LBS Properties

BRILL PLACE, SOMERS TOWN

Ground Investigation and Generic Quantitative Risk Assessment

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JUNE 2019

CONFIDENTIAL

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CONTENTS

TABLES

APPENDICES

1 INTRODUCTION

1.1 AUTHORISATION

WSP was instructed by LBS Properties (the Client) to undertake a Generic Quantitative Risk Assessment (GQRA) following a Ground Investigation at the proposed Brill Place Tower development, on Brill Place, directly opposite the Francis Crick Institute in King's Cross, London NW1 (the Site).

The site location is presented in **Figure 1**, **Appendix A**.

1.2 PROPOSED DEVELOPMENT

Brill Place Tower is a part of a wider Central Somers Town regeneration scheme by the London Borough of Camden. Planning permission was obtained in October 2016 (ref:2015/2704/P) and Brill Place Tower forms Plot 7 of the wider development.

Brill Place Tower comprises a 22-storey residential tower and single storey basement structure. The tower will consist of 54 residential flats over 701 square metres of floor space, surrounded by soft landscaping forming part of part of the wider Brill Place park.

It is understood that the single storey basement will extend to approximately 5.50 m bgl.

Proposed development plans are presented in **Appendix A**.

1.3 OBJECTIVES

The key objectives of the works comprised:

- Develop a Conceptual Site Model (CSM) for the site to identify ground conditions and potential contaminant linkages using the source-pathway-receptor approach; and,
- Evaluate potential risk exposure and its potential significance on identified receptors and provide risk management advice for proposed development.

1.4 SCOPE OF WORKS

In order the meet the objectives detailed in **Section 1.3**, the scope of works for the investigation comprised the following:

- Schedule soil samples for analysis taken during Ground Engineering Limited investigation on the Site; and,
- Completion of an interpretative Generic Quantitative Risk Assessment to assist with the discharge of pre-commencement planning conditions.

1.5 SOURCES OF INFORMATION

The following sources of information were used for compiling this report:

- Brill Place, Phase I Geotechnical and Geo-environmental Desk Study, Report Ref 034648, Burohappold Engineering, 18 September 2015 (Ref. 1);
- Central Somers Town, London, Factual and Interpretive Report on Ground Investigation, Volume 1: Factual Report, Report Ref D5061-15/1, ESG, September 2016 (Ref. 2);
- Central Somers Town, London, Factual and Interpretive Report on Ground Investigation, Volume 2: Interpretive Report, Report Ref D5061-15/2, ESG, September 2016 (Ref. 3);
- Brill Place Ground Investigation Report, Draft, Report Reference No. C14727, Ground Engineering Ltd, June 2019 (Ref. 4);
- British Geological Society (BGS), Geological map Sheet No. 256, North London, 1:50,000 Bedrock and Superficial Edition 2006 (Ref. 5);
- BGS 'Geology of Britain' online viewer, accessed on June 2019 (Ref. 6);
- Magic Map (https://magic.defra.gov.uk/MagicMap.aspx), accessed June 2019 (Ref. 7);
- Flood Maps for Planning Service (https://flood-map-for-planning.service.gov.uk/), accessed June 2019 (Ref. 8);
- Zetica Unexploded Bomb Risk Maps (https://zeticauxo.com/downloads-and-resources/risk-maps/) accessed June 2019 (Ref. 9); and,
- Bomb Sight (http://bombsight.org/) accessed June 2019 (Ref. 10).

The information sources outlined above have been used to compile this report and a summary of the historical ground investigation data is included within **Section 3** of this report.

1.6 REGULATORY CONTEXT

This assessment has been undertaken with due regard to Contaminated Land Guidance documents issued by the Department for Environment, Food and Rural Affairs (and its predecessors) including Contaminated Land Report 11 (CLR 11). The methods used follow a risk-based approach, with the potential environmental risk assessed qualitatively using the 'source-pathway-receptor contaminant linkage' concept to assess risk as introduced in the Environmental Protection Act 1990 (EPA, 1990).

Legislation and guidance on the assessment of contaminated sites acknowledges the need for a tiered risk based approach. This assessment represents a Generic Quantitative Risk Assessment (GQRA) being a comparison of site contaminant levels against generic standards and compliance criteria including an assessment of risk using the source-pathway-receptor model.

1.7 CONFIDENTIALITY AND LIMITATIONS

This report has been prepared for the sole use and reliance of LBS Properties and should not be relied upon or transferred to any other parties without the express written authorisation of WSP.

General limitations of the assessment are included in **Appendix B**.

2 SUMMARY OF SITE INFORMATION

2.1 SITE DESCRIPTION AND SITE OBSERVATIONS

A site location plan (**Figure 1**) is provided in **Appendix A**.

Table 1 provides details of the site obtained from a review of Ordnance Survey (OS) mapping, online aerial photography and review of previous reports.

Table 1 - Site Information and Observations

DETAILS	DESCRIPTION
Name and Address of Site	Brill Place Park, Brill Place, Somers Town, London, NW1 1DX (approximate postcode)
Grid Reference	52980, 83130
Site Description and Current Use	The site is rectangular, measuring 33 m by 19 m within and on the southern boundary of Brill Place Park, opposite the Francis Clerk Institute building. The site lies at approximately 19 m-20 m AOD with a gentle slope towards the south. The site is mainly grass, with asphalt surfaced footpaths and an enclosed rectangular asphalt surfaced games court within its south-western quarter. Semi-mature trees with preservation orders are present within the Site area.
Chemical/Fuel Storage	None
Stockpiles and Waste Management	None
Drainage	Unknown
Asbestos Containing Materials (ACMs)	Asbestos was identified within Made Ground during the 2016 site investigation (Ref. 3) in WS29.

2.2 SITE HISTORY

The 2015 desk study (Ref. 1) reported on the entire Brill Place Park. The following is a summary of historical activities relating to the current development Site area on the southern boundary of the wider development area.

2.2.1 ON-SITE

During 1876 the site was occupied by housing, which was partly demolished by 1896. By 1916 the Site area was occupied by rail links and hoists associated with a Coal Depot and St Pancras Station. The coal depot was replaced by the temporary "Euston Air Terminal" in 1969 (for an air race). The Terminal was demolished by 1982 and replaced by the current playground area by 1988.

2.2.2 OFF-SITE

During 1876, the surrounding area was housing with St Pancras Railway Station and the Imperial Gas Works within the vicinity. By 1896, much of the residential area to the north of site had been demolished. Milk Sheds, Goods Sheds (including railway links) and Coal Depots had been developed to the south and a tramway a couple of streets away to the north. By 1916, the former residential area to the north is now part of the large coal depot. By 1948 the tramway was removed and other industrial and commercial buildings were present with some gas holders demolished.

By 1976 the coal depot was demolished and part of the Euston Air Terminal or vacant land. The Goods Sheds were demolished by 1982 and the area to the north of site was vacant and presumably part of Brill Place Park.

2.3 GEOLOGY

Table 2 provides a summary of the geology of the site based on information from the British Geological Survey (BGS) Geological Map Sheet No. 256 (Ref. 5), BGS 'Geology of Britain' online viewer (Ref. 6) and the 2016 ESG site investigation (Ref. 2 & 3) which is described in further detail in **Section 3**.

Table 2 provides the Environment Agency's aquifer designations for each of the geological units.

Table 2 – Geological Description

GEOLOGICAL UNIT	PROVEN THICKNESS (m)	DEPTH TO TOP OF STRATUM (m bgl)	AQUIFER DESIGNATION*	TYPICAL STRATA DESCRIPTION
Made Ground	2.25 to 2.70	0.0	NA	Varied; clayey gravel/ gravelly clay and sand with cobbles of brick and concrete.
London Clay Formation	16.90 to 17.55	2.25 to 2.70	Unproductive Strata	Firm to stiff brown grey Clay.

GEOLOGICAL UNIT	PROVEN THICKNESS (m)	DEPTH TO TOP OF STRATUM (m bgl)	AQUIFER DESIGNATION*	TYPICAL STRATA DESCRIPTION
Lambeth Group	Not proven	19.6 to 19.8	Secondary A Aquifer	Very stiff brownish red/red mottled bluish grey clay. With sand and pebble beds**.
Thanet Sand Formation**	~8.5	~34	Secondary A Aquifer	Fine grained sand**.
White Chalk Subgroup**	>100m	~43	Principal	Chalk**.

*Environment Agency designation
**British Geological Survey (BGS) Geological Map Sheet No. 256, North London, 1:50,000, Bedrock and Superficial Edition (2006)

2.4 HYDROLOGY / HYDROGEOLOGY

London Clay Formation is classified as Unproductive Strata (i.e. with low permeability that has a negligible significance for water supply or river base flow).

According to the 2015 desk study (Ref. 1) there are two groundwater abstractions located over 250 m (but within 500 m) of the site. The site is not in a source protection zone.

The Grand Union Canal is located >250 m north-east of the site. The River Fleet is culverted and located 80 m west but was once located adjacent to St Pancras Road, 80m north-east of the site. There are two surface water abstractions, one located 370 m north associated with Grand Union Canal/Regent's Canal at Camley Street Nature Park and another 550 m north-east associated with Regent's Canal.

A review of Flood Map for Planning website (Ref. 8) indicated that the site is not located within an indicative area of flood risk from rivers.

During the 2016 ESG site investigation (Ref. 2 & 3), groundwater was encountered at 2.10 m bgl within the Made Ground and a seepage at 7.10 m bgl within the London Clay Formation witihin BH10. During monitoring groundwater levels ranged from 2.67 to 2.76 m bgl in BH9 (London Clay Formation) and 15.28 to 15.32 m bgl in BH10 (Lambeth Group).

2.5 PRELIMINARY HYDROGEOLOGICAL MODEL

The 2016 ESG site investigation report (Ref. 3) encountered perched groundwater within the Made Ground during excavation and probable perched water within the London Clay Formation (monitored within BH09) associated with sandy lenses. Groundwater was also recorded within the Lambeth Group (monitored within BH10). No conclusion was

made with regards to the groundwater flow direction based on the wider site investigation boreholes.

Based on the position of the site, any groundwater flow is likely to be south to south-west towards the River Thames and it's directional flow.

2.6 DESIGNATED ECOLOGICAL SITES AND HERITAGE SITES

The Magic website (Ref. 7) indicates no statutory ecological designations, World Heritage Sites, Scheduled Ancient Monuments or Registered Battlefields within the site boundary.

2.7 REGULATORY DATABASE

Reference was made to the 2015 desk study (Ref. 1) and hence some of the database results may be out of date.

Table 3 below also presents the entries which WSP considers may represent contamination sources.

Table 3 – Summary of Pertinent Information from Regulatory Database

DESCRIPTOR	ON-SITE	0-249 M	250-500 M	DETAILS
Petrol Filling Stations	0	1	2	The closest petrol filling station is located 180 m to the north-east.
National Incidents Recording System, List 2	0	0	1	2003, 250 m south-east; minor land impact: oils & fuel (Diesel).
COMAH and NIHHS	0	1	0	British Gas – St Pancras Holder Station
Part A(2) and Part B Activities and Enforcements	0	2	6	Closest is 135 m southwest with two records relating to a dry cleaners Over 250 m: industrial activities include a petrol station, dry cleaner and recycling/including vegetable matter/ composting process (historical Part B permit).

No landfills were identified on site or in the surrounding area.

2.8 UNEXPLODED ORDNANCE (UXO)

A preliminary risk assessment (in line with CIRIA 681) was undertaken by Burohappold Engineering as part of their 2015 desk study and concluded a moderate risk from unexploded ordnance.

Readily available records (Ref. 9 & 10) indicate that several high explosive bombs fell in close proximity to the site in an area with a high recorded bombing density.

3 PREVIOUS GROUND INVESTIGATIONS

ESG undertook a site investigation of the wider area in 2016 and reported their findings in two reports;

- Central Somers Town, London, Factual and Interpretive Report on Ground Investigation, Volume 1: Factual Report, Report Ref D5061-15/1, ESG, September 2016 (Ref. 2) and
- Central Somers Town, London, Factual and Interpretive Report on Ground Investigation, Volume 2: Interpretive Report, Report Ref D5061-15/2, ESG, September 2016 (Ref. 3).

The site investigation comprised 11 cable-percussion boreholes, 4 trial pits, 46 window samples and 6 groundwater/gas monitoring visits. Of those the following exploratory holes fall within the current Site area;

- BH9, 25 m deep with installation 3.20 to 7.50m bgl within the London Clay;
- BH10, 30.3 m deep with installation 21 to 30.30m bgl within the Lambeth Group;
- WS28, 1.60 m deep with no installation;
- WS29, 0.75 m deep with no installation; and,
- TP5, 1.8 m deep.

Encountered ground conditions are mentioned in **Section 2.3**. BH10 noted a slight hydrocarbon odour in the Made Ground.

For the wider investigation, the report concluded “a potential risk to site users from the presence of asbestos, together with a more localised risk from lead, TPH and PAH” within the soil. With reference to the current Site area the following was noted;

- WS28 - Benzo(a)pyrene and Dibenzo(a,h)anthracene present above the generic assessment criteria (residential without plant uptake) at 1.0m bgl; and,
- WS29 – Amosite asbestos present at 0.30m bgl.

No groundwater was sampled or analysed as part of the investigation.

Based on the ground gas measurements for the larger development, the gas regime was concluded as Characteristic Situation 1. This was based on 6 monitoring visits between 5 January and 20 June 2016 and during periods of barometric pressure ranging from 1008 to 1026 mbar. However, all boreholes were flooded during monitoring (the slotted section of the boreholes were underwater) therefore, the ground gas assessment undertaken as a part of the 2016 ground investigation is considered to be unsuitable.

4 PRELIMINARY CONCEPTUAL SITE MODEL

4.1 INTRODUCTION

The Conceptual Site Model (CSM) is based upon the environmental conditions of the site as described in the previous sections.

The methods used within this assessment followed a risk-based approach; with the potential environmental risk assessed qualitatively using the 'source-pathway-receptor' contaminant linkage concept introduced in the guidance documents (principally the EA's CLR11) on the practical implementation of the Environmental Protection Act 1990.

Environmental risk can be defined as the combination of the consequence of a harmful effect and the probability of its occurrence. The existence of a contaminant linkage is primarily dependant on site usage and environmental conditions.

The environmental risk assessment has been carried out by identifying and evaluating the significance of the following:

- Potential Sources of Contamination: these include any actual or potentially contaminating materials and activities, located either on or in the vicinity of the site;
- Potential Pathways for Contamination Migration: these are the routes or mechanisms by which contaminants may migrate from the source to the receptor; and,
- Potential Receptors of contamination: these include future land users, activities or persons at the Site.

4.2 POTENTIAL CONTAMINATION SOURCES

Table 4 provides a summary of the potential sources of contamination and the likely nature of such sources both on-site and in the immediate surroundings based on the available information.

Table 4 - Plausible Sources of Contamination

POTENTIAL SOURCES	POTENTIAL CONTAMINANTS OF CONCERN	LIKELY / ANTICIPATED DISTRIBUTION
ON-SITE		
Made Ground	Full range of contaminants including metals, inorganics (e.g. cyanide), total petroleum hydrocarbons (TPHs), polyaromatic hydrocarbons (PAHs), ground gases (including methane and carbon dioxide) and asbestos containing materials. Asbestos & PAH were detected within the site boundary during	Site wide.

POTENTIAL SOURCES	POTENTIAL CONTAMINANTS OF CONCERN	LIKELY / ANTICIPATED DISTRIBUTION
	the 2016 site investigation (Ref. 2 & 3). Lead was detected in the wider development area.	
Historical activities including coal depot and railway sidings.	PAHs, Polychlorinated biphenyl (PCBs) and mineral oils.	Site wide.
Contaminated groundwater	Metals, inorganics (e.g. cyanide), TPH, PAH. Groundwater encountered but not analysed.	Site wide.
OFF-SITE		
Made Ground	Metals, inorganics (e.g. cyanide), TPH, PAH, ground gases (methane and carbon dioxide) and asbestos containing materials.	Surrounding the site in all directions.
Railway Sidings	Metals, TPH & PAH.	North, east and south
Workshops	PAH, TPH & chlorinated solvents.	South
Gasworks	Metals, inorganics (e.g. cyanide), TPH, PAH.	East of site

4.3 POTENTIAL PATHWAYS

Potential Pathways include:

- Direct/dermal contact, ingestion or inhalation of soil bound contaminants / dust;
- Inhalation of vapours associated with volatile organic compounds;
- Inhalation of respirable asbestos fibres;
- Leaching of contamination into groundwater from soil followed by lateral migration of groundwater to the wider groundwater environment or surface waters;
- Migration of gases / groundwater through preferential pathways such as utility service trenches / ducts; and,
- Direct/dermal contact with potentially impacted groundwater.

4.4 POTENTIAL RECEPTORS

Relevant Potential Receptors are considered to include the following in the context of the proposed development:

In the context of the future proposed development, the following potential receptors were identified:

Human Health

- Future site users (residents);
- Construction workers and future maintenance workers; and,
- Third party neighbours

Controlled Waters

The London Clay is an Unproductive Strata, with approximately 17 m of clay separating from the underlying Lambeth Group which is a Secondary A Aquifer.

The River Thames has been discounted as a controlled waters receptor due to distance (2.5 km) from the site. Additionally, the Grand Union Canal (>250 m north-east of the site) is likely to be isolated from the surrounding groundwater and the River Fleet (80 m west) is culverted, both therefore unlikely to be in continuity with any groundwater from the site.

Services and Building Fabric

It should also be noted that risks to portable water supply pipes and plant life have not been assessed in this report. Risks to portable water supplies should be considered prior to development in line with the UKWIR guidance.

Potential risks associated with concrete in aggressive ground are further assessed within the Ground Investigation Report for the Site.

4.5 PLAUSIBLE POLLUTANT LINKAGE ASSESSMENTS

Table 5 provides an evaluation of the potential contaminant linkages that were considered to be plausible on the basis of the information currently available for the site.

Table 5 - Plausible Contaminant Linkages

POTENTIAL CONTAMINANT SOURCES	RECEPTOR	PATHWAYS	COMMENTS
ON SITE · Made Ground · Historical activities including coal depot and railway sidings.	**Human Health** · Future site users · Construction workers and future maintenance workers · Third party neighbours	· Dermal contact · Ingestion of impacted soil particles on-site, and windblown to adjacent properties · Inhalation of dust and asbestos fibres, and windblown to adjacent properties · Migration of ground gas and volatile vapours into buildings	The proposed development includes a one storey basement. As such human exposure to potentially contaminated soils and groundwater may potentially occur future site users in unsealed areas of the redevelopment (i.e. soft landscaping). The risk to future site users is therefore considered to be **Low to Moderate**. Made Ground is likely present across the entire site and neighbouring areas. Organic material potentially present within this Made Ground has the potential to produce ground gas, which can migrate into buildings and pose an explosion and/or asphyxiation risk. Gas monitoring from the 2016 site investigation was insufficient to accurately determine the gas regime of site. Therefore, ground gas is considered to pose a **Moderate** risk to future site users. The risk to future ground / maintenance workers is considered to be **Moderate** due to the potential for direct contact (e.g. dermal exposure or inhalation) with asbestos and potentially contaminated groundwater and soils. There is also considered to be **Moderate** risk to third party neighbours due to the potential of inhalation.

POTENTIAL CONTAMINANT SOURCES	RECEPTOR	PATHWAYS	COMMENTS
ON SITE · Made Ground · Historical activities including coal depot and railway sidings.	**Controlled Waters** § London Clay (Unproductive Strata) § Lambeth Group (Secondary A Aquifer)	· Vertical and lateral leaching from impacted soil · Vertical and lateral migration via groundwater · Infiltration into potential future potable water pipework	Perched water has been encountered within the Made Ground and London Clay and groundwater has been encountered within the Lambeth Group. The London Clay is an Unproductive Strata, with approximately 17 m of clay separating from the underlying Lambeth Group which is a Secondary A Aquifer. Based on the above, the risks to groundwater from identified on-site potentially contaminative sources are considered to be **Low to Moderate**.
OFF SITE · Made Ground · Railway Sidings · Workshops · Gasworks	**Human Health** · Future site users · Construction workers and future maintenance workers **Controlled Waters** § London Clay (Unproductive Strata) · Lambeth Group (Secondary A Aquifer)	· Migration of ground gas · Lateral migration of contaminants via impacted groundwater	A number of potentially contaminative historical and current site uses have been identified within the surrounding area. Made Ground has been identified within the larger development area, though no substantial ground gas was recorded during the 2016 site investigation. The risk from off site ground gas is considered to be **Low**. Groundwater is anticipated to flow southwards towards the River Thames. It is therefore considered that potentially contaminated groundwater from sources north of the site is likely to flow onto the site. Therefore, the overall risk to human health, controlled waters and future structures from off-site sources is considered to be **Low to Moderate.**

5 SITE INVESTIGATION AND ASSESSMENT RATIONALE

5.1 SITE INVESTIGATION RATIONALE

The 2019 intrusive ground investigation works were completed by Ground Engineering Limited over a period including 08 April 2019 to the 11 April 2019.

The ground investigation was undertaken in general accordance with techniques outlined in BS5930: 2015 Code of Practice for Ground Investigations and BS10175:201+A1:2013 Investigation of Potentially Contaminated Sites.

A licence was obtained from the London Borough of Camden Parks Department by the client to undertake the works within the existing public park.

Services information was provided prior to the start of the investigation and was referenced in relation to the exploratory hole positions prior to boring and a scan was undertaken using a cable avoidance tool (CAT). This included details of the Thames Water Fleet Storm Relief Sewer (Main Line).

The risk of Unexploded Ordnance (UXO) was assessed prior to the ground investigation works and there was considered to be a risk present on the site during any excavation works. In order to mitigate the risk of encountering any UXO, a UXO Specialist was employed to attend site and scan and clear all of the exploratory hole locations prior to excavation.

Within proximity to proposed exploratory holes were trees with protection orders, hence live roots greater than 25 mm diameter were not to be severed. If such a root was encountered the pits were either to be extended to avoid the root, and the root protected whilst excavation continued, or the hole position was to be relocated.

A summary of the exploratory holes completed is presented in **Table 6** below. Exploratory hole logs are presented within the factual report included within **Appendix C.**

Table 6 - Summary of Fieldwork

METHOD	NUMBER	DEPTH (m bgl)	COMMENT
Window Sampling	WS101 to WS104, WS101A, WS102A, WS104A & WS104B	1.00 to 6.00	Only one location completed to 6.00 m bgl. Multiple positions were abandoned due to obstructions or dense ground.
Dynamic Probe Tests	DP101 to DP1027, DP107A, DP108A	0.40 to 5.00	13 No. positions completed to 5.00 m bgl. Each location was started with a hand dug pit which has been logged and included in Appendix C.

4 No. of the boreholes were installed with wells for monitoring and sampling of ground gas and groundwater within the Made Ground, Lynch Hill Gravel Member and London Clay Formation. A summary of the monitoring wells installed is presented in **Table 7** below.

Table 7 - Well Installation Summary

EXPLORATORY HOLE (M AOD)	DIAMETER OF INSTALLATION (MM)	TOP AND BASE OF RESPONSE ZONE (M BGL)	TOP AND BASE OF RESPONSE ZONE (M AOD)	STRATA
WS101	50 mm	0.40	1.40	Made Ground
WS102A	50 mm	0.50	1.00	Made Ground
WS103	50 mm	1.00	2.50	Made Ground
WS104B	50 mm	0.50	1.20	Made Ground

5.2 LABORATORY TESTING: SOIL SAMPLES AND LEACHATE

Selected soil samples were submitted for chemical analysis by Chemtest (a UKAS and MCERTS accredited laboratory) for the following contaminants:

- pH
- Sulphate
- Cyanide
- Metals – arsenic, boron, cadmium, chromium, chromium VI, copper, lead, mercury, nickel, selenium and zinc;
- Soil organic matter;
- Polycyclic aromatic hydrocarbons (PAHs) (speciated);
- Asbestos identification and quantification;
- Total petroleum hydrocarbons (TPH) (speciated)
- BTEX (benzene, toluene, ethylbenzene, xylenes and tert-amyl methyl ether);
- Phenols (speciated).

The laboratory certificates are presented within the factual report in **Appendix C**.

5.3 LABORATORY TESTING: GROUNDWATER SAMPLES

No groundwater was encountered within the completed boreholes.

5.4 GROUNDWATER AND GROUND GAS MONITORING

Groundwater level and ground gas monitoring was undertaken on six occasions:

- 18 April 2019;
- 23 April 2019;
- 26 April 2019;
- 29 April 2019;
- 04 May 2019; and
- 07 May 2019.

Monitoring records are presented within the factual report in **Appendix C.**

5.5 GEOTECHNICAL TESTING

Dynamic Probe Penetration Tests were undertaken as a part of the ground investigation works. The results and findings will be summarised and assessed within a separate Ground Investigation Report.

5.6 SAMPLE DEVIATIONS

A single sample (DP101) obtained during the works was recorded as deviated due to age of sample. This was due to long holding times or various delays associated with sending the samples to the laboratory. The deviation in this sample results is not considered to have a significant impact on robustness of data set or the assessment, based on the following:

(i) Number of samples tested across the Site; and

(ii) The absence of visual / olfactory contamination;

6 GROUND CONDITIONS

6.1 ENCOUNTERED GROUND CONDITIONS

Only two of the new exploratory hole locations encountered the London Clay. When compared to the data presented in **Table 2** based on published geology and the 2016 site investigation, the only change to ground conditions was the proving a shallower thickness of Made Ground of 1.60 m. **Table 8** below has been updated with this information.

Table 8 - Summary of Ground Conditions

GEOLOGICAL UNIT	PROVEN THICKNESS (m)	DEPTH TO TOP OF STRATUM (m bgl)	TYPICAL STRATA DESCRIPTION
Tarmac	0.06	0.08	NA
Made Ground	1.60 to 2.70	0.0	Varied; clayey gravel/ gravelly clay and sand with cobbles of brick and concrete.
London Clay Formation	16.90 to 17.55	1.60 to 2.70	Firm to stiff brown grey Clay.
Lambeth Group	Not proven	19.6 to 19.8	Very stiff brownish red/red mottled bluish grey clay. With sand and pebble beds**.
Thanet Sand Formation**	~8.5	~34	Fine grained sand.
White Chalk Subgroup**	>100	~43	Chalk.

**British Geological Survey (BGS) Geological Map Sheet No. 256, North London, 1:50,000, Bedrock and Superficial Edition (2006)

The following **Sections 6.1.1 to 6.1.3** summarise the geological strata encountered from the recent Ground Engineering Ltd investigation as well as ESG 2016 investigation.

6.1.1 TARMAC / ASPHALT

Tarmacadam / asphalt were encountered in 9 No. exploratory holes. The thickness of the tarmac / asphalt ranged between 0.06 to 0.08 m in thickness.

Tarmac / asphalt was encountered in areas of footpath and the surfaced play area.

6.1.2 MADE GROUND

Made Ground was encountered at all exploratory hole locations.

The thickness of the Made Ground was proven in BH9 and BH10 from the 2016 site investigation and in WS103 and WS104 from the Ground Engineering Ltd 2019 site investigation, shallowest in WS104 at 1.60 m and thickest in BH9 at 2.70 m.

The Made Ground is varied; both cohesive and granular though consistently containing gravel of concrete, brick, ash and flint.

Concrete or other obstruction were encountered within 13 No. of the exploratory holes. The thickness of the concrete obstructions was not proven.

6.1.3 LONDON CLAY FORMATION

The London Clay Formation was encountered within the four exploratory holes that penetrated the Made Ground (BH9, BH10, WS103 and WS104).

The London Clay appeared consistent in appearance, a stiff brown / grey clay with occasional selenite crystals and orange fine sand within pockets and fissures.

The 2016 boreholes fully penetrated the clay, proving a thickness ranging from 16.90 to 17.55 m.

6.2 OBSERVATIONS OF CONTAMINATION

Ash was noted throughout the Made Ground.

There are no other visual or olfactory observations within the 2016 or 2019 exploratory hole logs

6.3 GROUNDWATER STRIKES

Groundwater was noted at 3.80 m in WS103 on completion (installed within the Made Ground) though dry, along with the other new installations during monitoring.

The two boreholes from the 2016 site investigation were not monitored during the recent monitoring rounds.

7 CONTAMINANT RISK ASSESSMENT

7.1 INTRODUCTION

Following the tiered risk assessment approach provided in CLR11 (The Model Procedures for the Management of Land Contamination), this section of the report provides a Generic Quantitative Risk Assessment (GQRA) of those contaminant linkages that were determined to be plausible in the CSM in **Section 4**. Chemical results from ground investigations undertaken by Ground Engineering Ltd in 2019 and that obtained during ESG 2016 investigation have been included in this assessment.

It should also be noted that risks to portable water supply pipes and plant life have not been assessed in this report. Risks to portable water supplies should be considered prior to development in line with the UKWIR guidance.

It is understood that the proposed Brill Place Tower development comprises a 22 storey residential tower and single storey basement understood to be approximately 5.50 m bgl.

7.2 HUMAN HEALTH RISK ASSESSMENT

7.2.1 RATIONALE

In the United Kingdom, the presence of contamination on a site is generally only of concern if an actual or potentially unacceptable risk exists. Legislation and guidance on the assessment of contaminated sites, consistent with the European Union best practice, acknowledges the need for a tiered risk based approach. This report represents a Generic Quantitative Risk Assessment (GQRA) being a comparison of Site contaminant levels against highly conservative standards and compliance criteria including an assessment of risk using the source-pathway-receptor model.

WSP has derived a set of Generic Assessment Criteria (GAC) for the CLEA generic land use scenarios using the CLEA Workbook v1.071 Excel modelling tool. The CLEA workbook does not currently have the capacity to derive criteria to assess risks from the inhalation of vapours derived from contaminants dissolved in groundwater. Therefore, a set of groundwater GACs has also been derived using the Johnson & Ettinger (J&E) approach.

Further details on the assumptions and methodologies adopted by WSP are presented in **Appendix D**.

Due to significant earthworks activities with the excavation of the basement, a conservative approach has been adopted whereby soil from all depths has been assessed against ingestion, dermal contact and inhalation pathways. The proposed land use will be residential and therefore residential without plant update GACs were used to screen against the soil analytical results.

A soil organic matter (SOM) content of 1 % was implemented to generate conservative screening criteria.

Any changes to the development would require a re-assessment of the data and the risks associated with any updated development plan.

7.3 GENERIC QUANTITATIVE RISK ASSESSMENT OF SOIL

20 No. samples were collected and tested for a suite of contaminants during the 2019 site investigation. Only two relevant samples were analysed during the 2016 investigation, shallow soil samples from WS28 and WS29.

7.3.1 SOIL CONTAMINATION

Full laboratory analytical certificates for the 2019 Ground Engineering Ltd ground investigation are presented in **Appendix C**, along with a summary screening assessment included within **Appendix E**.

Table 9 provides a summary of human health exceedances with respect to the proposed residential flats.

Table 9 - Summary of Soil Contamination Exceedances for Public Open Space GAC (All Data)

Dataset	Exploratory Hole	Sample Depth	Contaminant	GAC (mg/kg)	C4SL	Concentration (mg/kg)	Strata
2019	WS101	1.30	Lead	188	310	**420**	Made Ground
2019	WS101A	0.10	Benzo(a)pyrene	1.7	5.3	**8.2**	Made Ground
		1.00	Lead	188	310	**900**	Made Ground
			Benzo(a)pyrene	1.7	5.3	**10**	
2019	WS102A	0.20	Lead	188	310	210	Made Ground
		1.00	Lead	188	310	290	Made Ground
			Benzo(a)pyrene	1.7	5.3	1.9	
2019	WS103	0.40	Lead	188	310	190	Made Ground
		3.00	Arsenic	35	40	**41**	London Clay
2019	WS104	1.20	Lead	188	310	**350**	Made Ground
			Benzo(a)pyrene	1.7	5.3	2.9	
			Naphthalene	2.3	NA	2.7	

Dataset	Exploratory Hole	Sample Depth	Contaminant	GAC (mg/kg)	C4SL	Concentration (mg/kg)	Strata
2019	WS104A	0.40	Lead	188	310	**400**	Made Ground
2019	DP101	0.70	Lead	188	310	300	Made Ground
2019	DP110	0.50	Lead	188	310	240	Made Ground
2019	DP115	0.30	Lead	188	310	290	Made Ground
2019	DP117	0.70	Lead	188	310	220	Made Ground
			Benzo(a)pyrene	1.7	5.3	2.3	Made Ground
2019	DP126	0.70	Benzo(a)pyrene	1.7	5.3	3.6	Made Ground
			Naphthalene	2.3	NA	4.6	Made Ground
2016	WS28	1.00	Benzo(a)pyrene	1.7	5.3	**8.31**	Made Ground

Red indicates exceedances of C4SL values.

The screening shows;

- A single marginally elevated concentration of arsenic in WS103 at 3.00 m within the natural strata;
- Widespread elevated concentrations of lead in the Made Ground (WS101, WS101A, WS102A, WS103, WS104, WS104A, DP101, DP110, DP115, DP117);
- A potential hotspot of elevated naphthalene in the Made Ground from adjacent positions WS104 at 1.20 m and DP126 at 0.70 m bgl; and,
- Elevated concentrations of benzo(a)pyrene in the Made Ground across the centre of the site (WS101A, WS102A, WS104, DP117 and DP126).

The exceedances are generally widespread across the site as shown on **Figure 3** (**Appendix A**). All exceedances are related to Made Ground, though it should be noted 17 out of the 20 soil samples came from Made Ground.

7.3.2 ASBESTOS

A combined total of 22 soil samples were tested for the presence of asbestos containing materials (Ground Engineering Limited 2019 – 20 samples, ESG 2016 – 2 samples). Two of the asbestos screens identified asbestos as being present.

Gravimetric quantification testing was undertaken on the samples where asbestos was identified. Asbestos was detected above the limit of detection (LOD) within only one of the samples tested for quantification. Laboratory analytical certificates are presented within the 2019 factual report in **Appendix C** and within the 2016 report (Ref. 2). The results are summarised within **Table 10** below.

Asbestos containing materials were identified in a single same; fibre clumps of amosite in WS104 at 1.20 m bgl within the Made Ground. Further analysis by gravimetry was below the laboratory limit of detection (<0.001%).

Table 10 - Summary of Positive Asbestos Identification and Quantification Results

LOCATION	SAMPLE DEPTH (M BGL)	PRESENCE	QUANTIFICATION (%)
WS29	0.30	Chrysotile	0.005
WS104	1.20	Amosite	<0.001

WS104 and WS29 are located within the vicinity of each other in the east of the site.

Further assessment of risks associated with the presence of asbestos containing materials within the Made Ground would need to be considered as a part of the proposed development.

7.3.3 SOIL CONTAMINATION RISK EVALUATION

Based on the findings of this assessment, there elevated concentrations of metals, PAHs and ACMs. Based on the proposed development comprising a basement excavation across most of the site, it is likely that the Made Ground across the footprint of the basement will be removed as part of the proposed development. Within areas of soft landscaping there is considered to be a **moderate** risk to human health. This should be mitigated by further assessment and potentially a clean cover layer to minimise exposure to future site users.

There is considered to be a **moderate** risk to groundworkers and adjacent site users during construction. These risks should be managed and mitigated in line with Construction Design Management (CDM) Regulations and Asbestos Management Plan should be implemented during construction works.

7.4 GENERIC QUANTITATIVE RISK ASSESSMENT OF CONTROLLED WATERS

Groundwater was not analysed during the 2016 site investigation and the new groundwater monitoring boreholes from the 2019 investigation were dry.

It is understood that the deeper 2016 wells were not accessible during the 2019 ground investigation works. It is considered that the London Clay will act as an aquitard to the underlying Secondary A Aquifer (Lambeth Group). Based on the nature of the proposed

development it is considered likely that the proposed pile foundations will extend to the underlying Lambeth Group. A Piling Risk Assessment should be undertaken prior to the formation of the foundations.

It is recommended that further groundwater monitoring and sampling is undertaken prior to development in order to suitably assess the potential impact to the underlying Secondary A Aquifer.

7.5 GROUND GAS RISK ASSESSMENT

Ground gas monitoring was conducted by Ground Engineering Ltd on six occasions between 18 April and 7th May 2019. The atmospheric pressure during the monitoring ranged from 997 mb to 1026 mb. All wells were dry.

The pre-existing wells were not included during the monitoring regime. It should be noted that during the monitoring in 2016, the slotted sections of the installations in BH9 and BH10 were flooded during the monitoring rounds and the data therefore is insufficient for calculating the gas regime for the site and has not been included in the following assessment.

A summary of the ground gas conditions is presented in **Table 11**, and the full details of the ground gas monitoring are presented in the factual reports (Ref. 4)**.**

Table 11 – 2019 Ground Gas Summary

MONITORING POINT	RESPONSE ZONE STRATA	CH_4 RANGE (% V/V)		CO_2 RANGE (% V/V)		Steady Flow (l/hr)	GSV CH_4 (l/hr)*	GSV CO_2 (l/hr)*
		MIN	MAX	MIN	MAX			
WS101	Made Ground	<0.1	<0.1	0.5	1.1	<0.1	0.0001	0.0011
WS102A	Made Ground	<0.1	<0.1	0.3	1.5	<0.1	0.0001	0.0015
WS103	Made Ground	<0.1	<0.1	0.8	1.2	<0.1	0.0001	0.0012
WS104B	Made Ground	<0.1	<0.1	<0.1	1.6	<0.1	0.0001	0.0016

*Gas screening value (GSV) calculated by multiplying the maximum gas concentration (%) by the steady measured borehole flow rate (l/hr) as per CIRIA C665 Assessing risks posed by hazardous ground gases to buildings

With respect to the data suitability, CIRIA C665 recommends a minimum of six gas monitoring visits over a period of three months for sites with moderate sensitivity (flats) end use and low source generation. CIRIA C665 also recommends that ground gas monitoring is undertaken during low (<1000 mb) and falling pressure conditions since this is considered to represent a worst case scenario. Though six rounds of monitoring were undertaken in 2019, they were completed within 3 weeks and only a single round of monitoring was undertaken during low pressure conditions.

Methane concentrations were found to be below the detection limit (0.1% v/v) at all monitoring locations during all six monitoring visits. Carbon dioxide was encountered at a maximum of 1.6% v/v in WS104B on 23 April 2019 during the lowest atmospheric pressure visit.

Oxygen concentrations ranged from 18.6 (v/v) to 20.6% (v/v) not representing oxygen depleted soil conditions.

There were no carbon monoxide or hydrogen sulphide measurements.

7.5.1 CIRIA C665 CLASSIFICATION

Gas Screening Values (calculated as the maximum gas concentration (% v/v) by the steady borehole flow rate (l/h)) were calculated in line with CIRIA C665 guidance. A maximum GSV of 0.0016 l/hr was calculated for carbon dioxide and 0.0001 l/hr for methane, both below the 0.07 l/hr limit for Characteristic Situation 1.

As the recommended three-month monitoring period has not been undertaken, further monitoring may be required and should be agreed with the regulators prior to construction.

8 REFINED CONCEPTUAL SITE MODEL

8.1 ON-SITE

Following the findings of the GQRA, the preliminary conceptual site model (Section 4) was revised for Human Health in the context of the proposed development. A revised list of relevant pollutant linkages is presented in **Table 12** below based on an evaluation of the potential sources and future receptors. Those linkages which were not considered plausible (following the ground investigation and risk assessment) are omitted from this table.

Table 12 - Revised Relevant Contaminant Linkages – On-Site

PLAUSIBLE POLLUTANT LINKAGE (RPL)	SOURCE	PATHWAY	RECEPTOR	COMMENTS
RPL1	Asbestos fibres	Inhalation of fibres on-site in unsealed areas.	Future site users Construction /maintenance workers Adjacent site users / residents	Asbestos fibres and Asbestos Containing Materials were noted at two locations across the site. Consideration of further risk assessment and appropriate control measures must be undertaken if this material is to be re-used on site or disposed of off-site to a suitably licenced facility. The risk to construction/maintenance workers and adjacent residents during construction/maintenance work is considered to be **Moderate** and would need to be addressed through appropriate risk assessments and control measures. The risk from asbestos fibres to future site users and adjacent residents, once the site is developed, is considered to be **Low** based on the proposed development, provided the soils are capped or removed.
RPL2	Metals and hydrocarbons in the Made Ground soils	Direct contact / soil ingestion in unsealed areas Inhalation of dust	Future site users Construction /maintenance workers Adjacent site users / residents	Made Ground soil was found to pose a potential **Low to Moderate** risk of potential harm to human health in unsealed areas. The risk to construction/maintenance workers and to adjacent residents during construction/maintenance would need to be addressed through appropriate control measures.
RPL3	Metals and hydrocarbons in the Made Ground soils	Vertical and lateral leaching from impacted soil Vertical and lateral migration via groundwater	Controlled Waters London Clay (Unproductive Strata) Lambeth Group	Based on the nature of the proposed development it is considered likely that the proposed pile foundations will extend to the underlying Lambeth Group. A Piling Risk Assessment should be undertaken prior to the formation of the foundations.

PLAUSIBLE POLLUTANT LINKAGE (RPL)	SOURCE	PATHWAY	RECEPTOR	COMMENTS
		Infiltration into potential future potable water pipework	(Secondary A Aquifer)	Based on the above, the risks to groundwater from identified on-site potentially contaminative sources are considered to be **Low to Moderate**.
RPL4	Ground Gas	Migration of ground gas and volatile vapours into buildings	Future site users Construction workers and future maintenance workers Third party neighbours	The current monitoring has indicated a Characteristic Situation 1, however as the recommended three-month monitoring period has not been undertaken, further monitoring may be required The current risk to human health is considered **Low to Moderate**.

A summary of the pollutant linkages identified are shown within **Plate 1**.

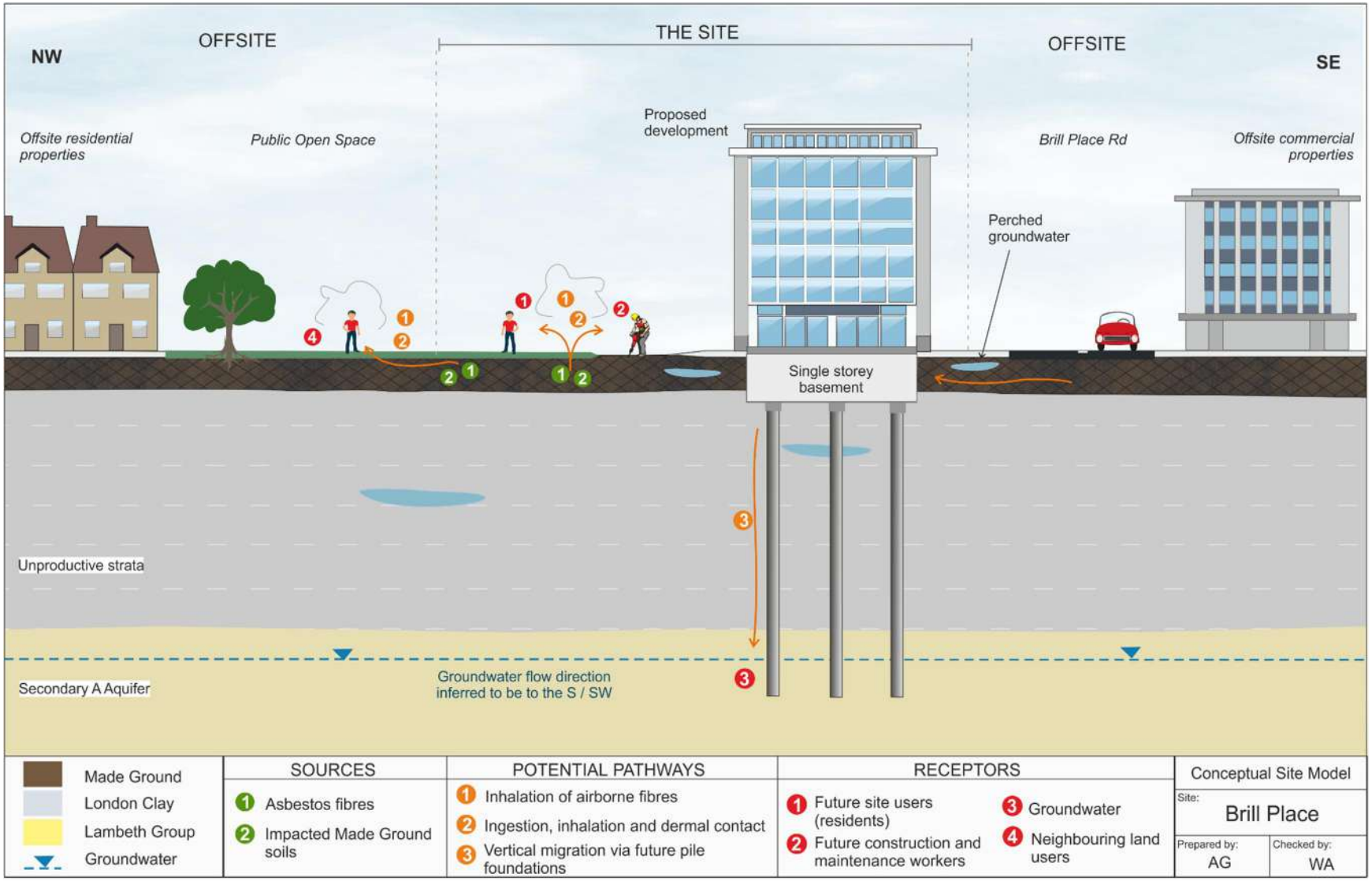
8.2 OFF-SITE

Based on the findings of the ground investigation works, the potential risk from off-site sources have been assessed within **Table 13** below:

Table 13 - Revised Relevant Contaminant Linkages

SOURCE	POTENTIAL CONTAMINANTS OF CONCERN	LOCATION	COMMENTS
Made Ground	Metals, inorganics (e.g. cyanide), TPH, PAH and asbestos containing materials.	Surrounding the site in all directions.	Consistent with the urban setting of the Site therefore considered to be a low to moderate risk.
Railway Sidings & other historical / industrial activities	Metals, sulphates, asbestos containing materials, herbicides, and TPH.	All directions	Consistent with the urban setting of the Site therefore considered to be a low to moderate risk.

Plate 1 – Conceptual Site Model



9 CONCLUSIONS

9.1 SITE SETTING

The Site was formerly part of a larger railway sidings/coal depot surrounded by railway associated infrastructure and currently the southern edge of a larger park with trees, footpaths and play area.

The encountered geology underlying the Site comprises Made Ground, London Clay Formation and Lambeth Group with published geology indicating Thanet Sand Formation and White Chalk Subgroup at depth.

The Made Ground is not designated with an aquifer Classification and the London Clay Formation is designated as Unproductive Strata. The deeper bedrock aquifers of the Lambeth Group and Thanet sands are classified as Secondary A Aquifers. The chalk underlying the site at depth is classified as a Principal Aquifer.

The Site does not lie within a Source Protection Zone and there are no known groundwater abstractions within 250 m of the site (in 2016).

The Grand Union Canal is located >250 m north-east of the site. The River Fleet is culverted and located 80 m west but was once located adjacent to St Pancras Road, 80 m north-east of the site.

The 2016 ESG site investigation report (Ref. 3) encountered perched groundwater within the Made Ground during excavation and probable perched water within the London Clay Formation (monitored within BH09) associated with sandy lenses. Groundwater was also recorded within the Lambeth Group (monitored within BH10). No conclusion was made with regards to the groundwater flow direction based on the wider site investigation boreholes.

Based on the position of the site, any groundwater flow is likely to be south to south-west towards the River Thames.

9.2 SITE INVESTIGATION

ESG undertook a site investigation of the wider area in 2016 with five exploratory locations falling within the current Site area. A further ground investigation was undertaken in April 2019 by Ground Engineering Limited.

Data from both investigations has been used within this assessment, where appropriate.

Visual and olfactory signs of contamination is limited to widespread ash within the Made Ground and a slight hydrocarbon odour in BH10.

No groundwater has been sampled or analysed.

9.3 RISK ASSESSMENT

When undertaking Human Health risk assessment, the proposed development plan and future site uses were taken into consideration to evaluate risks post development.

Based on the findings of the assessment the following conclusions are made:

9.3.1 HUMAN HEALTH

There were elevated concentrations of metals, PAHs and ACMs across site. Based on the proposed development comprising a basement excavation across most of the site, it is likely that the Made Ground across the footprint of the basement will be removed as part of the proposed development. Within areas of soft landscaping there is considered to be a **moderate** risk to human health. This should be mitigated by further assessment and potentially a clean cover layer to minimise exposure to future site users.

There is considered to be a **moderate** risk to groundworkers and adjacent site users during construction. These risks should be managed and mitigated in line with Construction Design Management (CDM) Regulations and Asbestos Management Plan should be implemented during construction works.

9.3.2 CONTROLLED WATERS

Groundwater was not analysed during the 2016 site investigation and the new groundwater monitoring boreholes from the 2019 investigation were dry.

It is understood that the deeper 2016 wells were not accessible during the 2019 ground investigation works. It is considered that the London Clay will act as an aquitard to the underlying Secondary A Aquifer (Lambeth Group). Based on the nature of the proposed development it is considered likely that the proposed pile foundations will extend to the underlying Lambeth Group.

9.3.3 GROUND GAS

Gas Screening Values (calculated as the maximum gas concentration (% v/v) by the steady borehole flow rate (l/h)) were calculated in line with CIRIA C665 guidance. Given the maximum steady flow rate and concentrations noted, a maximum GSV of 0.0016 l/hr was calculated for carbon dioxide and 0.0001 l/hr for methane. This maximum value does not exceed the 0.07 l/hr limit for Characteristic Situation 1 for either gas.

10 RECOMMENDATIONS

Based on the findings of this GQRA, the following recommendations are made in order to mitigate the potential risks associated with the potential contaminants of concern identified.

10.1 HUMAN HEALTH

Based on the risks identified on the site, the following recommendations are made in order to mitigate the risks associated with the proposed development of the site:

- Further assessment of risks associated with the presence of ACMs within the Made Ground may need to be considered as a part of the proposed development when assessing risks to construction workers and future site users. Asbestos management should be undertaken in accordance with the Control of Asbestos Regulations 2012; and,
- An assessment of risk to potable water pipes and plants was not undertaken as part of this report and should be considered as a part of the proposed development.

A Remediation Strategy incorporating an options appraisal of the risks identified may be required.

10.2 CONTROLLED WATERS

A Piling Risk Assessment should be undertaken prior to the formation of the foundations.

It is recommended that further groundwater monitoring and sampling is undertaken prior to development in order to suitably assess the potential impact to the underlying Secondary A Aquifer.

10.3 GROUND GAS / VAPOUR

Based on the findings of the historical and current ground gas monitoring, it is recommended that gas protection measures suitable for Characteristic Situation 1, following CIRIA C665 guidance are installed within all areas of building footprint as agreed with building control.

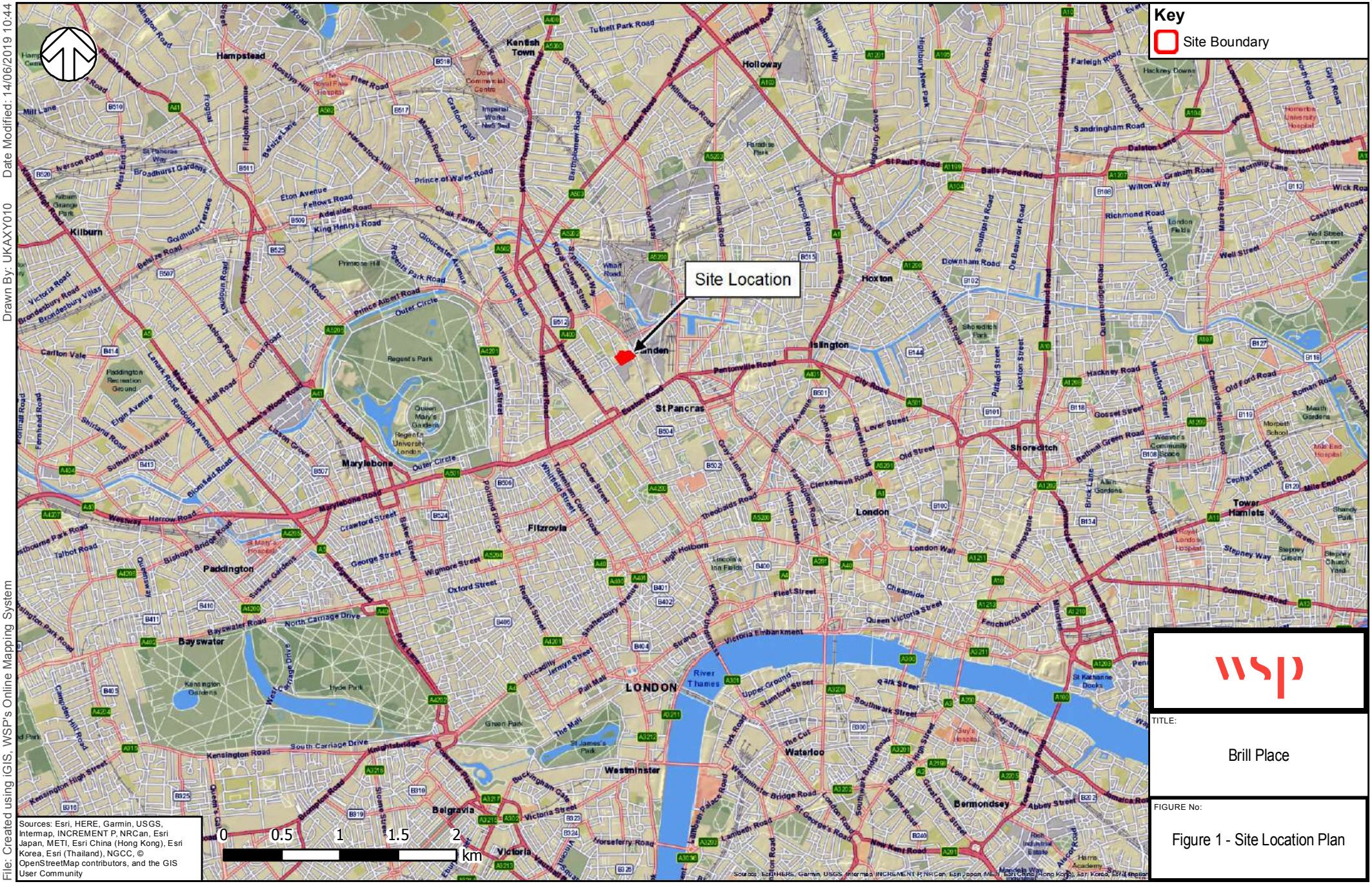
As the recommended three-month monitoring period has not been undertaken, further monitoring may be required and should be agreed with the regulators prior to construction.

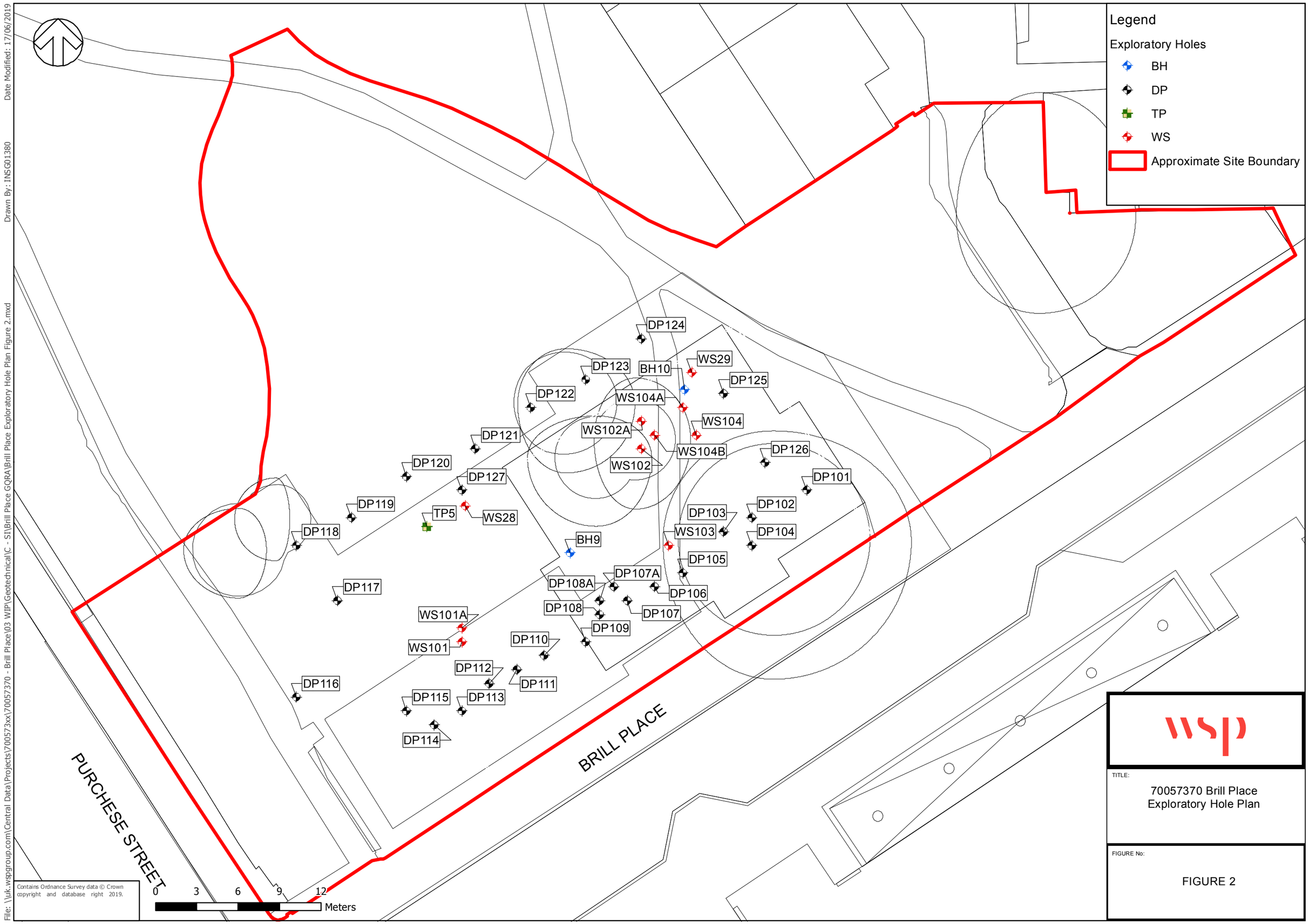
10.4 UNCERTAINTIES

- Should development plans change or be altered an update of the assessments are likely to be necessary.

Appendix A

DRAWINGS


Site Location
Key
Site Boundary
Hampstead
Kentish Town
Holloway
Kilburn
Primrose Hill
Regent's Park
Hoxton
Islington
St Pancras
Marylebone
Fitzrovia
Shoreditch
London
Paddington
Bayswater
LONDON
River Thames
Waterloo
Westminster
Belgravia
Victoria
Bermondsey
Tower Hamlets
Hyde Park
Green Park
Kensington Gardens
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community
0 0.5 1 1.5 2 km
wsp
TITLE:
Brill Place
FIGURE No:
Figure 1 - Site Location Plan
Date Modified: 14/06/2019 10:44
Drawn By: UKAXY010
File: Created using iGIS, WSP's Online Mapping System


Legend
Exploratory Holes
BH
DP
TP
WS
Approximate Site Boundary
DP124
DP123
BH10
WS29
DP125
DP122
WS104A
WS104
DP121
WS102A
WS104B
DP126
DP120
WS102
DP101
DP127
DP119
TP5
WS28
DP103
DP102
DP118
WS103
DP104
BH9
DP105
DP107A
DP108A
DP106
DP117
DP108
DP107
WS101A
DP109
DP110
WS101
DP112
DP111
DP116
DP115
DP113
DP114
BRILL PLACE
PURCHESE STREET
0
3
6
9
12
Meters
Contains Ordnance Survey data © Crown copyright and database right 2019.
wsp
TITLE:
70057370 Brill Place
Exploratory Hole Plan
FIGURE No:
FIGURE 2
Date Modified: 17/06/2019
Drawn By: INSG01380
File: \\uk.wspgroup.com\Central Data\Projects\700573xx\70057370 - Brill Place\03 WIP\Geotechnical\C - S1\Brill Place GQRA\Brill Place Exploratory Hole Plan Figure 2.mxd

WS104A	Depth (m)	C4SL (mg/kg)	Value (mg/kg)
Lead	0.4	310	400

WS104	Depth (m)	C4SL (mg/kg)	Value (mg/kg)
Lead	1.2	310	350

WS28	Depth (m)	C4SL (mg/kg)	Value (mg/kg)
Benzo(a)pyrene	1	5.3	8.31

WS101A	Depth (m)	C4SL (mg/kg)	Value (mg/kg)
Benzo(a)pyrene	0.1	5.3	8.2
Lead	1	310	900
Benzo(a)pyrene		5.3	10

WS101	Depth (m)	C4SL (mg/kg)	Value (mg/kg)
Lead	1.3	310	420

WS103	Depth (m)	C4SL (mg/kg)	Value (mg/kg)
Arsenic	3	40	41

Legend

Exploratory Holes

- BH
- DP
- TP
- WS

Approximate Site Boundary

DP124, WS29, DP125, DP123, DP122, BH10, DP121, WS102A, WS104B, DP126, DP120, WS102, DP127, DP101, DP119, TP5, DP103, DP102, DP104, BH9, DP105, DP107A, DP108A, DP106, DP108, DP107, DP109, DP110, DP112, DP111, DP115, DP113, DP114, DP117

BRILL PLACE

PURCHESE STREET

Contains Ordnance Survey data © Crown copyright and database right 2019.

0 3.5 7 10.5 14 Meters

wsp

TITLE:

70057370 Brill Place
Soil Exceedance

FIGURE No:

FIGURE 3

Camden

- LANDSCAPE DESIGN SHOWN INDICATIVELY - REFER TO LANDSCAPE ARCHITECT DRAWINGS
- THE BACKGROUND AND CONTEXT, INCLUDING THE FRANCIS CRICK INSTITUTE IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. THE 4DDTS ARE CORRECT BUT THE DRAWN FORM IS NOT BASED UPON SURVEY INFORMATION.
- TREES SHOWN INDICATIVELY AND NOT SHOWN IN FRONT OF BUILDING FOR CLARITY

NOTES

- SOURROUNDINGS BASED ON ORDNANCE SURVEY MAP
- FOR BRILL PLACE - PLOT 7 ONLY. FOR INFORMATION OUTSIDE PLOT 7 REFER TO OTHER LOT ARCHITECT'S INFORMATION.

APPLICATION BOUNDARY

EXISTING TREES

PROPOSED TREES

P03. PLANNING ISSUE

REVISION NOTES

REV	DESCRIPTION	BY	CHK	QA	DATE
P03	PLANNING ISSUE	VG	JST		30.11.15
P02	FINAL DRAFT PLANNING ISSUE	VG	JST		03.11.15
P01	DRAFT PLANNING ISSUE	VG	JST	JL	23.10.15
P00	DRAFT PLANNING ISSUE	VG	JST		12.10.15

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London SE1 2TU UK
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E mail@drmm.co.uk

SITE PLAN - KEY

AUTHOR

dRMM ARCHITECTS

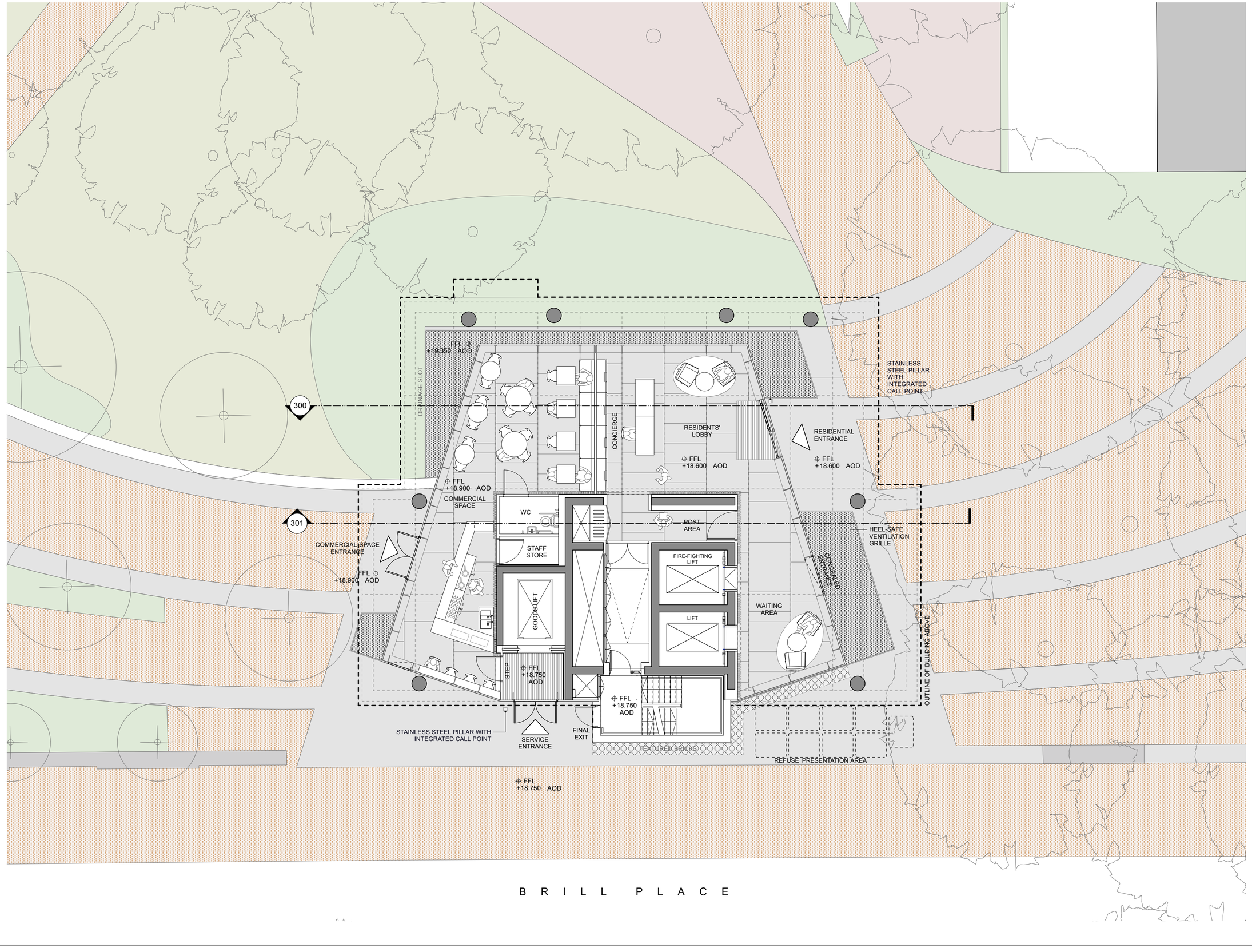
TITLE

SITE LOCATION PLAN - PROPOSED

PROJECT	SCALE	SIZE
BRILL PLACE	1:500 1:1000	A1 A3

DRAWING NO	REVISION
372-SITE-101	P03

0 3 5 M



Camden

- LANDSCAPE DESIGN SHOWN INDICATIVELY - REFER TO LANDSCAPE DRAWINGS
- THE BACKGROUND AND CONTEXT, INCLUDING THE FRANCIS CRICK INSTITUTE IS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. THE AOD'S ARE CORRECT BUT THE DRAWN FORM IS NOT BASED UPON SURVEY INFORMATION.
- TREES SHOWN INDICATIVELY WITH REGARD TO EXACT SIZE AND POSITION

NOTES

- ALL PLANS ARE CUT AT 1500 AFFL

EXISTING TREES

PROPOSED TREES

P03 PLANNING ISSUE

REVISION NOTES

REV	DESCRIPTION	BY	CHK	QA	DATE
P03	PLANNING ISSUE	VG	JST		30.11.15
P02	FINAL DRAFT PLANNING ISSUE	VG	JST		03.11.15
P01	DRAFT PLANNING	VG	JST	JL	23.10.15
00	DRAFT PLANNING	VG	JST		12.10.15

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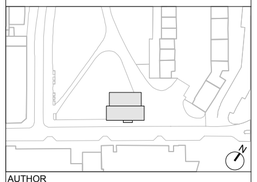
E mail@drmm.co.uk

SITE PLAN - KEY



AUTHOR
dRMM ARCHITECTS

TITLE
GROUND FLOOR PLAN

PROJECT	SCALE	SIZE
BRILL PLACE	1:100 1:200	A2 A4

DRAWING NO
372-L00-201

REVISION
P03