Uxbridge Road, Hayes, UB4 0RR
National Grid Reference (m)	509962, 181468

All acronyms used within this report are defined in the Glossary presented in Appendix 2.

Current Site Use

Site Description

The area of investigation is located approximately 1km east of Heathrow Airport on an irregular shaped parcel of land approximately 0.25 hectares in size, located just to the north of Uxbridge Road. The site address is the Adam and Eve Public House, Uxbridge Road, Hayes, UB4 0RR. Site access was via an asphalt road joining Uxbridge Road to the south of the site.

At the time of the walkover, the site was divided into two (2no.) separate land uses. The first site use was the Adam and Eve Public House located within the southern area of the site fronting onto Uxbridge Road. The building comprised an irregular shaped two-storey brick built public house. The building was in a generally good visual state of repair with no significant aesthetic damage noted. Adjoining the public house to the north was a single storey brick built function room, also in a generally good visual state of repair. To the south of the Adam and Eve public house, adjacent to the main entrance, an area of outside seating area was present with multiple tables. A boiler room was present within the interior of the public house, housing a disused boiler with two (2no.) yellow water tanks.

The second site use, located within the north of the site comprised Heathrow General Cars, an automobile sales centre, and was segregated from the rest of the site by a large white lockable gate. This area of the site comprised a single one-storey brick built rectangular office unit utilised as the sales room for Heathrow General Cars. This building was in an overall good visual state of repair with no obvious visible damage noted.

Externally the southern site was predominantly capped by hardstanding, with an asphalt road orientated north to south located on the eastern boundary of the site leading onto Uxbridge Road, which served as an access road to a neighbouring site to the north. The condition of the asphalt surfacing was in an overall good state of repair with no visible scarring or deterioration. Within the north eastern area of the southern site a car parking area was present, surfaced with gravel over asphalt hardstanding. Adjacent to the public house an area of block paving was noted to be damaged with entire paving blocks removed and broken. Across the seating area to the south of the site, hardstanding comprised a pinkish red asphalt material with visible scarring orientated north to south. The majority of the surfacing within this area was in a good state of repair, however the area adjacent to the site boundary to the south showed signs of extensive wear.

The area of the site utilised by Heathrow General Cars, the northern area of the site was surfaced by asphalt hardstanding. The condition of the hardstanding was in a relatively good state of repair, with notable potholes located within the north-western area of the site. The main site activities were the parking of vehicles for sales purposes with an area within the western portion of the site utilised as a cleaning bay, where the vehicles would be sprayed down and washed.

Surface water was present within the Heathrow General Cars area of the site associated with the deteriorated areas of hardstanding.

Onsite vegetation within the southern site was relatively devoid comprising a couple mature coniferous trees located within the central eastern area of the site and a single mature deciduous tree located within the south-eastern corner of the site.

The site was bound to the north by a metal mesh fence with commercial units beyond. The eastern boundary of the site was marked by a brick built wall, a wooden fence and the adjacent building. The south of the site was bound by a low picket fence segregating the exterior seating area of the Adam and Eve public house from the neighbouring Uxbridge Road to the south. The western boundary of the site was bound by the neighbouring building and associated car parking area in the southern part of the site, by residential properties accessed off Marshall Drive in the northern part of the site.

A selection of site photographs is presented within Appendix 3.

Hazardous Materials Storage

Hazardous materials were noted within the north-western area of the site during the site walkover within the area utilised by Heathrow General Cars. The materials identified included a mixture of industrial cleaning products which were observed to be stored in containers ranging from <1 litre to 25 litres in volume and were used for cleaning vehicles prior to display.

Potential Asbestos Containing Material (PACM)

No PACMs were noted during the site walkover. Anecdotal evidence from an onsite representative suggested that an asbestos survey had been undertaken approximately two (2no.) years prior and that asbestos containing materials had been removed from the interior areas of the site. Ahead of any refurbishment works reference should be made to the survey to confirm the extent of materials removed and to confirm the type and location of any asbestos containing materials still present within inaccessible parts of the building.

Waste Storage

Waste storage was identified within the centre of the site adjacent to the public house, along the east of the building. This was noted to comprising multiple recycling and general waste bins. Within the area of the site utilised by Heathrow General Cars a small heap pile of debris was present, and included a vehicle exhaust pipe.

Surrounding Area

The surrounding land uses are summarised in Table 2.

Table 2 Surrounding Land Uses

Direction	Land Use
North	Private residential housing to the north
East	Commercial and car parking area with Warley Road and residential units beyond
South	A4020 Uxbridge Road with private residential housing beyond
West	Commercial units

3. Site History

Historical Development

A review of historical maps pertinent to the site and within 250m is summarised in Table 3. An electronic copy of mapping information can be provided upon request.

Table 3 Summary of Potentially Contaminative Historical Land Uses

Map Edition	Historical Land Use	
	On-Site	Off-Site
1866 (1:2,500)	Site boundary encompasses two (2no.) plots of land with the boundary between the two orientated north-west to south-east through the centre of the site The northern plot of land comprises an orchard with a small rectangular building located within the south-east corner The southern plot of land comprises three (3no.) adjoined rectangular buildings located within the western side of the plot identified as Adam & Eve Public House Within the north-eastern area of the southern plot two (2no.) buildings are located comprising a rectangular and 'L' shaped building. Access road falls within the eastern site boundary running south west to north east from the current Uxbridge Road	Road way orientated north-west to south-east located adjacent to the southern site boundary as present. Four adjoined building aligned along northern boundary Orchard located ~10m north of site Three (3no.) small ponds located~40m east Multiple large ponds located between ~30m – 175m south and south-east One (1no.) large pond located ~30m south-west. Rectory Farm with associated orchard located ~180m south-east. Surrounding area comprises open fields, with limited development along the current Uxbridge Road
1895 (1:2,500)	Orchard within the northern plot of the site no longer identifiable on mapping	Smithy identified ~50m west of the site
1914 (1:2,500)	The northern plot remains unchanged The southern plot redeveloped within the north-eastern corner with prior buildings replaced with five (5no.) small rectangular buildings	Adjoined buildings along northern boundary now noted to comprise an Engineering Works Tramline identified along adjacent road way adjacent to the southern site boundary
1935 (1:2,500)	No significant change identified	Engineering Works to the north-east expanded to comprise larger irregular building adjacent to the north of the site Residential development in surrounding area with multiple large ponds located between ~30m-175m south and south-east no longer identified on mapping

Map Edition	Historical Land Use	
	On-Site	Off-Site
		The large pond located ~30m south-west no longer identified on mapping. The three (3no.) ponds located ~40m to the east no longer identified on mapping. Smithy located ~50m west of the site no longer identified on mapping. Rectory Farm (~180m south-east) redeveloped and now identified as Belmore Farm. Hayes House Hotel identified ~200m west of the site. Moderate housing development to the south-west, south and north-east.
1940 (1:2,500)	The site area now comprises four (4no.) separate plots of land Across the northern plot of land no significant changes are noted The southern plot of land is redeveloped and divided into three (3no.) separate plots with one (1no.) located within the west of the site and one (1no.) located within the east of the site. The forth plot of land is located within the south of the site area adjacent to the road to the south Within the western plot of land a single rectangular building is located against the plot boundary to the east Within the eastern plot of land four (4no.) rectangular buildings are located against the plot boundary to the north Within the southern plot of land an irregular shaped building is located identified as the Adam & Eve Public House	Tramline adjacent to the south of the site developed into the A40/Uxbridge Road. Tramline removed Allotment Gardens identified ~160m south Hayes Hotel ~200m west no longer identified on mapping Significant housing development to the north and north and east of the site
1960-1965 (1:2,500)	Site area now comprises a single plot of land Adam & Eve Public House extension added to the north of the building Previous buildings located within the centre of the site replaced by a single small rectangular building within the	Orchard located to the north divided into two (2no.) orchard plots with Engineering Works dividing the two Tank identified ~37m north within Engineering Works located adjacent to the site Builders Yard identified ~245m north-west of the site

Map Edition	Historical Land Use	
	On-Site	Off-Site
	centre of the site against the eastern site boundary Four (4no.) small rectangular buildings located within the north-west of the site, potentially lock up garages	Allotment Gardens located ~160m south now identified as a playing field. Belmore Farm located ~180m south-east replaced by commercial units.
1968-1973 (1:1,250)	Erection of small rectangular building within the north of the site.	No mapping coverage to the north-west of the site. Addition Tank identified ~64m north-east within Engineering Works located adjacent to the north. Electrical Substation identified adjacent to the eastern site boundary. Electrical Substation identified ~140m south.
1975-1977 (1:2,250)	Poor mapping coverage.	Poor historical mapping coverage. Electrical Substation identified ~110m south-west.
1978 (1:1,250)	Poor mapping coverage.	Engineering Works adjacent to the northern site boundary redeveloped into a large rectangular building with residential units beyond. Orchards (2no.) located to the north no longer identified.
1981 (1:1,250	No significant change identified.	No mapping coverage to the north-west, north-east, east and south-east. No significant change identified to the south-west.
1991-1992 (1:1,250)	No significant change identified.	Electrical Substation identified ~100m east.
2002 (1:10,000)	No significant change from mapping detail.	No significant change from mapping detail.
2010 (1:10,000)	No significant change from mapping detail.	No significant change from mapping detail.
2014 (1:10,000)	Small rectangular building located within the north of the site no longer identified.	No significant change from mapping detail.

Historical Tank Database

The Groundsure Report identified three (3no.) records within 250m of the site. It should be noted that two (2no.) records relate to the same point located 37m north-east. Tank details are summarised below:

- Unspecified Tank, 37m north-east, dated 1964 - 1965; and,
- Unspecified Tank, 64m north-east, dated 1971.

Planning History

A review of on-line planning records held by the London Borough of Hillingdon Council was undertaken on the 25th April 2017. No environmentally pertinent information was obtained for the site or the immediate area.

4. Environmental Setting

Geology & Hydrogeology

The British Geological Survey (BGS) map for the site, Map Sheet 255, Beaconsfield, Solid & Drift Edition 1: 50,000, indicates that the site is underlain by the geological sequence, summarised in Table 4.

Table 4 Summary of Geological Sequence

Geological Unit	Classification	Description	Aquifer Classification
Superficial	Langley Silt Member	Clay and Silt	Unproductive Aquifer
Bedrock	London Clay Formation	Clay, Silt and Sand.	Unproductive Aquifer

Published BGS records for the area indicate that the site is underlain by superficial deposits of the Langley Silt Member, however it should be noted that superficial deposits are not indicated to be present beneath the majority of the site and only encroach onto the south-eastern most area of the site. It is therefore anticipated that bedrock deposits associated with the London Clay Formation are present directly beneath the majority of the site.

The site is not located within an area defined as a Groundwater Source Protection Zone. No potable or groundwater abstractions were identified within a 1km radius of the site.

Groundwater vulnerability data indicates that the site is underlain by deposits classified as having a High Leaching Potential.

According to the British Geological Survey, the subject site is not susceptible to Groundwater flooding.

Based on local topography and the location of surface watercourses it is considered that shallow groundwater, if present, will flow in a north-easterly direction towards the Yeading Brook, a secondary river.

Geotechnical Data

Geotechnical Data presented within the Groundsure report identified the ground conditions, as summarised in Table 5.

Table 5 Summary of Ground Conditions

Hazard	Designation
Shrink-Swell Clay	Low
Landslides	Very Low
Ground Dissolution	Negligible
Compressible Ground	Negligible
Collapsible Deposits	Low
Running Sand	Negligible

Mining

The site is not located within an area that is affected by coal mining or non-coal mining therefore, no Coal Authority coal mining report was obtained.

Hydrology

The Groundsure Report did not identify any surface water abstraction licenses within 1km radius of the subject site.

There are no surface water features within 250m of the subject site. No detailed river network entries are present within 500m of the subject site.

The Groundsure Report indicated that the site is not located within 250m of an area at risk from river or coastal flooding.

Radon Risk Potential

The Groundsure report indicated that the site is not located within a Radon Affected Area, as less than 1% of properties are above the action level. At this level, BRE publication BR211 indicates that no radon protective measures are required in the construction of new extensions or dwellings.

Industrial Land Uses

Data obtained from the Groundsure report indicated twelve (12no.) industrial land use entries within a 250m radius of the subject site, as summarised below:

- Electrical Substation - 2m south-east;
- Distribution & Haulage - 67m north-east;
- Secondhand Vehicles, Vehicle Repair, Testing and Servicing - 86m north-west;
- Electrical Substation - 104m south-west;
- Electrical Substation - 110m south-east;
- Electrical Substation - 125m south-west;
- Vehicle Parts and Accessories - 181m south-east;
- Electrical Substation - 241m north-west; and,
- Electrical Substation -247m south-east.

The additional two (2no.) land uses comprised an airport taxi hire and graphic design services.

The Groundsure report did not identify any petrol filling station entries within 500m of the site.

Sensitive Land Uses

Data provided within the Groundsure report did not identify any sensitive land uses within a 500m radius of the subject site.

Site Sensitivity Assessment

The site is considered to be located within a low sensitivity setting due to the following reasons:

- Underlying Unproductive Aquifer within Bedrock Deposits;
- Absence of Groundwater Abstraction Licenses within 1km of the site;
- Absence of Potable Water Abstraction Licenses within 1km of the site;
- Absence of Surface Water Features and River Networks within 500m of the site;
- Absence of Sensitive Land Uses within 500m of the site; and,
- Surrounding area includes residential dwellings with private gardens.

5. Consultation

Contaminated Land Officer

Contact was made with the London Borough of Hillingdon Council on the 25th April 2017 as to whether the council were aware of any environmental issues pertaining to the site. A response has yet to be issued to the information request, however, once a response has been received, and if environmentally pertinent an addendum to this report will be produced.

Review of the publicly accessible online contaminated land register held by the London Borough of Hillingdon Council identified a single contaminated land entry referring to New Years Green Lane Landfill Site, New Years Green Lane, Harvil Road, Harefield located approximately 8.0km north-west of the site

Landfill Sites and Waste Treatment Sites

The Groundsure Report did not identify any EA historic landfill sites, landfills or waste treatment sites within 250m of the site.

Potentially Infilled Land Sites

The Groundsure report identified one (1no.) potentially infilled land site on-site, relating to a pond dated 1882. A further twelve (12no.) entries have been identified within 250m radius of the subject site however two (2no.) of which relate to the same entry resulting in ten (10no.) separate potentially infilled land entries summarised below:

- Pond - 11m west, dated 1882;
- Pond - 20m east, dated 1894-1913;
- Pond - 22m south, dated 1894-1913;
- Pond - 23m south-west, dated 1865;
- Pond - 25m east, dated 1865;
- Pond - 27m south, dated 1897;
- Pond - 32m south-west, dated 1920;
- Pond - 44m east, dated 1882;
- Pond - 47m south, dated 1920; and,
- Pond - 151m south-east, dated 1938.

Regulatory Database

The information shown in Table 6 has been obtained from a commercially available environmental database. The summary table only includes records not otherwise detailed in the report.

Table 6 Summary of Groundsure Data

Factor	0-249m	250-500m	Details
Contaminated Land Register Entries and Notices	0	0	N/A
Authorised industrial processes (IPC/IPPC/LAPPC)	1	1	247m west – S Dry Cleaners, 980 Uxbridge Road, Hayes, Middlesex, UB4 0RL – Process: Dry Cleaning – Permit Type: Part B 304m north-west – Professional Dry Cleaners, 1044 Uxbridge Road, Hayes, Middlesex, UB4 0RJ – Process: Dry Cleaning – Permit Type: Part B
Fuel Stations Entries	0	0	N/A
Licensed radioactive substances	0	0	N/A
Enforcements, prohibitions or prosecutions	0	0	N/A
Discharge Consents	0	0	N/A
Pollution Incidents	0	0	N/A
Consents issued under the Planning (Hazardous Substances) Act 1990	0	0	N/A
Control of Major Accident Hazard (COMAH) sites	0	0	N/A

6. Conceptual Site Model

Initial Conceptual Site Model

In accordance with EA CLR 11 (2004) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), an initial Conceptual Site Model (CSM) has been developed to identify potential contamination sources, migration pathways and receptors within the study area. A residential end use has been adopted, given the proposed site development.

Contaminant Sources

On-site potential sources include the following:

- Made Ground associated with historic development of the site as an orchard and Public House;
- Car sales and vehicle washing area on northern area;
- Boiler room associated with Adam and Eve Public House;
- Orchard located within the northern area of the site dated 1866-1895; and,
- Potentially infilled land associated with on-site pond, dated 1882.

Off-site potential sources include the following:

- Historic Engineering Works Adjacent, dated 1914-1978;
- Tanks associated with the Historic Engineering Works, dated 1964-1971;
- Electrical Substation, 2m south-east;
- Historic Orchard, ~10m north, dated 1866-1978;
- Multiple Historic Potentially Infilled Ponds within surrounding area, dated 1866-1935;
- Historic Smithy, ~50m west, dated 1895-1935;
- Vehicle Repair, Testing and Servicing, 86m north-west;
- Vehicle Parts and Accessories, 181m south-east;
- Multiple Electrical Substations within surrounding area, 110-247m; and,
- Historic Builders Yard, ~245m north-west, dated 1960-1965.

Potential pathways include the following:

- Ingestion of contaminated soils;
- Dermal contact with contaminated soil;
- Inhalation of vapours, dust and fibres;
- Migration of ground gas and vapours into confined spaces; and,
- Vertical and lateral migration of contaminants;

Potential Receptors include the following:

- Future Site users; and,
- Controlled waters.

Construction workers are not considered to be a plausible receptor due to management of their exposure through the use of suitable personal protective equipment (PPE) and hygienic working practices as required under HSE / CDM regulations. Furthermore, the length of any exposure is considered to be very short in comparison to the criteria for which the adopted end use has been derived.

An Initial CSM has been prepared for the site and is presented within Table 7.

Table 7 Conceptual Site Model

Source	Contaminant	Potential Migration Pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Active/Inactive
On Site							
Made Ground associated with historic development of the site	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Ingestion	Future Site Users	Likely	Low	Low	**Potentially Active** – Further investigation required.
		Dermal Contact					
	Polycyclic Aromatic Hydrocarbons (PAH)	Ingestion	Future Site Users	Low Likelihood	Low	Low	
		Dermal Contact					
		Vertical and Lateral Migration	Controlled Waters	Low Likelihood	Low	Low	
	Total Petroleum Hydrocarbons (TPH)	Ingestion	Future Site Users	Low Likelihood	Low	Low	
		Dermal Contact					
		Vertical and Lateral Migration	Controlled Waters	Low Likelihood	Low	Low	
		Inhalation of Vapours	Future Site Users	Low Likelihood	Low	Low	
	Ground Gas (CO_2 & CH_4)	Vertical Migration	Future Site Users	Likely	Medium	Low/Medium	
	Asbestos	Inhalation of fibres	Future Site Users	Low Likelihood	Low	Low	
Vehicle sales and cleaning	TPH	Ingestion	Future Site Users	Low Likelihood	Low	Low	**Potentially Active** – Further investigation required.
		Dermal Contact					
		Vertical and Lateral Migration	Controlled Waters	Low Likelihood	Low	Low	
		Inhalation of Vapours	Future Site Users	Low Likelihood	Low	Low	
	Volatile Organic Compounds (VOC)	Ingestion	Future Site Users	Low Likelihood	Low	Low	**Potentially Active** – Further investigation required.
		Dermal Contact					
		Vertical and Lateral Migration	Controlled Waters	Low Likelihood	Low	Low	
		Inhalation of Vapours	Future Site Users	Low Likelihood	Low	Low	
Boiler room associated with Public House	PAH	Ingestion	Future Site Users	Low Likelihood	Low	Low	**Potentially Active** – Further investigation required.
		Dermal Contact					
		Vertical and Lateral Migration					
		Inhalation of Vapours					

Source	Contaminant	Potential Migration Pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Active/Inactive
	TPH	Ingestion	Future Site Users	Low Likelihood	Low	Low	**Potentially Active** – Further investigation required.
		Dermal Contact					
		Vertical and Lateral Migration					
		Inhalation of Vapours					
Orchard (Within northern site area, dated 1866-1978)	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Ingestion	Future Site Users	Low Likelihood	Low	Low	**Potentially Active** – further investigation required.
		Dermal Contact	Future Site Users	Low Likelihood	Low	Low	
		Vertical and Lateral Migration	Controlled Waters	Low Likelihood	Low	Low	
	PAH	Ingestion	Future Site Users	Low Likelihood	Low	Low	
		Dermal Contact	Future Site Users				
		Vertical and Lateral Migration	Controlled Waters	Unlikely	Low	Low	
Historic Pond (1882)	Ground Gas (CO_2 & CH_4)	Vertical Migration	Future Site Users	Low Likelihood	Severe	Medium	**Potentially Active** – further investigation required
Off Site							
Engineering Works (Adjacent to the north)	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	**Potentially Active** – further investigation required.
	PAH	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	
	TPH	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	
	VOCs	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	
Historic Tanks associated with Engineering Works adjacent to the north.	TPH	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	**Potentially Active** – further investigation required.

Source	Contaminant	Potential Migration Pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Active/Inactive
Electrical Substation (2m south-east)	Polychlorinated Biphenyls (PCB)	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	**Potentially Active –** further investigation required.
Historic Orchard (10m north, dated 1866-1978)	Metals	Lateral Migration	Future Site Users	Unlikely	Low	Low	**Inactive –** Based on local topography and the location of surface water features any lateral migration will be in a north-easterly direction away from the subject site. In addition, the use of PAHs would be very limited in scale. It is therefore considered that this source does not have the potential to impact the subject site.
	PAH	Lateral Migration	Future Site Users	Unlikely	Low	Low	
Multiple Potentially Infilled Land Areas within the vicinity of the site. – closest 11m west. (Ponds, dating 1866-1935)	Ground Gas (CO_2 & CH_4)	Lateral Migration	Future Site Users	Low Likelihood	Severe	Moderate	**Potentially Active –** Further investigation required.
Historic Blacksmith (10m west, dated 1895-1935)	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Lateral Migration	Future Site Users	Unlikely	Low	Low	**Inactive -** Based on the historic age of activity, any potential contamination would have diffused to a concentration not considered to have the potential to impact the subject site.
	PAH	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	
Vehicle Repair, Testing and	PAH	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	**Inactive –** Based on local topography and the location of surface water features any lateral migration will be

Source	Contaminant	Potential Migration Pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Active/Inactive
Servicing (86m north-west)	TPH	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	in a north-easterly direction away from the subject site. It is therefore considered that this source does not have the potential to impact the subject site.
Vehicle Parts & Accessories (181m south-east)	TPH	Lateral Migration	Future Site Users	Low Likelihood	Low	Low	**Inactive –** Based on local topography and the location of surface water features any lateral migration will be in a north-easterly direction away from the subject site. It is therefore considered that this source does not have the potential to impact the subject site.
Multiple Electrical Substations Within surrounding area (110m-247m)	PCB	Lateral Migration	Future Site Users	Unlikely	Low	Low	**Inactive -** PCB's have a very limited mobility and any contamination if present would be highly localised within the vicinity of the substation. Therefore, considering the distance from the sources to the subject site it is considered that these do not have the potential to impact the subject site.
Historic Builders Yard (245m north-west, dated 1960-1965)	TPH	Lateral Migration	Future Site Users	Unlikely	Low	Low	**Inactive –**Based on local topography and the location of surface water features any lateral migration will be in a north-easterly direction away from the subject site. It is therefore considered that this source does not have the potential to impact the subject site.

7. Conclusion

This report has been prepared to support the planning application for a proposed residential-led development at the site of the existing Adam and Eve Public House, 830 Uxbridge Road, Hayes, UB4 0RR.

The Phase I DTS has highlighted some potential areas of concern, as detailed in Table 8.

Table 8 Areas of Concern

Conceptual Site Model (CSM)
The CSM has identified potentially active pollution linkages, which if active, have the potential to present a significant risk to the identified receptors.
Recommendations
It is recommended that an intrusive investigation is undertaken to determine whether the identified potential pollution linkages are active. This could be secured through condition of any planning approval. The investigation should be undertaken in accordance with BS10175 and BS5930 and include the collection of soil samples with subsequent testing under UKAS accreditation and the installation and monitoring of groundwater and ground gas wells. Upon completion, a Tier 1 Risk Assessment should be prepared with the results presented in an interpretive report.

Appendix 1 - Limitations

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between the Consultant and the Client.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not be made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. The Consultant cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by the Consultant is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by the Consultant in this connection without their explicit written agreement there to by the Consultant.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

Appendix 2 - Glossary

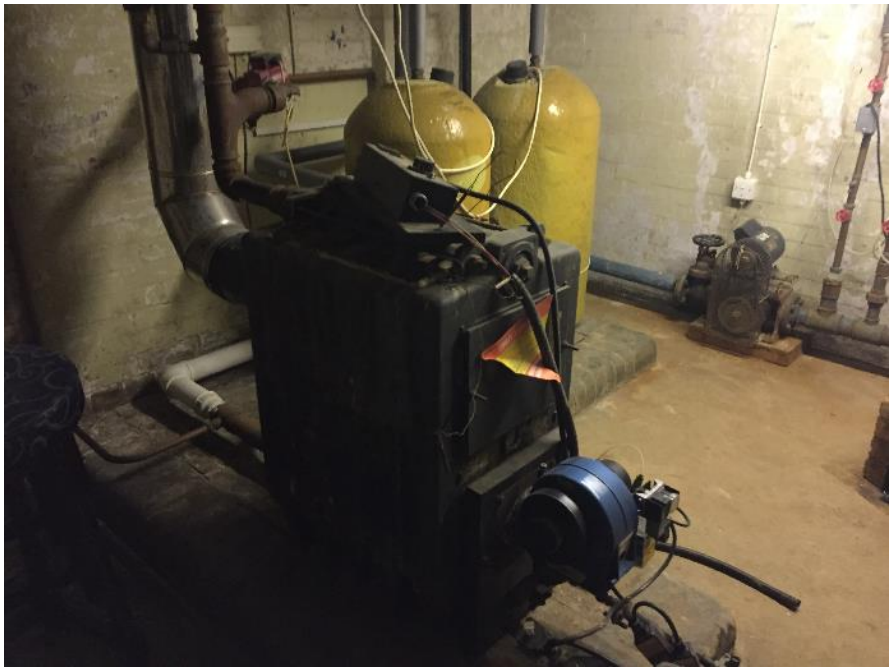
AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DWS	Drinking Water Standard
EA	Environment Agency
ICSM	Initial Conceptual Site Model
LBoB	London Borough of Barnet
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene)
PAH	Poly Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WTE	Water Table Elevation

UNITS

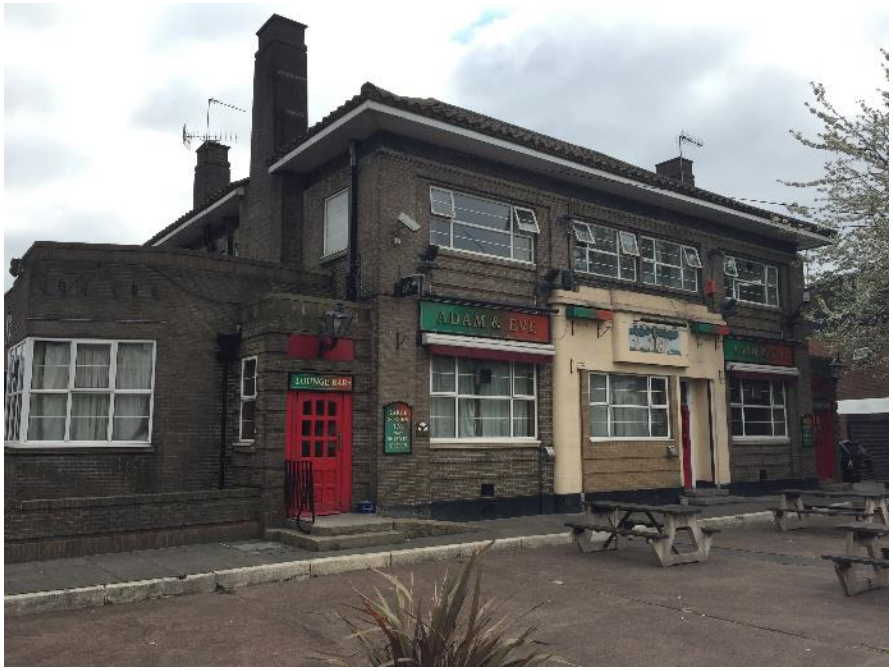
m	Metres
km	Kilometres
%	Percent
%v/v	Percent volume in air
mb	Milli Bars (atmospheric pressure)
l/hr	Litres per hour
µg/l	Micrograms per Litre (parts per billion)
ppb	Parts Per Billion
mg/kg	Milligrams per kilogram (parts per million)
ppm	Parts Per Million
mg/m^3	Milligram per metre cubed
m bgl	Metres Below Ground Level
m bcl	Metre Below Cover Level
mAOD	Metres Above Ordnance Datum (sea level)
kN/m^2	Kilo Newtons per metre squared
µm	Micro metre

Appendix 3 - Photographs

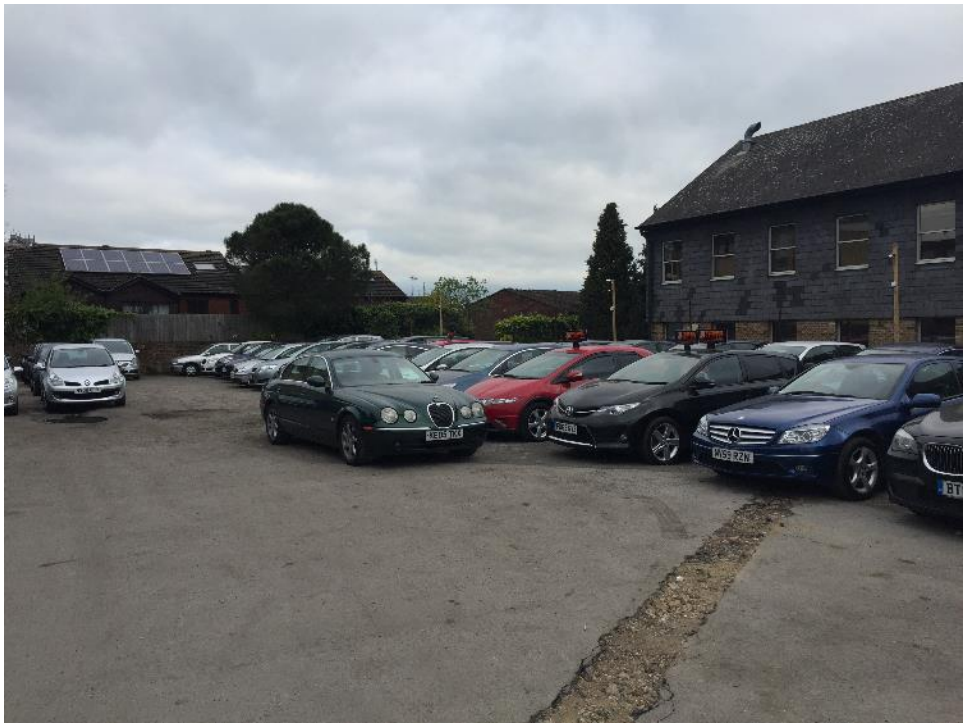
Photograph 1 – Interior of the basement of the Adam & Eve Public House, housing boiler room



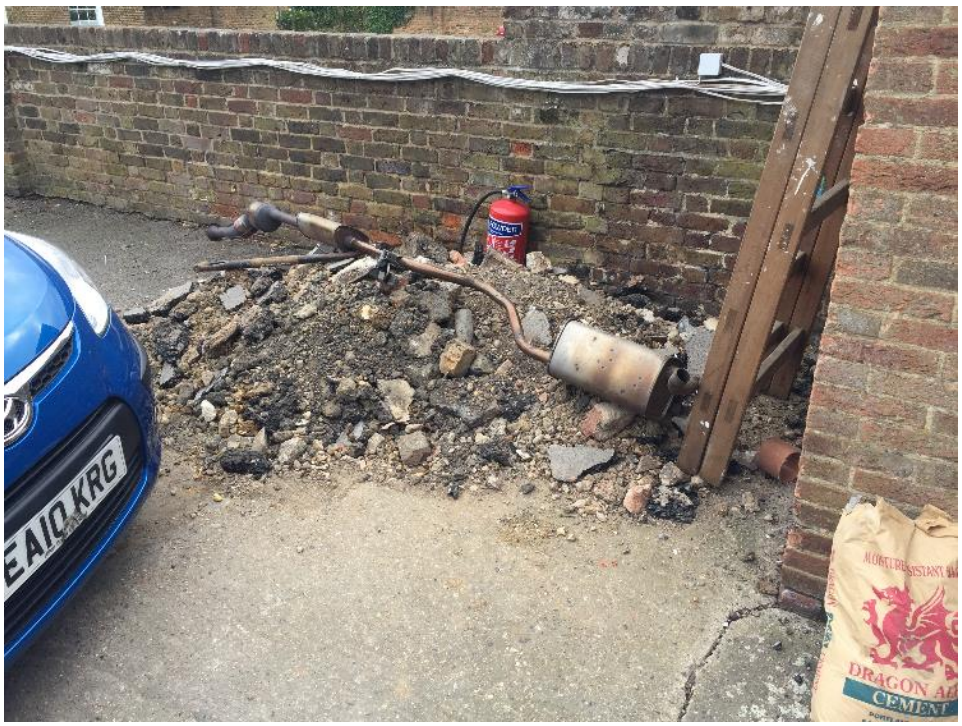
Photograph 2 – Orientated north-east showing the front exterior of the Adam & Eve Public house



Photograph 3 – Orientated north-west showing the northern area of the site with visible surface scarring.



Photograph 4 – Orientated north-east showing stockpile of debris and vehicle parts located within the northern area of the site.



Photograph 5 – Orientated south showing area utilised as a vehicle cleaning area located within the north of the site.