A-squared Studio

14 Blackburn Road, London, NW6 1RZ

Phase I Desk Study

March 2025

3749-A2S-XX-XX-RP-Y-0001-02

Project Name	14 Blackburn Road, London, NW6 1RZ
Project Number	3749
Client	Hampstead Asset Management Ltd and their delivery partner Fifth State
Document Name	Phase I Desk Study

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Document Reference	Status	Notes	Revision	Issued by	Date
3749-A2S-XX-XX-RP-Y-0001-00	First Issue	-	00	DDC	07.03.2025
3749-A2S-XX-XX-RP-Y-0001-01	Second Issue	Updated to address Planning Consultants' comments	01	DDC	17.03.2025
3749-A2S-XX-XX-RP-Y-0001-01	Third Issue	Updated to address Planning Consultants' comments	02	DDC	27.03.2025

Contents

1. Introduction 1
2. Site Setting 3
3. Historical Development 9
4. Environmental Designations and Data 14
5. Anticipated Ground Conditions 22
6. Conceptual Site Model (CSM) and Preliminary Risk Assessment (PRA) 25
7. Closing Remarks 29

Appendices

Appendix A: Site Walkover Records

Appendix B: Proposed Development Documentation

Appendix C: Groundsure Enviro+Geo Insight Report

Appendix D: Unexploded Ordnance Risk Assessment

Appendix E: Regulatory Correspondence

Appendix F: Qualitative Risk Assessment Matrix

1. Introduction

A-squared Studio Engineers Ltd (A-squared) has been engaged by Hampstead Asset Management Ltd and their delivery partner Fifth State to prepare a Phase I Desk Study report for the proposed development at 14 Blackburn Road, London, NW6 1RZ (herein called the 'site'). The proposed development is described in more detail in Section 2.3 but can be summarised as the demolition of the existing building followed by the construction of a new mixed-use commercial, residential, and purpose built student accommodation.

1.1. Study Aims and Objectives

The desk study develops an initial Conceptual Site Model (CSM) and provides a qualitative Preliminary Risk Assessment (PRA) for the proposed development in accordance with *Land Contamination Risk Management* (LCRM) guidance, published by the Environment Agency on the UK Government website. The desk study has been prepared in the context of the *National Planning Policy Framework* (NPPF) and *The Building Regulations 2010, Approved Document C - Site preparation and resistance to contaminants and moisture (2004 Edition incorporating 2010 and 2013 amendments)*. The desk study includes an assessment of whether there are potentially unacceptable risks (ref. *LCRM* guidance) requiring further geo-environmental investigation.

Preliminary geotechnical assessment is not included in this desk study.

The outcomes of this desk study have been developed based on information current at the time of writing.

1.2. Information Sources

The desk study has been prepared based on information available in the public domain and in the provided documentation, including the following sources:

- Site walkover undertaken by representatives of A-squared on the 28th of January 2025, photographs are included as Appendix A.
- Proposed development plans, included in Appendix B.
- *Groundsure Enviro+Geo Insight Report* for 14 Blackburn Road, London, NW6 1RZ (ref. GS-UJN-E15-8DJ-MIS), dated 23rd of January 2025 included in Appendix C.
- *Preliminary Unexploded Ordnance (UXO) Risk Assessment* for 14 Blackburn Road, London, NW6 1RZ, produced by RMS UXO Ltd, dated January 2025 (ref. INO5536), included in Appendix D.
- British Geological Survey, GeoIndex Onshore GIS database (accessed 29th of January 2025); https://mapapps2.bgs.ac.uk/geoindex/.
- Department for Environment, Food & Rural Affairs (DEFRA), Magic Map Application (accessed 29th of January 2025); http://magic.defra.gov.uk/MagicMap.aspx.
- Historic England, online Aerial Photo Explorer (accessed 29th of January 2025); https://historicengland.org.uk/images-books/archive/collections/aerial-photos/.
- UK Health Security Agency (UKHSA) and BGS radon mapping (accessed 29th of January 2025); https://www.ukradon.org/information/ukmaps.
- Google Earth (ref. earth.google.com/web/), accessed 29th of January 2025.
- Flood Maps for Planning (ref. https://flood-map-for-planning.service.gov.uk/), accessed 29th of January 2025).
- Local authority planning portal (https://planningrecords.camden.gov.uk/Northgate/PlanningExplorer/GeneralSearch.aspx/), accessed 29th of January 2025.

- BGS Viewer for scanned hydrogeology maps of the UK (ref. https://www2.bgs.ac.uk/groundwater/datainfo/hydromaps/hydro_maps_scanviewer.html), accessed 29th of January 2025.

1.3. Common abbreviations

The following common abbreviations are used within this report:

- PRA – preliminary risk assessment
- CSM – conceptual site model
- TPH – total petroleum hydrocarbons
- BTEX – benzene, toluene, ethylbenzene, and xylenes
- MTBE – methyl tert-butyl ether
- PAH – polycyclic aromatic hydrocarbons
- PCB – polychlorinated biphenyls
- Asbestos – potential free fibres, debris and / or fragments of asbestos containing material (ACM)
- Ground gas – methane, carbon dioxide (excludes soil vapour).
- mbgl – metres below ground level.
- mOD – metres above Ordnance Datum

2. Site Setting

2.1. Development Location and Current Site Use

The site is located at 14 Blackburn Road, London, NW6 1RZ, as shown in Figure 2.1.

The approximate National Grid reference for the centre of the site is 525623, 184680 and the site covers an overall footprint of 0.24 hectares. The approximate surface elevations range from +54m OD in the western portion of the site to +51.0m OD in the eastern portion, resulting in a gentle easterly incline across the site.

The site is located within the administrative boundaries of the London Borough of Camden and currently includes a builders' merchants with a showroom, sheds, and an external yard.

Figure 2.1 Location of the proposed development (the red polygon reflects the Site boundary used for this assessment)

The current land uses within a 250 m radius surrounding the Site are summarised in Table 2.1.

Table 2.1 Surrounding land uses summary

Bearing from Site	Features directly adjacent to the Site boundary	Other identified land uses and key structures
North	Blackburn Road – a single carriageway with on-road vehicle parking lined with multi-storey student accommodation and residential properties.	The London Overground Mildmay railway land is located approximately 70m north of the Site which has an approximate southeast-northwest orientation. West Hampstead London Overground Station is located approximately 65m northeast of the Site. The Midland Main Railway Line is located approximately 110m north of the Site at its closest point. Various commercial establishments are located between approximately 10m and 135m north-northeast of the Site along West End Lane B510, such as cafes, high-street estate agents, and restaurants amongst others. A large builders' merchants yard (Travis Perkins) is located approximately 170m north of the Site and comprises a large area of hardstanding storing timber and construction materials as well as a large single-storey commercial building to its western boundary. Residential properties with private domestic gardens are located from 200m to beyond 250m north and northwest of the Site.
South	London Underground railway line running from east to west.	West Hampstead London Underground Station entrance is located approximately 30m south-southwest of the Site. Broadhurst Gardens is a one-way single carriageway road located approximately 55m south of the Site and is lined with various commercial establishments such as charity shops, cafes, restaurants, public houses, and bars. Residential properties with private domestic gardens are located from 60m to beyond 250m south and southwest of the Site. A large communal area of soft landscaping is located approximately 185m to the southeast which is encircled by the residential properties.
West	Crown Joinery Centre is a single-storey builders' merchant retailing flooring and door items.	West End Lane B510, is a single carriageway high-street lined with various commercial establishments such as convenience stores, high-street estate agents, cafes, restaurants, and florists amongst others. It has an approximate north-south orientation and located 20m west of the Site boundary. Residential flats with areas of soft landscaping are located along Heritage Lane from approximately 30m to beyond 250m west of the Site. A London Underground railway line is located directly south of the Site and runs towards to west under a bridge at West End Lane B510 which extends beyond 250m to the west.
East	A pedestrian overpass above the West Hampstead London Underground railway land. A vacant area of hardstanding is located directly east of the pedestrian overpass with an unidentified white container box and various miscellaneous items.	London Underground railway line is located from south and southeast adjacent to beyond 250m east of the Site. Finchley Road Audi and Alan Day Volkswagen Hampstead are car dealerships located approximately between 20m and 160m east-northeast of the Site. The dealerships comprise of two large single and double-storey commercial buildings and large areas of hardstanding for vehicles being sold. Homebase, a home improvement store, is located approximately 160m east-northeast of the Site and comprises of a large single-

Bearing from Site	Features directly adjacent to the Site boundary	Other identified land uses and key structures
		storey commercial building and a large area of hardstanding used for vehicle parking. A large tank with unknown content associated with the homebase store is observed approximately 150m east of the Site. Residential properties with private domestic gardens are located from approximately 80m to beyond 250m east-southeast of the Site along Broadhurst Gardens.

2.2. Site Walkover

A site walkover was undertaken by a representative of A-squared on the 28th of January 2025. The findings are summarised below, with accompanying photographs included in Appendix A.

Topographically, the Site had a gentle incline towards the east and comprised of an active builders' merchant which comprises of a brick building on the northern side of the Site housing the customer checkout and a large warehouse attached to the southern and eastern sides of the bricked building for storage of construction materials. In addition to this development, there is a sizable undeveloped area of hardstanding located on the western portion of the Site. This hardstanding area was used for vehicular parking and for the storage of timber along multiple shelves. The hardstanding comprised of concrete which was noted to be in good condition and did not exhibit evidence of spills and leakages from vehicles. Several drainage grates were identified across the Site which appeared to be in good conditions. The drainage grates did not appear to be congested or blocked.

At the time of the site walkover, a large yellow skip was observed on the northeastern corner of the Site which contained various domestic waste items such as food packaging, plastic bottles, cardboard boxes, wooden boards and frames. An electrical substation was identified on the northeastern corner of the Site within the fenced area of the builders' merchant. The electrical substation was noted to be in good condition with no visible evidence of damage or leakages.

The warehouse attached to the builders' merchants along the southern and western portion of the Site consisted of a steel supported structure with wooden and corrugated steel roof panels. The warehouse contained multiple vertical shelves of various building materials (i.e., plasterboards, concrete mixes, timber boards, and miscellaneous construction materials) along its sides in an organised fashion. Numerous cans of paints and closed jugs of solvents were stored within the warehouse which were noted to be in very good condition with no evidence of spillages or leakages. No industrial infrastructure such as storage tanks or pipework were identified during the walkover, although machinery was noted in the bricked building which consisted of an automated paint mixer and a vertical baler. An electricity switch room was identified in the north-northeastern corner of the Site and housed multiple switchboards and fuseboards as well as miscellaneous items such as a uniformed-mannequin, a bicycle, and a can of paint.

The Site was directly north of the London Underground railway line and was separated by a metal mesh fence.

A site feature location plan observed during the site walkover is presented below in Figure 2.2.

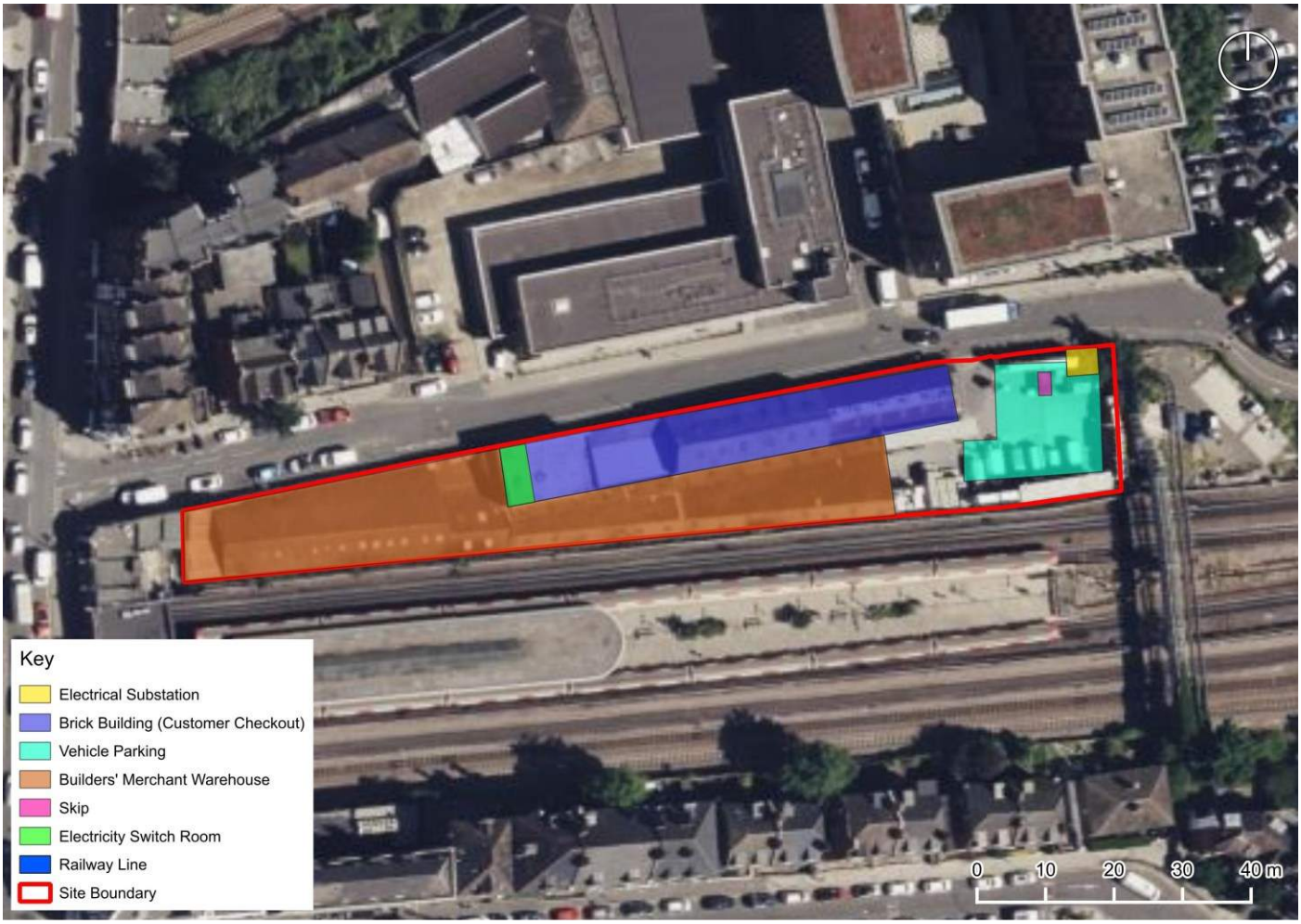


Figure 2.2 Site feature plan

2.3. Proposed Development

The proposed development comprises two distinct buildings that are linked at ground level. The C3 building will be 4 to 7-storeys including a taller ground floor and the purpose built student accommodation (PBSA) building will be ten-storeys including a ground floor and amenity mezzanine level. There is a double height space spanning these lower two floors in the café at the base of PBSA.

A selection of the proposed development plans and sections are included below as Figure 2.3 to Figure 2.7. For the complete proposed document, please refer to Appendix B.

The eastern portion of the proposed development is to comprise a ten-storey building with a dedicated amenity terrace on the first floor level at the centre of the structure and will areas of soft landscaped terrace as shown in Figure 2.6.

The western portion of the proposed development is to comprise of a four to seven-storey residential apartment building over a platform level (partial basement) and lower platform levels towards the east as shown in Figure 2.5. The ground floor, platform level, and lower platform levels are proposed to house commercial showrooms, ancillary offices, bin stores, a plant room, and cycle store for the residents. An amenity terraces dedicated to the residents of the proposed building is to be constructed on the sixth floor level of the residential structure which will include a soft landscaped terrace as shown in Figure 2.7.

The proposed development plans indicate that the existing electrical substation at the northeastern corner of the Site is to be removed and replaced with two new electrical substations to be constructed on the southeastern corner of the proposed structure, one of which will be a UKPN substation as shown in Figure 2.4.

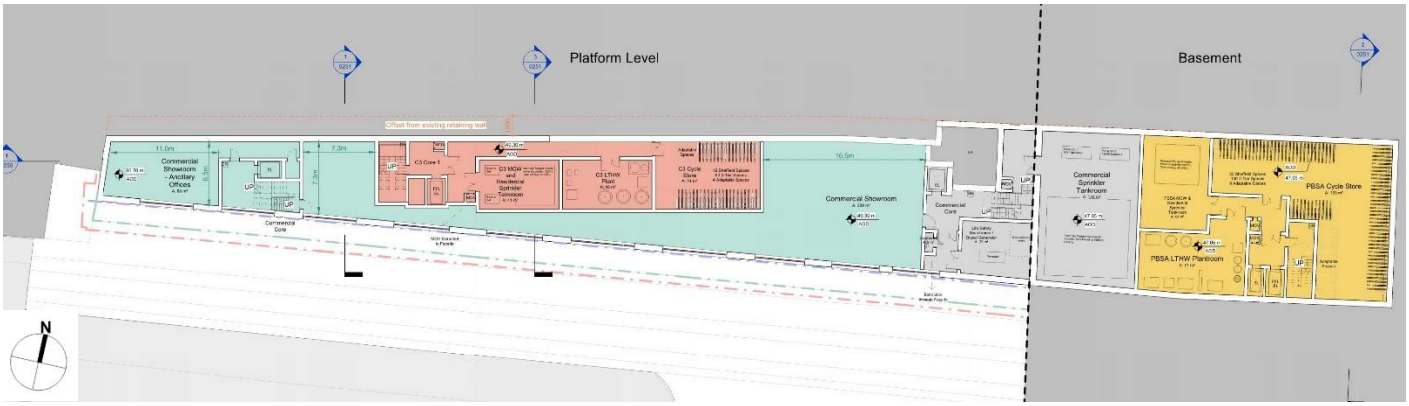


Figure 2.3 Proposed basement and platform level plan

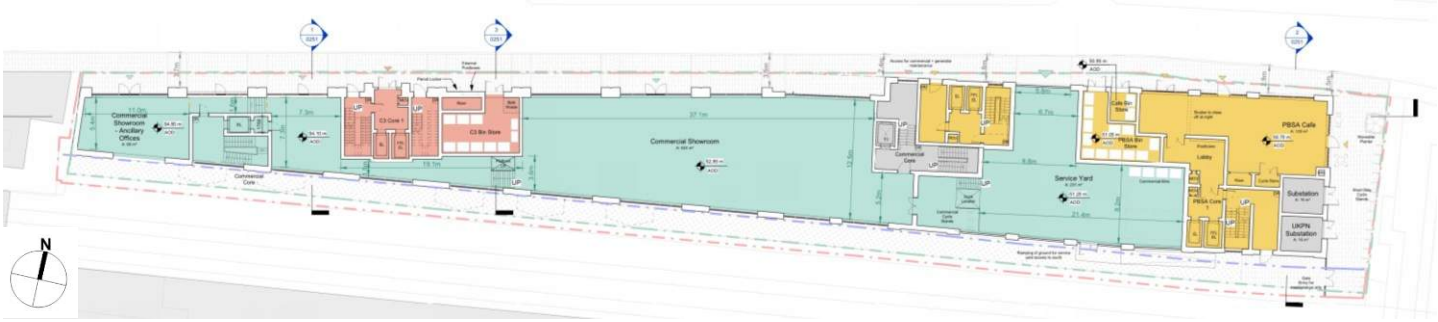


Figure 2.4 Proposed ground floor level plan

Figure 2.5 Proposed elevations of the development (west to east)

Figure 2.6 Proposed external amenity terrace at the PBSA building

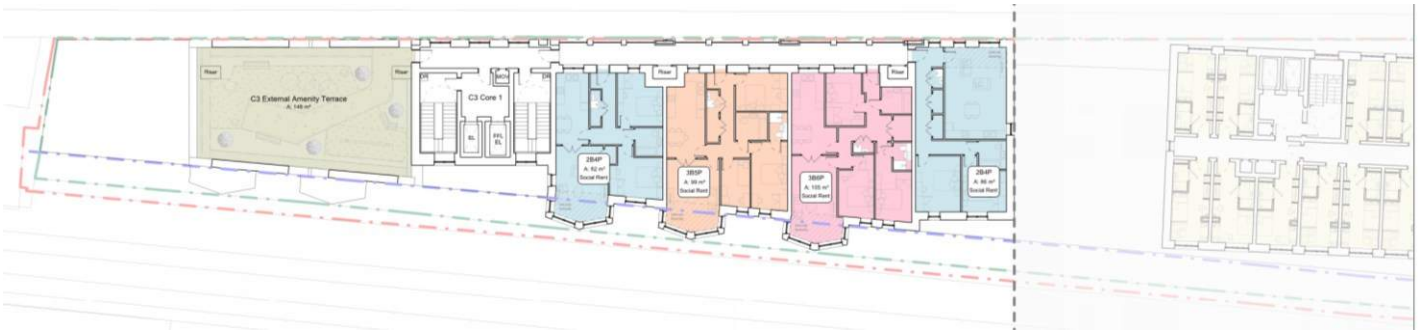


Figure 2.7 Proposed external amenity terrace at the residential building

3. Historical Development

Detailed historical maps and aerial photographs of the Site and surrounding area dated between 1871 and 2025 (at scales of 1:1,056, 1:1,250, 1:2,500, 1:5,280, 1:10,000 and 1:10,560), provided as part of the *Groundsure Enviro+Geo Insight* Report (Appendix C), have been reviewed as part of the study. This process has been undertaken to identify former land uses at the Site and within the surrounding area that may have geo-environmental implications for the proposed development.

The earliest historical maps are dated to 1871 (as shown on the left image of Figure 3.1) which show the Site to be undeveloped greenfield land with the immediate vicinity of the site also appearing to be undeveloped and remained undeveloped until 1896. At that time, maps indicated that a large cutting was present approximately 60m northwest of the Site with the *Hampstead Junction Railway* line running across the cutting in a northeast to southwest orientation. The *Midlands Railway* line was identified approximately 120m north of the Site and had an unfinished railway track heading towards the Site located from 60m to 100m northeast. By 1894 (as shown on the right image of Figure 3.1) significant suburbanisation had occurred in the wider area which comprised the development of residential properties to the south, southwest, and southeast of the Site. At that time, notable changes to the surrounding area include a railway line south adjacent to the Site and two new railway *stations* approximately 30m southwest (*West Hampstead Station*) and 70m northwest of the Site (*West End Lane Station*) associated with the south adjacent and *Metropolitan Railway Extension Line.*

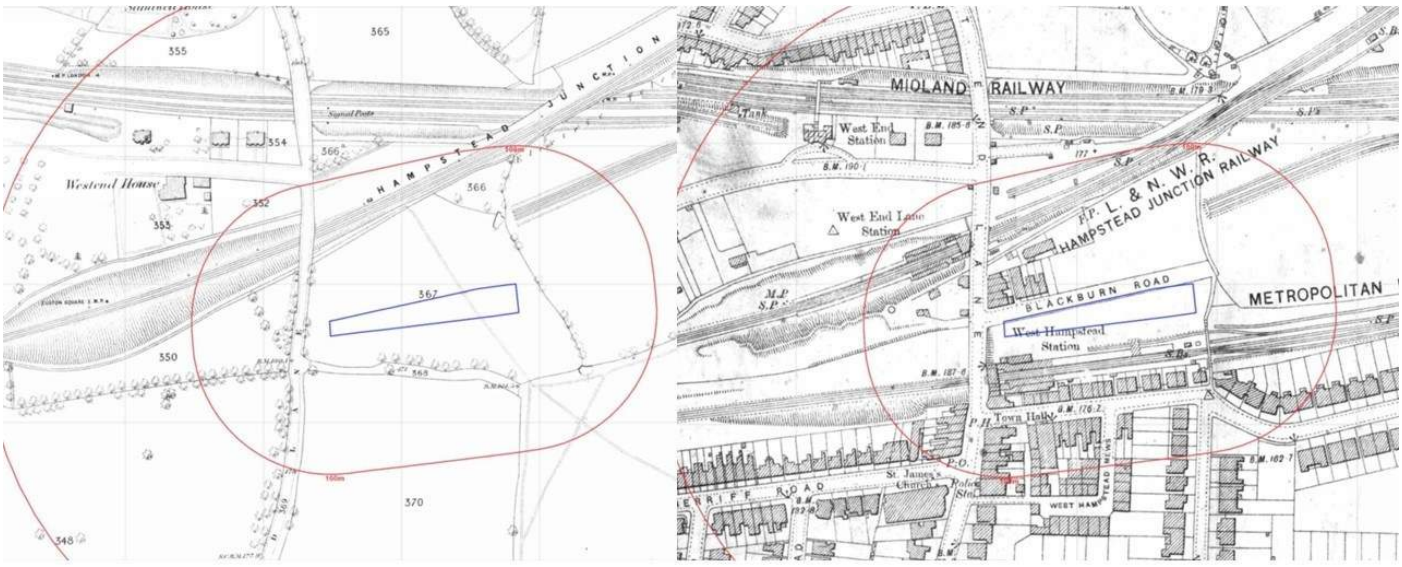


Figure 3.1 Historical maps dated to 1871 (left) and 1896 (right) © Ordnance Survey (1:2,500 scale)

Historical maps dated to 1915 (left image of Figure 3.2) show that a single terminus track associated with the extension of the *Metropolitan Railway* line ran across the middle of the Site. New developments of interest in the surrounding area around that time include the emergence of suburban developments from 200m north and *allotment gardens* from 50m to 250m east. By 1935 (right image of Figure 3.2), the single terminus track appeared to have been altered in its orientation, then terminating at the south-central portion of the Site with new unlabelled adjoining buildings developed along the northern portion of the Site as well as two small unlabelled structures in the Site's northeastern corner. Notable changes to the surrounding land use during that period includes the emergence of the *Canadian Building* (approximately 80m northeast), and *cocoa factory* (approximately 150m northeast). Aside from these new developments, the wider area remained similar between 1915 and 1935.

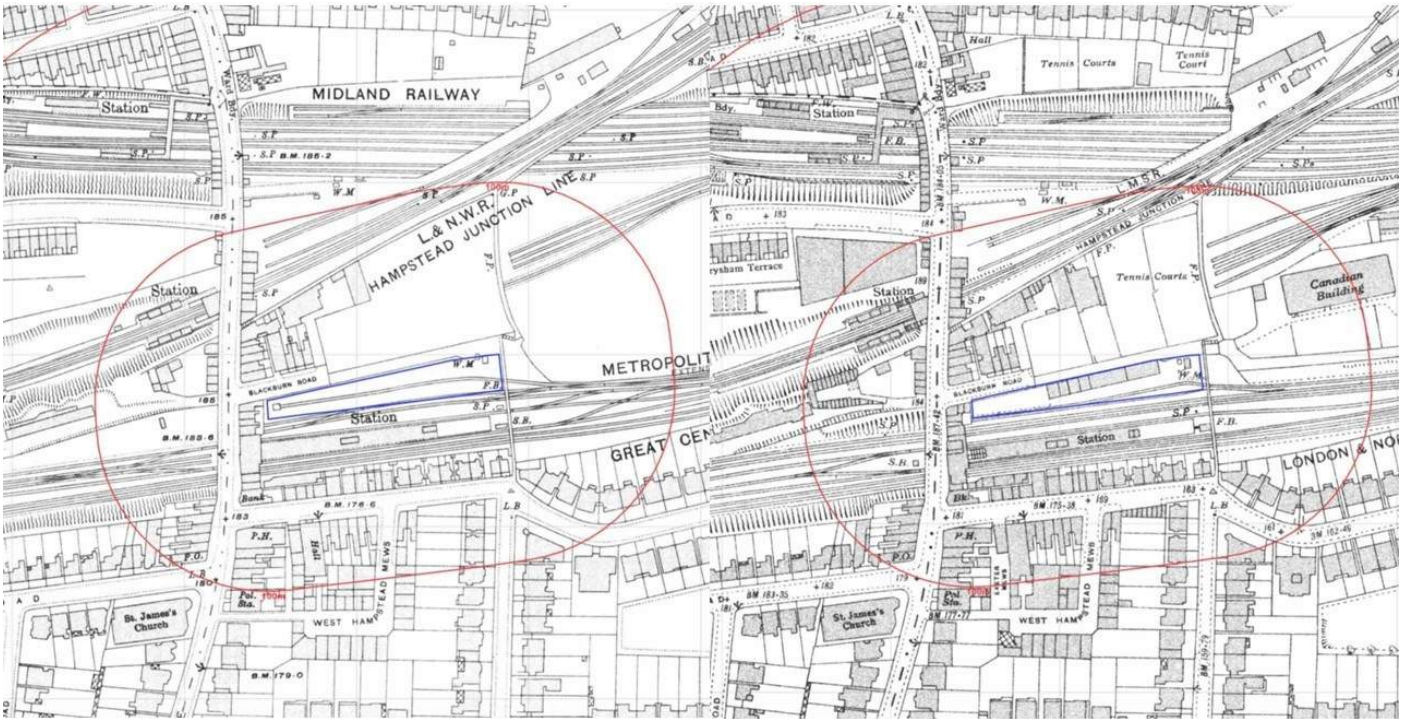


Figure 3.2 Historical maps dated to 1915 (left) and 1935 (right) © Ordnance Survey (1:2,500 scale)

With reference to the map dated 1953 (left image of Figure 3.3), no discernible changes were noted on-site. The wider area remained largely unchanged apart from the emergence of *Tower Royal Works (Engineering)* approximately 65m north-northwest, a *ruin* approximately 70m north, *exhibition & display works* approximately 100m northeast and a *Cadbury-Fry Depot* approximately 200m northeast. *Garages* were also present approximately 180m north and 70m south of the Site. By 1960 (as show in the right image of Figure 3.3), the railway track located on-site had been removed and a new structure built along the southern-south-central portion of the Site. The wider area remained relatively unchanged in the 1960's other than the notable development of a new garage, named *GPO Garage* (15m north), and a *works* (17m east). It is noted that the *GPO Garage* is later associated with a Mercedez Benz garage and car dealership.

Figure 3.3 Historical maps dated to 1953 (left) and 1960 (right) © Ordnance Survey (1:2,500 scale)

By 1974 (left image of Figure 3.4), the Site had been developed into a *Milk Distribution Depot* with the western expansion of the structures already present. An electrical substation is noted to have been constructed in the northeastern portion of the of the Site, which currently stands to the present day. In the surrounding area by 1974, the former *Canadian Building* and *cocoa factory* had been converted into *depots, works,* and *warehouses.* Between 1974 and 1992 (as shown in Figure 3.4), very little change had occurred on-site with notable changes in the surrounding area including the demolition of the *exhibition & display works* followed by subsequent redevelopment into a residential estate and the change in name of new *engineering works* to *works*.

Figure 3.4 Historical maps dated to 1974 (left) and 1992 (right) © Ordnance Survey (1:2,500 scale)

No discernible changes were observed in the vicinity of the Site. Small changes were observed on-site between 1992 and 2010, notably the change in name of the *milk depot* to *depot*.

No discernible changes were observed on-site between 2010 and 2025. The *Depot* north of the Site, associated with the Mercedes Benz garage and dealership, is not present on the maps by 2025. Recent site visits to the area indicates that the former *Depot* has been demolished and redeveloped into student accommodation.

The historical and recent maps do not indicate when the site use changed from the *milk distribution depot* into the current builders' merchant, however, Google Streetview images indicates that the Site had been a builders' merchant as soon as 2008.

The Groundsure Report has identified historical land uses on-site and within the vicinity of the Site. Table 3.1 summarises the potential sources of contamination within 100m of the Site from historical and recent land uses identified in the Groundsure Report and the findings from the inspection of the available historical maps.

For a full breakdown of the historical and recent land uses, please refer to Appendix C.

Table 3.1 Historical land uses / features

Historical Feature	Distance and bearing from the Site	Approx Date Present
Former Railway Sidings	On-site	1920 - 1989
Unlabelled Buildings on-site	On-site	1935 – present (assumed to have been incorporated into the existing brick building)

Historical Feature	Distance and bearing from the Site	Approx Date Present
Former Milk Distribution Depot	On-site	1974
Electrical Substation	On-site	1974 – 1992
	On-site	1994
	84m W	1974
	85m W	1994
	86m W	1985 – 1991
Builders' Merchants	On-site	2008 – present
Railway Sidings	On-site	1920 – 1989
	11m E	1894
	36m NE	1874
Railway Station (West Hampstead Underground Station)	3m W	1957 – 1989
	12m W	1894 – 1920
Railway Station (West Hampstead Overground Station)	49m W	1894
	54m W	1920 – 1951
	55m W	1968 – 1989
	64m W	1957
Unspecified Depot (Identified to be the *GPO Garage* / the former Mercedez Benz Garage and Dealership	9m NE	1989
Unspecified Works	17m E	1968 – 1989
Unspecified Works (Identified to be Tower Royal Works)	73m NW	1968 – 1973
Canadian Building (Unspecified Use)	80m NE	1935 – 1955
Works (on the same footprint as the former Canadian Building)	80m NE	1960 – 1992
Historical Tanks	79m W	1896
Historical Garages	6m W	1960
	65m S	1953 – 1960

3.1. Unexploded Ordnance

A preliminary unexploded ordnance (UXO) risk assessment has been carried out by RMS UXO Ltd (RMS) and is included in Appendix D.

The Site was located in the World War II (WWII)-era Borough of Hampstead which was subjected to an overall very-high level of bombing. A preliminary search of the local records and consulted mapping suggest that the Site sustained damage from bombing and, due to bombings recorded in close proximity of the Site and the Site consisting of open ground, it is unclear if the area has been affected by German or Allied ordnance. Therefore, there is a potential risk posed by UXO to the extent of which needs clarification.

RMS has recommended that a Detailed UXO Risk Assessment per CIRIA C681 guidance should be undertaken for a thorough examination of wartime conditions in the site development area. The Detailed UXO Risk Assessment is not required for planning purposes but it would be prudent to undertake in order to inform and assess the risks during intrusive works.

Details of risk management strategies are outlined in *CIRIA C681*.

A copy of the preliminary UXO risk assessment is provided in Appendix D must be referred to.

4. Environmental Designations and Data

4.1. Regulatory Data

Regulatory data from the *Groundsure Enviro+Geo Insight* Report in close proximity to the Site (generally within 250m of the site boundary, but with the inclusion of landfill and other notable infilled ground within 500m of the Site, if present) has been summarised below. For a full breakdown of the regulatory data refer to the *Groundsure Enviro+Geo Insight* Report in Appendix C.

4.1.1. Waste and Landfill

There is one record of a historical landfill located 361m east of the Site at *Canfield Place, London, NW6*. The record does not specify further details pertaining to materials landfilled.

There are five records of historical waste sites within 500m of the Site. A summary of the identified historical waste sites is presented below in Table 4.1.

Table 4.1 Summary of historical waste sites within 500m of the site

Type of Waste Site	Distance and bearing from the Site	Date
Scrap Metal Yard	270m W	1974
Car Breaker's Yard	289m W	1974
Waste Transfer Station	320m E	1994
Refuse Transfer Depot	325m E	1986
Refuse Transfer Depot	337m E	1971

Due to distance, the identified historical waste sites have not been considered as potential off-site sources of contamination and have not been assessed further as potential risks to the Site.

There are two records of waste exemptions within 500m of the Site; both are located 94m east and are associated with '*storage of waste in a secure place*'. The waste materials are likely to be stored which will not liberate soils or dusts, therefore these have not been considered as potential sources of contamination and have not been assessed further as potential risks to the Site.

4.1.2. Licenced Pollutant Release (Part A(2) / B)

There are three records of licenced pollutant release within 250m of the Site. A record is identified to be located 168m south of the Site associated with '*respraying of road vehicles*' process. The remaining two records are located 212m northwest and 216m northwest and are associated with '*dry cleaning*' processes. Due to distance, the licenced pollutant releases have not been considered as potential sources of contamination and have not been assessed further as potential risks to the Site.

4.1.3. Recent industrial land uses

There are 25no. records of recent industrial use within 250m of the Site. Table 4.2 summarises the recent industrial land uses which have been considered to have a likely impact to the Site.

Table 4.2 Recent Industrial Use

Recent Industrial Land Use	Distance and bearing from the Site
Electricity Substation	On-site
Underground Network Stations (West Hampstead)	15m SW
Gantry	19m E
Car Dealership (Finchley Road Audi)	79m NE
Car Dealership (Alan Day Volkswagen)	94m E

4.2. Flood Risks

The Site is not located within an area at risk of surface water flooding and is classified as having a '*negligible*' risk as a result of groundwater flooding.

Flood Maps for Planning (ref. https://flood-map-for-planning.service.gov.uk/, accessed 30th January 2025) indicates that the Site is located in a Flood Zone 1 i.e., there is a low probability of flooding from rivers.

A Flood Risk Assessment has been prepared by Expedition Engineering Ltd (Expedition) which accompanies the Planning Application and should be referred to.

4.3. Ecology, Flora and Fauna

No records of potentially sensitive ecological receptors as defined by the *Environmental Protection Act (1990) Part 2a (as amended)* have been identified.

An assessment of potential invasive species is not included in this report.

4.4. Planning Records

The Local Authority Planning Portal has been searched for relevant geo-environmental documentation associated with planning applications for both the Site and in close vicinity of the Site.

The following planning reference numbers have been identified relating to previous applications made for all or part of the Site which have relevant geo-environmental reports:

- 2009/0639/P

The following planning reference numbers have been identified within close vicinity of the Site:

- 2009/5823/P; 2011/2521/P
- 2010/6051/P; and
- 2020/2940/P.

The identified planning references are spatially illustrated in relation to the Site in Figure 4.1.

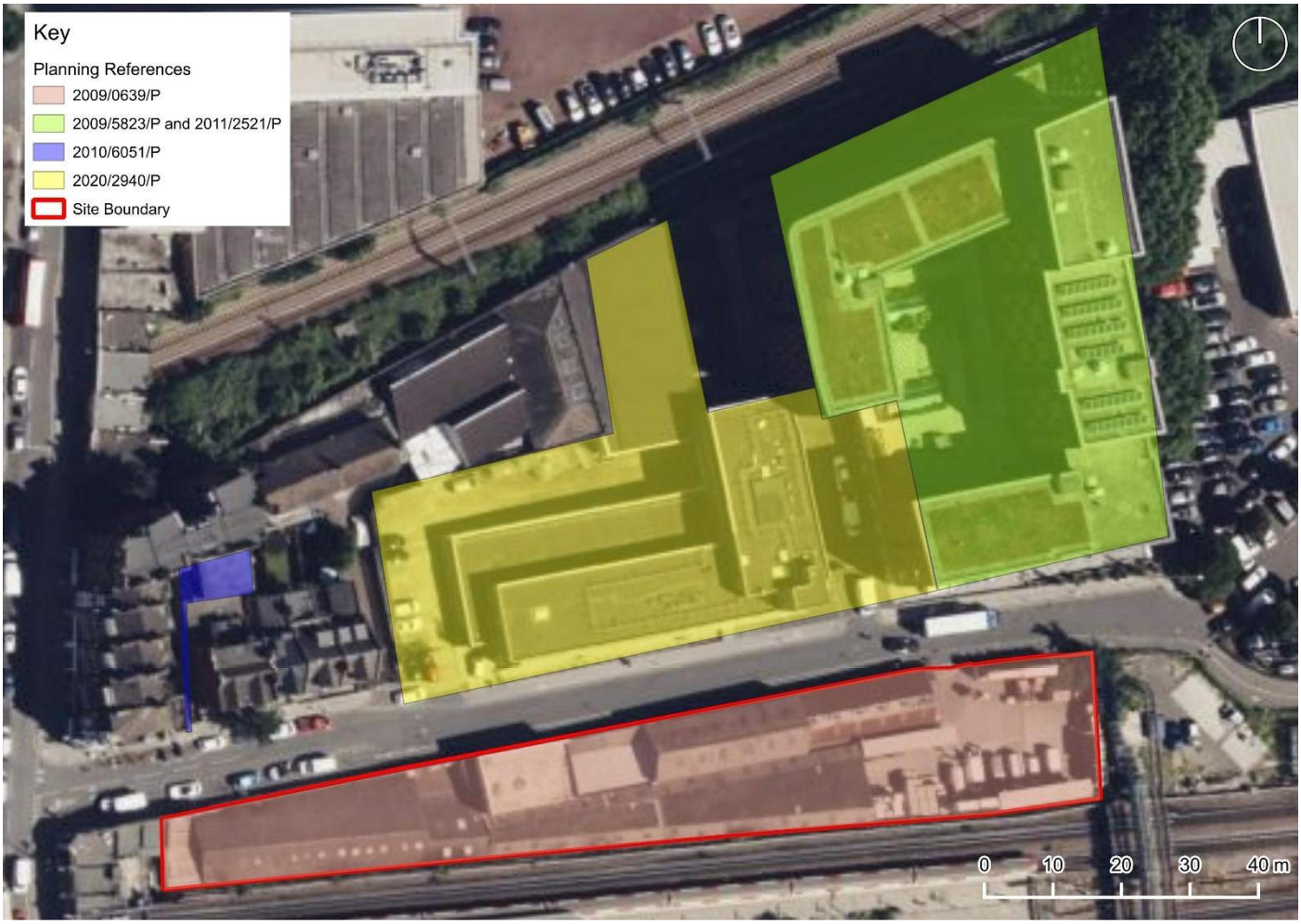


Figure 4.1 Planning References with relevant geo-environmental documentation

4.4.1. On-site Planning Applications

4.4.1.1. Planning Reference 2009/0639/P

Planning Reference 2009/0639/P refers to '*Details of a programme of investigation of contaminated land pursuant to Condition 18 of planning permission granted on 6th January 2004 (ref: PWX0202103) for redevelopment of whole site by the erection of a 4 storey eastern block comprising two Class B8 and eight Class B1 units with associated service yard, together with a 4 storey plus basement western block comprising 8 dwellinghouses and 6 self-contained flats with associated underground car parking.*' The planning reference concerns the Site.

The following report was identified to have geo-environmental relevance:

- *14 Blackburn Road, West Hampstead, London, NW6 1RZ, Report on a Ground Investigation*, produced by Site Analytical Services Ltd. (SAS) (ref. 07/13437), dated June 2008.

The SAS report details a ground investigation undertaken at 14 Blackburn Road which consisted of:

- 1no. shell and auger borehole to 25m bgl (BH1);
- 2no. continuous flight auger boreholes to 13m bgl (CFA1 and CFA2);
- 4no. hand-excavated trial pits to 2.5m bgl (TP1 to TP4);
- Shallow soil sampling and in-situ testing (shallow soils were typically sampled from the Made Ground); and
- Laboratory soil testing.

An exploratory hole plan of the site investigation has been included below as Figure 4.2

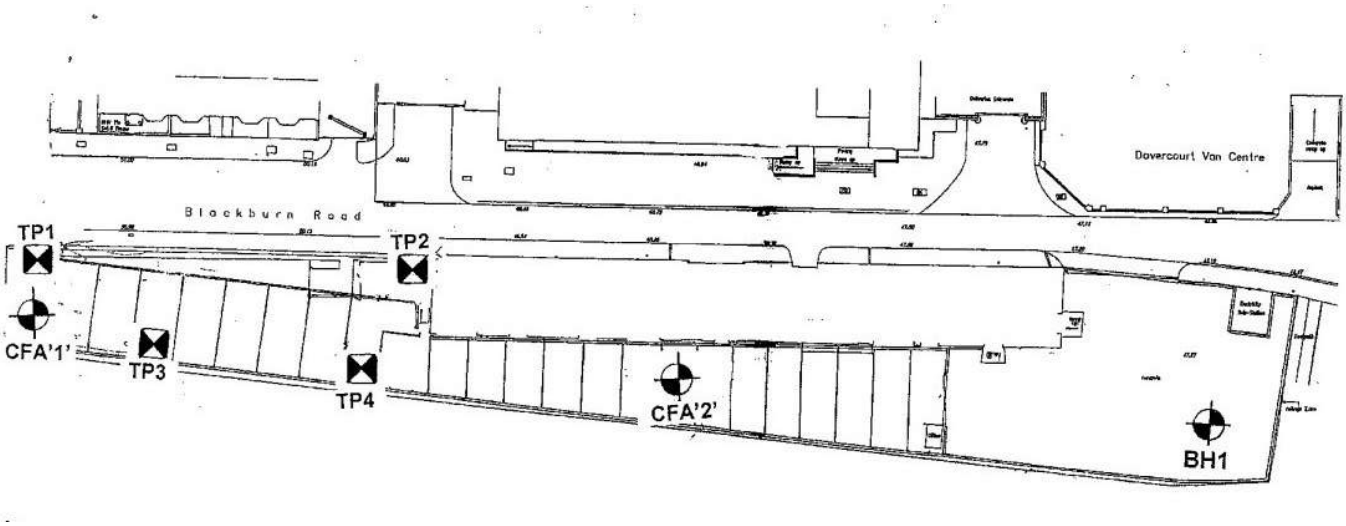


Figure 4.2 Exploratory hole location plan of the SAS site investigation

The ground investigation encountered Made Ground between 0.60m to 1.90m thick underlain by the London Clay Formation. The Made Ground comprised dark grey, clayey, silty gravel of concrete, brick, and ashes.

Groundwater seepages were encountered within the London Clay Formation, specifically at TP1 (1.30m bgl) and TP2 (1.30m bgl).

Interpretation of the laboratory soil (Made Ground) test results at the time of writing indicate that there are exceedances against the Soil Guideline Value (SGV) for the '*residential use without plant uptake*' with regards to arsenic, lead, PAHs (benzo(a)pyrene and dibenz(a,h)anthracene), and TPHs.

SAS recommended further investigation and that a remediation strategy should be undertaken to further assess the potential risks from the contamination encountered during the site investigation.

Taking this into account the findings of SAS ground investigation, it is likely that the elevated concentrations of arsenic, lead, PAHs, and TPHs are still present on-site. Thus, on-site Made Ground has been considered as a potential source of contamination for the Site, notwithstanding that the SGV used by SAS may be somewhat conservative given the proposed end-use of the development. On-site Made Ground has been assessed further in Section 6.

4.4.2. Off-site Planning Applications

4.4.2.1. Planning Reference 2009/5823/P and 2011/2521/P

Planning Reference 2009/5823/P refers to '*Erection of a part five, part seven, part nine storey plus basement building providing 2,110 sqm of flexible B1 employment space at ground floor and 347 beds (39 x cluster flats and 52 x studios) of accommodation for students to upper floors (following demolition of the existing car repair garage).*'

Planning Reference 2011/2521/P refers to '*Details of results of ground investigation and remediation measures pursuant to condition 4b of planning permission 2009/5823/P granted on appeal dated 30/09/10 (ref: APP/X5210/A/10/2127151) for the erection of a part five, part seven, part nine storey plus basement building providing B1 employment space and student accommodation*'

The planning references is for the development located approximately 15m north of the Site which was used as a former Mercedez Benz garage and dealership as identified in the Section 3.

The following documents of geo-environmental relevance where identified:

- *The Former Mercedez Benz Garage Blackburn Road, West Hampstead, Phase I Contaminated Land Risk Assessment*, produced by Ramboll UK Limited (Ramboll) (ref. 6888.E.CLRA.2A), dated November 2009.
- *The Former Mercedez Benz Garage Blackburn Road, West Hampstead, Ground Contamination Interpretative Report,* Produced by Ramboll (ref. 6888.E.GCIR.1A), dated May 2011.

The Ramboll Phase I Contaminated Land Risk Assessment contains a PRA which identified the following as potential sources of contamination for the former Mercedes Benz Garage:

- Made Ground;
- Area of vehicle parking;
- Historical site activities associated with the fuel dispenser court;
- Historical activities associated with vehicle wash;
- Historical activities associated with the liquefied petroleum gas (LPG) stores;
- Historical activities associated with maintenance workshops; and
- Historical activities associated with heating fuels for the building.

A ground investigation was designed by Ramboll, based on the Ramboll Phase I Contaminated Land Risk Assessment, and undertaken by Soil Mechanics between 28th of February and 14th of March 2011. The ground investigation comprised of:

- 3no. cable percussion boreholes to 40.0m bgl;
- 8no. window sampler boreholes to 6.0m bgl;
- 8no. hand excavated trials pits to 0.9m bgl; and
- 6no. machine excavated trial pits to 4.0m bgl

Following the ground investigation, an assessment was undertaken using the laboratory soil results which were screened against the Generic Assessment Criteria (GAC) for '*residential without homegrown produce'* end use scenario at the time of issue. The screening identified exceedances of arsenic, lead, benzo(a)anthracene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene above the GAC in the Made Ground.

Ramboll concluded that there was a maximum risk level of 'moderate' to construction workers as a result of contaminated Made Ground and the underground fuel tanks. Ramboll did not assess the risks to potential off-site receptors.

Taking into account the historical use of the former Mercedes Benz garage as a former garage which has since been developed into student accommodation by 2015 (as indicated by Google Streetview), it has been assumed that remediation has been undertaken and for this reason, the former Mercedes Benz garage (and previous land uses) has not been assessed as a potential ongoing off-site source of contamination.

4.4.2.2. Planning Reference 2010/6051/P

Planning Reference 2010/6051/P refers to '*Change of use from light industrial workshop (Class B1) and works of conversion including additional storey at roof level to create two self contained residential units (Class C3).*'

The following report was previously identified in relation to Planning Reference 2010/6051/P:

- *Land Contamination Assessment for Rear of 3 Blackburn Road, London, NW6 1RZ*, prepared by Ecologia Environmental Solutions Limited (Ecologia) (ref. EES 11.102.0), dated 31st of March 2011.

It is noted that the report is no longer available on the planning portal.

The report completed by Ecologia details a desk-based land contamination risk assessment which includes PRA. The PRA did not detail off-site receptors, presumably based on anticipated ground model which comprises of Made Ground over the London Clay

Formation. On this basis, the development at 3 Blackburn Road has not been considered as a potential source of contamination and have not been assessed further.

4.4.2.3. Planning Reference 2020/2940/P

Planning Reference 2020/2940/P refers to '*Demolition of existing building and construction of three buildings between 1 and 9 storeys (plus basement) in height comprising 53 residential dwellings, 4,797sqm of commercial floorspace, courtyard landscaping and resident's facilities including cycle and refuse storage.*'. The planning reference is located at Clockwork Factory Apartments, 13 Blackburn Road, London, NW6 1RZ which is located approximately 10m north of the Site.

The following report was identified to have geo-environmental relevance:

- *Ground Investigation and Basement Impact Assessment Report for 13 Blackburn Road, London, NW6 1RZ*, produced by Geotechnical & Environmental Associates Limited (GEA) (ref. J19295), dated 11th of May 2020.

The GEA reports includes a PRA, details of a ground investigation undertaken at the development based on the PRA and a generic quantitative risk assessment (GQRA) from the findings of the ground investigation. GEA identified the former *watch factory* and *garages* present at the 13 Blackburn Road as potential sources of contamination. The PRA did not assess off-site potential receptors (i.e., potential end-users of the Site at 14 Blackburn Road).

The ground investigation comprised of:

- 2no. cable percussion boreholes to 25.0m and 30.0m bgl;
- 4no. drive in window sampler boreholes to 5.0m bgl; and
- 3no. hand excavated trial pits to 1.3m bgl.

At GQRA stage, GEA identified that there were concentrations of PAHs (benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and dibenz(a,h,)anthracene) in the Made Ground exceeding the selected human health GAC for a '*residential without plant uptake*' land use. The GQRA undertaken by GEA did not assess for off-site receptors, presumably based on the encountered ground conditions, which consists of Made Ground over the London Clay Formation. However, GEA stated that the observed contaminants are '*…relatively immobile and unlikely to be in a soluble form and is considered to be non-volatile or of a low volatility.*' In this regard, GEA has concluded that the identified contamination did not present a significant risk of leaching and migration within the perched groundwater.

Following the redevelopment of the area at 13 Blackburn Road, it is assumed that remedial works have been undertaken. For this reason, 13 Blackburn Road has not been considered as an ongoing potential source of off-site contamination.

4.5. Regulatory Consultation

Requests for information have been made to the following bodies:

- The Environment Agency (EA), contacted via email on the 28th of January 2025. A response was received 19th of February 2025.
- Camden London Borough Council (Camden Council) was contacted via email on the 29th of January 2025. A response was received on the 6th of February 2025.

The responses received from the Environment Agency and Camden London Borough Council have been included in Appendix E.

4.5.1. Environmental Agency Response

The Environmental Agency (EA) was contacted on the 28th of January 2025 and a response was received on the 19th of February 2025.

The EA has provided information regarding pollution incidents and historical landfills.

Following a review of the information provided by the EA, a historical landfill is located approximately 520m east-northeast of the Site.

Two pollution incidents with Incident Category 3 (Minor) have been identified within 500m of the Site and are stated to have been caused by 'pipe failure below ground' and 'fly-tipping'. Taking into account the nature of the incidents, they are unlikely to be a source of gross contamination which could migrate and affect the Site.

Figure 4.3 Locations of the pollution incidents with Incident Category 3 for land relative to the Site

4.5.2. Camden London Borough Council Response

Camden Council was contacted on the 29th of January 2025 and a response was received on the 6th of February 2025.

Camden Council has stated that the Site has not been determined as contaminated land under *Part IIA of the Environment Protection Act 1990* and that the Site is not currently being investigated by the council. Camden Council has undertaken a search using the *Councils GIS Software* (GISMO) to identify the potential land contamination due to past and present land uses within 100m of the Site. The search indicated that the Site is within a 25m buffer of the following historical land uses:

- Perforating Machine Manufacturers;
- Engineering Works; and
- Coal & Coke Merchants.

The land uses above were not identified in the historical maps within the Groundsure *Enviro+Geo Insight* report.

The following land uses have been identified within 100m of the Site:

- Plastics and Rubber Manufacturers;

- Coal & Coke Merchants;
- Coach & Motor Body Builders;
- Crane Repair Works;
- Furriers; and
- Motor Garage Repairs.

A map illustrating the locations of the historical land uses identified by Camden Council is included in Appendix E.

Camden Council has assessed the Site, based on their *contaminated land risk characterisation*, to represent a *medium to high* risk and is '*…considered likely that such land could exhibit significantly elevated contaminated levels with the potential to cause harm*'. However, Camden Council has no present evidence that confirms that there are contamination issues on-site and to its surrounding.

Findings of the Camden Council land search have been considered and assessed further in Section 6.

Camden Council has stated that the Site is not in the vicinity of Part A2/B industrial process sites, private water supplies, and pollution incidents. Camden Council has no information regarding historical landfill sites in the vicinity of the Site.

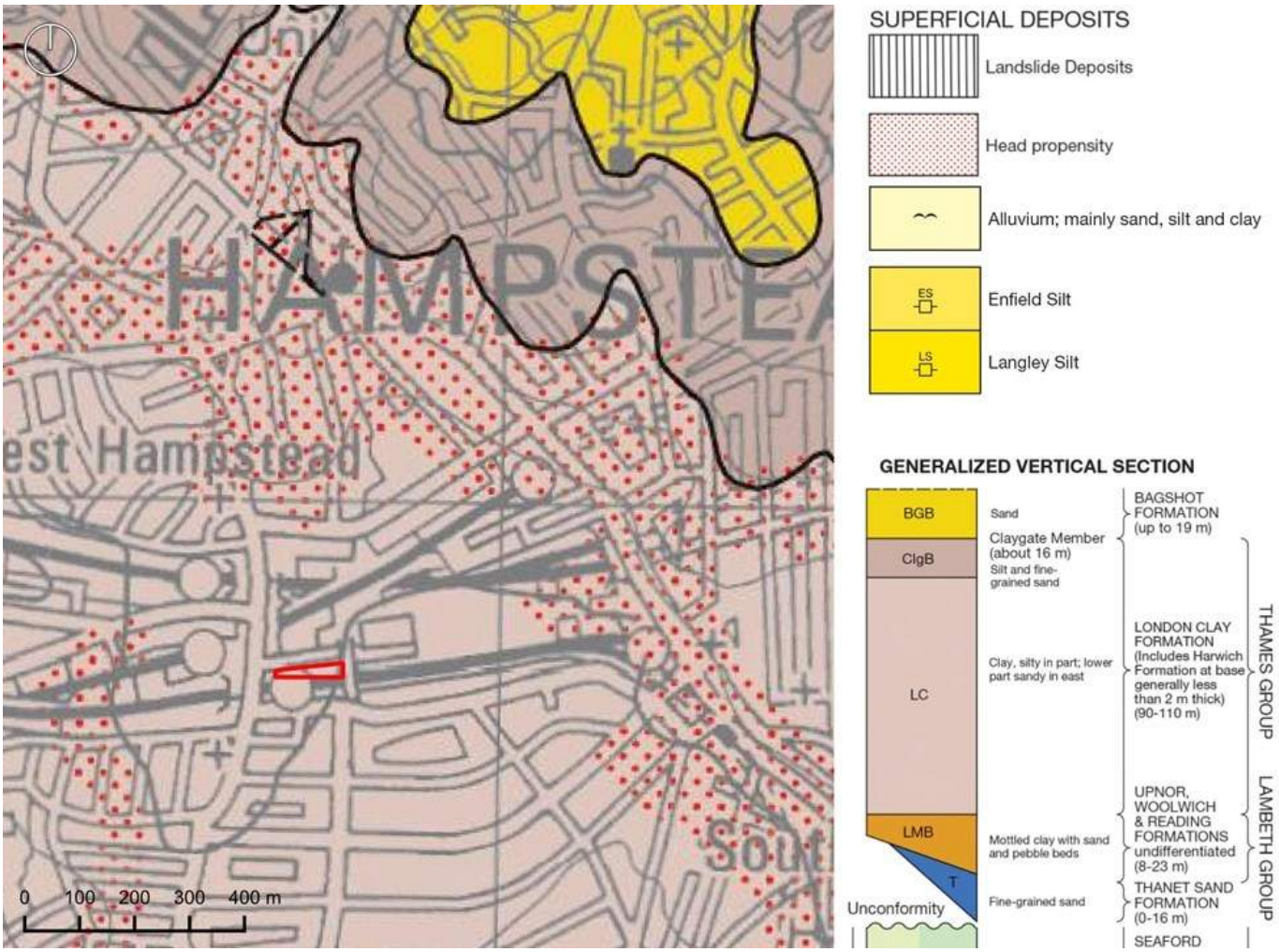
5. Anticipated Ground Conditions

5.1. Geology

The development Site is located within the London Basin, which refers to an approximately triangular synclinal geological structure where the sedimentary units underlying London and much of southeast England were deposited.

Figure 5.1 illustrates the location of the Site within the context of a regional geological sheet. The sheet illustrates the spatial distribution of superficial deposits and bedrock geology. Artificial Deposits are not mapped on the Site or within the immediate surrounding area, but Made Ground is assumed to be present on-site due to historical demolition and construction works.

The geology sheet indicates that the Site is not underlain by superficial deposits but instead directly overlies the bedrock geology of the London Clay Formation. The London Clay Formation is underlain by the Lambeth Group, Thanet Formation and the White Chalk Subgroup at depth.



Approximate Site location marked by red polygon.

Figure 5.1 Geological context of the Site

The British Geological Survey (BGS) Geology of Britain web map services provide access to the geographic locations and logs of historical borehole investigations and well installations. Historical boreholes surrounding the Site are shown in Figure 5.2. Data from historical BGS borehole TQ28SE46 and the SAS ground investigation (via Planning Reference 2009/0639/P) have been used to construct a preliminary ground model which is presented as Table 5.1. This has been supplemented with stratum levels from a synthetic borehole derived from the BGS 3D model for London and Thames Valley.

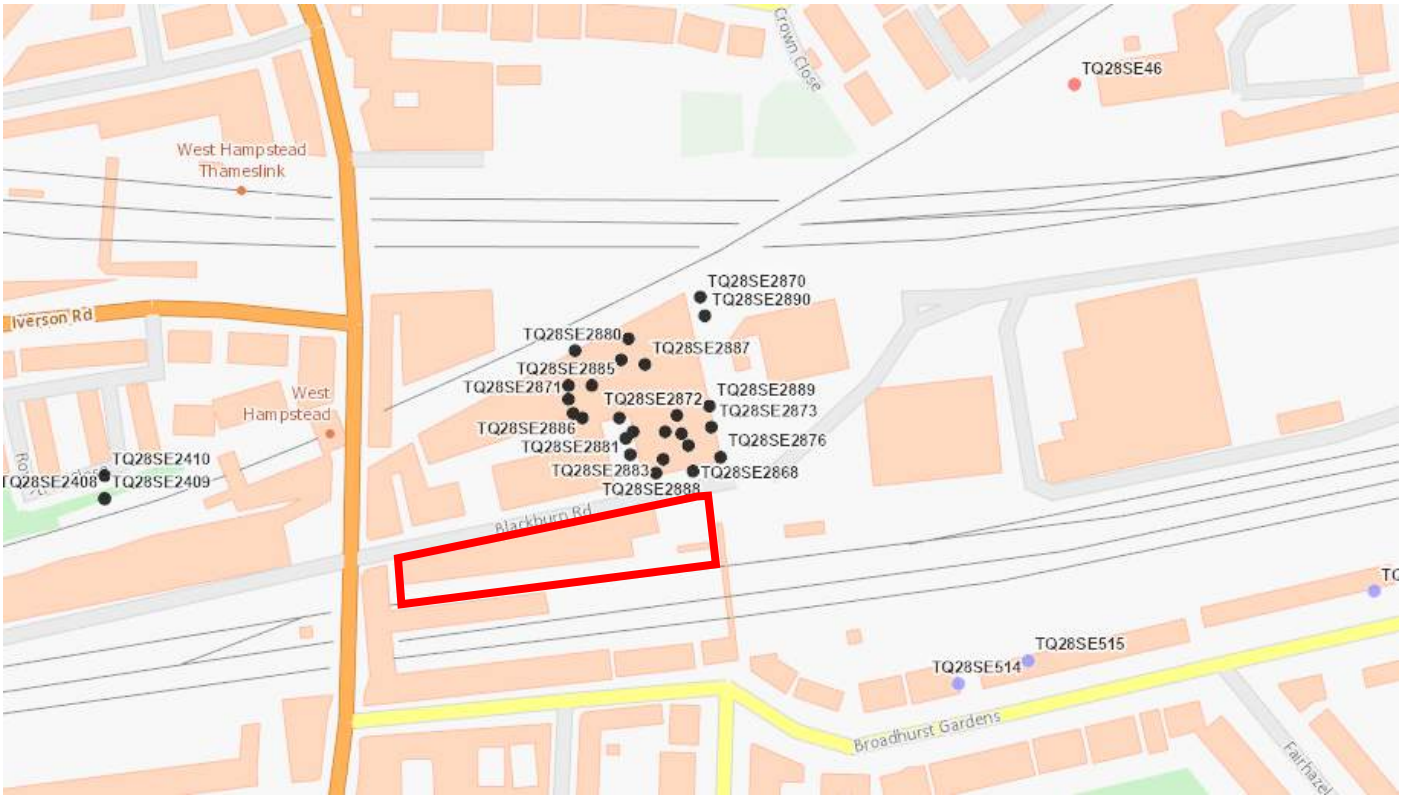


Figure 5.2 Locations of BGS boreholes in close proximity to the Site boundary

Table 5.1 Preliminary Ground Model

Unit	Elevation[1] (mOD)	Depth[1] (m bgl)	Thickness (m)	Description
Made Ground[2]	+54.0 to +51.0	0.0	1.9	Firm dark brown and black sandy clay with occasional gravel, and fragments of brick and concrete rubble.,
London Clay Formation[3]	+52.1 to +49.1	1.9	>72.0	Stiff brown and mottled orange brown, veined blue grey silty clay with occasional partings of sand and occasional gypsum crystals.

1. Elevation and depth refer to top of stratum.
2. Made Ground thickness has been modelled from the SAS ground investigation via planning reference 2009/0639/P.
3. The London Clay Formation thickness has been assumed based on the BGS 3D geological model for London and the Thames Valley.

5.2. Hydrogeology

The groundwater model is likely to comprise a perched water table, which is sustained within the more permeable Made Ground (if present) overlying the low permeability London Clay Formation. Data available from historical BGS boreholes and the SAS ground investigation do not indicate the presence of a shallow groundwater table, with groundwater seepages encountered during the SAS ground investigation at 1.20m bgl and 1.30m bgl. Groundwater is anticipated to be present at depth within the Lambeth Group, Thanet Formation, and the Chalk, however these will be afforded protection from downward migration of perched water and/or mobile contaminants by the significant thickness of the London Clay Formation.

It is anticipated that the pore water pressure distribution within the London Clay Formation is in hydrostatic equilibrium with an average or mean perched water table level. Whilst it is considered that the pore water pressure distribution within the London Clay and upper Lambeth Group clays is hydrostatic, it is likely that the lower portion of the Lambeth Group, Thanet Formation and Chalk are

underdrained. Due to historical dewatering from the Chalk aquifer at depth, underdrainage effects are frequently observed within the strata at depth within the London Basin.

The London Clay Formation is designated as Unproductive Strata. Unproductive Strata are low permeability strata which are not considered to retain significant quantities of groundwater. If groundwater is present within Unproductive Strata, for example within more permeable lenses or small fissures, it is typically discontinuous, of low value and very low sensitivity.

Foundations for the proposed development will not penetrate the base of the London Clay Formation. Therefore, no preferential pathways will be created between the shallow perched water in the Made Ground or mobile contaminants (if present) and the aquifers within the deep strata (Lambeth Group, Thanet Formation and Chalk).

Based on the above, no sensitive groundwater receptors have been identified at the Site.

There are no records of groundwater abstractions on-site and within 500m of the Site.

The site is not identified as being located within a groundwater Source Protection Zone (SPZ) and there are no SPZs recorded within 500m of the Site.

5.3. Hydrology

There are no surface water features on-site or within 500m of the Site.

A ‘lost river of London’, the River Westbourne, is located approximately 200m southwest of the site. The River Westbourne is culverted and therefore, unlikely to be hydraulically connected to the Site. On this basis, the River Westbourne is not assessed in this report as a potential surface water receptor.

There are no records of surface water abstraction within 500m of the Site boundary.

5.4. Radon

UK Health Security Agency (UKHSA) and BGS radon mapping indicates that the Site is in an area with <1% of homes estimated to be at or above the Action Level. The *Building Regulations 2010, Approved Document C* state that without a site-specific Radon Risk Report the maximum requirement for radon protection in these areas is none.

A new basement is to be incorporated into the proposed development. As indicated in *BRE 211: Radon – Guidance on Protective Measures for New Buildings (2023)*, basements may be at an increased risk due to radon, regardless of geographic location. However, the superficial and bedrock geology beneath the Site do not pose an elevated risk of radon based on the mineralogy, i.e. sands/gravels or clay soils not derived from bedrock or natively rich in uranium. The significant thickness of the London Clay Formation (>70m) will afford protection from the underlying White Chalk Subgroup, notwithstanding that the Chalk is nevertheless typically of low radon potential in the absence of phosphate-enriched beds/zones. In this regard, radon protection is not considered to be necessary for the proposed development.

6. Conceptual Site Model (CSM) and Preliminary Risk Assessment (PRA)

6.1. Approach

A means to qualitatively assess the risk posed by potential land contamination to a proposed development is to prepare an initial CSM and carry out a PRA. An initial CSM represents the characteristics of the Site which influence the possible relationships between identified potential contaminant sources, pathways and receptors. A PRA is undertaken for each potentially complete source-pathway-receptor linkage (potential contaminant linkage). The PRA assessment matrix used in this report is included as Appendix F. The risk assessment approach is in accordance with the *LCRM* guidance.

An initial CSM and PRA for the proposed development is set out below in consideration of all the information detailed in the earlier sections of this report. Should any changes to the proposed development's layout, use, and/or changes to the proposed basement use compared to the details presented herein, then the PRA must be updated.

6.2. Potential Sources

The relevant potential on- and off-site contamination sources are summarised in this section. Current and former residential land-uses, retail units, offices and other general commercial uses (non-industrial) are not considered potential sources of contamination unless stated otherwise. Taking into consideration the anticipated ground model, potential sources of contamination within 100m Site are considered to have viable pathways.

The following potential sources of contamination have been identified:

- *Made Ground* – associated with previous phases of development / demolition could be a potential source of contaminants associated with previous and current land uses (notably as railway sidings, railway land, railway lines, milk distribution depot, builders' merchants, and electrical substations) including heavy metals, PAHs, PCBs, VOCs, TPHs, and asbestos fibres. The Made Ground, if present, may also be a source of ground gases if it contains an appreciable organic content. It should be noted that the proposed development incorporates a single-storey and half-storey basement which will likely remove a sizable portion of Made Ground on-site, therefore reducing the potential risks that could be present posed by Made Ground.

Previous industrial land uses in the immediate adjacent area of the Site (notable the former Mercedes Benz Garage) have since been developed into residential properties (as described in Section 4.4) and therefore are likely to have been remediated during their development. Additionally, the anticipated ground model is unlikely to facilitate potential migration of contaminants from off-site sources due to the relatively impermeable nature of the London Clay Formation, thus it is considered that there are no viable pathways for off-site sources of contamination.

An on-site potential contamination source plan is presented below in Figure 6.1.

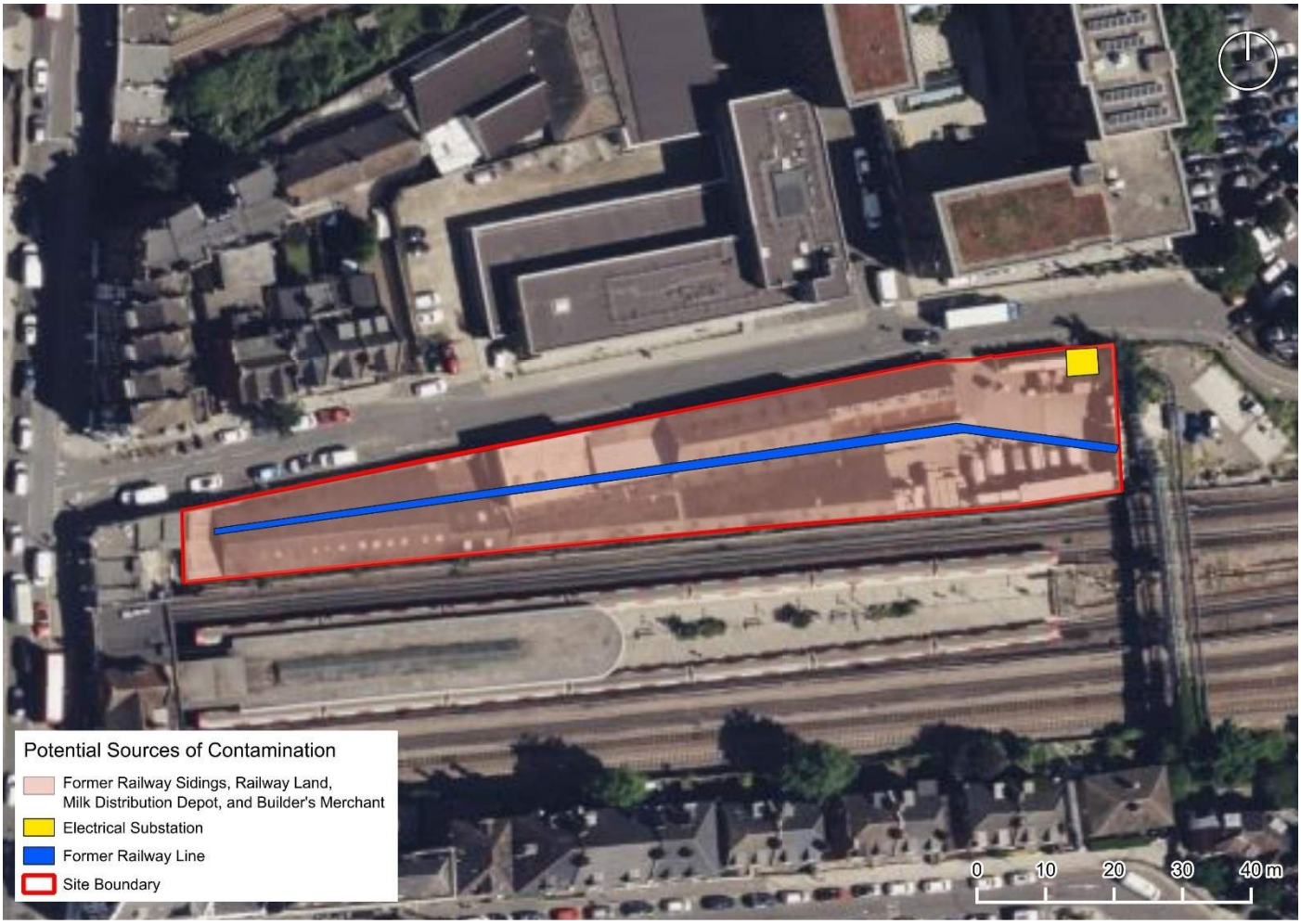


Figure 6.1 On-site potential contamination source plan

6.3. Potential Pathways

The potential pathways relevant to the identified sources/receptors include:

- Dermal contact: via direct contact with Made Ground and/or contaminated natural soils (if present) exposed at finished level in the permanent condition.
- Ingestion of soil: affected by contamination in Made Ground and/or contaminated natural soils (if present).
- Ingestion of drinking water*:* via new water supply pipes compromised by contamination in the surrounding soils (e.g. permeation of TPH leaching from soils into the pipes).
- Ground gases/vapours (if present) may migrate through shallow soils and floor slabs and accumulate in buildings/confined spaces.
- Direct contact of buried concrete (e.g., foundations, ground beams, or floor slabs): via contact with 'aggressive' ground and/or groundwater conditions associated with the Made Ground and/or naturally occurring within natural soils.

Since there are no proposed in-situ soft landscaping included in the proposed development at ground level, human health pathways such as dermal contact, ingestion, and inhalation (of soil particles) have not been considered as viable for the future occupiers. These pathways may exist in the temporary condition during the construction works and associated risks to construction works will need to be managed by the contractor.

6.4. Potential Receptors

Potential receptors identified as part of this assessment include:

- Human health (long term, chronic) of proposed site end users (residential users).
- Human health (short-term acute) of proposed commercial users.
- Human health (short-term, acute) of construction workers and occasional below-ground maintenance workers
- Property including on-site (proposed) buildings / structures.

Risks to site workers and the environment (from potential land contamination) during the construction phase of the proposed development can be appropriately managed by successful implementation of construction phase risk assessments and method statements (RAMS). The associated construction phase risks from potential contamination are considered further in this document and should be appropriately considered and mitigated by the Principal Contractor in their preparation and implementation of construction phase RAMS and Construction Phase Plan (CPP).

6.5. Summary of Potential Contaminant Linkages

There are some potentially complete contaminant linkages based on the identified sources, pathways and receptors.

Table 6.1 presents a PRA for contaminant linkages relevant for the proposed development. Qualitative risk classifications are provided in accordance with *CIRIA C552: Contaminated Land Risk Assessment, A Guide to Good Practice (Rudland et al., 2001)* (see summary in Appendix F). Where there is no potentially complete contaminant linkage then no risk classification is provided. The PRA is applicable to current climatic conditions and those which may be expected in future due to human induced climate change.

Table 6.1 Preliminary Risk Assessment (PRA) for the Completed Development without Mitigation

Potential Source	(media)	Potential Pathway	Potential Receptor	Severity	Probability	Risk Rating
Current / recent land uses which includes railway sidings, railway land, railway lines, milk distribution depot, builders' depot, and an electrical substation (potentially including heavy metals, PAHs, PCBs, TPHs, asbestos, and VOCs)	Soil	Dermal Contact	Construction workers	Mild	Low Likelihood	Low
		Ingestion		Mild	Low Likelihood	Low
	Dust	Inhalation		Mild	Low Likelihood	Low
	Drinking water	Permeation into pipes & Ingestion	Future users (commercial and residential)	Medium	Low Likelihood	Low to Moderate
	Ground Gas	Migration and accumulation	Future users (commercial and residential)	Medium	Low Likelihood	Low to Moderate
			Construction workers	Mild	Low Likelihood	Low
	Soil	Direct Contact of buried structures	Buildings and Structures	Medium	Low Likelihood	Low to Moderate
	Vapours (soil)	Migration and accumulation	Future users (commercial and residential)	Medium	Low Likelihood	Low to Moderate
			Construction workers	Mild	Low Likelihood	Low

The PRA has identified potential contaminant linkages with a maximum 'low to moderate' risk classification.

Risk ratings above low are considered as potentially unacceptable risks and based on the Table 6.1, potentially unacceptable risks have been identified relating to human health of future site users (commercial and residential), and buildings and structures. Therefore, it is recommended that appropriately targeted ground investigation is undertaken for geo-environmental purposes to

enable a refinement of the CSM and geo-environmental assessments for the specifically identified unacceptable risks. The next stage of geo-environmental assessment should include a generic quantitative risk assessment (GQRA). The recommended ground investigation and assessments should be undertaken and presented in a geo-environmental interpretive report in accordance with *BS10175:2011 Investigation of Potentially Contaminated Sites – Code of Practice* and *LCRM* guidance. The targeted ground investigation can be undertaken once planning permission has been received and can be included as a planning condition as part of the approved planning permission.

Design of a future geo-environmental site investigation is outside the scope of this document.

The risk represented by potential ACMs in the current building fabric can be addressed by commissioning an Asbestos Demolition and Refurbishment Survey for the relevant areas of the current building to be demolished and / or renovated. If ACMs are identified then their onward management should be informed by an asbestos specialist, but it is considered that appropriate ACM removal will be required prior to any phases of demolition.

It has been assumed that soft landscaping associated with the proposed development will be formed of clean and chemically suitable imported materials for planters. Therefore, risks to long-term human health associated with dermal contact, ingestion of soil/dust derived from soil, and inhalation of dust derived from soil has not been assessed. If areas of soft landscaping installed at ground level are to be included, A-squared must be informed for the risks to be reassessed.

7. Closing Remarks

A-squared has been engaged by Hampstead Asset Management Ltd and their delivery partner Fifth Estate to prepare a Phase I Desk Study report for the proposed development at 14 Blackburn Road, London, NW6 1RZ. The Site currently includes a single-storey builders' merchants with showrooms, sheds, and external yard. The proposed development comprises the complete demolition of the existing structure followed by the construction of a new mixed-use commercial, residential, and PBSA buildings.

The ground conditions at the Site are anticipated to comprise of Made Ground overlying the London Clay Formation.

The PRA has identified potential contaminant linkages with a maximum 'low to moderate' risk classification (ref. *LCRM* guidance). Potentially unacceptable risks have been identified to human health of future users and buildings. Therefore, a geo-environmental investigation is required which can be undertaken as a planning condition. The ground investigation is to be undertaken in accordance with *BS10175:2011 Investigation of Potentially Contaminated Sites – Code of Practice* and *LCRM* guidance. The targeted ground investigation can be undertaken once planning permission has been received and can be included as a planning condition as part of the approved planning permission.

It has been assumed that the proposed soft landscaping associated with the development will be formed of clean and chemically suitable imported materials for planters. Human health pathways such as dermal contact, ingestion, and inhalation (of soil particles) have not been considered as viable for the future occupiers. These pathways may exist in the temporary condition during the construction works and associated risks to construction works will need to be managed by the contractor.

Risks to site workers and the environment (from potential land contamination) during the construction phase of the proposed redevelopment can be appropriately managed by successful implementation of construction phase RAMS. The associated construction phase risks from potential contamination should be appropriately considered and mitigated by the Principal Contractor in their preparation and implementation of construction phase RAMS and CPP.

A preliminary UXO risk assessment was undertaken by RMS which recommends a Stage 2 Detailed Risk Assessment to be undertaken. The Detailed UXO Risk Assessment is not required for planning purposes but it would be prudent to undertake in order to inform and assess the risks during intrusive works.

This desk study should be made available to those preparing the operational site Health & Safety File for the proposed development.

Should any changes to the proposed development's layout, use, and/or changes to the proposed basement use compared to the details presented herein, or should any new information become available, then the assessments included in this desk study must be updated.