MOSAIC
CIVIL & STRUCTURAL ENGINEERS

BLOCK 9 EXTENSION, ST.THOMAS´ HOSPITAL, LAMBETH PALACE ROAD, LONDON, SE1 7EH
For
KINGS COLLEGE LONDON

FINAL REPORT
PHASE 1 PRELIMINARY CONTAMINATION RISK ASSESSMENT REPORT

Prepared by Mosaic CSE

Client Name: Kings College London
Project Name: Block 9 Extension, St. Thomas´ Hospital, Lambeth Palace Road, London
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1. Introduction

1.1 Objectives

Mosaic CSE has been instructed by the Client, Kings College London, to undertake a Phase 1 Preliminary Contamination Risk Assessment Report (PRA) of the subject site, referred to as the Block 9 Extension, located at St. Thomas´ Hospital on Lambeth Palace Road in Central London. The postcode for the site is SE1 7EH. The overall objective of the Preliminary Contamination Risk Assessment, also known as a Desk Study Report, was to inform the Client of the ground conditions and any potential environmental or ground-related risks associated with the proposed redevelopment of the site.

The risk assessment undertaken relates to the proposed redevelopment of the existing Block 9 Extension site. The existing building is to be demolished and a new building constructed on site providing office, research, education and laboratory space within the expansive Kings College Campus. A single-storey basement level is proposed on site. A roof garden comprising a terrace overlooking the River Thames is also proposed. No further areas of public open space or soft landscaping will be provided as part of the redevelopment scheme. The existing cadaver tunnel and perimeter wall surrounding the site are expected to be retained as part of the proposed redevelopment. Full details on the anticipated works are summarised in Section 1.3 of this report.

An Envirocheck Environmental Insight Report, provided by the Landmark Information Group (report reference: 348585666_1_1) has been used to support the findings of this Preliminary Contamination Risk Assessment.

1.2 Site Location

The site is located at the southern end of the St. Thomas´ Hospital Campus, located to the west of Lambeth Palace Road adjacent to the southern bank of the River Thames. The centre of the site is located at National Grid Reference 530570, 179210. The site location is shown in Figure 1.

The site is approximately 90m long, 40m wide at the north and 20m wide at the south. An aerial view of the existing buildings on site, taken from above the nearby Lambeth Palace is shown in Figure 2.

The site is roughly triangular and occupies an area of approximately 0.73 hectares. The site lies at the southern end of the St. Thomas´ Hospital and Kings College medical campus and lies directly to the south of Block 9 and the Prideaux Building. To the west of the site is the Thames Path which runs along the Albert Embankment and the River Thames. The site lies to the west of Lambeth Palace Road and Lambeth Palace. The site is positioned approximately 180m north of Lambeth Bridge and around 250m to 300m east of the Houses of Parliament, Palace of Westminster, Big Ben and Westminster Abbey.

The site lies at an elevation of approximately +12m AOD and is generally level. The ground level rises slightly towards the western site boundary adjacent to the Albert Embankment.

The site lies in a multipurpose, developed area of Central London. The surrounding area is dominated by research, medical, education and other public facilities including libraries, schools and political institutions. Offices, hotels, restaurants, shops, leisure facilities including the London Eye and residential flats are also present within the nearby area. The site lies approximately 450m to the south-west of Lambeth North London Underground railway station.

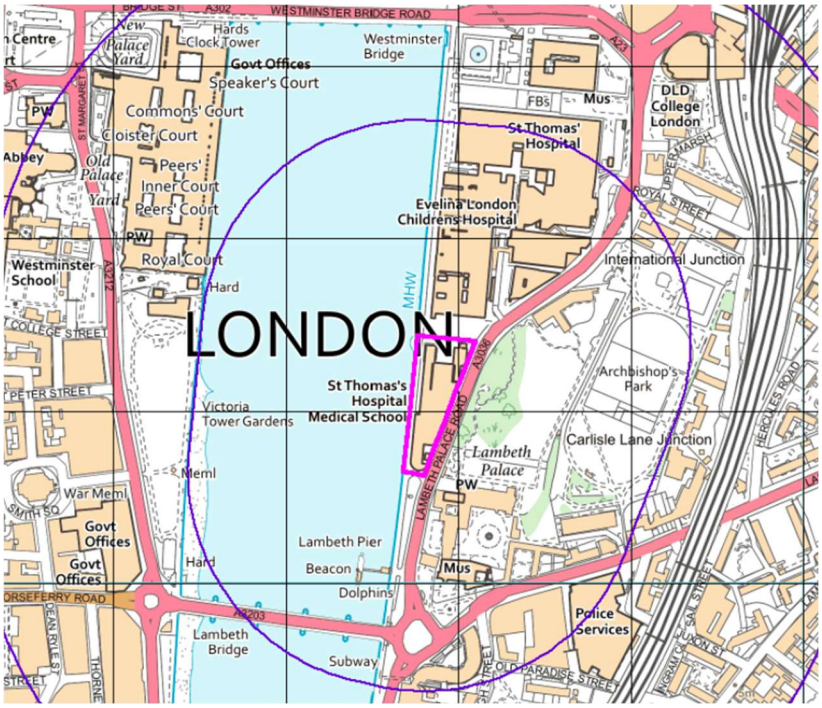


Figure 1: Site Location Plan

Taken from Environmental Insight Report historical mapping records (Scale: 1:10,000, dated 2024)

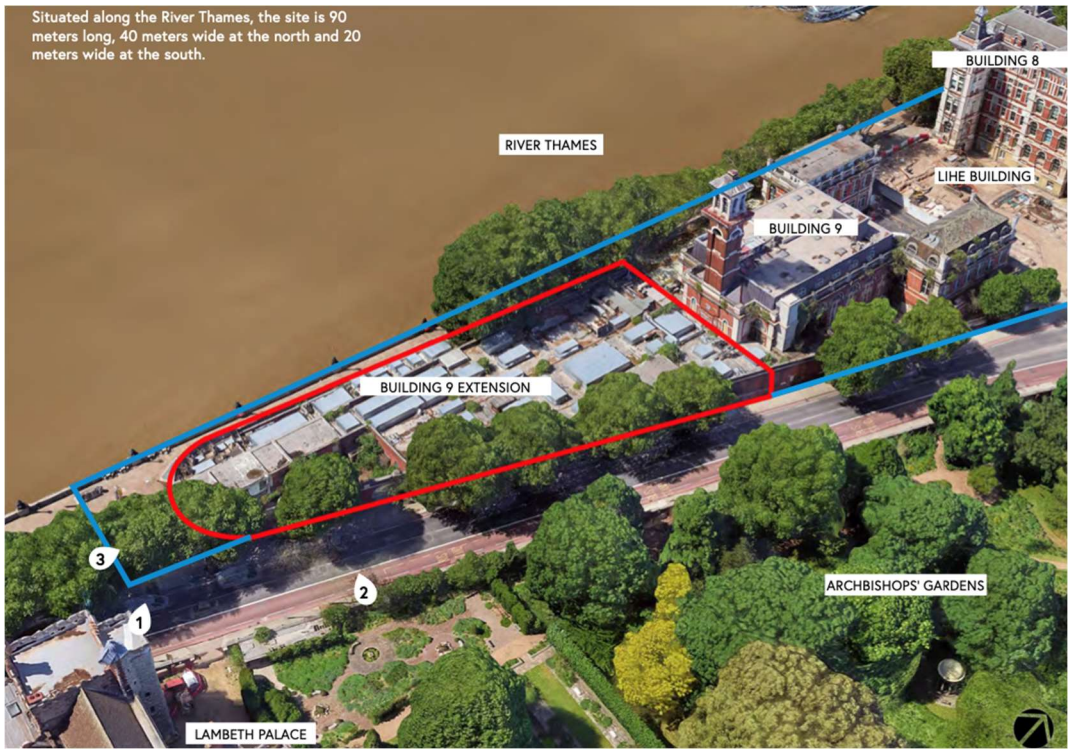


Figure 2: Aerial Site View

Taken from Building 9 Extension Design Statement (23567-8003-00, dated October 2023)

1.3 Site Description

The existing Block 9 Extension building was derelict at the time of writing in June 2024 and has reportedly been vacant for around 20 years.

The existing Block 9 Extension is a predominantly a single-storey structure with glass ceiling roof lights, although at its southern corner comprises a two-storey residential structure. There is currently no basement level on site although a cadaver tunnel (which connects to a cadaver lift and dissection room) is present beneath the building on the eastern side of the site. The Block 9 Extension on site is not a listed building. At the time of writing, the building on site is dilapidated and in a state of disrepair.

Figure 3 presents the current site layout showing the existing building location in relation to the additional structures within St. Thomas´ Hospital.

According to anecdotal evidence, the Block 9 Extension was previously home to a surgical training facility where a ready supply of cadavers from the hospital facilitated the development of surgery within St. Thomas´ Hospital.

The site lies within the Lambeth Palace Conservation Area and sits directly adjacent to a world heritage site, The Houses of Parliament (The Palace of Westminster). The nearby Block 9 building, located to the north of the site is a listed Grade II building.

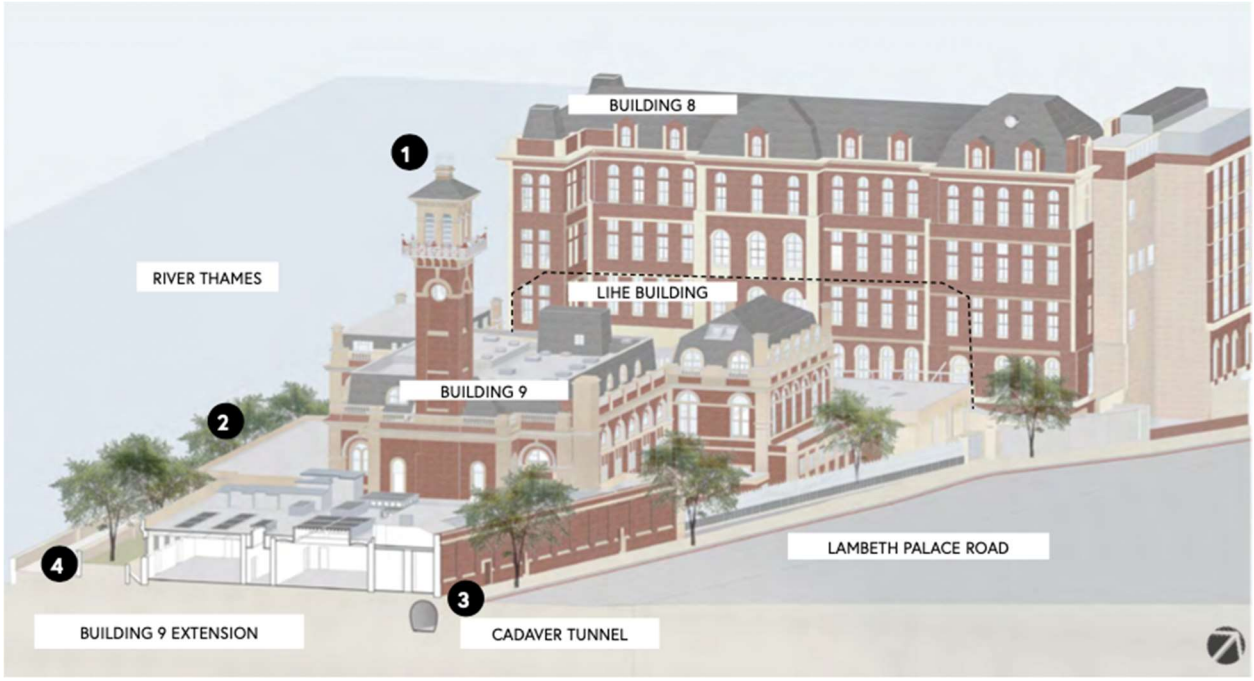


Figure 3: Existing Site Layout

Taken from Building 9 Extension Design Statement (23567-8003-00, dated October 2023)

1.4 Proposed Development

The site redevelopment scheme forms part of a wider redevelopment scheme at St. Thomas´ Hospital which comprises the demolition of the Prideaux Building to the north of the site, whilst retaining the façade of the Grade 2 listed Block 9 Building and its associated wings. Block 9 will be redeveloped and extended from within, whereas new multi-storey buildings will be built in the location of the Prideaux Building. Construction was ongoing at the time of writing in June 2024.

The new building proposed at the Block 9 Extension site will provide a General Indoor Area (GIA) across the basement, ground and first floor level of 5,716m^2. Office, research, education and laboratory space will be created to allow St. Thomas´ Hospital to relocate administrative management and educational facilities out of existing hospital buildings. This will create space to facilitate new research and clinical initiatives adjacent to ongoing existing clinical research activity. The aim of the project will be to provide modern medical research curated facilities for incubator and growing entrepreneurial enterprises, along with educational opportunities.

The new building will comprise a new ground floor, roof garden and terrace, café, storage space, amenity space, showers, lockers, bicycle parking and waste storage. The building will contain a single-storey basement, a ground floor and a first-floor level. The existing cadaver tunnel, the stone perimeter wall on the west side of the site facing the Albert Embankment and the brick wall on the eastern perimeter of the site are expected to be retained as part of the proposed redevelopment scheme. No areas of open space or soft landscaping will be provided on site. The proposed redevelopment scheme is outlined in detail in the drawings presented in Appendix A.

The proposed foundation solution at the site is anticipated to be either rotary bored piles or a raft solution, subject to ground investigation at the site. For a raft solution to be effective, it will need to be bedded into the main London Clay Formation strata at the site. This would require the raft to be founded at significant depth, with dewatering likely to be required. Rotary bored piles may need to be sleeved through the Made Ground and Superficial Deposits if groundwater proves to be free flowing.

1.5 Site Walkover Survey

A site walkover survey was conducted on the 19th July 2023 by a representative of Earth Water GCE / Mosaic CSE. A series of photographs taken during the walkover survey are presented in Appendix B. Inspection of internal and external areas of the site was undertaken where deemed safe to access.

The Block 9 Extension was previously a functional hospital building within St. Thomas´ Hospital but has been vacant for around 20 years. The existing building is a predominantly a single-storey structure with glass ceiling roof lights. The building was in a state of disrepair at the time of the site walkover and access to some areas of the site was restricted. Much of the plastered walls, wiring and ceilings were collapsing at the time of the walkover and the internal paintwork was in poor condition. Temporary lighting and works equipment, as well as hoarding restricting access to parts of the building were observed (highlighting the possible risks from the degrading structure). Several of the glass windows and roof lights within the building had been smashed and were noted to be broken at the time of the walkover.

A Victorian cadaver tunnel, linked to the former mortuary at ground floor within the building via a lift, was present below the eastern side of the site.

Wooden pallets and wood were noted on site both within the building and around the building. Graffiti was present internally and externally on the building walls and evidence of possible squatters was seen within the building. Some evidence of damp / possible water ingress was also observed, and part of the roof had collapsed on site (which appeared to be due to damp which had rotted part of the structure).

A hazardous brick-built chemical storage unit was present on site. This was locked and empty at the time of the site walkover. No evidence of staining or former leakage was observed.

No obvious asbestos sheeted roofing, insulation, or any other potential Asbestos-Containing Materials (ACMs) were observed during the site walkover. However, due to the age of some of the structure on site, the presence of ACMs within building fixtures and fittings is possible and cannot be ruled out at this stage.

No electrical sub-stations were observed on site and no above or below-ground fuel or oil tanks were noted to be present. No evidence of contamination, including odours or staining, were noted on site and no

potential signs of contamination associated with nearby parked vehicles, nearby hospital operations or neighbouring activities were observed. No evidence of fly tipping or other waste materials were seen.

No open soft landscaped areas were present on site. Only minimal areas of peripheral weeds and vegetation noted to be growing from guttering and roofing were visible. No evidence of invasive plant species was noted to be present during the site walkover.

Wooden hoarding was present around most of the site, separating it from the adjacent construction areas and from Albert Embankment and Lambeth Palace Road. The western elevation of the site along the Albert Embankment comprises a COVID 19 memorial wall.

At the time of the site walkover, the new build at the Prideaux Building was approaching completion and associated site cabins and welfare facilities were present to the north of the site, adjacent to Block 9. Skips and building materials associated with nearby construction activities were also visible. A HV transformer switch room which reportedly feeds the site and adjacent buildings within St. Thomas´ Hospital was present to the north of the site in this area.

Anecdotal evidence obtained during the site walkover suggests that Block 9 to the north of the site was partially bombed during WWII and reconstructed following the war. The remainder of the Block 9 building comprises the original Victoria structure (which is a Grade II listed building).

1.6 Existing Reports

The existing reports for the site outlined in this section of the report have been reviewed to support the production of this Phase 1 Preliminary Contamination Risk Assessment Report. Third-party data used to produce this report has been taken at face value and has not been independently verified.

- Geotechnical and Geoenvironmental Desk Study produced by Mott Macdonald dated October 2015. Originally prepared to support planning application 16/02387/FUL for the site (which included the Prideaux site along with Block 9 and the Block 9 extension). There has been no material change in circumstances since the preparation of the report and the assessment and recommendations remain valid;
- Ground Engineering Ground Investigation Report for Block 9 (report reference: C14386 dated July 2018);
- King´s College London / Building 9 Extension Design Statement (23567-8003-00 dated October 2023);
- Building 9 Extension Design Statement (23567-8010-00 dated February 2024);
- Corstorphine & Wright Proposed Drawings and Elevations; and
- Mosaic Block 9 Extension Initial Review Presentation.

1.7 Limitations

This report is based upon information obtained from third party sources, together with observations from the site walkover. The third-party data has been accepted at face value and has not been independently verified. Mosaic CSE can therefore give no warranty, representation, or assurance as to the accuracy or completeness of such information.

This report has been prepared for the sole internal use and reliance of the Client, Kings College London, and shall not be relied upon by other parties without the express written authority of Mosaic CSE. If an unauthorised third party comes into possession of this report, then they rely on it at their own risk.

2. Site and Surrounding Area Historical Mapping Review

Detailed maps and aerial photographs of the site and surrounding area dated 1872 to 2024 (at scales of 1:500, 1:1,250, 1:2,500, 1:10,000 and 1:10,560), provided as part of the Envirocheck Report for the site, have been reviewed. A review of the available historic building insurance plans provided by Envirocheck has also been carried out to support this study. This has been undertaken to identify any former land uses at the site and within the surrounding area that may have geotechnical or geo-environmental implications for the proposed development. The findings are summarised in Table 1. Google Earth and other sources of publicly available information for the site, have also been reviewed to support this assessment.

Table 1: History of the site and surrounding area

Map date and scale	Key on-site features	Key off-site features
1871 to 1882 (1:500, 1:2,500 and 1:10,560)	St. Thomas´ Hospital was constructed in its current location in 1871 following the construction of the Albert Embankment (which required reclamation of land from the River Thames) and the demolition of old boatbuilding and barge house sites which dated back to the 1680s. The first historic map for the site dated 1871 shows the Block 9 extension to be present on site. A museum, medical theatres and other medical facilities were labelled on site at this time.	By 1872, Block 9 was present adjacent to the site (though the wings of Block 9 and the Prideaux were not present) with surrounding garden areas. Further hospital buildings were present beyond to the north of the site. The Albert Embankment was present adjacent to the west and Lambeth Palace (and associated buildings and grounds) were shown to the east. Two tanks were shown on mapping dated 1871 to the east of the site adjacent to Block 9 but were no longer shown by 1880. A builder´s yard was labelled around 30m to the north-east of the site with a large engineering works present from approximately 100m north-east. Schools, public houses, halls and other public facilities were present within the wider area. A candle manufactory and a distillery were present over 200m from the site. The Houses of Parliament and Palace of Westminster were labelled from 250m west of the site.
1895 to 1896 (1:500, 1:2,500 and 1:10,560)	By 1895, a student's club and the medical school were labelled on site within the Block 9 extension building.	By 1895, the wings of Block 9 had been constructed as separate two-storey buildings. A tramway was shown to run north to south along Lambeth Palace Road directly to the east of the site boundary. Lambeth Pottery and a smithy were labelled over 200m from the site boundary.
1907 to 1920 (1:500, 1:2,500 and 1:10,560)	No significant changes were recorded on site.	The candle manufactory in the wider area was no longer shown by 1907. By 1916, the nearby distillery was no longer labelled.
1938 to 1951 (1:2,500 and 1:10,560)	No significant changes were recorded on site.	By 1950, the builder´s yard to the north-east was no longer shown and had been replaced with a series of new structures associated with St. Thomas´ Hospital. The nearby engineering works, smithy and Lambeth Pottery were no longer shown. Part of the Block 9 extension was labelled as a ruin by 1951 and by the mid-1950s a building had been constructed in the present-day location of the Prideaux Building (Medical Outpatients Department). Significant residential development had occurred within the wider area over 150m from the site.
1952 to 1969 (1:1,250, 1:2,500 and 1:10,000)	The site was labelled as the St. Thomas´ Hospital Medical School.	The building to the north of the site was reportedly demolished in 1953. By 1958, the tramway to the east of the site had been removed.
1976 to 1985 (1:1,250,	No significant changes were recorded on site.	The Prideaux Building was constructed between 1976 and 1978.

1:2,500 and 1:10,000)		By 1985, the Police Support Headquarters were labelled from approximately 200m south-east of the site and included a large depot. Significant residential development had taken place around the site.
1991 to 1999 (1:1,250 and 1:10,000)	No significant changes were recorded on site.	Further expansion of the hospital buildings and associated facilities had taken place to the north and north-east of the site by the late-1990s.
2006 to 2024	No significant changes were recorded on site in 2024. The site had been empty for approximately twenty years.	The Evelina London Children´s Hospital was labelled within the St. Thomas´ Hospital complex to the north of the site. No further significant changes were recorded in the surrounding area.

3. Environmental Desk Study Assessment

3.1 Geology

Information on the underlying geology at the site has been obtained from the British Geological Survey (BGS) Sheet 270 for South London (scale: 1:50,000 dated 1998), the BGS Geological Map Viewer and the available existing reports for the site which have been reviewed to supplement this study.

Worked or artificial ground has not been identified on site or within 500m of the site by Envirocheck or the BGS. No areas of potentially infilled land (water or non-water) have been recorded by Envirocheck within 375m of the site boundary. Despite this, Made Ground is present across the site given the presence of site-wide building footprints and hardstanding and historic reclamation having taken place on site as detailed below.

Made Ground is known to be present on site based on historic records from the land reclamation and formation of the Albert Embankment. The composition of the Made Ground may consist of and not be limited to variable quantities of clay, silt, sand, gravel, cobbles, ash, masonry, concrete, timber and organic materials.

Superficial deposits comprising Alluvium are recorded by the BGS to be present on site at ground level. These deposits comprise unconsolidated and poorly sorted clay, silt, sand, and gravel and were formed between 11,800 years ago and the present day during the Quaternary period. The Alluvium on site is likely to have been largely displaced but is shown on mapping records to be underlain by the Kempton Park Gravel Member, which comprises sands and gravels with localised lenses of silt, clay, or peat.

The Kempton Park Gravel Member on site is recorded to be underlain by the London Clay Formation bedrock. The London Clay Formation comprises poorly laminated, blue-grey, or grey-brown, silty to very silty clay. Clayey silt and sandy clay are occasionally recorded, and it commonly contains thin courses of carbonate concretions (known as cementstone nodules) and disseminated pyrite. The London Clay Formation is around 30m thick in this area of London. The stratum was formed between 47 and 56 million years ago during the Paleogene period.

According to the BGS, three BGS borehole records are listed within the site boundary (borehole references: TQ37NW16 and TQ37NW17). The boreholes were advanced in 1865 on the Albert Embankment and recorded loamy and sandy gravel and gravel and stones to depths of approximately 3.35m to 3.65m bgl. These deposits were representative of superficial deposits. Sandy clay, clay and blue clay, representative of the London Clay Formation bedrock, were recorded below the superficial deposits to depths of 5m and 9m bgl.

An additional borehole (borehole reference: TQ37NW2489) was also listed by the BGS on the Albert Embankment adjacent to St. Thomas´ Hospital and was advanced in 1970 to a depth of approximately 7.23m bgl. Made Ground comprising bricks, clay and stone were recorded at ground level to a depth of approximately 4m bgl. Soft blue-grey organic slightly clayey silt was present below the Made Ground, underlain by gravel and brown sand were present to approximately 7m bgl. Stiff, brown, fissured clay representative of the London Clay Formation was found to be present below the superficial deposits.

A ground investigation was carried out at the site, and the adjacent Block 9 and Prideaux Building sites by Ground Engineering Ltd as part of a wider investigation in February 2018 as detailed in Section 4.2 of this report. A variable and locally significant covering of Made Ground was encountered (associated with the historical reclamation of the site), overlying the Kempton Park Gravel. A thin remnant of Alluvium was present adjacent to the Albert Embankment. The London Clay Formation was found below the superficial deposits to a depth of >30m bgl. The Made Ground was approximately 3m to 9m thick and contained concrete, tarmac, brick, mortar, flint, clinker, ash, limestone, coal, quartzite, chalk, glass, bone, tiles, metal,

slate, other anthropogenic materials and shell fragments. The Made Ground matrix comprised a sandy, gravelly clay fill material. No evidence of asbestos, fuels or oils were observed on site during the ground works.

Groundwater on site is anticipated to lie within the Made Ground and to be hydraulically linked with the adjacent River Thames. Groundwater was encountered at the base of the Made Ground and the top of the Kempton Park Gravels during the 2018 ground investigation described in Section 4.2.

There are no contaminated land register entries and notices recorded within 1km of the site.

3.2 Mining and Mineral Extraction

The site is not located within an area with a history of coal mining and no mining records are listed within 1km of the site.

No BGS recorded mineral sites are recorded within a 1km radius of the site boundary.

No man-made cavities are recorded by Envirocheck within 1km of the site boundary. There are no natural cavities recorded by Envirocheck within a 675m radius of the site.

3.3 Soil Chemistry

Estimated BGS soil chemistry data based on characteristics of the natural geochemistry of the geological units present at the site has been provided within the Envirocheck Report. A review of this data has been undertaken and is summarised in Table 2.

Table 2: Soil Chemistry Summary

Contaminants	Average concentrations (mg/kg)
Arsenic	15 to 25 mg/kg
Cadmium	<1.8 mg/kg
Chromium	40 to 60 mg/kg
Lead	300 to 600 mg/kg
Nickel	15 to 30 mg/kg

The estimated soil chemistry for Arsenic, Cadmium, Chromium (assuming trivalent), Lead and Nickel do not exceed the relevant Generic Assessment Criteria (GAC) for commercial and industrial land use scenario, which include Soil Guidance Values (SGVs) (CL:aire), Category 4 Screening Levels (C4SLs) (DEFRA) and the 2014 Land Quality Management (LQM) / Chartered Institute of Environmental Health (CIEH) Suitable for Use Levels for Human Health Risk Assessment (S4ULs).

No site-specific empirical data, referred to by the BGS as ‘Measured Urban Soil Chemistry’ has been recorded for the site. One dataset has been provided for a location approximately 215m east of the site boundary. A review of this data has been carried out and is summarised in Table 3.

Table 3: Empirical Soil Chemistry Data (approximately 215m east of the site)

Contaminants	Average concentrations (mg/kg)
Arsenic	22.7 mg/kg
Cadmium	0.5 mg/kg

Chromium	50.1 mg/kg
Lead	380.4 mg/kg
Nickel	27 mg/kg

3.4 Hydrogeology

The Alluvium superficial deposits are classified by the Environment Agency as a Secondary Undifferentiated Aquifer. This status is assigned where it has not been possible to attribute either Secondary A or Secondary B Aquifer status. In most cases, this means that the layer in question has previously been designated as both a minor and a non-aquifer due to variable characteristics of the rock type.

The Kempton Park Gravel Member is classified by the Environment Agency as a Secondary A Aquifer. Secondary A Aquifers are described as permeable layers capable of supporting water supplies at a local rather than a strategic scale and in some cases forming an important source of base flow to rivers.

The London Clay Formation bedrock is classified as Unproductive Strata by the Environment Agency, described as largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.

The site does not lie within a Groundwater Source Protection Zone (SPZ) and no groundwater SPZs are recorded within 700m of the site boundary.

No groundwater abstractions are recorded within 400m of the site. The closest groundwater abstraction to the site is recorded by Envirocheck approximately 408m to the south-west of the site boundary at Thames House. Two boreholes are operated by Building Services Group by the Crown and Government, according to Envirocheck for drinking, cooking, sanitary, washing and use within a small garden. The consent dates to 1966 and appears to remain active. Further groundwater abstractions for non-evaporite cooling, drinking, cooking, sanitary, washing, use within a small garden and a heat pump are recorded between 450m and 550m from the site boundary.

According to Envirocheck records, no discharge consents to groundwater are recorded within 700m of the site boundary.

The combined groundwater vulnerability on site is considered by Envirocheck to be low to moderate. This rating is due to the presence of a shallow Secondary A Aquifer, relating to the Kempton Park Gravel Member on site (with a low superficial recharge, mixed flow and a high pollutant speed), confined below by the London Clay Formation Unproductive Strata and overlain by the Alluvium Secondary Undifferentiated Aquifer. Given the hydrogeological status of the site, the groundwater beneath the site is considered to be of low sensitivity with regards to near surface contamination given the nature of the underlying strata, lack of groundwater and surface water abstractions in the immediate nearby area (>400m from the site) and absence of groundwater SPZs within the vicinity of the site (>700m from the site). In addition, the Secondary A Aquifer on site is limited in its extent and thickness and the deep strata below the site (and any associated deep groundwater resources) are afforded protection by the underlying London Clay Formation Unproductive Strata.

Based on the local topography of the site and the proximity to the River Thames, the direction of near surface groundwater and surface water flow would locally be from east to west.

Envirocheck do not record a significant risk relating to the presence of soluble rocks at the site.

No Water Industry Act referrals have been recorded with respect to groundwater discharges within 1km.

3.5 Hydrology

The Envirocheck Report details that the closest surface water feature to the site is recorded directly to the west of the site and relates to the southern bank of the River Thames, along Albert Embankment. The River Thames flows locally to the north. No further surface water receptors are recorded within the wider area around the site.

One pollution incident to controlled waters is recorded by Envirocheck approximately 45m to the west of the site at a Vauxhall premises and related to the spillage of unknown oils in April 1995. The incident was classified as a Category 3 (minor) incident. No further pollution incidents are listed by Envirocheck within a 300m radius of the site boundary.

No surface water abstractions are recorded within 700m of the site boundary.

The closest discharge consent to surface water to the site is recorded by Envirocheck approximately 255m to the west of the site and relates to the discharge of sewage discharges (storm sewage overflow) from Wood Street into the River Thames by Thames Water Utilities Ltd. The consent became effective in 2021 and appears to remain active. A further twenty surface water discharge consents are recorded between 275m and 1km from the site boundary.

There are no prosecutions relating to controlled waters within 1km of the site.

No Integrated Pollution Controls (IPC) or Integrated Prevention and Controls (IPPC) are recorded within a 750m radius of the site boundary.

There are no Local Authority Pollution Prevention Controls (LAPPC) recorded on site. One LAPPC is recorded within a 500m radius of the site, which relates to St. Thomas´ Hospital on Lambeth Palace Road approximately 62m to the north of the site. The control dates to January 1991 and relates to PG5/1 clinical waste incineration processes (under 1 tonne per hour).

There is one record for enforcement and prohibition notices recorded within 1km of the site, relating to an incident in July 1995, directly north-east of the site on Lambeth Palace Road. A notice (Press Release HM258) is recorded by Envirocheck for a breach of the disposal limit for on-site incineration of radioactive waste, under RSA93).

No prosecutions relating to authorised processes are listed within 1km within the Envirocheck Report.

3.6 Flood Risk

The site is listed as having the potential for groundwater flooding of property situated below ground level to occur.

The site falls within a Flood Zone 2 (medium risk with 0.1% to 1% risk of flooding) and Flood Zone 3 (high risk with 1% or greater risk of flooding) and is therefore at risk of extreme flooding from rivers or seas without defences. The site is recorded as benefitting from flood defences, relating to the reinforced river

walls present along the southern bank of the River Thames directly west of the site. No flood water storage areas are recorded within the site vicinity.

No further consideration of flood risk is given in this report. Specialist flood risk advice should be sought with regards to drainage and flooding.

3.7 Unexploded Ordnance

In general accordance with the CIRIA report C681 (Stone et al 2009) a non-UXO specialist screening exercise has been carried out for the site as detailed below.

The Zetica bomb risk map for the area (Lambeth) indicates that the site is within an area with a high bomb risk. Areas designated as high risk are those that show a high density of bombing hits (50+ bombs per 1,000 acres) and abundant potential WWII targets. In high-risk regions, further action to mitigate UXO risk is considered essential. A copy of the map is presented in Appendix D.

Anecdotal evidence suggests that the Block 9 building to the north of the site was partially bombed during WWII and reconstructed following the war.

3.8 Ground Stability

The potential ground stability hazards associated with the geology at the site, as outlined in the Envirocheck Report, have been summarised below in Table 4.

Table 4: Ground Stability Risks

Ground Stability Issue	Risk Level
Collapsible Ground	Very Low
Compressible Ground	High risk (relating to the underlying Alluvium superficial deposits and London Clay Formation bedrock shown to be present on site)
Ground Dissolution	No hazard
Landslide Ground Instability	Very Low
Running Sand	Low
Shrinking or Swelling Clay	Moderate (relating to the underlying Alluvium superficial deposits and London Clay Formation bedrock shown to be present on site)

3.9 Radon

The site is indicated within the Indicative Atlas of Radon for England and Wales and the Envirocheck Report to be in a lower probability radon area, with less than 1% of homes estimated to be at or above the action level. Therefore, the BGS and the Building Research Establishment Radon Guidance Document indicate basic radon protection measures are not required in the construction of new homes, buildings, or extensions at the site.

3.10 Waste Management and Landfill

No Environment Agency registered landfills, historical landfills or BGS landfills are recorded within the Envirocheck Report within a 1km radius of the site.

There is one recorded licensed waste management facility recorded within 750m of the site. This relates to Arch 195 on Hercules Road in Lambeth approximately 357m to the east of the site and relates to a mixed metal recycling site, operated by Frank Warrington & Co. Ltd. The licence for the facility was issued in June 1993 and was surrendered in February 2003.

There are no registered waste treatment, transfer or disposal sites and no IPC registered waste sites identified by Envirocheck within 1km of the site boundary.

3.11 Hazardous Substances

No records of explosive sites, planning hazardous substance consents, registered radioactive substances, Control of Major Accident Hazards (COMAH) or Notification of Installations Handling Hazardous Substances (NIHHS) sites have been identified within 1km of the site boundary.

3.12 Contemporary Trade Directories

There are no contemporary trade directory entries recorded on site within the Envirocheck Report.

There are six entries relating to hospitals listed between 50m and 150m from the site boundary by Envirocheck on Lambeth Palace Road. The entries relate to St. Thomas´ Hospital, St. John´s Institute of Dermatology, Twin Research Unit, Guys & St. Thomas´ NHS Foundation Trust and Evelina Children´s Hospital. Four or the entries are listed as inactive and two are listed as active.

Two further entries are recorded within a 250m radius of the site which relate to domestic cleaning services (inactive) approximately 137m south-east and hygiene and sanitary appliance manufacturers (inactive) approximately 232m south of the site.

Further active entries relating to oil companies (office operations), hospitals and tyre dealers are recorded by Envirocheck between 251m and 350m from the site boundary. Further inactive entries relating to oil and gas exploration supplies and services (office operations), distribution services, domestic cleaning services, printers, car body repairs, garage services, tyre dealers and scrap metal merchants are also listed by Envirocheck between 251m and 350m from the site.

No petrol filling stations are recorded within an 800m radius of the site boundary.

3.13 Sensitive Land Uses

The Envirocheck Report indicates that the site is not located within a Nitrate Vulnerable Zone (NVZ) and that no NVZs are recorded within a 1km radius of the site.

The Palace of Westminster, Westminster Abbey and St. Margaret´s Church located approximately 252m to the north-west of the site are listed as a World Heritage Site by Envirocheck (designated in 1987).

The site does not lie within an area of adopted greenbelt and no areas of Ancient Woodland, Sites of Special Scientific Interest (SSSI), Local Nature Reserves, National Parks, Areas of Outstanding Natural Beauty (AONB) or other sensitive land uses are located within 1km of the site.

3.14 Invasive Weeds

During the site walkover, no ecological receptors were identified on site and no evidence of invasive weeds, including Japanese Knotweed were observed, though access to the site was limited. Although a visual inspection was carried out, this does not represent a full invasive weeds survey and as such may need to be carried out by a specialist.

4. Lambeth Council and Local Records Search

4.1 Planning Portal Search

The site currently benefits from extant planning permission (planning reference: 16/02387/FUL) and listed Building Consent (listed building reference: 16/02477/LB) associated with the wider hospital redevelopment site comprising Block 9, the Prideaux Building and the Block 9 extension (the site itself).

The key elements of the original consents are summarised as follows:

- The demolition and redevelopment of the Prideaux Building to provide the LIHE Building;
- The overall retention of the existing Block 9 (the former medical school) but with internal and external alterations including new double-height mansard extensions and new external vertical circulation cores; and
- Demolition of the existing Block 9 extension and the erection of a new single-storey replacement building, with the retention of the listed perimeter wall, together with the dissection area.

In November 2019 (planning reference: 19/03544/NMC) and February 2020 (20/00128/VOC) two planning applications were approved for amendments to conditions attached to the original planning permission outlined above. Since this time, the Prideaux Building has been redeveloped. The key principles and challenges of the consented scheme are outlined below:

- Three floors;
- New openings in perimeter wall (Lambeth Palace Road elevation);
- Linked on all three floors to Block 9;
- Sloped green roof;
- Limited mechanical plant in Block 9 extension, located in basement rather than on upper level;
- Modern elevation on western side adjacent to the River Thames;
- Retention of historic assets;
- External terrace overlooking the River Thames; and
- Utilisation of the cadaver tunnel in logistics strategy.

No significant planning applications in terms of contaminated land risk were recorded within the SE1 7EH postcode area or within the immediate area surrounding the site.

4.2 Previous Ground Investigation Records

A previous ground investigation was carried out at the site to support the above planning applications for the site, the adjacent Block 9 and Prideaux Building sites by Ground Engineering Ltd in February 2018 (report reference: C14386 dated July 2018 for c/o Ross & Partners). This report should be read in conjunction with this report. The investigation was carried out to determine the nature and geotechnical properties of the underlying soils in relation to the design and construction of foundations for the proposed development. The scope of the investigation was to include a contamination assessment and tidal groundwater monitoring.

The investigation area comprised all three of the above buildings (described as one site for the purposes of this work). On this basis, the assessment of the Block 9 Extension area only using this dataset has some limitations but does provide some useful information to support this Phase 1 Preliminary Contamination Risk Assessment.

Five cable percussive boreholes (BH1 to BH4) and six window sample boreholes (WS1 to WS6) were

advanced at the site within the hospital campus. Groundwater was encountered at the base of the Made Ground and the top of the Kempton Park Gravels.

A variable and locally significant covering of Made Ground was encountered (associated with the historical reclamation of the site, mainly comprising reworked superficial deposits with anthropogenic materials) overlying the Kempton Park Gravel to a depth of approximately 6m bgl. A thin remnant of Alluvium was present adjacent to the Albert Embankment. The London Clay Formation was found below the superficial deposits on site to a depth of at least 30m bgl.

The Made Ground on site was approximately 3m to 9m thick and contained concrete, tarmac, brick, mortar, flint, clinker, ash, limestone, coal, quartzite, chalk, glass, bone, tiles, metal, slate, other anthropogenic materials and shell fragments. The Made Ground predominantly comprised a sandy, gravelly clay fill material. No evidence of asbestos, fuels or oils were observed within the shallow soils during the ground works.

Eleven soil samples were analysed for various heavy metals, Poly-cyclic Aromatic Hydrocarbons (PAHs), Total Petroleum Hydrocarbons (TPH), asbestos, phenols and pH. Three groundwater samples were also analysed for a similar suite of contaminants. One benzo(a)pyrene concentration in WS3 from the Made Ground was recorded above the commercial / industrial Generic Assessment Criteria (GAC). Some elevated TPH was also recorded in the same sample. No asbestos or ACMs were found as part of the chemical analysis carried out. Some contaminant concentrations were recorded in groundwater though no evidence of significant contamination was recorded.

Groundwater and ground gas standpipes were installed within three of the boreholes with a monitoring programme carried out in March and April 2018 (monitoring was carried out on six occasions). No significant methane or carbon dioxide concentrations were recorded on site throughout the monitoring programme and the site was considered to present a very low ground gas risk (Characteristic Situation 1) based on the available dataset.

5. Preliminary Risk Assessment and Exposure Model

A Conceptual Model represents the possible relationships between potential contaminant sources, pathways, and receptors in line with the Statutory Guidance to Part 2a of the Environmental Protection Act 1990. The following Preliminary Risk Assessment is based on the results of the Desk Study and the site walkover.

5.1 Potential Contamination Sources and Contaminants of Concern

On-site

Made Ground at least 3m thick is known to be present on site (and within the adjacent area) based on data from the 2018 ground investigation. Much of this Made Ground comprises reworked superficial deposits (associated with historic land reclamation on the southern banks of the River Thames) and contains anthropogenic materials including concrete, tarmac, brick, mortar, flint, clinker, ash, limestone, coal, quartzite, chalk, glass, bone, tiles, metal, slate, and shells. The Made Ground matrix comprised a sandy, gravelly clay fill material and did not contain evidence of asbestos, fuels, oils or any other evidence of contamination.

The Made Ground present is likely to be site-wide and present to depth below the whole site including below the existing building footprints and hardstanding. Any Made Ground present on site may have also been affected by the former use of the site as the former Medical School within St. Thomas´ Hospital. Potential contaminants of concern could include heavy metals and metals (including lead and arsenic known to have been used historically in structures and paintwork), asbestos and ACMs, Poly-cyclic Aromatic Hydrocarbons (PAHs), phenols, Total Petroleum Hydrocarbons (TPH) and pH.

There is a possible risk from ground gas and vapours from the Made Ground on site due to the thickness of the stratum below the site. Despite this, the ground gas monitoring carried out at the site and within the adjacent site areas in 2018 did not record significant methane or carbon dioxide concentrations and the site was considered to present a very low ground gas risk (Characteristic Situation 1) based on the available dataset.

To date, an asbestos survey has not been undertaken on site. No obvious asbestos sheeted roofing, insulation or any other potential ACMs were observed during the site walkover. However, due to the age of the site structure, the presence of ACMs within building fixtures and fittings is possible and cannot be ruled out at this stage. Residual asbestos and ACMs could pose a viable risk to human health receptors.

No further sources of contamination and no significant waste materials have been identified on site.

Off-site

The former tanks to the north of the site (removed by 1880) and the former tramway, present to the west of the site by 1895 and removed by 1958, pose a limited potential risk to the site. While the potential for off-site contamination to have migrated onto the site cannot be ruled out entirely, due to the nature of these operations (which were small-scale) the potential risks to the proposed development scheme are limited.

The historic Category 3 (minor) pollution incident that took place approximately 45m to the west of the site in 1995 is not considered to pose a significant risk due to the distance from the site, the severity of the incident and the time elapsed since this incident occurred (>25 years).

The former builder´s yard and engineering works located from approximately 30m and 100m to the north-east of the site are considered to pose a low risk to the site due to the extent of redevelopment that has since taken place at these locations to incorporate these areas into the wider hospital complex.

Nearby historical potentially contaminative land uses over 200m from the site including a former smithy, candle manufactory, distillery and Lambeth Pottery are not considered to pose a significant risk to the site due to the time elapsed since the removal of these land uses, the distance from the site, the scale of redevelopment that has taken place and / or the nature of such operations.

The nearby off-site transformer switch room identified during the site walkover is not considered to pose a risk to the site due to the nature of this facility and the stringent modern environmental controls placed upon such infrastructure.

The metal recycling site located over 350m from the site is also not considered to pose a risk to the site.

Nearby medical, education and research facilities in the surrounding area associated with the nearby St. Thomas´ Hospital are not considered to pose a risk to the site due to the non-contaminative nature of these land uses. In addition, nearby residential properties, schools, offices, hotels, restaurants, shops and political buildings including the Police Headquarters are also not considered to pose a risk.

5.2 Potential Pathways

There are not considered to be any viable pathways for direct human contact and ingestion by current and future staff, visitors, and neighbours due to the absence of soft landscaping on site (apart from the proposed above-ground roof garden / terrace proposed on site).

The potential pathways identified for the site include the following:

- Inhalation (dust inhalation during construction and future maintenance works);
- Direct contact with aggressive ground conditions; and
- Leaching and migration via groundwater and surface water (though both significantly reduced due to the presence of site-wide hardstanding and building footprints).

5.3 Potential Receptors

The site will be entirely covered in building footprints and hardstanding which will significantly reduce the amount of rainwater infiltrating at the site.

The potential receptors identified for the site include the following:

- Site end users (future staff, visitors, and neighbours);
- Groundworkers (construction and future maintenance workers);
- Building materials (buried concrete and underground services); and
- Controlled waters: Groundwater (Kempton Park Gravel Member Secondary A Aquifer), the adjacent River Thames and surface water run-off / overland flow.

5.4 Summary of Potential Contaminant Linkages

Table 6 lists the plausible contaminant linkages identified for the site.

These are considered as potentially unacceptable risks in line with guidelines published in CLR 11, and additional risk assessment may be required. Linkages have been assessed in general accordance with guidance provided in the CIRIA Report C552 (Rudland et al 2001) but with the addition of a 'no linkage' category as detailed in Table 5.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to groundworkers (construction and future maintenance workers), consideration of occupational health and safety issues is beyond the scope of this report and needs to be considered separately in the Construction Phase Health and Safety Plan. This will include good site practices such as dust suppression and the use of Personal Protective Equipment (PPE).

Table 5: Risk Assessment Process

	Consequence			
Probability	**Severe**	**Medium**	**Mild**	**Minor**
High Likelihood	Very high risk	High risk	Moderate risk	Low risk
Likely	High risk	Moderate risk	Low risk	Very low risk
Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
Unlikely	Low risk	Very low risk	Very low risk	Very low risk
No Linkage	No risk			

The information gathered in this Phase 1 Preliminary Contamination Risk Assessment Report has been compiled to produce a Conceptual Site Model (CSM), which is summarised in Table 6.

Table 6: Conceptual Site Model

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
<u>On-Site</u> Made Ground associated with current building on site with an associated ground gas risk. Former land use as a medical school. Asbestos and ACMs within existing buildings on site. <u>Off-Site</u>	Dermal / direct contact	Current site users (site is derelict). Comprising maintenance workers only	Yes	Very Low (no soft landscaping so no exposure pathway)
	Direct ingestion		Yes	Very Low (no soft landscaping so no exposure pathway)
	Direct inhalation		Yes	Very Low (no soft landscaping so no exposure pathway)
	Inhalation of wind-blown dust		Yes	Very Low (no soft landscaping so no exposure pathway)
	Ground gas and vapour generation and migration		Yes	Very Low (no soft landscaping and minimal exposure only during maintenance works)
	Dermal / direct contact	Future site users (equivalent to	Yes	Very Low (no soft landscaping and minimal exposure only

Former adjacent historic tanks and tramway. Historic Category 3 (minor) pollution incident 45m west. Former builder´s yard and engineering works >30m from site.		commercial land use)		during maintenance works)
	Direct ingestion		Yes	Very Low (no soft landscaping and minimal exposure only during maintenance works)
	Direct inhalation		Yes	Very Low (no soft landscaping and minimal exposure only during maintenance works)
	Inhalation of wind-blown dust		Yes	Low (no soft landscaping and potential minimal exposure only during maintenance works)
	Ground gas and vapour generation and migration		Yes	Low to moderate (>3m Made Ground thickness on site but and no issues recorded since construction).
	Direct contact	Services (following development)	Yes	Low
	Migration of contaminants off-site: non-aqueous phase		Yes	Low
	Migration of contaminants off-site: aqueous phase		Yes	Low
	Migration of contaminants off-site: non-aqueous phase	Adjacent land uses including research, medical, residential and leisure uses	Yes	Very Low
	Migration of contaminants off site: aqueous phase		Yes	Very Low
	Vapour migration		Yes	Very Low
	Inhalation of wind-blown dust	Ecological impacts (including in and adjacent to the River Thames)	Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater (Secondary A Aquifer underlain by Unproductive Strata)	Yes	Low (no infiltration on site due to absence of soft landscaping)
	Migration of contaminants from site: aqueous phase		Yes	Low (no infiltration on site due to absence of soft landscaping)
	Migration of Contaminants: non-aqueous phase	Surface waters (River Thames, surface water run-off and overland flow)	Yes	Low to moderate (site-wide drainage systems in place and no direct discharge to adjacent River Thames)
	Migration of contaminants: aqueous phase		Yes	Low to moderate (site-wide drainage systems in place and no direct discharge to adjacent River Thames)

5.5 Summary of Potential Contaminant Risks

The preliminary contamination risk assessment has identified complete source-pathway-receptor linkages with a maximum **Low to Moderate** risk level from the potential contamination sources and risk drivers identified on the site and surrounding area.

There are limited significant potential source drivers representing a risk to the future site users or controlled waters. The site will be covered in building footprints and hardstanding meaning exposure will be limited to periods of maintenance works only, during which, appropriate mitigation measures will be implemented on site as part of standard good practice. Infiltration on site will be negligible due to the presence of site-wide building footprints and hardstanding. Drainage systems will collect surface water run-off on site and no discharge to the River Thames is anticipated. As such, the mobilisation of any shallow contamination on site and the potential risks to controlled waters is considered to be limited. Despite some contamination likely on site associated with the significant thickness of Made Ground present and the former site use, the potential for exposure is very limited due to the absence of soft landscaping. Exposure pathways at the site are very limited. The potential for ground gas risk at the site is considered to be very low based on the available ground investigation for the site and the wider area but cannot be entirely ruled out based on the available data and the findings presented in this report.

It is recommended that a comprehensive asbestos survey is carried out within the building to be demolished on site as soon as practically possible by the Client. A specialist asbestos contractor will be appointed by the Client, in line with the Control of Asbestos Regulations (CAR 2012), to ensure the safe handling of any asbestos or ACMs that is identified. All materials will need to be bagged and removed from site prior to the commencement of demolition or refurbishment activities in line with good practice guidance and current regulations.

6. Geotechnical Hazard Identification and Considerations

Potential geotechnical hazards have been identified by Envirocheck during the Phase 1 Desk Study. The hazards provided by Envirocheck, and associated and other geotechnical considerations are presented below:

- Excessive settlement (creep and inundation settlement or differential settlement of foundations) or unstable, poor-quality material within any Made Ground present;
- Attack of buried concrete by aggressive ground conditions;
- There is a high risk from compressible ground on site associated with the presence of Alluvium superficial deposits and the London Clay Formation bedrock on site;
- There is a moderate risk from shrinking and swelling clay at the site associated with the presence of Alluvium superficial deposits and the London Clay Formation bedrock on site;
- The site is listed as having the potential for groundwater of property below ground level to occur on site and lies within a Flood Zone 2 and Flood Zone 3 and is therefore at risk of extreme flooding from rivers or seas without defences;
- Impact of new foundation on buried utilities and infrastructure;
- If piling is adopted, environmental objections can usually be overcome if piles are designed in accordance with the EA's advice "Piling and Penetrative Ground Improvement Methods on Land Affected by contamination: Guidance on Pollution Prevention (reference: NC/99/73);
- Consideration should be given to the re-use of pile arisings if bored piles are used. It may be possible to re-use pile arisings subject to risk assessment; however, certainty of use and volume should be confirmed in accordance with the requirements of CLAIRE guidance;
- Given the proximity of existing structures, the effects of noise and vibration (e.g., from piling plant) should be addressed as part of the contractor's Method Statement;
- The potential use of a suspended floor slab should be considered, as this may be more economical than a ground bearing slab designed to withstand the potential heave;
- Groundwater variation should be reviewed and monitored for a sufficient period of time.

7. Conclusions and Recommendations

7.1 Risk Evaluation

Based on historic land uses and its current operational use, the overall risk from land contamination at the site is **Low to Moderate** based on the proposed use of the site for commercial (to be used as office, research, education and laboratory space).

It is unlikely that the site would be classified as Contaminated Land under Part 2a of the EPA 1990 however this has not been formally confirmed by the Local Authority.

Table 6 provides a summary of the geo-environmental risks identified and the overall risk associated with the site has been designated using qualitative judgement using the risk categories provided in Table 7.

Table 7: Assessed Overall Risk Categories for the Site from Land Contamination

Risk Category	Definition
Very High Risk	A significant contaminant linkage, including actual evidence of significant harm or significant possibility and significant harm, is clearly identifiable at the site (e.g., from visual or documentary evidence) under current conditions, with potential for legal and / or financial consequences for the site owner or other Responsible Person. Remediation advisable based on acute impacts being likely. Immediate action should be considered.
High Risk	A contaminant linkage is identifiable on site under current and future use conditions. Although likely, there is no obvious actual evidence of significant harm or significant possibility and significant harm under current conditions. Extent of risk is therefore subject to confirmation by investigation and risk assessment, and most likely to be deemed significant. Realisation of the risk is likely to present a substantial liability to the site owner or other Responsible Person. Remediation required for redevelopment and may also be required under Part 2A for existing receptors.
Moderate Risk	A contaminant linkage is identifiable on site under current and future use conditions. However, it is not likely to be a significant linkage under current conditions. It is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Actual extent of risk subject to confirmation by additional investigation and risk assessment and most likely to lie between no possibility of harm (under current conditions) and significant possibility of significant harm (under conditions created by new use). Remediation may be required for redevelopment.
Low Risk	Potential pathways and receptors exist but history of contaminative use or site conditions indicates that contamination is likely to be of limited extent and below the level of possibility of harm. Unlikely that the site owner or other Responsible Person would face substantial liabilities from such a risk. Precautionary investigations and risk assessment advisable on change of use. Any subsequent remedial works are likely to be relatively limited.
Very Low Risk	No contaminant linkage likely to exist under current or future conditions, but this cannot be completely discounted. If harm is realised, it is likely at worst to be mild or minor. Site not capable of being determined under Part 2A (in accordance with PPS23) where the Local Authority inspects the site. No further action needed.
No Risk	No contaminant linkage exists.

7.2 Recommendations for Future Work

Based on the findings of this report, the risks to human health and controlled water receptors from contamination at the site is considered to be **low to moderate**.

On this basis, an extensive site-wide geo-environmental investigation is not required at the site to support the proposed redevelopment scheme. Despite this, as part of the geotechnical Phase 2 ground investigation that will be carried out at the site, further ground gas monitoring should be carried out at the site to confirm the Characteristic Situation 1 (very low risk) ground gas status at the site. Soil samples should also be taken to confirm the absence of significant contamination at the site. It is also recommended that soil samples for waste classification purposes to aid future waste classification at the site should be carried out (particularly of materials to be removed from site as part of the basement construction works). This will be subject to agreement with the Contaminated Land Officer (CLO) at the Local Planning Authority.

A specialist asbestos contractor will be appointed by the Client, in line with the Control of Asbestos Regulations (CAR 2012) to ensure the safe handling of any encountered asbestos or ACMs within the buildings to be demolished on site. All materials will need to be bagged and removed from site prior to the commencement of demolition or refurbishment activities in line with good practice guidance and current regulations.

Detailed geotechnical ground investigation and assessment should be carried out to ensure the proposed structures on site are appropriate given the ground conditions on site.

The site is listed as having the potential for groundwater flooding below ground level to occur on site. The site also falls within a Flood Zone 2 and Flood Zone 3 and is therefore at risk of extreme flooding from rivers or seas without defences. Specialist flood risk advice should be sought with regards to drainage and flooding to support the proposed redevelopment scheme at the site.

In high-risk UXO regions, further action to mitigate UXO risk is considered essential. It is therefore recommended appropriate guidance from a suitably qualified professional is sought by the Client regarding UXO risk associated with the proposed redevelopment scheme.

It is recommended that a watching brief for contamination is maintained throughout the earthworks at the Block 9 Extension Building. Should any unexpected contamination be identified during the future groundworks, such as evidence of the use of former chemicals or the burial of waste on site, then a suitably qualified and experienced geo-environmental engineer should be consulted and if necessary further assessment should be undertaken.

It should be noted that the risk assessment undertaken as part of this Desk Study has assumed that appropriate PPE and working practices will be put in place by contractors, to ensure that site workers are protected from contamination which may be present at the site. Appropriate Health & Safety precautions, including dust suppression will need to be implemented during construction works to ensure the protection of site users, workers, and neighbours.

This risk assessment assumes the absence of usable soft landscaping areas on site. Any changes to the proposed scheme would change the risk assessment contained within this report and would need to be reviewed and updated accordingly.

References

1. British Geological Survey Map (1998) South London, Solid and Drift, Sheet 270 scale 1:50,000.
2. Indicative Atlas of Radon in England and Wales. Health Protection Agency (HPA) and British Geological Society. Report HPA-RPD-033. 2007.
3. Contaminated Land Risk Assessment – A Guide to Good Practice CIRIA Report C552. CIRIA London. 158 pp. 2001.
4. Radon: Guidance on Protective Measures for New Buildings, Extensions, Conversions and Refurbishment. Building Research Establishment Report. BR211. BRE Garston. 2007.
5. Unexploded Ordnance (UXO) – A Guide to the Construction Industry. CIRIA Report C681. CIRIA London. 141pp. 2009.

APPENDICES

A. Proposed Development Drawings

Area Schedule (GIA)

Level	Area
Basement Floor Level	1926 m²
First Floor Level	1807 m²
Ground Floor Level	2054 m²
TOTAL:	5786 m²

Provision

Cycle - 33 (21 sqm)

Lockers - 33 (8 sqm)

Showers - 4 (18 sqm)

WC'c - 9 per floor (27 sqm/floor)

Lettable Areas Schedule

Areas Schedule	Area
Amenity Area	106 m²
Amenity/Cycle Store Area	79 m²
Bin Store	24 m²
Circulation	690 m²
Core Area	230 m²
External Amenity Area	19 m²
Gas Store	16 m²
Lab Area	2615 m²
Loading Area	0 m²
Plant Area	841 m²
Reception Area	134 m²
Room	0 m²
Store Area	179 m²
UKPN	25 m²
WC	228 m²
WU Area	531 m²

Key

- Amenity/Cycle Store Area
- Bin Store
- Circulation
- Core Area
- Gas Store
- Lab Area
- Loading Area
- Plant Area
- Reception Area
- Store Area
- UKPN
- WC
- WU Area

Area Schedule (Lab Areas) BM

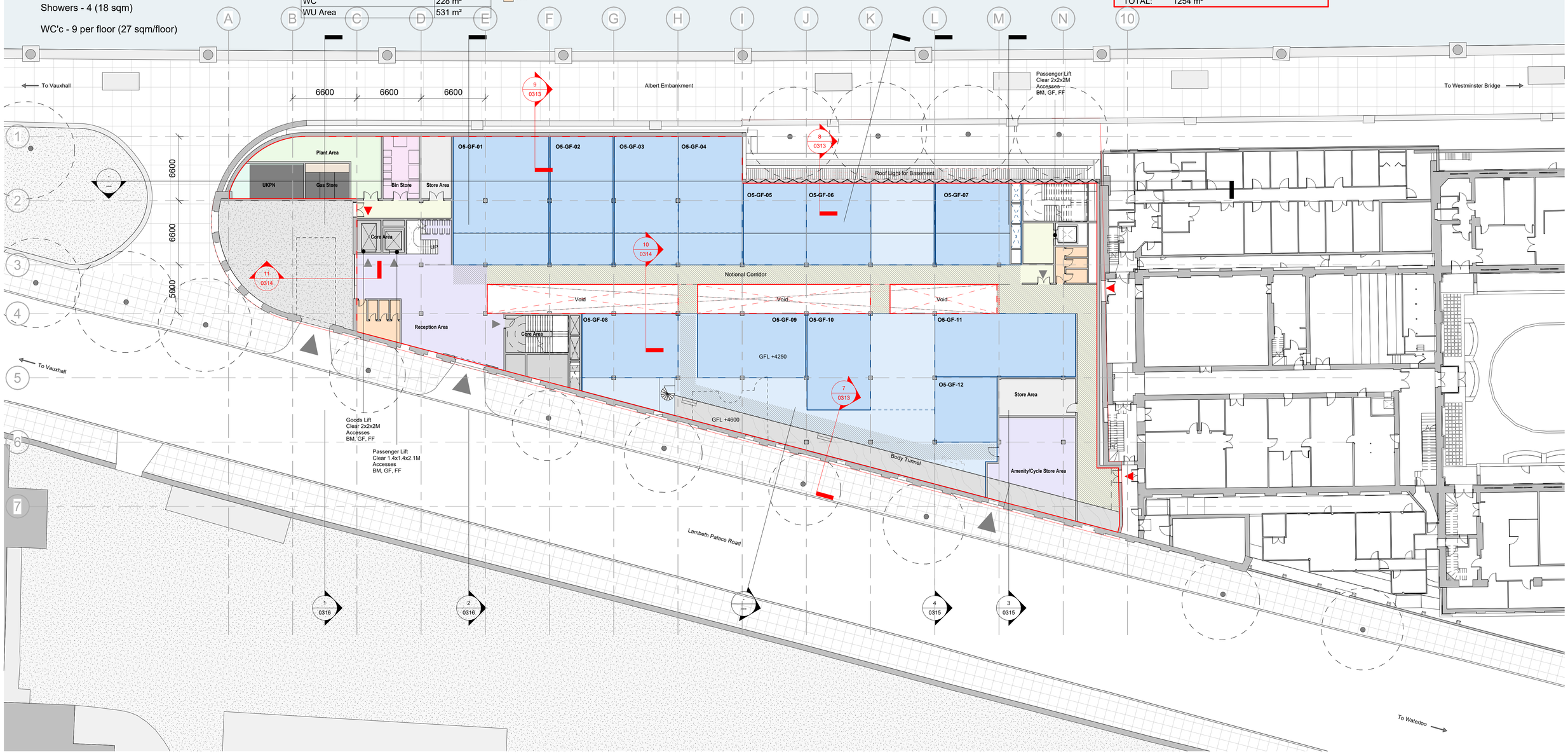
Name	Area
O5-BM-01	80 m²
O5-BM-02	92 m²
O5-BM-03	92 m²
O5-BM-04	92 m²
O5-BM-05	93 m²
O5-BM-06	76 m²
O5-BM-07	77 m²
O5-BM-08	77 m²
O5-BM-09	105 m²
O5-BM-10	100 m²
O5-BM-11	67 m²
O5-BM-12	78 m²
O5-BM-13	87 m²
TOTAL:	1117 m²

Area Schedule (Lab Areas) GF

Name	Area
Area	55 m²
O5-GF-01	130 m²
O5-GF-02	85 m²
O5-GF-03	87 m²
O5-GF-04	87 m²
O5-GF-05	54 m²
O5-GF-06	56 m²
O5-GF-07	74 m²
O5-GF-08	65 m²
O5-GF-09	73 m²
O5-GF-09	287 m²
O5-GF-10	65 m²
O5-GF-11	94 m²
O5-GF-12	43 m²
TOTAL:	1254 m²

Area Schedule (Lab Areas) FF

Name	Area
O5-FF-01	196 m²
O5-FF-02	174 m²
O5-FF-03	109 m²
O5-FF-04	54 m²
O5-FF-04	82 m²
O5-FF-05	237 m²
TOTAL:	853 m²



NORTH

0 2.0 4.0 6.0 8.0 10.0 20.0m

Rev.	Description	Date	Drw.	Chk.

DESIGN INTENT DRAWING ONLY

This drawing requires additional Third Party design input to ensure compliance, including further detail resolution and co-ordination.

Further specialist Input from the following will be required;

Fire Consultants Information
The fire-related information depicted in these drawings is subject to specialist consultant design provided by qualified fire consultants.

Services Design Strategy
Service-related elements, including but not limited to electrical, plumbing, and HVAC systems, are preliminary and may be subject to refinement based on detailed design strategies provided by Service Engineers.

Structural Engineering Strategy
Structural details and specifications are indicative and require validation by Structural Engineer.

Logistics Strategy
The logistical aspects outlined in these drawings are conceptual and may be adjusted based on a comprehensive logistics strategy.

Survey Information Disclaimer
Base drawn information is derived from a 2016 historic survey. This survey was not commissioned by the Corstorphine & Wright Architects and as such the accuracy of the survey data is undermined at this stage. Exercise caution and consider the limitations of the historical survey data in the decision-making process.

Client:
Pioneer Group

Project:
KCL - B9X

Drawing Title:
Feasibility - Proposed Ground Floor Plan

Drawing Status:
INFORMATION

Corstorphine & Wright

London Studio
21-27 Lamb's Conduit Street, Holborn, London, WC1N 3NL
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Drawing No.	Revision
23567-0152	

Drawn	Checked	Paper Size	Scale	Date
DS	RS	A1	1 : 200	10/02/23

B. Site Walkover Photographs

Photo 1: View of the tunnel

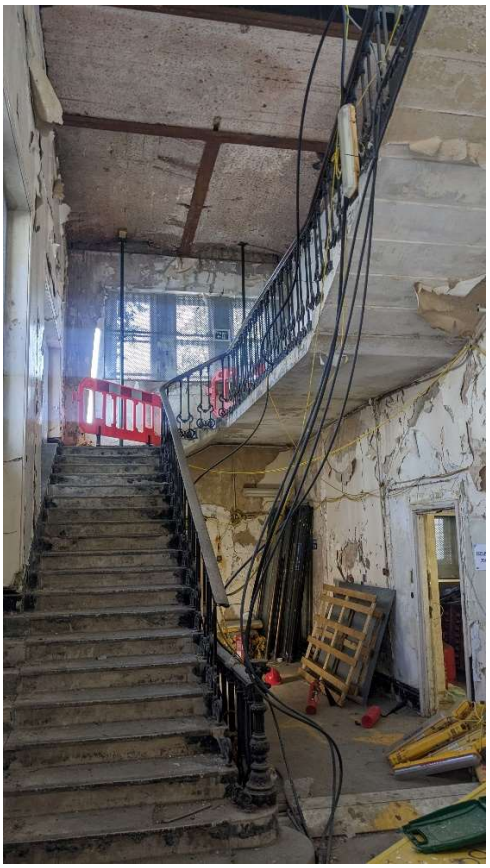

Photo 2: View of the existing staircase

Photo 3: View of internal room

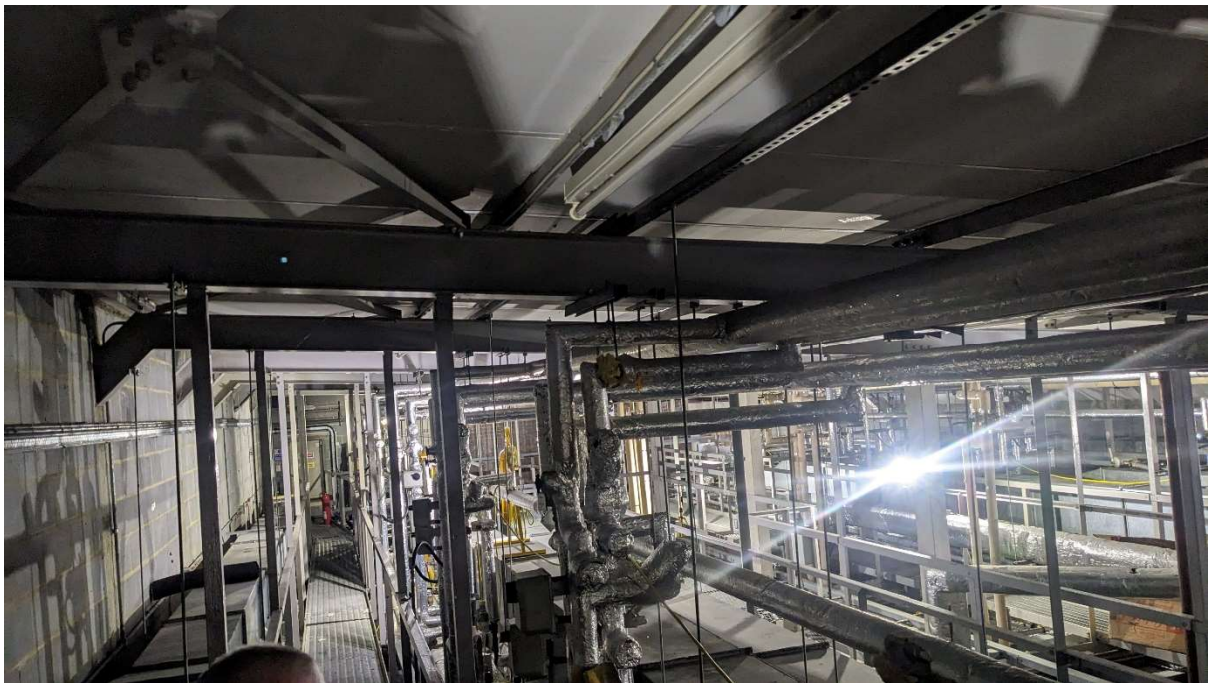

Photo 4: View of the plant room

Photo 5: View of the theatre

Photo 6: View of the Chimney

Photo 7: View of the wall along the river way

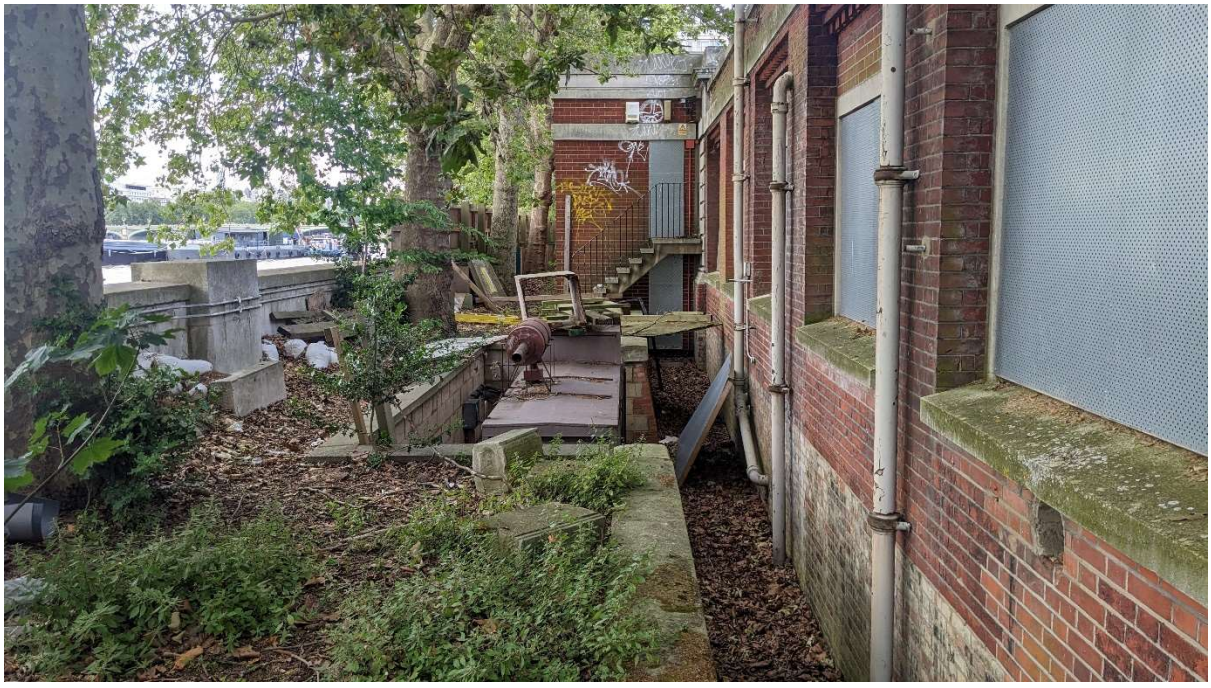

Photo 8: Internal views of the properties along the river

Photo 9: Internal views of the property from roof

Photo 10: Internal views of the existing roof

C. Envirocheck Report and Historical Mapping

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene
	WMGR	Infilled Ground	Artificial Deposit	Not Supplied - Holocene

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand And Peat	Not Supplied - Holocene
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	KPGR	KEMPTON PARK GRAVEL MEMBER	Sand and Gravel	Not Supplied - Devensian
	LASI	Langley Silt Member	Clay and Silt	Not Supplied - Devensian
	TPGR	TAPLOW GRAVEL MEMBER	Sand and Gravel	Not Supplied - Wolstonian
	HAGR	Hackney Gravel Member	Sand and Gravel	Not Supplied - Wolstonian
	LHGR	Lynch Hill Gravel Member	Sand and Gravel	Not Supplied - Wolstonian
	PEAT	Peat	Peat	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	LC	London Clay Formation	Clay and Silt	Not Supplied - Ypresian
	LC	London Clay Formation	Clay, Silt and Sand	Not Supplied - Ypresian
	LMBE	Lambeth Group	Clay, Silt and Sand	Not Supplied - Thanetian
		Faults		

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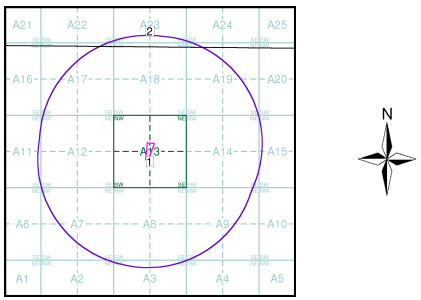
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**2**	**Map ID:**	**1**
Map Sheet No:	**256**	**Map Sheet No:**	**270**
Map Name:	**North London**	**Map Name:**	**South London**
Map Date:	**2006**	**Map Date:**	**1998**
Bedrock Geology:	**Available**	**Bedrock Geology:**	**Available**
Superficial Geology:	**Available**	**Superficial Geology:**	**Available**
Artificial Geology:	**Available**	**Artificial Geology:**	**Available**
Faults:	**Not Supplied**	**Faults:**	**Not Supplied**
Landslip:	**Available**	**Landslip:**	**Available**
Rock Segments:	**Not Supplied**	**Rock Segments:**	**Not Supplied**

Geology 1:50,000 Maps - Slice A



Order Details:

Order Number:	348585666_1_1
Customer Reference:	Block 9 Extension_30/05/2024
National Grid Reference:	530570, 179210
Slice:	A
Site Area (Ha):	0.73
Search Buffer (m):	1000

Site Details:

Block 9 Extenstion, St Thomas' Hospital, Westminster Bridge Road, LONDON, SE1 7EH

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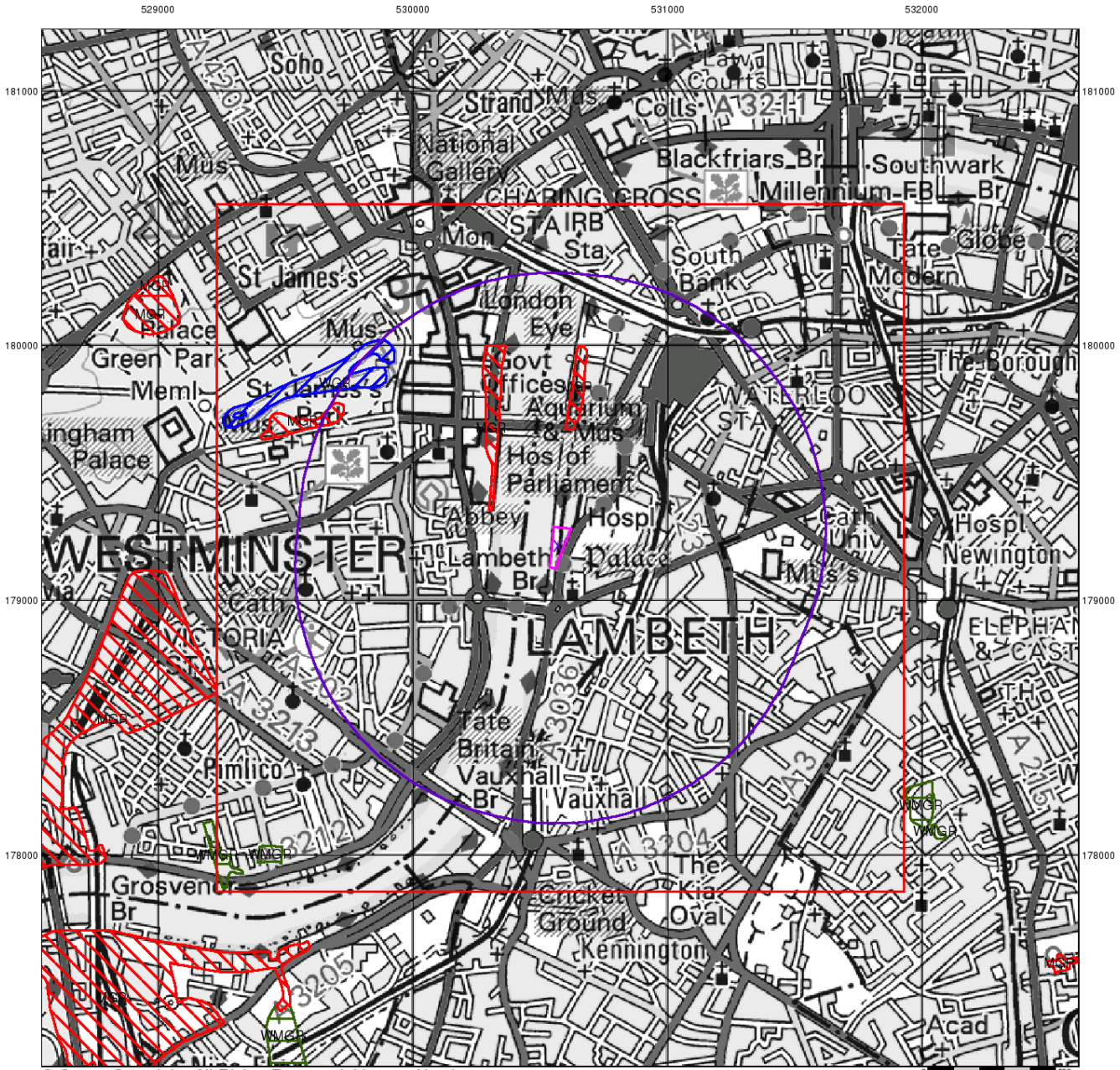

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Artificial Ground and Landslip

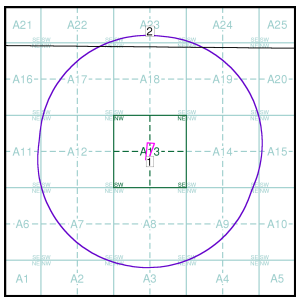
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



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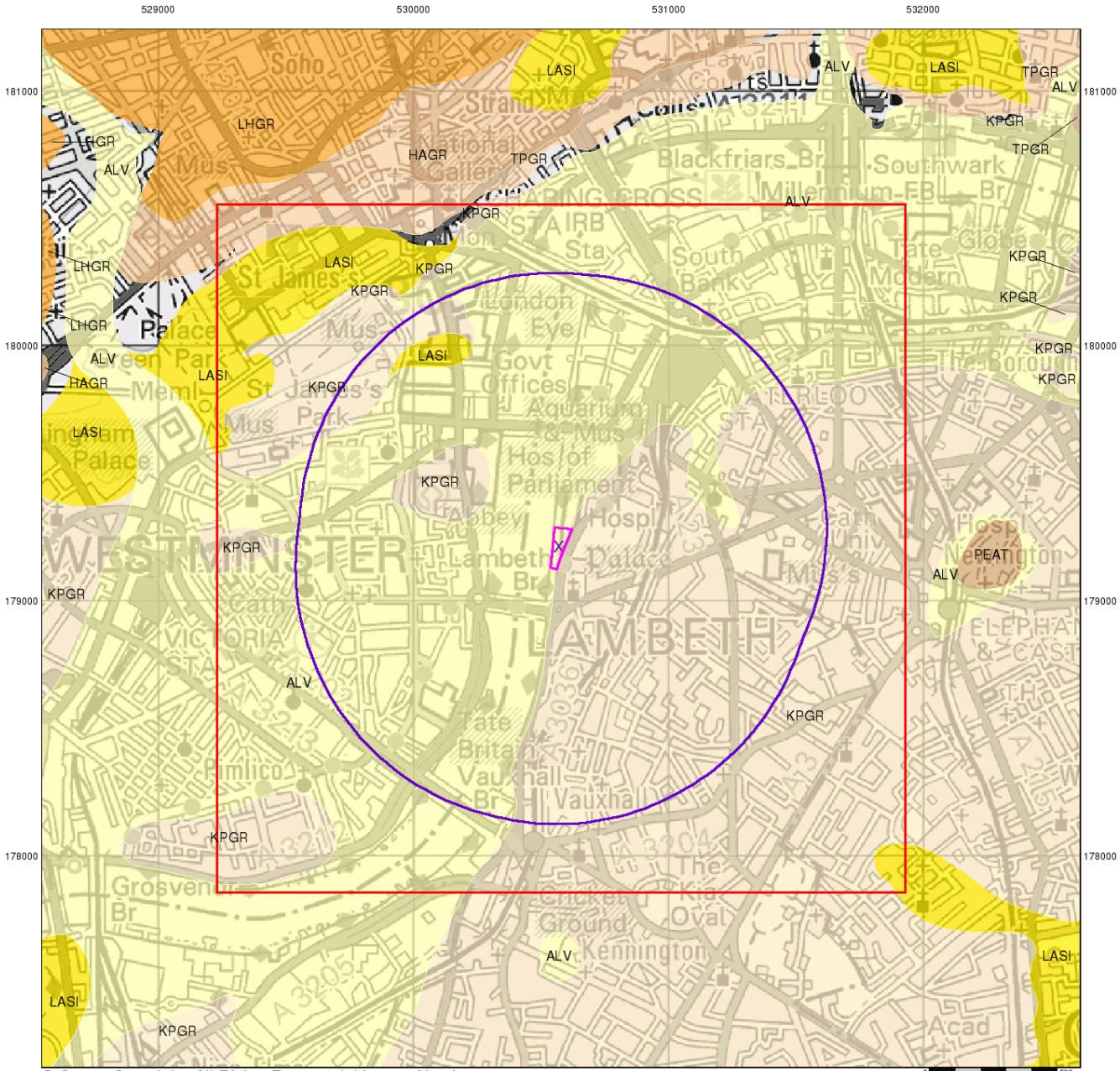

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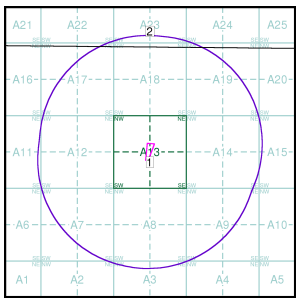
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



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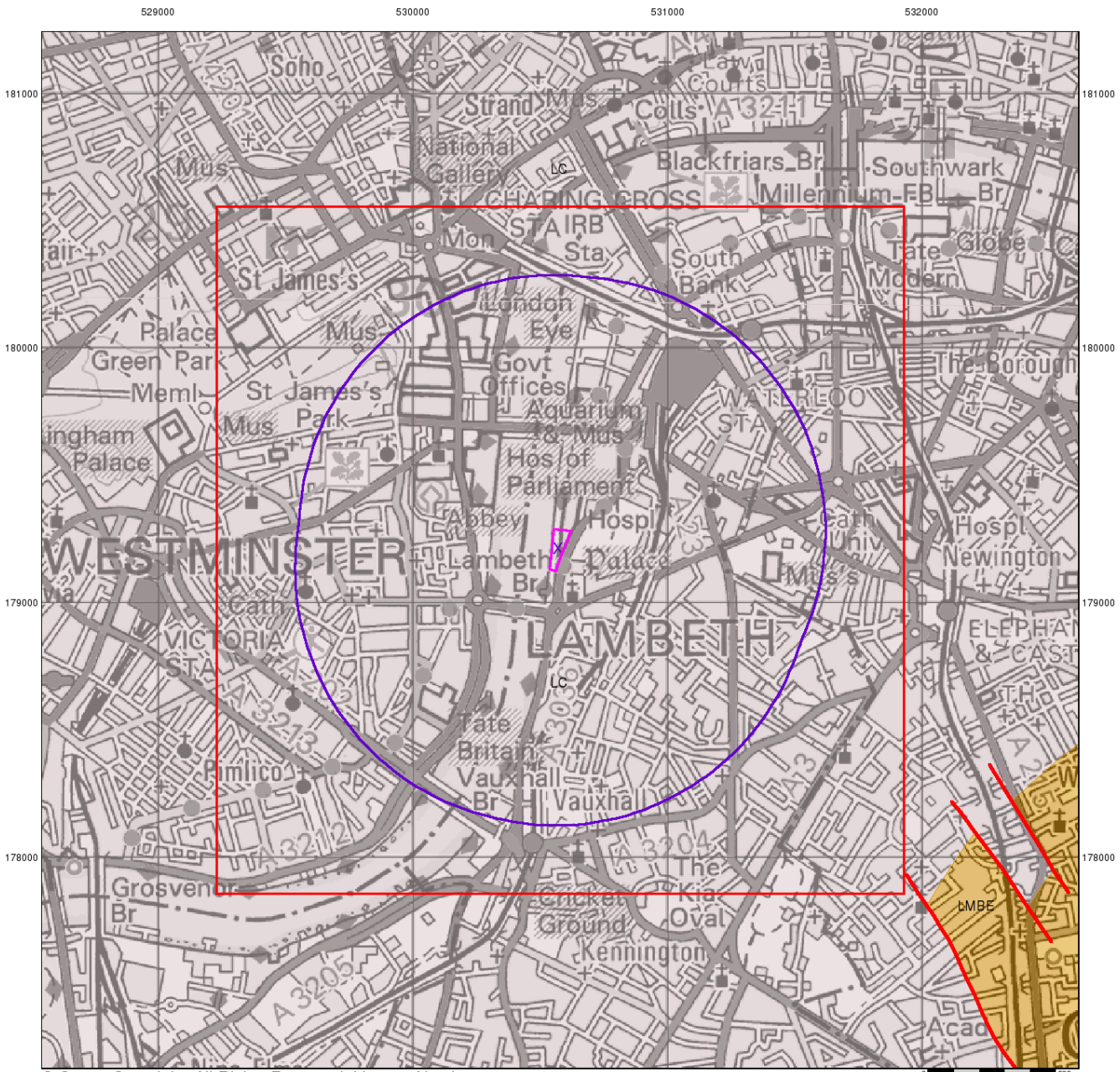

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Bedrock and Faults

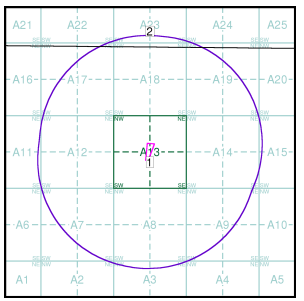
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



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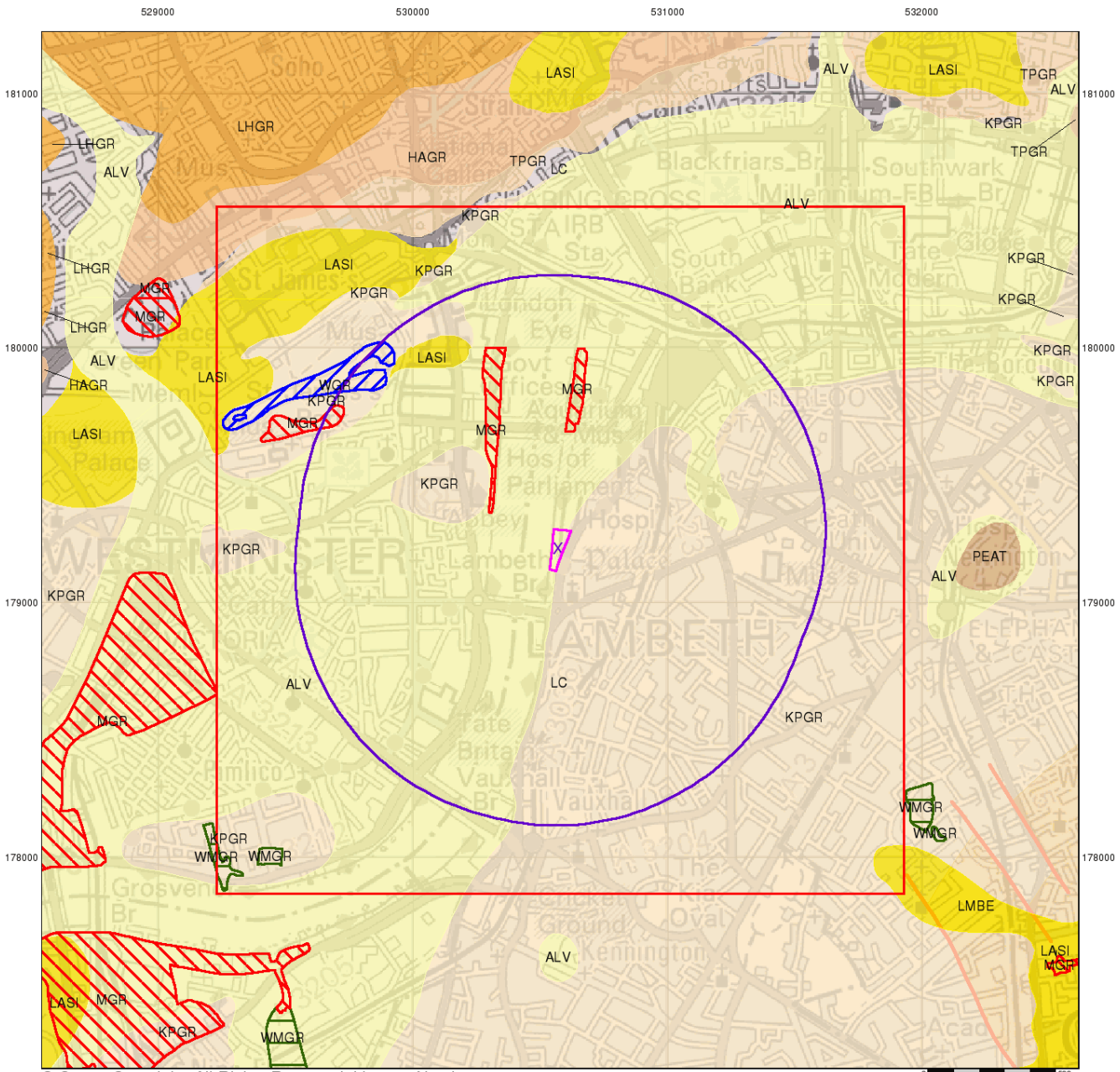

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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

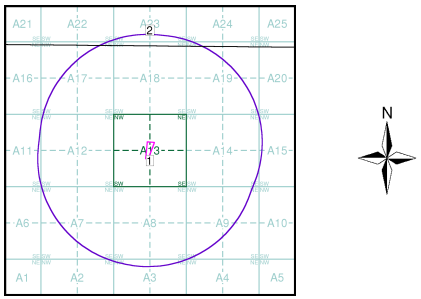
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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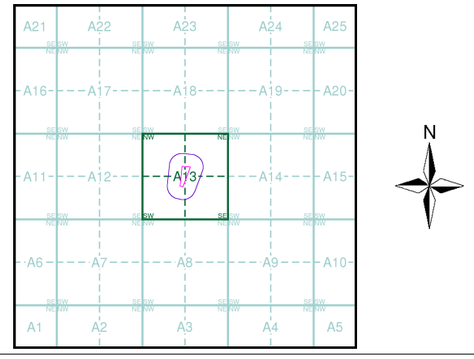
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:10,560	1879 - 1882	3
Surrey	1:10,560	1880	4
London	1:10,560	1896	5
Surrey	1:10,560	1898	6
London	1:10,560	1920	7
London	1:10,560	1938	8
Ordnance Survey Plan	1:10,000	1940 - 1951	9
Historical Aerial Photography	1:10,560	1948 - 1949	10
Ordnance Survey Plan	1:10,000	1954 - 1957	11
Ordnance Survey Plan	1:10,000	1962 - 1968	12
Ordnance Survey Plan	1:10,000	1968	13
Ordnance Survey Plan	1:10,000	1972 - 1975	14
Ordnance Survey Plan	1:10,000	1979	15
Ordnance Survey Plan	1:10,000	1981 - 1987	16
London	1:25,000	1985	17
Ordnance Survey Plan	1:10,000	1988	18
Ordnance Survey Plan	1:10,000	1991 - 1995	19
10K Raster Mapping	1:10,000	1999	20
10K Raster Mapping	1:10,000	2006	21
VectorMap Local	1:10,000	2024	22

Historical Map - Slice A



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Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Fireproof Building
- Prominent Fireproof Building
- Non-fireproof Building
- Non-fireproof Building (non-dwelling)
- Factory, mill, and flour mill, with chimneys
- Factory, mill, and flour mill, without chimneys
- Power Station, drawn to scale
- Hydroelectric Power Station
- Radio Station, drawn to scale
- Telephone Station, drawn to scale
- Abandoned Open-pit Mine or Quarry
- Open-pit Salt Mine
- Pit
- Oil Deposit or Well
- Oil Seepage
- Tailings Pile
- Fuel Storage Tanks
- Natural Gas Tank
- Bench Mark
- Drill Hole
- Burial Mound
- Triangulation Point on Burial Mound
- Single-track Railroad
- Double-track Railroad and Station Building
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Lawns
- Citrus Orchard
- Wet Ground
- Scattered Vegetation

243,8 — Values for prominent elevations

186.0 — Numbers for spot elevations, depth soundings, contour lines, etc.

0,2 — Velocity of the current, width of river bed, depth of river

Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	ъ (–)
Д д (D)	Л л (L)	У у (U)	ы (Y)
Е е (E)	М м (M)	Ф ф (F)	ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Partly Demolished Buildings
- Demolished Buildings
- Built-Up Area with Fireproof Buildings Predominant
- Built-Up Area with Non-Fireproof Buildings Predominant
- Individual Fireproof Building
- Prominent Industrial Building
- Individual Dwelling, Fireproof
- Ruins of an Individual Dwelling
- Factory or Mill Chimney
- Factory or Mill with Chimney (бум.)
- Factory or Mill without Chimney (скип.)
- Mine or Open Pit Mine (медн.)
- Operating Shaft or Mine (кам. уг.)
- Non-Operating Shaft or Mine
- Salt Mine (сол.)
- Tailings Pile
- Pit (– 1.7)
- Stone Quarry (гл. пес. кам.)
- Gas Pump or Service Station
- Fuel Storage or Natural Gas Tank
- Oil or Natural Gas Derrick
- Small Hydroelectric Power Station
- Power Station
- Transformer Station (б.тр.)
- Cemetery
- Burial Mound (height in metres) (+ 8.1)
- Triangulation Point on Burial Mound (95.7)
- Triangulation Point (92.6)
- Bench Mark (52.1)
- Bench Mark (monumented) (71.1)
- Telegraph Office
- Telephone Station
- Radio Station
- Radio Tower
- Airfield or Seaplane Base
- Landing Strip
- Main Highway (Cut, Fill, Km Post, Plantings, Telegraph/Telephone Lines)
- Highway under Construction
- Improved Dirt Road (former truck road) (Width of Road, Steep Grade)
- Double-track Railroad with First Class Station (Small Bridge, Pipe (Culvert), Tunnel)
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment (+2.4)
- Direction and velocity of current (Water Gauge, Water Level Mark)
- Well (К. 125.0 гл.8м (г.-сол.))
- Water Reservoir or Rain Water Pit (вдхр.)
- Spring (156.2 кл.)
- Isobath with value (20)
- Heavy (Index) Contour Line
- Contour Line and Value (20)
- Half Contour Line
- Spot Elevation Value (347.1)
- Coniferous
- Deciduous
- Mixed
- Scrub

Key to Numbers on Mapping

TQ27_London

No.	Description
245	Administration Buildings (Foreign Office)
247	Council/Government Buildings/Courts

TQ37_London

No.	Description
21	Railway Station
123	Refinery (Oil)
240	Administration Buildings (Finance)
249	Houses Of Parliament
250	Police Station/Headquarters
283	Council/Government Buildings/Courts

TQ38_London

No.	Description
246	Military Administration
351	Military Administration

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:10,560	1879 - 1882	3
Surrey	1:10,560	1880	4
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London	1:10,560	1938	8
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Historical Aerial Photography	1:10,560	1948 - 1949	10
Ordnance Survey Plan	1:10,000	1954 - 1957	11
Ordnance Survey Plan	1:10,000	1962 - 1968	12
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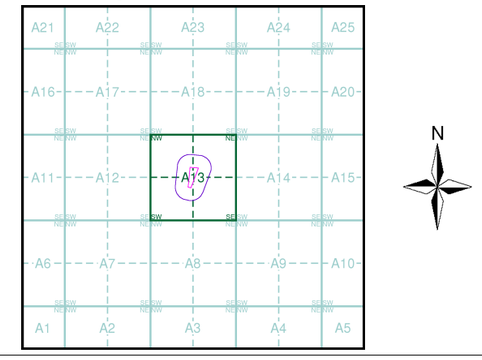
London	1:25,000	1985	17
Ordnance Survey Plan	1:10,000	1988	18
Ordnance Survey Plan	1:10,000	1991 - 1995	19
10K Raster Mapping	1:10,000	1999	20
10K Raster Mapping	1:10,000	2006	21
VectorMap Local	1:10,000	2024	22

Russian Map - Slice A



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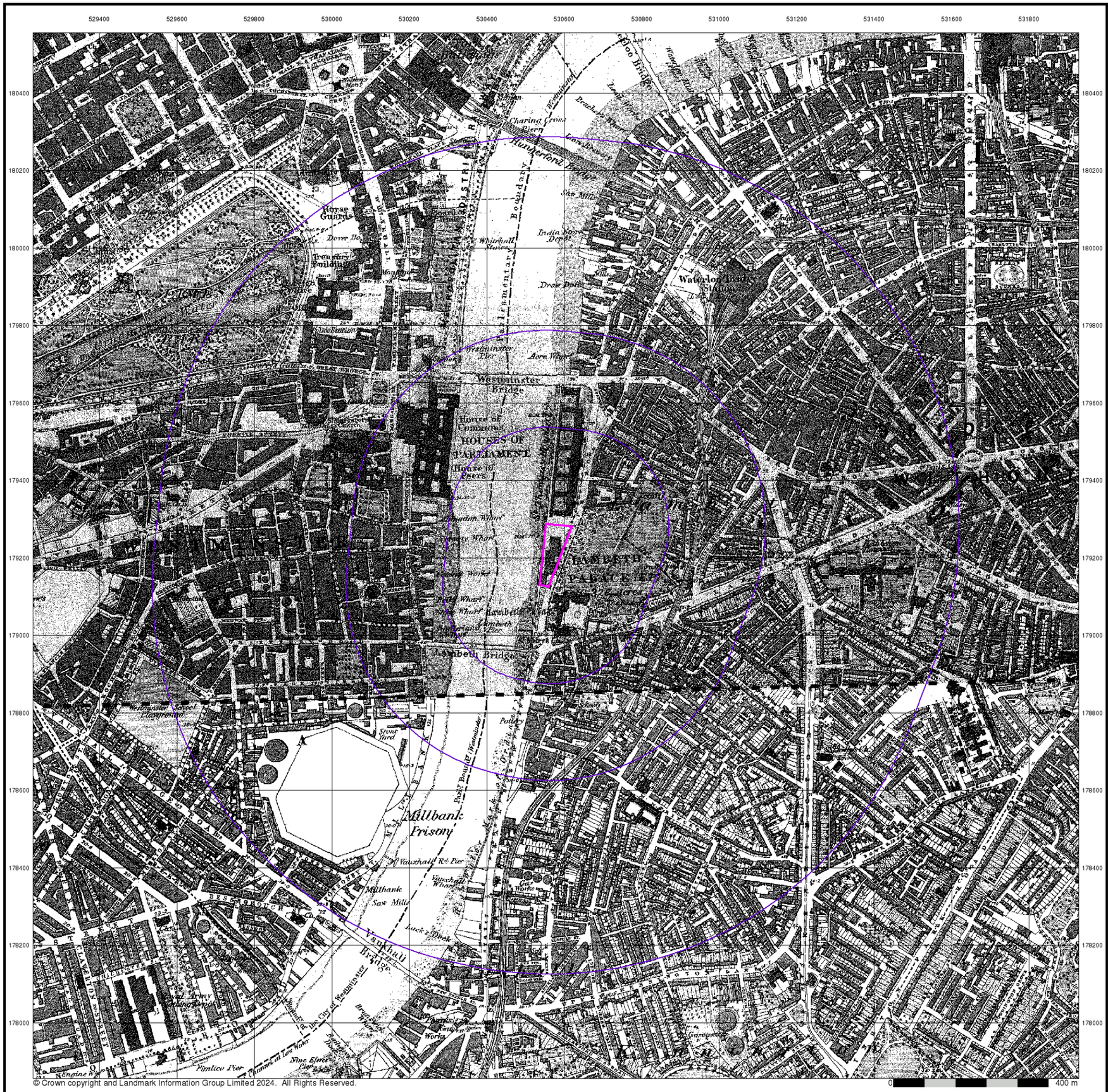

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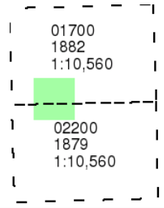
Middlesex

Published 1879 - 1882

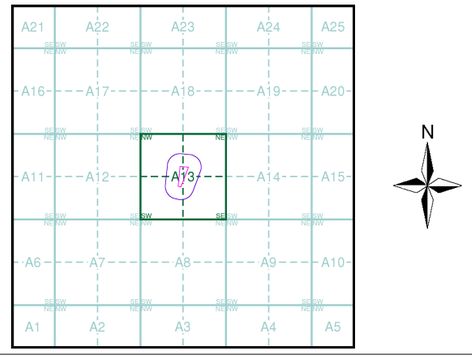
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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Site Details

Block 9 Extenstion, St Thomas' Hospital, Westminster Bridge Road, LONDON, SE1 7EH

Landmark® INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
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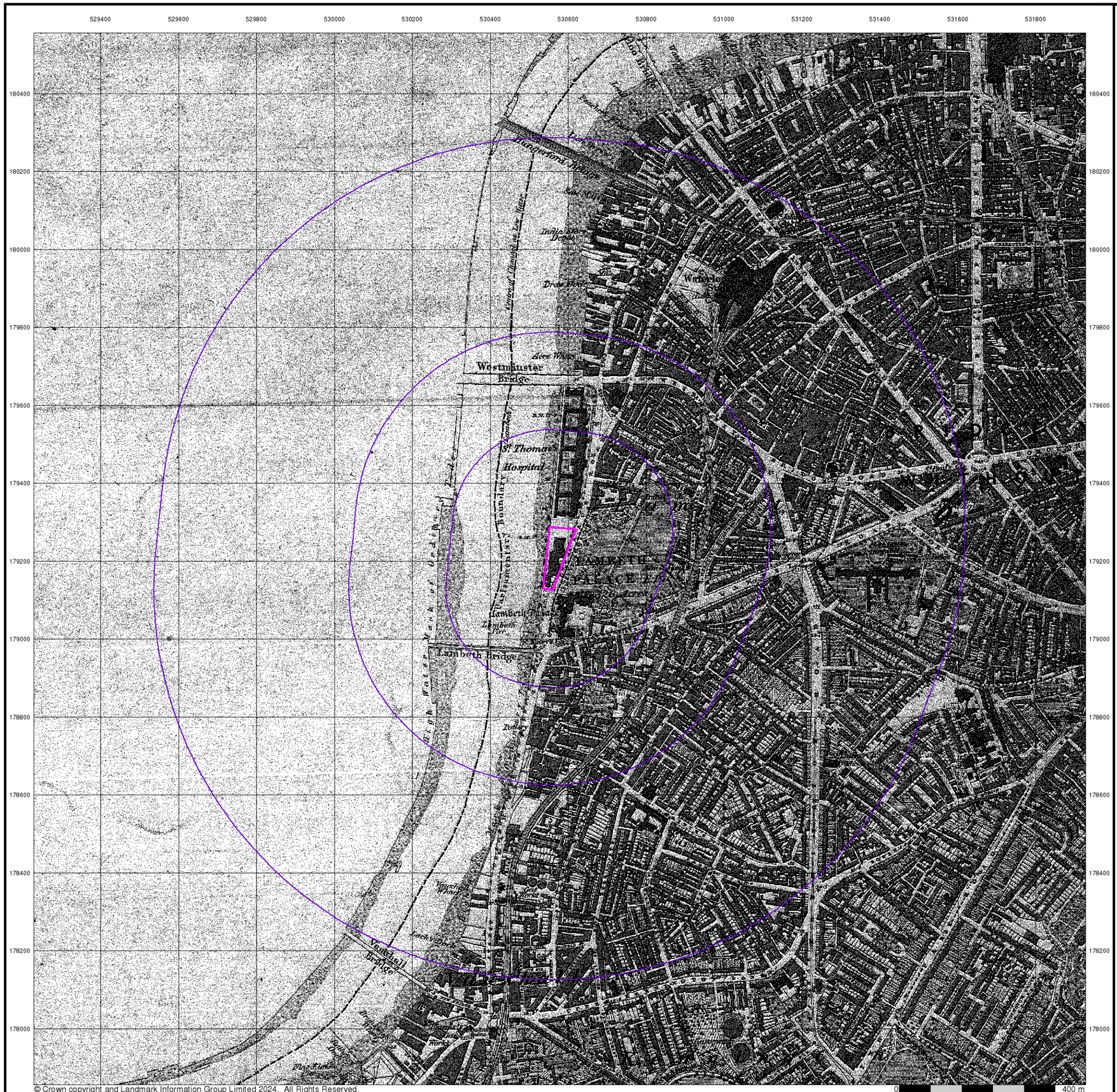

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Surrey

Published 1880

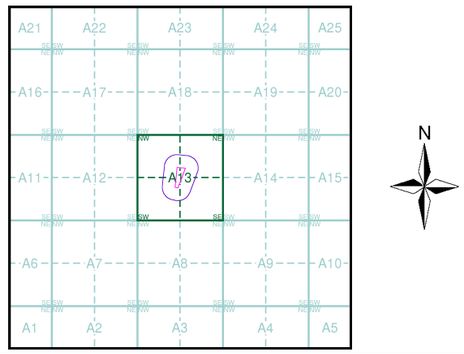
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

00300
1880
1:10,560

Historical Map - Slice A



Order Details

Order Number:	348585666_1_1
Customer Ref:	Block 9 Extension_30/05/2024
National Grid Reference:	530570, 179210
Slice:	A
Site Area (Ha):	0.73
Search Buffer (m):	1000

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