

Preliminary Geo-Environmental Risk Assessment

Logicor Park Reading, Rose Kiln Court

Presented to: Redwood (Light Industrial) Propco Sarl

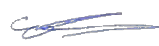
Issued: April 2023

Delta-Simons Project No: 91193.557185

Report Details

Client	Redwood (Light Industrial) Propco Sarl
Report Title	Preliminary Geo-Environmental Risk Assessment
Site Address	Logicor Park Reading, Rose Kiln Court, Rose Kiln Lane, Reading, RG2 0BY
Report No.	91193.557185_V3_REP_Rose Kiln Court_PRA_2023-04_04
Delta-Simons Contact	Tom Horner (tom.horner@deltasimons.com)

Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
03	Final	04/04/2023	Updated to reflect Client Comments & include Local Authority Response			<i>T Horner</i>
				Sarah Illingworth Senior	Emma Painter Senior	Tom Horner Associate Director

About Us

Delta-Simons is a trusted, multidisciplinary environmental consultancy, focused on delivering the best possible project outcomes for customers. 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 across the UK we employ over 210 environmental professionals, bringing experience from across the private consultancy and public sector markets.

As part of The Lucion Group, our combined team of 500 in the UK has a range of specialist skill sets in over 50 environmental consultancy specialisms including asbestos, hazardous materials, ecology, air and water services, geo-environmental and sustainability amongst others.

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 5000 resources in our global network of consultants, each committed to providing superior EH&S and sustainability consulting expertise to our customers. Through Inogen we can offer our Clients more consultants, with more expertise in more countries than traditional multinational consultancy.



Delta-Simons is a 'Beyond Net-Zero' company. We have set a Science-Based Target to reduce our Scope 1 and Scope 2 carbon emissions in line with the Paris Agreement and are committed to reducing Scope 3 emissions from our supply chain. Every year we offset our residual emissions by 150% through verified carbon removal projects linked to the UN Sustainable Development Goals. Our consultancy services to you are climate positive.

If you would like support in understanding your carbon footprint and playing your part in tackling the global climate crisis, please get in touch with your Delta-Simons contact above who will be happy to help.

Executive Summary

Brief	Delta-Simons was instructed by Savills on behalf of Redwood (Light Industrial) Propco Sarl to prepare a Preliminary Geo-Environmental Risk Assessment for the land at Logicor Park Reading, Rose Kiln Court, Rose Kiln Lane, Reading, RG2 0BY. The proposed redevelopment of the Site will comprise the demolition of the existing E(g)(i) (Office) building and the construction of three buildings for Class E(g)(iii) (Light Industrial) / Class B2 (General Industrial) / Class B8 (Storage or Distribution) uses, including the provision of a new substation, parking, landscaping, and associated works. The proposed buildings (currently referenced as blocks A to C) will be split across eight units (A1, A2, A3 B1, C1 to C4).
Site Use & Surrounding Area	The Site currently comprises one commercial office building in the north, with the remainder of the Site occupied by vehicle parking, with limited soft landscaping around the Site peripheries. The Site is located within an urban area with a mix of residential housing commercial / light industrial units in close vicinity to the Site.
Environmental Setting	The Site is likely underlain by a sequence of Made Ground (in locations of former buildings or infilled ground) underlain by Alluvium comprising clay, silt, sand and gravel (secondary A Aquifer), underlain by bedrock comprising the Seaford Chalk Formation and Newhaven Chalk Formation (Principal Aquifer). The Site is not located within a source protection area and there are no groundwater abstraction licences within 1.0 km of the Site. The Site is considered to be of a moderate environmental sensitivity given the presence of Secondary A Aquifer (superficial deposits and a Principal Aquifers in the bedrock deposits, the nearby surface water courses (the Holy Brook along the western Site boundary and the River Kennett 100 m east)), the absence of a source protection zone or potable water supply abstractions and in consideration of the residential development in close vicinity of the Site.
Contamination Potential Sources	Potential sources of contamination have been identified on-Site, including the current above ground storage tank and associated pipework and generator, the infilled drain as well as the former use of the Site as unspecified works. Potential for contaminants from the former uses of the surrounding areas, include the railway line, kilns and associated infilled clay pits, factories, depots, sawmill, historical landfill and various works buildings with associated tanks and sub-stations.
Development Considerations	Widespread or significant contamination is considered unlikely and the preliminary risk assessment has identified a low to moderate risk of soil/groundwater contamination and hazardous ground gas at the Site. Asbestos may be present within any localised Made Ground. Potential geohazards have been identified on Site, including the culvert underlying the western side of the Site, the potential for soft compressible alluvium to be encountered and the potential for relict structures beneath the ground associated with the former works buildings.
Uncertainty and Data Gaps	This assessment is based on desk study information only. No Site-specific ground investigation data has made available for review.
Recommendations	It is recommended that an intrusive Site investigation is undertaken to assess the potential for contamination and ground gases to impact on the proposed development. The investigation will also refine the Site-specific ground model and groundwater regime and enable an assessment of foundation and engineering solutions to be made.
This is intended as a summary only. Further detail and the limitations of the assessment are 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	Physical Setting	4
2.3	Sensitive Land Use	7
2.4	Historical Use of the Site & Surrounding Area	7
2.4.1	Approach	7
2.4.2	Historical Information Review	7
2.4.3	Historical Use Summary	9
2.4.4	Unexploded Ordnance (UXO)	9
2.5	Environmental Database Review	9
2.6	Planning Review/Regulatory Enquiries	11
2.7	Previous Reports	12
3.0	CONCEPTUAL SITE MODEL	13
3.1	Introduction	13
3.2	Overall Site Sensitivity	13
3.3	Potential Contamination Sources	13
3.4	Potential Pathways	13
3.5	Potential Receptors	14
4.0	CONCLUSIONS & RECOMMENDATIONS	18
4.1	Land Contamination Risks and Liabilities	18
4.2	Geotechnical Considerations	18
4.3	Recommendations and Other Development Considerations	19

DRAWINGS

Drawing 1 - Proposed Development Plan

FIGURES

Figure 1 - Site Location Plan

APPENDICES

Appendix A - Limitations

Appendix B - Data Sources

Appendix C - Risk Definitions

Appendix D - Site Photographs

Appendix E - Historical Mapping

Appendix F - Landmark Envirocheck® Report

Appendix G - Regulatory Authority Information

1.0 Introduction

1.1 Appointment

Delta-Simons Limited ("Delta-Simons") was instructed by Savills on behalf of Redwood (Light Industrial) Propco Sarl (the "Client") to prepare a Preliminary Geo-Environmental Risk Assessment for a parcel of land located at Logikor Park Reading, Rose Kiln Court, Rose Kiln Lane, Reading, RG2 0BY (the "Site").

This Report was undertaken in accordance with Delta-Simons' fee proposal dated 4th August 2022. The standard limitations associated with this Assessment are presented in Appendix A.

1.2 Context & Purpose

The aim of this Report was to support the submission of a planning application for the proposed redevelopment.

The proposed redevelopment of the Site will comprise the demolition of the existing Class E(g)(i) (Office) building and the construction of three buildings for Class E(g)(iii) (Light Industrial) / Class B2 (General Industrial) / Class B8 (Storage or Distribution) uses, including the provision of a new substation, parking, landscaping, and associated works.

The proposed buildings (currently referenced as blocks A to C) will be split across eight units (A1, A2, A3 B1, C1 to C4).

The Site is proposed to be predominantly covered in buildings and hardstanding with areas of soft landscaping surrounding the peripheries of the buildings and car parking areas. A Proposed Development Plan is included as Drawing 1.

To that end this study assesses the likely environmental and geotechnical issues associated with soil and groundwater conditions that may affect the proposed development of the Site. This Report is designed in general accordance with guidance on Land Contamination: Risk Management pages of the GOV.UK web pages, the relevant requirements of the National Planning Policy Framework (NPPF) (as revised 2021) (paragraphs 174 & 183-184)¹ and the Planning Practice Guidance (Land Affected by Contamination)².

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 the historical activities of the Site and surrounding area;
- Review of regulatory information relating to the Site;
- Review of the online planning records for the Site;
- Consult and review information from the Local Authority in relation to Part 2A of the 1990 Environmental Protection Act;
- Review online records of potential unexploded ordnance (UXO) risks;
- Complete a Site reconnaissance by undertaking a visual inspection of readily accessible areas of the Site;
- Review of readily available 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;
- Provide commentary on potential land contamination and geotechnical constraints in the context of the proposed development.

Data sources used in this assessment are listed in Appendix B.

1

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004408/NPPF_JULY_2021.pdf

² <https://www.gov.uk/guidance/land-affected-by-contamination>

1.4 Limitations

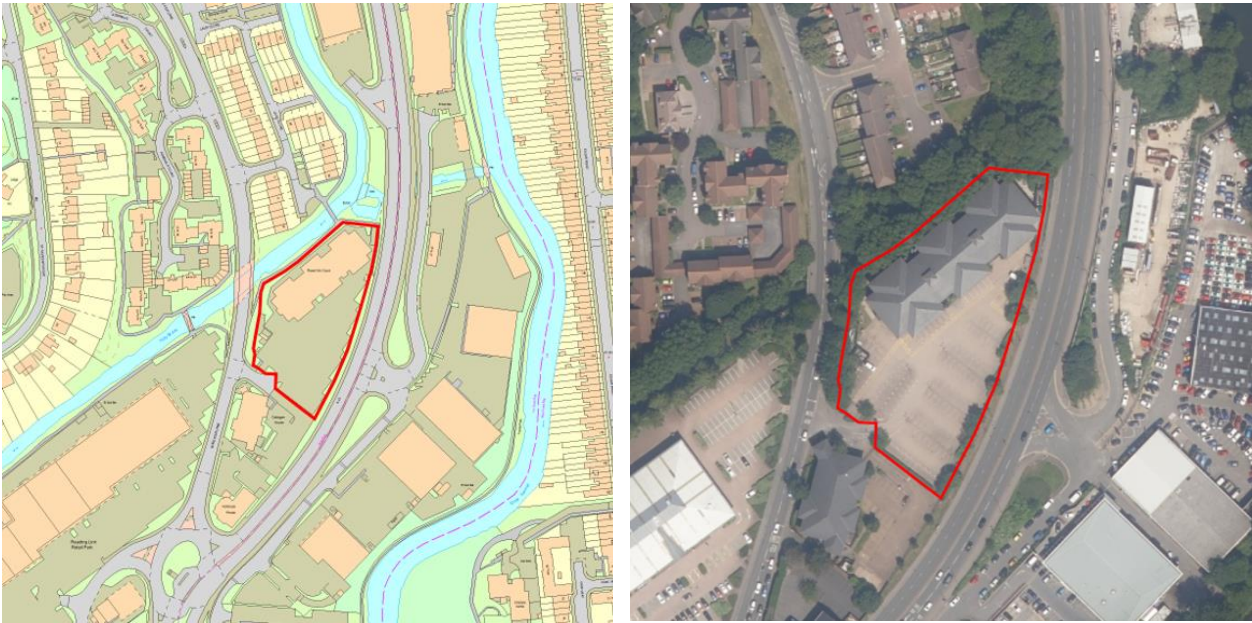
The standard limitations associated with this Assessment are presented in Appendix A. In addition, there are the following specific limitations that apply to this Assessment:

- The Consultant undertaking the Site inspection maintained a general awareness for evidence of invasive plant species, particularly Japanese Knotweed. While none were observed during the walkover, it should be noted that the Consultant is not a trained ecologist and a separate survey undertaken by an experienced Ecologist would be necessary if a more robust assessment is needed;
- The Report includes an initial assessment of UXO risks for the Site using online data sources. A detailed UXO assessment falls outside of the scope of this Report, further specialist assessment may be required; 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 Local Authority.

2.0 Site Context & Data Review

The following sections provide a summary of the key site features based on the data sources listed in Appendix B. All distances, measurements and dates are approximate, and the accuracy limitations of the data sources should be noted.

2.1 Site Information

Site Overview			
			
Contains Data from, © 2023 Landmark Information Group Ltd			
Co-ordinates	Centred at National Grid Reference 471310, 172330.	Elevation	38.0 - 39.0 m AOD
		Area	0.64 Ha
Site Address and Location	Land at Rose Kiln Court, Rose Kiln Lane, Reading, RG2 0BY. The Site is located in the south of Reading, approximately 1.4 km south of Reading train station and approximately 3.5 km north of the M4 motorway. Google Maps Link [Google, Imagery©2023 Getmapping plc, Inforterra Ltd & Bluesky, Maxar Technologies, The GeoInformation Group, Map data ©2023]		
Site Occupant(s)	The Site has been vacant since April 2022.		
Site Description	The Site currently comprises a commercial office building in the northwest, with the remainder of the Site occupied by vehicle parking, with limited soft landscaping around the Site peripheries. Delta-Simons conducted a Site visit on 19 th January 2023. A series of Site photographs are presented as Appendix D, and pertinent information that was observed or reported on-Site is summarised below:		

	• The Site was occupied with a two-storey (ground and first floor) rectangular shaped building in the north, which was previously utilised for office space; • The Site was noted to be at a lower elevation (by approximately 2m) to Rose Kiln Lane to the west and the A33 to the east; • The northern and western boundaries were delineated by metal fencing beyond which were areas of landscaping and Holy Brook to the north; • The eastern and southern boundaries were delineated by wooden fencing; • Surface water was noted to be pooling at the Site entrance to the west of the Site; • An outlet for an underground culvert was noted off-Site approximately 10m north-east, associated with Holy Brook; • On the western portion of the Site, adjacent the Site boundary was an electrical substation, a gas governor, a steel-banded aboveground storage tank (AST) within a concrete and wood enclosure with associated filling point, air conditioning units and an assumed water pumping station; • The tank was unable to be accessed and contents could not be confirmed. The concrete surround was in good condition however, the tank base was covered with debris and was unable to be assessed; • The tank was noted to be in good condition with small areas of surface rust; • No evidence of spillages were noted around the tank; • Empty blue drums containing unknown contents, were recorded adjacent the AST on the western part of the Site; • Pipes from the AST exit the banded area and appear to go underground to the filling point approximately 10m east of the AST; • Evidence of potential historic spillages (staining of the ground) was observed by the filling point associated with the AST; • Additional air conditioning units were noted on the north-eastern part of the Site; • An unknown green metal unit was recorded to the rear of the office building on the northern part of the Site. It was assumed this was additional air conditioning infrastructure; and, • Hardstanding surfaces at the Site comprised block paving.
Description of Adjacent and Surrounding Land Uses	The Site is located within an urban area with residential housing to the north and west and commercial / light industrial units to the south and east. The Site is bordered by Holly Brook to the north, the A33 highway to the east, a vacant office block to the south and Rose Kiln Lane to the east.
Where identified, the potential on-Site or off-Site sources of contamination are considered further in Section 3.0.	

2.2 Physical Setting

The physical setting of the subject property can influence the susceptibility to, and relative magnitude of, environmental impacts and liabilities associated with on- and off-Site sources of contamination. The following table provides physical setting information for the subject property and surrounding area.

Published Geology	British Geological Survey (BGS) online viewer (mapapps2.bgs.ac.uk/geoindex) and mapping (bgs.ac.uk/maps) (1:50,000 Sheet Number 268, Reading) indicates that ground conditions at the Site comprise: Superficial deposits: Alluvium comprising clay, silt, sand and gravel; Bedrock: Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated chalk). According the Envirocheck® Report, an area of Infilled Ground is located approximately 100 m northeast, and areas of Worked Ground are located approximately 150 m east and 155 m west.
Site-Specific Geology	There are three BGS recorded boreholes (mapapps2.bgs.ac.uk/geoindex) on the Site, referenced SU77SW776 (BH1), SU77SW777 (BH2) and SU77SW780 (BH5), drilled in 1985 and 1989. The ground conditions encountered comprised the following generalised sequence: • Made Ground comprising concrete over loose ash and clayey / sandy fill up to between 0.9 m and 2.4 m bgl; • Soft grey silty chalky clay / gravelly silty clay up to between 2.8 and 3.8 m within BH1 and BH2 (centre and south of Site); or Soft brown sandy peaty clay with some flint gravel up to 3.4 m bgl within BH5 (north of Site); • Medium dense chalky gravel / loose sandy gravel or gravelly sand up to between 12.6 and 13.5 m bgl; • Lumps of intact chalk / remoulded chalk with some flint (Grade 4 to 5) up to between 16.0 and 17.0 m bgl; over • Medium hard rubbly or blocky chalk (Grade 2 to 3) to the base of the boreholes (20.0 m bgl).
Aquifers and Groundwater Receptors	The Environment Agency (EA) data (magic.defra.gov.uk) provides the following aquifer classification and designations: Superficial deposits: The Alluvium is classified as a Secondary A Aquifer. Bedrock: The Seaford Chalk and Newhaven Chalk are classified as a Principal Aquifer. Source Protection Zones: The Site is not in a designated groundwater Source Protection Zone. Groundwater Abstractions: According to the Envirocheck® Report, there are no groundwater abstraction licences within 1.0 km of the Site.
Groundwater Levels and Flow Direction	The available BGS borehole information recorded water strikes of between 2.7 m and 3.8 m bgl, with standing water levels of between 2.5 and 3.1 m bgl. Shallow groundwater is expected to flow to the north-east, sub-parallel to the River Kennett.
Hydrology	The nearest surface water feature is the Holy Brook located along the north-western Site boundary, which flows in a north-easterly direction. According to the Envirocheck® Report, the Holy Brook has a river quality Grade B and flows at <0.31 cumecs.

	It is understood that there is also a large culvert beneath the Site, crossing from north-east to south-west across the north-western side of the Site. During the Site reconnaissance, an outlet point was observed off-Site approximately 10m north-east of the Site. The River Kennett is located approximately 90 m east of the Site, flowing in a generally northerly direction. The Envirocheck® Report records the river as having Grade A and B quality with a flow rate of <20 cumecs. According to the Envirocheck® Report, there are two water abstraction licences within 1.0 km of the Site. The closest is located 20 m north, operated by Birse Construction for the abstraction of 3 m³ of water daily, for industrial processing. The permit has either lapsed or been revoked or cancelled. The second is associated with Oracle Shopping Centre, located approximately 795 m north, involving abstraction for amenity uses (lake and pond throughflow). The start date of the current version of the permit was March 2020.
Site Topography	The Site topography is relatively level with a slight fall from approximately 39.0 m in the west to approximately 38.6 m AOD in the east. The regional topography slopes downwards towards the River Kennett (to the east).
Mining & Quarrying	Reference to the Coal Authority on-line viewer (bgs.ac.uk/coalauthority) 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. The Envirocheck® Report records six BGS recorded mineral Sites within 250 m of the Site, all of which are recorded as ceased. The closest is located approximately 200 m east of the Site associated with Katesgrove Kilns for the extraction of common clay and shale (Lambeth Group) by opencast methods. The remainder are located between 210 m and 240 m east and west of the Site, also relating to the extraction of common clay and shale by opencast methods. These appear to correspond to the areas of Worked Ground located to the east and west of the Site. According to the Envirocheck® Report, there is one man made mining cavity within 250 m of the Site, located approximately 205 m north-east, recorded as a shaft for pillar and stall chalk mining. There are no natural cavities recorded within 250 m of the Site.
Ground Stability Hazards	The Envirocheck Report indicates the following hazards in the area of the Site: - Dissolution - Very Low hazard (recorded as High approximately 15 m north-west) - Landslide - Very Low hazard - Shrinking and swelling clay - Very Low hazard - Collapsible ground - No Hazard - Running sands - Low hazard - Compressible ground - Moderate hazard
Radon Gas	The UK Health Security Agency (ukradon.org) data indicates that the Site lies within an area of intermediate radon potential, with a maximum radon potential of 1-3% of homes being above the action level for radon. According to the Envirocheck® Report, no radon protective measures are considered necessary in the construction of new buildings.

	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 Local Authority.
--	--

2.3 Sensitive Land Use

Ecological Receptors	It is understood from information provided within the Envirocheck Report, that there are no statutory ecological receptors located within 500 m of the Site.
Heritage Interest	Historic England Records (historicengland.org.uk) indicate that no areas of designated heritage interest are located on or adjacent to the Site.

2.4 Historical Use of the Site & Surrounding Area

2.4.1 Approach

The historical development of the Site and surrounding area has been assessed through a review of historical maps, aerial photographs, 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 selected historical maps are included as Appendix E.

2.4.2 Historical Information Review

The following table provides a review of the historical information for the Site, adjacent and surrounding area.

Date	Source	Site Description	Surrounding Area
1879	OS Mapping	The Site appears to comprise undeveloped land. A surface water feature was located on-Site. This comprises two sections in a south-west - central and south-east - central orientation which meet in the centre of the Site to form one channel which flows northwards. A drain was evident mid-east of the Site, in a north-south orientation.	The areas immediately surrounding the Site were observed to comprise undeveloped land. The Holy Brook was present at the north-western Site boundary and the River Kennett, flowing north, was located 90 m east. The Katesgrove Kilns (brick, tile and drainpipes) and brick field were located approximately 110 m to 300 m north-east, the Waterloo Kilns were located approximately 250 m to 500 m south-east, the Coley Kilns (brick, tile and pottery) were located approximately 120 m to 250 m west and the Avenue Works (brick, tile and pottery) were located 400 m north-west. The Reading iron works and a timber yard were present approximately 240 m north and a rifle range was present approximately 45 m south-west.
1899	OS Mapping	The surface water feature crossing the Site was no longer present (presumed infilled or culverted).	The majority of the kilns and clay pits were no longer present, apart from the Waterloo Kilns. Residential housing had been constructed from 100 m north-east and the rifle range was now occupied by allotments.
1912	OS Mapping,	The drain was no longer present in the east.	A railway line had been constructed along the eastern Site boundary. An unspecified tank was present

Date	Source	Site Description	Surrounding Area
			approximately 165 m north. Residential housing had been constructed 100 m east.
1931 - 1933	OS Mapping	No significant changes observed.	Tanks were present approximately 20 m north-east, a sawmill had been constructed 80 m north, the Coley Bathing Place (an open air lido) was constructed 30 m north and a Preserve Works and associated tanks and additional railway lines were situated 50 m south-east.
1957 - 1958	OS Mapping	A works had been constructed in the centre of the Site, comprising several buildings in the centre of the Site with several small outbuildings along the eastern Site boundary and in the west. A drain was shown in the north-west of the Site in a north-west - south-east orientation, which appeared to be culverted in the west.	A depot was located in the footprint of the tanks formerly located approximately 20 m north-east, the Preserve Works was now labelled as unspecified works. The sawmill was labelled as a depot and an additional depot was present to the south of this. An unspecified factory had been constructed approximately 45 m north-west, and a coal yard and depot were present approximately 100 m north. The Waterloo Kilns were no longer shown on the mapping.
1963 - 1969	OS Mapping	The drain appears to have been culverted beneath the Site. The works had been extended southwards with the addition of a new building as well as the addition of a small building in the north-west.	Unspecified works buildings had been constructed from adjacent to the south-west with associated sub-station and tanks. A further works (later labelled as a factory) was situated approximately 30 m south-west with associated tanks.
1972 - 1981	OS Mapping	No significant changes observed.	An oil storage depot and associated tanks were located approximately 20 m north-west. Commercial/light industrial buildings had been constructed from approximately 50 m south-east.
1986 - 1987	OS Mapping	No significant changes observed.	Rose Kiln Lane was constructed adjacent west of the Site and the lido to the north was no longer present. The factory and coal yard to the north were no longer present.
1991 - 1992	OS Mapping	The works had been demolished.	The railway line adjacent to the Site had been dismantled. A trading estate had been constructed from approximately 580 m south-west and the buildings approximately 50 m south-east were labelled as an industrial estate. An electrical substation was located approximately 15 m south and an unspecified tank was located

Date	Source	Site Description	Surrounding Area
			approximately 30 m south. The oil storage depot was no longer present.
1995	OS Mapping	One building had been constructed in the north (later labelled as 'Rose Kiln Court') in the same configuration as the present day.	No significant changes observed.
1996	OS Mapping	No significant changes observed.	The A33 had been constructed along the eastern Site boundary.
2022	Google Earth	No significant changes observed.	No significant changes observed.

2.4.3 Historical Use Summary

Based on a review of the compilation of historical sources dating back to 1879, it appears that the Site was undeveloped until circa. 1957 when unspecified works buildings were constructed in the centre of the Site. The works remained until circa.1991 when one building labelled as 'Rose Kiln Court' was constructed in the north-west, which remains to the present day. A surface water feature was present on Site until circa. 1899 when it is presumed infilled A drain was present in the east until around 1912 when this is also presumed infilled, and a second drain was shown culverted beneath the west of the Site from circa. 1963.

Potentially contaminated land uses identified on Site include the unspecified works buildings and infilled drain.

The surrounding areas were also predominantly undeveloped, with localised kilns and clay pits, until the early 1900s. A railway line had been constructed along the eastern Site boundary from 1912, dismantled by 1991. From the early 1930s, commercial and industrial units were developed in the surrounding areas, including a preserve works, sawmill, factories, depots and associated tanks and sub-stations. By the 1990s, the A33 was constructed along the eastern Site boundary and the areas to the south were labelled as a trading estate and industrial estate which remain to the present day.

Potentially contaminative land uses identified in the surrounding area include the railway line adjacent to the east of the Site, the infilling of various drains and clay pits surrounding the Site and nearby industrial land use various works and depots with associated tanks and sub-stations.

2.4.4 Unexploded Ordnance (UXO)

The Zetica Regional Unexploded Bomb Risk Map for the area of the Site (zeticauxo.com) indicates that there is a low risk of UXO in the area of the Site.

Delta-Simons has separately commissioned a Preliminary UXO Risk Assessment Report for the Site, which has also confirmed a low potential risk from UXO at the Site.

2.5 Environmental Database Review

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 Public Health England amongst others. A 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 the following as relating to the Site: One Pollution Incident to Controlled Waters, listed as a Category 3 Minor Incident involving an unknown pollutant in August 1994. The receiving water was not specified;
-------------------------	---

	- One potentially infilled land feature (water) likely relating to the former drain in the east. Reference to historical mapping indicates this feature was infilled by 1912; and - There are no BGS, LA or EA registered landfill sites on-Site.
Potentially Contaminative Features Off-Site	The Landmark Envirocheck® Report lists the following within 250 m of the Site: - Five Discharge Consents, the closest of which is located approximately 70 m west and relates to the discharge of surface water to a freshwater river (presumed to be the Holy Brook). The permit operated between 1988 and 1992 and has since been revoked. The remainder relate to two sewage discharges final/treated effluent to land (both of which have lapsed), trade effluent (site drainage) to the Coley Ditch (the permit has been revoked since 2009) and discharge of surface water to a freshwater river (the permit has been revoked since 1991); - One Part B Environmental Permit (formerly known as Local Authority Pollution Prevention and Control) located 75 m south, relating to the manufacture of timber and wood-based products. The authorisation was for air pollution control, dated 1996, and has since been revoked; - Eleven Pollution Incidents to Controlled Waters, all classified as Category Minor Incident, the closest of which occurred approximately 5 m east relating to oils to an unknown receiving water body. The remainder relate to oils, miscellaneous and general pollution with all listed as an unknown receiving water body which are likely the Holy Brook or River Kennett (given their location); - One historical landfill site located approximately 190 m south, the licence holder was not supplied but likely relates to the former kilns in this area. The input dates were not supplied, and deposited waste included inert and industrial waste. Further information was requested from the Local Authority, which is provided within Appendix G. Reading Borough Council state that they have carried out some Part IIA investigations at the Waterloo Meadows Site to establish what contaminants are present and whether the landfill poses a risk to health. The Council state that the fill comprises of inert waste such as coal, clinker, brick and concrete with variable quantities of domestic waste containing glass, pottery, rubber, wood, shoes, toothpaste, cloth, plastic and batteries. The Council also state that ground gas monitoring at the landfill recorded methane concentrations of between 0.0 and 2.3% and carbon dioxide concentrations between 0.03 and 21.9%; - Three potentially infilled land features located 95 m west (assumed to be related to the Coley Kilns (now labelled as recreation ground)) and 110 m east and 135 m east, both assumed to relate to Katesgrove Kilns and associated clay pits. These appear to correspond to the areas of Worked Ground located to the east and west of the Site; - Nine potentially infilled water features, located approximately 15 m north and north-east, 15 m and 35 m south-east, 55 m north-east, 110 m and 180 m north, 170 m and 215 m south-west all assumed to relate to infilled drains; - Three tanks (generic), located approximately 125 m south, 220 m north-east and 230 m north; - Thirty-two Contemporary Trade Directory Entries. The closest active trade entry is located 40 m north-east and relates to a car dealers. The remaining active entries relate to engineering materials (75 m south), car dealers (75 m,



	90 m and 160 m south), kitchen furniture manufacturers (160 m south-west), tyre dealers (180 m north), oven cleaning (180 m north), builders merchants (185 m north-east) and a scrap metal merchants (225 m east); and One active fuel station entry located approximately 190 m south-west at associated with a BP petrol filling station. There is also one obsolete entry, Rose Kiln Service Station located 190 m south-west (now the BP filling station).
--	--

2.6 Planning Review/Regulatory Enquiries

On-line Planning Review	Reading Borough Council	Date Accessed	19/01/23
On-Site Applications	A number of planning application records relate to the Site. The most recent records for the Site comprise: <u>Application no. 220255 - Dated February 2022</u> - Clearance of existing building and construction of two blocks of Buildings for employment use (B2/B8 and light industry (Class E g iii)) and new substation, alongside parking and landscaping and other associated works. The application was withdrawn on 20 July 2022. As part of the application, a Preliminary Risk Assessment report by WML Consulting was prepared. The report includes similar information to Sections 2.0 to 2.5 of this report and pertinent information is included within Section 2.7 below; <u>Application no. 211837 - Dated November 2021</u> - Various elevational alterations including replacement of fire doors with windows. The council granted planning permission in January 2022. No further information in relation to contamination or geotechnical information was provided; <u>Application no. 211138 - Dated July 2021</u> - Change of use of 2-Storey Office Building from Class B1(a) (offices) to C3 (dwelling houses) to comprise 38 Residential Units. Prior Notification under Class O, Part 3 of Schedule 2 of the Town and Country Planning (General Permitted Development) Order 2015. The council made the decision that planning was not required on September 2021 due to limited risks associated with the change of use. Application numbers 211148, 211618 and 211617 relate to non-material amendments or change of use of this planning application. As part of the application, a Ground Conditions Statement was prepared by Aylward Town Planning Limited in July 2021, which included an asbestos survey undertaken by Environmental Contamination Services (dated May 2003). The report concluded that no asbestos was detected within the building on Site; <u>Application no. 992205 - Dated May 1999</u> - Installation of containerised diesel generator and associated fuel storage tank within existing site boundary. The council granted permission July 1999. There were no documents included on the planning portal in relation to this application.		
Off-Site Applications	No additional potentially contaminative activities or other information pertinent to this assessment was identified from the historical off-Site planning records.		
Part 2A of the Environmental	Reading Borough Council's contaminated land officer was contacted for information relating to the Site. The Council has identified the Site as being potentially contaminated due to part of the land formerly being used as a works and note that the Site has been identified for future investigation under the		

Protection Act (EPA) 1990	Council's Part IIA inspection strategy. However, the Council also state that the Site is currently classified as low risk and that there is no schedule set for the investigation of the Site. The response is provided within Appendix G. The Council were also contacted by Environ in 2003 (as discussed below), who recorded similar information with respect to Part IIA.
----------------------------------	--

2.7 Previous Reports

List of Reports	Delta-Simons has been provided with the following report relating to the Site by the Client: - Phase I Desk Study and Preliminary Geoenvironmental Assessment, by WML Consulting, (Ref: 10334G-WML-XX-ZZ-RP-G-0001), dated January 2022. In addition, the following report relating to the Site has been obtained via the public planning records. - Phase I Environmental Review, by Environ (Ref: 61C11563), dated March 2007. A review of these third party reports is provided for information purposes only. No reliance on these reports is assumed or inferred.
Phase I, WML Consulting, January 2022	WML Consulting were commissioned by Stenprop Industrial 6 Limited to undertake a Phase 1 and PRA report. The proposed development at the time comprised 11 low rise industrial/commercial units, with external areas surfaced with hardstanding with vehicle parking and service yards. The report includes similar information to Section 2.0 to 2.5 of this report. No additional pertinent information was identified. WML Consulting concluded that under the proposed development scenario, <i>'potential pollution linkages were considered unlikely or low with associated preliminary risks being assessed as very low to low'</i>.
Phase I, Environ, March 2003	Environ prepared an environmental review, which includes similar information to this Report. Pertinent information included the following: - Information received from the Environmental Health Officer of Reading Borough Council stated that an unspecified works had been on Site historically, and that this had been identified for inspection as part of the Council's Contaminated Land Inspection Strategy under Part IIA. Environ noted that the Council were unable to confirm a timescale for the inspection; - Environ also noted that the Council were aware of two pollution incidents on the Site which they dealt with in 1999, and no further action was considered necessary; - Information received from the Council confirmed that there were no records of petroleum storage having taken place on the Site; and - Environ concluded that there is limited potential for contamination at the Site, but that the Site is situated within a sensitive setting in terms of groundwater and that the potential for migration of on or off-site contaminants could not be discounted. Overall, Environ note that the Site is considered to be of low to moderate risk.

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 contaminant linkages.

3.2 Overall Site Sensitivity

The Site is considered to be of moderate environmental sensitivity given the presence of Secondary A Aquifer within the superficial deposits and a Principal Aquifers in the bedrock deposits, the nearby surface water courses (the Holy Brook along the western Site boundary and the River Kennett 100 m east), the absence of a source protection zone or potable water supply abstractions and in consideration to the residential development in the Site's vicinity.

3.3 Potential Contamination Sources

A source is a contaminant or pollutant that is in, on or under the land that has the potential to cause harm or pollution.

The following identified potential contamination sources are considered in the CSM:

On-Site:

- Residual contamination and Made Ground (encountered up to 2.4 m bgl on-Site) from the former works and infilled drain – potentially containing metals and metalloids, petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), volatile and semi-volatile organic compounds (VOCs and SVOCs) and asbestos-containing materials from the usage and/or demolition of the former buildings;
- Potential for hazardous ground gases from Made Ground (including the infilled drain) and superficial deposits of Alluvium (if putrescible material is encountered);
- Above ground storage tank with underground pipework and generator on Site – potential for petroleum hydrocarbons, and VOCs and SVOCs if a significant leak/spillage is encountered; and

Although an electrical substation is located on-Site, it is likely this was constructed at the same time as the existing building on Site, between 1991 and 1995. Given that the construction age is after the ban of the use of polychlorinated biphenyls (PCBs) in the UK in 1981, the presence of PCBs can likely be discounted at this stage, however discussions should be held with the statutory service provider regarding whether any of the equipment used contains PCBs.

Off-Site:

- Potential for contaminants from the former industrial uses of the surrounding areas, including the railway line, kilns, factories, depots, sawmill and various works buildings with associated tanks and sub-stations – potential for metals and metalloids, petroleum hydrocarbons, PAH, VOCs and SVOCs;
- Potential for ground gas from the historical landfill (190 m south) which is recorded by Reading Borough Council as having the following deposited waste; coal, clinker, brick and concrete with variable quantities of glass, pottery, rubber, wood, shoes, toothpaste, cloth, plastic and batteries, with maximum ground gas concentrations for methane of 2.3% and carbon dioxide of 21.9%; and
- Potential for ground gas from historically infilled land features (clay pits) and water features (drains) surrounding the Site, especially if putrescible waste was used.

3.4 Potential Pathways

A pathway is a route by which a receptor is or could be affected by contaminant.

The potential pathways are considered to be as follows:

- Direct contact, ingestion or inhalation of soil bound contaminants / dust during or following redevelopment;

- Inhalation of organic vapours associated with contamination;
- Migration of ground gas / vapours into on-Site buildings causing asphyxiation or risk of explosion;
- Leaching of contamination into groundwater followed by migration of groundwater to the wider groundwater environment or discharge to surface waters;
- Direct contact between aggressive ground conditions and new infrastructure.

3.5 Potential Receptors

A receptor is something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings crops or animals.

Relevant potential receptors are considered to include:

- Construction workers;
- Third parties during construction (adjacent Site users and adjacent residents);
- Future Site users and maintenance workers;
- The Holy Brook and River Kennett water courses;
- The underlying superficial aquifers (Secondary A and Principal Aquifers); and
- The Built Environment (new buildings and infrastructure / utilities).

Contaminant Linkage Assessment					
Source(s)	Pathway(s)	Receptor(s)	Risk	Comments	Requires Investigation
Potentially contaminated soils and/or groundwater located beneath the Site.	Direct contact/ ingestion and inhalation of dust and vapours.	Site users.	Low to Moderate Risk	Whilst significant potential sources of contamination have not been identified associated with the current use of the Site, there remains the potential for localised contamination associated with historical Site uses, in particular the above ground tank and associated underground pipework, the generators and the former use of the Site as a works. The potential for leaks of tank supply lines to have occurred cannot be discounted. However, given the current and proposed commercial/light industrial use of the Site, which will be predominantly covered by buildings and hardstanding, the risk to Site users is considered to be Low to Moderate, primarily stemming from the potential risk from vapours from potential hydrocarbon contamination. Intrusive investigation will be required to support the planning application for the new development area.	Yes
	Direct contact, ingestion and inhalation of dust and vapours.	Maintenance workers during any future sub-surface works at the Site.	Low to Moderate Risk	Site workers may become exposed to localised contaminated soils and shallow groundwater during intrusive groundworks undertaken at the Site. Safe working practices should be undertaken and appropriate Personal Protective Equipment (PPE) should be used that will reduce the risk to low. Intrusive investigation will inform potential risks in new development areas.	Yes
	Leaching of contaminants and vertical migration.	Groundwater beneath the Site.	Low to Moderate Risk	Significant potential sources of contamination have not been identified associated with the current use of the Site, and whilst there remains the potential for localised contamination associated with the historical use of the Site, the risk to underlying groundwater is considered to be Low to Moderate in the context of the Site setting and given that the Site is likely to be hard covered reducing the risk of mobilising any contaminants, if present. Though the underlying bedrock is	Yes

Contaminant Linkage Assessment					
Source(s)	Pathway(s)	Receptor(s)	Risk	Comments	Requires Investigation
				classified as a Principal Aquifer, this is unlikely to be used as resource given the industrial estate setting. It would be prudent to undertake a limited programme of groundwater sampling and analysis to further assess the risk.	
	Permeation of hydrocarbons through plastic pipe work.	Water supply pipes.	Low to Moderate Risk	Hydrocarbons, especially aromatics and chlorinated solvents are known to permeate plastic pipes, particularly when encountered at high concentrations. Given the presence of generators and an AST on Site which have the potential to have leaked over-time, the risk of contamination migrating into areas containing water supply pipes is considered to be Low to Moderate.	Yes
	Lateral migration through any groundwater beneath the Site.	Off-Site receptors (neighbouring properties/ users, nearby surface water features).	Low Risk	Whilst significant potential sources of contamination have not been identified associated with the current use of the Site, there remains the potential for localised contamination associated with historical Site uses. Although there are two sensitive surface water features close to the Site, particularly the Holy Brook, given the nature to the Site, which is predominantly surfaced by hardstanding and will continue to be following the redevelopment of the Site, the potential for infiltration and leaching of any contaminants to off-Site receptors is considered to be Low.	No
Hazardous ground gases.	Vertical and lateral migration of ground gases.	Site users & the buildings on-Site.	Low to Moderate Risk	Made Ground is present on Site associated with the former use as works and has been encountered to depths up to 2.4 m bgl. There is also one identified infilled drain in the east of the Site, as well as a number of identified infilled land and water features surrounding the Site, and an historical landfill to the south which recorded a maximum methane concentration of 2.3% and a maximum carbon dioxide concentration of 21.9%. The potential for ground gas generation will be dependent on the nature (amount of putrescible material), area and thickness of	Yes

Contaminant Linkage Assessment					
Source(s)	Pathway(s)	Receptor(s)	Risk	Comments	Requires Investigation
				materials used. There is also the potential for ground gas if biodegradable material is encountered within the Alluvium. The proposed development includes a likely well ventilated commercial/light industrial units and hardstanding. Based on the above, the risk is considered to be Low to Moderate; however, it would be prudent to undertake a ground gas monitoring programme to further assess the risk.	
Potentially contaminated soil and groundwater from off-Site sources.	Lateral migration and subsequent inhalation.	Groundwater beneath the Site and future Site users.	Low Risk	The Site is located within a large commercial industrial estate setting, likely resulting in some impact to the wider groundwater quality of the Site area. Whilst potential off-Site sources of contamination have been identified associated with the current and historical uses, these are considered unlikely to cause a significant impact to the Site. Given that the former kilns have since been redeveloped which would have likely addressed any contamination at the time. The railway, former saw mill, preserve works and some unspecified works are hydrologically down gradient and given that the factories, works and depots to the west are covered with hardstanding limiting the mobilisation of contaminants, if present, the risk from off-Site sources is considered to be low.	No

4.0 Conclusions & Recommendations

4.1 Land Contamination Risks and Liabilities

Uncertainty and Data Gaps	This assessment is based on desk study information only. No Site-specific ground investigation data has made available for review.
Soils	Significant widespread soil contamination is not anticipated. Localised contamination may be present in the areas of the former works, fuel storage infrastructure and the infilled drain.
Groundwater	Significant widespread groundwater contamination is not anticipated; however, there may be localised historical contamination from the former works and current on-Site AST and associated pipework. Though the underlying bedrock is classified as a Principal Aquifer, this is unlikely to be used as resource given the industrial estate setting.
Ground Gas	Ground gas risk is considered to be Low to Moderate given the potential sources identified on-Site and in the surrounding areas. This will be reassessed based on ground gas monitoring. It would be prudent to allow for basic ground gas protection measures until monitoring data is available for interpretation.
Volatile Organic Vapours	There is the potential for localised volatile contamination associated with the former works and current on-Site AST and associated pipework.
Potential Contaminated Land Development Risks	Significant widespread contamination is considered unlikely and the preliminary risk assessment has identified a Low to Moderate risk of soil/groundwater contamination and hazardous ground gas at the Site. Asbestos may be present within the Made Ground.

4.2 Geotechnical Considerations

Uncertainty and Data Gaps	This assessment is based on desk study information only. No Site-specific ground investigation data has made available for review.
Preliminary Ground Model	Based on the available information, it is anticipated that the Site is likely underlain by a sequence of Made Ground (in locations of former buildings or infilled ground, encountered up to a maximum 2.4 m bgl within previous BGS boreholes on Site) underlain by Alluvium comprising clay, silt, sand and gravel, underlain by bedrock of the Seaford Chalk Formation and Newhaven Chalk Formation comprising weathered chalk (clayey gravels, gravelly clay) underlain by chalk bedrock.
Plausible Geo-Hazards	The geohazards listed below have been identified to follow guidance presented in the HE document CD622 'Managing Geotechnical Risk' (2019) which aims to identify and manage the geotechnical risks associated with a scheme throughout its lifespan, from planning to construction to maintenance. The following geohazards are considered to be substantial ground related risks associated with the proposed development. A substantial risk is defined by Delta-Simons in Appendix C.

	• Made Ground - typically variable in nature and strength with a potentially low bearing capacity and unacceptable levels of total/differential settlement may occur; • Alluvium deposits which could contain peat - deposits may be compressible / soft ground could be encountered; • Relict structures and obstructions may be encountered in the vicinity of the former works buildings on Site; • There is a culvert crossing the western side of the Site from north-east to south-west, which may impact foundation design; • Natural cavities may be encountered within the chalk; and • Shallow groundwater may be encountered given the proximity to the Holy Brook and River Kennett; • Ground investigation will be required to refine the ground model, and to provide data to inform preliminary geotechnical / foundation design.
--	--

4.3 Recommendations and Other Development Considerations

Ground Investigation Recommendations	Based on the preliminary assessment and identified potential sources, intrusive investigation is required to confirm the potential contaminant linkages. Including, but not limited to, the assessment of: • The thickness and nature of any Made Ground; • The presence, concentrations and leachability of substances of concern in shallow soils (including Made Ground) on-Site; • Substances of concern in any perched water/soil pore water or shallow groundwater beneath Site; • Ground gas and/or soil vapour intrusion into future on-Site and off-Site buildings; and • Geotechnical design parameters.
Other Development Considerations	The following development considerations/potentially pertinent factors could be anticipated with respect the site: • Pre-demolition asbestos survey as the Site was developed prior to the asbestos ban (1999); and • Removal of the AST and associated underground pipework.

Drawings

Drawing 1 - Proposed Development Plan



Block A

- A1 Unit 279sqm / 3,000sqft GIA
inc. 70sqm / 750sqft mezz office 25% office content
- A2 Unit 264sqm / 2,850sqft GIA
inc. 70sqm / 750sqft mezz office 26% office content
- A2 Unit 325sqm / 3,500sqft GIA
inc. 74sqm / 800sqft mezz office 23% office content

TOTAL UNIT 868 sqm / 9,350sqft

Block B

- B1 Unit 697sqm / 7,500sqft GIA
inc. 139sqm / 1,500sqft mezz office 21% office content

TOTAL UNIT 697sqm / 7,500sqft

Block C

- C1 Unit 437sqm / 4,700sqft GIA
inc. 93sqm / 1,000sqft mezz office 21% office content
- C2 Unit 321sqm / 3,450sqft GIA
inc. 74sqm / 800sqft mezz office 23% office content
- C3 Unit 321sqm / 3,450sqft GIA
inc. 74sqm / 800sqft mezz office 23% office content
- C4 Unit 437sqm / 4,700sqft GIA
inc. 93sqm / 1,000sqft mezz office 21% office content

TOTAL UNIT 1,516sqm / 16,300sqft

TOTAL 3,081sqm / 33,150sqft GIA

33 car parking spaces
All units 7.5m u/s of haunch

- Tree removed
- Tree retained green

SCHEDULE OF MATERIALS
EXTERNAL WORKS

- 1 - CONCRETE BLOCK PAVING
- LAID IN HERRINGBONE PATTERN
- COLOUR - BRINDLE
- 2 - CONCRETE SURFACING
- COLOUR - LIGHT GREY SELF COLOUR
- 3 - RAILING FENCING 2.4M HIGH ON
SQUARE SECTION POSTS
- POLYESTER POWDER COATED FINISH
- COLOUR - BLACK
- 4 - STRUCTURED LANDSCAPING
- (PLEASE REFER TO SEPARATE
DRAWING BY LANDSCAPER)
- 5 - NO DIG PATH WAY SYSTEM WITH
- GRAVEL INFILL TO PROTECT TREE
- ROOTS

ADOPTED HIGHWAY WITH
LOGICOR OWNERSHIP

© 2022 webbgray

NOTE:
THIS DRAWING IS © COPYRIGHT OF WEBB GRAY LTD AND SHOULD NOT BE REPRODUCED
WITHOUT PERMISSION.

ALL PROPOSALS ARE SUBJECT TO CONFIRMATION FOLLOWING DETAILED TOPOGRAPHICAL
SURVEY AND GROUND INVESTIGATION WORK.

IT HAS BEEN ASSUMED THAT OTHER THAN WHERE SHOWN THE SITE IS ESSENTIALLY FLAT
WITH NO EASEMENTS TO ABOVE OR BELOW GROUND SERVICES.

ALL PROPOSALS ARE SUBJECT TO CONFIRMATION FOLLOWING LIAISONS WITH RELEVANT
LOCAL AUTHORITIES.

PRELIMINARY INDICATIVE DRAWINGS MAY BE BASED UPON INFORMATION FROM VARIOUS
SOURCES, THE ACCURACY OF WHICH CANNOT BE GUARANTEED.

WHERE BOUNDARIES ARE SHOWN THESE ARE AS ADVISED BY THE CLIENT AND ARE FOR
GENERAL GUIDANCE ONLY, WHILST PLOTTED WITH REFERENCE TO LAND REGISTRY DATA
WHERE AVAILABLE AND INTERPOLATED AS PHYSICAL FEATURES ON SITE WHERE POSSIBLE,
THEY ARE NOT INTENDED TO REPRESENT DEFINITIVE SITE EXTENTS OR LEGAL OWNERSHIP.

ALL DIMENSIONS AND SETTING OUT COORDINATES TO BE CHECKED ON THE PROJECT SITE
BEFORE WORK IS COMMENCED OR MAKING ANY SHOP DRAWINGS.

IF THIS DRAWING HAS BEEN RECEIVED ELECTRONICALLY IT IS THE RECIPIENTS
RESPONSIBILITY TO PRINT THE DOCUMENT TO THE CORRECT SCALE.
ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE IT IS
RECOMMENDED THAT INFORMATION IS NOT SCALED OFF THIS DRAWING.
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT
DRAWINGS AND SPECIFICATIONS.

Client:



Project:

Rose Kiln Court
Reading

Drawing Title:
SITE LAYOUT PLAN

Webb Gray Ltd
Chartered Architects
75-77 Colmore Row
Birmingham B3 2AP

t: 0121 616 6030
e: architecture@webbgray.co.uk
w: www.webbgray.co.uk

Scale @ A1: 1:500 Date: MARCH 23 Drafted: DLD Checked: LA

Job No: 8758 Origin: WGA Vol: EX Level: XX Type: DR Role: A No: 002 Status: P Revision:

PLANNING

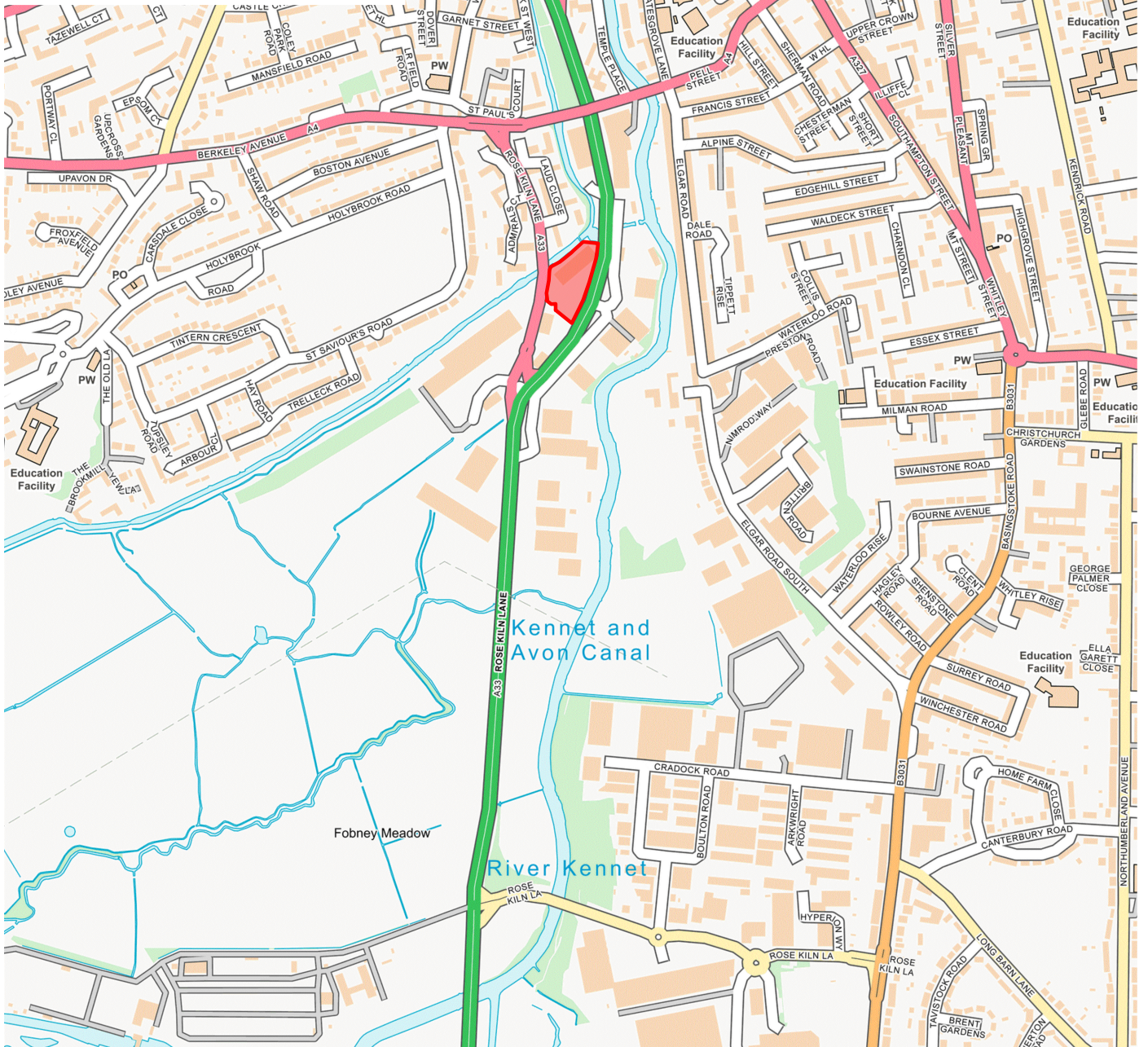
Figures

Figure 1 - Site Location Plan

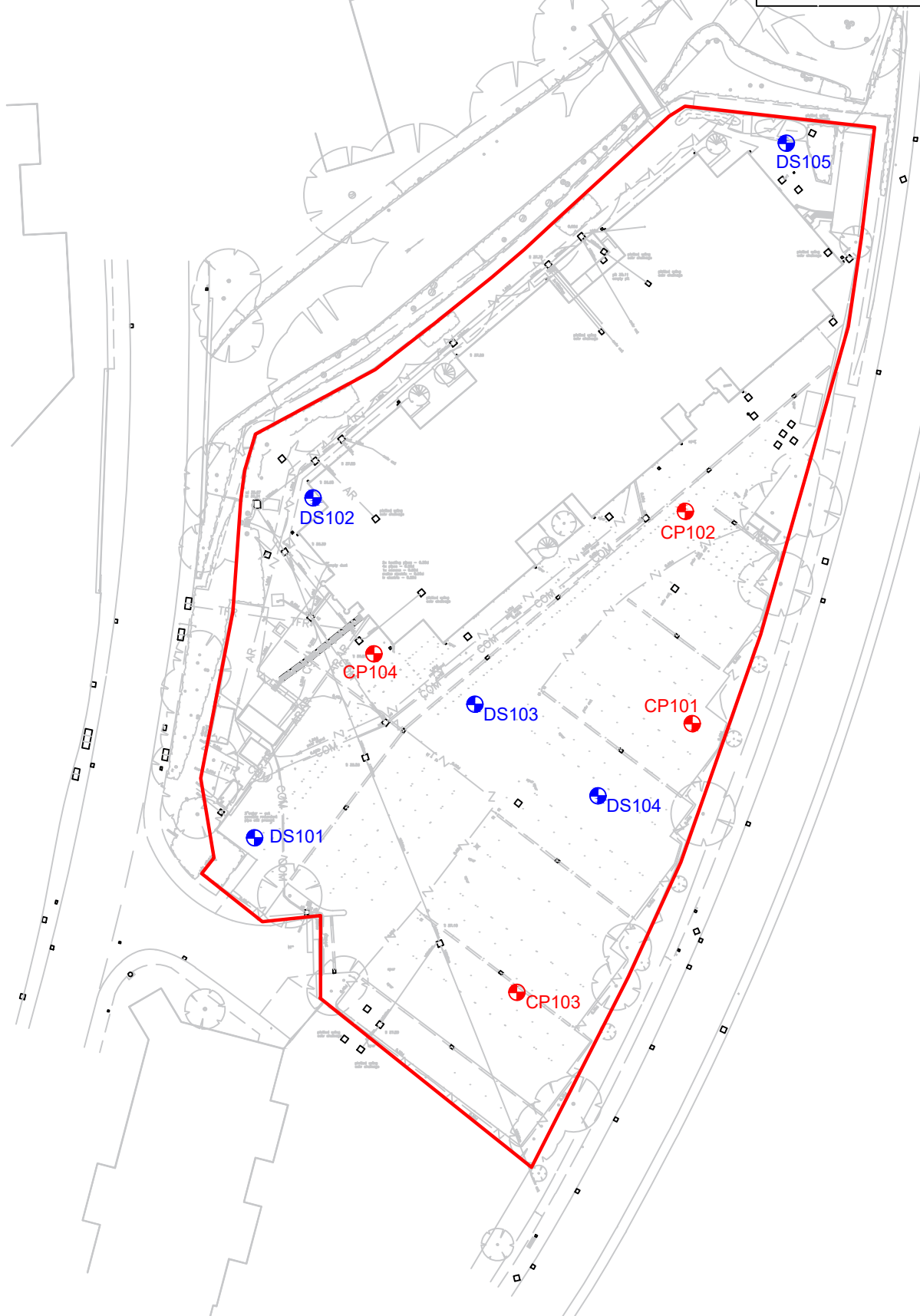
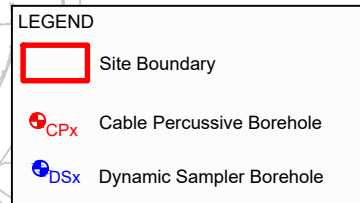


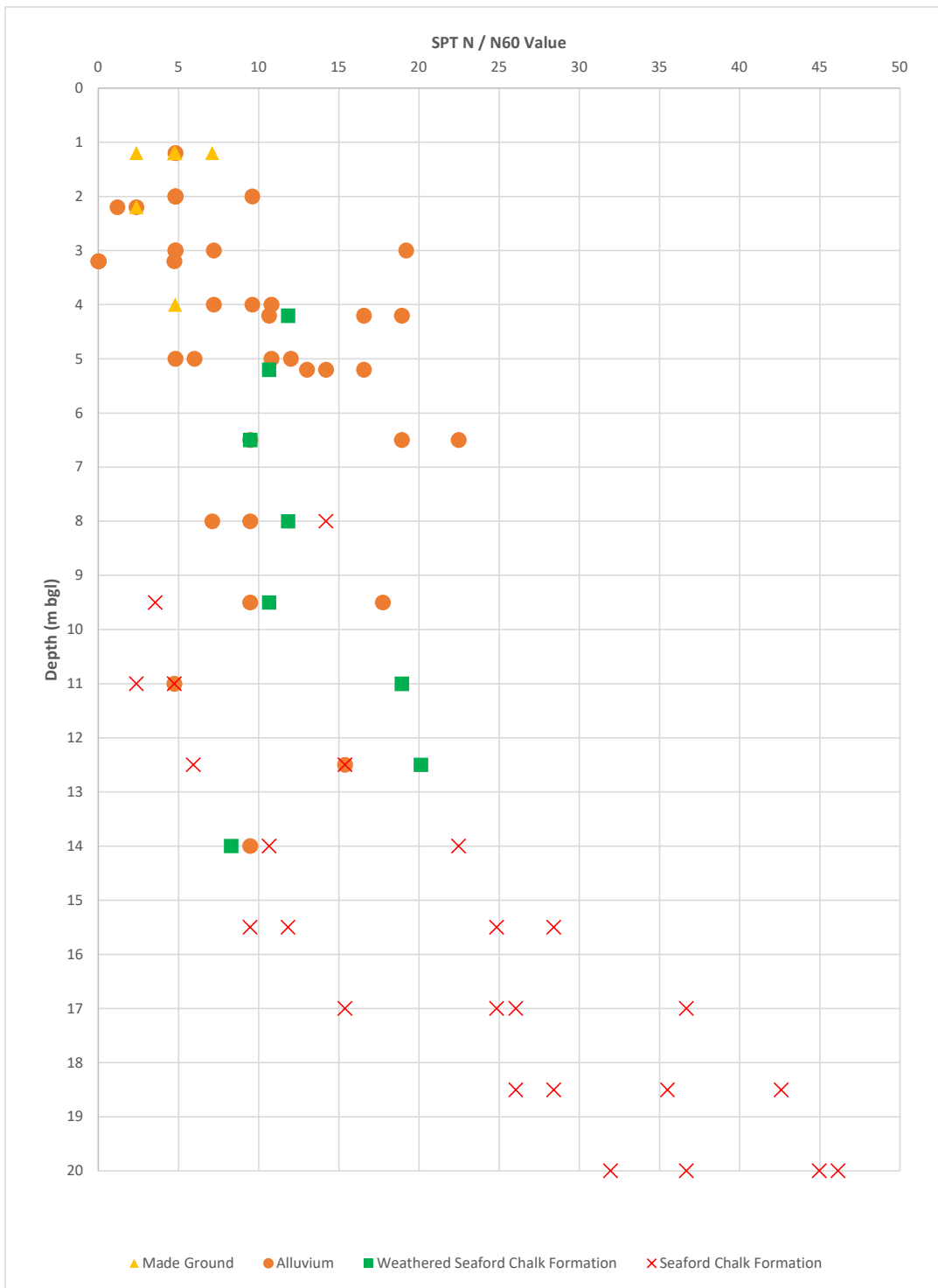
LEGEND

Site Boundary



Contains OS data © , Crown Copyright and Database Right (2022)





TITLE:
Corrected N60 / Uncorrected SPT N Values vs
Depth Plot (m bgl)
Rose Kiln Court New Development, Reading

DWN:	MOK	PROJECT NO.:	91193.557185
DATE:	Mar-23	Figure:	3

Appendices

Appendix A - Limitations

Limitations

This Report was prepared by Delta-Simons Ltd (Delta-Simons) for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. Delta-Simons does not intend, without its written consent through a formal letter of reliance or warranty, for this Report to be disseminated to any party other than the named Client or to be used or relied upon by any party other than the named Client. Use of the Report by any other party is unauthorised and such use is at the sole risk of the user. Any party using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by Delta-Simons. Unless explicitly agreed otherwise, in writing, this Report has been prepared under Delta-Simons' Standard Terms and Conditions as included within our proposal to the Client.

The recommendations contained within this Report represent Delta-Simons professional opinions, based upon the information detailed within the Report, exercising the reasonable skill and care to be expected of a professional consultant holding itself out as having the competence, experience and resources necessary for the purpose of carrying out similar work in scope and character to the services performed. The Report needs to be considered in the light of the proposal and associated limitations of scope. The Report needs to be read and considered in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the Report.

Where Delta-Simons has obtained, reviewed and evaluated information in preparing this Report from the Client and others and Delta-Simons conclusions, opinions and recommendations has been reasonably determined using this information, Delta-Simons does not warrant the accuracy of the third-party information provided to it and cannot be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

Site surveys document the conditions encountered at the time of survey only and conditions may change due to natural processes or human intervention. As such, surveys represent an assessment at a specific point in time and Delta-Simons cannot be responsible for adverse conditions which arise or become apparent after the time of the survey or for conditions which sit outside the scope for which the survey or Report was commissioned.

Where intrusive investigations have been completed, information, comments and opinions given in this report are based on the ground conditions encountered during the site work period and on the results of laboratory and field tests performed during the investigation. Ground conditions are inherently variable such that no investigation can be exhaustive to the extent that all adverse conditions are revealed. Conditions may therefore be present beneath the site that were not apparent in the data reviewed or obtained as part of this assessment. It should be noted that groundwater levels vary due to seasonal and other effects and may at times differ to those measured during the investigation. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions. Where risk assessment is undertaken, this is based upon the standards, guidance and common practice at the time of the assessment and Delta-Simons cannot be responsible for conditions which become apparent following changes in guidance or practice or advancements in scientific knowledge which change the position in relation to assessment of risk.

No aspect of this Report constitutes a design. Where this information is used in design, the designer should verify the information has been used appropriately.

Where budgets are prepared and presented within the Report, these are for information only to indicate the likely magnitude of a cost and do not represent an invitation to treat for the works. All budgets and programmes presented should be reviewed and verified by appropriately qualified and experienced independent Project Managers and Cost Consultants.

Appendix B – Data Sources

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

- Current and Historical Ordnance Survey (OS) maps;
- British Geological Survey (BGS) data;
- Environment Agency (EA) online data;
- DEFRA Magic Map online data;
- Coal Authority (CA) online data;
- A Landmark Envirocheck® Report for the Site (Ref. 305869184_1_1), dated 16 January 2023;
- Historical Maps included as part of the Envirocheck Report;
- Information provided by Reading Borough Council & from their planning website;
- Phase 1 Desk Study and Preliminary Geoenvironmental Assessment, by WML Consulting (Ref:10334G-xx-zz-RP-G-0001) dated January 2022;
- Phase I Environmental Review, by Environ (Ref: 61C11563), dated March 2007; and
- Ground Condition Statement. By Alward Town planning, (Ref: MA/STEN/002-1/R002), dated July 2021.

Appendix C - Risk Definitions

Contaminated Land Risk Definitions

The following methodology is based on the methodology presented in CIRIA C552 Contaminated Land Risk Assessment: A Guide to Good Practice 2001. It requires the classification of the:

Magnitude of the potential consequence (severity) of the Risk occurring: and

Magnitude of the Probability (likelihood) of the Risk occurring.

The classifications are then compared to indicate the risk presented by each pollutant linkage.

Consequence to Receptor Definition Matrix

	Human Health	Controlled Waters	Buildings/Services
Severe Consequence	Acute or chronic permanent impact on human health.	Sensitive controlled water pollution ongoing, or just about	Catastrophic collapse
Medium Consequence	Chronic permanent impact on human health	Gradual pollution of sensitive controlled water	Degradation of materials
Mild Consequence	Chronic temporary impact on human health	Gradual pollution of non-sensitive controlled water	Damage to building rendering it unsafe to occupy (e.g. foundation damage resulting in instability).
Minor Consequence	Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc).	Slight discoloration of water	Easily repairable effects of damage to buildings, structures and services, i.e. discoloration of concrete

Probability Definitions

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

Standard Risk Matrix

		Consequence/Magnitude of impact			
		Severe	Medium	Mild	Minor
Probability	High	Very High	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/low	Low
	Low Likelihood	Moderate	Moderate/low	Low	Very Low
	Unlikely	Moderate/low	Low	Very Low	Very Low

Classified Risks and Likely Action

Significance Level	Definition/Comments
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required. Demonstrable contaminated land situation, highest threat & liability level, urgent action recommended.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term. Likely contaminated land situation, risk assessment and action recommended.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, if it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term. Plausible contaminated land situation, risk assessment and possible action recommended.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild. Unlikely contaminated land situation, possible risk assessment and possible action.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe. Negligible risk, no action recommended except vigilance for changes in conditions.

Geotechnical Risk Classification

The geohazards listed in the report within Section 4 follow guidance presented in Clayton, C.R.I. (2001) *Managing Geotechnical Risk*, Thomas Telford and the National Highways document CD622 '*Managing Geotechnical Risk*' (2020) which aims to identify and manage the geotechnical risks associated with a scheme throughout its lifespan, from planning to construction to maintenance.

For each geohazard the probability of the hazard occurring (P) has been considered together with the impact it would have (I) if it were to happen to calculate the risk rating between 1 and 25.

Risks that fall within Moderate, Significant and Severe categories below are considered to be **substantial** and are therefore listed within the report.

Probability	(P)	X	Impact	(I)	=	(R)	Risk
Very Likely (VLk)	5		Very High (VH)	5		20 - 25	Severe
Likely (Lk)	4		High (H)	4		15 - 19	Substantial
Plausible (P)	3		Medium (M)	3		10 - 14	Moderate
Unlikely (U)	2		Low (L)	2		5 - 9	Minor
Very Unlikely (VU)	1		Very Low (VL)	1		1 - 4	Negligible

Appendix D - Site Photographs

Site Photographs



Plate 1 - Electrical substation and above ground storage tank (AST) on western portion of the Site.



Plate 2 - Empty drums adjacent the AST.



Plate 3 - Steel banded AST within concrete and wooden building.



Plate 4 - Inside AST cage, pump noted at rear of the cage and no evidence of spillages.



Plate 5 - Inside AST cage, gauge noted associated with the tank. Water noted on the floor.



Plate 6 - Filling point.



Plate 7 - Pipe/ducting on the back of the filling point going underground.