



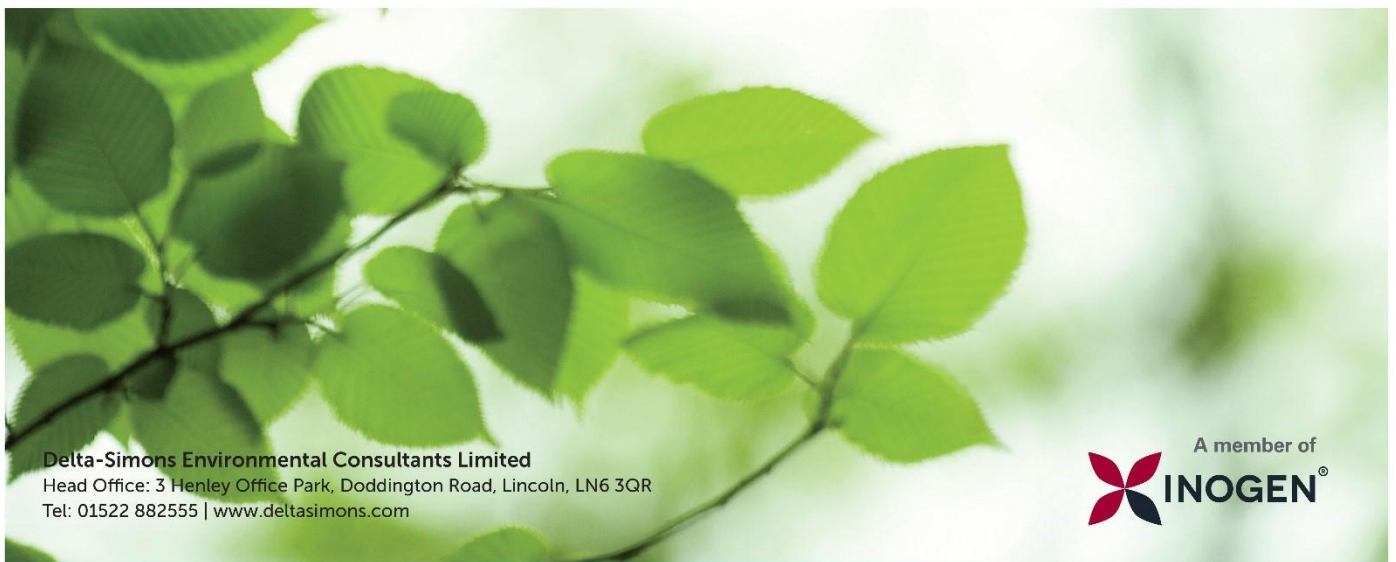
Preliminary Geo-Environmental Risk Assessment

Land at Stone Close, West Drayton, UB7 8JU

Presented to St James Place UK Plc c/o Orchard Street Investment Management LLP

Issued: November 2017

Delta-Simons Project No. 17-0685.01



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Report Details

Client	St James Place UK Plc c/o Orchard Street Investment Management LLP
Report Title	Preliminary Geo-Environmental Risk Assessment
Site Address	Land at Stone Close, West Drayton, UB7 8JU
Project No.	17-0685.01
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Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
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About us

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Specialising in Environment, Health & Safety and Sustainability, Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from eight locations - Lincoln, London, Leeds, Manchester, Norwich, Nottingham, Durham and Dublin - we employ over 70 environmental professionals, bringing experience from across the private consultancy and public sector markets.

Delta-Simons is proud to be a founder member of the Inogen® Environmental Alliance, enabling us to efficiently deliver customer projects worldwide by calling upon over 4,330 resources in our global network of consultants, each committed to providing superior EH&S and sustainability consulting expertise to our customers. Inogen® Environmental Alliance offers its clients more consultants, with more services in more countries than the traditional multinational consultancy.

Executive Summary

Site Use & Proposed Development	The Site comprises a vacant former vehicle body repair facility, with an associated former oil tank in the east, spray booths in the north, vehicle wash in the north, and remnant ancillary equipment. The proposed development for the Site comprises the demolition of the existing structures and the construction of a vehicle servicing facility including workshop areas, a MOT test bay, a tyre bay, parts storage area; customer reception and office area; and a drive through reception area.
Environmental Setting	Based on the available information, it is anticipated that the Site is likely underlain by a sequence of Made Ground; cohesive River Brickearth; granular and potentially cohesive Lynch Hill Gravel Member (Principal Aquifer); over London Clay (Unproductive Strata). The nearest surface water feature is the Grand Union Canal located approximately 230 m to the south of the Site and no sensitive water abstractions are listed within close proximity to the Site.
Contamination Potential	Historically, the Site remained largely undeveloped until 1965 mapping, where the Site is shown to be developed by an unspecified works, with a main unit in the centre of the Site and a smaller unit encroaching the north. By 1975 mapping, the Site is shown in its contemporary layout, which is denoted as an engineering works, and later as warehousing and works. Light industrial land use and landfilling has been identified in the surrounding area. Ground investigation of the wider area has identified relatively localised contamination.
Pollutant Linkage Assessment	Delta-Simons has completed a risk assessment based upon available information. Based on available information, the presence of localised contamination cannot be discounted. In the context of the proposed redevelopment, it is considered that the risk of significant possible pollutant linkages to exist at the Site is Low/Moderate.
Key Land Contamination Recommendations	It is recommended that a targeted environmental ground investigation is conducted in conjunction with a geotechnical investigation to verify design requirements for the proposed development. The identified asbestos containing materials within the current units should be removed from the Site prior to / during the demolition activities.
This is intended as a summary only. Further detail and limitations of the assessment is provided within the main body of the Report.	

Table of Contents

1.0 INTRODUCTION	1
1.1 Appointment.....	1
1.2 Context & Purpose	1
1.3 Scope of Works	1
1.4 Limitations.....	2
2.0 SITE CONTEXT & DATA REVIEW.....	3
2.1 Site information.....	3
2.2 Environmental Setting	4
2.3 Historical Use of the Site & Surrounding Area	5
2.4 Environmental Database Review	6
2.5 Planning Review / Regulatory Enquiries	7
2.6 Previous Reports	8
3.0 CONCEPTUAL SITE MODEL	10
3.1 Introduction	10
3.2 Potential Contamination Sources	10
3.3 Potential Receptors	10
3.4 Potential Pathways	11
4.0 CONCLUSIONS & RECOMMENDATIONS	14
4.1 Geo-Environmental Considerations	14

Figures

Figure 1 Site Features Plan

Appendices

Appendix A	Limitations
Appendix B	Risk Definitions
Appendix C	Proposed Development Plans
Appendix D	Site Photographs
Appendix E	Historical Maps
Appendix F	Landmark Envirocheck Report
Appendix G	Planning Information
Appendix H	Previous Reports

1.0 Introduction

1.1 Appointment

Delta-Simons Environmental Consultants Limited (“Delta-Simons”) was instructed by St James Place UK Plc c/o Orchard Street Investment Management LLP (the “Client”) to prepare a Preliminary Geo-Environmental Risk Assessment for vacant commercial properties located off Stone Close, West Drayton, UB7 8JU (the “Site”).

1.2 Context & Purpose

The aim of this report is to identify likely environmental issues associated with soil and groundwater conditions that may affect the proposed development of the Site. This report is designed in accordance with ‘the Model Procedures for the Management of Land Contamination (CLR 11)’ and the relevant Planning Practice Guidance (Land Affected by Contamination) <https://www.gov.uk/guidance/land-affected-by-contamination>.

The proposed development for the Site is the demolition of existing structures and the construction of a new vehicle servicing garage.

1.3 Scope of Works

- ▲ Review of the environmental setting of the Site, including the current use / status of the Site and surrounding area, and review of the geology, hydrogeology and hydrology;
- ▲ Review of regulatory information relating to the Site (A Landmark Envirocheck Report for the Site (Ref. 145679894_1_1), dated November 2017);
- ▲ Review of the historical activities of the Site and surrounding area from historical maps included as part of the Envirocheck Report;
- ▲ Review of the online planning records for the Site;
- ▲ Review Coal Authority (CA) online data;
- ▲ Consult and review information from the Local Authority in relation to Part 2A of the 1990 Environmental Protection Act;
- ▲ Complete a Site reconnaissance by undertaking a visual inspection of readily accessible areas of the Site;
- ▲ Review of provided relevant third-party reports relating to the Site or surrounding area;
- ▲ Develop an outline Conceptual Site Model and undertake a Preliminary Risk Assessment with respect to potential contamination focussed on the proposed land use; and
- ▲ Provide commentary on potential land contamination constraints in the context of the proposed development.

In completing this Assessment, Delta-Simons has utilised the following data sources and third-party information:

- ▲ British Geological Survey (BGS) data;
- ▲ Environment Agency (EA) online data;
- ▲ Information provided by the London Borough of Hillingdon Council; and
- ▲ Information provided by the Client team, including:
 - Phase I Environmental Assessment by WSP dated November 2010;
 - Phase II Environmental Assessment by WSP dated November 2010;
 - Amiantus Environmental Consultants Ltd. - Pre-Refurbishment & Demolition Asbestos Survey - Unit 501 (ref: J001056 dated April 2017); and
 - Amiantus Environmental Consultants Ltd. - Pre-Refurbishment & Demolition Asbestos Survey - Unit 504 (ref: J001057 dated April 2017).

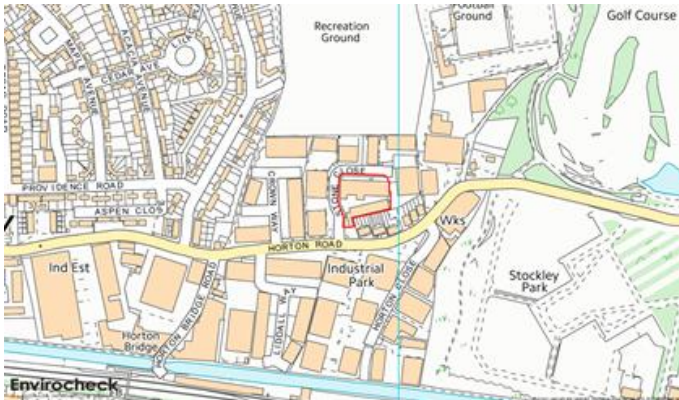
1.4 Limitations

The standard limitations associated with this assessment are presented in Appendix A. In addition, there are the following specific limitations that apply to this assessment:

- ▲ The Consultant undertaking the Site inspection has observe for evidence of invasive species, particularly Japanese Knotweed. It should be noted however that the Consultant is not a trained ecologist and a separate survey undertaken by an experienced Ecologist should be completed to provide a robust assessment; and
- ▲ The report includes a preliminary assessment for the potential for radon gas hazards. A detailed radon assessment falls outside of the scope of this report, and the requirement for radon mitigation measures in the proposed development should be identified separately to the satisfaction of the London Borough of Hillingdon Council Building Control.

2.0 Site Context & Data Review

2.1 Site information

 Contains OS data ©, Crown Copyright and Database Right (2017) Contains Data from, © 2017 Landmark Information Group Ltd		 Contains Data from, © 2017 Getmapping Plc Contains Data from, © 2017 Landmark Information Group Ltd	
Site Location		Current Site Layout	
Co-ordinates	Centred approximately at National Grid Reference 506950, 180320.	Elevation	31 m AOD
		Area	0.47 Ha
Site Location	The Site is located off Stone Close, in the north of West Drayton.		
Proposed Development Description	The proposed development for the Site comprises the demolition of the existing structures and the construction of a vehicle servicing facility including workshop areas, a MOT test bay, a tyre bay, parts storage area; customer reception and office area; and a drive through reception area. The current development plan is provided as Appendix C.		
Current Site Use	Delta-Simons conducted a Site visit on 17th November 2017. A relevant Feature Plan is included as Figure 1 and a photographic log is presented as Appendix D. Pertinent information that was observed or reported on-Site is summarised as follows: ▲ The Site comprises two vacant light industrial units with integral office space, service yard; and limited soft landscaping. Anecdotal evidence and observations on Site indicate that the Site's former use was associated with vehicle body repairs; ▲ The Site was secured by metal fencing and barriers, preventing vehicle access to the Site. A manual entrance gate was present in the south-west of the Site providing access to the southern car park area; an inoperative motorised gate was present at the western boundary providing access to the central service yard; and locked bollards were present at the northern boundary providing access to the northern yard area. Concrete security blocks were placed at each access point, in addition, members of the public were noted to be parked around the whole western and northern boundaries of the Site preventing access from Stone Close; ▲ A compressor room was present on the northern elevation of the northern unit; ▲ A possible interceptor and suspected former plant housing (wooden enclosure on the northern elevation) was also present to the north of the northern unit;		

	▲ An oil tank was present at the eastern elevation of the southern unit. The tank was situated within a bund and no evidence of the loss of product was observed in the area. The tank fill point was present to at the northern elevation of the southern unit, with the pipework running above ground on the inside of the unit to the tank. Minor staining on the wall was observed at the fill point; ▲ Four spray booths were present in the south of the northern unit, ▲ A former vehicle wash was also present in the north-eastern area of the northern unit; ▲ No evidence of underground tanks such as vent pipes or former dispensing pumps were observed; and ▲ No obvious evidence of Japanese Knotweed was observed.	
Current Surrounding Area	North	Light industrial units.
	East	Light industrial units and residential housing.
	South	Residential housing.
	West	Light industrial units.

2.2 Environmental Setting

Published Geology	From the British Geological Survey (BGS) mapping provided as part of the Envirocheck® Report, the Site is indicated as being underlain superficial Lynch Hill Gravel Member (sand and gravel) over the solid geology of the London Clay (clay, silt and sand). The London clay is anticipated to be underlain by Reading Beds and Chalk at depth. The Site and wider area is shown to be situated upon Made Ground.
Specific Ground Conditions	A previous ground investigation report produced by WSP in 2010 for a wider area (discussed in Section 2.6) indicates the following geological sequence: ▲ Made Ground, comprising variable granular and cohesive materials with inclusions of brick, concrete, wood, flint, clinker, coal and ash; to depths of between 0.8 and 5.65 m bgl (proven to 2.4 m on Site); ▲ Discontinuous River Brickearth comprising clayey silt ranging in thicknesses of between 0.8 and 1.0 m; ▲ Sandy and gravels and gravelly clays (with cohesive materials identified in the borehole on Site); and ▲ London Clay was encountered in two boreholes off Site at 6.0 to 6.2 m bgl. It is noted that London Clay was not encountered within the drill depth of 4.2 m in the borehole on Site. BGS borehole record TQ08SE235 located 83 m to the south-west of the Site indicates that the London Clay is present to 34 m bgl, with the Reading Beds present to 57 m bgl.
Hydrogeology	The EA classify the superficial deposits (Lynch Hill Gravel Member) as a Principal Aquifer and the bedrock (London Clay) as Unproductive Strata.

	The Chalk at depth beneath the Site are understood to be classified as a Principal Aquifer, however, this is not considered to be at risk of impact from contamination at the Site given the thickness of the low permeability London Clay. The EA data also indicates that the Site is not in a designated groundwater Source Protection Zone. According to the Envirocheck® Report, the closest groundwater abstraction to the Site is listed 478 m to the east of the Site associated with 'make-up or top up water' at a business park. A previous ground investigation report produced by WSP in 2010 for the wider area, indicates that groundwater was recorded at depths ranging from 1.31 m to 4.91 m bgl.
Hydrology	The nearest surface water feature is the Grand Union Canal located approximately 230 m to the south of the Site (which is likely to be lined). An unnamed stream / drainage ditch is also listed approximately 470 m to the east. According to the Envirocheck Report, there are no licensed abstraction records from surface water located within 500 m of the Site. There are no discharge consents or pollution incidents to controlled waters listed within 250 m of the Site.
Coal Mining	Reference to the Coal Authority on-line viewer indicates that the Site is not with a Coal Mining Reporting Area, and is not within a Development High Risk Area. Consequently, a Coal Mining Risk Assessment (CMRA) is unlikely to be required under the planning regime.
Radon Gas	The Site lies within an area where less than 1% of homes are above the National Radiological Protection Board (NRPB) recommended "action level" for radon. The BGS National Geoscience Information Service indicates that no radon protective measures are necessary in the construction of new buildings at the Site.

2.3 Historical Use of the Site & Surrounding Area

Approach	The historical development of the Site and surrounding area has been assessed through a review of available historical OS maps and Google Earth historical satellite imagery. A summary of the key historical Site uses and developments in the surrounding area is presented below. Copies of pertinent historical maps are included as Appendix E.
Historical Features On-Site	The Site appears to have been in agricultural use until 1960 mapping where a wider unspecified feature encroaches the west of the Site. By 1965 mapping, the Site is shown to be developed by an unspecified works, with a main unit in the centre of the Site and a smaller unit encroaching the north. A potential tank feature is shown it the south-west of the Site. By 1975 mapping, the Site is shown in its contemporary layout, which is denoted as an engineering works, and later as warehousing and works on 1978/1979 mapping. A review of aerial imagery provided by Google Earth between 1999 and 2017 shows the Site in its contemporary layout with no discernible changed identified.
Potentially Contaminative Historical Features Off-Site	Potential sources of contamination identified within 100 m of the Site include: ▲ A brick field shown 80 m to the south of the Site from 1864 to 1878 mapping (likely infilled post this period); ▲ Gravel pits with associated rail sidings shown 90 m to the east of the Site from 1895 to 1960 mapping (likely infilled post this period);

	▲ A tramway and associated sheds shown 80 m to the east from 1935 to 1960 mapping; ▲ A regulator and instrument works shown 90 m to the west from 1935 to 1960 mapping; ▲ A concrete works shown 40 m to the south from 1935 to 1975 mapping; ▲ A barge repair works shown 95 m to the south of the Site from 1935 to 1960 mapping; ▲ Several unspecified works units from adjacent to the east and north from 1965 to current mapping (which have been redeveloped for similar uses over the period); ▲ A depot shown 40 m to the east from 1965 to current mapping; ▲ A works shown 60 m to the east from 1965 to current mapping; ▲ Unspecified works units shown to the 40 m to the south from 1965 to current mapping; ▲ Warehousing shown adjacent to the east from 1975 to current mapping; and ▲ Several light industrial units shown 50 m to the south west from 1979 to current mapping.
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2.4 Environmental Database Review

Approach	The Landmark Envirocheck® Report provides a database of environmental information held by various statutory bodies including the EA, Local Authority (LA), Health & Safety Executive (HSE) and HPA amongst others. A full copy of the Envirocheck® Report is provided in Appendix F and the most relevant information is summarised below.
Features On-Site	The Landmark Envirocheck® Report lists an area of potentially infilled land to encroach the south-west of the Site associated with an unknown pit/quarry. It is noted that this feature is not identifiable on available historical mapping. While listed 20 m to the north-east of the Site, a Local Authority air pollution control permit for the respraying of road vehicles is listed for the Simpson Group (former tenant). With the exception of the historical works (as identified in the historical mapping review), there are no further pertinent entries relating to the Site.
Potentially Contaminative Features Off-Site	Pertinent entries included within the Landmark Envirocheck® Report located within 250 m from the Site include: ▲ A Water Industry Act referral listed 101 m to the south east for the discharge of Special Category effluents under the Trade Effluents (Prescribed Processes and Substances) Regulations. The entry is listed as 'not yet authorised'; ▲ A BGS recorded landfill is listed 150 m to the east of the Site, known as Stockley Road Tip. No further information is available; ▲ Two historical landfills are listed 110 m to the east (Stockley Park West) and 111 m to the south-east (Stockley Trident). Stockley Park West is listed to have accepted inert, industrial, commercial, household, special waste, and liquid sludge between December 1921 and March 1993. Stockley Trident is reported to have accepted inert waste between December 1928 and August 1993; ▲ Three former BGS recorded mineral sites are listed 105 m to the south (common clay and shale opencast); 177 to the north); and 225 to the north-east (sand and gravel open cast);

	▲ 66 contemporary trade directory entries, with entries within 100 m including door manufacturers; care body repairs; car customisation & conversion specialists; freight forwarders; electronic engineers; airfreight services; precision engineers; ventilators & ventilation systems; car dealers; air conditioning & refrigeration contractors; printers; garage services; and pharmaceutical manufacturers & distributors; and ▲ Several areas of potentially infilled land are also listed.
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2.5 Planning Review/Regulatory Enquiries

On-line Planning Portal	London Borough of Hillingdon	Date Accessed	15/11/2017
Findings	<u>54822/APP/2000/424</u> - Erection of a maximum of 10,000 square metres of industrial and warehouse accommodation (use classes b1(b) research and development, b1(c) light industry, b2 general industrial and b8 storage or distribution) and associated vehicle parking for 160 cars (involving demolition of existing buildings) (outline application). The application was granted consent March 2003. No supporting information is available to view. <u>54822/APP/2003/718</u> - Erection of 3 buildings and associated car parking for use as a car dealership, including car sales showroom, storage, car service workshop, pre-delivery inspection and valeting accommodation. The application was granted consent in February 2004. No contaminated land conditions were set. A copy of the consent is reproduced as Appendix G.		
Part 2A of the Environmental Protection Act (EPA) 1990	The Contaminated Land Officer (CLO) at Hillingdon Borough Council has been contacted with regards to the status of the Site with respect to Part 2A of the EPA. At the time of writing a response was awaited. Given the known Site history, it is considered likely that the Site has been identified as potentially contaminated land; however, given the low sensitivity use, considered unlikely to be a high priority for inspection. It would be expected that the Council would use the planning process as a tool for determination and apply contaminated land investigation conditions to any planning consent for redevelopment of the Site.		
Historical Local Authority Consultation	The WSP 2010 Desk study makes reference to a previous enquiry with the Local Authority for a wider area. Pertinent points are summarised below: ▲ Two recorded landfill sites in the vicinity of the Site were remediated as part of the Stockley Park Development. The contaminated fill was removed from the area of the office developments proposed for the southern landfill area and placed under the golf course to the north, with the worst of the fill landfilled offsite. Inert fill material was imported to fill in the excavations to the south. ▲ Remediation works at Stockley Park included leachate and gas collection including the use of a gas flare for the area containing the more biodegradable wastes below Stockley Golf Course. Most recent monitoring reports for the golf course suggest that although there are still high levels of gas, the flow rates are too low for the continued use of the gas flare. ▲ There are likely to be contamination issues at the Site and surrounding area due to its industrial history. Generally, site investigations in other industrial sites in the area have indicated Made Ground some of which has been contaminated or there have been instances of hydrocarbon contamination where fuel oil stored had leaked.		

	▲ The former Sipson Coach Works (on Site), had an authorisation for the respraying of road vehicles (PG6/34b(06)), and to the south east of the wider site was Hansons, which had authorisations for a roadstone coating process (PG13a(04)) and Blending, Packing, Loading, Unloading and Use of Bulk Cement (PG3/01(04)).
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2.6 Previous Reports

List of Reports	Delta-Simons has obtained the following reports relating to the Site: ▲ Phase I Environmental Assessment by WSP dated November 2010; ▲ Phase II Environmental Assessment by WSP dated November 2010; ▲ Amiantus Environmental Consultants Ltd. - Pre-Refurbishment & Demolition Asbestos Survey - Unit 501 (ref: J001056 dated April 2017); and ▲ Amiantus Environmental Consultants Ltd. - Pre-Refurbishment & Demolition Asbestos Survey - Unit 504 (ref: J001057 dated April 2017). Copies of these reports are appended as Appendix H.
WSP Phase I (2010)	The assessment relates to a wider area including land off Site to the north, east and west. The report also includes a review of the following documents (not seen by Delta-Simons): ▲ WSP Environmental Ltd. (May 1999). Phase I Environmental Audit; Stone Close / Horton Road, West Drayton. Ref. 90422L. ▲ WSP Environmental Ltd. (June 2006). Post Construction Environmental Audit BMW, Stone Close, West Drayton, Middlesex, Slough Estates International. Ref. 12040287/002. ▲ WSP Risk Management Services. (March 2004). Pre-demolition Hazardous Materials Survey, Units 489, 490, 499, 507 & 512/513 Stone Close, West Drayton. Ref: 35050879; ▲ WSP Environmental Ltd. (January 2004). Phase II Geotechnical and Environmental Investigation. Ref: 12040287/001; and, ▲ R. Collard Ltd. (October 2005). Waste consignment notes. The units associated with the Site are referred to as Unit 501 and 504. Pertinent information from the assessment is summarised below. ▲ A bunded diesel above ground tank (AST), was located to the rear of unit 0501 (southern unit), no surface staining was reported; ▲ Four 'Junair' vehicle respraying units were observed in unit 0504 (the northern unit on Site); ▲ Two unbunded motor oil storage tanks were observed in the car parking area of unit 2004 (off Site to the north-east), one of which appeared to be leaking; ▲ Unit 508 (adjacent to the east of the Site) was formerly occupied by a light engineering company. A diesel tank to the rear of the unit showed signs of staining; and reportedly the tank had rusted through resulting in a loss in diesel fuel. A chemical storage shed for Metaclean Solvo, a degreaser, was also located to the rear of the unit; ▲ Unit 502 (adjacent to the north-east of the Site) was occupied by Henderson Bostwick, manufacturers of garage doors. A car park to the rear of the unit contained an above ground tank for the storage of diesel fuel. Reportedly the tank had rusted through resulting in a loss of diesel fuel;

	▲ Unit 0488 (off Site to the north-east) was occupied by Hookes Wholesale. Three above ground storage tanks were located adjacent to the eastern side of the unit; ▲ Unit 0507 (off Site to the north-east) was occupied by Robins Motors, a garage mechanics for repair and respraying of motor vehicles. An un-bunded storage tank with associated hydrocarbon stains was observed in the forecourt area of the unit; ▲ Ground investigation off-Site to the west (at Units 505, 506 and 507) identified elevated hydrocarbons and asbestos in localised shallow soils. Gas monitoring of this area off Site recorded gas concentrations and flow rates representative of CIRIIA Characteristic Situation 1; and ▲ During redevelopment of some of the surrounding units, 409 tonnes of Japanese Knotweed impacted soils; 1,211 tonnes of asbestos containing concrete; and 2,000 gallons of oil and water was disposed of off Site.
WSP Phase II (2010)	The report provides information on a ground investigation conducted in the wider area to support the divestment of the associated plots. The investigation comprised the drilling of eight dynamic sampling boreholes to a maximum depth of 7.5 m bgl (one of which was located on Site); and a return visit for gas and groundwater monitoring. <i>It is noted that the on-Site monitoring well appears to have been destroyed as this was not identified during the recent Site visit.</i> Pertinent information from the report is summarised below: ▲ While no visual or olfactory evidence of contamination was identified on Site, evidence of hydrocarbon impact was identified in boreholes to the north and north-east; ▲ With the exception of lead and 1,1-dichloroethane in one location off Site, none of the contaminant concentrations exceeded the human health screening values adopted by WSP; ▲ Elevated dissolved phase PAH and trichloroethene (TCE) were identified in groundwater in the wider area; and elevated ammonia was recorded across the wider area when compared to the adopted screening value of 1,000 µg/l (ranging in concentrations of 840 µg/l to 17,920 µg/l, with 685 µg/l recorded on Site); ▲ Ground gas monitoring recorded generally low concentrations of ground gas, with a maximum methane concentration of 0.1 % by volume and a maximum carbon dioxide concentration of 6.9 % by volume (0.1 % by volume on Site). No recordable flow rates were reported. It is noted that the atmospheric pressure was 1010mb during the single monitoring visit. The WSP report concluded a low overall risk with regards to ground contamination and associated environmental liabilities. However, WSP state that should there be any future development or a change in land use, an additional ground investigation with continued groundwater and ground gas monitoring is likely to be required by the regulatory bodies.
Amiantus Asbestos Surveys (2017)	The reports relate to surveys conducted at both units in 2017. In summary, several low risk items were identified which were recommended to be removed as part of the demolition works. However, the following medium risk items were identified: ▲ Insulation board to the fire door at Unit 501; ▲ Cement debris external to the rear of Unit 501; ▲ Insulation board at the rear wall of the warehouse Unit 504; and ▲ Insulation board in the ceiling of the store room in the Unit 504.

3.0 Conceptual Site Model

3.1 Introduction

A Conceptual Site Model (CSM) represents the relationships between contaminant sources, pathways and receptors, to support the identification and assessment of Possible Pollutant Linkages (PPL).

3.2 Potential Contamination Sources

Potential sources of contamination identified as part of the desktop review are presented in the following table:

Ref	Source	Location	Dates Present	Potential Associated Key Contaminants of Concern
S1	Potential Made Ground.	Site-wide	1960s to present	Asbestos, heavy metals, hydrocarbons, PAHs and ground gas
S2	Remnant oil tank and former fill point.	Eastern elevation and northern elevation of southern unit	1970s to present	Hydrocarbons and PAH
S3	Potential historical oil / fuel tank.	West of the Site	1960s	Hydrocarbons and PAH
S4	Former spray booths.	Southern area of the northern unit	Assumed 1980s to present	VOC's
S5	Compressor units and assumed interceptor.	Northern elevation of the northern unit.	Assumed 1970's present	Hydrocarbons and PAH
S6	Vehicle wash	In the north of the northern unit.	Assumed 1980s to present	Hydrocarbons
S7	Potential filled ground.	South-west of the Site	1960s to present	Asbestos, heavy metals, hydrocarbons, PAHs
S7	Surrounding industrial uses and former land fill	All compass directions (industrial land use) and east (landfills)	1960s to present	Heavy metals, hydrocarbons, PAHs, VOC's and ground gas.

* Based on UK Department of the Environment Industry Profiles

3.3 Potential Receptors

Relevant potential receptors are considered to include:

- ▲ R1 - Construction workers.
- ▲ R2 - Third parties during construction (adjacent Site users and adjacent residents).
- ▲ R3 - Future Site users and maintenance workers.
- ▲ R4 - The underlying gravel aquifer.

▲ R5 - The Built Environment (new buildings and infrastructure / utilities).

The Grand Union Canal located approximately 230 m to the south of the Site is not considered to be a plausible receptor given distance from the Site.

3.4 Potential Pathways

The potential pathways are considered to be as follows:

- ▲ P1 - Direct contact, ingestion or inhalation of soil bound contaminants / dust during or following redevelopment.
- ▲ P2 - Inhalation of organic vapours associated with contamination.
- ▲ P3 - Migration of ground gas / vapours into on-site buildings causing asphyxiation or risk of explosion.
- ▲ P4 - Leaching of contamination into groundwater followed by migration of groundwater to the wider groundwater environment or discharge to surface waters.
- ▲ P5 - Direct contact between aggressive ground conditions and new infrastructure.

Source	Pathway(s)	Receptor(s)	Risk Ratings	Justification & Mitigation (if required)
S1, S2, S3, S4, S5, S6, S7	Direct contact/ ingestion and inhalation of dust, vapours and asbestos fibres.	Future Site users. Groundworkers during the redevelopment or during any sub-surface maintenance works.	Low / Moderate Risk	Given the Sites former use, the potential for relatively localised contamination cannot be discounted. A limited environmental investigation is recommended at the time of any geotechnical assessment to advise on the soil quality beneath the Site. A 'hotspot' protocol should be in place during the redevelopment for ground workers to act upon should suspected contamination be identified. A clean layer of certified suitable for use topsoil may be required in landscaped areas, if proposed. It is likely that the entire development area will be covered in buildings/hardstanding as such, the risk to future site users coming in to contact with contamination is considered low. Groundworkers should use appropriate personal protective equipment (PPE), including respiratory protective equipment (RPE) if required; and maintain good standards of hygiene to be protected from any soil contamination which may be present.
	Leaching of contamination into groundwater. Vertical and lateral migration of contamination through permeable deposits below the Site.	Controlled waters.	Low/Moderate Risk	Given the Sites former use, the potential for relatively localised contamination cannot be discounted. A limited environmental investigation is recommended at the time of any geotechnical assessment to advise on the soil quality beneath the Site.
	Direct infiltration in water supply pipes.	Service conduits.	Low / Moderate Risk	It is considered prudent to undertake hydrocarbon testing of the shallow soils at the time of any environmental investigation to provide recommendations for the upgrading of any potable service pipes.
Potentially contaminated groundwater from off-Site sources	Lateral migration and subsequent indoor inhalation of volatile vapours.	Future Site users.	Low / Moderate Risk	The Site is located within a wider former industrial area. Previously undertaken limited intrusive investigation across the wider area has identified relatively localised groundwater contamination. A limited environmental investigation is recommended at the time of any geotechnical assessment to assess the risk of potentially contaminated groundwater migrating on to the development Site.

Source	Pathway(s)	Receptor(s)	Risk Ratings	Justification & Mitigation (if required)
Hazardous ground gas (Made Ground and landfill).	Accumulation of gas in enclosed spaces and sub-floor voids.	Buildings and future Site users.	Low/ Moderate Risk	As Made Ground has been identified in the wider site area it is recommended that ground gas monitoring and assessment is undertaken at the time of any environmental assessment. However, based on available information, it would be anticipated that only basic gas protection would be required for any new development.

4.0 Conclusions & Recommendations

4.1 Geo-Environmental Considerations

Summary	The Site comprises a vacant former vehicle body repair facility, with an associated former oil tank in the east, spray booths in the north, vehicle wash in the north, and remnant ancillary equipment. Historically, the Site remained largely undeveloped until 1965 mapping, where the Site is shown to be developed by an unspecified works, with a main unit in the centre of the Site and a smaller unit encroaching the north. By 1975 mapping, the Site is shown in its contemporary layout, which is denoted as an engineering works, and later as warehousing and works. Light industrial land use and landfilling has been identified in the surrounding area. Ground investigation of the wider area has identified relatively localised contamination. The proposed development for the Site comprises the demolition of the existing structures and the construction of a vehicle servicing facility including workshop areas, a MOT test bay, a tyre bay, parts storage area; customer reception and office area; and a drive through reception area. Based on the available information, it is anticipated that the Site is likely underlain by a sequence of Made Ground; cohesive River Brickearth; granular and potentially cohesive Lynch Hill Gravel Member (Principal Aquifer); over London Clay (Unproductive Strata). The nearest surface water feature is the Grand Union Canal located approximately 230 m to the south of the Site and no sensitive water abstractions are listed within close proximity to the Site.
Soils	The risk of the Site requiring widespread remediation to protect end users is considered to be low, although localised remedial measures, for example provision of a clean soil cover for proposed soft landscaping/hotspot removal may be required in areas of Made Ground. If contamination and/or ACMs are identified, then this may have an impact on waste disposal costs.
Groundwater	Significant widespread groundwater contamination is not anticipated based on the known Site history and available third-party ground investigation data (conducted on a wider area).
Ground Gas	Based on available information, it is considered unlikely that a significant ground gas risk exists although it would be prudent to allow for basic ground gas protection measures until monitoring data is available for interpretation.
Building Fabric & Services	Widespread contamination at the Site is considered unlikely. However, services are recommended to be placed in clean corridors. A drinking water pipeline assessment may be required following soils chemical results. Aggressive ground chemistry may attack buried concrete and therefore there may be a requirement for protection measures to be put in place at the Site.
Recommendations	It is recommended that a targeted environmental ground investigation is conducted in conjunction with a geotechnical investigation to verify design requirements for the proposed development. The identified asbestos containing materials within the current units should be removed from the Site prior to / during the demolition activities.