

Ravenscourt Park Hospital

Phase 1 Preliminary Risk Assessment

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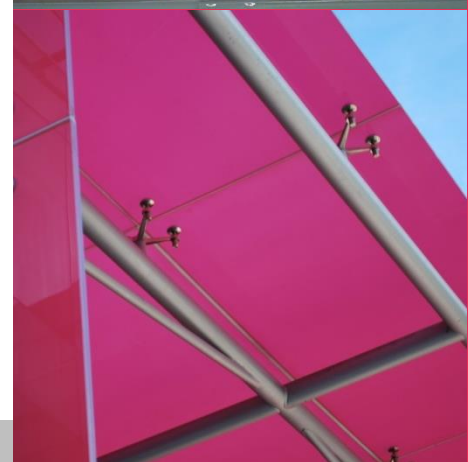
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Client Name: TT Group

Client Address: 5 Aldermanbury Square, London, EC2V 7HR

Site Address: 1 Coulter Rd, London W6 0BJ




Curtins Consulting Limited
40 Compton Street
London
EC1V 0BD
Tel: 020 7324 2240
Email: london@curtins.com
www.curtins.com

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Author	Signature	Date
D. Xu BSc (hons) Senior Geo-Environmental Engineer		October 2023

Reviewed & Authorised	Signature	Date
W. Spraggs BSc (hons), MSc, FGS Principal Geo-Environmental Engineer		October 2023

Executive Summary

<p>Appointment</p>	<p>In January 2023, Curtins were instructed by TT Group (the client) to undertake a desk-based Phase 1 Preliminary Risk Assessment (PRA) at Ravenscourt Park Hospital.</p> <p>This report has been undertaken in support of the proposed development to comprise the part-demolition of an unlisted building and redevelopment of the existing Grade II* listed 1930s structure. The redevelopment is to comprise the refurbishment and extension (in height) as part of a mixed-use residential development including community use, new care home constructed with basement level amenity facilities, car and cycle parking facilities. The existing soft landscaping areas are to be retained as part of the development.</p> <p>The site has been vacant since 2006 and is not currently in active use, but previously operated as an in-patient hospital and therefore falls within planning use C2.</p>
<p>Current Site Status and Site Walkover</p>	<p>The site is located at 1 Coulter Road, London, W6 0BJ and comprises five vacant, three to five storey former hospital blocks (Blocks A to D) with existing full footprint basements.</p> <p>Blocks A to D are identified as Grade II* listed whilst the remaining Block E is not listed owing to 1970s construction. Given the former site use as a hospital, service tunnels are present on-site within the existing basements and a service tunnel extends onto the site from an off-site energy centre to the west. As part of the site walkover it was noted that heating oil was stored off-site to the west but was used on the site through service tunnels. Suspected heating oil (hydrocarbons) was noted to be leaking into the service tunnel on the western boundary.</p> <p>An electrical substation was identified during the site walkover within the basement of Block D.</p> <p>A garden area is present within the southern area of the site adjacent to Block B with vegetation and mature trees. A further garden area is located in the north-eastern area adjacent to Block E and D. A former radiation area within the building (radiology area) is present within Block D and based on yellow hazard demarcation the radiation use was restricted within 6 rooms within this area. No further former radiation areas were recorded on-site.</p> <p>Access to the site is from a gated entrance leading from Ravenscourt Park Road on the eastern half of the site adjacent to Block A.</p>
<p>Site History</p>	<p>Earliest available historical mapping (1850s) shows the subject site was undeveloped land between Ravenscourt Park and Ravenscourt Square. By 1871 several semi-detached/detached residential dwellings were constructed across the development site. The development site encroached the rear gardens of properties on Ravenscourt Square to the north. Stamford Brook (West Branch) traversed the northern area of the development site in an east to west orientation until it was infilled circa 1896.</p> <p>Circa 1935, the semi-detached/detached residential dwellings were demolished and the Royal Masonic Hospital (Block A to Block D) was constructed in the present-day layout including a mortuary, chimney, and several small buildings in the northern area of the development site (area of Stamford Brook). Council records indicate that planning permission (1969/00445/HIST) was granted in June 1969 for the erection of a new Chimney and the repositioning of Oil Storage Tanks at the subject property. However, this is considered to be in relation to the 'energy centre' which is now to the west of the application boundary.</p> <p>A fishpond was also constructed at the same time in the courtyard of Block B. The mortuary and small buildings were demolished circa 1974 and the building currently identified as Block E was constructed by 1977 in the northern area. The site remained largely unchanged from late 1970s to present day.</p> <p>Earliest available historical mapping (1850) shows the area surrounding the subject site to comprise several roads in same general format as present day with Ravenscourt Park adjacent to the eastern site boundary. After 1871, the surrounding area predominantly comprised residential dwellings, gardens, and parks. Stamford Brook (West Branch) traversed the northern area of the development site from earliest available mapping in an east to west orientation until it was infilled circa 1896 and several buildings were constructed in its place. A lake was constructed 100m north-east of the site within the neighbouring Ravenscourt Park and the Kensington & Richmond Railway Line is present 100m south of the site.</p> <p>Several new developments were constructed between 1910s and circa 1935 including tennis courts, a tank (potentially associated with off-site energy centre), and a maternity hospital 10m, 30m, and</p>

	<p>100m west of the site respectively, as was a laboratory 60m to the north-west of the site. A laundry and a coachbuilding works were also identified 50m and 80m south of the site boundary respectively by 1935, adjacent to railway line.</p> <p>Circa 1951, an electrical substation and chimney were constructed near the laboratory (60m north-west) and the previously mentioned tank was demolished or incorporated into building. A pumping house was also constructed in the same period 60m west, as was an irregularly shaped Nurses Home with a pond 90m south-west of the site.</p> <p>The Coachbuilding Works was identified as a Printing Works from 1951 and an electrical substation was constructed in the same area (adjacent to railway line). A shelter was constructed 10m north of the site by the same time which was likely utilised as a bomb raid shelter which was demolished circa 1965.</p> <p>By 1954, the tennis courts to the west of the site were demolished and the building that Chiswick Nursing Home currently occupies was constructed and the pumping house was demolished in the same year. General development and expansion of residential/commercial properties in all orientations surrounding the development site. The laundry 50m south of the site is no longer identified on mapping from 1984. By 2006, the maternity hospital and laboratory to the west are redeveloped into residential end use.</p> <p>No further significant changes to land use or potential sources of off-site contamination were identified on historical mapping.</p>
Geology	<p>The British Geological Society records indicate that the site is underlain by superficial deposits of Kempton Park Gravel Member (sand and gravel) and bedrock geology of the London Clay Formation (clay, silt and sand).</p>
Hydrogeology	<p>The site is underlain by Secondary A Aquifer associated with Kempton Park Gravel Member and Unproductive Strata associated with London Clay Formation. The site is not located within an Environment Agency defined Source Protection Zone. There are no active groundwater abstractions within 1000m of the subject site.</p>
Hydrology	<p>There is a single surface water feature identified on site identified as the fishpond in the courtyard area of Block B, however this was thought to have silted up during the site walkover. An off-site surface water feature is present 90m north-west within Ravenscourt Park Hospital.</p> <p>The site is within an Environment Agency designated flood risk zone 3.</p>
Ground Gas and Radon	<p>There are no historical landfills within 250m of the subject site.</p> <p>Radon information within the Envirocheck report and the Public Health England radon mapping confirms that the site is in a lower probability radon area, where less than 1% of properties are estimated to be above the radon action level.</p>
Ecological Sensitive Areas	<p>A review of the Envirocheck did not highlight any sensitive areas within 250m of the subject site. Ravenscourt Park is located immediately adjacent to the eastern boundary of the site which has flora and fauna anticipated to be present.</p>
Historical Ground Investigations	<p>The subject site has undergone historical ground investigation undertaken by Albury S.I. Ltd which included a Phase 1 Desk study, a Phase 2 Ground Investigation, and a Remediation Method Statement as part of planning applications 2009/01217/DET and 2009/03215/DET in support of the construction of four LINAC bunkers in the area of the Courtyard of Block B and a new generator house northeast of Block D.</p> <p>The Phase 2 Ground Investigation was undertaken in March 2007 and comprised two restricted access boreholes to 20.00m bgl, six window sample boreholes to a maximum depth of 4.50m bgl (one of which was extended to 7.00m bgl utilising dynamic probing), and two hand excavated foundation inspection trial pits to maximum depth of 1.20m bgl. Two boreholes were installed with dual purpose ground gas and groundwater monitoring wells and two return monitoring visits were undertaken.</p> <p>The encountered ground conditions comprised Made Ground comprising topsoil overlying subsoil or granular soils to a maximum depth of 1.05m bgl, underlain by superficial deposits of the Kempton Park Gravel Member to 6.00m bgl which was further underlain by bedrock geology of the London Clay</p>

	<p>Formation proven to a minimum depth of 20.00m bgl (base not encountered). Groundwater seepages were encountered from 2.50m to 2.80m bgl within Kempton Park Gravels during the investigation and from 2.22m to 2.32m bgl during the return monitoring visits.</p> <p>9 No. samples of the Made Ground were submitted for chemical analyses comprising pH and water-soluble sulphates, cyanide (total), polyaromatic hydrocarbons (total), phenols (screen), polyaromatic hydrocarbons (part speciation), and heavy metals. Only two samples were submitted for speciated polyaromatic hydrocarbon testing. No samples were submitted for asbestos screening, cyanide (free), or total petroleum hydrocarbons. Two samples of groundwater were submitted for chemical analyses comprising heavy metals, pH, sulphates, sulphides, cyanide (total), phenols, semi-volatile organic compounds, total petroleum hydrocarbons banded (aliphatic/aromatic) and volatile organic compounds.</p> <p>Given the proposed end use of the site, the laboratory results were compared to the Generic Assessment Criteria for end use scenario of Industrial/Commercial usage. With this borne in mind, the results of the chemical testing did not identify any exceedances above the allowable thresholds, with only two elevated PAH concentrations.</p> <p>The findings of the chemical analyses are reflective of the development history on-site with limited solid phase contamination within the material and reflective of background soil concentrations. However, an initial review of current assessment criteria has highlighted potential lead and PAH exceedances for Residential criteria.</p> <p>Groundwater seepages were encountered within the superficial KPGM deposits at depths ranging from 2.50m to 2.80m bgl in BH01 and BH02 and Probe No, 3 and 4 during the ground investigation.</p> <p>Two return monitoring visits were undertaken in February and March 2007 and two additional visits were undertaken in October and November 2009. The monitoring recorded ground gas concentrations for methane <0.1% v/v and carbon dioxide in the range of 0.1 to 1.7 % v/v. Flow rates were recorded at <0.1 l/hr. Groundwater levels of 2.22m bgl and 2.32 bgl were recorded in BH02.</p>
<p>Initial Ground Contamination Assessment</p>	<p>The qualitative risk assessment (QRA) determined an overall Very Low to Moderate Risk to environmental receptors on-site (as defined by the Conceptual Site Model). The QRA concluded that further works required to determine the potential contamination risk on-site in the form of a GQRA during a ground investigation.</p>
<p>Recommendations</p>	<p>In summary, the following recommendations are made:</p> <ul style="list-style-type: none"> • Investigation of suspected heating oil/kerosene potentially migrating onto the development site. • Obtain specialist radiological advice and input for radiological scope within the Site Investigation Scheme. • Undertake an intrusive ground investigation to support civil and structural design. • As part of the ground investigation, undertake a GQRA to determine the potential contamination risk to environmental receptors (as defined by the Conceptual Site Model). <p>It is further recommended that this work is completed in advance of any development works taking place. A scheme of site investigation in support of planning is presented in under a separate cover.</p>

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1.0 Introduction

1.1 Project Background

In January 2023, Curtins were instructed by TT Group (the client) to undertake a desk-based Phase 1 Preliminary Risk Assessment (PRA) at Ravenscourt Park Hospital.

This report has been undertaken in support of the proposed development to comprise the part-demolition of unlisted building and redevelopment of the existing Grade II* listed 1930s structure. The redevelopment is to comprise the refurbishment and extension (height) as part of a mixed-use residential development including community use, new care home constructed with basement level amenity facilities, car and cycle parking facilities. The existing soft landscaping areas are to be retained as part of the development.

The site has been vacant since 2006 and is not currently in active use, but previously operated as an in-patient hospital and therefore falls within planning use C2. The proposed development plans are presented in Appendix A.

A Phase 1 PRA has been requested to determine the potential contamination risk on-site and support a full planning application for the development. In addition, a proposed site investigation scheme (ref. 082182.001-CUR-XX-XX-T-GE-002) is presented under a separate cover in support of the full planning application.

1.2 Scope

This desk-based assessment is intended to provide an overview of the geo-environmental setting of the site. The report will develop a working preliminary conceptual ground model for the site as well as present an initial assessment of geo-environmental risks that could be presented to the future development of the site. Specifically, the geo-environmental assessment provides an initial assessment of the site with regard to:

- a) Potential contamination of the site from historical and/or current use.
- b) The potential impact on the wider environment from historical and/or current use.
- c) The potential impact from surrounding land uses and other environmental factors.
- d) Potential risks associated with geological features such as faulting, mineral extraction, mining and land instability.
- e) The location of apparent sub-surface structures that may affect the proposed redevelopment.
- f) The location of above-surface features that may affect the proposed redevelopment.

The geo-environmental assessment is a desk-based exercise written using information provided from a desk based environmental sources and any information made available to Curtins from the Client. The assessment can be utilised to inform the requirement for, and extent of, any future intrusive investigation work if required. The development site has previously undergone historical ground investigation works in support of the design, with factual data have been utilised to inform the overall environmental quality of site soils and provide historical desk-based data to construct the Initial Conceptual Site Model (CSM).

2.0 Desk Based Sources

This assessment has been undertaken using the following data sources, publicly available information and reports supplied by the client. In addition, a site walkover (both external and internal) has been undertaken to inform the assessment, with the proforma presented in Appendix B.

- Envirocheck Report (1) – utilised throughout the report.
- London Borough of Hammersmith and Fulham (LBHF) – Environmental Quality Report (2) – specifically utilised in Section 3.0.
- LBHF – Planning Portal (3) and Building Control (4) records – specifically utilised in Section 3.0 and Section 5.0.
- British Geological Survey (5) (6) – specifically utilised in Section 4.1.
- Environmental Agency Data (7) – specifically utilised in Section 4.2 to 4.4.
- Historical Landfill Data (8) and UK Radon Maps (9) – specifically utilised in Section 4.7.

Copies of reports, publicly available information references, and any other supporting information are presented in Appendix C.

2.1 Current Setting

The site is located at 1 Coulter Road, London, W6 0BJ and comprises five vacant, three to five storey former hospital buildings with existing basements in Blocks A to D which occupy the same footprint as the overlying buildings. A site location plan is presented in Appendix 2.1. Blocks A to D are identified as Grade II* listed whilst the remaining Block E (northern area) is not listed owing to construction in the 1970s. Given the former site use as a hospital, service tunnels are present on-site within the existing basements and a service tunnel extends onto the site from an off-site energy centre to the western boundary.

A courtyard and fishpond are present south of Block B with vegetation and mature trees. A further garden area is located in the north-eastern area adjacent to Block E and D. A former radiation area within the building (radiology) is present within Block D and based on yellow hazard demarcation the radiation use was anticipated within 6 rooms within this area.

Access to the site is from a gated entrance leading from Ravenscourt Park Road on the eastern half of the site adjacent to Block A.

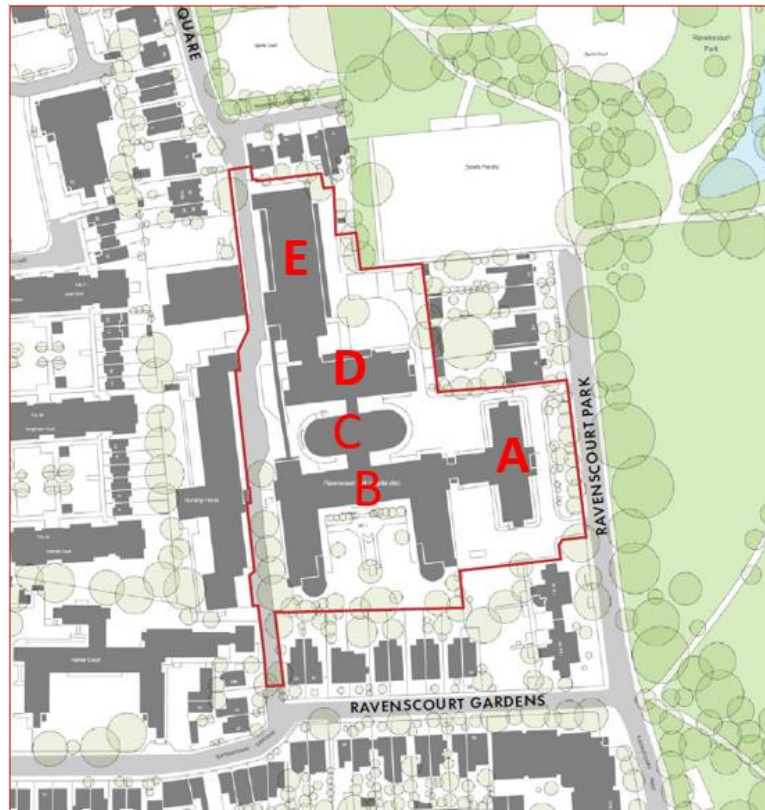


Figure 2.1 Site Location (TT Group, 2023) – Blocks demarcated in red

2.2 Site Walkover

A site walkover was undertaken by a Curtins Geo-Environmental Engineer on 18 January 2023 to inspect both external and internal areas of the site for potential contaminant or fuel sources on-site. A site inspection proforma and photographs are presented in Appendix B, with a summary of the walkover information detailed below.

The majority of the site (up to 90%) is covered in hardstanding comprising building footprint and pedestrian areas. The remainder is soft landscaping with the aforementioned garden areas in the southern and north-eastern area of the site.

As part of the site walkover, suspected heating oil was noted to be leaking into the service tunnel on the west adjacent to the western boundary, as presented in Figure 2.2a and b. Hydrocarbon odours and staining were recorded associated with the staining and viscous fluid noted. It is anticipated that the potential source of heating oil is associated with the off-site energy centre. The service tunnel was 'bricked up' to the western boundary as highlighted in Figure 2.2a and it was estimated that the leakage/staining was recorded circa 3m inside the site boundary.



Figure 2.2a Service tunnel with suspected heating oil/kerosene (hydrocarbons)- blue highlights anticipated site boundary and red highlights areas of leakage.

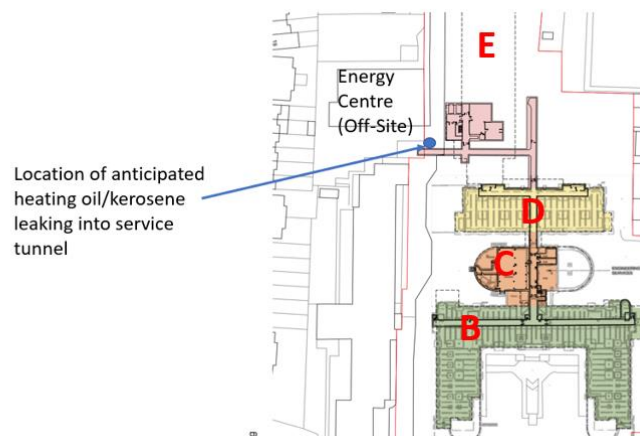


Figure 2.2b Location of anticipated heating oil/kerosene within service tunnel

No known tanks or fuel infrastructure (outside of service tunnels) are present on-site with energy supplied via mains or through service tunnels originating from the west off-site.

A former radiation area within the building (radiology) is present within Block D (Figure 2.2b) and based on yellow hazard demarcation within the building the radiation use was restricted to 6 rooms within this area. No further former radiation areas were recorded on-site. An electrical substation is present in the basement of Block D which is to be retained as part of the development.

2.3 Surrounding Land Use

The immediate surrounding land use and within 50m of the development site is highlighted in Table 2.3. The site is within a primarily residential area, with no immediate industrial land uses present within 100m.

Table 2.3 Surrounding Area

Surrounding Area	N	Residential dwellings and Ravenscourt Park.
	E	Ravenscourt Park (road) and Ravenscourt Park.
	S	Residential dwellings and Ravenscourt Gardens.
	W	Chiswick Nursing Centre, former energy centre for the hospital, and mixed residential dwellings and commercial properties.

3.0 Site History

A review of the available historical mapping (1) and LBHF records (Environmental Quality (EQ) letter (2), Planning (3) and Building Control (4) records) for the site has been reviewed for any potential sources of contamination on-site and within the surrounding area (<100m from the subject site). The site boundary is presented in red within historical mapping in Appendix C, along with planning and building control references reviewed in Appendix C.

To review planning and building control records on-site and off-site, the following web address <https://www.lbhf.gov.uk/public-access-applications-search> was searched utilising a 50m search buffer. The client has also procured an LBHF EQ letter for the site which includes reference to planning and building records information on-site and within 40m. Where environmentally pertinent information has been determined this has been included within Table 3.0 and 3.1 (and references highlighted in yellow within Appendix C). Given the quantity of planning applications identified within a 50m radius of the development site, only applications that are either directly related to the development site or contain environmentally pertinent information within the buffer zone have been included. Based on the above review, the historical development of the site and surroundings are presented below in Table 3.0 and Table 3.1 respectively.

Table 3.0 Previous Site Uses and Potential Sources of Contamination

Date	Description	Potential Sources of Contamination
1850s to 1920s	<p>From the earliest available historical mapping (1850), the subject site comprised undeveloped land between Ravenscourt Park (road) and Ravenscourt Square.</p> <p>By circa 1871, several semi-detached/detached/terraced residential dwellings were constructed across the development site. The site is labelled as Parkside. A Glasshouse is shown in the centre of the site. The development site encroached the rear gardens of properties on Ravenscourt Square to the north.</p> <p>Stamford Brook (West Branch) traversed the northern area of the development site in an east to west orientation until it was infilled circa 1896 when several buildings were constructed in its place.</p> <p>Site remains largely unchanged between the 1890s and 1920s.</p>	<p>Uncontrolled deposition of Made Ground during phases of development that may contain inorganic (heavy metals e.g., lead, arsenic) and organic (PAHs).</p>
1930s to 1960s	<p>Circa 1935 the semi-detached/detached residential dwellings were demolished and the Royal Masonic Hospital (Block A to Block D) was constructed in the present-day layout including a mortuary, chimney, and several small buildings in the northern area of the development site.</p> <p>A fishpond was also present in the southwest corner of the development adjacent to Block B.</p> <p>Site remains largely unchanged between the 1930s and 1960s.</p>	<p>Uncontrolled deposition of Made Ground during phases of development that may contain inorganic contaminant sources (heavy metals e.g., lead, arsenic), asbestos and organic contaminants (PAHs).</p> <p>Potential deposition of ash on-site associated with former chimney.</p> <p>Potential use and deposition of radioactive materials/substances within Block D (6 rooms) on-site associated with hospital use.</p>

Date	Description	Potential Sources of Contamination
1970s to 1990s	<p>The previously identified mortuary and small buildings in the northern area of the development of the site were demolished circa 1974 and the building currently identified as Block E was constructed by 1977.</p> <p>Erection of single storey storage building (1982/01885/FUL) and erection of an extension at first floor level (1989/01990/FUL) were detailed on planning records. Along with the retention of a freestanding liquid oxygen cylinder and erection of a brick enclosure 1998/02137/FUL in the northern area.</p> <p>Council records indicate that planning permission (1969/00445/HIST) was granted in June 1969 for the erection of a new Chimney and the repositioning of Oil Storage Tanks at the subject property. However, this is considered to be in relation to the off-site energy centre which was historically part of the development site.</p> <p>Further planning records indicate that an application (1973/00270/HIST) was approved in January 1973 the erection of a Surgical block and in June 1974 (1974/00651/HIST) for the erection of a Paint Shop and Carpenters Workshop also at the site.</p>	<p>Uncontrolled deposition of Made Ground during phases of development that may contain inorganic contaminant sources (heavy metals e.g., lead, arsenic), asbestos and organic contaminants (PAHs, TPH, VOCs).</p> <p>Potential leaks from the electrical substation identified during site walkover in basement of Block D onsite leading to localised contamination of Polychlorinated biphenyls (PCB).</p>
2000s to present day	<p>It is understood the development site was vacant during this period until planning application for: Refurbishment and extension to existing hospital comprising: erection of a single storey extension to the north elevation of Block B for supplies; erection of a generator housing and substation to north east of the site; erection of steps, access platform and hoist to the southern elevation of Block A; excavation of garden area to the south of the site and creation of a subterranean housing for four linear accelerators including alteration to the building elevation at ground level to form glazed lobby; lift and stair access to the below ground housing and single storey plant room at ground level 2007/04211/FUL.</p> <p>A number of planning submissions in relation to contamination were recorded comprising Submission of details for contamination pursuant to Condition 27 of planning permission 2007/04211/FUL & 2009/03215/DET. Submission of details for Contaminated Land pursuant to Condition 27; submission of details for Remediation pursuant to Condition 28 of Planning Permission 2007/04211/FUL & 2009/01217/DET. The reporting provided in submissions are reviewed in Section 5.0.</p> <p>A further application for implementation of planning permission ref: 2007/04211/FUL granted planning permission on the 29.01.2008 for the refurbishment and extensions to existing hospital comprising: erection of a single storey extension to the north elevation of Block B for supplies; erection of a generator housing and substation to north east of the site; erection of steps, access platform & hoist to the southern elevation of Block A; excavation of garden area to the south of the site & creation of a subterranean housing for four linear accelerators including alteration to the building elevation at ground level to form glazed lobby; lift & stair access to the below ground housing & single storey plant room at ground level 2015/03600/CLE.</p> <p>However, it is understood that although planning applications were submitted no further construction was undertaken on-site since the 1990s. The site remained vacant till present day.</p>	N/A

Table 3.1 Surrounding Land Uses (within 100m) and Potential Sources of Mobile Contamination

Date	Description	Potential Sources of Contamination
1850s to 1930s	<p>From the earliest available mapping (1850) the area surrounding the subject site comprised several roads in same general format as present day with Ravenscourt Park adjacent to the eastern boundary of the site. After 1871, the surrounding area predominantly comprised residential dwellings, gardens, and parks.</p> <p>Council records indicate that Parkinson's Candle Factory operated approximately 80m to the south of the site.</p> <p>Residential dwelling were constructed immediately adjacent to the northeast boundary by 1896.</p> <p>Two pumps were identified 75m W of the site in the rear garden of adjacent Longthorpe Lodge by 1850 and were demolished by 1896.</p> <p>Stamford Brook (West Branch) traversed the northern area of the development site from earliest available mapping in an east to west orientation until it was infilled circa 1896, when several buildings were constructed in its place.</p> <p>Trade directory records indicate that an Electric Company is located approximately 125m to the southwest of the site.</p> <p>A lake is constructed 100m northeast of the site within the neighbouring Ravenscourt Park. An Excavation is depicted approximately 80m to the southwest.</p> <p>London and Southwest Rail Kensington & Richmond Railway Line is present 100m south of the site.</p> <p>Minimal information pertaining to the area surrounding the development site is available for the 1920s.</p>	<p>Uncontrolled deposition of Made Ground during phases of development and infilling of Stamford Brook (West Branch) that may contain organic material that would be a source of off-site ground gas.</p>
1930s to 1960s	<p>Several new developments were constructed between 1910s and circa 1935 including a tank (potentially associated with off-site energy centre/boiler house) and a maternity hospital 30m and 100m to the west of the site respectively, and a tennis court 10m west of the site. A laboratory was constructed 60m northwest of the subject site by 1935. Council planning records indicate that permission (1948/00160/HIST) was granted in 1948 to erect a Spirit Store at Queen Charlotte Hospital (maternity hospital); the exact location of this store is not specified within the record.</p> <p>A laundry and a coachbuilding works are identified 50m and 80m south of the site boundary respectively by 1935, adjacent to railway line.</p> <p>Circa 1951, an electrical substation and chimney were constructed near the laboratory and the previously mentioned tank was no longer present on mapping/or incorporated within energy centre/boiler house footprint.</p> <p>A pumping house was constructed in the same period 60m west, as was an irregularly shaped Nurses Home with a pond 90m southwest of the site.</p> <p>The Coachbuilding Works was identified as a Printing Works from 1951 and an electrical substation was constructed in the same area. A Timber Yard is located to the south-south east of the site.</p> <p>A shelter was constructed 10m north of the site by 1951, likely as a bomb raid shelter.</p> <p>By 1954, the tennis courts to the west of the site were demolished and the building that Chiswick Nursing Home currently occupies was constructed. The pumping house was demolished by the same year.</p>	<p>Potential migration of mobile phase contamination sources associated with plant and machinery associated with coachbuilding works and railway (i.e., diesel, lubricating, engine and/or hydraulic oils).</p> <p>Potential migration of mobile phases contamination (heating oil/kerosene) sources onto site associated with tanks identified 30m west of the site associated with energy centre. Visual identification of hydrocarbons in service tunnels currently.</p> <p>Potential migration of volatile organic compounds associated with off-site laundry use and maternity hospital.</p>

Date	Description	Potential Sources of Contamination
1960s to 1990s	<p>Previously identified bomb shelter no longer on mapping from 1965.</p> <p>General development and expansion of residential/ commercial properties in all areas surrounding the development site.</p> <p>The laundry 50m south of the site is no longer identified on mapping. A planning application records this with the demolition of single storey laundry building (1998/02135/CAC) and provision of hardstanding for refuelling vehicles in connection with the adjoining boiler house 1998/02134/FUL.</p> <p>A withdrawn planning application (1982/02117/CLE) identified previous uses 65m to the south-southwest of the site, in a Railway Arch of Garaging and Servicing of Motor Vehicles- September 1961 to December 1970, Motor Vehicle Repairs- March 1971 to March 1972, Garaging and Repairing of Motor Vehicles- September 1972 to September 1976 and Sheet Metal Fabrication and Metal Polishing- September 1976 to 1981.</p> <p>Council records indicate that planning permission (1969/00445/HIST) was granted in June 1969 for the erection of a new Chimney and the repositioning of Oil Storage Tanks at the subject property. This is considered to be in relation to the off-site energy centre</p>	<p>Potential migration of mobile phase contamination (hydrocarbons and Volatile Organic Compounds) associated with motor vehicle 65m south-south-west.</p>
2000s to present day	<p>A planning application for the Submission of details of a preliminary risk assessment report pursuant to Condition 13; details of a site investigation scheme pursuant to Condition 14 Planning Permission 2017/02375/FUL granted 28.12.2017. 30 Ravenscourt Gardens London W6 0TU. 2018/00996/DET. As well as, The submission of details of a quantitative risk assessment report, pursuant to Condition 19; details of a remediation method statement, pursuant to Condition 20 of planning permission reference: 2018/03008/FUL dated 8th February 2019. 32 Ravenscourt Gardens London W6 0TU. 2022/00295/DET. These reports associated with the off-site application have been reviewed for any potential contamination; with no mobile phase contamination recorded within the reporting.</p> <p>The maternity hospital and laboratory to the west were developed into mixed use residential in 2006.</p> <p>No further significant changes to land use or potential sources of off-site contamination identified on historical mapping.</p>	

Limited information is available relating to the site history before the 1850s when the first ordnance survey maps were produced.

Potential sources of on-site and off-site contamination are further discussed in Section 6.2.

3.1 Detailed Unexploded Ordnance Risk Assessment

A Detailed Unexploded Ordnance (UXO) Risk Assessment was acquired by Curtins to inform the likelihood of UXO being encountered and to advise any intrusive ground investigation in the event that this is undertaken by Curtins. This risk is influenced by a number of factors including the proximity to strategic targets, the nature of the works being undertaken and evidence of local damage in the post-war periods amongst others. In order to determine the likelihood of UXO being present on a site, a stepwise risk assessment process is followed. This process is outlined within CIRIA C681 Unexploded Ordnance: A Guide for the Construction Industry.

The detailed UXO risk assessment for the development site has been determined a **Low-Medium** risk in regard to German delivered UXOs and Negligible risk from Allied UXO on-site. In light of this low-medium risk, the following risk mitigation measures are recommended to support the proposed works at Ravenscourt Park Hospital:

All Works

- UXO Risk Management Plan
- Site Specific UXO Awareness Briefings to all personnel conducting intrusive works

It is recommended that a copy of the detailed UXO risk assessment is retained within the site Health and Safety file or Construction Phase Plan.

4.0 Geology, Hydrogeology and Hydrology

4.1 Geology

A study of the Envirocheck report (1) and British Geological Survey (BGS) 1:50,000 mapping records (Bedrock and Superficial Editions) for North London (Sheet 270) (6) indicates the following geological succession underlying the site:

Table 4.1 *Geological/Hydrogeological Succession*

Geology	Associated Hydrogeological Classification
Made Ground deposits are not recorded on geological mapping, however given the phases of development on-site, a minimal thickness of Made Ground is likely to be present.	N/A
Superficial deposits are recorded as: Kempton Park Gravel Member (KPGM) recorded as sand and gravel. Although not detailed as being present on geological mapping, there is potential for Langley Silts (silts and clay) to overlie the KPGM on-site.	Secondary A Aquifer ¹
Bedrock deposits are recorded as the London Clay Formation These deposits are anticipated to comprise clay silt and sand.	Unproductive Strata ²

Notes:

1. These are deposits which comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers
2. These are rock layers of drift deposits with low permeability that have negligible significance for water supply or river base flow.

4.1.1 Historical BGS Borehole Records

A review of online historical BGS borehole records (5) was undertaken to determine any records on-site or surrounding area to determine potential pathways, receptors and informing the likelihood of mobility from off-site contaminant sources. No borehole records were identified for the development site or within 200m of the site. A previous ground investigation was undertaken by Albury S.I. Ltd in the development site which is detailed in Section 5.0.

4.2 Hydrogeology

As detailed in Table 4.1 the superficial deposits are listed as a Secondary A Aquifer and bedrock is listed as Unproductive Strata. The site is not situated within an Environment Agency defined Source

Protection Zone (SPZ). There are no active groundwater abstraction points within 1000m of the subject site.

4.3 Hydrology

The Envirocheck report (1) has identified a single surface water feature on site which likely refers to the Fish Pond identified adjacent to Block B. However, during the site walkover, the fish pond was identified to have silted up and overgrown with reeds with no water remaining. An off-site surface water feature is present 90m north-west within Ravenscourt Park Hospital.

There are no discharge consents for the site and no pollution incidents to controlled waters have been recorded on-site.

4.4 Flood Risk

The desk study information indicates that the proposed development is in Flood Zone 3. A flood risk assessment is outside the scope of this reporting.

4.5 Mining or Mineral Extraction

A review of the Envirocheck (1) report indicated that the site is not within an area of historical mining or mineral extraction.

4.6 Natural Ground Subsidence

The Envirocheck report (1) confirms that there is a very low to no hazard from the following ground stability hazards on the site: collapsible ground, compressible ground, ground dissolution, landslide, and running sand ground stability hazards. There is a moderate risk to shrinking and swelling clay ground stability hazards associated with underlying London Clay bedrock.

4.7 Ground Gas and Radon

There are no historical landfills within 250m of the subject site (1) (8). There is a single recorded entry pertaining to potentially infilled land (non-water) 248m northwest of the development site referring to unknown filled ground (pit, quarry, etc). A review of the potential gas generating sources identified from the available desk study in formation is presented in Table 4.7.

Table 4.7 Ground Gas Source Potential

Potential Source	Discussion	Gassing Potential	Credible Source of Gas
On Site			
Site History	Limited cycles of development history on the site. No evidence of significant landfilling on the site.	Very Low	No
Made Ground	Made Ground anticipated given development history. Previous investigation (Section 5) identified limited thickness of Made Ground with no evidence of degradable material within the Made Ground, confirmed by logs. The records show that the Made Ground is predominantly soil and inert materials. It does not contain a high proportion of degradable material that could cause hazardous gas emissions at the ground surface. Low TOC % reported in laboratory testing	Very Low	No
Natural Soils	Superficial soils comprise KPGM	Very Low	No
Bedrock Geology	Bedrock is London Clay	Very Low	No
Hydrocarbon Contamination	Evidence of potential hydrocarbon in the ground based on site walkover I the west of the site. Degrading hydrocarbons can generate methane but typically at very low generation rates.	Very Low	No*

* Hydrocarbon contamination may pose a potential vapour risk, Table 4.7 considers bulk gases only

Radon information within the Envirocheck report (1) and the Public Health England radon mapping confirms that the site is in a lower probability radon area, where less than 1% of properties are estimated to be above the radon action level. On this basis, basic radon protection measures are not considered necessary within the construction of new dwellings or extensions. Given that the proposed development will include new a basement in the area of the new care home, additional consideration of the risk posed by radon should be considered. The natural strata in which the basement is to be formed are likely to have a low to very low potential for radon production.

4.8 Regulatory Data

Information in the Envirocheck Report (1) relating to various regulatory controls has been reviewed, with a summary presented below in Table 4.8. The identified data within the Table 4.8 is in keeping with the residential setting of the site and surrounding area.

Table 4.8 Regulatory information within 250m of the site

Regulatory Data	Distance from Site	Details
Historical Landfill Sites	>250m	None recorded within 250m of the subject site.
Local Authority Recorded Landfill Sites	>250m	None recorded within 250m of the subject site
Local Authority Pollution Prevention and Controls	192m W	Shell UK Oil Product Ltd, Petrol Filling Station, Active. Present on Goldhawk Road and subject to current environmental controls/licences.
	233m NW	Owen Conway & Sons, Vehicle Respraying, Active. Subject to current environmental controls/licences.
Registered Waste Transfer Sites	>250m	None recorded within 250m of the subject site.
Registered Waste Treatment or Disposal Sites	>250m	None recorded within 250m of the subject site.
Licensed Waste Management Facilities	>250m	None recorded within 250m of the subject site.
Fuel Station Entries	192m W	Shell UK Oil Product Ltd, Petrol Filling Station, Active. Present on Goldhawk Road and subject to current environmental controls/licences.
Registered Radioactive Substances	On site	A number locations present associated with former hospital uses however no longer in use.
	61m N	Royal Masonic Hospital, 1991, revoked or cancelled. Likely associated with radiological use in Block D (6 rooms).
	67m NW	Ravenscourt Laboratories, 1991, revoked or cancelled. Queen Charlotte and Chelsea Hospitals NHS Trust, 1997, revoked or cancelled.

4.9 Contemporary Trade Directory Entries

There are no active contemporary trade directory entries registered for the site or within 50m of the site. Historically Council records indicate a cabinet maker in 191, 95m south-west of the site and furniture spray shop in 2010, 60m south of the site.

4.10 Ecological Sensitive Areas

A review of the Envirocheck did not highlight any sensitive areas within 250m of the subject site, however Ravenscourt Park is located immediately adjacent to the east of the site which has potential flora and fauna receptors (i.e. plants, trees, insects, mammals and birds etc) present.

5.0 Previous Ground Investigation

The subject site has undergone a single historical ground investigation reporting undertaken by Albury S.I. Ltd which comprised a Phase 1 Desk study undertaken in September 2006 (12), and a Phase 2 in March 2007 (11) which were submitted under planning application 2009/01217/DET, and a Remediation Method Statement which was submitted under a separate planning application 2009/03215/DET. The previous work provides information to inform environmental quality of shallow soils and confirming ground conditions to inform the initial Conceptual Site Model. These have been reviewed to determine potential pathways, receptors and informing the likelihood of mobility from on and off-site contaminant sources. A summary of the works, the encountered ground conditions and environmental testing results are presented below.

5.1 Albury S.I. Ltd

Phase 1 Desk Study

The Phase 1 Desk Study (12) was undertaken in September 2006 in support of the proposed development plans which proposed the construction of four LINAC bunkers, used for radiation treatment of cancer patients in the area of the courtyard and fishpond south of Block B, and a new generator house was proposed northeast of Block D. As previously stated, the proposed construction works were never undertaken on-site.

The desk study comprised a walkover survey and the review of information from an environmental database report including historical mapping, geological, hydrological, hydrogeological, radon and landfill data. The Conceptual Site Model within the reporting did not identify any potential contaminant sources with respect to the proposed development, however identified the requirement to undertake ground investigation to determine the potential presence of contamination and therefore risk to future site users.

Phase 2 Ground Investigation

The Phase 2 Ground Investigation (11) was undertaken in March 2007 in support of the aforementioned proposed development plans.

Scope of Works

The scope of works comprised two restricted access cable percussive boreholes (BH1 and BH2) to 20.00m bgl and six window sample boreholes (BH3, BH3a, BH4, BH6 and BH7) to depths ranging from 2.00m and 4.50m bgl in the area of northeast of Block D. Two hand excavated foundation inspection trial pits (Trial pit No. 1 and No. 2) were excavated to depths of 1.05m and 1.20m bgl respectively on Block B. It should be noted that BH3 terminated at 2.00m bgl due to an obstruction and Probe No. 7 was extended to 10m bgl using dynamic probing. As part of the ground investigation, Borehole 2 and Probe No. 7 were installed with piezometric standpipes. The exploratory hole location plan of Albury S.I. Ltd.'s ground investigation is shown below in Figure 5.1.1.

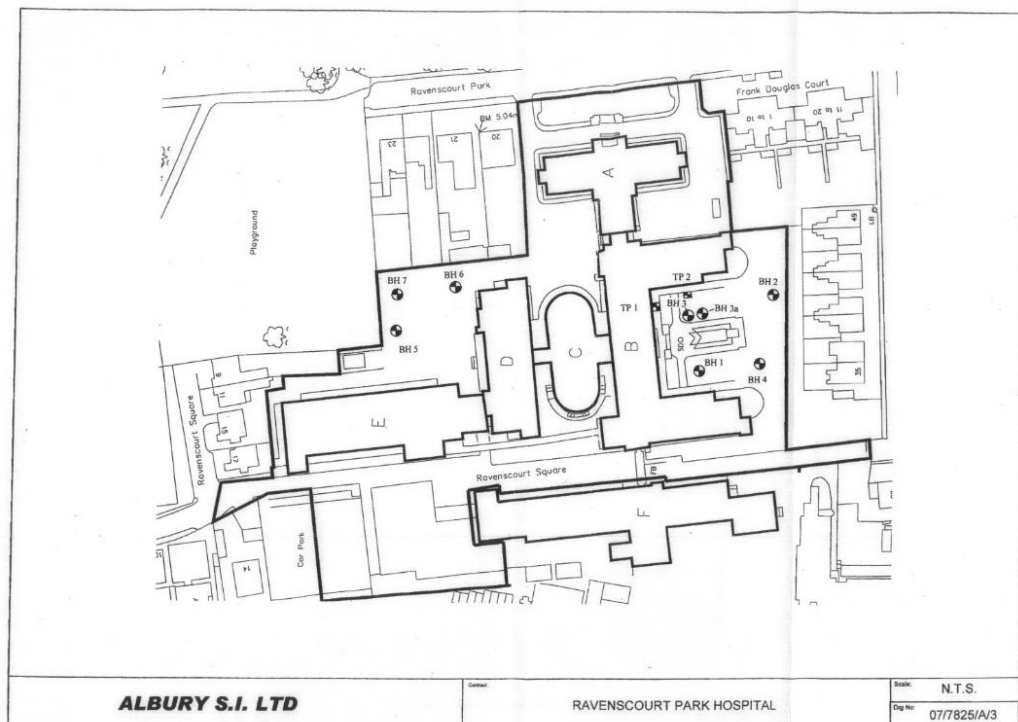


Figure 5.1.1 Exploratory Hole Location Plan (Albury S.I. Ltd)

Encountered Ground Conditions

Made Ground

Made Ground of varying composition was proven to depths ranging from 0.40m to 1.05m bgl in all exploratory locations as topsoil overlying subsoils in BH01, BH02 and Probe No. 7, and as brown silty SAND with gravels of brick in Probe No. 3 to Probe No. 7, and Trial Pit No.1 and 2. A concrete obstruction was encountered in Trial Pit No. 1 at 1.05m bgl thought to be a drain run.

There are no records within the Albury S.I. Ltd Ground Investigation report pertaining to the identification of gross or mobile phase contamination within the advanced exploratory holes. There are no references to hydrocarbon, chemical or other notable odours, no reference to staining or distinct coloured soils.

The majority of locations were advanced on the eastern and southern area of the site with no locations advanced in the area of the suspected heating oil identified during the walkover.

Superficial Deposits – Anticipated Langley Silt Member

Superficial deposits were encountered underlying the Made Ground described as orange-brown sandy CLAY with roots to brown SAND thought to represent Langley Silt Member to circa 1.0m to 2.0m bgl. There are no records of identified suspected contamination noted within the superficial soils.

Superficial Deposits - Kempton Park Gravel Member

Superficial deposits were encountered underlying the Langley Silt Member comprised, medium dense to dense brown sandy GRAVEL associated with KPGM. The unit was proven to a maximum depth of 6.00m bgl in BH01 and BH02. There are no records of identified suspected contamination noted within the superficial soils.

Groundwater strikes were encountered within the superficial KPGM at depths ranging from 2.50m to 2.80m bgl in BH01 and BH02 and Probe No, 3 and 4. There are no records of identified suspected contamination noted within the groundwater

Bedrock Geology – London Clay Formation

Blue-grey CLAY representative of unweathered London Clay Formation was encountered underlying the superficial deposits from 6.00m bgl and proven to a minimum depth of 20.00m bgl (base not encountered). No SPTs were undertaken within the London Clay Formation during the Albury S.I. Ltd ground investigation. No groundwater seepages were encountered within the London Clay Formation. There are no records of identified suspected contamination noted within the bedrock.

Geo-Environmental Assessment

Albury S.I. Ltd submitted 9 No. samples of the Made Ground for chemical analyses. The testing comprised pH and water-soluble sulphates, cyanide (total), polyaromatic hydrocarbons (total), phenols (screen), polyaromatic hydrocarbons (part speciation), and heavy metals. Only two samples were submitted for speciated polyaromatic hydrocarbon testing. No samples were submitted for asbestos screening, cyanide (free), or total petroleum hydrocarbons.

The testing results are provided in Appendix C, with no deviating samples recorded from laboratory with UKAS and MCERTS accreditation.

Given the proposed end use of the site, the laboratory results were compared to the conservative Generic Assessment Criteria for end use scenario of Industrial/Commercial usage. With this borne in mind, the results of the chemical testing did not identify any exceedances above the allowable thresholds, with only two slightly elevated PAH concentrations in Probe No. 5 and 6. The above concentrations are reflective of the two identified phases of development on-site with minimal solid phase (i.e ash and clinker) contamination within the material and reflective of background soil concentrations. The suitability of testing is considered predominately in line with site history.

An initial review of the historical environmental testing against current *Residential* screening criteria has highlighted potential elevated lead and PAH concentrations within the Made Ground. However, such concentrations are considered typical of shallow soils within the wider London area which typically have lead and PAH concentrations above conservative *Residential* screening criteria.

Post Investigation Gas and Groundwater Monitoring

Four return post investigation monitoring visits were undertaken in total between February and March 2007, and October and November 2009. The monitoring recorded ground gas concentrations for methane <0.1% v/v and carbon dioxide in the range of 0.1 to 1.7 % v/v. Flow rates were recorded at <0.1 l/hr. Groundwater levels of 2.22m bgl and 2.32 bgl were recorded in BH02 within Kempton Park Gravels. The results of which are included in Appendix C of this report.

Two samples of groundwater were submitted for chemical analyses. The testing comprised heavy metals, pH, sulphates, sulphides, cyanide (total), phenols, semi-volatile organic compounds, total petroleum hydrocarbons banded (aliphatic/aromatic) and volatile organic compounds.

The groundwater testing predominately record background levels of contaminants or mobile phase contaminants less than laboratory limits of detection, however marginally elevated TPH Aliphatic C16-C35 were recorded in BH2

Remediation Method Statement

A Remediation Method Statement was prepared by Albury S.I. Ltd to outline the construction process and provide a strategy to deal with potential unforeseen contamination during the groundwork phase in the event of development. No specific mitigation measures were proposed in the Remediation Method Statement.

6.0 Preliminary Conceptual Site Model & Qualitative Risk Assessment

The Conceptual Site Model (CSM) and Qualitative Risk Assessment (QRA) are presented in the table within this section.

The CSM details the source-pathway-receptor linkages or potential contaminant linkages (PCLs) that have been identified for the site. The QRA details the associated level of risk relating to these PCLs.

The CSM and QRA concern the major risks to human health and controlled waters with additional, more specific risk assessment protocols contained within the main body of this reporting, as detailed in Section 6.1 below.

The QRA follows the framework outlined within CIRIA C552 which is summarised within Appendix D.

The 'risk rating' within the QRA refers to the risk that the source, pathway, receptor linkage or PCL is complete. Unless specifically stated it does not necessarily refer to an immediate risk and is intended to be used as a tool to assess the necessity for further assessment/investigation.

6.1 Additional Risk Assessments

The following risk assessments, listed below, are not included within the main CSM and QRA but none-the-less can be of critical importance to the onward development of the site.

- The risk presented by **UXO** is discussed and assessed in Section 3.1.
- The risk presented by **Radon** is discussed and assessed in Section 4.7.

6.2 Potential Sources, Pathways and Receptors

6.2.1 Potential Contaminant Sources (On-site and Off-Site)

The following potential contaminant sources is based on review within Section 3.0 and the EQ letter provided by LBHF. The following potential sources, pathways and receptors is based on the site remaining unoccupied during development works. The Block E building on-site is to be demolished and re-constructed, whilst remaining buildings are being refurbished all currently unoccupied and will remain so during development.

On-Site

- **Source 1:** Solid Phase - Uncontrolled deposition of Made Ground associated with phases of development (and potential burning of material associated with chimney with potential for ash) as identified on historical mapping (potential contaminants comprising heavy metals, PAHs, TPH, VOCs and asbestos). Available environmental testing data

of Made Ground from the Albury S.I Phase 2 report (11) determined marginally elevated concentrations of PAHs in the area of BH5 and BH6 (northeast of Block D) and elevated concentrations of lead within shallow soils. The concentrations are reflective of shallow soils within the wider London area. No samples were submitted for asbestos screening or organic matter testing. No historical landfills within 250m of the subject site.

- **Source 2:** Radiological - Potential use and deposition of radioactive materials/substances on-site associated with hospital use which could present a potential risk to future site users in refurbished areas of former radiological use – mainly X ray areas. (albeit unlikely to be at concentrations/particles to migrate through concrete). During the site walkover, a former radiation area within Block D was identified and based on yellow hazard demarcation the radiation use was restricted to within 6 rooms in this area on the second floor. The location of use and the presence of full footprint basement reduces the potential for use and storage to have caused ground contamination however impact from contaminated waste within the building fabric cannot be precluded. The radiation risk is to be fully confirmed by specialist.
- **Source 3:** PCB – potential discreet leakages of polychlorinated biphenyls (PCBs) from the on-site electrical substation identified in basement of Block D. Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users. No soft landscaping proposed within this area. There is a (low) potential for migration of PCBs in the KPGM,

Off-Site

- **Source 4:** Mobile Phase – Leakages of fuel-based contaminants including suspected heating oil identified during site walkover leaking into service tunnel potentially through existing subsurface infrastructure (service tunnels, existing utilities etc.)/granular superficial deposit potentially originating from off-site energy centre west of the site. The Council records highlight that oil tanks were installed at the energy centre in the 1970s.
- **Source 5:** Mobile Phase – potential migration of mobile phase contamination sources (VOCs and hydrocarbons) associated with plant and machinery associated with coachbuilding works, motor vehicles and railway (i.e., diesel, lubricating, engine and/or hydraulic oils). Potential migration of volatile organic compounds associated with off-site laundry use (south of the site). Both these off-site potential contaminant sources are located south of the site and current understanding of geology within the Hammersmith and Fulham, any migration is anticipated to be southwards towards the

River Thames. Consequently, the development site is considered to be upgradient of these off-site sources however this needs to be confirmed.

The above contaminants of concern detailed in Sources 1 to 5 will be captured by testing suites comprising heavy metals, Asbestos, PCBs, inorganic compounds, phenolic compounds, speciated PAHs, speciated TPH inc BTEX, SVOCs and VOCs.

6.2.2 Potential Pathways

Discounted pathways: As part of the development, no private garden areas are proposed and consequently the on-site ingestion of soil and homegrown produce pathways have been discounted.

- **Pathway 1:** Inhalation of tracked backed dust, fibres and inhalation of vapours.
- **Pathway 2:** Dermal contact with soil.
- **Pathway 3:** Inhalation of radioactive dust or contact with radioactive dust.
- **Pathway 4:** Vertical and horizontal migration of solid/mobile phase contaminants through the Made Ground into underlying Secondary A Aquifer.
- **Pathway 5:** Horizontal migration of mobile phase contaminants through the granular superficial deposits – followed by inhalation of vapours
- **Pathway 6:** Vertical and horizontal migration of ground gas (or derived ground gas via hydrocarbons breakdown) through existing service corridors and the underlying soils.
- **Pathway 7:** Horizontal migration of site derived wind-blown dust.
- **Pathway 8:** Contact and interaction with underlying foundations and services.
- **Pathway 9:** Migration of contaminants along a preferential pathway - followed by contact/interaction with underlying foundations and services.
- **Pathway 10:** Migration of contaminants along a preferential pathway – followed by ingestion of vegetation/uptake.

6.2.3 Potential Receptors

The following potential receptors are listed in order of priority

- **Receptor 1:** On-site Residents, Site Staff, Visitors and Trespassers.
- **Receptor 2:** Off-site Residents (Immediate North, South and West).
- **Receptor 3:** Construction and Maintenance Workers.
- **Receptor 4:** Secondary A Aquifer (Kempton Park Gravels). No groundwater abstractions within 1000m of the subject site. Site not within a SPZ. Unproductive Aquifer associated with bedrock.
- **Receptor 5:** Surface water feature (Pond) within Ravenscourt Park (90m north-east).
- **Receptor 6:** On-site building and services.

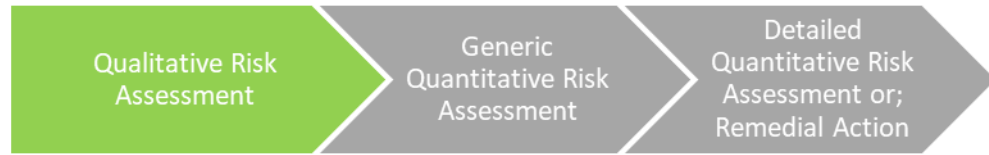
- **Receptor 7:** Off-site buildings and services.
- **Receptor 8:** On-site flora and fauna.
- **Receptor 9:** Off-site flora and fauna.
- **Receptor 10:** Ravenscourt Park immediately adjacent to east of the site.

Discounted Receptors

Curtins have discounted the Unproductive Aquifer of the London Clay as a receptor. In addition, Surface water feature identified on site (fishpond) however this identified as silted up during site walkover and not considered a receptor.

6.3 Conceptual Site Model

The following Conceptual Site Model in Table 6.3 considers the potential contaminant linkages both during and following completion of development works. A consideration of both elements is provided in the likelihood of occurrence column and the assessment has been based on no mitigation in the first instance.



- The table below represents the first stage in the land quality risk assessment process: The Qualitative Risk Assessment.
- In order for a development site to be deemed 'suitable for use', the level of risk needs to be brought down to acceptable levels, i.e. low to negligible risk. The purpose of each stage of risk assessment is ultimately to establish, if there is a requirement for additional levels of assessment to be made in order to have sufficient confidence to support a risk characterisation or management decision, e.g. remedial action.

Table 6.3 *Initial Conceptual Site Model – During Construction and Post Completion of Development*

Conceptual Site Model			Qualitative Risk Assessment			
Source	Pathway(s)	Receptor(s)	Consequence (Potential Severity)	Likelihood of Occurrence (During Construction and Post Completion of Development)	Risk Rating	Action
<p>S1: Uncontrolled deposition of Made Ground through development that may contain inorganic (heavy metals e.g., lead, arsenic), asbestos and organic (PAHs, TPH and VOCs).</p> <p>No historical landfills within 250m of the subject site.</p>	<p>P1 to P2: Inhalation of tracked backed dust, fibres and inhalation of vapours Dermal contact with soil.</p>	<p>R1: Residents, site staff visitors, and trespassers</p>	<p>Medium Chronic health risk</p>	<p>Low Likelihood With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). Based on the available dataset, it is considered a low likelihood that Made Ground soils on-site would present a risk to future site users, with a GQRA to be undertaken as part of a ground investigation to further determine potential contamination risk post completion of development.</p>	<p>Low to Moderate</p>	<p>GQRA as part of a ground investigation</p>
	<p>P6: Vertical and horizontal migration of ground gas through existing service corridors and the underlying soils.</p>		<p>Severe Acute health risk</p>	<p>Unlikely It is not anticipated that Made Ground thickness on-site could be in excess of 1.0m, given a lack of turnover of soils from a single phase of construction with limited demolition activities onsite and mainly refurbishment of workshop to residential use. The existing Made Ground is anticipated to comprise 'Inert' material with no organic and putrescible material. Additionally, the underlying natural soils are unlikely to comprise any organic material (granular material Kempton Park Gravels). On this basis, it is considered the development site has a 'very low' gassing potential in line with BS8576 and very limited ground gas sources, which in line with current standards would not require gas monitoring to determine potential gas risk. However, owing to existing basements on-site and proposed basement development, it is considered unlikely that site Made Ground and superficial deposits would present an ongoing potential ground gas source. Given this Low to Moderate risk, a GQRA is to be undertaken as part of a ground investigation to further determine potential contamination risk post completion of development.</p>	<p>Low to Moderate</p>	<p>GQRA (including gas monitoring) as part of a ground investigation</p>
	<p>P7: Horizontal migration of site derived wind-blown dust.</p>	<p>R2: Off-site Residents</p>	<p>Medium Chronic health risk</p>	<p>Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). Based on the available dataset, it is considered unlikely that Made Ground soils on-site would present a risk to off-site users during construction and post completion of the development, with a GQRA to being undertaken as part of a ground investigation to confirm this.</p>	<p>Low</p>	<p>GQRA being undertaken as part of a ground investigation</p>
	<p>P1 to P2: Inhalation of dust and fibres as well as dermal contact with soil.</p>	<p>R3: Construction and maintenance workers</p>	<p>Mild Sub-Chronic health risk</p>	<p>Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). Based on the available dataset, it is considered unlikely that Made Ground soils on-site would present a sub-chronic risk to construction and maintenance workers during construction and post completion of development with a GQRA to being undertaken as part of a ground investigation to confirm this.</p>	<p>Low</p>	<p>GQRA as part of a ground investigation</p>
	<p>P4: Vertical and horizontal migration through the Made Ground</p>	<p>R4: Superficial – Secondary A Aquifer</p>	<p>Medium Pollution of sensitive water resources</p>	<p>Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas</p>	<p>Low</p>	<p>GQRA as part of a ground investigation</p>

Conceptual Site Model			Qualitative Risk Assessment			
Source	Pathway(s)	Receptor(s)	Consequence (Potential Severity)	Likelihood of Occurrence (During Construction and Post Completion of Development)	Risk Rating	Action
<p>S1: Uncontrolled deposition of Made Ground through development that may contain inorganic (heavy metals e.g., lead, arsenic), asbestos and organic (PAHs, TPHs and VOCs). No historical landfills within 250m of the subject site.</p>	May occur due to processes including capillary action.			to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). Additionally, two groundwater samples were tested for a suite of determinants which recorded concentrations less than LOD or background concentrations. Consequently, it is considered unlikely that Made Ground contaminant sources on-site will present a risk to controlled waters during construction and post completion of development. A GQRA is being undertaken to confirm this assessment.		
	<p>P4: Vertical and horizontal migration through the Made Ground</p> <p>May occur due to processes including capillary action.</p>	<p>R5: Surface water feature (Pond) within Ravenscourt Park (90m north-east).</p>	<p>Mild Pollution of a non-sensitive water resource</p>	<p>Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). Additionally, two groundwater samples were tested for a suite of determinants which recorded concentrations less than LOD or background concentrations. Consequently, it is considered unlikely that Made Ground contaminant sources on-site will present a risk to controlled waters during construction and post completion of development. A GQRA is being undertaken to confirm this assessment.</p>	<p>Low</p>	<p>GQRA as part of a ground investigation</p>
	<p>P8: Contact and interaction with underlying foundations and services.</p>	<p>R6: On-site buildings and services</p>	<p>Minor Easily reparable effects of damage to buildings, structures, or services</p>	<p>Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). During the site walkover, no evidence of subsidence was recorded within the building which would be reflective of damage to existing building on-site. In addition, when consider Made Ground is up to 1.05m bgl on-site; it is anticipated that any foundations would be present within natural soils (i.e either Kempton Park Gravels (<6.00m bgl) or London Clay Formation (>6.00m bgl)). Consequently, it is considered unlikely that on-site Made Ground soils would present a potential contamination risk to on-site buildings and services, during construction and post completion of development.</p>	<p>Very Low</p>	<p>GQRA as part of a ground investigation</p>
	<p>P9: Migration of contaminants along a preferential pathway - followed by contact/interaction with underlying foundations and services.</p>	<p>R7: Off-site buildings and services</p>		<p>Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary).Based on lack of gross or mobile phase contamination (originating from site) identified during previous phase of ground investigation undertaken by Albury S.I. Ltd, it is considered unlikely that on-site Made Ground soils would present a potential risk to off-site building and services during construction and post completion of development.</p>	<p>Very Low</p>	<p>GQRA as part of a ground investigation</p>
	<p>P10: Migration of contaminants along a preferential pathway – followed by</p>	<p>R8: On-site flora and fauna</p>	<p>Minor Easily reparable effects to vegetation</p>	<p>Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of</p>	<p>Very Low</p>	<p>GQRA as part of a ground investigation</p>

Conceptual Site Model			Qualitative Risk Assessment			
Source	Pathway(s)	Receptor(s)	Consequence (Potential Severity)	Likelihood of Occurrence (During Construction and Post Completion of Development)	Risk Rating	Action
	ingestion of vegetation/uptake.			historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). Areas including the courtyard south of Block B and garden northeast of Block D are heavily vegetated which is considered to indicate that the flora and fauna is not inhibited by Made Ground deposits underlying the development site. Consequently, it is considered unlikely that on-site Made Ground soils would present a potential risk on-site flora and fauna during construction and post completion of development.		
	P8: Horizontal migration of site derived wind-blown dust. P11: Migration of contaminants along a preferential pathway – followed by ingestion of vegetation/uptake.	R9: Off-site flora and fauna. R10: Ravenscourt Park (185m west of the site)	Mild Damage to the environment	Unlikely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. The previous historical ground investigation works determined existing Made Ground soils within external areas to have limited solid phase contamination (i.e., brick) and groundwater samples with concentrations of contaminants reflective of this. The Made Ground on-site had marginally elevated concentration of PAHs and lead which are considered reflective of historical combustion products and lead use, typical of wider London soils. No gross or mobile phase contamination was encountered within soils or groundwater advanced within external areas on-site (however these were advanced within eastern and southern areas away from the western boundary). It is considered unlikely that on-site Made Ground soils would migrate off-site and present a potential risk to off-site flora and fauna during construction and post completion of development. Unlikely The ecologically sensitive Ravenscourt Park is located adjacent to the eastern boundary of the site. It is considered unlikely that any on-site Made Ground would have the potential to migrate towards the ecologically sensitive Ravenscourt Park during the construction and post completion of development given the lack of gross or mobile phase contamination identified within existing ground investigation data.	Very Low	GQRA as part of a ground investigation
S2: Potential use and deposition of radioactive materials/substances on-site associated with hospital use.	P3: Inhalation of radioactive dust or contact with radioactive dust.	R1: Residents, Site Staff, Visitors and Trespassers	Medium Chronic health risk	Likely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. As part of the development Block D is to be retained. During the site walkover, a former radiation area was identified within Block D and based on yellow hazard demarcation the radiation use was anticipated within 6 rooms in this area. Given this, it is considered that any radioactive substance deposited is likely to be retained in the near surface and if radioactive effluent has leaked is likely to be dispersed and diluted any radiological contamination. Additionally, given the sensitive use as a hospital, it is also considered likely that the radioactive substances would be subject to environmental controls. However current radiological surveys have yet to be undertaken on-site. Given the aforementioned, it is considered a likely risk to future site users given that Block D is to be retained and therefore a radiological survey is required to be undertaken by a specialist to confirm the risk post completion of the development.	Moderate	Radiological survey be to be undertaken by specialist to confirm risk. Radiological specialist scope to be provided in the SIS.
	P3: Inhalation of radioactive dust or contact with radioactive dust.	R3: Construction and Maintenance Workers	Mild Sub-Chronic health Risk	Likely With review of historical mapping and EQ letter report, the development area was formerly detached/semi-detached residential dwellings which were demolished prior to construction of the Royal Masonic Hall (Blocks A to D) with Block E constructed circa 1977. As part of the development Block D is to be retained. During the site walkover, a former radiation area was identified within Block D and based on yellow hazard demarcation the radiation use was anticipated within 6 rooms in this area. Given this, it is considered that any radioactive substance deposited is likely to be retained in the near surface and if radioactive effluent has leaked is likely to be dispersed and diluted any radiological contamination. Additionally, given the sensitive use as a hospital, it is also considered likely that the radioactive substances would be subject to environmental controls. However current radiological surveys have yet to be undertaken on-site. Given the aforementioned, it is considered a likely risk to construction and maintenance users given that Block D is to be retained and therefore a radiological survey is required to be undertaken by a specialist to confirm the risk during construction and post completion of development.	Moderate	Radiological survey be to be undertaken by specialist to confirm risk. Radiological specialist scope to be provided in the SIS.
S3: PCB – potential discreet leakages of polychlorinated biphenyls (PCBs)	P1 to P2: Inhalation of tracked backed dust, Dermal contact with soil.	R1: Residents, site staff visitors, and trespassers	Medium Chronic health risk	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to future site users post completion of development.	Low	GQRA as part of a ground investigation

Conceptual Site Model			Qualitative Risk Assessment			
Source	Pathway(s)	Receptor(s)	Consequence (Potential Severity)	Likelihood of Occurrence (During Construction and Post Completion of Development)	Risk Rating	Action
from the on-site electrical substation identified in basement of Block D	P7: Horizontal migration of site derived wind-blown dust.	R2: Off-site Residents	Medium Chronic health risk	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to off-site residents during construction and post completion of development.	Low	GQRA as part of a ground investigation
	P1 to P2: Inhalation of dust as well as dermal contact with soil.	R3: Construction and maintenance workers	Mild Sub-Chronic health risk	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to construction and maintenance workers during construction and post completion of development.	Low	GQRA as part of a ground investigation
	P4: Vertical and horizontal migration through the Made Ground May occur due to processes including capillary action.	R4: Superficial – Secondary A Aquifer	Medium Pollution of sensitive water resources	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk. There is a (low) potential for migration of PCBs in the KPGM and consequently unlikely to present a risk during construction and post completion of development.	Low	GQRA as part of a ground investigation
	P4: Vertical and horizontal migration through the Made Ground May occur due to processes including capillary action.	R5: Surface water feature (Pond) within Ravenscourt Park (90m north-east).	Mild pollution of a non-sensitive water resource	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk. There is a (low) potential for migration of PCBs in shallow groundwater and consequently unlikely to present a risk during construction and post completion of development.	Low	GQRA as part of a ground investigation
	P8: Contact and interaction with underlying foundations and services.	R6: On-site buildings and services	Minor Easily repairable effects of damage to buildings, structures, or services	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to on-site building and services during construction and post completion of development.	Low	GQRA as part of a ground investigation
	P9: Migration of contaminants along a preferential pathway - followed by contact/interaction with underlying foundations and services.	R7: Off-site buildings and services	Minor Easily repairable effects of damage to buildings, structures, or services	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to off-site building and services during construction and post completion of development.	Low	GQRA as part of a ground investigation

Conceptual Site Model			Qualitative Risk Assessment			
Source	Pathway(s)	Receptor(s)	Consequence (Potential Severity)	Likelihood of Occurrence (During Construction and Post Completion of Development)	Risk Rating	Action
	P10: Migration of contaminants along a preferential pathway – followed by ingestion of vegetation/uptake.	R8: On-site flora and fauna	Minor Easily repairable effects to vegetation	Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to on-site flora and fauna during construction and post completion of development.	Low	GQRA as part of a ground investigation
	P8: Horizontal migration of site derived wind-blown dust.	R9: Off-site flora and fauna.		Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to off-site flora and fauna during construction and post completion of development.		
	P11: Migration of contaminants along a preferential pathway – followed by ingestion of vegetation/uptake.	R10: Ravenscourt Park (185m west of the site)	Mild Damage to the environment	Unlikely Unlikely Given that the current development plans identify the retention of the electrical substation as part of the final development and general low mobility of PCB contamination in impacted soils (if present), it is considered unlikely that on-site sources of potential PCB contamination will present a risk to future site users through the retention of this hardstanding. Consequently, it is considered unlikely that the existing electrical substation will present a risk to Ravenscourt Park during construction and post completion of development.	Low	GQRA as part of a ground investigation
S4 (off-site): Mobile Phase – Leakages of fuel-based contaminants originating from off-site energy centre west of the site	P5: Horizontal migration of mobile phase contaminants through the granular superficial deposits – followed by inhalation of vapours	R1: Residents, Site Staff, Visitors and Trespassers	Medium Chronic health risk	Likely During the site walkover within service tunnels along the western boundary, leakages of fuel-based contaminants anticipated to be heating oil/kerosene were identified. These are considered to originate from off-site energy centre to the west of the development site. Typically heating oil/kerosene comprise longer chain hydrocarbons and therefore not generally associated with an inhalation of vapour risk. However further investigation and testing along the western boundary is required to confirm this. Based on the current understanding, there is a potential likely risk of fuel based hydrocarbons migrating onto site and presenting a potential inhalation of vapours risk to future site users. It is recommended that a GQRA is undertaken to further determine the risk.	Moderate	GQRA as part of a ground investigation
	P6: Vertical and horizontal migration of ground gas (derived by hydrocarbons) through existing service corridors and the underlying soils	R1: Residents, Site Staff, Visitors and Trespassers	Severe Acute Health Risk	Low Likelihood During the site walkover within service tunnels along the western boundary, leakages of fuel-based contaminants anticipated to be heating oil/kerosene were identified. These are considered to originate from off-site energy centre to the west of the development site. The aerobic degradation of these hydrocarbons has the potential be a source of ground gas. Consequently, a GQRA including gas monitoring is required along the western boundary to determine potential ground gas risk as part of the development.		
	P5: Horizontal migration of mobile phase contaminants through the granular	R3: Construction and Maintenance Workers	Mild Sub-Chronic health Risk	Likely During the site walkover within service tunnels along the western boundary, leakages of fuel-based contaminants anticipated to be heating oil/kerosene were identified. These are considered to originate from off-site energy centre to the west of the development site. Typically heating oil/kerosene comprise longer chain hydrocarbons and therefore not generally associated with an inhalation of vapour risk. However further investigation and testing along the western boundary is required to confirm this.		

Conceptual Site Model			Qualitative Risk Assessment			
Source	Pathway(s)	Receptor(s)	Consequence (Potential Severity)	Likelihood of Occurrence (During Construction and Post Completion of Development)	Risk Rating	Action
	superficial deposits – followed by inhalation of vapours			Based on the current understanding, there is a potential likely risk of fuel based hydrocarbons migrating onto site and presenting a potential inhalation of vapours risk to construction and maintenance workers. It is recommended that a GQRA is undertaken to further determine the risk.		
	P9: Migration of contaminants along a preferential pathway - followed by contact/interaction with underlying foundations and services.	R6: On-site building and services	Minor Easily repairable effects of damage to buildings, structures or services	Unlikely During the site walkover within service tunnels along the western boundary, leakages of fuel-based contaminants anticipated to be heating oil/kerosene were identified. These are considered to originate from off-site energy centre to the west of the development site. During the site walkover, no evidence of subsidence was recorded within the building which would be reflective of damage to existing building on-site. In addition, when consider Made Ground is up to 1.05m bgl on-site with no evidence of gross or mobile phase contaminated soils; it is anticipated that any foundations would be present within natural soils (i.e either Kempton Park Gravels or London Clay Formation). Consequently, it is considered unlikely that potential off-site hydrocarbon contamination would present a potential contamination risk to on-site buildings and services, post completion of development.	Very Low	GQRA as part of a ground investigation
S3 (off-site): Mobile Phase – Leakages of fuel-based contaminants originating from off-site energy centre west of the site	P10: Migration of contaminants along a preferential pathway – followed by ingestion of vegetation/uptake.	R8: On-site flora and fauna	Minor Easily repairable effects to vegetation	Unlikely During the site walkover within service tunnels along the western boundary, leakages of fuel-based contaminants anticipated to be heating oil/kerosene were identified. These are considered to originate from off-site energy centre to the west of the development site. Limited flora and fauna is present on the western boundary, with this area mostly comprising hardstanding. Additionally areas including the courtyard south of Block B and garden northeast of Block D are heavily vegetated which is considered to indicate that the flora and fauna is not inhibited by contamination underlying the development site	Very Low	GQRA as part of a ground investigation
Source 5: Mobile Phase – potential migration of mobile phase contamination sources (VOCs and hydrocarbons) associated with plant and machinery associated with coachbuilding works, motor vehicles and railway (i.e., diesel, lubricating, engine and/or hydraulic oils).	P5: Horizontal migration of mobile phase contaminants through the granular superficial deposits – followed by inhalation of vapours	R1: Residents, Site Staff, Visitors and Trespassers	Medium Chronic health risk	Unlikely The potential for migration of mobile phase contamination source is considered unlikely owing to the development site being upgradient of this contaminant source and any migration of contaminants through a preferential pathway is considered southwards towards the River Thames. Consequently, it is considered unlikely this off-site source will present a risk to future site users post completion of the development.	Very Low	GQRA as part of a ground investigation
	P6: Vertical and horizontal migration of ground gas (derived by hydrocarbons) through existing service corridors and the underlying soils	R1: Residents, Site Staff, Visitors and Trespassers	Severe Acute Health Risk	Unlikely The potential for migration of mobile phase contamination source is considered unlikely owing to the development site being upgradient of this contaminant source and any migration of contaminants through a preferential pathway is considered southwards towards the River Thames. Consequently, it is considered unlikely this off-site source will present a risk to future site users post completion of the development.	Very Low	GQRA as part of a ground investigation
	P5: Horizontal migration of mobile phase contaminants through the	R3: Construction and	Mild Sub-Chronic health Risk	Unlikely The potential for migration of mobile phase contamination source is considered unlikely owing to the development site being upgradient of this contaminant source and any migration of contaminants through a preferential pathway is considered southwards towards the River Thames. Consequently, it is considered unlikely this off-site source will present a risk to construction and maintenance workers during the construction and post completion of the development.	Very Low	GQRA as part of a ground investigation

Conceptual Site Model			Qualitative Risk Assessment			
Source	Pathway(s)	Receptor(s)	Consequence (Potential Severity)	Likelihood of Occurrence (During Construction and Post Completion of Development)	Risk Rating	Action
	granular superficial deposits – followed by inhalation of vapours	Maintenance Workers				
	P9: Migration of contaminants along a preferential pathway - followed by contact/interaction with underlying foundations and services.	R6: On-site building and services	Minor Easily reparable effects of damage to buildings, structures or services	Unlikely The potential for migration of mobile phase contamination source is considered unlikely owing to the development site being upgradient of this contaminant source and any migration of contaminants through a preferential pathway is considered southwards towards the River Thames. Consequently, it is considered unlikely this off-site source will present a risk to on-site buildings and services during the construction and post completion of the development.	Very Low	GQRA as part of a ground investigation
	P10: Migration of contaminants along a preferential pathway – followed by ingestion of vegetation/uptake.	R8: On-site flora and fauna	Minor Easily reparable effects to vegetation	Unlikely The potential for migration of mobile phase contamination source is considered unlikely owing to the development site being upgradient of this contaminant source and any migration of contaminants through a preferential pathway is considered southwards towards the River Thames. Consequently, it is considered unlikely this off-site source will present a risk to on-site flora and fauna and services during the construction and post completion of the development.	Very Low	GQRA as part of a ground investigation

7.0 Conclusions & Recommendations

The qualitative risk assessment (QRA) determined an overall Very Low to Moderate Risk to environmental receptors on-site (as defined by the Conceptual Site Model). The QRA concluded that further works required to determine the potential contamination risk on-site in the form of a GQRA as part of a ground investigation. It is further recommended that this work is completed in advance of any development works taking place, either prior to or post demolition of the site.

In summary, the following recommendations are made:

- Investigation of suspected heating oil/kerosene potentially migrating onto the development site.
- Obtain specialist radiological advice and input for radiological scope within the Site Investigation Scheme.
- Undertake an intrusive ground investigation to support civil and structural design.
- As part of the ground investigation, undertake a GQRA to determine the potential contamination risk to environmental receptors (as defined by the Conceptual Site Model).

The proposed scope of investigation is provided in a Site Investigation Scheme (SIS) (Curtins ref. 082182-CUR-XX-XX-T-GE-002-P04) providing further detail of proposed works is provided under a separate cover. The SIS details the proposed investigation of all the identified contaminant sources within this document. It is further recommended that this work is completed in advance of any development works taking place and once accepted by London Borough of Hammersmith and Fulham.

8.0 References

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18. Ground Gas Information Sheets: Using ternary plots for interpretation of ground gas monitoring results. **WilsonCollins, F., and Lavery, R.S.,** 2018 :

Appendix A – Drawings

- Proposed Development Plans.

GENERAL NOTES
 CONTRACTOR TO IMMEDIATELY ADVISE THE CONTRACT ADMINISTRATOR & ARCHITECT OF ANY DISCREPANCIES BETWEEN THE EXISTING SURVEY DRAWINGS AND THE SITE SITUATION IF FOUND TO DIFFER. SHOULD A DISCREPANCY BE IDENTIFIED, THE CONTRACTOR IS TO REQUEST VERIFICATION FROM THE CONTRACT ADMINISTRATOR BY WAY OF INSTRUCTION PRIOR TO PROCEEDING WITH THE ASSOCIATED WORK OR ORDERING OF MATERIALS.

WHERE THERE IS A PERCEIVED DISCREPANCY BETWEEN THE ARCHITECT'S P.H.E./ STRUCTURAL ENG. DRAWINGS, SPECIFICATIONS AND SCHEDULES, THOSE OF THE ARCHITECT ARE TO TAKE PRECEDENCE. THE CONTRACTOR IS TO SEEK CLARIFICATION FROM THE CONTRACT ADMINISTRATOR PRIOR TO UNDERTAKING THE WORKS OR ASSOCIATED WORKS.

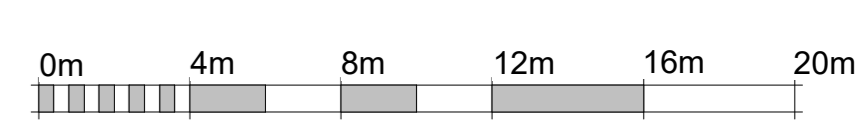
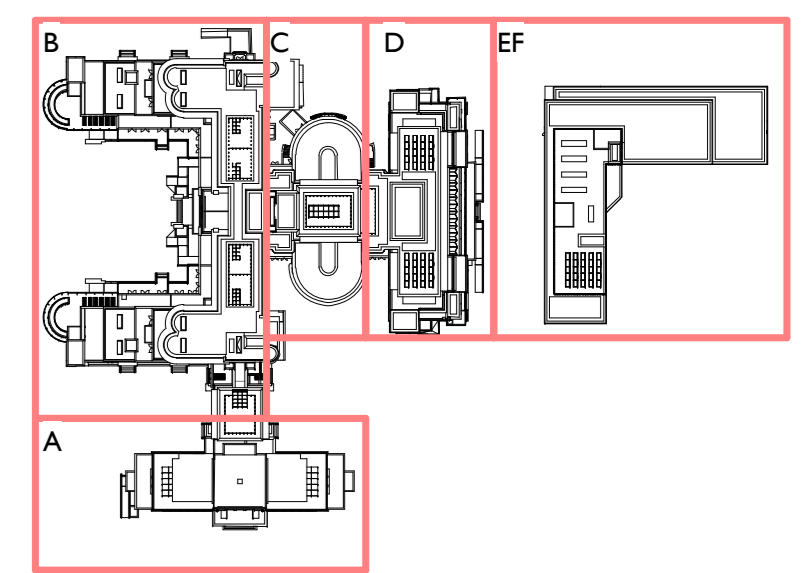
THE CONTRACTOR IS RESPONSIBLE FOR CHECKING DIMENSIONS. ANY DISCREPANCY IS TO BE VERIFIED WITH THE ARCHITECTS BEFORE PROCEEDING WITH ANY WORKS.

DO NOT SCALE DRAWING.

FIGURED DIMENSIONS TO BE WORKED IN ALL CASES. ALL DIMS ARE IN mm UNLESS OTHERWISE STATED.

ALL SUPPLIED TIMBER AND TIMBER BASED PRODUCTS SHALL CARRY THE FOREST STEWARDSHIP COUNCIL'S (FSC) TRADEMARK OR OTHER LABEL FROM AN EQUIVALENT INTERNATIONALLY RECOGNISED, GLOBALLY APPLICABLE, INDEPENDENT CERTIFICATION SYSTEM FOR GOOD FOREST MANAGEMENT, ACCEPTABLE TO THE ARCHITECT. CHAIN OF CUSTODY DOCUMENTATION IS TO BE PROVIDED PRIOR TO ANY WORKS PROCEEDING AND IS TO BE AVAILABLE FOR INSPECTION ON REQUEST BY THE ARCHITECT (WHERE INCORPORATED INDEPENDENTLY CERTIFIED TIMBER STOCKS ARE NOT AVAILABLE, TIMBER AND WOOD PRODUCTS MAY BE SOURCED FROM SUPPLIERS THAT HAVE ADOPTED A FORMAL ENVIRONMENTAL PURCHASING POLICY, AND CAN PROVIDE CREDIBLE EVIDENCE OF A COMMITMENT TO THAT POLICY).

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, STRUCTURAL ENGINEERS, M.E.E. ENGINEERS AND OTHER CONTRACT DOCUMENTS.



VISUAL SCALE 1:200 @ A1
 Notes, legends or Key plans to be added above here

23.10.19	WJP	GK	Issued for Information
23.09.15	WJP	DM	Issued for Information
23.08.04	WJP	DM	Issued for Information
23.07.01	WJP	DM	Issued for Information
23.06.23	WJP	DM	Issued for Information
23.06.02	WJP	DM	Issued for Information
23.05.12	WJP	DM	WJP for Information
23.03.10	WJP	DM	Issued for Information
23.01.31	WJP	EG	Issued for Information
DATE	REV	BY	DESCRIPTION

SPPARC
 N°10 BAYLEY STREET
 BEDFORD SQUARE
 LONDON WC1B 3HB
 T +44 (0) 20 7734 4100
 F +44 (0) 20 7334 9930
 W www.spparcstudio.com

Client
TT Group (Telereal Trillium)

Job Title
2210 - Ravenscourt Park

Drawing Title
Masterplan - Proposed Level 0G Floor Plan

Drawing Number & Revision			
2210-SPP-RCZ-0G-DR-A-20-1002			
Scale	Date Amended	Amended By	Revision
1:200	23.10.19	GK	WJP_9
Checked	Date Created	Drawn By	SUITABILITY
BR	23.01.15	DM	52

GENERAL NOTES

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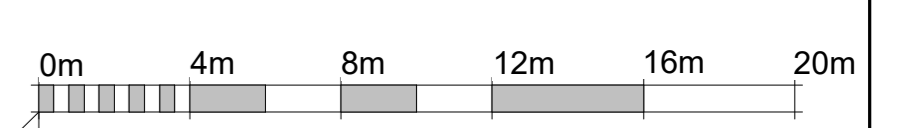
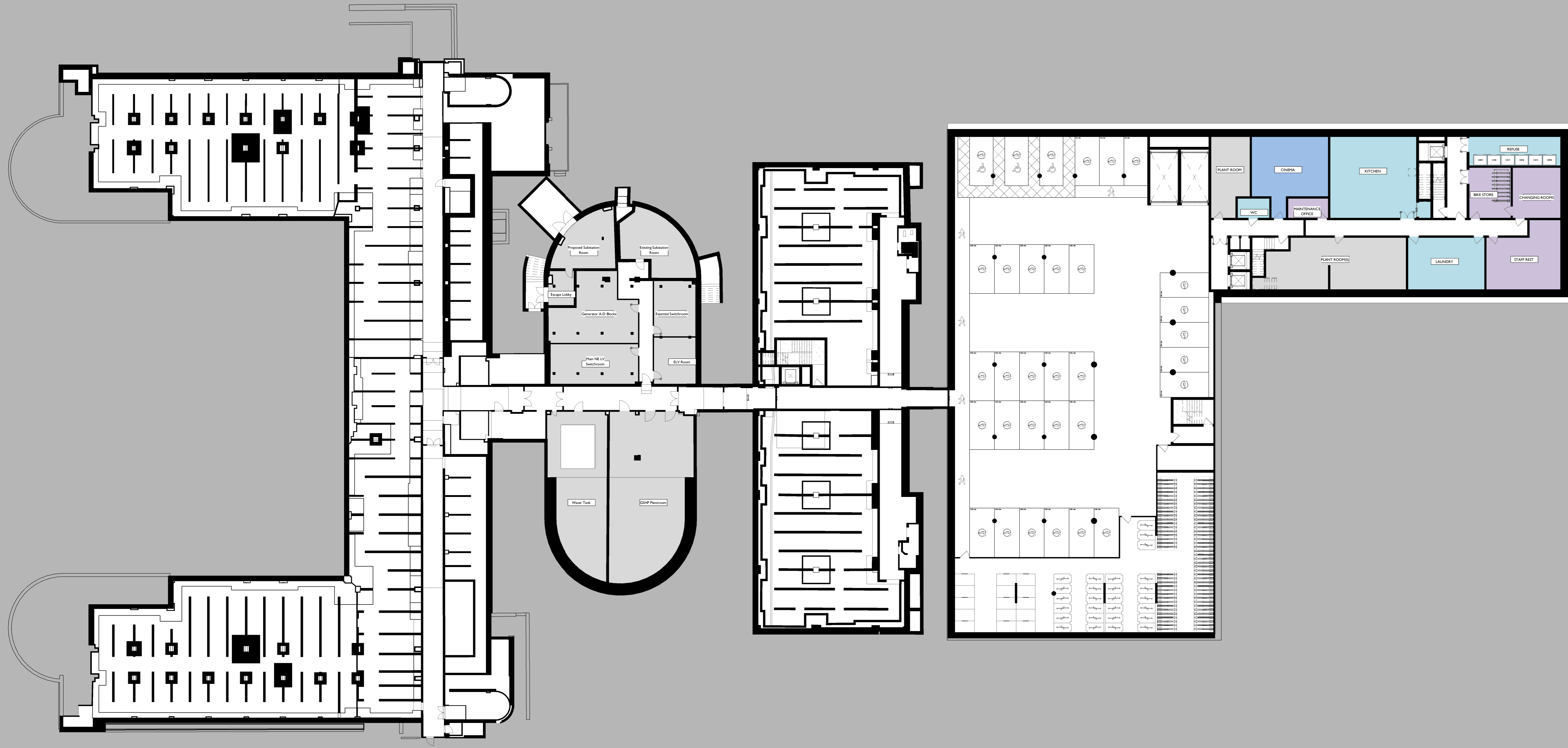
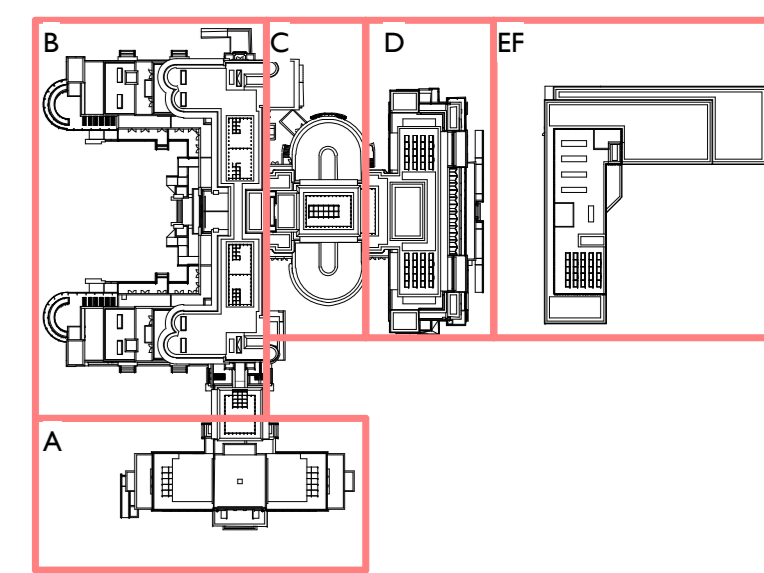
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VISUAL SCALE 1:200 @ A1
Notes, legends or Key plans to be added above here

23.10.19	WIP_9	GK	Issued for Information
23.09.15	WIP_8	DM	Issued for Information
23.08.04	WIP_7	DM	Issued for Information
23.07.01	WIP_6	DM	Issued for Information
23.06.23	WIP_5	DM	Issued for Information
23.06.02	WIP_4	DM	Issued for Information
23.05.12	WIP_3	DM	WIP for Information
23.03.01	WIP_2	DM	Issued for Information
23.01.31	WIP_1	EG	Issued for Information
DATE	REV	BY	DESCRIPTION

SPPARC

N°10 BAYLEY STREET
BEDFORD SQUARE
LONDON WC1B 3HB
T +44 (0) 20 7734 4100
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Client
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Job Title
2210 - Ravenscourt Park

Drawing Title
Masterplan - Proposed Level B1 Floor Plan

Drawing Number & Revision
2210-SPP-RCZ-B1-DR-A-20-1001

Scale	Date Amended	Amended By	Revision
1:200	23.10.19	GK	WIP_9
Checked	Date Created	Drawn By	SUITABILITY
BR	23.01.15	DM	S2

Appendix B Site Walkover

- Site Walkover Proforma
- Site Walkover Photographs

Site Name:	Ravenscourt Park Hospital	Project Number:	082182
Date:	18/01/2023	Walkover By?	Will Spraggs
Site Contact:	N/A	Weather:	Overcast, frosty
Address: Inc. Postcode	Ravenscourt Park Hospital, London W6 0AE	Proposed Use:	Refurbishment of existing Grade II listed former hospital (Block A to D) and demolition of Block E. Construction of additional storeys to Block B to D and new block within former Block E. The proposed use are to comprise arts/community space, residential and care home.
Site Area (m²):	1.27Ha	NGR:	522180, 178970

General Site Description/Current Site Uses

The site comprises a vacant Grade II list vacant three to five storey hospital (Blocks A to D listed, Block E not listed). The development site comprises existing basements within each of the blocks (exception of Block E), however the basement does not extend outside of these footprints. Given former hospital use, service tunnels are present on-site with the basement, a service tunnel extended onto site from an off-site energy centre to the west.

A garden area is present within the southern area of the site adjacent to Block B with vegetation and mature trees. A further garden area is located in the north-eastern area adjacent to Block E and D. A former radiation area within the building is present within Block D and based on yellow hazard demarcation the radiation use was anticipated within 6 rooms within this area.

Access to the site was on the eastern area of the site adjacent to Block A and Ravenscourt Park road.

Surface Cover and Topography

The majority of the site (up to 90%) is covered in hardstanding comprising building footprint, roadways and hardstanding . The remainder is soft landscaping with the aforementioned garden areas in the southern and north-eastern area of the site.

<p>Visible Evidence of Contamination</p>
<p>Visible and olfactory indicators of contamination were noted within the existing service tunnel on the western boundary of the site. Hydrocarbons were noted to be leaking into the service tunnel at an approximate depth of circa 2.0m to 2.50m bgl on the northern side of the tunnel and likely corresponds to the off-site energy centre.</p>
<p>Presence of Asbestos</p>
<p>No easily identifiable Asbestos was recorded as part of the site walkover. However, it is understood that an Asbestos survey and removal is proposed throughout the hospital.</p>
<p>Presence of PCBs</p>
<p>An electrical substation is present in the basement of Block D which is to be retained as part of the development.</p>
<p>Storage of Materials and Old Tanks</p>
<p>No fuel infrastructure was present within the development site footprint or within the basement plant area. However, it is anticipated that the off-site energy centre to the west has an underground fuel storage tank present. No access was available to this site.</p> <p>The storage of gas bottles was noted within the northern boundary of the site.</p>
<p>Services</p>
<p>A Thames Water Sewer is understood to enter the site on the eastern boundary and traverse across the site in a north-westerly direction (passing the corner of Block E). A number of the on-site services are located within services tunnels within the basement of the hospital.</p>
<p>Surrounding Area</p>
<p>The surrounding area predominately comprises residential to the north and south whilst Ravenscourt Park is present to the west. On the east of the development site is a nursing home, former energy centre for the hospital and residential.</p>
<p>Any Other Relevant Information</p>
<p>N/A</p>


Photo No: 1	
Orientation: West	
Notes: Southern area – shared access with surrounding residential use	

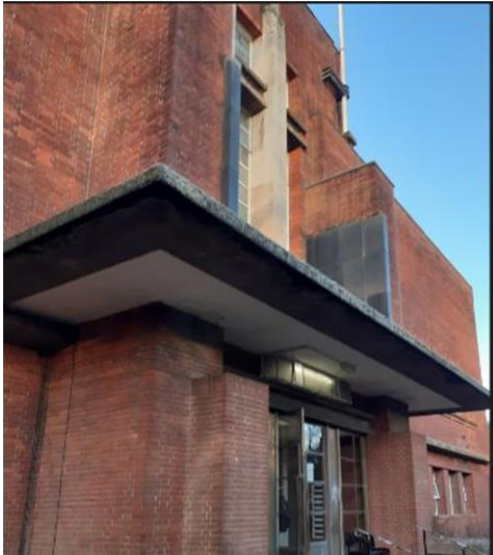
Photo No: 2	
Orientation: North-West	
Notes: Block A Entrance	


Photo No: 3	
Orientation: South	
Notes: Site Entrance	

Photo No: 4	
Orientation: West	
Notes: Garden Area within Block B	


Photo No: 5	
Orientation: West	
Notes: Hardstanding area between Block B and C	


Photo No: 6	
Orientation: North-West	
Notes: Garden area between Block D and E	

Photo No: 7	
Orientation: North	
Notes: Garden area between Block D and E	


Photo No: 8	
Orientation: North	
Notes: Garden Area adjacent to Block E	


Photo No: 9	
Orientation: South	
Notes: Link corridor between Block B and E on western boundary	

Photo No: 10	
Orientation: North	
Notes: Substation to be retained	


Photo No: 11	
Orientation: -	
Notes: On-site service tunnels	

Photo No: 12	
Orientation: -	
Notes: Existing Foundation within service tunnel	

Photo No: 12	
Orientation: -	
Notes: Existing Foundation within service tunnel	

Photo No: 13	
Orientation: West	
Notes: Evidence of leaking heating oil/kerosene entering the service tunnel	

Photo No: 14	
Orientation: North-West	
Notes: Evidence of leaking heating oil/kerosene entering the service tunnel	

<p>Photo No: 15</p>	
<p>Orientation: North-west</p>	
<p>Notes: Further evidence of leakage</p>	

<p>Photo No: 16</p>	
<p>Orientation: West</p>	
<p>Notes: Off-site Energy Centre</p>	

Appendix C – Supporting Information

- Envirocheck Report;
- Historical Ordnance Survey Maps;
- LBHF Environmental Quality Report;
- LBHF Planning and Building Control References;
- Historical Ground Investigation Data;
- Detailed Unexploded Ordnance Risk Assessment

Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

305853105_1_1

Customer Reference:

B082182.000

National Grid Reference:

522180, 178970

Slice:

A

Site Area (Ha):

1.27

Search Buffer (m):

1000

Site Details:

Ravenscourt Park Hospital

LONDON

W6 0AE

Client Details:

Mr W Spraggs

Curtins Consulting Ltd

Rose Wharf

78-80 East Street

Leeds

West Yorkshire

LS9 8EE