CONTAMINATED LAND RISK ASSESSMENT

Phase 1 Desk Study Report

Site Address
5 Brecknock Road
London
N7 0BL

Client
Dinesh Bakhda

Report Reference
PH1-2021-000079

Prepared by
STM Environmental Consultants Ltd

Date
02/08/2021

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Site Coordinates:	529769, 185008
Prepared for:	Dinesh Bakhda
Report Reference:	PH1-2021-000079
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3 DISCLAIMER

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It is noted that some of the findings presented in this report are based on information obtained from third parties (i.e. Environmental Search Report). Whilst we assume that all information is representative of the site and of present conditions, we can offer no guarantee as to its validity regarding the short term or long-term history of the Site.

This report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

It should be noted that this report has been produced for environmental purposes only. It should not in any way be construed to be or used to replace a geotechnical survey, structural survey, asbestos survey, buried services survey, unexploded ordnance survey or Invasive Plant Survey.

4 EXECUTIVE SUMMARY

SECTION	SUMMARY
Site Location And Size	The site is located at 5 Brecknock Road, London, N7 0BL and is centred at national grid reference 529769, 185008. The site has an area of approximately 0.01 ha.
Current Use	The site is currently T.R. Hardware (DIY Store) on the ground floor with 2no. residential flats on the upper floors.
Proposed Development	The development proposal is a conversion and change of use of the rear of the ground floor shop into a self-contained residential accommodation.
Site History	Examination of Ordnance Survey historic maps revealed that the site was an unspecified building until c.1948-52 when it became a post office until it was no longer labelled as such c.2001. The surrounding area has been largely residential until c.1948-52 when industrial developments occurred.
Geology	According to BGS, the bedrock geology beneath the site consists of London Clay Formation comprising Clay, Silt, and Sand. No superficial deposits were identified during this search.
Topography	The site is at an elevation of approximately 53.0mAOD (above Ordnance Datum).
Hydrogeology	The site is underlain by an Unproductive Bedrock Aquifer.
Hydrology	There are no surface water bodies located onsite or within 250m of the site.
Ecology	There are no ecological receptors located onsite or within 250m of the site.
Contamination Assessment	No on site potentially contaminative land uses (PCLUs) were identified, while off site PCLUs include a former Printing/Engineering/Unspecified Works (Adjacent SW), Dry Cleaners (15m NE), Depot (50m W), Tramway (60m E) and a Reservoir/Worked Ground (208m SE). A conceptual site risk model was developed and a qualitative risk assessment carried out. No potentially significant potential pollutant linkages were identified based on the understanding that the development works will consist of the internal conversion of the building only and that no soft landscaped amenity areas will be available.
Recommendations	Given that no potentially significant potential pollutant linkages were identified, no specific remedial action is considered necessary in respect of potential soil contamination at the proposed development. Nonetheless it is recommended that a “watching brief” is kept during the development. Any unexpected contamination encountered should be reported immediately to the Local Planning Authority.
This table is intended as a summary of the desk study findings and should be read in conjunction with the main report.	

5 INTRODUCTION

STM Environmental Consultants Ltd (STM) were commissioned by Dinesh Bakhda (Client) to undertake a Phase 1 Contaminated Land Risk Assessment (CLRA) at a site located at 5 Brecknock Road, London, N7 0BL.

The study is required to support the planning application 2021/2730/NEW.

6 CONTEXT AND OBJECTIVES FOR THE RISK ASSESSMENT

6.1 Legislative Context

6.1.1 Part IIA

Part IIA of the Environmental Protection Act 1990, which came into force in England in April 2000 and in Wales in July 2001, introduced a new statutory regime for the identification and remediation of contaminated land in the United Kingdom.

The legislation considers risks from contaminated land to human beings, controlled waters (surface and ground water), protected ecological systems and property. Under the legislation “contaminated land” is defined as:

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

(a) Significant harm is being caused or there is significant possibility of such harm being caused: or

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

In order for land to be considered contaminated, there must be a contaminant, a receptor and a pathway (via which the contaminant can reach the receptor) present at the site. When these three components are identified at a site, a *pollutant linkage* is said to exist.

Pollutant Linkage = Contaminant –> Pathway –> Receptor

In order for a local authority to determine that a site is contaminated land, it must be satisfied that the pollutant linkage is a *significant pollutant linkage* and that the land in question is causing, or that there is a significant possibility that it will cause significant harm (SPOSH) to humans, habitats, buildings or livestock and crops if remedial work is not carried out.

6.1.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the government's policy on dealing with land contamination through the planning process. It states that planning policies and decisions should ensure that:

- a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);
- after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and

- adequate site investigation information, prepared by a competent person, is presented.

6.1.3 Environmental Damage Regulations

The Environmental Damage (Protections and Remediation) Regulations 2015 transpose the provisions of the EU Environmental Liability Directive into law in England and Wales.

The Regulations require action in response to the most significant cases of environmental damage. They cover specific types of:

- damage to species and habitats;
- damage to water; or
- risks to human health from contamination of land.

The Regulations apply to both imminent threats and actual cases of damage. Where these arise, those responsible must take immediate action to prevent damage occurring or remediate damage where it does occur.

The Regulations are based on the polluter pays principle 'requiring those responsible to meet the cost of preventive and remedial measures.

6.2 Objectives

This Desk Study has been written so as to provide an initial overview of the nature and extent of contamination hazards that may exist at the site. It has been undertaken in accordance with the specifications outlined in the British Standard BS 10175:2011+A2:2017 Code of Practice for the Investigation of potentially contaminated sites and the Environment Agency Document, LCRM: Stage 1 Risk Assessment.

The main objectives of the study were to:

- Enable a conceptual site risk model to be constructed;
- Provide sufficient information for a preliminary qualitative risk assessment to be undertaken;
- Inform the need for and scope of any intrusive investigations that may be required.

6.3 Summary of Research Undertaken

Details of information sources researched in order to compile this desk study are given below.

- Environment Agency Open Data (GIS)
- English Nature Open Data (GIS)
- English Heritage Open Data (GIS)
- British Geological Survey GeoIndex Web Map Service
- Coal Authority Open Data and Web Map Service.
- Historical Ordnance Survey Maps
- Local Authority Planning Application Portal
- Groundsure Enviro Insight Report & Historical Maps
- Bomb Sight Web Map Service for UXO

7 SITE DESCRIPTION

7.1 Site Location and Size

The site is located at 5 Brecknock Road, London, N7 0BL at grid reference is 529769, 185008. The site has an area of approximately 0.01 ha. See Figure 1 below for the Site Location and Aerial Maps.

The site lies within the jurisdiction of Camden London Borough Council in terms of the planning process.

7.2 Site Current Use

The site is currently used as T.R. Hardware (DIY Store) on the ground floor with 2no. residential flats on the upper floors.

7.3 Surrounding Land Uses

A description of current land uses surrounding the boundaries of the site is given below in Table 1.

Table 1: Summary of surrounding land uses

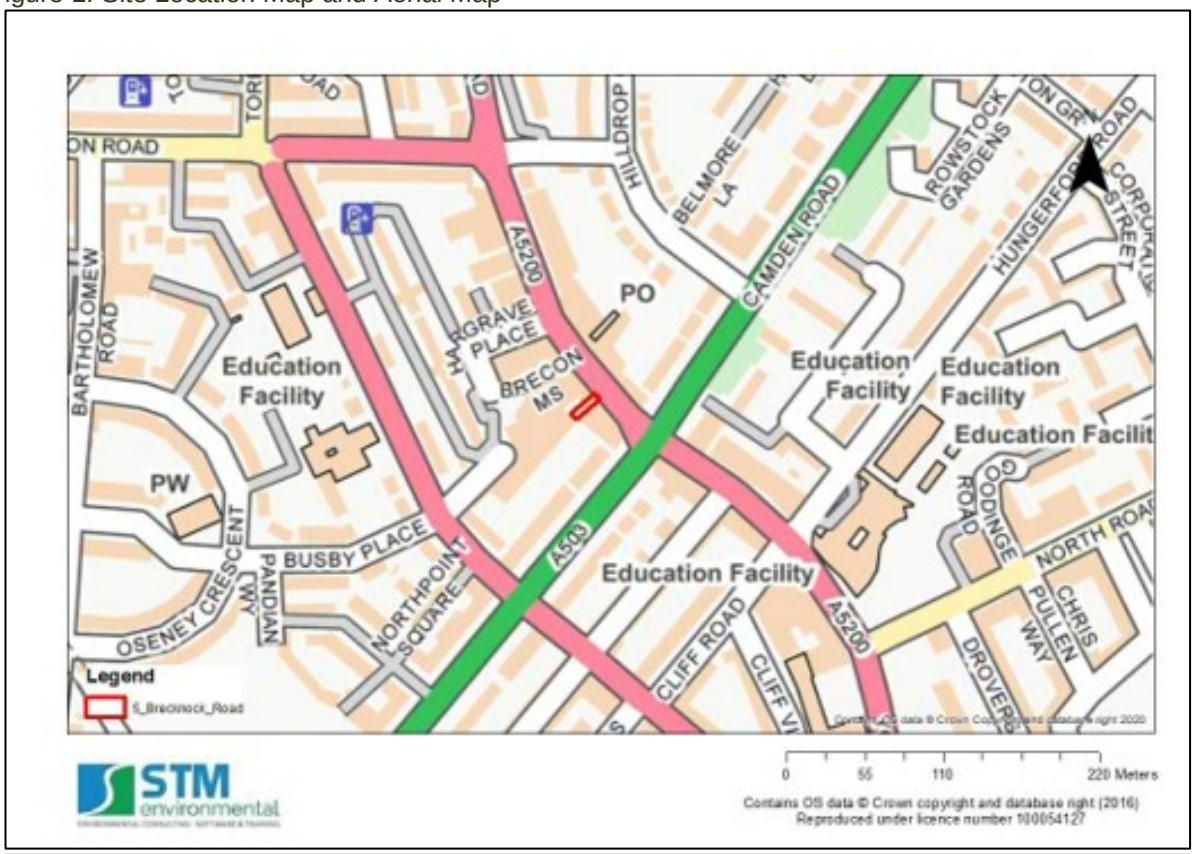
Boundary	Land Use Description
Northern	Adjacent road/Commercial/Residential properties/ Universal Dry Cleaners & Laundry (Dry Cleaners)
Eastern	Adjacent road/Commercial/Residential properties
Southern	Commercial/Residential properties
Western	Studios/Residential properties

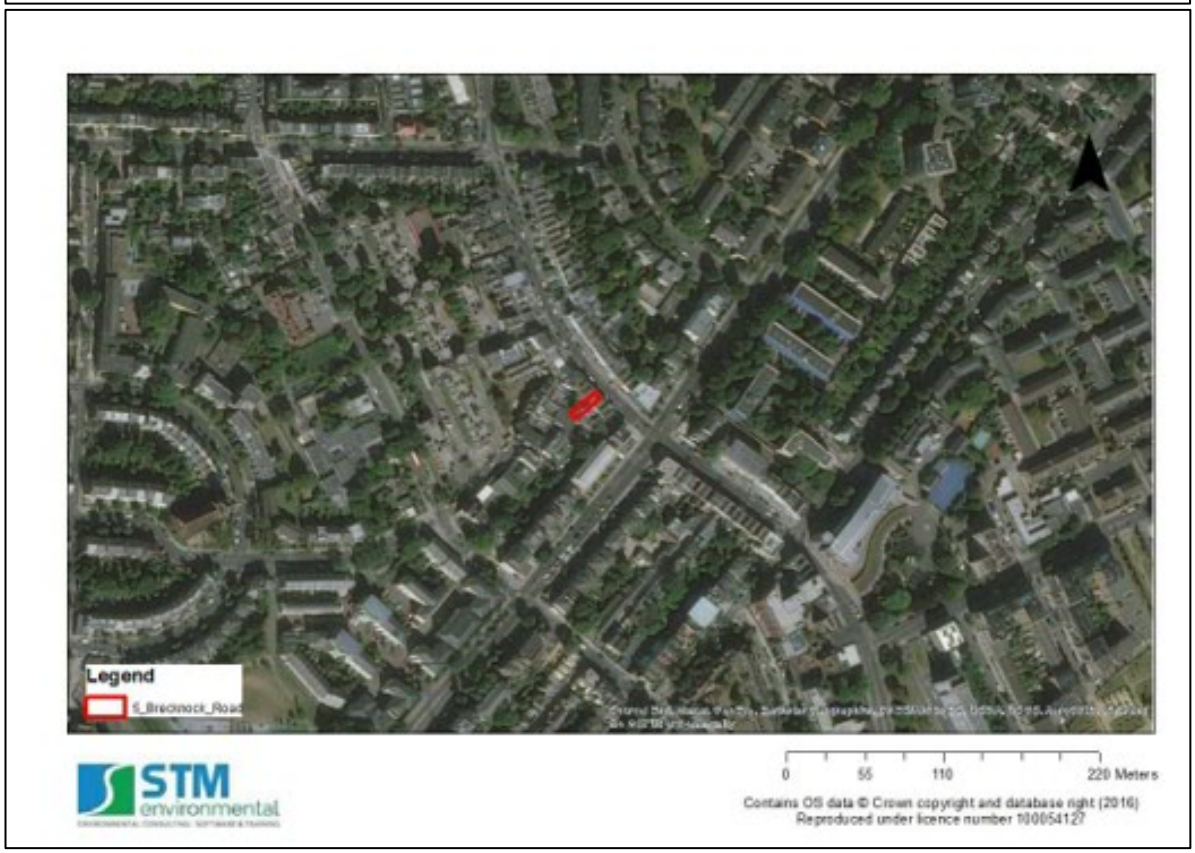
7.4 Proposed Development

The development proposal is a conversion and change of use of the rear of the ground floor shop into a self-contained residential accommodation. It is understood that there are no proposals to include soft landscaping in the development.

The proposed development plans are contained in Appendix 1.

Figure 1: Site Location Map and Aerial Map





8 SITE HISTORY

8.1 Analysis of Historical Ordnance Survey Mapping

Historical maps published by the Ordnance Survey dating back to the late 1800's were reviewed in order to ascertain any previous industrial use at the site. The Groundsure Historical Maps are presented in Appendix 2. A summary of the historic map analysis is provided in Table 2.

Table 2: Summary of historical land use identified from historical maps

Map Year & Scale	POTENTIALLY CONTAMINATIVE LAND USES	
	On Site	Off Site
1873 1:1,056 1:10,560	The site comprises of 1no. unspecified building, similar layout to the present day.	The surrounding area is predominantly residential.
1877-82 1:2,500 1:10,560	No significant changes.	Nursery 200m NE, Reservoir 208m SE, Tank 225m NE.
1894 1:10,560	No significant changes.	No significant changes.
1896 1:1,056 1:2,500 1:10,560	No significant changes.	Tramway 60m E, Nursery 200m NE no longer labelled, Organ Works 225m SE.
1915-16 1:2,500	No significant changes.	Organ Works 225m SE no longer labelled.
1920 1:10,560	No significant changes.	No significant changes.
1938 1:10,560	No significant changes.	Reservoir 208m SE infilled.
1948-52 1:1,250 1:2,500 1:10,560	Building onsite labelled as a Post Office.	Printing Works adjacent SW, Ruins 60m NW, Tramway 60m E no longer labelled, Electricity Substation 85m SW, Engine Works 125m SE, Garages 175m,190m & 245m E, Builders Yards 175m W, Electricity Substation 200m SE, Depository 200m SE, Warehouse 225m SE, Warehouse 230m S, Garage 240m NE.

Table 2: Summary of historical land use identified from historical maps

Map Year & Scale	POTENTIALLY CONTAMINATIVE LAND USES	
	On Site	Off Site
1953-54 1:1,250	No significant changes.	No significant changes.
1955-68 1:1,250 1:2,500 1:10,560	No significant changes.	Depot 50m W, Ruins 60m NW have been redeveloped, Electricity Substation 85m SW no longer labelled, Engine Works 125m SE no longer labelled, Garages 175m NE no longer labelled, Builders Yards 175m W no longer labelled. Electricity Substation 175m SE, Warehouse 250m SE.
1969-79 1:1,250 1:2,500 1:10,000	No significant changes.	Printing Works adjacent SW relabelled as Engineering Works, Builders Yard 100m S, Electricity Substation 200m NE
1980-82 1:1,250 1:10,000	No significant changes.	Engineering Works adjacent SW relabelled as Works
1989-94 1:1,250 1:10,000	No significant changes.	Depot 50m W no longer labelled.
2001 1:10,000	Site no longer labelled as a Post Office.	No significant changes.
2003 1:1,250	No significant changes.	No significant changes.
2010 1:10,000	No significant changes.	No significant changes.
2021 1:10,000	No significant changes.	No significant changes.
Current Use	The site is currently T.R. Hardware (DIY Store) on the ground floor with 2no. residential flats on the upper floors.	The surrounding area comprises mixed commercial/residential properties and a Dry Cleaners to the N, mixed commercial/residential properties to the E & S, and a studio to the W.

9 ENVIRONMENTAL CHARACTERISTICS

A variety of Environmental datasets provided by the Environment Agency, British Geological Society, English Heritage and English Nature and others were screened in order to assess the environmental sensitivity of the site. The Groundsure Environmental Screen Report is presented in Appendix 3.. The results are summarised below.

9.1 Geology

9.1.1 Published Geology

According to the BGS Geoindex, the site is located on bedrock of London Clay Formation comprising Clay, Silt and Sand. No superficial deposits were identified during the search.

9.1.2 Unpublished Geology

BGS borehole records for the immediate surrounding area were reviewed in order to obtain further information on the ground conditions beneath the site. No relevant information was identified.

9.2 Hydrogeology

The Environment Agency classifies the bedrock as an Unproductive Aquifer. There are no groundwater Source Protection Zones onsite or within 250m of the site.

9.3 Water Abstractions

No Groundwater, Surface Water or Potable Water Abstraction Licenses were identified onsite or within 750m of the site.

9.4 Groundwater Level

According to BGS, the groundwater is likely to be more than 5.0 metres below the ground surface throughout the year.

9.5 Hydrology

No surface water bodies were identified onsite or within 250m of the site.

9.6 Flood Risk

The site is located within Flood Zone 1 meaning that it has a less than 0.1% chance of flooding in any year. According to the EA the site is also at a very low risk of long term surface water or reservoir flooding.

9.7 Environmentally Sensitive Sites and Ecological Protection Zones

No Environmentally Sensitive Sites (e.g. Green Belt Land, Ancient Woodlands) or Ecological Protection Zones (e.g. Special Scientific Interest (SSSI), Ramsar Sites, Special Areas of Conservation (SAC)) were identified onsite or within 250m of the proposed development.

9.8 Conservation Areas, Designated Protected Buildings and Monuments

No Listed Buildings or Scheduled Ancient Monuments were identified onsite or within 50m of the proposed development.

The following Conservation Areas were identified within 50m of the site:

Table 3: Conservation Areas identified within 50m of the site

Name	District	Date of Designation	Distance & Direction
Hillmarton, Islington	Islington	13/11/1990	8m NE
Camden Square	Camden	01/10/1974	49m SE

9.9 Topography

According to Elevation Finder, the general site level is at 53.0mAOD.

9.10 Waste Disposal Activities & Landfill Sites

No evidence of Waste Disposal Activities or Landfill Sites were identified onsite or within 250m of the site.

9.11 Petrol and Fuel Sites

No Petrol or Fuel Sites were identified onsite or within 250m of the site.

9.12 Sites Determined as Contaminated Land under Part 2A EPA 1990

No Sites Determined as Contaminated Land were identified onsite or within 500m of the site.

9.13 Dangerous or Hazardous Sites

No Control of Major Accident Hazards (COMAH) or Notification of Installations Handling Hazardous Substances (NIHHS) Sites were identified onsite or within 500m of the site.

9.14 Hazardous Substance Storage/Usage

No consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015 were identified onsite or within 500m of the site.

9.15 IPC Authorisations

No Integrated Pollution Control (IPC) Authorisations were identified onsite or within 500m of the site.

9.16 Part A(1) and IPPC Authorised Activities

No Part A(1) or Integrated Pollution Prevention Control (IPPC) Authorised Activities were identified onsite or within 500m of the site.

9.17 Part A(2) and Part B Activities and Enforcements

The following Part A(2) and Part B Activities and Enforcements were identified within 250m of the site:

Table 4: Part B Activities and Enforcements identified within 250m of the site

Site Address	Process	Permit Type	Status	Distance/ Direction
Universal Dry Cleaners, 112 Camden Road, NW1 9EE	Dry Cleaning	Part B	Historical Permit	7m NW
Universal Dry Cleaners, 11 Brecknock Road, N7 0BL	Dry Cleaning	Part B	Current Permit	14m NW
Empire Professional Dry Cleaners, 173 York Way, N7 9LN	Dry Cleaning	Part B	Historical Permit	94m SE
Empire Professional Dry Cleaners, 173 York Way, N7 9LN	Dry Cleaning	Part B	Current Permit	95m SE

9.18 Category 3 or 4 Radioactive Substance Authorisations

No Category 3 or 4 Radioactive Substance Authorisations were identified onsite or within 500m of the site.

9.19 Discharge Consents

No Red List Discharge Consents or Licensed Discharge Consents were identified onsite or within 500m of the site.

9.20 List 1 and List 2 Dangerous Substance Inventory Sites

No List 1 and List 2 Dangerous Substances Inventory Sites were identified onsite or within 500m of the site.

9.21 Pollution Incidents

No Pollution Incidents occurred onsite or within 50m of the site.

9.22 Coal Mining

The site is not located in an area potentially affected by Coal Mining.

9.23 Non-Coal Mining

No Non-Coal Mining Areas were identified onsite or within 50m of the site.

9.24 Radon

A search of the BGS Radon dataset indicates that the property lies in an area with <1% chance of being affected by naturally occurring Radon gas. Therefore, it is unlikely to be affected by Radon.

9.25 Asbestos within Buildings

The information available indicates that the building on the site were developed prior to 2010. It is therefore considered possible that Asbestos may exist within them and that an Asbestos survey may be required in line with The Control of Asbestos Regulations 2012. This is outside the scope of this assessment. An Asbestos survey is recommended.

9.26 Unexploded Ordnance

Although a detailed Unexploded Ordnance (UXO) risk assessment in line with CIRIA C681 is beyond the scope of this report, the Bomb Sight website (www.bombsight.org) was checked to see if the site may have been affected. Unfortunately, the website was not available at the time this report was completed.

10 RELEVANT PLANNING HISTORY

Camden London Borough Council's online planning portal was searched in an effort to identify any relevant planning applications.

10.1 Planning Applications for the Site

Table 5 below provides a summary of the previously submitted planning applications identified for the site.

Table 5: Summary of planning applications at the site

Application Reference	Description of Proposal	Status
(2013/0747/P)	Change of use of office (B1) to two-bed, residential flat (C3) at second floor level, including the addition of a dormer window to side elevation.	Granted (Unknown Conditions)

10.2 Planning Applications for Adjacent Sites

Table 6 below provides a summary of the previously submitted planning applications identified for adjacent sites.

Table 6: Summary of planning applications for adjacent sites

Application Reference	Date	Description of Proposal	Status
2020/3260/P	2020	Redevelopment of the site to provide 4 storey building with commercial floorspaces and 16 residential units with terraces at front and rear – **1 Hampshire Street, London, NW5 2TE (60m W of the site)**	Granted (with Contaminated Land Condition*)

**Report identified on the planning portal summarised in the section below.*

10.2.1 Previous Contaminated Land Risk Assessment

STM has previously undertaken a Phase 2 Environmental Site Investigation Report (ref.PH2-2020-000026; July 2020) at the site at 1 Hampshire Street in relation to the above mentioned planning application (2020/3260/P).

The site investigation works were carried out on the 22nd June 2020 and comprised of 4no. sampling locations (BH01-BH04) with samples collected at depths between 0.25 – 0.9 mbgl. No significant odours or PID readings were recorded during the investigation. Groundwater was not identified in any of the boreholes during the investigation.

8no. soil samples were sent for chemical analysis of Heavy Metals, TPH, BTEX, PAHs and Asbestos. A Generic Quantitative Risk Assessment was carried out where the results of the soil sample analysis were compared to Generic Assessment Criteria (GAC) for a commercial land use scenario. Although the site investigation found concentrations of Lead, Arsenic and PAHs that were elevated when compared to background, none of the contaminants were found to exceed the adopted GAC.

The Conceptual Risk Model for the site was reassessed incorporating the results of the site investigation. The only Potentially Significant Potential Pollutant linkages considered to exist were with respect to property (i.e. piped water services) receptors into the proposed development.

11 SITE WALKOVER

A site walkover was not undertaken as part of the initial scope of works. Photographs of the site, which have been taken from Google Maps, are presented in Appendix 4.

12 PRELIMINARY CONCEPTUAL RISK MODEL (CRM)

A conceptual site risk model (CRM) aims to summarise all the potential pollutant linkages or risk that may be associated with a site. It considers the potential pollution sources, receptors and pathways by which receptors can be impacted.

12.1 Potential Sources

Potentially contaminative land uses (PCLUs) of concern were identified based on their proximity to the site and whether they had the potential to generate significant quantities of ground gases, vapours and/or mobile volatile contamination (i.e. high pollution migration potential).

Any PCLUs within a 50m radius of the site as well as any PCLUs with high pollution migration potential within 250m of the site were considered to be of concern and were included within the assessment.

A summary is provided in Table 7 below.

Table 7: Summary of potential contamination sources, period of operation and distance from site.

Site Name	Industrial Profile	Approx. Year Use Established	Approx. Year Use Ended	Direction	Approx. Distance from Site (m)
Printing Works/ Engineering Works/Works	Printing and bookbinding Works/Engineering Works/Factory or works – use not specified	c.1948-52	Unknown	SW	Adjacent
Universal Dry Cleaners & Laundry	Dry Cleaners	Unknown	Current (2021)	NE	15
Depot	Warehouse	c.1955-68	c.1989-94	W	50
Tramway	N/A	c.1896	c.1948-52	E	60
Reservoir/Worked Ground	Reservoir/ Unknown Filled Ground	c.1877-82	c.1938	SE	208

Typical contaminants associated with the above PCLUs are:

- Acids & Alkalis
- Asbestos
- Chlorinated & Non-Chlorinated Solvents
- Fuels & Fuel Oils
- Gases: Methane & Carbon Dioxide
- Heavy Metals
- Organic & Inorganic Compounds
- Polychlorinated Biphenyls (PCBs)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Total Petroleum Hydrocarbons (TPHs)
- Volatile Organic Compounds (VOCs)

Please note, this list is not exhaustive of all contaminants that may be present on or off site.

12.2 Potential Receptors

The potential receptors include human, water, ecological and infrastructure receptors.

12.2.1 Potential Human Health receptors

Potential human health receptors include construction workers, future occupants or users of the site and the proposed development and neighbours of the site.

12.2.2 Potential Groundwater Receptors

There are no potential groundwater receptors in the vicinity of the site.

12.2.3 Potential Surface Water Receptors

There are no potential surface water receptors in the vicinity of the site.

12.2.4 Potential Ecological Receptors

There are no potential ecological receptors in the vicinity of the site.

12.2.5 Potential Property Receptors

Potential property receptors include the proposed development as well as neighbouring properties and associated services.

12.3 Potential Pathways

12.3.1 Potential Pathways for Human Receptors

The main pathways via which on and off-site human receptors are likely to come into contact with, or be affected by any contamination present on the site can be summarised as follows:

- Dermal contact with contaminated soil (i.e. absorption through the skin) – through garden activities such as children playing, gardening etc.
- Ingestion of contaminated soil (either directly or via soil adhering to vegetables grown on the site)
- Inhalation of contaminated soil, fugitive dust and vapours.
- Explosion of landfill gases leading to death/injury

12.3.2 Potential Pathways for Groundwater Receptors

The principal means by which contaminants can reach the groundwater is by leaching (i.e. downward movement through the soil pores with percolating and infiltrating water).

12.3.3 Potential Pathways for Surface Water Receptors

Routes by which contaminants from the site could reach surface water include via overland run-off, drainage and groundwater entering nearby rivers as base flow.

12.3.4 Potential Pathways for Ecological Receptors

The exposure pathways for terrestrial ecological receptors will be similar to those for humans. Pathways for aquatic receptors are via uptake of contaminated sediments and water.

12.3.5 Potential Pathways for Property Receptors

Pathways by which property receptors are exposed to potential contaminants include ground gas and vapour migration through the unsaturated zone and absorption of water containing dissolved contaminants (i.e. as in the case of sulphate attack).

12.4 Potential Pollutant Linkages

The Potential Pollutant Linkages (PPLs) were identified as part of the CRM. These were concerned with the following:

- Risk of direct contact (ingestion and absorption) with and inhalation of contaminants to on-site human health receptors (PPL1a)
- Risk of injury/death of on-site human health receptors as a result of explosion due to accumulation of ground gas from on and off-site sources in confined spaces within on-site dwellings. (PPL1b)
- Risk of direct contact with (ingestion and absorption) and inhalation of contaminants to off-site human health receptors as a result of on-site contaminants migrating off-site (PPL2a)

- Risk of injury/death to off-site human health receptors as a result of explosion due to migration of on-site ground gas and subsequent accumulation in confined spaces in off-site buildings. (PPL2b)
- Risk of derogation of groundwater quality resulting from the migration of on-site contaminants into the underlying aquifer (PPL3)
- Risk of derogation of surface water quality resulting from the migration and entry of on-site contaminants into the surface water receptor (PPL4)
- Risk of derogation of ecological quality resulting from the migration and entry of on-site contaminants to the ecological receptor during development and after completion (PPL5);
- Risk of damage to buildings and services from on and off-site contaminants (PPL6a)
- Risk of damage to property as a result of explosion due to accumulation of ground gas from on and off-site sources in confined spaces within buildings (PPL6b).

13 QUALITATIVE RISK ASSESSMENT

For land to be considered 'contaminated land' under Part IIA, the potential contamination source must be causing or have the significant possibility of causing harm to designated receptors. It is therefore necessary to focus on pollutant linkages that have the potential to be significant (i.e. those that are most likely to lead to a determination).

The identified PPLs were therefore individually qualitatively assessed using a basic risk assessment methodology which considers "Likelihood" and "Severity" to assess the magnitude of the potential risk. The methodology is summarised in Appendix 5.

Table 8 below summarises the conceptual site risk model (CRM) including the identified PPLs and the results of the qualitative risk assessment.

Table 8: Conceptual Site Risk Model - Potential Sources, Pathways and Receptors identified on the site.

Source/ Potential Contaminants	**Potential Contaminants Associated with Offsite (Adjacent Uses) as Printing Works/Engineering Works/Unspecified Works and Offsite Uses as Dry Cleaners, Depot, Tramway, Reservoir/Worked Ground:** i.e. Acids & Alkalis, Asbestos, Chlorinated & Non-Chlorinated Solvents, Fuels & Fuel Oils, Gases: Methane & Carbon Dioxide, Heavy Metals, Organic & Inorganic Compounds, PCBs, PAHs, TPHs, VOCs								
	On and Off-Site Contaminants		**On Site Contaminants**		**On Site Contaminants**			**On and Off-Site Contaminants**	
Potential Pathways	• Ingestion of soils, garden vegetables and dust • Ingestion of contaminated drinking water • Dermal absorption • Inhalation of dusts and vapours indoors and outdoors • Migration of ground gases and vapours into properties				Leaching in the unsaturated zone and diffusion in the saturated zone	• Overland run-off • Drainage channels • Base flow	• Direct contact via absorption and ingestion; • Inhalation	• Migration of ground gases and vapours through the unsaturated zone • Attack on water supply service pipes	
Potential Receptors	**ON SITE HUMANS** Future occupiers, visitors, construction workers		**OFF SITE HUMANS** Residents, visitors		**GROUNDWATER** None	**SURFACE WATER** None	**ECOLOGY** None	**ON SITE PROPERTY** Buildings and services	
Potential Hazards	• Adverse health effects • Injury/Death	Explosion/ Fire - Buildup of Methane/ VOCs in confined spaces	• Adverse health effects • Injury/ Death	Explosion/ Methane/VOCs build up in confined spaces	Derogation of groundwater quality	• Derogation of surface water quality • Ecological impacts	Derogation of ecological receptor quality	Damage to property and services	Explosion/ Fire - Buildup of Methane/ VOCs in confined spaces
Plausible?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**Yes**	**Yes**
PPL ID	**PPL1a**	**PPL1b**	**PPL2a**	**PPL2b**	**PPL3**	**PPL4**	**PPL5**	**PPL6a**	**PPL6b**
SEVERITY	Major (4)	Major (4)	Major (4)	Major (4)	Moderate (3)	Moderate (3)	Moderate (3)	Moderate (3)	Moderate (3)
LIKELIHOOD	Improbable (1)	Improbable (1)	Improbable (1)	Improbable (1)	Improbable (1)	Improbable (1)	Improbable (1)	Improbable (1)	Improbable (1)
RISK	Low (4)	Low (4)	Low (4)	Low (4)	Very Low (3)	Very Low (3)	Very Low (3)	Very Low (3)	Very Low (3)
POTENTIALLY SIGNIFICANT ?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

13.1 Assessment of Potential Significance of Potential Pollutant Linkages

13.1.1 Potential Risks to On-Site Human Health

PPL1a is concerned with the risk of direct contact (ingestion and dermal absorption) with and inhalation of on and off-site contaminants by on site human health receptors. PPL1a is considered unlikely to have the potential to be significant.

Although potentially contaminative land uses were at the adjacent former works at 1 Hampshire Street, the findings of the Contaminated Land investigation undertaken by STM there indicate that the level of contaminants present in the soil are not of a sufficient magnitude or mobility to significantly impact human receptors at the study Site.

Furthermore, it is understood from the Client that the development proposals involve the internal conversion of the existing building only and that no ground break is proposed. It is further understood that the development will not include any soft landscaping. As such, no potential pathways are envisaged. Any potential risks to future groundworkers can be dealt with relatively easily through the use of a watching brief and appropriate health and safety measures (i.e. PPE) as detailed in the recommendations section below.

PPL1b is concerned with the risk of injury/death of on-site human health receptors as a result of explosion due to the potential accumulation of ground gases and vapours from on and off-site sources. PPL1b is considered unlikely to have the potential to be significant as although potential sources of explosive ground gases and/or vapours (i.e. Works, Reservoir/Worked Ground.) were identified in the vicinity of the site these are considered to be significant. As described above, the adjacent works has been the subject of an investigation which did not find any significant mobile or volatile contaminants to be present. With regard to the reservoir /worked ground, its size and distance from the Site combined with the fact that it was redeveloped for over 80 years ago for residential use indicates that it is unlikely to present a risk.

13.1.2 Potential Risks to Off-Site Human Health

PPL2a is concerned with the risk of direct contact and inhalation of contaminants emanating from the site by off-site human health receptors. PPL2a is considered unlikely to have the potential to be significant. It is considered unlikely that any potential contaminants present at the site would be of sufficient magnitude as to significantly impact off-site human receptors.

PPL2b is concerned with the risk of injury/death of on-site human health receptors as a result of explosion due to accumulation of ground gases from on-site sources. PPL2b is considered unlikely to have the potential to be significant as no potential sources of explosive ground gases (i.e. Landfills, Minable Coal, Petrol Stations etc.) were identified on the site.

13.1.3 Potential Risks to Groundwater Receptors

PPL3 is concerned with the risk of derogation of groundwater quality resulting from the migration of on-site contaminants into the underlying aquifer. PPL3 is considered unlikely to have the potential to be significant as the site is underlain by an Unproductive Aquifer and no Source Protection Zones were identified in the vicinity of the site.

13.1.4 Potential Risks to Surface Water Receptors

PPL4 is concerned with the risk of negative impacts on surface water quality resulting from the migration and entry of on-site contaminants into surface water receptors. PPL4 is considered unlikely to have the potential to be significant as no surface water bodies were identified onsite or within 250m of the site.

13.1.5 Potential Risks to Ecological Receptors

PPL5 is concerned with the risk of negative ecological impacts resulting from potential on-site contaminants. PPL5 is considered unlikely to have the potential to be significant as no designated ecological receptors were identified onsite or within 250m of the site

13.1.6 Potential Risks to Property Receptors

PPL6a is concerned with the risk of damage to on site buildings and services from on and off-site contaminants If contaminated, the soil may contain aggressive chemicals (i.e. Sulphates, VOCs) that can attack building materials and services. PPL6a is considered unlikely to have the potential to be significant. It is considered unlikely that any potential contaminants present at the site would be of sufficient magnitude as to significantly impact property receptors.

PPL6b was concerned with the risk of damage to property as a result of explosion due to migration of on and off-site ground gases and vapours and their subsequent accumulation in confined spaces in on-site buildings. PPL6b is considered unlikely to have the potential to be significant as for same reasons as PPL1b.

14 CONCLUSIONS

This Phase 1 Desk Study was carried out to support a planning application 2021/2730/NEW.

A review of historical maps and planning records suggests that the site and immediate adjacent land have been subject to previous potentially contaminative land uses (PCLUs). No onsite PCLUs were identified, while off site PCLUs include Printing Works/Engineering Works/Works, Dry Cleaners, Depot, Reservoir/Worked Ground.

A conceptual site risk model was developed and a qualitative risk assessment undertaken. The conclusions of the risk assessment are presented in Table 9 below.

Table 9: Summary of qualitative risk assessment

Potential Receptor	Potential Pathway	Potential Hazard	PSPPL?	Risk
On-Site Human Health	Ingestion/Absorption Inhalation	Adverse health Injury/Death	**No**	**Low**
	Buildup of Methane/ VOCs in confined spaces	Explosion/ Fire Injury/Death	**No**	**Low**
Off-Site Human Health	Ingestion/Absorption Inhalation	Adverse health Injury/Death	**No**	**Low**
	Buildup of Methane/ VOCs in confined spaces	Explosion/ Fire Injury/Death	**No**	**Low**
Groundwater	Percolation/Leaching	Adverse groundwater quality	**No**	**Very Low**
Surface Water	Lateral Migration Groundwater baseflow	Adverse Surface water quality	**No**	**Very Low**
Ecology	Ingestion/Absorption	Adverse health Injury/Death	**No**	**Very Low**
Property	Physical Contact/Absorption	Damage to building and services	**No**	**Very Low**
	Buildup of Methane/ VOCs in confined spaces	Explosion/ Fire Damage to building	**No**	**Very Low**

15 RECOMMENDATIONS

Given that no potentially significant potential pollutant linkages (PSPPLs) were identified, no specific remedial action is considered necessary in respect of potential soil contamination at the proposed development.

15.1 Watching Brief and Discovery Strategy

It is recommended that a "watching brief" is kept at all times during the development. Should any unexpected contamination be encountered then the discovery strategy outlined below should be followed.

- Works should be halted if any suspicious ground conditions are identified by groundworkers;
- The Contractor should assess the need for any immediate health and safety or environmental management control measures. If control measures are considered to be required, they should be implemented;
- The Contractor should notify the Client's Environmental Consultant and the Local Planning Authority;
- The Environmental Consultant should attend the site to record the extent of 'contamination' and if necessary, to collect samples;
- If remedial action is considered necessary then the proposed works should be agreed with the Local Planning Authority prior to implementation;
- Once remediation is complete, the Environmental Consultant should collate evidence of work carried out for inclusion in a Remediation Verification Report which should be submitted to the Local Planning Authority.

15.2 Health and Safety

All site works should be carried out in accordance with Health and Safety Executive regulations and guidelines, the Contractor's Construction Health and Safety Plan and the Construction (Design and Management) Regulations 2015.

Precautions should be taken to minimise exposure of site workers during ground works through the implementation of site safety. Such precautions should include, but not be limited to:

- Provision of appropriate Personal Protective Equipment (PPE);
- Availability of site welfare;
- Good personal hygiene, washing and changing procedures;
- Daily safety briefings.

15.3 Services

The local Statutory Water Undertaker should be contacted in the event that new services are proposed as part of the redevelopment in order to determine their specification for the type of pipework which should be used on this site.

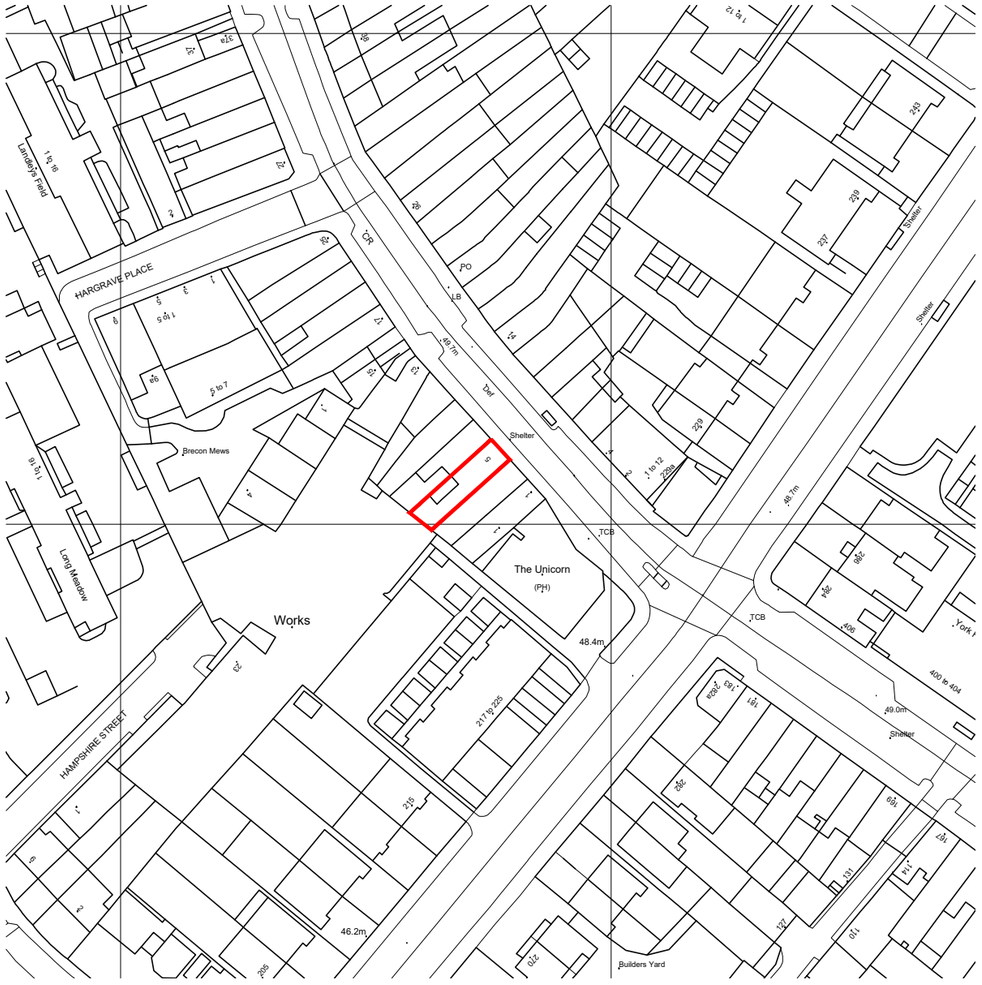
It is recommended that all services, and in particular potable water, should be supplied using materials that are resistant to attack and degradation to chemical attack.

Further information can be found within the published guidance for the '*Selection of Water Supply Pipes to be used in Brownfield Sites'*, issued in January 2011 by the UK Water Industry Research.

16 INFORMATION GAPS AND UNCERTAINTIES

Assumptions have been made regarding the nature and scale of the activities that took place on the site and the types of potential contaminants that may have resulted. These assumptions will need to be reviewed along with the Conceptual Site Model should further information come to light.

17 APPENDIX 1 – PROPOSED DEVELOPMENT PLANS



0m 10m 20m 50m

N

LOCATION PLAN

00	10.05.21	PLANNING

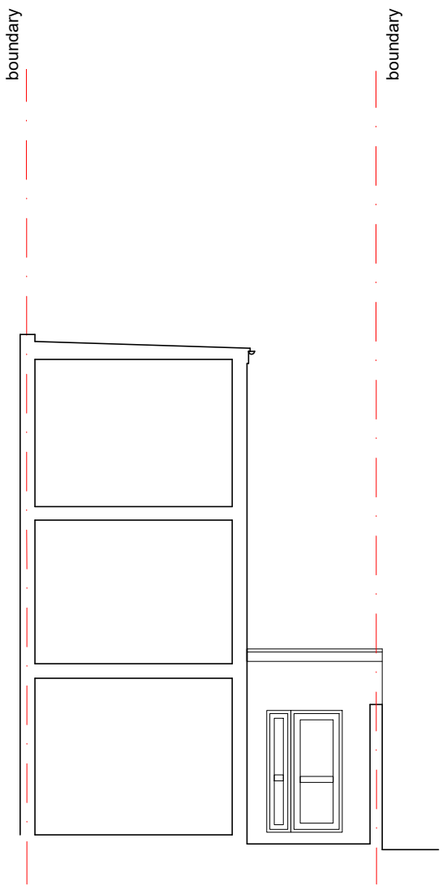
VMA architects
21 Sunningfields Road
London NW4 4QR
DDI: 020 7936 4222
office@vm-arch.com

Job title
5 BRECKNOCK ROAD
LONDON - N7 0BL

Drawing title
LOCATION PLAN

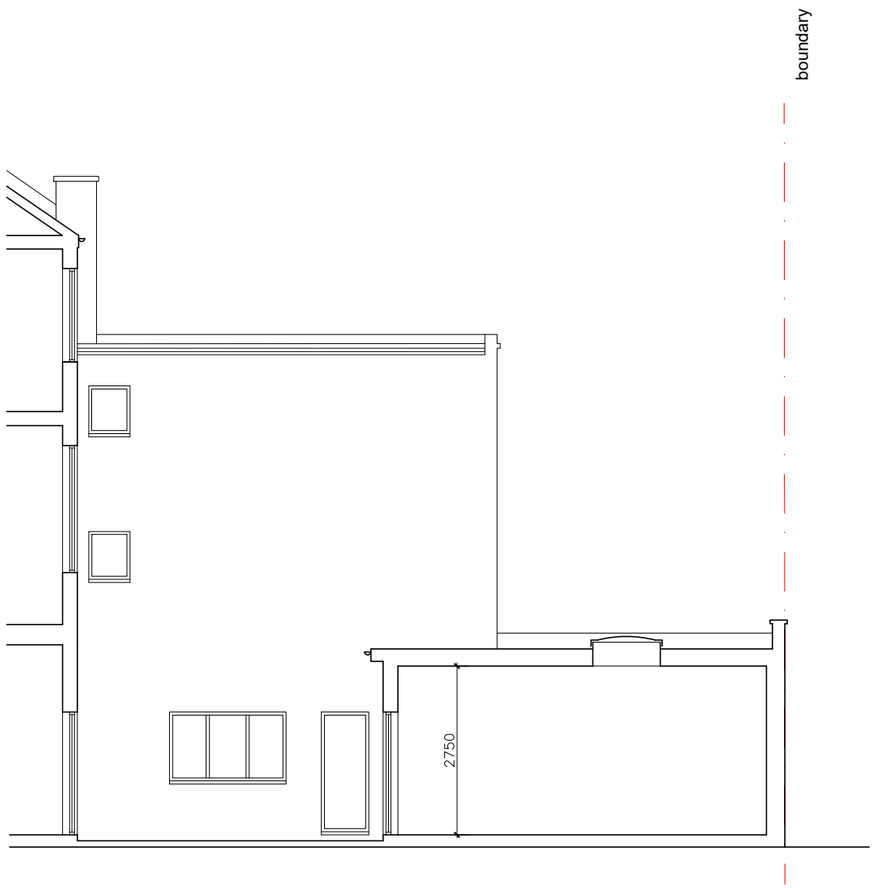
Scale	Date	Drawn	Checked
1:1250@ A3	May 21	MJ	VM

Drawing No.	Rev. No.
380/B - 0001	00



SOUTH ELEVATION

WEST ELEVATION



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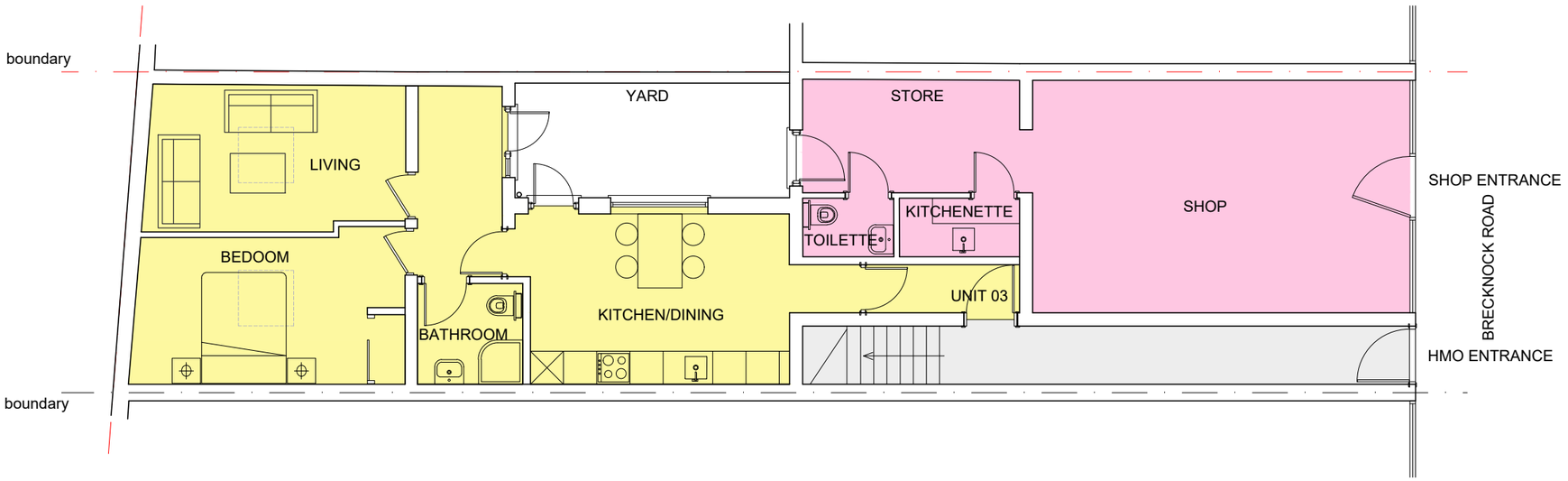

GROUND FLOOR PLAN
AS BUILT

0m 1m 2m 5m

HMO UNIT 03
Gross internal area 55.0 m²

SHOP AREA
Gross internal area 42.0 m²

00	10.05.21	PLANNING

VMA architects
21 Sunningfields Road
London NW4 4QR
DDI: 020 7936 4222
office@vm-arch.com

Job title
5 BRECKNOCK ROAD
LONDON - N7 0BL

Drawing title
PLAN, SECTIONS AND ELEVATIONS
AS BUILT

Scale	Date	Drawn	Checked
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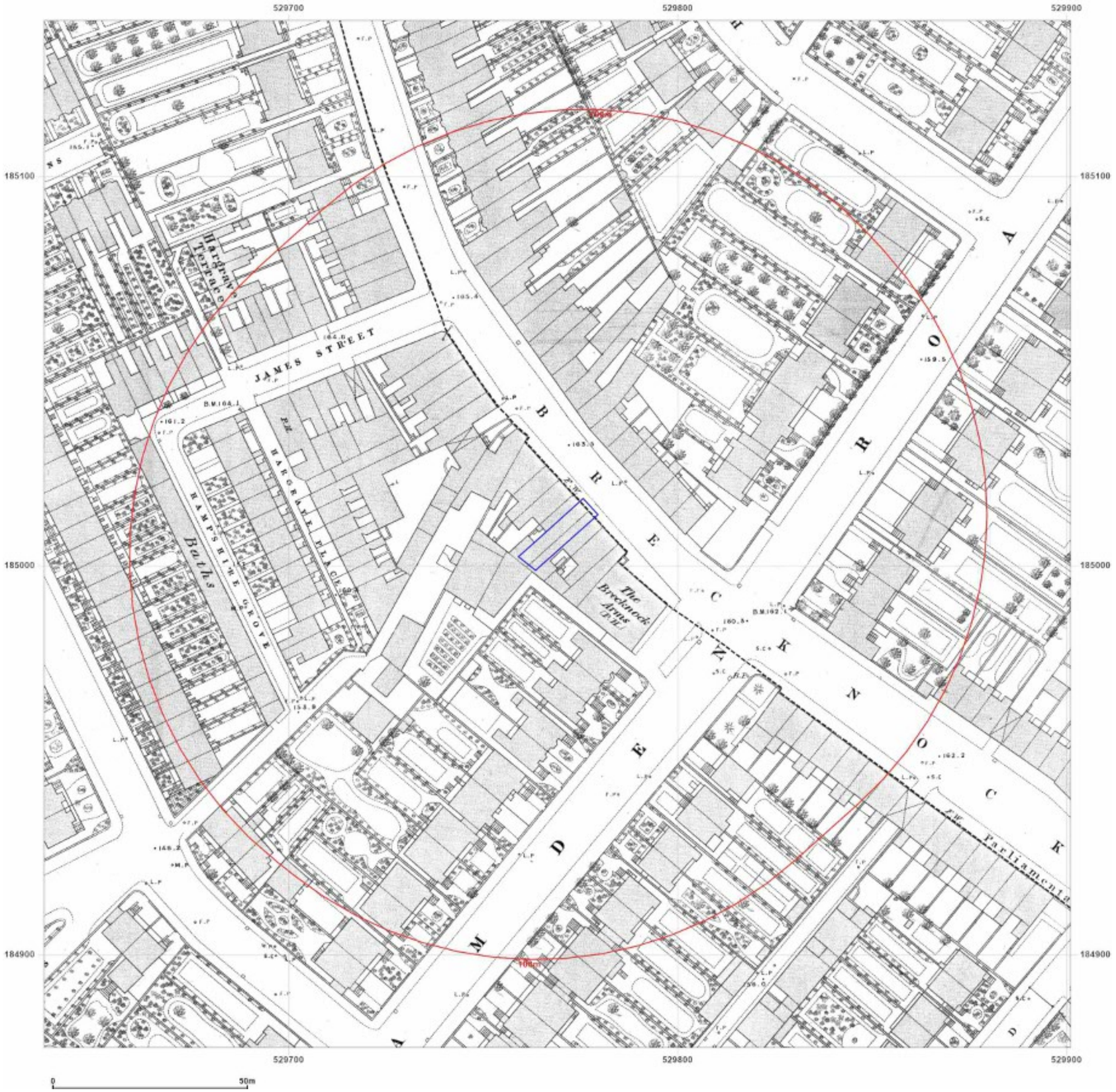
Drawing No.	Rev. No.
380 - 110	00

18 APPENDIX 2 – HISTORICAL MAPS



Groundsure INSIGHTS

Site Details:

5 BRECKNOCK ROAD,
LONDON, N7 0BL

Client Ref: PH1-2021-000079
Report Ref: GS-8045331
Grid Ref: 529769, 185008

Map Name: 1056 Scale Town Plan

Map date: **1873**

Scale: 1:1,056

Printed at: 1:1,056

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Surveyed 1871
Revised N/A
Edition 1873
Copyright N/A
Levelled N/A

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Report Ref: GS-8045331
Grid Ref: 529769, 185008

Map Name: 1056 Scale Town Plan
Map date: **1873**
Scale: 1:1,056
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Surveyed 1871
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Client Ref: PH1-2021-000079
Report Ref: GS-8045331
Grid Ref: 529769, 185008

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Map date: **1877-1879**

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Printed at: 1:2,500

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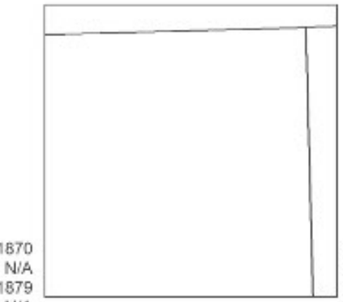

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Client Ref: PH1-2021-000079
Report Ref: GS-8045331
Grid Ref: 529769, 185008

Map Name: 1056 Scale Town Plan
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Revised N/A
Edition 1896
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Client Ref: PH1-2021-000079
Report Ref: GS-8045331
Grid Ref: 529769, 185008

Map Name: County Series

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Revised 1896
Edition N/A
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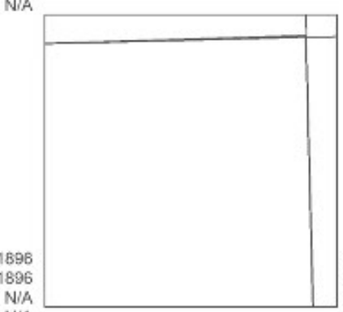

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Map Name: County Series

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Revised 1915
Edition N/A
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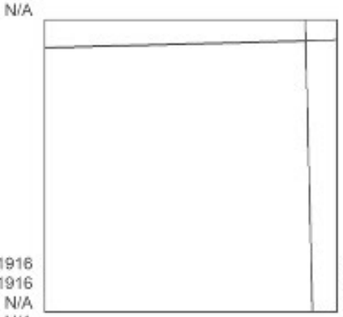

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Report Ref: GS-8045331
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Map Name: National Grid

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Map Name: National Grid

Map date: **1952**

Scale: 1:2,500

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Client Ref: PH1-2021-000079
Report Ref: GS-8045331
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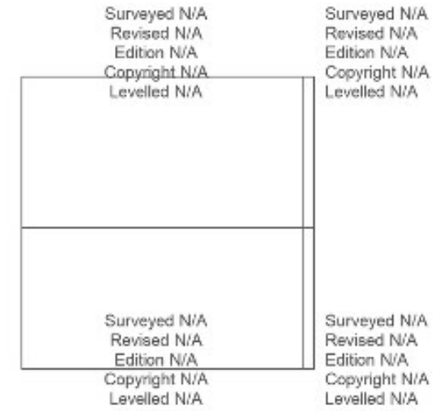

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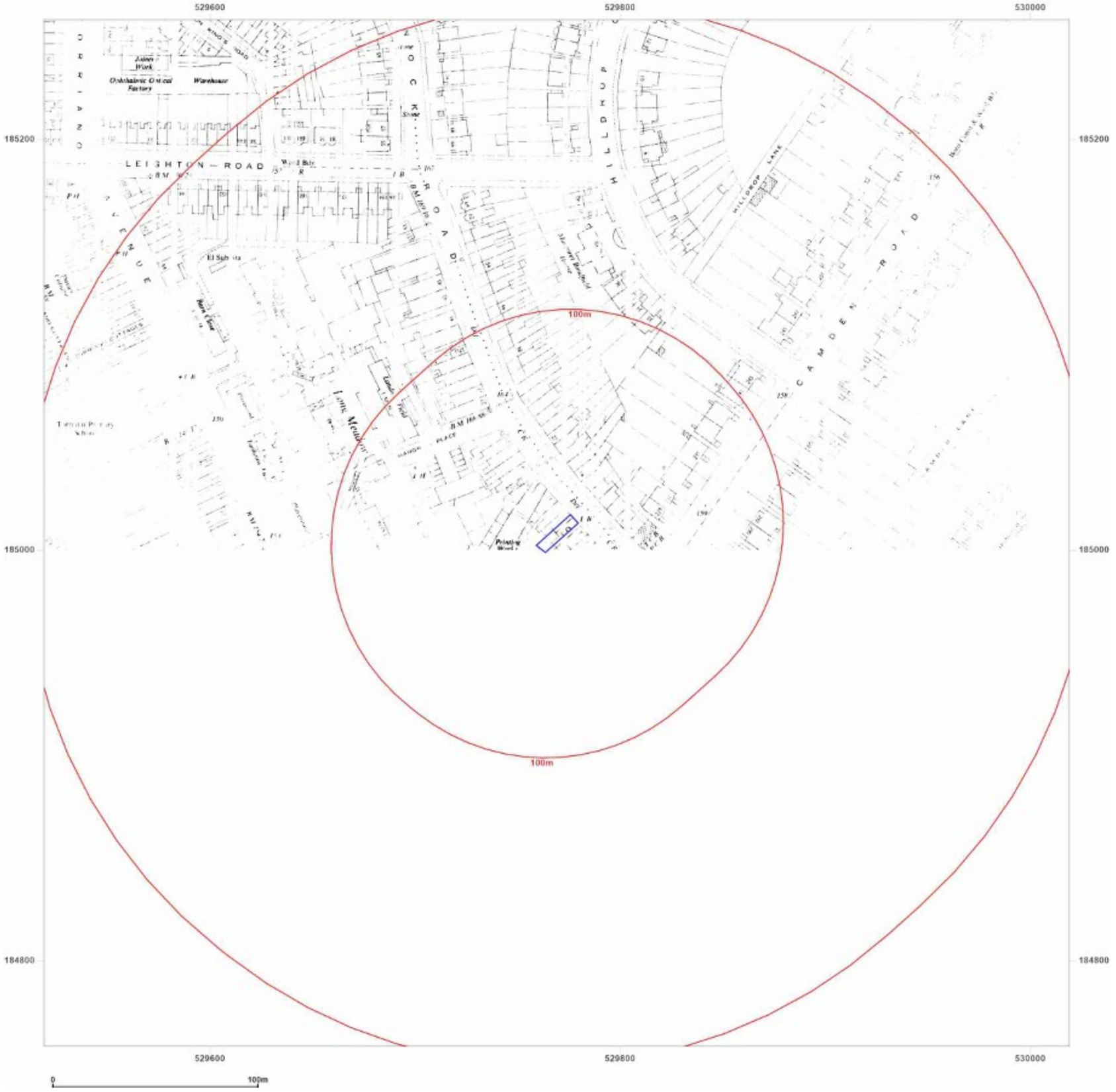

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Client Ref: PH1-2021-000079
Report Ref: GS-8045331
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Map Name: National Grid

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Printed at: 1:2,000

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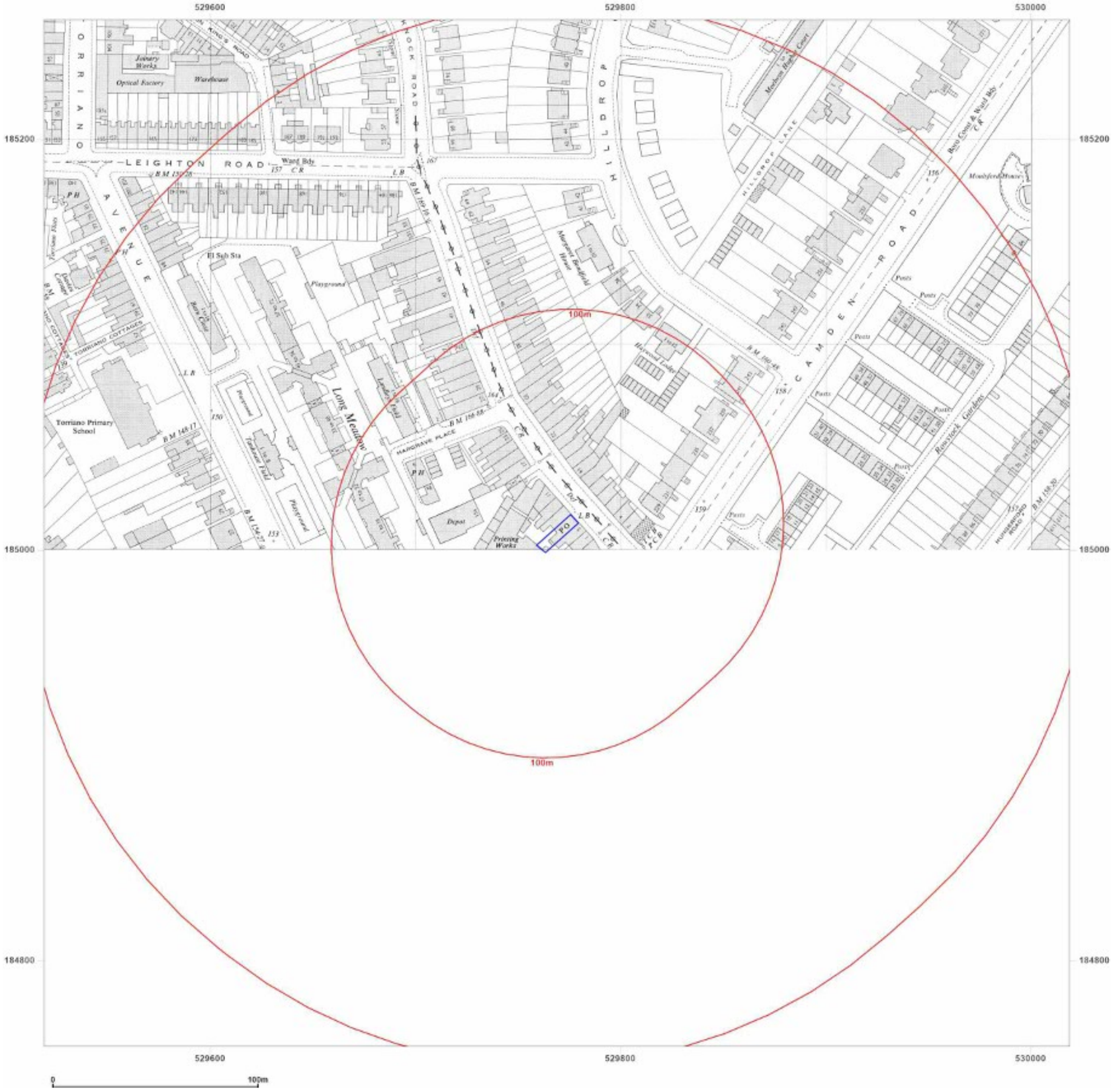

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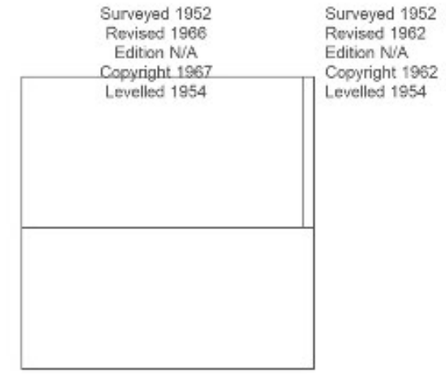

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