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PHASE 1: DESK TOP STUDY REPORT

STUDIO HATCHAM ARCHITECTS

PROPOSED REDEVELOPMENT

80 LAMBLE STREET

LONDON

NE5 4AB

Project No: 21-422

Prepared By:

A handwritten signature in blue ink, appearing to read 'Phil Brown'.

Phil Brown

Date: 27/05/2021

Approved By:

A handwritten signature in black ink, appearing to read 'J.P. Ditchburn'.

John Ditchburn

Date: 27/05/2021

The information and/or advice contained in this Phase 1: Desk Top Study Report is based solely on, and is limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) unless otherwise stated. This 'Report' has been prepared to collate information relating to the physical, environmental and industrial setting of the site, and to highlight, where possible, the likely problems that might be encountered when considering the future development of this site for the proposed end use. All comments, opinions, diagrams, cross sections and/or sketches contained within the report, and/or any configuration of the findings is conjectural and given for guidance only, and confirmation of the anticipated ground conditions should be considered before development proceeds. Agreement for the use or copying of this report by any Third Party must be obtained in writing from Arc Environmental Limited (ARC). If a change in the proposed land use is envisaged, then a reassessment of the site should be carried out.

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1.0 Introduction

May 2021

Arc Environmental Limited (ARC) were instructed by Studio Hatcham Architects, to undertake a Phase 1: Desk Top Study for a property at 80 Lambale Street, London, where proposals have been made to refurbish / renovate the existing building layout for residential end-use.

The primary objectives of this report are to assess the geological and potential contaminated land conditions. This Phase 1: DTS Report has been carried out generally in accordance with the EA (Environment Agency) guidance for Land Contamination Risk Management (LCRM: October 2020) which has replaced CLR11: Model Procedures for the Management of Land Contamination.

Based on all of the data reviewed, a Conceptual Site Model (CSM) has been developed to help define the scope and extent of any further investigation works deemed necessary, prior to commencing with the proposed redevelopment works.

A site reconnaissance (walkover) survey was not completed at the time of writing of this report. However, a review of current google street view imagery has been completed as part of this report.

2.0 Physical Setting

2.1 Site Details/Reconnaissance Survey: -

Table 2.1

Site Name & Address:	80 Lambale Street, London, NW5 4AB.
Grid Reference:	541320, 183150 (representative of the centre of the site).
Description of Location:	The site is located on Lambale Street to the east of Lismore Circus and south of Hampstead Heath.
Site Shape & Boundaries:	The site is generally rectangular in shape (c.0.02Ha in size). N = Oak Village (residential properties), E = Garden / Courtyard associated with 33 Oak Village, W = Garden / Courtyard associated with 30 Oak Village, S = Lambale Street leading to residential flats / maisonettes.
Development Details:	Current proposals are for the refurbishment / renovation the existing building for residential end use.
Above Ground Structures:	Two storey office building (incorporating mezzanine floor) with pitched roof on central portion of site with lower flat roofed 'bays' to east and west.
Below Ground/Sub-surface Structures and Services:	Live services (i.e. drains, gas, etc.) are likely to be present below the existing building.
General Topography:	The site and surrounding topography appear to be relatively level. OS levels on historical plans record the site to be c.43m AOD.
Site Surfacing:	The site surfacing comprises current building footprint with limited external hardstanding (concrete).
Summary of Historical Site Information	The site was recorded as developed land from c.1872, initially associated with residential properties to the north. It is understood that the site itself was used as a former milk float shed from the late 1940's. It was converted into architects' offices c.1980.

3.0 Environmental Setting

The geological assessment for this site is based on geological maps and data published by the British Geological Survey (BGS), Coal Authority (CA) and data sources included in the Landmark Information Group Envirocheck Report (ref. 278564264_1_1). The following documents have been reviewed as part of this study:

- Online BGS Geology of Britain Viewer
- BGS Geological Sheet 256, North London, England and Wales, Solid & Drift Edition, 1:50,000, 1994
- BGS Borehole Records TQ28NE 235, TQ28NE 236, TQ28NE 254, TQ28NE 256 and TQ28NE 31.
- Online CA Interactive Map Viewer

3.1 Site Geology: -

3.1.1 Made Ground: -

According to published BGS data, the site is not recorded to be underlain by significant thicknesses of made ground deposits. However, based on the historical site use, some limited thickness of made ground is likely to be present beneath the site associated with the historical and current development. Any made ground is likely to comprise disturbed natural strata with anthropogenic debris (i.e. brick, etc.,).

3.1.2 Superficial Deposits: -

From the published BGS maps and online data, superficial deposits are not present below the site.

3.1.3 Solid Geology: -

Based on published BGS maps, the site is underlain by the London Clay Formation which mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. The BGS borehole records to the north, south and west of the site indicate very stiff dark grey clay, recorded to a depth of at least c.10m bgl.

Published geological information indicates that there is no evidence of any significant faulting or other lines of weakness intersecting the development area or its immediate surroundings.

3.2 Potential Geological Hazards: -

Table 3.1

Land Slip:	Ground Instability in association with landslide events is indicated to be generally very low.
Shrinkable Soils:	The information provided in the Envirocheck Report indicates a Moderate classification
Collapsible Soils:	A classification of very low has been attributed to collapsible ground stability hazards.
Compressible Soils:	The stability of the superficial deposits in relation to a potential compressible hazard, normally associated with poorly consolidated, is suggested not to represent a hazard.
Running Sand:	The hazard rating in connection with running sand conditions in open excavations is suggested to be generally very low.
Dissolution	The Envirocheck Report indicates that ground dissolution stability does not to represent a hazard.

3.0 Environmental Setting (Cont'd)

3.3 Coal Mining Risk Assessment: -

The site is underlain by the London Clay Formation which is absent of productive coal measures. In accordance with the Coal Authority (CA) Interactive Map Viewer the site does not lie within a Coal Mining Reporting Area and is not considered to be at risk from shallow coal workings with no further assessment required.

3.4 Site Hydrogeology: -

Table 3.2

STRATA	EA Aquifer Classification	Comments
Groundwater Vulnerability:	Combined: Unproductive.	Unproductive Bedrock Aquifer with no Superficial Aquifer. Low pollution speed and dilution rate of <300mm/year.
Superficial Geology:	None recorded.	~
Solid Geology: (London Clay)	Unproductive Strata.	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

- There are no Source Protection Zones (SPZ) recorded within 1km from the boundaries of the site.
- There are 6 no Groundwater Abstractions recorded c.995m to the southeast of the site, all relating to groundwater abstracted for Commercial & Public Services associated with Kentish Town Sports Centre operated by Greenwich Leisure Ltd.

3.5 Site Hydrology: -

Table 3.3

SURFACE WATER FEATURE	Location	Comments
OS Water Network	None recorded within c.250m.	~
GQA Classified River	None recorded within c.250m.	~
Unclassified Watercourse(s), Canals, Ponds & Lakes	None recorded within c.250m	~
FLOODING	Location	Comments
Flooding from Rivers (fluvial) and the Sea (tidal)	The whole of the site lies in a Zone 1 Flood Risk area.	The whole of the site lies within a Zone 1 Flood Risk area and is considered a very low risk. Further consultation should be made to the EA and Local Planning Authority for further advice or the requirements for a site-specific flood risk assessment for the proposed development.

3.0 Environmental Setting (Cont'd)

3.5 Site Hydrology (Cont'd): -

Table 3.3 (Cont'd)

<u>FLOODING</u>	<u>Location</u>	<u>Comments</u>
Surface Water Flooding (Environment Agency)	The EA data indicates that the site is within an area considered to be at a low risk of flooding from surface water.	Surface water flooding occurs when rainwater does not drain away through the standard drainage systems or soak into the ground but lies on or flows over the ground instead. However, flooding events, although considered a low risk may still occur.
Groundwater Flooding at Surface (BGS)	The BGS do not record the site to be at potential risk from groundwater flooding to occur at surface.	Information obtained from Landmark which publish maps indicating the potential for groundwater flooding at surface, proposed by the British Geological Survey (BGS). This information is based on areas which may be potentially influenced by geological factors.
<u>RAINFALL</u>	<u>Measurements (mm)</u>	<u>Comments</u>
Annual	557.4	Based on 'station average' records from Hampstead dated 1981-2010
Rainfall: Max (Oct)	61.1	
Rainfall: Min (Jul)	34.6	

3.6 Radon Assessment: -

The site lies in a low probability radon area, as less than 1% of homes are above the action level. In accordance with the BGS, National Geoscience Information Service, their assessment suggests that no radon protection measures for new dwellings. This corresponds with the BRE Digest, BR211 (2015) Radon: Guidance on Protective Measures for New Buildings, where the site is situated within a clear grid square (1km), and therefore no radon protective measures are required for the site.

3.7 Site Ecology: -

From observations made using google street view imagery, there is no visual evidence to suggest the site is affected by the presence of invasive weed species (i.e. Japanese Knotweed, Giant Hogweed or Himalayan Balsam). However, a detailed invasive plant survey has not been carried out.

Table 3.4

<u>FEATURES</u>	<u>Location</u>	<u>Comments</u>
Local Nature Reserves	None recorded within c.250m.	~
Areas of Adopted/Unadopted Green Belt	None recorded within c.250m.	~
Special Protection Areas	None recorded within c.250m.	~
Nitrate Vulnerable Zone	None recorded within c.250m.	~

3.8 Estimated Soil Chemistry: -

The BGS have no data available concerning estimated soil chemistry for several key metals and metalloid elements for the subject site. However, average soil concentrations (urban soil chemistry) for an area within c.500m east / northeast and south is included in Table 3.5 below. Note; the references to the recorded concentrations of contaminants, sourced from the BGS, should not be relied upon. They are not site-specific and do not represent the condition of the ground at the proposed development site.

3.0 Environmental Setting (Cont'd)

3.8 Estimated Soil Chemistry (Cont'd): -

Table 3.5

Element	Soil Type	Average Soil Concentrations (mg/kg)
Arsenic	Urban	15 - 25
Cadmium	Urban	<1.8
Chromium (total)	Urban	90 – 120
Lead	Urban	300 – 600
Nickel	Urban	30 – 45

4.0 Industrial Setting

4.1 Site History: -

Copies of old survey plans covering the site area & adjacent land are included in Appendix III and a summary of the site history based on these plans is provided in Table 4.1 below and continued on the following page.

Table 4.1

Date	Site	Adjacent Areas
c.1850 – c.1851	The site is recorded as undeveloped land.	The surrounding areas are generally undeveloped, a road (Cordon House Lane) is recorded to the northeast. Some development (assumed residential) and associated infrastructure is shown 250m to the south of the site.
c.1872 – c.1873	The site is now shown to be partly developed with possible outbuilding / structure evident on the eastern portion of the site (likely to be associated with residential properties off Oak Village immediately to the north). Circus Road East forms the southern boundary.	Residential housing is recorded to the immediate north, east and west of the site. Further residential housing is recorded to the surrounding areas notably to the west (Lismore Circus). Railway Lines are shown 150m to the south and also 170m to the northeast (Gospel Oak Station).
c.1895 – c.1896	As c.1872 – 1873. Circus Road East on southern boundary is now labelled as Lamble Street.	Continued residential development to the north and west. Land immediately to the south of Lamble Street is shown as Gospel Oak Brick Works . A Coal Depot is referenced northeast of the site beyond the railway lines .
c.1915 – c.1920	As c.1895 – c.1896.	The Brickworks to the south of the site has expanded with additional buildings noted including a chimney . Earthwork features (embankments , heaps and a pond) are shown on land adjacent to the Brickworks . Gas Works referenced beyond the railway lines (c.250m northeast of the site). Land to the north, and west is now shown as predominantly residential end use.
c.1936 – c.1938	Additional structure (with glazed roof) is shown on western and central area of the site.	The Brickworks to the south is now labelled as 'disused' and the majority of the previous earthwork features are no longer evident. The central southern area of the Brickworks is now shown as a Timber Yard .
c.1951 – c.1954	As c.1936 – c.1938.	Large square shaped buildings shown on the land between the Timber Yard and the site with additional earthwork features slopes / embankments shown immediately west of this structure. Buildings to the east of the disused Brickworks named as Slag Wool Works . Gas Works to northeast now labelled as Oil Processing Plant .

4.0 Industrial Setting (Cont'd)

4.1 Site History (Cont'd): -

Table 4.1 (Cont'd)

Date	Site	Adjacent Areas
c.1966 – c.1968	As c.1951 – c.1954.	Land formerly referenced as Brickworks and Timber Yard now shown to be occupied by residential properties (flats / maisonnettes) with associated infrastructure and areas of soft landscaping including a playground. Oil Processing Plant now shown as Depot.
c.1970 – c.1980	Structure with the glazed roof is no longer evident.	Generally as c.1966 – c.1968 with immediate surrounding area shown to be predominantly residential development / end use.
c.1985 – c.2006	As c.1970 – c.1980.	As c.1970 – c.1980.
c.2021	The site comprises a derelict single storey office building.	Generally, as c.1985 – c.2006.

Significant features / potential contamination sources highlighted in **bold**.

4.2 Landfill & Waste: -

The following information relating to Landfill and Waste has been obtained from the Envirocheck Report (attached in Appendix III).

- There are no BGS or Historical Recorded Landfill Sites within c.250m of the site.
- There are no Local Authority Recorded Landfill Sites recorded within c.250m of the site.
- There is one Registered Waste Transfer Sites recorded within c.250m of the site (196m northeast). Licence Holder is named as Wharf and Jetty Services Ltd with authorized wastes noted as 'commercial waste, construction and demolition waste'. License Status is recorded as lapsed / cancelled.
- There is one area of infilled land (water) recorded c.219m to the northeast of the site with the date of mapping recorded as c.1876. Historical plans from that date show the area to be beyond the railway lines to the northeast with no obvious feature (pond / stream etc) evident. Consequently, this is not considered to present a risk to the subject site.
- There is one area of infilled land (non-water) recorded c.15m to the south of the site with the date of mapping recorded as c.1996. This area of infilled land is associated with the area of the former Brickworks and Timber Yard referenced on historical plans and discussed in Section 4.1. Infilling of this land appears to have been undertaken during the 1940's and 1950's and was subsequently shown to be developed with residential flats / maisonnettes by c.1966.

From the review undertaken the infill appears to have been completed by the early 1960's, at least c.60 years ago. Soil degradation tends to follow what is known as the "landfill cycle", (Waste Management Papers 26 & 27) which suggest the significant gas production period of a landfill rarely exceeds 30 years. Figure 4.1. below shows an estimation of the declining rate of gas generation with time, with an 80% reduction in gas generation rate after 30 years and around 10% gas generation rate after around 40 years.

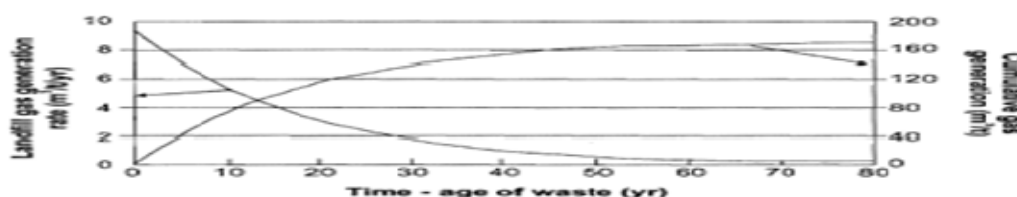


Figure 4.1 Reproduction of CIRIA C665.

4.0 Industrial Setting (Cont'd)

4.2 Landfill & Waste (Cont'd): -

Consequently, the risk from ground gas generation / migration affecting the site is considered to be very low to negligible due to the following considerations:

- The proposed works comprise the renovation / refurbishment of the existing structure with no new extensions / structures.
- The infilling of the land to the south was undertaken more than 60 years ago and therefore any possible gas generation from any biodegradable fill materials should have diminished / ceased.
- The infilled land itself has been developed with residential flats / maisonettes since c.1966.
- The geology underlying the site and wider area is referenced as the London Clay Formation which comprises mainly silty to very silty firm to stiff clay deposits. These impermeable deposits would significantly limit any subterranean pathway with regard to possible gas generation.

4.3 Statutory Requirements/Authorisations: -

Table 4.2

TYPE	Location	Comments
Enforcement and Prohibition Notices	None recorded within c.250m	~
Integrated Pollution Prevention & Control	None recorded within c.250m	~
Local Authority Pollution Prevention & Controls	Two recorded within c.250m	~
Prosecutions Relating to Authorised Processes	None recorded within c.250m	~
Registered Radioactive Substances	None recorded within c.250m	~
COMAH/NIHHS Sites	None recorded within c.250m	~
Explosive Sites	None recorded within c.250m	~
Planning Hazardous Substances Consents / Enforcements	None recorded within c.250m	~
Fuel Station Entries	None recorded within c.250m	~
Contemporary Trade Entries and Points of Interest (POI)	Seven recorded within c.250m.	All seven entries record an 'inactive' status and therefore not considered to represent a risk to the site.

4.4 Pollution Incidents and Discharge Consents: -

Table 4.3

TYPE	Location	Comments
Discharge Consents	None recorded within c.250m	~
Pollution Incidents to Controlled Waters	None recorded within c.250m	~
Substantiated Pollution Incident Register	None recorded within c.250m	~
Water Industry Act Referrals	None recorded within c.250m	~

5.0 Conceptual Site Model (CSM)

The Conceptual Site Model (CSM) is one of the primary planning tools that can be used to support the decision-making process of managing contaminated land and groundwater on any given site. The CSM allows for a better understanding of what needs to be done to achieve risk management, and design appropriate remediation techniques if required for the risk management goals chosen. This can be done by undertaking a *source-pathway-receptor* analysis of the site. The likely *sources*, *pathways* and *receptors* for this site are summarised in Table 5.1 below.

The CSM sets out the critical pollutant linkages of concern for this particular site, with regard to contamination. When considering the site will be comprised entirely of hardcover with no significant construction works envisaged, there will be no link between the Source-Pathway-Receptor model.

Table 5.1

	<i>Sources (S)</i>		<i>Pathways (P)</i>		<i>Receptors (R)</i>
S1	Possible Made Ground associated with current & historical development on site.	P1	Ingestion & Dermal Contact	R1	Human Health - End user to be taken as Residential without Home Grown Produce (and construction workforce)
		P2	Air – Inhalation of vapours (indoor & outdoors) and contact with dust generated through the construction works		
		P3	Plant Uptake and attached soil	R2	Controlled Waters – Unproductive Strata (low permeability that have negligible significance for water supply or river base flow).
		P4	Migration through existing service corridors	R3	Adjacent sites
		P5	Direct contact with building materials	R4*	Building materials & protection of water supply pipes
		P6	Surface runoff & Infiltration	R5*	Flora and fauna

* = Not included in the Human Health & Controlled Waters Risk Assessment.

5.1 Geotechnical Considerations: -

The following potential geotechnical issues and hazards have been identified for this site. These issues should be considered before any redevelopment of the site is to take place;

- The actual depth, variability and thickness of any made ground present on site.
- Geotechnical parameters of solid geological deposits beneath the site.
- The nature and depth of existing foundations.
- Stability of any new proposed excavations (for drains / services etc).
- Control of surface water drainage.
- Chemical attack on buried concrete.
- The possible presence of buried services which may pass below the site.

To determine the geotechnical considerations above with more certainty, if any new foundations or increases in structural loadings are envisaged, it is recommended that intrusive geotechnical investigation works are undertaken with associated geotechnical testing to determine detailed foundation proposals.

The information reviewed indicates that the site can be considered as being located within a **LOW** geotechnical risk setting.

5.0 Conceptual Site Model (CSM) (Cont'd)

5.2 Sources of Contamination and Probable Contaminants: -

The OS maps, the Landmark Information Group Envirocheck Report and other environmental information reviewed record the site developed land from c.1872, likely to be associated with residential properties to the north. It is understood that the site itself was used as a former milk float shed from the late 1940's. It was converted into architects' offices from c.1980 and this reflects the current site layout.

The surrounding areas have been mainly developed as residential end use with some light commercial properties recorded.

Soils – Human Health

When considering the proposed development, comprising the renovation / refurbishment of the existing building, with no new construction (structures / extensions / foundations) works envisaged, along with 100% hardstanding upon completion, the potential risks posed to Human Health (future end users) is considered low to negligible, based on the information currently available.

Appropriate PPE should be worn by development workers and a watching brief should be undertaken during works on site. Should any significant made ground be encountered during development works or should any areas of odorous, abnormally coloured or suspected contaminated ground be encountered, an amended risk assessment should be undertaken to determine whether further investigation, mitigation or remedial works are necessary.

Consideration may also need to be given to the protection of any new service pipes for the proposed development and a suite of contamination testing (UKWIR suite) may be required, in order to meet the requirements of the local utilities service provider for their 'pipe selection risk assessment' (PSRA), once the location and depth of future services have been determined.

The information reviewed indicates that the site can be considered as being located within a **LOW to NEGLIGIBLE** ground contamination risk setting for Human Health.

Groundwater/Leachate – Controlled Waters: -

The following factors have been taken into consideration when assessing the risks posed towards Controlled Waters;

- No superficial deposits are recorded below the site and the solid geological deposits (London Clay Formation) are classified as Unproductive Strata.
- There are no Source Protection Zones (SPZ) recorded within 1km from the boundaries of the site.
- There are 6 no Groundwater Abstractions recorded c.995m to the southeast of the site, all relating to groundwater abstracted for Commercial & Public Services associated with Kentish Town Sports Centre operated by Greenwich Leisure Ltd.
- There are no surface water features recorded within c.250m of the site.

The information reviewed indicates that the site can be considered to have a **NEGLIGIBLE** ground contamination risk setting for Controlled Waters.

6.0 Conclusions and Recommendations

When considering the proposed development will comprise a change of end use from commercial to residential, the proposals are for the internal renovation / refurbishment of the existing building only, with no significant construction works envisaged. In addition, the site will continue to comprise 100% hard cover post completion of the works. As a result, from the information reviewed during the completion of this report, the site is not felt to be at risk from any significant ground contamination or ground issues and therefore no intrusive investigation works are considered necessary.

If any changes to the current proposed works are made, resulting in construction works being required (i.e. new buildings / extensions / foundations), then a reassessment of this report will be required.

END OF REPORT