

## DESK STUDY & BASEMENT IMPACT ASSESSMENT REPORT

AVONMOUTH HOUSE,  
6 AVONMOUTH STREET,  
LONDON,  
SE1 6NX



**Report Title:** Desk Study & Basement Impact Assessment (BIA) for Avonmouth House, 6  
Avonmouth Street, London, SE1 6NX

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## EXECUTIVE SUMMARY

Tribe Avonmouth House Ltd ("The Client") has commissioned Jomas Associates Ltd ('Jomas'), to prepare a Basement Impact Assessment for a site referred to as Avonmouth House, 6 Avonmouth Street, London, SE1 6NX.

The aim of this report is to assess whether the ground conditions within the local area represent an impediment to the proposed development. A preliminary risk assessment is also undertaken to establish if possible contaminant linkages exist, which require further investigation in accordance with the Environment Agency (EA) report R&D CLR11 and relevant guidance within the National Planning Policy Framework (NPPF).

*It should be noted that the table below is an executive summary of the findings of this report and is for briefing purposes only. Reference should be made to the main report for detailed information and analysis.*

Desk Study	
<b>Current Site Use</b>	Site consists of a 2 storey building, currently used as venues with catering facilities and office space to let with concrete car parking areas.
<b>Proposed Site Use</b>	<p>It is understood that the proposed development is to comprise the demolition of the existing building on site and the construction of a new 2-16 storey building with 2 storey basement. The building is to be occupied by 233 Purpose Built Student Accommodation units. The lower basement is to comprise a plant, cycle storage and laundry, the upper basement level is to comprise of commercial space. The ground floor is to be occupied by commercial space in addition to a bin store, concierge and substation. The first floor is to be occupied by commercial space with the overlying floors occupied by student accommodation units.</p> <p>Some external amenity space is anticipated in the form of a landscaped terrace on the 7th floor accessed from the internal communal student space with only minor soft landscaping proposed at ground floor level.</p>
<b>Site History</b>	<p>The historic mapping has shown the site to have been part of the grounds of adjacent properties since the earliest publication (1872), when the site was occupied by an Oilcloth Manufactory building with two extensions into the adjacent land to the northwest. The Oilcloth Manufactory building and associated outbuildings were demolished around 1950. The site was later redeveloped with a large building which covers the entire site. These buildings were named as 'Atlas Paper Works' and later renamed as a 'Warehouse' until circa 1987. The main office building and associated hardstanding areas have remained unaltered over the mapped period with several changes in size, layout and position of the small buildings noted.</p> <p>The surrounding land uses have been shown to comprise predominantly commercial development (e.g. garages, manufactories, coal and coke depot's and various works), car parking areas, roads and railway. A dual tracked railway line is shown approximately 60m to the west, generally running north to south and the River Thames is located approximately 1.2km to the north.</p>

<b>Site Setting</b>	<p>The British Geological Survey indicates that the site is directly underlain by superficial deposits of the Kempton Park Gravel Member underlain by solid deposits of the London Clay Formation.</p> <p>The underlying the Kempton Park Gravel is identified as a Secondary (A) Aquifer with the London Clay Formation identified as an Unproductive Strata.</p> <p>A review of the EnviroInsight Report indicates that the site is located within an Environment Agency Flood Zone 2 and 3.</p> <p>The site is not located within a Source Protection Zone.</p> <p>There are 146No groundwater abstractions reported within 2km, the nearest abstraction is 215m north west for a heat pump.</p> <p>There are no surface water abstractions reported within 2km of the site.</p> <p>There are 63No potable abstractions reported within 2km; the nearest abstraction is located 566m south west for drinking, cooking, sanitary and washing but is termed historical. The nearest active abstraction is located 1469m north east of the site for the same use.</p> <p>There are no detailed river entries or surface water features reported within 250m of the site.</p>
<b>Potential Sources</b>	<ul style="list-style-type: none"> <li>• Potential for Made Ground associated with previous development operations – on site (S1)</li> <li>• Potential asbestos impacted soils from demolition of previous buildings – on site (S2)</li> <li>• Potential for contaminated ground/hydrocarbon impacted ground associated with previous site use – on site (S3) <ul style="list-style-type: none"> <li>- Oilcloth Manufactory</li> </ul> </li> <li>• Current and previous industrial use – on and off site (S4) <ul style="list-style-type: none"> <li>On site; <ul style="list-style-type: none"> <li>- Oilcloth Manufactory</li> <li>- Atlas paper works</li> </ul> </li> <li>Off site; <ul style="list-style-type: none"> <li>- Vehicle components industrial use 8m SW</li> <li>- Railway 50m W</li> <li>- Engineering works 80m W</li> <li>- Printing works 90m N</li> <li>- Smithy 70m NW</li> <li>- Globe lamp works 60m SW</li> <li>- Atlas paper works 60m NW</li> <li>- Garages; nearest 100m N</li> </ul> </li> </ul> </li> </ul>
<b>Potential Receptors</b>	<ul style="list-style-type: none"> <li>• Construction workers (R1)</li> <li>• Maintenance workers (R2)</li> <li>• Neighbouring site users (R3)</li> <li>• Future site users (R4)</li> </ul>

	<ul style="list-style-type: none"> <li>• Building foundations and on site buried services (water mains, electricity and sewer) (R5)</li> <li>• Secondary (A) Aquifer, groundwater abstraction 215m NW (R6)</li> </ul>
<b>Preliminary Risk Assessment</b>	<p>The risk estimation matrix indicates a moderate risk as defined above. A high potential risk has been identified for asbestos.</p> <p>Due to the potential presence of asbestos containing materials, an asbestos survey should be undertaken, with any asbestos containing materials found, removed under suitably controlled conditions. There should be no risk to end users from asbestos if the potential asbestos containing materials are removed by suitably qualified and experienced specialists under controlled conditions.</p> <p>It is recommended that an intrusive investigation is carried out to verify the underlying ground conditions, clarify potential risks to the identified receptors, and assess the extent of made ground soils present at the site.</p>
<b>Potential Geological Hazards</b>	<p>The Groundsure data identifies a negligible to very low risks for the potential hazards assessed.</p> <p>The presence of Made Ground and London Clay Formation may be a source of elevated sulphate. If such levels are noted then sulphate resistant concrete may be required.</p> <p>It is recommended that a geotechnical ground investigation is undertaken to inform foundation design.</p>
<b>UXO</b>	<p>Publicly available information has been assessed regarding the risk of Unexploded Ordnance affecting the site. The data indicates there is a potentially high risk. This does not constitute a formal UXO risk assessment. A formal UXO risk assessment is recommended.</p>



Screening and Scoping (Basement Impact Assessment)	
<b>Subterranean (Groundwater) Flow</b>	A ground investigation is recommended to confirm the ground conditions and groundwater levels (if any) beneath the site. This can then confirm the relative depths of the basement to the groundwater levels.
<b>Land Stability</b>	<p>The site, as with the surrounding area, is generally flat and level. The Groundsure report has noted that there is a “very low” risk of land instability issues for the site.</p> <p>The investigation should also determine the possibility of encountering groundwater and the possibility of Made Ground and/or clay. Atterberg Limits of the underlying clay should be determined by the ground investigation to establish shrink/swell potential.</p>
<b>Surface Flow and Flooding</b>	<p>The proposed development will comprise a basement similar to the footprint of the existing building. An increase in impermeable cover is not anticipated and therefore surface water flow is unlikely to be affected.</p> <p>The site is within a flood zone 3. The site is to be developed into a multi-storey mixed student housing and commercial block. As the basement will be used exclusively for employment space (commercial) and cycle storage, the ground floor is designated for commercial use, a bin store and cycle storage and the first floor is designated for commercial use and student accommodation, the development may be defined as “less vulnerable” in accordance with PPS25 Table D2 and an Exception Test is not required. Note that if the development proposal changes, this may increase the definition of the site to “more vulnerable”, and an Exception Test may then be required.</p>

Basement Impact Assessment	
<b>Impact Assessment</b>	<p>The overall assessment of the site is that the creation of a basement for the existing development will not adversely impact the site or its immediate environs, providing measures are taken to protect surrounding land and properties during construction.</p> <p>The proposed basement excavation will be within 5m of a public pavement. It is also laterally within 5m of neighbouring properties.</p> <p>Unavoidable lateral ground movements associated with the basement excavations must be controlled during temporary and permanent works so as not to impact adversely on the stability of the surrounding ground and any associated services.</p> <p>During the construction phase careful and regular monitoring will need to be undertaken to ensure that the property above, is not adversely affected. This may mean that the property needs to be suitably propped and supported.</p> <p>From the studies that have been undertaken so far, and subject to the findings of an intrusive investigation, it is concluded that the construction of the building will not present a problem for groundwater. The proposed development is not expected to cause significant problems to the subterranean drainage. However, this should be confirmed by a ground investigation and a subsequently updated Basement Impact Assessment.</p>

**Recommended Further Work**

<b>Works</b>	<p>An intrusive ground investigation is recommended to confirm the ground conditions and groundwater levels (if any) beneath the site, as well as to inform foundation design.</p> <p>A preliminary investigation could comprise a cable percussive borehole drilled to at least 5m below the proposed depth of the basement.</p> <p>A UXO risk assessment is also recommended.</p>
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## **1 INTRODUCTION**

### **1.1 Terms of Reference**

1.1.1 Tribe Avonmouth House Ltd (“The Client”) has commissioned Jomas Associates Ltd (‘Jomas’), to prepare a Phase 1 Desk Study and a Basement Impact Assessment (Screening & Scoping) at a site referred to as Avonmouth House, 6 Avonmouth Street, London, SE1 6NX.

1.1.2 Jomas' work has been undertaken in accordance with email proposal dated 29<sup>th</sup> April 2021.

### **1.2 Proposed Development**

1.2.1 It is understood that the proposed development is to comprise the demolition of the existing building on site and the construction of a new 2-16 storey building with 2 storey basement. The building is to be occupied by 233 Purpose Built Student Accommodation units. The lower basement is to comprise a plant, cycle storage and laundry, the upper basement level is to comprise of commercial space. The ground floor is to be occupied by commercial space in addition to a bin store, concierge and substation. The first floor is to be occupied by commercial space with the overlying floors occupied by student accommodation units.

1.2.2 Some external amenity space is anticipated in the form of a landscaped terrace on the 7<sup>th</sup> floor accessed from the internal communal student space with only minor soft landscaping proposed at ground floor level.

1.2.3 A plan of the proposed development is included in Appendix 1.

1.2.4 For the purposes of the contamination risk assessment, the proposed development is classified as ‘Residential without plant uptake’.

1.2.5 For the purpose of geotechnical assessment, it is considered that the project could be classified as a Geotechnical Category (GC) 2 site in accordance with BS EN 1997 Part 1.

1.2.6 This will be reviewed at each stage of the project.

### **1.3 Objectives**

1.3.1 The objectives of Jomas’ investigation was as follows:

- To undertake a desk-based assessment of geotechnical and geo-environmental factors pertaining to the site and surrounding area, including a site walkover survey and an examination of various sources of geo-environmental, hydrogeological, hydrological and geotechnical information;
- To review readily available historical information (i.e., Ordnance Survey maps and database search information) for the site and surrounding areas;

- To assess the potential impacts that the proposal may have on ground stability, the hydrogeology and hydrology on the site and its environs;
- To carry out a screening and scoping assessment to determine the likely impacts caused by the proposed development works and to provide recommendations for mitigation methods.

#### **1.4 Scope of Works**

1.4.1 The following tasks were undertaken to achieve the objectives listed above:

- A walkover survey of the site;
- A Phase 1 desk study, which includes the review of a database search report (GeoInsight Report, attached in Appendix 2) and historical Ordnance Survey maps (attached in Appendix 3);
- A basement impact assessment;
- The compilation of this report, which collects and discusses the above data, and presents an assessment of the site conditions, conclusions and recommendations.

#### **1.5 Scope of Basement Impact Assessment**

1.5.1 The site lies within the remit of the London Borough of Southwark. The council has published a document “Basements and Flooding – Guide for Developers” (May 2021). This gives a breakdown of what is required for basement impact assessments but does not go into detail as to how these issues should be assessed.

1.5.2 Consequently, Jomas has based the methodology of the BIA on the guidance given in the London Borough of Camden document “Camden Planning Guidance Basements” (CPGB) (January 2021). This document has been used as it is generally accepted that this gives the best available guidance on the practicalities regarding how to undertake a BIA.

1.5.3 This Jomas BIA also takes into account the Campbell Reith pro forma BIA produced on behalf of and published by the London Borough of Camden as guidance for applicants to ensure that all of the required information is provided.

1.5.4 A number of the requirements set out in the London Borough of Camden document CPGB will need to be addressed in a construction management plan, this stage is not within the scope of work that Jomas Associates have been commissioned.

#### **1.6 Supplied Documentation**

1.6.1 Jomas Associates have not been supplied with any previously produced reports at the time of writing this report.

**1.7 Limitations**

- 1.7.1 Jomas Associates Ltd has prepared this report for the sole use of Tribe Avonmouth House Ltd in accordance with the generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon by any other party without the explicit written agreement of Jomas. No other third party warranty, expressed or implied, is made as to the professional advice included in this report. This report must be used in its entirety.
- 1.7.2 The records search was limited to information available from public sources; this information is changing continually and frequently incomplete. Unless Jomas has actual knowledge to the contrary, information obtained from public sources or provided to Jomas by site personnel and other information sources, have been assumed to be correct. Jomas does not assume any liability for the misinterpretation of information or for items not visible, accessible or present on the subject property at the time of this study.
- 1.7.3 Whilst every effort has been made to ensure the accuracy of the data supplied, and any analysis derived from it, there may be conditions at the site that have not been disclosed by the investigation, and could not therefore be taken into account. As with any site, there may be differences in soil conditions between exploratory hole positions. Furthermore, it should be noted that groundwater conditions may vary due to seasonal and other effects and may at times be significantly different from those measured by the investigation. No liability can be accepted for any such variations in these conditions.
- 1.7.4 ***This report is not an engineering design and the figures and calculations contained in the report should be used by the Structural Engineer, taking note that variations may apply, depending on variations in design loading, in techniques used, and in site conditions. Our recommendations should therefore not supersede the Engineer's design.***

## 2 SITE SETTING & HISTORICAL INFORMATION

### 2.1 Site Information

2.1.1 The site location plan is appended to this report in Appendix 1.

**Table 2.1: Site Information**

<b>Name of Site</b>	Avonmouth House
<b>Address of Site</b>	6 Avonmouth Street London, SE1 6NX
<b>Approx. National Grid Ref.</b>	532152, 179352
<b>Site Area (Approx)</b>	0.13 hectares
<b>Site Occupation</b>	Venues and offices with car parking areas
<b>Local Authority</b>	London Borough of Southwark
<b>Proposed Site Use</b>	Demolition of the existing building and the construction of a new 2-16 storey building with 2 storey basement. Student Accommodation units.

### 2.2 Walkover Survey

2.2.1 The site was visited by a Jomas Engineer on the 12<sup>th</sup> August 2021. The following information was noted while on site.

<b>Table 2.2: Site Description</b>	<b>Item</b>	<b>Details</b>
<b>On-site:</b>	<b>Current Uses:</b>	Site consists of a 2 storey building, currently used as an office space venue with catering facilities, and concrete car parking areas.
	<b>Evidence of historic uses:</b>	No evidence of historic uses observed on site.
	<b>Surfaces:</b>	The majority of the site is covered by hardstanding. The car park and access footpaths are comprised of concrete and brick paving, respectively.
	<b>Vegetation:</b>	A mature tree approximately 6m in height and several newly planted palm trees approximately 2m in height were noted at the entrance to the site.
	<b>Topography / Slope Stability:</b>	With the exception of some localised positive drainage along the concrete car parking areas, the site's topography is generally flat and level.

Table 2.2: Site Description	Item	Details
	<b>Drainage:</b>	Site appears to be connected to normal surface runoff drainage facilities with manholes on site and no structural issues were noted.
	<b>Services:</b>	Site appears to be connected to services which are in use and active.
	<b>Controlled waters:</b>	No controlled waters were observed on site.
	<b>Tanks:</b>	No tanks were observed on site.
<b>Neighbouring land:</b>	<b>North:</b>	Cafes and commercial.
	<b>East:</b>	Possible substation below ground level.
	<b>South:</b>	Residential flats and a recreational park.
	<b>South west:</b>	Railway line approximately 60m SW.
	<b>West:</b>	Residential, autocar building/garage.

2.2.2 Photos taken during the site walkover are provided in Appendix 1.

### 2.3 Historical Mapping Information

2.3.1 The historical development of the site and its surrounding areas was evaluated following the review of a number of Ordnance Survey historic maps, procured from GroundSure, and these are provided in Appendix 3 of this report.

2.3.2 A summary produced from the review of the historical map is given in Table 2.3 below. Distances are taken from the site boundary.

## SECTION 2

### SITE SETTING & HISTORICAL INFORMATION

**Table 2.3: Historical Development**

Dates and Scale of Map	Relevant Historical Information	
	On Site	Off Site
1872-1879  1:1,056 1:2,500 1:10,560	Site is occupied by a building which extends off site to the W, identified as an <b>'oilcloth manufactory'</b> . A detached smaller building is also present in the E.	The building on site extends off site to the west as part of a row of buildings positioned on Newington Causeway. Site is bounded by Mead's Place along the N and SE boundary and Tiverton Street along the SW boundary.  A <b>railway line</b> crosses Newington Causeway 60m W and runs generally N-S.  A <b>smithy</b> has been identified 70m NW.  A fountain is present 70m N and a drinking fountain is identified 150m N.  <b>Cart and Wheel Works</b> located 90m NW.  <b>Stone yard</b> is present from 75m SE and 125m E.  A pump is present 100m N.  <b>Engineering works</b> 80m W.  <b>Rag store</b> 90m W and 160m E.  <b>Timber yard</b> 125m W.  <b>Boot and shoe manufactory</b> identified 125m NW.  <b>Railway signal manufactory</b> located 175m W.  <b>Carpet manufactory</b> 175m SW.  <b>Coal depot</b> 175m S.  <b>Coke depot</b> located 150m S.  <b>Warehouse</b> located 200m SW.  <b>Printing works</b> identified 90m N.  River Thames present 1.2km N.
1895-1898  1:1,056 1:10,560	The building on site is now separate to adjacent buildings off site and is no longer identified as an oilcloth manufactory.  Minor extension/construction of outbuilding.	<b>Globe lamp works</b> constructed 60m SW.  <b>Atlas paper works</b> identified 60m NW.  Recreation ground including a newly constructed band stand is present from 30m E.  South London Sessions house has been constructed from 30m NE.  Bath chambers present 100m SE.  Road bounded to the NE has been renamed to Devonshire street.
1916-1938  1:2,500 1:10,560	No significant changes.	2No large <b>garages</b> identified 175m and 210m S.  <b>Tramway</b> identified on Newington Causeway 50m NW.  <b>Garage</b> identified 130m NE.  <b>Underground Station</b> located 250m SW.  <b>Smithy</b> identified 120m W.



**Table 2.3: Historical Development**

Dates and Scale of Map	Relevant Historical Information	
	On Site	Off Site
1950-1957  1:1,250 1:10,560	The site has been redeveloped; 1No building covers the majority of the site and a building from off-site encroaches onto the site from the NW covering the NW corner of the site.  These buildings are now identified as ' <b>Atlas paper works</b> '.	<b>Atlas and paper works</b> constructed 60m NW. <b>Ruins</b> are identified 70m NW, 80m N and 90m N.  Larger <b>ruins</b> identified 150m E. Garage 175m S, now identified as <b>Engineering Works</b> . <b>Engineering works</b> 250m W. Electricity substation 240m WSW.
1960-1966  1:1,250 1:10,560	No significant changes.	<b>Garage</b> constructed 100m N.
1968-1973  1:1,250 1:2,500 1:10,560	Buildings on site now identified as <b>warehouse</b> .	Rectangular pond constructed 175m SW.
1987-2021  1:1,250 1:10,000 1:10,560	Building no longer covers NW corner of the site.  No longer identified as a warehouse.  Site appears to be in its current configuration.	No significant changes over the years.

- 2.3.4 Aerial photographs have been supplied as part of the GroundSure Enviro+GeoInsight report range from 1999 to 2019. These generally show a building covering the majority of the site and car parking in the north west. The site is bounded to the north east and south by roads. The surrounding area is quite well developed with buildings of various shapes and sizes of which the specific uses are unknown. A railway line is present to the west of the site, which appears to be raised above ground level, and a play area with numerous trees is visible to the south east.

## 2.4 Past Land Use

- 2.4.1 Groundsure provide some information on past land use on and in the vicinity of the site. Table 2.4 below summarises the information provided, which is presented in further detail in the Enviro+Geoinsight in Appendix 2. Where the identified features have appeared on more than one map they have been counted multiple times and therefore the reported numbers may be higher than the actual count.

**Table 2.4: Past Land Use**

Type of Use	On site	Off-site (within 500m of site, unless stated otherwise)	Potential to Impact Site*
Historical Industrial Land Uses	None reported	66No reported; nearest entry is a hospital located 55m W. Other entries include railway sidings 171m S and a police station 182m NE.	X
Historical Tanks	None reported	16No reported; nearest entry is a tank/trough 135m NE.	X
Historical Energy Features	None reported	42No reported; nearest entry is an electricity substation 151m SW.	X
Historical Petrol Stations	None reported	1No reported; a service garage 230m NE.	X
Historical Garages	None reported	33No reported; nearest entry is a garage located 89m W.	X
Historical Military Land	None reported	None reported	X

## **2.5 Landfill, Waste and Potentially Infilled Surface Ground Workings**

2.5.1 The Groundsure Enviro+Geosight Report provides information on active and historical landfills and waste sites. It also provides information on historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface; these features may or may not have been subsequently infilled. The following section summarises the information collected from the available sources.

**Table 2.5: Landfill, Waste and Potentially Infilled Ground Surface Workings**

Type of Consent/Authorisation	On site	Off-site (within 500m of site, unless stated otherwise)	Potential to Impact Site*
Active or Recent Landfill	None reported	None reported	X
Historical Landfill	None reported	None reported	X
Historical Waste Sites	None reported	1No reported, a waste paper works 471m E.	X
Licensed Waste Sites	None reported	None reported	X
Waste Exemptions	None reported	17No reported; nearest entry is for the repair or refurbishment of WEEE, 110m NW.	X
Potentially Infilled Surface Ground Workings	None reported	None reported	X

## 2.6 Current Industrial Land Use

2.6.1 The Groundsure Enviro+Geosight Report also provides information on various records relating to current industrial land use on and in the vicinity of the site. The following section summarises the information collected from the available sources.

**Table 2.6: Current Industrial Land Use**

Type of Consent/Authorisation	On site	Off-site (within 500m of site, unless stated otherwise)	Potential to Impact Site*
Recent Industrial Land Uses	None reported	15No reported; nearest entry is for vehicle components 8m SW. Other entries include alcoholic drinks 72m NW and printing related machinery 110m W.	✓
Current or Recent Petrol Stations	None reported	1No reported for BFL 135m N.	X
High Voltage Electricity Cables	None reported	None reported	X
High Pressure Gas Pipelines	None reported	None reported	X
Sites Determined as Contaminated Land	None reported	None reported	X
Control of Major Accident Hazards (COMAH) and Notification of Installations Handling Hazardous Substances (NIHHS) Sites	None reported	None reported	X
Regulated Explosive Sites	None reported	None reported	X
Hazardous Substance Storage/Usage	None reported	None reported	X
Historical Licensed Industrial Activities	None reported	None reported	X
Licensed Industrial Activities	None reported	3No reported; nearest entry is for organic chemicals; oxygen containing compounds e.g alcohols, 296m NW.	X
Licensed Pollutant Release	None reported	3No reported; nearest entry is for a historical permit for petrol vapour recovery 114m N.	X
Radioactive Substance Authorisations	None reported	15No reported; nearest entry is for the keeping and use of radioactive materials, 191m NE.	X
Licensed Discharge to Controlled Waters	None reported	None reported	X
Pollutant Release to Surface Waters (Red List)	None reported	None reported	X
Pollutant Release to Public Sewer	None reported	None reported	X
List 1 and List 2 Dangerous Substances	None reported	None reported	X

Type of Consent/Authorisation	On site	Off-site (within 500m of site, unless stated otherwise)	Potential to Impact Site*
Pollution Incidents	None reported	1No reported 150m NE for inert materials and wastes with no impact to water and air and minor impact to land.	X
Pollution Inventory Substances	None reported	None reported	X
Pollution Inventory Waste Transfers	None reported	None reported	X
Pollution Inventory Radioactive Waste	None reported	1No reported for King's College London, 269m NE.	X

## 2.7 Tunnels and Railways

2.7.1 The Groundsure Enviro+Geosight Report provides information on railway tunnels and railways on and within the vicinity of the site, as summarised in the table below.

**Table 2.7: Tunnels and Railways**

Feature	On site	Off-site (within 250m of site, unless stated otherwise)	Potential to Impact Site*
Underground Railways (London)	None reported	1No reported 33m NW.	X
Underground Railways (Non-London)	None reported	None reported	X
Railway Tunnels	None reported	None reported	X
Historical Railway and Tunnel Features	None reported	20No reported; nearest entry is a railway line 51m W.	X
Royal Mail Tunnels	None reported	None reported	X
Railways	None reported	19No reported; nearest entry is 57m W.	✓
Crossrail and HS2	None reported	None reported	X

\* From a land contamination/site development perspective

## 2.8 Previous Site Investigations

2.8.1 No previous site investigation reports were provided at the time of writing.

## 2.9 Local Authority Information

2.9.1 Jomas have made a request to London Borough of Southwark for information relating to contamination on the site and surrounding areas. A copy of the correspondence is included in Appendix 6.

2.9.2 A response is pending.

**2.10 Planning Information**

- 2.10.1 A review of the local authority's planning portal was undertaken on the 24<sup>th</sup> May 2021 at <https://www.southwark.gov.uk/planning-and-building-control>.
- 2.10.2 A Phase 2 ground investigation report was found that relates to a previous planning application near the site (report ref. 35113/R/001A/G/CLD/RJM, by Knapp Hicks & Partners Limited, March 2018). This relates to planning application number 19/AP/0750.
- 2.10.3 The reader is referred to the report for full details but some salient information is noted;
- A small metal above ground storage tank was identified in the north of the site with some leakage.
  - The ground investigation reported that contaminants measured within the made ground and underlying strata were generally found to be below the relevant tier 1 assessment criteria for a residential without home-grown produce end use.
  - Asbestos cement and bitumen products containing chrysotile were reported within the 2No samples tested. Asbestos quantification on these samples confirmed as 0.001%.
  - Further assessments of the soils within the vicinity of the above ground storage tank were recommended, in addition to additional investigations within the building post demolition.

**2.11 Unexploded Ordnance**

- 2.11.1 Publicly available information has been assessed regarding the risk of Unexploded Ordnance affecting the site.
- 2.11.2 The initial data indicates that there is a potentially high risk of UXO.
- 2.11.3 High-risk regions are those that show a bomb density of up to 150 bombs per 1km<sup>2</sup> and that may contain potential WWII targets.
- 2.11.4 This does not comprise a full UXO risk assessment. A full UXO threat assessment is recommended.

**2.12 Sensitive Land Uses**

- 2.12.1 The site is not located within a Nitrate Vulnerable Zone.

## SECTION 2

### SITE SETTING & HISTORICAL INFORMATION



- 2.12.2 9No listed buildings are reported within 250m of the site. The nearest reported is 81m north east of the site. The proposed developments at the site is not considered to affect the listed building.
- 2.12.3 The Trinity Church Square Conservation Area is located 188m north east of the site and the King's Bench Conservation Area is located 233m north west of the site.
- 2.12.4 Deciduous woodland is located from 8m east of the site.
- 2.12.5 An open mosaic habitat is located 215m east of the site.
- 2.12.6 No sensitive land use was identified within 1km of the site.
- 2.13 Radon**
- 2.13.1 The site is reported not to lie within a Radon affected area, as less than 1% of properties are above the action level.
- 2.13.2 Consequently, no radon protective measures are necessary in the construction of new dwellings or extensions as described in publication BR211 (BRE, 2015).

### 3 GEOLOGICAL SETTING & HAZARD REVIEW

3.1.1 The following section summarises the principal geological resources of the site and its surroundings. The data discussed herein is generally based on the information given within the Groundsure Report (in Appendix 2).

#### 3.2 Solid and Drift Geology

3.2.1 With reference to British Geological Survey (BGS) mapping, the geology of the site is anticipated to comprise the Kempton Park Gravel Member overlying the London Clay Formation. In addition, given the close proximity of developed areas (e.g. existing venues, associated infrastructure and adjacent roads) within the boundaries of the site as well as within the surrounding area, a thickness of Made Ground could also be present overlying the natural soils.

3.2.2 BS5930:2015 defines **Made Ground** as anthropogenic ground in which the material has been placed without engineering control and/or manufactured by man in some way, such as through crushing or washing, or arising from an industrial process. Great variations in material type, thickness and degree of compaction invariably occur and there can be deleterious or harmful matter, as well as potentially methanogenic organic material. In addition, on sites which have undergone several phases of historic development it is not uncommon for asbestos to be present within Made Ground soils.

3.2.3 The **Kempton Park Gravel Member** comprises alternating layers of sands and gravel, locally with lenses of silt, clay or peat. The sands usually overlie the clays. The Kempton Park Gravel Member is transitional and overlays bedrock geology of the London Clay Formation, or Lambeth Group.

3.2.4 The **London Clay Formation** comprises a stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required. The lowest part of the formation is a sandy bed with black rounded gravel and occasional layers of sandstone and is known as the Basement Beds. In the north London area, the upper part of the London Clay has been disturbed by glacial action and may contain pockets of sand and gravel.

3.2.5 2No hollows filled with superficial deposits are reported 116m south and 135m south east of the site.

#### 3.3 British Geological Survey (BGS) Borehole Data

3.3.1 As part of the assessment, publicly available BGS borehole records were obtained and reviewed from the surrounding area. The local records obtained are presented in Appendix 5.

3.3.2 The nearest such record was located approximately 14m north east of the site, in August 1987.

- 3.3.3 This showed the underlying ground conditions to comprise 'Made Ground' to a depth of around 5.00mbgl.
- 3.3.4 This was underlain by a 'Gravel with sand in places' to a depth of ca. 10.60m bgl. This was overlying a 'stiff to very stiff locally firm fissured dark brown grey silty clay' to the base of the borehole at 15.00m bgl. This material is considered by Jomas as likely to represent the London Clay Formation.
- 3.3.5 During drilling of the borehole, no groundwater strikes were reported, although it was noted that water was added to aid drilling from 4.45m bgl and could have masked any groundwater strikes.
- 3.3.6 All depths and measurements should be viewed as approximate, due to the age of the borehole.

### **3.4 Geological Hazards**

- 3.4.1 The following are brief findings extracted from the GroundSure GeolInsight Report, that relate to factors that may have a potential impact upon the engineering of the proposed development.

**Table 3.1: Geological Hazards**

Potential Hazard	Site check Hazard Rating	Details	Further Action Required?
Shrink swell	Negligible	Ground conditions predominantly non-plastic.	No
Running sands	Very Low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.	No
Compressible deposits	Negligible	Compressible strata are not thought to occur.	No
Collapsible deposits	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.	No
Landslides	Very Low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.	No
Ground dissolution	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.	No
Coal mining	No	The site is not within a coal mining area.	No
Non-coal mining	No	None reported within 1km.	No
Brine affected areas	No	The site is not within a brine affected area.	No



- 3.4.2 In addition, the GeolInsight report notes the following:
- 1No natural cavity is reported within 250m of the site. It is located 230m south of the site and described as a scour hollow.
  - No historical surface ground working features are reported within 250m of the site.
  - No historical underground working features are reported within 1km of the site.
  - No British Pits (BritPits) are located within 500m of the site.
- 3.4.3 The existing hardstanding areas will need to be excavated and removed prior to the commencement of the redevelopment. This may require the use of hydraulic breaking.
- 3.4.4 Foundations should not be formed within Made Ground due to the potential risk of total and differential settlement.
- 3.4.5 The clearance of the site, including removal of services is likely to increase the depth of Made Ground on the site.
- 3.4.6 The presence of Made Ground derived from demolition material may be a source of elevated sulphate results associated with plaster from the previous structures.
- 3.4.7 The BGS notes disseminated pyrite within the London Clay Formation and as such may be a source of elevated sulphate. If such levels are noted then sulphate resistant concrete may be required.
- 3.4.8 The potential impacts of shallow groundwater should be considered during foundation design. The affects that this may have include (but are not limited to):
- Permanent excavations – i.e. for items such as basements and drainage. This is likely to need waterproofing / tanking and may have flotation issues.
  - Temporary excavations – likely to affect side stability especially where the excavations are formed in granular materials.
  - Soakaways – likely to affect the permeability and therefore the effective use of soak-away drainage.
  - Concrete classification on the site (in accordance with BRE SD-1) due to the potential for a mobile groundwater table.
  - May require dewatering or groundwater exclusion techniques to be used.
  - Foundation design – likely to reduce the allowable bearing capacity that could be achieved in the superficial deposits.
- 3.4.9 Although London Clay is reported beneath the site the presence of the superficial Kempton Park Gravel deposits will likely mean that the London Clay is at sufficient depth to not be affected by shrinking and swelling as a result of water uptake of nearby trees.

- 3.4.10 It is recommended that a geotechnical ground investigation is undertaken to inform design.

## 4 HYDROGEOLOGY, HYDROLOGY AND FLOOD RISK REVIEW

### 4.1 Hydrogeology & Hydrology

4.1.1 General information about the hydrogeology of the site was obtained from the MAGIC website.

#### Groundwater Vulnerability

4.1.2 Since 1 April 2010, the EA's Groundwater Protection Policy uses aquifer designations that are consistent with the Water Framework Directive. This comprises;

- **Secondary A** - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers;
- **Secondary B** - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
- **Secondary Undifferentiated** - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
- **Principal Aquifer** – this is a formation with a high primary permeability, supplying large quantities of water for public supply abstraction.
- **Unproductive Strata** - These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

#### Source Protection Zones (SPZ)

4.1.3 In terms of aquifer protection, the EA generally adopts a three-fold classification of SPZs for public water supply abstraction wells.

- Zone I - or 'Inner Protection Zone' is located immediately adjacent to the groundwater source and is based on a 50-day travel time. It is designed to protect against the effects of human activity and biological/chemical contaminants that may have an immediate effect on the source.
- Zone II - or 'Outer Protection Zone' is defined by a 400-day travel time to the source. The travel time is designed to provide delay and attenuation of slowly degrading pollutants.
- Zone III - or 'Total Catchment' is the total area needed to support removal of water from the borehole, and to support any discharge from the borehole.

Hydrogeology

- 4.1.4 The baseline hydrogeology of the site is based on available hydrogeological mapping, including the BGS online mapping, and generic information obtained from the Groundsure Report.
- 4.1.5 The available data indicates that the geology of the area consists of the Kempton Park Gravel underlain by the London Clay Formation. It would be expected that a groundwater table would be encountered above or at the interface between the two strata.

Hydrology

- 4.1.6 The hydrology of the site and the area covers water abstractions, rivers, streams, other water bodies and flooding.
- 4.1.7 The Environment Agency defines a floodplain as the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.
- 4.1.8 There are two different kinds of area shown on the Flood Map for Planning. They can be described as follows:

Areas that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

- from the sea by a flood that has a 0.5 per cent (1 in 200) or greater chance of happening each year;
- or from a river by a flood that has a 1 per cent (1 in 100) or greater chance of happening each year.

(For planning and development purposes, this is the same as Flood Zone 3, in England only.)

- The additional extent of an extreme flood from rivers or the sea. These outlying areas are likely to be affected by a major flood, with up to a 0.1 per cent (1 in 1000) chance of occurring each year.

(For planning and development purposes, this is the same as Flood Zone 2, in England only.)

- 4.1.9 These two areas show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements.
- 4.1.10 Outside of these areas flooding from rivers and the sea is very unlikely. There is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The majority of England and Wales falls within this area. (For planning and development purposes, this is the same as Flood Zone 1, in England only.)

**SECTION 4**  
**HYDROGEOLOGY, HYDROLOGY AND**  
**FLOOD RISK REVIEW**

4.1.11 Some areas benefit from flood defences and these are detailed on Environment Agency mapping.

4.1.12 Flood defences do not completely remove the chance of flooding, however, and can be overtopped or fail in extreme weather conditions.

**Table 4.1: Summary of Hydrogeological & Hydrology**

Feature		On Site	Off Site	Potential Receptor?
Aquifer	Superficial:	Secondary (A) Aquifer	-	✓
	Solid:	Unproductive	Unproductive	X
Source Protection Zone		None	None within 500m.	X
Abstractions	Groundwater	None	146No reported within 2km; the nearest abstraction is 215m NW for a heat pump.	✓
	Surface water	None	None within 2km.	X
	Potable water	None	63No reported within 2km; the nearest abstraction is located 566m SW for drinking, cooking, sanitary and washing but is termed historical. The nearest active abstraction is located 1469m NE of the site for the same use.	✓
Surface Water Features		None	No surface water features/bodies within 250m of site.	X
Flood Risk	EA Flood Zone 2	Yes	-	-
	EA Flood Zone 3	Yes	-	-
	RoFRaS	Very low	-	-
	Historical flood events	None	None within 250m.	-
	Flood Defences	The site is reported to be within an area benefiting from flood defences.		-
	Surface water flooding	The highest risk on site is 1 in 100 year, 0.1m-0.3m.		-
	Groundwater flooding	The highest risk on site is moderate.		-

4.1.15 The borehole log for the nearest groundwater abstraction is confidential and therefore could not be obtained.

## 4.2 Flood Risk Review

4.2.1 In accordance with the NPPF Guidance, below is a review of flood risks posed to and from the development and recommendations for appropriate design mitigation where necessary. Specific areas considered are based on the requirements laid out in the “Camden Guidance for Subterranean Development” as this document is generally considered to be the most comprehensive Local Authority Guidance in the London area.

**Table 4.2: Flood Risk Review**

Flood Sources	Site Status	Comment on flood risk posed to / from the development
<b>Fluvial / Tidal</b>	<p>Risk of flooding from rivers and the sea (RoFRaS) rating very low.</p> <p>Site is within an Environment Agency Flood Zone 3.</p> <p>However, the site is within an area benefiting from flood defences.</p>	<p>Low risk.</p> <p>Proposed basement development will be formed within the overlying building footprint, of which is a similar building footprint to the existing structure.</p>
<b>Groundwater</b>	<p>The BGS considers the area to be at ‘moderate’ risk of groundwater flooding.</p> <p>The BGS considers the area to be susceptible to groundwater flooding within the superficial deposits.</p>	<p>As SUDS will be required by NPPF, PPG and LLFA policy requirements, this is likely to be provided by surface and above ground attenuation before releasing to the existing sewer network. This will ensure that the proposed development will not increase the potential risk of groundwater flooding.</p> <p>Basement will be fully waterproofed as appropriate to industry standard.</p> <p>Low Risk</p>
<b>Artificial Sources</b>	<p>No surface water features within 250m of site.</p>	<p>Low Risk</p>
<b>Surface Water / Sewer Flooding</b>	<p>No surface water features within 250m of site.</p> <p>Condition, depth and location of surrounding infrastructure uncertain.</p>	<p>As SUDS will be required by NPPF, PPG and LLFA policy requirements, these are likely to include attenuation before releasing to the existing sewer network. If permeable paving is used this would likely reduce the risk of surface water flooding. Combined, these are likely to reduce the risk of both surface and sewer flooding to both the site and surrounding properties.</p> <p>Basement will be fully waterproofed as appropriate to industry standard.</p> <p>Low Risk</p>
<b>Climate Change</b>	<p>Included in the flood modelling extents.</p> <p>The site is not within a predicted flood extent area.</p>	<p>Development will not significantly increase the peak flow and volume of discharge from the site.</p> <p>Low risk posed to and from the development.</p>

- 4.2.2 Information about the risk to the study site from flooding has been obtained from the following documents produced for London Borough of Southwark: Strategic Flood Risk Assessment (CONWAY and AECOM, 2017). Potential impacts to the site are discussed below.

Flooding from Fluvial/Tidal Sources

- 4.2.3 According to the London Borough of Southwark SFRA, the nearest main river is the River Thames located approximately 1250m north of the site and the site is located approximately 300m north of a hidden/lost watercourse.
- 4.2.4 The SFRA shows that the site is approximately 200m north of a recorded localised flood incident. There are no historic flood event outlines within 1km of the site.
- 4.2.5 The site is not located within an area that has any reports of properties flooded by overloaded sewers.

Groundwater Flooding

- 4.2.6 The London Borough of Southwark SFRA shows the site within an area that has the potential for groundwater flooding to occur at the surface.
- 4.2.7 However, there are no recorded instances of this occurring.

Emergency Flooding and Flood Risk Management Infrastructure

- 4.2.8 The Southwark SFRA shows the site to be within a flood warning and flood alert area and within an area benefiting from flood defences associated with the River Thames.

Surface Water Flooding

- 4.2.9 According to the London Borough of Southwark SFRA, the site is within an area at low risk of flooding (1 in 1000 years).
- 4.2.10 Based on EA mapping, the site and highways surrounding the site are not within an area identified as a high risk for surface water flooding potential; site itself not likely to be inundated.

Sewer/Artificial Flooding

- 4.2.11 The London Borough of Southwark is served by a combined sewer system. During a rainfall event greater than 1 in 30 year, the system may be susceptible to surcharge and flooding.
- 4.2.12 The Southwark SFRA shows the total properties flooded by overloaded sewers by postcode area.

- 4.2.13 The site is not located within an area with any records of sewer flooding or flooding from reservoirs.

Critical Drainage Areas (CDAs)

- 4.2.14 A critical drainage area is defined in the Town and Country Planning (General Development Procedure) (Amendment) (No. 2) (England) Order 2006 a Critical Drainage Area is “an area within Flood Zone 1 which has critical drainage problems and which has been notified... [to]...the local planning authority by the Environment Agency”.
- 4.2.15 They are where man made drainage infrastructure has been identified as at critical risk of failure, resulting in flooding. Such areas can be completely different or similar, to the areas identified by the Environment Agency as at risk of natural watercourse, river and sea flooding.
- 4.2.16 5No Critical Drainage Areas (CDA) are located within the London Borough of Southwark Strategic Flood Risk Assessment (SFRA).
- 4.2.17 The site is not located within a Critical Drainage Area (CDA).

Sustainable Drainage Systems (SuDS)

- 4.2.18 The basement is defined by a similar footprint of the existing building; it is unlikely to significantly change the impermeable areas on site.
- 4.2.19 In accordance with the NPPF, PPG and LLFA policy requirements, sustainable drainage systems (SUDS) should be incorporated wherever possible to reduce positive surface water run-off and flood risk to other areas.
- 4.2.20 However, it is likely that any SUDS would be restricted by the small size of the site, the proposed building footprint, and proximity to adjacent buildings and boundary.

Conclusion

- 4.2.21 Based on the available data, the site is considered to be at low risk from identified potential sources of flooding. The basement can be constructed and operated safely in flood risk terms without increasing flood risk elsewhere and is therefore considered NPPF compliant.

**4.3 Sequential and Exception Tests**

- 4.3.1 The Sequential Test aims to ensure that development does not take place in areas at high risk of flooding when appropriate areas of lower risk are reasonably available.

**Sequential Test:** The site is within a flood zone 3. The site is to be developed into a multi-storey mixed student housing and commercial block. As the basement will be used exclusively for



employment space (commercial) and cycle storage, the ground floor is designated for commercial use, a bin store and cycle storage and the first floor is designated for commercial use and student accommodation the development may be defined as “less vulnerable” in accordance with PPS25 Table D2 and an Exception Test is not required. Note that if the development proposal changes, this may increase the definition of the site to “more vulnerable”, and an Exception Test may then be required.

- 4.3.2 Paragraph 19 of PPS25 recognizes the fact that wider sustainable development criteria may require the development of some land that cannot be delivered through the sequential test. In these circumstances, the Exception Test can be applied to some developments depending on their vulnerability classification (Table D.2 of PPS25). The Exception Test provides a method of managing flood risk while still allowing necessary development to occur.

**Exception Test:** Based on the nature of the proposed development, the site may be defined as “less vulnerable” and an Exception Test is not necessary.

#### **4.4 Flood Resilience**

- 4.4.1 In accordance with general basement flood policy and basement design, the proposed development will utilize the flood resilient techniques recommended in the NPPF Technical Guidance where appropriate and also the recommendations that have previously been issued by various councils.

- 4.4.2 These include:

- Basement to be fully waterproofed (tanked) and waterproofing to be tied in to the ground floor slab as appropriate: to reduce the turnaround time for returning the property to full operation after a flood event.
- Plasterboards will be installed in horizontal sheets rather than conventional vertical installation methods to minimise the amount of plasterboard that could be damaged in a flood event
- Wall sockets will be raised to as high as is feasible and practicable in order to minimise damage if flood waters inundate the property
- Any wood fixings on basement / ground floor will be robust and/or protected by suitable coatings in order to minimise damage during a flood event
- The basement waterproofing where feasible will be extended to an appropriate level above existing ground levels.
- The concrete sub floor as standard will likely be laid to fall to drains or gullies which will remove any build-up of ground water to a sump pump where it will be pumped into the mains sewer. This pump will be fitted with a non-

return valve to prevent water backing up into the property should the mains sewer become full.

- Insulation to the external walls will be specified as rigid board which has impermeable foil facings that are resistant to the passage of water vapour and double the thermal resistance of the cavity.

## **5 SCREENING AND SCOPING ASSESSMENT**

### **5.1 Screening Assessment**

- 5.1.1 Screening is the process of determining whether or not there are areas of concern which require a BIA for a particular project. This was undertaken in previous sections by the site characterisation. Scoping is the process of producing a statement which defines further matters of concern identified in the screening stage. This defining is in terms of ground processes in order that a site specific BIA can be designed and executed by deciding what aspects identified in the screening stage require further investigation by desk research or intrusive drilling and monitoring or other work.
- 5.1.2 The scoping stage highlights areas of concern where further investigation, intrusive soil and water testing and groundwater monitoring may be required.
- 5.1.3 This Jomas BIA also takes into account the Campbell Reith pro forma BIA produced on behalf of and published by the London Borough of Camden as guidance for applicants to ensure that all of the required information is provided. Within the pro forma a series of tables have been used to identify what issues are relevant to the site.
- 5.1.4 Each question posed in the tables is completed by answering “Yes”, “No” or “Unknown”. Any question answered with “Yes” or “Unknown” is then subsequently carried forward to the scoping phase of the assessment.
- 5.1.5 The results of the screening process for the site are provided in Table 5.1 below. Where further discussion is required the items have been carried forward to scoping.
- 5.1.6 The numbering within the questions refers the reader to the appropriate question / section in the London Borough of Camden BIA pro forma.
- 5.1.7 It should also be noted that the London Borough of Southwark may not place the same importance on the issues identified in the London Borough of Camden’s guidance documents. It should be noted that the pro forma is mainly concerned with the pond chain on Hampstead Heath, if other ponds / waterbodies may similarly affect the development Jomas will indicate this.
- 5.1.8 A ground investigation is undertaken where necessary to establish base conditions and the impact assessment determines the impact of the proposed basement on the baseline conditions, taking into account any mitigating measures proposed.

**Table 5.1: Screening Assessment**

Query	Y / N	Comment
<b>Subterranean (Groundwater) Flow (see London Borough of Camden BIA Pro Forma Section 4.1.1)</b>		
1a) Is the site located directly above an aquifer?	Yes	The site is directly underlain by the Kempton Park Gravel Member, a Secondary (A) Aquifer.
1b) Will the proposed basement extend below the surface of the water table?	Unknown	The basement may potentially extend below a water table within the superficial deposits. This should be confirmed by a ground investigation.
2) Is the site within 100m of a watercourse, well (disused or used) or a potential spring line?	No	No surface water features within 250m of site. No detailed river networks within 500m of site.
3) Is the site within the catchment of any surface water features?	No	No surface water features within 250m of site. No detailed river networks within 500m of site.
4) Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	No	The proposed development will comprise a basement similar to the footprint of the existing building. An increase in impermeable cover is not anticipated.
5) As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No	The proposed development will comprise a basement similar to the footprint of the existing building. An increase in impermeable cover is not anticipated.
6) Is the lowest point of the proposed excavation (allowing of any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond?	No	No surface water features within 250m of site.
<b>Slope Stability ((see London Borough of Camden BIA Pro Forma Section 4.2)</b>		
1) Does the existing site include slopes, natural or manmade, greater than 7 degrees? (approximately 1 in 8)	No	With the exception of some localised positive drainage along the concrete car parking areas, the site's topography is generally flat and level.
2) Will the proposed re-profiling of landscaping change slopes at the property to more than 7 degrees? (approximately 1 in 8)	No	The proposed development will not create new slopes.
3) Does the developments' neighbouring land include railway cuttings and the like, with a slope greater than 7 degrees? (approximately 1 in 8)	No	Nearest entry of a railway line is 57m west.
4) Is the site within a wider hillside setting in which the general slope is greater than 7 degrees? (approximately 1 in 8)	No	Surrounding area is generally flat and level.

**SECTION 6**  
**PRELIMINARY BASEMENT IMPACT**  
**ASSESSMENT**

Query	Y / N	Comment
5) Is the London Clay the shallowest strata at the site?	No	The site is directly underlain by superficial deposits of the Kempton Park Gravel Member, these deposits are underlain by the London Clay Formation.
6) Will any trees be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained?	Unknown	A mature tree and several newly planted palm trees were noted within the boundaries of the site.
7) Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	Unknown	The site is reported to be in area at negligible risk from shrink-swell clays. No evidence of structural distress caused by seasonal shrink / swell was noted during the external walkover. However, further investigation is recommended on site to identify the extent of cohesive deposits and their potential effect on proposed construction.
8) Is the site within 100m of a watercourse or a spring line?	No	No surface water features within 250m of site. No detailed river networks within 500m of site.
9) Is the site within an area of previously worked ground?	No	Site has gone under several phases of development but has not included worked ground.
10) Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?	Unknown	The Kempton Park Gravel Member are classified as a Secondary (A) Aquifer and the underlying London Clay Formation is classified as an Unproductive Strata. Groundwater level should be assessed by a ground investigation prior to construction to confirm its presence. Seasonal fluctuations may lead to the requirement for dewatering to be undertaken during construction.
11) Is the site within 50m of the Hampstead Heath ponds (or other waterbody)?	No	-
12) Is the site within 5m of a highway or pedestrian 'right of way'?	Yes	The site faces onto a pavement and road to the north east, east and south.
13) Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Unknown	Neighbouring foundations are unknown.
14) Is the site over (or within the exclusion of) any tunnels e.g. railway lines?	No	The nearest underground railway is reported 33m NW as part of the northern line.

Query	Y / N	Comment
<b>Surface Flow and Flooding (see London Borough of Camden BIA Pro Forma Section 4.3)</b>		
1) Is the site within the catchment of the pond chains on Hampstead Heath?	No	No surface water features within 250m of site.
2) As part of the site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially different from the existing route?	No	<p>The proposed development will comprise a basement similar to the footprint of the existing building. An increase in impermeable cover is not anticipated and therefore surface water flow is unlikely to be affected.</p> <p>The site is currently covered by hardstanding. Consequently, replacement of the hardstanding with permeable paving as part of the likely required SUDs would increase the amount of water that would be discharged to the ground.</p>
3) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No	<p>The proposed development will comprise a basement similar to the footprint of the existing building. An increase in impermeable cover is not anticipated.</p> <p>Replacement of the remaining hardstanding with permeable paving as part of the likely required SUDs would reduce the amount of hardstanding / impermeable paved areas.</p>
4) Will the proposed basement result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	No	No surface waters in the area to be impacted.
5) Will the proposed basement result in changes to the quality of surface waters being received by adjacent properties or downstream watercourses?	Unknown	No surface waters in the area to be impacted.
6) Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or Strategic Flood Risk Assessment or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?	No	<p>No surface water features reported within 250m of site.</p> <p>No detailed river network entries reported within 500m of site.</p> <p>Site located within an area benefiting from flood defences.</p>

## 5.2 Scoping

5.2.1 Scoping is the activity of defining in further detail the matters to be investigated as part of the BIA process. Scoping comprises of the definition of the required investigation needed in order to determine in detail the nature and significance of the potential impacts identified during screening.

5.2.2 The potential impacts for each of the matters highlighted in Table 5.1 above are discussed in further detail below together with the requirements for further

investigations. Detailed assessment of the potential impacts and recommendations are provided where possible.

Subterranean (Groundwater) Flow

- 5.2.3 A ground investigation is recommended to confirm the ground conditions and groundwater levels (if any) beneath the site. This can then be used to confirm the relative depths of the basement to the groundwater levels.

Land Stability

- 5.2.4 The site itself and the surrounding areas, is generally flat and level. The Groundsure report has noted that there is a “very low” to “Negligible” risk of land instability issues for the site.
- 5.2.5 The recommended ground investigation should also determine the possibility of encountering groundwater and the possibility of Made Ground and/or clay. Atterberg Limits of the underlying clay should be determined by the ground investigation to assess shrink/swell potential of the soils.
- 5.2.6 It is noted that the London Borough of Camden’s guidance documents requires a Ground Movement Assessment to be undertaken as part of the Basement Impact Assessment. Such an assessment uses a ground model based on a zone of influence equivalent of four times the proposed depth of excavation. Consequently, such a study is recommended.

Surface Flow and Flooding

- 5.2.7 The proposed basement will underlie the existing hardstanding of the proposed structure on site of which is a similar footprint to the existing building on site; there will be no significant change in surface water run-off.
- 5.2.8 As SUDS will be required by NPPF, PPG and LLFA policy requirements, this will be provided by surface and above ground attenuation before releasing to the existing sewer network. This will ensure that the proposed development will not increase the potential risk of groundwater flooding.
- 5.2.9 Plans and maps showing the flood risks and the topography of the site and surrounding area are included as part of Appendix 3.

## **6 PRELIMINARY BASEMENT IMPACT ASSESSMENT**

### **6.1 Proposed Changes to Areas of External Hardstanding**

6.1.1 Existing areas of hardstanding include the existing building on site and external areas which equate to the entire site. The proposed development will comprise a basement within a similar footprint to the existing building. An increase in impermeable cover is not anticipated. As a result, there are unlikely to be changes in hardstanding areas, and so it is not considered necessary to undertake any further investigations, studies or impact assessment in relation to the proposed changes to areas of external hardstanding.

6.1.2 As SUDS will be required by NPPF, PPG and LLFA policy requirements, where practicable, the hard surfaces will likely be constructed with permeable paving.

### **6.2 Past Flooding**

6.2.1 The National Planning Policy Framework sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow.

6.2.2 When assessing the site-specific flood risk and the potential for historic flooding to reoccur the above guidance recommends that, historic flooding records and any other relevant and available information including flood datasets (e.g. flood levels, depths and/or velocities) and any other relevant data, which can be acquired are assessed.

6.2.3 The London Borough of Southwark Strategic Flood Risk Assessment (December 2016) has reported less than 37 properties flooded by overloaded sewers in the south east of the borough. The majority of the borough has less than 11 or has no data reported at all.

6.2.4 The site is therefore considered to be at low risk of flooding based on historic flooding.

### **6.3 Geological Impact**

6.3.1 With reference to British Geological Survey (BGS) mapping, the geology of the site is anticipated to comprise the Kempton Park Gravel Member over the London Clay Formation. Given that the site has been developed previously, a thickness of Made Ground could also be present overlying the natural soils.

6.3.2 The underlying solid geology (London Clay Formation) is deemed to be highly compressible strata, which might adversely impact the constructability of conventional foundations and subsequently this might influence both development layout and foundation options.

6.3.3 In addition, the groundwater table is considered likely to be at the interface of the two strata due to the overlying granular materials potentially likely to have a relatively high permeability compare to the very low permeability London Clay Formation.



**6.4 Hydrology and Hydrogeology Impact**

- 6.4.1 Based on the information available at the time of writing, the risk of flooding from groundwater is considered to be low. The proposed basement is unlikely to have a detectable impact on the local groundwater regime.
- 6.4.2 Appropriate water proofing measures should be included within the whole of the proposed basement wall/floor design as a precaution.
- 6.4.3 There are no surface water features on or within 250m of the site. It is therefore not anticipated that the site will have an impact upon the hydrology of the area.
- 6.4.4 The site is not located within a Critical Drainage Area (CDA).
- 6.4.5 The information available suggests that the site lies in an area that is at low risk of surface water flooding.
- 6.4.6 The proposed basement construction is considered unlikely to create a reduction of impermeable area in the post development scenario.
- 6.4.7 No risk of flooding to the site from artificial sources has been identified.

**6.5 Impacts of Basement on Adjacent Properties and Pavement**

- 6.5.1 The proposed basement excavation will be within a '5m inclusion zone' of a public pavement. It is also within a '5m inclusion zone' of adjacent office buildings and roads.
- 6.5.2 Unavoidable lateral ground movements associated with the basement excavations must be controlled during temporary and permanent works so as not to impact adversely on the stability of the surrounding ground, any associated services and structures.
- 6.5.3 It is possible that groundwater will be breached within the proposed basement excavation, and all excavations intersecting the groundwater table will become highly unstable and some form of temporary support or battering back to a safe angle will be required. Furthermore, dewatering may also be required due to the presence of continuous, perched and ponded groundwater.
- 6.5.4 It is recommended that the site is supported by suitably designed temporary support with a basement box construction. This will ensure that the adjacent land is adequately supported throughout the temporary works as well as during the actual construction works. Alternatively, excavation works should always be designed in such a manner to avoid man entry into excavations. However, in the event that such works cannot be avoided or designed out, they should only be undertaken in accordance with a safe system of work, following an appropriate risk assessment and in accordance with any legislative requirements, e.g. Confined Spaces Regulations.

- 6.5.5 Careful and regular monitoring of the structure will need to be undertaken during the construction phase to ensure that vertical movements do not adversely affect the above property. If necessary, the works may have to be carried out in stages with the above structure suitably propped and supported.
- 6.5.6 It will be necessary to ensure that the basements are designed in accordance with the NHBC Standards and take due cognisance of the potential impacts highlighted above. This may be achieved by ensuring best practice engineering and design of the proposed scheme by competent persons and in full accordance with the Construction (Design and Management) Regulations. This will include:
- Establishment of the likely ground movements arising from the temporary and permanent works and the mitigation of excessive movements;
  - Assessment of the impact on any adjacent structures (including adjacent properties and the adjacent pavement with potential services);
  - Determination of the most appropriate methods of construction of the proposed basements;
  - Undertake pre-condition surveys of adjacent structures;
  - Monitor any movements and pre-existing cracks during construction;
  - Establishment of contingencies to deal with adverse performance;
  - Ensuring quality of workmanship by competent persons.
- 6.5.7 Full details of the suitable engineering design of the scheme in addition to an appropriate construction method statement should be submitted by the Developer to the London Borough of Southwark.
- 6.6 Accumulative Impacts**
- 6.6.1 The above individual effects could interact to form a greater issue.
- 6.6.2 The site has been identified as being directly underlain by permeable deposits of the Kempton Park Gravel Member, underlain by the very low permeability London Clay Formation.
- 6.6.3 Such materials may allow some movement of groundwater and the ingress of surface water into the ground.
- 6.6.4 The development of the basement would not significantly affect the groundwater flow through the ground due to the anticipated groundwater level at the interface between the two strata beneath the site.

- 6.6.5 Assuming that the adjacent properties also have basements, the construction of the proposed basement would not reduce the groundwater flow.

## 7 QUALITATIVE RISK ASSESSMENT

### 7.1 Legislative Framework

7.1.1 A qualitative risk assessment has been prepared for the site, based on the information collated. This highlights the potential sources, pathways and receptors. Intrusive investigations will be required to confirm the actual site conditions and risks.

7.1.2 Under Part IIA of the Environmental Protection Act 1990, the statutory definition of contaminated land is:

*"land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that:*

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

*(b) pollution of controlled waters is being, or is likely to be, caused."*

7.1.3 The Statutory Guidance provided in the DEFRA Circular 04/2012 lists the following categories of significant harm to **human health**:

- death; life threatening diseases (e.g. cancers); other diseases likely to have serious impacts on health; serious injury; birth defects; and impairment of reproductive functions.

7.1.4 Other health effects may also be considered by the local authority to constitute significant harm with a wide range of conditions that may or may not constitute significant harm (alone or in combination) including: physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts.

7.1.5 In deciding whether or not land is contaminated land on grounds of significant possibility of significant harm to human health there are four categories to be considered. Categories 1 and 2 would encompass land which is capable of being determined as contaminated land on grounds of significant possibility of significant harm to human health. Categories 3 and 4 would encompass land which is not capable of being determined on such grounds.

7.1.6 For non-human receptors the following types of harm should be considered to be significant harm:

#### **Ecological System Effects**

- Harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or
- Harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location.
- In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at

such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010.

#### Property Effects

- Crops: A substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage.
- Buildings: Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended. In the case of a scheduled Ancient Monument, substantial damage should also be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.

7.1.7 Contaminated land will only be identified when a 'pollutant linkage' has been established.

7.1.8 A 'pollutant linkage' is defined in Part IIA as:

*"A linkage between a contaminant Source and a Receptor by means of a Pathway".*

7.1.9 Therefore, this report presents an assessment of the potential pollutant linkages that may be associated with the site, in order to determine whether additional investigations are required to assess their significance.

7.1.10 In accordance with the National Planning Policy Framework, where development is proposed, the developer is responsible for ensuring that the development is safe and suitable for use for the purpose for which it is intended, or can be made so by remedial action. In particular, the developer should carry out an adequate investigation to inform a risk assessment to determine:

- whether the land in question is already affected by contamination through source – pathway – receptor pollutant linkages and how those linkages are represented in a conceptual model;
- whether the development proposed will create new linkages, e.g. new pathways by which existing contaminants might reach existing or proposed receptors and whether it will introduce new vulnerable receptors; and
- what action is needed to break those linkages and avoid new ones, deal with any unacceptable risks and enable development and future occupancy of the site and neighbouring land.

- 7.1.11 A potential developer will need to satisfy the Local Authority that unacceptable risk from contamination will be successfully addressed through remediation without undue environmental impact during and following the development.

## **7.2 Conceptual Site Model**

- 7.2.1 On the basis of the information summarised above, a conceptual site model (CSM) has been developed for the site. The CSM is used to guide the investigation activities at the site and identifies potential contamination sources, receptors (both on and off-site) and exposure pathways that may be present. The identification of such potential “pollutant linkages” is a key aspect of the evaluation of potentially contaminated land.
- 7.2.2 The site investigation is then undertaken in order to prove or disprove the presence of these potential source-pathway-receptor linkages. Under current legislation an environmental risk is only deemed to exist if there are proven linkages between all three elements (source, pathway and receptor).
- 7.2.3 This part of the report lists the potential sources, pathways and receptors at the site, and assesses based on current and future land use, whether pollution linkages are possible.
- 7.2.4 Potential pollutant linkages identified at the site are detailed below:

**Table 7.1: Potential Sources, Pathways and Receptors**

Source(s)	Pathway(s)	Receptor(s)
<ul style="list-style-type: none"> <li>Potential for Made Ground associated with previous development operations – on site (S1)</li> <li>Potential asbestos impacted soils from demolition of previous buildings – on site (S2)</li> <li>Potential for contaminated ground/hydrocarbon impacted ground associated with previous site use – on site (S3) <ul style="list-style-type: none"> <li>Oilcloth Manufactory</li> </ul> </li> <li>Current and previous industrial use – on and off site (S4) <p><i>On site;</i></p> <ul style="list-style-type: none"> <li>Oilcloth Manufactory</li> <li>Atlas paper works</li> </ul> <p><i>Off site;</i></p> <ul style="list-style-type: none"> <li>Vehicle components industrial use 8m SW</li> <li>Railway 50m W</li> <li>Engineering works 80m W</li> <li>Printing works 90m N</li> <li>Smithy 70m NW</li> <li>Globe lamp works 60m SW</li> <li>Atlas paper works 60m NW</li> <li>Garages; nearest 100m N</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Ingestion and dermal contact with contaminated soil (P1)</li> <li>Inhalation or contact with potentially contaminated dust and vapours (P2)</li> <li>Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hard standing or via service pipe/corridors and surface water runoff. (P3)</li> <li>Horizontal and vertical migration of contaminants within groundwater (P4)</li> <li>Accumulation and Migration of Soil Gases (P5)</li> <li>Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6)</li> </ul>	<ul style="list-style-type: none"> <li>Construction workers (R1)</li> <li>Maintenance workers (R2)</li> <li>Neighbouring site users (R3)</li> <li>Future site users (R4)</li> <li>Building foundations and on site buried services (water mains, electricity and sewer) (R5)</li> <li>Controlled Waters; Secondary (A) aquifer, groundwater abstraction 215m NW. (R6)</li> </ul>

### 7.3 Qualitative Risk Estimation

7.3.1 Based on information previously presented in this report, a qualitative risk estimation was undertaken.

7.3.2 For each potential pollutant linkage identified in the conceptual model, the potential risk can be evaluated, based on the following principle:

Overall contamination risk = Probability of event occurring x Consequence of event occurring

7.3.3 In accordance with CIRIA C552, the consequence of a risk occurring has been classified into the following categories:

- Severe
- Medium
- Mild
- Minor

7.3.4 The probability of a risk occurring has been classified into the following categories:

- High Likelihood
- Likely
- Low Likelihood
- Unlikely

7.3.5 This relationship can be represented graphically as a matrix (Table 7.2).

**Table 7.2: Overall Contamination Risk Matrix**

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High Risk	High Risk	Moderate Risk	Low Risk
	Likely	High Risk	Moderate Risk	Moderate Risk	Low Risk
	Low Likelihood	Moderate Risk	Moderate Risk	Low Risk	Very Low Risk
	Unlikely	Low Risk	Low Risk	Very Low Risk	Very Low Risk

7.3.6 The risk assessment process is based on guidance provided in CIRIA C552 (2001) *Contaminated Land Risk Assessment – A Guide to Good Practice*. Further information including definitions of descriptive terms used in the risk assessment process is included in Appendix 4.

7.3.7 The degree of risk is based on a combination of the potential sources and the sensitivity of the environment. The risk classifications can be cross checked with reference to Table A4.4 in Appendix 4.

7.3.8 Hazard assessment was also carried out, the outcome of which could be:

- Urgent Action (UA) required to break existing source-pathway-receptor link.
- Ground Investigation (GI) required to gather more information.



- Watching Brief there is no evidence of potential contamination but the possibility of it exists and so the site should be monitored for local and olfactory evidence of contamination.
- No action required (NA).

7.3.9 The preliminary risk assessment for the site is presented in Table 7.3 overleaf.

## SECTION 7

### QUALITATIVE RISK ASSESSMENT

**Table 7.3: Preliminary Risk Assessment for the Site**

Sources	Pathways (P)	Receptors	Consequence of Impact	Probability of Impact	Risk Estimation	Hazard Assessment
<ul style="list-style-type: none"> <li>Potential for Made Ground associated with previous development operations – on site (S1)</li> <li>Potential asbestos impacted soils from demolition of previous buildings – on site (S2)</li> <li>Potential for contaminated ground/hydrocarbon impacted ground associated with previous site use – on site (S3)                             <ul style="list-style-type: none"> <li>Oilcloth Manufactory</li> </ul> </li> <li>Current and previous industrial use – on and off site (S4)                             <ul style="list-style-type: none"> <li><i>On site;</i> <ul style="list-style-type: none"> <li>Oilcloth Manufactory</li> <li>Atlas paper works</li> </ul> </li> <li><i>Off site;</i> <ul style="list-style-type: none"> <li>Vehicle components industrial use 8m SW</li> <li>Railway 50m W</li> <li>Engineering works 80m W</li> <li>Printing works 90m N</li> <li>Smithy 70m NW</li> <li>Globe lamp works 60m SW</li> <li>Atlas paper works 60m NW</li> <li>Garages; nearest 100m N</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Ingestion and dermal contact with contaminated soil (P1)</li> <li>Inhalation or contact with potentially contaminated dust and vapours (P2)</li> <li>Permeation of water pipes and attack on concrete foundations by aggressive soil conditions (P6)</li> </ul>	<ul style="list-style-type: none"> <li>Construction workers (R1)</li> <li>Maintenance workers (R2)</li> <li>Neighbouring site users (R3)</li> <li>Future site users (R4)</li> <li>Building foundations and on site buried services (water mains, electricity and sewer) (R5)</li> </ul>	Medium	Low Likelihood	Moderate	GI – Ground Investigation
	<ul style="list-style-type: none"> <li>Accumulation and migration of soil gases (P5)</li> </ul>		Severe for Asbestos	Likely	High	
			Severe	Unlikely	Low	
	<ul style="list-style-type: none"> <li>Leaching through permeable soils, migration within the vadose zone (i.e., unsaturated soil above the water table) and/or lateral migration within surface water, as a result of cracked hardstanding or via service pipe/corridors and surface water runoff. (P3)</li> <li>Horizontal and vertical migration of contaminants within groundwater (P4)</li> </ul>	<ul style="list-style-type: none"> <li>Neighbouring site users (R3)</li> <li>Building foundations and on site buried services (water mains, electricity and sewer) (R5)</li> <li>Controlled Waters; Secondary (A) Aquifer, groundwater abstraction 215m NW. (R6)</li> </ul>	Medium	Low Likelihood	Moderate	

## SECTION 5

### LAND CONTAMINATION ASSESSMENT

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- 7.3.10 It should be noted that the identification of potential pollutant linkages does not necessarily signify that the site is unsuitable for its current or proposed land use. It does however act as a way of focussing data collection at the site in accordance with regulatory guidance in CLR 11.

#### **7.4 Outcome of Risk Assessment**

- 7.4.1 It is understood that the proposed development is to comprise the demolition of the existing building on site and the construction of a new 2-16 storey building with 2 storey basement. The building is to be occupied by 233 Purpose Built Student Accommodation units. The lower basement is to comprise a plant, cycle storage and laundry, the upper basement level is to comprise of commercial space. The ground floor is to be occupied by commercial space in addition to a bin store, concierge and substation. The first floor is to be occupied by commercial space with the overlying floors occupied by student accommodation units.
- 7.4.2 Some external amenity space is anticipated in the form of a landscaped terrace on the 7<sup>th</sup> floor accessed from the internal communal student space with only minor soft landscaping proposed at ground floor level.
- 7.4.3 The risk estimation matrix indicates a moderate risk as defined above. A high potential risk has been identified for asbestos.
- 7.4.4 Due to the potential presence of asbestos containing materials, an asbestos survey should be undertaken, with any asbestos containing materials found, removed under suitably controlled conditions. There should be no risk to end users from asbestos if the potential asbestos containing materials are removed by suitably qualified and experienced specialists under controlled conditions.
- 7.4.5 The historic mapping has shown the site to have been part of the grounds of adjacent properties since the earliest publication (1872), when the site was occupied by an Oilcloth Manufactory building with two extensions into the adjacent land to the northwest. The Oilcloth Manufactory building and associated outbuildings were demolished around 1950. The site was later redeveloped with a large building which covers the entire site. These buildings were named as 'Atlas Paper Works' and later renamed as a 'Warehouse' until circa 1987. The main office building and associated hardstanding areas have remained unaltered over the mapped period with several changes in size, layout and position of the small buildings noted.
- 7.4.6 The surrounding land uses have been shown to comprise predominantly commercial development (e.g. garages, manufactories, coal and coke depot's and various works), car parking areas, roads and railway. A dual tracked railway line is shown approximately 60m to the west, generally running north to south and the River Thames is located approximately 1.2km to the north.
- 7.4.1 It is recommended that an intrusive investigation is undertaken to clarify potential risks to the identified receptors, and assess the extent of made ground soils present at the site.

- 7.4.2 A preliminary investigation may comprise a series of window sampler boreholes, cable percussive boreholes or trial pits.
- 7.4.3 No significant sources of potential ground gas have been identified. Nevertheless, if extensive made ground with significant organic inclusions is encountered during the intrusive investigation then a series of soil gas monitoring should also be undertaken. This should be undertaken in accordance with CIRIA C665.
- 7.5 List of Key Contaminants**
- 7.5.1 The possible contamination implications for both on-site and off-site sources have been assessed based on the information presented in the report. This has been achieved using guidance publications by the Environment Agency, together with other sources.
- 7.5.2 It is recommended that samples are taken and analysed for a broad suite of determinants to confirm the low risk determination for the site.
- 7.5.3 In the case of the site uses identified as part of the desk study research, reference to DoE industry profiles for textile and dye works, pulp and paper works and miscellaneous industries has been made.
- 7.5.4 Based on recommendations within the guidance publications, an initial soil and water chemical testing suite would need to consider a range of contaminants as follows:
- *Metals*: cadmium, chromium, copper, lead, mercury, nickel, zinc;
  - *Semi-metals and non-metals*: arsenic, boron, sulphur;
  - *Inorganic chemicals*: cyanide, nitrate, sulphate and sulphide;
  - *Organic chemicals*: aromatic hydrocarbons, aliphatic hydrocarbons, petroleum hydrocarbons, phenol, polyaromatic hydrocarbons;
  - VOCs/SVOCs;
  - *Others*: pH, Asbestos.
- 7.5.5 It is also recommended that testing is undertaken to help categorise the material that will be excavated for waste disposal purposes.

8

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London Borough of Camden (January 2021) *“Camden Planning Guidance Basements”*

Campbell Reith (March 2018) *“Pro Forma Basement Impact Assessment”*, London Borough of Camden

## **APPENDICES**

## **APPENDIX 1 – FIGURES**

## **APPENDIX 2 – GROUNDSURE REPORTS**



## **APPENDIX 3 – STRATEGIC FLOOD RISK ASSESSMENT MAP EXTRACTS**

## **APPENDIX 4 - OS HISTORICAL MAPS**

## **APPENDIX 5 – QUALITATIVE RISK ASSESSMENT METHODOLOGY**

## **APPENDIX 6 – BGS BOREHOLE RECORDS**

## **APPENDIX 7 – LOCAL AUTHORITY CORRESPONDENCE**

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